Analytical Resources, Incorporated
Analytical Chemists and Consultants

30 August 2021

Cindy Fields
Anchor QEA, LLC
1201 3rd Ave, Suite 2600
Seattle, WA 98101

RE: Lower Duwamish AOC4

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
21G0108	N/A

Susan Dunnihoo

Digitally signed by Susan Dunnihoo
Date: 2021.08.30 18:21:13 -07'00'

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Susan Dunnihoo, Director, Client Services

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

~~21G001~~ SC 21G0108

1 of 1

CHAIN-OF-CUSTODY/TEST REQUEST FORM

№ 4034

Project/Client Name: Duwamish AOC4
Project Number: 180067-02.02
Contact Name: Amara VandenOft
Sampled By: Windward

Ship to: ARI
Attn: Sue Dunnihoo
Shipper: Courier
Form filled out by: Brandi Quinlisk

Shipping Date: 7/9/2021
Airbill Number: —
Turnaround requested: STD

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	PCB	TOC/Total Solids	Archive	Dioxin Furans	Arsenic			Comments / Instructions [Jar tag number(s)]
7/8/2021	15:20	LDW21-IT641	3	Sediment	X	X	X					
	15:47	LDW21-IT654B	4		X	X	X	X				
	15:47	LDW21-IT654C	4		X	X	X	X				
	15:47	LDW21-IT654E	4		X	X	X	X				
	16:10	LDW21-IT679	3		X	X	X					
	16:26	LDW21-IT649B	4		X	X	X	X				
	16:26	LDW21-IT649C	4		X	X	X	X				
	16:26	LDW21-IT649E	4		X	X	X	X				
	17:02	LDW21-IT669B	4		X	X	X	X				
	↓	LDW21-IT669C	4		X	X	X	X				
↓	17:02	LDW21-IT669E	4	↓	X	X	X	X				
7/8/2021	18:06	LDW21-IT598A	3	Sediment	X	X	X		X			
		Total Number of Containers	45	Purchase Order / Statement of Work #	CLF-052021-ARI							

1) Released by:	1) Rec'd by:	2) Released by:	2) Rec'd by:
Print name: A VandenOft		Print name:	
Signature:	Company: ARI	Signature:	Company:
Company: Windward		Company:	
Date/Time: 7/9/21 1038	Date/Time: 07/09/2021 1038	Date/Time:	Date/Time:

* Distribution: White copies accompany shipment; yellow retained by consignor.

Wind Ward environmental LLC

200 1st Ave W, Suite 500
Seattle, WA 98119

206.378.1364

To be completed by Laboratory upon sample receipt:

Date of receipt::	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Windward/Anchor

Project Name: Lower Duwamish AOC4

COC No(s): 4034 NA JM

Delivered by: Fed-Ex UPS Courier Hand Delivered Other:_____

Assigned ARI Job No: 21G0108

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	NO
Were custody papers included with the cooler?	YES	NO
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1103 ~~2.4~~ SC 3.1 ____ ____ ____ ____

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: DOO 5206

Cooler Accepted by: JM Date: 07/09/2021 Time: 1038

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	YES	NO
How were bottles sealed in plastic bags?	Individually	Grouped	Not
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ...	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI	NA	_____	

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: SC Date: 7/9/21 Time: 1527 Labels checked by: SC

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Anchor QEA, LLC	Project:	Lower Duwamish AOC4	
1201 3rd Ave, Suite 2600	Project Number:	180067-02.02	**Reported:**
Seattle, WA 98101	Project Manager:	Cindy Fields	08/30/2021 17:00

ANALYTICAL REPORT FOR SAMPLES

Laboratory ID	Sample ID	Matrix	Date Sampled	Date Received
21G0108-01	LDW21-IT641	Solid	07/08/21 15:20	07/09/21 10:38
21G0108-02	LDW21-IT654B	Solid	07/08/21 15:47	07/09/21 10:38
21G0108-03	LDW21-IT654C	Solid	07/08/21 15:47	07/09/21 10:38
21G0108-04	LDW21-IT654E	Solid	07/08/21 15:47	07/09/21 10:38
21G0108-05	LDW21-IT679	Solid	07/08/21 16:10	07/09/21 10:38
21G0108-06	LDW21-IT649B	Solid	07/08/21 16:26	07/09/21 10:38
21G0108-07	LDW21-IT649C	Solid	07/08/21 16:26	07/09/21 10:38
21G0108-08	LDW21-IT649E	Solid	07/08/21 16:26	07/09/21 10:38
21G0108-09	LDW21-IT669B	Solid	07/08/21 17:02	07/09/21 10:38
21G0108-10	LDW21-IT669C	Solid	07/08/21 17:02	07/09/21 10:38
21G0108-11	LDW21-IT669E	Solid	07/08/21 17:02	07/09/21 10:38
21G0108-12	LDW21-IT598A	Solid	07/08/21 18:06	07/09/21 10:38

Anchor QEA, LLC	Project: Lower Duwamish AOC4	
1201 3rd Ave, Suite 2600	Project Number: 180067-02.02	**Reported:**
Seattle WA, 98101	Project Manager: Cindy Fields	30-Aug-2021 17:00

Case Narrative

Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Work Order: 21G0108

Sample receipt

Samples as listed on the preceding page were received 09-Jul-2021 10:38 under ARI work order 21G0108. For details regarding sample receipt, please refer to the Cooler Receipt Form. Mercury aliquots were frozen to meet QAPP requirements.

Dioxin/Furans - EPA Method 1613

The sample(s) were extracted and analyzed within the recommended holding times. Analysis was performed using an application specific column developed by Restek. The RTX-DIoxin2 column has unique isomer separation for the 2378-TCDF, eliminating the need for confirmation analysis.

Initial and continuing calibrations were within method requirements.

Labeled internal standard areas were within limits.

The cleanup surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits, with response for OCDD below the reporting limit and "J"-flagged. Associated positive results have been "B"-flagged.

The OPR (Ongoing Precision and Recovery) standard percent recoveries were within control limits.

The duplicate (DUP) has relative percent differences (RPD) outside advisory limits for the PeCDD, the HxCDDs, 1,2,3,4,6,7,8-HpCDF and 1,2,3,4,6,7,8-HpCDD.

The standard reference material (SRM) was undetected for 2,3,7,8-TCDD, attributed to the laboratory using insufficient material in the extraction process.

QUALIFIERS AND NOTES

Qualifier	Definition
X	Indicates possible CDPE interference.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
J	Estimated concentration value detected below the reporting limit.
EMPC	Estimated Maximum Possible Concentration qualifier for HRGCMS Dioxin
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
B	This analyte was detected in the method blank.
*	Flagged value is not within established control limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT654B

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21G0108-02 C	File ID:	21082711
Sampled:	07/08/21 15:47	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 13:04
% Solids:	67.48	Preparation:	EPA 8290	Initial/Final:	14.85 g Wet / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1	0.759	0.655-0.886	0.381	0.998	1.58	ng/kg	X
1746-01-6	2,3,7,8-TCDD	1	0.681	0.655-0.886	0.247	0.998	0.671	ng/kg	J
57117-41-6	1,2,3,7,8-PeCDF	1	1.666	1.318-1.783	0.218	0.998	1.75	ng/kg	
57117-31-4	2,3,4,7,8-PeCDF	1	1.442	1.318-1.783	0.200	0.998	3.32	ng/kg	
40321-76-4	1,2,3,7,8-PeCDD	1	1.503	1.318-1.783	0.324	0.998	3.47	ng/kg	
70648-26-9	1,2,3,4,7,8-HxCDF	1	1.208	1.054-1.426	0.271	0.998	41.4	ng/kg	
57117-44-9	1,2,3,6,7,8-HxCDF	1	1.218	1.054-1.426	0.269	0.998	7.42	ng/kg	
60851-34-5	2,3,4,6,7,8-HxCDF	1	1.210	1.054-1.426	0.257	0.998	12.7	ng/kg	
72918-21-9	1,2,3,7,8,9-HxCDF	1	1.262	1.054-1.426	0.285	0.998	5.59	ng/kg	
39227-28-6	1,2,3,4,7,8-HxCDD	1	1.229	1.054-1.426	0.295	0.998	3.21	ng/kg	
57653-85-7	1,2,3,6,7,8-HxCDD	1	1.289	1.054-1.426	0.293	0.998	18.3	ng/kg	
19408-74-3	1,2,3,7,8,9-HxCDD	1	1.243	1.054-1.426	0.315	0.998	7.28	ng/kg	
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.047	0.893-1.208	0.277	0.998	166	ng/kg	
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	0.979	0.893-1.208	0.355	0.998	22.5	ng/kg	
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.082	0.893-1.208	0.663	2.49	517	ng/kg	
39001-02-0	OCDF	1	0.885	0.757-1.024	0.393	2.49	307	ng/kg	
3268-87-9	OCDD	1	0.895	0.757-1.024	0.794	9.98	3460	ng/kg	B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			0.998	13.9	ng/kg
41903-57-5	Total TCDD	1	0.000			0.998	4.33	ng/kg
30402-15-4	Total PeCDF	1	0.000			0.998	48.7	ng/kg
36088-22-9	Total PeCDD	1	0.000			0.998	16.2	ng/kg
55684-94-1	Total HxCDF	1	0.000			0.998	278	ng/kg
34465-46-8	Total HxCDD	1	0.000			0.998	133	ng/kg
38998-75-3	Total HpCDF	1	0.000			0.998	611	ng/kg
37871-00-4	Total HpCDD	1	0.000			0.998	1010	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 23.12
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 23.12

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT654B

Form 2
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21G0108-02	File ID:	21082711
Sampled:	07/08/21 15:47	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 13:04
Solids Wt%:	67.48	Preparation:	EPA 8290	Initial/Final:	14.85 g / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.826	0.655-0.886	0.161	47.0	24 - 169 %	
13C12-2,3,7,8-TCDD		0.768	0.655-0.886	0.195	54.2	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.592	1.318-1.783	0.177	74.9	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.615	1.318-1.783	0.186	74.3	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.548	1.318-1.783	0.171	79.2	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.524	0.434-0.587	0.144	61.6	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.527	0.434-0.587	0.134	58.9	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.512	0.434-0.587	0.148	61.9	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.521	0.434-0.587	0.178	69.4	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.265	1.054-1.426	0.156	71.4	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.250	1.054-1.426	0.144	65.4	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.468	0.374-0.506	0.172	68.4	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.460	0.374-0.506	0.210	74.2	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.019	0.893-1.208	0.198	75.9	23 - 140 %	
13C12-OCDD		0.917	0.757-1.024	0.332	90.5	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.072	54.3	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:42:27 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-02, Name: 21082711, Date: 27-Aug-2021, Time: 13:04:38, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.247	1.001	1.414e3	1.863e3	1.108	0.759	0.770	2965	1100	2.26e4	2.82e4	7.6	25.6	NO	bd	bd	0.790
12378-PeCDF	29.414	1.001	3.025e3	1.815e3	1.015	1.666	1.550	1237	1756	4.81e4	2.72e4	38.9	15.5	NO	bb	bd	0.879
23478-PeCDF	30.751	1.001	5.670e3	3.933e3	1.126	1.442	1.550	1237	1756	8.44e4	6.11e4	68.3	34.8	NO	dd	db	1.662
123478-HxCDF	34.417	1.001	5.132e4	4.249e4	1.017	1.208	1.240	1848	1370	7.83e5	6.58e5	423.9	480.3	NO	dd	dd	20.747
234678-HxCDF	35.387	0.999	1.600e4	1.323e4	1.052	1.210	1.240	1848	1370	1.90e5	1.57e5	102.8	114.6	NO	bb	bb	6.361
123678-HxCDF	34.551	1.000	9.728e3	7.986e3	1.037	1.218	1.240	1848	1370	1.50e5	1.16e5	81.2	84.3	NO	db	db	3.716
123789-HxCDF	36.434	0.999	6.541e3	5.185e3	1.030	1.262	1.240	1848	1370	1.02e5	8.44e4	54.9	61.6	NO	bb	bb	2.803
1234678-HpCDF	38.350	1.000	2.081e5	1.988e5	1.327	1.047	1.050	2117	1791	3.67e6	3.45e6	1732.9	1927.9	NO	bb	bb	83.240
1234789-HpCDF	40.523	1.000	2.339e4	2.390e4	1.283	0.979	1.050	2117	1791	3.50e5	3.51e5	165.3	196.1	NO	bb	bb	11.274
OCDF	44.657	1.005	2.769e5	3.129e5	1.447	0.885	0.890	1635	1618	3.41e6	3.92e6	2083.3	2426.1	NO	bb	bb	153.847
2378-TCDD	25.882	1.001	4.237e2	6.221e2	0.920	0.681	0.770	1231	731	4.57e3	9.42e3	3.7	12.9	NO	bd	bd	0.336
12378-PeCDD	30.997	1.000	3.368e3	2.240e3	0.995	1.503	1.550	1230	1452	4.47e4	2.83e4	36.3	19.5	NO	bb	bb	1.740
123478-HxCDD	35.565	1.001	3.634e3	2.956e3	1.027	1.229	1.240	1828	1456	6.98e4	5.03e4	38.2	34.5	NO	bd	bd	1.610
123678-HxCDD	35.676	1.001	2.065e4	1.602e4	1.009	1.289	1.240	1828	1456	3.38e5	2.77e5	185.0	190.4	NO	dd	db	9.184
123789-HxCDD	36.066	1.012	7.631e3	6.140e3	0.950	1.243	1.240	1828	1456	1.34e5	9.79e4	73.2	67.2	NO	bb	bb	3.649
1234678-HpCDD	39.810	1.000	4.011e5	3.709e5	1.068	1.082	1.050	3003	2320	6.60e6	6.12e6	2196.4	2636.4	NO	bb	bb	259.060
OCDD	44.447	1.000	2.559e6	2.858e6	1.181	0.895	0.890	2419	2940	3.29e7	3.69e7	13600.9	12537.2	NO	bb	bb	1731.516
13C-2378-TCDF	25.232	1.007	1.694e5	2.049e5	1.427	0.826	0.770	2083	1311	2.61e6	3.14e6	1253.1	2393.7	NO	bb	bb	46.983
13C-12378-PeCDF	29.392	1.173	3.331e5	2.093e5	1.297	1.592	1.550	2437	947	4.98e6	3.14e6	2044.0	3316.0	NO	bb	bb	74.869
13C-23478-PeCDF	30.729	1.227	3.170e5	1.963e5	1.236	1.615	1.550	2437	947	4.92e6	3.08e6	2018.1	3250.0	NO	bb	bb	74.328
13C-123478-HxCDF	34.395	0.954	1.529e5	2.918e5	1.242	0.524	0.510	1038	1837	2.40e6	4.58e6	2315.1	2490.8	NO	bd	bd	61.593
13C-123678-HxCDF	34.540	0.958	1.587e5	3.011e5	1.343	0.527	0.510	1038	1837	2.39e6	4.68e6	2299.3	2549.8	NO	db	db	58.899
13C-234678-HxCDF	35.420	0.983	1.480e5	2.887e5	1.215	0.512	0.510	1038	1837	2.42e6	4.72e6	2328.8	2571.7	NO	bb	bb	61.862
13C-123789-HxCDF	36.456	1.011	1.392e5	2.669e5	1.008	0.521	0.510	1038	1837	2.25e6	4.30e6	2164.4	2341.3	NO	bb	bb	69.361
13C-1234678-HpCDF	38.339	1.064	1.173e5	2.510e5	0.926	0.468	0.440	995	1559	2.02e6	4.34e6	2034.4	2781.5	NO	bb	bb	68.417
13C-1234789-HpCDF	40.512	1.124	1.029e5	2.239e5	0.758	0.460	0.440	995	1559	1.62e6	3.39e6	1626.2	2176.9	NO	bb	bb	74.217
13C-1234-TCDD	25.050	0.000	2.425e5	3.160e5	1.000	0.767	0.770	2053	1160	3.83e6	4.97e6	1865.8	4287.8	NO	bb	bb	100.000
13C-2378-TCDD	25.867	1.033	1.467e5	1.911e5	1.116	0.768	0.770	2053	1160	2.24e6	2.95e6	1092.3	2544.8	NO	bb	bb	54.177
13C-12378-PeCDD	30.985	1.237	1.967e5	1.271e5	0.732	1.548	1.550	909	936	3.02e6	1.90e6	3325.7	2034.1	NO	bb	bb	79.218
13C-123478-HxCDD	35.542	0.986	2.225e5	1.759e5	0.960	1.265	1.240	1104	1296	3.62e6	2.90e6	3277.4	2238.7	NO	bd	bd	71.446
13C-123678-HxCDD	35.654	0.989	2.199e5	1.758e5	1.041	1.250	1.240	1104	1296	3.69e6	2.88e6	3346.5	2223.2	NO	db	db	65.393
13C-1234678-HpCDD	39.799	1.104	1.408e5	1.382e5	0.632	1.019	1.050	971	1036	2.27e6	2.21e6	2339.8	2132.8	NO	bb	bb	75.924
13C-OCDD	44.428	1.233	2.535e5	2.764e5	0.504	0.917	0.890	1280	1395	3.27e6	3.52e6	2556.9	2523.3	NO	bb	bb	181.044
13C-123789-HxCDD	36.044	0.000	3.212e5	2.599e5	1.000	1.236	1.240	1104	1296	5.30e6	4.30e6	4800.2	3319.5	NO	bb	bb	100.000
37CL-2378-TCDD	25.882	1.033	1.315e5		1.084			1155		2.01e6		1740.5			bb		21.728

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
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ID: 21G0108-02, Name: 21082711, Date: 27-Aug-2021, Time: 13:04:38, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	21.769	0.863	4.298e2	5.926e2	1.425	0.725	0.770	2965	1100	5.93e3	1.08e4	2.0	9.8	NO	bb	bb	0.192
1289-TCDF					1.043		0.770	2965	1100								
13468-PECDF	26.683	0.908	3.136e4	2.155e4	1.376	1.455	1.550	780	836	4.67e5	3.18e5	599.1	381.1	NO	bb	bb	7.088
12389-PECDF	31.765	1.081	4.916e2	3.302e2	1.000	1.489	1.550	1237	1756	8.62e3	6.10e3	7.0	3.5	NO	dd	db	0.152
123468-HXCDF	32.723	0.951	2.233e4	1.878e4	1.087	1.189	1.240	1848	1370	3.54e5	2.95e5	191.7	215.6	NO	bb	bb	8.510
1368-TCDD	23.024	0.890	1.174e3	1.272e3	0.923	0.923	0.770	1231	731	2.13e4	2.13e4	17.3	29.1	YES	bd	bb	0.784
1289-TCDD					0.794		0.770	1231	731								
12479-PECDD	28.311	0.914	1.035e4	6.878e3	1.843	1.505	1.550	1230	1452	1.05e5	6.74e4	85.2	46.4	NO	bb	bb	2.886
12389-PECDD	31.398	1.013	9.203e2	8.317e2	1.154	1.107	1.550	1230	1452	1.44e4	1.12e4	11.7	7.7	YES	bb	bb	0.469
124679-HXCDD	33.515	0.943	5.489e4	4.400e4	1.125	1.247	1.240	1828	1456	8.59e5	6.74e5	469.8	462.7	NO	bb	bb	22.060
1234679-HPCDD	38.785	0.975	4.316e5	4.039e5	1.211	1.069	1.050	3003	2320	7.28e6	6.85e6	2425.7	2953.2	NO	bb	bb	247.297
Total-tetrafurans			1.297e4		1.192			2965		1.99e5							6.972
Total-penta1			3.136e4					780		4.67e5							7.088
Total-pentafurans			5.793e4		1.047			1237		8.00e5							17.317
Total-hexafurans			3.507e5		1.045			1848		5.37e6							139.488
Total-heptafurans			7.261e5		1.305			2117		1.25e7							306.120
Total-Furans			1.456e6		1.158			2965		2.27e7							630.831
Total-tetradioxins			2.742e3		0.879			1231		4.15e4							2.169
Total-pentadioxins			2.287e4		1.331			1230		2.96e5							8.099
Total-hexadioxins			1.561e5		1.028			1828		2.24e6							66.872
Total-heptadioxins			8.328e5		1.140			3003		1.39e7							506.357
Total-Dioxins			3.574e6		1.092			1231		4.94e7							2315.013
Total-TEQ			5.030e6					1231		7.21e7							2945.844
FUNCTION1 PFK			9.986e6					641820		6.56e7							
FUNCTION2 PFK			4.156e6					286411		7.33e7							0.000
FUNCTION3 PFK			1.893e6					444567		3.44e7							0.000
FUNCTION4 PFK			4.479e5					281712		9.61e6							
FUNCTION5 PFK			2.894e5					218258		7.57e6							
FUNCTION1 HXCD...			2.799e3					852		4.33e4							0.000
FUNCTION1 HPCD...			1.563e3					667		2.25e4							0.000
FUNCTION2 HPCD...			1.259e3					815		1.91e4							0.000
FUNCTION3 OCDPE			8.749e2					916		1.66e4							0.000
FUNCTION4 NCDPE			1.483e3					873		2.78e4							0.000
FUNCTION5 DCDPE			4.186e2					679		6.27e3							0.000

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Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-02, Name: 21082711, Date: 27-Aug-2021, Time: 13:04:38, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.48	7.019e2	9.868e2	1.192	0.71	0.77	3.9	YES	NO	dd	bb	0.379
2	Total-tetrafurans	23.25	1.761e3	2.199e3	1.192	0.80	0.77	8.7	YES	NO	dd	bd	0.887
3	Total-tetrafurans	22.71	3.635e2	4.395e2	1.192	0.83	0.77	2.8	NO	NO	dd	dd	0.180
4	Total-tetrafurans	22.59	3.483e3	5.135e3	1.192	0.68	0.77	18.0	YES	NO	bd	bd	1.931
5	1368-TCDF	21.77	4.298e2	5.926e2	1.425	0.73	0.77	2.0	NO	NO	bb	bb	0.192
6	Total-tetrafurans	25.49	1.106e3	1.671e3	1.192	0.66	0.77	4.9	YES	NO	dd	dd	0.623
7	Total-tetrafurans	25.38	6.774e2	9.384e2	1.192	0.72	0.77	4.1	YES	NO	dd	dd	0.362
8	2378-TCDF	25.25	1.414e3	1.863e3	1.108	0.76	0.77	7.6	YES	NO	bd	bd	0.790
9	Total-tetrafurans	24.14	1.742e3	2.514e3	1.192	0.69	0.77	8.9	YES	NO	db	dd	0.954
10	Total-tetrafurans	23.99	1.294e3	1.712e3	1.192	0.76	0.77	5.9	YES	NO	dd	dd	0.674

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.68	3.136e4	2.155e4	1.376	1.46	1.55	599.1	YES	NO	bb	bb	7.088

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentafurans	28.33	3.235e4	2.131e4	1.047	1.52	1.55	334.6	YES	NO	dd	db	9.712
2	Total-pentafurans	28.02	6.169e2	3.698e2	1.047	1.67	1.55	8.2	YES	NO	bd	bd	0.179
3	12389-PECDF	31.77	4.916e2	3.302e2	1.000	1.49	1.55	7.0	YES	NO	dd	db	0.152
4	23478-PeCDF	30.75	5.670e3	3.933e3	1.126	1.44	1.55	68.3	YES	NO	dd	db	1.662
5	Total-pentafurans	30.58	5.425e3	3.572e3	1.047	1.52	1.55	64.5	YES	NO	dd	dd	1.628
6	Total-pentafurans	29.60	3.353e3	2.290e3	1.047	1.46	1.55	41.6	YES	NO	bd	dd	1.021
7	12378-PeCDF	29.41	3.025e3	1.815e3	1.015	1.67	1.55	38.9	YES	NO	bb	bd	0.879
8	Total-pentafurans	29.05	3.783e3	2.345e3	1.047	1.61	1.55	41.4	YES	NO	dd	dd	1.109
9	Total-pentafurans	28.92	3.222e3	2.162e3	1.047	1.49	1.55	42.3	YES	NO	dd	bd	0.974

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HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123678-HxCDF	34.55	9.728e3	7.986e3	1.037	1.22	1.24	81.2	YES	NO	db	db	3.716
2	123478-HxCDF	34.42	5.132e4	4.249e4	1.017	1.21	1.24	423.9	YES	NO	dd	dd	20.747
3	Total-hexafurans	34.25	3.836e3	3.087e3	1.045	1.24	1.24	32.9	YES	NO	bd	bd	1.517
4	Total-hexafurans	33.78	1.622e5	1.310e5	1.045	1.24	1.24	1368.8	YES	NO	bb	bb	64.262
5	Total-hexafurans	33.21	5.103e2	4.146e2	1.045	1.23	1.24	3.8	YES	NO	bb	bb	0.203
6	Total-hexafurans	32.94	7.684e4	6.392e4	1.045	1.20	1.24	631.4	YES	NO	bb	bb	30.848
7	123468-HXCDF	32.72	2.233e4	1.878e4	1.087	1.19	1.24	191.7	YES	NO	bb	bb	8.510
8	123789-HxCDF	36.43	6.541e3	5.185e3	1.030	1.26	1.24	54.9	YES	NO	bb	bb	2.803
9	234678-HxCDF	35.39	1.600e4	1.323e4	1.052	1.21	1.24	102.8	YES	NO	bb	bb	6.361
10	Total-hexafurans	34.88	1.357e3	1.023e3	1.045	1.33	1.24	12.1	YES	NO	bb	bb	0.522

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-heptafurans	38.99	4.906e5	4.621e5	1.305	1.06	1.05	3970.7	YES	NO	bb	bb	209.980
2	Total-heptafurans	38.75	4.000e3	3.374e3	1.305	1.19	1.05	33.5	YES	NO	bb	bb	1.625
3	1234678-HpCDF	38.35	2.081e5	1.988e5	1.327	1.05	1.05	1732.9	YES	NO	bb	bb	83.240
4	1234789-HpCDF	40.52	2.339e4	2.390e4	1.283	0.98	1.05	165.3	YES	NO	bb	bb	11.274

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.48	7.019e2	9.868e2	1.192	0.71	0.77	3.9	YES	NO	dd	bb	0.379
2	Total-tetrafurans	23.25	1.761e3	2.199e3	1.192	0.80	0.77	8.7	YES	NO	dd	bd	0.887
3	Total-tetrafurans	22.71	3.635e2	4.395e2	1.192	0.83	0.77	2.8	NO	NO	dd	dd	0.180
4	Total-tetrafurans	22.59	3.483e3	5.135e3	1.192	0.68	0.77	18.0	YES	NO	bd	bd	1.931
5	1368-TCDF	21.77	4.298e2	5.926e2	1.425	0.73	0.77	2.0	NO	NO	bb	bb	0.192
6	Total-tetrafurans	25.49	1.106e3	1.671e3	1.192	0.66	0.77	4.9	YES	NO	dd	dd	0.623
7	Total-tetrafurans	25.38	6.774e2	9.384e2	1.192	0.72	0.77	4.1	YES	NO	dd	dd	0.362
8	2378-TCDF	25.25	1.414e3	1.863e3	1.108	0.76	0.77	7.6	YES	NO	bd	bd	0.790
9	Total-tetrafurans	24.14	1.742e3	2.514e3	1.192	0.69	0.77	8.9	YES	NO	db	dd	0.954
10	Total-tetrafurans	23.99	1.294e3	1.712e3	1.192	0.76	0.77	5.9	YES	NO	dd	dd	0.674
11	Total-pentafurans	28.33	3.235e4	2.131e4	1.047	1.52	1.55	334.6	YES	NO	dd	db	9.712
12	Total-pentafurans	28.02	6.169e2	3.698e2	1.047	1.67	1.55	8.2	YES	NO	bd	bd	0.179
13	12389-PECDF	31.77	4.916e2	3.302e2	1.000	1.49	1.55	7.0	YES	NO	dd	db	0.152
14	23478-PeCDF	30.75	5.670e3	3.933e3	1.126	1.44	1.55	68.3	YES	NO	dd	db	1.662
15	Total-pentafurans	30.58	5.425e3	3.572e3	1.047	1.52	1.55	64.5	YES	NO	dd	dd	1.628
16	Total-pentafurans	29.60	3.353e3	2.290e3	1.047	1.46	1.55	41.6	YES	NO	bd	dd	1.021
17	12378-PeCDF	29.41	3.025e3	1.815e3	1.015	1.67	1.55	38.9	YES	NO	bb	bd	0.879
18	Total-pentafurans	29.05	3.783e3	2.345e3	1.047	1.61	1.55	41.4	YES	NO	dd	dd	1.109
19	Total-pentafurans	28.92	3.222e3	2.162e3	1.047	1.49	1.55	42.3	YES	NO	dd	bd	0.974
20	123678-HxCDF	34.55	9.728e3	7.986e3	1.037	1.22	1.24	81.2	YES	NO	db	db	3.716
21	123478-HxCDF	34.42	5.132e4	4.249e4	1.017	1.21	1.24	423.9	YES	NO	dd	dd	20.747
22	Total-hexafurans	34.25	3.836e3	3.087e3	1.045	1.24	1.24	32.9	YES	NO	bd	bd	1.517
23	Total-hexafurans	33.78	1.622e5	1.310e5	1.045	1.24	1.24	1368.8	YES	NO	bb	bb	64.262
24	Total-hexafurans	33.21	5.103e2	4.146e2	1.045	1.23	1.24	3.8	YES	NO	bb	bb	0.203
25	Total-hexafurans	32.94	7.684e4	6.392e4	1.045	1.20	1.24	631.4	YES	NO	bb	bb	30.848
26	123468-HXCDF	32.72	2.233e4	1.878e4	1.087	1.19	1.24	191.7	YES	NO	bb	bb	8.510
27	123789-HxCDF	36.43	6.541e3	5.185e3	1.030	1.26	1.24	54.9	YES	NO	bb	bb	2.803
28	234678-HxCDF	35.39	1.600e4	1.323e4	1.052	1.21	1.24	102.8	YES	NO	bb	bb	6.361
29	Total-hexafurans	34.88	1.357e3	1.023e3	1.045	1.33	1.24	12.1	YES	NO	bb	bb	0.522
30	Total-heptafurans	38.99	4.906e5	4.621e5	1.305	1.06	1.05	3970.7	YES	NO	bb	bb	209.980
31	Total-heptafurans	38.75	4.000e3	3.374e3	1.305	1.19	1.05	33.5	YES	NO	bb	bb	1.625
32	1234678-HpCDF	38.35	2.081e5	1.988e5	1.327	1.05	1.05	1732.9	YES	NO	bb	bb	83.240
33	1234789-HpCDF	40.52	2.339e4	2.390e4	1.283	0.98	1.05	165.3	YES	NO	bb	bb	11.274
34	OCDF	44.66	2.769e5	3.129e5	1.447	0.88	0.89	2083.3	YES	NO	bb	bb	153.847
35	13468-PECDF	26.68	3.136e4	2.155e4	1.376	1.46	1.55	599.1	YES	NO	bb	bb	7.088

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TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	24.85	5.575e2	7.981e2	0.879	0.70	0.77	6.8	YES	NO	dd	dd	0.456
2	Total-tetradioxins	23.51	5.526e2	6.790e2	0.879	0.81	0.77	7.2	YES	NO	bb	bb	0.415
3	Total-tetradioxins	23.30	1.208e3	1.647e3	0.879	0.73	0.77	16.0	YES	NO	bb	bb	0.961
4	2378-TCDD	25.88	4.237e2	6.221e2	0.920	0.68	0.77	3.7	YES	NO	bd	bd	0.336

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDD	31.00	3.368e3	2.240e3	0.995	1.50	1.55	36.3	YES	NO	bb	bb	1.740
2	Total-pentadioxins	30.33	1.338e3	8.214e2	1.331	1.63	1.55	13.8	YES	NO	bb	bb	0.501
3	Total-pentadioxins	29.61	2.668e3	1.731e3	1.331	1.54	1.55	32.6	YES	NO	bd	bd	1.021
4	Total-pentadioxins	29.40	2.988e3	1.911e3	1.331	1.56	1.55	41.1	YES	NO	bb	bb	1.137
5	Total-pentadioxins	28.79	2.161e3	1.350e3	1.331	1.60	1.55	31.3	YES	NO	bb	bb	0.815
6	12479-PECDD	28.31	1.035e4	6.878e3	1.843	1.50	1.55	85.2	YES	NO	bb	bb	2.886

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.07	7.631e3	6.140e3	0.950	1.24	1.24	73.2	YES	NO	bb	bb	3.649
2	123678-HxCDD	35.68	2.065e4	1.602e4	1.009	1.29	1.24	185.0	YES	NO	dd	db	9.184
3	123478-HxCDD	35.56	3.634e3	2.956e3	1.027	1.23	1.24	38.2	YES	NO	bd	bd	1.610
4	Total-hexadioxins	34.77	1.695e3	1.520e3	1.028	1.12	1.24	18.9	YES	NO	db	db	0.788
5	Total-hexadioxins	34.66	5.479e4	4.353e4	1.028	1.26	1.24	328.0	YES	NO	bd	bd	24.087
6	Total-hexadioxins	34.29	1.284e4	9.586e3	1.028	1.34	1.24	110.7	YES	NO	bb	bb	5.495
7	124679-HXCDD	33.51	5.489e4	4.400e4	1.125	1.25	1.24	469.8	YES	NO	bb	bb	22.060

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.81	4.011e5	3.709e5	1.068	1.08	1.05	2196.4	YES	NO	bb	bb	259.060
2	1234679-HPCDD	38.78	4.316e5	4.039e5	1.211	1.07	1.05	2425.7	YES	NO	bb	bb	247.297

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	24.85	5.575e2	7.981e2	0.879	0.70	0.77	6.8	YES	NO	dd	dd	0.456
2	Total-tetradioxins	23.51	5.526e2	6.790e2	0.879	0.81	0.77	7.2	YES	NO	bb	bb	0.415
3	Total-tetradioxins	23.30	1.208e3	1.647e3	0.879	0.73	0.77	16.0	YES	NO	bb	bb	0.961
4	2378-TCDD	25.88	4.237e2	6.221e2	0.920	0.68	0.77	3.7	YES	NO	bd	bd	0.336
5	12378-PeCDD	31.00	3.368e3	2.240e3	0.995	1.50	1.55	36.3	YES	NO	bb	bb	1.740
6	Total-pentadioxins	30.33	1.338e3	8.214e2	1.331	1.63	1.55	13.8	YES	NO	bb	bb	0.501
7	Total-pentadioxins	29.61	2.668e3	1.731e3	1.331	1.54	1.55	32.6	YES	NO	bd	bd	1.021
8	Total-pentadioxins	29.40	2.988e3	1.911e3	1.331	1.56	1.55	41.1	YES	NO	bb	bb	1.137
9	Total-pentadioxins	28.79	2.161e3	1.350e3	1.331	1.60	1.55	31.3	YES	NO	bb	bb	0.815
10	12479-PECDD	28.31	1.035e4	6.878e3	1.843	1.50	1.55	85.2	YES	NO	bb	bb	2.886
11	123789-HxCDD	36.07	7.631e3	6.140e3	0.950	1.24	1.24	73.2	YES	NO	bb	bb	3.649
12	123678-HxCDD	35.68	2.065e4	1.602e4	1.009	1.29	1.24	185.0	YES	NO	dd	db	9.184
13	123478-HxCDD	35.56	3.634e3	2.956e3	1.027	1.23	1.24	38.2	YES	NO	bd	bd	1.610
14	Total-hexadioxins	34.77	1.695e3	1.520e3	1.028	1.12	1.24	18.9	YES	NO	db	db	0.788
15	Total-hexadioxins	34.66	5.479e4	4.353e4	1.028	1.26	1.24	328.0	YES	NO	bd	bd	24.087
16	Total-hexadioxins	34.29	1.284e4	9.586e3	1.028	1.34	1.24	110.7	YES	NO	bb	bb	5.495
17	124679-HXCDD	33.51	5.489e4	4.400e4	1.125	1.25	1.24	469.8	YES	NO	bb	bb	22.060
18	1234678-HpCDD	39.81	4.011e5	3.709e5	1.068	1.08	1.05	2196.4	YES	NO	bb	bb	259.060
19	1234679-HPCDD	38.78	4.316e5	4.039e5	1.211	1.07	1.05	2425.7	YES	NO	bb	bb	247.297
20	OCDD	44.45	2.559e6	2.858e6	1.181	0.90	0.89	13600.9	YES	NO	bb	bb	1731.5...

ID: 21G0108-02, Name: 21082711, Date: 27-Aug-2021, Time: 13:04:38, Conditions: AUTOSPEC01, User: pk

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.48	7.019e2	9.868e2	1.192	0.71	0.77	3.9	YES	NO	dd	bb	0.379
2	Total-tetrafurans	23.25	1.761e3	2.199e3	1.192	0.80	0.77	8.7	YES	NO	dd	bd	0.887
3	Total-tetrafurans	22.71	3.635e2	4.395e2	1.192	0.83	0.77	2.8	NO	NO	dd	dd	0.180
4	Total-tetrafurans	22.59	3.483e3	5.135e3	1.192	0.68	0.77	18.0	YES	NO	bd	bd	1.931
5	1368-TCDF	21.77	4.298e2	5.926e2	1.425	0.73	0.77	2.0	NO	NO	bb	bb	0.192
6	Total-tetrafurans	25.49	1.106e3	1.671e3	1.192	0.66	0.77	4.9	YES	NO	dd	dd	0.623
7	Total-tetrafurans	25.38	6.774e2	9.384e2	1.192	0.72	0.77	4.1	YES	NO	dd	dd	0.362
8	2378-TCDF	25.25	1.414e3	1.863e3	1.108	0.76	0.77	7.6	YES	NO	bd	bd	0.790
9	Total-tetrafurans	24.14	1.742e3	2.514e3	1.192	0.69	0.77	8.9	YES	NO	db	dd	0.954
10	Total-tetrafurans	23.99	1.294e3	1.712e3	1.192	0.76	0.77	5.9	YES	NO	dd	dd	0.674
11	Total-pentafurans	28.33	3.235e4	2.131e4	1.047	1.52	1.55	334.6	YES	NO	dd	db	9.712
12	Total-pentafurans	28.02	6.169e2	3.698e2	1.047	1.67	1.55	8.2	YES	NO	bd	bd	0.179
13	12389-PECDF	31.77	4.916e2	3.302e2	1.000	1.49	1.55	7.0	YES	NO	dd	db	0.152
14	23478-PeCDF	30.75	5.670e3	3.933e3	1.126	1.44	1.55	68.3	YES	NO	dd	db	1.662
15	Total-pentafurans	30.58	5.425e3	3.572e3	1.047	1.52	1.55	64.5	YES	NO	dd	dd	1.628
16	Total-pentafurans	29.60	3.353e3	2.290e3	1.047	1.46	1.55	41.6	YES	NO	bd	dd	1.021
17	12378-PeCDF	29.41	3.025e3	1.815e3	1.015	1.67	1.55	38.9	YES	NO	bb	bd	0.879
18	Total-pentafurans	29.05	3.783e3	2.345e3	1.047	1.61	1.55	41.4	YES	NO	dd	dd	1.109
19	Total-pentafurans	28.92	3.222e3	2.162e3	1.047	1.49	1.55	42.3	YES	NO	dd	bd	0.974
20	123678-HxCDF	34.55	9.728e3	7.986e3	1.037	1.22	1.24	81.2	YES	NO	db	db	3.716
21	123478-HxCDF	34.42	5.132e4	4.249e4	1.017	1.21	1.24	423.9	YES	NO	dd	dd	20.747
22	Total-hexafurans	34.25	3.836e3	3.087e3	1.045	1.24	1.24	32.9	YES	NO	bd	bd	1.517
23	Total-hexafurans	33.78	1.622e5	1.310e5	1.045	1.24	1.24	1368.8	YES	NO	bb	bb	64.262
24	Total-hexafurans	33.21	5.103e2	4.146e2	1.045	1.23	1.24	3.8	YES	NO	bb	bb	0.203
25	Total-hexafurans	32.94	7.684e4	6.392e4	1.045	1.20	1.24	631.4	YES	NO	bb	bb	30.848
26	123468-HXCDF	32.72	2.233e4	1.878e4	1.087	1.19	1.24	191.7	YES	NO	bb	bb	8.510
27	123789-HxCDF	36.43	6.541e3	5.185e3	1.030	1.26	1.24	54.9	YES	NO	bb	bb	2.803
28	234678-HxCDF	35.39	1.600e4	1.323e4	1.052	1.21	1.24	102.8	YES	NO	bb	bb	6.361
29	Total-hexafurans	34.88	1.357e3	1.023e3	1.045	1.33	1.24	12.1	YES	NO	bb	bb	0.522
30	Total-heptafurans	38.99	4.906e5	4.621e5	1.305	1.06	1.05	3970.7	YES	NO	bb	bb	209.980
31	Total-heptafurans	38.75	4.000e3	3.374e3	1.305	1.19	1.05	33.5	YES	NO	bb	bb	1.625
32	1234678-HpCDF	38.35	2.081e5	1.988e5	1.327	1.05	1.05	1732.9	YES	NO	bb	bb	83.240
33	1234789-HpCDF	40.52	2.339e4	2.390e4	1.283	0.98	1.05	165.3	YES	NO	bb	bb	11.274
34	OCDF	44.66	2.769e5	3.129e5	1.447	0.88	0.89	2083.3	YES	NO	bb	bb	153.847
35	13468-PECDF	26.68	3.136e4	2.155e4	1.376	1.46	1.55	599.1	YES	NO	bb	bb	7.088
36	Total-tetradioxins	24.85	5.575e2	7.981e2	0.879	0.70	0.77	6.8	YES	NO	dd	dd	0.456
37	Total-tetradioxins	23.51	5.526e2	6.790e2	0.879	0.81	0.77	7.2	YES	NO	bb	bb	0.415

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:42:27 Pacific Daylight Time

ID: 21G0108-02, Name: 21082711, Date: 27-Aug-2021, Time: 13:04:38, Conditions: AUTOSPEC01, User: pk

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	Total-tetradioxins	23.30	1.208e3	1.647e3	0.879	0.73	0.77	16.0	YES	NO	bb	bb	0.961
39	2378-TCDD	25.88	4.237e2	6.221e2	0.920	0.68	0.77	3.7	YES	NO	bd	bd	0.336
40	12378-PeCDD	31.00	3.368e3	2.240e3	0.995	1.50	1.55	36.3	YES	NO	bb	bb	1.740
41	Total-pentadioxins	30.33	1.338e3	8.214e2	1.331	1.63	1.55	13.8	YES	NO	bb	bb	0.501
42	Total-pentadioxins	29.61	2.668e3	1.731e3	1.331	1.54	1.55	32.6	YES	NO	bd	bd	1.021
43	Total-pentadioxins	29.40	2.988e3	1.911e3	1.331	1.56	1.55	41.1	YES	NO	bb	bb	1.137
44	Total-pentadioxins	28.79	2.161e3	1.350e3	1.331	1.60	1.55	31.3	YES	NO	bb	bb	0.815
45	12479-PECDD	28.31	1.035e4	6.878e3	1.843	1.50	1.55	85.2	YES	NO	bb	bb	2.886
46	123789-HxCDD	36.07	7.631e3	6.140e3	0.950	1.24	1.24	73.2	YES	NO	bb	bb	3.649
47	123678-HxCDD	35.68	2.065e4	1.602e4	1.009	1.29	1.24	185.0	YES	NO	dd	db	9.184
48	123478-HxCDD	35.56	3.634e3	2.956e3	1.027	1.23	1.24	38.2	YES	NO	bd	bd	1.610
49	Total-hexadioxins	34.77	1.695e3	1.520e3	1.028	1.12	1.24	18.9	YES	NO	db	db	0.788
50	Total-hexadioxins	34.66	5.479e4	4.353e4	1.028	1.26	1.24	328.0	YES	NO	bd	bd	24.087
51	Total-hexadioxins	34.29	1.284e4	9.586e3	1.028	1.34	1.24	110.7	YES	NO	bb	bb	5.495
52	124679-HXCDD	33.51	5.489e4	4.400e4	1.125	1.25	1.24	469.8	YES	NO	bb	bb	22.060
53	1234678-HpCDD	39.81	4.011e5	3.709e5	1.068	1.08	1.05	2196.4	YES	NO	bb	bb	259.060
54	1234679-HPCDD	38.78	4.316e5	4.039e5	1.211	1.07	1.05	2425.7	YES	NO	bb	bb	247.297
55	OCDD	44.45	2.559e6	2.858e6	1.181	0.90	0.89	13600.9	YES	NO	bb	bb	1731.5...

ID: 21G0108-02, Name: 21082711, Date: 27-Aug-2021, Time: 13:04:38, Conditions: AUTOSPEC01, User: pk

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	21.77	4.492e6					16.3	YES		bd		
2	FUNCTION1 PFK	21.45	1.317e6					16.0	YES		db		
3	FUNCTION1 PFK	21.33	1.016e6					10.7	YES		bd		
4	FUNCTION1 PFK	25.87	5.738e4					2.0	NO		bd		
5	FUNCTION1 PFK	25.02	4.942e4					1.5	NO		bb		
6	FUNCTION1 PFK	24.90	3.026e4					1.2	NO		db		
7	FUNCTION1 PFK	24.84	4.238e4					1.8	NO		bd		
8	FUNCTION1 PFK	24.75	9.545e3					0.6	NO		bb		
9	FUNCTION1 PFK	24.70	4.191e3					0.4	NO		bb		
10	FUNCTION1 PFK	23.80	1.427e4					0.7	NO		bb		
11	FUNCTION1 PFK	23.40	2.550e4					1.1	NO		bb		
12	FUNCTION1 PFK	23.28	2.639e5					3.3	YES		db		
13	FUNCTION1 PFK	23.16	1.502e5					4.1	YES		bd		
14	FUNCTION1 PFK	23.04	6.838e4					2.4	NO		bb		
15	FUNCTION1 PFK	22.69	1.920e4					0.9	NO		bb		
16	FUNCTION1 PFK	22.46	6.246e5					5.9	YES		db		
17	FUNCTION1 PFK	22.30	4.170e5					8.2	YES		dd		
18	FUNCTION1 PFK	22.24	5.049e5					9.3	YES		dd		
19	FUNCTION1 PFK	22.12	7.523e5					11.0	YES		dd		
20	FUNCTION1 PFK	27.26	1.583e4					0.7	NO		bb		
21	FUNCTION1 PFK	26.06	4.389e4					1.3	NO		db		
22	FUNCTION1 PFK	26.00	2.579e4					1.3	NO		bd		
23	FUNCTION1 PFK	25.91	4.196e4					1.5	NO		db		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	27.97	4.529e5					11.3	YES		dd		0.000
2	FUNCTION2 PFK	27.90	1.284e5					10.7	YES		dd		0.000
3	FUNCTION2 PFK	27.85	1.322e5					11.0	YES		dd		0.000
4	FUNCTION2 PFK	27.80	1.677e5					11.3	YES		dd		0.000
5	FUNCTION2 PFK	27.74	1.424e5					11.5	YES		dd		0.000
6	FUNCTION2 PFK	27.71	1.458e5					11.8	YES		dd		0.000
7	FUNCTION2 PFK	27.67	2.392e5					13.0	YES		dd		0.000
8	FUNCTION2 PFK	27.59	2.337e5					13.2	YES		dd		0.000
9	FUNCTION2 PFK	27.53	1.366e5					11.5	YES		dd		0.000
10	FUNCTION2 PFK	27.49	9.719e4					10.6	YES		dd		0.000
11	FUNCTION2 PFK	27.45	9.605e4					10.4	YES		bd		0.000
12	FUNCTION2 PFK	29.46	5.640e4					2.4	NO		dd		0.000
13	FUNCTION2 PFK	29.31	4.594e4					2.6	NO		dd		0.000
14	FUNCTION2 PFK	29.26	2.835e4					2.7	NO		bd		0.000
15	FUNCTION2 PFK	29.21	3.725e3					0.7	NO		bb		0.000
16	FUNCTION2 PFK	28.92	7.560e4					3.2	YES		db		0.000
17	FUNCTION2 PFK	28.88	1.266e4					1.7	NO		bd		0.000
18	FUNCTION2 PFK	28.79	2.090e4					1.9	NO		db		0.000
19	FUNCTION2 PFK	28.72	2.500e4					2.8	NO		dd		0.000
20	FUNCTION2 PFK	28.68	1.122e5					6.3	YES		dd		0.000
21	FUNCTION2 PFK	28.60	1.125e5					6.7	YES		dd		0.000
22	FUNCTION2 PFK	28.49	1.953e5					7.0	YES		dd		0.000
23	FUNCTION2 PFK	28.42	1.586e5					7.8	YES		dd		0.000
24	FUNCTION2 PFK	28.28	2.966e5					8.9	YES		dd		0.000
25	FUNCTION2 PFK	28.23	1.061e5					7.3	YES		dd		0.000
26	FUNCTION2 PFK	28.16	1.051e5					7.1	YES		dd		0.000
27	FUNCTION2 PFK	28.11	9.844e4					8.3	YES		dd		0.000
28	FUNCTION2 PFK	30.81	3.521e4					2.2	NO		db		0.000
29	FUNCTION2 PFK	30.76	6.191e4					2.0	NO		bd		0.000
30	FUNCTION2 PFK	30.58	1.766e4					2.2	NO		db		0.000
31	FUNCTION2 PFK	30.50	5.512e4					2.1	NO		dd		0.000
32	FUNCTION2 PFK	30.41	4.668e4					2.5	NO		dd		0.000
33	FUNCTION2 PFK	30.37	1.390e4					2.1	NO		bd		0.000
34	FUNCTION2 PFK	30.16	3.156e4					2.4	NO		db		0.000
35	FUNCTION2 PFK	30.12	3.964e4					2.7	NO		dd		0.000
36	FUNCTION2 PFK	30.04	1.749e4					2.3	NO		dd		0.000
37	FUNCTION2 PFK	30.02	1.958e4					2.4	NO		dd		0.000

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
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ID: 21G0108-02, Name: 21082711, Date: 27-Aug-2021, Time: 13:04:38, Conditions: AUTOSPEC01, User: pk

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION2 PFK	29.98	3.168e4					2.5	NO		dd		0.000
39	FUNCTION2 PFK	29.87	6.527e4					3.3	YES		dd		0.000
40	FUNCTION2 PFK	29.84	1.820e4					2.8	NO		bd		0.000
41	FUNCTION2 PFK	29.78	2.964e4					1.8	NO		bb		0.000
42	FUNCTION2 PFK	29.67	6.524e3					0.8	NO		bb		0.000
43	FUNCTION2 PFK	29.53	1.065e4					1.2	NO		db		0.000
44	FUNCTION2 PFK	32.04	3.389e4					2.1	NO		bb		0.000
45	FUNCTION2 PFK	31.83	4.668e4					2.6	NO		db		0.000
46	FUNCTION2 PFK	31.79	1.656e4					1.8	NO		bd		0.000
47	FUNCTION2 PFK	31.61	1.105e4					1.3	NO		bb		0.000
48	FUNCTION2 PFK	31.50	3.257e4					2.8	NO		db		0.000
49	FUNCTION2 PFK	31.45	3.835e4					2.9	NO		dd		0.000
50	FUNCTION2 PFK	31.34	1.618e4					1.2	NO		bd		0.000
51	FUNCTION2 PFK	31.24	1.754e4					1.2	NO		bb		0.000
52	FUNCTION2 PFK	31.04	1.734e4					1.3	NO		bb		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	32.99	6.527e3					0.8	NO		bb		0.000
2	FUNCTION3 PFK	32.78	7.777e4					1.3	NO		db		0.000
3	FUNCTION3 PFK	32.57	2.535e5					4.0	YES		bd		0.000
4	FUNCTION3 PFK	32.39	9.801e4					3.5	YES		db		0.000
5	FUNCTION3 PFK	32.34	1.978e4					1.7	NO		dd		0.000
6	FUNCTION3 PFK	32.30	5.153e4					3.0	NO		bd		0.000
7	FUNCTION3 PFK	34.80	2.186e4					1.7	NO		dd		0.000
8	FUNCTION3 PFK	34.75	2.131e4					1.6	NO		dd		0.000
9	FUNCTION3 PFK	34.71	8.127e3					0.8	NO		bd		0.000
10	FUNCTION3 PFK	34.50	4.964e3					0.5	NO		bb		0.000
11	FUNCTION3 PFK	34.41	1.722e4					0.7	NO		bb		0.000
12	FUNCTION3 PFK	34.26	2.267e4					1.3	NO		bb		0.000
13	FUNCTION3 PFK	34.17	6.486e3					0.7	NO		bb		0.000
14	FUNCTION3 PFK	34.05	8.680e3					0.7	NO		bb		0.000
15	FUNCTION3 PFK	34.00	1.612e3					0.3	NO		bb		0.000
16	FUNCTION3 PFK	33.90	3.914e3					0.5	NO		bb		0.000
17	FUNCTION3 PFK	33.86	4.446e3					0.5	NO		bb		0.000
18	FUNCTION3 PFK	33.55	1.809e4					1.6	NO		db		0.000
19	FUNCTION3 PFK	33.53	2.157e4					1.6	NO		bd		0.000
20	FUNCTION3 PFK	33.17	8.684e4					1.6	NO		db		0.000
21	FUNCTION3 PFK	33.12	3.650e3					0.5	NO		bd		0.000
22	FUNCTION3 PFK	33.08	5.979e3					0.7	NO		bb		0.000
23	FUNCTION3 PFK	36.72	9.663e3					0.6	NO		bd		0.000
24	FUNCTION3 PFK	36.68	1.477e4					1.1	NO		bb		0.000
25	FUNCTION3 PFK	36.49	7.404e4					3.4	YES		db		0.000
26	FUNCTION3 PFK	36.43	1.633e5					5.2	YES		bd		0.000
27	FUNCTION3 PFK	36.30	3.561e5					7.1	YES		db		0.000
28	FUNCTION3 PFK	36.16	4.181e4					2.5	NO		bd		0.000
29	FUNCTION3 PFK	35.85	1.909e3					0.4	NO		bb		0.000
30	FUNCTION3 PFK	35.56	2.521e4					1.0	NO		bb		0.000
31	FUNCTION3 PFK	35.28	3.215e3					0.7	NO		bb		0.000
32	FUNCTION3 PFK	35.17	7.273e4					3.5	YES		db		0.000
33	FUNCTION3 PFK	35.14	8.214e4					3.7	YES		dd		0.000
34	FUNCTION3 PFK	35.07	4.225e4					2.5	NO		dd		0.000
35	FUNCTION3 PFK	35.03	5.744e4					2.8	NO		dd		0.000
36	FUNCTION3 PFK	34.95	5.078e4					2.0	NO		dd		0.000
37	FUNCTION3 PFK	34.87	1.689e4					1.3	NO		dd		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION3 PFK	34.84	1.696e4					1.5	NO		dd		0.000
39	FUNCTION3 PFK	37.35	1.613e3					0.3	NO		bb		0.000
40	FUNCTION3 PFK	37.15	6.314e3					0.9	NO		bb		0.000
41	FUNCTION3 PFK	37.00	7.400e3					0.6	NO		bb		0.000
42	FUNCTION3 PFK	36.96	1.978e3					0.4	NO		bb		0.000
43	FUNCTION3 PFK	36.91	2.907e4					1.8	NO		db		0.000
44	FUNCTION3 PFK	36.87	8.668e3					1.0	NO		dd		0.000
45	FUNCTION3 PFK	36.83	2.094e4					1.4	NO		dd		0.000
46	FUNCTION3 PFK	36.79	2.338e4					1.7	NO		dd		0.000

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	38.24	1.011e4					1.0	NO		bb		
2	FUNCTION4 PFK	38.17	1.639e3					0.5	NO		bb		
3	FUNCTION4 PFK	38.06	5.215e3					0.8	NO		bb		
4	FUNCTION4 PFK	38.00	9.338e3					1.3	NO		bb		
5	FUNCTION4 PFK	37.92	4.600e3					0.8	NO		bb		
6	FUNCTION4 PFK	37.64	7.668e4					3.4	YES		db		
7	FUNCTION4 PFK	37.50	1.311e5					3.7	YES		bd		
8	FUNCTION4 PFK	42.37	7.334e3					1.1	NO		bb		
9	FUNCTION4 PFK	41.06	1.291e4					1.7	NO		db		
10	FUNCTION4 PFK	41.02	9.941e3					1.6	NO		bd		
11	FUNCTION4 PFK	40.69	1.025e4					1.2	NO		bb		
12	FUNCTION4 PFK	40.38	8.654e3					1.2	NO		bb		
13	FUNCTION4 PFK	40.12	1.688e4					1.4	NO		bb		
14	FUNCTION4 PFK	40.01	3.266e4					2.2	NO		db		
15	FUNCTION4 PFK	39.92	1.941e4					2.1	NO		bd		
16	FUNCTION4 PFK	39.81	1.490e4					1.8	NO		db		
17	FUNCTION4 PFK	39.76	7.106e3					1.1	NO		bd		
18	FUNCTION4 PFK	39.61	2.260e4					1.5	NO		bb		
19	FUNCTION4 PFK	39.17	2.607e3					0.8	NO		bb		
20	FUNCTION4 PFK	39.03	3.463e4					2.9	NO		bb		
21	FUNCTION4 PFK	38.67	3.822e3					0.8	NO		bb		
22	FUNCTION4 PFK	38.28	5.520e3					1.1	NO		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	45.52	3.747e3					0.9	NO		bb		
2	FUNCTION5 PFK	45.42	2.992e3					0.8	NO		bb		
3	FUNCTION5 PFK	45.37	6.696e3					1.4	NO		db		
4	FUNCTION5 PFK	45.33	1.178e4					1.7	NO		bd		
5	FUNCTION5 PFK	45.24	7.899e3					1.5	NO		bb		
6	FUNCTION5 PFK	44.96	1.022e4					1.6	NO		bb		
7	FUNCTION5 PFK	44.90	8.350e2					0.4	NO		bb		
8	FUNCTION5 PFK	44.83	6.684e3					1.4	NO		bb		
9	FUNCTION5 PFK	44.75	2.889e3					0.8	NO		bb		
10	FUNCTION5 PFK	44.57	1.948e4					2.2	NO		bb		
11	FUNCTION5 PFK	43.81	8.504e3					1.5	NO		bb		
12	FUNCTION5 PFK	43.74	9.509e2					0.5	NO		bb		
13	FUNCTION5 PFK	43.62	2.858e4					2.7	NO		db		
14	FUNCTION5 PFK	43.58	1.860e4					2.3	NO		bd		
15	FUNCTION5 PFK	42.52	2.862e4					4.8	YES		db		
16	FUNCTION5 PFK	42.46	1.246e5					8.6	YES		bd		
17	FUNCTION5 PFK	45.56	6.271e3					1.5	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	26.24	2.014e2					3.7	YES		bb		0.000
2	FUNCTION1 HXCD...	25.59	5.000e2					7.6	YES		bb		0.000
3	FUNCTION1 HXCD...	25.23	5.480e2					11.1	YES		bb		0.000
4	FUNCTION1 HXCD...	24.60	1.597e2					2.4	NO		bb		0.000
5	FUNCTION1 HXCD...	23.25	7.004e2					13.0	YES		bb		0.000
6	FUNCTION1 HXCD...	22.21	1.401e2					3.1	YES		bb		0.000
7	FUNCTION1 HXCD...	21.81	2.125e2					3.8	YES		db		0.000
8	FUNCTION1 HXCD...	21.63	3.372e2					6.0	YES		bd		0.000

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ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	25.40	9.565e1					1.9	NO		bd		0.000
2	FUNCTION1 HPCD...	25.05	7.144e1					1.8	NO		bb		0.000
3	FUNCTION1 HPCD...	22.93	9.504e1					2.2	NO		db		0.000
4	FUNCTION1 HPCD...	22.81	6.490e2					15.6	YES		bd		0.000
5	FUNCTION1 HPCD...	21.39	8.511e1					2.2	NO		bb		0.000
6	FUNCTION1 HPCD...	26.85	8.555e1					1.6	NO		db		0.000
7	FUNCTION1 HPCD...	26.68	8.162e1					2.1	NO		dd		0.000
8	FUNCTION1 HPCD...	26.55	1.879e2					2.4	NO		bd		0.000
9	FUNCTION1 HPCD...	25.62	2.120e2					4.0	YES		db		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	28.58	2.899e2					5.7	YES		db		0.000
2	FUNCTION2 HPCD...	28.42	8.086e2					13.0	YES		dd		0.000
3	FUNCTION2 HPCD...	28.30	1.609e2					4.8	YES		bd		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.04	1.378e2					2.1	NO		bb		0.000
2	FUNCTION3 OCDPE	35.55	8.009e1					1.6	NO		bb		0.000
3	FUNCTION3 OCDPE	33.70	1.517e2					5.1	YES		db		0.000
4	FUNCTION3 OCDPE	33.67	1.871e2					4.1	YES		bd		0.000
5	FUNCTION3 OCDPE	33.14	1.007e2					1.8	NO		bb		0.000
6	FUNCTION3 OCDPE	32.56	2.175e2					3.4	YES		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	41.80	1.400e2					3.0	YES		bb		0.000
2	FUNCTION4 NCDPE	37.96	1.182e3					23.7	YES		db		0.000
3	FUNCTION4 NCDPE	37.85	1.603e2					5.1	YES		bd		0.000

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ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	44.53	7.362e1					3.0	YES		db		0.000
2	FUNCTION5 DCDPE	44.46	3.450e2					6.2	YES		bd		0.000

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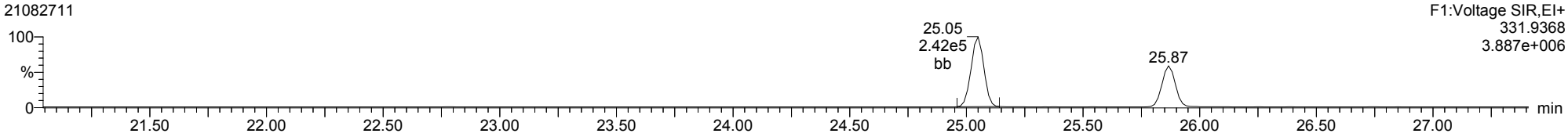

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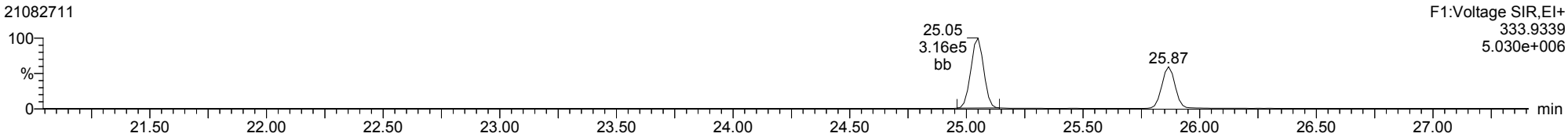

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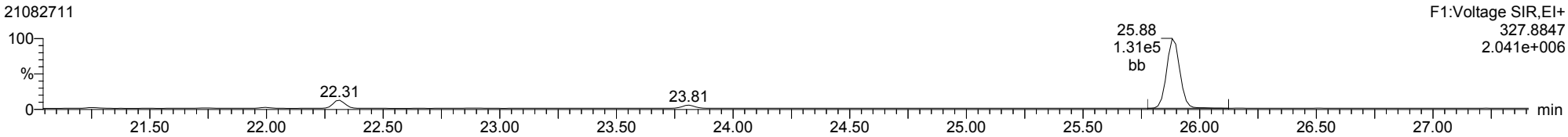

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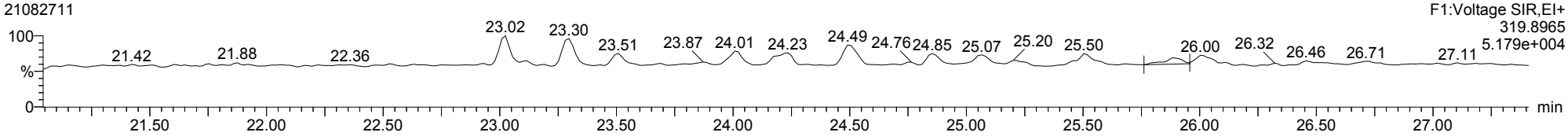

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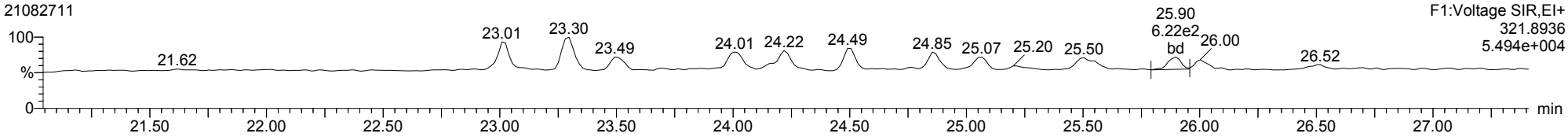

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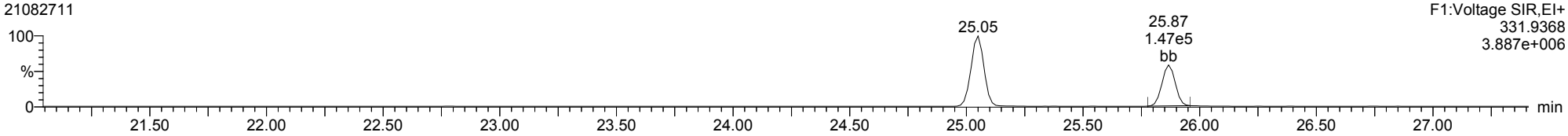

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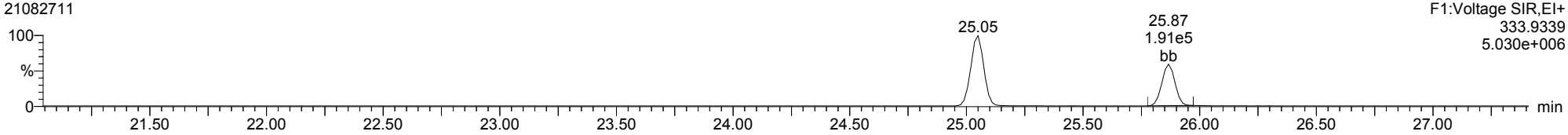

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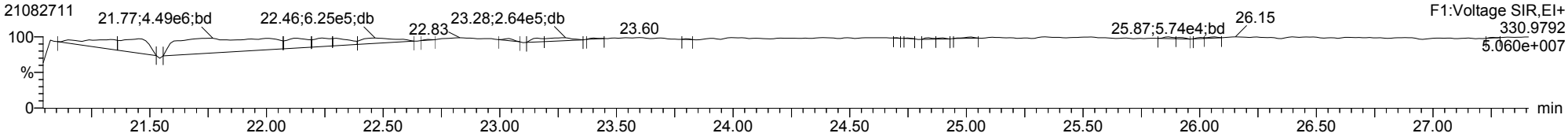

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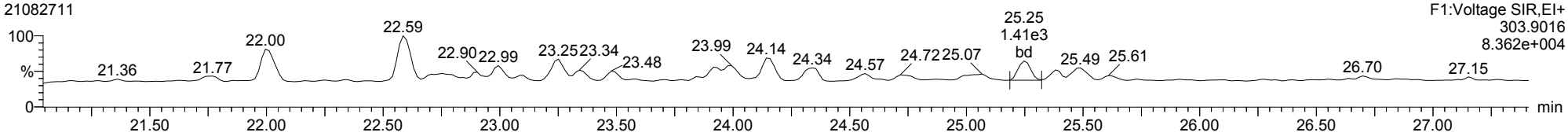

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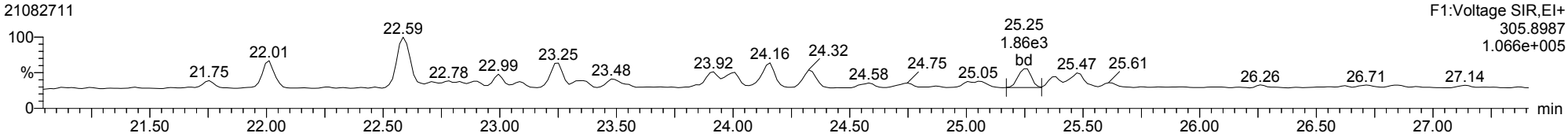

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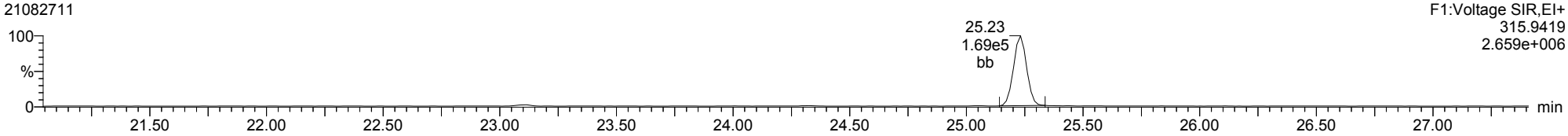

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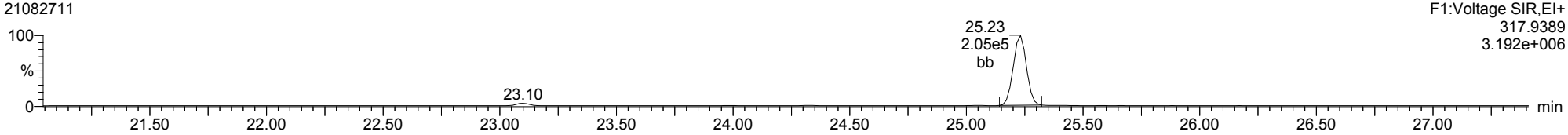

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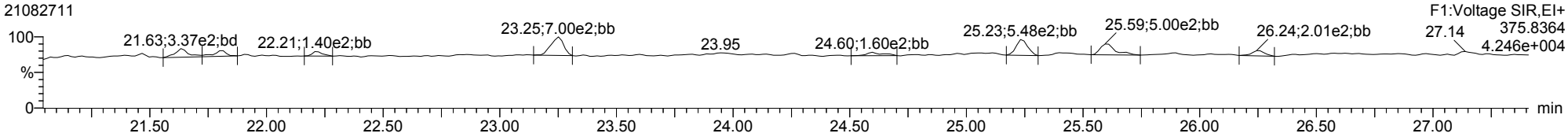

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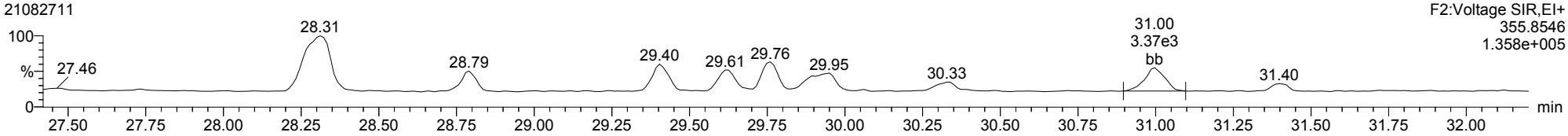

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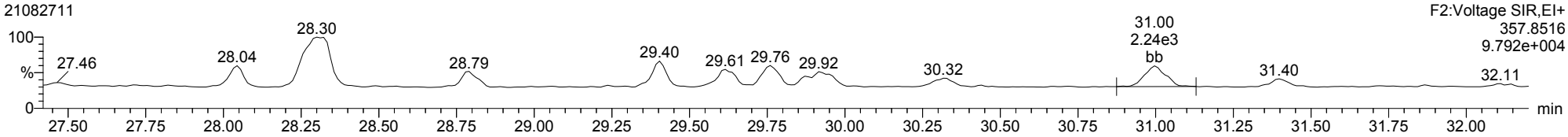

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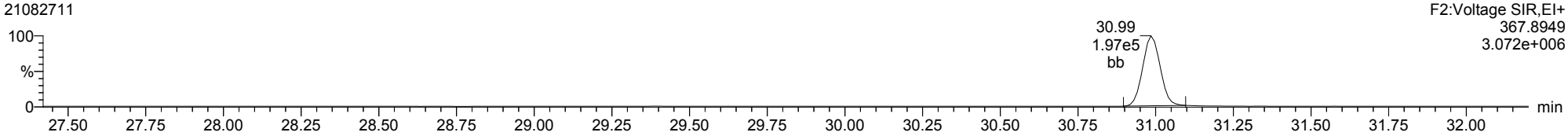

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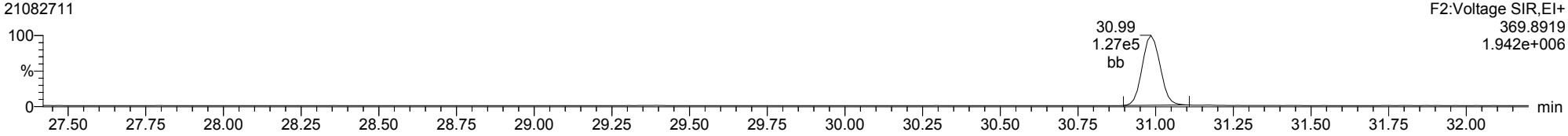

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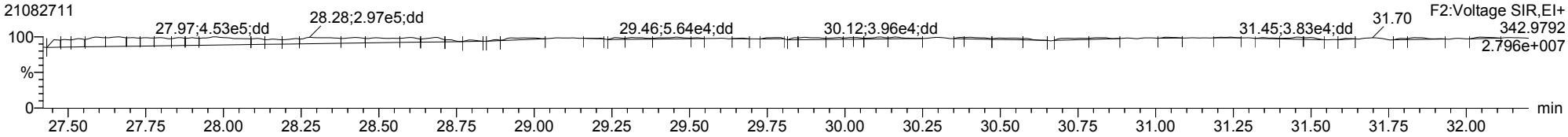

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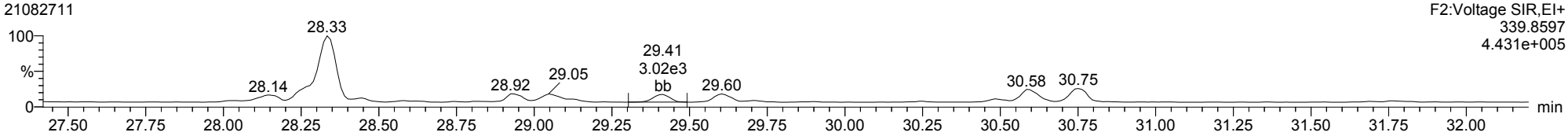

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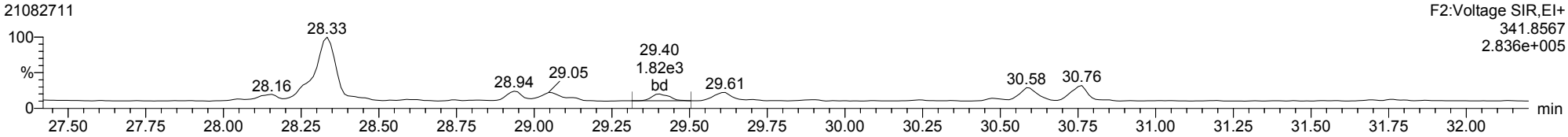

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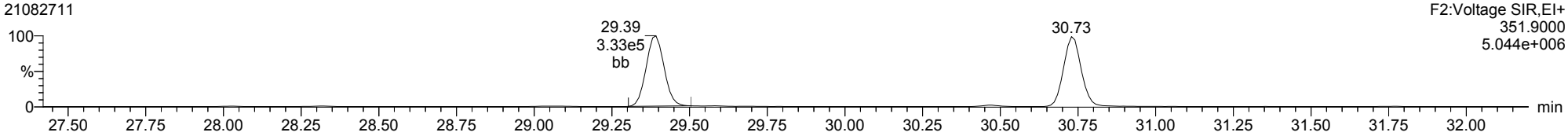

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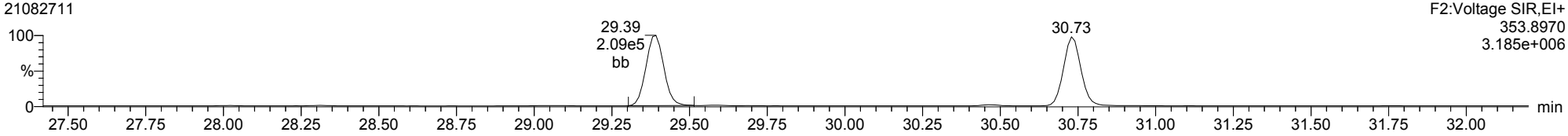

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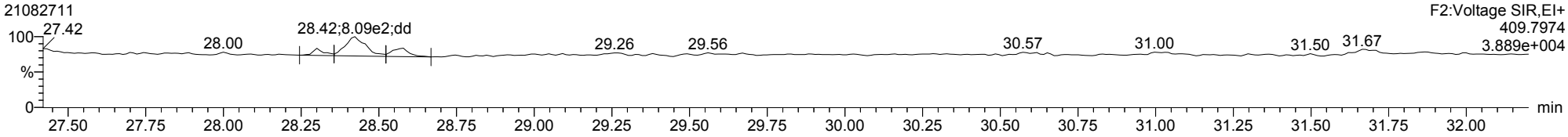

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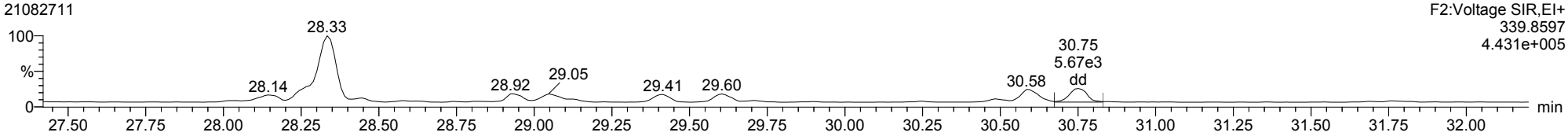
23478-PeCDF



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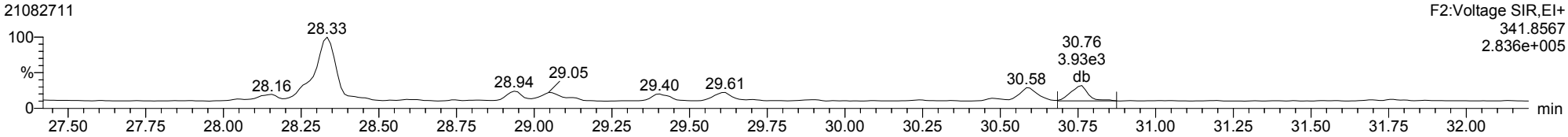

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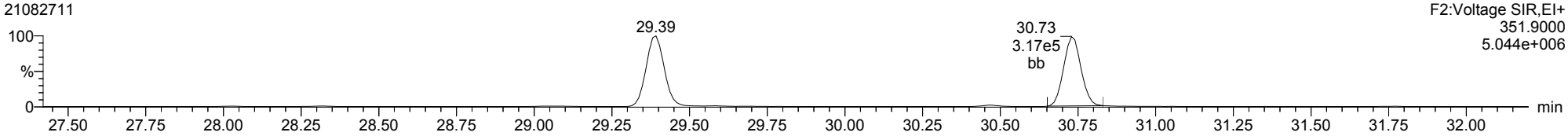

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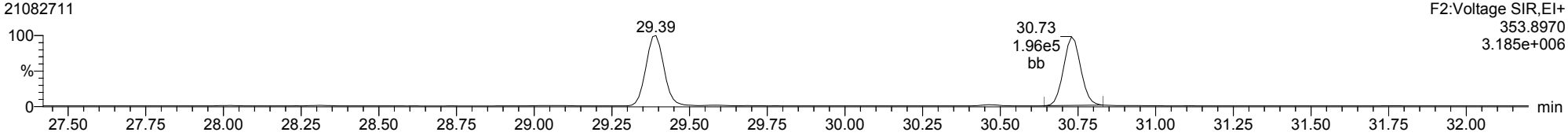
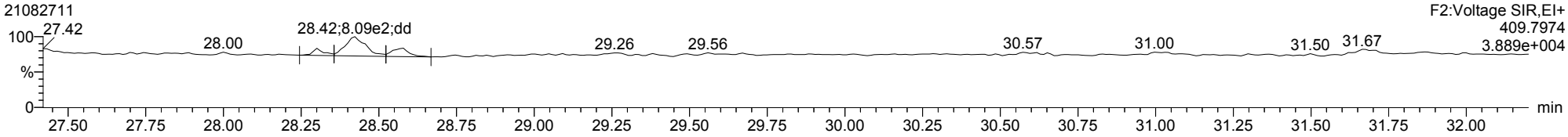


FUNCTION2 HPCDPE



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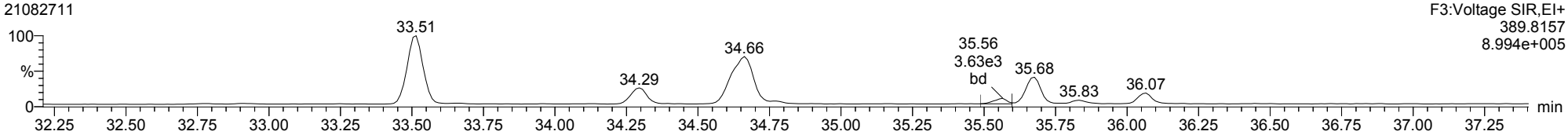
123478-HxCDD



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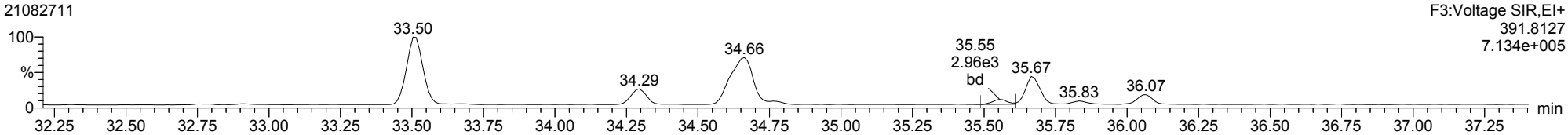

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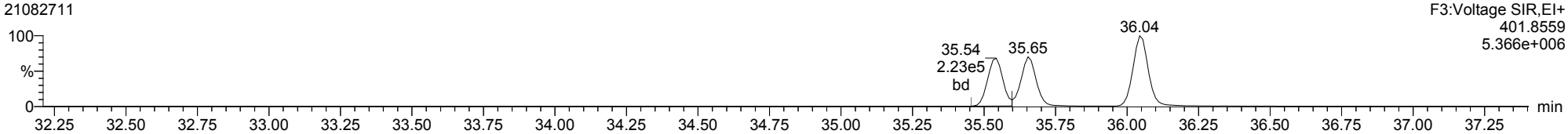

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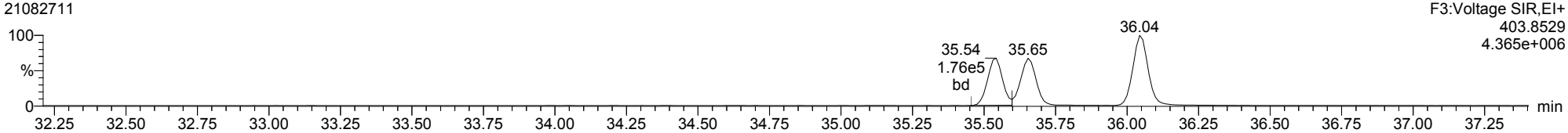

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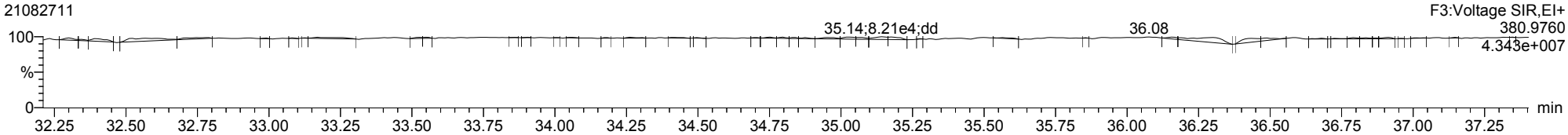

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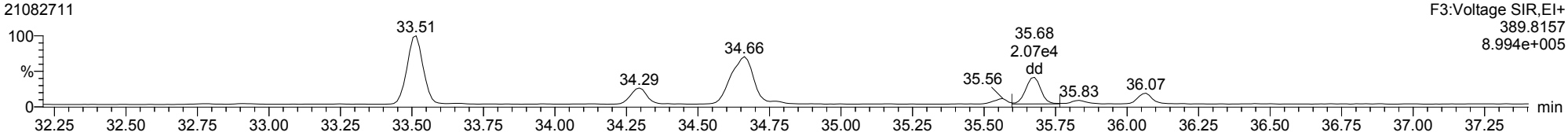

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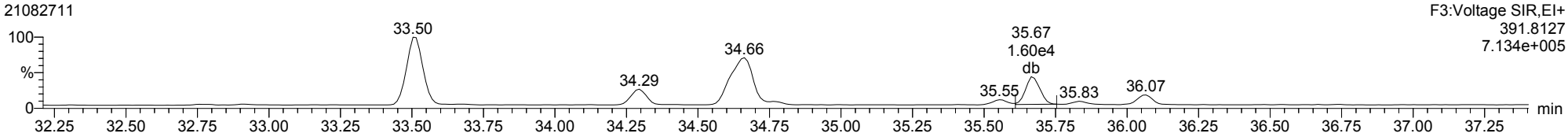

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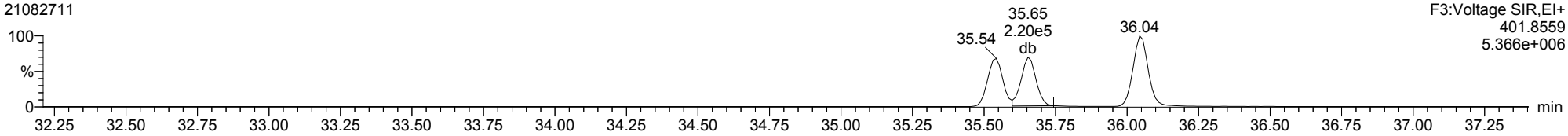

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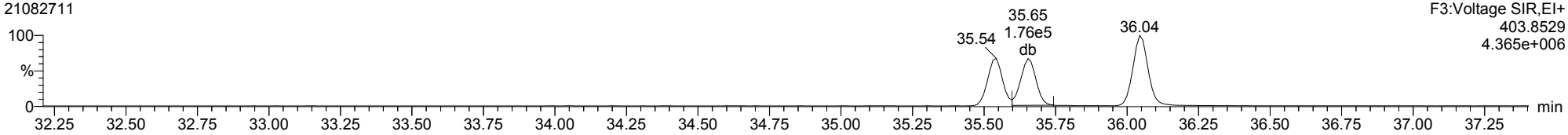

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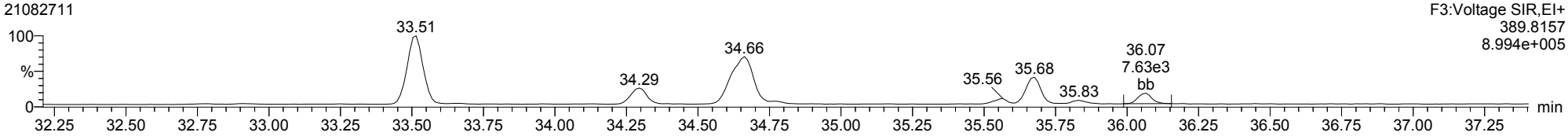

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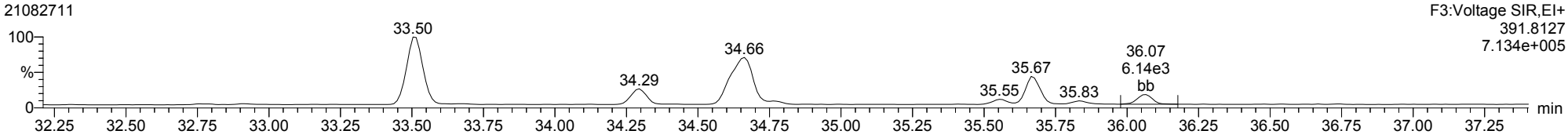

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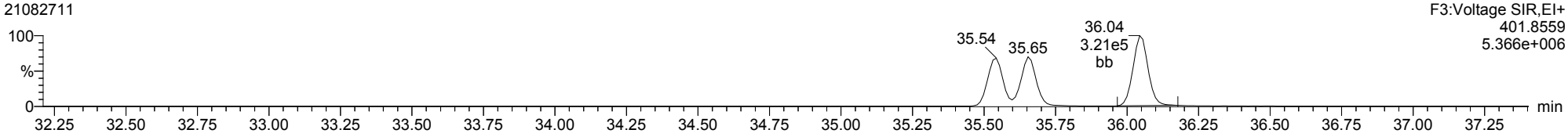

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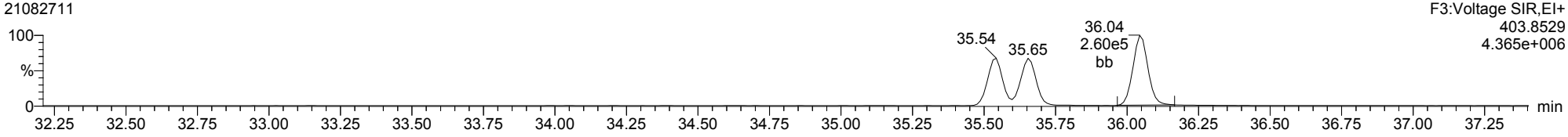

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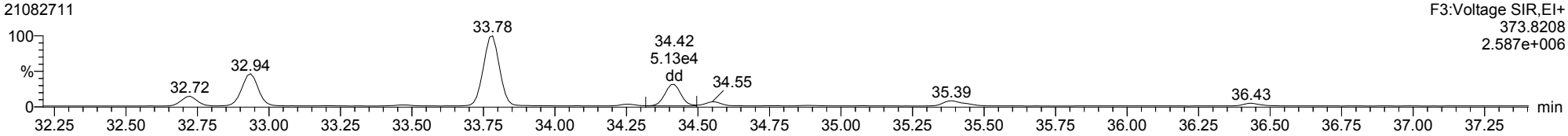

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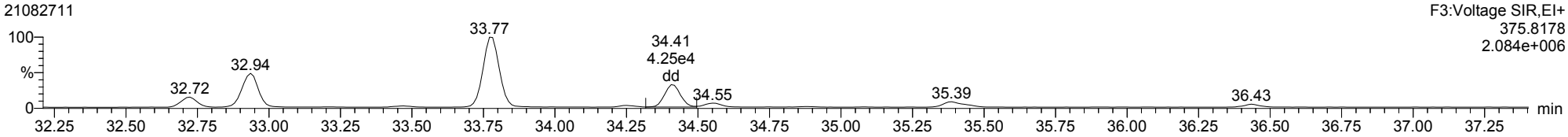

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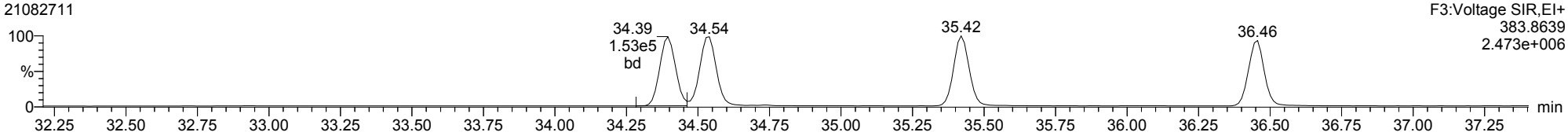

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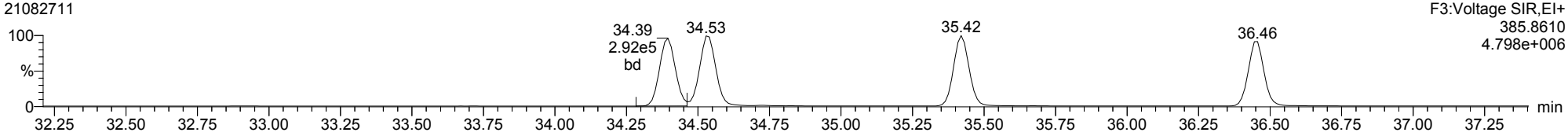

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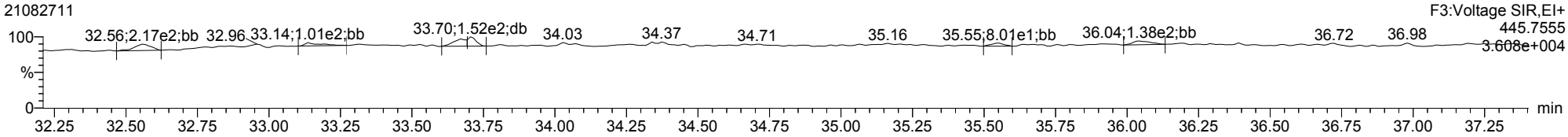

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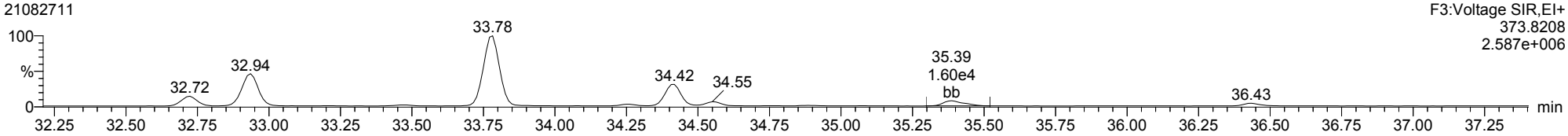

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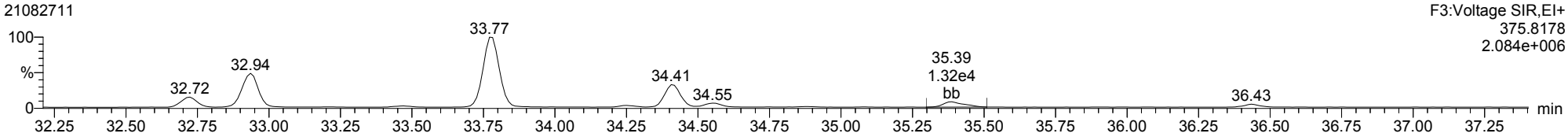

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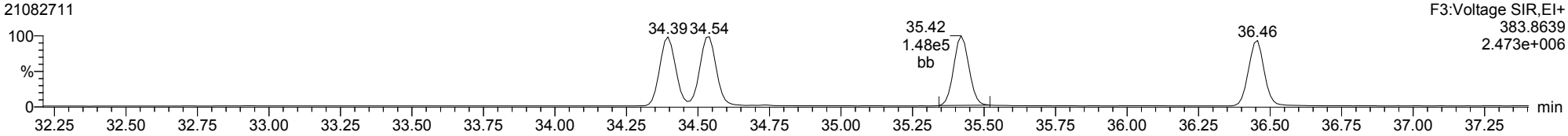

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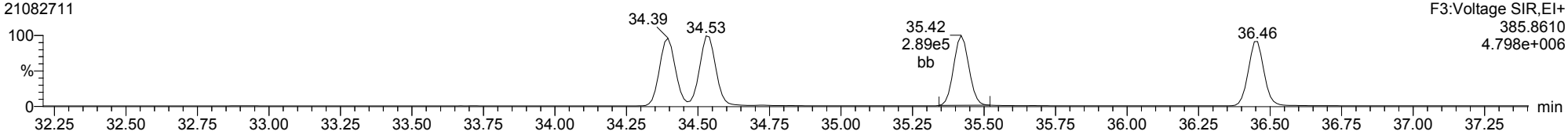

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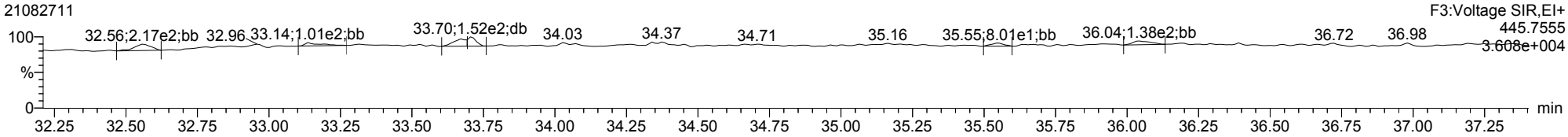

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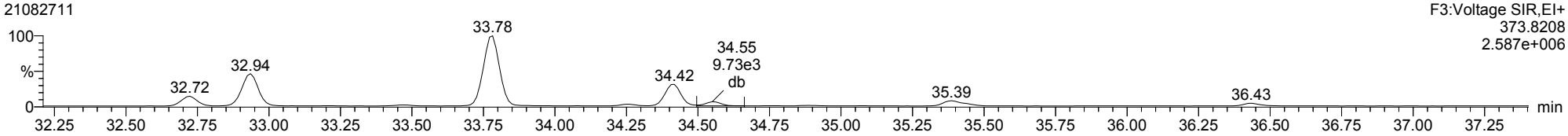

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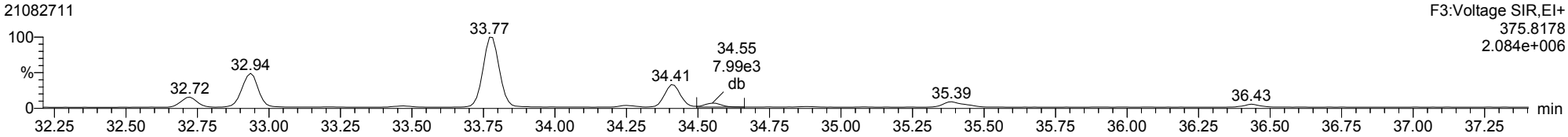

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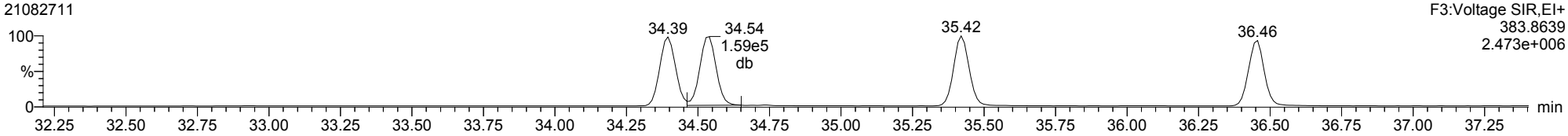

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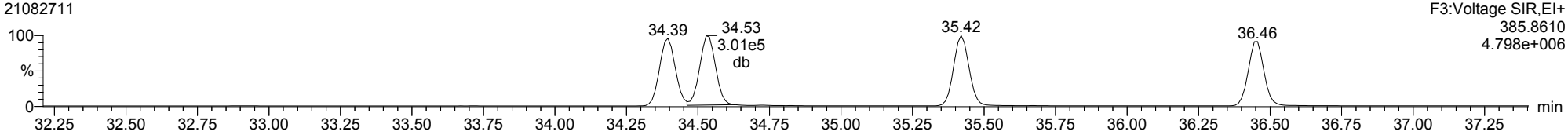

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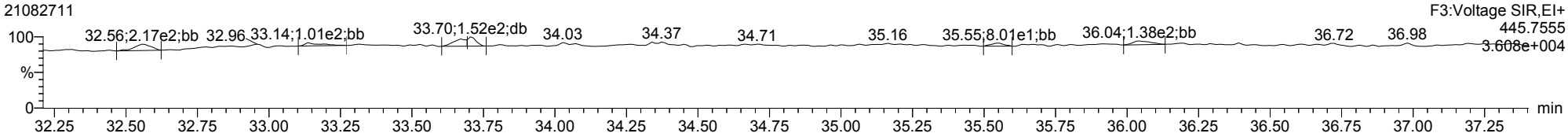

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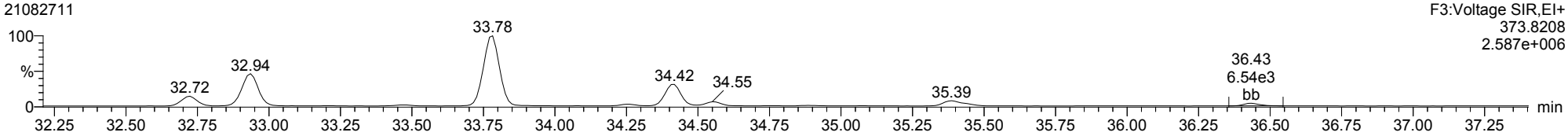

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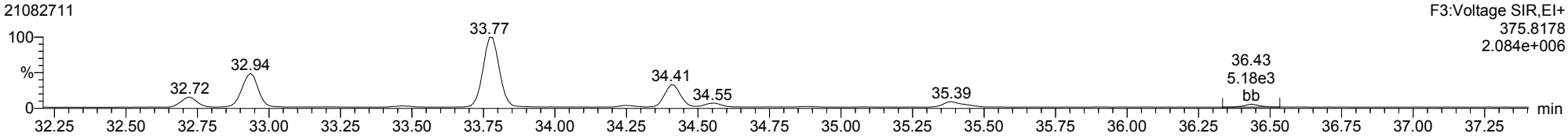

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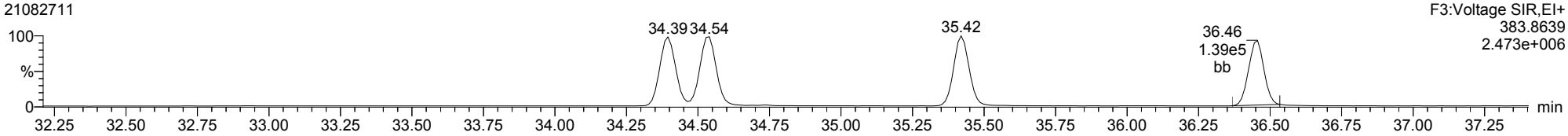

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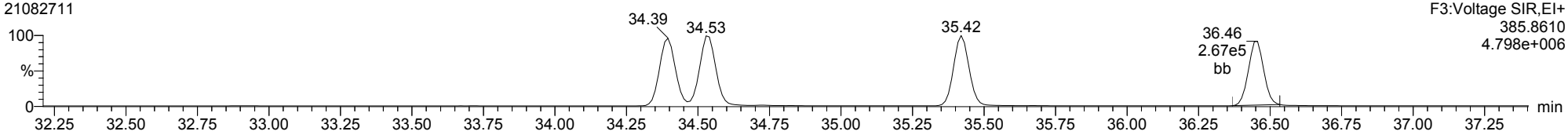

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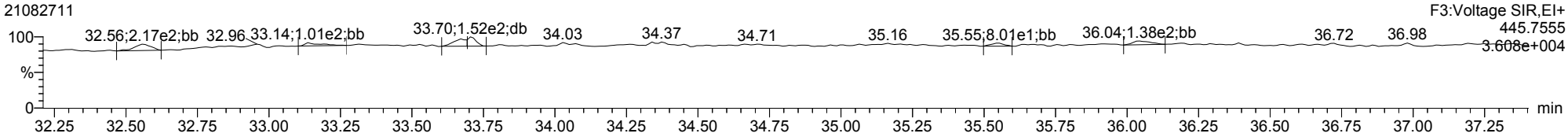

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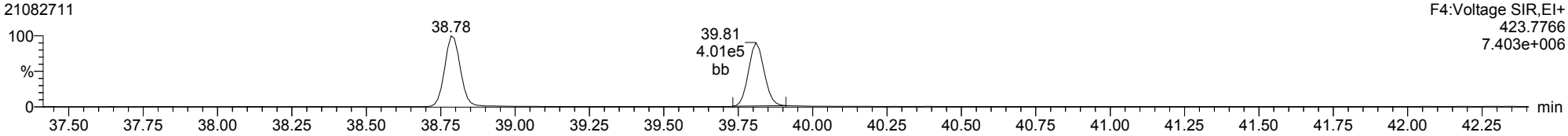

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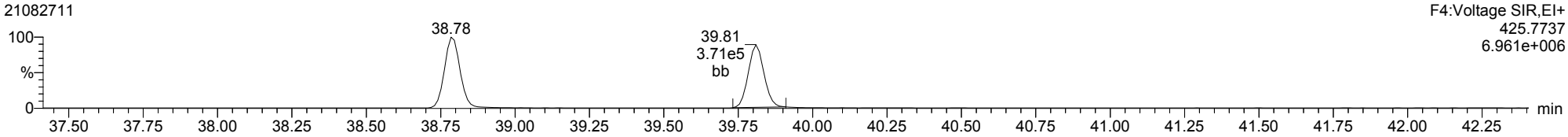

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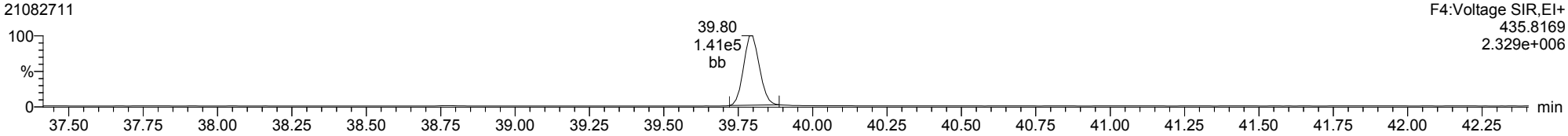

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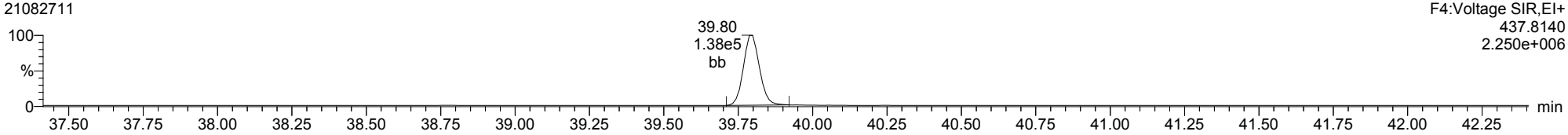

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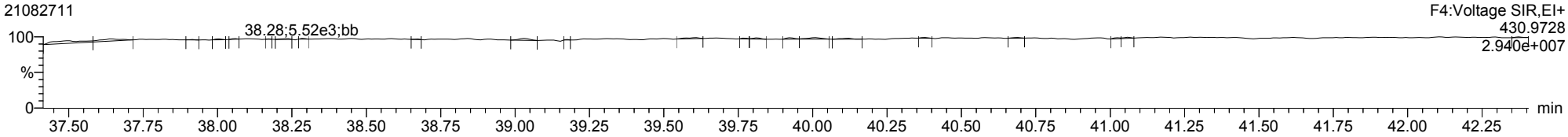

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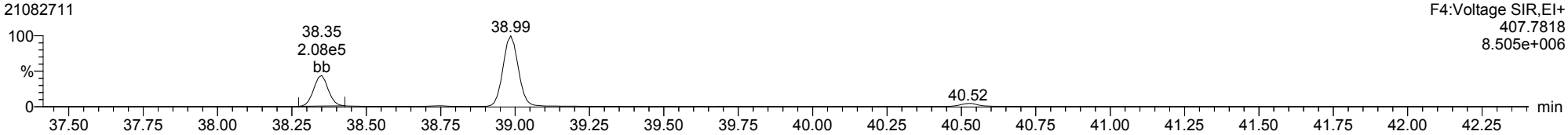

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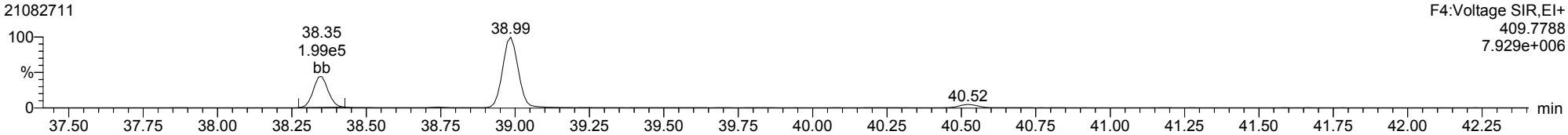

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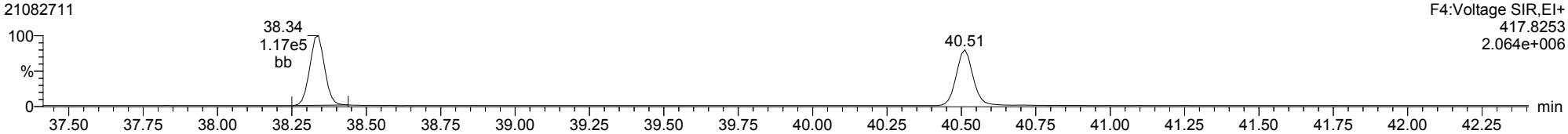

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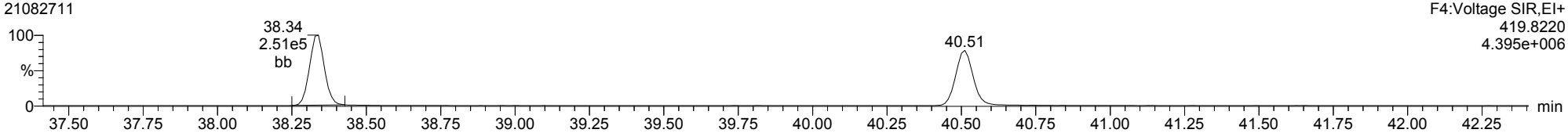
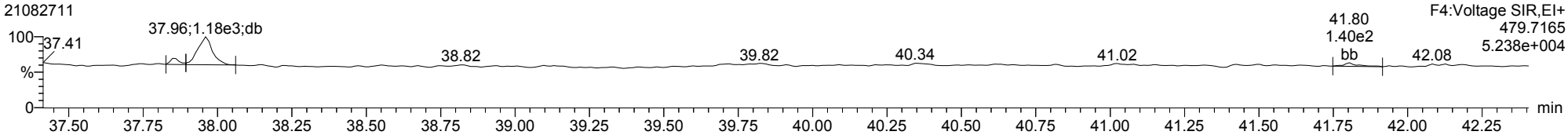


FUNCTION4 NCDPE



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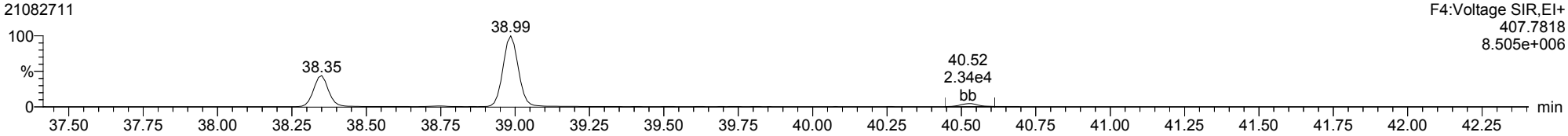

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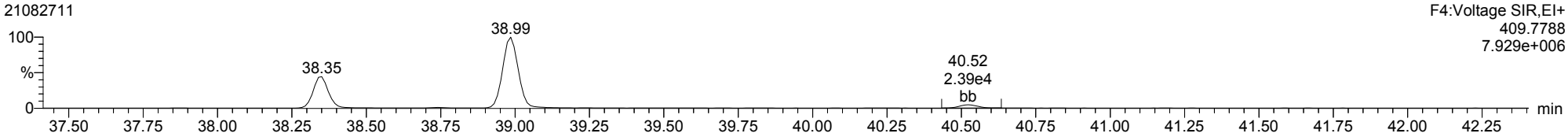

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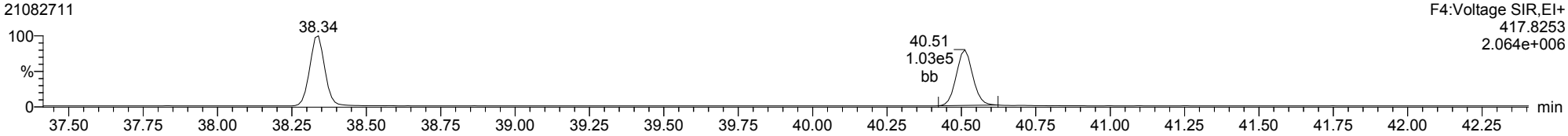

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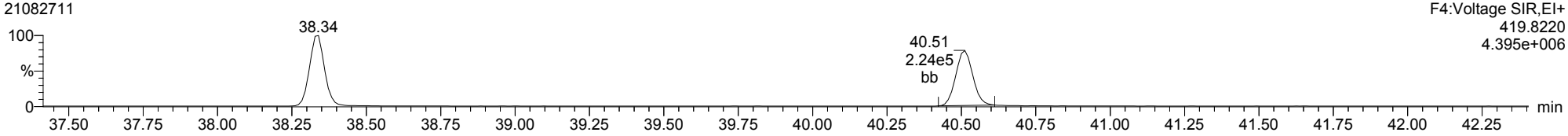

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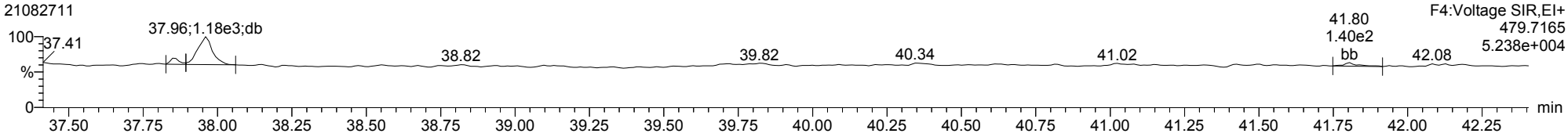

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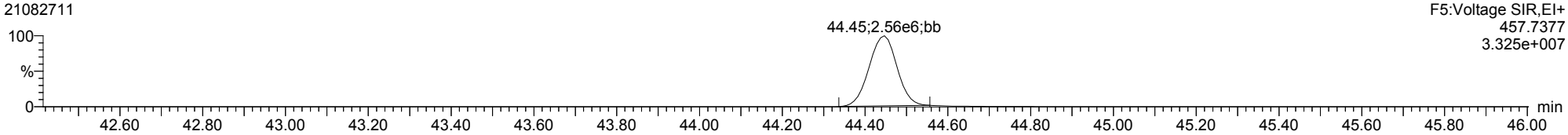

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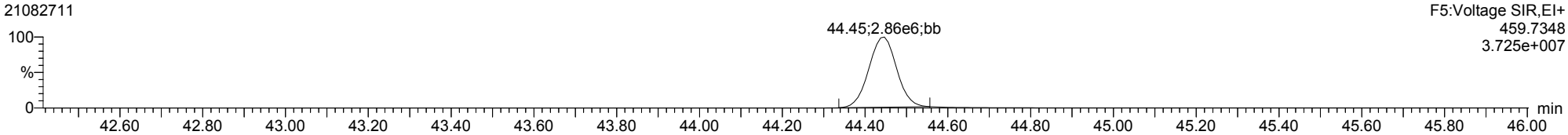

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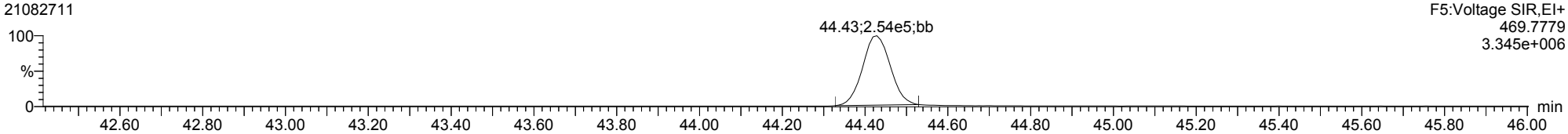
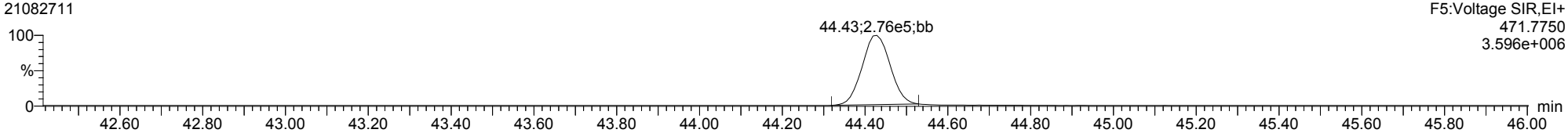
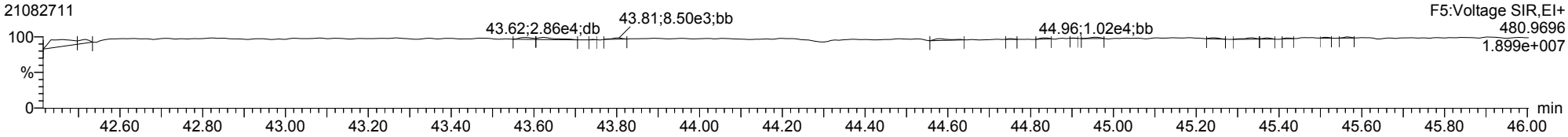


13C-OCDD

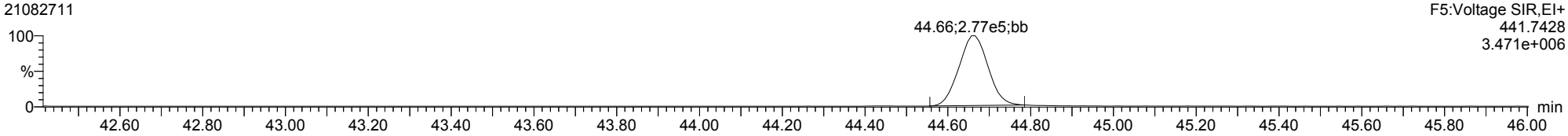


FUNCTION5 PFK

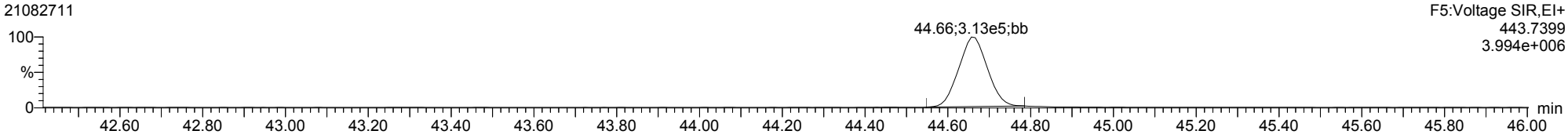


ID: 21G0108-02, Name: 21082711, Date: 27-Aug-2021, Time: 13:04:38, Conditions: AUTOSPEC01, User: pk

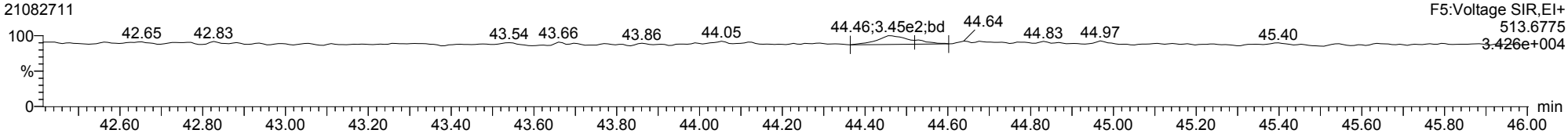
OCDF



OCDF

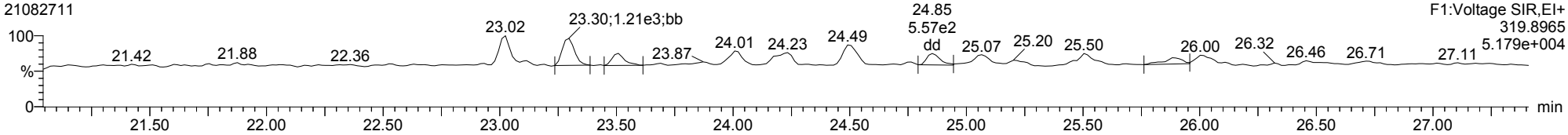


FUNCTION5 DCDPE

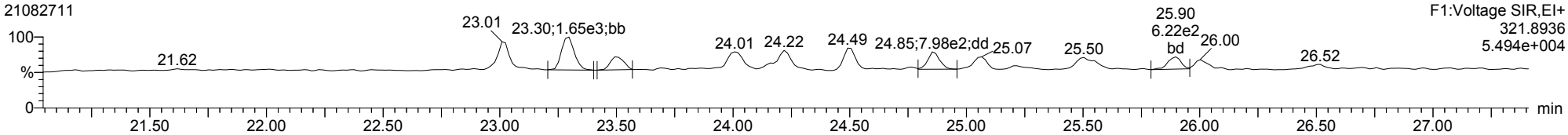


ID: 21G0108-02, Name: 21082711, Date: 27-Aug-2021, Time: 13:04:38, Conditions: AUTOSPEC01, User: pk

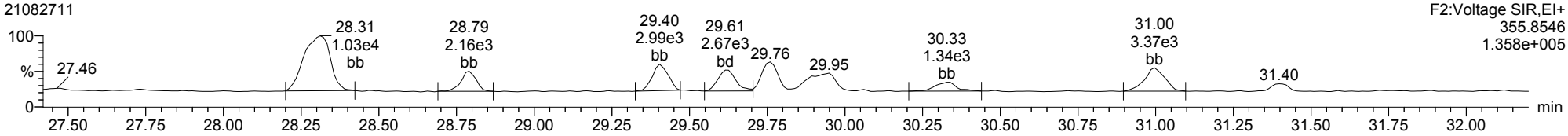
Total-tetradioxins



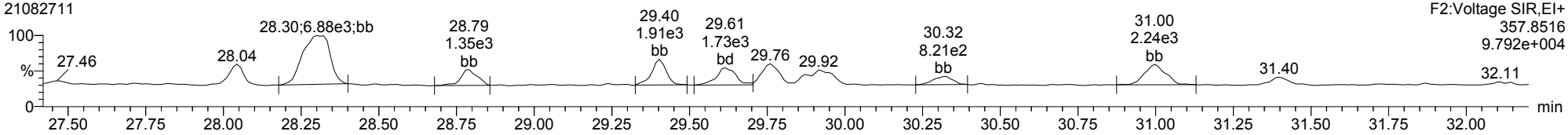
Total-tetradioxins



Total-pentadioxins

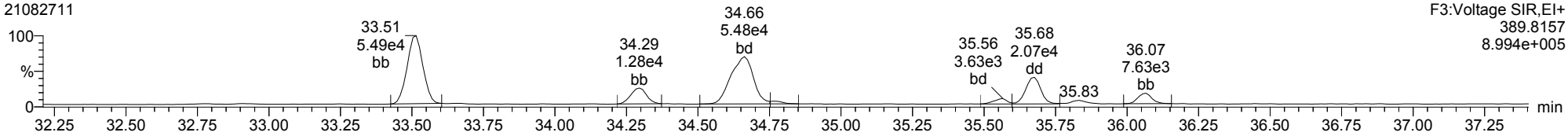


Total-pentadioxins

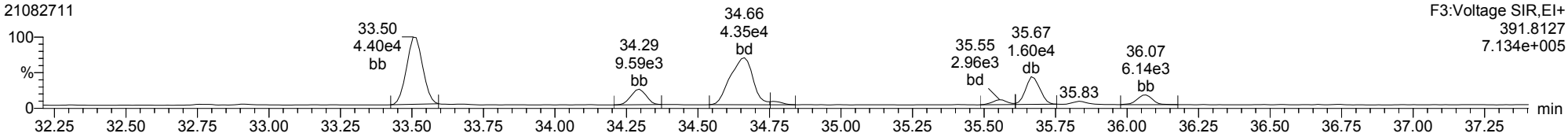


ID: 21G0108-02, Name: 21082711, Date: 27-Aug-2021, Time: 13:04:38, Conditions: AUTOSPEC01, User: pk

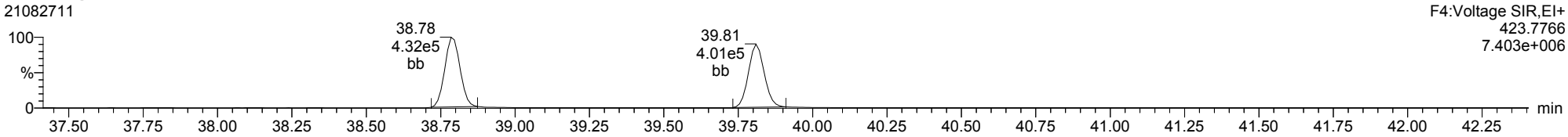
Total-hexadioxins



Total-hexadioxins



Total-heptadioxins



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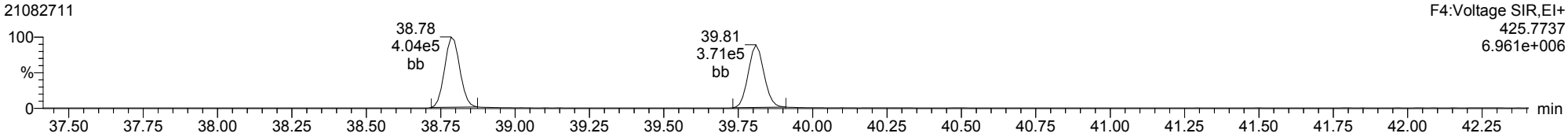
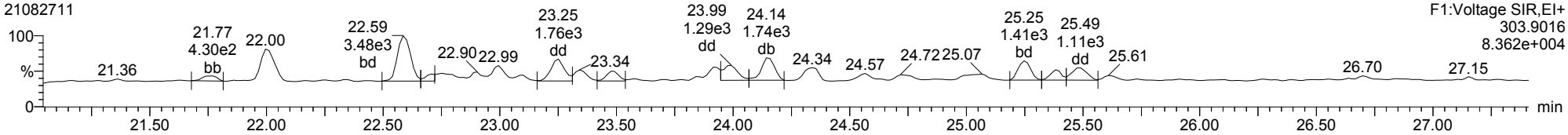
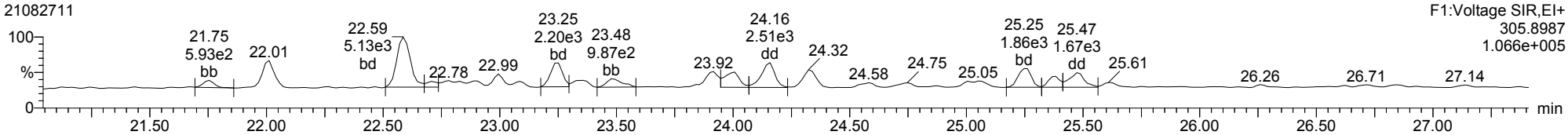


ID: 21G0108-02, Name: 21082711, Date: 27-Aug-2021, Time: 13:04:38, Conditions: AUTOSPEC01, User: pk

Total-tetrafurans



Total-tetrafurans



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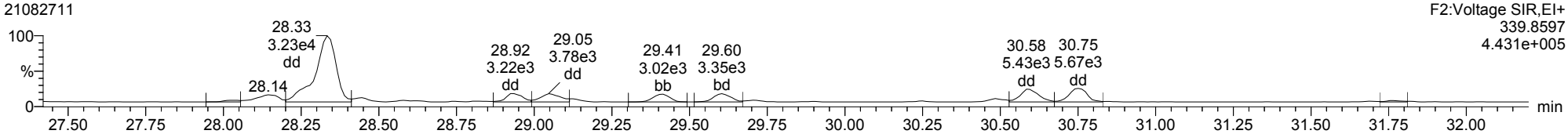
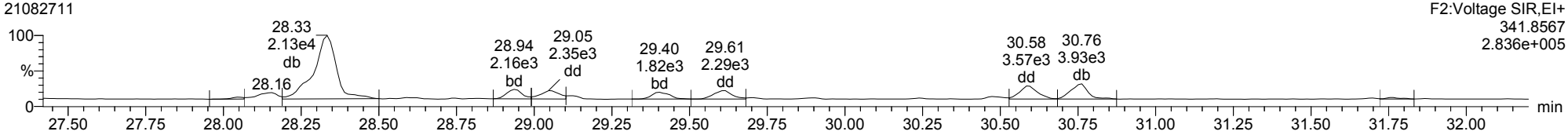


Total-pentafurans



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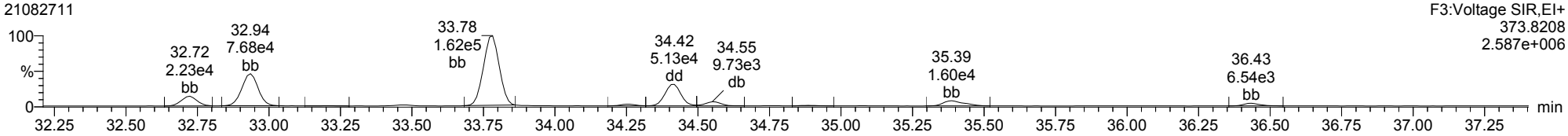
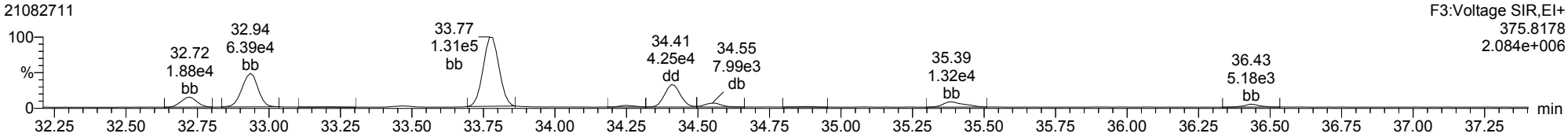
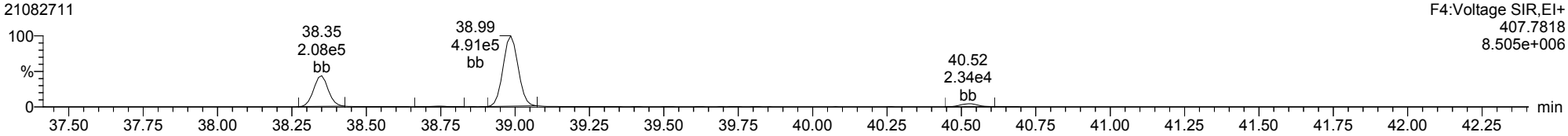
Total-hexafurans



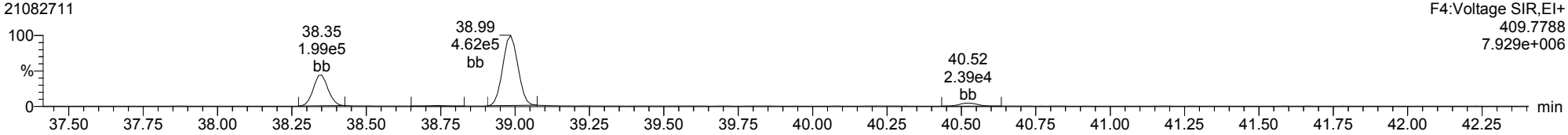
Total-hexafurans



Total-heptafurans



Total-heptafurans



Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT654C

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21G0108-03 C	File ID:	21082712
Sampled:	07/08/21 15:47	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 13:53
% Solids:	73.46	Preparation:	EPA 8290	Initial/Final:	13.65 g Wet / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1	0.498	0.655-0.886	0.249	0.997	0.567	ng/kg	EMPC, X, J
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.211	0.997	ND	ng/kg	U
57117-41-6	1,2,3,7,8-PeCDF	1	1.893	1.318-1.783	0.129	0.997	0.277	ng/kg	EMPC, J
57117-31-4	2,3,4,7,8-PeCDF	1	1.327	1.318-1.783	0.126	0.997	0.159	ng/kg	J
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	0.270	0.997	ND	ng/kg	U
70648-26-9	1,2,3,4,7,8-HxCDF	1	1.171	1.054-1.426	0.134	0.997	0.372	ng/kg	J
57117-44-9	1,2,3,6,7,8-HxCDF	1	0.921	1.054-1.426	0.130	0.997	0.367	ng/kg	EMPC, J
60851-34-5	2,3,4,6,7,8-HxCDF	1	1.796	1.054-1.426	0.132	0.997	0.304	ng/kg	EMPC, J
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.143	0.997	ND	ng/kg	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	0.141	0.997	ND	ng/kg	U
57653-85-7	1,2,3,6,7,8-HxCDD	1	1.210	1.054-1.426	0.149	0.997	0.342	ng/kg	J
19408-74-3	1,2,3,7,8,9-HxCDD	1	1.135	1.054-1.426	0.155	0.997	0.336	ng/kg	J
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.036	0.893-1.208	0.112	0.997	2.64	ng/kg	
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	0.919	0.893-1.208	0.149	0.997	0.197	ng/kg	J
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.091	0.893-1.208	0.178	2.49	4.81	ng/kg	
39001-02-0	OCDF	1	0.920	0.757-1.024	0.171	2.49	2.48	ng/kg	J
3268-87-9	OCDD	1	0.926	0.757-1.024	0.232	9.97	29.2	ng/kg	B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			0.997	3.77	ng/kg
41903-57-5	Total TCDD	1	0.000			0.997	0.936	ng/kg
30402-15-4	Total PeCDF	1	0.000			0.997	4.14	ng/kg
36088-22-9	Total PeCDD	1	0.000			0.997	2.67	ng/kg
55684-94-1	Total HxCDF	1	0.000			0.997	4.64	ng/kg
34465-46-8	Total HxCDD	1	0.000			0.997	3.80	ng/kg
38998-75-3	Total HpCDF	1	0.000			0.997	5.32	ng/kg
37871-00-4	Total HpCDD	1	0.000			0.997	10.2	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.371
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.625

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT654C

Form 2
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21G0108-03	File ID:	21082712
Sampled:	07/08/21 15:47	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 13:53
Solids Wt%:	73.46	Preparation:	EPA 8290	Initial/Final:	13.65 g / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.809	0.655-0.886	0.217	61.7	24 - 169 %	
13C12-2,3,7,8-TCDD		0.755	0.655-0.886	0.218	69.9	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.610	1.318-1.783	0.171	88.0	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.629	1.318-1.783	0.179	88.3	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.575	1.318-1.783	0.195	90.6	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.523	0.434-0.587	0.156	70.6	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.530	0.434-0.587	0.144	66.2	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.523	0.434-0.587	0.160	68.9	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.519	0.434-0.587	0.192	76.1	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.242	1.054-1.426	0.141	80.9	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.219	1.054-1.426	0.130	74.8	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.453	0.374-0.506	0.180	81.0	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.463	0.374-0.506	0.220	85.8	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.065	0.893-1.208	0.240	88.0	23 - 140 %	
13C12-OCDD		0.919	0.757-1.024	0.287	105	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.054	71.0	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:42:39 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-03, Name: 21082712, Date: 27-Aug-2021, Time: 13:53:45, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.262	1.001	4.535e2	9.105e2	1.108	0.498	0.770	1301	1692	6.64e3	1.65e4	5.1	9.7	YES	bd	bd	0.284
12378-PeCDF	29.425	1.001	5.178e2	2.736e2	1.015	1.893	1.550	871	1027	1.03e4	4.79e3	11.8	4.7	YES	bb	bb	0.139
23478-PeCDF	30.751	1.000	2.761e2	2.081e2	1.126	1.327	1.550	871	1027	6.93e3	5.38e3	8.0	5.2	NO	MM	MM	0.080
123478-HxCDF	34.428	1.000	4.637e2	3.961e2	1.017	1.171	1.240	871	763	6.07e3	5.77e3	7.0	7.6	NO	bd	bd	0.186
234678-HxCDF	35.453	1.000	4.457e2	2.481e2	1.052	1.796	1.240	871	763	8.23e3	3.89e3	9.5	5.1	YES	MM	bd	0.152
123678-HxCDF	34.572	1.001	4.201e2	4.560e2	1.037	0.921	1.240	871	763	6.95e3	4.96e3	8.0	6.5	YES	db	db	0.184
123789-HxCDF					1.030		1.240	871	763								
1234678-HpCDF	38.372	1.001	3.461e3	3.342e3	1.327	1.036	1.050	827	824	6.56e4	5.84e4	79.3	70.9	NO	bb	bb	1.322
1234789-HpCDF	40.556	1.001	2.038e2	2.218e2	1.283	0.919	1.050	827	824	4.31e3	5.09e3	5.2	6.2	NO	db	bb	0.099
OCDF	44.693	1.006	2.359e3	2.565e3	1.447	0.920	0.890	642	819	3.46e4	2.73e4	53.9	33.3	NO	bb	bb	1.245
2378-TCDD					0.920		0.770	1011	839								
12378-PeCDD					0.995		1.550	1353	897								
123478-HxCDD					1.027		1.240	756	892								
123678-HxCDD	35.687	1.001	3.819e2	3.156e2	1.009	1.210	1.240	756	892	6.39e3	5.53e3	8.4	6.2	NO	bb	db	0.172
123789-HxCDD	36.077	1.012	3.424e2	3.017e2	0.950	1.135	1.240	756	892	6.27e3	5.46e3	8.3	6.1	NO	bb	bb	0.169
1234678-HpCDD	39.820	1.000	3.868e3	3.544e3	1.068	1.091	1.050	772	711	6.16e4	5.94e4	79.8	83.6	NO	bb	bb	2.413
OCDD	44.455	1.000	2.272e4	2.453e4	1.181	0.926	0.890	798	822	2.86e5	3.11e5	359.2	378.4	NO	bb	bb	14.636
13C-2378-TCDF	25.232	1.007	1.938e5	2.395e5	1.427	0.809	0.770	2420	1488	2.91e6	3.61e6	1200.5	2428.1	NO	bb	bb	61.672
13C-12378-PeCDF	29.403	1.174	3.466e5	2.153e5	1.297	1.610	1.550	1732	1063	5.36e6	3.30e6	3091.5	3102.2	NO	bb	bb	87.954
13C-23478-PeCDF	30.751	1.228	3.334e5	2.047e5	1.236	1.629	1.550	1732	1063	4.95e6	3.14e6	2856.9	2948.8	NO	bb	bb	88.349
13C-123478-HxCDF	34.417	0.954	1.556e5	2.978e5	1.242	0.523	0.510	1141	1676	2.46e6	4.65e6	2158.4	2775.6	NO	bd	bd	70.606
13C-123678-HxCDF	34.550	0.958	1.593e5	3.004e5	1.343	0.530	0.510	1141	1676	2.51e6	4.75e6	2197.9	2835.9	NO	db	db	66.203
13C-234678-HxCDF	35.442	0.983	1.486e5	2.840e5	1.215	0.523	0.510	1141	1676	2.41e6	4.61e6	2113.1	2752.1	NO	bb	bb	68.890
13C-123789-HxCDF	36.467	1.011	1.355e5	2.611e5	1.008	0.519	0.510	1141	1676	2.27e6	4.29e6	1993.6	2562.1	NO	bb	bb	76.138
13C-1234678-HpCDF	38.349	1.063	1.209e5	2.668e5	0.926	0.453	0.440	1134	1291	2.08e6	4.61e6	1833.2	3566.9	NO	bb	bb	80.959
13C-1234789-HpCDF	40.533	1.124	1.064e5	2.299e5	0.758	0.463	0.440	1134	1291	1.64e6	3.45e6	1444.9	2669.5	NO	bb	bb	85.839
13C-1234-TCDD	25.050	0.000	2.144e5	2.781e5	1.000	0.771	0.770	2011	1057	3.29e6	4.23e6	1634.0	4004.0	NO	bb	bb	100.000
13C-2378-TCDD	25.882	1.033	1.654e5	2.189e5	1.116	0.755	0.770	2011	1057	2.45e6	3.18e6	1219.4	3010.7	NO	bb	bb	69.876
13C-12378-PeCDD	30.996	1.237	1.997e5	1.268e5	0.732	1.575	1.550	1018	779	3.06e6	1.94e6	3005.3	2493.1	NO	bb	bb	90.556
13C-123478-HxCDD	35.553	0.986	2.224e5	1.790e5	0.960	1.242	1.240	888	1081	3.77e6	3.03e6	4240.3	2797.7	NO	bd	bd	80.913
13C-123678-HxCDD	35.664	0.989	2.211e5	1.815e5	1.041	1.219	1.240	888	1081	3.61e6	2.98e6	4064.5	2756.3	NO	db	db	74.793
13C-1234678-HpCDD	39.809	1.104	1.483e5	1.393e5	0.632	1.065	1.050	1054	1154	2.40e6	2.24e6	2277.4	1942.0	NO	bb	bb	87.995
13C-OCDD	44.446	1.232	2.618e5	2.850e5	0.504	0.919	0.890	1237	860	3.39e6	3.67e6	2742.7	4267.1	NO	bb	bb	210.032
13C-123789-HxCDD	36.065	0.000	2.887e5	2.281e5	1.000	1.266	1.240	888	1081	4.86e6	3.75e6	5466.9	3469.3	NO	bb	bb	100.000
37CL-2378-TCDD	25.897	1.034	1.516e5		1.084			739		2.28e6		3076.7			bd		28.413

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:42:39 Pacific Daylight Time

ID: 21G0108-03, Name: 21082712, Date: 27-Aug-2021, Time: 13:53:45, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	21.754	0.862	2.631e2	4.639e2	1.425	0.567	0.770	1301	1692	4.45e3	7.00e3	3.4	4.1	YES	db	bb	0.118
1289-TCDF					1.043		0.770	1301	1692								
13468-PECDF	26.698	0.908	7.798e3	5.133e3	1.376	1.519	1.550	994	795	1.11e5	7.03e4	111.7	88.5	NO	bb	bd	1.672
12389-PECDF					1.000		1.550	871	1027								
123468-HXCDF	32.734	0.951	4.696e2	5.522e2	1.087	0.850	1.240	871	763	7.38e3	8.86e3	8.5	11.6	YES	bb	bb	0.207
1368-TCDD	23.024	0.890	1.076e3	1.069e3	0.923	1.007	0.770	1011	839	1.63e4	2.05e4	16.1	24.4	YES	bb	bb	0.605
1289-TCDD					0.794		0.770	1011	839								
12479-PECDD	28.333	0.914	1.295e3	9.663e2	1.843	1.340	1.550	1353	897	1.58e4	1.11e4	11.7	12.4	NO	MM	MM	0.376
12389-PECDD					1.154		1.550	1353	897								
124679-HXCDD	33.525	0.943	1.787e3	1.515e3	1.125	1.180	1.240	756	892	2.60e4	2.36e4	34.4	26.5	NO	bb	bb	0.731
1234679-HPCDD	38.806	0.975	4.864e3	4.595e3	1.211	1.059	1.050	772	711	8.86e4	7.60e4	114.8	107.0	NO	bb	bb	2.716
Total-tetrafurans			4.156e3		1.192			1301		6.05e4							1.890
Total-penta1			7.798e3					994		1.11e5							1.672
Total-pentafurans			1.436e3		1.047			871		2.04e4							0.405
Total-hexafurans			5.959e3		1.045			871		9.09e4							2.324
Total-heptafurans			6.631e3		1.305			827		1.17e5							2.667
Total-Furans			2.834e4		1.158			1301		4.34e5							10.202
Total-tetradioxins			6.893e2		0.879			1011		9.84e3							0.469
Total-pentadioxins			3.926e3		1.331			1353		5.98e4							1.339
Total-hexadioxins			4.334e3		1.028			756		6.74e4							1.905
Total-heptadioxins			8.732e3		1.140			772		1.50e5							5.128
Total-Dioxins			4.040e4		1.092			1011		5.74e5							23.478
Total-TEQ			6.874e4					1011		1.01e6							33.680
FUNCTION1 PFK			9.907e5					526998		1.45e7							
FUNCTION2 PFK			1.019e5					352378		1.91e6							0.000
FUNCTION3 PFK			0.000e0					406068		0.00e0							
FUNCTION4 PFK			1.167e5					305361		1.40e6							
FUNCTION5 PFK			1.699e5					200861		4.79e6							
FUNCTION1 HXCD...			2.241e3					582		3.08e4							0.000
FUNCTION1 HPCD...			9.703e2					772		1.69e4							0.000
FUNCTION2 HPCD...			2.221e2					710		6.59e3							0.000
FUNCTION3 OCDPE			3.466e2					549		5.47e3							0.000
FUNCTION4 NCDPE			2.177e3					761		3.64e4							0.000
FUNCTION5 DCDPE			4.006e2					869		9.11e3							0.000

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
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Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-03, Name: 21082712, Date: 27-Aug-2021, Time: 13:53:45, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.16	1.175e3	1.601e3	1.192	0.73	0.77	14.5	YES	NO	bd	db	0.537
2	Total-tetrafurans	22.99	4.493e2	6.363e2	1.192	0.71	0.77	5.2	YES	NO	dd	dd	0.210
3	Total-tetrafurans	22.89	4.846e2	5.999e2	1.192	0.81	0.77	5.8	YES	NO	dd	dd	0.210
4	Total-tetrafurans	22.78	8.469e2	1.079e3	1.192	0.79	0.77	7.2	YES	NO	dd	dd	0.373
5	Total-tetrafurans	25.49	7.070e2	1.044e3	1.192	0.68	0.77	9.0	YES	NO	dd	dd	0.339
6	Total-tetrafurans	24.32	4.934e2	6.437e2	1.192	0.77	0.77	4.9	YES	NO	db	bb	0.220

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.70	7.798e3	5.133e3	1.376	1.52	1.55	111.7	YES	NO	bb	bd	1.672

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentafurans	29.07	1.160e3	7.117e2	1.047	1.63	1.55	15.5	YES	NO	MM	MM	0.325
2	23478-PeCDF	30.75	2.761e2	2.081e2	1.126	1.33	1.55	8.0	YES	NO	MM	MM	0.080

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123478-HxCDF	34.43	4.637e2	3.961e2	1.017	1.17	1.24	7.0	YES	NO	bd	bd	0.186
2	Total-hexafurans	33.79	2.387e3	1.789e3	1.045	1.33	1.24	47.0	YES	NO	bb	bb	0.918
3	Total-hexafurans	32.96	3.109e3	2.441e3	1.045	1.27	1.24	50.4	YES	NO	bb	bb	1.220

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.56	2.038e2	2.218e2	1.283	0.92	1.05	5.2	YES	NO	db	bb	0.099
2	Total-heptafurans	39.01	2.966e3	2.921e3	1.305	1.02	1.05	56.6	YES	NO	bb	bb	1.246
3	1234678-HpCDF	38.37	3.461e3	3.342e3	1.327	1.04	1.05	79.3	YES	NO	bb	bb	1.322

ID: 21G0108-03, Name: 21082712, Date: 27-Aug-2021, Time: 13:53:45, Conditions: AUTOSPEC01, User: pk

Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.16	1.175e3	1.601e3	1.192	0.73	0.77	14.5	YES	NO	bd	db	0.537
2	Total-tetrafurans	22.99	4.493e2	6.363e2	1.192	0.71	0.77	5.2	YES	NO	dd	dd	0.210
3	Total-tetrafurans	22.89	4.846e2	5.999e2	1.192	0.81	0.77	5.8	YES	NO	dd	dd	0.210
4	Total-tetrafurans	22.78	8.469e2	1.079e3	1.192	0.79	0.77	7.2	YES	NO	dd	dd	0.373
5	Total-tetrafurans	25.49	7.070e2	1.044e3	1.192	0.68	0.77	9.0	YES	NO	dd	dd	0.339
6	Total-tetrafurans	24.32	4.934e2	6.437e2	1.192	0.77	0.77	4.9	YES	NO	db	bb	0.220
7	Total-pentafurans	29.07	1.160e3	7.117e2	1.047	1.63	1.55	15.5	YES	NO	MM	MM	0.325
8	23478-PeCDF	30.75	2.761e2	2.081e2	1.126	1.33	1.55	8.0	YES	NO	MM	MM	0.080
9	123478-HxCDF	34.43	4.637e2	3.961e2	1.017	1.17	1.24	7.0	YES	NO	bd	bd	0.186
10	Total-hexafurans	33.79	2.387e3	1.789e3	1.045	1.33	1.24	47.0	YES	NO	bb	bb	0.918
11	Total-hexafurans	32.96	3.109e3	2.441e3	1.045	1.27	1.24	50.4	YES	NO	bb	bb	1.220
12	OCDF	44.69	2.359e3	2.565e3	1.447	0.92	0.89	53.9	YES	NO	bb	bb	1.245
13	1234789-HpCDF	40.56	2.038e2	2.218e2	1.283	0.92	1.05	5.2	YES	NO	db	bb	0.099
14	Total-heptafurans	39.01	2.966e3	2.921e3	1.305	1.02	1.05	56.6	YES	NO	bb	bb	1.246
15	1234678-HpCDF	38.37	3.461e3	3.342e3	1.327	1.04	1.05	79.3	YES	NO	bb	bb	1.322
16	13468-PECDF	26.70	7.798e3	5.133e3	1.376	1.52	1.55	111.7	YES	NO	bb	bd	1.672

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.53	2.418e2	3.510e2	0.879	0.69	0.77	4.0	YES	NO	bb	bb	0.175
2	Total-tetradioxins	24.51	4.475e2	5.451e2	0.879	0.82	0.77	5.8	YES	NO	bb	bb	0.294

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentadioxins	29.41	1.175e3	6.935e2	1.331	1.69	1.55	16.7	YES	NO	bb	bb	0.430
2	12479-PECDD	28.33	1.295e3	9.663e2	1.843	1.34	1.55	11.7	YES	NO	MM	MM	0.376
3	Total-pentadioxins	30.35	3.541e2	2.262e2	1.331	1.57	1.55	3.9	YES	NO	bb	bb	0.134
4	Total-pentadioxins	29.77	1.103e3	6.355e2	1.331	1.74	1.55	11.9	YES	NO	dd	db	0.400

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
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ID: 21G0108-03, Name: 21082712, Date: 27-Aug-2021, Time: 13:53:45, Conditions: AUTOSPEC01, User: pk

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.08	3.424e2	3.017e2	0.950	1.13	1.24	8.3	YES	NO	bb	bb	0.169
2	123678-HxCDD	35.69	3.819e2	3.156e2	1.009	1.21	1.24	8.4	YES	NO	bb	db	0.172
3	Total-hexadioxins	34.32	1.823e3	1.622e3	1.028	1.12	1.24	38.1	YES	NO	bb	bb	0.834
4	124679-HXCDD	33.53	1.787e3	1.515e3	1.125	1.18	1.24	34.4	YES	NO	bb	bb	0.731

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.82	3.868e3	3.544e3	1.068	1.09	1.05	79.8	YES	NO	bb	bb	2.413
2	1234679-HPCDD	38.81	4.864e3	4.595e3	1.211	1.06	1.05	114.8	YES	NO	bb	bb	2.716

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.53	2.418e2	3.510e2	0.879	0.69	0.77	4.0	YES	NO	bb	bb	0.175
2	Total-tetradioxins	24.51	4.475e2	5.451e2	0.879	0.82	0.77	5.8	YES	NO	bb	bb	0.294
3	Total-pentadioxins	29.41	1.175e3	6.935e2	1.331	1.69	1.55	16.7	YES	NO	bb	bb	0.430
4	12479-PECDD	28.33	1.295e3	9.663e2	1.843	1.34	1.55	11.7	YES	NO	MM	MM	0.376
5	Total-pentadioxins	30.35	3.541e2	2.262e2	1.331	1.57	1.55	3.9	YES	NO	bb	bb	0.134
6	Total-pentadioxins	29.77	1.103e3	6.355e2	1.331	1.74	1.55	11.9	YES	NO	dd	db	0.400
7	123789-HxCDD	36.08	3.424e2	3.017e2	0.950	1.13	1.24	8.3	YES	NO	bb	bb	0.169
8	123678-HxCDD	35.69	3.819e2	3.156e2	1.009	1.21	1.24	8.4	YES	NO	bb	db	0.172
9	Total-hexadioxins	34.32	1.823e3	1.622e3	1.028	1.12	1.24	38.1	YES	NO	bb	bb	0.834
10	124679-HXCDD	33.53	1.787e3	1.515e3	1.125	1.18	1.24	34.4	YES	NO	bb	bb	0.731
11	1234678-HpCDD	39.82	3.868e3	3.544e3	1.068	1.09	1.05	79.8	YES	NO	bb	bb	2.413
12	1234679-HPCDD	38.81	4.864e3	4.595e3	1.211	1.06	1.05	114.8	YES	NO	bb	bb	2.716
13	OCDD	44.46	2.272e4	2.453e4	1.181	0.93	0.89	359.2	YES	NO	bb	bb	14.636

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.16	1.175e3	1.601e3	1.192	0.73	0.77	14.5	YES	NO	bd	db	0.537
2	Total-tetrafurans	22.99	4.493e2	6.363e2	1.192	0.71	0.77	5.2	YES	NO	dd	dd	0.210
3	Total-tetrafurans	22.89	4.846e2	5.999e2	1.192	0.81	0.77	5.8	YES	NO	dd	dd	0.210
4	Total-tetrafurans	22.78	8.469e2	1.079e3	1.192	0.79	0.77	7.2	YES	NO	dd	dd	0.373
5	Total-tetrafurans	25.49	7.070e2	1.044e3	1.192	0.68	0.77	9.0	YES	NO	dd	dd	0.339
6	Total-tetrafurans	24.32	4.934e2	6.437e2	1.192	0.77	0.77	4.9	YES	NO	db	bb	0.220
7	Total-pentafurans	29.07	1.160e3	7.117e2	1.047	1.63	1.55	15.5	YES	NO	MM	MM	0.325
8	23478-PeCDF	30.75	2.761e2	2.081e2	1.126	1.33	1.55	8.0	YES	NO	MM	MM	0.080
9	123478-HxCDF	34.43	4.637e2	3.961e2	1.017	1.17	1.24	7.0	YES	NO	bd	bd	0.186
10	Total-hexafurans	33.79	2.387e3	1.789e3	1.045	1.33	1.24	47.0	YES	NO	bb	bb	0.918
11	Total-hexafurans	32.96	3.109e3	2.441e3	1.045	1.27	1.24	50.4	YES	NO	bb	bb	1.220
12	OCDF	44.69	2.359e3	2.565e3	1.447	0.92	0.89	53.9	YES	NO	bb	bb	1.245
13	1234789-HpCDF	40.56	2.038e2	2.218e2	1.283	0.92	1.05	5.2	YES	NO	db	bb	0.099
14	Total-heptafurans	39.01	2.966e3	2.921e3	1.305	1.02	1.05	56.6	YES	NO	bb	bb	1.246
15	1234678-HpCDF	38.37	3.461e3	3.342e3	1.327	1.04	1.05	79.3	YES	NO	bb	bb	1.322
16	13468-PECDF	26.70	7.798e3	5.133e3	1.376	1.52	1.55	111.7	YES	NO	bb	bd	1.672
17	Total-tetradioxins	25.53	2.418e2	3.510e2	0.879	0.69	0.77	4.0	YES	NO	bb	bb	0.175
18	Total-tetradioxins	24.51	4.475e2	5.451e2	0.879	0.82	0.77	5.8	YES	NO	bb	bb	0.294
19	Total-pentadioxins	29.41	1.175e3	6.935e2	1.331	1.69	1.55	16.7	YES	NO	bb	bb	0.430
20	12479-PECDD	28.33	1.295e3	9.663e2	1.843	1.34	1.55	11.7	YES	NO	MM	MM	0.376
21	Total-pentadioxins	30.35	3.541e2	2.262e2	1.331	1.57	1.55	3.9	YES	NO	bb	bb	0.134
22	Total-pentadioxins	29.77	1.103e3	6.355e2	1.331	1.74	1.55	11.9	YES	NO	dd	db	0.400
23	123789-HxCDD	36.08	3.424e2	3.017e2	0.950	1.13	1.24	8.3	YES	NO	bb	bb	0.169
24	123678-HxCDD	35.69	3.819e2	3.156e2	1.009	1.21	1.24	8.4	YES	NO	bb	db	0.172
25	Total-hexadioxins	34.32	1.823e3	1.622e3	1.028	1.12	1.24	38.1	YES	NO	bb	bb	0.834
26	124679-HXCDD	33.53	1.787e3	1.515e3	1.125	1.18	1.24	34.4	YES	NO	bb	bb	0.731
27	1234678-HpCDD	39.82	3.868e3	3.544e3	1.068	1.09	1.05	79.8	YES	NO	bb	bb	2.413
28	1234679-HPCDD	38.81	4.864e3	4.595e3	1.211	1.06	1.05	114.8	YES	NO	bb	bb	2.716
29	OCDD	44.46	2.272e4	2.453e4	1.181	0.93	0.89	359.2	YES	NO	bb	bb	14.636

ID: 21G0108-03, Name: 21082712, Date: 27-Aug-2021, Time: 13:53:45, Conditions: AUTOSPEC01, User: pk

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	27.24	6.444e4					2.6	NO		bb		
2	FUNCTION1 PFK	27.12	6.474e4					2.8	NO		db		
3	FUNCTION1 PFK	27.05	1.309e5					3.9	YES		bd		
4	FUNCTION1 PFK	25.81	1.130e4					0.9	NO		bb		
5	FUNCTION1 PFK	25.00	1.393e4					1.0	NO		bb		
6	FUNCTION1 PFK	23.93	1.374e4					1.0	NO		bb		
7	FUNCTION1 PFK	23.27	1.740e4					1.1	NO		bb		
8	FUNCTION1 PFK	23.15	4.635e3					0.6	NO		bb		
9	FUNCTION1 PFK	21.62	1.208e5					2.4	NO		bb		
10	FUNCTION1 PFK	21.47	3.429e5					7.4	YES		db		
11	FUNCTION1 PFK	21.33	2.059e5					4.0	YES		bd		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	27.45	1.019e5					5.4	YES		bb		0.000

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	39.51	1.007e4					1.4	NO		bb		
2	FUNCTION4 PFK	37.85	5.892e3					1.0	NO		bb		
3	FUNCTION4 PFK	37.54	1.007e5					2.2	NO		bb		

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ID: 21G0108-03, Name: 21082712, Date: 27-Aug-2021, Time: 13:53:45, Conditions: AUTOSPEC01, User: pk

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	43.54	1.714e4					1.7	NO		bb		
2	FUNCTION5 PFK	43.47	2.244e3					0.7	NO		bb		
3	FUNCTION5 PFK	43.33	6.729e3					1.2	NO		bb		
4	FUNCTION5 PFK	43.20	7.752e3					1.0	NO		bb		
5	FUNCTION5 PFK	43.04	2.023e3					0.6	NO		bb		
6	FUNCTION5 PFK	42.95	1.933e3					0.4	NO		bb		
7	FUNCTION5 PFK	42.83	6.543e2					0.4	NO		bb		
8	FUNCTION5 PFK	42.79	2.835e3					0.8	NO		bb		
9	FUNCTION5 PFK	42.74	2.353e3					0.6	NO		bb		
10	FUNCTION5 PFK	42.56	6.076e3					1.4	NO		bb		
11	FUNCTION5 PFK	45.82	1.932e4					1.3	NO		bb		
12	FUNCTION5 PFK	45.45	2.341e4					1.8	NO		bb		
13	FUNCTION5 PFK	45.05	6.677e2					0.4	NO		bb		
14	FUNCTION5 PFK	44.96	4.269e3					0.7	NO		bb		
15	FUNCTION5 PFK	44.62	4.835e3					0.8	NO		bb		
16	FUNCTION5 PFK	44.56	6.400e3					1.4	NO		bb		
17	FUNCTION5 PFK	44.42	8.362e3					1.4	NO		bb		
18	FUNCTION5 PFK	44.24	1.867e4					1.9	NO		bb		
19	FUNCTION5 PFK	44.13	1.861e3					0.6	NO		bb		
20	FUNCTION5 PFK	43.81	1.570e4					2.3	NO		db		
21	FUNCTION5 PFK	43.77	4.545e3					1.1	NO		bd		
22	FUNCTION5 PFK	43.63	1.212e4					1.4	NO		bb		

ID: 21G0108-03, Name: 21082712, Date: 27-Aug-2021, Time: 13:53:45, Conditions: AUTOSPEC01, User: pk

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	22.65	7.433e1					2.3	NO		bb		0.000
2	FUNCTION1 HXCD...	22.22	8.977e1					3.1	YES		bb		0.000
3	FUNCTION1 HXCD...	21.16	1.171e2					1.9	NO		bb		0.000
4	FUNCTION1 HXCD...	26.97	1.090e2					2.1	NO		bb		0.000
5	FUNCTION1 HXCD...	26.68	8.089e1					2.2	NO		db		0.000
6	FUNCTION1 HXCD...	26.50	1.309e2					2.3	NO		dd		0.000
7	FUNCTION1 HXCD...	26.44	7.259e1					2.1	NO		dd		0.000
8	FUNCTION1 HXCD...	26.26	2.733e2					4.9	YES		bd		0.000
9	FUNCTION1 HXCD...	25.64	2.319e2					4.5	YES		db		0.000
10	FUNCTION1 HXCD...	25.52	1.008e2					2.9	NO		dd		0.000
11	FUNCTION1 HXCD...	25.43	8.294e1					1.8	NO		dd		0.000
12	FUNCTION1 HXCD...	25.25	2.070e2					6.2	YES		bd		0.000
13	FUNCTION1 HXCD...	24.99	8.028e1					1.4	NO		bb		0.000
14	FUNCTION1 HXCD...	24.58	1.434e2					4.0	YES		bb		0.000
15	FUNCTION1 HXCD...	23.25	3.237e2					9.2	YES		bb		0.000
16	FUNCTION1 HXCD...	22.84	1.235e2					2.1	NO		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	21.35	8.431e1					2.4	NO		dd		0.000
2	FUNCTION1 HPCD...	21.29	7.981e1					1.7	NO		bd		0.000
3	FUNCTION1 HPCD...	26.97	1.167e2					1.6	NO		db		0.000
4	FUNCTION1 HPCD...	26.86	1.115e2					2.9	NO		bd		0.000
5	FUNCTION1 HPCD...	25.29	8.619e1					3.5	YES		bb		0.000
6	FUNCTION1 HPCD...	24.54	1.250e2					1.7	NO		bb		0.000
7	FUNCTION1 HPCD...	24.13	7.152e1					2.0	NO		bb		0.000
8	FUNCTION1 HPCD...	22.90	1.185e2					1.7	NO		bb		0.000
9	FUNCTION1 HPCD...	22.68	7.442e1					2.4	NO		bb		0.000
10	FUNCTION1 HPCD...	21.39	1.024e2					2.1	NO		db		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	28.47	1.250e2					5.7	YES		db		0.000
2	FUNCTION2 HPCD...	28.42	9.714e1					3.6	YES		bd		0.000

ID: 21G0108-03, Name: 21082712, Date: 27-Aug-2021, Time: 13:53:45, Conditions: AUTOSPEC01, User: pk

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.05	1.407e2					4.2	YES		bb		0.000
2	FUNCTION3 OCDPE	35.68	1.234e2					3.2	YES		bb		0.000
3	FUNCTION3 OCDPE	33.25	8.239e1					2.6	NO		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	37.97	2.177e3					47.9	YES		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	45.93	1.601e2					3.0	NO		bb		0.000
2	FUNCTION5 DCDPE	45.40	8.451e1					2.8	NO		bb		0.000
3	FUNCTION5 DCDPE	45.14	7.982e1					1.7	NO		bb		0.000
4	FUNCTION5 DCDPE	43.52	7.614e1					3.0	NO		bb		0.000

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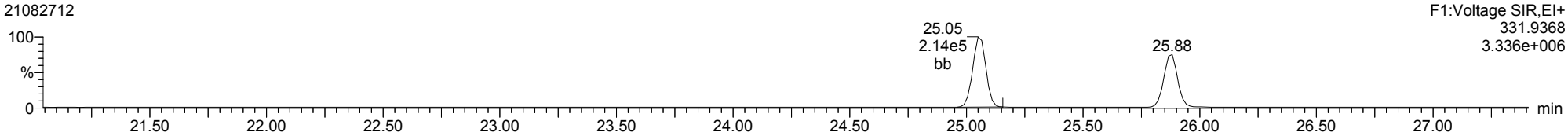

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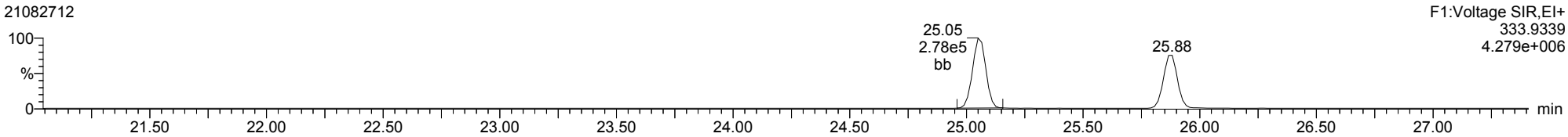

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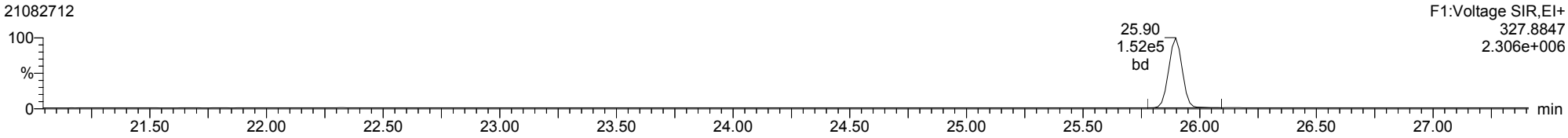

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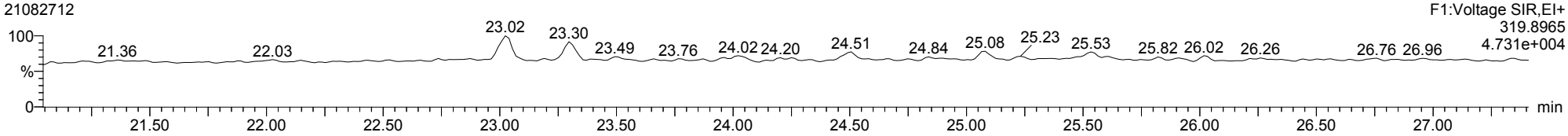

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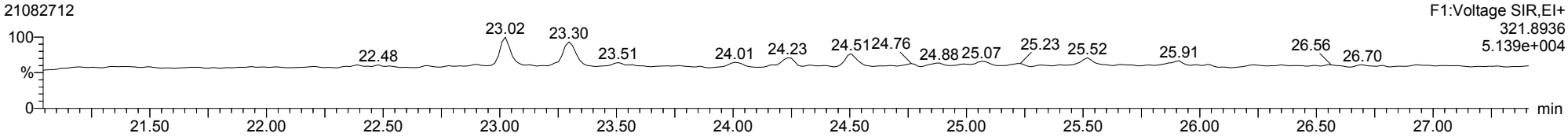

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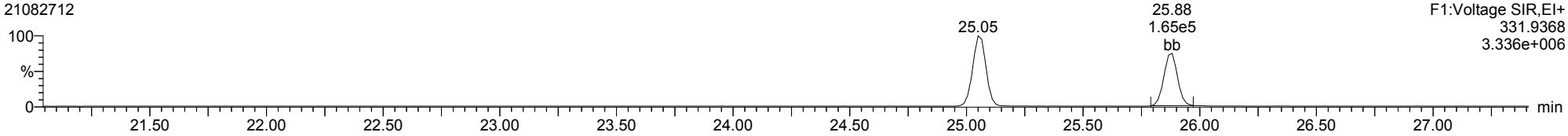

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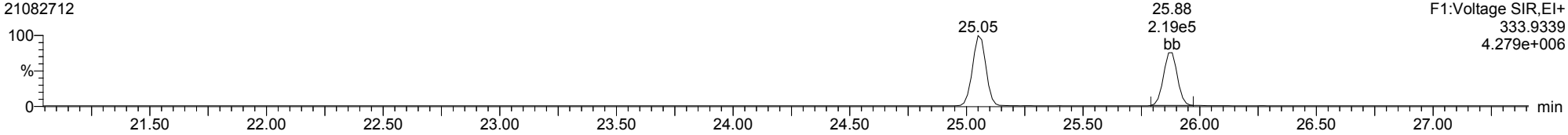

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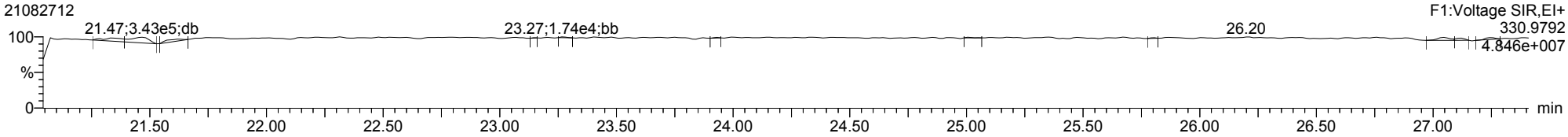

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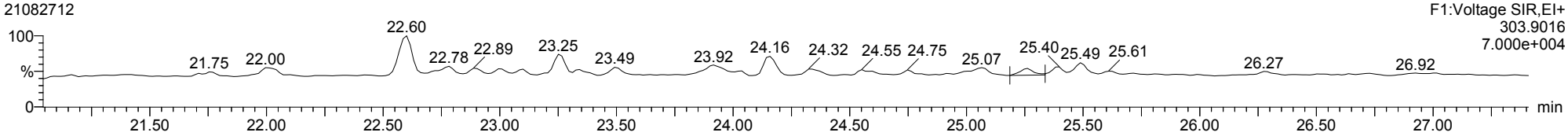

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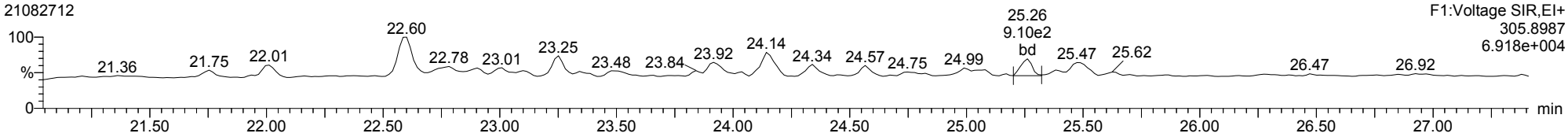

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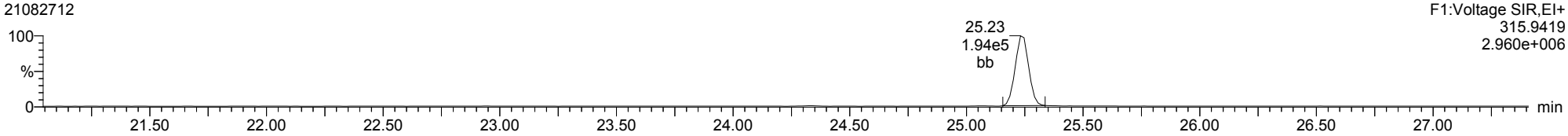

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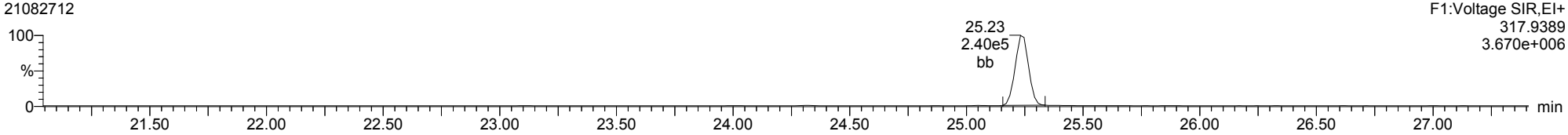

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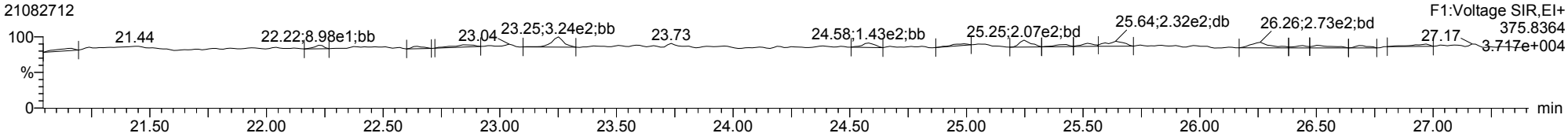

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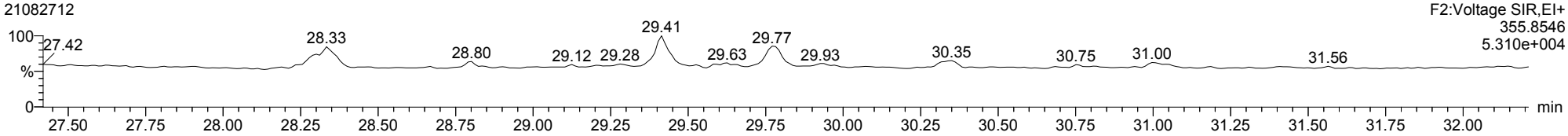

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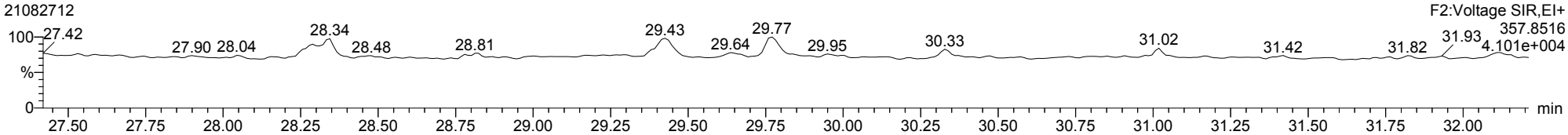

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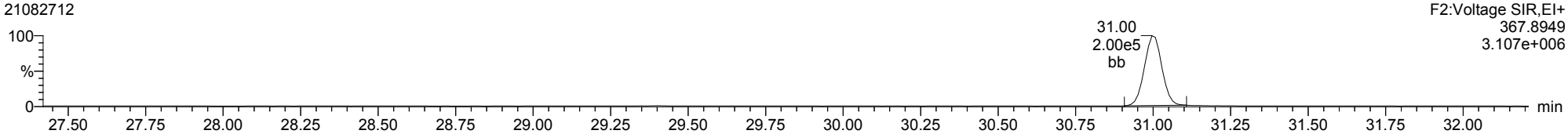

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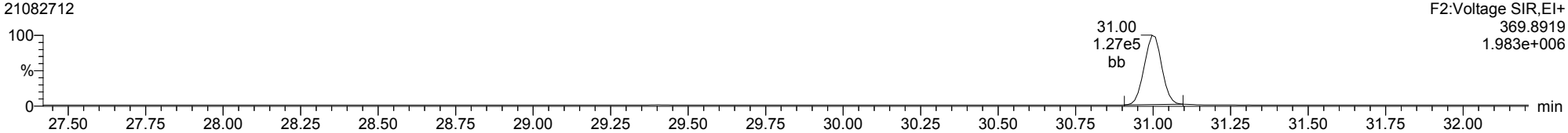
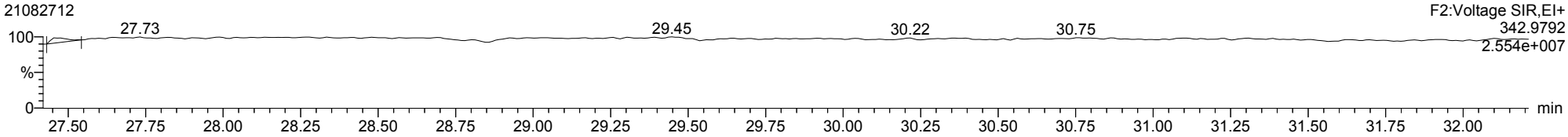


FUNCTION2 PFK



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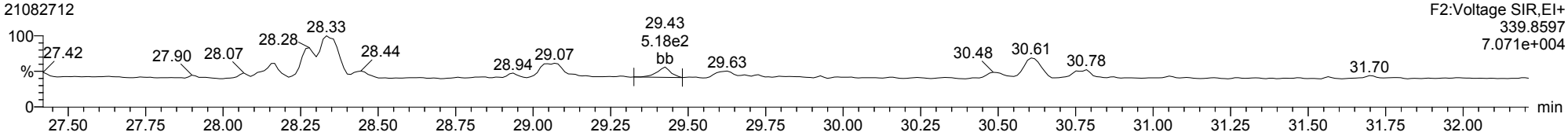

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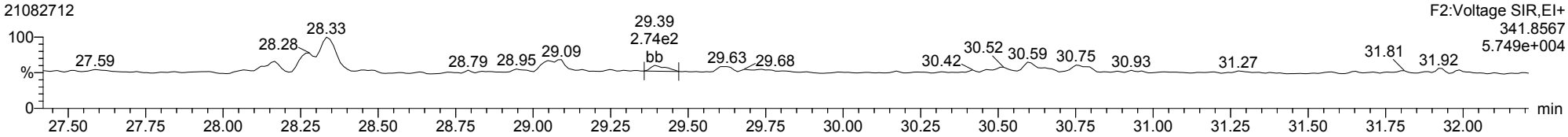

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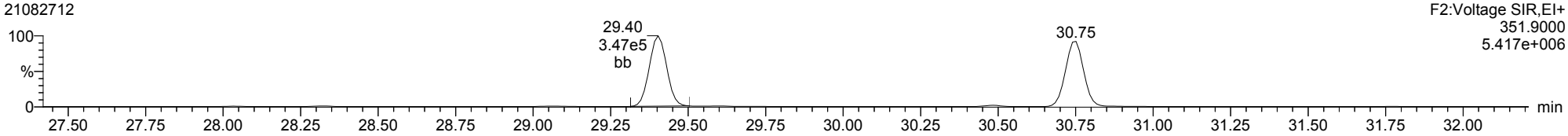

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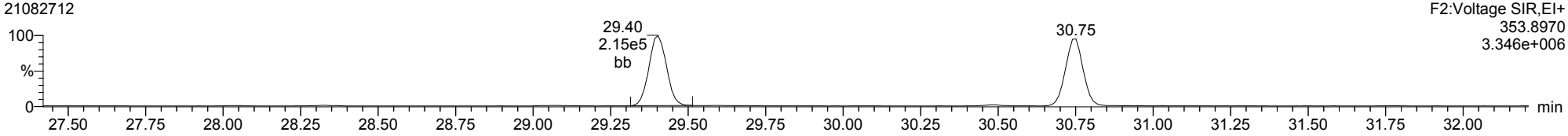
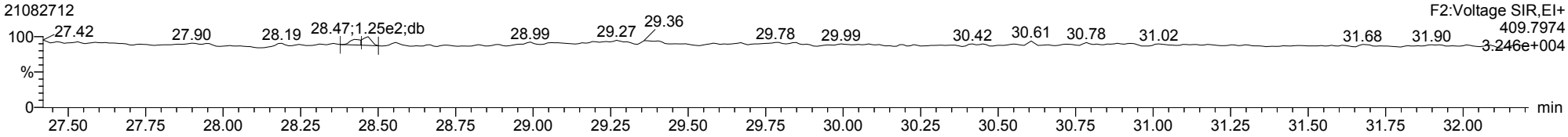


FUNCTION2 HPCDPE



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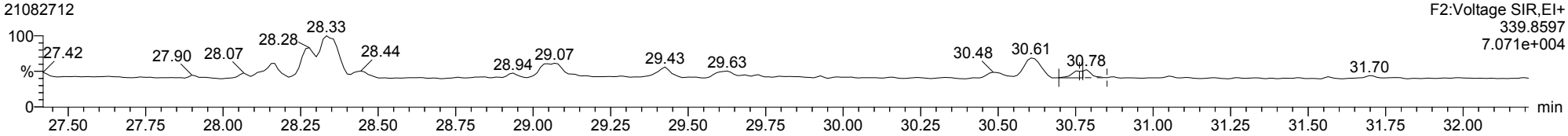
23478-PeCDF



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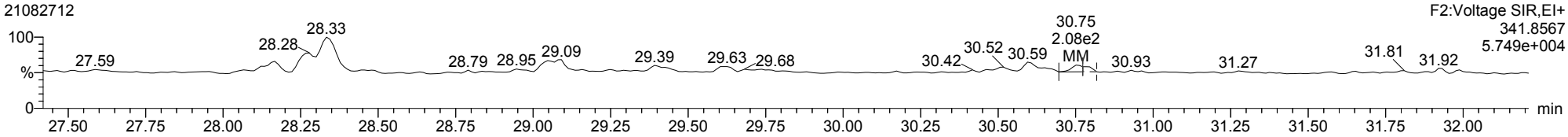

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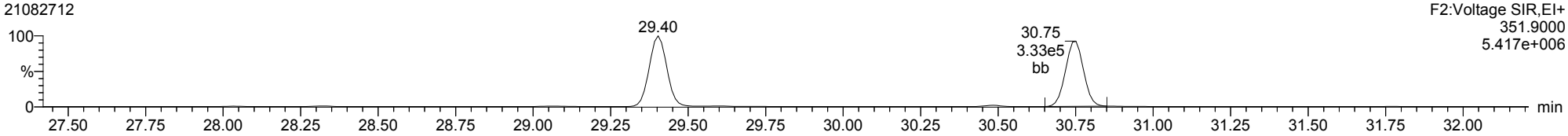

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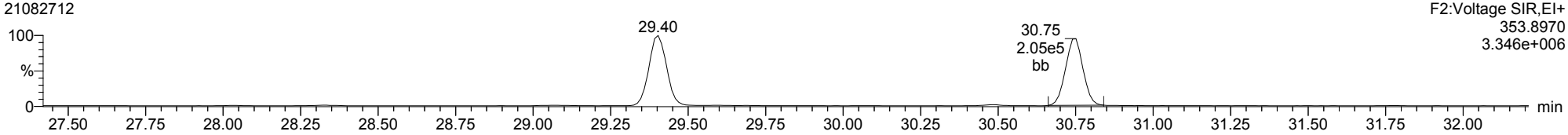
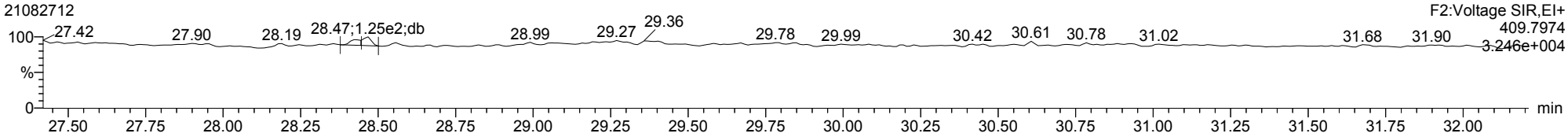


FUNCTION2 HPCDPE



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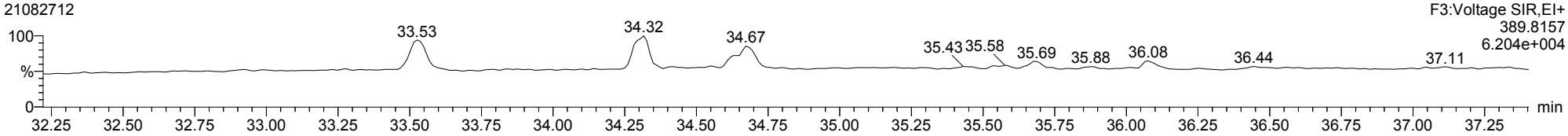
123478-HxCDD



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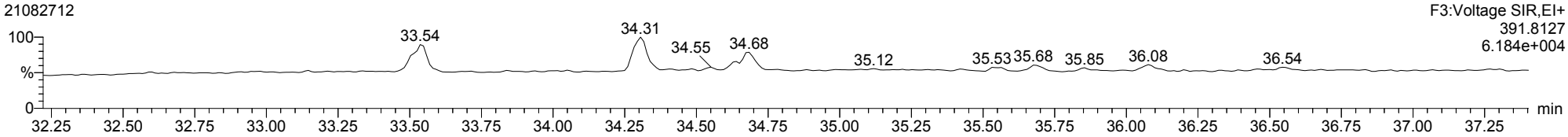

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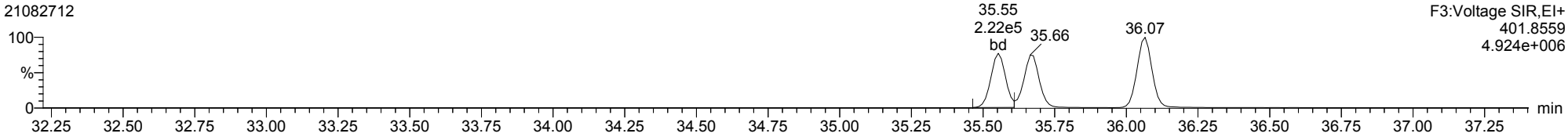

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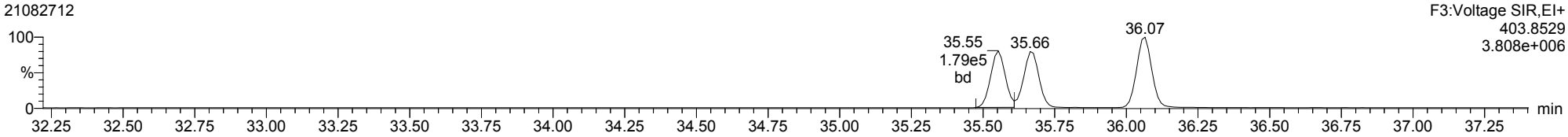

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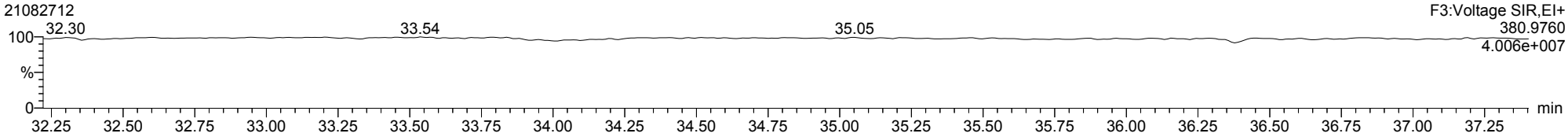

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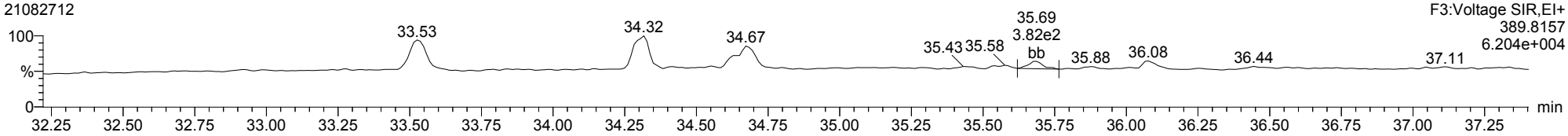

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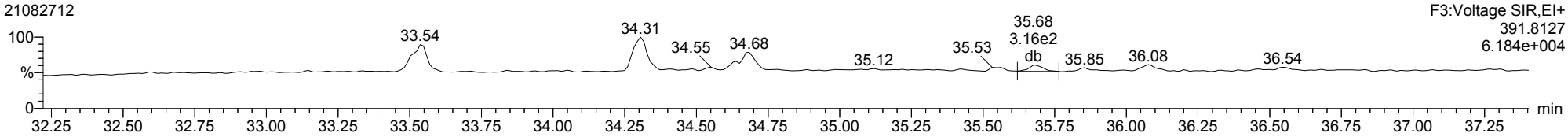

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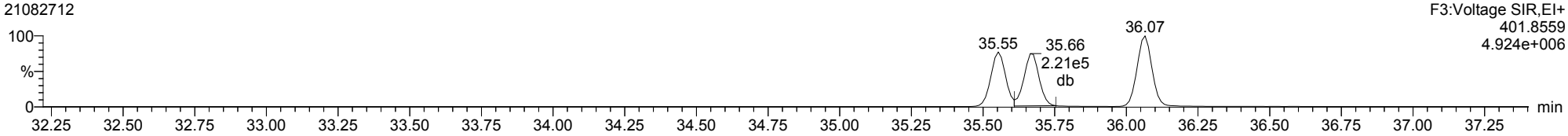

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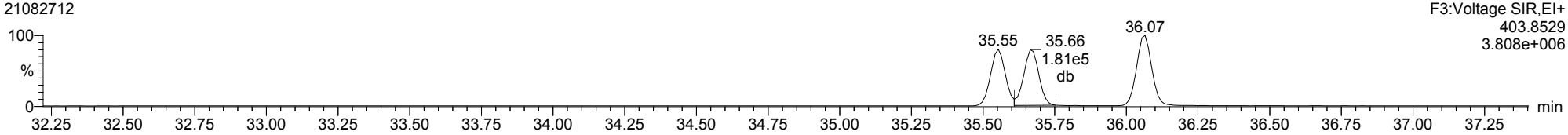

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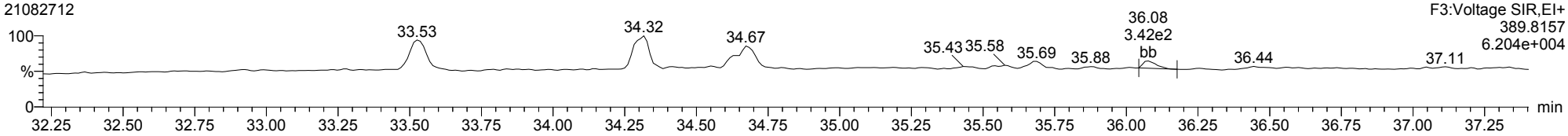

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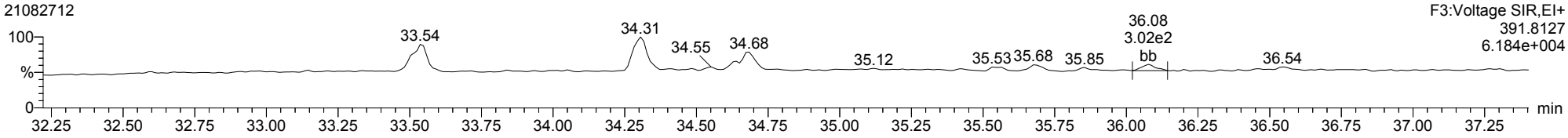

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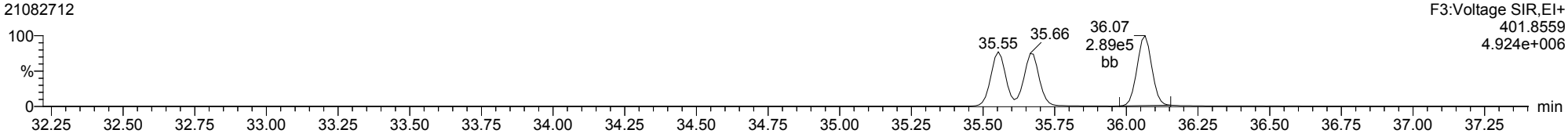

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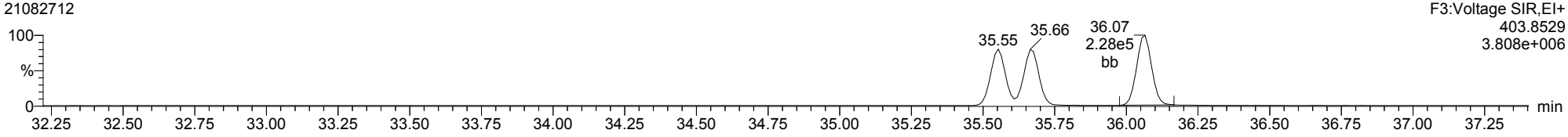

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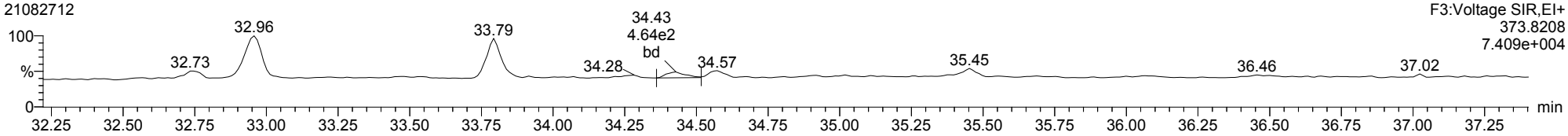

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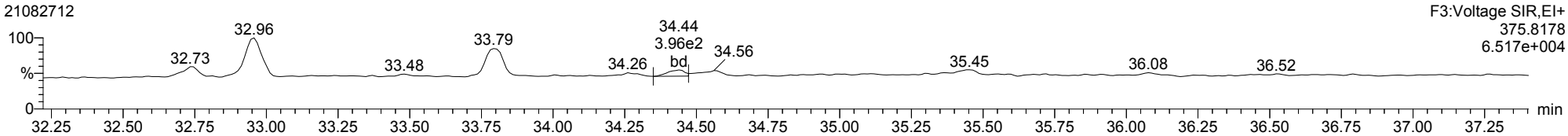

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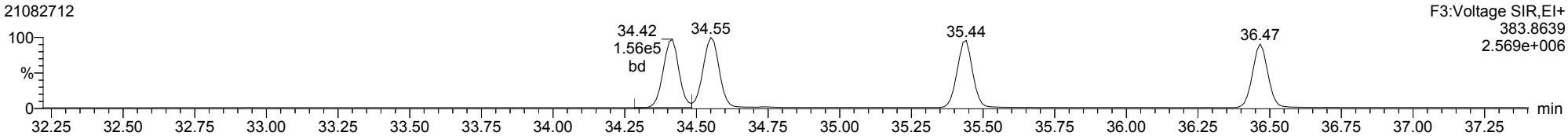

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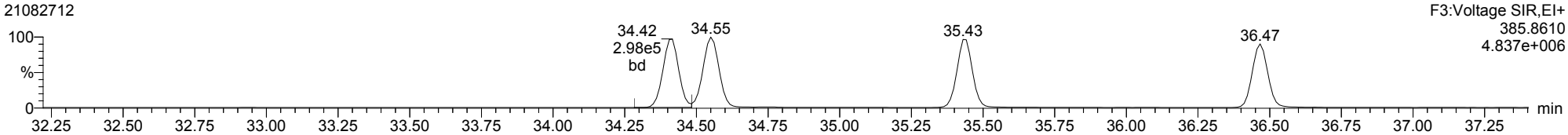

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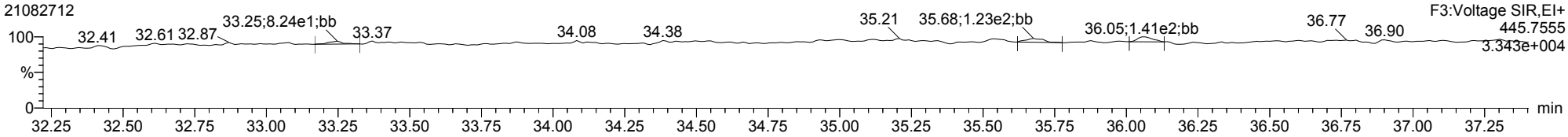

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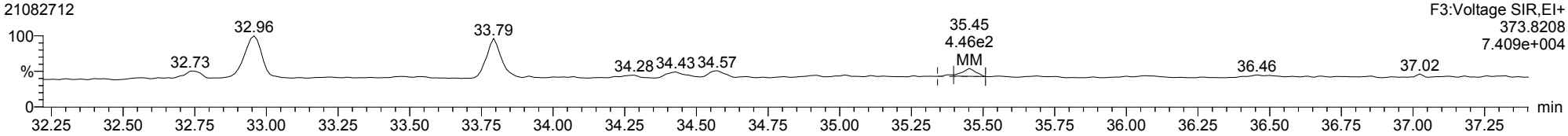

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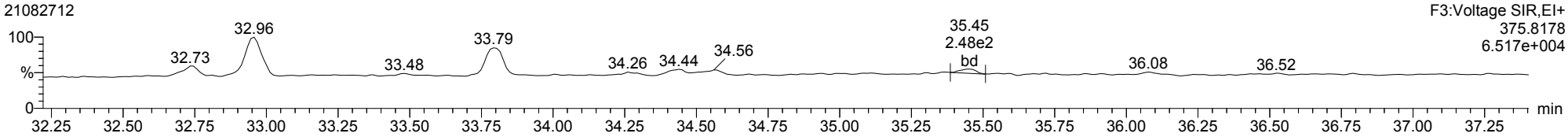

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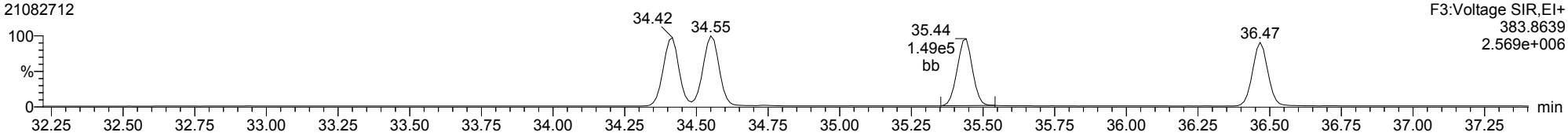

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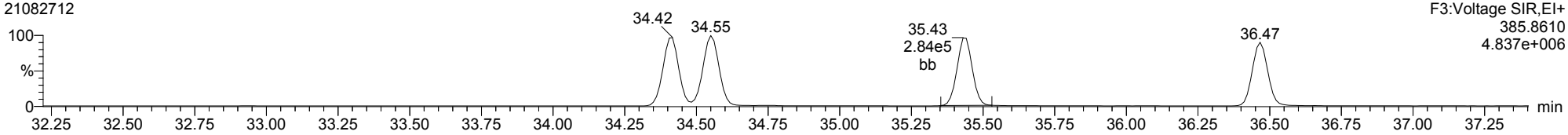

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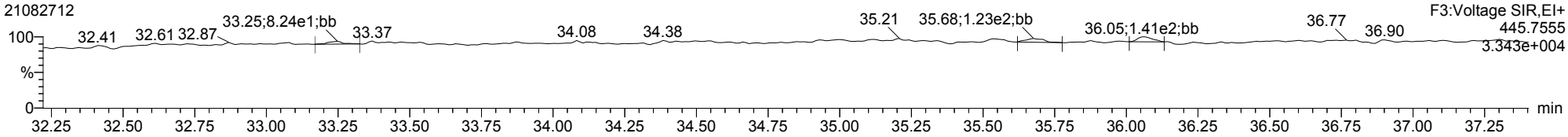

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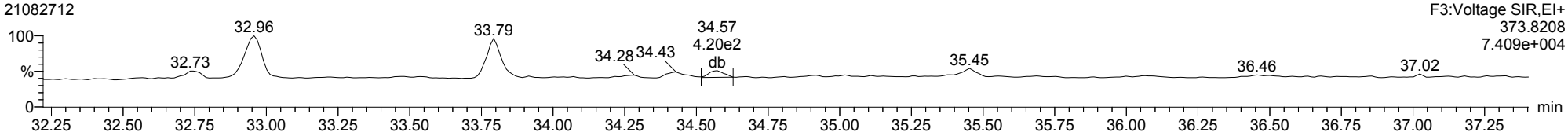

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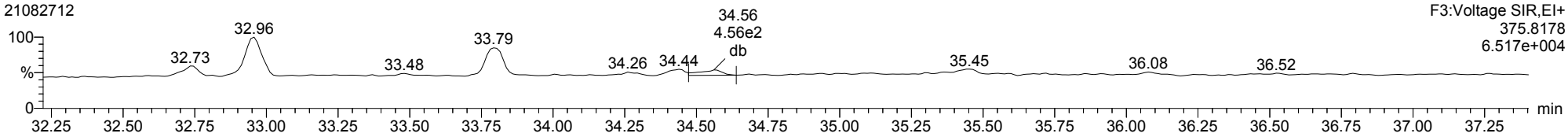

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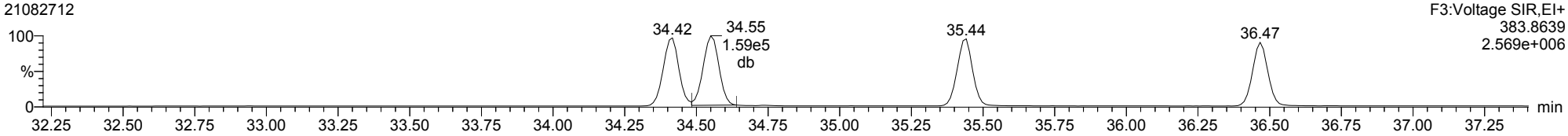

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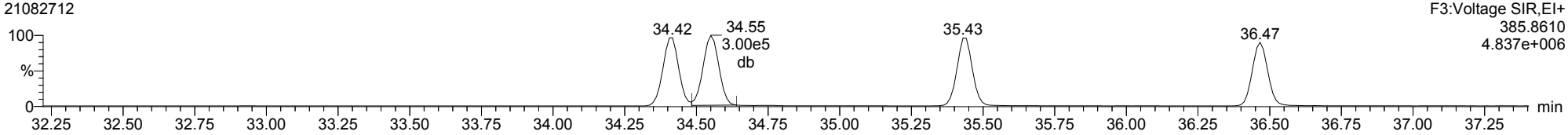

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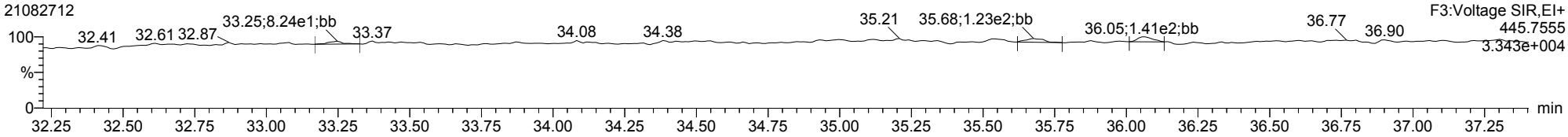

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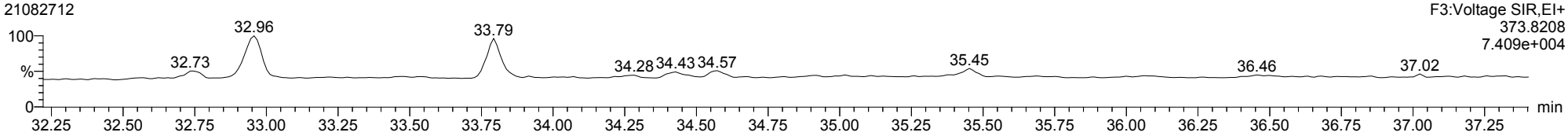

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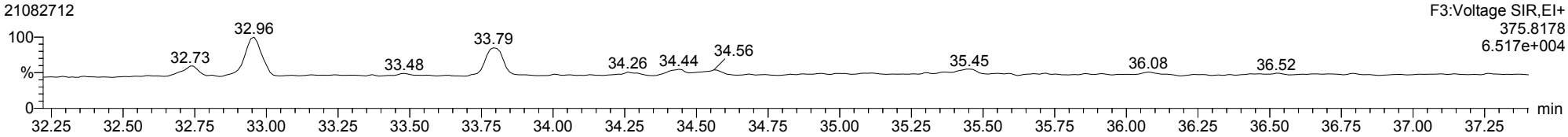

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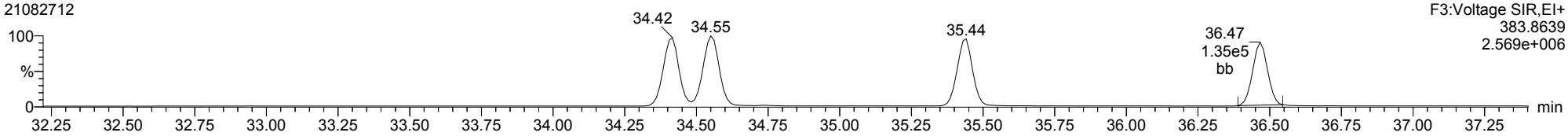

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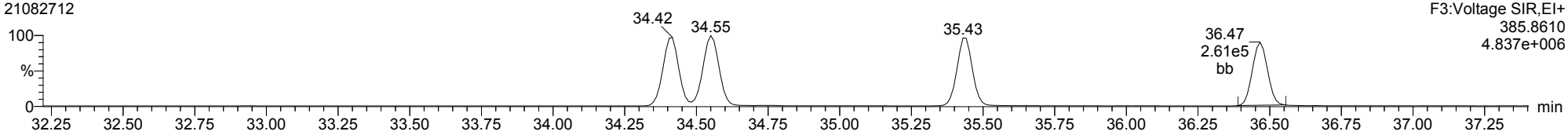

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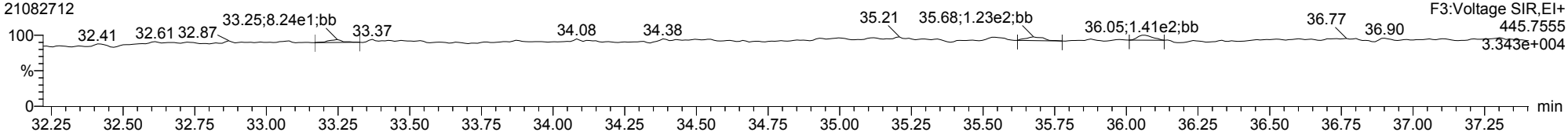

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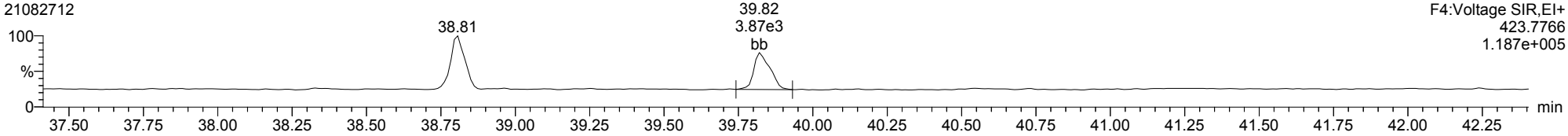

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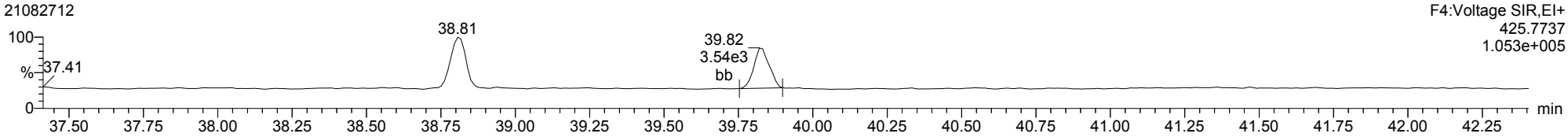

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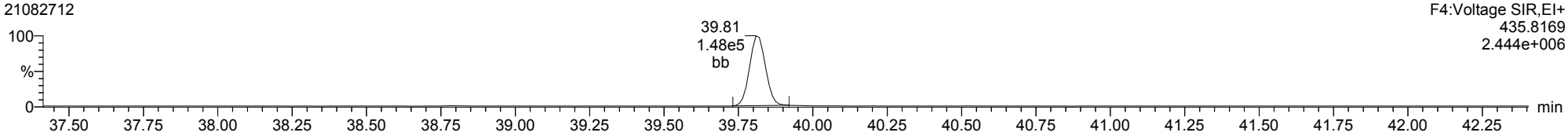

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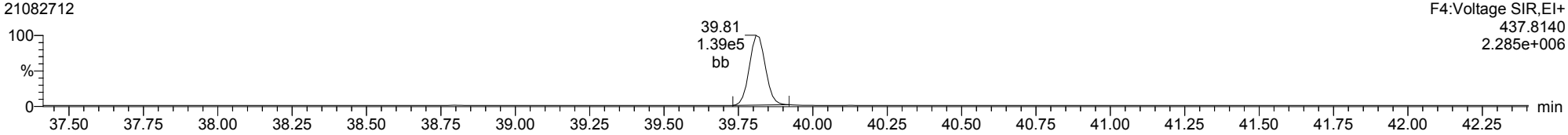
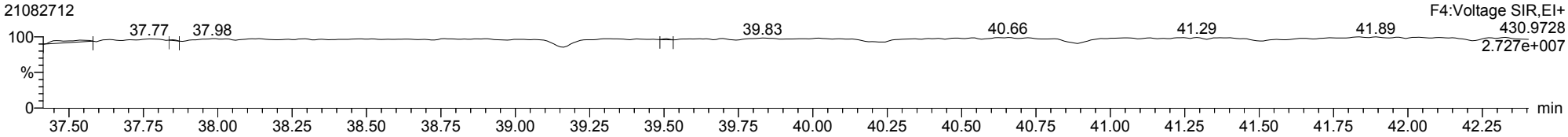


FUNCTION4 PFK



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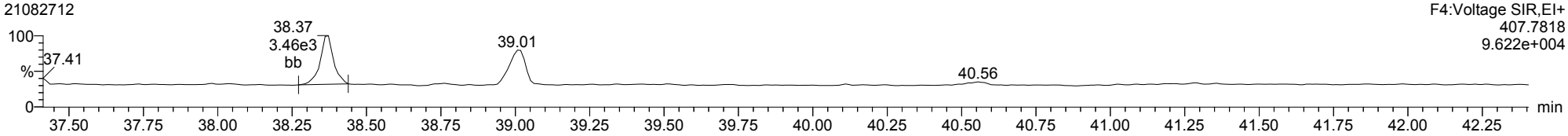

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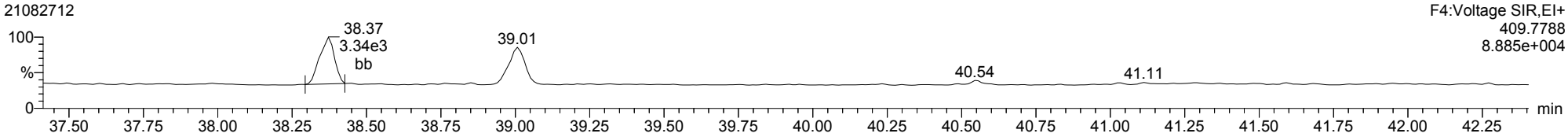

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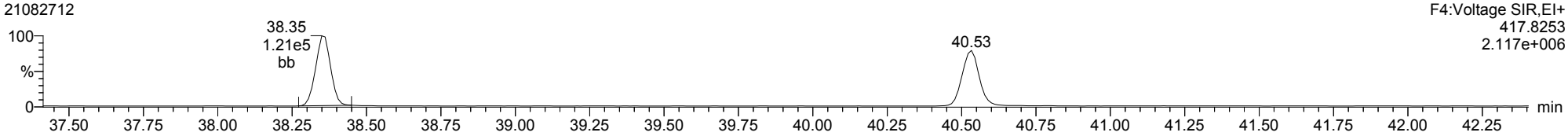

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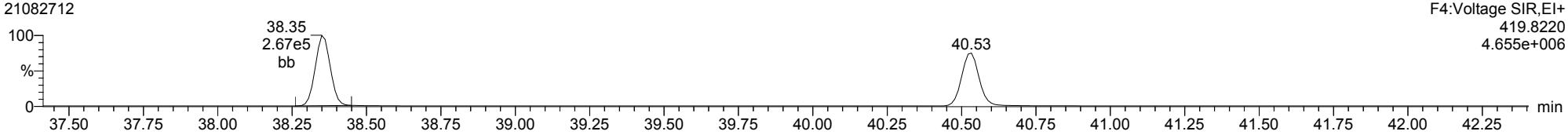

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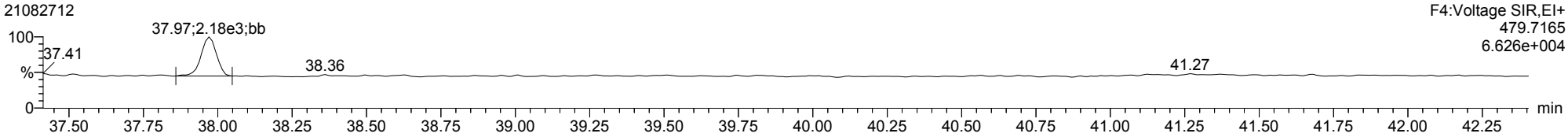

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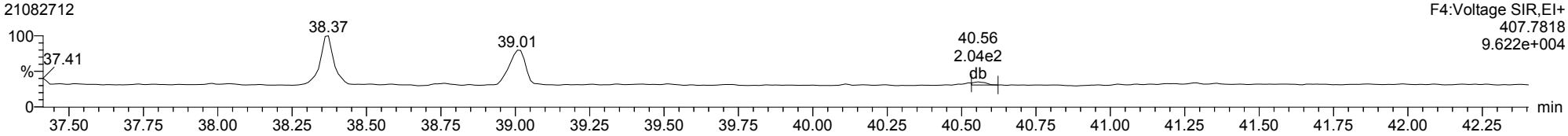
1234789-HpCDF



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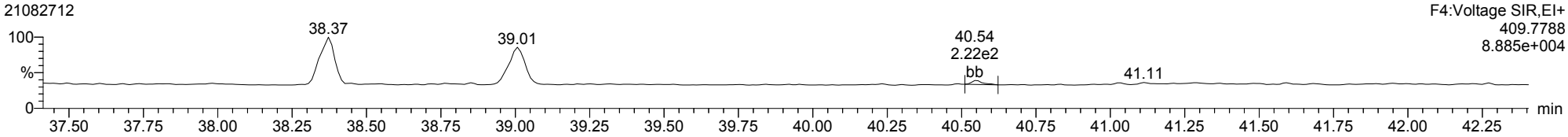

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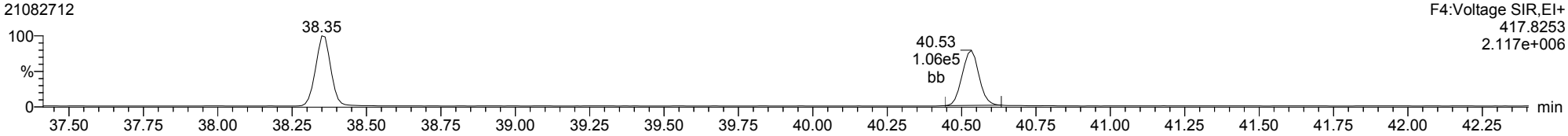

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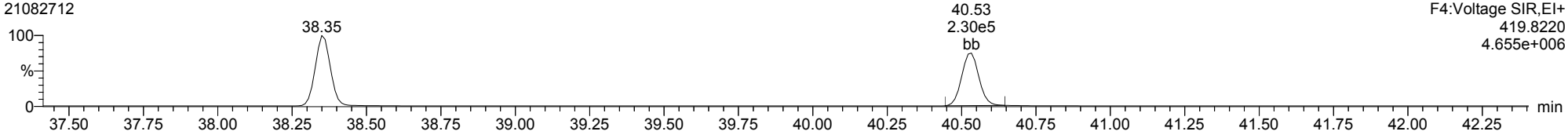

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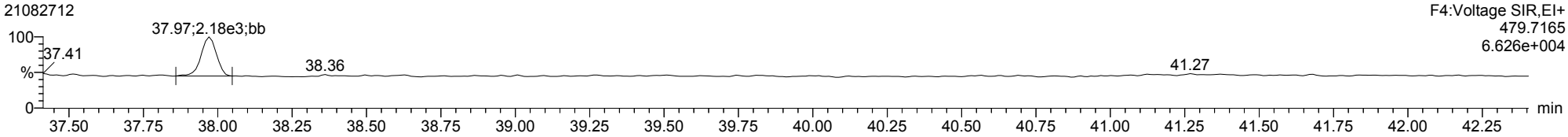

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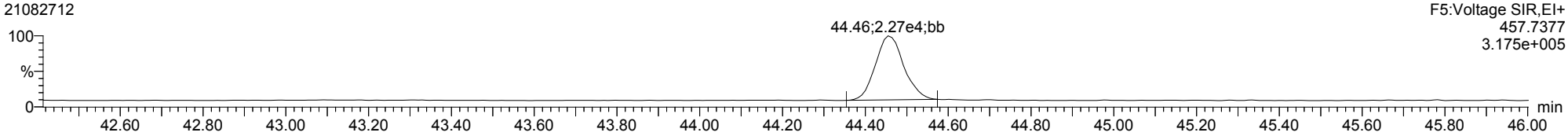
OCDD



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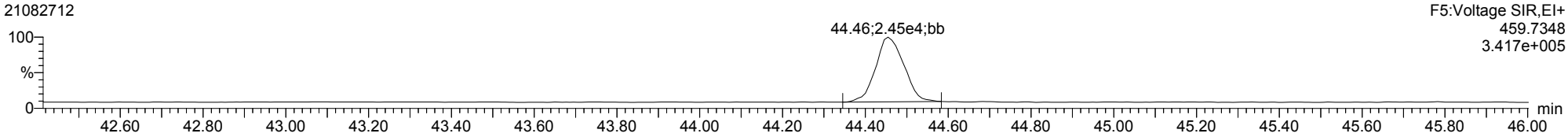

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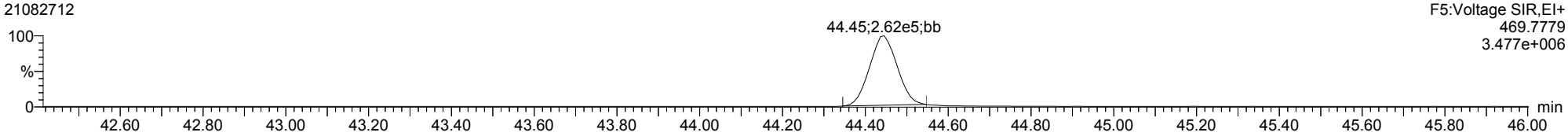

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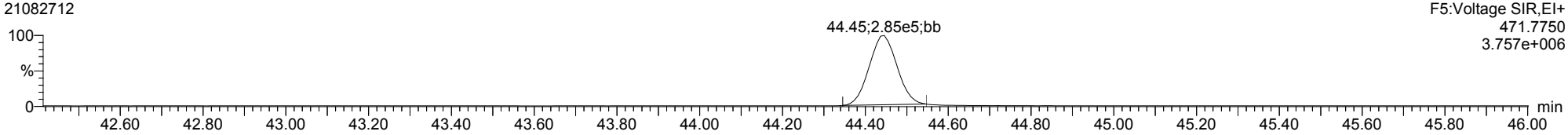
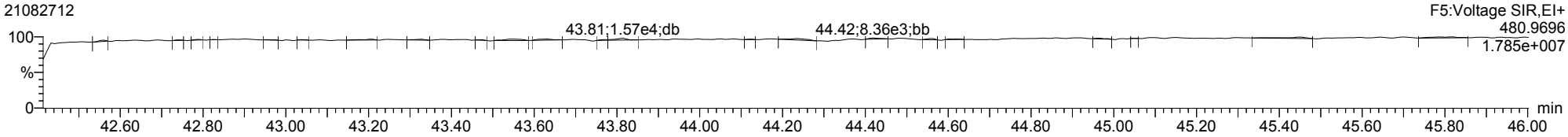


FUNCTION5 PFK



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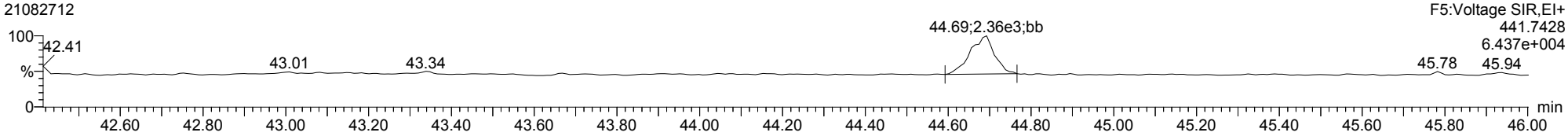
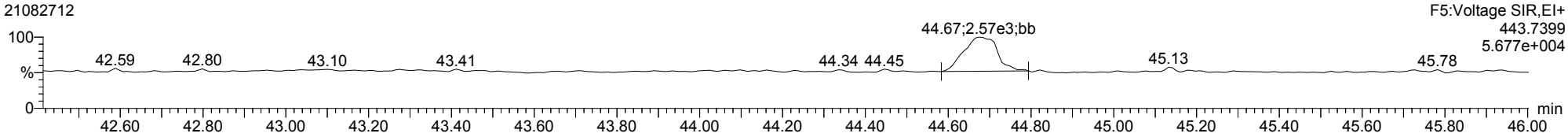
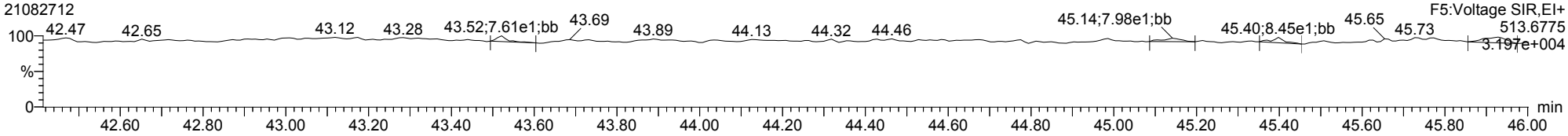
OCDF



OCDF

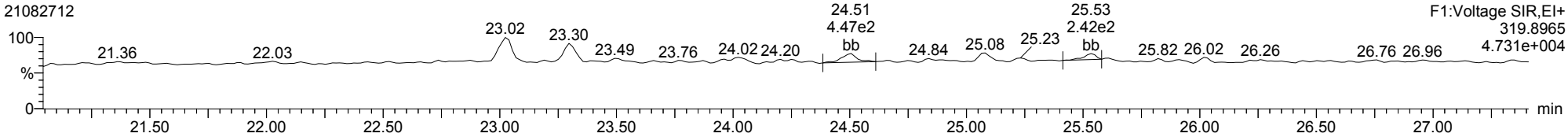


FUNCTION5 DCDPE

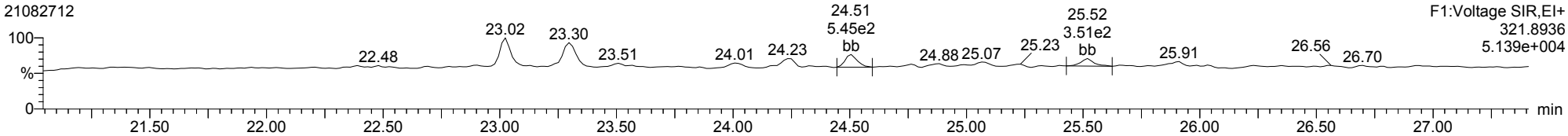


ID: 21G0108-03, Name: 21082712, Date: 27-Aug-2021, Time: 13:53:45, Conditions: AUTOSPEC01, User: pk

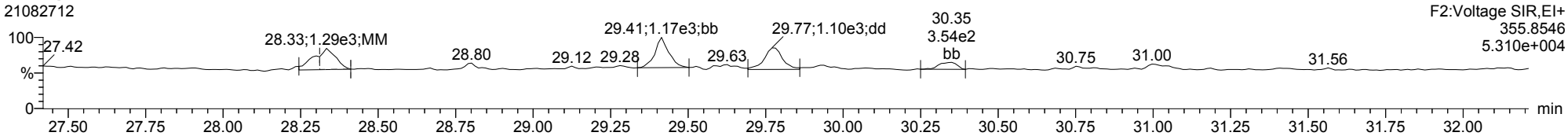
Total-tetradioxins



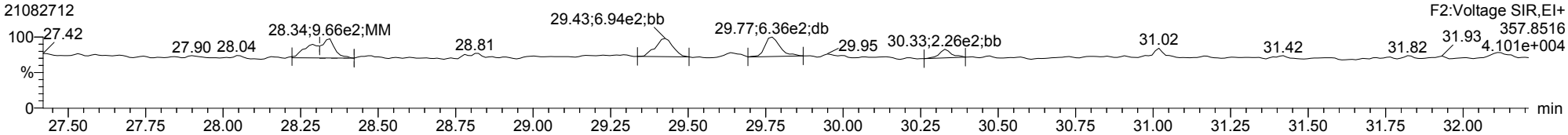
Total-tetradioxins



Total-pentadioxins

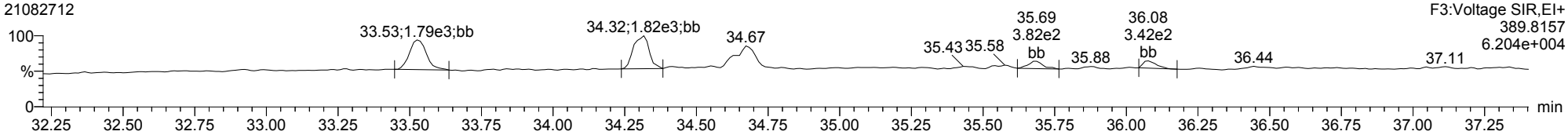


Total-pentadioxins

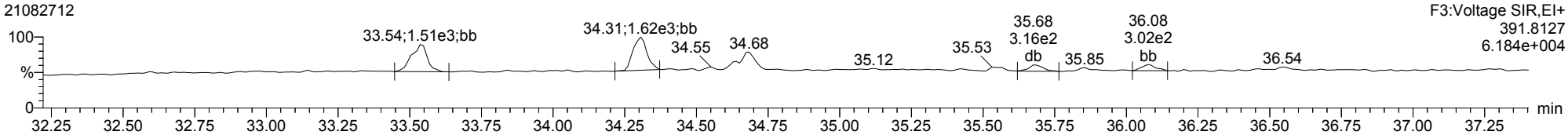


ID: 21G0108-03, Name: 21082712, Date: 27-Aug-2021, Time: 13:53:45, Conditions: AUTOSPEC01, User: pk

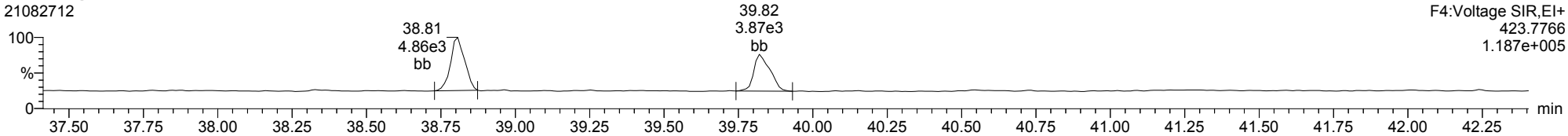
Total-hexadioxins



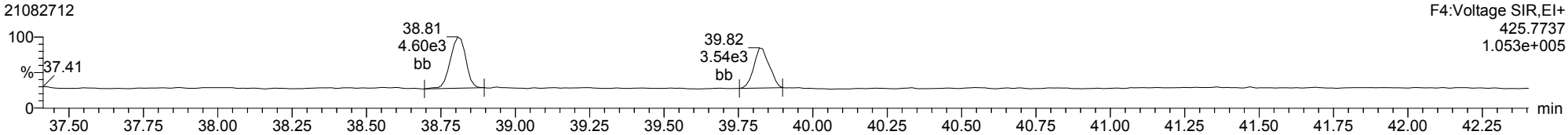
Total-hexadioxins



Total-heptadioxins

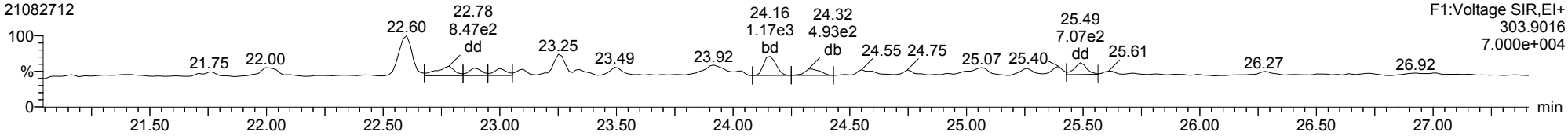


Total-heptadioxins

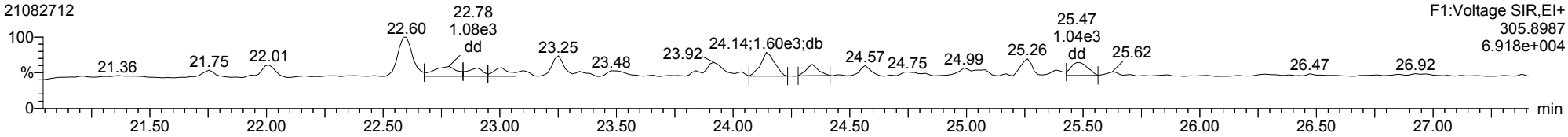


ID: 21G0108-03, Name: 21082712, Date: 27-Aug-2021, Time: 13:53:45, Conditions: AUTOSPEC01, User: pk

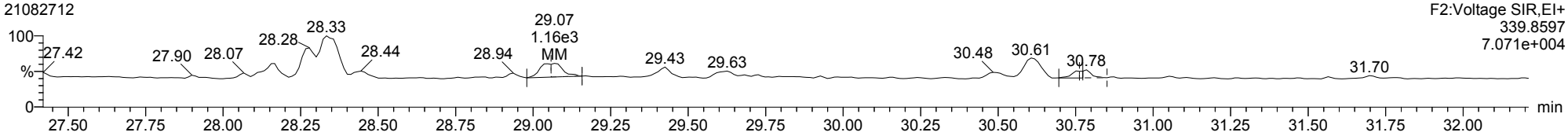
Total-tetrafurans



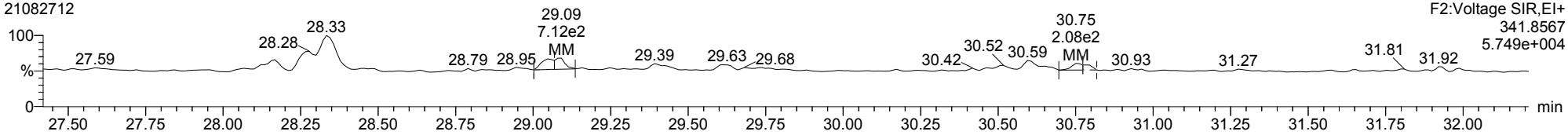
Total-tetrafurans



Total-pentafurans

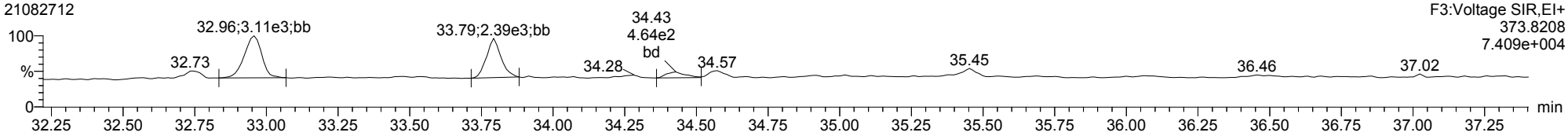


Total-pentafurans

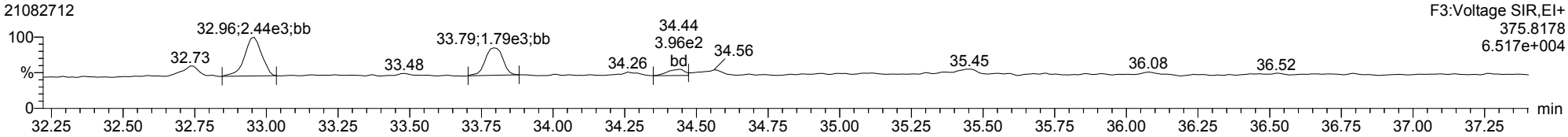


ID: 21G0108-03, Name: 21082712, Date: 27-Aug-2021, Time: 13:53:45, Conditions: AUTOSPEC01, User: pk

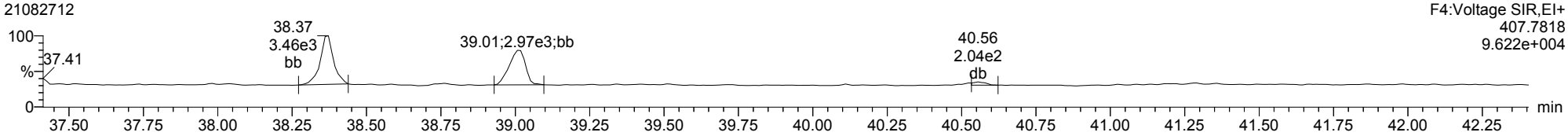
Total-hexafurans



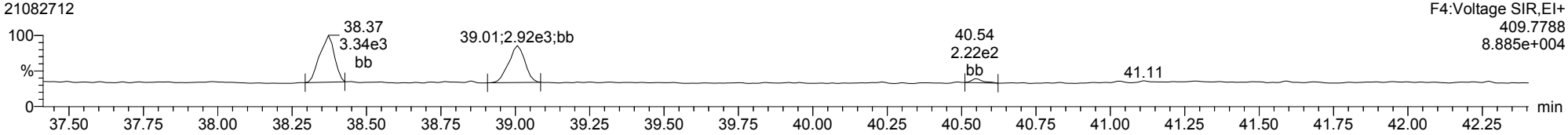
Total-hexafurans



Total-heptafurans



Total-heptafurans



Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT654E

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21G0108-04 C	File ID:	21082713
Sampled:	07/08/21 15:47	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 14:42
% Solids:	78.21	Preparation:	EPA 8290	Initial/Final:	12.8 g Wet / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	0.216	0.999	ND	ng/kg	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.350	0.999	ND	ng/kg	U
57117-41-6	1,2,3,7,8-PeCDF	1		1.318-1.783	0.143	0.999	ND	ng/kg	U
57117-31-4	2,3,4,7,8-PeCDF	1		1.318-1.783	0.139	0.999	ND	ng/kg	U
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	0.259	0.999	ND	ng/kg	U
70648-26-9	1,2,3,4,7,8-HxCDF	1		1.054-1.426	0.138	0.999	ND	ng/kg	U
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	0.138	0.999	ND	ng/kg	U
60851-34-5	2,3,4,6,7,8-HxCDF	1		1.054-1.426	0.140	0.999	ND	ng/kg	U
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.162	0.999	ND	ng/kg	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	0.188	0.999	ND	ng/kg	U
57653-85-7	1,2,3,6,7,8-HxCDD	1		1.054-1.426	0.182	0.999	ND	ng/kg	U
19408-74-3	1,2,3,7,8,9-HxCDD	1		1.054-1.426	0.198	0.999	ND	ng/kg	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.198	0.893-1.208	0.116	0.999	0.123	ng/kg	J
55673-89-7	1,2,3,4,7,8,9-HpCDF	1		0.893-1.208	0.156	0.999	ND	ng/kg	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.087	0.893-1.208	0.218	2.50	1.18	ng/kg	J
39001-02-0	OCDF	1		0.757-1.024	0.193	2.50	ND	ng/kg	U
3268-87-9	OCDD	1	0.930	0.757-1.024	0.239	9.99	7.57	ng/kg	J, B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			0.999	ND	ng/kg
41903-57-5	Total TCDD	1	0.000			0.999	ND	ng/kg
30402-15-4	Total PeCDF	1	0.000			0.999	ND	ng/kg
36088-22-9	Total PeCDD	1	0.000			0.999	ND	ng/kg
55684-94-1	Total HxCDF	1	0.000			0.999	ND	ng/kg
34465-46-8	Total HxCDD	1	0.000			0.999	ND	ng/kg
38998-75-3	Total HpCDF	1	0.000			0.999	0.123	ng/kg
37871-00-4	Total HpCDD	1	0.000			0.999	1.18	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.015
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.412

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT654E

Form 2
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21G0108-04	File ID:	21082713
Sampled:	07/08/21 15:47	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 14:42
Solids Wt%:	78.21	Preparation:	EPA 8290	Initial/Final:	12.8 g / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.812	0.655-0.886	0.334	58.8	24 - 169 %	
13C12-2,3,7,8-TCDD		0.753	0.655-0.886	0.315	65.5	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.633	1.318-1.783	0.224	88.9	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.612	1.318-1.783	0.235	87.2	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.559	1.318-1.783	0.304	89.1	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.527	0.434-0.587	0.207	71.2	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.514	0.434-0.587	0.191	66.6	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.531	0.434-0.587	0.212	68.6	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.520	0.434-0.587	0.255	73.6	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.281	1.054-1.426	0.198	81.4	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.256	1.054-1.426	0.182	74.2	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.461	0.374-0.506	0.227	82.1	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.460	0.374-0.506	0.278	84.7	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.053	0.893-1.208	0.298	87.5	23 - 140 %	
13C12-OCDD		0.913	0.757-1.024	0.368	101	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.101	66.4	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:42:49 Pacific Daylight Time

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Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-04, Name: 21082713, Date: 27-Aug-2021, Time: 14:42:42, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF					1.108		0.770	865	1096								
12378-PeCDF					1.015		1.550	795	908								
23478-PeCDF					1.126		1.550	795	908								
123478-HxCDF					1.017		1.240	653	738								
234678-HxCDF					1.052		1.240	653	738								
123678-HxCDF					1.037		1.240	653	738								
123789-HxCDF					1.030		1.240	653	738								
1234678-HpCDF	38.338	1.000	1.439e2	1.201e2	1.327	1.198	1.050	656	710	3.29e3	2.20e3	5.0	3.1	NO	bb	bb	0.061
1234789-HpCDF					1.283		1.050	656	710								
OCDF					1.447		0.890	473	795								
2378-TCDD					0.920		0.770	1529	843								
12378-PeCDD					0.995		1.550	947	734								
123478-HxCDD					1.027		1.240	663	1014								
123678-HxCDD					1.009		1.240	663	1014								
123789-HxCDD					0.950		1.240	663	1014								
1234678-HpCDD	39.798	1.000	7.753e2	7.135e2	1.068	1.087	1.050	727	679	1.33e4	1.18e4	18.3	17.4	NO	bb	bb	0.592
OCDD	44.428	1.000	4.686e3	5.040e3	1.181	0.930	0.890	581	700	6.39e4	5.75e4	109.9	82.1	NO	bb	bb	3.788
13C-2378-TCDF	25.232	1.008	1.492e5	1.839e5	1.427	0.812	0.770	3083	1710	2.20e6	2.71e6	712.7	1586.9	NO	bb	bb	58.798
13C-12378-PeCDF	29.381	1.174	2.839e5	1.739e5	1.297	1.633	1.550	1532	1393	4.36e6	2.65e6	2847.4	1904.8	NO	bb	bb	88.865
13C-23478-PeCDF	30.729	1.227	2.644e5	1.640e5	1.236	1.612	1.550	1532	1393	4.03e6	2.47e6	2629.3	1773.5	NO	bb	bb	87.243
13C-123478-HxCDF	34.383	0.954	1.300e5	2.465e5	1.242	0.527	0.510	1387	1525	2.05e6	3.87e6	1475.1	2536.5	NO	bd	bd	71.183
13C-123678-HxCDF	34.528	0.958	1.292e5	2.515e5	1.343	0.514	0.510	1387	1525	1.97e6	3.85e6	1421.5	2525.1	NO	db	db	66.563
13C-234678-HxCDF	35.408	0.983	1.230e5	2.318e5	1.215	0.531	0.510	1387	1525	1.96e6	3.80e6	1410.8	2492.3	NO	bb	bb	68.612
13C-123789-HxCDF	36.444	1.011	1.080e5	2.077e5	1.008	0.520	0.510	1387	1525	1.70e6	3.35e6	1229.1	2197.1	NO	bb	bb	73.607
13C-1234678-HpCDF	38.327	1.064	1.022e5	2.215e5	0.926	0.461	0.440	1063	1325	1.68e6	3.71e6	1582.4	2800.2	NO	bd	bb	82.086
13C-1234789-HpCDF	40.500	1.124	8.609e4	1.872e5	0.758	0.460	0.440	1063	1325	1.29e6	2.78e6	1210.2	2096.0	NO	bb	bb	84.714
13C-1234-TCDD	25.035	0.000	1.724e5	2.247e5	1.000	0.767	0.770	2370	1173	2.62e6	3.46e6	1104.9	2950.2	NO	bb	bb	100.000
13C-2378-TCDD	25.867	1.033	1.249e5	1.657e5	1.116	0.753	0.770	2370	1173	1.90e6	2.53e6	800.9	2161.6	NO	bb	bb	65.538
13C-12378-PeCDD	30.974	1.237	1.579e5	1.012e5	0.732	1.559	1.550	1207	1032	2.38e6	1.53e6	1971.4	1486.7	NO	bb	bb	89.139
13C-123478-HxCDD	35.530	0.986	1.867e5	1.457e5	0.960	1.281	1.240	1115	1034	2.92e6	2.31e6	2620.4	2230.4	NO	bd	bd	81.356
13C-123678-HxCDD	35.642	0.989	1.830e5	1.458e5	1.041	1.256	1.240	1115	1034	3.05e6	2.47e6	2735.0	2391.7	NO	db	db	74.178
13C-1234678-HpCDD	39.786	1.104	1.208e5	1.147e5	0.632	1.053	1.050	976	1163	1.86e6	1.78e6	1903.1	1532.7	NO	bb	bb	87.483
13C-OCDD	44.409	1.232	2.076e5	2.273e5	0.504	0.913	0.890	1347	753	2.59e6	2.88e6	1924.8	3819.6	NO	bb	bb	202.832
13C-123789-HxCDD	36.032	0.000	2.351e5	1.905e5	1.000	1.234	1.240	1115	1034	3.75e6	3.00e6	3363.9	2905.0	NO	bb	bb	100.000
37CL-2378-TCDD	25.882	1.034	1.143e5		1.084			1098		1.75e6		1594.8			bd		26.568

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:42:49 Pacific Daylight Time

ID: 21G0108-04, Name: 21082713, Date: 27-Aug-2021, Time: 14:42:42, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF					1.425		0.770	865	1096								
1289-TCDF					1.043		0.770	865	1096								
13468-PECDF					1.376		1.550	803	1013								
12389-PECDF					1.000		1.550	795	908								
123468-HXCDF					1.087		1.240	653	738								
1368-TCDD					0.923		0.770	1529	843								
1289-TCDD					0.794		0.770	1529	843								
12479-PECDD					1.843		1.550	947	734								
12389-PECDD					1.154		1.550	947	734								
124679-HXCDD	33.492	0.943	4.136e2	9.987e1	1.125	4.141	1.240	663	1014	5.25e3	2.35e3	7.9	2.3	YES	bb	bd	0.137
1234679-HPCDD	38.773	0.975	1.296e3	9.009e2	1.211	1.439	1.050	727	679	2.24e4	1.44e4	30.9	21.1	YES	bb	bb	0.770
Total-tetrafurans			0.000e0		1.192			865		0.00e0							
Total-penta1			0.000e0					803		0.00e0							
Total-pentafurans			0.000e0		1.047			795		0.00e0							
Total-hexafurans			0.000e0		1.045			653		0.00e0							
Total-heptafurans			1.439e2		1.305			656		3.29e3							0.061
Total-Furans			2.456e2		1.158			865		5.30e3							0.119
Total-tetradioxins			0.000e0		0.879			1529		0.00e0							
Total-pentadioxins			0.000e0		1.331			947		0.00e0							
Total-hexadioxins			0.000e0		1.028			663		0.00e0							
Total-heptadioxins			7.753e2		1.140			727		1.33e4							0.592
Total-Dioxins			5.461e3		1.092			1529		7.72e4							4.380
Total-TEQ			5.707e3					1529		8.25e4							4.499
FUNCTION1 PFK			6.345e6					696786		7.12e7							
FUNCTION2 PFK			7.907e5					567684		1.50e7							0.000
FUNCTION3 PFK			0.000e0					521198		0.00e0							
FUNCTION4 PFK			4.575e5					412061		1.34e7							
FUNCTION5 PFK			2.255e5					270649		6.75e6							
FUNCTION1 HXCD...			1.366e3					927		2.09e4							0.000
FUNCTION1 HPCD...			1.735e3					1006		3.27e4							0.000
FUNCTION2 HPCD...			8.710e2					1003		2.34e4							0.000
FUNCTION3 OCDPE			4.683e2					534		7.21e3							0.000
FUNCTION4 NCDPE			9.591e2					742		1.83e4							0.000
FUNCTION5 DCDPE			0.000e0					523		0.00e0							

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:42:49 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-04, Name: 21082713, Date: 27-Aug-2021, Time: 14:42:42, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.34	1.439e2	1.201e2	1.327	1.20	1.05	5.0	YES	NO	bb	bb	0.061

Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-Furans	21.10	1.017e2	1.204e2	1.158	0.84	0.77	2.3	NO	NO	bd	bd	0.058
2	1234678-HpCDF	38.34	1.439e2	1.201e2	1.327	1.20	1.05	5.0	YES	NO	bb	bb	0.061

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:42:49 Pacific Daylight Time

ID: 21G0108-04, Name: 21082713, Date: 27-Aug-2021, Time: 14:42:42, Conditions: AUTOSPEC01, User: pk

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.80	7.753e2	7.135e2	1.068	1.09	1.05	18.3	YES	NO	bb	bb	0.592

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	OCDD	44.43	4.686e3	5.040e3	1.181	0.93	0.89	109.9	YES	NO	bb	bb	3.788
2	1234678-HpCDD	39.80	7.753e2	7.135e2	1.068	1.09	1.05	18.3	YES	NO	bb	bb	0.592

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-Furans	21.10	1.017e2	1.204e2	1.158	0.84	0.77	2.3	NO	NO	bd	bd	0.058
2	1234678-HpCDF	38.34	1.439e2	1.201e2	1.327	1.20	1.05	5.0	YES	NO	bb	bb	0.061
3	OCDD	44.43	4.686e3	5.040e3	1.181	0.93	0.89	109.9	YES	NO	bb	bb	3.788
4	1234678-HpCDD	39.80	7.753e2	7.135e2	1.068	1.09	1.05	18.3	YES	NO	bb	bb	0.592

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	21.94	3.500e5					5.3	YES		bd		
2	FUNCTION1 PFK	21.78	6.286e5					6.6	YES		db		
3	FUNCTION1 PFK	21.59	3.217e5					4.6	YES		dd		
4	FUNCTION1 PFK	21.48	1.660e5					2.8	NO		bd		
5	FUNCTION1 PFK	21.33	1.131e5					2.4	NO		bb		
6	FUNCTION1 PFK	21.21	8.557e4					2.1	NO		bb		
7	FUNCTION1 PFK	24.61	1.027e5					1.7	NO		dd		
8	FUNCTION1 PFK	24.52	3.091e5					2.3	NO		bd		
9	FUNCTION1 PFK	23.76	2.884e5					3.3	YES		db		
10	FUNCTION1 PFK	23.57	4.002e5					4.4	YES		bd		
11	FUNCTION1 PFK	23.39	3.668e5					5.0	YES		db		
12	FUNCTION1 PFK	23.28	1.322e5					3.1	YES		dd		
13	FUNCTION1 PFK	23.21	9.774e4					2.8	NO		dd		
14	FUNCTION1 PFK	23.16	5.469e4					2.1	NO		bd		
15	FUNCTION1 PFK	23.02	3.874e4					1.3	NO		db		
16	FUNCTION1 PFK	22.84	5.777e5					4.4	YES		dd		
17	FUNCTION1 PFK	22.75	2.937e5					4.5	YES		bd		
18	FUNCTION1 PFK	22.56	4.298e5					6.0	YES		db		
19	FUNCTION1 PFK	22.46	1.265e5					4.0	YES		dd		
20	FUNCTION1 PFK	22.39	4.985e4					1.5	NO		bd		
21	FUNCTION1 PFK	22.21	2.127e5					2.1	NO		bb		
22	FUNCTION1 PFK	22.01	2.337e5					5.6	YES		db		
23	FUNCTION1 PFK	27.03	4.642e4					1.2	NO		db		
24	FUNCTION1 PFK	26.95	8.031e3					0.6	NO		bd		
25	FUNCTION1 PFK	26.64	4.177e4					1.5	NO		db		
26	FUNCTION1 PFK	26.58	4.983e4					1.8	NO		bd		
27	FUNCTION1 PFK	26.20	1.720e4					0.7	NO		bb		
28	FUNCTION1 PFK	25.94	7.873e4					1.5	NO		db		
29	FUNCTION1 PFK	25.88	6.712e3					0.5	NO		bd		
30	FUNCTION1 PFK	25.78	3.816e3					0.4	NO		bb		
31	FUNCTION1 PFK	25.72	3.947e4					1.3	NO		db		
32	FUNCTION1 PFK	25.67	1.079e5					1.4	NO		dd		
33	FUNCTION1 PFK	25.52	5.113e4					1.3	NO		dd		
34	FUNCTION1 PFK	25.46	6.163e4					1.9	NO		dd		
35	FUNCTION1 PFK	25.32	1.395e5					2.1	NO		bd		
36	FUNCTION1 PFK	25.20	6.369e3					0.6	NO		bb		
37	FUNCTION1 PFK	24.82	2.018e5					3.1	YES		db		

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION1 PFK	24.75	7.682e4					2.0	NO		dd		
39	FUNCTION1 PFK	27.36	1.035e4					0.6	NO		bb		
40	FUNCTION1 PFK	27.30	4.948e3					0.5	NO		bb		
41	FUNCTION1 PFK	27.24	5.527e3					0.5	NO		bb		
42	FUNCTION1 PFK	27.18	7.616e3					0.7	NO		bb		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	30.87	2.495e4					1.3	NO		bd		0.000
2	FUNCTION2 PFK	30.44	2.878e4					1.2	NO		db		0.000
3	FUNCTION2 PFK	30.32	4.805e4					1.5	NO		bd		0.000
4	FUNCTION2 PFK	29.97	2.875e3					0.5	NO		bb		0.000
5	FUNCTION2 PFK	29.88	5.025e3					0.8	NO		bb		0.000
6	FUNCTION2 PFK	29.84	3.360e3					0.5	NO		bb		0.000
7	FUNCTION2 PFK	29.76	1.280e4					0.8	NO		bb		0.000
8	FUNCTION2 PFK	29.45	1.579e4					1.1	NO		bb		0.000
9	FUNCTION2 PFK	27.69	6.356e4					2.0	NO		db		0.000
10	FUNCTION2 PFK	27.52	3.264e5					6.2	YES		dd		0.000
11	FUNCTION2 PFK	27.48	1.916e5					6.5	YES		bd		0.000
12	FUNCTION2 PFK	32.18	2.629e3					0.4	NO		bb		0.000
13	FUNCTION2 PFK	32.03	2.251e4					1.1	NO		bb		0.000
14	FUNCTION2 PFK	30.99	1.659e4					1.2	NO		bb		0.000
15	FUNCTION2 PFK	30.93	2.577e4					1.4	NO		db		0.000

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	39.12	5.301e3					0.7	NO		bb		
2	FUNCTION4 PFK	38.93	2.479e4					1.2	NO		bb		
3	FUNCTION4 PFK	38.62	1.648e4					0.7	NO		bb		
4	FUNCTION4 PFK	38.16	1.791e4					1.0	NO		db		
5	FUNCTION4 PFK	38.07	2.980e4					1.4	NO		bd		
6	FUNCTION4 PFK	37.83	4.975e3					0.6	NO		bb		
7	FUNCTION4 PFK	37.69	3.455e4					1.9	NO		db		
8	FUNCTION4 PFK	37.64	2.346e4					1.7	NO		bd		
9	FUNCTION4 PFK	37.55	1.901e4					1.8	NO		db		
10	FUNCTION4 PFK	37.50	2.200e4					1.8	NO		bd		
11	FUNCTION4 PFK	41.65	1.360e4					1.5	NO		db		
12	FUNCTION4 PFK	41.61	2.298e4					1.4	NO		bd		
13	FUNCTION4 PFK	41.51	3.185e3					0.7	NO		bb		
14	FUNCTION4 PFK	41.40	6.148e3					0.7	NO		bb		
15	FUNCTION4 PFK	41.36	1.608e3					0.4	NO		bb		
16	FUNCTION4 PFK	40.73	5.218e3					0.7	NO		bb		
17	FUNCTION4 PFK	40.61	6.818e3					0.7	NO		bb		
18	FUNCTION4 PFK	40.49	2.443e3					0.5	NO		bb		
19	FUNCTION4 PFK	40.34	1.359e4					1.2	NO		db		
20	FUNCTION4 PFK	40.25	3.107e4					1.4	NO		bd		
21	FUNCTION4 PFK	40.03	2.836e4					1.1	NO		bb		
22	FUNCTION4 PFK	39.76	7.216e3					0.9	NO		bb		
23	FUNCTION4 PFK	39.70	3.000e4					1.6	NO		bb		
24	FUNCTION4 PFK	39.44	1.608e3					0.4	NO		bb		
25	FUNCTION4 PFK	39.37	3.180e4					1.6	NO		bb		
26	FUNCTION4 PFK	39.29	1.096e4					1.1	NO		bb		
27	FUNCTION4 PFK	42.24	9.576e3					1.0	NO		bb		
28	FUNCTION4 PFK	41.88	1.265e4					0.7	NO		bb		
29	FUNCTION4 PFK	41.78	2.578e3					0.4	NO		bb		
30	FUNCTION4 PFK	41.74	9.538e3					0.9	NO		db		
31	FUNCTION4 PFK	41.69	8.281e3					0.9	NO		bd		

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	43.27	6.060e3					1.2	NO		bb		
2	FUNCTION5 PFK	43.17	1.752e4					1.3	NO		bb		
3	FUNCTION5 PFK	43.07	4.368e3					0.9	NO		bb		
4	FUNCTION5 PFK	42.95	7.369e3					1.0	NO		bb		
5	FUNCTION5 PFK	42.87	6.918e3					1.1	NO		db		
6	FUNCTION5 PFK	42.83	8.100e3					1.2	NO		bd		
7	FUNCTION5 PFK	42.60	2.529e4					1.8	NO		bb		
8	FUNCTION5 PFK	42.53	1.261e4					2.4	NO		bb		
9	FUNCTION5 PFK	42.50	3.397e3					1.0	NO		db		
10	FUNCTION5 PFK	42.47	8.092e3					1.3	NO		bd		
11	FUNCTION5 PFK	45.97	1.276e3					0.5	NO		db		
12	FUNCTION5 PFK	45.94	9.197e3					1.3	NO		dd		
13	FUNCTION5 PFK	45.91	2.294e3					0.6	NO		bd		
14	FUNCTION5 PFK	45.53	1.639e3					0.7	NO		bb		
15	FUNCTION5 PFK	45.29	6.351e3					1.3	NO		bb		
16	FUNCTION5 PFK	45.09	3.263e3					0.8	NO		bb		
17	FUNCTION5 PFK	44.82	7.807e3					0.8	NO		bb		
18	FUNCTION5 PFK	44.66	2.252e3					0.6	NO		bb		
19	FUNCTION5 PFK	44.61	3.561e3					0.8	NO		bb		
20	FUNCTION5 PFK	44.57	3.182e4					2.1	NO		db		
21	FUNCTION5 PFK	44.49	3.452e4					1.5	NO		bd		
22	FUNCTION5 PFK	44.30	2.179e4					0.6	NO		bb		

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ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	21.57	7.553e1					1.8	NO		bd		0.000
2	FUNCTION1 HXCD...	21.35	1.375e2					1.7	NO		db		0.000
3	FUNCTION1 HXCD...	21.21	8.530e1					2.8	NO		bd		0.000
4	FUNCTION1 HXCD...	26.79	9.136e1					1.5	NO		bb		0.000
5	FUNCTION1 HXCD...	26.55	8.064e1					2.6	NO		bb		0.000
6	FUNCTION1 HXCD...	26.41	1.057e2					1.9	NO		db		0.000
7	FUNCTION1 HXCD...	26.32	3.323e2					2.8	NO		bd		0.000
8	FUNCTION1 HXCD...	25.20	8.340e1					1.4	NO		bb		0.000
9	FUNCTION1 HXCD...	22.74	9.511e1					1.7	NO		bb		0.000
10	FUNCTION1 HXCD...	22.15	1.045e2					1.5	NO		bb		0.000
11	FUNCTION1 HXCD...	21.80	7.493e1					1.4	NO		db		0.000
12	FUNCTION1 HXCD...	21.68	9.984e1					1.4	NO		dd		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	24.43	1.263e2					3.7	YES		bd		0.000
2	FUNCTION1 HPCD...	24.19	1.193e2					1.9	NO		db		0.000
3	FUNCTION1 HPCD...	24.01	9.211e1					0.9	NO		dd		0.000
4	FUNCTION1 HPCD...	23.95	1.325e2					2.9	NO		bd		0.000
5	FUNCTION1 HPCD...	22.00	1.111e2					2.7	NO		bb		0.000
6	FUNCTION1 HPCD...	21.80	1.158e2					1.9	NO		bb		0.000
7	FUNCTION1 HPCD...	26.59	8.347e1					2.6	NO		db		0.000
8	FUNCTION1 HPCD...	26.55	1.256e2					2.9	NO		bd		0.000
9	FUNCTION1 HPCD...	26.21	7.309e1					1.9	NO		bb		0.000
10	FUNCTION1 HPCD...	25.49	1.075e2					2.7	NO		bb		0.000
11	FUNCTION1 HPCD...	25.41	9.122e1					2.4	NO		bb		0.000
12	FUNCTION1 HPCD...	24.63	3.885e2					3.0	NO		db		0.000
13	FUNCTION1 HPCD...	24.55	1.686e2					3.1	YES		dd		0.000

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ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	31.42	1.569e2					2.6	NO		bb		0.000
2	FUNCTION2 HPCD...	30.39	9.234e1					3.9	YES		bb		0.000
3	FUNCTION2 HPCD...	29.68	1.038e2					2.7	NO		db		0.000
4	FUNCTION2 HPCD...	29.57	1.576e2					5.6	YES		bd		0.000
5	FUNCTION2 HPCD...	29.17	1.636e2					3.6	YES		bb		0.000
6	FUNCTION2 HPCD...	27.92	8.734e1					1.5	NO		bb		0.000
7	FUNCTION2 HPCD...	27.56	1.094e2					3.4	YES		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.03	1.191e2					4.1	YES		bb		0.000
2	FUNCTION3 OCDPE	34.38	9.833e1					2.4	NO		db		0.000
3	FUNCTION3 OCDPE	34.24	7.317e1					2.3	NO		bd		0.000
4	FUNCTION3 OCDPE	34.05	9.295e1					2.6	NO		bb		0.000
5	FUNCTION3 OCDPE	32.82	8.479e1					2.1	NO		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	41.42	1.601e2					3.1	YES		bb		0.000
2	FUNCTION4 NCDPE	38.01	1.443e2					5.5	YES		db		0.000
3	FUNCTION4 NCDPE	37.96	6.547e2					16.0	YES		bd		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

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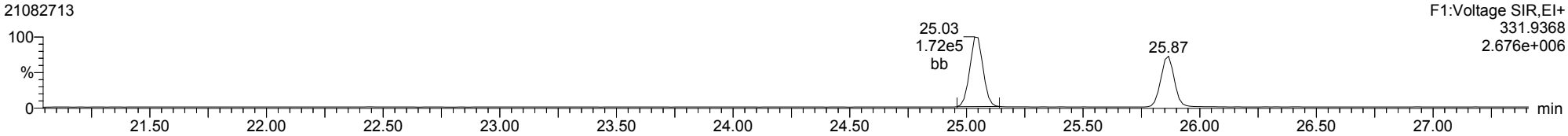
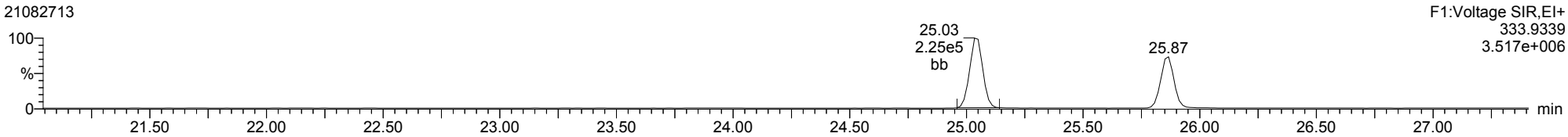
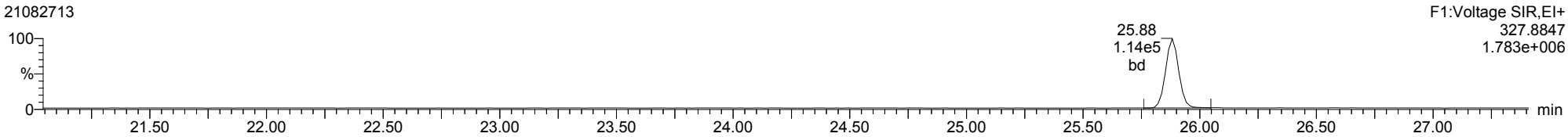
13C-1234-TCDD



13C-1234-TCDD



37CL-2378-TCDD



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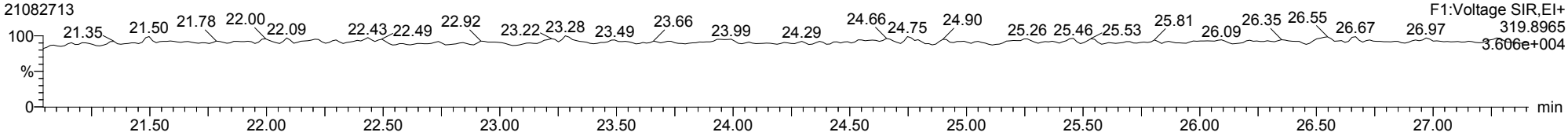
2378-TCDD



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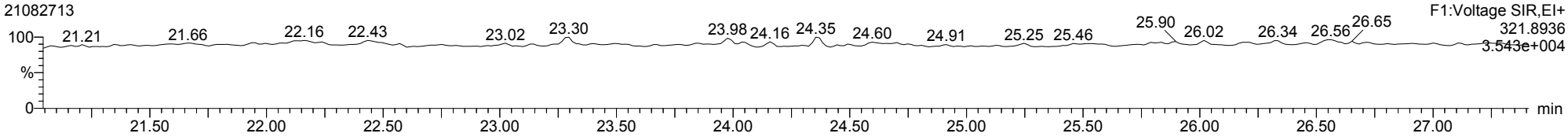

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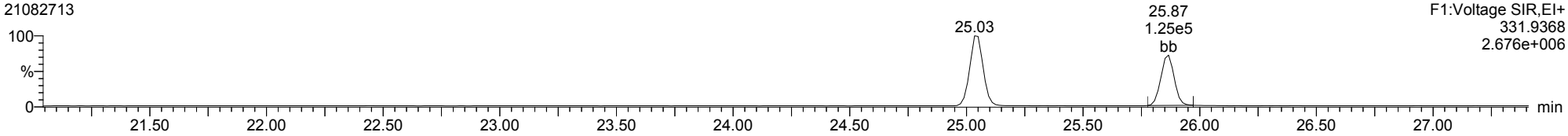

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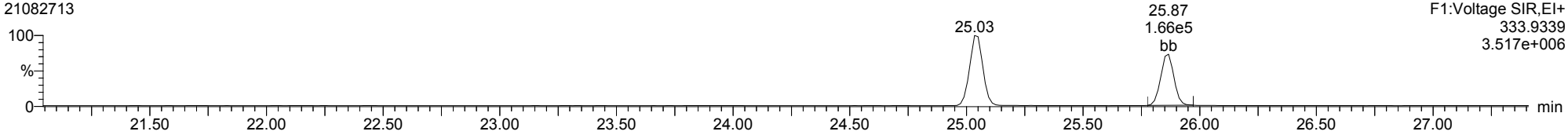

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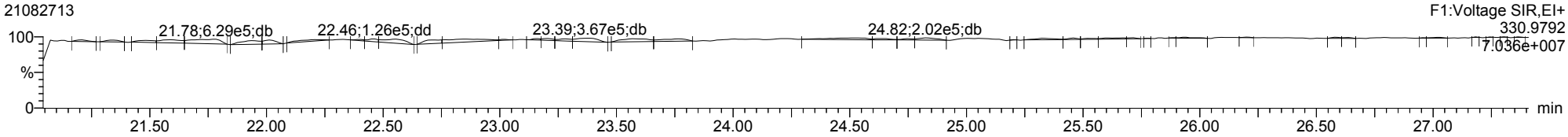

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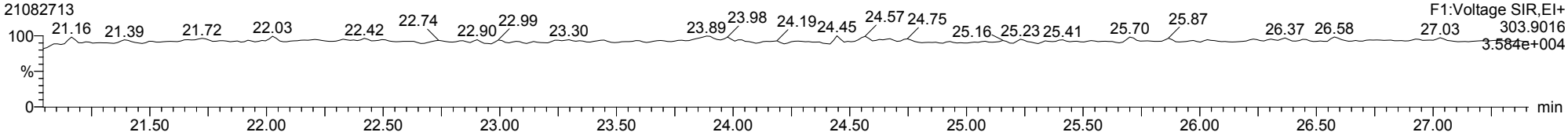

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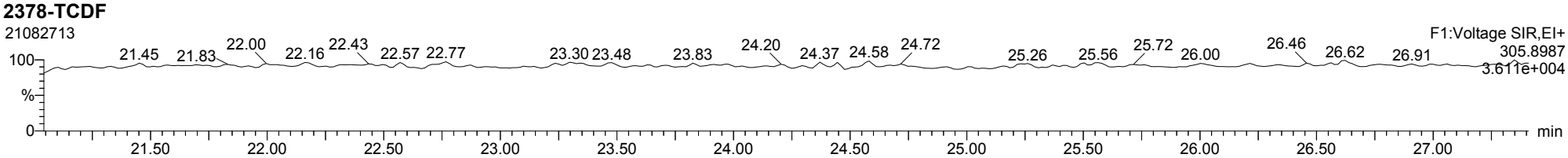

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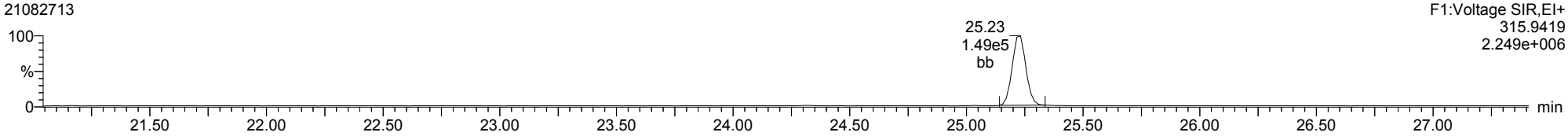

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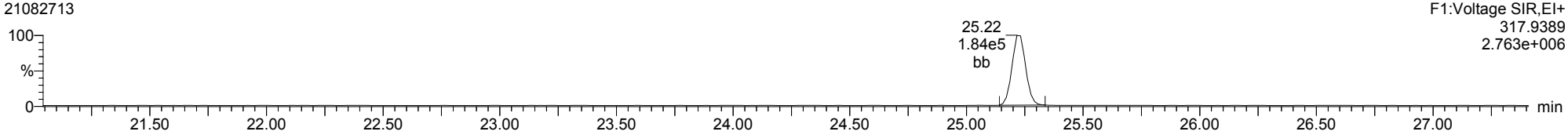
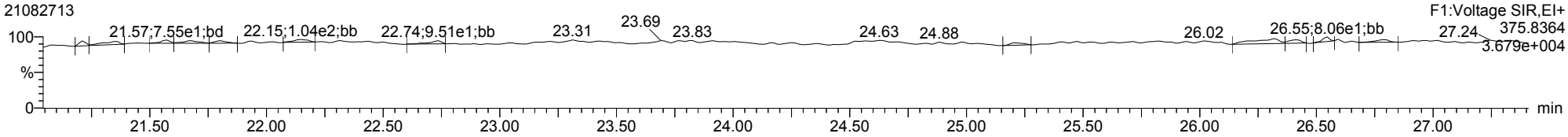


FUNCTION1 HXCDPE



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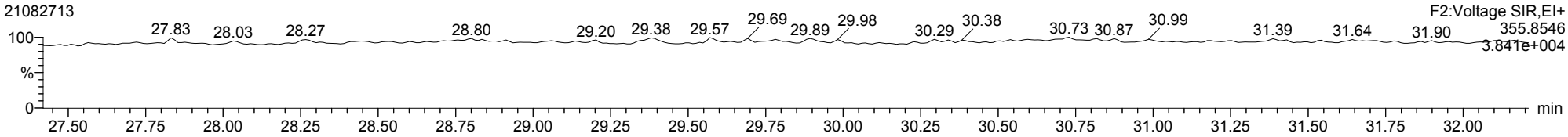
12378-PeCDD



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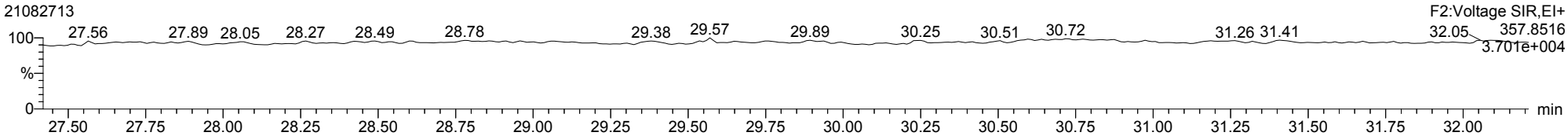

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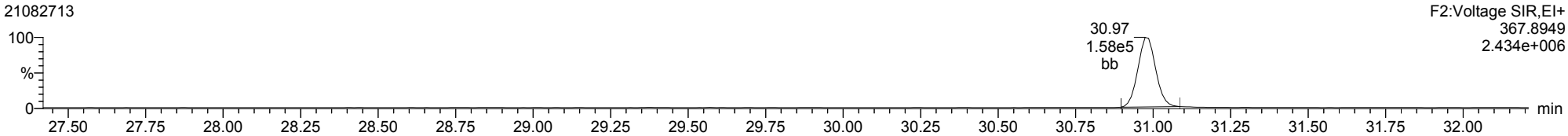

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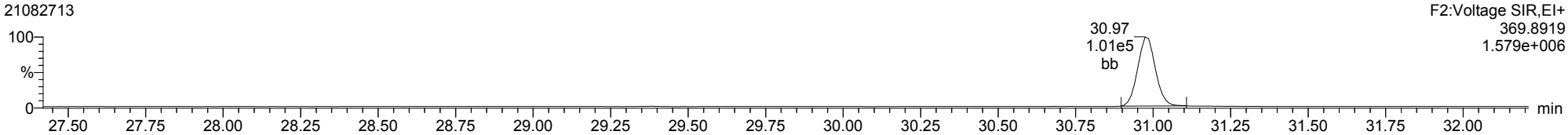

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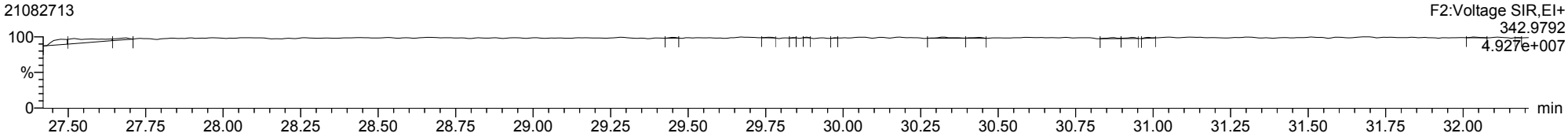

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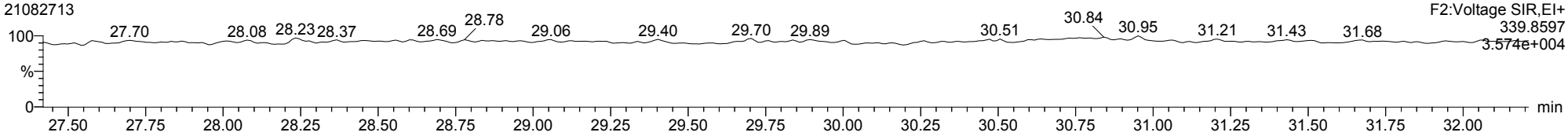

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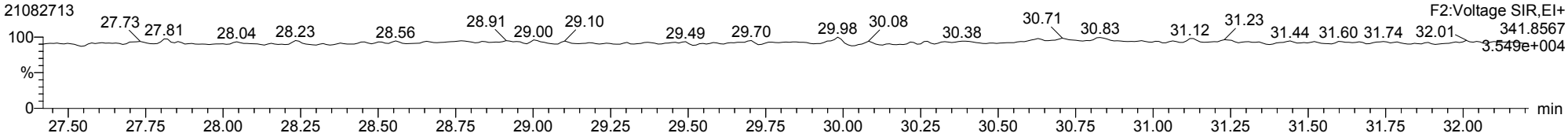

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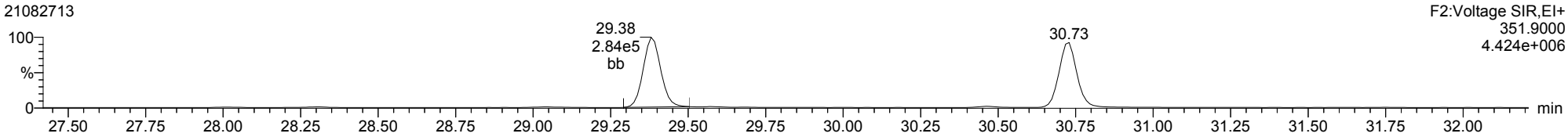

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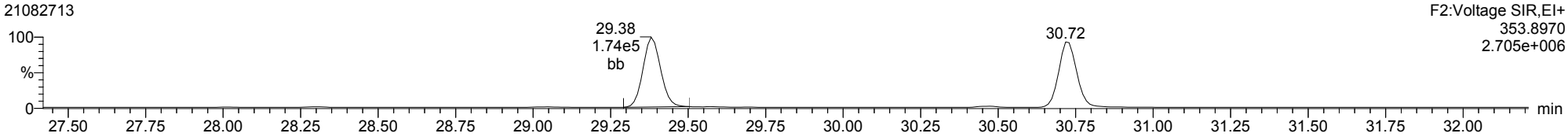
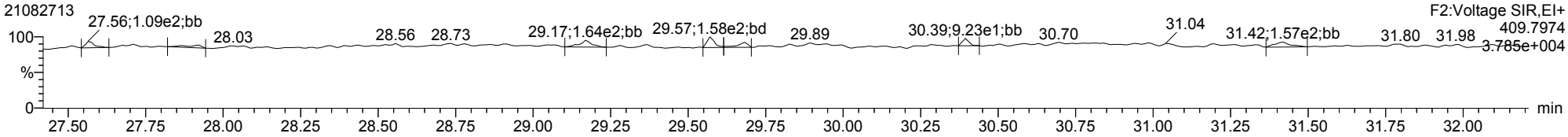


FUNCTION2 HPCDPE



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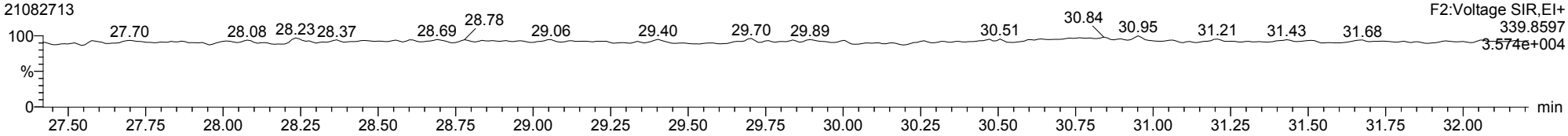
23478-PeCDF



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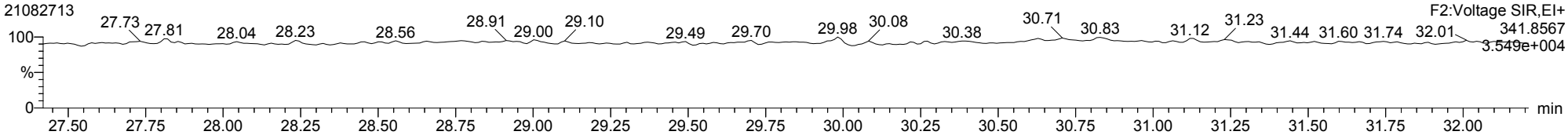

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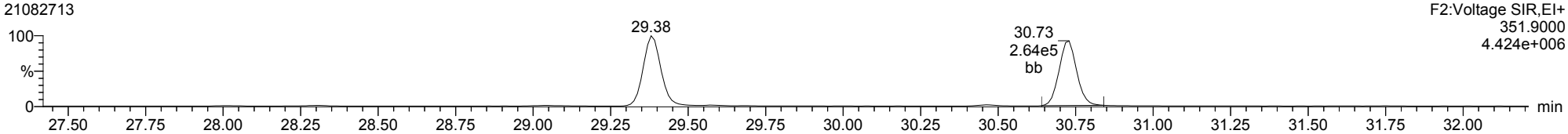

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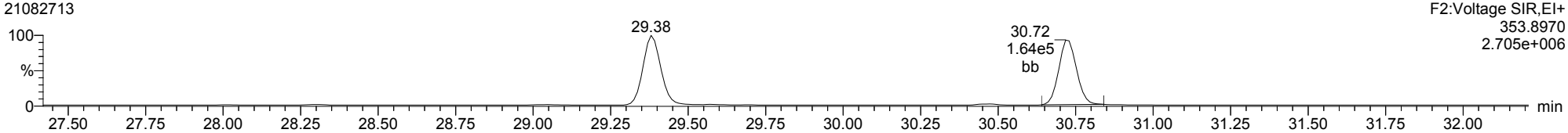

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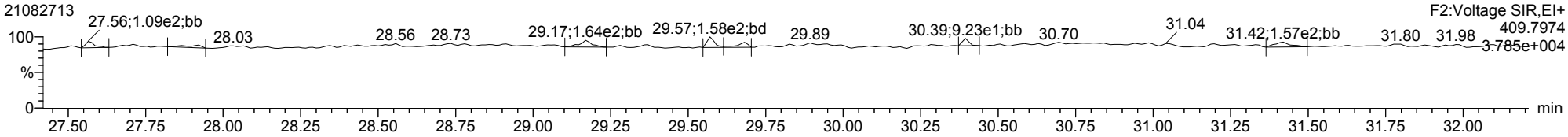

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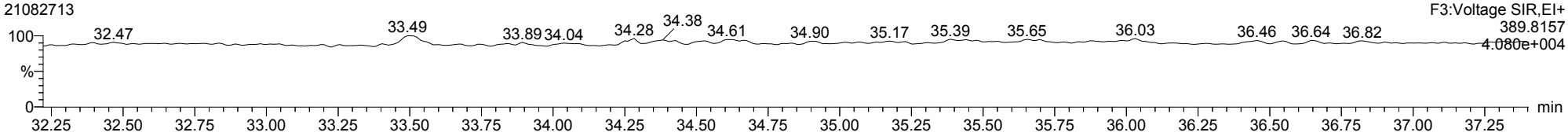

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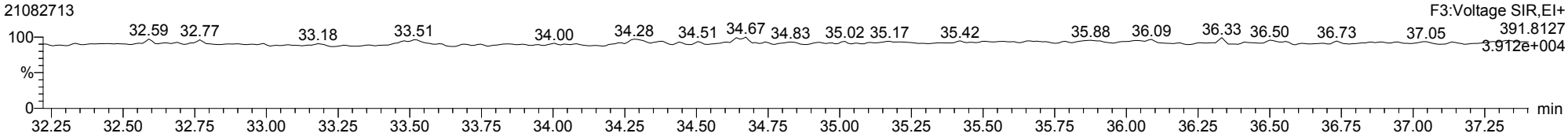

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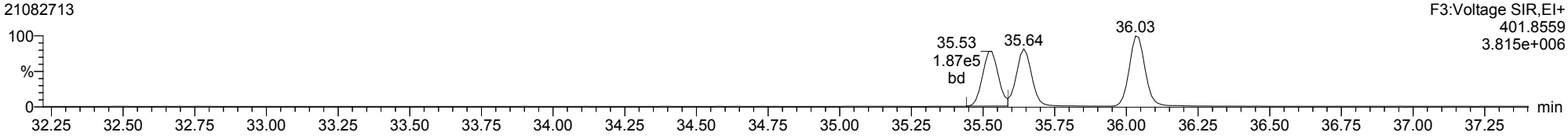

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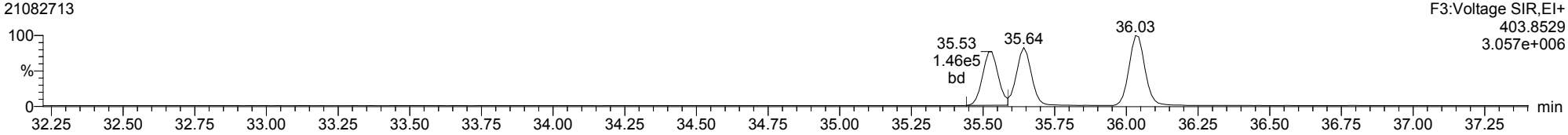

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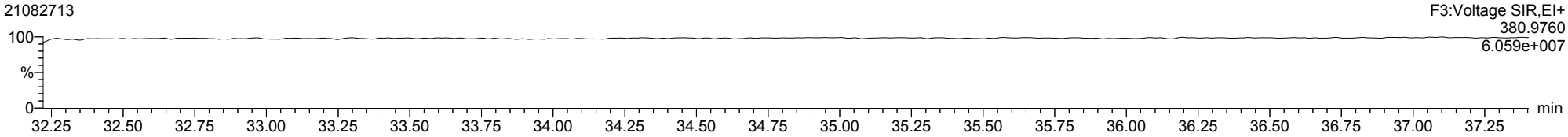

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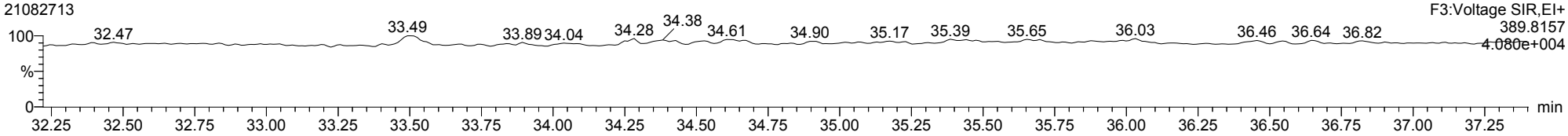

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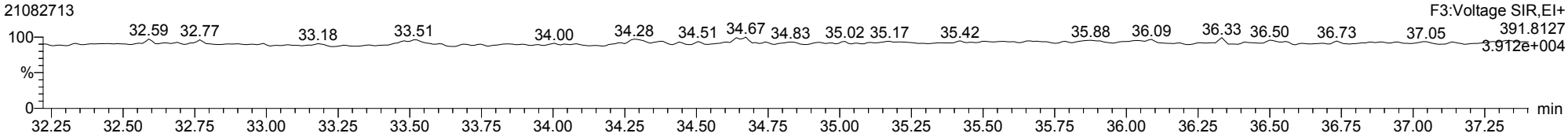

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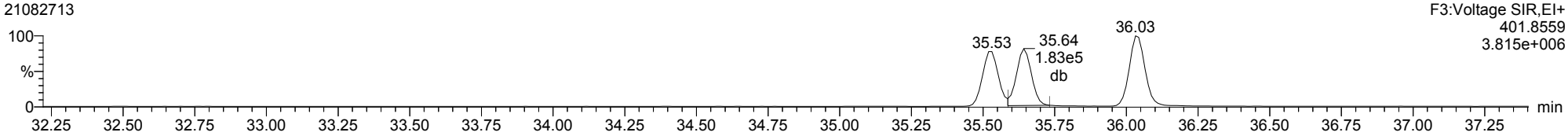

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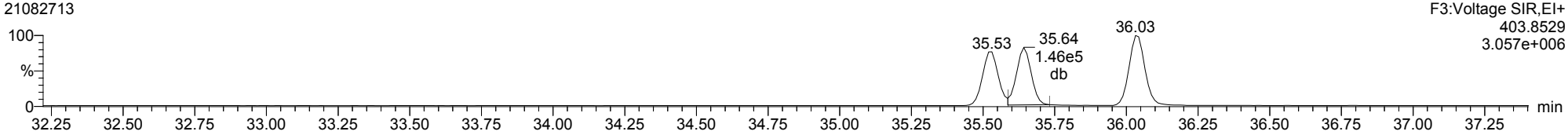

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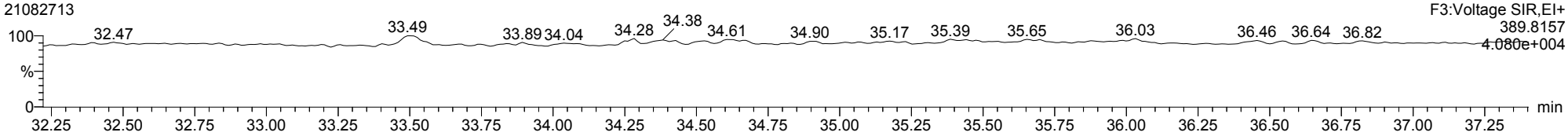

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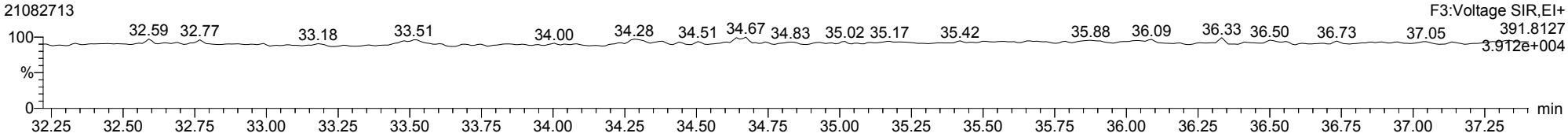

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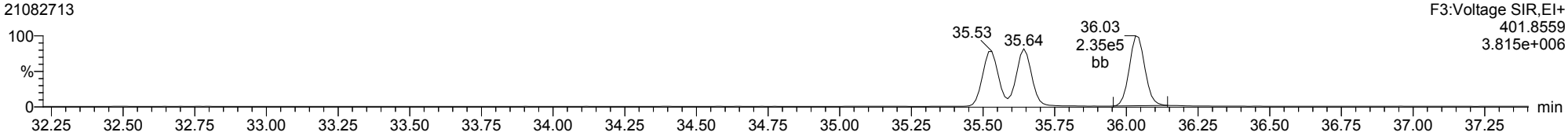

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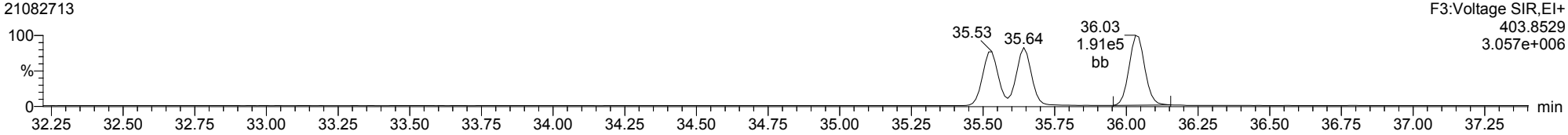

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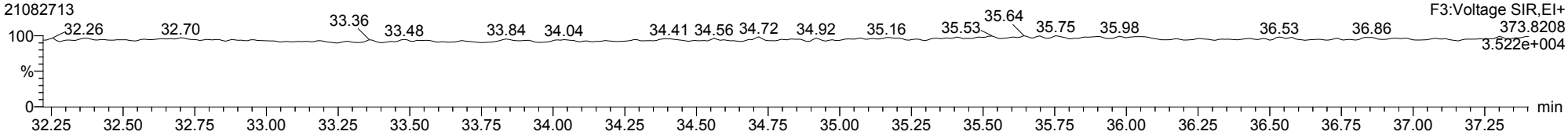

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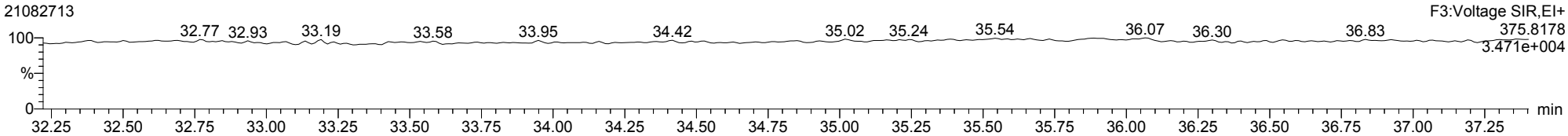

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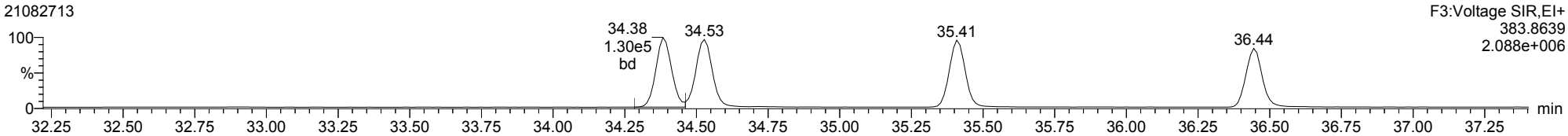

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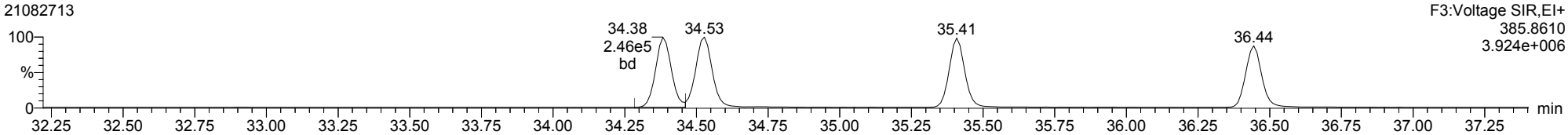
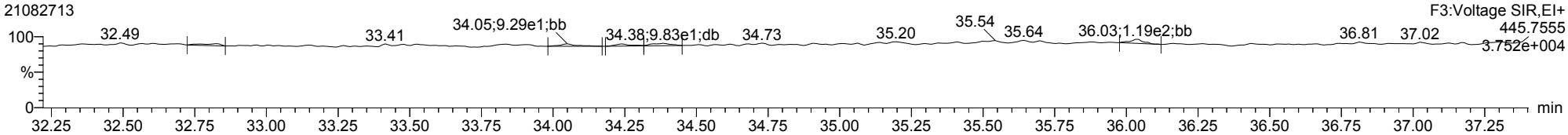


FUNCTION3 OCDPE



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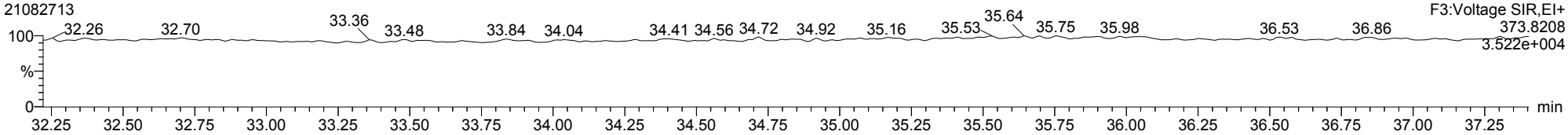
234678-HxCDF



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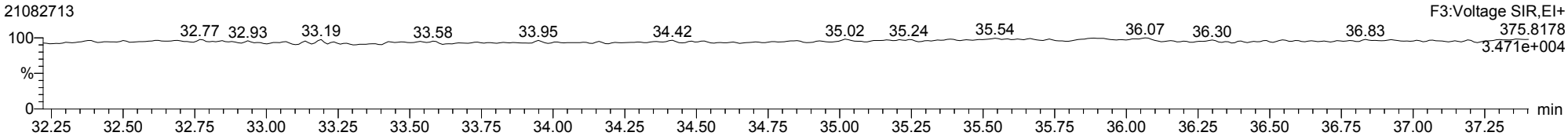

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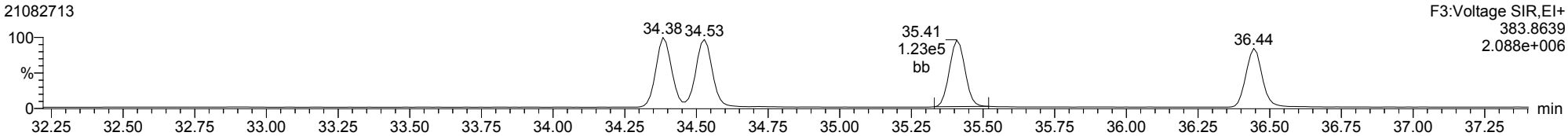

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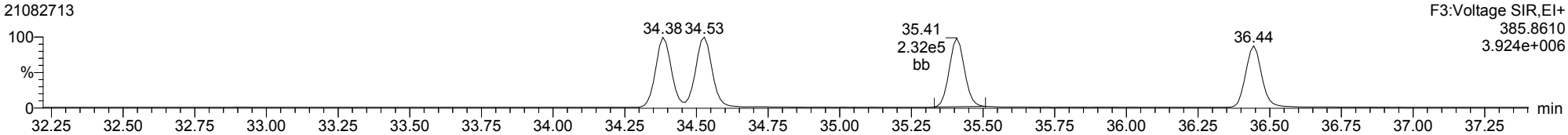
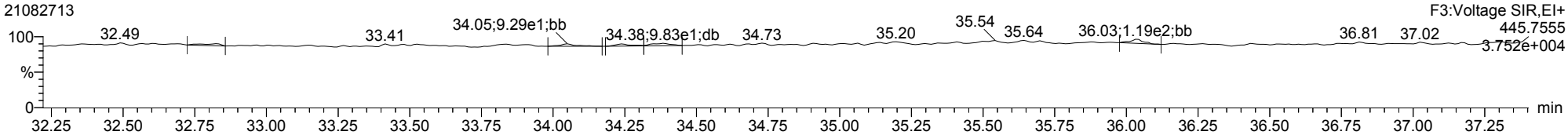


FUNCTION3 OCDPE



ID: 21G0108-04, Name: 21082713, Date: 27-Aug-2021, Time: 14:42:42, Conditions: AUTOSPEC01, User: pk

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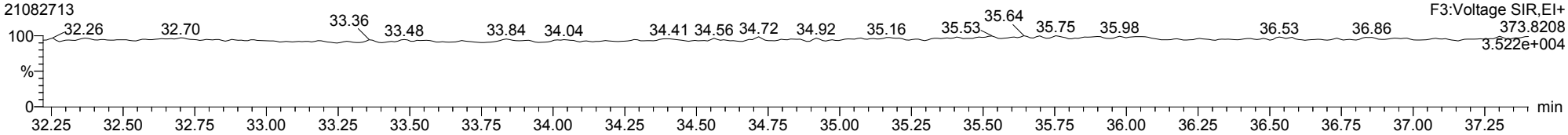

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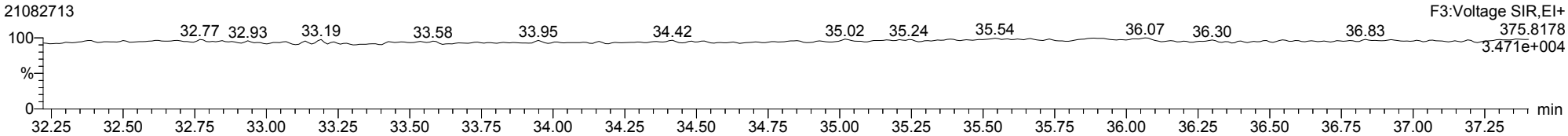

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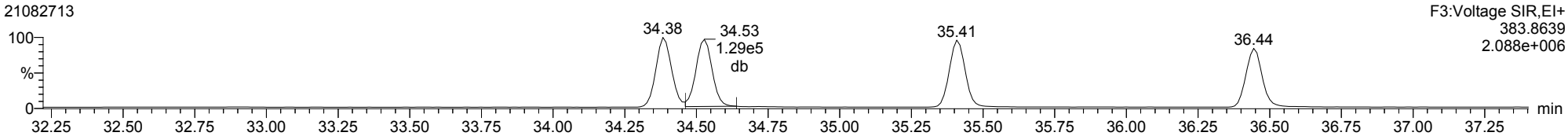

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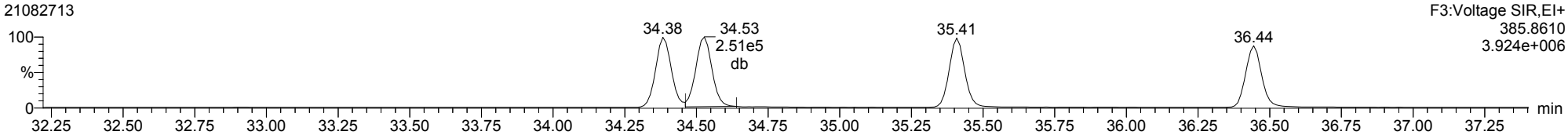

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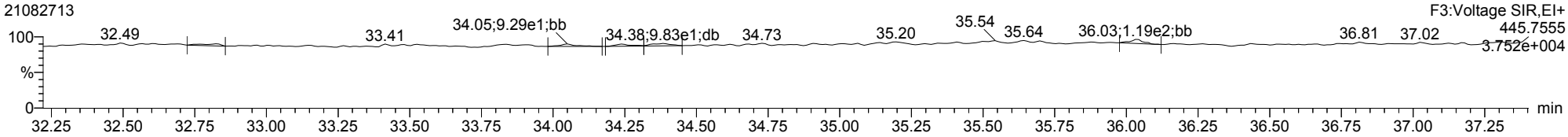

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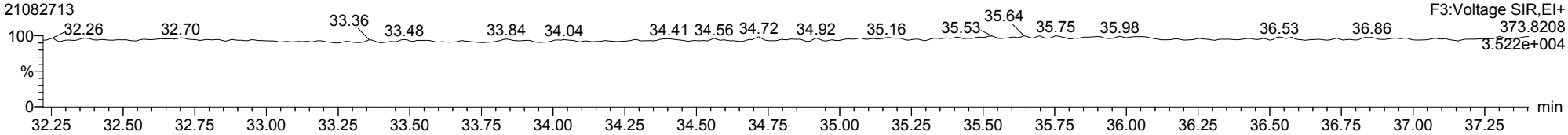

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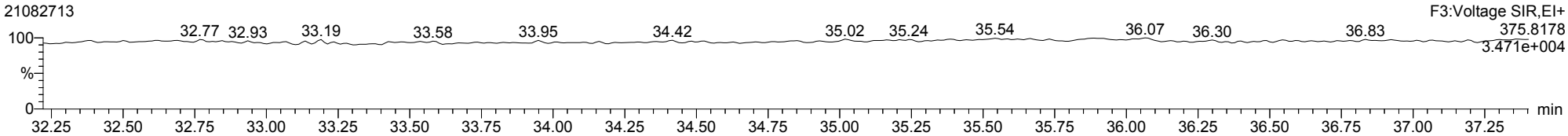

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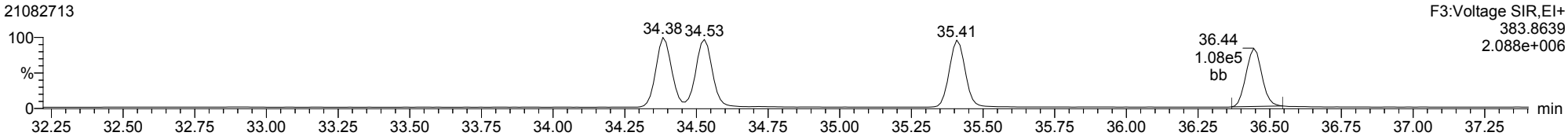

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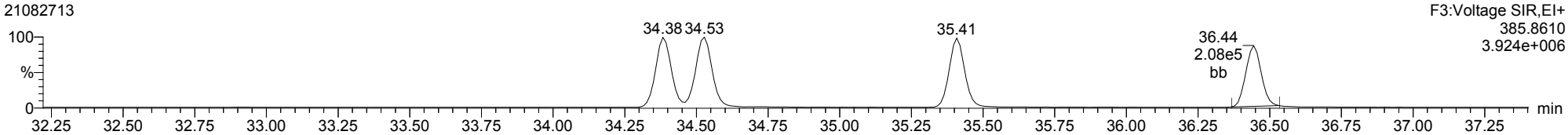

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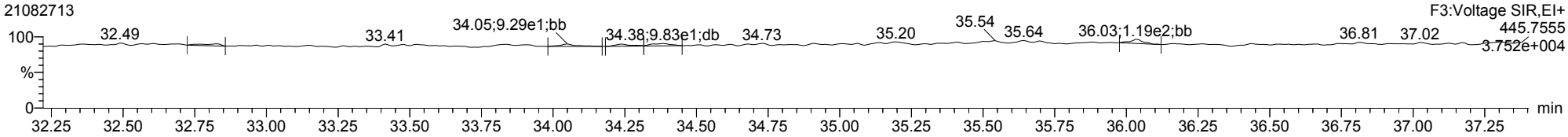

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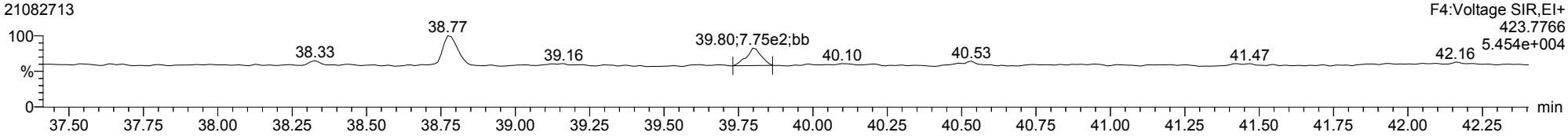

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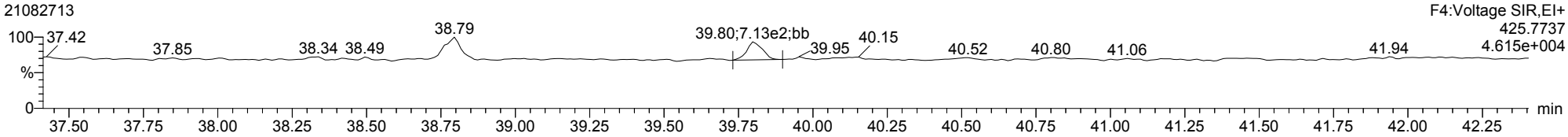

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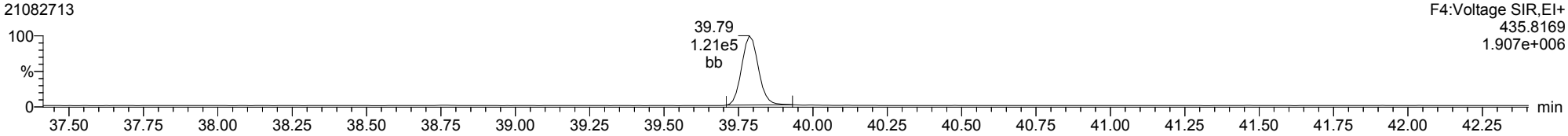

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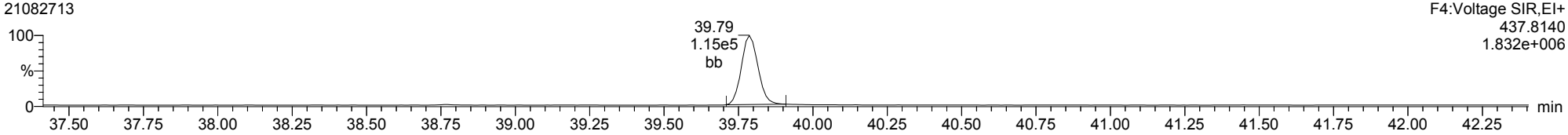
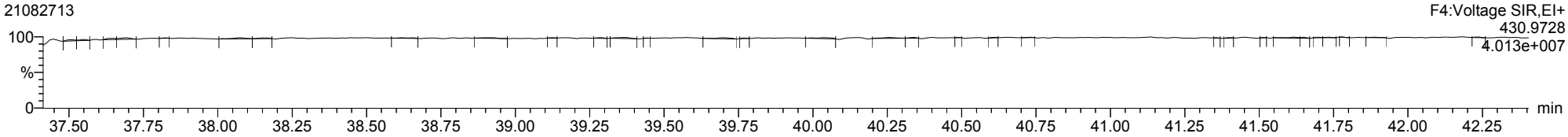


FUNCTION4 PFK



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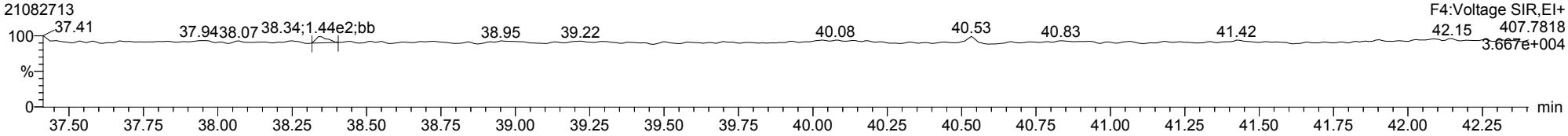

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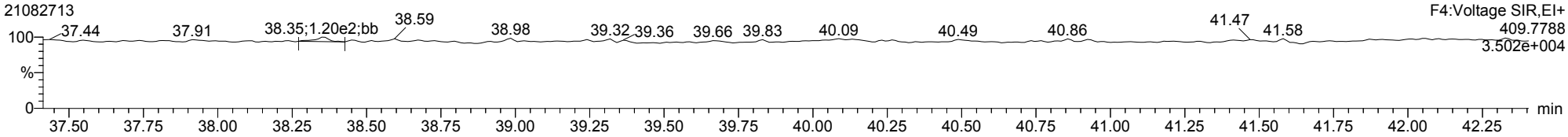

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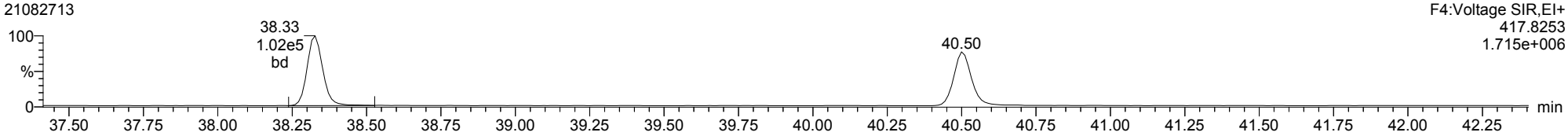

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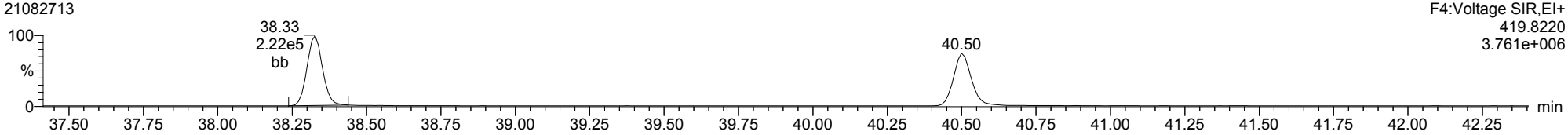

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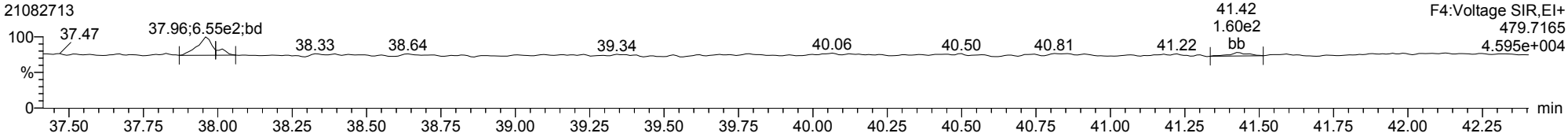

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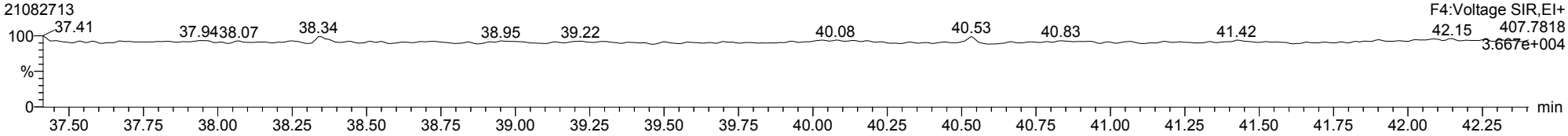

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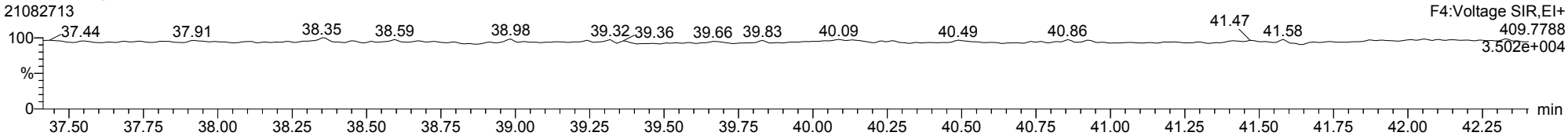

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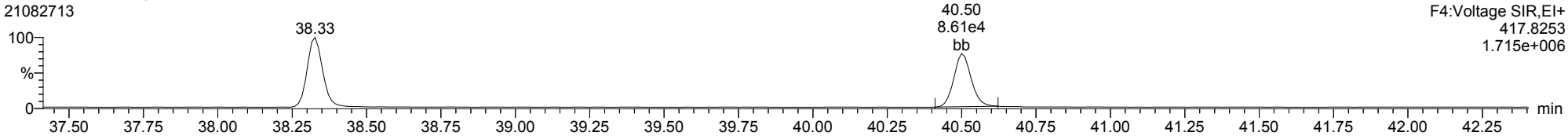

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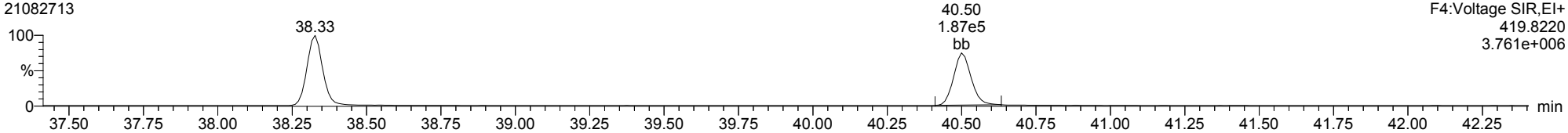

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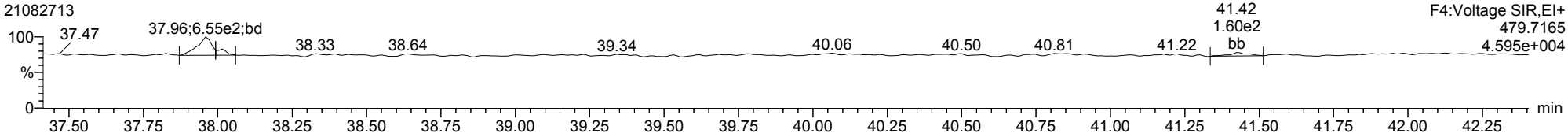

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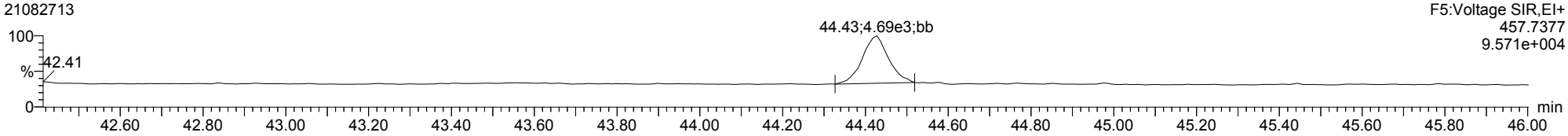
OCDD



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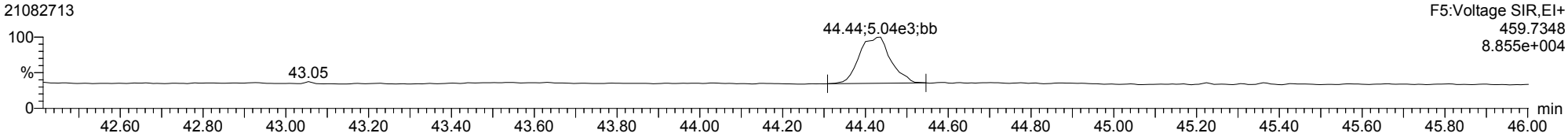

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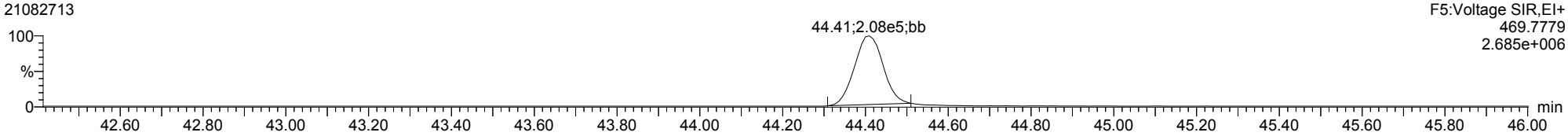

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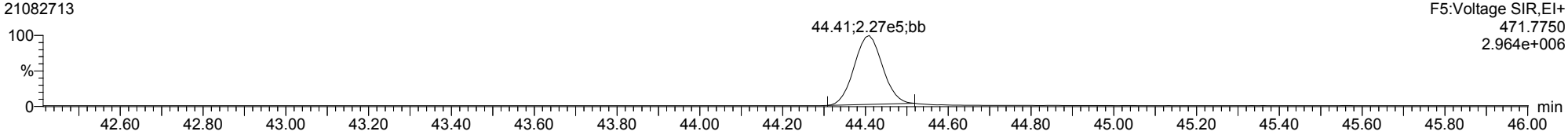

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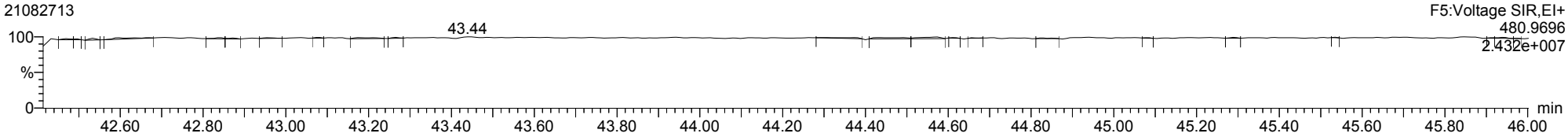

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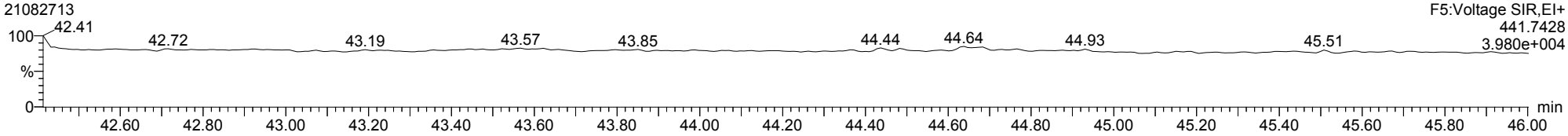
OCDF



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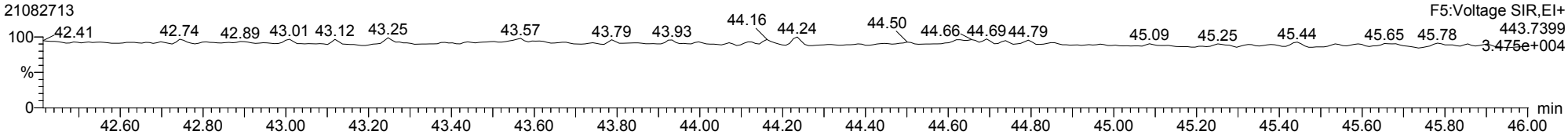

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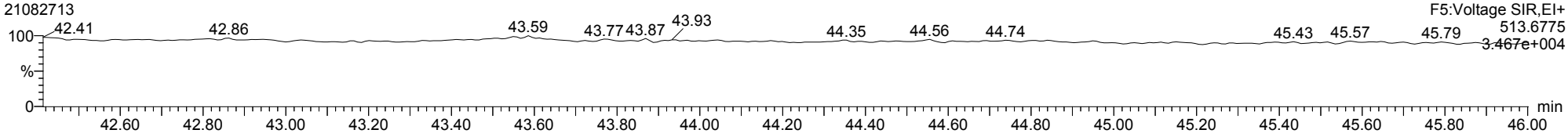

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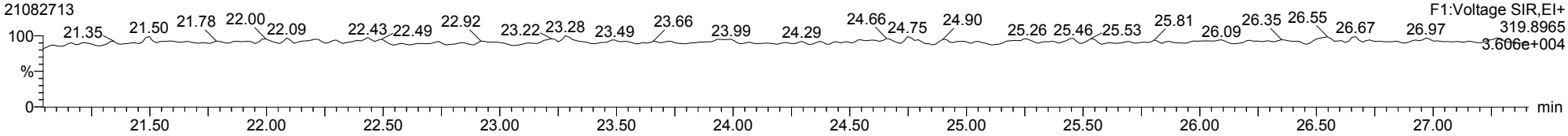
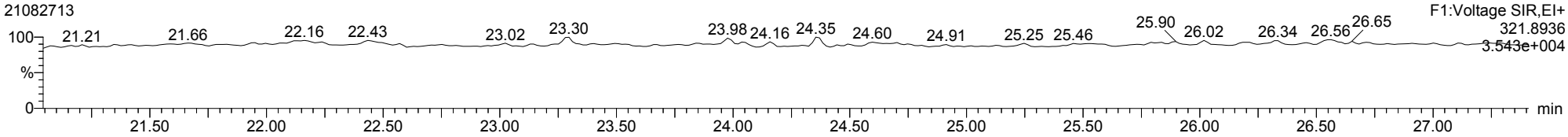


Total-tetradioxins



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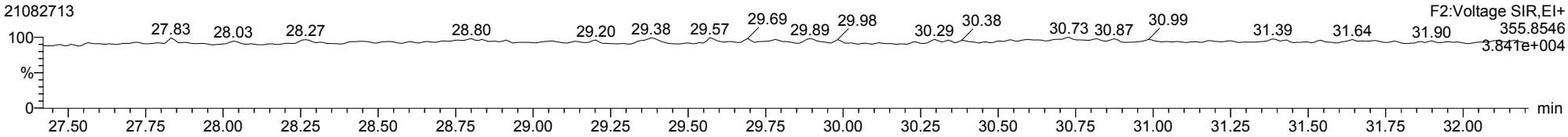

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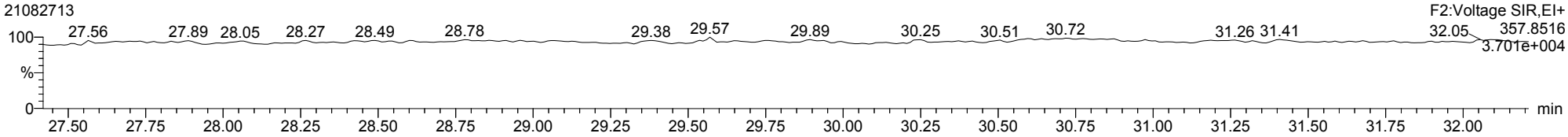

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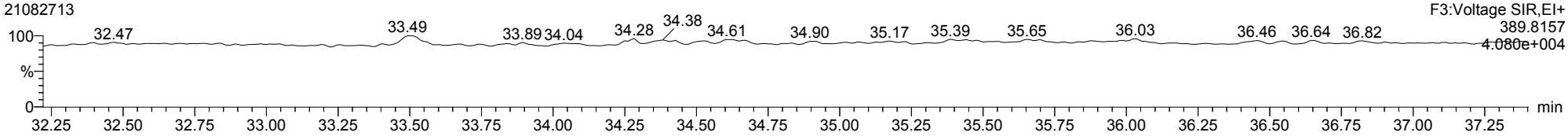

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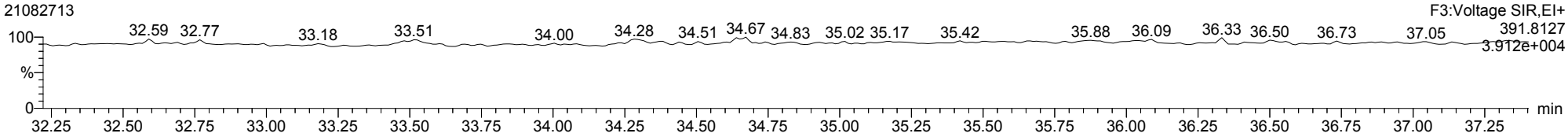

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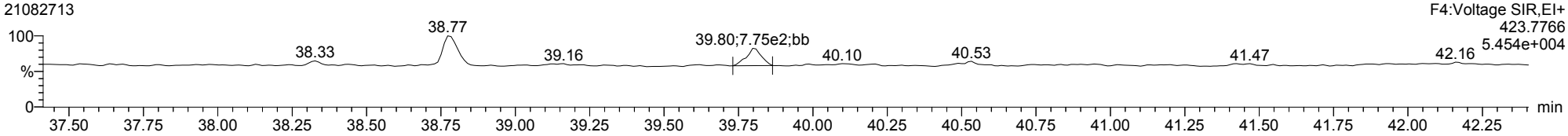

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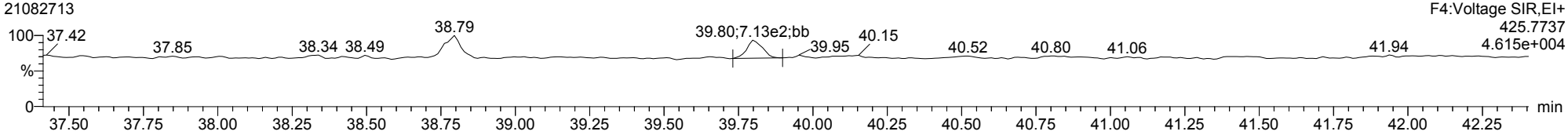

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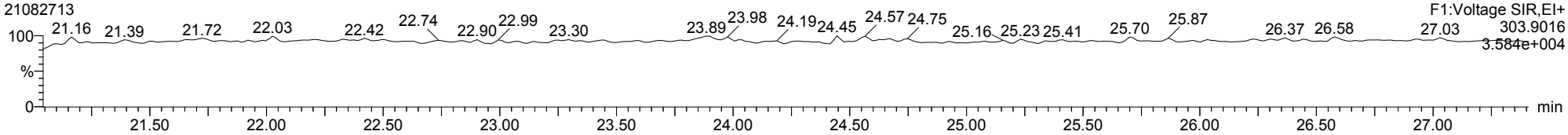

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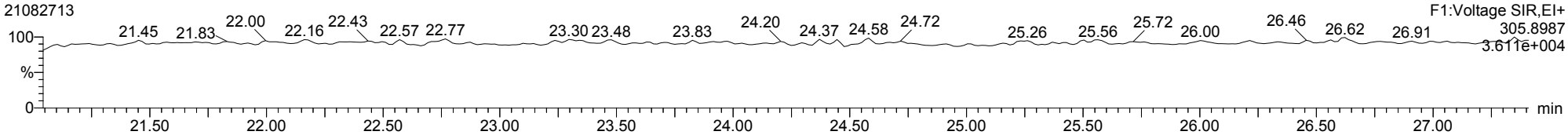

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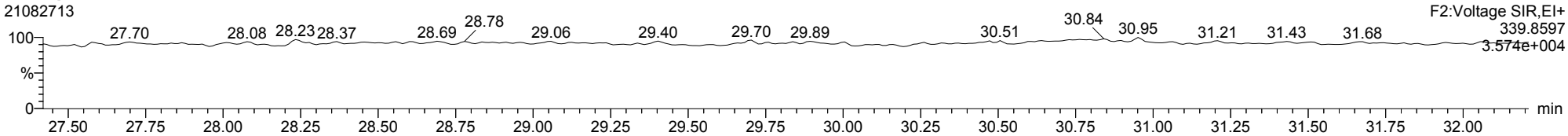

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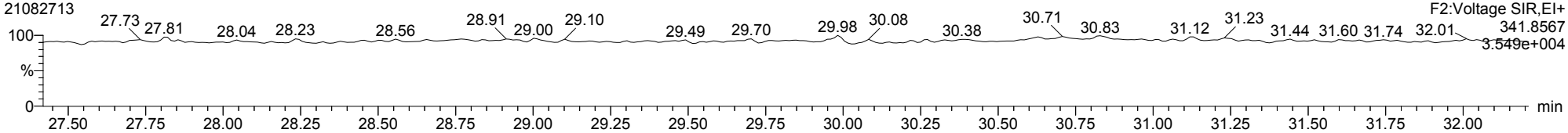

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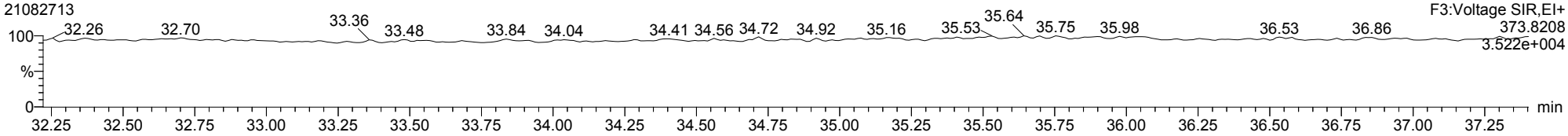

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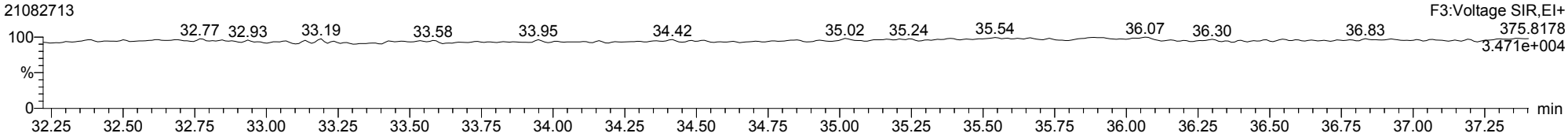

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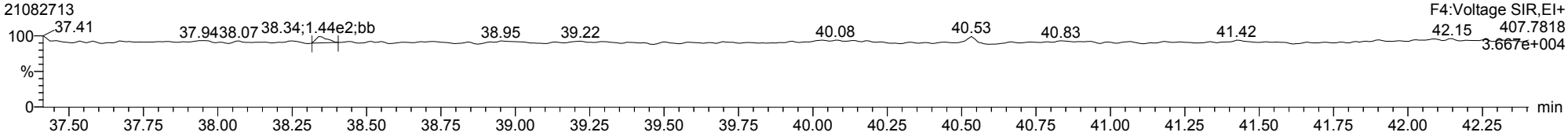

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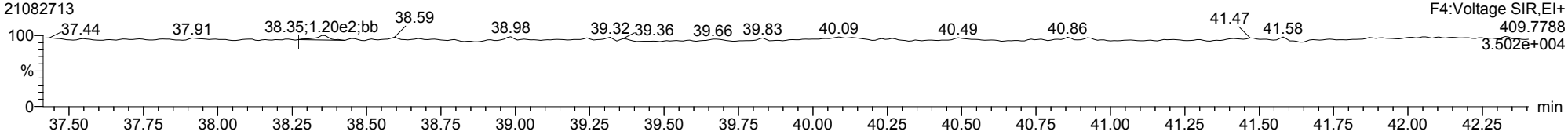

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT649B

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21G0108-06 C	File ID:	21082714
Sampled:	07/08/21 16:26	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 15:31
% Solids:	73.70	Preparation:	EPA 8290	Initial/Final:	13.59 g Wet / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1	0.813	0.655-0.886	0.341	0.998	1.62	ng/kg	X
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.344	0.998	ND	ng/kg	U
57117-41-6	1,2,3,7,8-PeCDF	1	2.062	1.318-1.783	0.338	0.998	1.05	ng/kg	EMPC
57117-31-4	2,3,4,7,8-PeCDF	1	1.499	1.318-1.783	0.306	0.998	2.95	ng/kg	
40321-76-4	1,2,3,7,8-PeCDD	1	1.400	1.318-1.783	0.283	0.998	1.97	ng/kg	
70648-26-9	1,2,3,4,7,8-HxCDF	1	1.236	1.054-1.426	0.178	0.998	13.8	ng/kg	
57117-44-9	1,2,3,6,7,8-HxCDF	1	1.301	1.054-1.426	0.174	0.998	5.54	ng/kg	
60851-34-5	2,3,4,6,7,8-HxCDF	1	1.236	1.054-1.426	0.169	0.998	5.56	ng/kg	
72918-21-9	1,2,3,7,8,9-HxCDF	1	1.120	1.054-1.426	0.200	0.998	2.55	ng/kg	
39227-28-6	1,2,3,4,7,8-HxCDD	1	1.446	1.054-1.426	0.295	0.998	1.71	ng/kg	EMPC
57653-85-7	1,2,3,6,7,8-HxCDD	1	1.171	1.054-1.426	0.289	0.998	7.57	ng/kg	
19408-74-3	1,2,3,7,8,9-HxCDD	1	1.338	1.054-1.426	0.313	0.998	4.23	ng/kg	
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.043	0.893-1.208	0.211	0.998	46.5	ng/kg	
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	1.025	0.893-1.208	0.271	0.998	7.09	ng/kg	
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.080	0.893-1.208	0.516	2.50	217	ng/kg	
39001-02-0	OCDF	1	0.865	0.757-1.024	0.302	2.50	139	ng/kg	
3268-87-9	OCDD	1	0.901	0.757-1.024	0.758	9.98	1420	ng/kg	B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			0.998	19.0	ng/kg
41903-57-5	Total TCDD	1	0.000			0.998	8.60	ng/kg
30402-15-4	Total PeCDF	1	0.000			0.998	35.8	ng/kg
36088-22-9	Total PeCDD	1	0.000			0.998	12.7	ng/kg
55684-94-1	Total HxCDF	1	0.000			0.998	83.6	ng/kg
34465-46-8	Total HxCDD	1	0.000			0.998	79.0	ng/kg
38998-75-3	Total HpCDF	1	0.000			0.998	159	ng/kg
37871-00-4	Total HpCDD	1	0.000			0.998	413	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 10.32
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 10.49

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT649B

Form 2
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21G0108-06	File ID:	21082714
Sampled:	07/08/21 16:26	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 15:31
Solids Wt%:	73.70	Preparation:	EPA 8290	Initial/Final:	13.59 g / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.812	0.655-0.886	0.258	55.2	24 - 169 %	
13C12-2,3,7,8-TCDD		0.757	0.655-0.886	0.231	59.8	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.574	1.318-1.783	0.201	75.9	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.596	1.318-1.783	0.211	77.0	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.545	1.318-1.783	0.219	77.7	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.520	0.434-0.587	0.207	59.5	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.520	0.434-0.587	0.192	55.6	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.521	0.434-0.587	0.212	58.5	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.516	0.434-0.587	0.256	63.5	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.274	1.054-1.426	0.202	67.4	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.220	1.054-1.426	0.186	63.5	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.461	0.374-0.506	0.193	67.6	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.450	0.374-0.506	0.236	70.5	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.049	0.893-1.208	0.222	71.7	23 - 140 %	
13C12-OCDD		0.935	0.757-1.024	0.269	87.3	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.085	59.9	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:42:59 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-06, Name: 21082714, Date: 27-Aug-2021, Time: 15:31:36, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.231	1.001	1.409e3	1.734e3	1.108	0.813	0.770	1827	1539	2.07e4	2.47e4	11.3	16.0	NO	dd	bd	0.809
12378-PeCDF	29.392	1.000	1.575e3	7.640e2	1.015	2.062	1.550	1983	1760	2.30e4	1.49e4	11.6	8.5	YES	bb	MM	0.526
23478-PeCDF	30.740	1.001	4.231e3	2.822e3	1.126	1.499	1.550	1983	1760	6.31e4	4.61e4	31.8	26.2	NO	dd	db	1.478
123478-HxCDF	34.394	1.000	1.384e4	1.119e4	1.017	1.236	1.240	850	792	2.11e5	1.78e5	247.9	224.2	NO	bd	dd	6.902
234678-HxCDF	35.375	0.999	5.556e3	4.494e3	1.052	1.236	1.240	850	792	6.15e4	4.96e4	72.4	62.5	NO	bb	bb	2.786
123678-HxCDF	34.539	1.001	5.859e3	4.503e3	1.037	1.301	1.240	850	792	9.22e4	7.46e4	108.4	94.1	NO	db	db	2.774
123789-HxCDF	36.422	0.999	2.142e3	1.913e3	1.030	1.120	1.240	850	792	3.48e4	2.72e4	40.9	34.3	NO	bb	bb	1.277
1234678-HpCDF	38.338	1.000	4.761e4	4.565e4	1.327	1.043	1.050	1228	1089	8.27e5	7.74e5	673.6	710.6	NO	bb	bb	23.270
1234789-HpCDF	40.510	1.000	5.944e3	5.801e3	1.283	1.025	1.050	1228	1089	8.42e4	8.53e4	68.6	78.3	NO	bd	bb	3.553
OCDF	44.637	1.005	9.934e4	1.148e5	1.447	0.865	0.890	1026	989	1.22e6	1.39e6	1190.7	1403.4	NO	bb	bb	69.769
2378-TCDD					0.920		0.770	1518	893								
12378-PeCDD	30.996	1.001	1.451e3	1.036e3	0.995	1.400	1.550	977	880	1.58e4	1.49e4	16.2	17.0	NO	MM	bb	0.987
123478-HxCDD	35.530	1.000	1.619e3	1.120e3	1.027	1.446	1.240	1225	1351	2.47e4	1.86e4	20.1	13.8	YES	bd	bd	0.855
123678-HxCDD	35.653	1.000	6.573e3	5.614e3	1.009	1.171	1.240	1225	1351	1.07e5	9.26e4	87.0	68.5	NO	dd	db	3.791
123789-HxCDD	36.043	1.011	3.630e3	2.713e3	0.950	1.338	1.240	1225	1351	6.02e4	4.13e4	49.2	30.6	NO	bb	bb	2.117
1234678-HpCDD	39.797	1.000	1.317e5	1.220e5	1.068	1.080	1.050	1575	1614	2.16e6	1.98e6	1371.1	1228.2	NO	bb	bb	108.615
OCDD	44.427	1.000	8.417e5	9.338e5	1.181	0.901	0.890	1613	2516	1.07e7	1.22e7	6627.0	4851.9	NO	bb	bb	708.847
13C-2378-TCDF	25.216	1.007	1.572e5	1.935e5	1.427	0.812	0.770	2449	1815	2.39e6	2.97e6	977.7	1635.1	NO	bb	bb	55.230
13C-12378-PeCDF	29.381	1.174	2.679e5	1.702e5	1.297	1.574	1.550	1641	1372	4.00e6	2.59e6	2436.9	1887.5	NO	bb	bb	75.876
13C-23478-PeCDF	30.718	1.227	2.605e5	1.633e5	1.236	1.596	1.550	1641	1372	4.01e6	2.50e6	2441.2	1819.4	NO	bb	bb	77.018
13C-123478-HxCDF	34.383	0.954	1.220e5	2.346e5	1.242	0.520	0.510	1700	1605	1.86e6	3.61e6	1093.1	2249.3	NO	bd	bd	59.538
13C-123678-HxCDF	34.516	0.958	1.232e5	2.370e5	1.343	0.520	0.510	1700	1605	1.87e6	3.60e6	1100.7	2242.8	NO	db	db	55.625
13C-234678-HxCDF	35.408	0.983	1.174e5	2.254e5	1.215	0.521	0.510	1700	1605	1.89e6	3.56e6	1113.4	2218.1	NO	bb	bb	58.532
13C-123789-HxCDF	36.444	1.011	1.050e5	2.034e5	1.008	0.516	0.510	1700	1605	1.63e6	3.17e6	958.3	1972.9	NO	bb	bb	63.485
13C-1234678-HpCDF	38.327	1.064	9.520e4	2.067e5	0.926	0.461	0.440	920	1378	1.57e6	3.40e6	1701.9	2466.7	NO	bb	bb	67.602
13C-1234789-HpCDF	40.499	1.124	7.995e4	1.776e5	0.758	0.450	0.440	920	1378	1.24e6	2.76e6	1345.3	2000.6	NO	bb	bb	70.491
13C-1234-TCDD	25.035	0.000	1.923e5	2.527e5	1.000	0.761	0.770	1649	1335	2.99e6	3.92e6	1816.1	2936.3	NO	bb	bb	100.000
13C-2378-TCDD	25.851	1.033	1.281e5	1.692e5	1.116	0.757	0.770	1649	1335	1.96e6	2.57e6	1191.6	1924.8	NO	bb	bb	59.839
13C-12378-PeCDD	30.974	1.237	1.537e5	9.948e4	0.732	1.545	1.550	945	907	2.40e6	1.55e6	2537.8	1704.2	NO	bb	bb	77.718
13C-123478-HxCDD	35.519	0.986	1.748e5	1.372e5	0.960	1.274	1.240	1468	1016	2.85e6	2.30e6	1942.9	2265.1	NO	bd	bd	67.412
13C-123678-HxCDD	35.642	0.989	1.751e5	1.436e5	1.041	1.220	1.240	1468	1016	2.91e6	2.30e6	1981.4	2263.4	NO	db	db	63.471
13C-1234678-HpCDD	39.786	1.104	1.120e5	1.067e5	0.632	1.049	1.050	881	924	1.77e6	1.69e6	2012.6	1827.8	NO	bb	bb	71.725
13C-OCDD	44.409	1.232	2.050e5	2.193e5	0.504	0.935	0.890	755	983	2.67e6	2.84e6	3535.1	2893.4	NO	bb	bb	174.686
13C-123789-HxCDD	36.032	0.000	2.663e5	2.158e5	1.000	1.234	1.240	1468	1016	4.25e6	3.42e6	2893.9	3369.4	NO	bb	bb	100.000
37CL-2378-TCDD	25.867	1.033	1.155e5		1.084			1062		1.67e6		1572.1			bb		23.942

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:42:59 Pacific Daylight Time

ID: 21G0108-06, Name: 21082714, Date: 27-Aug-2021, Time: 15:31:36, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	21.724	0.862	5.606e2	7.241e2	1.425	0.774	0.770	1827	1539	8.04e3	1.08e4	4.4	7.0	NO	bd	bd	0.257
1289-TCDF					1.043		0.770	1827	1539								
13468-PECDF	26.668	0.908	1.872e4	1.182e4	1.376	1.583	1.550	1145	1100	2.58e5	1.65e5	225.6	149.8	NO	bb	db	5.065
12389-PECDF					1.000		1.550	1983	1760								
123468-HXCDF	32.701	0.951	5.278e3	4.479e3	1.087	1.179	1.240	850	792	7.85e4	6.73e4	92.3	84.9	NO	bb	bb	2.518
1368-TCDD	23.009	0.890	9.935e2	1.421e3	0.923	0.699	0.770	1518	893	1.72e4	2.22e4	11.3	24.9	NO	bb	bb	0.880
1289-TCDD					0.794		0.770	1518	893								
12479-PECDD	28.289	0.913	8.698e3	6.196e3	1.843	1.404	1.550	977	880	8.10e4	6.05e4	83.0	68.8	NO	bd	MM	3.191
12389-PECDD	31.375	1.013	2.972e2	1.503e2	1.154	1.978	1.550	977	880	5.19e3	3.98e3	5.3	4.5	YES	bb	bb	0.153
124679-HXCDD	33.492	0.943	3.819e4	3.064e4	1.125	1.247	1.240	1225	1351	5.82e5	4.64e5	474.8	343.6	NO	bb	bb	19.616
1234679-HPCDD	38.772	0.975	1.332e5	1.264e5	1.211	1.054	1.050	1575	1614	2.24e6	2.10e6	1419.2	1304.3	NO	bb	bb	98.011
Total-tetrafurans			1.730e4		1.192			1827		2.40e5							9.510
Total-penta1			1.872e4					1145		2.58e5							5.065
Total-pentafurans			3.566e4		1.047			1983		4.82e5							12.886
Total-hexafurans			8.369e4		1.045			850		1.21e6							41.859
Total-heptafurans			1.501e5		1.305			1228		2.60e6							79.589
Total-Furans			4.051e5		1.158			1827		6.02e6							218.839
Total-tetradioxins			4.856e3		0.879			1518		7.81e4							4.306
Total-pentadioxins			1.452e4		1.331			977		1.65e5							6.372
Total-hexadioxins			7.408e4		1.028			1225		1.04e6							39.541
Total-heptadioxins			2.649e5		1.140			1575		4.39e6							206.625
Total-Dioxins			1.200e6		1.092			1518		1.64e7							965.691
Total-TEQ			1.605e6					1518		2.24e7							1184.530
FUNCTION1 PFK			8.060e6					844963		3.36e7							
FUNCTION2 PFK			1.637e6					531513		3.59e7							0.000
FUNCTION3 PFK			4.078e5					490455		1.03e7							0.000
FUNCTION4 PFK			4.871e5					323608		1.19e7							
FUNCTION5 PFK			3.323e5					249095		9.11e6							
FUNCTION1 HXCD...			1.969e3					909		3.42e4							0.000
FUNCTION1 HPCD...			1.064e3					780		1.41e4							0.000
FUNCTION2 HPCD...			3.675e2					746		9.72e3							0.000
FUNCTION3 OCDPE			4.584e2					617		6.95e3							0.000
FUNCTION4 NCDPE			3.328e4					1191		5.59e5							0.000
FUNCTION5 DCDPE			2.821e2					618		6.92e3							0.000

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-06, Name: 21082714, Date: 27-Aug-2021, Time: 15:31:36, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.24	1.924e3	2.495e3	1.192	0.77	0.77	14.7	YES	NO	dd	dd	1.057
2	Total-tetrafurans	22.98	1.828e3	2.651e3	1.192	0.69	0.77	14.6	YES	NO	dd	dd	1.072
3	Total-tetrafurans	22.57	3.439e3	4.183e3	1.192	0.82	0.77	24.5	YES	NO	bd	bd	1.824
4	1368-TCDF	21.72	5.606e2	7.241e2	1.425	0.77	0.77	4.4	YES	NO	bd	bd	0.257
5	2378-TCDF	25.23	1.409e3	1.734e3	1.108	0.81	0.77	11.3	YES	NO	dd	bd	0.809
6	Total-tetrafurans	24.32	1.160e3	1.577e3	1.192	0.74	0.77	10.0	YES	NO	bd	dd	0.655
7	Total-tetrafurans	24.14	2.661e3	3.493e3	1.192	0.76	0.77	21.9	YES	NO	db	dd	1.472
8	Total-tetrafurans	23.90	2.625e3	3.330e3	1.192	0.79	0.77	16.5	YES	NO	bd	bd	1.425
9	Total-tetrafurans	23.55	3.606e2	5.321e2	1.192	0.68	0.77	3.1	YES	NO	dd	db	0.214
10	Total-tetrafurans	23.48	1.331e3	1.700e3	1.192	0.78	0.77	10.2	YES	NO	dd	dd	0.725

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.67	1.872e4	1.182e4	1.376	1.58	1.55	225.6	YES	NO	bb	db	5.065

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentafurans	29.04	2.157e3	1.508e3	1.047	1.43	1.55	17.9	YES	NO	dd	dd	0.813
2	Total-pentafurans	28.92	1.104e3	6.736e2	1.047	1.64	1.55	7.9	YES	NO	dd	bd	0.394
3	Total-pentafurans	28.31	1.799e4	1.147e4	1.047	1.57	1.55	110.5	YES	NO	db	MM	6.531
4	Total-pentafurans	28.13	2.161e3	1.628e3	1.047	1.33	1.55	15.4	YES	NO	dd	dd	0.840
5	23478-PeCDF	30.74	4.231e3	2.822e3	1.126	1.50	1.55	31.8	YES	NO	dd	db	1.478
6	Total-pentafurans	30.58	3.292e3	2.026e3	1.047	1.63	1.55	22.6	YES	NO	dd	dd	1.179
7	Total-pentafurans	30.46	8.780e2	5.196e2	1.047	1.69	1.55	7.1	YES	NO	bd	bd	0.310
8	Total-pentafurans	29.58	3.850e3	2.197e3	1.047	1.75	1.55	29.9	YES	NO	bd	bd	1.341

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HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-hexafurans	33.76	2.738e4	2.134e4	1.045	1.28	1.24	486.9	YES	NO	bb	bb	13.636
2	Total-hexafurans	32.92	2.179e4	1.770e4	1.045	1.23	1.24	347.4	YES	NO	bb	bb	11.055
3	123468-HXCDF	32.70	5.278e3	4.479e3	1.087	1.18	1.24	92.3	YES	NO	bb	bb	2.518
4	123789-HxCDF	36.42	2.142e3	1.913e3	1.030	1.12	1.24	40.9	YES	NO	bb	bb	1.277
5	234678-HxCDF	35.37	5.556e3	4.494e3	1.052	1.24	1.24	72.4	YES	NO	bb	bb	2.786
6	123678-HxCDF	34.54	5.859e3	4.503e3	1.037	1.30	1.24	108.4	YES	NO	db	db	2.774
7	123478-HxCDF	34.39	1.384e4	1.119e4	1.017	1.24	1.24	247.9	YES	NO	bd	dd	6.902
8	Total-hexafurans	34.24	1.848e3	1.410e3	1.045	1.31	1.24	32.3	YES	NO	bb	bd	0.912

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.51	5.944e3	5.801e3	1.283	1.02	1.05	68.6	YES	NO	bd	bb	3.553
2	Total-heptafurans	38.97	9.647e4	9.606e4	1.305	1.00	1.05	1373.7	YES	NO	bb	bb	52.721
3	1234678-HpCDF	38.34	4.761e4	4.565e4	1.327	1.04	1.05	673.6	YES	NO	bb	bb	23.270
4	Total-heptafurans	41.03	7.941e1		1.305			2.1	NO		bb		0.044

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.24	1.924e3	2.495e3	1.192	0.77	0.77	14.7	YES	NO	dd	dd	1.057
2	Total-tetrafurans	22.98	1.828e3	2.651e3	1.192	0.69	0.77	14.6	YES	NO	dd	dd	1.072
3	Total-tetrafurans	22.57	3.439e3	4.183e3	1.192	0.82	0.77	24.5	YES	NO	bd	bd	1.824
4	1368-TCDF	21.72	5.606e2	7.241e2	1.425	0.77	0.77	4.4	YES	NO	bd	bd	0.257
5	Total-Furans	21.15	2.617e2	3.945e2	1.158	0.66	0.77	1.8	NO	NO	bd	bb	0.162
6	2378-TCDF	25.23	1.409e3	1.734e3	1.108	0.81	0.77	11.3	YES	NO	dd	bd	0.809
7	Total-tetrafurans	24.32	1.160e3	1.577e3	1.192	0.74	0.77	10.0	YES	NO	bd	dd	0.655
8	Total-tetrafurans	24.14	2.661e3	3.493e3	1.192	0.76	0.77	21.9	YES	NO	db	dd	1.472
9	Total-tetrafurans	23.90	2.625e3	3.330e3	1.192	0.79	0.77	16.5	YES	NO	bd	bd	1.425
10	Total-tetrafurans	23.55	3.606e2	5.321e2	1.192	0.68	0.77	3.1	YES	NO	dd	db	0.214
11	Total-tetrafurans	23.48	1.331e3	1.700e3	1.192	0.78	0.77	10.2	YES	NO	dd	dd	0.725
12	Total-pentafurans	29.04	2.157e3	1.508e3	1.047	1.43	1.55	17.9	YES	NO	dd	dd	0.813
13	Total-pentafurans	28.92	1.104e3	6.736e2	1.047	1.64	1.55	7.9	YES	NO	dd	bd	0.394
14	Total-pentafurans	28.31	1.799e4	1.147e4	1.047	1.57	1.55	110.5	YES	NO	db	MM	6.531
15	Total-pentafurans	28.13	2.161e3	1.628e3	1.047	1.33	1.55	15.4	YES	NO	dd	dd	0.840
16	23478-PeCDF	30.74	4.231e3	2.822e3	1.126	1.50	1.55	31.8	YES	NO	dd	db	1.478
17	Total-pentafurans	30.58	3.292e3	2.026e3	1.047	1.63	1.55	22.6	YES	NO	dd	dd	1.179
18	Total-pentafurans	30.46	8.780e2	5.196e2	1.047	1.69	1.55	7.1	YES	NO	bd	bd	0.310
19	Total-pentafurans	29.58	3.850e3	2.197e3	1.047	1.75	1.55	29.9	YES	NO	bd	bd	1.341
20	Total-hexafurans	33.76	2.738e4	2.134e4	1.045	1.28	1.24	486.9	YES	NO	bb	bb	13.636
21	Total-hexafurans	32.92	2.179e4	1.770e4	1.045	1.23	1.24	347.4	YES	NO	bb	bb	11.055
22	123468-HXCDF	32.70	5.278e3	4.479e3	1.087	1.18	1.24	92.3	YES	NO	bb	bb	2.518
23	123789-HxCDF	36.42	2.142e3	1.913e3	1.030	1.12	1.24	40.9	YES	NO	bb	bb	1.277
24	234678-HxCDF	35.37	5.556e3	4.494e3	1.052	1.24	1.24	72.4	YES	NO	bb	bb	2.786
25	123678-HxCDF	34.54	5.859e3	4.503e3	1.037	1.30	1.24	108.4	YES	NO	db	db	2.774
26	123478-HxCDF	34.39	1.384e4	1.119e4	1.017	1.24	1.24	247.9	YES	NO	bd	dd	6.902
27	Total-hexafurans	34.24	1.848e3	1.410e3	1.045	1.31	1.24	32.3	YES	NO	bb	bd	0.912
28	1234789-HpCDF	40.51	5.944e3	5.801e3	1.283	1.02	1.05	68.6	YES	NO	bd	bb	3.553
29	Total-heptafurans	38.97	9.647e4	9.606e4	1.305	1.00	1.05	1373.7	YES	NO	bb	bb	52.721
30	1234678-HpCDF	38.34	4.761e4	4.565e4	1.327	1.04	1.05	673.6	YES	NO	bb	bb	23.270
31	Total-heptafurans	41.03	7.941e1		1.305			2.1	NO		bb		0.044
32	OCDF	44.64	9.934e4	1.148e5	1.447	0.87	0.89	1190.7	YES	NO	bb	bb	69.769
33	13468-PECDF	26.67	1.872e4	1.182e4	1.376	1.58	1.55	225.6	YES	NO	bb	db	5.065

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TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	24.49	5.680e2	7.383e2	0.879	0.77	0.77	7.1	YES	NO	dd	bd	0.500
2	Total-tetradioxins	24.19	3.632e2	5.471e2	0.879	0.66	0.77	3.7	YES	NO	bb	bb	0.348
3	Total-tetradioxins	24.01	3.824e2	4.664e2	0.879	0.82	0.77	4.2	YES	NO	bb	bb	0.325
4	Total-tetradioxins	23.39	8.626e2	1.187e3	0.879	0.73	0.77	9.0	YES	NO	dd	dd	0.784
5	Total-tetradioxins	23.28	1.319e3	1.637e3	0.879	0.81	0.77	12.7	YES	NO	bd	bd	1.131
6	1368-TCDD	23.01	9.935e2	1.421e3	0.923	0.70	0.77	11.3	YES	NO	bb	bb	0.880
7	Total-tetradioxins	24.58	3.669e2	5.177e2	0.879	0.71	0.77	3.5	YES	NO	db	dd	0.338

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentadioxins	29.74	1.385e3	8.893e2	1.331	1.56	1.55	21.7	YES	NO	dd	dd	0.675
2	Total-pentadioxins	29.60	1.544e3	1.106e3	1.331	1.40	1.55	25.5	YES	NO	bd	bd	0.787
3	Total-pentadioxins	29.38	1.446e3	1.022e3	1.331	1.41	1.55	22.0	YES	NO	bb	bb	0.733
4	12479-PECDD	28.29	8.698e3	6.196e3	1.843	1.40	1.55	83.0	YES	NO	bd	MM	3.191
5	12378-PeCDD	31.00	1.451e3	1.036e3	0.995	1.40	1.55	16.2	YES	NO	MM	bb	0.987

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.04	3.630e3	2.713e3	0.950	1.34	1.24	49.2	YES	NO	bb	bb	2.117
2	Total-hexadioxins	35.82	8.685e2	6.941e2	1.028	1.25	1.24	9.2	YES	NO	db	bb	0.482
3	123678-HxCDD	35.65	6.573e3	5.614e3	1.009	1.17	1.24	87.0	YES	NO	dd	db	3.791
4	Total-hexadioxins	34.65	2.008e4	1.555e4	1.028	1.29	1.24	173.1	YES	NO	bd	bd	10.991
5	Total-hexadioxins	34.27	4.407e3	3.239e3	1.028	1.36	1.24	52.7	YES	NO	bb	bb	2.359
6	Total-hexadioxins	33.65	3.237e2	2.755e2	1.028	1.18	1.24	5.9	YES	NO	bb	bb	0.185
7	124679-HXCDD	33.49	3.819e4	3.064e4	1.125	1.25	1.24	474.8	YES	NO	bb	bb	19.616

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.80	1.317e5	1.220e5	1.068	1.08	1.05	1371.1	YES	NO	bb	bb	108.615
2	1234679-HPCDD	38.77	1.332e5	1.264e5	1.211	1.05	1.05	1419.2	YES	NO	bb	bb	98.011

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	24.49	5.680e2	7.383e2	0.879	0.77	0.77	7.1	YES	NO	dd	bd	0.500
2	Total-tetradioxins	24.19	3.632e2	5.471e2	0.879	0.66	0.77	3.7	YES	NO	bb	bb	0.348
3	Total-tetradioxins	24.01	3.824e2	4.664e2	0.879	0.82	0.77	4.2	YES	NO	bb	bb	0.325
4	Total-tetradioxins	23.39	8.626e2	1.187e3	0.879	0.73	0.77	9.0	YES	NO	dd	dd	0.784
5	Total-tetradioxins	23.28	1.319e3	1.637e3	0.879	0.81	0.77	12.7	YES	NO	bd	bd	1.131
6	1368-TCDD	23.01	9.935e2	1.421e3	0.923	0.70	0.77	11.3	YES	NO	bb	bb	0.880
7	Total-tetradioxins	24.58	3.669e2	5.177e2	0.879	0.71	0.77	3.5	YES	NO	db	dd	0.338
8	Total-pentadioxins	29.74	1.385e3	8.893e2	1.331	1.56	1.55	21.7	YES	NO	dd	dd	0.675
9	Total-pentadioxins	29.60	1.544e3	1.106e3	1.331	1.40	1.55	25.5	YES	NO	bd	bd	0.787
10	Total-pentadioxins	29.38	1.446e3	1.022e3	1.331	1.41	1.55	22.0	YES	NO	bb	bb	0.733
11	12479-PECDD	28.29	8.698e3	6.196e3	1.843	1.40	1.55	83.0	YES	NO	bd	MM	3.191
12	12378-PeCDD	31.00	1.451e3	1.036e3	0.995	1.40	1.55	16.2	YES	NO	MM	bb	0.987
13	123789-HxCDD	36.04	3.630e3	2.713e3	0.950	1.34	1.24	49.2	YES	NO	bb	bb	2.117
14	Total-hexadioxins	35.82	8.685e2	6.941e2	1.028	1.25	1.24	9.2	YES	NO	db	bb	0.482
15	123678-HxCDD	35.65	6.573e3	5.614e3	1.009	1.17	1.24	87.0	YES	NO	dd	db	3.791
16	Total-hexadioxins	34.65	2.008e4	1.555e4	1.028	1.29	1.24	173.1	YES	NO	bd	bd	10.991
17	Total-hexadioxins	34.27	4.407e3	3.239e3	1.028	1.36	1.24	52.7	YES	NO	bb	bb	2.359
18	Total-hexadioxins	33.65	3.237e2	2.755e2	1.028	1.18	1.24	5.9	YES	NO	bb	bb	0.185
19	124679-HXCDD	33.49	3.819e4	3.064e4	1.125	1.25	1.24	474.8	YES	NO	bb	bb	19.616
20	1234678-HpCDD	39.80	1.317e5	1.220e5	1.068	1.08	1.05	1371.1	YES	NO	bb	bb	108.615
21	1234679-HPCDD	38.77	1.332e5	1.264e5	1.211	1.05	1.05	1419.2	YES	NO	bb	bb	98.011
22	OCDD	44.43	8.417e5	9.338e5	1.181	0.90	0.89	6627.0	YES	NO	bb	bb	708.847

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.24	1.924e3	2.495e3	1.192	0.77	0.77	14.7	YES	NO	dd	dd	1.057
2	Total-tetrafurans	22.98	1.828e3	2.651e3	1.192	0.69	0.77	14.6	YES	NO	dd	dd	1.072
3	Total-tetrafurans	22.57	3.439e3	4.183e3	1.192	0.82	0.77	24.5	YES	NO	bd	bd	1.824
4	1368-TCDF	21.72	5.606e2	7.241e2	1.425	0.77	0.77	4.4	YES	NO	bd	bd	0.257
5	Total-Furans	21.15	2.617e2	3.945e2	1.158	0.66	0.77	1.8	NO	NO	bd	bb	0.162
6	2378-TCDF	25.23	1.409e3	1.734e3	1.108	0.81	0.77	11.3	YES	NO	dd	bd	0.809
7	Total-tetrafurans	24.32	1.160e3	1.577e3	1.192	0.74	0.77	10.0	YES	NO	bd	dd	0.655
8	Total-tetrafurans	24.14	2.661e3	3.493e3	1.192	0.76	0.77	21.9	YES	NO	db	dd	1.472
9	Total-tetrafurans	23.90	2.625e3	3.330e3	1.192	0.79	0.77	16.5	YES	NO	bd	bd	1.425
10	Total-tetrafurans	23.55	3.606e2	5.321e2	1.192	0.68	0.77	3.1	YES	NO	dd	db	0.214
11	Total-tetrafurans	23.48	1.331e3	1.700e3	1.192	0.78	0.77	10.2	YES	NO	dd	dd	0.725
12	Total-pentafurans	29.04	2.157e3	1.508e3	1.047	1.43	1.55	17.9	YES	NO	dd	dd	0.813
13	Total-pentafurans	28.92	1.104e3	6.736e2	1.047	1.64	1.55	7.9	YES	NO	dd	bd	0.394
14	Total-pentafurans	28.31	1.799e4	1.147e4	1.047	1.57	1.55	110.5	YES	NO	db	MM	6.531
15	Total-pentafurans	28.13	2.161e3	1.628e3	1.047	1.33	1.55	15.4	YES	NO	dd	dd	0.840
16	23478-PeCDF	30.74	4.231e3	2.822e3	1.126	1.50	1.55	31.8	YES	NO	dd	db	1.478
17	Total-pentafurans	30.58	3.292e3	2.026e3	1.047	1.63	1.55	22.6	YES	NO	dd	dd	1.179
18	Total-pentafurans	30.46	8.780e2	5.196e2	1.047	1.69	1.55	7.1	YES	NO	bd	bd	0.310
19	Total-pentafurans	29.58	3.850e3	2.197e3	1.047	1.75	1.55	29.9	YES	NO	bd	bd	1.341
20	Total-hexafurans	33.76	2.738e4	2.134e4	1.045	1.28	1.24	486.9	YES	NO	bb	bb	13.636
21	Total-hexafurans	32.92	2.179e4	1.770e4	1.045	1.23	1.24	347.4	YES	NO	bb	bb	11.055
22	123468-HXCDF	32.70	5.278e3	4.479e3	1.087	1.18	1.24	92.3	YES	NO	bb	bb	2.518
23	123789-HxCDF	36.42	2.142e3	1.913e3	1.030	1.12	1.24	40.9	YES	NO	bb	bb	1.277
24	234678-HxCDF	35.37	5.556e3	4.494e3	1.052	1.24	1.24	72.4	YES	NO	bb	bb	2.786
25	123678-HxCDF	34.54	5.859e3	4.503e3	1.037	1.30	1.24	108.4	YES	NO	db	db	2.774
26	123478-HxCDF	34.39	1.384e4	1.119e4	1.017	1.24	1.24	247.9	YES	NO	bd	dd	6.902
27	Total-hexafurans	34.24	1.848e3	1.410e3	1.045	1.31	1.24	32.3	YES	NO	bb	bd	0.912
28	1234789-HpCDF	40.51	5.944e3	5.801e3	1.283	1.02	1.05	68.6	YES	NO	bd	bb	3.553
29	Total-heptafurans	38.97	9.647e4	9.606e4	1.305	1.00	1.05	1373.7	YES	NO	bb	bb	52.721
30	1234678-HpCDF	38.34	4.761e4	4.565e4	1.327	1.04	1.05	673.6	YES	NO	bb	bb	23.270
31	Total-heptafurans	41.03	7.941e1		1.305			2.1	NO		bb		0.044
32	OCDF	44.64	9.934e4	1.148e5	1.447	0.87	0.89	1190.7	YES	NO	bb	bb	69.769
33	13468-PECDF	26.67	1.872e4	1.182e4	1.376	1.58	1.55	225.6	YES	NO	bb	db	5.065
34	Total-tetradioxins	24.49	5.680e2	7.383e2	0.879	0.77	0.77	7.1	YES	NO	dd	bd	0.500
35	Total-tetradioxins	24.19	3.632e2	5.471e2	0.879	0.66	0.77	3.7	YES	NO	bb	bb	0.348
36	Total-tetradioxins	24.01	3.824e2	4.664e2	0.879	0.82	0.77	4.2	YES	NO	bb	bb	0.325
37	Total-tetradioxins	23.39	8.626e2	1.187e3	0.879	0.73	0.77	9.0	YES	NO	dd	dd	0.784

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	Total-tetradioxins	23.28	1.319e3	1.637e3	0.879	0.81	0.77	12.7	YES	NO	bd	bd	1.131
39	1368-TCDD	23.01	9.935e2	1.421e3	0.923	0.70	0.77	11.3	YES	NO	bb	bb	0.880
40	Total-tetradioxins	24.58	3.669e2	5.177e2	0.879	0.71	0.77	3.5	YES	NO	db	dd	0.338
41	Total-pentadioxins	29.74	1.385e3	8.893e2	1.331	1.56	1.55	21.7	YES	NO	dd	dd	0.675
42	Total-pentadioxins	29.60	1.544e3	1.106e3	1.331	1.40	1.55	25.5	YES	NO	bd	bd	0.787
43	Total-pentadioxins	29.38	1.446e3	1.022e3	1.331	1.41	1.55	22.0	YES	NO	bb	bb	0.733
44	12479-PECDD	28.29	8.698e3	6.196e3	1.843	1.40	1.55	83.0	YES	NO	bd	MM	3.191
45	12378-PeCDD	31.00	1.451e3	1.036e3	0.995	1.40	1.55	16.2	YES	NO	MM	bb	0.987
46	123789-HxCDD	36.04	3.630e3	2.713e3	0.950	1.34	1.24	49.2	YES	NO	bb	bb	2.117
47	Total-hexadioxins	35.82	8.685e2	6.941e2	1.028	1.25	1.24	9.2	YES	NO	db	bb	0.482
48	123678-HxCDD	35.65	6.573e3	5.614e3	1.009	1.17	1.24	87.0	YES	NO	dd	db	3.791
49	Total-hexadioxins	34.65	2.008e4	1.555e4	1.028	1.29	1.24	173.1	YES	NO	bd	bd	10.991
50	Total-hexadioxins	34.27	4.407e3	3.239e3	1.028	1.36	1.24	52.7	YES	NO	bb	bb	2.359
51	Total-hexadioxins	33.65	3.237e2	2.755e2	1.028	1.18	1.24	5.9	YES	NO	bb	bb	0.185
52	124679-HXCDD	33.49	3.819e4	3.064e4	1.125	1.25	1.24	474.8	YES	NO	bb	bb	19.616
53	1234678-HpCDD	39.80	1.317e5	1.220e5	1.068	1.08	1.05	1371.1	YES	NO	bb	bb	108.615
54	1234679-HPCDD	38.77	1.332e5	1.264e5	1.211	1.05	1.05	1419.2	YES	NO	bb	bb	98.011
55	OCDD	44.43	8.417e5	9.338e5	1.181	0.90	0.89	6627.0	YES	NO	bb	bb	708.847

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.45	2.641e6					10.7	YES		bb		
2	FUNCTION1 PFK	21.72	1.113e6					5.3	YES		bb		
3	FUNCTION1 PFK	21.44	8.634e5					6.3	YES		bb		
4	FUNCTION1 PFK	22.93	3.055e6					8.5	YES		bb		
5	FUNCTION1 PFK	22.60	3.872e5					9.1	YES		bb		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	28.67	3.725e4					2.3	NO		dd		0.000
2	FUNCTION2 PFK	28.63	4.703e4					2.1	NO		bd		0.000
3	FUNCTION2 PFK	28.50	1.031e4					0.9	NO		db		0.000
4	FUNCTION2 PFK	28.47	1.890e4					1.1	NO		dd		0.000
5	FUNCTION2 PFK	28.41	2.336e4					1.3	NO		bd		0.000
6	FUNCTION2 PFK	28.13	4.022e4					1.4	NO		db		0.000
7	FUNCTION2 PFK	28.07	1.758e4					1.1	NO		bd		0.000
8	FUNCTION2 PFK	27.80	3.290e4					1.9	NO		db		0.000
9	FUNCTION2 PFK	27.72	1.518e5					3.9	YES		dd		0.000
10	FUNCTION2 PFK	27.65	1.599e5					5.0	YES		dd		0.000
11	FUNCTION2 PFK	27.60	2.074e5					6.1	YES		dd		0.000
12	FUNCTION2 PFK	27.53	1.605e5					7.3	YES		dd		0.000
13	FUNCTION2 PFK	27.50	2.692e5					7.8	YES		bd		0.000
14	FUNCTION2 PFK	30.23	1.906e4					1.1	NO		bb		0.000
15	FUNCTION2 PFK	30.12	2.280e4					1.0	NO		bb		0.000
16	FUNCTION2 PFK	30.07	2.196e3					0.4	NO		bb		0.000
17	FUNCTION2 PFK	29.78	2.858e4					1.3	NO		bb		0.000
18	FUNCTION2 PFK	29.64	1.850e4					1.1	NO		db		0.000
19	FUNCTION2 PFK	29.59	9.434e3					0.8	NO		bd		0.000
20	FUNCTION2 PFK	29.34	2.509e4					1.7	NO		bb		0.000
21	FUNCTION2 PFK	29.28	9.866e3					0.8	NO		bb		0.000
22	FUNCTION2 PFK	29.09	1.724e4					1.4	NO		db		0.000
23	FUNCTION2 PFK	29.07	1.716e4					1.4	NO		bd		0.000
24	FUNCTION2 PFK	28.99	2.337e4					1.5	NO		db		0.000
25	FUNCTION2 PFK	28.95	1.227e4					0.9	NO		dd		0.000
26	FUNCTION2 PFK	28.91	2.645e4					1.3	NO		dd		0.000
27	FUNCTION2 PFK	28.87	5.271e3					0.6	NO		bd		0.000
28	FUNCTION2 PFK	28.78	4.023e4					1.7	NO		bb		0.000
29	FUNCTION2 PFK	28.70	4.338e4					2.3	NO		db		0.000
30	FUNCTION2 PFK	31.66	9.752e4					1.8	NO		bb		0.000
31	FUNCTION2 PFK	31.36	7.714e3					0.7	NO		bb		0.000
32	FUNCTION2 PFK	31.26	2.318e3					0.4	NO		bb		0.000
33	FUNCTION2 PFK	30.81	6.050e3					0.6	NO		bb		0.000
34	FUNCTION2 PFK	30.74	1.256e4					0.8	NO		bb		0.000
35	FUNCTION2 PFK	30.61	5.477e3					0.5	NO		bb		0.000
36	FUNCTION2 PFK	30.51	3.528e3					0.6	NO		bb		0.000
37	FUNCTION2 PFK	30.33	4.960e3					0.5	NO		bb		0.000

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:42:59 Pacific Daylight Time

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	33.86	7.083e3					0.8	NO		bb		0.000
2	FUNCTION3 PFK	33.56	6.366e3					0.7	NO		bb		0.000
3	FUNCTION3 PFK	33.51	4.252e3					0.8	NO		bb		0.000
4	FUNCTION3 PFK	33.41	3.746e4					1.4	NO		bb		0.000
5	FUNCTION3 PFK	33.18	2.623e3					0.5	NO		bb		0.000
6	FUNCTION3 PFK	32.79	4.649e4					1.8	NO		bb		0.000
7	FUNCTION3 PFK	32.37	2.254e4					1.2	NO		bb		0.000
8	FUNCTION3 PFK	37.32	4.057e4					2.0	NO		db		0.000
9	FUNCTION3 PFK	37.25	2.968e4					1.6	NO		bd		0.000
10	FUNCTION3 PFK	36.28	1.095e5					2.9	NO		bb		0.000
11	FUNCTION3 PFK	35.92	3.882e4					1.5	NO		bb		0.000
12	FUNCTION3 PFK	35.78	1.482e4					1.3	NO		db		0.000
13	FUNCTION3 PFK	35.73	6.515e3					0.7	NO		bd		0.000
14	FUNCTION3 PFK	35.36	5.649e3					0.7	NO		bb		0.000
15	FUNCTION3 PFK	35.11	1.051e4					0.8	NO		bb		0.000
16	FUNCTION3 PFK	35.05	1.636e4					1.4	NO		bb		0.000
17	FUNCTION3 PFK	34.78	8.572e3					0.9	NO		bb		0.000

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:42:59 Pacific Daylight Time

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	38.67	1.726e4					1.4	NO		bd		
2	FUNCTION4 PFK	37.68	1.903e4					1.6	NO		db		
3	FUNCTION4 PFK	37.64	9.455e3					1.5	NO		bd		
4	FUNCTION4 PFK	37.59	5.762e4					2.8	NO		db		
5	FUNCTION4 PFK	37.46	1.147e5					5.2	YES		bd		
6	FUNCTION4 PFK	41.51	1.555e3					0.4	NO		bb		
7	FUNCTION4 PFK	41.41	1.055e4					1.1	NO		bb		
8	FUNCTION4 PFK	41.27	1.532e3					0.4	NO		bb		
9	FUNCTION4 PFK	41.11	1.853e4					1.4	NO		bb		
10	FUNCTION4 PFK	40.97	4.321e3					0.6	NO		bb		
11	FUNCTION4 PFK	40.77	5.995e3					0.8	NO		bb		
12	FUNCTION4 PFK	40.69	1.801e3					0.5	NO		bb		
13	FUNCTION4 PFK	40.64	2.080e3					0.6	NO		bb		
14	FUNCTION4 PFK	39.96	1.125e4					0.8	NO		bb		
15	FUNCTION4 PFK	39.78	2.101e4					1.8	NO		bb		
16	FUNCTION4 PFK	39.66	6.232e4					3.0	NO		db		
17	FUNCTION4 PFK	39.59	3.584e4					2.6	NO		bd		
18	FUNCTION4 PFK	39.45	1.352e4					1.8	NO		bb		
19	FUNCTION4 PFK	39.28	8.873e3					0.9	NO		bb		
20	FUNCTION4 PFK	38.95	9.609e3					1.1	NO		bb		
21	FUNCTION4 PFK	38.73	2.527e3					0.5	NO		db		
22	FUNCTION4 PFK	42.17	1.233e4					0.9	NO		db		
23	FUNCTION4 PFK	42.11	1.029e4					1.1	NO		bd		
24	FUNCTION4 PFK	41.89	8.965e3					1.1	NO		bb		
25	FUNCTION4 PFK	41.83	1.671e4					1.8	NO		bb		
26	FUNCTION4 PFK	41.65	9.479e3					0.9	NO		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	43.14	3.049e3					0.9	NO		db		
2	FUNCTION5 PFK	43.12	6.302e3					1.4	NO		bd		
3	FUNCTION5 PFK	43.04	6.364e3					1.1	NO		bb		
4	FUNCTION5 PFK	42.99	1.124e3					0.5	NO		bb		
5	FUNCTION5 PFK	42.83	2.970e3					0.6	NO		bb		
6	FUNCTION5 PFK	42.79	4.046e3					0.9	NO		db		
7	FUNCTION5 PFK	42.71	1.201e4					1.2	NO		dd		
8	FUNCTION5 PFK	42.67	1.279e3					0.5	NO		bd		
9	FUNCTION5 PFK	42.52	3.785e4					4.2	YES		db		
10	FUNCTION5 PFK	42.47	1.287e5					7.4	YES		bd		
11	FUNCTION5 PFK	45.63	6.933e3					1.1	NO		bb		
12	FUNCTION5 PFK	45.56	3.369e3					0.9	NO		bb		
13	FUNCTION5 PFK	45.42	4.090e3					1.0	NO		bb		
14	FUNCTION5 PFK	44.99	8.376e2					0.4	NO		bb		
15	FUNCTION5 PFK	44.71	2.438e3					0.7	NO		bb		
16	FUNCTION5 PFK	44.66	1.863e3					0.5	NO		bb		
17	FUNCTION5 PFK	44.14	1.033e4					1.0	NO		db		
18	FUNCTION5 PFK	44.07	1.187e4					1.5	NO		bd		
19	FUNCTION5 PFK	44.00	1.520e4					1.5	NO		bb		
20	FUNCTION5 PFK	43.94	1.168e3					0.5	NO		bb		
21	FUNCTION5 PFK	43.86	5.066e3					0.9	NO		bb		
22	FUNCTION5 PFK	43.80	4.381e3					0.8	NO		db		
23	FUNCTION5 PFK	43.75	1.957e4					2.0	NO		bd		
24	FUNCTION5 PFK	43.69	7.268e3					1.0	NO		bb		
25	FUNCTION5 PFK	43.36	1.148e4					1.1	NO		bb		
26	FUNCTION5 PFK	43.17	1.462e3					0.6	NO		bb		
27	FUNCTION5 PFK	45.95	4.721e3					0.8	NO		bb		
28	FUNCTION5 PFK	45.89	1.342e4					1.2	NO		bb		
29	FUNCTION5 PFK	45.69	3.132e3					0.5	NO		bb		

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ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	26.30	2.084e2					1.9	NO		bd		0.000
2	FUNCTION1 HXCD...	25.59	1.846e2					5.7	YES		bb		0.000
3	FUNCTION1 HXCD...	25.22	1.278e2					2.4	NO		bb		0.000
4	FUNCTION1 HXCD...	24.16	1.081e2					3.4	YES		bb		0.000
5	FUNCTION1 HXCD...	23.66	9.281e1					1.6	NO		bb		0.000
6	FUNCTION1 HXCD...	23.24	3.060e2					3.6	YES		bb		0.000
7	FUNCTION1 HXCD...	23.08	1.253e2					2.8	NO		bb		0.000
8	FUNCTION1 HXCD...	22.24	7.884e1					2.1	NO		bb		0.000
9	FUNCTION1 HXCD...	21.77	1.265e2					2.9	NO		bb		0.000
10	FUNCTION1 HXCD...	21.62	1.982e2					3.7	YES		bb		0.000
11	FUNCTION1 HXCD...	21.42	9.600e1					2.2	NO		db		0.000
12	FUNCTION1 HXCD...	21.38	1.651e2					2.7	NO		bd		0.000
13	FUNCTION1 HXCD...	26.37	1.515e2					2.5	NO		db		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	26.47	1.022e2					2.9	NO		db		0.000
2	FUNCTION1 HPCD...	26.37	9.111e1					2.1	NO		dd		0.000
3	FUNCTION1 HPCD...	26.29	2.214e2					2.9	NO		bd		0.000
4	FUNCTION1 HPCD...	22.80	1.497e2					3.2	YES		bb		0.000
5	FUNCTION1 HPCD...	22.40	9.327e1					2.8	NO		bb		0.000
6	FUNCTION1 HPCD...	21.81	1.134e2					1.5	NO		bb		0.000
7	FUNCTION1 HPCD...	21.44	2.926e2					2.7	NO		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	28.66	7.627e1					3.8	YES		bb		0.000
2	FUNCTION2 HPCD...	28.41	2.096e2					5.7	YES		db		0.000
3	FUNCTION2 HPCD...	28.31	8.163e1					3.5	YES		bd		0.000

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ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	33.70	1.225e2					3.4	YES		bb		0.000
2	FUNCTION3 OCDPE	33.36	8.339e1					2.3	NO		bb		0.000
3	FUNCTION3 OCDPE	36.73	7.317e1					1.7	NO		bb		0.000
4	FUNCTION3 OCDPE	36.04	1.793e2					3.9	YES		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	38.67	9.342e1					1.6	NO		bb		0.000
2	FUNCTION4 NCDPE	37.95	3.318e4					467.3	YES		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	43.38	8.265e1					2.9	NO		db		0.000
2	FUNCTION5 DCDPE	43.29	1.291e2					6.0	YES		bd		0.000
3	FUNCTION5 DCDPE	43.05	7.042e1					2.3	NO		bb		0.000

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ID: 21G0108-06, Name: 21082714, Date: 27-Aug-2021, Time: 15:31:36, Conditions: AUTOSPEC01, User: pk

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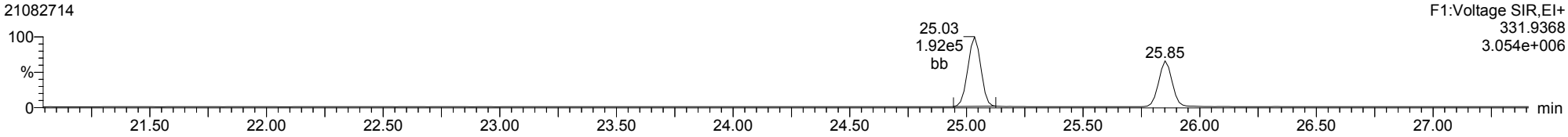

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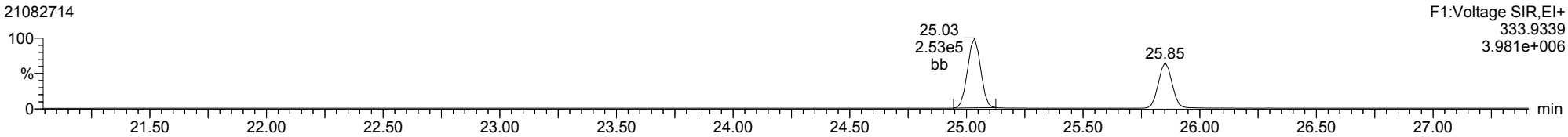

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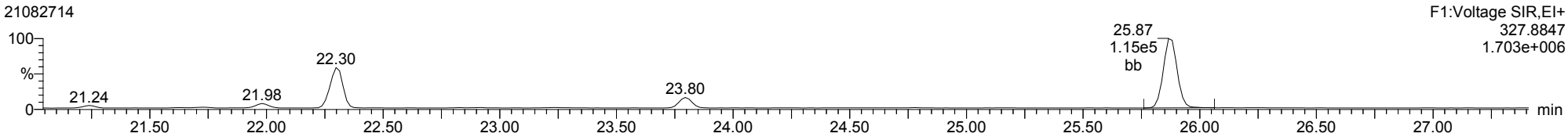

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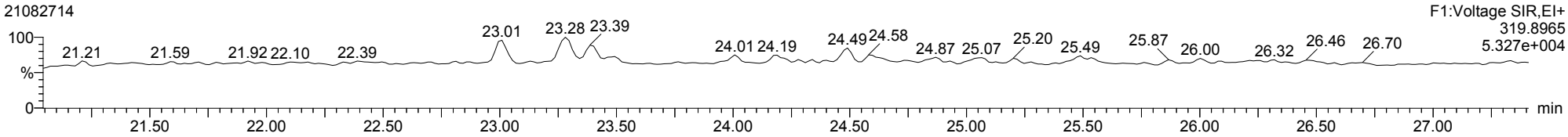
2378-TCDD



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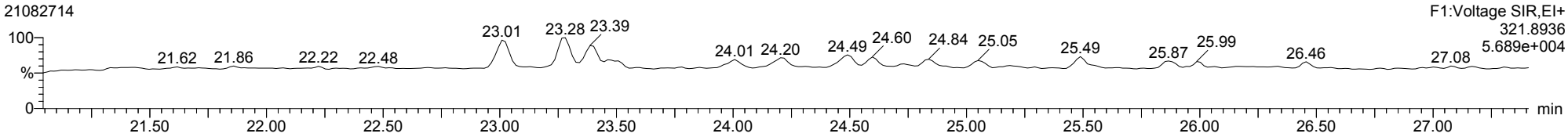

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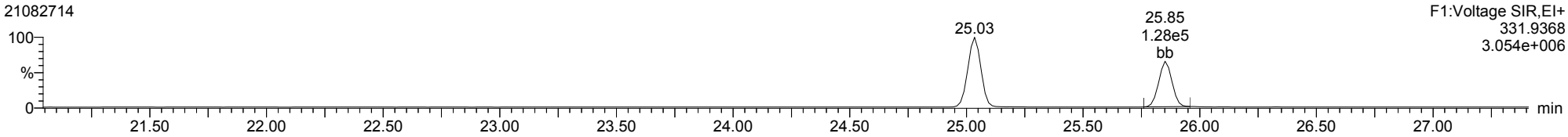

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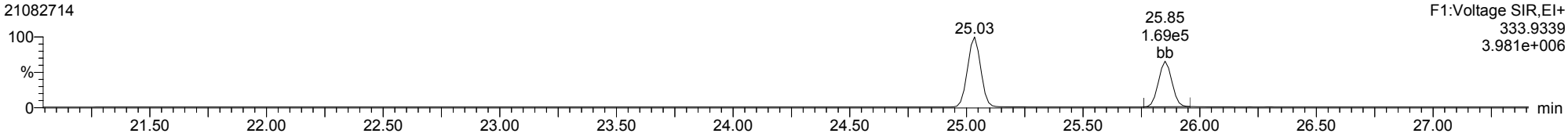

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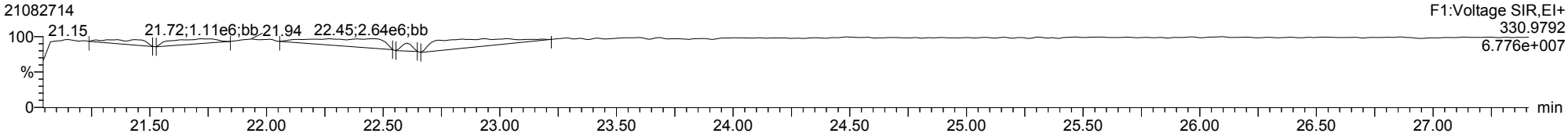

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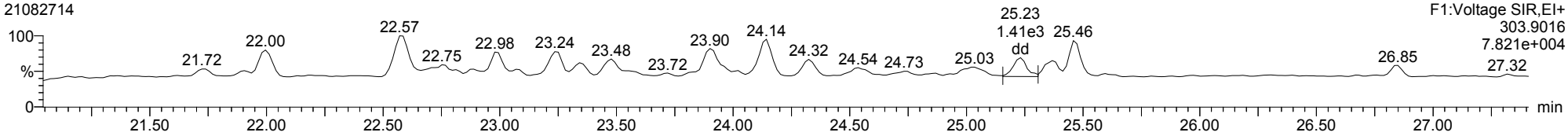
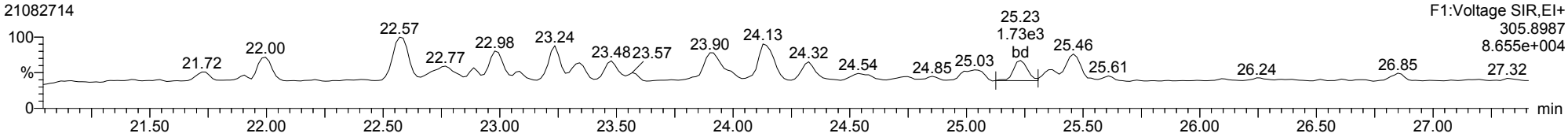
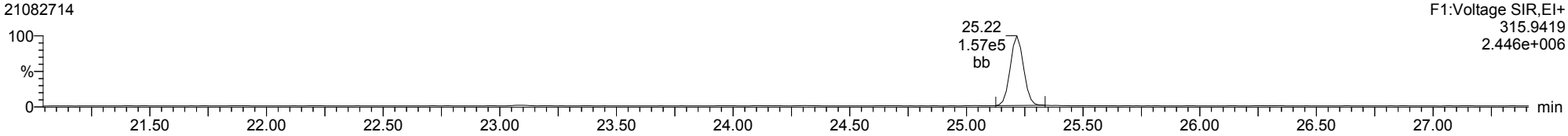


2378-TCDF



13C-2378-TCDF



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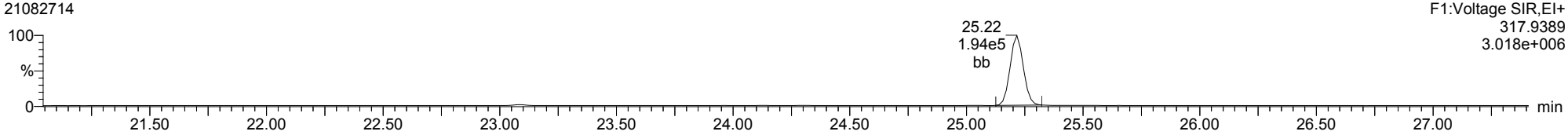

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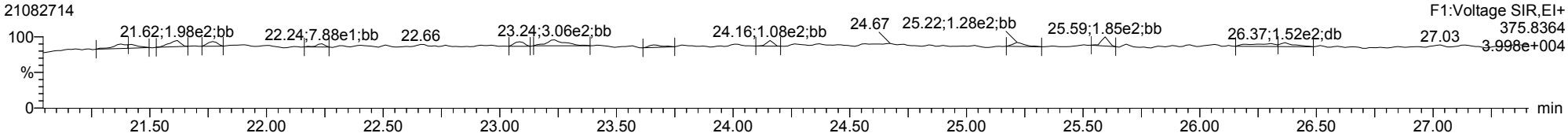

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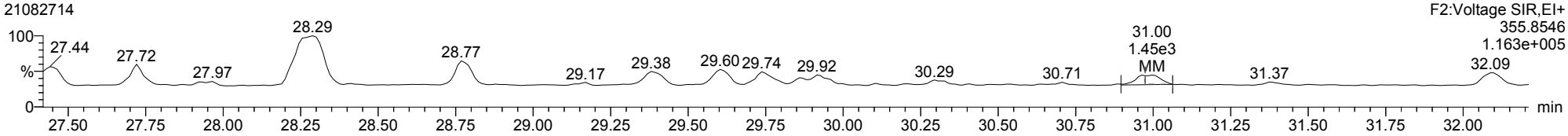
12378-PeCDD



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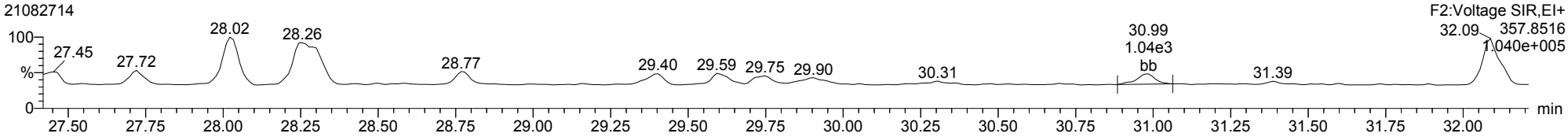

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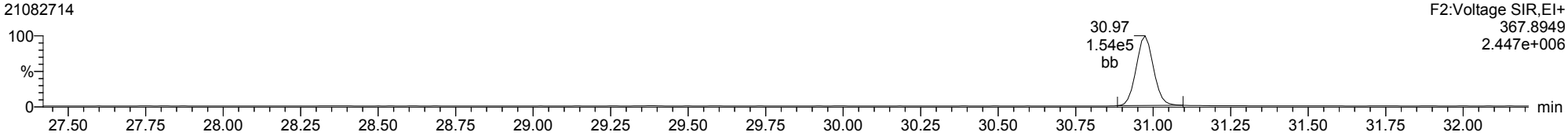

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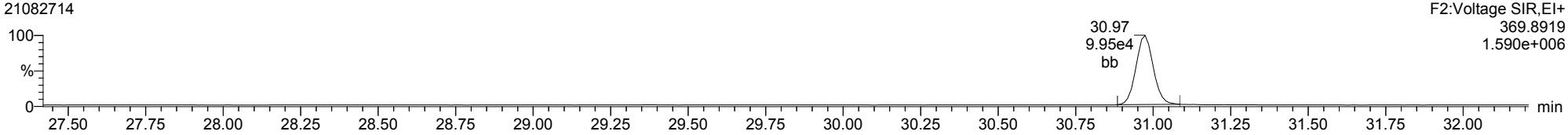

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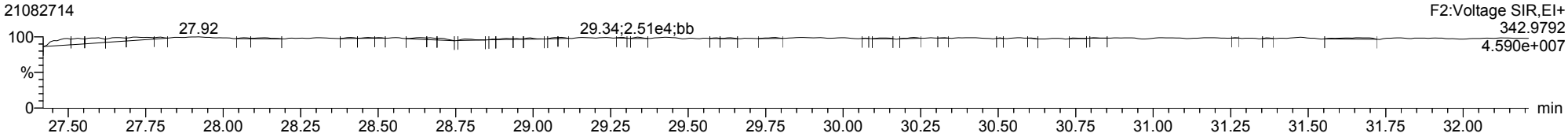

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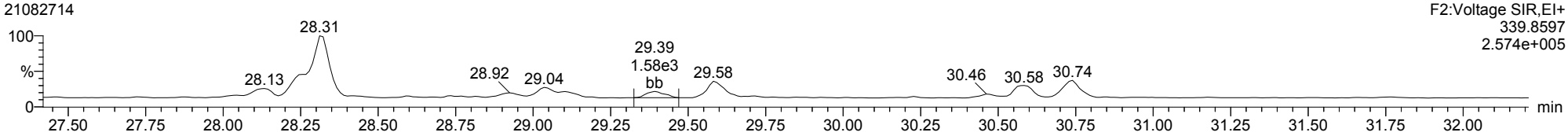

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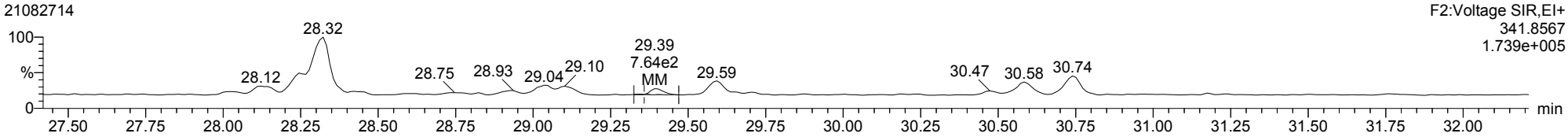

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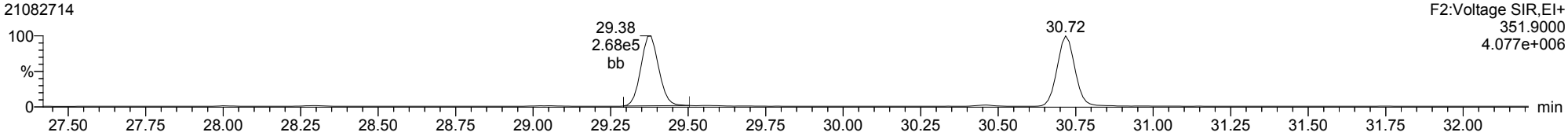

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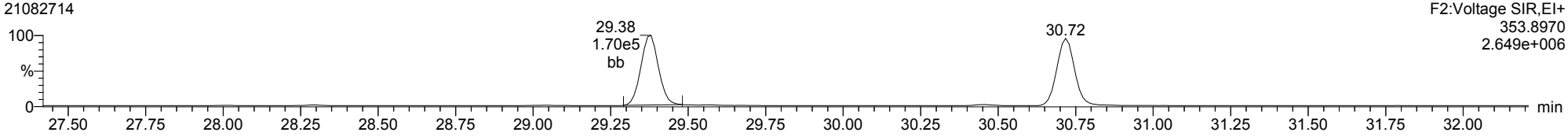
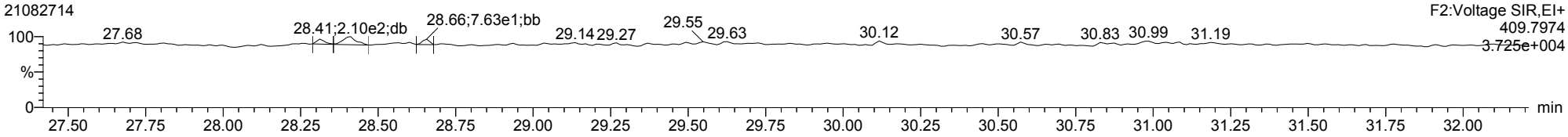


FUNCTION2 HPCDPE



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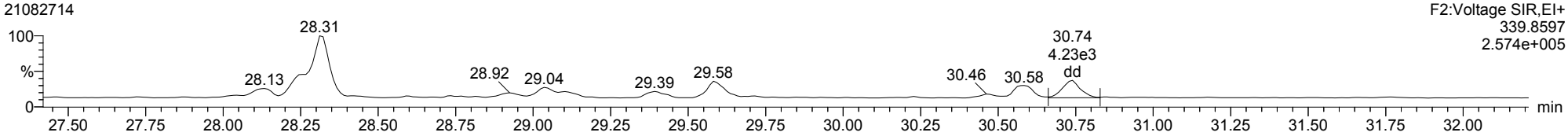
23478-PeCDF



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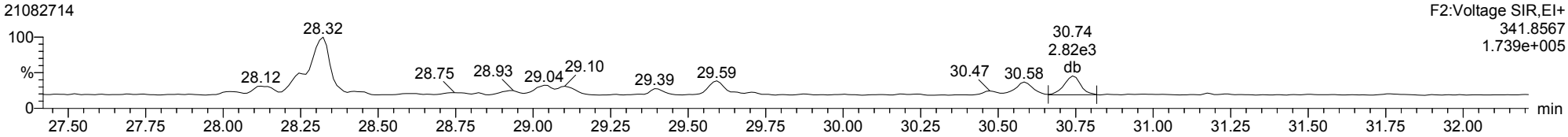

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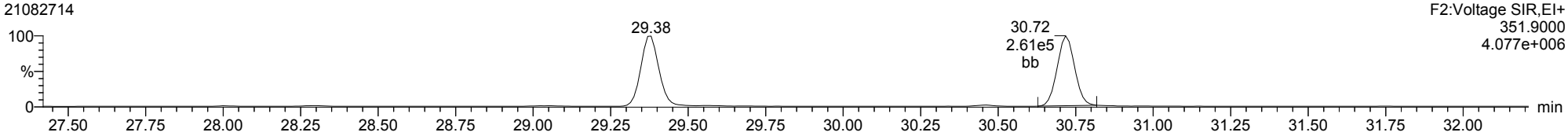

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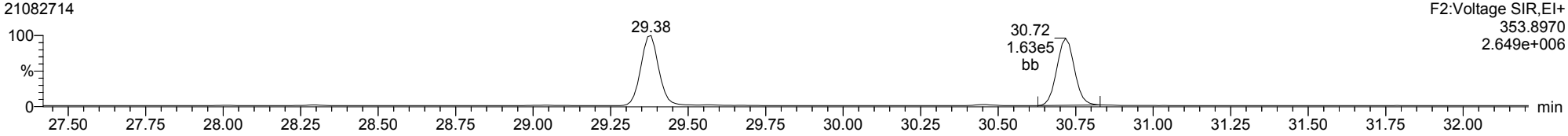

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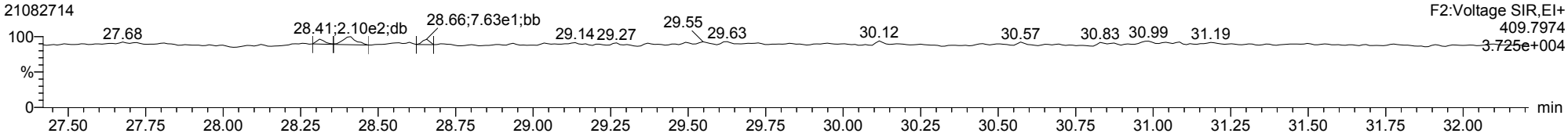

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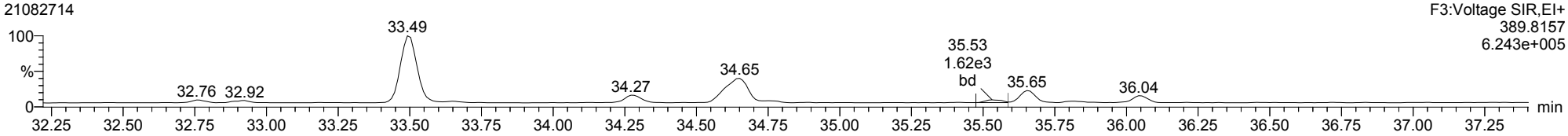
123478-HxCDD



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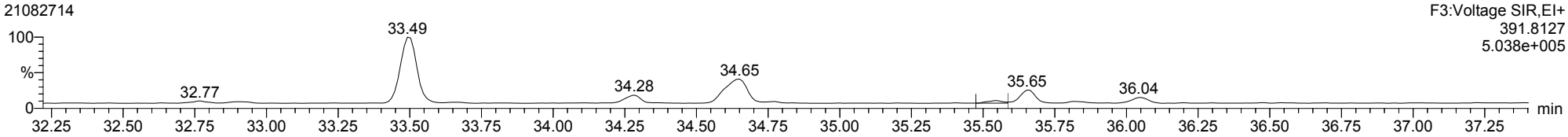

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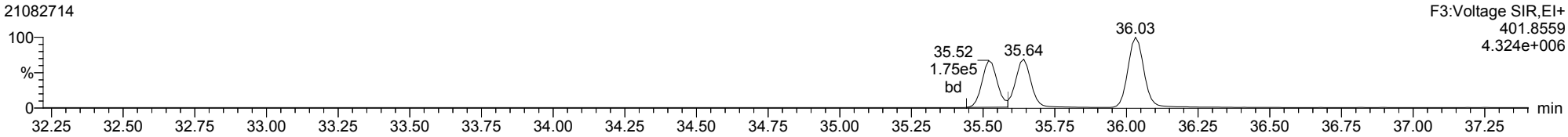

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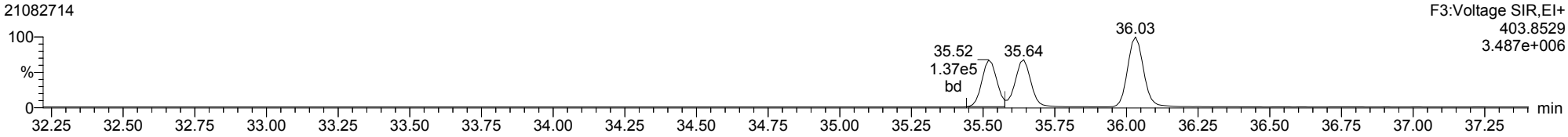
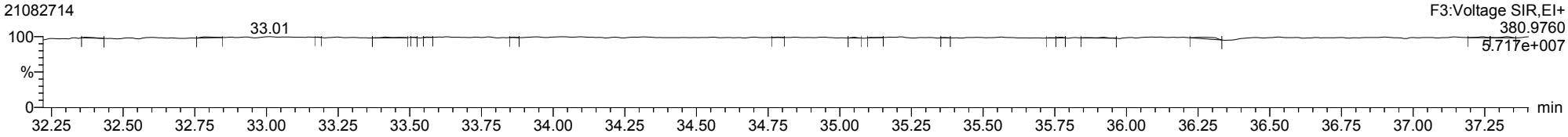


FUNCTION3 PFK



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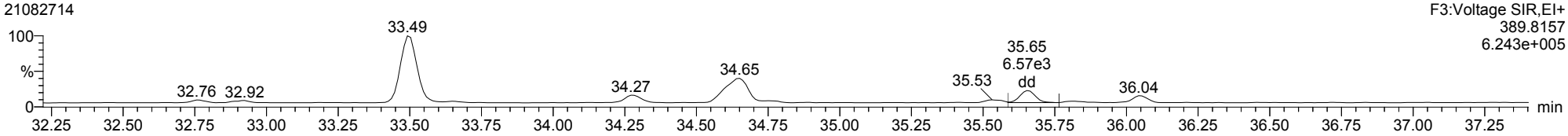
123678-HxCDD



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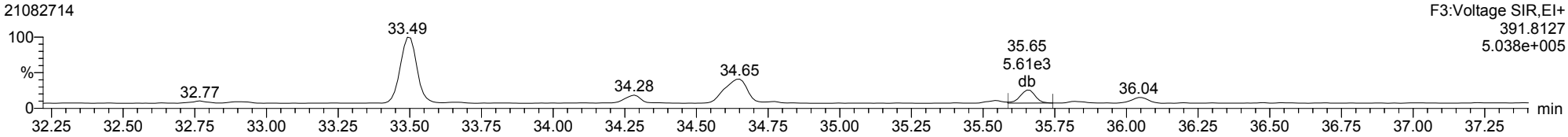

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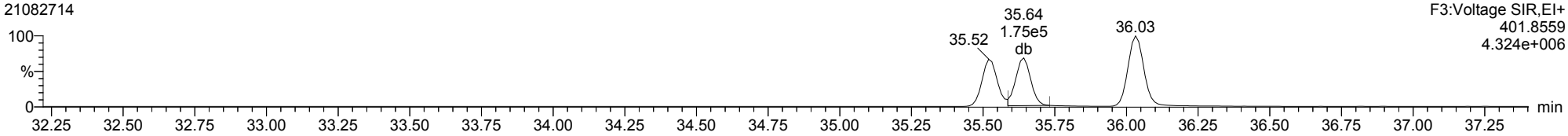

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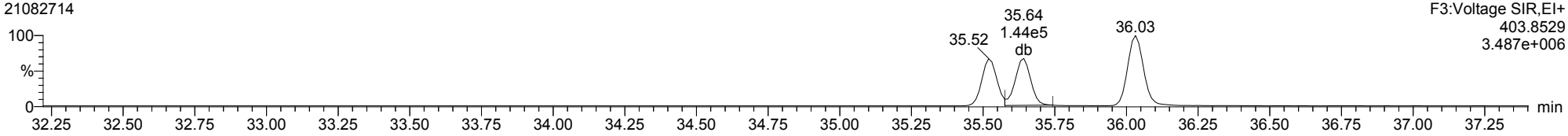

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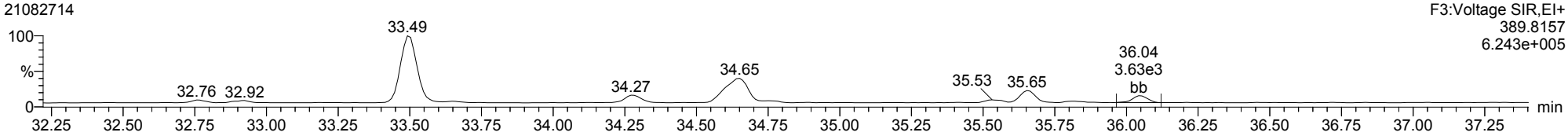
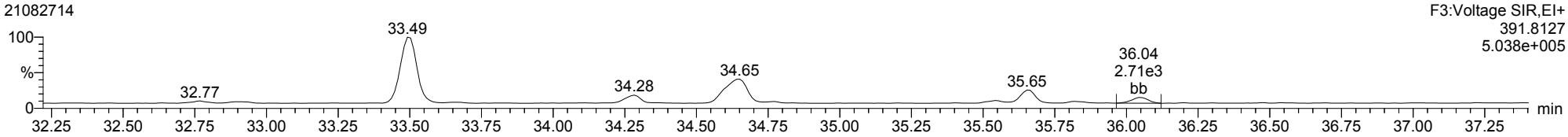


123789-HxCDD



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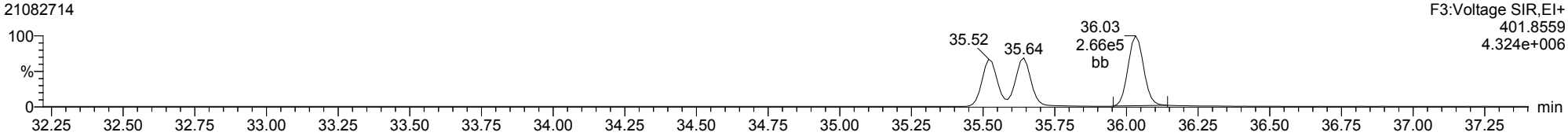

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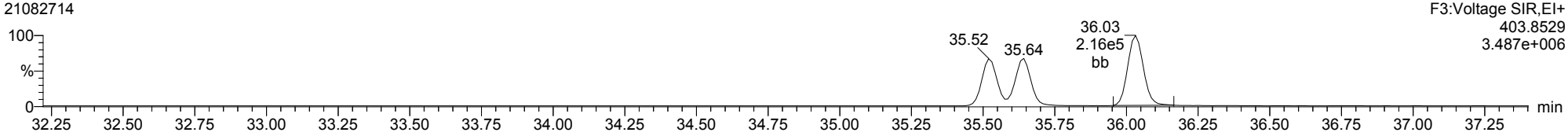

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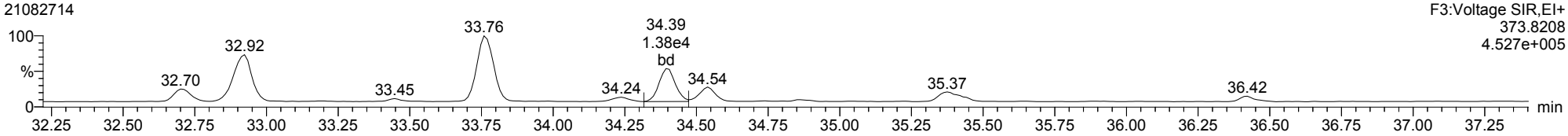
123478-HxCDF



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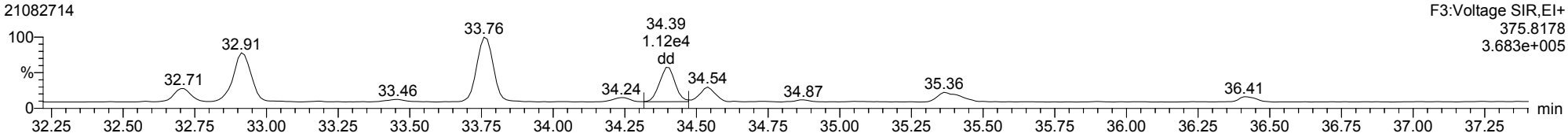

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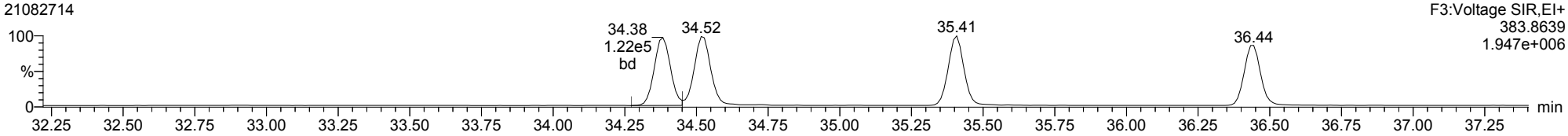

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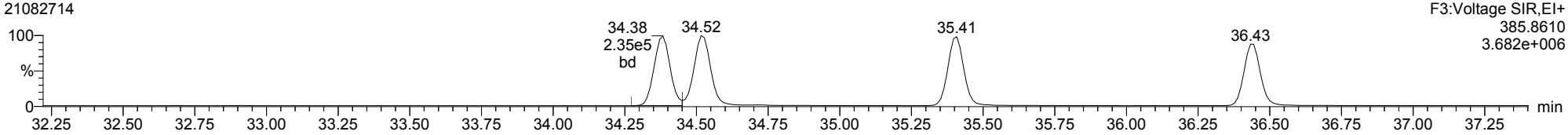
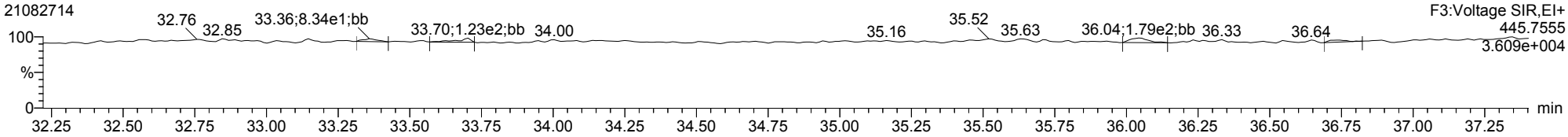


FUNCTION3 OCDPE



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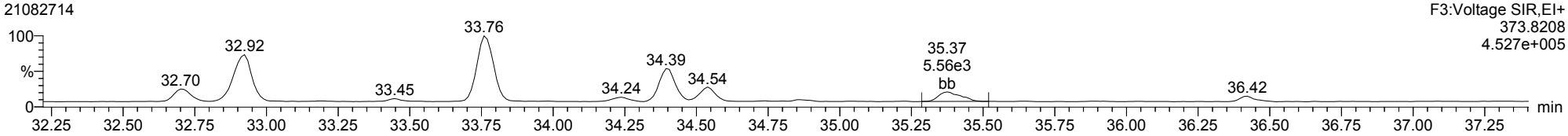
234678-HxCDF



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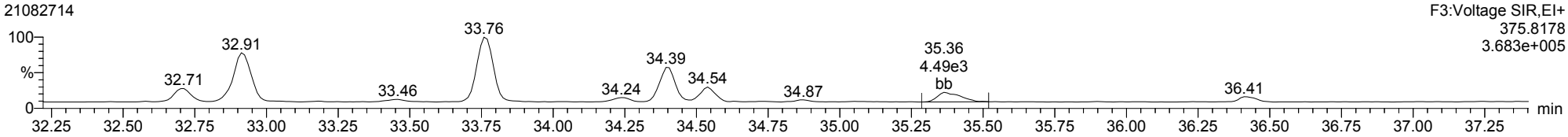

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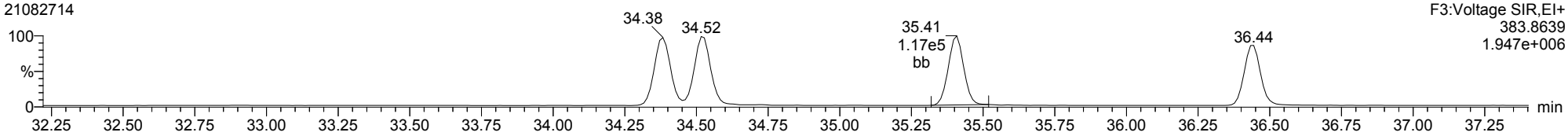

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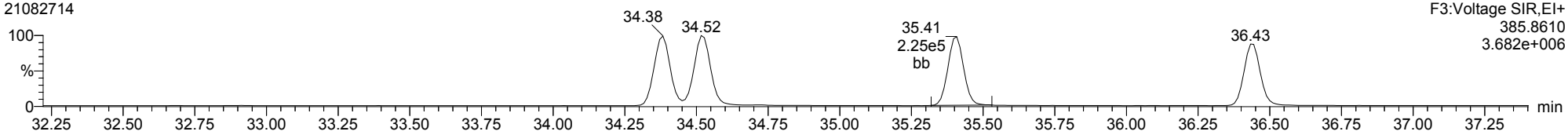
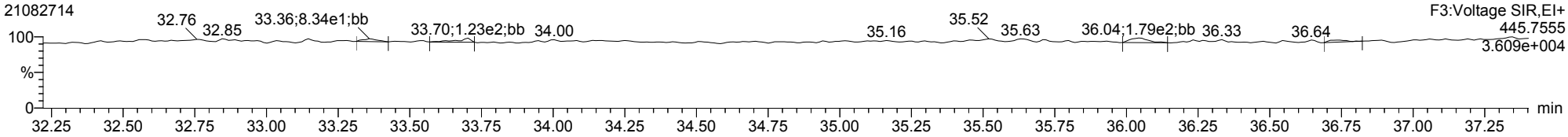


FUNCTION3 OCDPE



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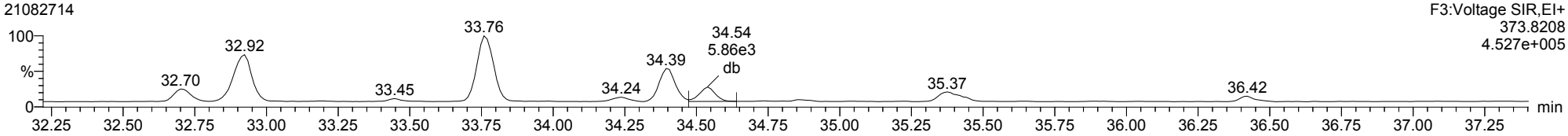
123678-HxCDF



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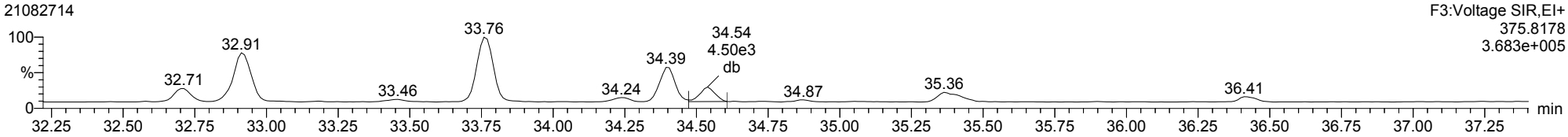

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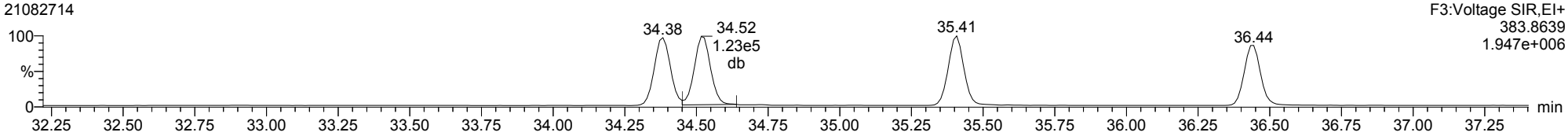

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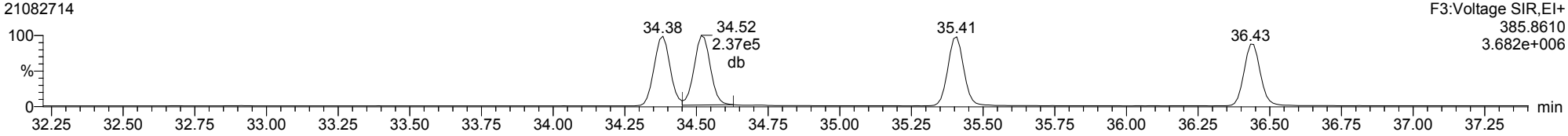
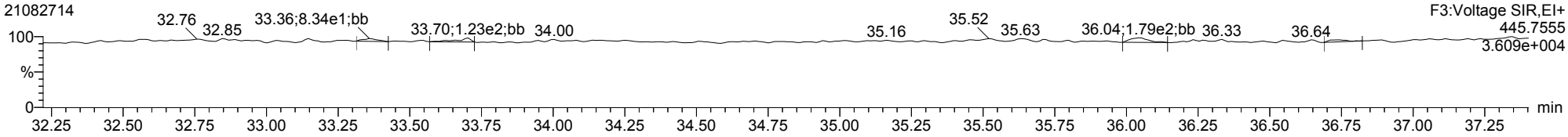


FUNCTION3 OCDPE



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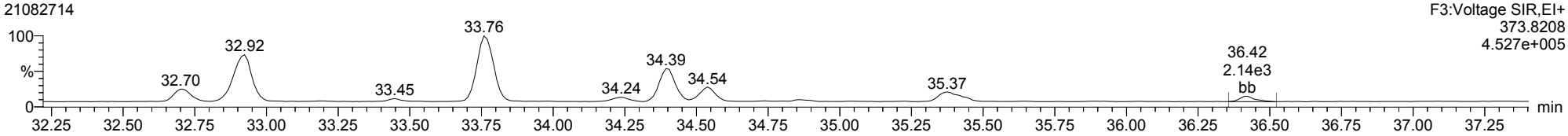
123789-HxCDF



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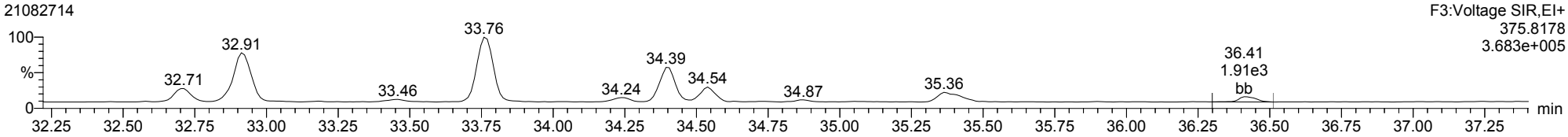

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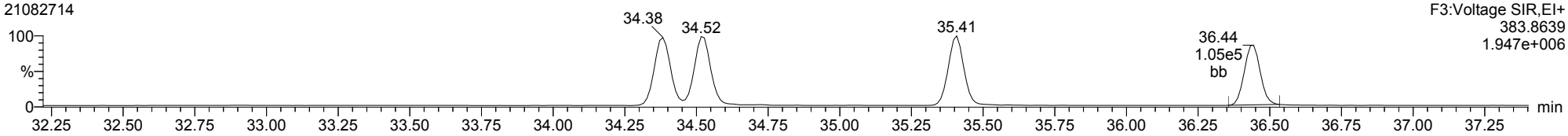

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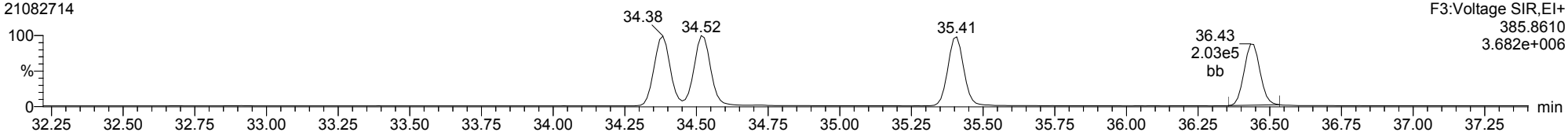

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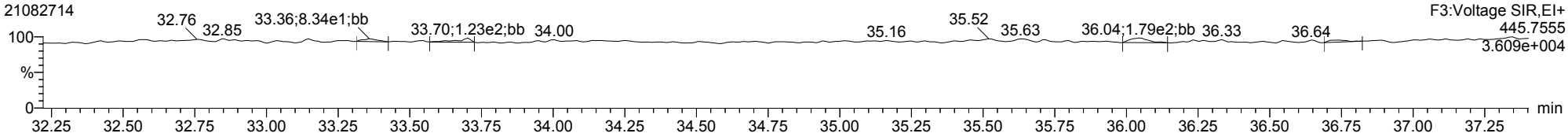
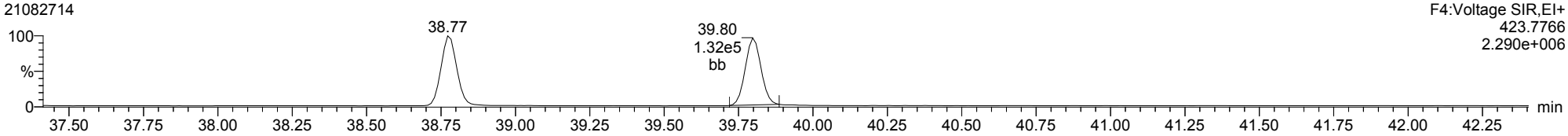
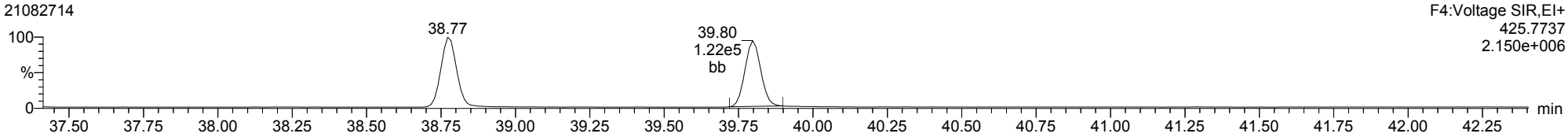


ID: 21G0108-06, Name: 21082714, Date: 27-Aug-2021, Time: 15:31:36, Conditions: AUTOSPEC01, User: pk

1234678-HpCDD



1234678-HpCDD



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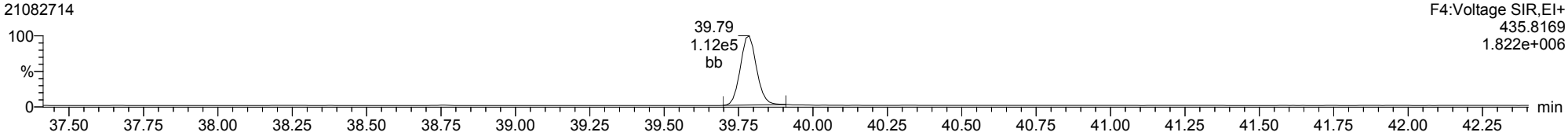

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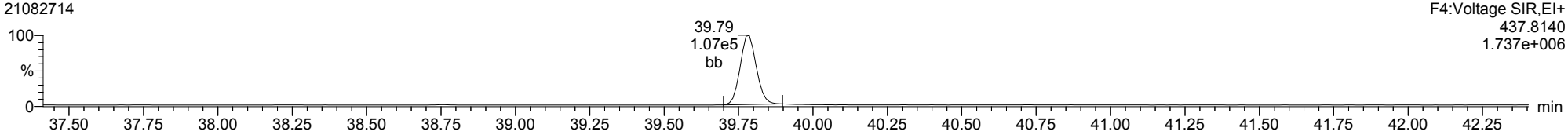

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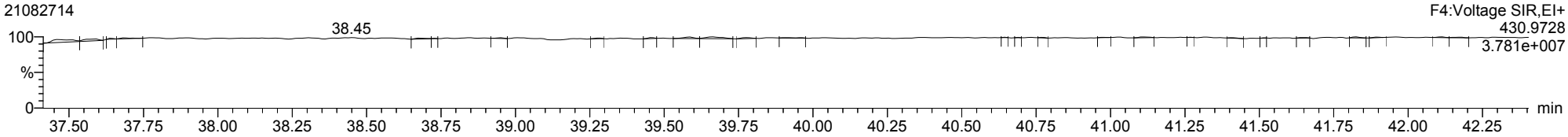

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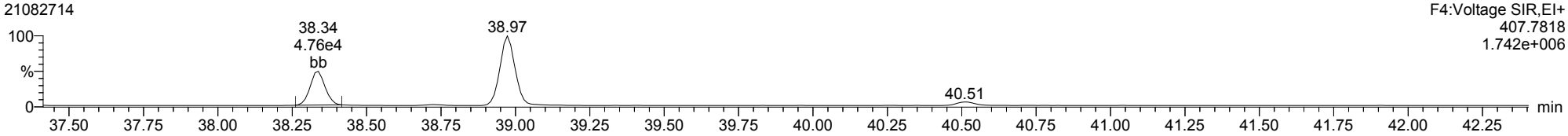

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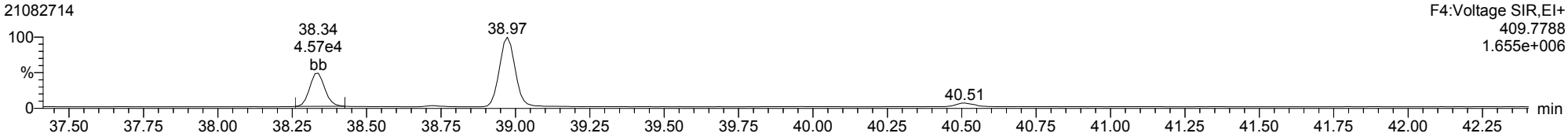

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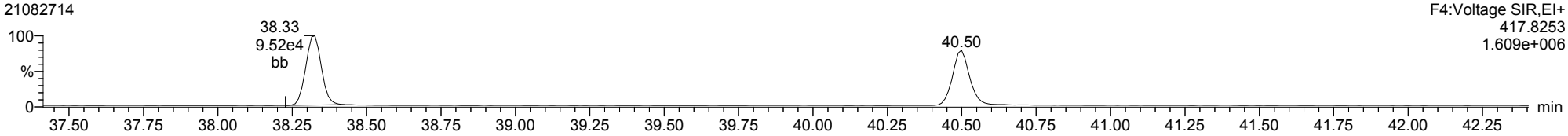

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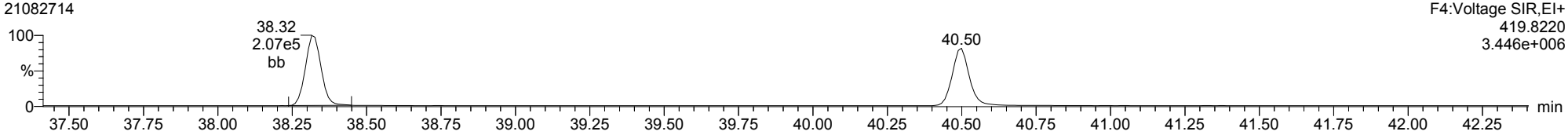
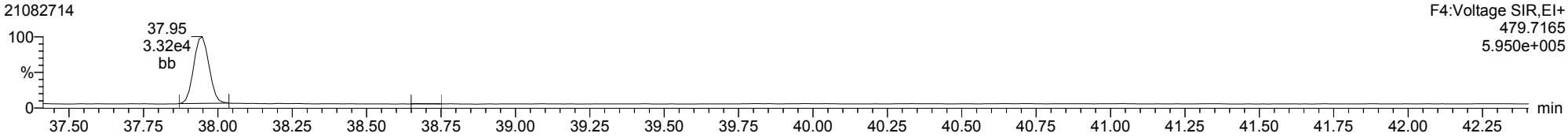


FUNCTION4 NCDPE



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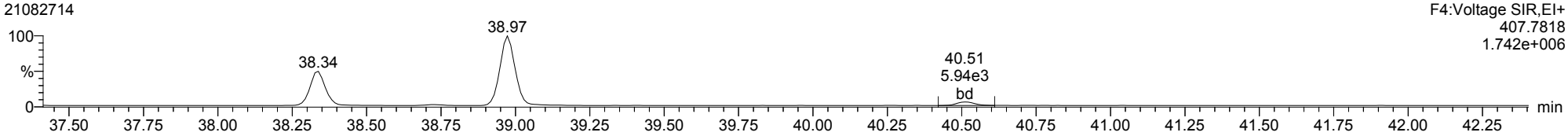
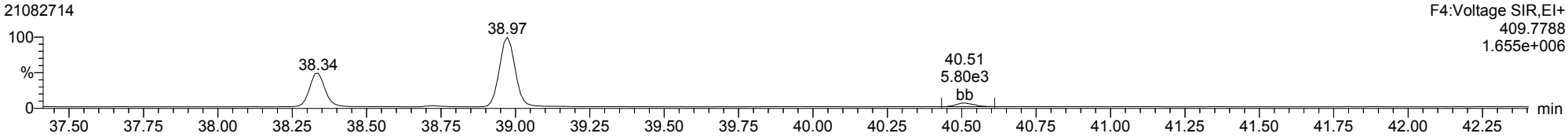
1234789-HpCDF



1234789-HpCDF



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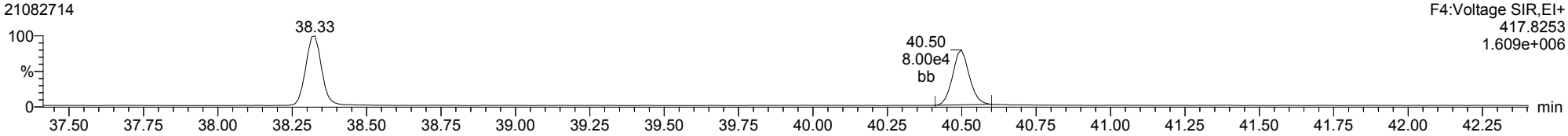

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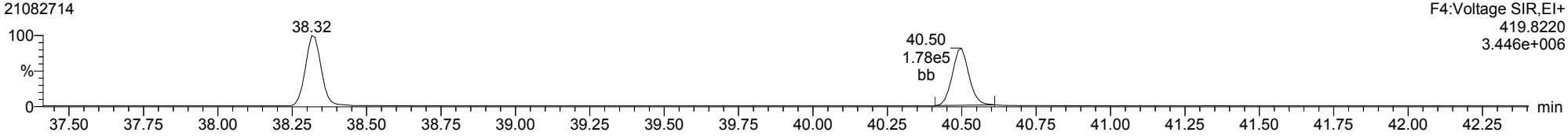
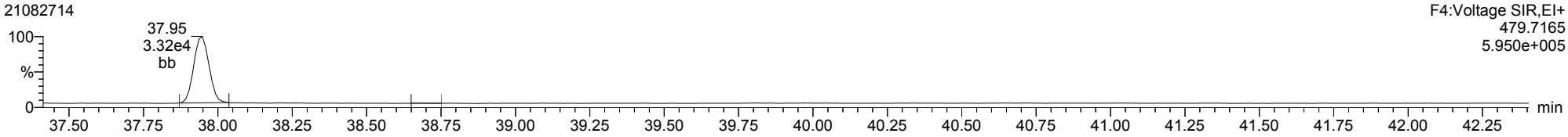
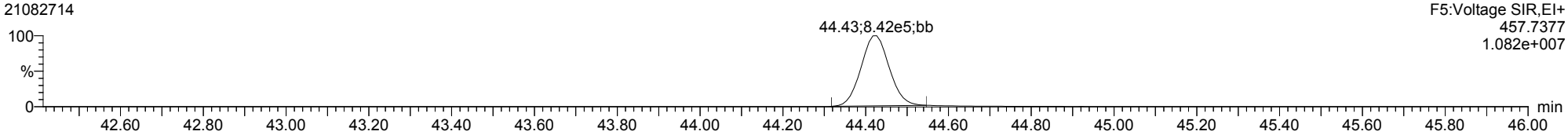


FUNCTION4 NCDPE



ID: 21G0108-06, Name: 21082714, Date: 27-Aug-2021, Time: 15:31:36, Conditions: AUTOSPEC01, User: pk

OCDD



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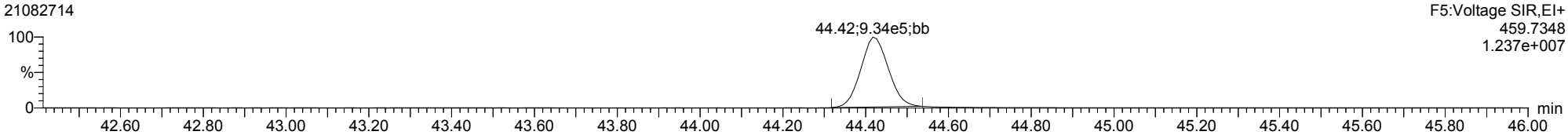

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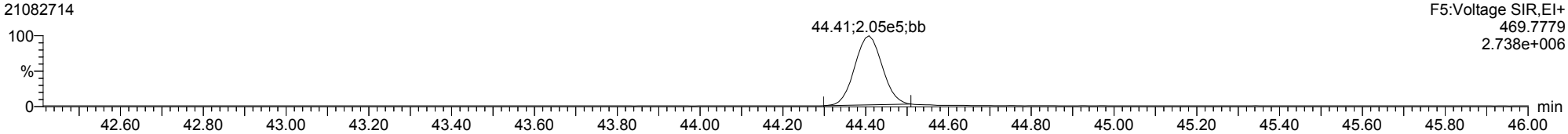

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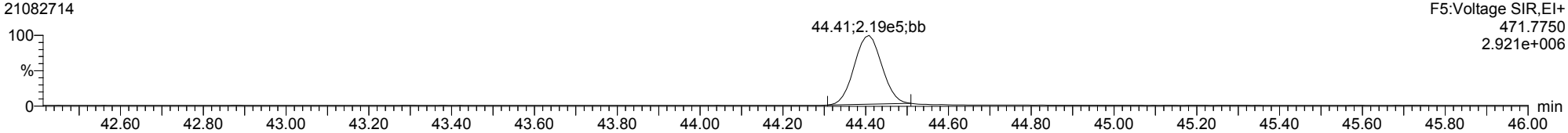
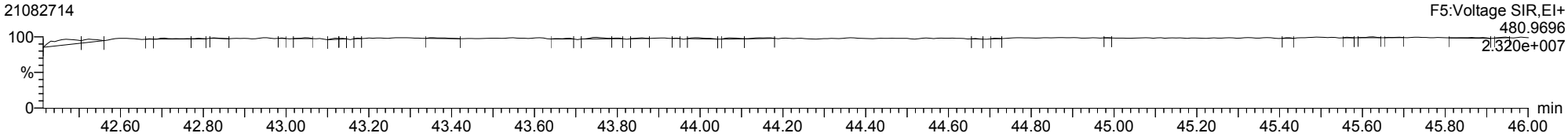


FUNCTION5 PFK



ID: 21G0108-06, Name: 21082714, Date: 27-Aug-2021, Time: 15:31:36, Conditions: AUTOSPEC01, User: pk

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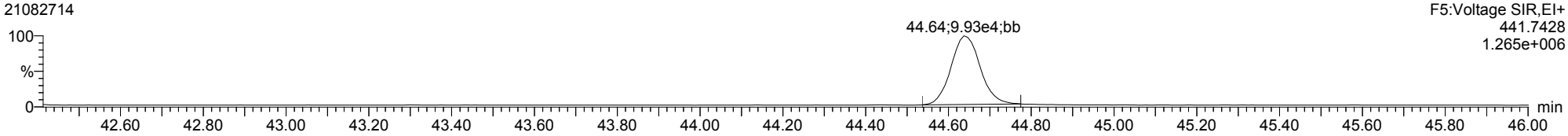

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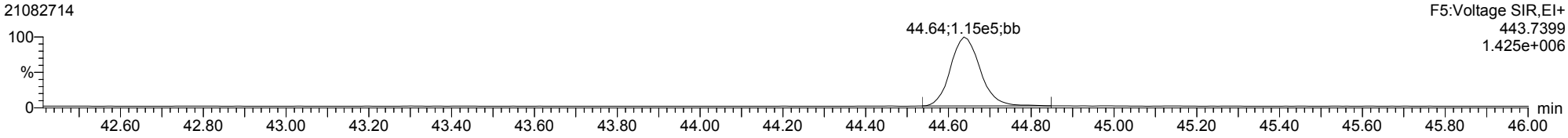
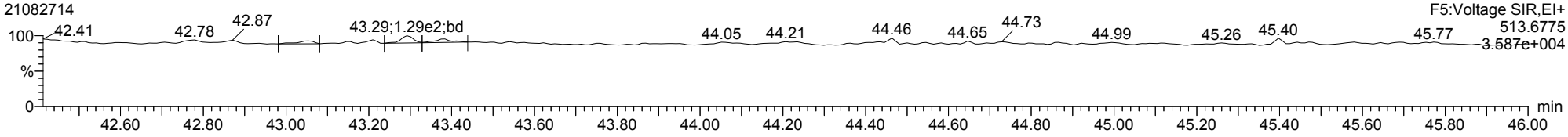


FUNCTION5 DCDPE



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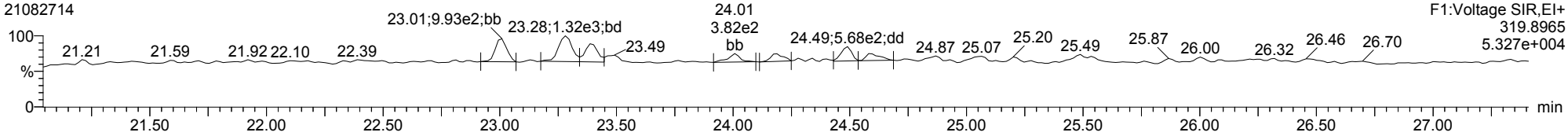
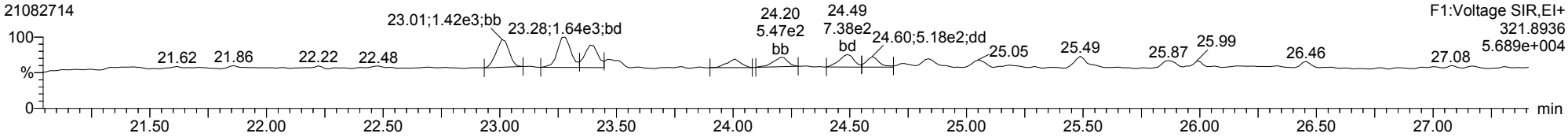


Total-tetradioxins



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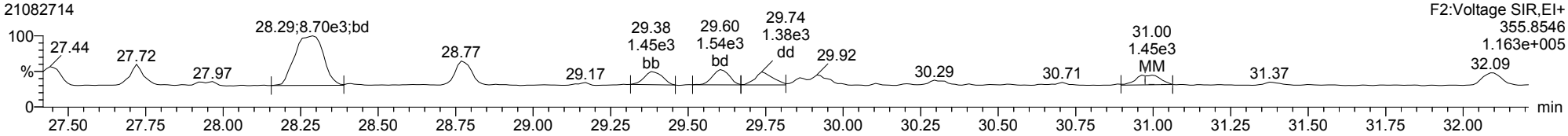
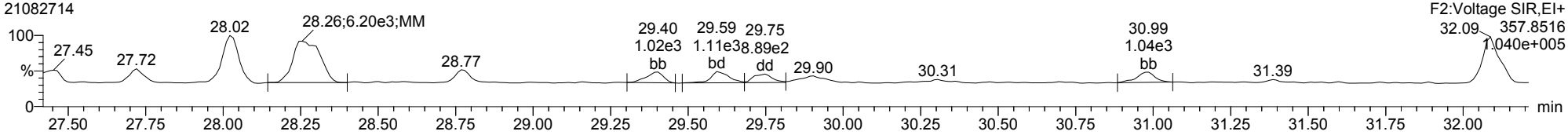


Total-pentadioxins



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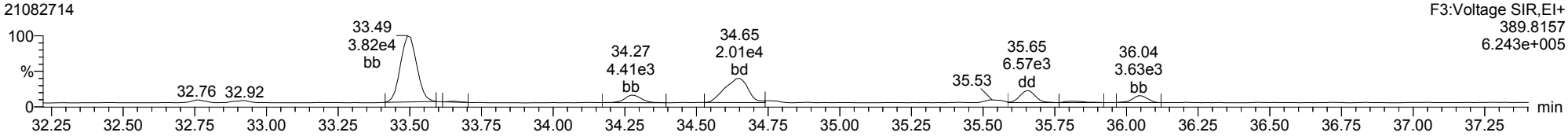
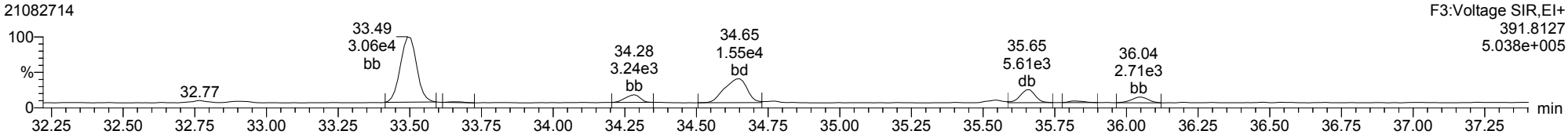


Total-hexadioxins



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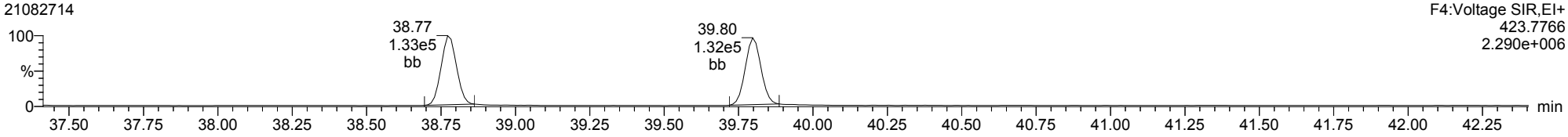

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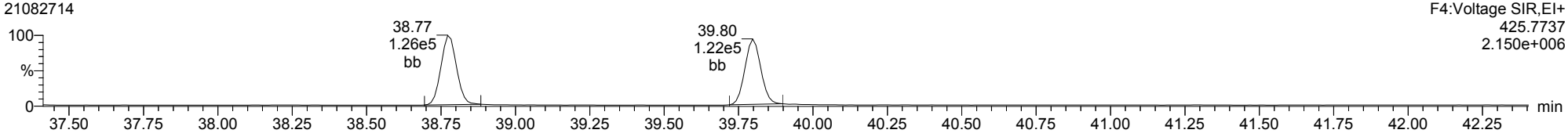

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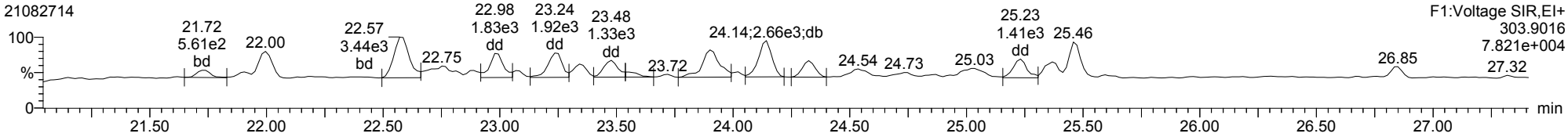
Total-tetrafurans



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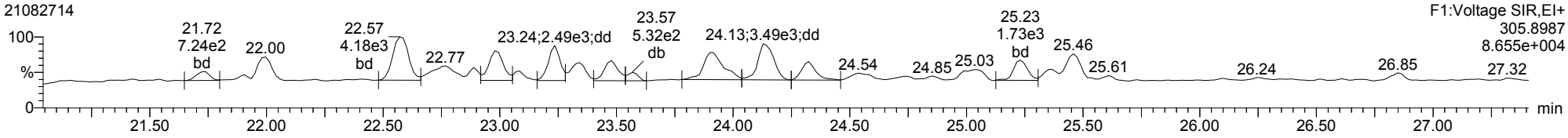

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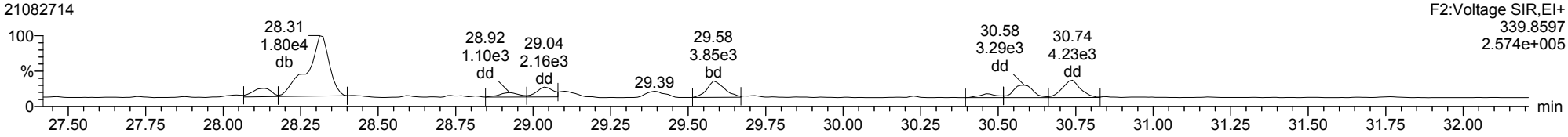

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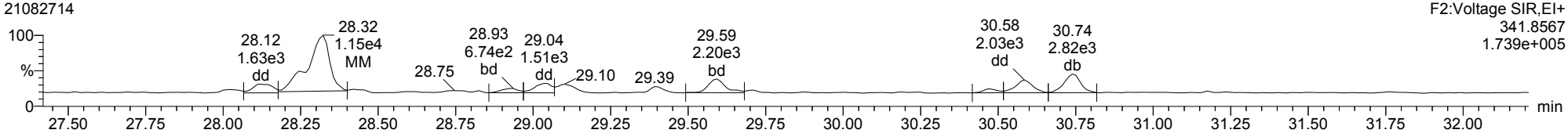

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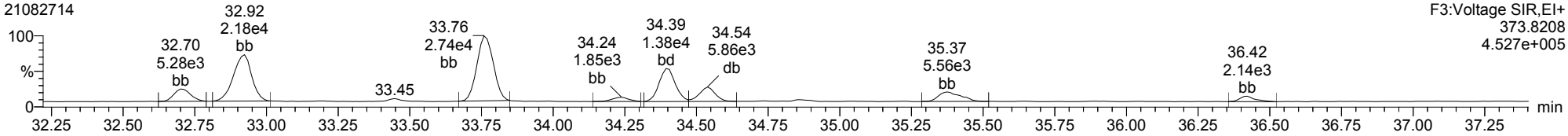
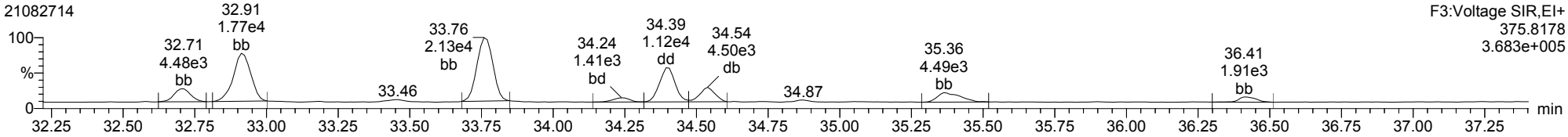
Printed: Monday, August 30, 2021 13:42:59 Pacific Daylight Time

ID: 21G0108-06, Name: 21082714, Date: 27-Aug-2021, Time: 15:31:36, Conditions: AUTOSPEC01, User: pk

Total-hexafurans



Total-hexafurans



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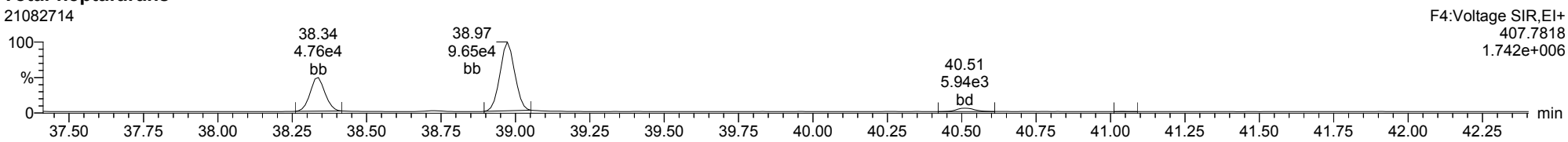

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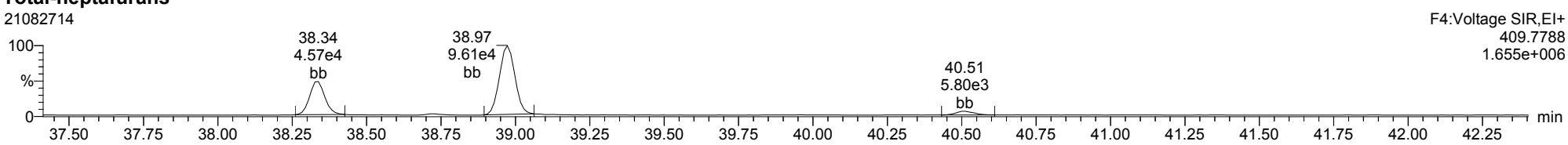

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT649C

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21G0108-07 C	File ID:	21082715
Sampled:	07/08/21 16:26	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 16:20
% Solids:	75.22	Preparation:	EPA 8290	Initial/Final:	13.3 g Wet / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	0.469	1.00	ND	ng/kg	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.458	1.00	ND	ng/kg	U
57117-41-6	1,2,3,7,8-PeCDF	1		1.318-1.783	0.208	1.00	ND	ng/kg	U
57117-31-4	2,3,4,7,8-PeCDF	1		1.318-1.783	0.201	1.00	ND	ng/kg	U
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	0.370	1.00	ND	ng/kg	U
70648-26-9	1,2,3,4,7,8-HxCDF	1	1.248	1.054-1.426	0.236	1.00	0.368	ng/kg	J
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	0.225	1.00	ND	ng/kg	U
60851-34-5	2,3,4,6,7,8-HxCDF	1		1.054-1.426	0.228	1.00	ND	ng/kg	U
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.257	1.00	ND	ng/kg	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	0.213	1.00	ND	ng/kg	U
57653-85-7	1,2,3,6,7,8-HxCDD	1		1.054-1.426	0.213	1.00	ND	ng/kg	U
19408-74-3	1,2,3,7,8,9-HxCDD	1		1.054-1.426	0.228	1.00	ND	ng/kg	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.076	0.893-1.208	0.259	1.00	1.25	ng/kg	
55673-89-7	1,2,3,4,7,8,9-HpCDF	1		0.893-1.208	0.348	1.00	ND	ng/kg	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.288	0.893-1.208	0.404	2.50	4.66	ng/kg	EMPC
39001-02-0	OCDF	1	1.027	0.757-1.024	0.309	2.50	1.44	ng/kg	EMPC, J
3268-87-9	OCDD	1	0.850	0.757-1.024	0.336	10.0	27.5	ng/kg	B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			1.00	1.28	ng/kg
41903-57-5	Total TCDD	1	0.000			1.00	1.16	ng/kg
30402-15-4	Total PeCDF	1	0.000			1.00	3.48	ng/kg
36088-22-9	Total PeCDD	1	0.000			1.00	0.220	ng/kg
55684-94-1	Total HxCDF	1	0.000			1.00	3.94	ng/kg
34465-46-8	Total HxCDD	1	0.000			1.00	1.33	ng/kg
38998-75-3	Total HpCDF	1	0.000			1.00	2.95	ng/kg
37871-00-4	Total HpCDD	1	0.000			1.00	4.44	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.105
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.645

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT649C

Form 2
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21G0108-07	File ID:	21082715
Sampled:	07/08/21 16:26	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 16:20
Solids Wt%:	75.22	Preparation:	EPA 8290	Initial/Final:	13.3 g / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.814	0.655-0.886	0.306	57.6	24 - 169 %	
13C12-2,3,7,8-TCDD		0.750	0.655-0.886	0.282	61.2	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.618	1.318-1.783	0.223	70.3	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.577	1.318-1.783	0.234	68.6	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.570	1.318-1.783	0.270	71.0	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.513	0.434-0.587	0.167	53.7	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.519	0.434-0.587	0.154	51.5	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.515	0.434-0.587	0.171	51.8	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.521	0.434-0.587	0.206	55.3	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.269	1.054-1.426	0.244	61.9	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.263	1.054-1.426	0.225	57.8	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.449	0.374-0.506	0.311	61.2	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.458	0.374-0.506	0.380	62.3	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.072	0.893-1.208	0.267	65.9	23 - 140 %	
13C12-OCDD		0.907	0.757-1.024	0.449	75.3	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.103	61.0	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:43:11 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-07, Name: 21082715, Date: 27-Aug-2021, Time: 16:20:42, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF					1.108		0.770	2375	2203								
12378-PeCDF					1.015		1.550	918	1115								
23478-PeCDF					1.126		1.550	918	1115								
123478-HxCDF	34.394	1.000	3.286e2	2.632e2	1.017	1.248	1.240	679	1234	5.25e3	3.77e3	7.7	3.1	NO	bd	bd	0.184
234678-HxCDF					1.052		1.240	679	1234								
123678-HxCDF					1.037		1.240	679	1234								
123789-HxCDF					1.030		1.240	679	1234								
1234678-HpCDF	38.338	1.000	1.154e3	1.072e3	1.327	1.076	1.050	1114	1374	1.94e4	2.10e4	17.4	15.3	NO	bd	bb	0.625
1234789-HpCDF				1.897e2	1.283	0.000	1.050	1114	1374		3.61e3		2.6	YES	MM-	bd	
OCDF	44.629	1.005	9.473e2	9.220e2	1.447	1.027	0.890	800	902	1.38e4	1.39e4	17.2	15.4	YES	bb	bb	0.720
2378-TCDD					0.920		0.770	1829	1204								
12378-PeCDD					0.995		1.550	1183	908								
123478-HxCDD					1.027		1.240	806	829								
123678-HxCDD					1.009		1.240	806	829								
123789-HxCDD					0.950		1.240	806	829								
1234678-HpCDD	39.809	1.001	2.764e3	2.145e3	1.068	1.288	1.050	1142	1045	4.46e4	2.84e4	39.0	27.2	YES	bd	bb	2.329
OCDD	44.428	1.000	1.341e4	1.577e4	1.181	0.850	0.890	834	677	1.70e5	1.94e5	203.5	286.9	NO	bb	bb	13.764
13C-2378-TCDF	25.216	1.007	1.603e5	1.969e5	1.427	0.814	0.770	2815	1997	2.37e6	2.90e6	843.5	1449.6	NO	bb	bb	57.569
13C-12378-PeCDF	29.381	1.174	2.452e5	1.516e5	1.297	1.618	1.550	1918	1270	3.56e6	2.21e6	1857.5	1736.2	NO	bb	bb	70.335
13C-23478-PeCDF	30.729	1.227	2.258e5	1.432e5	1.236	1.577	1.550	1918	1270	3.29e6	2.09e6	1717.8	1649.0	NO	bb	bb	68.623
13C-123478-HxCDF	34.383	0.954	1.073e5	2.090e5	1.242	0.513	0.510	1099	1504	1.62e6	3.26e6	1476.4	2164.0	NO	bd	bd	53.748
13C-123678-HxCDF	34.528	0.958	1.119e5	2.155e5	1.343	0.519	0.510	1099	1504	1.68e6	3.25e6	1531.1	2157.8	NO	db	db	51.462
13C-234678-HxCDF	35.408	0.983	1.013e5	1.966e5	1.215	0.515	0.510	1099	1504	1.63e6	3.17e6	1481.8	2110.0	NO	bb	bb	51.780
13C-123789-HxCDF	36.444	1.011	9.034e4	1.734e5	1.008	0.521	0.510	1099	1504	1.49e6	2.81e6	1352.5	1870.5	NO	bb	bb	55.273
13C-1234678-HpCDF	38.327	1.064	8.315e4	1.851e5	0.926	0.449	0.440	1344	2269	1.35e6	2.99e6	1001.7	1316.3	NO	bb	bd	61.153
13C-1234789-HpCDF	40.500	1.124	7.025e4	1.533e5	0.758	0.458	0.440	1344	2269	1.05e6	2.32e6	781.6	1022.1	NO	bd	bb	62.276
13C-1234-TCDD	25.035	0.000	1.889e5	2.460e5	1.000	0.768	0.770	2147	1322	2.87e6	3.71e6	1336.5	2807.8	NO	bb	bb	100.000
13C-2378-TCDD	25.851	1.033	1.274e5	1.698e5	1.116	0.750	0.770	2147	1322	1.85e6	2.51e6	860.8	1901.9	NO	bb	bb	61.215
13C-12378-PeCDD	30.974	1.237	1.381e5	8.800e4	0.732	1.570	1.550	1023	1153	2.08e6	1.35e6	2034.5	1169.1	NO	bb	bb	71.044
13C-123478-HxCDD	35.531	0.986	1.574e5	1.241e5	0.960	1.269	1.240	1556	1387	2.51e6	1.98e6	1612.9	1430.5	NO	bd	bd	61.935
13C-123678-HxCDD	35.642	0.989	1.591e5	1.260e5	1.041	1.263	1.240	1556	1387	2.54e6	2.04e6	1633.9	1467.9	NO	db	db	57.813
13C-1234678-HpCDD	39.787	1.104	1.021e5	9.529e4	0.632	1.072	1.050	1093	1028	1.57e6	1.48e6	1439.8	1442.2	NO	bb	bb	65.916
13C-OCDD	44.409	1.232	1.708e5	1.883e5	0.504	0.907	0.890	1309	1528	2.17e6	2.36e6	1659.6	1543.4	NO	bb	bb	150.550
13C-123789-HxCDD	36.032	0.000	2.602e5	2.134e5	1.000	1.219	1.240	1556	1387	4.13e6	3.35e6	2658.0	2416.8	NO	bb	bd	100.000
37CL-2378-TCDD	25.882	1.034	1.149e5		1.084			1226		1.72e6		1403.5			dd		24.385

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
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ID: 21G0108-07, Name: 21082715, Date: 27-Aug-2021, Time: 16:20:42, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF					1.425		0.770	2375	2203								
1289-TCDF					1.043		0.770	2375	2203								
13468-PECDF	26.668	0.908	4.349e3	3.121e3	1.376	1.393	1.550	1332	1073	6.44e4	4.05e4	48.3	37.8	NO	bb	bb	1.368
12389-PECDF					1.000		1.550	918	1115								
123468-HXCDF	32.701	0.951	3.163e2	2.272e2	1.087	1.392	1.240	679	1234	4.57e3	4.15e3	6.7	3.4	NO	bb	bb	0.158
1368-TCDD	23.009	0.890	1.021e3	1.007e3	0.923	1.014	0.770	1829	1204	1.43e4	1.48e4	7.8	12.3	YES	bd	db	0.739
1289-TCDD					0.794		0.770	1829	1204								
12479-PECDD	28.256	0.912	7.698e2	1.774e2	1.843	4.340	1.550	1183	908	1.41e4	4.93e3	11.9	5.4	YES	dd	dd	0.227
12389-PECDD					1.154		1.550	1183	908								
124679-HXCDD	33.503	0.943	1.107e3	9.974e2	1.125	1.110	1.240	806	829	1.67e4	1.76e4	20.7	21.2	NO	bb	bb	0.665
1234679-HPCDD	38.784	0.975	2.738e3	2.569e3	1.211	1.066	1.050	1142	1045	4.71e4	4.38e4	41.2	42.0	NO	bb	bb	2.220
Total-tetrafurans			1.172e3		1.192			2375		1.95e4							0.639
Total-penta1			4.349e3					1332		6.44e4							1.368
Total-pentafurans			8.887e2		1.047			918		1.79e4							0.371
Total-hexafurans			3.486e3		1.045			679		5.07e4							1.971
Total-heptafurans			2.599e3		1.305			1114		4.09e4							1.476
Total-Furans			1.249e4		1.158			2375		1.93e5							5.825
Total-tetradioxins			6.615e2		0.879			1829		9.63e3							0.579
Total-pentadioxins			2.011e2		1.331			1183		5.46e3							0.110
Total-hexadioxins			1.107e3		1.028			806		1.67e4							0.665
Total-heptadioxins			2.738e3		1.140			1142		4.71e4							2.220
Total-Dioxins			1.847e4		1.092			1829		2.54e5							17.587
Total-TEQ			3.096e4					1829		4.47e5							23.412
FUNCTION1 PFK			2.609e5					690960		5.78e6							
FUNCTION2 PFK			1.092e6					457747		2.35e7							0.000
FUNCTION3 PFK			9.681e5					607637		2.84e7							0.000
FUNCTION4 PFK			3.842e5					373242		3.01e6							
FUNCTION5 PFK			2.160e5					237959		7.21e6							
FUNCTION1 HXCD...			2.921e3					1139		5.08e4							0.000
FUNCTION1 HPCD...			2.006e3					1158		4.34e4							0.000
FUNCTION2 HPCD...			1.908e3					1151		4.00e4							0.000
FUNCTION3 OCDPE			1.789e2					671		2.65e3							0.000
FUNCTION4 NCDPE			6.379e4					1234		1.10e6							0.000
FUNCTION5 DCDPE			3.243e2					753		5.40e3							0.000

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
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Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-07, Name: 21082715, Date: 27-Aug-2021, Time: 16:20:42, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	22.57	1.172e3	1.547e3	1.192	0.76	0.77	8.2	YES	NO	bd	bd	0.639

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.67	4.349e3	3.121e3	1.376	1.39	1.55	48.3	YES	NO	bb	bb	1.368

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentafurans	28.26	8.887e2	5.972e2	1.047	1.49	1.55	19.5	YES	NO	dd	bd	0.371

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123478-HxCDF	34.39	3.286e2	2.632e2	1.017	1.25	1.24	7.7	YES	NO	bd	bd	0.184
2	Total-hexafurans	33.77	1.331e3	1.106e3	1.045	1.20	1.24	28.4	YES	NO	bb	bb	0.775
3	Total-hexafurans	32.92	1.510e3	1.178e3	1.045	1.28	1.24	31.8	YES	NO	bb	bb	0.854
4	123468-HXCDF	32.70	3.163e2	2.272e2	1.087	1.39	1.24	6.7	YES	NO	bb	bb	0.158

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-heptafurans	38.98	1.445e3	1.287e3	1.305	1.12	1.05	19.4	YES	NO	bb	bb	0.851
2	1234678-HpCDF	38.34	1.154e3	1.072e3	1.327	1.08	1.05	17.4	YES	NO	bd	bb	0.625

ID: 21G0108-07, Name: 21082715, Date: 27-Aug-2021, Time: 16:20:42, Conditions: AUTOSPEC01, User: pk

Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	22.57	1.172e3	1.547e3	1.192	0.76	0.77	8.2	YES	NO	bd	bd	0.639
2	Total-pentafurans	28.26	8.887e2	5.972e2	1.047	1.49	1.55	19.5	YES	NO	dd	bd	0.371
3	123478-HxCDF	34.39	3.286e2	2.632e2	1.017	1.25	1.24	7.7	YES	NO	bd	bd	0.184
4	Total-hexafurans	33.77	1.331e3	1.106e3	1.045	1.20	1.24	28.4	YES	NO	bb	bb	0.775
5	Total-hexafurans	32.92	1.510e3	1.178e3	1.045	1.28	1.24	31.8	YES	NO	bb	bb	0.854
6	123468-HXCDF	32.70	3.163e2	2.272e2	1.087	1.39	1.24	6.7	YES	NO	bb	bb	0.158
7	Total-heptafurans	38.98	1.445e3	1.287e3	1.305	1.12	1.05	19.4	YES	NO	bb	bb	0.851
8	1234678-HpCDF	38.34	1.154e3	1.072e3	1.327	1.08	1.05	17.4	YES	NO	bd	bb	0.625
9	13468-PECDF	26.67	4.349e3	3.121e3	1.376	1.39	1.55	48.3	YES	NO	bb	bb	1.368

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	23.27	6.615e2	8.520e2	0.879	0.78	0.77	5.3	YES	NO	bd	bb	0.579

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentadioxins	28.13	2.011e2	1.302e2	1.331	1.54	1.55	4.6	YES	NO	bd	bd	0.110

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	124679-HXCDD	33.50	1.107e3	9.974e2	1.125	1.11	1.24	20.7	YES	NO	bb	bb	0.665

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234679-HPCDD	38.78	2.738e3	2.569e3	1.211	1.07	1.05	41.2	YES	NO	bb	bb	2.220

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ID: 21G0108-07, Name: 21082715, Date: 27-Aug-2021, Time: 16:20:42, Conditions: AUTOSPEC01, User: pk

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	23.27	6.615e2	8.520e2	0.879	0.78	0.77	5.3	YES	NO	bd	bb	0.579
2	Total-Dioxins	22.77	3.537e2	4.536e2	1.092	0.78	0.77	2.9	NO	NO	db	db	0.249
3	Total-pentadioxins	28.13	2.011e2	1.302e2	1.331	1.54	1.55	4.6	YES	NO	bd	bd	0.110
4	124679-HXCDD	33.50	1.107e3	9.974e2	1.125	1.11	1.24	20.7	YES	NO	bb	bb	0.665
5	1234679-HPCDD	38.78	2.738e3	2.569e3	1.211	1.07	1.05	41.2	YES	NO	bb	bb	2.220
6	OCDD	44.43	1.341e4	1.577e4	1.181	0.85	0.89	203.5	YES	NO	bb	bb	13.764

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	22.57	1.172e3	1.547e3	1.192	0.76	0.77	8.2	YES	NO	bd	bd	0.639
2	Total-pentafurans	28.26	8.887e2	5.972e2	1.047	1.49	1.55	19.5	YES	NO	dd	bd	0.371
3	123478-HxCDF	34.39	3.286e2	2.632e2	1.017	1.25	1.24	7.7	YES	NO	bd	bd	0.184
4	Total-hexafurans	33.77	1.331e3	1.106e3	1.045	1.20	1.24	28.4	YES	NO	bb	bb	0.775
5	Total-hexafurans	32.92	1.510e3	1.178e3	1.045	1.28	1.24	31.8	YES	NO	bb	bb	0.854
6	123468-HXCDF	32.70	3.163e2	2.272e2	1.087	1.39	1.24	6.7	YES	NO	bb	bb	0.158
7	Total-heptafurans	38.98	1.445e3	1.287e3	1.305	1.12	1.05	19.4	YES	NO	bb	bb	0.851
8	1234678-HpCDF	38.34	1.154e3	1.072e3	1.327	1.08	1.05	17.4	YES	NO	bd	bb	0.625
9	13468-PECDF	26.67	4.349e3	3.121e3	1.376	1.39	1.55	48.3	YES	NO	bb	bb	1.368
10	Total-tetradioxins	23.27	6.615e2	8.520e2	0.879	0.78	0.77	5.3	YES	NO	bd	bb	0.579
11	Total-Dioxins	22.77	3.537e2	4.536e2	1.092	0.78	0.77	2.9	NO	NO	db	db	0.249
12	Total-pentadioxins	28.13	2.011e2	1.302e2	1.331	1.54	1.55	4.6	YES	NO	bd	bd	0.110
13	124679-HXCDD	33.50	1.107e3	9.974e2	1.125	1.11	1.24	20.7	YES	NO	bb	bb	0.665
14	1234679-HPCDD	38.78	2.738e3	2.569e3	1.211	1.07	1.05	41.2	YES	NO	bb	bb	2.220
15	OCDD	44.43	1.341e4	1.577e4	1.181	0.85	0.89	203.5	YES	NO	bb	bb	13.764

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	21.19	4.568e4					1.9	NO		bb		
2	FUNCTION1 PFK	26.53	2.281e4					1.4	NO		bb		
3	FUNCTION1 PFK	26.35	2.314e4					1.3	NO		bb		
4	FUNCTION1 PFK	21.47	1.693e5					3.8	YES		bb		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	29.75	2.848e4					1.8	NO		bb		0.000
2	FUNCTION2 PFK	29.54	1.901e4					1.4	NO		bb		0.000
3	FUNCTION2 PFK	29.48	5.215e3					0.6	NO		bb		0.000
4	FUNCTION2 PFK	29.31	2.745e4					1.8	NO		bb		0.000
5	FUNCTION2 PFK	29.19	5.264e3					0.7	NO		bb		0.000
6	FUNCTION2 PFK	27.99	3.715e3					0.7	NO		bb		0.000
7	FUNCTION2 PFK	27.94	2.564e3					0.5	NO		bb		0.000
8	FUNCTION2 PFK	27.70	3.148e5					4.4	YES		db		0.000
9	FUNCTION2 PFK	27.59	9.039e4					5.5	YES		dd		0.000
10	FUNCTION2 PFK	27.54	8.484e4					6.5	YES		dd		0.000
11	FUNCTION2 PFK	27.51	1.406e5					7.8	YES		dd		0.000
12	FUNCTION2 PFK	27.48	1.244e5					6.2	YES		bd		0.000
13	FUNCTION2 PFK	32.03	2.172e4					1.3	NO		bb		0.000
14	FUNCTION2 PFK	31.83	1.949e3					0.4	NO		bb		0.000
15	FUNCTION2 PFK	31.74	6.890e3					0.6	NO		bb		0.000
16	FUNCTION2 PFK	31.65	6.903e4					1.9	NO		bb		0.000
17	FUNCTION2 PFK	31.53	8.755e3					0.8	NO		bb		0.000
18	FUNCTION2 PFK	31.45	5.772e4					1.8	NO		db		0.000
19	FUNCTION2 PFK	31.38	3.079e4					1.7	NO		dd		0.000
20	FUNCTION2 PFK	31.33	1.196e4					1.2	NO		bd		0.000
21	FUNCTION2 PFK	31.12	7.962e3					0.7	NO		bb		0.000
22	FUNCTION2 PFK	31.07	8.143e3					0.8	NO		bb		0.000
23	FUNCTION2 PFK	31.02	3.747e3					0.7	NO		bb		0.000
24	FUNCTION2 PFK	30.94	1.491e4					1.0	NO		bb		0.000
25	FUNCTION2 PFK	30.25	2.001e3					0.4	NO		bb		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	32.36	2.071e4					1.1	NO		bb		0.000
2	FUNCTION3 PFK	32.28	2.690e4					1.3	NO		bb		0.000
3	FUNCTION3 PFK	33.89	4.192e4					1.5	NO		bb		0.000
4	FUNCTION3 PFK	33.80	5.342e3					0.4	NO		bb		0.000
5	FUNCTION3 PFK	33.65	1.769e4					1.0	NO		db		0.000
6	FUNCTION3 PFK	33.59	3.201e4					1.2	NO		bd		0.000
7	FUNCTION3 PFK	33.50	1.238e4					0.8	NO		bb		0.000
8	FUNCTION3 PFK	33.44	9.987e3					0.4	NO		db		0.000
9	FUNCTION3 PFK	33.38	3.097e4					1.2	NO		dd		0.000
10	FUNCTION3 PFK	33.34	1.187e4					0.7	NO		bd		0.000
11	FUNCTION3 PFK	33.21	3.795e3					0.4	NO		bb		0.000
12	FUNCTION3 PFK	33.16	6.490e3					0.7	NO		bb		0.000
13	FUNCTION3 PFK	33.11	1.158e4					0.8	NO		db		0.000
14	FUNCTION3 PFK	33.07	1.089e4					0.6	NO		bd		0.000
15	FUNCTION3 PFK	32.85	4.667e4					1.9	NO		bb		0.000
16	FUNCTION3 PFK	32.78	3.461e4					1.7	NO		bb		0.000
17	FUNCTION3 PFK	32.67	3.855e4					0.9	NO		bb		0.000
18	FUNCTION3 PFK	32.46	1.103e4					0.5	NO		bb		0.000
19	FUNCTION3 PFK	35.41	2.257e3					0.3	NO		bb		0.000
20	FUNCTION3 PFK	35.36	5.640e3					0.6	NO		bb		0.000
21	FUNCTION3 PFK	35.30	6.906e3					0.5	NO		db		0.000
22	FUNCTION3 PFK	35.20	4.021e4					1.1	NO		bd		0.000
23	FUNCTION3 PFK	35.14	1.525e3					0.2	NO		bb		0.000
24	FUNCTION3 PFK	35.01	3.904e3					0.3	NO		bb		0.000
25	FUNCTION3 PFK	34.57	3.115e4					1.3	NO		bb		0.000
26	FUNCTION3 PFK	34.48	1.250e4					0.8	NO		bb		0.000
27	FUNCTION3 PFK	34.41	1.837e4					0.9	NO		db		0.000
28	FUNCTION3 PFK	34.38	6.028e3					0.7	NO		bd		0.000
29	FUNCTION3 PFK	34.34	9.057e3					0.8	NO		db		0.000
30	FUNCTION3 PFK	34.31	2.581e4					1.3	NO		bd		0.000
31	FUNCTION3 PFK	34.24	4.173e3					0.6	NO		bb		0.000
32	FUNCTION3 PFK	34.09	1.223e4					0.8	NO		db		0.000
33	FUNCTION3 PFK	34.04	4.630e4					1.6	NO		dd		0.000
34	FUNCTION3 PFK	33.98	3.305e4					1.7	NO		bd		0.000
35	FUNCTION3 PFK	36.89	1.892e4					1.0	NO		bb		0.000
36	FUNCTION3 PFK	36.70	2.138e4					1.0	NO		bb		0.000
37	FUNCTION3 PFK	36.63	2.499e4					1.0	NO		db		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION3 PFK	36.57	2.157e4					1.0	NO		bd		0.000
39	FUNCTION3 PFK	36.48	1.963e4					1.1	NO		db		0.000
40	FUNCTION3 PFK	36.41	6.279e4					2.1	NO		bd		0.000
41	FUNCTION3 PFK	36.10	2.114e3					0.3	NO		bb		0.000
42	FUNCTION3 PFK	36.05	9.376e3					0.7	NO		bb		0.000
43	FUNCTION3 PFK	36.00	5.552e3					0.5	NO		bb		0.000
44	FUNCTION3 PFK	35.92	8.965e3					0.6	NO		bb		0.000
45	FUNCTION3 PFK	35.88	2.133e3					0.3	NO		bb		0.000
46	FUNCTION3 PFK	35.83	1.100e4					0.9	NO		bb		0.000
47	FUNCTION3 PFK	35.72	1.560e4					0.8	NO		db		0.000
48	FUNCTION3 PFK	35.63	2.591e4					0.8	NO		dd		0.000
49	FUNCTION3 PFK	35.59	1.692e4					1.1	NO		dd		0.000
50	FUNCTION3 PFK	35.54	1.204e4					0.8	NO		bd		0.000
51	FUNCTION3 PFK	37.21	1.631e4					0.7	NO		bb		0.000
52	FUNCTION3 PFK	37.09	4.070e3					0.4	NO		bb		0.000
53	FUNCTION3 PFK	37.00	3.632e4					1.0	NO		bb		0.000

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	37.49	3.842e5					8.1	YES		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	43.53	5.225e3					1.2	NO		bd		
2	FUNCTION5 PFK	43.28	9.836e3					0.8	NO		bb		
3	FUNCTION5 PFK	43.15	4.628e3					1.0	NO		bb		
4	FUNCTION5 PFK	43.03	2.577e4					2.0	NO		db		
5	FUNCTION5 PFK	42.96	8.502e3					1.3	NO		bd		
6	FUNCTION5 PFK	42.65	5.145e3					1.2	NO		db		
7	FUNCTION5 PFK	42.60	2.442e4					2.3	NO		dd		
8	FUNCTION5 PFK	42.56	1.181e4					1.6	NO		dd		
9	FUNCTION5 PFK	42.51	9.442e3					1.5	NO		dd		
10	FUNCTION5 PFK	42.48	7.536e3					1.7	NO		bd		
11	FUNCTION5 PFK	45.86	3.857e3					0.8	NO		bb		
12	FUNCTION5 PFK	45.82	1.670e3					0.5	NO		bb		
13	FUNCTION5 PFK	45.64	9.922e3					1.2	NO		bb		
14	FUNCTION5 PFK	45.58	9.061e2					0.4	NO		bb		
15	FUNCTION5 PFK	45.19	6.743e3					1.1	NO		db		
16	FUNCTION5 PFK	45.13	2.134e4					1.8	NO		dd		
17	FUNCTION5 PFK	45.05	1.364e4					1.6	NO		bd		
18	FUNCTION5 PFK	44.96	7.723e3					1.0	NO		bb		
19	FUNCTION5 PFK	44.79	5.364e3					0.7	NO		db		
20	FUNCTION5 PFK	44.71	1.063e4					1.1	NO		bd		
21	FUNCTION5 PFK	44.67	4.006e3					0.9	NO		bb		
22	FUNCTION5 PFK	44.43	1.041e3					0.5	NO		bb		
23	FUNCTION5 PFK	44.15	3.395e3					0.8	NO		db		
24	FUNCTION5 PFK	44.13	5.372e3					1.0	NO		dd		
25	FUNCTION5 PFK	44.09	3.333e3					0.8	NO		bd		
26	FUNCTION5 PFK	43.56	3.660e3					0.8	NO		db		
27	FUNCTION5 PFK	45.96	1.061e3					0.5	NO		bb		

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ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	25.68	1.391e2					1.9	NO		dd		0.000
2	FUNCTION1 HXCD...	25.61	1.929e2					1.9	NO		bd		0.000
3	FUNCTION1 HXCD...	23.64	7.498e1					0.8	NO		bb		0.000
4	FUNCTION1 HXCD...	22.93	8.185e1					0.7	NO		bb		0.000
5	FUNCTION1 HXCD...	22.75	2.615e2					4.4	YES		db		0.000
6	FUNCTION1 HXCD...	22.65	1.566e2					3.6	YES		dd		0.000
7	FUNCTION1 HXCD...	22.59	8.571e1					1.6	NO		dd		0.000
8	FUNCTION1 HXCD...	22.45	1.322e2					1.6	NO		dd		0.000
9	FUNCTION1 HXCD...	22.37	3.146e2					3.8	YES		dd		0.000
10	FUNCTION1 HXCD...	22.19	1.227e2					1.7	NO		bd		0.000
11	FUNCTION1 HXCD...	22.01	7.214e1					1.7	NO		db		0.000
12	FUNCTION1 HXCD...	21.91	9.536e1					1.6	NO		bd		0.000
13	FUNCTION1 HXCD...	21.75	1.219e2					2.1	NO		bb		0.000
14	FUNCTION1 HXCD...	21.09	9.799e1					1.9	NO		bb		0.000
15	FUNCTION1 HXCD...	27.27	7.202e1					1.9	NO		db		0.000
16	FUNCTION1 HXCD...	27.21	2.845e2					3.6	YES		dd		0.000
17	FUNCTION1 HXCD...	27.12	7.106e1					1.6	NO		bd		0.000
18	FUNCTION1 HXCD...	26.03	2.189e2					4.8	YES		db		0.000
19	FUNCTION1 HXCD...	25.91	1.281e2					1.4	NO		dd		0.000
20	FUNCTION1 HXCD...	25.76	1.963e2					1.8	NO		dd		0.000

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ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	24.25	9.635e1					1.4	NO		db		0.000
2	FUNCTION1 HPCD...	24.16	1.393e2					2.6	NO		bd		0.000
3	FUNCTION1 HPCD...	23.86	8.766e1					1.6	NO		bb		0.000
4	FUNCTION1 HPCD...	23.64	7.575e1					1.6	NO		bb		0.000
5	FUNCTION1 HPCD...	22.75	4.837e2					10.3	YES		bb		0.000
6	FUNCTION1 HPCD...	22.10	1.016e2					1.2	NO		bb		0.000
7	FUNCTION1 HPCD...	21.88	1.476e2					2.2	NO		db		0.000
8	FUNCTION1 HPCD...	21.75	1.804e2					2.8	NO		bd		0.000
9	FUNCTION1 HPCD...	21.19	1.685e2					1.6	NO		bb		0.000
10	FUNCTION1 HPCD...	27.23	1.383e2					3.1	YES		db		0.000
11	FUNCTION1 HPCD...	27.18	1.183e2					3.0	NO		dd		0.000
12	FUNCTION1 HPCD...	27.14	8.932e1					2.4	NO		bd		0.000
13	FUNCTION1 HPCD...	26.86	1.061e2					2.7	NO		bb		0.000
14	FUNCTION1 HPCD...	26.77	7.302e1					1.0	NO		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	30.32	8.194e1					1.5	NO		bb		0.000
2	FUNCTION2 HPCD...	30.18	7.044e1					1.4	NO		bb		0.000
3	FUNCTION2 HPCD...	28.53	9.647e1					2.1	NO		db		0.000
4	FUNCTION2 HPCD...	28.46	1.706e2					4.6	YES		dd		0.000
5	FUNCTION2 HPCD...	28.41	2.076e2					3.2	YES		dd		0.000
6	FUNCTION2 HPCD...	28.31	1.702e2					2.6	NO		dd		0.000
7	FUNCTION2 HPCD...	28.23	3.688e2					6.3	YES		dd		0.000
8	FUNCTION2 HPCD...	28.13	1.827e2					2.3	NO		bd		0.000
9	FUNCTION2 HPCD...	27.91	7.599e1					2.0	NO		bb		0.000
10	FUNCTION2 HPCD...	27.82	1.406e2					3.9	YES		bb		0.000
11	FUNCTION2 HPCD...	31.69	2.364e2					3.2	YES		bb		0.000
12	FUNCTION2 HPCD...	30.95	1.068e2					1.5	NO		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.63	8.467e1					1.8	NO		bb		0.000
2	FUNCTION3 OCDPE	36.03	9.421e1					2.2	NO		bb		0.000

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ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	40.32	1.495e2					3.5	YES		bb		0.000
2	FUNCTION4 NCDPE	40.04	1.593e2					3.4	YES		bb		0.000
3	FUNCTION4 NCDPE	39.78	1.775e2					2.7	NO		bb		0.000
4	FUNCTION4 NCDPE	38.73	1.028e2					2.2	NO		bb		0.000
5	FUNCTION4 NCDPE	37.95	6.320e4					878.0	YES		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	45.76	7.161e1					2.3	NO		bb		0.000
2	FUNCTION5 DCDPE	44.40	1.444e2					2.6	NO		db		0.000
3	FUNCTION5 DCDPE	44.30	1.083e2					2.3	NO		bd		0.000

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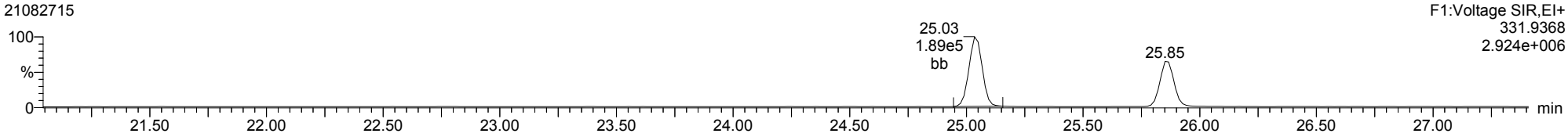

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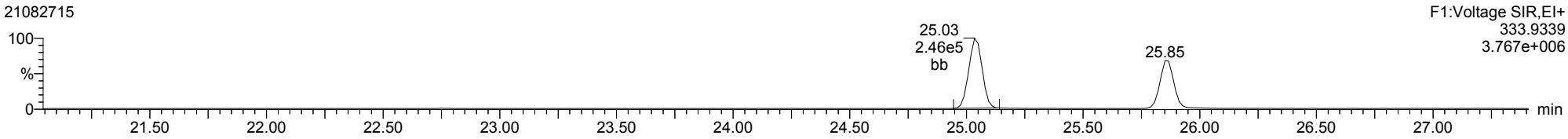

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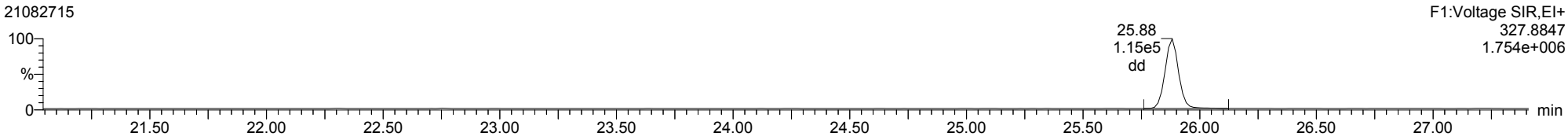

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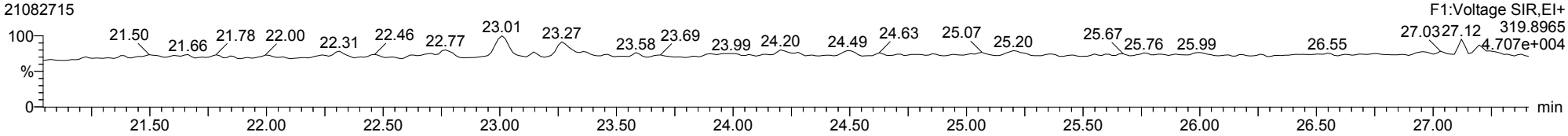
2378-TCDD



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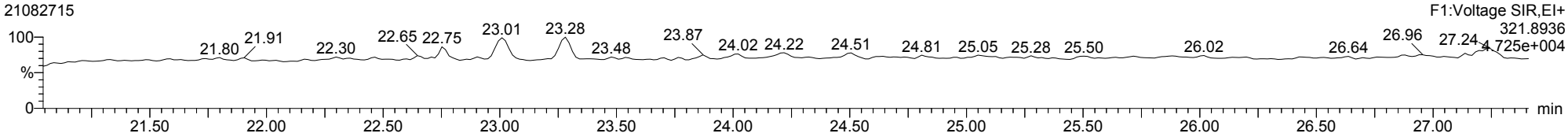

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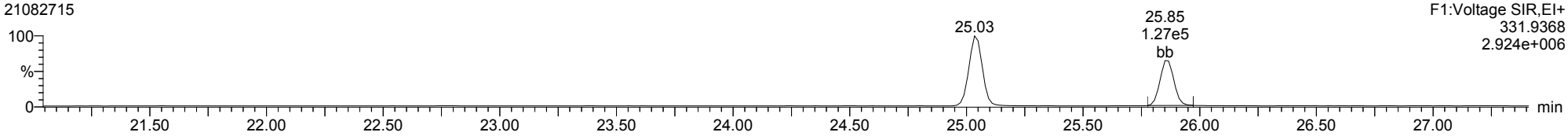

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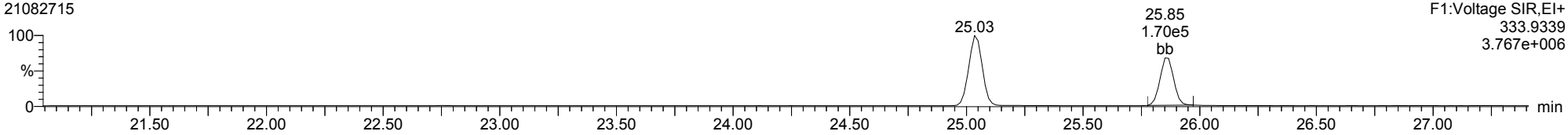
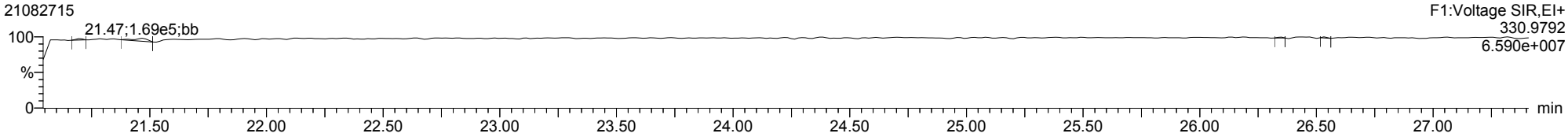


FUNCTION1 PFK



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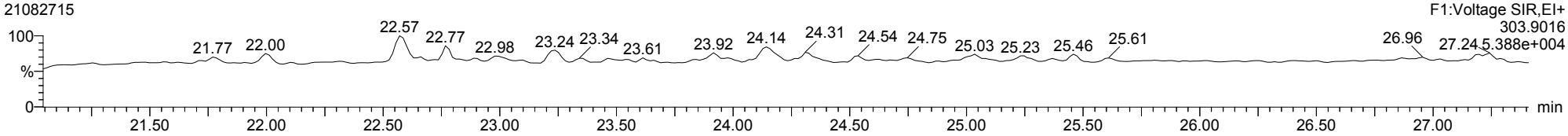
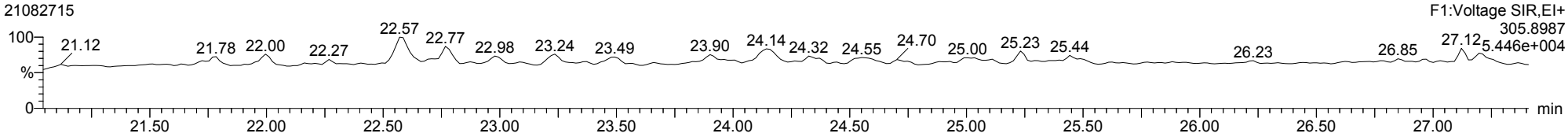
2378-TCDF



2378-TCDF



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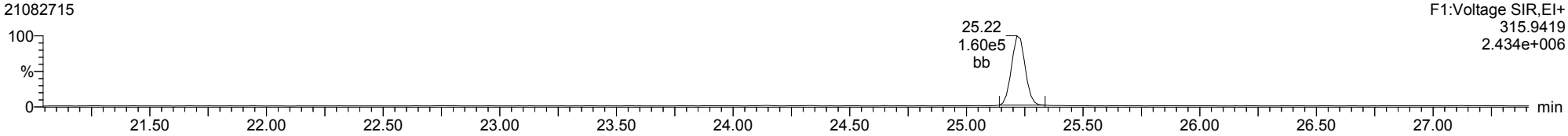

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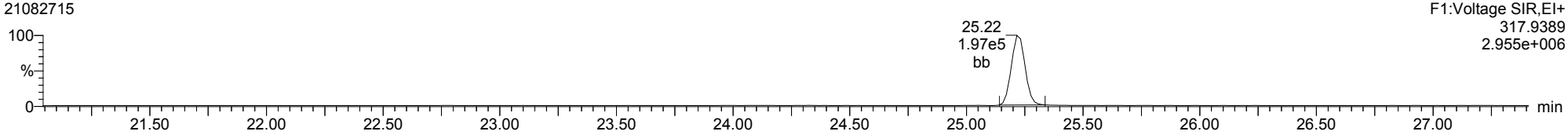

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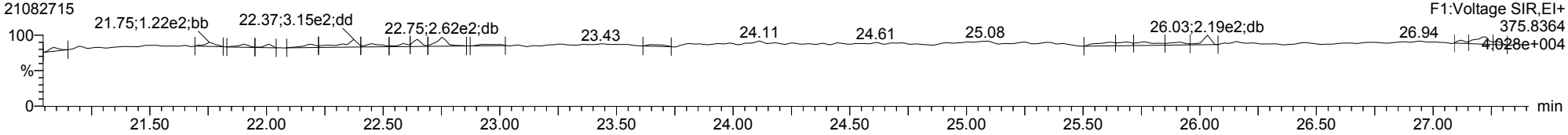

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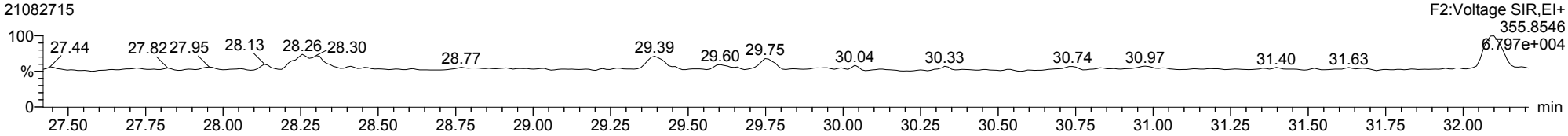
12378-PeCDD



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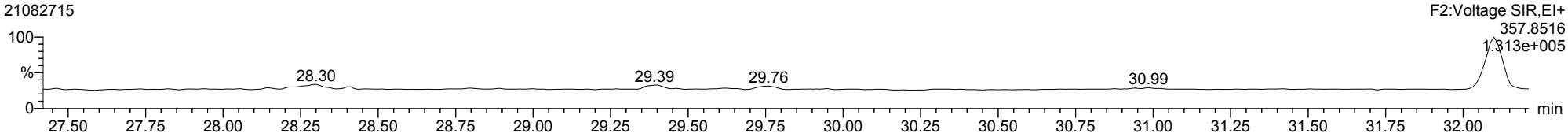

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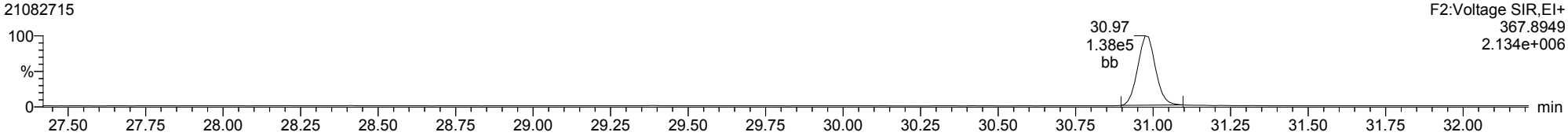

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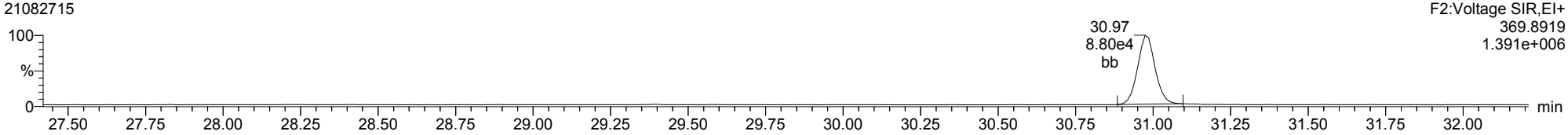
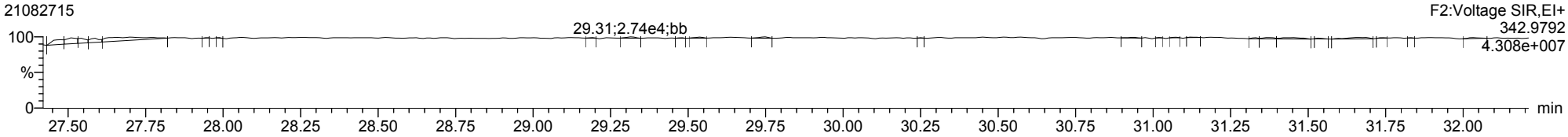


FUNCTION2 PFK



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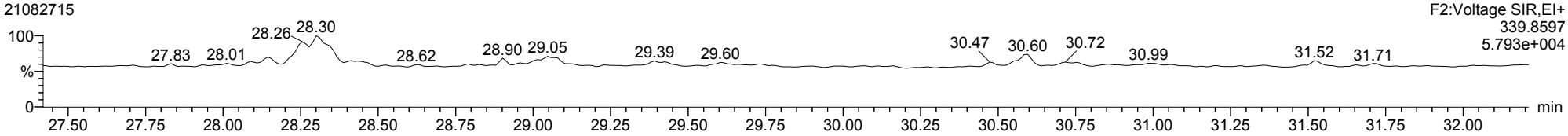

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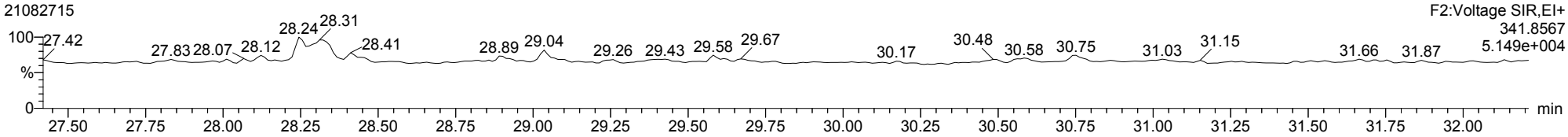

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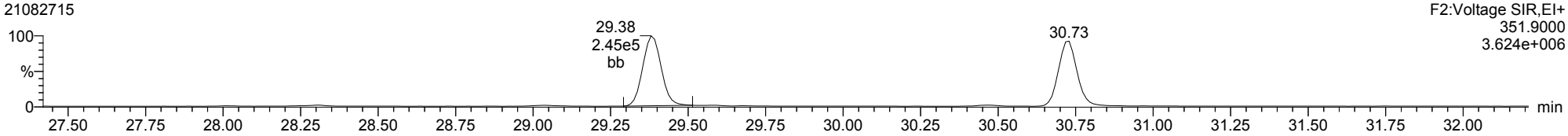

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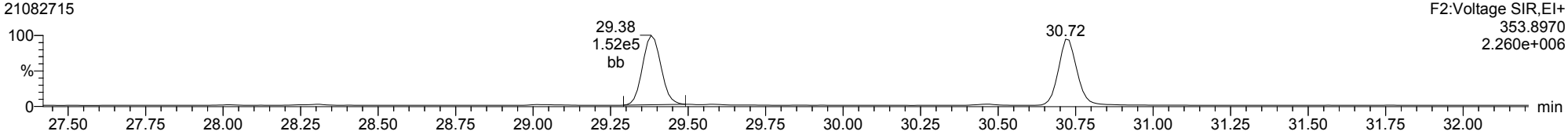
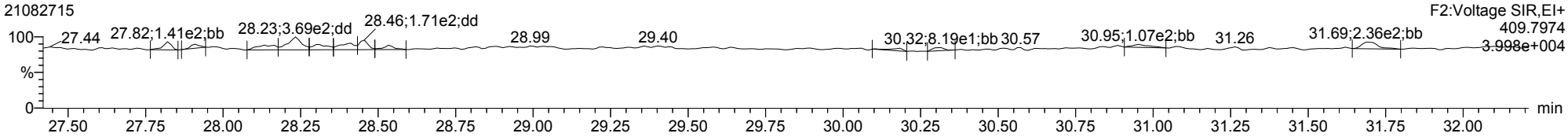


FUNCTION2 HPCDPE



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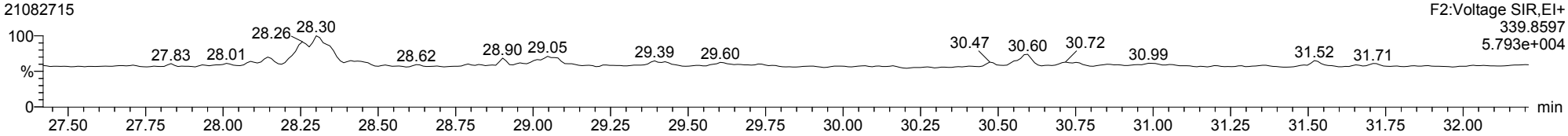

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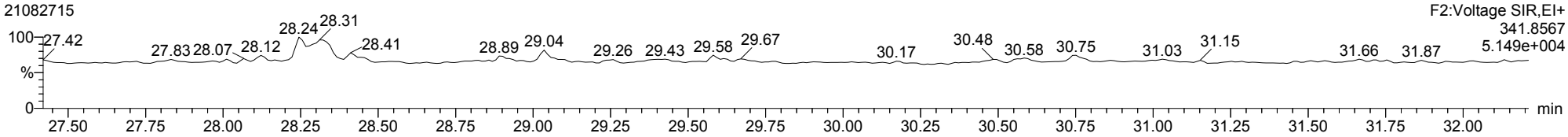

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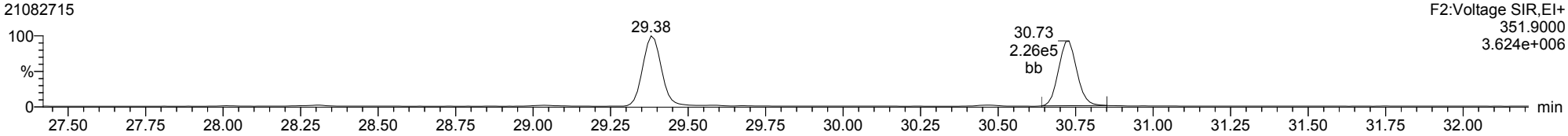

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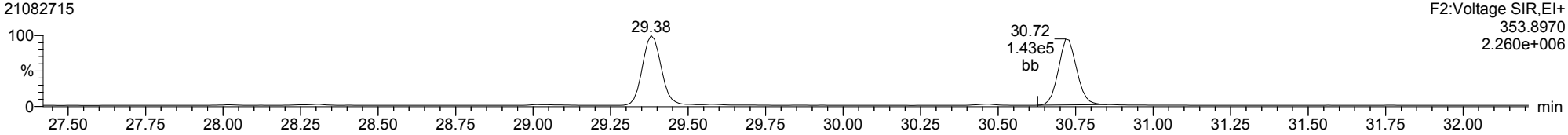

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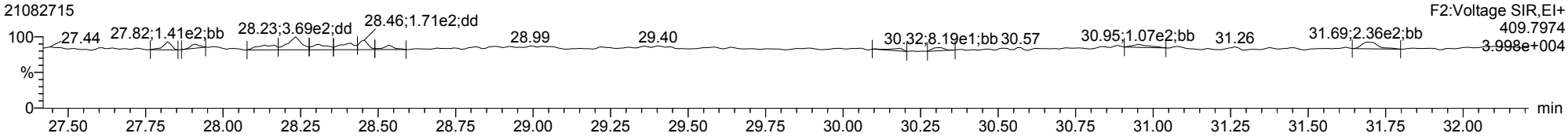

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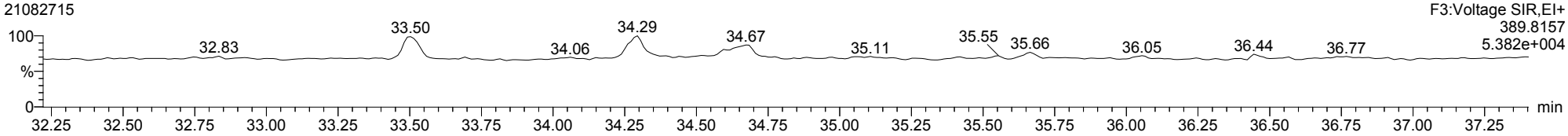

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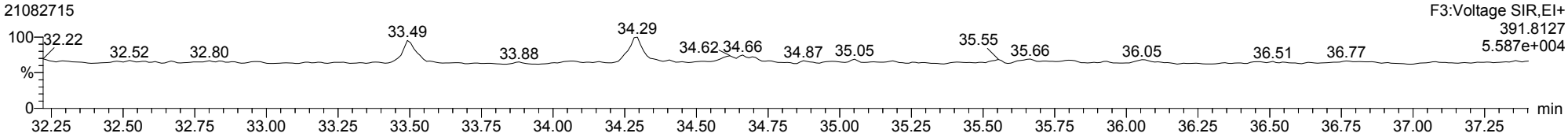

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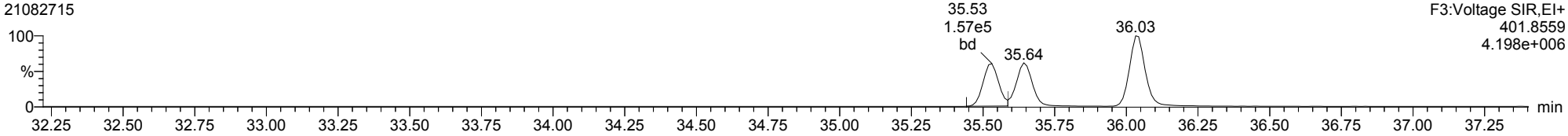

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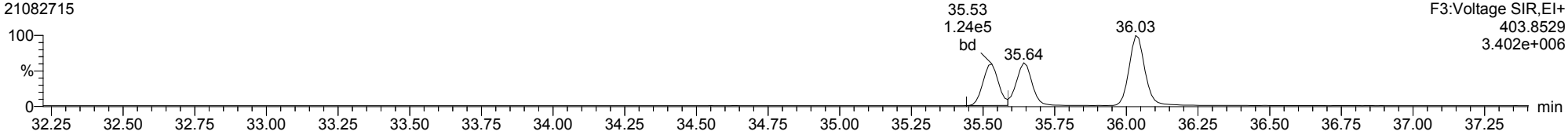
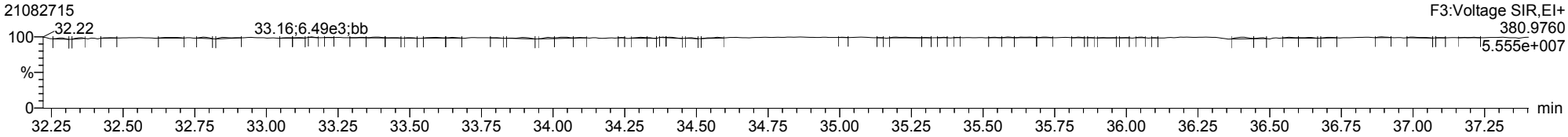


FUNCTION3 PFK



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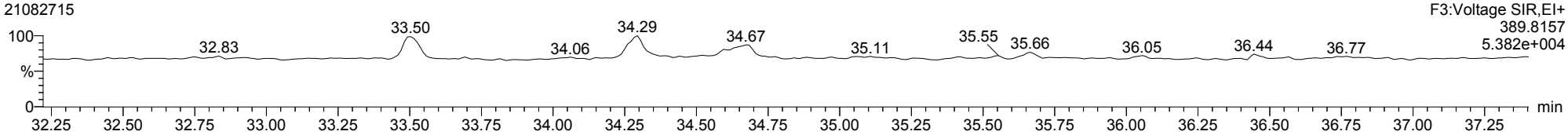

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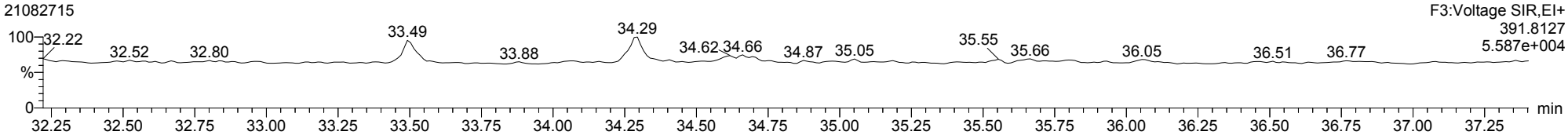

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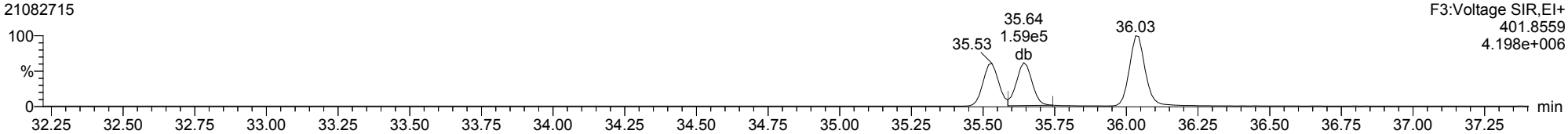

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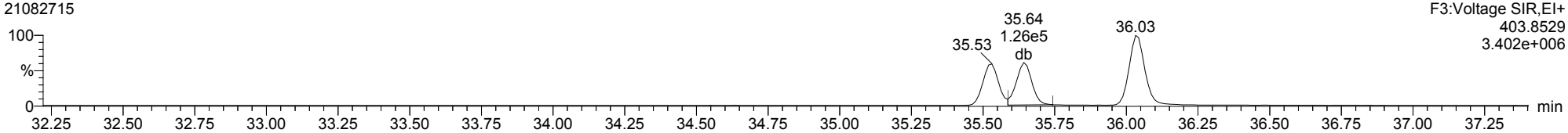

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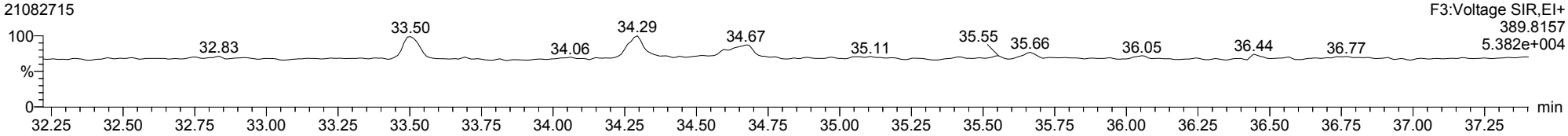

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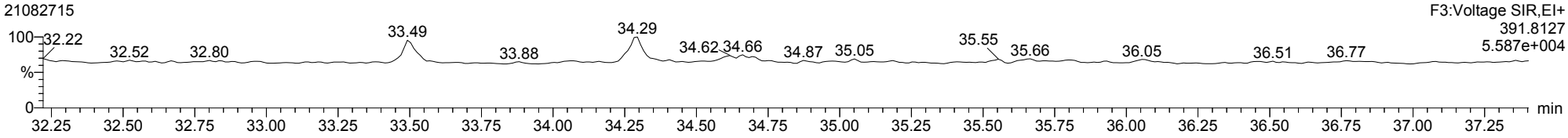

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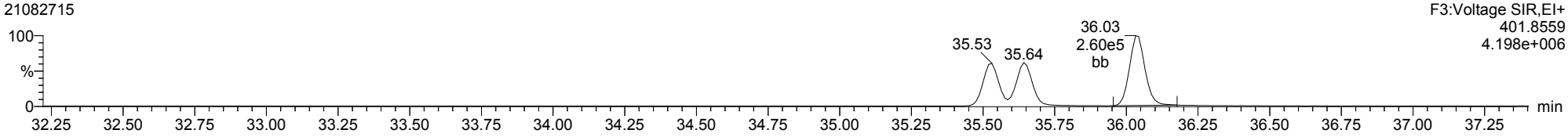

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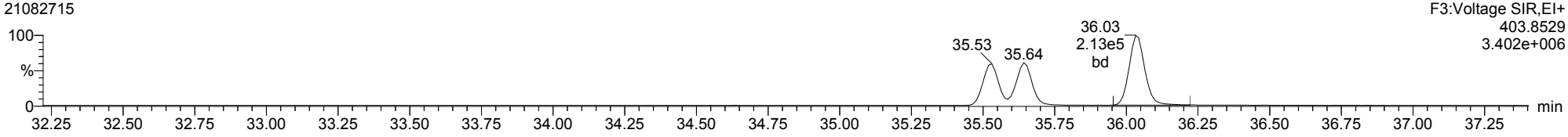

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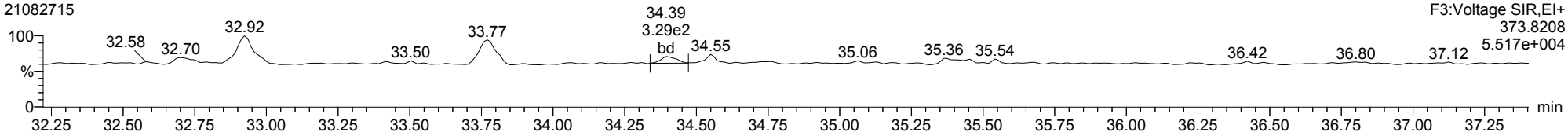
123478-HxCDF



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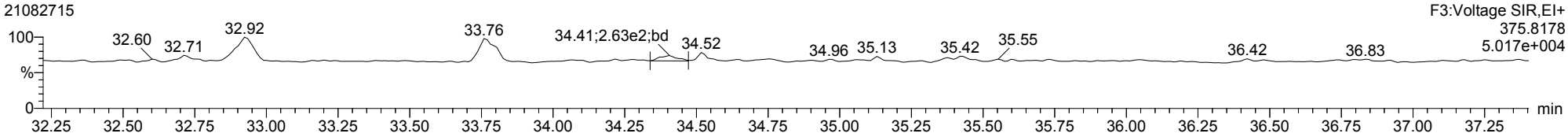

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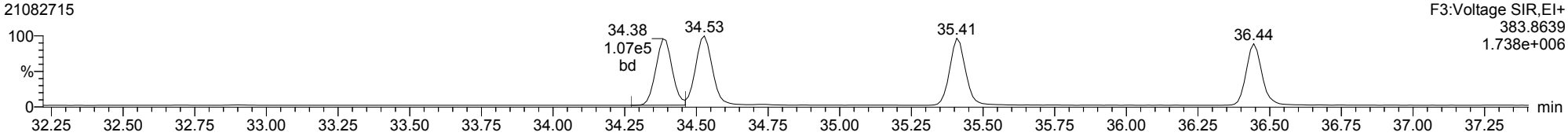

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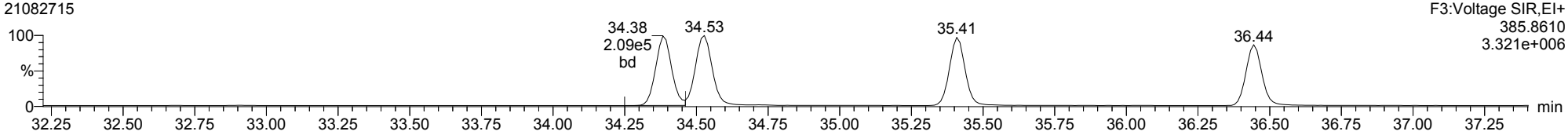

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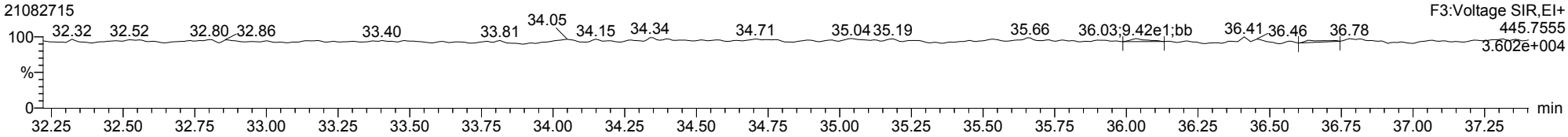

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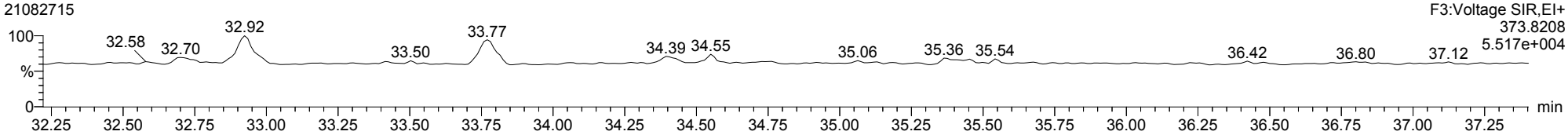
234678-HxCDF



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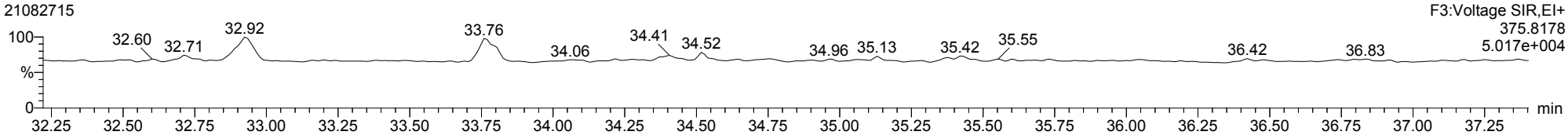

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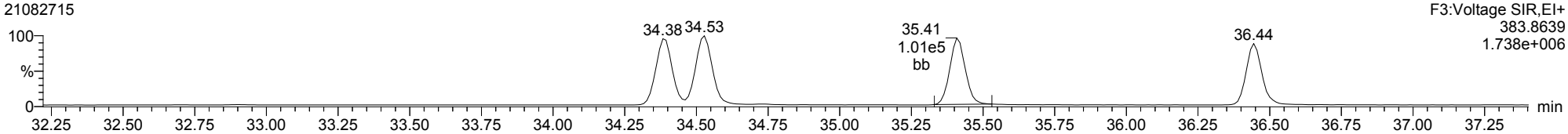

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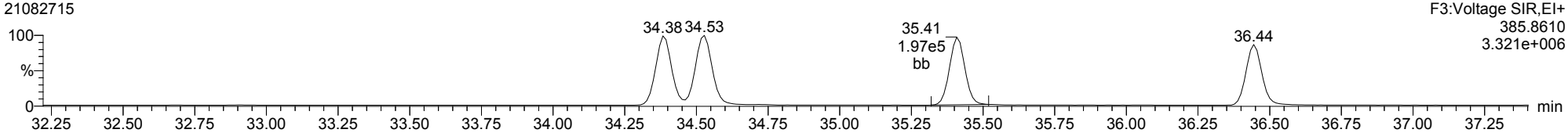

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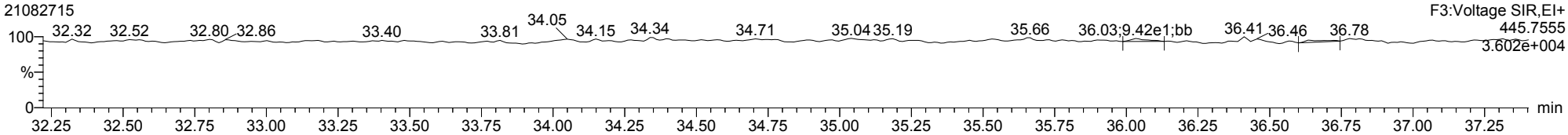

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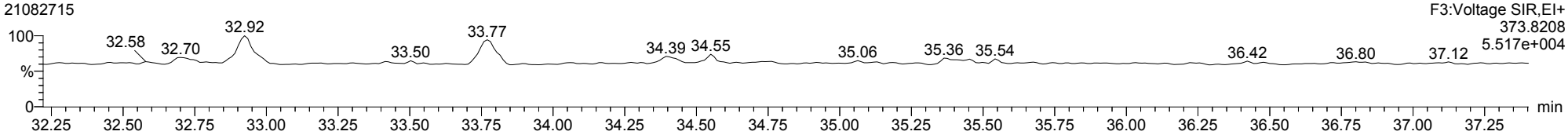

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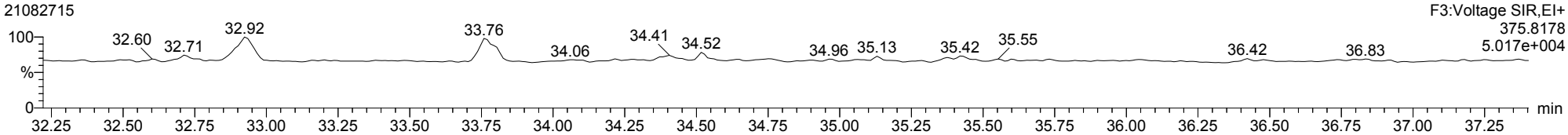

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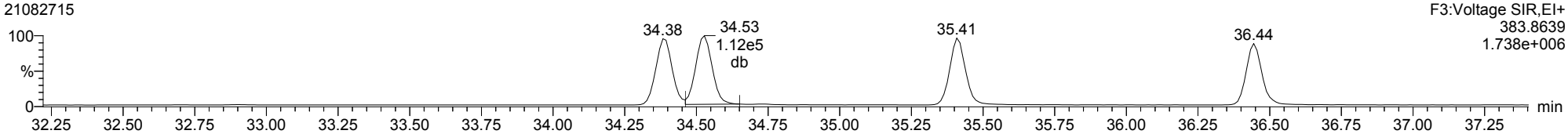

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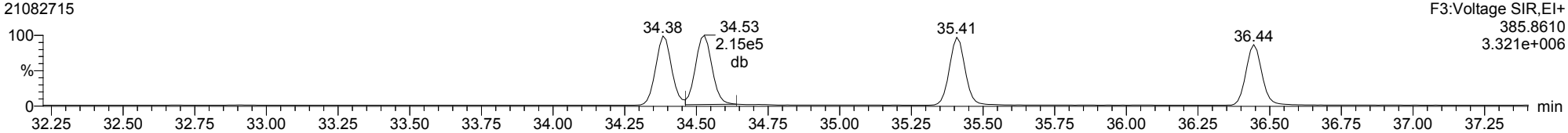
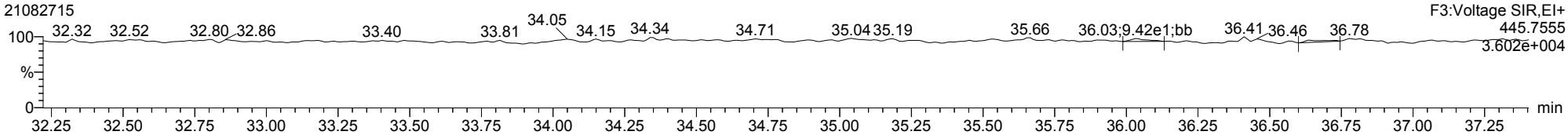


FUNCTION3 OCDPE



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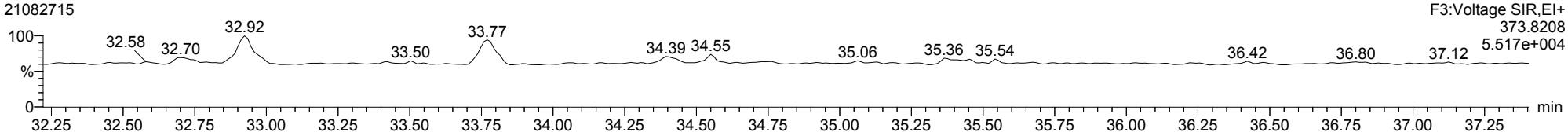
123789-HxCDF



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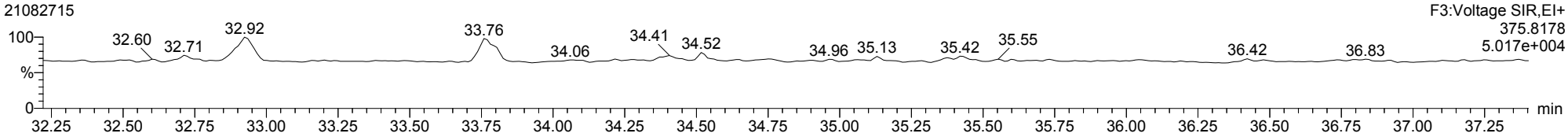

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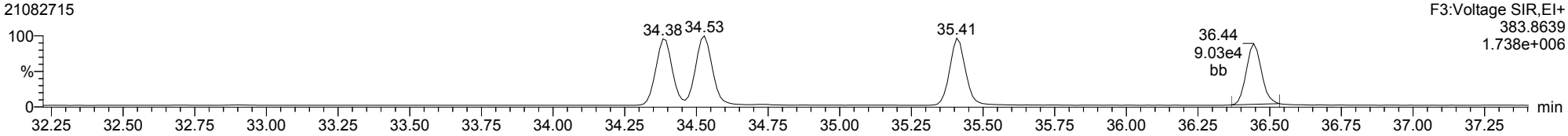

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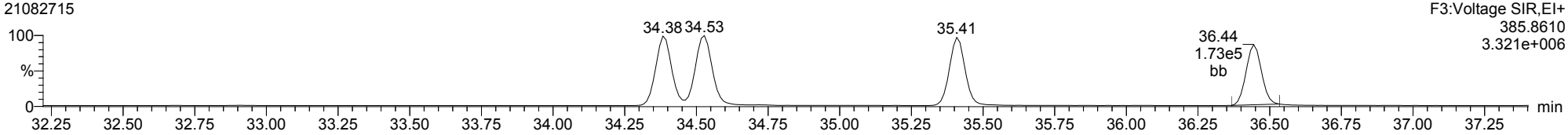
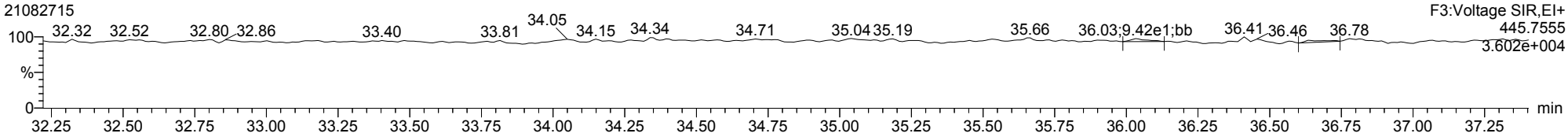
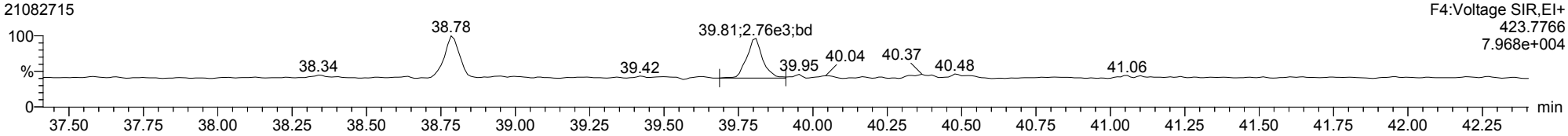


FUNCTION3 OCDPE



ID: 21G0108-07, Name: 21082715, Date: 27-Aug-2021, Time: 16:20:42, Conditions: AUTOSPEC01, User: pk

1234678-HpCDD



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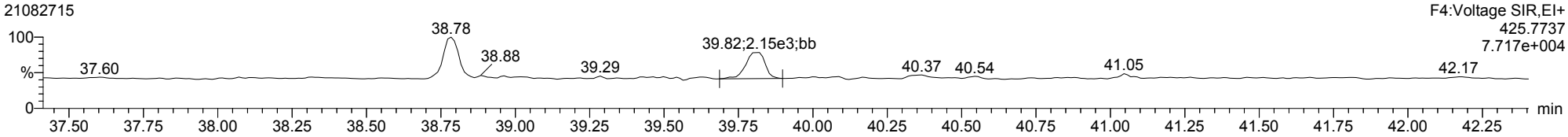

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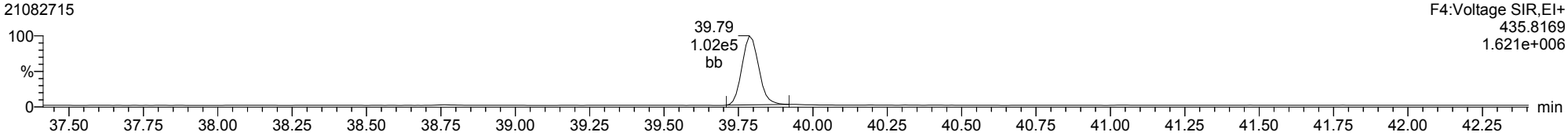

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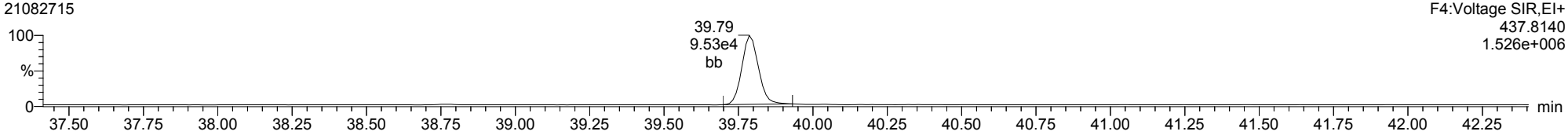
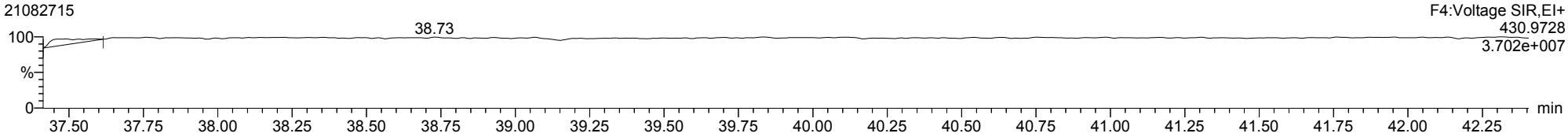


FUNCTION4 PFK



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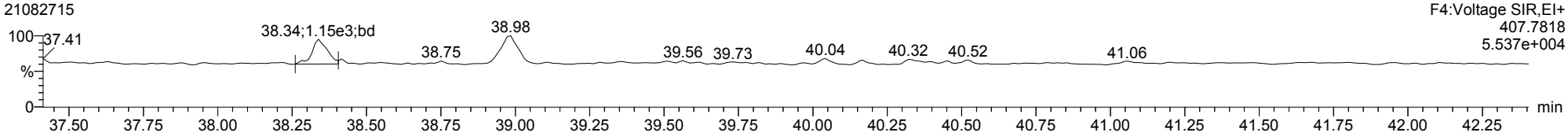

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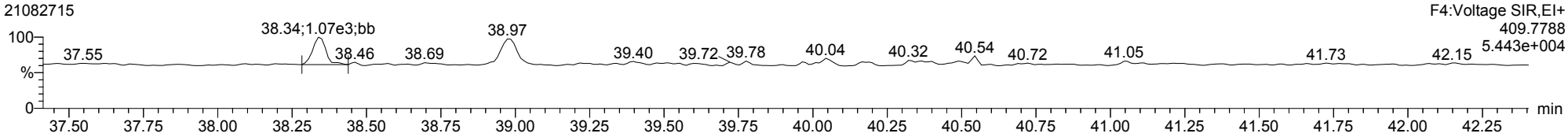

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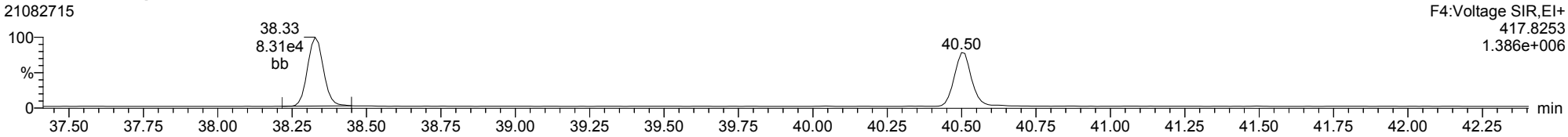

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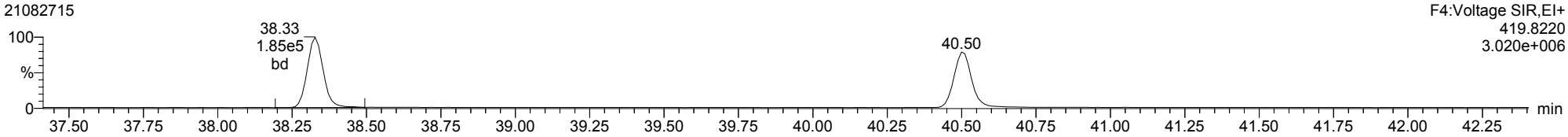
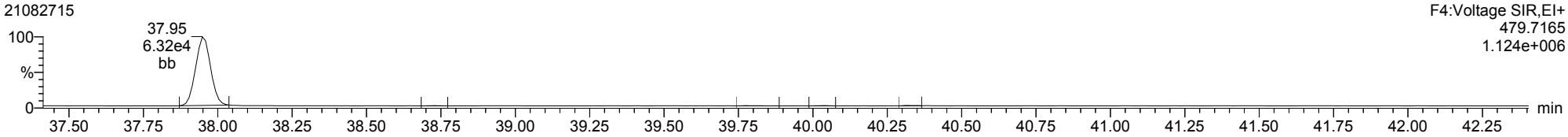


FUNCTION4 NCDPE



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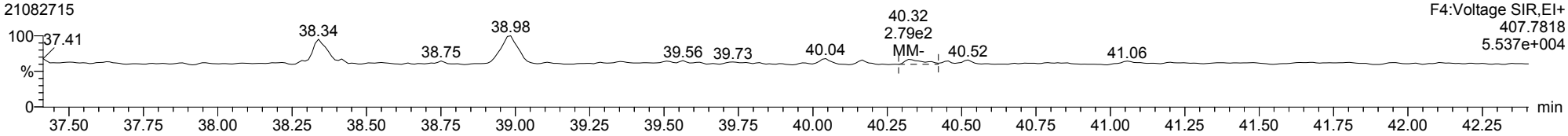
1234789-HpCDF



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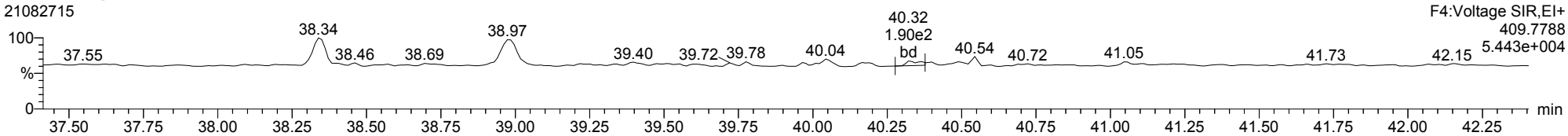

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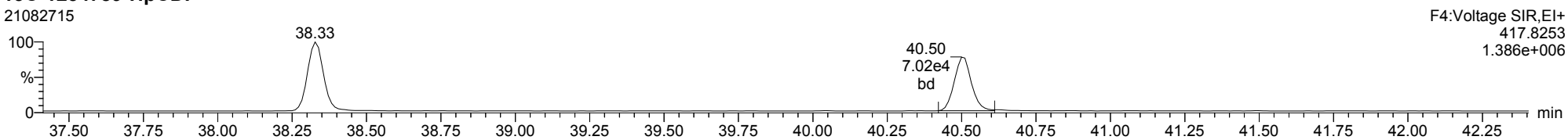

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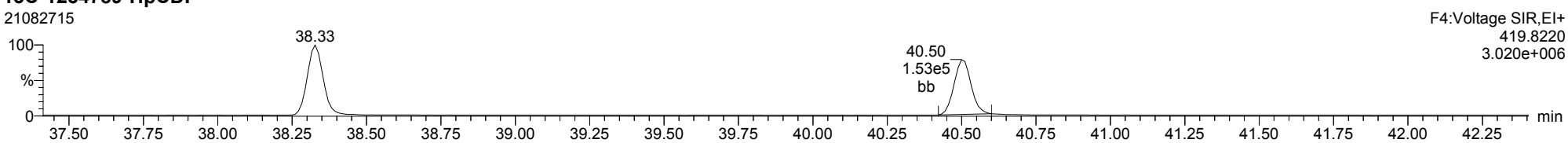
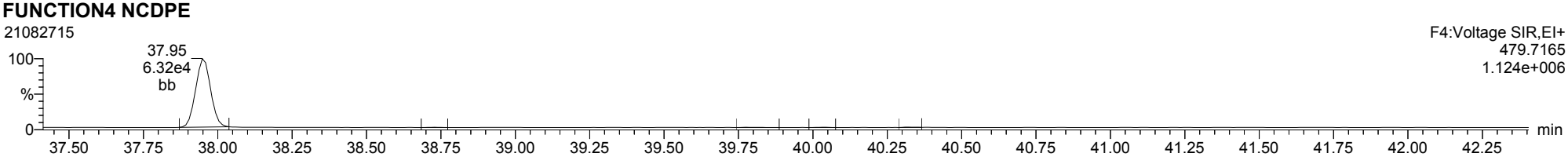
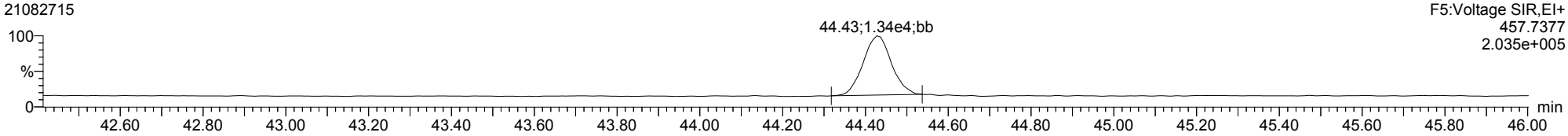


FUNCTION4 NCDPE

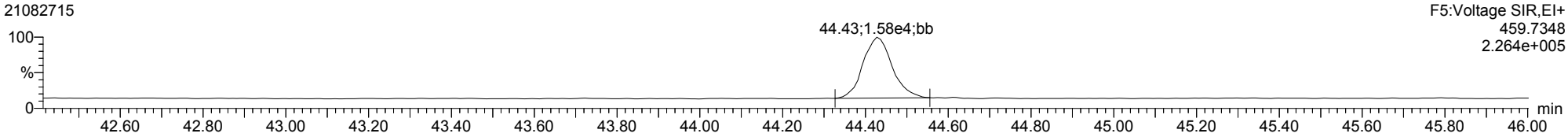


ID: 21G0108-07, Name: 21082715, Date: 27-Aug-2021, Time: 16:20:42, Conditions: AUTOSPEC01, User: pk

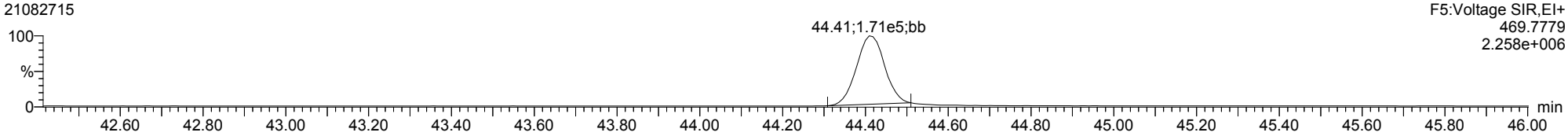
OCDD



OCDD



13C-OCDD



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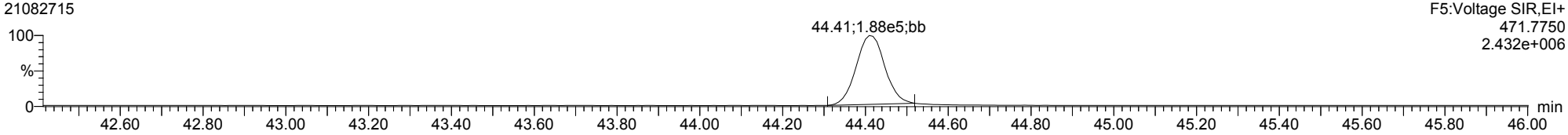
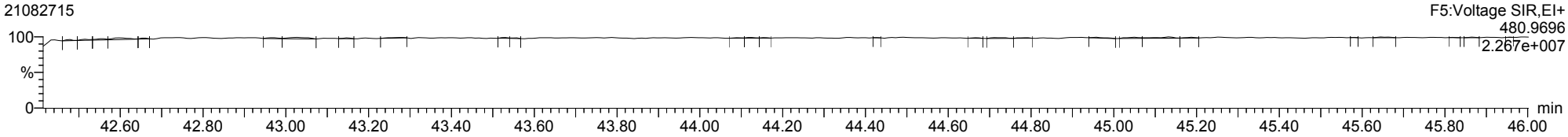
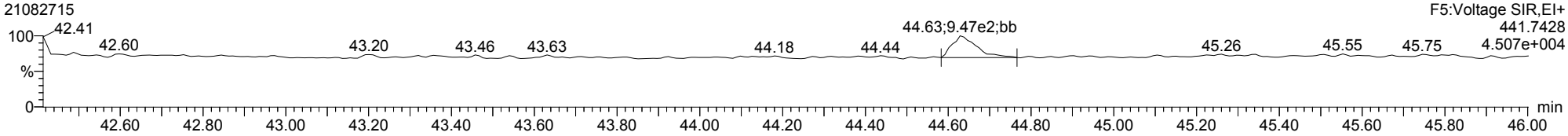


FUNCTION5 PFK



ID: 21G0108-07, Name: 21082715, Date: 27-Aug-2021, Time: 16:20:42, Conditions: AUTOSPEC01, User: pk

OCDF



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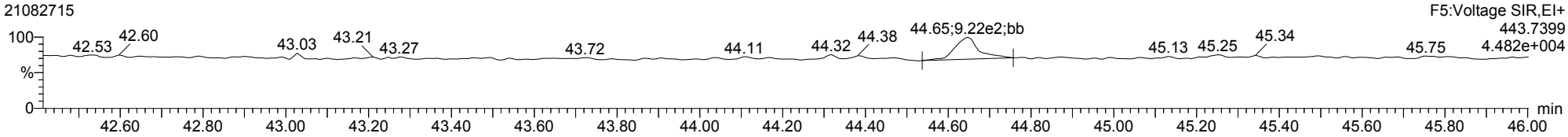
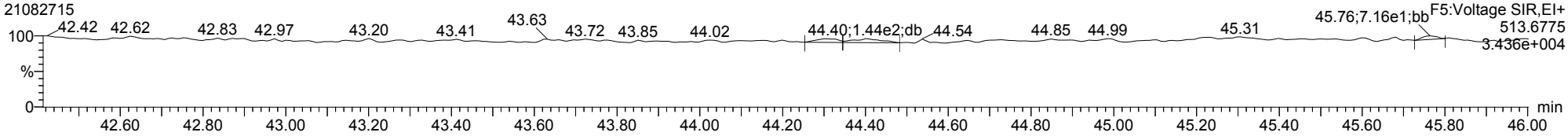
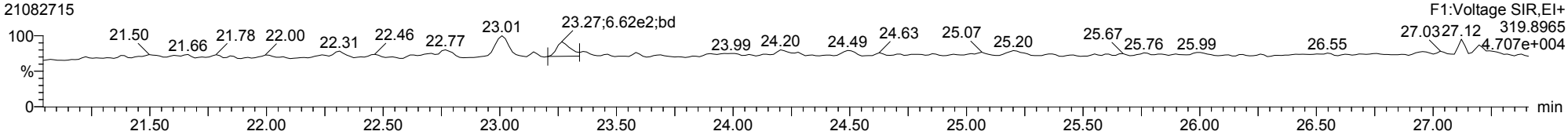


FUNCTION5 DCDPE

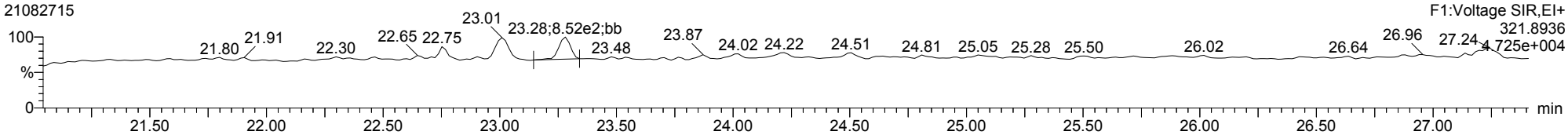


ID: 21G0108-07, Name: 21082715, Date: 27-Aug-2021, Time: 16:20:42, Conditions: AUTOSPEC01, User: pk

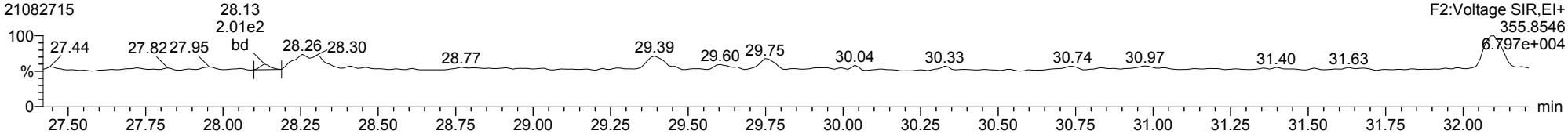
Total-tetradioxins



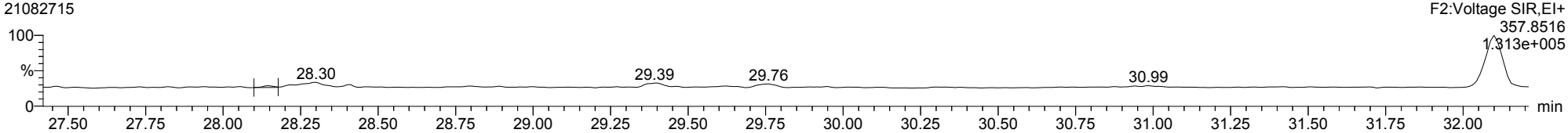
Total-tetradioxins



Total-pentadioxins



Total-pentadioxins



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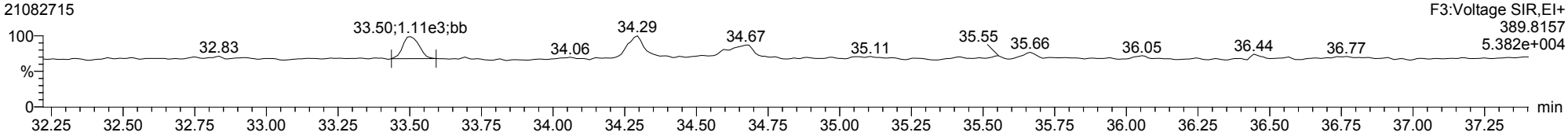
Total-hexadioxins



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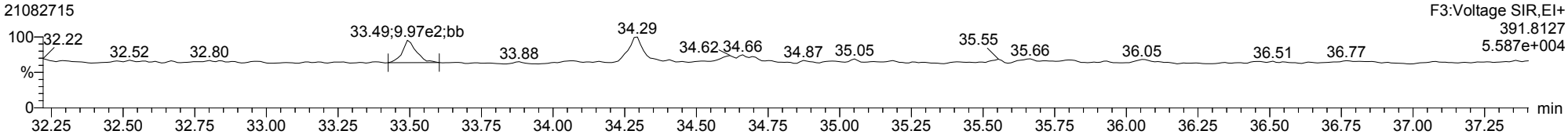
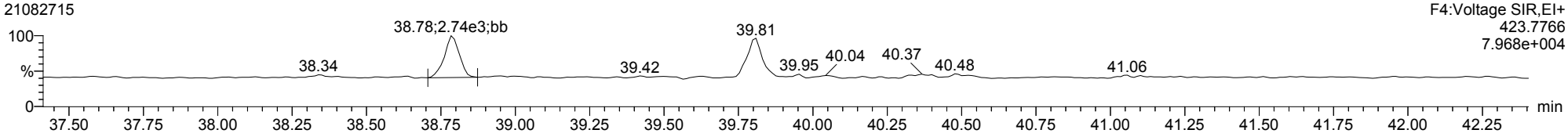
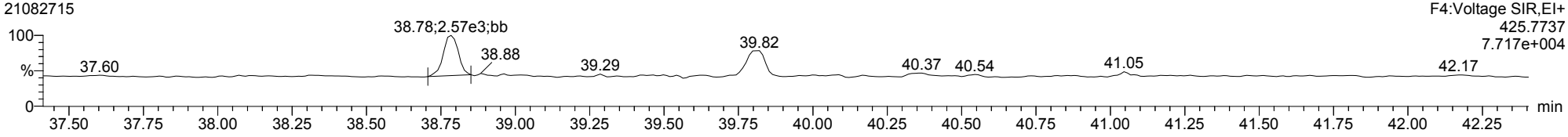


Total-heptadioxins

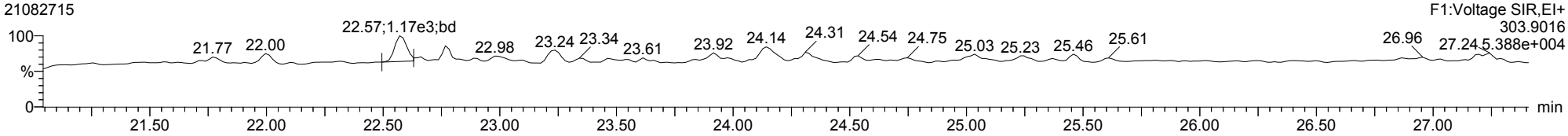


Total-heptadioxins

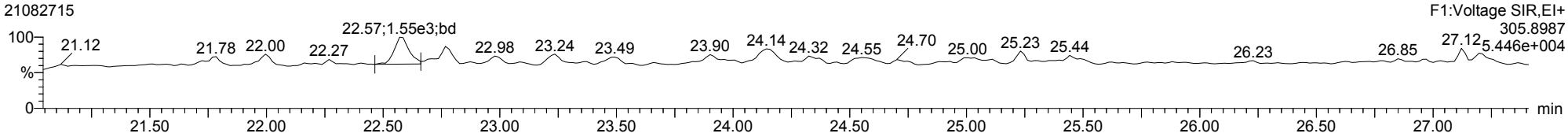


ID: 21G0108-07, Name: 21082715, Date: 27-Aug-2021, Time: 16:20:42, Conditions: AUTOSPEC01, User: pk

Total-tetrafurans



Total-tetrafurans



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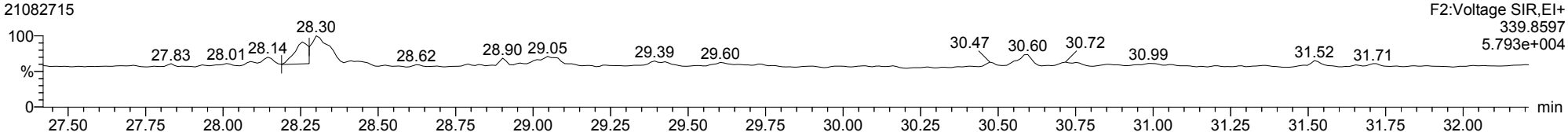
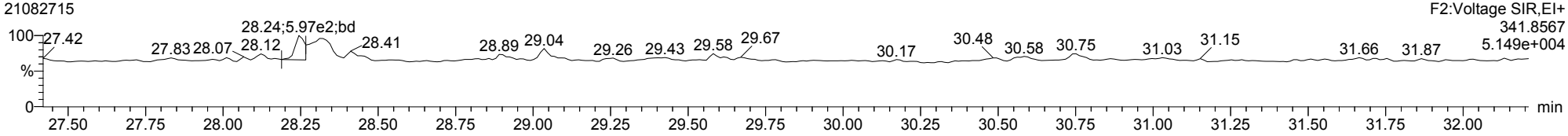


Total-pentafurans



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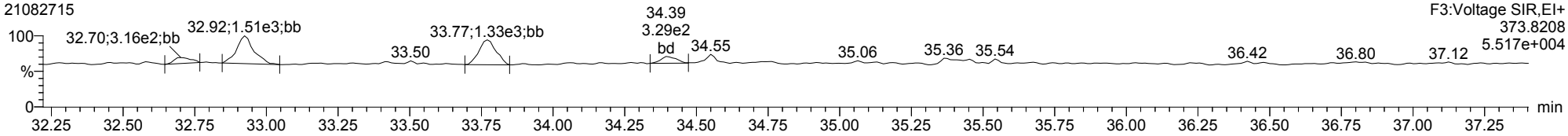
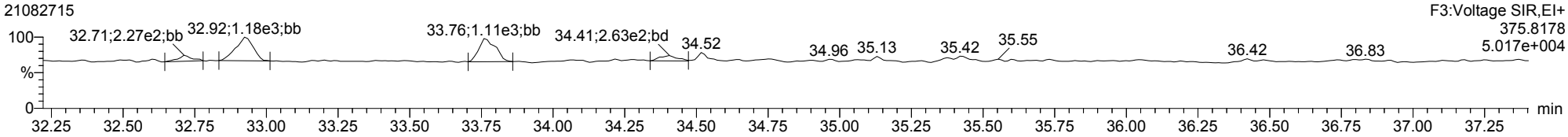
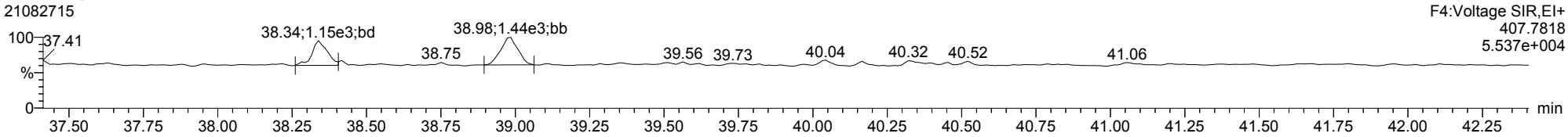


Total-hexafurans



Total-heptafurans



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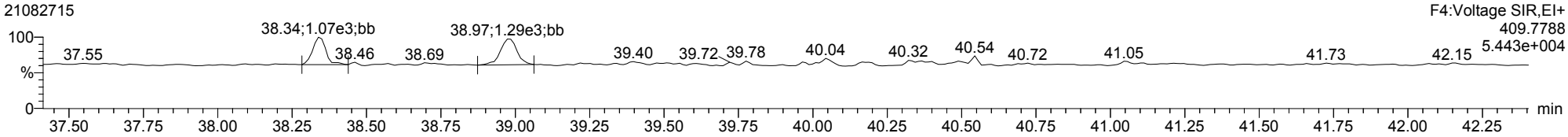

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT649E

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21G0108-08 C	File ID:	21082716
Sampled:	07/08/21 16:26	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 17:09
% Solids:	80.37	Preparation:	EPA 8290	Initial/Final:	12.45 g Wet / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	0.275	0.999	ND	ng/kg	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.450	0.999	ND	ng/kg	U
57117-41-6	1,2,3,7,8-PeCDF	1		1.318-1.783	0.175	0.999	ND	ng/kg	U
57117-31-4	2,3,4,7,8-PeCDF	1		1.318-1.783	0.179	0.999	ND	ng/kg	U
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	0.285	0.999	ND	ng/kg	U
70648-26-9	1,2,3,4,7,8-HxCDF	1		1.054-1.426	0.188	0.999	ND	ng/kg	U
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	0.174	0.999	ND	ng/kg	U
60851-34-5	2,3,4,6,7,8-HxCDF	1		1.054-1.426	0.182	0.999	ND	ng/kg	U
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.230	0.999	ND	ng/kg	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	0.242	0.999	ND	ng/kg	U
57653-85-7	1,2,3,6,7,8-HxCDD	1		1.054-1.426	0.246	0.999	ND	ng/kg	U
19408-74-3	1,2,3,7,8,9-HxCDD	1		1.054-1.426	0.261	0.999	ND	ng/kg	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	0.910	0.893-1.208	0.215	0.999	0.760	ng/kg	J
55673-89-7	1,2,3,4,7,8,9-HpCDF	1		0.893-1.208	0.310	0.999	ND	ng/kg	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.224	0.893-1.208	0.315	2.50	1.72	ng/kg	EMPC, J
39001-02-0	OCDF	1	0.801	0.757-1.024	0.285	2.50	1.04	ng/kg	J
3268-87-9	OCDD	1	0.900	0.757-1.024	0.357	9.99	15.1	ng/kg	B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			0.999	ND	ng/kg
41903-57-5	Total TCDD	1	0.000			0.999	ND	ng/kg
30402-15-4	Total PeCDF	1	0.000			0.999	ND	ng/kg
36088-22-9	Total PeCDD	1	0.000			0.999	ND	ng/kg
55684-94-1	Total HxCDF	1	0.000			0.999	0.177	ng/kg
34465-46-8	Total HxCDD	1	0.000			0.999	ND	ng/kg
38998-75-3	Total HpCDF	1	0.000			0.999	1.47	ng/kg
37871-00-4	Total HpCDD	1	0.000			0.999	2.09	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.030
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.518

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT649E

Form 2
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21G0108-08	File ID:	21082716
Sampled:	07/08/21 16:26	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 17:09
Solids Wt%:	80.37	Preparation:	EPA 8290	Initial/Final:	12.45 g / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.822	0.655-0.886	0.278	47.3	24 - 169 %	
13C12-2,3,7,8-TCDD		0.758	0.655-0.886	0.273	54.8	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.620	1.318-1.783	0.289	74.3	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.614	1.318-1.783	0.303	68.5	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.598	1.318-1.783	0.263	76.5	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.527	0.434-0.587	0.287	55.1	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.531	0.434-0.587	0.266	57.8	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.511	0.434-0.587	0.294	55.2	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.529	0.434-0.587	0.354	54.0	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.259	1.054-1.426	0.301	69.0	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.266	1.054-1.426	0.277	64.0	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.458	0.374-0.506	0.274	64.8	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.455	0.374-0.506	0.335	61.2	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.039	0.893-1.208	0.304	74.0	23 - 140 %	
13C12-OCDD		0.908	0.757-1.024	0.493	85.0	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.103	56.8	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
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Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-08, Name: 21082716, Date: 27-Aug-2021, Time: 17:09:35, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF					1.108		0.770	993	997								
12378-PeCDF					1.015		1.550	767	937								
23478-PeCDF					1.126		1.550	767	937								
123478-HxCDF					1.017		1.240	781	618								
234678-HxCDF					1.052		1.240	781	618								
123678-HxCDF					1.037		1.240	781	618								
123789-HxCDF					1.030		1.240	781	618								
1234678-HpCDF	38.338	1.000	6.034e2	6.630e2	1.327	0.910	1.050	1185	668	1.08e4	1.57e4	9.1	23.5	NO	bb	bb	0.380
1234789-HpCDF					1.283		1.050	1185	668								
OCDF	44.638	1.005	5.975e2	7.462e2	1.447	0.801	0.890	684	837	1.07e4	1.20e4	15.6	14.4	NO	MM	MM	0.519
2378-TCDD					0.920		0.770	1639	848								
12378-PeCDD					0.995		1.550	871	676								
123478-HxCDD					1.027		1.240	1051	772								
123678-HxCDD					1.009		1.240	1051	772								
123789-HxCDD					0.950		1.240	1051	772								
1234678-HpCDD	39.798	1.000	9.866e2	8.061e2	1.068	1.224	1.050	891	763	1.45e4	1.30e4	16.3	17.1	YES	bb	MM	0.858
OCDD	44.418	1.000	7.577e3	8.417e3	1.181	0.900	0.890	955	599	8.57e4	1.14e5	89.8	189.8	NO	bb	bb	7.572
13C-2378-TCDF	25.216	1.007	1.232e5	1.499e5	1.427	0.822	0.770	2409	1684	1.77e6	2.21e6	734.8	1314.6	NO	bb	bb	47.251
13C-12378-PeCDF	29.381	1.174	2.416e5	1.492e5	1.297	1.620	1.550	2587	1275	3.55e6	2.19e6	1373.1	1718.9	NO	bb	bb	74.348
13C-23478-PeCDF	30.729	1.227	2.119e5	1.313e5	1.236	1.614	1.550	2587	1275	3.14e6	1.94e6	1212.1	1519.1	NO	bb	bb	68.494
13C-123478-HxCDF	34.383	0.954	9.878e4	1.873e5	1.242	0.527	0.510	2261	1715	1.51e6	2.88e6	668.6	1681.5	NO	bd	bd	55.088
13C-123678-HxCDF	34.528	0.958	1.125e5	2.121e5	1.343	0.531	0.510	2261	1715	1.61e6	3.07e6	713.3	1788.8	NO	db	db	57.815
13C-234678-HxCDF	35.408	0.983	9.487e4	1.857e5	1.215	0.511	0.510	2261	1715	1.48e6	2.90e6	655.8	1692.0	NO	bd	bb	55.248
13C-123789-HxCDF	36.444	1.011	7.874e4	1.488e5	1.008	0.529	0.510	2261	1715	1.22e6	2.32e6	540.7	1350.3	NO	bb	bb	54.026
13C-1234678-HpCDF	38.327	1.064	7.884e4	1.722e5	0.926	0.458	0.440	1260	1568	1.22e6	2.75e6	969.6	1752.6	NO	bd	bd	64.831
13C-1234789-HpCDF	40.499	1.124	6.068e4	1.333e5	0.758	0.455	0.440	1260	1568	8.75e5	1.88e6	694.4	1198.7	NO	bb	bd	61.214
13C-1234-TCDD	25.035	0.000	1.735e5	2.317e5	1.000	0.749	0.770	2129	1009	2.65e6	3.55e6	1242.4	3519.7	NO	bb	bb	100.000
13C-2378-TCDD	25.851	1.033	1.070e5	1.410e5	1.116	0.758	0.770	2129	1009	1.55e6	2.06e6	730.0	2042.2	NO	bb	bb	54.822
13C-12378-PeCDD	30.974	1.237	1.395e5	8.734e4	0.732	1.598	1.550	1027	954	2.01e6	1.27e6	1957.4	1332.1	NO	bd	bb	76.496
13C-123478-HxCDD	35.519	0.986	1.542e5	1.224e5	0.960	1.259	1.240	2017	1197	2.45e6	1.95e6	1214.3	1625.2	NO	bd	bd	68.953
13C-123678-HxCDD	35.642	0.989	1.558e5	1.230e5	1.041	1.266	1.240	2017	1197	2.46e6	2.01e6	1221.8	1679.4	NO	db	db	64.038
13C-1234678-HpCDD	39.786	1.104	9.966e4	9.588e4	0.632	1.039	1.050	969	1172	1.50e6	1.42e6	1549.5	1214.3	NO	bb	bb	73.967
13C-OCDD	44.409	1.232	1.703e5	1.875e5	0.504	0.908	0.890	1397	1369	2.10e6	2.31e6	1506.1	1691.2	NO	bb	bb	169.908
13C-123789-HxCDD	36.032	0.000	2.313e5	1.867e5	1.000	1.239	1.240	2017	1197	3.69e6	2.97e6	1831.8	2482.0	NO	bb	bb	100.000
37CL-2378-TCDD	25.882	1.034	9.984e4		1.084			1153		1.42e6		1228.4			bb		22.739

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ID: 21G0108-08, Name: 21082716, Date: 27-Aug-2021, Time: 17:09:35, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF					1.425		0.770	993	997								
1289-TCDF					1.043		0.770	993	997								
13468-PECDF					1.376		1.550	758	1015								
12389-PECDF					1.000		1.550	767	937								
123468-HXCDF	32.712	0.951	1.310e2	1.367e2	1.087	0.959	1.240	781	618	2.36e3	2.70e3	3.0	4.4	YES	bd	bb	0.086
1368-TCDD					0.923		0.770	1639	848								
1289-TCDD					0.794		0.770	1639	848								
12479-PECDD					1.843		1.550	871	676								
12389-PECDD					1.154		1.550	871	676								
124679-HXCDD	33.492	0.943	2.405e2	2.386e2	1.125	1.008	1.240	1051	772	5.34e3	3.88e3	5.1	5.0	YES	bd	bb	0.154
1234679-HPCDD	38.772	0.975	1.222e3	1.249e3	1.211	0.978	1.050	891	763	1.96e4	1.96e4	21.9	25.7	NO	bb	bd	1.043
Total-tetrafurans			0.000e0		1.192			993		0.00e0							
Total-penta1			0.000e0					758		0.00e0							
Total-pentafurans			0.000e0		1.047			767		0.00e0							
Total-hexafurans			1.337e2		1.045			781		3.95e3							0.089
Total-heptafurans			1.161e3		1.305			1185		1.93e4							0.737
Total-Furans			1.893e3		1.158			993		3.39e4							1.345
Total-tetradioxins			0.000e0		0.879			1639		0.00e0							
Total-pentadioxins			0.000e0		1.331			871		0.00e0							
Total-hexadioxins			0.000e0		1.028			1051		0.00e0							
Total-heptadioxins			1.222e3		1.140			891		1.96e4							1.043
Total-Dioxins			8.798e3		1.092			1639		1.05e5							8.615
Total-TEQ			1.069e4					1639		1.39e5							9.960
FUNCTION1 PFK			3.837e6					658841		4.70e7							
FUNCTION2 PFK			1.029e6					423208		2.49e7							0.000
FUNCTION3 PFK			5.048e5					466696		1.43e7							0.000
FUNCTION4 PFK			8.117e5					376946		2.04e7							
FUNCTION5 PFK			1.034e6					245645		1.84e7							
FUNCTION1 HXCD...			9.177e2					654		1.25e4							0.000
FUNCTION1 HPCD...			1.330e3					733		2.08e4							0.000
FUNCTION2 HPCD...			6.025e2					937		1.07e4							0.000
FUNCTION3 OCDPE			2.592e2					653		5.46e3							0.000
FUNCTION4 NCDPE			5.008e2					769		8.31e3							0.000
FUNCTION5 DCDPE			0.000e0					643		0.00e0							

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ID: 21G0108-08, Name: 21082716, Date: 27-Aug-2021, Time: 17:09:35, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-hexafurans	32.93	1.337e2	1.254e2	1.045	1.07	1.24	5.1	YES	NO	db	bb	0.089

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.34	6.034e2	6.630e2	1.327	0.91	1.05	9.1	YES	NO	bb	bb	0.380
2	Total-heptafurans	38.98	5.580e2	4.790e2	1.305	1.16	1.05	7.2	YES	NO	bb	bb	0.357

Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-hexafurans	32.93	1.337e2	1.254e2	1.045	1.07	1.24	5.1	YES	NO	db	bb	0.089
2	1234678-HpCDF	38.34	6.034e2	6.630e2	1.327	0.91	1.05	9.1	YES	NO	bb	bb	0.380
3	OCDF	44.64	5.975e2	7.462e2	1.447	0.80	0.89	15.6	YES	NO	MM	MM	0.519
4	Total-heptafurans	38.98	5.580e2	4.790e2	1.305	1.16	1.05	7.2	YES	NO	bb	bb	0.357

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234679-HPCDD	38.77	1.222e3	1.249e3	1.211	0.98	1.05	21.9	YES	NO	bb	bd	1.043

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	OCDD	44.42	7.577e3	8.417e3	1.181	0.90	0.89	89.8	YES	NO	bb	bb	7.572
2	1234679-HPCDD	38.77	1.222e3	1.249e3	1.211	0.98	1.05	21.9	YES	NO	bb	bd	1.043

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-hexafurans	32.93	1.337e2	1.254e2	1.045	1.07	1.24	5.1	YES	NO	db	bb	0.089
2	1234678-HpCDF	38.34	6.034e2	6.630e2	1.327	0.91	1.05	9.1	YES	NO	bb	bb	0.380
3	OCDF	44.64	5.975e2	7.462e2	1.447	0.80	0.89	15.6	YES	NO	MM	MM	0.519
4	Total-heptafurans	38.98	5.580e2	4.790e2	1.305	1.16	1.05	7.2	YES	NO	bb	bb	0.357
5	OCDD	44.42	7.577e3	8.417e3	1.181	0.90	0.89	89.8	YES	NO	bb	bb	7.572
6	1234679-HPCDD	38.77	1.222e3	1.249e3	1.211	0.98	1.05	21.9	YES	NO	bb	bd	1.043

ID: 21G0108-08, Name: 21082716, Date: 27-Aug-2021, Time: 17:09:35, Conditions: AUTOSPEC01, User: pk

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	21.54	1.974e5					2.8	NO		dd		
2	FUNCTION1 PFK	21.48	1.285e5					2.5	NO		dd		
3	FUNCTION1 PFK	21.36	7.052e4					1.7	NO		dd		
4	FUNCTION1 PFK	21.27	2.097e4					1.2	NO		bd		
5	FUNCTION1 PFK	21.21	6.069e4					2.6	NO		bb		
6	FUNCTION1 PFK	21.12	5.341e4					1.8	NO		bb		
7	FUNCTION1 PFK	24.08	4.446e4					1.7	NO		db		
8	FUNCTION1 PFK	24.02	8.675e4					2.2	NO		dd		
9	FUNCTION1 PFK	23.96	8.076e4					2.2	NO		dd		
10	FUNCTION1 PFK	23.75	4.171e5					4.8	YES		dd		
11	FUNCTION1 PFK	23.67	1.366e5					4.9	YES		dd		
12	FUNCTION1 PFK	23.61	5.511e5					5.5	YES		bd		
13	FUNCTION1 PFK	23.37	7.250e5					6.5	YES		bb		
14	FUNCTION1 PFK	22.99	3.303e4					1.3	NO		bb		
15	FUNCTION1 PFK	22.81	4.412e4					1.5	NO		db		
16	FUNCTION1 PFK	22.74	1.037e5					1.6	NO		bd		
17	FUNCTION1 PFK	22.57	2.126e4					0.8	NO		bb		
18	FUNCTION1 PFK	22.18	2.000e4					0.8	NO		bb		
19	FUNCTION1 PFK	22.10	1.594e4					0.9	NO		bb		
20	FUNCTION1 PFK	22.04	6.334e4					1.8	NO		db		
21	FUNCTION1 PFK	21.97	6.097e4					1.7	NO		bd		
22	FUNCTION1 PFK	21.72	2.218e5					2.7	NO		db		
23	FUNCTION1 PFK	27.14	5.128e3					0.5	NO		bd		
24	FUNCTION1 PFK	27.08	3.281e3					0.3	NO		bb		
25	FUNCTION1 PFK	26.89	1.640e4					0.5	NO		bb		
26	FUNCTION1 PFK	26.73	8.141e3					0.5	NO		bb		
27	FUNCTION1 PFK	26.38	4.823e4					1.0	NO		bb		
28	FUNCTION1 PFK	26.31	4.828e4					1.1	NO		bb		
29	FUNCTION1 PFK	26.21	1.115e4					0.8	NO		bb		
30	FUNCTION1 PFK	25.97	2.993e4					1.2	NO		db		
31	FUNCTION1 PFK	25.85	1.561e5					1.7	NO		bd		
32	FUNCTION1 PFK	25.68	4.783e4					1.5	NO		bb		
33	FUNCTION1 PFK	25.58	1.596e4					0.7	NO		bb		
34	FUNCTION1 PFK	24.73	5.685e4					1.4	NO		bb		
35	FUNCTION1 PFK	24.63	3.124e4					1.3	NO		db		
36	FUNCTION1 PFK	24.55	8.408e4					1.4	NO		dd		
37	FUNCTION1 PFK	24.43	2.141e4					0.8	NO		bd		

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION1 PFK	24.23	1.178e4					0.7	NO		bb		
39	FUNCTION1 PFK	27.35	7.089e4					1.7	NO		bb		
40	FUNCTION1 PFK	27.18	1.234e4					0.7	NO		db		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	29.26	3.995e4					2.1	NO		bb		0.000
2	FUNCTION2 PFK	29.21	4.857e3					0.7	NO		db		0.000
3	FUNCTION2 PFK	29.12	3.040e4					1.6	NO		bd		0.000
4	FUNCTION2 PFK	28.88	3.720e4					0.9	NO		bb		0.000
5	FUNCTION2 PFK	28.62	7.059e3					0.8	NO		bb		0.000
6	FUNCTION2 PFK	28.58	1.296e4					0.7	NO		bb		0.000
7	FUNCTION2 PFK	28.03	3.208e3					0.5	NO		db		0.000
8	FUNCTION2 PFK	28.00	2.099e3					0.4	NO		bd		0.000
9	FUNCTION2 PFK	27.91	8.920e3					0.9	NO		bb		0.000
10	FUNCTION2 PFK	27.60	1.830e5					5.3	YES		db		0.000
11	FUNCTION2 PFK	27.53	1.631e5					8.2	YES		dd		0.000
12	FUNCTION2 PFK	27.51	1.811e5					8.4	YES		dd		0.000
13	FUNCTION2 PFK	27.46	7.350e4					6.8	YES		bd		0.000
14	FUNCTION2 PFK	31.30	3.381e4					1.5	NO		bb		0.000
15	FUNCTION2 PFK	31.24	5.736e3					0.7	NO		bb		0.000
16	FUNCTION2 PFK	31.11	2.489e3					0.5	NO		bb		0.000
17	FUNCTION2 PFK	30.84	3.338e3					0.7	NO		bb		0.000
18	FUNCTION2 PFK	30.67	2.108e4					1.3	NO		db		0.000
19	FUNCTION2 PFK	30.63	2.073e4					1.7	NO		bd		0.000
20	FUNCTION2 PFK	30.48	3.953e3					0.6	NO		bb		0.000
21	FUNCTION2 PFK	30.44	3.270e3					0.7	NO		bb		0.000
22	FUNCTION2 PFK	30.39	6.520e3					0.8	NO		bb		0.000
23	FUNCTION2 PFK	30.26	4.001e4					1.8	NO		bb		0.000
24	FUNCTION2 PFK	30.07	1.861e4					1.2	NO		bb		0.000
25	FUNCTION2 PFK	29.98	2.983e4					1.7	NO		bb		0.000
26	FUNCTION2 PFK	29.92	1.358e4					1.4	NO		bb		0.000
27	FUNCTION2 PFK	29.59	5.013e3					0.6	NO		bb		0.000
28	FUNCTION2 PFK	29.50	1.025e4					1.0	NO		bb		0.000
29	FUNCTION2 PFK	29.43	1.644e3					0.3	NO		bb		0.000
30	FUNCTION2 PFK	32.15	1.728e4					1.2	NO		bb		0.000
31	FUNCTION2 PFK	32.10	1.388e4					1.1	NO		bb		0.000
32	FUNCTION2 PFK	31.75	1.383e4					0.9	NO		bb		0.000
33	FUNCTION2 PFK	31.68	5.772e3					0.8	NO		bb		0.000
34	FUNCTION2 PFK	31.56	1.053e4					1.0	NO		bb		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	33.70	6.900e4					1.9	NO		bd		0.000
2	FUNCTION3 PFK	33.07	3.214e4					2.1	NO		bb		0.000
3	FUNCTION3 PFK	32.96	1.483e4					1.3	NO		bb		0.000
4	FUNCTION3 PFK	32.90	9.431e3					1.0	NO		bb		0.000
5	FUNCTION3 PFK	32.80	1.853e4					1.7	NO		bb		0.000
6	FUNCTION3 PFK	32.66	6.726e3					0.8	NO		bb		0.000
7	FUNCTION3 PFK	32.54	7.842e4					1.7	NO		db		0.000
8	FUNCTION3 PFK	32.43	2.975e4					2.0	NO		bd		0.000
9	FUNCTION3 PFK	32.33	1.355e4					1.3	NO		db		0.000
10	FUNCTION3 PFK	32.30	6.573e3					0.9	NO		bd		0.000
11	FUNCTION3 PFK	37.36	1.974e4					1.8	NO		bb		0.000
12	FUNCTION3 PFK	37.28	1.059e4					1.0	NO		bb		0.000
13	FUNCTION3 PFK	36.80	7.230e3					0.9	NO		bb		0.000
14	FUNCTION3 PFK	36.51	1.664e4					0.7	NO		bb		0.000
15	FUNCTION3 PFK	36.43	7.724e3					0.9	NO		bb		0.000
16	FUNCTION3 PFK	36.29	1.350e4					1.1	NO		bb		0.000
17	FUNCTION3 PFK	36.14	8.334e3					0.8	NO		bb		0.000
18	FUNCTION3 PFK	36.10	2.236e3					0.4	NO		bb		0.000
19	FUNCTION3 PFK	35.88	8.059e3					0.7	NO		bb		0.000
20	FUNCTION3 PFK	35.03	3.301e4					1.4	NO		bb		0.000
21	FUNCTION3 PFK	34.41	2.936e4					1.7	NO		db		0.000
22	FUNCTION3 PFK	34.29	2.945e4					1.4	NO		bd		0.000
23	FUNCTION3 PFK	33.94	1.624e4					1.3	NO		bb		0.000
24	FUNCTION3 PFK	33.80	2.374e4					1.9	NO		db		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	37.52	6.555e3					0.9	NO		bb		
2	FUNCTION4 PFK	39.44	2.138e4					1.8	NO		db		
3	FUNCTION4 PFK	39.40	2.146e4					1.8	NO		dd		
4	FUNCTION4 PFK	39.33	3.723e4					1.7	NO		bd		
5	FUNCTION4 PFK	39.04	4.959e4					2.0	NO		db		
6	FUNCTION4 PFK	39.00	2.571e4					2.2	NO		bd		
7	FUNCTION4 PFK	38.93	3.702e4					2.0	NO		bb		
8	FUNCTION4 PFK	38.81	1.032e4					0.6	NO		bb		
9	FUNCTION4 PFK	38.68	6.010e3					0.4	NO		bb		
10	FUNCTION4 PFK	38.54	1.641e4					1.2	NO		bb		
11	FUNCTION4 PFK	38.38	1.362e4					0.9	NO		bb		
12	FUNCTION4 PFK	38.32	2.421e4					2.0	NO		bb		
13	FUNCTION4 PFK	38.16	3.012e4					0.9	NO		bb		
14	FUNCTION4 PFK	37.81	3.663e4					2.2	NO		bb		
15	FUNCTION4 PFK	37.76	1.336e4					1.4	NO		db		
16	FUNCTION4 PFK	37.73	3.697e4					1.8	NO		dd		
17	FUNCTION4 PFK	37.64	1.543e4					1.4	NO		bd		
18	FUNCTION4 PFK	41.25	1.374e4					1.1	NO		bd		
19	FUNCTION4 PFK	41.12	1.148e4					1.2	NO		bb		
20	FUNCTION4 PFK	40.97	1.922e4					1.4	NO		bb		
21	FUNCTION4 PFK	40.91	6.272e3					0.6	NO		bb		
22	FUNCTION4 PFK	40.79	2.118e4					1.3	NO		bb		
23	FUNCTION4 PFK	40.54	4.231e3					0.5	NO		bb		
24	FUNCTION4 PFK	40.39	2.046e4					1.2	NO		bb		
25	FUNCTION4 PFK	40.28	1.211e4					1.1	NO		bb		
26	FUNCTION4 PFK	40.10	4.260e4					2.2	NO		db		
27	FUNCTION4 PFK	40.02	2.404e4					1.7	NO		dd		
28	FUNCTION4 PFK	39.93	3.165e4					1.6	NO		dd		
29	FUNCTION4 PFK	39.89	1.346e4					1.3	NO		bd		
30	FUNCTION4 PFK	39.79	2.424e4					1.5	NO		bb		
31	FUNCTION4 PFK	39.73	1.458e3					0.3	NO		bb		
32	FUNCTION4 PFK	39.61	2.733e4					1.8	NO		bb		
33	FUNCTION4 PFK	39.52	3.824e4					1.7	NO		bb		
34	FUNCTION4 PFK	41.94	4.804e3					0.7	NO		bb		
35	FUNCTION4 PFK	41.76	6.728e3					0.8	NO		bb		
36	FUNCTION4 PFK	41.69	1.371e3					0.3	NO		bb		
37	FUNCTION4 PFK	41.65	1.065e4					1.1	NO		db		

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION4 PFK	41.58	1.756e4					1.1	NO		bd		
39	FUNCTION4 PFK	41.49	1.858e4					1.6	NO		db		
40	FUNCTION4 PFK	41.44	2.663e4					1.8	NO		bd		
41	FUNCTION4 PFK	41.29	1.163e4					1.0	NO		db		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	42.92	4.290e4					3.4	YES		dd		
2	FUNCTION5 PFK	42.86	3.380e4					4.3	YES		dd		
3	FUNCTION5 PFK	42.79	1.532e5					5.7	YES		dd		
4	FUNCTION5 PFK	42.70	6.782e4					6.6	YES		dd		
5	FUNCTION5 PFK	42.66	6.304e4					7.4	YES		dd		
6	FUNCTION5 PFK	42.62	3.858e5					8.8	YES		dd		
7	FUNCTION5 PFK	42.45	1.051e5					10.8	YES		bd		
8	FUNCTION5 PFK	44.94	1.306e4					1.7	NO		dd		
9	FUNCTION5 PFK	44.91	5.922e3					1.3	NO		bd		
10	FUNCTION5 PFK	44.88	7.819e2					0.3	NO		bb		
11	FUNCTION5 PFK	44.70	7.394e3					1.0	NO		bb		
12	FUNCTION5 PFK	44.57	3.626e3					0.6	NO		bb		
13	FUNCTION5 PFK	44.51	5.980e3					0.9	NO		bb		
14	FUNCTION5 PFK	44.45	1.258e3					0.6	NO		bb		
15	FUNCTION5 PFK	44.38	1.400e4					1.4	NO		bb		
16	FUNCTION5 PFK	43.99	4.384e3					0.8	NO		bb		
17	FUNCTION5 PFK	43.91	5.828e3					1.0	NO		db		
18	FUNCTION5 PFK	43.86	3.304e3					0.7	NO		bd		
19	FUNCTION5 PFK	43.57	3.492e3					0.6	NO		bb		
20	FUNCTION5 PFK	43.33	5.297e3					1.0	NO		db		
21	FUNCTION5 PFK	43.29	3.143e3					0.7	NO		bd		
22	FUNCTION5 PFK	43.18	5.594e3					1.0	NO		bb		
23	FUNCTION5 PFK	42.95	3.315e4					3.0	YES		db		
24	FUNCTION5 PFK	45.92	4.062e3					0.7	NO		bb		
25	FUNCTION5 PFK	45.74	1.088e3					0.5	NO		bb		
26	FUNCTION5 PFK	45.71	8.638e3					1.1	NO		bb		
27	FUNCTION5 PFK	45.56	1.727e3					0.5	NO		bb		
28	FUNCTION5 PFK	45.50	1.106e3					0.5	NO		bb		
29	FUNCTION5 PFK	45.42	1.089e4					1.1	NO		bb		
30	FUNCTION5 PFK	45.33	5.885e3					1.1	NO		bb		
31	FUNCTION5 PFK	45.27	3.502e3					0.6	NO		bb		
32	FUNCTION5 PFK	45.23	2.688e3					0.9	NO		bb		
33	FUNCTION5 PFK	45.13	3.193e3					0.6	NO		db		
34	FUNCTION5 PFK	45.10	3.552e3					0.8	NO		dd		
35	FUNCTION5 PFK	45.07	7.336e3					1.1	NO		bd		
36	FUNCTION5 PFK	45.00	1.278e4					1.7	NO		db		

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ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	21.86	2.343e2					2.8	NO		dd		0.000
2	FUNCTION1 HXCD...	21.72	7.049e1					2.0	NO		bd		0.000
3	FUNCTION1 HXCD...	26.83	1.530e2					2.3	NO		bb		0.000
4	FUNCTION1 HXCD...	25.10	7.421e1					1.4	NO		bb		0.000
5	FUNCTION1 HXCD...	23.93	8.739e1					3.9	YES		bb		0.000
6	FUNCTION1 HXCD...	22.62	8.175e1					2.9	NO		bb		0.000
7	FUNCTION1 HXCD...	22.22	7.800e1					2.0	NO		bb		0.000
8	FUNCTION1 HXCD...	22.06	1.386e2					1.8	NO		db		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	26.61	8.679e1					2.3	NO		bb		0.000
2	FUNCTION1 HPCD...	26.43	2.331e2					2.8	NO		db		0.000
3	FUNCTION1 HPCD...	26.24	1.180e2					2.0	NO		bd		0.000
4	FUNCTION1 HPCD...	24.85	1.064e2					2.1	NO		bb		0.000
5	FUNCTION1 HPCD...	24.19	1.254e2					5.6	YES		bb		0.000
6	FUNCTION1 HPCD...	22.98	1.014e2					2.3	NO		db		0.000
7	FUNCTION1 HPCD...	22.92	8.131e1					2.3	NO		dd		0.000
8	FUNCTION1 HPCD...	22.75	2.571e2					3.4	YES		bd		0.000
9	FUNCTION1 HPCD...	21.12	1.262e2					2.6	NO		bb		0.000
10	FUNCTION1 HPCD...	27.24	9.406e1					3.0	YES		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	29.61	9.937e1					2.2	NO		bb		0.000
2	FUNCTION2 HPCD...	28.95	1.185e2					1.8	NO		db		0.000
3	FUNCTION2 HPCD...	28.87	7.122e1					2.0	NO		bd		0.000
4	FUNCTION2 HPCD...	28.78	2.117e2					2.3	NO		bb		0.000
5	FUNCTION2 HPCD...	27.63	1.018e2					3.0	YES		bb		0.000

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ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	35.63	1.005e2					3.1	YES		db		0.000
2	FUNCTION3 OCDPE	35.59	7.572e1					2.8	NO		dd		0.000
3	FUNCTION3 OCDPE	35.53	8.292e1					2.5	NO		bd		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	40.20	1.082e2					2.0	NO		bb		0.000
2	FUNCTION4 NCDPE	39.28	8.048e1					2.9	NO		bb		0.000
3	FUNCTION4 NCDPE	37.97	3.121e2					5.8	YES		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
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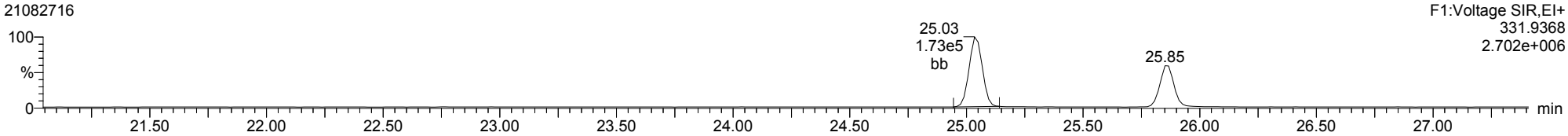
13C-1234-TCDD



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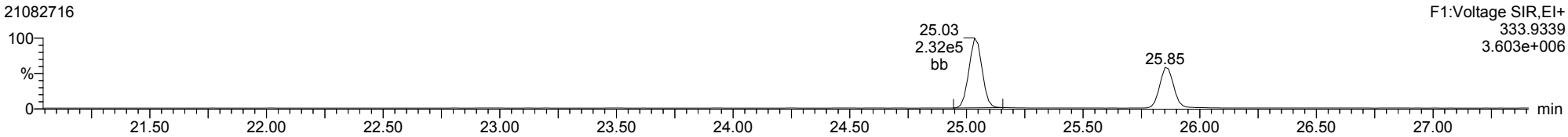

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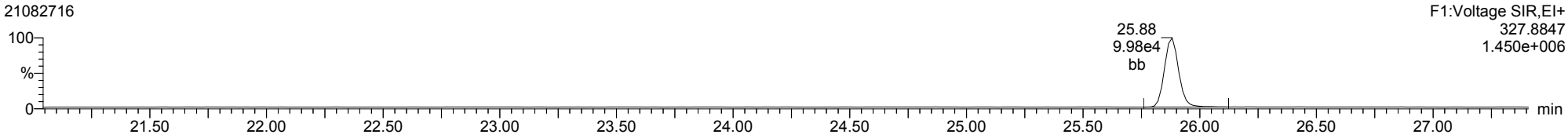

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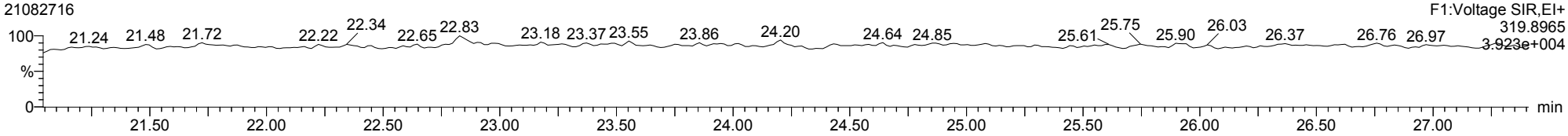

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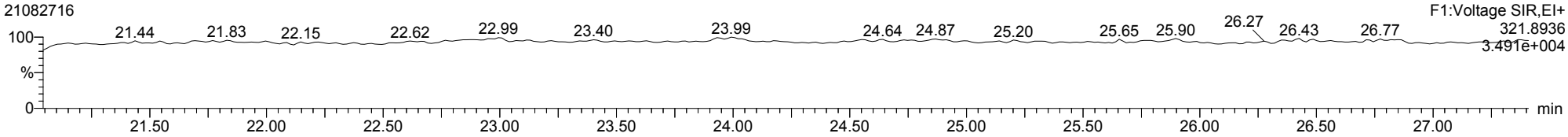

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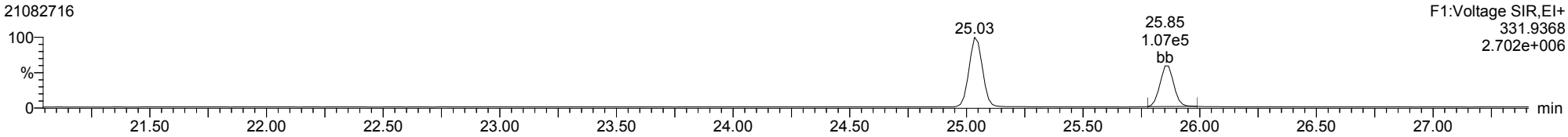

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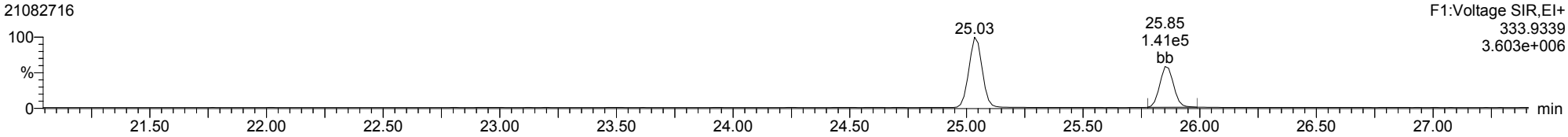

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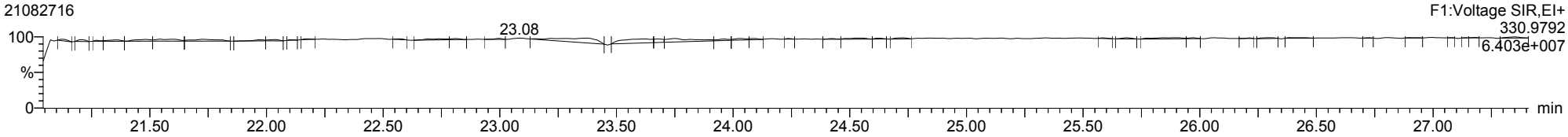

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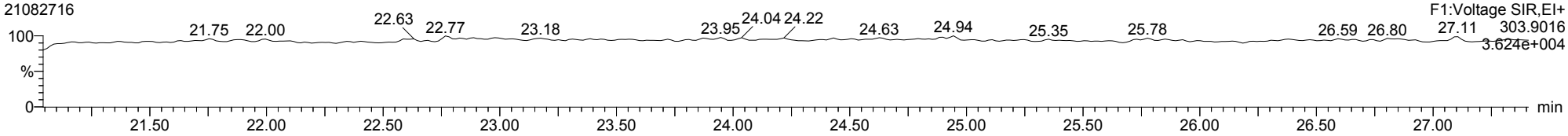
2378-TCDF



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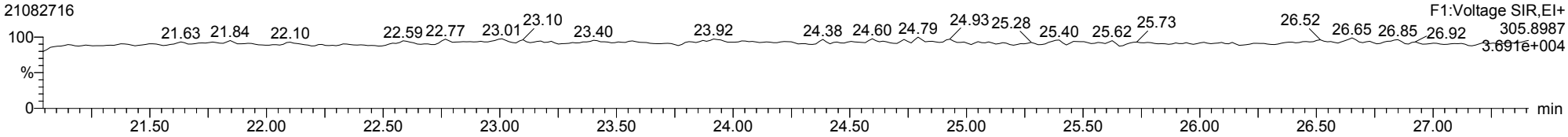
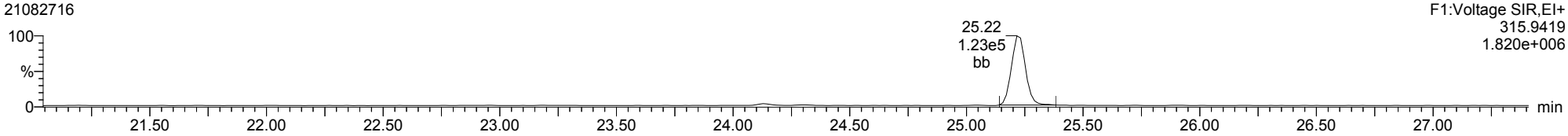


13C-2378-TCDF



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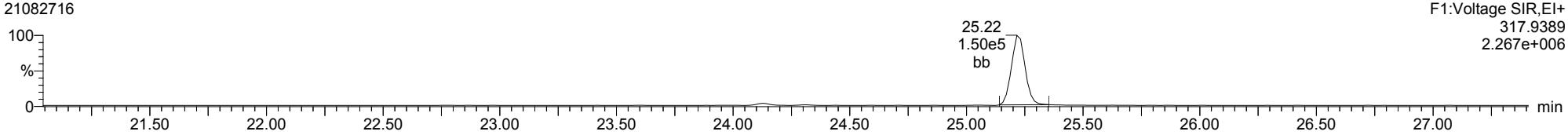
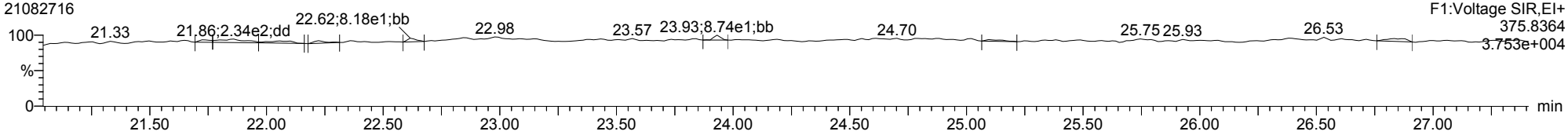


FUNCTION1 HXCDPE



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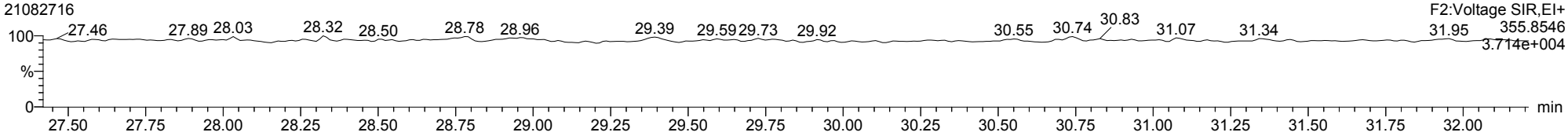
12378-PeCDD



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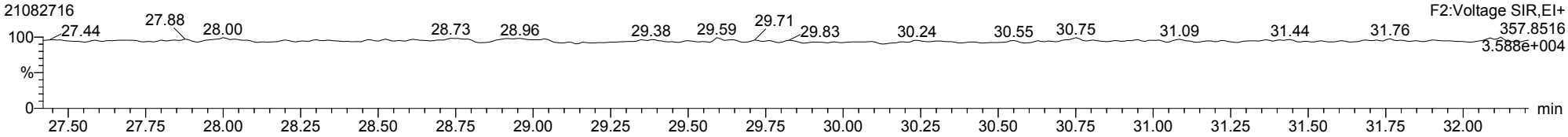

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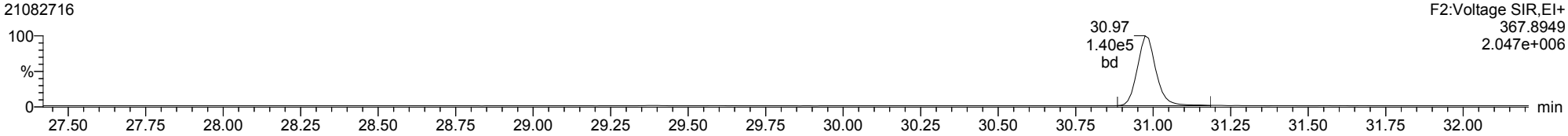

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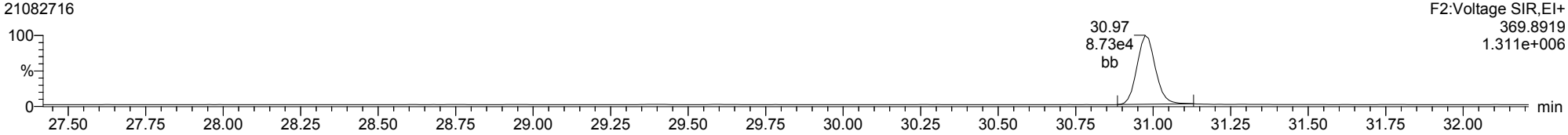
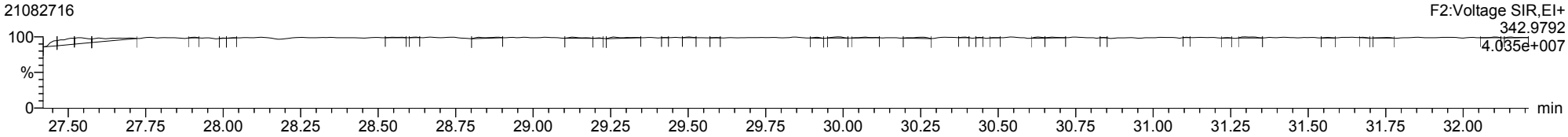


FUNCTION2 PFK



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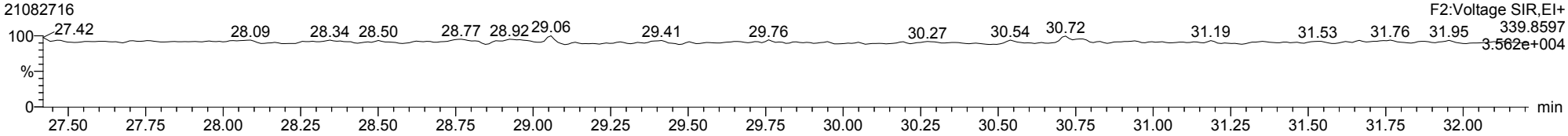
12378-PeCDF



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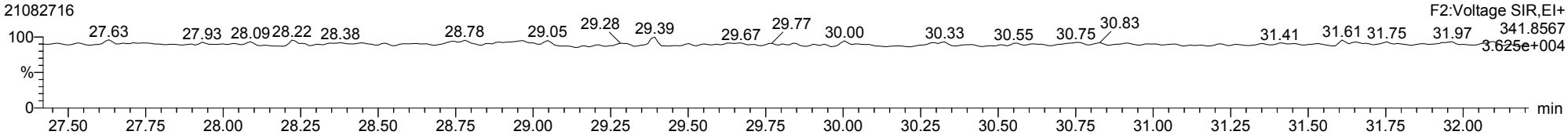

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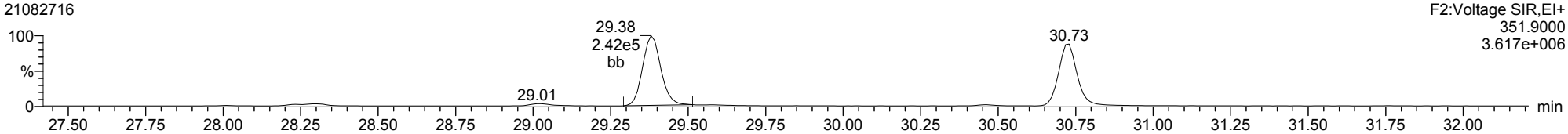

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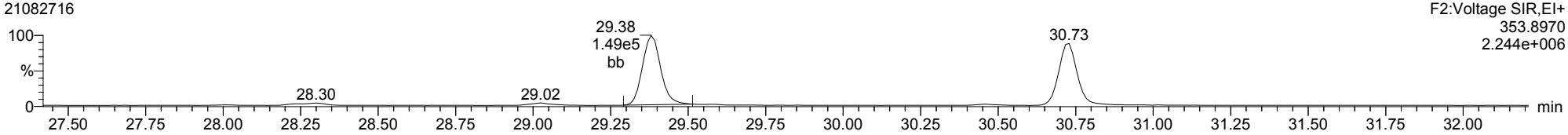
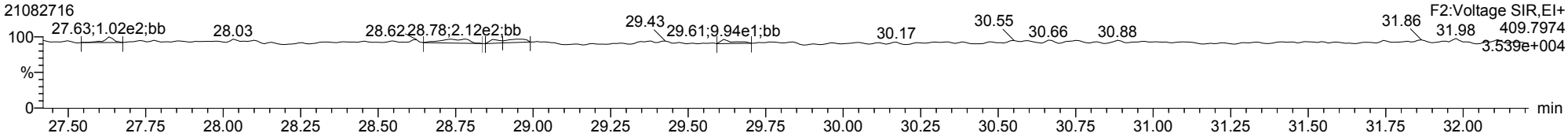


FUNCTION2 HPCDPE



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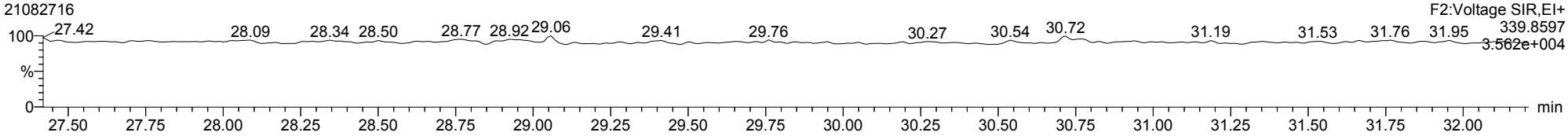
23478-PeCDF



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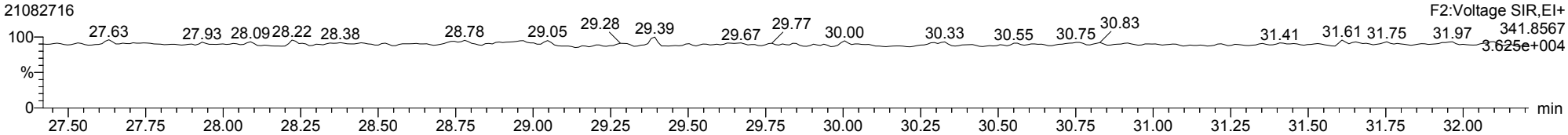

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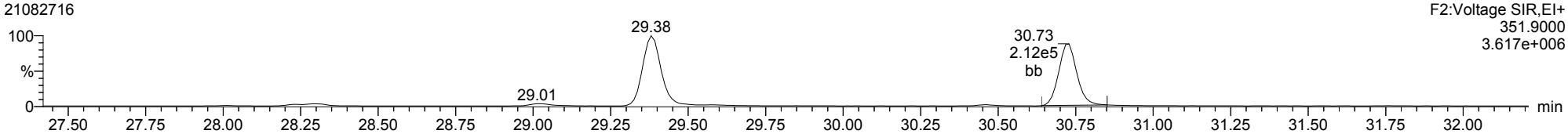

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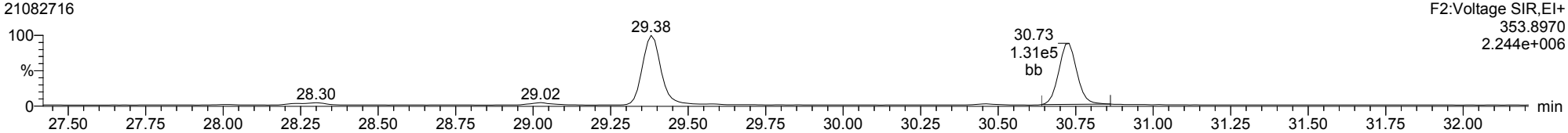
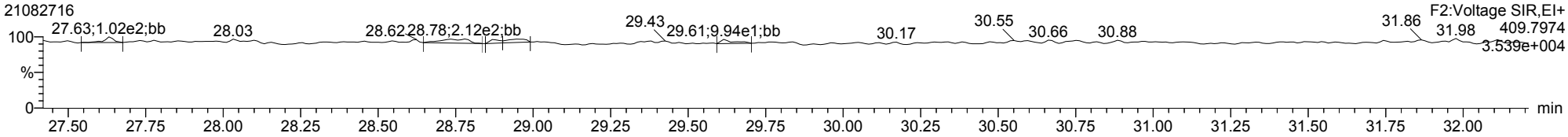


FUNCTION2 HPCDPE



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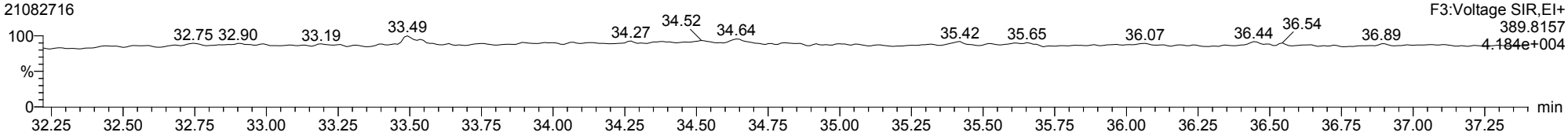
123478-HxCDD



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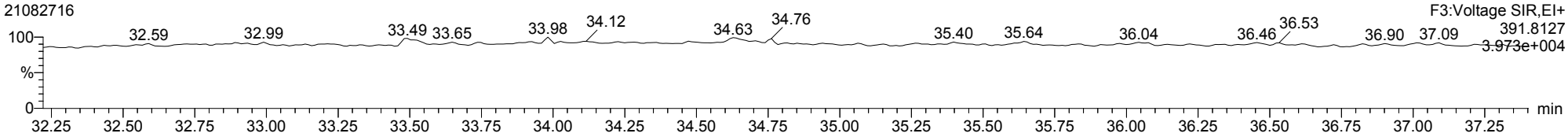

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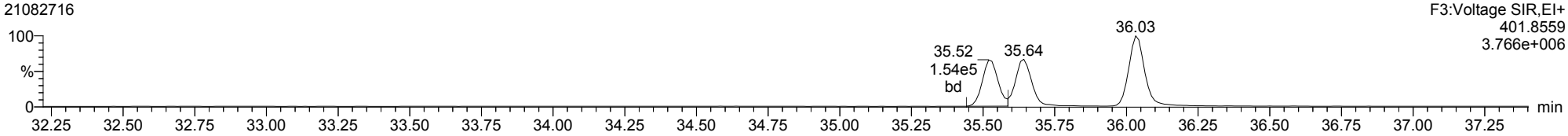

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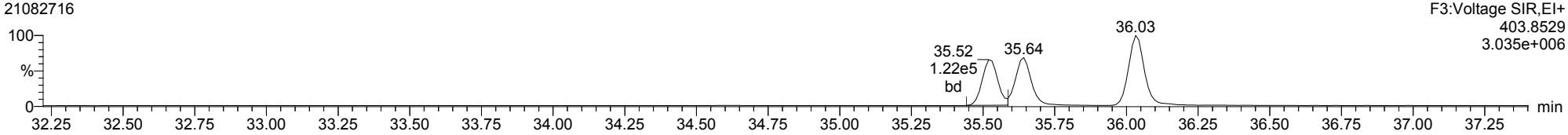
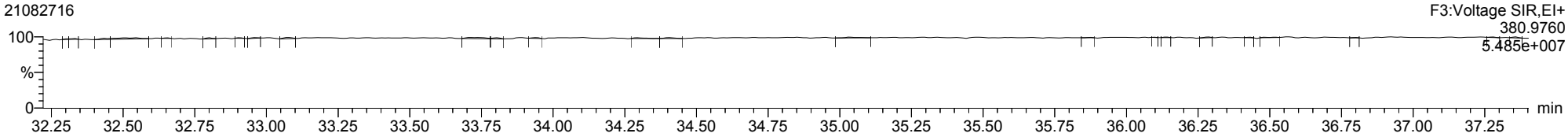


FUNCTION3 PFK



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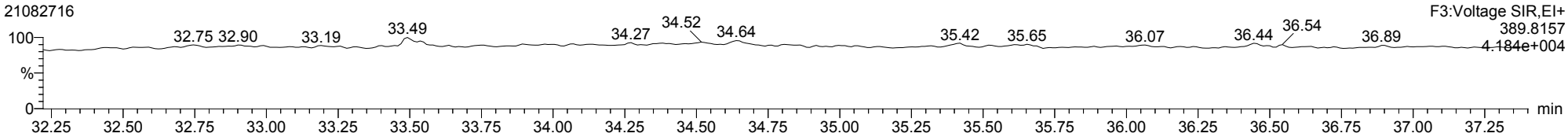
123678-HxCDD



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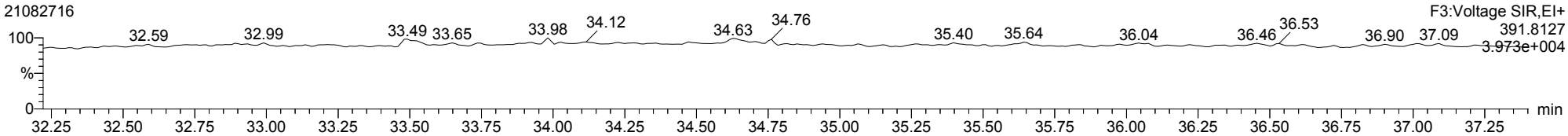

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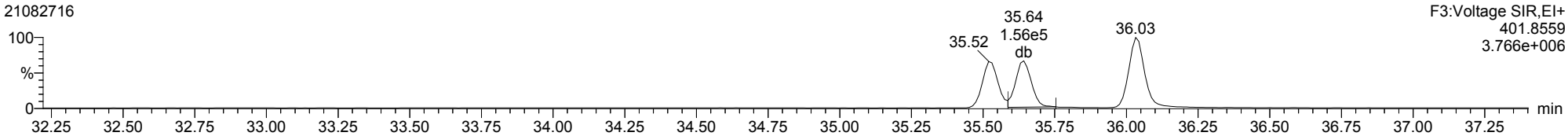

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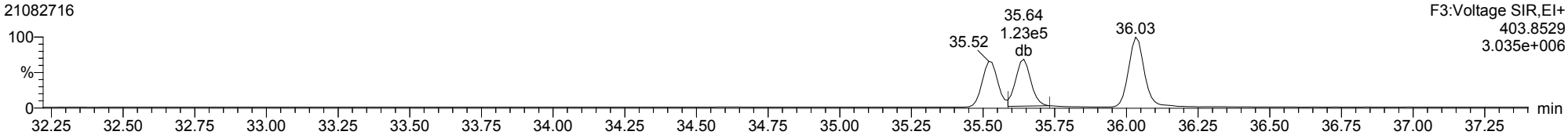

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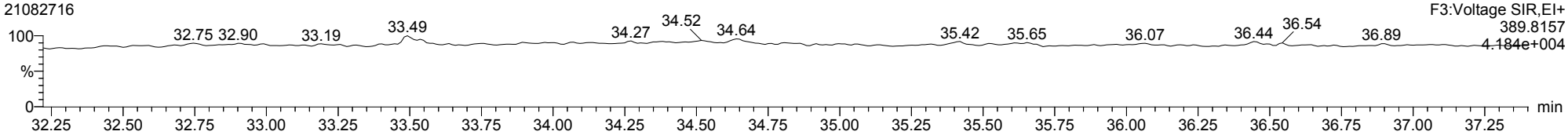
123789-HxCDD



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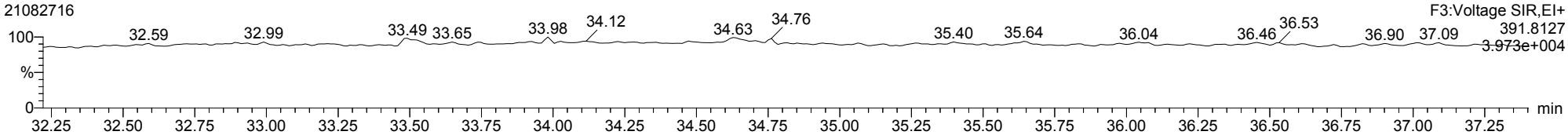

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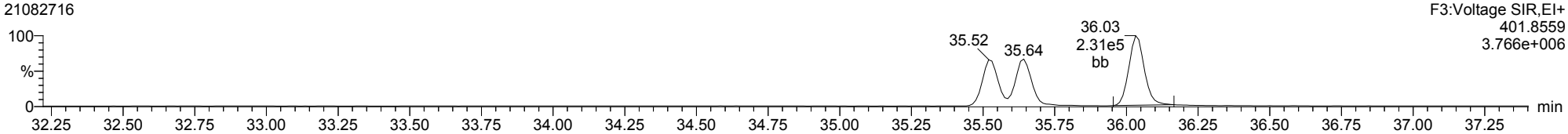

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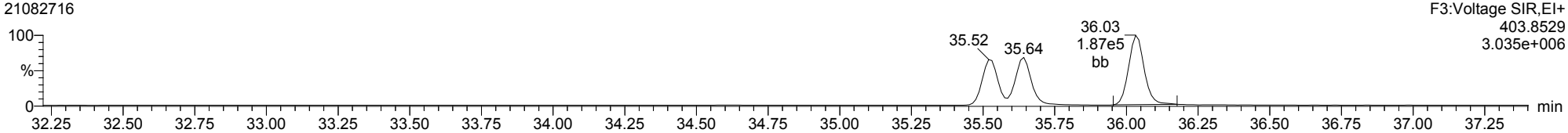

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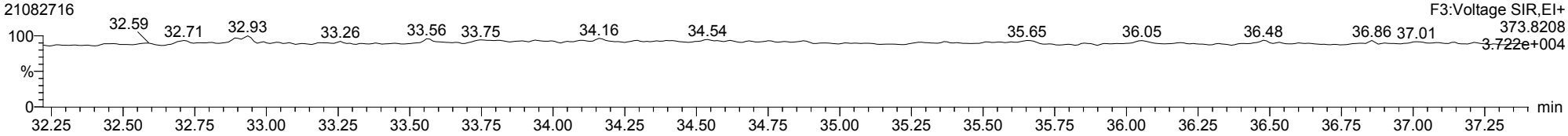
123478-HxCDF



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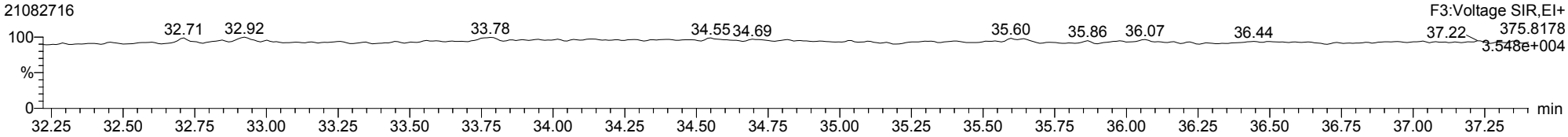

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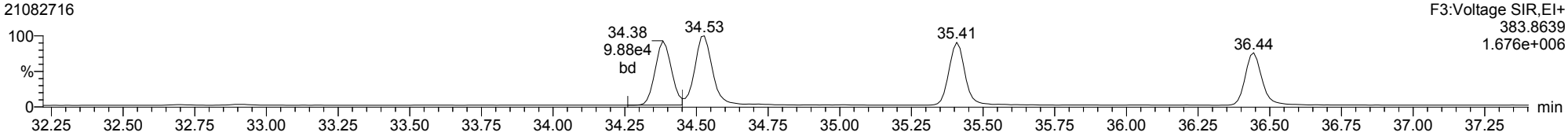

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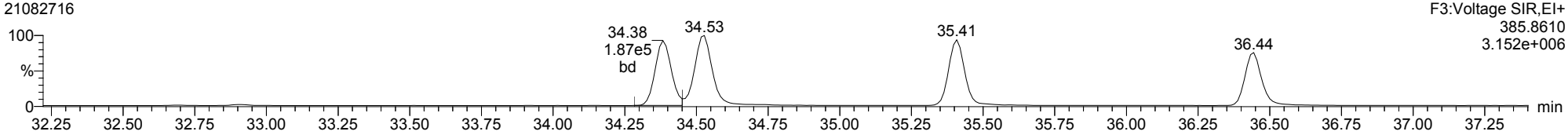
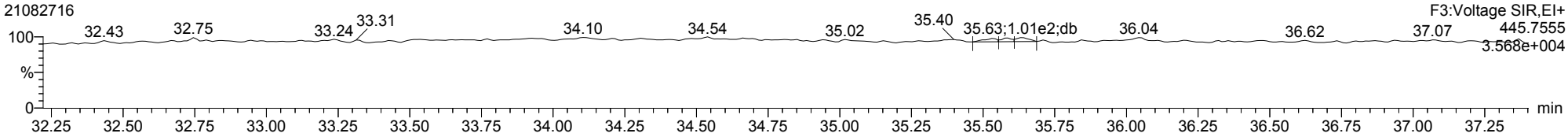


FUNCTION3 OCDPE



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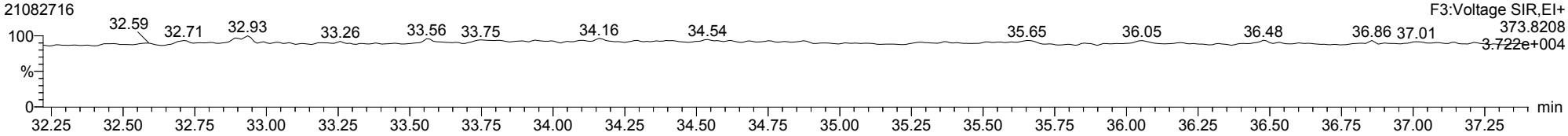
234678-HxCDF



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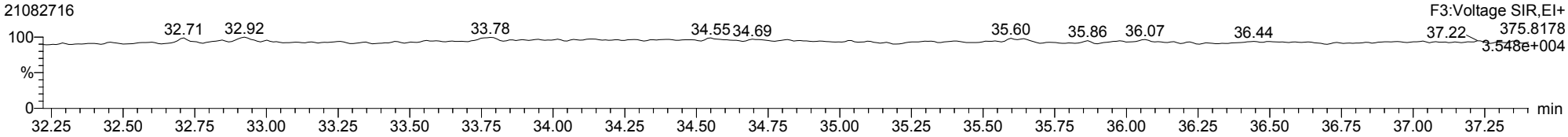

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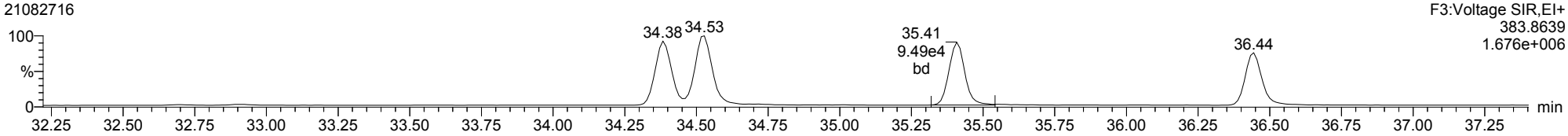

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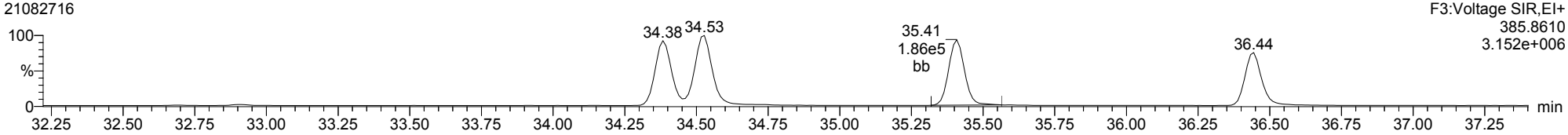
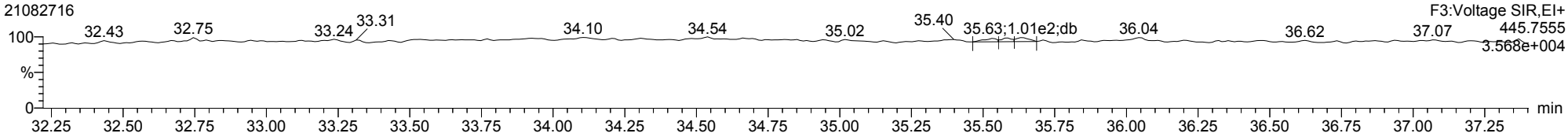


FUNCTION3 OCDPE



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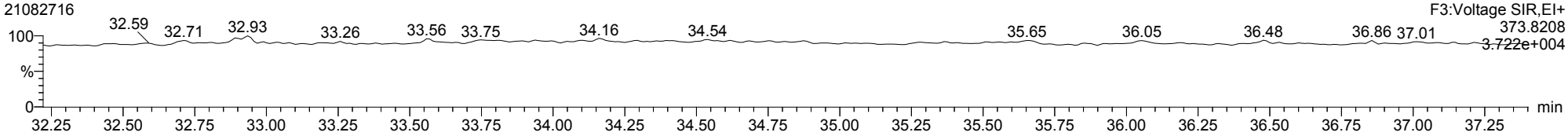
123678-HxCDF



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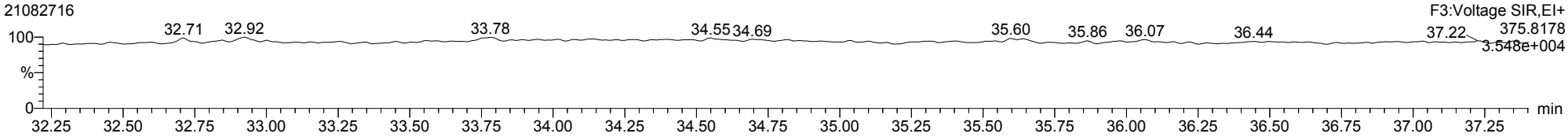

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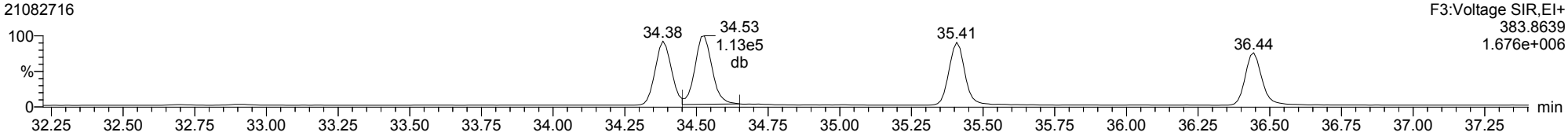

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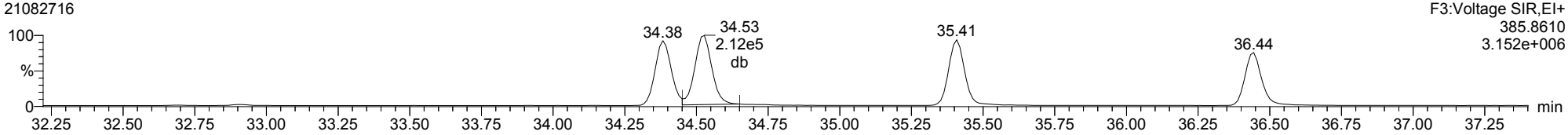
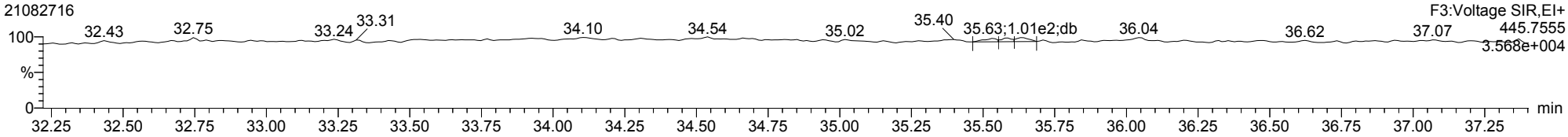


FUNCTION3 OCDPE



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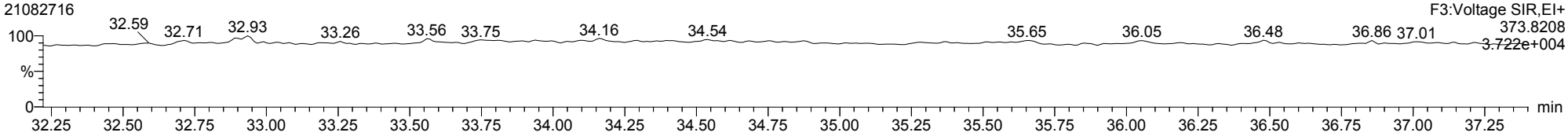

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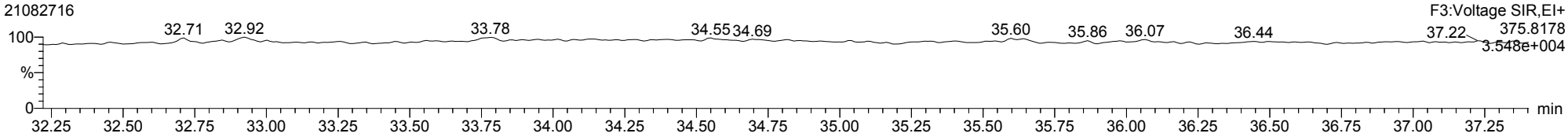

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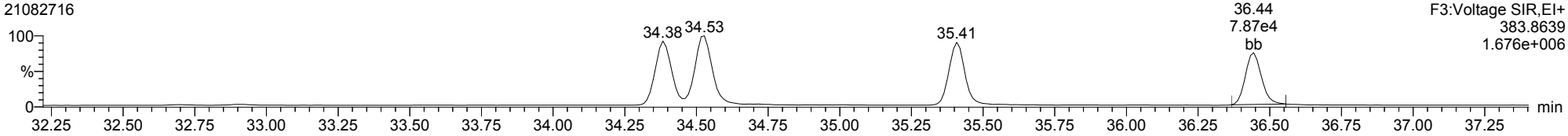

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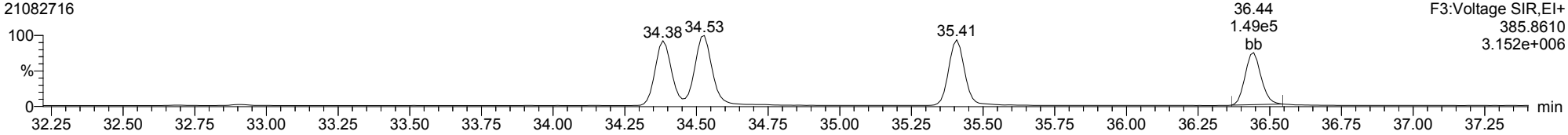
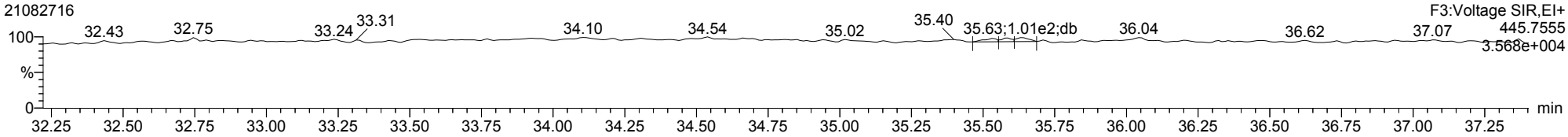
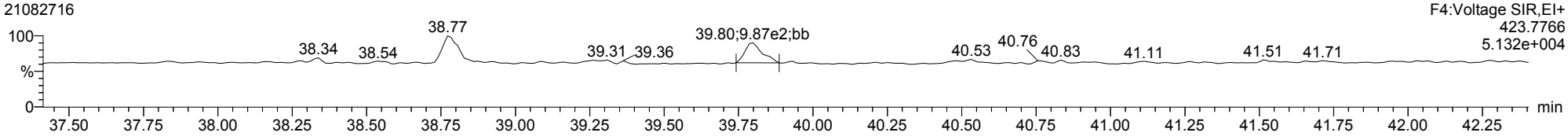


FUNCTION3 OCDPE

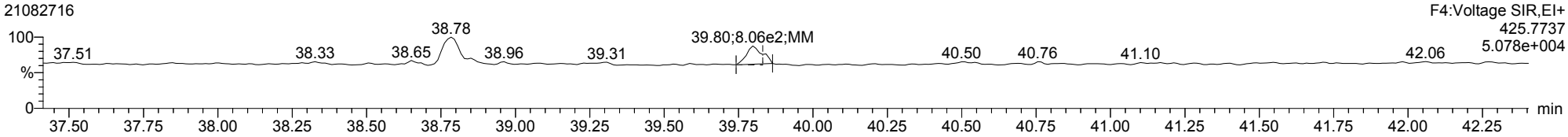


ID: 21G0108-08, Name: 21082716, Date: 27-Aug-2021, Time: 17:09:35, Conditions: AUTOSPEC01, User: pk

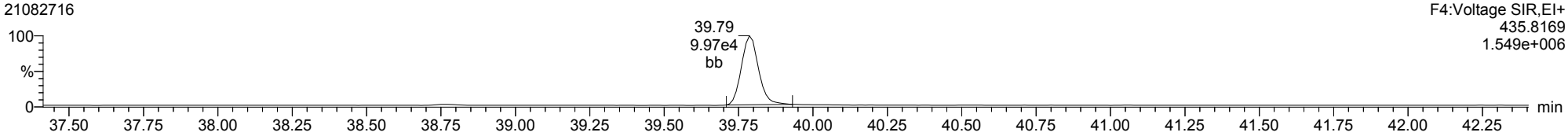
1234678-HpCDD



1234678-HpCDD



13C-1234678-HpCDD



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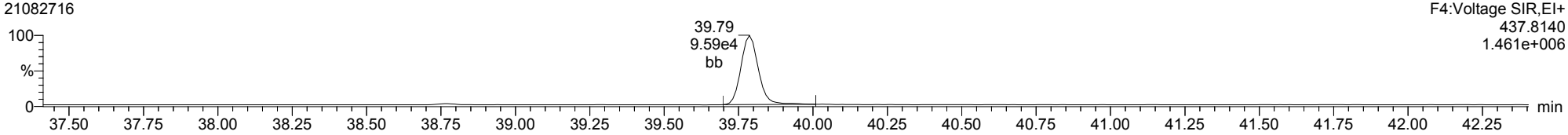

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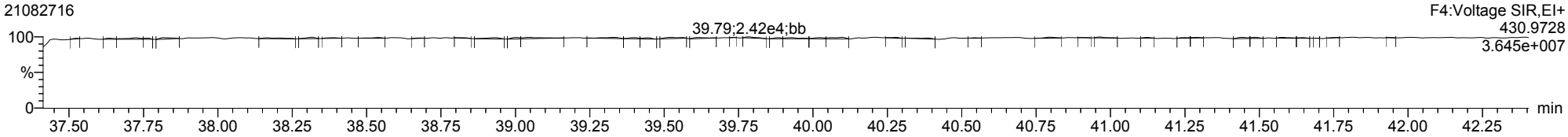

ID: 21G0108-08, Name: 21082716, Date: 27-Aug-2021, Time: 17:09:35, Conditions: AUTOSPEC01, User: pk

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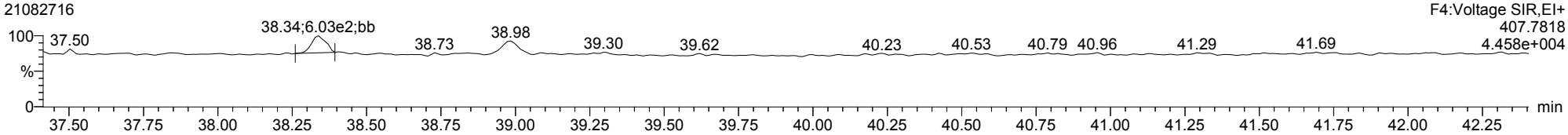

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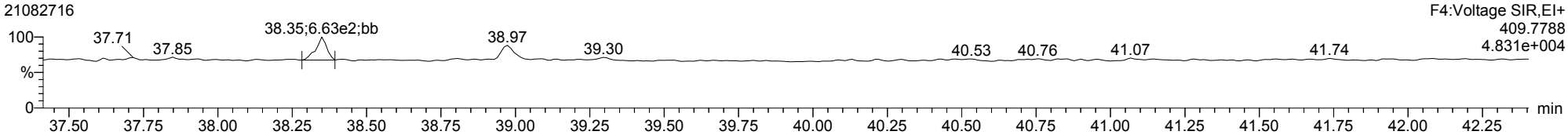

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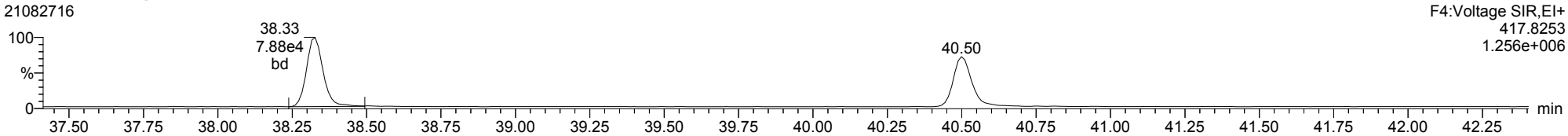

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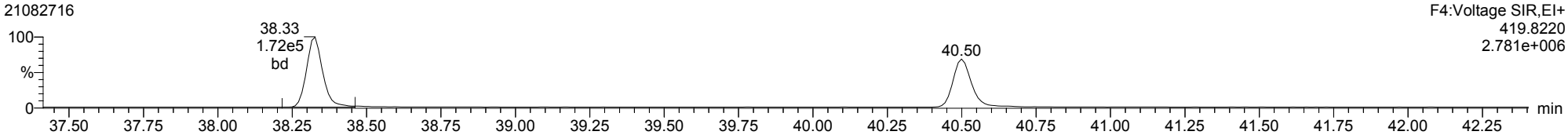
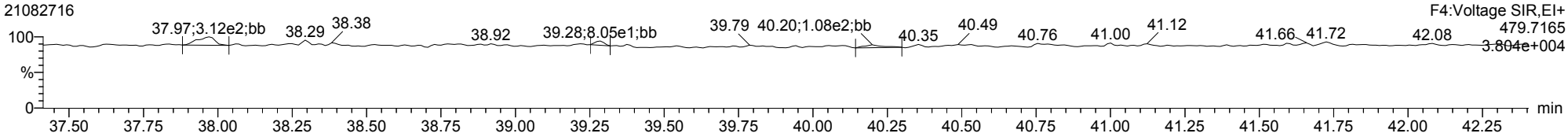
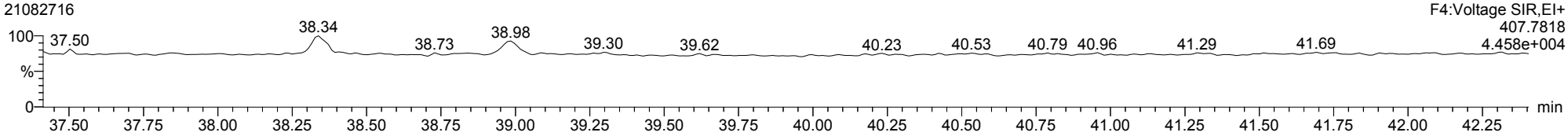


FUNCTION4 NCDPE

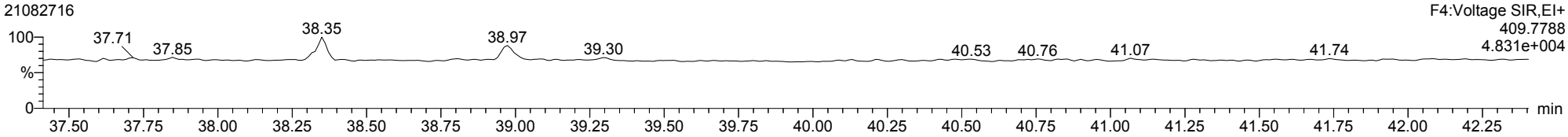


ID: 21G0108-08, Name: 21082716, Date: 27-Aug-2021, Time: 17:09:35, Conditions: AUTOSPEC01, User: pk

1234789-HpCDF



1234789-HpCDF



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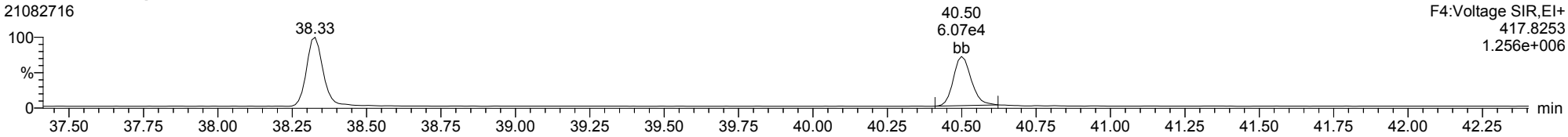

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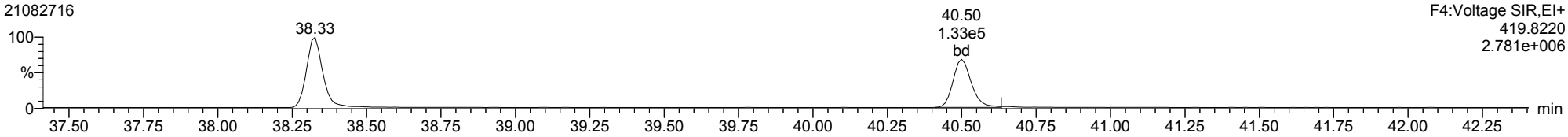
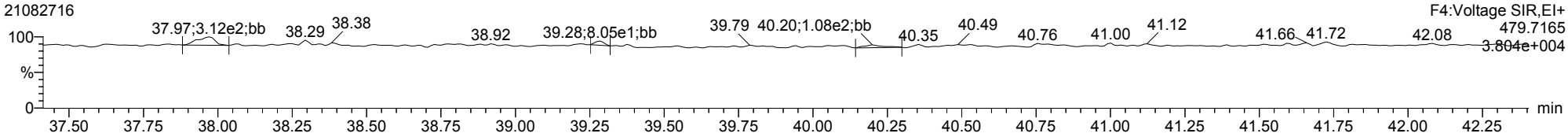
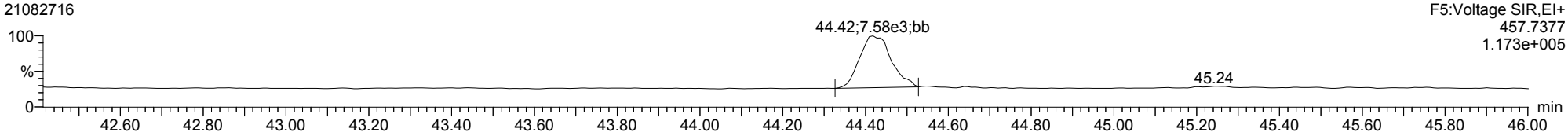


FUNCTION4 NCDPE

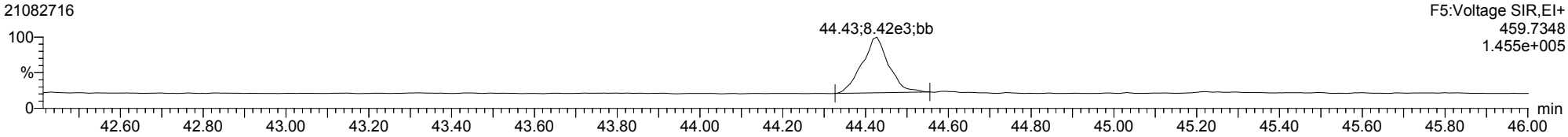


ID: 21G0108-08, Name: 21082716, Date: 27-Aug-2021, Time: 17:09:35, Conditions: AUTOSPEC01, User: pk

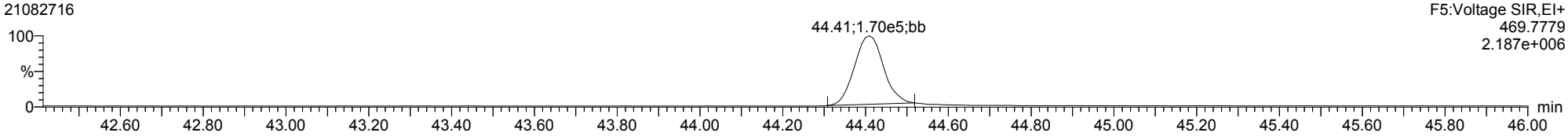
OCDD



OCDD



13C-OCDD



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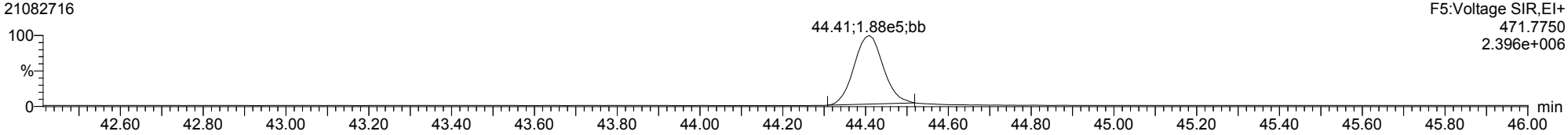
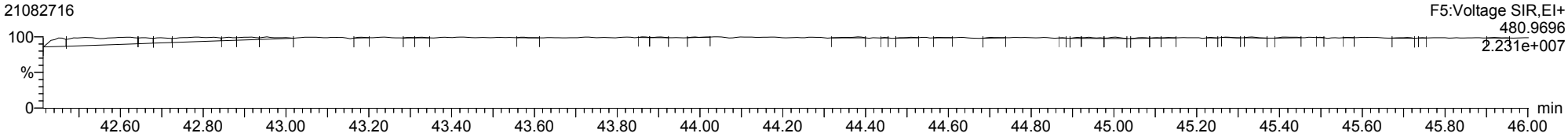
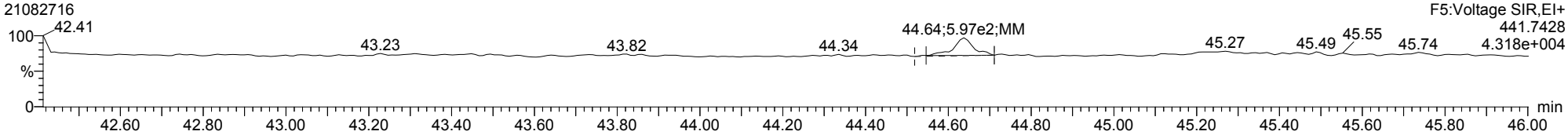


FUNCTION5 PFK



ID: 21G0108-08, Name: 21082716, Date: 27-Aug-2021, Time: 17:09:35, Conditions: AUTOSPEC01, User: pk

OCDF



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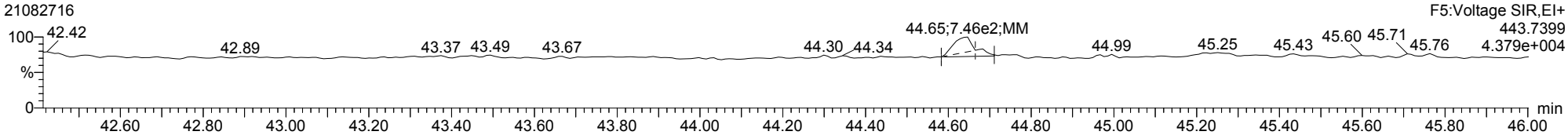
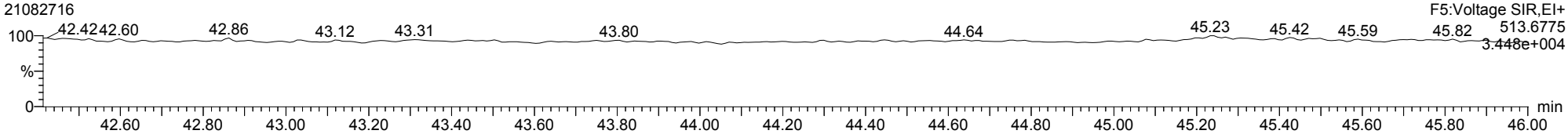
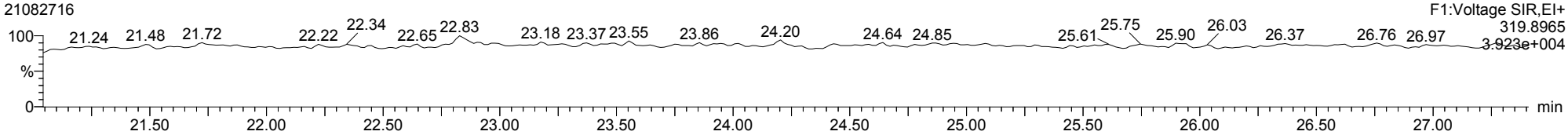


FUNCTION5 DCDPE

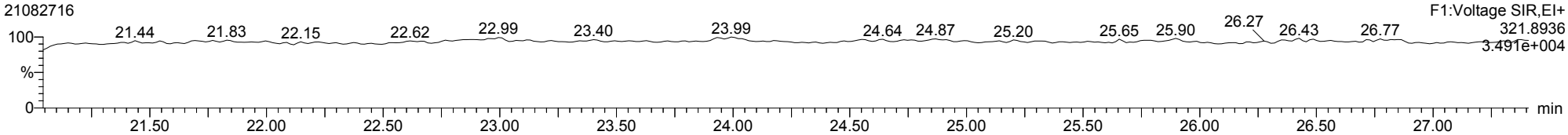


ID: 21G0108-08, Name: 21082716, Date: 27-Aug-2021, Time: 17:09:35, Conditions: AUTOSPEC01, User: pk

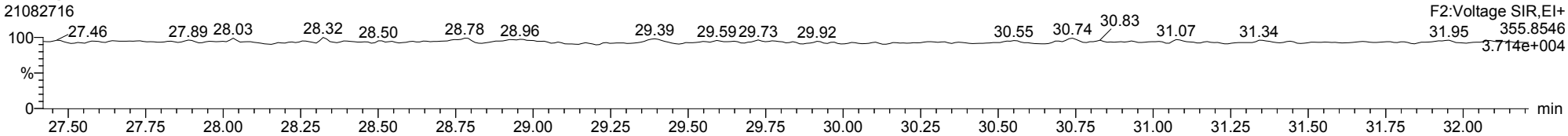
Total-tetradioxins



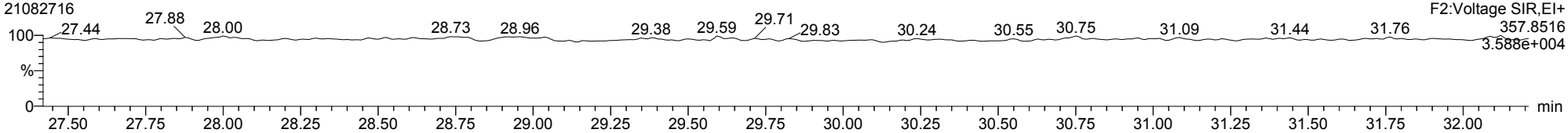
Total-tetradioxins



Total-pentadioxins

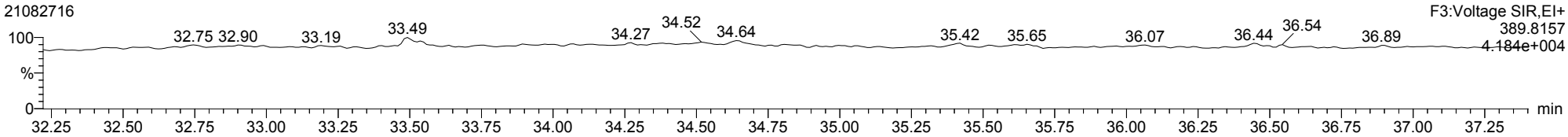


Total-pentadioxins

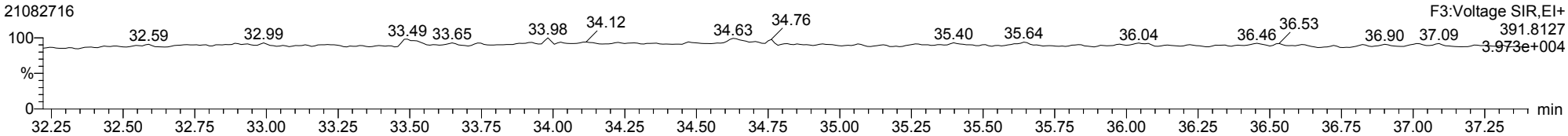


ID: 21G0108-08, Name: 21082716, Date: 27-Aug-2021, Time: 17:09:35, Conditions: AUTOSPEC01, User: pk

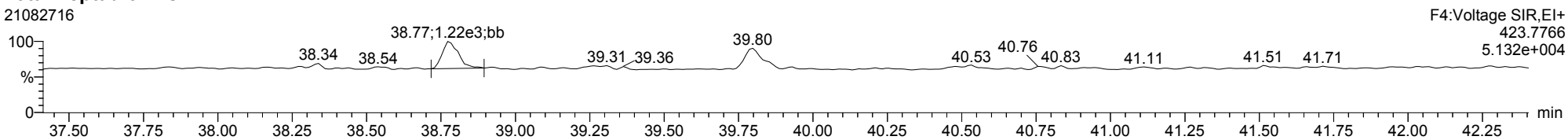
Total-hexadioxins



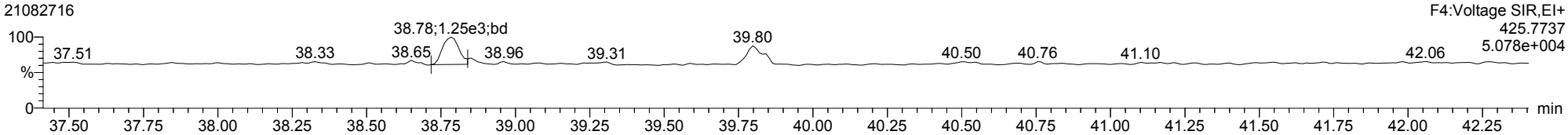
Total-hexadioxins



Total-heptadioxins

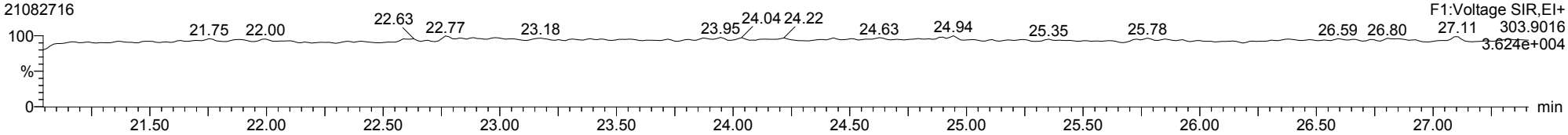


Total-heptadioxins

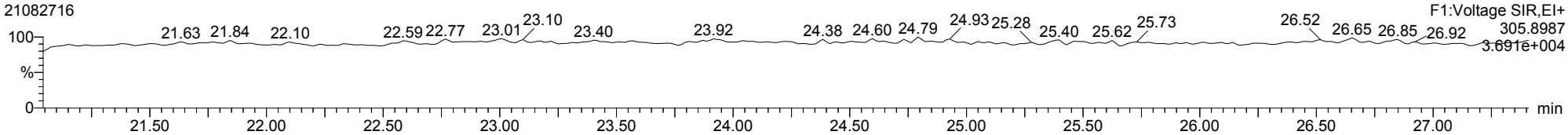


ID: 21G0108-08, Name: 21082716, Date: 27-Aug-2021, Time: 17:09:35, Conditions: AUTOSPEC01, User: pk

Total-tetrafurans



Total-tetrafurans



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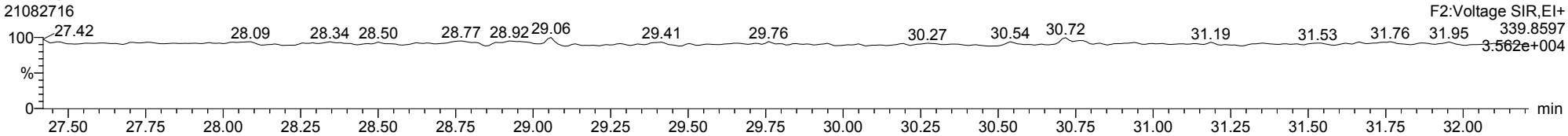
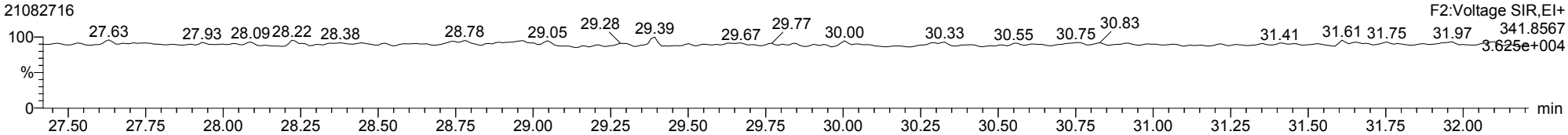
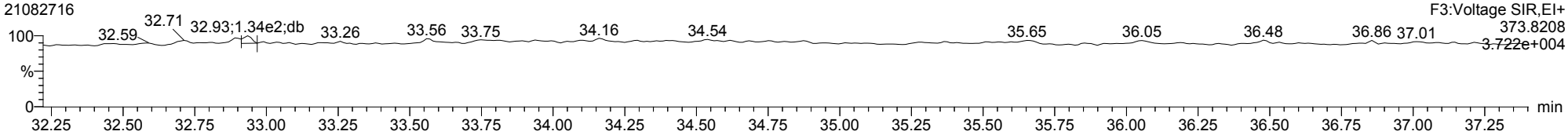


Total-pentafurans

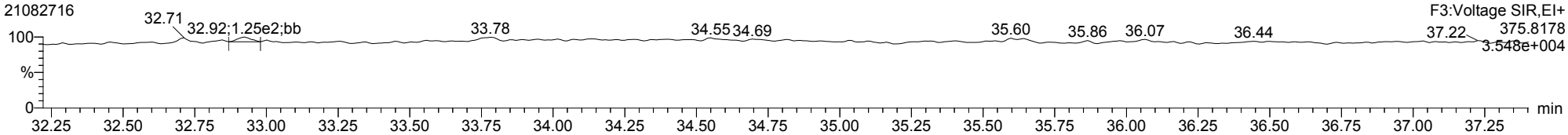


ID: 21G0108-08, Name: 21082716, Date: 27-Aug-2021, Time: 17:09:35, Conditions: AUTOSPEC01, User: pk

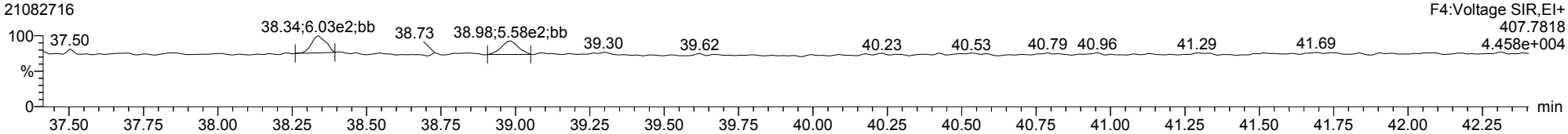
Total-hexafurans



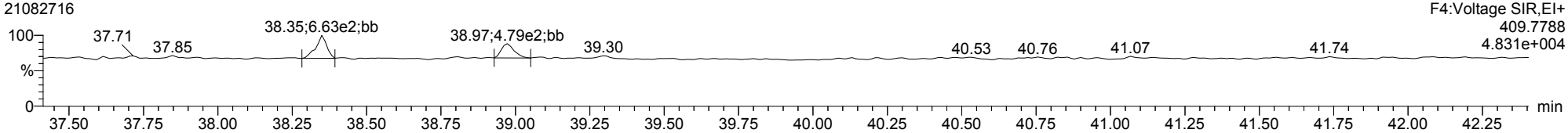
Total-hexafurans



Total-heptafurans



Total-heptafurans



Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT669B

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21G0108-09 C	File ID:	21082717
Sampled:	07/08/21 17:02	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 17:58
% Solids:	61.33	Preparation:	EPA 8290	Initial/Final:	16.32 g Wet / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1	0.851	0.655-0.886	0.295	0.999	3.11	ng/kg	X
1746-01-6	2,3,7,8-TCDD	1	0.801	0.655-0.886	0.346	0.999	1.62	ng/kg	
57117-41-6	1,2,3,7,8-PeCDF	1	1.271	1.318-1.783	0.265	0.999	1.41	ng/kg	EMPC
57117-31-4	2,3,4,7,8-PeCDF	1	1.317	1.318-1.783	0.245	0.999	3.05	ng/kg	EMPC
40321-76-4	1,2,3,7,8-PeCDD	1	1.753	1.318-1.783	0.523	0.999	3.90	ng/kg	
70648-26-9	1,2,3,4,7,8-HxCDF	1	1.247	1.054-1.426	0.240	0.999	11.3	ng/kg	
57117-44-9	1,2,3,6,7,8-HxCDF	1	1.266	1.054-1.426	0.226	0.999	5.02	ng/kg	
60851-34-5	2,3,4,6,7,8-HxCDF	1	1.340	1.054-1.426	0.235	0.999	6.93	ng/kg	
72918-21-9	1,2,3,7,8,9-HxCDF	1	1.446	1.054-1.426	0.256	0.999	1.73	ng/kg	EMPC
39227-28-6	1,2,3,4,7,8-HxCDD	1	1.022	1.054-1.426	0.331	0.999	4.14	ng/kg	EMPC
57653-85-7	1,2,3,6,7,8-HxCDD	1	1.185	1.054-1.426	0.341	0.999	16.4	ng/kg	
19408-74-3	1,2,3,7,8,9-HxCDD	1	1.233	1.054-1.426	0.360	0.999	9.22	ng/kg	
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.036	0.893-1.208	0.330	0.999	97.6	ng/kg	
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	1.005	0.893-1.208	0.458	0.999	8.62	ng/kg	
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.063	0.893-1.208	0.934	2.50	458	ng/kg	
39001-02-0	OCDF	1	0.889	0.757-1.024	0.423	2.50	320	ng/kg	
3268-87-9	OCDD	1	0.899	0.757-1.024	0.752	9.99	3530	ng/kg	B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			0.999	26.8	ng/kg
41903-57-5	Total TCDD	1	0.000			0.999	12.3	ng/kg
30402-15-4	Total PeCDF	1	0.000			0.999	37.3	ng/kg
36088-22-9	Total PeCDD	1	0.000			0.999	17.3	ng/kg
55684-94-1	Total HxCDF	1	0.000			0.999	119	ng/kg
34465-46-8	Total HxCDD	1	0.000			0.999	137	ng/kg
38998-75-3	Total HpCDF	1	0.000			0.999	336	ng/kg
37871-00-4	Total HpCDD	1	0.000			0.999	906	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 19.06
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 19.06

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT669B

Form 2
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21G0108-09	File ID:	21082717
Sampled:	07/08/21 17:02	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 17:58
Solids Wt%:	61.33	Preparation:	EPA 8290	Initial/Final:	16.32 g / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.819	0.655-0.886	0.263	52.8	24 - 169 %	
13C12-2,3,7,8-TCDD		0.776	0.655-0.886	0.236	58.7	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.595	1.318-1.783	0.257	73.1	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.584	1.318-1.783	0.270	71.2	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.604	1.318-1.783	0.231	74.0	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.514	0.434-0.587	0.205	59.4	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.517	0.434-0.587	0.189	56.4	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.520	0.434-0.587	0.209	58.1	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.520	0.434-0.587	0.253	63.0	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.301	1.054-1.426	0.201	68.7	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.264	1.054-1.426	0.185	62.5	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.447	0.374-0.506	0.230	65.5	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.463	0.374-0.506	0.282	67.6	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.040	0.893-1.208	0.240	71.2	23 - 140 %	
13C12-OCDD		0.937	0.757-1.024	0.298	80.0	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.071	65.0	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:43:31 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-09, Name: 21082717, Date: 27-Aug-2021, Time: 17:58:39, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.262	1.001	2.675e3	3.141e3	1.108	0.851	0.770	1524	1384	4.00e4	5.39e4	26.2	38.9	NO	bd	bd	1.558
12378-PeCDF	29.425	1.001	1.703e3	1.339e3	1.015	1.271	1.550	1566	1421	2.90e4	1.73e4	18.5	12.2	YES	bb	bd	0.707
23478-PeCDF	30.773	1.001	3.850e3	2.923e3	1.126	1.317	1.550	1566	1421	6.27e4	5.34e4	40.0	37.6	YES	db	db	1.528
123478-HxCDF	34.427	1.000	1.074e4	8.615e3	1.017	1.247	1.240	973	1127	1.70e5	1.28e5	174.4	113.6	NO	dd	bd	5.673
234678-HxCDF	35.397	0.999	6.703e3	5.004e3	1.052	1.340	1.240	973	1127	6.79e4	5.77e4	69.8	51.2	NO	bd	bb	3.470
123678-HxCDF	34.572	1.001	5.010e3	3.957e3	1.037	1.266	1.240	973	1127	7.91e4	6.08e4	81.2	53.9	NO	db	db	2.513
123789-HxCDF	36.455	1.000	1.518e3	1.049e3	1.030	1.446	1.240	973	1127	2.02e4	1.62e4	20.7	14.4	YES	bb	bb	0.865
1234678-HpCDF	38.360	1.000	9.089e4	8.776e4	1.327	1.036	1.050	2078	1411	1.59e6	1.50e6	765.8	1060.1	NO	bb	bb	48.845
1234789-HpCDF	40.544	1.001	6.467e3	6.432e3	1.283	1.005	1.050	2078	1411	1.02e5	9.52e4	48.9	67.5	NO	bb	bb	4.315
OCDF	44.683	1.005	1.994e5	2.243e5	1.447	0.889	0.890	789	1648	2.46e6	2.77e6	3113.2	1679.1	NO	bb	bb	159.919
2378-TCDD	25.897	1.001	9.750e2	1.217e3	0.920	0.801	0.770	1422	985	1.33e4	1.99e4	9.4	20.2	NO	dd	bd	0.813
12378-PeCDD	31.018	1.000	3.001e3	1.712e3	0.995	1.753	1.550	1668	1557	4.08e4	2.33e4	24.4	15.0	NO	bb	bb	1.954
123478-HxCDD	35.575	1.001	3.226e3	3.156e3	1.027	1.022	1.240	1232	1516	5.75e4	5.43e4	46.7	35.9	YES	bd	bd	2.073
123678-HxCDD	35.686	1.000	1.328e4	1.121e4	1.009	1.185	1.240	1232	1516	2.25e5	1.79e5	182.4	118.4	NO	db	db	8.207
123789-HxCDD	36.076	1.011	7.213e3	5.848e3	0.950	1.233	1.240	1232	1516	1.31e5	1.00e5	106.5	66.3	NO	bb	bb	4.615
1234678-HpCDD	39.831	1.001	2.580e5	2.428e5	1.068	1.063	1.050	2730	2609	4.05e6	3.80e6	1484.5	1456.5	NO	bb	bb	229.267
OCDD	44.464	1.000	1.809e6	2.011e6	1.181	0.899	0.890	1882	1657	2.38e7	2.64e7	12620.6	15905.9	NO	bb	bb	1766.672
13C-2378-TCDF	25.247	1.007	1.517e5	1.853e5	1.427	0.819	0.770	2536	1907	2.40e6	2.94e6	947.5	1542.2	NO	bb	bb	52.831
13C-12378-PeCDF	29.403	1.173	2.608e5	1.635e5	1.297	1.595	1.550	2285	1657	4.09e6	2.50e6	1789.3	1508.3	NO	bb	bb	73.123
13C-23478-PeCDF	30.751	1.227	2.414e5	1.524e5	1.236	1.584	1.550	2285	1657	3.98e6	2.51e6	1743.4	1517.3	NO	bb	bb	71.216
13C-123478-HxCDF	34.416	0.954	1.139e5	2.216e5	1.242	0.514	0.510	1523	1650	1.75e6	3.45e6	1150.6	2089.9	NO	bd	bd	59.427
13C-123678-HxCDF	34.550	0.958	1.174e5	2.268e5	1.343	0.517	0.510	1523	1650	1.84e6	3.63e6	1205.8	2200.1	NO	db	db	56.383
13C-234678-HxCDF	35.441	0.983	1.096e5	2.109e5	1.215	0.520	0.510	1523	1650	1.74e6	3.32e6	1143.5	2015.0	NO	bb	bb	58.063
13C-123789-HxCDF	36.466	1.011	9.863e4	1.896e5	1.008	0.520	0.510	1523	1650	1.63e6	3.15e6	1070.8	1909.2	NO	bb	bb	62.960
13C-1234678-HpCDF	38.349	1.063	8.514e4	1.904e5	0.926	0.447	0.440	1470	1191	1.48e6	3.27e6	1004.8	2745.8	NO	bb	bb	65.455
13C-1234789-HpCDF	40.521	1.124	7.374e4	1.592e5	0.758	0.463	0.440	1470	1191	1.13e6	2.46e6	766.0	2069.1	NO	bb	bb	67.634
13C-1234-TCDD	25.065	0.000	1.916e5	2.556e5	1.000	0.750	0.770	1857	1265	3.04e6	4.00e6	1636.1	3159.3	NO	bb	bb	100.000
13C-2378-TCDD	25.882	1.033	1.280e5	1.649e5	1.116	0.776	0.770	1857	1265	1.98e6	2.58e6	1066.8	2042.1	NO	bb	bb	58.653
13C-12378-PeCDD	31.007	1.237	1.493e5	9.308e4	0.732	1.604	1.550	1064	932	2.29e6	1.44e6	2151.3	1544.0	NO	bb	bb	74.046
13C-123478-HxCDD	35.553	0.986	1.695e5	1.303e5	0.960	1.301	1.240	1020	1384	2.74e6	2.12e6	2688.2	1532.2	NO	bd	bd	68.730
13C-123678-HxCDD	35.675	0.989	1.651e5	1.306e5	1.041	1.264	1.240	1020	1384	2.67e6	2.17e6	2618.0	1568.7	NO	db	db	62.494
13C-1234678-HpCDD	39.808	1.104	1.042e5	1.002e5	0.632	1.040	1.050	1000	891	1.64e6	1.60e6	1635.0	1802.3	NO	bb	bb	71.156
13C-OCDD	44.445	1.232	1.772e5	1.891e5	0.504	0.937	0.890	835	1038	2.31e6	2.50e6	2767.6	2413.5	NO	bb	bb	160.015
13C-123789-HxCDD	36.065	0.000	2.523e5	2.021e5	1.000	1.248	1.240	1020	1384	4.15e6	3.33e6	4068.1	2402.6	NO	bb	bb	100.000
37CL-2378-TCDD	25.897	1.033	1.261e5		1.084			906		1.89e6		2091.9			bb		26.019

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ID: 21G0108-09, Name: 21082717, Date: 27-Aug-2021, Time: 17:58:39, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	21.769	0.862	6.101e2	7.623e2	1.425	0.800	0.770	1524	1384	8.97e3	1.15e4	5.9	8.3	NO	db	db	0.286
1289-TCDF	26.668	1.056	1.113e2	9.963e1	1.043	1.117	0.770	1524	1384	3.10e3	2.46e3	2.0	1.8	YES	dd	bd	0.060
13468-PECDF	26.698	0.908	2.532e4	1.711e4	1.376	1.480	1.550	874	917	3.61e5	2.45e5	413.5	267.1	NO	bb	bb	7.266
12389-PECDF					1.000		1.550	1566	1421								
123468-HXCDF	32.734	0.951	9.421e3	7.742e3	1.087	1.217	1.240	973	1127	1.50e5	1.23e5	154.4	108.8	NO	bb	bb	4.708
1368-TCDD	23.054	0.891	1.244e3	1.887e3	0.923	0.660	0.770	1422	985	2.02e4	3.14e4	14.2	31.9	NO	bb	bb	1.158
1289-TCDD	26.501	1.024	1.090e2	1.154e2	0.794	0.944	0.770	1422	985	1.58e3	2.67e3	1.1	2.7	YES	db	bb	0.097
12479-PECDD	28.333	0.914	8.238e3	6.146e3	1.843	1.340	1.550	1668	1557	8.92e4	5.31e4	53.5	34.1	NO	bd	bb	3.219
12389-PECDD	31.419	1.013	6.713e2	4.260e2	1.154	1.576	1.550	1668	1557	1.43e4	7.05e3	8.6	4.5	NO	bb	bb	0.392
124679-HXCDD	33.525	0.943	4.878e4	3.758e4	1.125	1.298	1.240	1232	1516	7.68e5	5.92e5	622.9	390.7	NO	bb	bb	25.611
1234679-HPCDD	38.806	0.975	2.886e5	2.659e5	1.211	1.085	1.050	2730	2609	4.91e6	4.57e6	1797.1	1751.6	NO	bb	bb	223.947
Total-tetrafurans			2.313e4		1.192			1524		3.64e5							13.411
Total-penta1			2.532e4					874		3.61e5							7.266
Total-pentafurans			2.980e4		1.047			1566		3.48e5							11.410
Total-hexafurans			1.125e5		1.045			973		1.73e6							59.694
Total-heptafurans			2.920e5		1.305			2078		4.93e6							168.066
Total-Furans			6.821e5		1.158			1524		1.02e7							419.766
Total-tetradioxins			6.936e3		0.879			1422		1.10e5							6.157
Total-pentadioxins			1.802e4		1.331			1668		2.38e5							8.647
Total-hexadioxins			1.200e5		1.028			1232		1.74e6							68.791
Total-heptadioxins			5.465e5		1.140			2730		8.96e6							453.214
Total-Dioxins			2.500e6		1.092			1422		3.48e7							2303.480
Total-TEQ			3.182e6					1422		4.50e7							2723.246
FUNCTION1 PFK			3.216e7					717817		1.26e8							
FUNCTION2 PFK			4.816e5					371598		6.40e6							0.000
FUNCTION3 PFK			2.870e6					482751		2.14e7							0.000
FUNCTION4 PFK			9.293e5					452449		2.18e7							
FUNCTION5 PFK			0.000e0					217391		0.00e0							
FUNCTION1 HXCD...			2.811e3					1013		4.43e4							0.000
FUNCTION1 HPCD...			1.645e3					835		2.80e4							0.000
FUNCTION2 HPCD...			4.538e2					908		8.50e3							0.000
FUNCTION3 OCDPE			1.028e3					786		2.06e4							0.000
FUNCTION4 NCDPE			1.934e3					796		3.51e4							0.000
FUNCTION5 DCDPE			0.000e0					680		0.00e0							

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Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-09, Name: 21082717, Date: 27-Aug-2021, Time: 17:58:39, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	22.93	1.298e3	1.716e3	1.192	0.76	0.77	13.4	YES	NO	dd	dd	0.750
2	Total-tetrafurans	22.60	2.819e3	3.395e3	1.192	0.83	0.77	25.6	YES	NO	bd	bd	1.547
3	Total-tetrafurans	22.03	1.787e3	2.332e3	1.192	0.77	0.77	19.3	YES	NO	bd	db	1.025
4	1368-TCDF	21.77	6.101e2	7.623e2	1.425	0.80	0.77	5.9	YES	NO	db	db	0.286
5	Total-tetrafurans	25.49	3.887e3	5.593e3	1.192	0.70	0.77	38.4	YES	NO	db	dd	2.360
6	2378-TCDF	25.26	2.675e3	3.141e3	1.108	0.85	0.77	26.2	YES	NO	bd	bd	1.558
7	Total-tetrafurans	24.76	6.396e2	8.908e2	1.192	0.72	0.77	6.5	YES	NO	db	dd	0.381
8	Total-tetrafurans	24.35	1.872e3	2.545e3	1.192	0.74	0.77	19.1	YES	NO	db	db	1.100
9	Total-tetrafurans	24.17	2.622e3	3.928e3	1.192	0.67	0.77	26.6	YES	NO	bd	MM	1.630
10	Total-tetrafurans	24.57	1.123e3	1.320e3	1.192	0.85	0.77	10.6	YES	NO	MM	bd	0.608
11	Total-tetrafurans	23.39	2.262e3	2.870e3	1.192	0.79	0.77	28.3	YES	NO	MM	MM	1.277
12	Total-tetrafurans	23.28	1.533e3	2.036e3	1.192	0.75	0.77	19.0	YES	NO	MM	MM	0.888

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.70	2.532e4	1.711e4	1.376	1.48	1.55	413.5	YES	NO	bb	bb	7.266

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentafurans	29.07	4.825e3	3.568e3	1.047	1.35	1.55	32.9	YES	NO	MM	MM	1.961
2	Total-pentafurans	28.96	1.055e3	7.227e2	1.047	1.46	1.55	12.7	YES	NO	bd	dd	0.415
3	Total-pentafurans	28.34	1.920e4	1.173e4	1.047	1.64	1.55	130.0	YES	NO	MM	MM	7.226
4	Total-pentafurans	30.61	2.946e3	1.831e3	1.047	1.61	1.55	27.7	YES	NO	dd	dd	1.116
5	Total-pentafurans	30.51	1.776e3	1.188e3	1.047	1.49	1.55	18.9	YES	NO	bd	bd	0.692

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HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-hexafurans	33.49	1.128e3	9.892e2	1.045	1.14	1.24	19.8	YES	NO	bb	bb	0.629
2	Total-hexafurans	32.95	3.369e4	2.661e4	1.045	1.27	1.24	518.2	YES	NO	bb	bb	17.921
3	123468-HXCDF	32.73	9.421e3	7.742e3	1.087	1.22	1.24	154.4	YES	NO	bb	bb	4.708
4	234678-HxCDF	35.40	6.703e3	5.004e3	1.052	1.34	1.24	69.8	YES	NO	bd	bb	3.470
5	123678-HxCDF	34.57	5.010e3	3.957e3	1.037	1.27	1.24	81.2	YES	NO	db	db	2.513
6	123478-HxCDF	34.43	1.074e4	8.615e3	1.017	1.25	1.24	174.4	YES	NO	dd	bd	5.673
7	Total-hexafurans	33.79	4.578e4	3.759e4	1.045	1.22	1.24	757.9	YES	NO	bb	bb	24.780

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-heptafurans	39.00	1.928e5	1.848e5	1.305	1.04	1.05	1538.5	YES	NO	bb	bb	113.789
2	Total-heptafurans	38.76	1.833e3	1.870e3	1.305	0.98	1.05	17.2	YES	NO	bd	bb	1.116
3	1234678-HpCDF	38.36	9.089e4	8.776e4	1.327	1.04	1.05	765.8	YES	NO	bb	bb	48.845
4	1234789-HpCDF	40.54	6.467e3	6.432e3	1.283	1.01	1.05	48.9	YES	NO	bb	bb	4.315

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	22.93	1.298e3	1.716e3	1.192	0.76	0.77	13.4	YES	NO	dd	dd	0.750
2	Total-tetrafurans	22.60	2.819e3	3.395e3	1.192	0.83	0.77	25.6	YES	NO	bd	bd	1.547
3	Total-tetrafurans	22.03	1.787e3	2.332e3	1.192	0.77	0.77	19.3	YES	NO	bd	db	1.025
4	1368-TCDF	21.77	6.101e2	7.623e2	1.425	0.80	0.77	5.9	YES	NO	db	db	0.286
5	Total-tetrafurans	25.49	3.887e3	5.593e3	1.192	0.70	0.77	38.4	YES	NO	db	dd	2.360
6	2378-TCDF	25.26	2.675e3	3.141e3	1.108	0.85	0.77	26.2	YES	NO	bd	bd	1.558
7	Total-tetrafurans	24.76	6.396e2	8.908e2	1.192	0.72	0.77	6.5	YES	NO	db	dd	0.381
8	Total-tetrafurans	24.35	1.872e3	2.545e3	1.192	0.74	0.77	19.1	YES	NO	db	db	1.100
9	Total-tetrafurans	24.17	2.622e3	3.928e3	1.192	0.67	0.77	26.6	YES	NO	bd	MM	1.630
10	Total-pentafurans	29.07	4.825e3	3.568e3	1.047	1.35	1.55	32.9	YES	NO	MM	MM	1.961
11	Total-pentafurans	28.96	1.055e3	7.227e2	1.047	1.46	1.55	12.7	YES	NO	bd	dd	0.415
12	Total-pentafurans	28.34	1.920e4	1.173e4	1.047	1.64	1.55	130.0	YES	NO	MM	MM	7.226
13	Total-pentafurans	30.61	2.946e3	1.831e3	1.047	1.61	1.55	27.7	YES	NO	dd	dd	1.116
14	Total-pentafurans	30.51	1.776e3	1.188e3	1.047	1.49	1.55	18.9	YES	NO	bd	bd	0.692
15	Total-hexafurans	33.49	1.128e3	9.892e2	1.045	1.14	1.24	19.8	YES	NO	bb	bb	0.629
16	Total-hexafurans	32.95	3.369e4	2.661e4	1.045	1.27	1.24	518.2	YES	NO	bb	bb	17.921
17	123468-HXCDF	32.73	9.421e3	7.742e3	1.087	1.22	1.24	154.4	YES	NO	bb	bb	4.708
18	234678-HxCDF	35.40	6.703e3	5.004e3	1.052	1.34	1.24	69.8	YES	NO	bd	bb	3.470
19	123678-HxCDF	34.57	5.010e3	3.957e3	1.037	1.27	1.24	81.2	YES	NO	db	db	2.513
20	123478-HxCDF	34.43	1.074e4	8.615e3	1.017	1.25	1.24	174.4	YES	NO	dd	bd	5.673
21	Total-hexafurans	33.79	4.578e4	3.759e4	1.045	1.22	1.24	757.9	YES	NO	bb	bb	24.780
22	Total-heptafurans	39.00	1.928e5	1.848e5	1.305	1.04	1.05	1538.5	YES	NO	bb	bb	113.789
23	Total-heptafurans	38.76	1.833e3	1.870e3	1.305	0.98	1.05	17.2	YES	NO	bd	bb	1.116
24	1234678-HpCDF	38.36	9.089e4	8.776e4	1.327	1.04	1.05	765.8	YES	NO	bb	bb	48.845
25	1234789-HpCDF	40.54	6.467e3	6.432e3	1.283	1.01	1.05	48.9	YES	NO	bb	bb	4.315
26	OCDF	44.68	1.994e5	2.243e5	1.447	0.89	0.89	3113.2	YES	NO	bb	bb	159.919
27	13468-PECDF	26.70	2.532e4	1.711e4	1.376	1.48	1.55	413.5	YES	NO	bb	bb	7.266
28	Total-tetrafurans	24.57	1.123e3	1.320e3	1.192	0.85	0.77	10.6	YES	NO	MM	bd	0.608
29	Total-tetrafurans	23.39	2.262e3	2.870e3	1.192	0.79	0.77	28.3	YES	NO	MM	MM	1.277
30	Total-tetrafurans	23.28	1.533e3	2.036e3	1.192	0.75	0.77	19.0	YES	NO	MM	MM	0.888

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TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDD	25.90	9.750e2	1.217e3	0.920	0.80	0.77	9.4	YES	NO	dd	bd	0.813
2	Total-tetradioxins	25.08	7.453e2	1.020e3	0.879	0.73	0.77	8.9	YES	NO	bb	dd	0.685
3	Total-tetradioxins	24.88	4.941e2	6.272e2	0.879	0.79	0.77	6.1	YES	NO	db	dd	0.435
4	Total-tetradioxins	24.76	3.747e2	4.907e2	0.879	0.76	0.77	3.7	YES	NO	dd	bd	0.336
5	Total-tetradioxins	24.52	9.911e2	1.153e3	0.879	0.86	0.77	10.1	YES	NO	bd	bb	0.833
6	Total-tetradioxins	23.52	7.680e2	1.064e3	0.879	0.72	0.77	8.7	YES	NO	bb	bb	0.712
7	Total-tetradioxins	23.33	1.343e3	1.705e3	0.879	0.79	0.77	16.2	YES	NO	bb	bb	1.184
8	1368-TCDD	23.05	1.244e3	1.887e3	0.923	0.66	0.77	14.2	YES	NO	bb	bb	1.158

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentadioxins	29.41	3.051e3	1.813e3	1.331	1.68	1.55	30.3	YES	NO	db	bb	1.508
2	Total-pentadioxins	28.80	1.695e3	1.099e3	1.331	1.54	1.55	15.4	YES	NO	bb	bb	0.866
3	12479-PECDD	28.33	8.238e3	6.146e3	1.843	1.34	1.55	53.5	YES	NO	bd	bb	3.219
4	12389-PECDD	31.42	6.713e2	4.260e2	1.154	1.58	1.55	8.6	YES	NO	bb	bb	0.392
5	12378-PeCDD	31.02	3.001e3	1.712e3	0.995	1.75	1.55	24.4	YES	NO	bb	bb	1.954
6	Total-pentadioxins	30.34	1.365e3	9.157e2	1.331	1.49	1.55	10.8	YES	NO	db	bb	0.707

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.08	7.213e3	5.848e3	0.950	1.23	1.24	106.5	YES	NO	bb	bb	4.615
2	Total-hexadioxins	35.84	1.822e3	1.334e3	1.028	1.37	1.24	24.7	YES	NO	bb	bb	1.031
3	123678-HxCDD	35.69	1.328e4	1.121e4	1.009	1.19	1.24	182.4	YES	NO	db	db	8.207
4	Total-hexadioxins	34.68	3.994e4	3.333e4	1.028	1.20	1.24	357.2	YES	NO	bd	bd	23.942
5	Total-hexadioxins	34.32	8.930e3	7.546e3	1.028	1.18	1.24	117.6	YES	NO	bb	bb	5.384
6	124679-HXCDD	33.53	4.878e4	3.758e4	1.125	1.30	1.24	622.9	YES	NO	bb	bb	25.611

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.83	2.580e5	2.428e5	1.068	1.06	1.05	1484.5	YES	NO	bb	bb	229.267
2	1234679-HPCDD	38.81	2.886e5	2.659e5	1.211	1.09	1.05	1797.1	YES	NO	bb	bb	223.947

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDD	25.90	9.750e2	1.217e3	0.920	0.80	0.77	9.4	YES	NO	dd	bd	0.813
2	Total-tetradioxins	25.08	7.453e2	1.020e3	0.879	0.73	0.77	8.9	YES	NO	bb	dd	0.685
3	Total-tetradioxins	24.88	4.941e2	6.272e2	0.879	0.79	0.77	6.1	YES	NO	db	dd	0.435
4	Total-tetradioxins	24.76	3.747e2	4.907e2	0.879	0.76	0.77	3.7	YES	NO	dd	bd	0.336
5	Total-tetradioxins	24.52	9.911e2	1.153e3	0.879	0.86	0.77	10.1	YES	NO	bd	bb	0.833
6	Total-tetradioxins	23.52	7.680e2	1.064e3	0.879	0.72	0.77	8.7	YES	NO	bb	bb	0.712
7	Total-tetradioxins	23.33	1.343e3	1.705e3	0.879	0.79	0.77	16.2	YES	NO	bb	bb	1.184
8	1368-TCDD	23.05	1.244e3	1.887e3	0.923	0.66	0.77	14.2	YES	NO	bb	bb	1.158
9	Total-pentadioxins	29.41	3.051e3	1.813e3	1.331	1.68	1.55	30.3	YES	NO	db	bb	1.508
10	Total-pentadioxins	28.80	1.695e3	1.099e3	1.331	1.54	1.55	15.4	YES	NO	bb	bb	0.866
11	12479-PECDD	28.33	8.238e3	6.146e3	1.843	1.34	1.55	53.5	YES	NO	bd	bb	3.219
12	12389-PECDD	31.42	6.713e2	4.260e2	1.154	1.58	1.55	8.6	YES	NO	bb	bb	0.392
13	12378-PeCDD	31.02	3.001e3	1.712e3	0.995	1.75	1.55	24.4	YES	NO	bb	bb	1.954
14	Total-pentadioxins	30.34	1.365e3	9.157e2	1.331	1.49	1.55	10.8	YES	NO	db	bb	0.707
15	123789-HxCDD	36.08	7.213e3	5.848e3	0.950	1.23	1.24	106.5	YES	NO	bb	bb	4.615
16	Total-hexadioxins	35.84	1.822e3	1.334e3	1.028	1.37	1.24	24.7	YES	NO	bb	bb	1.031
17	123678-HxCDD	35.69	1.328e4	1.121e4	1.009	1.19	1.24	182.4	YES	NO	db	db	8.207
18	Total-hexadioxins	34.68	3.994e4	3.333e4	1.028	1.20	1.24	357.2	YES	NO	bd	bd	23.942
19	Total-hexadioxins	34.32	8.930e3	7.546e3	1.028	1.18	1.24	117.6	YES	NO	bb	bb	5.384
20	124679-HXCDD	33.53	4.878e4	3.758e4	1.125	1.30	1.24	622.9	YES	NO	bb	bb	25.611
21	1234678-HpCDD	39.83	2.580e5	2.428e5	1.068	1.06	1.05	1484.5	YES	NO	bb	bb	229.267
22	1234679-HPCDD	38.81	2.886e5	2.659e5	1.211	1.09	1.05	1797.1	YES	NO	bb	bb	223.947
23	OCDD	44.46	1.809e6	2.011e6	1.181	0.90	0.89	12620.6	YES	NO	bb	bb	1766.6...

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	22.93	1.298e3	1.716e3	1.192	0.76	0.77	13.4	YES	NO	dd	dd	0.750
2	Total-tetrafurans	22.60	2.819e3	3.395e3	1.192	0.83	0.77	25.6	YES	NO	bd	bd	1.547
3	Total-tetrafurans	22.03	1.787e3	2.332e3	1.192	0.77	0.77	19.3	YES	NO	bd	db	1.025
4	1368-TCDF	21.77	6.101e2	7.623e2	1.425	0.80	0.77	5.9	YES	NO	db	db	0.286
5	Total-tetrafurans	25.49	3.887e3	5.593e3	1.192	0.70	0.77	38.4	YES	NO	db	dd	2.360
6	2378-TCDF	25.26	2.675e3	3.141e3	1.108	0.85	0.77	26.2	YES	NO	bd	bd	1.558
7	Total-tetrafurans	24.76	6.396e2	8.908e2	1.192	0.72	0.77	6.5	YES	NO	db	dd	0.381
8	Total-tetrafurans	24.35	1.872e3	2.545e3	1.192	0.74	0.77	19.1	YES	NO	db	db	1.100
9	Total-tetrafurans	24.17	2.622e3	3.928e3	1.192	0.67	0.77	26.6	YES	NO	bd	MM	1.630
10	Total-pentafurans	29.07	4.825e3	3.568e3	1.047	1.35	1.55	32.9	YES	NO	MM	MM	1.961
11	Total-pentafurans	28.96	1.055e3	7.227e2	1.047	1.46	1.55	12.7	YES	NO	bd	dd	0.415
12	Total-pentafurans	28.34	1.920e4	1.173e4	1.047	1.64	1.55	130.0	YES	NO	MM	MM	7.226
13	Total-pentafurans	30.61	2.946e3	1.831e3	1.047	1.61	1.55	27.7	YES	NO	dd	dd	1.116
14	Total-pentafurans	30.51	1.776e3	1.188e3	1.047	1.49	1.55	18.9	YES	NO	bd	bd	0.692
15	Total-hexafurans	33.49	1.128e3	9.892e2	1.045	1.14	1.24	19.8	YES	NO	bb	bb	0.629
16	Total-hexafurans	32.95	3.369e4	2.661e4	1.045	1.27	1.24	518.2	YES	NO	bb	bb	17.921
17	123468-HXCDF	32.73	9.421e3	7.742e3	1.087	1.22	1.24	154.4	YES	NO	bb	bb	4.708
18	234678-HxCDF	35.40	6.703e3	5.004e3	1.052	1.34	1.24	69.8	YES	NO	bd	bb	3.470
19	123678-HxCDF	34.57	5.010e3	3.957e3	1.037	1.27	1.24	81.2	YES	NO	db	db	2.513
20	123478-HxCDF	34.43	1.074e4	8.615e3	1.017	1.25	1.24	174.4	YES	NO	dd	bd	5.673
21	Total-hexafurans	33.79	4.578e4	3.759e4	1.045	1.22	1.24	757.9	YES	NO	bb	bb	24.780
22	Total-heptafurans	39.00	1.928e5	1.848e5	1.305	1.04	1.05	1538.5	YES	NO	bb	bb	113.789
23	Total-heptafurans	38.76	1.833e3	1.870e3	1.305	0.98	1.05	17.2	YES	NO	bd	bb	1.116
24	1234678-HpCDF	38.36	9.089e4	8.776e4	1.327	1.04	1.05	765.8	YES	NO	bb	bb	48.845
25	1234789-HpCDF	40.54	6.467e3	6.432e3	1.283	1.01	1.05	48.9	YES	NO	bb	bb	4.315
26	OCDF	44.68	1.994e5	2.243e5	1.447	0.89	0.89	3113.2	YES	NO	bb	bb	159.919
27	13468-PECDF	26.70	2.532e4	1.711e4	1.376	1.48	1.55	413.5	YES	NO	bb	bb	7.266
28	Total-tetrafurans	24.57	1.123e3	1.320e3	1.192	0.85	0.77	10.6	YES	NO	MM	bd	0.608
29	Total-tetrafurans	23.39	2.262e3	2.870e3	1.192	0.79	0.77	28.3	YES	NO	MM	MM	1.277
30	Total-tetrafurans	23.28	1.533e3	2.036e3	1.192	0.75	0.77	19.0	YES	NO	MM	MM	0.888
31	2378-TCDD	25.90	9.750e2	1.217e3	0.920	0.80	0.77	9.4	YES	NO	dd	bd	0.813
32	Total-tetradioxins	25.08	7.453e2	1.020e3	0.879	0.73	0.77	8.9	YES	NO	bb	dd	0.685
33	Total-tetradioxins	24.88	4.941e2	6.272e2	0.879	0.79	0.77	6.1	YES	NO	db	dd	0.435
34	Total-tetradioxins	24.76	3.747e2	4.907e2	0.879	0.76	0.77	3.7	YES	NO	dd	bd	0.336
35	Total-tetradioxins	24.52	9.911e2	1.153e3	0.879	0.86	0.77	10.1	YES	NO	bd	bb	0.833
36	Total-tetradioxins	23.52	7.680e2	1.064e3	0.879	0.72	0.77	8.7	YES	NO	bb	bb	0.712
37	Total-tetradioxins	23.33	1.343e3	1.705e3	0.879	0.79	0.77	16.2	YES	NO	bb	bb	1.184

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	1368-TCDD	23.05	1.244e3	1.887e3	0.923	0.66	0.77	14.2	YES	NO	bb	bb	1.158
39	Total-pentadioxins	29.41	3.051e3	1.813e3	1.331	1.68	1.55	30.3	YES	NO	db	bb	1.508
40	Total-pentadioxins	28.80	1.695e3	1.099e3	1.331	1.54	1.55	15.4	YES	NO	bb	bb	0.866
41	12479-PECDD	28.33	8.238e3	6.146e3	1.843	1.34	1.55	53.5	YES	NO	bd	bb	3.219
42	12389-PECDD	31.42	6.713e2	4.260e2	1.154	1.58	1.55	8.6	YES	NO	bb	bb	0.392
43	12378-PeCDD	31.02	3.001e3	1.712e3	0.995	1.75	1.55	24.4	YES	NO	bb	bb	1.954
44	Total-pentadioxins	30.34	1.365e3	9.157e2	1.331	1.49	1.55	10.8	YES	NO	db	bb	0.707
45	123789-HxCDD	36.08	7.213e3	5.848e3	0.950	1.23	1.24	106.5	YES	NO	bb	bb	4.615
46	Total-hexadioxins	35.84	1.822e3	1.334e3	1.028	1.37	1.24	24.7	YES	NO	bb	bb	1.031
47	123678-HxCDD	35.69	1.328e4	1.121e4	1.009	1.19	1.24	182.4	YES	NO	db	db	8.207
48	Total-hexadioxins	34.68	3.994e4	3.333e4	1.028	1.20	1.24	357.2	YES	NO	bd	bd	23.942
49	Total-hexadioxins	34.32	8.930e3	7.546e3	1.028	1.18	1.24	117.6	YES	NO	bb	bb	5.384
50	124679-HXCDD	33.53	4.878e4	3.758e4	1.125	1.30	1.24	622.9	YES	NO	bb	bb	25.611
51	1234678-HpCDD	39.83	2.580e5	2.428e5	1.068	1.06	1.05	1484.5	YES	NO	bb	bb	229.267
52	1234679-HPCDD	38.81	2.886e5	2.659e5	1.211	1.09	1.05	1797.1	YES	NO	bb	bb	223.947
53	OCDD	44.46	1.809e6	2.011e6	1.181	0.90	0.89	12620.6	YES	NO	bb	bb	1766.6...

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.89	4.748e6					24.2	YES		bb		
2	FUNCTION1 PFK	22.66	6.317e5					17.6	YES		bb		
3	FUNCTION1 PFK	22.48	4.023e6					34.8	YES		db		
4	FUNCTION1 PFK	22.33	1.230e7					35.7	YES		dd		
5	FUNCTION1 PFK	21.74	6.125e6					32.7	YES		bd		
6	FUNCTION1 PFK	21.45	4.103e6					24.0	YES		db		
7	FUNCTION1 PFK	21.15	2.312e5					6.1	YES		bd		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	27.48	1.408e5					6.0	YES		bb		0.000
2	FUNCTION2 PFK	30.56	2.932e5					7.9	YES		bb		0.000
3	FUNCTION2 PFK	28.81	4.761e4					3.3	YES		bb		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	37.34	2.108e4					1.3	NO		bb		0.000
2	FUNCTION3 PFK	36.59	6.336e5					5.1	YES		bb		0.000
3	FUNCTION3 PFK	36.30	3.113e5					7.1	YES		bb		0.000
4	FUNCTION3 PFK	35.52	3.804e4					1.9	NO		bb		0.000
5	FUNCTION3 PFK	34.96	1.247e4					1.3	NO		bb		0.000
6	FUNCTION3 PFK	32.79	5.099e4					3.0	NO		db		0.000
7	FUNCTION3 PFK	32.77	9.649e5					3.0	YES		bd		0.000
8	FUNCTION3 PFK	32.41	2.448e5					11.3	YES		db		0.000
9	FUNCTION3 PFK	32.30	5.185e5					6.3	YES		dd		0.000
10	FUNCTION3 PFK	32.25	7.462e4					4.1	YES		bd		0.000

ID: 21G0108-09, Name: 21082717, Date: 27-Aug-2021, Time: 17:58:39, Conditions: AUTOSPEC01, User: pk

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	37.52	4.187e3					0.6	NO		db		
2	FUNCTION4 PFK	37.50	7.536e3					0.7	NO		bd		
3	FUNCTION4 PFK	39.30	1.068e5					1.7	NO		bd		
4	FUNCTION4 PFK	39.07	2.345e4					1.6	NO		db		
5	FUNCTION4 PFK	39.04	1.207e4					1.2	NO		bd		
6	FUNCTION4 PFK	38.83	9.244e3					0.8	NO		bb		
7	FUNCTION4 PFK	38.76	2.644e4					1.9	NO		bb		
8	FUNCTION4 PFK	38.55	2.629e4					1.5	NO		db		
9	FUNCTION4 PFK	38.45	3.021e4					1.3	NO		bd		
10	FUNCTION4 PFK	38.29	1.835e4					0.6	NO		db		
11	FUNCTION4 PFK	38.24	9.263e3					0.6	NO		bd		
12	FUNCTION4 PFK	38.15	2.182e4					1.2	NO		bb		
13	FUNCTION4 PFK	38.01	1.499e4					1.2	NO		db		
14	FUNCTION4 PFK	37.98	2.247e4					1.3	NO		dd		
15	FUNCTION4 PFK	37.95	1.244e4					1.2	NO		dd		
16	FUNCTION4 PFK	37.90	6.887e3					0.6	NO		bd		
17	FUNCTION4 PFK	37.62	1.398e4					1.4	NO		db		
18	FUNCTION4 PFK	37.59	1.831e4					1.5	NO		bd		
19	FUNCTION4 PFK	40.93	3.950e3					0.4	NO		bd		
20	FUNCTION4 PFK	40.87	8.635e3					0.9	NO		db		
21	FUNCTION4 PFK	40.83	1.063e4					0.8	NO		bd		
22	FUNCTION4 PFK	40.63	2.018e4					0.7	NO		bb		
23	FUNCTION4 PFK	40.58	1.417e4					1.3	NO		db		
24	FUNCTION4 PFK	40.51	3.955e4					1.6	NO		dd		
25	FUNCTION4 PFK	40.42	1.167e4					0.7	NO		bd		
26	FUNCTION4 PFK	40.38	1.805e4					1.6	NO		db		
27	FUNCTION4 PFK	40.31	2.883e4					1.5	NO		bd		
28	FUNCTION4 PFK	40.24	4.542e3					0.5	NO		bb		
29	FUNCTION4 PFK	40.17	1.176e4					0.8	NO		bb		
30	FUNCTION4 PFK	40.10	1.682e3					0.3	NO		bb		
31	FUNCTION4 PFK	40.05	1.001e4					0.9	NO		bb		
32	FUNCTION4 PFK	39.95	4.428e3					0.5	NO		bb		
33	FUNCTION4 PFK	39.61	2.082e4					0.7	NO		bb		
34	FUNCTION4 PFK	39.38	3.876e4					1.6	NO		db		
35	FUNCTION4 PFK	42.33	2.794e4					0.9	NO		bb		
36	FUNCTION4 PFK	42.18	2.464e3					0.4	NO		db		
37	FUNCTION4 PFK	42.13	1.558e4					0.9	NO		dd		

ID: 21G0108-09, Name: 21082717, Date: 27-Aug-2021, Time: 17:58:39, Conditions: AUTOSPEC01, User: pk

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION4 PFK	42.09	4.071e3					0.6	NO		bd		
39	FUNCTION4 PFK	42.05	7.867e3					0.9	NO		bb		
40	FUNCTION4 PFK	41.99	1.650e4					0.9	NO		db		
41	FUNCTION4 PFK	41.93	1.062e4					0.9	NO		bd		
42	FUNCTION4 PFK	41.79	8.240e4					1.6	NO		bb		
43	FUNCTION4 PFK	41.65	1.901e4					1.6	NO		db		
44	FUNCTION4 PFK	41.61	8.670e4					2.1	NO		bd		
45	FUNCTION4 PFK	41.38	1.368e4					1.0	NO		bb		
46	FUNCTION4 PFK	41.17	5.553e3					0.6	NO		bb		
47	FUNCTION4 PFK	40.98	4.512e3					0.4	NO		db		

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	21.42	2.057e2					2.0	NO		bb		0.000
2	FUNCTION1 HXCD...	26.94	7.133e1					1.1	NO		bb		0.000
3	FUNCTION1 HXCD...	26.20	1.073e2					1.6	NO		bb		0.000
4	FUNCTION1 HXCD...	25.81	1.248e2					1.5	NO		bb		0.000
5	FUNCTION1 HXCD...	25.25	1.957e2					3.6	YES		bb		0.000
6	FUNCTION1 HXCD...	23.45	1.687e2					3.5	YES		db		0.000
7	FUNCTION1 HXCD...	23.25	5.306e2					6.3	YES		bd		0.000
8	FUNCTION1 HXCD...	22.81	7.248e1					1.3	NO		bb		0.000
9	FUNCTION1 HXCD...	22.27	1.772e2					4.1	YES		bb		0.000
10	FUNCTION1 HXCD...	21.80	4.007e2					7.5	YES		db		0.000
11	FUNCTION1 HXCD...	21.66	7.564e2					11.3	YES		bd		0.000

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ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	23.43	1.854e2					5.9	YES		bb		0.000
2	FUNCTION1 HPCD...	22.84	1.051e3					20.0	YES		bb		0.000
3	FUNCTION1 HPCD...	22.13	1.587e2					2.8	NO		bb		0.000
4	FUNCTION1 HPCD...	21.80	2.495e2					4.8	YES		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	28.98	8.798e1					2.1	NO		bb		0.000
2	FUNCTION2 HPCD...	28.41	2.877e2					5.5	YES		bb		0.000
3	FUNCTION2 HPCD...	28.26	7.812e1					1.8	NO		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	37.05	9.553e1					3.4	YES		bb		0.000
2	FUNCTION3 OCDPE	36.81	1.353e2					2.0	NO		bb		0.000
3	FUNCTION3 OCDPE	36.47	9.123e1					1.5	NO		bb		0.000
4	FUNCTION3 OCDPE	36.05	7.571e1					1.9	NO		bb		0.000
5	FUNCTION3 OCDPE	35.56	9.026e1					1.9	NO		bb		0.000
6	FUNCTION3 OCDPE	33.71	1.112e2					3.9	YES		db		0.000
7	FUNCTION3 OCDPE	33.68	1.203e2					4.2	YES		dd		0.000
8	FUNCTION3 OCDPE	33.56	1.665e2					2.0	NO		bd		0.000
9	FUNCTION3 OCDPE	32.59	1.416e2					5.5	YES		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	38.49	1.017e2					2.8	NO		bb		0.000
2	FUNCTION4 NCDPE	37.97	1.832e3					41.3	YES		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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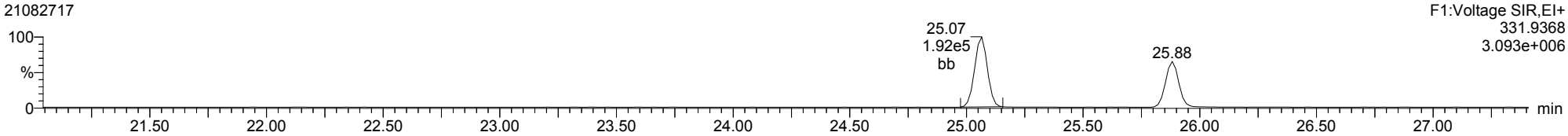
ID: 21G0108-09, Name: 21082717, Date: 27-Aug-2021, Time: 17:58:39, Conditions: AUTOSPEC01, User: pk

13C-1234-TCDD



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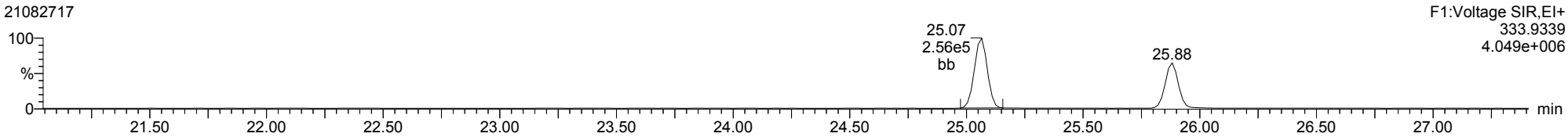
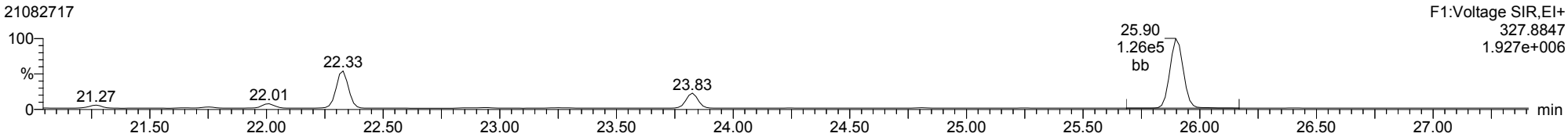


37CL-2378-TCDD



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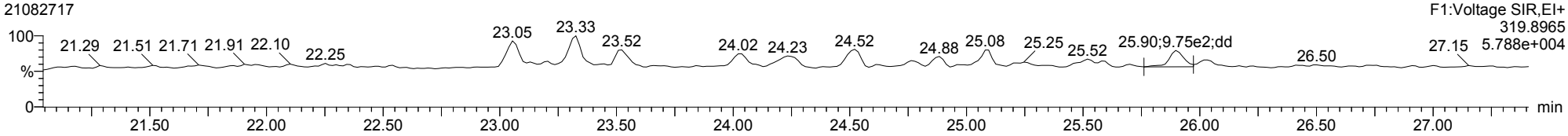
2378-TCDD



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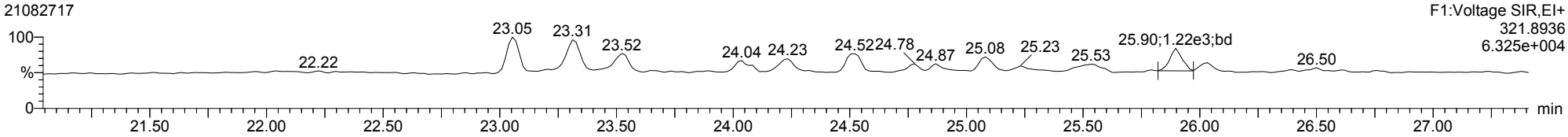

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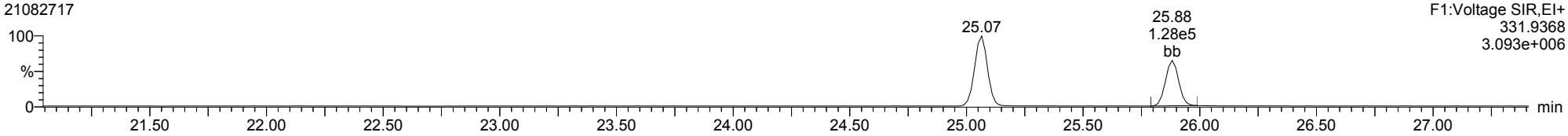

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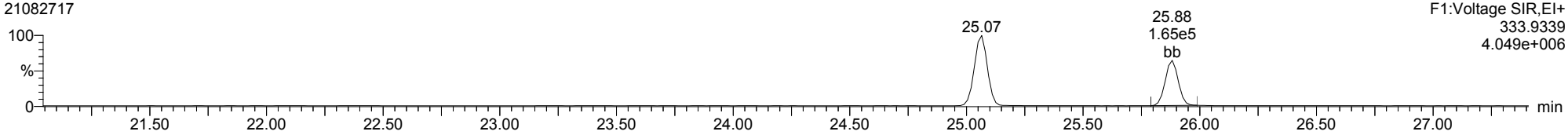

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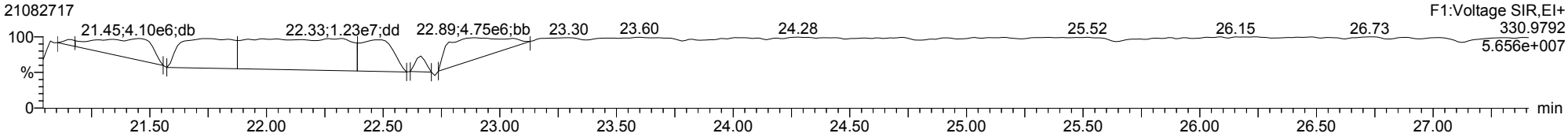

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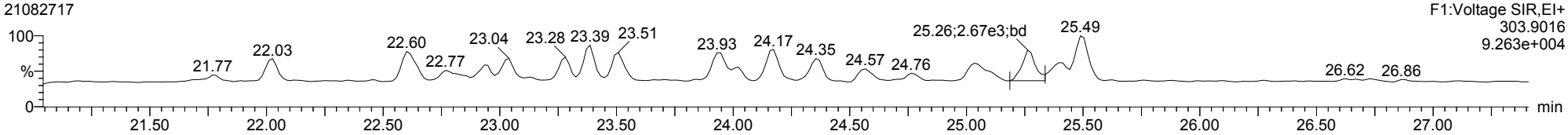

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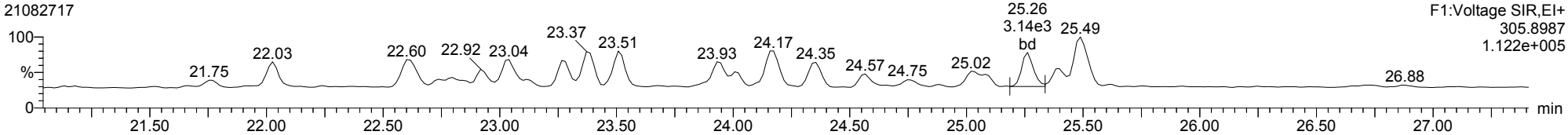

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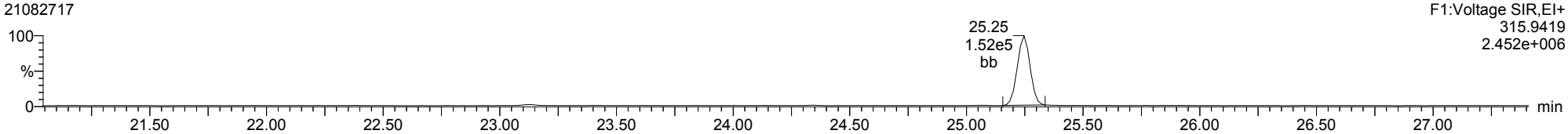

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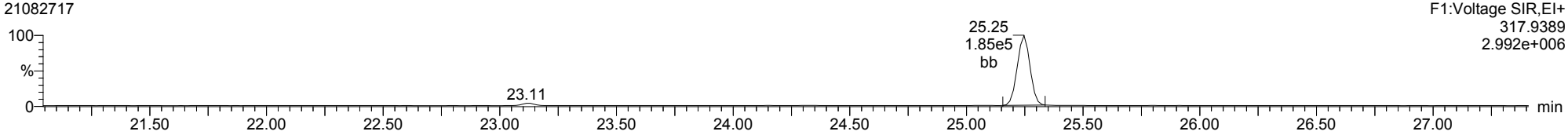
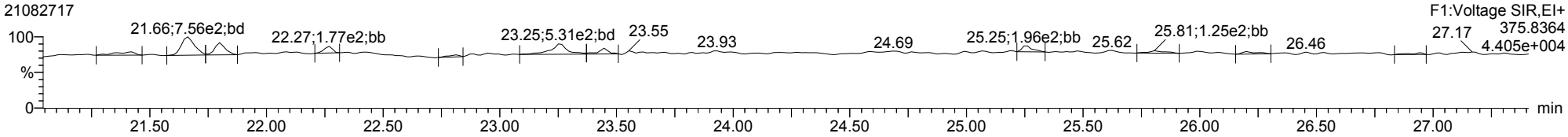


FUNCTION1 HXCDPE



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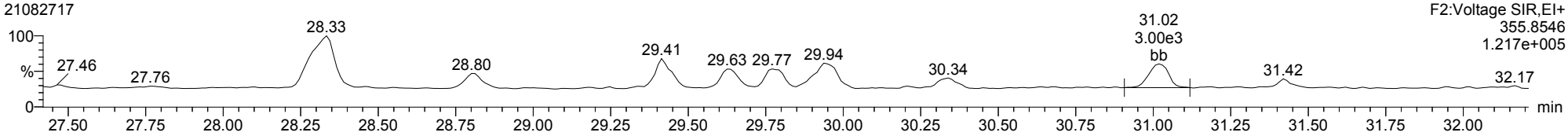
12378-PeCDD



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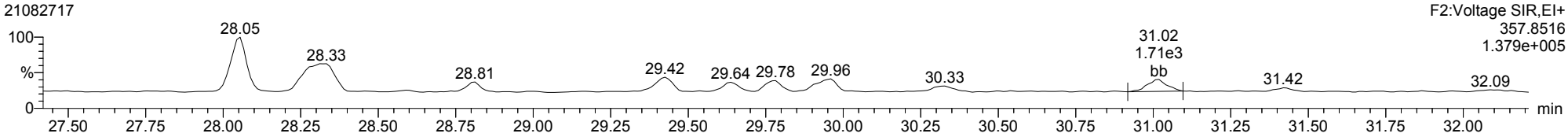

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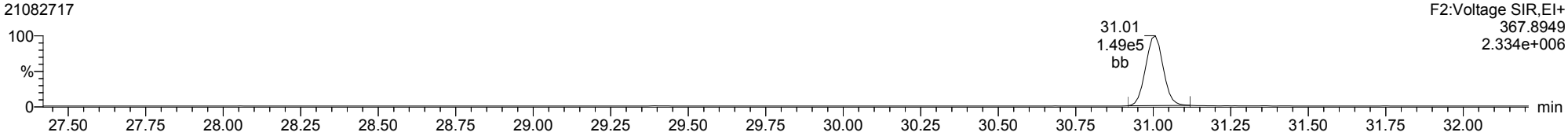

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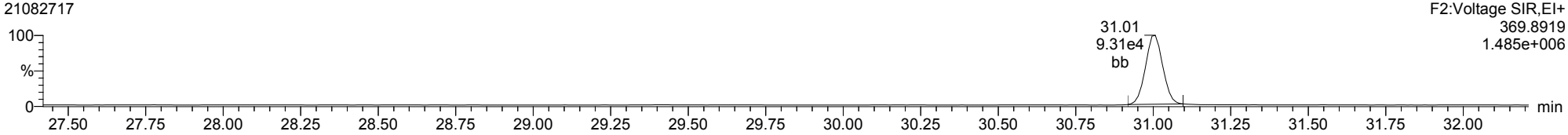
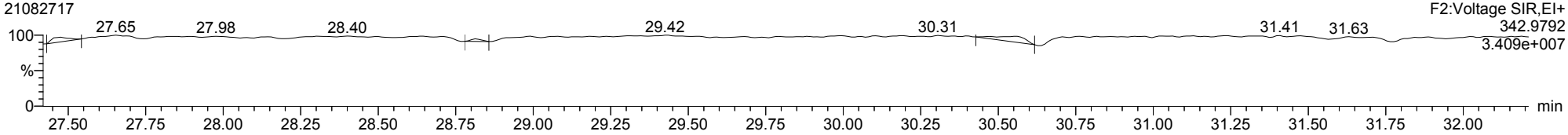


FUNCTION2 PFK



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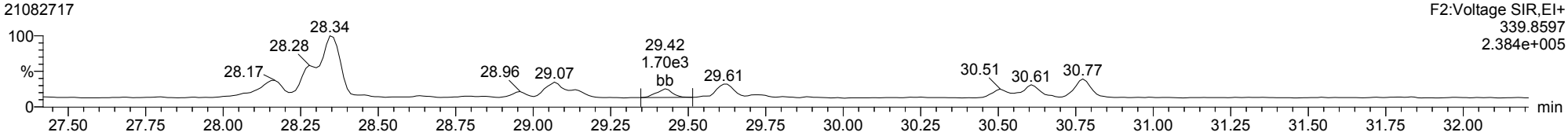
12378-PeCDF



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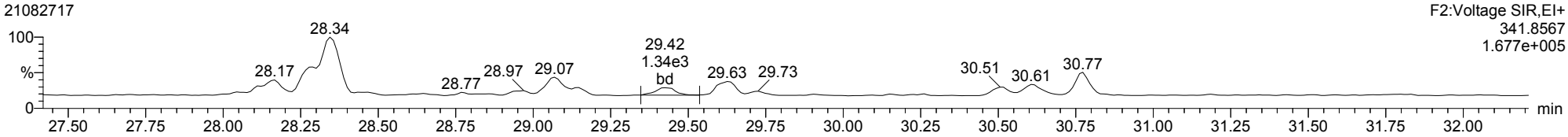

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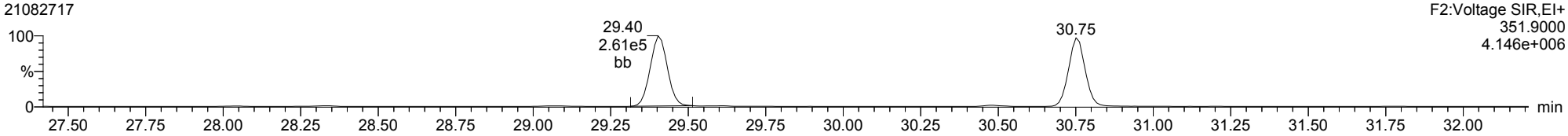

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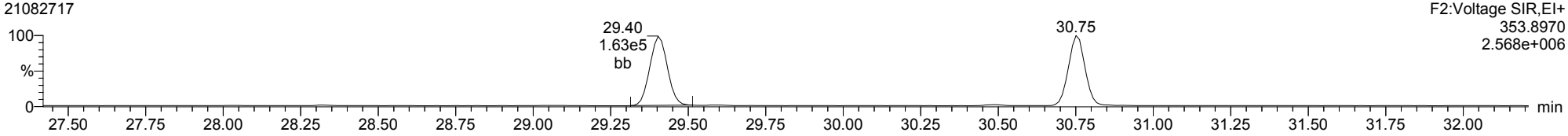
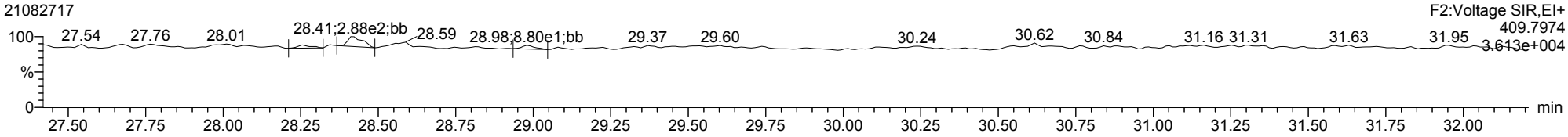


FUNCTION2 HPCDPE



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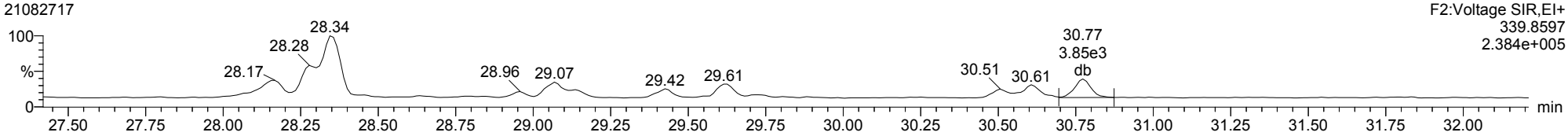
23478-PeCDF



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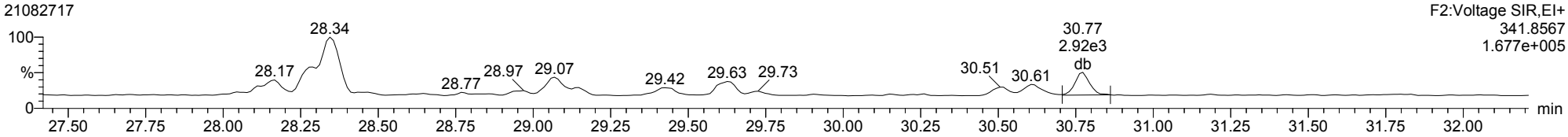

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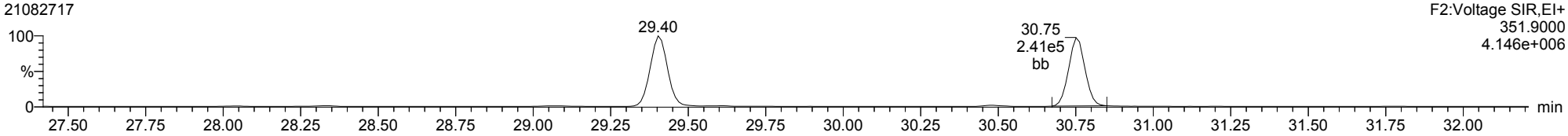

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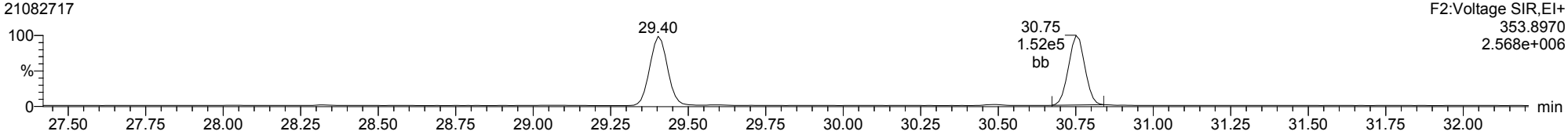
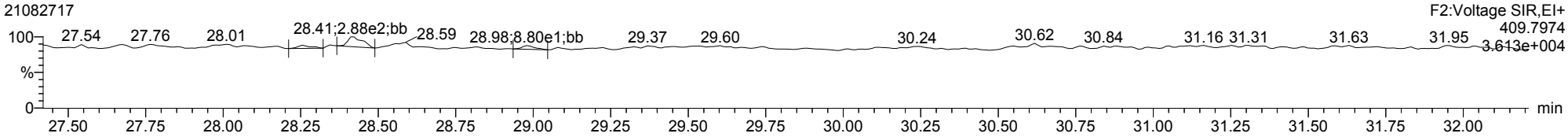


FUNCTION2 HPCDPE



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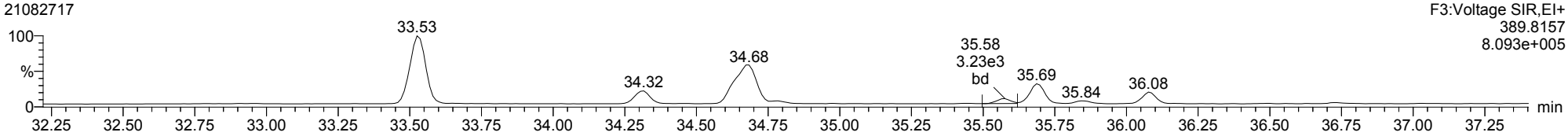
123478-HxCDD



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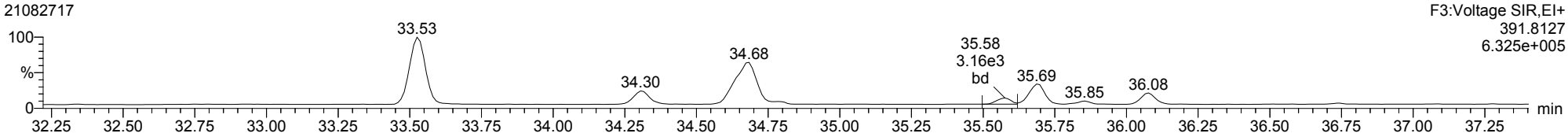

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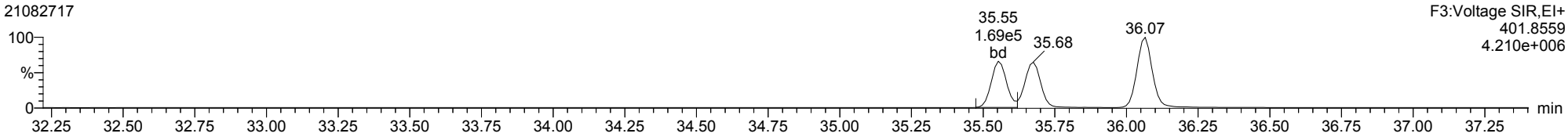

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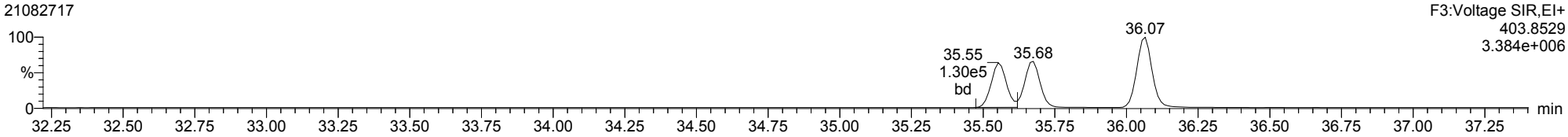

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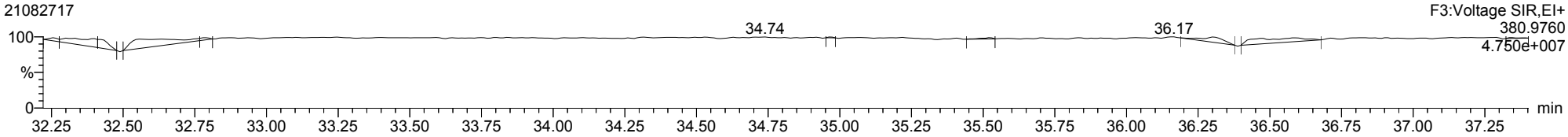

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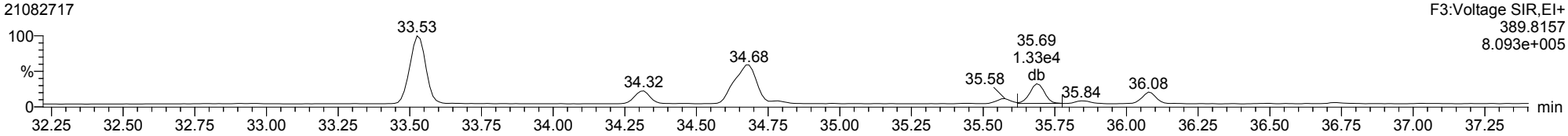

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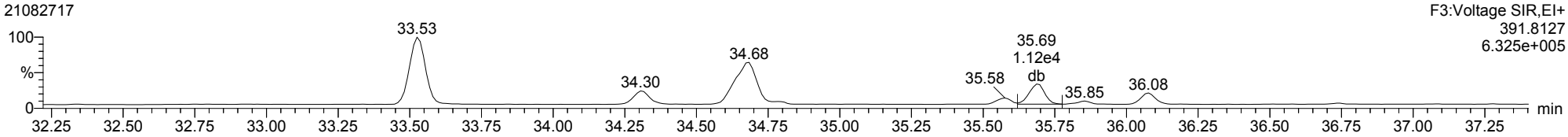

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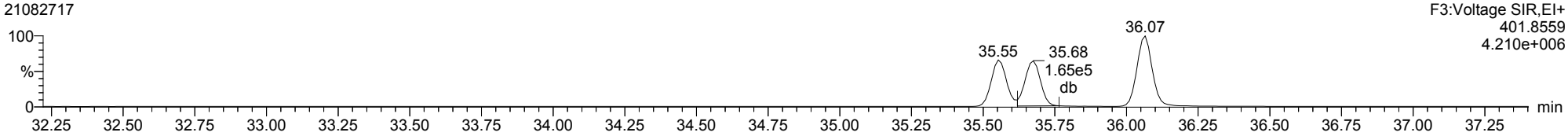

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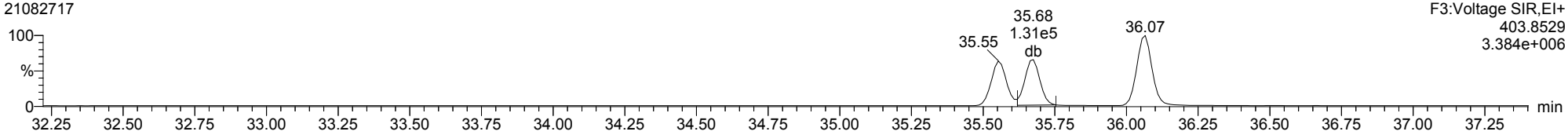

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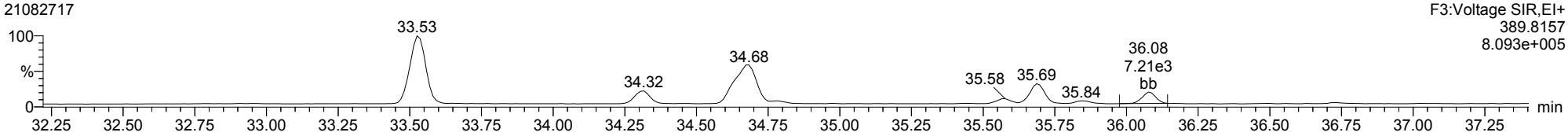

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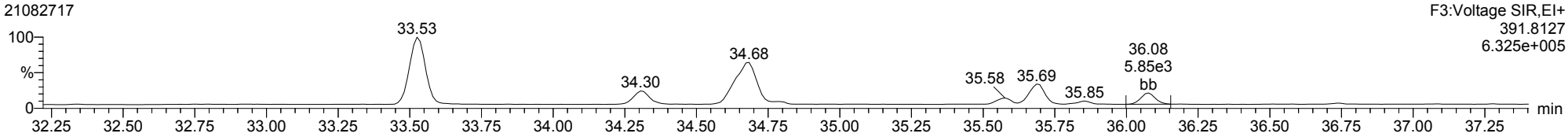

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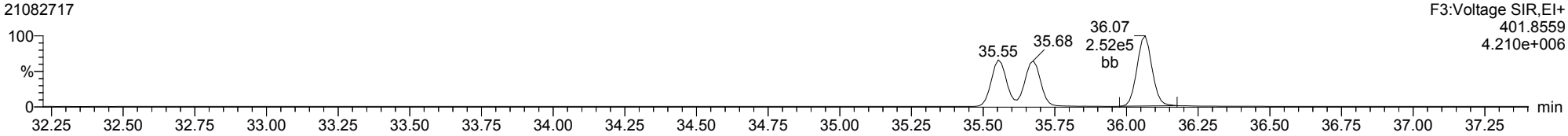

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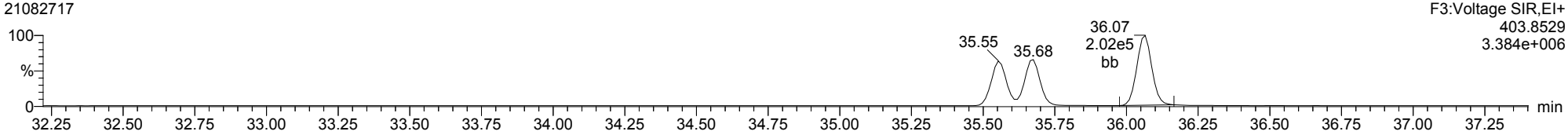

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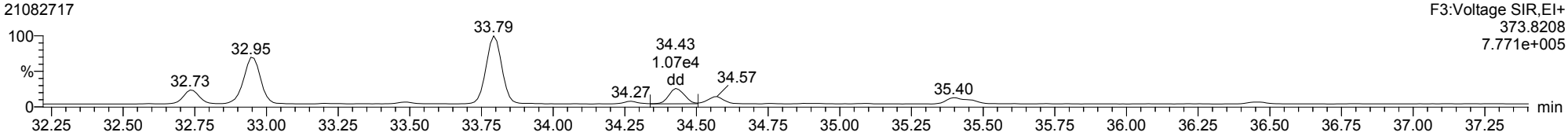

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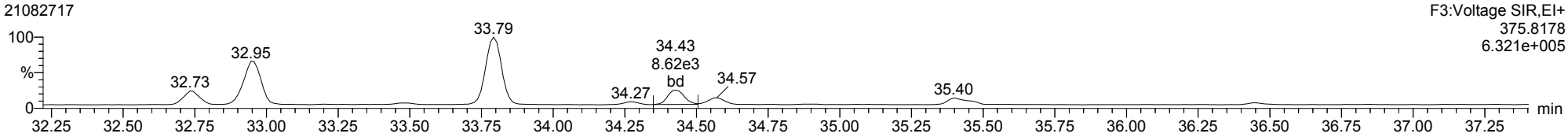

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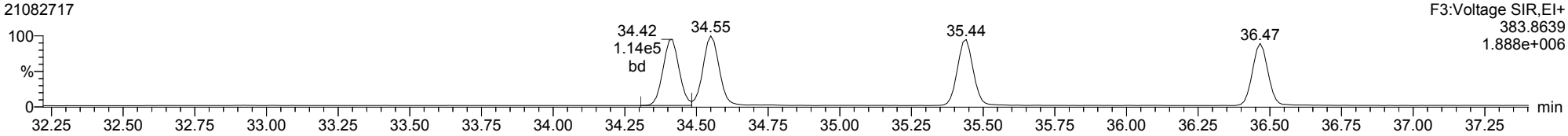

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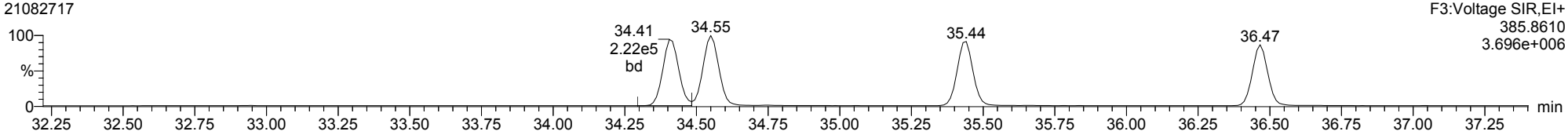

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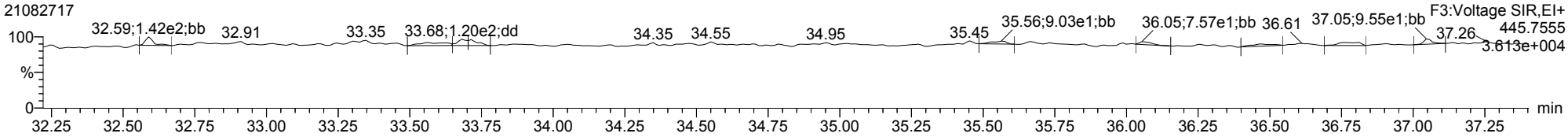

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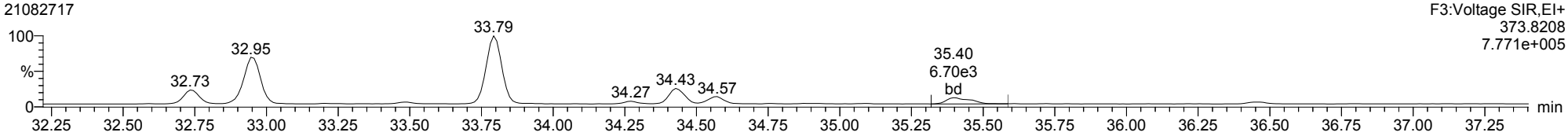

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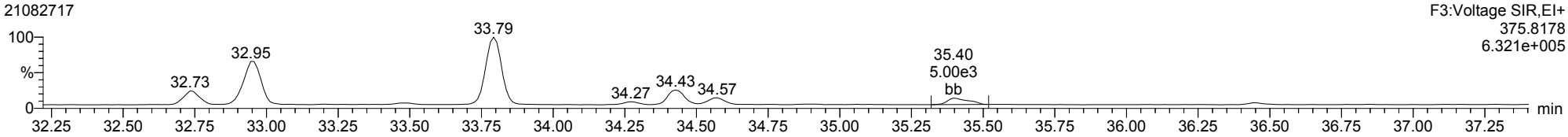

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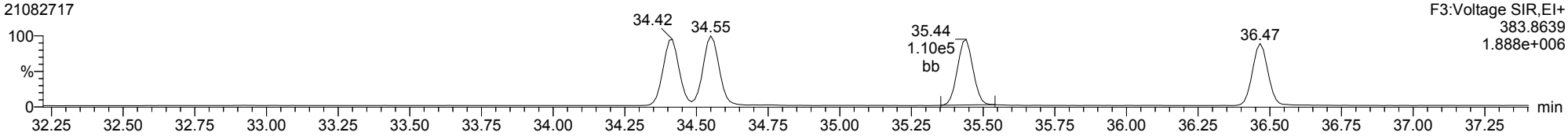

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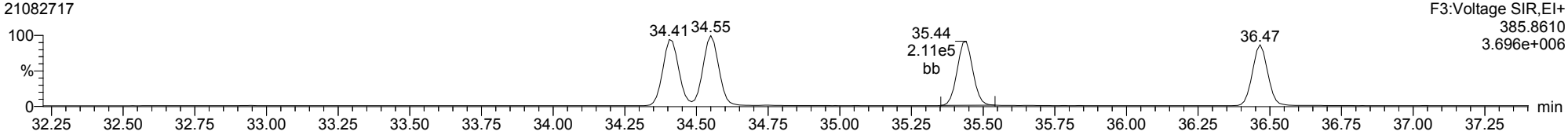

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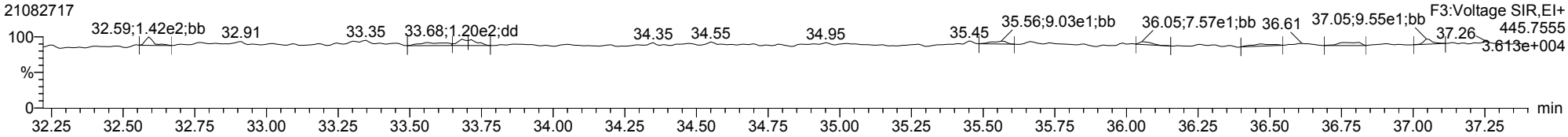

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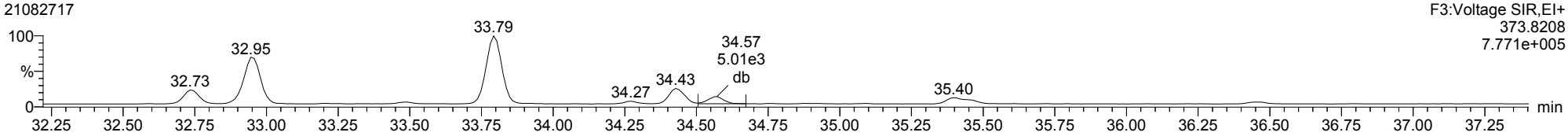

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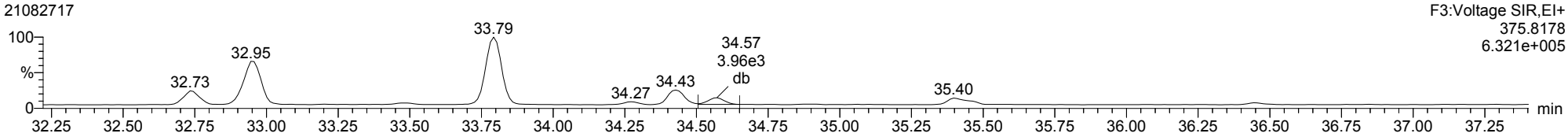

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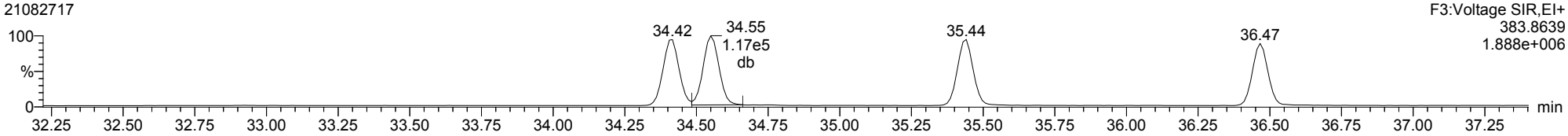

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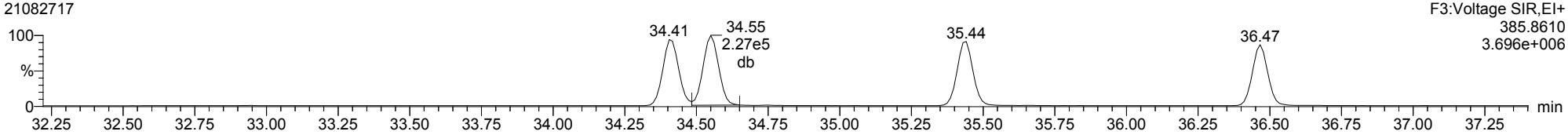

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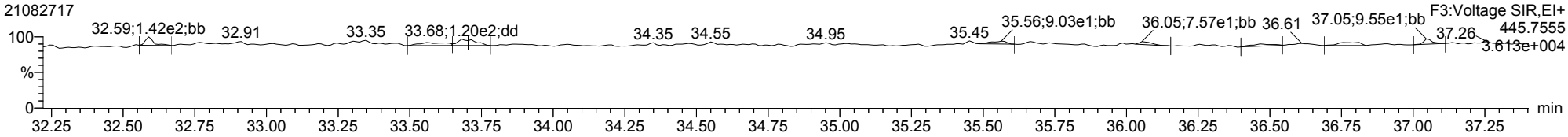

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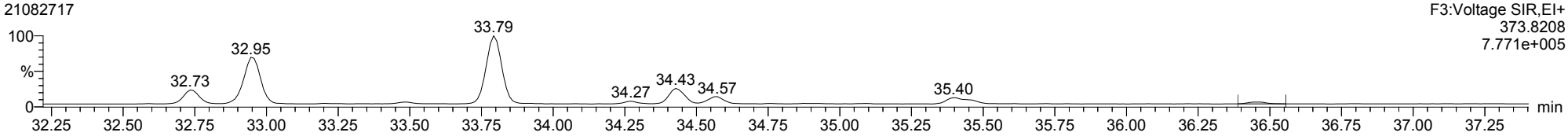

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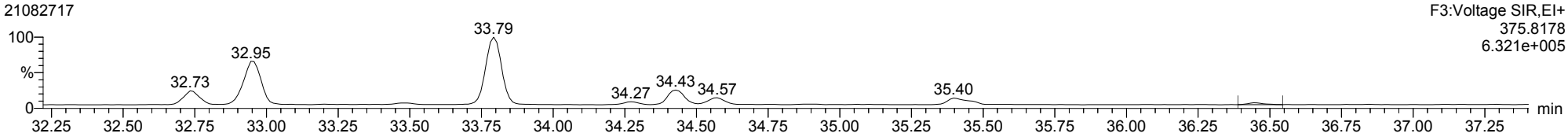

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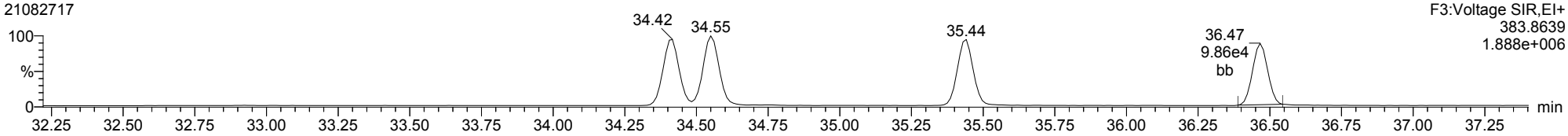

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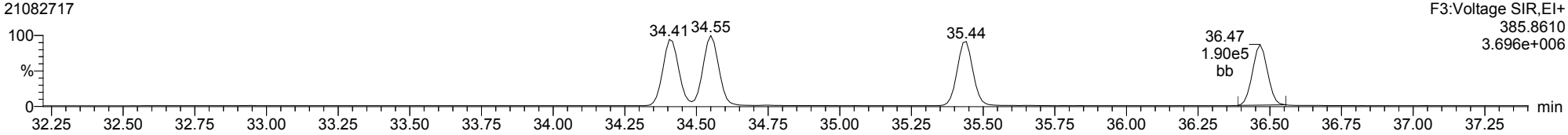

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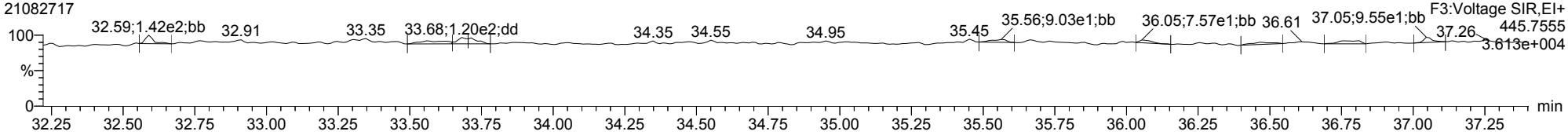

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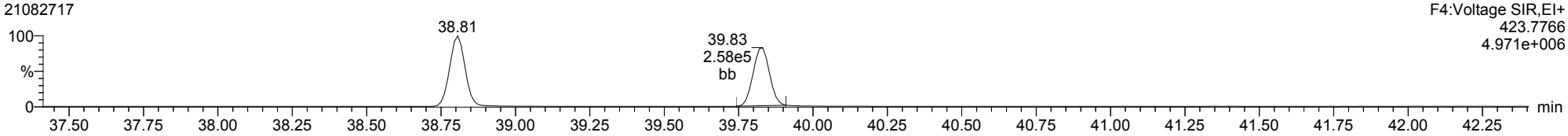

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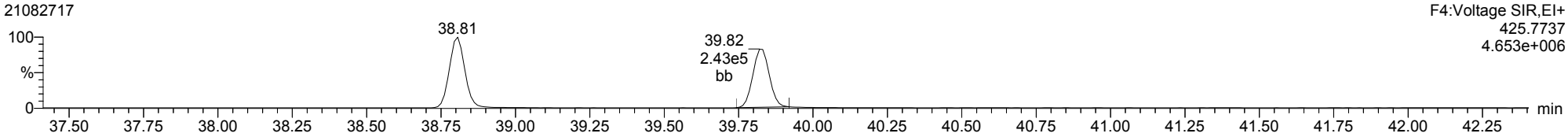

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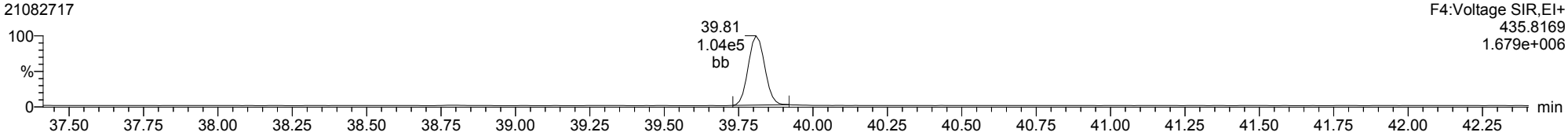

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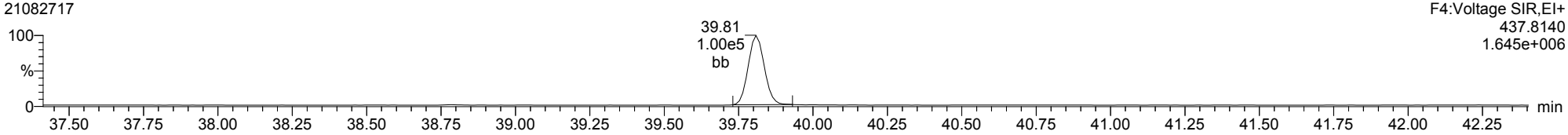
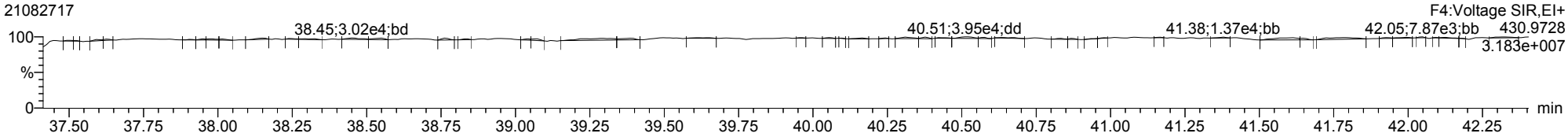


FUNCTION4 PFK



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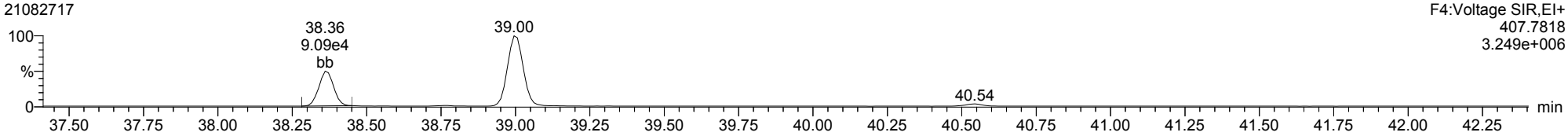

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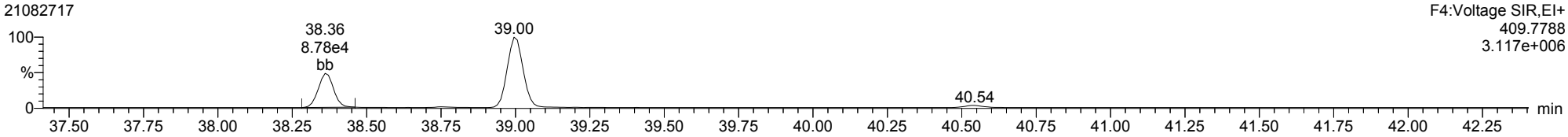

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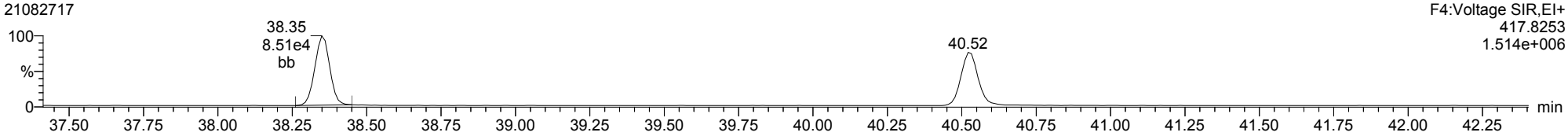

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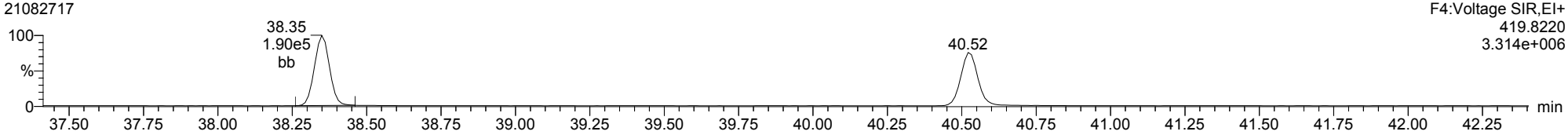

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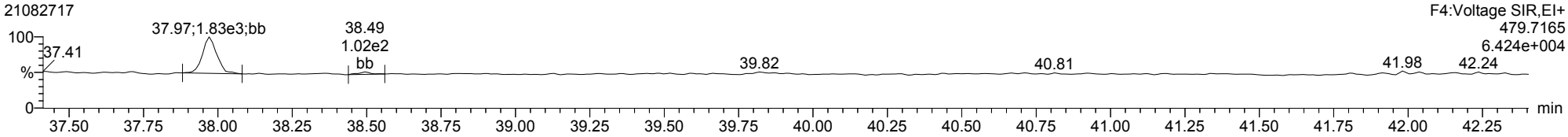

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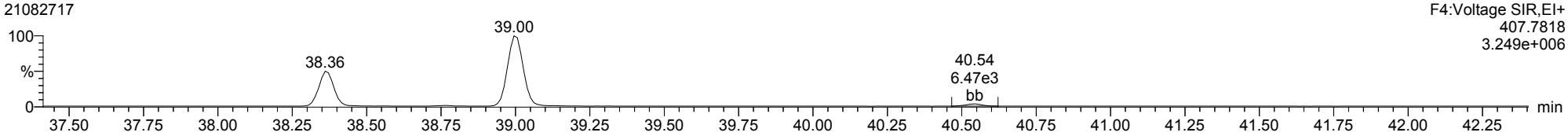

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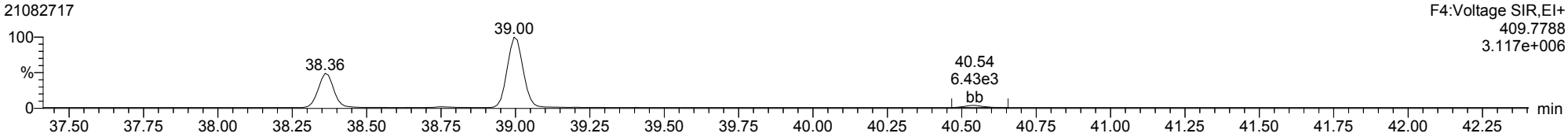

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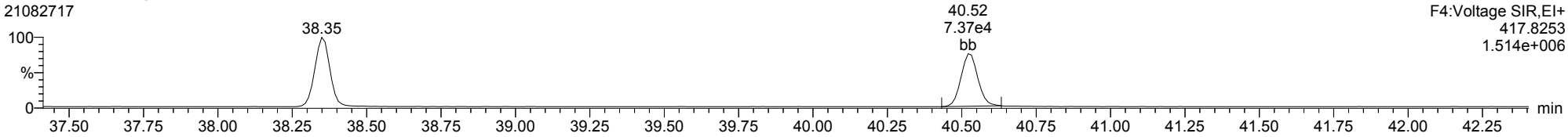

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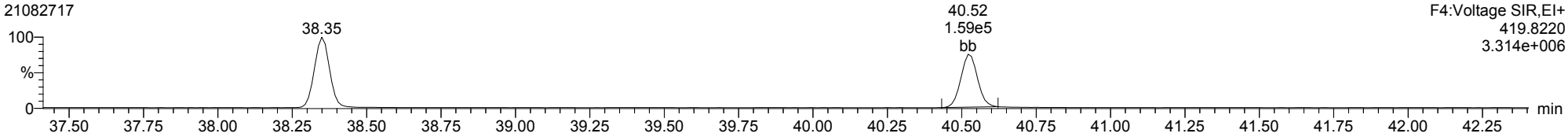

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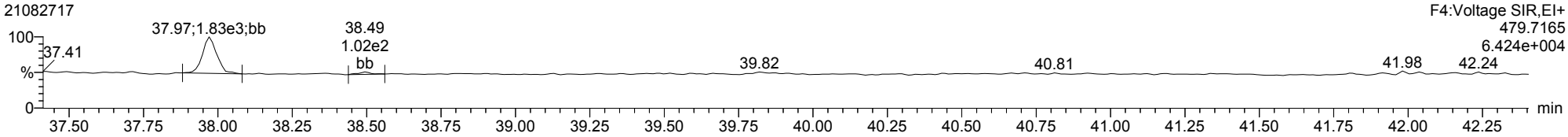

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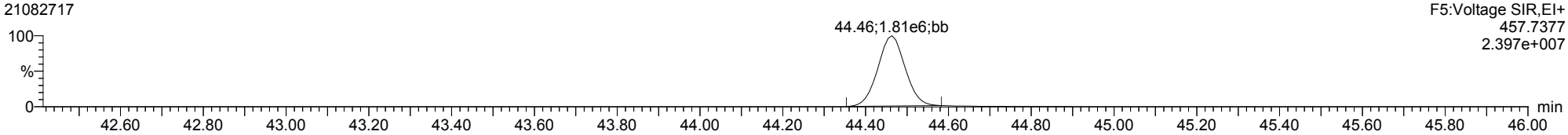

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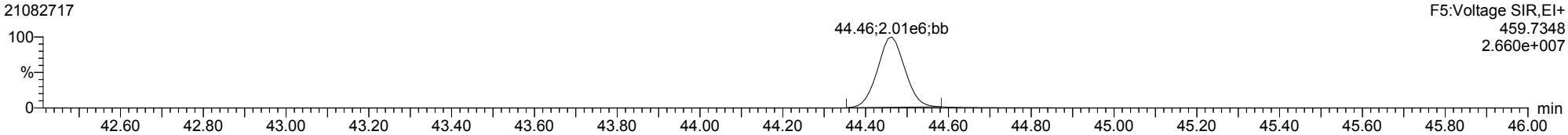

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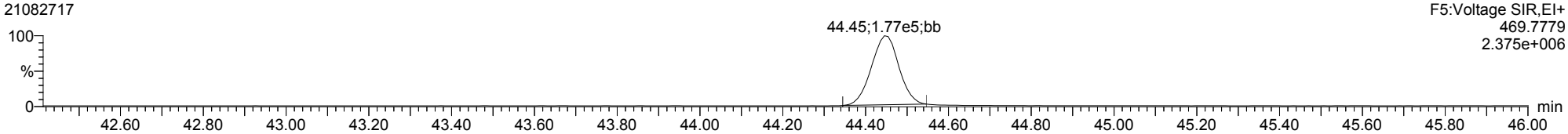

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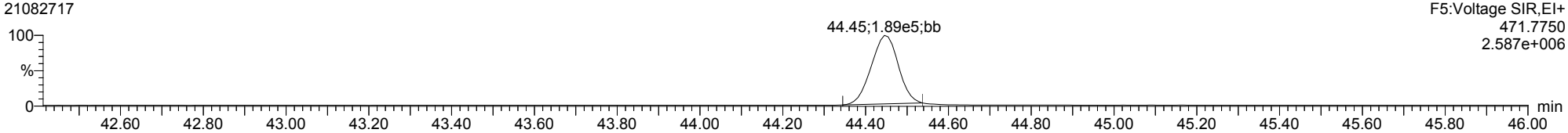
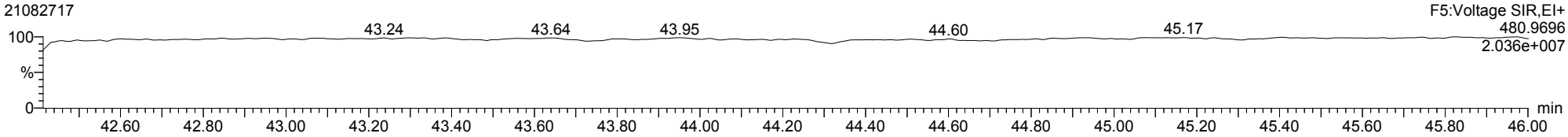
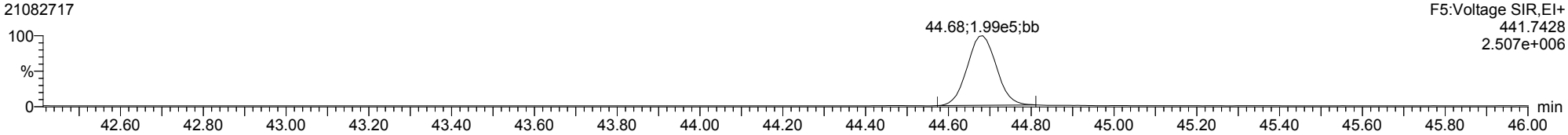


FUNCTION5 PFK

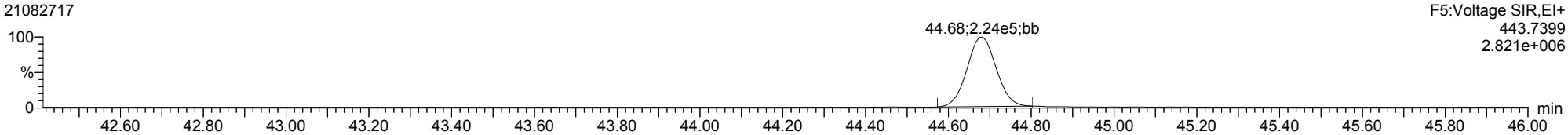


ID: 21G0108-09, Name: 21082717, Date: 27-Aug-2021, Time: 17:58:39, Conditions: AUTOSPEC01, User: pk

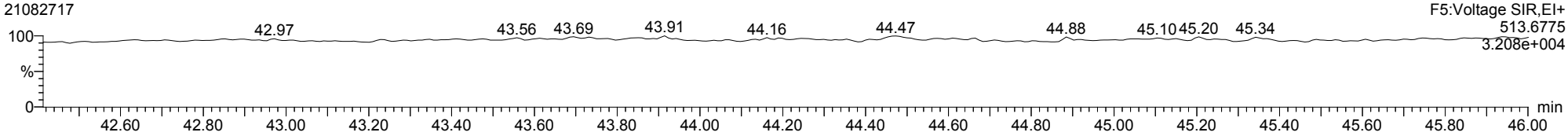
OCDF



OCDF

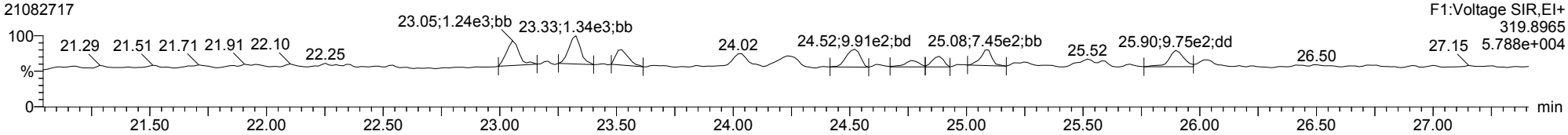


FUNCTION5 DCDPE

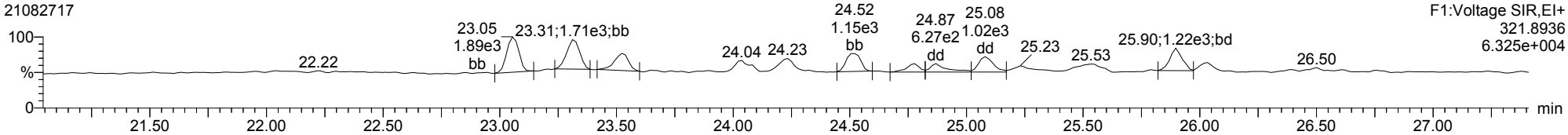


ID: 21G0108-09, Name: 21082717, Date: 27-Aug-2021, Time: 17:58:39, Conditions: AUTOSPEC01, User: pk

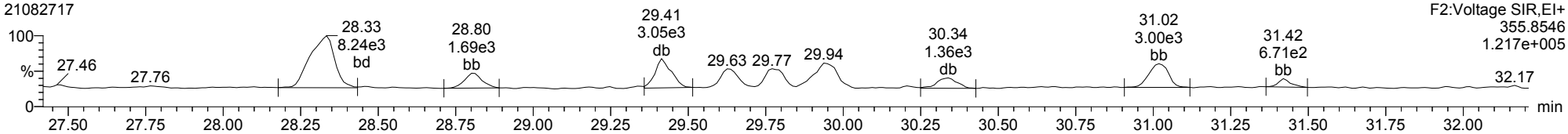
Total-tetradioxins



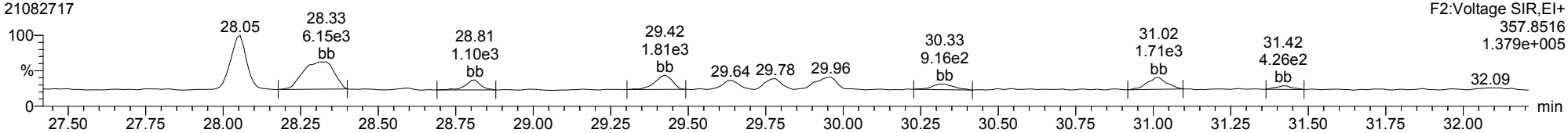
Total-tetradioxins



Total-pentadioxins

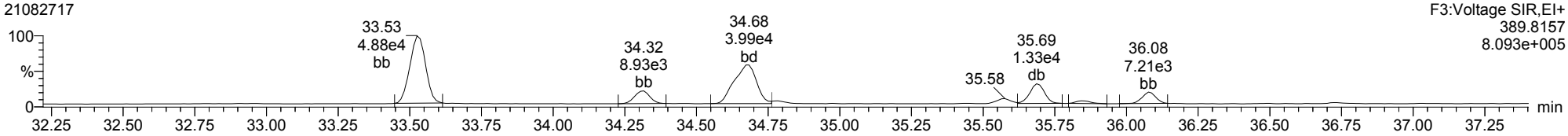


Total-pentadioxins

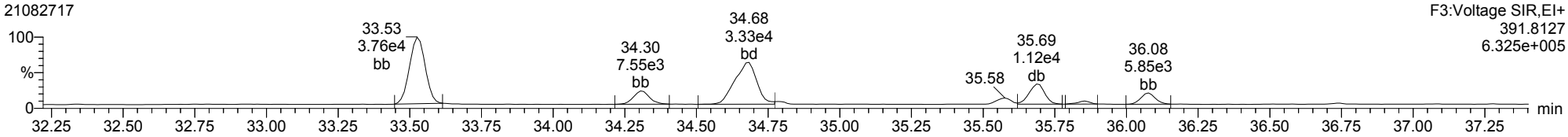


ID: 21G0108-09, Name: 21082717, Date: 27-Aug-2021, Time: 17:58:39, Conditions: AUTOSPEC01, User: pk

Total-hexadioxins



Total-hexadioxins



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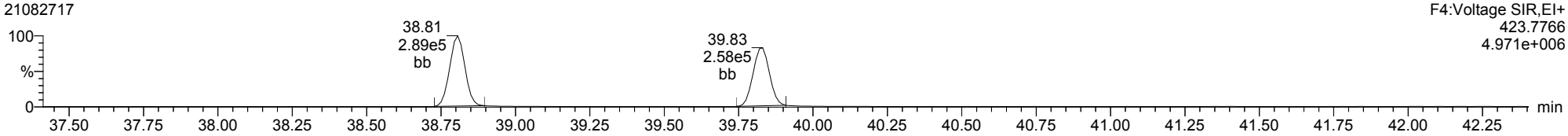
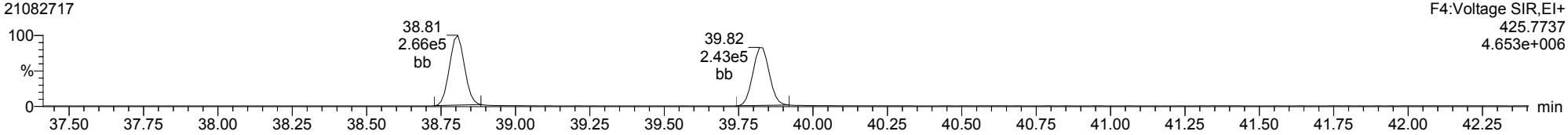
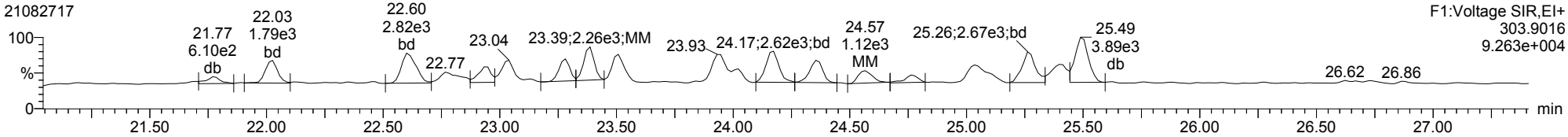


Total-heptadioxins

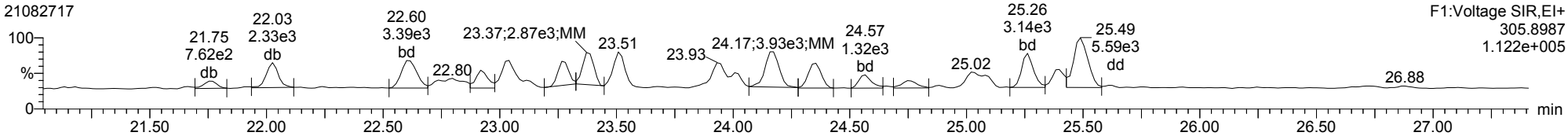


ID: 21G0108-09, Name: 21082717, Date: 27-Aug-2021, Time: 17:58:39, Conditions: AUTOSPEC01, User: pk

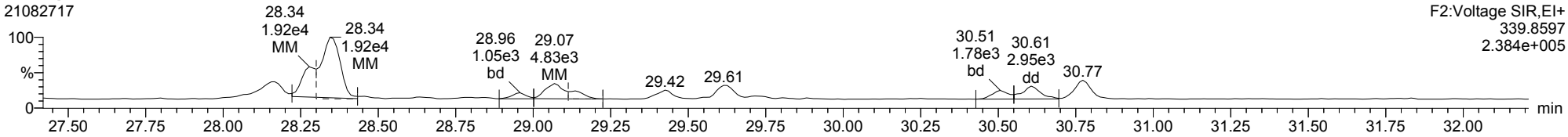
Total-tetrafurans



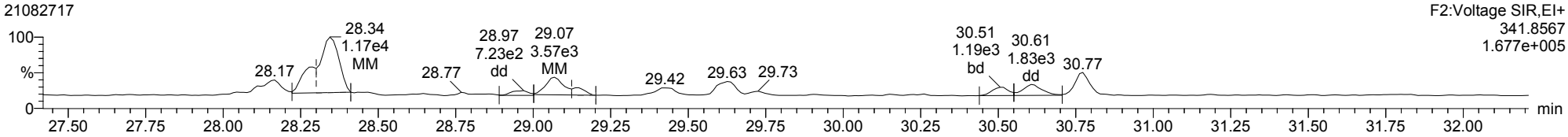
Total-tetrafurans



Total-pentafurans

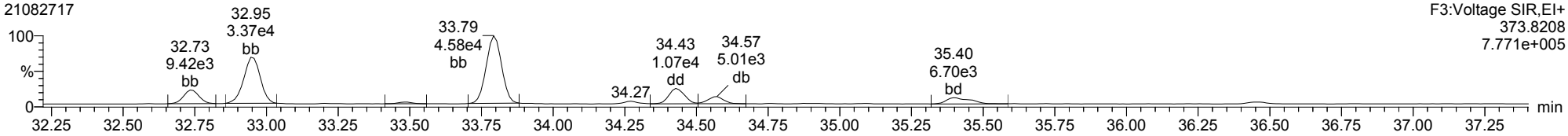


Total-pentafurans

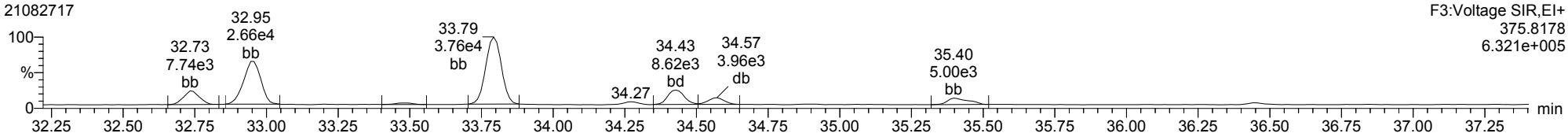


ID: 21G0108-09, Name: 21082717, Date: 27-Aug-2021, Time: 17:58:39, Conditions: AUTOSPEC01, User: pk

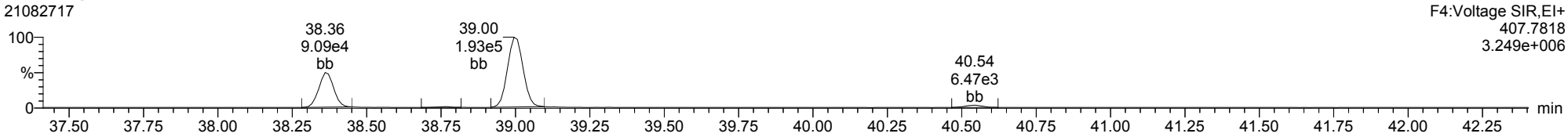
Total-hexafurans



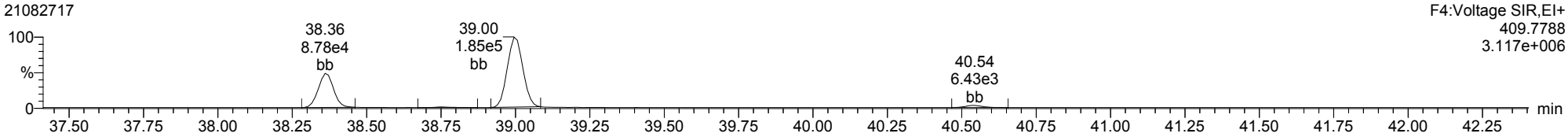
Total-hexafurans



Total-heptafurans



Total-heptafurans



Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT669C

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21G0108-10 C	File ID:	21082718
Sampled:	07/08/21 17:02	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 18:47
% Solids:	62.17	Preparation:	EPA 8290	Initial/Final:	16.08 g Wet / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1	0.616	0.655-0.886	0.302	1.00	1.99	ng/kg	EMPC, X
1746-01-6	2,3,7,8-TCDD	1	0.662	0.655-0.886	0.325	1.00	0.771	ng/kg	J
57117-41-6	1,2,3,7,8-PeCDF	1	1.594	1.318-1.783	0.312	1.00	3.08	ng/kg	
57117-31-4	2,3,4,7,8-PeCDF	1	1.457	1.318-1.783	0.281	1.00	6.49	ng/kg	
40321-76-4	1,2,3,7,8-PeCDD	1	2.218	1.318-1.783	0.681	1.00	3.21	ng/kg	EMPC
70648-26-9	1,2,3,4,7,8-HxCDF	1	1.263	1.054-1.426	0.315	1.00	82.7	ng/kg	
57117-44-9	1,2,3,6,7,8-HxCDF	1	1.326	1.054-1.426	0.303	1.00	15.2	ng/kg	
60851-34-5	2,3,4,6,7,8-HxCDF	1	1.174	1.054-1.426	0.313	1.00	24.7	ng/kg	
72918-21-9	1,2,3,7,8,9-HxCDF	1	1.244	1.054-1.426	0.321	1.00	11.3	ng/kg	
39227-28-6	1,2,3,4,7,8-HxCDD	1	1.249	1.054-1.426	0.313	1.00	4.65	ng/kg	
57653-85-7	1,2,3,6,7,8-HxCDD	1	1.239	1.054-1.426	0.336	1.00	28.1	ng/kg	
19408-74-3	1,2,3,7,8,9-HxCDD	1	1.247	1.054-1.426	0.347	1.00	9.60	ng/kg	
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.048	0.893-1.208	0.462	1.00	314	ng/kg	
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	0.992	0.893-1.208	0.551	1.00	45.2	ng/kg	
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.075	0.893-1.208	1.15	2.50	795	ng/kg	
39001-02-0	OCDF	1	0.895	0.757-1.024	0.728	2.50	802	ng/kg	
3268-87-9	OCDD	1	0.899	0.757-1.024	1.56	10.0	6060	ng/kg	E, B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			1.00	30.0	ng/kg
41903-57-5	Total TCDD	1	0.000			1.00	19.1	ng/kg
30402-15-4	Total PeCDF	1	0.000			1.00	97.2	ng/kg
36088-22-9	Total PeCDD	1	0.000			1.00	24.7	ng/kg
55684-94-1	Total HxCDF	1	0.000			1.00	556	ng/kg
34465-46-8	Total HxCDD	1	0.000			1.00	196	ng/kg
38998-75-3	Total HpCDF	1	0.000			1.00	1340	ng/kg
37871-00-4	Total HpCDD	1	0.000			1.00	1500	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 37.45
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 37.45

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT669C

Form 2
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21G0108-10	File ID:	21082718
Sampled:	07/08/21 17:02	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 18:47
Solids Wt%:	62.17	Preparation:	EPA 8290	Initial/Final:	16.08 g / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.797	0.655-0.886	0.215	54.5	24 - 169 %	
13C12-2,3,7,8-TCDD		0.755	0.655-0.886	0.238	59.5	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.584	1.318-1.783	0.193	74.7	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.623	1.318-1.783	0.202	73.6	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.562	1.318-1.783	0.220	76.4	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.523	0.434-0.587	0.185	57.2	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.516	0.434-0.587	0.172	52.7	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.521	0.434-0.587	0.190	54.8	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.519	0.434-0.587	0.229	63.7	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.270	1.054-1.426	0.237	65.1	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.277	1.054-1.426	0.218	59.2	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.457	0.374-0.506	0.184	52.4	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.455	0.374-0.506	0.225	63.2	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.023	0.893-1.208	0.255	60.2	23 - 140 %	
13C12-OCDD		0.918	0.757-1.024	0.374	57.4	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.078	66.4	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:43:43 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-10, Name: 21082718, Date: 27-Aug-2021, Time: 18:47:31, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.262	1.001	1.438e3	2.333e3	1.108	0.616	0.770	1939	1026	2.03e4	3.51e4	10.5	34.2	YES	MM	bd	0.995
12378-PeCDF	29.414	1.001	4.092e3	2.567e3	1.015	1.594	1.550	1894	1499	6.13e4	4.14e4	32.3	27.6	NO	bb	bb	1.539
23478-PeCDF	30.762	1.001	8.670e3	5.952e3	1.126	1.457	1.550	1894	1499	1.44e5	8.95e4	76.3	59.7	NO	db	db	3.246
123478-HxCDF	34.416	1.000	7.663e4	6.068e4	1.017	1.263	1.240	1351	1354	1.23e6	9.73e5	907.9	718.3	NO	bd	bd	41.328
234678-HxCDF	35.385	0.999	2.154e4	1.835e4	1.052	1.174	1.240	1351	1354	2.81e5	2.33e5	208.0	172.1	NO	bb	bb	12.370
123678-HxCDF	34.550	1.000	1.461e4	1.102e4	1.037	1.326	1.240	1351	1354	2.18e5	1.74e5	161.4	128.3	NO	db	db	7.591
123789-HxCDF	36.432	0.999	9.510e3	7.645e3	1.030	1.244	1.240	1351	1354	1.43e5	1.15e5	106.2	85.3	NO	bb	bb	5.642
1234678-HpCDF	38.349	1.000	2.380e5	2.271e5	1.327	1.048	1.050	2128	1856	4.10e6	3.94e6	1928.3	2125.1	NO	bb	bb	156.837
1234789-HpCDF	40.532	1.000	3.183e4	3.209e4	1.283	0.992	1.050	2128	1856	4.88e5	4.80e5	229.4	258.7	NO	bb	bb	22.596
OCDF	44.664	1.005	3.641e5	4.071e5	1.447	0.895	0.890	1581	1384	4.60e6	5.13e6	2910.4	3706.0	NO	bb	bb	400.964
2378-TCDD	25.882	1.001	4.128e2	6.237e2	0.920	0.662	0.770	1326	923	6.43e3	9.61e3	4.8	10.4	NO	bd	bd	0.386
12378-PeCDD	31.007	1.000	2.713e3	1.223e3	0.995	2.218	1.550	2227	1980	3.76e4	1.79e4	16.9	9.0	YES	bb	bb	1.606
123478-HxCDD	35.553	1.000	3.814e3	3.053e3	1.027	1.249	1.240	1141	1443	6.44e4	5.51e4	56.4	38.2	NO	bd	bd	2.326
123678-HxCDD	35.675	1.000	2.227e4	1.797e4	1.009	1.239	1.240	1141	1443	3.97e5	3.08e5	347.8	213.2	NO	db	dd	14.059
123789-HxCDD	36.065	1.011	7.228e3	5.795e3	0.950	1.247	1.240	1141	1443	1.23e5	9.80e4	107.5	67.9	NO	bb	bb	4.799
1234678-HpCDD	39.819	1.001	3.852e5	3.584e5	1.068	1.075	1.050	2630	3092	6.22e6	5.73e6	2365.5	1853.0	NO	bb	bb	397.355
OCDD	44.445	1.000	2.252e6	2.504e6	1.181	0.899	0.890	2056	3146	2.90e7	3.22e7	14120.2	10221.4	NO	bb	bb	3029.678
13C-2378-TCDF	25.231	1.007	1.518e5	1.904e5	1.427	0.797	0.770	2227	1344	2.36e6	2.93e6	1058.7	2180.0	NO	bb	bb	54.507
13C-12378-PeCDF	29.392	1.173	2.614e5	1.650e5	1.297	1.584	1.550	1560	1355	3.95e6	2.53e6	2528.9	1866.1	NO	bb	bb	74.693
13C-23478-PeCDF	30.740	1.227	2.477e5	1.526e5	1.236	1.623	1.550	1560	1355	3.98e6	2.45e6	2550.7	1806.3	NO	bb	bb	73.554
13C-123478-HxCDF	34.405	0.954	1.122e5	2.145e5	1.242	0.523	0.510	1244	1716	1.74e6	3.35e6	1399.6	1951.4	NO	bd	bd	57.176
13C-123678-HxCDF	34.539	0.958	1.109e5	2.147e5	1.343	0.516	0.510	1244	1716	1.76e6	3.45e6	1412.6	2009.7	NO	db	db	52.682
13C-234678-HxCDF	35.430	0.983	1.050e5	2.014e5	1.215	0.521	0.510	1244	1716	1.69e6	3.24e6	1358.5	1886.1	NO	bb	bb	54.827
13C-123789-HxCDF	36.455	1.011	1.009e5	1.943e5	1.008	0.519	0.510	1244	1716	1.68e6	3.20e6	1348.9	1866.1	NO	bb	bb	63.689
13C-1234678-HpCDF	38.338	1.063	7.006e4	1.534e5	0.926	0.457	0.440	956	1235	1.22e6	2.69e6	1278.1	2181.9	NO	bb	bb	52.435
13C-1234789-HpCDF	40.510	1.124	6.895e4	1.515e5	0.758	0.455	0.440	956	1235	1.06e6	2.30e6	1107.6	1862.6	NO	bb	bb	63.232
13C-1234-TCDD	25.050	0.000	1.913e5	2.487e5	1.000	0.769	0.770	1852	1250	3.04e6	3.96e6	1642.9	3167.8	NO	bb	bb	100.000
13C-2378-TCDD	25.866	1.033	1.257e5	1.665e5	1.116	0.755	0.770	1852	1250	1.94e6	2.57e6	1047.0	2057.8	NO	bb	bb	59.459
13C-12378-PeCDD	30.996	1.237	1.501e5	9.611e4	0.732	1.562	1.550	831	1047	2.27e6	1.51e6	2733.4	1441.7	NO	bb	bb	76.436
13C-123478-HxCDD	35.541	0.986	1.607e5	1.266e5	0.960	1.270	1.240	1506	1413	2.70e6	2.15e6	1793.4	1523.0	NO	bd	bd	65.094
13C-123678-HxCDD	35.664	0.989	1.591e5	1.246e5	1.041	1.277	1.240	1506	1413	2.56e6	1.99e6	1702.3	1406.1	NO	db	db	59.222
13C-1234678-HpCDD	39.797	1.104	8.860e4	8.662e4	0.632	1.023	1.050	1081	991	1.42e6	1.40e6	1310.8	1412.3	NO	bb	bb	60.236
13C-OCDD	44.436	1.232	1.272e5	1.386e5	0.504	0.918	0.890	1064	1355	1.62e6	1.81e6	1519.9	1338.5	NO	bb	bb	114.747
13C-123789-HxCDD	36.054	0.000	2.556e5	2.043e5	1.000	1.251	1.240	1506	1413	4.28e6	3.36e6	2845.9	2380.7	NO	bb	bb	100.000
37CL-2378-TCDD	25.897	1.034	1.267e5		1.084			987		1.96e6		1984.2			bb		26.565

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
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Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	21.754	0.862	1.096e3	1.495e3	1.425	0.733	0.770	1939	1026	1.66e4	2.61e4	8.6	25.4	NO	bb	bb	0.531
1289-TCDF					1.043		0.770	1939	1026								
13468-PECDF	26.683	0.908	5.422e4	3.546e4	1.376	1.529	1.550	771	979	7.95e5	5.28e5	1031.3	538.9	NO	bb	bb	15.282
12389-PECDF					1.000		1.550	1894	1499								
123468-HXCDF	32.734	0.951	2.881e4	2.432e4	1.087	1.184	1.240	1351	1354	4.46e5	3.83e5	330.1	282.9	NO	bb	bb	14.966
1368-TCDD	23.024	0.890	3.110e3	3.638e3	0.923	0.855	0.770	1326	923	5.20e4	6.14e4	39.2	66.5	NO	bb	bb	2.502
1289-TCDD					0.794		0.770	1326	923								
12479-PECDD	28.322	0.914	1.830e4	1.139e4	1.843	1.607	1.550	2227	1980	1.85e5	1.09e5	83.0	55.1	NO	bb	bb	6.541
12389-PECDD	31.408	1.013	8.868e2	6.577e2	1.154	1.348	1.550	2227	1980	1.24e4	8.48e3	5.6	4.3	NO	bb	bb	0.544
124679-HXCDD	33.514	0.943	6.702e4	5.298e4	1.125	1.265	1.240	1141	1443	1.07e6	8.24e5	941.5	570.9	NO	bb	bb	37.123
1234679-HPCDD	38.794	0.975	3.882e5	3.638e5	1.211	1.067	1.050	2630	3092	6.75e6	6.33e6	2568.0	2046.1	NO	bb	bb	354.441
Total-tetrafurans			2.671e4		1.192			1939		3.96e5							14.982
Total-penta1			5.422e4					771		7.95e5							15.282
Total-pentafurans			8.701e4		1.047			1894		1.21e6							33.304
Total-hexafurans			5.037e5		1.045			1351		7.83e6							277.977
Total-heptafurans			9.882e5		1.305			2128		1.66e7							668.728
Total-Furans			2.024e6		1.158			1939		3.14e7							1411.236
Total-tetradioxins			1.135e4		0.879			1326		1.83e5							9.540
Total-pentadioxins			2.966e4		1.331			2227		3.74e5							12.325
Total-hexadioxins			1.641e5		1.028			1141		2.47e6							98.148
Total-heptadioxins			7.735e5		1.140			2630		1.30e7							751.796
Total-Dioxins			3.230e6		1.092			1326		4.50e7							3901.487
Total-TEQ			5.254e6					1326		7.65e7							5312.723
FUNCTION1 PFK			6.796e6					702090		2.22e7							
FUNCTION2 PFK			1.946e6					480231		3.18e7							0.000
FUNCTION3 PFK			3.541e6					457991		5.19e6							0.000
FUNCTION4 PFK			9.718e5					328274		1.92e7							
FUNCTION5 PFK			0.000e0					186457		0.00e0							
FUNCTION1 HXCD...			4.448e3					911		6.21e4							0.000
FUNCTION1 HPCD...			2.047e3					804		3.33e4							0.000
FUNCTION2 HPCD...			2.633e3					837		5.66e4							0.000
FUNCTION3 OCDPE			1.845e3					783		3.20e4							0.000
FUNCTION4 NCDPE			2.217e3					909		3.78e4							0.000
FUNCTION5 DCDPE			1.715e2					645		3.66e3							0.000

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

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TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.16	3.885e3	4.534e3	1.192	0.86	0.77	30.5	YES	NO	db	bb	2.064
2	Total-tetrafurans	24.01	6.932e2	8.930e2	1.192	0.78	0.77	5.5	YES	NO	dd	db	0.389
3	Total-tetrafurans	23.49	1.744e3	2.339e3	1.192	0.75	0.77	13.6	YES	NO	db	db	1.001
4	Total-tetrafurans	23.25	2.543e3	3.590e3	1.192	0.71	0.77	22.2	YES	NO	dd	dd	1.504
5	Total-tetrafurans	23.07	3.966e2	5.902e2	1.192	0.67	0.77	4.2	YES	NO	dd	dd	0.242
6	Total-tetrafurans	23.01	1.991e3	2.261e3	1.192	0.88	0.77	16.5	YES	NO	dd	dd	1.043
7	Total-tetrafurans	22.78	1.908e3	2.573e3	1.192	0.74	0.77	8.2	YES	NO	dd	dd	1.099
8	Total-tetrafurans	22.59	5.997e3	7.574e3	1.192	0.79	0.77	43.6	YES	NO	bd	bd	3.328
9	Total-tetrafurans	22.01	1.566e3	2.307e3	1.192	0.68	0.77	12.4	YES	NO	bb	bb	0.950
10	1368-TCDF	21.75	1.096e3	1.495e3	1.425	0.73	0.77	8.6	YES	NO	bb	bb	0.531
11	Total-tetrafurans	25.47	2.305e3	2.834e3	1.192	0.81	0.77	17.1	YES	NO	db	db	1.260
12	Total-tetrafurans	25.38	8.805e2	1.270e3	1.192	0.69	0.77	8.0	YES	NO	dd	dd	0.527
13	Total-tetrafurans	24.34	1.704e3	2.553e3	1.192	0.67	0.77	14.0	YES	NO	bb	bb	1.044

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.68	5.422e4	3.546e4	1.376	1.53	1.55	1031.3	YES	NO	bb	bb	15.282

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentafurans	29.61	6.041e3	3.440e3	1.047	1.76	1.55	50.5	YES	NO	bd	bb	2.192
2	12378-PeCDF	29.41	4.092e3	2.567e3	1.015	1.59	1.55	32.3	YES	NO	bb	bb	1.539
3	Total-pentafurans	28.34	5.469e4	3.669e4	1.047	1.49	1.55	379.6	YES	NO	dd	db	21.122
4	Total-pentafurans	28.15	5.518e3	3.272e3	1.047	1.69	1.55	39.3	YES	NO	dd	dd	2.032
5	23478-PeCDF	30.76	8.670e3	5.952e3	1.126	1.46	1.55	76.3	YES	NO	db	db	3.246
6	Total-pentafurans	30.61	8.004e3	5.722e3	1.047	1.40	1.55	62.7	YES	NO	dd	dd	3.173

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HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123678-HxCDF	34.55	1.461e4	1.102e4	1.037	1.33	1.24	161.4	YES	NO	db	db	7.591
2	123478-HxCDF	34.42	7.663e4	6.068e4	1.017	1.26	1.24	907.9	YES	NO	bd	bd	41.328
3	Total-hexafurans	33.78	2.433e5	2.008e5	1.045	1.21	1.24	2851.4	YES	NO	bb	bb	135.637
4	Total-hexafurans	33.47	4.293e3	3.119e3	1.045	1.38	1.24	50.7	YES	NO	bb	bb	2.264
5	Total-hexafurans	32.95	1.032e5	8.387e4	1.045	1.23	1.24	1158.6	YES	NO	bb	bb	57.130
6	123468-HXCDF	32.73	2.881e4	2.432e4	1.087	1.18	1.24	330.1	YES	NO	bb	bb	14.966
7	123789-HxCDF	36.43	9.510e3	7.645e3	1.030	1.24	1.24	106.2	YES	NO	bb	bb	5.642
8	234678-HxCDF	35.39	2.154e4	1.835e4	1.052	1.17	1.24	208.0	YES	NO	bb	bb	12.370
9	Total-hexafurans	34.88	1.411e3	1.251e3	1.045	1.13	1.24	14.8	YES	NO	db	bb	0.813
10	Total-hexafurans	34.75	4.502e2	3.219e2	1.045	1.40	1.24	7.0	YES	NO	bd	bb	0.236

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.35	2.380e5	2.271e5	1.327	1.05	1.05	1928.3	YES	NO	bb	bb	156.837
2	1234789-HpCDF	40.53	3.183e4	3.209e4	1.283	0.99	1.05	229.4	YES	NO	bb	bb	22.596
3	Total-heptafurans	38.98	7.184e5	6.991e5	1.305	1.03	1.05	5646.2	YES	NO	bb	bb	489.294

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.16	3.885e3	4.534e3	1.192	0.86	0.77	30.5	YES	NO	db	bb	2.064
2	Total-tetrafurans	24.01	6.932e2	8.930e2	1.192	0.78	0.77	5.5	YES	NO	dd	db	0.389
3	Total-tetrafurans	23.49	1.744e3	2.339e3	1.192	0.75	0.77	13.6	YES	NO	db	db	1.001
4	Total-tetrafurans	23.25	2.543e3	3.590e3	1.192	0.71	0.77	22.2	YES	NO	dd	dd	1.504
5	Total-tetrafurans	23.07	3.966e2	5.902e2	1.192	0.67	0.77	4.2	YES	NO	dd	dd	0.242
6	Total-tetrafurans	23.01	1.991e3	2.261e3	1.192	0.88	0.77	16.5	YES	NO	dd	dd	1.043
7	Total-tetrafurans	22.78	1.908e3	2.573e3	1.192	0.74	0.77	8.2	YES	NO	dd	dd	1.099
8	Total-tetrafurans	22.59	5.997e3	7.574e3	1.192	0.79	0.77	43.6	YES	NO	bd	bd	3.328
9	Total-tetrafurans	22.01	1.566e3	2.307e3	1.192	0.68	0.77	12.4	YES	NO	bb	bb	0.950
10	1368-TCDF	21.75	1.096e3	1.495e3	1.425	0.73	0.77	8.6	YES	NO	bb	bb	0.531
11	Total-tetrafurans	25.47	2.305e3	2.834e3	1.192	0.81	0.77	17.1	YES	NO	db	db	1.260
12	Total-tetrafurans	25.38	8.805e2	1.270e3	1.192	0.69	0.77	8.0	YES	NO	dd	dd	0.527
13	Total-tetrafurans	24.34	1.704e3	2.553e3	1.192	0.67	0.77	14.0	YES	NO	bb	bb	1.044
14	Total-pentafurans	29.61	6.041e3	3.440e3	1.047	1.76	1.55	50.5	YES	NO	bd	bb	2.192
15	12378-PeCDF	29.41	4.092e3	2.567e3	1.015	1.59	1.55	32.3	YES	NO	bb	bb	1.539
16	Total-pentafurans	28.34	5.469e4	3.669e4	1.047	1.49	1.55	379.6	YES	NO	dd	db	21.122
17	Total-pentafurans	28.15	5.518e3	3.272e3	1.047	1.69	1.55	39.3	YES	NO	dd	dd	2.032
18	23478-PeCDF	30.76	8.670e3	5.952e3	1.126	1.46	1.55	76.3	YES	NO	db	db	3.246
19	Total-pentafurans	30.61	8.004e3	5.722e3	1.047	1.40	1.55	62.7	YES	NO	dd	dd	3.173
20	123678-HxCDF	34.55	1.461e4	1.102e4	1.037	1.33	1.24	161.4	YES	NO	db	db	7.591
21	123478-HxCDF	34.42	7.663e4	6.068e4	1.017	1.26	1.24	907.9	YES	NO	bd	bd	41.328
22	Total-hexafurans	33.78	2.433e5	2.008e5	1.045	1.21	1.24	2851.4	YES	NO	bb	bb	135.637
23	Total-hexafurans	33.47	4.293e3	3.119e3	1.045	1.38	1.24	50.7	YES	NO	bb	bb	2.264
24	Total-hexafurans	32.95	1.032e5	8.387e4	1.045	1.23	1.24	1158.6	YES	NO	bb	bb	57.130
25	123468-HXCDF	32.73	2.881e4	2.432e4	1.087	1.18	1.24	330.1	YES	NO	bb	bb	14.966
26	123789-HxCDF	36.43	9.510e3	7.645e3	1.030	1.24	1.24	106.2	YES	NO	bb	bb	5.642
27	234678-HxCDF	35.39	2.154e4	1.835e4	1.052	1.17	1.24	208.0	YES	NO	bb	bb	12.370
28	Total-hexafurans	34.88	1.411e3	1.251e3	1.045	1.13	1.24	14.8	YES	NO	db	bb	0.813
29	Total-hexafurans	34.75	4.502e2	3.219e2	1.045	1.40	1.24	7.0	YES	NO	bd	bb	0.236
30	1234678-HpCDF	38.35	2.380e5	2.271e5	1.327	1.05	1.05	1928.3	YES	NO	bb	bb	156.837
31	1234789-HpCDF	40.53	3.183e4	3.209e4	1.283	0.99	1.05	229.4	YES	NO	bb	bb	22.596
32	Total-heptafurans	38.98	7.184e5	6.991e5	1.305	1.03	1.05	5646.2	YES	NO	bb	bb	489.294
33	OCDF	44.66	3.641e5	4.071e5	1.447	0.89	0.89	2910.4	YES	NO	bb	bb	400.964
34	13468-PECDF	26.68	5.422e4	3.546e4	1.376	1.53	1.55	1031.3	YES	NO	bb	bb	15.282

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TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	23.51	1.487e3	1.758e3	0.879	0.85	0.77	18.1	YES	NO	bb	db	1.263
2	Total-tetradioxins	23.30	5.506e3	6.466e3	0.879	0.85	0.77	67.5	YES	NO	bb	bd	4.661
3	1368-TCDD	23.02	3.110e3	3.638e3	0.923	0.85	0.77	39.2	YES	NO	bb	bb	2.502
4	2378-TCDD	25.88	4.128e2	6.237e2	0.920	0.66	0.77	4.8	YES	NO	bd	bd	0.386
5	Total-tetradioxins	24.01	8.375e2	1.034e3	0.879	0.81	0.77	8.6	YES	NO	bd	bd	0.728

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentadioxins	29.40	3.491e3	2.312e3	1.331	1.51	1.55	25.5	YES	NO	bb	bb	1.771
2	Total-pentadioxins	28.79	1.827e3	1.089e3	1.331	1.68	1.55	15.4	YES	NO	bb	bb	0.890
3	12479-PECDD	28.32	1.830e4	1.139e4	1.843	1.61	1.55	83.0	YES	NO	bb	bb	6.541
4	12389-PECDD	31.41	8.868e2	6.577e2	1.154	1.35	1.55	5.6	YES	NO	bb	bb	0.544
5	Total-pentadioxins	29.76	2.799e3	1.808e3	1.331	1.55	1.55	21.5	YES	NO	bb	dd	1.406
6	Total-pentadioxins	29.63	2.361e3	1.480e3	1.331	1.60	1.55	17.3	YES	NO	bb	bd	1.173

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-hexadioxins	35.84	2.542e3	2.399e3	1.028	1.06	1.24	40.5	YES	NO	bb	db	1.684
2	123678-HxCDD	35.67	2.227e4	1.797e4	1.009	1.24	1.24	347.8	YES	NO	db	dd	14.059
3	123478-HxCDD	35.55	3.814e3	3.053e3	1.027	1.25	1.24	56.4	YES	NO	bd	bd	2.326
4	Total-hexadioxins	34.67	4.982e4	4.101e4	1.028	1.22	1.24	512.5	YES	NO	bd	bd	30.948
5	Total-hexadioxins	34.29	1.140e4	9.755e3	1.028	1.17	1.24	159.6	YES	NO	bb	bb	7.209
6	124679-HXCDD	33.51	6.702e4	5.298e4	1.125	1.26	1.24	941.5	YES	NO	bb	bb	37.123
7	123789-HxCDD	36.06	7.228e3	5.795e3	0.950	1.25	1.24	107.5	YES	NO	bb	bb	4.799

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.82	3.852e5	3.584e5	1.068	1.07	1.05	2365.5	YES	NO	bb	bb	397.355
2	1234679-HPCDD	38.79	3.882e5	3.638e5	1.211	1.07	1.05	2568.0	YES	NO	bb	bb	354.441

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	23.51	1.487e3	1.758e3	0.879	0.85	0.77	18.1	YES	NO	bb	db	1.263
2	Total-tetradioxins	23.30	5.506e3	6.466e3	0.879	0.85	0.77	67.5	YES	NO	bb	bd	4.661
3	1368-TCDD	23.02	3.110e3	3.638e3	0.923	0.85	0.77	39.2	YES	NO	bb	bb	2.502
4	2378-TCDD	25.88	4.128e2	6.237e2	0.920	0.66	0.77	4.8	YES	NO	bd	bd	0.386
5	Total-tetradioxins	24.01	8.375e2	1.034e3	0.879	0.81	0.77	8.6	YES	NO	bd	bd	0.728
6	Total-pentadioxins	29.40	3.491e3	2.312e3	1.331	1.51	1.55	25.5	YES	NO	bb	bb	1.771
7	Total-pentadioxins	28.79	1.827e3	1.089e3	1.331	1.68	1.55	15.4	YES	NO	bb	bb	0.890
8	12479-PECDD	28.32	1.830e4	1.139e4	1.843	1.61	1.55	83.0	YES	NO	bb	bb	6.541
9	12389-PECDD	31.41	8.868e2	6.577e2	1.154	1.35	1.55	5.6	YES	NO	bb	bb	0.544
10	Total-pentadioxins	29.76	2.799e3	1.808e3	1.331	1.55	1.55	21.5	YES	NO	bb	dd	1.406
11	Total-pentadioxins	29.63	2.361e3	1.480e3	1.331	1.60	1.55	17.3	YES	NO	bb	bd	1.173
12	Total-hexadioxins	35.84	2.542e3	2.399e3	1.028	1.06	1.24	40.5	YES	NO	bb	db	1.684
13	123678-HxCDD	35.67	2.227e4	1.797e4	1.009	1.24	1.24	347.8	YES	NO	db	dd	14.059
14	123478-HxCDD	35.55	3.814e3	3.053e3	1.027	1.25	1.24	56.4	YES	NO	bd	bd	2.326
15	Total-hexadioxins	34.67	4.982e4	4.101e4	1.028	1.22	1.24	512.5	YES	NO	bd	bd	30.948
16	Total-hexadioxins	34.29	1.140e4	9.755e3	1.028	1.17	1.24	159.6	YES	NO	bb	bb	7.209
17	124679-HXCDD	33.51	6.702e4	5.298e4	1.125	1.26	1.24	941.5	YES	NO	bb	bb	37.123
18	123789-HxCDD	36.06	7.228e3	5.795e3	0.950	1.25	1.24	107.5	YES	NO	bb	bb	4.799
19	1234678-HpCDD	39.82	3.852e5	3.584e5	1.068	1.07	1.05	2365.5	YES	NO	bb	bb	397.355
20	1234679-HPCDD	38.79	3.882e5	3.638e5	1.211	1.07	1.05	2568.0	YES	NO	bb	bb	354.441
21	OCDD	44.44	2.252e6	2.504e6	1.181	0.90	0.89	14120.2	YES	NO	bb	bb	3029.6...

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:43:43 Pacific Daylight Time

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.16	3.885e3	4.534e3	1.192	0.86	0.77	30.5	YES	NO	db	bb	2.064
2	Total-tetrafurans	24.01	6.932e2	8.930e2	1.192	0.78	0.77	5.5	YES	NO	dd	db	0.389
3	Total-tetrafurans	23.49	1.744e3	2.339e3	1.192	0.75	0.77	13.6	YES	NO	db	db	1.001
4	Total-tetrafurans	23.25	2.543e3	3.590e3	1.192	0.71	0.77	22.2	YES	NO	dd	dd	1.504
5	Total-tetrafurans	23.07	3.966e2	5.902e2	1.192	0.67	0.77	4.2	YES	NO	dd	dd	0.242
6	Total-tetrafurans	23.01	1.991e3	2.261e3	1.192	0.88	0.77	16.5	YES	NO	dd	dd	1.043
7	Total-tetrafurans	22.78	1.908e3	2.573e3	1.192	0.74	0.77	8.2	YES	NO	dd	dd	1.099
8	Total-tetrafurans	22.59	5.997e3	7.574e3	1.192	0.79	0.77	43.6	YES	NO	bd	bd	3.328
9	Total-tetrafurans	22.01	1.566e3	2.307e3	1.192	0.68	0.77	12.4	YES	NO	bb	bb	0.950
10	1368-TCDF	21.75	1.096e3	1.495e3	1.425	0.73	0.77	8.6	YES	NO	bb	bb	0.531
11	Total-tetrafurans	25.47	2.305e3	2.834e3	1.192	0.81	0.77	17.1	YES	NO	db	db	1.260
12	Total-tetrafurans	25.38	8.805e2	1.270e3	1.192	0.69	0.77	8.0	YES	NO	dd	dd	0.527
13	Total-tetrafurans	24.34	1.704e3	2.553e3	1.192	0.67	0.77	14.0	YES	NO	bb	bb	1.044
14	Total-pentafurans	29.61	6.041e3	3.440e3	1.047	1.76	1.55	50.5	YES	NO	bd	bb	2.192
15	12378-PeCDF	29.41	4.092e3	2.567e3	1.015	1.59	1.55	32.3	YES	NO	bb	bb	1.539
16	Total-pentafurans	28.34	5.469e4	3.669e4	1.047	1.49	1.55	379.6	YES	NO	dd	db	21.122
17	Total-pentafurans	28.15	5.518e3	3.272e3	1.047	1.69	1.55	39.3	YES	NO	dd	dd	2.032
18	23478-PeCDF	30.76	8.670e3	5.952e3	1.126	1.46	1.55	76.3	YES	NO	db	db	3.246
19	Total-pentafurans	30.61	8.004e3	5.722e3	1.047	1.40	1.55	62.7	YES	NO	dd	dd	3.173
20	123678-HxCDF	34.55	1.461e4	1.102e4	1.037	1.33	1.24	161.4	YES	NO	db	db	7.591
21	123478-HxCDF	34.42	7.663e4	6.068e4	1.017	1.26	1.24	907.9	YES	NO	bd	bd	41.328
22	Total-hexafurans	33.78	2.433e5	2.008e5	1.045	1.21	1.24	2851.4	YES	NO	bb	bb	135.637
23	Total-hexafurans	33.47	4.293e3	3.119e3	1.045	1.38	1.24	50.7	YES	NO	bb	bb	2.264
24	Total-hexafurans	32.95	1.032e5	8.387e4	1.045	1.23	1.24	1158.6	YES	NO	bb	bb	57.130
25	123468-HXCDF	32.73	2.881e4	2.432e4	1.087	1.18	1.24	330.1	YES	NO	bb	bb	14.966
26	123789-HxCDF	36.43	9.510e3	7.645e3	1.030	1.24	1.24	106.2	YES	NO	bb	bb	5.642
27	234678-HxCDF	35.39	2.154e4	1.835e4	1.052	1.17	1.24	208.0	YES	NO	bb	bb	12.370
28	Total-hexafurans	34.88	1.411e3	1.251e3	1.045	1.13	1.24	14.8	YES	NO	db	bb	0.813
29	Total-hexafurans	34.75	4.502e2	3.219e2	1.045	1.40	1.24	7.0	YES	NO	bd	bb	0.236
30	1234678-HpCDF	38.35	2.380e5	2.271e5	1.327	1.05	1.05	1928.3	YES	NO	bb	bb	156.837
31	1234789-HpCDF	40.53	3.183e4	3.209e4	1.283	0.99	1.05	229.4	YES	NO	bb	bb	22.596
32	Total-heptafurans	38.98	7.184e5	6.991e5	1.305	1.03	1.05	5646.2	YES	NO	bb	bb	489.294
33	OCDF	44.66	3.641e5	4.071e5	1.447	0.89	0.89	2910.4	YES	NO	bb	bb	400.964
34	13468-PECDF	26.68	5.422e4	3.546e4	1.376	1.53	1.55	1031.3	YES	NO	bb	bb	15.282
35	Total-tetradioxins	23.51	1.487e3	1.758e3	0.879	0.85	0.77	18.1	YES	NO	bb	db	1.263
36	Total-tetradioxins	23.30	5.506e3	6.466e3	0.879	0.85	0.77	67.5	YES	NO	bb	bd	4.661
37	1368-TCDD	23.02	3.110e3	3.638e3	0.923	0.85	0.77	39.2	YES	NO	bb	bb	2.502

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	2378-TCDD	25.88	4.128e2	6.237e2	0.920	0.66	0.77	4.8	YES	NO	bd	bd	0.386
39	Total-tetradioxins	24.01	8.375e2	1.034e3	0.879	0.81	0.77	8.6	YES	NO	bd	bd	0.728
40	Total-pentadioxins	29.40	3.491e3	2.312e3	1.331	1.51	1.55	25.5	YES	NO	bb	bb	1.771
41	Total-pentadioxins	28.79	1.827e3	1.089e3	1.331	1.68	1.55	15.4	YES	NO	bb	bb	0.890
42	12479-PECDD	28.32	1.830e4	1.139e4	1.843	1.61	1.55	83.0	YES	NO	bb	bb	6.541
43	12389-PECDD	31.41	8.868e2	6.577e2	1.154	1.35	1.55	5.6	YES	NO	bb	bb	0.544
44	Total-pentadioxins	29.76	2.799e3	1.808e3	1.331	1.55	1.55	21.5	YES	NO	bb	dd	1.406
45	Total-pentadioxins	29.63	2.361e3	1.480e3	1.331	1.60	1.55	17.3	YES	NO	bb	bd	1.173
46	Total-hexadioxins	35.84	2.542e3	2.399e3	1.028	1.06	1.24	40.5	YES	NO	bb	db	1.684
47	123678-HxCDD	35.67	2.227e4	1.797e4	1.009	1.24	1.24	347.8	YES	NO	db	dd	14.059
48	123478-HxCDD	35.55	3.814e3	3.053e3	1.027	1.25	1.24	56.4	YES	NO	bd	bd	2.326
49	Total-hexadioxins	34.67	4.982e4	4.101e4	1.028	1.22	1.24	512.5	YES	NO	bd	bd	30.948
50	Total-hexadioxins	34.29	1.140e4	9.755e3	1.028	1.17	1.24	159.6	YES	NO	bb	bb	7.209
51	124679-HXCDD	33.51	6.702e4	5.298e4	1.125	1.26	1.24	941.5	YES	NO	bb	bb	37.123
52	123789-HxCDD	36.06	7.228e3	5.795e3	0.950	1.25	1.24	107.5	YES	NO	bb	bb	4.799
53	1234678-HpCDD	39.82	3.852e5	3.584e5	1.068	1.07	1.05	2365.5	YES	NO	bb	bb	397.355
54	1234679-HPCDD	38.79	3.882e5	3.638e5	1.211	1.07	1.05	2568.0	YES	NO	bb	bb	354.441
55	OCDD	44.44	2.252e6	2.504e6	1.181	0.90	0.89	14120.2	YES	NO	bb	bb	3029.6...

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.62	1.328e5					4.1	YES		bb		
2	FUNCTION1 PFK	21.71	4.164e6					18.4	YES		bb		
3	FUNCTION1 PFK	21.30	2.499e6					9.1	YES		bb		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	28.26	1.444e4					1.2	NO		bd		0.000
2	FUNCTION2 PFK	27.91	5.521e3					0.5	NO		bb		0.000
3	FUNCTION2 PFK	27.76	2.340e3					0.4	NO		bb		0.000
4	FUNCTION2 PFK	27.69	7.151e4					3.6	YES		db		0.000
5	FUNCTION2 PFK	27.65	9.919e4					4.0	YES		dd		0.000
6	FUNCTION2 PFK	27.45	3.469e5					6.7	YES		bd		0.000
7	FUNCTION2 PFK	30.55	9.084e4					3.0	NO		bb		0.000
8	FUNCTION2 PFK	30.36	5.748e3					0.6	NO		bb		0.000
9	FUNCTION2 PFK	30.23	7.590e3					0.6	NO		bb		0.000
10	FUNCTION2 PFK	29.84	4.982e3					0.6	NO		bb		0.000
11	FUNCTION2 PFK	29.79	9.402e3					1.0	NO		bb		0.000
12	FUNCTION2 PFK	29.73	4.253e3					0.4	NO		bb		0.000
13	FUNCTION2 PFK	29.68	1.122e4					0.8	NO		bb		0.000
14	FUNCTION2 PFK	29.61	2.468e3					0.5	NO		bb		0.000
15	FUNCTION2 PFK	29.51	2.298e4					1.3	NO		db		0.000
16	FUNCTION2 PFK	29.42	5.737e4					1.9	NO		dd		0.000
17	FUNCTION2 PFK	29.31	8.698e4					1.9	NO		bd		0.000
18	FUNCTION2 PFK	28.98	1.544e5					2.1	NO		bb		0.000
19	FUNCTION2 PFK	28.80	7.449e4					3.3	YES		db		0.000
20	FUNCTION2 PFK	28.71	2.556e5					4.6	YES		dd		0.000
21	FUNCTION2 PFK	28.50	2.630e4					1.5	NO		bd		0.000
22	FUNCTION2 PFK	28.30	2.565e4					1.2	NO		db		0.000
23	FUNCTION2 PFK	32.09	3.242e4					1.2	NO		db		0.000
24	FUNCTION2 PFK	32.03	9.744e3					0.8	NO		bd		0.000
25	FUNCTION2 PFK	31.71	5.946e4					3.2	YES		db		0.000
26	FUNCTION2 PFK	31.66	7.088e4					3.1	YES		dd		0.000
27	FUNCTION2 PFK	31.61	4.905e4					2.4	NO		bd		0.000
28	FUNCTION2 PFK	31.41	7.073e4					0.8	NO		bb		0.000
29	FUNCTION2 PFK	31.22	4.964e3					0.5	NO		bb		0.000
30	FUNCTION2 PFK	30.90	1.041e4					1.0	NO		db		0.000
31	FUNCTION2 PFK	30.84	4.709e4					2.4	NO		dd		0.000
32	FUNCTION2 PFK	30.80	4.750e4					2.6	NO		dd		0.000
33	FUNCTION2 PFK	30.75	5.615e4					3.1	YES		dd		0.000
34	FUNCTION2 PFK	30.69	1.071e5					3.5	YES		bd		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	32.95	2.563e6					4.8	YES		bb		0.000
2	FUNCTION3 PFK	32.29	9.783e5					6.6	YES		bb		0.000

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	42.28	2.667e4					2.0	NO		bb		
2	FUNCTION4 PFK	41.25	1.541e4					1.2	NO		bb		
3	FUNCTION4 PFK	39.79	1.499e4					1.5	NO		db		
4	FUNCTION4 PFK	39.71	1.492e4					1.4	NO		dd		
5	FUNCTION4 PFK	39.62	1.243e4					0.8	NO		bd		
6	FUNCTION4 PFK	39.38	2.178e4					1.4	NO		bb		
7	FUNCTION4 PFK	39.22	3.555e3					0.6	NO		bb		
8	FUNCTION4 PFK	39.04	2.182e4					1.4	NO		db		
9	FUNCTION4 PFK	39.01	9.008e3					1.3	NO		bd		
10	FUNCTION4 PFK	37.76	2.125e5					4.3	YES		db		
11	FUNCTION4 PFK	37.64	1.399e5					7.6	YES		dd		
12	FUNCTION4 PFK	37.56	1.500e5					8.3	YES		dd		
13	FUNCTION4 PFK	37.52	1.198e5					8.6	YES		dd		
14	FUNCTION4 PFK	37.49	9.063e4					8.6	YES		dd		
15	FUNCTION4 PFK	37.46	1.184e5					9.7	YES		bd		

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	26.24	3.380e2					3.7	YES		bb		0.000
2	FUNCTION1 HXCD...	25.61	2.999e2					5.8	YES		bb		0.000
3	FUNCTION1 HXCD...	25.25	4.969e2					6.3	YES		bb		0.000
4	FUNCTION1 HXCD...	25.07	9.800e1					2.0	NO		bb		0.000
5	FUNCTION1 HXCD...	24.26	1.129e2					1.2	NO		db		0.000
6	FUNCTION1 HXCD...	24.13	2.335e2					7.1	YES		dd		0.000
7	FUNCTION1 HXCD...	24.07	1.449e2					2.6	NO		bd		0.000
8	FUNCTION1 HXCD...	23.81	9.627e1					1.9	NO		bb		0.000
9	FUNCTION1 HXCD...	23.24	8.934e2					12.0	YES		bb		0.000
10	FUNCTION1 HXCD...	22.25	1.984e2					2.5	NO		bb		0.000
11	FUNCTION1 HXCD...	22.00	1.870e2					1.8	NO		db		0.000
12	FUNCTION1 HXCD...	21.80	2.119e2					4.1	YES		dd		0.000
13	FUNCTION1 HXCD...	21.75	1.003e2					2.8	NO		dd		0.000
14	FUNCTION1 HXCD...	21.63	5.790e2					8.7	YES		bd		0.000
15	FUNCTION1 HXCD...	21.42	2.043e2					2.0	NO		bb		0.000
16	FUNCTION1 HXCD...	27.15	1.479e2					1.9	NO		bb		0.000
17	FUNCTION1 HXCD...	26.53	1.053e2					1.7	NO		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	26.79	8.772e1					3.0	YES		bb		0.000
2	FUNCTION1 HPCD...	26.55	1.453e2					2.9	NO		db		0.000
3	FUNCTION1 HPCD...	26.49	2.266e2					4.5	YES		bd		0.000
4	FUNCTION1 HPCD...	25.85	8.002e1					1.3	NO		bb		0.000
5	FUNCTION1 HPCD...	25.08	1.026e2					2.3	NO		db		0.000
6	FUNCTION1 HPCD...	24.97	1.473e2					2.6	NO		bd		0.000
7	FUNCTION1 HPCD...	24.38	1.055e2					2.4	NO		bb		0.000
8	FUNCTION1 HPCD...	24.23	1.340e2					1.8	NO		bb		0.000
9	FUNCTION1 HPCD...	24.13	2.784e2					7.3	YES		bb		0.000
10	FUNCTION1 HPCD...	22.83	5.103e2					10.6	YES		bb		0.000
11	FUNCTION1 HPCD...	21.71	1.041e2					0.7	NO		bb		0.000
12	FUNCTION1 HPCD...	21.10	1.252e2					2.2	NO		bb		0.000

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ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	30.77	8.898e1					3.0	NO		dd		0.000
2	FUNCTION2 HPCD...	30.71	1.568e2					3.9	YES		dd		0.000
3	FUNCTION2 HPCD...	30.68	1.344e2					4.1	YES		dd		0.000
4	FUNCTION2 HPCD...	30.59	1.697e2					3.5	YES		dd		0.000
5	FUNCTION2 HPCD...	30.55	1.072e2					3.4	YES		dd		0.000
6	FUNCTION2 HPCD...	30.51	1.141e2					3.7	YES		dd		0.000
7	FUNCTION2 HPCD...	30.46	1.446e2					6.1	YES		bd		0.000
8	FUNCTION2 HPCD...	30.36	8.234e1					2.6	NO		db		0.000
9	FUNCTION2 HPCD...	30.33	1.048e2					3.1	YES		dd		0.000
10	FUNCTION2 HPCD...	30.20	1.125e2					2.4	NO		bd		0.000
11	FUNCTION2 HPCD...	29.39	7.515e1					1.7	NO		bb		0.000
12	FUNCTION2 HPCD...	28.56	1.281e2					3.3	YES		bb		0.000
13	FUNCTION2 HPCD...	28.43	4.108e2					10.7	YES		bb		0.000
14	FUNCTION2 HPCD...	27.76	1.815e2					3.5	YES		db		0.000
15	FUNCTION2 HPCD...	27.65	7.039e1					1.9	NO		dd		0.000
16	FUNCTION2 HPCD...	27.56	1.120e2					1.8	NO		bd		0.000
17	FUNCTION2 HPCD...	31.83	9.565e1					2.2	NO		bb		0.000
18	FUNCTION2 HPCD...	31.69	8.191e1					3.2	YES		bb		0.000
19	FUNCTION2 HPCD...	30.90	2.618e2					3.6	YES		db		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	37.29	8.596e1					1.5	NO		bb		0.000
2	FUNCTION3 OCDPE	36.64	1.322e2					3.7	YES		bb		0.000
3	FUNCTION3 OCDPE	35.55	8.248e1					2.6	NO		bb		0.000
4	FUNCTION3 OCDPE	34.43	1.048e2					2.7	NO		bb		0.000
5	FUNCTION3 OCDPE	33.70	2.921e2					7.8	YES		bb		0.000
6	FUNCTION3 OCDPE	33.38	8.329e1					2.8	NO		db		0.000
7	FUNCTION3 OCDPE	33.20	1.982e2					1.9	NO		bd		0.000
8	FUNCTION3 OCDPE	32.97	7.635e1					3.3	YES		db		0.000
9	FUNCTION3 OCDPE	32.93	2.543e2					4.4	YES		dd		0.000
10	FUNCTION3 OCDPE	32.81	9.232e1					2.2	NO		bd		0.000
11	FUNCTION3 OCDPE	32.58	4.425e2					7.8	YES		bb		0.000

ID: 21G0108-10, Name: 21082718, Date: 27-Aug-2021, Time: 18:47:31, Conditions: AUTOSPEC01, User: pk

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	38.79	8.257e1					2.5	NO		bb		0.000
2	FUNCTION4 NCDPE	37.96	2.032e3					36.0	YES		db		0.000
3	FUNCTION4 NCDPE	37.87	1.017e2					3.1	YES		bd		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	44.46	8.373e1					2.4	NO		bb		0.000
2	FUNCTION5 DCDPE	43.88	8.778e1					3.3	YES		bb		0.000

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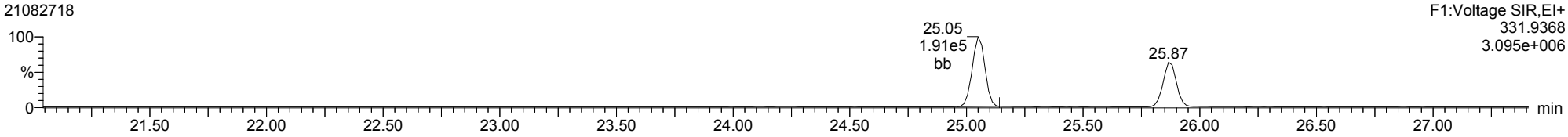
ID: 21G0108-10, Name: 21082718, Date: 27-Aug-2021, Time: 18:47:31, Conditions: AUTOSPEC01, User: pk

13C-1234-TCDD



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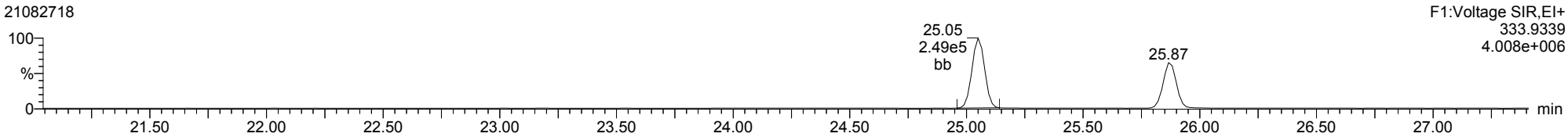
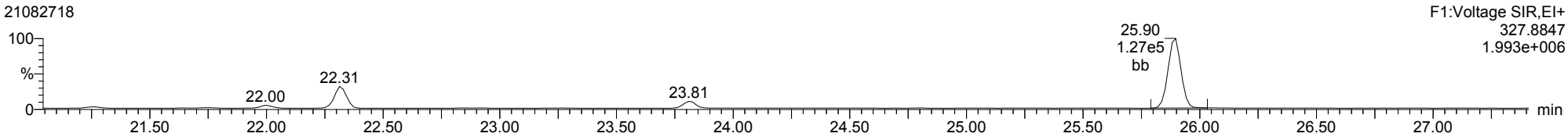


37CL-2378-TCDD



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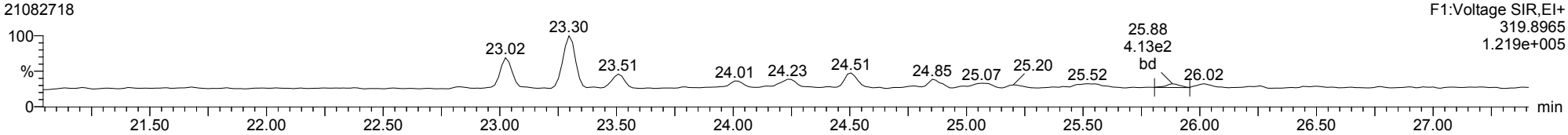

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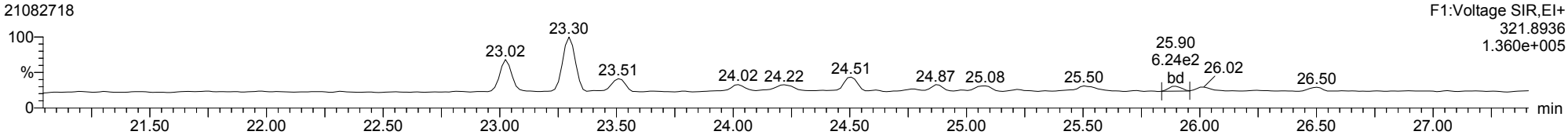

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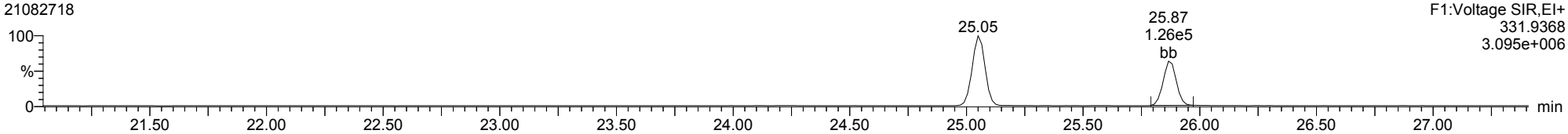

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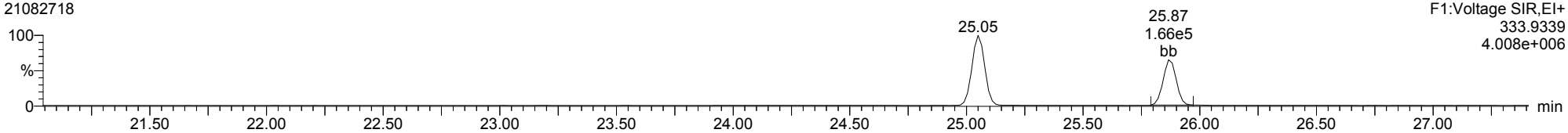

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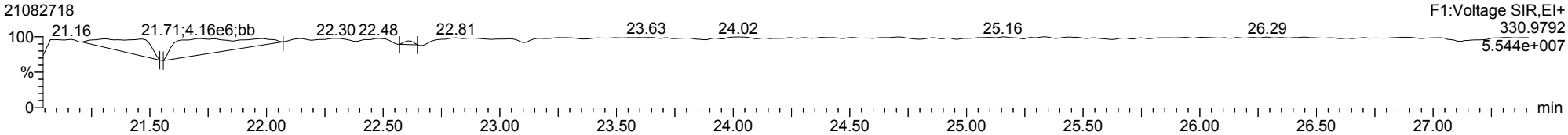

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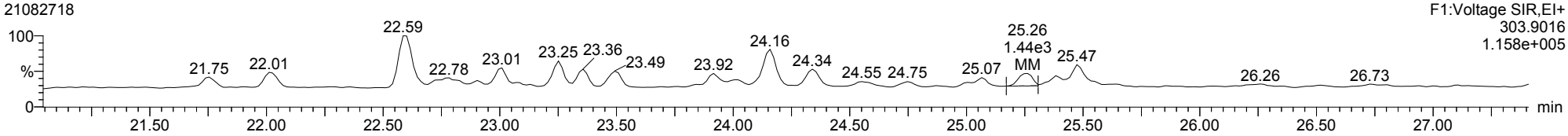
2378-TCDF



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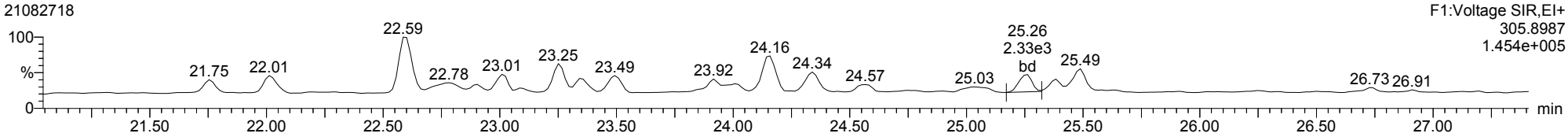

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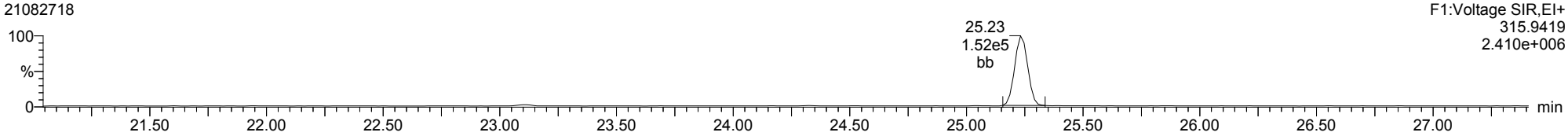

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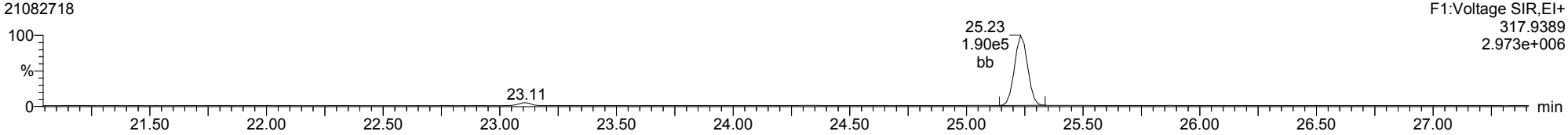

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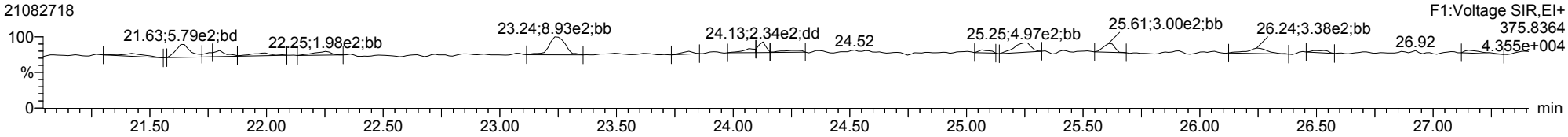

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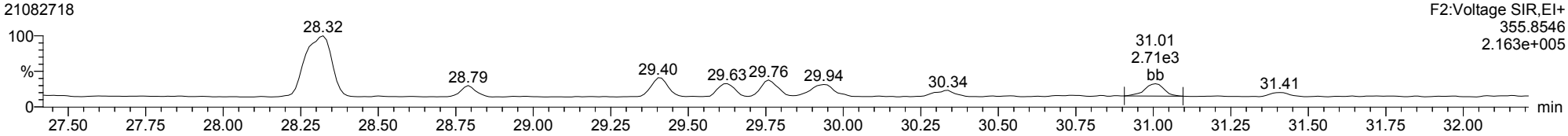
12378-PeCDD



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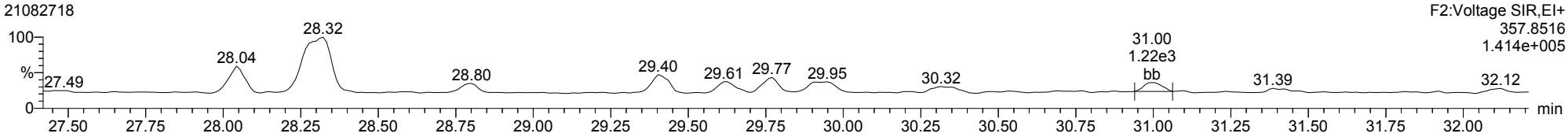

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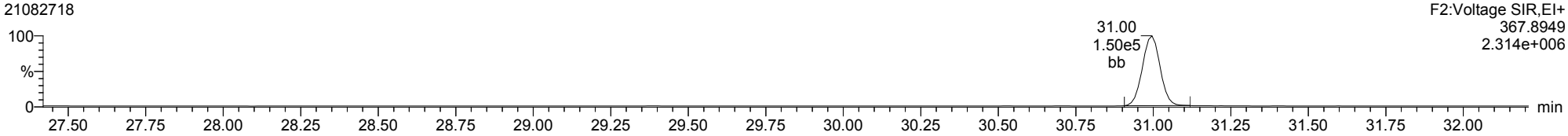

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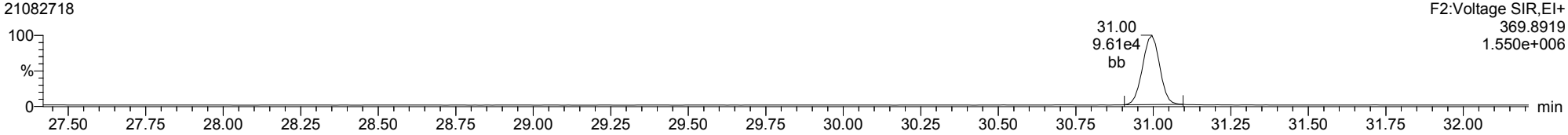

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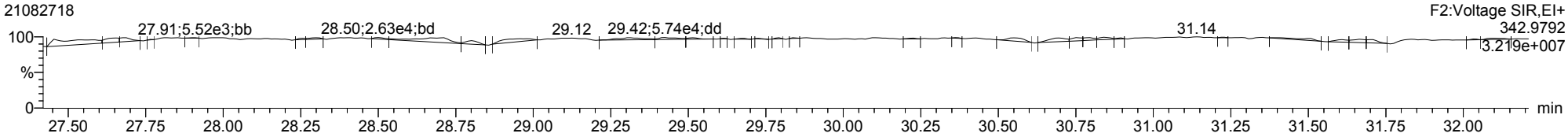

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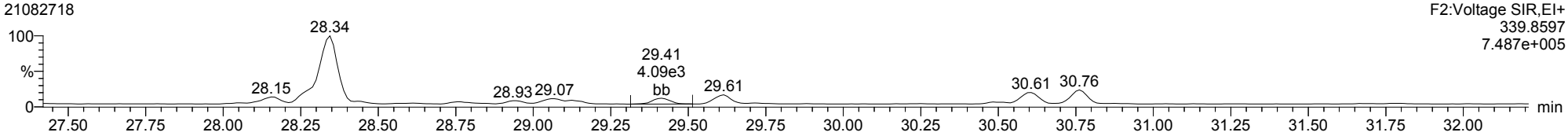

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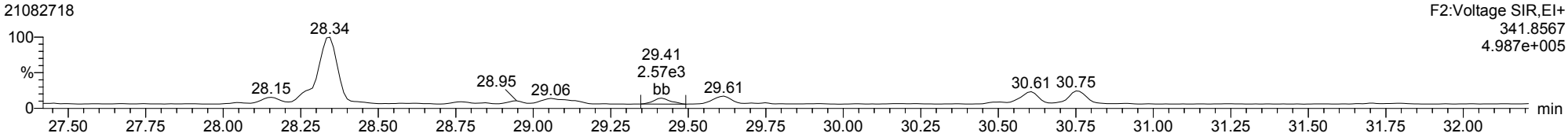

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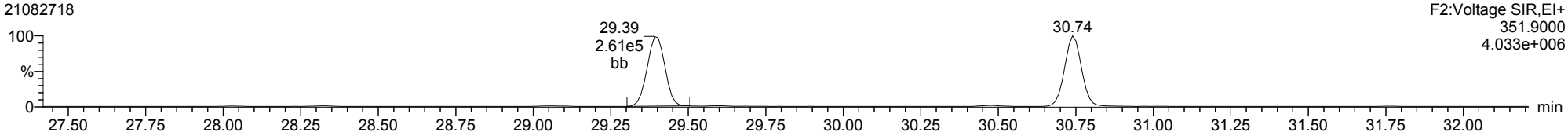

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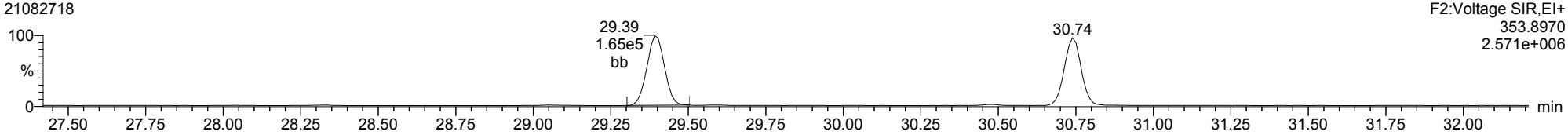

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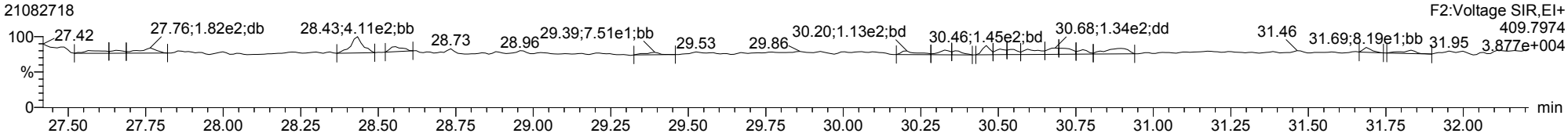

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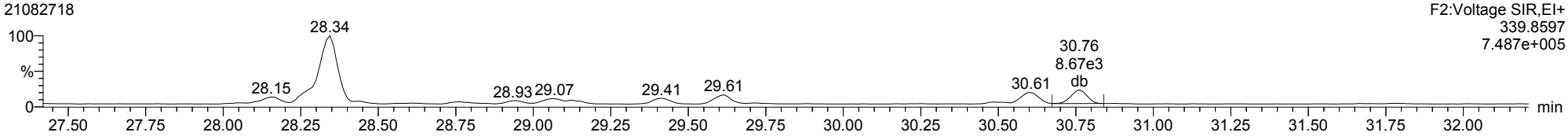
23478-PeCDF



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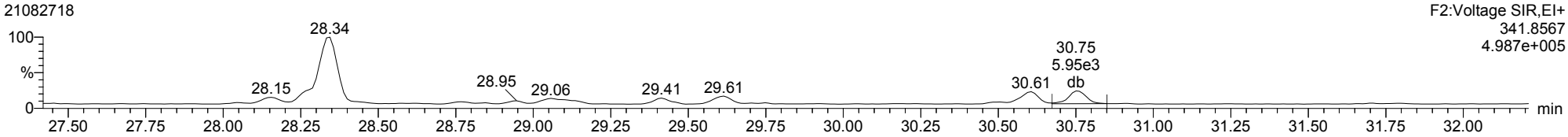

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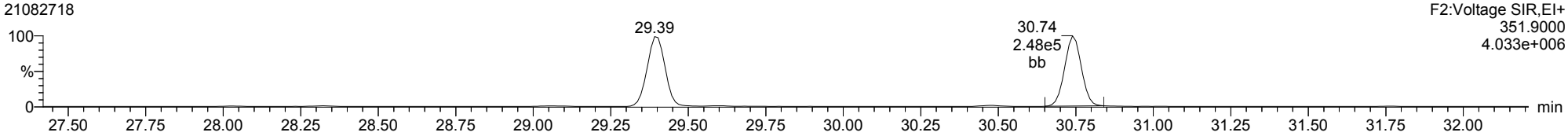

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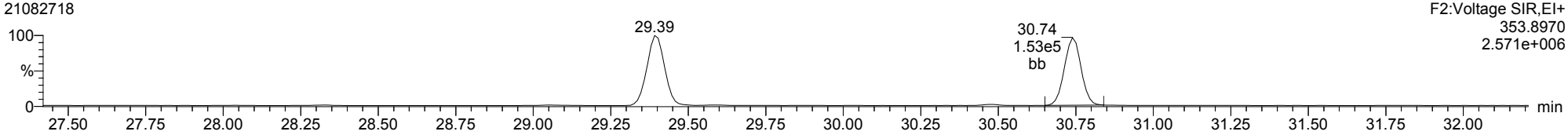

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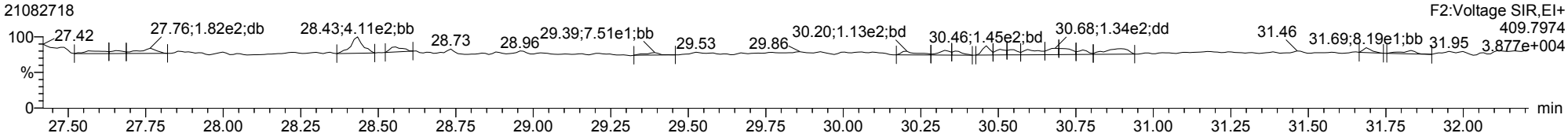

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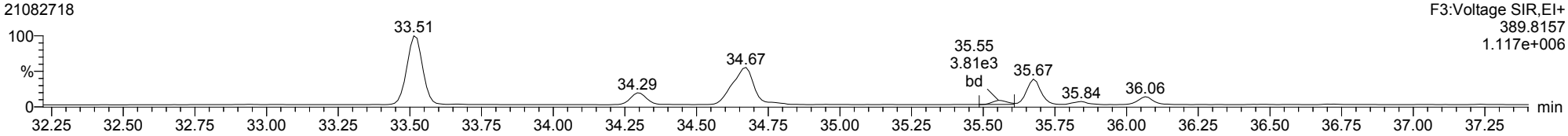
123478-HxCDD



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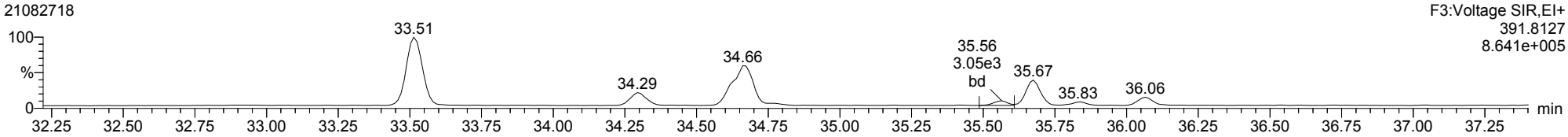

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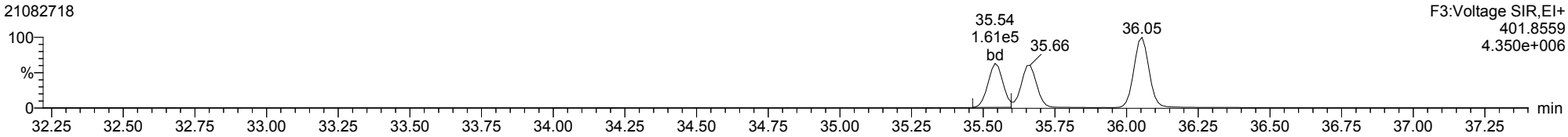

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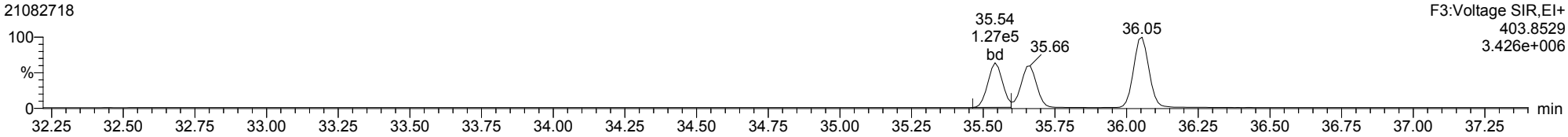

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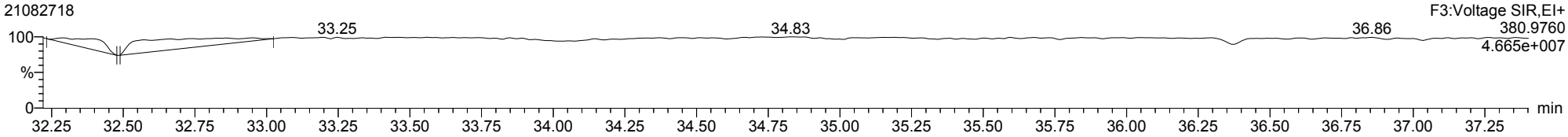

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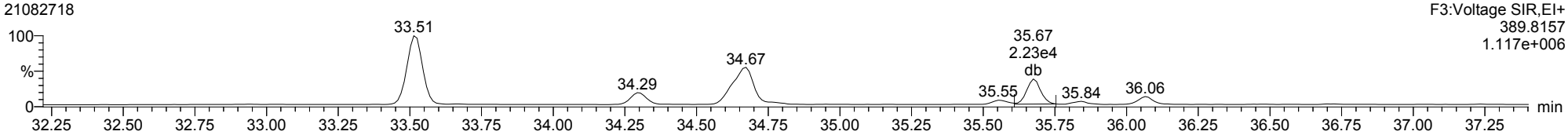

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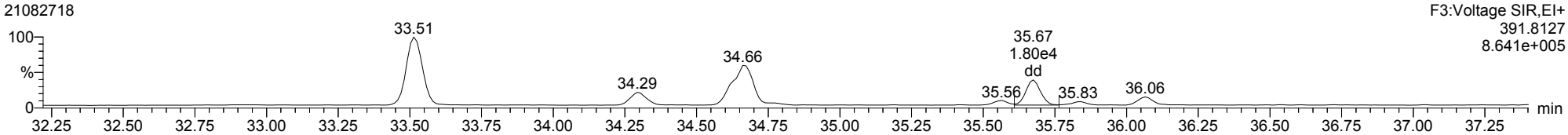

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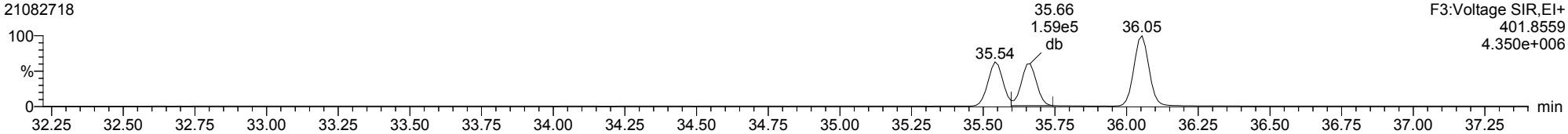

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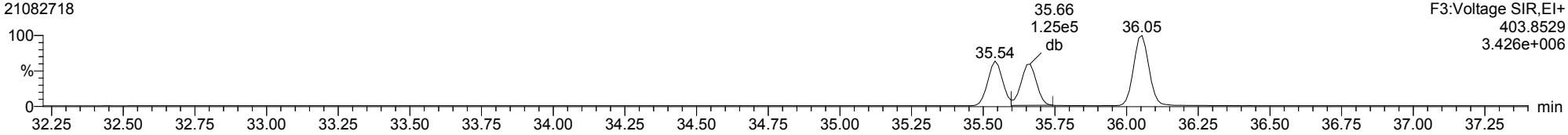

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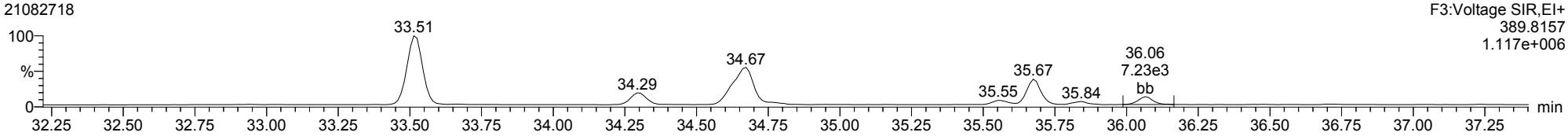

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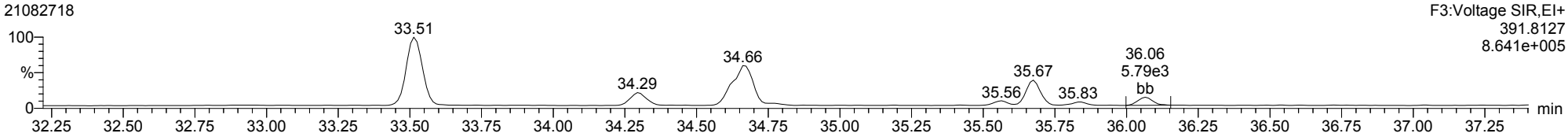

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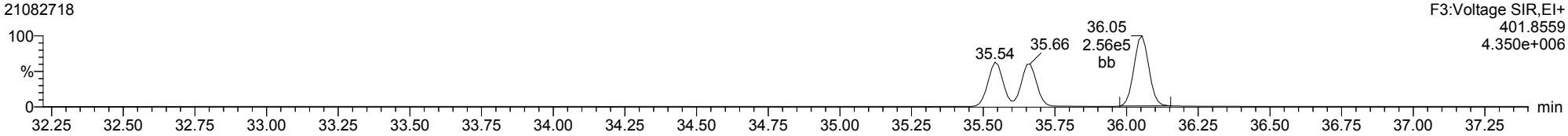

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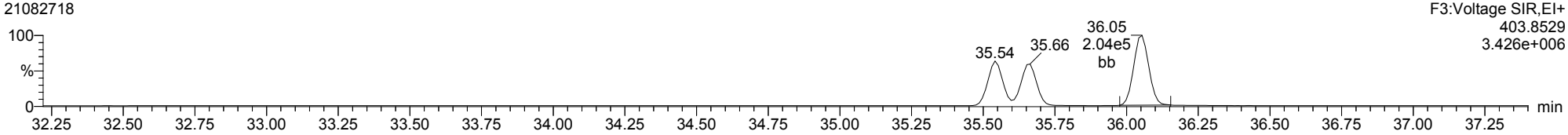

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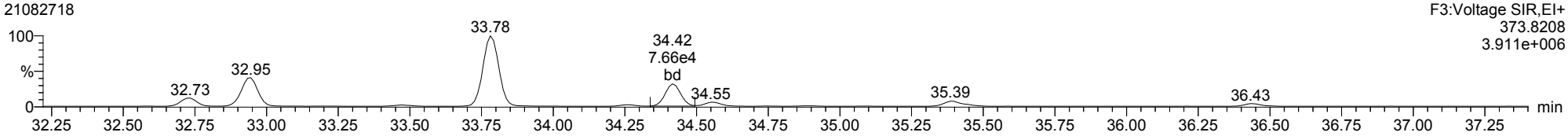

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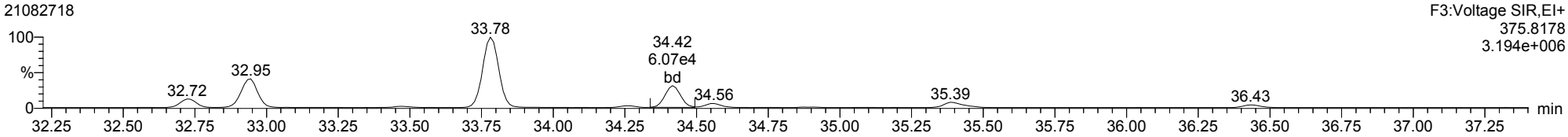

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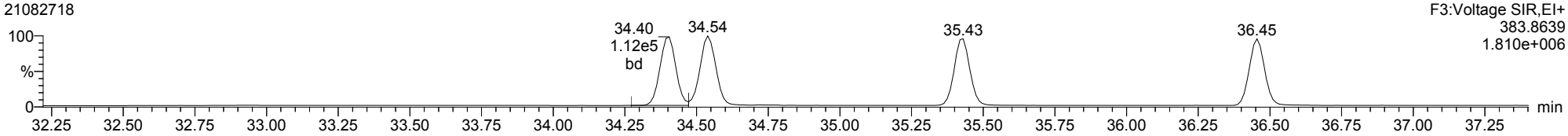

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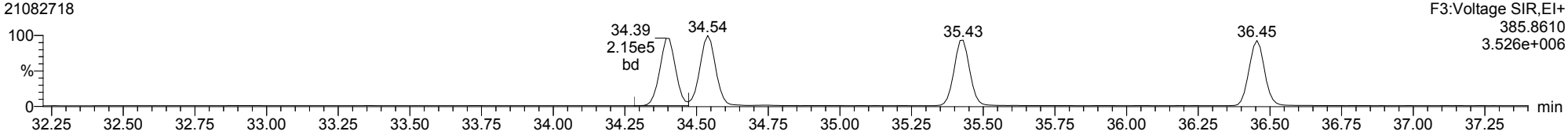

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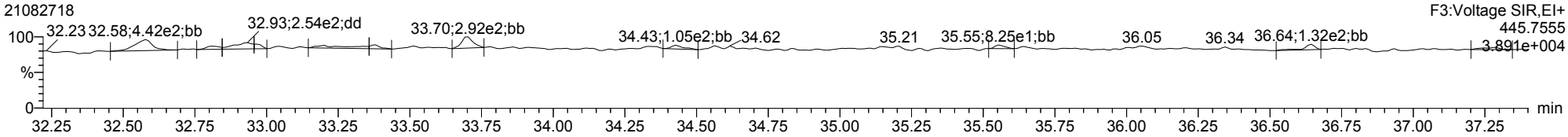

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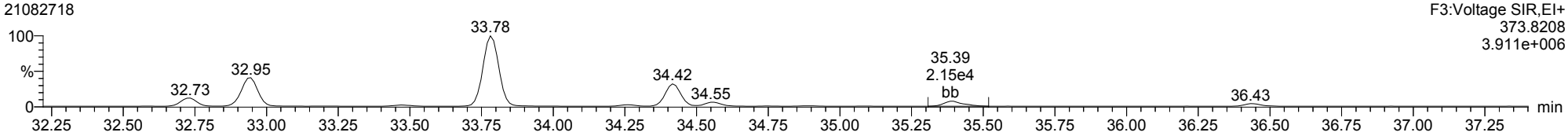

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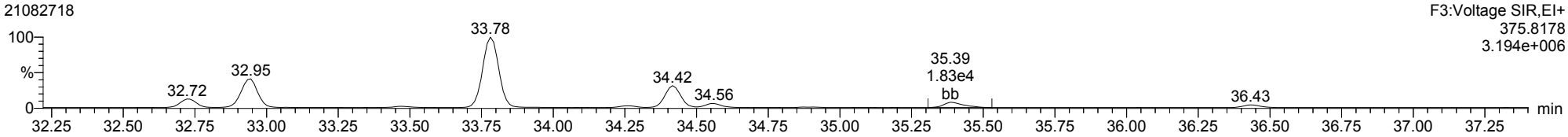

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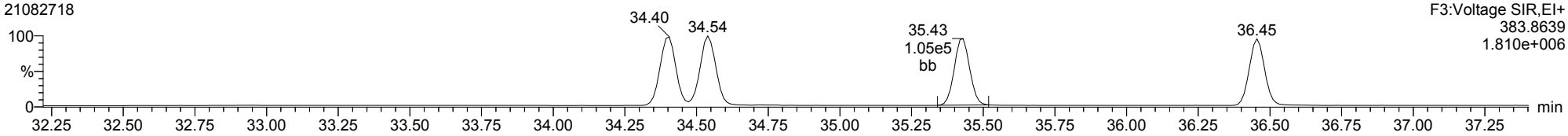

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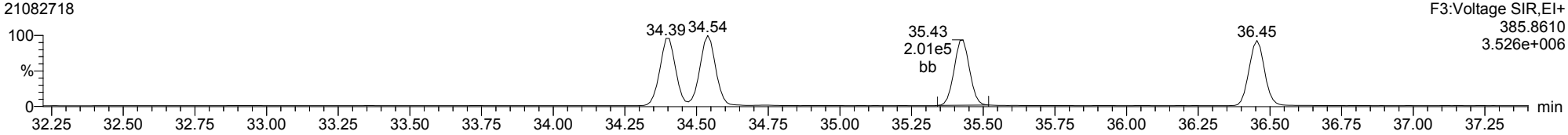

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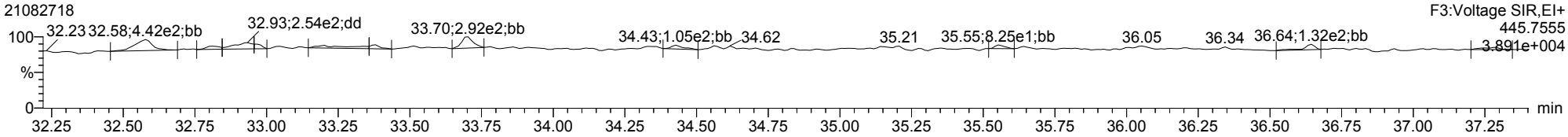

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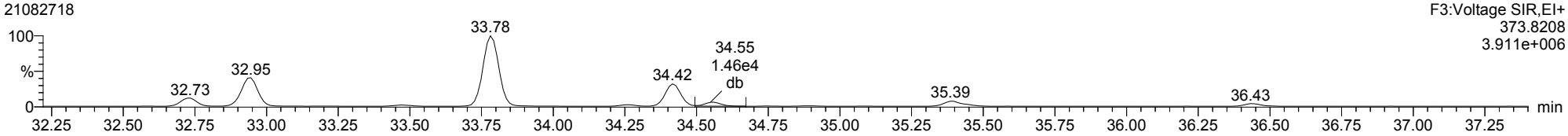

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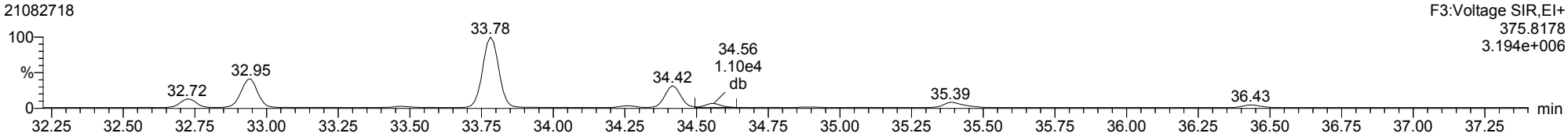

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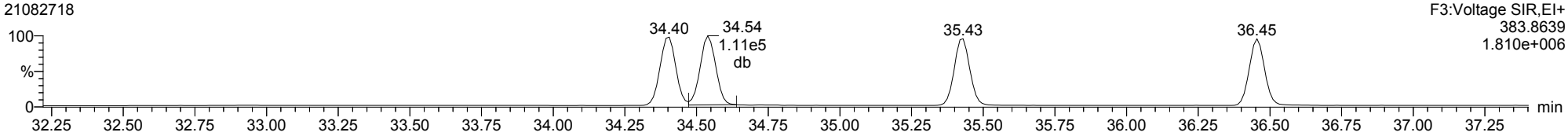

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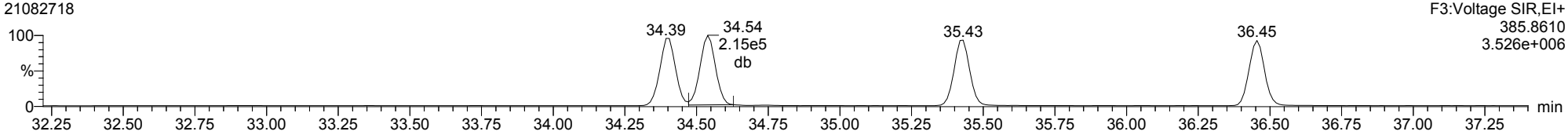

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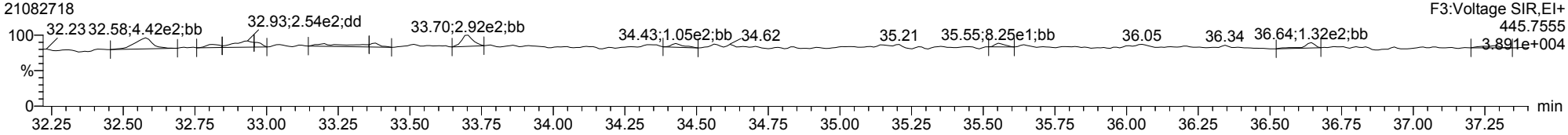

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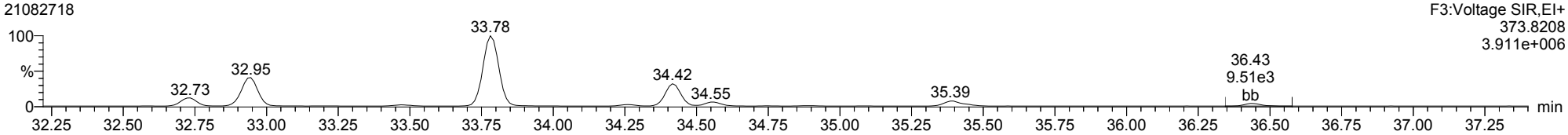

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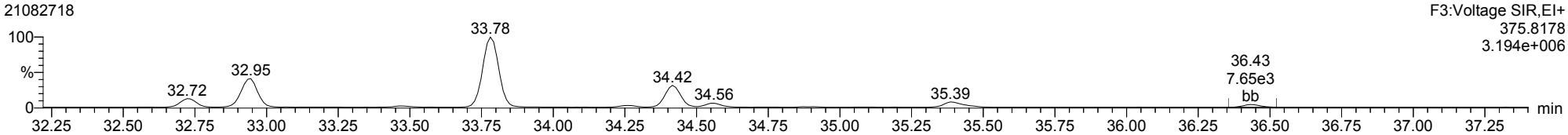

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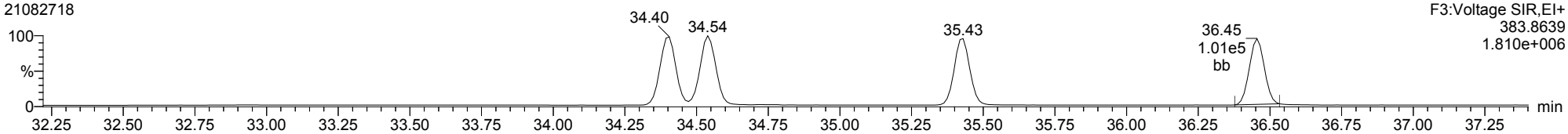

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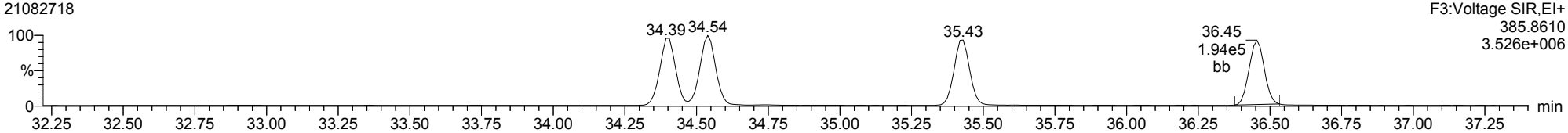

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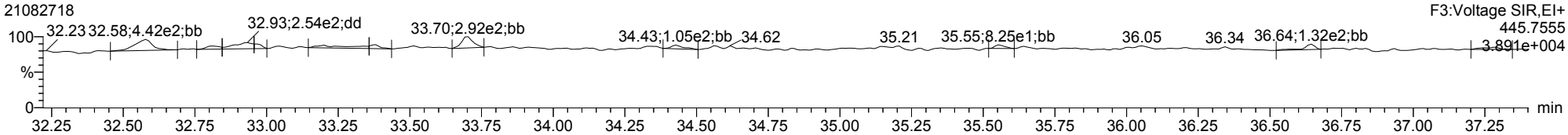

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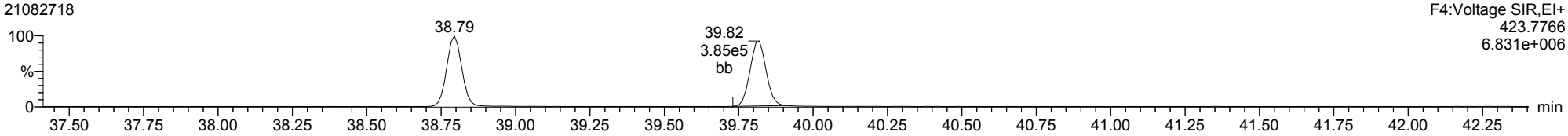

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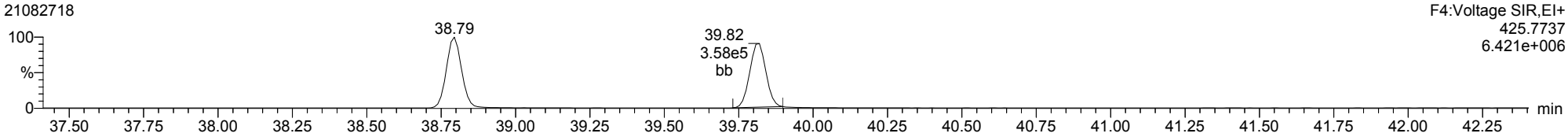

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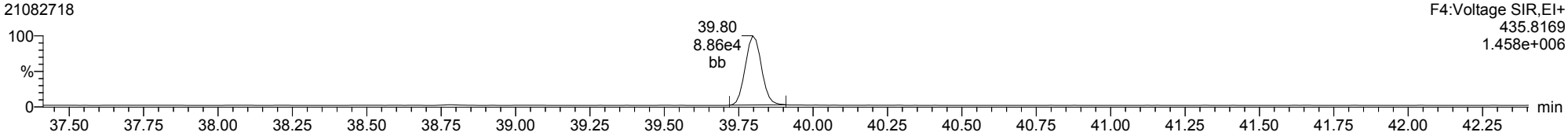

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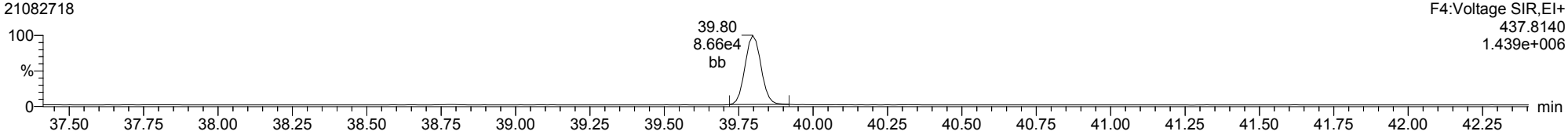

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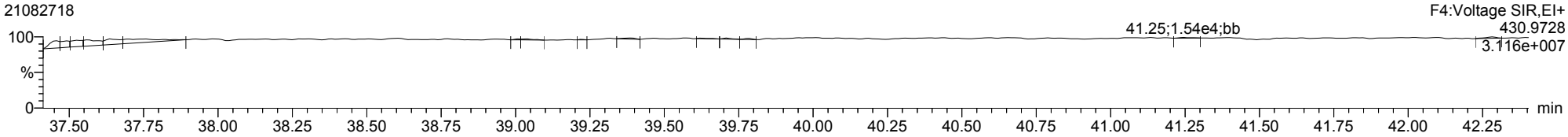

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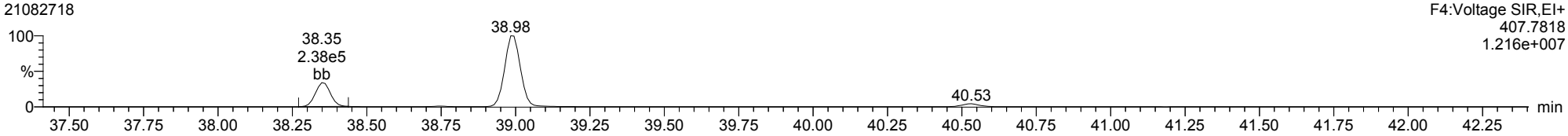

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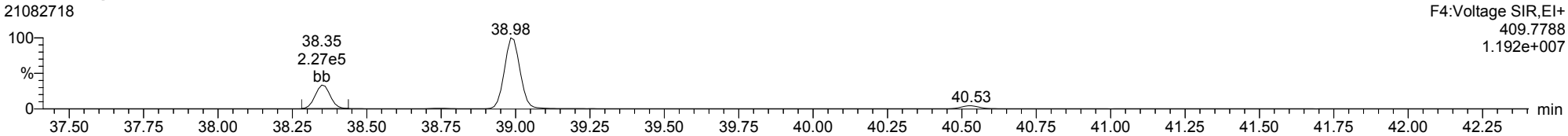

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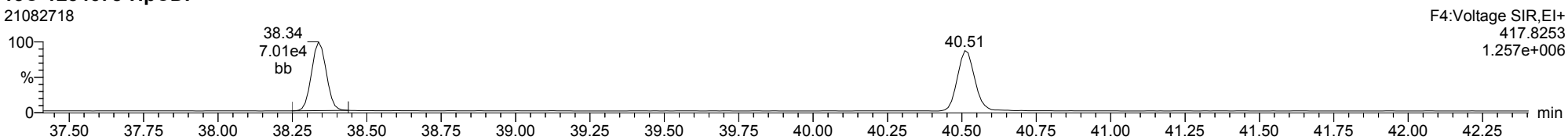

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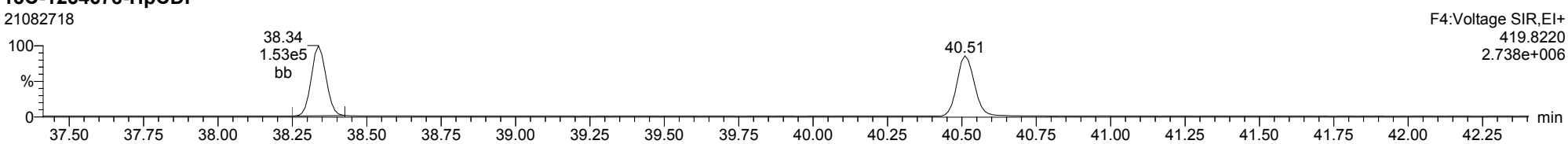

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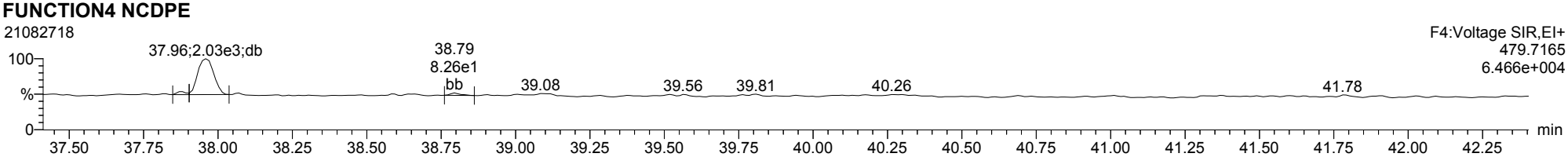

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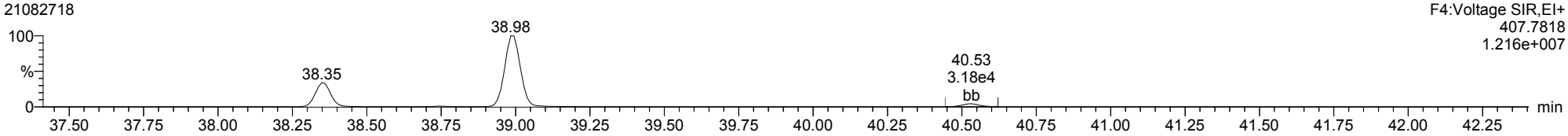

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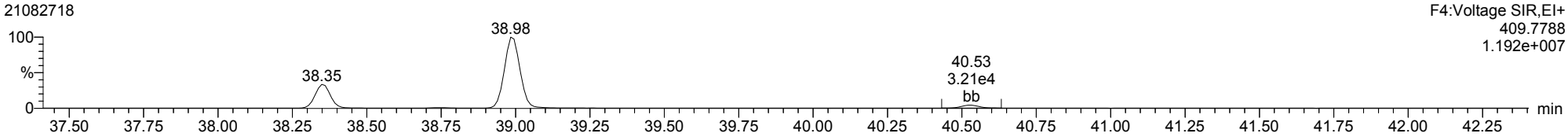

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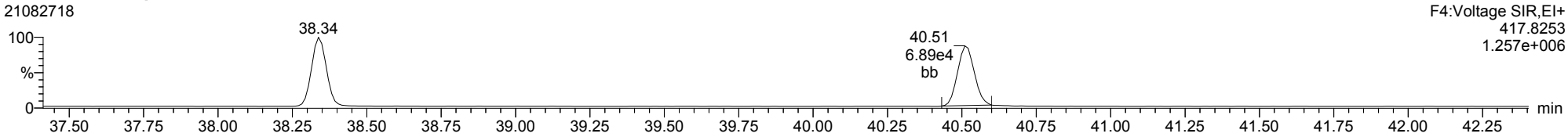

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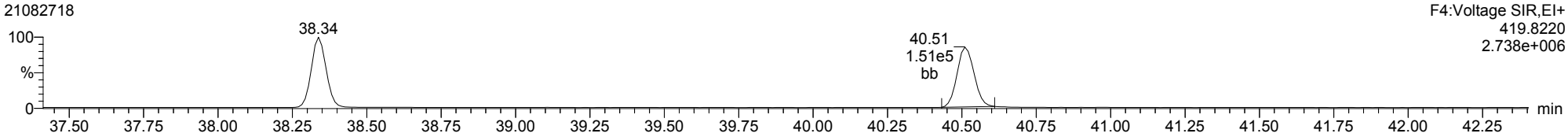

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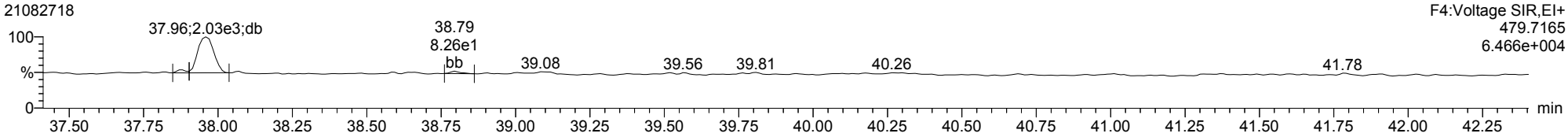

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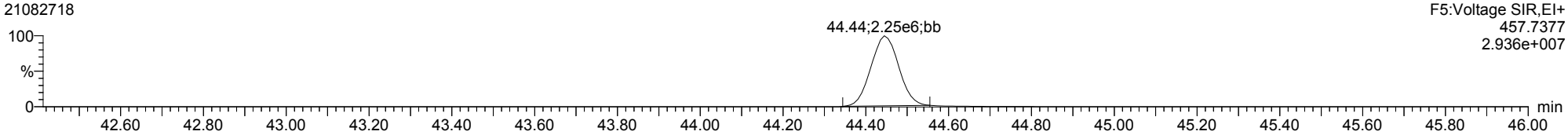

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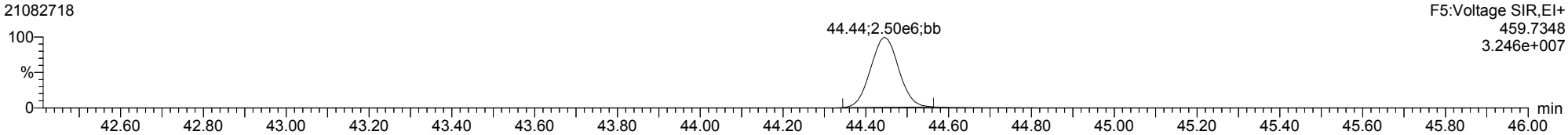

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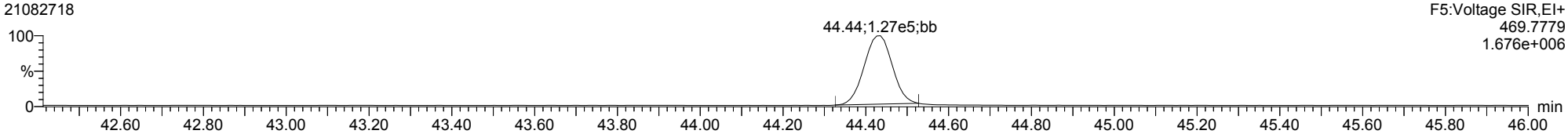

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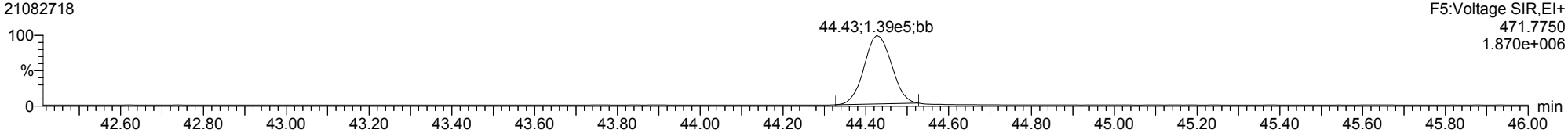
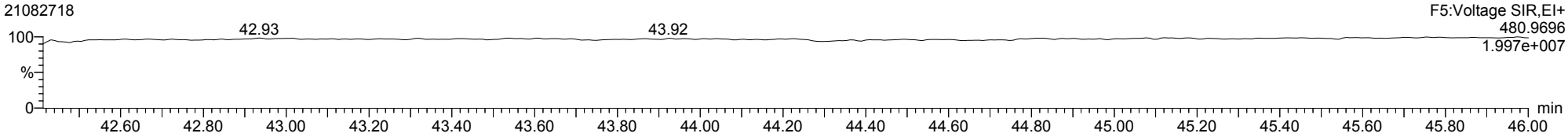


FUNCTION5 PFK



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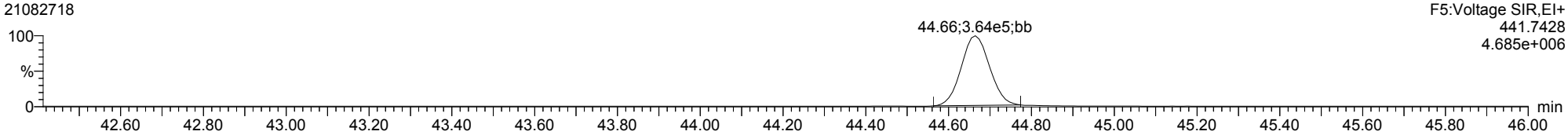

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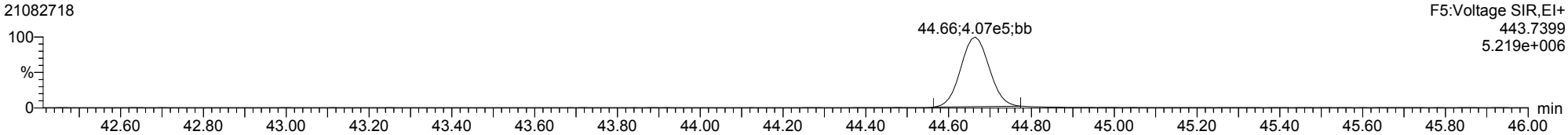

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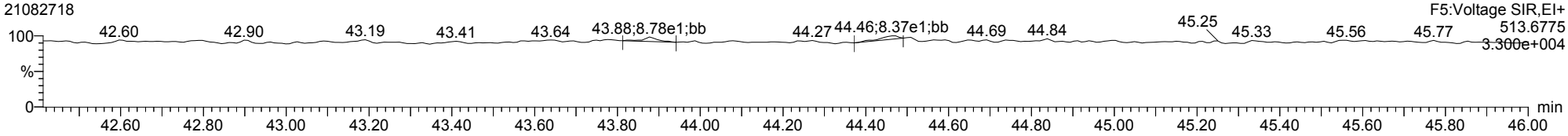

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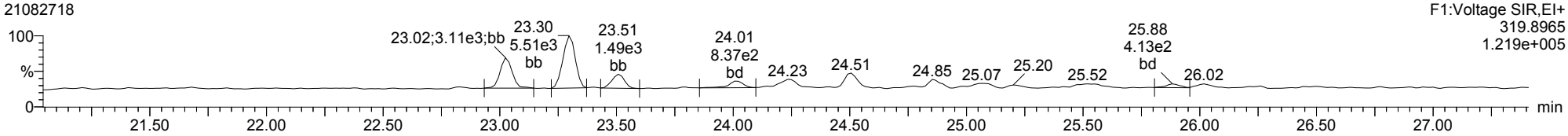

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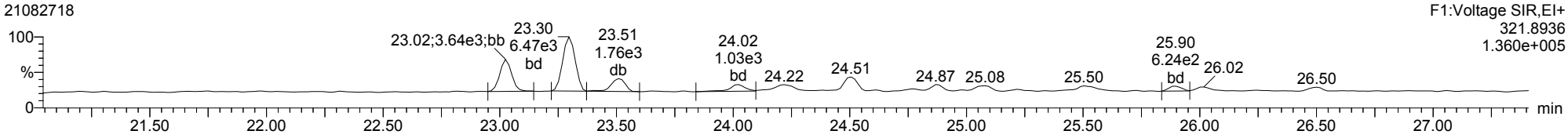

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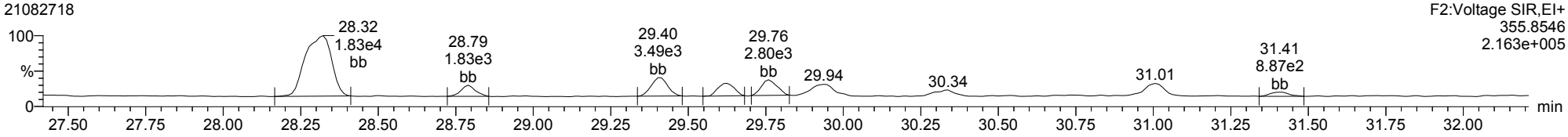

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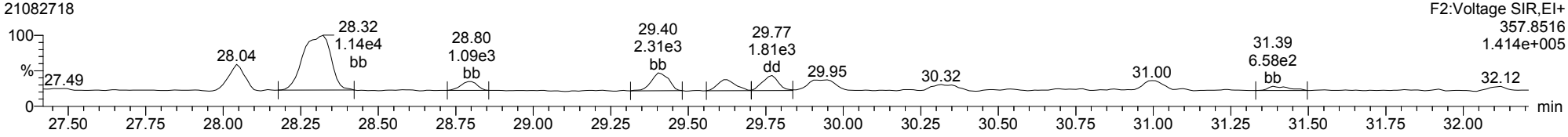

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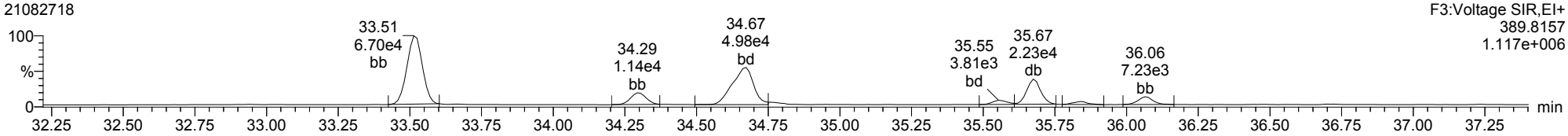

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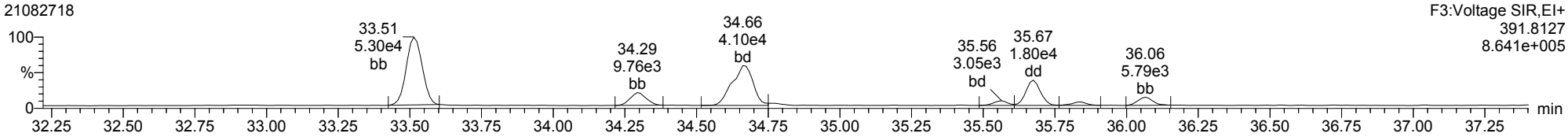

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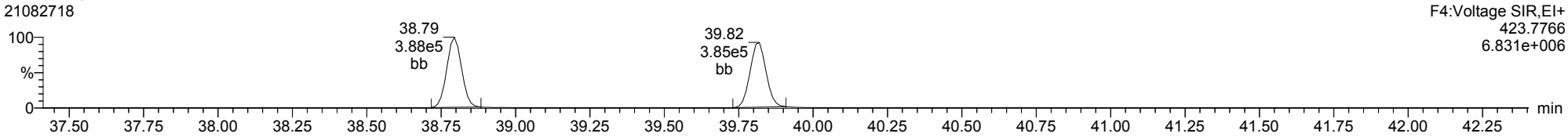

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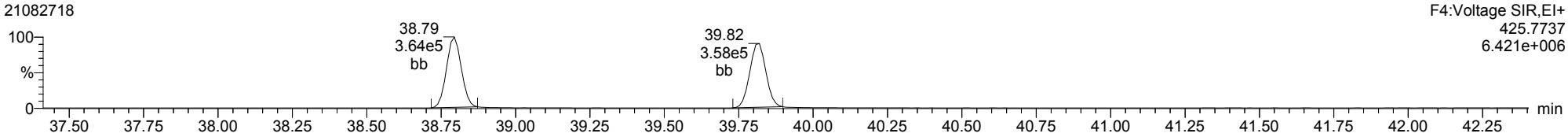

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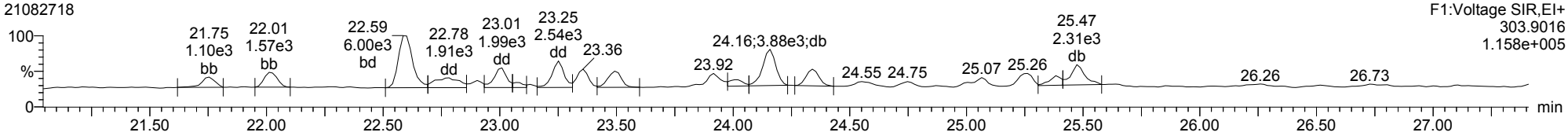
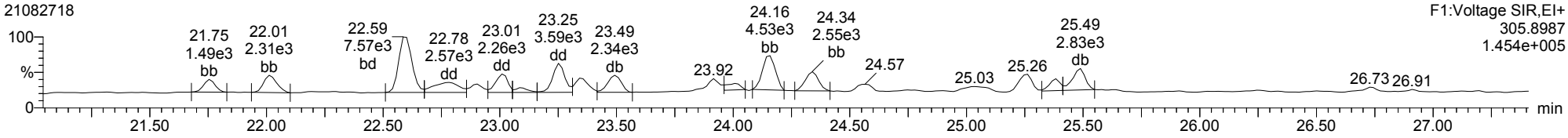
ID: 21G0108-10, Name: 21082718, Date: 27-Aug-2021, Time: 18:47:31, Conditions: AUTOSPEC01, User: pk

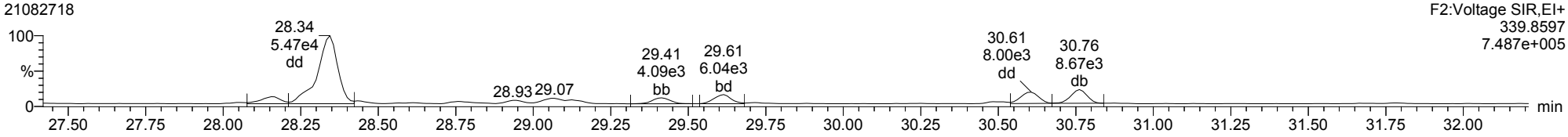
Total-tetrafurans



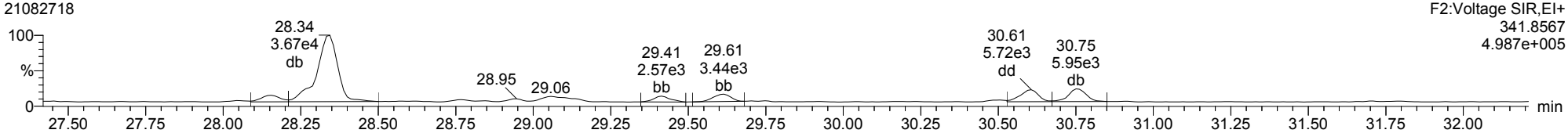
Total-tetrafurans



Total-pentafurans

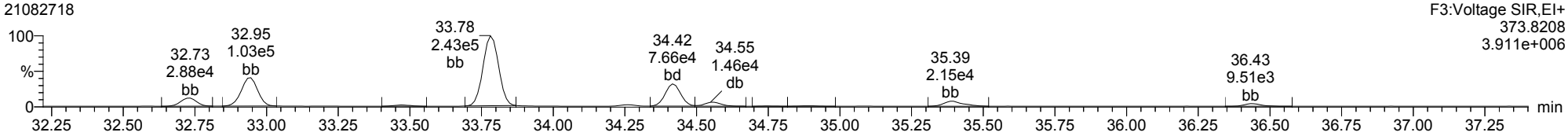


Total-pentafurans



ID: 21G0108-10, Name: 21082718, Date: 27-Aug-2021, Time: 18:47:31, Conditions: AUTOSPEC01, User: pk

Total-hexafurans



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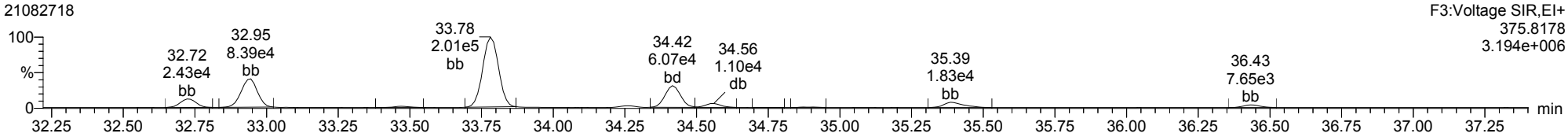

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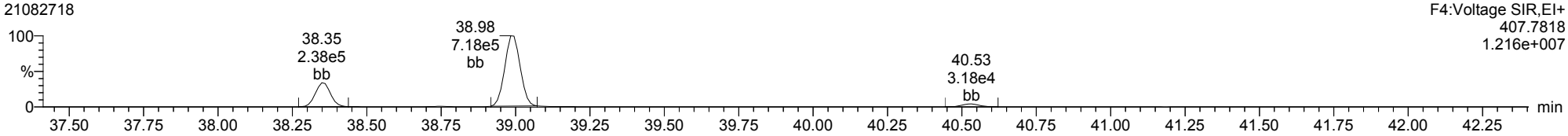
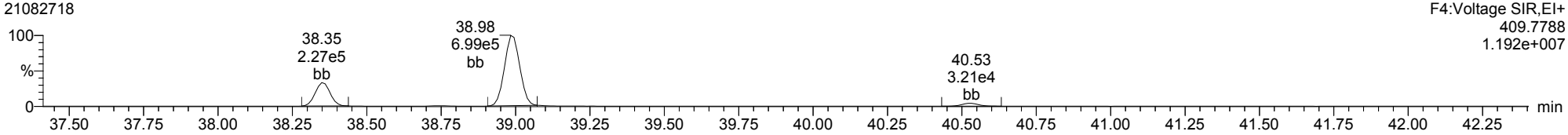


Total-heptafurans



Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT669E

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC				
Project:	Lower Duwamish AOC4				
Matrix:	Sediment	Laboratory ID:	21G0108-11 C	File ID:	21082719
Sampled:	07/08/21 17:02	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 19:36
% Solids:	73.29	Preparation:	EPA 8290	Initial/Final:	13.64 g Wet / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1	0.710	0.655-0.886	0.330	1.00	2.17	ng/kg	X
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.283	1.00	ND	ng/kg	U
57117-41-6	1,2,3,7,8-PeCDF	1	2.212	1.318-1.783	0.229	1.00	0.481	ng/kg	EMPC, J
57117-31-4	2,3,4,7,8-PeCDF	1	1.806	1.318-1.783	0.215	1.00	0.887	ng/kg	EMPC, J
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	0.285	1.00	ND	ng/kg	U
70648-26-9	1,2,3,4,7,8-HxCDF	1	1.037	1.054-1.426	0.269	1.00	0.991	ng/kg	EMPC, J
57117-44-9	1,2,3,6,7,8-HxCDF	1	0.976	1.054-1.426	0.259	1.00	0.982	ng/kg	EMPC, J
60851-34-5	2,3,4,6,7,8-HxCDF	1	1.218	1.054-1.426	0.256	1.00	1.05	ng/kg	
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.285	1.00	ND	ng/kg	U
39227-28-6	1,2,3,4,7,8-HxCDD	1	1.078	1.054-1.426	0.347	1.00	0.742	ng/kg	J
57653-85-7	1,2,3,6,7,8-HxCDD	1	1.348	1.054-1.426	0.343	1.00	4.15	ng/kg	
19408-74-3	1,2,3,7,8,9-HxCDD	1	1.217	1.054-1.426	0.369	1.00	2.57	ng/kg	
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.071	0.893-1.208	0.160	1.00	24.3	ng/kg	
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	1.337	0.893-1.208	0.218	1.00	1.28	ng/kg	EMPC
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.072	0.893-1.208	0.370	2.50	98.1	ng/kg	
39001-02-0	OCDF	1	0.902	0.757-1.024	0.313	2.50	62.0	ng/kg	
3268-87-9	OCDD	1	0.911	0.757-1.024	0.470	10.0	596	ng/kg	B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			1.00	16.5	ng/kg
41903-57-5	Total TCDD	1	0.000			1.00	4.55	ng/kg
30402-15-4	Total PeCDF	1	0.000			1.00	22.0	ng/kg
36088-22-9	Total PeCDD	1	0.000			1.00	3.35	ng/kg
55684-94-1	Total HxCDF	1	0.000			1.00	27.7	ng/kg
34465-46-8	Total HxCDD	1	0.000			1.00	41.3	ng/kg
38998-75-3	Total HpCDF	1	0.000			1.00	65.8	ng/kg
37871-00-4	Total HpCDD	1	0.000			1.00	202	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 2.98
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 3.28

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT669E

Form 2
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Sediment	Laboratory ID:	21G0108-11	File ID:	21082719
Sampled:	07/08/21 17:02	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 19:36
Solids Wt%:	73.29	Preparation:	EPA 8290	Initial/Final:	13.64 g / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.812	0.655-0.886	0.200	60.2	24 - 169 %	
13C12-2,3,7,8-TCDD		0.759	0.655-0.886	0.202	66.0	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.614	1.318-1.783	0.136	77.3	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.576	1.318-1.783	0.142	75.8	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.598	1.318-1.783	0.214	79.3	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.522	0.434-0.587	0.140	59.1	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.523	0.434-0.587	0.129	54.8	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.520	0.434-0.587	0.143	58.1	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.521	0.434-0.587	0.172	62.2	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.263	1.054-1.426	0.241	67.2	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.234	1.054-1.426	0.222	61.6	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.464	0.374-0.506	0.264	63.6	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.458	0.374-0.506	0.322	67.9	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.059	0.893-1.208	0.200	69.5	23 - 140 %	
13C12-OCDD		0.932	0.757-1.024	0.408	79.4	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.065	72.4	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:43:54 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: 21G0108-11, Name: 21082719, Date: 27-Aug-2021, Time: 19:36:37, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.247	1.001	2.070e3	2.914e3	1.108	0.710	0.770	2255	1668	2.96e4	4.42e4	13.1	26.5	NO	bd	bd	1.083
12378-PeCDF	29.403	1.000	8.146e2	3.682e2	1.015	2.212	1.550	1313	1639	1.35e4	5.80e3	10.3	3.5	YES	bb	MM	0.240
23478-PeCDF	30.763	1.001	1.457e3	8.067e2	1.126	1.806	1.550	1313	1639	2.04e4	1.22e4	15.5	7.5	YES	db	bb	0.443
123478-HxCDF	34.417	1.000	9.837e2	9.489e2	1.017	1.037	1.240	1822	907	1.57e4	1.29e4	8.6	14.2	YES	bb	bd	0.495
234678-HxCDF	35.442	1.000	1.123e3	9.215e2	1.052	1.218	1.240	1822	907	1.84e4	1.79e4	10.1	19.7	NO	db	MM	0.527
123678-HxCDF	34.562	1.001	9.668e2	9.906e2	1.037	0.976	1.240	1822	907	1.75e4	1.38e4	9.6	15.3	YES	bb	db	0.491
123789-HxCDF					1.030		1.240	1822	907								
1234678-HpCDF	38.350	1.000	2.566e4	2.397e4	1.327	1.071	1.050	864	994	4.43e5	4.20e5	513.3	423.0	NO	bb	bb	12.153
1234789-HpCDF	40.534	1.000	1.261e3	9.434e2	1.283	1.337	1.050	864	994	2.23e4	1.63e4	25.8	16.4	YES	bb	bb	0.640
OCDF	44.675	1.005	4.443e4	4.924e4	1.447	0.902	0.890	870	1146	5.50e5	6.14e5	631.9	535.9	NO	bb	bb	31.002
2378-TCDD					0.920		0.770	1278	1083								
12378-PeCDD					0.995		1.550	928	1141								
123478-HxCDD	35.553	1.000	6.658e2	6.175e2	1.027	1.078	1.240	811	2416	9.15e3	1.15e4	11.3	4.8	NO	bd	bd	0.371
123678-HxCDD	35.676	1.000	4.027e3	2.987e3	1.009	1.348	1.240	811	2416	7.03e4	4.34e4	86.7	17.9	NO	dd	dd	2.075
123789-HxCDD	36.066	1.011	2.253e3	1.852e3	0.950	1.217	1.240	811	2416	4.04e4	2.83e4	49.9	11.7	NO	bb	bb	1.286
1234678-HpCDD	39.820	1.001	6.219e4	5.799e4	1.068	1.072	1.050	1214	1221	1.02e6	9.32e5	844.0	763.4	NO	bb	bb	49.014
OCDD	44.455	1.000	3.499e5	3.841e5	1.181	0.911	0.890	1082	1389	4.52e6	4.92e6	4175.0	3543.5	NO	bb	bb	297.680
13C-2378-TCDF	25.232	1.007	1.861e5	2.293e5	1.427	0.812	0.770	2246	1421	2.89e6	3.57e6	1286.2	2511.3	NO	bb	bb	60.161
13C-12378-PeCDF	29.392	1.173	2.995e5	1.856e5	1.297	1.614	1.550	1152	1110	4.71e6	2.90e6	4090.8	2613.0	NO	bb	bb	77.266
13C-23478-PeCDF	30.740	1.227	2.776e5	1.762e5	1.236	1.576	1.550	1152	1110	4.48e6	2.82e6	3892.5	2544.0	NO	bb	bb	75.817
13C-123478-HxCDF	34.406	0.954	1.315e5	2.521e5	1.242	0.522	0.510	1098	1415	2.05e6	3.89e6	1867.8	2749.4	NO	bd	bd	59.123
13C-123678-HxCDF	34.539	0.958	1.321e5	2.527e5	1.343	0.523	0.510	1098	1415	2.09e6	4.03e6	1904.2	2845.8	NO	db	db	54.838
13C-234678-HxCDF	35.431	0.983	1.262e5	2.425e5	1.215	0.520	0.510	1098	1415	2.08e6	3.99e6	1894.6	2817.0	NO	bb	bb	58.113
13C-123789-HxCDF	36.456	1.011	1.121e5	2.154e5	1.008	0.521	0.510	1098	1415	1.91e6	3.68e6	1740.5	2601.9	NO	bb	bb	62.249
13C-1234678-HpCDF	38.339	1.063	9.755e4	2.101e5	0.926	0.464	0.440	1937	1603	1.67e6	3.65e6	862.0	2278.5	NO	bb	bb	63.593
13C-1234789-HpCDF	40.522	1.124	8.432e4	1.843e5	0.758	0.458	0.440	1937	1603	1.25e6	2.80e6	645.1	1747.8	NO	bb	bb	67.860
13C-1234-TCDD	25.050	0.000	2.081e5	2.758e5	1.000	0.754	0.770	1702	1197	3.32e6	4.39e6	1950.8	3672.7	NO	bb	bb	100.000
13C-2378-TCDD	25.867	1.033	1.539e5	2.027e5	1.116	0.759	0.770	1702	1197	2.35e6	3.15e6	1379.0	2636.1	NO	bb	bb	65.994
13C-12378-PeCDD	30.997	1.237	1.728e5	1.081e5	0.732	1.598	1.550	1063	955	2.69e6	1.69e6	2533.5	1773.5	NO	bb	bb	79.284
13C-123478-HxCDD	35.542	0.986	1.880e5	1.488e5	0.960	1.263	1.240	1480	1876	3.04e6	2.45e6	2050.7	1304.9	NO	bd	bd	67.186
13C-123678-HxCDD	35.665	0.989	1.851e5	1.500e5	1.041	1.234	1.240	1480	1876	3.09e6	2.45e6	2088.0	1303.8	NO	db	db	61.602
13C-1234678-HpCDD	39.798	1.104	1.181e5	1.115e5	0.632	1.059	1.050	809	1023	1.90e6	1.81e6	2349.0	1769.7	NO	bb	bb	69.503
13C-OCDD	44.437	1.232	2.014e5	2.162e5	0.504	0.932	0.890	1076	1906	2.58e6	2.78e6	2397.7	1456.3	NO	bb	bb	158.752
13C-123789-HxCDD	36.055	0.000	2.887e5	2.336e5	1.000	1.236	1.240	1480	1876	4.81e6	3.91e6	3249.9	2086.6	NO	bb	bb	100.000
37CL-2378-TCDD	25.897	1.034	1.520e5		1.084			900		2.30e6		2554.9			bb		28.980

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
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ID: 21G0108-11, Name: 21082719, Date: 27-Aug-2021, Time: 19:36:37, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	21.754	0.862	7.305e2	6.884e2	1.425	1.061	0.770	2255	1668	8.89e3	7.80e3	3.9	4.7	YES	bb	bb	0.240
1289-TCDF					1.043		0.770	2255	1668								
13468-PECDF	26.683	0.908	2.286e4	1.488e4	1.376	1.536	1.550	891	904	3.44e5	2.39e5	386.1	264.0	NO	bb	bb	5.654
12389-PECDF	31.676	1.078	6.297e2	2.785e2	1.000	2.261	1.550	1313	1639	1.01e4	6.31e3	7.7	3.8	YES	bb	bb	0.187
123468-HXCDF	32.723	0.951	3.146e3	2.673e3	1.087	1.177	1.240	1822	907	5.45e4	4.07e4	29.9	44.8	NO	bb	bb	1.396
1368-TCDD	23.024	0.890	1.327e3	1.686e3	0.923	0.787	0.770	1278	1083	2.07e4	2.79e4	16.2	25.7	NO	bb	bb	0.915
1289-TCDD					0.794		0.770	1278	1083								
12479-PECDD	28.323	0.914	5.419e3	1.502e3	1.843	3.607	1.550	928	1141	6.25e4	3.31e4	67.4	29.0	YES	bb	db	1.337
12389-PECDD	31.409	1.013	3.655e2	1.369e2	1.154	2.670	1.550	928	1141	5.97e3	2.45e3	6.4	2.1	YES	bb	bb	0.155
124679-HXCDD	33.514	0.943	1.801e4	1.452e4	1.125	1.240	1.240	811	2416	2.82e5	2.36e5	347.3	97.8	NO	bb	bb	8.584
1234679-HPCDD	38.796	0.975	7.545e4	6.867e4	1.211	1.099	1.050	1214	1221	1.30e6	1.23e6	1074.1	1006.0	NO	bb	bb	51.844
Total-tetrafurans			1.719e4		1.192			2255		2.64e5							8.253
Total-penta1			2.286e4					891		3.44e5							5.654
Total-pentafurans			1.632e4		1.047			1313		2.33e5							5.361
Total-hexafurans			2.892e4		1.045			1822		4.45e5							13.834
Total-heptafurans			6.496e4		1.305			864		1.09e6							32.865
Total-Furans			1.947e5		1.158			2255		2.93e6							96.969
Total-tetradioxins			3.217e3		0.879			1278		5.23e4							2.275
Total-pentadioxins			3.785e3		1.331			928		5.30e4							1.677
Total-hexadioxins			4.094e4		1.028			811		5.98e5							20.630
Total-heptadioxins			1.376e5		1.140			1214		2.33e6							100.859
Total-Dioxins			5.355e5		1.092			1278		7.55e6							423.120
Total-TEQ			7.302e5					1278		1.05e7							520.089
FUNCTION1 PFK			1.833e7					565439		8.93e7							
FUNCTION2 PFK			1.067e5					362312		2.46e6							0.000
FUNCTION3 PFK			3.625e6					457262		4.97e7							0.000
FUNCTION4 PFK			1.383e5					298440		2.93e6							
FUNCTION5 PFK			5.709e5					165041		1.07e7							
FUNCTION1 HXCD...			6.762e3					1181		1.05e5							0.000
FUNCTION1 HPCD...			1.844e3					665		2.97e4							0.000
FUNCTION2 HPCD...			1.123e3					899		2.03e4							0.000
FUNCTION3 OCDPE			6.301e2					877		1.38e4							0.000
FUNCTION4 NCDPE			1.547e3					810		2.77e4							0.000
FUNCTION5 DCDPE			0.000e0					840		0.00e0							

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

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TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.32	1.019e3	1.260e3	1.192	0.81	0.77	6.7	YES	NO	bb	db	0.460
2	Total-tetrafurans	24.16	2.888e3	3.874e3	1.192	0.75	0.77	20.1	YES	NO	bb	dd	1.366
3	Total-tetrafurans	23.36	2.995e2	4.367e2	1.192	0.69	0.77	3.0	NO	NO	db	dd	0.149
4	Total-tetrafurans	23.25	3.574e3	4.968e3	1.192	0.72	0.77	24.1	YES	NO	bd	dd	1.725
5	Total-tetrafurans	22.59	4.443e3	5.973e3	1.192	0.74	0.77	30.8	YES	NO	bb	bd	2.104
6	Total-tetrafurans	26.29	4.085e2	5.500e2	1.192	0.74	0.77	2.3	NO	NO	bb	bb	0.194
7	Total-tetrafurans	25.62	9.877e2	1.217e3	1.192	0.81	0.77	7.4	YES	NO	db	dd	0.445
8	Total-tetrafurans	25.49	1.006e3	1.420e3	1.192	0.71	0.77	5.9	YES	NO	dd	dd	0.490
9	Total-tetrafurans	25.40	4.945e2	6.755e2	1.192	0.73	0.77	3.9	YES	NO	dd	dd	0.236
10	2378-TCDF	25.25	2.070e3	2.914e3	1.108	0.71	0.77	13.1	YES	NO	bd	bd	1.083

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.68	2.286e4	1.488e4	1.376	1.54	1.55	386.1	YES	NO	bb	bb	5.654

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentafurans	28.28	3.581e3	2.198e3	1.047	1.63	1.55	45.4	YES	NO	dd	dd	1.176
2	Total-pentafurans	28.16	1.345e3	8.260e2	1.047	1.63	1.55	14.4	YES	NO	dd	dd	0.442
3	Total-pentafurans	29.60	1.258e3	8.868e2	1.047	1.42	1.55	11.7	YES	NO	bd	bb	0.437
4	Total-pentafurans	28.34	7.310e3	4.354e3	1.047	1.68	1.55	77.1	YES	NO	dd	dd	2.374
5	Total-pentafurans	29.06	2.826e3	1.753e3	1.047	1.61	1.55	29.0	YES	NO	MM	dd	0.932

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	234678-HxCDF	35.44	1.123e3	9.215e2	1.052	1.22	1.24	10.1	YES	NO	db	MM	0.527
2	Total-hexafurans	33.78	1.266e4	1.099e4	1.045	1.15	1.24	105.6	YES	NO	bb	bb	6.183
3	Total-hexafurans	33.47	4.460e2	3.784e2	1.045	1.18	1.24	5.4	YES	NO	bb	bb	0.216
4	Total-hexafurans	32.95	1.154e4	9.545e3	1.045	1.21	1.24	93.3	YES	NO	bb	bb	5.513
5	123468-HXCDF	32.72	3.146e3	2.673e3	1.087	1.18	1.24	29.9	YES	NO	bb	bb	1.396

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HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-heptafurans	39.00	3.930e4	3.860e4	1.305	1.02	1.05	750.2	YES	NO	bb	bb	20.712
2	1234678-HpCDF	38.35	2.566e4	2.397e4	1.327	1.07	1.05	513.3	YES	NO	bb	bb	12.153

Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.32	1.019e3	1.260e3	1.192	0.81	0.77	6.7	YES	NO	bb	db	0.460
2	Total-tetrafurans	24.16	2.888e3	3.874e3	1.192	0.75	0.77	20.1	YES	NO	bb	dd	1.366
3	Total-tetrafurans	23.36	2.995e2	4.367e2	1.192	0.69	0.77	3.0	NO	NO	db	dd	0.149
4	Total-tetrafurans	23.25	3.574e3	4.968e3	1.192	0.72	0.77	24.1	YES	NO	bd	dd	1.725
5	Total-tetrafurans	22.59	4.443e3	5.973e3	1.192	0.74	0.77	30.8	YES	NO	bb	bd	2.104
6	Total-tetrafurans	26.29	4.085e2	5.500e2	1.192	0.74	0.77	2.3	NO	NO	bb	bb	0.194
7	Total-tetrafurans	25.62	9.877e2	1.217e3	1.192	0.81	0.77	7.4	YES	NO	db	dd	0.445
8	Total-tetrafurans	25.49	1.006e3	1.420e3	1.192	0.71	0.77	5.9	YES	NO	dd	dd	0.490
9	Total-tetrafurans	25.40	4.945e2	6.755e2	1.192	0.73	0.77	3.9	YES	NO	dd	dd	0.236
10	2378-TCDF	25.25	2.070e3	2.914e3	1.108	0.71	0.77	13.1	YES	NO	bd	bd	1.083
11	Total-pentafurans	28.28	3.581e3	2.198e3	1.047	1.63	1.55	45.4	YES	NO	dd	dd	1.176
12	Total-pentafurans	28.16	1.345e3	8.260e2	1.047	1.63	1.55	14.4	YES	NO	dd	dd	0.442
13	Total-pentafurans	29.60	1.258e3	8.868e2	1.047	1.42	1.55	11.7	YES	NO	bd	bb	0.437
14	Total-pentafurans	28.34	7.310e3	4.354e3	1.047	1.68	1.55	77.1	YES	NO	dd	dd	2.374
15	234678-HxCDF	35.44	1.123e3	9.215e2	1.052	1.22	1.24	10.1	YES	NO	db	MM	0.527
16	Total-hexafurans	33.78	1.266e4	1.099e4	1.045	1.15	1.24	105.6	YES	NO	bb	bb	6.183
17	Total-hexafurans	33.47	4.460e2	3.784e2	1.045	1.18	1.24	5.4	YES	NO	bb	bb	0.216
18	Total-hexafurans	32.95	1.154e4	9.545e3	1.045	1.21	1.24	93.3	YES	NO	bb	bb	5.513
19	123468-HXCDF	32.72	3.146e3	2.673e3	1.087	1.18	1.24	29.9	YES	NO	bb	bb	1.396
20	Total-heptafurans	39.00	3.930e4	3.860e4	1.305	1.02	1.05	750.2	YES	NO	bb	bb	20.712
21	1234678-HpCDF	38.35	2.566e4	2.397e4	1.327	1.07	1.05	513.3	YES	NO	bb	bb	12.153
22	OCDF	44.67	4.443e4	4.924e4	1.447	0.90	0.89	631.9	YES	NO	bb	bb	31.002
23	13468-PECDF	26.68	2.286e4	1.488e4	1.376	1.54	1.55	386.1	YES	NO	bb	bb	5.654
24	Total-pentafurans	29.06	2.826e3	1.753e3	1.047	1.61	1.55	29.0	YES	NO	MM	dd	0.932

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	23.51	3.727e2	5.184e2	0.879	0.72	0.77	4.5	YES	NO	dd	bb	0.284
2	Total-tetradioxins	23.30	1.517e3	1.855e3	0.879	0.82	0.77	20.2	YES	NO	bb	bb	1.075
3	1368-TCDD	23.02	1.327e3	1.686e3	0.923	0.79	0.77	16.2	YES	NO	bb	bb	0.915

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
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PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentadioxins	30.34	5.493e2	3.225e2	1.331	1.70	1.55	7.1	YES	NO	bb	bb	0.233
2	Total-pentadioxins	29.95	1.138e3	7.594e2	1.331	1.50	1.55	15.2	YES	NO	db	bb	0.508
3	Total-pentadioxins	29.40	1.499e3	1.029e3	1.331	1.46	1.55	23.9	YES	NO	bb	bb	0.676
4	Total-pentadioxins	28.81	5.997e2	3.711e2	1.331	1.62	1.55	10.9	YES	NO	bb	bb	0.260

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.07	2.253e3	1.852e3	0.950	1.22	1.24	49.9	YES	NO	bb	bb	1.286
2	123678-HxCDD	35.68	4.027e3	2.987e3	1.009	1.35	1.24	86.7	YES	NO	dd	dd	2.075
3	123478-HxCDD	35.55	6.658e2	6.175e2	1.027	1.08	1.24	11.3	YES	NO	bd	bd	0.371
4	Total-hexadioxins	34.67	1.289e4	1.028e4	1.028	1.25	1.24	182.6	YES	NO	bd	bd	6.711
5	Total-hexadioxins	34.31	3.096e3	2.438e3	1.028	1.27	1.24	60.5	YES	NO	bb	bb	1.603
6	124679-HXCDD	33.51	1.801e4	1.452e4	1.125	1.24	1.24	347.3	YES	NO	bb	bb	8.584

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.82	6.219e4	5.799e4	1.068	1.07	1.05	844.0	YES	NO	bb	bb	49.014
2	1234679-HPCDD	38.80	7.545e4	6.867e4	1.211	1.10	1.05	1074.1	YES	NO	bb	bb	51.844

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
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Printed: Monday, August 30, 2021 13:43:54 Pacific Daylight Time

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	23.51	3.727e2	5.184e2	0.879	0.72	0.77	4.5	YES	NO	dd	bb	0.284
2	Total-tetradioxins	23.30	1.517e3	1.855e3	0.879	0.82	0.77	20.2	YES	NO	bb	bb	1.075
3	1368-TCDD	23.02	1.327e3	1.686e3	0.923	0.79	0.77	16.2	YES	NO	bb	bb	0.915
4	Total-pentadioxins	30.34	5.493e2	3.225e2	1.331	1.70	1.55	7.1	YES	NO	bb	bb	0.233
5	Total-pentadioxins	29.95	1.138e3	7.594e2	1.331	1.50	1.55	15.2	YES	NO	db	bb	0.508
6	Total-pentadioxins	29.40	1.499e3	1.029e3	1.331	1.46	1.55	23.9	YES	NO	bb	bb	0.676
7	Total-pentadioxins	28.81	5.997e2	3.711e2	1.331	1.62	1.55	10.9	YES	NO	bb	bb	0.260
8	123789-HxCDD	36.07	2.253e3	1.852e3	0.950	1.22	1.24	49.9	YES	NO	bb	bb	1.286
9	123678-HxCDD	35.68	4.027e3	2.987e3	1.009	1.35	1.24	86.7	YES	NO	dd	dd	2.075
10	123478-HxCDD	35.55	6.658e2	6.175e2	1.027	1.08	1.24	11.3	YES	NO	bd	bd	0.371
11	Total-hexadioxins	34.67	1.289e4	1.028e4	1.028	1.25	1.24	182.6	YES	NO	bd	bd	6.711
12	Total-hexadioxins	34.31	3.096e3	2.438e3	1.028	1.27	1.24	60.5	YES	NO	bb	bb	1.603
13	124679-HXCDD	33.51	1.801e4	1.452e4	1.125	1.24	1.24	347.3	YES	NO	bb	bb	8.584
14	1234678-HpCDD	39.82	6.219e4	5.799e4	1.068	1.07	1.05	844.0	YES	NO	bb	bb	49.014
15	1234679-HPCDD	38.80	7.545e4	6.867e4	1.211	1.10	1.05	1074.1	YES	NO	bb	bb	51.844
16	OCDD	44.46	3.499e5	3.841e5	1.181	0.91	0.89	4175.0	YES	NO	bb	bb	297.680

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.32	1.019e3	1.260e3	1.192	0.81	0.77	6.7	YES	NO	bb	db	0.460
2	Total-tetrafurans	24.16	2.888e3	3.874e3	1.192	0.75	0.77	20.1	YES	NO	bb	dd	1.366
3	Total-tetrafurans	23.36	2.995e2	4.367e2	1.192	0.69	0.77	3.0	NO	NO	db	dd	0.149
4	Total-tetrafurans	23.25	3.574e3	4.968e3	1.192	0.72	0.77	24.1	YES	NO	bd	dd	1.725
5	Total-tetrafurans	22.59	4.443e3	5.973e3	1.192	0.74	0.77	30.8	YES	NO	bb	bd	2.104
6	Total-tetrafurans	26.29	4.085e2	5.500e2	1.192	0.74	0.77	2.3	NO	NO	bb	bb	0.194
7	Total-tetrafurans	25.62	9.877e2	1.217e3	1.192	0.81	0.77	7.4	YES	NO	db	dd	0.445
8	Total-tetrafurans	25.49	1.006e3	1.420e3	1.192	0.71	0.77	5.9	YES	NO	dd	dd	0.490
9	Total-tetrafurans	25.40	4.945e2	6.755e2	1.192	0.73	0.77	3.9	YES	NO	dd	dd	0.236
10	2378-TCDF	25.25	2.070e3	2.914e3	1.108	0.71	0.77	13.1	YES	NO	bd	bd	1.083
11	Total-pentafurans	28.28	3.581e3	2.198e3	1.047	1.63	1.55	45.4	YES	NO	dd	dd	1.176
12	Total-pentafurans	28.16	1.345e3	8.260e2	1.047	1.63	1.55	14.4	YES	NO	dd	dd	0.442
13	Total-pentafurans	29.60	1.258e3	8.868e2	1.047	1.42	1.55	11.7	YES	NO	bd	bb	0.437
14	Total-pentafurans	28.34	7.310e3	4.354e3	1.047	1.68	1.55	77.1	YES	NO	dd	dd	2.374
15	234678-HxCDF	35.44	1.123e3	9.215e2	1.052	1.22	1.24	10.1	YES	NO	db	MM	0.527
16	Total-hexafurans	33.78	1.266e4	1.099e4	1.045	1.15	1.24	105.6	YES	NO	bb	bb	6.183
17	Total-hexafurans	33.47	4.460e2	3.784e2	1.045	1.18	1.24	5.4	YES	NO	bb	bb	0.216
18	Total-hexafurans	32.95	1.154e4	9.545e3	1.045	1.21	1.24	93.3	YES	NO	bb	bb	5.513
19	123468-HXCDF	32.72	3.146e3	2.673e3	1.087	1.18	1.24	29.9	YES	NO	bb	bb	1.396
20	Total-heptafurans	39.00	3.930e4	3.860e4	1.305	1.02	1.05	750.2	YES	NO	bb	bb	20.712
21	1234678-HpCDF	38.35	2.566e4	2.397e4	1.327	1.07	1.05	513.3	YES	NO	bb	bb	12.153
22	OCDF	44.67	4.443e4	4.924e4	1.447	0.90	0.89	631.9	YES	NO	bb	bb	31.002
23	13468-PECDF	26.68	2.286e4	1.488e4	1.376	1.54	1.55	386.1	YES	NO	bb	bb	5.654
24	Total-pentafurans	29.06	2.826e3	1.753e3	1.047	1.61	1.55	29.0	YES	NO	MM	dd	0.932
25	Total-tetradioxins	23.51	3.727e2	5.184e2	0.879	0.72	0.77	4.5	YES	NO	dd	bb	0.284
26	Total-tetradioxins	23.30	1.517e3	1.855e3	0.879	0.82	0.77	20.2	YES	NO	bb	bb	1.075
27	1368-TCDD	23.02	1.327e3	1.686e3	0.923	0.79	0.77	16.2	YES	NO	bb	bb	0.915
28	Total-pentadioxins	30.34	5.493e2	3.225e2	1.331	1.70	1.55	7.1	YES	NO	bb	bb	0.233
29	Total-pentadioxins	29.95	1.138e3	7.594e2	1.331	1.50	1.55	15.2	YES	NO	db	bb	0.508
30	Total-pentadioxins	29.40	1.499e3	1.029e3	1.331	1.46	1.55	23.9	YES	NO	bb	bb	0.676
31	Total-pentadioxins	28.81	5.997e2	3.711e2	1.331	1.62	1.55	10.9	YES	NO	bb	bb	0.260
32	123789-HxCDD	36.07	2.253e3	1.852e3	0.950	1.22	1.24	49.9	YES	NO	bb	bb	1.286
33	123678-HxCDD	35.68	4.027e3	2.987e3	1.009	1.35	1.24	86.7	YES	NO	dd	dd	2.075
34	123478-HxCDD	35.55	6.658e2	6.175e2	1.027	1.08	1.24	11.3	YES	NO	bd	bd	0.371
35	Total-hexadioxins	34.67	1.289e4	1.028e4	1.028	1.25	1.24	182.6	YES	NO	bd	bd	6.711
36	Total-hexadioxins	34.31	3.096e3	2.438e3	1.028	1.27	1.24	60.5	YES	NO	bb	bb	1.603
37	124679-HXCDD	33.51	1.801e4	1.452e4	1.125	1.24	1.24	347.3	YES	NO	bb	bb	8.584

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	1234678-HpCDD	39.82	6.219e4	5.799e4	1.068	1.07	1.05	844.0	YES	NO	bb	bb	49.014
39	1234679-HPCDD	38.80	7.545e4	6.867e4	1.211	1.10	1.05	1074.1	YES	NO	bb	bb	51.844
40	OCDD	44.46	3.499e5	3.841e5	1.181	0.91	0.89	4175.0	YES	NO	bb	bb	297.680

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	21.33	9.933e5					29.8	YES		dd		
2	FUNCTION1 PFK	21.27	1.689e6					30.1	YES		dd		
3	FUNCTION1 PFK	21.16	2.085e6					28.1	YES		bd		
4	FUNCTION1 PFK	26.44	6.366e3					0.7	NO		bb		
5	FUNCTION1 PFK	25.97	2.677e4					1.4	NO		bb		
6	FUNCTION1 PFK	25.50	5.192e3					0.6	NO		bb		
7	FUNCTION1 PFK	24.85	9.535e3					0.8	NO		bb		
8	FUNCTION1 PFK	24.23	1.238e5					1.9	NO		bb		
9	FUNCTION1 PFK	23.25	6.445e5					6.4	YES		bb		
10	FUNCTION1 PFK	22.83	9.264e5					5.0	YES		bb		
11	FUNCTION1 PFK	22.46	3.274e5					5.0	YES		db		
12	FUNCTION1 PFK	22.12	8.914e6					16.9	YES		bd		
13	FUNCTION1 PFK	21.42	2.580e6					31.2	YES		db		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	29.01	7.322e3					1.0	NO		bb		0.000
2	FUNCTION2 PFK	28.96	1.042e4					1.2	NO		bb		0.000
3	FUNCTION2 PFK	27.48	8.895e4					4.6	YES		bb		0.000

ID: 21G0108-11, Name: 21082719, Date: 27-Aug-2021, Time: 19:36:37, Conditions: AUTOSPEC01, User: pk

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	32.31	2.524e5					5.4	YES		bd		0.000
2	FUNCTION3 PFK	34.51	1.528e4					1.1	NO		bb		0.000
3	FUNCTION3 PFK	34.36	1.672e4					0.9	NO		bb		0.000
4	FUNCTION3 PFK	34.13	8.507e3					0.7	NO		bb		0.000
5	FUNCTION3 PFK	33.97	1.299e4					1.0	NO		db		0.000
6	FUNCTION3 PFK	33.84	7.130e4					1.7	NO		dd		0.000
7	FUNCTION3 PFK	33.76	3.151e4					1.4	NO		bd		0.000
8	FUNCTION3 PFK	33.58	1.938e4					1.1	NO		bb		0.000
9	FUNCTION3 PFK	33.22	5.299e4					2.0	NO		db		0.000
10	FUNCTION3 PFK	33.17	1.863e4					1.6	NO		bd		0.000
11	FUNCTION3 PFK	33.10	3.803e4					1.7	NO		db		0.000
12	FUNCTION3 PFK	33.00	1.381e4					1.1	NO		bd		0.000
13	FUNCTION3 PFK	32.83	2.772e5					2.8	NO		db		0.000
14	FUNCTION3 PFK	32.63	1.704e5					6.4	YES		dd		0.000
15	FUNCTION3 PFK	32.59	1.406e5					7.5	YES		dd		0.000
16	FUNCTION3 PFK	32.54	2.255e5					8.0	YES		bd		0.000
17	FUNCTION3 PFK	32.40	2.510e5					8.0	YES		db		0.000
18	FUNCTION3 PFK	36.18	4.581e5					4.4	YES		db		0.000
19	FUNCTION3 PFK	36.13	6.681e4					3.7	YES		dd		0.000
20	FUNCTION3 PFK	36.09	9.177e4					3.4	YES		bd		0.000
21	FUNCTION3 PFK	35.85	1.659e4					0.7	NO		bb		0.000
22	FUNCTION3 PFK	35.76	6.481e3					0.7	NO		bb		0.000
23	FUNCTION3 PFK	35.71	6.958e3					0.6	NO		bb		0.000
24	FUNCTION3 PFK	35.60	2.672e4					1.4	NO		db		0.000
25	FUNCTION3 PFK	35.52	2.505e4					1.2	NO		bd		0.000
26	FUNCTION3 PFK	35.39	2.790e4					1.6	NO		bb		0.000
27	FUNCTION3 PFK	35.29	1.503e4					1.3	NO		bb		0.000
28	FUNCTION3 PFK	35.12	9.507e3					0.8	NO		bb		0.000
29	FUNCTION3 PFK	35.00	1.548e3					0.3	NO		bb		0.000
30	FUNCTION3 PFK	34.88	1.075e4					0.7	NO		db		0.000
31	FUNCTION3 PFK	34.82	9.195e3					0.8	NO		bd		0.000
32	FUNCTION3 PFK	34.72	1.421e4					1.1	NO		bb		0.000
33	FUNCTION3 PFK	34.65	6.849e3					0.7	NO		bb		0.000
34	FUNCTION3 PFK	37.37	9.086e3					0.8	NO		bb		0.000
35	FUNCTION3 PFK	37.20	6.999e4					2.0	NO		bb		0.000
36	FUNCTION3 PFK	36.86	1.184e5					3.5	YES		db		0.000
37	FUNCTION3 PFK	36.81	4.644e4					3.5	YES		dd		0.000

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ID: 21G0108-11, Name: 21082719, Date: 27-Aug-2021, Time: 19:36:37, Conditions: AUTOSPEC01, User: pk

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION3 PFK	36.76	1.285e5					4.1	YES		dd		0.000
39	FUNCTION3 PFK	36.69	1.343e5					5.0	YES		dd		0.000
40	FUNCTION3 PFK	36.57	2.778e5					6.8	YES		dd		0.000
41	FUNCTION3 PFK	36.47	4.304e5					7.5	YES		bd		0.000

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	40.56	1.884e3					0.6	NO		bb		
2	FUNCTION4 PFK	40.34	1.760e3					0.5	NO		bb		
3	FUNCTION4 PFK	39.29	7.651e3					1.1	NO		bb		
4	FUNCTION4 PFK	39.03	2.267e3					0.7	NO		bb		
5	FUNCTION4 PFK	38.74	2.163e3					0.6	NO		bb		
6	FUNCTION4 PFK	37.83	1.309e4					1.3	NO		bb		
7	FUNCTION4 PFK	37.49	5.756e4					2.6	NO		bb		
8	FUNCTION4 PFK	42.33	4.991e4					1.7	NO		bb		
9	FUNCTION4 PFK	40.75	2.007e3					0.6	NO		bb		

ID: 21G0108-11, Name: 21082719, Date: 27-Aug-2021, Time: 19:36:37, Conditions: AUTOSPEC01, User: pk

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	44.09	3.574e3					0.9	NO		bb		
2	FUNCTION5 PFK	44.04	1.017e4					1.9	NO		bb		
3	FUNCTION5 PFK	43.66	2.260e4					2.6	NO		bb		
4	FUNCTION5 PFK	43.56	8.910e2					0.6	NO		bb		
5	FUNCTION5 PFK	43.41	2.421e3					1.0	NO		db		
6	FUNCTION5 PFK	43.38	1.129e4					1.6	NO		bd		
7	FUNCTION5 PFK	43.31	1.475e4					3.0	YES		bb		
8	FUNCTION5 PFK	43.26	5.546e3					1.4	NO		bb		
9	FUNCTION5 PFK	42.94	7.822e2					0.5	NO		bb		
10	FUNCTION5 PFK	42.74	1.361e4					2.6	NO		db		
11	FUNCTION5 PFK	42.63	1.766e5					6.5	YES		dd		
12	FUNCTION5 PFK	42.52	5.840e4					10.6	YES		dd		
13	FUNCTION5 PFK	42.46	1.338e5					12.3	YES		bd		
14	FUNCTION5 PFK	45.93	4.968e3					1.5	NO		bb		
15	FUNCTION5 PFK	45.89	3.598e3					0.8	NO		bb		
16	FUNCTION5 PFK	45.83	4.316e3					1.3	NO		bb		
17	FUNCTION5 PFK	45.32	1.008e3					0.7	NO		bb		
18	FUNCTION5 PFK	45.22	2.652e3					0.9	NO		db		
19	FUNCTION5 PFK	45.20	1.002e3					0.6	NO		bd		
20	FUNCTION5 PFK	45.17	9.370e2					0.6	NO		bb		
21	FUNCTION5 PFK	45.05	1.527e4					2.2	NO		bb		
22	FUNCTION5 PFK	44.94	7.464e3					1.8	NO		db		
23	FUNCTION5 PFK	44.90	3.951e3					1.3	NO		bd		
24	FUNCTION5 PFK	44.76	5.914e3					1.5	NO		bb		
25	FUNCTION5 PFK	44.56	1.719e4					0.6	NO		bb		
26	FUNCTION5 PFK	44.41	2.429e4					1.7	NO		bb		
27	FUNCTION5 PFK	44.23	2.190e4					2.8	NO		bb		
28	FUNCTION5 PFK	44.14	1.940e3					0.8	NO		bb		

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ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	27.12	1.497e2					2.9	NO		bb		0.000
2	FUNCTION1 HXCD...	26.26	8.311e2					8.6	YES		bb		0.000
3	FUNCTION1 HXCD...	25.61	1.545e3					19.7	YES		bb		0.000
4	FUNCTION1 HXCD...	25.37	3.600e2					3.8	YES		db		0.000
5	FUNCTION1 HXCD...	25.23	1.091e3					14.0	YES		bd		0.000
6	FUNCTION1 HXCD...	24.60	5.040e2					5.6	YES		bb		0.000
7	FUNCTION1 HXCD...	23.45	1.941e2					4.6	YES		bb		0.000
8	FUNCTION1 HXCD...	23.24	1.679e3					21.8	YES		bb		0.000
9	FUNCTION1 HXCD...	22.22	3.012e2					6.0	YES		bb		0.000
10	FUNCTION1 HXCD...	21.80	1.076e2					2.2	NO		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	22.28	1.720e2					6.3	YES		bb		0.000
2	FUNCTION1 HPCD...	21.94	1.284e2					3.0	NO		db		0.000
3	FUNCTION1 HPCD...	21.81	1.103e2					3.2	YES		dd		0.000
4	FUNCTION1 HPCD...	21.74	7.184e1					2.6	NO		bd		0.000
5	FUNCTION1 HPCD...	21.48	2.802e2					3.5	YES		bb		0.000
6	FUNCTION1 HPCD...	26.38	7.056e1					2.3	NO		bb		0.000
7	FUNCTION1 HPCD...	25.90	1.991e2					2.4	NO		bb		0.000
8	FUNCTION1 HPCD...	22.83	8.113e2					21.4	YES		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	31.70	2.985e2					5.8	YES		bb		0.000
2	FUNCTION2 HPCD...	30.41	7.049e1					1.8	NO		bb		0.000
3	FUNCTION2 HPCD...	28.43	7.543e2					15.0	YES		bb		0.000

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
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ID: 21G0108-11, Name: 21082719, Date: 27-Aug-2021, Time: 19:36:37, Conditions: AUTOSPEC01, User: pk

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.38	8.202e1					2.4	NO		bb		0.000
2	FUNCTION3 OCDPE	34.61	7.456e1					1.9	NO		bb		0.000
3	FUNCTION3 OCDPE	34.36	1.762e2					3.8	YES		bb		0.000
4	FUNCTION3 OCDPE	33.96	7.479e1					1.9	NO		bb		0.000
5	FUNCTION3 OCDPE	33.49	8.656e1					2.3	NO		db		0.000
6	FUNCTION3 OCDPE	33.46	1.359e2					3.3	YES		bd		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	37.96	1.547e3					34.2	YES		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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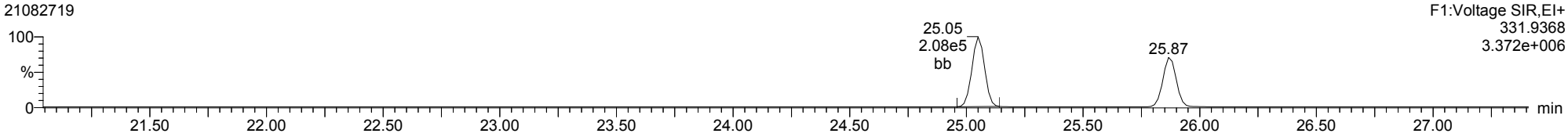

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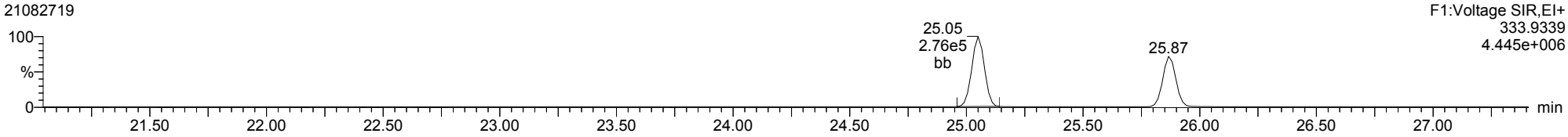

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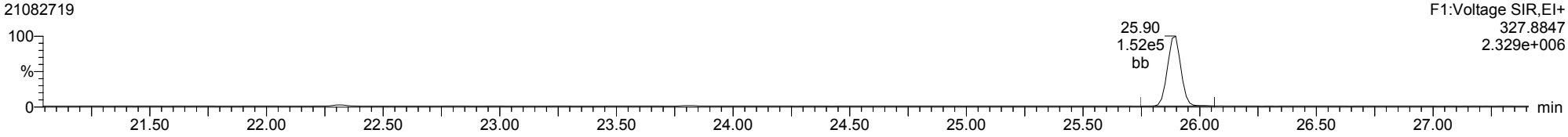

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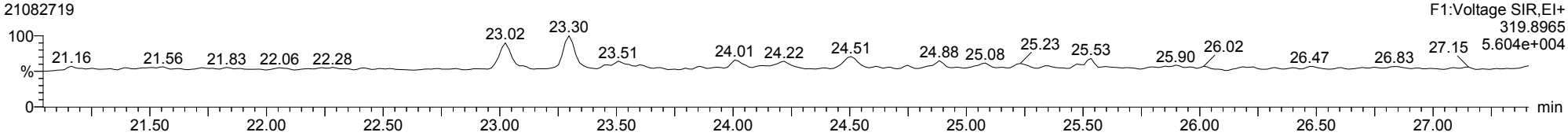
2378-TCDD



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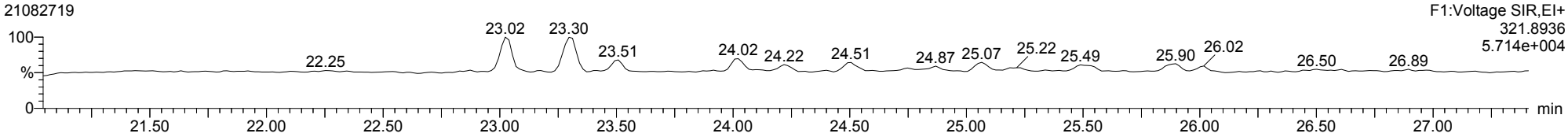

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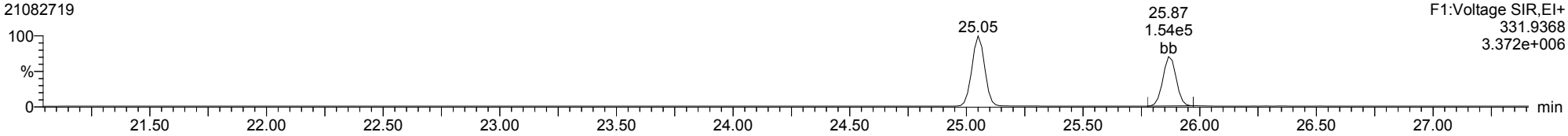

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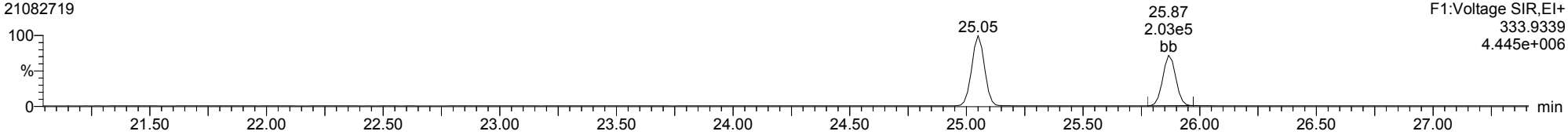

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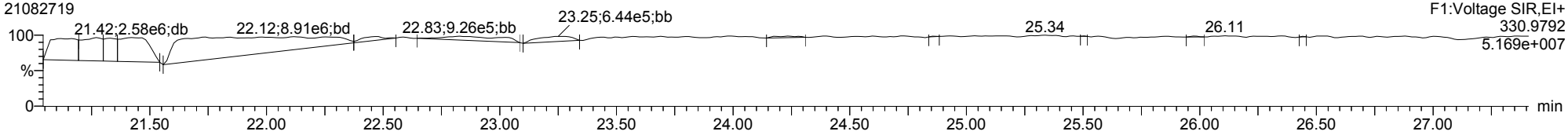

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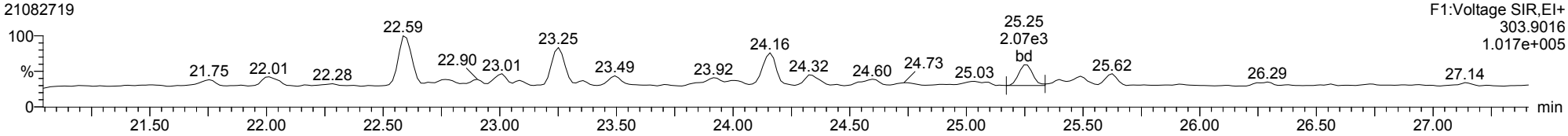

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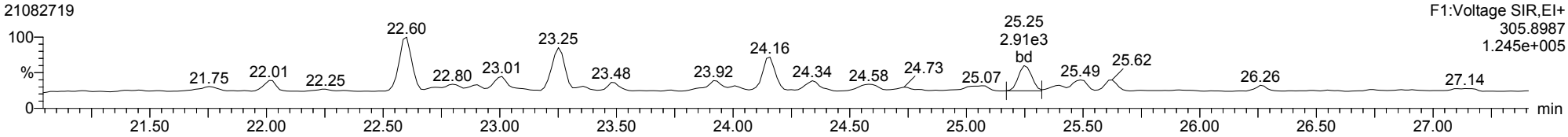

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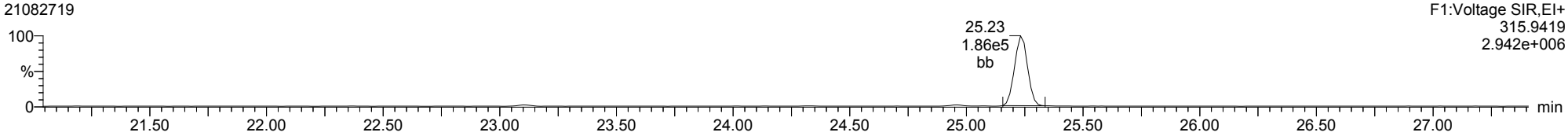

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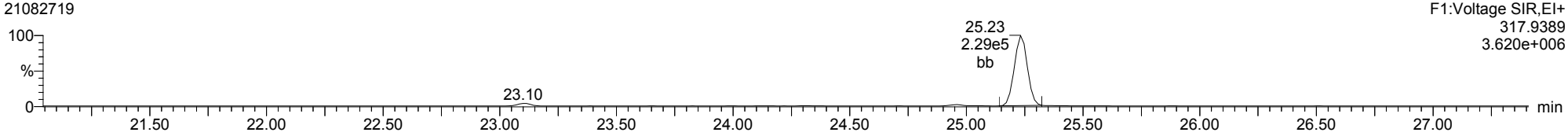

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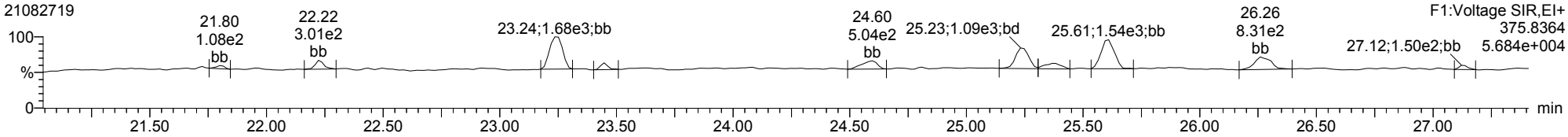

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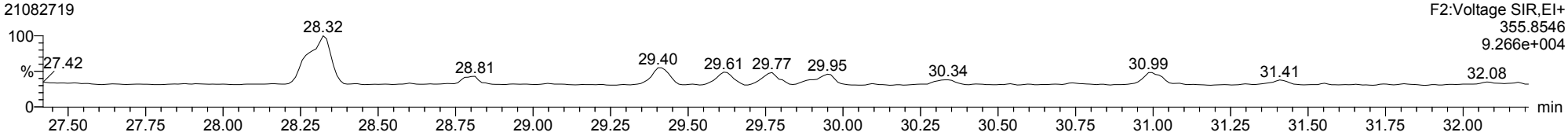

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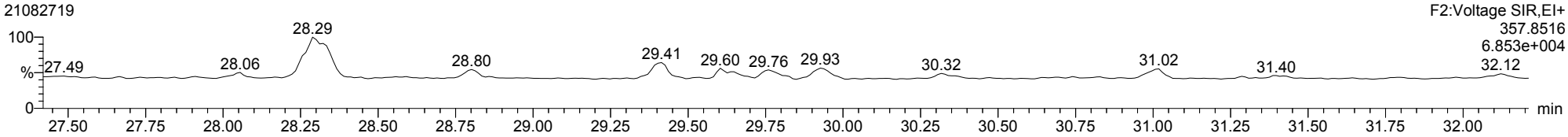

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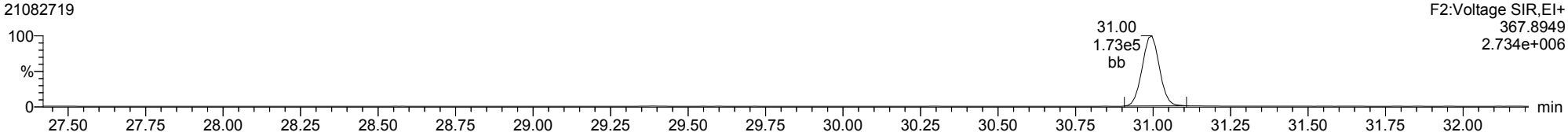

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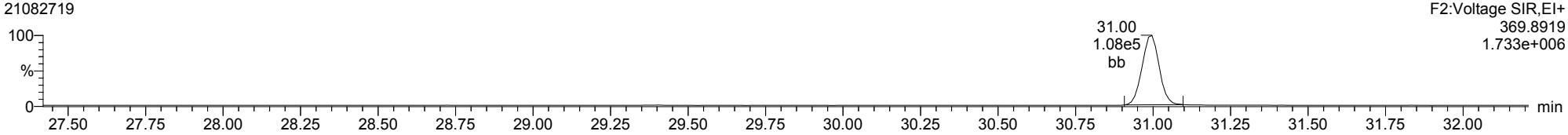
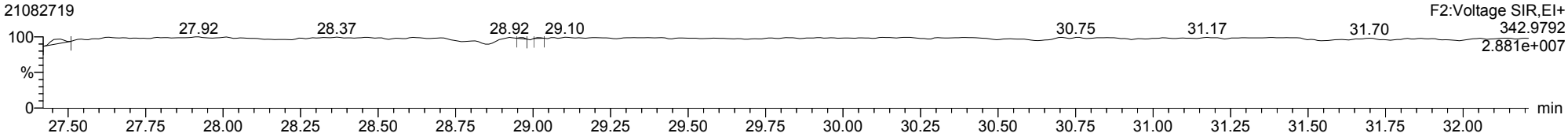


FUNCTION2 PFK



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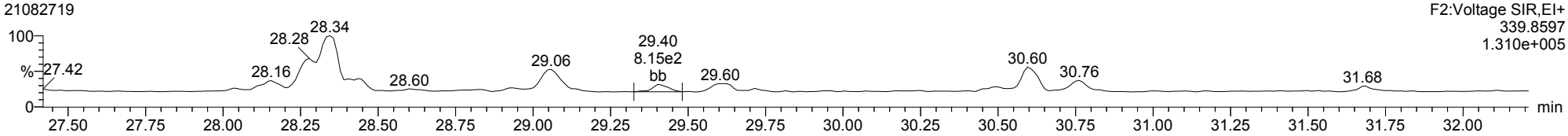
12378-PeCDF



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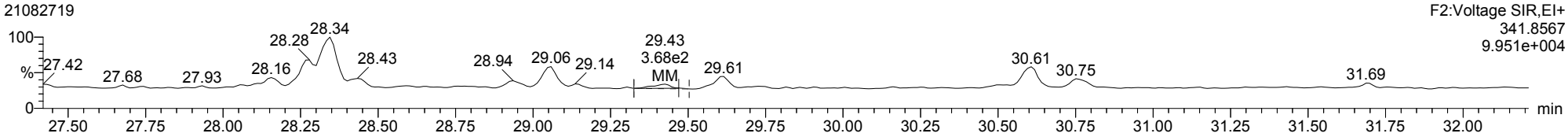

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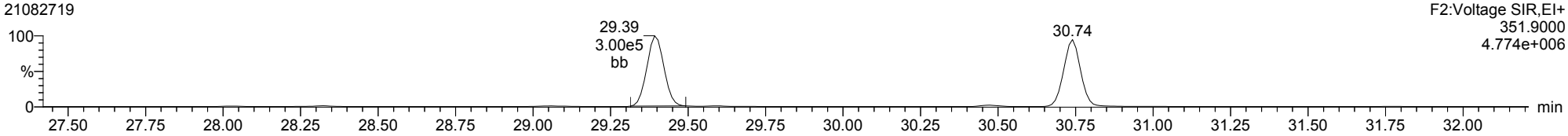

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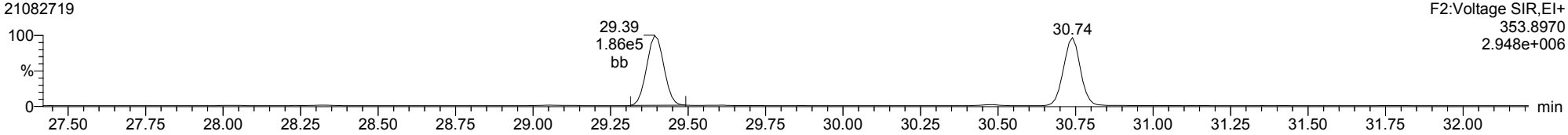
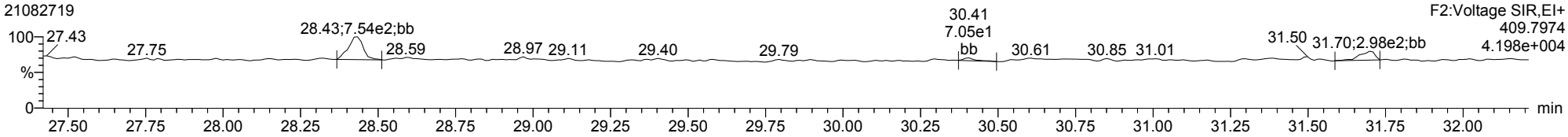


FUNCTION2 HPCDPE



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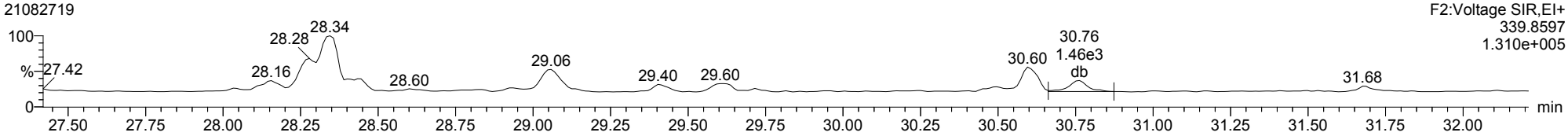
23478-PeCDF



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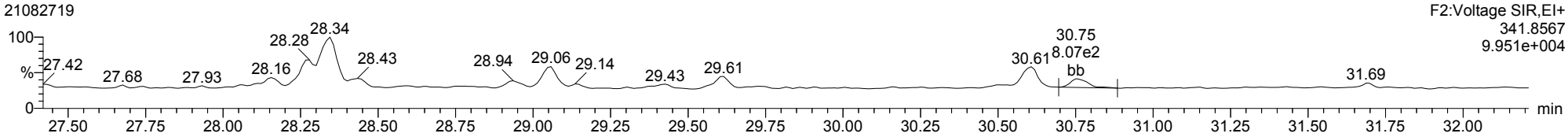

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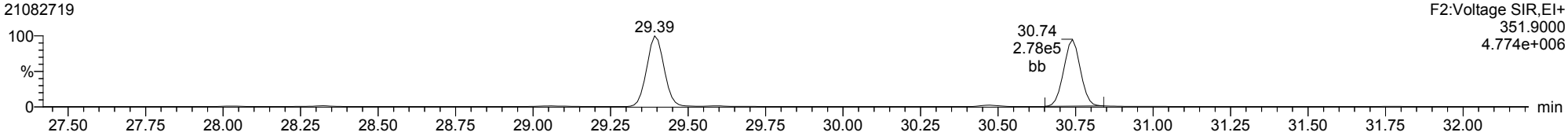

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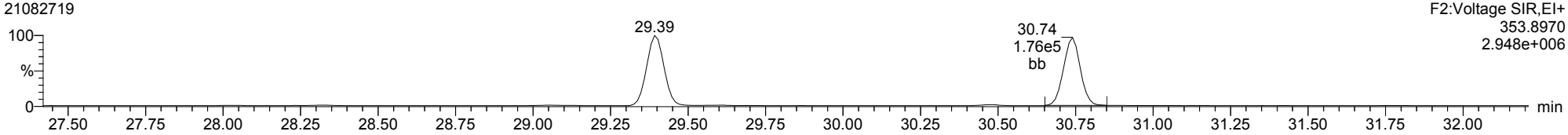

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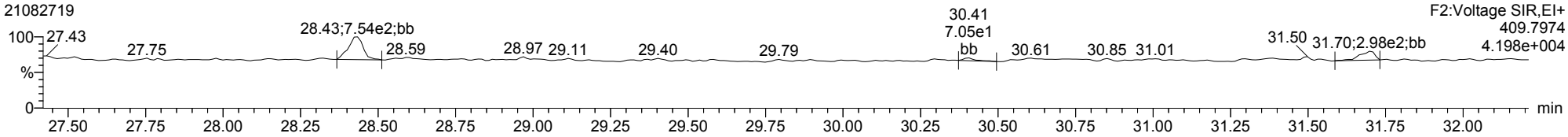

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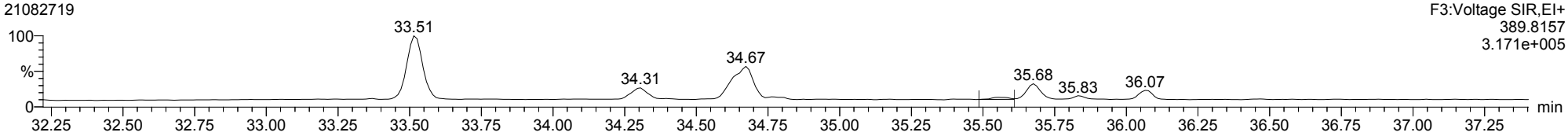

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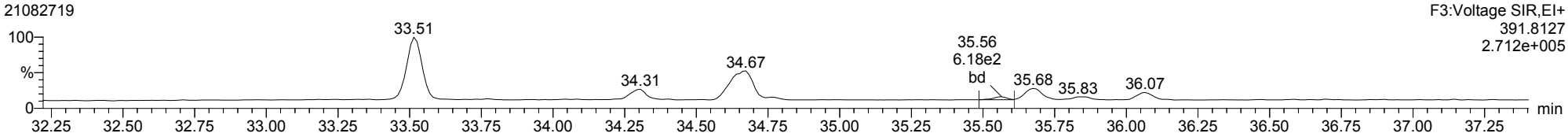

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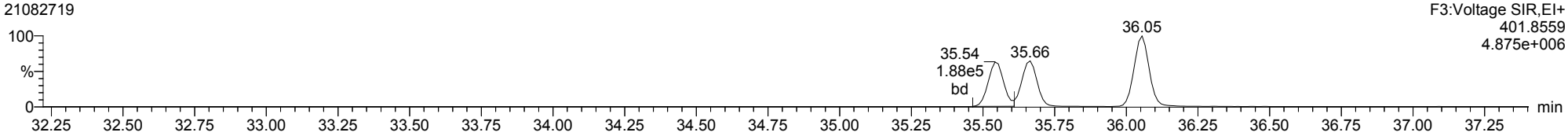

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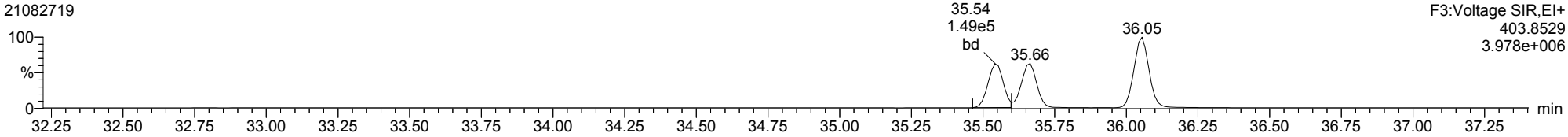

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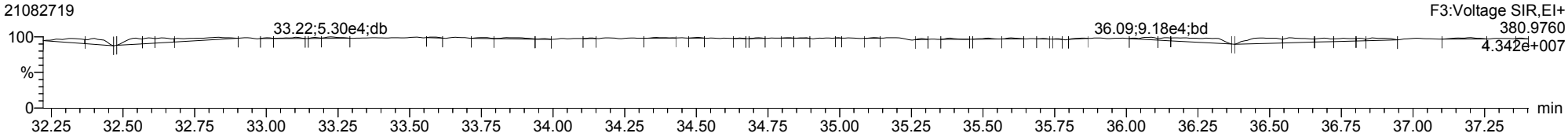

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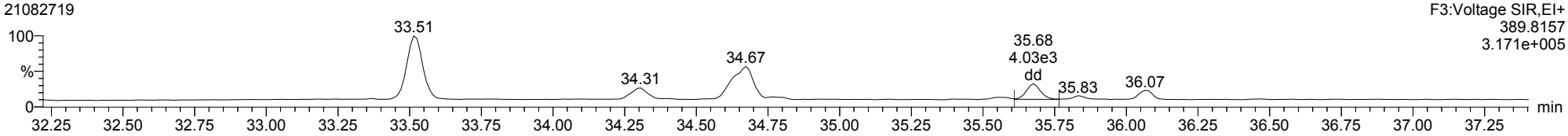

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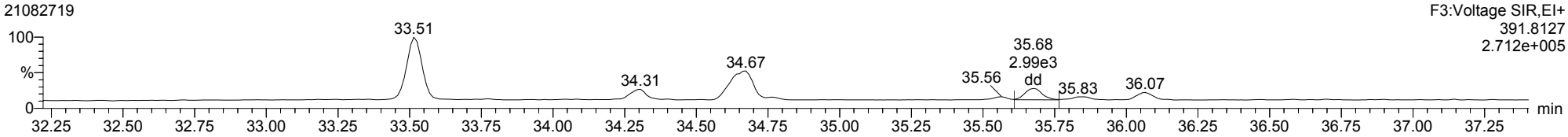

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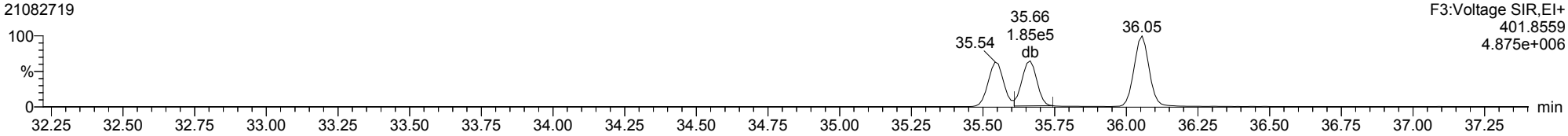

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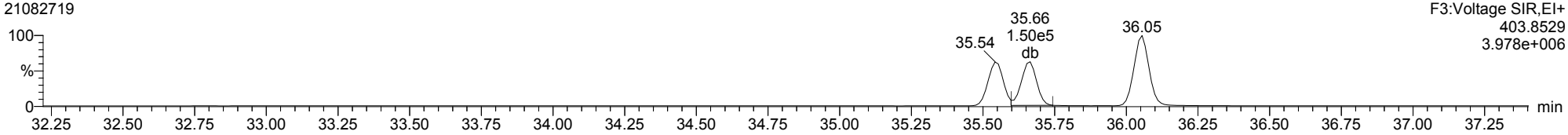

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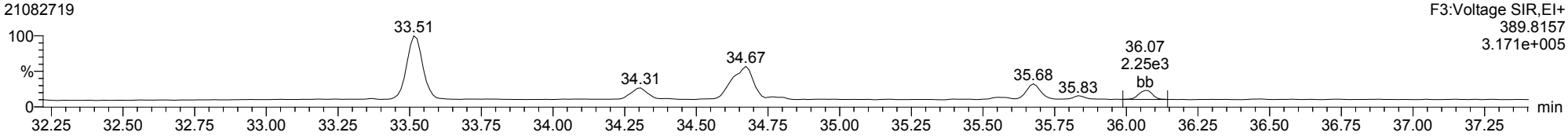

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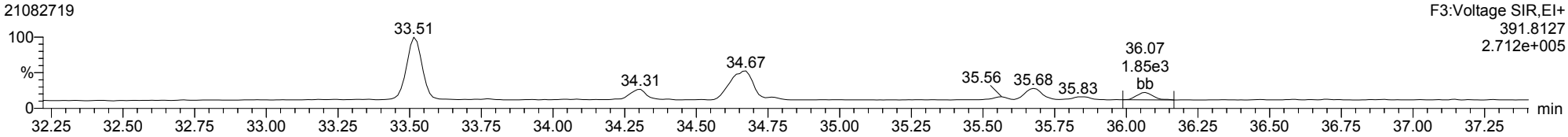

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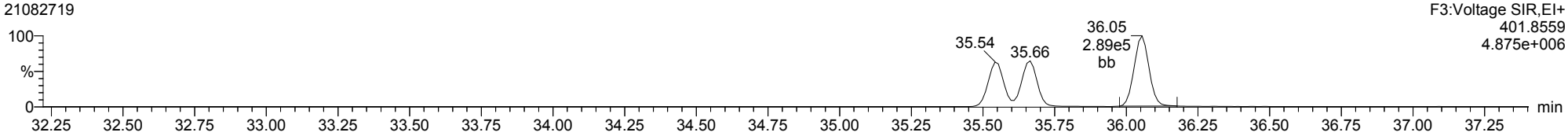

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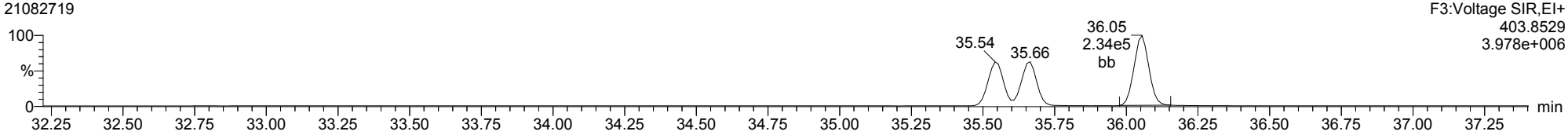

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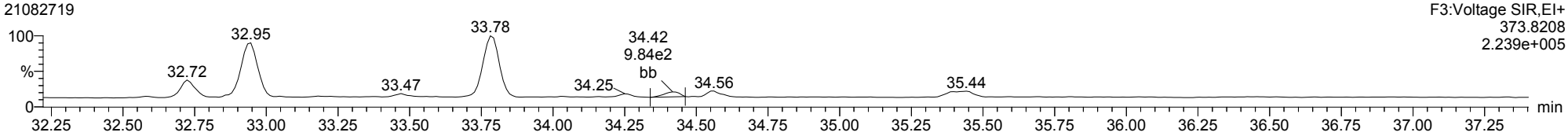

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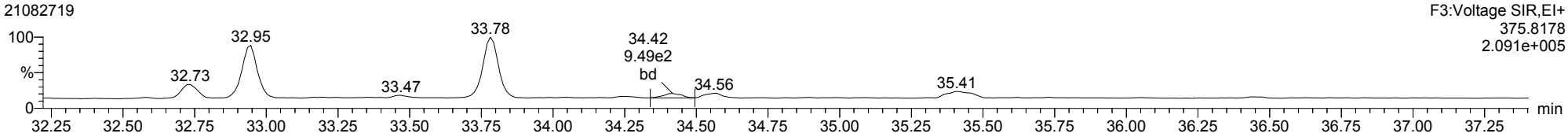

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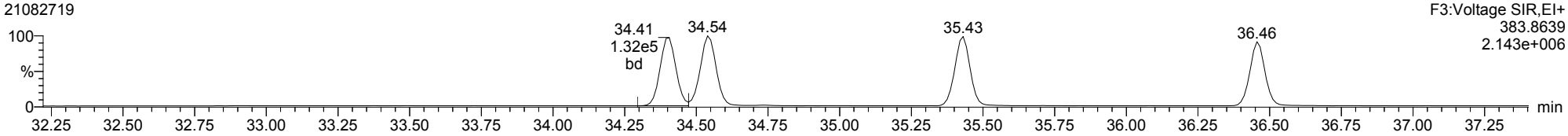

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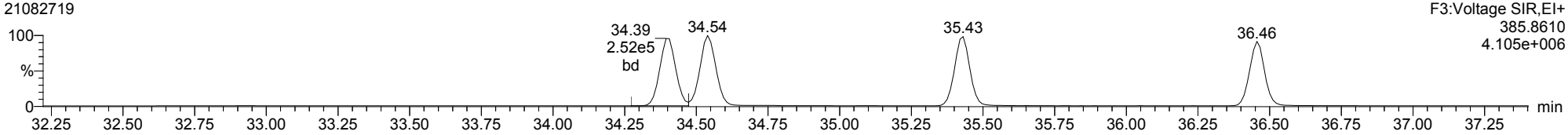

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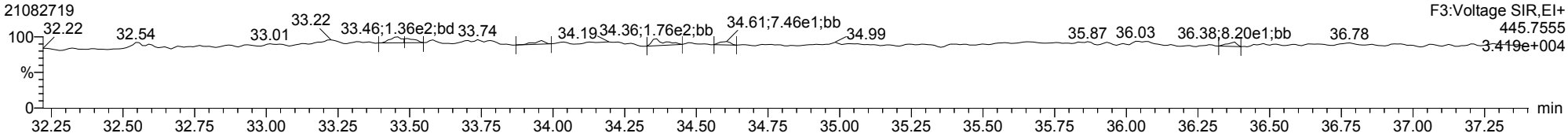

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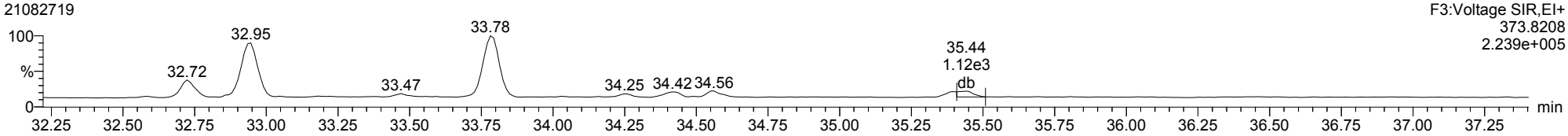
234678-HxCDF



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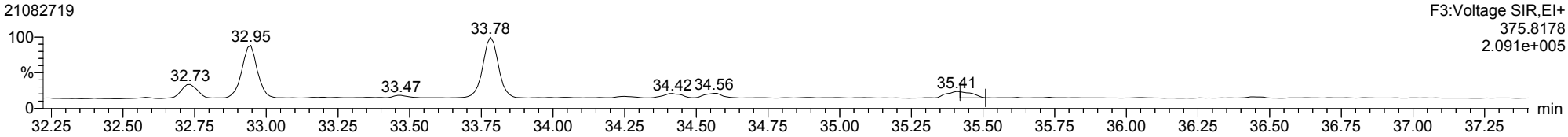

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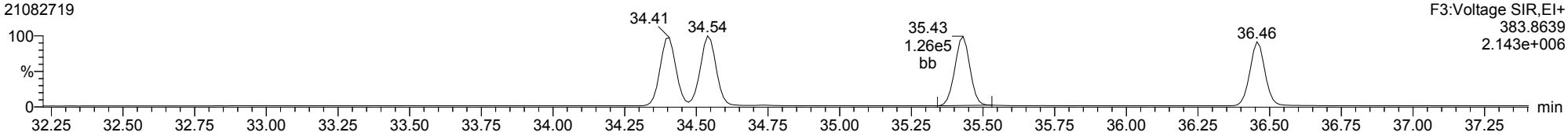

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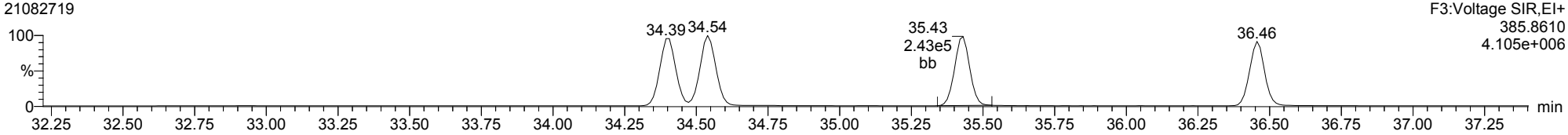

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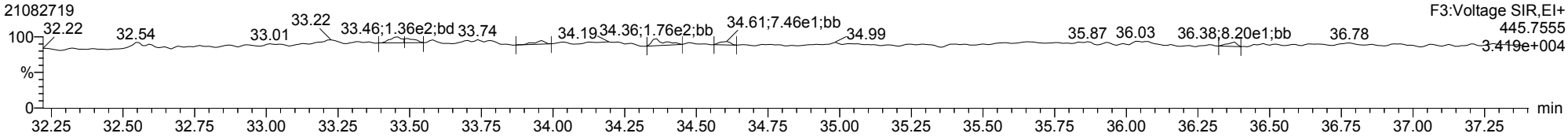

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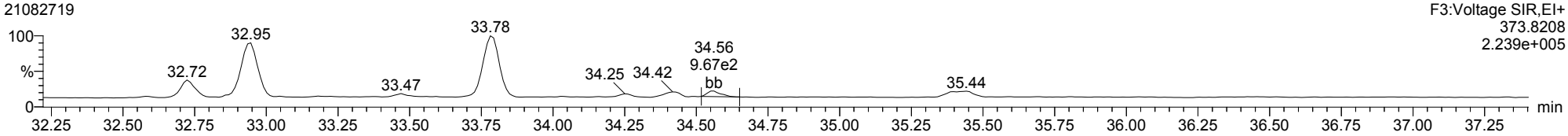
123678-HxCDF



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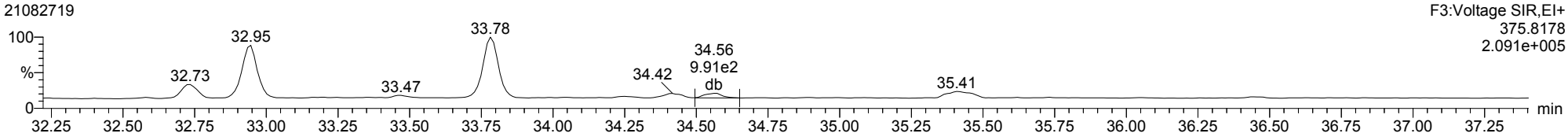

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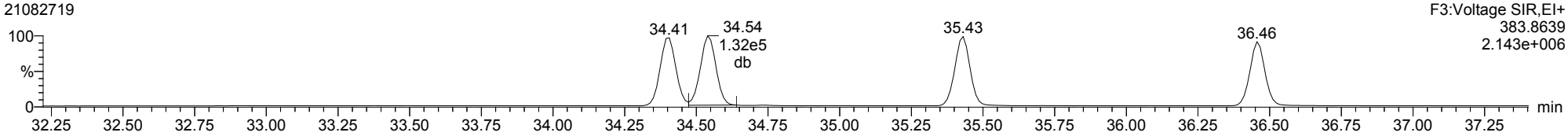

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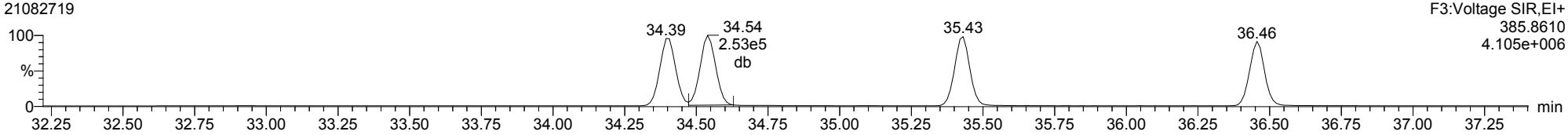

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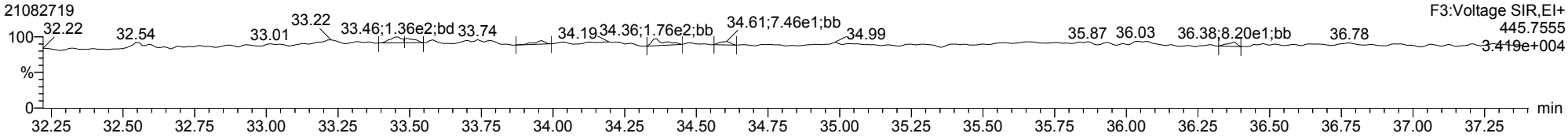

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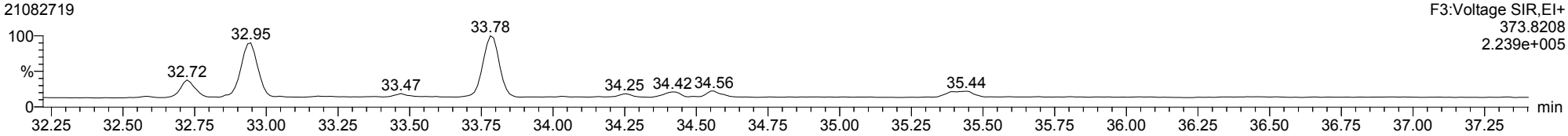
123789-HxCDF



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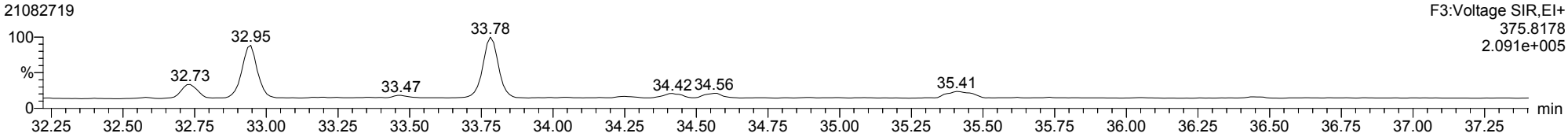

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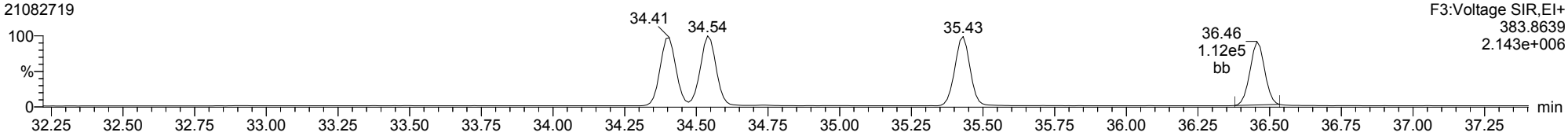

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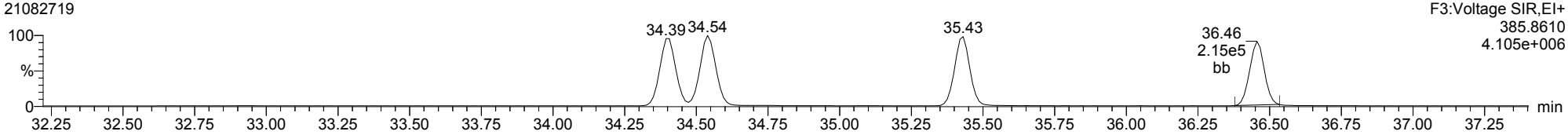
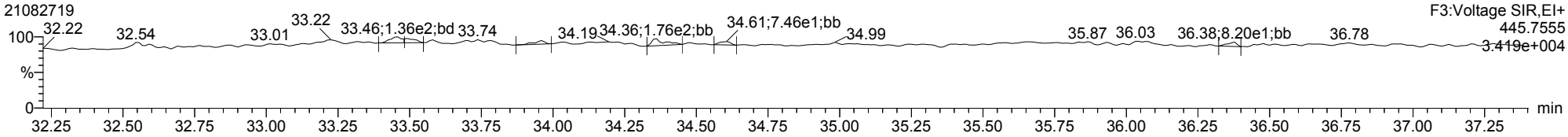


FUNCTION3 OCDPE



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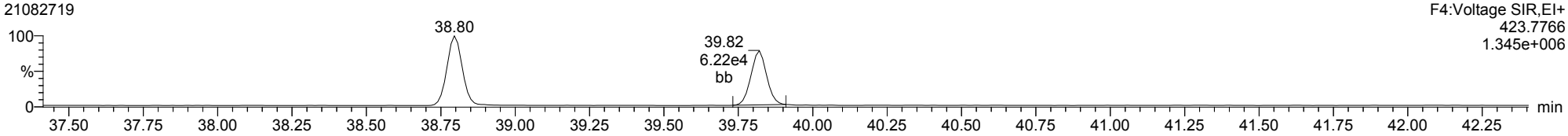
1234678-HpCDD



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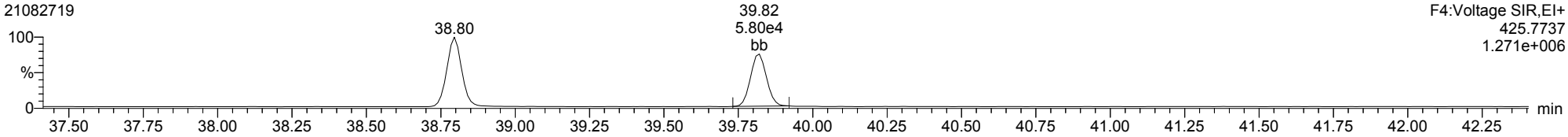

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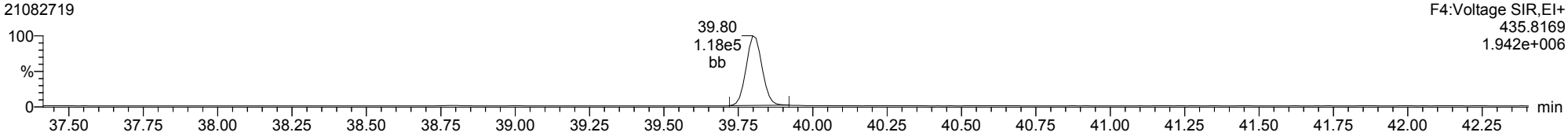

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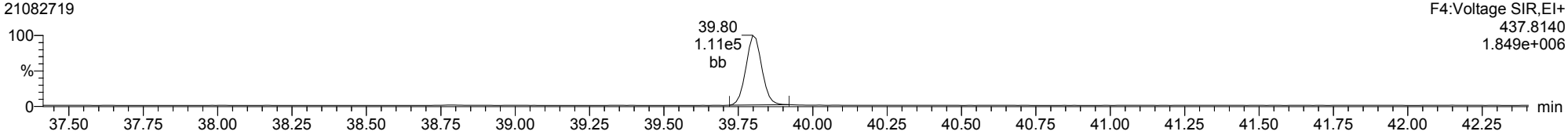
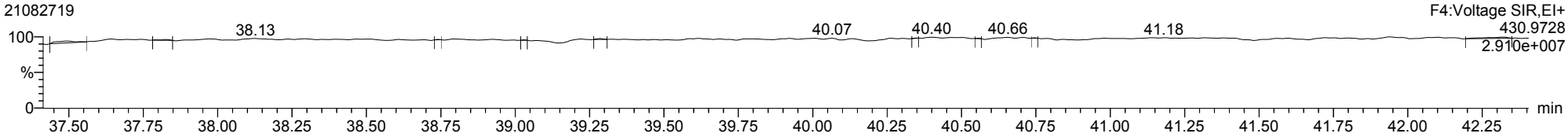


FUNCTION4 PFK



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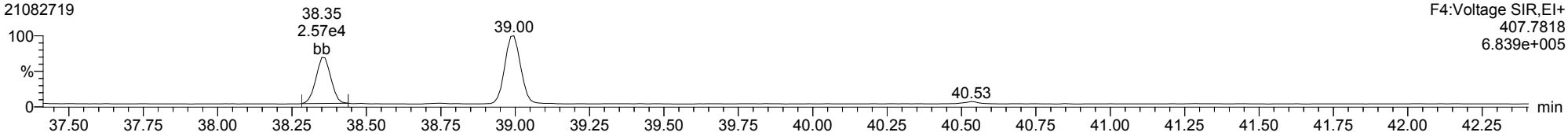

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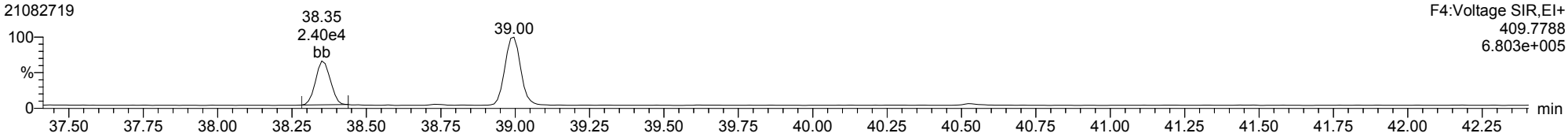

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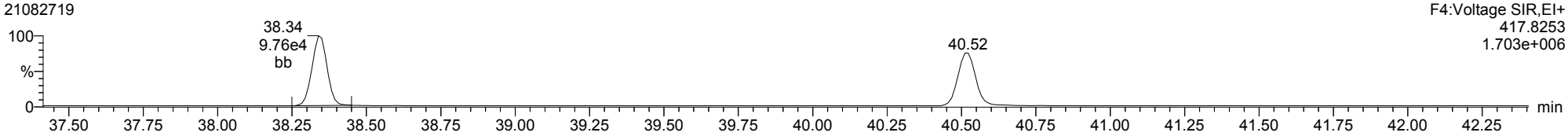

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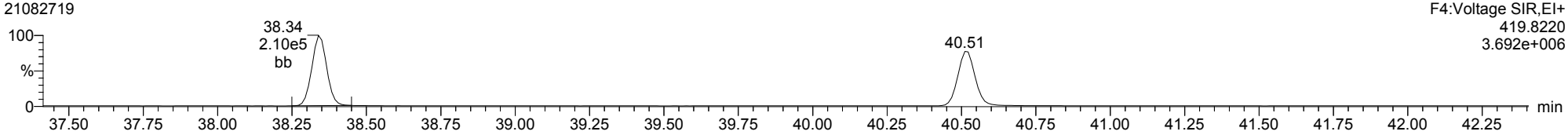
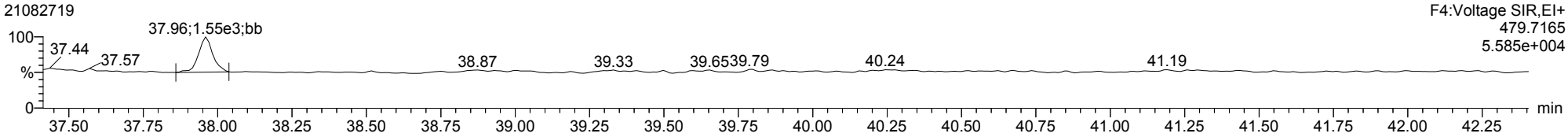


FUNCTION4 NCDPE



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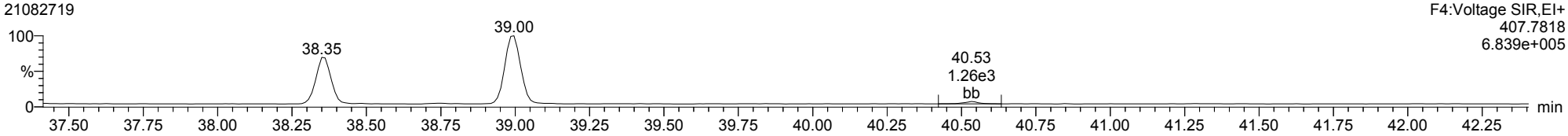
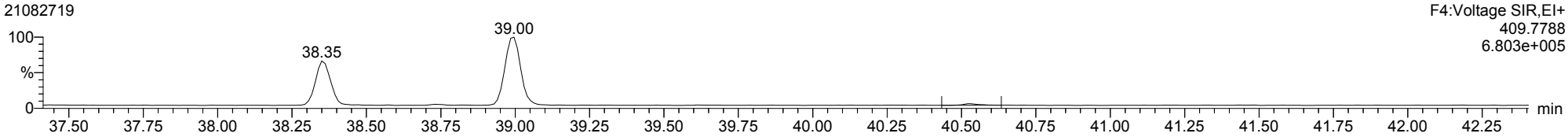
1234789-HpCDF



1234789-HpCDF



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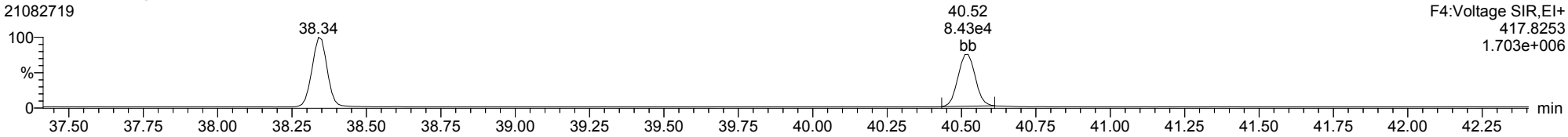

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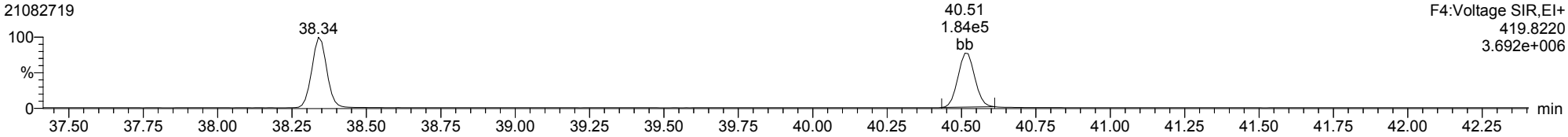
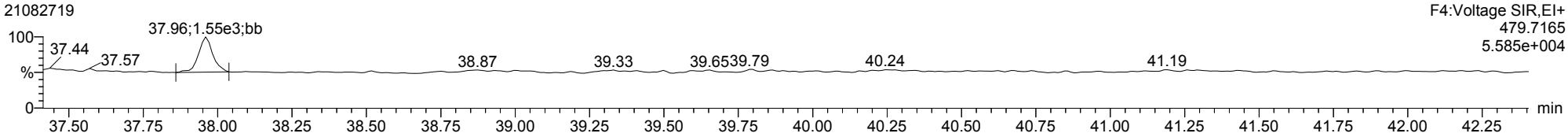
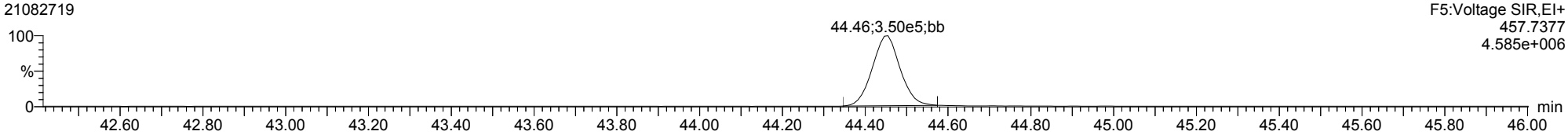


FUNCTION4 NCDPE

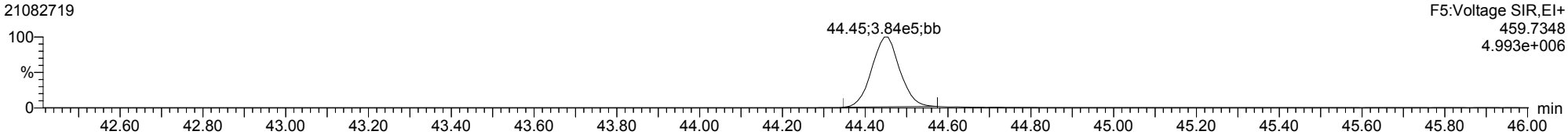


ID: 21G0108-11, Name: 21082719, Date: 27-Aug-2021, Time: 19:36:37, Conditions: AUTOSPEC01, User: pk

OCDD



OCDD



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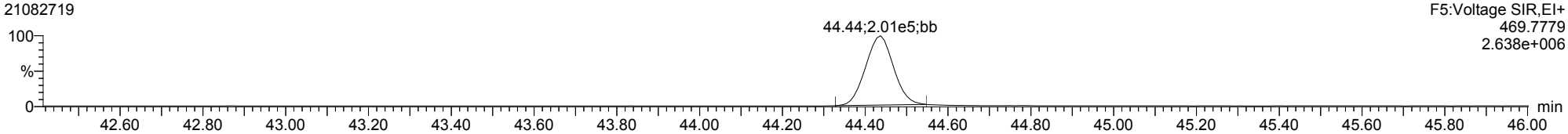

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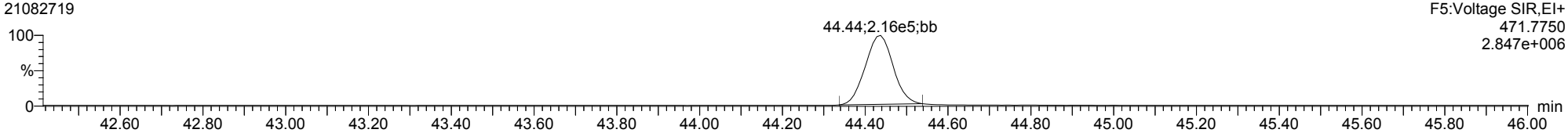
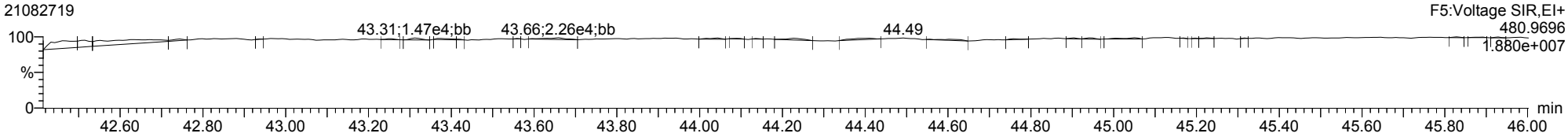
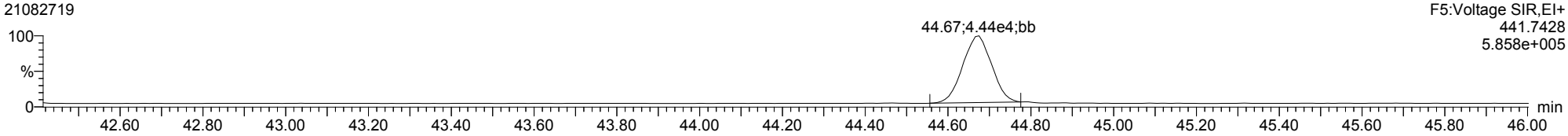


FUNCTION5 PFK

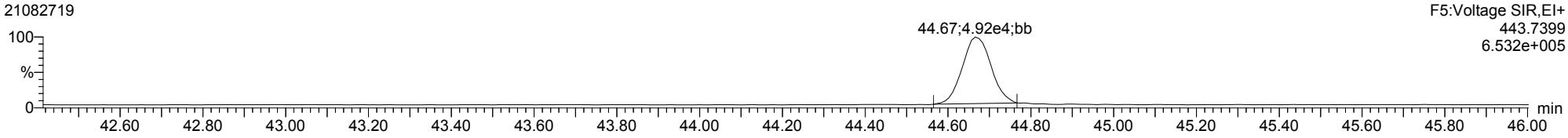


ID: 21G0108-11, Name: 21082719, Date: 27-Aug-2021, Time: 19:36:37, Conditions: AUTOSPEC01, User: pk

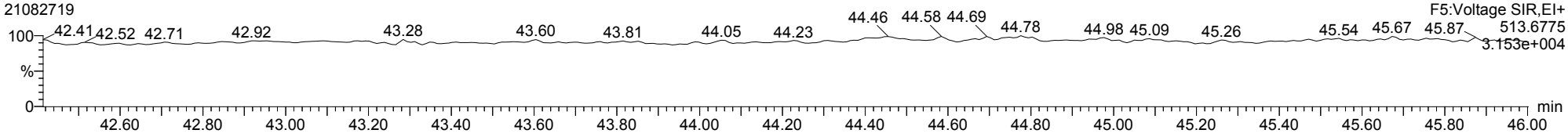
OCDF



OCDF

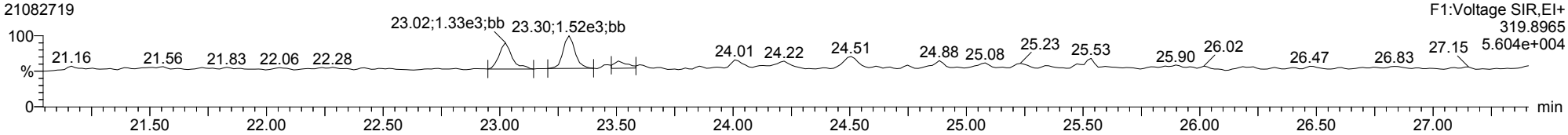


FUNCTION5 DCDPE

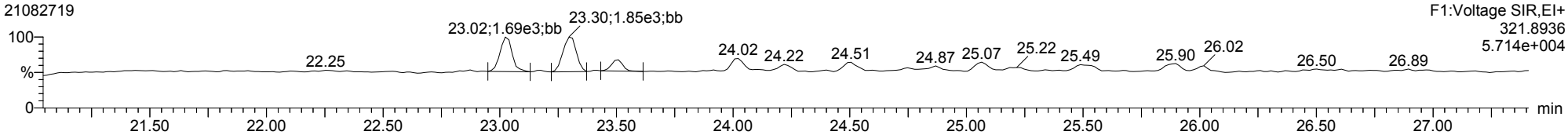


ID: 21G0108-11, Name: 21082719, Date: 27-Aug-2021, Time: 19:36:37, Conditions: AUTOSPEC01, User: pk

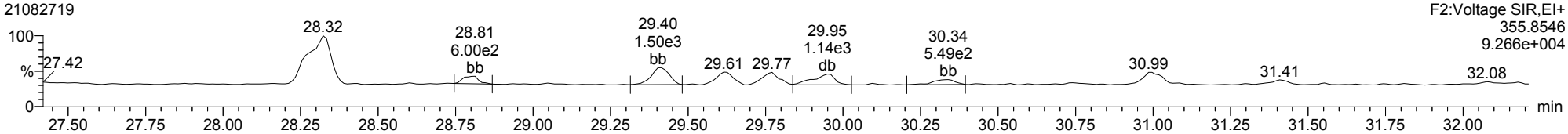
Total-tetradioxins



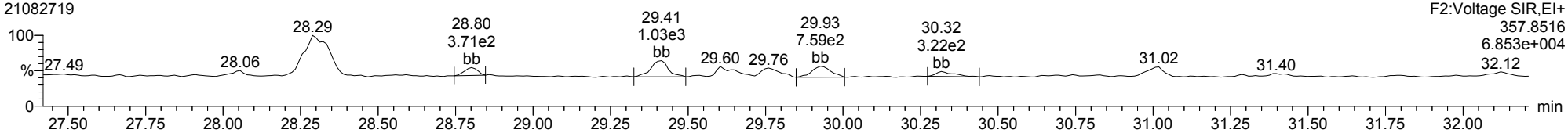
Total-tetradioxins



Total-pentadioxins

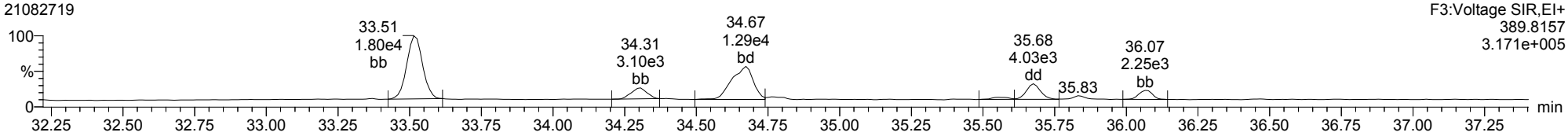


Total-pentadioxins

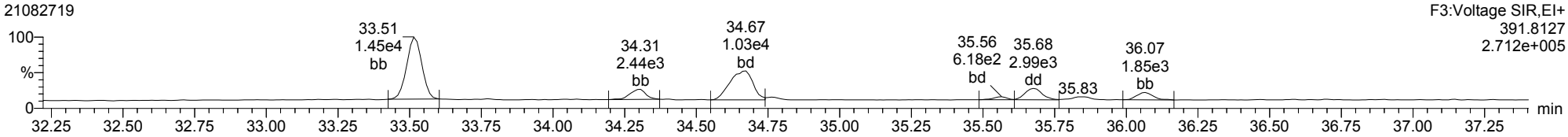


ID: 21G0108-11, Name: 21082719, Date: 27-Aug-2021, Time: 19:36:37, Conditions: AUTOSPEC01, User: pk

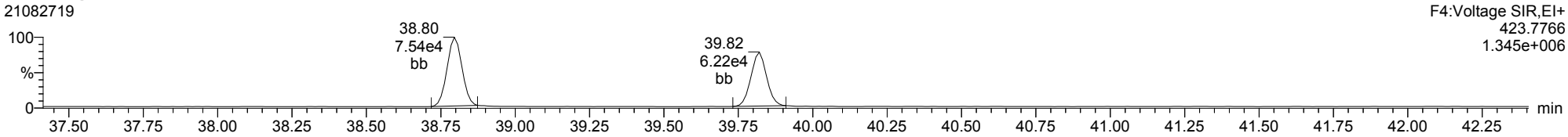
Total-hexadioxins



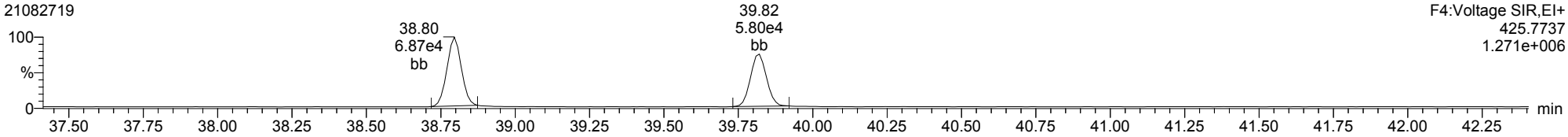
Total-hexadioxins



Total-heptadioxins



Total-heptadioxins



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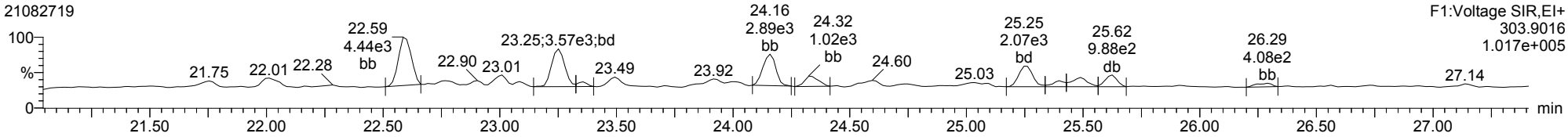
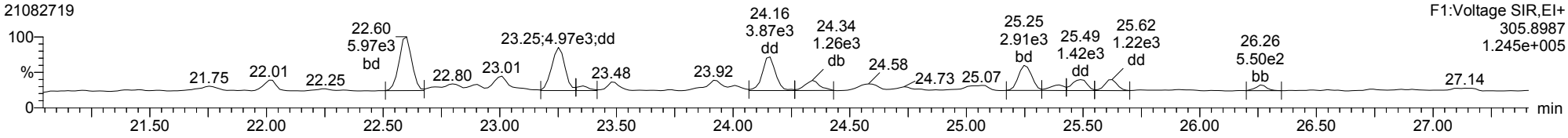
Printed: Monday, August 30, 2021 13:43:54 Pacific Daylight Time

ID: 21G0108-11, Name: 21082719, Date: 27-Aug-2021, Time: 19:36:37, Conditions: AUTOSPEC01, User: pk

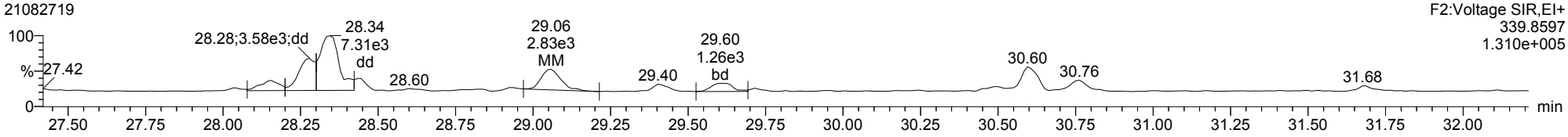
Total-tetrafurans



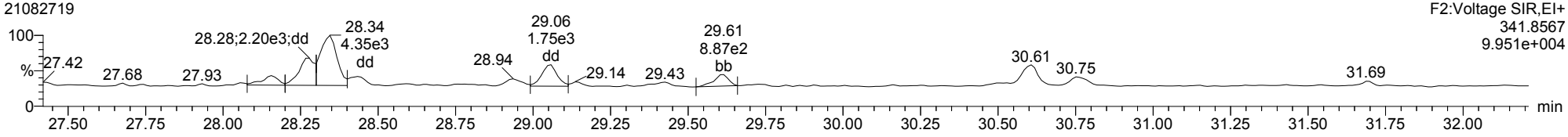
Total-tetrafurans



Total-pentafurans

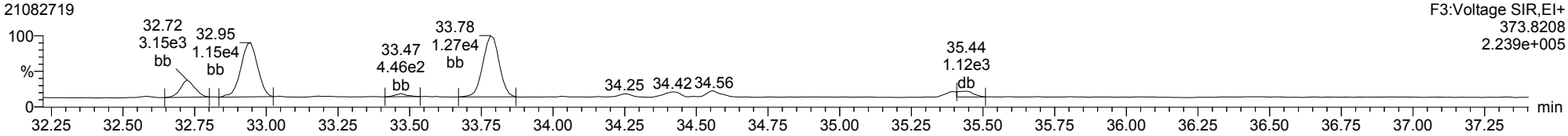


Total-pentafurans



ID: 21G0108-11, Name: 21082719, Date: 27-Aug-2021, Time: 19:36:37, Conditions: AUTOSPEC01, User: pk

Total-hexafurans



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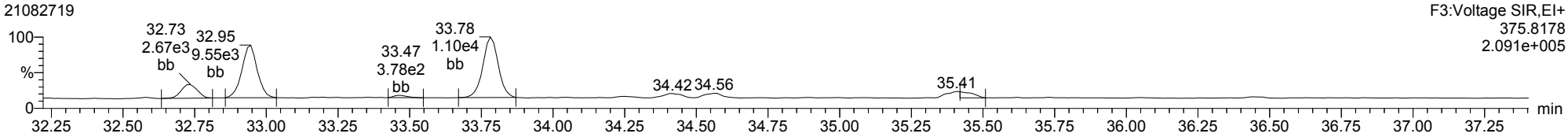

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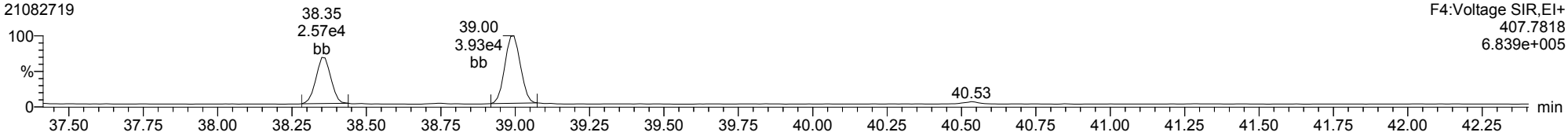
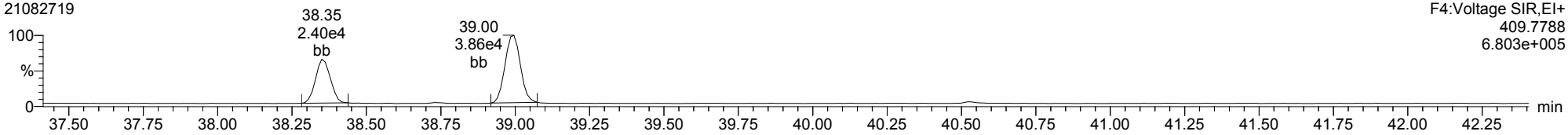


Total-heptafurans



Analytical Resources, Incorporated
Analytical Chemists and Consultants

PREPARATION BATCH SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Batch:	BJG0465	Batch Matrix:	Solid	Preparation:	EPA 8290

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
LDW21-IT654B	21G0108-02	21082711	08/05/21 13:50	
LDW21-IT654C	21G0108-03	21082712	08/05/21 13:50	
LDW21-IT654E	21G0108-04	21082713	08/05/21 13:50	
LDW21-IT649B	21G0108-06	21082714	08/05/21 13:50	
LDW21-IT649C	21G0108-07	21082715	08/05/21 13:50	
LDW21-IT649E	21G0108-08	21082716	08/05/21 13:50	
LDW21-IT669B	21G0108-09	21082717	08/05/21 13:50	
LDW21-IT669C	21G0108-10	21082718	08/05/21 13:50	
LDW21-IT669E	21G0108-11	21082719	08/05/21 13:50	
Blank	BJG0465-BLK1	21082701	08/05/21 13:50	
LCS	BJG0465-BS1	21082702	08/05/21 13:50	
LDW21-IT654B	BJG0465-DUP1	21082707	08/05/21 13:50	
Reference	BJG0465-SRM1	21082705	08/05/21 13:50	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

HRGCMS Dioxin/Furan Preparation Bench Sheet EPA Methods 8290A & 1613B

Batch: BJG0465

Solid Samples

ARI Work Orders:

Matrix (circle one)	Soil	Sediment	Oil / Tissue
Extraction Method	Start Date/Time:	End Date/Time:	
Soxhlet SepF Shake out	8/5/21 13:50	8/6/21 0610	

Reagents/Equipment Used	NA	ID / Lot Number	Initials	Date
Balance		24650344	NLB	8/5/21
Toluene		J005598	NLB	8/5/21
Hexane		J005194/J006933	DLP	8/6/21
CH2Cl2		J006423	DLP	8/10/21
H2SO4		F009222	DLP	8/9/21
Na2SO4		J007778/J008034	NLB/DLP	8/5/21/8/10/21
Glasswool		I006679	DLP	8/10/21
~~(96:2 Hex/DCM~~ (RM1)		J006842	NLB	8/5/21
Basic Silica		J002641	DLP	8/10/21
Acid Silica		J005573	DLP	8/10/21
0% Silica		J005622	NLB/DLP	8/5/21/8/10/21
Activated Florisil		J002451	DLP	8/10/21
Nonane		H006038	M	8/12/21
Other (RM2)		I009344	NLB	8/5/21

Lab Number & Container	Sample Name	% Solids	Sample Weight Equal to dry (g) (Target Dry)	Actual	RotoVap 45 °C	Water Trap Vol (mL)	Final Vol. (uL)
21G0108-02 C	LDW21-IT654B	67.48	(14.82)	14.85	1/2	4.5	20
~~21G0108-02 C~~	~~LDW21-IT654B~~	~~67.48~~	~~(14.82)~~		~~1/2~~		~~20~~
21G0108-03 C	LDW21-IT654C	73.46	(13.61)	13.65	1/2	4.0	20
21G0108-04 C	LDW21-IT654E	78.21	(12.79)	12.80	1/2	2.6	20
21G0108-06 C	LDW21-IT649B	73.7	(13.57)	13.59	1/2	3.3	20
21G0108-07 C	LDW21-IT649C	75.22	(13.29)	13.30	1/2	2.9	20
21G0108-08 C	LDW21-IT649E	80.37	(12.44)	12.45	1/2	1.8	20
21G0108-09 C	LDW21-IT669B	61.33	(16.31)	16.32	1/2	6.3	20
21G0108-10 C	LDW21-IT669C	62.17	(16.09)	16.08	1/2	6.1	20
21G0108-11 C	LDW21-IT669E	73.29	(13.64)	13.64	1/2	3.4	20
21G0133-01 C	REF21-Comp	79.61935	(12.56)	12.55	1/2	6.2	20
~~21G0133-01 C~~	~~REF21-Comp~~	~~79.61935~~	~~(12.56)~~		~~1/2~~		~~20~~
BJG0465-BLK1	Blank	100	()		1/2		20
BJG0465-BS1	LCS	100	()		1/2		20
BJG0465-BSD1	LCS Dup	100	()		1/2		20
BJG0465-DUP1	21G0108-02C Duplicate	67.48	(14.82)	14.85	1/2	4.4	20
BJG0465-DUP2	21G0133-01C Duplicate	79.6193	(12.56)	12.56	1/2	2.5	20
BJG0465-MS1	21G0133-01C Matrix Spike		()	12.56	1/2	2.5	20
BJG0465-SRM1	Reference	100	(5.0)	5.03	1/2		20
BJG0465-SRM2	Reference	100	(5.0)	5.02	1/2		20
Prep Analyst / Date:	NLB 8/5/21				DLP 8/6/21	DLP 8/6/21	M 8/12/21

Standards Used	Vol	ID / Lot Number	Concentration	Expiration Date	Analyst	Witness	Date
Recovery Standard	1.0 mL	J007665	2/4 ng/mL	7/27/2022	NLB	M	8/5/21
OPR	1.0 mL	J001260	0.2/1.0/2.0 ng/mL	2/3/2022	NLB	M	8/5/21
~~**QLS Standard**~~	~~1.0 mL~~		~~0.01/0.05/0.1 ng/mL ng/m~~				
Cleanu-up Standard	1.0 mL	J007666	0.8 ng/mL	7/27/22	DLP	NLB	8/10/21

Verify Client ID
Analyst / Date: NLB 8/5/21

Acid Clean
Y / N
Analyst / Date: DLP 8/9/21

Silica Florisil Clean
Y / N
Analyst / Date: DLP 8/10/21

Supervisor Review By — Date: 8/14/21

Printed: 8/5/2021 9:05:00AM

TOTAL SOLIDS BENCHSHEET

Method HRSM01.2

(dry at 110 C)

Instrumentation

Batch:	BJG0401
Date:	7/20/2021 5:30
Analyst:	DXP / NL
Drying Oven:	18
Analytical Balance:	24650344

Batch drying time		
Record times as mm/dd/yy hh:mm		Oven Temp, C
Date/time in oven:	7/19/2021 13:45	
Date/time out:	7/20/2021 5:30	
Elapsed hrs:	15.8	

TS (%) calculated as:

Final dry wt (g) = (Dry Wt - Tare Wt)

TS = (Final Dry Wt X 100)/ (sample & dish -dish tare)

Oven Temps, °C	
Start Temp:	108
End Temp:	108

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
21G0108-02	0.7900	11.0300	7.7000	6.91	**67.48%**	No
21G0108-03	0.8000	11.6500	8.7700	7.97	**73.46%**	Yes
21G0108-04	0.7900	11.3900	9.0800	8.29	**78.21%**	No
21G0108-06	0.7900	11.7400	8.8600	8.07	**73.70%**	No
21G0108-07	0.7900	11.9300	9.1700	8.38	**75.22%**	Yes
21G0108-08	0.8000	11.0400	9.0300	8.23	**80.37%**	No
21G0108-09	0.7900	11.6500	7.4500	6.66	**61.33%**	No
21G0108-10	0.7900	11.3100	7.3300	6.54	**62.17%**	No
21G0108-11	0.7900	11.3100	8.5000	7.71	**73.29%**	No
21G0140-04	0.8000	11.9500	7.2100	6.41	**57.49%**	Yes
21G0140-05	0.7900	11.5500	6.8900	6.10	**56.69%**	Yes
21G0140-06	0.8200	11.3000	7.1700	6.35	**60.59%**	No
21G0140-07	0.8200	11.0300	8.9200	8.10	**79.33%**	No
21G0140-08	0.7800	11.6000	8.5500	7.77	**71.81%**	Yes

TOTAL SOLIDS BENCHSHEET

Method HRSM01.2

(dry at 110 C)

Batch:	BJG0401
Date:	
Analyst:	DP / NL
Drying Oven:	018
Analytical Balance:	2465034

Instrumentation

Batch drying time

Record times as mm/dd/yy hh:mm

Date/time in oven:	07/19/21	13:45
Date/time out:	07/20/21	0530
Elapsed hrs:	0.0	

Oven Temp, C: 108

TS (%) calculated as:

Final dry wt (g) = (Dry Wt - Tare Wt)

TS = (Final Dry Wt X 100)/ (sample & dish -dish tare)

Oven Temps, °C	
Start Temp:	108
End Temp:	108

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
21G0108-02	~~10~~ 0.79	11.03	7.70			No
21G0108-03	0.80	11.65	8.77			No yes
21G0108-04	0.79	11.39	9.08			No
21G0108-06	0.79	11.74	8.86			No
21G0108-07	0.79	11.93	9.17			No yes
21G0108-08	0.80	11.04	9.03			No
21G0108-09	0.79	11.65	7.45			No
21G0108-10	0.79	11.31	7.33			No
21G0108-11	0.79	11.31	8.450			No
21G0140-04	0.80	11.95	7.21			No yes
21G0140-05	0.79	11.55	6.59			No yes
21G0140-06	0.82	11.30	7.17			No
21G0140-07	0.82	11.03	8.92			No
21G0140-08	0.78	11.60	8.55			No yes

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Organic Extractions Laboratory Analyst Notes

Extraction Parameter: Dioxin Extraction Batch BJG0465

Total Solids Batch: BJG0385 Work Order(s): 21G0133

Screens: Soil/Sediment/Solid/Other:	Analyst/Date
☐ No Anomalies (standard soil/wet sediment/sand/gravel)=	
☑ Standing Water Decanted (Not shared)= a	07/19/21
☐ Standing Water Homogenized (Shared samples)=	
☐ Clay/Clumps (Difficult to homogenize)=	
☐ Rocks (%+size)?	
☐ Organics (Leaves/sticks/grass)=	
☐ Oily, obvious fuel/sulfur odors=	
☐ Received in 32oz jar(s)=Homogenized in Pyrex dish=	
☐ Previously Frozen =	
☐ Other (Details)=	
Aqueous:	
☐ No Anomalies	
☐ Turbid/Color=	
☐ Particulates(%)=(Note: >5%=Notify Supervisor/Lead)	
☐ Emulsions (%)=	
☐ Oily, obvious fuel/sulfur odors=	
☐ Other (Details)=	
☐ Received in 1.0L Bottle(s)=No Bottle Rinse=	
☐ Other Notes/Comments= (Note problems, concerns, corrective actions).	
☑ Share Samples Y / N	07/19/21
☑ Multiple Jars Y / N	07/19/21
☐ Sample Pre-Screens indicate analyte activity=	
☐ Sample weights/volumes reduced based on Pre-Screen=	

3056F

Revision 15
07/01/19

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Organic Extractions Laboratory Analyst Notes

Extraction Parameter: Dioxin Extraction Batch BJG0465

Total Solids Batch: BJG0401 Work Order(s): 21G0108, 21G0111, 21G0140

Screens: Soil/Sediment/Solid/Other:	Analyst/Date
☒ No Anomalies (standard soil/wet sediment/sand/gravel)= 108-4,6,7,8 140-7	DP 7/19/21
☒ Standing Water Decanted (Not shared)= 108-3,7; 140-4,5,8	DP 7/19/21
☐ Standing Water Homogenized (Shared samples)=	
☒ Clay/Clumps (Difficult to homogenize)= 108-9,10,11 140-6	DP 7/19/21
☐ Rocks (%+size)?	
☒ Organics (Leaves/sticks/grass)= 108-2	DP 7/19/21
☐ Oily, obvious fuel/sulfur odors=	
☐ Received in 32oz jar(s)=Homogenized in Pyrex dish=	
☐ Previously Frozen =	
☐ Other (Details)=	
Aqueous:	
☐ No Anomalies	
☐ Turbid/Color=	
☐ Particulates(%)=(Note: >5%=Notify Supervisor/Lead)	
☐ Emulsions (%)=	
☐ Oily, obvious fuel/sulfur odors=	
☐ Other (Details)=	
☐ Received in 1.0L Bottle(s)=No Bottle Rinse=	
☐ Other Notes/Comments= (Note problems, concerns, corrective actions).	
☐ Share Samples Y / N	
☐ Multiple Jars Y / N	
☐ Sample Pre-Screens indicate analyte activity=	
☐ Sample weights/volumes reduced based on Pre-Screen=	

3056F

Revision 15
07/01/19

TOTAL SOLIDS BENCHSHEET

Method HRSM01.2

(dry at 110 C)

Instrumentation

Batch:	BJG0401
Date:	7/20/2021 5:30
Analyst:	DXP / NL
Drying Oven:	18
Analytical Balance:	24650344

Batch drying time			
Record times as mm/dd/yy hh:mm		Oven Temp, C	TS (%) calculated as:
Date/time in oven:	7/19/2021 13:45		Final dry wt (g) = (Dry Wt - Tare Wt)
Date/time out:	7/20/2021 5:30		TS = (Final Dry Wt X 100)/ (sample & dish -dish tare)
Elapsed hrs:	15.8		

Oven Temps, °C	
Start Temp:	108
End Temp:	108

SAMPLE ID	Dish Tare Wt (g)	Dish with Sample (g)	Dry Wt (g)	Solids Wt (g)	TS (%)	Sample Decanted
21G0108-02	0.7900	11.0300	7.7000	6.91	**67.48%**	No
21G0108-03	0.8000	11.6500	8.7700	7.97	**73.46%**	Yes
21G0108-04	0.7900	11.3900	9.0800	8.29	**78.21%**	No
21G0108-06	0.7900	11.7400	8.8600	8.07	**73.70%**	No
21G0108-07	0.7900	11.9300	9.1700	8.38	**75.22%**	Yes
21G0108-08	0.8000	11.0400	9.0300	8.23	**80.37%**	No
21G0108-09	0.7900	11.6500	7.4500	6.66	**61.33%**	No
21G0108-10	0.7900	11.3100	7.3300	6.54	**62.17%**	No
21G0108-11	0.7900	11.3100	8.5000	7.71	**73.29%**	No
21G0140-04	0.8000	11.9500	7.2100	6.41	**57.49%**	Yes
21G0140-05	0.7900	11.5500	6.8900	6.10	**56.69%**	Yes
21G0140-06	0.8200	11.3000	7.1700	6.35	**60.59%**	No
21G0140-07	0.8200	11.0300	8.9200	8.10	**79.33%**	No
21G0140-08	0.7800	11.6000	8.5500	7.77	**71.81%**	Yes

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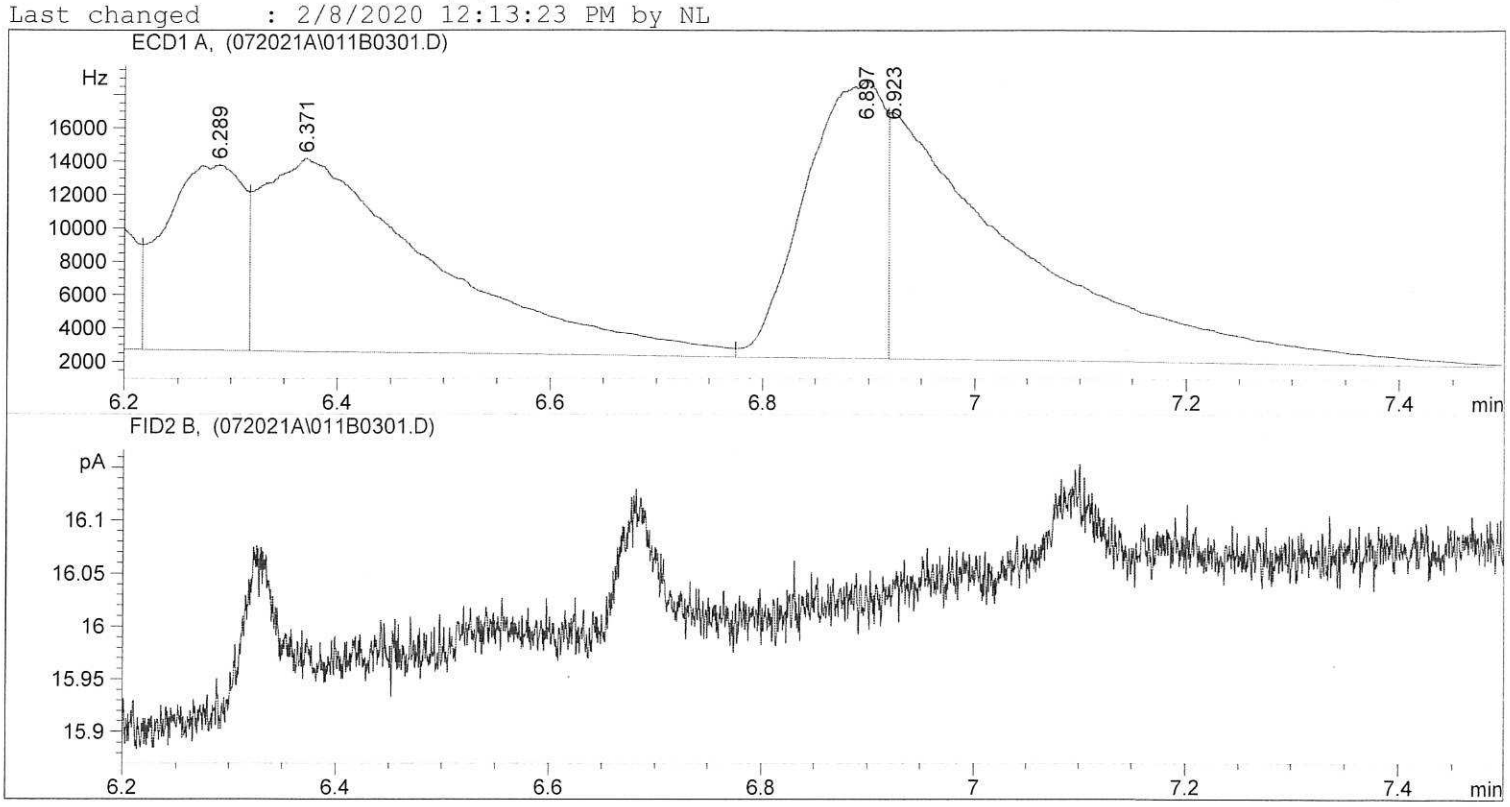
Injection Date : 7/20/2021 5:21:06 PM Seq. Line : 3
Sample Name : CS4 STANDARD Location : Vial 11
Acq. Operator : DXP Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072021A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



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Area Percent Report

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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.221	BV	0.0234	2464.33350	1343.46509	0.22709
2	5.320	VP S	0.1414	6.76124e4	7969.86230	6.23053
3	5.687	PV S	0.0592	6.77314e4	1.90844e4	6.24149
4	5.764	VV S	0.0734	1.58571e5	3.60136e4	14.61242
5	5.809	VV S	0.1513	2.75473e5	3.03419e4	25.38505
6	6.113	VV S	0.1113	1.07418e5	1.60868e4	9.89864
7	6.289	VV S	0.0855	5.71157e4	1.11373e4	5.26325
8	6.371	VV S	0.1888	1.31290e5	1.15886e4	12.09847
9	6.897	PV S	0.0855	8.54799e4	1.66637e4	7.87704
10	6.923	VB S	0.1491	1.32023e5	1.47576e4	12.16602
Totals :				1.08518e6	1.64987e5	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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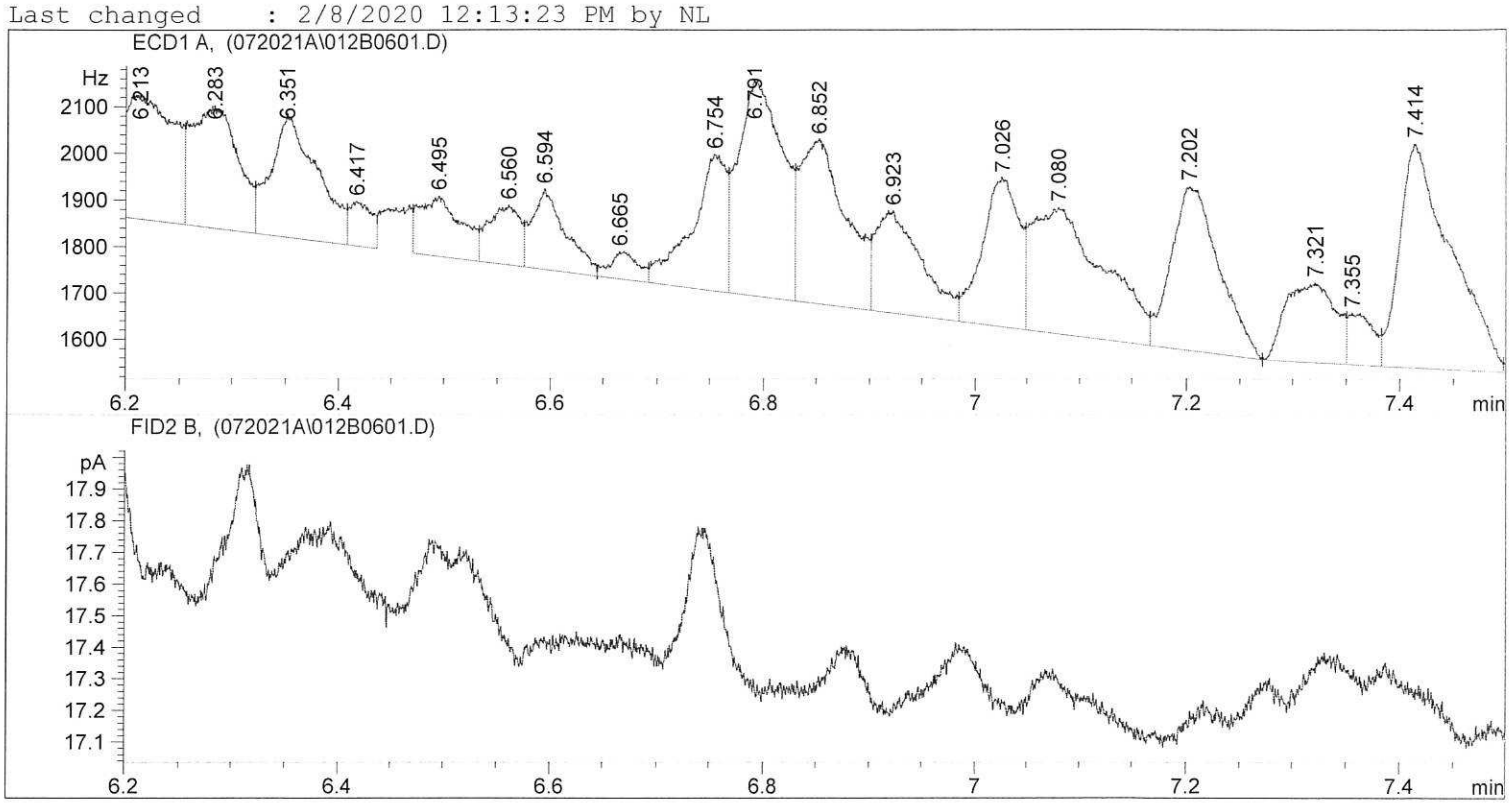
Injection Date : 7/20/2021 5:54:27 PM Seq. Line : 6
Sample Name : 21G0108 02 Location : Vial 12
Acq. Operator : DXP Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072021A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



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Area Percent Report

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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.223	BP	0.0117	262.02530	275.75696	0.87605
2	5.259	VP	0.0175	639.21918	481.52866	2.13716
3	5.312	VV	0.0198	65.22691	42.34731	0.21808
4	5.356	VP	0.0182	94.31473	62.38773	0.31533
5	5.439	VV	0.0217	320.46396	176.81966	1.07144
6	5.514	VV	0.0267	1061.06982	481.57471	3.54757
7	5.543	VV	0.0260	1770.92871	832.36969	5.92091
8	5.576	VB	0.0345	1430.18103	494.38739	4.78166
9	5.693	BV	0.0380	769.92450	242.87170	2.57416
10	5.714	VV	0.0113	212.63152	231.32538	0.71091
11	5.725	VV	9.11e-3	147.29417	202.02641	0.49246
12	5.762	VV	0.0239	875.68213	441.57660	2.92775
13	5.791	VV	7.61e-3	127.72021	218.72791	0.42702
14	5.825	VV	0.0267	1598.52026	749.62555	5.34448
15	5.873	VB	0.0257	569.24622	264.41077	1.90321
16	5.934	BV	0.0286	888.23590	367.60922	2.96972
17	5.963	VV	0.0183	339.79907	221.41510	1.13608

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.986	VV	3.25e-3	42.65490	187.72168	0.14261
19	6.008	VV	0.0255	527.30908	244.69142	1.76300
20	6.054	VV	0.0195	341.41470	227.32014	1.14148
21	6.094	VV	0.0586	2999.94531	614.00586	10.03000
22	6.213	VV	0.0427	920.73486	268.91403	3.07838
23	6.283	VV	0.0369	808.02618	262.88385	2.70155
24	6.351	VV	0.0367	796.84674	265.23203	2.66417
25	6.417	VV	0.0173	139.37668	96.13142	0.46599
26	6.495	BV	0.0329	358.60986	129.61491	1.19897
27	6.560	VV	0.0239	256.41681	128.47491	0.85730
28	6.594	VV	0.0267	379.76379	172.33987	1.26970
29	6.665	VV	0.0214	105.75828	58.74689	0.35359
30	6.754	VV	0.0265	646.63800	293.00073	2.16197
31	6.791	VV	0.0347	1349.78308	461.73013	4.51286
32	6.852	VV	0.0367	1077.08508	352.42337	3.60112
33	6.923	VV	0.0364	670.74481	219.87399	2.24256
34	7.026	VV	0.0290	783.52203	319.19324	2.61962
35	7.080	VV	0.0558	1284.40527	271.54959	4.29427
36	7.202	VP	0.0376	1091.21057	352.03796	3.64835
37	7.321	VV	0.0376	548.20380	171.95819	1.83286
38	7.355	VB	0.0194	180.35965	110.52304	0.60301
39	7.414	BV	0.0399	1610.97375	480.52487	5.38612
40	7.532	VP	0.0387	614.59045	191.05869	2.05482
41	7.619	VV	0.0154	124.28184	102.22183	0.41552
42	7.651	VV	0.0273	402.02805	178.23685	1.34414
43	7.704	VP	0.0120	34.97420	35.68513	0.11693
44	7.772	VBA	0.0272	641.59045	285.65677	2.14509
Totals :				2.99097e4	1.22685e4	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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==========================================================================
Injection Date  : 7/20/2021 6:05:26 PM          Seq. Line :   7
Sample Name     : 21G0108 03                     Location : Vial 13
Acq. Operator   : DXP                                 Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072021A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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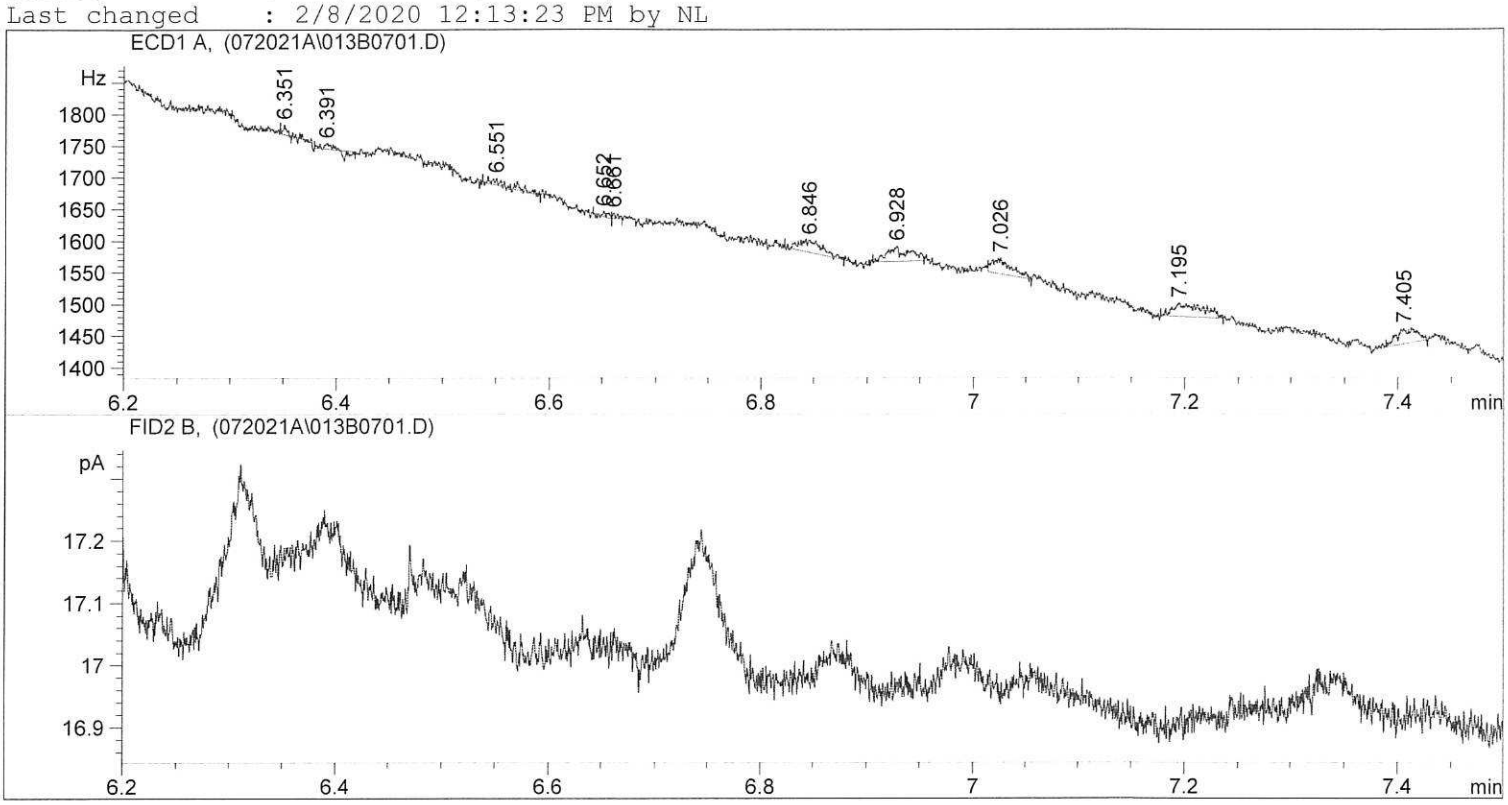


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==========================================================================
                            Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
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Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.224	PV	0.0130	101.02868	97.82810	4.82301
2	5.262	VV	0.0208	231.54979	145.21143	11.05396
3	5.315	VP	0.0144	15.42078	13.07076	0.73617
4	5.346	VB	0.0126	18.35575	20.11842	0.87629
5	5.443	PP	0.0170	55.70671	39.60335	2.65938
6	5.548	BV	0.0230	289.38950	151.05029	13.81517
7	5.574	VB	0.0166	110.11597	82.33170	5.25683
8	5.605	BB	0.0106	20.60200	32.40985	0.98352
9	5.758	BV	0.0218	141.44304	79.47284	6.75235
10	5.826	VB	0.0260	283.93668	132.56212	13.55485
11	5.936	BV	0.0279	385.74554	171.09464	18.41511
12	5.986	VV	0.0235	153.25888	78.00594	7.31643
13	5.994	VV	5.28e-3	26.91669	67.13033	1.28498
14	6.000	VB	9.70e-3	54.66891	70.11291	2.60984
15	6.073	PP	6.31e-3	10.52205	21.51295	0.50231
16	6.166	BP	0.0177	10.88724	10.25075	0.51975
17	6.351	BP	3.41e-3	3.43666	15.34122	0.16406

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	6.391	PP	1.69e-3	8.13917e-1	8.71315	0.03886
19	6.551	BP	0.0118	10.10197	10.37870	0.48226
20	6.652	PP	4.88e-3	2.36979	8.09208	0.11313
21	6.661	VB	3.30e-3	2.06071	8.89246	0.09838
22	6.846	BB	0.0180	28.15724	18.84462	1.34420
23	6.928	BB	0.0169	33.69062	24.05240	1.60836
24	7.026	BP	0.0151	29.68254	24.93603	1.41701
25	7.195	PB	0.0236	39.45270	20.57865	1.88343
26	7.405	PP	0.0157	29.97934	23.77572	1.43118
27	7.524	BP	4.30e-3	4.04556	13.48906	0.19313
28	7.675	PP	2.77e-3	1.38417	7.45518	0.06608

Totals : 2094.72340 1396.31565

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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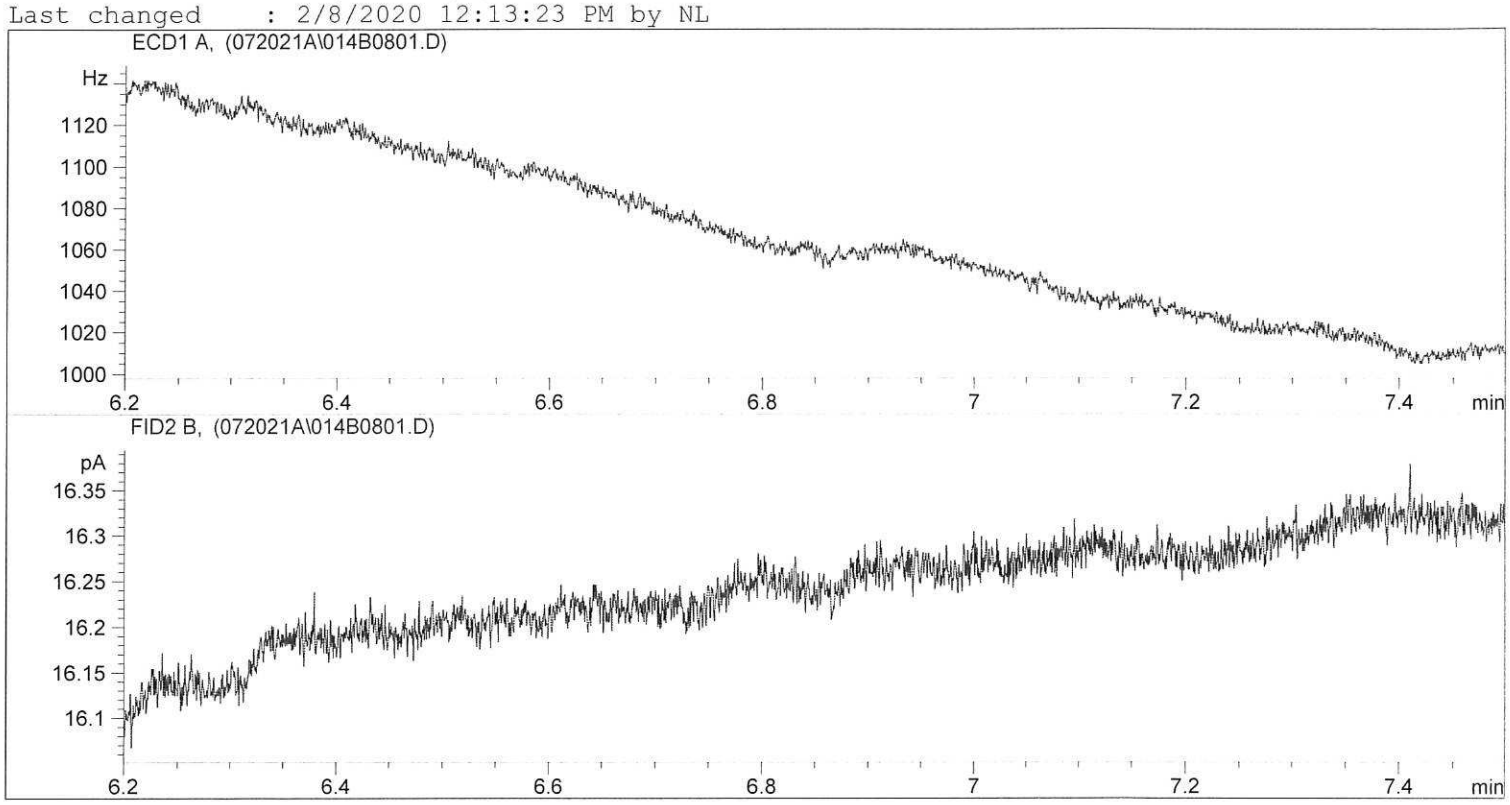
Injection Date : 7/20/2021 6:16:25 PM Seq. Line : 8
Sample Name : 21G0108 04 Location : Vial 14
Acq. Operator : DXP Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072021A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



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Area Percent Report

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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

No peaks found

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*** End of Report ***

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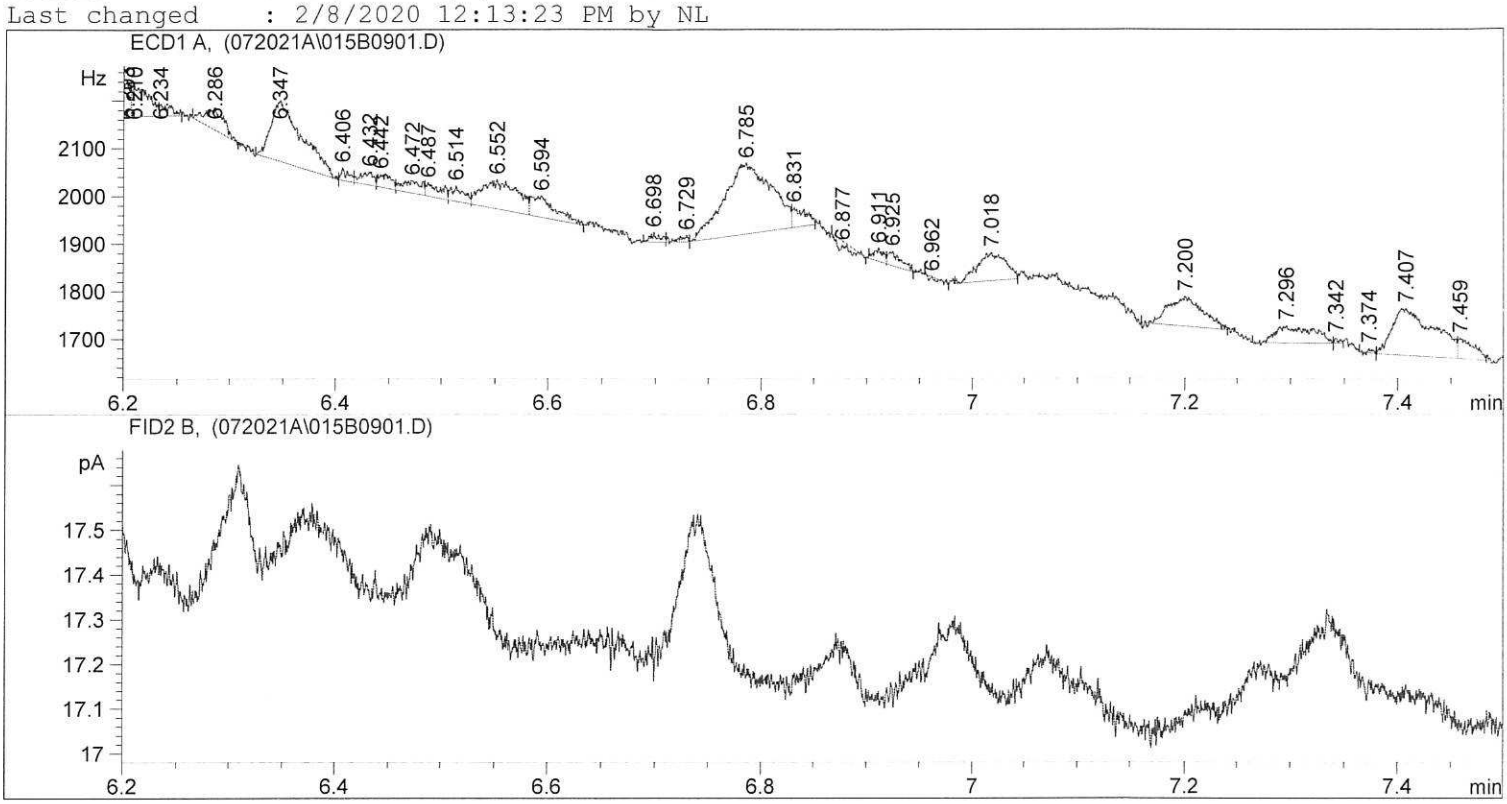
Injection Date : 7/20/2021 6:27:25 PM Seq. Line : 9
Sample Name : 21G0108 06 Location : Vial 15
Acq. Operator : DXP Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072021A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



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Area Percent Report

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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.223	BP	0.0130	576.05511	643.55066	3.11715
2	5.257	VP	0.0162	1055.90247	989.60779	5.71369
3	5.306	VP	9.91e-3	26.68220	34.95528	0.14438
4	5.353	VP	0.0194	292.90808	185.95273	1.58498
5	5.393	VP	4.20e-3	5.60861	18.19169	0.03035
6	5.401	VV	2.66e-3	2.52139	14.28811	0.01364
7	5.440	VV	0.0191	732.72223	483.80353	3.96490
8	5.517	VV	0.0219	1141.91992	619.25751	6.17915
9	5.542	VV	0.0324	4621.98584	1782.66809	25.01047
10	5.641	VV	3.97e-3	50.86974	176.03853	0.27527
11	5.681	VV	0.0465	1287.98291	326.06842	6.96953
12	5.759	VV	0.0241	1229.84277	673.98596	6.65492
13	5.823	VV	0.0240	1300.05933	654.66461	7.03488
14	5.862	VV	5.98e-3	92.74515	208.78514	0.50186
15	5.877	VV	0.0232	409.98682	213.07883	2.21852
16	5.931	VV	0.0250	619.63147	298.55884	3.35295
17	5.976	VV	0.0259	650.80597	297.52631	3.52164

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	6.001	VV	0.0264	567.26074	264.90140	3.06956
19	6.048	VV	0.0115	137.55206	155.71608	0.74432
20	6.085	VV	0.0430	1453.73340	399.81775	7.86644
21	6.173	VV	9.60e-3	40.92739	53.04610	0.22147
22	6.203	VV	0.0120	73.40618	75.07650	0.39722
23	6.210	VV	0.0175	67.04623	63.78410	0.36280
24	6.234	VB	9.68e-3	18.35571	23.58640	0.09933
25	6.286	BB	0.0158	55.03684	43.44675	0.29782
26	6.347	PP	0.0251	258.38354	126.17191	1.39816
27	6.406	VB	6.03e-3	11.60986	25.89099	0.06282
28	6.432	BV	0.0105	21.78819	27.31463	0.11790
29	6.442	VV	0.0145	23.27962	26.72997	0.12597
30	6.472	VV	0.0149	31.93044	26.33904	0.17278
31	6.487	VV	0.0162	26.40324	27.24152	0.14287
32	6.514	VV	0.0100	26.23220	32.43937	0.14195
33	6.552	VV	0.0275	139.57523	60.88683	0.75527
34	6.594	VP	0.0193	67.48827	44.07726	0.36519
35	6.698	PB	6.81e-3	10.51795	19.13647	0.05691
36	6.729	BP	6.59e-3	6.37595	12.42129	0.03450
37	6.785	VV	0.0392	458.76068	146.96024	2.48244
38	6.831	VB	0.0108	35.60054	40.89388	0.19264
39	6.877	BP	0.0203	16.51671	9.66030	0.08938
40	6.911	BV	8.55e-3	16.26388	26.55280	0.08801
41	6.925	VP	0.0106	25.67842	29.98238	0.13895
42	6.962	BP	0.0000	3.13833	4.88987e-1	0.01698
43	7.018	PV	0.0226	111.37599	59.12708	0.60268
44	7.200	PB	0.0263	135.00533	61.30147	0.73054
45	7.296	PP	0.0279	83.80383	35.81590	0.45348
46	7.342	VB	4.19e-3	2.92831	10.08450	0.01585
47	7.374	PP	2.77e-3	1.52278	8.19649	0.00824
48	7.407	VV	0.0323	269.16043	98.93497	1.45648
49	7.459	VB	0.0134	44.27940	41.71586	0.23960
50	7.766	PV	0.0214	111.52274	67.04041	0.60347
51	7.780	VB	6.83e-3	29.51313	55.29647	0.15970
Totals :				1.84802e4	9821.05811	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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==========================================================================
Injection Date  : 7/20/2021 6:38:39 PM          Seq. Line :  10
Sample Name     : 21G0108 07                     Location : Vial 16
Acq. Operator   : DXP                                Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072021A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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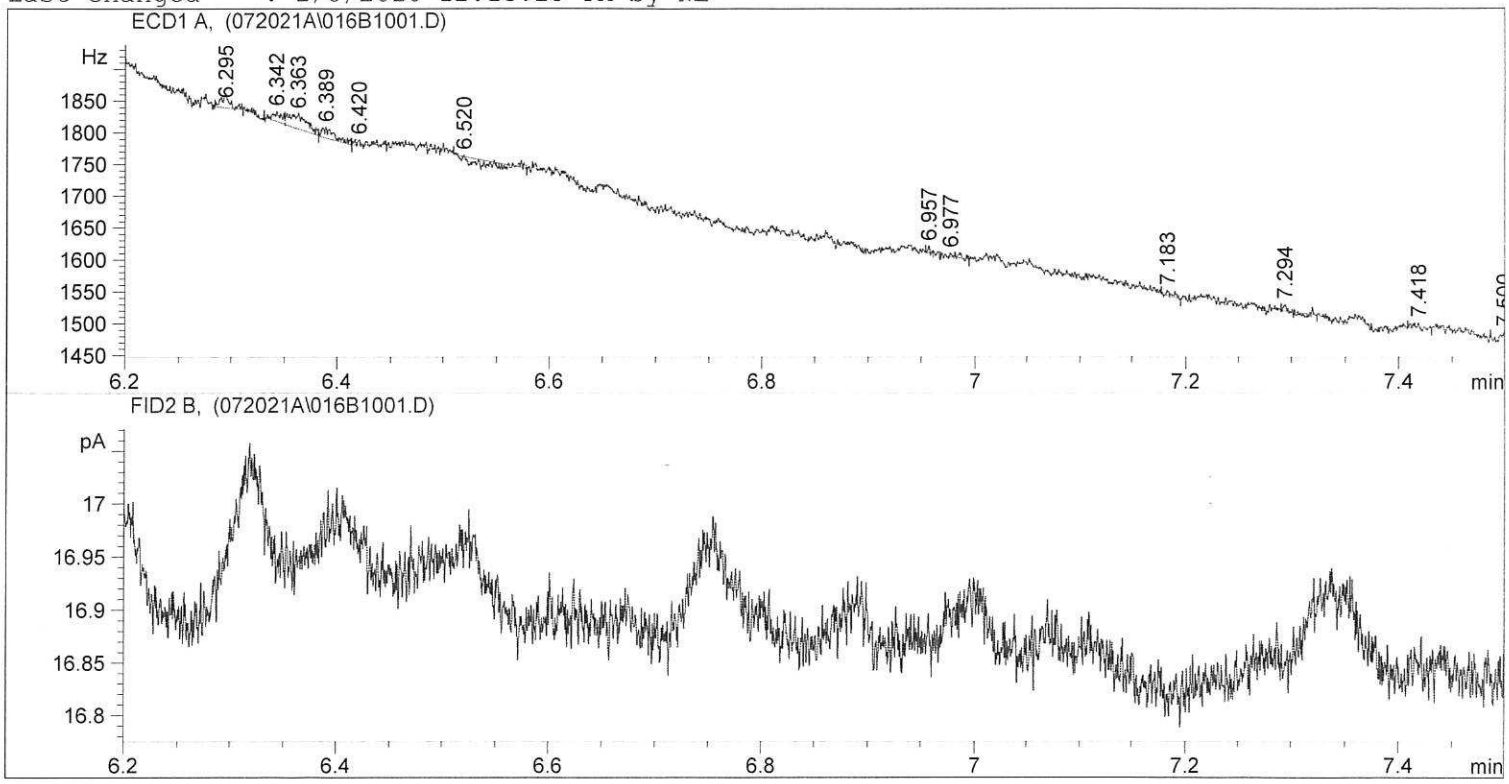


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==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
```

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.228	BB	9.16e-3	13.33255	18.17348	0.46615
2	5.281	BP	5.89e-3	4.79931	13.69320	0.16780
3	5.420	PV	0.0437	160.20828	43.12571	5.60137
4	5.552	VV	0.0260	141.24394	66.02135	4.93832
5	5.587	VV	0.0236	118.61917	60.20842	4.14729
6	5.619	VV	0.0179	53.27511	35.86787	1.86266
7	5.653	VP	3.82e-3	3.84848	13.12413	0.13455
8	5.704	VV	0.0311	278.78134	107.19884	9.74705
9	5.761	VV	0.0325	260.79245	97.84397	9.11810
10	5.836	VV	0.0345	317.57620	110.00336	11.10344
11	5.895	VV	0.0259	114.08104	52.24307	3.98862
12	5.931	VV	0.0130	71.36276	70.54395	2.49506
13	5.938	VB	8.34e-3	40.83978	63.18193	1.42788
14	6.004	BV	0.0429	1075.02283	299.13342	37.58609
15	6.080	VB	0.0133	72.37811	74.40059	2.53056
16	6.179	BP	2.63e-3	2.20829	12.70515	0.07721
17	6.295	PB	7.54e-3	12.41869	22.16293	0.43420

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	6.342	PV	6.69e-3	8.13886	15.59358	0.28456
19	6.363	VP	0.0140	26.48225	23.08410	0.92590
20	6.389	BP	0.0112	13.36767	16.18513	0.46737
21	6.420	BB	6.28e-3	3.87244	7.95966	0.13539
22	6.520	BP	0.0000	13.17732	1.87597	0.46072
23	6.957	BB	2.19e-3	1.46347	10.76035	0.05117
24	6.977	BP	5.18e-3	2.17855	5.55076	0.07617
25	7.183	PP	5.13e-3	2.75775	7.10450	0.09642
26	7.294	PB	1.09e-3	7.20598e-2	9.33517	0.00252
27	7.418	BP	3.95e-3	2.23679	7.79254	0.07821
28	7.500	PP	5.89e-3	2.61088	7.45507	0.09128
29	7.653	BP	0.0167	31.14886	25.71679	1.08906
30	7.780	PBA	0.0135	11.86587	11.05816	0.41487
Totals :				2860.16112	1309.10315	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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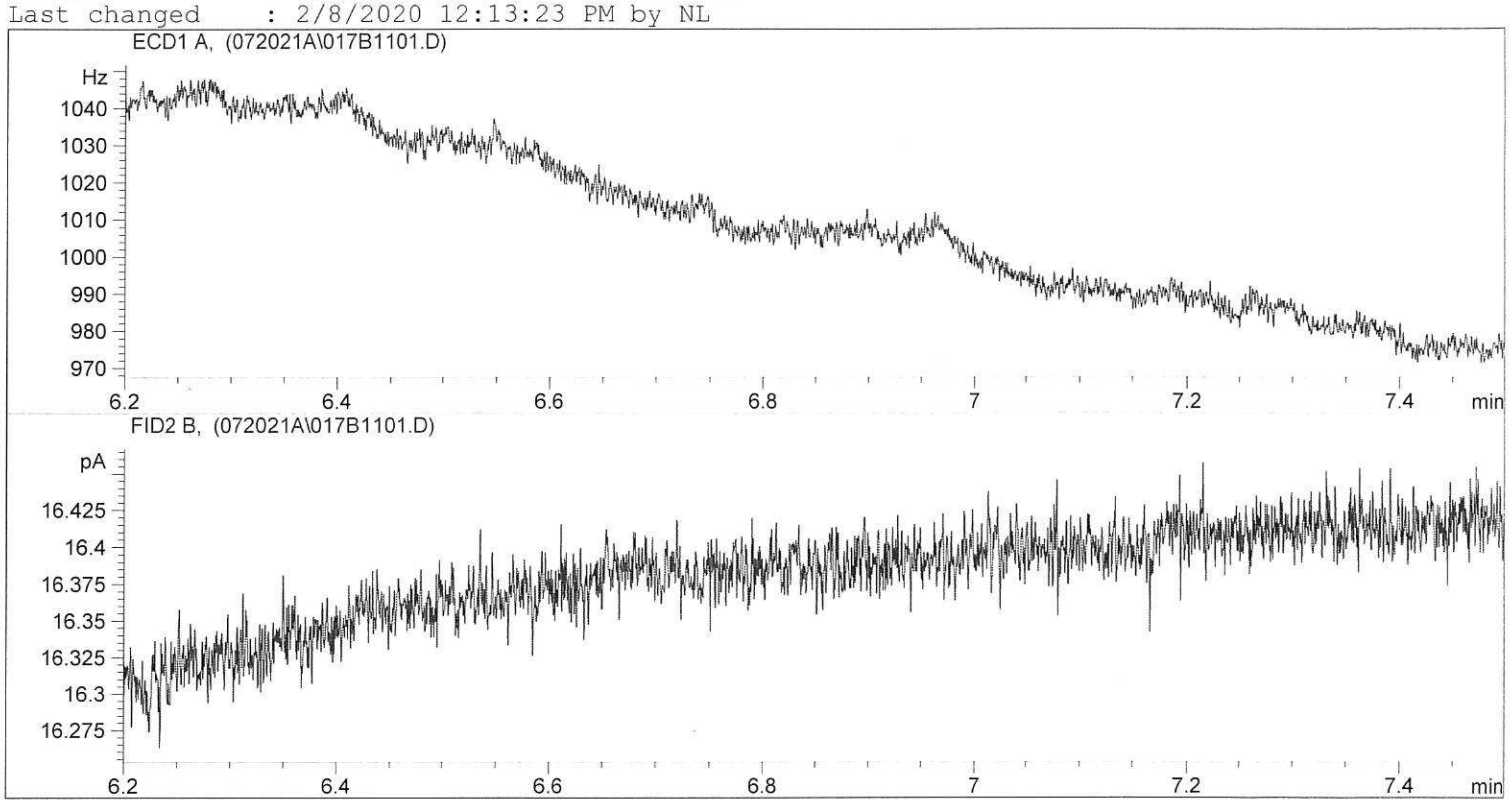
*** End of Report ***

Injection Date	: 7/20/2021 6:49:37 PM	Seq. Line :	11
Sample Name	: 21G0108 08	Location :	Vial 17
Acq. Operator	: DXP	Inj :	1
		Inj Volume :	1 µl
Sequence File	: C:\HPCHEM\2\SEQUENCE\072021A.S		
Method	: C:\HPCHEM\2\METHODS\DIOXIN.M		
Last changed	: 2/8/2020 12:13:23 PM by NL		



Area Percent Report

Sorted By	:	Signal
Multiplier	:	1.0000
Dilution	:	1.0000

No peaks found

*** End of Report ***

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==========================================================================
Injection Date  : 7/20/2021 7:00:48 PM          Seq. Line :  12
Sample Name     : 21G0108 09                     Location : Vial 18
Acq. Operator   : DXP                                Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072021A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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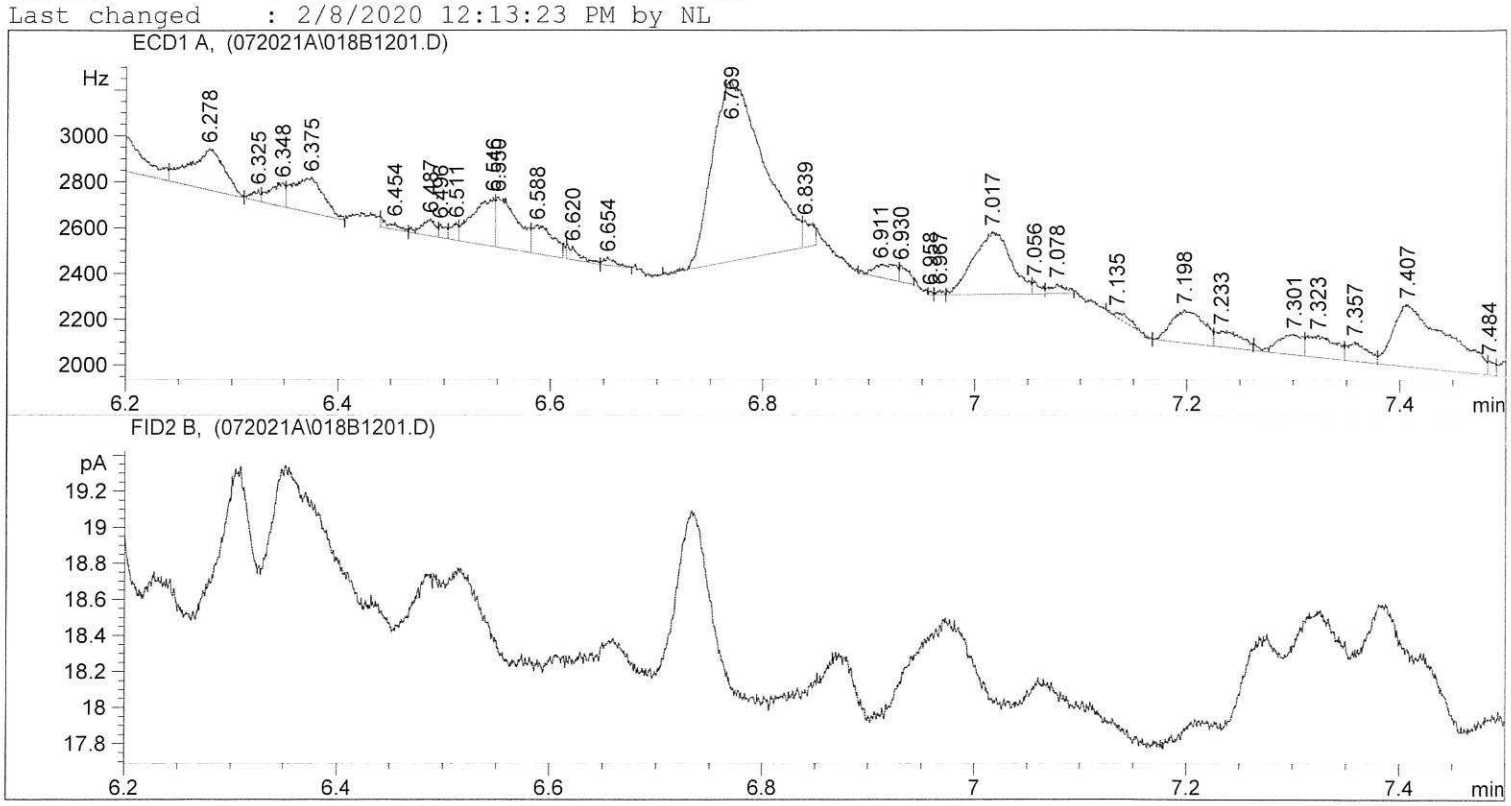


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==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
```

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.222	BV	0.0153	1038.27441	1073.98657	3.53138
2	5.257	VV S	0.0344	4719.10889	1680.92432	16.05062
3	5.345	PP T	0.0107	111.63557	140.55348	0.37969
4	5.400	PV T	0.0436	230.37881	63.09625	0.78356
5	5.436	PV T	2.46e-3	52.29767	366.87405	0.17787
6	5.504	PV T	1.90e-3	12.90964	213.65675	0.04391
7	5.539	VB S	0.0248	3652.25415	2006.43628	12.42204
8	5.572	BB T	0.0132	159.16808	147.63022	0.54136
9	5.654	BV	0.0187	170.56030	108.72885	0.58011
10	5.683	VV	0.0113	65.13641	69.59229	0.22154
11	5.708	VV	0.0109	79.45854	93.72462	0.27025
12	5.718	VV	9.38e-3	76.28740	103.74689	0.25947
13	5.759	VV	0.0194	965.71234	640.22321	3.28458
14	5.821	VB S	0.0312	5682.89795	2423.63623	19.32866
15	5.872	BB X	9.05e-3	20.35441	29.50999	0.06923
16	5.930	BV T	0.0214	758.39154	424.82910	2.57944
17	6.006	VV T	0.0152	180.88319	149.08322	0.61522

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	6.073	VB T	0.0383	2133.92090	663.31647	7.25789
19	6.190	BV	0.0296	377.84668	157.61963	1.28513
20	6.278	VV	0.0263	398.19046	180.60300	1.35432
21	6.325	VV	6.72e-3	24.55309	46.77330	0.08351
22	6.348	VV	0.0119	99.02772	102.34853	0.33681
23	6.375	VP	0.0230	297.21774	154.69714	1.01090
24	6.454	BP	0.0111	30.27117	33.09485	0.10296
25	6.487	VV	0.0107	64.83733	75.11400	0.22052
26	6.496	VV	5.18e-3	24.13867	58.97292	0.08210
27	6.511	VV	6.43e-3	36.60169	73.22229	0.12449
28	6.546	VV	0.0175	295.65952	214.00729	1.00560
29	6.550	VV	0.0174	312.04861	216.81256	1.06134
30	6.588	VB	0.0171	171.81648	124.21395	0.58438
31	6.620	BP	0.0103	46.47004	56.10864	0.15805
32	6.654	VB	8.87e-3	24.51001	33.75846	0.08336
33	6.769	PV	0.0404	2632.39868	787.26892	8.95331
34	6.839	VB	8.54e-3	77.17670	116.30186	0.26249
35	6.911	PV	0.0183	91.02364	59.33717	0.30959
36	6.930	VB	7.52e-3	43.13504	72.76826	0.14671
37	6.958	BP	2.86e-3	2.86295	16.25084	0.00974
38	6.967	VP	4.56e-3	7.17250	20.12106	0.02440
39	7.017	VV	0.0292	671.55573	272.49283	2.28409
40	7.056	VV	7.37e-3	27.99637	52.94827	0.09522
41	7.078	VB	0.0119	41.47414	42.86382	0.14106
42	7.135	BP	0.0148	29.77693	24.83123	0.10128
43	7.198	VV	0.0256	305.95367	143.70818	1.04061
44	7.233	VB	0.0201	121.09792	71.84777	0.41188
45	7.301	BV	0.0214	151.48271	89.31922	0.51522
46	7.323	VV	0.0224	171.23611	96.18171	0.58241
47	7.357	VV	0.0155	107.29436	84.14427	0.36493
48	7.407	VV	0.0420	955.14880	271.64944	3.24865
49	7.484	VB	6.02e-3	29.40964	63.26429	0.10003
50	7.521	BV	0.0370	438.42725	142.17921	1.49118
51	7.635	VP	0.0508	703.23529	162.80885	2.39184
52	7.766	VBA	0.0296	480.72925	193.11774	1.63506
Totals :				2.94014e4	1.47103e4	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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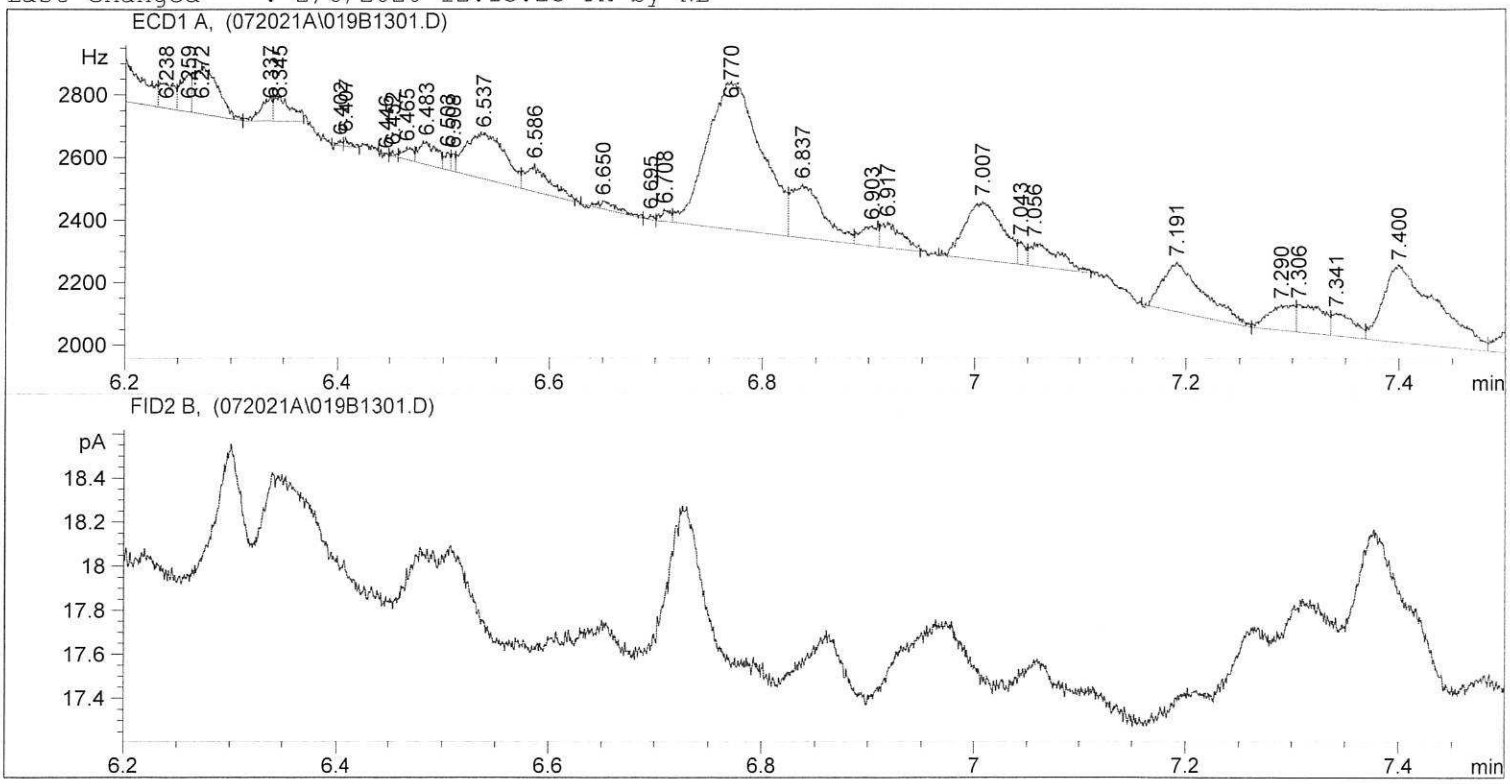
Injection Date : 7/20/2021 7:11:45 PM Seq. Line : 13
Sample Name : 21G0108 10 Location : Vial 19
Acq. Operator : DXP Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072021A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



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Area Percent Report

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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.221	BP	0.0111	405.24808	460.66275	1.78453
2	5.256	VP	0.0145	963.94244	806.75281	4.24476
3	5.312	VV	7.69e-3	30.28856	52.85269	0.13338
4	5.344	VV	0.0137	186.15044	170.65971	0.81972
5	5.349	VP	0.0139	148.05463	178.10762	0.65197
6	5.374	VV	2.32e-3	2.39317	18.37632	0.01054
7	5.380	VV	4.27e-3	6.10781	20.55165	0.02690
8	5.434	VV	0.0220	620.27747	341.04416	2.73142
9	5.502	VV	0.0257	1103.54871	521.69684	4.85953
10	5.537	VV	0.0209	1736.21460	1059.03540	7.64550
11	5.573	VP	0.0209	822.61133	481.36801	3.62241
12	5.630	VV	3.20e-3	4.70696	21.10321	0.02073
13	5.650	VV	7.88e-3	32.26157	53.18848	0.14207
14	5.658	VV	8.93e-3	36.93135	50.48790	0.16263
15	5.670	VB	5.43e-3	12.31945	32.45631	0.05425
16	5.702	PV	0.0109	42.46235	46.96990	0.18698
17	5.718	VV	8.48e-3	24.84724	48.81777	0.10942

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.756	VV	0.0180	718.68811	511.77045	3.16478
19	5.817	VV	0.0231	2290.90308	1386.79187	10.08810
20	5.869	VV	0.0168	332.33298	236.20084	1.46344
21	5.930	VV	0.0342	1695.67847	596.25989	7.46700
22	5.995	VV	0.0161	413.44476	311.30371	1.82062
23	6.032	VV	0.0212	787.17273	450.81601	3.46635
24	6.066	VV	0.0391	2550.06689	780.51086	11.22934
25	6.144	VB	0.0145	146.75461	125.01335	0.64624
26	6.191	BV	0.0332	426.41473	151.66542	1.87774
27	6.238	VV	0.0143	79.63772	80.75667	0.35069
28	6.259	VV	8.20e-3	84.10226	125.76934	0.37035
29	6.272	VP	0.0183	238.69679	155.91980	1.05111
30	6.337	VV	9.01e-3	55.96963	77.60034	0.24646
31	6.345	VB	0.0134	87.37498	79.83507	0.38476
32	6.402	PV	3.31e-3	4.30557	17.28143	0.01896
33	6.407	VP	4.71e-3	10.04300	28.49237	0.04422
34	6.446	BP	0.0000	1.38236	1.08233	0.00609
35	6.452	VV	3.75e-3	4.11155	18.27248	0.01811
36	6.465	VV	8.03e-3	26.73984	40.86493	0.11775
37	6.483	VV	0.0138	84.39453	74.74068	0.37164
38	6.503	VV	5.15e-3	21.11100	56.66793	0.09296
39	6.508	VV	3.43e-3	13.76019	56.77393	0.06059
40	6.537	VV	0.0311	379.70441	146.96277	1.67205
41	6.586	VB	0.0184	135.31418	88.62195	0.59586
42	6.650	BP	0.0151	31.74934	25.56208	0.13981
43	6.695	BP	4.17e-3	4.89695	15.14625	0.02156
44	6.708	VV	6.83e-3	20.51793	38.42037	0.09035
45	6.770	VV	0.0435	1678.48425	471.41919	7.39128
46	6.837	VV	0.0251	359.58670	170.88727	1.58346
47	6.903	VV	0.0139	72.87545	65.74376	0.32091
48	6.917	VB	0.0164	106.82081	80.76378	0.47039
49	7.007	PV	0.0291	457.28232	185.87833	2.01366
50	7.043	VV	8.03e-3	36.14202	74.98712	0.15915
51	7.056	VB	0.0235	148.14693	74.95290	0.65237
52	7.191	PP	0.0320	425.91885	158.31464	1.87555
53	7.290	VV	0.0202	138.43433	81.62812	0.60960
54	7.306	VV	0.0205	152.30701	89.35763	0.67069
55	7.341	VV	0.0178	106.73483	73.30901	0.47001
56	7.400	VV	0.0423	864.40674	242.92767	3.80645
57	7.516	VP	0.0314	334.77206	125.79142	1.47418
58	7.622	VV	0.0185	167.98442	110.69738	0.73973
59	7.628	VV	0.0160	153.53395	114.79848	0.67609
60	7.661	VP	4.57e-3	9.69763	28.46857	0.04270
61	7.759	PBA	0.0359	672.20972	222.29631	2.96011

Totals : 2.27090e4 1.24155e4

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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==========================================================================
Injection Date  : 7/20/2021 7:22:45 PM          Seq. Line :  14
Sample Name     : 21G0108 11                     Location : Vial 20
Acq. Operator   : DXP                                 Inj :   1
                                               Inj Volume : 1 µl
Sequence File   : C:\HPCHEM\2\SEQUENCE\072021A.S
Method          : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed    : 2/8/2020 12:13:23 PM by NL
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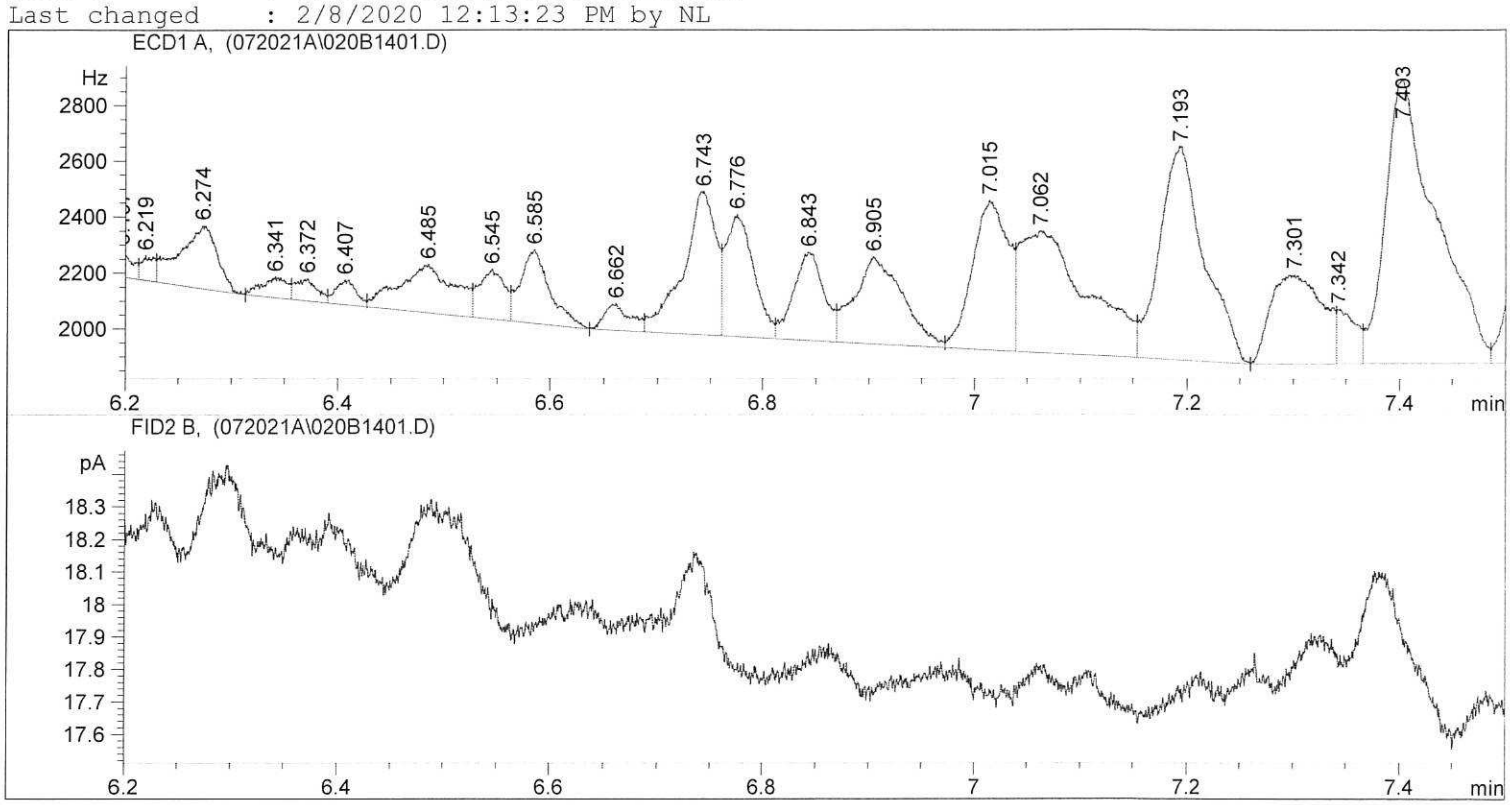


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==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier            :      1.0000
Dilution              :      1.0000
```

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.223	BV	0.0134	597.19788	579.41296	2.24449
2	5.257	VP	0.0159	1145.05396	920.82935	4.30354
3	5.304	BB	3.66e-3	4.30253	16.40276	0.01617
4	5.356	BP	0.0193	95.94691	59.97968	0.36060
5	5.396	BV	5.60e-3	6.90863	17.50869	0.02597
6	5.435	VV	0.0198	376.88403	229.36938	1.41647
7	5.469	VV	0.0155	143.13434	113.51872	0.53795
8	5.538	VV	0.0222	1095.88855	627.67285	4.11875
9	5.569	VB	0.0172	254.47118	176.51828	0.95640
10	5.649	BP	0.0122	23.29912	23.35861	0.08757
11	5.673	VB	3.66e-3	3.89136	14.82584	0.01463
12	5.755	PV	0.0163	714.99976	598.02319	2.68723
13	5.816	VV	0.0161	434.54947	327.27515	1.63320
14	5.857	VB	0.0123	33.76679	34.71355	0.12691
15	5.892	PV	6.32e-3	15.11176	29.75718	0.05680
16	5.931	VV	0.0195	344.18567	215.28336	1.29358
17	5.954	VV	0.0180	198.50537	131.82518	0.74606

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
18	5.990	VP	0.0178	109.31944	74.86868	0.41086
19	6.046	BV	6.52e-3	24.35041	47.97852	0.09152
20	6.069	VB	0.0238	233.19696	120.27099	0.87644
21	6.142	PV	2.46e-3	2.06705	12.99226	0.00777
22	6.146	VP	6.89e-3	13.49954	24.28252	0.05074
23	6.197	PV	0.0134	103.16300	93.85023	0.38772
24	6.219	VV	0.0103	74.46807	87.61815	0.27988
25	6.274	VP	0.0295	553.19928	224.98322	2.07913
26	6.341	VV	0.0199	118.56406	73.32887	0.44561
27	6.372	VV	0.0169	110.92073	79.27605	0.41688
28	6.407	VV	0.0159	115.91722	87.17195	0.43566
29	6.485	VV	0.0432	616.24518	172.86551	2.31608
30	6.545	VV	0.0206	299.46582	177.81416	1.12550
31	6.585	VP	0.0233	511.91608	263.21286	1.92397
32	6.662	VV	0.0213	161.11714	95.60173	0.60554
33	6.743	VV	0.0282	1092.18762	510.62915	4.10484
34	6.776	VV	0.0226	822.57977	435.99854	3.09156
35	6.843	VV	0.0238	630.50964	316.55899	2.36969
36	6.905	VV	0.0390	995.52063	311.88370	3.74153
37	7.015	VV	0.0281	1261.66040	534.57745	4.74179
38	7.062	VB	0.0526	1922.24146	434.78723	7.22449
39	7.193	BP	0.0351	2221.49023	760.76154	8.34918
40	7.301	VV	0.0411	1073.16272	320.42560	4.03334
41	7.342	VV	0.0152	245.59666	195.99394	0.92304
42	7.403	VV	0.0399	3419.23657	1015.63910	12.85075
43	7.520	VV	0.0218	805.88422	448.05017	3.02881
44	7.540	VP	0.0186	625.64551	409.62604	2.35141
45	7.633	VP	0.0341	988.21179	344.58728	3.71406
46	7.698	VP	0.0126	47.96402	46.03157	0.18027
47	7.758	VBA	0.0330	1919.88660	700.30658	7.21564
Totals :				2.66073e4	1.25382e4	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

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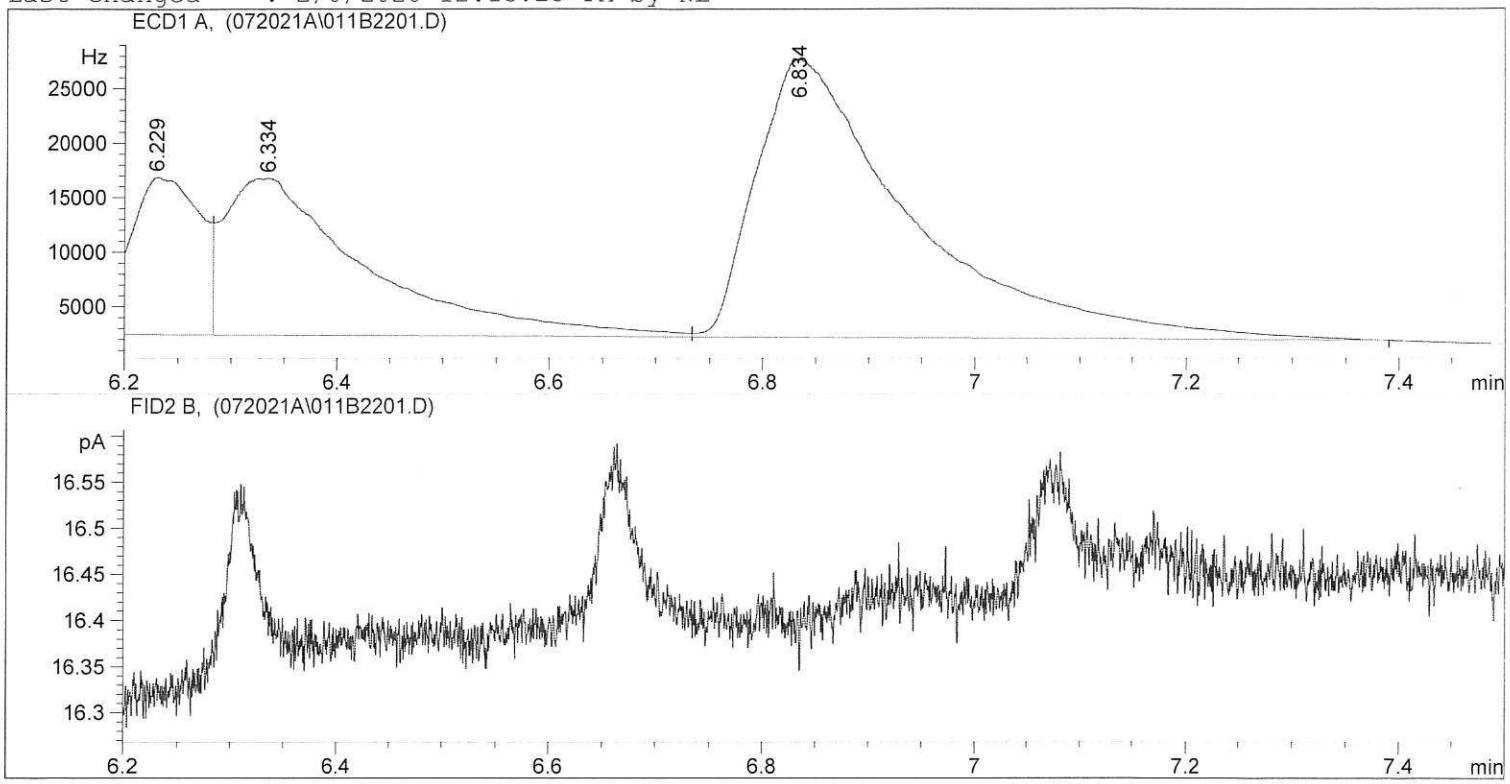
Injection Date : 7/20/2021 8:51:12 PM Seq. Line : 22
Sample Name : CS4 STANDARD Location : Vial 11
Acq. Operator : DXP Inj : 1
Inj Volume : 1 µl

Sequence File : C:\HPCHEM\2\SEQUENCE\072021A.S
Method : C:\HPCHEM\2\METHODS\DIOXIN.M
Last changed : 2/8/2020 12:13:23 PM by NL



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Area Percent Report

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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: ECD1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [Hz*s]	Height [Hz]	Area %
1	5.287	BP S	0.1052	6.00138e4	9503.39160	5.03702
2	5.639	PV S	0.0422	8.96372e4	2.51382e4	7.52334
3	5.728	VV S	0.1713	4.72530e5	4.59823e4	39.65992
4	6.069	VV S	0.0939	1.11485e5	1.97806e4	9.35706
5	6.229	VV S	0.0538	6.61286e4	1.44485e4	5.55025
6	6.334	VV S	0.1547	1.33577e5	1.43916e4	11.21125
7	6.834	PB S	0.1196	2.58083e5	2.55564e4	21.66117
Totals :				1.19145e6	1.54801e5	

Results obtained with enhanced integrator!

Signal 2: FID2 B,

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*** End of Report ***

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Dioxin Extraction Laboratory – Glasswa

Batch ID: BJG0465 Work Order: 21G0108, 21G0133 Extraction Parameter: Dioxin ARI Analyst

ARI Sample ID	300 mL Flat Bottom	Small Soxhlet	Large Soxhlet	250 mL Beaker	Funnel	Column	Florisil Column	Turbo Tube	Sep Funnel	Erlenmeyer Flask	Centrifuge Bottle	Turbo-Vap	Vortex Mixer	Heat Element
BJG0465-BLK1	5	59		8	7	222	86	38				4	4	A1
-BS1	6	109		258	69	191	99	713				4	4	A2
-BSD1	70	113		260	68	26	23	83				4	4	A3
-DUP1	82	102		163	89	211	46	57				4	4	A4
-DUP2	17	108		194	51	24	81	26				4	4	A5
-MS1	73	86		177	37	165	137	14				4	4	A6
-SRM1	38	84		31	45	226	145	67				4	4	B1
-SRM2	85	5		38	48	145	88	51				4	4	B2
21G0108-02C	12	93		15	75	18	9	6				4	4	B3
-03C	4	1		256	9	186	149	64				4	4	B4
-04C	25	56		32	87	223	108	17				4	4	B5
-06C	87	99		14	38	172	139	49				4	4	B6
-07C	40	112		2	84	210	104	21				4	4	C1
-08C	76	77		6	71	198	89	81				4	4	C2
-09C	18	70		188	39	177	5	71				4	4	C3
-10C	63		60	23	85	17	128	52				4	4	C4
-11C	13	57		231	42	2	136	79				4	4	C5
21G0133-01C	80	88		261	2	118	8	58				4	4	C6
												4	4	
												4	4	
												4	4	
												4	4	
												4	4	

Analytical Resources, Incorporated
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CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Cleanup Batch:	CJH0103	Cleanup Type:	Sulfuric Acid
Cleanup Method:	EPA 3665A Sulfuric Acid Cleanup	Analysis:	EPA 1613B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
LDW21-IT669B	21G0108-09	21082717	08/09/2021	
Reference	BJG0465-SRM1	21082705	08/09/2021	
LDW21-IT654B	21G0108-02	21082711	08/09/2021	
LDW21-IT649C	21G0108-07	21082715	08/09/2021	
LDW21-IT649E	21G0108-08	21082716	08/09/2021	
LCS	BJG0465-BS1	21082702	08/09/2021	
Duplicate	BJG0465-DUP1	21082707	08/09/2021	
Blank	BJG0465-BLK1	21082701	08/09/2021	
LDW21-IT654E	21G0108-04	21082713	08/09/2021	
LDW21-IT669C	21G0108-10	21082718	08/09/2021	
LDW21-IT669E	21G0108-11	21082719	08/09/2021	
LDW21-IT649B	21G0108-06	21082714	08/09/2021	
LDW21-IT654C	21G0108-03	21082712	08/09/2021	

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CLEANUP BENCH SHEET

CJH0103

Matrix: Solid **Cleanup using: HRGCMS - EPA 3665A Sulfuric Acid Cleanup** **Printed: 8/12/2021 10:08:18AM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (mL)	Final (mL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
21G0133-01	C	REF21-Comp	C 01	20	20	8290 Dioxin	8/9/2021	NPL	
21G0133-01	C	REF21-Comp	C 01	20	20	1613B Dioxin	8/9/2021	NPL	
21G0108-08	C	LDW21-IT649E	C 01	20	20	1613B Dioxin	8/9/2021	NPL	
21G0108-09	C	LDW21-IT669B	C 01	20	20	1613B Dioxin	8/9/2021	NPL	
21G0108-10	C	LDW21-IT669C	C 01	20	20	1613B Dioxin	8/9/2021	NPL	
21G0108-11	C	LDW21-IT669E	C 01	20	20	1613B Dioxin	8/9/2021	NPL	
21G0108-03	C	LDW21-IT654C	C 01	20	20	1613B Dioxin	8/9/2021	NPL	
21G0108-02	C	LDW21-IT654B	C 01	20	20	1613B Dioxin	8/9/2021	NPL	
21G0108-04	C	LDW21-IT654E	C 01	20	20	1613B Dioxin	8/9/2021	NPL	
21G0108-06	C	LDW21-IT649B	C 01	20	20	1613B Dioxin	8/9/2021	NPL	
21G0108-07	C	LDW21-IT649C	C 01	20	20	1613B Dioxin	8/9/2021	NPL	
21G0108-02	C	LDW21-IT654B	C 01	20	20	8290 Dioxin	8/9/2021	NPL	
BJG0465-SRM2	-	Reference	-	20	20	-	8/9/2021	NPL	
BJG0465-SRM1	-	Reference	-	20	20	-	8/9/2021	NPL	
BJG0465-BSD1	-	LCS Dup	-	20	20	-	8/9/2021	NPL	
BJG0465-DUP1	-	Duplicate	-	20	20	-	8/9/2021	NPL	
BJG0465-DUP2	-	Duplicate	-	20	20	-	8/9/2021	NPL	
BJG0465-MS1	-	Matrix Spike	-	20	20	-	8/9/2021	NPL	
BJG0465-BLK1	-	Blank	-	20	20	-	8/9/2021	NPL	
BJG0465-BS1	-	LCS	-	20	20	-	8/9/2021	NPL	

Analytical Resources, Incorporated
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CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Cleanup Batch:	CJH0104	Cleanup Type:	Silica Gel
Cleanup Method:	EPA 3630C Silica Gel Cleanup	Analysis:	EPA 1613B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
LDW21-IT649C	21G0108-07	21082715	08/10/2021	
Blank	BJG0465-BLK1	21082701	08/10/2021	
Duplicate	BJG0465-DUP1	21082707	08/10/2021	
LCS	BJG0465-BS1	21082702	08/10/2021	
Reference	BJG0465-SRM1	21082705	08/10/2021	
LDW21-IT654B	21G0108-02	21082711	08/10/2021	
LDW21-IT649B	21G0108-06	21082714	08/10/2021	
LDW21-IT649E	21G0108-08	21082716	08/10/2021	
LDW21-IT669E	21G0108-11	21082719	08/10/2021	
LDW21-IT669C	21G0108-10	21082718	08/10/2021	
LDW21-IT669B	21G0108-09	21082717	08/10/2021	
LDW21-IT654E	21G0108-04	21082713	08/10/2021	
LDW21-IT654C	21G0108-03	21082712	08/10/2021	

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CLEANUP BENCH SHEET

CJH0104

Matrix: Solid **Cleanup using: HRGCMS - EPA 3630C Silica Gel Cleanup** **Printed: 8/12/2021 10:08:32AM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (mL)	Final (mL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
21G0133-01	C	REF21-Comp	C 01	20	20	8290 Dioxin	8/10/2021	NPL	
21G0133-01	C	REF21-Comp	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-08	C	LDW21-IT649E	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-09	C	LDW21-IT669B	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-10	C	LDW21-IT669C	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-11	C	LDW21-IT669E	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-03	C	LDW21-IT654C	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-02	C	LDW21-IT654B	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-04	C	LDW21-IT654E	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-06	C	LDW21-IT649B	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-07	C	LDW21-IT649C	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-02	C	LDW21-IT654B	C 01	20	20	8290 Dioxin	8/10/2021	NPL	
BJG0465-SRM2	-	Reference	-	20	20	-	8/10/2021	NPL	
BJG0465-SRM1	-	Reference	-	20	20	-	8/10/2021	NPL	
BJG0465-BSD1	-	LCS Dup	-	20	20	-	8/10/2021	NPL	
BJG0465-DUP1	-	Duplicate	-	20	20	-	8/10/2021	NPL	
BJG0465-DUP2	-	Duplicate	-	20	20	-	8/10/2021	NPL	
BJG0465-MS1	-	Matrix Spike	-	20	20	-	8/10/2021	NPL	
BJG0465-BLK1	-	Blank	-	20	20	-	8/10/2021	NPL	
BJG0465-BS1	-	LCS	-	20	20	-	8/10/2021	NPL	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Cleanup Batch:	CJH0105	Cleanup Type:	Florisil
Cleanup Method:	EPA 3620B Florisil Cleanup (mL)	Analysis:	EPA 1613B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
LDW21-IT649B	21G0108-06	21082714	08/10/2021	
LCS	BJG0465-BS1	21082702	08/10/2021	
Duplicate	BJG0465-DUP1	21082707	08/10/2021	
Blank	BJG0465-BLK1	21082701	08/10/2021	
LDW21-IT669E	21G0108-11	21082719	08/10/2021	
LDW21-IT669C	21G0108-10	21082718	08/10/2021	
LDW21-IT669B	21G0108-09	21082717	08/10/2021	
LDW21-IT654E	21G0108-04	21082713	08/10/2021	
LDW21-IT654C	21G0108-03	21082712	08/10/2021	
LDW21-IT654B	21G0108-02	21082711	08/10/2021	
Reference	BJG0465-SRM1	21082705	08/10/2021	
LDW21-IT649C	21G0108-07	21082715	08/10/2021	
LDW21-IT649E	21G0108-08	21082716	08/10/2021	

Analytical Resources, Incorporated
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CLEANUP BENCH SHEET

CJH0105

Matrix: Solid **Cleanup using: HRGCMS - EPA 3620B Florisil Cleanup (mL)** **Printed: 8/12/2021 10:08:42AM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (mL)	Final (mL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
21G0133-01	C	REF21-Comp	C 01	20	20	8290 Dioxin	8/10/2021	NPL	
21G0133-01	C	REF21-Comp	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-08	C	LDW21-IT649E	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-09	C	LDW21-IT669B	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-10	C	LDW21-IT669C	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-11	C	LDW21-IT669E	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-03	C	LDW21-IT654C	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-02	C	LDW21-IT654B	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-04	C	LDW21-IT654E	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-06	C	LDW21-IT649B	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-07	C	LDW21-IT649C	C 01	20	20	1613B Dioxin	8/10/2021	NPL	
21G0108-02	C	LDW21-IT654B	C 01	20	20	8290 Dioxin	8/10/2021	NPL	
BJG0465-SRM2	-	Reference	-	20	20	-	8/10/2021	NPL	
BJG0465-SRM1	-	Reference	-	20	20	-	8/10/2021	NPL	
BJG0465-BSD1	-	LCS Dup	-	20	20	-	8/10/2021	NPL	
BJG0465-DUP1	-	Duplicate	-	20	20	-	8/10/2021	NPL	
BJG0465-DUP2	-	Duplicate	-	20	20	-	8/10/2021	NPL	
BJG0465-MS1	-	Matrix Spike	-	20	20	-	8/10/2021	NPL	
BJG0465-BLK1	-	Blank	-	20	20	-	8/10/2021	NPL	
BJG0465-BS1	-	LCS	-	20	20	-	8/10/2021	NPL	

Analytical Resources, Incorporated
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Form 1
METHOD BLANK DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Solid	Laboratory ID:	BJG0465-BLK1	File ID:	21082701
Sampled:	N/A	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 04:48
Solids Wt%:		Preparation:	EPA 8290	Initial/Final:	10 g / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1	0.000	0.655-0.886	0.313	1.00	ND	ng/kg	U
1746-01-6	2,3,7,8-TCDD	1	0.000	0.655-0.886	0.371	1.00	ND	ng/kg	U
57117-41-6	1,2,3,7,8-PeCDF	1	0.000	1.318-1.783	0.128	1.00	ND	ng/kg	U
57117-31-4	2,3,4,7,8-PeCDF	1	0.000	1.318-1.783	0.127	1.00	ND	ng/kg	U
40321-76-4	1,2,3,7,8-PeCDD	1	0.000	1.318-1.783	0.219	1.00	ND	ng/kg	U
70648-26-9	1,2,3,4,7,8-HxCDF	1	0.000	1.054-1.426	0.183	1.00	ND	ng/kg	U
57117-44-9	1,2,3,6,7,8-HxCDF	1	0.000	1.054-1.426	0.169	1.00	ND	ng/kg	U
60851-34-5	2,3,4,6,7,8-HxCDF	1	0.000	1.054-1.426	0.172	1.00	ND	ng/kg	U
72918-21-9	1,2,3,7,8,9-HxCDF	1	0.000	1.054-1.426	0.201	1.00	ND	ng/kg	U
39227-28-6	1,2,3,4,7,8-HxCDD	1	0.000	1.054-1.426	0.199	1.00	ND	ng/kg	U
57653-85-7	1,2,3,6,7,8-HxCDD	1	0.000	1.054-1.426	0.192	1.00	ND	ng/kg	U
19408-74-3	1,2,3,7,8,9-HxCDD	1	0.000	1.054-1.426	0.209	1.00	ND	ng/kg	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	0.000	0.893-1.208	0.141	1.00	ND	ng/kg	U
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	0.000	0.893-1.208	0.191	1.00	ND	ng/kg	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	0.000	0.893-1.208	0.282	2.50	ND	ng/kg	U
39001-02-0	OCDF	1	0.000	0.757-1.024	0.225	2.50	ND	ng/kg	U
3268-87-9	OCDD	1	0.763	0.757-1.024	0.214	10.0	1.25	ng/kg	J

Homologue Groups

55722-27-5	Total TCDF	1	0.000			1.00	ND	ng/kg
41903-57-5	Total TCDD	1	0.000			1.00	ND	ng/kg
30402-15-4	Total PeCDF	1	0.000			1.00	ND	ng/kg
36088-22-9	Total PeCDD	1	0.000			1.00	ND	ng/kg
55684-94-1	Total HxCDF	1	0.000			1.00	ND	ng/kg
34465-46-8	Total HxCDD	1	0.000			1.00	ND	ng/kg
38998-75-3	Total HpCDF	1	0.000			1.00	ND	ng/kg
37871-00-4	Total HpCDD	1	0.000			1.00	ND	ng/kg

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.000
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.401

Analytical Resources, Incorporated
Analytical Chemists and Consultants

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Form 2
METHOD BLANK DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21G0108
Client:	Anchor QEA, LLC			Project:	Lower Duwamish AOC4
Matrix:	Solid	Laboratory ID:	BJG0465-BLK1	File ID:	21082701
Sampled:	N/A	Prepared:	08/05/21 13:50	Analyzed:	08/27/21 04:48
Solids Wt%:	0.00	Preparation:	EPA 8290	Initial/Final:	10 g / 20 uL
Result Basis:	Dry	Sequence:	SJH0365	Calibration:	EH00030
Batch:	BJG0465	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF	1	0.808	0.655-0.886	0.19	24.7	24 - 169 %	
13C12-2,3,7,8-TCDD	1	0.755	0.655-0.886	0.24	36.5	25 - 164 %	
13C12-1,2,3,7,8-PeCDF	1	1.587	1.318-1.783	0.20	70.3	24 - 185 %	
13C12-2,3,4,7,8-PeCDF	1	1.579	1.318-1.783	0.21	67.7	21 - 178 %	
13C12-1,2,3,7,8-PeCDD	1	1.571	1.318-1.783	0.20	76.6	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF	1	0.521	0.434-0.587	0.23	67.3	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF	1	0.525	0.434-0.587	0.21	67.6	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF	1	0.519	0.434-0.587	0.23	69.9	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF	1	0.510	0.434-0.587	0.28	71.5	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD	1	1.250	1.054-1.426	0.31	77.2	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD	1	1.274	1.054-1.426	0.28	75.3	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF	1	0.450	0.374-0.506	0.41	84.7	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF	1	0.470	0.374-0.506	0.50	85.5	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD	1	1.077	0.893-1.208	0.36	90.9	23 - 140 %	
13C12-OCDD	1	0.943	0.757-1.024	0.61	112	17 - 157 %	
37Cl4-2,3,7,8-TCDD	1	328.000		0.08	35.7	35 - 197 %	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D1.qld
Last Altered: Friday, August 27, 2021 13:00:30 Pacific Daylight Time
Printed: Friday, August 27, 2021 13:31:31 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: BJG0465-BLK1, Name: 21082701, Date: 27-Aug-2021, Time: 04:48:45, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF					1.108		0.770	628	715								
12378-PeCDF					1.015		1.550	650	741								
23478-PeCDF					1.126		1.550	650	741								
123478-HxCDF					1.017		1.240	993	881								
234678-HxCDF					1.052		1.240	993	881								
123678-HxCDF					1.037		1.240	993	881								
123789-HxCDF					1.030		1.240	993	881								
1234678-HpCDF					1.327		1.050	830	1075								
1234789-HpCDF					1.283		1.050	830	1075								
OCDF					1.447		0.890	924	933								
2378-TCDD					0.920		0.770	999	649								
12378-PeCDD					0.995		1.550	838	587								
123478-HxCDD					1.027		1.240	989	909								
123678-HxCDD					1.009		1.240	989	909								
123789-HxCDD					0.950		1.240	989	909								
1234678-HpCDD					1.068		1.050	893	1171								
OCDD	44.418	1.000	8.677e2	1.137e3	1.181	0.763	0.890	840	602	1.12e4	1.62e4	13.3	26.9	NO	bb	MM	0.626
13C-2378-TCDF	25.216	1.007	7.607e4	9.418e4	1.427	0.808	0.770	1778	1312	1.04e6	1.30e6	584.5	993.7	NO	bb	bb	24.657
13C-12378-PeCDF	29.381	1.174	2.707e5	1.705e5	1.297	1.587	1.550	1592	1440	3.94e6	2.46e6	2477.5	1708.1	NO	bb	bb	70.260
13C-23478-PeCDF	30.718	1.227	2.482e5	1.572e5	1.236	1.579	1.550	1592	1440	3.58e6	2.27e6	2247.1	1579.7	NO	bb	bb	67.732
13C-123478-HxCDF	34.372	0.954	1.378e5	2.643e5	1.242	0.521	0.510	1555	1836	2.07e6	3.96e6	1333.5	2155.5	NO	bd	bd	67.265
13C-123678-HxCDF	34.517	0.958	1.505e5	2.865e5	1.343	0.525	0.510	1555	1836	2.21e6	4.23e6	1421.7	2303.1	NO	db	db	67.599
13C-234678-HxCDF	35.397	0.982	1.396e5	2.691e5	1.215	0.519	0.510	1555	1836	2.12e6	4.12e6	1365.8	2245.5	NO	bb	bb	69.942
13C-123789-HxCDF	36.433	1.011	1.170e5	2.297e5	1.008	0.510	0.510	1555	1836	1.83e6	3.57e6	1177.7	1946.1	NO	bb	bb	71.518
13C-1234678-HpCDF	38.316	1.063	1.172e5	2.604e5	0.926	0.450	0.440	2431	2140	1.89e6	4.18e6	778.1	1954.6	NO	bb	bb	84.710
13C-1234789-HpCDF	40.488	1.124	9.960e4	2.121e5	0.758	0.470	0.440	2431	2140	1.49e6	3.11e6	611.3	1453.0	NO	bb	bb	85.490
13C-1234-TCDD	25.035	0.000	2.100e5	2.740e5	1.000	0.766	0.770	1948	1128	2.99e6	3.90e6	1534.7	3460.7	NO	bb	bb	100.000
13C-2378-TCDD	25.867	1.033	8.482e4	1.123e5	1.116	0.755	0.770	1948	1128	1.25e6	1.63e6	639.6	1448.1	NO	bb	bb	36.474
13C-12378-PeCDD	30.974	1.237	1.658e5	1.055e5	0.732	1.571	1.550	851	861	2.40e6	1.55e6	2822.1	1797.4	NO	bb	bb	76.588
13C-123478-HxCDD	35.520	0.986	1.979e5	1.584e5	0.960	1.250	1.240	2006	1572	3.10e6	2.44e6	1545.7	1555.0	NO	bd	bd	77.168
13C-123678-HxCDD	35.631	0.989	2.114e5	1.660e5	1.041	1.274	1.240	2006	1572	3.30e6	2.62e6	1642.8	1667.4	NO	db	db	75.334
13C-1234678-HpCDD	39.776	1.104	1.434e5	1.332e5	0.632	1.077	1.050	1495	1242	2.13e6	2.06e6	1425.2	1661.9	NO	bb	bb	90.906
13C-OCDD	44.400	1.232	2.635e5	2.793e5	0.504	0.943	0.890	1998	1710	3.33e6	3.56e6	1665.6	2080.4	NO	bb	bb	223.991
13C-123789-HxCDD	36.032	0.000	2.681e5	2.129e5	1.000	1.259	1.240	2006	1572	4.04e6	3.19e6	2013.7	2028.5	NO	bb	bb	100.000
37CL-2378-TCDD	25.882	1.034	7.492e4		1.084			982		1.07e6		1094.2			bd		14.284

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Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF					1.425		0.770	628	715								
1289-TCDF					1.043		0.770	628	715								
13468-PECDF					1.376		1.550	568	585								
12389-PECDF					1.000		1.550	650	741								
123468-HXCDF					1.087		1.240	993	881								
1368-TCDD					0.923		0.770	999	649								
1289-TCDD					0.794		0.770	999	649								
12479-PECDD					1.843		1.550	838	587								
12389-PECDD					1.154		1.550	838	587								
124679-HXCDD					1.125		1.240	989	909								
1234679-HPCDD					1.211		1.050	893	1171								
Total-tetrafurans			0.000e0		1.192			628		0.00e0							
Total-penta1			0.000e0					568		0.00e0							
Total-pentafurans			0.000e0		1.047			650		0.00e0							
Total-hexafurans			0.000e0		1.045			993		0.00e0							
Total-heptafurans			0.000e0		1.305			830		0.00e0							
Total-Furans			0.000e0		1.158			628		0.00e0							
Total-tetradioxins			0.000e0		0.879			999		0.00e0							
Total-pentadioxins			0.000e0		1.331			838		0.00e0							
Total-hexadioxins			0.000e0		1.028			989		0.00e0							
Total-heptadioxins			0.000e0		1.140			893		0.00e0							
Total-Dioxins			8.677e2		1.092			999		1.12e4							0.626
Total-TEQ			8.677e2					999		1.12e4							0.626
FUNCTION1 PFK			2.440e7					449361		1.24e8							
FUNCTION2 PFK			2.003e5					244616		4.83e6							0.000
FUNCTION3 PFK			2.001e6					370879		2.95e7							0.000
FUNCTION4 PFK			2.502e5					287226		8.19e6							
FUNCTION5 PFK			5.441e4					176267		2.24e6							
FUNCTION1 HXCD...			5.193e2					617		8.60e3							0.000
FUNCTION1 HPCD...			6.378e2					819		9.64e3							0.000
FUNCTION2 HPCD...			3.336e2					610		5.30e3							0.000
FUNCTION3 OCDPE			4.710e2					819		1.00e4							0.000
FUNCTION4 NCDPE			7.508e2					848		1.86e4							0.000
FUNCTION5 DCDPE			8.606e1					699		1.43e3							0.000

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Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

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TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	OCDD	44.42	8.677e2	1.137e3	1.181	0.76	0.89	13.3	YES	NO	bb	MM	0.626

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.83	2.806e6					24.4	YES		bb		
2	FUNCTION1 PFK	22.56	9.081e5					20.9	YES		bb		
3	FUNCTION1 PFK	22.16	5.359e5					13.3	YES		bb		
4	FUNCTION1 PFK	21.97	1.531e6					22.3	YES		bb		
5	FUNCTION1 PFK	21.75	3.048e6					24.2	YES		db		
6	FUNCTION1 PFK	21.48	6.081e5					20.2	YES		bd		
7	FUNCTION1 PFK	21.33	4.684e5					12.7	YES		bb		
8	FUNCTION1 PFK	21.18	1.919e5					6.5	YES		bb		
9	FUNCTION1 PFK	26.82	3.529e5					7.1	YES		bb		
10	FUNCTION1 PFK	25.91	3.654e6					4.9	YES		bb		
11	FUNCTION1 PFK	25.02	1.701e6					23.2	YES		bb		
12	FUNCTION1 PFK	24.82	1.786e6					23.1	YES		db		
13	FUNCTION1 PFK	24.49	2.985e6					21.2	YES		dd		
14	FUNCTION1 PFK	24.22	1.358e6					20.0	YES		dd		
15	FUNCTION1 PFK	24.05	1.889e6					20.1	YES		bd		
16	FUNCTION1 PFK	23.75	5.733e5					12.4	YES		bb		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	30.17	5.053e3					1.1	NO		bb		0.000
2	FUNCTION2 PFK	29.01	2.068e4					2.2	NO		bb		0.000
3	FUNCTION2 PFK	28.92	8.228e3					1.3	NO		bb		0.000
4	FUNCTION2 PFK	28.43	1.629e4					1.8	NO		db		0.000
5	FUNCTION2 PFK	28.40	7.362e3					1.4	NO		bd		0.000
6	FUNCTION2 PFK	27.67	9.022e4					4.8	YES		bb		0.000
7	FUNCTION2 PFK	27.58	6.443e3					1.1	NO		bb		0.000
8	FUNCTION2 PFK	32.02	1.580e4					1.8	NO		bb		0.000
9	FUNCTION2 PFK	31.94	8.111e3					0.8	NO		bb		0.000
10	FUNCTION2 PFK	31.45	1.121e4					1.2	NO		bb		0.000
11	FUNCTION2 PFK	31.17	3.861e3					0.8	NO		bb		0.000
12	FUNCTION2 PFK	30.91	4.062e3					0.9	NO		bb		0.000
13	FUNCTION2 PFK	30.78	2.988e3					0.7	NO		bb		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	33.55	1.252e4					1.5	NO		bb		0.000
2	FUNCTION3 PFK	33.49	8.450e3					1.1	NO		bb		0.000
3	FUNCTION3 PFK	32.96	3.707e3					0.6	NO		bb		0.000
4	FUNCTION3 PFK	32.78	1.286e4					1.6	NO		db		0.000
5	FUNCTION3 PFK	32.62	2.617e5					7.0	YES		dd		0.000
6	FUNCTION3 PFK	32.53	2.686e5					9.7	YES		dd		0.000
7	FUNCTION3 PFK	32.43	4.277e5					11.6	YES		dd		0.000
8	FUNCTION3 PFK	32.37	1.961e5					13.1	YES		dd		0.000
9	FUNCTION3 PFK	32.27	6.445e5					15.9	YES		bd		0.000
10	FUNCTION3 PFK	37.14	1.703e4					1.5	NO		bb		0.000
11	FUNCTION3 PFK	37.05	1.067e4					1.4	NO		db		0.000
12	FUNCTION3 PFK	37.01	2.060e4					1.7	NO		bd		0.000
13	FUNCTION3 PFK	36.82	1.124e4					0.6	NO		bb		0.000
14	FUNCTION3 PFK	36.72	1.356e4					1.5	NO		bb		0.000
15	FUNCTION3 PFK	36.60	2.173e4					1.9	NO		bb		0.000
16	FUNCTION3 PFK	36.22	1.291e4					1.5	NO		db		0.000
17	FUNCTION3 PFK	36.18	6.018e3					0.9	NO		bd		0.000
18	FUNCTION3 PFK	36.13	2.579e3					0.6	NO		db		0.000
19	FUNCTION3 PFK	36.10	7.591e3					1.1	NO		bd		0.000
20	FUNCTION3 PFK	35.95	3.932e3					0.6	NO		bb		0.000
21	FUNCTION3 PFK	35.45	6.025e3					0.9	NO		bb		0.000
22	FUNCTION3 PFK	34.95	4.398e3					0.7	NO		bb		0.000
23	FUNCTION3 PFK	34.26	8.871e3					1.0	NO		bb		0.000
24	FUNCTION3 PFK	34.15	1.419e4					1.1	NO		bb		0.000
25	FUNCTION3 PFK	33.81	3.017e3					0.5	NO		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	38.81	2.369e3					0.5	NO		bb		
2	FUNCTION4 PFK	38.66	4.614e3					0.8	NO		bb		
3	FUNCTION4 PFK	38.58	4.198e3					0.8	NO		bb		
4	FUNCTION4 PFK	38.23	1.546e4					1.5	NO		bb		
5	FUNCTION4 PFK	38.17	5.471e3					0.9	NO		db		
6	FUNCTION4 PFK	38.13	1.147e4					1.5	NO		dd		
7	FUNCTION4 PFK	38.07	1.855e4					1.6	NO		bd		
8	FUNCTION4 PFK	38.03	5.507e3					0.9	NO		bb		
9	FUNCTION4 PFK	37.94	1.489e4					1.6	NO		db		
10	FUNCTION4 PFK	37.87	3.924e3					0.6	NO		dd		
11	FUNCTION4 PFK	37.80	9.347e3					0.8	NO		bd		
12	FUNCTION4 PFK	37.76	1.961e3					0.6	NO		bb		
13	FUNCTION4 PFK	37.58	4.331e3					0.8	NO		bb		
14	FUNCTION4 PFK	37.51	2.325e4					2.0	NO		bb		
15	FUNCTION4 PFK	37.45	1.991e4					2.8	NO		bb		
16	FUNCTION4 PFK	42.28	2.189e4					1.8	NO		bb		
17	FUNCTION4 PFK	42.16	5.908e3					0.8	NO		bb		
18	FUNCTION4 PFK	42.12	3.673e3					0.8	NO		bb		
19	FUNCTION4 PFK	41.79	1.246e4					0.9	NO		bb		
20	FUNCTION4 PFK	41.64	6.629e3					0.7	NO		bb		
21	FUNCTION4 PFK	40.90	8.627e3					1.4	NO		bb		
22	FUNCTION4 PFK	40.70	1.275e4					1.3	NO		bb		
23	FUNCTION4 PFK	40.53	2.233e4					1.3	NO		bb		
24	FUNCTION4 PFK	40.27	4.564e3					0.8	NO		bb		
25	FUNCTION4 PFK	39.88	1.342e3					0.4	NO		bb		
26	FUNCTION4 PFK	38.95	4.749e3					0.8	NO		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	43.46	1.198e4					1.2	NO		bb		
2	FUNCTION5 PFK	42.96	2.572e3					0.9	NO		bb		
3	FUNCTION5 PFK	42.76	2.098e3					0.6	NO		bb		
4	FUNCTION5 PFK	42.56	3.372e3					1.1	NO		bb		
5	FUNCTION5 PFK	45.87	4.570e3					1.3	NO		bb		
6	FUNCTION5 PFK	44.99	2.981e3					1.0	NO		db		
7	FUNCTION5 PFK	44.96	1.097e4					2.1	NO		bd		
8	FUNCTION5 PFK	44.78	2.553e3					0.9	NO		bb		
9	FUNCTION5 PFK	44.69	2.144e3					0.6	NO		bb		
10	FUNCTION5 PFK	44.30	4.259e3					1.2	NO		bb		
11	FUNCTION5 PFK	43.80	4.249e3					1.0	NO		bb		
12	FUNCTION5 PFK	43.65	2.654e3					0.9	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	26.17	7.460e1					1.5	NO		bb		0.000
2	FUNCTION1 HXCD...	25.14	7.212e1					1.7	NO		db		0.000
3	FUNCTION1 HXCD...	25.08	7.024e1					2.2	NO		dd		0.000
4	FUNCTION1 HXCD...	25.02	7.773e1					1.8	NO		bd		0.000
5	FUNCTION1 HXCD...	23.78	7.188e1					2.2	NO		db		0.000
6	FUNCTION1 HXCD...	23.73	7.506e1					2.4	NO		bd		0.000
7	FUNCTION1 HXCD...	21.12	7.764e1					2.0	NO		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	23.78	1.367e2					2.7	NO		bb		0.000
2	FUNCTION1 HPCD...	22.03	1.727e2					2.9	NO		bb		0.000
3	FUNCTION1 HPCD...	21.63	8.595e1					1.4	NO		bb		0.000
4	FUNCTION1 HPCD...	21.21	1.017e2					2.1	NO		db		0.000
5	FUNCTION1 HPCD...	21.10	1.408e2					2.6	NO		bd		0.000

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ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	32.15	1.126e2					2.7	NO		db		0.000
2	FUNCTION2 HPCD...	32.03	8.038e1					3.1	YES		dd		0.000
3	FUNCTION2 HPCD...	31.97	1.406e2					2.8	NO		bd		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.03	1.137e2					3.2	YES		bb		0.000
2	FUNCTION3 OCDPE	35.83	1.828e2					3.3	YES		bb		0.000
3	FUNCTION3 OCDPE	34.86	1.745e2					5.7	YES		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	37.76	1.372e2					4.8	YES		bb		0.000
2	FUNCTION4 NCDPE	42.25	1.249e2					4.1	YES		bb		0.000
3	FUNCTION4 NCDPE	41.76	8.534e1					1.7	NO		bb		0.000
4	FUNCTION4 NCDPE	41.34	1.156e2					2.9	NO		bb		0.000
5	FUNCTION4 NCDPE	40.92	1.310e2					4.0	YES		bb		0.000
6	FUNCTION4 NCDPE	40.35	7.592e1					2.0	NO		bb		0.000
7	FUNCTION4 NCDPE	38.86	8.078e1					2.4	NO		bb		0.000

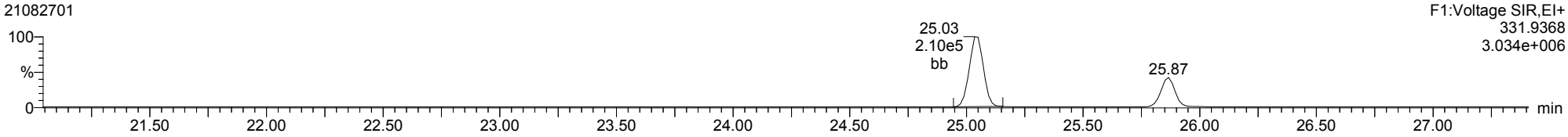
ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	45.53	8.606e1					2.0	NO		bb		0.000

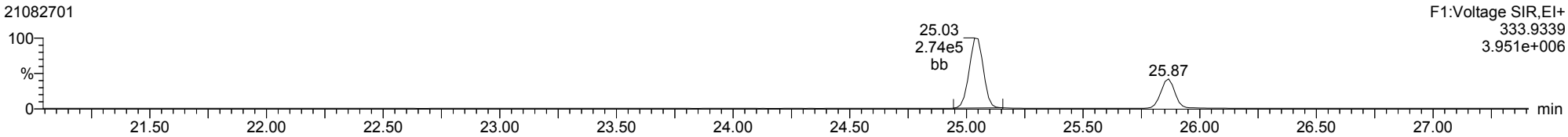
Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: BJG0465-BLK1, Name: 21082701, Date: 27-Aug-2021, Time: 04:48:45, Conditions: AUTOSPEC01, User: pk

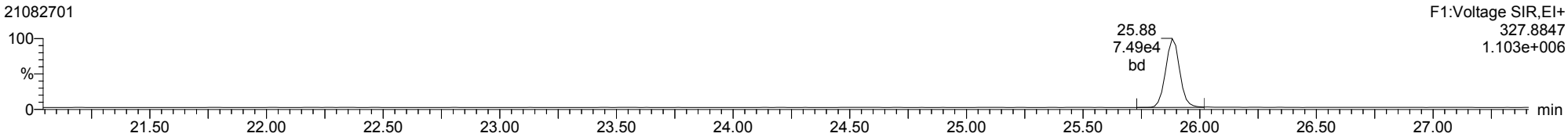
13C-1234-TCDD



13C-1234-TCDD

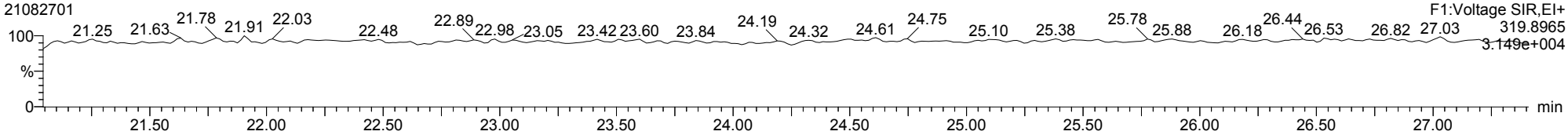


37CL-2378-TCDD



ID: BJG0465-BLK1, Name: 21082701, Date: 27-Aug-2021, Time: 04:48:45, Conditions: AUTOSPEC01, User: pk

2378-TCDD



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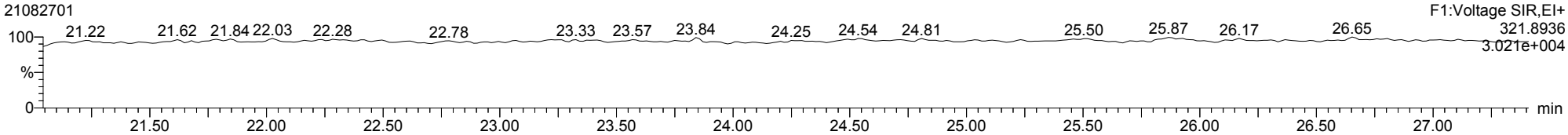

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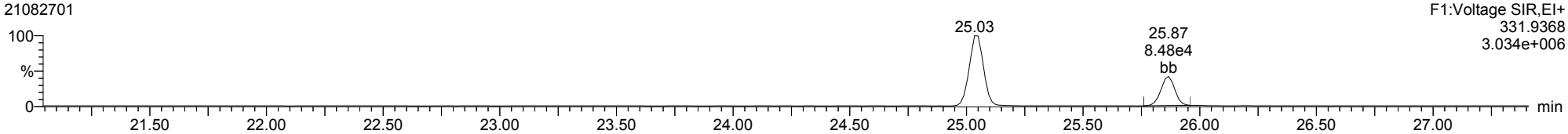

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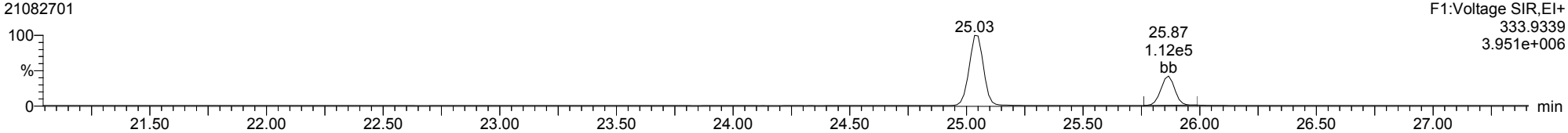

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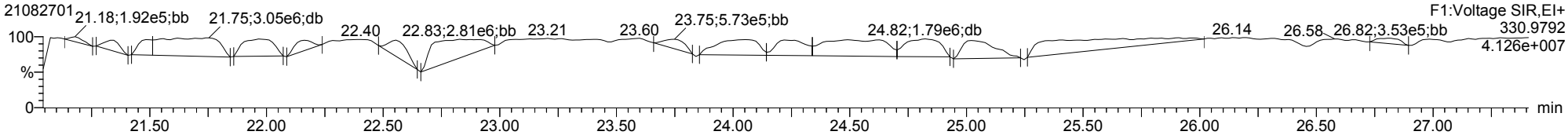
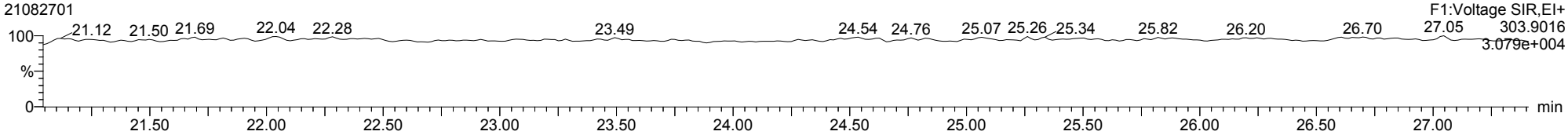


ID: BJG0465-BLK1, Name: 21082701, Date: 27-Aug-2021, Time: 04:48:45, Conditions: AUTOSPEC01, User: pk

2378-TCDF



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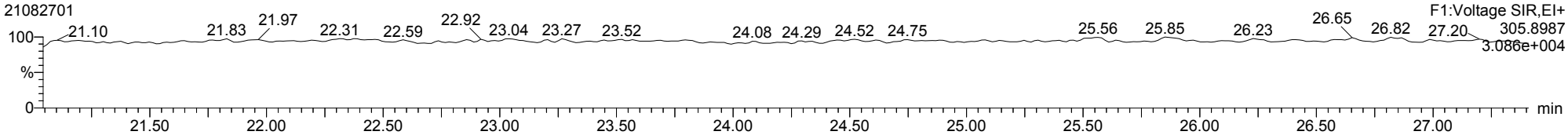

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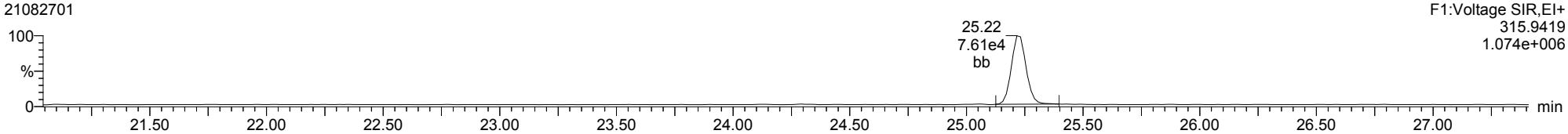

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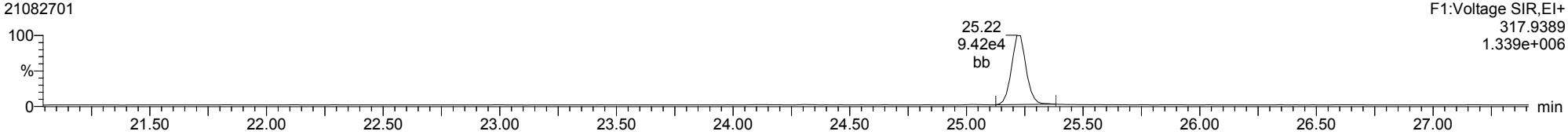
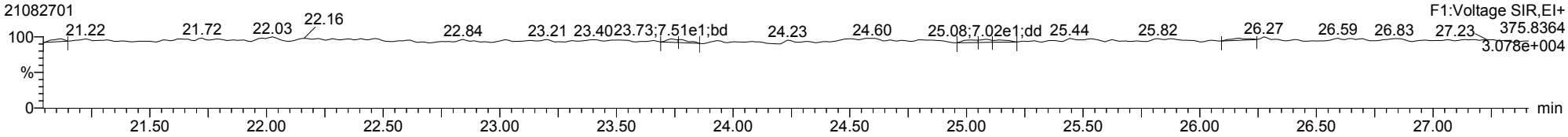
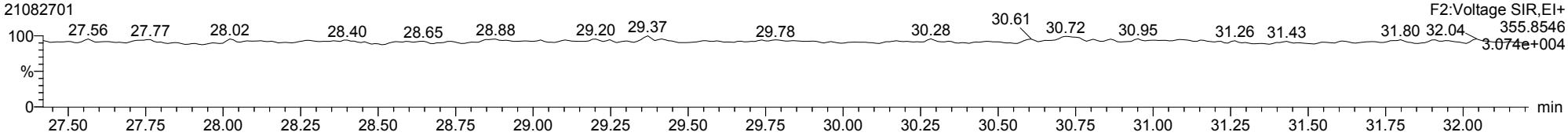


FUNCTION1 HXCDPE



ID: BJG0465-BLK1, Name: 21082701, Date: 27-Aug-2021, Time: 04:48:45, Conditions: AUTOSPEC01, User: pk

12378-PeCDD



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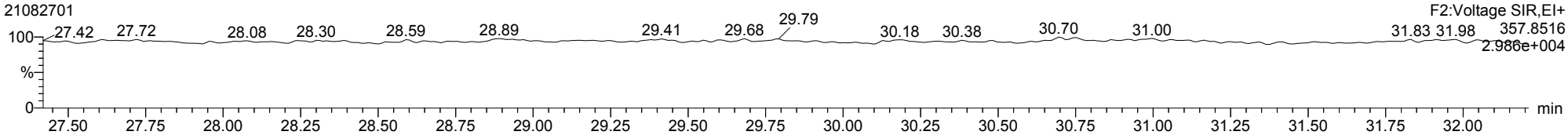

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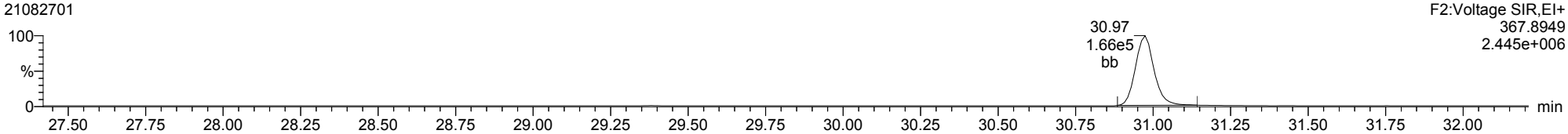

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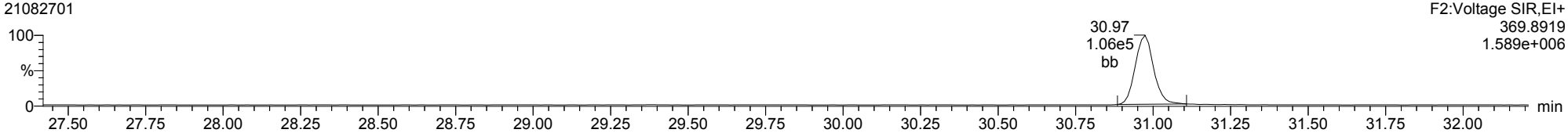

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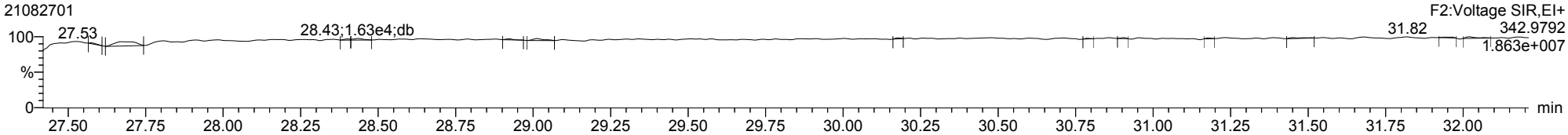

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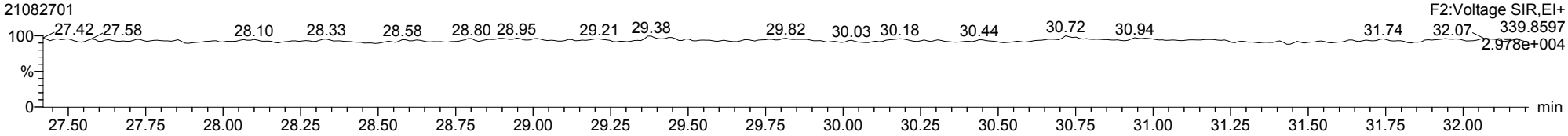

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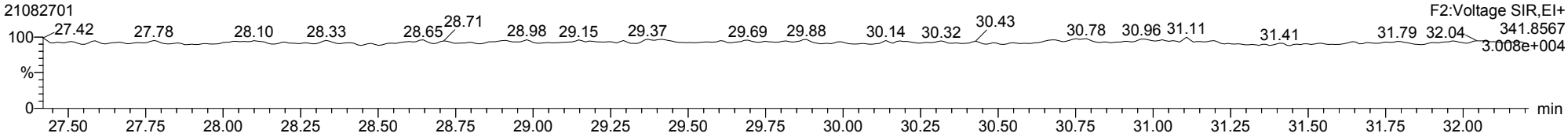

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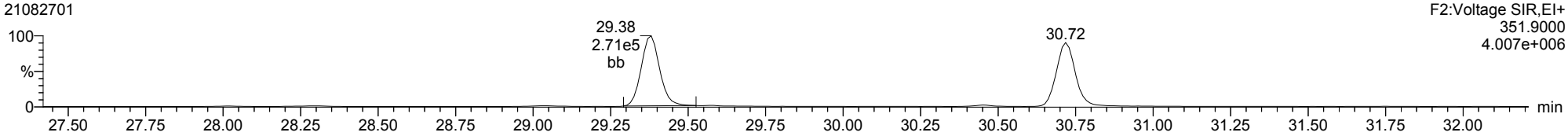

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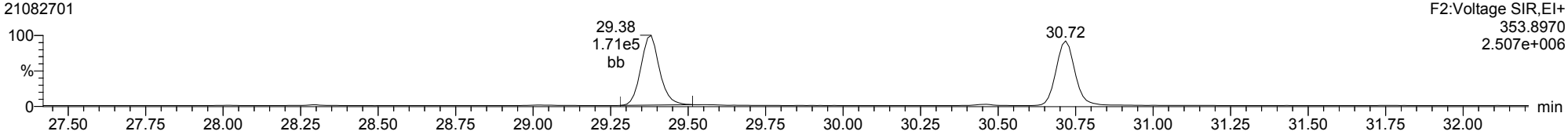
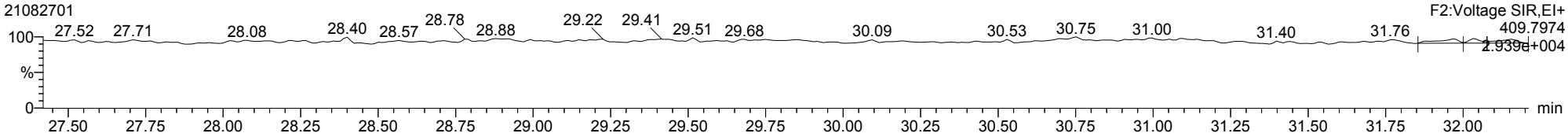


FUNCTION2 HPCDPE



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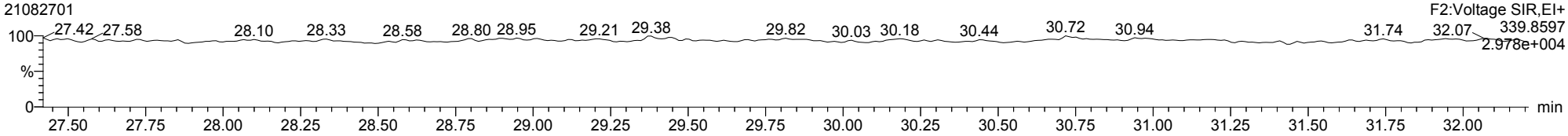
23478-PeCDF



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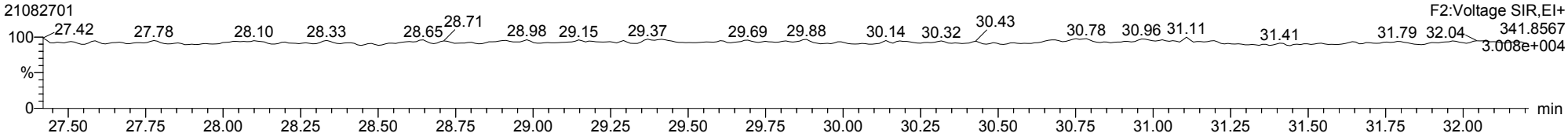

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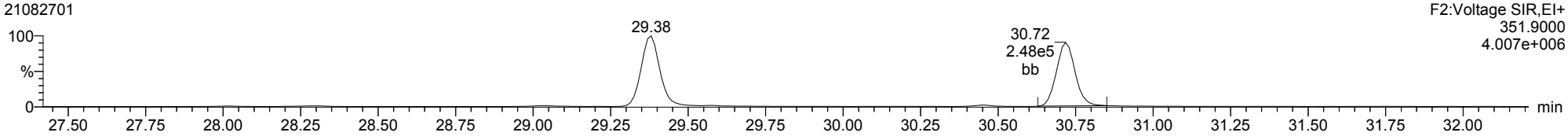

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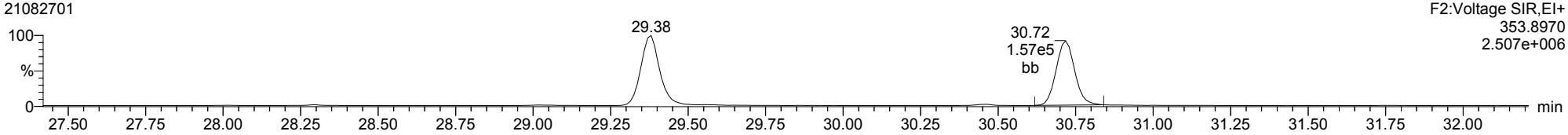
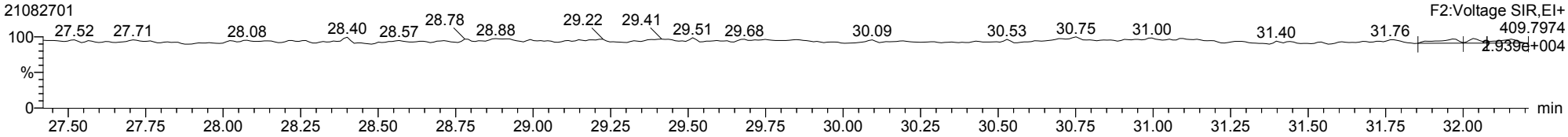


FUNCTION2 HPCDPE



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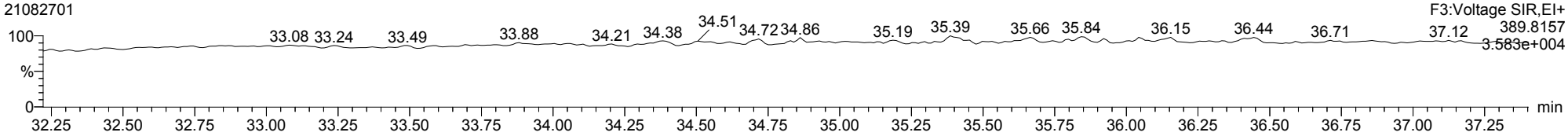

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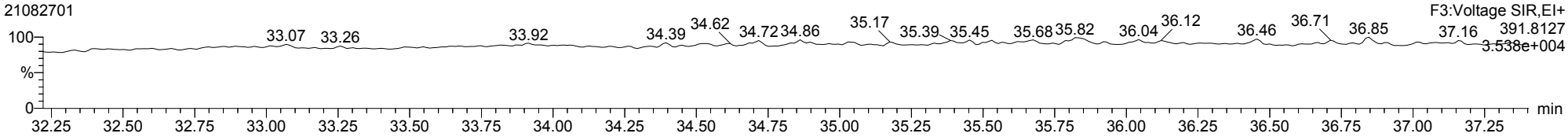

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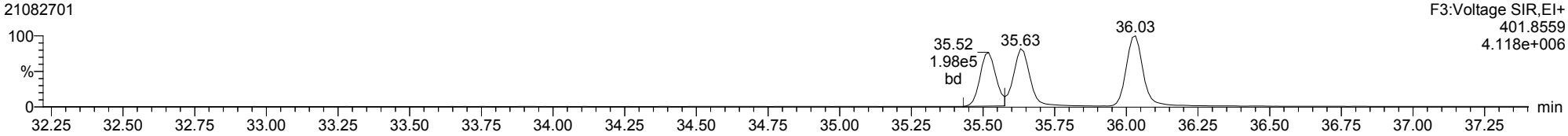

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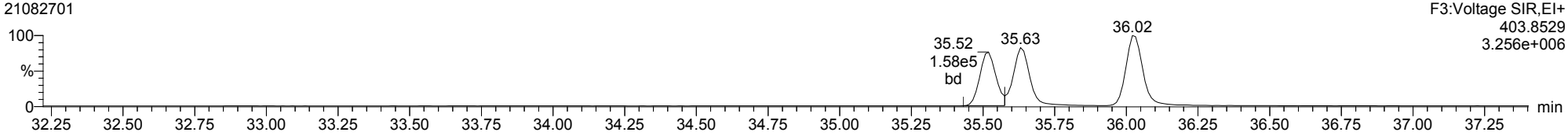
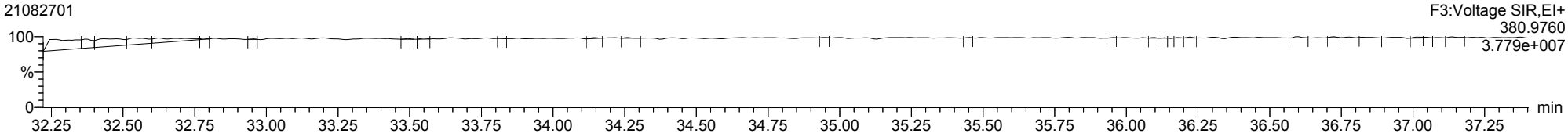


FUNCTION3 PFK



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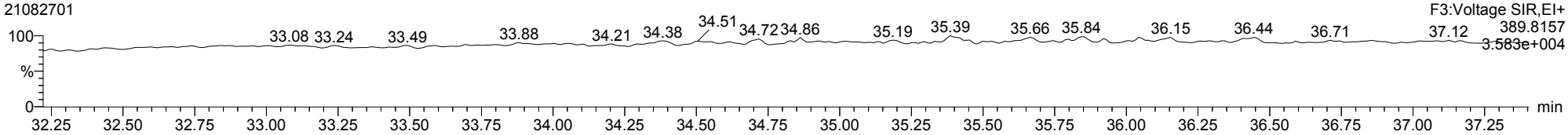

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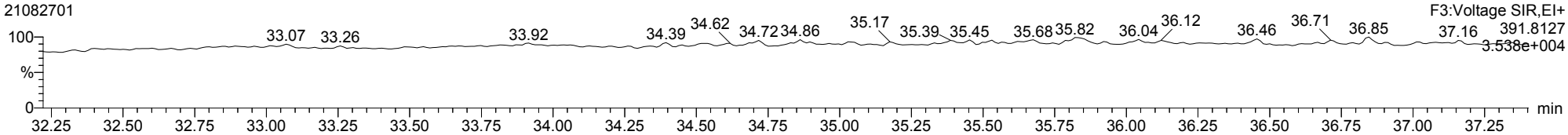

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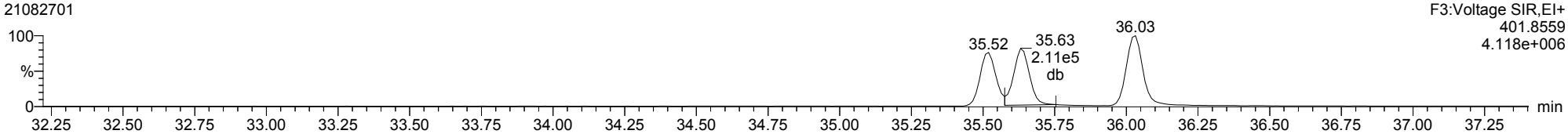

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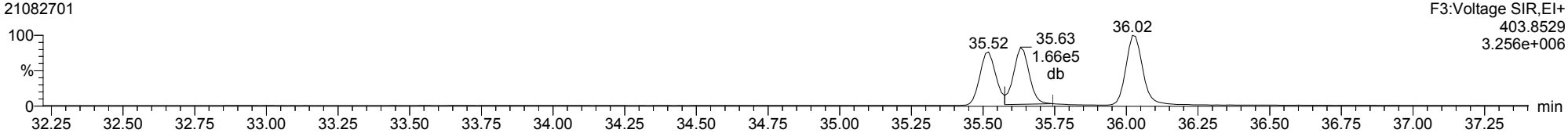

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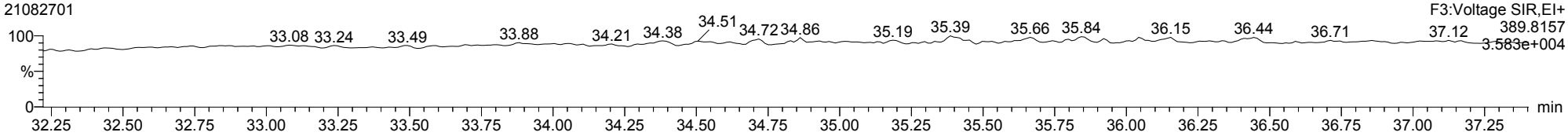

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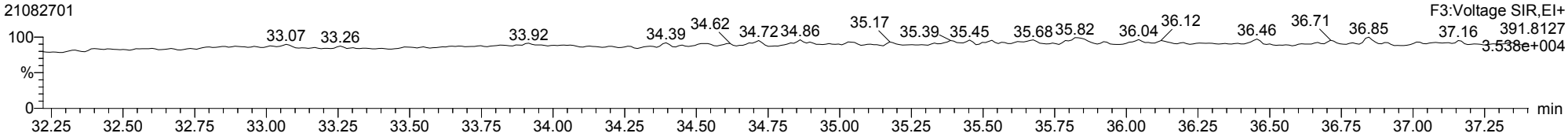

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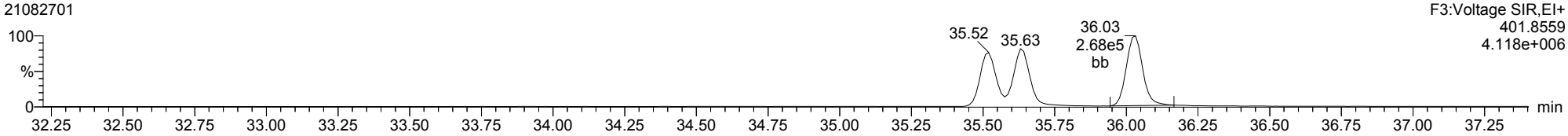

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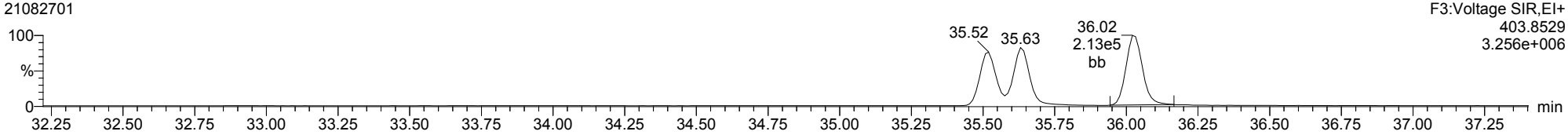

ID: BJG0465-BLK1, Name: 21082701, Date: 27-Aug-2021, Time: 04:48:45, Conditions: AUTOSPEC01, User: pk

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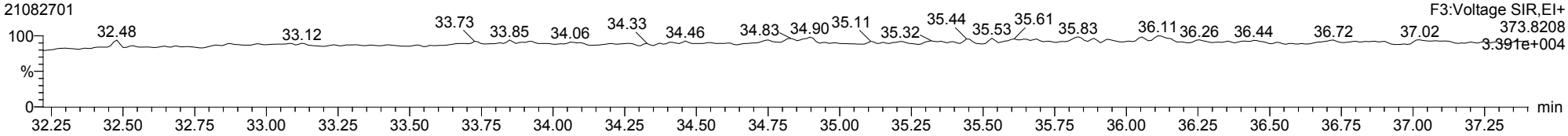

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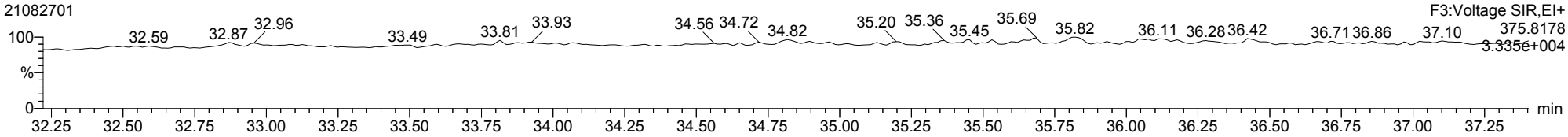

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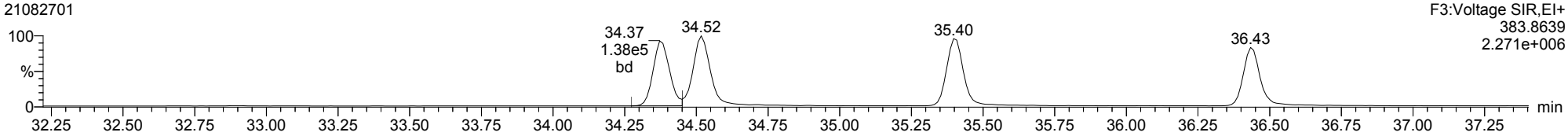

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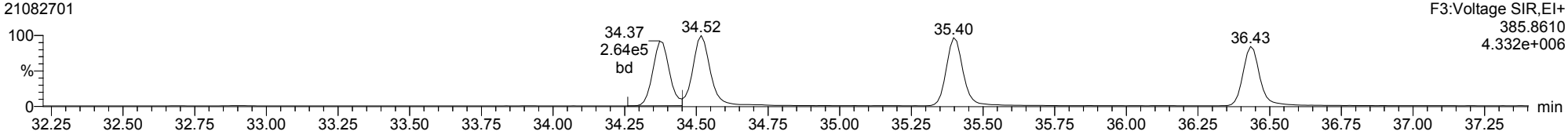
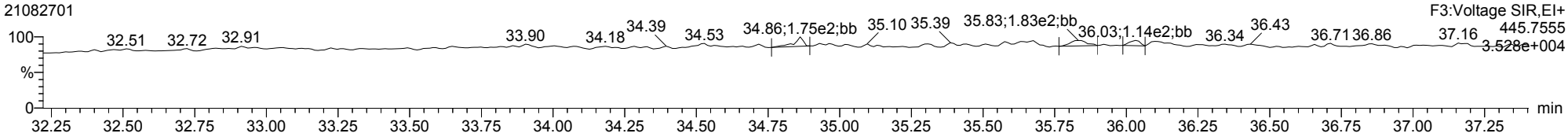
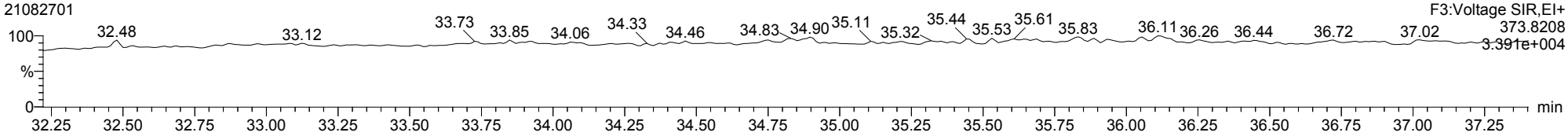


FUNCTION3 OCDPE



ID: BJG0465-BLK1, Name: 21082701, Date: 27-Aug-2021, Time: 04:48:45, Conditions: AUTOSPEC01, User: pk

234678-HxCDF



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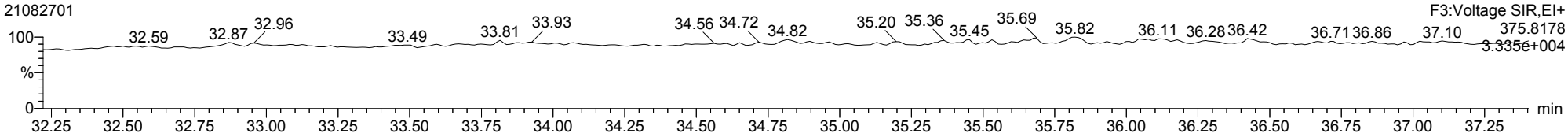

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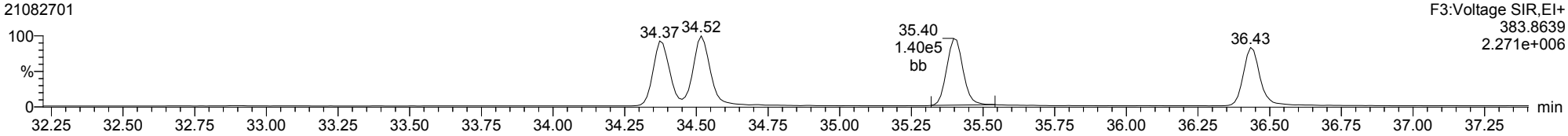

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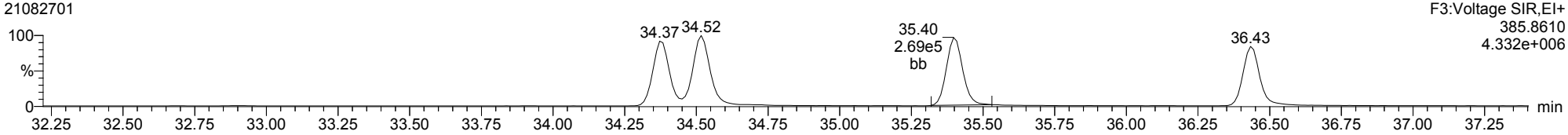

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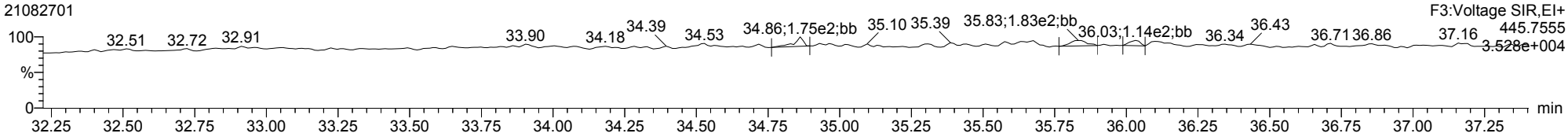

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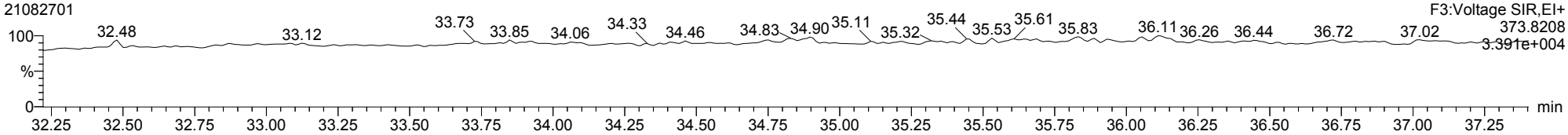

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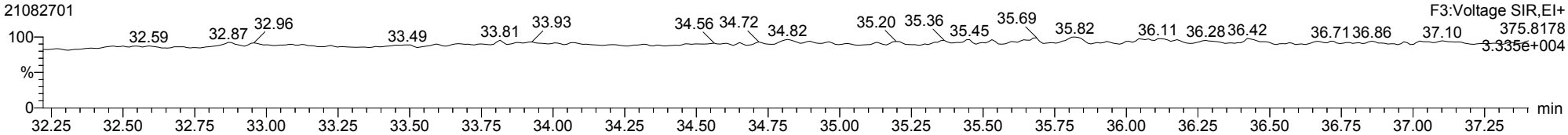

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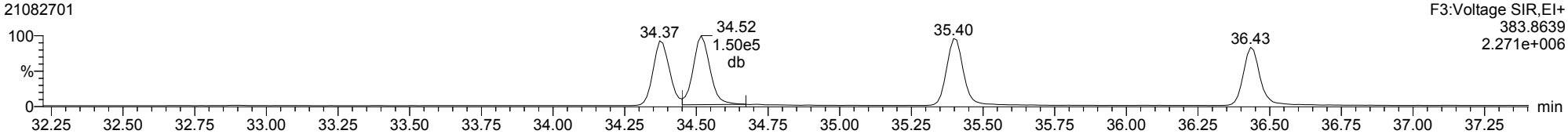

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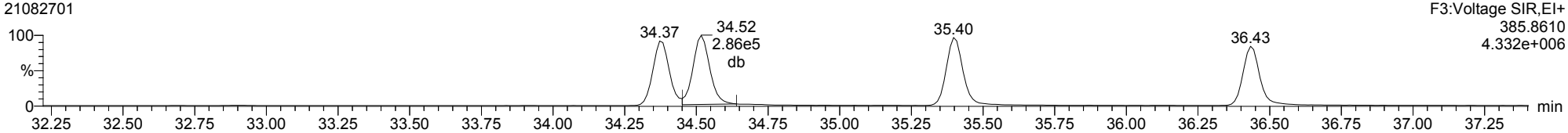

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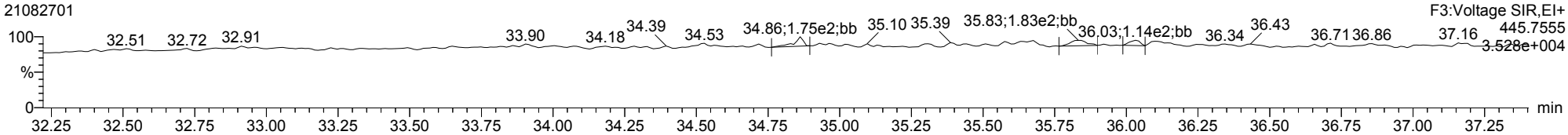

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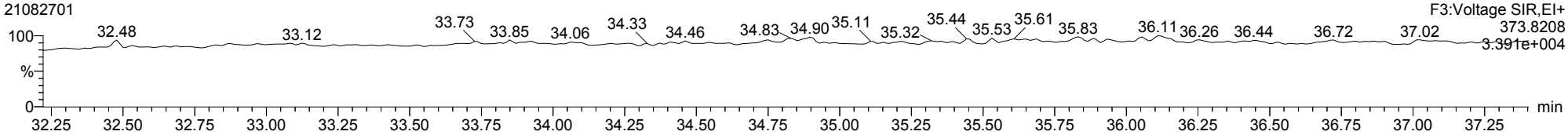

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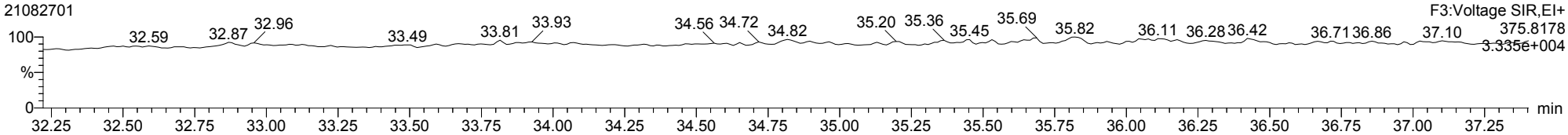

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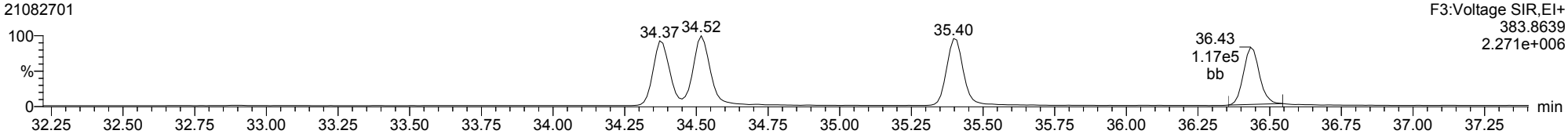

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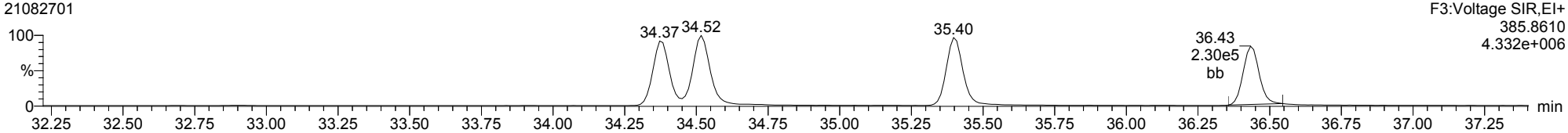

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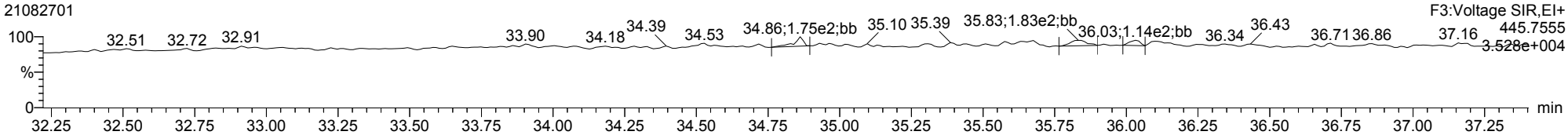

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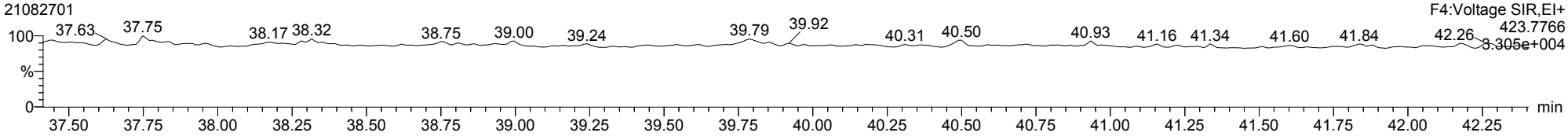

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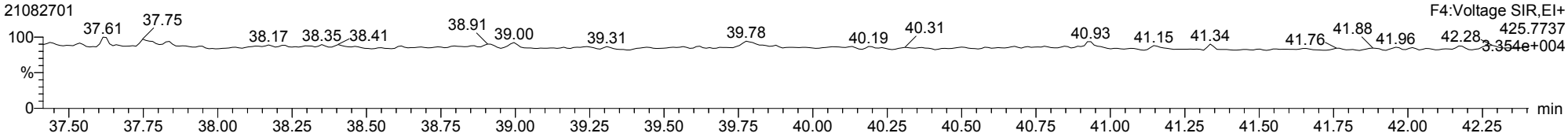

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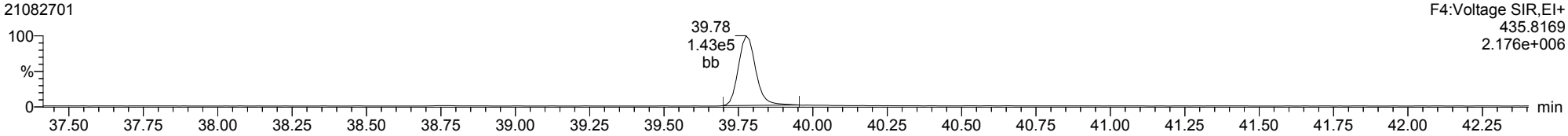

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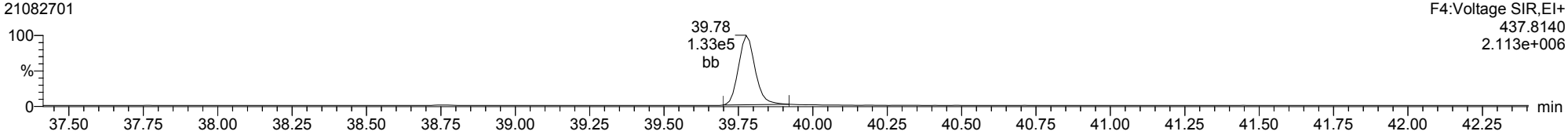

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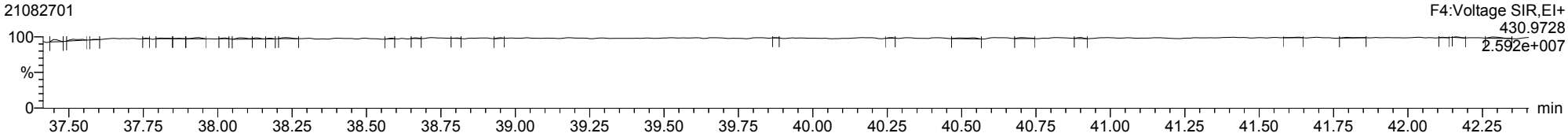

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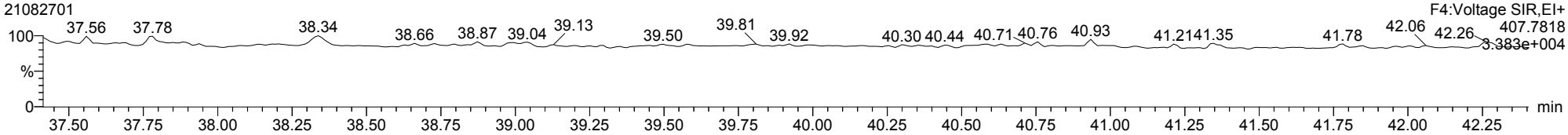

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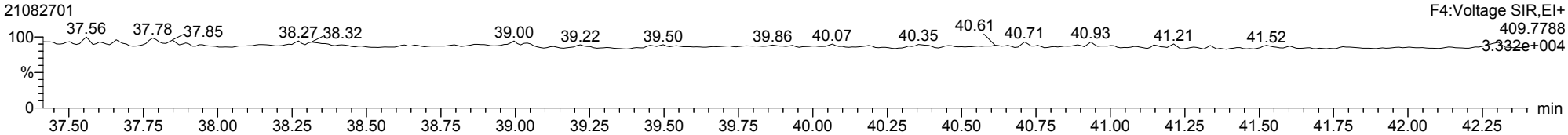

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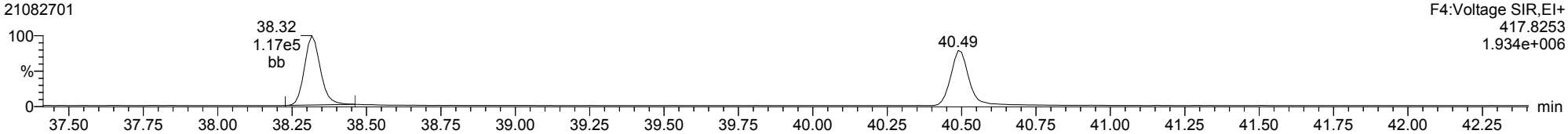

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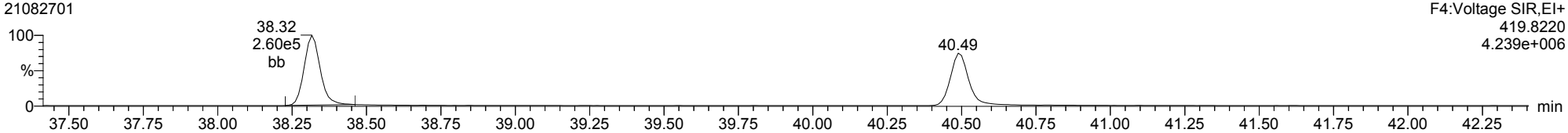

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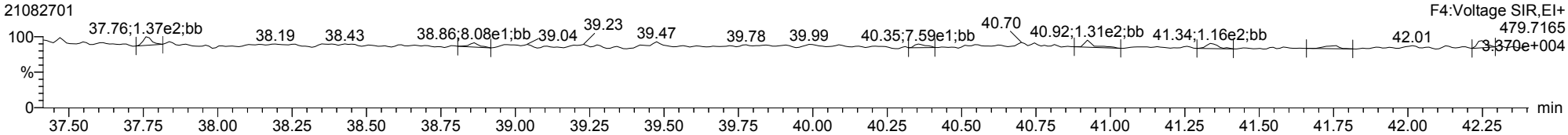

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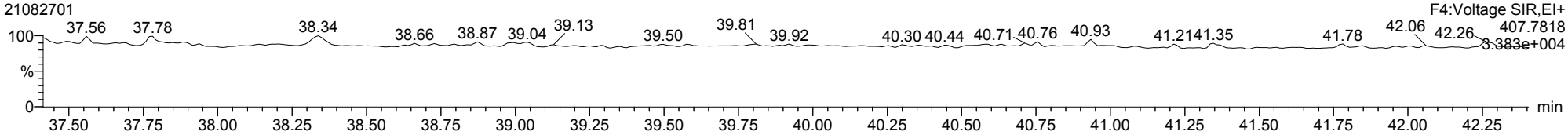

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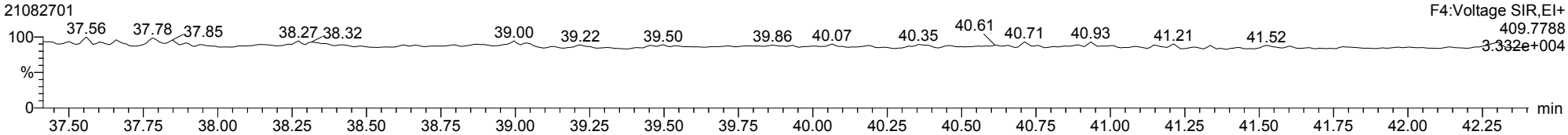

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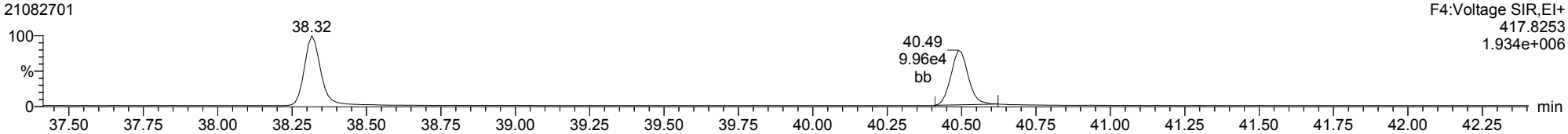

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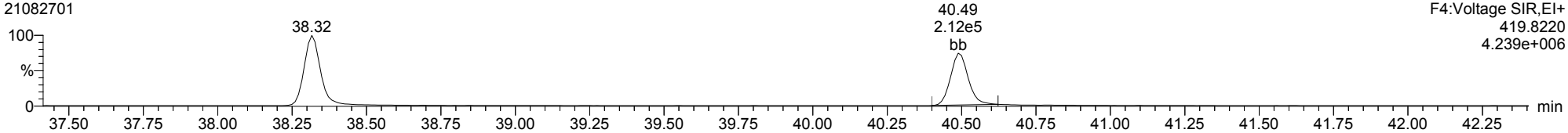

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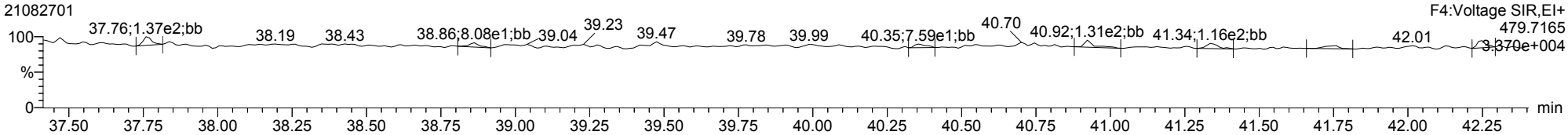

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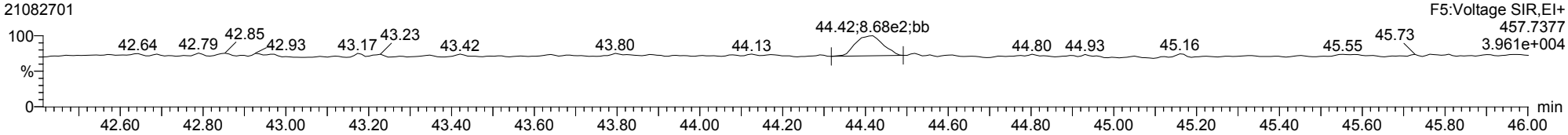

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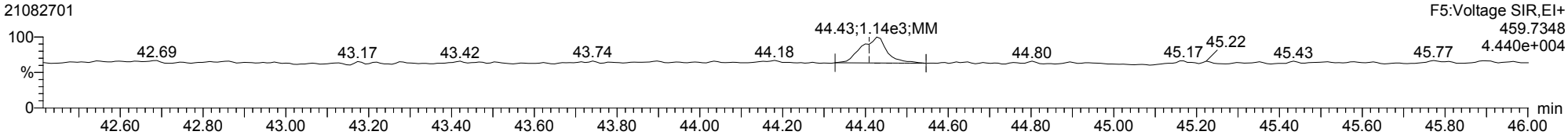

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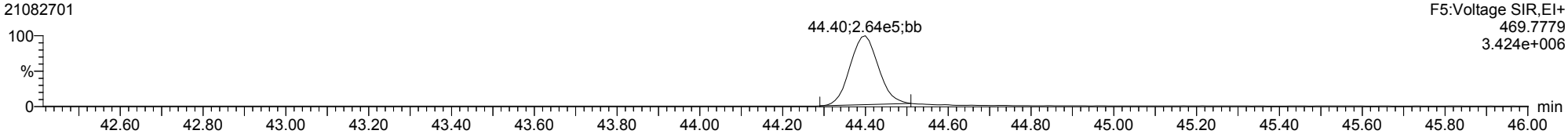

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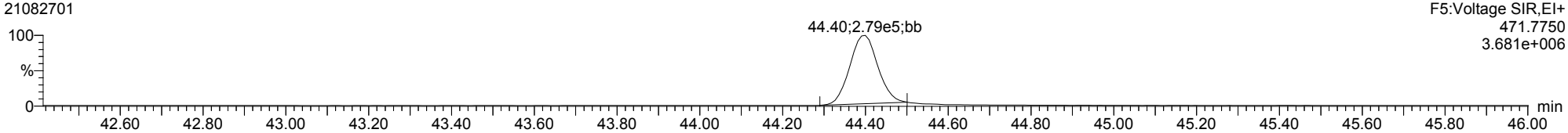
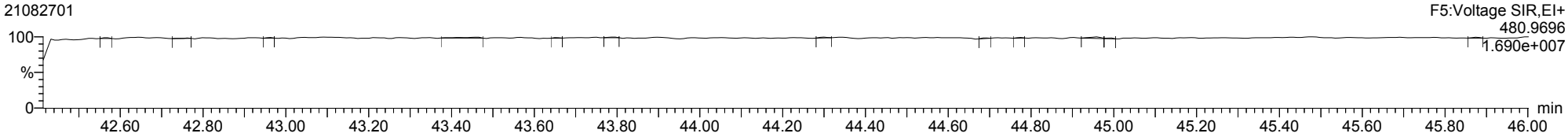


FUNCTION5 PFK



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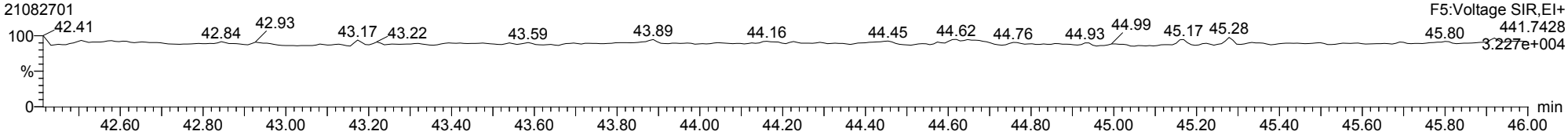

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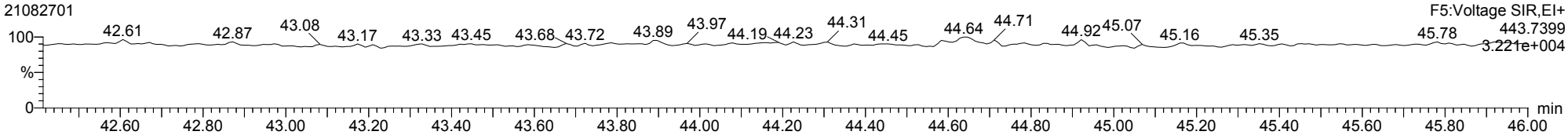

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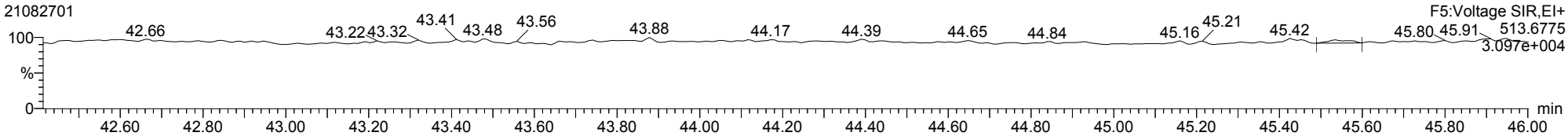

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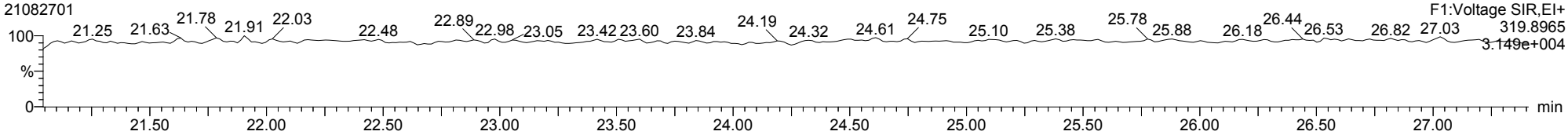

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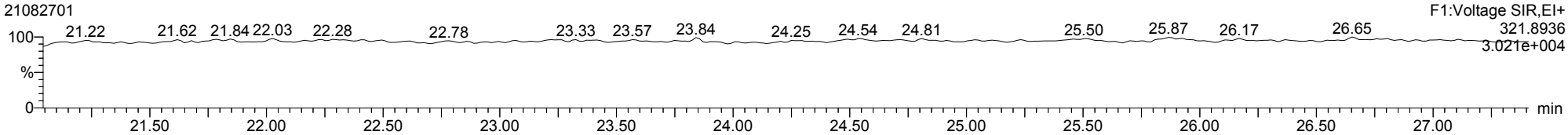

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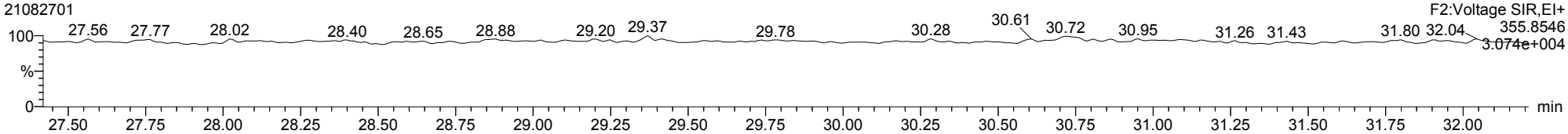

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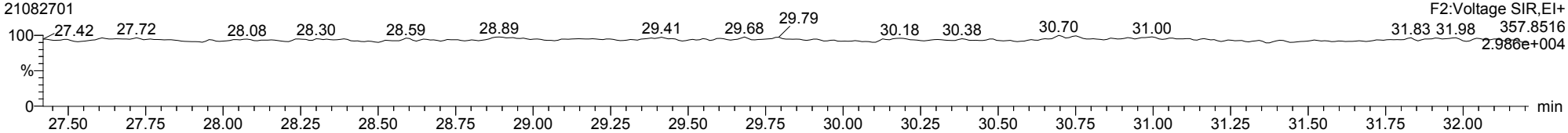

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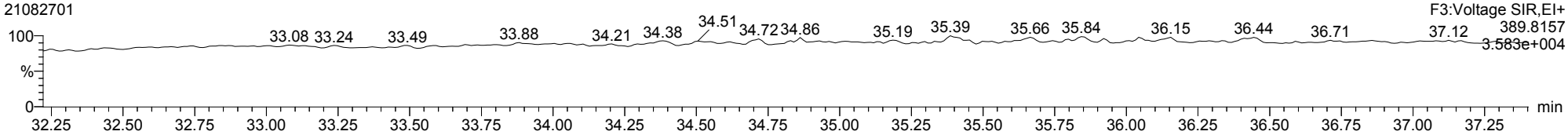

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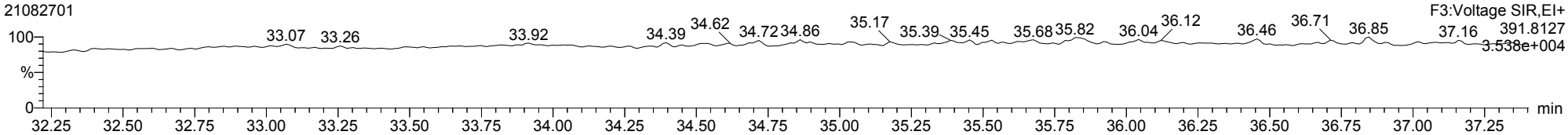

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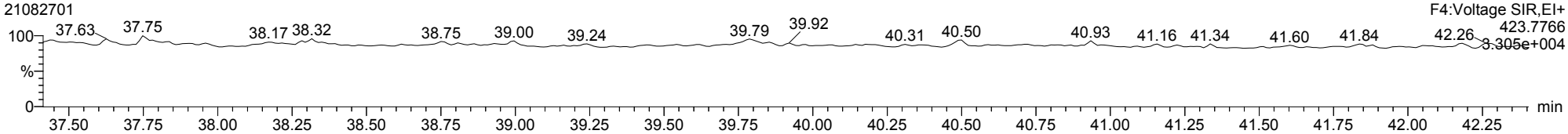

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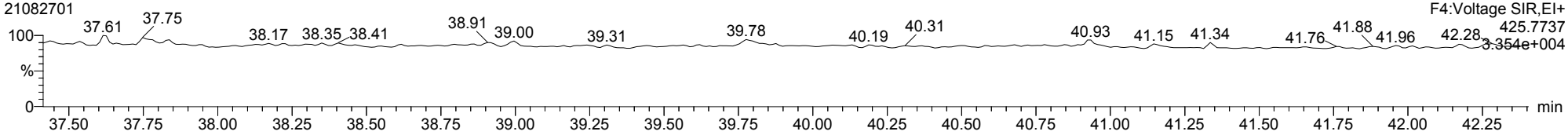

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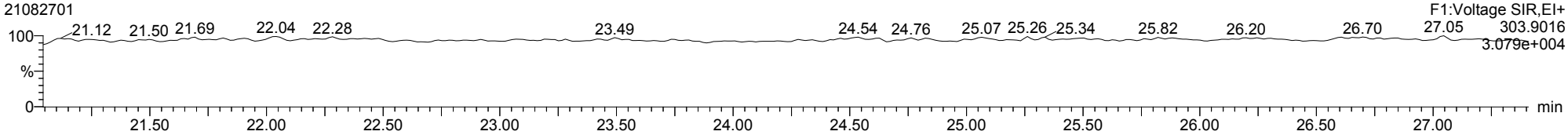
Total-tetrafurans



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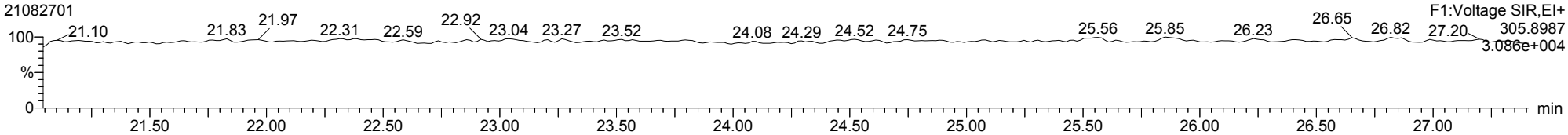

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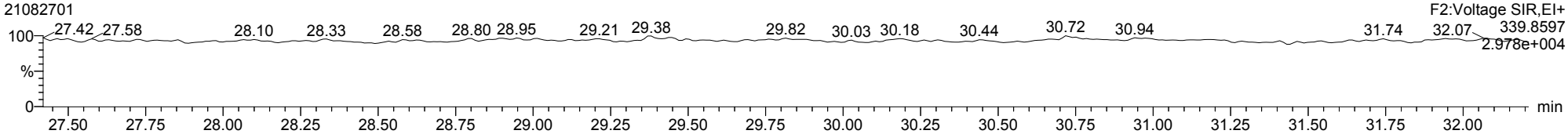

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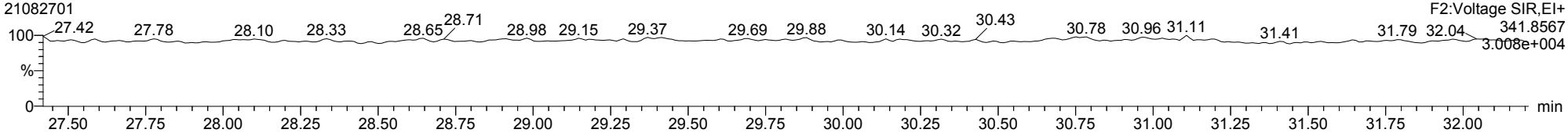

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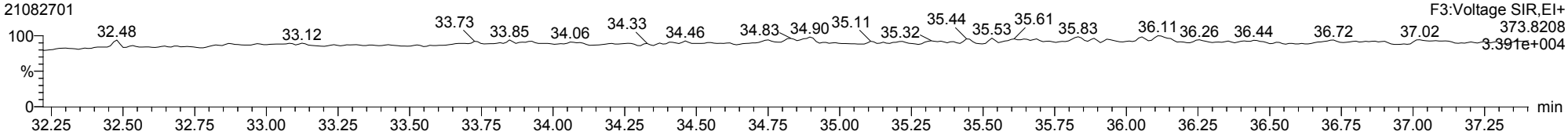

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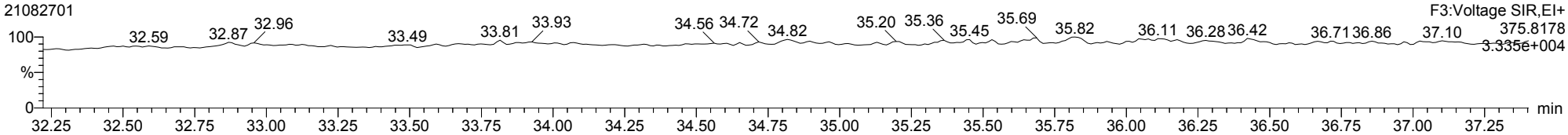

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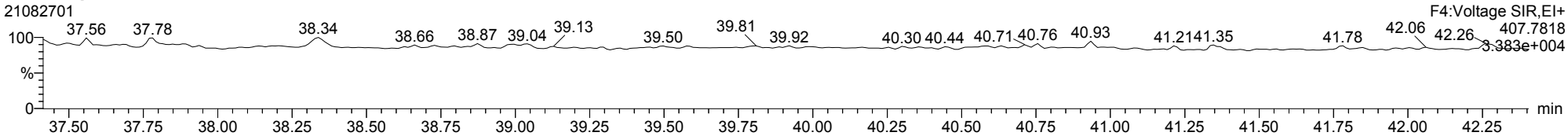
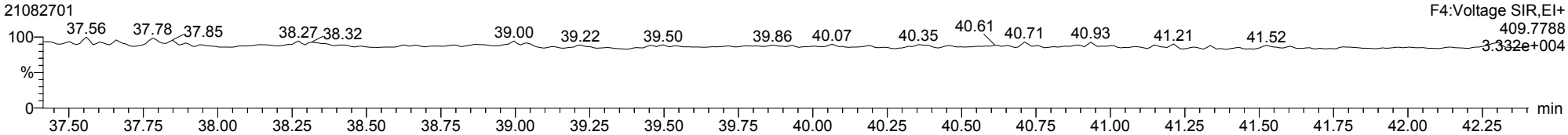


Total-heptafurans



Analytical Resources, Incorporated
Analytical Chemists and Consultants

LCS RECOVERY
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Matrix:	Solid	Analyzed:	08/27/21 05:37
Batch:	BJG0465	Laboratory ID:	BJG0465-BS1
Preparation:	EPA 8290	Sequence Name:	LCS
Initial/Final:	10 g / 20 uL		

COMPOUND	SPIKE ADDED (ng/kg wet)	LCS CONCENTRATION (ng/kg wet)	Q	LCS % REC. #	QC LIMITS REC.
2,3,7,8-TCDF	20.0	17.9		89.6	75 - 158
2,3,7,8-TCDD	20.0	19.6		97.8	67 - 158
1,2,3,7,8-PeCDF	100	88.4		88.4	80 - 134
2,3,4,7,8-PeCDF	100	91.9		91.9	68 - 160
1,2,3,7,8-PeCDD	100	108		108	70 - 142
1,2,3,4,7,8-HxCDF	100	99.4		99.4	72 - 134
1,2,3,6,7,8-HxCDF	100	96.9		96.9	84 - 130
2,3,4,6,7,8-HxCDF	100	99.4		99.4	70 - 156
1,2,3,7,8,9-HxCDF	100	96.8		96.8	78 - 130
1,2,3,4,7,8-HxCDD	100	91.5		91.5	70 - 164
1,2,3,6,7,8-HxCDD	100	98.3		98.3	76 - 134
1,2,3,7,8,9-HxCDD	100	103		103	64 - 162
1,2,3,4,6,7,8-HpCDF	100	98.1		98.1	82 - 122
1,2,3,4,7,8,9-HpCDF	100	102		102	78 - 138
1,2,3,4,6,7,8-HpCDD	100	104		104	70 - 140
OCDF	200	180		89.9	63 - 170
OCDD	200	195	B	97.5	78 - 144

* Indicates values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D1.qld
Last Altered: Friday, August 27, 2021 13:00:30 Pacific Daylight Time
Printed: Friday, August 27, 2021 13:31:41 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: BJG0465-BS1, Name: 21082702, Date: 27-Aug-2021, Time: 05:37:37, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.262	1.001	8.741e3	1.191e4	1.108	0.734	0.770	869	770	1.35e5	1.80e5	155.8	234.0	NO	bb	bb	8.955
12378-PeCDF	29.414	1.001	1.538e5	1.021e5	1.015	1.507	1.550	1516	1320	2.28e6	1.49e6	1504.2	1130.7	NO	bb	bb	44.216
23478-PeCDF	30.751	1.001	1.604e5	1.057e5	1.126	1.517	1.550	1516	1320	2.35e6	1.56e6	1549.2	1179.3	NO	bb	bb	45.948
123478-HxCDF	34.405	1.001	1.409e5	1.133e5	1.017	1.243	1.240	1660	2239	2.16e6	1.78e6	1302.0	796.3	NO	bd	bd	49.718
234678-HxCDF	35.430	1.001	1.447e5	1.180e5	1.052	1.226	1.240	1660	2239	2.27e6	1.84e6	1365.2	822.0	NO	bb	bb	49.705
123678-HxCDF	34.550	1.001	1.491e5	1.231e5	1.037	1.211	1.240	1660	2239	2.20e6	1.82e6	1328.3	811.4	NO	db	db	48.452
123789-HxCDF	36.466	1.001	1.179e5	9.545e4	1.030	1.235	1.240	1660	2239	1.81e6	1.49e6	1090.5	666.9	NO	bb	bb	48.416
1234678-HpCDF	38.338	1.000	1.594e5	1.605e5	1.327	0.993	1.050	1834	2019	2.67e6	2.57e6	1456.2	1271.8	NO	bb	bd	49.049
1234789-HpCDF	40.522	1.000	1.296e5	1.243e5	1.283	1.042	1.050	1834	2019	1.87e6	1.74e6	1018.3	861.8	NO	bd	bd	51.150
OCDF	44.638	1.005	2.110e5	2.220e5	1.447	0.950	0.890	1643	1692	2.58e6	2.73e6	1569.4	1615.7	NO	bd	bb	89.916
2378-TCDD	25.897	1.001	1.034e4	1.206e4	0.920	0.857	0.770	883	732	1.53e5	1.88e5	172.9	256.2	NO	bb	bb	9.782
12378-PeCDD	30.996	1.000	1.101e5	7.011e4	0.995	1.570	1.550	1205	883	1.70e6	1.04e6	1410.4	1180.1	NO	bb	bb	53.861
123478-HxCDD	35.542	1.000	1.141e5	9.289e4	1.027	1.229	1.240	1045	1703	1.90e6	1.54e6	1816.0	901.7	NO	bd	bd	45.725
123678-HxCDD	35.664	1.001	1.255e5	1.021e5	1.009	1.229	1.240	1045	1703	1.91e6	1.55e6	1827.7	912.7	NO	db	db	49.135
123789-HxCDD	36.054	1.012	1.214e5	9.831e4	0.950	1.234	1.240	1045	1703	2.00e6	1.55e6	1914.2	909.6	NO	bb	bb	51.368
1234678-HpCDD	39.809	1.001	9.918e4	9.308e4	1.068	1.066	1.050	1120	1193	1.54e6	1.46e6	1375.4	1226.8	NO	bb	bb	51.923
OCDD	44.418	1.000	1.830e5	2.001e5	1.181	0.914	0.890	1584	2035	2.27e6	2.47e6	1433.9	1213.6	NO	bb	bb	97.480
13C-2378-TCDF	25.247	1.007	9.363e4	1.146e5	1.427	0.817	0.770	2038	1308	1.39e6	1.69e6	684.2	1294.7	NO	bb	bb	25.939
13C-12378-PeCDF	29.392	1.173	3.481e5	2.223e5	1.297	1.566	1.550	2329	2443	5.18e6	3.26e6	2222.8	1335.7	NO	bb	bd	78.127
13C-23478-PeCDF	30.729	1.226	3.155e5	1.991e5	1.236	1.585	1.550	2329	2443	4.76e6	2.97e6	2042.7	1217.3	NO	bb	bb	73.953
13C-123478-HxCDF	34.383	0.954	1.715e5	3.312e5	1.242	0.518	0.510	1864	3105	2.55e6	5.02e6	1369.1	1617.5	NO	bd	bd	67.466
13C-123678-HxCDF	34.528	0.958	1.858e5	3.560e5	1.343	0.522	0.510	1864	3105	2.77e6	5.33e6	1487.7	1715.0	NO	db	db	67.234
13C-234678-HxCDF	35.408	0.983	1.718e5	3.303e5	1.215	0.520	0.510	1864	3105	2.65e6	5.13e6	1423.3	1651.8	NO	bb	bb	68.906
13C-123789-HxCDF	36.444	1.011	1.479e5	2.798e5	1.008	0.529	0.510	1864	3105	2.35e6	4.50e6	1260.6	1449.6	NO	bb	bb	70.775
13C-1234678-HpCDF	38.327	1.064	1.484e5	3.429e5	0.926	0.433	0.440	1889	1693	2.43e6	5.52e6	1286.4	3259.8	NO	bb	bd	88.425
13C-1234789-HpCDF	40.500	1.124	1.199e5	2.669e5	0.758	0.449	0.440	1889	1693	1.78e6	4.00e6	945.1	2364.6	NO	bb	bb	85.093
13C-1234-TCDD	25.065	0.000	2.444e5	3.184e5	1.000	0.768	0.770	1566	937	3.72e6	4.85e6	2377.9	5173.2	NO	bb	bb	100.000
13C-2378-TCDD	25.882	1.033	1.094e5	1.394e5	1.116	0.784	0.770	1566	937	1.64e6	2.11e6	1049.1	2252.0	NO	bb	bb	39.596
13C-12378-PeCDD	30.985	1.236	2.067e5	1.295e5	0.732	1.596	1.550	861	1237	3.11e6	1.92e6	3610.0	1551.5	NO	bd	bb	81.598
13C-123478-HxCDD	35.530	0.986	2.469e5	1.937e5	0.960	1.275	1.240	1477	1694	4.03e6	3.12e6	2727.2	1844.1	NO	bd	bd	76.546
13C-123678-HxCDD	35.642	0.989	2.574e5	2.017e5	1.041	1.276	1.240	1477	1694	4.06e6	3.18e6	2748.1	1876.5	NO	db	db	73.507
13C-1234678-HpCDD	39.786	1.104	1.807e5	1.660e5	0.632	1.089	1.050	1520	1402	2.71e6	2.56e6	1784.3	1824.4	NO	bd	bb	91.390
13C-OCDD	44.409	1.232	3.166e5	3.490e5	0.504	0.907	0.890	1216	1213	3.93e6	4.35e6	3236.1	3590.3	NO	bb	bb	220.296
13C-123789-HxCDD	36.032	0.000	3.329e5	2.669e5	1.000	1.247	1.240	1477	1694	5.21e6	4.18e6	3524.6	2467.1	NO	bb	bb	100.000
37CL-2378-TCDD	25.897	1.033	9.476e4		1.084			808		1.41e6		1743.9			bb		15.539

Dataset: T:\Autospec\Processed Data Batch\210827D1.qld
Last Altered: Friday, August 27, 2021 13:00:30 Pacific Daylight Time
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ID: BJG0465-BS1, Name: 21082702, Date: 27-Aug-2021, Time: 05:37:37, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF					1.425		0.770	869	770								
1289-TCDF					1.043		0.770	869	770								
13468-PECDF					1.376		1.550	726	865								
12389-PECDF	31.787	1.082	1.186e3	8.126e2	1.000	1.460	1.550	1516	1320	1.62e4	1.02e4	10.7	7.7	NO	bb	bd	0.351
123468-HXCDF					1.087		1.240	1660	2239								
1368-TCDD					0.923		0.770	883	732								
1289-TCDD					0.794		0.770	883	732								
12479-PECDD					1.843		1.550	1205	883								
12389-PECDD					1.154		1.550	1205	883								
124679-HXCDD					1.125		1.240	1045	1703								
1234679-HPCDD	38.784	0.975	1.143e3	6.791e2	1.211	1.683	1.050	1120	1193	1.79e4	1.07e4	16.0	9.0	YES	bb	bd	0.434
Total-tetrafurans			8.741e3		1.192			869		1.35e5							8.955
Total-penta1			0.000e0					726		0.00e0							
Total-pentafurans			3.161e5		1.047			1516		4.66e6							90.707
Total-hexafurans			5.525e5		1.045			1660		8.44e6							196.290
Total-heptafurans			2.890e5		1.305			1834		4.54e6							100.199
Total-Furans			1.377e6		1.158			869		2.03e7							486.068
Total-tetradioxins			1.034e4		0.879			883		1.53e5							9.782
Total-pentadioxins			1.101e5		1.331			1205		1.70e6							53.861
Total-hexadioxins			3.610e5		1.028			1045		5.81e6							146.228
Total-heptadioxins			9.918e4		1.140			1120		1.54e6							51.923
Total-Dioxins			7.635e5		1.092			883		1.15e7							359.274
Total-TEQ			2.141e6					883		3.18e7							845.342
FUNCTION1 PFK			5.715e7					506803		3.96e8							
FUNCTION2 PFK			1.263e6					287263		1.58e7							0.000
FUNCTION3 PFK			0.000e0					379815		0.00e0							
FUNCTION4 PFK			1.304e5					238887		3.93e6							
FUNCTION5 PFK			1.341e5					178692		5.25e6							
FUNCTION1 HXCD...			1.282e3					871		1.78e4							0.000
FUNCTION1 HPCD...			2.719e2					756		6.55e3							0.000
FUNCTION2 HPCD...			5.351e2					890		7.24e3							0.000
FUNCTION3 OCDPE			1.649e3					1145		4.28e4							0.000
FUNCTION4 NCDPE			8.909e2					837		2.16e4							0.000
FUNCTION5 DCDPE			3.055e2					570		4.11e3							0.000

Dataset: T:\Autospec\Processed Data Batch\210827D1.qld
Last Altered: Friday, August 27, 2021 13:00:30 Pacific Daylight Time
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Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: BJG0465-BS1, Name: 21082702, Date: 27-Aug-2021, Time: 05:37:37, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDF	25.26	8.741e3	1.191e4	1.108	0.73	0.77	155.8	YES	NO	bb	bb	8.955

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	23478-PeCDF	30.75	1.604e5	1.057e5	1.126	1.52	1.55	1549.2	YES	NO	bb	bb	45.948
2	12378-PeCDF	29.41	1.538e5	1.021e5	1.015	1.51	1.55	1504.2	YES	NO	bb	bb	44.216
3	Total-pentafurans	28.32	6.892e2	4.053e2	1.047	1.70	1.55	6.4	YES	NO	db	db	0.193
4	12389-PECDF	31.79	1.186e3	8.126e2	1.000	1.46	1.55	10.7	YES	NO	bb	bd	0.351

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	234678-HxCDF	35.43	1.447e5	1.180e5	1.052	1.23	1.24	1365.2	YES	NO	bb	bb	49.705
2	123678-HxCDF	34.55	1.491e5	1.231e5	1.037	1.21	1.24	1328.3	YES	NO	db	db	48.452
3	123478-HxCDF	34.41	1.409e5	1.133e5	1.017	1.24	1.24	1302.0	YES	NO	bd	bd	49.718
4	123789-HxCDF	36.47	1.179e5	9.545e4	1.030	1.24	1.24	1090.5	YES	NO	bb	bb	48.416

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.52	1.296e5	1.243e5	1.283	1.04	1.05	1018.3	YES	NO	bd	bd	51.150
2	1234678-HpCDF	38.34	1.594e5	1.605e5	1.327	0.99	1.05	1456.2	YES	NO	bb	bd	49.049

ID: BJG0465-BS1, Name: 21082702, Date: 27-Aug-2021, Time: 05:37:37, Conditions: AUTOSPEC01, User: pk

Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDF	25.26	8.741e3	1.191e4	1.108	0.73	0.77	155.8	YES	NO	bb	bb	8.955
2	23478-PeCDF	30.75	1.604e5	1.057e5	1.126	1.52	1.55	1549.2	YES	NO	bb	bb	45.948
3	12378-PeCDF	29.41	1.538e5	1.021e5	1.015	1.51	1.55	1504.2	YES	NO	bb	bb	44.216
4	Total-pentafurans	28.32	6.892e2	4.053e2	1.047	1.70	1.55	6.4	YES	NO	db	db	0.193
5	234678-HxCDF	35.43	1.447e5	1.180e5	1.052	1.23	1.24	1365.2	YES	NO	bb	bb	49.705
6	123678-HxCDF	34.55	1.491e5	1.231e5	1.037	1.21	1.24	1328.3	YES	NO	db	db	48.452
7	123478-HxCDF	34.41	1.409e5	1.133e5	1.017	1.24	1.24	1302.0	YES	NO	bd	bd	49.718
8	12389-PECDF	31.79	1.186e3	8.126e2	1.000	1.46	1.55	10.7	YES	NO	bb	bd	0.351
9	123789-HxCDF	36.47	1.179e5	9.545e4	1.030	1.24	1.24	1090.5	YES	NO	bb	bb	48.416
10	1234789-HpCDF	40.52	1.296e5	1.243e5	1.283	1.04	1.05	1018.3	YES	NO	bd	bd	51.150
11	1234678-HpCDF	38.34	1.594e5	1.605e5	1.327	0.99	1.05	1456.2	YES	NO	bb	bd	49.049
12	OCDF	44.64	2.110e5	2.220e5	1.447	0.95	0.89	1569.4	YES	NO	bd	bb	89.916

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDD	25.90	1.034e4	1.206e4	0.920	0.86	0.77	172.9	YES	NO	bb	bb	9.782

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDD	31.00	1.101e5	7.011e4	0.995	1.57	1.55	1410.4	YES	NO	bb	bb	53.861

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.05	1.214e5	9.831e4	0.950	1.23	1.24	1914.2	YES	NO	bb	bb	51.368
2	123678-HxCDD	35.66	1.255e5	1.021e5	1.009	1.23	1.24	1827.7	YES	NO	db	db	49.135
3	123478-HxCDD	35.54	1.141e5	9.289e4	1.027	1.23	1.24	1816.0	YES	NO	bd	bd	45.725

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.81	9.918e4	9.308e4	1.068	1.07	1.05	1375.4	YES	NO	bb	bb	51.923

Dataset: T:\Autospec\Processed Data Batch\210827D1.qld
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ID: BJG0465-BS1, Name: 21082702, Date: 27-Aug-2021, Time: 05:37:37, Conditions: AUTOSPEC01, User: pk

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDD	25.90	1.034e4	1.206e4	0.920	0.86	0.77	172.9	YES	NO	bb	bb	9.782
2	12378-PeCDD	31.00	1.101e5	7.011e4	0.995	1.57	1.55	1410.4	YES	NO	bb	bb	53.861
3	123789-HxCDD	36.05	1.214e5	9.831e4	0.950	1.23	1.24	1914.2	YES	NO	bb	bb	51.368
4	123678-HxCDD	35.66	1.255e5	1.021e5	1.009	1.23	1.24	1827.7	YES	NO	db	db	49.135
5	123478-HxCDD	35.54	1.141e5	9.289e4	1.027	1.23	1.24	1816.0	YES	NO	bd	bd	45.725
6	1234678-HpCDD	39.81	9.918e4	9.308e4	1.068	1.07	1.05	1375.4	YES	NO	bb	bb	51.923
7	OCDD	44.42	1.830e5	2.001e5	1.181	0.91	0.89	1433.9	YES	NO	bb	bb	97.480

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDF	25.26	8.741e3	1.191e4	1.108	0.73	0.77	155.8	YES	NO	bb	bb	8.955
2	23478-PeCDF	30.75	1.604e5	1.057e5	1.126	1.52	1.55	1549.2	YES	NO	bb	bb	45.948
3	12378-PeCDF	29.41	1.538e5	1.021e5	1.015	1.51	1.55	1504.2	YES	NO	bb	bb	44.216
4	Total-pentafurans	28.32	6.892e2	4.053e2	1.047	1.70	1.55	6.4	YES	NO	db	db	0.193
5	234678-HxCDF	35.43	1.447e5	1.180e5	1.052	1.23	1.24	1365.2	YES	NO	bb	bb	49.705
6	123678-HxCDF	34.55	1.491e5	1.231e5	1.037	1.21	1.24	1328.3	YES	NO	db	db	48.452
7	123478-HxCDF	34.41	1.409e5	1.133e5	1.017	1.24	1.24	1302.0	YES	NO	bd	bd	49.718
8	12389-PECDF	31.79	1.186e3	8.126e2	1.000	1.46	1.55	10.7	YES	NO	bb	bd	0.351
9	123789-HxCDF	36.47	1.179e5	9.545e4	1.030	1.24	1.24	1090.5	YES	NO	bb	bb	48.416
10	1234789-HpCDF	40.52	1.296e5	1.243e5	1.283	1.04	1.05	1018.3	YES	NO	bd	bd	51.150
11	1234678-HpCDF	38.34	1.594e5	1.605e5	1.327	0.99	1.05	1456.2	YES	NO	bb	bd	49.049
12	OCDF	44.64	2.110e5	2.220e5	1.447	0.95	0.89	1569.4	YES	NO	bd	bb	89.916
13	2378-TCDD	25.90	1.034e4	1.206e4	0.920	0.86	0.77	172.9	YES	NO	bb	bb	9.782
14	12378-PeCDD	31.00	1.101e5	7.011e4	0.995	1.57	1.55	1410.4	YES	NO	bb	bb	53.861
15	123789-HxCDD	36.05	1.214e5	9.831e4	0.950	1.23	1.24	1914.2	YES	NO	bb	bb	51.368
16	123678-HxCDD	35.66	1.255e5	1.021e5	1.009	1.23	1.24	1827.7	YES	NO	db	db	49.135
17	123478-HxCDD	35.54	1.141e5	9.289e4	1.027	1.23	1.24	1816.0	YES	NO	bd	bd	45.725
18	1234678-HpCDD	39.81	9.918e4	9.308e4	1.068	1.07	1.05	1375.4	YES	NO	bb	bb	51.923
19	OCDD	44.42	1.830e5	2.001e5	1.181	0.91	0.89	1433.9	YES	NO	bb	bb	97.480

Dataset: T:\Autospec\Processed Data Batch\210827D1.qld
Last Altered: Friday, August 27, 2021 13:00:30 Pacific Daylight Time
Printed: Friday, August 27, 2021 13:31:41 Pacific Daylight Time

ID: BJG0465-BS1, Name: 21082702, Date: 27-Aug-2021, Time: 05:37:37, Conditions: AUTOSPEC01, User: pk

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	21.21	3.375e5					7.6	YES		bd		
2	FUNCTION1 PFK	24.01	1.740e6					30.7	YES		dd		
3	FUNCTION1 PFK	23.73	2.579e6					33.2	YES		dd		
4	FUNCTION1 PFK	23.60	2.060e6					35.4	YES		dd		
5	FUNCTION1 PFK	23.54	1.266e6					34.9	YES		dd		
6	FUNCTION1 PFK	23.42	2.401e6					36.4	YES		dd		
7	FUNCTION1 PFK	23.22	6.406e6					38.1	YES		dd		
8	FUNCTION1 PFK	22.89	2.812e6					39.1	YES		dd		
9	FUNCTION1 PFK	22.81	2.612e6					38.6	YES		bd		
10	FUNCTION1 PFK	22.57	1.869e6					32.9	YES		db		
11	FUNCTION1 PFK	22.43	2.724e6					31.9	YES		dd		
12	FUNCTION1 PFK	22.30	1.228e6					28.8	YES		dd		
13	FUNCTION1 PFK	22.18	1.615e6					27.6	YES		dd		
14	FUNCTION1 PFK	22.01	2.205e6					25.9	YES		dd		
15	FUNCTION1 PFK	21.72	2.493e6					23.8	YES		dd		
16	FUNCTION1 PFK	21.60	1.552e6					20.7	YES		bd		
17	FUNCTION1 PFK	21.35	4.767e5					12.7	YES		db		
18	FUNCTION1 PFK	27.00	5.165e5					10.6	YES		bb		
19	FUNCTION1 PFK	26.83	7.397e5					12.8	YES		db		
20	FUNCTION1 PFK	26.68	3.745e5					10.0	YES		dd		
21	FUNCTION1 PFK	26.59	8.424e5					12.5	YES		bd		
22	FUNCTION1 PFK	26.40	1.963e5					7.4	YES		db		
23	FUNCTION1 PFK	26.34	3.368e5					8.1	YES		dd		
24	FUNCTION1 PFK	26.18	3.150e5					6.8	YES		dd		
25	FUNCTION1 PFK	26.12	1.776e5					5.1	YES		bd		
26	FUNCTION1 PFK	25.65	2.854e6					8.1	YES		bb		
27	FUNCTION1 PFK	25.05	1.998e6					25.7	YES		db		
28	FUNCTION1 PFK	24.85	1.614e6					27.5	YES		dd		
29	FUNCTION1 PFK	24.81	9.747e5					27.0	YES		dd		
30	FUNCTION1 PFK	24.64	1.612e6					28.1	YES		dd		
31	FUNCTION1 PFK	24.52	3.008e6					28.6	YES		dd		
32	FUNCTION1 PFK	24.23	2.439e6					30.2	YES		dd		
33	FUNCTION1 PFK	24.04	2.145e6					31.5	YES		dd		
34	FUNCTION1 PFK	27.33	6.350e5					2.8	NO		bb		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	31.84	1.866e4					1.3	NO		bb		0.000
2	FUNCTION2 PFK	31.40	7.264e3					0.9	NO		bb		0.000
3	FUNCTION2 PFK	30.28	1.474e3					0.5	NO		bb		0.000
4	FUNCTION2 PFK	29.57	2.684e4					1.5	NO		bb		0.000
5	FUNCTION2 PFK	29.11	3.030e4					2.7	NO		bb		0.000
6	FUNCTION2 PFK	29.00	6.740e4					3.4	YES		db		0.000
7	FUNCTION2 PFK	28.86	1.149e4					1.3	NO		dd		0.000
8	FUNCTION2 PFK	28.82	6.832e3					0.9	NO		bd		0.000
9	FUNCTION2 PFK	28.32	4.806e3					0.9	NO		bb		0.000
10	FUNCTION2 PFK	27.99	1.544e5					4.9	YES		db		0.000
11	FUNCTION2 PFK	27.87	2.222e5					6.2	YES		dd		0.000
12	FUNCTION2 PFK	27.71	1.547e5					7.5	YES		bd		0.000
13	FUNCTION2 PFK	27.59	1.494e5					11.2	YES		db		0.000
14	FUNCTION2 PFK	27.54	4.073e5					11.8	YES		bd		0.000

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	42.27	1.110e4					1.7	NO		bb		
2	FUNCTION4 PFK	41.94	1.426e3					0.5	NO		bb		
3	FUNCTION4 PFK	41.80	3.608e3					0.7	NO		bb		
4	FUNCTION4 PFK	41.38	1.651e3					0.6	NO		bb		
5	FUNCTION4 PFK	40.52	9.192e3					1.4	NO		bb		
6	FUNCTION4 PFK	40.23	9.022e3					1.4	NO		bb		
7	FUNCTION4 PFK	39.60	1.595e3					0.6	NO		bb		
8	FUNCTION4 PFK	38.84	1.159e4					1.5	NO		bb		
9	FUNCTION4 PFK	38.55	4.087e3					0.9	NO		bb		
10	FUNCTION4 PFK	38.35	5.397e3					1.0	NO		bb		
11	FUNCTION4 PFK	38.19	6.358e3					1.3	NO		bb		
12	FUNCTION4 PFK	38.10	1.192e4					1.8	NO		bb		
13	FUNCTION4 PFK	37.93	3.607e4					1.7	NO		bb		
14	FUNCTION4 PFK	37.47	1.739e4					1.2	NO		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	43.71	4.128e3					1.2	NO		dd		
2	FUNCTION5 PFK	43.68	3.047e3					0.9	NO		bd		
3	FUNCTION5 PFK	43.54	1.233e4					1.7	NO		db		
4	FUNCTION5 PFK	43.50	8.020e3					2.0	NO		bd		
5	FUNCTION5 PFK	43.29	8.478e3					1.6	NO		bb		
6	FUNCTION5 PFK	43.24	1.250e4					1.6	NO		bb		
7	FUNCTION5 PFK	43.05	3.050e3					0.9	NO		bb		
8	FUNCTION5 PFK	42.83	9.976e2					0.6	NO		bb		
9	FUNCTION5 PFK	42.81	8.019e2					0.5	NO		bb		
10	FUNCTION5 PFK	42.78	2.576e3					0.9	NO		bb		
11	FUNCTION5 PFK	42.69	9.364e2					0.6	NO		bb		
12	FUNCTION5 PFK	42.64	2.549e4					1.7	NO		bb		
13	FUNCTION5 PFK	42.54	1.469e4					3.4	YES		db		
14	FUNCTION5 PFK	42.51	3.151e3					0.8	NO		bd		
15	FUNCTION5 PFK	42.46	9.366e2					0.6	NO		bb		
16	FUNCTION5 PFK	45.51	9.439e3					1.9	NO		bb		
17	FUNCTION5 PFK	45.09	1.261e3					0.8	NO		bb		
18	FUNCTION5 PFK	45.03	2.096e3					0.8	NO		bb		
19	FUNCTION5 PFK	44.84	9.314e2					0.6	NO		bb		
20	FUNCTION5 PFK	44.70	1.003e3					0.6	NO		bb		
21	FUNCTION5 PFK	44.59	1.071e3					0.7	NO		bb		
22	FUNCTION5 PFK	44.50	2.837e3					0.9	NO		bb		
23	FUNCTION5 PFK	44.19	1.601e3					0.6	NO		bb		
24	FUNCTION5 PFK	43.94	7.148e3					1.9	NO		bb		
25	FUNCTION5 PFK	43.88	1.852e3					0.7	NO		bb		
26	FUNCTION5 PFK	43.75	3.716e3					1.0	NO		db		

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ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	21.66	2.003e2					3.4	YES		db		0.000
2	FUNCTION1 HXCD...	21.56	8.116e1					1.9	NO		dd		0.000
3	FUNCTION1 HXCD...	21.51	7.615e1					1.9	NO		dd		0.000
4	FUNCTION1 HXCD...	21.30	2.006e2					1.5	NO		bd		0.000
5	FUNCTION1 HXCD...	26.34	8.282e1					2.1	NO		bb		0.000
6	FUNCTION1 HXCD...	26.15	8.678e1					2.0	NO		db		0.000
7	FUNCTION1 HXCD...	26.08	8.871e1					1.8	NO		bd		0.000
8	FUNCTION1 HXCD...	25.11	2.748e2					2.8	NO		bb		0.000
9	FUNCTION1 HXCD...	24.87	7.954e1					1.0	NO		bb		0.000
10	FUNCTION1 HXCD...	23.16	1.112e2					1.9	NO		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	24.61	8.718e1					2.4	NO		bb		0.000
2	FUNCTION1 HPCD...	23.07	7.933e1					2.9	NO		bb		0.000
3	FUNCTION1 HPCD...	21.66	1.054e2					3.4	YES		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	30.67	1.545e2					2.5	NO		bb		0.000
2	FUNCTION2 HPCD...	28.71	8.629e1					1.6	NO		db		0.000
3	FUNCTION2 HPCD...	28.60	1.418e2					1.8	NO		bd		0.000
4	FUNCTION2 HPCD...	27.78	1.525e2					2.2	NO		bb		0.000

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ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	37.18	9.482e1					1.7	NO		bb		0.000
2	FUNCTION3 OCDPE	36.28	9.010e1					2.1	NO		bb		0.000
3	FUNCTION3 OCDPE	36.04	2.235e2					3.5	YES		bb		0.000
4	FUNCTION3 OCDPE	35.19	9.593e1					3.8	YES		bb		0.000
5	FUNCTION3 OCDPE	34.90	9.324e1					1.8	NO		bb		0.000
6	FUNCTION3 OCDPE	34.45	2.702e2					7.2	YES		bb		0.000
7	FUNCTION3 OCDPE	34.08	1.614e2					1.9	NO		bb		0.000
8	FUNCTION3 OCDPE	33.59	8.481e1					1.3	NO		bb		0.000
9	FUNCTION3 OCDPE	32.91	8.106e1					1.5	NO		db		0.000
10	FUNCTION3 OCDPE	32.83	7.806e1					2.0	NO		dd		0.000
11	FUNCTION3 OCDPE	32.79	9.415e1					2.5	NO		dd		0.000
12	FUNCTION3 OCDPE	32.72	1.554e2					5.7	YES		bd		0.000
13	FUNCTION3 OCDPE	32.51	1.266e2					2.4	NO		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	38.33	7.775e1					2.8	NO		bb		0.000
2	FUNCTION4 NCDPE	37.67	7.862e1					2.2	NO		bb		0.000
3	FUNCTION4 NCDPE	39.31	1.506e2					5.2	YES		db		0.000
4	FUNCTION4 NCDPE	39.26	9.609e1					3.5	YES		bd		0.000
5	FUNCTION4 NCDPE	38.97	1.186e2					5.6	YES		bb		0.000
6	FUNCTION4 NCDPE	38.84	2.386e2					3.6	YES		bb		0.000
7	FUNCTION4 NCDPE	38.54	1.306e2					2.9	NO		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	44.86	8.578e1					2.0	NO		db		0.000
2	FUNCTION5 DCDPE	44.75	8.152e1					2.0	NO		bd		0.000
3	FUNCTION5 DCDPE	44.46	1.382e2					3.2	YES		bb		0.000

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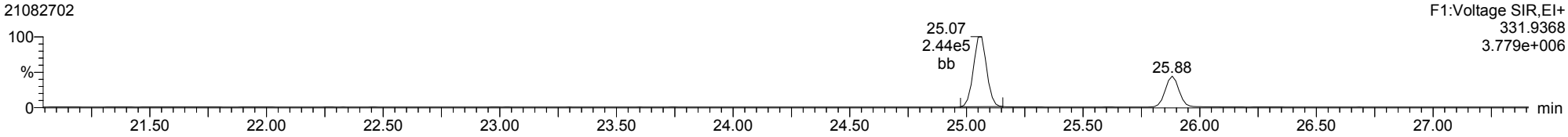
13C-1234-TCDD



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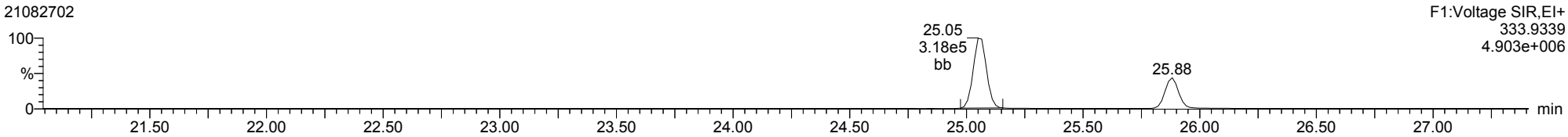

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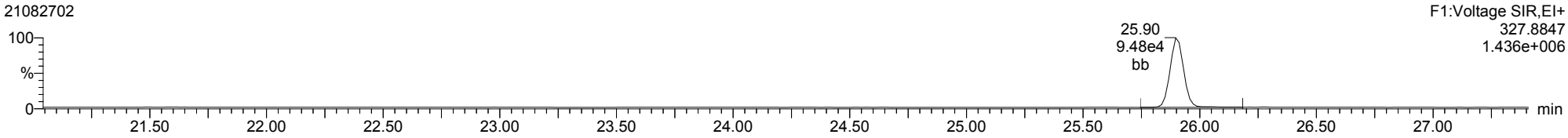

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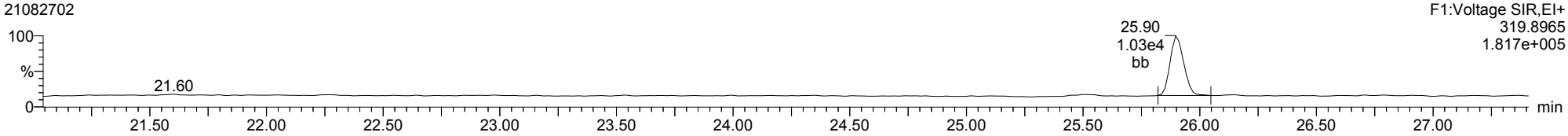
2378-TCDD



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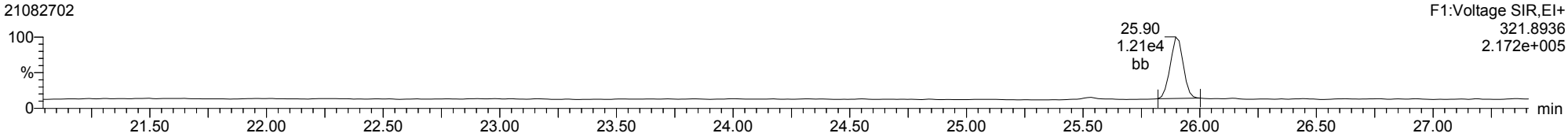

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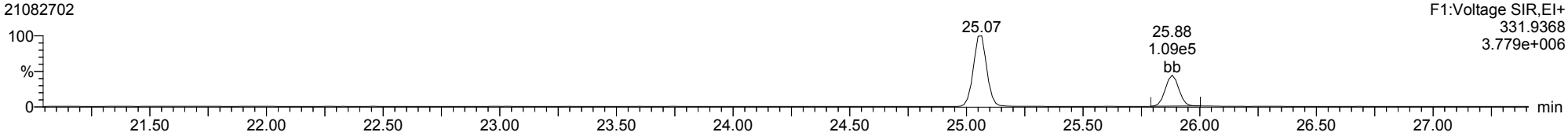

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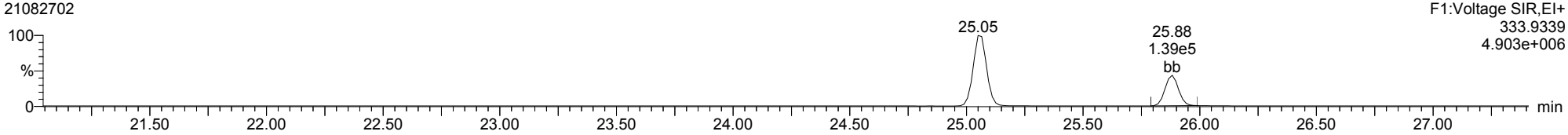

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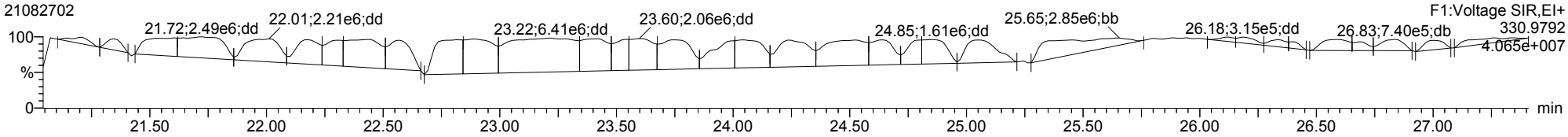

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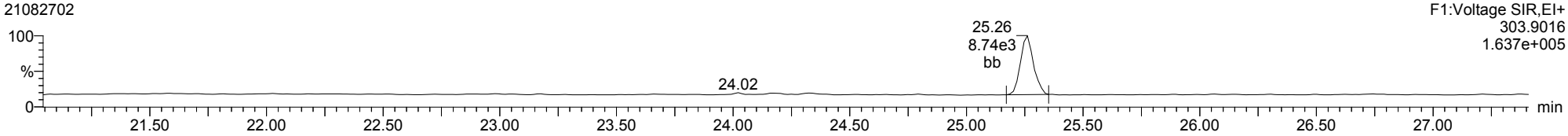
2378-TCDF



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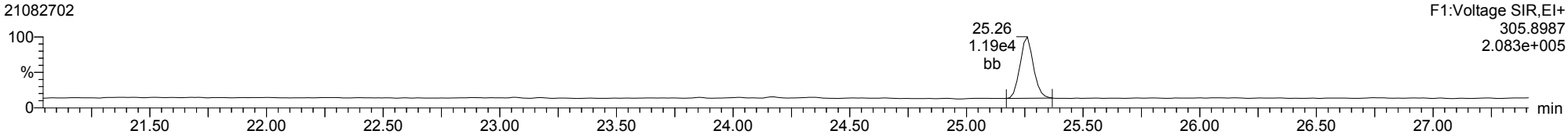

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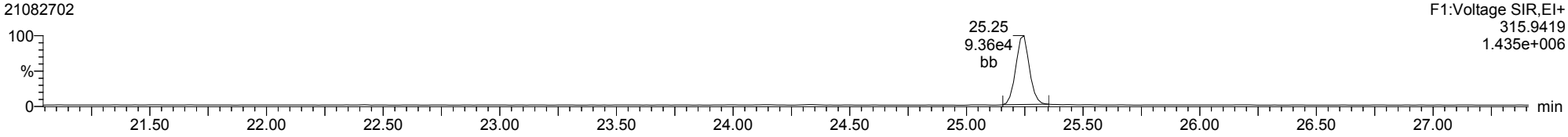

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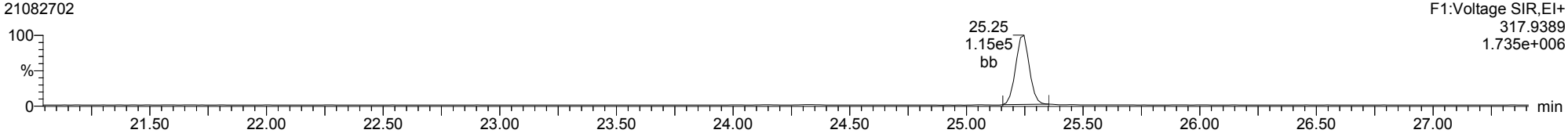

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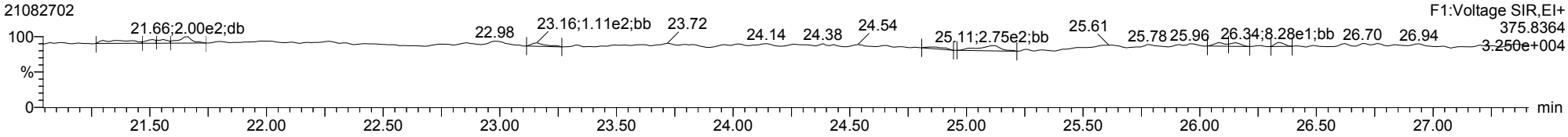

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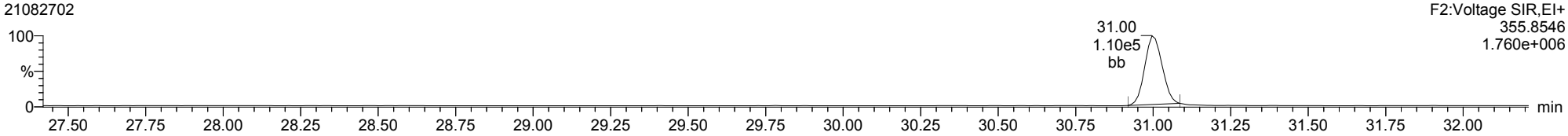
12378-PeCDD



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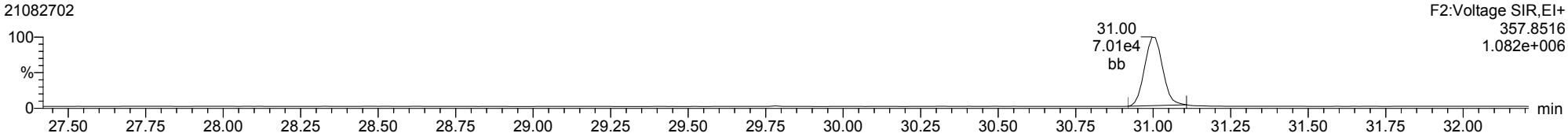

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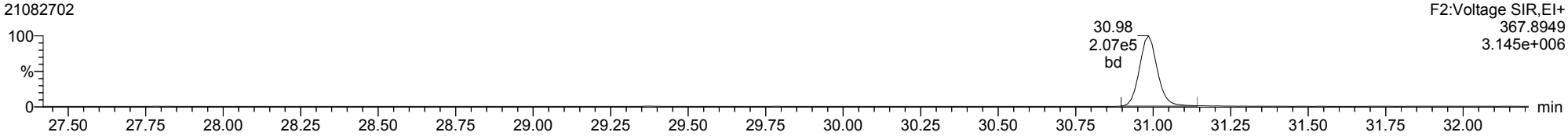

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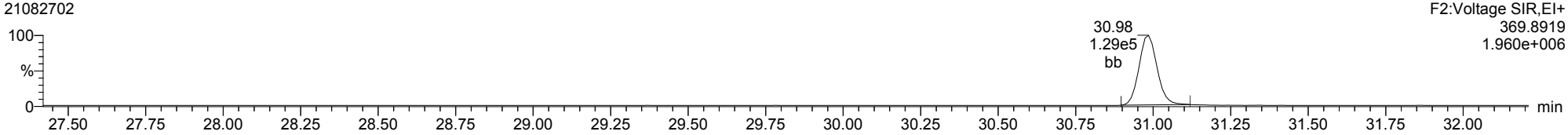

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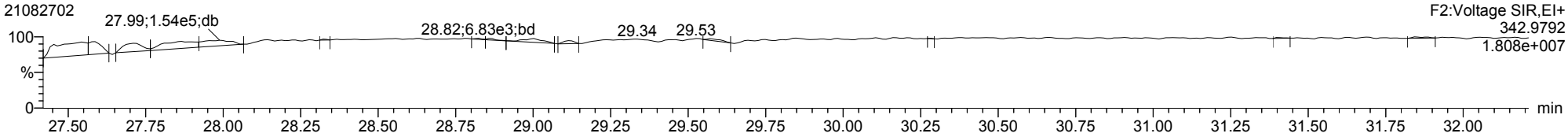

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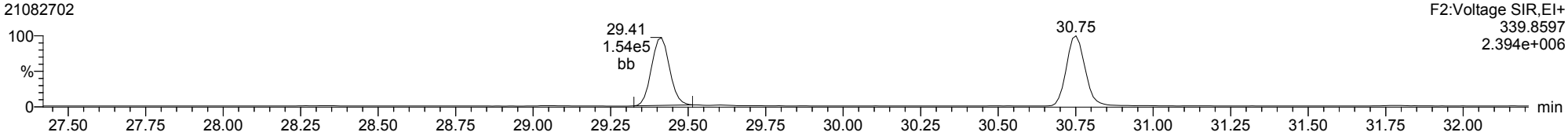

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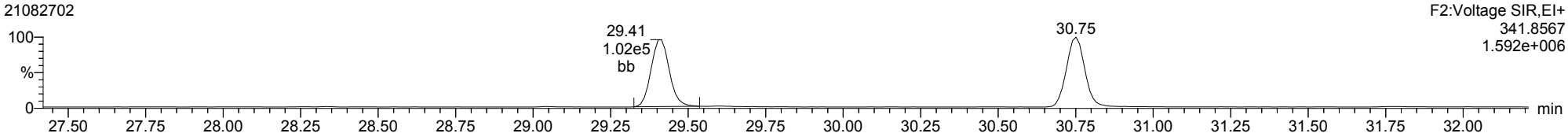

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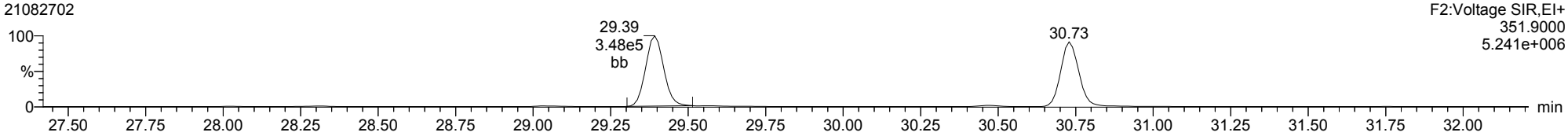

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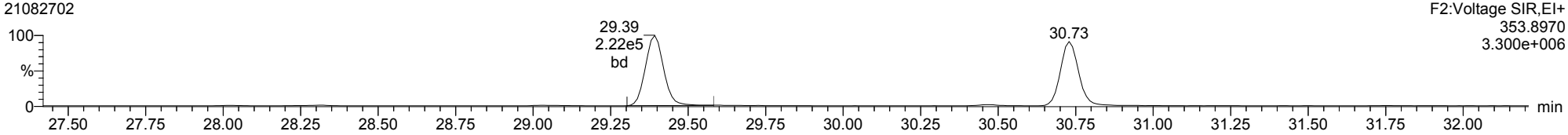
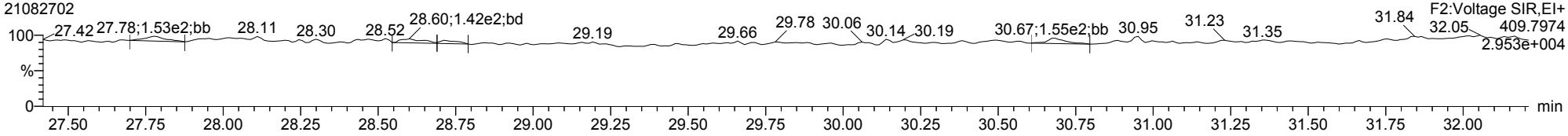


FUNCTION2 HPCDPE



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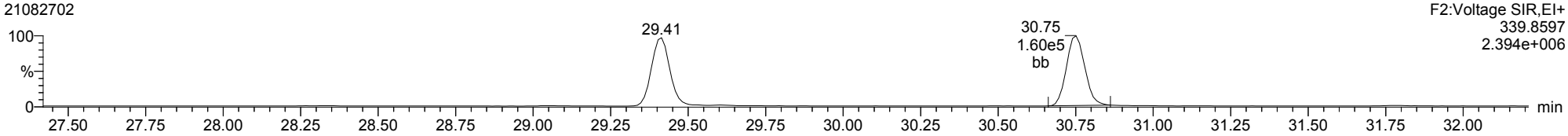
23478-PeCDF



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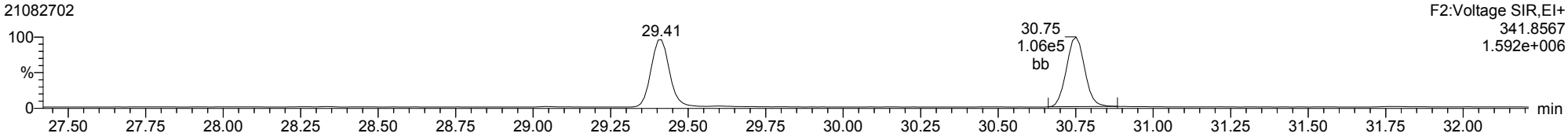

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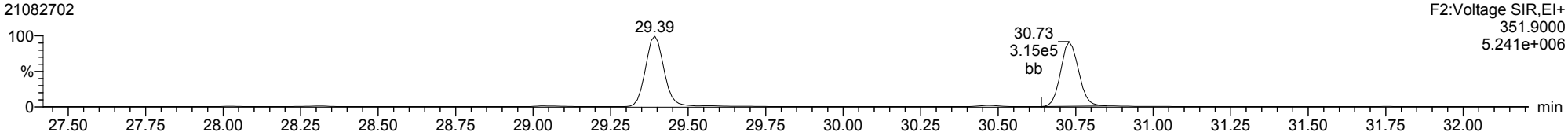

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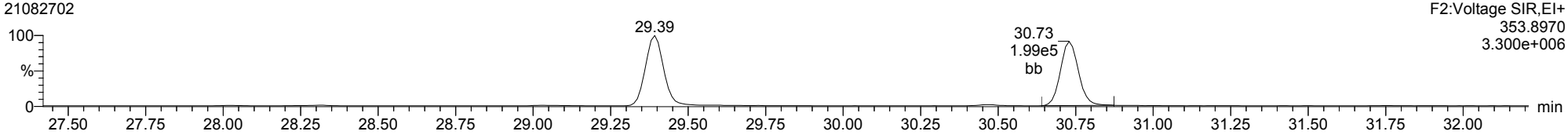

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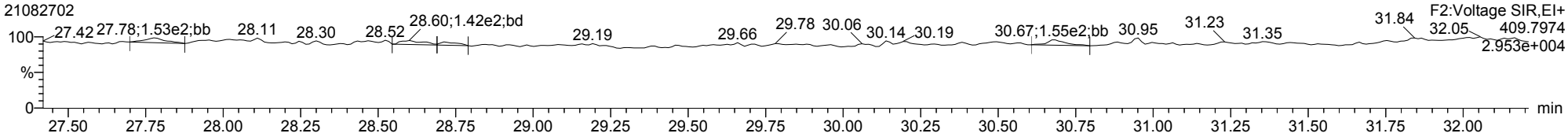

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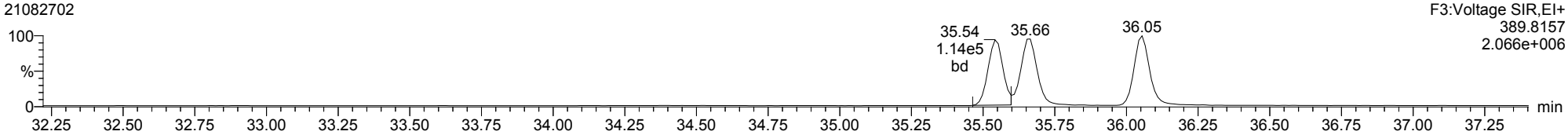

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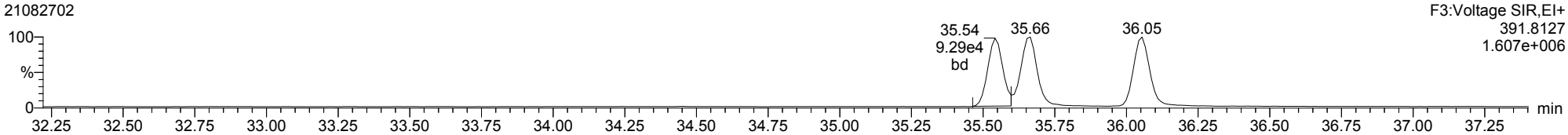

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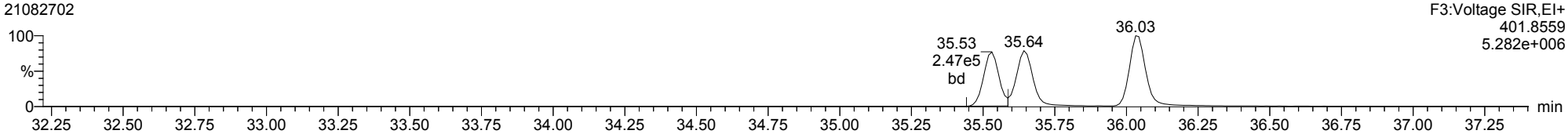

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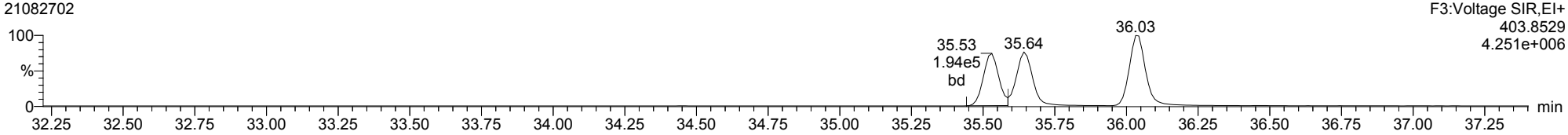
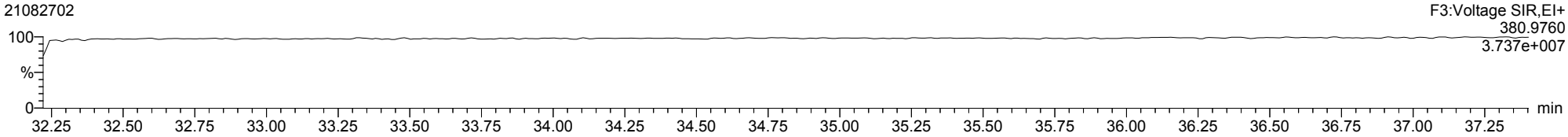


FUNCTION3 PFK



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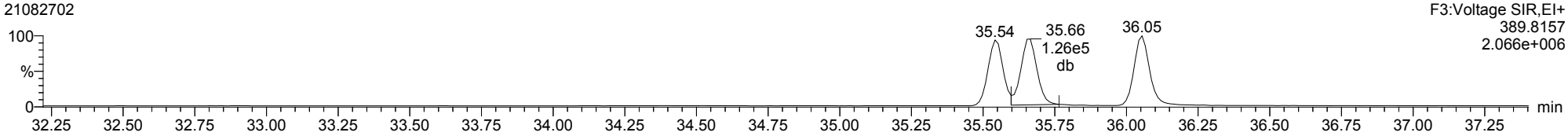

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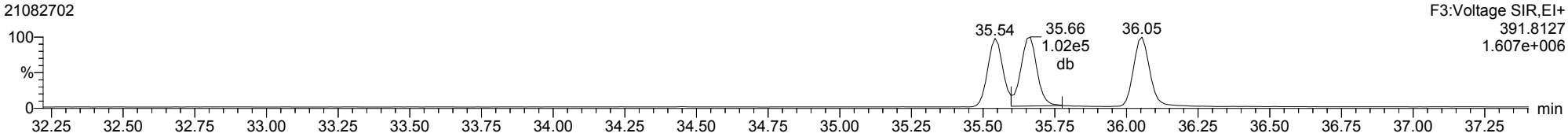

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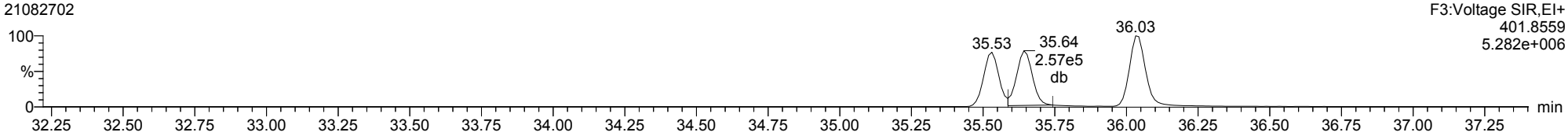

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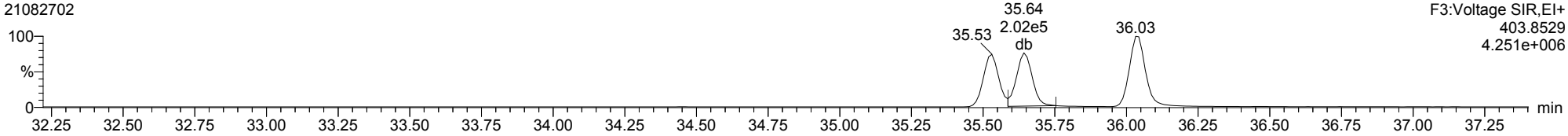

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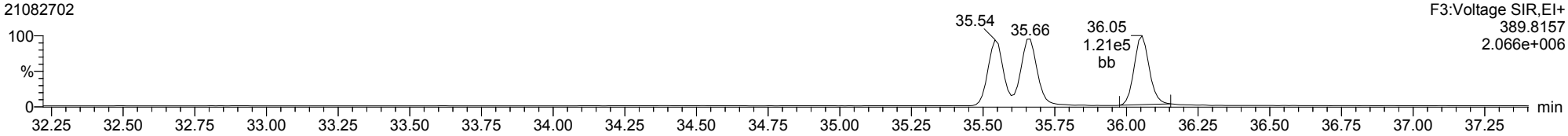

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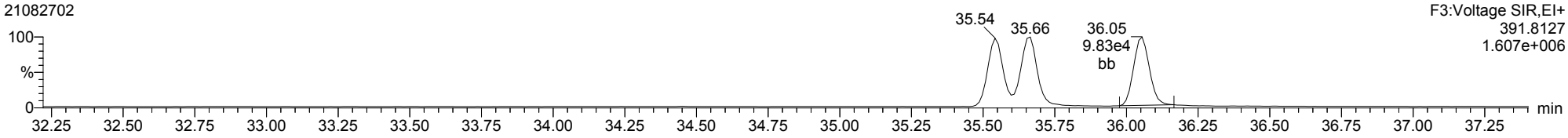

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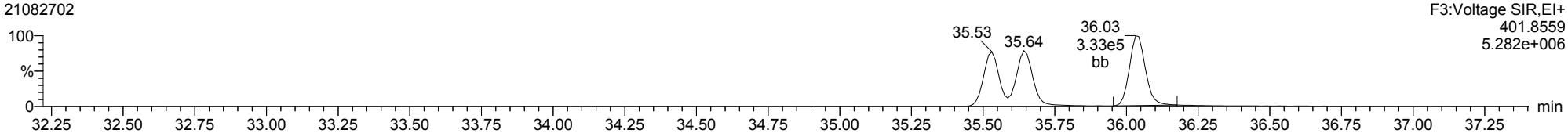

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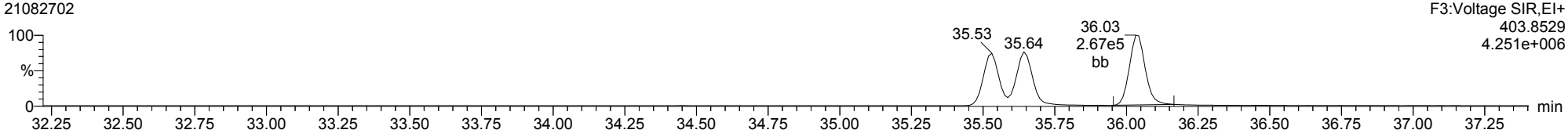

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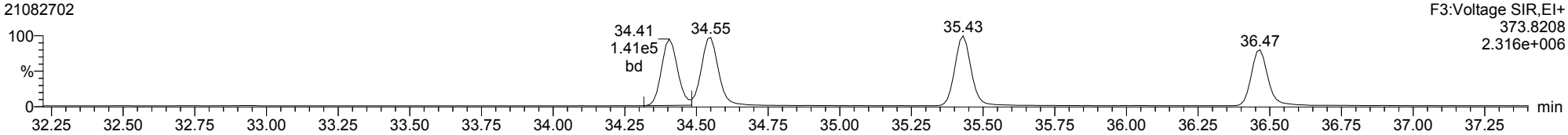

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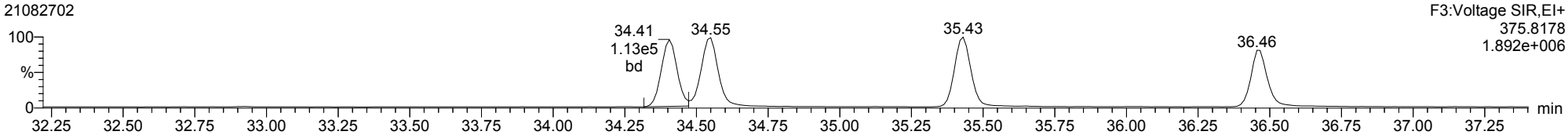

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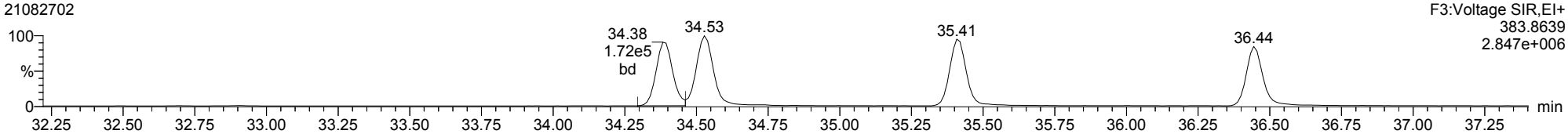

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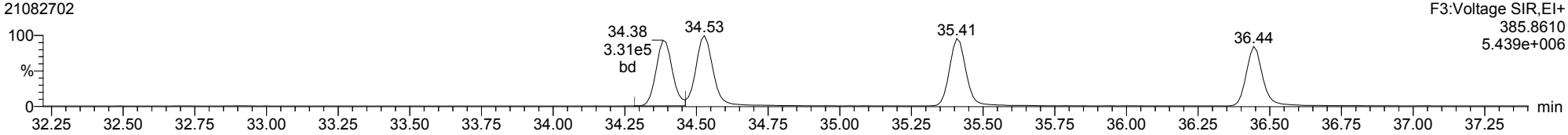
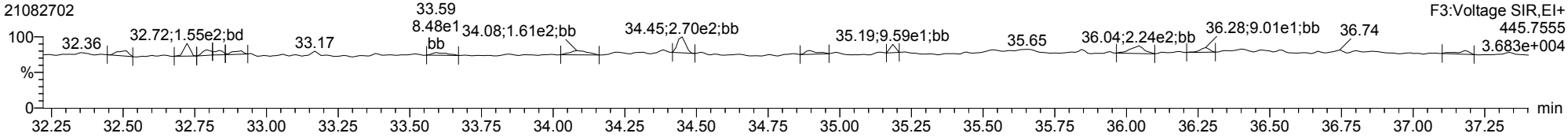


FUNCTION3 OCDPE



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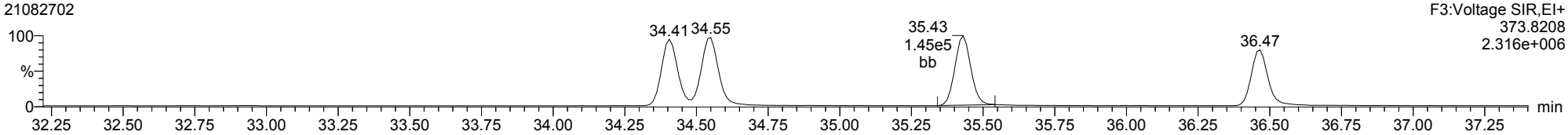
234678-HxCDF



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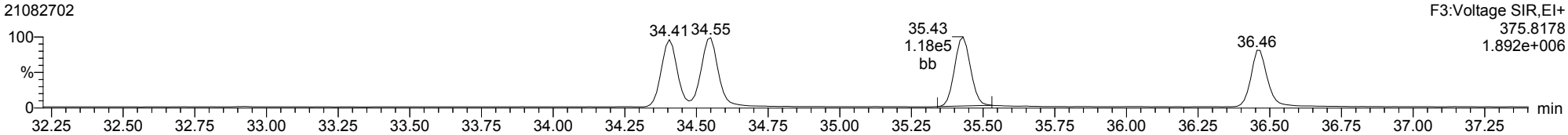

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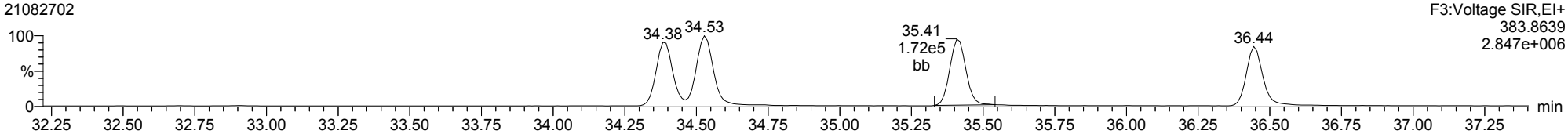

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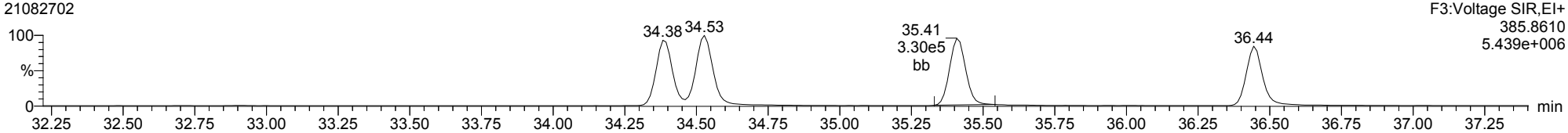
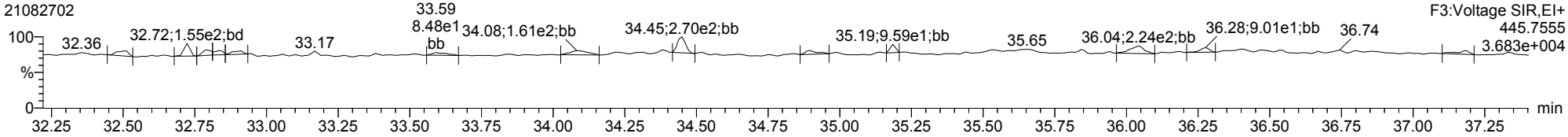


FUNCTION3 OCDPE



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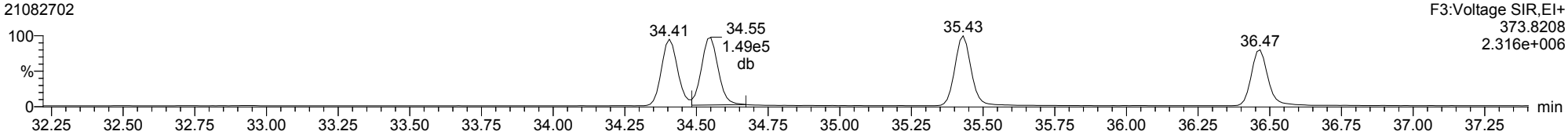
123678-HxCDF



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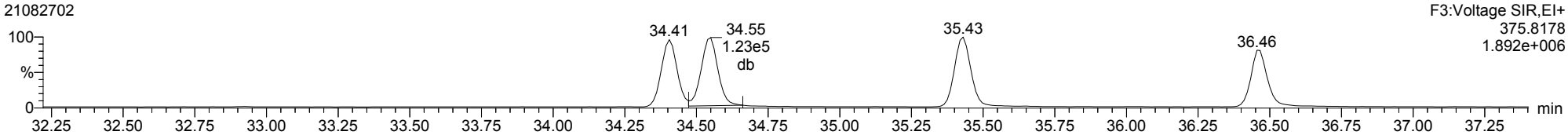

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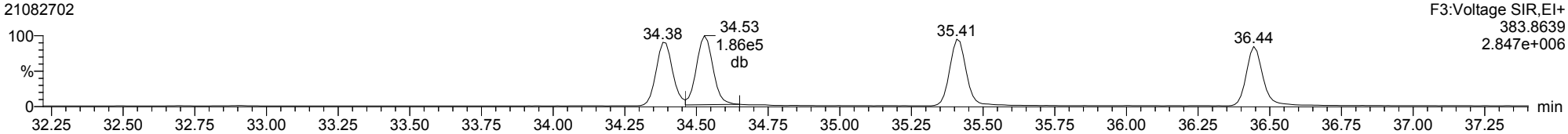

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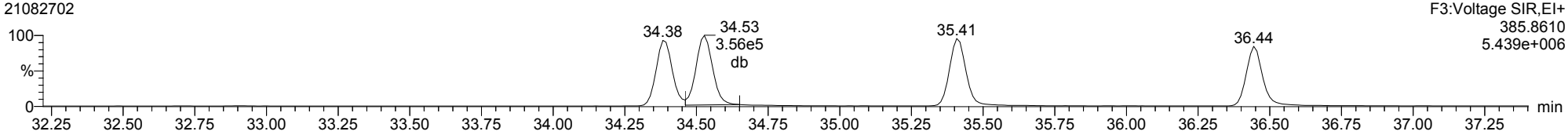
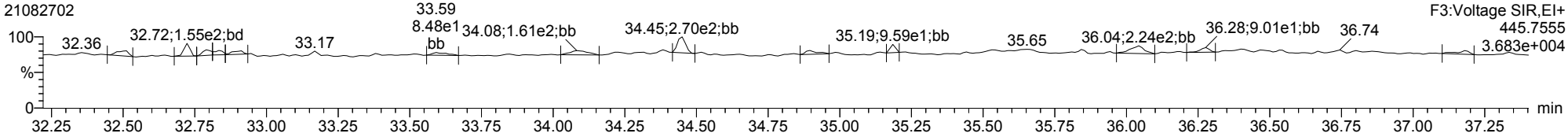


FUNCTION3 OCDPE



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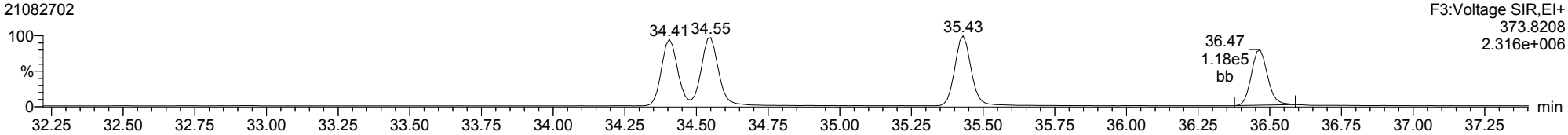
123789-HxCDF



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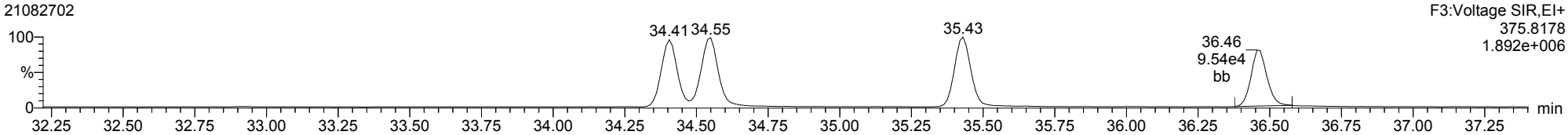

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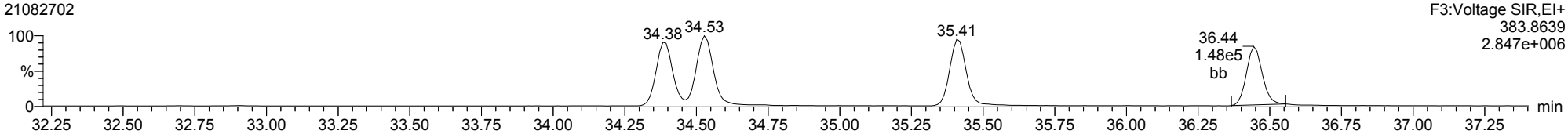

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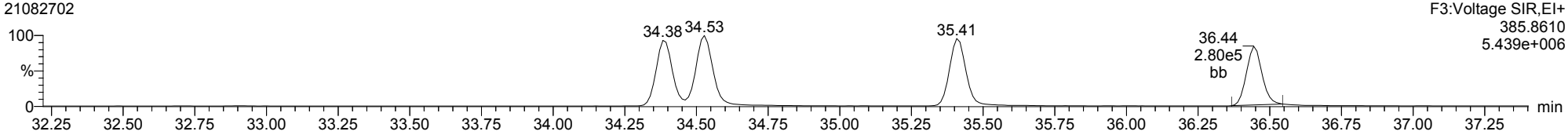
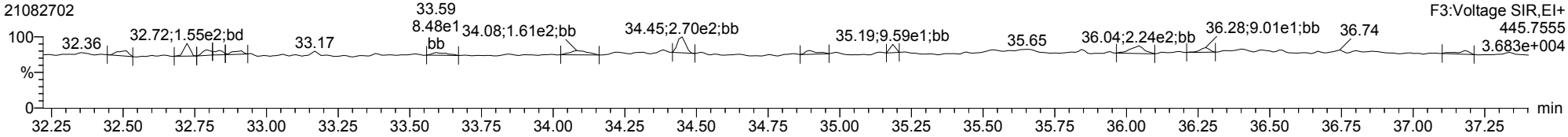


FUNCTION3 OCDPE



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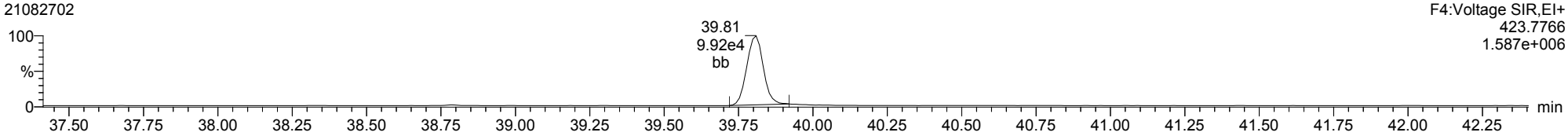
1234678-HpCDD



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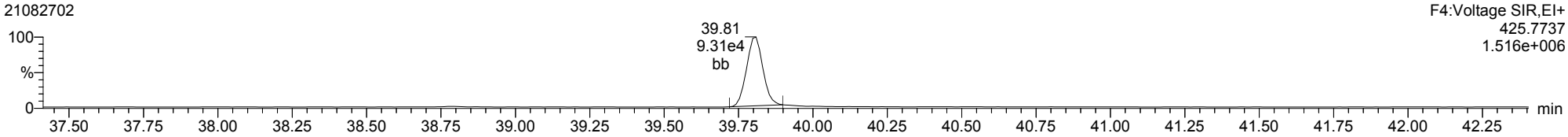
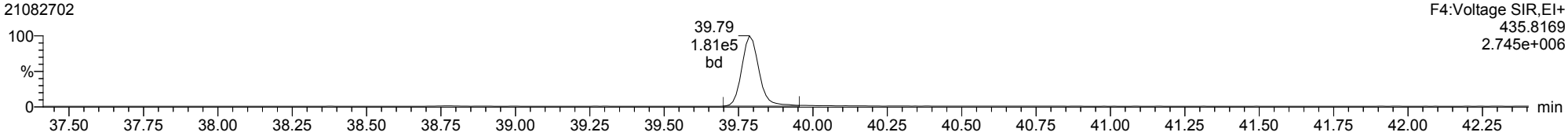


13C-1234678-HpCDD



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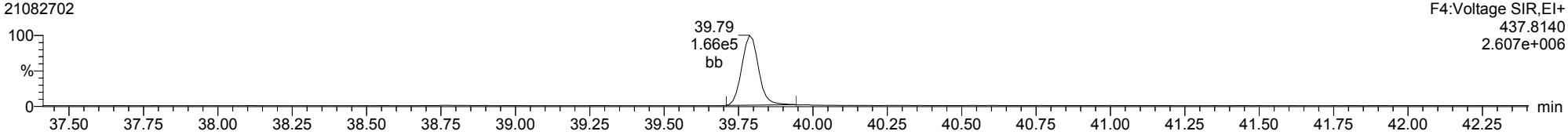
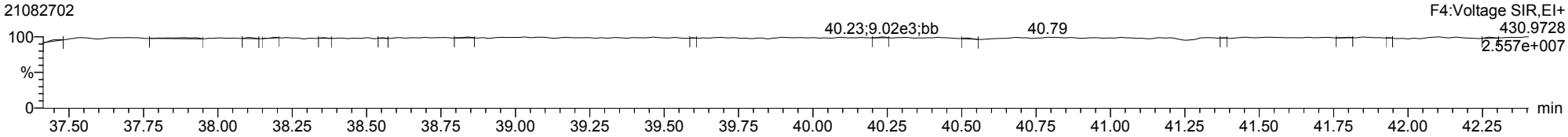


FUNCTION4 PFK



ID: BJG0465-BS1, Name: 21082702, Date: 27-Aug-2021, Time: 05:37:37, Conditions: AUTOSPEC01, User: pk

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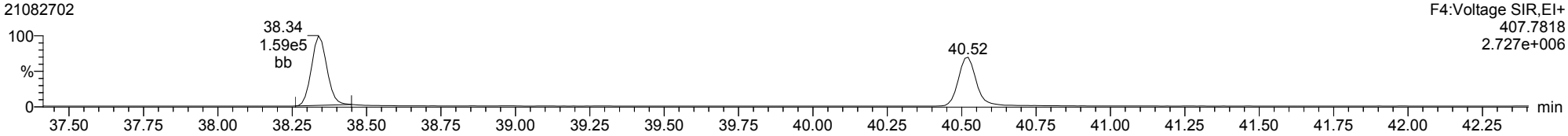

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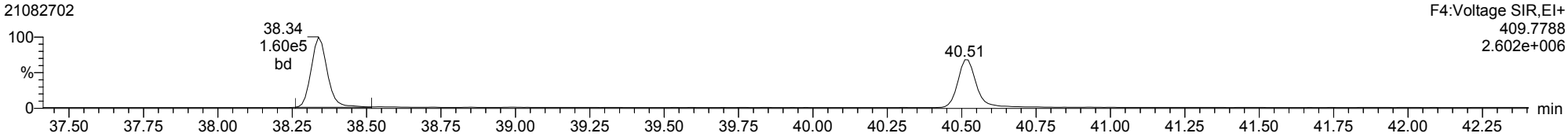

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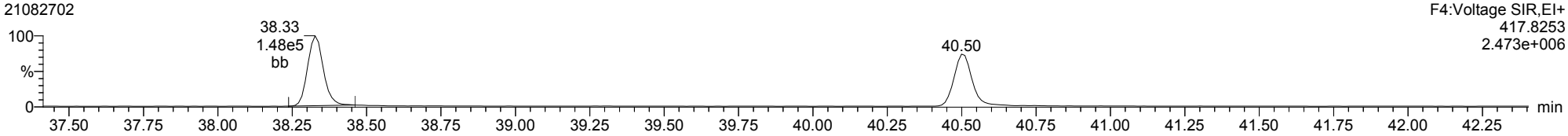

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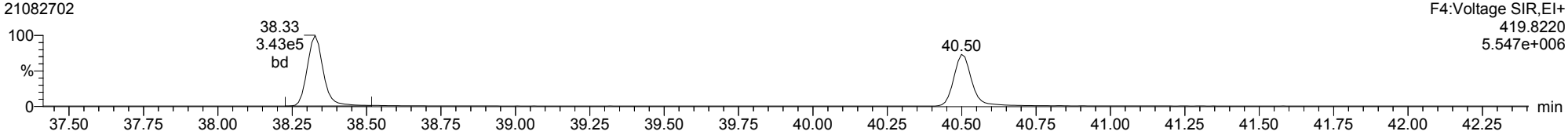
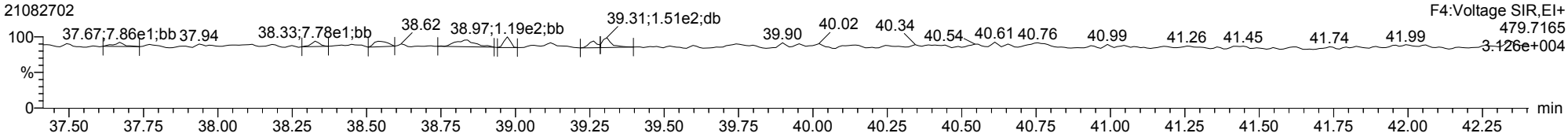


FUNCTION4 NCDPE



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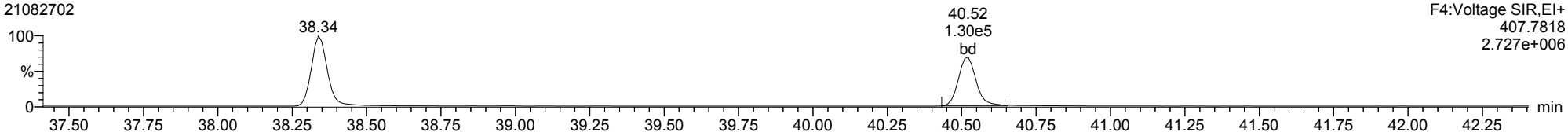
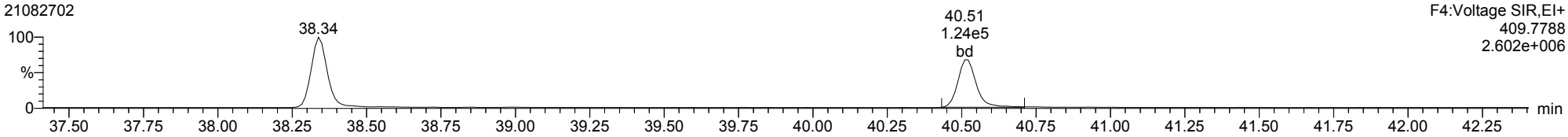
1234789-HpCDF



1234789-HpCDF



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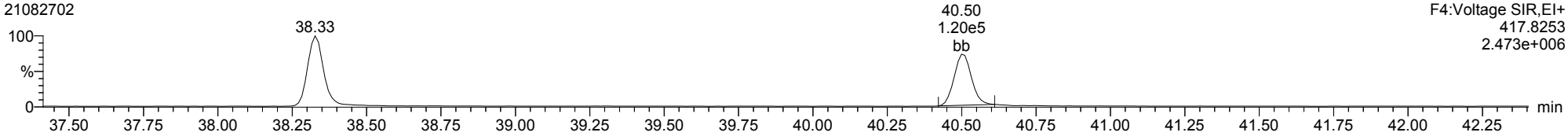

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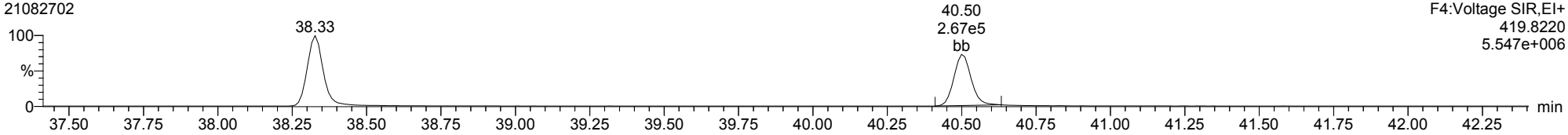
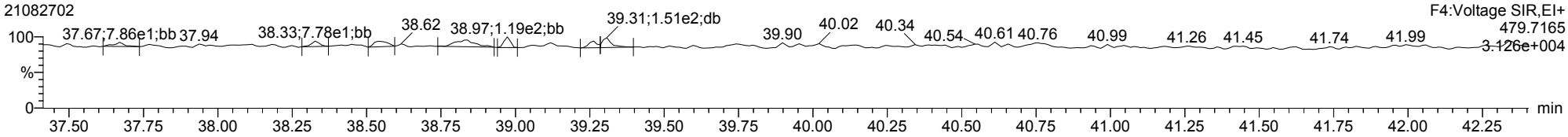


FUNCTION4 NCDPE



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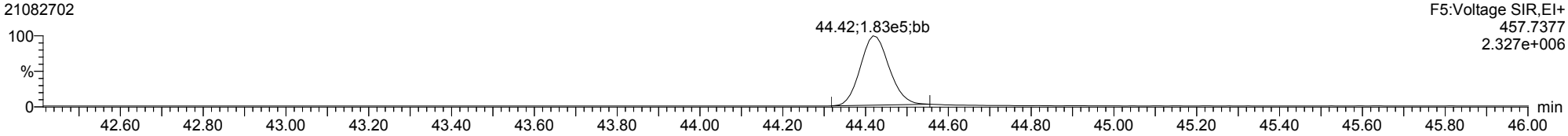
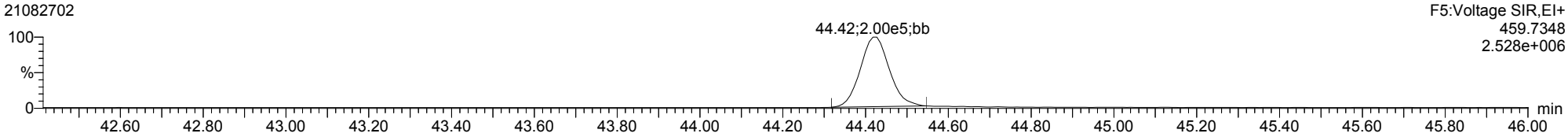
OCDD



OCDD



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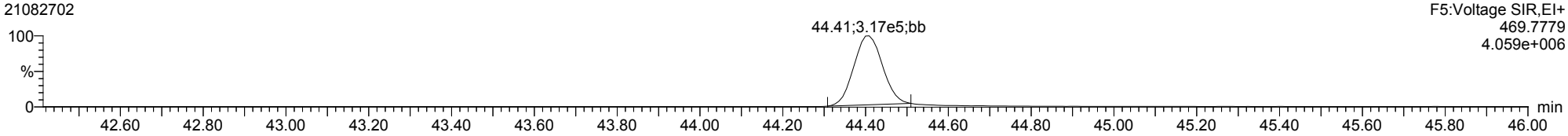

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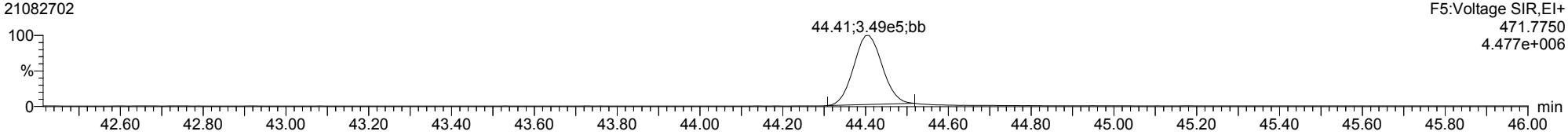
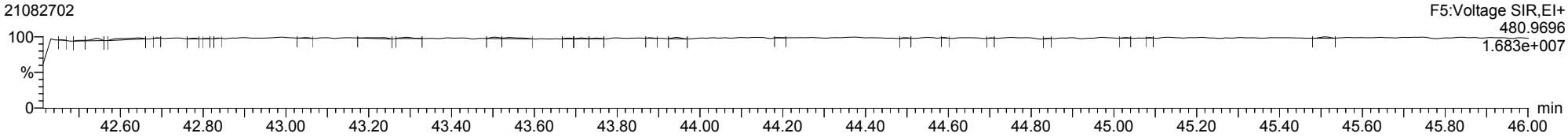


FUNCTION5 PFK



ID: BJG0465-BS1, Name: 21082702, Date: 27-Aug-2021, Time: 05:37:37, Conditions: AUTOSPEC01, User: pk

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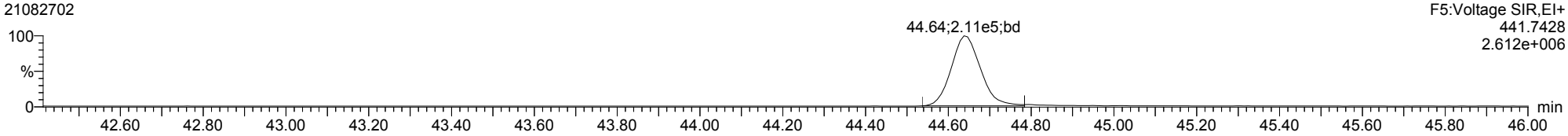

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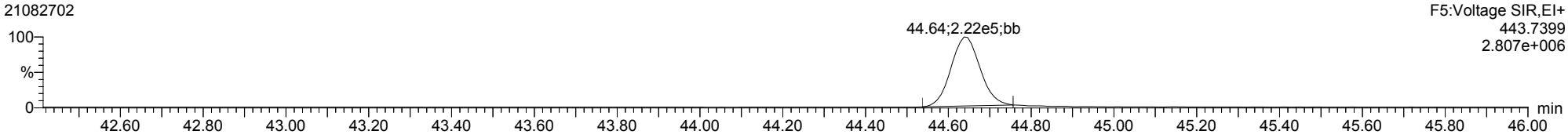
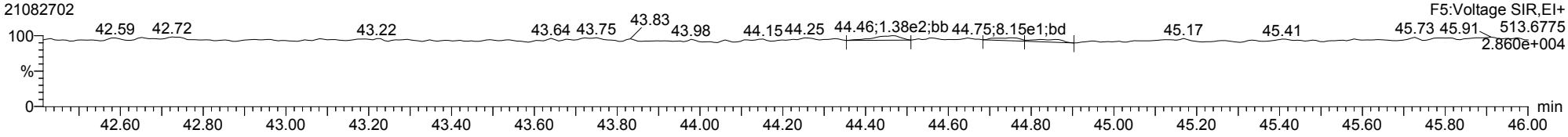


FUNCTION5 DCDPE



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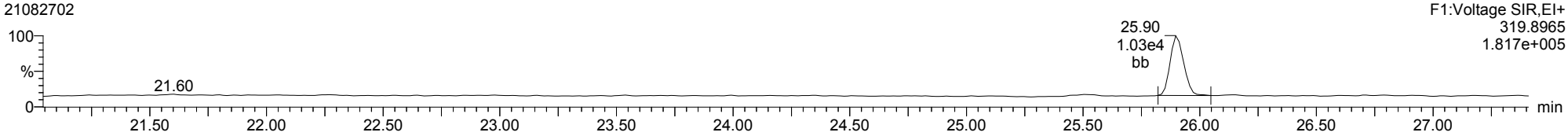
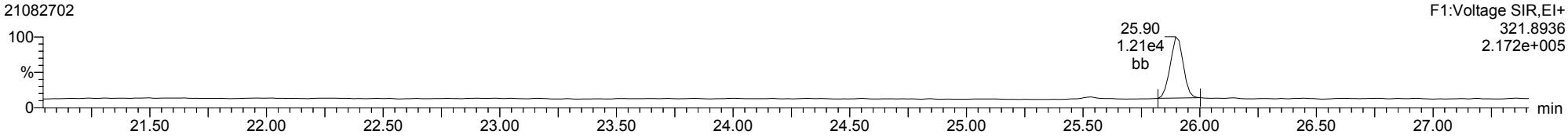
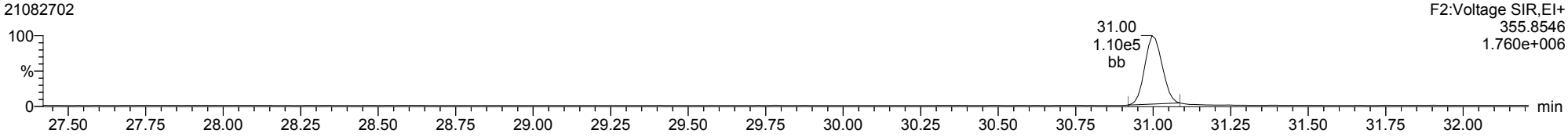
Total-tetradioxins



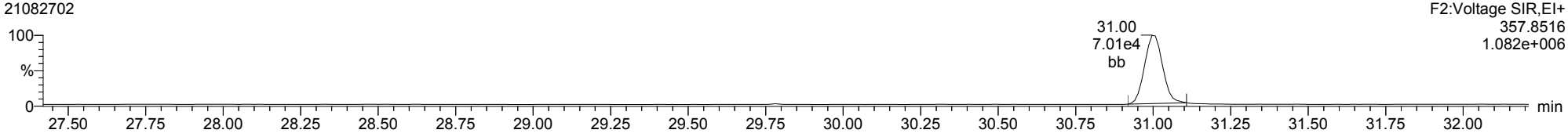
Total-tetradioxins



Total-pentadioxins

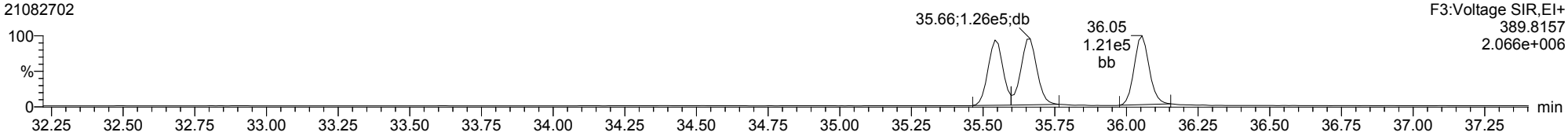


Total-pentadioxins

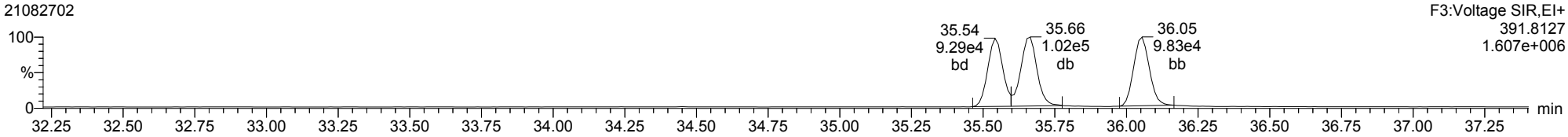


ID: BJG0465-BS1, Name: 21082702, Date: 27-Aug-2021, Time: 05:37:37, Conditions: AUTOSPEC01, User: pk

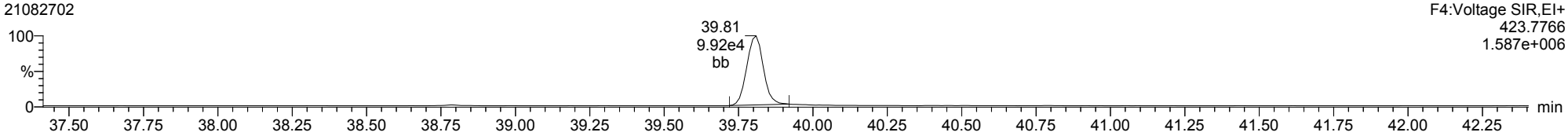
Total-hexadioxins



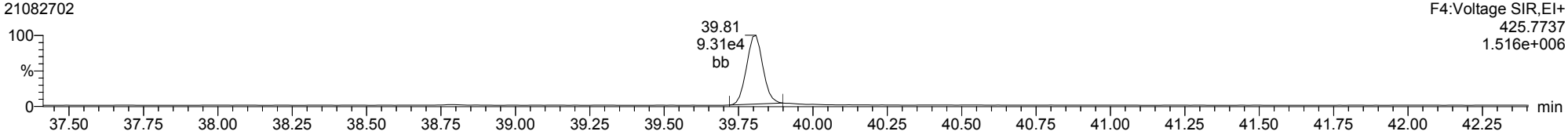
Total-hexadioxins



Total-heptadioxins



Total-heptadioxins



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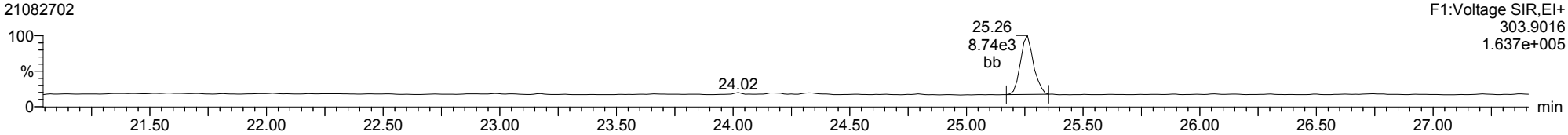
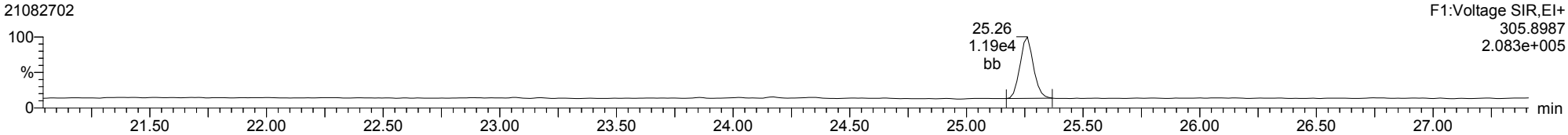
Total-tetrafurans



Total-tetrafurans



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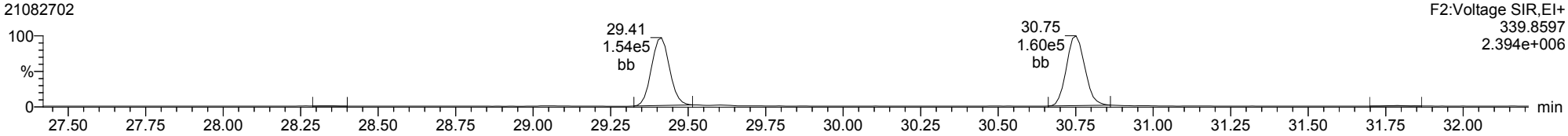
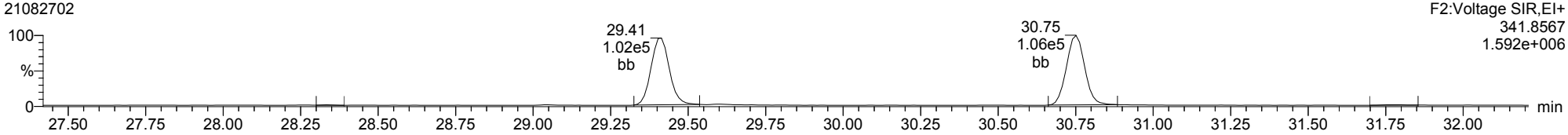


Total-pentafurans



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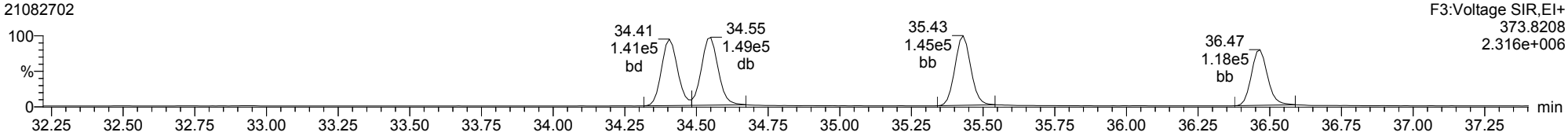
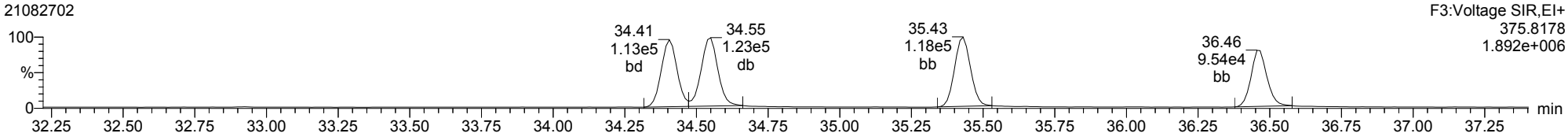
Printed: Friday, August 27, 2021 13:31:41 Pacific Daylight Time

ID: BJG0465-BS1, Name: 21082702, Date: 27-Aug-2021, Time: 05:37:37, Conditions: AUTOSPEC01, User: pk

Total-hexafurans



Total-hexafurans



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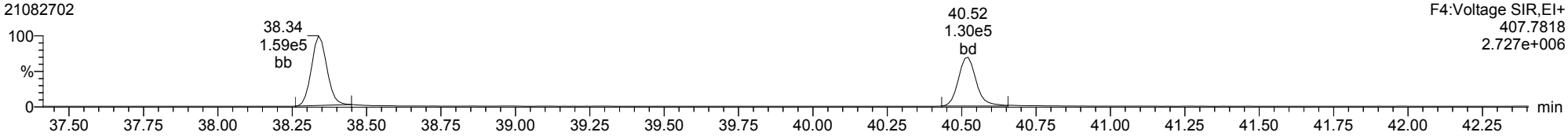
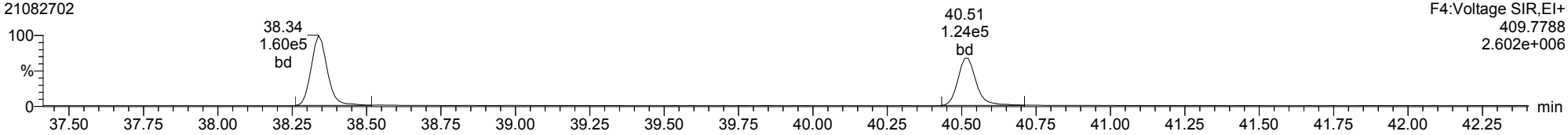


Total-heptafurans



Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT654B

DUPLICATES
EPA 1613B

Laboratory: Analytical Resources, Inc.
SDG: 21G0108
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Matrix: Solid
Laboratory ID: BJG0465-DUP1
Batch: BJG0465
Lab Source ID: 21G0108-02
Preparation: EPA 8290
Initial/Final: 14.85 g / 20 uL
Source Sample Name: LDW21-IT654B
% Solids: 67.48

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION	DUPLICATE CONCENTRATION	RPD %	Q
2,3,7,8-TCDF	25	1.58	1.12	34.3	
2,3,7,8-TCDD	25	0.671	0.621	7.78	
1,2,3,7,8-PeCDF	25	1.75	1.90	7.81	
2,3,4,7,8-PeCDF	25	3.32	3.14	5.58	
1,2,3,7,8-PeCDD	25	3.47	4.96	35.3	*
1,2,3,4,7,8-HxCDF	25	41.4	42.6	2.79	
1,2,3,6,7,8-HxCDF	25	7.42	8.25	10.6	
2,3,4,6,7,8-HxCDF	25	12.7	14.0	9.91	
1,2,3,7,8,9-HxCDF	25	5.59	6.26	11.3	
1,2,3,4,7,8-HxCDD	25	3.21	36.6	168	*
1,2,3,6,7,8-HxCDD	25	18.3	61.9	109	*
1,2,3,7,8,9-HxCDD	25	7.28	76.4	165	*
1,2,3,4,6,7,8-HpCDF	25	166	234	34.0	*
1,2,3,4,7,8,9-HpCDF	25	22.5	36.2	46.6	*
1,2,3,4,6,7,8-HpCDD	25	517	7330	174	
OCDF	25	307	695	77.4	*
OCDD	25	3460	15400	127	
Total TCDF	200	13.9	14.9	7.10	
Total TCDD	200	4.33	5.76	28.4	
Total PeCDF	200	48.7	48.5	0.372	
Total PeCDD	200	16.2	41.1	87.0	
Total HxCDF	200	278	306	9.55	
Total HxCDD	200	133	1620	170	
Total HpCDF	200	611	889	37.0	
Total HpCDD	200	1010	25100	185	
13C12-2,3,7,8-TCDF		93.8	130		
13C12-2,3,7,8-TCDD		108	137		

* Values outside of QC limits
L Analyte concentration is <=5 times the reporting limit and the replicate control limit defaults to +/- RL instead of 20% RPD

Analytical Resources, Incorporated
Analytical Chemists and Consultants

LDW21-IT654B

DUPLICATES
EPA 1613B

Laboratory: Analytical Resources, Inc.
SDG: 21G0108
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Matrix: Solid
Laboratory ID: BJG0465-DUP1
Batch: BJG0465
Lab Source ID: 21G0108-02
Preparation: EPA 8290
Initial/Final: 14.85 g / 20 uL
Source Sample Name: LDW21-IT654B
% Solids: 67.48

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION	DUPLICATE CONCENTRATION	RPD %	Q
13C12-1,2,3,7,8-PeCDF		149	154		
13C12-2,3,4,7,8-PeCDF		148	151		
13C12-1,2,3,7,8-PeCDD		158	157		
13C12-1,2,3,4,7,8-HxCDF		123	113		
13C12-1,2,3,6,7,8-HxCDF		118	106		
13C12-2,3,4,6,7,8-HxCDF		123	106		
13C12-1,2,3,7,8,9-HxCDF		138	124		
13C12-1,2,3,4,7,8-HxCDD		143	128		
13C12-1,2,3,6,7,8-HxCDD		131	116		
13C12-1,2,3,4,6,7,8-HpCDF		137	115		
13C12-1,2,3,4,7,8,9-HpCDF		148	128		
13C12-1,2,3,4,6,7,8-HpCDD		152	129		
13C12-OCDD		361	297		
37Cl4-2,3,7,8-TCDD		43.4	60.4		

*: Values outside of QC limits
L: Analyte concentration is <=5 times the reporting limit and the replicate control limit defaults to Dup = +/- RL instead of 20% RPD

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Printed: Friday, August 27, 2021 13:33:01 Pacific Daylight Time

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ID: BJG0465-DUP1, Name: 21082707, Date: 27-Aug-2021, Time: 09:42:13, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.246	1.001	1.316e3	1.577e3	1.108	0.835	0.770	1510	1724	1.98e4	2.29e4	13.1	13.3	NO	bd	bd	0.559
12378-PeCDF	29.391	1.000	2.848e3	1.996e3	1.015	1.427	1.550	1482	853	4.73e4	2.94e4	31.9	34.5	NO	bb	bb	0.951
23478-PeCDF	30.740	1.001	5.113e3	3.194e3	1.126	1.601	1.550	1482	853	9.18e4	5.38e4	62.0	63.1	NO	bb	bb	1.572
123478-HxCDF	34.405	1.001	4.549e4	3.680e4	1.017	1.236	1.240	1107	1344	7.34e5	5.84e5	663.4	434.8	NO	bd	bd	21.334
234678-HxCDF	35.374	0.999	1.391e4	1.179e4	1.052	1.180	1.240	1107	1344	1.69e5	1.52e5	152.7	113.0	NO	bb	bb	7.024
123678-HxCDF	34.539	1.000	8.997e3	7.408e3	1.037	1.215	1.240	1107	1344	1.42e5	1.21e5	128.4	90.1	NO	db	db	4.133
123789-HxCDF	36.432	1.000	5.977e3	4.951e3	1.030	1.207	1.240	1107	1344	9.23e4	7.59e4	83.4	56.5	NO	bb	bb	3.139
1234678-HpCDF	38.338	1.000	2.294e5	2.190e5	1.327	1.048	1.050	1659	2031	3.99e6	3.78e6	2407.5	1860.8	NO	bb	bb	117.398
1234789-HpCDF	40.510	1.000	3.044e4	3.044e4	1.283	1.000	1.050	1659	2031	4.86e5	4.70e5	292.7	231.4	NO	bb	bb	18.128
OCDF	44.655	1.005	4.780e5	5.395e5	1.447	0.886	0.890	1231	1301	5.96e6	6.90e6	4840.1	5299.7	NO	bb	bb	348.023
2378-TCDD	25.866	1.001	5.189e2	5.815e2	0.920	0.892	0.770	1505	958	7.38e3	8.69e3	4.9	9.1	YES	bd	bd	0.311
12378-PeCDD	30.973	1.000	4.408e3	2.735e3	0.995	1.612	1.550	1085	1806	5.46e4	3.41e4	50.3	18.9	NO	bb	bb	2.486
123478-HxCDD	35.541	1.000	3.443e4	2.785e4	1.027	1.236	1.240	3412	3002	5.92e5	4.79e5	173.5	159.7	NO	bd	bd	18.313
123678-HxCDD	35.664	1.001	5.573e4	4.589e4	1.009	1.214	1.240	3412	3002	9.33e5	7.81e5	273.5	260.1	NO	db	db	31.021
123789-HxCDD	36.054	1.012	6.622e4	5.307e4	0.950	1.248	1.240	3412	3002	1.09e6	8.73e5	319.9	290.7	NO	bb	bb	38.282
1234678-HpCDD	39.797	1.000	4.462e6	4.158e6	1.068	1.073	1.050	5051	4895	7.32e7	6.88e7	14498.3	14063.7	NO	bb	bb	3673.007
OCDD	44.435	1.000	8.725e6	9.675e6	1.181	0.902	0.890	2655	1775	1.12e8	1.25e8	42288.2	70509.9	NO	bb	bb	7711.760
13C-2378-TCDF	25.216	1.007	2.104e5	2.570e5	1.427	0.819	0.770	2481	2019	3.28e6	3.99e6	1320.2	1978.3	NO	bb	bb	65.330
13C-12378-PeCDF	29.380	1.174	3.101e5	1.920e5	1.297	1.615	1.550	1766	1302	4.96e6	3.07e6	2806.5	2356.8	NO	bb	bb	77.174
13C-23478-PeCDF	30.717	1.227	2.889e5	1.806e5	1.236	1.600	1.550	1766	1302	4.41e6	2.83e6	2497.6	2172.1	NO	bb	bb	75.714
13C-123478-HxCDF	34.382	0.954	1.284e5	2.509e5	1.242	0.512	0.510	947	1897	2.07e6	4.02e6	2185.3	2117.0	NO	bd	bd	56.722
13C-123678-HxCDF	34.527	0.958	1.305e5	2.523e5	1.343	0.517	0.510	947	1897	2.09e6	4.03e6	2202.7	2126.0	NO	db	db	52.941
13C-234678-HxCDF	35.408	0.983	1.174e5	2.301e5	1.215	0.510	0.510	947	1897	1.97e6	3.78e6	2078.2	1990.8	NO	bb	bb	53.151
13C-123789-HxCDF	36.444	1.011	1.152e5	2.228e5	1.008	0.517	0.510	947	1897	1.89e6	3.65e6	1999.2	1925.0	NO	bb	bb	62.323
13C-1234678-HpCDF	38.326	1.064	8.988e4	1.979e5	0.926	0.454	0.440	979	1214	1.55e6	3.44e6	1581.4	2831.3	NO	bb	bb	57.716
13C-1234789-HpCDF	40.499	1.124	8.174e4	1.799e5	0.758	0.454	0.440	979	1214	1.26e6	2.82e6	1285.2	2322.7	NO	bb	bb	64.146
13C-1234-TCDD	25.035	0.000	2.194e5	2.821e5	1.000	0.778	0.770	1896	1218	3.48e6	4.51e6	1834.4	3703.5	NO	bb	bb	100.000
13C-2378-TCDD	25.851	1.033	1.664e5	2.178e5	1.116	0.764	0.770	1896	1218	2.58e6	3.38e6	1362.7	2775.0	NO	bb	bb	68.625
13C-12378-PeCDD	30.973	1.237	1.751e5	1.136e5	0.732	1.541	1.550	912	887	2.71e6	1.79e6	2974.8	2013.4	NO	bb	bb	78.653
13C-123478-HxCDD	35.530	0.986	1.848e5	1.463e5	0.960	1.263	1.240	1173	1626	3.04e6	2.39e6	2592.6	1467.5	NO	bd	bd	64.080
13C-123678-HxCDD	35.641	0.989	1.774e5	1.473e5	1.041	1.204	1.240	1173	1626	3.00e6	2.50e6	2561.7	1536.2	NO	db	db	57.926
13C-1234678-HpCDD	39.786	1.104	1.130e5	1.067e5	0.632	1.059	1.050	1191	898	1.88e6	1.79e6	1582.6	1991.5	NO	bb	bb	64.551
13C-OCDD	44.417	1.233	1.923e5	2.118e5	0.504	0.908	0.890	1161	709	2.48e6	2.74e6	2137.2	3868.7	NO	bb	bb	149.055
13C-123789-HxCDD	36.031	0.000	2.988e5	2.394e5	1.000	1.248	1.240	1173	1626	5.06e6	4.05e6	4317.6	2491.5	NO	bb	bb	100.000
37CL-2378-TCDD	25.881	1.034	1.645e5		1.084			862		2.49e6		2883.3			bb		30.269

Dataset: T:\Autospec\Processed Data Batch\210827D1.qld
Last Altered: Friday, August 27, 2021 13:00:30 Pacific Daylight Time
Printed: Friday, August 27, 2021 13:33:01 Pacific Daylight Time

ID: BJG0465-DUP1, Name: 21082707, Date: 27-Aug-2021, Time: 09:42:13, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	21.754	0.863	5.056e2	7.144e2	1.425	0.708	0.770	1510	1724	6.25e3	1.02e4	4.1	5.9	NO	db	bb	0.183
1289-TCDF					1.043		0.770	1510	1724								
13468-PECDF	26.667	0.908	3.096e4	1.975e4	1.376	1.567	1.550	900	844	4.65e5	2.92e5	516.6	346.5	NO	bb	bb	7.339
12389-PECDF					1.000		1.550	1482	853								
123468-HXCDF	32.711	0.951	2.024e4	1.682e4	1.087	1.204	1.240	1107	1344	3.19e5	2.66e5	287.9	197.6	NO	bb	bb	8.992
1368-TCDD	23.009	0.890	1.453e3	2.062e3	0.923	0.705	0.770	1505	958	2.40e4	3.13e4	15.9	32.7	NO	bb	bb	0.991
1289-TCDD					0.794		0.770	1505	958								
12479-PECDD	28.277	0.913	2.585e4	1.608e4	1.843	1.608	1.550	1085	1806	2.57e5	1.57e5	236.6	86.7	NO	bb	bb	7.878
12389-PECDD	31.385	1.013	2.326e3	1.793e3	1.154	1.297	1.550	1085	1806	3.62e4	3.05e4	33.3	16.9	YES	bb	bb	1.236
124679-HXCDD	33.502	0.943	4.663e5	3.730e5	1.125	1.250	1.240	3412	3002	7.44e6	5.93e6	2179.6	1974.8	NO	bb	bb	225.378
1234679-HPCDD	38.783	0.975	1.225e7	1.140e7	1.211	1.075	1.050	5051	4895	2.12e8	1.98e8	41959.7	40352.3	NO	bb	bb	8888.946
Total-tetrafurans			1.834e4		1.192			1510		2.80e5							7.485
Total-penta1			3.096e4					900		4.65e5							7.339
Total-pentafurans			5.289e4		1.047			1482		7.67e5							16.975
Total-hexafurans			3.209e5		1.045			1107		5.05e6							153.475
Total-heptafurans			8.269e5		1.305			1659		1.40e7							445.279
Total-Furans			1.728e6		1.158			1510		2.65e7							978.576
Total-tetradioxins			4.243e3		0.879			1505		6.30e4							2.887
Total-pentadioxins			5.424e4		1.331			1085		6.38e5							20.580
Total-hexadioxins			1.545e6		1.028			3412		2.18e7							811.816
Total-heptadioxins			1.672e7		1.140			5051		2.85e8							12561.953
Total-Dioxins			2.704e7		1.092			1505		4.20e8							21108.997
Total-TEQ			2.877e7					1505		4.46e8							22087.573
FUNCTION1 PFK			3.090e7					634168		2.80e8							
FUNCTION2 PFK			3.611e6					491729		3.36e7							0.000
FUNCTION3 PFK			1.445e6					483710		2.60e7							0.000
FUNCTION4 PFK			6.095e5					387768		7.88e6							
FUNCTION5 PFK			3.608e5					217960		1.02e7							
FUNCTION1 HXCD...			2.991e3					680		4.47e4							0.000
FUNCTION1 HPCD...			2.303e3					875		3.48e4							0.000
FUNCTION2 HPCD...			1.345e3					958		2.36e4							0.000
FUNCTION3 OCDPE			5.156e2					641		8.62e3							0.000
FUNCTION4 NCDPE			4.140e3					653		5.69e4							0.000
FUNCTION5 DCDPE			1.225e3					709		1.21e4							0.000

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: BJG0465-DUP1, Name: 21082707, Date: 27-Aug-2021, Time: 09:42:13, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.99	1.283e3	1.925e3	1.192	0.67	0.77	12.9	YES	NO	dd	db	0.576
2	Total-tetrafurans	23.90	1.316e3	1.700e3	1.192	0.77	0.77	10.4	YES	NO	bd	bd	0.541
3	Total-tetrafurans	23.48	1.022e3	1.349e3	1.192	0.76	0.77	10.7	YES	NO	db	db	0.426
4	Total-tetrafurans	23.24	2.471e3	3.225e3	1.192	0.77	0.77	27.7	YES	NO	dd	bd	1.022
5	Total-tetrafurans	22.59	4.072e3	4.973e3	1.192	0.82	0.77	40.7	YES	NO	bd	bd	1.624
6	Total-tetrafurans	22.00	2.549e3	3.247e3	1.192	0.79	0.77	25.3	YES	NO	bb	bb	1.040
7	1368-TCDF	21.75	5.056e2	7.144e2	1.425	0.71	0.77	4.1	YES	NO	db	bb	0.183
8	Total-tetrafurans	25.47	1.485e3	1.711e3	1.192	0.87	0.77	15.1	YES	NO	dd	db	0.574
9	2378-TCDF	25.25	1.316e3	1.577e3	1.108	0.83	0.77	13.1	YES	NO	bd	bd	0.559
10	Total-tetrafurans	24.14	2.321e3	2.916e3	1.192	0.80	0.77	25.0	YES	NO	db	bb	0.940

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.67	3.096e4	1.975e4	1.376	1.57	1.55	516.6	YES	NO	bb	bb	7.339

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentafurans	29.59	2.904e3	2.022e3	1.047	1.44	1.55	34.3	YES	NO	bd	bb	0.969
2	12378-PeCDF	29.39	2.848e3	1.996e3	1.015	1.43	1.55	31.9	YES	NO	bb	bb	0.951
3	Total-pentafurans	29.10	1.248e3	8.559e2	1.047	1.46	1.55	16.8	YES	NO	db	dd	0.414
4	Total-pentafurans	29.05	3.394e3	2.186e3	1.047	1.55	1.55	30.3	YES	NO	dd	dd	1.098
5	Total-pentafurans	28.32	3.202e4	2.023e4	1.047	1.58	1.55	286.6	YES	NO	dd	dd	10.275
6	23478-PeCDF	30.74	5.113e3	3.194e3	1.126	1.60	1.55	62.0	YES	NO	bb	bb	1.572
7	Total-pentafurans	30.58	5.367e3	3.259e3	1.047	1.65	1.55	55.8	YES	NO	db	db	1.697

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HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123678-HxCDF	34.54	8.997e3	7.408e3	1.037	1.21	1.24	128.4	YES	NO	db	db	4.133
2	123478-HxCDF	34.40	4.549e4	3.680e4	1.017	1.24	1.24	663.4	YES	NO	bd	bd	21.334
3	Total-hexafurans	34.25	4.263e3	3.463e3	1.045	1.23	1.24	64.2	YES	NO	bb	bb	2.044
4	Total-hexafurans	33.77	1.520e5	1.240e5	1.045	1.23	1.24	2221.5	YES	NO	bb	bb	73.014
5	Total-hexafurans	32.92	6.860e4	5.666e4	1.045	1.21	1.24	935.6	YES	NO	bb	bb	33.134
6	123468-HXCDF	32.71	2.024e4	1.682e4	1.087	1.20	1.24	287.9	YES	NO	bb	bb	8.992
7	123789-HxCDF	36.43	5.977e3	4.951e3	1.030	1.21	1.24	83.4	YES	NO	bb	bb	3.139
8	Total-hexafurans	35.90	2.568e2	1.981e2	1.045	1.30	1.24	3.5	YES	NO	bb	bb	0.120
9	234678-HxCDF	35.37	1.391e4	1.179e4	1.052	1.18	1.24	152.7	YES	NO	bb	bb	7.024
10	Total-hexafurans	35.07	1.151e3	8.943e2	1.045	1.29	1.24	18.7	YES	NO	bb	bb	0.541

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.51	3.044e4	3.044e4	1.283	1.00	1.05	292.7	YES	NO	bb	bb	18.128
2	Total-heptafurans	39.81	1.819e3	2.029e3	1.305	0.90	1.05	16.1	YES	NO	bb	bb	1.073
3	Total-heptafurans	38.97	5.374e5	5.156e5	1.305	1.04	1.05	5490.3	YES	NO	bb	bb	293.624
4	Total-heptafurans	38.73	2.779e4	2.621e4	1.305	1.06	1.05	244.6	YES	NO	bb	bb	15.056
5	1234678-HpCDF	38.34	2.294e5	2.190e5	1.327	1.05	1.05	2407.5	YES	NO	bb	bb	117.398

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.99	1.283e3	1.925e3	1.192	0.67	0.77	12.9	YES	NO	dd	db	0.576
2	Total-tetrafurans	23.90	1.316e3	1.700e3	1.192	0.77	0.77	10.4	YES	NO	bd	bd	0.541
3	Total-tetrafurans	23.48	1.022e3	1.349e3	1.192	0.76	0.77	10.7	YES	NO	db	db	0.426
4	Total-tetrafurans	23.24	2.471e3	3.225e3	1.192	0.77	0.77	27.7	YES	NO	dd	bd	1.022
5	Total-tetrafurans	22.59	4.072e3	4.973e3	1.192	0.82	0.77	40.7	YES	NO	bd	bd	1.624
6	Total-tetrafurans	22.00	2.549e3	3.247e3	1.192	0.79	0.77	25.3	YES	NO	bb	bb	1.040
7	1368-TCDF	21.75	5.056e2	7.144e2	1.425	0.71	0.77	4.1	YES	NO	db	bb	0.183
8	Total-tetrafurans	25.47	1.485e3	1.711e3	1.192	0.87	0.77	15.1	YES	NO	dd	db	0.574
9	2378-TCDF	25.25	1.316e3	1.577e3	1.108	0.83	0.77	13.1	YES	NO	bd	bd	0.559
10	Total-tetrafurans	24.14	2.321e3	2.916e3	1.192	0.80	0.77	25.0	YES	NO	db	bb	0.940
11	Total-pentafurans	29.59	2.904e3	2.022e3	1.047	1.44	1.55	34.3	YES	NO	bd	bb	0.969
12	12378-PeCDF	29.39	2.848e3	1.996e3	1.015	1.43	1.55	31.9	YES	NO	bb	bb	0.951
13	Total-pentafurans	29.10	1.248e3	8.559e2	1.047	1.46	1.55	16.8	YES	NO	db	dd	0.414
14	Total-pentafurans	29.05	3.394e3	2.186e3	1.047	1.55	1.55	30.3	YES	NO	dd	dd	1.098
15	Total-pentafurans	28.32	3.202e4	2.023e4	1.047	1.58	1.55	286.6	YES	NO	dd	dd	10.275
16	23478-PeCDF	30.74	5.113e3	3.194e3	1.126	1.60	1.55	62.0	YES	NO	bb	bb	1.572
17	Total-pentafurans	30.58	5.367e3	3.259e3	1.047	1.65	1.55	55.8	YES	NO	db	db	1.697
18	123678-HxCDF	34.54	8.997e3	7.408e3	1.037	1.21	1.24	128.4	YES	NO	db	db	4.133
19	123478-HxCDF	34.40	4.549e4	3.680e4	1.017	1.24	1.24	663.4	YES	NO	bd	bd	21.334
20	Total-hexafurans	34.25	4.263e3	3.463e3	1.045	1.23	1.24	64.2	YES	NO	bb	bb	2.044
21	Total-hexafurans	33.77	1.520e5	1.240e5	1.045	1.23	1.24	2221.5	YES	NO	bb	bb	73.014
22	Total-hexafurans	32.92	6.860e4	5.666e4	1.045	1.21	1.24	935.6	YES	NO	bb	bb	33.134
23	123468-HXCDF	32.71	2.024e4	1.682e4	1.087	1.20	1.24	287.9	YES	NO	bb	bb	8.992
24	123789-HxCDF	36.43	5.977e3	4.951e3	1.030	1.21	1.24	83.4	YES	NO	bb	bb	3.139
25	Total-hexafurans	35.90	2.568e2	1.981e2	1.045	1.30	1.24	3.5	YES	NO	bb	bb	0.120
26	234678-HxCDF	35.37	1.391e4	1.179e4	1.052	1.18	1.24	152.7	YES	NO	bb	bb	7.024
27	Total-hexafurans	35.07	1.151e3	8.943e2	1.045	1.29	1.24	18.7	YES	NO	bb	bb	0.541
28	1234789-HpCDF	40.51	3.044e4	3.044e4	1.283	1.00	1.05	292.7	YES	NO	bb	bb	18.128
29	Total-heptafurans	39.81	1.819e3	2.029e3	1.305	0.90	1.05	16.1	YES	NO	bb	bb	1.073
30	Total-heptafurans	38.97	5.374e5	5.156e5	1.305	1.04	1.05	5490.3	YES	NO	bb	bb	293.624
31	Total-heptafurans	38.73	2.779e4	2.621e4	1.305	1.06	1.05	244.6	YES	NO	bb	bb	15.056
32	1234678-HpCDF	38.34	2.294e5	2.190e5	1.327	1.05	1.05	2407.5	YES	NO	bb	bb	117.398
33	OCDF	44.65	4.780e5	5.395e5	1.447	0.89	0.89	4840.1	YES	NO	bb	bb	348.023
34	13468-PECDF	26.67	3.096e4	1.975e4	1.376	1.57	1.55	516.6	YES	NO	bb	bb	7.339

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TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	24.85	4.399e2	5.435e2	0.879	0.81	0.77	4.3	YES	NO	bb	bb	0.291
2	Total-tetradioxins	24.49	1.177e3	1.639e3	0.879	0.72	0.77	10.9	YES	NO	bb	bb	0.834
3	Total-tetradioxins	23.49	7.174e2	8.383e2	0.879	0.86	0.77	6.6	YES	NO	bb	bb	0.461
4	1368-TCDD	23.01	1.453e3	2.062e3	0.923	0.70	0.77	15.9	YES	NO	bb	bb	0.991
5	Total-tetradioxins	25.99	4.553e2	5.967e2	0.879	0.76	0.77	4.2	YES	NO	db	dd	0.311

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDD	30.97	4.408e3	2.735e3	0.995	1.61	1.55	50.3	YES	NO	bb	bb	2.486
2	Total-pentadioxins	30.32	4.043e3	2.348e3	1.331	1.72	1.55	43.8	YES	NO	bb	bb	1.663
3	Total-pentadioxins	29.93	7.934e3	5.265e3	1.331	1.51	1.55	83.3	YES	NO	db	db	3.435
4	Total-pentadioxins	29.75	7.119e3	4.476e3	1.331	1.59	1.55	103.6	YES	NO	dd	dd	3.018
5	Total-pentadioxins	29.60	4.887e3	3.184e3	1.331	1.54	1.55	70.1	YES	NO	bd	bd	2.101
6	12479-PECDD	28.28	2.585e4	1.608e4	1.843	1.61	1.55	236.6	YES	NO	bb	bb	7.878

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	124679-HXCDD	33.50	4.663e5	3.730e5	1.125	1.25	1.24	2179.6	YES	NO	bb	bb	225.378
2	123789-HxCDD	36.05	6.622e4	5.307e4	0.950	1.25	1.24	319.9	YES	NO	bb	bb	38.282
3	Total-hexadioxins	35.82	6.687e4	5.447e4	1.028	1.23	1.24	330.4	YES	NO	bb	bb	36.004
4	123678-HxCDD	35.66	5.573e4	4.589e4	1.009	1.21	1.24	273.5	YES	NO	db	db	31.021
5	123478-HxCDD	35.54	3.443e4	2.785e4	1.027	1.24	1.24	173.5	YES	NO	bd	bd	18.313
6	Total-hexadioxins	34.75	4.913e4	4.063e4	1.028	1.21	1.24	233.2	YES	NO	db	dd	26.634
7	Total-hexadioxins	34.64	5.214e5	4.270e5	1.028	1.22	1.24	1515.0	YES	NO	bd	bd	281.428
8	Total-hexadioxins	34.28	2.853e5	2.363e5	1.028	1.21	1.24	1361.3	YES	NO	bb	bb	154.757

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.80	4.462e6	4.158e6	1.068	1.07	1.05	14498.3	YES	NO	bb	bb	3673.0...
2	1234679-HPCDD	38.78	1.225e7	1.140e7	1.211	1.08	1.05	41959.7	YES	NO	bb	bb	8888.9...

Dataset: T:\Autospec\Processed Data Batch\210827D1.qld
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Printed: Friday, August 27, 2021 13:33:01 Pacific Daylight Time

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	24.85	4.399e2	5.435e2	0.879	0.81	0.77	4.3	YES	NO	bb	bb	0.291
2	Total-tetradioxins	24.49	1.177e3	1.639e3	0.879	0.72	0.77	10.9	YES	NO	bb	bb	0.834
3	Total-tetradioxins	23.49	7.174e2	8.383e2	0.879	0.86	0.77	6.6	YES	NO	bb	bb	0.461
4	1368-TCDD	23.01	1.453e3	2.062e3	0.923	0.70	0.77	15.9	YES	NO	bb	bb	0.991
5	Total-tetradioxins	25.99	4.553e2	5.967e2	0.879	0.76	0.77	4.2	YES	NO	db	dd	0.311
6	12378-PeCDD	30.97	4.408e3	2.735e3	0.995	1.61	1.55	50.3	YES	NO	bb	bb	2.486
7	Total-pentadioxins	30.32	4.043e3	2.348e3	1.331	1.72	1.55	43.8	YES	NO	bb	bb	1.663
8	Total-pentadioxins	29.93	7.934e3	5.265e3	1.331	1.51	1.55	83.3	YES	NO	db	db	3.435
9	Total-pentadioxins	29.75	7.119e3	4.476e3	1.331	1.59	1.55	103.6	YES	NO	dd	dd	3.018
10	Total-pentadioxins	29.60	4.887e3	3.184e3	1.331	1.54	1.55	70.1	YES	NO	bd	bd	2.101
11	12479-PECDD	28.28	2.585e4	1.608e4	1.843	1.61	1.55	236.6	YES	NO	bb	bb	7.878
12	124679-HXCDD	33.50	4.663e5	3.730e5	1.125	1.25	1.24	2179.6	YES	NO	bb	bb	225.378
13	123789-HxCDD	36.05	6.622e4	5.307e4	0.950	1.25	1.24	319.9	YES	NO	bb	bb	38.282
14	Total-hexadioxins	35.82	6.687e4	5.447e4	1.028	1.23	1.24	330.4	YES	NO	bb	bb	36.004
15	123678-HxCDD	35.66	5.573e4	4.589e4	1.009	1.21	1.24	273.5	YES	NO	db	db	31.021
16	123478-HxCDD	35.54	3.443e4	2.785e4	1.027	1.24	1.24	173.5	YES	NO	bd	bd	18.313
17	Total-hexadioxins	34.75	4.913e4	4.063e4	1.028	1.21	1.24	233.2	YES	NO	db	dd	26.634
18	Total-hexadioxins	34.64	5.214e5	4.270e5	1.028	1.22	1.24	1515.0	YES	NO	bd	bd	281.428
19	Total-hexadioxins	34.28	2.853e5	2.363e5	1.028	1.21	1.24	1361.3	YES	NO	bb	bb	154.757
20	OCDD	44.44	8.725e6	9.675e6	1.181	0.90	0.89	42288.2	YES	NO	bb	bb	7711.7...
21	1234678-HpCDD	39.80	4.462e6	4.158e6	1.068	1.07	1.05	14498.3	YES	NO	bb	bb	3673.0...
22	1234679-HPCDD	38.78	1.225e7	1.140e7	1.211	1.08	1.05	41959.7	YES	NO	bb	bb	8888.9...

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	23.99	1.283e3	1.925e3	1.192	0.67	0.77	12.9	YES	NO	dd	db	0.576
2	Total-tetrafurans	23.90	1.316e3	1.700e3	1.192	0.77	0.77	10.4	YES	NO	bd	bd	0.541
3	Total-tetrafurans	23.48	1.022e3	1.349e3	1.192	0.76	0.77	10.7	YES	NO	db	db	0.426
4	Total-tetrafurans	23.24	2.471e3	3.225e3	1.192	0.77	0.77	27.7	YES	NO	dd	bd	1.022
5	Total-tetrafurans	22.59	4.072e3	4.973e3	1.192	0.82	0.77	40.7	YES	NO	bd	bd	1.624
6	Total-tetrafurans	22.00	2.549e3	3.247e3	1.192	0.79	0.77	25.3	YES	NO	bb	bb	1.040
7	1368-TCDF	21.75	5.056e2	7.144e2	1.425	0.71	0.77	4.1	YES	NO	db	bb	0.183
8	Total-tetrafurans	25.47	1.485e3	1.711e3	1.192	0.87	0.77	15.1	YES	NO	dd	db	0.574
9	2378-TCDF	25.25	1.316e3	1.577e3	1.108	0.83	0.77	13.1	YES	NO	bd	bd	0.559
10	Total-tetrafurans	24.14	2.321e3	2.916e3	1.192	0.80	0.77	25.0	YES	NO	db	bb	0.940
11	Total-pentafurans	29.59	2.904e3	2.022e3	1.047	1.44	1.55	34.3	YES	NO	bd	bb	0.969
12	12378-PeCDF	29.39	2.848e3	1.996e3	1.015	1.43	1.55	31.9	YES	NO	bb	bb	0.951
13	Total-pentafurans	29.10	1.248e3	8.559e2	1.047	1.46	1.55	16.8	YES	NO	db	dd	0.414
14	Total-pentafurans	29.05	3.394e3	2.186e3	1.047	1.55	1.55	30.3	YES	NO	dd	dd	1.098
15	Total-pentafurans	28.32	3.202e4	2.023e4	1.047	1.58	1.55	286.6	YES	NO	dd	dd	10.275
16	23478-PeCDF	30.74	5.113e3	3.194e3	1.126	1.60	1.55	62.0	YES	NO	bb	bb	1.572
17	Total-pentafurans	30.58	5.367e3	3.259e3	1.047	1.65	1.55	55.8	YES	NO	db	db	1.697
18	123678-HxCDF	34.54	8.997e3	7.408e3	1.037	1.21	1.24	128.4	YES	NO	db	db	4.133
19	123478-HxCDF	34.40	4.549e4	3.680e4	1.017	1.24	1.24	663.4	YES	NO	bd	bd	21.334
20	Total-hexafurans	34.25	4.263e3	3.463e3	1.045	1.23	1.24	64.2	YES	NO	bb	bb	2.044
21	Total-hexafurans	33.77	1.520e5	1.240e5	1.045	1.23	1.24	2221.5	YES	NO	bb	bb	73.014
22	Total-hexafurans	32.92	6.860e4	5.666e4	1.045	1.21	1.24	935.6	YES	NO	bb	bb	33.134
23	123468-HXCDF	32.71	2.024e4	1.682e4	1.087	1.20	1.24	287.9	YES	NO	bb	bb	8.992
24	123789-HxCDF	36.43	5.977e3	4.951e3	1.030	1.21	1.24	83.4	YES	NO	bb	bb	3.139
25	Total-hexafurans	35.90	2.568e2	1.981e2	1.045	1.30	1.24	3.5	YES	NO	bb	bb	0.120
26	234678-HxCDF	35.37	1.391e4	1.179e4	1.052	1.18	1.24	152.7	YES	NO	bb	bb	7.024
27	Total-hexafurans	35.07	1.151e3	8.943e2	1.045	1.29	1.24	18.7	YES	NO	bb	bb	0.541
28	1234789-HpCDF	40.51	3.044e4	3.044e4	1.283	1.00	1.05	292.7	YES	NO	bb	bb	18.128
29	Total-heptafurans	39.81	1.819e3	2.029e3	1.305	0.90	1.05	16.1	YES	NO	bb	bb	1.073
30	Total-heptafurans	38.97	5.374e5	5.156e5	1.305	1.04	1.05	5490.3	YES	NO	bb	bb	293.624
31	Total-heptafurans	38.73	2.779e4	2.621e4	1.305	1.06	1.05	244.6	YES	NO	bb	bb	15.056
32	1234678-HpCDF	38.34	2.294e5	2.190e5	1.327	1.05	1.05	2407.5	YES	NO	bb	bb	117.398
33	OCDF	44.65	4.780e5	5.395e5	1.447	0.89	0.89	4840.1	YES	NO	bb	bb	348.023
34	13468-PECDF	26.67	3.096e4	1.975e4	1.376	1.57	1.55	516.6	YES	NO	bb	bb	7.339
35	Total-tetradioxins	24.85	4.399e2	5.435e2	0.879	0.81	0.77	4.3	YES	NO	bb	bb	0.291
36	Total-tetradioxins	24.49	1.177e3	1.639e3	0.879	0.72	0.77	10.9	YES	NO	bb	bb	0.834
37	Total-tetradioxins	23.49	7.174e2	8.383e2	0.879	0.86	0.77	6.6	YES	NO	bb	bb	0.461

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	1368-TCDD	23.01	1.453e3	2.062e3	0.923	0.70	0.77	15.9	YES	NO	bb	bb	0.991
39	Total-tetradioxins	25.99	4.553e2	5.967e2	0.879	0.76	0.77	4.2	YES	NO	db	dd	0.311
40	12378-PeCDD	30.97	4.408e3	2.735e3	0.995	1.61	1.55	50.3	YES	NO	bb	bb	2.486
41	Total-pentadioxins	30.32	4.043e3	2.348e3	1.331	1.72	1.55	43.8	YES	NO	bb	bb	1.663
42	Total-pentadioxins	29.93	7.934e3	5.265e3	1.331	1.51	1.55	83.3	YES	NO	db	db	3.435
43	Total-pentadioxins	29.75	7.119e3	4.476e3	1.331	1.59	1.55	103.6	YES	NO	dd	dd	3.018
44	Total-pentadioxins	29.60	4.887e3	3.184e3	1.331	1.54	1.55	70.1	YES	NO	bd	bd	2.101
45	12479-PECDD	28.28	2.585e4	1.608e4	1.843	1.61	1.55	236.6	YES	NO	bb	bb	7.878
46	124679-HXCDD	33.50	4.663e5	3.730e5	1.125	1.25	1.24	2179.6	YES	NO	bb	bb	225.378
47	123789-HxCDD	36.05	6.622e4	5.307e4	0.950	1.25	1.24	319.9	YES	NO	bb	bb	38.282
48	Total-hexadioxins	35.82	6.687e4	5.447e4	1.028	1.23	1.24	330.4	YES	NO	bb	bb	36.004
49	123678-HxCDD	35.66	5.573e4	4.589e4	1.009	1.21	1.24	273.5	YES	NO	db	db	31.021
50	123478-HxCDD	35.54	3.443e4	2.785e4	1.027	1.24	1.24	173.5	YES	NO	bd	bd	18.313
51	Total-hexadioxins	34.75	4.913e4	4.063e4	1.028	1.21	1.24	233.2	YES	NO	db	dd	26.634
52	Total-hexadioxins	34.64	5.214e5	4.270e5	1.028	1.22	1.24	1515.0	YES	NO	bd	bd	281.428
53	Total-hexadioxins	34.28	2.853e5	2.363e5	1.028	1.21	1.24	1361.3	YES	NO	bb	bb	154.757
54	OCDD	44.44	8.725e6	9.675e6	1.181	0.90	0.89	42288.2	YES	NO	bb	bb	7711.7...
55	1234678-HpCDD	39.80	4.462e6	4.158e6	1.068	1.07	1.05	14498.3	YES	NO	bb	bb	3673.0...
56	1234679-HPCDD	38.78	1.225e7	1.140e7	1.211	1.08	1.05	41959.7	YES	NO	bb	bb	8888.9...

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	23.02	3.573e5					9.0	YES		dd		
2	FUNCTION1 PFK	22.92	6.962e5					11.5	YES		dd		
3	FUNCTION1 PFK	22.86	1.050e6					12.1	YES		dd		
4	FUNCTION1 PFK	22.72	7.290e5					13.5	YES		dd		
5	FUNCTION1 PFK	22.60	9.499e5					15.3	YES		dd		
6	FUNCTION1 PFK	22.49	2.016e6					18.0	YES		dd		
7	FUNCTION1 PFK	22.28	1.763e6					22.4	YES		dd		
8	FUNCTION1 PFK	22.13	2.443e6					24.6	YES		dd		
9	FUNCTION1 PFK	21.92	5.073e6					27.2	YES		dd		
10	FUNCTION1 PFK	21.74	1.116e6					29.6	YES		dd		
11	FUNCTION1 PFK	21.71	2.784e6					29.3	YES		dd		
12	FUNCTION1 PFK	21.45	2.550e6					34.5	YES		dd		
13	FUNCTION1 PFK	21.32	2.686e6					35.8	YES		dd		
14	FUNCTION1 PFK	21.24	1.385e6					36.9	YES		dd		
15	FUNCTION1 PFK	21.16	1.415e6					37.7	YES		dd		
16	FUNCTION1 PFK	21.12	2.142e6					38.4	YES		bd		
17	FUNCTION1 PFK	25.11	2.423e4					0.9	NO		dd		
18	FUNCTION1 PFK	25.05	4.015e4					1.7	NO		bd		
19	FUNCTION1 PFK	24.70	2.988e4					1.1	NO		bb		
20	FUNCTION1 PFK	24.48	2.136e4					0.8	NO		bb		
21	FUNCTION1 PFK	24.40	2.218e4					0.9	NO		db		
22	FUNCTION1 PFK	24.35	2.253e4					1.0	NO		bd		
23	FUNCTION1 PFK	24.14	1.441e4					0.7	NO		bb		
24	FUNCTION1 PFK	24.07	2.322e4					1.3	NO		bb		
25	FUNCTION1 PFK	24.01	9.542e3					0.7	NO		db		
26	FUNCTION1 PFK	23.92	8.269e4					1.6	NO		dd		
27	FUNCTION1 PFK	23.83	3.563e4					1.4	NO		dd		
28	FUNCTION1 PFK	23.80	1.122e4					0.7	NO		bd		
29	FUNCTION1 PFK	23.48	5.450e4					1.6	NO		db		
30	FUNCTION1 PFK	23.39	5.808e4					2.1	NO		dd		
31	FUNCTION1 PFK	23.30	2.079e5					4.3	YES		dd		
32	FUNCTION1 PFK	23.21	5.385e5					6.4	YES		dd		
33	FUNCTION1 PFK	27.30	3.428e4					1.2	NO		db		
34	FUNCTION1 PFK	27.24	6.294e4					1.6	NO		bd		
35	FUNCTION1 PFK	27.12	4.516e4					1.4	NO		db		
36	FUNCTION1 PFK	27.05	7.904e4					1.9	NO		bd		
37	FUNCTION1 PFK	26.71	5.766e4					1.4	NO		db		

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION1 PFK	26.65	1.797e4					0.8	NO		dd		
39	FUNCTION1 PFK	26.59	1.121e4					0.7	NO		dd		
40	FUNCTION1 PFK	26.53	2.065e4					0.9	NO		bd		
41	FUNCTION1 PFK	26.17	1.486e4					0.6	NO		db		
42	FUNCTION1 PFK	26.08	3.810e4					1.2	NO		dd		
43	FUNCTION1 PFK	25.99	3.573e4					1.2	NO		bd		
44	FUNCTION1 PFK	25.91	2.195e4					0.9	NO		db		
45	FUNCTION1 PFK	25.87	2.624e4					1.0	NO		bd		
46	FUNCTION1 PFK	25.55	3.513e4					1.0	NO		bb		
47	FUNCTION1 PFK	25.28	7.578e3					0.5	NO		bb		
48	FUNCTION1 PFK	25.19	3.753e4					1.1	NO		db		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	29.74	4.618e3					0.5	NO		bb		0.000
2	FUNCTION2 PFK	29.67	5.282e3					0.6	NO		bb		0.000
3	FUNCTION2 PFK	29.37	1.099e4					0.9	NO		db		0.000
4	FUNCTION2 PFK	29.28	4.217e4					1.5	NO		bd		0.000
5	FUNCTION2 PFK	29.20	8.655e3					0.8	NO		bb		0.000
6	FUNCTION2 PFK	28.89	2.500e4					1.2	NO		bb		0.000
7	FUNCTION2 PFK	28.56	6.587e3					0.6	NO		db		0.000
8	FUNCTION2 PFK	28.52	1.036e4					0.8	NO		bd		0.000
9	FUNCTION2 PFK	28.40	7.004e3					0.7	NO		bb		0.000
10	FUNCTION2 PFK	28.17	1.930e4					1.3	NO		db		0.000
11	FUNCTION2 PFK	28.07	1.291e5					4.0	YES		dd		0.000
12	FUNCTION2 PFK	27.94	3.315e5					8.1	YES		dd		0.000
13	FUNCTION2 PFK	27.66	1.745e6					13.9	YES		dd		0.000
14	FUNCTION2 PFK	27.53	8.740e5					15.4	YES		dd		0.000
15	FUNCTION2 PFK	27.45	3.686e5					15.7	YES		bd		0.000
16	FUNCTION2 PFK	31.72	8.743e3					0.9	NO		bb		0.000
17	FUNCTION2 PFK	31.03	2.371e3					0.4	NO		bb		0.000
18	FUNCTION2 PFK	30.82	1.224e4					1.0	NO		bb		0.000

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Last Altered: Friday, August 27, 2021 13:00:30 Pacific Daylight Time
Printed: Friday, August 27, 2021 13:33:01 Pacific Daylight Time

ID: BJG0465-DUP1, Name: 21082707, Date: 27-Aug-2021, Time: 09:42:13, Conditions: AUTOSPEC01, User: pk

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	35.82	1.733e4					1.5	NO		db		0.000
2	FUNCTION3 PFK	35.79	1.709e4					1.5	NO		bd		0.000
3	FUNCTION3 PFK	35.39	4.375e4					2.5	NO		bb		0.000
4	FUNCTION3 PFK	34.54	2.211e4					1.4	NO		bb		0.000
5	FUNCTION3 PFK	34.49	1.167e4					1.3	NO		bb		0.000
6	FUNCTION3 PFK	34.45	1.270e4					0.9	NO		bb		0.000
7	FUNCTION3 PFK	34.25	5.649e3					0.7	NO		bb		0.000
8	FUNCTION3 PFK	33.20	1.426e4					0.9	NO		bb		0.000
9	FUNCTION3 PFK	33.07	3.456e4					1.3	NO		bb		0.000
10	FUNCTION3 PFK	32.42	7.017e4					3.7	YES		db		0.000
11	FUNCTION3 PFK	32.37	2.069e5					7.6	YES		dd		0.000
12	FUNCTION3 PFK	32.29	5.225e5					11.8	YES		bd		0.000
13	FUNCTION3 PFK	36.58	1.606e5					3.9	YES		db		0.000
14	FUNCTION3 PFK	36.50	8.986e4					4.7	YES		dd		0.000
15	FUNCTION3 PFK	36.45	9.759e4					5.1	YES		dd		0.000
16	FUNCTION3 PFK	36.41	1.177e5					5.2	YES		bd		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	39.73	6.852e4					2.3	NO		bb		
2	FUNCTION4 PFK	39.62	1.478e4					1.4	NO		bb		
3	FUNCTION4 PFK	39.56	1.323e4					1.1	NO		db		
4	FUNCTION4 PFK	39.51	1.166e4					1.1	NO		dd		
5	FUNCTION4 PFK	39.46	2.236e4					1.5	NO		bd		
6	FUNCTION4 PFK	39.18	1.723e4					1.3	NO		bb		
7	FUNCTION4 PFK	38.52	2.191e5					1.0	NO		bb		
8	FUNCTION4 PFK	38.26	8.962e3					0.9	NO		bb		
9	FUNCTION4 PFK	37.71	3.168e4					1.0	NO		bb		
10	FUNCTION4 PFK	37.52	1.026e4					1.0	NO		bb		
11	FUNCTION4 PFK	37.47	5.886e3					0.7	NO		bb		
12	FUNCTION4 PFK	42.24	1.938e3					0.4	NO		bb		
13	FUNCTION4 PFK	42.10	7.134e3					0.6	NO		bb		
14	FUNCTION4 PFK	42.06	1.042e4					1.0	NO		bb		
15	FUNCTION4 PFK	42.00	1.806e3					0.4	NO		bb		
16	FUNCTION4 PFK	41.96	2.688e3					0.6	NO		bb		
17	FUNCTION4 PFK	41.62	8.841e4					1.8	NO		bb		
18	FUNCTION4 PFK	40.72	7.171e4					1.7	NO		bb		
19	FUNCTION4 PFK	40.33	1.737e3					0.4	NO		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	43.34	9.970e3					1.5	NO		bb		
2	FUNCTION5 PFK	43.23	9.664e2					0.5	NO		bb		
3	FUNCTION5 PFK	43.02	1.087e4					1.4	NO		bb		
4	FUNCTION5 PFK	42.93	5.895e3					1.2	NO		bb		
5	FUNCTION5 PFK	42.64	1.827e4					1.2	NO		bb		
6	FUNCTION5 PFK	42.56	1.190e3					0.6	NO		bb		
7	FUNCTION5 PFK	42.50	6.452e3					0.9	NO		bb		
8	FUNCTION5 PFK	44.90	7.582e3					1.4	NO		db		
9	FUNCTION5 PFK	44.87	1.149e4					1.8	NO		dd		
10	FUNCTION5 PFK	44.82	3.235e4					2.4	NO		dd		
11	FUNCTION5 PFK	44.73	8.854e3					1.6	NO		bd		
12	FUNCTION5 PFK	44.33	4.859e4					3.2	YES		bb		
13	FUNCTION5 PFK	44.22	4.926e4					4.1	YES		db		
14	FUNCTION5 PFK	44.18	1.277e4					2.6	NO		dd		
15	FUNCTION5 PFK	44.14	3.120e4					3.0	NO		dd		
16	FUNCTION5 PFK	44.09	1.309e4					2.1	NO		dd		
17	FUNCTION5 PFK	44.06	8.659e3					1.8	NO		dd		
18	FUNCTION5 PFK	44.03	7.078e3					1.8	NO		bd		
19	FUNCTION5 PFK	43.97	9.221e3					1.7	NO		bb		
20	FUNCTION5 PFK	43.81	2.544e3					0.6	NO		bb		
21	FUNCTION5 PFK	43.75	1.149e4					1.8	NO		bb		
22	FUNCTION5 PFK	43.69	2.740e3					0.8	NO		bb		
23	FUNCTION5 PFK	43.62	1.018e4					1.1	NO		bb		
24	FUNCTION5 PFK	45.88	1.087e4					1.6	NO		bb		
25	FUNCTION5 PFK	45.81	4.346e3					1.0	NO		bb		
26	FUNCTION5 PFK	45.77	1.028e4					1.5	NO		db		
27	FUNCTION5 PFK	45.73	7.594e3					1.5	NO		bd		
28	FUNCTION5 PFK	45.68	1.054e3					0.5	NO		bb		
29	FUNCTION5 PFK	45.03	8.694e2					0.4	NO		bb		
30	FUNCTION5 PFK	44.99	5.048e3					1.2	NO		bb		

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ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	23.25	5.913e2					10.5	YES		db		0.000
2	FUNCTION1 HXCD...	23.11	7.354e1					2.0	NO		bd		0.000
3	FUNCTION1 HXCD...	22.46	1.314e2					2.4	NO		bb		0.000
4	FUNCTION1 HXCD...	21.75	2.488e2					5.7	YES		db		0.000
5	FUNCTION1 HXCD...	21.63	3.331e2					7.7	YES		dd		0.000
6	FUNCTION1 HXCD...	21.38	4.862e2					5.3	YES		dd		0.000
7	FUNCTION1 HXCD...	21.21	1.084e2					2.7	NO		dd		0.000
8	FUNCTION1 HXCD...	21.13	1.381e2					2.3	NO		bd		0.000
9	FUNCTION1 HXCD...	27.11	1.337e2					3.9	YES		bb		0.000
10	FUNCTION1 HXCD...	26.49	7.938e1					1.7	NO		bb		0.000
11	FUNCTION1 HXCD...	25.59	3.181e2					9.0	YES		bb		0.000
12	FUNCTION1 HXCD...	25.23	1.855e2					7.3	YES		bb		0.000
13	FUNCTION1 HXCD...	24.58	1.635e2					5.2	YES		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	25.03	8.076e1					1.7	NO		db		0.000
2	FUNCTION1 HPCD...	24.97	8.199e1					1.3	NO		bd		0.000
3	FUNCTION1 HPCD...	24.64	7.269e1					1.3	NO		bb		0.000
4	FUNCTION1 HPCD...	22.81	7.404e2					13.5	YES		db		0.000
5	FUNCTION1 HPCD...	22.63	1.273e2					2.4	NO		dd		0.000
6	FUNCTION1 HPCD...	22.56	2.011e2					1.8	NO		bd		0.000
7	FUNCTION1 HPCD...	22.33	1.328e2					1.7	NO		db		0.000
8	FUNCTION1 HPCD...	22.22	8.359e1					1.8	NO		bd		0.000
9	FUNCTION1 HPCD...	21.80	1.039e2					2.7	NO		bb		0.000
10	FUNCTION1 HPCD...	21.13	1.055e2					1.7	NO		bb		0.000
11	FUNCTION1 HPCD...	26.85	1.307e2					1.9	NO		bb		0.000
12	FUNCTION1 HPCD...	26.58	9.309e1					1.8	NO		db		0.000
13	FUNCTION1 HPCD...	26.46	1.407e2					1.6	NO		bd		0.000
14	FUNCTION1 HPCD...	26.15	1.239e2					2.9	NO		db		0.000
15	FUNCTION1 HPCD...	26.06	8.455e1					1.7	NO		bd		0.000

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ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	31.99	7.762e1					1.4	NO		bb		0.000
2	FUNCTION2 HPCD...	31.66	1.408e2					2.7	NO		bb		0.000
3	FUNCTION2 HPCD...	30.98	9.579e1					2.0	NO		bb		0.000
4	FUNCTION2 HPCD...	30.61	2.079e2					3.3	YES		db		0.000
5	FUNCTION2 HPCD...	30.49	1.005e2					2.3	NO		dd		0.000
6	FUNCTION2 HPCD...	30.39	1.250e2					2.6	NO		bd		0.000
7	FUNCTION2 HPCD...	29.71	1.345e2					2.3	NO		bb		0.000
8	FUNCTION2 HPCD...	28.57	9.710e1					2.1	NO		db		0.000
9	FUNCTION2 HPCD...	28.41	3.656e2					5.9	YES		bd		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	33.68	2.902e2					7.3	YES		bb		0.000
2	FUNCTION3 OCDPE	32.54	2.254e2					6.2	YES		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	40.99	1.111e2					3.7	YES		bb		0.000
2	FUNCTION4 NCDPE	39.81	4.698e2					9.7	YES		bb		0.000
3	FUNCTION4 NCDPE	38.79	1.651e3					22.8	YES		bb		0.000
4	FUNCTION4 NCDPE	37.95	1.907e3					50.9	YES		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	44.44	1.225e3					17.1	YES		bb		0.000

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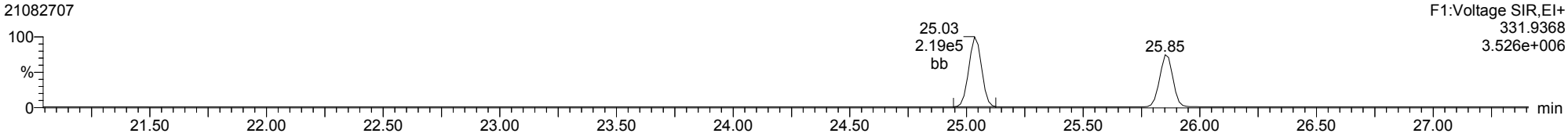

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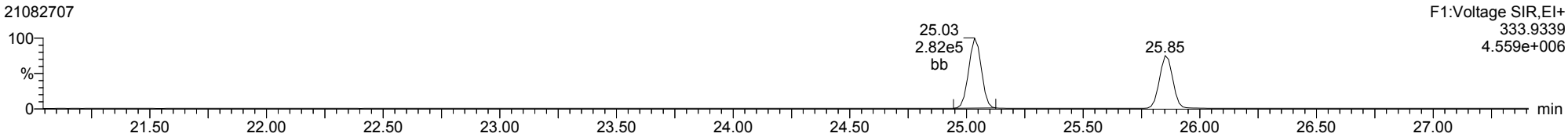

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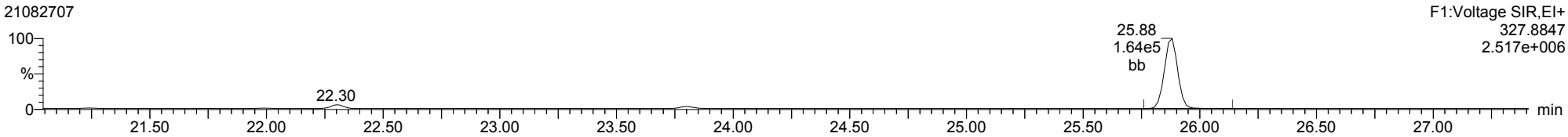

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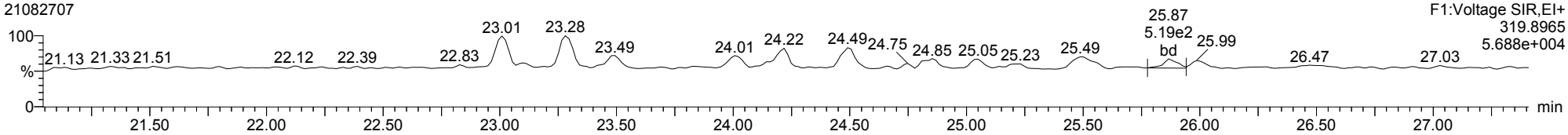
2378-TCDD



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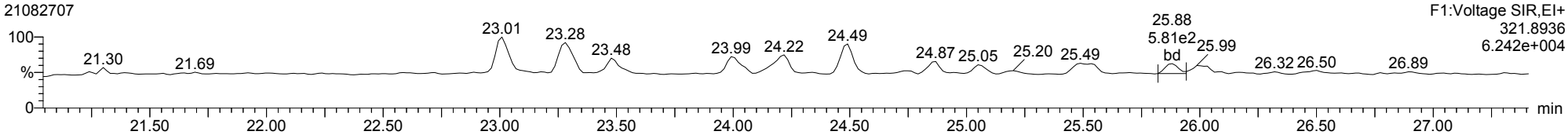

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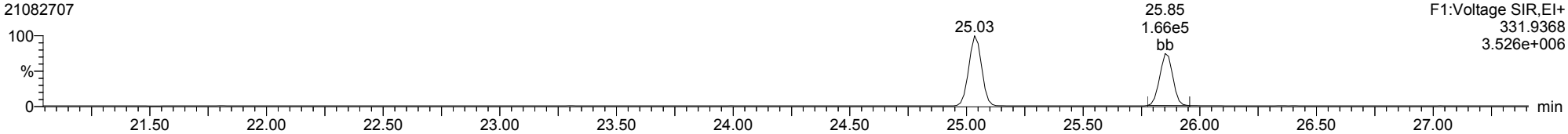

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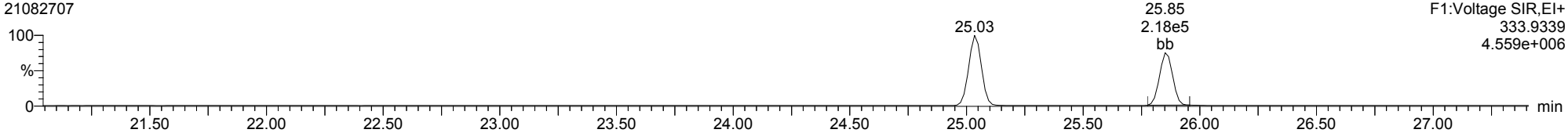

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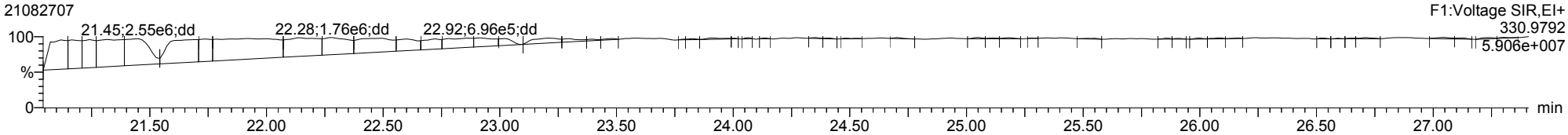

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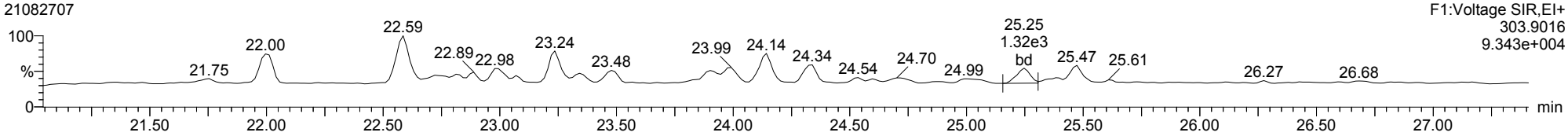
2378-TCDF



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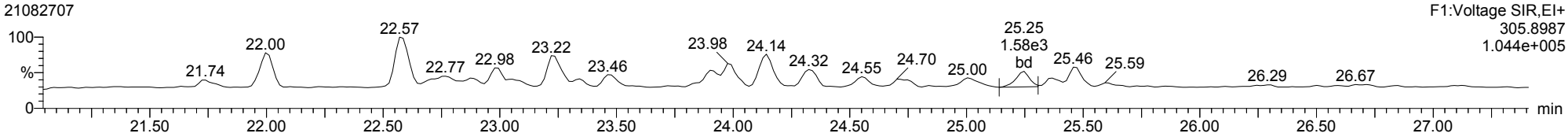

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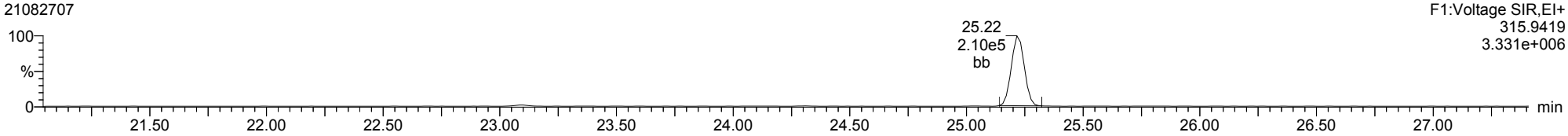

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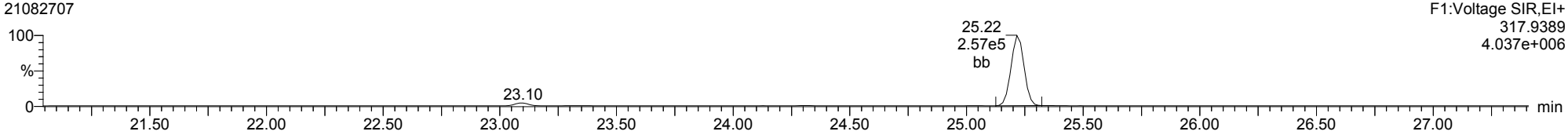

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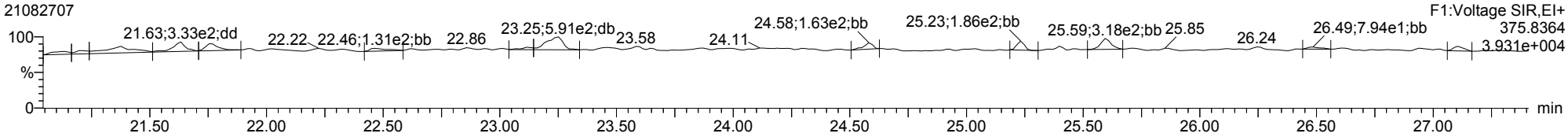

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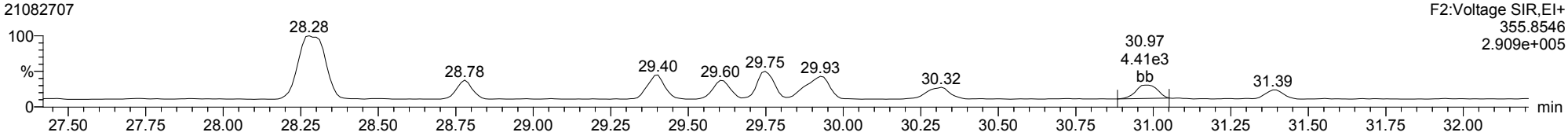
12378-PeCDD



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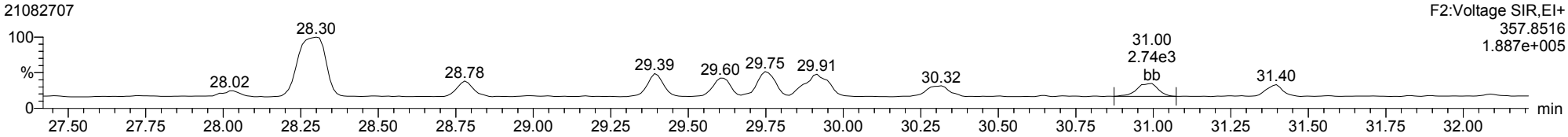

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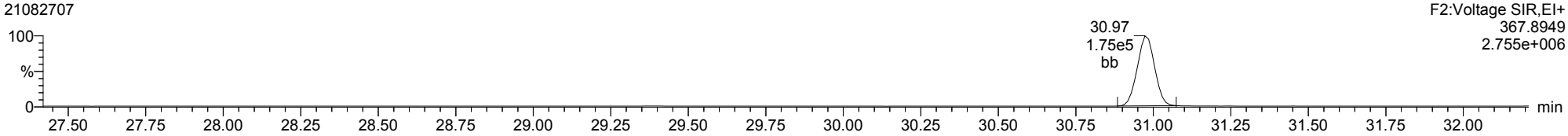

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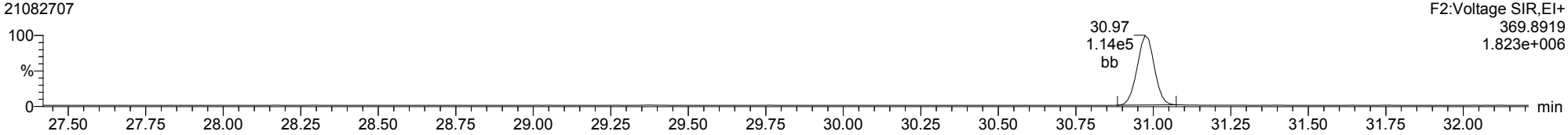

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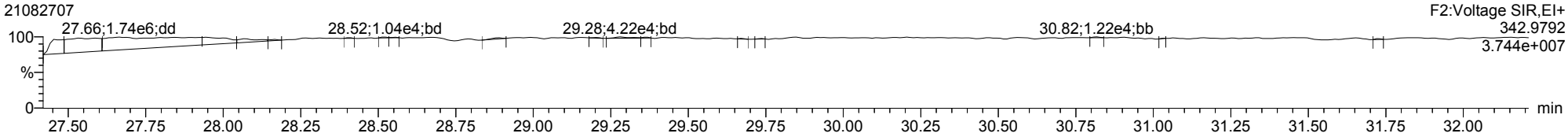

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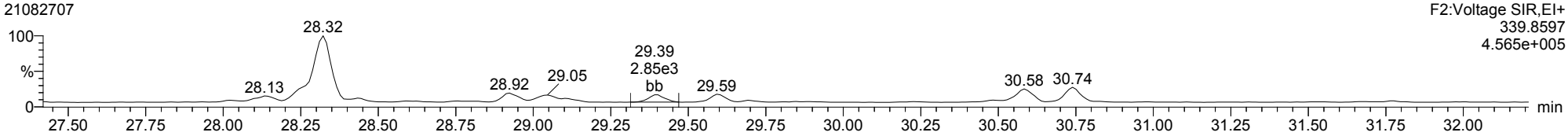
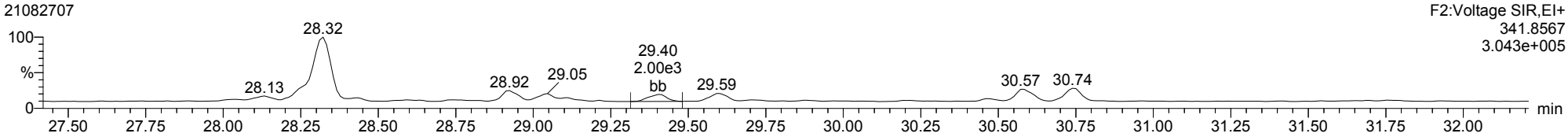


12378-PeCDF



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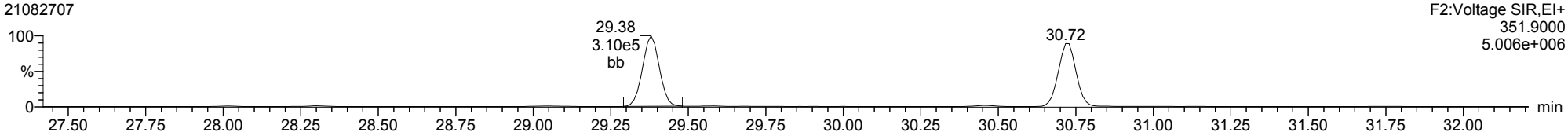

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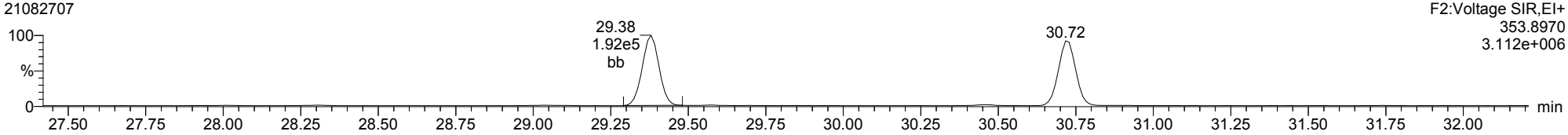

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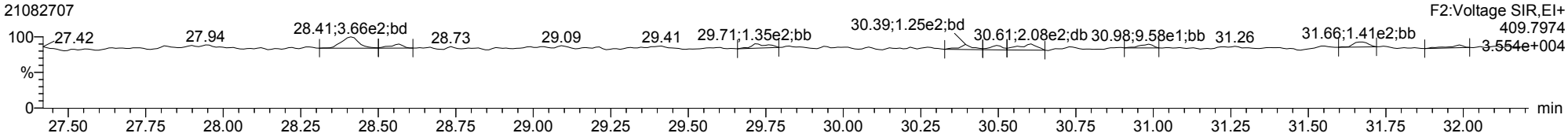

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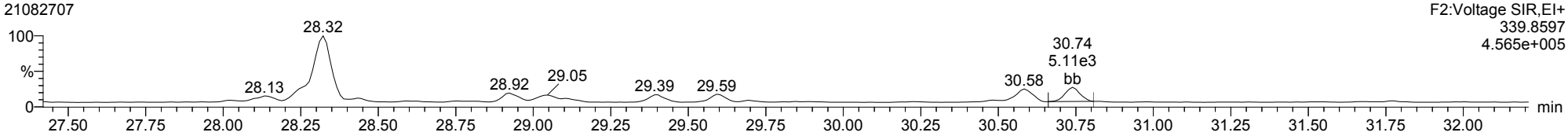
23478-PeCDF



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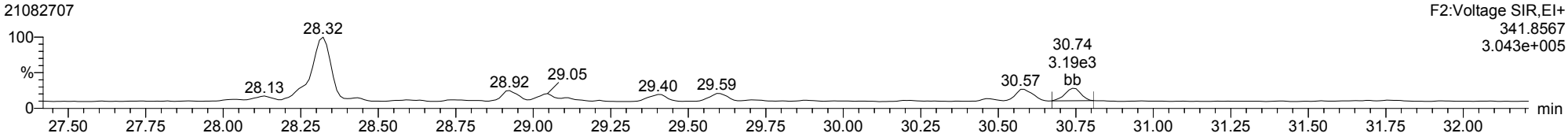

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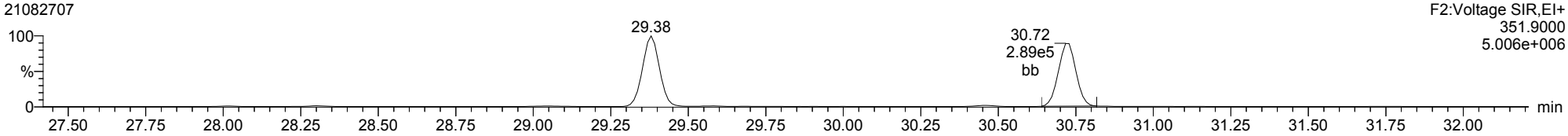

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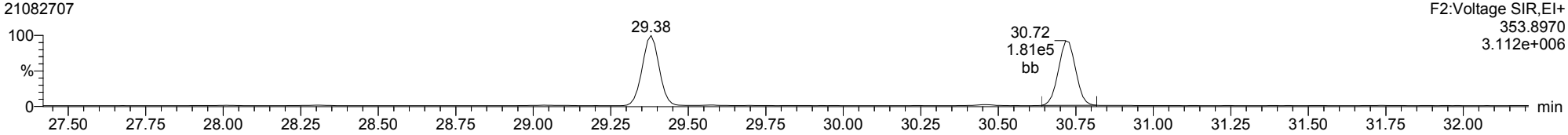

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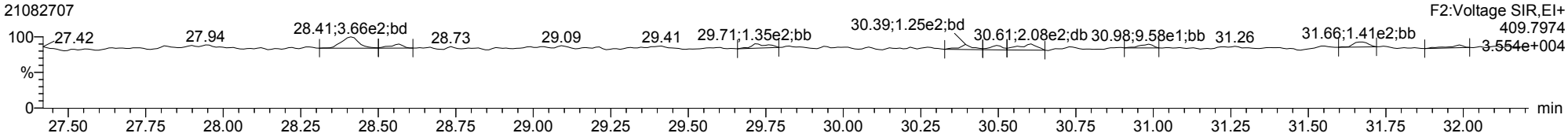

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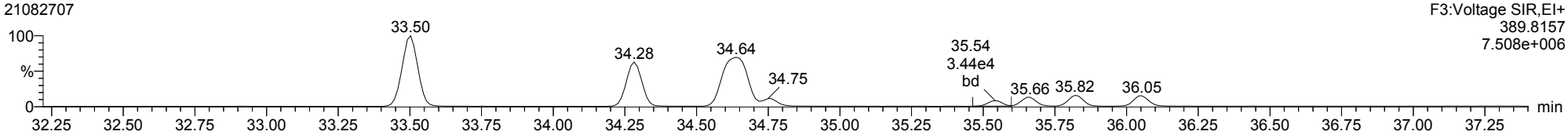

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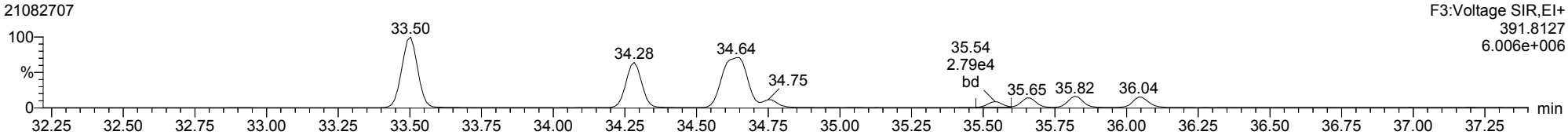

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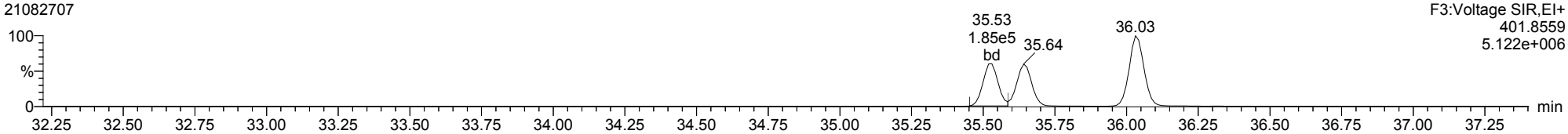

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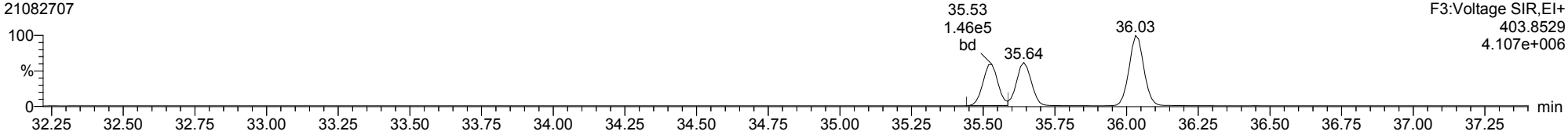
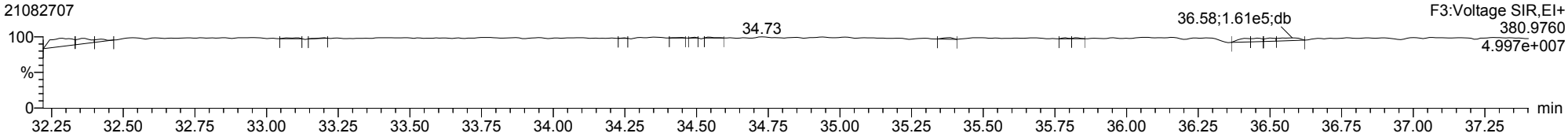


FUNCTION3 PFK



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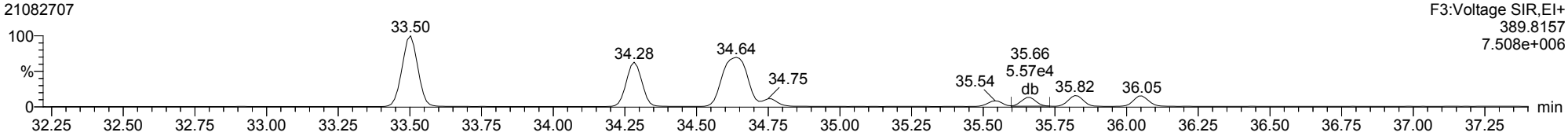

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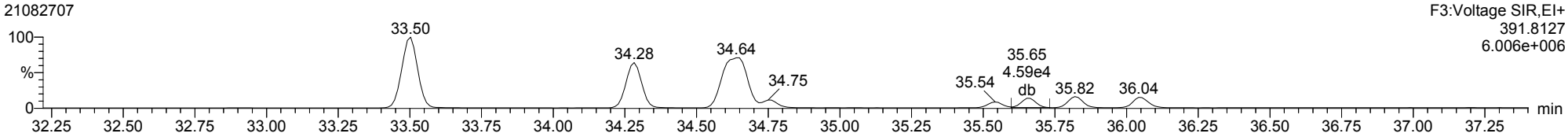

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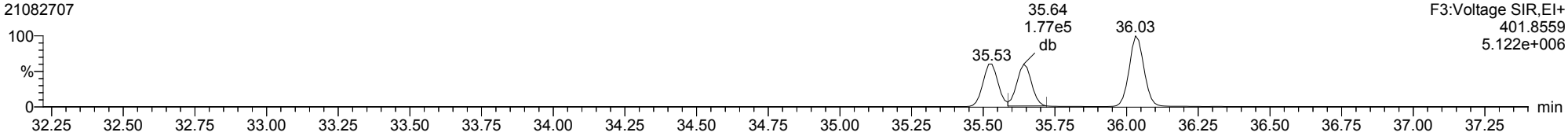

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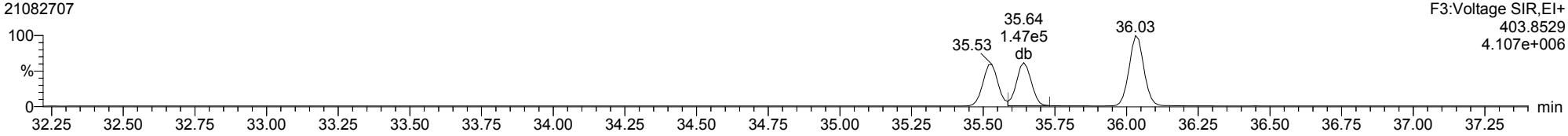

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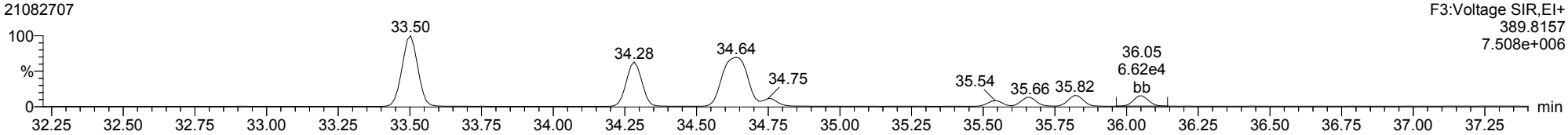

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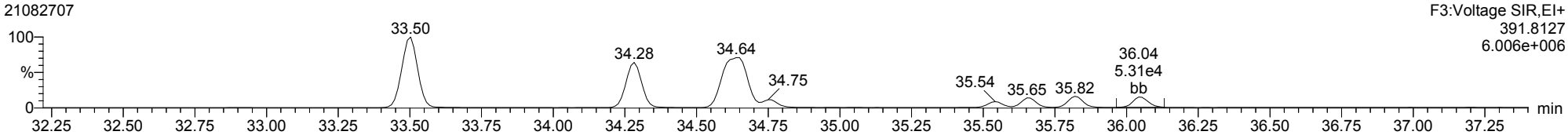

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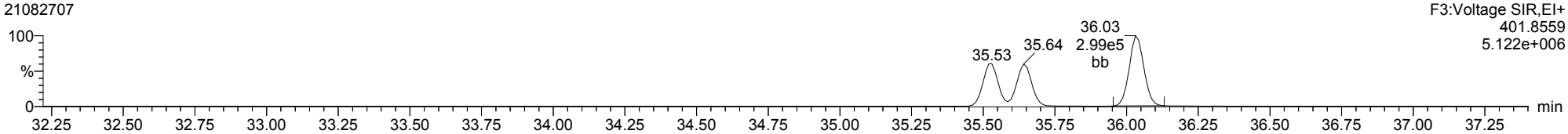

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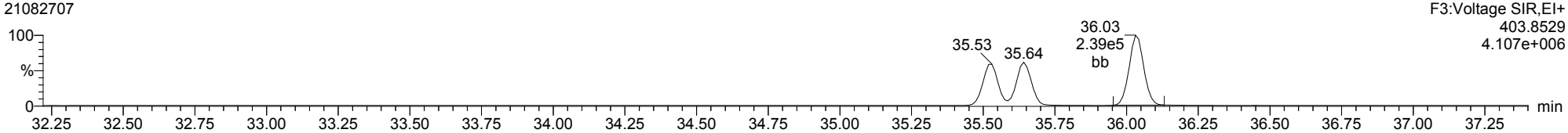

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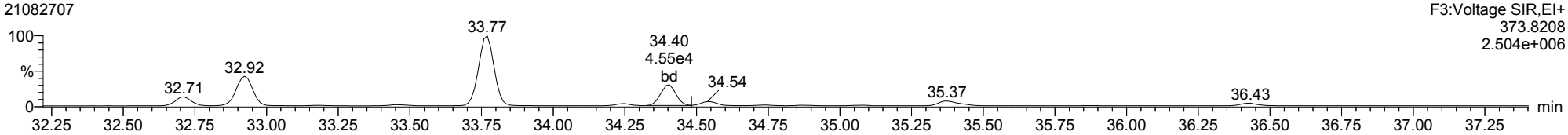

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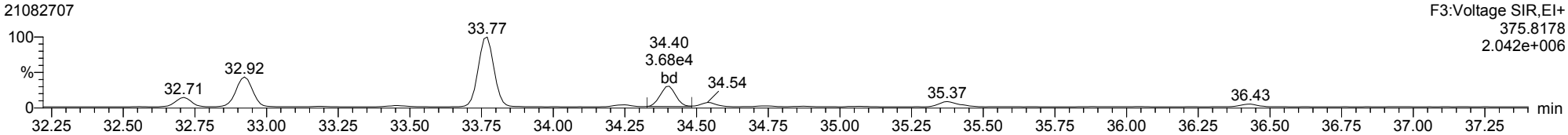

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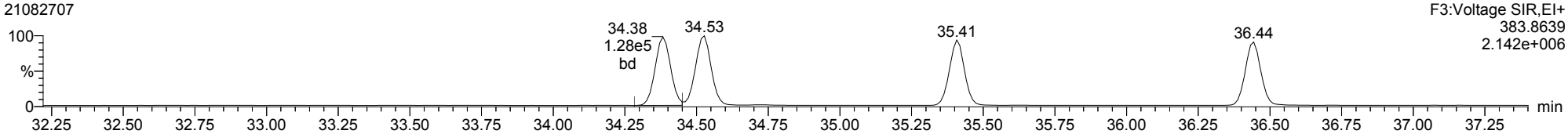

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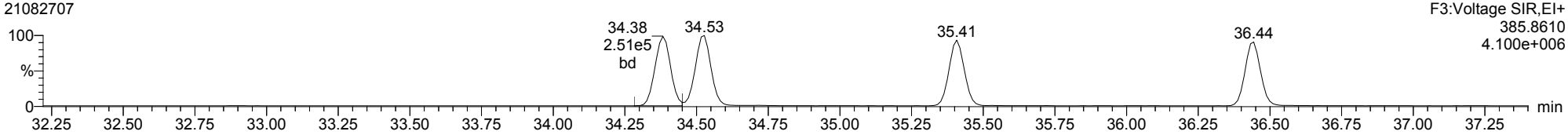

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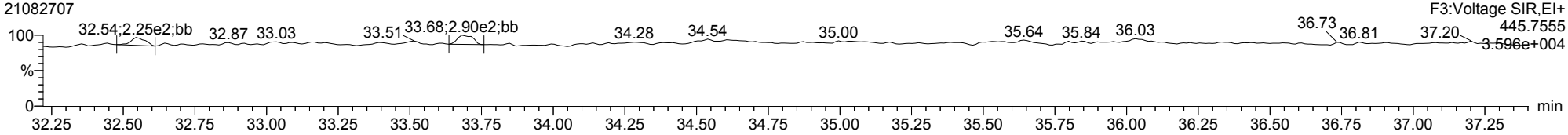

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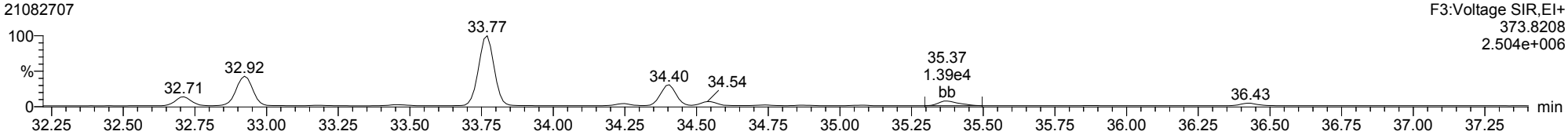
234678-HxCDF



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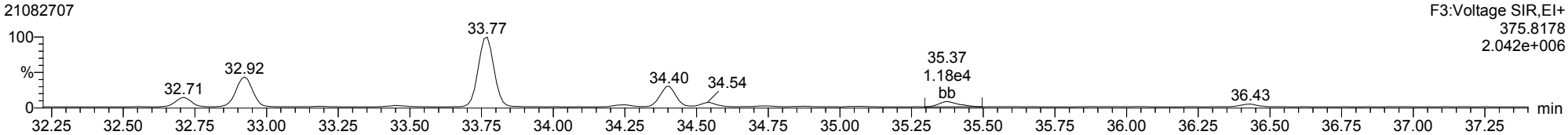

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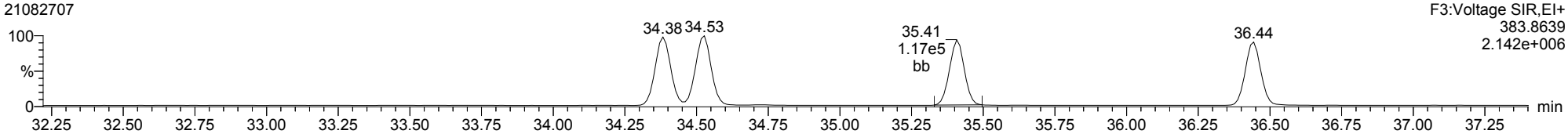

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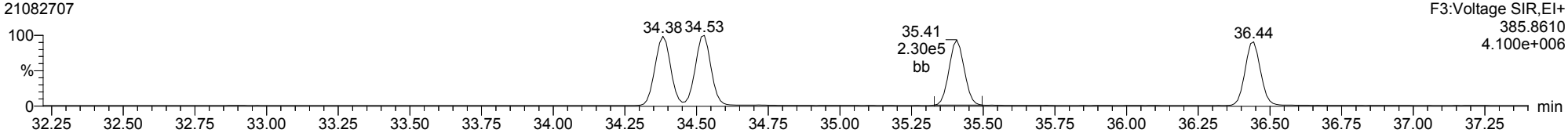

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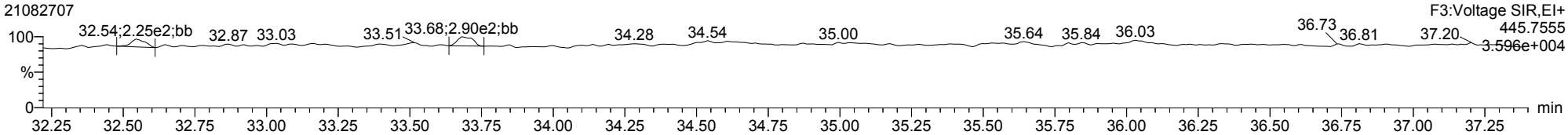

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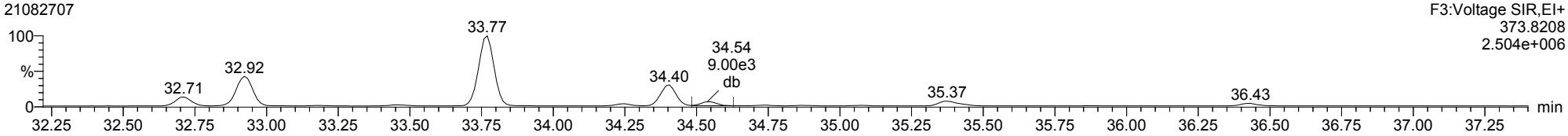

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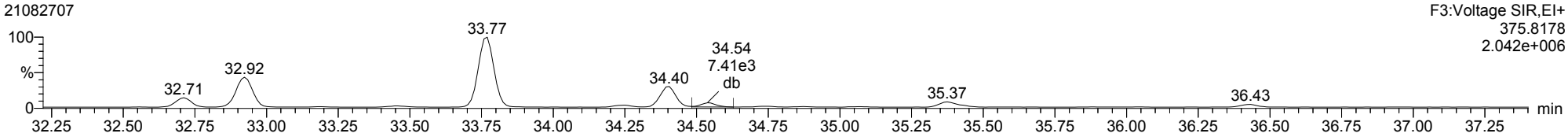

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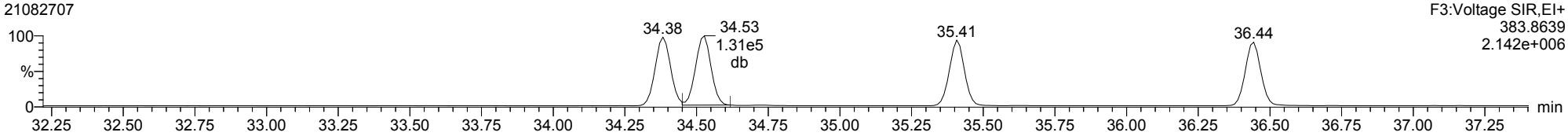

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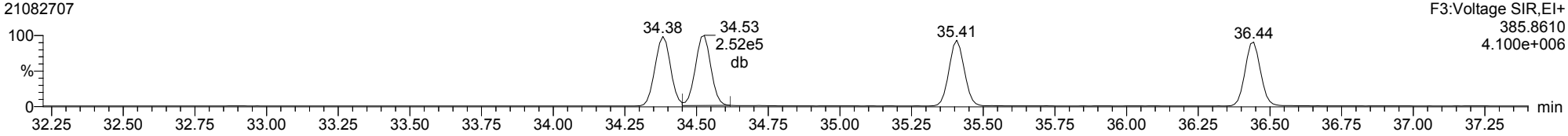

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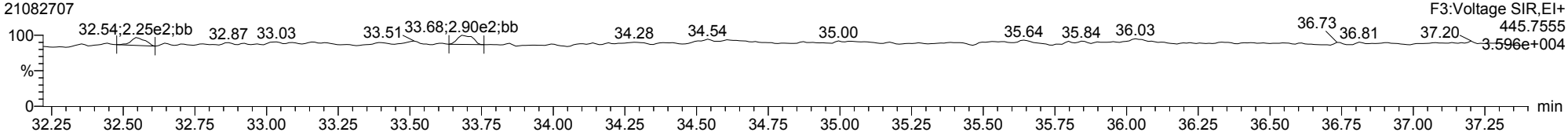

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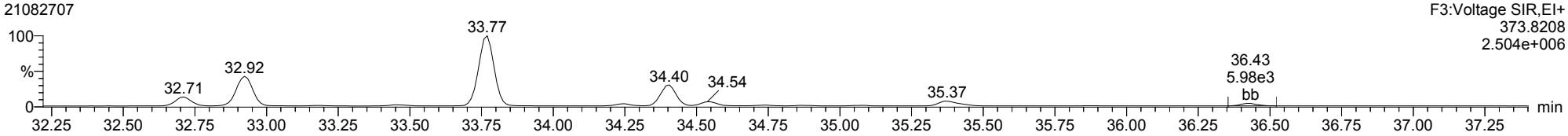

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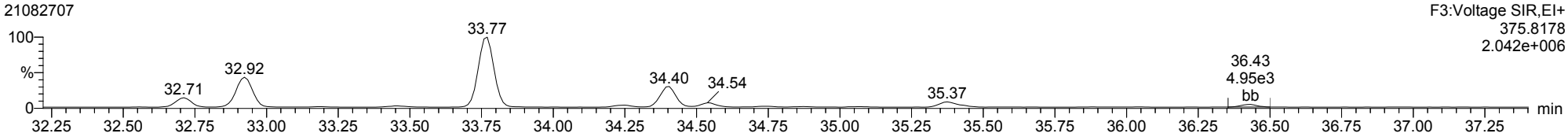

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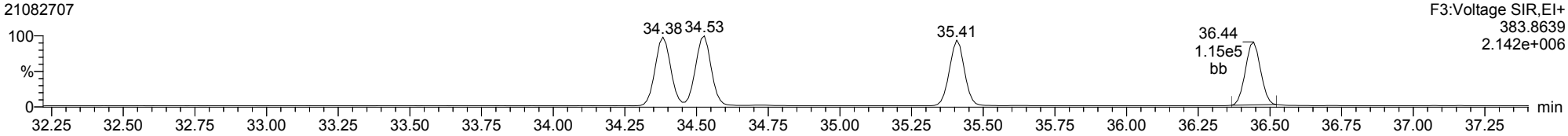

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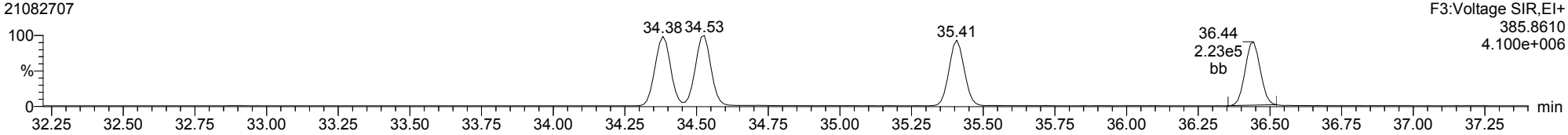
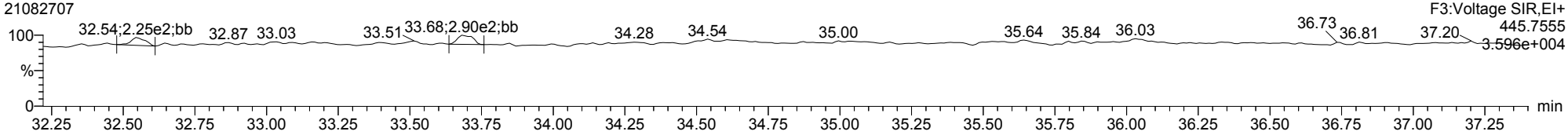


FUNCTION3 OCDPE



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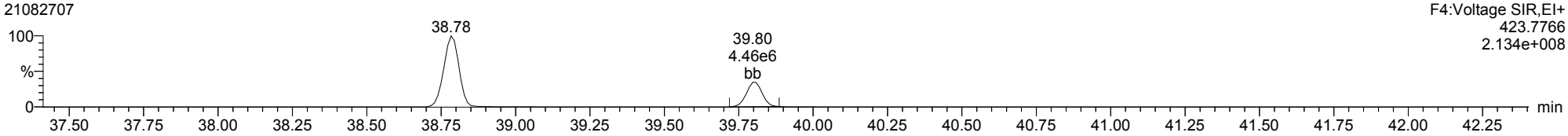

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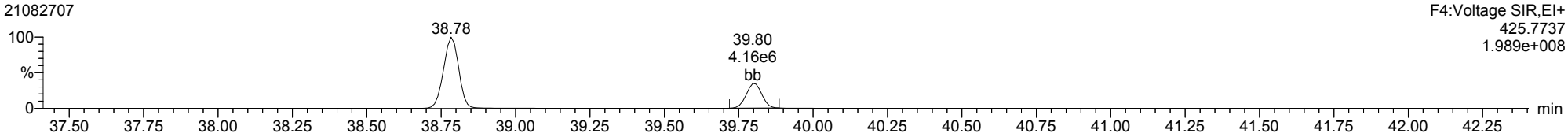

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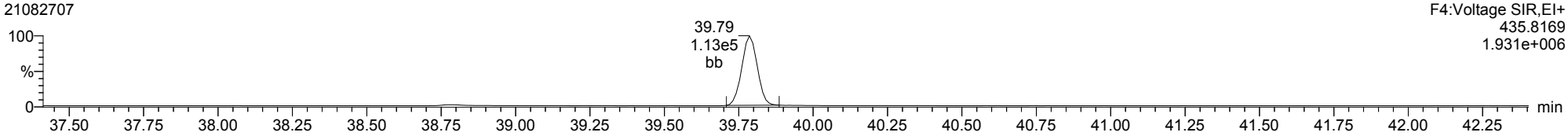

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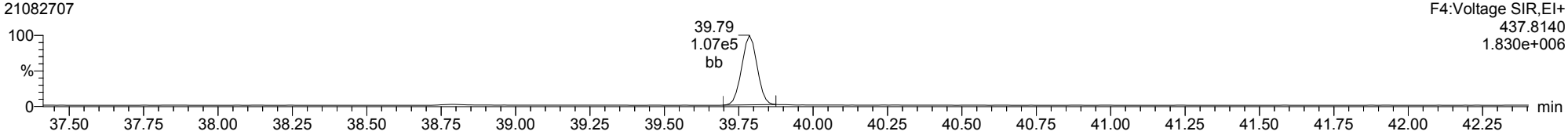
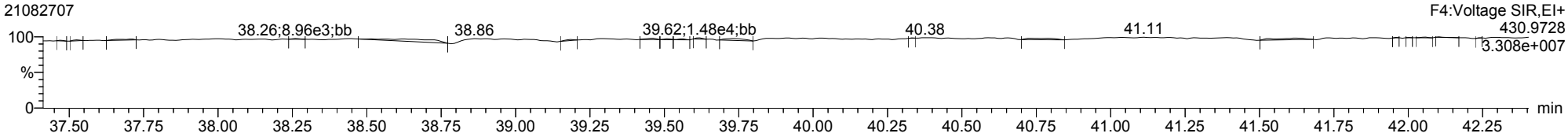


FUNCTION4 PFK



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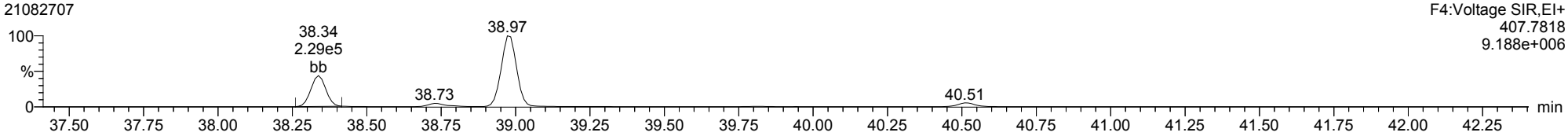

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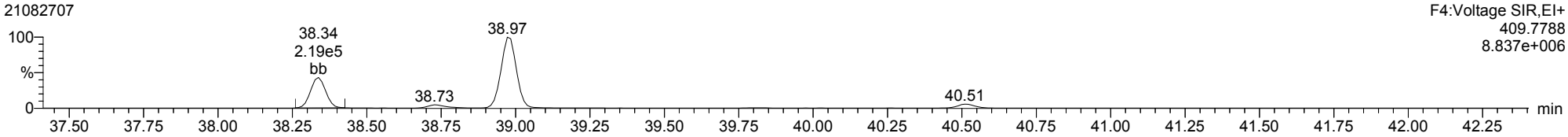

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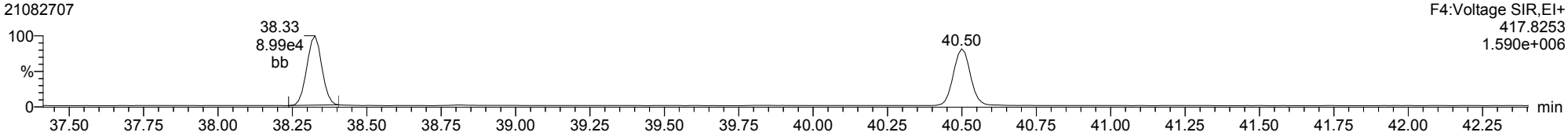

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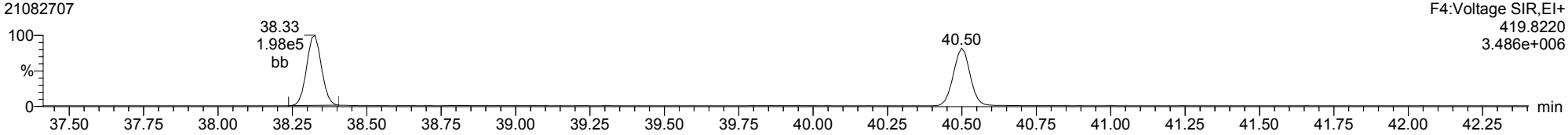
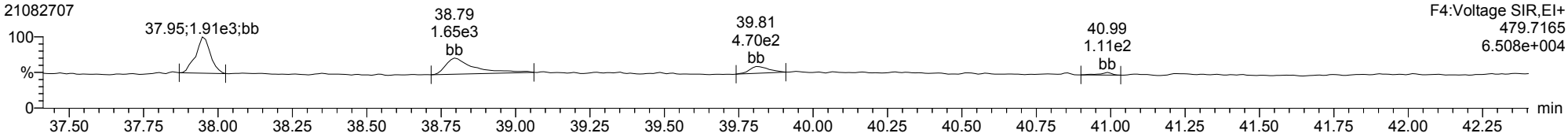
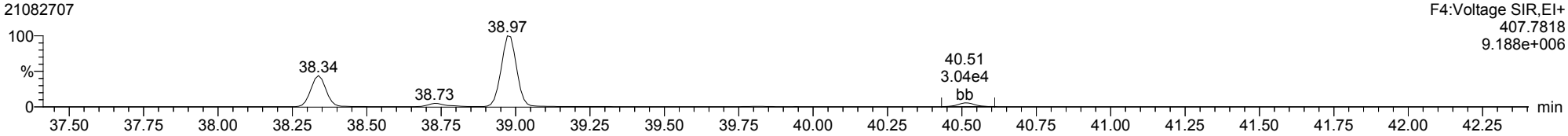


FUNCTION4 NCDPE

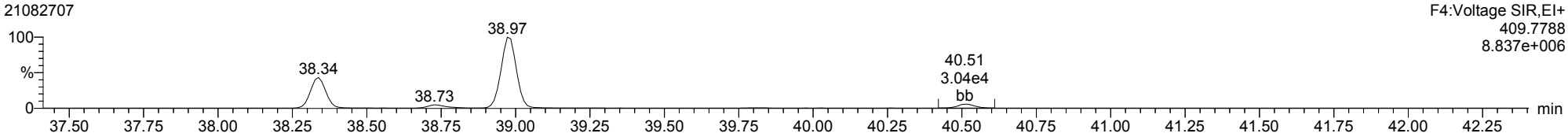


ID: BJG0465-DUP1, Name: 21082707, Date: 27-Aug-2021, Time: 09:42:13, Conditions: AUTOSPEC01, User: pk

1234789-HpCDF



1234789-HpCDF



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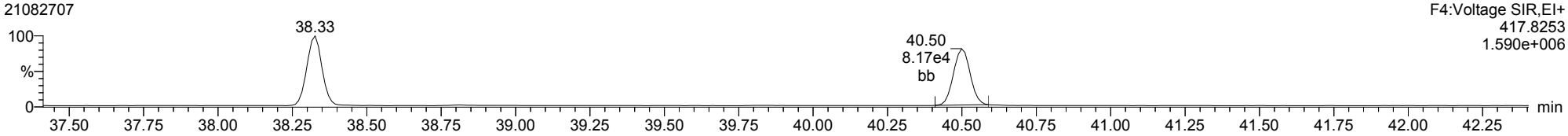

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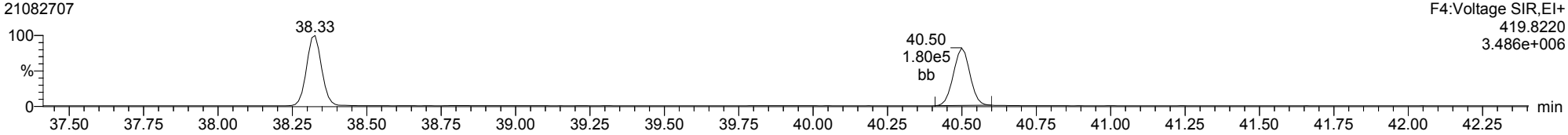
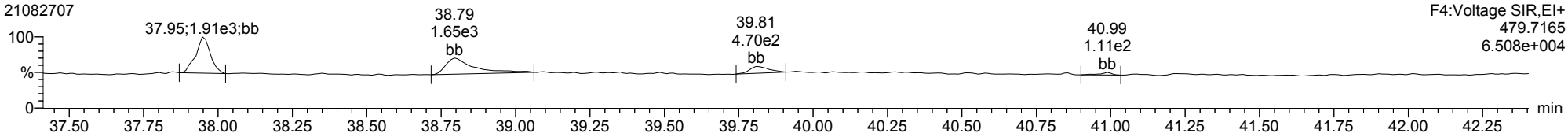
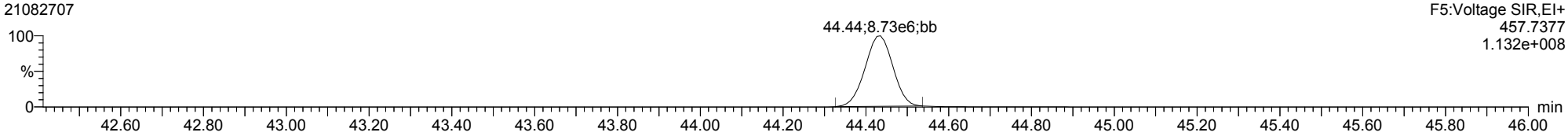


FUNCTION4 NCDPE



ID: BJG0465-DUP1, Name: 21082707, Date: 27-Aug-2021, Time: 09:42:13, Conditions: AUTOSPEC01, User: pk

OCDD



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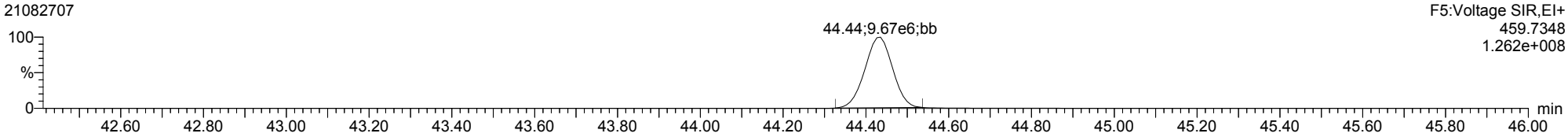

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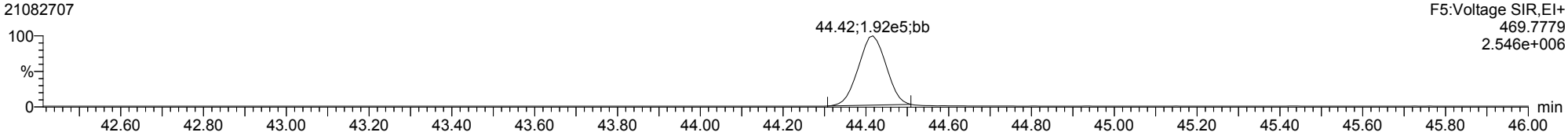

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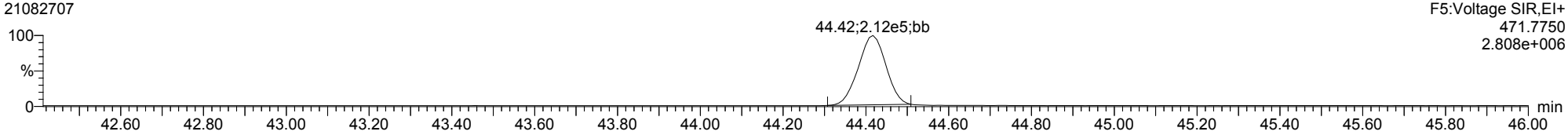
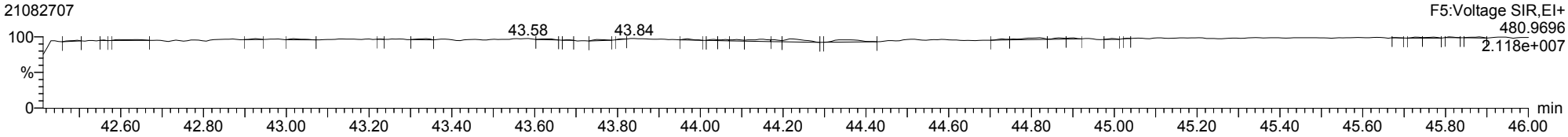
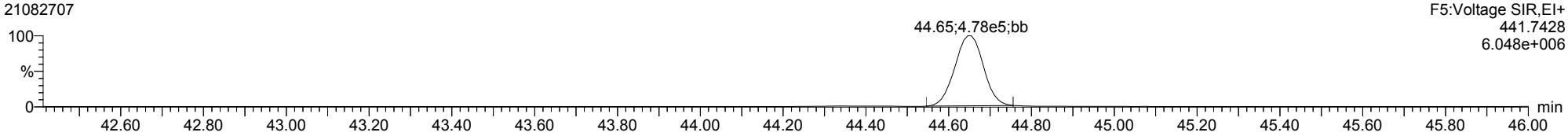


FUNCTION5 PFK



ID: BJG0465-DUP1, Name: 21082707, Date: 27-Aug-2021, Time: 09:42:13, Conditions: AUTOSPEC01, User: pk

OCDF



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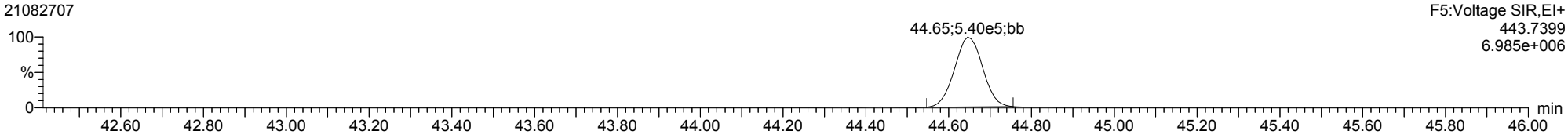
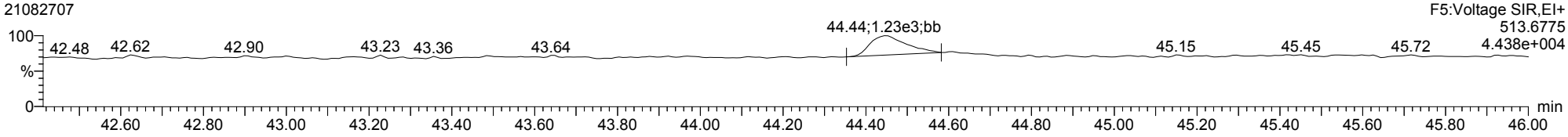
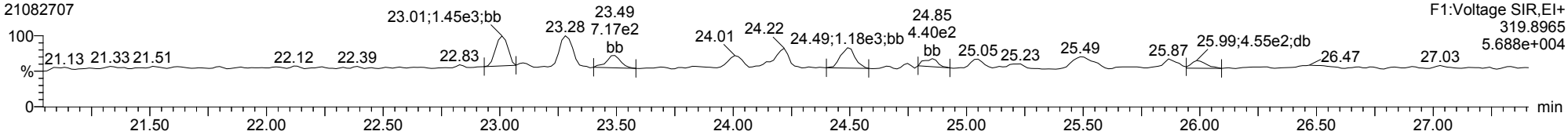


FUNCTION5 DCDPE

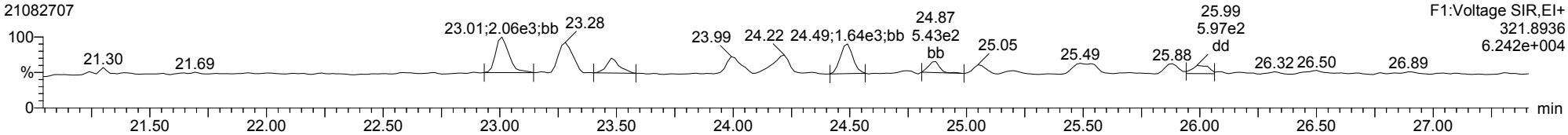


ID: BJG0465-DUP1, Name: 21082707, Date: 27-Aug-2021, Time: 09:42:13, Conditions: AUTOSPEC01, User: pk

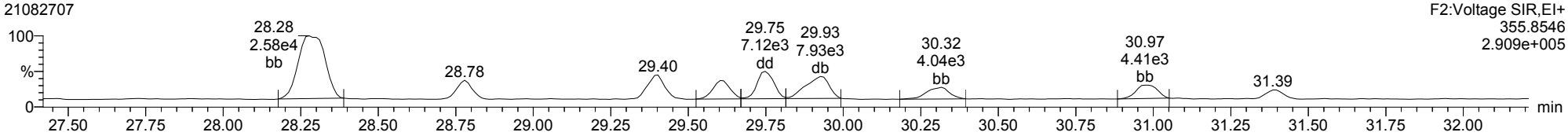
Total-tetradioxins



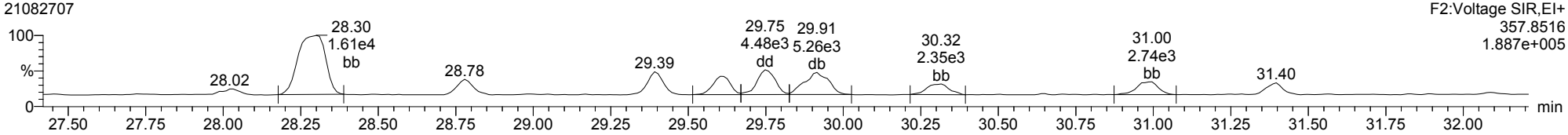
Total-tetradioxins



Total-pentadioxins

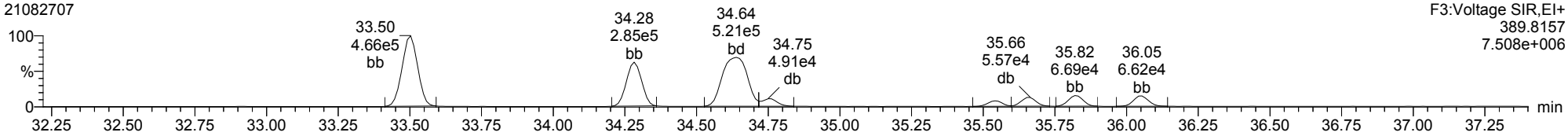


Total-pentadioxins

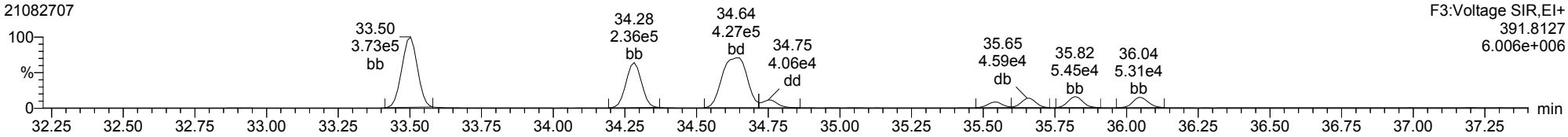


ID: BJG0465-DUP1, Name: 21082707, Date: 27-Aug-2021, Time: 09:42:13, Conditions: AUTOSPEC01, User: pk

Total-hexadioxins



Total-hexadioxins



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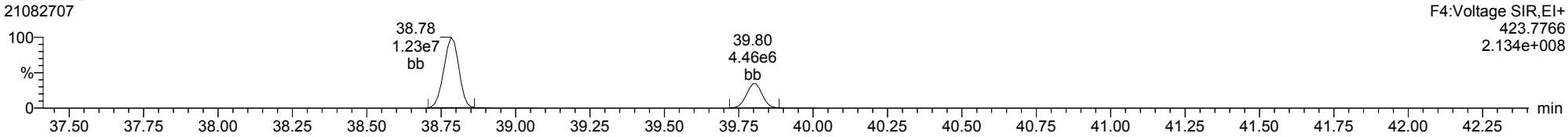
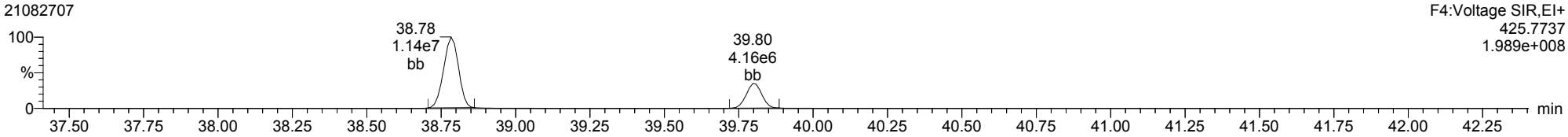


Total-heptadioxins



ID: BJG0465-DUP1, Name: 21082707, Date: 27-Aug-2021, Time: 09:42:13, Conditions: AUTOSPEC01, User: pk

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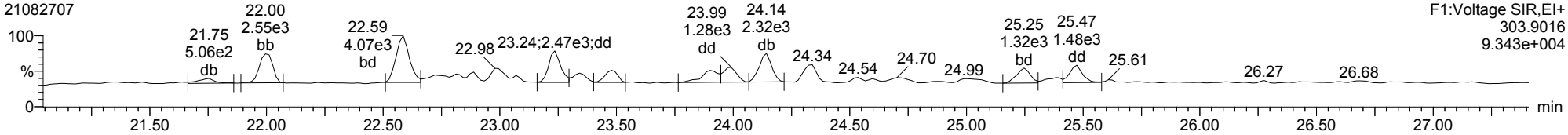

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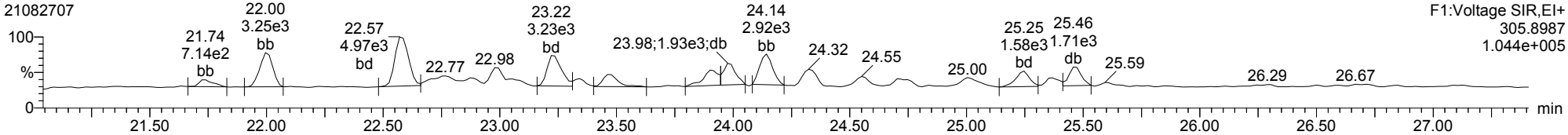

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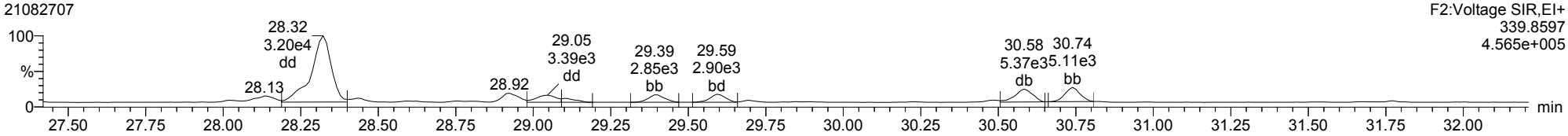

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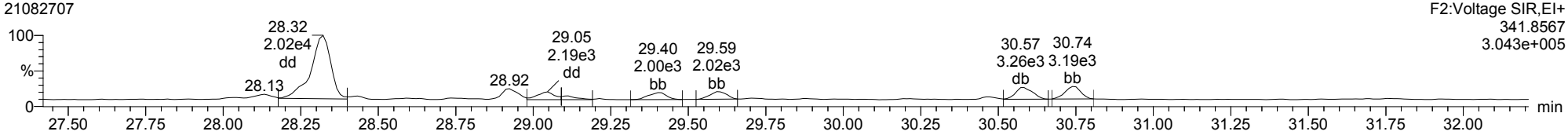

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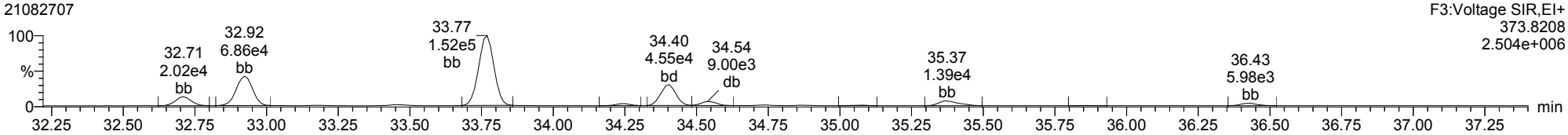

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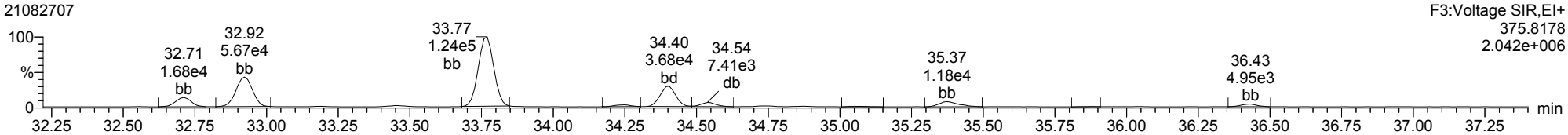
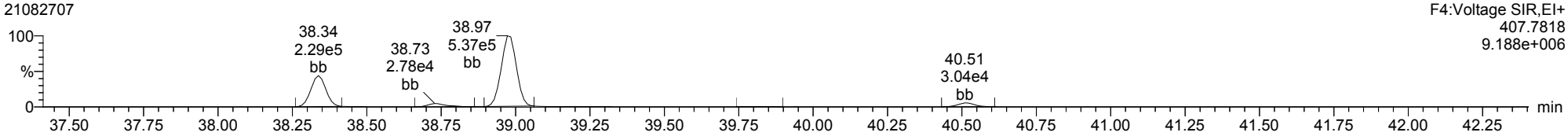
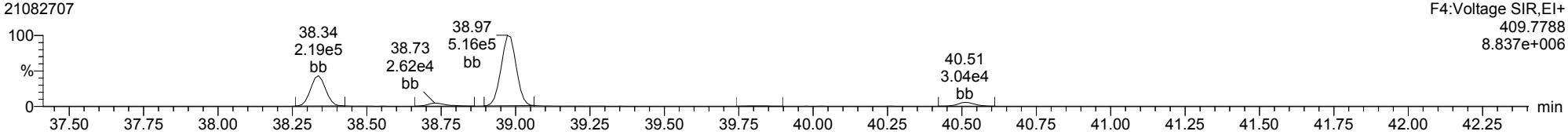


Total-heptafurans



Total-heptafurans



Analytical Resources, Incorporated
Analytical Chemists and Consultants

STANDARD REFERENCE MATERIAL RECOVERY

EPA 1613B

Laboratory: Analytical Resources, Inc.
SDG: 21G0108
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Matrix: Solid
Laboratory ID: BJG0465-SRM1
Batch: BJG0465
Initial/Final: 5.03 g / 20 uL
Preparation: EPA 8290
Analyzed: 08/27/2021 8:04
Standard ID: J006841
Expires: 12/28/2021
Standard Lot#: PSRM0135
Description: Puget Sound reference-SRM

ANALYTE	TRUE (ng/kg wet)	FOUND (ng/kg wet)	MDL	MRL	Q	SRM % REC.	QC LIMITS REC.
2,3,7,8-TCDF	1.1034	0.908	0.467	1.99	J	82.3	50 - 150
2,3,7,8-TCDD	1.0437	ND	0.477	1.99	*, U		50 - 150
1,2,3,7,8-PeCDF	1.2227	1.04	0.477	1.99	J	85.4	50 - 150
2,3,4,7,8-PeCDF	1.0636	1.04	0.437	1.99	J	97.4	50 - 150
1,2,3,7,8-PeCDD	1.0736	1.27	0.363	1.99	EMPC, J	119	50 - 150
1,2,3,4,7,8-HxCDF	3.0020	2.94	0.557	1.99		97.8	50 - 150
1,2,3,6,7,8-HxCDF	1.0835	1.04	0.398	1.99	J	96.3	50 - 150
2,3,4,6,7,8-HxCDF	1.8191	1.96	0.338	1.99	J	108	50 - 150
1,2,3,4,7,8-HxCDD	1.5805	1.55	0.345	1.99	J	98.0	50 - 150
1,2,3,6,7,8-HxCDD	3.8569	3.44	0.358	1.99		89.3	50 - 150
1,2,3,7,8,9-HxCDD	3.0219	2.93	0.437	1.99		97.0	50 - 150
1,2,3,4,6,7,8-HpCDF	18.588	20.1	0.417	1.99		108	50 - 150
1,2,3,4,7,8,9-HpCDF	1.6203	1.71	0.477	1.99	J	105	50 - 150
1,2,3,4,6,7,8-HpCDD	90.060	103	1.11	4.97		114	50 - 150
OCDF	58.052	55.7	2.19	4.97		95.9	50 - 150
OCDD	806.16	872	9.15	19.9	B	108	50 - 150

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D1.qld
Last Altered: Friday, August 27, 2021 13:00:30 Pacific Daylight Time
Printed: Friday, August 27, 2021 13:32:11 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: BJG0465-SRM1, Name: 21082705, Date: 27-Aug-2021, Time: 08:04:24, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.232	1.001	4.482e2	6.727e2	1.108	0.666	0.770	1624	1272	6.29e3	9.52e3	3.9	7.5	NO	bb	dd	0.228
12378-PeCDF	29.381	1.000	9.619e2	5.834e2	1.015	1.649	1.550	1746	1616	1.38e4	1.09e4	7.9	6.7	NO	MM	bd	0.263
23478-PeCDF	30.740	1.001	9.738e2	6.584e2	1.126	1.479	1.550	1746	1616	1.60e4	1.15e4	9.2	7.1	NO	db	db	0.261
123478-HxCDF	34.394	1.000	2.037e3	1.607e3	1.017	1.268	1.240	625	920	3.32e4	2.91e4	53.1	31.6	NO	bd	bd	0.739
234678-HxCDF	35.441	1.001	1.290e3	1.146e3	1.052	1.126	1.240	625	920	1.57e4	1.34e4	25.2	14.5	NO	bb	bb	0.494
123678-HxCDF	34.539	1.000	7.916e2	5.736e2	1.037	1.380	1.240	625	920	1.11e4	9.07e3	17.8	9.9	NO	MM	db	0.263
123789-HxCDF	36.433	1.000	2.626e2	2.440e2	1.030	1.076	1.240	625	920	5.97e3	5.92e3	9.5	6.4	NO	MM	MM	0.116
1234678-HpCDF	38.338	1.000	1.379e4	1.329e4	1.327	1.037	1.050	603	799	2.30e5	2.32e5	380.4	290.2	NO	bb	bb	5.055
1234789-HpCDF	40.511	1.000	1.001e3	9.555e2	1.283	1.048	1.050	603	799	1.78e4	1.30e4	29.5	16.2	NO	bb	bb	0.429
OCDF	44.647	1.005	2.704e4	2.887e4	1.447	0.937	0.890	822	909	3.48e5	3.51e5	424.0	386.2	NO	bb	bb	14.008
2378-TCDD					0.920		0.770	1392	720								
12378-PeCDD	30.996	1.001	7.339e2	3.373e2	0.995	2.176	1.550	801	763	1.12e4	6.37e3	13.9	8.3	YES	bb	bb	0.320
123478-HxCDD	35.564	1.001	9.004e2	8.233e2	1.027	1.094	1.240	978	1104	1.58e4	1.51e4	16.2	13.7	NO	bd	bb	0.389
123678-HxCDD	35.664	1.000	2.216e3	1.560e3	1.009	1.420	1.240	978	1104	3.92e4	3.02e4	40.1	27.3	NO	db	bb	0.866
123789-HxCDD	36.054	1.011	1.650e3	1.373e3	0.950	1.202	1.240	978	1104	2.45e4	2.59e4	25.0	23.4	NO	bb	MM	0.737
1234678-HpCDD	39.798	1.000	4.372e4	4.158e4	1.068	1.051	1.050	1271	1126	7.21e5	6.59e5	567.3	585.6	NO	bb	bb	25.787
OCDD	44.427	1.000	3.384e5	3.757e5	1.181	0.901	0.890	884	1294	4.35e6	4.79e6	4924.0	3704.1	NO	bb	bb	219.268
13C-2378-TCDF	25.216	1.007	1.964e5	2.469e5	1.427	0.795	0.770	2771	2018	2.96e6	3.71e6	1068.5	1838.1	NO	bb	bb	62.582
13C-12378-PeCDF	29.381	1.174	3.580e5	2.219e5	1.297	1.614	1.550	2024	1631	5.48e6	3.40e6	2707.5	2087.0	NO	bb	bb	90.031
13C-23478-PeCDF	30.718	1.227	3.441e5	2.124e5	1.236	1.620	1.550	2024	1631	5.15e6	3.23e6	2545.6	1978.5	NO	bb	bb	90.643
13C-123478-HxCDF	34.383	0.954	1.648e5	3.204e5	1.242	0.514	0.510	1258	2555	2.48e6	4.85e6	1973.3	1898.4	NO	bd	bd	71.239
13C-123678-HxCDF	34.528	0.958	1.704e5	3.312e5	1.343	0.515	0.510	1258	2555	2.59e6	5.12e6	2058.4	2002.2	NO	db	db	68.103
13C-234678-HxCDF	35.419	0.983	1.589e5	3.100e5	1.215	0.512	0.510	1258	2555	2.49e6	4.78e6	1982.0	1872.5	NO	bb	bb	70.400
13C-123789-HxCDF	36.444	1.011	1.449e5	2.787e5	1.008	0.520	0.510	1258	2555	2.31e6	4.55e6	1835.8	1782.7	NO	bb	bb	76.680
13C-1234678-HpCDF	38.327	1.063	1.258e5	2.778e5	0.926	0.453	0.440	1358	1606	2.14e6	4.72e6	1572.0	2937.3	NO	bb	bb	79.455
13C-1234789-HpCDF	40.499	1.124	1.130e5	2.421e5	0.758	0.467	0.440	1358	1606	1.70e6	3.66e6	1254.3	2276.6	NO	bd	bb	85.468
13C-1234-TCDD	25.035	0.000	2.166e5	2.799e5	1.000	0.774	0.770	1951	1137	3.34e6	4.30e6	1711.7	3783.1	NO	bb	bb	100.000
13C-2378-TCDD	25.851	1.033	1.663e5	2.192e5	1.116	0.759	0.770	1951	1137	2.48e6	3.29e6	1269.7	2898.3	NO	bb	bb	69.533
13C-12378-PeCDD	30.974	1.237	2.057e5	1.305e5	0.732	1.576	1.550	963	956	3.16e6	2.01e6	3283.5	2098.0	NO	bb	bb	92.487
13C-123478-HxCDD	35.542	0.986	2.425e5	1.883e5	0.960	1.288	1.240	1123	928	3.95e6	3.10e6	3517.8	3338.6	NO	bd	bd	81.874
13C-123678-HxCDD	35.653	0.989	2.402e5	1.919e5	1.041	1.251	1.240	1123	928	3.90e6	3.13e6	3473.4	3372.7	NO	db	db	75.691
13C-1234678-HpCDD	39.786	1.104	1.588e5	1.509e5	0.632	1.053	1.050	1276	984	2.42e6	2.30e6	1899.3	2341.6	NO	bd	bd	89.330
13C-OCDD	44.409	1.232	2.640e5	2.877e5	0.504	0.918	0.890	1481	1178	3.43e6	3.70e6	2315.0	3142.0	NO	bb	bb	199.764
13C-123789-HxCDD	36.043	0.000	3.058e5	2.424e5	1.000	1.262	1.240	1123	928	5.23e6	4.10e6	4658.9	4414.6	NO	bb	bb	100.000
37CL-2378-TCDD	25.882	1.034	1.550e5		1.084			1226		2.30e6		1877.4			bb		28.810

Dataset: T:\Autospec\Processed Data Batch\210827D1.qld
Last Altered: Friday, August 27, 2021 13:00:30 Pacific Daylight Time
Printed: Friday, August 27, 2021 13:32:11 Pacific Daylight Time

ID: BJG0465-SRM1, Name: 21082705, Date: 27-Aug-2021, Time: 08:04:24, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	21.890	0.868	1.819e2	9.733e1	1.425	1.869	0.770	1624	1272	4.28e3	2.20e3	2.6	1.7	YES	bb	bd	0.044
1289-TCDF					1.043		0.770	1624	1272								
13468-PECDF	26.668	0.908	5.137e3	3.148e3	1.376	1.632	1.550	758	1261	6.81e4	4.47e4	89.8	35.4	NO	db	db	1.038
12389-PECDF					1.000		1.550	1746	1616								
123468-HXCDF	32.712	0.951	1.900e3	1.787e3	1.087	1.064	1.240	625	920	2.70e4	2.53e4	43.2	27.5	NO	bb	bb	0.699
1368-TCDD	22.994	0.890	2.214e2	3.769e2	0.923	0.587	0.770	1392	720	4.29e3	5.75e3	3.1	8.0	YES	bb	bd	0.168
1289-TCDD					0.794		0.770	1392	720								
12479-PECDD	28.289	0.913	6.792e2	3.681e2	1.843	1.845	1.550	801	763	1.26e4	7.99e3	15.7	10.5	YES	bd	bd	0.169
12389-PECDD					1.154		1.550	801	763								
124679-HXCDD	33.492	0.942	5.578e3	4.622e3	1.125	1.207	1.240	978	1104	8.17e4	7.23e4	83.5	65.5	NO	bb	bb	2.105
1234679-HPCDD	38.784	0.975	6.542e4	5.872e4	1.211	1.114	1.050	1271	1126	1.10e6	9.74e5	868.0	865.3	NO	bb	bb	33.101
Total-tetrafurans			2.186e3		1.192			1624		3.22e4							0.995
Total-penta1			5.694e3					758		7.55e4							1.211
Total-pentafurans			1.936e3		1.047			1746		2.98e4							0.523
Total-hexafurans			2.010e4		1.045			625		2.95e5							7.303
Total-heptafurans			4.169e4		1.305			603		6.84e5							15.953
Total-Furans			9.896e4		1.158			1624		1.47e6							40.132
Total-tetradioxins			0.000e0		0.879			1392		0.00e0							
Total-pentadioxins			1.236e3		1.331			801		2.26e4							0.447
Total-hexadioxins			1.965e4		1.028			978		2.73e5							7.710
Total-heptadioxins			1.091e5		1.140			1271		1.82e6							58.888
Total-Dioxins			4.684e5		1.092			1392		6.47e6							286.314
Total-TEQ			5.674e5					1392		7.94e6							326.447
FUNCTION1 PFK			4.204e6					709432		4.17e7							
FUNCTION2 PFK			4.501e6					501704		2.03e7							0.000
FUNCTION3 PFK			5.843e6					497765		1.05e7							0.000
FUNCTION4 PFK			5.952e5					439811		1.55e7							
FUNCTION5 PFK			4.443e4					245494		1.09e6							
FUNCTION1 HXCD...			7.886e2					672		1.21e4							0.000
FUNCTION1 HPCD...			2.983e3					882		5.70e4							0.000
FUNCTION2 HPCD...			4.548e2					777		7.76e3							0.000
FUNCTION3 OCDPE			4.326e2					584		7.01e3							0.000
FUNCTION4 NCDPE			3.534e3					938		6.38e4							0.000
FUNCTION5 DCDPE			0.000e0					609		0.00e0							

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: BJG0465-SRM1, Name: 21082705, Date: 27-Aug-2021, Time: 08:04:24, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.32	6.357e2	8.753e2	1.192	0.73	0.77	6.2	YES	NO	db	bb	0.286
2	Total-tetrafurans	24.14	5.983e2	7.074e2	1.192	0.85	0.77	5.4	YES	NO	dd	bb	0.247
3	Total-tetrafurans	23.48	5.035e2	7.314e2	1.192	0.69	0.77	4.4	YES	NO	dd	dd	0.234
4	2378-TCDF	25.23	4.482e2	6.727e2	1.108	0.67	0.77	3.9	YES	NO	bb	dd	0.228

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-penta1	26.53	5.572e2	3.634e2		1.53	1.55	9.8	YES	NO	bd	bd	0.173
2	13468-PECDF	26.67	5.137e3	3.148e3	1.376	1.63	1.55	89.8	YES	NO	db	db	1.038

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12378-PeCDF	29.38	9.619e2	5.834e2	1.015	1.65	1.55	7.9	YES	NO	MM	bd	0.263
2	23478-PeCDF	30.74	9.738e2	6.584e2	1.126	1.48	1.55	9.2	YES	NO	db	db	0.261

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.43	2.626e2	2.440e2	1.030	1.08	1.24	9.5	YES	NO	MM	MM	0.116
2	234678-HxCDF	35.44	1.290e3	1.146e3	1.052	1.13	1.24	25.2	YES	NO	bb	bb	0.494
3	123678-HxCDF	34.54	7.916e2	5.736e2	1.037	1.38	1.24	17.8	YES	NO	MM	db	0.263
4	123478-HxCDF	34.39	2.037e3	1.607e3	1.017	1.27	1.24	53.1	YES	NO	bd	bd	0.739
5	Total-hexafurans	33.77	7.181e3	5.984e3	1.045	1.20	1.24	170.7	YES	NO	bb	bb	2.683
6	Total-hexafurans	32.92	6.635e3	4.701e3	1.045	1.41	1.24	151.9	YES	NO	bb	bb	2.310
7	123468-HXCDF	32.71	1.900e3	1.787e3	1.087	1.06	1.24	43.2	YES	NO	bb	bb	0.699

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.34	1.379e4	1.329e4	1.327	1.04	1.05	380.4	YES	NO	bb	bb	5.055
2	1234789-HpCDF	40.51	1.001e3	9.555e2	1.283	1.05	1.05	29.5	YES	NO	bb	bb	0.429
3	Total-heptafurans	38.97	2.690e4	2.494e4	1.305	1.08	1.05	723.3	YES	NO	bd	bb	10.468

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.32	6.357e2	8.753e2	1.192	0.73	0.77	6.2	YES	NO	db	bb	0.286
2	Total-tetrafurans	24.14	5.983e2	7.074e2	1.192	0.85	0.77	5.4	YES	NO	dd	bb	0.247
3	Total-tetrafurans	23.48	5.035e2	7.314e2	1.192	0.69	0.77	4.4	YES	NO	dd	dd	0.234
4	Total-Furans	27.32	3.276e2	3.868e2	1.158	0.85	0.77	1.9	NO	NO	bb	bb	0.139
5	2378-TCDF	25.23	4.482e2	6.727e2	1.108	0.67	0.77	3.9	YES	NO	bb	dd	0.228
6	12378-PeCDF	29.38	9.619e2	5.834e2	1.015	1.65	1.55	7.9	YES	NO	MM	bd	0.263
7	23478-PeCDF	30.74	9.738e2	6.584e2	1.126	1.48	1.55	9.2	YES	NO	db	db	0.261
8	123789-HxCDF	36.43	2.626e2	2.440e2	1.030	1.08	1.24	9.5	YES	NO	MM	MM	0.116
9	234678-HxCDF	35.44	1.290e3	1.146e3	1.052	1.13	1.24	25.2	YES	NO	bb	bb	0.494
10	123678-HxCDF	34.54	7.916e2	5.736e2	1.037	1.38	1.24	17.8	YES	NO	MM	db	0.263
11	123478-HxCDF	34.39	2.037e3	1.607e3	1.017	1.27	1.24	53.1	YES	NO	bd	bd	0.739
12	Total-hexafurans	33.77	7.181e3	5.984e3	1.045	1.20	1.24	170.7	YES	NO	bb	bb	2.683
13	Total-hexafurans	32.92	6.635e3	4.701e3	1.045	1.41	1.24	151.9	YES	NO	bb	bb	2.310
14	123468-HXCDF	32.71	1.900e3	1.787e3	1.087	1.06	1.24	43.2	YES	NO	bb	bb	0.699
15	1234678-HpCDF	38.34	1.379e4	1.329e4	1.327	1.04	1.05	380.4	YES	NO	bb	bb	5.055
16	1234789-HpCDF	40.51	1.001e3	9.555e2	1.283	1.05	1.05	29.5	YES	NO	bb	bb	0.429
17	Total-heptafurans	38.97	2.690e4	2.494e4	1.305	1.08	1.05	723.3	YES	NO	bd	bb	10.468
18	OCDF	44.65	2.704e4	2.887e4	1.447	0.94	0.89	424.0	YES	NO	bb	bb	14.008
19	Total-penta1	26.53	5.572e2	3.634e2		1.53	1.55	9.8	YES	NO	bd	bd	0.173
20	13468-PECDF	26.67	5.137e3	3.148e3	1.376	1.63	1.55	89.8	YES	NO	db	db	1.038

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentadioxins	28.32	6.789e2	4.479e2	1.331	1.52	1.55	17.9	YES	NO	dd	db	0.252
2	Total-pentadioxins	29.60	5.572e2	3.170e2	1.331	1.76	1.55	10.4	YES	NO	bd	bb	0.195

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HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-hexadioxins	34.75	4.619e2	3.447e2	1.028	1.34	1.24	12.0	YES	NO	dd	dd	0.182
2	Total-hexadioxins	34.65	7.525e3	5.417e3	1.028	1.39	1.24	82.2	YES	NO	bd	bd	2.918
3	Total-hexadioxins	34.28	1.323e3	9.524e2	1.028	1.39	1.24	19.8	YES	NO	bd	bd	0.513
4	124679-HXCDD	33.49	5.578e3	4.622e3	1.125	1.21	1.24	83.5	YES	NO	bb	bb	2.105
5	123789-HxCDD	36.05	1.650e3	1.373e3	0.950	1.20	1.24	25.0	YES	NO	bb	MM	0.737
6	123678-HxCDD	35.66	2.216e3	1.560e3	1.009	1.42	1.24	40.1	YES	NO	db	bb	0.866
7	123478-HxCDD	35.56	9.004e2	8.233e2	1.027	1.09	1.24	16.2	YES	NO	bd	bb	0.389

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.80	4.372e4	4.158e4	1.068	1.05	1.05	567.3	YES	NO	bb	bb	25.787
2	1234679-HPCDD	38.78	6.542e4	5.872e4	1.211	1.11	1.05	868.0	YES	NO	bb	bb	33.101

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentadioxins	28.32	6.789e2	4.479e2	1.331	1.52	1.55	17.9	YES	NO	dd	db	0.252
2	Total-pentadioxins	29.60	5.572e2	3.170e2	1.331	1.76	1.55	10.4	YES	NO	bd	bb	0.195
3	Total-hexadioxins	34.75	4.619e2	3.447e2	1.028	1.34	1.24	12.0	YES	NO	dd	dd	0.182
4	Total-hexadioxins	34.65	7.525e3	5.417e3	1.028	1.39	1.24	82.2	YES	NO	bd	bd	2.918
5	Total-hexadioxins	34.28	1.323e3	9.524e2	1.028	1.39	1.24	19.8	YES	NO	bd	bd	0.513
6	124679-HXCDD	33.49	5.578e3	4.622e3	1.125	1.21	1.24	83.5	YES	NO	bb	bb	2.105
7	123789-HxCDD	36.05	1.650e3	1.373e3	0.950	1.20	1.24	25.0	YES	NO	bb	MM	0.737
8	123678-HxCDD	35.66	2.216e3	1.560e3	1.009	1.42	1.24	40.1	YES	NO	db	bb	0.866
9	123478-HxCDD	35.56	9.004e2	8.233e2	1.027	1.09	1.24	16.2	YES	NO	bd	bb	0.389
10	1234678-HpCDD	39.80	4.372e4	4.158e4	1.068	1.05	1.05	567.3	YES	NO	bb	bb	25.787
11	1234679-HPCDD	38.78	6.542e4	5.872e4	1.211	1.11	1.05	868.0	YES	NO	bb	bb	33.101
12	OCDD	44.43	3.384e5	3.757e5	1.181	0.90	0.89	4924.0	YES	NO	bb	bb	219.268

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetrafurans	24.32	6.357e2	8.753e2	1.192	0.73	0.77	6.2	YES	NO	db	bb	0.286
2	Total-tetrafurans	24.14	5.983e2	7.074e2	1.192	0.85	0.77	5.4	YES	NO	dd	bb	0.247
3	Total-tetrafurans	23.48	5.035e2	7.314e2	1.192	0.69	0.77	4.4	YES	NO	dd	dd	0.234
4	Total-Furans	27.32	3.276e2	3.868e2	1.158	0.85	0.77	1.9	NO	NO	bb	bb	0.139
5	2378-TCDF	25.23	4.482e2	6.727e2	1.108	0.67	0.77	3.9	YES	NO	bb	dd	0.228
6	12378-PeCDF	29.38	9.619e2	5.834e2	1.015	1.65	1.55	7.9	YES	NO	MM	bd	0.263
7	23478-PeCDF	30.74	9.738e2	6.584e2	1.126	1.48	1.55	9.2	YES	NO	db	db	0.261
8	123789-HxCDF	36.43	2.626e2	2.440e2	1.030	1.08	1.24	9.5	YES	NO	MM	MM	0.116
9	234678-HxCDF	35.44	1.290e3	1.146e3	1.052	1.13	1.24	25.2	YES	NO	bb	bb	0.494
10	123678-HxCDF	34.54	7.916e2	5.736e2	1.037	1.38	1.24	17.8	YES	NO	MM	db	0.263
11	123478-HxCDF	34.39	2.037e3	1.607e3	1.017	1.27	1.24	53.1	YES	NO	bd	bd	0.739
12	Total-hexafurans	33.77	7.181e3	5.984e3	1.045	1.20	1.24	170.7	YES	NO	bb	bb	2.683
13	Total-hexafurans	32.92	6.635e3	4.701e3	1.045	1.41	1.24	151.9	YES	NO	bb	bb	2.310
14	123468-HXCDF	32.71	1.900e3	1.787e3	1.087	1.06	1.24	43.2	YES	NO	bb	bb	0.699
15	1234678-HpCDF	38.34	1.379e4	1.329e4	1.327	1.04	1.05	380.4	YES	NO	bb	bb	5.055
16	1234789-HpCDF	40.51	1.001e3	9.555e2	1.283	1.05	1.05	29.5	YES	NO	bb	bb	0.429
17	Total-heptafurans	38.97	2.690e4	2.494e4	1.305	1.08	1.05	723.3	YES	NO	bd	bb	10.468
18	OCDF	44.65	2.704e4	2.887e4	1.447	0.94	0.89	424.0	YES	NO	bb	bb	14.008
19	Total-penta1	26.53	5.572e2	3.634e2		1.53	1.55	9.8	YES	NO	bd	bd	0.173
20	13468-PECDF	26.67	5.137e3	3.148e3	1.376	1.63	1.55	89.8	YES	NO	db	db	1.038
21	Total-pentadioxins	28.32	6.789e2	4.479e2	1.331	1.52	1.55	17.9	YES	NO	dd	db	0.252
22	Total-pentadioxins	29.60	5.572e2	3.170e2	1.331	1.76	1.55	10.4	YES	NO	bd	bb	0.195
23	Total-hexadioxins	34.75	4.619e2	3.447e2	1.028	1.34	1.24	12.0	YES	NO	dd	dd	0.182
24	Total-hexadioxins	34.65	7.525e3	5.417e3	1.028	1.39	1.24	82.2	YES	NO	bd	bd	2.918
25	Total-hexadioxins	34.28	1.323e3	9.524e2	1.028	1.39	1.24	19.8	YES	NO	bd	bd	0.513
26	124679-HXCDD	33.49	5.578e3	4.622e3	1.125	1.21	1.24	83.5	YES	NO	bb	bb	2.105
27	123789-HxCDD	36.05	1.650e3	1.373e3	0.950	1.20	1.24	25.0	YES	NO	bb	MM	0.737
28	123678-HxCDD	35.66	2.216e3	1.560e3	1.009	1.42	1.24	40.1	YES	NO	db	bb	0.866
29	123478-HxCDD	35.56	9.004e2	8.233e2	1.027	1.09	1.24	16.2	YES	NO	bd	bb	0.389
30	1234678-HpCDD	39.80	4.372e4	4.158e4	1.068	1.05	1.05	567.3	YES	NO	bb	bb	25.787
31	1234679-HPCDD	38.78	6.542e4	5.872e4	1.211	1.11	1.05	868.0	YES	NO	bb	bb	33.101
32	OCDD	44.43	3.384e5	3.757e5	1.181	0.90	0.89	4924.0	YES	NO	bb	bb	219.268

ID: BJG0465-SRM1, Name: 21082705, Date: 27-Aug-2021, Time: 08:04:24, Conditions: AUTOSPEC01, User: pk

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.84	9.181e4					1.5	NO		bb		
2	FUNCTION1 PFK	22.57	3.822e4					1.6	NO		bb		
3	FUNCTION1 PFK	22.51	2.537e4					1.3	NO		bb		
4	FUNCTION1 PFK	22.43	5.835e4					1.5	NO		bb		
5	FUNCTION1 PFK	21.75	1.765e6					7.2	YES		bb		
6	FUNCTION1 PFK	21.45	5.479e5					9.9	YES		db		
7	FUNCTION1 PFK	21.39	5.469e5					7.8	YES		dd		
8	FUNCTION1 PFK	21.24	1.311e5					3.7	YES		dd		
9	FUNCTION1 PFK	21.16	2.282e4					0.9	NO		bd		
10	FUNCTION1 PFK	27.02	2.710e5					3.6	YES		bb		
11	FUNCTION1 PFK	26.85	1.437e5					3.6	YES		db		
12	FUNCTION1 PFK	26.64	1.688e5					1.9	NO		bd		
13	FUNCTION1 PFK	26.46	3.611e4					1.3	NO		bb		
14	FUNCTION1 PFK	26.27	3.951e4					1.5	NO		bb		
15	FUNCTION1 PFK	26.08	1.356e4					0.7	NO		bb		
16	FUNCTION1 PFK	25.53	2.745e4					1.1	NO		bb		
17	FUNCTION1 PFK	25.11	6.737e4					1.4	NO		bb		
18	FUNCTION1 PFK	24.79	4.963e3					0.5	NO		bb		
19	FUNCTION1 PFK	24.67	6.260e3					0.6	NO		bb		
20	FUNCTION1 PFK	24.60	4.108e4					1.6	NO		bb		
21	FUNCTION1 PFK	24.17	5.717e4					1.8	NO		db		
22	FUNCTION1 PFK	24.11	3.641e4					1.5	NO		bd		
23	FUNCTION1 PFK	24.04	3.770e4					1.1	NO		bb		
24	FUNCTION1 PFK	23.70	1.297e4					0.8	NO		bb		
25	FUNCTION1 PFK	23.51	1.278e4					0.8	NO		bb		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	32.05	5.366e4					2.1	NO		bb		0.000
2	FUNCTION2 PFK	31.85	1.246e5					2.7	NO		bb		0.000
3	FUNCTION2 PFK	31.64	3.486e5					5.3	YES		bb		0.000
4	FUNCTION2 PFK	30.57	6.948e4					2.6	NO		bb		0.000
5	FUNCTION2 PFK	29.10	9.519e5					5.2	YES		bb		0.000
6	FUNCTION2 PFK	28.79	1.292e5					4.9	YES		db		0.000
7	FUNCTION2 PFK	28.67	4.831e5					7.3	YES		bd		0.000
8	FUNCTION2 PFK	27.70	2.340e6					10.4	YES		bb		0.000

ID: BJG0465-SRM1, Name: 21082705, Date: 27-Aug-2021, Time: 08:04:24, Conditions: AUTOSPEC01, User: pk

PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	36.66	1.630e6					6.6	YES		bb		0.000
2	FUNCTION3 PFK	35.97	4.188e6					12.3	YES		bb		0.000
3	FUNCTION3 PFK	35.16	2.526e4					2.2	NO		bb		0.000

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	37.55	7.791e4					3.1	YES		bd		
2	FUNCTION4 PFK	37.45	2.411e4					1.6	NO		bb		
3	FUNCTION4 PFK	39.73	9.141e3					1.0	NO		bb		
4	FUNCTION4 PFK	39.53	1.695e3					0.3	NO		bb		
5	FUNCTION4 PFK	39.43	1.092e4					1.0	NO		bb		
6	FUNCTION4 PFK	39.33	3.353e3					0.5	NO		bb		
7	FUNCTION4 PFK	39.05	3.466e4					1.7	NO		db		
8	FUNCTION4 PFK	39.00	2.354e4					1.5	NO		bd		
9	FUNCTION4 PFK	38.62	1.836e3					0.4	NO		bb		
10	FUNCTION4 PFK	38.58	3.467e3					0.4	NO		bb		
11	FUNCTION4 PFK	38.37	2.523e3					0.5	NO		bb		
12	FUNCTION4 PFK	38.33	2.448e4					1.6	NO		db		
13	FUNCTION4 PFK	38.27	1.512e4					1.3	NO		bd		
14	FUNCTION4 PFK	38.01	3.607e4					1.3	NO		bb		
15	FUNCTION4 PFK	37.81	2.351e4					1.2	NO		db		
16	FUNCTION4 PFK	37.77	1.061e4					1.0	NO		dd		
17	FUNCTION4 PFK	37.73	2.755e4					2.1	NO		dd		
18	FUNCTION4 PFK	37.60	8.694e4					2.4	NO		dd		
19	FUNCTION4 PFK	42.07	4.097e3					0.8	NO		bb		
20	FUNCTION4 PFK	42.01	1.746e4					0.8	NO		bb		
21	FUNCTION4 PFK	41.44	2.513e4					1.6	NO		bb		
22	FUNCTION4 PFK	41.32	3.490e4					1.5	NO		db		
23	FUNCTION4 PFK	41.22	2.482e4					1.6	NO		dd		
24	FUNCTION4 PFK	41.19	8.857e3					0.8	NO		bd		
25	FUNCTION4 PFK	40.96	1.125e4					0.9	NO		bb		
26	FUNCTION4 PFK	40.88	1.351e4					1.0	NO		bb		
27	FUNCTION4 PFK	40.23	1.814e3					0.4	NO		bb		
28	FUNCTION4 PFK	40.04	2.423e4					1.4	NO		db		
29	FUNCTION4 PFK	39.98	9.366e3					0.8	NO		bd		
30	FUNCTION4 PFK	39.80	2.331e3					0.5	NO		bb		

ID: BJG0465-SRM1, Name: 21082705, Date: 27-Aug-2021, Time: 08:04:24, Conditions: AUTOSPEC01, User: pk

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	44.72	1.233e4					2.1	NO		bb		
2	FUNCTION5 PFK	44.22	3.210e4					2.3	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	26.67	9.089e1					2.2	NO		db		0.000
2	FUNCTION1 HXCD...	26.50	7.380e1					1.8	NO		bd		0.000
3	FUNCTION1 HXCD...	25.87	7.152e1					2.8	NO		bb		0.000
4	FUNCTION1 HXCD...	25.38	1.762e2					4.7	YES		bb		0.000
5	FUNCTION1 HXCD...	24.26	8.186e1					3.1	YES		bb		0.000
6	FUNCTION1 HXCD...	21.44	7.226e1					1.9	NO		bb		0.000
7	FUNCTION1 HXCD...	21.19	2.221e2					1.6	NO		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	24.08	2.277e2					2.5	NO		bb		0.000
2	FUNCTION1 HPCD...	22.81	2.743e2					7.2	YES		db		0.000
3	FUNCTION1 HPCD...	22.78	2.060e2					6.1	YES		bd		0.000
4	FUNCTION1 HPCD...	22.51	1.115e2					2.3	NO		bb		0.000
5	FUNCTION1 HPCD...	22.28	8.295e1					1.5	NO		bb		0.000
6	FUNCTION1 HPCD...	21.68	1.105e2					3.4	YES		bb		0.000
7	FUNCTION1 HPCD...	21.51	1.887e3					39.7	YES		bb		0.000
8	FUNCTION1 HPCD...	21.15	8.344e1					1.9	NO		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	31.25	7.015e1					1.9	NO		bb		0.000
2	FUNCTION2 HPCD...	30.19	7.502e1					1.6	NO		bb		0.000
3	FUNCTION2 HPCD...	30.05	9.393e1					1.9	NO		bb		0.000
4	FUNCTION2 HPCD...	28.56	1.333e2					1.9	NO		bb		0.000
5	FUNCTION2 HPCD...	28.28	8.238e1					2.6	NO		bb		0.000

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Printed: Friday, August 27, 2021 13:32:11 Pacific Daylight Time

ID: BJG0465-SRM1, Name: 21082705, Date: 27-Aug-2021, Time: 08:04:24, Conditions: AUTOSPEC01, User: pk

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.04	7.590e1					2.7	NO		bb		0.000
2	FUNCTION3 OCDPE	35.66	1.509e2					3.2	YES		bb		0.000
3	FUNCTION3 OCDPE	35.53	7.273e1					2.5	NO		bb		0.000
4	FUNCTION3 OCDPE	34.76	1.331e2					3.5	YES		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	37.95	3.534e3					68.0	YES		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
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ID: BJG0465-SRM1, Name: 21082705, Date: 27-Aug-2021, Time: 08:04:24, Conditions: AUTOSPEC01, User: pk

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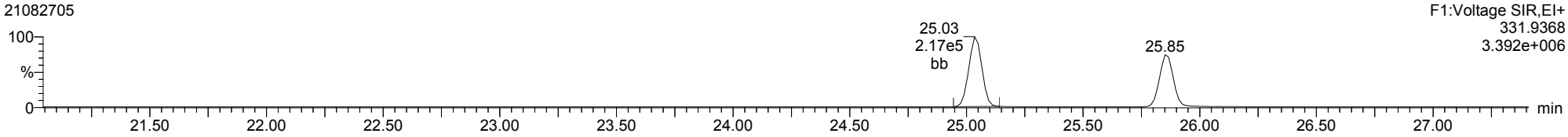

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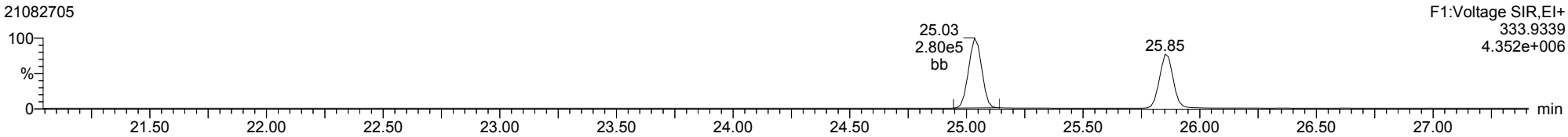

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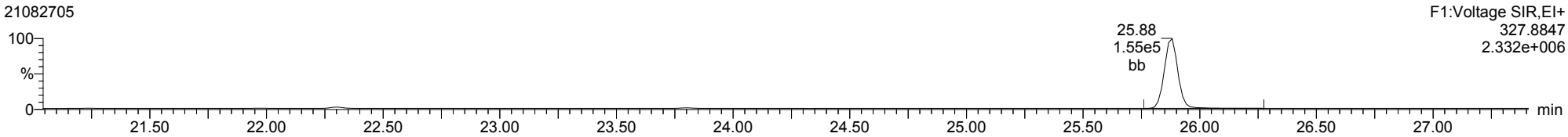

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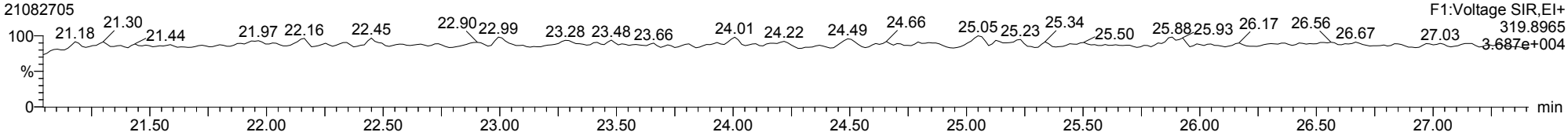

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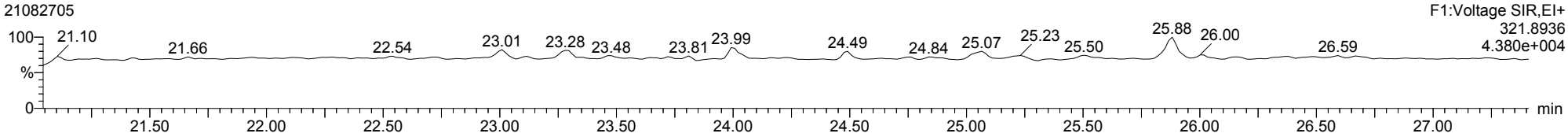

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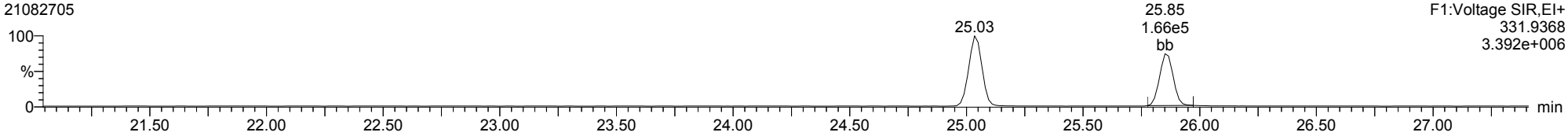

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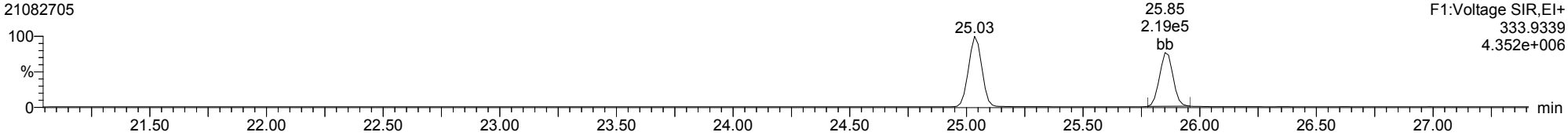

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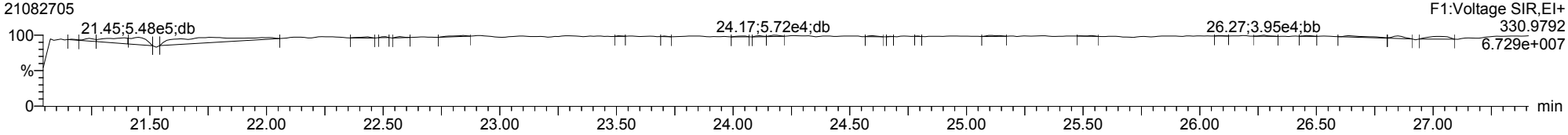

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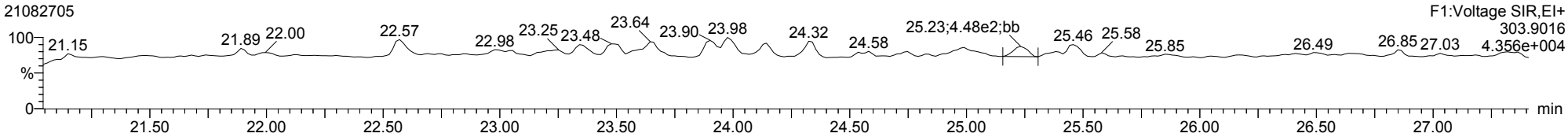

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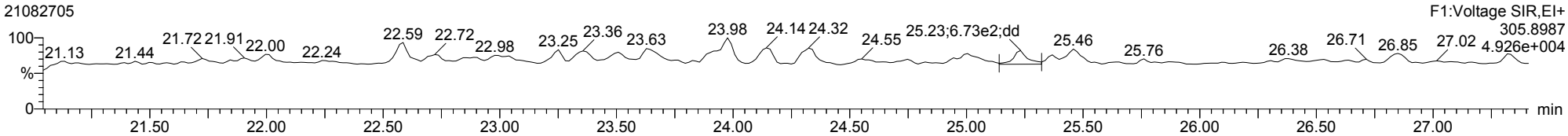

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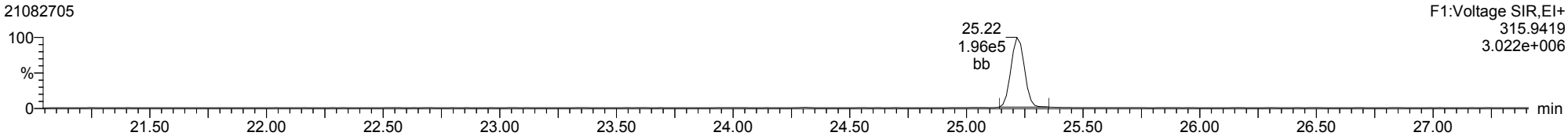

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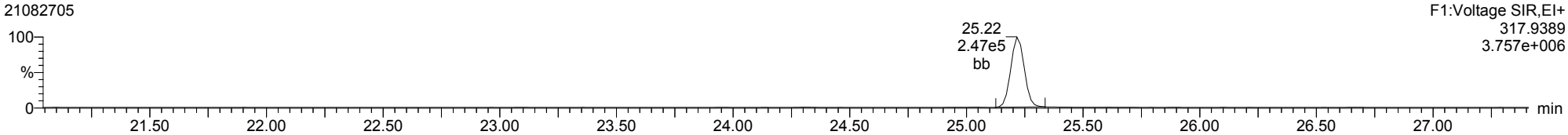

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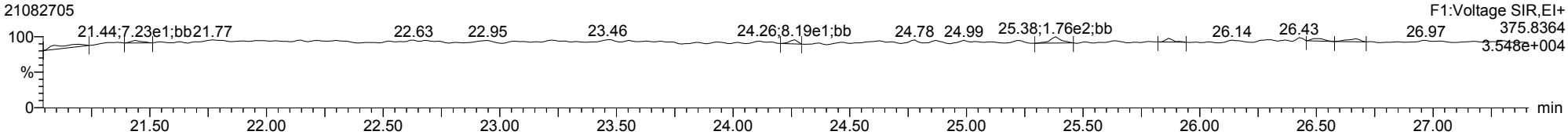

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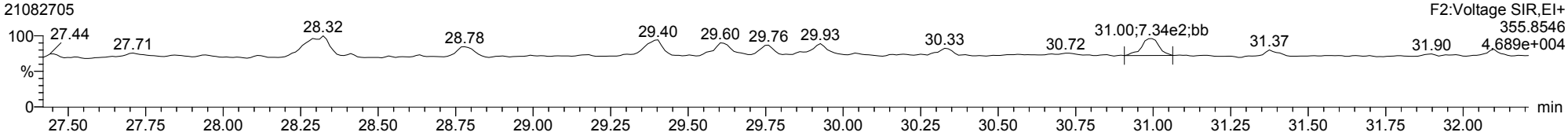
12378-PeCDD



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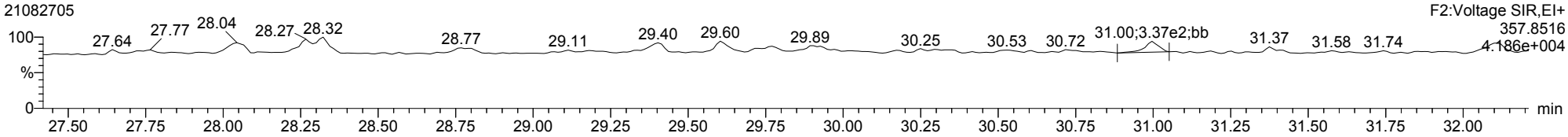

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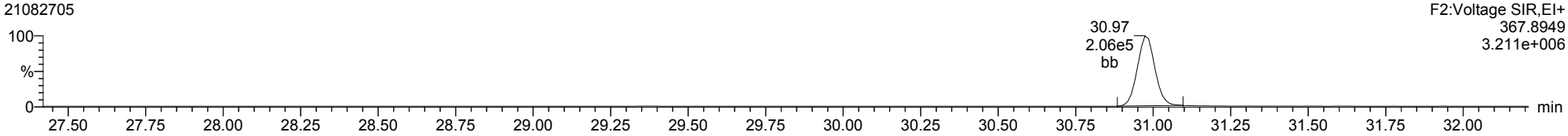

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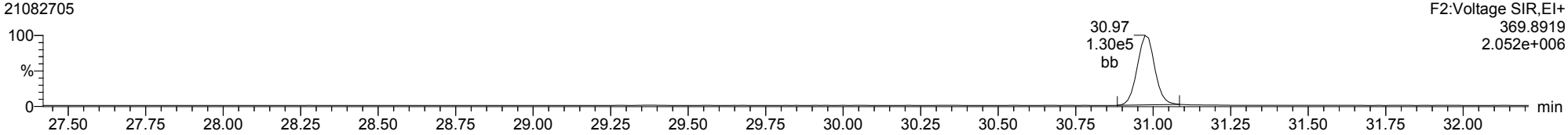

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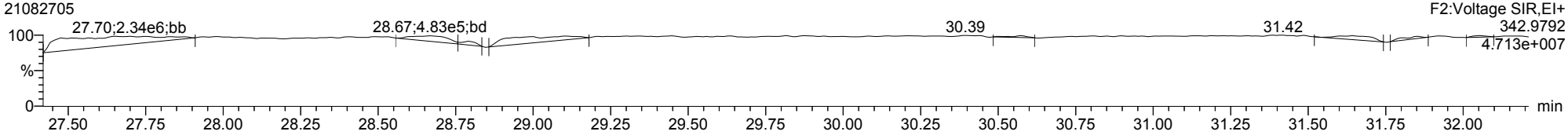

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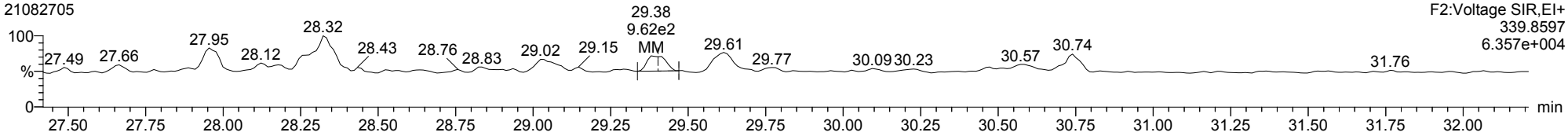

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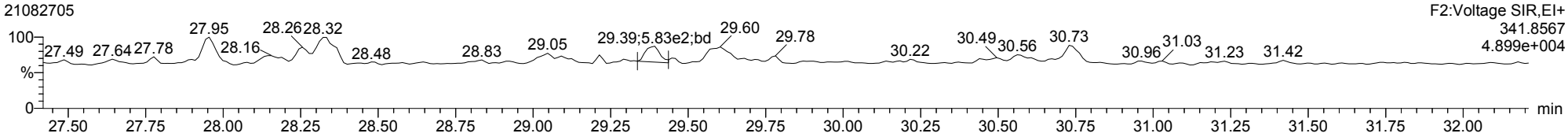

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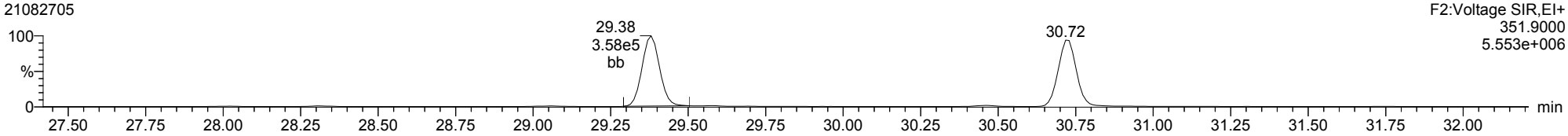

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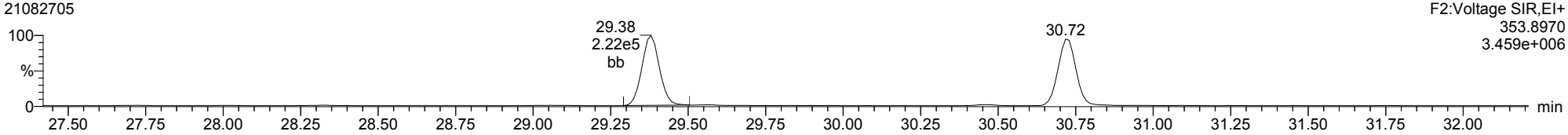
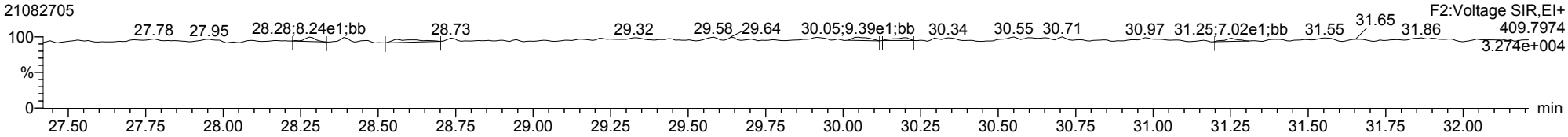


FUNCTION2 HPCDPE



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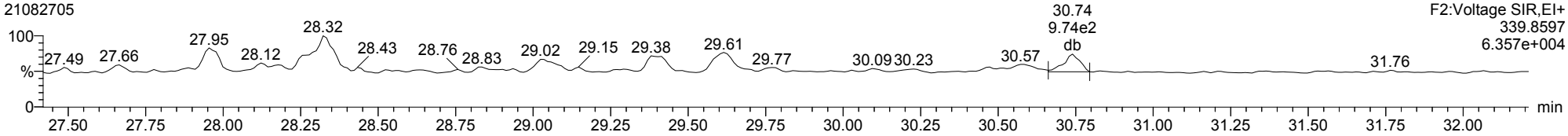
23478-PeCDF



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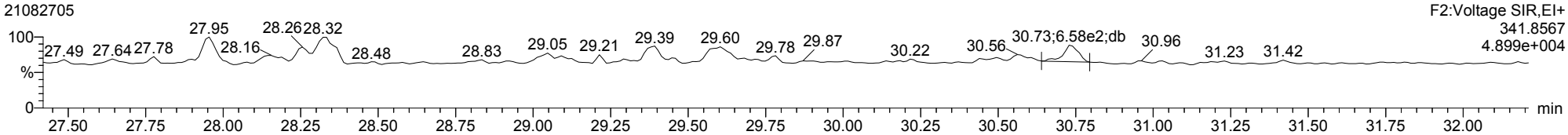
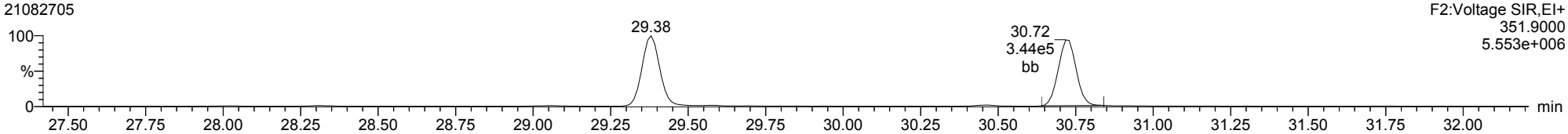


13C-23478-PeCDF



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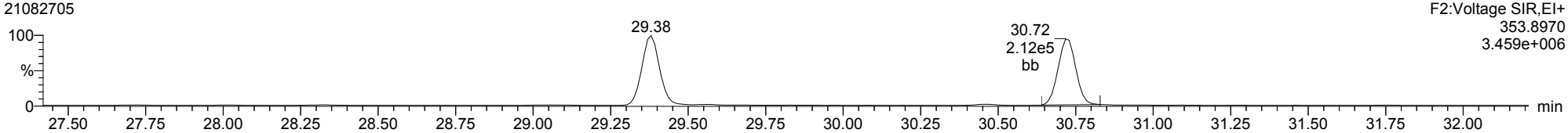
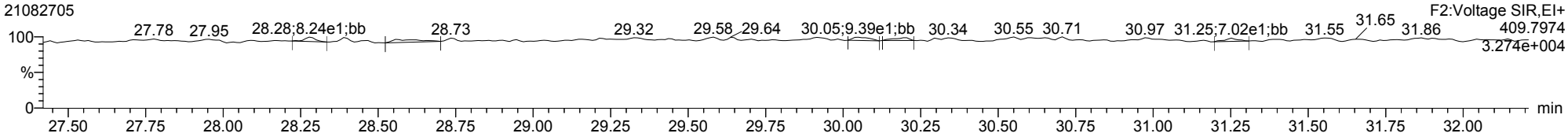


FUNCTION2 HPCDPE



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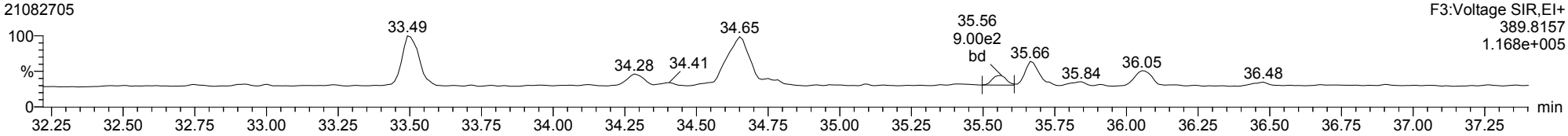
123478-HxCDD



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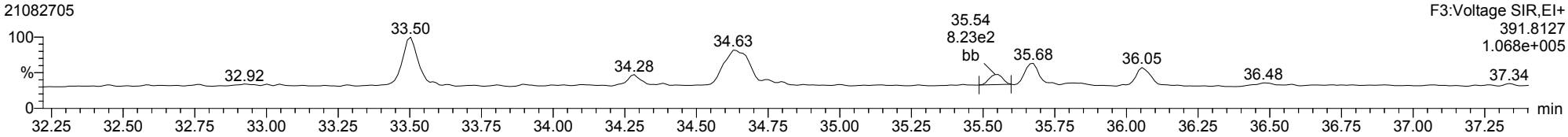

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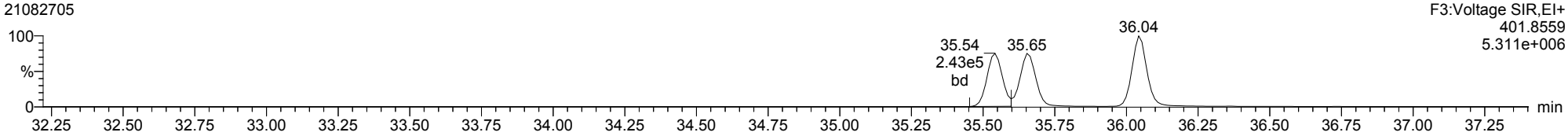

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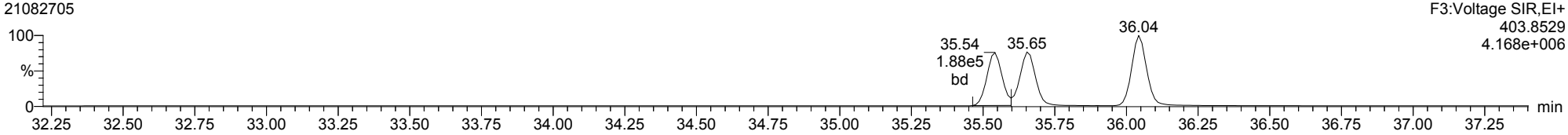

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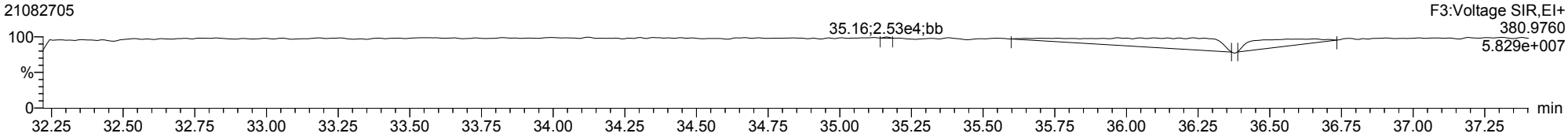

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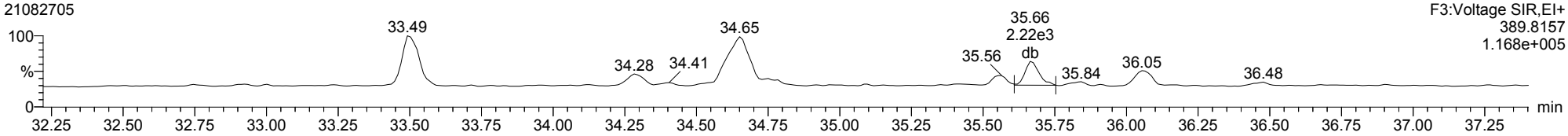
123678-HxCDD



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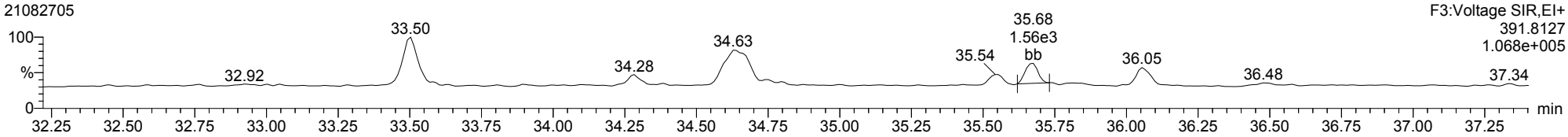

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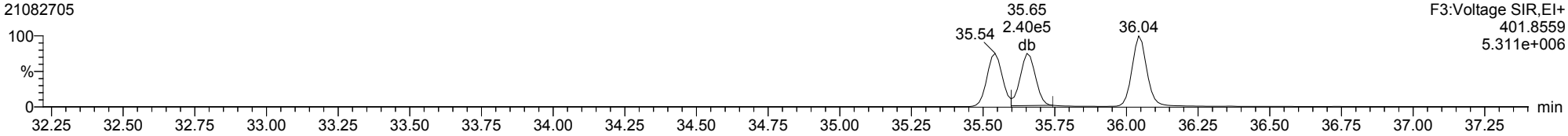

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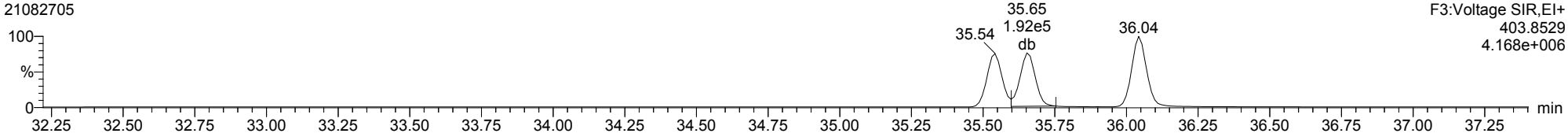

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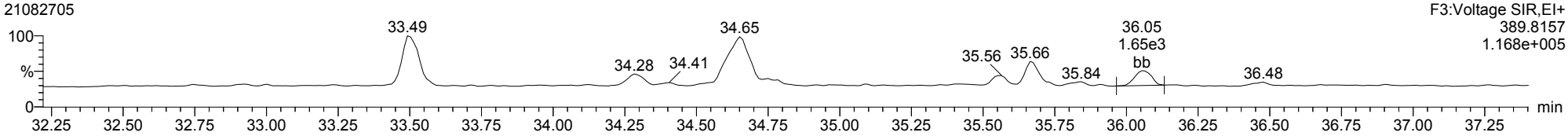

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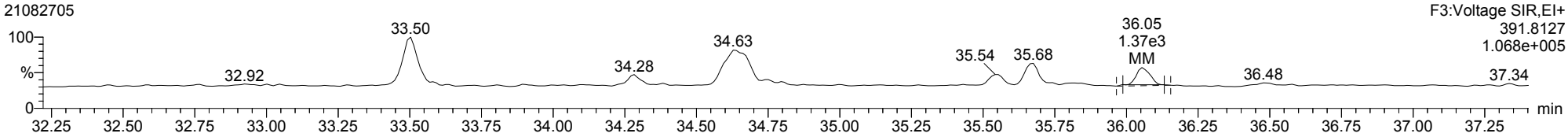

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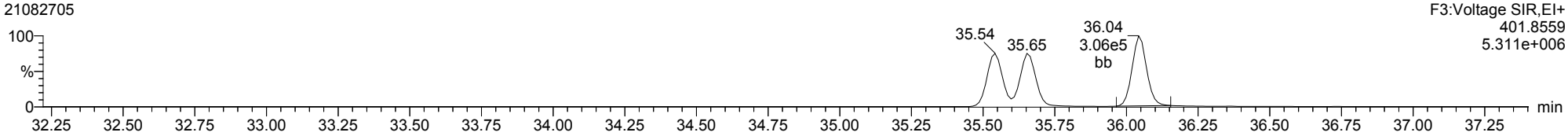

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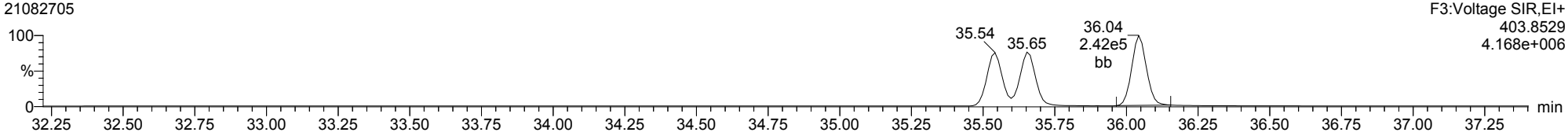

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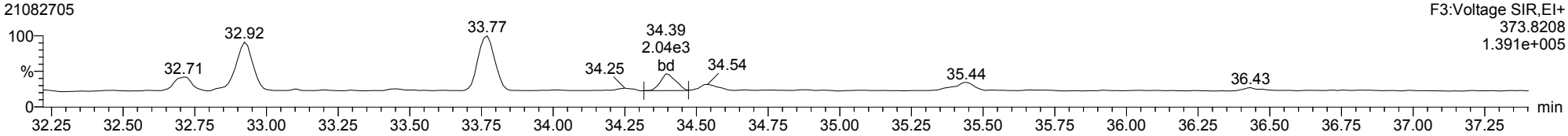

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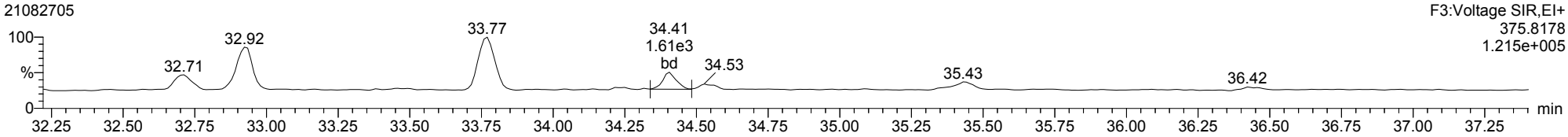

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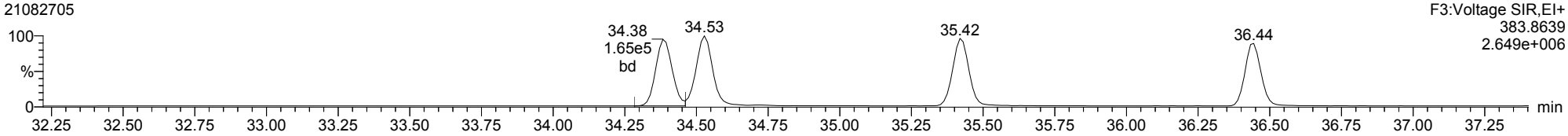

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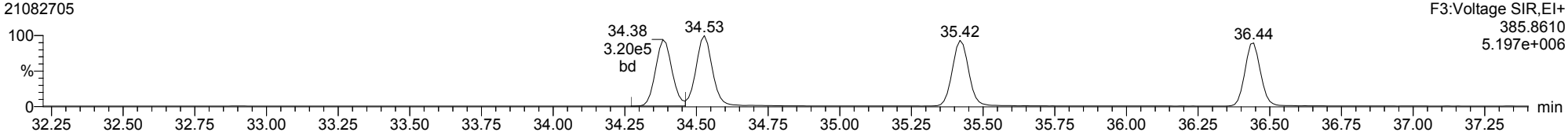
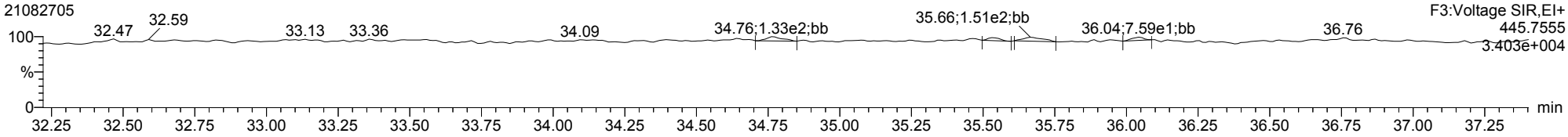


FUNCTION3 OCDPE



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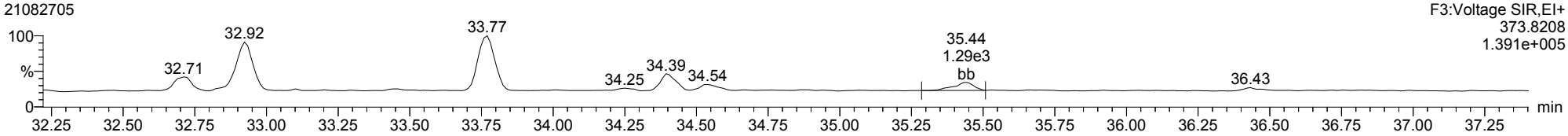
234678-HxCDF



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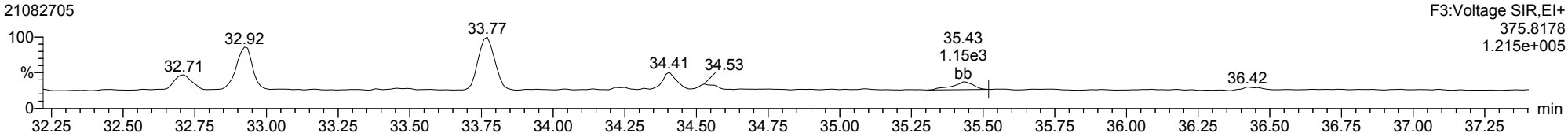

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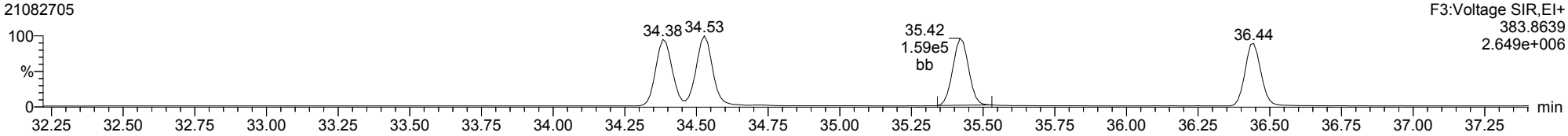

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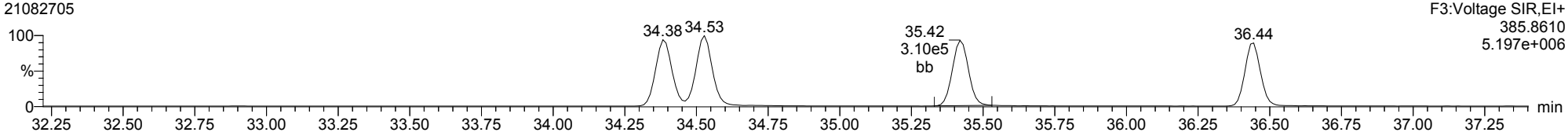
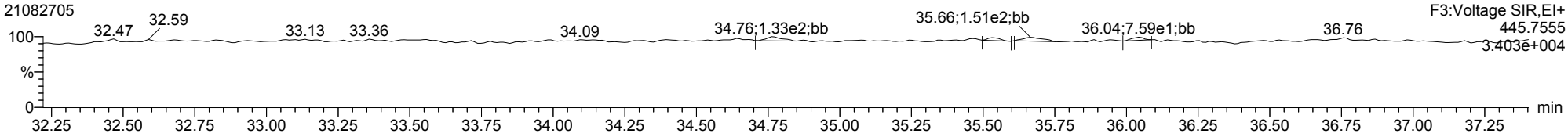


FUNCTION3 OCDPE



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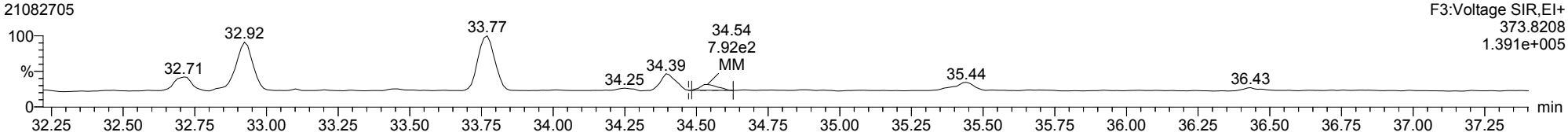
123678-HxCDF



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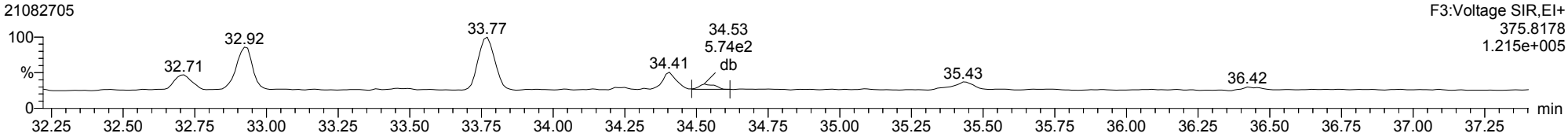

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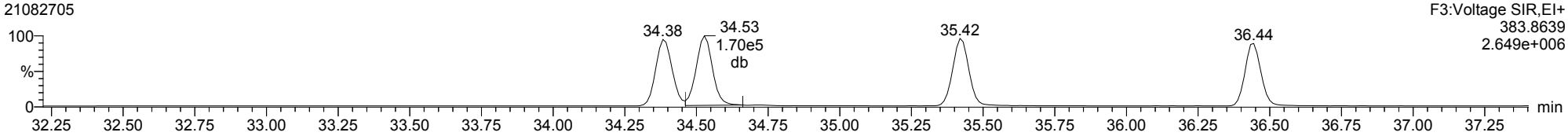

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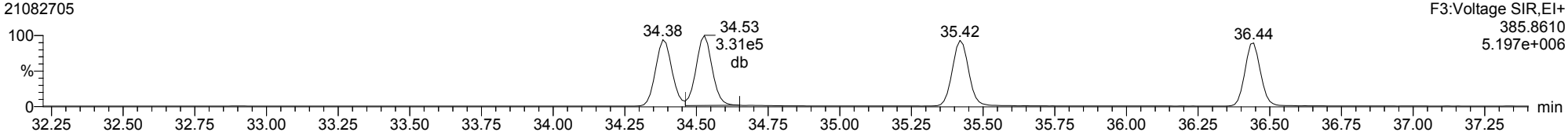
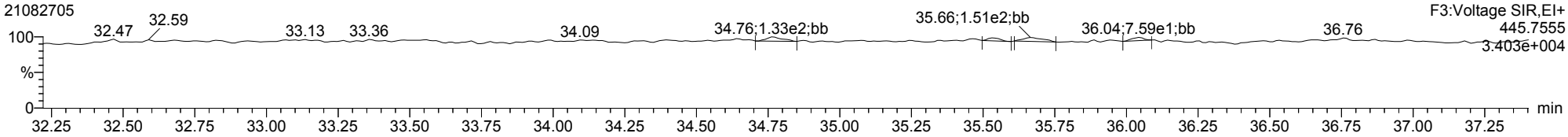


FUNCTION3 OCDPE



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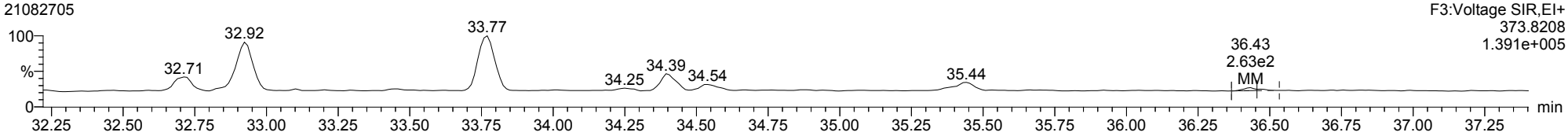
123789-HxCDF



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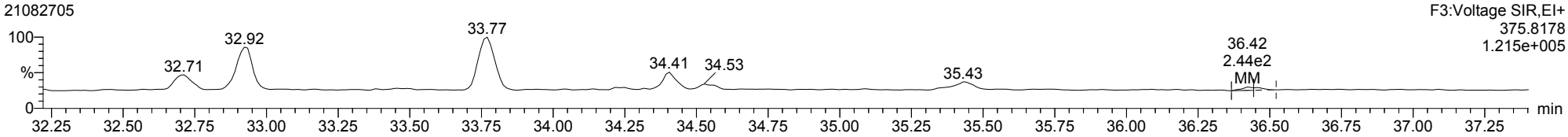

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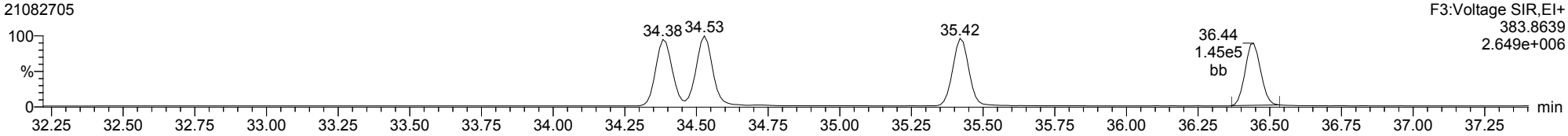

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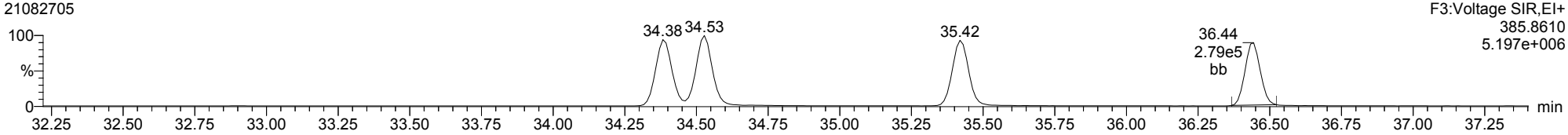
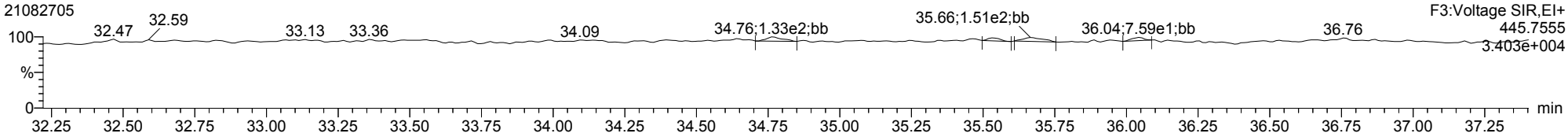


FUNCTION3 OCDPE



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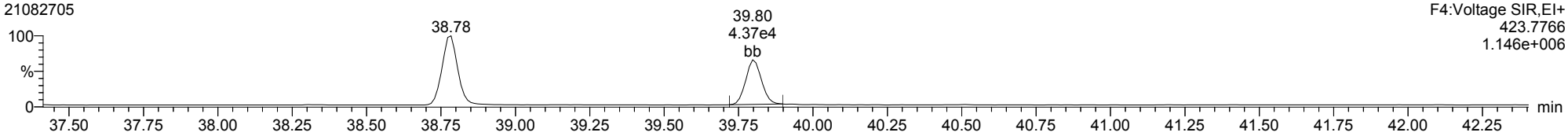
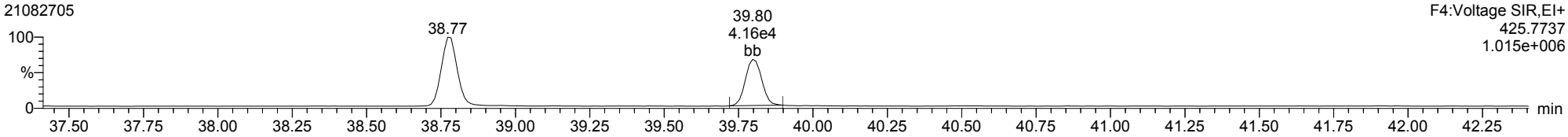
1234678-HpCDD



1234678-HpCDD



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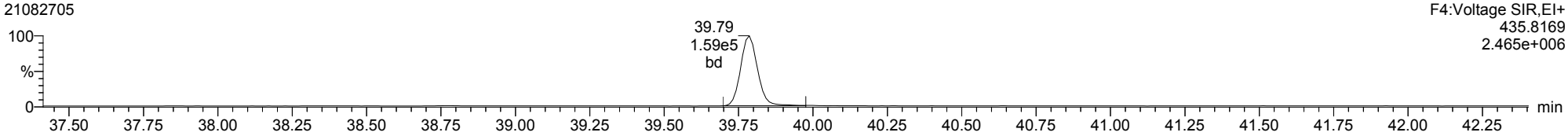

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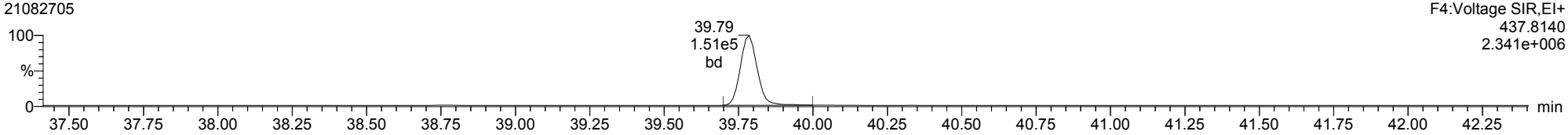
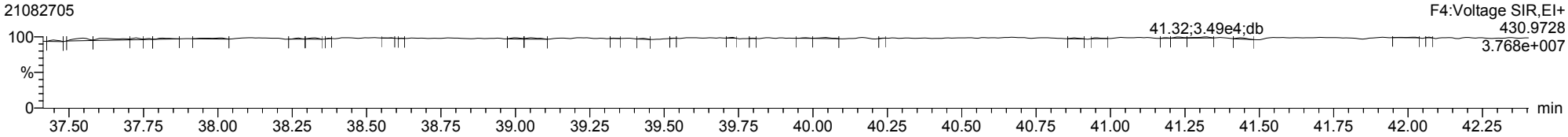


FUNCTION4 PFK



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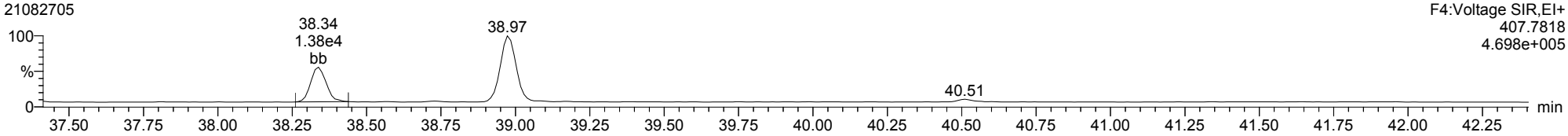
1234678-HpCDF



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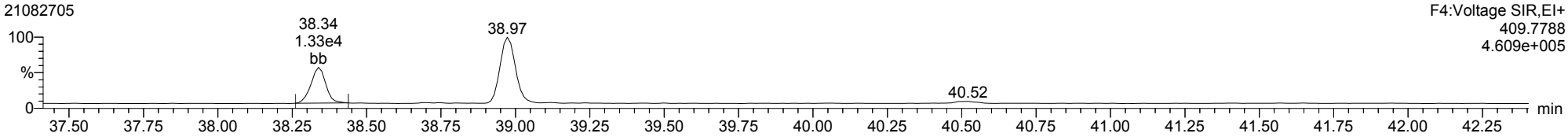

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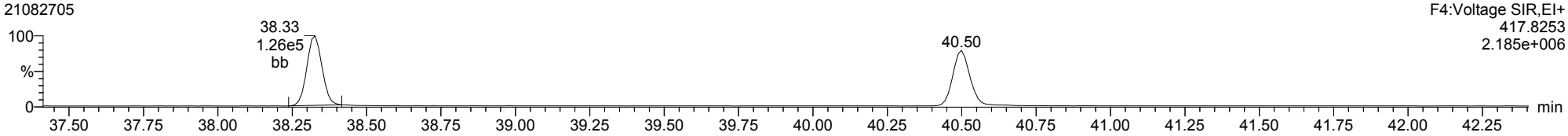

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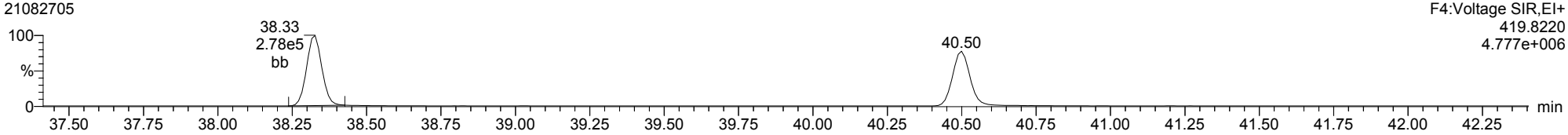
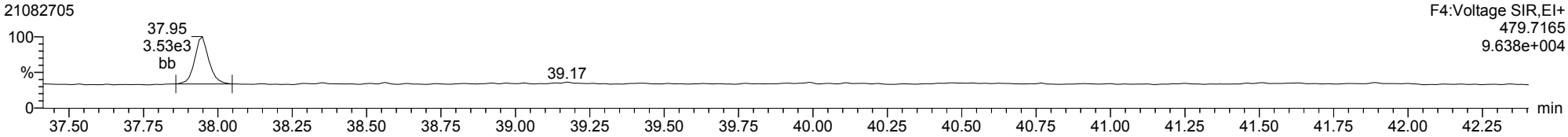


FUNCTION4 NCDPE



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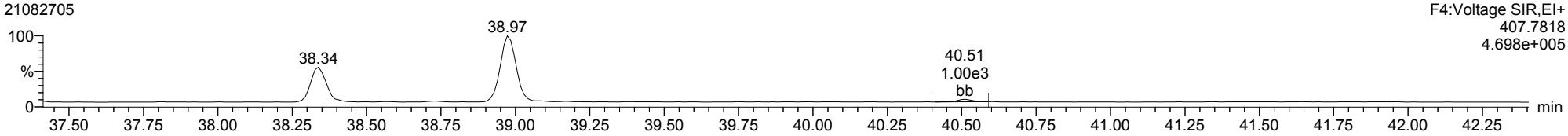
1234789-HpCDF



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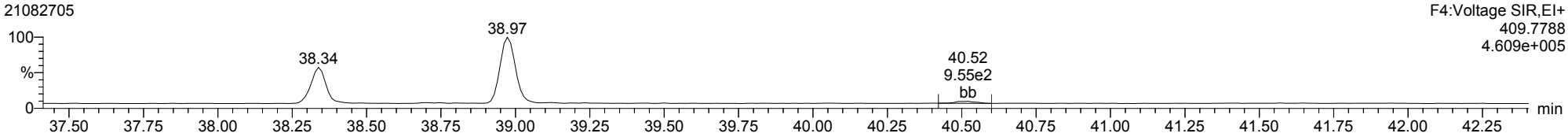

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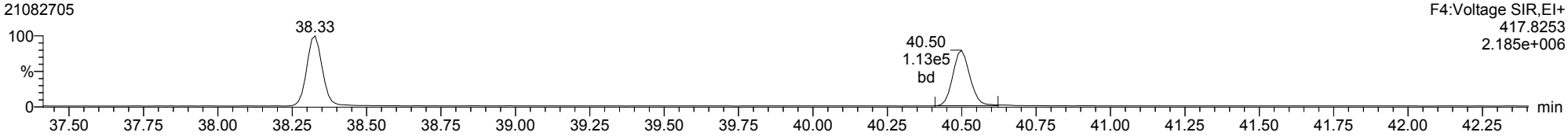

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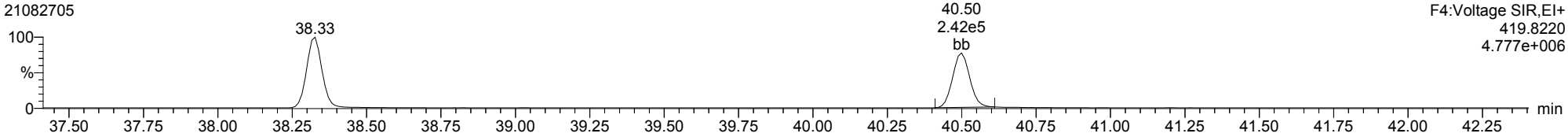
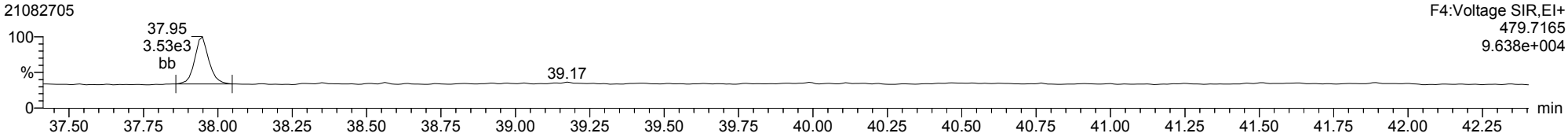


FUNCTION4 NCDPE



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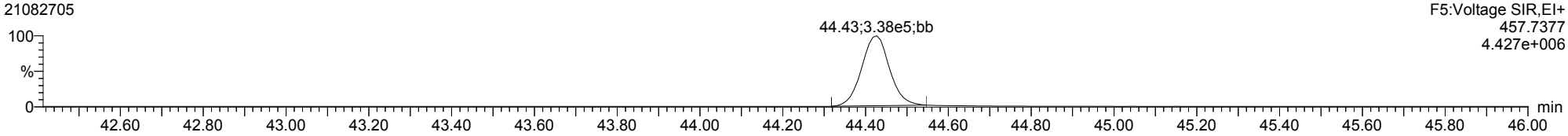
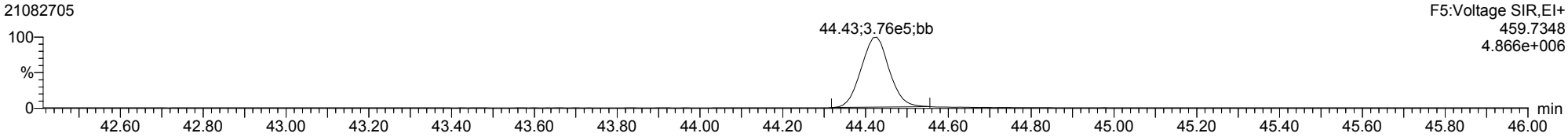
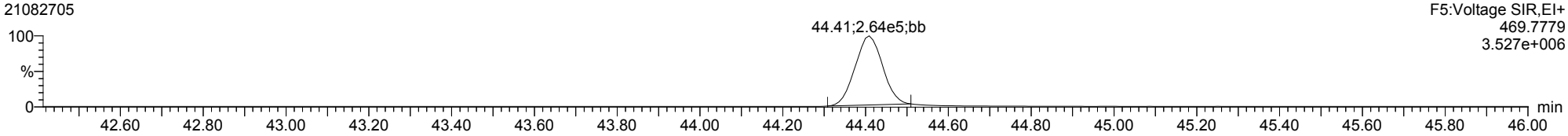
OCDD



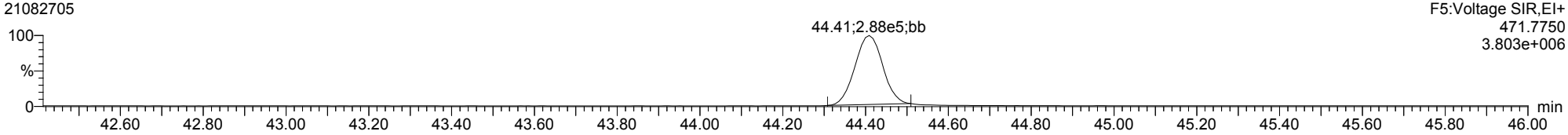
OCDD



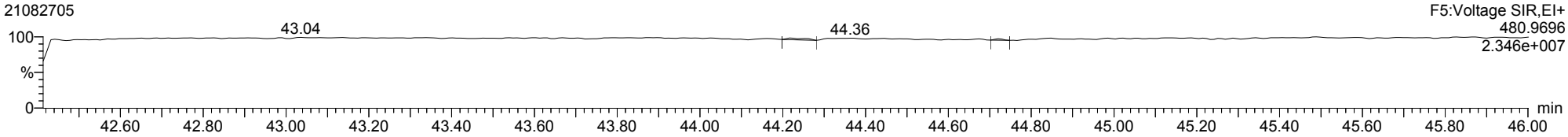
13C-OCDD



13C-OCDD

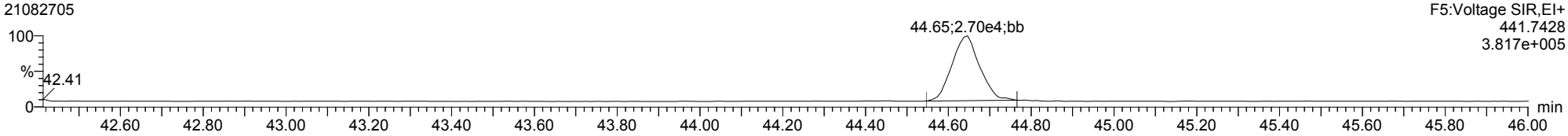


FUNCTION5 PFK

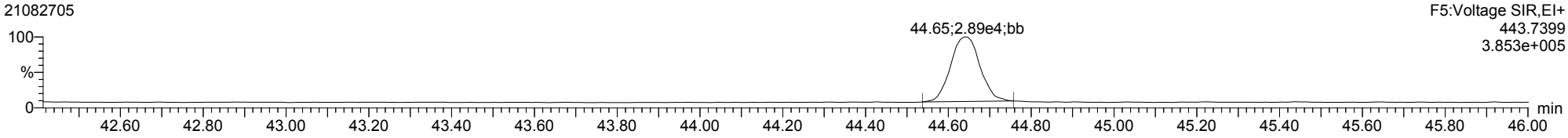


ID: BJG0465-SRM1, Name: 21082705, Date: 27-Aug-2021, Time: 08:04:24, Conditions: AUTOSPEC01, User: pk

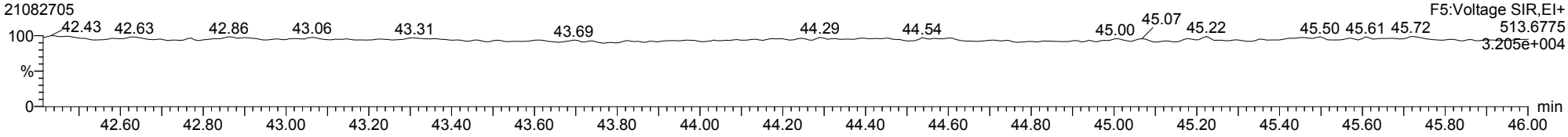
OCDF



OCDF

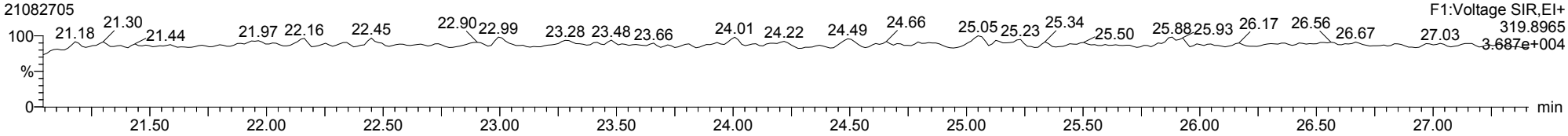


FUNCTION5 DCDPE

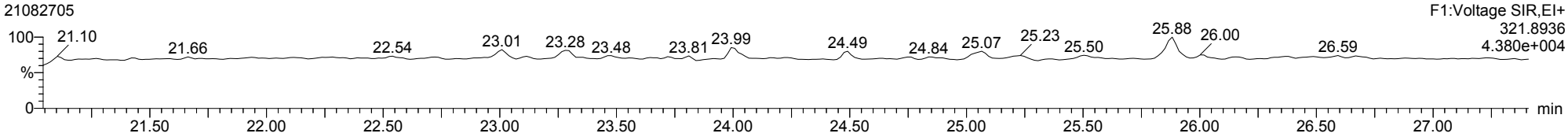


ID: BJG0465-SRM1, Name: 21082705, Date: 27-Aug-2021, Time: 08:04:24, Conditions: AUTOSPEC01, User: pk

Total-tetradioxins



Total-tetradioxins



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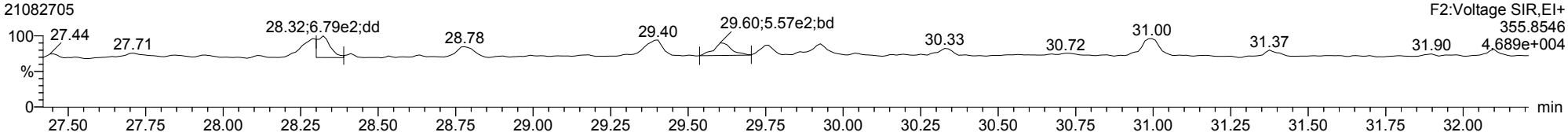
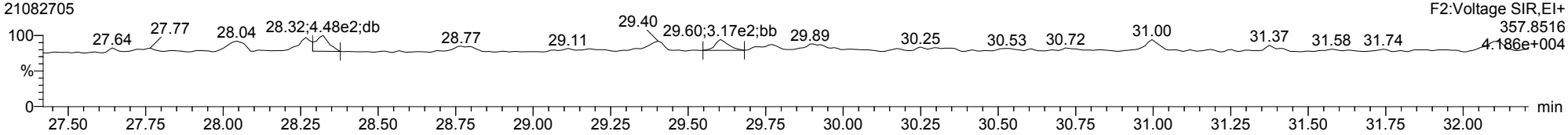
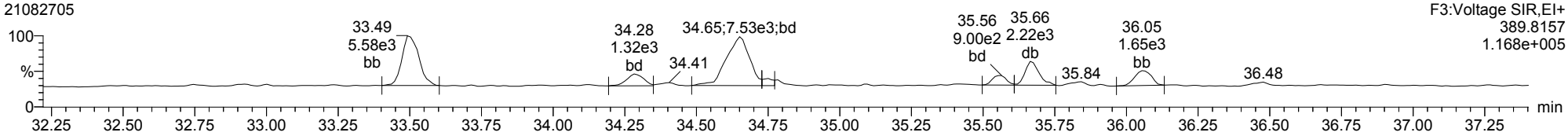


Total-pentadioxins

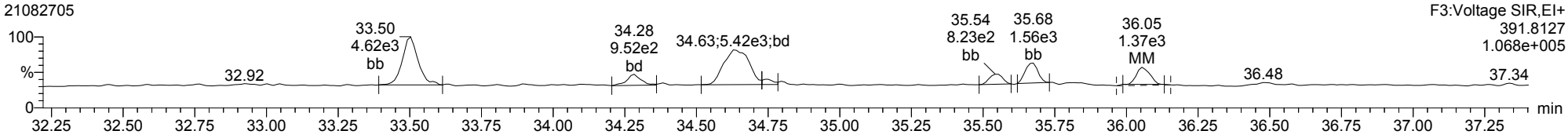


ID: BJG0465-SRM1, Name: 21082705, Date: 27-Aug-2021, Time: 08:04:24, Conditions: AUTOSPEC01, User: pk

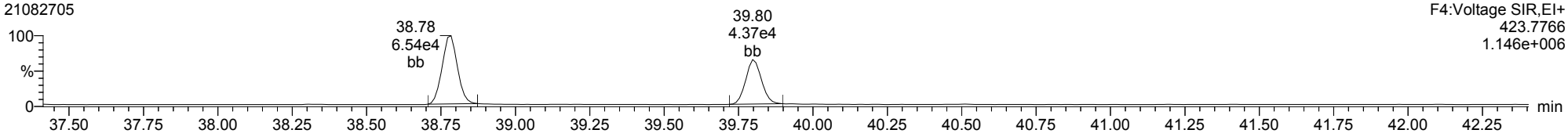
Total-hexadioxins



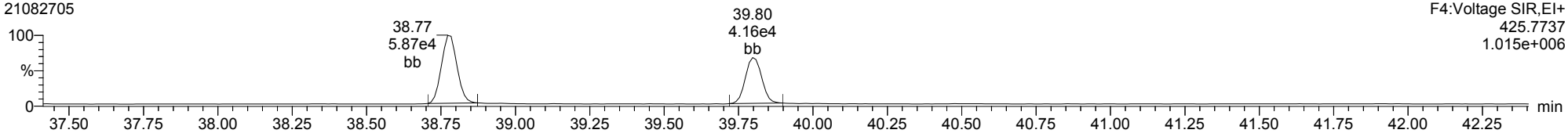
Total-hexadioxins



Total-heptadioxins



Total-heptadioxins



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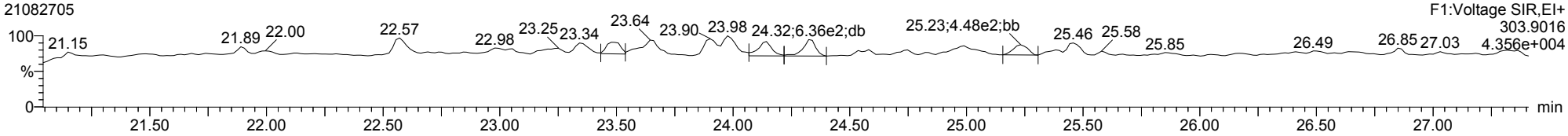
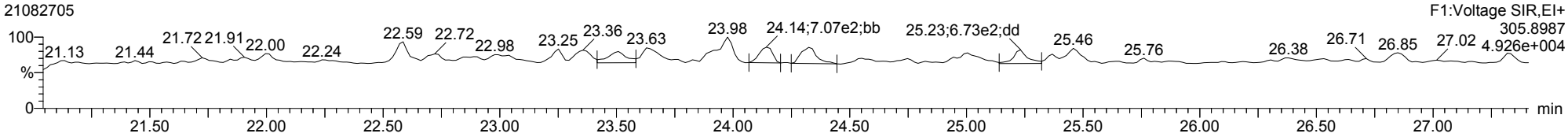
Printed: Friday, August 27, 2021 13:32:11 Pacific Daylight Time

ID: BJG0465-SRM1, Name: 21082705, Date: 27-Aug-2021, Time: 08:04:24, Conditions: AUTOSPEC01, User: pk

Total-tetrafurans



Total-tetrafurans



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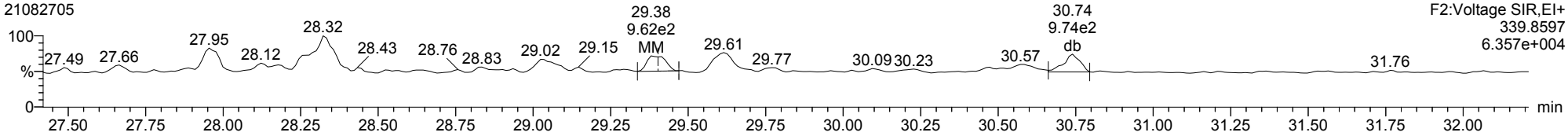
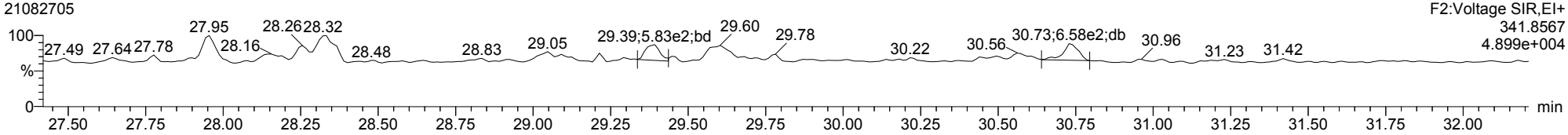
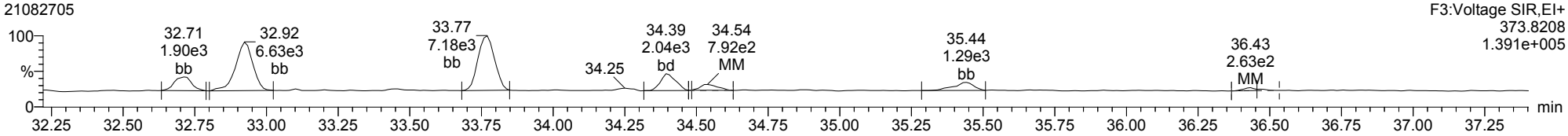


Total-pentafurans

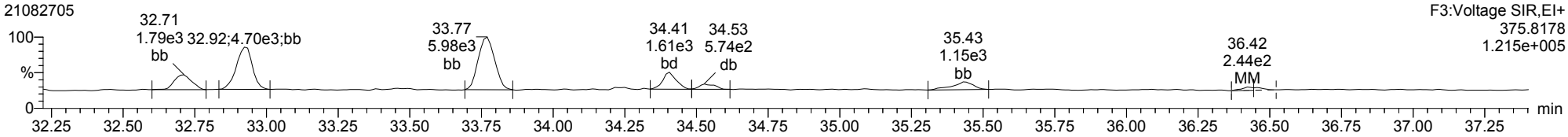


ID: BJG0465-SRM1, Name: 21082705, Date: 27-Aug-2021, Time: 08:04:24, Conditions: AUTOSPEC01, User: pk

Total-hexafurans



Total-hexafurans



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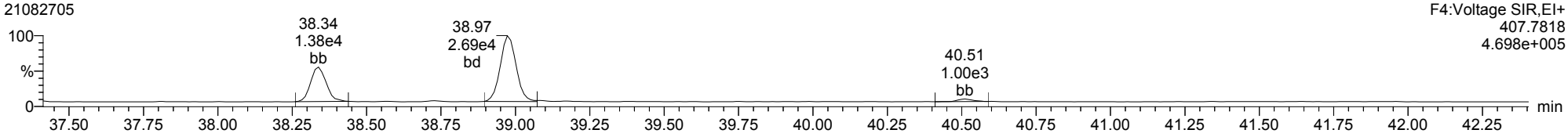

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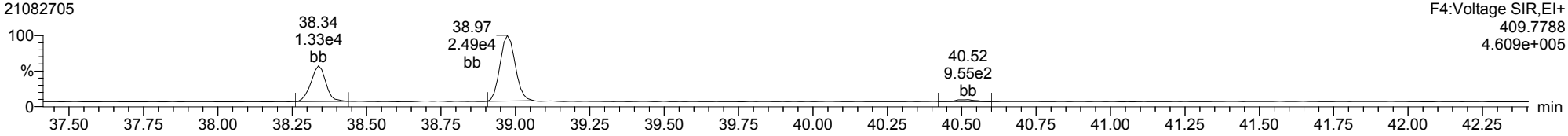

Analytical Resources, Incorporated
Analytical Chemists and Consultants

INITIAL CALIBRATION DATA
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EH00030	Instrument:	AUTOSPEC01
Calibration Date:	08/11/2021	Column (1):	RTX-Dioxin2

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
		RRF		RRF		RRF		RRF		RRF		RRF
2,3,7,8-TCDF			0.5	1.177779	2	1.089564	10	1.083206	40	1.09573	200	1.091684
2,3,7,8-TCDD			0.5	0.9055873	2	0.9678062	10	0.9085186	40	0.8960008	200	0.9235243
1,2,3,7,8-PeCDF	0.5	1.055376	2.5	0.9749948	10	0.9890582	50	1.04064	200	1.01544	1000	1.013695
2,3,4,7,8-PeCDF	0.5	1.154709	2.5	1.162487	10	1.08879	50	1.108527	200	1.12263	1000	1.116149
1,2,3,7,8-PeCDD	0.5	1.042847	2.5	0.9347965	10	1.000426	50	1.023433	200	0.967595	1000	1.00284
1,2,3,4,7,8-HxCDF	0.5	0.9510236	2.5	1.043616	10	1.027461	50	1.004481	200	1.030496	1000	1.044283
1,2,3,6,7,8-HxCDF	0.5	1.146121	2.5	1.02211	10	1.074838	50	0.9512592	200	1.003115	1000	1.02354
2,3,4,6,7,8-HxCDF	0.5	1.127526	2.5	1.070857	10	1.079018	50	1.043215	200	1.009624	1000	0.9845533
1,2,3,7,8,9-HxCDF	0.5	1.098409	2.5	1.018068	10	1.023691	50	1.015326	200	1.012664	1000	1.012763
1,2,3,4,7,8-HxCDD	0.5	1.061437	2.5	1.066813	10	1.04129	50	0.9862893	200	0.988471	1000	1.019875
1,2,3,6,7,8-HxCDD	0.5	0.9987812	2.5	1.00345	10	1.014563	50	1.005616	200	1.025933	1000	1.005535
1,2,3,7,8,9-HxCDD	0.5	0.9340398	2.5	0.9232118	10	0.9937847	50	0.9399502	200	0.9446474	1000	0.9672851
1,2,3,4,6,7,8-HpCDF	0.5	1.389904	2.5	1.344079	10	1.329355	50	1.296772	200	1.274981	1000	1.329007
1,2,3,4,7,8,9-HpCDF	0.5	1.296099	2.5	1.298231	10	1.306049	50	1.250104	200	1.264967	1000	1.284581
1,2,3,4,6,7,8-HpCDD	0.5	1.188982	2.5	0.9715609	10	1.075415	50	1.051009	200	1.0446	1000	1.076963
OCDF	1	1.386229	5	1.321192	20	1.473428	100	1.440564	400	1.519487	2000	1.540503
OCDD			5	1.230403	20	1.209327	100	1.133227	400	1.156307	2000	1.174851
13C12-2,3,7,8-TCDF	100	1.368644	100	1.423872	100	1.423929	100	1.432983	100	1.427899	100	1.482172
13C12-2,3,7,8-TCDD	100	1.085201	100	1.102248	100	1.115748	100	1.11594	100	1.126097	100	1.153713
13C12-1,2,3,7,8-PeCDF	100	1.199089	100	1.277562	100	1.315098	100	1.301019	100	1.280476	100	1.410636
13C12-2,3,4,7,8-PeCDF	100	1.157138	100	1.217571	100	1.208288	100	1.25174	100	1.225075	100	1.35907
13C12-1,2,3,7,8-PeCDD	100	0.6771591	100	0.7210236	100	0.7142954	100	0.7228749	100	0.7511038	100	0.805443
13C12-1,2,3,4,7,8-HxCDF	100	1.286327	100	1.201751	100	1.230613	100	1.269148	100	1.245045	100	1.221854
13C12-1,2,3,6,7,8-HxCDF	100	1.339141	100	1.30779	100	1.316908	100	1.430696	100	1.354788	100	1.311536
13C12-2,3,4,6,7,8-HxCDF	100	1.24279	100	1.168157	100	1.194712	100	1.212905	100	1.242651	100	1.227916
13C12-1,2,3,7,8,9-HxCDF	100	1.031792	100	0.9827749	100	0.9825353	100	1.01982	100	0.9970797	100	1.03182
13C12-1,2,3,4,7,8-HxCDD	100	0.9931736	100	0.9197633	100	0.9354684	100	0.9847809	100	0.9652949	100	0.9604585
13C12-1,2,3,6,7,8-HxCDD	100	1.065671	100	1.027995	100	1.028764	100	1.057951	100	1.039041	100	1.028891

Analytical Resources, Incorporated
Analytical Chemists and Consultants

INITIAL CALIBRATION DATA
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EH00030	Instrument:	AUTOSPEC01
Calibration Date:	08/11/2021	Column (1):	RTX-Dioxin2

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
		RRF		RRF		RRF		RRF		RRF		RRF
13C12-1,2,3,4,6,7,8-HpCDF	100	0.9372866	100	0.9086205	100	0.9102718	100	0.922368	100	0.9442818	100	0.9359936
13C12-1,2,3,4,7,8,9-HpCDF	100	0.7416153	100	0.7182342	100	0.7567011	100	0.7658258	100	0.7723607	100	0.7927589
13C12-1,2,3,4,6,7,8-HpCDD	100	0.6435664	100	0.6169459	100	0.6151049	100	0.6260609	100	0.6432814	100	0.6497259
13C12-OCDD	200	0.4894078	200	0.4833068	200	0.4662427	200	0.5014182	200	0.5191023	200	0.5629814
37Cl4-2,3,7,8-TCDD	0.1	1.029849	0.5	1.178508	2	1.088624	10	1.009798	40	1.061277	200	1.133499
13C12-1,2,3,4-TCDD	100	1	100	1	100	1	100	1	100	1	100	1
13C12-1,2,3,7,8,9-HxCDD	100	1	100	1	100	1	100	1	100	1	100	1

Analytical Resources, Incorporated
Analytical Chemists and Consultants

INITIAL CALIBRATION DATA
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EH00030	Instrument:	AUTOSPEC01
Calibration Date:	08/11/2021	Column (1):	RTX-Dioxin2

COMPOUND	Mean RRF	RRF RSD	Linear COD	Quad COD	Limit Type & Limit	Q
2,3,7,8-TCDF	1.107593	3.6			RSD ()	
2,3,7,8-TCDD	0.9202875	3.1			RSD ()	
1,2,3,7,8-PeCDF	1.014867	3.0			RSD ()	
2,3,4,7,8-PeCDF	1.125549	2.5			RSD ()	
1,2,3,7,8-PeCDD	0.9953229	3.9			RSD ()	
1,2,3,4,7,8-HxCDF	1.016893	3.5			RSD ()	
1,2,3,6,7,8-HxCDF	1.036831	6.4			RSD ()	
2,3,4,6,7,8-HxCDF	1.052466	4.9			RSD ()	
1,2,3,7,8,9-HxCDF	1.030154	3.3			RSD ()	
1,2,3,4,7,8-HxCDD	1.027363	3.4			RSD ()	
1,2,3,6,7,8-HxCDD	1.00898	1.0			RSD ()	
1,2,3,7,8,9-HxCDD	0.9504865	2.7			RSD ()	
1,2,3,4,6,7,8-HpCDF	1.32735	3.0			RSD ()	
1,2,3,4,7,8,9-HpCDF	1.283338	1.7			RSD ()	
1,2,3,4,6,7,8-HpCDD	1.068088	6.6			RSD ()	
OCDF	1.446901	5.7			RSD ()	
OCDD	1.180823	3.3			RSD ()	
13C12-2,3,7,8-TCDF	1.426583	2.5			RSD ()	
13C12-2,3,7,8-TCDD	1.116491	2.1			RSD ()	
13C12-1,2,3,7,8-PeCDF	1.297313	5.3			RSD ()	
13C12-2,3,4,7,8-PeCDF	1.23648	5.5			RSD ()	
13C12-1,2,3,7,8-PeCDD	0.7319833	5.9			RSD ()	
13C12-1,2,3,4,7,8-HxCDF	1.242456	2.5			RSD ()	
13C12-1,2,3,6,7,8-HxCDF	1.343476	3.5			RSD ()	
13C12-2,3,4,6,7,8-HxCDF	1.214855	2.4			RSD ()	
13C12-1,2,3,7,8,9-HxCDF	1.007637	2.3			RSD ()	
13C12-1,2,3,4,7,8-HxCDD	0.9598233	2.9			RSD ()	
13C12-1,2,3,6,7,8-HxCDD	1.041385	1.6			RSD ()	
13C12-1,2,3,4,6,7,8-HpCDF	0.9264704	1.6			RSD ()	
13C12-1,2,3,4,7,8,9-HpCDF	0.757916	3.4			RSD ()	
13C12-1,2,3,4,6,7,8-HpCDD	0.6324476	2.4			RSD ()	

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Analytical Chemists and Consultants

INITIAL CALIBRATION DATA
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Calibration:	EH00030	Instrument:	AUTOSPEC01
Calibration Date:	08/11/2021	Column (1):	RTX-Dioxin2

COMPOUND	Mean RRF	RRF RSD	Linear COD	Quad COD	Limit Type & Limit	Q
13C12-OCDD	0.5037432	6.7			RSD ()	
37Cl4-2,3,7,8-TCDD	1.083593	5.9			RSD ()	
13C12-1,2,3,4-TCDD	1	0.0			RSD ()	
13C12-1,2,3,7,8,9-HxCDD	1	0.0			RSD ()	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 1613B

Laboratory: Analytical Resources, Inc.
Client: Anchor QEA, LLC
Calibration: UNASSIGNED
Sequence: SJH0117

SDG: 21G0108
Project: Lower Duwamish AOC4
Laboratory ID: SJH0117-SCV1
Sequence Name: ICVCV
Standard ID: G001361

ANALYTE	EXPECTED (ng/mL)	FOUND (ng/mL)	% DRIFT	QC LIMIT
2,3,7,8-TCDF	10.000	10.1	1.1	
2,3,7,8-TCDD	10.000	11.1	10.6	
1,2,3,7,8-PeCDF	50.000	52.8	5.7	
2,3,4,7,8-PeCDF	50.000	50.7	1.4	
1,2,3,7,8-PeCDD	50.000	52.2	4.4	
1,2,3,4,7,8-HxCDF	50.000	54.0	8.0	
1,2,3,6,7,8-HxCDF	50.000	51.5	3.0	
2,3,4,6,7,8-HxCDF	50.000	55.5	11.0	
1,2,3,7,8,9-HxCDF	50.000	53.6	7.2	
1,2,3,4,7,8-HxCDD	50.000	54.6	9.3	
1,2,3,6,7,8-HxCDD	50.000	50.6	1.1	
1,2,3,7,8,9-HxCDD	50.000	52.3	4.7	
1,2,3,4,6,7,8-HpCDF	50.000	54.8	9.6	
1,2,3,4,7,8,9-HpCDF	50.000	59.1	18.3	
1,2,3,4,6,7,8-HpCDD	50.000	51.9	3.7	
OCDF	100.00	105	5.4	
OCDD	100.00	105	5.0	
13C12-2,3,7,8-TCDF	100.00	102	1.7	
13C12-2,3,7,8-TCDD	100.00	81.6	-18.4	
13C12-1,2,3,7,8-PeCDF	100.00	105	4.8	
13C12-2,3,4,7,8-PeCDF	100.00	104	4.3	
13C12-1,2,3,7,8-PeCDD	100.00	98.4	-1.6	
13C12-1,2,3,4,7,8-HxCDF	100.00	116	15.9	
13C12-1,2,3,6,7,8-HxCDF	100.00	119	19.4	
13C12-2,3,4,6,7,8-HxCDF	100.00	109	8.8	
13C12-1,2,3,7,8,9-HxCDF	100.00	113	13.2	
13C12-1,2,3,4,7,8-HxCDD	100.00	114	14.1	
13C12-1,2,3,6,7,8-HxCDD	100.00	119	19.5	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	114	13.7	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	110	9.8	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	110	10.5	
13C12-OCDD	200.00	212	5.9	
37Cl4-2,3,7,8-TCDD	10.000	10.4	4.0	

* Indicates values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210811ICVIH.qld
Last Altered: Friday, August 13, 2021 13:47:27 Pacific Daylight Time
Printed: Friday, August 13, 2021 13:51:56 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210720.mdb 11 Aug 2021 14:23:13
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.655	1.001	8.598e4	1.128e5	1.108	0.762	0.770	1727	2357	1.26e6	1.68e6	728.4	713.0	NO	bb	bb	10.110
12378-PeCDF	29.816	1.000	5.436e5	3.483e5	1.015	1.561	1.550	6428	5298	7.67e6	4.88e6	1193.2	921.9	NO	bd	bd	52.831
23478-PeCDF	31.165	1.001	5.567e5	3.442e5	1.126	1.617	1.550	6428	5298	7.71e6	5.06e6	1200.0	955.7	NO	dd	bb	50.709
123478-HxCDF	34.797	1.000	3.790e5	3.119e5	1.017	1.215	1.240	6025	4489	5.81e6	4.80e6	963.5	1070.0	NO	bd	bd	54.003
234678-HxCDF	35.810	1.001	3.741e5	3.010e5	1.052	1.243	1.240	6025	4489	5.56e6	4.51e6	922.2	1004.3	NO	bb	bb	55.515
123678-HxCDF	34.941	1.001	4.107e5	3.376e5	1.037	1.217	1.240	6025	4489	5.99e6	4.89e6	994.0	1090.0	NO	db	db	51.475
123789-HxCDF	36.835	1.000	3.029e5	2.474e5	1.030	1.224	1.240	6025	4489	4.62e6	3.69e6	767.5	821.7	NO	bb	bb	53.582
1234678-HpCDF	38.685	1.000	3.428e5	3.268e5	1.327	1.049	1.050	5528	5142	5.22e6	4.97e6	945.1	966.6	NO	bb	bb	54.784
1234789-HpCDF	40.924	1.000	2.799e5	2.719e5	1.283	1.029	1.050	5528	5142	3.60e6	3.43e6	650.7	667.0	NO	bd	bd	59.145
OCDF	45.140	1.006	3.368e5	3.743e5	1.447	0.900	0.890	5198	2808	3.79e6	4.27e6	729.8	1522.4	NO	bb	bb	105.415
2378-TCDD	26.305	1.001	4.924e4	6.425e4	0.920	0.766	0.770	2440	1603	7.12e5	9.28e5	291.6	579.2	NO	bb	db	11.057
12378-PeCDD	31.421	1.001	2.834e5	1.748e5	0.995	1.621	1.550	4032	3115	4.22e6	2.62e6	1046.5	841.2	NO	bb	bb	52.211
123478-HxCDD	35.922	1.000	2.965e5	2.407e5	1.027	1.232	1.240	4241	3010	4.65e6	3.73e6	1096.7	1237.9	NO	bd	bd	54.629
123678-HxCDD	36.044	1.001	3.082e5	2.464e5	1.009	1.251	1.240	4241	3010	4.61e6	3.72e6	1085.9	1237.1	NO	db	db	50.555
123789-HxCDD	36.423	1.011	2.887e5	2.199e5	0.950	1.313	1.240	4241	3010	4.19e6	3.34e6	989.1	1108.9	NO	bd	bb	52.339
1234678-HpCDD	40.178	1.000	1.757e5	1.625e5	1.068	1.081	1.050	3111	3083	2.53e6	2.35e6	814.6	763.1	NO	bb	bb	51.865
OCDD	44.903	1.000	2.642e5	3.138e5	1.181	0.842	0.890	2972	3108	3.12e6	3.44e6	1050.3	1105.9	NO	bb	bd	104.997
13C-2378-TCDF	25.640	1.007	7.798e5	9.953e5	1.427	0.784	0.770	3469	3089	1.16e7	1.43e7	3339.4	4613.3	NO	bb	bb	101.689
13C-12378-PeCDF	29.806	1.171	1.051e6	6.125e5	1.297	1.716	1.550	4922	3645	1.42e7	8.62e6	2881.8	2364.6	NO	bd	bb	104.785
13C-23478-PeCDF	31.142	1.223	9.754e5	6.030e5	1.236	1.617	1.550	4922	3645	1.41e7	8.69e6	2860.8	2384.9	NO	bb	bb	104.321
13C-123478-HxCDF	34.785	0.955	4.274e5	8.307e5	1.242	0.514	0.510	5265	6298	6.41e6	1.24e7	1218.4	1973.2	NO	bd	bd	115.885
13C-123678-HxCDF	34.919	0.959	4.860e5	9.161e5	1.343	0.530	0.510	5265	6298	7.00e6	1.35e7	1330.1	2144.5	NO	db	db	119.442
13C-234678-HxCDF	35.788	0.983	3.967e5	7.587e5	1.215	0.523	0.510	5265	6298	5.75e6	1.13e7	1091.4	1799.0	NO	bb	bb	108.848
13C-123789-HxCDF	36.824	1.011	3.447e5	6.522e5	1.008	0.529	0.510	5265	6298	5.11e6	9.81e6	969.9	1558.1	NO	bb	bb	113.229
13C-1234678-HpCDF	38.674	1.062	3.005e5	6.203e5	0.926	0.484	0.440	3480	6125	4.35e6	9.34e6	1249.4	1525.5	NO	bd	bb	113.744
13C-1234789-HpCDF	40.902	1.123	2.223e5	5.047e5	0.758	0.440	0.440	3480	6125	2.90e6	6.30e6	833.4	1029.2	NO	bb	bb	109.773
13C-1234-TCDD	25.458	0.000	5.298e5	6.938e5	1.000	0.764	0.770	5513	2305	7.87e6	1.03e7	1428.2	4481.1	NO	bb	bb	100.000
13C-2378-TCDD	26.275	1.032	4.826e5	6.328e5	1.116	0.763	0.770	5513	2305	7.09e6	9.32e6	1285.5	4044.7	NO	bb	bb	81.637
13C-12378-PeCDD	31.399	1.233	5.423e5	3.395e5	0.732	1.598	1.550	2388	2135	7.53e6	4.95e6	3154.4	2319.5	NO	bb	bb	98.449
13C-123478-HxCDD	35.911	0.986	5.361e5	4.211e5	0.960	1.273	1.240	3574	5521	8.65e6	6.70e6	2421.3	1213.6	NO	bd	bd	114.124
13C-123678-HxCDD	36.022	0.989	6.017e5	4.857e5	1.041	1.239	1.240	3574	5521	9.06e6	7.24e6	2535.4	1311.0	NO	db	db	119.499
13C-1234678-HpCDD	40.167	1.103	3.074e5	3.031e5	0.632	1.014	1.050	3260	2760	4.30e6	4.19e6	1318.4	1519.0	NO	bb	bb	110.470
13C-OCDD	44.884	1.233	4.208e5	5.116e5	0.504	0.822	0.890	2744	3477	4.92e6	5.55e6	1792.3	1596.9	NO	bb	bd	211.835
13C-123789-HxCDD	36.412	0.000	4.843e5	3.895e5	1.000	1.243	1.240	3574	5521	7.18e6	5.79e6	2010.2	1047.9	NO	bb	bb	100.000
37CL-2378-TCDD	26.305	1.033	1.379e5		1.084			1849		1.90e6		1029.2			bd		10.397

Dataset: T:\Autospec\Processed Data Batch\210811ICVIH.qld
Last Altered: Friday, August 13, 2021 13:47:27 Pacific Daylight Time
Printed: Friday, August 13, 2021 13:51:56 Pacific Daylight Time

ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	22.147	0.864	1.063e5	1.324e5	1.425	0.802	0.770	1727	2357	1.66e6	2.09e6	959.0	886.5	NO	bb	bb	9.436
1289-TCDF	27.152	1.059	5.661e4	7.137e4	1.043	0.793	0.770	1727	2357	8.15e5	1.06e6	472.0	447.8	NO	bb	bb	6.913
13468-PECDF	27.015	0.906	5.743e5	3.714e5	1.376	1.546	1.550	1557	1759	8.45e6	5.45e6	5425.9	3099.7	NO	bb	bb	41.310
12389-PECDF	32.201	1.080	4.075e5	2.638e5	1.000	1.544	1.550	6428	5298	5.63e6	3.72e6	875.5	702.7	NO	bb	bb	40.376
123468-HXCDF	33.125	0.952	4.315e5	3.546e5	1.087	1.217	1.240	6025	4489	6.40e6	5.20e6	1061.8	1158.1	NO	bb	bb	57.507
1368-TCDD	23.417	0.891	5.716e4	7.362e4	0.923	0.776	0.770	2440	1603	8.73e5	1.13e6	357.6	706.6	NO	bb	bb	12.700
1289-TCDD	26.895	1.024	4.776e4	6.026e4	0.794	0.793	0.770	2440	1603	6.91e5	8.63e5	283.1	538.1	NO	bb	bb	12.197
12479-PECDD	28.691	0.914	4.186e5	2.632e5	1.843	1.590	1.550	4032	3115	3.99e6	2.51e6	988.7	804.5	NO	bb	bb	41.945
12389-PECDD	31.822	1.013	2.780e5	1.664e5	1.154	1.671	1.550	4032	3115	4.00e6	2.46e6	992.1	791.3	NO	bb	bb	43.683
124679-HXCDD	33.905	0.944	3.632e5	2.896e5	1.125	1.254	1.240	4241	3010	5.57e6	4.44e6	1314.1	1475.1	NO	bb	bb	60.629
1234679-HPCDD	39.141	0.975	2.129e5	1.840e5	1.211	1.157	1.050	3111	3083	2.93e6	2.75e6	941.5	893.1	NO	bd	bb	53.689
Total-tetrafurans			2.574e5		1.192			1727		3.86e6							27.363
Total-penta1			5.743e5					1557		8.45e6							41.310
Total-pentafurans			1.602e6		1.047			6428		2.23e7							153.079
Total-hexafurans			1.898e6		1.045			6025		2.84e7							272.082
Total-heptafurans			6.227e5		1.305			5528		8.82e6							113.929
Total-Furans			5.291e6		1.158			1727		7.56e7							713.177
Total-tetradioxins			2.709e5		0.879			2440		3.41e6							62.800
Total-pentadioxins			9.817e5		1.331			4032		1.22e7							138.087
Total-hexadioxins			1.266e6		1.028			4241		1.92e7							219.741
Total-heptadioxins			3.886e5		1.140			3111		5.46e6							105.554
Total-Dioxins			3.171e6		1.092			2440		4.34e7							631.178
Total-TEQ			8.462e6					2440		1.19e8							1344.355
FUNCTION1 PFK			6.450e7					839971		2.37e8							
FUNCTION2 PFK			0.000e0					483349		0.00e0							
FUNCTION3 PFK			5.184e7					675979		4.54e8							0.000
FUNCTION4 PFK			3.964e5					425264		1.39e7							
FUNCTION5 PFK			3.414e4					345829		1.67e6							
FUNCTION1 HXCD...			2.903e3					1258		5.64e4							0.000
FUNCTION1 HPCD...			2.863e3					1421		5.44e4							0.000
FUNCTION2 HPCD...			2.720e3					1471		5.70e4							0.000
FUNCTION3 OCDPE			1.392e3					890		2.72e4							0.000
FUNCTION4 NCDPE			1.187e3					1520		2.23e4							0.000
FUNCTION5 DCDPE			1.665e2					1065		6.42e3							0.000

Dataset: T:\Autospec\Processed Data Batch\210811ICVIH.qld
Last Altered: Friday, August 13, 2021 13:47:27 Pacific Daylight Time
Printed: Friday, August 13, 2021 13:51:56 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210720.mdb 11 Aug 2021 14:23:13
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.15	5.661e4	7.137e4	1.043	0.79	0.77	472.0	YES	NO	bb	bb	6.913
2	2378-TCDF	25.65	8.598e4	1.128e5	1.108	0.76	0.77	728.4	YES	NO	bb	bb	10.110
3	Total-tetrafurans	24.75	7.210e3	8.958e3	1.192	0.80	0.77	60.0	YES	NO	bb	bb	0.764
4	Total-tetrafurans	24.42	1.138e3	1.365e3	1.192	0.83	0.77	9.8	YES	NO	bb	bb	0.118
5	1368-TCDF	22.15	1.063e5	1.324e5	1.425	0.80	0.77	959.0	YES	NO	bb	bb	9.436
6	Total-tetrafurans	27.47	1.965e2	2.354e2	1.192	0.83	0.77	3.7	YES	NO	db	bb	0.020

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	27.02	5.743e5	3.714e5	1.376	1.55	1.55	5425.9	YES	NO	bb	bb	41.310

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentafurans	28.67	7.393e4	4.763e4	1.047	1.55	1.55	167.4	YES	NO	bb	bb	7.165
2	12389-PECDF	32.20	4.075e5	2.638e5	1.000	1.54	1.55	875.5	YES	NO	bb	bb	40.376
3	23478-PeCDF	31.16	5.567e5	3.442e5	1.126	1.62	1.55	1200.0	YES	NO	dd	bb	50.709
4	Total-pentafurans	30.02	2.035e4	1.353e4	1.047	1.50	1.55	37.7	YES	NO	dd	dd	1.997
5	12378-PeCDF	29.82	5.436e5	3.483e5	1.015	1.56	1.55	1193.2	YES	NO	bd	bd	52.831

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123468-HXCDF	33.13	4.315e5	3.546e5	1.087	1.22	1.24	1061.8	YES	NO	bb	bb	57.507
2	123789-HxCDF	36.84	3.029e5	2.474e5	1.030	1.22	1.24	767.5	YES	NO	bb	bb	53.582
3	234678-HxCDF	35.81	3.741e5	3.010e5	1.052	1.24	1.24	922.2	YES	NO	bb	bb	55.515
4	123678-HxCDF	34.94	4.107e5	3.376e5	1.037	1.22	1.24	994.0	YES	NO	db	db	51.475
5	123478-HxCDF	34.80	3.790e5	3.119e5	1.017	1.22	1.24	963.5	YES	NO	bd	bd	54.003

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.68	3.428e5	3.268e5	1.327	1.05	1.05	945.1	YES	NO	bb	bb	54.784
2	1234789-HpCDF	40.92	2.799e5	2.719e5	1.283	1.03	1.05	650.7	YES	NO	bd	bd	59.145

ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.15	5.661e4	7.137e4	1.043	0.79	0.77	472.0	YES	NO	bb	bb	6.913
2	2378-TCDF	25.65	8.598e4	1.128e5	1.108	0.76	0.77	728.4	YES	NO	bb	bb	10.110
3	Total-tetrafurans	24.75	7.210e3	8.958e3	1.192	0.80	0.77	60.0	YES	NO	bb	bb	0.764
4	Total-tetrafurans	24.42	1.138e3	1.365e3	1.192	0.83	0.77	9.8	YES	NO	bb	bb	0.118
5	1368-TCDF	22.15	1.063e5	1.324e5	1.425	0.80	0.77	959.0	YES	NO	bb	bb	9.436
6	Total-tetrafurans	27.47	1.965e2	2.354e2	1.192	0.83	0.77	3.7	YES	NO	db	bb	0.020
7	Total-pentafurans	28.67	7.393e4	4.763e4	1.047	1.55	1.55	167.4	YES	NO	bb	bb	7.165
8	12389-PECDF	32.20	4.075e5	2.638e5	1.000	1.54	1.55	875.5	YES	NO	bb	bb	40.376
9	23478-PeCDF	31.16	5.567e5	3.442e5	1.126	1.62	1.55	1200.0	YES	NO	dd	bb	50.709
10	Total-pentafurans	30.02	2.035e4	1.353e4	1.047	1.50	1.55	37.7	YES	NO	dd	dd	1.997
11	12378-PeCDF	29.82	5.436e5	3.483e5	1.015	1.56	1.55	1193.2	YES	NO	bd	bd	52.831
12	123468-HXCDF	33.13	4.315e5	3.546e5	1.087	1.22	1.24	1061.8	YES	NO	bb	bb	57.507
13	123789-HxCDF	36.84	3.029e5	2.474e5	1.030	1.22	1.24	767.5	YES	NO	bb	bb	53.582
14	234678-HxCDF	35.81	3.741e5	3.010e5	1.052	1.24	1.24	922.2	YES	NO	bb	bb	55.515
15	123678-HxCDF	34.94	4.107e5	3.376e5	1.037	1.22	1.24	994.0	YES	NO	db	db	51.475
16	123478-HxCDF	34.80	3.790e5	3.119e5	1.017	1.22	1.24	963.5	YES	NO	bd	bd	54.003
17	1234678-HpCDF	38.68	3.428e5	3.268e5	1.327	1.05	1.05	945.1	YES	NO	bb	bb	54.784
18	1234789-HpCDF	40.92	2.799e5	2.719e5	1.283	1.03	1.05	650.7	YES	NO	bd	bd	59.145
19	OCDF	45.14	3.368e5	3.743e5	1.447	0.90	0.89	729.8	YES	NO	bb	bb	105.415
20	13468-PECDF	27.02	5.743e5	3.714e5	1.376	1.55	1.55	5425.9	YES	NO	bb	bb	41.310

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.97	8.932e4	1.141e5	0.879	0.78	0.77	303.9	YES	NO	bd	bd	20.744
2	Total-tetradioxins	25.49	2.543e4	2.972e4	0.879	0.86	0.77	154.2	YES	NO	bd	bb	5.625
3	Total-tetradioxins	24.63	2.020e3	2.647e3	0.879	0.76	0.77	8.0	YES	NO	bd	bb	0.476
4	1368-TCDD	23.42	5.716e4	7.362e4	0.923	0.78	0.77	357.6	YES	NO	bb	bb	12.700
5	1289-TCDD	26.89	4.776e4	6.026e4	0.794	0.79	0.77	283.1	YES	NO	bb	bb	12.197
6	2378-TCDD	26.30	4.924e4	6.425e4	0.920	0.77	0.77	291.6	YES	NO	bb	db	11.057

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PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDD	31.82	2.780e5	1.664e5	1.154	1.67	1.55	992.1	YES	NO	bb	bb	43.683
2	12378-PeCDD	31.42	2.834e5	1.748e5	0.995	1.62	1.55	1046.5	YES	NO	bb	bb	52.211
3	Total-pentadioxins	30.75	1.739e3	1.177e3	1.331	1.48	1.55	6.0	YES	NO	bb	bb	0.249
4	12479-PECDD	28.69	4.186e5	2.632e5	1.843	1.59	1.55	988.7	YES	NO	bb	bb	41.945

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	124679-HXCDD	33.91	3.632e5	2.896e5	1.125	1.25	1.24	1314.1	YES	NO	bb	bb	60.629
2	123789-HxCDD	36.42	2.887e5	2.199e5	0.950	1.31	1.24	989.1	YES	NO	bd	bb	52.339
3	123678-HxCDD	36.04	3.082e5	2.464e5	1.009	1.25	1.24	1085.9	YES	NO	db	db	50.555
4	123478-HxCDD	35.92	2.965e5	2.407e5	1.027	1.23	1.24	1096.7	YES	NO	bd	bd	54.629
5	Total-hexadioxins	35.04	7.156e3	6.136e3	1.028	1.17	1.24	26.9	YES	NO	db	db	1.265
6	Total-hexadioxins	34.67	1.781e3	1.631e3	1.028	1.09	1.24	7.7	YES	NO	bb	bb	0.325

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.18	1.757e5	1.625e5	1.068	1.08	1.05	814.6	YES	NO	bb	bb	51.865
2	1234679-HPCDD	39.14	2.129e5	1.840e5	1.211	1.16	1.05	941.5	YES	NO	bd	bb	53.689

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.97	8.932e4	1.141e5	0.879	0.78	0.77	303.9	YES	NO	bd	bd	20.744
2	Total-tetradioxins	25.49	2.543e4	2.972e4	0.879	0.86	0.77	154.2	YES	NO	bd	bb	5.625
3	Total-tetradioxins	24.63	2.020e3	2.647e3	0.879	0.76	0.77	8.0	YES	NO	bd	bb	0.476
4	1368-TCDD	23.42	5.716e4	7.362e4	0.923	0.78	0.77	357.6	YES	NO	bb	bb	12.700
5	1289-TCDD	26.89	4.776e4	6.026e4	0.794	0.79	0.77	283.1	YES	NO	bb	bb	12.197
6	2378-TCDD	26.30	4.924e4	6.425e4	0.920	0.77	0.77	291.6	YES	NO	bb	db	11.057
7	12389-PECDD	31.82	2.780e5	1.664e5	1.154	1.67	1.55	992.1	YES	NO	bb	bb	43.683
8	12378-PeCDD	31.42	2.834e5	1.748e5	0.995	1.62	1.55	1046.5	YES	NO	bb	bb	52.211
9	Total-pentadioxins	30.75	1.739e3	1.177e3	1.331	1.48	1.55	6.0	YES	NO	bb	bb	0.249
10	12479-PECDD	28.69	4.186e5	2.632e5	1.843	1.59	1.55	988.7	YES	NO	bb	bb	41.945
11	124679-HXCDD	33.91	3.632e5	2.896e5	1.125	1.25	1.24	1314.1	YES	NO	bb	bb	60.629
12	123789-HxCDD	36.42	2.887e5	2.199e5	0.950	1.31	1.24	989.1	YES	NO	bd	bb	52.339
13	123678-HxCDD	36.04	3.082e5	2.464e5	1.009	1.25	1.24	1085.9	YES	NO	db	db	50.555
14	123478-HxCDD	35.92	2.965e5	2.407e5	1.027	1.23	1.24	1096.7	YES	NO	bd	bd	54.629
15	Total-hexadioxins	35.04	7.156e3	6.136e3	1.028	1.17	1.24	26.9	YES	NO	db	db	1.265
16	Total-hexadioxins	34.67	1.781e3	1.631e3	1.028	1.09	1.24	7.7	YES	NO	bb	bb	0.325
17	1234678-HpCDD	40.18	1.757e5	1.625e5	1.068	1.08	1.05	814.6	YES	NO	bb	bb	51.865
18	1234679-HPCDD	39.14	2.129e5	1.840e5	1.211	1.16	1.05	941.5	YES	NO	bd	bb	53.689
19	OCDD	44.90	2.642e5	3.138e5	1.181	0.84	0.89	1050.3	YES	NO	bb	bd	104.997

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.15	5.661e4	7.137e4	1.043	0.79	0.77	472.0	YES	NO	bb	bb	6.913
2	2378-TCDF	25.65	8.598e4	1.128e5	1.108	0.76	0.77	728.4	YES	NO	bb	bb	10.110
3	Total-tetrafurans	24.75	7.210e3	8.958e3	1.192	0.80	0.77	60.0	YES	NO	bb	bb	0.764
4	Total-tetrafurans	24.42	1.138e3	1.365e3	1.192	0.83	0.77	9.8	YES	NO	bb	bb	0.118
5	1368-TCDF	22.15	1.063e5	1.324e5	1.425	0.80	0.77	959.0	YES	NO	bb	bb	9.436
6	Total-tetrafurans	27.47	1.965e2	2.354e2	1.192	0.83	0.77	3.7	YES	NO	db	bb	0.020
7	Total-pentafurans	28.67	7.393e4	4.763e4	1.047	1.55	1.55	167.4	YES	NO	bb	bb	7.165
8	12389-PECDF	32.20	4.075e5	2.638e5	1.000	1.54	1.55	875.5	YES	NO	bb	bb	40.376
9	23478-PeCDF	31.16	5.567e5	3.442e5	1.126	1.62	1.55	1200.0	YES	NO	dd	bb	50.709
10	Total-pentafurans	30.02	2.035e4	1.353e4	1.047	1.50	1.55	37.7	YES	NO	dd	dd	1.997
11	12378-PeCDF	29.82	5.436e5	3.483e5	1.015	1.56	1.55	1193.2	YES	NO	bd	bd	52.831
12	123468-HXCDF	33.13	4.315e5	3.546e5	1.087	1.22	1.24	1061.8	YES	NO	bb	bb	57.507
13	123789-HxCDF	36.84	3.029e5	2.474e5	1.030	1.22	1.24	767.5	YES	NO	bb	bb	53.582
14	234678-HxCDF	35.81	3.741e5	3.010e5	1.052	1.24	1.24	922.2	YES	NO	bb	bb	55.515
15	123678-HxCDF	34.94	4.107e5	3.376e5	1.037	1.22	1.24	994.0	YES	NO	db	db	51.475
16	123478-HxCDF	34.80	3.790e5	3.119e5	1.017	1.22	1.24	963.5	YES	NO	bd	bd	54.003
17	1234678-HpCDF	38.68	3.428e5	3.268e5	1.327	1.05	1.05	945.1	YES	NO	bb	bb	54.784
18	1234789-HpCDF	40.92	2.799e5	2.719e5	1.283	1.03	1.05	650.7	YES	NO	bd	bd	59.145
19	OCDF	45.14	3.368e5	3.743e5	1.447	0.90	0.89	729.8	YES	NO	bb	bb	105.415
20	13468-PECDF	27.02	5.743e5	3.714e5	1.376	1.55	1.55	5425.9	YES	NO	bb	bb	41.310
21	Total-tetradioxins	25.97	8.932e4	1.141e5	0.879	0.78	0.77	303.9	YES	NO	bd	bd	20.744
22	Total-tetradioxins	25.49	2.543e4	2.972e4	0.879	0.86	0.77	154.2	YES	NO	bd	bb	5.625
23	Total-tetradioxins	24.63	2.020e3	2.647e3	0.879	0.76	0.77	8.0	YES	NO	bd	bb	0.476
24	1368-TCDD	23.42	5.716e4	7.362e4	0.923	0.78	0.77	357.6	YES	NO	bb	bb	12.700
25	1289-TCDD	26.89	4.776e4	6.026e4	0.794	0.79	0.77	283.1	YES	NO	bb	bb	12.197
26	2378-TCDD	26.30	4.924e4	6.425e4	0.920	0.77	0.77	291.6	YES	NO	bb	db	11.057
27	12389-PECDD	31.82	2.780e5	1.664e5	1.154	1.67	1.55	992.1	YES	NO	bb	bb	43.683
28	12378-PeCDD	31.42	2.834e5	1.748e5	0.995	1.62	1.55	1046.5	YES	NO	bb	bb	52.211
29	Total-pentadioxins	30.75	1.739e3	1.177e3	1.331	1.48	1.55	6.0	YES	NO	bb	bb	0.249
30	12479-PECDD	28.69	4.186e5	2.632e5	1.843	1.59	1.55	988.7	YES	NO	bb	bb	41.945
31	124679-HXCDD	33.91	3.632e5	2.896e5	1.125	1.25	1.24	1314.1	YES	NO	bb	bb	60.629
32	123789-HxCDD	36.42	2.887e5	2.199e5	0.950	1.31	1.24	989.1	YES	NO	bd	bb	52.339
33	123678-HxCDD	36.04	3.082e5	2.464e5	1.009	1.25	1.24	1085.9	YES	NO	db	db	50.555
34	123478-HxCDD	35.92	2.965e5	2.407e5	1.027	1.23	1.24	1096.7	YES	NO	bd	bd	54.629
35	Total-hexadioxins	35.04	7.156e3	6.136e3	1.028	1.17	1.24	26.9	YES	NO	db	db	1.265
36	Total-hexadioxins	34.67	1.781e3	1.631e3	1.028	1.09	1.24	7.7	YES	NO	bb	bb	0.325
37	1234678-HpCDD	40.18	1.757e5	1.625e5	1.068	1.08	1.05	814.6	YES	NO	bb	bb	51.865

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	1234679-HPCDD	39.14	2.129e5	1.840e5	1.211	1.16	1.05	941.5	YES	NO	bd	bb	53.689
39	OCDD	44.90	2.642e5	3.138e5	1.181	0.84	0.89	1050.3	YES	NO	bb	bd	104.997

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.34	1.094e7					29.2	YES		db		
2	FUNCTION1 PFK	22.07	1.938e7					38.3	YES		dd		
3	FUNCTION1 PFK	21.38	2.077e7					61.6	YES		dd		
4	FUNCTION1 PFK	21.25	7.452e6					64.7	YES		dd		
5	FUNCTION1 PFK	21.10	5.199e6					69.3	YES		bd		
6	FUNCTION1 PFK	27.62	5.202e4					1.5	NO		bb		
7	FUNCTION1 PFK	26.61	3.088e4					1.4	NO		bb		
8	FUNCTION1 PFK	26.53	3.772e4					1.3	NO		bb		
9	FUNCTION1 PFK	26.21	4.215e4					1.3	NO		bb		
10	FUNCTION1 PFK	26.14	2.091e4					0.7	NO		bb		
11	FUNCTION1 PFK	25.90	2.782e4					1.0	NO		bb		
12	FUNCTION1 PFK	25.64	2.244e4					0.9	NO		bb		
13	FUNCTION1 PFK	25.38	4.475e4					1.3	NO		bb		
14	FUNCTION1 PFK	25.32	8.085e4					1.5	NO		bb		
15	FUNCTION1 PFK	25.10	6.333e4					1.7	NO		db		
16	FUNCTION1 PFK	24.94	2.192e5					2.0	NO		dd		
17	FUNCTION1 PFK	24.82	2.857e4					1.1	NO		bd		
18	FUNCTION1 PFK	24.63	2.787e4					1.0	NO		bb		
19	FUNCTION1 PFK	24.35	1.463e4					0.7	NO		bb		
20	FUNCTION1 PFK	23.43	4.951e4					1.7	NO		bb		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	34.47	2.892e5					8.3	YES		dd		0.000
2	FUNCTION3 PFK	34.42	3.441e5					9.9	YES		dd		0.000
3	FUNCTION3 PFK	34.30	9.123e5					14.6	YES		dd		0.000
4	FUNCTION3 PFK	33.96	4.870e6					27.1	YES		dd		0.000
5	FUNCTION3 PFK	33.92	6.208e5					27.9	YES		dd		0.000
6	FUNCTION3 PFK	33.75	6.775e6					34.2	YES		dd		0.000
7	FUNCTION3 PFK	33.58	8.843e5					39.8	YES		dd		0.000
8	FUNCTION3 PFK	33.52	4.828e6					42.2	YES		dd		0.000
9	FUNCTION3 PFK	33.37	2.844e6					47.3	YES		dd		0.000
10	FUNCTION3 PFK	33.18	5.432e6					54.3	YES		dd		0.000
11	FUNCTION3 PFK	33.04	5.575e6					59.2	YES		dd		0.000
12	FUNCTION3 PFK	32.95	3.680e6					62.9	YES		dd		0.000
13	FUNCTION3 PFK	32.86	7.904e6					65.6	YES		dd		0.000
14	FUNCTION3 PFK	32.74	1.549e6					69.1	YES		dd		0.000
15	FUNCTION3 PFK	32.67	4.268e6					72.4	YES		bd		0.000
16	FUNCTION3 PFK	36.86	8.449e3					0.3	NO		bb		0.000
17	FUNCTION3 PFK	36.72	6.925e4					2.0	NO		bb		0.000
18	FUNCTION3 PFK	36.59	5.799e4					1.2	NO		bb		0.000
19	FUNCTION3 PFK	36.30	7.563e3					0.7	NO		bb		0.000
20	FUNCTION3 PFK	36.04	6.922e3					0.5	NO		bb		0.000
21	FUNCTION3 PFK	35.83	2.532e4					1.1	NO		bb		0.000
22	FUNCTION3 PFK	35.75	1.516e4					0.9	NO		bb		0.000
23	FUNCTION3 PFK	35.63	1.004e4					0.7	NO		bb		0.000
24	FUNCTION3 PFK	35.33	1.433e4					0.8	NO		bb		0.000
25	FUNCTION3 PFK	35.04	1.089e4					0.6	NO		bb		0.000
26	FUNCTION3 PFK	34.97	5.517e3					0.7	NO		bb		0.000
27	FUNCTION3 PFK	34.89	3.001e4					1.0	NO		bb		0.000
28	FUNCTION3 PFK	34.81	1.594e4					1.0	NO		db		0.000
29	FUNCTION3 PFK	34.76	3.092e4					1.3	NO		bd		0.000
30	FUNCTION3 PFK	34.60	1.659e5					4.5	YES		db		0.000
31	FUNCTION3 PFK	34.53	2.985e5					6.7	YES		dd		0.000
32	FUNCTION3 PFK	37.64	2.742e4					1.1	NO		bb		0.000
33	FUNCTION3 PFK	37.58	2.711e4					1.4	NO		db		0.000
34	FUNCTION3 PFK	37.54	1.758e4					0.9	NO		dd		0.000
35	FUNCTION3 PFK	37.49	3.447e4					1.6	NO		dd		0.000
36	FUNCTION3 PFK	37.45	2.646e4					1.5	NO		dd		0.000
37	FUNCTION3 PFK	37.38	4.745e4					1.5	NO		dd		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION3 PFK	37.34	2.452e4					1.6	NO		bd		0.000
39	FUNCTION3 PFK	37.29	9.653e3					0.8	NO		bb		0.000
40	FUNCTION3 PFK	37.08	5.064e3					0.5	NO		bb		0.000
41	FUNCTION3 PFK	36.98	6.612e4					1.7	NO		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	38.42	2.469e3					0.5	NO		bb		
2	FUNCTION4 PFK	38.08	2.954e4					1.7	NO		bb		
3	FUNCTION4 PFK	37.98	4.856e4					2.3	NO		db		
4	FUNCTION4 PFK	37.94	3.614e4					2.6	NO		bd		
5	FUNCTION4 PFK	37.85	8.390e3					1.0	NO		bb		
6	FUNCTION4 PFK	40.91	1.035e4					1.0	NO		bb		
7	FUNCTION4 PFK	40.71	1.742e3					0.4	NO		bb		
8	FUNCTION4 PFK	40.68	3.176e3					0.5	NO		bb		
9	FUNCTION4 PFK	40.61	6.362e3					0.7	NO		bb		
10	FUNCTION4 PFK	40.38	7.075e3					0.8	NO		bb		
11	FUNCTION4 PFK	40.32	3.115e4					1.2	NO		bb		
12	FUNCTION4 PFK	39.94	4.461e3					0.6	NO		bb		
13	FUNCTION4 PFK	39.80	5.746e3					0.6	NO		bb		
14	FUNCTION4 PFK	39.51	2.799e3					0.4	NO		bb		
15	FUNCTION4 PFK	39.43	1.949e3					0.4	NO		bb		
16	FUNCTION4 PFK	39.36	2.879e3					0.6	NO		bb		
17	FUNCTION4 PFK	39.32	5.365e3					1.1	NO		bb		
18	FUNCTION4 PFK	39.28	3.621e3					0.8	NO		bb		
19	FUNCTION4 PFK	39.21	1.666e4					1.0	NO		bb		
20	FUNCTION4 PFK	39.07	6.512e3					0.8	NO		bb		
21	FUNCTION4 PFK	38.46	1.263e4					1.2	NO		bb		
22	FUNCTION4 PFK	42.68	1.445e4					0.9	NO		bb		
23	FUNCTION4 PFK	42.62	2.052e4					1.7	NO		bb		
24	FUNCTION4 PFK	42.51	2.321e3					0.5	NO		bb		
25	FUNCTION4 PFK	42.43	3.121e4					1.9	NO		bb		
26	FUNCTION4 PFK	42.18	7.742e3					0.8	NO		bb		
27	FUNCTION4 PFK	42.05	1.748e4					1.2	NO		db		
28	FUNCTION4 PFK	41.97	1.470e4					1.2	NO		bd		
29	FUNCTION4 PFK	41.63	2.487e3					0.5	NO		bb		
30	FUNCTION4 PFK	41.48	1.442e4					1.2	NO		bb		
31	FUNCTION4 PFK	41.24	1.211e4					1.0	NO		bb		
32	FUNCTION4 PFK	41.17	1.136e4					1.2	NO		bb		

ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	45.97	5.710e3					1.0	NO		bb		
2	FUNCTION5 PFK	45.74	1.859e3					0.6	NO		bb		
3	FUNCTION5 PFK	43.26	1.526e4					1.8	NO		bb		
4	FUNCTION5 PFK	42.93	1.131e4					1.5	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	25.35	1.892e2					4.2	YES		db		0.000
2	FUNCTION1 HXCD...	25.23	1.187e2					1.3	NO		bd		0.000
3	FUNCTION1 HXCD...	24.87	7.961e1					1.9	NO		db		0.000
4	FUNCTION1 HXCD...	24.81	1.259e2					2.7	NO		bd		0.000
5	FUNCTION1 HXCD...	24.72	1.584e2					1.4	NO		bb		0.000
6	FUNCTION1 HXCD...	24.40	9.113e1					1.6	NO		bb		0.000
7	FUNCTION1 HXCD...	23.72	7.480e1					1.5	NO		bb		0.000
8	FUNCTION1 HXCD...	23.61	1.381e2					2.9	NO		bb		0.000
9	FUNCTION1 HXCD...	23.11	9.740e1					2.5	NO		bb		0.000
10	FUNCTION1 HXCD...	22.43	1.791e2					2.1	NO		db		0.000
11	FUNCTION1 HXCD...	22.30	7.125e1					1.5	NO		bd		0.000
12	FUNCTION1 HXCD...	22.19	7.195e1					1.3	NO		bb		0.000
13	FUNCTION1 HXCD...	21.98	1.102e2					1.5	NO		db		0.000
14	FUNCTION1 HXCD...	21.89	2.251e2					4.2	YES		bd		0.000
15	FUNCTION1 HXCD...	21.80	1.414e2					2.0	NO		bb		0.000
16	FUNCTION1 HXCD...	27.03	2.453e2					2.4	NO		bb		0.000
17	FUNCTION1 HXCD...	26.29	2.686e2					2.1	NO		db		0.000
18	FUNCTION1 HXCD...	26.12	1.763e2					2.9	NO		dd		0.000
19	FUNCTION1 HXCD...	26.03	9.387e1					1.2	NO		bd		0.000
20	FUNCTION1 HXCD...	25.82	1.399e2					2.0	NO		bb		0.000
21	FUNCTION1 HXCD...	25.46	1.064e2					1.7	NO		bb		0.000

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ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	22.51	7.992e1					1.4	NO		bb		0.000
2	FUNCTION1 HPCD...	22.07	1.029e2					2.1	NO		bb		0.000
3	FUNCTION1 HPCD...	21.98	1.510e2					1.6	NO		db		0.000
4	FUNCTION1 HPCD...	21.88	1.949e2					3.5	YES		bd		0.000
5	FUNCTION1 HPCD...	21.75	2.528e2					1.8	NO		bb		0.000
6	FUNCTION1 HPCD...	21.47	1.508e2					2.1	NO		bb		0.000
7	FUNCTION1 HPCD...	21.25	1.018e2					1.3	NO		db		0.000
8	FUNCTION1 HPCD...	21.16	1.149e2					1.6	NO		dd		0.000
9	FUNCTION1 HPCD...	21.09	2.200e2					3.0	NO		bd		0.000
10	FUNCTION1 HPCD...	27.00	1.586e2					1.8	NO		bb		0.000
11	FUNCTION1 HPCD...	26.83	9.159e1					0.8	NO		bb		0.000
12	FUNCTION1 HPCD...	26.59	1.663e2					2.5	NO		bb		0.000
13	FUNCTION1 HPCD...	26.32	1.753e2					1.6	NO		db		0.000
14	FUNCTION1 HPCD...	26.14	2.616e2					2.2	NO		bd		0.000
15	FUNCTION1 HPCD...	25.59	8.230e1					1.9	NO		bb		0.000
16	FUNCTION1 HPCD...	25.44	8.713e1					1.0	NO		bb		0.000
17	FUNCTION1 HPCD...	25.16	7.125e1					1.1	NO		db		0.000
18	FUNCTION1 HPCD...	25.05	1.030e2					1.1	NO		bd		0.000
19	FUNCTION1 HPCD...	24.07	1.494e2					2.5	NO		bb		0.000
20	FUNCTION1 HPCD...	23.83	1.478e2					3.3	YES		bb		0.000

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ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	28.48	1.146e2					2.7	NO		bb		0.000
2	FUNCTION2 HPCD...	28.07	8.040e1					1.2	NO		db		0.000
3	FUNCTION2 HPCD...	27.98	1.117e2					1.5	NO		bd		0.000
4	FUNCTION2 HPCD...	27.82	9.308e1					2.0	NO		bb		0.000
5	FUNCTION2 HPCD...	31.82	1.073e2					1.6	NO		bb		0.000
6	FUNCTION2 HPCD...	31.41	3.440e2					4.0	YES		bb		0.000
7	FUNCTION2 HPCD...	31.18	9.044e1					1.2	NO		db		0.000
8	FUNCTION2 HPCD...	31.11	9.781e1					2.1	NO		dd		0.000
9	FUNCTION2 HPCD...	31.03	7.279e2					8.6	YES		bd		0.000
10	FUNCTION2 HPCD...	30.26	7.257e1					1.3	NO		bb		0.000
11	FUNCTION2 HPCD...	30.21	7.122e1					1.7	NO		db		0.000
12	FUNCTION2 HPCD...	30.14	1.157e2					1.5	NO		dd		0.000
13	FUNCTION2 HPCD...	30.06	7.412e1					1.1	NO		dd		0.000
14	FUNCTION2 HPCD...	29.98	7.219e1					1.2	NO		dd		0.000
15	FUNCTION2 HPCD...	29.91	9.212e1					2.0	NO		bd		0.000
16	FUNCTION2 HPCD...	29.69	7.977e1					1.3	NO		bb		0.000
17	FUNCTION2 HPCD...	29.08	1.408e2					1.5	NO		db		0.000
18	FUNCTION2 HPCD...	28.96	1.497e2					1.4	NO		bd		0.000
19	FUNCTION2 HPCD...	28.71	8.490e1					1.0	NO		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	37.65	1.580e2					2.6	NO		db		0.000
2	FUNCTION3 OCDPE	37.55	1.150e2					2.8	NO		bd		0.000
3	FUNCTION3 OCDPE	36.42	1.835e2					2.9	NO		bb		0.000
4	FUNCTION3 OCDPE	36.04	2.520e2					4.7	YES		db		0.000
5	FUNCTION3 OCDPE	35.93	1.106e2					3.8	YES		dd		0.000
6	FUNCTION3 OCDPE	35.90	1.018e2					3.4	YES		bd		0.000
7	FUNCTION3 OCDPE	34.40	1.321e2					5.0	YES		bb		0.000
8	FUNCTION3 OCDPE	33.58	1.010e2					2.3	NO		bb		0.000
9	FUNCTION3 OCDPE	32.70	2.382e2					3.1	YES		bb		0.000

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ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	40.42	7.136e1					0.9	NO		bb		0.000
2	FUNCTION4 NCDPE	40.16	1.641e2					1.6	NO		bb		0.000
3	FUNCTION4 NCDPE	39.69	1.182e2					1.5	NO		bb		0.000
4	FUNCTION4 NCDPE	38.52	1.487e2					1.6	NO		db		0.000
5	FUNCTION4 NCDPE	38.34	2.790e2					2.3	NO		dd		0.000
6	FUNCTION4 NCDPE	38.26	1.556e2					2.2	NO		bd		0.000
7	FUNCTION4 NCDPE	41.34	1.448e2					1.6	NO		bb		0.000
8	FUNCTION4 NCDPE	40.81	1.056e2					2.8	NO		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	44.58	7.112e1					3.0	NO		bb		0.000
2	FUNCTION5 DCDPE	43.59	9.542e1					3.1	YES		bb		0.000

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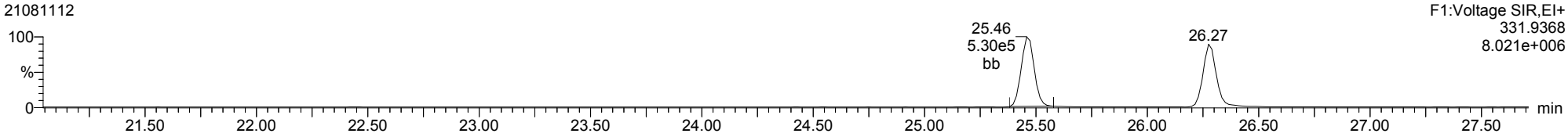

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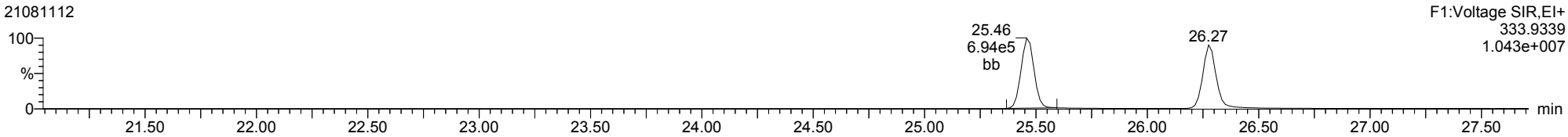

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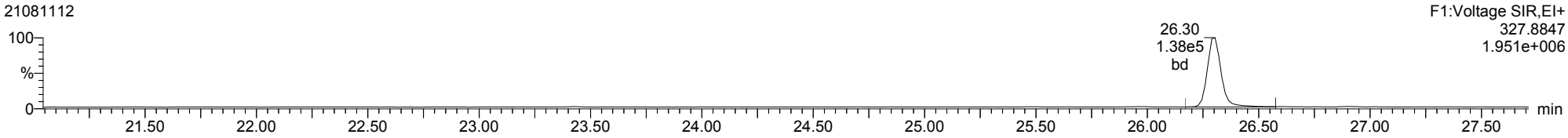

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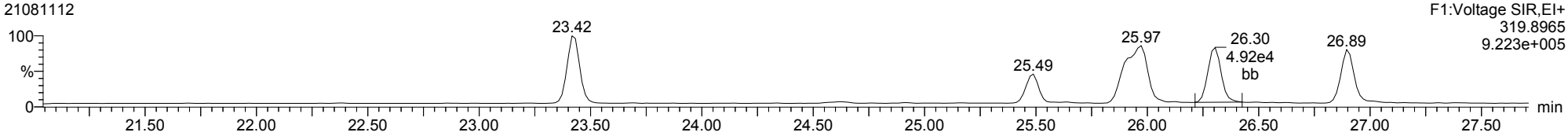

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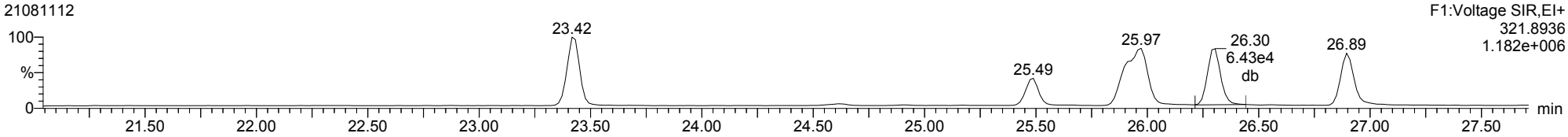

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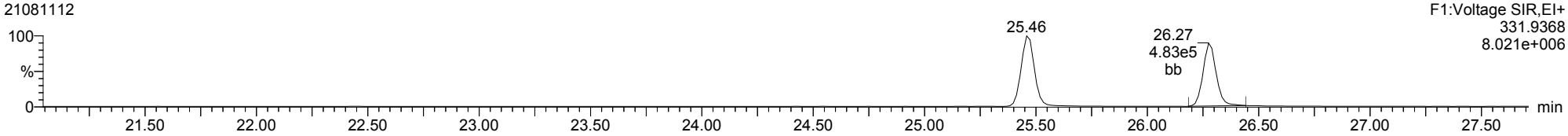

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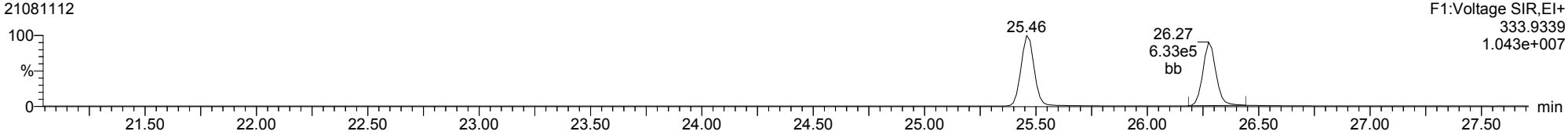

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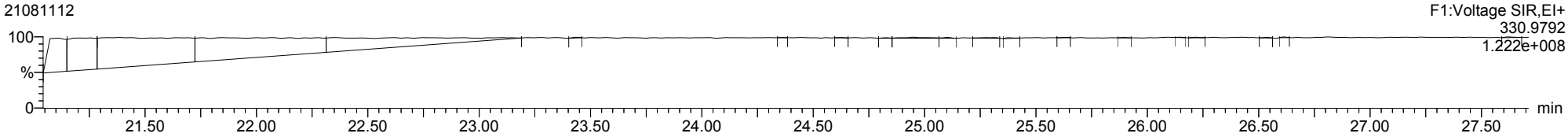

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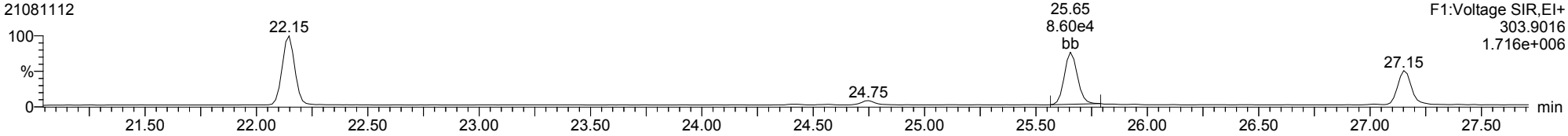

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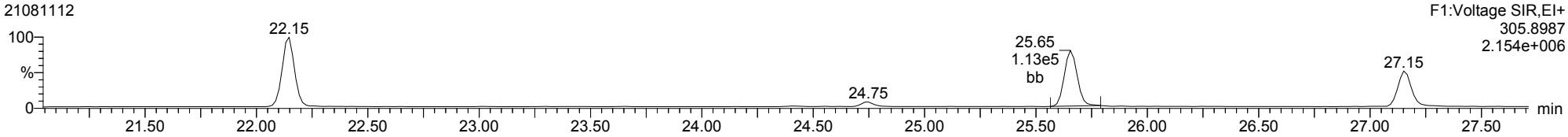

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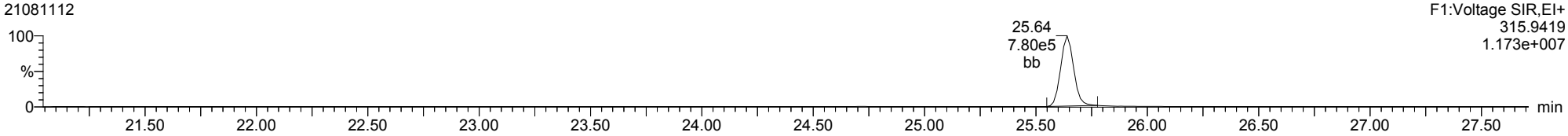

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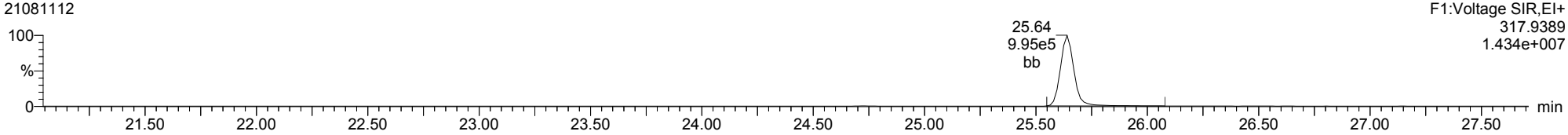

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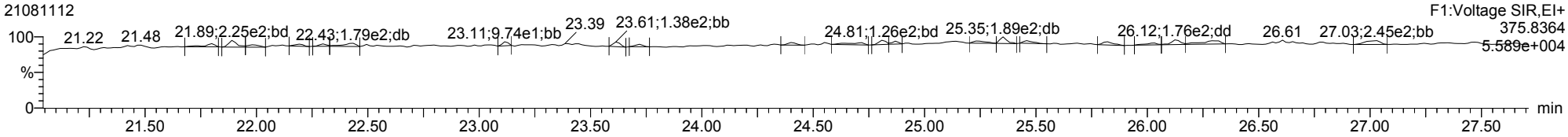

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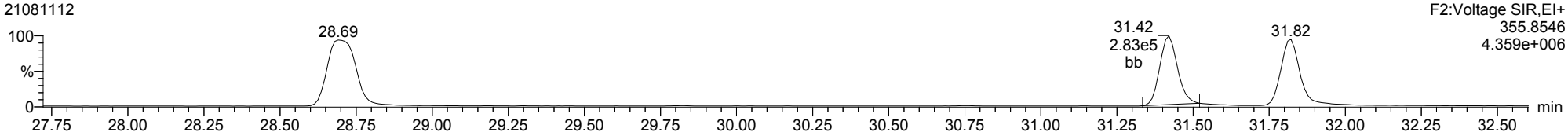

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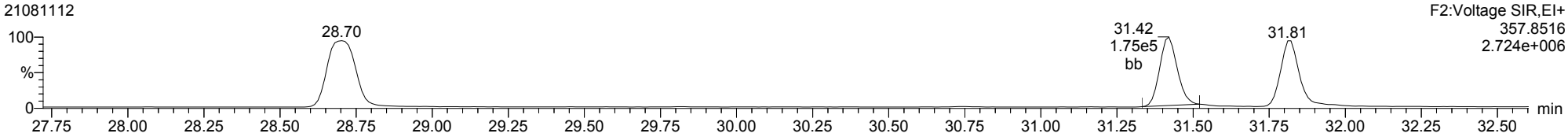

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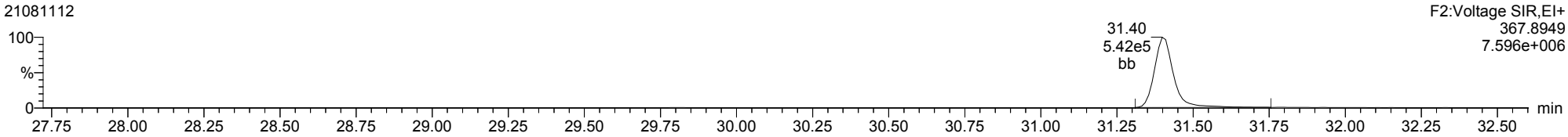

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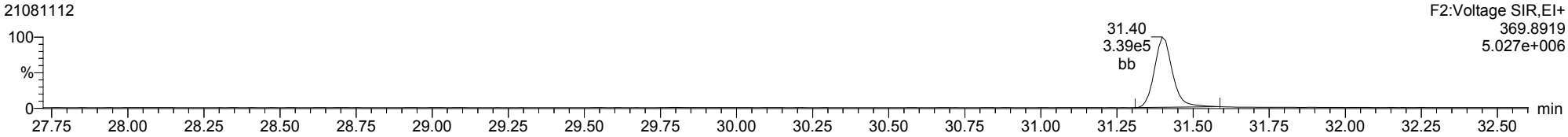

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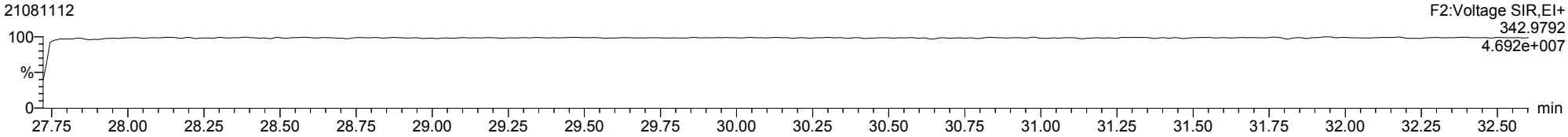

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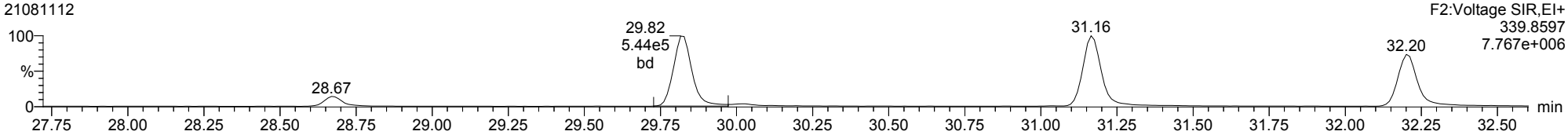

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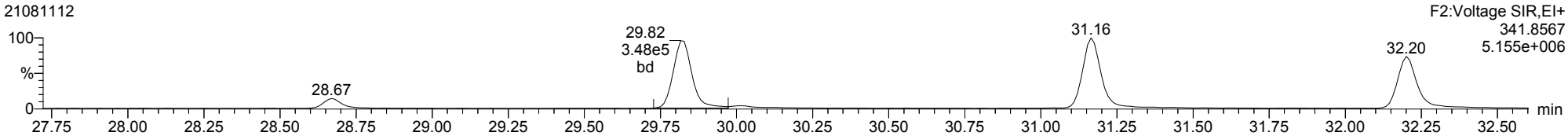

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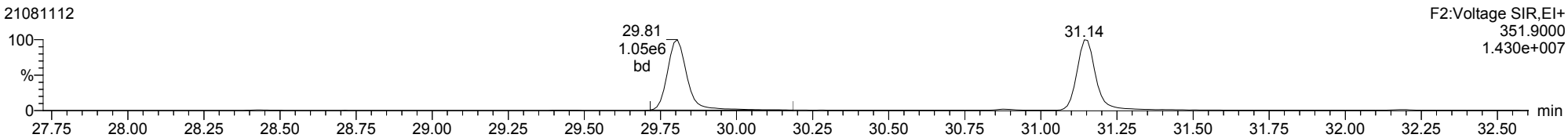

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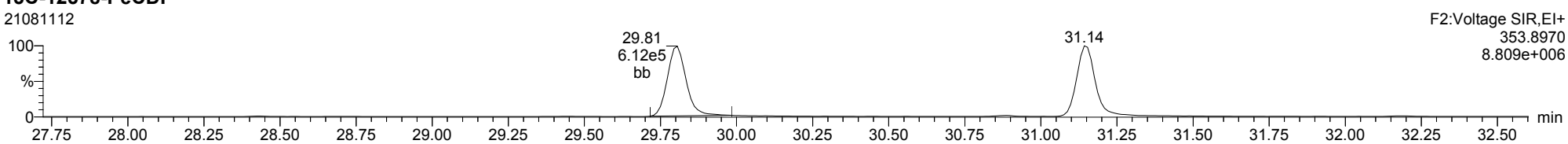

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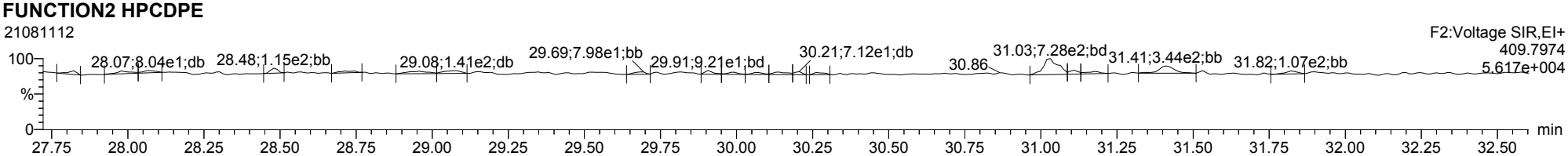

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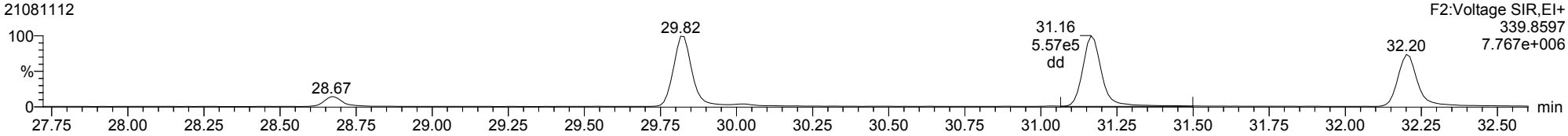
23478-PeCDF



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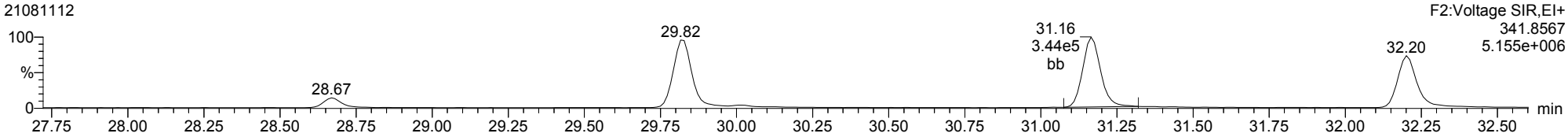

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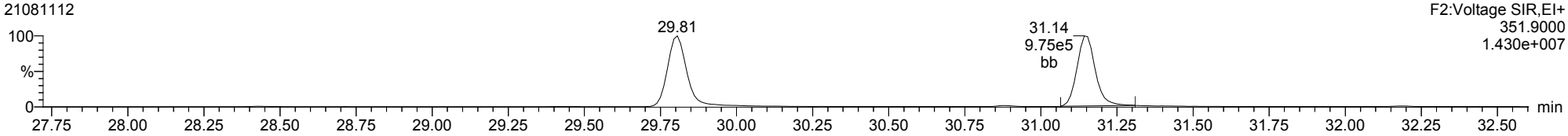

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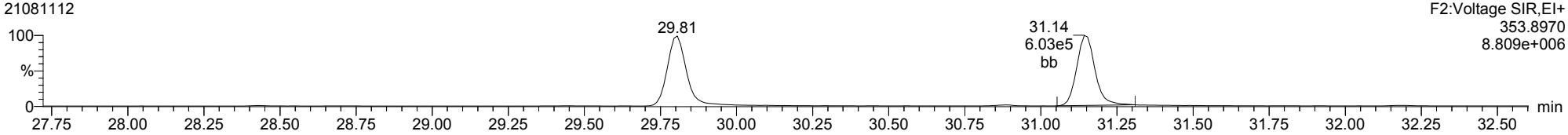

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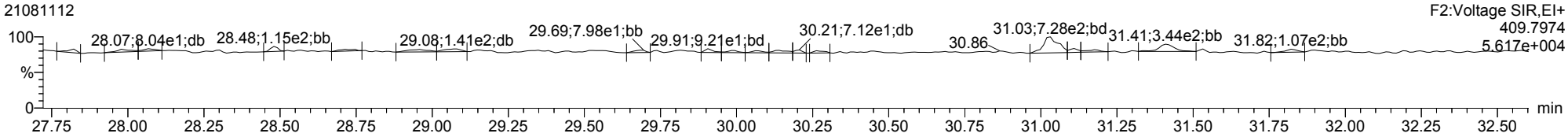

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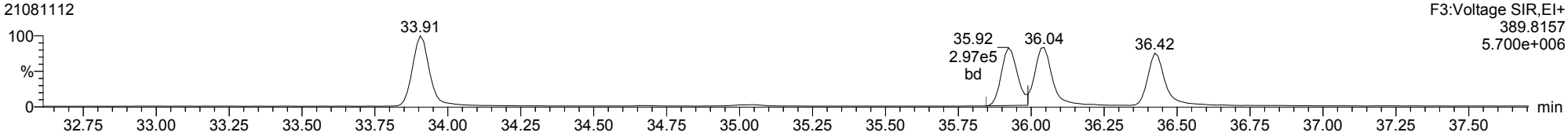

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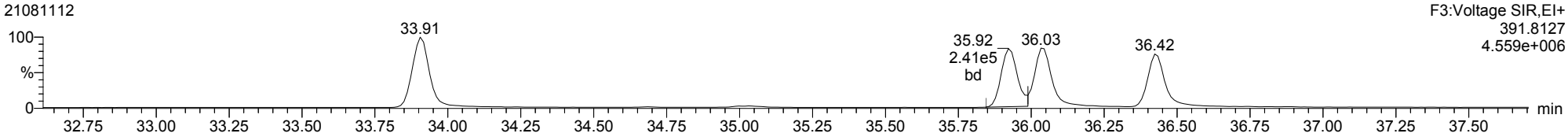

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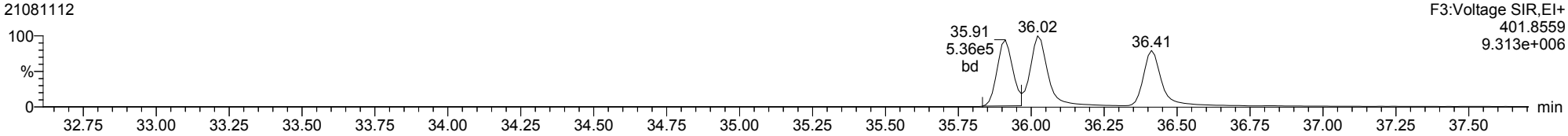

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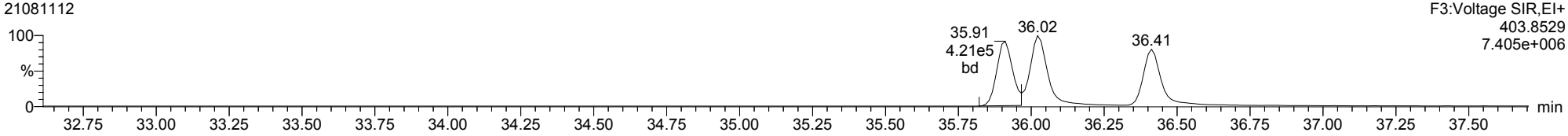

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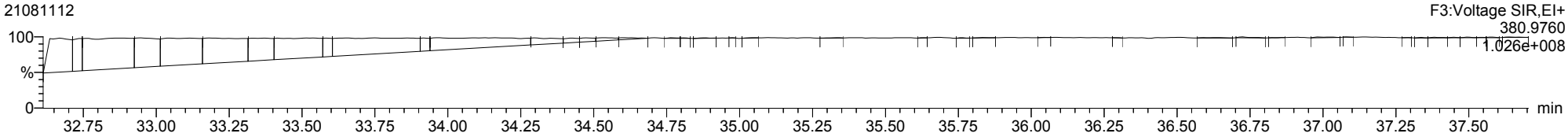

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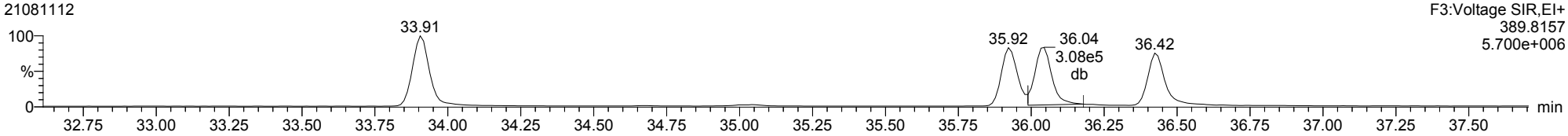

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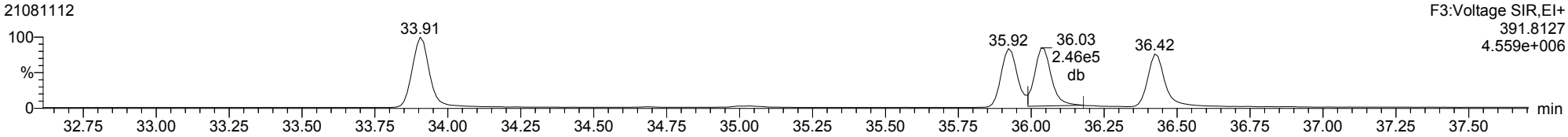

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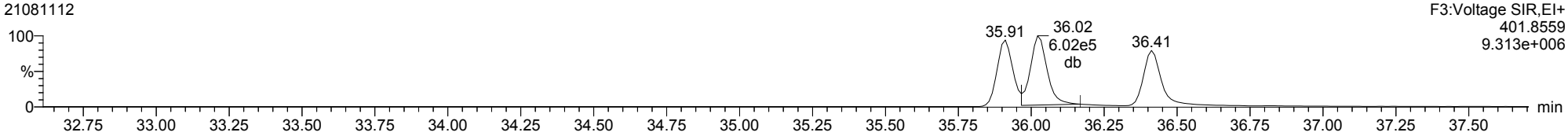

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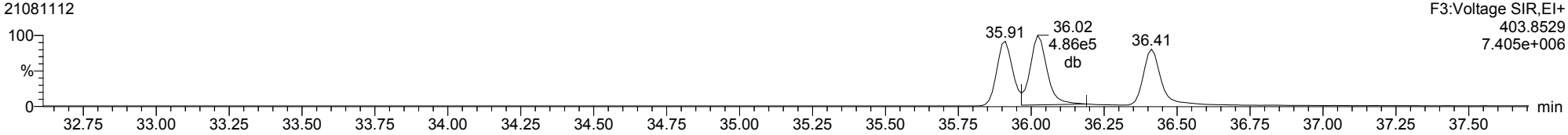

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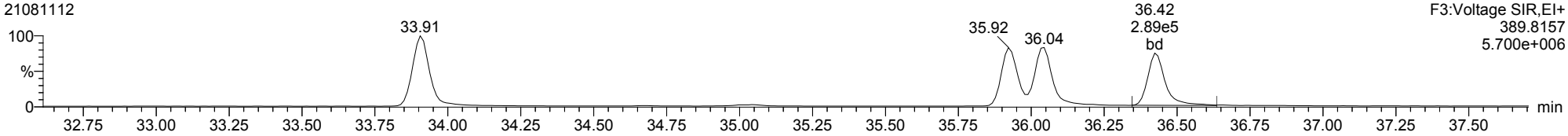

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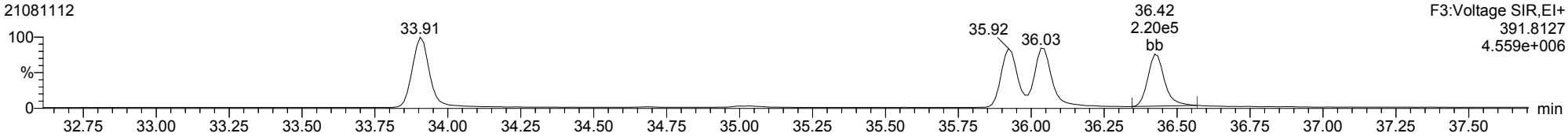

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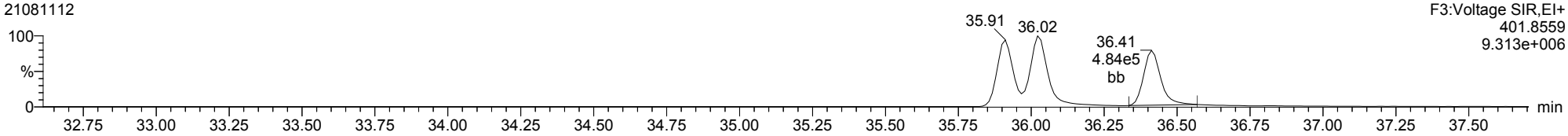

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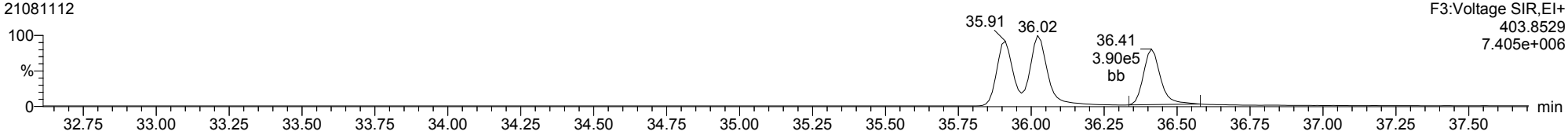

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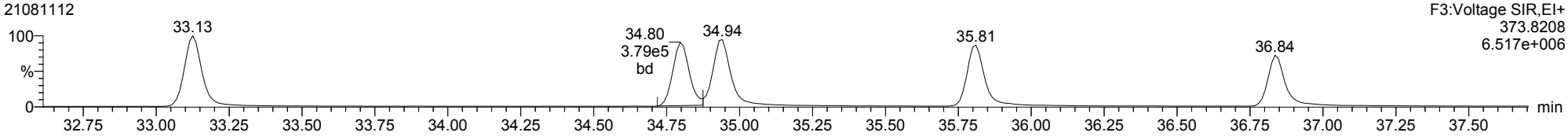

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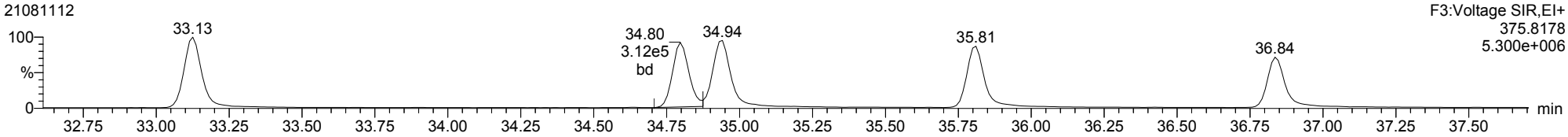

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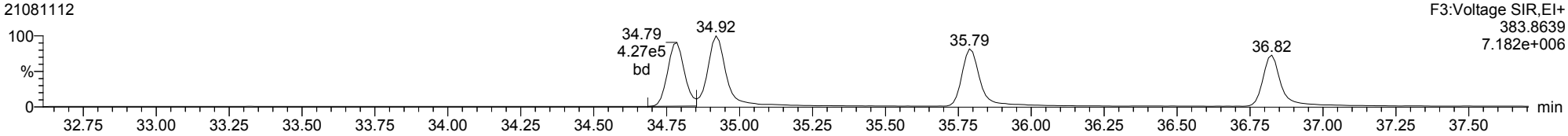

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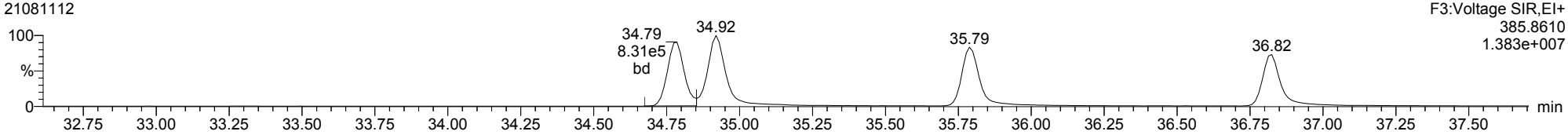

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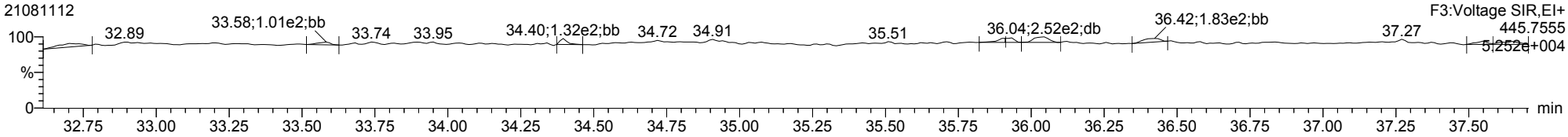

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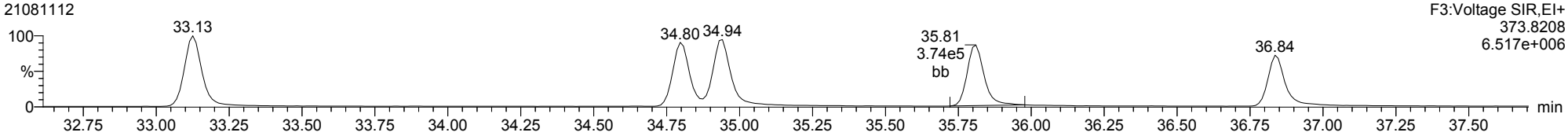

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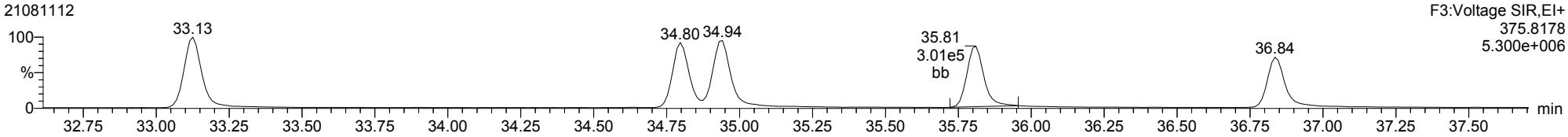

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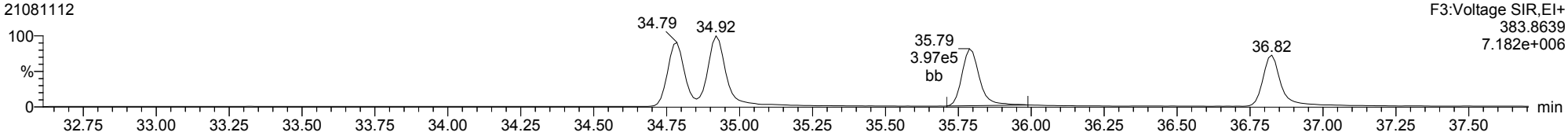

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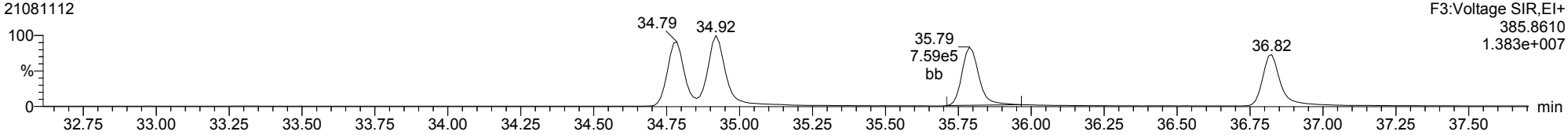

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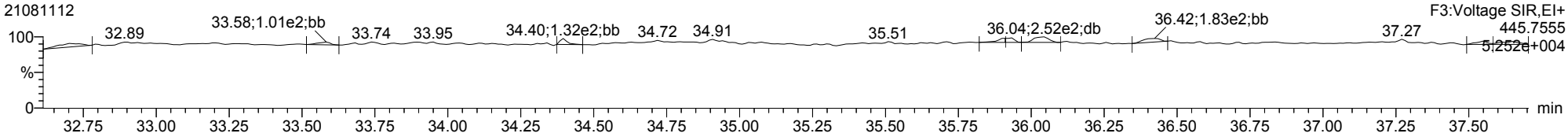

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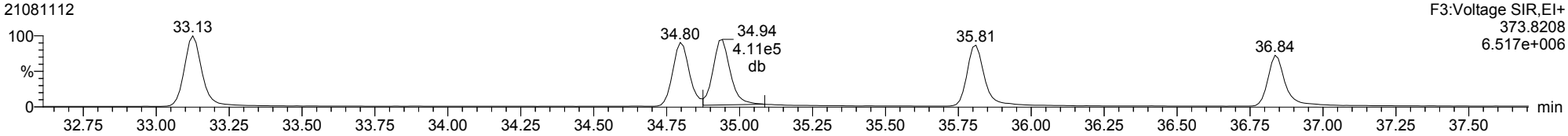

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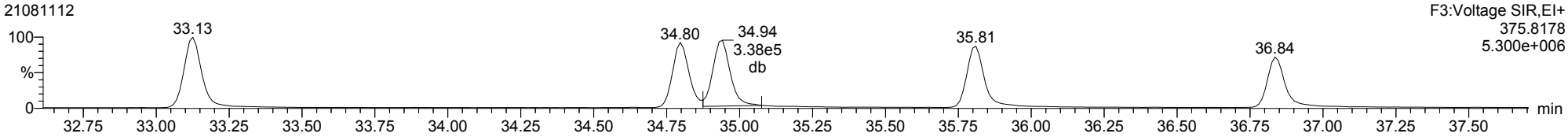

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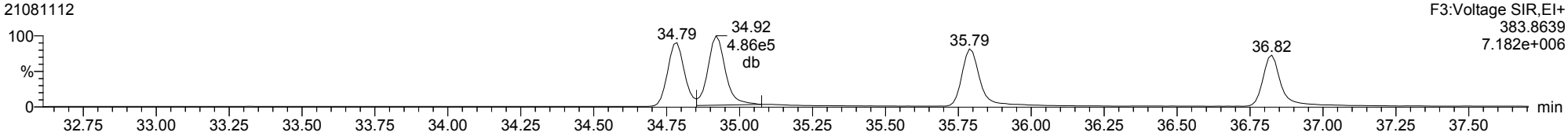

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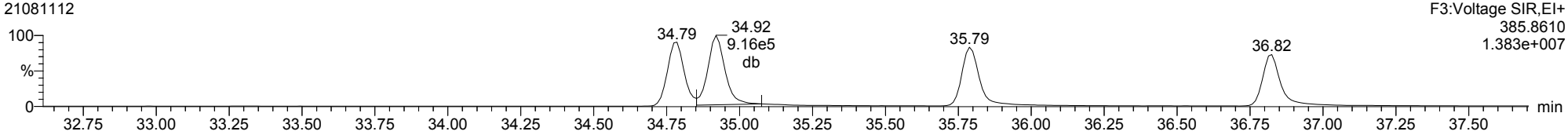

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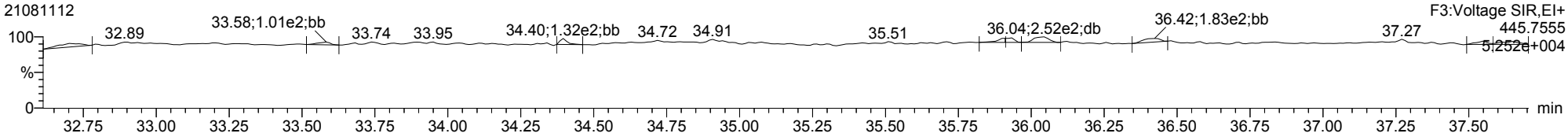

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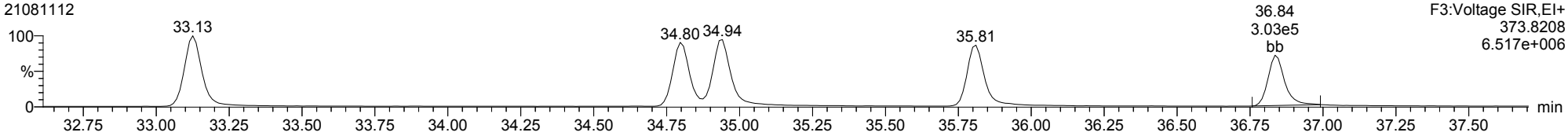

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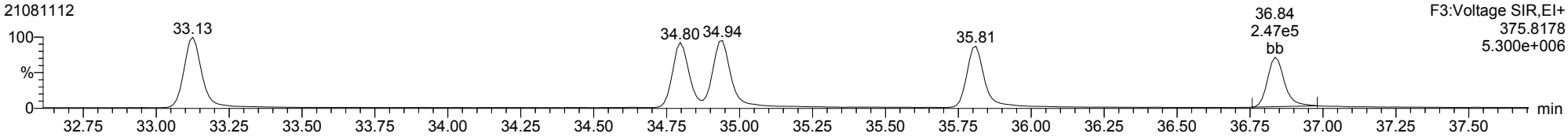

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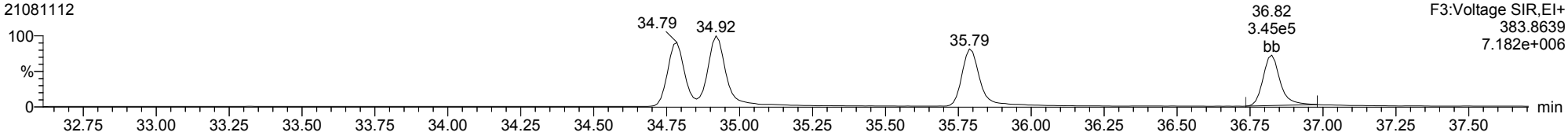

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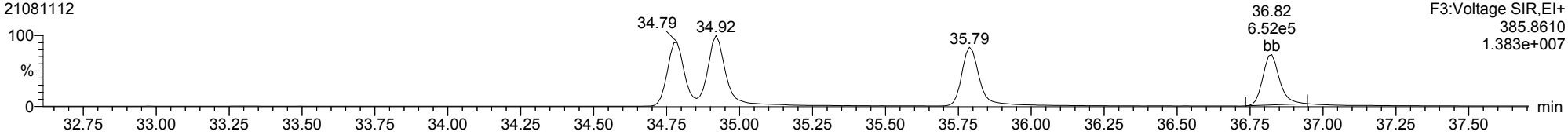

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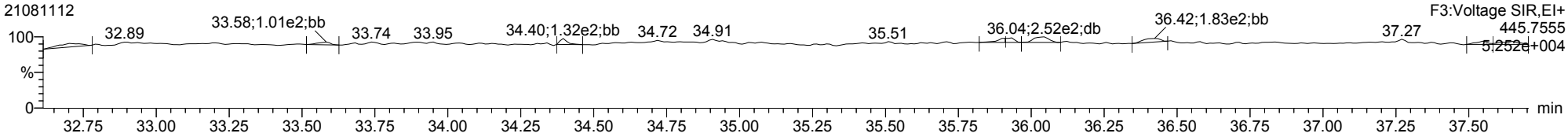

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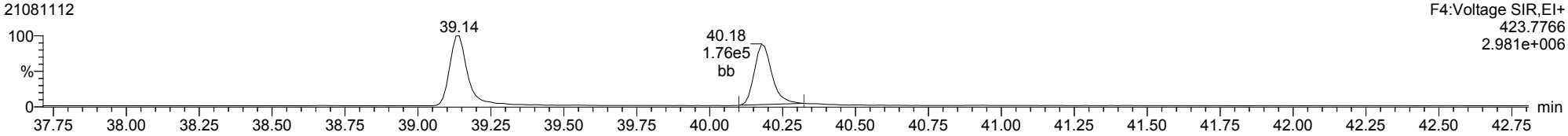

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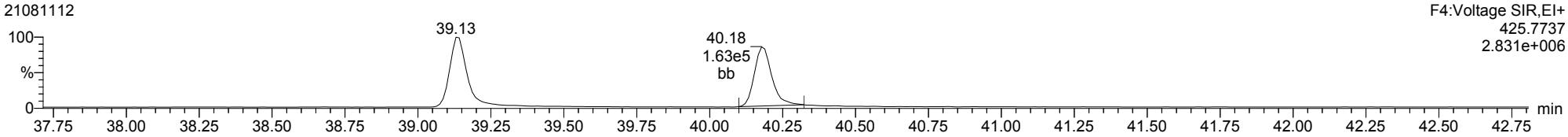

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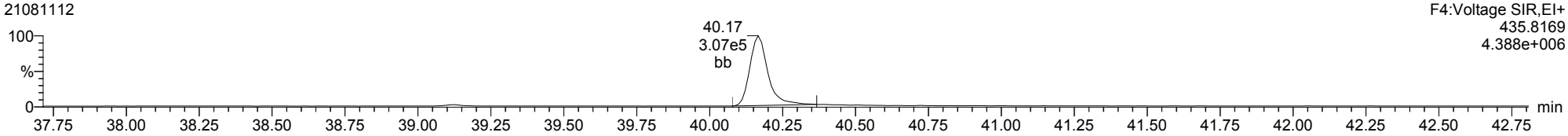

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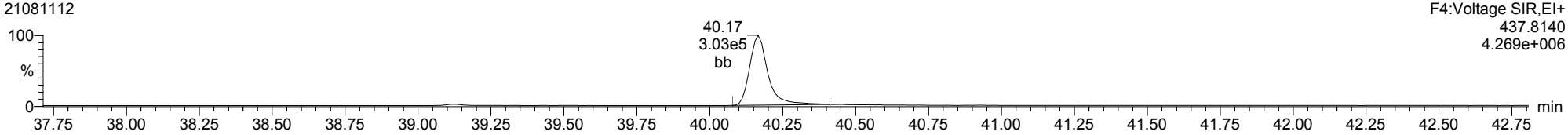

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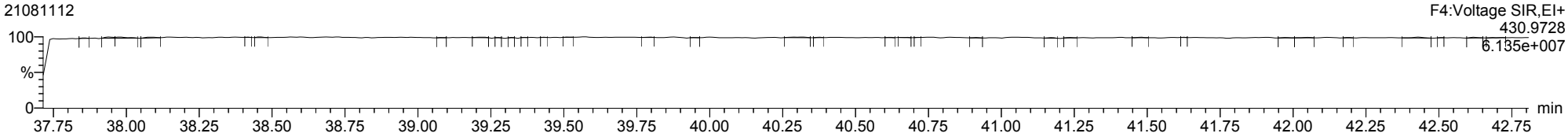

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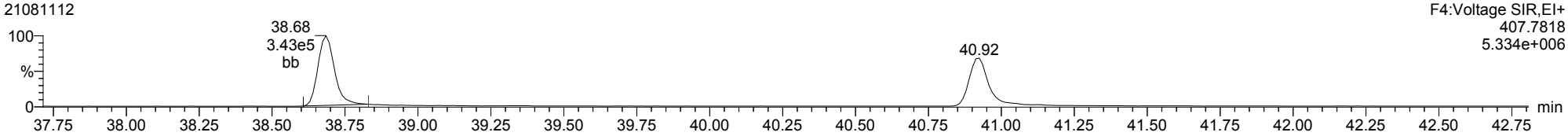

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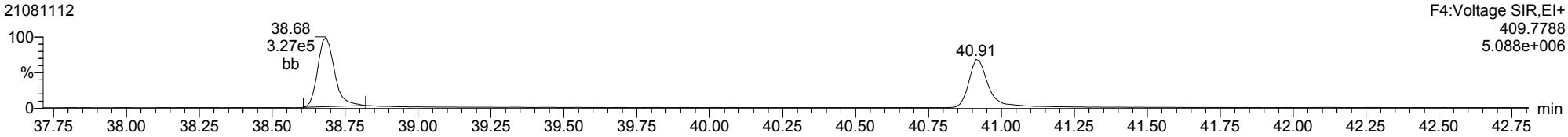

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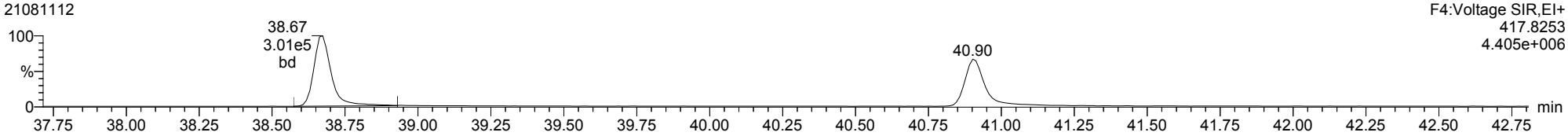

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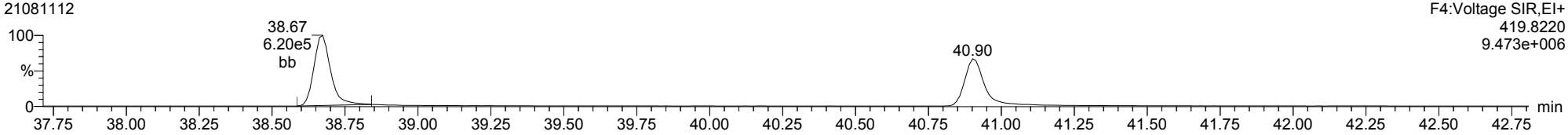

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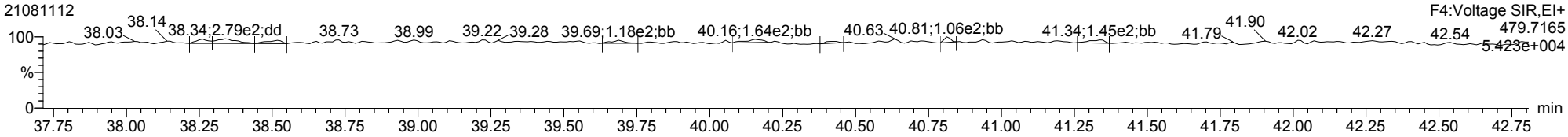

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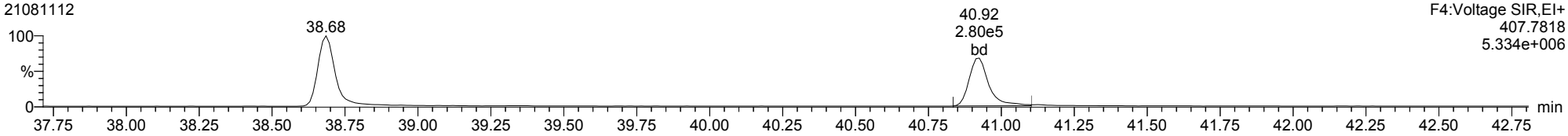

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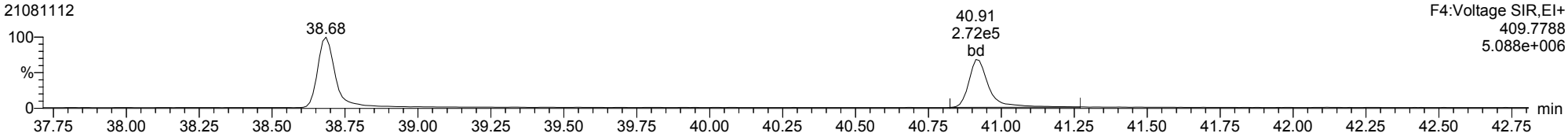

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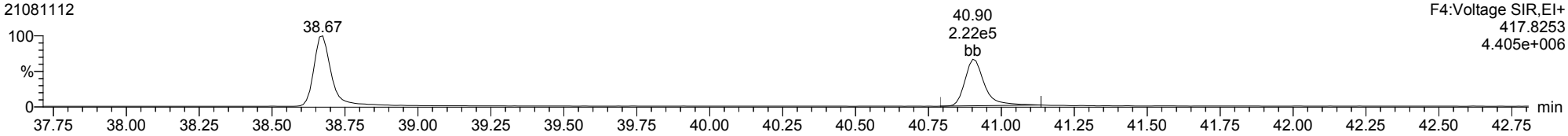

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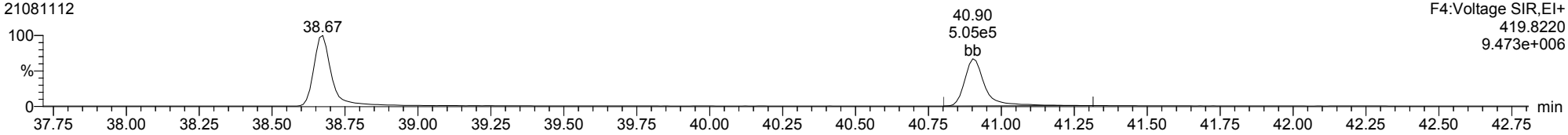
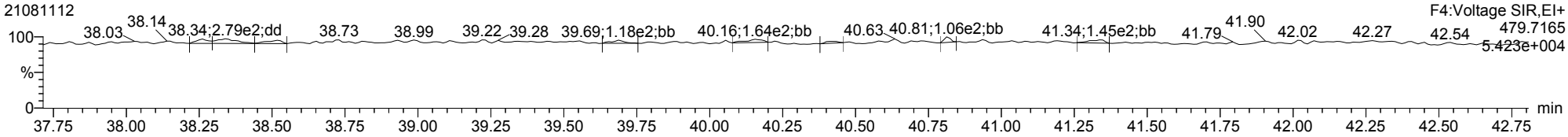
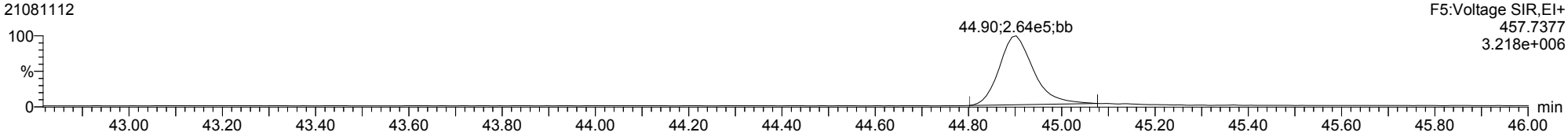


FUNCTION4 NCDPE

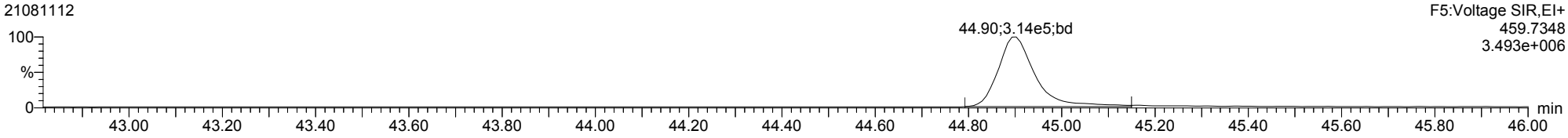


ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

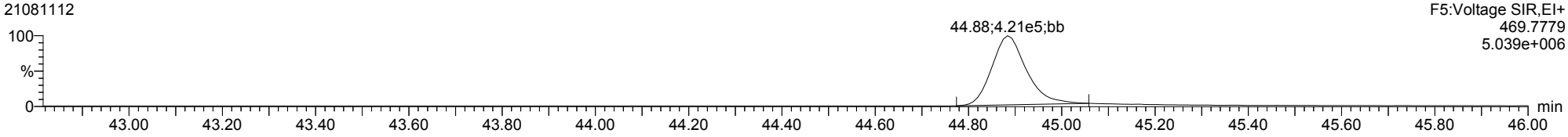
OCDD



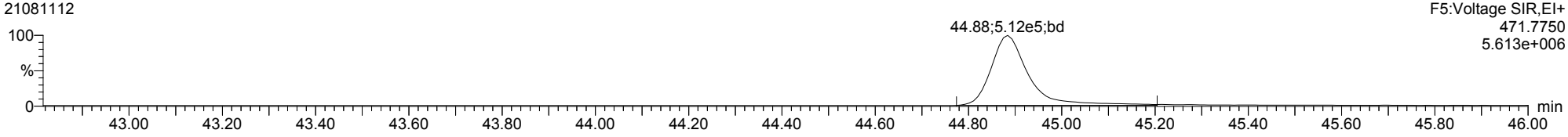
OCDD



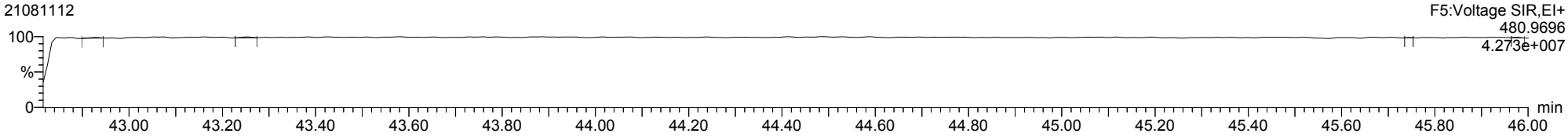
13C-OCDD



13C-OCDD

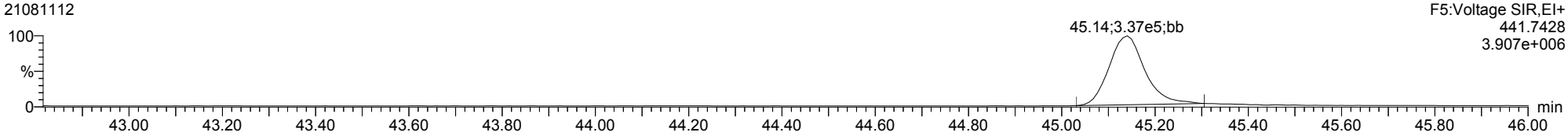


FUNCTION5 PFK

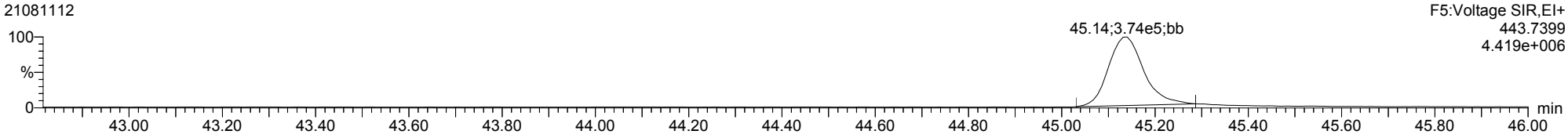


ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

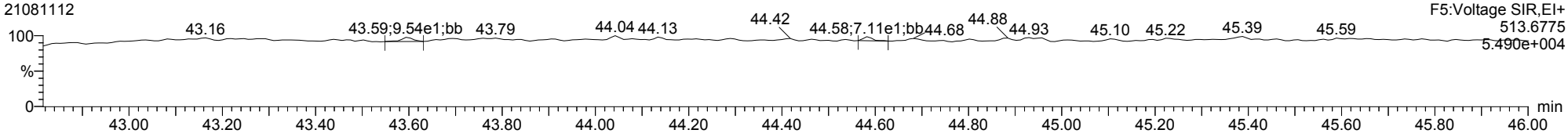
OCDF



OCDF



FUNCTION5 DCDPE



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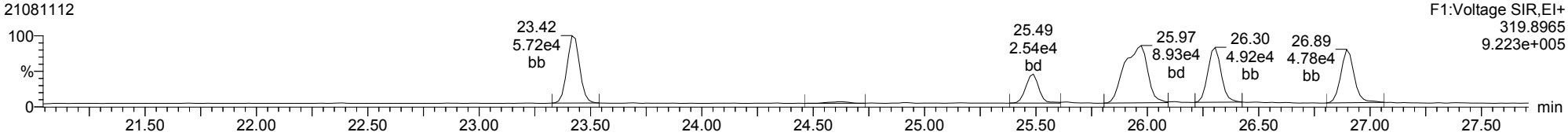
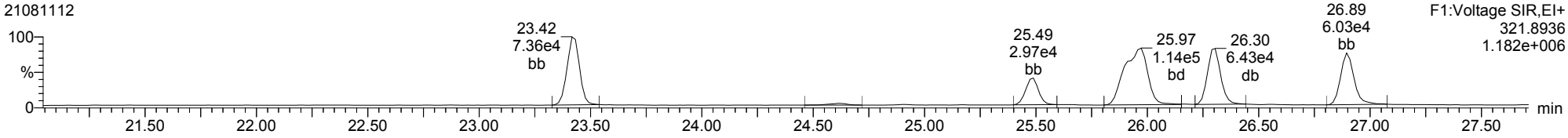
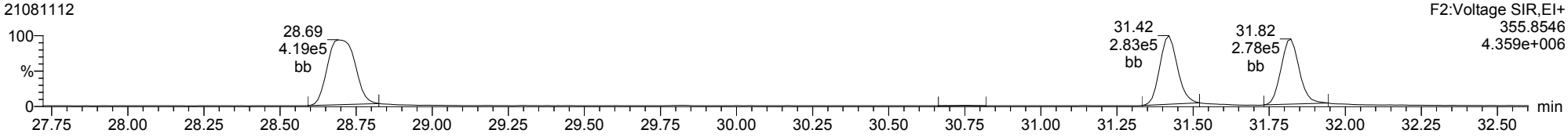
Total-tetradioxins



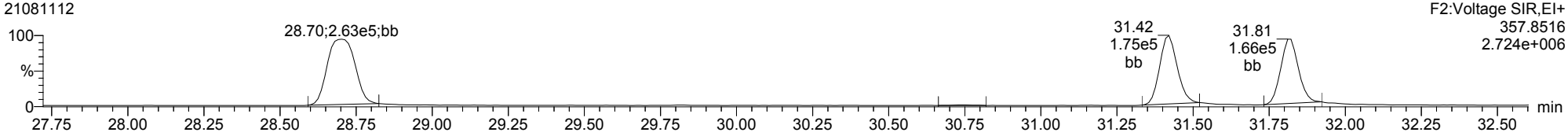
Total-tetradioxins



Total-pentadioxins

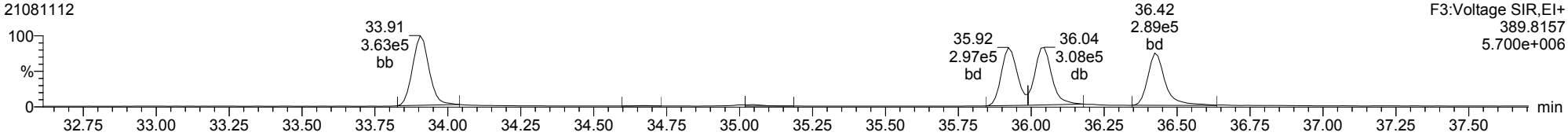


Total-pentadioxins

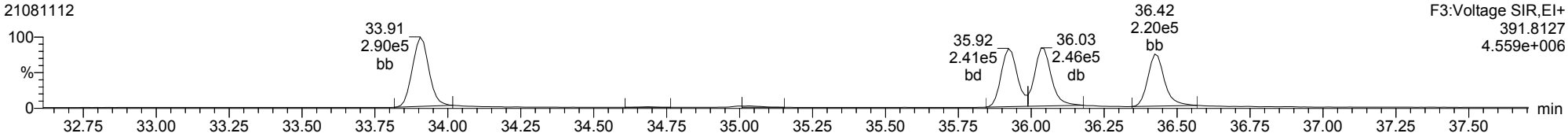


ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

Total-hexadioxins



Total-hexadioxins



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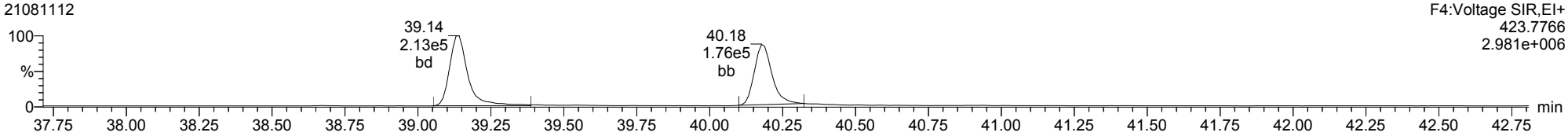
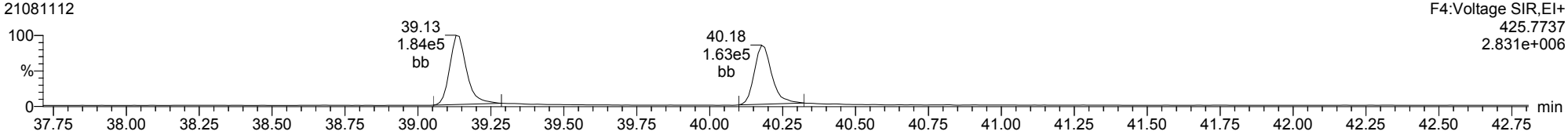
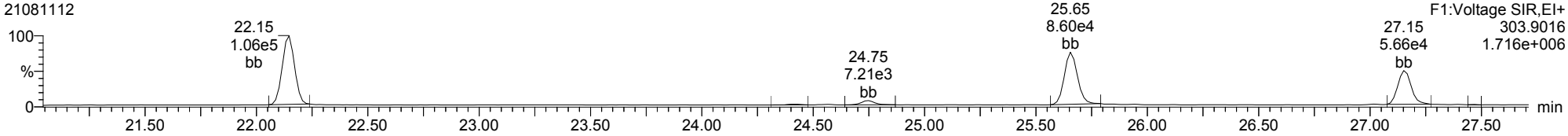


Total-heptadioxins

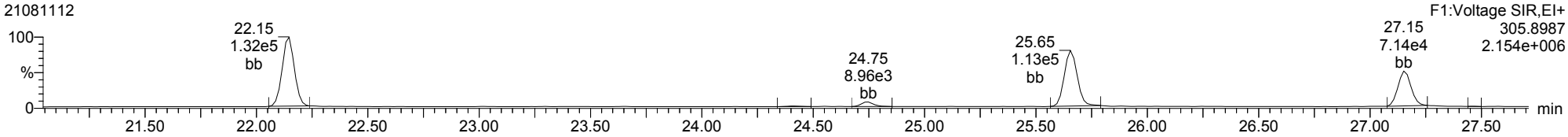


ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

Total-tetrafurans



Total-tetrafurans



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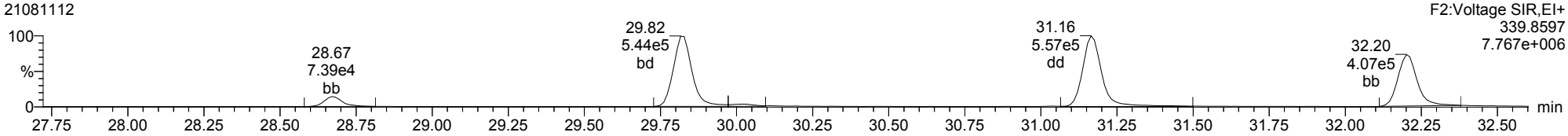

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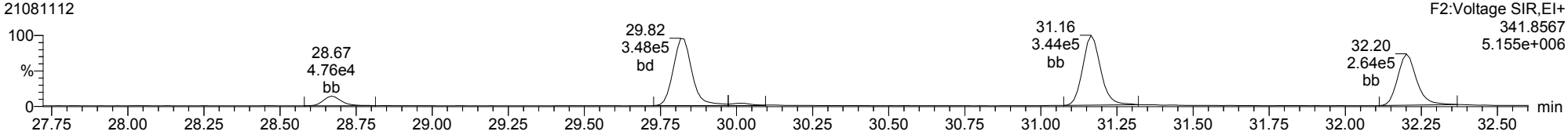

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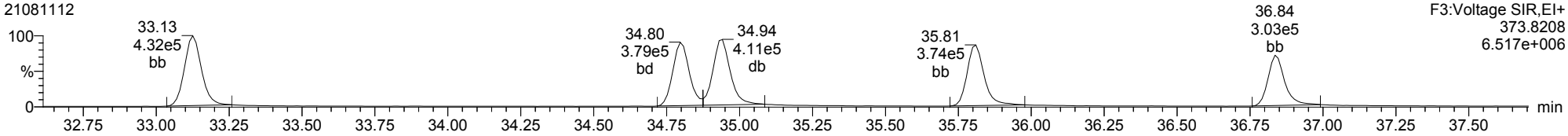
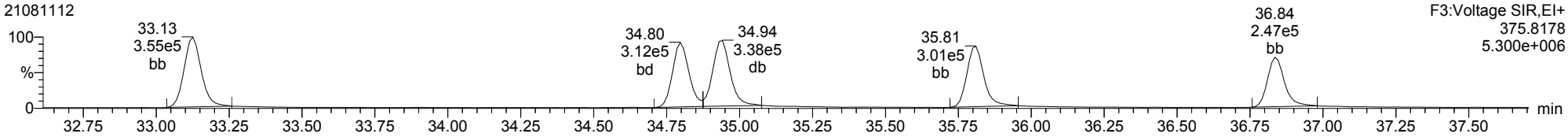
Last Altered: Friday, August 13, 2021 13:47:27 Pacific Daylight Time
Printed: Friday, August 13, 2021 13:51:56 Pacific Daylight Time

ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

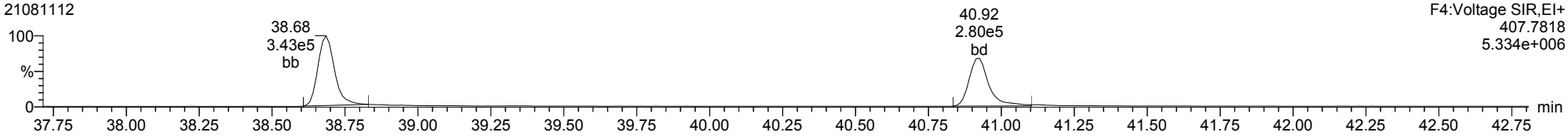
Total-hexafurans



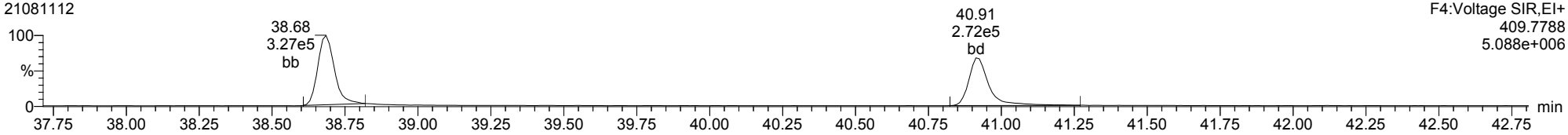
Total-hexafurans



Total-heptafurans



Total-heptafurans



Analytical Resources, Incorporated
Analytical Chemists and Consultants

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 1613B

Laboratory: Analytical Resources, Inc.
SDG: 21G0108
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Calibration: UNASSIGNED
Laboratory ID: SJH0117-SCV1
Sequence: SJH0117
Standard ID: G001361

ANALYTE	EXPECTED (ng/mL)	FOUND (ng/mL)	% DRIFT	QC LIMIT
OCDF	100.00	105	5.4	
OCDD	100.00	105	5.0	
13C12-2,3,7,8-TCDF	100.00	102	1.7	
13C12-2,3,7,8-TCDD	100.00	81.6	-18.4	
13C12-1,2,3,7,8-PeCDF	100.00	105	4.8	
13C12-2,3,4,7,8-PeCDF	100.00	104	4.3	
13C12-1,2,3,7,8-PeCDD	100.00	98.4	-1.6	
13C12-1,2,3,4,7,8-HxCDF	100.00	116	15.9	
13C12-1,2,3,6,7,8-HxCDF	100.00	119	19.4	
13C12-2,3,4,6,7,8-HxCDF	100.00	109	8.8	
13C12-1,2,3,7,8,9-HxCDF	100.00	113	13.2	
13C12-1,2,3,4,7,8-HxCDD	100.00	114	14.1	
13C12-1,2,3,6,7,8-HxCDD	100.00	119	19.5	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	114	13.7	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	110	9.8	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	110	10.5	
13C12-OCDD	200.00	212	5.9	
37Cl4-2,3,7,8-TCDD	10.000	10.4	4.0	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210811ICVIH.qld
Last Altered: Friday, August 13, 2021 13:47:27 Pacific Daylight Time
Printed: Friday, August 13, 2021 13:51:56 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210720.mdb 11 Aug 2021 14:23:13
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.655	1.001	8.598e4	1.128e5	1.108	0.762	0.770	1727	2357	1.26e6	1.68e6	728.4	713.0	NO	bb	bb	10.110
12378-PeCDF	29.816	1.000	5.436e5	3.483e5	1.015	1.561	1.550	6428	5298	7.67e6	4.88e6	1193.2	921.9	NO	bd	bd	52.831
23478-PeCDF	31.165	1.001	5.567e5	3.442e5	1.126	1.617	1.550	6428	5298	7.71e6	5.06e6	1200.0	955.7	NO	dd	bb	50.709
123478-HxCDF	34.797	1.000	3.790e5	3.119e5	1.017	1.215	1.240	6025	4489	5.81e6	4.80e6	963.5	1070.0	NO	bd	bd	54.003
234678-HxCDF	35.810	1.001	3.741e5	3.010e5	1.052	1.243	1.240	6025	4489	5.56e6	4.51e6	922.2	1004.3	NO	bb	bb	55.515
123678-HxCDF	34.941	1.001	4.107e5	3.376e5	1.037	1.217	1.240	6025	4489	5.99e6	4.89e6	994.0	1090.0	NO	db	db	51.475
123789-HxCDF	36.835	1.000	3.029e5	2.474e5	1.030	1.224	1.240	6025	4489	4.62e6	3.69e6	767.5	821.7	NO	bb	bb	53.582
1234678-HpCDF	38.685	1.000	3.428e5	3.268e5	1.327	1.049	1.050	5528	5142	5.22e6	4.97e6	945.1	966.6	NO	bb	bb	54.784
1234789-HpCDF	40.924	1.000	2.799e5	2.719e5	1.283	1.029	1.050	5528	5142	3.60e6	3.43e6	650.7	667.0	NO	bd	bd	59.145
OCDF	45.140	1.006	3.368e5	3.743e5	1.447	0.900	0.890	5198	2808	3.79e6	4.27e6	729.8	1522.4	NO	bb	bb	105.415
2378-TCDD	26.305	1.001	4.924e4	6.425e4	0.920	0.766	0.770	2440	1603	7.12e5	9.28e5	291.6	579.2	NO	bb	db	11.057
12378-PeCDD	31.421	1.001	2.834e5	1.748e5	0.995	1.621	1.550	4032	3115	4.22e6	2.62e6	1046.5	841.2	NO	bb	bb	52.211
123478-HxCDD	35.922	1.000	2.965e5	2.407e5	1.027	1.232	1.240	4241	3010	4.65e6	3.73e6	1096.7	1237.9	NO	bd	bd	54.629
123678-HxCDD	36.044	1.001	3.082e5	2.464e5	1.009	1.251	1.240	4241	3010	4.61e6	3.72e6	1085.9	1237.1	NO	db	db	50.555
123789-HxCDD	36.423	1.011	2.887e5	2.199e5	0.950	1.313	1.240	4241	3010	4.19e6	3.34e6	989.1	1108.9	NO	bd	bb	52.339
1234678-HpCDD	40.178	1.000	1.757e5	1.625e5	1.068	1.081	1.050	3111	3083	2.53e6	2.35e6	814.6	763.1	NO	bb	bb	51.865
OCDD	44.903	1.000	2.642e5	3.138e5	1.181	0.842	0.890	2972	3108	3.12e6	3.44e6	1050.3	1105.9	NO	bb	bd	104.997
13C-2378-TCDF	25.640	1.007	7.798e5	9.953e5	1.427	0.784	0.770	3469	3089	1.16e7	1.43e7	3339.4	4613.3	NO	bb	bb	101.689
13C-12378-PeCDF	29.806	1.171	1.051e6	6.125e5	1.297	1.716	1.550	4922	3645	1.42e7	8.62e6	2881.8	2364.6	NO	bd	bb	104.785
13C-23478-PeCDF	31.142	1.223	9.754e5	6.030e5	1.236	1.617	1.550	4922	3645	1.41e7	8.69e6	2860.8	2384.9	NO	bb	bb	104.321
13C-123478-HxCDF	34.785	0.955	4.274e5	8.307e5	1.242	0.514	0.510	5265	6298	6.41e6	1.24e7	1218.4	1973.2	NO	bd	bd	115.885
13C-123678-HxCDF	34.919	0.959	4.860e5	9.161e5	1.343	0.530	0.510	5265	6298	7.00e6	1.35e7	1330.1	2144.5	NO	db	db	119.442
13C-234678-HxCDF	35.788	0.983	3.967e5	7.587e5	1.215	0.523	0.510	5265	6298	5.75e6	1.13e7	1091.4	1799.0	NO	bb	bb	108.848
13C-123789-HxCDF	36.824	1.011	3.447e5	6.522e5	1.008	0.529	0.510	5265	6298	5.11e6	9.81e6	969.9	1558.1	NO	bb	bb	113.229
13C-1234678-HpCDF	38.674	1.062	3.005e5	6.203e5	0.926	0.484	0.440	3480	6125	4.35e6	9.34e6	1249.4	1525.5	NO	bd	bb	113.744
13C-1234789-HpCDF	40.902	1.123	2.223e5	5.047e5	0.758	0.440	0.440	3480	6125	2.90e6	6.30e6	833.4	1029.2	NO	bb	bb	109.773
13C-1234-TCDD	25.458	0.000	5.298e5	6.938e5	1.000	0.764	0.770	5513	2305	7.87e6	1.03e7	1428.2	4481.1	NO	bb	bb	100.000
13C-2378-TCDD	26.275	1.032	4.826e5	6.328e5	1.116	0.763	0.770	5513	2305	7.09e6	9.32e6	1285.5	4044.7	NO	bb	bb	81.637
13C-12378-PeCDD	31.399	1.233	5.423e5	3.395e5	0.732	1.598	1.550	2388	2135	7.53e6	4.95e6	3154.4	2319.5	NO	bb	bb	98.449
13C-123478-HxCDD	35.911	0.986	5.361e5	4.211e5	0.960	1.273	1.240	3574	5521	8.65e6	6.70e6	2421.3	1213.6	NO	bd	bd	114.124
13C-123678-HxCDD	36.022	0.989	6.017e5	4.857e5	1.041	1.239	1.240	3574	5521	9.06e6	7.24e6	2535.4	1311.0	NO	db	db	119.499
13C-1234678-HpCDD	40.167	1.103	3.074e5	3.031e5	0.632	1.014	1.050	3260	2760	4.30e6	4.19e6	1318.4	1519.0	NO	bb	bb	110.470
13C-OCDD	44.884	1.233	4.208e5	5.116e5	0.504	0.822	0.890	2744	3477	4.92e6	5.55e6	1792.3	1596.9	NO	bb	bd	211.835
13C-123789-HxCDD	36.412	0.000	4.843e5	3.895e5	1.000	1.243	1.240	3574	5521	7.18e6	5.79e6	2010.2	1047.9	NO	bb	bb	100.000
37CL-2378-TCDD	26.305	1.033	1.379e5		1.084			1849		1.90e6		1029.2			bd		10.397

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ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	22.147	0.864	1.063e5	1.324e5	1.425	0.802	0.770	1727	2357	1.66e6	2.09e6	959.0	886.5	NO	bb	bb	9.436
1289-TCDF	27.152	1.059	5.661e4	7.137e4	1.043	0.793	0.770	1727	2357	8.15e5	1.06e6	472.0	447.8	NO	bb	bb	6.913
13468-PECDF	27.015	0.906	5.743e5	3.714e5	1.376	1.546	1.550	1557	1759	8.45e6	5.45e6	5425.9	3099.7	NO	bb	bb	41.310
12389-PECDF	32.201	1.080	4.075e5	2.638e5	1.000	1.544	1.550	6428	5298	5.63e6	3.72e6	875.5	702.7	NO	bb	bb	40.376
123468-HXCDF	33.125	0.952	4.315e5	3.546e5	1.087	1.217	1.240	6025	4489	6.40e6	5.20e6	1061.8	1158.1	NO	bb	bb	57.507
1368-TCDD	23.417	0.891	5.716e4	7.362e4	0.923	0.776	0.770	2440	1603	8.73e5	1.13e6	357.6	706.6	NO	bb	bb	12.700
1289-TCDD	26.895	1.024	4.776e4	6.026e4	0.794	0.793	0.770	2440	1603	6.91e5	8.63e5	283.1	538.1	NO	bb	bb	12.197
12479-PECDD	28.691	0.914	4.186e5	2.632e5	1.843	1.590	1.550	4032	3115	3.99e6	2.51e6	988.7	804.5	NO	bb	bb	41.945
12389-PECDD	31.822	1.013	2.780e5	1.664e5	1.154	1.671	1.550	4032	3115	4.00e6	2.46e6	992.1	791.3	NO	bb	bb	43.683
124679-HXCDD	33.905	0.944	3.632e5	2.896e5	1.125	1.254	1.240	4241	3010	5.57e6	4.44e6	1314.1	1475.1	NO	bb	bb	60.629
1234679-HPCDD	39.141	0.975	2.129e5	1.840e5	1.211	1.157	1.050	3111	3083	2.93e6	2.75e6	941.5	893.1	NO	bd	bb	53.689
Total-tetrafurans			2.574e5		1.192			1727		3.86e6							27.363
Total-penta1			5.743e5					1557		8.45e6							41.310
Total-pentafurans			1.602e6		1.047			6428		2.23e7							153.079
Total-hexafurans			1.898e6		1.045			6025		2.84e7							272.082
Total-heptafurans			6.227e5		1.305			5528		8.82e6							113.929
Total-Furans			5.291e6		1.158			1727		7.56e7							713.177
Total-tetradioxins			2.709e5		0.879			2440		3.41e6							62.800
Total-pentadioxins			9.817e5		1.331			4032		1.22e7							138.087
Total-hexadioxins			1.266e6		1.028			4241		1.92e7							219.741
Total-heptadioxins			3.886e5		1.140			3111		5.46e6							105.554
Total-Dioxins			3.171e6		1.092			2440		4.34e7							631.178
Total-TEQ			8.462e6					2440		1.19e8							1344.355
FUNCTION1 PFK			6.450e7					839971		2.37e8							
FUNCTION2 PFK			0.000e0					483349		0.00e0							
FUNCTION3 PFK			5.184e7					675979		4.54e8							0.000
FUNCTION4 PFK			3.964e5					425264		1.39e7							
FUNCTION5 PFK			3.414e4					345829		1.67e6							
FUNCTION1 HXCD...			2.903e3					1258		5.64e4							0.000
FUNCTION1 HPCD...			2.863e3					1421		5.44e4							0.000
FUNCTION2 HPCD...			2.720e3					1471		5.70e4							0.000
FUNCTION3 OCDPE			1.392e3					890		2.72e4							0.000
FUNCTION4 NCDPE			1.187e3					1520		2.23e4							0.000
FUNCTION5 DCDPE			1.665e2					1065		6.42e3							0.000

Dataset: T:\Autospec\Processed Data Batch\210811ICVIH.qld
Last Altered: Friday, August 13, 2021 13:47:27 Pacific Daylight Time
Printed: Friday, August 13, 2021 13:51:56 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210720.mdb 11 Aug 2021 14:23:13
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

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TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.15	5.661e4	7.137e4	1.043	0.79	0.77	472.0	YES	NO	bb	bb	6.913
2	2378-TCDF	25.65	8.598e4	1.128e5	1.108	0.76	0.77	728.4	YES	NO	bb	bb	10.110
3	Total-tetrafurans	24.75	7.210e3	8.958e3	1.192	0.80	0.77	60.0	YES	NO	bb	bb	0.764
4	Total-tetrafurans	24.42	1.138e3	1.365e3	1.192	0.83	0.77	9.8	YES	NO	bb	bb	0.118
5	1368-TCDF	22.15	1.063e5	1.324e5	1.425	0.80	0.77	959.0	YES	NO	bb	bb	9.436
6	Total-tetrafurans	27.47	1.965e2	2.354e2	1.192	0.83	0.77	3.7	YES	NO	db	bb	0.020

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	27.02	5.743e5	3.714e5	1.376	1.55	1.55	5425.9	YES	NO	bb	bb	41.310

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-pentafurans	28.67	7.393e4	4.763e4	1.047	1.55	1.55	167.4	YES	NO	bb	bb	7.165
2	12389-PECDF	32.20	4.075e5	2.638e5	1.000	1.54	1.55	875.5	YES	NO	bb	bb	40.376
3	23478-PeCDF	31.16	5.567e5	3.442e5	1.126	1.62	1.55	1200.0	YES	NO	dd	bb	50.709
4	Total-pentafurans	30.02	2.035e4	1.353e4	1.047	1.50	1.55	37.7	YES	NO	dd	dd	1.997
5	12378-PeCDF	29.82	5.436e5	3.483e5	1.015	1.56	1.55	1193.2	YES	NO	bd	bd	52.831

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123468-HXCDF	33.13	4.315e5	3.546e5	1.087	1.22	1.24	1061.8	YES	NO	bb	bb	57.507
2	123789-HxCDF	36.84	3.029e5	2.474e5	1.030	1.22	1.24	767.5	YES	NO	bb	bb	53.582
3	234678-HxCDF	35.81	3.741e5	3.010e5	1.052	1.24	1.24	922.2	YES	NO	bb	bb	55.515
4	123678-HxCDF	34.94	4.107e5	3.376e5	1.037	1.22	1.24	994.0	YES	NO	db	db	51.475
5	123478-HxCDF	34.80	3.790e5	3.119e5	1.017	1.22	1.24	963.5	YES	NO	bd	bd	54.003

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDF	38.68	3.428e5	3.268e5	1.327	1.05	1.05	945.1	YES	NO	bb	bb	54.784
2	1234789-HpCDF	40.92	2.799e5	2.719e5	1.283	1.03	1.05	650.7	YES	NO	bd	bd	59.145

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.15	5.661e4	7.137e4	1.043	0.79	0.77	472.0	YES	NO	bb	bb	6.913
2	2378-TCDF	25.65	8.598e4	1.128e5	1.108	0.76	0.77	728.4	YES	NO	bb	bb	10.110
3	Total-tetrafurans	24.75	7.210e3	8.958e3	1.192	0.80	0.77	60.0	YES	NO	bb	bb	0.764
4	Total-tetrafurans	24.42	1.138e3	1.365e3	1.192	0.83	0.77	9.8	YES	NO	bb	bb	0.118
5	1368-TCDF	22.15	1.063e5	1.324e5	1.425	0.80	0.77	959.0	YES	NO	bb	bb	9.436
6	Total-tetrafurans	27.47	1.965e2	2.354e2	1.192	0.83	0.77	3.7	YES	NO	db	bb	0.020
7	Total-pentafurans	28.67	7.393e4	4.763e4	1.047	1.55	1.55	167.4	YES	NO	bb	bb	7.165
8	12389-PECDF	32.20	4.075e5	2.638e5	1.000	1.54	1.55	875.5	YES	NO	bb	bb	40.376
9	23478-PeCDF	31.16	5.567e5	3.442e5	1.126	1.62	1.55	1200.0	YES	NO	dd	bb	50.709
10	Total-pentafurans	30.02	2.035e4	1.353e4	1.047	1.50	1.55	37.7	YES	NO	dd	dd	1.997
11	12378-PeCDF	29.82	5.436e5	3.483e5	1.015	1.56	1.55	1193.2	YES	NO	bd	bd	52.831
12	123468-HXCDF	33.13	4.315e5	3.546e5	1.087	1.22	1.24	1061.8	YES	NO	bb	bb	57.507
13	123789-HxCDF	36.84	3.029e5	2.474e5	1.030	1.22	1.24	767.5	YES	NO	bb	bb	53.582
14	234678-HxCDF	35.81	3.741e5	3.010e5	1.052	1.24	1.24	922.2	YES	NO	bb	bb	55.515
15	123678-HxCDF	34.94	4.107e5	3.376e5	1.037	1.22	1.24	994.0	YES	NO	db	db	51.475
16	123478-HxCDF	34.80	3.790e5	3.119e5	1.017	1.22	1.24	963.5	YES	NO	bd	bd	54.003
17	1234678-HpCDF	38.68	3.428e5	3.268e5	1.327	1.05	1.05	945.1	YES	NO	bb	bb	54.784
18	1234789-HpCDF	40.92	2.799e5	2.719e5	1.283	1.03	1.05	650.7	YES	NO	bd	bd	59.145
19	OCDF	45.14	3.368e5	3.743e5	1.447	0.90	0.89	729.8	YES	NO	bb	bb	105.415
20	13468-PECDF	27.02	5.743e5	3.714e5	1.376	1.55	1.55	5425.9	YES	NO	bb	bb	41.310

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.97	8.932e4	1.141e5	0.879	0.78	0.77	303.9	YES	NO	bd	bd	20.744
2	Total-tetradioxins	25.49	2.543e4	2.972e4	0.879	0.86	0.77	154.2	YES	NO	bd	bb	5.625
3	Total-tetradioxins	24.63	2.020e3	2.647e3	0.879	0.76	0.77	8.0	YES	NO	bd	bb	0.476
4	1368-TCDD	23.42	5.716e4	7.362e4	0.923	0.78	0.77	357.6	YES	NO	bb	bb	12.700
5	1289-TCDD	26.89	4.776e4	6.026e4	0.794	0.79	0.77	283.1	YES	NO	bb	bb	12.197
6	2378-TCDD	26.30	4.924e4	6.425e4	0.920	0.77	0.77	291.6	YES	NO	bb	db	11.057

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PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDD	31.82	2.780e5	1.664e5	1.154	1.67	1.55	992.1	YES	NO	bb	bb	43.683
2	12378-PeCDD	31.42	2.834e5	1.748e5	0.995	1.62	1.55	1046.5	YES	NO	bb	bb	52.211
3	Total-pentadioxins	30.75	1.739e3	1.177e3	1.331	1.48	1.55	6.0	YES	NO	bb	bb	0.249
4	12479-PECDD	28.69	4.186e5	2.632e5	1.843	1.59	1.55	988.7	YES	NO	bb	bb	41.945

HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	124679-HXCDD	33.91	3.632e5	2.896e5	1.125	1.25	1.24	1314.1	YES	NO	bb	bb	60.629
2	123789-HxCDD	36.42	2.887e5	2.199e5	0.950	1.31	1.24	989.1	YES	NO	bd	bb	52.339
3	123678-HxCDD	36.04	3.082e5	2.464e5	1.009	1.25	1.24	1085.9	YES	NO	db	db	50.555
4	123478-HxCDD	35.92	2.965e5	2.407e5	1.027	1.23	1.24	1096.7	YES	NO	bd	bd	54.629
5	Total-hexadioxins	35.04	7.156e3	6.136e3	1.028	1.17	1.24	26.9	YES	NO	db	db	1.265
6	Total-hexadioxins	34.67	1.781e3	1.631e3	1.028	1.09	1.24	7.7	YES	NO	bb	bb	0.325

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	40.18	1.757e5	1.625e5	1.068	1.08	1.05	814.6	YES	NO	bb	bb	51.865
2	1234679-HPCDD	39.14	2.129e5	1.840e5	1.211	1.16	1.05	941.5	YES	NO	bd	bb	53.689

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Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.97	8.932e4	1.141e5	0.879	0.78	0.77	303.9	YES	NO	bd	bd	20.744
2	Total-tetradioxins	25.49	2.543e4	2.972e4	0.879	0.86	0.77	154.2	YES	NO	bd	bb	5.625
3	Total-tetradioxins	24.63	2.020e3	2.647e3	0.879	0.76	0.77	8.0	YES	NO	bd	bb	0.476
4	1368-TCDD	23.42	5.716e4	7.362e4	0.923	0.78	0.77	357.6	YES	NO	bb	bb	12.700
5	1289-TCDD	26.89	4.776e4	6.026e4	0.794	0.79	0.77	283.1	YES	NO	bb	bb	12.197
6	2378-TCDD	26.30	4.924e4	6.425e4	0.920	0.77	0.77	291.6	YES	NO	bb	db	11.057
7	12389-PECDD	31.82	2.780e5	1.664e5	1.154	1.67	1.55	992.1	YES	NO	bb	bb	43.683
8	12378-PeCDD	31.42	2.834e5	1.748e5	0.995	1.62	1.55	1046.5	YES	NO	bb	bb	52.211
9	Total-pentadioxins	30.75	1.739e3	1.177e3	1.331	1.48	1.55	6.0	YES	NO	bb	bb	0.249
10	12479-PECDD	28.69	4.186e5	2.632e5	1.843	1.59	1.55	988.7	YES	NO	bb	bb	41.945
11	124679-HXCDD	33.91	3.632e5	2.896e5	1.125	1.25	1.24	1314.1	YES	NO	bb	bb	60.629
12	123789-HxCDD	36.42	2.887e5	2.199e5	0.950	1.31	1.24	989.1	YES	NO	bd	bb	52.339
13	123678-HxCDD	36.04	3.082e5	2.464e5	1.009	1.25	1.24	1085.9	YES	NO	db	db	50.555
14	123478-HxCDD	35.92	2.965e5	2.407e5	1.027	1.23	1.24	1096.7	YES	NO	bd	bd	54.629
15	Total-hexadioxins	35.04	7.156e3	6.136e3	1.028	1.17	1.24	26.9	YES	NO	db	db	1.265
16	Total-hexadioxins	34.67	1.781e3	1.631e3	1.028	1.09	1.24	7.7	YES	NO	bb	bb	0.325
17	1234678-HpCDD	40.18	1.757e5	1.625e5	1.068	1.08	1.05	814.6	YES	NO	bb	bb	51.865
18	1234679-HPCDD	39.14	2.129e5	1.840e5	1.211	1.16	1.05	941.5	YES	NO	bd	bb	53.689
19	OCDD	44.90	2.642e5	3.138e5	1.181	0.84	0.89	1050.3	YES	NO	bb	bd	104.997

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	27.15	5.661e4	7.137e4	1.043	0.79	0.77	472.0	YES	NO	bb	bb	6.913
2	2378-TCDF	25.65	8.598e4	1.128e5	1.108	0.76	0.77	728.4	YES	NO	bb	bb	10.110
3	Total-tetrafurans	24.75	7.210e3	8.958e3	1.192	0.80	0.77	60.0	YES	NO	bb	bb	0.764
4	Total-tetrafurans	24.42	1.138e3	1.365e3	1.192	0.83	0.77	9.8	YES	NO	bb	bb	0.118
5	1368-TCDF	22.15	1.063e5	1.324e5	1.425	0.80	0.77	959.0	YES	NO	bb	bb	9.436
6	Total-tetrafurans	27.47	1.965e2	2.354e2	1.192	0.83	0.77	3.7	YES	NO	db	bb	0.020
7	Total-pentafurans	28.67	7.393e4	4.763e4	1.047	1.55	1.55	167.4	YES	NO	bb	bb	7.165
8	12389-PECDF	32.20	4.075e5	2.638e5	1.000	1.54	1.55	875.5	YES	NO	bb	bb	40.376
9	23478-PeCDF	31.16	5.567e5	3.442e5	1.126	1.62	1.55	1200.0	YES	NO	dd	bb	50.709
10	Total-pentafurans	30.02	2.035e4	1.353e4	1.047	1.50	1.55	37.7	YES	NO	dd	dd	1.997
11	12378-PeCDF	29.82	5.436e5	3.483e5	1.015	1.56	1.55	1193.2	YES	NO	bd	bd	52.831
12	123468-HXCDF	33.13	4.315e5	3.546e5	1.087	1.22	1.24	1061.8	YES	NO	bb	bb	57.507
13	123789-HxCDF	36.84	3.029e5	2.474e5	1.030	1.22	1.24	767.5	YES	NO	bb	bb	53.582
14	234678-HxCDF	35.81	3.741e5	3.010e5	1.052	1.24	1.24	922.2	YES	NO	bb	bb	55.515
15	123678-HxCDF	34.94	4.107e5	3.376e5	1.037	1.22	1.24	994.0	YES	NO	db	db	51.475
16	123478-HxCDF	34.80	3.790e5	3.119e5	1.017	1.22	1.24	963.5	YES	NO	bd	bd	54.003
17	1234678-HpCDF	38.68	3.428e5	3.268e5	1.327	1.05	1.05	945.1	YES	NO	bb	bb	54.784
18	1234789-HpCDF	40.92	2.799e5	2.719e5	1.283	1.03	1.05	650.7	YES	NO	bd	bd	59.145
19	OCDF	45.14	3.368e5	3.743e5	1.447	0.90	0.89	729.8	YES	NO	bb	bb	105.415
20	13468-PECDF	27.02	5.743e5	3.714e5	1.376	1.55	1.55	5425.9	YES	NO	bb	bb	41.310
21	Total-tetradioxins	25.97	8.932e4	1.141e5	0.879	0.78	0.77	303.9	YES	NO	bd	bd	20.744
22	Total-tetradioxins	25.49	2.543e4	2.972e4	0.879	0.86	0.77	154.2	YES	NO	bd	bb	5.625
23	Total-tetradioxins	24.63	2.020e3	2.647e3	0.879	0.76	0.77	8.0	YES	NO	bd	bb	0.476
24	1368-TCDD	23.42	5.716e4	7.362e4	0.923	0.78	0.77	357.6	YES	NO	bb	bb	12.700
25	1289-TCDD	26.89	4.776e4	6.026e4	0.794	0.79	0.77	283.1	YES	NO	bb	bb	12.197
26	2378-TCDD	26.30	4.924e4	6.425e4	0.920	0.77	0.77	291.6	YES	NO	bb	db	11.057
27	12389-PECDD	31.82	2.780e5	1.664e5	1.154	1.67	1.55	992.1	YES	NO	bb	bb	43.683
28	12378-PeCDD	31.42	2.834e5	1.748e5	0.995	1.62	1.55	1046.5	YES	NO	bb	bb	52.211
29	Total-pentadioxins	30.75	1.739e3	1.177e3	1.331	1.48	1.55	6.0	YES	NO	bb	bb	0.249
30	12479-PECDD	28.69	4.186e5	2.632e5	1.843	1.59	1.55	988.7	YES	NO	bb	bb	41.945
31	124679-HXCDD	33.91	3.632e5	2.896e5	1.125	1.25	1.24	1314.1	YES	NO	bb	bb	60.629
32	123789-HxCDD	36.42	2.887e5	2.199e5	0.950	1.31	1.24	989.1	YES	NO	bd	bb	52.339
33	123678-HxCDD	36.04	3.082e5	2.464e5	1.009	1.25	1.24	1085.9	YES	NO	db	db	50.555
34	123478-HxCDD	35.92	2.965e5	2.407e5	1.027	1.23	1.24	1096.7	YES	NO	bd	bd	54.629
35	Total-hexadioxins	35.04	7.156e3	6.136e3	1.028	1.17	1.24	26.9	YES	NO	db	db	1.265
36	Total-hexadioxins	34.67	1.781e3	1.631e3	1.028	1.09	1.24	7.7	YES	NO	bb	bb	0.325
37	1234678-HpCDD	40.18	1.757e5	1.625e5	1.068	1.08	1.05	814.6	YES	NO	bb	bb	51.865

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	1234679-HPCDD	39.14	2.129e5	1.840e5	1.211	1.16	1.05	941.5	YES	NO	bd	bb	53.689
39	OCDD	44.90	2.642e5	3.138e5	1.181	0.84	0.89	1050.3	YES	NO	bb	bd	104.997

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.34	1.094e7					29.2	YES		db		
2	FUNCTION1 PFK	22.07	1.938e7					38.3	YES		dd		
3	FUNCTION1 PFK	21.38	2.077e7					61.6	YES		dd		
4	FUNCTION1 PFK	21.25	7.452e6					64.7	YES		dd		
5	FUNCTION1 PFK	21.10	5.199e6					69.3	YES		bd		
6	FUNCTION1 PFK	27.62	5.202e4					1.5	NO		bb		
7	FUNCTION1 PFK	26.61	3.088e4					1.4	NO		bb		
8	FUNCTION1 PFK	26.53	3.772e4					1.3	NO		bb		
9	FUNCTION1 PFK	26.21	4.215e4					1.3	NO		bb		
10	FUNCTION1 PFK	26.14	2.091e4					0.7	NO		bb		
11	FUNCTION1 PFK	25.90	2.782e4					1.0	NO		bb		
12	FUNCTION1 PFK	25.64	2.244e4					0.9	NO		bb		
13	FUNCTION1 PFK	25.38	4.475e4					1.3	NO		bb		
14	FUNCTION1 PFK	25.32	8.085e4					1.5	NO		bb		
15	FUNCTION1 PFK	25.10	6.333e4					1.7	NO		db		
16	FUNCTION1 PFK	24.94	2.192e5					2.0	NO		dd		
17	FUNCTION1 PFK	24.82	2.857e4					1.1	NO		bd		
18	FUNCTION1 PFK	24.63	2.787e4					1.0	NO		bb		
19	FUNCTION1 PFK	24.35	1.463e4					0.7	NO		bb		
20	FUNCTION1 PFK	23.43	4.951e4					1.7	NO		bb		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	34.47	2.892e5					8.3	YES		dd		0.000
2	FUNCTION3 PFK	34.42	3.441e5					9.9	YES		dd		0.000
3	FUNCTION3 PFK	34.30	9.123e5					14.6	YES		dd		0.000
4	FUNCTION3 PFK	33.96	4.870e6					27.1	YES		dd		0.000
5	FUNCTION3 PFK	33.92	6.208e5					27.9	YES		dd		0.000
6	FUNCTION3 PFK	33.75	6.775e6					34.2	YES		dd		0.000
7	FUNCTION3 PFK	33.58	8.843e5					39.8	YES		dd		0.000
8	FUNCTION3 PFK	33.52	4.828e6					42.2	YES		dd		0.000
9	FUNCTION3 PFK	33.37	2.844e6					47.3	YES		dd		0.000
10	FUNCTION3 PFK	33.18	5.432e6					54.3	YES		dd		0.000
11	FUNCTION3 PFK	33.04	5.575e6					59.2	YES		dd		0.000
12	FUNCTION3 PFK	32.95	3.680e6					62.9	YES		dd		0.000
13	FUNCTION3 PFK	32.86	7.904e6					65.6	YES		dd		0.000
14	FUNCTION3 PFK	32.74	1.549e6					69.1	YES		dd		0.000
15	FUNCTION3 PFK	32.67	4.268e6					72.4	YES		bd		0.000
16	FUNCTION3 PFK	36.86	8.449e3					0.3	NO		bb		0.000
17	FUNCTION3 PFK	36.72	6.925e4					2.0	NO		bb		0.000
18	FUNCTION3 PFK	36.59	5.799e4					1.2	NO		bb		0.000
19	FUNCTION3 PFK	36.30	7.563e3					0.7	NO		bb		0.000
20	FUNCTION3 PFK	36.04	6.922e3					0.5	NO		bb		0.000
21	FUNCTION3 PFK	35.83	2.532e4					1.1	NO		bb		0.000
22	FUNCTION3 PFK	35.75	1.516e4					0.9	NO		bb		0.000
23	FUNCTION3 PFK	35.63	1.004e4					0.7	NO		bb		0.000
24	FUNCTION3 PFK	35.33	1.433e4					0.8	NO		bb		0.000
25	FUNCTION3 PFK	35.04	1.089e4					0.6	NO		bb		0.000
26	FUNCTION3 PFK	34.97	5.517e3					0.7	NO		bb		0.000
27	FUNCTION3 PFK	34.89	3.001e4					1.0	NO		bb		0.000
28	FUNCTION3 PFK	34.81	1.594e4					1.0	NO		db		0.000
29	FUNCTION3 PFK	34.76	3.092e4					1.3	NO		bd		0.000
30	FUNCTION3 PFK	34.60	1.659e5					4.5	YES		db		0.000
31	FUNCTION3 PFK	34.53	2.985e5					6.7	YES		dd		0.000
32	FUNCTION3 PFK	37.64	2.742e4					1.1	NO		bb		0.000
33	FUNCTION3 PFK	37.58	2.711e4					1.4	NO		db		0.000
34	FUNCTION3 PFK	37.54	1.758e4					0.9	NO		dd		0.000
35	FUNCTION3 PFK	37.49	3.447e4					1.6	NO		dd		0.000
36	FUNCTION3 PFK	37.45	2.646e4					1.5	NO		dd		0.000
37	FUNCTION3 PFK	37.38	4.745e4					1.5	NO		dd		0.000

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Printed: Friday, August 13, 2021 13:51:56 Pacific Daylight Time

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION3 PFK	37.34	2.452e4					1.6	NO		bd		0.000
39	FUNCTION3 PFK	37.29	9.653e3					0.8	NO		bb		0.000
40	FUNCTION3 PFK	37.08	5.064e3					0.5	NO		bb		0.000
41	FUNCTION3 PFK	36.98	6.612e4					1.7	NO		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	38.42	2.469e3					0.5	NO		bb		
2	FUNCTION4 PFK	38.08	2.954e4					1.7	NO		bb		
3	FUNCTION4 PFK	37.98	4.856e4					2.3	NO		db		
4	FUNCTION4 PFK	37.94	3.614e4					2.6	NO		bd		
5	FUNCTION4 PFK	37.85	8.390e3					1.0	NO		bb		
6	FUNCTION4 PFK	40.91	1.035e4					1.0	NO		bb		
7	FUNCTION4 PFK	40.71	1.742e3					0.4	NO		bb		
8	FUNCTION4 PFK	40.68	3.176e3					0.5	NO		bb		
9	FUNCTION4 PFK	40.61	6.362e3					0.7	NO		bb		
10	FUNCTION4 PFK	40.38	7.075e3					0.8	NO		bb		
11	FUNCTION4 PFK	40.32	3.115e4					1.2	NO		bb		
12	FUNCTION4 PFK	39.94	4.461e3					0.6	NO		bb		
13	FUNCTION4 PFK	39.80	5.746e3					0.6	NO		bb		
14	FUNCTION4 PFK	39.51	2.799e3					0.4	NO		bb		
15	FUNCTION4 PFK	39.43	1.949e3					0.4	NO		bb		
16	FUNCTION4 PFK	39.36	2.879e3					0.6	NO		bb		
17	FUNCTION4 PFK	39.32	5.365e3					1.1	NO		bb		
18	FUNCTION4 PFK	39.28	3.621e3					0.8	NO		bb		
19	FUNCTION4 PFK	39.21	1.666e4					1.0	NO		bb		
20	FUNCTION4 PFK	39.07	6.512e3					0.8	NO		bb		
21	FUNCTION4 PFK	38.46	1.263e4					1.2	NO		bb		
22	FUNCTION4 PFK	42.68	1.445e4					0.9	NO		bb		
23	FUNCTION4 PFK	42.62	2.052e4					1.7	NO		bb		
24	FUNCTION4 PFK	42.51	2.321e3					0.5	NO		bb		
25	FUNCTION4 PFK	42.43	3.121e4					1.9	NO		bb		
26	FUNCTION4 PFK	42.18	7.742e3					0.8	NO		bb		
27	FUNCTION4 PFK	42.05	1.748e4					1.2	NO		db		
28	FUNCTION4 PFK	41.97	1.470e4					1.2	NO		bd		
29	FUNCTION4 PFK	41.63	2.487e3					0.5	NO		bb		
30	FUNCTION4 PFK	41.48	1.442e4					1.2	NO		bb		
31	FUNCTION4 PFK	41.24	1.211e4					1.0	NO		bb		
32	FUNCTION4 PFK	41.17	1.136e4					1.2	NO		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	45.97	5.710e3					1.0	NO		bb		
2	FUNCTION5 PFK	45.74	1.859e3					0.6	NO		bb		
3	FUNCTION5 PFK	43.26	1.526e4					1.8	NO		bb		
4	FUNCTION5 PFK	42.93	1.131e4					1.5	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	25.35	1.892e2					4.2	YES		db		0.000
2	FUNCTION1 HXCD...	25.23	1.187e2					1.3	NO		bd		0.000
3	FUNCTION1 HXCD...	24.87	7.961e1					1.9	NO		db		0.000
4	FUNCTION1 HXCD...	24.81	1.259e2					2.7	NO		bd		0.000
5	FUNCTION1 HXCD...	24.72	1.584e2					1.4	NO		bb		0.000
6	FUNCTION1 HXCD...	24.40	9.113e1					1.6	NO		bb		0.000
7	FUNCTION1 HXCD...	23.72	7.480e1					1.5	NO		bb		0.000
8	FUNCTION1 HXCD...	23.61	1.381e2					2.9	NO		bb		0.000
9	FUNCTION1 HXCD...	23.11	9.740e1					2.5	NO		bb		0.000
10	FUNCTION1 HXCD...	22.43	1.791e2					2.1	NO		db		0.000
11	FUNCTION1 HXCD...	22.30	7.125e1					1.5	NO		bd		0.000
12	FUNCTION1 HXCD...	22.19	7.195e1					1.3	NO		bb		0.000
13	FUNCTION1 HXCD...	21.98	1.102e2					1.5	NO		db		0.000
14	FUNCTION1 HXCD...	21.89	2.251e2					4.2	YES		bd		0.000
15	FUNCTION1 HXCD...	21.80	1.414e2					2.0	NO		bb		0.000
16	FUNCTION1 HXCD...	27.03	2.453e2					2.4	NO		bb		0.000
17	FUNCTION1 HXCD...	26.29	2.686e2					2.1	NO		db		0.000
18	FUNCTION1 HXCD...	26.12	1.763e2					2.9	NO		dd		0.000
19	FUNCTION1 HXCD...	26.03	9.387e1					1.2	NO		bd		0.000
20	FUNCTION1 HXCD...	25.82	1.399e2					2.0	NO		bb		0.000
21	FUNCTION1 HXCD...	25.46	1.064e2					1.7	NO		bb		0.000

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ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	22.51	7.992e1					1.4	NO		bb		0.000
2	FUNCTION1 HPCD...	22.07	1.029e2					2.1	NO		bb		0.000
3	FUNCTION1 HPCD...	21.98	1.510e2					1.6	NO		db		0.000
4	FUNCTION1 HPCD...	21.88	1.949e2					3.5	YES		bd		0.000
5	FUNCTION1 HPCD...	21.75	2.528e2					1.8	NO		bb		0.000
6	FUNCTION1 HPCD...	21.47	1.508e2					2.1	NO		bb		0.000
7	FUNCTION1 HPCD...	21.25	1.018e2					1.3	NO		db		0.000
8	FUNCTION1 HPCD...	21.16	1.149e2					1.6	NO		dd		0.000
9	FUNCTION1 HPCD...	21.09	2.200e2					3.0	NO		bd		0.000
10	FUNCTION1 HPCD...	27.00	1.586e2					1.8	NO		bb		0.000
11	FUNCTION1 HPCD...	26.83	9.159e1					0.8	NO		bb		0.000
12	FUNCTION1 HPCD...	26.59	1.663e2					2.5	NO		bb		0.000
13	FUNCTION1 HPCD...	26.32	1.753e2					1.6	NO		db		0.000
14	FUNCTION1 HPCD...	26.14	2.616e2					2.2	NO		bd		0.000
15	FUNCTION1 HPCD...	25.59	8.230e1					1.9	NO		bb		0.000
16	FUNCTION1 HPCD...	25.44	8.713e1					1.0	NO		bb		0.000
17	FUNCTION1 HPCD...	25.16	7.125e1					1.1	NO		db		0.000
18	FUNCTION1 HPCD...	25.05	1.030e2					1.1	NO		bd		0.000
19	FUNCTION1 HPCD...	24.07	1.494e2					2.5	NO		bb		0.000
20	FUNCTION1 HPCD...	23.83	1.478e2					3.3	YES		bb		0.000

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ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	28.48	1.146e2					2.7	NO		bb		0.000
2	FUNCTION2 HPCD...	28.07	8.040e1					1.2	NO		db		0.000
3	FUNCTION2 HPCD...	27.98	1.117e2					1.5	NO		bd		0.000
4	FUNCTION2 HPCD...	27.82	9.308e1					2.0	NO		bb		0.000
5	FUNCTION2 HPCD...	31.82	1.073e2					1.6	NO		bb		0.000
6	FUNCTION2 HPCD...	31.41	3.440e2					4.0	YES		bb		0.000
7	FUNCTION2 HPCD...	31.18	9.044e1					1.2	NO		db		0.000
8	FUNCTION2 HPCD...	31.11	9.781e1					2.1	NO		dd		0.000
9	FUNCTION2 HPCD...	31.03	7.279e2					8.6	YES		bd		0.000
10	FUNCTION2 HPCD...	30.26	7.257e1					1.3	NO		bb		0.000
11	FUNCTION2 HPCD...	30.21	7.122e1					1.7	NO		db		0.000
12	FUNCTION2 HPCD...	30.14	1.157e2					1.5	NO		dd		0.000
13	FUNCTION2 HPCD...	30.06	7.412e1					1.1	NO		dd		0.000
14	FUNCTION2 HPCD...	29.98	7.219e1					1.2	NO		dd		0.000
15	FUNCTION2 HPCD...	29.91	9.212e1					2.0	NO		bd		0.000
16	FUNCTION2 HPCD...	29.69	7.977e1					1.3	NO		bb		0.000
17	FUNCTION2 HPCD...	29.08	1.408e2					1.5	NO		db		0.000
18	FUNCTION2 HPCD...	28.96	1.497e2					1.4	NO		bd		0.000
19	FUNCTION2 HPCD...	28.71	8.490e1					1.0	NO		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	37.65	1.580e2					2.6	NO		db		0.000
2	FUNCTION3 OCDPE	37.55	1.150e2					2.8	NO		bd		0.000
3	FUNCTION3 OCDPE	36.42	1.835e2					2.9	NO		bb		0.000
4	FUNCTION3 OCDPE	36.04	2.520e2					4.7	YES		db		0.000
5	FUNCTION3 OCDPE	35.93	1.106e2					3.8	YES		dd		0.000
6	FUNCTION3 OCDPE	35.90	1.018e2					3.4	YES		bd		0.000
7	FUNCTION3 OCDPE	34.40	1.321e2					5.0	YES		bb		0.000
8	FUNCTION3 OCDPE	33.58	1.010e2					2.3	NO		bb		0.000
9	FUNCTION3 OCDPE	32.70	2.382e2					3.1	YES		bb		0.000

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ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	40.42	7.136e1					0.9	NO		bb		0.000
2	FUNCTION4 NCDPE	40.16	1.641e2					1.6	NO		bb		0.000
3	FUNCTION4 NCDPE	39.69	1.182e2					1.5	NO		bb		0.000
4	FUNCTION4 NCDPE	38.52	1.487e2					1.6	NO		db		0.000
5	FUNCTION4 NCDPE	38.34	2.790e2					2.3	NO		dd		0.000
6	FUNCTION4 NCDPE	38.26	1.556e2					2.2	NO		bd		0.000
7	FUNCTION4 NCDPE	41.34	1.448e2					1.6	NO		bb		0.000
8	FUNCTION4 NCDPE	40.81	1.056e2					2.8	NO		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	44.58	7.112e1					3.0	NO		bb		0.000
2	FUNCTION5 DCDPE	43.59	9.542e1					3.1	YES		bb		0.000

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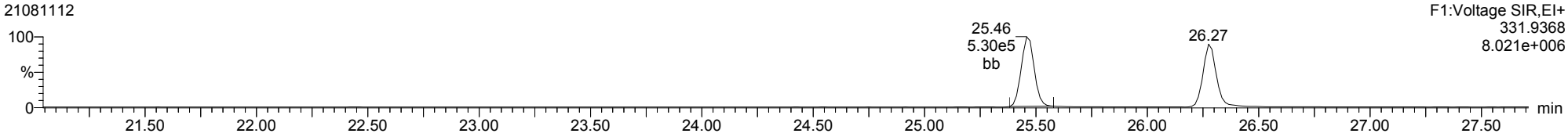
13C-1234-TCDD



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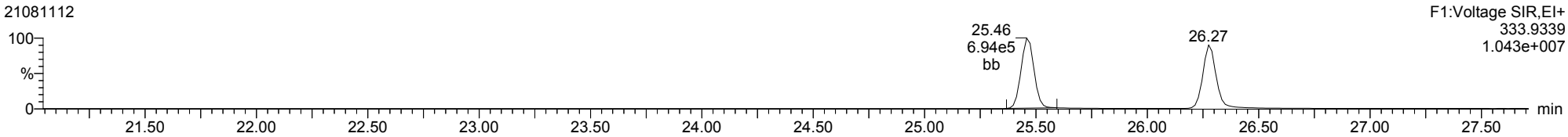
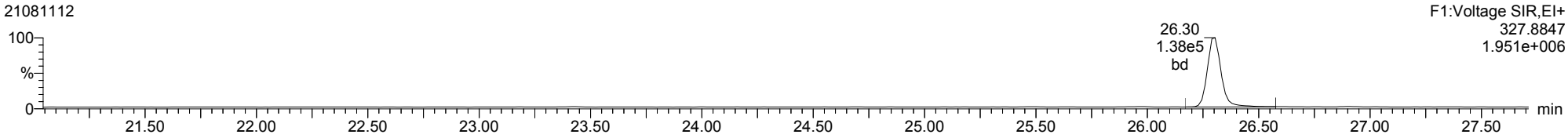


37CL-2378-TCDD



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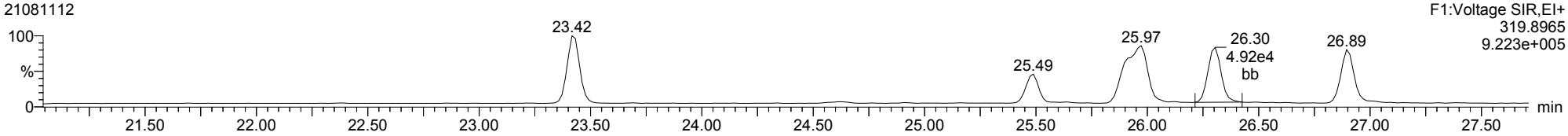
2378-TCDD



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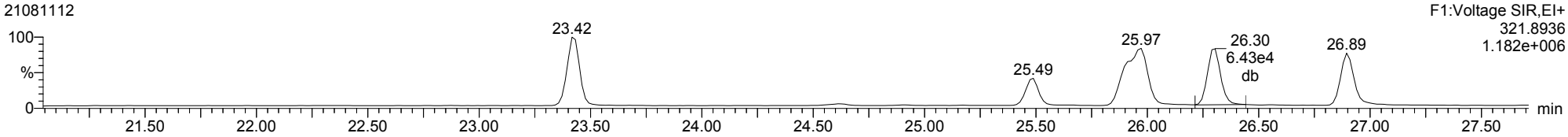

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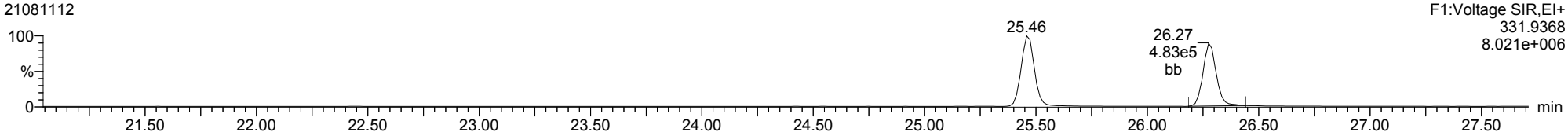

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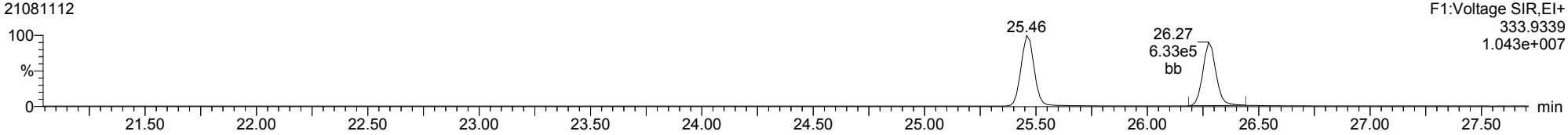

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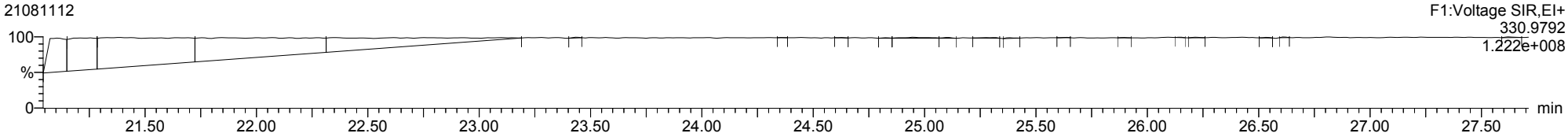

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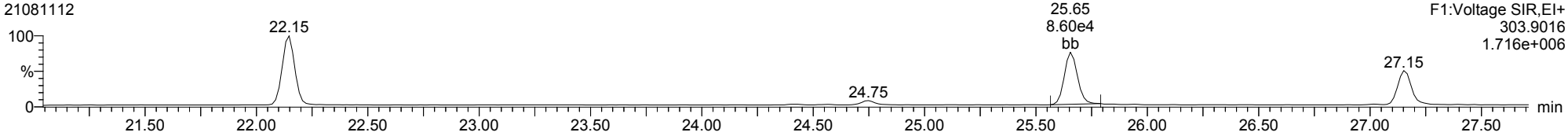
2378-TCDF



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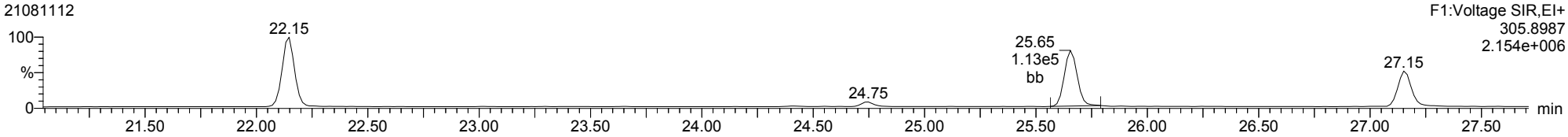

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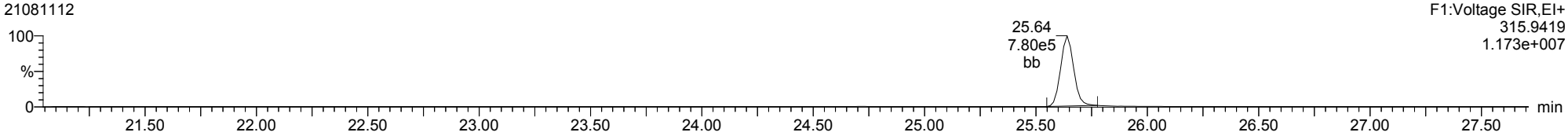

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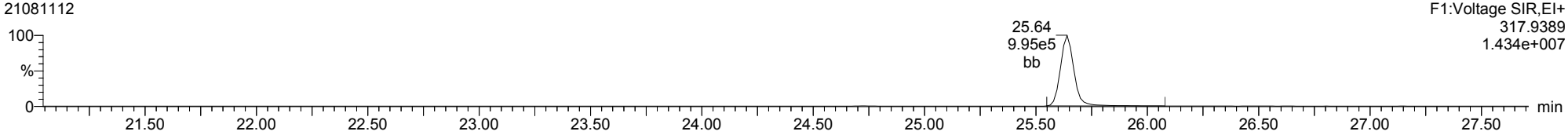

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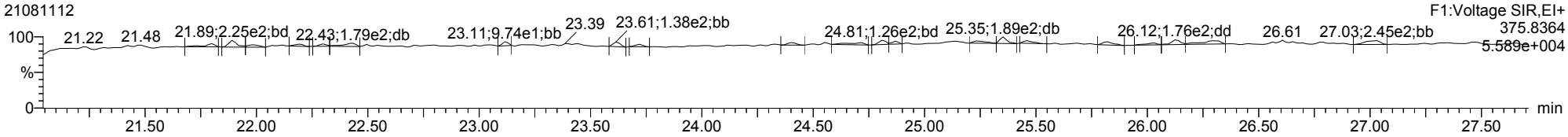

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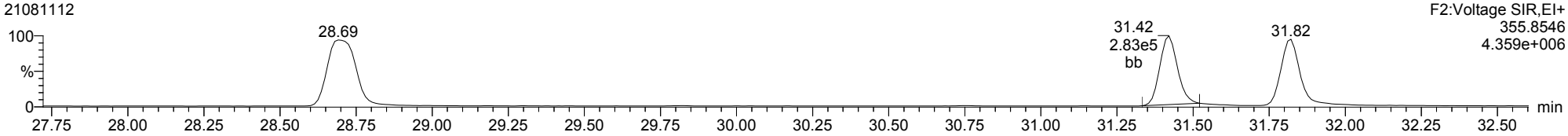

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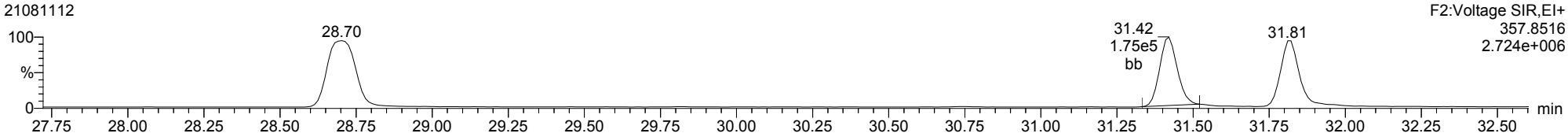

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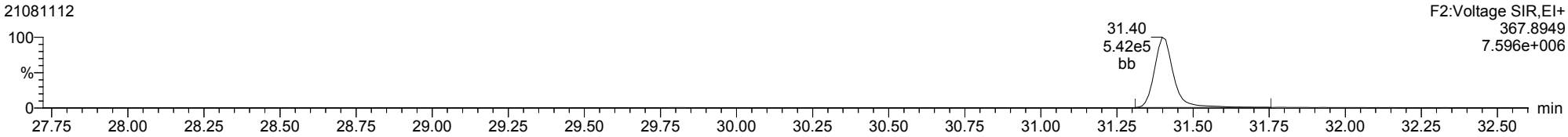

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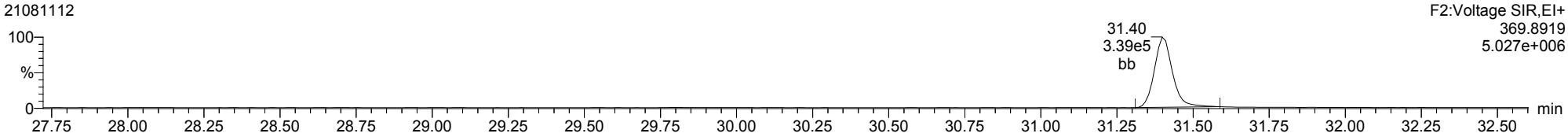

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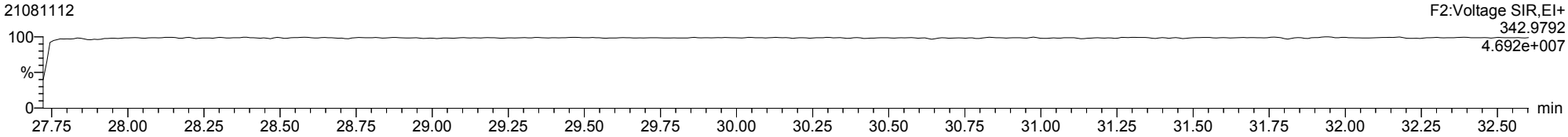

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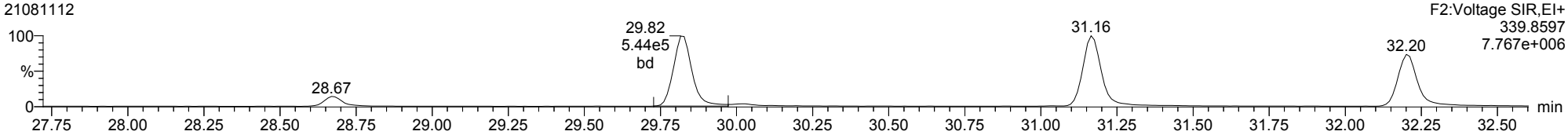

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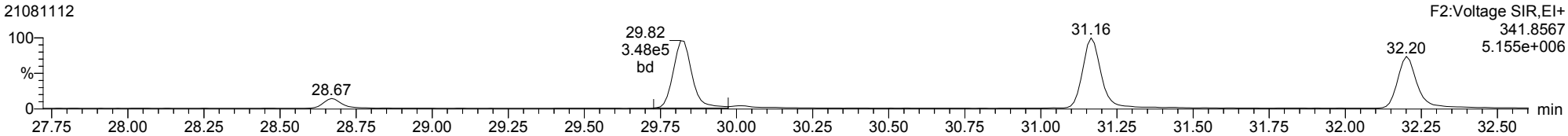

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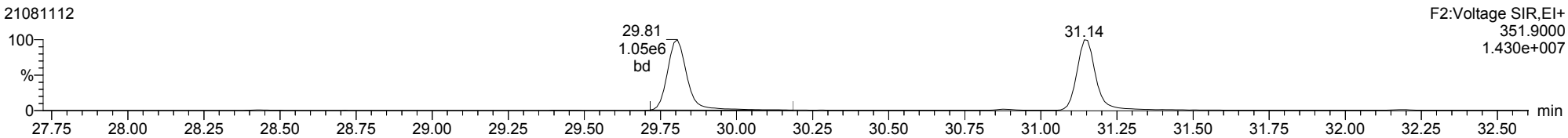

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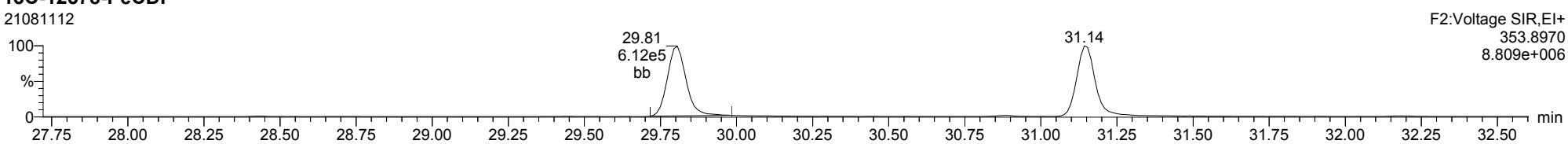

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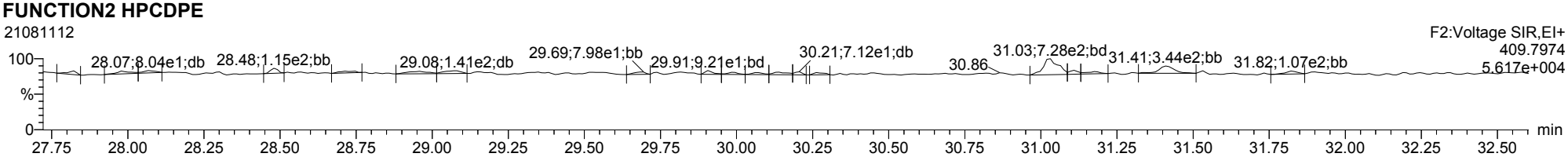

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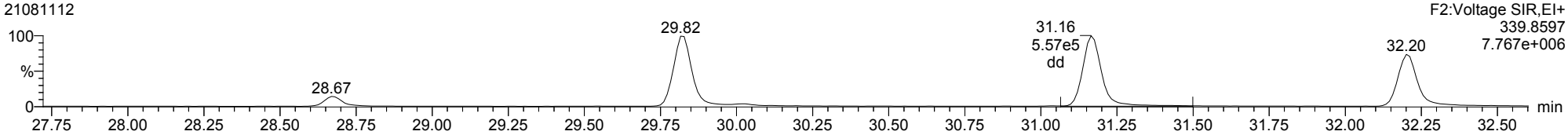

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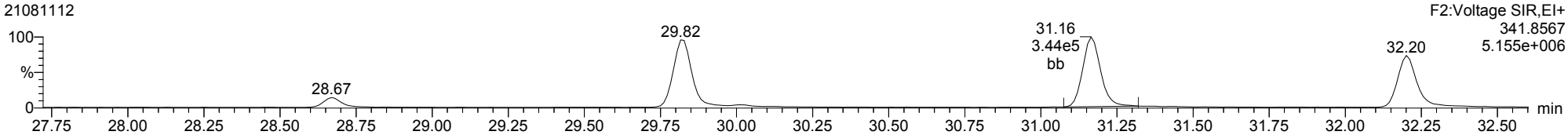

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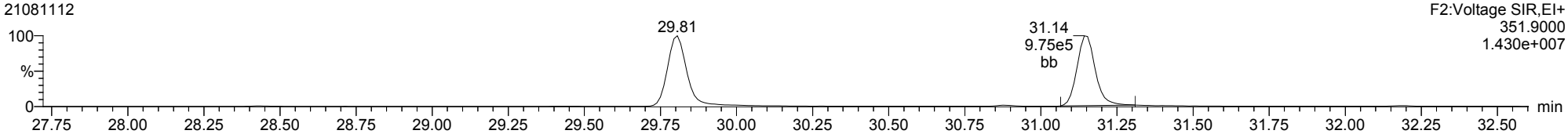

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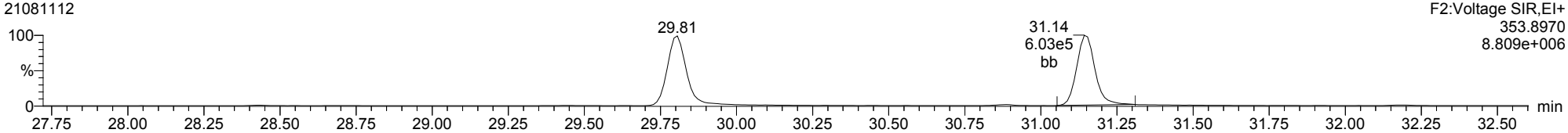

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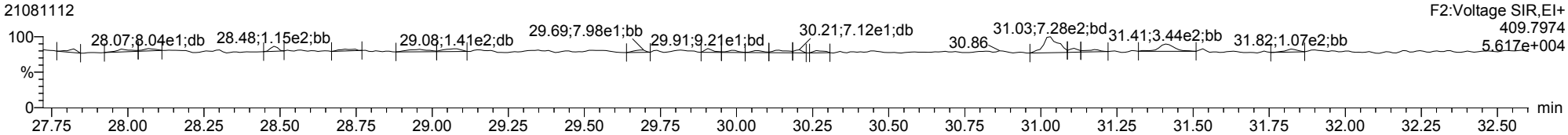

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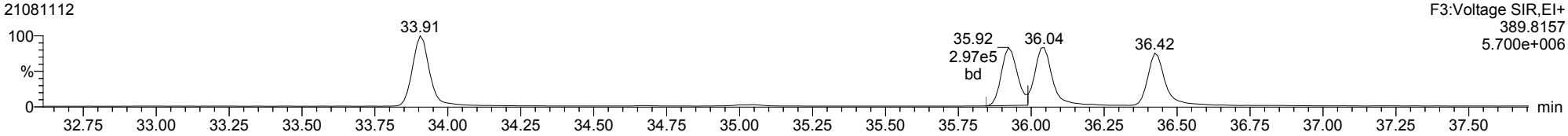

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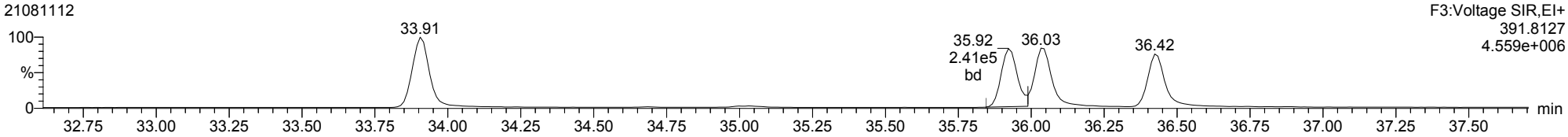

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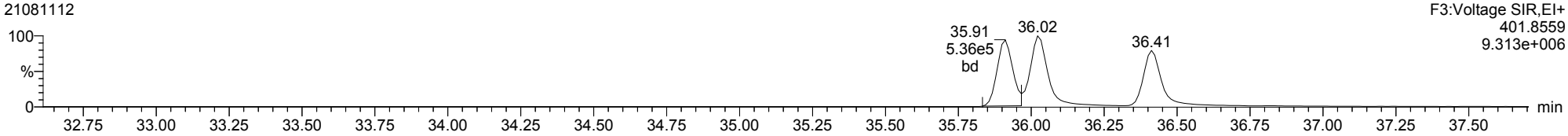

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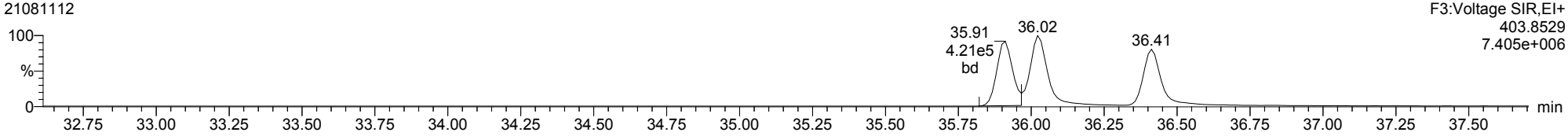

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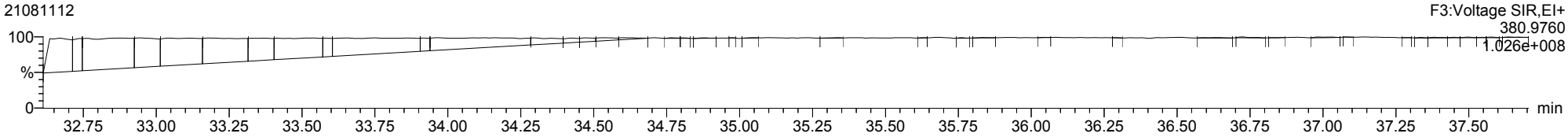

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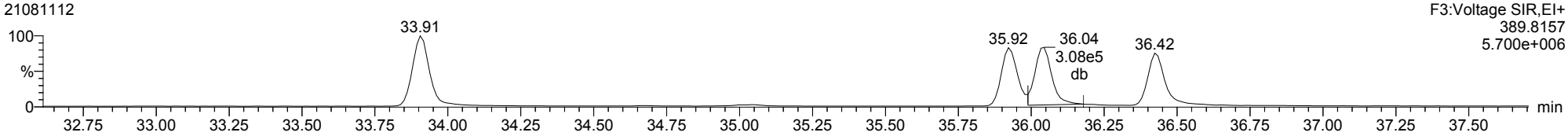

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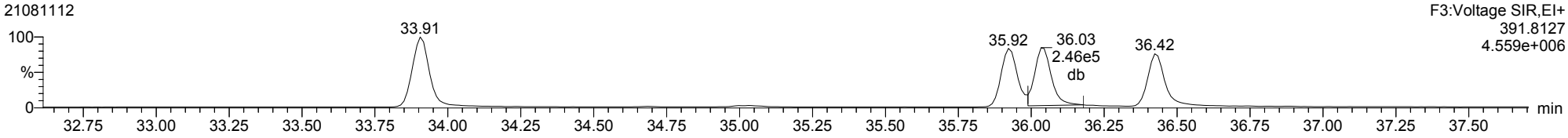

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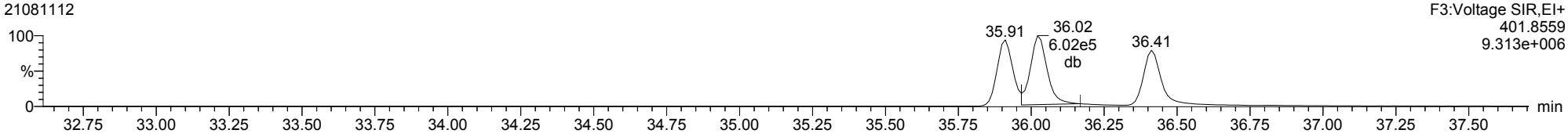

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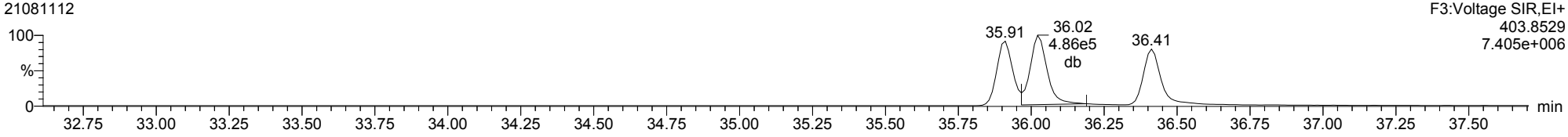

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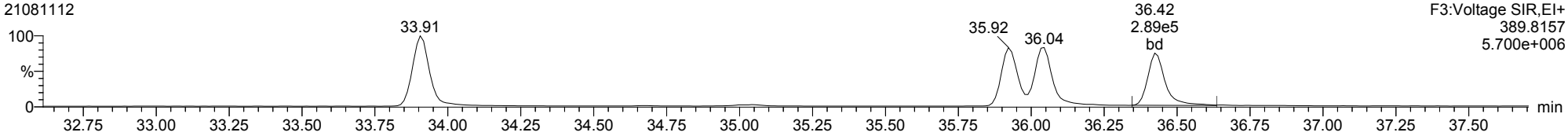

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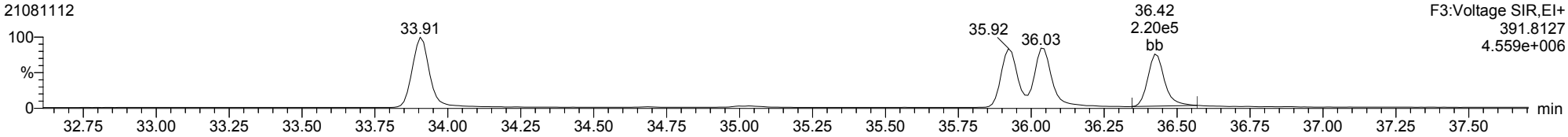

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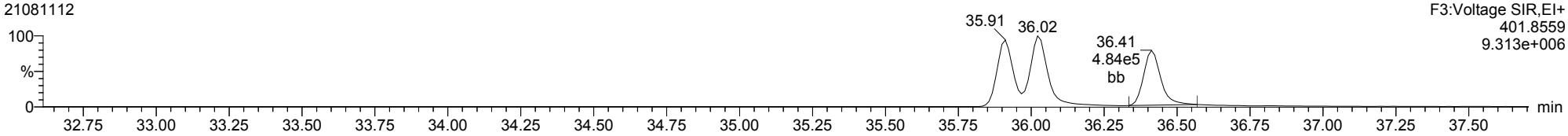

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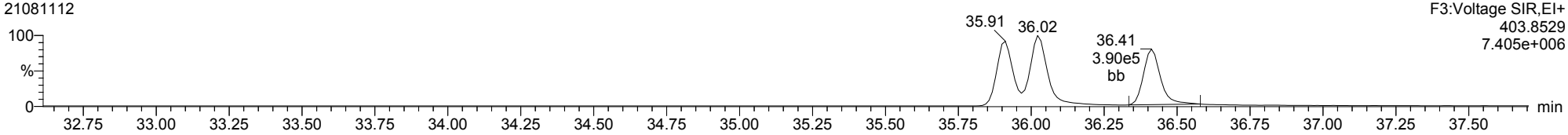

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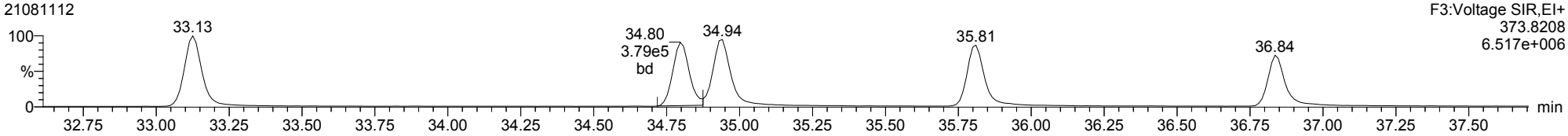

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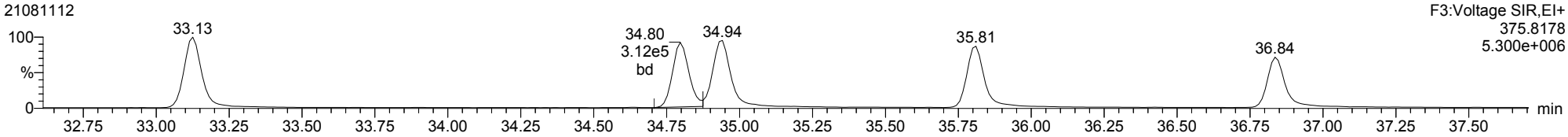

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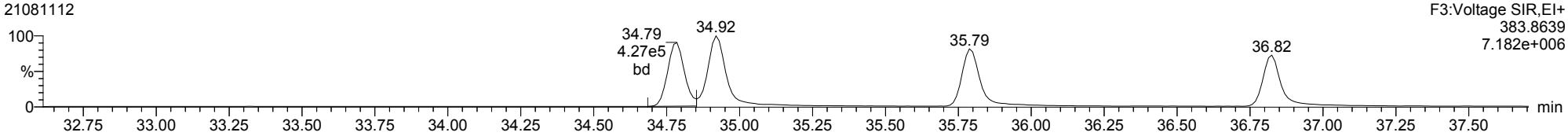

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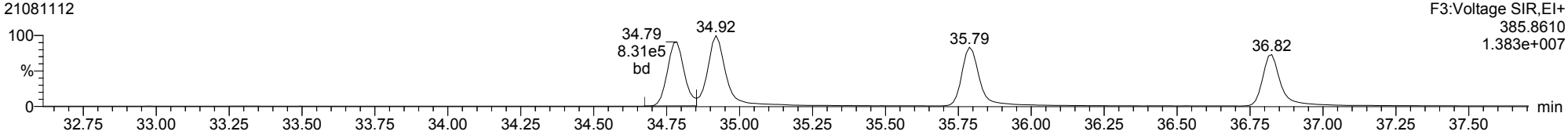

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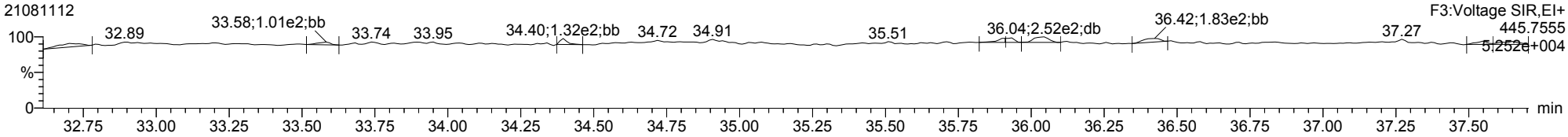

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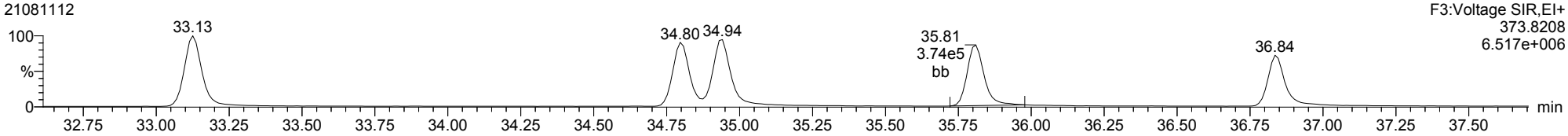
234678-HxCDF



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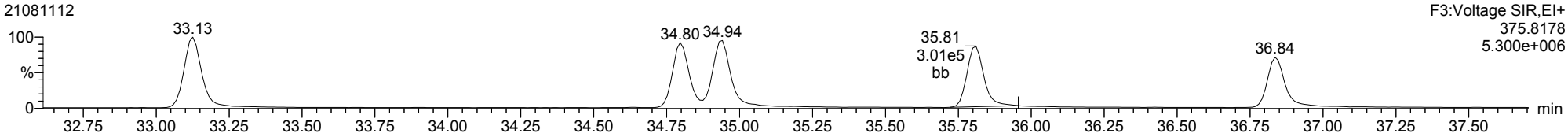

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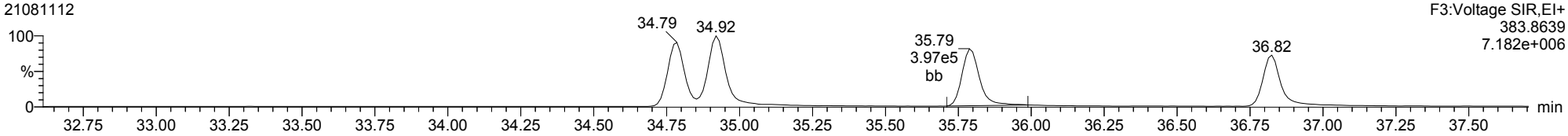

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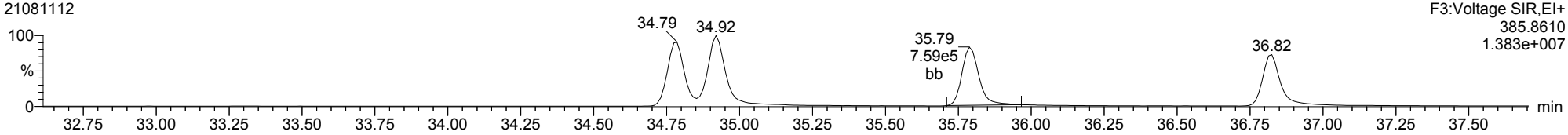
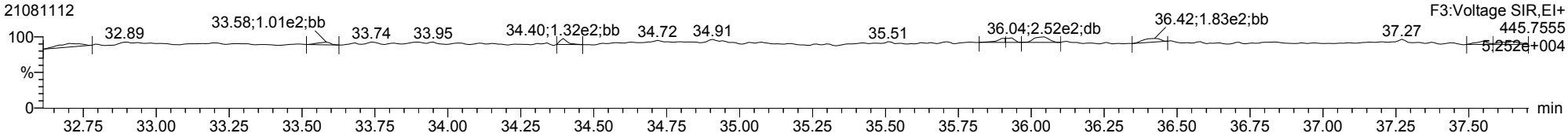


FUNCTION3 OCDPE



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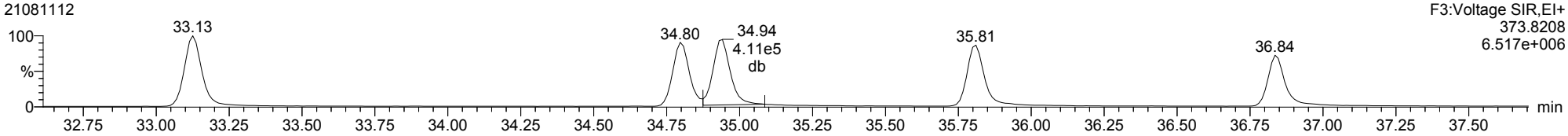

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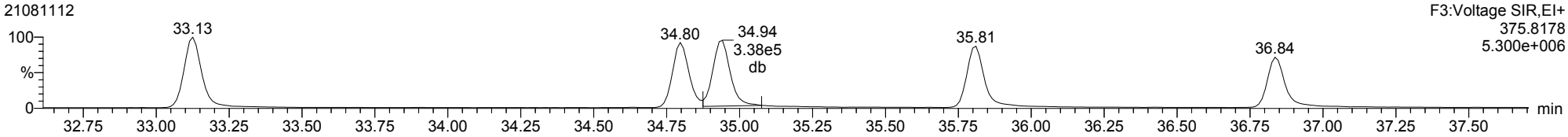

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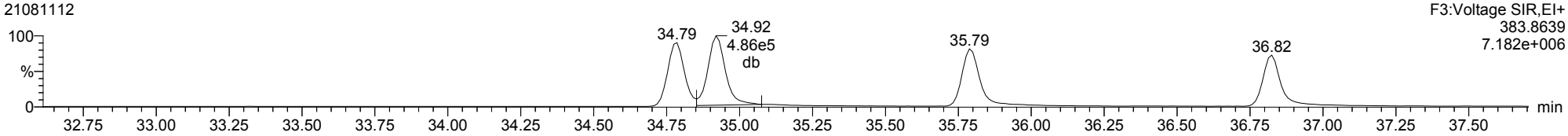

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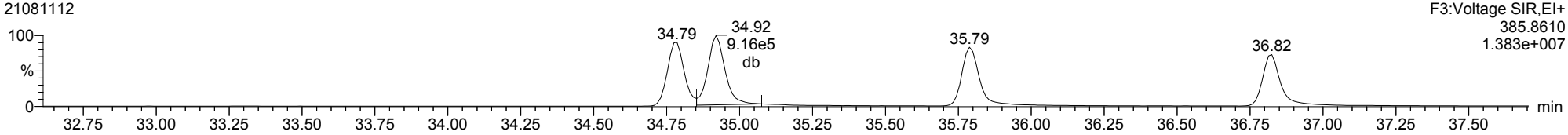
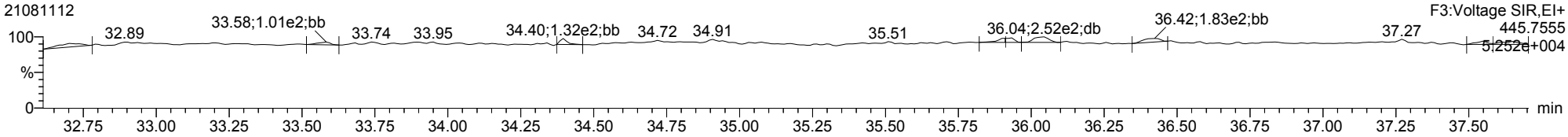


FUNCTION3 OCDPE



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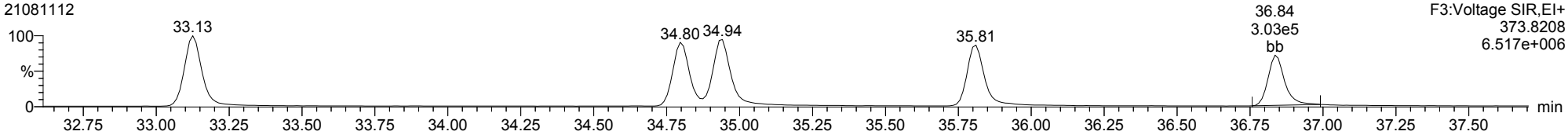

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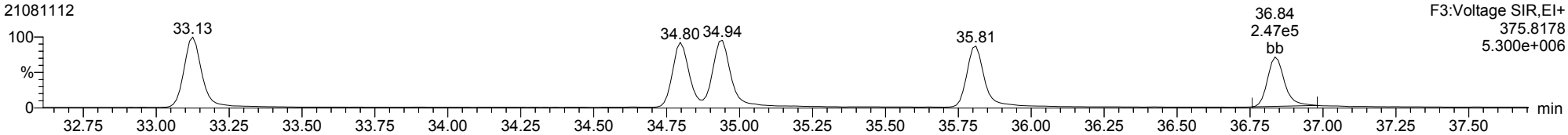

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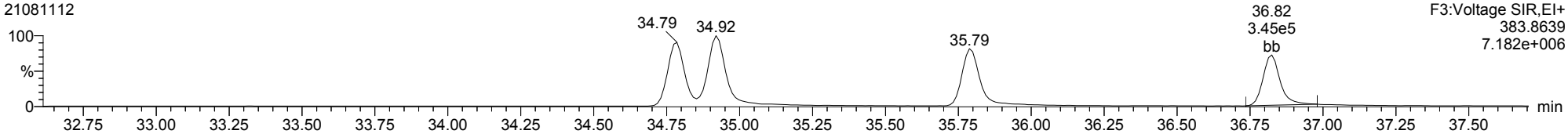

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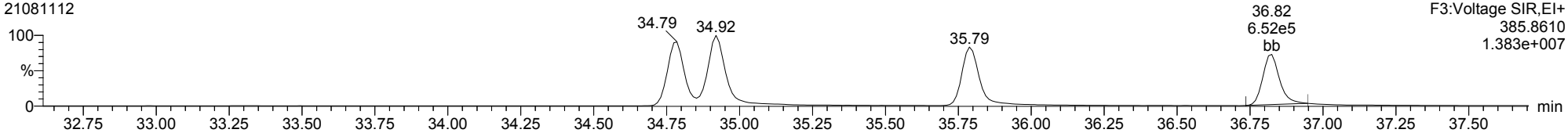
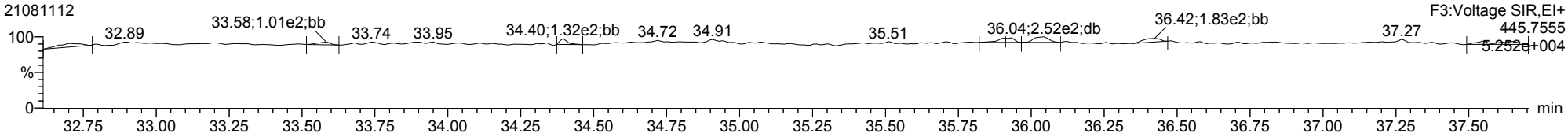
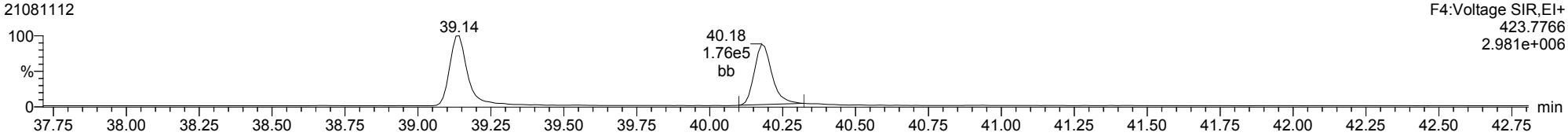


FUNCTION3 OCDPE



ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

1234678-HpCDD



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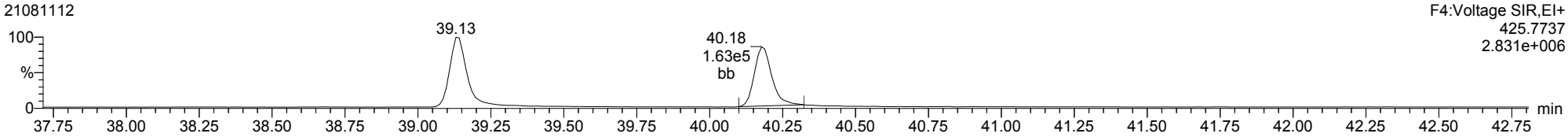

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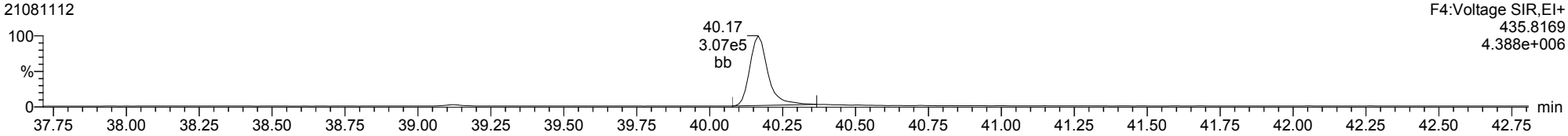

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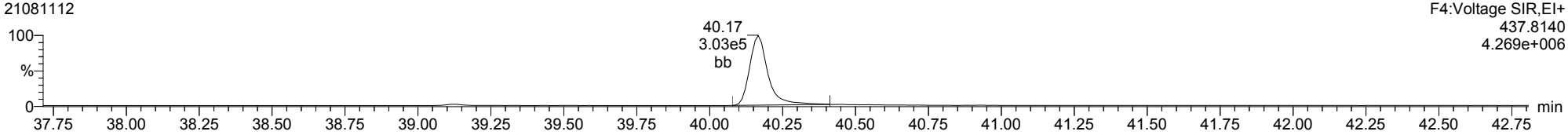
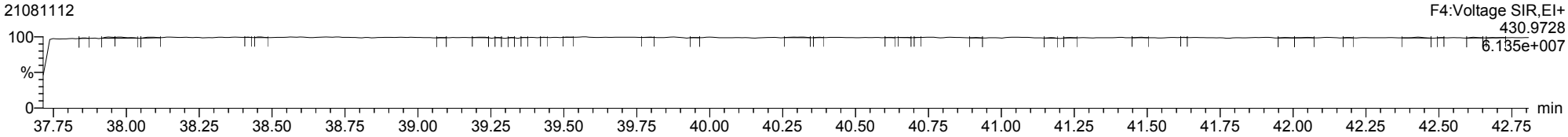


FUNCTION4 PFK



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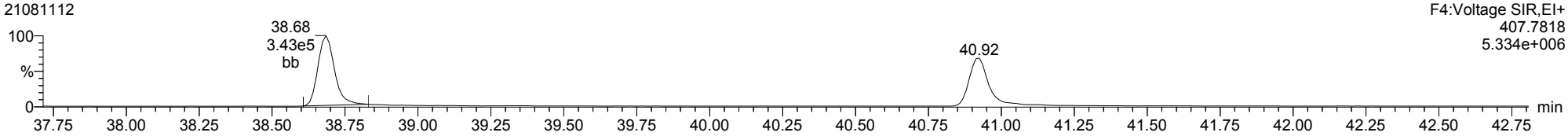

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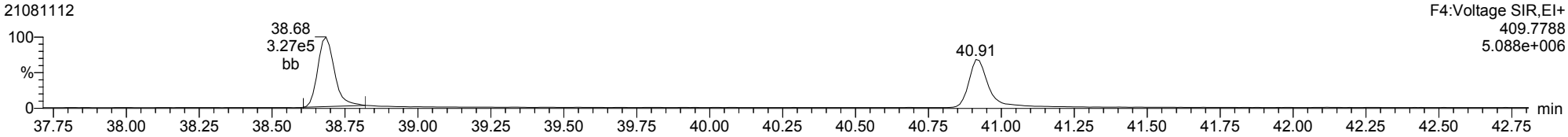

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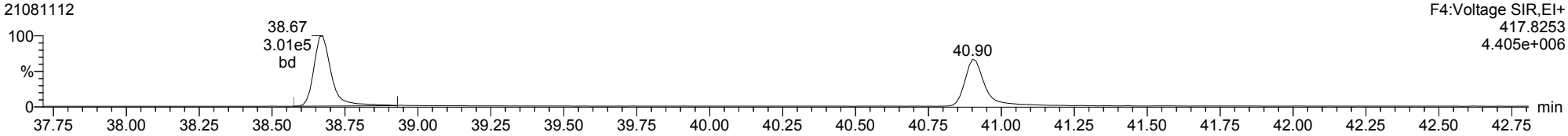

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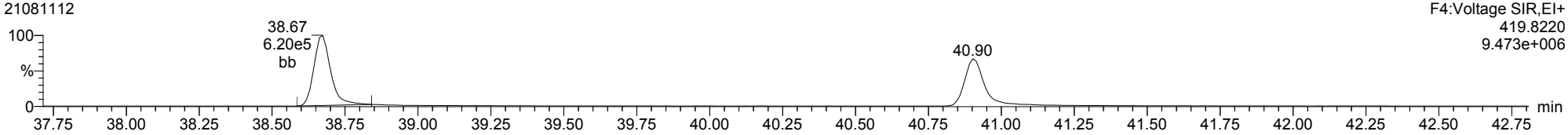
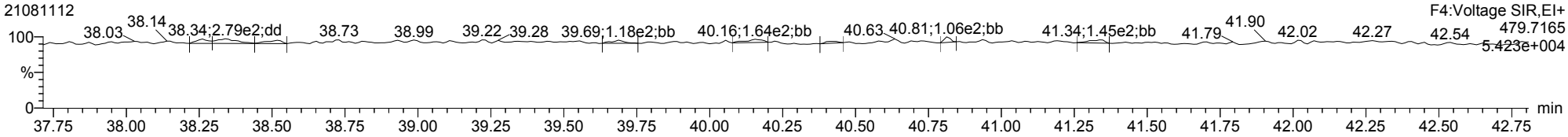


FUNCTION4 NCDPE



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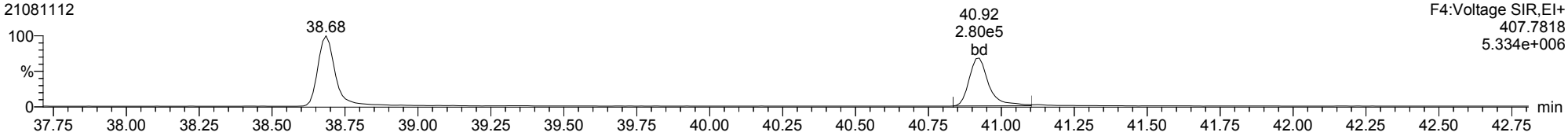

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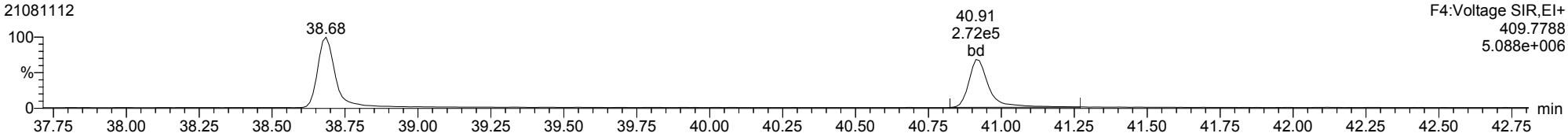

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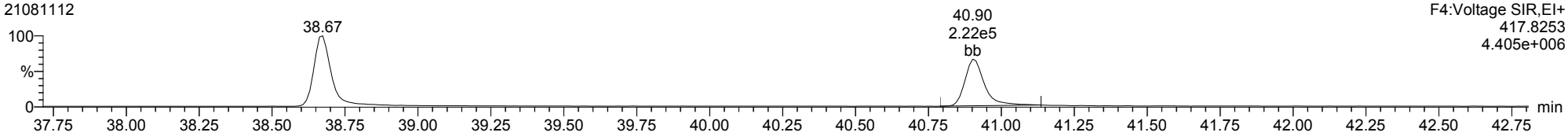

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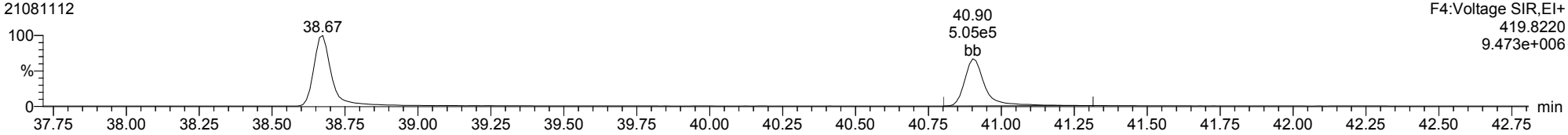

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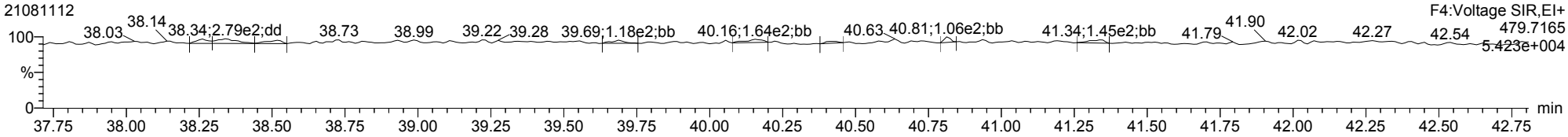

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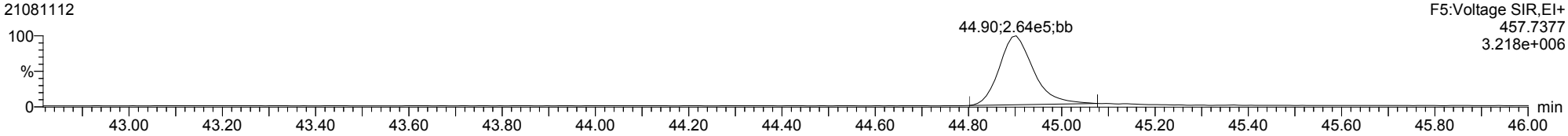

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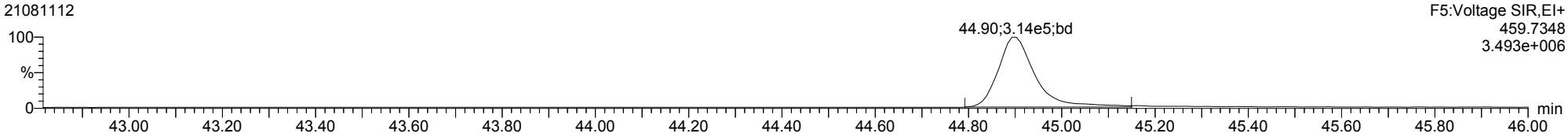

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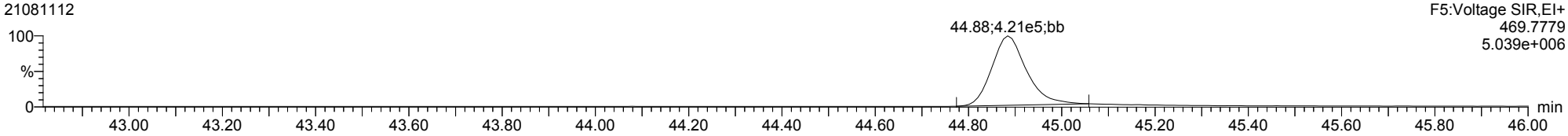

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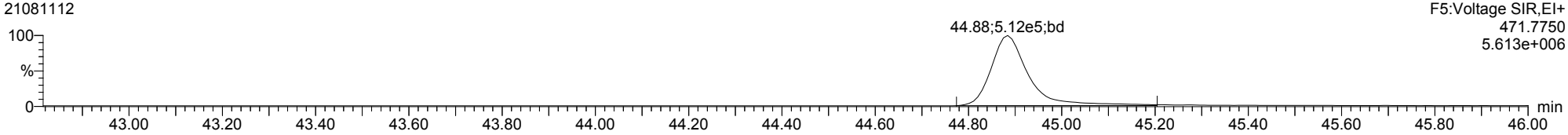

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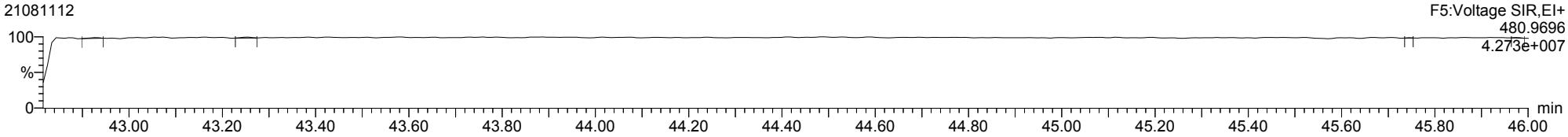

ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

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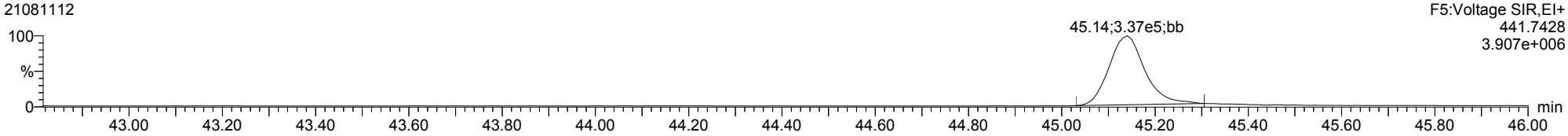

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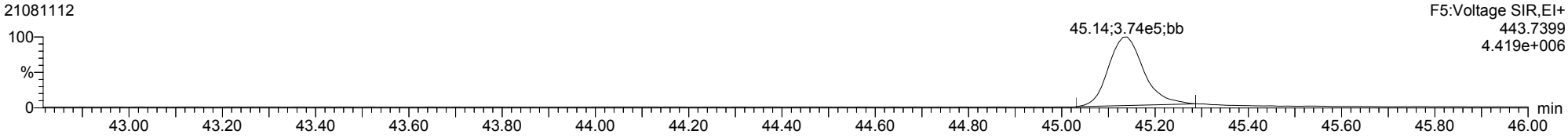
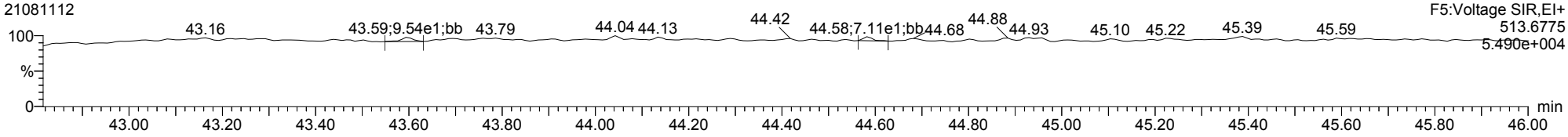


FUNCTION5 DCDPE



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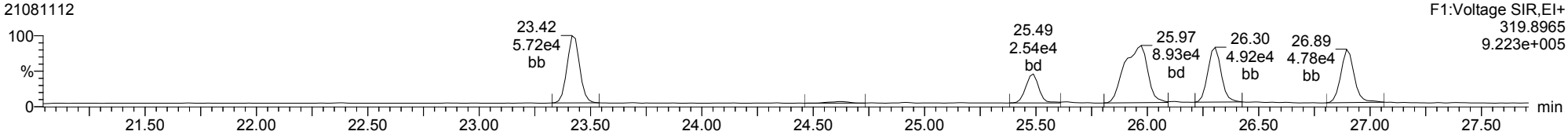
Total-tetradioxins



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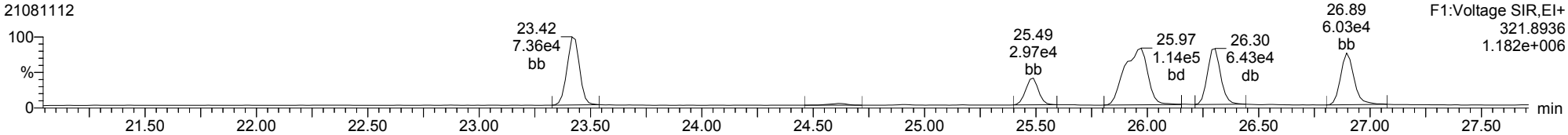

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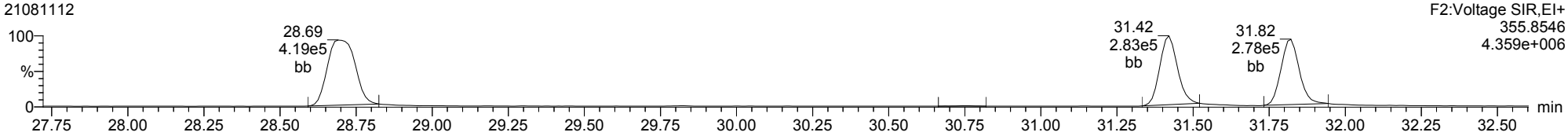

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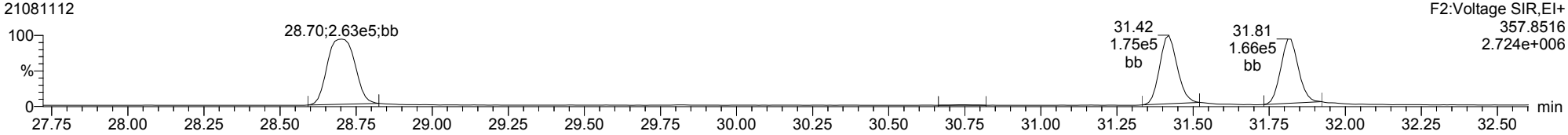

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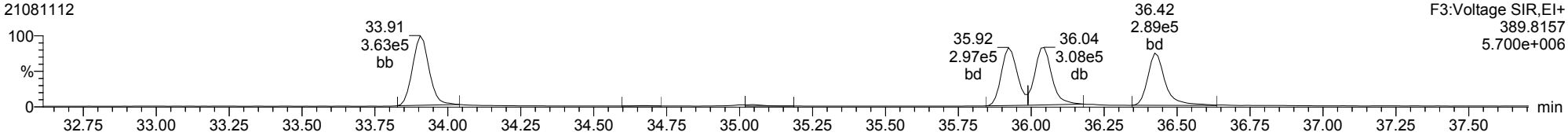

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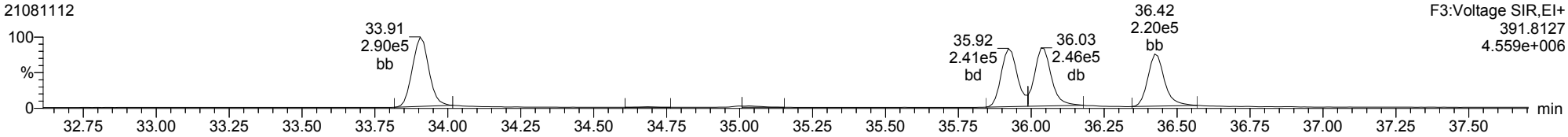

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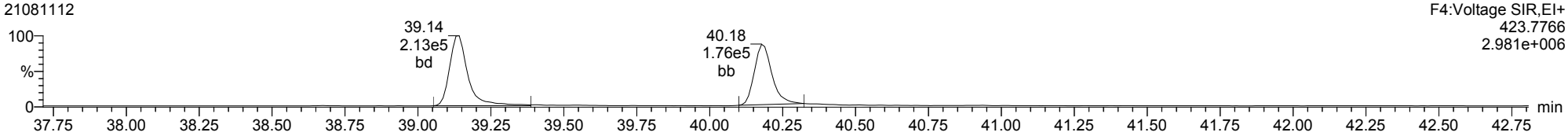

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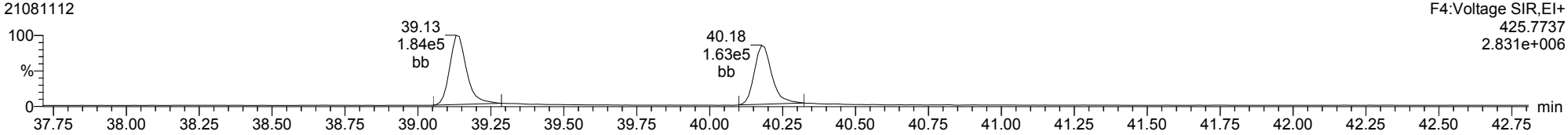
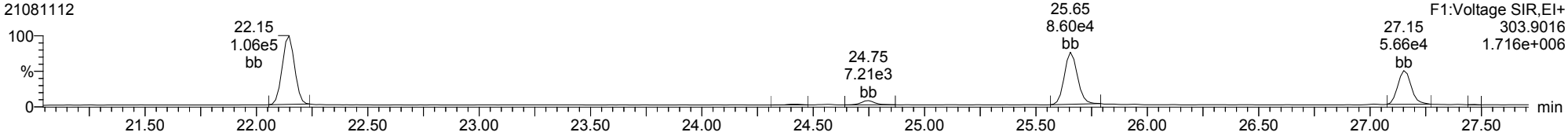


ID: ICVCZ, Name: 21081112, Date: 12-Aug-2021, Time: 00:00:03, Conditions: AUTOSPEC01, User: pk

Total-tetrafurans



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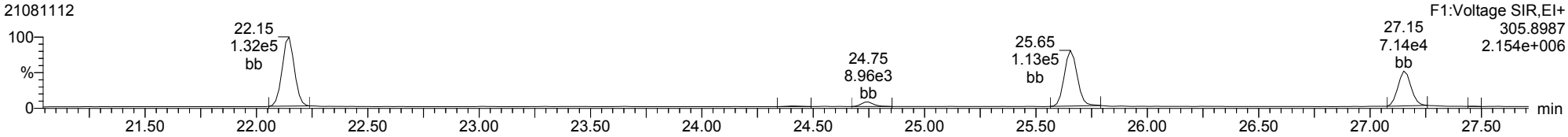

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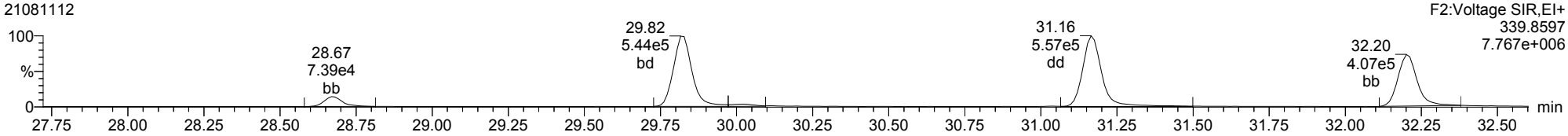

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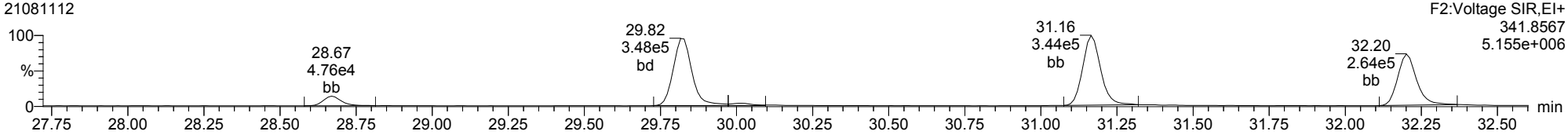

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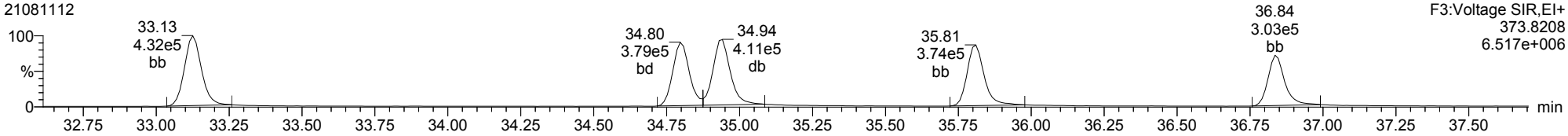

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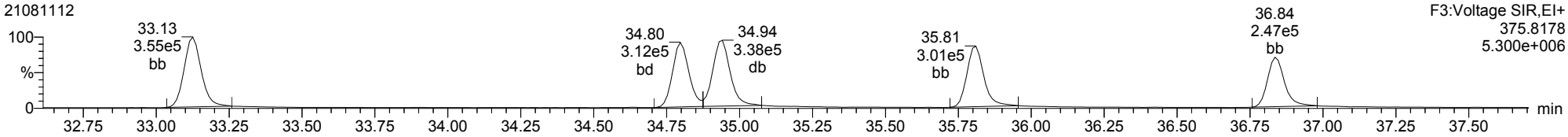
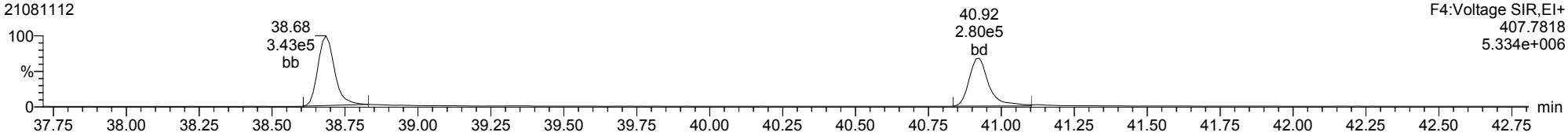


Total-heptafurans



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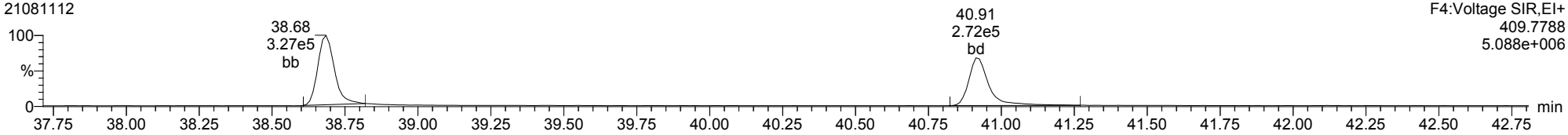

Analytical Resources, Incorporated
Analytical Chemists and Consultants

INITIAL CALIBRATION CHECK

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	AUTOSPEC01	Calibration:	EH00030
Lab File ID:	21082621A	Calibration Date:	08/11/2021
Sequence:	SJH0365	Injection Date:	08/27/21
Lab Sample ID:	SJH0365-ICV1	Injection Time:	03:04
Sequence Name:	CS3L7		

COMPOUND	TYPE	CONC. (ng/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
		STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
2,3,7,8-TCDF	A	10.000	9.00	1.1075930	0.9963944		-10.0	+/-16
2,3,7,8-TCDD	A	10.000	10.6	0.9202875	0.9732359		5.8	+/-22
1,2,3,7,8-PeCDF	A	50.000	46.4	1.0148670	0.9426481		-7.1	+/-18
2,3,4,7,8-PeCDF	A	50.000	46.0	1.1255490	1.0346300		-8.1	+/-18
1,2,3,7,8-PeCDD	A	50.000	52.8	0.9953229	1.0516810		5.7	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	50.1	1.0168930	1.0185380		0.2	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	48.5	1.0368310	1.0064100		-2.9	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	49.0	1.0524660	1.0318980		-2.0	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	48.0	1.0301540	0.9879648		-4.1	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	46.3	1.0273630	0.9516956		-7.4	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	48.2	1.0089800	0.9730510		-3.6	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	49.2	0.9504865	0.9358200		-1.5	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	46.6	1.3273500	1.2367580		-6.8	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	49.8	1.2833380	1.2776250		-0.4	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	53.1	1.0680880	1.1335050		6.1	+/-14
OCDF	A	100.00	95.2	1.4469010	1.3774860		-4.8	+/-37
OCDD	A	100.00	99.5	1.1808230	1.1753570		-0.5	+/-21
13C12-2,3,7,8-TCDF	A	100.00	105	1.4265830	1.4938391		4.7	+/-29
13C12-2,3,7,8-TCDD	A	100.00	102	1.1164910	1.1383414		2.0	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	110	1.2973130	1.4283629		10.1	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	109	1.2364800	1.3459101		8.9	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	109	0.7319833	0.8012959		9.5	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	87.4	1.2424560	1.0856651		-12.6	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	83.1	1.3434760	1.1164367		-16.9	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	84.9	1.2148550	1.0310987		-15.1	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	88.7	1.0076370	0.8934663		-11.3	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	98.3	0.9598233	0.9439480		-1.7	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	94.4	1.0413850	0.9829577		-5.6	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	105	0.9264704	0.9755024		5.3	+/-22
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	105	0.7579160	0.7926059		4.6	+/-23
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	109	0.6324476	0.6881967		8.8	+/-28

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

INITIAL CALIBRATION CHECK

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	AUTOSPEC01	Calibration:	EH00030
Lab File ID:	21082621A	Calibration Date:	08/11/2021
Sequence:	SJH0365	Injection Date:	08/27/21
Lab Sample ID:	SJH0365-ICV1	Injection Time:	03:04
Sequence Name:	CS3L7		

		CONC. (ng/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
COMPOUND	TYPE	STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
13C12-OCDD	A	200.00	270	0.5037432	0.6799623		35.0	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	9.37	1.0835930	1.0152209		-6.3	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D1OP.qld
Last Altered: Friday, August 27, 2021 13:29:26 Pacific Daylight Time
Printed: Friday, August 27, 2021 13:30:42 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: CS3L7, Name: 21082621, Date: 27-Aug-2021, Time: 03:04:10, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.232	1.001	3.576e4	4.759e4	1.108	0.752	0.770	826	1142	5.22e5	6.95e5	631.7	608.4	NO	bb	bb	8.996
12378-PeCDF	29.392	1.001	2.289e5	1.481e5	1.015	1.546	1.550	2977	1879	3.31e6	2.15e6	1113.3	1144.4	NO	bb	bb	46.442
23478-PeCDF	30.740	1.001	2.346e5	1.553e5	1.126	1.510	1.550	2977	1879	3.42e6	2.26e6	1148.6	1205.4	NO	bb	bb	45.961
123478-HxCDF	34.394	1.001	1.864e5	1.491e5	1.017	1.250	1.240	1603	1677	2.83e6	2.32e6	1767.4	1384.5	NO	bd	bd	50.081
234678-HxCDF	35.419	1.001	1.781e5	1.448e5	1.052	1.230	1.240	1603	1677	2.78e6	2.29e6	1737.0	1368.4	NO	bb	bb	49.023
123678-HxCDF	34.539	1.001	1.846e5	1.564e5	1.037	1.180	1.240	1603	1677	2.76e6	2.32e6	1724.5	1384.7	NO	db	db	48.533
123789-HxCDF	36.455	1.001	1.481e5	1.198e5	1.030	1.237	1.240	1603	1677	2.22e6	1.79e6	1382.3	1066.5	NO	bb	bb	47.952
1234678-HpCDF	38.327	1.000	1.875e5	1.786e5	1.327	1.050	1.050	1765	1792	3.12e6	2.95e6	1765.9	1645.2	NO	bb	bb	46.588
1234789-HpCDF	40.511	1.001	1.577e5	1.496e5	1.283	1.054	1.050	1765	1792	2.32e6	2.17e6	1313.9	1213.4	NO	bb	bb	49.777
OCDF	44.629	1.005	2.665e5	3.019e5	1.447	0.883	0.890	1455	2489	3.23e6	3.57e6	2216.3	1435.0	NO	bb	bd	95.203
2378-TCDD	25.867	1.001	2.755e4	3.449e4	0.920	0.799	0.770	969	715	3.90e5	4.91e5	402.3	686.1	NO	bd	bd	10.575
12378-PeCDD	30.985	1.001	1.457e5	9.024e4	0.995	1.615	1.550	2037	1903	2.19e6	1.36e6	1072.8	716.4	NO	bb	bb	52.831
123478-HxCDD	35.530	1.000	1.501e5	1.225e5	1.027	1.226	1.240	2095	1710	2.47e6	1.97e6	1179.5	1149.9	NO	bd	bd	46.317
123678-HxCDD	35.653	1.001	1.593e5	1.309e5	1.009	1.217	1.240	2095	1710	2.45e6	1.99e6	1167.1	1164.1	NO	db	db	48.220
123789-HxCDD	36.043	1.012	1.485e5	1.251e5	0.950	1.187	1.240	2095	1710	2.39e6	1.94e6	1140.8	1134.7	NO	bb	bd	49.228
1234678-HpCDD	39.798	1.001	1.235e5	1.132e5	1.068	1.091	1.050	1524	1679	1.87e6	1.77e6	1226.6	1051.3	NO	bb	bb	53.062
OCDD	44.418	1.000	2.294e5	2.556e5	1.181	0.897	0.890	1666	1499	2.94e6	3.19e6	1763.8	2126.8	NO	bb	bb	99.537
13C-2378-TCDF	25.216	1.007	3.737e5	4.628e5	1.427	0.808	0.770	2193	1340	5.49e6	6.80e6	2503.9	5076.7	NO	bb	bb	104.714
13C-12378-PeCDF	29.370	1.173	4.925e5	3.074e5	1.297	1.602	1.550	2817	1962	7.18e6	4.52e6	2547.6	2304.5	NO	bb	bb	110.102
13C-23478-PeCDF	30.718	1.227	4.626e5	2.910e5	1.236	1.590	1.550	2817	1962	6.84e6	4.23e6	2427.4	2158.2	NO	bb	bb	108.850
13C-123478-HxCDF	34.372	0.954	2.234e5	4.355e5	1.242	0.513	0.510	1761	2329	3.31e6	6.52e6	1880.1	2798.0	NO	bd	bd	87.381
13C-123678-HxCDF	34.517	0.958	2.331e5	4.444e5	1.343	0.525	0.510	1761	2329	3.54e6	6.76e6	2012.3	2902.8	NO	db	db	83.101
13C-234678-HxCDF	35.397	0.982	2.153e5	4.105e5	1.215	0.525	0.510	1761	2329	3.47e6	6.54e6	1968.4	2806.0	NO	bb	bb	84.874
13C-123789-HxCDF	36.433	1.011	1.829e5	3.594e5	1.008	0.509	0.510	1761	2329	2.81e6	5.56e6	1597.1	2388.8	NO	bb	bb	88.669
13C-1234678-HpCDF	38.316	1.063	1.866e5	4.054e5	0.926	0.460	0.440	1501	2106	2.98e6	6.51e6	1988.0	3090.6	NO	bb	bb	105.292
13C-1234789-HpCDF	40.488	1.124	1.505e5	3.305e5	0.758	0.455	0.440	1501	2106	2.25e6	4.89e6	1499.8	2321.6	NO	bb	bb	104.577
13C-1234-TCDD	25.035	0.000	2.416e5	3.184e5	1.000	0.759	0.770	1838	1099	3.67e6	4.83e6	1998.2	4392.1	NO	bb	bb	100.000
13C-2378-TCDD	25.851	1.033	2.744e5	3.630e5	1.116	0.756	0.770	1838	1099	4.00e6	5.27e6	2177.4	4796.3	NO	bb	bb	101.957
13C-12378-PeCDD	30.963	1.237	2.739e5	1.748e5	0.732	1.567	1.550	893	1440	4.00e6	2.51e6	4482.1	1743.1	NO	bb	bb	109.469
13C-123478-HxCDD	35.520	0.986	3.209e5	2.520e5	0.960	1.273	1.240	1555	1830	5.04e6	3.95e6	3244.3	2158.9	NO	bd	bd	98.346
13C-123678-HxCDD	35.631	0.989	3.323e5	2.642e5	1.041	1.258	1.240	1555	1830	5.19e6	4.16e6	3340.4	2270.5	NO	db	db	94.389
13C-1234678-HpCDD	39.775	1.104	2.172e5	2.005e5	0.632	1.083	1.050	1136	1446	3.33e6	3.16e6	2929.1	2182.2	NO	bd	bb	108.815
13C-OCDD	44.400	1.232	3.993e5	4.261e5	0.504	0.937	0.890	1604	1565	5.03e6	5.37e6	3137.5	3434.9	NO	bb	bb	269.964
13C-123789-HxCDD	36.032	0.000	3.349e5	2.720e5	1.000	1.231	1.240	1555	1830	5.16e6	4.26e6	3319.5	2327.8	NO	bb	bb	100.000
37CL-2378-TCDD	25.867	1.033	5.685e4		1.084			1027		8.08e5		787.4			bb		9.369

Dataset: T:\Autospec\Processed Data Batch\210827D1OP.qld
Last Altered: Friday, August 27, 2021 13:29:26 Pacific Daylight Time
Printed: Friday, August 27, 2021 13:30:42 Pacific Daylight Time

ID: CS3L7, Name: 21082621, Date: 27-Aug-2021, Time: 03:04:10, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	21.724	0.861	4.615e4	5.887e4	1.425	0.784	0.770	826	1142	6.72e5	8.65e5	813.5	757.6	NO	bb	bb	8.809
1289-TCDF	26.713	1.059	3.752e4	4.597e4	1.043	0.816	0.770	826	1142	4.89e5	6.28e5	592.4	549.4	NO	db	bb	9.569
13468-PECDF	26.592	0.905	2.991e5	1.950e5	1.376	1.533	1.550	721	804	4.33e6	2.82e6	6003.0	3511.8	NO	bb	bb	44.887
12389-PECDF	31.765	1.082	2.222e5	1.458e5	1.000	1.524	1.550	2977	1879	3.07e6	2.06e6	1031.8	1094.0	NO	bb	bb	46.030
123468-HXCDF	32.701	0.951	1.912e5	1.552e5	1.087	1.232	1.240	1603	1677	2.71e6	2.24e6	1693.8	1334.4	NO	bb	bb	48.377
1368-TCDD	23.009	0.890	2.658e4	3.395e4	0.923	0.783	0.770	969	715	3.80e5	4.98e5	392.7	696.0	NO	bb	bb	10.284
1289-TCDD	26.471	1.024	2.515e4	3.069e4	0.794	0.820	0.770	969	715	3.34e5	4.19e5	345.2	586.3	NO	bb	bd	11.032
12479-PECDD	28.267	0.913	2.617e5	1.658e5	1.843	1.579	1.550	2037	1903	2.50e6	1.59e6	1228.5	834.1	NO	bb	bb	51.687
12389-PECDD	31.386	1.014	1.714e5	1.080e5	1.154	1.587	1.550	2037	1903	2.57e6	1.60e6	1263.5	839.6	NO	bb	bb	53.975
124679-HXCDD	33.492	0.943	1.710e5	1.322e5	1.125	1.293	1.240	2095	1710	2.40e6	1.99e6	1144.7	1161.7	NO	bd	bb	47.043
1234679-HPCDD	38.773	0.975	1.353e5	1.287e5	1.211	1.051	1.050	1524	1679	2.19e6	2.06e6	1437.9	1228.9	NO	bb	bb	52.191
Total-tetrafurans			1.197e5		1.192			826		1.69e6							27.442
Total-penta1			2.991e5					721		4.33e6							44.887
Total-pentafurans			7.222e5		1.047			2977		1.03e7							146.088
Total-hexafurans			8.884e5		1.045			1603		1.33e7							243.966
Total-heptafurans			3.452e5		1.305			1765		5.43e6							96.365
Total-Furans			2.641e6		1.158			826		3.83e7							653.952
Total-tetradioxins			1.333e5		0.879			969		1.72e6							53.538
Total-pentadioxins			5.794e5		1.331			2037		7.27e6							158.654
Total-hexadioxins			6.298e5		1.028			2095		9.71e6							191.075
Total-heptadioxins			2.588e5		1.140			1524		4.06e6							105.253
Total-Dioxins			1.831e6		1.092			969		2.57e7							608.057
Total-TEQ			4.472e6					969		6.40e7							1262.009
FUNCTION1 PFK			8.205e4					459232		2.28e6							
FUNCTION2 PFK			9.838e4					277602		3.67e6							0.000
FUNCTION3 PFK			2.111e6					379794		4.08e7							0.000
FUNCTION4 PFK			5.068e5					261718		1.49e7							
FUNCTION5 PFK			5.157e4					213530		2.03e6							
FUNCTION1 HXCD...			7.671e2					707		9.40e3							0.000
FUNCTION1 HPCD...			3.272e2					616		4.42e3							0.000
FUNCTION2 HPCD...			5.255e2					750		1.41e4							0.000
FUNCTION3 OCDPE			5.025e2					596		8.76e3							0.000
FUNCTION4 NCDPE			2.880e2					515		4.37e3							0.000
FUNCTION5 DCDPE			8.065e1					548		1.65e3							0.000

Dataset: T:\Autospec\Processed Data Batch\210827D1OP.qld
Last Altered: Friday, August 27, 2021 13:29:26 Pacific Daylight Time
Printed: Friday, August 27, 2021 13:30:42 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: CS3L7, Name: 21082621, Date: 27-Aug-2021, Time: 03:04:10, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	26.71	3.752e4	4.597e4	1.043	0.82	0.77	592.4	YES	NO	db	bb	9.569
2	2378-TCDF	25.23	3.576e4	4.759e4	1.108	0.75	0.77	631.7	YES	NO	bb	bb	8.996
3	Total-tetrafurans	24.32	3.075e2	3.753e2	1.192	0.82	0.77	6.3	YES	NO	bb	bb	0.068
4	1368-TCDF	21.72	4.615e4	5.887e4	1.425	0.78	0.77	813.5	YES	NO	bb	bb	8.809

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.59	2.991e5	1.950e5	1.376	1.53	1.55	6003.0	YES	NO	bb	bb	44.887

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	23478-PeCDF	30.74	2.346e5	1.553e5	1.126	1.51	1.55	1148.6	YES	NO	bb	bb	45.961
2	12378-PeCDF	29.39	2.289e5	1.481e5	1.015	1.55	1.55	1113.3	YES	NO	bb	bb	46.442
3	Total-pentafurans	28.24	3.653e4	2.570e4	1.047	1.42	1.55	171.1	YES	NO	bb	bb	7.655
4	12389-PECDF	31.76	2.222e5	1.458e5	1.000	1.52	1.55	1031.8	YES	NO	bb	bb	46.030

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDF	36.46	1.481e5	1.198e5	1.030	1.24	1.24	1382.3	YES	NO	bb	bb	47.952
2	234678-HxCDF	35.42	1.781e5	1.448e5	1.052	1.23	1.24	1737.0	YES	NO	bb	bb	49.023
3	123678-HxCDF	34.54	1.846e5	1.564e5	1.037	1.18	1.24	1724.5	YES	NO	db	db	48.533
4	123478-HxCDF	34.39	1.864e5	1.491e5	1.017	1.25	1.24	1767.4	YES	NO	bd	bd	50.081
5	123468-HXCDF	32.70	1.912e5	1.552e5	1.087	1.23	1.24	1693.8	YES	NO	bb	bb	48.377

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.51	1.577e5	1.496e5	1.283	1.05	1.05	1313.9	YES	NO	bb	bb	49.777
2	1234678-HpCDF	38.33	1.875e5	1.786e5	1.327	1.05	1.05	1765.9	YES	NO	bb	bb	46.588

ID: CS3L7, Name: 21082621, Date: 27-Aug-2021, Time: 03:04:10, Conditions: AUTOSPEC01, User: pk

Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	26.71	3.752e4	4.597e4	1.043	0.82	0.77	592.4	YES	NO	db	bb	9.569
2	2378-TCDF	25.23	3.576e4	4.759e4	1.108	0.75	0.77	631.7	YES	NO	bb	bb	8.996
3	Total-tetrafurans	24.32	3.075e2	3.753e2	1.192	0.82	0.77	6.3	YES	NO	bb	bb	0.068
4	1368-TCDF	21.72	4.615e4	5.887e4	1.425	0.78	0.77	813.5	YES	NO	bb	bb	8.809
5	23478-PeCDF	30.74	2.346e5	1.553e5	1.126	1.51	1.55	1148.6	YES	NO	bb	bb	45.961
6	12378-PeCDF	29.39	2.289e5	1.481e5	1.015	1.55	1.55	1113.3	YES	NO	bb	bb	46.442
7	Total-pentafurans	28.24	3.653e4	2.570e4	1.047	1.42	1.55	171.1	YES	NO	bb	bb	7.655
8	12389-PECDF	31.76	2.222e5	1.458e5	1.000	1.52	1.55	1031.8	YES	NO	bb	bb	46.030
9	123789-HxCDF	36.46	1.481e5	1.198e5	1.030	1.24	1.24	1382.3	YES	NO	bb	bb	47.952
10	234678-HxCDF	35.42	1.781e5	1.448e5	1.052	1.23	1.24	1737.0	YES	NO	bb	bb	49.023
11	123678-HxCDF	34.54	1.846e5	1.564e5	1.037	1.18	1.24	1724.5	YES	NO	db	db	48.533
12	123478-HxCDF	34.39	1.864e5	1.491e5	1.017	1.25	1.24	1767.4	YES	NO	bd	bd	50.081
13	123468-HXCDF	32.70	1.912e5	1.552e5	1.087	1.23	1.24	1693.8	YES	NO	bb	bb	48.377
14	1234789-HpCDF	40.51	1.577e5	1.496e5	1.283	1.05	1.05	1313.9	YES	NO	bb	bb	49.777
15	1234678-HpCDF	38.33	1.875e5	1.786e5	1.327	1.05	1.05	1765.9	YES	NO	bb	bb	46.588
16	OCDF	44.63	2.665e5	3.019e5	1.447	0.88	0.89	2216.3	YES	NO	bb	bd	95.203
17	13468-PECDF	26.59	2.991e5	1.950e5	1.376	1.53	1.55	6003.0	YES	NO	bb	bb	44.887

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDD	25.87	2.755e4	3.449e4	0.920	0.80	0.77	402.3	YES	NO	bd	bd	10.575
2	Total-tetradioxins	25.55	4.025e4	5.115e4	0.879	0.79	0.77	431.6	YES	NO	bb	bb	16.308
3	Total-tetradioxins	25.05	1.374e4	1.618e4	0.879	0.85	0.77	207.5	YES	NO	bd	bd	5.339
4	1368-TCDD	23.01	2.658e4	3.395e4	0.923	0.78	0.77	392.7	YES	NO	bb	bb	10.284
5	1289-TCDD	26.47	2.515e4	3.069e4	0.794	0.82	0.77	345.2	YES	NO	bb	bd	11.032

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDD	31.39	1.714e5	1.080e5	1.154	1.59	1.55	1263.5	YES	NO	bb	bb	53.975
2	12378-PeCDD	30.99	1.457e5	9.024e4	0.995	1.61	1.55	1072.8	YES	NO	bb	bb	52.831
3	Total-pentadioxins	29.39	5.559e2	4.049e2	1.331	1.37	1.55	3.6	NO	NO	bb	bb	0.161
4	12479-PECDD	28.27	2.617e5	1.658e5	1.843	1.58	1.55	1228.5	YES	NO	bb	bb	51.687

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HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.04	1.485e5	1.251e5	0.950	1.19	1.24	1140.8	YES	NO	bb	bd	49.228
2	123678-HxCDD	35.65	1.593e5	1.309e5	1.009	1.22	1.24	1167.1	YES	NO	db	db	48.220
3	123478-HxCDD	35.53	1.501e5	1.225e5	1.027	1.23	1.24	1179.5	YES	NO	bd	bd	46.317
4	Total-hexadioxins	34.63	8.770e2	7.275e2	1.028	1.21	1.24	4.2	YES	NO	db	db	0.267
5	124679-HXCDD	33.49	1.710e5	1.322e5	1.125	1.29	1.24	1144.7	YES	NO	bd	bb	47.043

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.80	1.235e5	1.132e5	1.068	1.09	1.05	1226.6	YES	NO	bb	bb	53.062
2	1234679-HPCDD	38.77	1.353e5	1.287e5	1.211	1.05	1.05	1437.9	YES	NO	bb	bb	52.191

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	2378-TCDD	25.87	2.755e4	3.449e4	0.920	0.80	0.77	402.3	YES	NO	bd	bd	10.575
2	Total-tetradioxins	25.55	4.025e4	5.115e4	0.879	0.79	0.77	431.6	YES	NO	bb	bb	16.308
3	Total-tetradioxins	25.05	1.374e4	1.618e4	0.879	0.85	0.77	207.5	YES	NO	bd	bd	5.339
4	1368-TCDD	23.01	2.658e4	3.395e4	0.923	0.78	0.77	392.7	YES	NO	bb	bb	10.284
5	1289-TCDD	26.47	2.515e4	3.069e4	0.794	0.82	0.77	345.2	YES	NO	bb	bd	11.032
6	12389-PECDD	31.39	1.714e5	1.080e5	1.154	1.59	1.55	1263.5	YES	NO	bb	bb	53.975
7	12378-PeCDD	30.99	1.457e5	9.024e4	0.995	1.61	1.55	1072.8	YES	NO	bb	bb	52.831
8	Total-pentadioxins	29.39	5.559e2	4.049e2	1.331	1.37	1.55	3.6	NO	NO	bb	bb	0.161
9	12479-PECDD	28.27	2.617e5	1.658e5	1.843	1.58	1.55	1228.5	YES	NO	bb	bb	51.687
10	123789-HxCDD	36.04	1.485e5	1.251e5	0.950	1.19	1.24	1140.8	YES	NO	bb	bd	49.228
11	123678-HxCDD	35.65	1.593e5	1.309e5	1.009	1.22	1.24	1167.1	YES	NO	db	db	48.220
12	123478-HxCDD	35.53	1.501e5	1.225e5	1.027	1.23	1.24	1179.5	YES	NO	bd	bd	46.317
13	Total-hexadioxins	34.63	8.770e2	7.275e2	1.028	1.21	1.24	4.2	YES	NO	db	db	0.267
14	124679-HXCDD	33.49	1.710e5	1.322e5	1.125	1.29	1.24	1144.7	YES	NO	bd	bb	47.043
15	1234678-HpCDD	39.80	1.235e5	1.132e5	1.068	1.09	1.05	1226.6	YES	NO	bb	bb	53.062
16	1234679-HPCDD	38.77	1.353e5	1.287e5	1.211	1.05	1.05	1437.9	YES	NO	bb	bb	52.191
17	OCDD	44.42	2.294e5	2.556e5	1.181	0.90	0.89	1763.8	YES	NO	bb	bb	99.537

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	26.71	3.752e4	4.597e4	1.043	0.82	0.77	592.4	YES	NO	db	bb	9.569
2	2378-TCDF	25.23	3.576e4	4.759e4	1.108	0.75	0.77	631.7	YES	NO	bb	bb	8.996
3	Total-tetrafurans	24.32	3.075e2	3.753e2	1.192	0.82	0.77	6.3	YES	NO	bb	bb	0.068
4	1368-TCDF	21.72	4.615e4	5.887e4	1.425	0.78	0.77	813.5	YES	NO	bb	bb	8.809
5	23478-PeCDF	30.74	2.346e5	1.553e5	1.126	1.51	1.55	1148.6	YES	NO	bb	bb	45.961
6	12378-PeCDF	29.39	2.289e5	1.481e5	1.015	1.55	1.55	1113.3	YES	NO	bb	bb	46.442
7	Total-pentafurans	28.24	3.653e4	2.570e4	1.047	1.42	1.55	171.1	YES	NO	bb	bb	7.655
8	12389-PECDF	31.76	2.222e5	1.458e5	1.000	1.52	1.55	1031.8	YES	NO	bb	bb	46.030
9	123789-HxCDF	36.46	1.481e5	1.198e5	1.030	1.24	1.24	1382.3	YES	NO	bb	bb	47.952
10	234678-HxCDF	35.42	1.781e5	1.448e5	1.052	1.23	1.24	1737.0	YES	NO	bb	bb	49.023
11	123678-HxCDF	34.54	1.846e5	1.564e5	1.037	1.18	1.24	1724.5	YES	NO	db	db	48.533
12	123478-HxCDF	34.39	1.864e5	1.491e5	1.017	1.25	1.24	1767.4	YES	NO	bd	bd	50.081
13	123468-HXCDF	32.70	1.912e5	1.552e5	1.087	1.23	1.24	1693.8	YES	NO	bb	bb	48.377
14	1234789-HpCDF	40.51	1.577e5	1.496e5	1.283	1.05	1.05	1313.9	YES	NO	bb	bb	49.777
15	1234678-HpCDF	38.33	1.875e5	1.786e5	1.327	1.05	1.05	1765.9	YES	NO	bb	bb	46.588
16	OCDF	44.63	2.665e5	3.019e5	1.447	0.88	0.89	2216.3	YES	NO	bb	bd	95.203
17	13468-PECDF	26.59	2.991e5	1.950e5	1.376	1.53	1.55	6003.0	YES	NO	bb	bb	44.887
18	2378-TCDD	25.87	2.755e4	3.449e4	0.920	0.80	0.77	402.3	YES	NO	bd	bd	10.575
19	Total-tetradioxins	25.55	4.025e4	5.115e4	0.879	0.79	0.77	431.6	YES	NO	bb	bb	16.308
20	Total-tetradioxins	25.05	1.374e4	1.618e4	0.879	0.85	0.77	207.5	YES	NO	bd	bd	5.339
21	1368-TCDD	23.01	2.658e4	3.395e4	0.923	0.78	0.77	392.7	YES	NO	bb	bb	10.284
22	1289-TCDD	26.47	2.515e4	3.069e4	0.794	0.82	0.77	345.2	YES	NO	bb	bd	11.032
23	12389-PECDD	31.39	1.714e5	1.080e5	1.154	1.59	1.55	1263.5	YES	NO	bb	bb	53.975
24	12378-PeCDD	30.99	1.457e5	9.024e4	0.995	1.61	1.55	1072.8	YES	NO	bb	bb	52.831
25	Total-pentadioxins	29.39	5.559e2	4.049e2	1.331	1.37	1.55	3.6	NO	NO	bb	bb	0.161
26	12479-PECDD	28.27	2.617e5	1.658e5	1.843	1.58	1.55	1228.5	YES	NO	bb	bb	51.687
27	123789-HxCDD	36.04	1.485e5	1.251e5	0.950	1.19	1.24	1140.8	YES	NO	bb	bd	49.228
28	123678-HxCDD	35.65	1.593e5	1.309e5	1.009	1.22	1.24	1167.1	YES	NO	db	db	48.220
29	123478-HxCDD	35.53	1.501e5	1.225e5	1.027	1.23	1.24	1179.5	YES	NO	bd	bd	46.317
30	Total-hexadioxins	34.63	8.770e2	7.275e2	1.028	1.21	1.24	4.2	YES	NO	db	db	0.267
31	124679-HXCDD	33.49	1.710e5	1.322e5	1.125	1.29	1.24	1144.7	YES	NO	bd	bb	47.043
32	1234678-HpCDD	39.80	1.235e5	1.132e5	1.068	1.09	1.05	1226.6	YES	NO	bb	bb	53.062
33	1234679-HPCDD	38.77	1.353e5	1.287e5	1.211	1.05	1.05	1437.9	YES	NO	bb	bb	52.191
34	OCDD	44.42	2.294e5	2.556e5	1.181	0.90	0.89	1763.8	YES	NO	bb	bb	99.537

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	24.32	3.605e4					1.9	NO		bb		
2	FUNCTION1 PFK	21.15	4.600e4					3.0	YES		bb		

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	27.72	9.779e3					1.2	NO		bb		0.000
2	FUNCTION2 PFK	27.55	2.324e4					2.2	NO		db		0.000
3	FUNCTION2 PFK	27.50	1.285e4					1.5	NO		bd		0.000
4	FUNCTION2 PFK	31.85	2.977e3					0.6	NO		bb		0.000
5	FUNCTION2 PFK	30.33	8.970e3					0.8	NO		bb		0.000
6	FUNCTION2 PFK	30.04	1.600e3					0.5	NO		bb		0.000
7	FUNCTION2 PFK	29.92	7.965e3					1.2	NO		bb		0.000
8	FUNCTION2 PFK	29.58	1.537e3					0.5	NO		bb		0.000
9	FUNCTION2 PFK	29.12	1.183e4					1.5	NO		bb		0.000
10	FUNCTION2 PFK	28.37	5.713e3					1.0	NO		bb		0.000
11	FUNCTION2 PFK	28.08	7.926e3					1.2	NO		db		0.000
12	FUNCTION2 PFK	28.04	3.986e3					0.9	NO		bd		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	32.61	2.751e5					5.5	YES		db		0.000
2	FUNCTION3 PFK	32.57	8.659e4					5.7	YES		dd		0.000
3	FUNCTION3 PFK	32.49	2.162e5					7.2	YES		dd		0.000
4	FUNCTION3 PFK	32.41	2.201e5					8.4	YES		dd		0.000
5	FUNCTION3 PFK	32.32	2.390e5					9.4	YES		dd		0.000
6	FUNCTION3 PFK	32.27	2.315e5					9.9	YES		bd		0.000
7	FUNCTION3 PFK	34.57	1.233e4					1.5	NO		bb		0.000
8	FUNCTION3 PFK	34.46	6.914e3					0.9	NO		bb		0.000
9	FUNCTION3 PFK	34.39	4.762e3					0.7	NO		bb		0.000
10	FUNCTION3 PFK	34.26	3.067e3					0.5	NO		bb		0.000
11	FUNCTION3 PFK	34.22	6.087e3					0.7	NO		bb		0.000
12	FUNCTION3 PFK	33.77	1.228e3					0.3	NO		bb		0.000
13	FUNCTION3 PFK	33.71	3.078e4					1.5	NO		db		0.000
14	FUNCTION3 PFK	33.65	3.152e4					1.6	NO		bd		0.000
15	FUNCTION3 PFK	33.49	2.296e4					1.5	NO		db		0.000
16	FUNCTION3 PFK	33.42	3.726e4					2.1	NO		bd		0.000
17	FUNCTION3 PFK	33.35	2.312e3					0.4	NO		bb		0.000
18	FUNCTION3 PFK	33.24	4.212e3					0.5	NO		db		0.000
19	FUNCTION3 PFK	33.19	9.189e3					0.9	NO		bd		0.000
20	FUNCTION3 PFK	33.14	2.141e4					1.3	NO		bb		0.000
21	FUNCTION3 PFK	33.02	2.347e3					0.6	NO		bb		0.000
22	FUNCTION3 PFK	32.98	4.117e3					0.5	NO		bb		0.000
23	FUNCTION3 PFK	35.89	2.053e4					1.5	NO		db		0.000
24	FUNCTION3 PFK	35.84	2.942e3					0.5	NO		bd		0.000
25	FUNCTION3 PFK	35.80	5.489e3					0.9	NO		db		0.000
26	FUNCTION3 PFK	35.75	1.706e4					1.9	NO		bd		0.000
27	FUNCTION3 PFK	35.68	1.324e3					0.3	NO		bb		0.000
28	FUNCTION3 PFK	35.62	2.614e4					1.6	NO		db		0.000
29	FUNCTION3 PFK	35.56	3.364e4					1.8	NO		dd		0.000
30	FUNCTION3 PFK	35.46	4.484e4					2.3	NO		dd		0.000
31	FUNCTION3 PFK	35.41	9.662e3					1.0	NO		bd		0.000
32	FUNCTION3 PFK	35.32	2.151e3					0.5	NO		bb		0.000
33	FUNCTION3 PFK	35.27	2.282e4					1.6	NO		db		0.000
34	FUNCTION3 PFK	35.22	9.856e3					0.9	NO		bd		0.000
35	FUNCTION3 PFK	35.17	2.470e4					2.3	NO		db		0.000
36	FUNCTION3 PFK	35.13	2.078e4					1.9	NO		bd		0.000
37	FUNCTION3 PFK	35.00	1.534e4					1.3	NO		bb		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION3 PFK	34.68	2.113e4					0.0	NO		bb		0.000
39	FUNCTION3 PFK	37.03	7.449e4					2.2	NO		bd		0.000
40	FUNCTION3 PFK	36.96	3.117e3					0.5	NO		bb		0.000
41	FUNCTION3 PFK	36.86	9.746e3					1.1	NO		bb		0.000
42	FUNCTION3 PFK	36.72	3.950e3					0.5	NO		db		0.000
43	FUNCTION3 PFK	36.69	3.634e3					0.4	NO		bd		0.000
44	FUNCTION3 PFK	36.60	4.436e3					0.7	NO		bb		0.000
45	FUNCTION3 PFK	36.54	1.958e4					1.4	NO		bb		0.000
46	FUNCTION3 PFK	36.48	6.288e3					0.8	NO		db		0.000
47	FUNCTION3 PFK	36.41	1.706e4					1.0	NO		bd		0.000
48	FUNCTION3 PFK	36.30	1.982e4					1.2	NO		bb		0.000
49	FUNCTION3 PFK	36.23	9.500e3					1.1	NO		db		0.000
50	FUNCTION3 PFK	36.19	6.896e3					0.8	NO		bd		0.000
51	FUNCTION3 PFK	36.11	4.314e4					2.0	NO		db		0.000
52	FUNCTION3 PFK	36.05	1.686e4					1.8	NO		dd		0.000
53	FUNCTION3 PFK	36.01	1.984e4					1.5	NO		dd		0.000
54	FUNCTION3 PFK	35.94	3.142e4					1.5	NO		bd		0.000
55	FUNCTION3 PFK	37.35	8.058e3					0.9	NO		db		0.000
56	FUNCTION3 PFK	37.31	8.373e3					1.1	NO		bd		0.000
57	FUNCTION3 PFK	37.26	1.945e4					1.3	NO		db		0.000
58	FUNCTION3 PFK	37.21	1.474e4					1.3	NO		bd		0.000
59	FUNCTION3 PFK	37.12	2.323e4					2.0	NO		db		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	38.26	9.906e3					1.1	NO		bb		
2	FUNCTION4 PFK	38.16	3.745e3					0.6	NO		bb		
3	FUNCTION4 PFK	38.03	3.378e3					0.7	NO		bb		
4	FUNCTION4 PFK	37.90	5.732e3					0.8	NO		bb		
5	FUNCTION4 PFK	37.84	4.859e3					1.0	NO		bb		
6	FUNCTION4 PFK	37.79	2.740e3					0.6	NO		bb		
7	FUNCTION4 PFK	37.64	2.402e4					2.5	NO		db		
8	FUNCTION4 PFK	37.55	4.852e4					3.1	YES		dd		
9	FUNCTION4 PFK	37.49	2.512e4					3.3	YES		dd		
10	FUNCTION4 PFK	37.45	4.845e4					4.7	YES		bd		
11	FUNCTION4 PFK	39.90	2.389e4					1.3	NO		bd		
12	FUNCTION4 PFK	39.78	3.175e3					0.6	NO		bb		
13	FUNCTION4 PFK	39.68	2.773e3					0.6	NO		db		
14	FUNCTION4 PFK	39.60	1.285e4					1.3	NO		bd		
15	FUNCTION4 PFK	39.51	1.721e4					1.7	NO		bb		
16	FUNCTION4 PFK	39.45	1.695e3					0.6	NO		bb		
17	FUNCTION4 PFK	39.41	8.944e3					1.0	NO		bb		
18	FUNCTION4 PFK	39.27	1.243e4					2.0	NO		db		
19	FUNCTION4 PFK	39.25	1.768e4					1.9	NO		bd		
20	FUNCTION4 PFK	39.12	8.066e3					1.0	NO		bb		
21	FUNCTION4 PFK	38.96	1.372e3					0.5	NO		bb		
22	FUNCTION4 PFK	38.81	1.402e4					1.2	NO		bb		
23	FUNCTION4 PFK	38.75	1.255e3					0.4	NO		bb		
24	FUNCTION4 PFK	38.66	6.255e3					1.0	NO		bb		
25	FUNCTION4 PFK	38.62	1.411e3					0.5	NO		bb		
26	FUNCTION4 PFK	38.58	1.202e3					0.4	NO		bb		
27	FUNCTION4 PFK	41.56	9.072e2					0.3	NO		bb		
28	FUNCTION4 PFK	41.36	2.058e3					0.5	NO		bb		
29	FUNCTION4 PFK	41.30	1.486e3					0.5	NO		bb		
30	FUNCTION4 PFK	41.06	7.178e3					1.1	NO		db		
31	FUNCTION4 PFK	41.01	1.609e4					1.6	NO		bd		
32	FUNCTION4 PFK	40.90	1.992e4					2.0	NO		bb		
33	FUNCTION4 PFK	40.67	5.288e3					0.8	NO		db		
34	FUNCTION4 PFK	40.62	9.307e3					1.5	NO		dd		
35	FUNCTION4 PFK	40.59	1.479e4					1.8	NO		bd		
36	FUNCTION4 PFK	40.53	1.447e4					2.1	NO		bb		
37	FUNCTION4 PFK	40.47	3.320e3					0.4	NO		bb		

ID: CS3L7, Name: 21082621, Date: 27-Aug-2021, Time: 03:04:10, Conditions: AUTOSPEC01, User: pk

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION4 PFK	40.31	8.112e3					1.2	NO		db		
39	FUNCTION4 PFK	40.28	9.620e3					1.3	NO		bd		
40	FUNCTION4 PFK	40.23	1.278e3					0.4	NO		bb		
41	FUNCTION4 PFK	40.13	1.361e4					1.5	NO		bb		
42	FUNCTION4 PFK	40.02	2.560e4					1.2	NO		db		
43	FUNCTION4 PFK	42.27	1.578e4					1.1	NO		bb		
44	FUNCTION4 PFK	42.18	2.127e3					0.5	NO		db		
45	FUNCTION4 PFK	42.14	1.907e4					1.5	NO		bd		
46	FUNCTION4 PFK	41.61	6.067e3					1.1	NO		bb		

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	45.77	5.081e3					1.1	NO		bb		
2	FUNCTION5 PFK	44.81	7.641e3					1.0	NO		bb		
3	FUNCTION5 PFK	44.33	9.905e3					1.2	NO		bb		
4	FUNCTION5 PFK	44.20	2.353e3					0.8	NO		bb		
5	FUNCTION5 PFK	44.13	1.115e3					0.6	NO		bb		
6	FUNCTION5 PFK	44.10	1.635e4					2.1	NO		bb		
7	FUNCTION5 PFK	43.36	9.223e2					0.5	NO		bb		
8	FUNCTION5 PFK	43.16	1.815e3					0.7	NO		bb		
9	FUNCTION5 PFK	42.97	3.438e3					0.9	NO		bb		
10	FUNCTION5 PFK	42.61	2.956e3					0.7	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	26.71	7.661e1					1.3	NO		db		0.000
2	FUNCTION1 HXCD...	26.58	1.740e2					2.8	NO		dd		0.000
3	FUNCTION1 HXCD...	26.43	2.442e2					2.4	NO		bd		0.000
4	FUNCTION1 HXCD...	25.35	8.047e1					1.7	NO		db		0.000
5	FUNCTION1 HXCD...	25.23	1.918e2					5.1	YES		bd		0.000

ID: CS3L7, Name: 21082621, Date: 27-Aug-2021, Time: 03:04:10, Conditions: AUTOSPEC01, User: pk

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	26.17	8.643e1					1.6	NO		bb		0.000
2	FUNCTION1 HPCD...	25.87	8.828e1					2.0	NO		bb		0.000
3	FUNCTION1 HPCD...	25.08	7.833e1					1.7	NO		bb		0.000
4	FUNCTION1 HPCD...	24.69	7.420e1					1.8	NO		bb		0.000

ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	31.59	1.065e2					2.4	NO		bb		0.000
2	FUNCTION2 HPCD...	30.57	2.358e2					9.0	YES		bb		0.000
3	FUNCTION2 HPCD...	28.02	1.015e2					2.4	NO		bb		0.000
4	FUNCTION2 HPCD...	27.83	8.166e1					4.9	YES		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.89	7.178e1					2.3	NO		bb		0.000
2	FUNCTION3 OCDPE	36.04	1.205e2					4.3	YES		bb		0.000
3	FUNCTION3 OCDPE	35.63	8.905e1					2.7	NO		db		0.000
4	FUNCTION3 OCDPE	35.52	1.441e2					3.5	YES		bd		0.000
5	FUNCTION3 OCDPE	34.77	7.709e1					2.0	NO		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	41.83	7.312e1					2.0	NO		bb		0.000
2	FUNCTION4 NCDPE	40.17	1.050e2					2.8	NO		bb		0.000
3	FUNCTION4 NCDPE	38.45	1.099e2					3.7	YES		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	43.28	8.065e1					3.0	YES		bb		0.000

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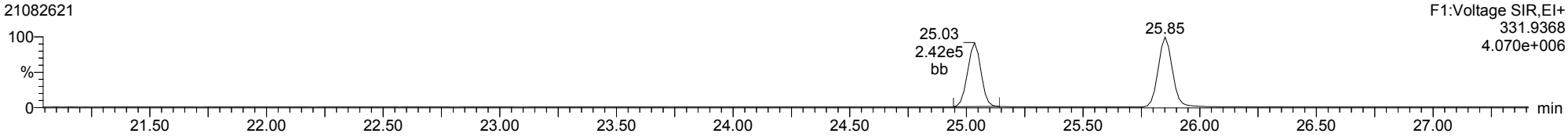

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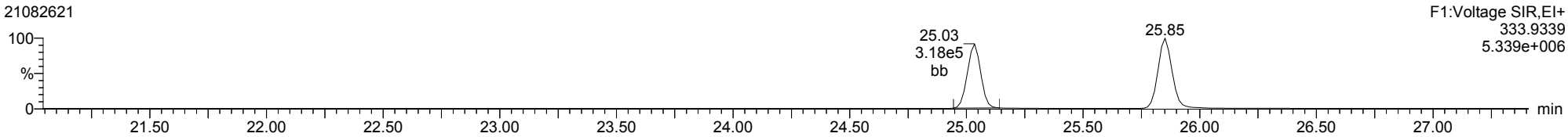

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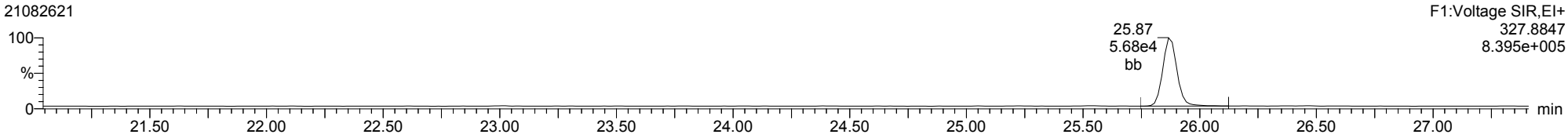

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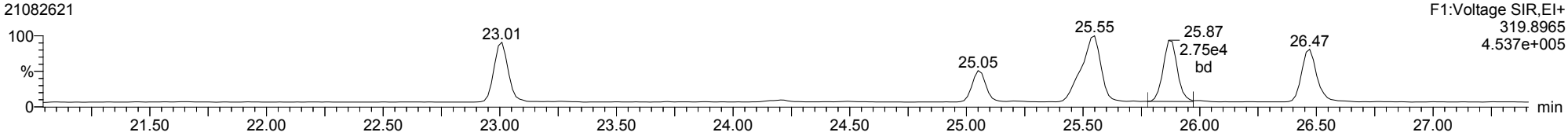

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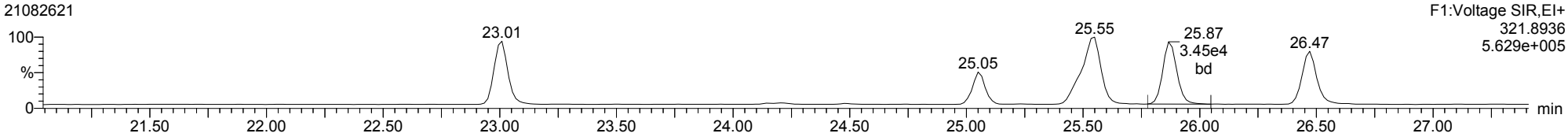

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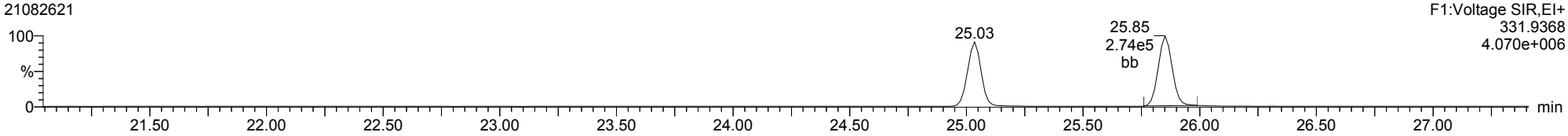

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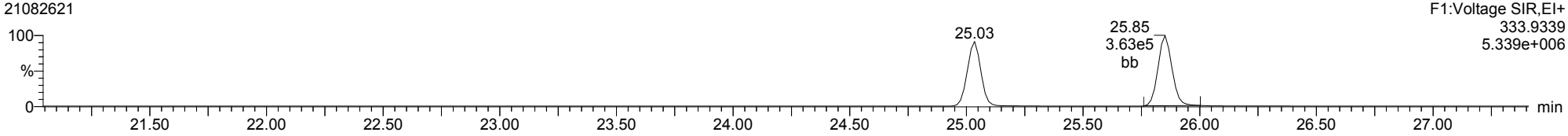

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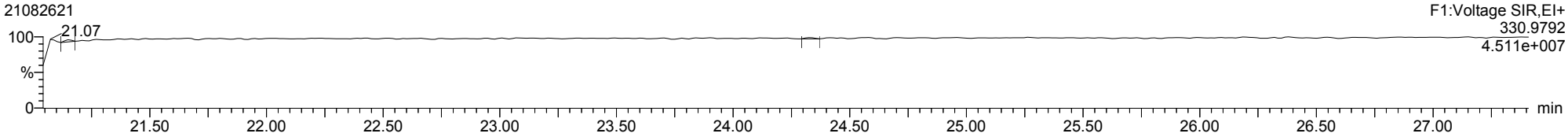

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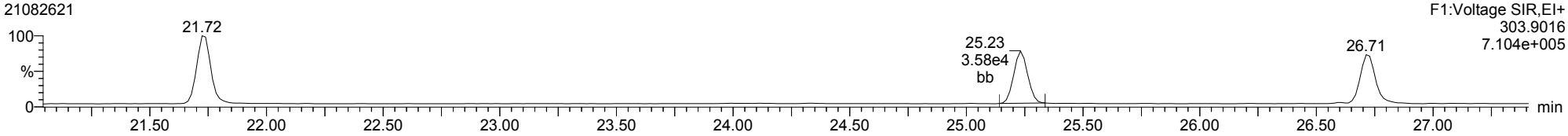

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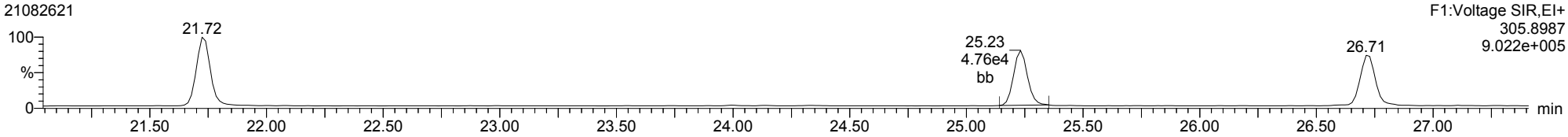

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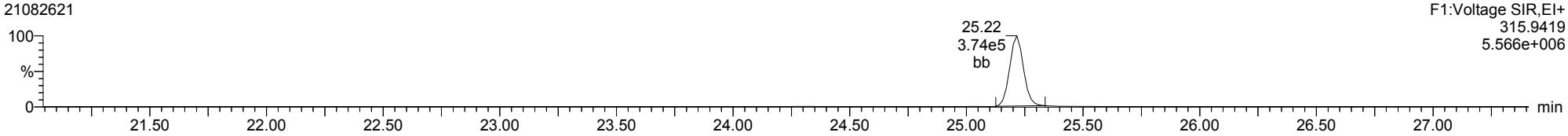

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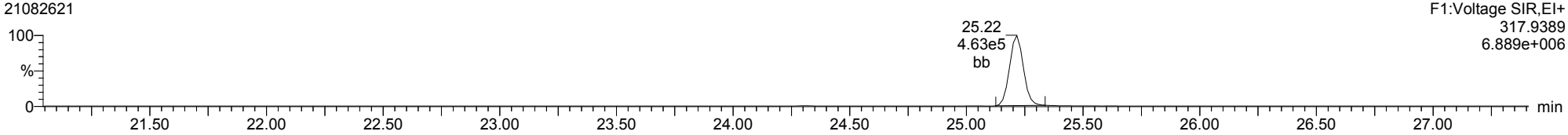

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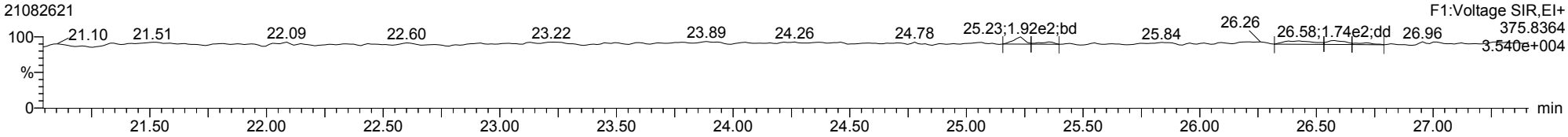

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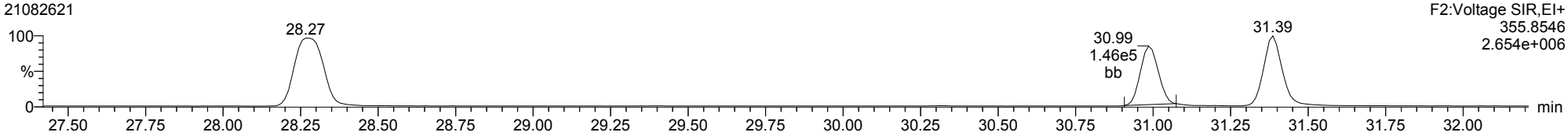

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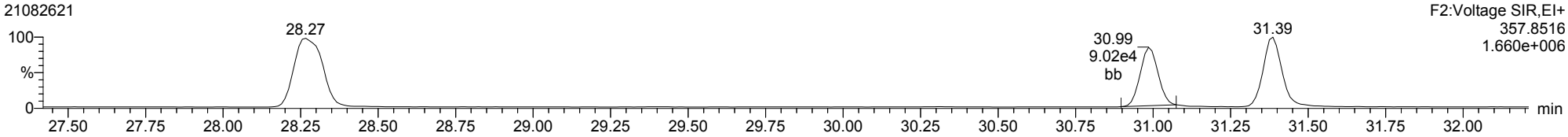

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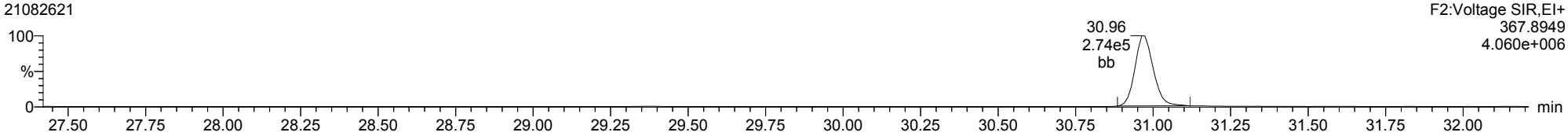

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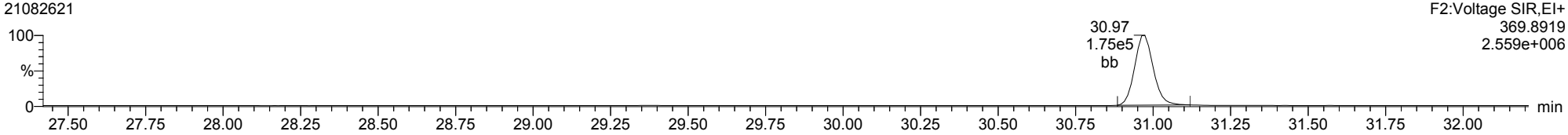
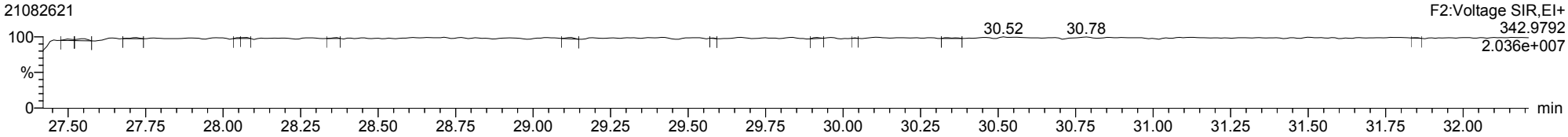


FUNCTION2 PFK



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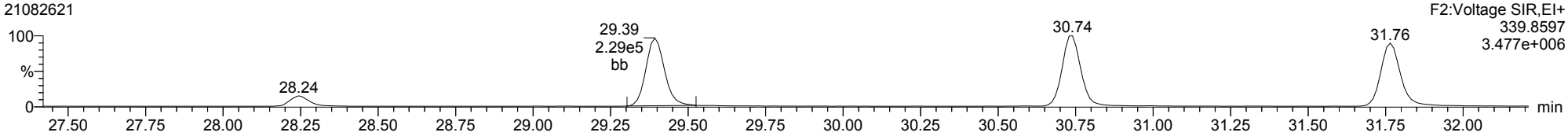

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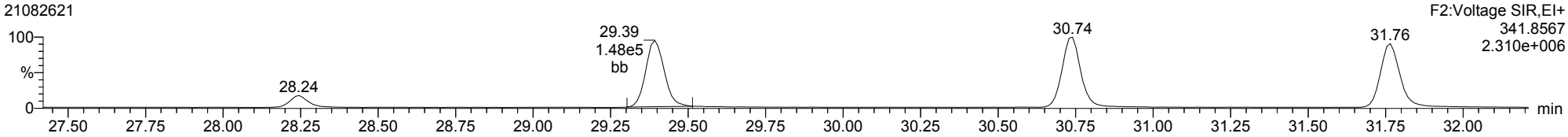

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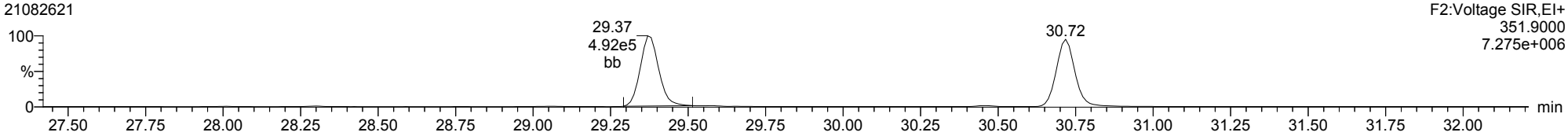

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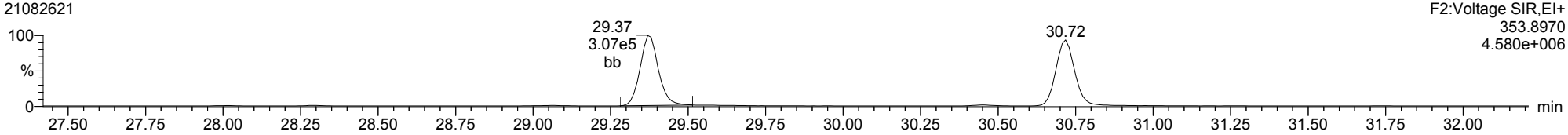

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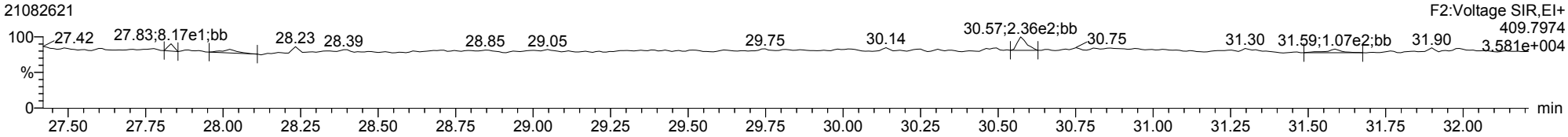

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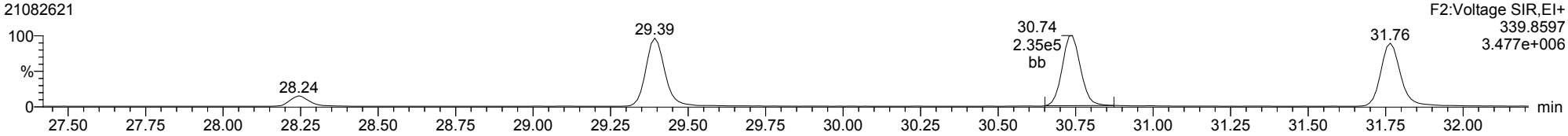

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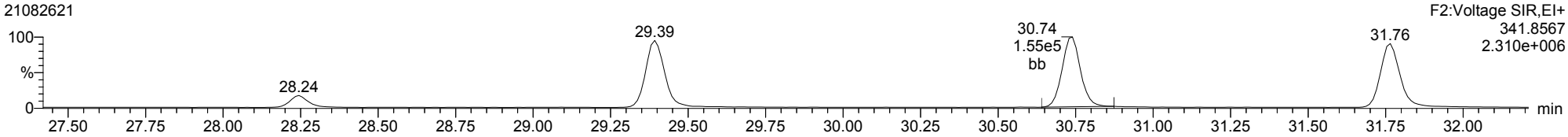

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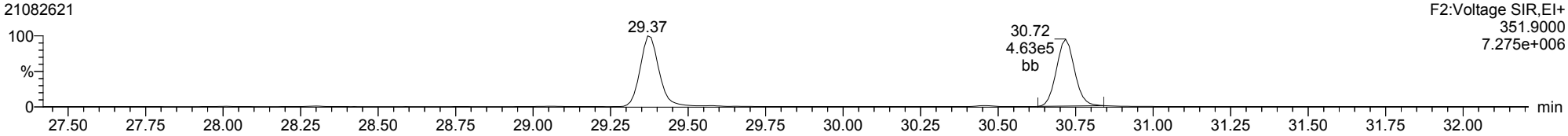

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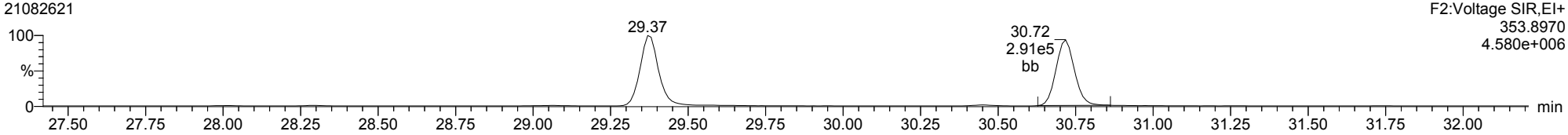

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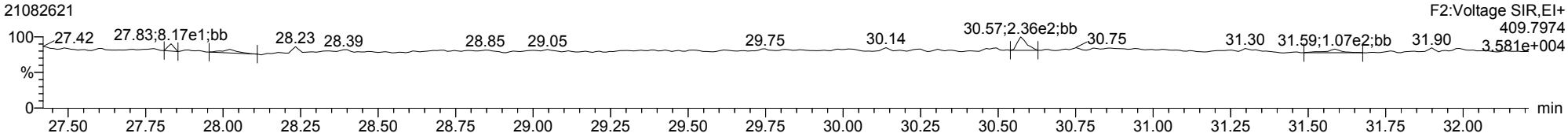

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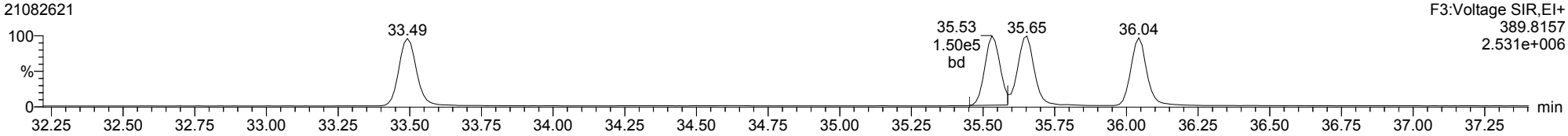
123478-HxCDD



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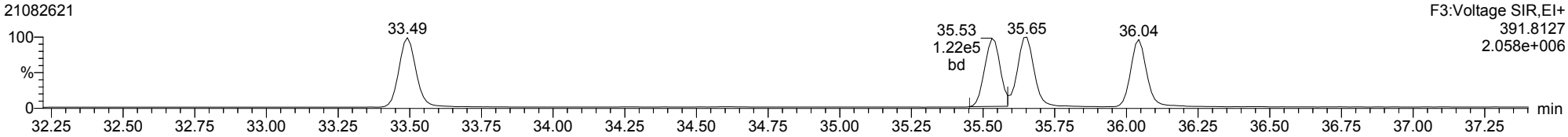

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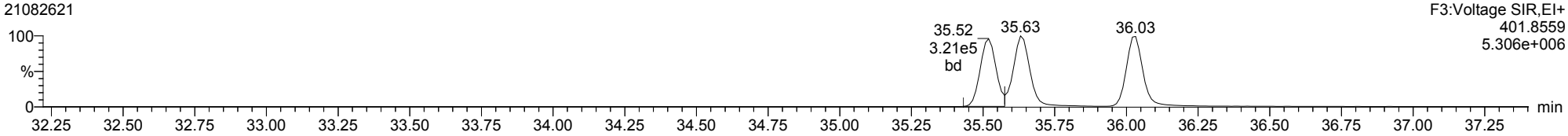

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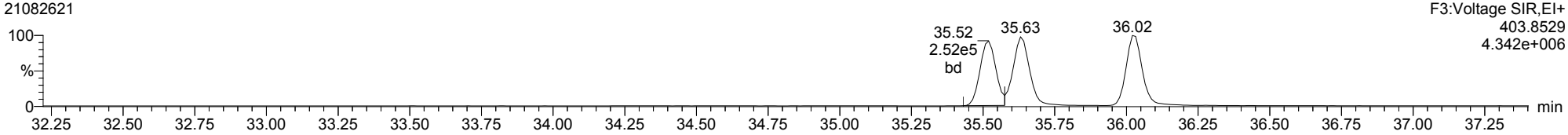

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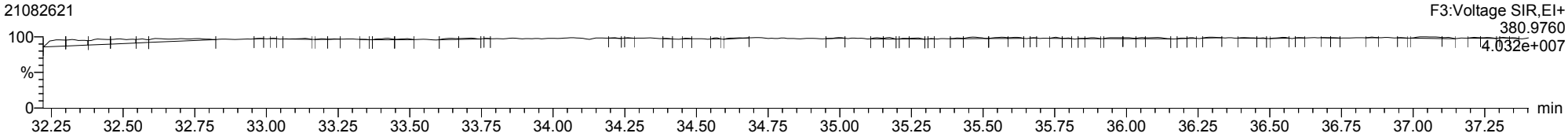

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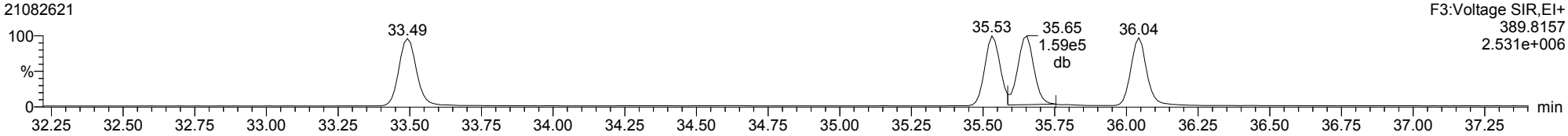

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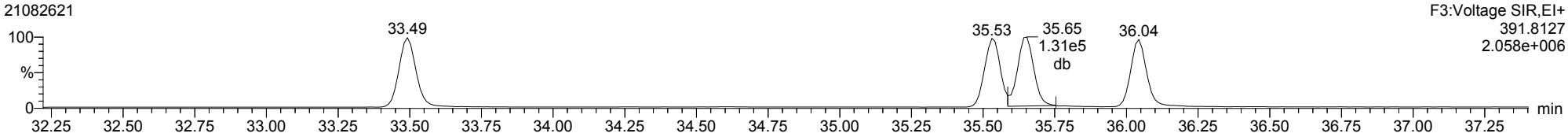

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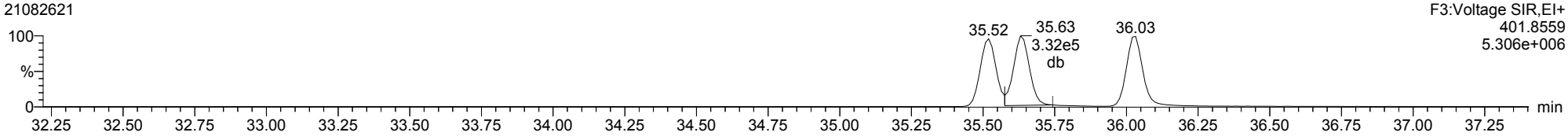

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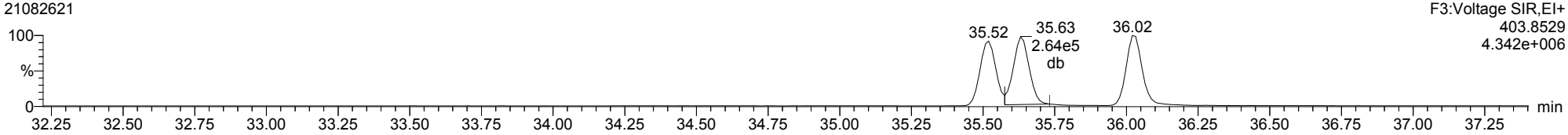

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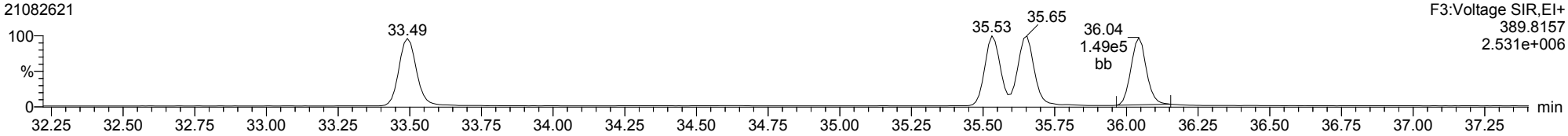

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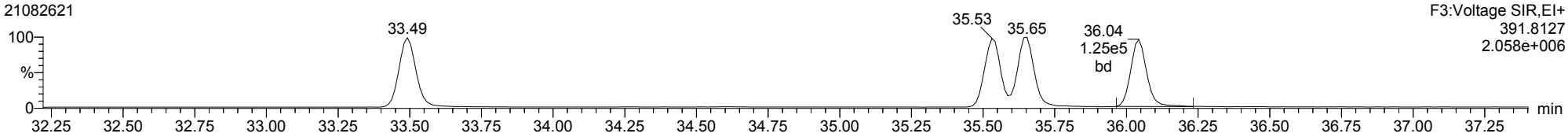

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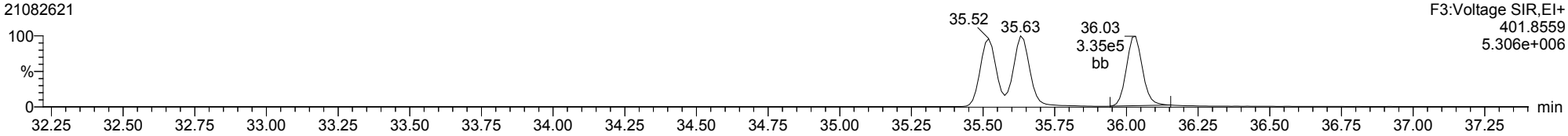

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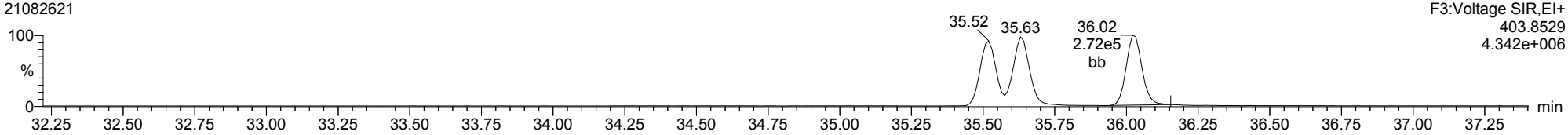

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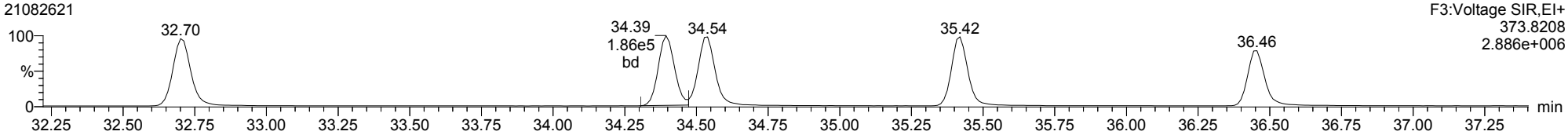

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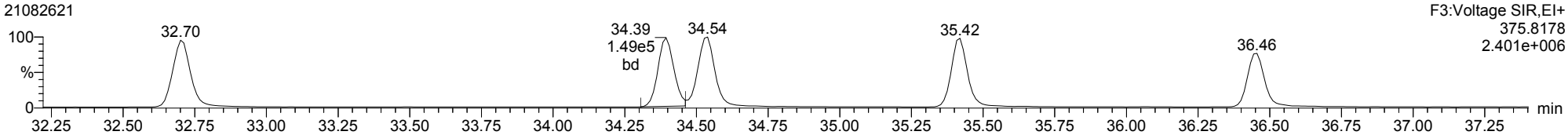

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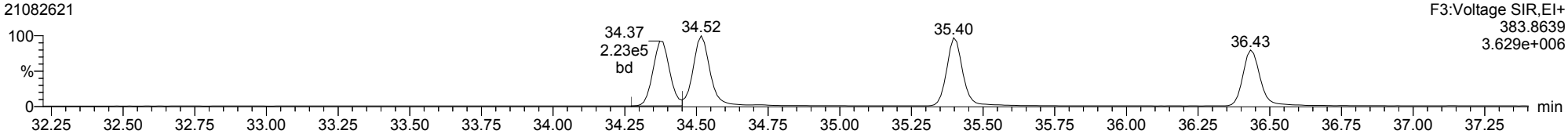

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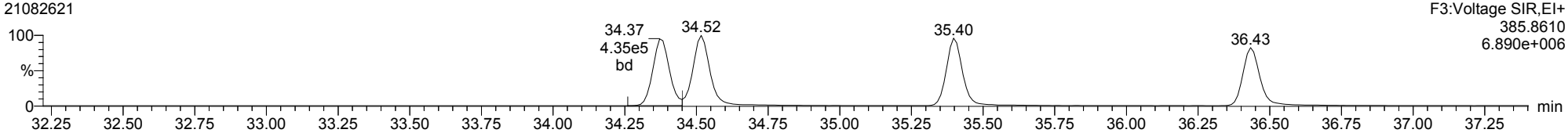

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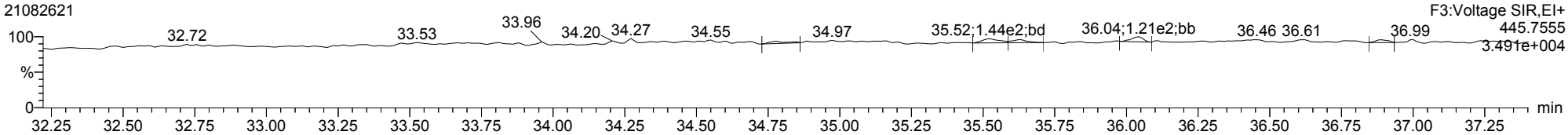

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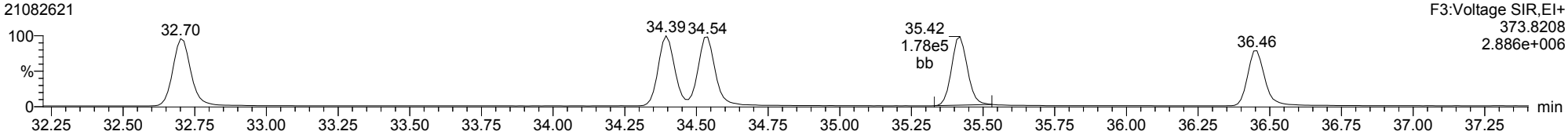

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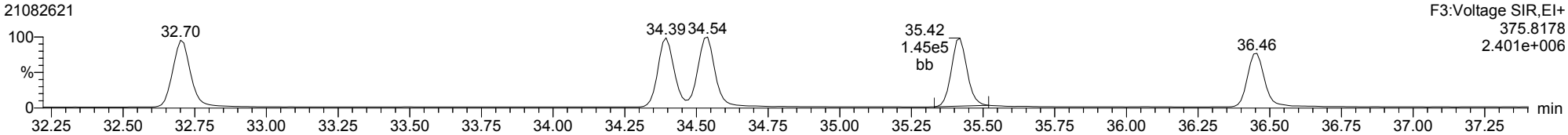

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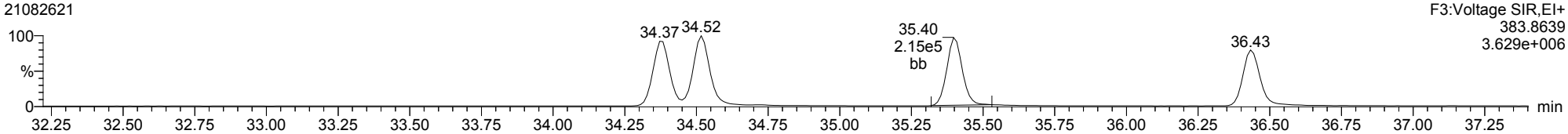

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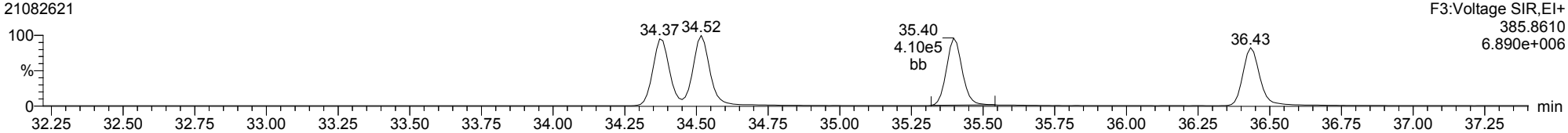

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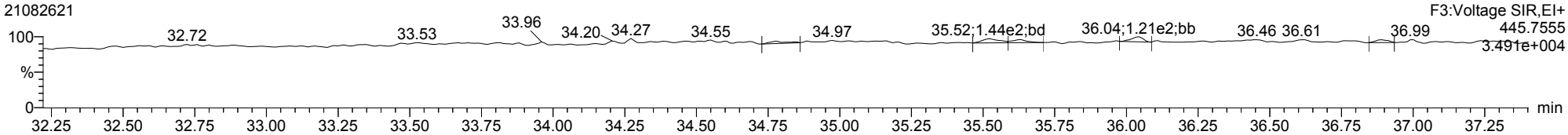

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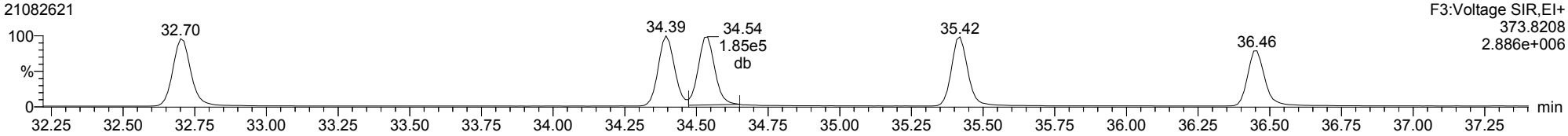

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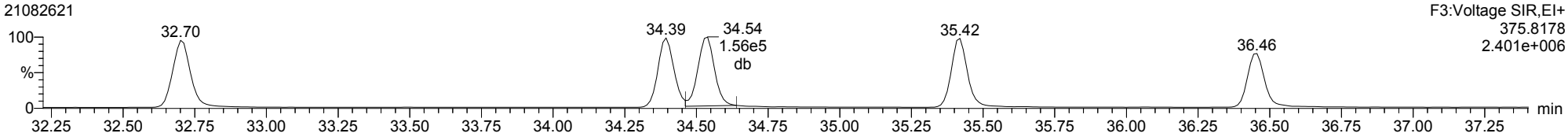

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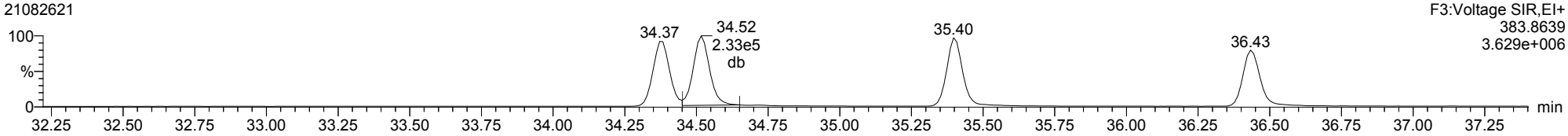

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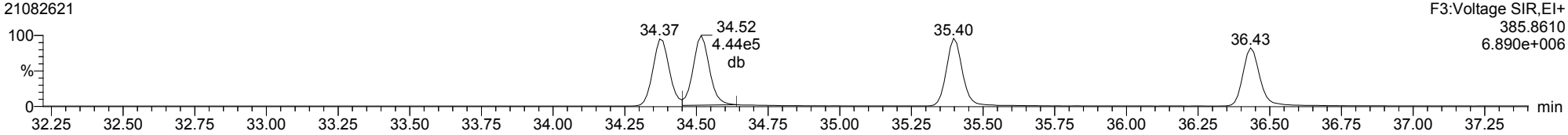

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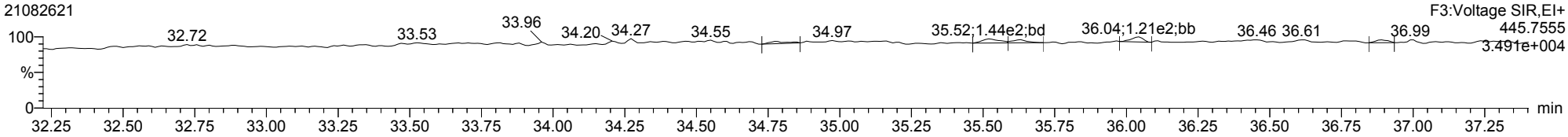

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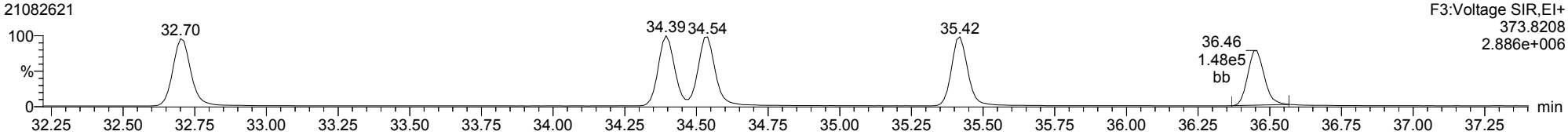

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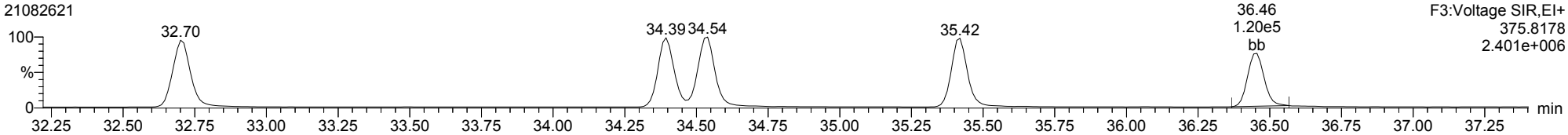

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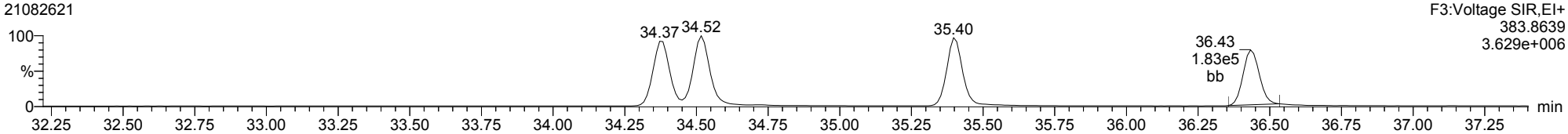

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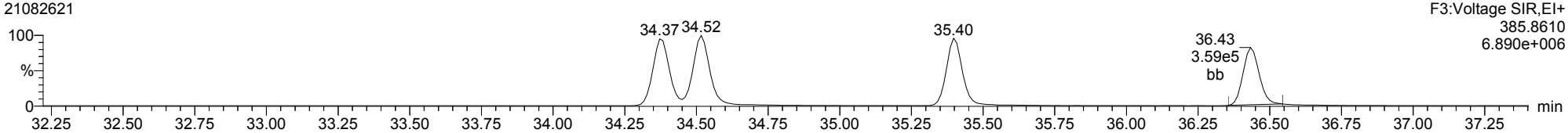

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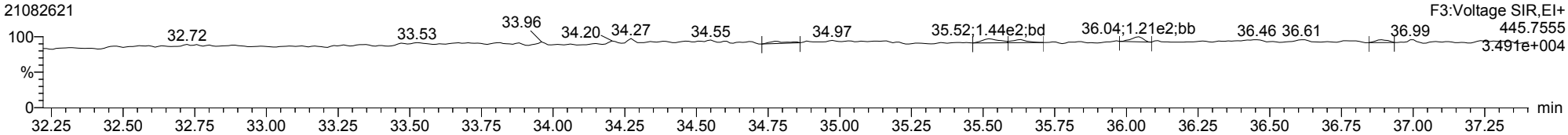

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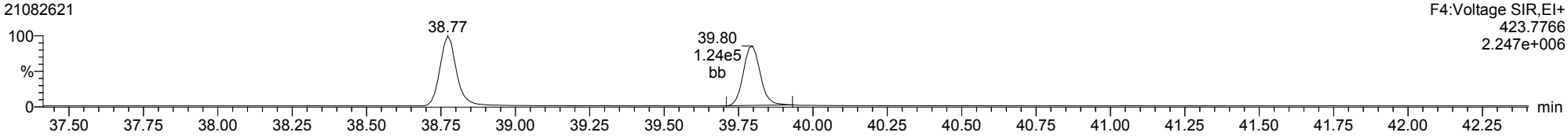

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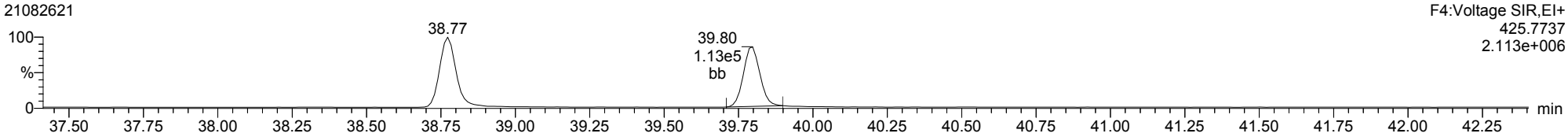

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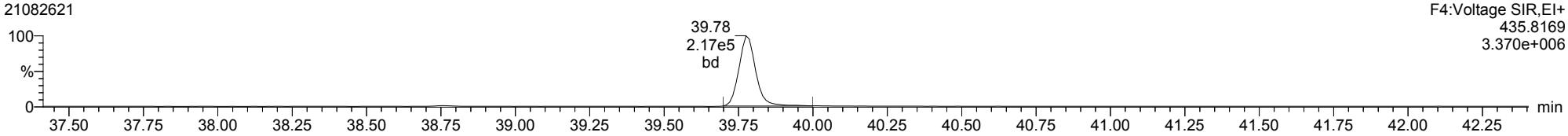

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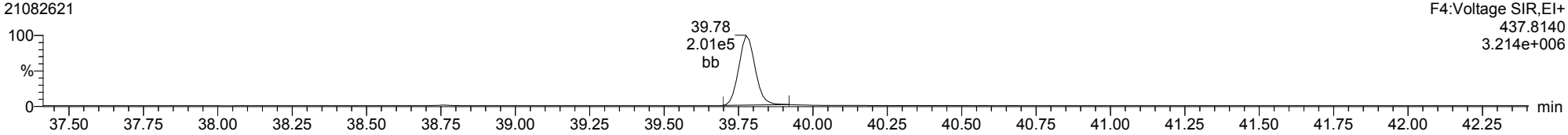

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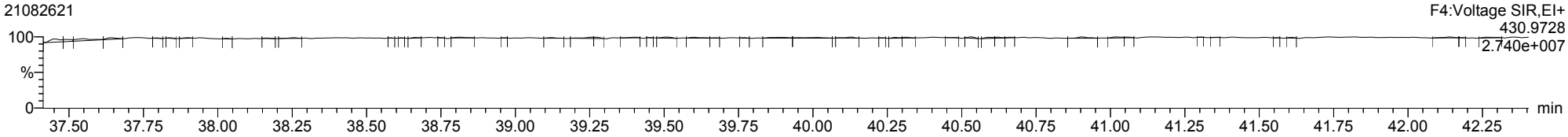

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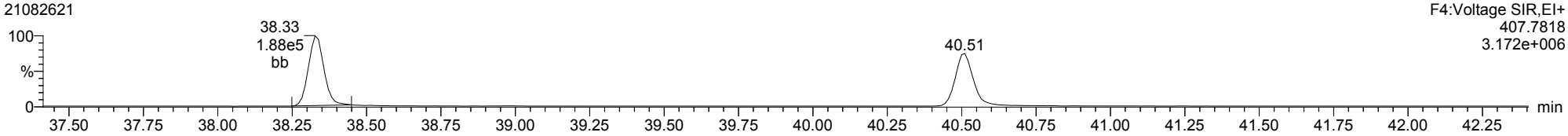

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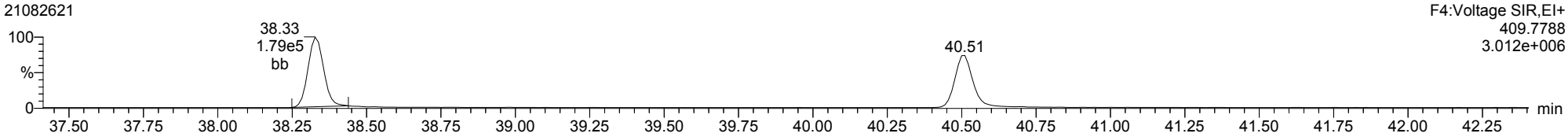

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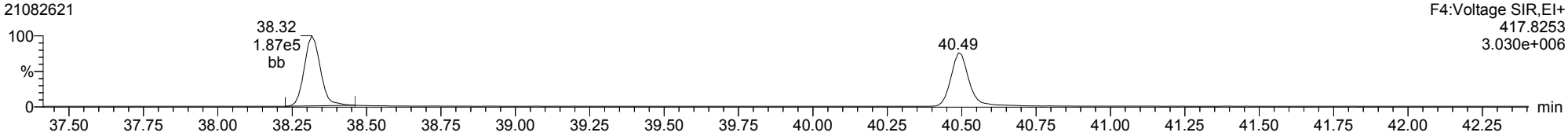

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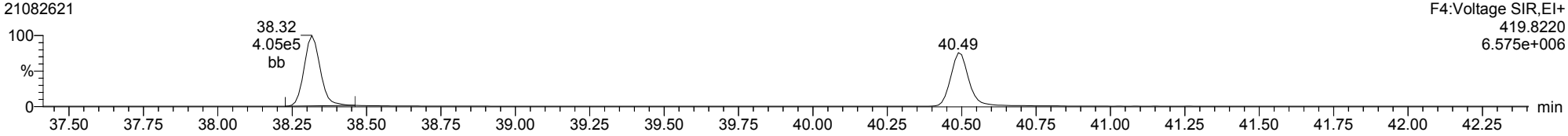

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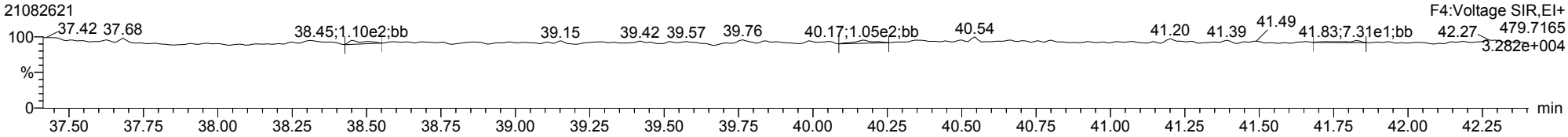

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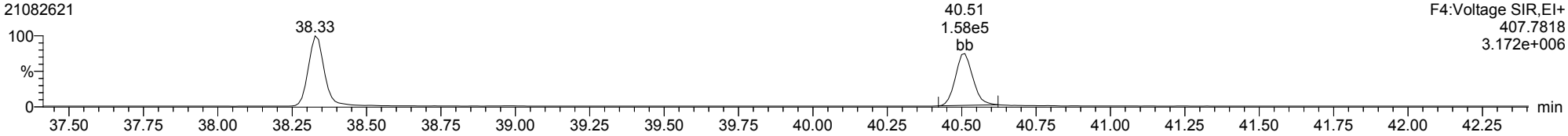

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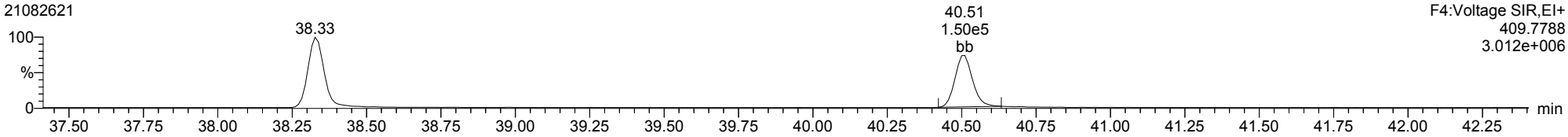

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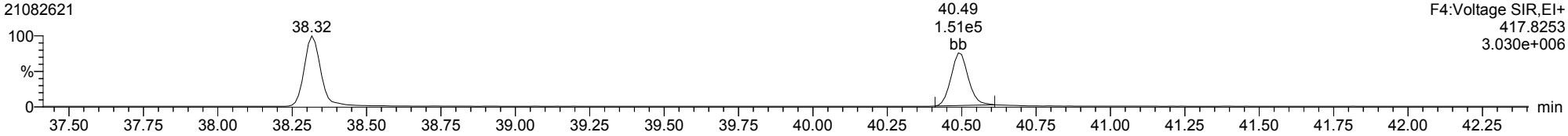

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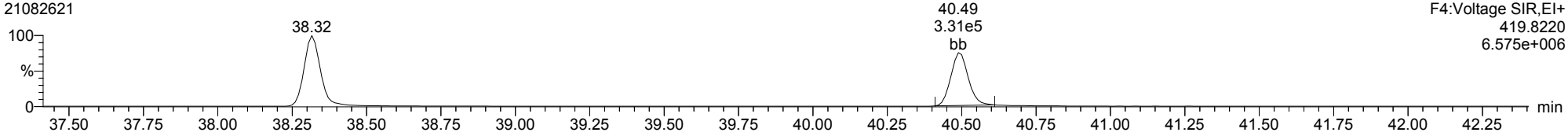

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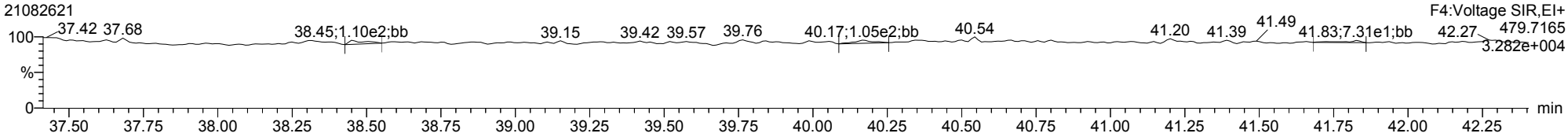

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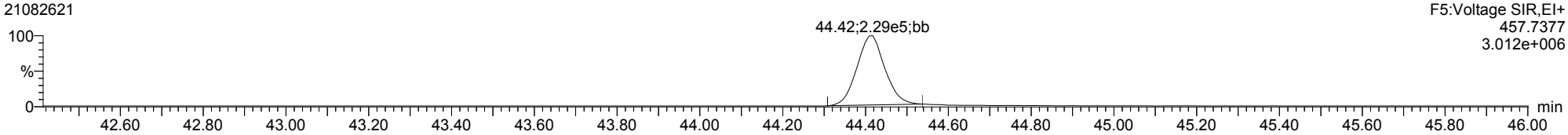

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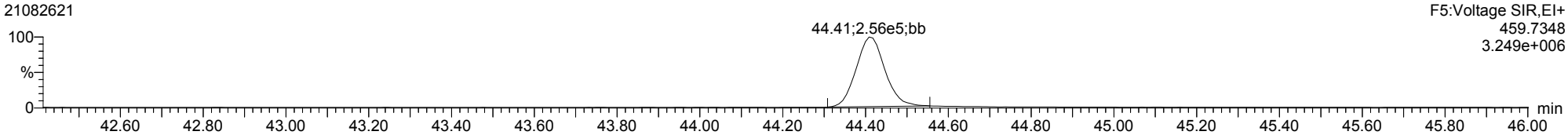

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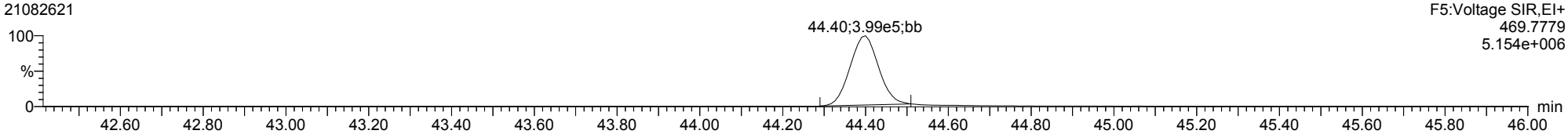

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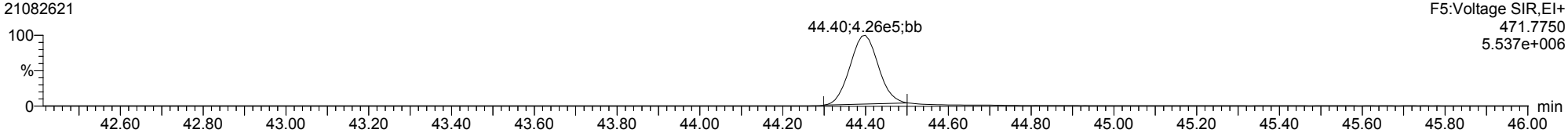
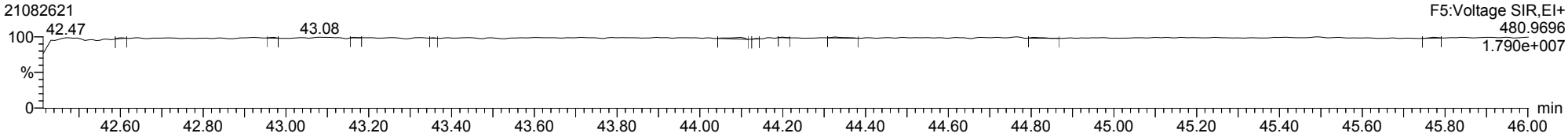


FUNCTION5 PFK



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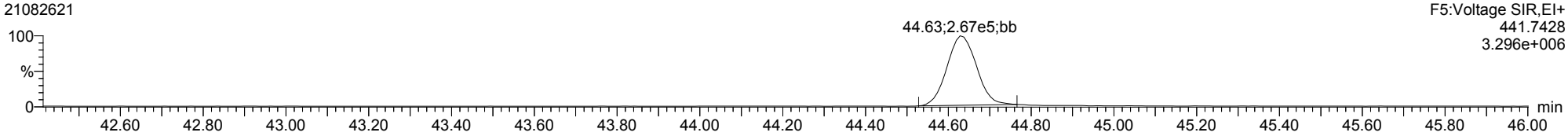

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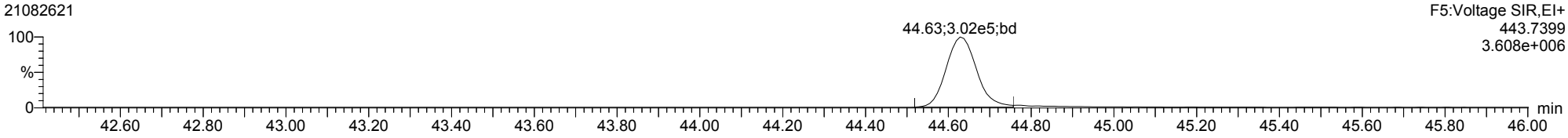

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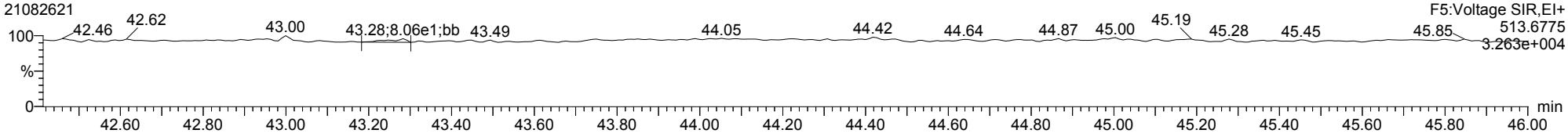

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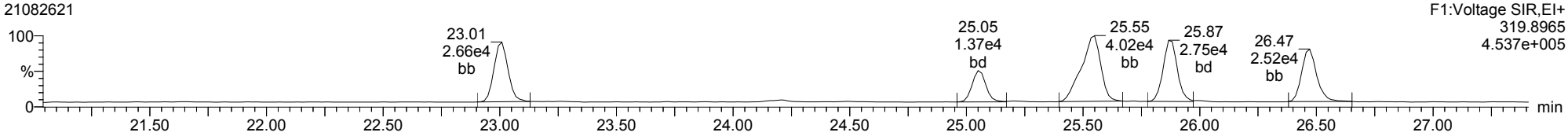
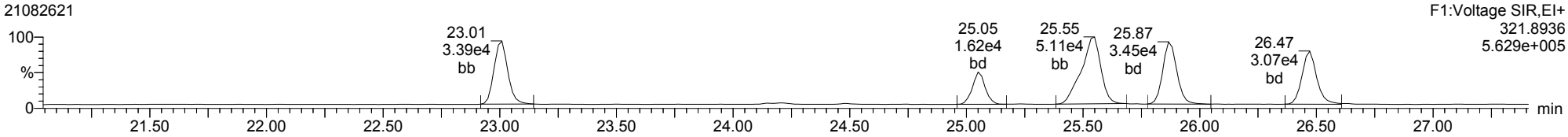
Total-tetradioxins



Total-tetradioxins



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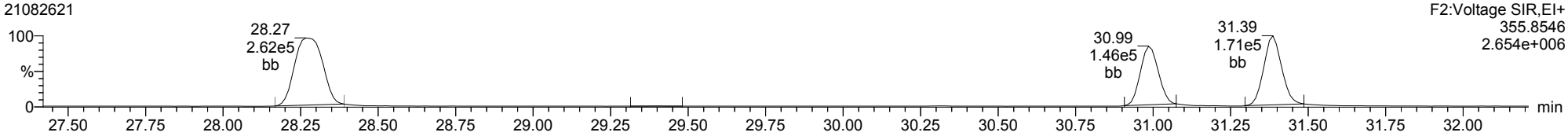
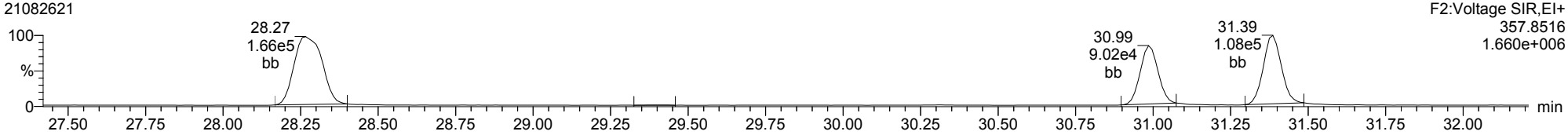
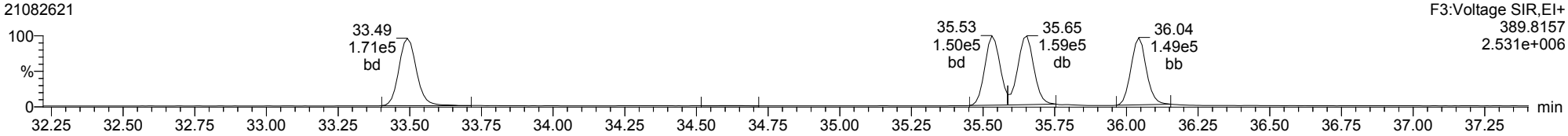


Total-pentadioxins

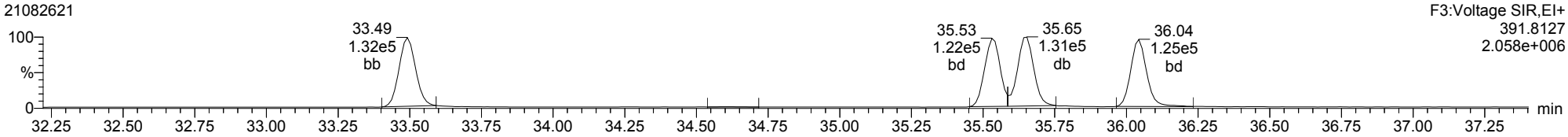


ID: CS3L7, Name: 21082621, Date: 27-Aug-2021, Time: 03:04:10, Conditions: AUTOSPEC01, User: pk

Total-hexadioxins



Total-hexadioxins



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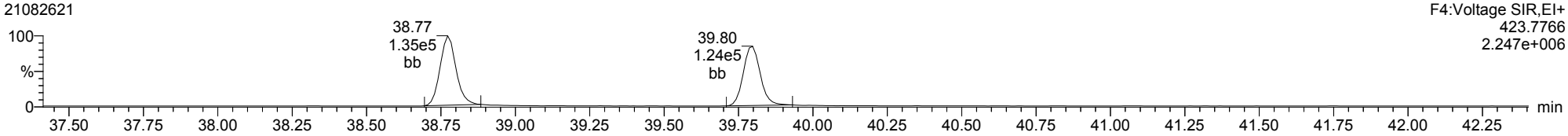
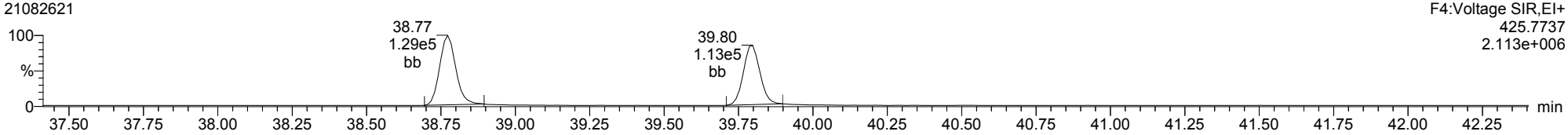


Total-heptadioxins



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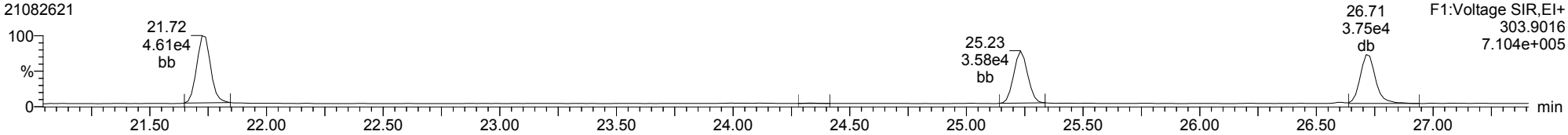
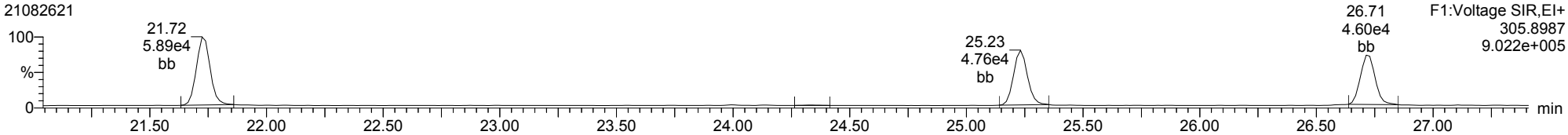
Total-tetrafurans



Total-tetrafurans



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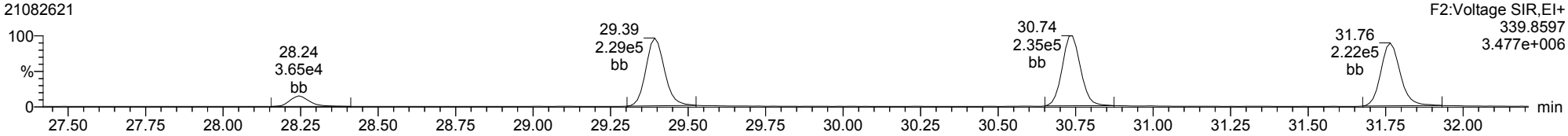

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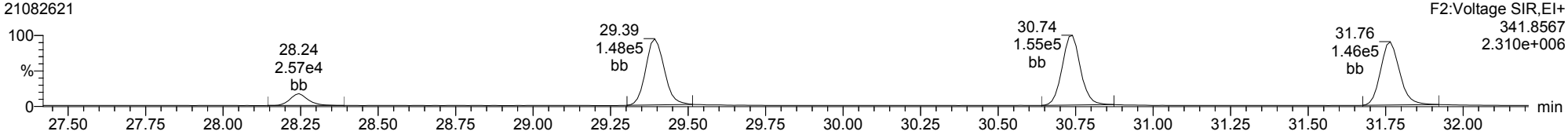

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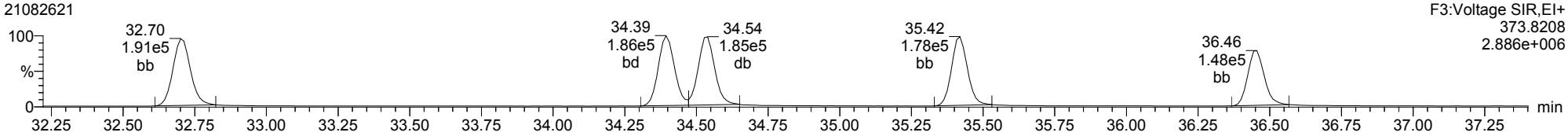
Printed: Friday, August 27, 2021 13:30:42 Pacific Daylight Time

ID: CS3L7, Name: 21082621, Date: 27-Aug-2021, Time: 03:04:10, Conditions: AUTOSPEC01, User: pk

Total-hexafurans



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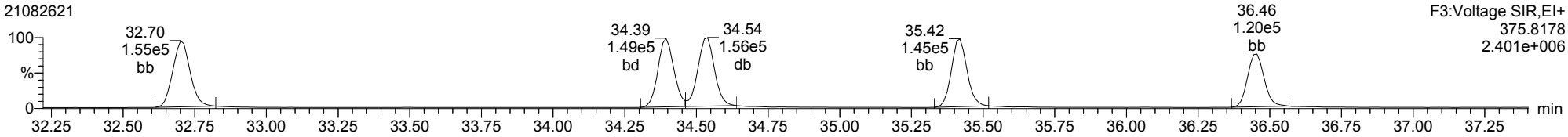

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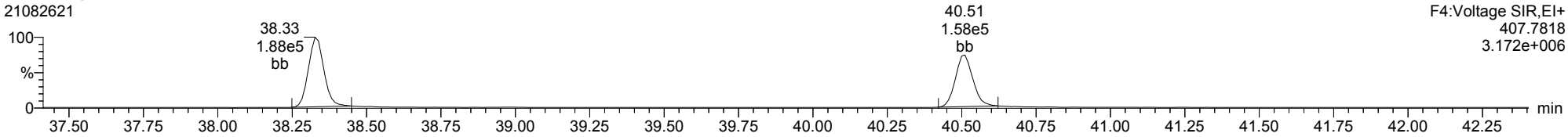
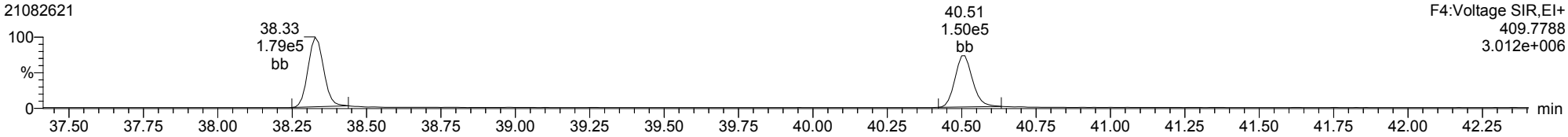


Total-heptafurans



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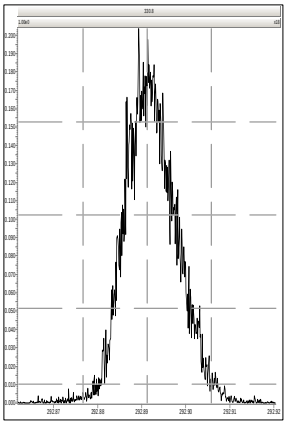

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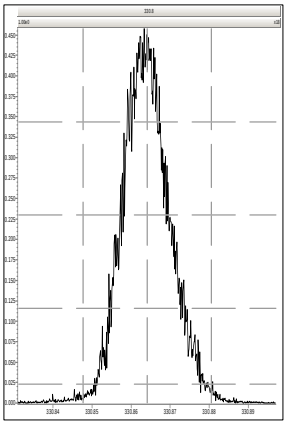

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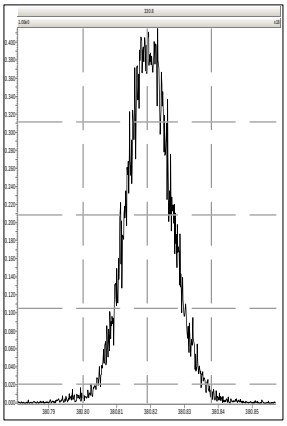
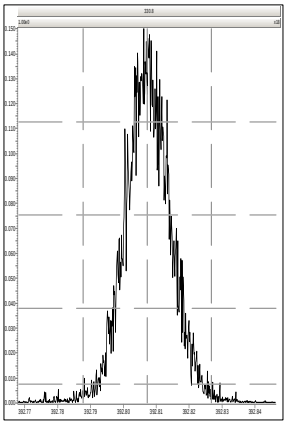
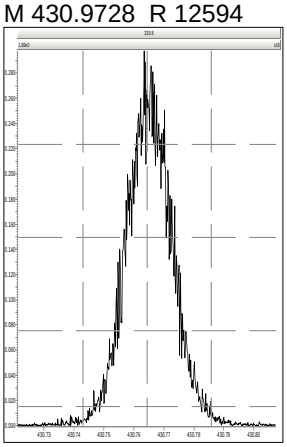


M 392.9760 R 12789



M 430.9728 R 12594



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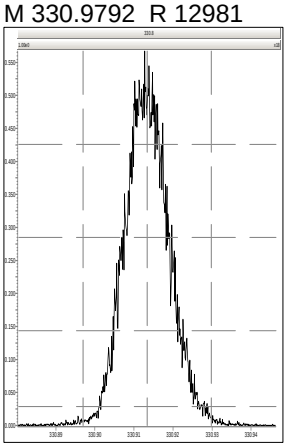
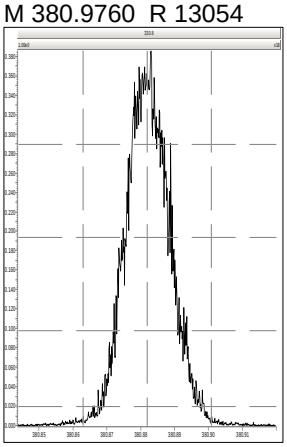
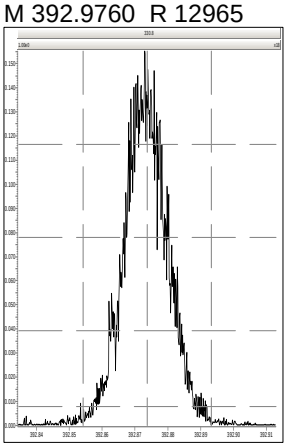


M 380.9760 R 13054



M 392.9760 R 12965



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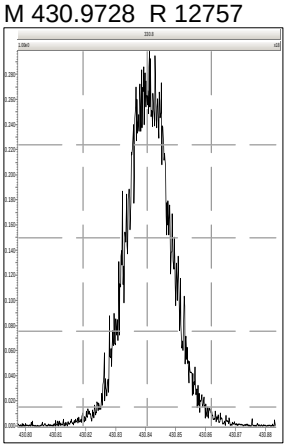
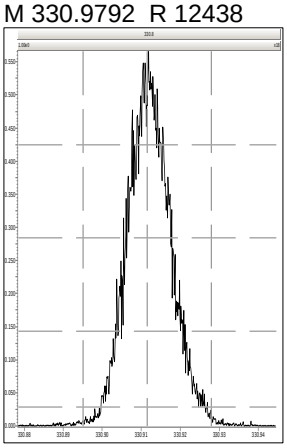


M 330.9792 R 12438



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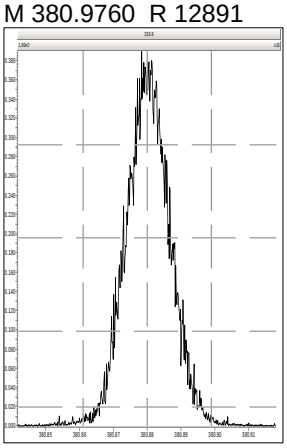

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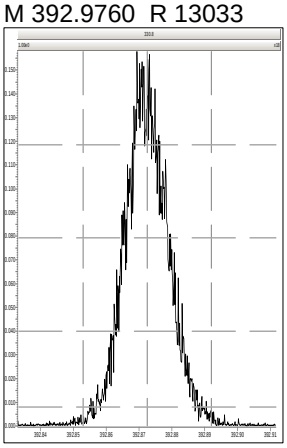

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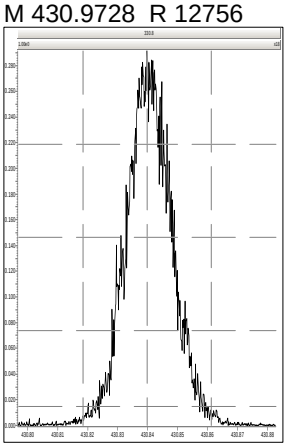

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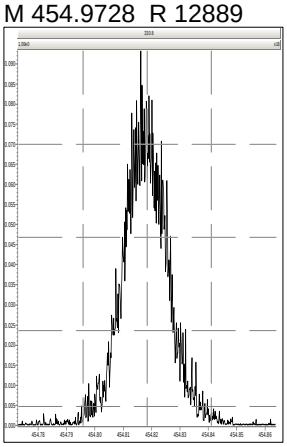
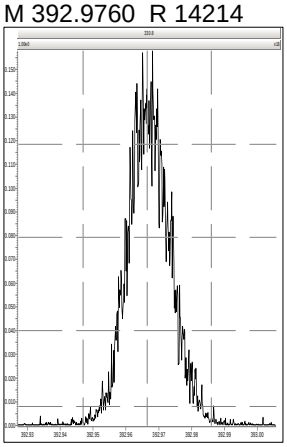
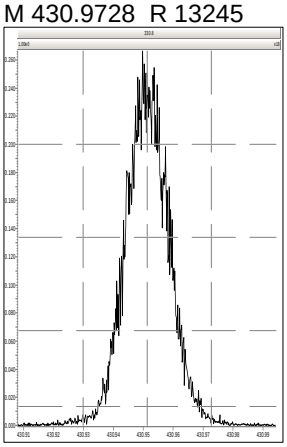


M 392.9760 R 14214



M 430.9728 R 13245



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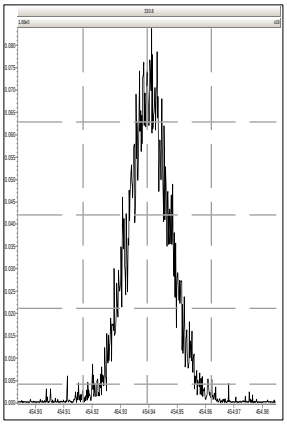
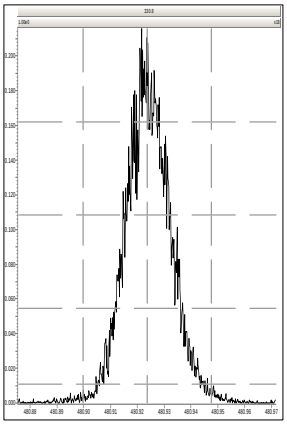
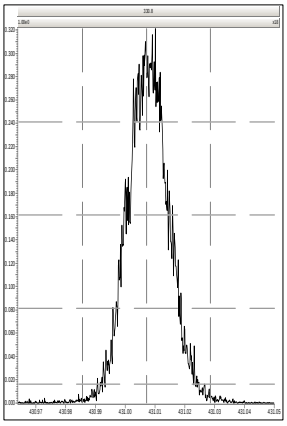
M 454.9728 R 14204



M 480.9696 R 12477



M 430.9728 R 13646



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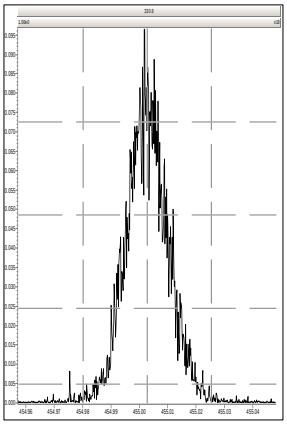
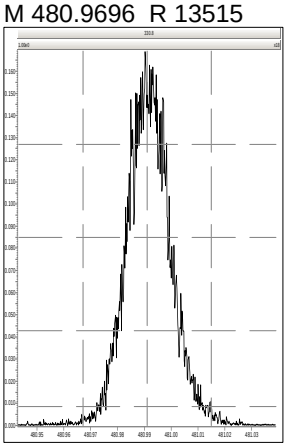


M 480.9696 R 13515



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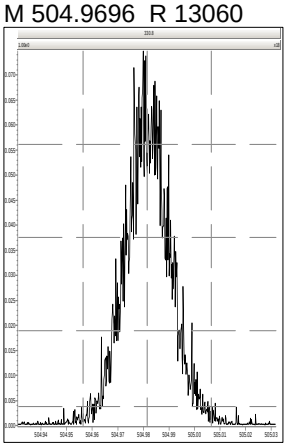

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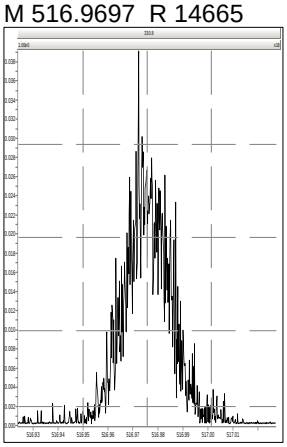
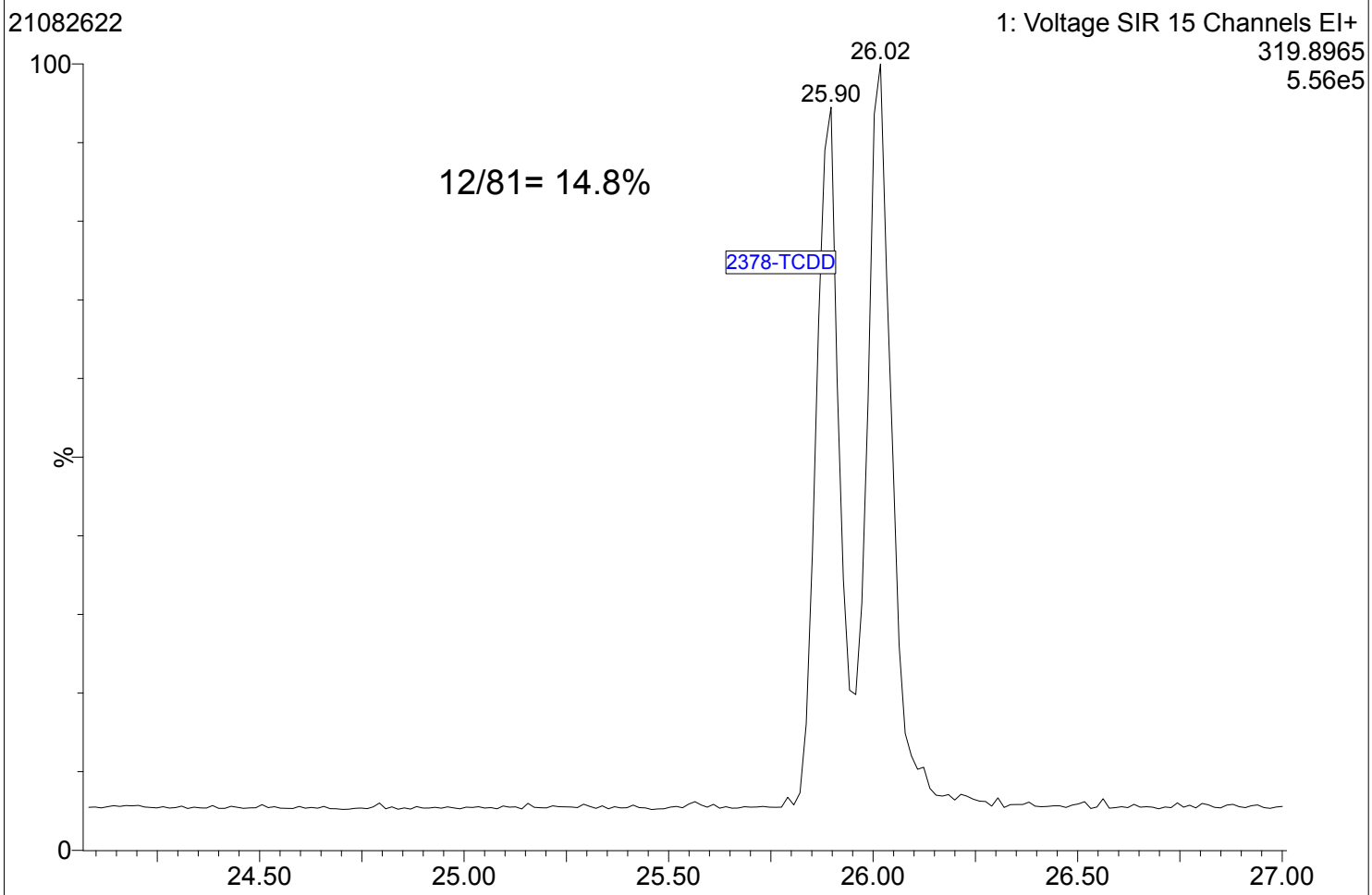
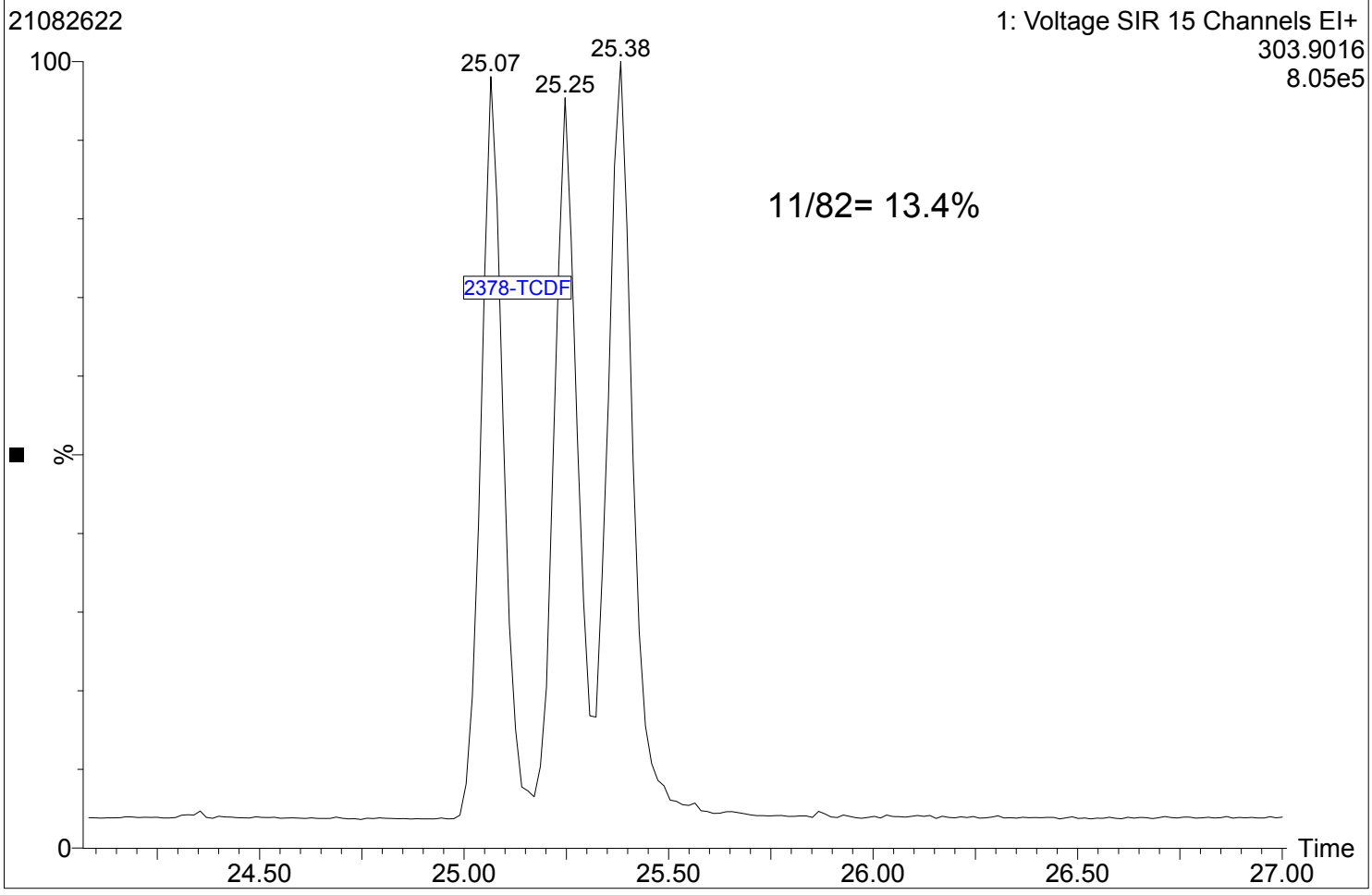



21082622
1: Voltage SIR 15 Channels EI+
319.8965
5.56e5
100
%
0
25.90
26.02
12/81= 14.8%
2378-TCDD
24.50
25.00
25.50
26.00
26.50
27.00


21082622
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303.9016
8.05e5
100
%
0
25.07
25.25
25.38
11/82= 13.4%
2378-TCDF
Time
24.50
25.00
25.50
26.00
26.50
27.00

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CONTINUING CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	AUTOSPEC01	Calibration:	EH00030
Lab File ID:	21082709	Calibration Date:	08/11/2021
Sequence:	SJH0365	Injection Date:	08/27/21
Lab Sample ID:	SJH0365-CCV1	Injection Time:	11:20
Sequence Name:	CS3L8		

		CONC. (ng/mL)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
2,3,7,8-TCDF	A	10.000	9.18	1.1075930	1.0165460		-8.2	+/-16
2,3,7,8-TCDD	A	10.000	10.2	0.9202875	0.9401597		2.2	+/-22
1,2,3,7,8-PeCDF	A	50.000	46.9	1.0148670	0.9512494		-6.3	+/-18
2,3,4,7,8-PeCDF	A	50.000	46.4	1.1255490	1.0437410		-7.3	+/-18
1,2,3,7,8-PeCDD	A	50.000	53.9	0.9953229	1.0739530		7.9	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	50.3	1.0168930	1.0226840		0.6	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	48.8	1.0368310	1.0127520		-2.3	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	50.0	1.0524660	1.0519330		-0.05	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	49.5	1.0301540	1.0205900		-0.9	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	48.0	1.0273630	0.9868022		-3.9	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	47.9	1.0089800	0.9657707		-4.3	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	50.8	0.9504865	0.9649523		1.5	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	47.9	1.3273500	1.2705480		-4.3	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	49.6	1.2833380	1.2730720		-0.8	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	54.1	1.0680880	1.1567220		8.3	+/-14
OCDF	A	100.00	95.3	1.4469010	1.3783020		-4.7	+/-37
OCDD	A	100.00	101	1.1808230	1.1912010		0.9	+/-21
13C12-2,3,7,8-TCDF	A	100.00	106	1.4265830	1.5139055		6.1	+/-29
13C12-2,3,7,8-TCDD	A	100.00	103	1.1164910	1.1527874		3.3	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	110	1.2973130	1.4333242		10.5	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	111	1.2364800	1.3777637		11.4	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	114	0.7319833	0.8326394		13.8	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	86.2	1.2424560	1.0710360		-13.8	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	82.5	1.3434760	1.1088224		-17.5	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	84.5	1.2148550	1.0262196		-15.5	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	90.4	1.0076370	0.9113409		-9.6	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	95.4	0.9598233	0.9153039		-4.6	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	92.0	1.0413850	0.9581585		-8.0	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	104	0.9264704	0.9605255		3.7	+/-22
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	106	0.7579160	0.8028074		5.9	+/-23
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	109	0.6324476	0.6893942		9.0	+/-28
13C12-OCDD	A	200.00	253	0.5037432	0.6374984		26.6	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	9.72	1.0835930	1.0536434		-2.8	

* Values outside of QC limits

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D1.qld
Last Altered: Friday, August 27, 2021 13:00:30 Pacific Daylight Time
Printed: Friday, August 27, 2021 13:33:23 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: CS3L8, Name: 21082709, Date: 27-Aug-2021, Time: 11:20:12, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.231	1.001	3.499e4	4.637e4	1.108	0.755	0.770	924	1609	5.19e5	6.86e5	561.7	426.3	NO	bb	bb	9.178
12378-PeCDF	29.392	1.000	2.170e5	1.434e5	1.015	1.514	1.550	2227	2283	3.14e6	2.07e6	1410.7	904.4	NO	bb	bd	46.866
23478-PeCDF	30.740	1.001	2.291e5	1.511e5	1.126	1.516	1.550	2227	2283	3.42e6	2.24e6	1533.8	980.0	NO	bb	bb	46.366
123478-HxCDF	34.394	1.000	1.807e5	1.473e5	1.017	1.227	1.240	1645	2628	2.72e6	2.24e6	1655.4	852.0	NO	bd	bd	50.285
234678-HxCDF	35.419	1.000	1.808e5	1.424e5	1.052	1.270	1.240	1645	2628	2.79e6	2.27e6	1695.5	864.7	NO	bd	bb	49.975
123678-HxCDF	34.539	1.001	1.838e5	1.524e5	1.037	1.206	1.240	1645	2628	2.78e6	2.26e6	1688.6	858.1	NO	db	db	48.839
123789-HxCDF	36.455	1.000	1.578e5	1.206e5	1.030	1.308	1.240	1645	2628	2.38e6	1.91e6	1445.3	726.0	NO	bd	bb	49.536
1234678-HpCDF	38.338	1.000	1.861e5	1.793e5	1.327	1.038	1.050	1584	1902	3.10e6	2.97e6	1955.4	1563.0	NO	bb	bb	47.860
1234789-HpCDF	40.511	1.000	1.569e5	1.491e5	1.283	1.053	1.050	1584	1902	2.35e6	2.18e6	1482.1	1144.8	NO	bb	bb	49.600
OCDF	44.638	1.005	2.513e5	2.748e5	1.447	0.915	0.890	1517	1251	3.15e6	3.46e6	2078.6	2762.6	NO	bb	bb	95.259
2378-TCDD	25.882	1.001	2.500e4	3.230e4	0.920	0.774	0.770	1143	1683	3.57e5	4.58e5	312.7	272.1	NO	bb	bb	10.216
12378-PeCDD	30.996	1.001	1.462e5	9.015e4	0.995	1.622	1.550	2590	1322	2.23e6	1.37e6	860.7	1034.3	NO	bb	bb	53.950
123478-HxCDD	35.531	1.000	1.502e5	1.202e5	1.027	1.250	1.240	1767	1449	2.34e6	1.90e6	1323.9	1309.9	NO	bd	bd	48.026
123678-HxCDD	35.653	1.000	1.530e5	1.240e5	1.009	1.234	1.240	1767	1449	2.46e6	2.03e6	1391.9	1398.6	NO	db	db	47.859
123789-HxCDD	36.043	1.011	1.469e5	1.238e5	0.950	1.187	1.240	1767	1449	2.40e6	2.00e6	1357.6	1379.8	NO	bb	bb	50.761
1234678-HpCDD	39.798	1.000	1.223e5	1.164e5	1.068	1.050	1.050	1280	1562	1.91e6	1.81e6	1493.3	1160.2	NO	bb	bb	54.149
OCDD	44.418	1.000	2.138e5	2.409e5	1.181	0.887	0.890	1029	1268	2.62e6	3.01e6	2550.8	2373.5	NO	bb	bb	100.879
13C-2378-TCDF	25.216	1.007	3.581e5	4.423e5	1.427	0.810	0.770	2927	1695	5.22e6	6.47e6	1782.4	3815.5	NO	bb	bb	106.121
13C-12378-PeCDF	29.381	1.174	4.637e5	2.941e5	1.297	1.577	1.550	1750	1694	6.77e6	4.32e6	3866.2	2550.6	NO	bb	bb	110.484
13C-23478-PeCDF	30.718	1.227	4.498e5	2.786e5	1.236	1.615	1.550	1750	1694	6.54e6	4.12e6	3736.5	2434.2	NO	bb	bb	111.426
13C-123478-HxCDF	34.383	0.954	2.182e5	4.231e5	1.242	0.516	0.510	1439	1966	3.33e6	6.38e6	2317.7	3245.9	NO	bd	bd	86.203
13C-123678-HxCDF	34.517	0.958	2.287e5	4.353e5	1.343	0.525	0.510	1439	1966	3.38e6	6.55e6	2347.1	3328.9	NO	db	db	82.534
13C-234678-HxCDF	35.408	0.983	2.095e5	4.050e5	1.215	0.517	0.510	1439	1966	3.26e6	6.19e6	2266.3	3148.9	NO	bb	bb	84.473
13C-123789-HxCDF	36.444	1.011	1.860e5	3.597e5	1.008	0.517	0.510	1439	1966	2.93e6	5.58e6	2039.0	2839.5	NO	bb	bb	90.443
13C-1234678-HpCDF	38.327	1.064	1.812e5	3.939e5	0.926	0.460	0.440	1081	1975	2.92e6	6.25e6	2697.9	3162.2	NO	bb	bb	103.676
13C-1234789-HpCDF	40.500	1.124	1.541e5	3.266e5	0.758	0.472	0.440	1081	1975	2.31e6	4.84e6	2133.2	2450.1	NO	bb	bb	105.923
13C-1234-TCDD	25.035	0.000	2.283e5	3.003e5	1.000	0.760	0.770	2449	872	3.49e6	4.60e6	1426.0	5274.3	NO	bb	bb	100.000
13C-2378-TCDD	25.851	1.033	2.627e5	3.468e5	1.116	0.757	0.770	2449	872	3.78e6	5.08e6	1544.9	5828.2	NO	bb	bb	103.251
13C-12378-PeCDD	30.974	1.237	2.681e5	1.721e5	0.732	1.558	1.550	995	1126	3.97e6	2.53e6	3993.8	2248.6	NO	bb	bb	113.751
13C-123478-HxCDD	35.520	0.986	3.044e5	2.437e5	0.960	1.249	1.240	1567	1299	4.95e6	4.00e6	3159.2	3077.0	NO	bd	bd	95.362
13C-123678-HxCDD	35.642	0.989	3.185e5	2.553e5	1.041	1.248	1.240	1567	1299	5.10e6	4.05e6	3257.3	3117.2	NO	db	db	92.008
13C-1234678-HpCDD	39.786	1.104	2.095e5	2.033e5	0.632	1.030	1.050	1156	1339	3.21e6	3.07e6	2779.3	2294.2	NO	bb	bb	109.004
13C-OCDD	44.400	1.232	3.624e5	4.010e5	0.504	0.904	0.890	1202	1583	4.72e6	5.17e6	3930.3	3264.6	NO	bb	bb	253.105
13C-123789-HxCDD	36.032	0.000	3.313e5	2.674e5	1.000	1.239	1.240	1567	1299	5.30e6	4.16e6	3381.8	3201.4	NO	bb	bb	100.000
37CL-2378-TCDD	25.866	1.033	5.570e4		1.084			1137		7.70e5		677.0			bb		9.724

Dataset: T:\Autospec\Processed Data Batch\210827D1.qld
Last Altered: Friday, August 27, 2021 13:00:30 Pacific Daylight Time
Printed: Friday, August 27, 2021 13:33:23 Pacific Daylight Time

ID: CS3L8, Name: 21082709, Date: 27-Aug-2021, Time: 11:20:12, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	21.739	0.862	4.308e4	5.669e4	1.425	0.760	0.770	924	1609	6.25e5	7.98e5	676.6	496.3	NO	bb	bb	8.747
1289-TCDF	26.728	1.060	3.306e4	4.362e4	1.043	0.758	0.770	924	1609	4.73e5	6.06e5	512.2	377.0	NO	db	db	9.186
13468-PECDF	26.592	0.905	2.811e5	1.860e5	1.376	1.512	1.550	937	958	4.08e6	2.69e6	4351.6	2803.2	NO	bb	bb	44.788
12389-PECDF	31.765	1.081	2.209e5	1.445e5	1.000	1.529	1.550	2227	2283	3.20e6	2.05e6	1436.6	898.9	NO	bb	bb	48.242
123468-HXCDF	32.712	0.951	1.816e5	1.514e5	1.087	1.199	1.240	1645	2628	2.59e6	2.16e6	1571.7	821.0	NO	bb	bb	47.797
1368-TCDD	23.009	0.890	2.522e4	3.228e4	0.923	0.781	0.770	1143	1683	3.78e5	4.76e5	331.2	282.7	NO	bb	bb	10.219
1289-TCDD	26.471	1.024	2.372e4	2.918e4	0.794	0.813	0.770	1143	1683	3.34e5	4.19e5	292.2	249.0	NO	bb	bb	10.933
12479-PECDD	28.267	0.913	2.509e5	1.565e5	1.843	1.603	1.550	2590	1322	2.37e6	1.50e6	915.7	1136.2	NO	bb	bb	50.217
12389-PECDD	31.386	1.013	1.724e5	1.062e5	1.154	1.623	1.550	2590	1322	2.54e6	1.57e6	982.0	1189.1	NO	bb	bb	54.877
124679-HXCDD	33.492	0.943	1.598e5	1.300e5	1.125	1.229	1.240	1767	1449	2.41e6	1.91e6	1365.8	1321.2	NO	bb	bb	47.004
1234679-HPCDD	38.773	0.975	1.360e5	1.262e5	1.211	1.077	1.050	1280	1562	2.16e6	2.03e6	1684.3	1298.2	NO	bb	bb	52.455
Total-tetrafurans			1.111e5		1.192			924		1.62e6							27.112
Total-penta1			2.811e5					937		4.08e6							44.788
Total-pentafurans			7.041e5		1.047			2227		1.03e7							149.455
Total-hexafurans			8.847e5		1.045			1645		1.33e7							246.431
Total-heptafurans			3.432e5		1.305			1584		5.45e6							97.520
Total-Furans			2.576e6		1.158			924		3.78e7							660.565
Total-tetradioxins			1.268e5		0.879			1143		1.69e6							53.484
Total-pentadioxins			5.696e5		1.331			2590		7.14e6							159.045
Total-hexadioxins			6.101e5		1.028			1767		9.61e6							193.710
Total-heptadioxins			2.583e5		1.140			1280		4.07e6							106.604
Total-Dioxins			1.778e6		1.092			1143		2.51e7							613.721
Total-TEQ			4.354e6					1143		6.30e7							1274.287
FUNCTION1 PFK			9.883e6					638300		8.82e7							
FUNCTION2 PFK			5.291e5					432092		8.08e6							0.000
FUNCTION3 PFK			5.823e5					510967		1.82e7							0.000
FUNCTION4 PFK			2.636e5					436735		5.83e5							
FUNCTION5 PFK			0.000e0					227323		0.00e0							
FUNCTION1 HXCD...			3.316e2					539		4.34e3							0.000
FUNCTION1 HPCD...			1.692e3					900		2.83e4							0.000
FUNCTION2 HPCD...			5.586e2					792		9.46e3							0.000
FUNCTION3 OCDPE			1.348e3					649		2.24e4							0.000
FUNCTION4 NCDPE			2.883e2					862		7.43e3							0.000
FUNCTION5 DCDPE			1.695e2					561		2.94e3							0.000

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: CS3L8, Name: 21082709, Date: 27-Aug-2021, Time: 11:20:12, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	26.73	3.306e4	4.362e4	1.043	0.76	0.77	512.2	YES	NO	db	db	9.186
2	2378-TCDF	25.23	3.499e4	4.637e4	1.108	0.75	0.77	561.7	YES	NO	bb	bb	9.178
3	1368-TCDF	21.74	4.308e4	5.669e4	1.425	0.76	0.77	676.6	YES	NO	bb	bb	8.747

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.59	2.811e5	1.860e5	1.376	1.51	1.55	4351.6	YES	NO	bb	bb	44.788

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDF	31.76	2.209e5	1.445e5	1.000	1.53	1.55	1436.6	YES	NO	bb	bb	48.242
2	23478-PeCDF	30.74	2.291e5	1.511e5	1.126	1.52	1.55	1533.8	YES	NO	bb	bb	46.366
3	12378-PeCDF	29.39	2.170e5	1.434e5	1.015	1.51	1.55	1410.7	YES	NO	bb	bd	46.866
4	Total-pentafurans	28.24	3.711e4	2.496e4	1.047	1.49	1.55	240.5	YES	NO	bb	bb	7.981

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	234678-HxCDF	35.42	1.808e5	1.424e5	1.052	1.27	1.24	1695.5	YES	NO	bd	bb	49.975
2	123678-HxCDF	34.54	1.838e5	1.524e5	1.037	1.21	1.24	1688.6	YES	NO	db	db	48.839
3	123478-HxCDF	34.39	1.807e5	1.473e5	1.017	1.23	1.24	1655.4	YES	NO	bd	bd	50.285
4	123468-HXCDF	32.71	1.816e5	1.514e5	1.087	1.20	1.24	1571.7	YES	NO	bb	bb	47.797
5	123789-HxCDF	36.46	1.578e5	1.206e5	1.030	1.31	1.24	1445.3	YES	NO	bd	bb	49.536

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-heptafurans	40.90	1.142e2	1.166e2	1.305	0.98	1.05	2.0	NO	NO	bb	bb	0.033
2	1234789-HpCDF	40.51	1.569e5	1.491e5	1.283	1.05	1.05	1482.1	YES	NO	bb	bb	49.600
3	Total-heptafurans	38.55	9.731e1	8.361e1	1.305	1.16	1.05	2.2	NO	NO	bb	bb	0.026
4	1234678-HpCDF	38.34	1.861e5	1.793e5	1.327	1.04	1.05	1955.4	YES	NO	bb	bb	47.860

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	26.73	3.306e4	4.362e4	1.043	0.76	0.77	512.2	YES	NO	db	db	9.186
2	2378-TCDF	25.23	3.499e4	4.637e4	1.108	0.75	0.77	561.7	YES	NO	bb	bb	9.178
3	1368-TCDF	21.74	4.308e4	5.669e4	1.425	0.76	0.77	676.6	YES	NO	bb	bb	8.747
4	12389-PECDF	31.76	2.209e5	1.445e5	1.000	1.53	1.55	1436.6	YES	NO	bb	bb	48.242
5	23478-PeCDF	30.74	2.291e5	1.511e5	1.126	1.52	1.55	1533.8	YES	NO	bb	bb	46.366
6	12378-PeCDF	29.39	2.170e5	1.434e5	1.015	1.51	1.55	1410.7	YES	NO	bb	bd	46.866
7	Total-pentafurans	28.24	3.711e4	2.496e4	1.047	1.49	1.55	240.5	YES	NO	bb	bb	7.981
8	234678-HxCDF	35.42	1.808e5	1.424e5	1.052	1.27	1.24	1695.5	YES	NO	bd	bb	49.975
9	123678-HxCDF	34.54	1.838e5	1.524e5	1.037	1.21	1.24	1688.6	YES	NO	db	db	48.839
10	123478-HxCDF	34.39	1.807e5	1.473e5	1.017	1.23	1.24	1655.4	YES	NO	bd	bd	50.285
11	123468-HXCDF	32.71	1.816e5	1.514e5	1.087	1.20	1.24	1571.7	YES	NO	bb	bb	47.797
12	123789-HxCDF	36.46	1.578e5	1.206e5	1.030	1.31	1.24	1445.3	YES	NO	bd	bb	49.536
13	Total-heptafurans	40.90	1.142e2	1.166e2	1.305	0.98	1.05	2.0	NO	NO	bb	bb	0.033
14	1234789-HpCDF	40.51	1.569e5	1.491e5	1.283	1.05	1.05	1482.1	YES	NO	bb	bb	49.600
15	Total-heptafurans	38.55	9.731e1	8.361e1	1.305	1.16	1.05	2.2	NO	NO	bb	bb	0.026
16	1234678-HpCDF	38.34	1.861e5	1.793e5	1.327	1.04	1.05	1955.4	YES	NO	bb	bb	47.860
17	OCDF	44.64	2.513e5	2.748e5	1.447	0.91	0.89	2078.6	YES	NO	bb	bb	95.259
18	13468-PECDF	26.59	2.811e5	1.860e5	1.376	1.51	1.55	4351.6	YES	NO	bb	bb	44.788

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.05	1.226e4	1.567e4	0.879	0.78	0.77	162.1	YES	NO	bd	bb	5.213
2	1368-TCDD	23.01	2.522e4	3.228e4	0.923	0.78	0.77	331.2	YES	NO	bb	bb	10.219
3	1289-TCDD	26.47	2.372e4	2.918e4	0.794	0.81	0.77	292.2	YES	NO	bb	bb	10.933
4	2378-TCDD	25.88	2.500e4	3.230e4	0.920	0.77	0.77	312.7	YES	NO	bb	bb	10.216
5	Total-tetradioxins	25.55	4.057e4	5.000e4	0.879	0.81	0.77	381.4	YES	NO	bb	bb	16.903

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12479-PECDD	28.27	2.509e5	1.565e5	1.843	1.60	1.55	915.7	YES	NO	bb	bb	50.217
2	12389-PECDD	31.39	1.724e5	1.062e5	1.154	1.62	1.55	982.0	YES	NO	bb	bb	54.877
3	12378-PeCDD	31.00	1.462e5	9.015e4	0.995	1.62	1.55	860.7	YES	NO	bb	bb	53.950

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HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	124679-HXCDD	33.49	1.598e5	1.300e5	1.125	1.23	1.24	1365.8	YES	NO	bb	bb	47.004
2	123789-HxCDD	36.04	1.469e5	1.238e5	0.950	1.19	1.24	1357.6	YES	NO	bb	bb	50.761
3	123678-HxCDD	35.65	1.530e5	1.240e5	1.009	1.23	1.24	1391.9	YES	NO	db	db	47.859
4	123478-HxCDD	35.53	1.502e5	1.202e5	1.027	1.25	1.24	1323.9	YES	NO	bd	bd	48.026
5	Total-hexadioxins	34.29	1.940e2	1.528e2	1.028	1.27	1.24	2.1	NO	NO	bb	bb	0.060

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.80	1.223e5	1.164e5	1.068	1.05	1.05	1493.3	YES	NO	bb	bb	54.149
2	1234679-HPCDD	38.77	1.360e5	1.262e5	1.211	1.08	1.05	1684.3	YES	NO	bb	bb	52.455

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	Total-tetradioxins	25.05	1.226e4	1.567e4	0.879	0.78	0.77	162.1	YES	NO	bd	bb	5.213
2	1368-TCDD	23.01	2.522e4	3.228e4	0.923	0.78	0.77	331.2	YES	NO	bb	bb	10.219
3	12479-PECDD	28.27	2.509e5	1.565e5	1.843	1.60	1.55	915.7	YES	NO	bb	bb	50.217
4	1289-TCDD	26.47	2.372e4	2.918e4	0.794	0.81	0.77	292.2	YES	NO	bb	bb	10.933
5	2378-TCDD	25.88	2.500e4	3.230e4	0.920	0.77	0.77	312.7	YES	NO	bb	bb	10.216
6	Total-tetradioxins	25.55	4.057e4	5.000e4	0.879	0.81	0.77	381.4	YES	NO	bb	bb	16.903
7	124679-HXCDD	33.49	1.598e5	1.300e5	1.125	1.23	1.24	1365.8	YES	NO	bb	bb	47.004
8	12389-PECDD	31.39	1.724e5	1.062e5	1.154	1.62	1.55	982.0	YES	NO	bb	bb	54.877
9	12378-PeCDD	31.00	1.462e5	9.015e4	0.995	1.62	1.55	860.7	YES	NO	bb	bb	53.950
10	123789-HxCDD	36.04	1.469e5	1.238e5	0.950	1.19	1.24	1357.6	YES	NO	bb	bb	50.761
11	123678-HxCDD	35.65	1.530e5	1.240e5	1.009	1.23	1.24	1391.9	YES	NO	db	db	47.859
12	123478-HxCDD	35.53	1.502e5	1.202e5	1.027	1.25	1.24	1323.9	YES	NO	bd	bd	48.026
13	Total-hexadioxins	34.29	1.940e2	1.528e2	1.028	1.27	1.24	2.1	NO	NO	bb	bb	0.060
14	1234678-HpCDD	39.80	1.223e5	1.164e5	1.068	1.05	1.05	1493.3	YES	NO	bb	bb	54.149
15	1234679-HPCDD	38.77	1.360e5	1.262e5	1.211	1.08	1.05	1684.3	YES	NO	bb	bb	52.455
16	OCDD	44.42	2.138e5	2.409e5	1.181	0.89	0.89	2550.8	YES	NO	bb	bb	100.879

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TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	26.73	3.306e4	4.362e4	1.043	0.76	0.77	512.2	YES	NO	db	db	9.186
2	2378-TCDF	25.23	3.499e4	4.637e4	1.108	0.75	0.77	561.7	YES	NO	bb	bb	9.178
3	1368-TCDF	21.74	4.308e4	5.669e4	1.425	0.76	0.77	676.6	YES	NO	bb	bb	8.747
4	12389-PECDF	31.76	2.209e5	1.445e5	1.000	1.53	1.55	1436.6	YES	NO	bb	bb	48.242
5	23478-PeCDF	30.74	2.291e5	1.511e5	1.126	1.52	1.55	1533.8	YES	NO	bb	bb	46.366
6	12378-PeCDF	29.39	2.170e5	1.434e5	1.015	1.51	1.55	1410.7	YES	NO	bb	bd	46.866
7	Total-pentafurans	28.24	3.711e4	2.496e4	1.047	1.49	1.55	240.5	YES	NO	bb	bb	7.981
8	234678-HxCDF	35.42	1.808e5	1.424e5	1.052	1.27	1.24	1695.5	YES	NO	bd	bb	49.975
9	123678-HxCDF	34.54	1.838e5	1.524e5	1.037	1.21	1.24	1688.6	YES	NO	db	db	48.839
10	123478-HxCDF	34.39	1.807e5	1.473e5	1.017	1.23	1.24	1655.4	YES	NO	bd	bd	50.285
11	123468-HXCDF	32.71	1.816e5	1.514e5	1.087	1.20	1.24	1571.7	YES	NO	bb	bb	47.797
12	123789-HxCDF	36.46	1.578e5	1.206e5	1.030	1.31	1.24	1445.3	YES	NO	bd	bb	49.536
13	Total-heptafurans	40.90	1.142e2	1.166e2	1.305	0.98	1.05	2.0	NO	NO	bb	bb	0.033
14	1234789-HpCDF	40.51	1.569e5	1.491e5	1.283	1.05	1.05	1482.1	YES	NO	bb	bb	49.600
15	Total-heptafurans	38.55	9.731e1	8.361e1	1.305	1.16	1.05	2.2	NO	NO	bb	bb	0.026
16	1234678-HpCDF	38.34	1.861e5	1.793e5	1.327	1.04	1.05	1955.4	YES	NO	bb	bb	47.860
17	OCDF	44.64	2.513e5	2.748e5	1.447	0.91	0.89	2078.6	YES	NO	bb	bb	95.259
18	13468-PECDF	26.59	2.811e5	1.860e5	1.376	1.51	1.55	4351.6	YES	NO	bb	bb	44.788
19	Total-tetradioxins	25.05	1.226e4	1.567e4	0.879	0.78	0.77	162.1	YES	NO	bd	bb	5.213
20	1368-TCDD	23.01	2.522e4	3.228e4	0.923	0.78	0.77	331.2	YES	NO	bb	bb	10.219
21	12479-PECDD	28.27	2.509e5	1.565e5	1.843	1.60	1.55	915.7	YES	NO	bb	bb	50.217
22	1289-TCDD	26.47	2.372e4	2.918e4	0.794	0.81	0.77	292.2	YES	NO	bb	bb	10.933
23	2378-TCDD	25.88	2.500e4	3.230e4	0.920	0.77	0.77	312.7	YES	NO	bb	bb	10.216
24	Total-tetradioxins	25.55	4.057e4	5.000e4	0.879	0.81	0.77	381.4	YES	NO	bb	bb	16.903
25	124679-HXCDD	33.49	1.598e5	1.300e5	1.125	1.23	1.24	1365.8	YES	NO	bb	bb	47.004
26	12389-PECDD	31.39	1.724e5	1.062e5	1.154	1.62	1.55	982.0	YES	NO	bb	bb	54.877
27	12378-PeCDD	31.00	1.462e5	9.015e4	0.995	1.62	1.55	860.7	YES	NO	bb	bb	53.950
28	123789-HxCDD	36.04	1.469e5	1.238e5	0.950	1.19	1.24	1357.6	YES	NO	bb	bb	50.761
29	123678-HxCDD	35.65	1.530e5	1.240e5	1.009	1.23	1.24	1391.9	YES	NO	db	db	47.859
30	123478-HxCDD	35.53	1.502e5	1.202e5	1.027	1.25	1.24	1323.9	YES	NO	bd	bd	48.026
31	Total-hexadioxins	34.29	1.940e2	1.528e2	1.028	1.27	1.24	2.1	NO	NO	bb	bb	0.060
32	1234678-HpCDD	39.80	1.223e5	1.164e5	1.068	1.05	1.05	1493.3	YES	NO	bb	bb	54.149
33	1234679-HPCDD	38.77	1.360e5	1.262e5	1.211	1.08	1.05	1684.3	YES	NO	bb	bb	52.455
34	OCDD	44.42	2.138e5	2.409e5	1.181	0.89	0.89	2550.8	YES	NO	bb	bb	100.879

Dataset: T:\Autospec\Processed Data Batch\210827D1.qld
Last Altered: Friday, August 27, 2021 13:00:30 Pacific Daylight Time
Printed: Friday, August 27, 2021 13:33:23 Pacific Daylight Time

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PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	22.25	1.643e4					0.8	NO		bb		
2	FUNCTION1 PFK	22.00	5.856e4					2.1	NO		db		
3	FUNCTION1 PFK	21.39	4.721e6					21.8	YES		dd		
4	FUNCTION1 PFK	21.33	8.626e5					22.8	YES		dd		
5	FUNCTION1 PFK	21.25	1.111e6					23.9	YES		dd		
6	FUNCTION1 PFK	21.19	1.241e6					25.9	YES		dd		
7	FUNCTION1 PFK	21.12	1.625e6					28.5	YES		bd		
8	FUNCTION1 PFK	27.15	1.838e4					0.9	NO		bb		
9	FUNCTION1 PFK	27.02	1.488e4					0.9	NO		bb		
10	FUNCTION1 PFK	25.97	4.387e3					0.5	NO		bb		
11	FUNCTION1 PFK	25.82	1.373e4					0.7	NO		bb		
12	FUNCTION1 PFK	25.53	2.608e4					1.2	NO		bb		
13	FUNCTION1 PFK	25.34	3.786e3					0.4	NO		bb		
14	FUNCTION1 PFK	25.02	1.716e4					0.8	NO		bb		
15	FUNCTION1 PFK	24.91	4.360e3					0.5	NO		bb		
16	FUNCTION1 PFK	24.73	1.627e4					0.9	NO		bb		
17	FUNCTION1 PFK	24.07	3.910e4					1.2	NO		bb		
18	FUNCTION1 PFK	23.51	1.149e4					0.7	NO		bb		
19	FUNCTION1 PFK	23.43	3.321e4					1.3	NO		bb		
20	FUNCTION1 PFK	23.07	2.086e4					0.6	NO		bb		
21	FUNCTION1 PFK	22.96	3.963e3					0.4	NO		bb		
22	FUNCTION1 PFK	22.42	1.291e4					0.6	NO		db		
23	FUNCTION1 PFK	22.37	7.838e3					0.6	NO		bd		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	32.14	2.739e3					0.6	NO		bb		0.000
2	FUNCTION2 PFK	31.71	3.987e4					2.3	NO		bb		0.000
3	FUNCTION2 PFK	30.52	2.505e3					0.5	NO		bb		0.000
4	FUNCTION2 PFK	30.45	2.487e3					0.5	NO		bb		0.000
5	FUNCTION2 PFK	29.78	2.953e4					1.4	NO		bb		0.000
6	FUNCTION2 PFK	29.48	2.288e4					1.8	NO		bb		0.000
7	FUNCTION2 PFK	28.94	5.976e3					0.8	NO		bb		0.000
8	FUNCTION2 PFK	28.60	1.691e4					1.6	NO		bb		0.000
9	FUNCTION2 PFK	28.23	6.868e3					0.8	NO		bb		0.000
10	FUNCTION2 PFK	27.71	1.160e4					1.2	NO		bb		0.000
11	FUNCTION2 PFK	27.59	2.801e4					2.9	NO		db		0.000
12	FUNCTION2 PFK	27.55	3.597e5					4.5	YES		bd		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	32.37	1.800e4					0.9	NO		bb		0.000
2	FUNCTION3 PFK	32.32	9.029e3					1.1	NO		bb		0.000
3	FUNCTION3 PFK	34.92	1.173e4					0.9	NO		bb		0.000
4	FUNCTION3 PFK	34.44	7.560e3					0.6	NO		bb		0.000
5	FUNCTION3 PFK	34.32	4.152e3					0.7	NO		bb		0.000
6	FUNCTION3 PFK	34.18	1.795e4					1.5	NO		bb		0.000
7	FUNCTION3 PFK	34.09	4.314e4					1.7	NO		bb		0.000
8	FUNCTION3 PFK	33.73	7.470e3					0.8	NO		bb		0.000
9	FUNCTION3 PFK	33.58	2.429e3					0.4	NO		bb		0.000
10	FUNCTION3 PFK	33.46	1.519e4					1.3	NO		bb		0.000
11	FUNCTION3 PFK	33.38	2.023e4					1.3	NO		db		0.000
12	FUNCTION3 PFK	33.31	1.335e4					1.0	NO		bd		0.000
13	FUNCTION3 PFK	33.27	3.429e4					1.7	NO		bb		0.000
14	FUNCTION3 PFK	33.18	2.426e3					0.4	NO		bb		0.000
15	FUNCTION3 PFK	32.95	4.480e3					0.6	NO		bb		0.000
16	FUNCTION3 PFK	32.75	9.996e3					0.9	NO		bb		0.000
17	FUNCTION3 PFK	32.47	9.479e4					2.5	NO		db		0.000
18	FUNCTION3 PFK	32.43	2.591e4					2.2	NO		bd		0.000
19	FUNCTION3 PFK	36.87	5.506e4					1.6	NO		bb		0.000
20	FUNCTION3 PFK	36.69	2.957e4					0.8	NO		bb		0.000
21	FUNCTION3 PFK	36.51	3.534e3					0.6	NO		bb		0.000
22	FUNCTION3 PFK	36.39	2.576e4					1.3	NO		bb		0.000
23	FUNCTION3 PFK	36.20	2.137e3					0.4	NO		bb		0.000
24	FUNCTION3 PFK	36.17	7.003e3					0.7	NO		bb		0.000
25	FUNCTION3 PFK	36.03	1.237e4					1.0	NO		bb		0.000
26	FUNCTION3 PFK	35.97	1.417e4					1.3	NO		bb		0.000
27	FUNCTION3 PFK	35.90	1.049e4					1.1	NO		bb		0.000
28	FUNCTION3 PFK	35.78	6.036e3					0.6	NO		bb		0.000
29	FUNCTION3 PFK	35.71	2.382e4					1.3	NO		bb		0.000
30	FUNCTION3 PFK	35.55	4.013e3					0.7	NO		bb		0.000
31	FUNCTION3 PFK	35.51	2.215e4					1.5	NO		bb		0.000
32	FUNCTION3 PFK	35.42	3.746e3					0.7	NO		bb		0.000
33	FUNCTION3 PFK	35.37	1.627e4					1.0	NO		bb		0.000
34	FUNCTION3 PFK	34.97	4.058e3					0.7	NO		bb		0.000

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PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	37.58	2.636e5					1.3	NO		bb		

PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1													

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	27.11	1.713e2					4.1	YES		bb		0.000
2	FUNCTION1 HXCD...	26.03	1.603e2					4.0	YES		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	25.50	1.276e2					2.9	NO		bb		0.000
2	FUNCTION1 HPCD...	25.03	9.457e1					2.7	NO		bb		0.000
3	FUNCTION1 HPCD...	24.66	1.020e2					1.6	NO		db		0.000
4	FUNCTION1 HPCD...	24.51	1.158e2					2.6	NO		bd		0.000
5	FUNCTION1 HPCD...	23.45	9.256e1					1.1	NO		bb		0.000
6	FUNCTION1 HPCD...	23.18	1.463e2					1.9	NO		db		0.000
7	FUNCTION1 HPCD...	23.11	8.068e1					1.8	NO		bd		0.000
8	FUNCTION1 HPCD...	22.24	7.983e1					1.8	NO		bb		0.000
9	FUNCTION1 HPCD...	21.16	1.162e2					2.9	NO		bb		0.000
10	FUNCTION1 HPCD...	27.18	1.182e2					1.9	NO		db		0.000
11	FUNCTION1 HPCD...	27.06	8.588e1					1.7	NO		dd		0.000
12	FUNCTION1 HPCD...	26.94	2.144e2					3.0	NO		dd		0.000
13	FUNCTION1 HPCD...	26.86	8.896e1					1.6	NO		bd		0.000
14	FUNCTION1 HPCD...	26.46	1.140e2					2.1	NO		db		0.000
15	FUNCTION1 HPCD...	26.40	1.155e2					1.7	NO		bd		0.000

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ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	31.34	7.983e1					2.2	NO		bb		0.000
2	FUNCTION2 HPCD...	30.57	2.218e2					5.0	YES		bb		0.000
3	FUNCTION2 HPCD...	27.80	1.083e2					2.0	NO		db		0.000
4	FUNCTION2 HPCD...	27.68	1.487e2					2.8	NO		bd		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	35.41	7.761e1					2.5	NO		bd		0.000
2	FUNCTION3 OCDPE	34.41	7.517e1					1.9	NO		bb		0.000
3	FUNCTION3 OCDPE	33.65	1.096e2					2.3	NO		bb		0.000
4	FUNCTION3 OCDPE	32.81	7.701e1					1.9	NO		bb		0.000
5	FUNCTION3 OCDPE	37.22	1.118e2					4.5	YES		bb		0.000
6	FUNCTION3 OCDPE	36.68	8.544e1					2.4	NO		bb		0.000
7	FUNCTION3 OCDPE	36.41	2.061e2					2.3	NO		db		0.000
8	FUNCTION3 OCDPE	36.24	7.094e1					2.0	NO		bd		0.000
9	FUNCTION3 OCDPE	36.14	7.866e1					2.5	NO		db		0.000
10	FUNCTION3 OCDPE	36.02	1.066e2					3.1	YES		bd		0.000
11	FUNCTION3 OCDPE	35.65	7.708e1					2.6	NO		db		0.000
12	FUNCTION3 OCDPE	35.62	9.197e1					3.3	YES		dd		0.000
13	FUNCTION3 OCDPE	35.52	1.803e2					3.4	YES		dd		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	40.82	8.163e1					2.6	NO		bb		0.000
2	FUNCTION4 NCDPE	40.71	1.224e2					4.5	YES		bb		0.000
3	FUNCTION4 NCDPE	40.34	8.431e1					1.5	NO		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	44.66	7.192e1					2.5	NO		bb		0.000
2	FUNCTION5 DCDPE	43.77	9.756e1					2.7	NO		bb		0.000

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Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

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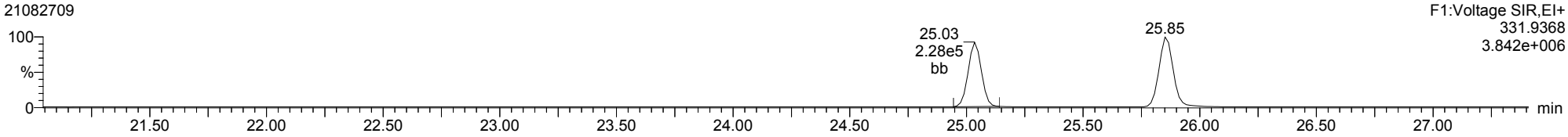
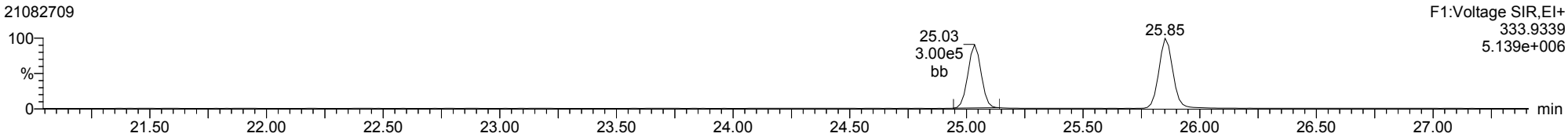
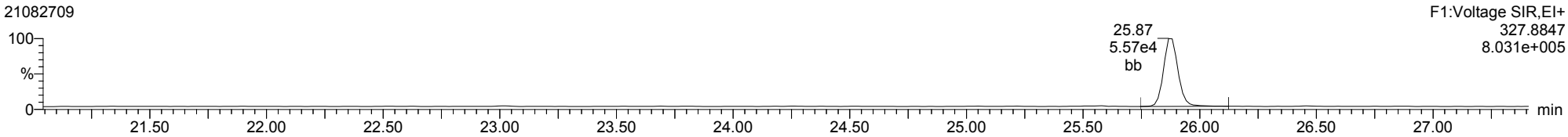
13C-1234-TCDD



13C-1234-TCDD



37CL-2378-TCDD



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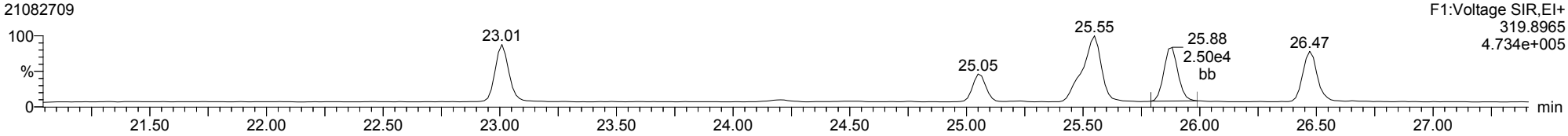
2378-TCDD



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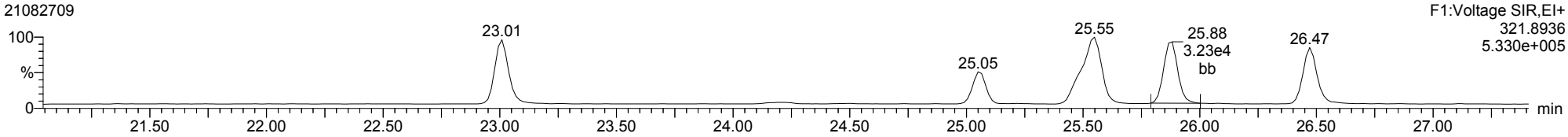

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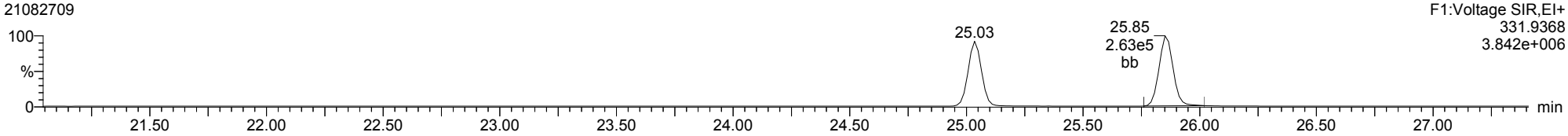

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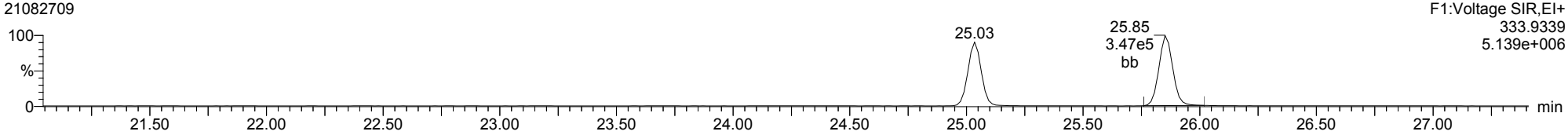

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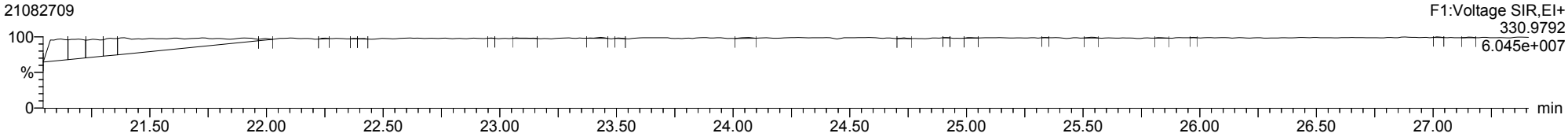

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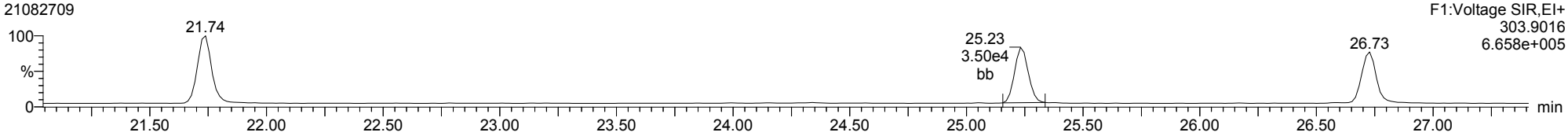
2378-TCDF



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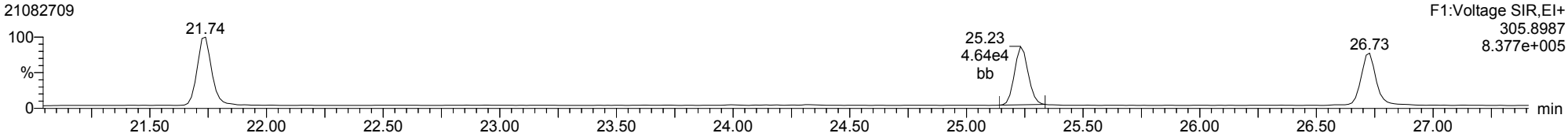

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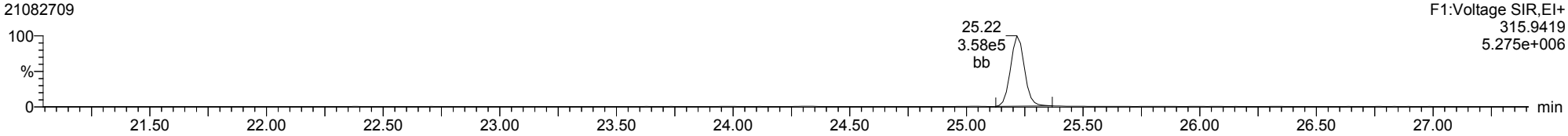

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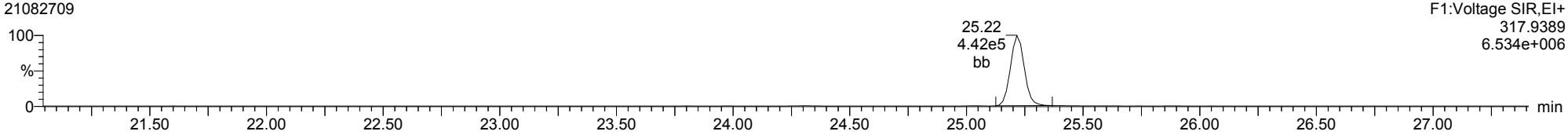

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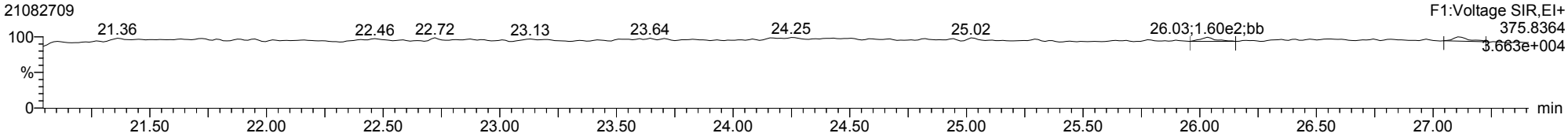

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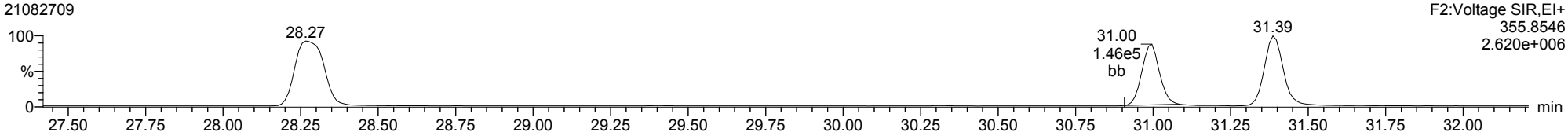
12378-PeCDD



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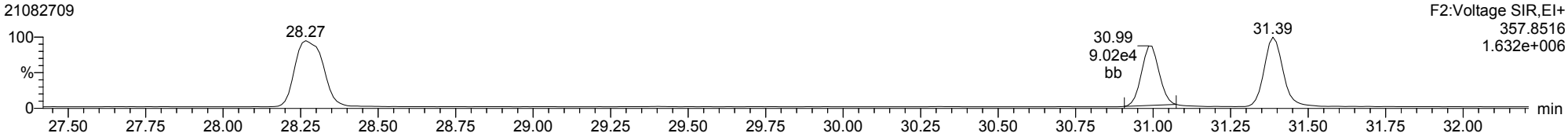

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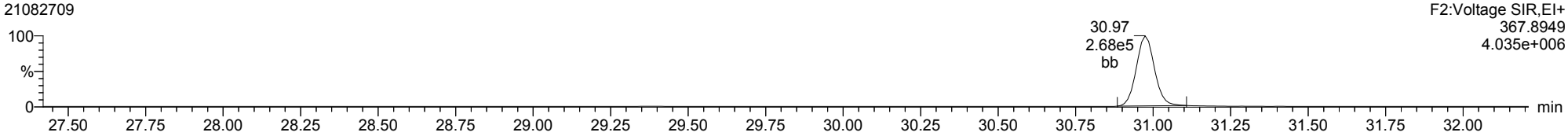

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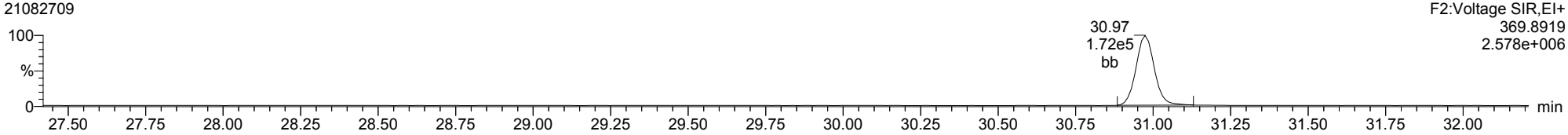

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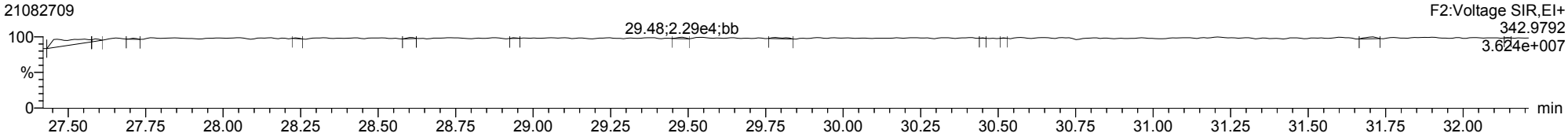

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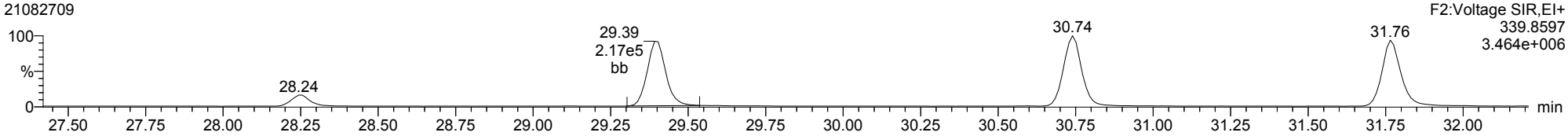
12378-PeCDF



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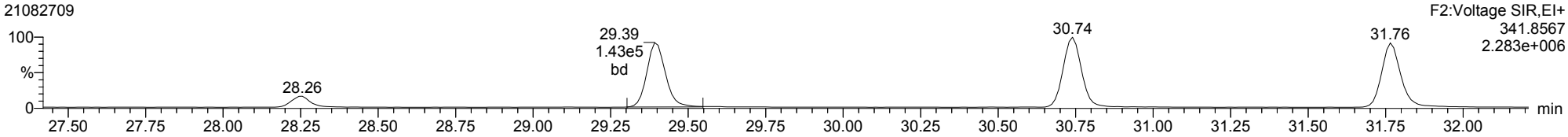

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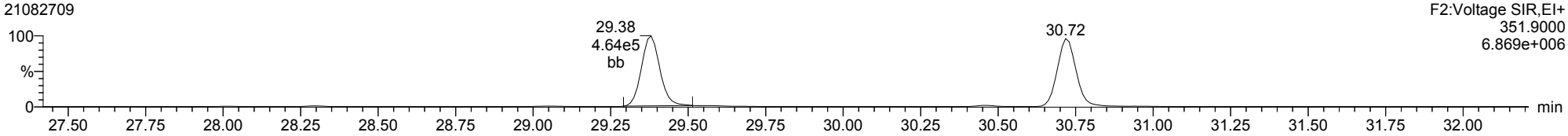

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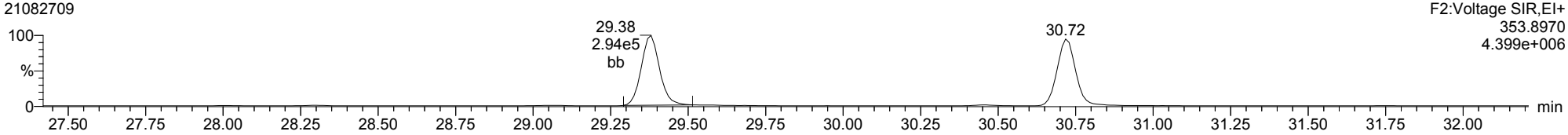
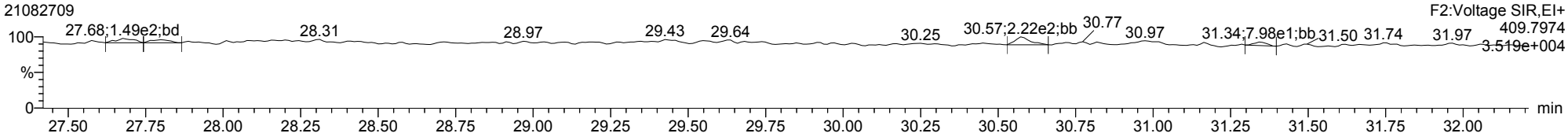


FUNCTION2 HPCDPE



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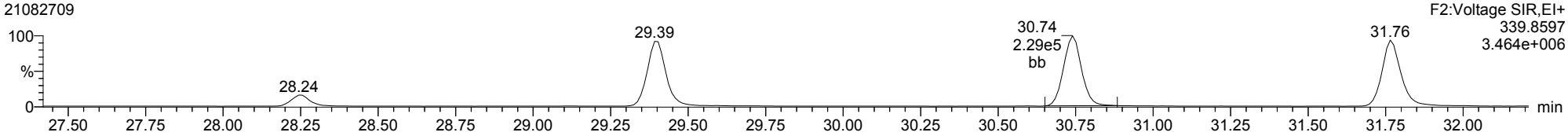
23478-PeCDF



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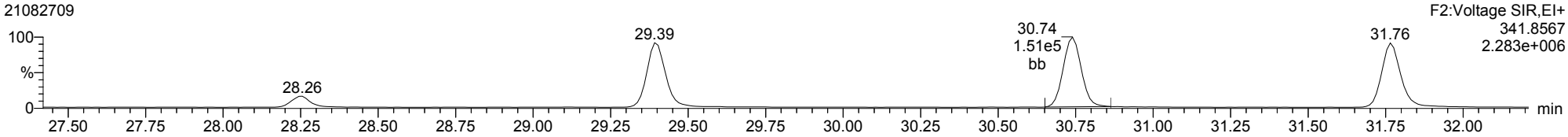

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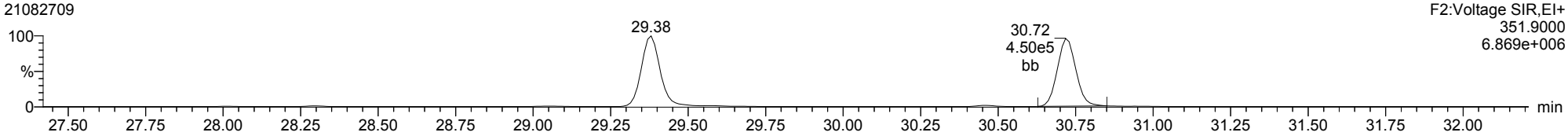

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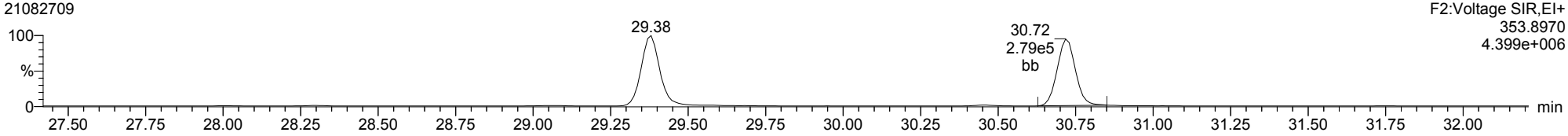

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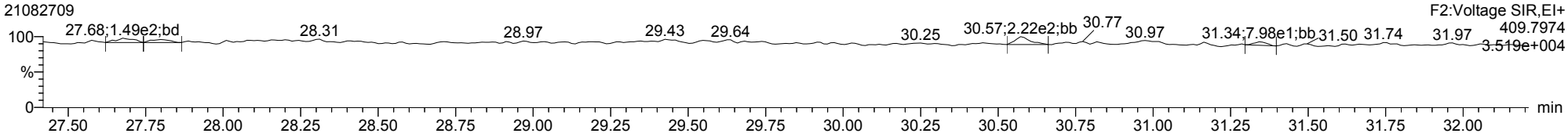

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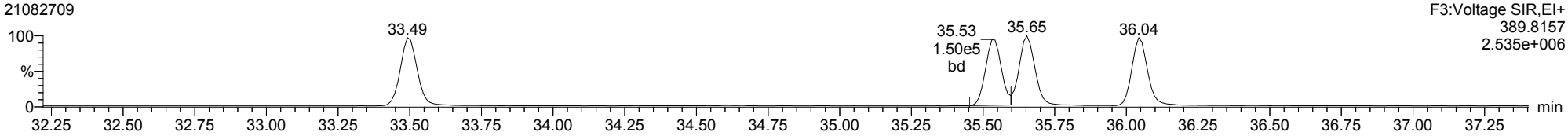
123478-HxCDD



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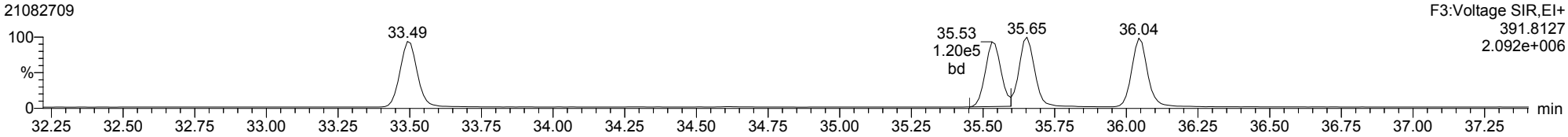

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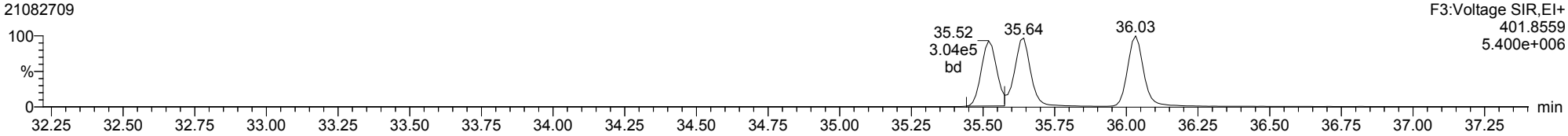

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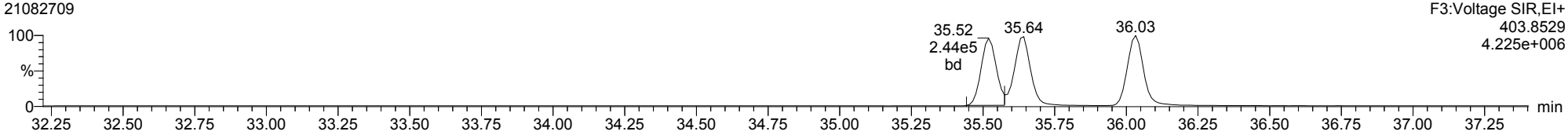
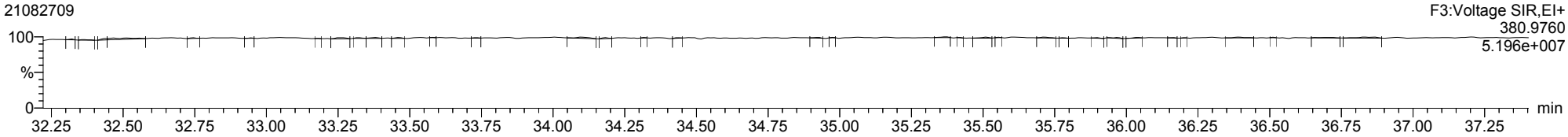


FUNCTION3 PFK



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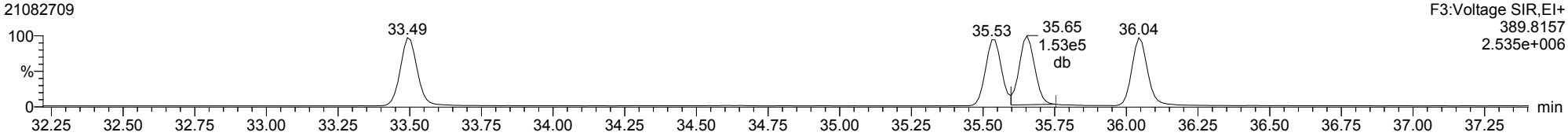

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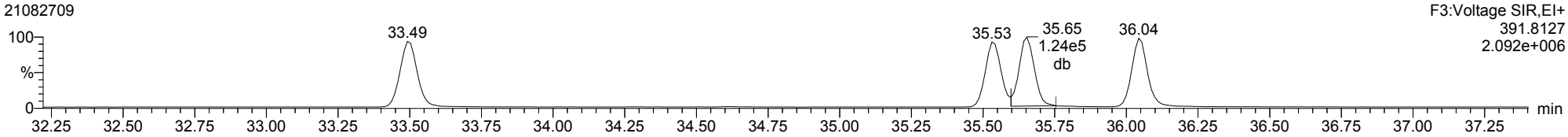

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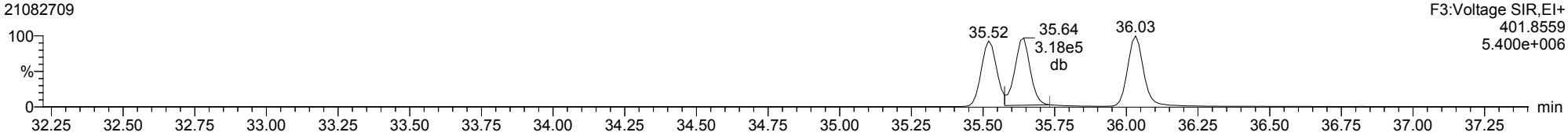

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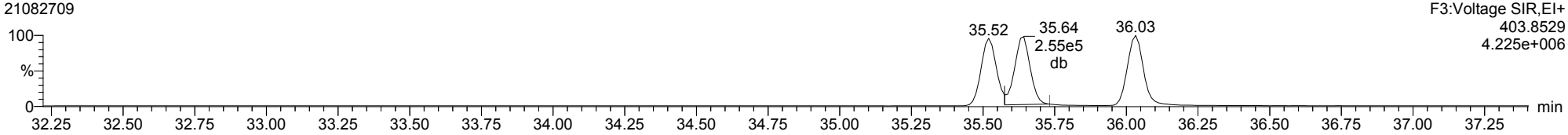

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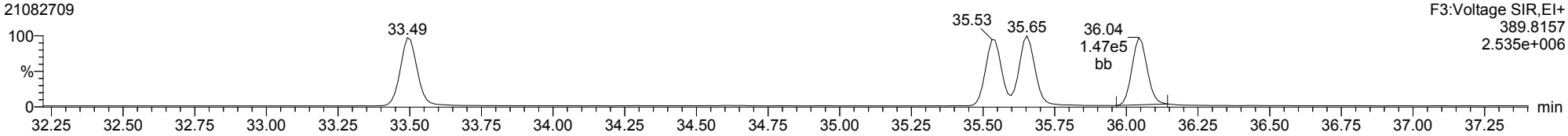

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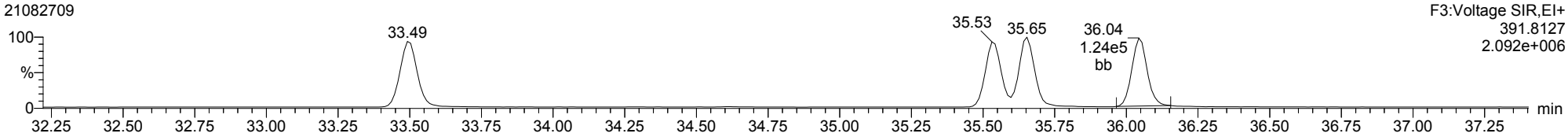

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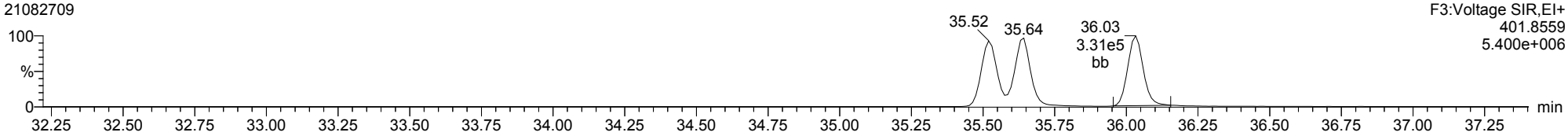

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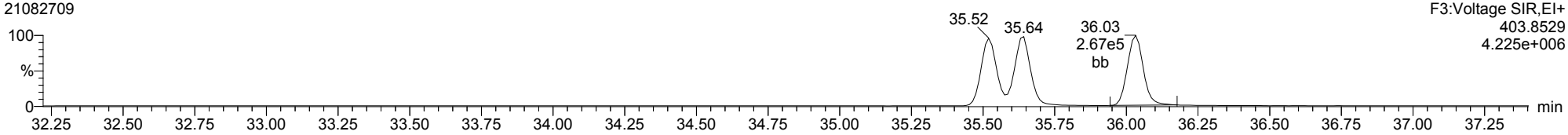

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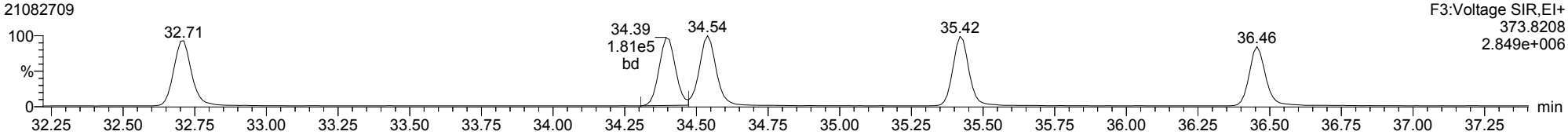
123478-HxCDF



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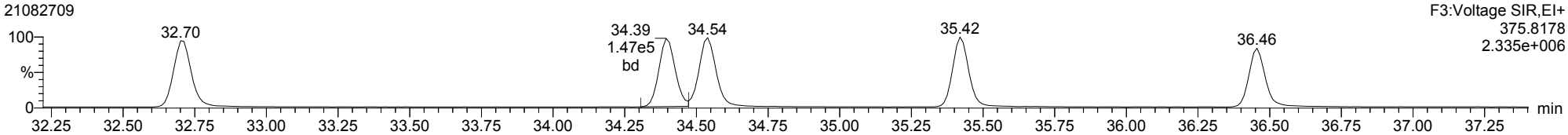

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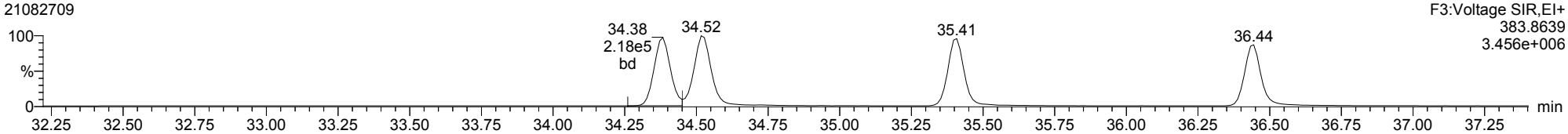

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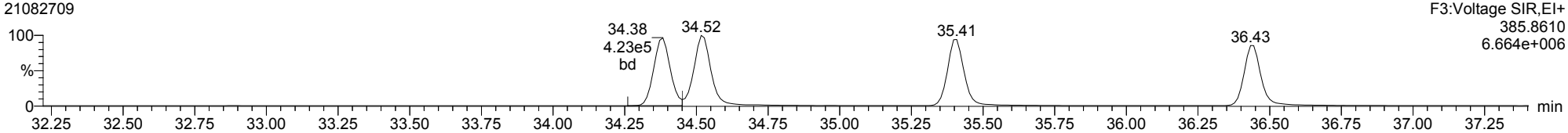
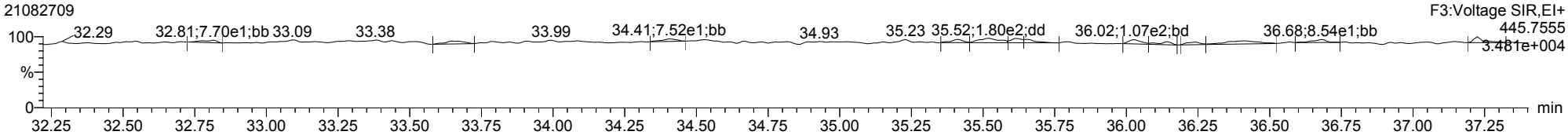


FUNCTION3 OCDPE



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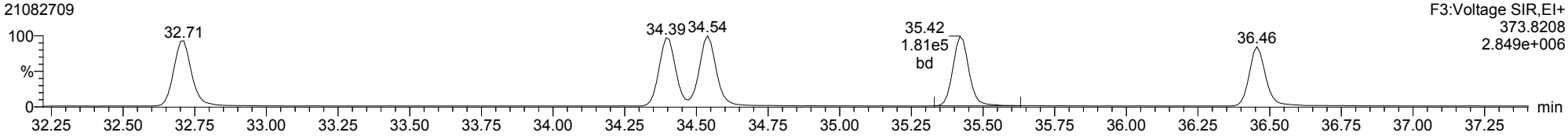
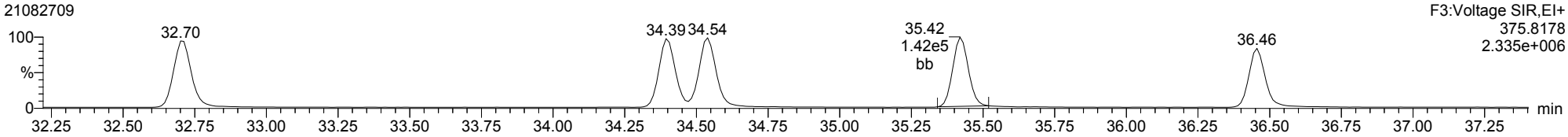
234678-HxCDF



234678-HxCDF



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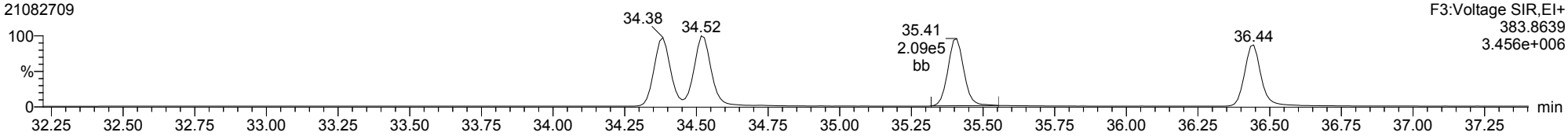

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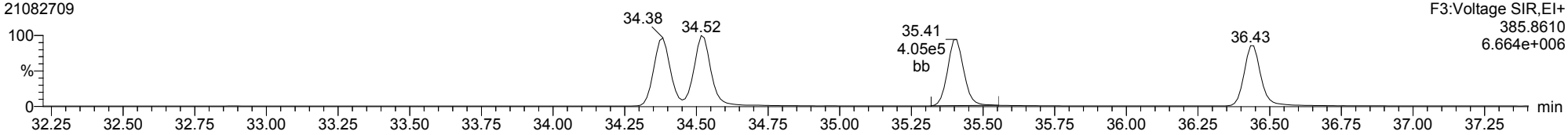
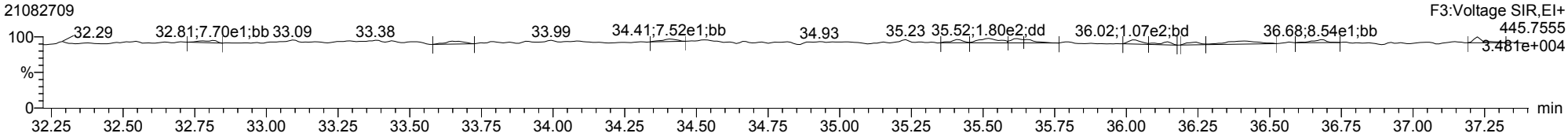


FUNCTION3 OCDPE



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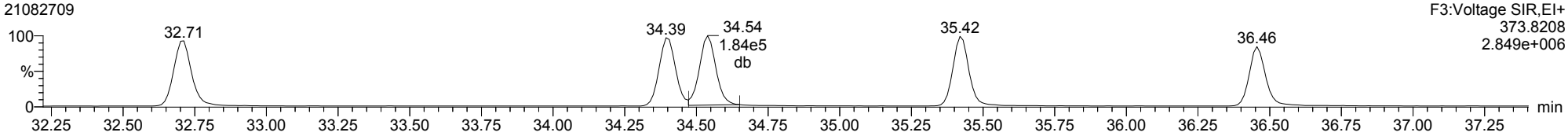
123678-HxCDF



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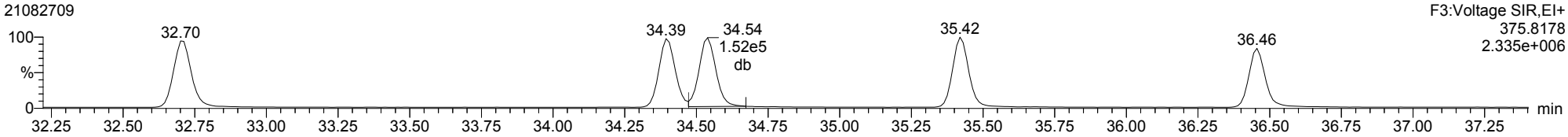

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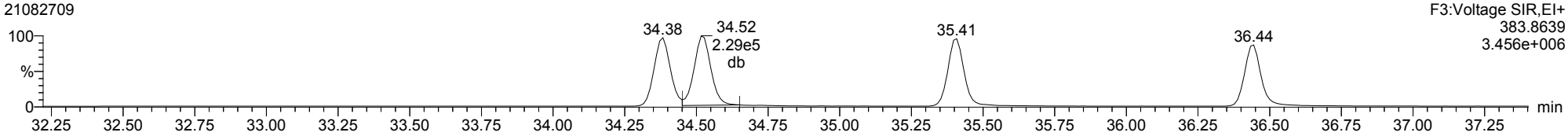

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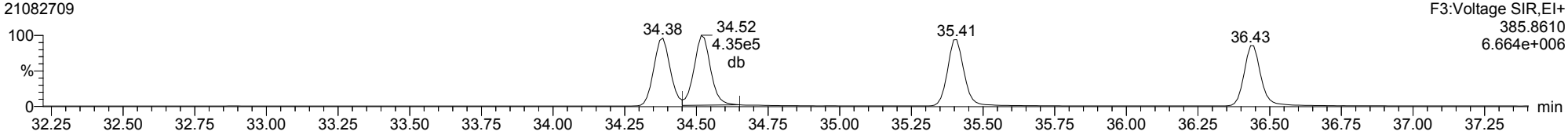

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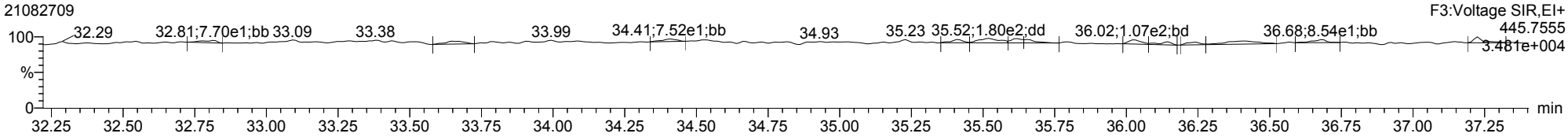

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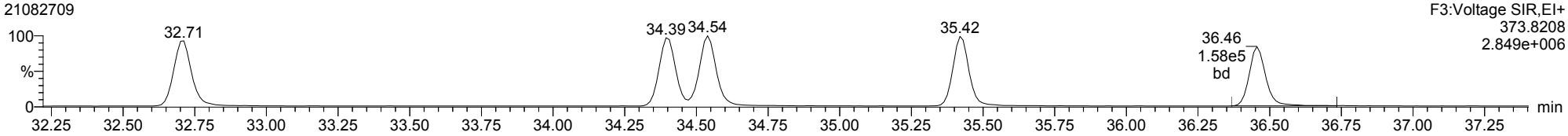

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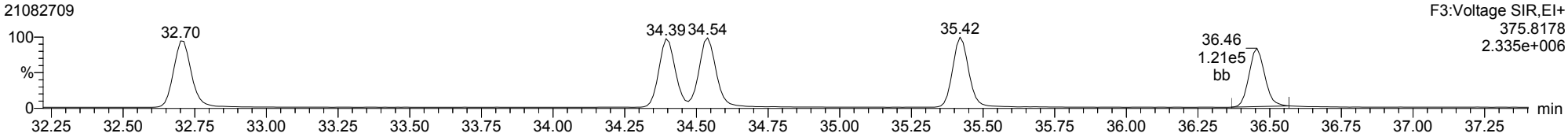

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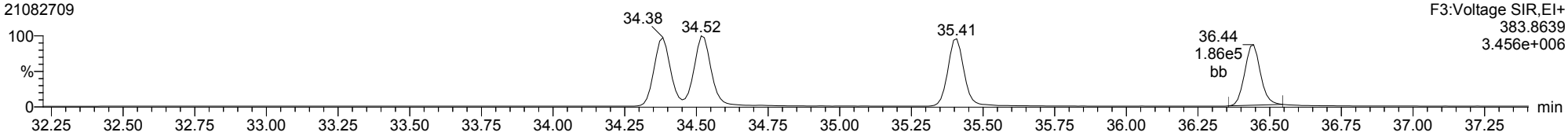

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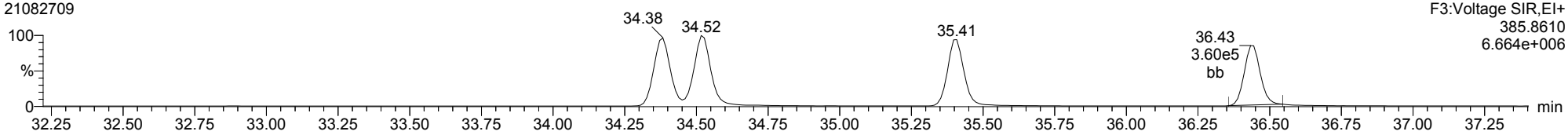

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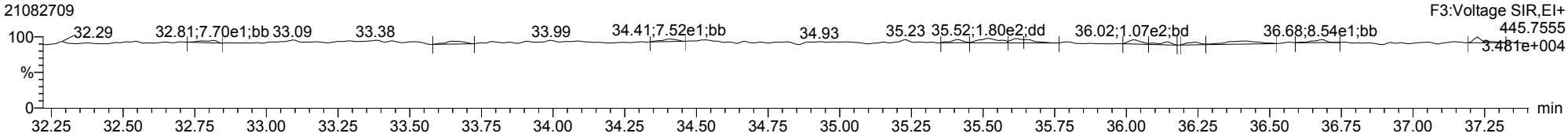

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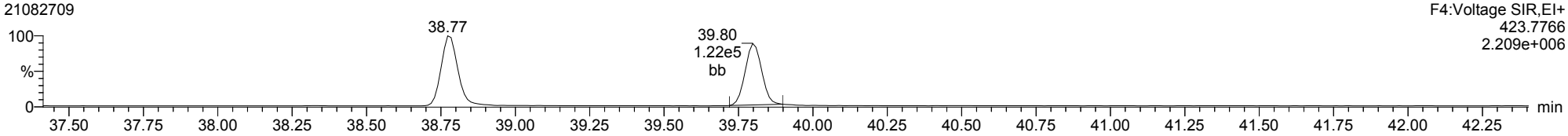

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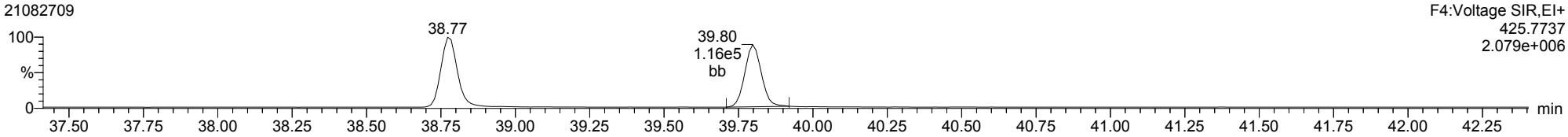

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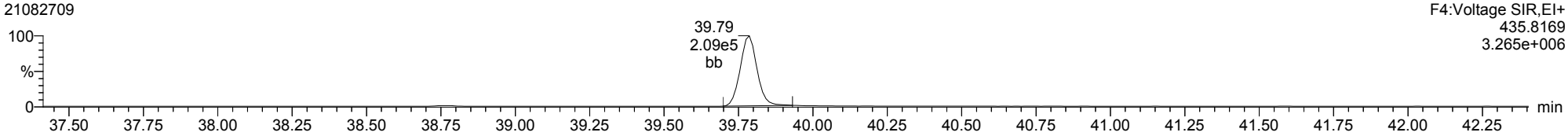

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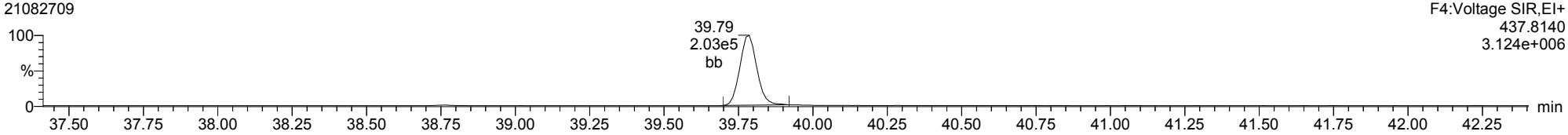

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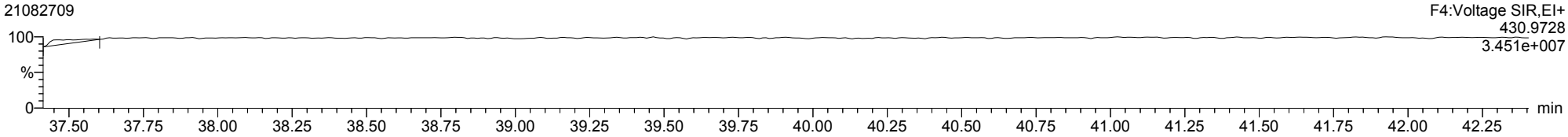

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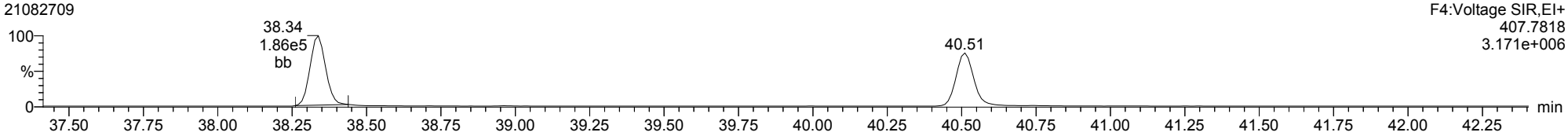

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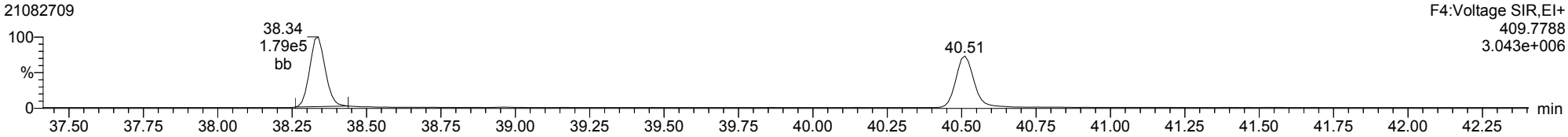

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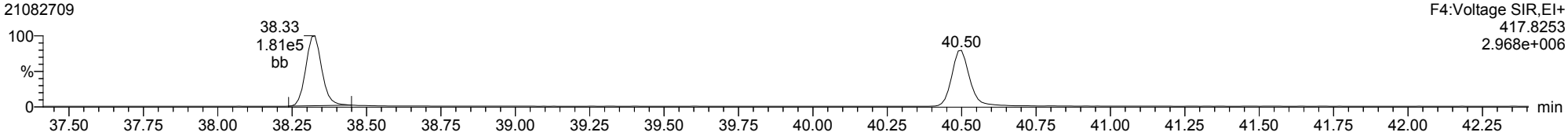

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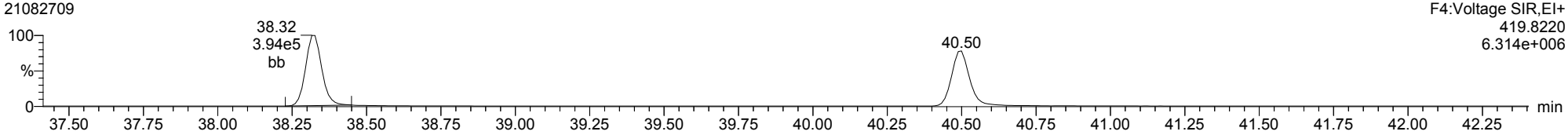

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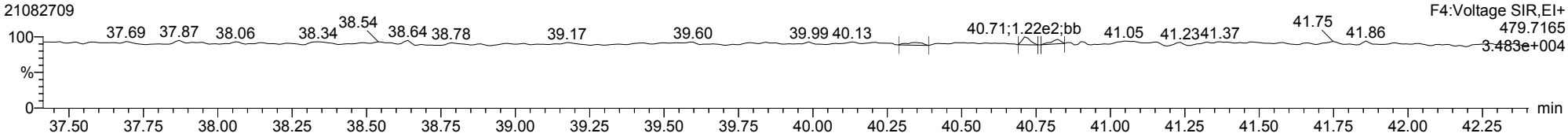

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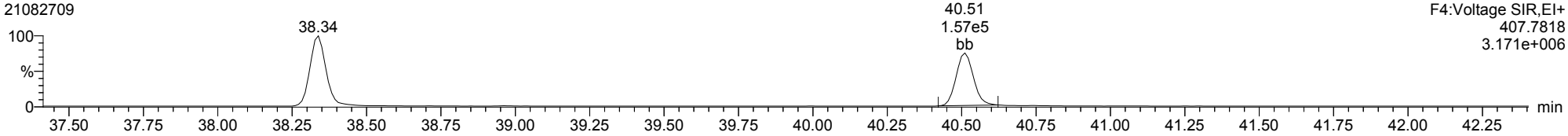

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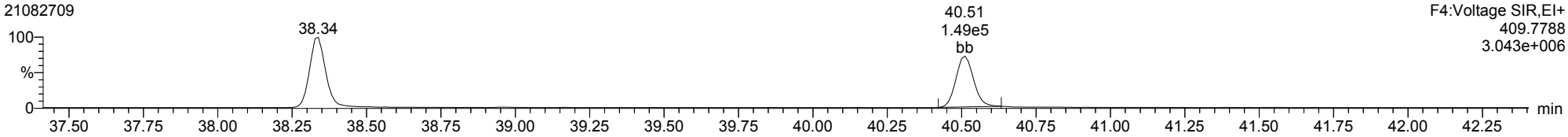

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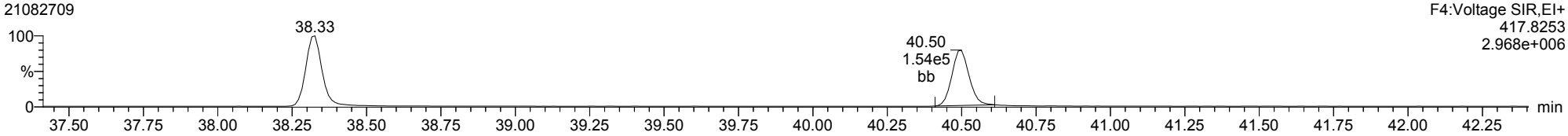

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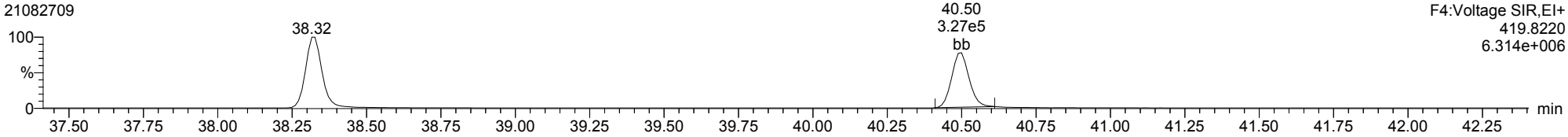

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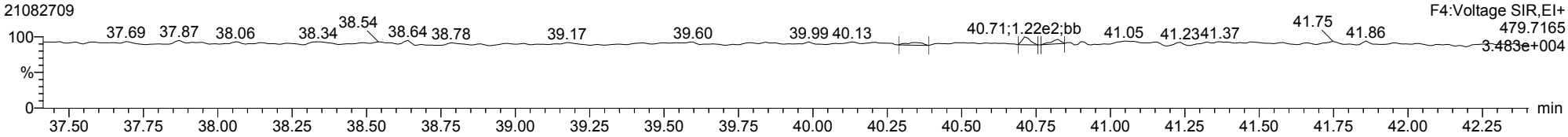

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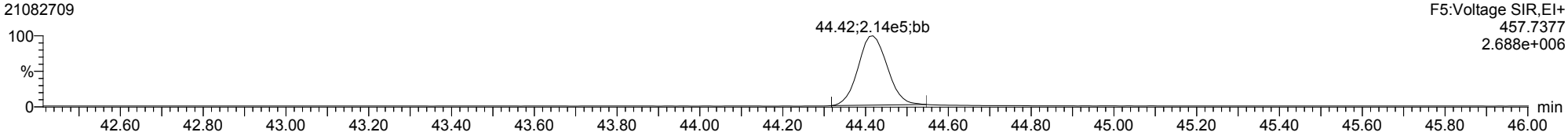

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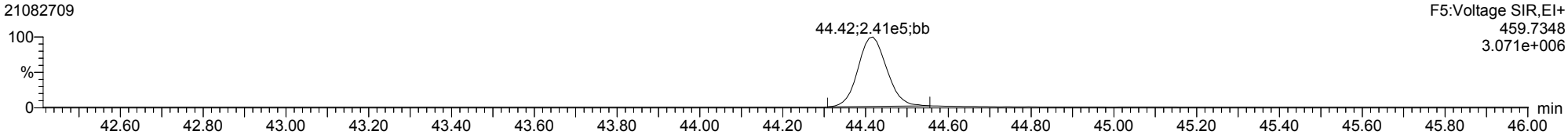

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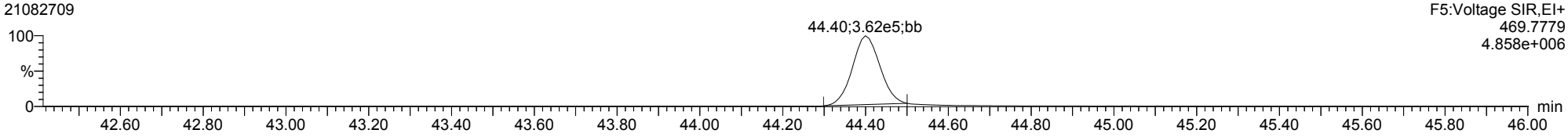

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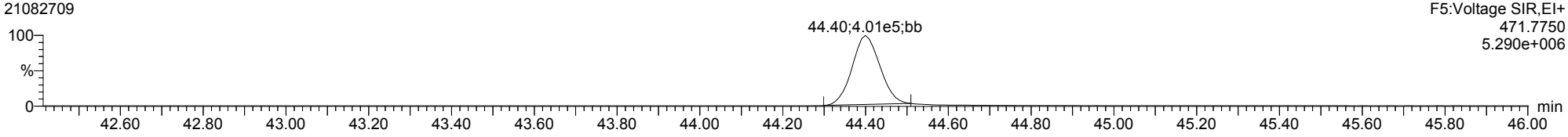

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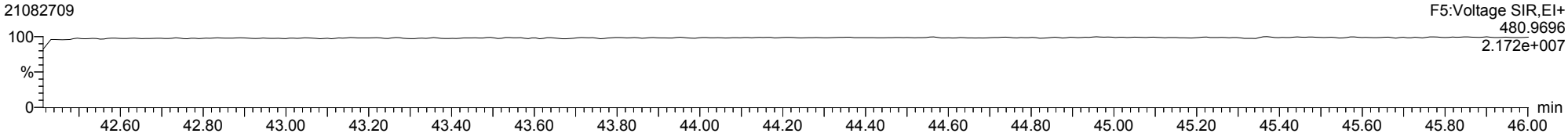

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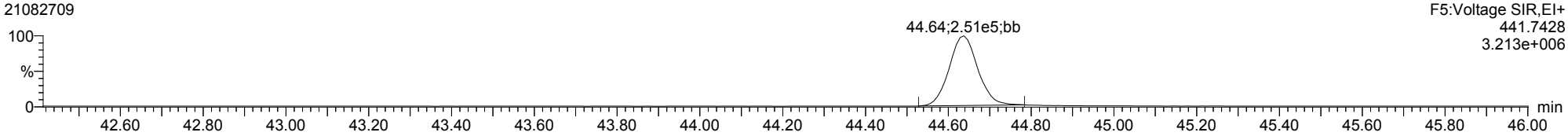

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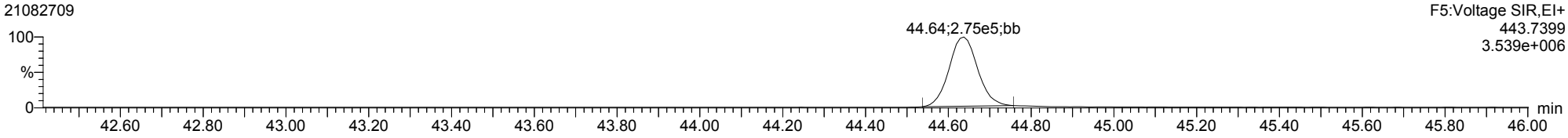

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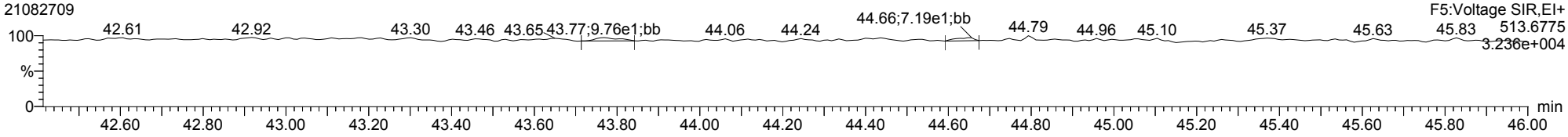

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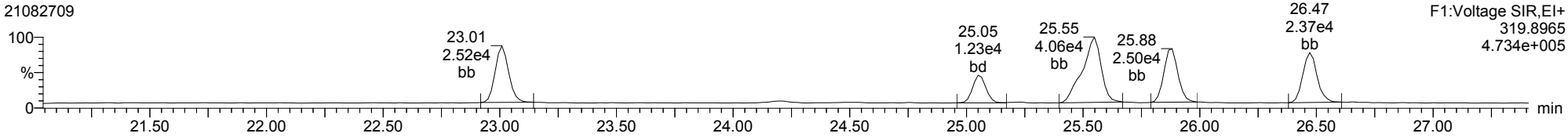

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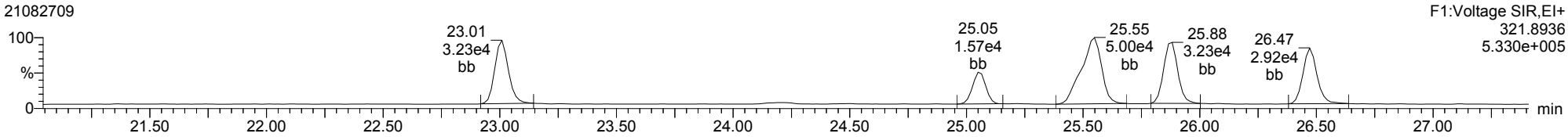

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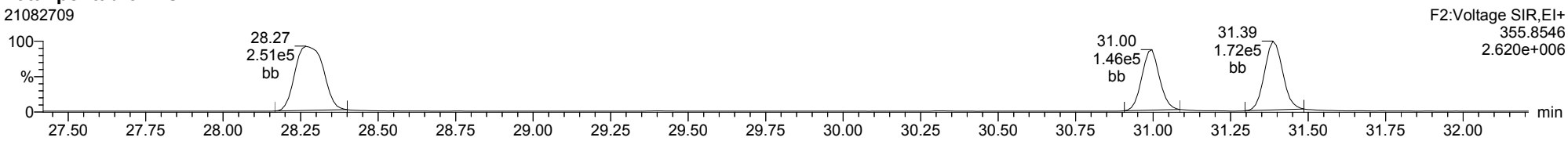

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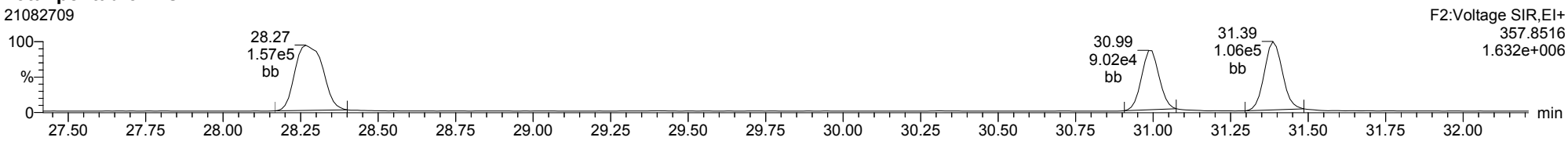

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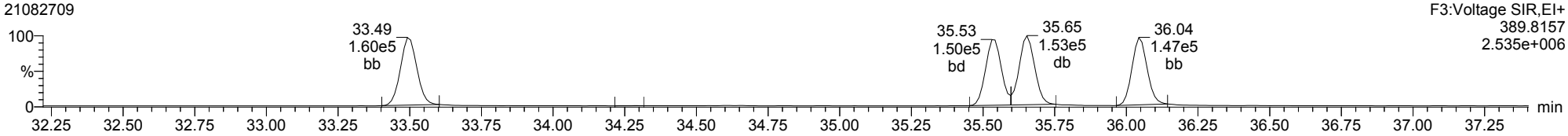

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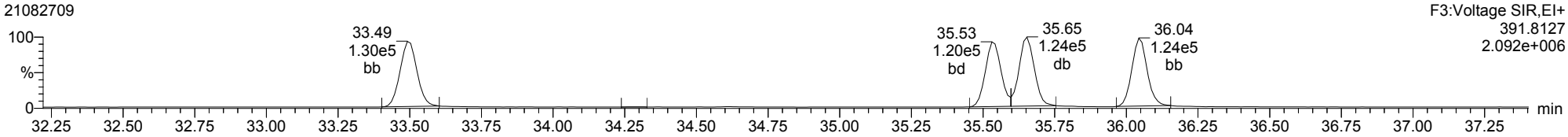

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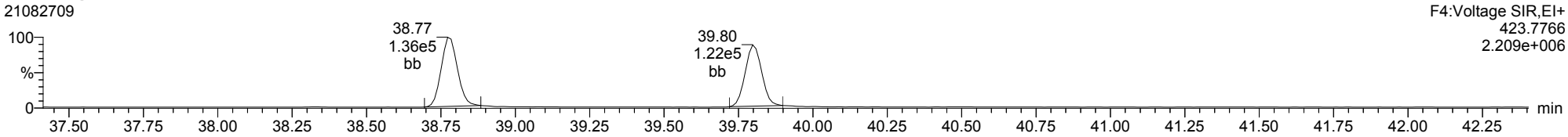

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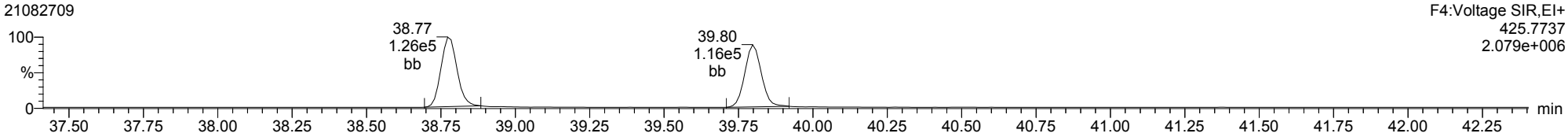

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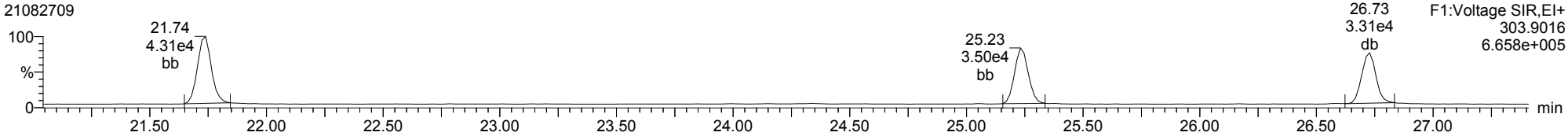
Total-tetrafurans



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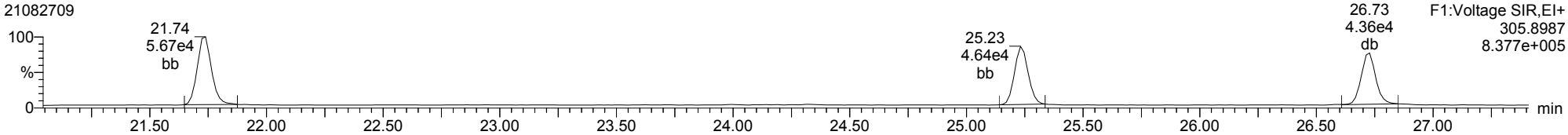

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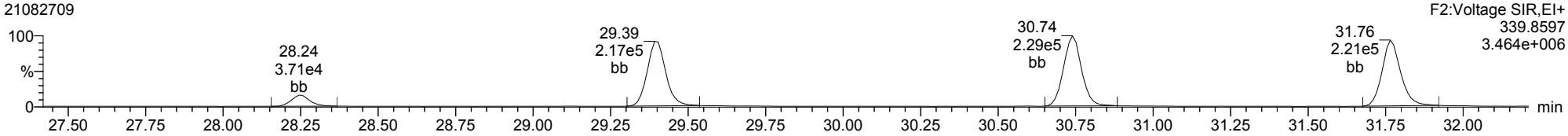

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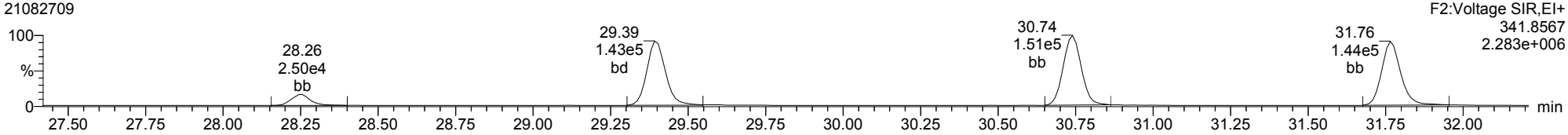

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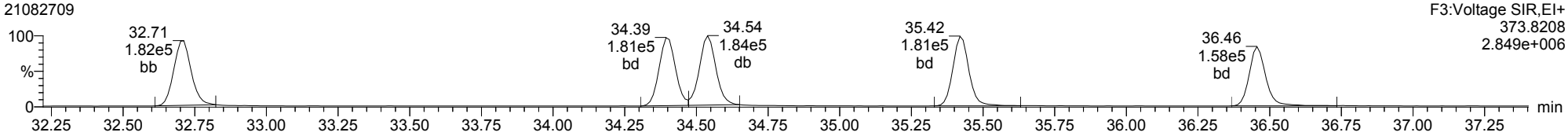
ID: CS3L8, Name: 21082709, Date: 27-Aug-2021, Time: 11:20:12, Conditions: AUTOSPEC01, User: pk

Total-hexafurans



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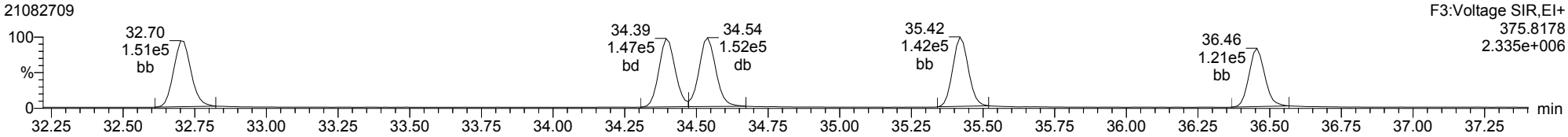

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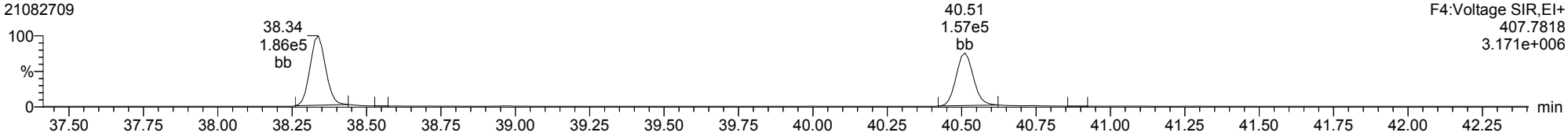

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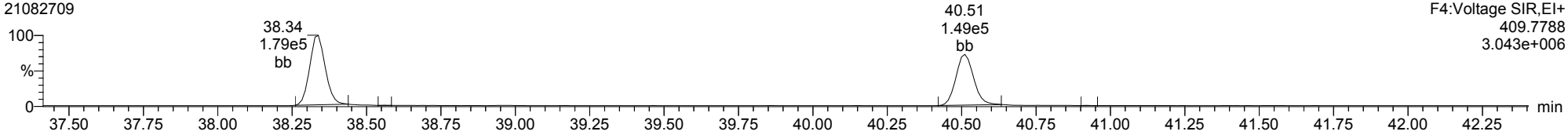

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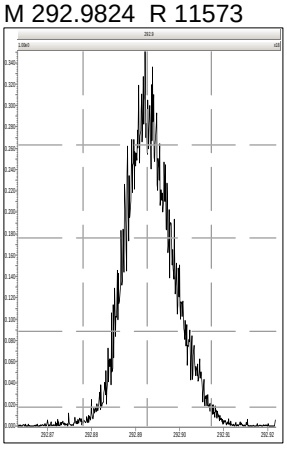

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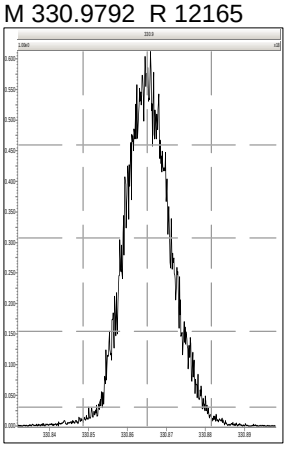

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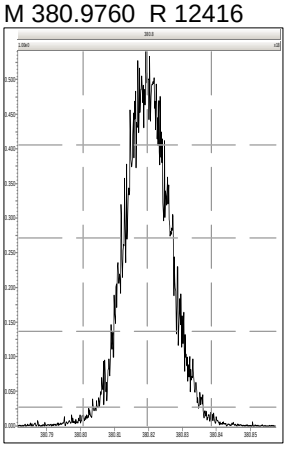
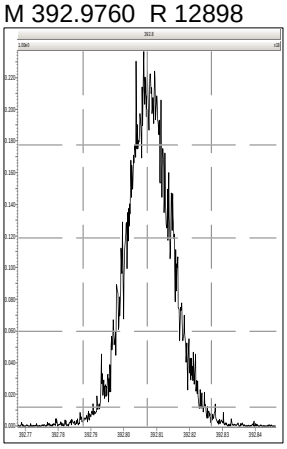
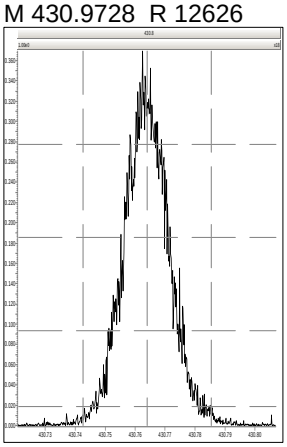


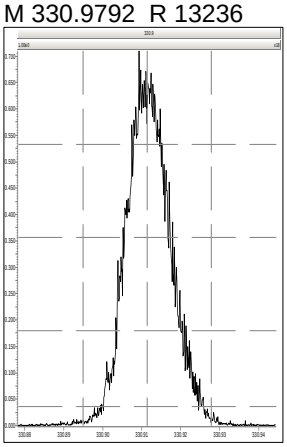
M 392.9760 R 12898



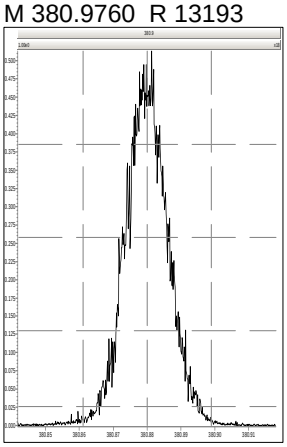
M 430.9728 R 12626



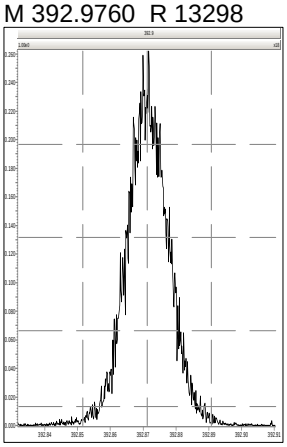
M 330.9792 R 13236



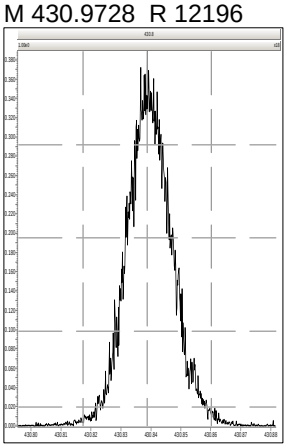
M 380.9760 R 13193



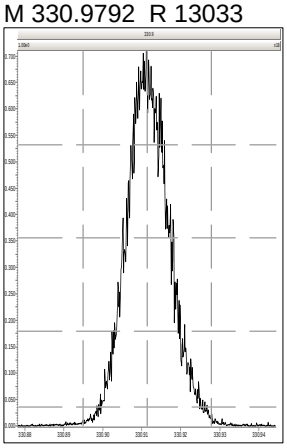
M 392.9760 R 13298



M 430.9728 R 12196



M 330.9792 R 13033



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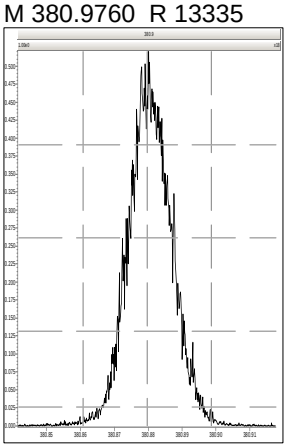
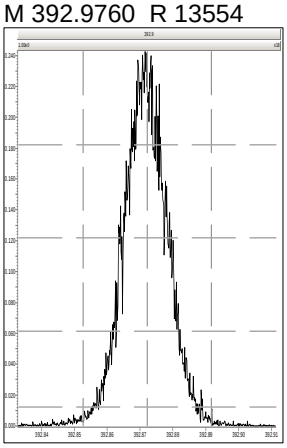
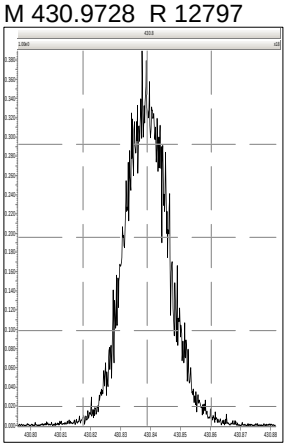


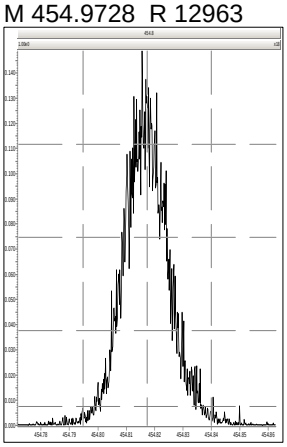
M 392.9760 R 13554



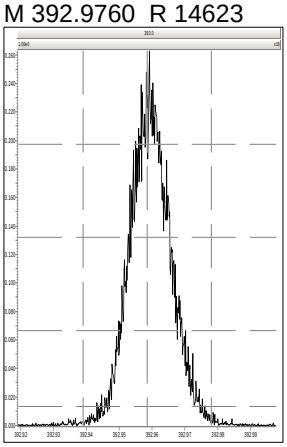
M 430.9728 R 12797



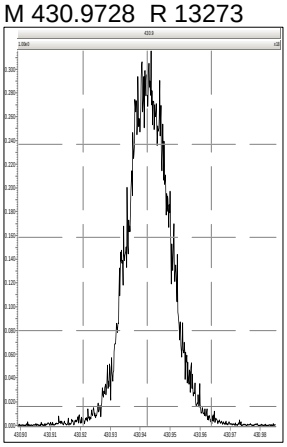
M 454.9728 R 12963



M 392.9760 R 14623



M 430.9728 R 13273



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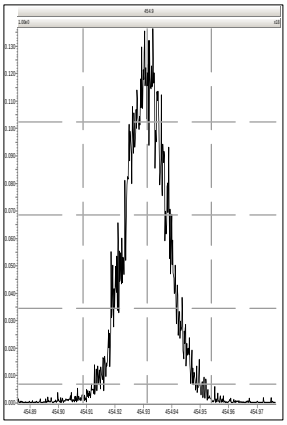
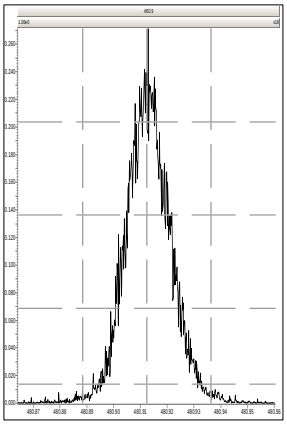
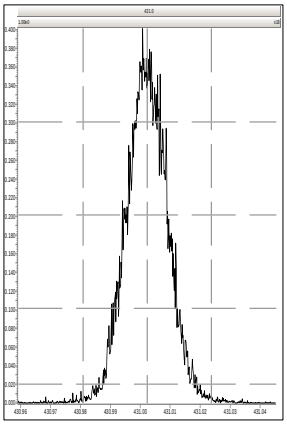
M 454.9728 R 14164



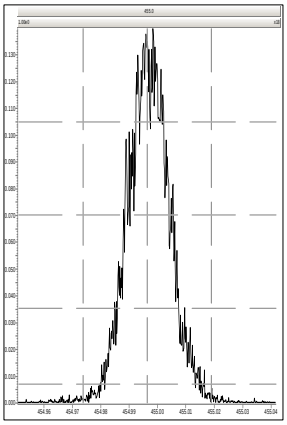
M 480.9696 R 12723



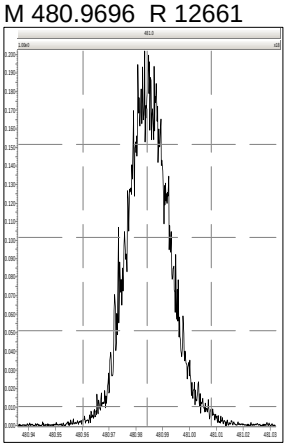
M 430.9728 R 14006



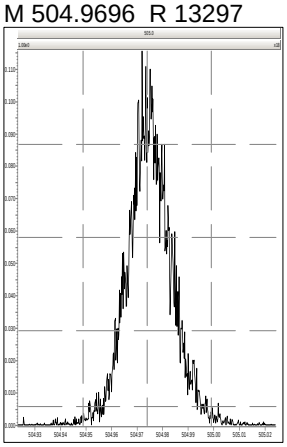
M 454.9728 R 13973



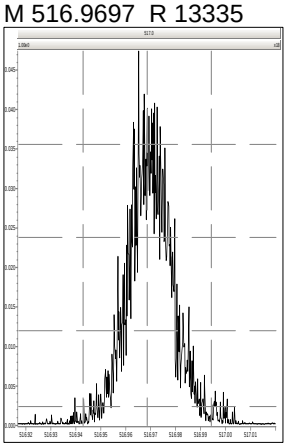
M 480.9696 R 12661

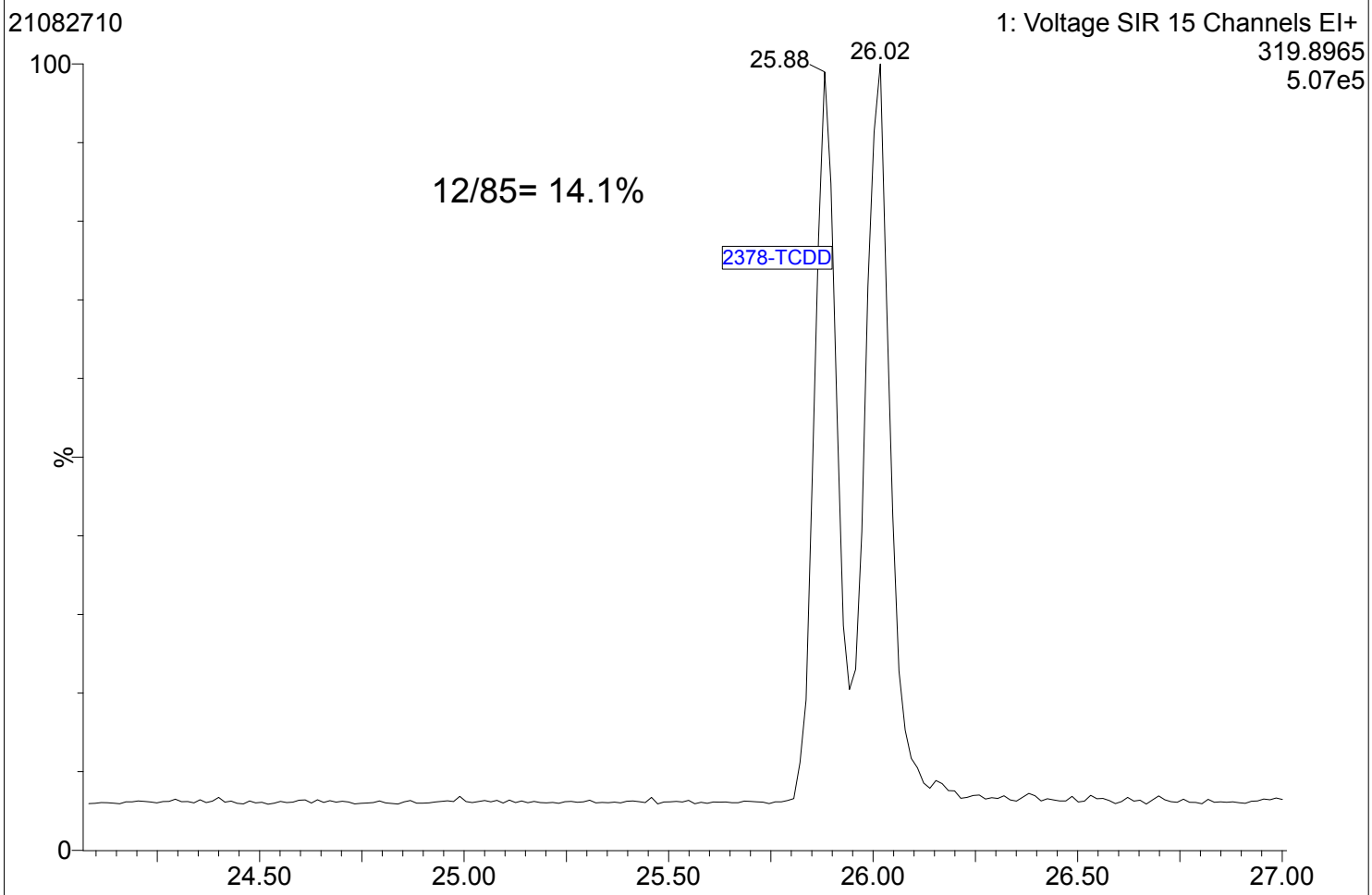


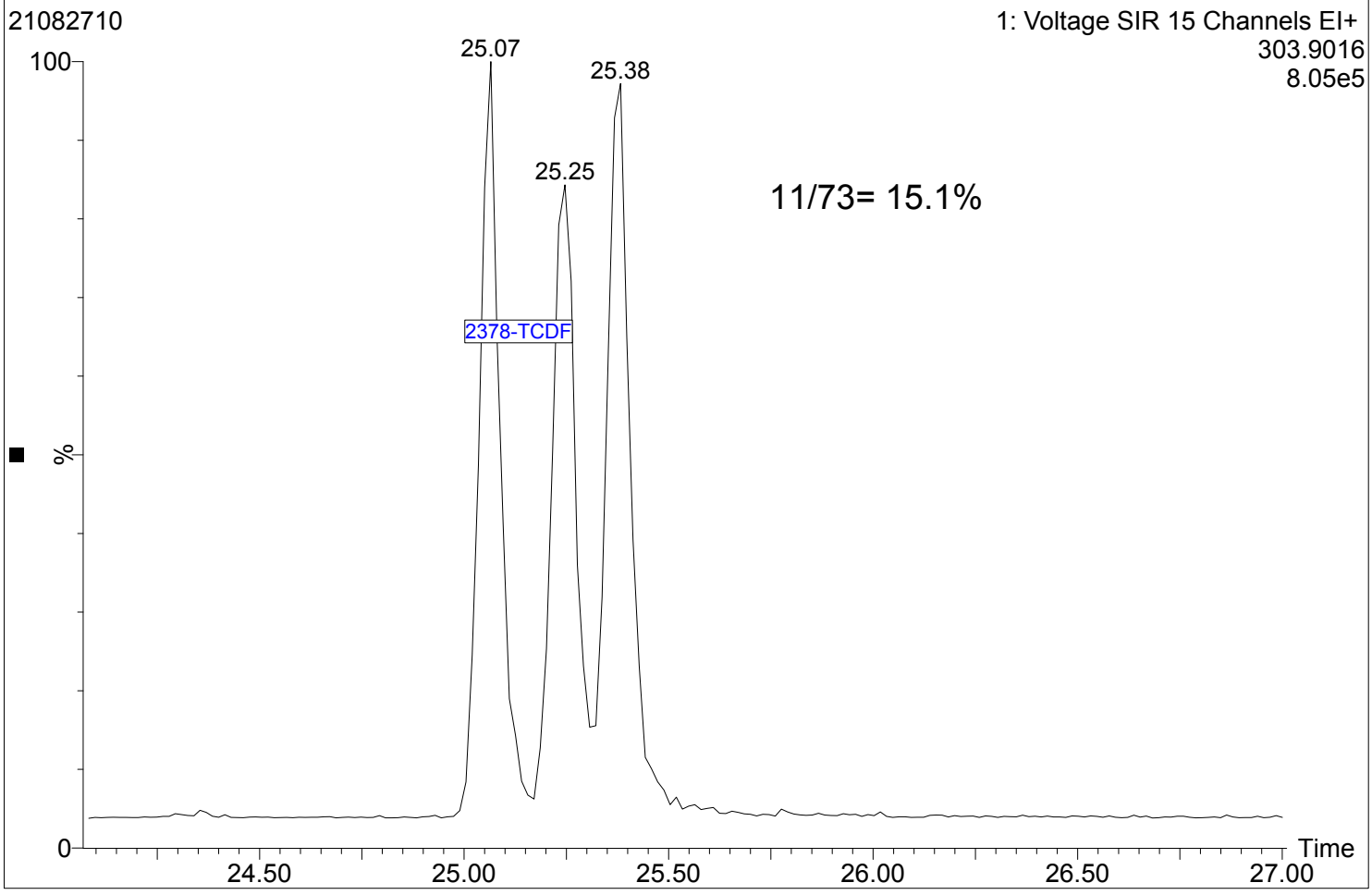
M 504.9696 R 13297



M 516.9697 R 13335




21082710
1: Voltage SIR 15 Channels EI+
319.8965
5.07e5
100
%
0
25.88
26.02
12/85= 14.1%
2378-TCDD
24.50
25.00
25.50
26.00
26.50
27.00


21082710
1: Voltage SIR 15 Channels EI+
303.9016
8.05e5
100
%
0
25.07
25.38
25.25
11/73= 15.1%
2378-TCDF
Time
24.50
25.00
25.50
26.00
26.50
27.00

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CONTINUING CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Instrument ID:	AUTOSPEC01	Calibration:	EH00030
Lab File ID:	21082720	Calibration Date:	08/11/2021
Sequence:	SJH0365	Injection Date:	08/27/21
Lab Sample ID:	SJH0365-CCV2	Injection Time:	20:25
Sequence Name:	CS3L9		

		CONC. (ng/mL)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
2,3,7,8-TCDF	A	10.000	9.17	1.1075930	1.0157040		-8.3	+/-16
2,3,7,8-TCDD	A	10.000	10.6	0.9202875	0.9727087		5.7	+/-22
1,2,3,7,8-PeCDF	A	50.000	45.1	1.0148670	0.9153155		-9.8	+/-18
2,3,4,7,8-PeCDF	A	50.000	46.7	1.1255490	1.0520490		-6.5	+/-18
1,2,3,7,8-PeCDD	A	50.000	54.8	0.9953229	1.0908720		9.6	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	50.1	1.0168930	1.0187660		0.2	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	48.6	1.0368310	1.0078790		-2.8	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	48.5	1.0524660	1.0202790		-3.1	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	47.6	1.0301540	0.9806076		-4.8	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	46.8	1.0273630	0.9609290		-6.5	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	47.4	1.0089800	0.9559347		-5.3	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	50.4	0.9504865	0.9572348		0.7	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	47.4	1.3273500	1.2586340		-5.2	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	49.1	1.2833380	1.2606740		-1.8	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	55.6	1.0680880	1.1882670		11.3	+/-14
OCDF	A	100.00	92.1	1.4469010	1.3325430		-7.9	+/-37
OCDD	A	100.00	100	1.1808230	1.1816530		0.07	+/-21
13C12-2,3,7,8-TCDF	A	100.00	107	1.4265830	1.5237082		6.8	+/-29
13C12-2,3,7,8-TCDD	A	100.00	103	1.1164910	1.1551793		3.5	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	111	1.2973130	1.4411453		11.1	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	110	1.2364800	1.3599408		10.0	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	112	0.7319833	0.8224854		12.4	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	86.0	1.2424560	1.0686029		-14.0	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	80.7	1.3434760	1.0838630		-19.3	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	84.0	1.2148550	1.0202552		-16.0	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	90.0	1.0076370	0.9068775		-10.0	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	97.1	0.9598233	0.9315172		-2.9	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	91.2	1.0413850	0.9501564		-8.8	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	101	0.9264704	0.9329054		0.7	+/-22
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	104	0.7579160	0.7900494		4.2	+/-23
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	106	0.6324476	0.6698760		5.9	+/-28
13C12-OCDD	A	200.00	253	0.5037432	0.6381025		26.7	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	10.1	1.0835930	1.0899837		0.6	

* Values outside of QC limits

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:44:05 Pacific Daylight Time

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: CS3L9, Name: 21082720, Date: 27-Aug-2021, Time: 20:25:31, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
2378-TCDF	25.231	1.001	3.704e4	4.800e4	1.108	0.772	0.770	1193	949	5.46e5	7.16e5	458.0	754.9	NO	bb	bb	9.170
12378-PeCDF	29.391	1.000	2.192e5	1.432e5	1.015	1.530	1.550	1453	1749	3.17e6	2.05e6	2178.6	1170.4	NO	bb	bb	45.095
23478-PeCDF	30.740	1.001	2.358e5	1.573e5	1.126	1.499	1.550	1453	1749	3.51e6	2.33e6	2416.5	1331.5	NO	bb	bb	46.735
123478-HxCDF	34.405	1.001	1.818e5	1.494e5	1.017	1.217	1.240	1576	1539	2.74e6	2.28e6	1739.7	1480.4	NO	bd	bd	50.092
234678-HxCDF	35.419	1.000	1.748e5	1.419e5	1.052	1.232	1.240	1576	1539	2.77e6	2.21e6	1758.3	1433.1	NO	bb	bb	48.471
123678-HxCDF	34.539	1.001	1.834e5	1.490e5	1.037	1.231	1.240	1576	1539	2.78e6	2.29e6	1763.8	1487.9	NO	db	db	48.604
123789-HxCDF	36.455	1.000	1.494e5	1.212e5	1.030	1.233	1.240	1576	1539	2.37e6	1.93e6	1504.4	1256.4	NO	bb	bb	47.595
1234678-HpCDF	38.338	1.000	1.836e5	1.737e5	1.327	1.057	1.050	1601	2367	3.03e6	2.94e6	1894.1	1242.4	NO	bb	bb	47.412
1234789-HpCDF	40.510	1.000	1.582e5	1.449e5	1.283	1.092	1.050	1601	2367	2.29e6	2.20e6	1427.5	930.7	NO	bd	bb	49.117
OCDF	44.637	1.005	2.436e5	2.738e5	1.447	0.890	0.890	1879	2126	3.00e6	3.39e6	1595.4	1595.9	NO	bb	bb	92.096
2378-TCDD	25.881	1.001	2.785e4	3.389e4	0.920	0.822	0.770	1348	1198	3.98e5	4.62e5	295.5	386.0	NO	bb	bb	10.570
12378-PeCDD	30.996	1.001	1.526e5	9.394e4	0.995	1.624	1.550	1599	905	2.22e6	1.36e6	1387.6	1500.4	NO	bb	bb	54.800
123478-HxCDD	35.530	1.000	1.500e5	1.224e5	1.027	1.226	1.240	2340	1394	2.41e6	1.95e6	1031.8	1396.0	NO	bd	bd	46.767
123678-HxCDD	35.653	1.000	1.523e5	1.240e5	1.009	1.228	1.240	2340	1394	2.44e6	2.00e6	1044.9	1432.7	NO	db	db	47.371
123789-HxCDD	36.042	1.011	1.501e5	1.239e5	0.950	1.211	1.240	2340	1394	2.43e6	1.94e6	1039.3	1390.6	NO	bb	bd	50.355
1234678-HpCDD	39.797	1.000	1.259e5	1.163e5	1.068	1.082	1.050	1168	1127	1.98e6	1.84e6	1691.3	1628.5	NO	bb	bb	55.626
OCDD	44.426	1.000	2.160e5	2.428e5	1.181	0.890	0.890	1850	1495	2.70e6	3.05e6	1460.7	2042.7	NO	bb	bb	100.070
13C-2378-TCDF	25.216	1.007	3.767e5	4.605e5	1.427	0.818	0.770	1932	1334	5.48e6	6.71e6	2836.7	5026.9	NO	bb	bb	106.808
13C-12378-PeCDF	29.380	1.174	4.911e5	3.007e5	1.297	1.633	1.550	1532	1984	7.09e6	4.40e6	4627.9	2215.4	NO	bd	bb	111.087
13C-23478-PeCDF	30.717	1.227	4.588e5	2.884e5	1.236	1.591	1.550	1532	1984	6.89e6	4.30e6	4499.7	2167.7	NO	bb	bb	109.985
13C-123478-HxCDF	34.382	0.954	2.230e5	4.272e5	1.242	0.522	0.510	1635	2395	3.43e6	6.54e6	2099.9	2731.8	NO	bd	bd	86.007
13C-123678-HxCDF	34.516	0.958	2.256e5	4.339e5	1.343	0.520	0.510	1635	2395	3.40e6	6.48e6	2080.9	2705.9	NO	db	db	80.676
13C-234678-HxCDF	35.408	0.983	2.105e5	4.104e5	1.215	0.513	0.510	1635	2395	3.33e6	6.42e6	2036.3	2678.3	NO	bb	bb	83.982
13C-123789-HxCDF	36.444	1.011	1.900e5	3.618e5	1.008	0.525	0.510	1635	2395	2.94e6	5.62e6	1799.3	2344.6	NO	bb	bb	90.000
13C-1234678-HpCDF	38.326	1.064	1.775e5	3.901e5	0.926	0.455	0.440	1660	1519	2.93e6	6.41e6	1766.3	4221.2	NO	bb	bb	100.695
13C-1234789-HpCDF	40.499	1.124	1.513e5	3.294e5	0.758	0.459	0.440	1660	1519	2.26e6	4.94e6	1359.1	3249.6	NO	bb	bb	104.240
13C-1234-TCDD	25.035	0.000	2.375e5	3.120e5	1.000	0.761	0.770	2596	1356	3.65e6	4.76e6	1406.1	3513.6	NO	bb	bb	100.000
13C-2378-TCDD	25.851	1.033	2.714e5	3.633e5	1.116	0.747	0.770	2596	1356	3.90e6	5.31e6	1501.5	3915.2	NO	bb	bb	103.465
13C-12378-PeCDD	30.973	1.237	2.756e5	1.763e5	0.732	1.563	1.550	897	784	4.17e6	2.63e6	4654.3	3357.1	NO	bb	bb	112.364
13C-123478-HxCDD	35.519	0.986	3.183e5	2.485e5	0.960	1.281	1.240	1321	1157	5.11e6	4.19e6	3868.1	3623.0	NO	bd	bd	97.051
13C-123678-HxCDD	35.641	0.989	3.195e5	2.586e5	1.041	1.235	1.240	1321	1157	5.22e6	4.08e6	3950.8	3521.9	NO	db	db	91.240
13C-1234678-HpCDD	39.786	1.104	2.085e5	1.991e5	0.632	1.048	1.050	1564	1001	3.22e6	3.14e6	2059.0	3136.8	NO	bb	bb	105.918
13C-OCDD	44.408	1.232	3.729e5	4.037e5	0.504	0.924	0.890	1106	1650	4.78e6	5.20e6	4320.5	3152.6	NO	bb	bb	253.344
13C-123789-HxCDD	36.031	0.000	3.357e5	2.727e5	1.000	1.231	1.240	1321	1157	5.45e6	4.39e6	4126.3	3796.9	NO	bb	bb	100.000
37CL-2378-TCDD	25.881	1.034	5.989e4		1.084			1144		8.12e5		709.7			bb		10.059

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 13:44:05 Pacific Daylight Time

ID: CS3L9, Name: 21082720, Date: 27-Aug-2021, Time: 20:25:31, Conditions: AUTOSPEC01, User: pk

Compound	RT	RRT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	Noise 1	Noise 2	Height 1	Height 2	S/N 1	S/N 2	EMPC	Int.1	Int.2	pg
1368-TCDF	21.724	0.862	4.347e4	5.795e4	1.425	0.750	0.770	1193	949	6.29e5	8.33e5	527.1	878.0	NO	bb	bb	8.500
1289-TCDF	26.728	1.060	3.526e4	4.515e4	1.043	0.781	0.770	1193	949	4.97e5	6.41e5	416.9	675.5	NO	db	db	9.208
13468-PECDF	26.592	0.905	2.868e5	1.897e5	1.376	1.512	1.550	1000	911	4.25e6	2.77e6	4254.6	3037.8	NO	bb	bb	43.728
12389-PECDF	31.764	1.081	2.249e5	1.462e5	1.000	1.538	1.550	1453	1749	3.12e6	2.11e6	2148.3	1208.7	NO	bb	bb	46.892
123468-HXCDF	32.711	0.951	1.824e5	1.511e5	1.087	1.207	1.240	1576	1539	2.63e6	2.17e6	1669.6	1407.5	NO	bb	bb	47.197
1368-TCDD	23.009	0.890	2.711e4	3.432e4	0.923	0.790	0.770	1348	1198	3.91e5	4.96e5	290.2	414.5	NO	bb	bb	10.483
1289-TCDD	26.471	1.024	2.390e4	3.033e4	0.794	0.788	0.770	1348	1198	3.31e5	4.19e5	245.3	349.9	NO	bb	bb	10.760
12479-PECDD	28.266	0.913	2.622e5	1.628e5	1.843	1.611	1.550	1599	905	2.52e6	1.56e6	1577.4	1728.9	NO	bb	bb	51.023
12389-PECDD	31.386	1.013	1.770e5	1.127e5	1.154	1.571	1.550	1599	905	2.57e6	1.63e6	1606.7	1807.0	NO	bb	bb	55.572
124679-HXCDD	33.502	0.943	1.586e5	1.309e5	1.125	1.212	1.240	2340	1394	2.35e6	2.00e6	1005.7	1433.8	NO	bb	bb	45.398
1234679-HPCDD	38.783	0.975	1.361e5	1.246e5	1.211	1.092	1.050	1168	1127	2.16e6	2.01e6	1849.6	1780.2	NO	bb	bb	52.829
Total-tetrafurans			1.158e5		1.192			1193		1.67e6							26.879
Total-penta1			2.868e5					1000		4.25e6							43.728
Total-pentafurans			7.174e5		1.047			1453		1.03e7							146.442
Total-hexafurans			8.718e5		1.045			1576		1.33e7							241.959
Total-heptafurans			3.419e5		1.305			1601		5.32e6							96.581
Total-Furans			2.577e6		1.158			1193		3.79e7							647.685
Total-tetradioxins			1.345e5		0.879			1348		1.74e6							53.900
Total-pentadioxins			5.925e5		1.331			1599		7.32e6							161.580
Total-hexadioxins			6.110e5		1.028			2340		9.64e6							189.891
Total-heptadioxins			2.620e5		1.140			1168		4.14e6							108.455
Total-Dioxins			1.816e6		1.092			1348		2.55e7							613.896
Total-TEQ			4.393e6					1348		6.34e7							1261.581
FUNCTION1 PFK			1.809e6					547607		3.27e7							
FUNCTION2 PFK			1.765e6					356910		2.92e7							0.000
FUNCTION3 PFK			4.260e5					428108		1.30e7							0.000
FUNCTION4 PFK			2.617e4					336042		1.02e6							
FUNCTION5 PFK			4.508e4					198805		1.56e6							
FUNCTION1 HXCD...			1.227e3					738		1.55e4							0.000
FUNCTION1 HPCD...			1.295e3					787		2.23e4							0.000
FUNCTION2 HPCD...			4.736e2					697		6.97e3							0.000
FUNCTION3 OCDPE			7.125e2					678		1.25e4							0.000
FUNCTION4 NCDPE			2.305e2					810		4.79e3							0.000
FUNCTION5 DCDPE			1.625e2					657		2.73e3							0.000

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
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Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

ID: CS3L9, Name: 21082720, Date: 27-Aug-2021, Time: 20:25:31, Conditions: AUTOSPEC01, User: pk

TF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	26.73	3.526e4	4.515e4	1.043	0.78	0.77	416.9	YES	NO	db	db	9.208
2	2378-TCDF	25.23	3.704e4	4.800e4	1.108	0.77	0.77	458.0	YES	NO	bb	bb	9.170
3	1368-TCDF	21.72	4.347e4	5.795e4	1.425	0.75	0.77	527.1	YES	NO	bb	bb	8.500

PP

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	13468-PECDF	26.59	2.868e5	1.897e5	1.376	1.51	1.55	4254.6	YES	NO	bb	bb	43.728

PF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	23478-PeCDF	30.74	2.358e5	1.573e5	1.126	1.50	1.55	2416.5	YES	NO	bb	bb	46.735
2	12378-PeCDF	29.39	2.192e5	1.432e5	1.015	1.53	1.55	2178.6	YES	NO	bb	bb	45.095
3	Total-pentafurans	28.25	3.756e4	2.461e4	1.047	1.53	1.55	379.3	YES	NO	bd	bb	7.719
4	12389-PECDF	31.76	2.249e5	1.462e5	1.000	1.54	1.55	2148.3	YES	NO	bb	bb	46.892

HF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123678-HxCDF	34.54	1.834e5	1.490e5	1.037	1.23	1.24	1763.8	YES	NO	db	db	48.604
2	123478-HxCDF	34.40	1.818e5	1.494e5	1.017	1.22	1.24	1739.7	YES	NO	bd	bd	50.092
3	123468-HXCDF	32.71	1.824e5	1.511e5	1.087	1.21	1.24	1669.6	YES	NO	bb	bb	47.197
4	123789-HxCDF	36.45	1.494e5	1.212e5	1.030	1.23	1.24	1504.4	YES	NO	bb	bb	47.595
5	234678-HxCDF	35.42	1.748e5	1.419e5	1.052	1.23	1.24	1758.3	YES	NO	bb	bb	48.471

HPF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234789-HpCDF	40.51	1.582e5	1.449e5	1.283	1.09	1.05	1427.5	YES	NO	bd	bb	49.117
2	1234678-HpCDF	38.34	1.836e5	1.737e5	1.327	1.06	1.05	1894.1	YES	NO	bb	bb	47.412
3	Total-heptafurans	40.88	1.880e2	1.724e2	1.305	1.09	1.05	2.5	NO	NO	dd	bb	0.053

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Furans,TF,PP,PF,HF,HPF,OF

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	26.73	3.526e4	4.515e4	1.043	0.78	0.77	416.9	YES	NO	db	db	9.208
2	2378-TCDF	25.23	3.704e4	4.800e4	1.108	0.77	0.77	458.0	YES	NO	bb	bb	9.170
3	1368-TCDF	21.72	4.347e4	5.795e4	1.425	0.75	0.77	527.1	YES	NO	bb	bb	8.500
4	23478-PeCDF	30.74	2.358e5	1.573e5	1.126	1.50	1.55	2416.5	YES	NO	bb	bb	46.735
5	12378-PeCDF	29.39	2.192e5	1.432e5	1.015	1.53	1.55	2178.6	YES	NO	bb	bb	45.095
6	Total-pentafurans	28.25	3.756e4	2.461e4	1.047	1.53	1.55	379.3	YES	NO	bd	bb	7.719
7	123678-HxCDF	34.54	1.834e5	1.490e5	1.037	1.23	1.24	1763.8	YES	NO	db	db	48.604
8	123478-HxCDF	34.40	1.818e5	1.494e5	1.017	1.22	1.24	1739.7	YES	NO	bd	bd	50.092
9	123468-HXCDF	32.71	1.824e5	1.511e5	1.087	1.21	1.24	1669.6	YES	NO	bb	bb	47.197
10	12389-PECDF	31.76	2.249e5	1.462e5	1.000	1.54	1.55	2148.3	YES	NO	bb	bb	46.892
11	123789-HxCDF	36.45	1.494e5	1.212e5	1.030	1.23	1.24	1504.4	YES	NO	bb	bb	47.595
12	234678-HxCDF	35.42	1.748e5	1.419e5	1.052	1.23	1.24	1758.3	YES	NO	bb	bb	48.471
13	1234789-HpCDF	40.51	1.582e5	1.449e5	1.283	1.09	1.05	1427.5	YES	NO	bd	bb	49.117
14	1234678-HpCDF	38.34	1.836e5	1.737e5	1.327	1.06	1.05	1894.1	YES	NO	bb	bb	47.412
15	Total-heptafurans	40.88	1.880e2	1.724e2	1.305	1.09	1.05	2.5	NO	NO	dd	bb	0.053
16	OCDF	44.64	2.436e5	2.738e5	1.447	0.89	0.89	1595.4	YES	NO	bb	bb	92.096
17	13468-PECDF	26.59	2.868e5	1.897e5	1.376	1.51	1.55	4254.6	YES	NO	bb	bb	43.728

TD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDD	26.47	2.390e4	3.033e4	0.794	0.79	0.77	245.3	YES	NO	bb	bb	10.760
2	2378-TCDD	25.88	2.785e4	3.389e4	0.920	0.82	0.77	295.5	YES	NO	bb	bb	10.570
3	Total-tetradioxins	25.55	4.235e4	5.187e4	0.879	0.82	0.77	312.3	YES	NO	bb	bb	16.885
4	Total-tetradioxins	25.05	1.328e4	1.575e4	0.879	0.84	0.77	147.8	YES	NO	bb	bb	5.202
5	1368-TCDD	23.01	2.711e4	3.432e4	0.923	0.79	0.77	290.2	YES	NO	bb	bb	10.483

PD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	12389-PECDD	31.39	1.770e5	1.127e5	1.154	1.57	1.55	1606.7	YES	NO	bb	bb	55.572
2	12378-PeCDD	31.00	1.526e5	9.394e4	0.995	1.62	1.55	1387.6	YES	NO	bb	bb	54.800
3	Total-pentadioxins	30.32	6.903e2	4.215e2	1.331	1.64	1.55	7.7	YES	NO	bb	bb	0.185
4	12479-PECDD	28.27	2.622e5	1.628e5	1.843	1.61	1.55	1577.4	YES	NO	bb	bb	51.023

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HD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	123789-HxCDD	36.04	1.501e5	1.239e5	0.950	1.21	1.24	1039.3	YES	NO	bb	bd	50.355
2	123678-HxCDD	35.65	1.523e5	1.240e5	1.009	1.23	1.24	1044.9	YES	NO	db	db	47.371
3	123478-HxCDD	35.53	1.500e5	1.224e5	1.027	1.23	1.24	1031.8	YES	NO	bd	bd	46.767
4	124679-HXCDD	33.50	1.586e5	1.309e5	1.125	1.21	1.24	1005.7	YES	NO	bb	bb	45.398

HPD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1234678-HpCDD	39.80	1.259e5	1.163e5	1.068	1.08	1.05	1691.3	YES	NO	bb	bb	55.626
2	1234679-HPCDD	38.78	1.361e5	1.246e5	1.211	1.09	1.05	1849.6	YES	NO	bb	bb	52.829

Dioxins,TD,PD,HD,HPD,OD

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDD	26.47	2.390e4	3.033e4	0.794	0.79	0.77	245.3	YES	NO	bb	bb	10.760
2	2378-TCDD	25.88	2.785e4	3.389e4	0.920	0.82	0.77	295.5	YES	NO	bb	bb	10.570
3	Total-tetradioxins	25.55	4.235e4	5.187e4	0.879	0.82	0.77	312.3	YES	NO	bb	bb	16.885
4	Total-tetradioxins	25.05	1.328e4	1.575e4	0.879	0.84	0.77	147.8	YES	NO	bb	bb	5.202
5	1368-TCDD	23.01	2.711e4	3.432e4	0.923	0.79	0.77	290.2	YES	NO	bb	bb	10.483
6	12389-PECDD	31.39	1.770e5	1.127e5	1.154	1.57	1.55	1606.7	YES	NO	bb	bb	55.572
7	12378-PeCDD	31.00	1.526e5	9.394e4	0.995	1.62	1.55	1387.6	YES	NO	bb	bb	54.800
8	Total-pentadioxins	30.32	6.903e2	4.215e2	1.331	1.64	1.55	7.7	YES	NO	bb	bb	0.185
9	12479-PECDD	28.27	2.622e5	1.628e5	1.843	1.61	1.55	1577.4	YES	NO	bb	bb	51.023
10	123789-HxCDD	36.04	1.501e5	1.239e5	0.950	1.21	1.24	1039.3	YES	NO	bb	bd	50.355
11	123678-HxCDD	35.65	1.523e5	1.240e5	1.009	1.23	1.24	1044.9	YES	NO	db	db	47.371
12	123478-HxCDD	35.53	1.500e5	1.224e5	1.027	1.23	1.24	1031.8	YES	NO	bd	bd	46.767
13	124679-HXCDD	33.50	1.586e5	1.309e5	1.125	1.21	1.24	1005.7	YES	NO	bb	bb	45.398
14	OCDD	44.43	2.160e5	2.428e5	1.181	0.89	0.89	1460.7	YES	NO	bb	bb	100.070
15	1234678-HpCDD	39.80	1.259e5	1.163e5	1.068	1.08	1.05	1691.3	YES	NO	bb	bb	55.626
16	1234679-HPCDD	38.78	1.361e5	1.246e5	1.211	1.09	1.05	1849.6	YES	NO	bb	bb	52.829

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ID: CS3L9, Name: 21082720, Date: 27-Aug-2021, Time: 20:25:31, Conditions: AUTOSPEC01, User: pk

TotalTEQ,Furans,Dioxins

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	1289-TCDF	26.73	3.526e4	4.515e4	1.043	0.78	0.77	416.9	YES	NO	db	db	9.208
2	2378-TCDF	25.23	3.704e4	4.800e4	1.108	0.77	0.77	458.0	YES	NO	bb	bb	9.170
3	1368-TCDF	21.72	4.347e4	5.795e4	1.425	0.75	0.77	527.1	YES	NO	bb	bb	8.500
4	23478-PeCDF	30.74	2.358e5	1.573e5	1.126	1.50	1.55	2416.5	YES	NO	bb	bb	46.735
5	12378-PeCDF	29.39	2.192e5	1.432e5	1.015	1.53	1.55	2178.6	YES	NO	bb	bb	45.095
6	Total-pentafurans	28.25	3.756e4	2.461e4	1.047	1.53	1.55	379.3	YES	NO	bd	bb	7.719
7	123678-HxCDF	34.54	1.834e5	1.490e5	1.037	1.23	1.24	1763.8	YES	NO	db	db	48.604
8	123478-HxCDF	34.40	1.818e5	1.494e5	1.017	1.22	1.24	1739.7	YES	NO	bd	bd	50.092
9	123468-HXCDF	32.71	1.824e5	1.511e5	1.087	1.21	1.24	1669.6	YES	NO	bb	bb	47.197
10	12389-PECDF	31.76	2.249e5	1.462e5	1.000	1.54	1.55	2148.3	YES	NO	bb	bb	46.892
11	123789-HxCDF	36.45	1.494e5	1.212e5	1.030	1.23	1.24	1504.4	YES	NO	bb	bb	47.595
12	234678-HxCDF	35.42	1.748e5	1.419e5	1.052	1.23	1.24	1758.3	YES	NO	bb	bb	48.471
13	1234789-HpCDF	40.51	1.582e5	1.449e5	1.283	1.09	1.05	1427.5	YES	NO	bd	bb	49.117
14	1234678-HpCDF	38.34	1.836e5	1.737e5	1.327	1.06	1.05	1894.1	YES	NO	bb	bb	47.412
15	Total-heptafurans	40.88	1.880e2	1.724e2	1.305	1.09	1.05	2.5	NO	NO	dd	bb	0.053
16	OCDF	44.64	2.436e5	2.738e5	1.447	0.89	0.89	1595.4	YES	NO	bb	bb	92.096
17	13468-PECDF	26.59	2.868e5	1.897e5	1.376	1.51	1.55	4254.6	YES	NO	bb	bb	43.728
18	1289-TCDD	26.47	2.390e4	3.033e4	0.794	0.79	0.77	245.3	YES	NO	bb	bb	10.760
19	2378-TCDD	25.88	2.785e4	3.389e4	0.920	0.82	0.77	295.5	YES	NO	bb	bb	10.570
20	Total-tetradioxins	25.55	4.235e4	5.187e4	0.879	0.82	0.77	312.3	YES	NO	bb	bb	16.885
21	Total-tetradioxins	25.05	1.328e4	1.575e4	0.879	0.84	0.77	147.8	YES	NO	bb	bb	5.202
22	1368-TCDD	23.01	2.711e4	3.432e4	0.923	0.79	0.77	290.2	YES	NO	bb	bb	10.483
23	12389-PECDD	31.39	1.770e5	1.127e5	1.154	1.57	1.55	1606.7	YES	NO	bb	bb	55.572
24	12378-PeCDD	31.00	1.526e5	9.394e4	0.995	1.62	1.55	1387.6	YES	NO	bb	bb	54.800
25	Total-pentadioxins	30.32	6.903e2	4.215e2	1.331	1.64	1.55	7.7	YES	NO	bb	bb	0.185
26	12479-PECDD	28.27	2.622e5	1.628e5	1.843	1.61	1.55	1577.4	YES	NO	bb	bb	51.023
27	123789-HxCDD	36.04	1.501e5	1.239e5	0.950	1.21	1.24	1039.3	YES	NO	bb	bd	50.355
28	123678-HxCDD	35.65	1.523e5	1.240e5	1.009	1.23	1.24	1044.9	YES	NO	db	db	47.371
29	123478-HxCDD	35.53	1.500e5	1.224e5	1.027	1.23	1.24	1031.8	YES	NO	bd	bd	46.767
30	124679-HXCDD	33.50	1.586e5	1.309e5	1.125	1.21	1.24	1005.7	YES	NO	bb	bb	45.398
31	OCDD	44.43	2.160e5	2.428e5	1.181	0.89	0.89	1460.7	YES	NO	bb	bb	100.070
32	1234678-HpCDD	39.80	1.259e5	1.163e5	1.068	1.08	1.05	1691.3	YES	NO	bb	bb	55.626
33	1234679-HPCDD	38.78	1.361e5	1.246e5	1.211	1.09	1.05	1849.6	YES	NO	bb	bb	52.829

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
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ID: CS3L9, Name: 21082720, Date: 27-Aug-2021, Time: 20:25:31, Conditions: AUTOSPEC01, User: pk

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 PFK	21.25	5.794e4					2.4	NO		dd		
2	FUNCTION1 PFK	21.16	9.870e4					2.2	NO		bd		
3	FUNCTION1 PFK	22.75	2.508e3					0.3	NO		bb		
4	FUNCTION1 PFK	22.60	3.435e4					1.3	NO		bb		
5	FUNCTION1 PFK	22.49	4.843e4					1.8	NO		db		
6	FUNCTION1 PFK	22.37	1.625e5					2.0	NO		bd		
7	FUNCTION1 PFK	22.22	3.077e4					1.4	NO		db		
8	FUNCTION1 PFK	22.18	3.293e4					1.3	NO		dd		
9	FUNCTION1 PFK	22.09	4.522e4					1.2	NO		dd		
10	FUNCTION1 PFK	22.03	1.190e4					0.6	NO		bd		
11	FUNCTION1 PFK	21.94	5.831e3					0.4	NO		bb		
12	FUNCTION1 PFK	21.81	2.349e4					0.9	NO		bb		
13	FUNCTION1 PFK	21.72	5.956e3					0.7	NO		bb		
14	FUNCTION1 PFK	21.66	3.096e4					1.5	NO		db		
15	FUNCTION1 PFK	21.60	3.629e4					1.4	NO		dd		
16	FUNCTION1 PFK	21.56	2.420e4					1.3	NO		bd		
17	FUNCTION1 PFK	21.47	1.266e5					3.4	YES		db		
18	FUNCTION1 PFK	21.33	1.679e5					3.2	YES		dd		
19	FUNCTION1 PFK	25.05	8.714e3					0.6	NO		bb		
20	FUNCTION1 PFK	24.90	7.215e3					0.5	NO		bb		
21	FUNCTION1 PFK	24.81	1.892e4					1.0	NO		db		
22	FUNCTION1 PFK	24.76	2.839e4					1.2	NO		bd		
23	FUNCTION1 PFK	24.67	3.260e4					1.3	NO		db		
24	FUNCTION1 PFK	24.61	1.197e4					0.9	NO		bd		
25	FUNCTION1 PFK	24.55	4.599e3					0.6	NO		bb		
26	FUNCTION1 PFK	24.29	8.806e3					0.6	NO		bb		
27	FUNCTION1 PFK	24.23	2.220e3					0.3	NO		bb		
28	FUNCTION1 PFK	24.01	1.172e5					1.9	NO		bb		
29	FUNCTION1 PFK	23.92	4.042e4					1.4	NO		bb		
30	FUNCTION1 PFK	23.55	4.903e4					2.0	NO		bb		
31	FUNCTION1 PFK	23.49	4.849e3					0.6	NO		bb		
32	FUNCTION1 PFK	23.42	1.094e4					0.7	NO		bb		
33	FUNCTION1 PFK	23.27	2.710e3					0.3	NO		db		
34	FUNCTION1 PFK	23.19	1.572e4					0.7	NO		bd		
35	FUNCTION1 PFK	27.24	2.271e4					0.9	NO		db		
36	FUNCTION1 PFK	27.17	3.176e4					1.5	NO		bd		
37	FUNCTION1 PFK	27.09	1.971e4					1.0	NO		bb		

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ID: CS3L9, Name: 21082720, Date: 27-Aug-2021, Time: 20:25:31, Conditions: AUTOSPEC01, User: pk

PFK1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION1 PFK	26.77	2.694e4					0.7	NO		bb		
39	FUNCTION1 PFK	26.68	1.263e4					0.7	NO		bb		
40	FUNCTION1 PFK	26.49	3.697e4					0.8	NO		bb		
41	FUNCTION1 PFK	26.29	1.924e4					0.9	NO		db		
42	FUNCTION1 PFK	26.23	1.808e4					0.9	NO		bd		
43	FUNCTION1 PFK	26.14	2.819e4					1.5	NO		db		
44	FUNCTION1 PFK	26.12	2.417e4					1.5	NO		bd		
45	FUNCTION1 PFK	25.87	8.870e4					1.9	NO		bb		
46	FUNCTION1 PFK	25.73	3.556e4					1.0	NO		bb		
47	FUNCTION1 PFK	25.44	6.713e4					1.1	NO		db		
48	FUNCTION1 PFK	25.34	2.102e4					1.2	NO		bd		
49	FUNCTION1 PFK	25.26	1.760e4					0.8	NO		bb		
50	FUNCTION1 PFK	25.17	1.948e4					1.0	NO		bb		
51	FUNCTION1 PFK	27.36	8.080e3					0.5	NO		bb		

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PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 PFK	28.96	2.377e4					1.8	NO		bd		0.000
2	FUNCTION2 PFK	28.86	3.340e4					1.7	NO		db		0.000
3	FUNCTION2 PFK	28.81	7.528e4					2.2	NO		bd		0.000
4	FUNCTION2 PFK	28.67	1.555e4					1.0	NO		db		0.000
5	FUNCTION2 PFK	28.61	1.719e4					1.4	NO		bd		0.000
6	FUNCTION2 PFK	28.46	1.241e3					0.3	NO		bb		0.000
7	FUNCTION2 PFK	28.41	3.444e3					0.6	NO		bb		0.000
8	FUNCTION2 PFK	28.21	4.327e4					1.9	NO		bb		0.000
9	FUNCTION2 PFK	27.89	3.796e4					2.1	NO		db		0.000
10	FUNCTION2 PFK	27.84	2.349e4					2.3	NO		dd		0.000
11	FUNCTION2 PFK	27.81	4.547e4					3.3	YES		dd		0.000
12	FUNCTION2 PFK	27.76	6.263e4					4.5	YES		dd		0.000
13	FUNCTION2 PFK	27.72	3.634e5					5.1	YES		dd		0.000
14	FUNCTION2 PFK	27.53	3.139e5					7.0	YES		bd		0.000
15	FUNCTION2 PFK	30.72	1.091e4					1.2	NO		db		0.000
16	FUNCTION2 PFK	30.64	1.919e4					1.5	NO		dd		0.000
17	FUNCTION2 PFK	30.59	1.963e4					1.3	NO		bd		0.000
18	FUNCTION2 PFK	30.28	1.122e4					0.9	NO		db		0.000
19	FUNCTION2 PFK	30.24	9.827e3					1.0	NO		dd		0.000
20	FUNCTION2 PFK	30.19	1.310e4					1.3	NO		bd		0.000
21	FUNCTION2 PFK	30.10	4.672e4					2.0	NO		db		0.000
22	FUNCTION2 PFK	30.04	1.510e4					1.5	NO		dd		0.000
23	FUNCTION2 PFK	30.00	2.669e4					2.0	NO		dd		0.000
24	FUNCTION2 PFK	29.92	2.724e4					1.5	NO		dd		0.000
25	FUNCTION2 PFK	29.85	3.199e4					1.4	NO		bd		0.000
26	FUNCTION2 PFK	29.36	1.059e4					1.1	NO		db		0.000
27	FUNCTION2 PFK	29.30	2.850e4					1.9	NO		bd		0.000
28	FUNCTION2 PFK	29.17	3.479e4					1.5	NO		db		0.000
29	FUNCTION2 PFK	29.09	6.300e3					0.8	NO		dd		0.000
30	FUNCTION2 PFK	29.03	3.385e4					1.9	NO		dd		0.000
31	FUNCTION2 PFK	32.13	2.924e4					1.4	NO		bb		0.000
32	FUNCTION2 PFK	31.96	1.691e4					1.6	NO		bb		0.000
33	FUNCTION2 PFK	31.90	5.923e4					2.8	NO		db		0.000
34	FUNCTION2 PFK	31.80	2.655e3					0.4	NO		bd		0.000
35	FUNCTION2 PFK	31.74	2.676e4					2.1	NO		db		0.000
36	FUNCTION2 PFK	31.71	1.492e4					1.5	NO		dd		0.000
37	FUNCTION2 PFK	31.65	3.931e4					2.1	NO		dd		0.000

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ID: CS3L9, Name: 21082720, Date: 27-Aug-2021, Time: 20:25:31, Conditions: AUTOSPEC01, User: pk

PFK2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
38	FUNCTION2 PFK	31.60	2.020e4					1.6	NO		dd		0.000
39	FUNCTION2 PFK	31.55	1.442e4					1.4	NO		dd		0.000
40	FUNCTION2 PFK	31.52	1.596e4					1.3	NO		dd		0.000
41	FUNCTION2 PFK	31.49	8.778e3					1.0	NO		bd		0.000
42	FUNCTION2 PFK	31.43	3.140e4					1.7	NO		db		0.000
43	FUNCTION2 PFK	31.33	4.276e4					1.7	NO		bd		0.000
44	FUNCTION2 PFK	31.14	2.106e4					1.4	NO		bb		0.000
45	FUNCTION2 PFK	30.96	7.488e3					0.8	NO		bb		0.000
46	FUNCTION2 PFK	30.83	7.926e3					1.0	NO		bb		0.000

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PFK3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 PFK	35.80	2.122e4					1.8	NO		bd		0.000
2	FUNCTION3 PFK	35.71	7.688e4					3.1	YES		bb		0.000
3	FUNCTION3 PFK	35.13	6.967e3					0.8	NO		bb		0.000
4	FUNCTION3 PFK	34.58	2.452e3					0.5	NO		bb		0.000
5	FUNCTION3 PFK	34.54	1.929e3					0.4	NO		bb		0.000
6	FUNCTION3 PFK	34.19	9.954e3					0.9	NO		bb		0.000
7	FUNCTION3 PFK	34.04	1.413e4					1.3	NO		bb		0.000
8	FUNCTION3 PFK	33.39	1.512e4					1.3	NO		bb		0.000
9	FUNCTION3 PFK	33.26	1.821e4					1.1	NO		bb		0.000
10	FUNCTION3 PFK	33.17	2.354e4					1.3	NO		bb		0.000
11	FUNCTION3 PFK	33.12	5.346e3					0.7	NO		bb		0.000
12	FUNCTION3 PFK	32.91	9.738e3					1.1	NO		db		0.000
13	FUNCTION3 PFK	32.85	6.968e3					0.7	NO		bd		0.000
14	FUNCTION3 PFK	32.71	4.093e4					1.3	NO		bb		0.000
15	FUNCTION3 PFK	32.42	4.910e4					2.5	NO		bb		0.000
16	FUNCTION3 PFK	37.25	1.114e4					1.3	NO		bb		0.000
17	FUNCTION3 PFK	37.06	2.023e3					0.4	NO		bb		0.000
18	FUNCTION3 PFK	36.94	1.870e4					1.1	NO		bb		0.000
19	FUNCTION3 PFK	36.69	1.372e4					1.4	NO		bb		0.000
20	FUNCTION3 PFK	36.58	2.926e3					0.6	NO		bb		0.000
21	FUNCTION3 PFK	36.21	1.513e4					1.5	NO		bb		0.000
22	FUNCTION3 PFK	36.15	1.848e4					1.2	NO		bb		0.000
23	FUNCTION3 PFK	36.08	8.442e3					1.0	NO		bb		0.000
24	FUNCTION3 PFK	35.95	1.615e4					1.6	NO		bb		0.000
25	FUNCTION3 PFK	35.84	1.683e4					1.4	NO		db		0.000

PFK4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 PFK	37.60	1.021e4					1.2	NO		bb		
2	FUNCTION4 PFK	37.55	1.596e4					1.8	NO		bb		

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PFK5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 PFK	42.50	1.415e3					0.8	NO		bb		
2	FUNCTION5 PFK	42.46	3.135e3					1.0	NO		bb		
3	FUNCTION5 PFK	44.09	1.974e4					2.0	NO		bb		
4	FUNCTION5 PFK	44.02	1.119e4					1.5	NO		bb		
5	FUNCTION5 PFK	43.90	4.578e3					1.2	NO		bb		
6	FUNCTION5 PFK	42.59	5.021e3					1.3	NO		bb		

ETHERS1

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HXCD...	26.70	1.039e2					3.2	YES		db		0.000
2	FUNCTION1 HXCD...	26.58	1.907e2					3.2	YES		dd		0.000
3	FUNCTION1 HXCD...	26.40	1.934e2					1.7	NO		dd		0.000
4	FUNCTION1 HXCD...	26.26	8.100e1					1.2	NO		bd		0.000
5	FUNCTION1 HXCD...	25.84	7.999e1					1.9	NO		bb		0.000
6	FUNCTION1 HXCD...	24.55	7.580e1					1.7	NO		db		0.000
7	FUNCTION1 HXCD...	24.48	1.231e2					2.4	NO		dd		0.000
8	FUNCTION1 HXCD...	24.37	9.073e1					2.1	NO		bd		0.000
9	FUNCTION1 HXCD...	23.10	8.728e1					0.9	NO		bb		0.000
10	FUNCTION1 HXCD...	21.45	2.014e2					2.6	NO		bb		0.000

ETHERS2

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION1 HPCD...	26.83	9.164e1					2.6	NO		bb		0.000
2	FUNCTION1 HPCD...	26.56	9.924e1					2.0	NO		db		0.000
3	FUNCTION1 HPCD...	26.44	7.992e1					2.0	NO		bd		0.000
4	FUNCTION1 HPCD...	25.03	7.214e1					1.5	NO		bb		0.000
5	FUNCTION1 HPCD...	23.76	8.570e1					2.0	NO		bb		0.000
6	FUNCTION1 HPCD...	23.13	8.723e1					2.6	NO		bb		0.000
7	FUNCTION1 HPCD...	22.86	7.051e1					2.1	NO		bb		0.000
8	FUNCTION1 HPCD...	22.71	1.853e2					3.9	YES		bb		0.000
9	FUNCTION1 HPCD...	22.31	8.840e1					3.3	YES		bb		0.000
10	FUNCTION1 HPCD...	21.44	2.317e2					2.8	NO		db		0.000
11	FUNCTION1 HPCD...	21.30	2.030e2					3.5	YES		bd		0.000

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ETHERS3

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION2 HPCD...	30.56	2.813e2					5.6	YES		bb		0.000
2	FUNCTION2 HPCD...	29.67	7.749e1					2.1	NO		bb		0.000
3	FUNCTION2 HPCD...	29.48	1.149e2					2.3	NO		bb		0.000

ETHERS4

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION3 OCDPE	36.03	1.190e2					2.7	NO		bb		0.000
2	FUNCTION3 OCDPE	35.63	9.879e1					3.3	YES		db		0.000
3	FUNCTION3 OCDPE	35.52	1.608e2					3.9	YES		bd		0.000
4	FUNCTION3 OCDPE	35.28	1.109e2					4.5	YES		bb		0.000
5	FUNCTION3 OCDPE	34.76	1.087e2					2.0	NO		bb		0.000
6	FUNCTION3 OCDPE	33.87	1.143e2					2.0	NO		bb		0.000

ETHERS5

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION4 NCDPE	40.52	7.169e1					2.8	NO		bb		0.000
2	FUNCTION4 NCDPE	40.25	8.849e1					1.9	NO		bb		0.000
3	FUNCTION4 NCDPE	38.95	7.034e1					1.2	NO		bb		0.000

ETHERS6

	Compound	RT	Ion1Area	Ion2Area	RRF	Ratio	Pred R	S/N 1	SNFlag	EMPC	Int.1	Int.2	pg
1	FUNCTION5 DCDPE	42.83	8.911e1					2.0	NO		bb		0.000
2	FUNCTION5 DCDPE	42.61	7.339e1					2.2	NO		bb		0.000

Method: T:\Autospec\Methods\Dioxin210726.mdb 27 Aug 2021 09:51:07
Calibration: T:\Autospec\Curves\210811ICIH.cdb 13 Aug 2021 13:44:39

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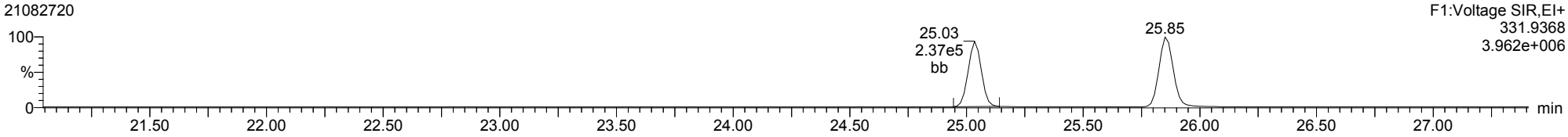
13C-1234-TCDD



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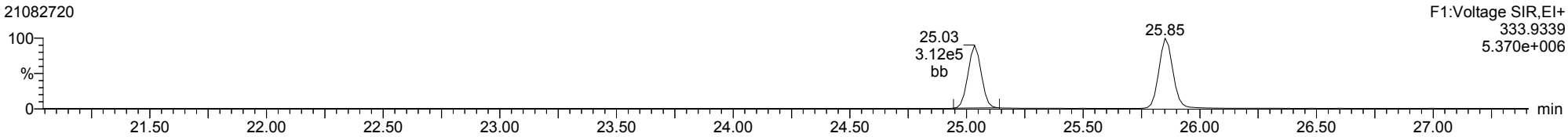

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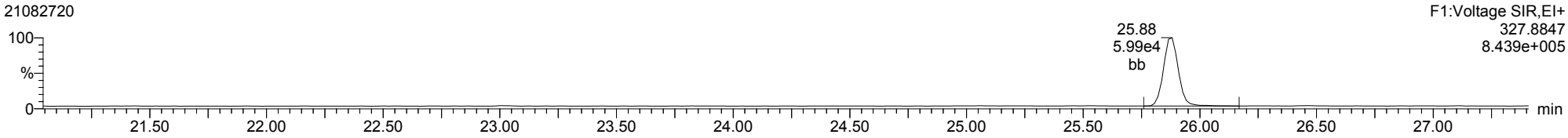

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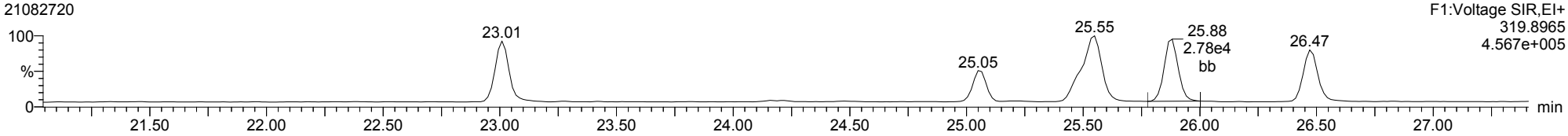
2378-TCDD



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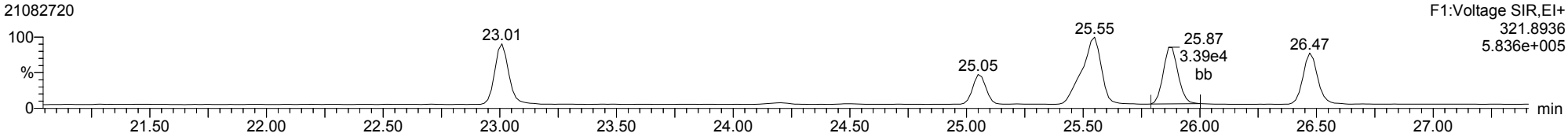
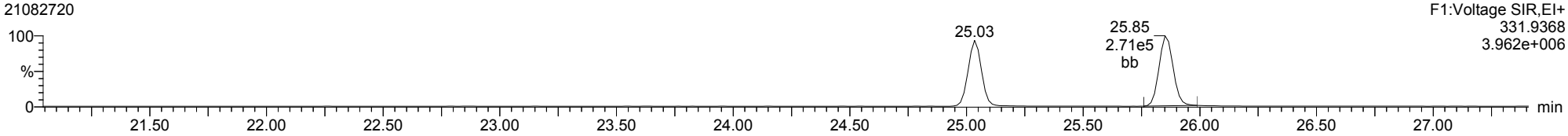


13C-2378-TCDD



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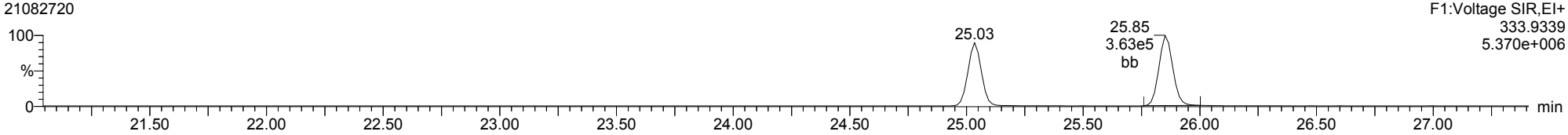
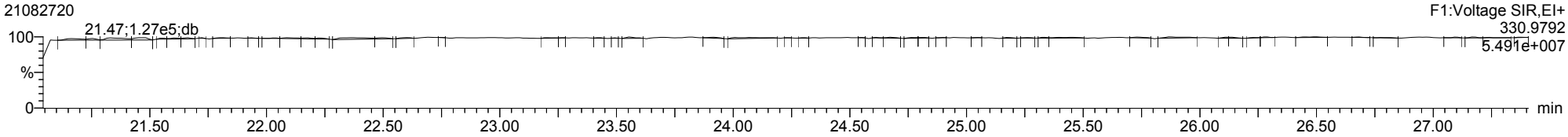


FUNCTION1 PFK



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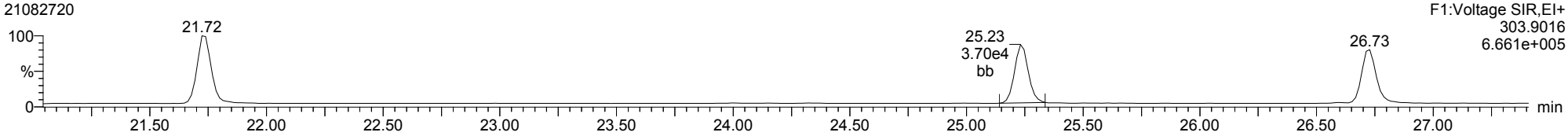
2378-TCDF



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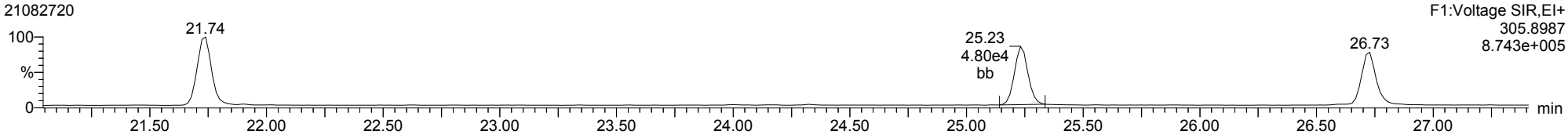

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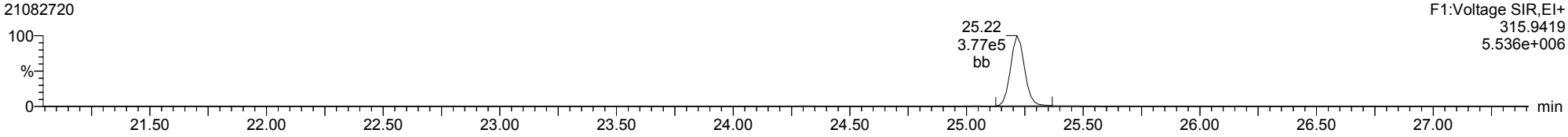

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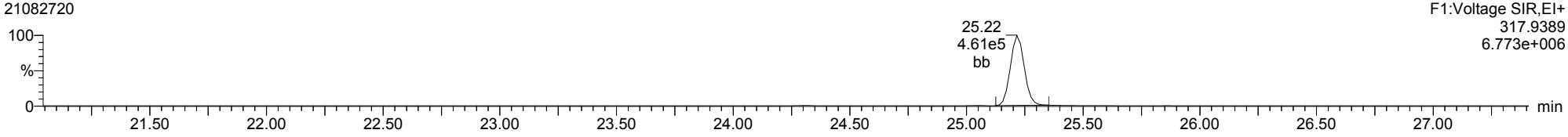
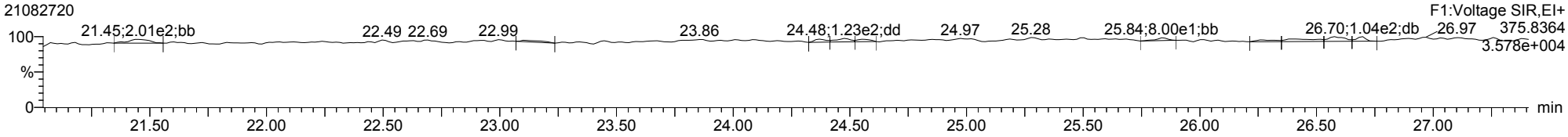


FUNCTION1 HXCDPE



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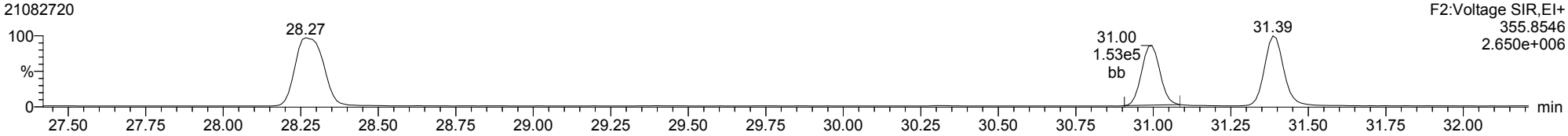
12378-PeCDD



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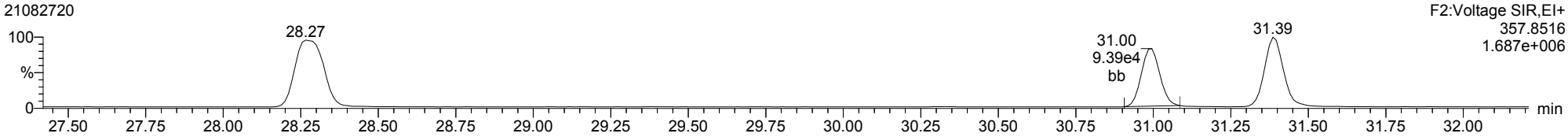

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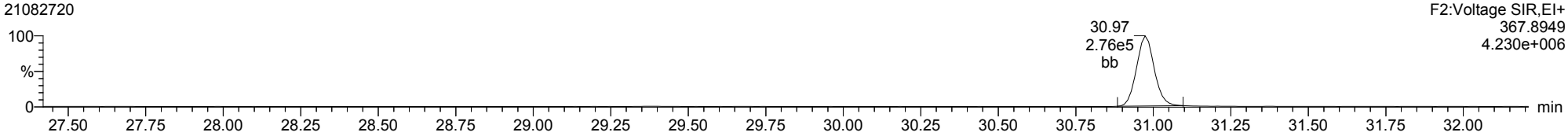

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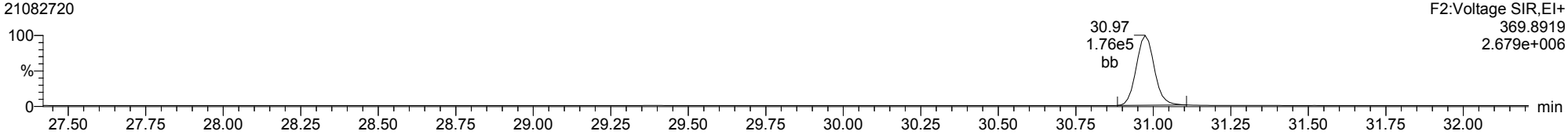
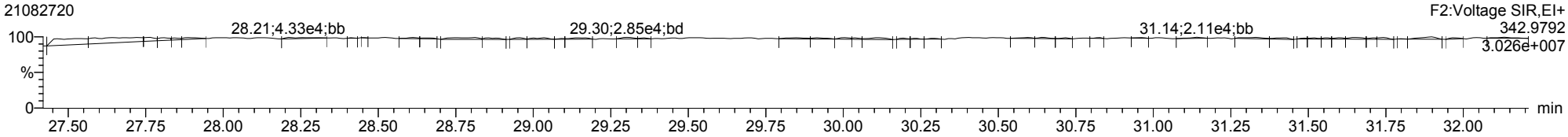


FUNCTION2 PFK



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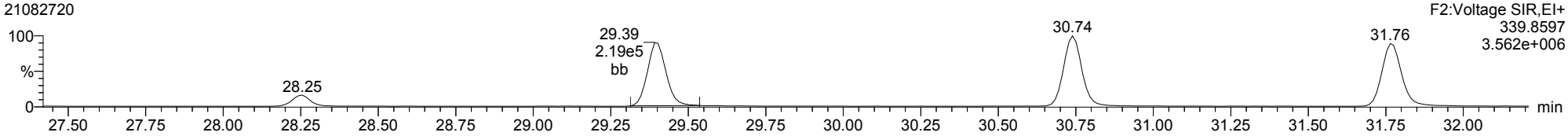

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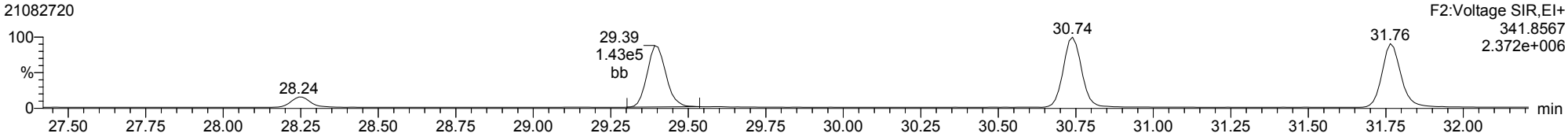

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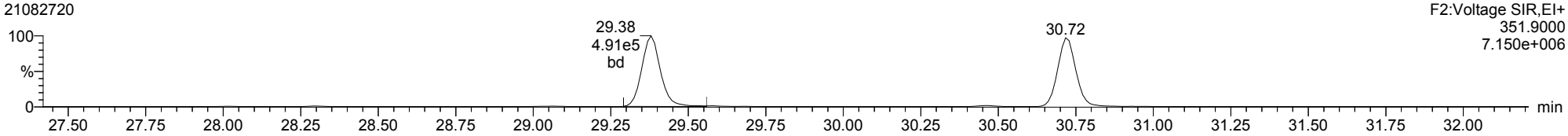

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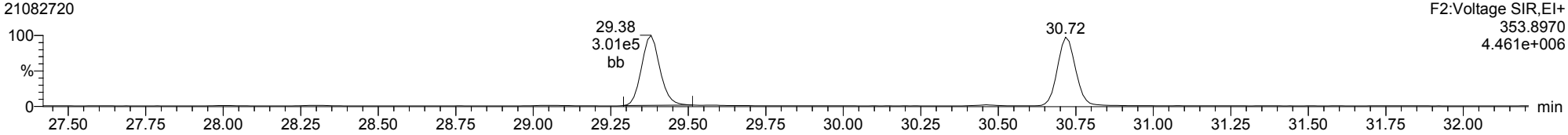
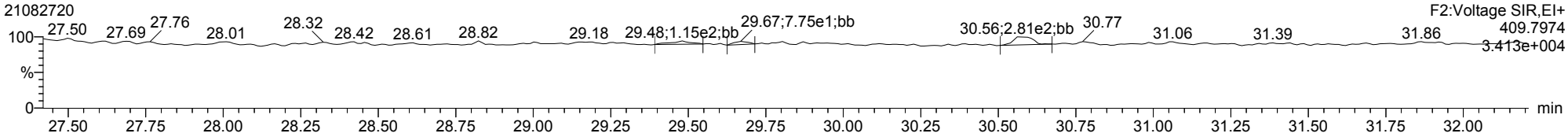


FUNCTION2 HPCDPE



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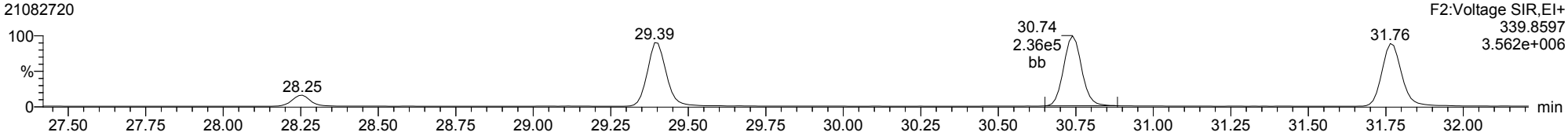
23478-PeCDF



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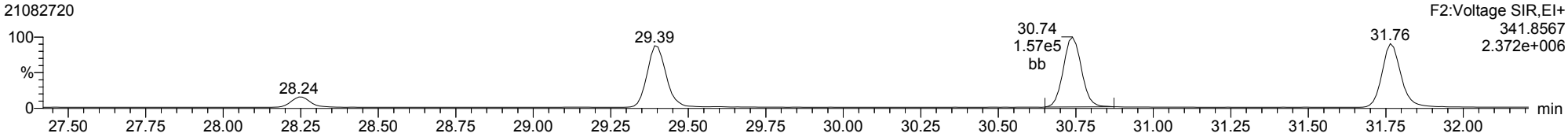

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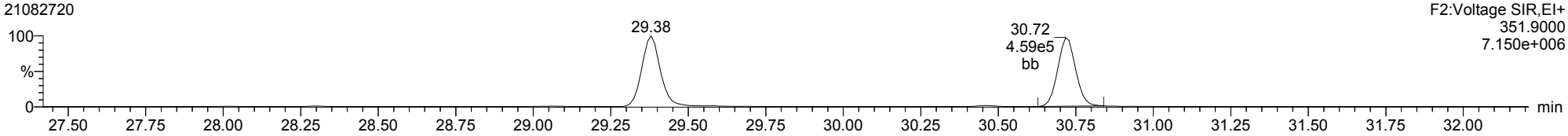

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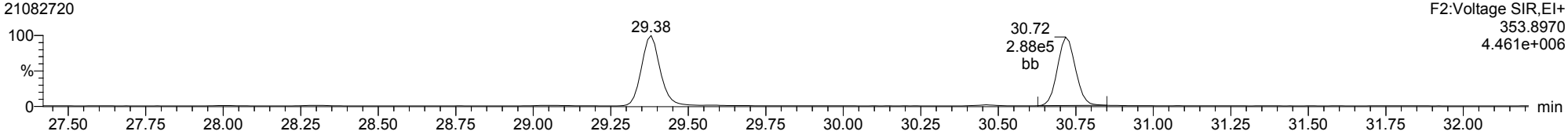
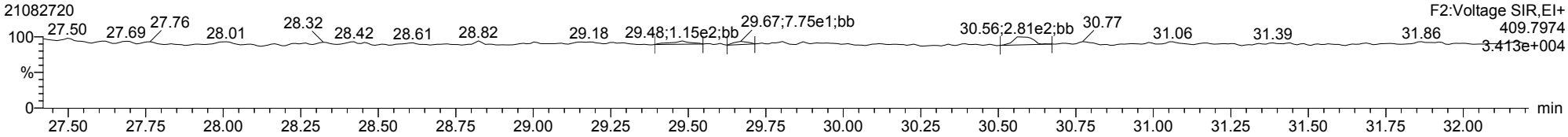


FUNCTION2 HPCDPE



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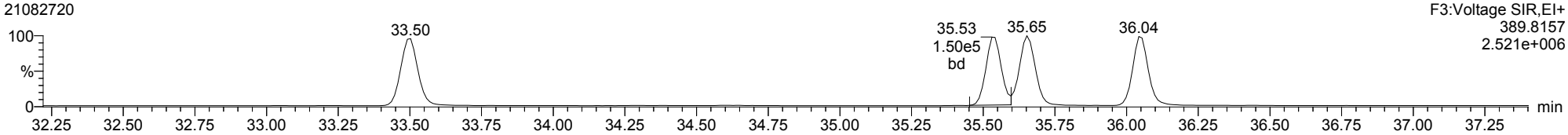
123478-HxCDD



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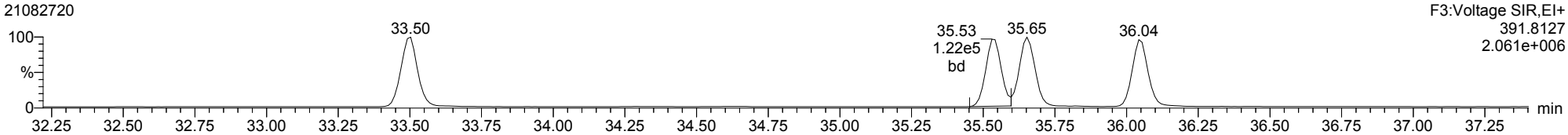

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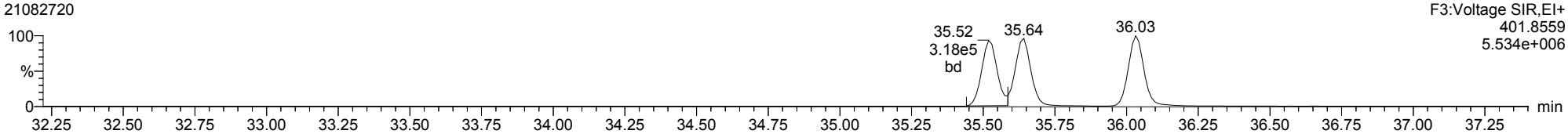

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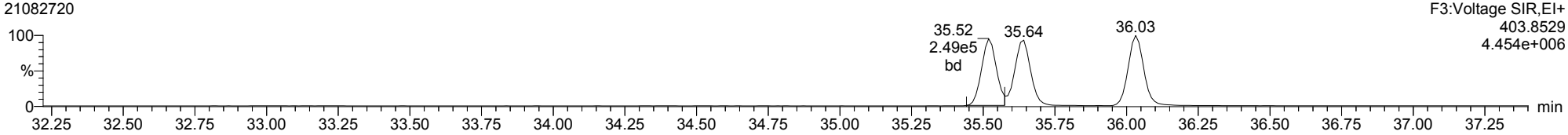
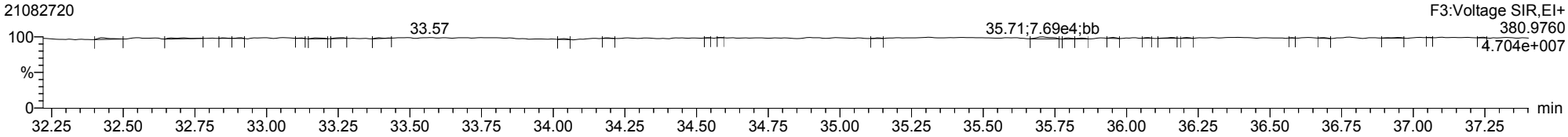


FUNCTION3 PFK



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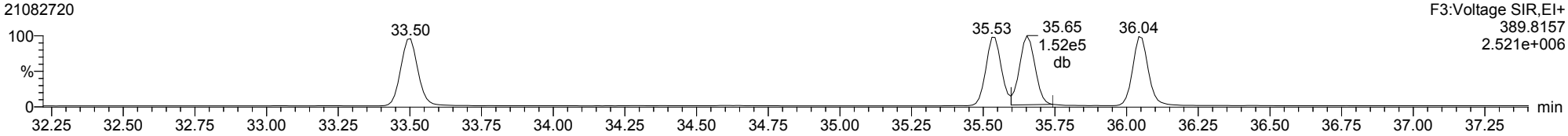
123678-HxCDD



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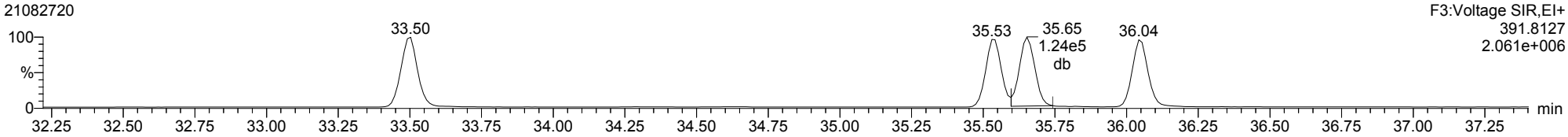

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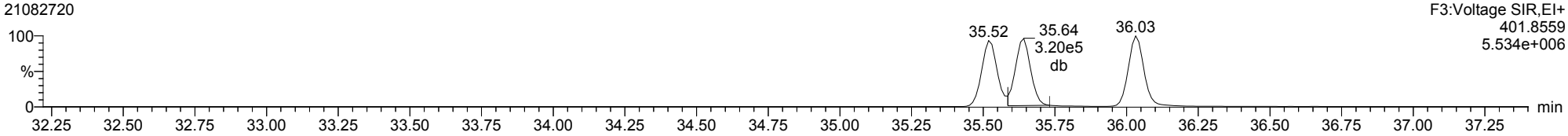

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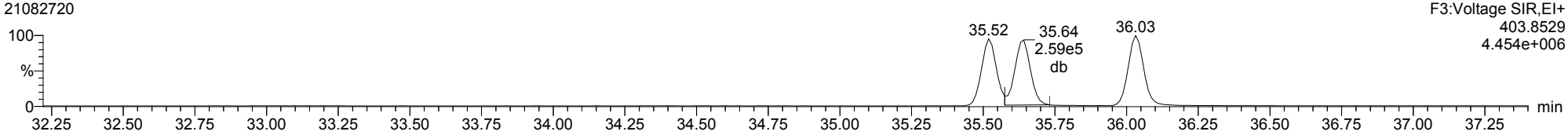

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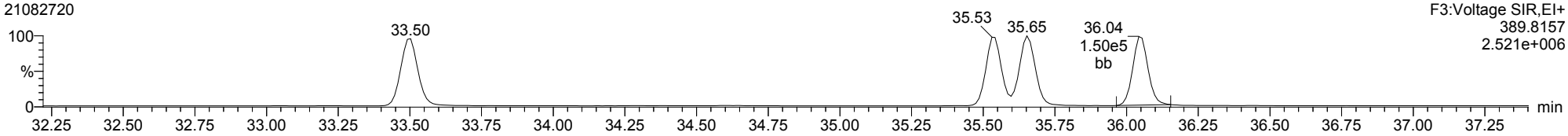
123789-HxCDD



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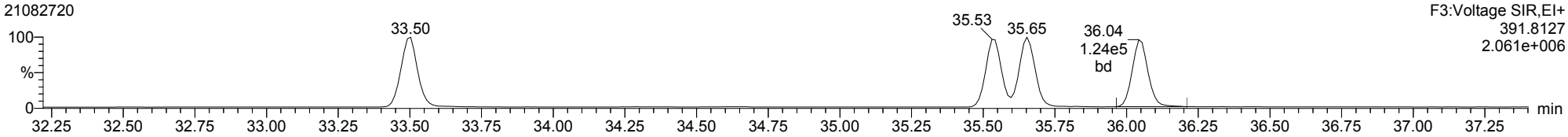

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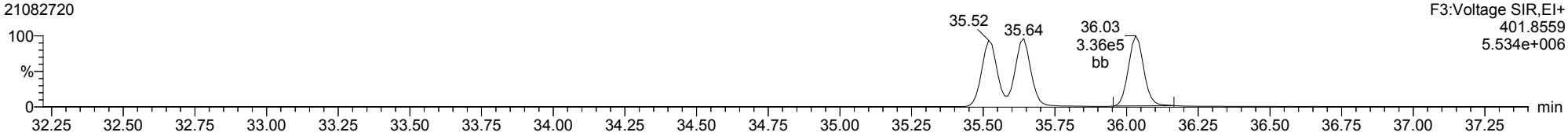

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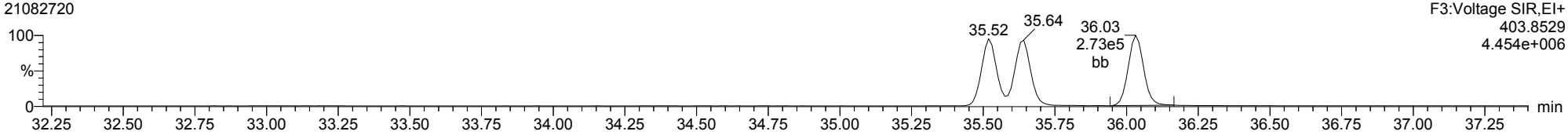

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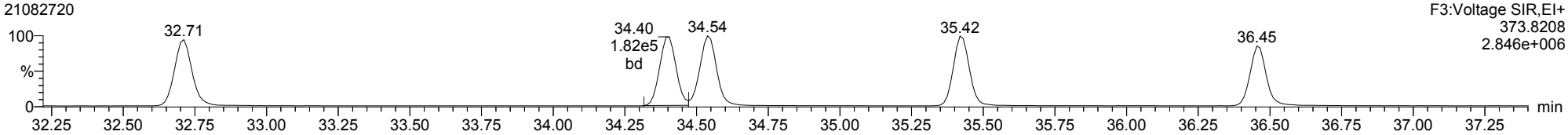
123478-HxCDF



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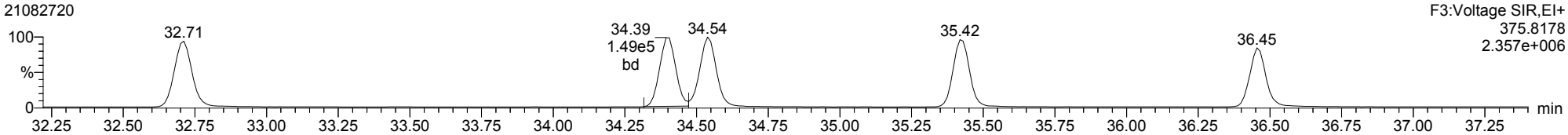

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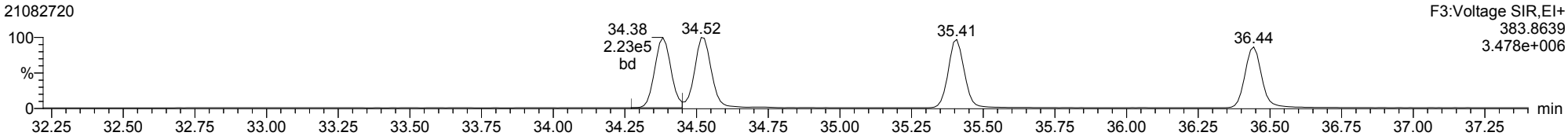

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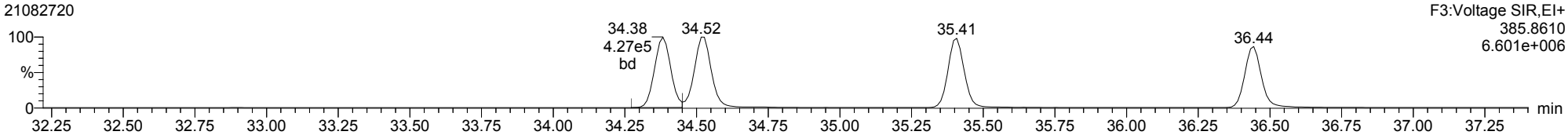
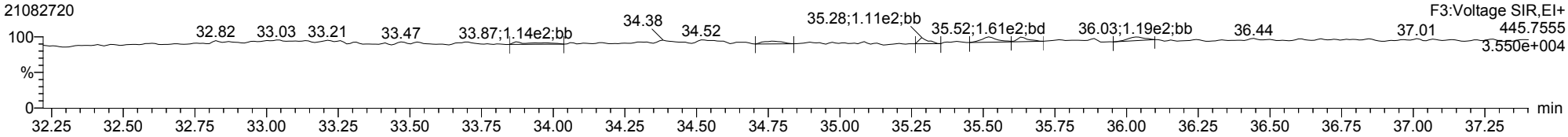


FUNCTION3 OCDPE



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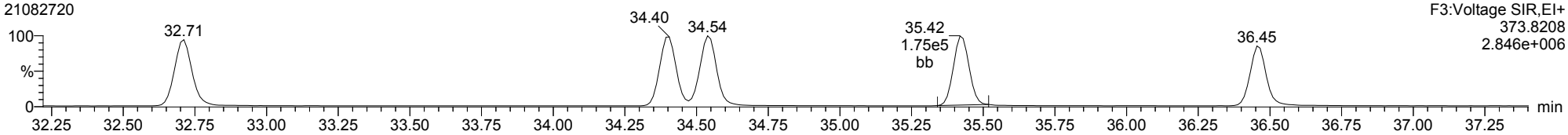
234678-HxCDF



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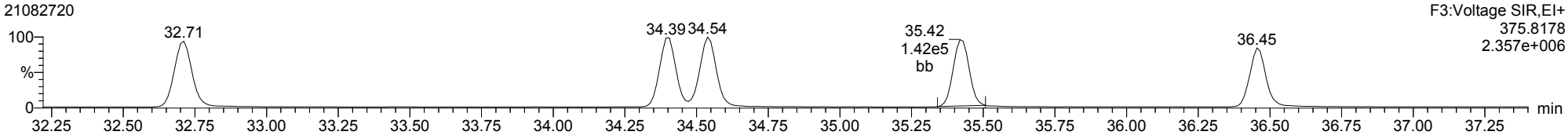

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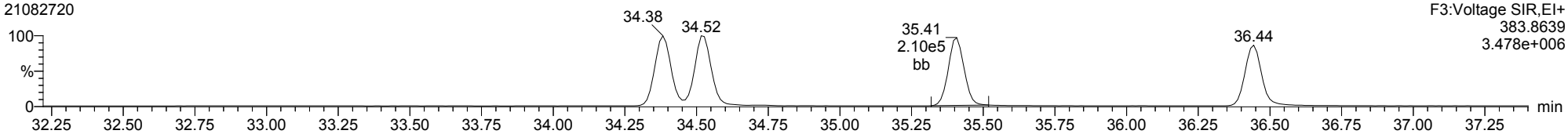

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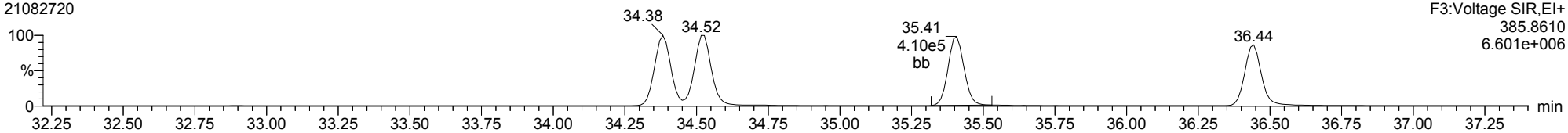
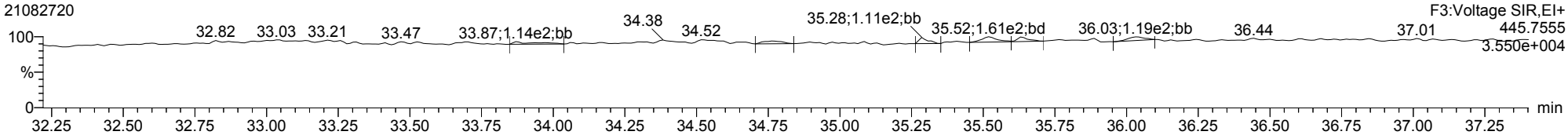


FUNCTION3 OCDPE



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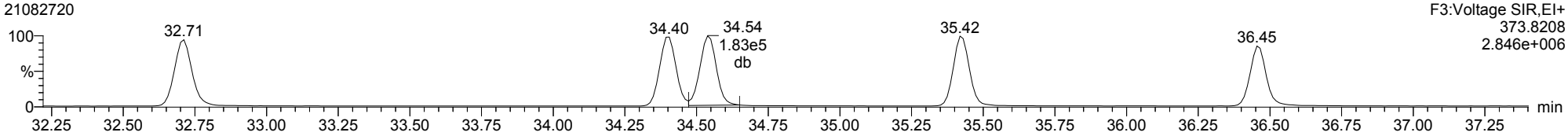
123678-HxCDF



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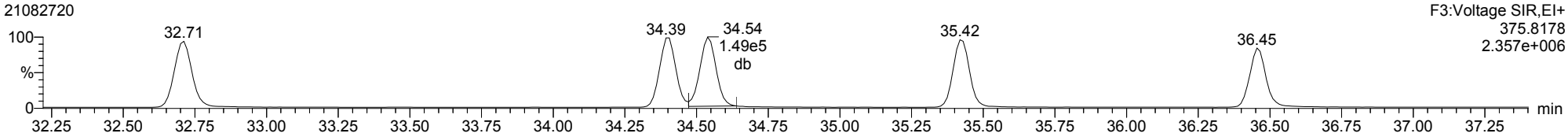

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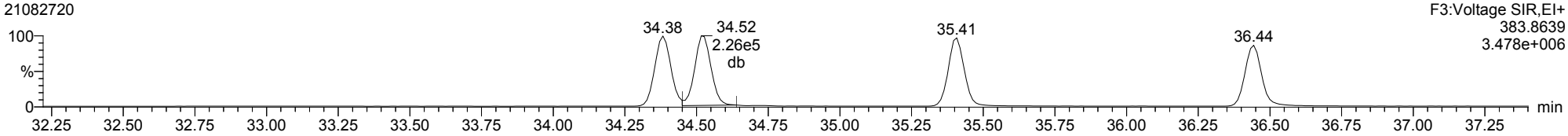

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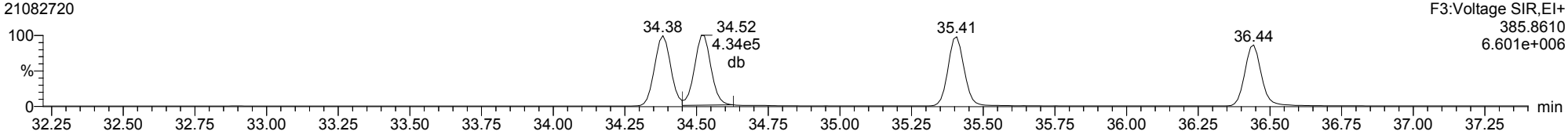
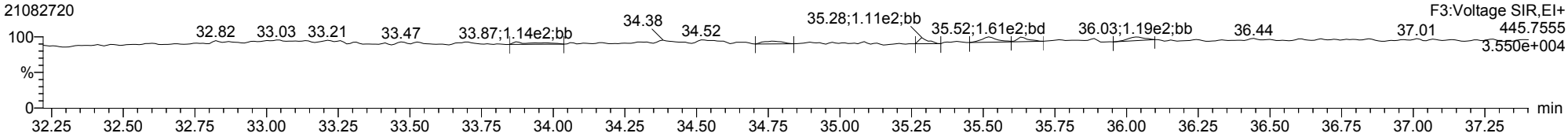


FUNCTION3 OCDPE



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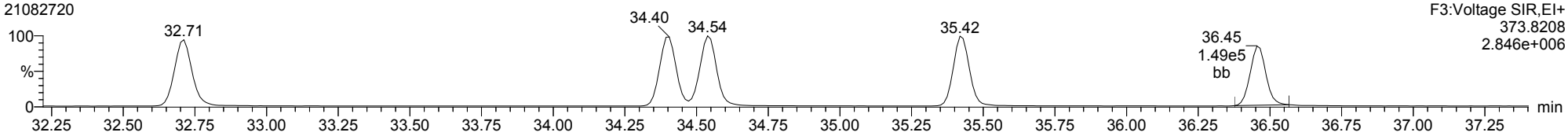

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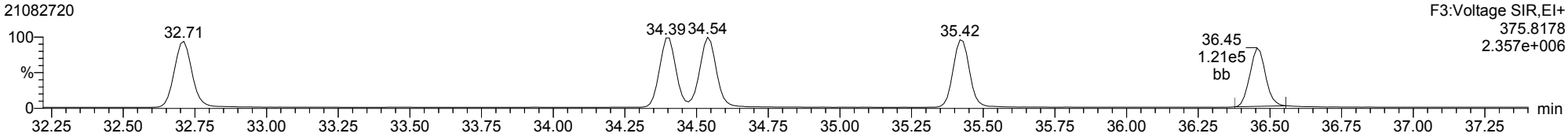

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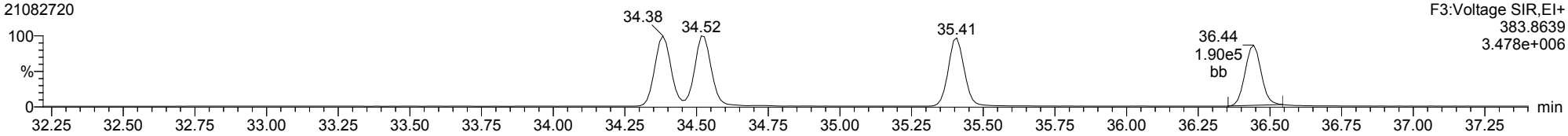

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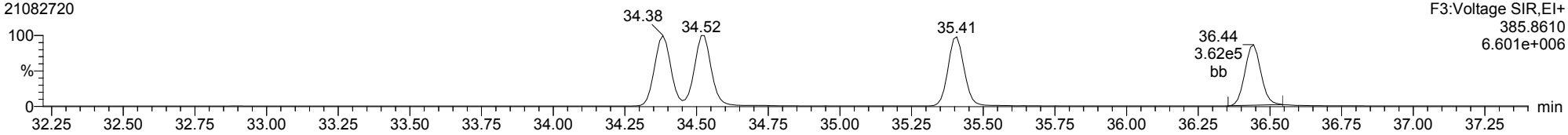

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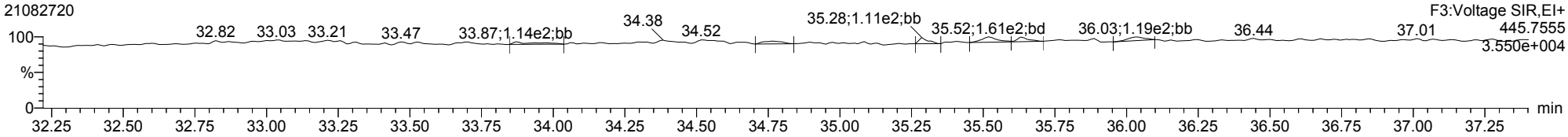

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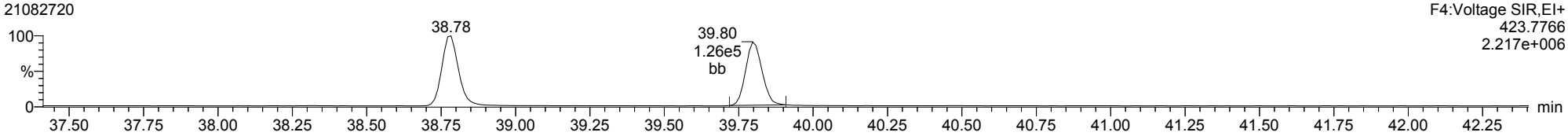

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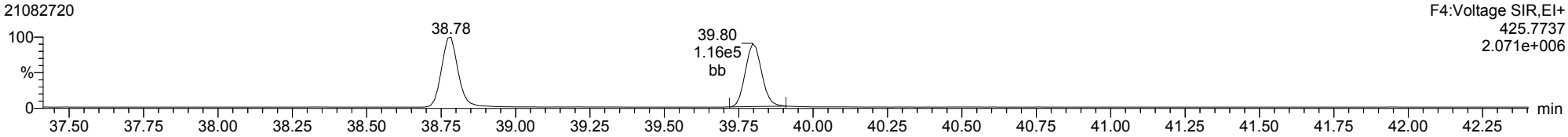

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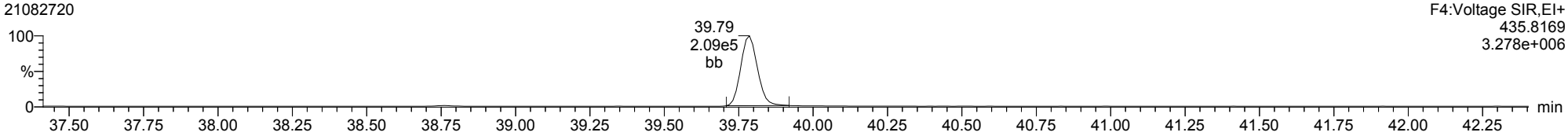

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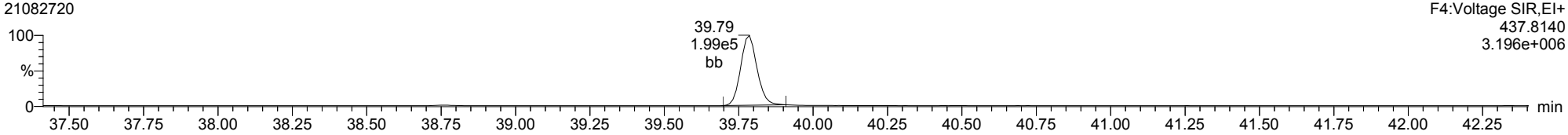

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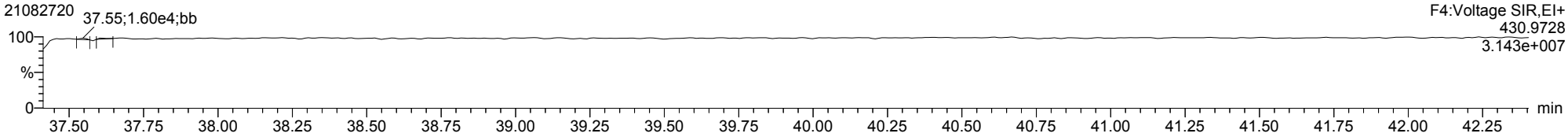

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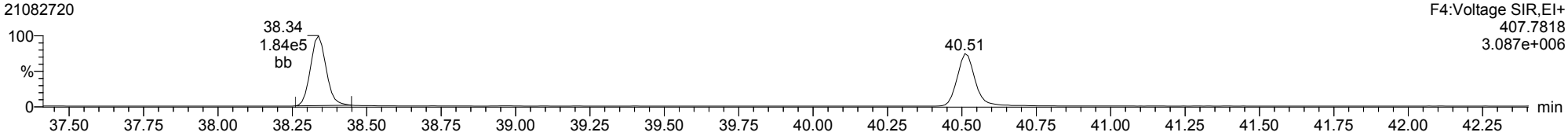

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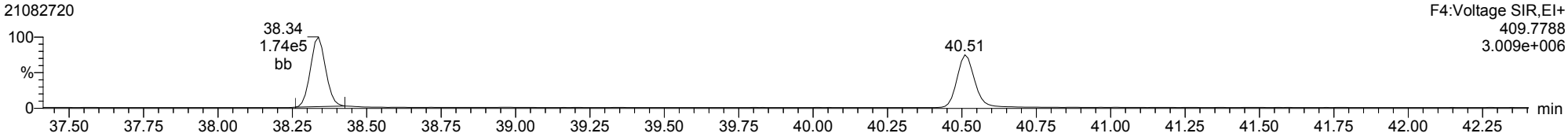

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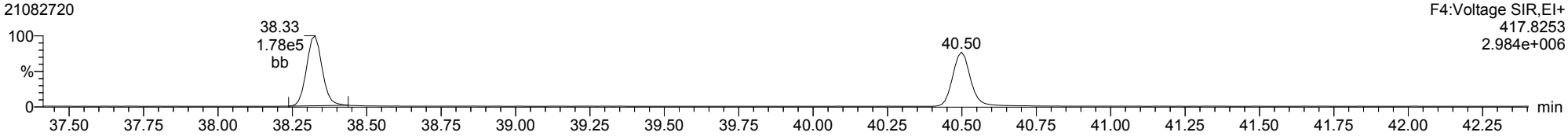

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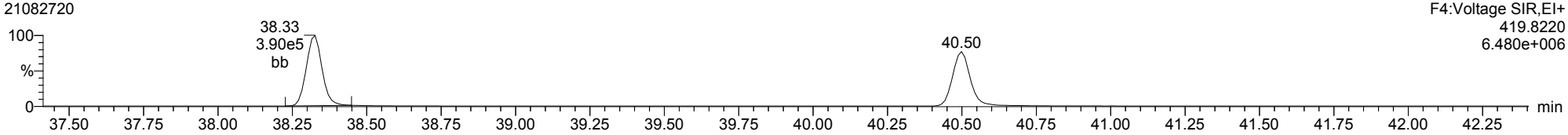

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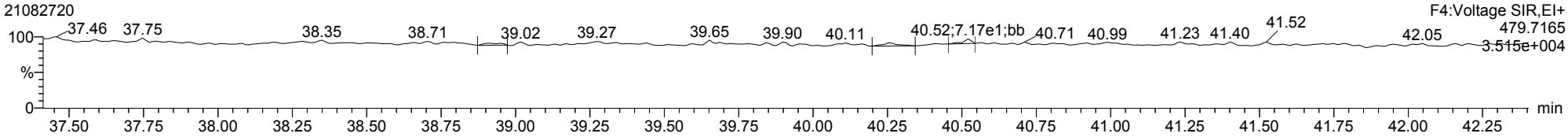

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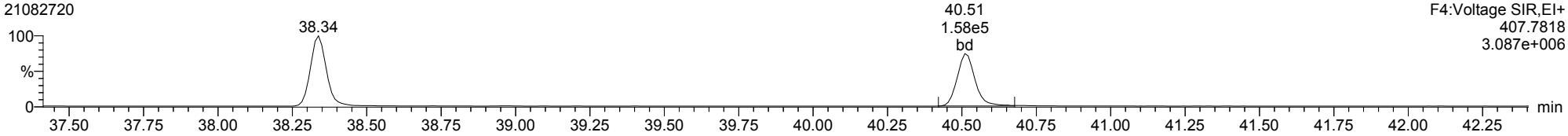

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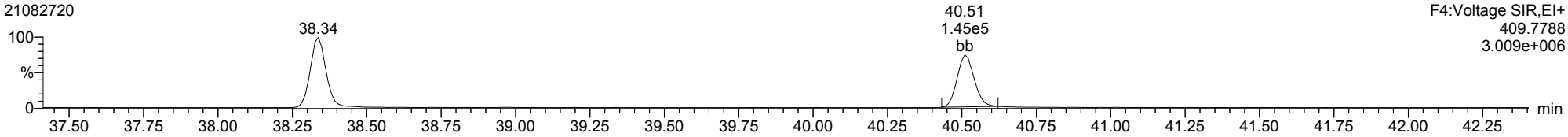

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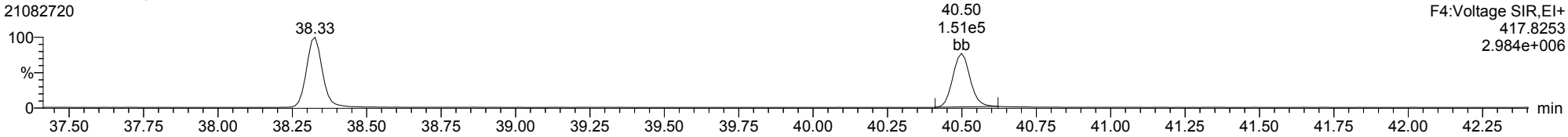

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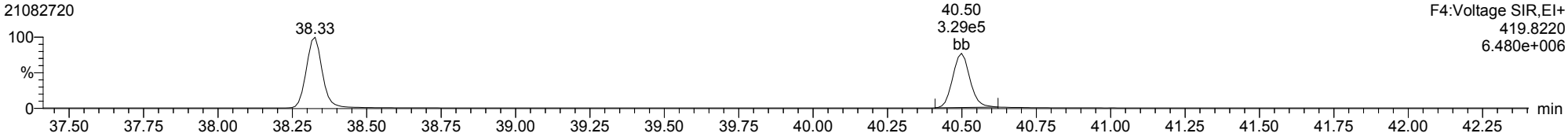

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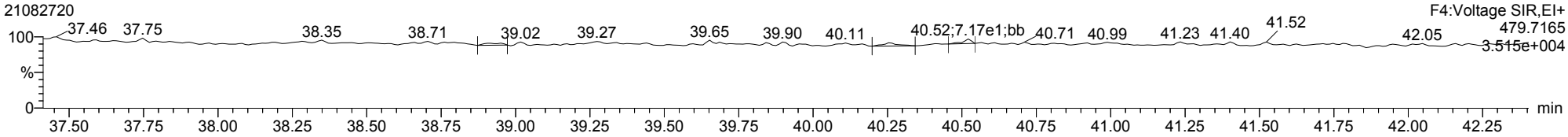

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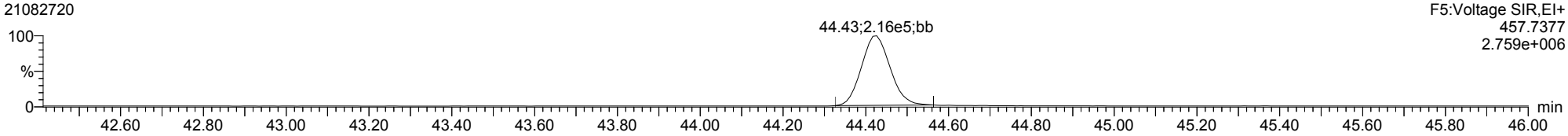

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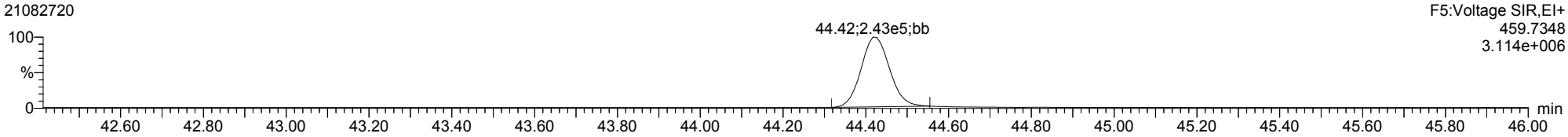

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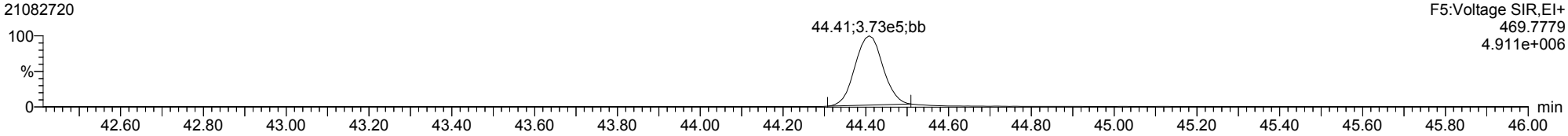

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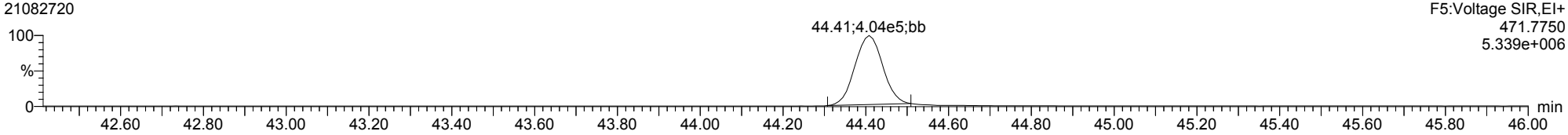

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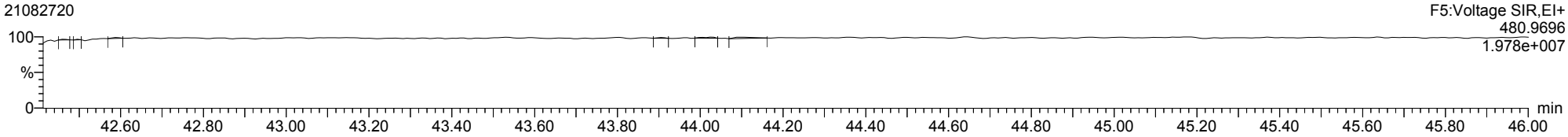

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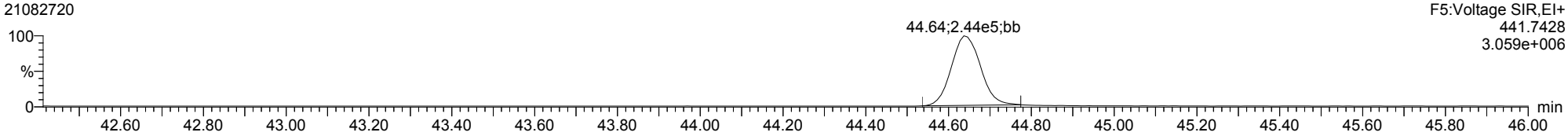

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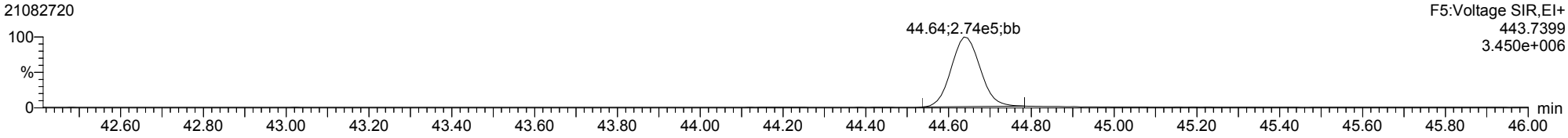

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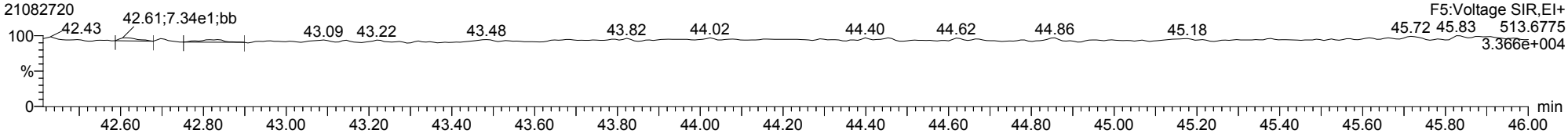

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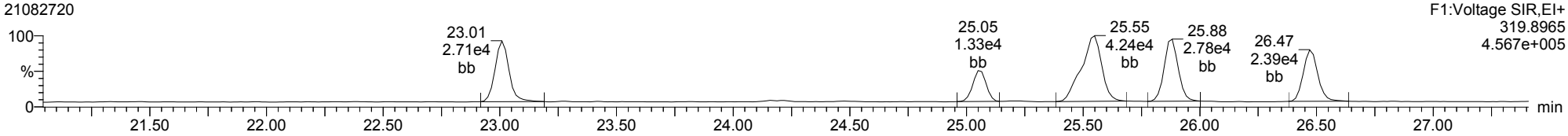

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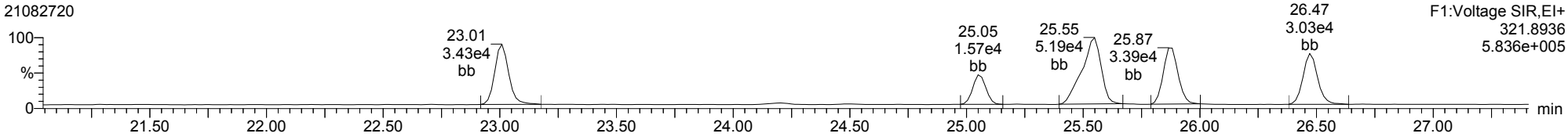

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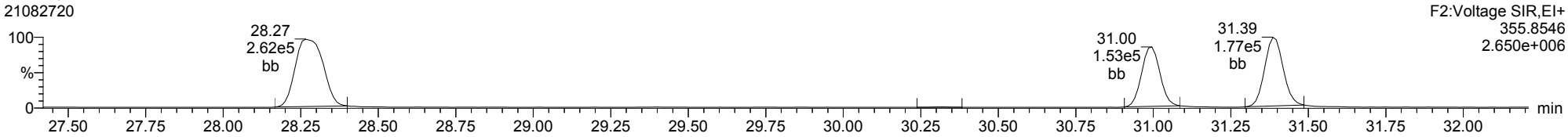

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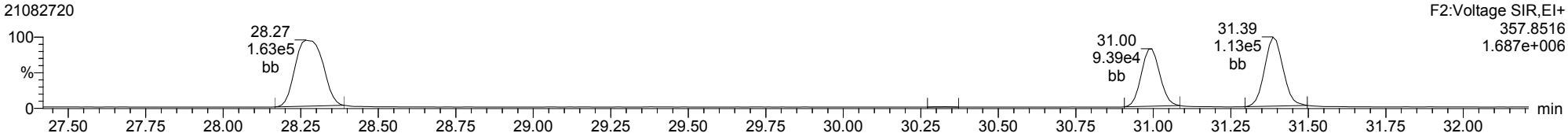

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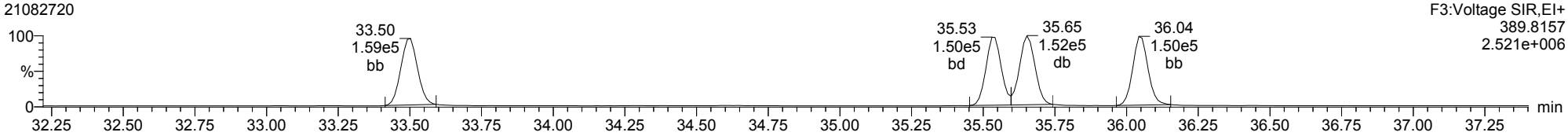

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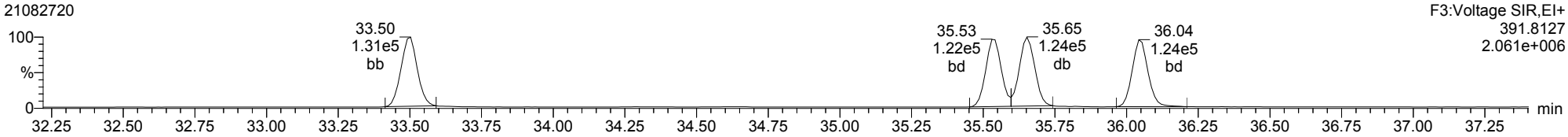

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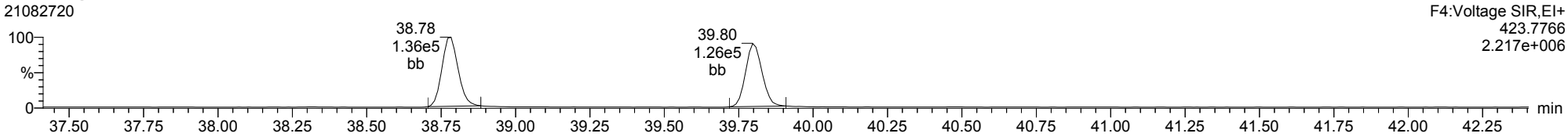

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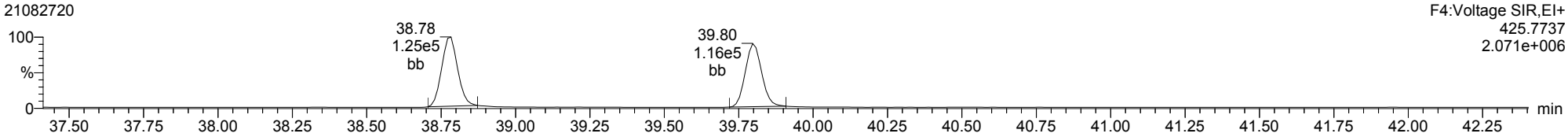

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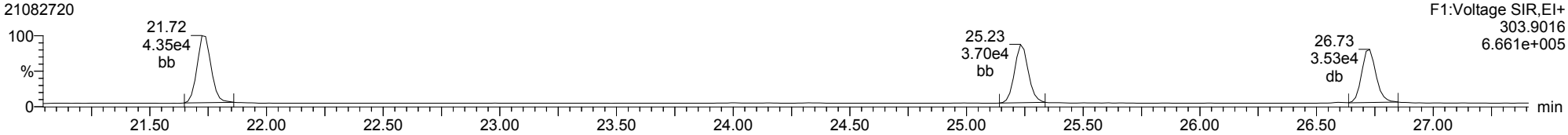
Total-tetrafurans



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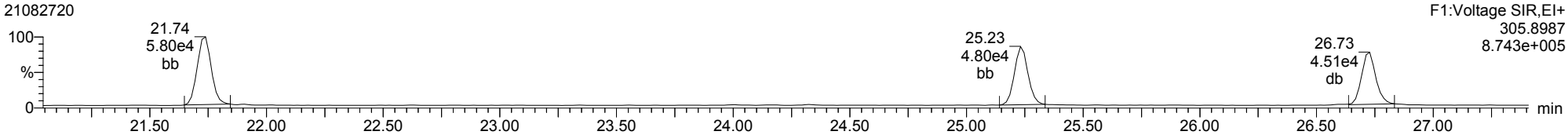

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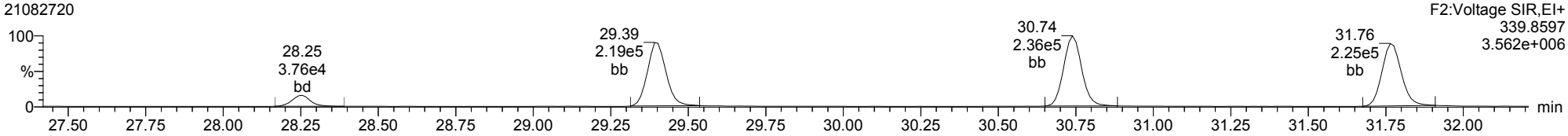

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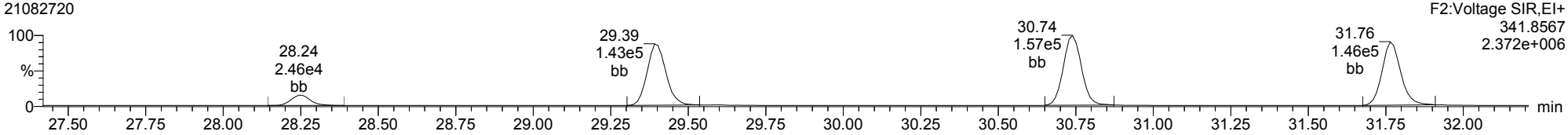

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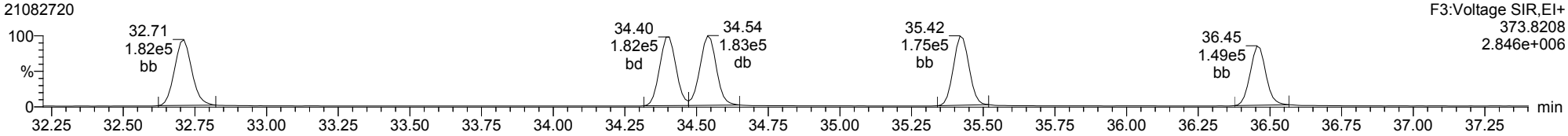

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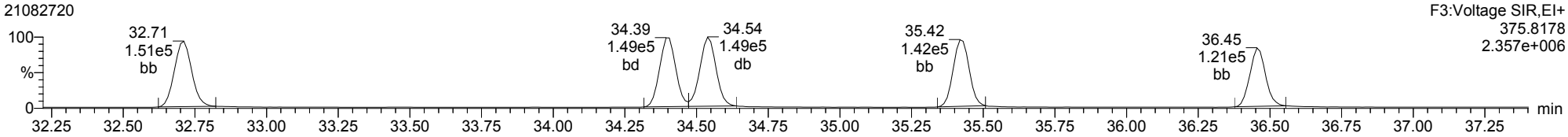

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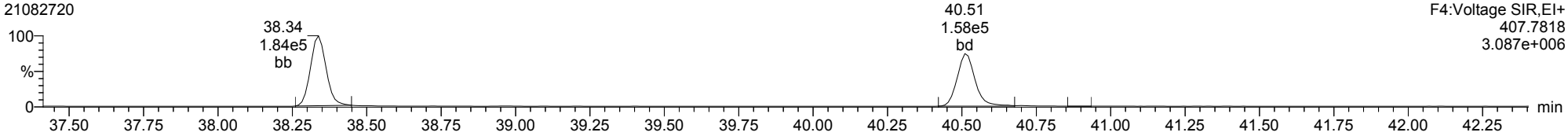

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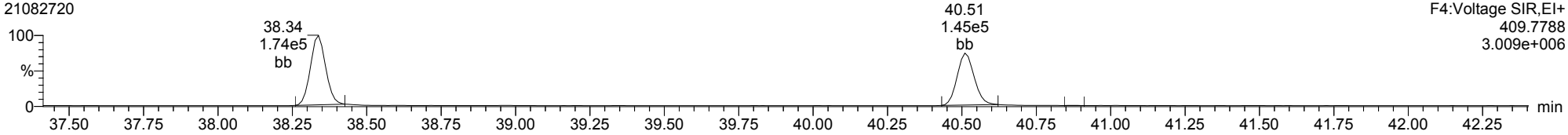

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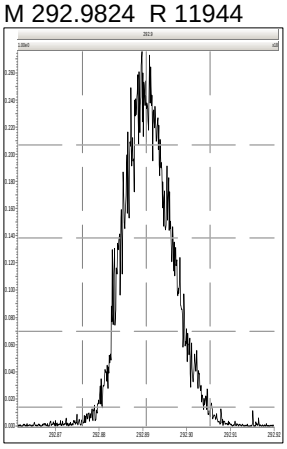

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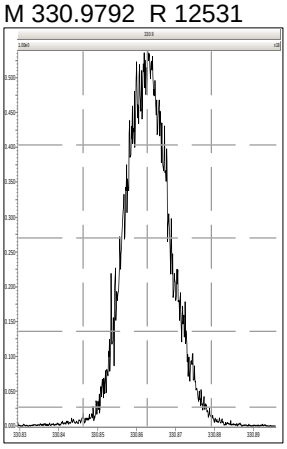

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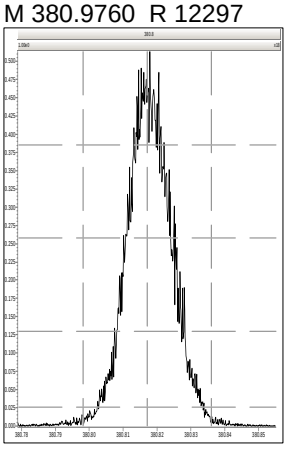

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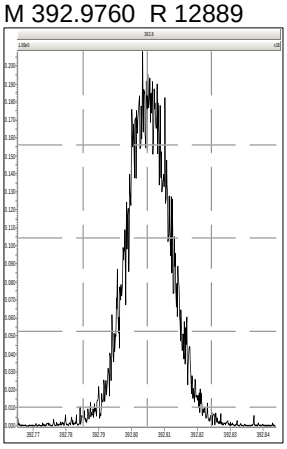

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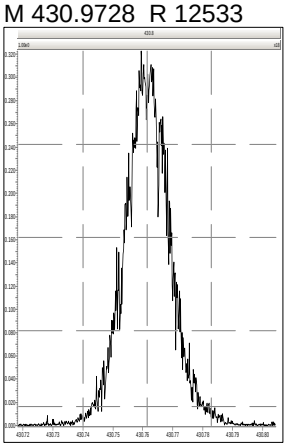
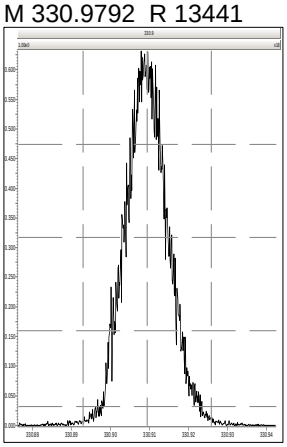
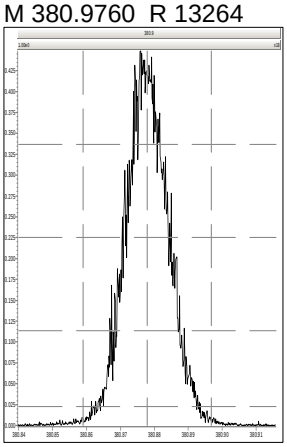


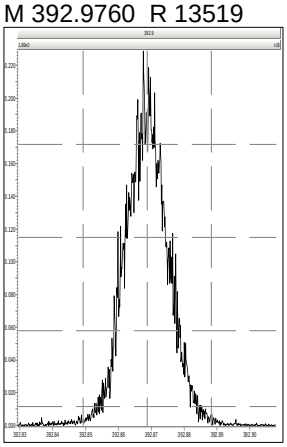
M 330.9792 R 13441



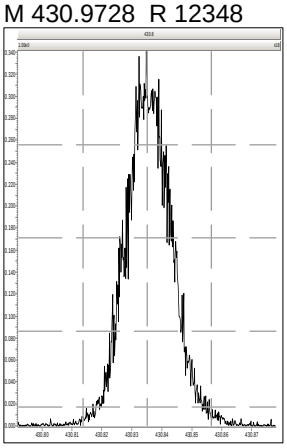
M 380.9760 R 13264



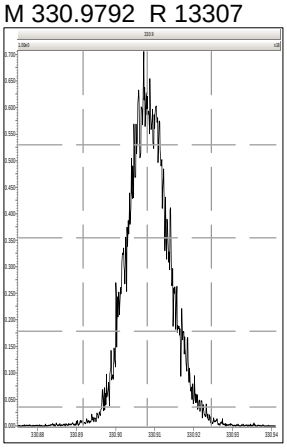
M 392.9760 R 13519



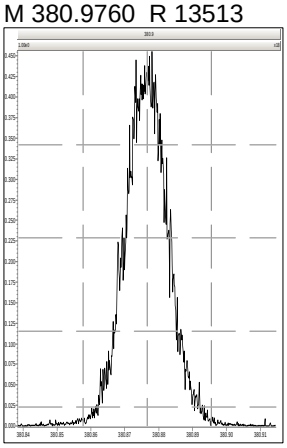
M 430.9728 R 12348



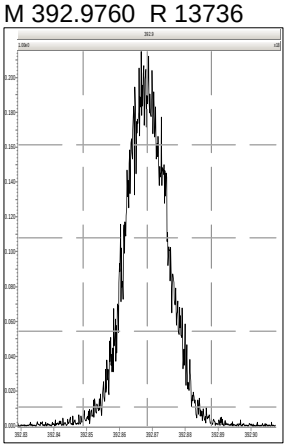
M 330.9792 R 13307



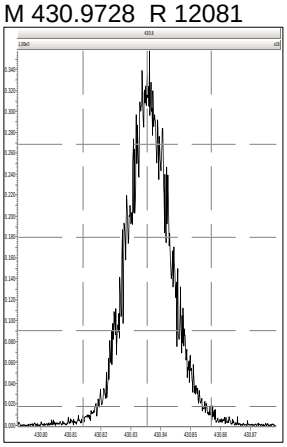
M 380.9760 R 13513



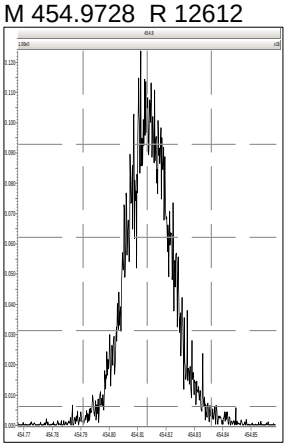
M 392.9760 R 13736



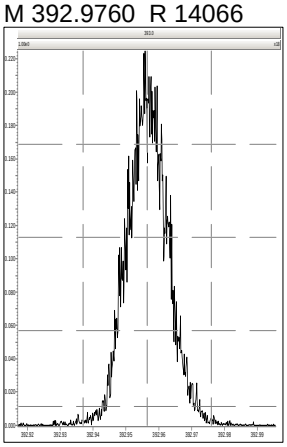
M 430.9728 R 12081



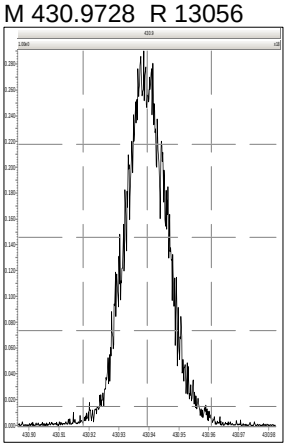
M 454.9728 R 12612



M 392.9760 R 14066

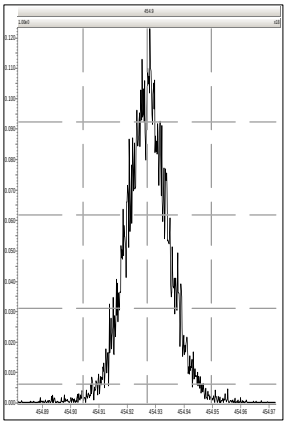


M 430.9728 R 13056

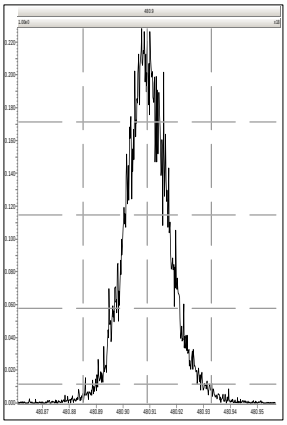


Printed: Friday, August 27, 2021 21:18:58 Pacific Daylight Time

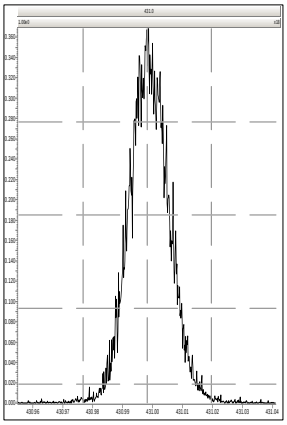
M 454.9728 R 12956



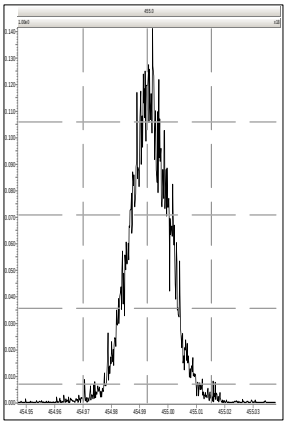
M 480.9696 R 12199



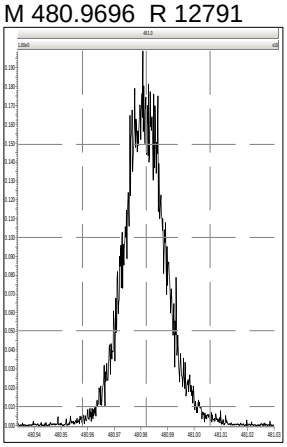
M 430.9728 R 14166



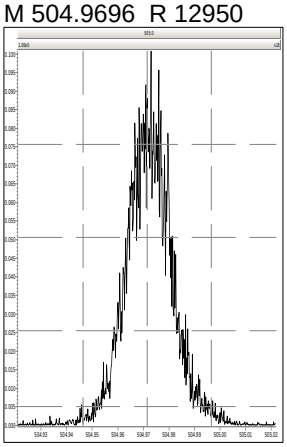
M 454.9728 R 14046



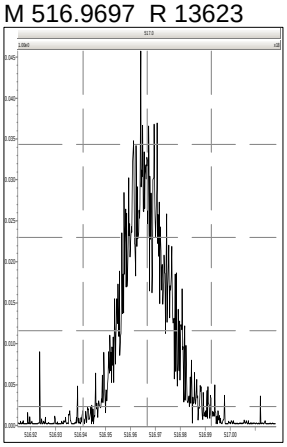
M 480.9696 R 12791

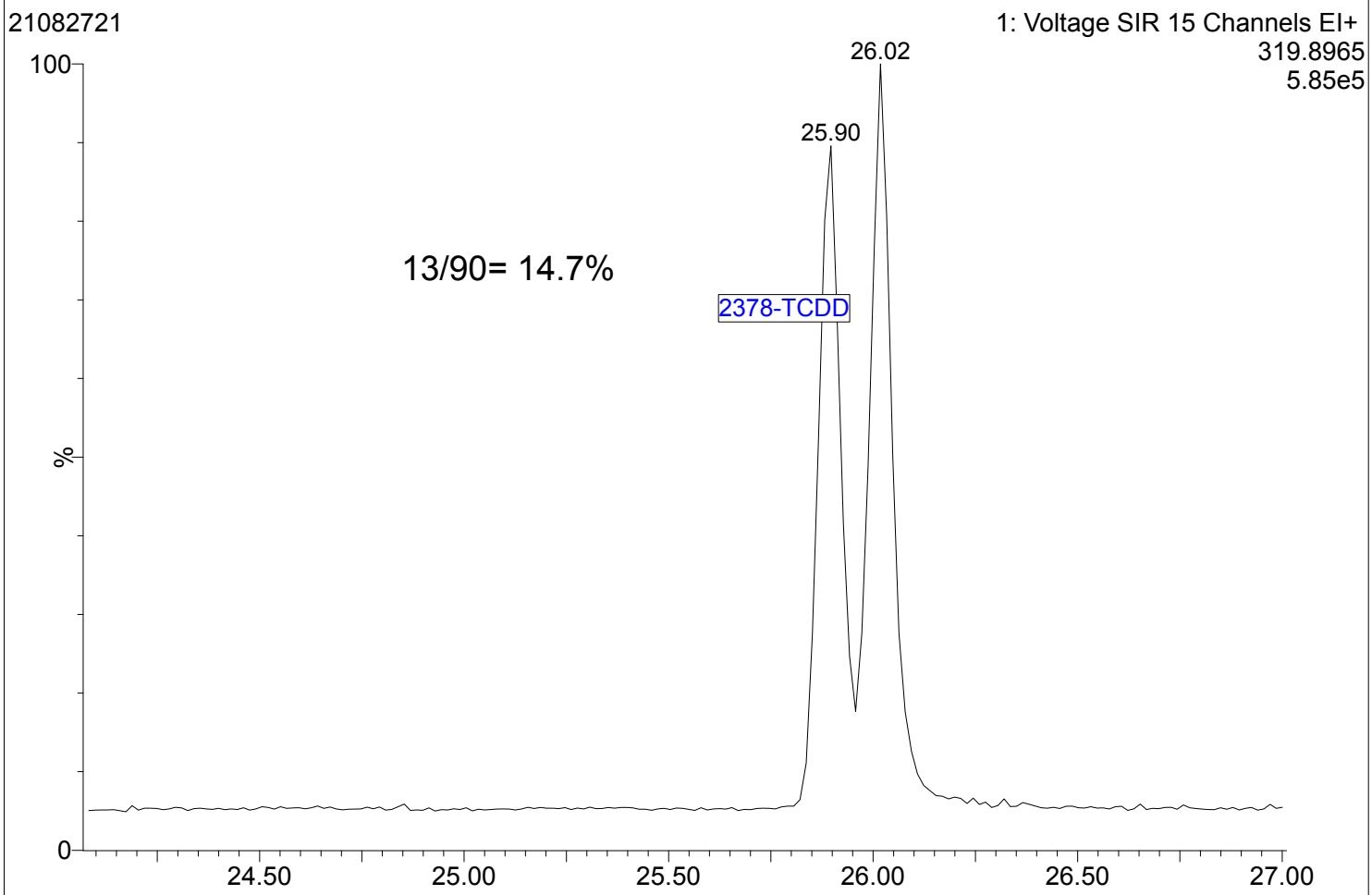


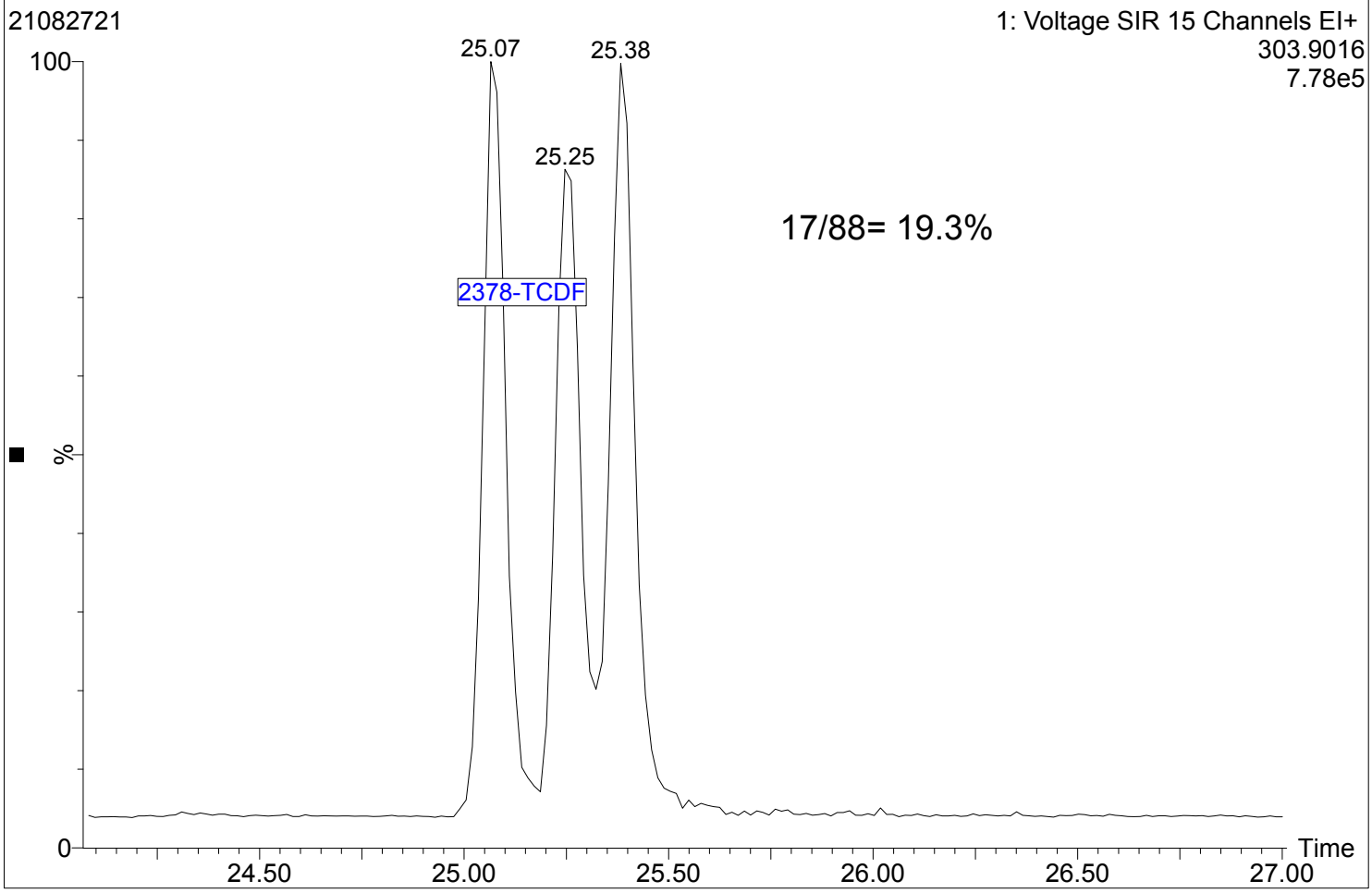
M 504.9696 R 12950



M 516.9697 R 13623




21082721
1: Voltage SIR 15 Channels EI+
319.8965
5.85e5
100
%
0
26.02
25.90
13/90= 14.7%
2378-TCDD
24.50
25.00
25.50
26.00
26.50
27.00


21082721
1: Voltage SIR 15 Channels EI+
303.9016
7.78e5
100
%
0
25.07
25.38
25.25
17/88= 19.3%
2378-TCDF
Time
24.50
25.00
25.50
26.00
26.50
27.00

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CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc.
SDG: 21G0108
Instrument .ID: AUTOSPEC01
Lab File ID: 21081103
Date Analyzed: 08/11/21
Time Analyzed: 16:41
Lab Sample ID: SJH0117-RES1
Sequence: SJH0117

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 9

3467-TCDF/2378-TCDF: 9

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJH0117-ICV1	CS3Z1	21081102A	08/11/2021	15:52
SJH0117-RES1	ISCZ1	21081103	08/11/2021	16:41
SJH0117-CAL1	CSLCV	21081104A	08/11/2021	17:30
SJH0117-CAL2	CS1CV	21081107A	08/11/2021	19:56
SJH0117-CAL3	CS2CV	21081108A	08/11/2021	20:45
SJH0117-CAL4	CS3CV	21081109A	08/11/2021	21:34
SJH0117-CAL5	CS4CV	21081110A	08/11/2021	22:22
SJH0117-CAL6	CS5CV	21081111A	08/11/2021	23:11
SJH0117-SCV1	ICVCV	21081112A	08/12/2021	00:00
SJH0117-CCV1	CS3Z2	21081113B	08/12/2021	00:48
SJH0117-RES2	ISCZ2	21081114	08/12/2021	01:42

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CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc.
SDG: 21G0108
Instrument .ID: AUTOSPEC01
Lab File ID: 21081114
Date Analyzed: 08/12/21
Time Analyzed: 01:42
Lab Sample ID: SJH0117-RES2
Sequence: SJH0117

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 10.6

3467-TCDF/2378-TCDF: 11.1

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJH0117-ICV1	CS3Z1	21081102A	08/11/2021	15:52
SJH0117-RES1	ISCZ1	21081103	08/11/2021	16:41
SJH0117-CAL1	CSLCV	21081104A	08/11/2021	17:30
SJH0117-CAL2	CS1CV	21081107A	08/11/2021	19:56
SJH0117-CAL3	CS2CV	21081108A	08/11/2021	20:45
SJH0117-CAL4	CS3CV	21081109A	08/11/2021	21:34
SJH0117-CAL5	CS4CV	21081110A	08/11/2021	22:22
SJH0117-CAL6	CS5CV	21081111A	08/11/2021	23:11
SJH0117-SCV1	ICVCV	21081112A	08/12/2021	00:00
SJH0117-CCV1	CS3Z2	21081113B	08/12/2021	00:48
SJH0117-RES2	ISCZ2	21081114	08/12/2021	01:42

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc.
SDG: 21G0108
Instrument .ID: AUTOSPEC01
Lab File ID: 21082622
Date Analyzed: 08/27/21
Time Analyzed: 03:57
Lab Sample ID: SJH0365-RES1
Sequence: SJH0365

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 14.8

3467-TCDF/2378-TCDF: 13.4

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJH0365-ICV1	CS3L7	21082621A	08/27/2021	03:04
SJH0365-RES1	ISCL7	21082622	08/27/2021	03:57
BJG0465-BLK1	Blank	21082701	08/27/2021	04:48
BJG0465-BS1	LCS	21082702	08/27/2021	05:37
BJG0465-SRM1	Reference	21082705	08/27/2021	08:04
BJG0465-DUP1	Duplicate	21082707	08/27/2021	09:42
SJH0365-CCV1	CS3L8	21082709	08/27/2021	11:20
SJH0365-RES2	ISCL8	21082710	08/27/2021	12:13
21G0108-02	LDW21-IT654B	21082711	08/27/2021	13:04
21G0108-03	LDW21-IT654C	21082712	08/27/2021	13:53
21G0108-04	LDW21-IT654E	21082713	08/27/2021	14:42
21G0108-06	LDW21-IT649B	21082714	08/27/2021	15:31
21G0108-07	LDW21-IT649C	21082715	08/27/2021	16:20
21G0108-08	LDW21-IT649E	21082716	08/27/2021	17:09
21G0108-09	LDW21-IT669B	21082717	08/27/2021	17:58
21G0108-10	LDW21-IT669C	21082718	08/27/2021	18:47
21G0108-11	LDW21-IT669E	21082719	08/27/2021	19:36
SJH0365-CCV2	CS3L9	21082720	08/27/2021	20:25
SJH0365-RES3	ISCL9	21082721	08/27/2021	21:19

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CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc.
SDG: 21G0108
Instrument .ID: AUTOSPEC01
Lab File ID: 21082710
Date Analyzed: 08/27/21
Time Analyzed: 12:13
Lab Sample ID: SJH0365-RES2
Sequence: SJH0365

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD:

3467-TCDF/2378-TCDF:

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJH0365-ICV1	CS3L7	21082621A	08/27/2021	03:04
SJH0365-RES1	ISCL7	21082622	08/27/2021	03:57
BJG0465-BLK1	Blank	21082701	08/27/2021	04:48
BJG0465-BS1	LCS	21082702	08/27/2021	05:37
BJG0465-SRM1	Reference	21082705	08/27/2021	08:04
BJG0465-DUP1	Duplicate	21082707	08/27/2021	09:42
SJH0365-CCV1	CS3L8	21082709	08/27/2021	11:20
SJH0365-RES2	ISCL8	21082710	08/27/2021	12:13
21G0108-02	LDW21-IT654B	21082711	08/27/2021	13:04
21G0108-03	LDW21-IT654C	21082712	08/27/2021	13:53
21G0108-04	LDW21-IT654E	21082713	08/27/2021	14:42
21G0108-06	LDW21-IT649B	21082714	08/27/2021	15:31
21G0108-07	LDW21-IT649C	21082715	08/27/2021	16:20
21G0108-08	LDW21-IT649E	21082716	08/27/2021	17:09
21G0108-09	LDW21-IT669B	21082717	08/27/2021	17:58
21G0108-10	LDW21-IT669C	21082718	08/27/2021	18:47
21G0108-11	LDW21-IT669E	21082719	08/27/2021	19:36
SJH0365-CCV2	CS3L9	21082720	08/27/2021	20:25
SJH0365-RES3	ISCL9	21082721	08/27/2021	21:19

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CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc.
SDG: 21G0108
Instrument .ID: AUTOSPEC01
Lab File ID: 21082721
Date Analyzed: 08/27/21
Time Analyzed: 21:19
Lab Sample ID: SJH0365-RES3
Sequence: SJH0365

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 14.7

3467-TCDF/2378-TCDF: 19.3

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJH0365-ICV1	CS3L7	21082621A	08/27/2021	03:04
SJH0365-RES1	ISCL7	21082622	08/27/2021	03:57
BJG0465-BLK1	Blank	21082701	08/27/2021	04:48
BJG0465-BS1	LCS	21082702	08/27/2021	05:37
BJG0465-SRM1	Reference	21082705	08/27/2021	08:04
BJG0465-DUP1	Duplicate	21082707	08/27/2021	09:42
SJH0365-CCV1	CS3L8	21082709	08/27/2021	11:20
SJH0365-RES2	ISCL8	21082710	08/27/2021	12:13
21G0108-02	LDW21-IT654B	21082711	08/27/2021	13:04
21G0108-03	LDW21-IT654C	21082712	08/27/2021	13:53
21G0108-04	LDW21-IT654E	21082713	08/27/2021	14:42
21G0108-06	LDW21-IT649B	21082714	08/27/2021	15:31
21G0108-07	LDW21-IT649C	21082715	08/27/2021	16:20
21G0108-08	LDW21-IT649E	21082716	08/27/2021	17:09
21G0108-09	LDW21-IT669B	21082717	08/27/2021	17:58
21G0108-10	LDW21-IT669C	21082718	08/27/2021	18:47
21G0108-11	LDW21-IT669E	21082719	08/27/2021	19:36
SJH0365-CCV2	CS3L9	21082720	08/27/2021	20:25
SJH0365-RES3	ISCL9	21082721	08/27/2021	21:19

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ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0117	Instrument:	AUTOSPEC01
		Calibration:	UNASSIGNED

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
CS3Z1	SJH0117-ICV1	21081102A	NA	08/11/21 15:52
ISCZ1	SJH0117-RES1	21081103	NA	08/11/21 16:41
CSLCV	SJH0117-CAL1	21081104A	NA	08/11/21 17:30
CS1CV	SJH0117-CAL2	21081107A	NA	08/11/21 19:56
CS2CV	SJH0117-CAL3	21081108A	NA	08/11/21 20:45
CS3CV	SJH0117-CAL4	21081109A	NA	08/11/21 21:34
CS4CV	SJH0117-CAL5	21081110A	NA	08/11/21 22:22
CS5CV	SJH0117-CAL6	21081111A	NA	08/11/21 23:11
ICVCV	SJH0117-SCV1	21081112A	NA	08/12/21 00:00
CS3Z2	SJH0117-CCV1	21081113B	NA	08/12/21 00:48
ISCZ2	SJH0117-RES2	21081114	NA	08/12/21 01:42

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
		Calibration:	EH00030

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
CS3L7	SJH0365-ICV1	21082621A	NA	08/27/21 03:04
ISCL7	SJH0365-RES1	21082622	NA	08/27/21 03:57
Blank	BJG0465-BLK1	21082701	Solid	08/27/21 04:48
LCS	BJG0465-BS1	21082702	Solid	08/27/21 05:37
Reference	BJG0465-SRM1	21082705	Solid	08/27/21 08:04
LDW21-IT654B	BJG0465-DUP1	21082707	Solid	08/27/21 09:42
CS3L8	SJH0365-CCV1	21082709	NA	08/27/21 11:20
ISCL8	SJH0365-RES2	21082710	NA	08/27/21 12:13
LDW21-IT654B	21G0108-02	21082711	Solid	08/27/21 13:04
LDW21-IT654C	21G0108-03	21082712	Solid	08/27/21 13:53
LDW21-IT654E	21G0108-04	21082713	Solid	08/27/21 14:42
LDW21-IT649B	21G0108-06	21082714	Solid	08/27/21 15:31
LDW21-IT649C	21G0108-07	21082715	Solid	08/27/21 16:20
LDW21-IT649E	21G0108-08	21082716	Solid	08/27/21 17:09
LDW21-IT669B	21G0108-09	21082717	Solid	08/27/21 17:58
LDW21-IT669C	21G0108-10	21082718	Solid	08/27/21 18:47
LDW21-IT669E	21G0108-11	21082719	Solid	08/27/21 19:36
CS3L9	SJH0365-CCV2	21082720	NA	08/27/21 20:25
ISCL9	SJH0365-RES3	21082721	NA	08/27/21 21:19

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Printed: 8/30/2021 2:08:39PM

ANALYSIS SEQUENCE

SJH0365

Instrument: AUTOSPEC01 Element Column ID: J6459
Calibration ID: EH00030 Tune File: AUG2021_1-5
EM Voltage: 370 Resolution check times : 03:57, 12:13, 21:18

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Analyzed	File ID	Analyst	Comments
SJH0365-ICV1	CS3L7	QC		1	J001522		08/27/2021 03:04	21082621A	PK	
SJH0365-RES1	ISCL7	QC		2	J005595		08/27/2021 03:57	21082622	PK	
BJG0465-BLK1	Blank	QC		3		J005741	08/27/2021 04:48	21082701	PK	
BJG0465-BS1	LCS	QC		4		J005741	08/27/2021 05:37	21082702	PK	
BJG0465-BSD1	LCS Dup	QC		5		J005741	08/27/2021 06:26	21082703	PK	
BJG0465-MS1	Matrix Spike	QC		6		J005741	08/27/2021 07:15	21082704	PK	
BJG0465-SRM1	Reference	QC		7		J005741	08/27/2021 08:04	21082705	PK	
BJG0465-SRM2	Reference	QC		8		J005741				
BJG0465-DUP1	Duplicate	QC		9		J005741	08/27/2021 09:42	21082707	PK	
BJG0465-DUP2	Duplicate	QC		10		J005741	08/27/2021 10:31	21082708	PK	
SJH0365-CCV1	CS3L8	QC		11	J001522		08/27/2021 11:20	21082709	PK	
SJH0365-RES2	ISCL8	QC		12	J005595		08/27/2021 12:13	21082710	PK	
21G0108-02	LDW21-IT654B	1613B Dioxin	C 01	13		J005741	08/27/2021 13:04	21082711	PK	
21G0108-03	LDW21-IT654C	1613B Dioxin	C 01	14		J005741	08/27/2021 13:53	21082712	PK	
21G0108-04	LDW21-IT654E	1613B Dioxin	C 01	15		J005741	08/27/2021 14:42	21082713	PK	
21G0108-06	LDW21-IT649B	1613B Dioxin	C 01	16		J005741	08/27/2021 15:31	21082714	PK	
21G0108-07	LDW21-IT649C	1613B Dioxin	C 01	17		J005741	08/27/2021 16:20	21082715	PK	
21G0108-08	LDW21-IT649E	1613B Dioxin	C 01	18		J005741	08/27/2021 17:09	21082716	PK	
21G0108-09	LDW21-IT669B	1613B Dioxin	C 01	19		J005741	08/27/2021 17:58	21082717	PK	
21G0108-10	LDW21-IT669C	1613B Dioxin	C 01	20		J005741	08/27/2021 18:47	21082718	PK	
21G0108-11	LDW21-IT669E	1613B Dioxin	C 01	21		J005741	08/27/2021 19:36	21082719	PK	
SJH0365-CCV2	CS3L9	QC		22	J001522		08/27/2021 20:25	21082720	PK	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Printed: 8/30/2021 2:08:39PM

ANALYSIS SEQUENCE

SJH0365

Instrument:	AUTOSPEC01	Element Column ID:	J6459
Calibration ID:	EH00030	Tune File:	AUG2021_1-5
EM Voltage:	370	Resolution check times :	03:57, 12:13, 21:18

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Analyzed	File ID	Analyst	Comments
SJH0365-RES3	ISCL9	QC		23	J005595		08/27/2021 21:19	21082721	PK	

Quantify Audit Report MassLynx MassLynx V4.1 SCN909

Dataset: T:\Autospec\Processed Data Batch\210827D1.qld
Last Altered: Friday, August 27, 2021 13:00:30 Pacific Daylight Time
Printed: Friday, August 27, 2021 13:01:50 Pacific Daylight Time

8/27/21 pk

Event	Details	Sample ID
Process Extract		
Process Integrate		
Process Quantify		
Dataset Created		
Peak deleted	Sample:21082701, Compound:HD, RT:35.820	1
Peak deleted	Sample:21082701, Compound:HPD, RT:39.776	1
Peak deleted	Sample:21082701, Compound:HPF, RT:38.316	1
Peak deleted	Sample:21082701, Compound:HPF, RT:38.996	1
Peak deleted	Sample:21082701, Compound:HPF, RT:39.040	1
Pre modification peak	Sample:21082701, Compound:OD, RT:44.427	1
Peak modified	Sample:21082701, Compound:OD, RT:44.427	1
Peak deleted	Sample:21082702, Compound:HD, RT:36.422	2
Peak deleted	Sample:21082702, Compound:TF, RT:23.175	2
Peak deleted	Sample:21082703, Compound:HD, RT:36.444	3
Peak deleted	Sample:21082703, Compound:HPF, RT:38.728	3
Peak deleted	Sample:21082704, Compound:PF, RT:31.264	4
Pre modification peak	Sample:21082705, Compound:HD, RT:36.054	5
Peak modified	Sample:21082705, Compound:HD, RT:36.054	5
Pre modification peak	Sample:21082705, Compound:HF, RT:34.539	5
Peak modified	Sample:21082705, Compound:HF, RT:34.539	5
Pre modification peak	Sample:21082705, Compound:HF, RT:36.422	5
Peak modified	Sample:21082705, Compound:HF, RT:36.422	5
Pre modification peak	Sample:21082705, Compound:HF, RT:36.433	5
Peak modified	Sample:21082705, Compound:HF, RT:36.433	5
Pre modification peak	Sample:21082705, Compound:PF, RT:29.381	5
Peak modified	Sample:21082705, Compound:PF, RT:29.381	5
Peak deleted	Sample:21082705, Compound:PF, RT:29.782	5
Peak deleted	Sample:21082705, Compound:TD, RT:23.478	5
Peak deleted	Sample:21082705, Compound:TD, RT:25.882	5
Peak added	Sample:21082706, Compound:13C-123789-HxCDD, RT:36.311	6
Peak added	Sample:21082706, Compound:13C-123789-HxCDD, RT:36.311	6
Peak added	Sample:21082706, Compound:13C-123789-HxCDD, RT:36.311	6
Peak added	Sample:21082706, Compound:13C-123789-HxCDD, RT:36.311	6
Peak deleted	Sample:21082708, Compound:HD, RT:35.520	8
Peak deleted	Sample:21082708, Compound:HF, RT:34.383	8
Peak deleted	Sample:21082708, Compound:HF, RT:34.428	8
Pre modification peak	Sample:21082708, Compound:HPF, RT:40.522	8
Peak modified	Sample:21082708, Compound:HPF, RT:40.522	8
Peak deleted	Sample:21082708, Compound:PF, RT:31.442	8
Peak deleted	Sample:21082708, Compound:TD, RT:23.992	8
Peak deleted	Sample:21082708, Compound:TF, RT:22.177	8
Peak deleted	Sample:21082708, Compound:TF, RT:26.895	8
Dataset Saved	Saved to 'T:\Autospec\Processed Data Batch\210827D1.qld'	
Dataset Saved	Saved to 'T:\Autospec\Processed Data Batch\210827D1.qld'	

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 11:17:50 Pacific Daylight Time 8/30/21 pk

Event	Details	Sample ID
Process Extract		
Process Integrate		
Process Quantify		
Dataset Created		
Peak deleted	Sample:21082711, Compound:PF, RT:28.746	3
Peak deleted	Sample:21082711, Compound:TF, RT:23.085	3
Peak deleted	Sample:21082711, Compound:TF, RT:25.610	3
Pre modification peak	Sample:21082712, Compound:HD, RT:34.673	4
Peak modified	Sample:21082712, Compound:HD, RT:34.673	4
Pre modification peak	Sample:21082712, Compound:HD, RT:34.684	4
Peak modified	Sample:21082712, Compound:HD, RT:34.684	4
Pre modification peak	Sample:21082712, Compound:HF, RT:35.453	4
Peak modified	Sample:21082712, Compound:HF, RT:35.453	4
Pre modification peak	Sample:21082712, Compound:PD, RT:28.333	4
Peak modified	Sample:21082712, Compound:PD, RT:28.333	4
Pre modification peak	Sample:21082712, Compound:PD, RT:28.345	4
Peak modified	Sample:21082712, Compound:PD, RT:28.345	4
Peak deleted	Sample:21082712, Compound:PD, RT:31.018	4
Pre modification peak	Sample:21082712, Compound:PF, RT:29.069	4
Peak modified	Sample:21082712, Compound:PF, RT:29.069	4
Pre modification peak	Sample:21082712, Compound:PF, RT:29.091	4
Peak modified	Sample:21082712, Compound:PF, RT:29.091	4
Pre modification peak	Sample:21082712, Compound:PF, RT:30.751	4
Peak modified	Sample:21082712, Compound:PF, RT:30.751	4
Pre modification peak	Sample:21082712, Compound:PF, RT:30.751	4
Peak modified	Sample:21082712, Compound:PF, RT:30.751	4
Peak deleted	Sample:21082713, Compound:PP, RT:26.577	5
Peak deleted	Sample:21082713, Compound:TF, RT:21.996	5
Peak deleted	Sample:21082714, Compound:HPD, RT:39.051	6
Peak added	Sample:21082714, Compound:PD, RT:28.256	6
Peak added	Sample:21082714, Compound:PD, RT:28.289	6
Peak added	Sample:21082714, Compound:PD, RT:28.768	6
Peak added	Sample:21082714, Compound:PD, RT:28.768	6
Pre modification peak	Sample:21082714, Compound:PD, RT:30.996	6
Peak modified	Sample:21082714, Compound:PD, RT:30.996	6
Peak added	Sample:21082714, Compound:PF, RT:28.311	6
Peak added	Sample:21082714, Compound:PF, RT:28.322	6
Pre modification peak	Sample:21082714, Compound:PF, RT:29.392	6
Peak modified	Sample:21082714, Compound:PF, RT:29.392	6
Peak deleted	Sample:21082714, Compound:TD, RT:25.050	6
Peak deleted	Sample:21082714, Compound:TD, RT:25.867	6
Peak deleted	Sample:21082714, Compound:TD, RT:25.987	6
Peak deleted	Sample:21082714, Compound:TF, RT:22.208	6
Peak deleted	Sample:21082714, Compound:TF, RT:24.854	6
Peak deleted	Sample:21082715, Compound:HD, RT:35.664	7
Peak deleted	Sample:21082715, Compound:HF, RT:35.375	7
Peak deleted	Sample:21082715, Compound:HPF, RT:40.321	7
Peak deleted	Sample:21082715, Compound:HPF, RT:40.544	7
Peak deleted	Sample:21082715, Compound:PF, RT:28.066	7
Peak deleted	Sample:21082715, Compound:PF, RT:30.484	7
Peak deleted	Sample:21082715, Compound:TD, RT:24.506	7
Peak deleted	Sample:21082715, Compound:TF, RT:21.724	7
Peak deleted	Sample:21082715, Compound:TF, RT:21.784	7
Peak deleted	Sample:21082715, Compound:TF, RT:25.232	7
Pre modification peak	Sample:21082716, Compound:HPD, RT:39.798	8

Dataset: T:\Autospec\Processed Data Batch\210827D2.qld
Last Altered: Monday, August 30, 2021 11:16:01 Pacific Daylight Time
Printed: Monday, August 30, 2021 11:17:50 Pacific Daylight Time

Event	Details	Sample ID
Peak modified	Sample:21082716, Compound:HPD, RT:39.798	8
Pre modification peak	Sample:21082716, Compound:OF, RT:44.638	8
Peak modified	Sample:21082716, Compound:OF, RT:44.638	8
Pre modification peak	Sample:21082716, Compound:OF, RT:44.647	8
Peak modified	Sample:21082716, Compound:OF, RT:44.647	8
Peak deleted	Sample:21082716, Compound:PF, RT:28.779	8
Peak deleted	Sample:21082716, Compound:PF, RT:29.046	8
Peak deleted	Sample:21082716, Compound:PF, RT:29.392	8
Peak deleted	Sample:21082716, Compound:TD, RT:25.897	8
Pre modification peak	Sample:21082717, Compound:PF, RT:28.344	9
Peak modified	Sample:21082717, Compound:PF, RT:28.344	9
Pre modification peak	Sample:21082717, Compound:PF, RT:28.344	9
Peak modified	Sample:21082717, Compound:PF, RT:28.344	9
Pre modification peak	Sample:21082717, Compound:PF, RT:29.069	9
Peak modified	Sample:21082717, Compound:PF, RT:29.069	9
Pre modification peak	Sample:21082717, Compound:PF, RT:29.069	9
Peak modified	Sample:21082717, Compound:PF, RT:29.069	9
Peak added	Sample:21082717, Compound:TF, RT:23.266	9
Peak added	Sample:21082717, Compound:TF, RT:23.281	9
Peak added	Sample:21082717, Compound:TF, RT:23.372	9
Peak added	Sample:21082717, Compound:TF, RT:23.387	9
Peak added	Sample:21082717, Compound:TF, RT:23.508	9
Peak added	Sample:21082717, Compound:TF, RT:23.508	9
Peak added	Sample:21082717, Compound:TF, RT:24.173	9
Peak added	Sample:21082717, Compound:TF, RT:24.173	9
Peak added	Sample:21082717, Compound:TF, RT:24.566	9
Peak added	Sample:21082717, Compound:TF, RT:24.566	9
Peak deleted	Sample:21082717, Compound:TF, RT:26.728	9
Peak deleted	Sample:21082718, Compound:HPF, RT:39.819	10
Peak deleted	Sample:21082718, Compound:TD, RT:25.216	10
Pre modification peak	Sample:21082718, Compound:TF, RT:25.262	10
Peak modified	Sample:21082718, Compound:TF, RT:25.262	10
Peak added	Sample:21082719, Compound:HF, RT:35.419	11
Pre modification peak	Sample:21082719, Compound:HF, RT:35.442	11
Peak modified	Sample:21082719, Compound:HF, RT:35.442	11
Peak added	Sample:21082719, Compound:HF, RT:35.442	11
Peak added	Sample:21082719, Compound:PF, RT:29.058	11
Peak added	Sample:21082719, Compound:PF, RT:29.058	11
Pre modification peak	Sample:21082719, Compound:PF, RT:29.426	11
Peak modified	Sample:21082719, Compound:PF, RT:29.426	11
Peak deleted	Sample:21082719, Compound:TD, RT:25.897	11
Peak deleted	Sample:21082721, Compound:13C-123789-HxCDD, RT:36.055	13
Dataset Saved	Saved to 'T:\Autospec\Processed Data Batch\210827D2.qld'	
Dataset Saved	Saved to 'T:\Autospec\Processed Data Batch\210827D2.qld'	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	SJH0365-ICV1	Calibration:	EH00030
File ID:	21082621A	Analyzed:	08/27/21 03:04

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	100.00	105	71 - 129	25.2165	25.63973	-0.4232	N/A	
13C12-2,3,7,8-TCDD	100.00	102	82 - 118	25.8515	26.27478	-0.4233	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	110	76 - 124	29.3697	29.80383	-0.4341	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	109	77 - 123	30.7177	31.14815	-0.4305	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	109	62 - 138	30.9628	31.40067	-0.4379	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	87.4	76 - 124	34.3718	34.782	-0.4102	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	83.1	70 - 130	34.5167	34.91943	-0.4027	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	84.9	73 - 127	35.3968	35.7884	-0.3916	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	88.7	74 - 126	36.433	36.8227	-0.3897	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	98.3	85 - 115	35.5195	35.90912	-0.3896	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	94.4	85 - 115	35.6308	36.0242	-0.3934	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	105	78 - 122	38.3158	38.67025	-0.3545	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	105	77 - 123	40.4885	40.90587	-0.4174	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	109	72 - 128	39.7753	40.16678	-0.3915	N/A	
13C12-OCDD	200.00	135	48 - 152	44.3998	44.88763	-0.4878	N/A	
37Cl4-2,3,7,8-TCDD	10.000	93.7	0 - 200	25.8667	26.30253	-0.4358	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	BJG0465-BLK1	Calibration:	EH00030
File ID:	21082701	Analyzed:	08/27/21 04:48

Surrogate Compound	Spike Level ng/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	200.00	24.7	24 - 169	25.2163	25.63973	-0.4234	N/A	
13C12-2,3,7,8-TCDD	200.00	36.5	25 - 164	25.8665	26.27478	-0.4083	N/A	
13C12-1,2,3,7,8-PeCDF	200.00	70.3	24 - 185	29.3808	29.80383	-0.4230	N/A	
13C12-2,3,4,7,8-PeCDF	200.00	67.7	21 - 178	30.7178	31.14815	-0.4304	N/A	
13C12-1,2,3,7,8-PeCDD	200.00	76.6	25 - 181	30.974	31.40067	-0.4267	N/A	
13C12-1,2,3,4,7,8-HxCDF	200.00	67.3	26 - 152	34.372	34.782	-0.4100	N/A	
13C12-1,2,3,6,7,8-HxCDF	200.00	67.6	26 - 123	34.5168	34.91943	-0.4026	N/A	
13C12-2,3,4,6,7,8-HxCDF	200.00	69.9	28 - 136	35.3972	35.7884	-0.3912	N/A	
13C12-1,2,3,7,8,9-HxCDF	200.00	71.5	29 - 147	36.4332	36.8227	-0.3895	N/A	
13C12-1,2,3,4,7,8-HxCDD	200.00	77.2	32 - 141	35.5197	35.90912	-0.3894	N/A	
13C12-1,2,3,6,7,8-HxCDD	200.00	75.3	28 - 130	35.631	36.0242	-0.3932	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	200.00	84.7	28 - 143	38.3162	38.67025	-0.3541	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	200.00	85.5	26 - 138	40.4885	40.90587	-0.4174	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	200.00	90.9	23 - 140	39.7757	40.16678	-0.3911	N/A	
13C12-OCDD	400.00	112	17 - 157	44.3998	44.88763	-0.4878	N/A	
37Cl4-2,3,7,8-TCDD	80.000	35.7	35 - 197	25.8817	26.30253	-0.4208	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	BJG0465-BS1	Calibration:	EH00030
File ID:	21082702	Analyzed:	08/27/21 05:37

Surrogate Compound	Spike Level ng/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	200.00	25.9	24 - 169	25.2467	25.63973	-0.3930	N/A	
13C12-2,3,7,8-TCDD	200.00	39.6	25 - 164	25.8817	26.27478	-0.3931	N/A	
13C12-1,2,3,7,8-PeCDF	200.00	78.1	24 - 185	29.3918	29.80383	-0.4120	N/A	
13C12-2,3,4,7,8-PeCDF	200.00	74.0	21 - 178	30.7287	31.14815	-0.4195	N/A	
13C12-1,2,3,7,8-PeCDD	200.00	81.6	25 - 181	30.9848	31.40067	-0.4159	N/A	
13C12-1,2,3,4,7,8-HxCDF	200.00	67.5	26 - 152	34.3828	34.782	-0.3992	N/A	
13C12-1,2,3,6,7,8-HxCDF	200.00	67.2	26 - 123	34.5277	34.91943	-0.3917	N/A	
13C12-2,3,4,6,7,8-HxCDF	200.00	68.9	28 - 136	35.408	35.7884	-0.3804	N/A	
13C12-1,2,3,7,8,9-HxCDF	200.00	70.8	29 - 147	36.444	36.8227	-0.3787	N/A	
13C12-1,2,3,4,7,8-HxCDD	200.00	76.5	32 - 141	35.5305	35.90912	-0.3786	N/A	
13C12-1,2,3,6,7,8-HxCDD	200.00	73.5	28 - 130	35.642	36.0242	-0.3822	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	200.00	88.4	28 - 143	38.327	38.67025	-0.3433	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	200.00	85.1	26 - 138	40.4995	40.90587	-0.4064	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	200.00	91.4	23 - 140	39.7865	40.16678	-0.3803	N/A	
13C12-OCDD	400.00	110	17 - 157	44.4088	44.88763	-0.4788	N/A	
37Cl4-2,3,7,8-TCDD	80.000	38.8	35 - 197	25.8967	26.30253	-0.4058	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	BJG0465-SRM1	Calibration:	EH00030
File ID:	21082705	Analyzed:	08/27/21 08:04

Surrogate Compound	Spike Level ng/kg wet	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	397.61	62.6	24 - 169	25.2163	25.63973	-0.4234	N/A	
13C12-2,3,7,8-TCDD	397.61	69.5	25 - 164	25.8513	26.27478	-0.4235	N/A	
13C12-1,2,3,7,8-PeCDF	397.61	90.0	24 - 185	29.3807	29.80383	-0.4231	N/A	
13C12-2,3,4,7,8-PeCDF	397.61	90.6	21 - 178	30.7175	31.14815	-0.4307	N/A	
13C12-1,2,3,7,8-PeCDD	397.61	92.5	25 - 181	30.9737	31.40067	-0.4270	N/A	
13C12-1,2,3,4,7,8-HxCDF	397.61	71.2	26 - 152	34.3828	34.782	-0.3992	N/A	
13C12-1,2,3,6,7,8-HxCDF	397.61	68.1	26 - 123	34.5277	34.91943	-0.3917	N/A	
13C12-2,3,4,6,7,8-HxCDF	397.61	70.4	28 - 136	35.419	35.7884	-0.3694	N/A	
13C12-1,2,3,7,8,9-HxCDF	397.61	76.7	29 - 147	36.444	36.8227	-0.3787	N/A	
13C12-1,2,3,4,7,8-HxCDD	397.61	81.9	32 - 141	35.5415	35.90912	-0.3676	N/A	
13C12-1,2,3,6,7,8-HxCDD	397.61	75.7	28 - 130	35.653	36.0242	-0.3712	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	397.61	79.5	28 - 143	38.3268	38.67025	-0.3435	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	397.61	85.5	26 - 138	40.4993	40.90587	-0.4066	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	397.61	89.3	23 - 140	39.7863	40.16678	-0.3805	N/A	
13C12-OCDD	795.23	99.9	17 - 157	44.4088	44.88763	-0.4788	N/A	
37Cl4-2,3,7,8-TCDD	159.05	72.0	35 - 197	25.8817	26.30253	-0.4208	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	BJG0465-DUP1	Calibration:	EH00030
File ID:	21082707	Analyzed:	08/27/21 09:42

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	199.59	65.3	24 - 169	25.2162	25.63973	-0.4235	N/A	
13C12-2,3,7,8-TCDD	199.59	68.6	25 - 164	25.8512	26.27478	-0.4236	N/A	
13C12-1,2,3,7,8-PeCDF	199.59	77.2	24 - 185	29.3802	29.80383	-0.4236	N/A	
13C12-2,3,4,7,8-PeCDF	199.59	75.7	21 - 178	30.7172	31.14815	-0.4310	N/A	
13C12-1,2,3,7,8-PeCDD	199.59	78.7	25 - 181	30.9733	31.40067	-0.4274	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.59	56.7	26 - 152	34.3825	34.782	-0.3995	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.59	52.9	26 - 123	34.5273	34.91943	-0.3921	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.59	53.2	28 - 136	35.4075	35.7884	-0.3809	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.59	62.3	29 - 147	36.4435	36.8227	-0.3792	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.59	64.1	32 - 141	35.53	35.90912	-0.3791	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.59	57.9	28 - 130	35.6413	36.0242	-0.3829	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.59	57.7	28 - 143	38.3263	38.67025	-0.3440	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.59	64.1	26 - 138	40.4988	40.90587	-0.4071	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.59	64.6	23 - 140	39.7858	40.16678	-0.3810	N/A	
13C12-OCDD	399.17	74.5	17 - 157	44.4172	44.88763	-0.4704	N/A	
37Cl4-2,3,7,8-TCDD	79.834	75.7	35 - 197	25.8813	26.30253	-0.4212	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	SJH0365-CCV1	Calibration:	EH00030
File ID:	21082709	Analyzed:	08/27/21 11:20

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	100.00	106	71 - 129	25.2163	25.63973	-0.4234	N/A	
13C12-2,3,7,8-TCDD	100.00	103	82 - 118	25.8513	26.27478	-0.4235	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	110	76 - 124	29.3807	29.80383	-0.4231	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	111	77 - 123	30.7177	31.14815	-0.4305	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	114	62 - 138	30.9738	31.40067	-0.4269	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	86.2	76 - 124	34.383	34.782	-0.3990	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	82.5	70 - 130	34.5168	34.91943	-0.4026	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	84.5	73 - 127	35.4082	35.7884	-0.3802	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	90.4	74 - 126	36.4442	36.8227	-0.3785	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	95.4	85 - 115	35.5195	35.90912	-0.3896	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	92.0	85 - 115	35.642	36.0242	-0.3822	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	104	78 - 122	38.327	38.67025	-0.3433	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	106	77 - 123	40.4995	40.90587	-0.4064	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	109	72 - 128	39.7865	40.16678	-0.3803	N/A	
13C12-OCDD	200.00	127	48 - 152	44.3998	44.88763	-0.4878	N/A	
37Cl4-2,3,7,8-TCDD	10.000	97.2	0 - 200	25.8663	26.30253	-0.4362	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	21G0108-02	Calibration:	EH00030
File ID:	21082711	Analyzed:	08/27/21 13:04

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	199.59	47.0	24 - 169	25.2317	25.63973	-0.4080	N/A	
13C12-2,3,7,8-TCDD	199.59	54.2	25 - 164	25.8667	26.27478	-0.4081	N/A	
13C12-1,2,3,7,8-PeCDF	199.59	74.9	24 - 185	29.3922	29.80383	-0.4116	N/A	
13C12-2,3,4,7,8-PeCDF	199.59	74.3	21 - 178	30.7292	31.14815	-0.4190	N/A	
13C12-1,2,3,7,8-PeCDD	199.59	79.2	25 - 181	30.9853	31.40067	-0.4154	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.59	61.6	26 - 152	34.3948	34.782	-0.3872	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.59	58.9	26 - 123	34.5397	34.91943	-0.3797	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.59	61.9	28 - 136	35.42	35.7884	-0.3684	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.59	69.4	29 - 147	36.456	36.8227	-0.3667	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.59	71.4	32 - 141	35.5425	35.90912	-0.3666	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.59	65.4	28 - 130	35.6538	36.0242	-0.3704	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.59	68.4	28 - 143	38.339	38.67025	-0.3313	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.59	74.2	26 - 138	40.5117	40.90587	-0.3942	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.59	75.9	23 - 140	39.7985	40.16678	-0.3683	N/A	
13C12-OCDD	399.17	90.5	17 - 157	44.4283	44.88763	-0.4593	N/A	
37Cl4-2,3,7,8-TCDD	79.834	54.3	35 - 197	25.8818	26.30253	-0.4207	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	21G0108-03	Calibration:	EH00030
File ID:	21082712	Analyzed:	08/27/21 13:53

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	199.46	61.7	24 - 169	25.2315	25.63973	-0.4082	N/A	
13C12-2,3,7,8-TCDD	199.46	69.9	25 - 164	25.8817	26.27478	-0.3931	N/A	
13C12-1,2,3,7,8-PeCDF	199.46	88.0	24 - 185	29.403	29.80383	-0.4008	N/A	
13C12-2,3,4,7,8-PeCDF	199.46	88.3	21 - 178	30.751	31.14815	-0.3972	N/A	
13C12-1,2,3,7,8-PeCDD	199.46	90.6	25 - 181	30.9962	31.40067	-0.4045	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.46	70.6	26 - 152	34.4165	34.782	-0.3655	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.46	66.2	26 - 123	34.5503	34.91943	-0.3691	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.46	68.9	28 - 136	35.4415	35.7884	-0.3469	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.46	76.1	29 - 147	36.4667	36.8227	-0.3560	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.46	80.9	32 - 141	35.553	35.90912	-0.3561	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.46	74.8	28 - 130	35.6643	36.0242	-0.3599	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.46	81.0	28 - 143	38.3495	38.67025	-0.3208	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.46	85.8	26 - 138	40.5332	40.90587	-0.3727	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.46	88.0	23 - 140	39.809	40.16678	-0.3578	N/A	
13C12-OCDD	398.91	105	17 - 157	44.4458	44.88763	-0.4418	N/A	
37Cl4-2,3,7,8-TCDD	79.782	71.0	35 - 197	25.8967	26.30253	-0.4058	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	21G0108-04	Calibration:	EH00030
File ID:	21082713	Analyzed:	08/27/21 14:42

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	199.78	58.8	24 - 169	25.2315	25.63973	-0.4082	N/A	
13C12-2,3,7,8-TCDD	199.78	65.5	25 - 164	25.8665	26.27478	-0.4083	N/A	
13C12-1,2,3,7,8-PeCDF	199.78	88.9	24 - 185	29.3807	29.80383	-0.4231	N/A	
13C12-2,3,4,7,8-PeCDF	199.78	87.2	21 - 178	30.7288	31.14815	-0.4194	N/A	
13C12-1,2,3,7,8-PeCDD	199.78	89.1	25 - 181	30.9738	31.40067	-0.4269	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.78	71.2	26 - 152	34.383	34.782	-0.3990	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.78	66.6	26 - 123	34.5278	34.91943	-0.3916	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.78	68.6	28 - 136	35.408	35.7884	-0.3804	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.78	73.6	29 - 147	36.4442	36.8227	-0.3785	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.78	81.4	32 - 141	35.5305	35.90912	-0.3786	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.78	74.2	28 - 130	35.642	36.0242	-0.3822	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.78	82.1	28 - 143	38.327	38.67025	-0.3433	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.78	84.7	26 - 138	40.4997	40.90587	-0.4062	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.78	87.5	23 - 140	39.7865	40.16678	-0.3803	N/A	
13C12-OCDD	399.57	101	17 - 157	44.4092	44.88763	-0.4784	N/A	
37Cl4-2,3,7,8-TCDD	79.913	66.4	35 - 197	25.8817	26.30253	-0.4208	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	21G0108-06	Calibration:	EH00030
File ID:	21082714	Analyzed:	08/27/21 15:31

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	199.68	55.2	24 - 169	25.2163	25.63973	-0.4234	N/A	
13C12-2,3,7,8-TCDD	199.68	59.8	25 - 164	25.8513	26.27478	-0.4235	N/A	
13C12-1,2,3,7,8-PeCDF	199.68	75.9	24 - 185	29.3807	29.80383	-0.4231	N/A	
13C12-2,3,4,7,8-PeCDF	199.68	77.0	21 - 178	30.7175	31.14815	-0.4307	N/A	
13C12-1,2,3,7,8-PeCDD	199.68	77.7	25 - 181	30.9738	31.40067	-0.4269	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.68	59.5	26 - 152	34.3828	34.782	-0.3992	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.68	55.6	26 - 123	34.5165	34.91943	-0.4029	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.68	58.5	28 - 136	35.4078	35.7884	-0.3806	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.68	63.5	29 - 147	36.4438	36.8227	-0.3789	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.68	67.4	32 - 141	35.5192	35.90912	-0.3899	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.68	63.5	28 - 130	35.6417	36.0242	-0.3825	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.68	67.6	28 - 143	38.3267	38.67025	-0.3436	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.68	70.5	26 - 138	40.4992	40.90587	-0.4067	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.68	71.7	23 - 140	39.7862	40.16678	-0.3806	N/A	
13C12-OCDD	399.37	87.3	17 - 157	44.4085	44.88763	-0.4791	N/A	
37Cl4-2,3,7,8-TCDD	79.874	59.9	35 - 197	25.8665	26.30253	-0.4360	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	21G0108-07	Calibration:	EH00030
File ID:	21082715	Analyzed:	08/27/21 16:20

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	199.91	57.6	24 - 169	25.2163	25.63973	-0.4234	N/A	
13C12-2,3,7,8-TCDD	199.91	61.2	25 - 164	25.8513	26.27478	-0.4235	N/A	
13C12-1,2,3,7,8-PeCDF	199.91	70.3	24 - 185	29.3808	29.80383	-0.4230	N/A	
13C12-2,3,4,7,8-PeCDF	199.91	68.6	21 - 178	30.7288	31.14815	-0.4194	N/A	
13C12-1,2,3,7,8-PeCDD	199.91	71.0	25 - 181	30.974	31.40067	-0.4267	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.91	53.7	26 - 152	34.3832	34.782	-0.3988	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.91	51.5	26 - 123	34.528	34.91943	-0.3914	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.91	51.8	28 - 136	35.4082	35.7884	-0.3802	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.91	55.3	29 - 147	36.4442	36.8227	-0.3785	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.91	61.9	32 - 141	35.5307	35.90912	-0.3784	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.91	57.8	28 - 130	35.642	36.0242	-0.3822	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.91	61.2	28 - 143	38.3272	38.67025	-0.3431	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.91	62.3	26 - 138	40.4997	40.90587	-0.4062	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.91	65.9	23 - 140	39.7867	40.16678	-0.3801	N/A	
13C12-OCDD	399.83	75.3	17 - 157	44.4092	44.88763	-0.4784	N/A	
37Cl4-2,3,7,8-TCDD	79.966	61.0	35 - 197	25.8817	26.30253	-0.4208	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	21G0108-08	Calibration:	EH00030
File ID:	21082716	Analyzed:	08/27/21 17:09

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	199.88	47.3	24 - 169	25.2163	25.63973	-0.4234	N/A	
13C12-2,3,7,8-TCDD	199.88	54.8	25 - 164	25.8513	26.27478	-0.4235	N/A	
13C12-1,2,3,7,8-PeCDF	199.88	74.3	24 - 185	29.3807	29.80383	-0.4231	N/A	
13C12-2,3,4,7,8-PeCDF	199.88	68.5	21 - 178	30.7287	31.14815	-0.4195	N/A	
13C12-1,2,3,7,8-PeCDD	199.88	76.5	25 - 181	30.9738	31.40067	-0.4269	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.88	55.1	26 - 152	34.383	34.782	-0.3990	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.88	57.8	26 - 123	34.5278	34.91943	-0.3916	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.88	55.2	28 - 136	35.408	35.7884	-0.3804	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.88	54.0	29 - 147	36.444	36.8227	-0.3787	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.88	69.0	32 - 141	35.5193	35.90912	-0.3898	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.88	64.0	28 - 130	35.642	36.0242	-0.3822	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.88	64.8	28 - 143	38.3268	38.67025	-0.3435	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.88	61.2	26 - 138	40.4993	40.90587	-0.4066	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.88	74.0	23 - 140	39.7865	40.16678	-0.3803	N/A	
13C12-OCDD	399.76	85.0	17 - 157	44.4088	44.88763	-0.4788	N/A	
37Cl4-2,3,7,8-TCDD	79.952	56.8	35 - 197	25.8817	26.30253	-0.4208	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	21G0108-09	Calibration:	EH00030
File ID:	21082717	Analyzed:	08/27/21 17:58

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	199.82	52.8	24 - 169	25.2465	25.63973	-0.3932	N/A	
13C12-2,3,7,8-TCDD	199.82	58.7	25 - 164	25.8815	26.27478	-0.3933	N/A	
13C12-1,2,3,7,8-PeCDF	199.82	73.1	24 - 185	29.4028	29.80383	-0.4010	N/A	
13C12-2,3,4,7,8-PeCDF	199.82	71.2	21 - 178	30.7508	31.14815	-0.3973	N/A	
13C12-1,2,3,7,8-PeCDD	199.82	74.0	25 - 181	31.007	31.40067	-0.3937	N/A	
13C12-1,2,3,4,7,8-HxCDF	199.82	59.4	26 - 152	34.4163	34.782	-0.3657	N/A	
13C12-1,2,3,6,7,8-HxCDF	199.82	56.4	26 - 123	34.55	34.91943	-0.3694	N/A	
13C12-2,3,4,6,7,8-HxCDF	199.82	58.1	28 - 136	35.4412	35.7884	-0.3472	N/A	
13C12-1,2,3,7,8,9-HxCDF	199.82	63.0	29 - 147	36.4662	36.8227	-0.3565	N/A	
13C12-1,2,3,4,7,8-HxCDD	199.82	68.7	32 - 141	35.5527	35.90912	-0.3564	N/A	
13C12-1,2,3,6,7,8-HxCDD	199.82	62.5	28 - 130	35.6752	36.0242	-0.3490	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	199.82	65.5	28 - 143	38.349	38.67025	-0.3213	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	199.82	67.6	26 - 138	40.5215	40.90587	-0.3844	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	199.82	71.2	23 - 140	39.8085	40.16678	-0.3583	N/A	
13C12-OCDD	399.64	80.0	17 - 157	44.4453	44.88763	-0.4423	N/A	
37Cl4-2,3,7,8-TCDD	79.928	65.0	35 - 197	25.8967	26.30253	-0.4058	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	21G0108-10	Calibration:	EH00030
File ID:	21082718	Analyzed:	08/27/21 18:47

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	200.06	54.5	24 - 169	25.2313	25.63973	-0.4084	N/A	
13C12-2,3,7,8-TCDD	200.06	59.5	25 - 164	25.8663	26.27478	-0.4085	N/A	
13C12-1,2,3,7,8-PeCDF	200.06	74.7	24 - 185	29.3915	29.80383	-0.4123	N/A	
13C12-2,3,4,7,8-PeCDF	200.06	73.6	21 - 178	30.7395	31.14815	-0.4087	N/A	
13C12-1,2,3,7,8-PeCDD	200.06	76.4	25 - 181	30.9957	31.40067	-0.4050	N/A	
13C12-1,2,3,4,7,8-HxCDF	200.06	57.2	26 - 152	34.4048	34.782	-0.3772	N/A	
13C12-1,2,3,6,7,8-HxCDF	200.06	52.7	26 - 123	34.5387	34.91943	-0.3807	N/A	
13C12-2,3,4,6,7,8-HxCDF	200.06	54.8	28 - 136	35.4298	35.7884	-0.3586	N/A	
13C12-1,2,3,7,8,9-HxCDF	200.06	63.7	29 - 147	36.4548	36.8227	-0.3679	N/A	
13C12-1,2,3,4,7,8-HxCDD	200.06	65.1	32 - 141	35.5413	35.90912	-0.3678	N/A	
13C12-1,2,3,6,7,8-HxCDD	200.06	59.2	28 - 130	35.6638	36.0242	-0.3604	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	200.06	52.4	28 - 143	38.3375	38.67025	-0.3328	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	200.06	63.2	26 - 138	40.51	40.90587	-0.3959	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	200.06	60.2	23 - 140	39.797	40.16678	-0.3698	N/A	
13C12-OCDD	400.12	57.4	17 - 157	44.4355	44.88763	-0.4521	N/A	
37Cl4-2,3,7,8-TCDD	80.025	66.4	35 - 197	25.8967	26.30253	-0.4058	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	21G0108-11	Calibration:	EH00030
File ID:	21082719	Analyzed:	08/27/21 19:36

Surrogate Compound	Spike Level ng/kg dry	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	200.06	60.2	24 - 169	25.2317	25.63973	-0.4080	N/A	
13C12-2,3,7,8-TCDD	200.06	66.0	25 - 164	25.8667	26.27478	-0.4081	N/A	
13C12-1,2,3,7,8-PeCDF	200.06	77.3	24 - 185	29.392	29.80383	-0.4118	N/A	
13C12-2,3,4,7,8-PeCDF	200.06	75.8	21 - 178	30.7402	31.14815	-0.4080	N/A	
13C12-1,2,3,7,8-PeCDD	200.06	79.3	25 - 181	30.9965	31.40067	-0.4042	N/A	
13C12-1,2,3,4,7,8-HxCDF	200.06	59.1	26 - 152	34.4057	34.782	-0.3763	N/A	
13C12-1,2,3,6,7,8-HxCDF	200.06	54.8	26 - 123	34.5393	34.91943	-0.3801	N/A	
13C12-2,3,4,6,7,8-HxCDF	200.06	58.1	28 - 136	35.4307	35.7884	-0.3577	N/A	
13C12-1,2,3,7,8,9-HxCDF	200.06	62.2	29 - 147	36.4557	36.8227	-0.3670	N/A	
13C12-1,2,3,4,7,8-HxCDD	200.06	67.2	32 - 141	35.542	35.90912	-0.3671	N/A	
13C12-1,2,3,6,7,8-HxCDD	200.06	61.6	28 - 130	35.6647	36.0242	-0.3595	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	200.06	63.6	28 - 143	38.3387	38.67025	-0.3316	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	200.06	67.9	26 - 138	40.5225	40.90587	-0.3834	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	200.06	69.5	23 - 140	39.7982	40.16678	-0.3686	N/A	
13C12-OCDD	400.13	79.4	17 - 157	44.4372	44.88763	-0.4504	N/A	
37Cl4-2,3,7,8-TCDD	80.026	72.4	35 - 197	25.8968	26.30253	-0.4057	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21G0108
Client:	Anchor QEA, LLC	Project:	Lower Duwamish AOC4
Sequence:	SJH0365	Instrument:	AUTOSPEC01
Sample ID:	SJH0365-CCV2	Calibration:	EH00030
File ID:	21082720	Analyzed:	08/27/21 20:25

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	100.00	107	71 - 129	25.216	25.63973	-0.4237	N/A	
13C12-2,3,7,8-TCDD	100.00	103	82 - 118	25.851	26.27478	-0.4238	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	111	76 - 124	29.3802	29.80383	-0.4236	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	110	77 - 123	30.7172	31.14815	-0.4310	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	112	62 - 138	30.9735	31.40067	-0.4272	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	86.0	76 - 124	34.3825	34.782	-0.3995	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	80.7	70 - 130	34.5162	34.91943	-0.4032	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	84.0	73 - 127	35.4075	35.7884	-0.3809	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	90.0	74 - 126	36.4435	36.8227	-0.3792	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	97.1	85 - 115	35.519	35.90912	-0.3901	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	91.2	85 - 115	35.6415	36.0242	-0.3827	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	101	78 - 122	38.3263	38.67025	-0.3440	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	104	77 - 123	40.4988	40.90587	-0.4071	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	106	72 - 128	39.786	40.16678	-0.3808	N/A	
13C12-OCDD	200.00	127	48 - 152	44.4082	44.88763	-0.4794	N/A	
37Cl4-2,3,7,8-TCDD	10.000	101	0 - 200	25.8813	26.30253	-0.4212	N/A	

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

HOLDING TIME SUMMARY

Analysis: EPA 1613B

Laboratory: Analytical Resources, Inc. SDG: 21G0108

Client: Anchor QEA, LLC Project: Lower Duwamish AOC4

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
LDW21-IT654B 21G0108-02	07/08/21 15:47	07/09/21 10:38	08/05/21 13:50	27	14	08/27/21 13:04	22	365	*
LDW21-IT654C 21G0108-03	07/08/21 15:47	07/09/21 10:38	08/05/21 13:50	27	14	08/27/21 13:53	22	365	*
LDW21-IT654E 21G0108-04	07/08/21 15:47	07/09/21 10:38	08/05/21 13:50	27	14	08/27/21 14:42	22	365	*
LDW21-IT649B 21G0108-06	07/08/21 16:26	07/09/21 10:38	08/05/21 13:50	27	14	08/27/21 15:31	22	365	*
LDW21-IT649C 21G0108-07	07/08/21 16:26	07/09/21 10:38	08/05/21 13:50	27	14	08/27/21 16:20	22	365	*
LDW21-IT649E 21G0108-08	07/08/21 16:26	07/09/21 10:38	08/05/21 13:50	27	14	08/27/21 17:09	22	365	*
LDW21-IT669B 21G0108-09	07/08/21 17:02	07/09/21 10:38	08/05/21 13:50	27	14	08/27/21 17:58	22	365	*
LDW21-IT669C 21G0108-10	07/08/21 17:02	07/09/21 10:38	08/05/21 13:50	27	14	08/27/21 18:47	22	365	*
LDW21-IT669E 21G0108-11	07/08/21 17:02	07/09/21 10:38	08/05/21 13:50	27	14	08/27/21 19:36	22	365	*
Duplicate BJG0465-DUP1	07/08/21 15:47	07/09/21 10:38	08/05/21 13:50	27	14	08/27/21 09:42	22	365	*

* Indicates hold time exceedance.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

METHOD DETECTION AND REPORTING LIMITS

EPA 1613B

Laboratory: Analytical Resources, Inc.
SDG: 21G0108
Client: Anchor QEA, LLC
Project: Lower Duwamish AOC4
Matrix: Solid
Instrument: AUTOSPEC01

Analyte	MDL	RL	Units
2,3,7,8-TCDF	0.058	1.00	ng/kg
2,3,7,8-TCDD	0.150	1.00	ng/kg
1,2,3,7,8-PeCDF	0.240	1.00	ng/kg
2,3,4,7,8-PeCDF	0.220	1.00	ng/kg
1,2,3,7,8-PeCDD	0.170	1.00	ng/kg
1,2,3,4,7,8-HxCDF	0.280	1.00	ng/kg
1,2,3,6,7,8-HxCDF	0.200	1.00	ng/kg
2,3,4,6,7,8-HxCDF	0.170	1.00	ng/kg
1,2,3,7,8,9-HxCDF	0.190	1.00	ng/kg
1,2,3,4,7,8-HxCDD	0.170	1.00	ng/kg
1,2,3,6,7,8-HxCDD	0.180	1.00	ng/kg
1,2,3,7,8,9-HxCDD	0.220	1.00	ng/kg
1,2,3,4,6,7,8-HpCDF	0.210	1.00	ng/kg
1,2,3,4,7,8,9-HpCDF	0.240	1.00	ng/kg
1,2,3,4,6,7,8-HpCDD	0.560	2.50	ng/kg
OCDF	1.10	2.50	ng/kg
OCDD	4.60	10.0	ng/kg
Total TCDF		1.00	ng/kg
Total TCDD		1.00	ng/kg
Total PeCDF		1.00	ng/kg
Total PeCDD		1.00	ng/kg
Total HxCDF		1.00	ng/kg
Total HxCDD		1.00	ng/kg
Total HpCDF		1.00	ng/kg
Total HpCDD		1.00	ng/kg

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

CS3WT

Calibration and Verification Solution (EPA-1613CS3) combined with Window Defining and 2,3,7,8-TCDD Resolution Testing Congeners

G 00136 Recd. 02/13/18

PRODUCT CODE:	CS3WT
LOT NUMBER:	CS3WT0617
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	06/27/2017
LAST TESTED: (mm/dd/yyyy)	06/27/2017
EXPIRY DATE: (mm/dd/yyyy)	06/27/2024
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

CS3WT is a solution/mixture of native and $^{13}C_{12}$-labelled chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

CS3WT was designed and prepared to be used as a HRMS calibration standard according to U.S. EPA Method 1613B.

It is to be used for calibration verification in place of EPA-1613CS3 (Lot: 13CS30617). It also contains the PCDD and PCDF window defining congeners for a DB-5 (or equivalent) capillary column as well as the TCDD isomers required to test and confirm the resolution of 2,3,7,8-TCDD.

The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%. The individual native 2,3,7,8-substituted PCDD and PCDF congeners all have chemical purities of >98%; the other congeners (window defining and resolution testing) should only be considered semi-quantitative.

This current lot of CS3WT (CS3WT0617) is to be used with the 1613 calibration solutions having the following lot numbers:

PRODUCT CODE	LOT NUMBER
EPA-1613CS1	13CS10617
EPA-1613CS2	13CS20617
EPA-1613CS3	13CS30617
EPA-1613CS4	13CS40617
EPA-1613CS5	13CS50617
EPA-1613CSL	13CSL0617
EPA-1613CS0.5	13CS0.50617

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) has been assigned to the quantitative analytes in this mixture. Conversely, semi-quantitative analytes have been assigned an uncertainty of ±20%.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

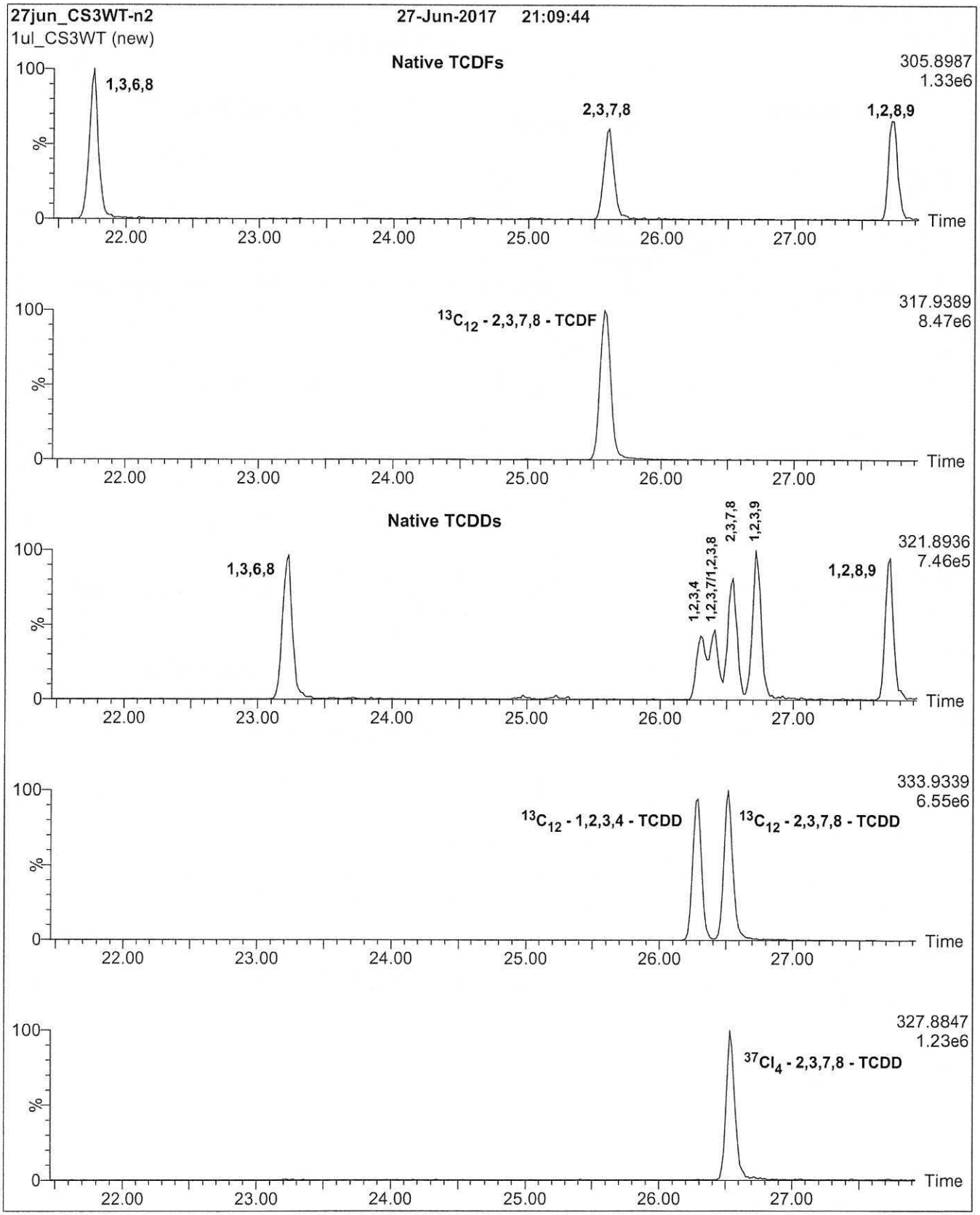


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

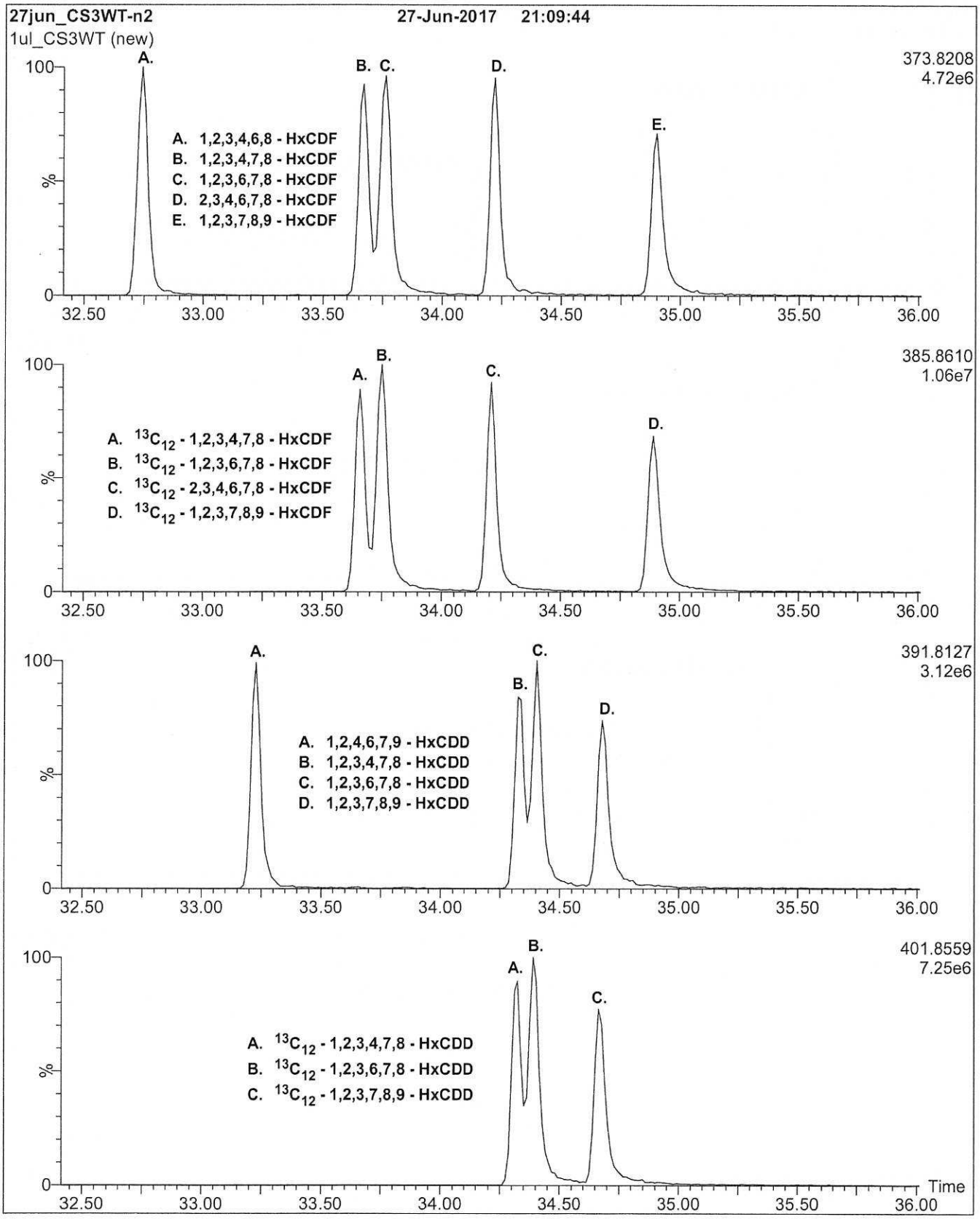
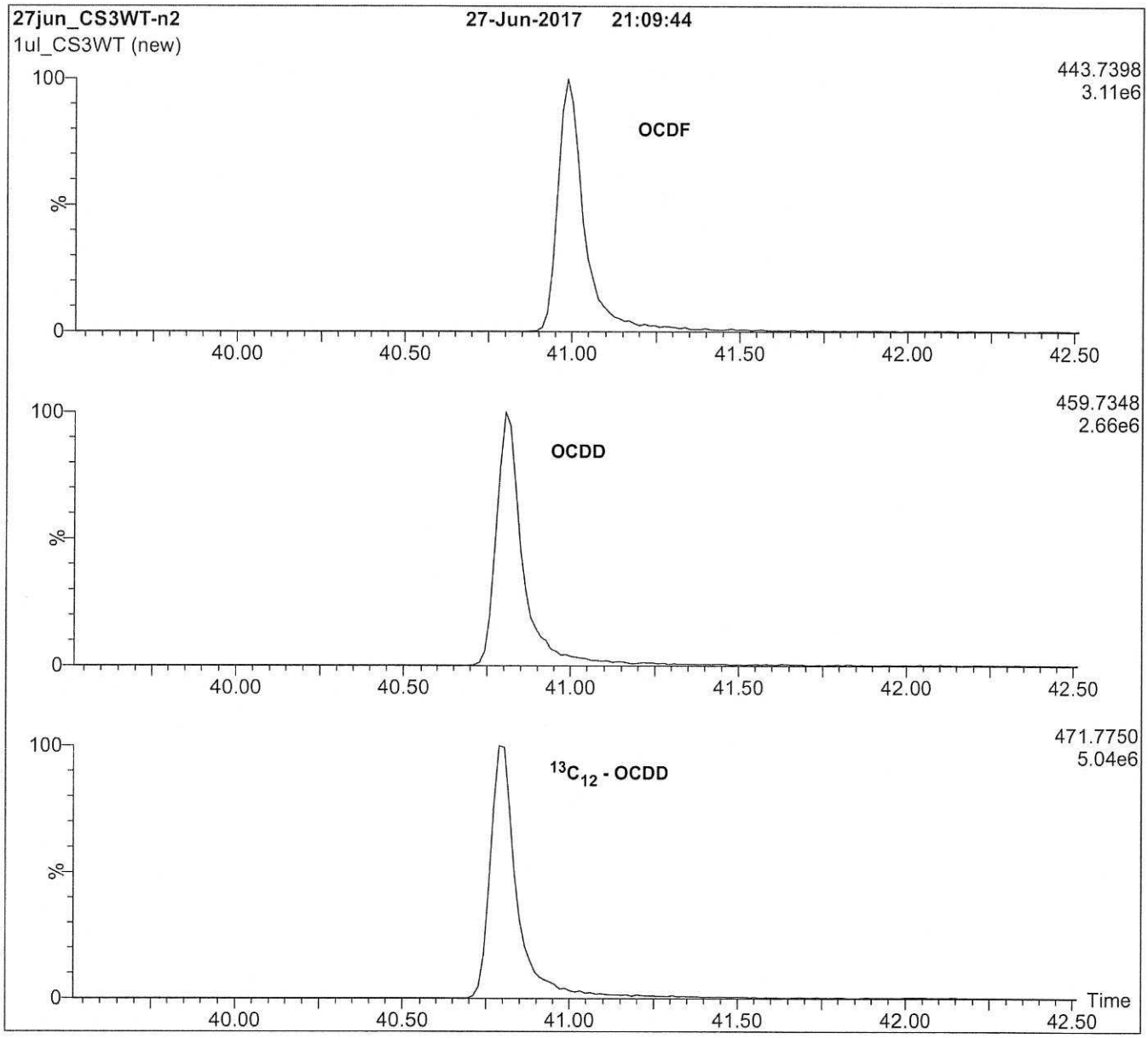


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613PAR

U.S. EPA Method 1613 Native PCDD/PCDF
Precision and Recovery Stock Solution

PRODUCT CODE:	EPA-1613PAR
LOT NUMBER:	13PAR1019
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/16/2019
LAST TESTED: (mm/dd/yyyy)	10/17/2019
EXPIRY DATE: (mm/dd/yyyy)	10/17/2026
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

I 000197

DESCRIPTION:

EPA-1613PAR is a solution/mixture of all the 2,3,7,8-substituted chlorinated dibenzo-p-dioxins (PCDDs) and 2,3,7,8-substituted dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

EPA-1613PAR was designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B).

The individual PCDDs and PCDFs all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

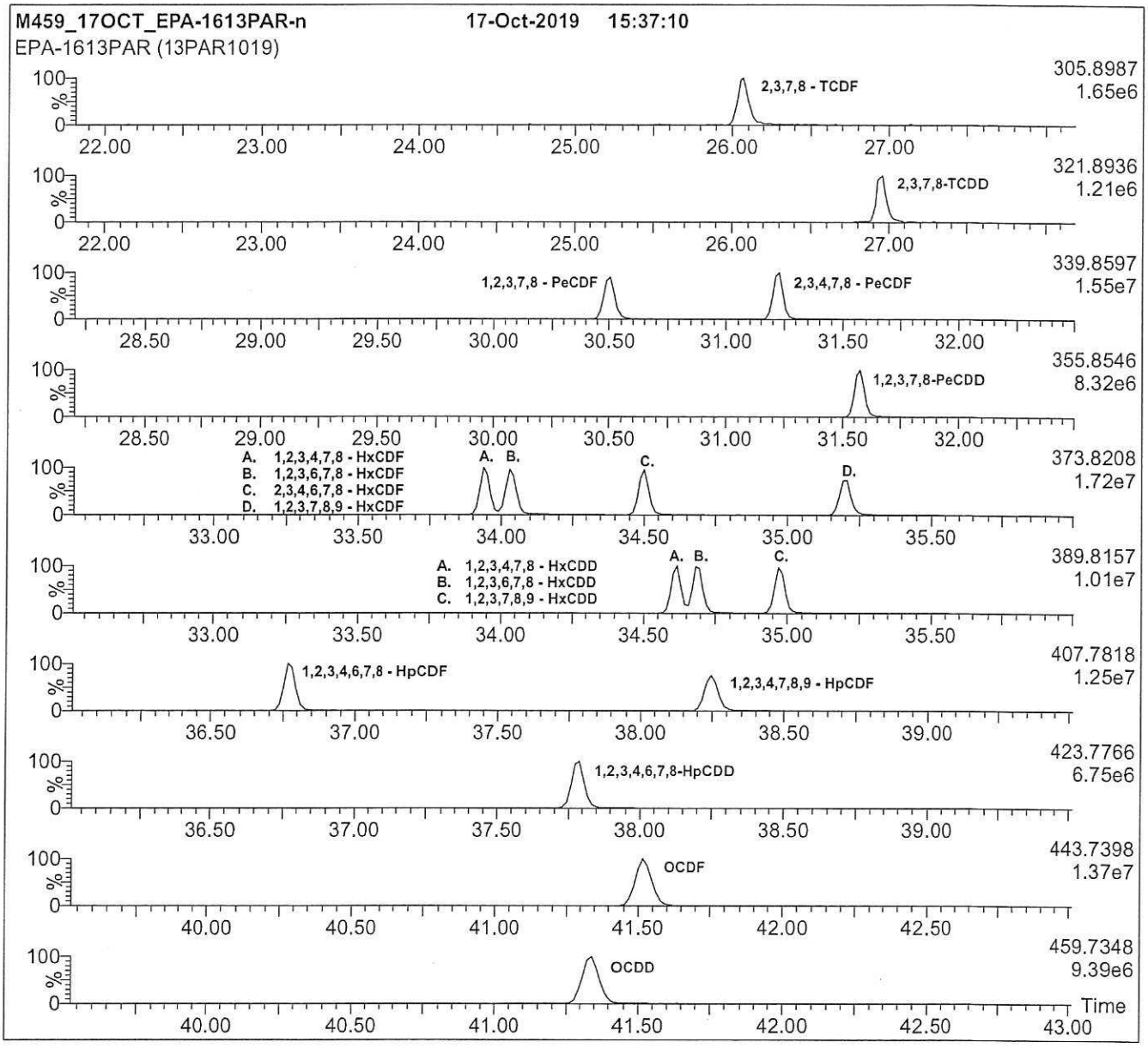
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: **EPA-1613PAR; Components and Concentrations (ng/ml, ± 5% in nonane/ 2.4% toluene)**

Component	Concentration (ng/ml)
PCDDs:	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	40
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	200
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	200
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	200
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	200
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	200
Octachlorodibenzo-p-dioxin	400
PCDFs:	
2,3,7,8-Tetrachlorodibenzofuran	40
1,2,3,7,8-Pentachlorodibenzofuran	200
2,3,4,7,8-Pentachlorodibenzofuran	200
1,2,3,4,7,8-Hexachlorodibenzofuran	200
1,2,3,6,7,8-Hexachlorodibenzofuran	200
1,2,3,7,8,9-Hexachlorodibenzofuran	200
2,3,4,6,7,8-Hexachlorodibenzofuran	200
1,2,3,4,6,7,8-Heptachlorodibenzofuran	200
1,2,3,4,7,8,9-Heptachlorodibenzofuran	200
Octachlorodibenzofuran	400

Certified By: _____ **Date:** 11/07/2019
(mm/dd/yyyy)
B.G. Chittim, General Manager

Figure 1: **EPA-1613PAR; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-1613CVS

U.S. EPA Method 1613 Calibration and Verification Solutions plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below)
	EPA-1613CS1		13CS11019 I005456
	EPA-1613CS2		13CS21019 I005457
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019 I005458
	EPA-1613CS5		13CS51019 I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION:

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analytes is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	**CS1**	**CS2**	**CS3**	**CS4**	**CS5**	**CSL**	**CS0.5**
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: _____ **Date:** 10/25/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: **EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

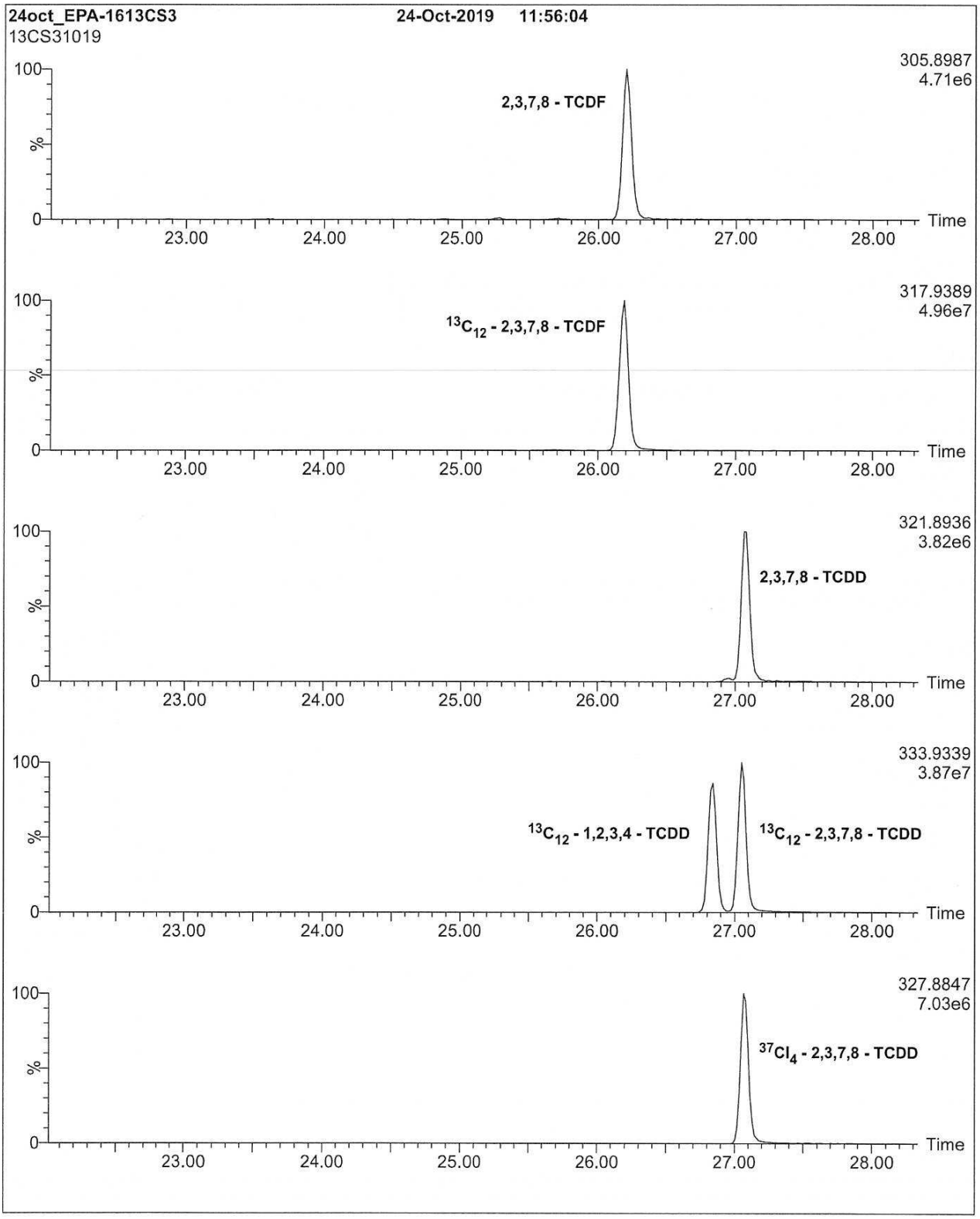


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

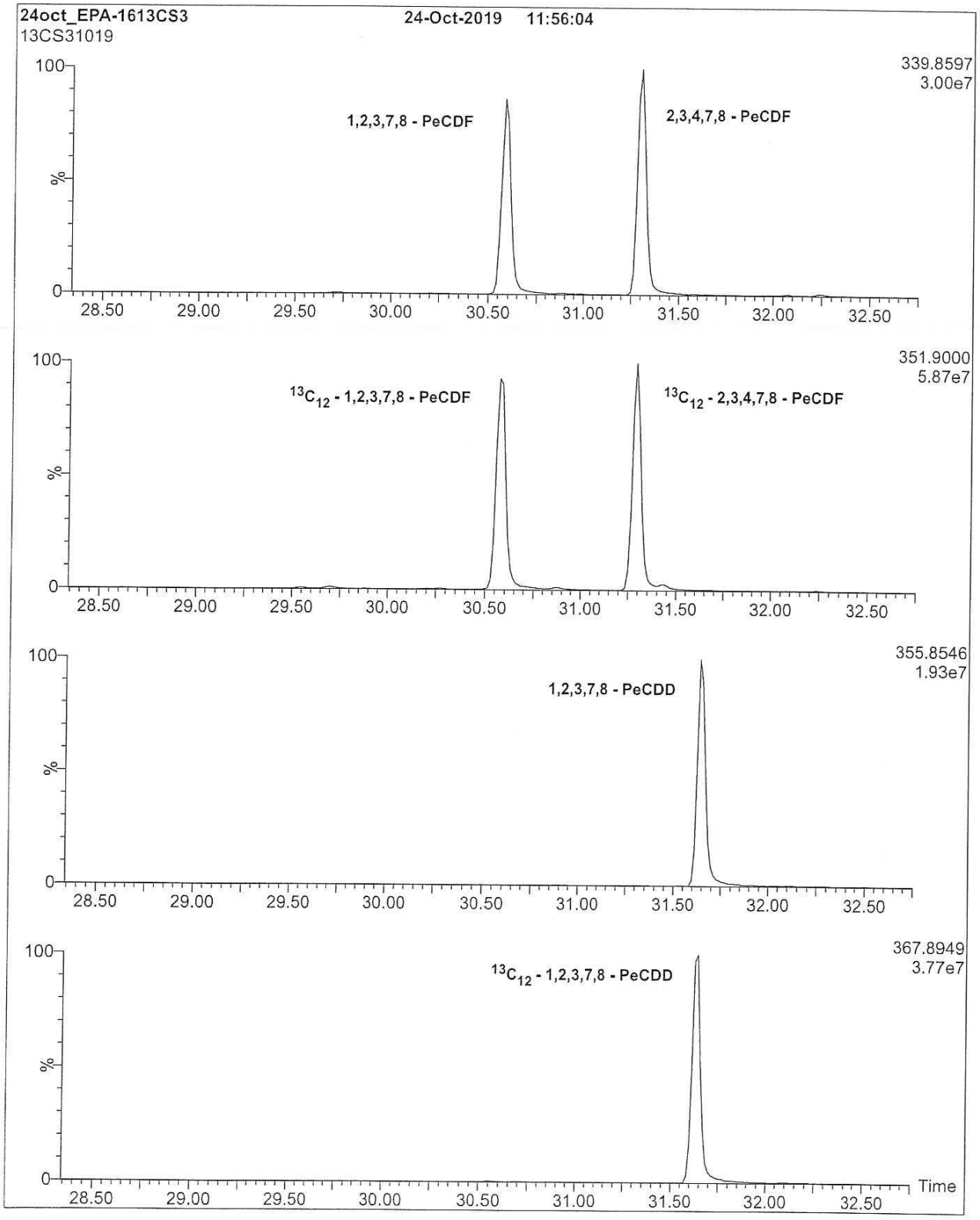


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

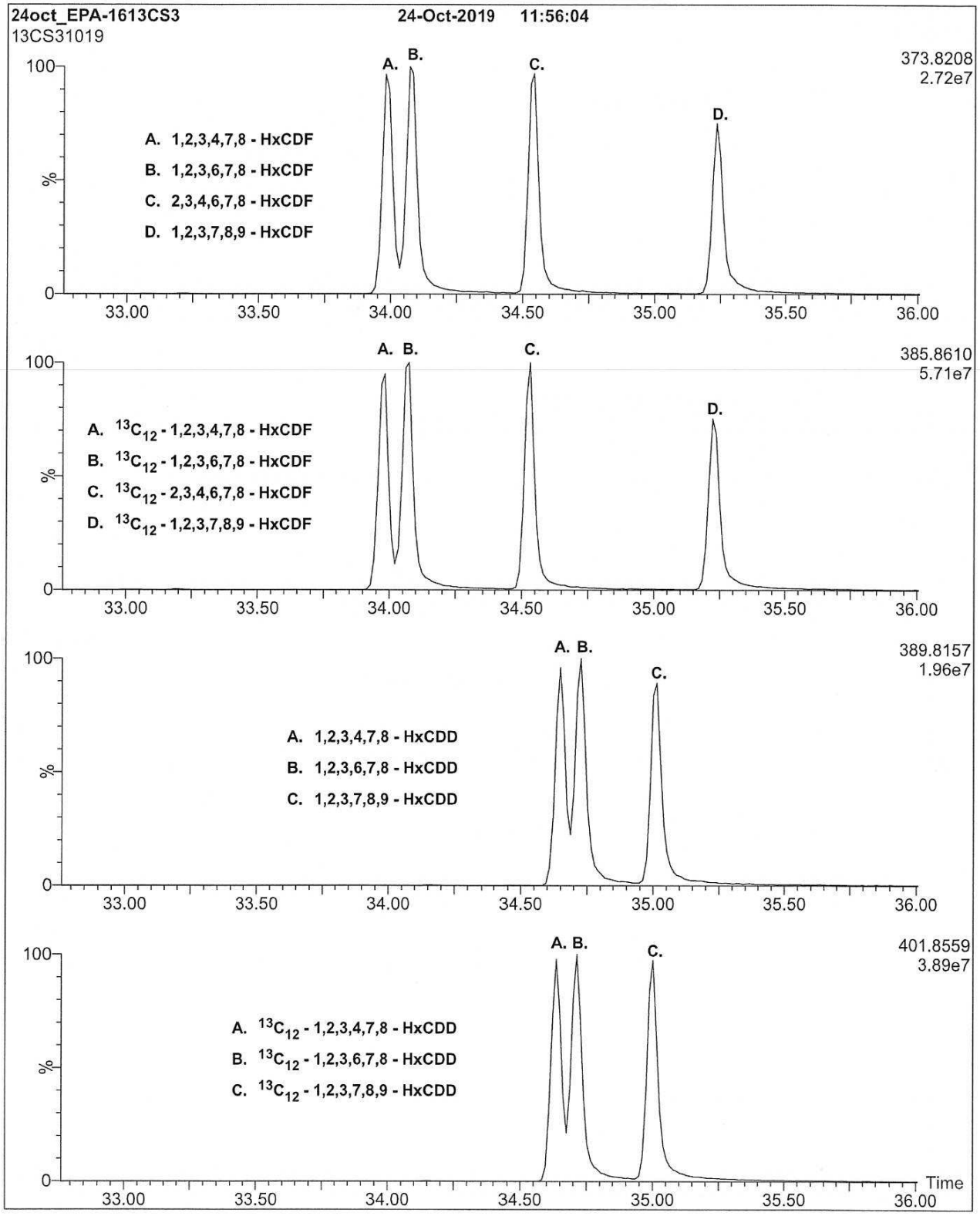


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

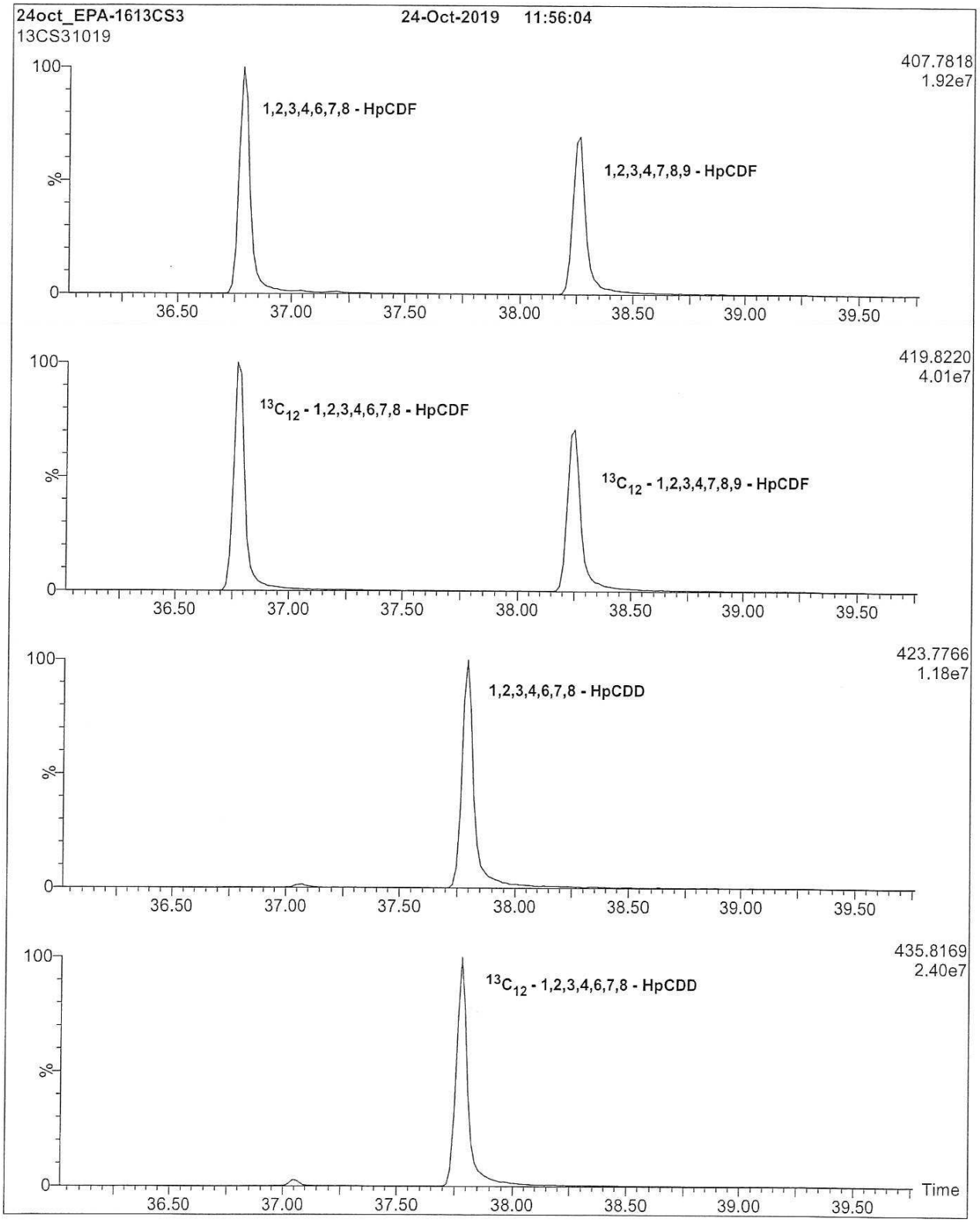
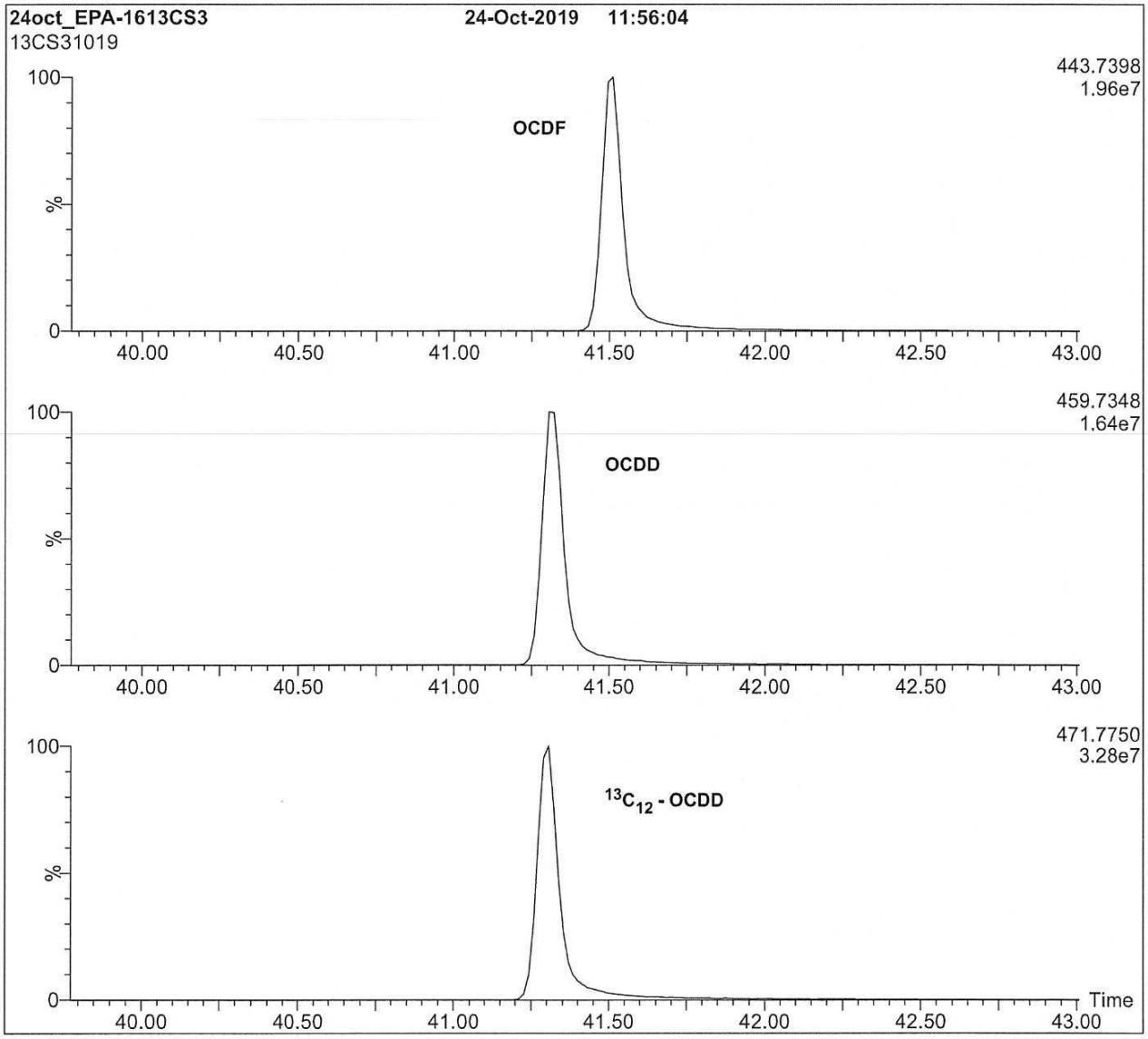


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-1613CVS

U.S. EPA Method 1613 Calibration and Verification Solutions plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below)
	EPA-1613CS1		13CS11019 I005456
	EPA-1613CS2		13CS21019 I005457
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019 I005458
	EPA-1613CS5		13CS51019 I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION:

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analytes is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	**CS1**	**CS2**	**CS3**	**CS4**	**CS5**	**CSL**	**CS0.5**
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: _____ **Date:** 10/25/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: **EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

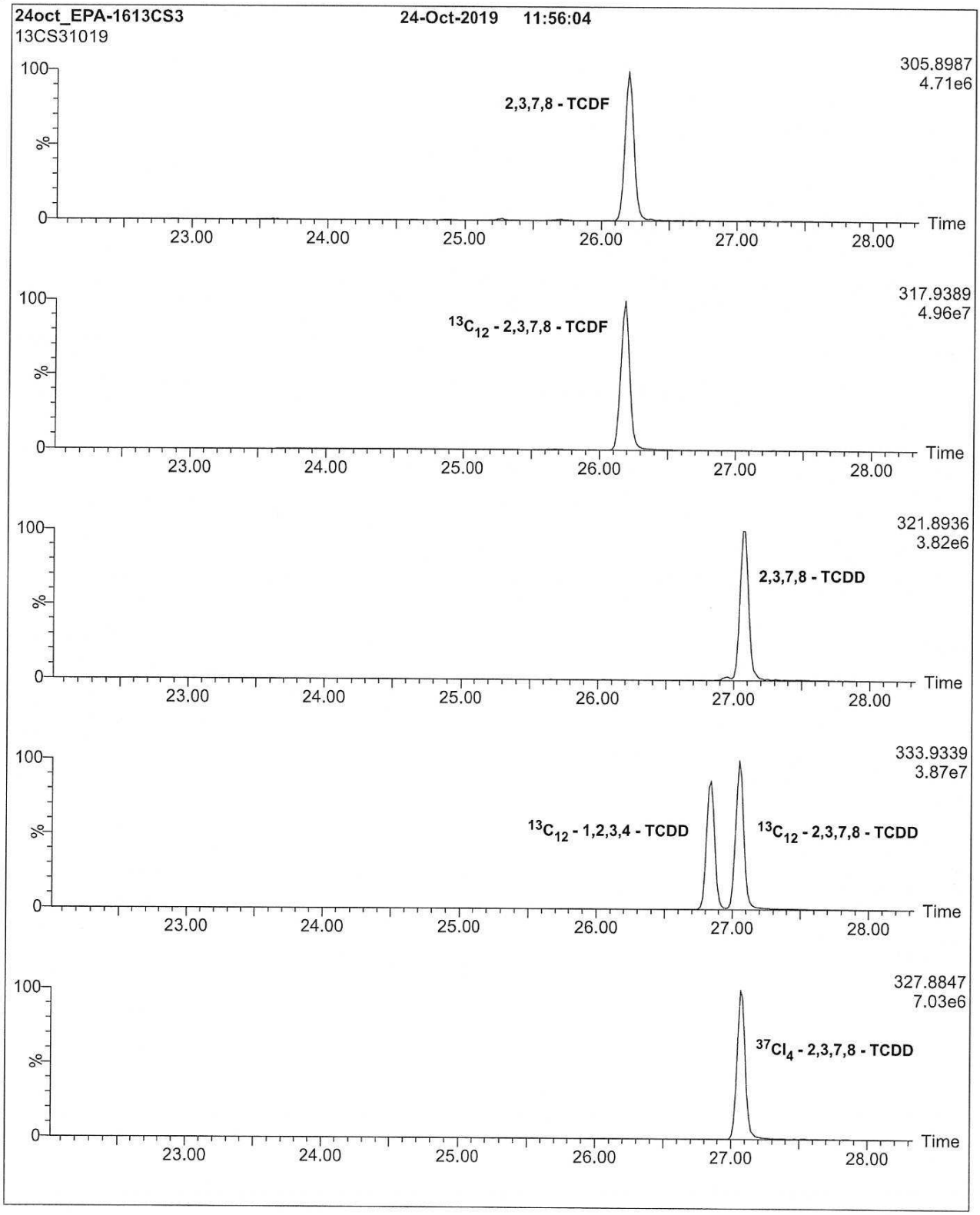


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

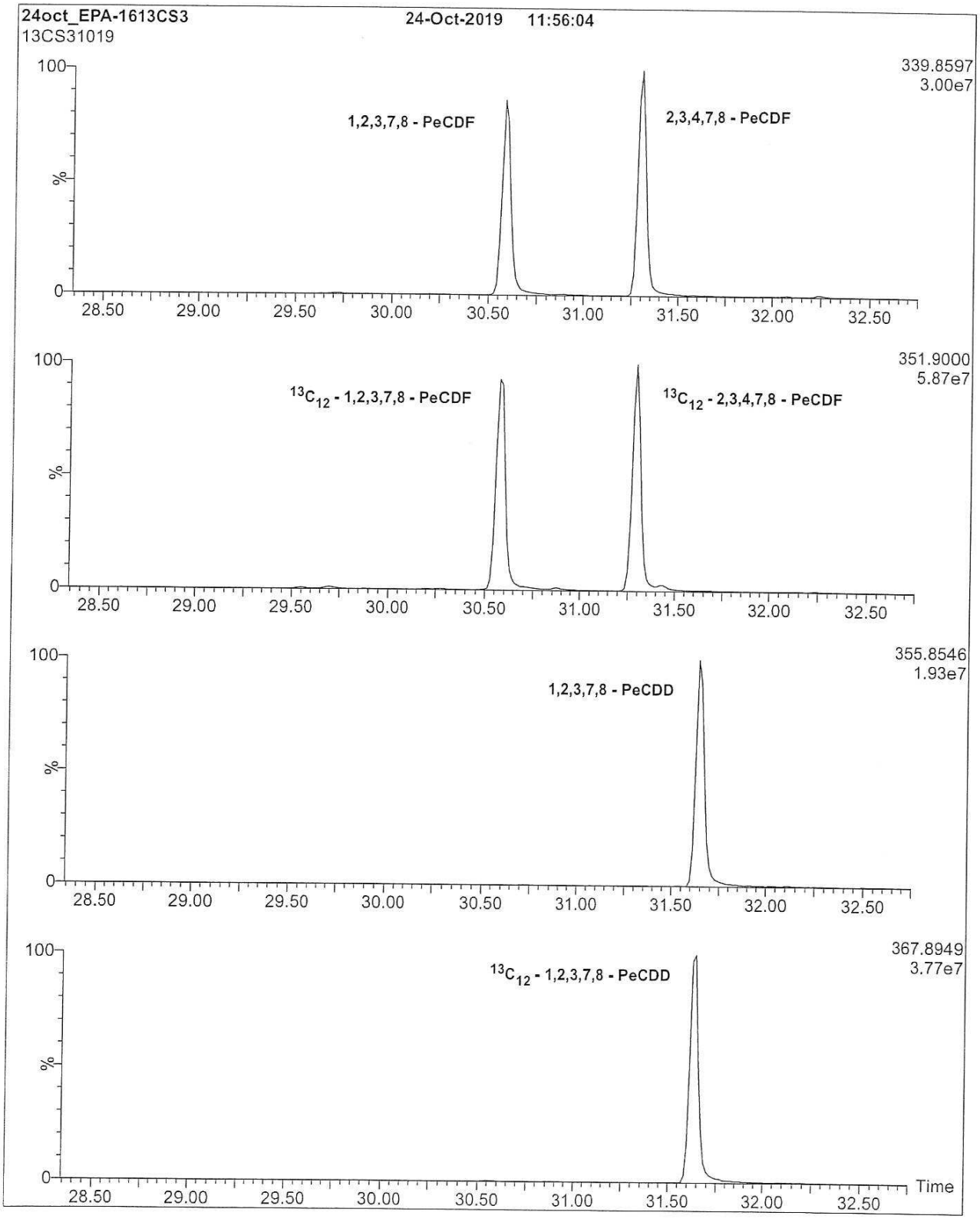


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

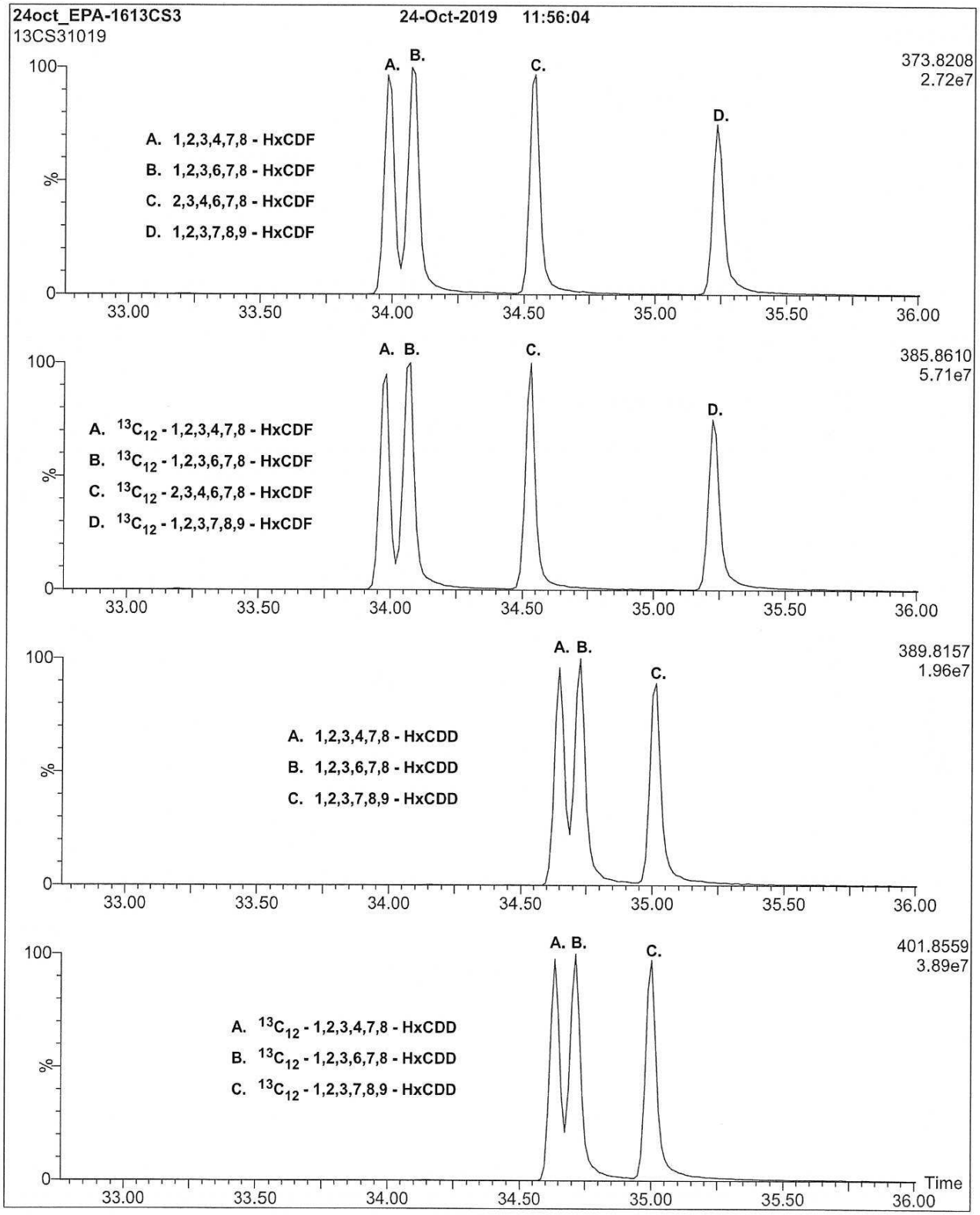


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

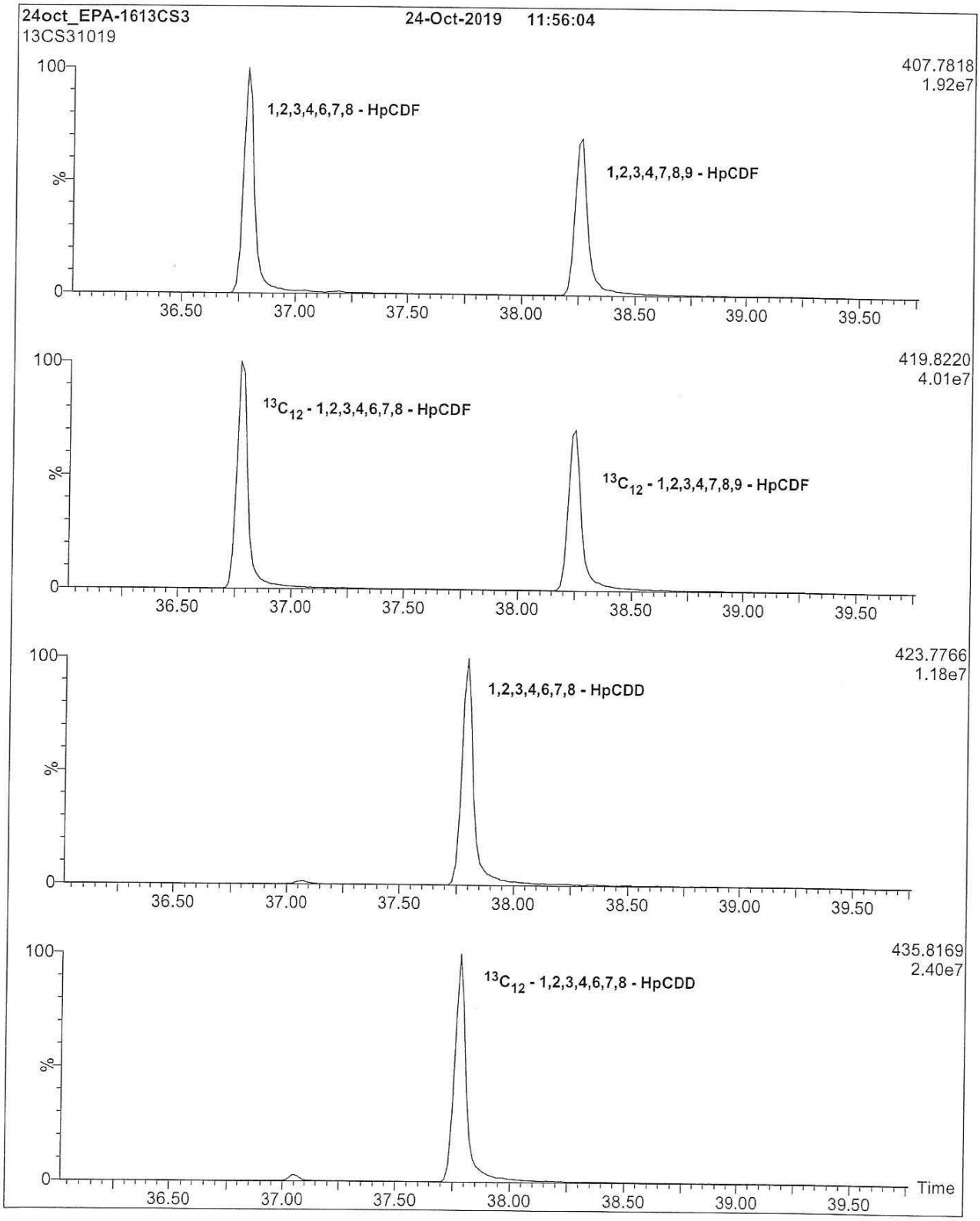
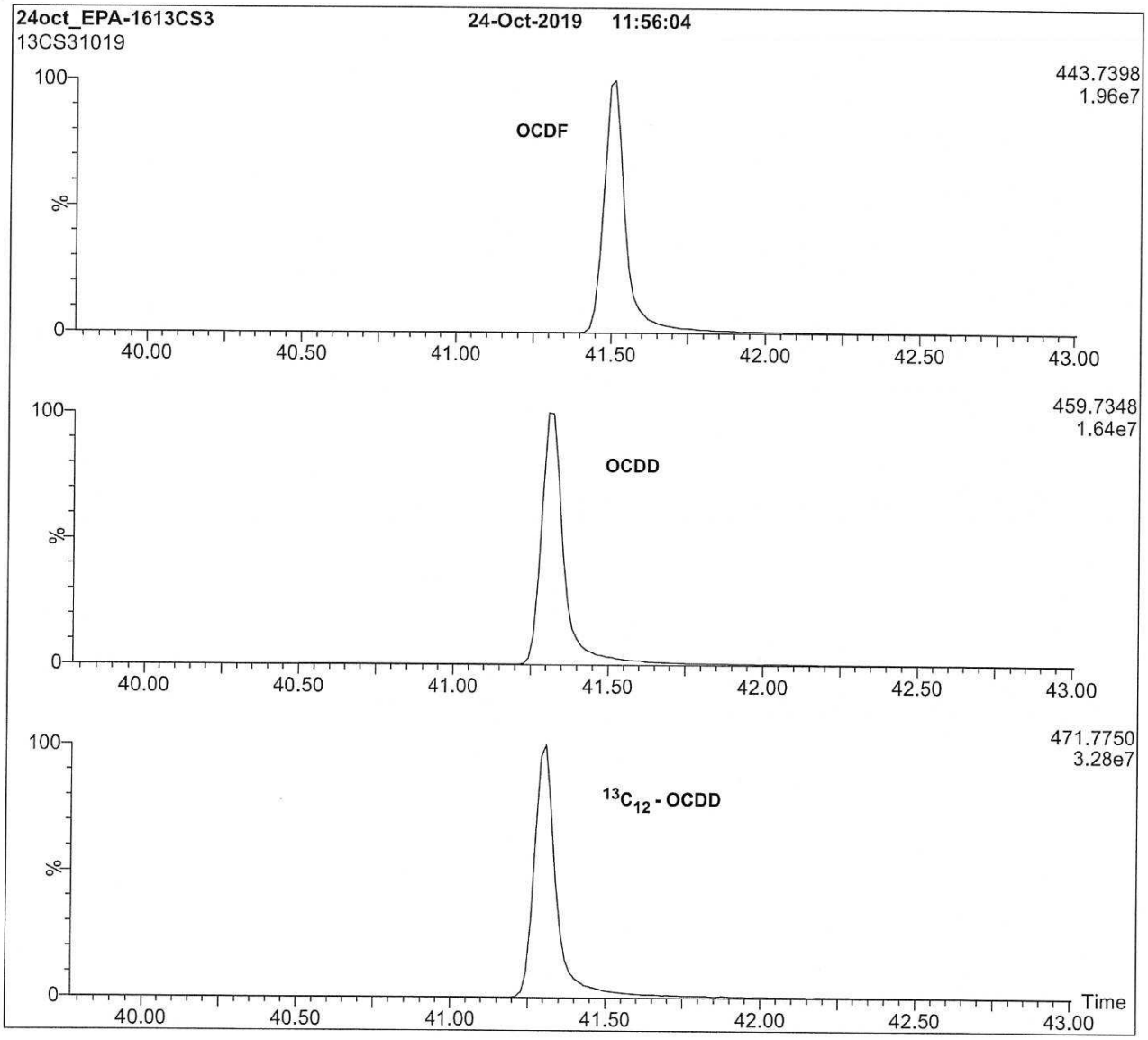


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613CVS
U.S. EPA Method 1613 Calibration and Verification Solutions
plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below)
	EPA-1613CS1		13CS11019 I005456
	EPA-1613CS2		13CS21019 I005457
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019 I005458
	EPA-1613CS5		13CS51019 I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION:

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analytes is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	**CS1**	**CS2**	**CS3**	**CS4**	**CS5**	**CSL**	**CS0.5**
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: _____ **Date:** 10/25/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: **EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

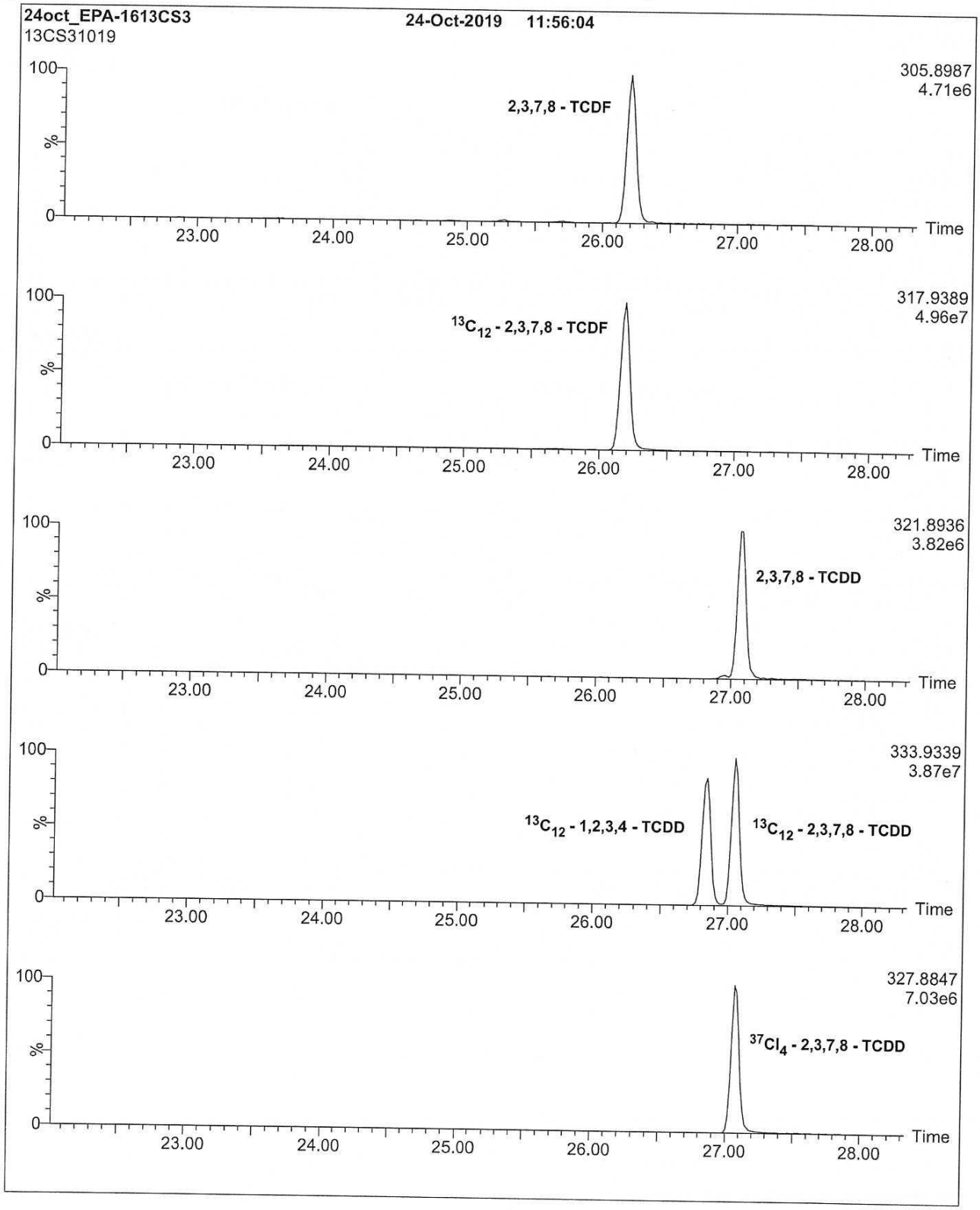


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

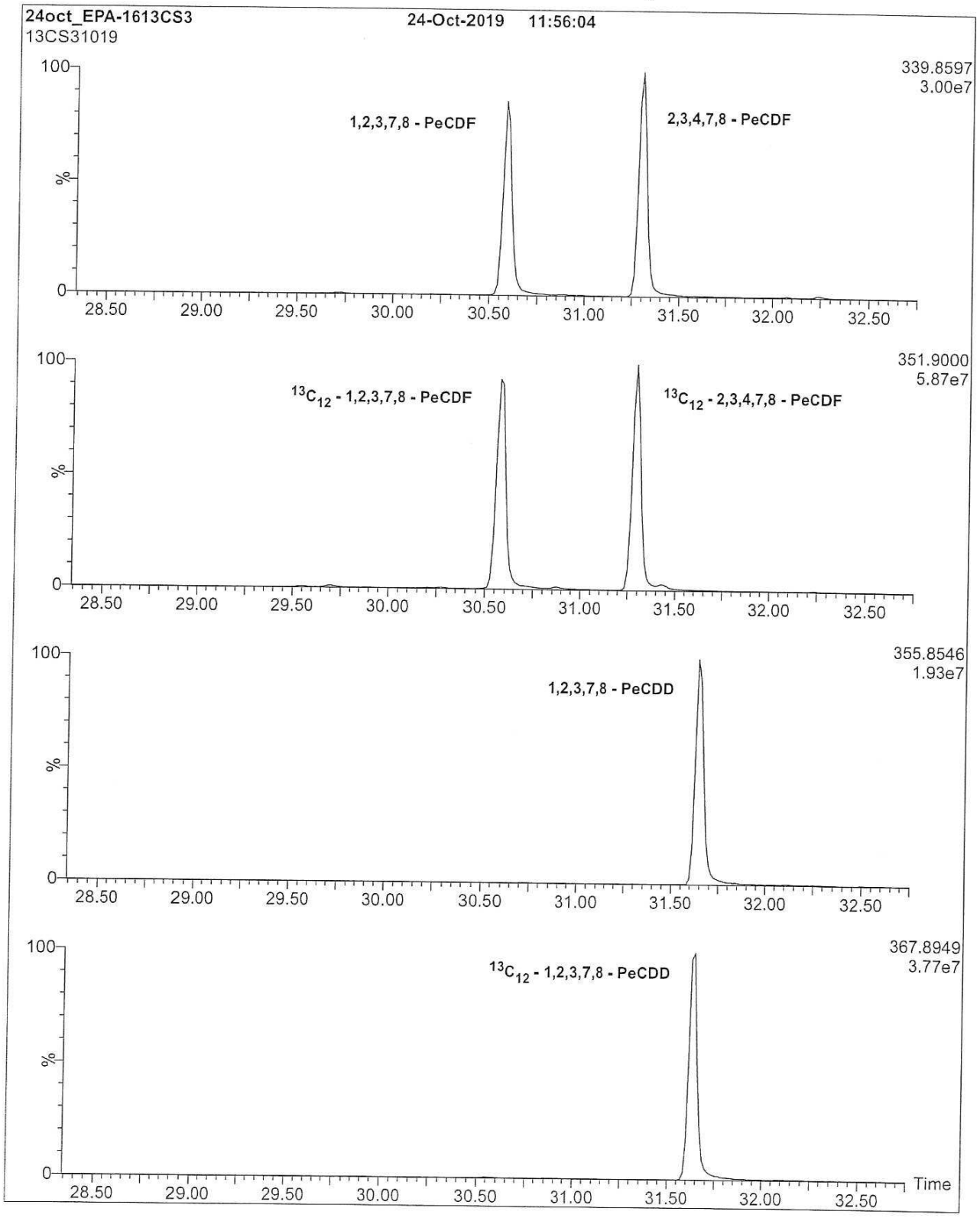


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

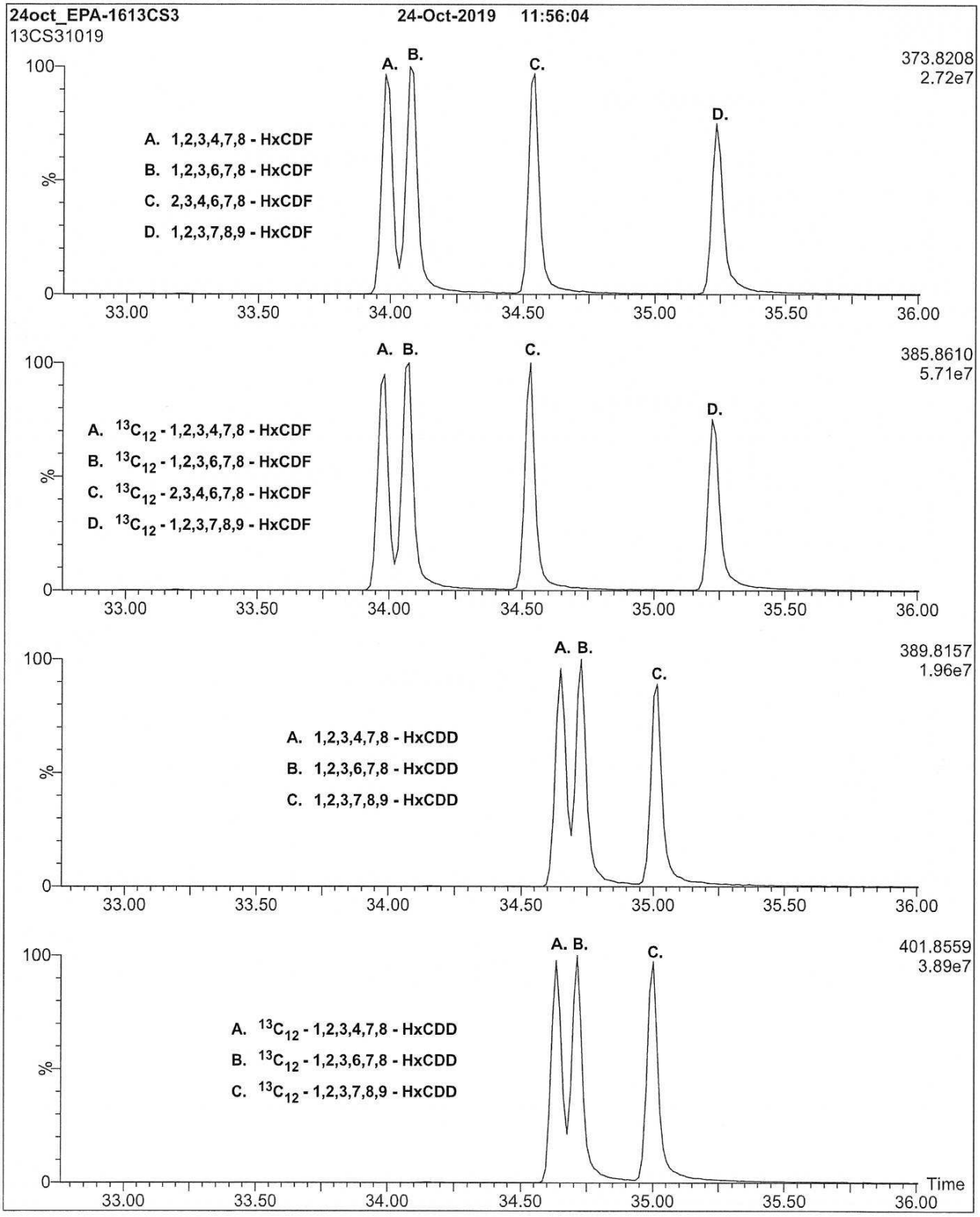


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

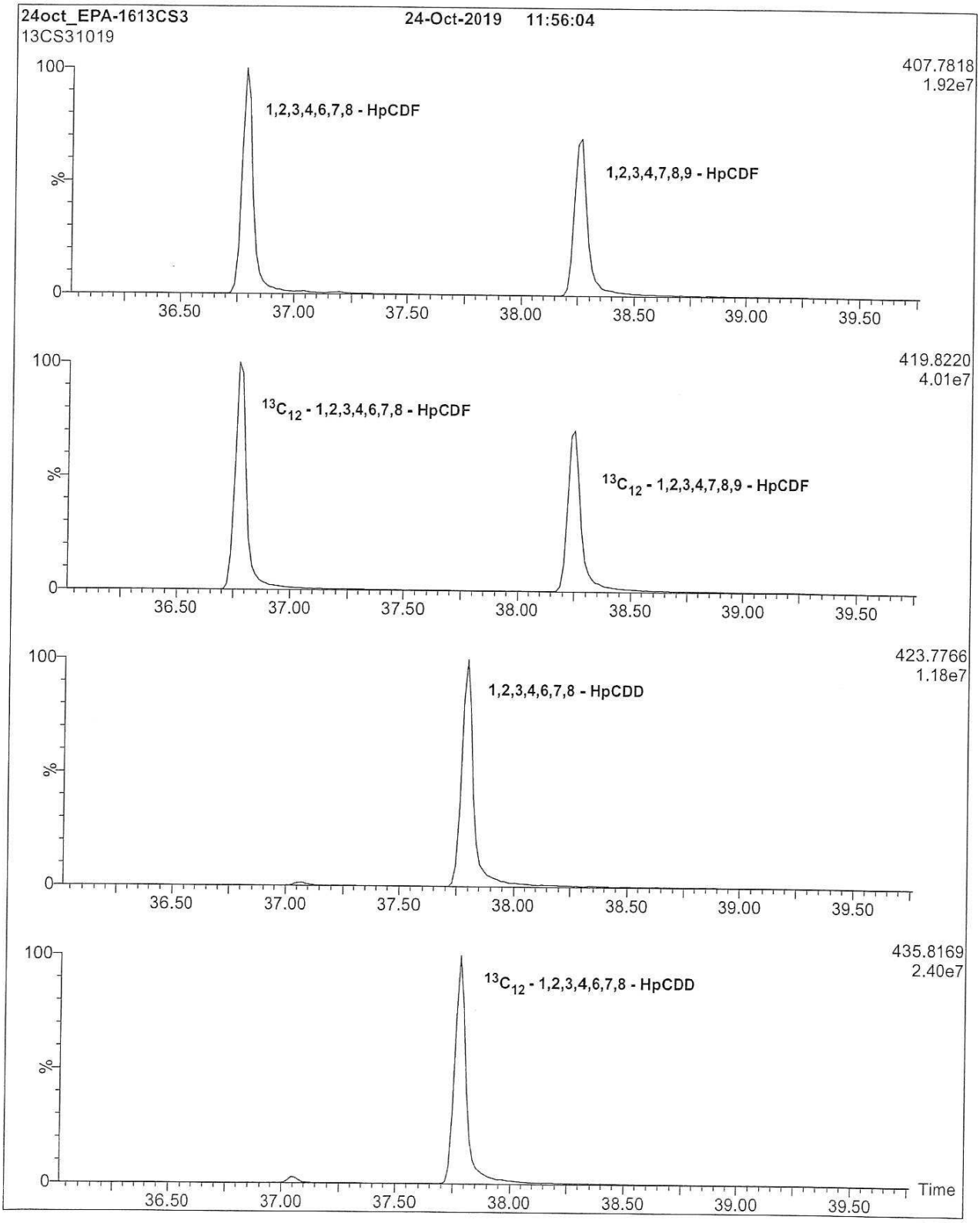
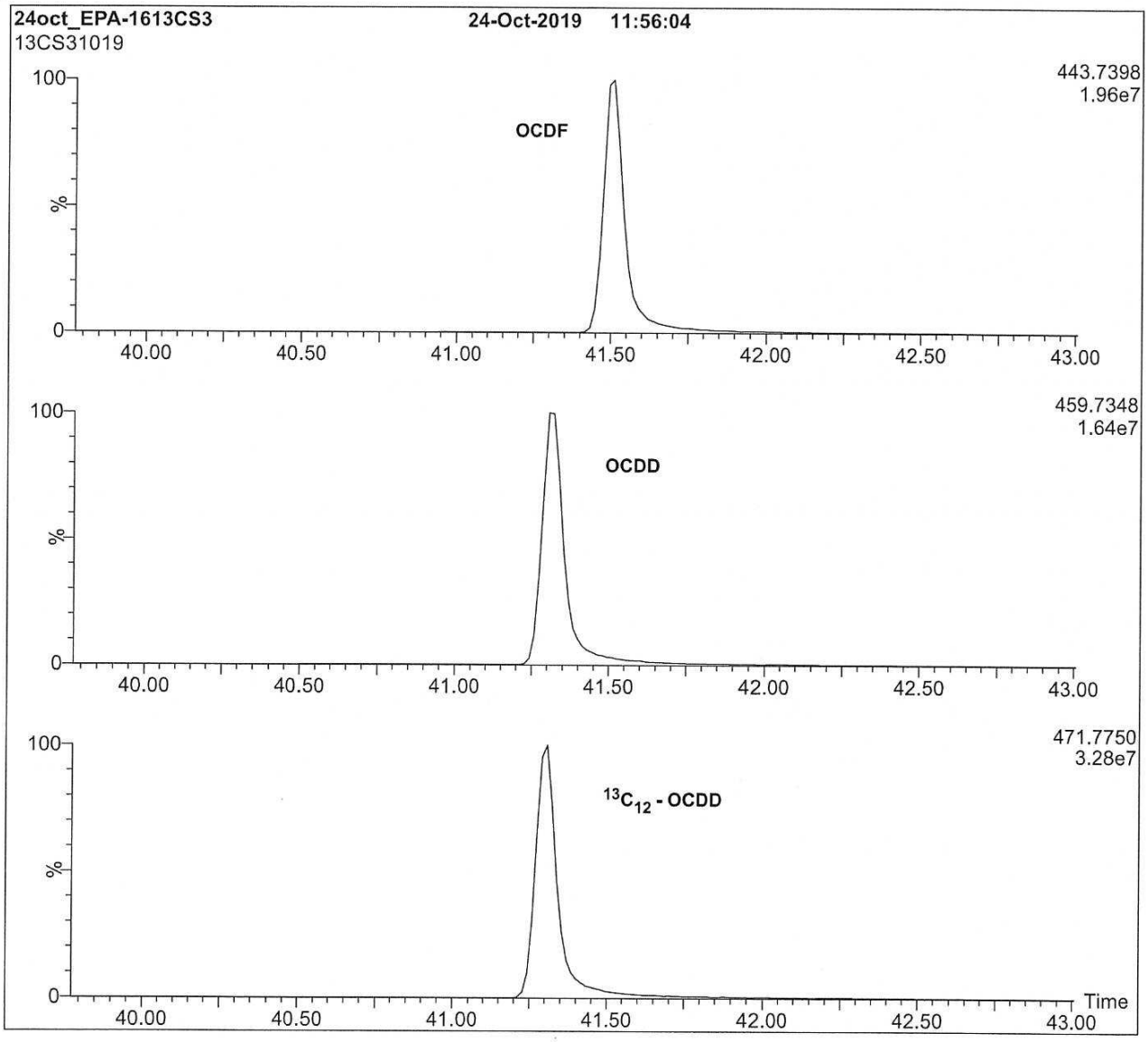


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-1613CVS

U.S. EPA Method 1613 Calibration and Verification Solutions plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below) 06/23/20
	EPA-1613CS1		13CS11019 I005456
	EPA-1613CS2		13CS21019 I005457
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019 I005458
	EPA-1613CS5		13CS51019 I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION: 06/23/20

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analytes is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	CS1	CS2	CS3	CS4	CS5	CSL	CS0.5
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: _____ **Date:** 10/25/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: **EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

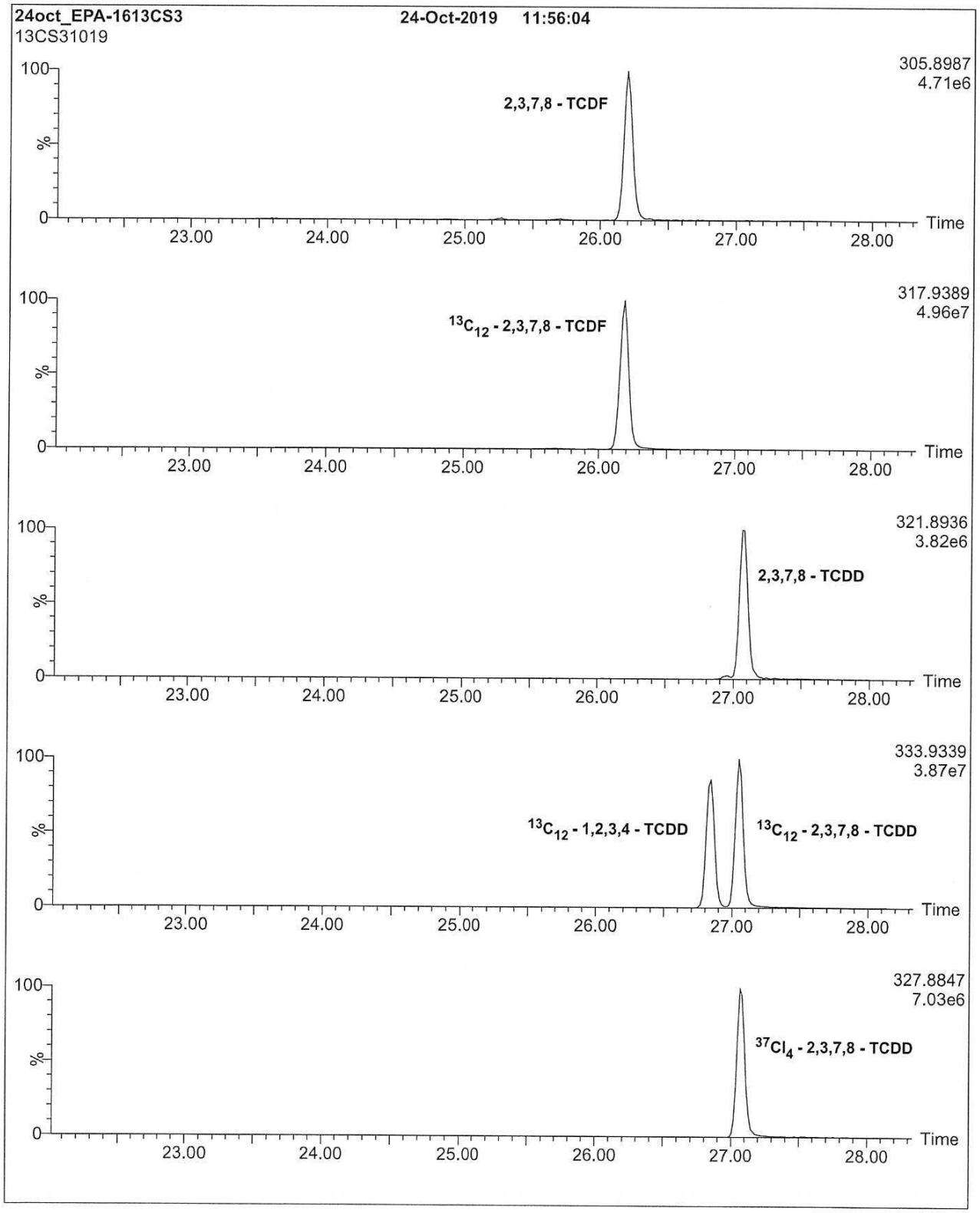


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

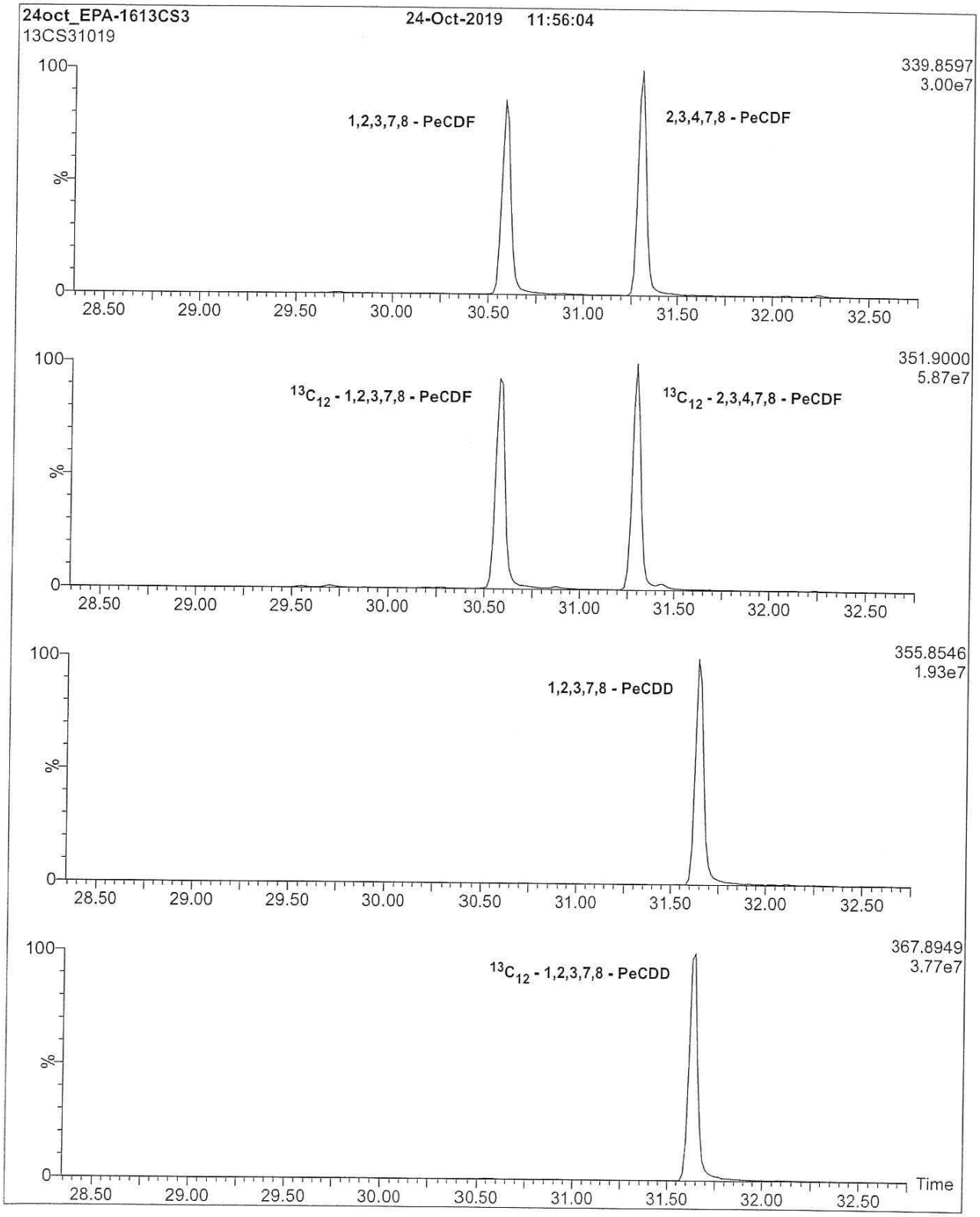


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

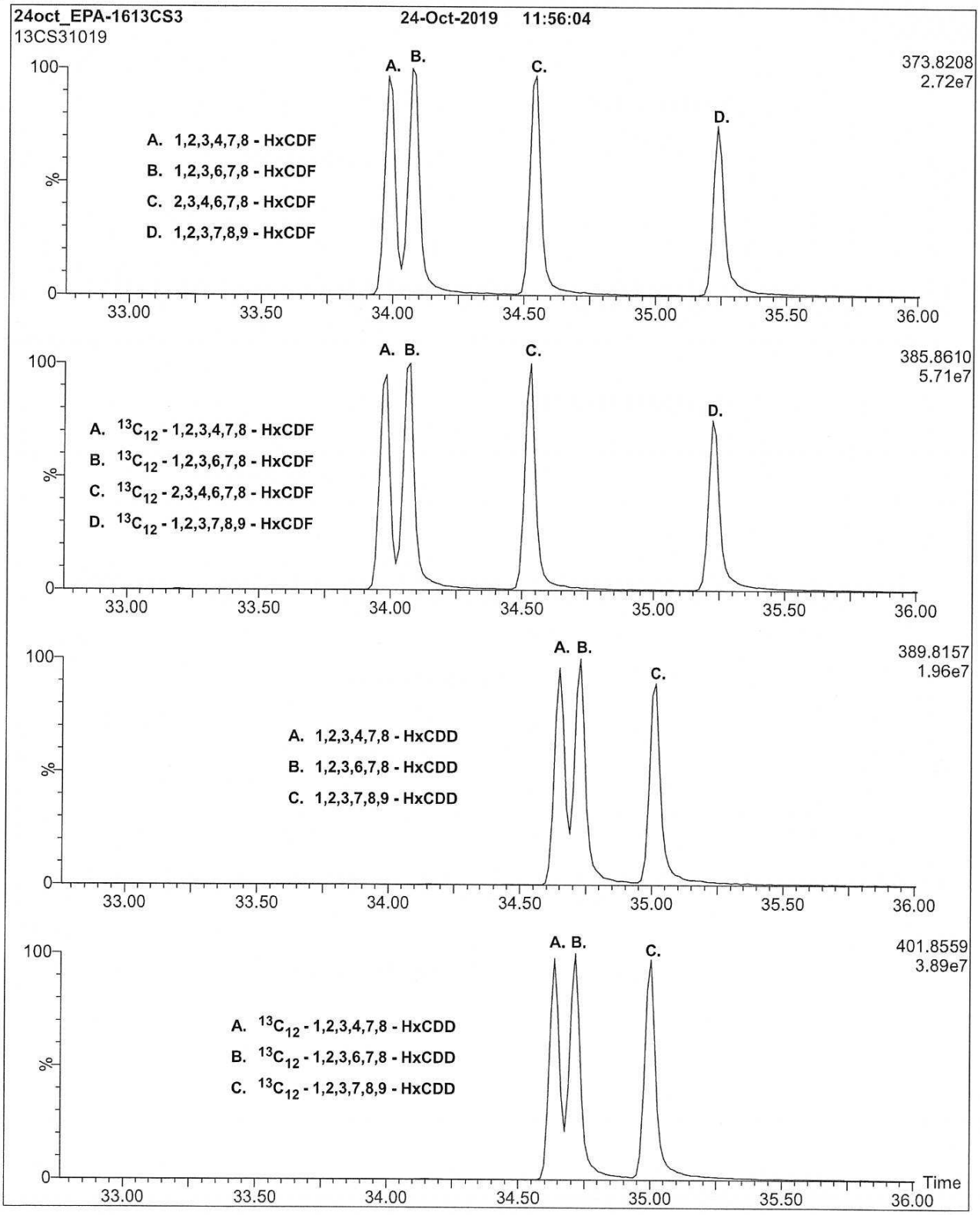


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

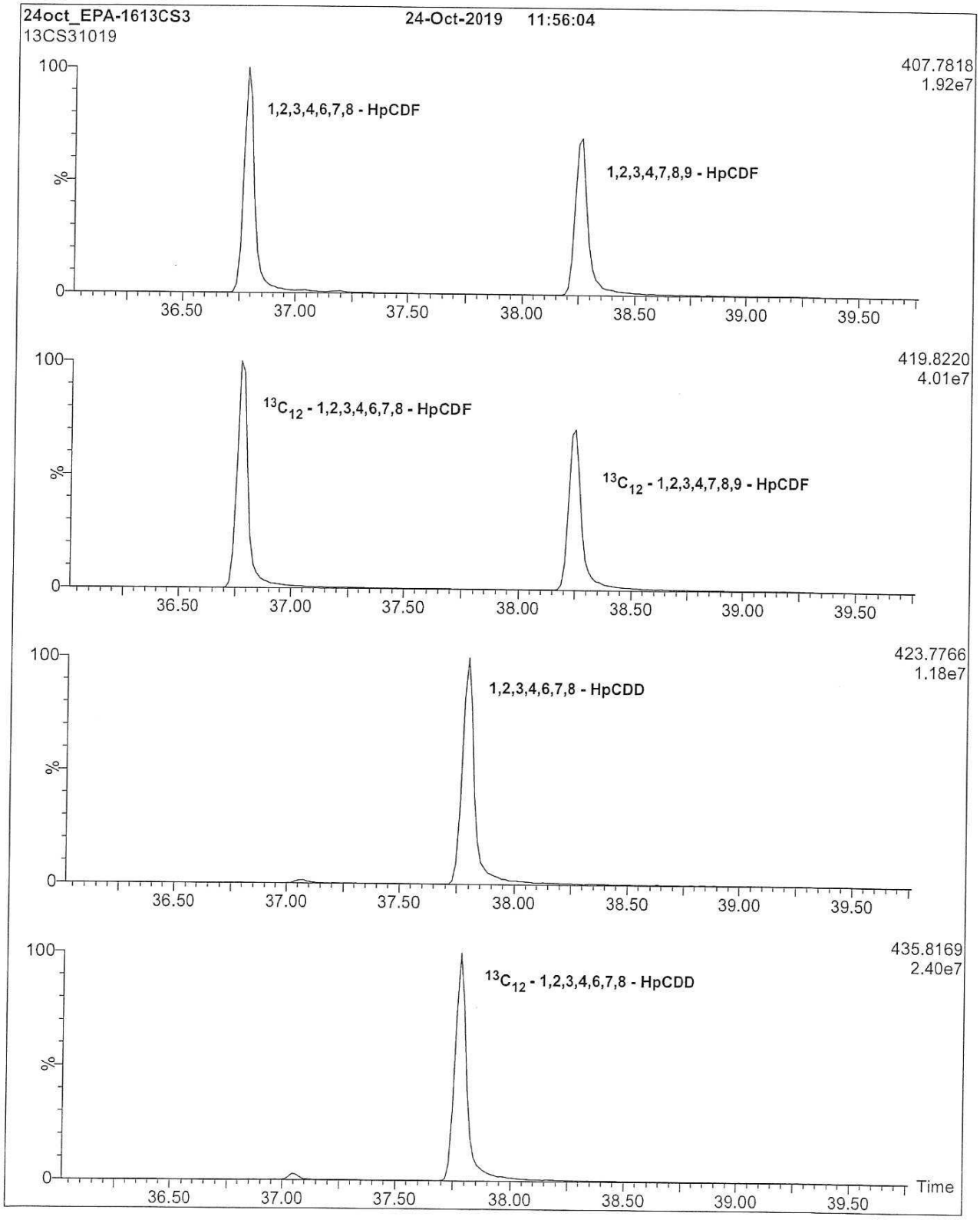
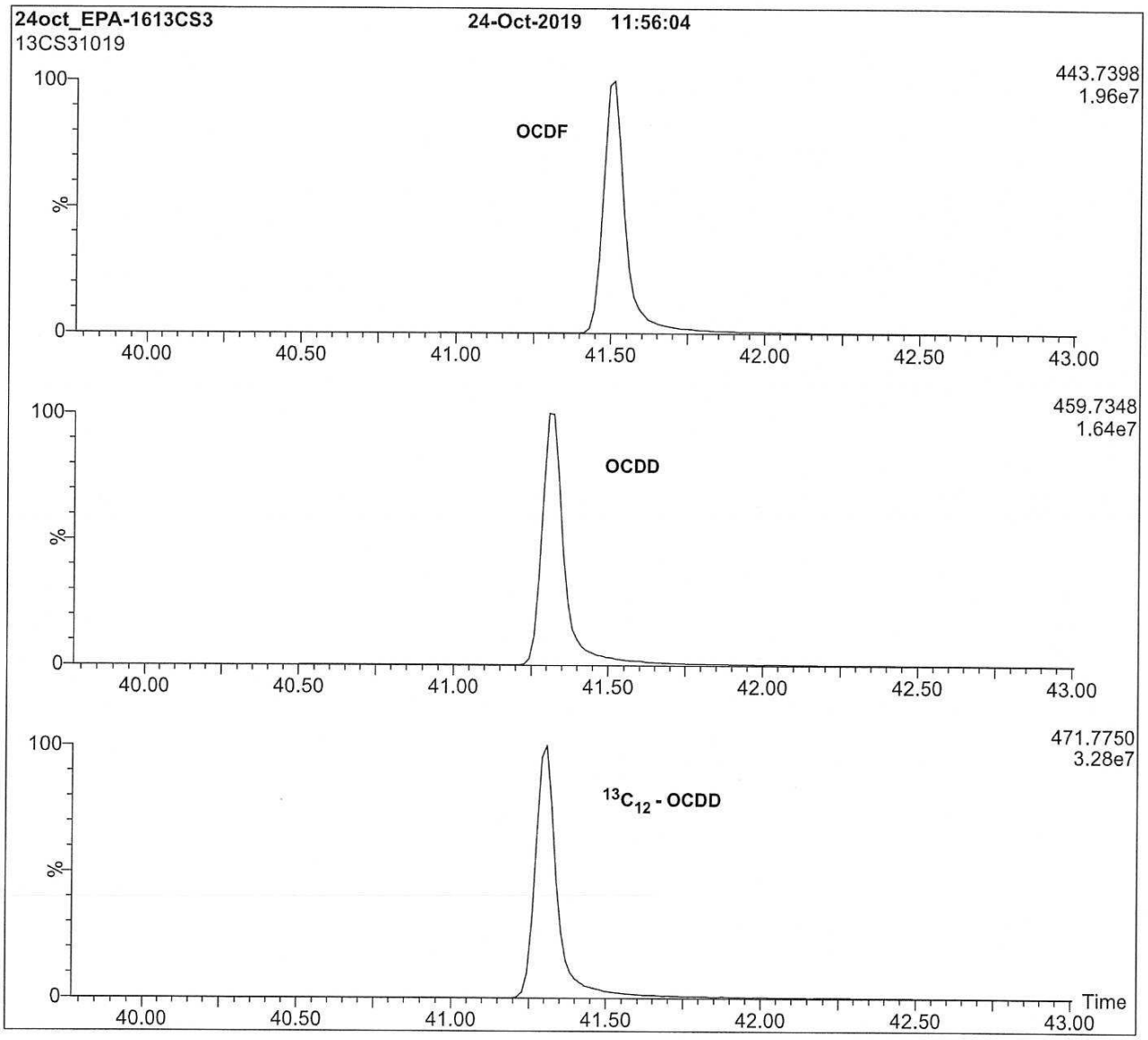


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-1613CVS

U.S. EPA Method 1613 Calibration and Verification Solutions plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below)
	EPA-1613CS1		13CS11019 I005456
	EPA-1613CS2		13CS21019 I005457
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019 I005458
	EPA-1613CS5		13CS51019 I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION:

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analytes is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	CS1	CS2	CS3	CS4	CS5	CSL	CS0.5
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: _____ B.G. Chittim, General Manager

Date: 10/25/2019 (mm/dd/yyyy)

Form#:52, Issued 2010-07-26

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: **EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

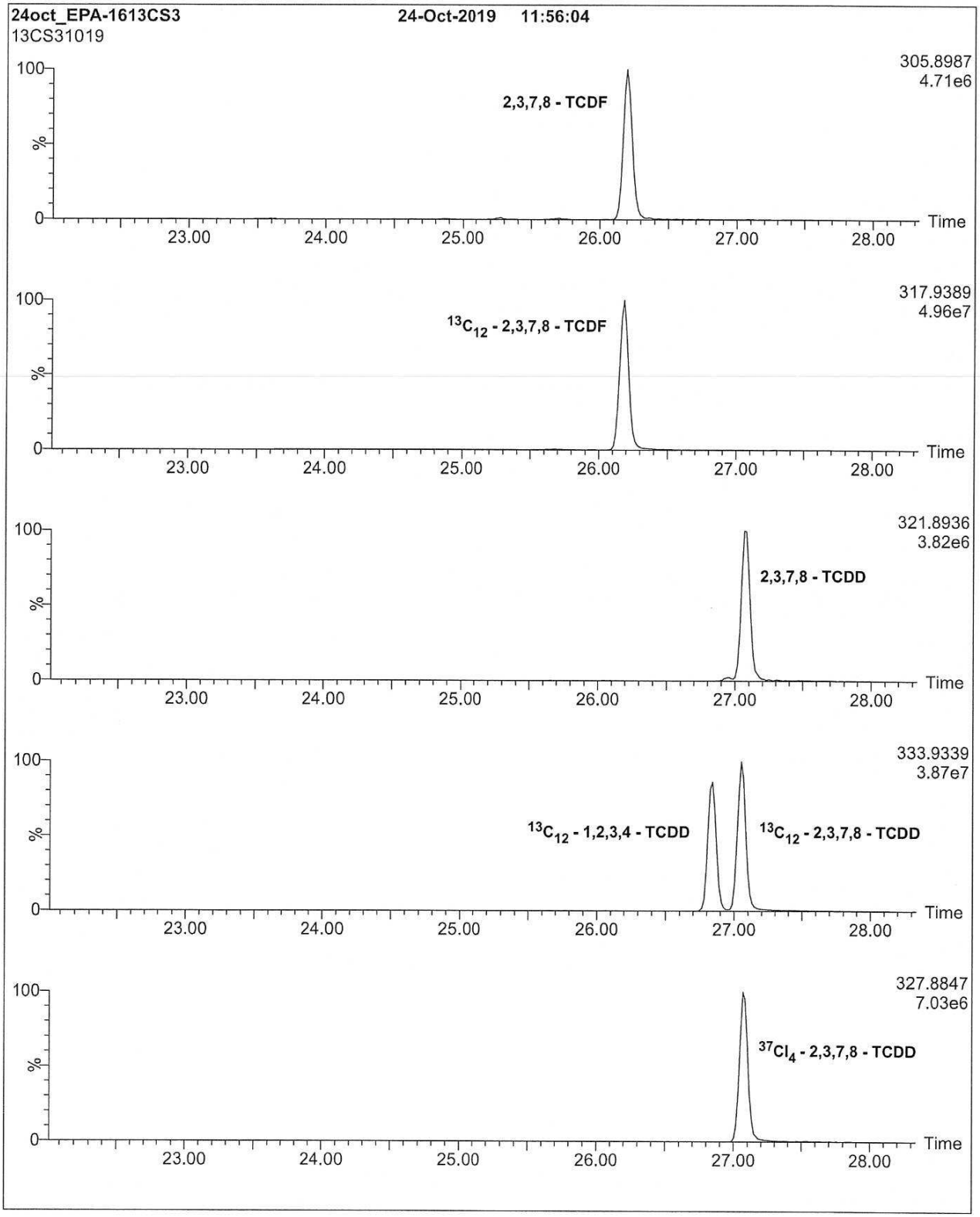


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

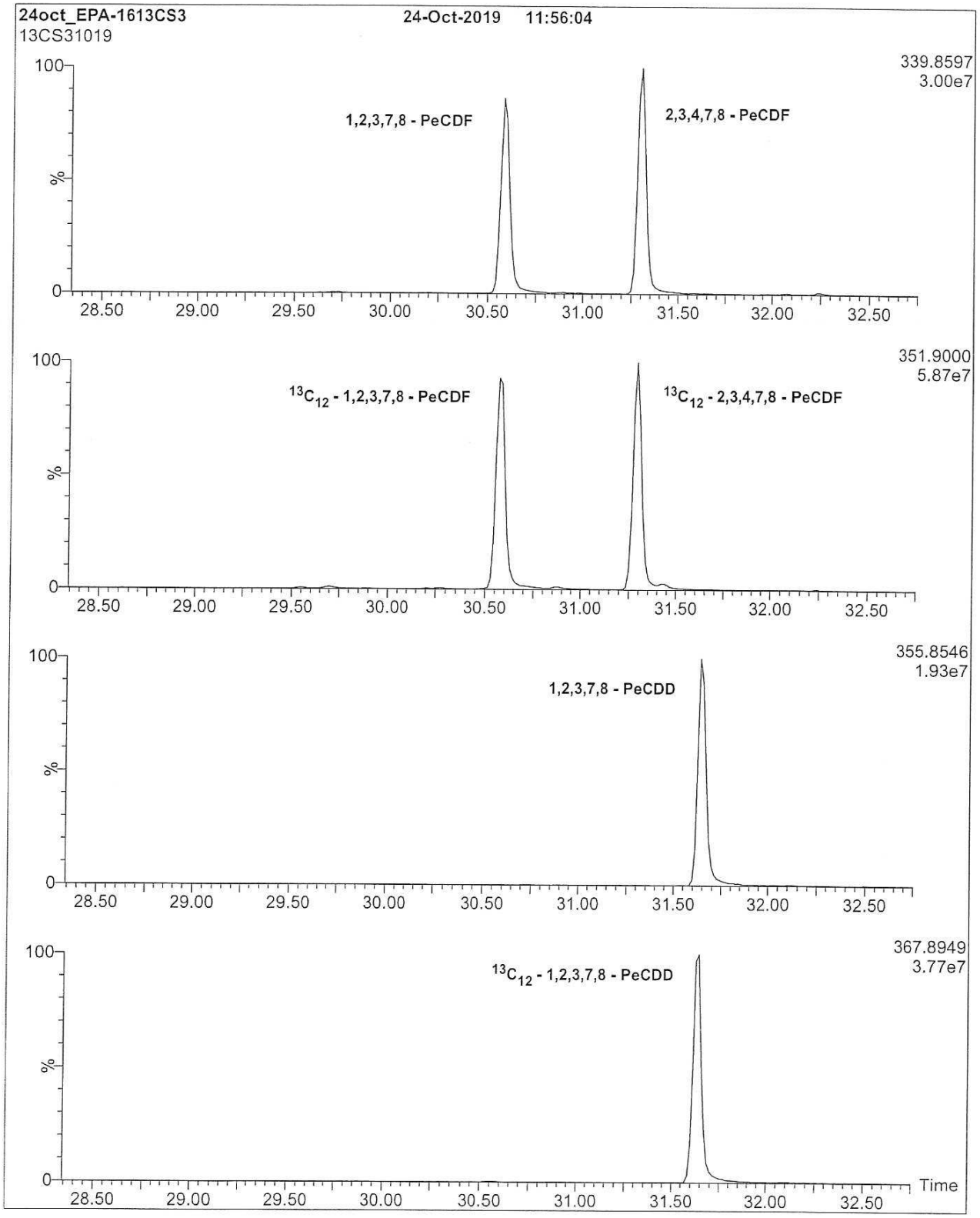


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

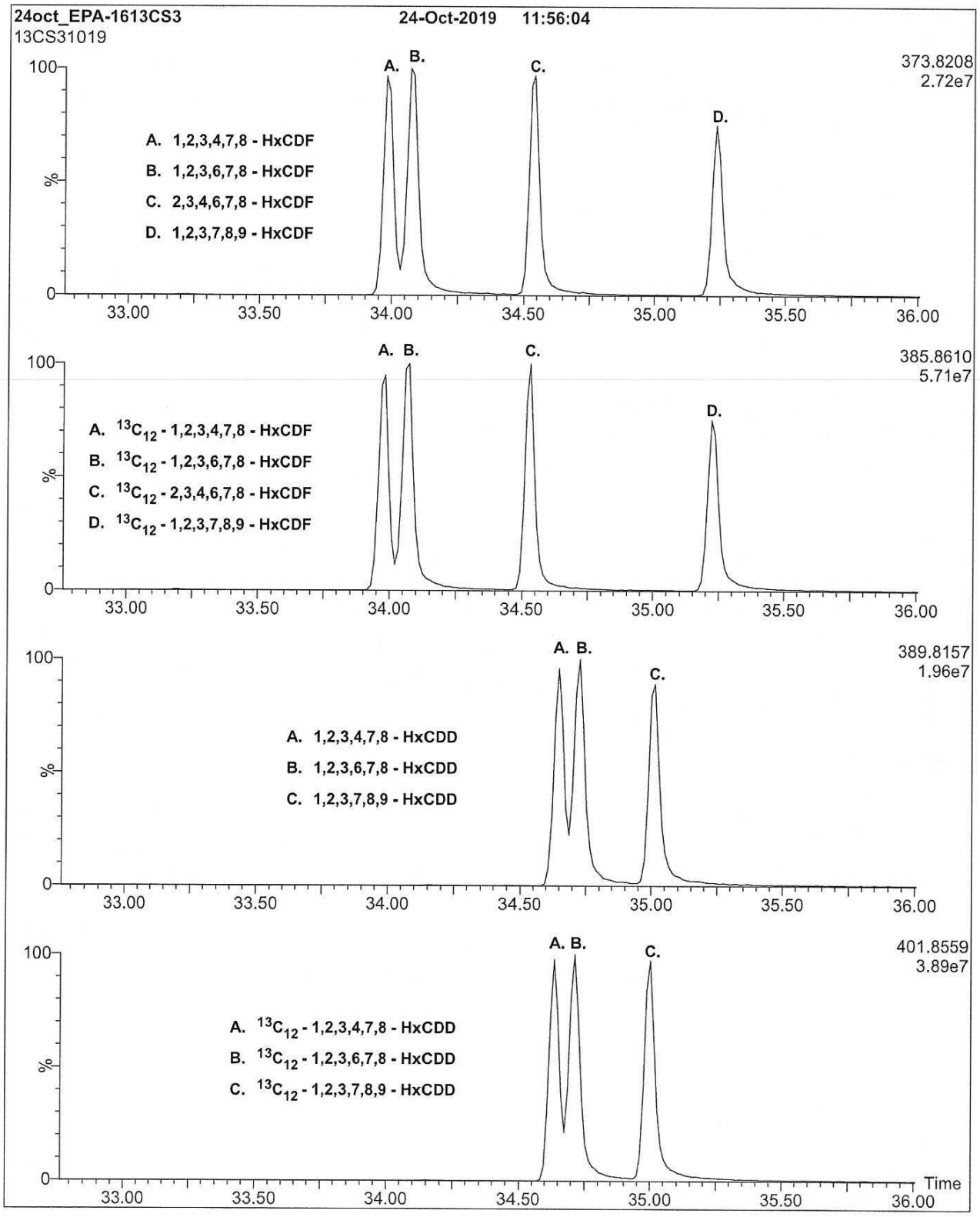


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

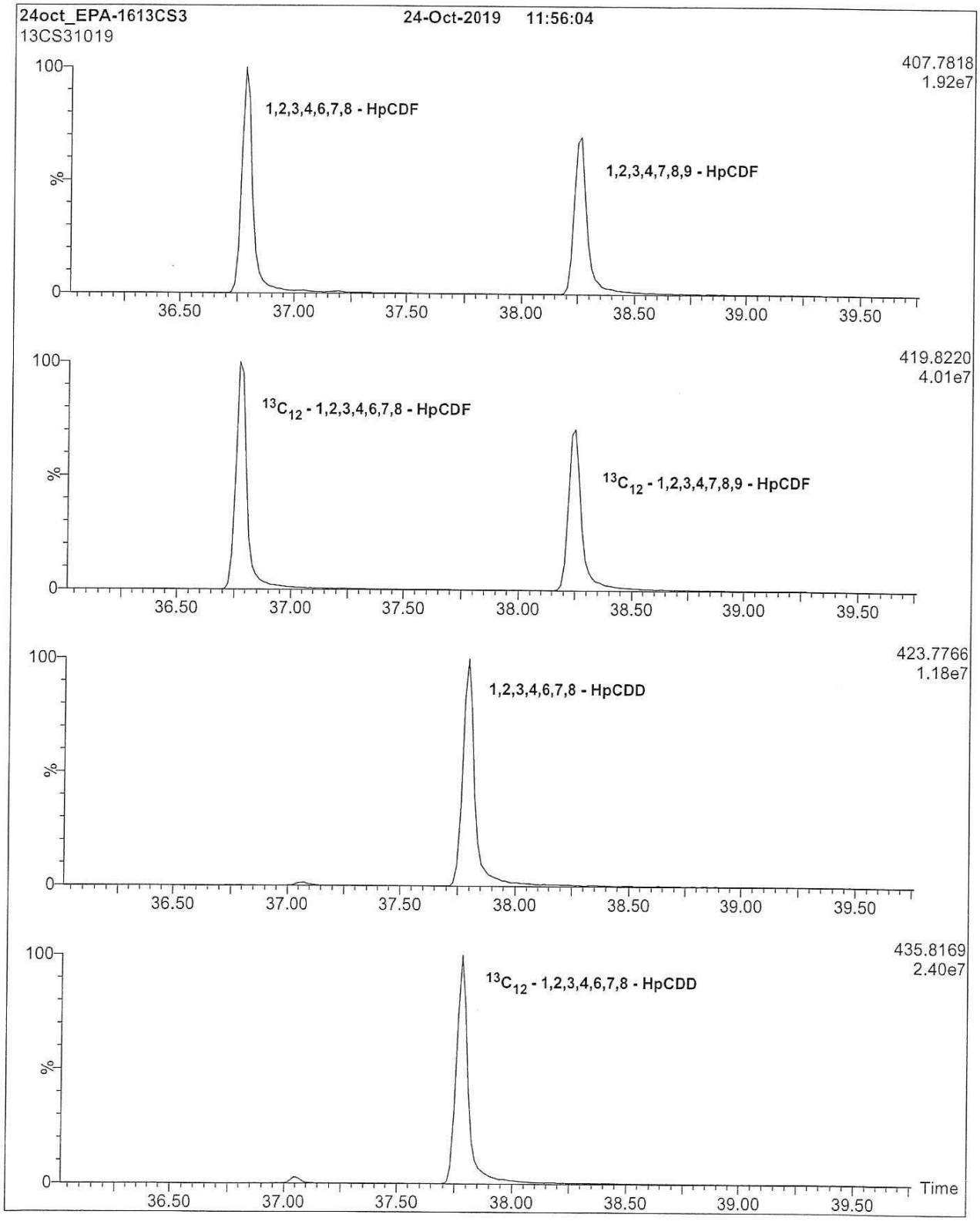
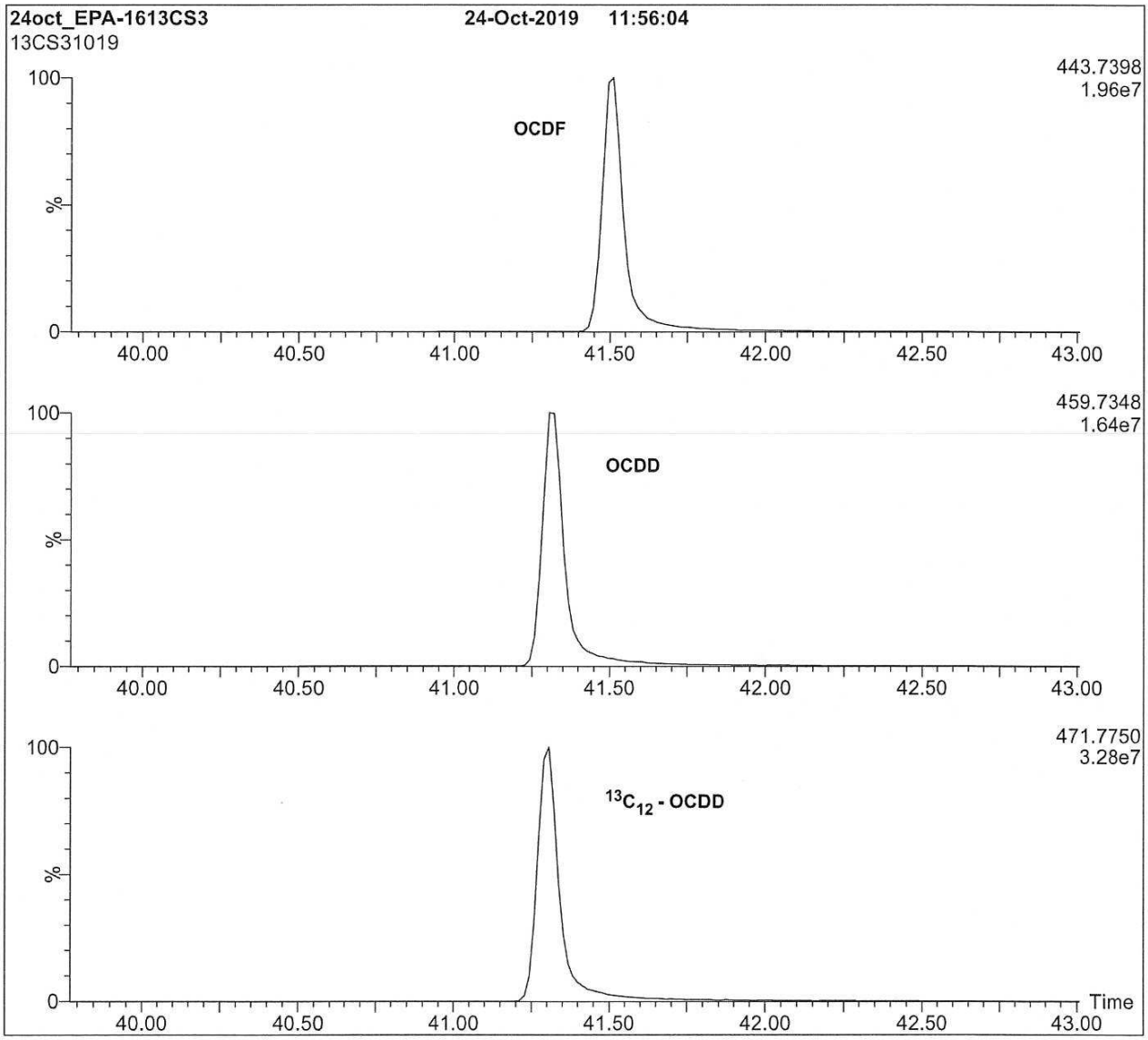


Figure 1: **EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-1613CSS

U.S. EPA Method 1613 Cleanup Standard Spiking Solution

PRODUCT CODE:	EPA-1613CSS
LOT NUMBER:	13CSS1020
SOLVENT(S):	Nonane
DATE PREPARED: (mm/dd/yyyy)	11/12/2020
LAST TESTED: (mm/dd/yyyy)	11/19/2020
EXPIRY DATE: (mm/dd/yyyy)	11/19/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

I 11575

DESCRIPTION:

EPA-1613CSS contains 2,3,7,8-[$^{37}Cl_4$]-tetrachlorodibenzo-*p*-dioxin at the concentration given in Table A.

EPA-1613CSS was designed and prepared to be used according to U.S. EPA Method 1613, Revision B.

2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-*p*-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

Table A: **EPA-1613CSS; Components and Concentrations (ng/mL, ± 5% in nonane)**

Compound	Acronym	CAS #	Concentration (ng/mL)
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-*p*-dioxin	$^{37}Cl_4$-2,3,7,8-TCDD	85508-50-5	40.0

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/20/2020 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

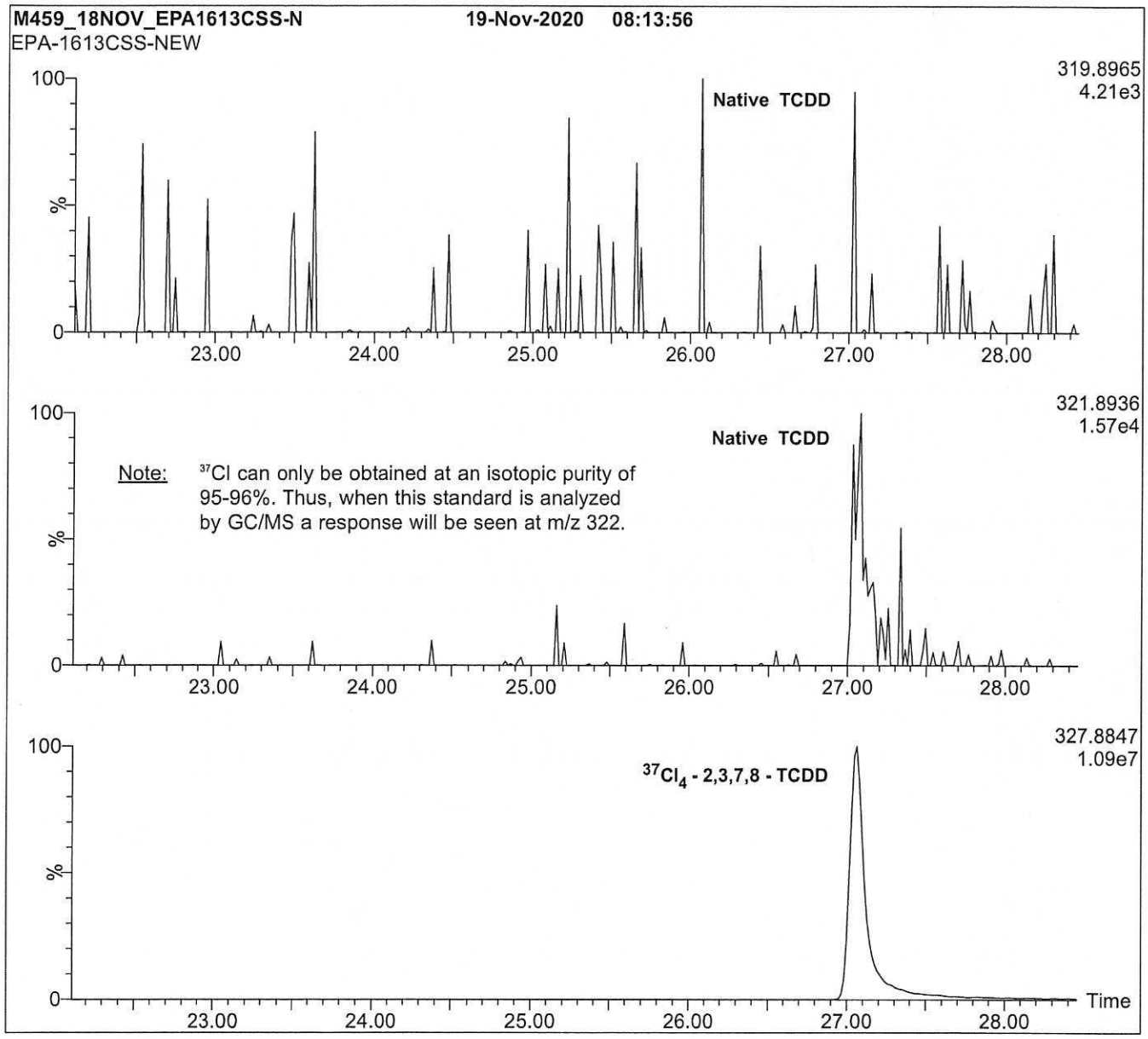
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **EPA-1613CSS; HRGC/HRMS Data (60 m DB-5 Column)**



Conditions for Figure 1:

Agilent 6890N HRGC
Autospec Ultima HRMS

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 mL/min	Oven:	150°C (1 min)
Injector:	280°C (Splitless Injection)		12°C/min to 200°C
Ionization:	EI+		3°C/min to 235°C
Detector:	280°C		235°C (8 min)
	SIR at 10,000 mass resolving power		8°C/min to 310°C
			310°C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-1613LCS

U.S. EPA Method 1613
Labelled Compound Stock Solution

PRODUCT CODE:	EPA-1613LCS
LOT NUMBER:	13LCS1020
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/16/2020
LAST TESTED: (mm/dd/yyyy)	10/21/2020
EXPIRY DATE: (mm/dd/yyyy)	10/21/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

I 11 576

DESCRIPTION:

EPA-1613LCS is a solution/mixture of mass-labelled ($^{13}C_{12}$) chlorinated dibenzo-*p*-dioxins (PCDDs) and dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

EPA-1613LCS was designed and prepared to be used according to U.S. EPA Method 1613, Revision B.

The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: **EPA-1613LCS; Components and Concentrations (ng/mL, ± 5% in nonane/3.2% toluene)**

Compound	Acronym	CAS #	Concentration (ng/mL)
Mass-Labelled PCDDs:			
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-2,3,7,8-TCDD	76523-40-5	100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,7,8-PeCDD	109719-79-1	100
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	109719-80-4	100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	109719-81-5	100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	109719-83-7	100
Octachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-OCDD	114423-97-1	200
Mass-Labelled PCDFs:			
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-2,3,7,8-TCDF	89059-46-1	100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,7,8-PeCDF	109719-77-9	100
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-2,3,4,7,8-PeCDF	116843-02-8	100
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	114423-98-2	100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	116843-03-9	100
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	116843-04-0	100
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	116843-05-1	100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	109719-84-8	100
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	109719-94-0	100

Certified By: _____ **Date:** 11/09/2020 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

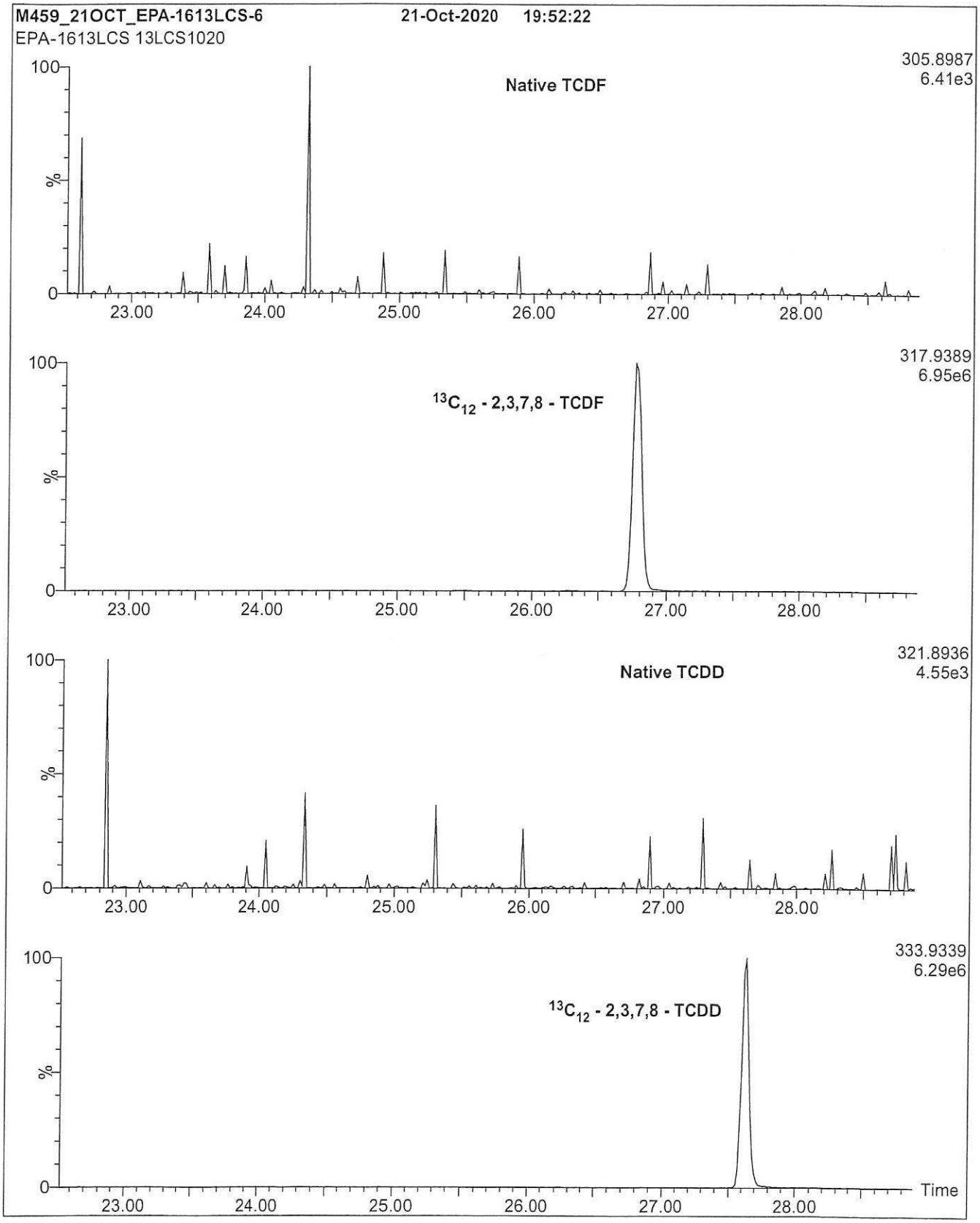


Figure 1: **EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)**

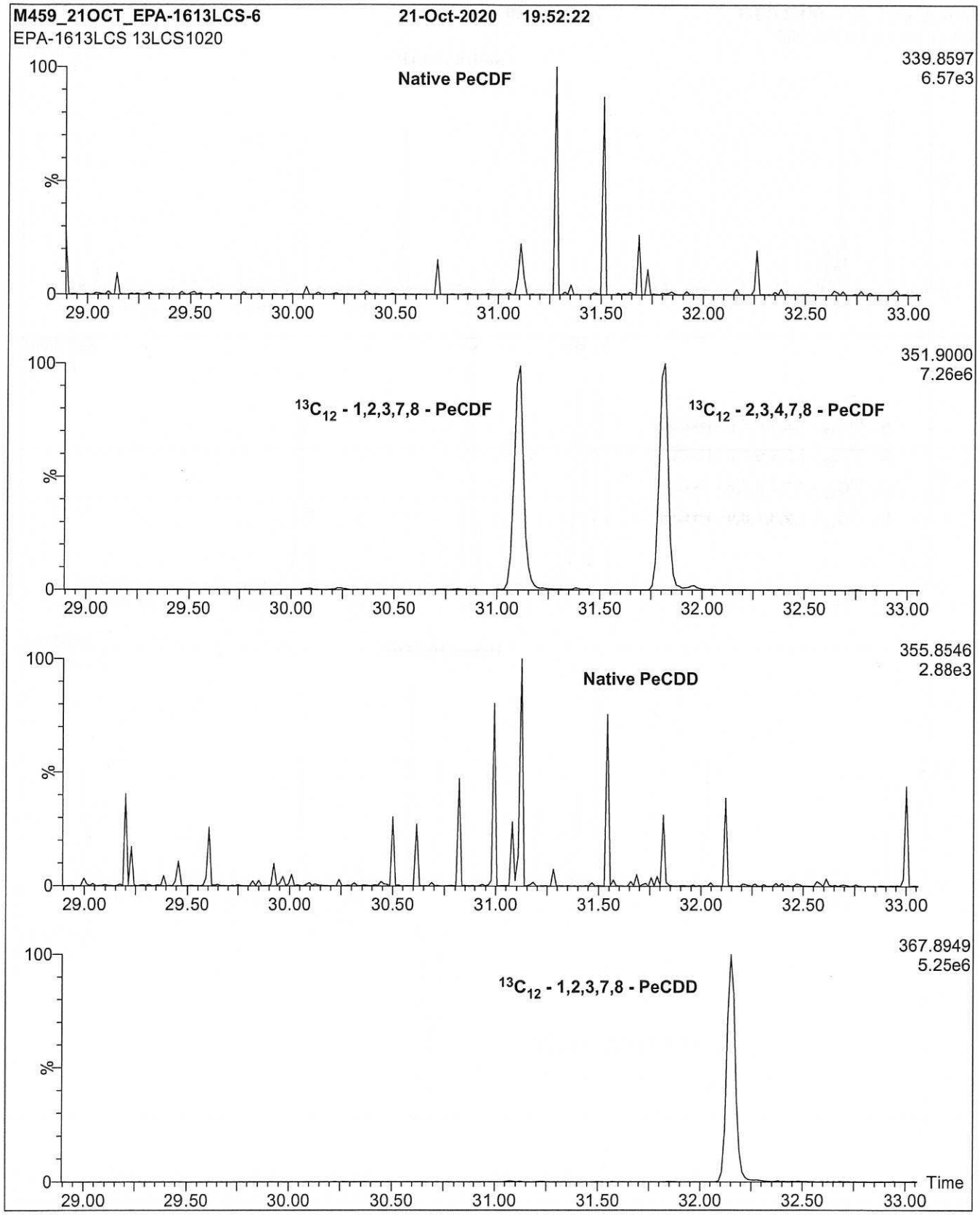


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

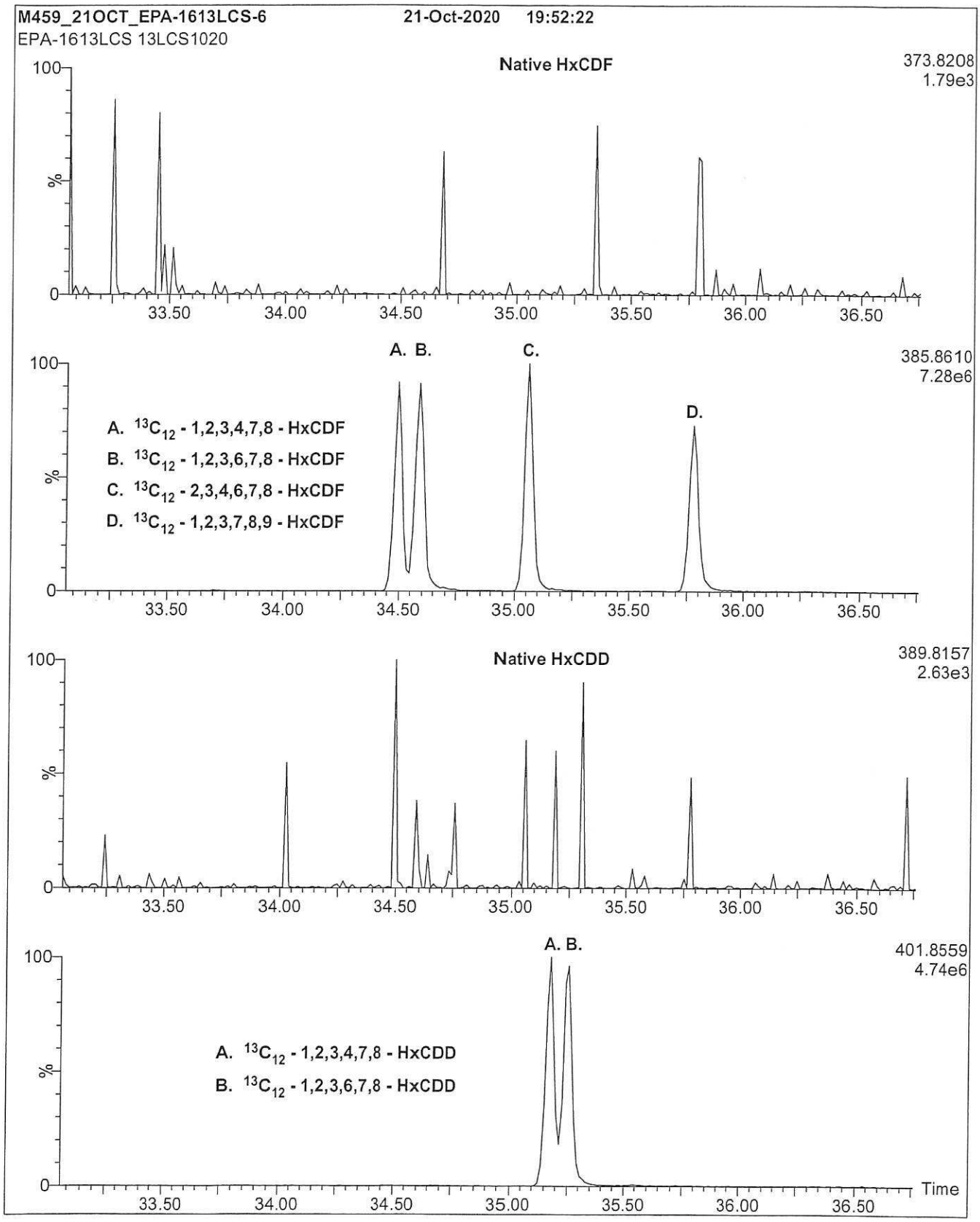


Figure 1: **EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)**

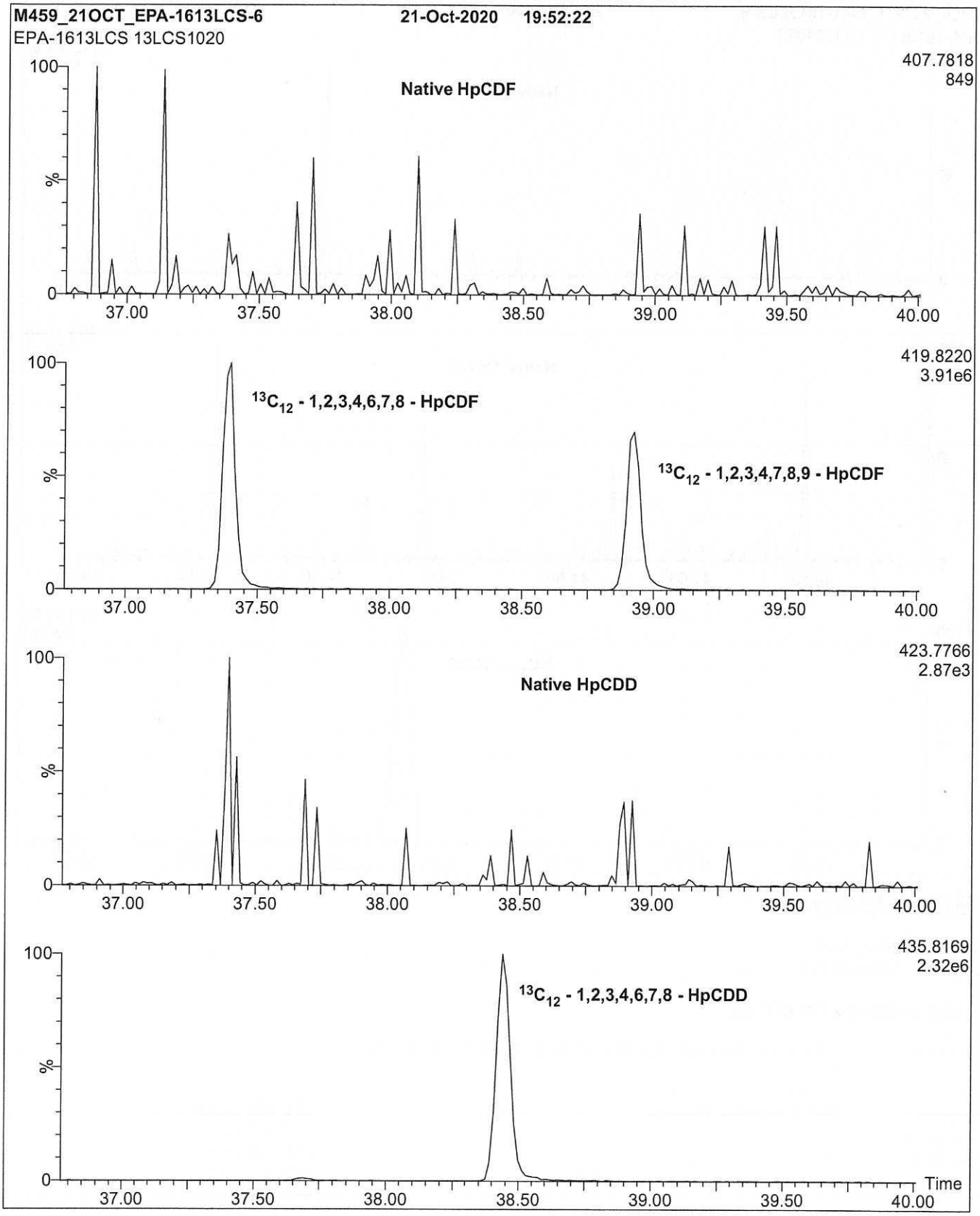
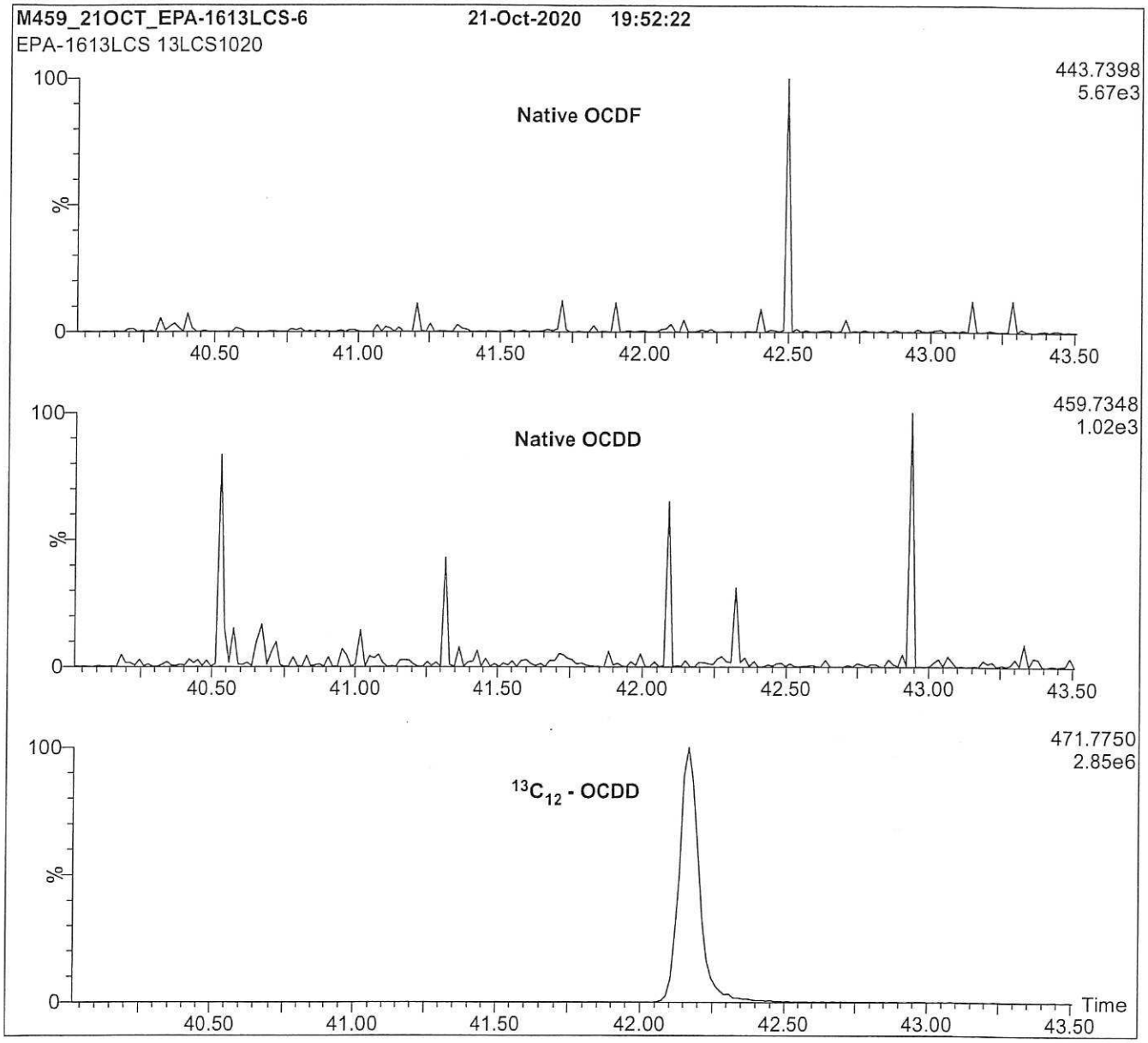


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)



Conditions for Figure 1:

Agilent 6890N HRGC
Autospec Ultima HRMS

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 mL/min	Oven:	150°C (1 min)
Injector:	280°C (Splitless Injection)		12°C/min to 200°C
Ionization:	EI+		3°C/min to 235°C
Detector:	300°C		235°C (8 min)
	SIR at 10,000 mass resolving power		8°C/min to 310°C
			310°C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

CS3WT

Calibration and Verification Solution (EPA-1613CS3) combined with Window Defining and 2,3,7,8-TCDD Resolution Testing Congeners

PRODUCT CODE:	CS3WT
LOT NUMBER:	CS3WT1020
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	12/02/2020
LAST TESTED: (mm/dd/yyyy)	12/10/2020
EXPIRY DATE: (mm/dd/yyyy)	12/10/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

J001522

DESCRIPTION:

CS3WT is a solution/mixture of native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$) chlorinated dibenzo-*p*-dioxins (PCDDs) and dibenzofurans (PCDFs). The components and their concentrations are given in Tables A and B.

CS3WT is an HRGC/HRMS calibration solution that was designed and prepared to be used according to U.S. EPA Method 1613, Revision B, in place of EPA-1613CS3 (lot: 13CS31020). Additionally, it contains the PCDD and PCDF isomers required to set retention time windows as well as test and establish isomer specificity for 2,3,7,8-TCDD on a DB-5 (or equivalent) capillary column.

The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-[$^{37}Cl_4$]-tetrachlorodibenzo-*p*-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%. The individual native 2,3,7,8-substituted PCDD and PCDF congeners all have chemical purities of >98%; the other congeners (window defining and resolution testing) should only be considered semi-quantitative.

This current lot of CS3WT is to be used with the 1613 calibration solutions having the following lot numbers:

PRODUCT CODE	LOT NUMBER
EPA-1613CS1	13CS11020
EPA-1613CS2	13CS21020
EPA-1613CS3	13CS31020
EPA-1613CS4	13CS41020
EPA-1613CS5	13CS51020
EPA-1613CSL	13CSL1020
EPA-1613CS0.5	13CS0.51020

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

DOCUMENTATION/ DATA ATTACHED:

Table A: Quantitative Components and Concentrations of the Solution/Mixture
Table B: Semi-Quantitative Components and Concentrations of the Solution/Mixture
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.
- Only the 2,3,7,8-substituted PCDDs and PCDFs should be used for quantitation. The other congeners (window defining and 2,3,7,8-TCDD resolution testing) should be considered semi-quantitative (within ±20% of their design value). Impurities have been identified where possible.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) has been assigned to the quantitative components in this product. A maximum combined percent relative uncertainty of ±20% has been assigned to the semi-quantitative components in this product.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: **CS3WT; Quantitative Components and Concentrations (ng/mL, ± 5%, in nonane/4.5% toluene)**

Compound		Acronym	CAS #	Concentration (ng/mL)
Native PCDDs:	**Designation[a]**			
2,3,7,8-Tetrachlorodibenzo-*p*-dioxin		2,3,7,8-TCDD	1746-01-6	10.0
1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin		1,2,3,7,8-PeCDD	40321-76-4	50.0
1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin		1,2,3,4,7,8-HxCDD	39227-28-6	50.0
1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin		1,2,3,6,7,8-HxCDD	57653-85-7	50.0
1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin	Last HxCDD[b]	1,2,3,7,8,9-HxCDD	19408-74-3	50.0
1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin	Last HpCDD	1,2,3,4,6,7,8-HpCDD	35822-46-9	50.0
Octachlorodibenzo-*p*-dioxin		OCDD	3268-87-9	100
Native PCDFs:	**Designation[a]**			
2,3,7,8-Tetrachlorodibenzofuran		2,3,7,8-TCDF	51207-31-9	10.0
1,2,3,7,8-Pentachlorodibenzofuran		1,2,3,7,8-PeCDF	57117-41-6	50.0
2,3,4,7,8-Pentachlorodibenzofuran		2,3,4,7,8-PeCDF	57117-31-4	50.0
1,2,3,4,7,8-Hexachlorodibenzofuran		1,2,3,4,7,8-HxCDF	70648-26-9	50.0
1,2,3,6,7,8-Hexachlorodibenzofuran		1,2,3,6,7,8-HxCDF	57117-44-9	50.0
1,2,3,7,8,9-Hexachlorodibenzofuran		1,2,3,7,8,9-HxCDF	72918-21-9	50.0
2,3,4,6,7,8-Hexachlorodibenzofuran		2,3,4,6,7,8-HxCDF	60851-34-5	50.0
1,2,3,4,6,7,8-Heptachlorodibenzofuran	First HpCDF[c]	1,2,3,4,6,7,8-HpCDF	67562-39-4	50.0
1,2,3,4,7,8,9-Heptachlorodibenzofuran	Last HpCDF	1,2,3,4,7,8,9-HpCDF	55673-89-7	50.0
Octachlorodibenzofuran		OCDF	39001-02-0	100
Mass-Labelled PCDDs:				
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-2,3,7,8-TCDD	76523-40-5	100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-1,2,3,7,8-PeCDD	109719-79-1	100
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	109719-80-4	100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	109719-81-5	100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	109719-83-7	100
Octachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-OCDD	114423-97-1	200
Mass-Labelled PCDFs:				
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-2,3,7,8-TCDF	89059-46-1	100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-1,2,3,7,8-PeCDF	109719-77-9	100
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-2,3,4,7,8-PeCDF	116843-02-8	100
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	114423-98-2	100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	116843-03-9	100
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	116843-04-0	100
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	116843-05-1	100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	109719-84-8	100
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran		$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	109719-94-0	100
Cleanup Standard:				
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-*p*-dioxin		$^{37}Cl_4$-2,3,7,8-TCDD	85508-50-5	10.0
Internal Standards:				
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-1,2,3,4-TCDD	114423-99-3	100
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin		$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	109719-82-6	100

[a] First/Last eluting isomer for the specified homologue group (see Table B for additional Window Definers).
[b, c] – see Table B for footnote.

Table B: **CS3WT; Semi-Quantitative Components and Concentrations (ng/mL, ± 20%, in nonane/4.5% toluene)**

Compound		Acronym	CAS #	Concentration (ng/mL)
PCDD Window Definers:	**Designation[a]**			
1,3,6,8-Tetrachlorodibenzo-*p*-dioxin	First TCDD	1,3,6,8-TCDD	33423-92-6	10.0
1,2,8,9-Tetrachlorodibenzo-*p*-dioxin	Last TCDD	1,2,8,9-TCDD	62470-54-6	10.0
1,2,4,6,8-/1,2,4,7,9-Pentachlorodibenzo-*p*-dioxin	First PeCDD	1,2,4,6,8-PeCDD 1,2,4,7,9-PeCDD	71998-76-0 82291-37-0	50.0[d]
1,2,3,8,9-Pentachlorodibenzo-*p*-dioxin	Last PeCDD	1,2,3,8,9-PeCDD	71925-18-3	50.0
1,2,4,6,7,9-Hexachlorodibenzo-*p*-dioxin	First HxCDD	1,2,4,6,7,9-HxCDD	39227-62-8	50.0
1,2,3,4,6,7,9-Heptachlorodibenzo-*p*-dioxin	First HpCDD	1,2,3,4,6,7,9-HpCDD	58200-70-7	50.0
PCDF Window Definers:	**Designation[a]**			
1,3,6,8-Tetrachlorodibenzofuran	First TCDF	1,3,6,8-TCDF	71998-72-6	10.0
1,2,8,9-Tetrachlorodibenzofuran	Last TCDF	1,2,8,9-TCDF	70648-22-5	10.0
1,3,4,6,8-Pentachlorodibenzofuran	First PeCDF	1,3,4,6,8-PeCDF	83704-55-6	50.0
1,2,3,8,9-Pentachlorodibenzofuran	Last PeCDF	1,2,3,8,9-PeCDF	83704-54-5	50.0
1,2,3,4,6,8-Hexachlorodibenzofuran	First HxCDF	1,2,3,4,6,8-HxCDF	69698-60-8	50.0
2,3,7,8-TCDD Resolution Testing Isomers:				
1,2,3,4-Tetrachlorodibenzo-*p*-dioxin		1,2,3,4-TCDD	30746-58-8	5.00
1,2,3,7-/1,2,3,8-Tetrachlorodibenzo-*p*-dioxin		1,2,3,7-TCDD 1,2,3,8-TCDD	67028-18-6 53555-02-5	5.00[d]
1,2,3,9-Tetrachlorodibenzo-*p*-dioxin		1,2,3,9-TCDD	71669-26-6	10.0

[a] First/Last eluting isomer for the specified homologue group (see Table A for additional Window Definers).

[b] 1,2,3,4,6,7-HxCDD (last eluting HxCDD) not included; coelutes with 1,2,3,7,8,9-HxCDD on a 60 m DB-5 column. Use 1,2,3,7,8,9-HxCDD (see Table A) and 1,2,3,4,6,7,9-HpCDD to approximate the end of the HxCDD window.

[c] 1,2,3,4,8,9-HxCDF (last eluting HxCDF) not included; can interfere with 1,2,3,7,8,9-HxCDF on a 60 m DB-5 column. Use 1,2,3,4,6,7,8-HpCDF (see Table A) to approximate the end of the HxCDF window.

[d] Total concentration of isomers.

Certified By: _____ **Date:** 01/07/2020 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: CS3WT; HRGC/HRMS Data (60 m DB-5 Column)

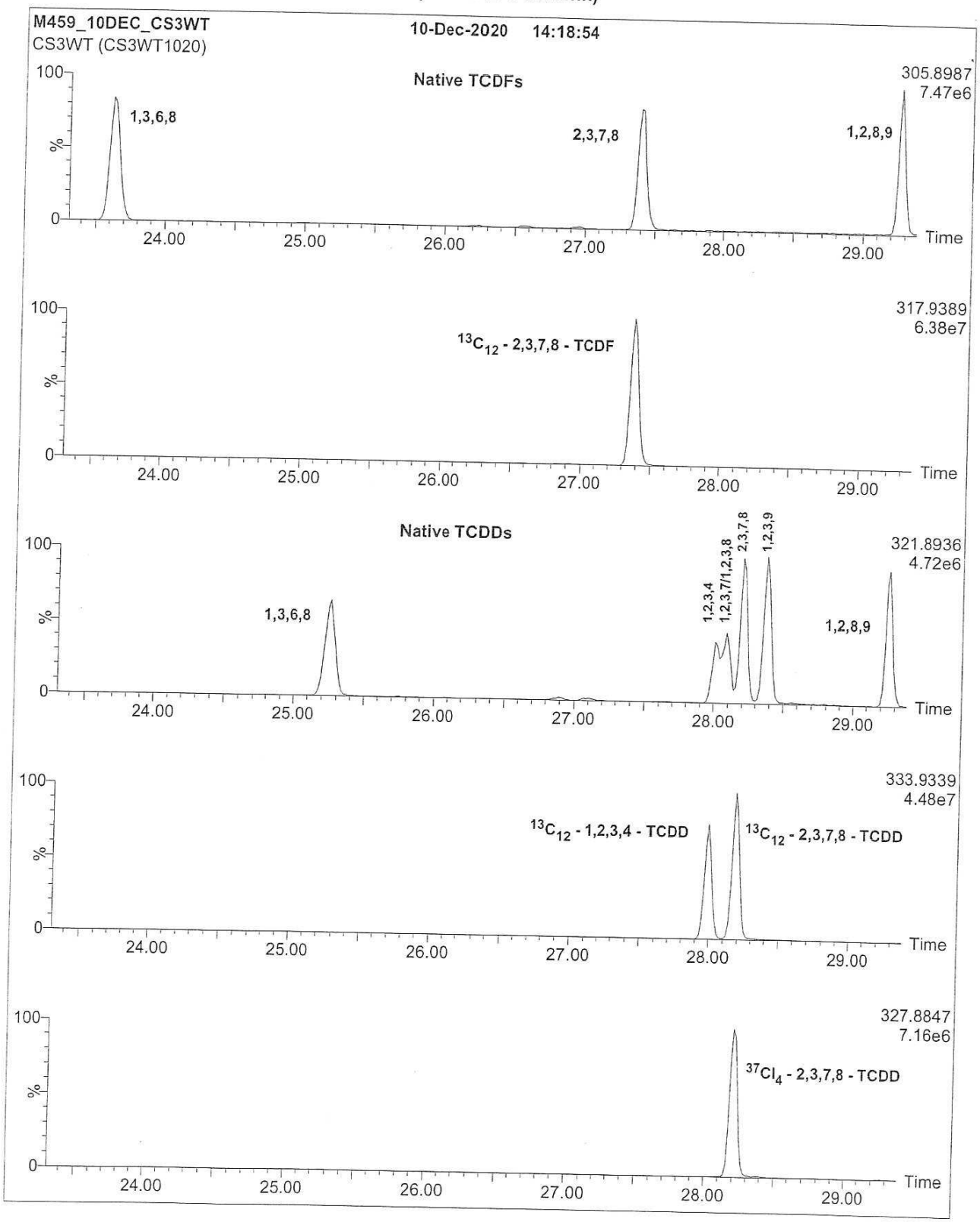


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

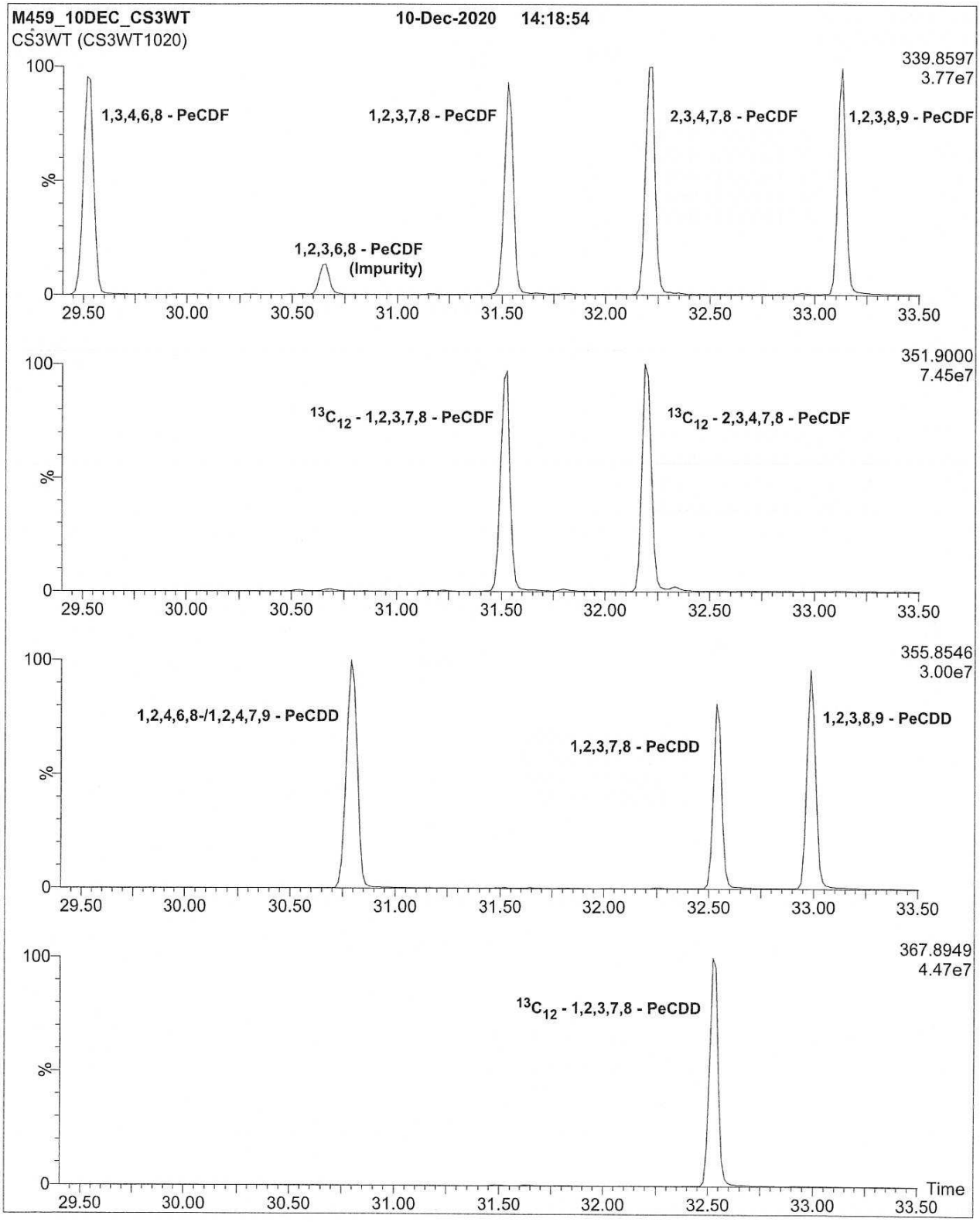


Figure 1: CS3WT; HRGC/HRMS Data (60 m DB-5 Column)

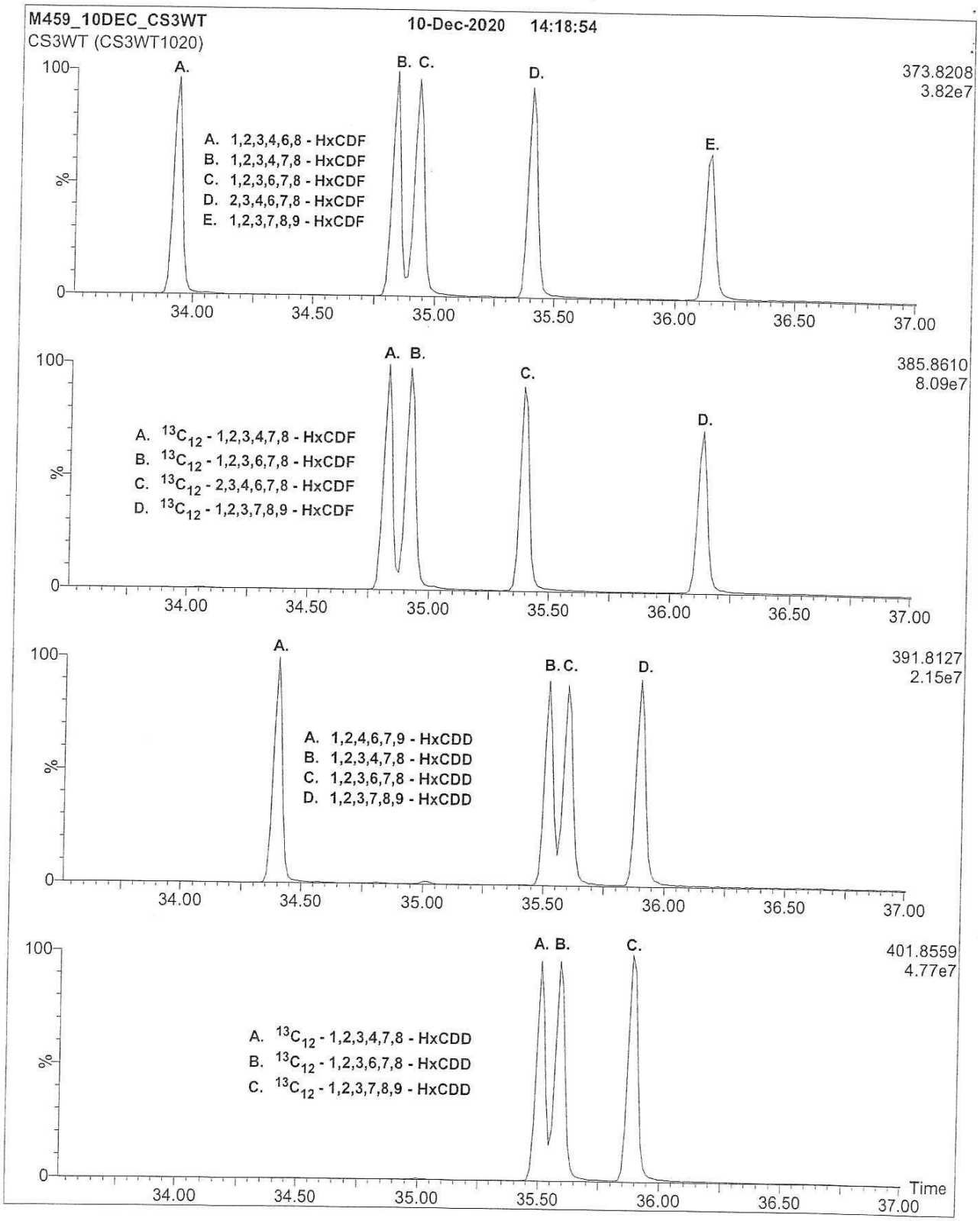


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

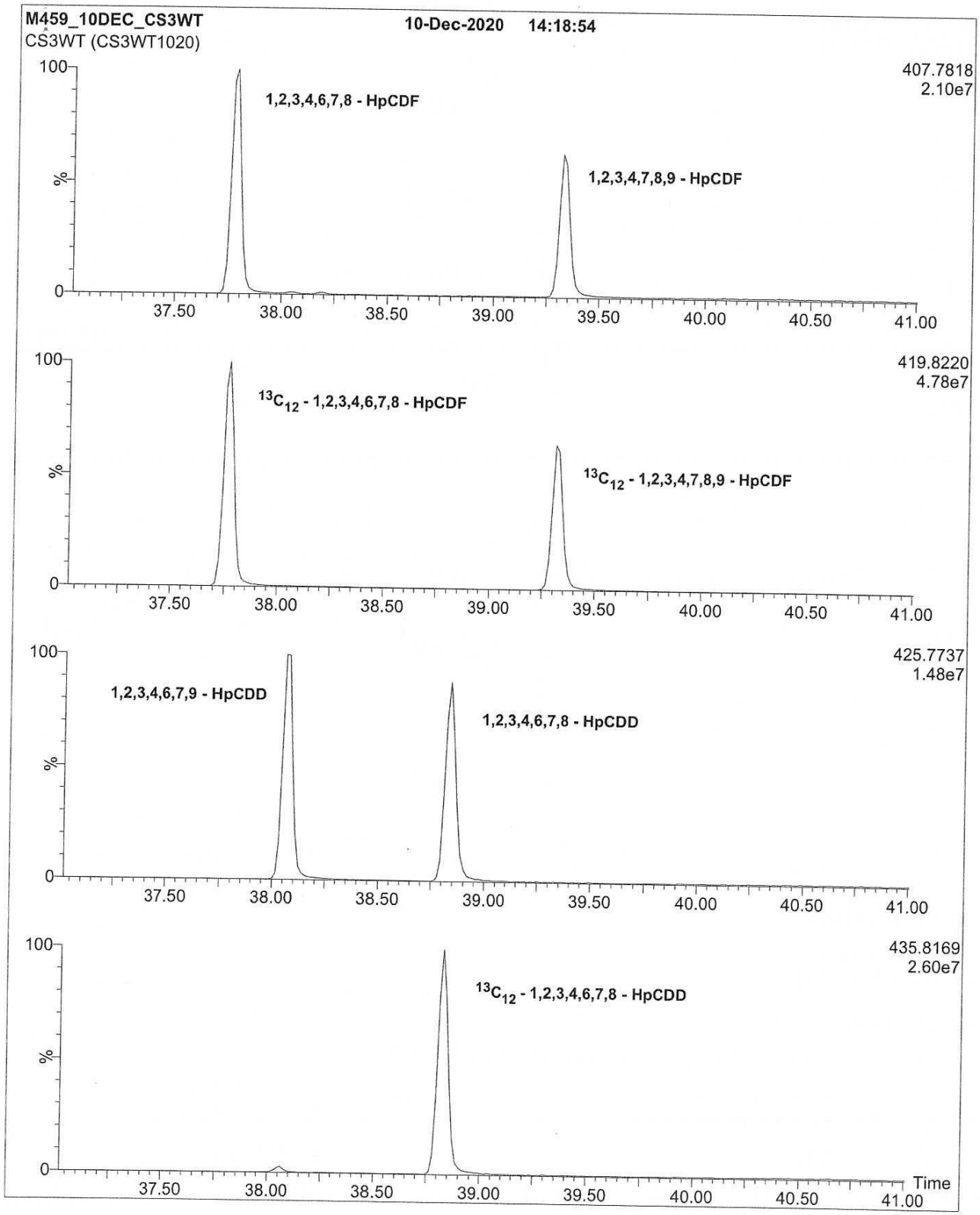
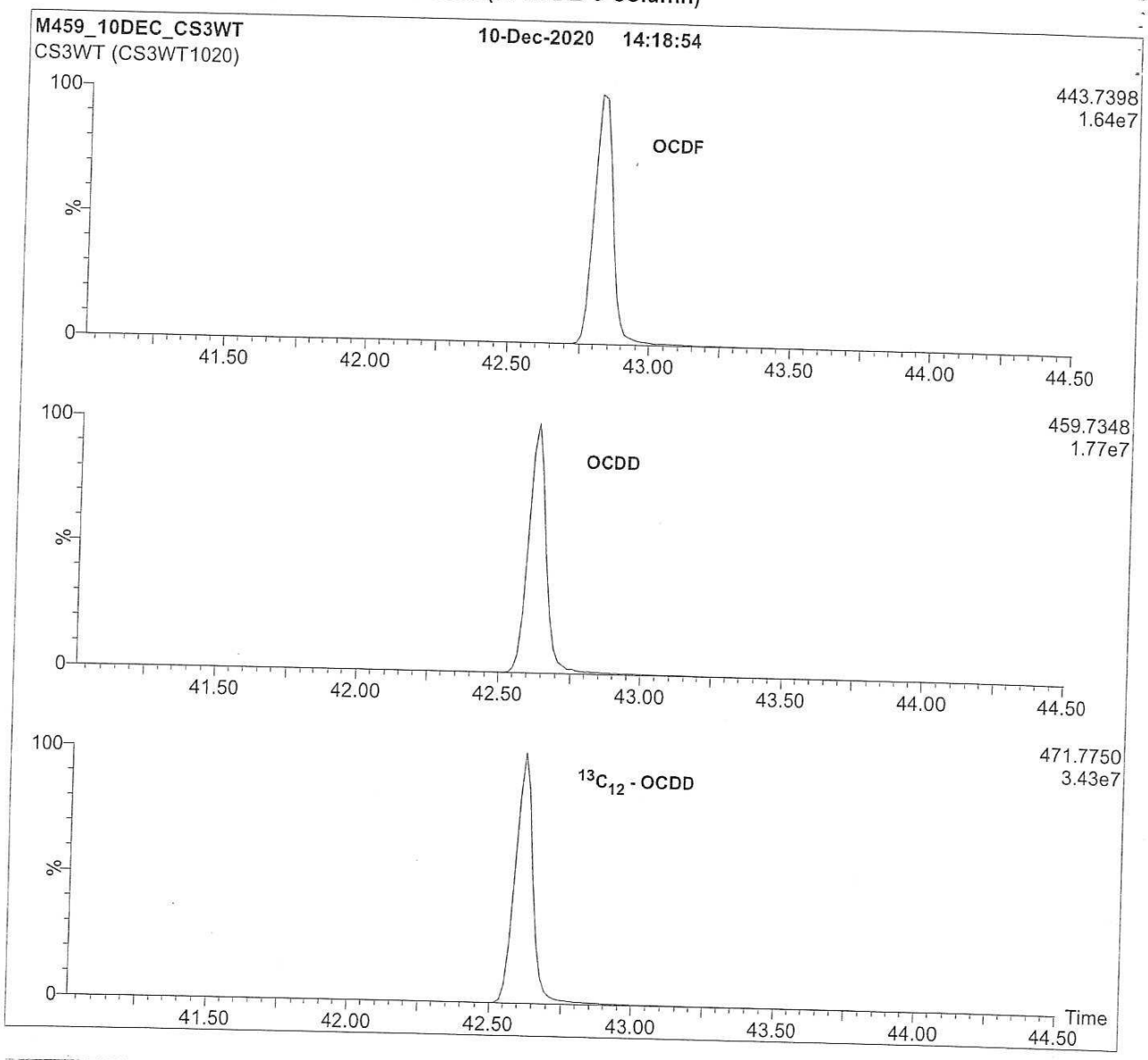


Figure 1: CS3WT; HRGC/HRMS Data (60 m DB-5 Column)



Conditions for Figure 1:

Agilent 6890N HRGC
Autospec Ultima HRMS

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow: Constant at 1 mL/min
Injector: 280°C (Splitless Injection)
Ionization: EI+
Detector: 280°C
SIR at 10,000 mass resolving power

Oven: 150°C (1 min)
12°C/min to 200°C
3°C/min to 235°C
235°C (8 min)
8°C/min to 310°C
310°C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613CSS

U.S. EPA Method 1613 Cleanup Standard Spiking Solution

PRODUCT CODE:	EPA-1613CSS
LOT NUMBER:	13CSS1020
SOLVENT(S):	Nonane
DATE PREPARED: (mm/dd/yyyy)	11/12/2020
LAST TESTED: (mm/dd/yyyy)	01/30/2021
EXPIRY DATE: (mm/dd/yyyy)	11/19/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

J004693 pr
Recd. 04/30/21

DESCRIPTION:

EPA-1613CSS contains 2,3,7,8-($^{37}Cl_4$)tetrachlorodibenzo-*p*-dioxin at the concentration given in Table A.

EPA-1613CSS was designed and prepared to be used according to U.S. EPA Method 1613, Revision B.

2,3,7,8-($^{37}Cl_4$)Tetrachlorodibenzo-*p*-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

Table A: **EPA-1613CSS; Components and Concentrations (ng/mL, ± 5% in nonane)**

Compound	Acronym	CAS #	Concentration (ng/mL)
2,3,7,8-($^{37}Cl_4$)Tetrachlorodibenzo-*p*-dioxin	$^{37}Cl_4$-2,3,7,8-TCDD	85508-50-5	40.0

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/20/2021 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

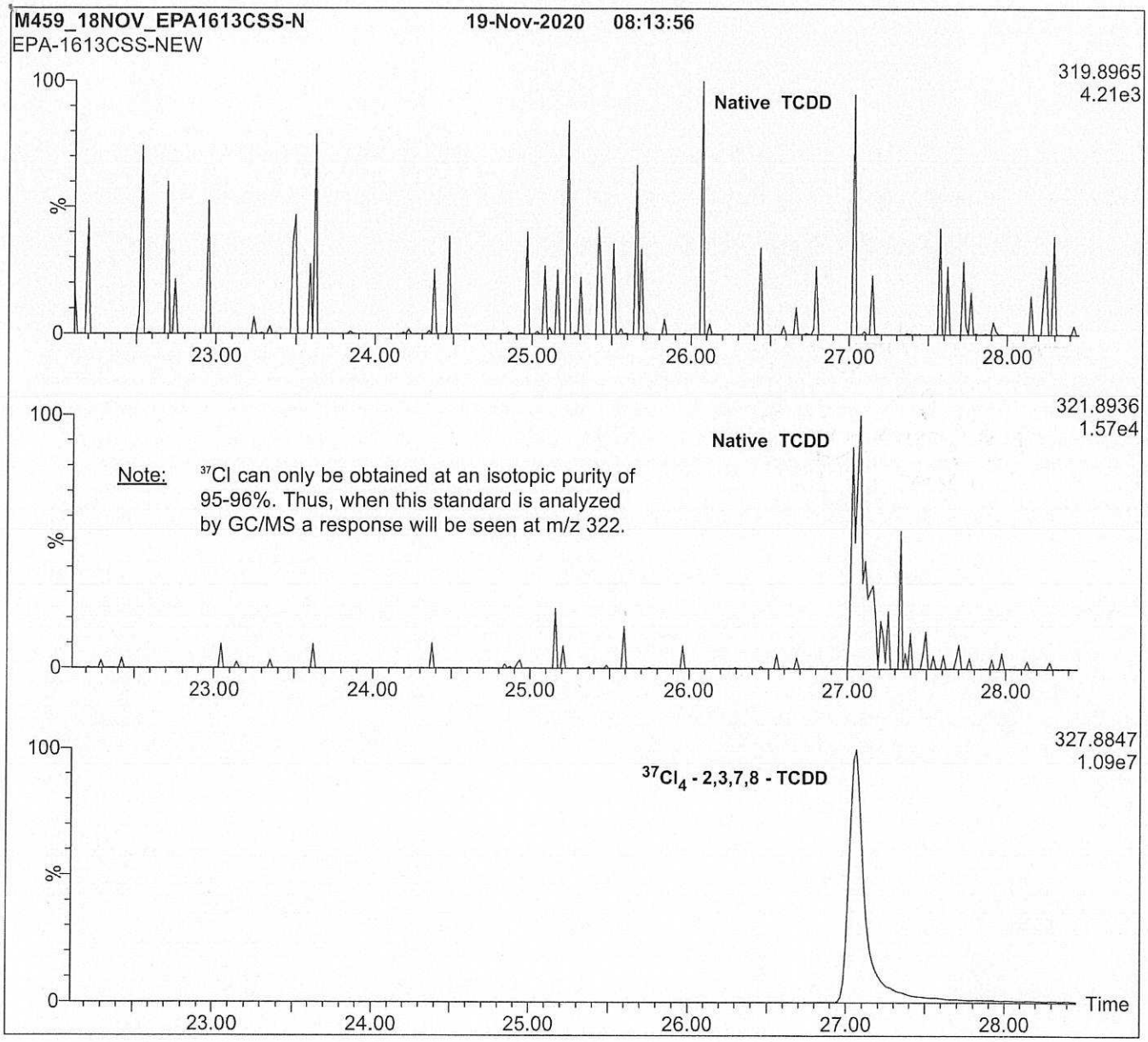
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **EPA-1613CSS; HRGC/HRMS Data (60 m DB-5 Column)**



Conditions for Figure 1:

Agilent 6890N HRGC
Autospec Ultima HRMS

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 mL/min	Oven:	150°C (1 min)
Injector:	280°C (Splitless Injection)		12°C/min to 200°C
Ionization:	EI+		3°C/min to 235°C
Detector:	280°C		235°C (8 min)
	SIR at 10,000 mass resolving power		8°C/min to 310°C
			310°C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613LCS

U.S. EPA Method 1613
Labelled Compound Stock Solution

PRODUCT CODE:	EPA-1613LCS
LOT NUMBER:	13LCS1020
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/16/2020
LAST TESTED: (mm/dd/yyyy)	01/30/2021
EXPIRY DATE: (mm/dd/yyyy)	10/21/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

J004694
Recd. JR
01/30/21

DESCRIPTION:

EPA-1613LCS is a solution/mixture of mass-labelled ($^{13}C_{12}$) polychlorinated dibenzo-*p*-dioxins (PCDDs) and dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

EPA-1613LCS was designed and prepared to be used according to U.S. EPA Method 1613, Revision B.

The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

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At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: **EPA-1613LCS; Components and Concentrations (ng/mL, ± 5% in nonane/3.2% toluene)**

Compound	Acronym	CAS #	Concentration (ng/mL)
Mass-Labelled PCDDs:			
2,3,7,8-Tetrachloro($^{13}C_{12}$)dibenzo-*p*-dioxin	$^{13}C_{12}$-2,3,7,8-TCDD	76523-40-5	100
1,2,3,7,8-Pentachloro($^{13}C_{12}$)dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,7,8-PeCDD	109719-79-1	100
1,2,3,4,7,8-Hexachloro($^{13}C_{12}$)dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	109719-80-4	100
1,2,3,6,7,8-Hexachloro($^{13}C_{12}$)dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	109719-81-5	100
1,2,3,4,6,7,8-Heptachloro($^{13}C_{12}$)dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	109719-83-7	100
Octachloro($^{13}C_{12}$)dibenzo-*p*-dioxin	$^{13}C_{12}$-OCDD	114423-97-1	200
Mass-Labelled PCDFs:			
2,3,7,8-Tetrachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-2,3,7,8-TCDF	89059-46-1	100
1,2,3,7,8-Pentachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-1,2,3,7,8-PeCDF	109719-77-9	100
2,3,4,7,8-Pentachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-2,3,4,7,8-PeCDF	116843-02-8	100
1,2,3,4,7,8-Hexachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	114423-98-2	100
1,2,3,6,7,8-Hexachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	116843-03-9	100
1,2,3,7,8,9-Hexachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	116843-04-0	100
2,3,4,6,7,8-Hexachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	116843-05-1	100
1,2,3,4,6,7,8-Heptachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	109719-84-8	100
1,2,3,4,7,8,9-Heptachloro($^{13}C_{12}$)dibenzofuran	$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	109719-94-0	100

Certified By: _____ **Date:** 04/19/2021 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

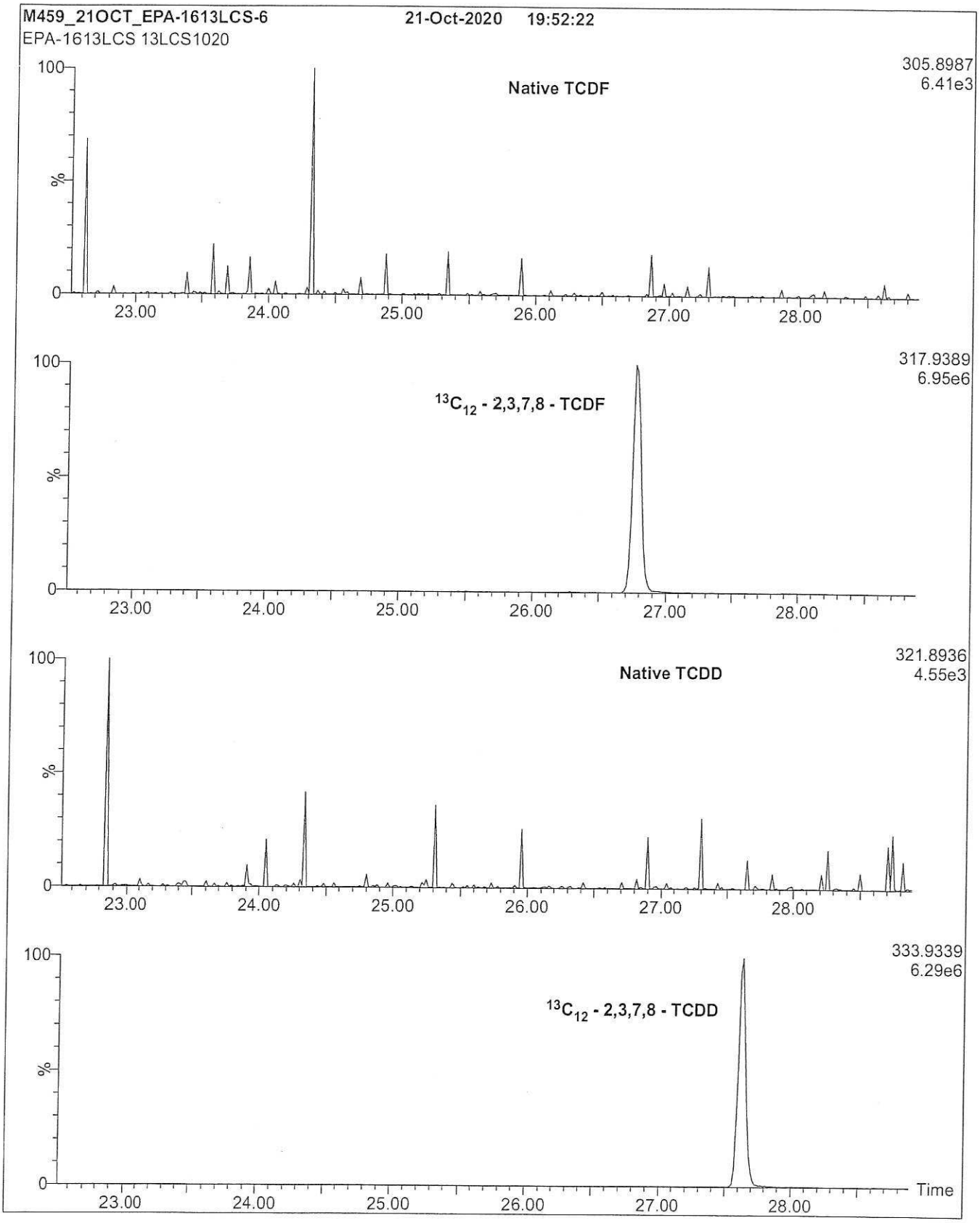


Figure 1: **EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)**

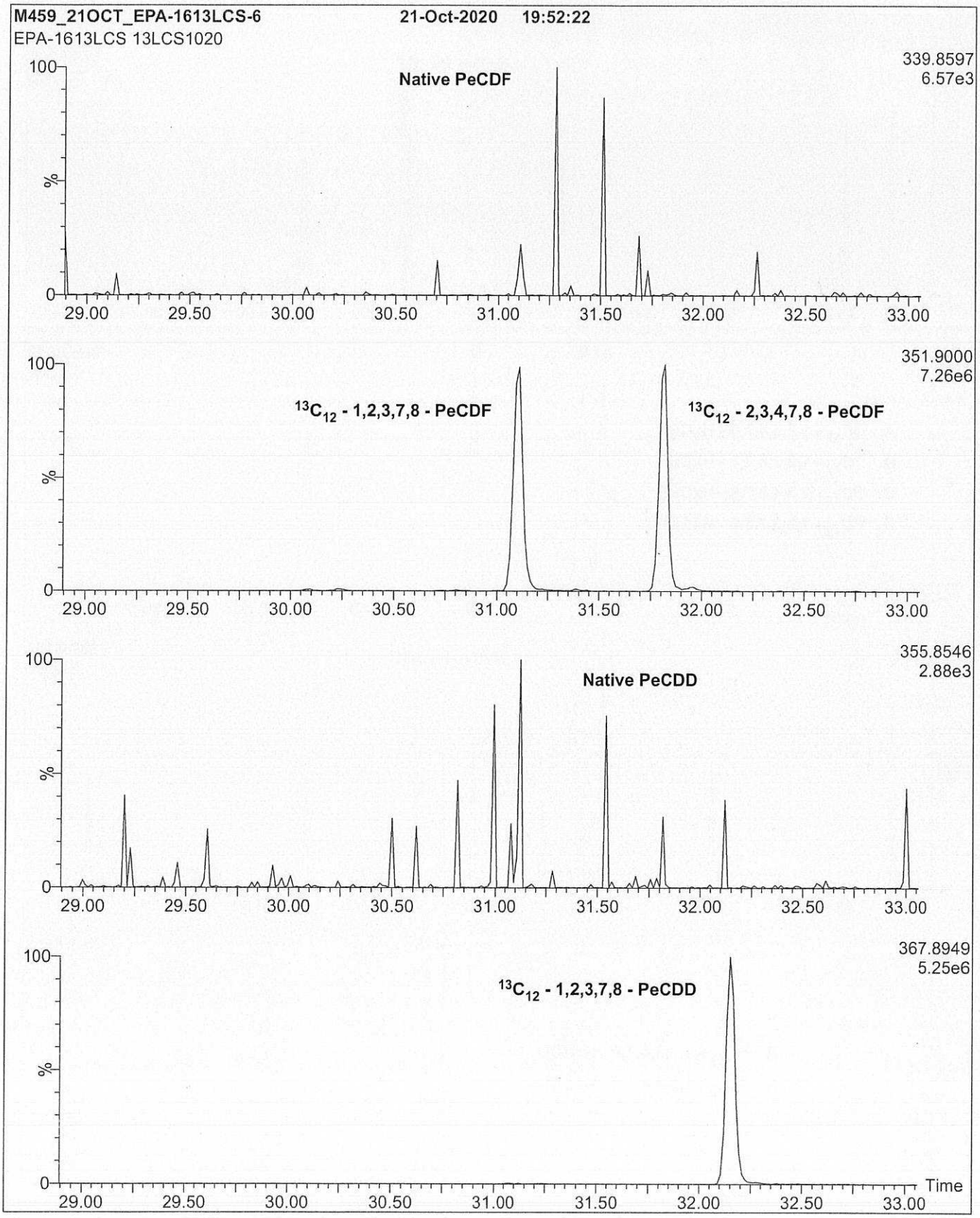


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

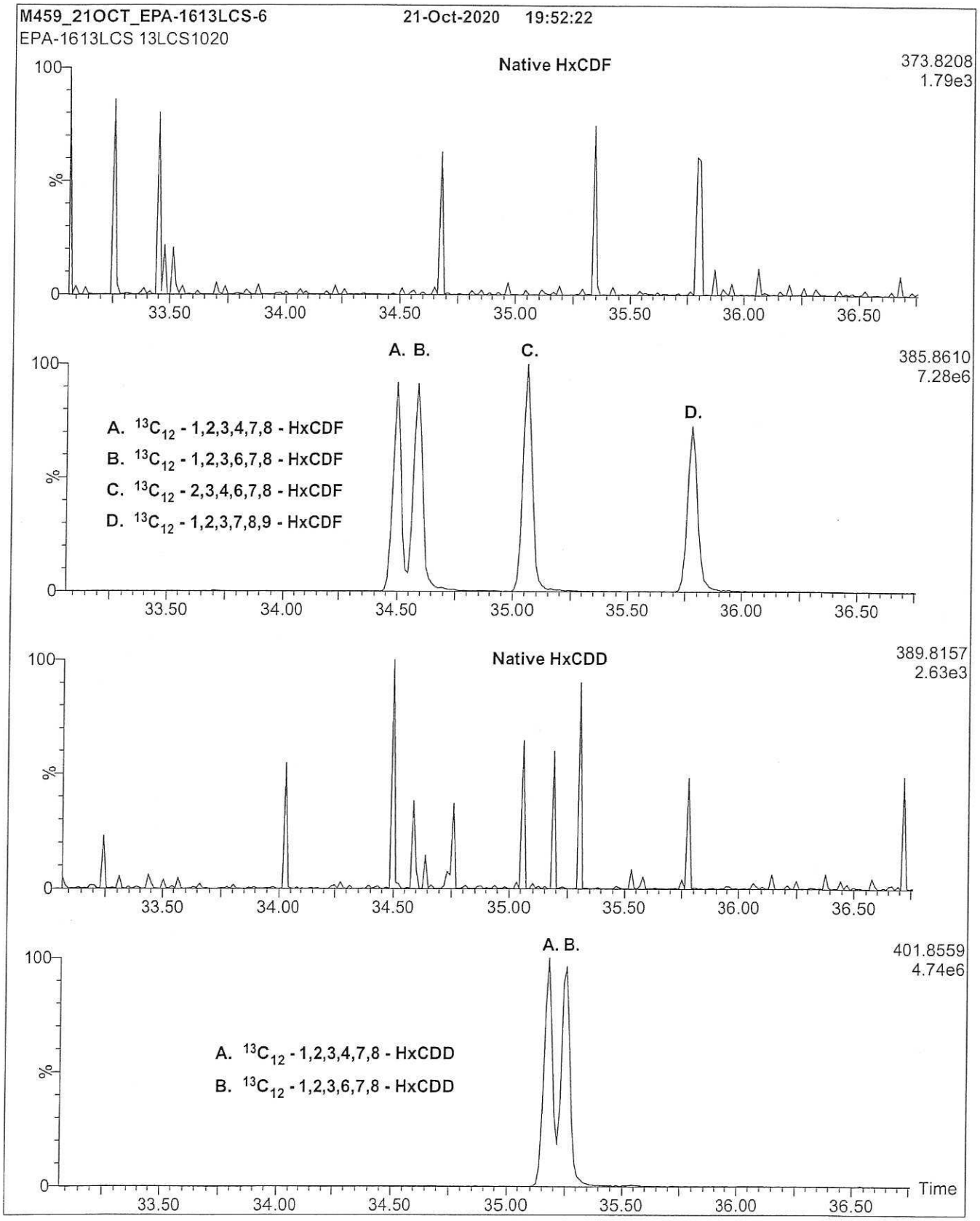


Figure 1: **EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)**

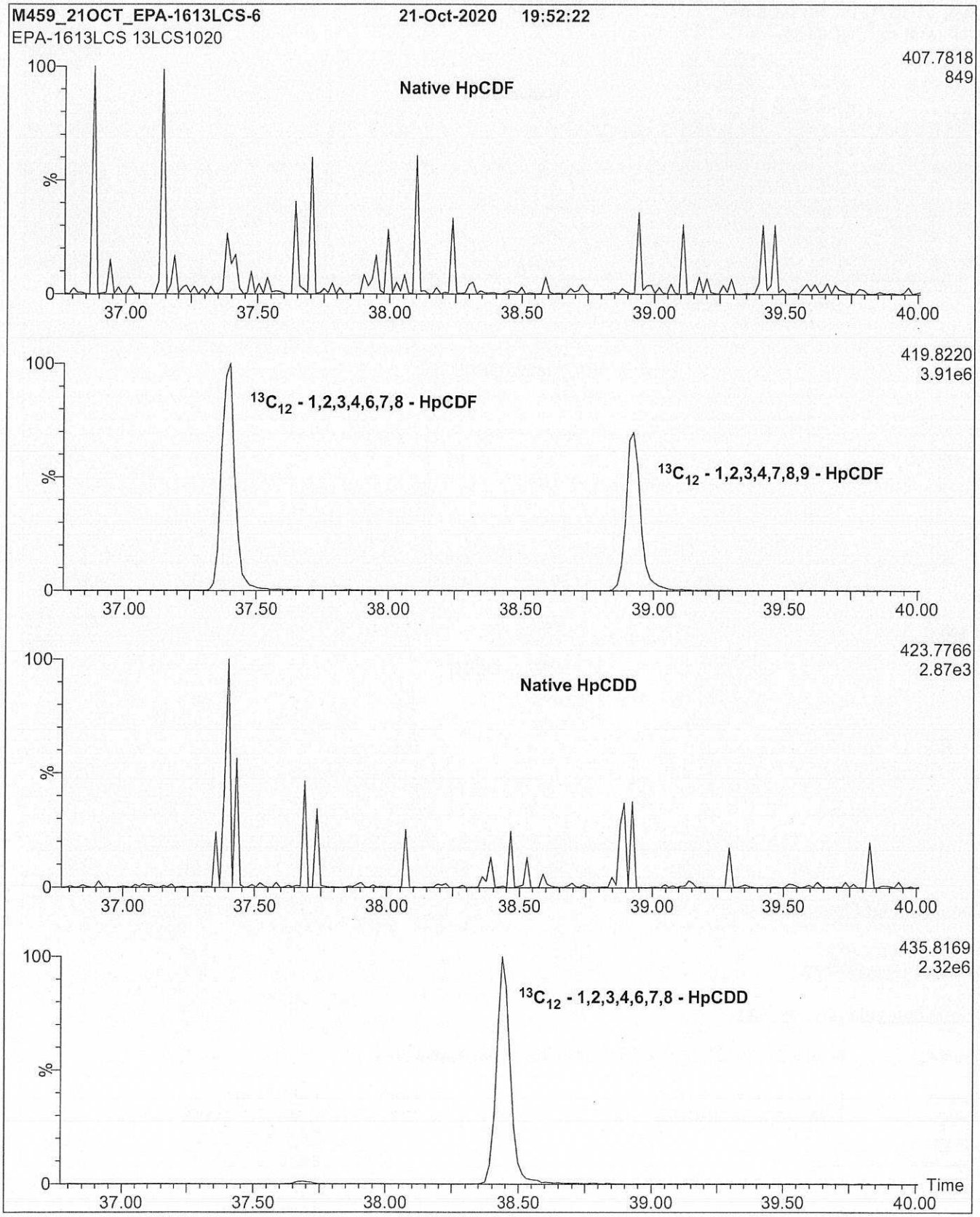
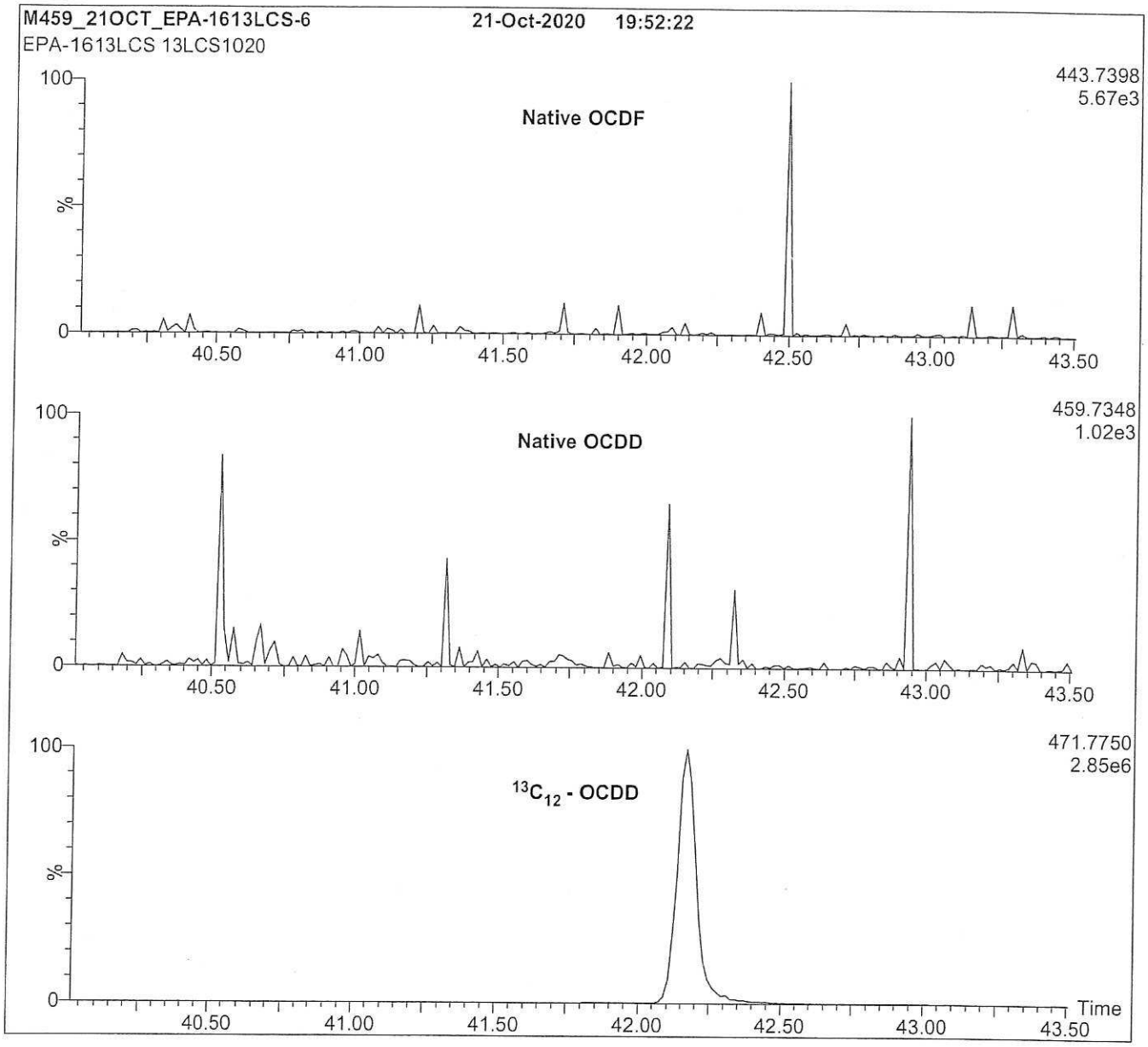


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)



Conditions for Figure 1:

Agilent 6890N HRGC
Autospec Ultima HRMS

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 mL/min	Oven:	150°C (1 min)
Injector:	280°C (Splitless Injection)		12°C/min to 200°C
Ionization:	EI+		3°C/min to 235°C
Detector:	300°C		235°C (8 min)
	SIR at 10,000 mass resolving power		8°C/min to 310°C
			310°C (8 min)

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Analytical Standard Record

Standard ID: J005595 **Printed: 5/26/2021 2:15:33PM**

Description:	Dioxin ISC Mix	Expires:	26-May-2022
Standard Type:	Other	Prepared:	26-May-2021
Solvent:	Nonane	Prepared By:	Peter Kepler
Final Volume (mls):	1	Department:	HRGCMS
Vials:	1	Last Edit:	26-May-2021 14:05 by PK
Vendor:		Lot #:	1234
Vendor Catalog #:			

Comments

Stock: H9902: 2378-TCDF, 3467-TCDF, 2348-TCDF, 1278-TCDD, 2378-TCDD. each @ 1000 ng/mL

10 ul to 1 mL FV in Nonane. Final Conc = 10 ng/mL. Analytes and units not available in Element.

Reviewed By Date

Recipient Copy

CHAIN-OF-CUSTODY RECORD

COC No. 15130

Order Number: CB014550

Date Shipped: 6/30/2021

AirBill No(s): 460843969796

From: QATS LABORATORY
2700 CHANDLER AVENUE, BLDG. C
LAS VEGAS, NV 89120
PHONE: 1-702-895-8712
FAX: 1-702-795-8210

To: SUE DUNNIHOO
ANALYTICAL RESOURCES INC.
4611 S. 134TH PLACE SUITE 100
TUKWILA WA 98168
250-695-6207

Sample ID	Qty	Description/Remarks	→ Catalogue Number
PSRM0134 - J006840	1	PUGET SOUND SEDIMENT RM	PS-SRM
PSRM0135 - J006841	1	PUGET SOUND SEDIMENT RM	PS-SRM
PSRM0136 - J006842	1	PUGET SOUND SEDIMENT RM	PS-SRM
PSRM0137 - J006843	1	PUGET SOUND SEDIMENT RM	PS-SRM
		6/30/2021	
		DUWAMISH AOC4	

Please use the enclosed Sample Preparation Instructions. If catalogue number(s) are listed at the top of the Sample Preparation Instructions use the Sample Preparation Instructions with catalogue number(s) matching the catalogue number(s) of each of the samples listed above.

Relinquished by: (Signature)	Date/Time 1400 6/30/2021	Received by: (Signature)	Date/Time 07/01/2021 1042
Custody Seal(s): Present/Absent	Remarks:		
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

Report No. 00, 9/11/2014

SMP Version 3.3