

The results set forth herein are provided by SGS North America Inc.

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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC11014

Sampling Date: 11/06/23

Report to:

AECOM, Inc
7595 Technology Way
Denver, CO 80237
katie.abbott@aecom.com; mark.kromis@aecom.com;
watson.tanji@aecom.com; kristin.rutherford@aecom.com;
ATTN: Katie Abbott

Total number of pages in report: 531



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Norm Farmer
Technical Director

Client Service contact: Terri McNulty-Patterson 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)

DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177),

AL, AK, AR, CT, IA, KY, MA, MI, MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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Test results relate only to samples analyzed.

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Sample Summary

AECOM, INC.

Job No: FC11014

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected		Matrix		Client	
	Date	Time By	Received	Code Type	Sample ID	
FC11014-1	11/06/23	10:20	AYMY11/07/23	AQ	Ground Water	
						AF-RHMW16-WGN01LF-2311

SAMPLE DELIVERY GROUP CASE NARRATIVE

2

Client: AECOM, INC.

Job No: FC11014

Site: N6274223F0104 RH Fire Suppression System

Report Date: 11/14/2023 4:18:08

On 11/07/2023, 1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 5 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC11014 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA DRAFT 1633

Matrix: AQ

Batch ID: OP99997

Sample(s) FC11062-2MS, FC11062-3DUP were used as the QC samples indicated.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

Kim Benham, Client Services (*Signature on File*)

Summary of Hits

Job Number: FC11014
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 11/06/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
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FC11014-1 AF-RHMW16-WGN01LF-2311

No hits reported in this sample.



Orlando, FL

Section 4

4

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Page 1 of 3

Client Sample ID:	AF-RHMW16-WGN01LF-2311				
Lab Sample ID:	FC11014-1			Date Sampled:	11/06/23
Matrix:	AQ - Ground Water			Date Received:	11/07/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT			Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q53747.D	1	11/13/23 19:55	AL	11/09/23 08:40	OP99997	S4Q785
Run #2							

	Initial Volume	Final Volume
Run #1	520 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
---------	----------	--------	-----	-----	----	-------	---

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	3.8 U	15	3.8	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.9 U	7.7	1.9	0.90	ng/l	
307-24-4	Perfluorohexanoic acid	1.9 U	3.8	1.9	0.48	ng/l	
375-85-9	Perfluoroheptanoic acid	1.9 U	3.8	1.9	0.48	ng/l	
335-67-1	Perfluorooctanoic acid	0.96 U	3.8	0.96	0.48	ng/l	
375-95-1	Perfluorononanoic acid	1.9 U	3.8	1.9	0.59	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.8	1.9	0.48	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.8	1.9	0.58	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.8	1.9	0.58	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.8	1.9	0.81	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.8	1.9	0.48	ng/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	1.9 U	3.8	1.9	0.48	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.8 U	4.8	3.8	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	3.8	1.9	0.67	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.8	1.9	0.48	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	3.8	1.9	0.52	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.8	1.9	0.55	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.8	1.9	0.62	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.8 U	4.8	3.8	1.1	ng/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	7.7 U	19	7.7	3.1	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.7 U	19	7.7	3.3	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.7 U	19	7.7	4.0	ng/l	

PERFLUOROOCTANE SULFONAMIDES

754-91-6	PFOSA	1.9 U	3.8	1.9	0.64	ng/l	
31506-32-8	MeFOSA	3.8 U	7.7	3.8	0.96	ng/l	
4151-50-2	EfOSA	3.8 U	7.7	3.8	0.96	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 2 of 3

Client Sample ID:	AF-RHMW16-WGN01LF-2311			Date Sampled:	11/06/23
Lab Sample ID:	FC11014-1			Date Received:	11/07/23
Matrix:	AQ - Ground Water			Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT				
Project:	N6274223F0104 RH Fire Suppression System				

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.8 U	4.8	3.8	0.96	ng/l	
2991-50-6	EtFOSAA	3.8 U	4.8	3.8	1.3	ng/l	

PERFLUOROOCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	19 U	38	19	4.2	ng/l	
1691-99-2	EtFOSE	19 U	38	19	7.1	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.9 U	3.8	1.9	0.96	ng/l	
919005-14-4	ADONA	3.8 U	7.7	3.8	1.8	ng/l	
377-73-1	PFMPA	1.9 U	7.7	1.9	0.96	ng/l	
863090-89-5	PFMBA	3.8 U	7.7	3.8	1.1	ng/l	
151772-58-6	NFDHA	3.8 U	7.7	3.8	1.2	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.8 U	7.7	3.8	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.8 U	7.7	3.8	1.7	ng/l	
113507-82-7	PFEESA	1.9 U	7.7	1.9	0.75	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.6 U	19	9.6	4.3	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	96	19	8.4	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	96	19	7.5	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
---------	------------------------	--------	--------	--------

13C4-PFBA	91%	20-150%
13C5-PFPeA	109%	20-150%
13C5-PFHxA	107%	20-150%
13C4-PFHpA	108%	20-150%
13C8-PFOA	108%	20-150%
13C9-PFNA	111%	20-150%
13C6-PFDA	102%	20-150%
13C7-PFUnDA	96%	20-150%
13C2-PFDoDA	89%	20-150%
13C2-PFTeDA	74%	20-150%
13C3-PFBS	103%	20-150%
13C3-PFHxS	102%	20-150%

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: AF-RHMW16-WGN01LF-2311			Date Sampled: 11/06/23
Lab Sample ID: FC11014-1			Date Received: 11/07/23
Matrix: AQ - Ground Water			Percent Solids: n/a
Method: EPA DRAFT 1633 EPA 1633 DRAFT			
Project: N6274223F0104 RH Fire Suppression System			

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	102%		20-150%
	13C8-FOSA	98%		20-150%
	d3-MeFOSA	84%		20-150%
	d5-EtFOSA	92%		20-150%
	d3-MeFOSAA	101%		20-150%
	d5-EtFOSAA	98%		20-150%
	d7-MeFOSE	83%		20-150%
	d9-EtFOSE	89%		20-150%
	13C2-4:2FTS	99%		20-180%
	13C2-6:2FTS	99%		20-180%
	13C2-8:2FTS	101%		20-180%
	13C3-HFPO-DA	108%		20-150%

U = Not detected

LOQ = Limit of Quantitation

E = Indicates value exceeds calibration range

LOD = Limit of Detection

DL = Detection Limit

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

SGS Sample Receipt Summary

Job Number: fc11014

Client: AECOM

Project: N6274223F0104 RH Fire Suppression Syst

Date / Time Received: 11/7/2023 2:30:00 PM

Delivery Method: United Cargo/Airspace

Airbill #'s: United Cargo AWB #: 016-97046482

Cooler Temps (Raw Measured) °C: Cooler 1: (4.6);

Cooler Temps (Corrected) °C: Cooler 1: (5.0);

Cooler Informatio

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Cooler temp verification: | IR Gun | |
| 5. Cooler media: | Ice (Bag) | |

Trip Blank Information

Y or N N/A

- | | | | |
|---------------------------------|--------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

W or S N/A

- | | | | |
|------------------------|--------------------------|--------------------------|-------------------------------------|
| 3. Type of TB Received | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|------------------------|--------------------------|--------------------------|-------------------------------------|

Sample Information

Y or N N/A

- | | | | |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Samples presented properly | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 3. Sufficient volume/containers recv'd for analysi | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Condition of sample: | Intact | | |
| 5. Sample recv'd within HT | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 6. Dates/Times/IDs on COC match sample labe | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 7. VOCs have headspace | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 9. Compositing instructions clear | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. Voa Soil Kits/Jars received past 48hrs? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11. % Solids Jar Received? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 12. Residual Chlorine Present? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Misc Information

Number of Encores: 25 Gram 5 Gram

Number of Lab Filtered Metals

Test Strip Lot #: pH 0-3: 226422

pH 10-12: _____ Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot: _____

Comments

SM001

Rev. Date 05/04/17

Technician: SHAYLAP

Date: 11/7/2023 2:30:00 PM

Reviewer: ZD

Date: 11/07/2023

FC11014: Chain of Custody

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QC Evaluation: DOD QSM5.x Limits

Job Number: FC11014
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 11/06/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
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No DOD QSM5.x Limits found for methods in this job.

* Sample used for QC is not from job FC11014

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Injection Standard Area Summaries
- TDCA Retention Time Checks
- Isotope Dilution Standard Recovery Summaries
- Initial and Continuing Calibration Summaries
- Run Sequence Reports

Instrument Blank

Job Number: FC11014
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q785-IBLK	4Q53739.D	1	11/13/23	AL	n/a	n/a	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11014-1

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	0.0015	0.0080	0.0010	ug/l	J
4151-50-2	EtFOSA	0.0029	0.0080	0.0010	ug/l	J
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Instrument Blank

Page 2 of 2

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q785-IBLK	4Q53739.D	1	11/13/23	AL	n/a	n/a	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11014-1

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits	
	13C4-PFBA	101%	20-150%
	13C5-PFPeA	101%	20-150%
	13C5-PFHxA	97%	20-150%
	13C4-PFHpA	102%	20-150%
	13C8-PFOA	102%	20-150%
	13C9-PFNA	92%	20-150%
	13C6-PFDA	102%	20-150%
	13C7-PFUnDA	106%	20-150%
	13C2-PFDoDA	101%	20-150%
	13C2-PFTeDA	96%	20-150%
	13C3-PFBS	108%	20-150%
	13C3-PFHxS	107%	20-150%
	13C8-PFOS	104%	20-150%
	13C8-FOSA	98%	20-150%
	d3-MeFOSAA	104%	20-150%
	d5-EtFOSAA	100%	20-150%
	13C2-4:2FTS	128%	20-180%
	13C2-6:2FTS	112%	20-180%
	13C2-8:2FTS	113%	20-180%

Method Blank Summary

Page 1 of 2

Job Number: FC11014
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-MB	4Q53746.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11014-1

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic acid	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Method Blank Summary

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Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-MB	4Q53746.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11014-1

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	109% 20-150%
	13C5-PFPeA	108% 20-150%
	13C5-PFHxA	106% 20-150%
	13C4-PFHpA	106% 20-150%
	13C8-PFOA	112% 20-150%
	13C9-PFNA	114% 20-150%
	13C6-PFDA	103% 20-150%
	13C7-PFUnDA	116% 20-150%
	13C2-PFDoDA	102% 20-150%
	13C2-PFTeDA	91% 20-150%
	13C3-PFBS	103% 20-150%
	13C3-PFHxS	106% 20-150%
	13C8-PFOS	104% 20-150%
	13C8-FOSA	61% 20-150%
	d3-MeFOSA	67% 20-150%
	d5-EtFOSA	77% 20-150%
	d3-MeFOSAA	105% 20-150%
	d5-EtFOSAA	93% 20-150%
	d7-MeFOSE	57% 20-150%
	d9-EtFOSE	68% 20-150%
	13C2-4:2FTS	92% 20-180%
	13C2-6:2FTS	97% 20-180%
	13C2-8:2FTS	101% 20-180%
	13C3-HFPO-DA	106% 20-150%

Blank Spike Summary

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Job Number: FC11014
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-LLBS	4Q53745.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11014-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0296	99	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0147	98	40-150
307-24-4	Perfluorohexanoic acid	0.0075	0.0073	97	40-150
375-85-9	Perfluoroheptanoic acid	0.0075	0.0075	100	40-150
335-67-1	Perfluorooctanoic acid	0.0075	0.0070	93	40-150
375-95-1	Perfluorononanoic acid	0.0075	0.0078	104	40-150
335-76-2	Perfluorodecanoic acid	0.0075	0.0070	93	40-150
2058-94-8	Perfluoroundecanoic acid	0.0075	0.0077	103	40-150
307-55-1	Perfluorododecanoic acid	0.0075	0.0077	103	40-150
72629-94-8	Perfluorotridecanoic acid	0.0075	0.0076	101	40-150
376-06-7	Perfluorotetradecanoic acid	0.0075	0.0066	88	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00665	0.0068	102	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00706	0.0071	101	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00686	0.0066	96	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00715	0.0066	92	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00696	0.0071	102	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00722	0.0077	107	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00724	0.0071	98	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.00728	0.0069	95	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0281	0.0249	89	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0285	0.0280	98	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0288	0.0325	113	40-150
754-91-6	PFOSA	0.0075	0.0077	103	40-150
31506-32-8	MeFOSA	0.015	0.0192	128	40-150
4151-50-2	EtFOSA	0.015	0.0147	98	40-150
2355-31-9	MeFOSAA	0.0075	0.0079	105	40-150
2991-50-6	EtFOSAA	0.0075	0.0085	113	40-150
24448-09-7	MeFOSE	0.0375	0.0381	102	40-150
1691-99-2	EtFOSE	0.0375	0.0381	102	40-150
13252-13-6	HFPO-DA (GenX)	0.015	0.0154	103	40-150
919005-14-4	ADONA	0.0142	0.0168	119	40-150
377-73-1	PFMPA	0.015	0.0173	115	40-150
863090-89-5	PFMBA	0.015	0.0165	110	40-150
151772-58-6	NFDHA	0.015	0.0189	126	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.014	0.0143	102	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0142	0.0139	98	40-150

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-LLBS	4Q53745.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11014-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0134	0.0157	118	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0375	0.0266	71	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.188	0.175	93	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.188	0.174	93	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	113%	20-150%
	13C5-PFPeA	113%	20-150%
	13C5-PFHxA	111%	20-150%
	13C4-PFHpA	112%	20-150%
	13C8-PFOA	113%	20-150%
	13C9-PFNA	106%	20-150%
	13C6-PFDA	113%	20-150%
	13C7-PFUnDA	116%	20-150%
	13C2-PFDoDA	103%	20-150%
	13C2-PFTeDA	93%	20-150%
	13C3-PFBS	110%	20-150%
	13C3-PFHxS	115%	20-150%
	13C8-PFOS	110%	20-150%
	13C8-FOSA	85%	20-150%
	d3-MeFOSA	67%	20-150%
	d5-EtFOSA	82%	20-150%
	d3-MeFOSAA	112%	20-150%
	d5-EtFOSAA	105%	20-150%
	d7-MeFOSE	70%	20-150%
	d9-EtFOSE	80%	20-150%
	13C2-4:2FTS	119%	20-180%
	13C2-6:2FTS	116%	20-180%
	13C2-8:2FTS	103%	20-180%
	13C3-HFPO-DA	112%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC11014
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-BS	4Q53744.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11014-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0882	88	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0452	90	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0227	91	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0227	91	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0216	86	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0211	84	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0214	86	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0214	86	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0222	89	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0220	88	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0228	91	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0204	92	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0221	94	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0213	93	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0241	101	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0218	94	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0263	109	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0231	96	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.0243	0.0230	95	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.0769	82	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.0834	88	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.0875	91	40-150
754-91-6	PFOSA	0.025	0.0223	89	40-150
31506-32-8	MeFOSA	0.05	0.0464	93	40-150
4151-50-2	EtFOSA	0.05	0.0447	89	40-150
2355-31-9	MeFOSAA	0.025	0.0215	86	40-150
2991-50-6	EtFOSAA	0.025	0.0241	96	40-150
24448-09-7	MeFOSE	0.125	0.109	87	40-150
1691-99-2	EtFOSE	0.125	0.114	91	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0470	94	40-150
919005-14-4	ADONA	0.0473	0.0506	107	40-150
377-73-1	PFMPA	0.05	0.0314	63	40-150
863090-89-5	PFMBA	0.05	0.0503	101	40-150
151772-58-6	NFDHA	0.05	0.0548	110	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0431	92	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0436	92	40-150

* = Outside of Control Limits.

Blank Spike Summary

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Job Number: FC11014

Account: AECOMCOD AECOM, INC.

Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-BS	4Q53744.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11014-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0460	103	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.132	106	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.508	81	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.551	88	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	38%	20-150%
	13C5-PFPeA	109%	20-150%
	13C5-PFHxA	109%	20-150%
	13C4-PFHpA	110%	20-150%
	13C8-PFOA	114%	20-150%
	13C9-PFNA	118%	20-150%
	13C6-PFDA	105%	20-150%
	13C7-PFUnDA	117%	20-150%
	13C2-PFDoDA	107%	20-150%
	13C2-PFTeDA	96%	20-150%
	13C3-PFBS	111%	20-150%
	13C3-PFHxS	113%	20-150%
	13C8-PFOS	99%	20-150%
	13C8-FOSA	82%	20-150%
	d3-MeFOSA	79%	20-150%
	d5-EtFOSA	90%	20-150%
	d3-MeFOSAA	115%	20-150%
	d5-EtFOSAA	105%	20-150%
	d7-MeFOSE	72%	20-150%
	d9-EtFOSE	87%	20-150%
	13C2-4:2FTS	119%	20-180%
	13C2-6:2FTS	125%	20-180%
	13C2-8:2FTS	123%	20-180%
	13C3-HFPO-DA	109%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

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Job Number: FC11014
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-MS	4Q53750.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785
FC11062-2	4Q53749.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11014-1

CAS No.	Compound	FC11062-2 ug/l	Spike Q	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.015 U	0.0962	0.0835	87	40-150
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.0481	0.0413	86	40-150
307-24-4	Perfluorohexanoic acid	0.0038 U	0.024	0.0214	89	40-150
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.024	0.0215	89	40-150
335-67-1	Perfluorooctanoic acid	0.0038 U	0.024	0.0212	88	40-150
375-95-1	Perfluorononanoic acid	0.0038 U	0.024	0.0204	85	40-150
335-76-2	Perfluorodecanoic acid	0.0038 U	0.024	0.0211	88	40-150
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.024	0.0197	82	40-150
307-55-1	Perfluorododecanoic acid	0.0038 U	0.024	0.0216	90	40-150
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.024	0.0212	88	40-150
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.024	0.0236	98	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0038 U	0.0213	0.0176	83	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0048 U	0.0226	0.0186	82	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.022	0.0208	95	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0229	0.0195	85	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.0223	0.0197	88	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0231	0.0209	90	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0232	0.0186	80	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0048 U	0.0233	0.0169	72	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.019 U	0.0901	0.0821	91	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.019 U	0.0913	0.0894	98	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.019 U	0.0923	0.0849	92	40-150
754-91-6	PFOSA	0.0038 U	0.024	0.0217	90	40-150
31506-32-8	MeFOSA	0.0077 U	0.0481	0.0454	94	40-150
4151-50-2	EtFOSA	0.0077 U	0.0481	0.0405	84	40-150
2355-31-9	MeFOSAA	0.0048 U	0.024	0.0213	89	40-150
2991-50-6	EtFOSAA	0.0048 U	0.024	0.0222	92	40-150
24448-09-7	MeFOSE	0.038 U	0.12	0.101	84	40-150
1691-99-2	EtFOSE	0.038 U	0.12	0.108	90	40-150
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0481	0.0428	89	40-150
919005-14-4	ADONA	0.0077 U	0.0454	0.0476	105	40-150
377-73-1	PFMPA	0.0077 U	0.0481	0.0468	97	40-150
863090-89-5	PFMBA	0.0077 U	0.0481	0.0462	96	40-150
151772-58-6	NFDHA	0.0077 U	0.0481	0.0500	104	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0077 U	0.045	0.0400	89	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0077 U	0.0454	0.0342	75	40-150

* = Outside of Control Limits.

Matrix Spike Summary

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Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-MS	4Q53750.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785
FC11062-2	4Q53749.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11014-1

CAS No.	Compound	FC11062-2 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0077 U	0.0428	0.0444	104	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.019 U	0.12	0.0904	75	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.096 U	0.601	0.515	86	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.096 U	0.601	0.533	89	40-150

CAS No.	ID Standard Recoveries	MS	FC11062-2	Limits
	13C4-PFBA	95%	106%	20-150%
	13C5-PFPeA	114%	115%	20-150%
	13C5-PFHxA	111%	113%	20-150%
	13C4-PFHpA	110%	115%	20-150%
	13C8-PFOA	113%	113%	20-150%
	13C9-PFNA	115%	111%	20-150%
	13C6-PFDA	103%	114%	20-150%
	13C7-PFUnDA	110%	116%	20-150%
	13C2-PFDoDA	96%	105%	20-150%
	13C2-PFTeDA	80%	92%	20-150%
	13C3-PFBS	118%	113%	20-150%
	13C3-PFHxS	120%	110%	20-150%
	13C8-PFOS	106%	96%	20-150%
	13C8-FOSA	90%	87%	20-150%
	d3-MeFOSA	81%	80%	20-150%
	d5-EtFOSA	90%	95%	20-150%
	d3-MeFOSAA	99%	100%	20-150%
	d5-EtFOSAA	95%	93%	20-150%
	d7-MeFOSE	79%	80%	20-150%
	d9-EtFOSE	86%	86%	20-150%
	13C2-4:2FTS	93%	86%	20-180%
	13C2-6:2FTS	100%	87%	20-180%
	13C2-8:2FTS	103%	92%	20-180%
	13C3-HFPO-DA	113%	113%	20-150%

* = Outside of Control Limits.

Duplicate Summary

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Job Number: FC11014
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-DUP	4Q53752.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785
FC11062-3	4Q53751.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11014-1

CAS No.	Compound	FC11062-3 ug/l	DUP Q ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.015 U	ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0075 U	ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0038 U	ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0038 U	ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0038 U	ND		nc	30
375-95-1	Perfluorononanoic acid	0.0038 U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0038 U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0038 U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0038 U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0038 U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0038 U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0038 U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0047 U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	ND		nc	30
79780-39-5	Perfluorododecanesulfonic aci	0.0047 U	ND		nc	30
757124-72-44:2	Fluorotelomer sulfonate	0.019 U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.019 U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.019 U	ND		nc	30
754-91-6	PFOSA	0.0038 U	ND		nc	30
31506-32-8	MeFOSA	0.0075 U	ND		nc	30
4151-50-2	EtFOSA	0.0075 U	ND		nc	30
2355-31-9	MeFOSAA	0.0047 U	ND		nc	30
2991-50-6	EtFOSAA	0.0047 U	ND		nc	30
24448-09-7	MeFOSE	0.038 U	ND		nc	30
1691-99-2	EtFOSE	0.038 U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.0038 U	ND		nc	30
919005-14-4	ADONA	0.0075 U	ND		nc	30
377-73-1	PFMPA	0.0075 U	ND		nc	30
863090-89-5	PFMBA	0.0075 U	ND		nc	30
151772-58-6	NFDHA	0.0075 U	ND		nc	30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0075 U	ND		nc	30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0075 U	ND		nc	30

* = Outside of Control Limits.

Duplicate Summary

Page 2 of 2

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-DUP	4Q53752.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785
FC11062-3	4Q53751.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11014-1

CAS No.	Compound	FC11062-3 ug/l	DUP Q ug/l	Q	RPD	Limits
113507-82-7	PFEESA	0.0075 U	ND		nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.019 U	ND		nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.094 U	ND		nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.094 U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC11062-3	Limits
	13C4-PFBA	106%	108%	20-150%
	13C5-PFPeA	110%	110%	20-150%
	13C5-PFHxA	110%	109%	20-150%
	13C4-PFHpA	114%	111%	20-150%
	13C8-PFOA	112%	113%	20-150%
	13C9-PFNA	111%	116%	20-150%
	13C6-PFDA	98%	102%	20-150%
	13C7-PFUnDA	107%	107%	20-150%
	13C2-PFDoDA	88%	92%	20-150%
	13C2-PFTeDA	77%	80%	20-150%
	13C3-PFBS	107%	112%	20-150%
	13C3-PFHxS	100%	105%	20-150%
	13C8-PFOS	97%	96%	20-150%
	13C8-FOSA	84%	83%	20-150%
	d3-MeFOSA	80%	80%	20-150%
	d5-EtFOSA	90%	90%	20-150%
	d3-MeFOSAA	92%	94%	20-150%
	d5-EtFOSAA	82%	87%	20-150%
	d7-MeFOSE	78%	75%	20-150%
	d9-EtFOSE	84%	83%	20-150%
	13C2-4:2FTS	102%	85%	20-180%
	13C2-6:2FTS	103%	93%	20-180%
	13C2-8:2FTS	98%	89%	20-180%
	13C3-HFPO-DA	111%	109%	20-150%

* = Outside of Control Limits.

Injection Standard Area Summary

Page 1 of 2

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q785-CC785	Injection Date:	11/13/23
Lab File ID:	4Q53742.D	Injection Time:	18:41
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Initial Cal ^b	40824	2.70	30080	5.35	33492	6.99	12987	7.53	9519	8.03
Check Std ^c	41260	2.62	30486	5.30	33995	6.96	12469	7.51	9541	8.00
Upper Limit ^d	81648	3.02	60160	5.70	66984	7.36	25974	7.91	19038	8.40
Lower Limit ^e	16330	2.22	12032	4.90	13397	6.56	5195	7.11	3808	7.60

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	DF ^a
OP99997-BS	37356	2.69	26715	5.30	29372	6.96	11283	7.51	8568	7.99	1
OP99997-LLBS	39262	2.69	27239	5.31	30816	6.96	12182	7.51	8717	8.00	1
OP99997-MB	40713	2.69	28967	5.31	31383	6.96	11954	7.51	8888	7.99	1
FC11014-1	39364	2.70	27251	5.31	31133	6.96	11666	7.51	9105	8.00	1
ZZZZZZ	39392	2.70	28005	5.31	30718	6.96	11729	7.51	8922	8.00	1
FC11062-2	37826	2.70	26085	5.31	29426	6.96	11591	7.51	7736	8.00	1
OP99997-MS	38916	2.69	27027	5.31	30218	6.96	11393	7.51	8639	7.99	1
FC11062-3	38083	2.70	27224	5.30	30076	6.96	10996	7.51	8504	8.00	1
OP99997-DUP	35419	2.69	24969	5.31	27890	6.96	10466	7.51	8527	7.99	1
ZZZZZZ	37741	2.70	27148	5.31	30848	6.96	11446	7.51	8964	8.00	1

IS 1 = 13C3-PFBA
IS 2 = 13C2-PFHxA
IS 3 = 13C4-PFOA
IS 4 = 13C5-PFNA
IS 5 = 13C2-PFDA

- (a) Sample areas corrected for dilution where applicable.
(b) Initial Cal is: S4Q785-ICC785 4Q53734.D 11/13/23 16:43. Area is AVERAGE of initial cal points.
(c) Check Std Limit = -60 to + 100% of initial cal area.
(d) Upper Limit = + 100% of initial standard area; Retention time + 0.4 minutes of check standard.
(e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.

Injection Standard Area Summary

Page 2 of 2

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q785-CC785	Injection Date:	11/13/23
Lab File ID:	4Q53742.D	Injection Time:	18:41
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	4232	7.05	5952	8.14
Check Std ^c	4323	7.03	6003	8.12
Upper Limit ^d	8464	7.43	11904	8.52
Lower Limit ^e	1693	6.63	2381	7.72

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
OP99997-BS	3724	7.02	5410	8.12	1
OP99997-LLBS	3912	7.03	5559	8.12	1
OP99997-MB	4139	7.02	6017	8.12	1
FC11014-1	4209	7.03	5481	8.12	1
ZZZZZZ	3926	7.03	5915	8.12	1
FC11062-2	3813	7.03	5636	8.12	1
OP99997-MS	3711	7.02	5581	8.12	1
FC11062-3	3932	7.03	5681	8.12	1
OP99997-DUP	3800	7.02	5466	8.12	1
ZZZZZZ	3797	7.03	5517	8.12	1

IS 6 = 18O2-PFHXS

IS 7 = 13C4-PFOS

(a) Sample areas corrected for dilution where applicable.

(b) Initial Cal is: S4Q785-ICC785 4Q53734.D 11/13/23 16:43. Area is AVERAGE of initial cal points.

(c) Check Std Limit = -60 to + 100% of initial cal area.

(d) Upper Limit = + 100% of initial standard area; Retention time + 0.4 minutes of check standard.

(e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.

TDCA Retention Time Check

Job Number: FC11014
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q785-RT	Injection Date:	11/13/23
Lab File ID:	4Q53728.D	Injection Time:	14:55
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.119	--	--
TDCA	6.747	1.372	1.000
TCDCA	6.597	1.522	1.000
TUDCA	5.741	2.378	1.000

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q785-IC785	4Q53730.D	11/13/23	15:25	00:30	Mass Calibration Verification
S4Q785-IC785	4Q53731.D	11/13/23	15:40	00:45	Initial cal 1
S4Q785-IC785	4Q53732.D	11/13/23	15:55	01:00	Initial cal 2
S4Q785-IC785	4Q53733.D	11/13/23	16:09	01:14	Initial cal 3
S4Q785-ICC785	4Q53734.D	11/13/23	16:43	01:48	Initial cal 4
S4Q785-IC785	4Q53735.D	11/13/23	16:58	02:03	Initial cal 5
S4Q785-IC785	4Q53736.D	11/13/23	17:13	02:18	Initial cal 6
S4Q785-IC785	4Q53737.D	11/13/23	17:28	02:33	Initial cal 7
S4Q785-IC785	4Q53738.D	11/13/23	17:42	02:47	Initial cal 8
S4Q785-IBLK	4Q53739.D	11/13/23	17:57	03:02	Instrument Blank
S4Q785-IBLK	4Q53739.D	11/13/23	17:57	03:02	Instrument Blank
S4Q785-ICV785	4Q53740.D	11/13/23	18:12	03:17	Initial cal verification 4
S4Q785-ICV785	4Q53741.D	11/13/23	18:27	03:32	Initial cal verification 20
S4Q785-CC785	4Q53742.D	11/13/23	18:41	03:46	Continuing cal 4
S4Q785-CC785	4Q53743.D	11/13/23	18:56	04:01	Continuing cal 1.0LL
OP99997-BS	4Q53744.D	11/13/23	19:11	04:16	Blank Spike
OP99997-LLBS	4Q53745.D	11/13/23	19:26	04:31	Blank Spike
OP99997-MB	4Q53746.D	11/13/23	19:40	04:45	Method Blank
FC11014-1	4Q53747.D	11/13/23	19:55	05:00	AF-RHMW16-WGN01LF-2311
ZZZZZZ	4Q53748.D	11/13/23	20:10	05:15	(unrelated sample)
FC11062-2	4Q53749.D	11/13/23	20:25	05:30	(used for QC only; not part of job FC11014)
OP99997-MS	4Q53750.D	11/13/23	20:39	05:44	Matrix Spike
FC11062-3	4Q53751.D	11/13/23	20:54	05:59	(used for QC only; not part of job FC11014)
OP99997-DUP	4Q53752.D	11/13/23	21:09	06:14	Duplicate
ZZZZZZ	4Q53753.D	11/13/23	21:24	06:29	(unrelated sample)
S4Q785-CC785	4Q53754.D	11/13/23	21:38	06:43	Continuing cal 4
S4Q785-ICCB	4Q53755.D	11/13/23	21:53	06:58	Continuing Calibration Blank
ZZZZZZ	4Q53756.D	11/13/23	22:08	07:13	(unrelated sample)
ZZZZZZ	4Q53757.D	11/13/23	22:23	07:28	(unrelated sample)
OP99956-BS	4Q53758.D	11/13/23	22:37	07:42	Blank Spike
OP99956-LLBS	4Q53759.D	11/13/23	22:52	07:57	Blank Spike
OP99956-MB	4Q53760.D	11/13/23	23:07	08:12	Method Blank
ZZZZZZ	4Q53761.D	11/13/23	23:22	08:27	(unrelated sample)
ZZZZZZ	4Q53762.D	11/13/23	23:36	08:41	(unrelated sample)

TDCA Retention Time Check

Page 2 of 3

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-RT
Lab File ID: 4Q53728.D
Instrument ID: GCMS4Q
Injection Date: 11/13/23
Injection Time: 14:55

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	4Q53763.D	11/13/23	23:51	08:56	(unrelated sample)
ZZZZZZ	4Q53764.D	11/14/23	00:06	09:11	(unrelated sample)
ZZZZZZ	4Q53765.D	11/14/23	00:21	09:26	(unrelated sample)
S4Q785-CC785	4Q53766.D	11/14/23	00:35	09:40	Continuing cal 4
S4Q785-ICCB	4Q53767.D	11/14/23	00:50	09:55	Continuing Calibration Blank
ZZZZZZ	4Q53768.D	11/14/23	01:05	10:10	(unrelated sample)
ZZZZZZ	4Q53769.D	11/14/23	01:20	10:25	(unrelated sample)
ZZZZZZ	4Q53770.D	11/14/23	01:34	10:39	(unrelated sample)
ZZZZZZ	4Q53771.D	11/14/23	01:49	10:54	(unrelated sample)
ZZZZZZ	4Q53772.D	11/14/23	02:04	11:09	(unrelated sample)
ZZZZZZ	4Q53773.D	11/14/23	02:19	11:24	(unrelated sample)
ZZZZZZ	4Q53774.D	11/14/23	02:33	11:38	(unrelated sample)
ZZZZZZ	4Q53775.D	11/14/23	02:48	11:53	(unrelated sample)
ZZZZZZ	4Q53776.D	11/14/23	03:03	12:08	(unrelated sample)
S4Q785-CC785	4Q53777.D	11/14/23	03:18	12:23	Continuing cal 4
S4Q785-ICCB	4Q53778.D	11/14/23	03:32	12:37	Continuing Calibration Blank
FC10708-15	4Q53779.D	11/14/23	03:47	12:52	(used for QC only; not part of job FC11014)
OP99956-MS	4Q53780.D	11/14/23	04:02	13:07	Matrix Spike
OP99956-MSD	4Q53781.D	11/14/23	04:17	13:22	Matrix Spike Duplicate
ZZZZZZ	4Q53782.D	11/14/23	04:31	13:36	(unrelated sample)
ZZZZZZ	4Q53783.D	11/14/23	04:46	13:51	(unrelated sample)
OP99926-BS	4Q53784.D	11/14/23	05:01	14:06	Blank Spike
OP99926-LLBS	4Q53785.D	11/14/23	05:16	14:21	Blank Spike
OP99926-MB	4Q53786.D	11/14/23	05:30	14:35	Method Blank
ZZZZZZ	4Q53787.D	11/14/23	05:45	14:50	(unrelated sample)
ZZZZZZ	4Q53788.D	11/14/23	06:00	15:05	(unrelated sample)
S4Q785-CC785	4Q53789.D	11/14/23	06:15	15:20	Continuing cal 4
S4Q785-ICCB	4Q53790.D	11/14/23	06:29	15:34	Continuing Calibration Blank
FC10703-1	4Q53791.D	11/14/23	06:44	15:49	(used for QC only; not part of job FC11014)
OP99926-MS	4Q53792.D	11/14/23	06:59	16:04	Matrix Spike
FC10703-2	4Q53793.D	11/14/23	07:14	16:19	(used for QC only; not part of job FC11014)
OP99926-DUP	4Q53794.D	11/14/23	07:28	16:33	Duplicate
ZZZZZZ	4Q53795.D	11/14/23	07:43	16:48	(unrelated sample)
ZZZZZZ	4Q53796.D	11/14/23	07:58	17:03	(unrelated sample)
ZZZZZZ	4Q53797.D	11/14/23	08:13	17:18	(unrelated sample)
ZZZZZZ	4Q53798.D	11/14/23	08:28	17:33	(unrelated sample)
ZZZZZZ	4Q53799.D	11/14/23	08:42	17:47	(unrelated sample)
ZZZZZZ	4Q53800.D	11/14/23	08:57	18:02	(unrelated sample)
S4Q785-CC785	4Q53801.D	11/14/23	09:12	18:17	Continuing cal 4
S4Q785-ICCB	4Q53802.D	11/14/23	09:27	18:32	Continuing Calibration Blank
ZZZZZZ	4Q53803.D	11/14/23	09:41	18:46	(unrelated sample)
ZZZZZZ	4Q53804.D	11/14/23	09:56	19:01	(unrelated sample)
ZZZZZZ	4Q53805.D	11/14/23	10:11	19:16	(unrelated sample)
ZZZZZZ	4Q53806.D	11/14/23	10:26	19:31	(unrelated sample)

6.6.1

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TDCA Retention Time Check

Page 3 of 3

Job Number: FC11014

Account: AECOMCOD AECOM, INC.

Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-RT

Injection Date: 11/13/23

Lab File ID: 4Q53728.D

Injection Time: 14:55

Instrument ID: GCMS4Q

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	4Q53807.D	11/14/23	10:40	19:45	(unrelated sample)
FC10636-32	4Q53808.D	11/14/23	10:55	20:00	(used for QC only; not part of job FC11014)
ZZZZZZ	4Q53809.D	11/14/23	11:10	20:15	(unrelated sample)
ZZZZZZ	4Q53810.D	11/14/23	11:25	20:30	(unrelated sample)
ZZZZZZ	4Q53811.D	11/14/23	11:39	20:44	(unrelated sample)
S4Q785-ECC785	4Q53812.D	11/14/23	11:54	20:59	Ending cal 4
S4Q785-ICCB	4Q53813.D	11/14/23	12:09	21:14	Continuing Calibration Blank

6.6.1

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Isotope Dilution Standard Recovery Summary

Page 1 of 3

Job Number: FC11014

Account: AECOMCOD AECOM, INC.

Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6	S7	S8
FC11014-1	4Q53747.D	91	109	107	108	108	111	102	96
OP99997-BS	4Q53744.D	38	109	109	110	114	118	105	117
OP99997-DUP	4Q53752.D	106	110	110	114	112	111	98	107
OP99997-LLBS	4Q53745.D	113	113	111	112	113	106	113	116
OP99997-MB	4Q53746.D	109	108	106	106	112	114	103	116
OP99997-MS	4Q53750.D	95	114	111	110	113	115	103	110
S4Q785-IBLK	4Q53739.D	101	101	97	102	102	92	102	106

Isotope Dilution Standards

Recovery Limits

S1 = 13C4-PFBA	20-150%
S2 = 13C5-PFPeA	20-150%
S3 = 13C5-PFHxA	20-150%
S4 = 13C4-PFHpA	20-150%
S5 = 13C8-PFOA	20-150%
S6 = 13C9-PFNA	20-150%
S7 = 13C6-PFDA	20-150%
S8 = 13C7-PFUnDA	20-150%

6.7.1

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Isotope Dilution Standard Recovery Summary

Page 2 of 3

Job Number: FC11014

Account: AECOMCOD AECOM, INC.

Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633

Matrix: AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S9	S10	S11	S12	S13	S14	S15	S16
FC11014-1	4Q53747.D	89	74	103	102	102	98	84	92
OP99997-BS	4Q53744.D	107	96	111	113	99	82	79	90
OP99997-DUP	4Q53752.D	88	77	107	100	97	84	80	90
OP99997-LLBS	4Q53745.D	103	93	110	115	110	85	67	82
OP99997-MB	4Q53746.D	102	91	103	106	104	61	67	77
OP99997-MS	4Q53750.D	96	80	118	120	106	90	81	90
S4Q785-IBLK	4Q53739.D	101	96	108	107	104	98		

Isotope Dilution Standards

Recovery Limits

S9 = 13C2-PFDoDA
S10 = 13C2-PFTeDA
S11 = 13C3-PFBS
S12 = 13C3-PFHxS
S13 = 13C8-PFOS
S14 = 13C8-FOSA
S15 = d3-MeFOSA
S16 = d5-EtFOSA

20-150%
20-150%
20-150%
20-150%
20-150%
20-150%
20-150%
20-150%

6.7.1

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Isotope Dilution Standard Recovery Summary

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S17	S18	S19	S20	S21	S22	S23	S24
FC11014-1	4Q53747.D	101	98	83	89	99	99	101	108
OP99997-BS	4Q53744.D	115	105	72	87	119	125	123	109
OP99997-DUP	4Q53752.D	92	82	78	84	102	103	98	111
OP99997-LLBS	4Q53745.D	112	105	70	80	119	116	103	112
OP99997-MB	4Q53746.D	105	93	57	68	92	97	101	106
OP99997-MS	4Q53750.D	99	95	79	86	93	100	103	113
S4Q785-IBLK	4Q53739.D	104	100			128	112	113	

Isotope Dilution Standards	Recovery Limits
S17 = d3-MeFOSAA	20-150%
S18 = d5-EtFOSAA	20-150%
S19 = d7-MeFOSE	20-150%
S20 = d9-EtFOSE	20-150%
S21 = 13C2-4:2FTS	20-180%
S22 = 13C2-6:2FTS	20-180%
S23 = 13C2-8:2FTS	20-180%
S24 = 13C3-HFPO-DA	20-150%

Initial Calibration Summary

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-ICC785
Lab FileID: 4Q53734.D

Initial Calibration Report												
Method Path	D:\MassHunter\methods											
Method File	1633_111323_S4Q785.quantmethod.xml											
Batch Name	D:\MassHunter\Data\111323_1633_S4Q785\QuantResults\s4q785.batch.bin											
Last Calib Update	11/14/2023 10:06:38 AM											
Level Name	Calibration Files	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
1	D:\MassHunter\Data\111323_1633_S4Q785\4Q53731.d	Avg RF	0.3212	0.3363	0.3495	0.3619	0.3947	0.3230	0.4101	0.4128	0.3637	10.359
2	D:\MassHunter\Data\111323_1633_S4Q785\4Q53732.d		0.0459	0.0540	0.0532	0.0552	0.0583	0.0496	0.0654	0.0717	0.0567	14.778
3	D:\MassHunter\Data\111323_1633_S4Q785\4Q53733.d											
4	D:\MassHunter\Data\111323_1633_S4Q785\4Q53734.d	Avg RF	0.5911	0.6630	0.6874	0.6861	0.7485	0.6221	0.7714	0.8032	0.6966	10.528
5	D:\MassHunter\Data\111323_1633_S4Q785\4Q53735.d		0.9576	1.0279	1.0583	1.0819	1.1577	0.9779	1.2096	1.2310	1.0877	9.436
6	D:\MassHunter\Data\111323_1633_S4Q785\4Q53736.d		0.5565	0.6011	0.6143	0.6175	0.6685	0.5564	0.6880	0.7093	0.6265	9.168
7	D:\MassHunter\Data\111323_1633_S4Q785\4Q53737.d	Avg RF										
8	D:\MassHunter\Data\111323_1633_S4Q785\4Q53738.d											
ISTD												
Compound												
I M4-PFBA	T PFBA	Avg RF	0.0504	0.0711	0.0574	0.0612	0.0651	0.0534	0.0635	0.0606	0.0603	10.935
T PFBA			0.7916	0.7823	0.8322	0.9150	0.9243	0.7454	0.9865	1.0102	0.8734	11.361
T 3:3FTCA			0.5714	0.6822	0.6892	0.6772	0.7560	0.6035	0.7887	0.7619	0.6912	11.074
I M5-PFPeA	T PFPeA	Avg RF	0.1345	0.1413	0.1468	0.1544	0.1673	0.1340	0.1738	0.1775	0.1537	11.308
T PFPeA			0.0589	0.0699	0.0685	0.0629	0.0754	0.0594	0.0772	0.0794	0.0690	11.592
T PFMeA												
ISTD												
I M5-PFHxA	T NFDHA	Avg RF	1.4319	1.4048	1.5368	1.5423	1.6493	1.3594	1.8173	1.8015	1.5679	11.142
T NFDHA												
T PFHxA												
I M8-PFOA	T PFOA	Avg RF	1.2032	1.1979	1.1570	1.2281	1.2296	1.0137	1.3424	1.3101	1.2103	8.250
T PFOA												
I M9-PFNA												
T PFNA	Avg RF	0.6769	0.7970	0.7970	0.7469	0.7624	0.9091	0.6492	0.9013	0.9335	0.7970	13.586
I M6-PFDA												
T PFDA			1.1193	0.9355	0.9509	1.0048	1.0328	0.7826	1.1147	1.2386	1.0224	13.594
I M7-PFUnDA	T PFUnDA	Avg RF	0.8756	0.8431	1.0606	1.0264	1.2320	0.8201	1.1229	1.1973	1.0223	15.718
T PFUnDA												
I M2-PFDODA												
ISTD												

Generated at 10:06 AM on 11/14/2023

Page 1 of 3

Initial Calibration Summary

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-ICC785
Lab FileID: 4Q53734.D

Page 2 of 3

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	1.0423	0.9231	0.9860	1.0568	1.1103	0.7883	1.1342	1.1149	1.0195	11.502
T PFTfDA	Avg RF	0.8416	1.0138	1.1847	1.2151	1.2822	0.9036	1.2600	1.1743	1.1094	15.114
I M2-PFTeDA	Avg RF	0.8463	0.9338	0.9192	0.9200	1.0566	0.8006	1.0600	1.0553	0.9490	10.514
T PFTeDA	Avg RF	1.0877	1.2381	1.1639	1.1850	1.3131	1.0297	1.3727	1.3577	1.2185	10.258
I M8-FOSA	Avg RF	0.8670	0.8902	0.8904	0.8901	0.9456	0.7484	0.9281	0.9383	0.8873	7.049
T FOSA	Avg RF	0.7144	0.8139	0.7777	0.8125	0.8470	0.6716	0.9602	0.9754	0.8216	12.977
I M3-PFBS	Avg RF	0.6928	0.7380	0.7916	0.7076	0.7982	0.6380	0.8618	0.8049	0.7541	9.664
T PFBS	Avg RF	1.0097	0.7936	0.9702	1.0402	1.0842	0.7622	1.1114	1.1363	0.9885	14.244
I M3-PFHxS	Avg RF	1.3444	0.9274	1.0997	1.1471	1.2551	0.8001	1.2574	1.2448	1.1345	16.388
T PFHxS	Avg RF	0.3657	0.5180	0.4986	0.5265	0.5221	0.3759	0.5127	0.4973	0.4771	13.932
I M8-PFOS	Avg RF	0.6198	0.5820	0.6020	0.6866	0.7157	0.4987	0.7206	0.7509	0.6470	13.251
T PFOS	Avg RF	0.5190	0.4227	0.5076	0.5540	0.5588	0.3853	0.5607	0.5734	0.5102	13.692
I M2-4:2FTS	Avg RF	10.07	10.15	10.03	10.19	10.18	8.0207	10.42	9.9954	9.8811	7.720
T 4:2FTS	Avg RF	5.6330	5.1601	5.1163	5.5790	5.7824	4.3417	6.0644	5.6080	5.4106	9.816
I M2-8:2FTS	Avg RF	2.8578	2.3640	2.6869	3.1273	3.1783	1.9346	3.3753	2.7402	2.7830	16.840
T 8:2FTS	Avg RF	1.0951	0.6578	0.8185	0.8520	0.9019	0.7725	1.0135	0.9982	0.8887	16.107
I M3-MeFOSAA	Avg RF	0.9501	1.0816	0.9916	1.0859	1.1283	0.9062	1.1833	1.1449	1.0590	9.349
T MeFOSAA	Avg RF	6.7850	7.6601	7.8322	4.7210	8.7850	7.0515	8.9514	8.6521	7.5548	18.472
I M3-HFO-DA	Avg RF	3.0972	3.0308	3.1760	3.3640	3.4855	2.7666	3.3461	2.9515	3.1522	7.591
T HFO-DA	Avg RF	2.8715	2.8705	2.9253	3.2807	3.4521	2.7464	3.5272	3.3029	3.1221	9.661
I M5-EFOSAA	Avg RF	0.6917	0.7597	0.9351	0.9429	0.9090	0.7719	1.0944	1.0587	0.8954	16.098
T EFOSAA	Avg RF	0.9807	1.1489	1.1447	0.9589	1.2792	0.9755	1.2770	1.3476	1.1391	13.545
I M9-EFOSE	Avg RF	0.9376	0.8795	0.8783	0.9464	1.0177	0.7571	1.0368	1.0191	0.9341	10.105
T EFOSE	Avg RF										

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Generated at 10:06 AM on 11/14/2023

Initial Calibration Summary

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-ICC785
Lab FileID: 4Q53734.D

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Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-EFOSA											
T EtFOSA	Avg RF	0.9355	1.1365	1.0873	1.1348	1.2959	0.9240	1.2041	1.3016	1.1275	12.746
I M3-MeFOSA											
T MeFOSA	Avg RF	0.8577	0.8915	0.8861	0.9802	0.9910	0.7547	0.9343	0.9634	0.9074	8.600
I 13C4-PFOS											
S d3-MeFOSAA	Avg RF	0.8834	1.0055	0.9696	0.9846	0.9596	0.9096	0.9339	0.9385	0.9481	4.215
S 13C8-PFOS	Avg RF	1.1337	1.2301	1.1786	1.2290	1.1145	1.2860	1.1736	1.2036	1.1936	4.664
S d5-EFOSAA	Avg RF	0.8139	0.8662	0.8035	0.8600	0.8321	0.8442	0.7962	0.8265	0.8303	3.067
S 13C8-FOSA	Avg RF	1.1495	1.2034	1.1755	1.4545	1.1401	1.1500	1.1055	1.1813	1.1950	9.117
S d7-MeFOSE	Avg RF	0.5036	0.5335	0.5038	0.5838	0.4905	0.4949	0.4943	0.5155	0.5150	6.040
S d3-MeFOSA	Avg RF	0.7585	0.8270	0.8013	0.8951	0.7762	0.8132	0.8688	0.9324	0.8341	7.195
S d9-EFOSE	Avg RF	0.5634	0.6600	0.5925	0.6573	0.5368	0.5943	0.5669	0.6010	0.5965	7.309
S d5-EFOSA	Avg RF	0.9600	0.9887	1.0077	1.0696	0.8841	0.9945	1.0090	1.0036	0.9896	5.312
I 13C3-PFBA											
S 13C4-PFBA	Avg RF	1.0658	1.0505	1.0189	1.0484	1.0463	1.0515	1.0312	1.0222	1.0418	1.552
I 1802-PFHxS											
S 13C2-4:2FTS	Avg RF	0.0828	0.0903	0.0811	0.0846	0.0890	0.0859	0.0895	0.0813	0.0856	4.334
S 13C3-PFBS	Avg RF	1.7799	1.9184	1.7386	1.8928	1.8301	1.7982	2.0567	1.9870	1.8752	5.817
S 13C2-6:2FTS	Avg RF	0.1767	0.1875	0.1775	0.1711	0.1837	0.1889	0.1832	0.1734	0.1803	3.630
S 13C3-PFHxS	Avg RF	1.5305	1.5950	1.4125	1.5639	1.5712	1.5413	1.6107	1.5714	1.5496	3.945
S 13C2-8:2FTS	Avg RF	0.2495	0.2897	0.2402	0.2110	0.2487	0.2986	0.2378	0.2577	0.2541	11.156
I 13C4-PFOA											
S 13C8-PFOA	Avg RF	0.8645	0.9014	0.8942	0.9104	0.9197	0.8728	0.8783	0.8988	0.8925	2.142
I 13C2-PFDA											
S 13C6-PFDA	Avg RF	0.9421	1.0175	0.9056	0.9093	0.9480	0.9243	0.9190	0.7924	0.9198	6.805
S 13C7-PFUndA	Avg RF	1.1528	1.1912	1.0349	1.1644	1.0162	1.0360	1.0474	0.8612	1.0630	10.024
S 13C2-PFDODA	Avg RF	1.1120	1.1541	1.0401	1.1304	1.1175	1.1398	1.1658	1.1643	1.1280	3.619
S 13C2-PFTeDA	Avg RF	1.1032	1.1159	1.0975	1.2527	1.1252	1.0508	1.1678	1.1684	1.1352	5.370
I 13C5-PFNA											
S 13C9-PFNA	Avg RF	1.0242	1.0323	0.9930	0.9913	0.9173	0.9973	0.9977	0.9329	0.9858	4.109
I 13C2-PFHxA											
S 13C5-PPeA	Avg RF	0.6169	0.6185	0.5974	0.6505	0.6239	0.5791	0.6055	0.5868	0.6098	3.735
S 13C5-PFHxA	Avg RF	0.9489	0.9451	0.9182	0.9629	0.9456	0.9168	0.9189	0.9034	0.9325	2.224
S 13C3-HFPO-DA	Avg RF	0.2107	0.2169	0.2144	0.2067	0.2146	0.2095	0.2126	0.2167	0.2127	1.691
S 13C4-PFHpA	Avg RF	0.9012	0.9034	0.8680	0.8662	0.8993	0.8654	0.8421	0.8317	0.8722	3.122

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Generated at 10:06 AM on 11/14/2023

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Initial Calibration Verification

Page 1 of 2

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-ICV785
Lab FileID: 4Q53740.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111323_1633_S4Q785\s4q785.batch.bin

Level ID:Calibration File

1:D:\MassHunter\Data\111323_1633_S4Q785\4Q53731.d
2:D:\MassHunter\Data\111323_1633_S4Q785\4Q53732.d
3:D:\MassHunter\Data\111323_1633_S4Q785\4Q53733.d
4:D:\MassHunter\Data\111323_1633_S4Q785\4Q53734.d
5:D:\MassHunter\Data\111323_1633_S4Q785\4Q53735.d
6:D:\MassHunter\Data\111323_1633_S4Q785\4Q53736.d
7:D:\MassHunter\Data\111323_1633_S4Q785\4Q53737.d
8:D:\MassHunter\Data\111323_1633_S4Q785\4Q53738.d

Data File: 4Q53740

Type : QC

Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.050	21.0	121.0
13C2-6:2FTS	5.000	5.070	1.4	101.4
13C2-8:2FTS	5.000	5.127	2.5	102.5
13C2-PFDoDA	1.250	1.230	-1.6	98.4
13C2-PFTeDA	1.250	1.233	-1.3	98.7
13C3-PFBS	2.500	2.551	2.0	102.0
13C3-PFHxS	2.500	2.373	-5.1	94.9
13C4-PFBA	10.000	10.107	1.1	101.1
13C4-PFHpA	2.500	2.523	0.9	100.9
13C5-PFHxA	2.500	2.550	2.0	102.0
13C5-PFPeA	5.000	4.958	-0.8	99.2
13C6-PFDA	1.250	1.282	2.6	102.6
13C7-PFUnDA	1.250	1.329	6.4	106.4
13C8-FOSA	2.500	2.488	-0.5	99.5
13C8-PFOA	2.500	2.445	-2.2	97.8
13C8-PFOS	2.500	2.462	-1.5	98.5
13C9-PFNA	1.250	1.326	6.1	106.1
4:2FTS	9.375	8.525	-9.1	90.9
6:2FTS	9.500	10.344	8.9	108.9
8:2FTS	9.600	10.599	10.4	110.4
d3-MeFOSAA	5.000	5.381	7.6	107.6
EtFOSAA	2.500	2.899	16.0	116.0
FOSA	2.500	2.412	-3.5	96.5
MeFOSAA	2.500	2.368	-5.3	94.7
PFBA	10.000	9.791	-2.1	97.9
PFBS	2.218	2.034	-8.3	91.7
PFDA	2.500	2.323	-7.1	92.9
PFDoDA	2.500	2.420	-3.2	96.8
PFDS	2.413	2.327	-3.6	96.4
PFHpA	2.500	2.477	-0.9	99.1
PFHpS	2.383	2.486	4.3	104.3
PFHxA	2.500	2.315	-7.4	92.6
PFHxS	2.285	2.550	11.6	111.6
PFNA	2.500	2.441	-2.3	97.7
PFNS	2.405	2.382	-1.0	99.0
PFOA	2.500	2.364	-5.5	94.5
PFOS	2.320	2.150	-7.3	92.7

Initial Calibration Verification

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-ICV785
Lab FileID: 4Q53740.D

PFPeA	5.000	4.917	-1.7	98.3
PFPeS	2.353	2.294	-2.5	97.5
PFTeDA	2.500	2.392	-4.3	95.7
PFTTrDA	2.500	2.618	4.7	104.7
PFUnDA	2.500	2.494	-0.2	99.8
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	4.725	4.705	-0.4	99.6
13C3-HFPO-DA	10.000	9.822	-1.8	98.2
9Cl-PF3ONS	4.675	4.754	1.7	101.7
ADONA	4.725	5.557	17.6	117.6
HFPO-DA	5.000	4.839	-3.2	96.8
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.921	-4.5	95.5
5:3FTCA	62.400	59.282	-5.0	95.0
7:3FTCA	62.400	59.658	-4.4	95.6
d3-MeFOSA	2.500	2.253	-9.9	90.1
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.131	2.6	102.6
EtFOSE	12.500	12.788	2.3	102.3
MeFOSA	5.000	5.482	9.6	109.6
MeFOSE	12.500	12.664	1.3	101.3
PFDoDS	2.425	2.408	-0.7	99.3
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.725	-5.5	94.5
d7-MeFOSE	25.000	23.728	-5.1	94.9
d9-EtFOSE	25.000	23.660	-5.4	94.6
d5-EtFOSA	2.500	2.373	-5.1	94.9
NFDHA	5.000	5.143	2.9	102.9
PFMBA	5.000	4.888	-2.2	97.8
PFMPA	5.000	4.905	-1.9	98.1
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.324	-2.8	97.2

CC Criteria: +/- 30%

Initial Calibration Verification

Page 1 of 2

Job Number: FC11014
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-ICV785
 Lab FileID: 4Q53741.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111323_1633_S4Q785\s4q785.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111323_1633_S4Q785\4Q53731.d
 2:D:\MassHunter\Data\111323_1633_S4Q785\4Q53732.d
 3:D:\MassHunter\Data\111323_1633_S4Q785\4Q53733.d
 4:D:\MassHunter\Data\111323_1633_S4Q785\4Q53734.d
 5:D:\MassHunter\Data\111323_1633_S4Q785\4Q53735.d
 6:D:\MassHunter\Data\111323_1633_S4Q785\4Q53736.d
 7:D:\MassHunter\Data\111323_1633_S4Q785\4Q53737.d
 8:D:\MassHunter\Data\111323_1633_S4Q785\4Q53738.d

Data File: 4Q53741

Type : QC

Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.435	8.7	108.7
13C2-6:2FTS	5.000	5.014	0.3	100.3
13C2-8:2FTS	5.000	5.403	8.1	108.1
13C2-PFDoDA	1.250	1.316	5.3	105.3
13C2-PFTeDA	1.250	1.311	4.9	104.9
13C3-PFBS	2.500	2.602	4.1	104.1
13C3-PFHxS	2.500	2.571	2.8	102.8
13C4-PFBA	10.000	10.033	0.3	100.3
13C4-PFHpA	2.500	2.427	-2.9	97.1
13C5-PFHxA	2.500	2.457	-1.7	98.3
13C5-PFPeA	5.000	5.009	0.2	100.2
13C6-PFDA	1.250	1.236	-1.1	98.9
13C7-PFUnDA	1.250	1.252	0.2	100.2
13C8-FOSA	2.500	2.374	-5.0	95.0
13C8-PFOA	2.500	2.611	4.4	104.4
13C8-PFOS	2.500	2.480	-0.8	99.2
13C9-PFNA	1.250	1.213	-3.0	97.0
4:2FTS	20.000	19.646	-1.8	98.2
6:2FTS	20.000	21.892	9.5	109.5
8:2FTS	20.000	19.867	-0.7	99.3
d3-MeFOSAA	5.000	5.035	0.7	100.7
EtFOSAA	20.000	20.515	2.6	102.6
FOSA	20.000	18.174	-9.1	90.9
MeFOSAA	20.000	18.514	-7.4	92.6
PFBA	20.000	17.928	-10.4	89.6
PFBS	20.000	18.061	-9.7	90.3
PFDA	20.000	19.562	-2.2	97.8
PFDoDA	20.000	17.285	-13.6	86.4
PFDS	20.000	18.766	-6.2	93.8
PFHpA	20.000	19.196	-4.0	96.0
PFHpS	20.000	17.928	-10.4	89.6
PFHxA	20.000	19.978	-0.1	99.9
PFHxS	20.000	20.353	1.8	101.8
PFNA	20.000	21.035	5.2	105.2
PFNS	20.000	18.010	-9.9	90.1
PFOA	20.000	17.674	-11.6	88.4
PFOS	20.000	17.255	-13.7	86.3

Initial Calibration Verification

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Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-ICV785
Lab FileID: 4Q53741.D

PFPeA	20.000	18.964	-5.2	94.8
PFPeS	20.000	19.336	-3.3	96.7
PFTeDA	20.000	19.779	-1.1	98.9
PFTTrDA	20.000	17.770	-11.2	88.8
PFUnDA	20.000	18.896	-5.5	94.5
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	19.196	-4.0	96.0
13C3-HFPO-DA	10.000	9.972	-0.3	99.7
9Cl-PF3ONS	20.000	18.686	-6.6	93.4
ADONA	20.000	21.352	6.8	106.8
HFPO-DA	20.000	18.824	-5.9	94.1
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	18.017	-9.9	90.1
5:3FTCA	20.000	19.638	-1.8	98.2
7:3FTCA	20.000	17.581	-12.1	87.9
d3-MeFOSA	2.500	2.360	-5.6	94.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	17.439	-12.8	87.2
EtFOSE	100.000	97.488	-2.5	97.5
MeFOSA	20.000	17.960	-10.2	89.8
MeFOSE	100.000	98.007	-2.0	98.0
PFDoDS	20.000	17.694	-11.5	88.5
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.847	-3.1	96.9
d7-MeFOSE	25.000	22.372	-10.5	89.5
d9-EtFOSE	25.000	23.905	-4.4	95.6
d5-EtFOSA	2.500	2.360	-5.6	94.4
NFDHA	20.000	20.301	1.5	101.5
PFMBA	20.000	18.066	-9.7	90.3
PFMPA	20.000	18.289	-8.6	91.4
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	20.000	17.505	-12.5	87.5

CC Criteria: +/- 30%

Continuing Calibration Summary

Page 1 of 2

Job Number: FC11014
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-CC785
 Lab FileID: 4Q53742.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111323_1633_S4Q785\s4q785.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111323_1633_S4Q785\4Q53731.d
 2:D:\MassHunter\Data\111323_1633_S4Q785\4Q53732.d
 3:D:\MassHunter\Data\111323_1633_S4Q785\4Q53733.d
 4:D:\MassHunter\Data\111323_1633_S4Q785\4Q53734.d
 5:D:\MassHunter\Data\111323_1633_S4Q785\4Q53735.d
 6:D:\MassHunter\Data\111323_1633_S4Q785\4Q53736.d
 7:D:\MassHunter\Data\111323_1633_S4Q785\4Q53737.d
 8:D:\MassHunter\Data\111323_1633_S4Q785\4Q53738.d

Data File: 4Q53742

Type : QC

Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.945	18.9	118.9
13C2-6:2FTS	5.000	5.296	5.9	105.9
13C2-8:2FTS	5.000	5.248	5.0	105.0
13C2-PFDoDA	1.250	1.273	1.8	101.8
13C2-PFTeDA	1.250	1.228	-1.8	98.2
13C3-PFBS	2.500	2.505	0.2	100.2
13C3-PFHxS	2.500	2.569	2.8	102.8
13C4-PFBA	10.000	9.868	-1.3	98.7
13C4-PFHpA	2.500	2.520	0.8	100.8
13C5-PFHxA	2.500	2.424	-3.0	97.0
13C5-PFPeA	5.000	4.860	-2.8	97.2
13C6-PFDA	1.250	1.269	1.5	101.5
13C7-PFUnDA	1.250	1.278	2.2	102.2
13C8-FOSA	2.500	2.458	-1.7	98.3
13C8-PFOA	2.500	2.567	2.7	102.7
13C8-PFOS	2.500	2.417	-3.3	96.7
13C9-PFNA	1.250	1.315	5.2	105.2
4:2FTS	9.375	8.677	-7.4	92.6
6:2FTS	9.500	10.299	8.4	108.4
8:2FTS	9.600	10.471	9.1	109.1
d3-MeFOSAA	5.000	5.300	6.0	106.0
EtFOSAA	2.500	2.579	3.1	103.1
FOSA	2.500	2.617	4.7	104.7
MeFOSAA	2.500	2.349	-6.0	94.0
PFBA	10.000	10.074	0.7	100.7
PFBS	2.218	2.094	-5.6	94.4
PFDA	2.500	2.345	-6.2	93.8
PFDoDA	2.500	2.389	-4.4	95.6
PFDS	2.413	2.530	4.8	104.8
PFHpA	2.500	2.495	-0.2	99.8
PFHpS	2.383	2.483	4.2	104.2
PFHxA	2.500	2.496	-0.2	99.8
PFHxS	2.285	2.333	2.1	102.1
PFNA	2.500	2.552	2.1	102.1
PFNS	2.405	2.544	5.8	105.8
PFOA	2.500	2.435	-2.6	97.4
PFOS	2.320	2.422	4.4	104.4

Continuing Calibration Summary

Page 2 of 2

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-CC785
Lab FileID: 4Q53742.D

PFPeA	5.000	5.069	1.4	101.4
PFPeS	2.353	2.410	2.4	102.4
PFTeDA	2.500	2.432	-2.7	97.3
PFTTrDA	2.500	2.592	3.7	103.7
PFUnDA	2.500	2.452	-1.9	98.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	4.725	4.828	2.2	102.2
13C3-HFPO-DA	10.000	9.767	-2.3	97.7
9Cl-PF3ONS	4.675	4.817	3.0	103.0
ADONA	4.725	5.683	20.3	120.3
HFPO-DA	5.000	4.955	-0.9	99.1
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.869	-4.9	95.1
5:3FTCA	62.400	62.275	-0.2	99.8
7:3FTCA	62.400	63.062	1.1	101.1
d3-MeFOSA	2.500	2.122	-15.1	84.9
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.960	-0.8	99.2
EtFOSE	12.500	12.833	2.7	102.7
MeFOSA	5.000	5.725	14.5	114.5
MeFOSE	12.500	13.297	6.4	106.4
PFDoDS	2.425	2.479	2.2	102.2
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.972	-0.6	99.4
d7-MeFOSE	25.000	24.495	-2.0	98.0
d9-EtFOSE	25.000	24.495	-2.0	98.0
d5-EtFOSA	2.500	2.487	-0.5	99.5
NFDHA	5.000	5.527	10.5	110.5
PFMBA	5.000	5.042	0.8	100.8
PFMPA	5.000	5.052	1.0	101.0
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.595	3.3	103.3

CC Criteria: +/- 30%

Continuing Calibration Summary

Page 1 of 2

Job Number: FC11014
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-CC785
 Lab FileID: 4Q53743.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111323_1633_S4Q785\s4q785.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111323_1633_S4Q785\4Q53731.d
 2:D:\MassHunter\Data\111323_1633_S4Q785\4Q53732.d
 3:D:\MassHunter\Data\111323_1633_S4Q785\4Q53733.d
 4:D:\MassHunter\Data\111323_1633_S4Q785\4Q53734.d
 5:D:\MassHunter\Data\111323_1633_S4Q785\4Q53735.d
 6:D:\MassHunter\Data\111323_1633_S4Q785\4Q53736.d
 7:D:\MassHunter\Data\111323_1633_S4Q785\4Q53737.d
 8:D:\MassHunter\Data\111323_1633_S4Q785\4Q53738.d

Data File: 4Q53743

Type : QC

Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.872	17.4	117.4
13C2-6:2FTS	5.000	5.288	5.8	105.8
13C2-8:2FTS	5.000	5.343	6.9	106.9
13C2-PFDoDA	1.250	1.368	9.5	109.5
13C2-PFTeDA	1.250	1.265	1.2	101.2
13C3-PFBS	2.500	2.570	2.8	102.8
13C3-PFHxS	2.500	2.554	2.2	102.2
13C4-PFBA	10.000	10.129	1.3	101.3
13C4-PFHpA	2.500	2.537	1.5	101.5
13C5-PFHxA	2.500	2.642	5.7	105.7
13C5-PFPeA	5.000	5.189	3.8	103.8
13C6-PFDA	1.250	1.424	13.9	113.9
13C7-PFUnDA	1.250	1.430	14.4	114.4
13C8-FOSA	2.500	2.562	2.5	102.5
13C8-PFOA	2.500	2.616	4.6	104.6
13C8-PFOS	2.500	2.510	0.4	100.4
13C9-PFNA	1.250	1.223	-2.1	97.9
4:2FTS	0.750	0.694	-7.5	92.5
6:2FTS	0.760	0.783	3.0	103.0
8:2FTS	0.768	0.750	-2.3	97.7
d3-MeFOSAA	5.000	5.436	8.7	108.7
EtFOSAA	0.200	0.162	-19.1	80.9
FOSA	0.200	0.177	-11.3	88.7
MeFOSAA	0.200	0.199	-0.4	99.6
PFBA	0.800	0.697	-12.9	87.1
PFBS	0.177	0.159	-10.4	89.6
PFDA	0.200	0.166	-16.8	83.2
PFDoDA	0.200	0.187	-6.3	93.7
PFDS	0.193	0.161	-16.5	83.5
PFHpA	0.200	0.188	-6.1	93.9
PFHpS	0.191	0.180	-5.9	94.1
PFHxA	0.200	0.180	-10.1	89.9
PFHxS	0.183	0.167	-8.7	91.3
PFNA	0.200	0.174	-12.9	87.1
PFNS	0.192	0.165	-14.0	86.0
PFOA	0.200	0.158	-21.1	78.9
PFOS	0.186	0.203	9.1	109.1

Continuing Calibration Summary

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Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-CC785
Lab FileID: 4Q53743.D

PFPeA	0.400	0.341	-14.7	85.3
PFPeS	0.188	0.153	-18.8	81.2
PFTeDA	0.200	0.187	-6.7	93.3
PFTTrDA	0.200	0.205	2.5	102.5
PFUnDA	0.200	0.196	-2.0	98.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	0.378	0.338	-10.5	89.5
13C3-HFPO-DA	10.000	10.241	2.4	102.4
9Cl-PF3ONS	0.374	0.321	-14.2	85.8
ADONA	0.378	0.375	-0.9	99.1
HFPO-DA	0.400	0.308	-23.0	77.0
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.851	-14.8	85.2
5:3FTCA	4.992	4.041	-19.1	80.9
7:3FTCA	4.992	4.226	-15.3	84.7
d3-MeFOSA	2.500	2.275	-9.0	91.0
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.424	6.1	106.1
EtFOSE	1.000	1.095	9.5	109.5
MeFOSA	0.400	0.325	-18.8	81.2
MeFOSE	1.000	0.972	-2.8	97.2
PFDoDS	0.194	0.158	-18.3	81.7
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.897	-2.1	97.9
d7-MeFOSE	25.000	24.968	-0.1	99.9
d9-EtFOSE	25.000	24.191	-3.2	96.8
d5-EtFOSA	2.500	2.383	-4.7	95.3
NFDHA	0.400	0.392	-2.0	98.0
PFMBA	0.400	0.334	-16.4	83.6
PFMPA	0.400	0.358	-10.6	89.4
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	0.356	0.302	-15.0	85.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Page 1 of 2

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-CC785
Lab FileID: 4Q53754.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111323_1633_S4Q785\s4q785.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111323_1633_S4Q785\4Q53731.d
2:D:\MassHunter\Data\111323_1633_S4Q785\4Q53732.d
3:D:\MassHunter\Data\111323_1633_S4Q785\4Q53733.d
4:D:\MassHunter\Data\111323_1633_S4Q785\4Q53734.d
5:D:\MassHunter\Data\111323_1633_S4Q785\4Q53735.d
6:D:\MassHunter\Data\111323_1633_S4Q785\4Q53736.d
7:D:\MassHunter\Data\111323_1633_S4Q785\4Q53737.d
8:D:\MassHunter\Data\111323_1633_S4Q785\4Q53738.d

Data File: 4Q53754

Type : QC

Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.292	5.8	105.8
13C2-6:2FTS	5.000	4.770	-4.6	95.4
13C2-8:2FTS	5.000	4.817	-3.7	96.3
13C2-PFDoDA	1.250	1.173	-6.2	93.8
13C2-PFTeDA	1.250	1.218	-2.6	97.4
13C3-PFBS	2.500	2.691	7.6	107.6
13C3-PFHxS	2.500	2.650	6.0	106.0
13C4-PFBA	10.000	9.883	-1.2	98.8
13C4-PFHpA	2.500	2.440	-2.4	97.6
13C5-PFHxA	2.500	2.478	-0.9	99.1
13C5-PFPeA	5.000	4.939	-1.2	98.8
13C6-PFDA	1.250	1.174	-6.1	93.9
13C7-PFUnDA	1.250	1.218	-2.6	97.4
13C8-FOSA	2.500	2.452	-1.9	98.1
13C8-PFOA	2.500	2.523	0.9	100.9
13C8-PFOS	2.500	2.534	1.4	101.4
13C9-PFNA	1.250	1.126	-9.9	90.1
4:2FTS	9.375	8.692	-7.3	92.7
6:2FTS	9.500	10.132	6.6	106.6
8:2FTS	9.600	9.709	1.1	101.1
d3-MeFOSAA	5.000	5.241	4.8	104.8
EtFOSAA	2.500	2.707	8.3	108.3
FOSA	2.500	2.512	0.5	100.5
MeFOSAA	2.500	2.300	-8.0	92.0
PFBA	10.000	9.943	-0.6	99.4
PFBS	2.218	2.108	-5.0	95.0
PFDA	2.500	2.554	2.1	102.1
PFDoDA	2.500	2.616	4.6	104.6
PFDS	2.413	2.406	-0.3	99.7
PFHpA	2.500	2.554	2.2	102.2
PFHpS	2.383	2.428	1.9	101.9
PFHxA	2.500	2.445	-2.2	97.8
PFHxS	2.285	2.454	7.4	107.4
PFNA	2.500	2.651	6.1	106.1
PFNS	2.405	2.522	4.9	104.9
PFOA	2.500	2.414	-3.4	96.6
PFOS	2.320	2.341	0.9	100.9

Continuing Calibration Summary

Page 2 of 2

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-CC785
Lab FileID: 4Q53754.D

PFPeA	5.000	5.005	0.1	100.1
PFPeS	2.353	2.325	-1.2	98.8
PFTeDA	2.500	2.405	-3.8	96.2
PFTTrDA	2.500	2.662	6.5	106.5
PFUnDA	2.500	2.477	-0.9	99.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	4.725	4.707	-0.4	99.6
13C3-HFPO-DA	10.000	9.753	-2.5	97.5
9Cl-PF3ONS	4.675	4.891	4.6	104.6
ADONA	4.725	5.731	21.3	121.3
HFPO-DA	5.000	4.910	-1.8	98.2
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.934	-4.4	95.6
5:3FTCA	62.400	61.153	-2.0	98.0
7:3FTCA	62.400	59.971	-3.9	96.1
d3-MeFOSA	2.500	2.284	-8.6	91.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.765	-4.7	95.3
EtFOSE	12.500	12.410	-0.7	99.3
MeFOSA	5.000	5.403	8.1	108.1
MeFOSE	12.500	12.564	0.5	100.5
PFDoDS	2.425	2.536	4.6	104.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.931	-1.4	98.6
d7-MeFOSE	25.000	24.928	-0.3	99.7
d9-EtFOSE	25.000	24.359	-2.6	97.4
d5-EtFOSA	2.500	2.567	2.7	102.7
NFDHA	5.000	5.371	7.4	107.4
PFMBA	5.000	4.872	-2.6	97.4
PFMPA	5.000	4.981	-0.4	99.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.478	0.6	100.6

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC11014
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q785		Method: EPA DRAFT 1633		Instrument ID: GCMS4Q	
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID	
S4Q785-RT	4Q53728.D	11/13/23 14:55	n/a	Retention Time Marker	
S4Q785-RT	4Q53729.D	11/13/23 15:10	n/a	Retention Time Marker	
S4Q785-IC785	4Q53730.D	11/13/23 15:25	n/a	Mass Calibration Verification	
S4Q785-IC785	4Q53731.D	11/13/23 15:40	n/a	Initial cal 1	
S4Q785-IC785	4Q53732.D	11/13/23 15:55	n/a	Initial cal 2	
S4Q785-IC785	4Q53733.D	11/13/23 16:09	n/a	Initial cal 3	
S4Q785-ICC785	4Q53734.D	11/13/23 16:43	n/a	Initial cal 4	
S4Q785-IC785	4Q53735.D	11/13/23 16:58	n/a	Initial cal 5	
S4Q785-IC785	4Q53736.D	11/13/23 17:13	n/a	Initial cal 6	
S4Q785-IC785	4Q53737.D	11/13/23 17:28	n/a	Initial cal 7	
S4Q785-IC785	4Q53738.D	11/13/23 17:42	n/a	Initial cal 8	
S4Q785-IBLK	4Q53739.D	11/13/23 17:57	n/a	Instrument Blank	
S4Q785-IBLK	4Q53739.D	11/13/23 17:57	n/a	Instrument Blank	
S4Q785-ICV785	4Q53740.D	11/13/23 18:12	n/a	Initial cal verification 4	
S4Q785-ICV785	4Q53741.D	11/13/23 18:27	n/a	Initial cal verification 20	
S4Q785-CC785	4Q53742.D	11/13/23 18:41	n/a	Continuing cal 4	
S4Q785-CC785	4Q53743.D	11/13/23 18:56	n/a	Continuing cal 1.0LL	
OP99997-BS	4Q53744.D	11/13/23 19:11	OP99997	Blank Spike	
OP99997-LLBS	4Q53745.D	11/13/23 19:26	OP99997	Blank Spike	
OP99997-MB	4Q53746.D	11/13/23 19:40	OP99997	Method Blank	
FC11014-1	4Q53747.D	11/13/23 19:55	OP99997	AF-RHMW16-WGN01LF-2311	
ZZZZZZ	4Q53748.D	11/13/23 20:10	OP99997	(unrelated sample)	
FC11062-2	4Q53749.D	11/13/23 20:25	OP99997	(used for QC only; not part of job FC11014)	
OP99997-MS	4Q53750.D	11/13/23 20:39	OP99997	Matrix Spike	
FC11062-3	4Q53751.D	11/13/23 20:54	OP99997	(used for QC only; not part of job FC11014)	
OP99997-DUP	4Q53752.D	11/13/23 21:09	OP99997	Duplicate	
ZZZZZZ	4Q53753.D	11/13/23 21:24	OP99997	(unrelated sample)	
S4Q785-CC785	4Q53754.D	11/13/23 21:38	n/a	Continuing cal 4	
S4Q785-ICCB	4Q53755.D	11/13/23 21:53	n/a	Continuing Calibration Blank	
ZZZZZZ	4Q53756.D	11/13/23 22:08	OP99997	(unrelated sample)	
ZZZZZZ	4Q53757.D	11/13/23 22:23	OP99997	(unrelated sample)	
OP99956-BS	4Q53758.D	11/13/23 22:37	OP99956	Blank Spike	
OP99956-LLBS	4Q53759.D	11/13/23 22:52	OP99956	Blank Spike	
OP99956-MB	4Q53760.D	11/13/23 23:07	OP99956	Method Blank	
ZZZZZZ	4Q53761.D	11/13/23 23:22	OP99956	(unrelated sample)	
ZZZZZZ	4Q53762.D	11/13/23 23:36	OP99956	(unrelated sample)	
ZZZZZZ	4Q53763.D	11/13/23 23:51	OP99956	(unrelated sample)	
ZZZZZZ	4Q53764.D	11/14/23 00:06	OP99956	(unrelated sample)	
ZZZZZZ	4Q53765.D	11/14/23 00:21	OP99956	(unrelated sample)	
S4Q785-CC785	4Q53766.D	11/14/23 00:35	n/a	Continuing cal 4	
S4Q785-ICCB	4Q53767.D	11/14/23 00:50	n/a	Continuing Calibration Blank	
ZZZZZZ	4Q53768.D	11/14/23 01:05	OP99956	(unrelated sample)	
ZZZZZZ	4Q53769.D	11/14/23 01:20	OP99956	(unrelated sample)	
ZZZZZZ	4Q53770.D	11/14/23 01:34	OP99956	(unrelated sample)	
ZZZZZZ	4Q53771.D	11/14/23 01:49	OP99956	(unrelated sample)	
ZZZZZZ	4Q53772.D	11/14/23 02:04	OP99956	(unrelated sample)	

Run Sequence Report

Page 2 of 2

Job Number: FC11014
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q785	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
ZZZZZZ	4Q53773.D	11/14/23 02:19	OP99956	(unrelated sample)
ZZZZZZ	4Q53774.D	11/14/23 02:33	OP99956	(unrelated sample)
ZZZZZZ	4Q53775.D	11/14/23 02:48	OP99956	(unrelated sample)
ZZZZZZ	4Q53776.D	11/14/23 03:03	OP99956	(unrelated sample)
S4Q785-CC785	4Q53777.D	11/14/23 03:18	n/a	Continuing cal 4
S4Q785-ICCB	4Q53778.D	11/14/23 03:32	n/a	Continuing Calibration Blank
FC10708-15	4Q53779.D	11/14/23 03:47	OP99956	(used for QC only; not part of job FC11014)
OP99956-MS	4Q53780.D	11/14/23 04:02	OP99956	Matrix Spike
OP99956-MSD	4Q53781.D	11/14/23 04:17	OP99956	Matrix Spike Duplicate
ZZZZZZ	4Q53782.D	11/14/23 04:31	OP99956	(unrelated sample)
ZZZZZZ	4Q53783.D	11/14/23 04:46	OP99956	(unrelated sample)
OP99926-BS	4Q53784.D	11/14/23 05:01	OP99926	Blank Spike
OP99926-LLBS	4Q53785.D	11/14/23 05:16	OP99926	Blank Spike
OP99926-MB	4Q53786.D	11/14/23 05:30	OP99926	Method Blank
ZZZZZZ	4Q53787.D	11/14/23 05:45	OP99926	(unrelated sample)
ZZZZZZ	4Q53788.D	11/14/23 06:00	OP99926	(unrelated sample)
S4Q785-CC785	4Q53789.D	11/14/23 06:15	n/a	Continuing cal 4
S4Q785-ICCB	4Q53790.D	11/14/23 06:29	n/a	Continuing Calibration Blank
FC10703-1	4Q53791.D	11/14/23 06:44	OP99926	(used for QC only; not part of job FC11014)
OP99926-MS	4Q53792.D	11/14/23 06:59	OP99926	Matrix Spike
FC10703-2	4Q53793.D	11/14/23 07:14	OP99926	(used for QC only; not part of job FC11014)
OP99926-DUP	4Q53794.D	11/14/23 07:28	OP99926	Duplicate
ZZZZZZ	4Q53795.D	11/14/23 07:43	OP99926	(unrelated sample)
ZZZZZZ	4Q53796.D	11/14/23 07:58	OP99926	(unrelated sample)
ZZZZZZ	4Q53797.D	11/14/23 08:13	OP99926	(unrelated sample)
ZZZZZZ	4Q53798.D	11/14/23 08:28	OP99926	(unrelated sample)
ZZZZZZ	4Q53799.D	11/14/23 08:42	OP99926	(unrelated sample)
ZZZZZZ	4Q53800.D	11/14/23 08:57	OP99926	(unrelated sample)
S4Q785-CC785	4Q53801.D	11/14/23 09:12	n/a	Continuing cal 4
S4Q785-ICCB	4Q53802.D	11/14/23 09:27	n/a	Continuing Calibration Blank
ZZZZZZ	4Q53803.D	11/14/23 09:41	OP99926	(unrelated sample)
ZZZZZZ	4Q53804.D	11/14/23 09:56	OP99926	(unrelated sample)
ZZZZZZ	4Q53805.D	11/14/23 10:11	OP99926	(unrelated sample)
ZZZZZZ	4Q53806.D	11/14/23 10:26	OP99926	(unrelated sample)
ZZZZZZ	4Q53807.D	11/14/23 10:40	OP99926	(unrelated sample)
FC10636-32	4Q53808.D	11/14/23 10:55	OP99872	(used for QC only; not part of job FC11014)
ZZZZZZ	4Q53809.D	11/14/23 11:10	OP99872	(unrelated sample)
ZZZZZZ	4Q53810.D	11/14/23 11:25	OP99872	(unrelated sample)
ZZZZZZ	4Q53811.D	11/14/23 11:39	OP99872	(unrelated sample)
S4Q785-ECC785	4Q53812.D	11/14/23 11:54	n/a	Ending cal 4
S4Q785-ICCB	4Q53813.D	11/14/23 12:09	n/a	Continuing Calibration Blank

6.9.1
6



Orlando, FL

Section 7

MS Semi-volatiles

Raw Data

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53747.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 7:55:31 PM
 Sample Name : fc11014-1
 Vial : P4-D4
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,520,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	74967	10.00 µg/L	0.000
M5-PFPeA	4.137	268.3 -> 223.0	36130	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	27286	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	25771	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	30005	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12772	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	8506	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	9313	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9125	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	7644	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	6392	2.50 µg/L	-0.025
M3-PFBS	5.165	302.1 -> 79.9	8108	2.50 µg/L	-0.038
M3-PFHxS	7.017	402.1 -> 79.9	6645	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6703	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	710	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1497	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2167	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	10480	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	25061	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	8880	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	23475	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	29068	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	4986	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3837	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5481	2.50 µg/L	-0.026
13C3-PFBA	2.703	216.0 -> 172.0	39364	5.00 µg/L	0.000
18O2-PFHxS	7.028	403.0 -> 83.9	4209	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	31133	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	9105	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	11666	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	27251	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	710	4.93 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1497	4.93 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2167	5.06 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9125	1.11 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.8%		
13C2-PFTeDA	9.649	715.2 -> 670.0	7644	0.92 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 74.0%		
13C3-PFBS	5.165	302.1 -> 79.9	8108	2.57 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.7%		
13C3-PFHxS	7.017	402.1 -> 79.9	6645	2.55 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C4-PFBA	2.699	216.8 -> 171.9	74967	9.14 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 91.4%		
13C4-PFHpA	6.267	367.1 -> 322.0	25771	2.71 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.4%		
13C5-PFHxA	5.310	318.0 -> 273.0	27286	2.68 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.4%		
13C5-PFPeA	4.137	268.3 -> 223.0	36130	5.44 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.7%		
13C6-PFDA	8.004	519.1 -> 474.1	8506	1.27 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C7-PFUnDA	8.448	570.0 -> 525.1	9313	1.20 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C8-FOSA	9.794	506.1 -> 77.8	6392	2.44 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C8-PFOA	6.964	421.1 -> 376.0	30005	2.70 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.0%		
13C8-PFOS	8.117	507.1 -> 79.9	6703	2.56 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C9-PFNA	7.509	472.1 -> 427.0	12772	1.39 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 111.1%		
d3-MeFOSAA	8.086	573.2 -> 419.0	10480	5.04 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	25061	10.81 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 108.1%		
d3-MeFOSA	11.126	515.0 -> 219.0	3837	2.10 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 83.9%		
d5-EtFOSAA	8.283	589.2 -> 419.0	8880	4.88 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.6%		
d7-MeFOSE	11.022	623.2 -> 58.9	23475	20.79 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 83.2%		
d9-EtFOSE	11.319	639.2 -> 58.9	29068	22.23 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 88.9%		
d5-EtFOSA	11.397	531.1 -> 219.0	4986	2.30 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.9%		

Target Compounds

QValue

4:2FTS	-	327.1 -> 307.0	-	N.D.
		327.1 -> 80.9		
6:2FTS	-	427.1 -> 407.0	-	N.D.
		427.1 -> 80.9		
8:2FTS	-	527.1 -> 507.0	-	N.D.
		527.1 -> 80.8		
EtFOSAA	-	584.2 -> 419.1	-	N.D.
		584.2 -> 526.0		
FOSA	-	498.1 -> 77.9	-	N.D.
		498.1 -> 478.0		
MeFOSAA	-	570.1 -> 419.0	-	N.D.
		570.1 -> 483.0		
PFBA	-	212.8 -> 168.9	-	N.D.
PFBS	-	298.7 -> 79.9	-	N.D.
		298.7 -> 98.8		
PFDA	-	512.9 -> 469.0	-	N.D.
		512.9 -> 219.0		
PFDODA	-	613.1 -> 569.0	-	N.D.
		613.1 -> 319.0		
PFDS	-	599.0 -> 79.9	-	N.D.

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	9.227	713.1 -> 669.0	0	µg/L	m	1
		713.1 -> 168.9	0			
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11CI-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9CI-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

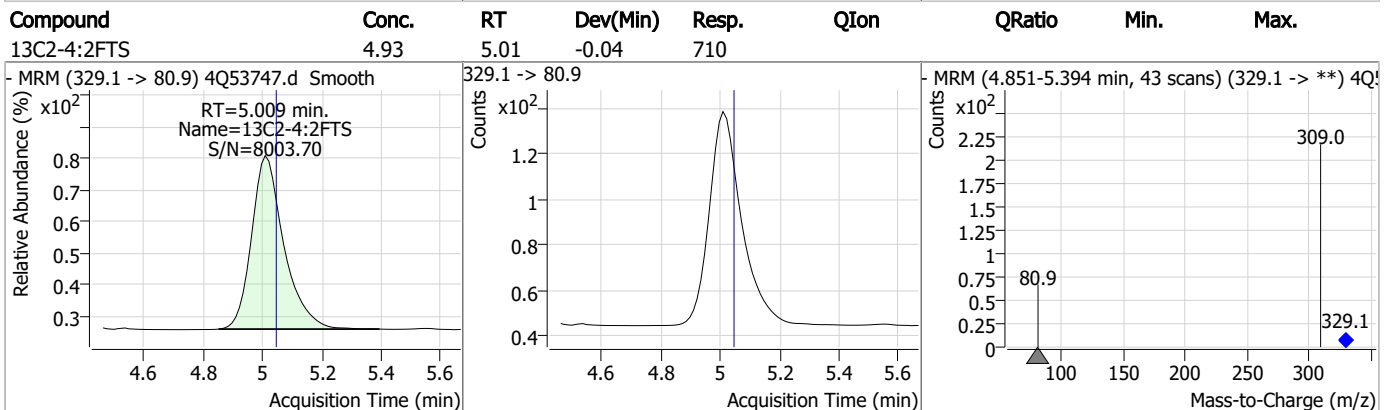
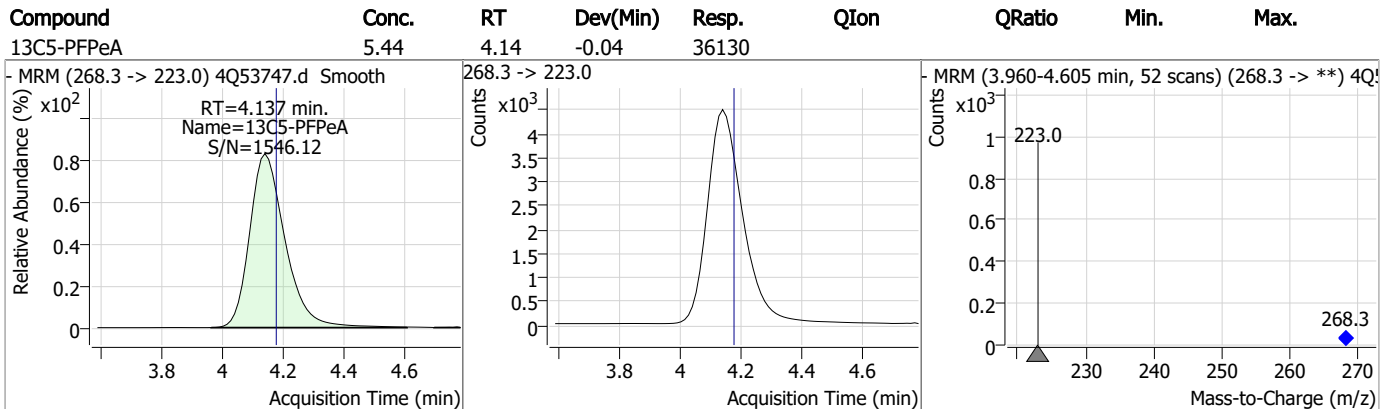
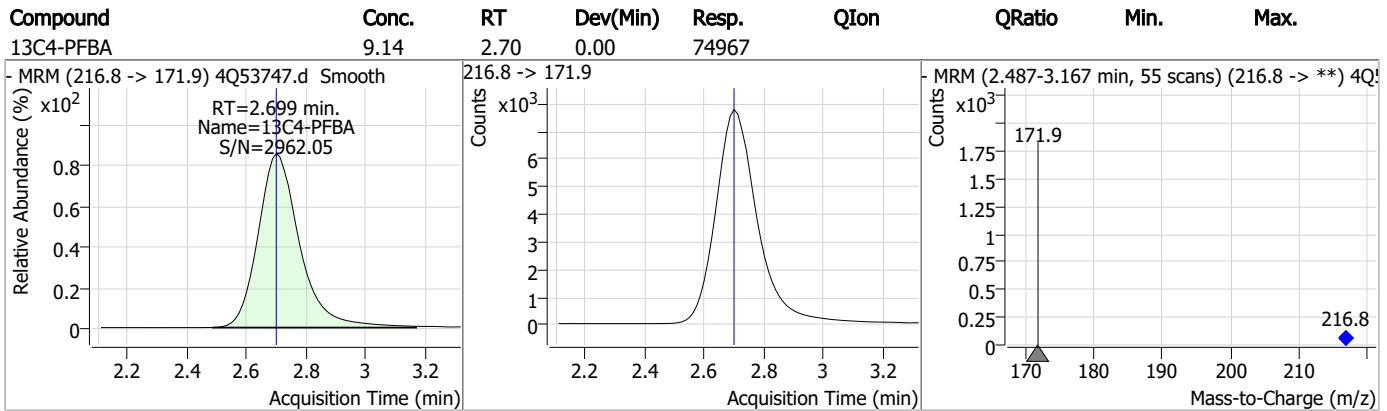
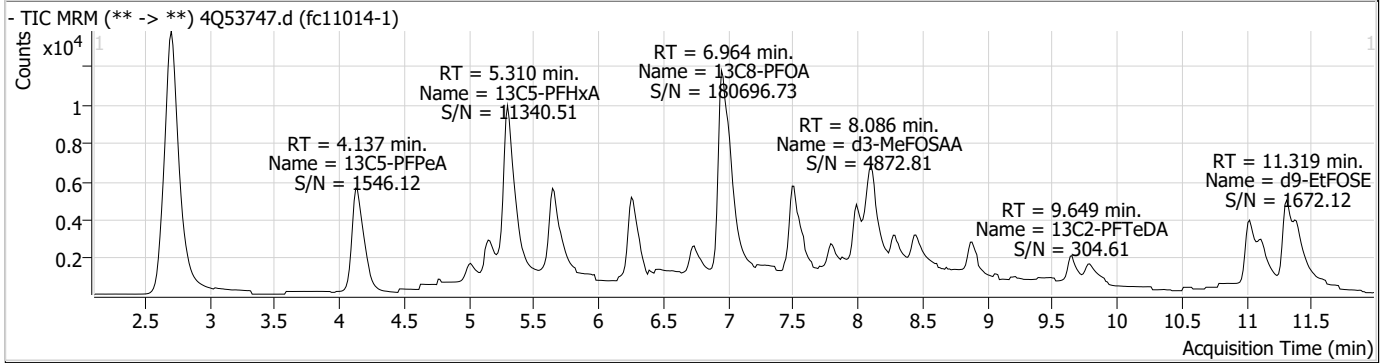
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

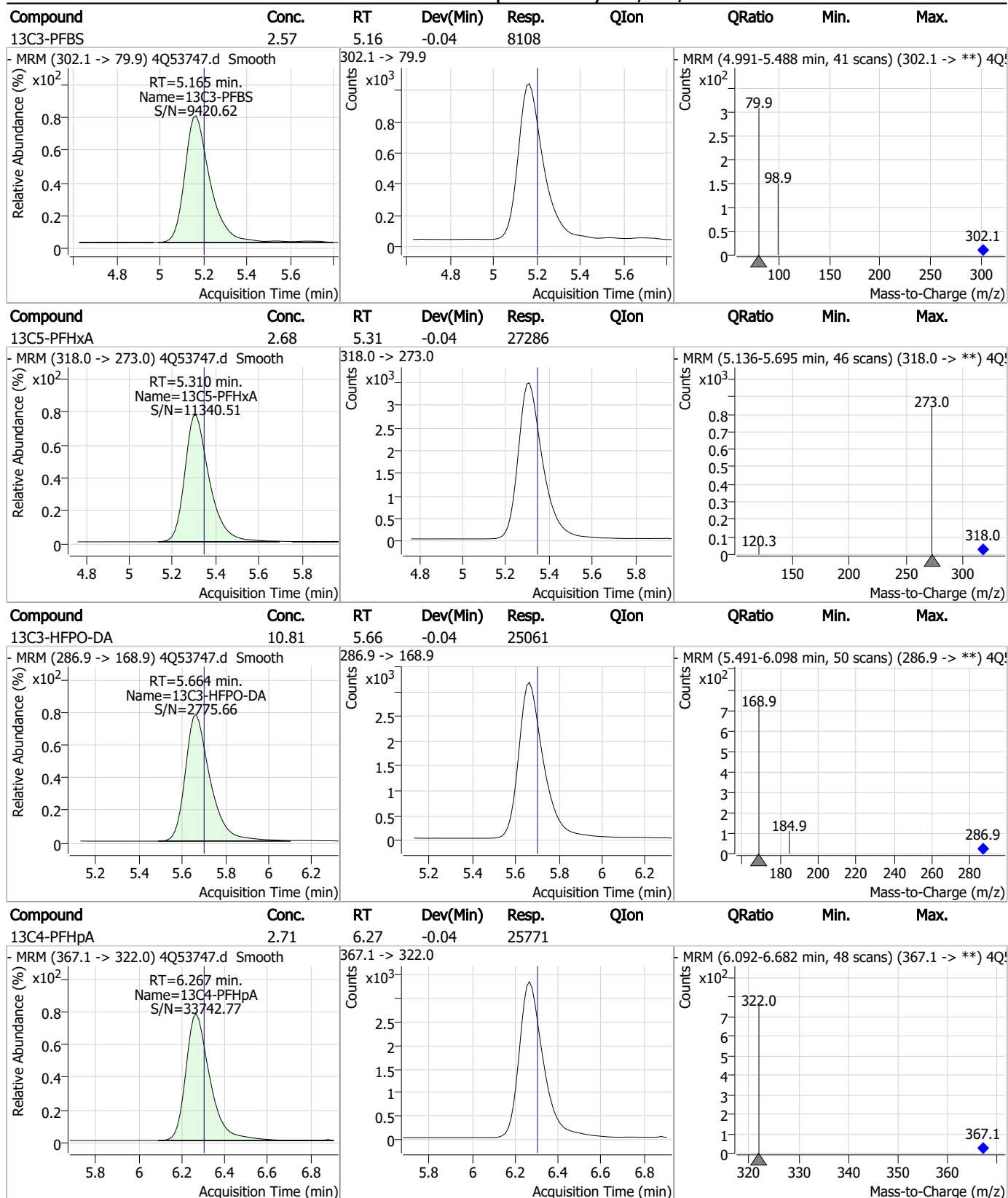
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.1.1
7

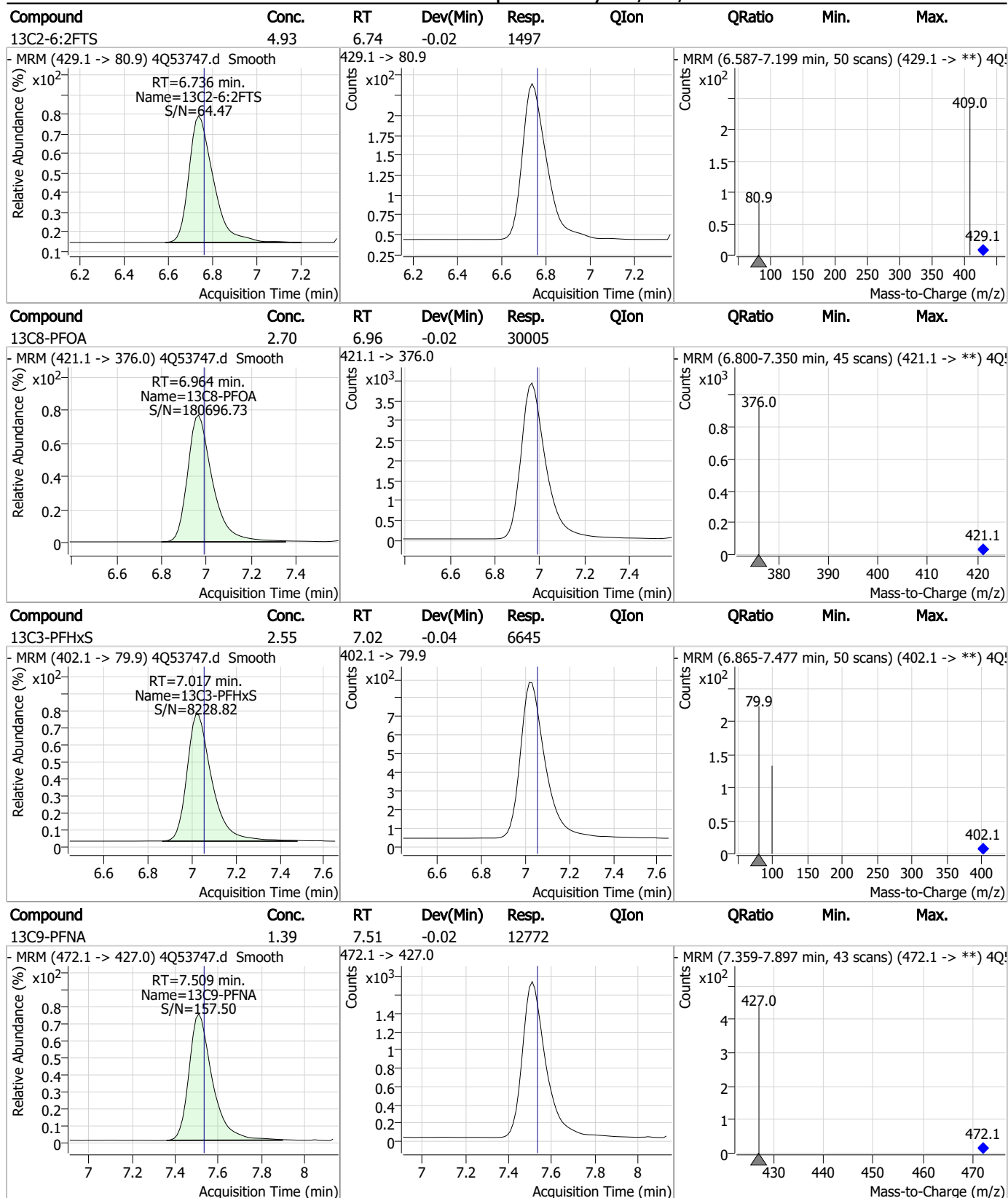
Perfluorinated Compounds by LC/MS/MS



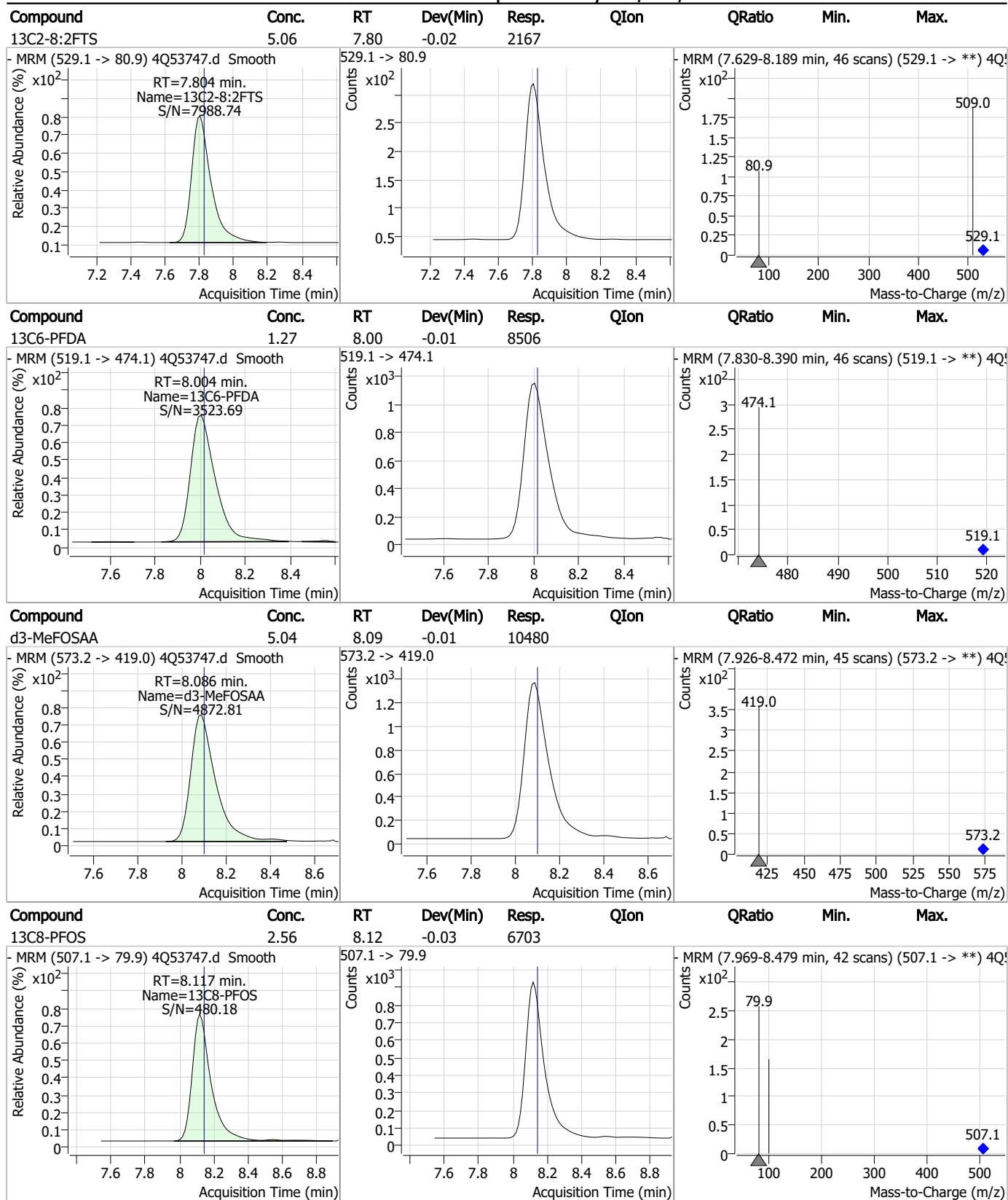
Perfluorinated Compounds by LC/MS/MS



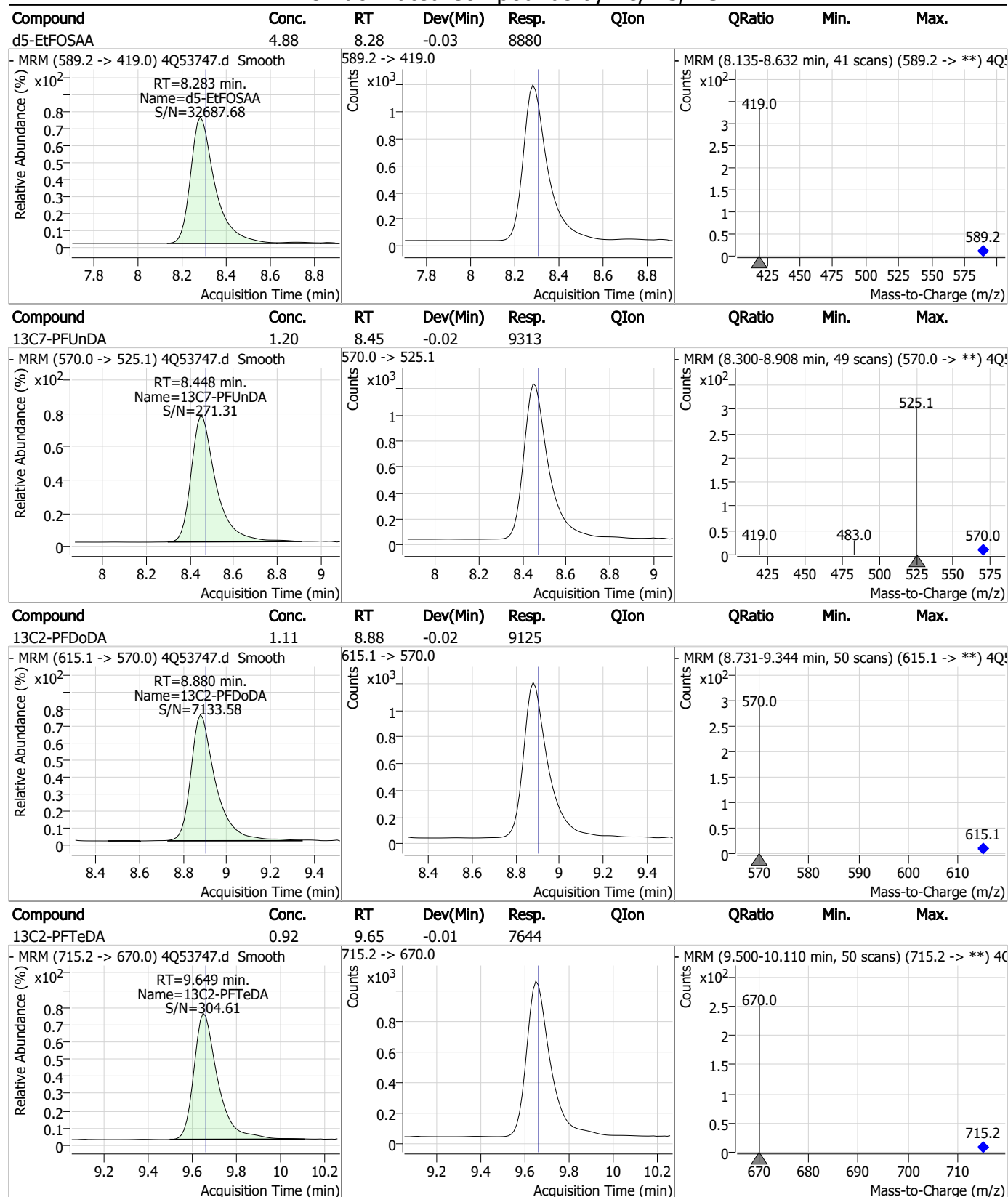
Perfluorinated Compounds by LC/MS/MS



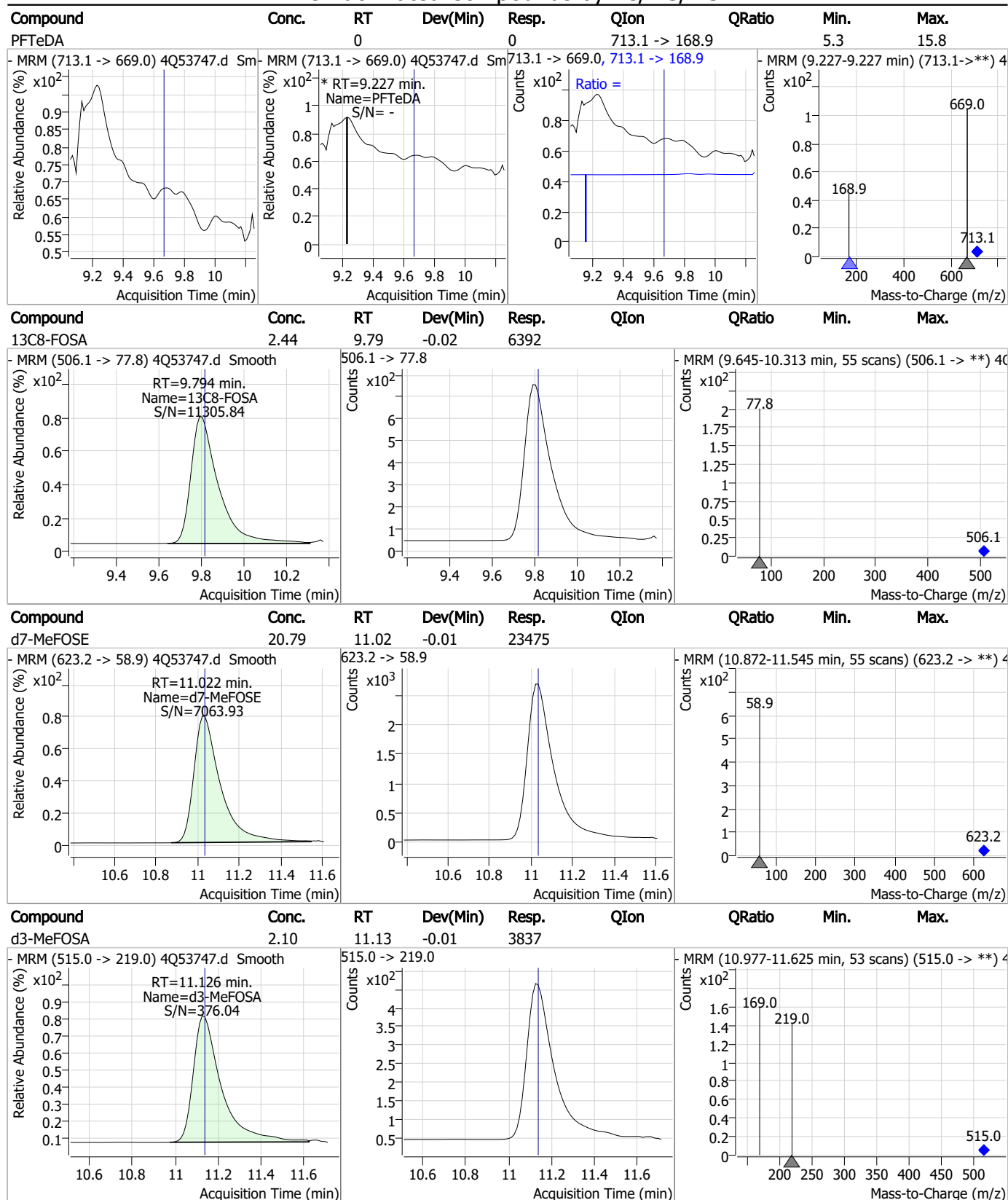
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

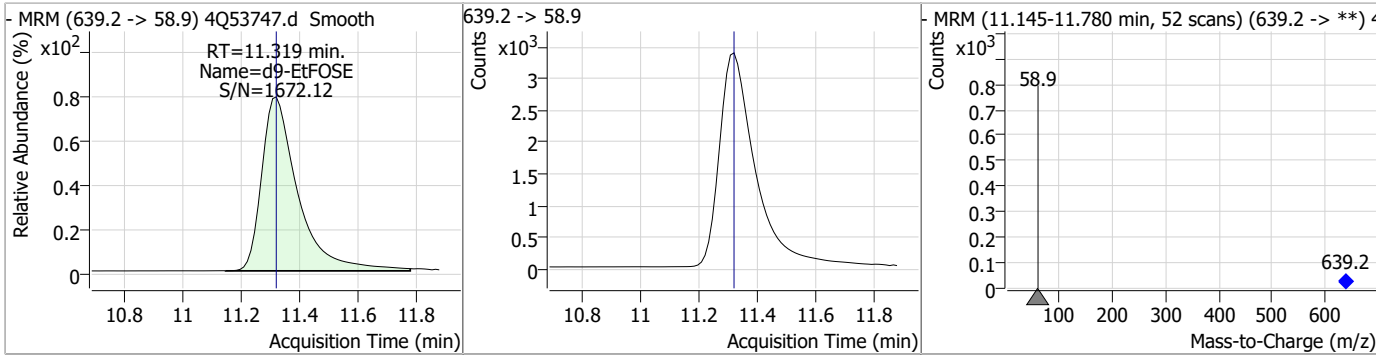


Perfluorinated Compounds by LC/MS/MS

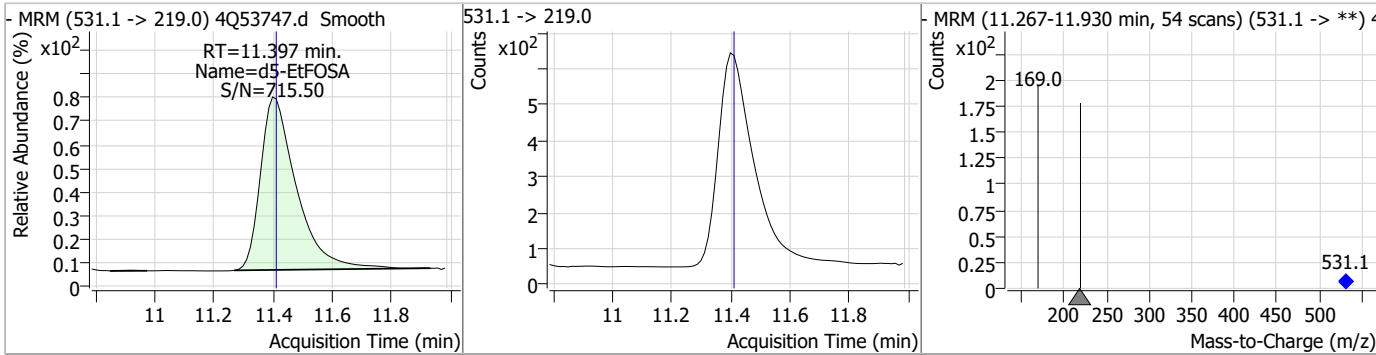


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	22.23	11.32	0.00	29068				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.30	11.40	-0.01	4986				



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53746.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 7:40:46 PM
 Sample Name : op99997-mb
 Vial : P4-D3
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	92865	10.00 µg/L	-0.013
M5-PFPeA	4.137	268.3 -> 223.0	38027	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	28743	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	26719	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	31231	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	13423	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8396	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10955	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10267	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9180	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	4415	2.50 µg/L	-0.025
M3-PFBS	5.165	302.1 -> 79.9	8003	2.50 µg/L	-0.038
M3-PFHxS	7.017	402.1 -> 79.9	6787	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7453	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	650	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1443	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2131	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	11962	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	26188	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	9286	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	17685	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	24347	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	4593	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3358	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6017	2.50 µg/L	-0.026
13C3-PFBA	2.691	216.0 -> 172.0	40713	5.00 µg/L	-0.013
18O2-PFHxS	7.016	403.0 -> 83.9	4139	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	31383	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	8888	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	11954	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	28967	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	650	4.59 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.8%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1443	4.84 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2131	5.07 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10267	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9180	1.14 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.0%		
13C3-PFBS	5.165	302.1 -> 79.9	8003	2.58 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C3-PFHxS	7.017	402.1 -> 79.9	6787	2.65 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.8%		
13C4-PFBA	2.686	216.8 -> 171.9	92865	10.95 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 109.5%		
13C4-PFHpA	6.267	367.1 -> 322.0	26719	2.64 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.8%		
13C5-PFHxA	5.310	318.0 -> 273.0	28743	2.66 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.4%		
13C5-PFPeA	4.137	268.3 -> 223.0	38027	5.38 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.6%		
13C6-PFDA	7.992	519.1 -> 474.1	8396	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.7%		
13C7-PFUnDA	8.448	570.0 -> 525.1	10955	1.45 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 115.9%		
13C8-FOSA	9.794	506.1 -> 77.8	4415	1.53 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 61.4%		
13C8-PFOA	6.964	421.1 -> 376.0	31231	2.79 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.5%		
13C8-PFOS	8.117	507.1 -> 79.9	7453	2.59 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C9-PFNA	7.509	472.1 -> 427.0	13423	1.42 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 113.9%		
d3-MeFOSAA	8.086	573.2 -> 419.0	11962	5.24 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.8%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	26188	10.62 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 106.2%		
d3-MeFOSA	11.126	515.0 -> 219.0	3358	1.67 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 66.9%		
d5-EtFOSAA	8.283	589.2 -> 419.0	9286	4.65 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.9%		
d7-MeFOSE	11.034	623.2 -> 58.9	17685	14.27 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 57.1%		
d9-EtFOSE	11.319	639.2 -> 58.9	24347	16.96 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 67.8%		
d5-EtFOSA	11.397	531.1 -> 219.0	4593	1.93 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 77.1%		

Target Compounds

QValue

4:2FTS	-	327.1 -> 307.0	-	N.D.
		327.1 -> 80.9		
6:2FTS	-	427.1 -> 407.0	-	N.D.
		427.1 -> 80.9		
8:2FTS	-	527.1 -> 507.0	-	N.D.
		527.1 -> 80.8		
EtFOSAA	-	584.2 -> 419.1	-	N.D.
		584.2 -> 526.0		
FOSA	-	498.1 -> 77.9	-	N.D.
		498.1 -> 478.0		
MeFOSAA	-	570.1 -> 419.0	-	N.D.
		570.1 -> 483.0		
PFBA	-	212.8 -> 168.9	-	N.D.
PFBS	-	298.7 -> 79.9	-	N.D.
		298.7 -> 98.8		
PFDA	-	512.9 -> 469.0	-	N.D.
		512.9 -> 219.0		
PFDODA	-	613.1 -> 569.0	-	N.D.
		613.1 -> 319.0		
PFDS	-	599.0 -> 79.9	-	N.D.

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

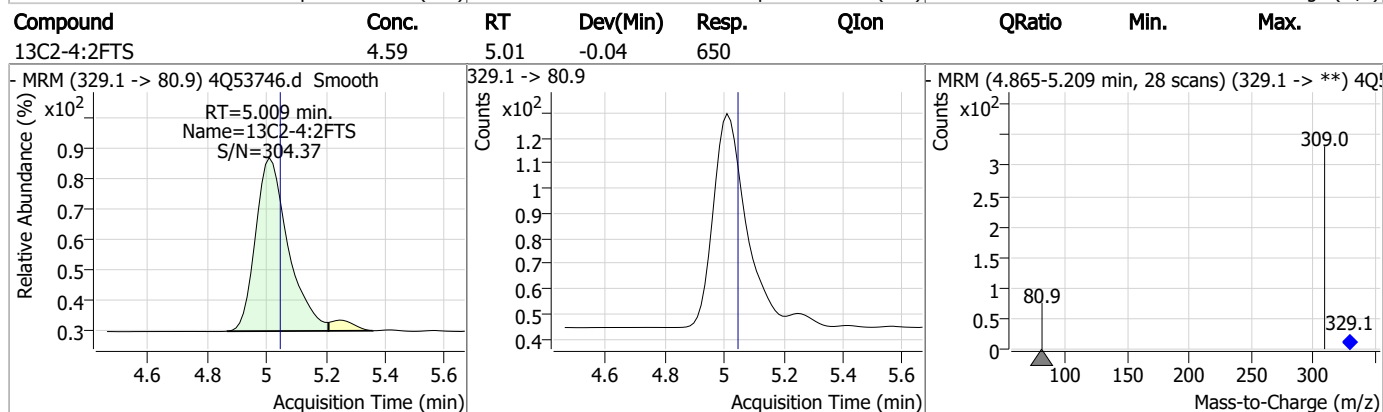
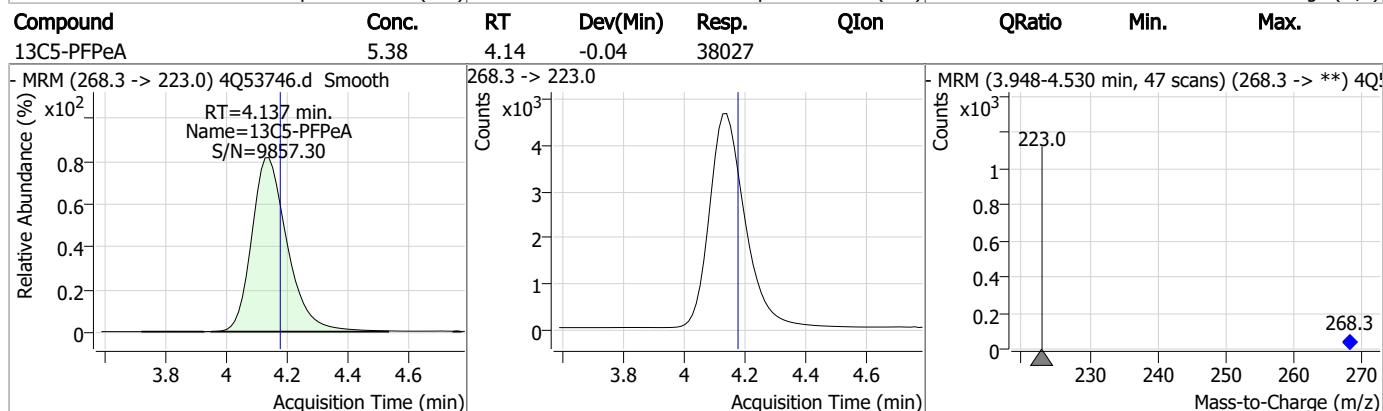
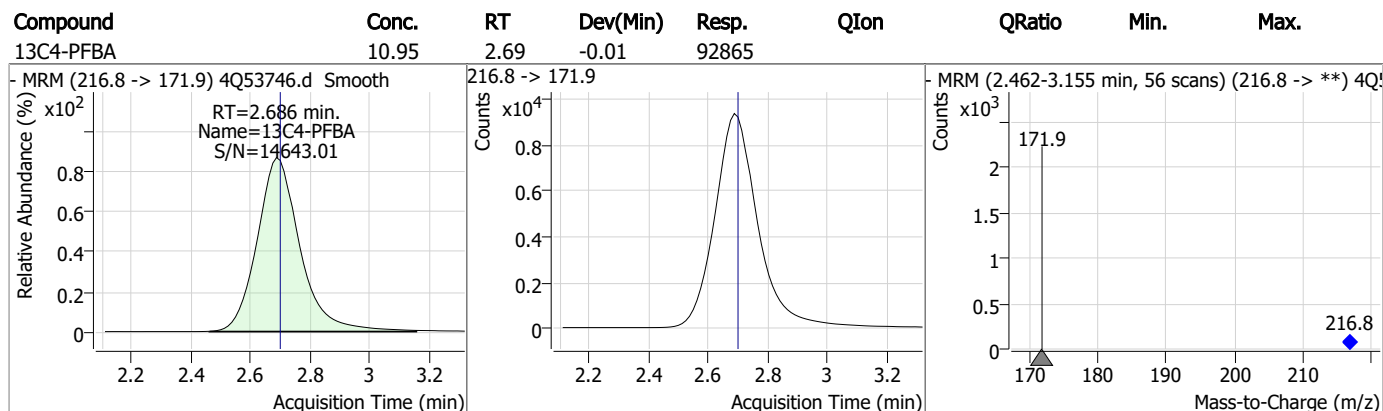
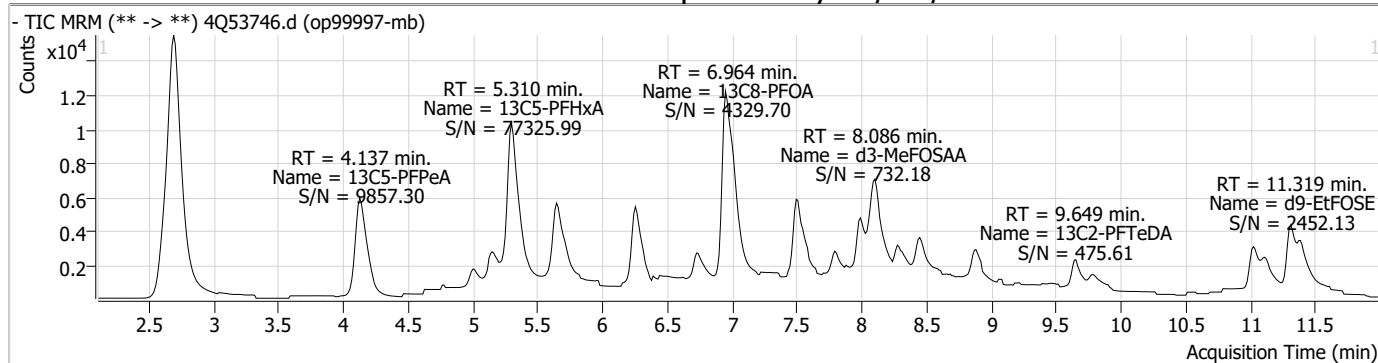
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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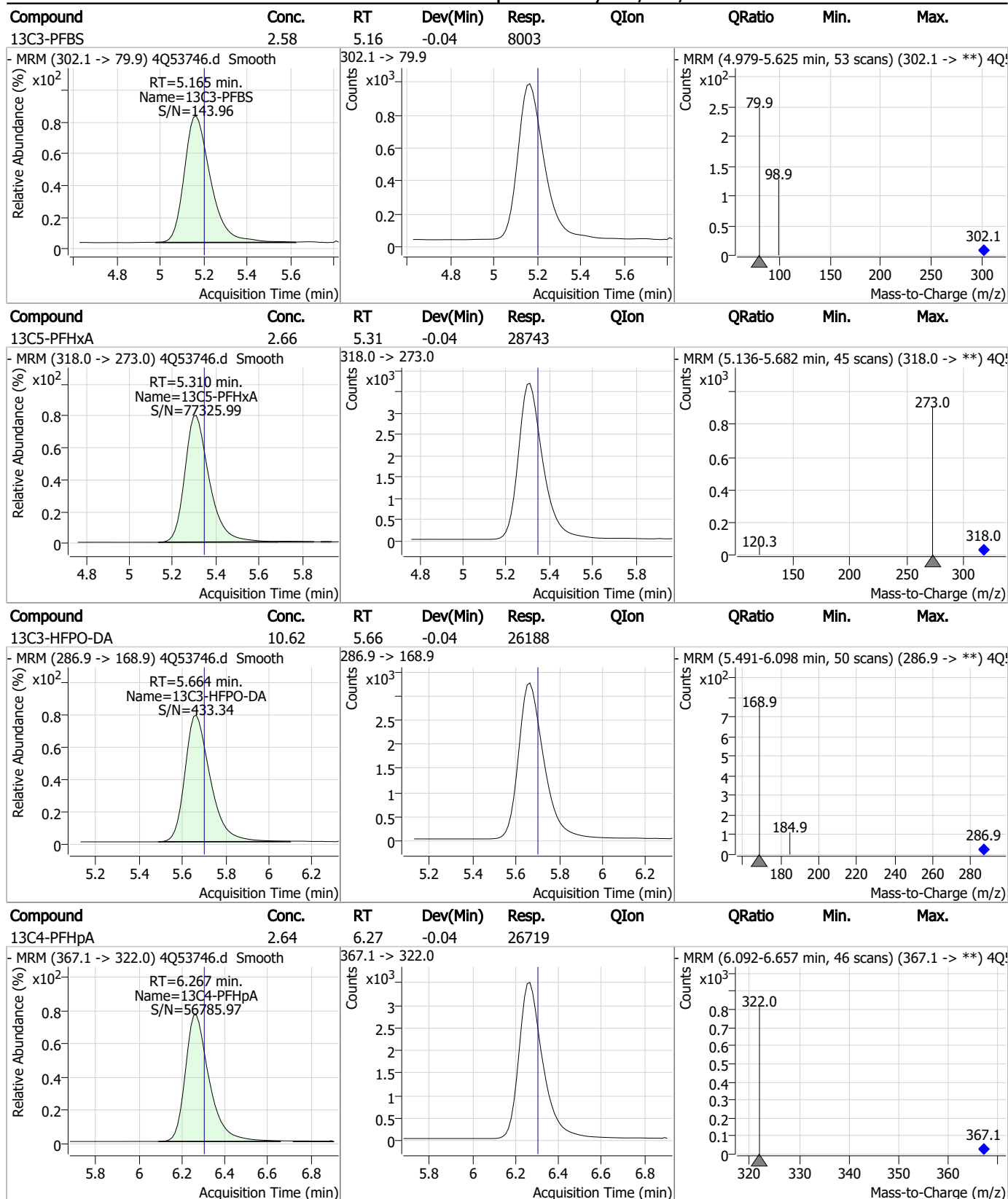
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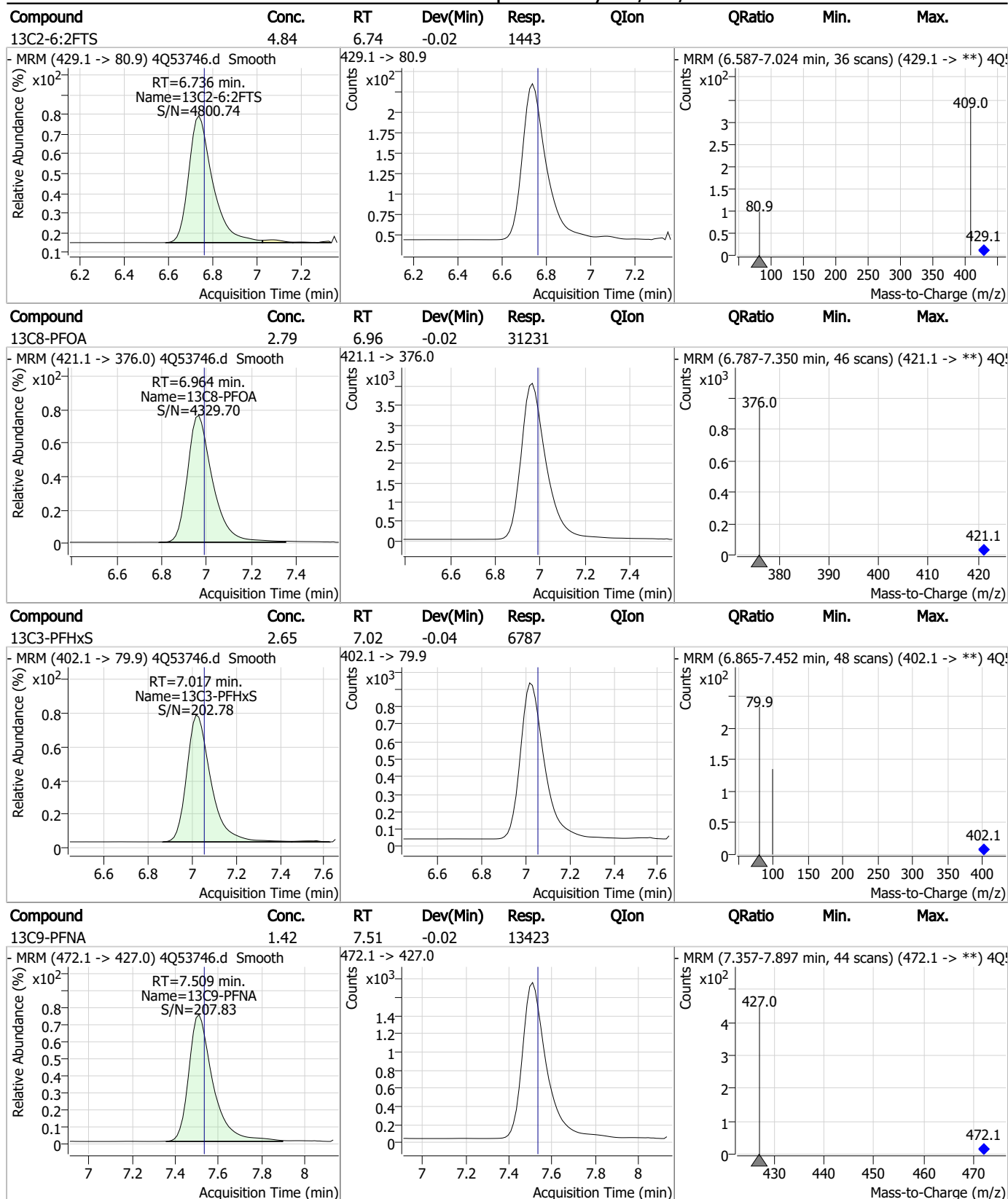
Perfluorinated Compounds by LC/MS/MS



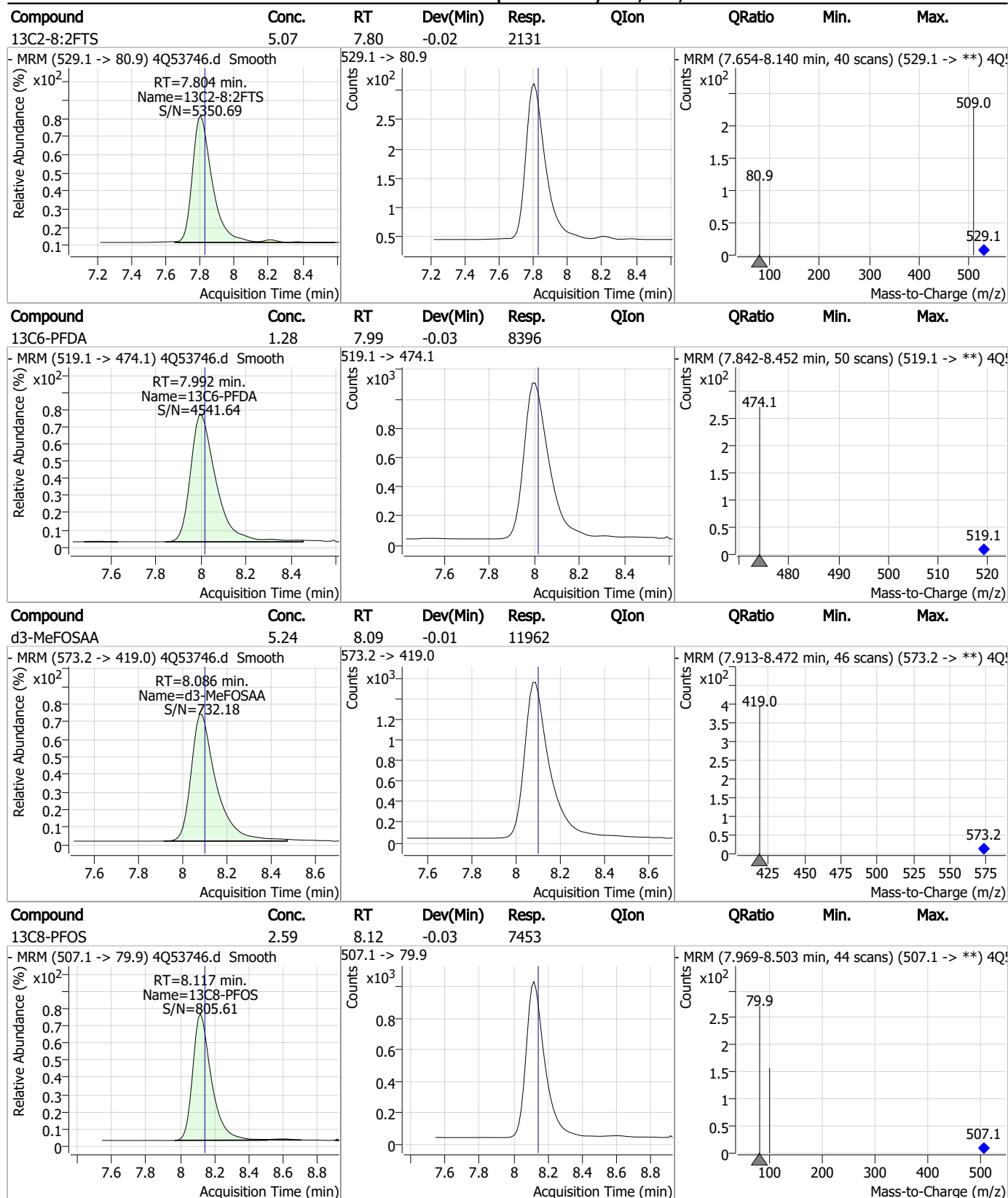
Perfluorinated Compounds by LC/MS/MS



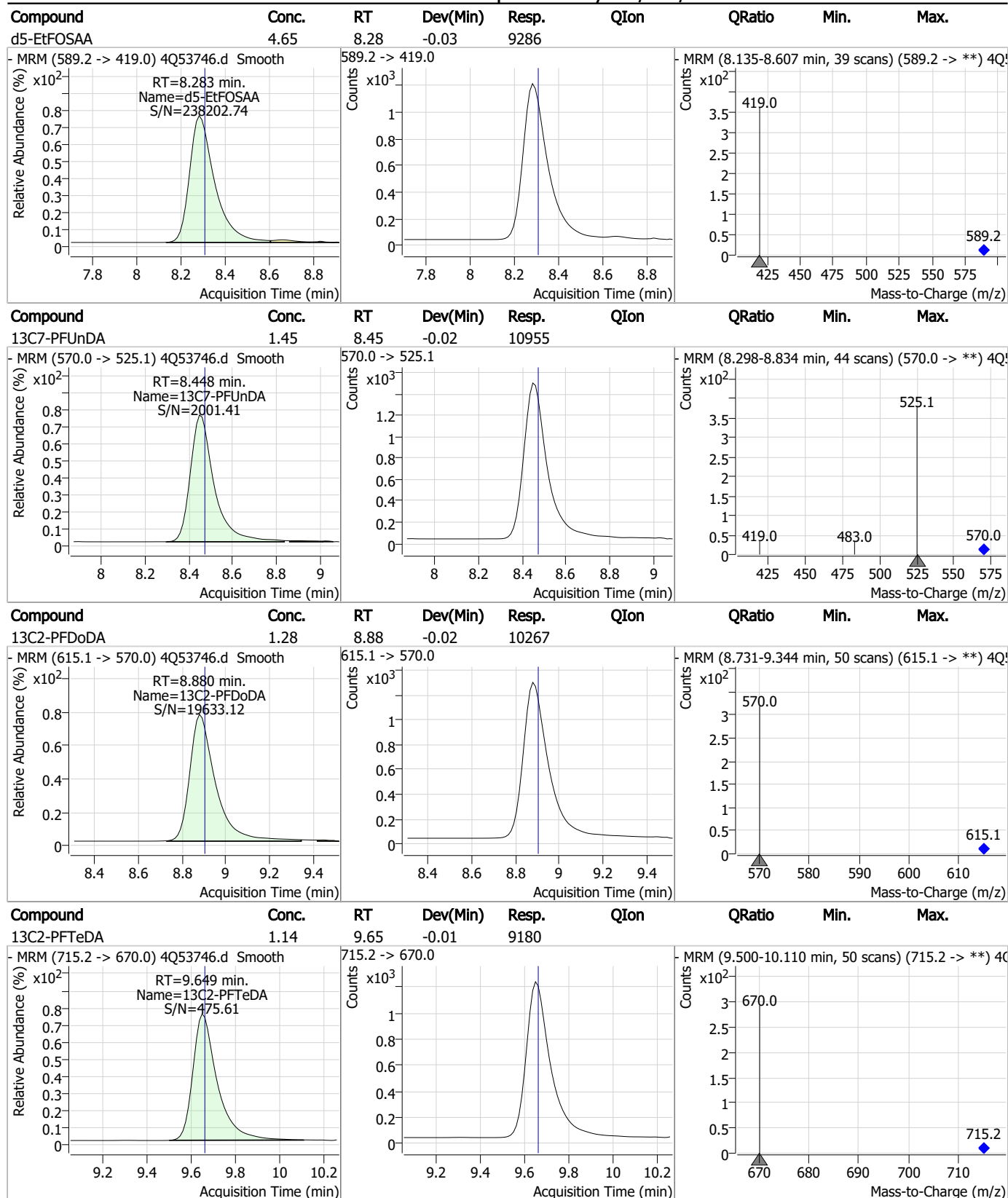
Perfluorinated Compounds by LC/MS/MS



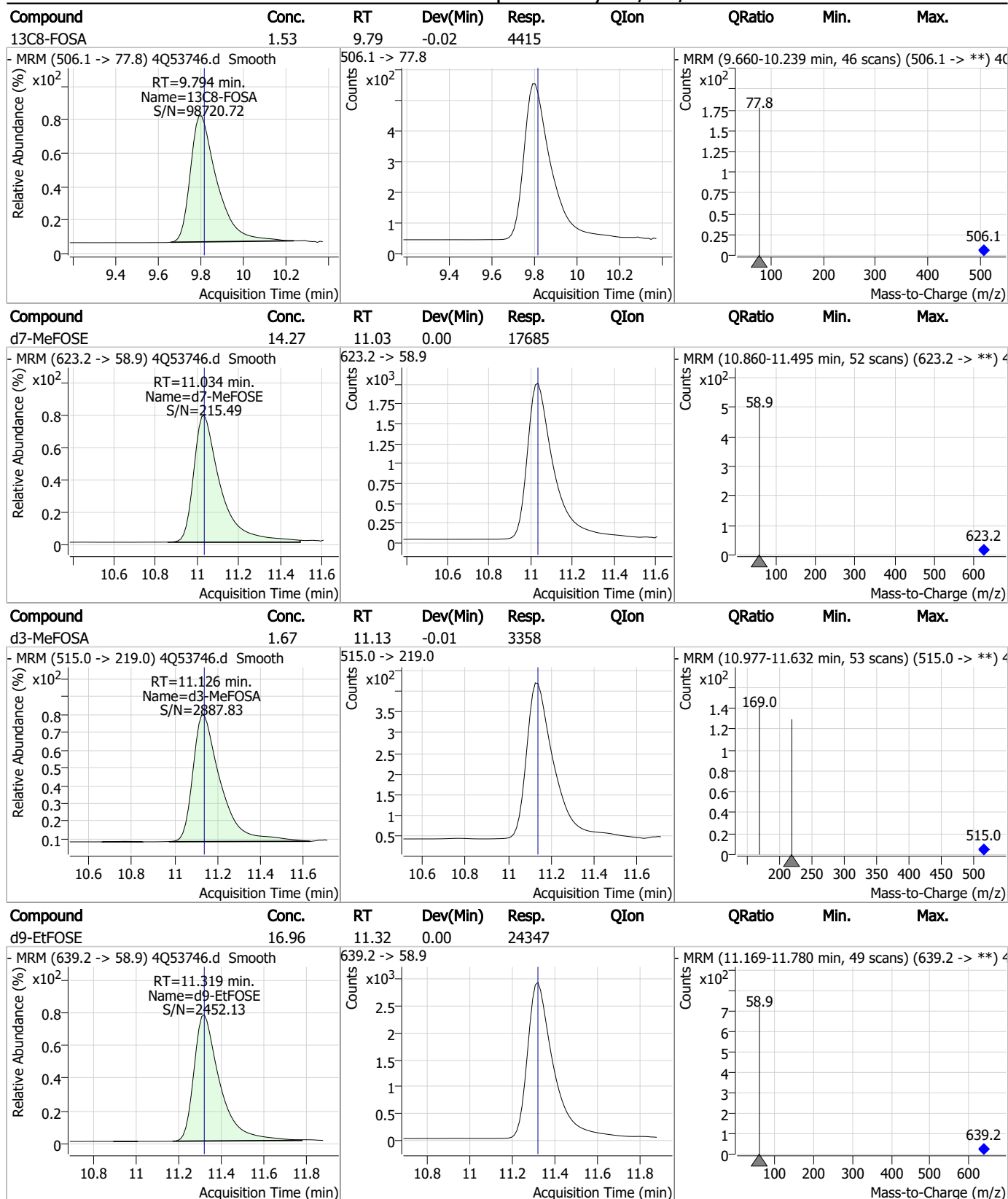
Perfluorinated Compounds by LC/MS/MS



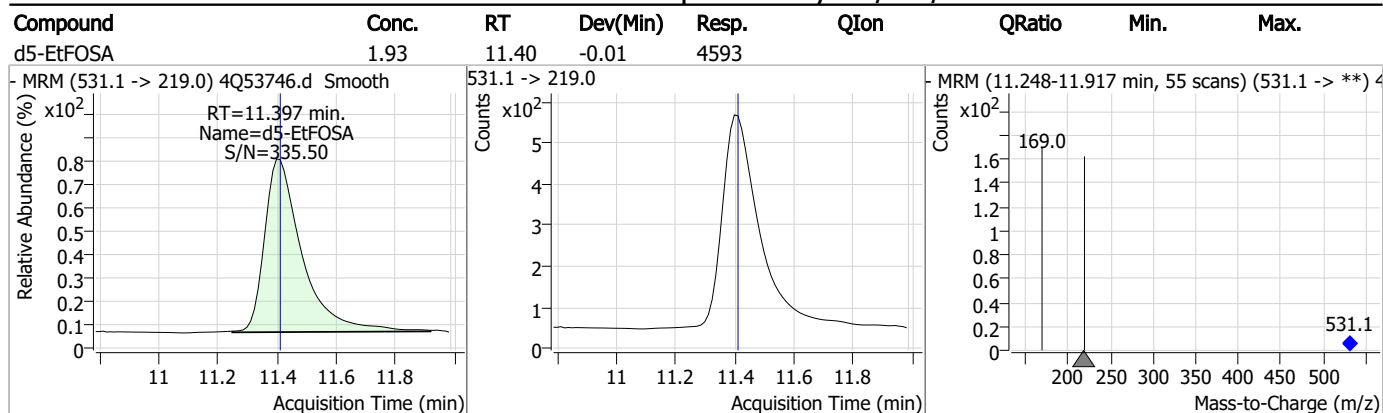
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Natasha Gumtie
11/14/23 15:48

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53739.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 5:57:35 PM
 Sample Name : iblk
 Vial : P1-A1
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.612	216.8 -> 171.9	82560	10.00 µg/L	-0.087
M5-PFPeA	4.112	268.3 -> 223.0	34969	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	25830	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	25328	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	29354	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	11559	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	8589	1.25 µg/L	-0.013
M7-PFUnDA	8.461	570.0 -> 525.1	10284	1.25 µg/L	-0.012
M2-PFDoDA	8.880	615.1 -> 570.0	10392	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9981	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	6774	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7934	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6483	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7176	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	857	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1584	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2241	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	11401	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	24845	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	9603	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	29083	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	34296	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	5576	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	4675	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5793	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	39178	5.00 µg/L	-0.087
18O2-PFHxS	7.016	403.0 -> 83.9	3914	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	32353	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	9124	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	12715	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	28453	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	857	6.40 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 128.0%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1584	5.61 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.2%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2241	5.63 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.6%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10392	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9981	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.4%		
13C3-PFBS	5.152	302.1 -> 79.9	7934	2.70 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.1%		
13C3-PFHxS	7.017	402.1 -> 79.9	6483	2.67 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.9%		
13C4-PFBA	2.612	216.8 -> 171.9	82560	10.11 µg/L	-0.087
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C4-PFHpA	6.267	367.1 -> 322.0	25328	2.55 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.1%		
13C5-PFHxA	5.297	318.0 -> 273.0	25830	2.43 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C5-PFPeA	4.112	268.3 -> 223.0	34969	5.04 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C6-PFDA	8.004	519.1 -> 474.1	8589	1.28 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C7-PFUnDA	8.461	570.0 -> 525.1	10284	1.33 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.0%		
13C8-FOSA	9.794	506.1 -> 77.8	6774	2.45 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C8-PFOA	6.964	421.1 -> 376.0	29354	2.54 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C8-PFOS	8.117	507.1 -> 79.9	7176	2.59 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C9-PFNA	7.509	472.1 -> 427.0	11559	1.15 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.2%		
d3-MeFOSAA	8.086	573.2 -> 419.0	11401	5.19 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	24845	10.26 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.6%		
d3-MeFOSA	11.126	515.0 -> 219.0	4675	2.42 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.8%		
d5-EtFOSAA	8.283	589.2 -> 419.0	9603	4.99 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.8%		
d7-MeFOSE	11.034	623.2 -> 58.9	29083	24.37 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.5%		
d9-EtFOSE	11.319	639.2 -> 58.9	34296	24.81 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.2%		
d5-EtFOSA	11.410	531.1 -> 219.0	5576	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.3%		

Target Compounds

QValue

4:2FTS	-	327.1 -> 307.0	-	N.D.
		327.1 -> 80.9		
6:2FTS	-	427.1 -> 407.0	-	N.D.
		427.1 -> 80.9		
8:2FTS	-	527.1 -> 507.0	-	N.D.
		527.1 -> 80.8		
EtFOSAA	-	584.2 -> 419.1	-	N.D.
		584.2 -> 526.0		
FOSA	-	498.1 -> 77.9	-	N.D.
		498.1 -> 478.0		
MeFOSAA	-	570.1 -> 419.0	-	N.D.
		570.1 -> 483.0		
PFBA	-	212.8 -> 168.9	-	N.D.
PFBS	-	298.7 -> 79.9	-	N.D.
		298.7 -> 98.8		
PFDA	-	512.9 -> 469.0	-	N.D.
		512.9 -> 219.0		
PFDODA	-	613.1 -> 569.0	-	N.D.
		613.1 -> 319.0		
PFDS	-	599.0 -> 79.9	-	N.D.

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11CI-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9CI-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	11.449	526.0 -> 219.0	735	0.29 µg/L	m	77
		526.0 -> 169.0	831			
EtFOSE	11.345	630.0 -> 58.9	889	0.69 µg/L		100
		511.9 -> 219.0	250	0.15 µg/L	m	49
MeFOSA	11.154	511.9 -> 169.0	482			
		616.1 -> 58.9	505	0.38 µg/L	m	100
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8	-			
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

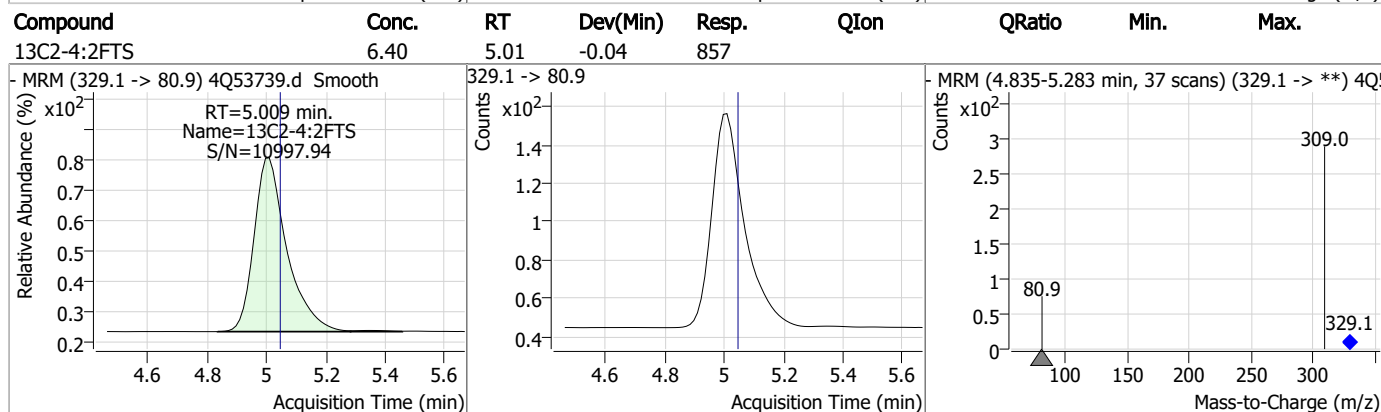
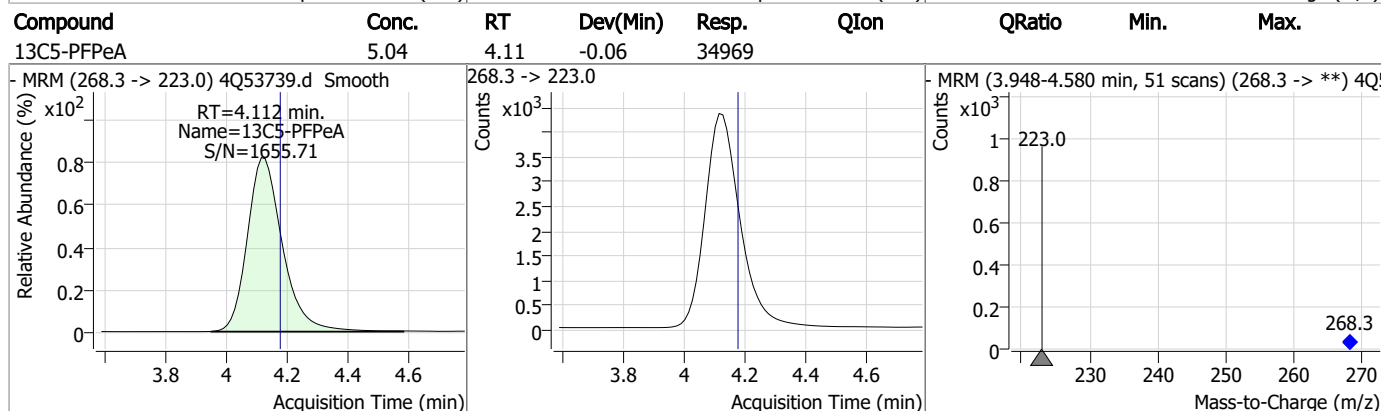
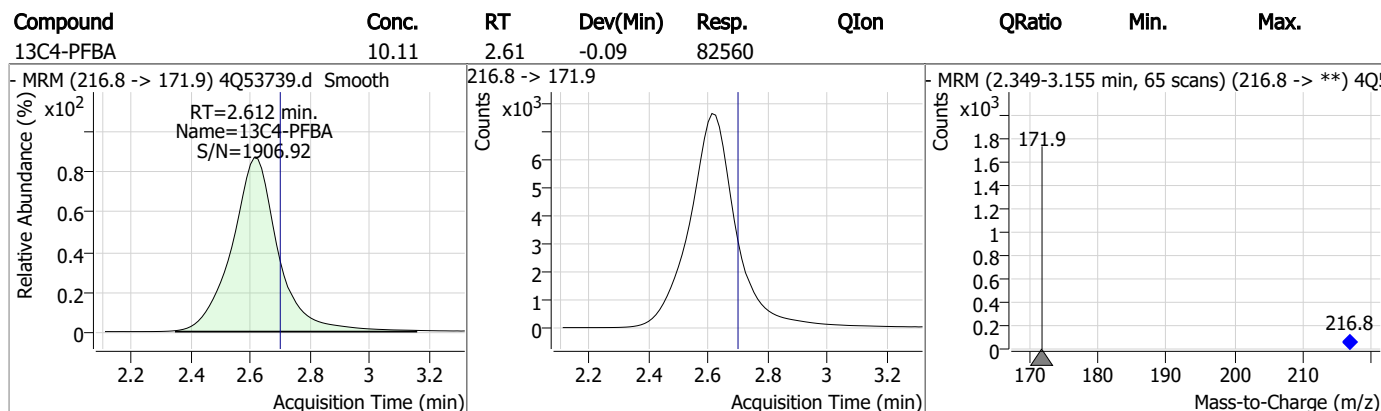
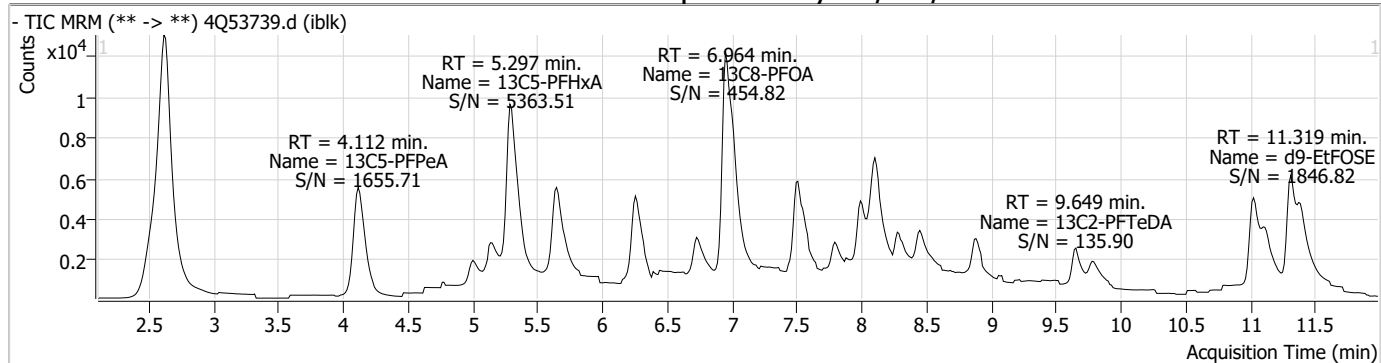
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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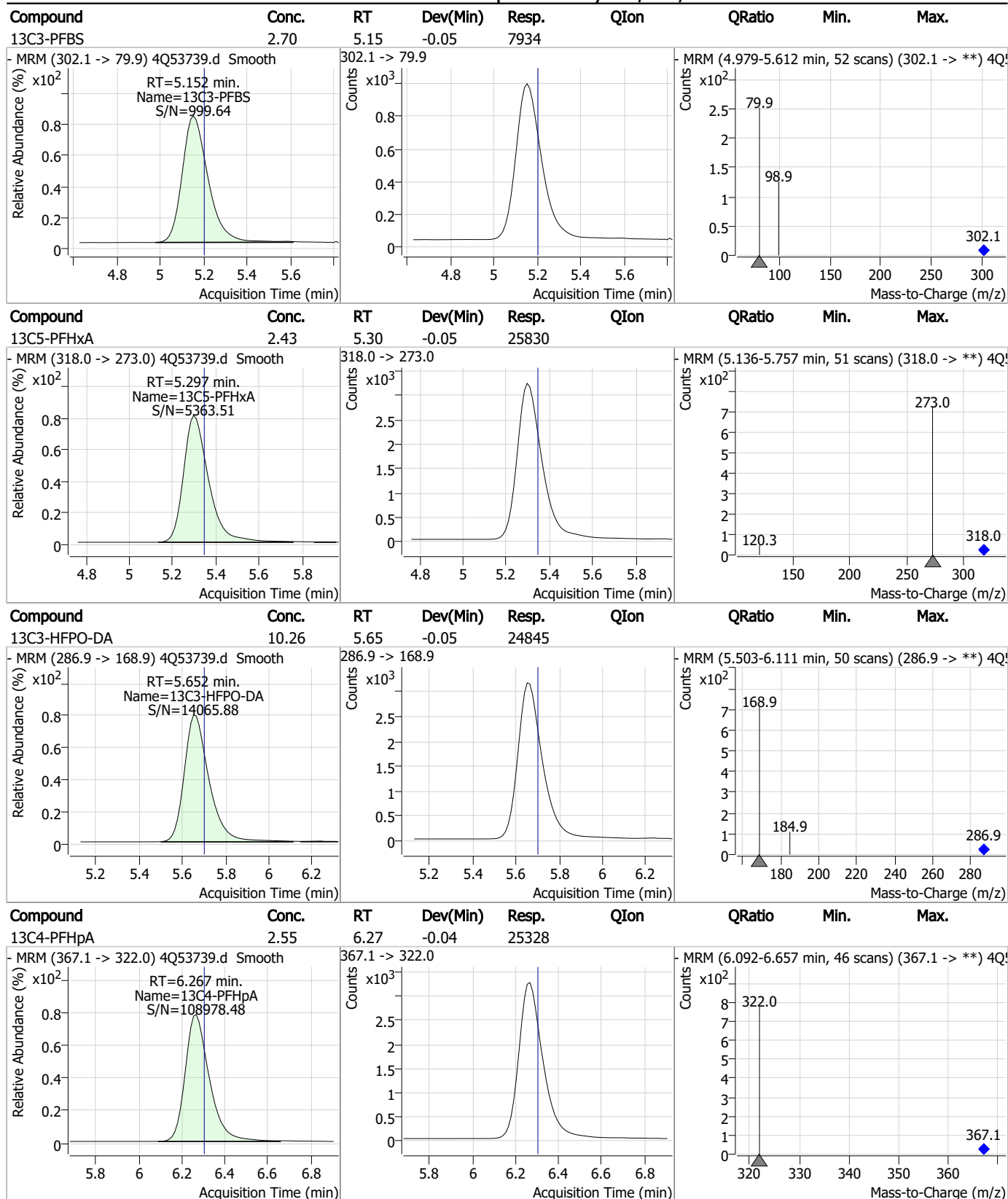
7.2.2
7



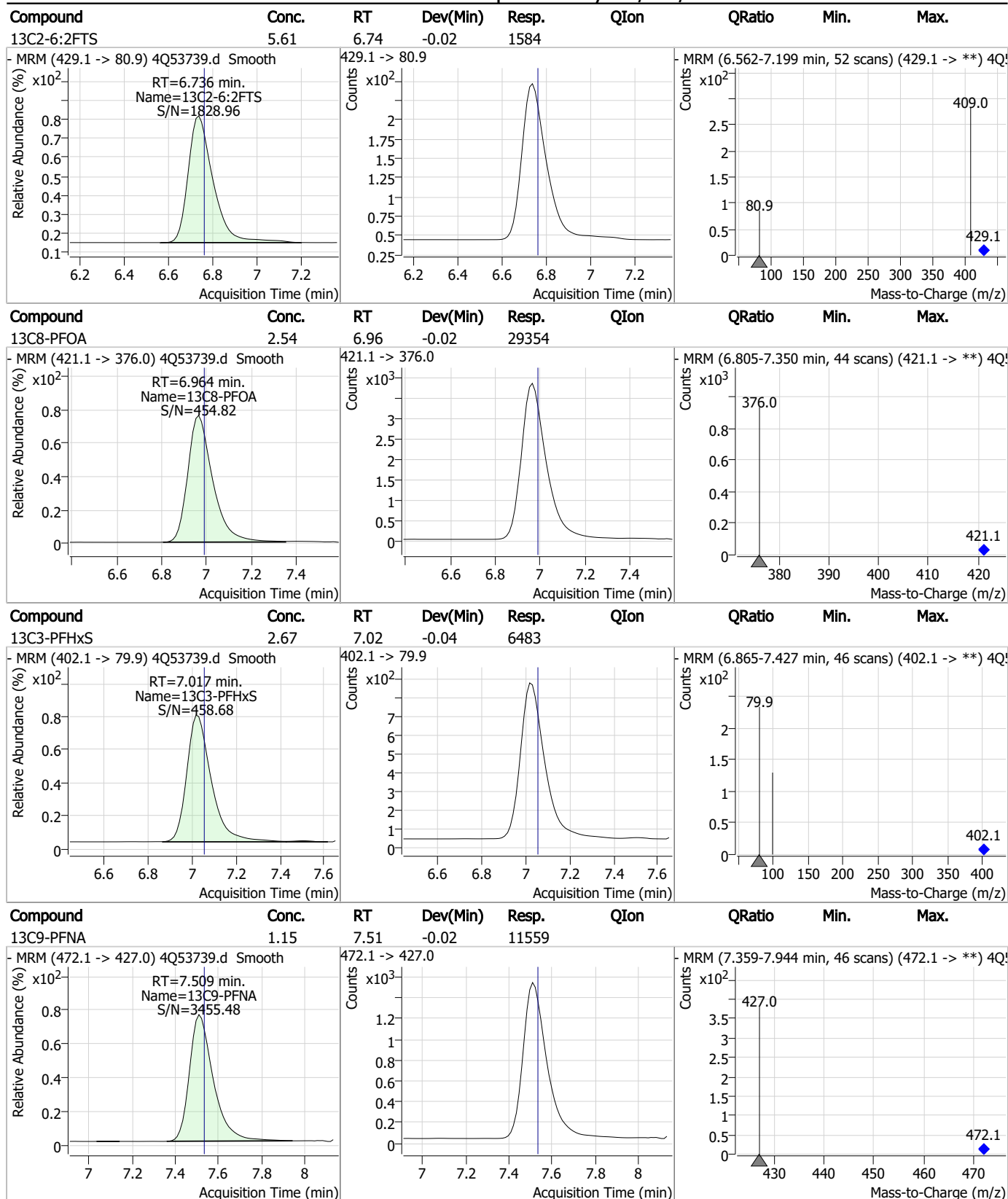
Perfluorinated Compounds by LC/MS/MS



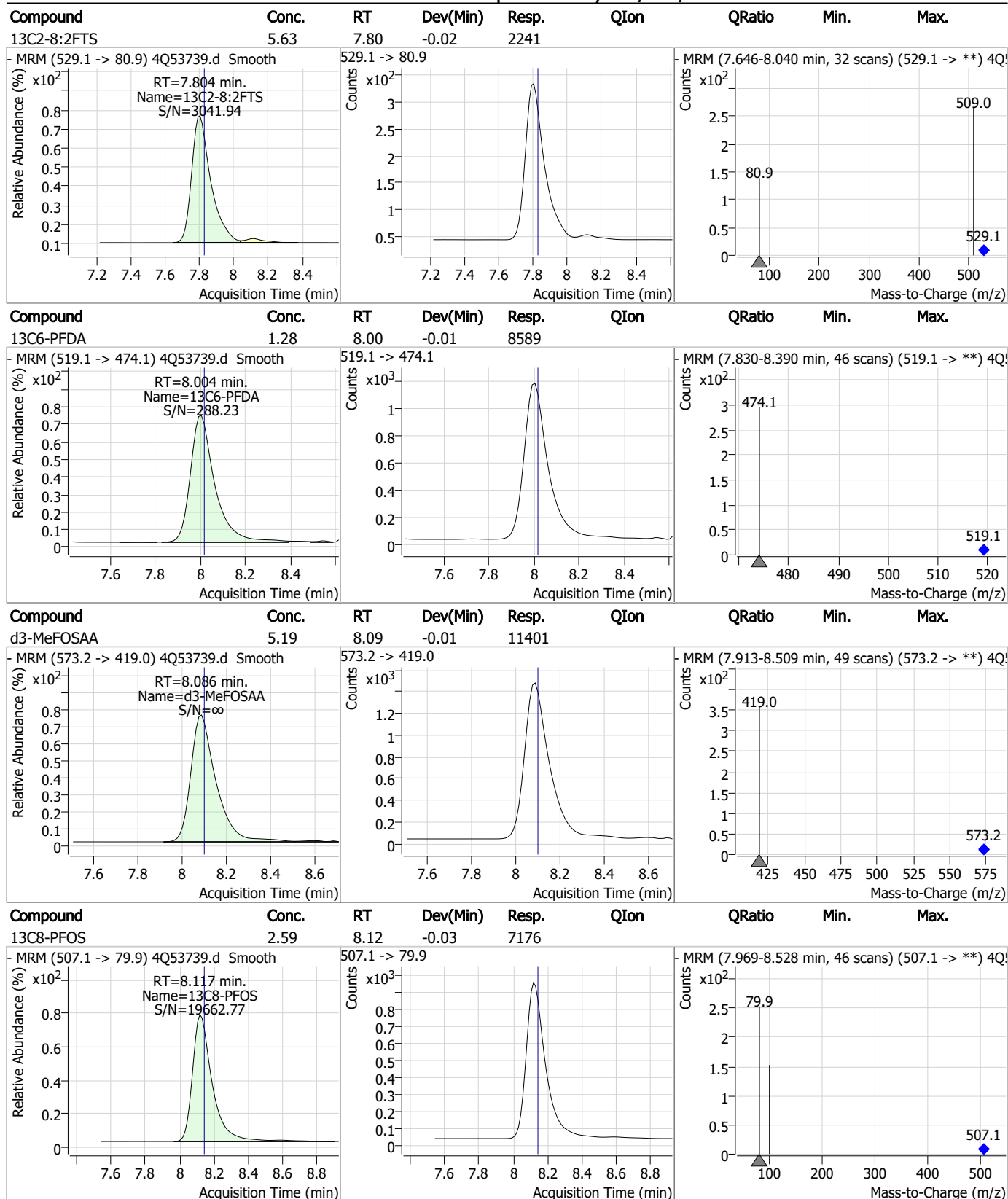
Perfluorinated Compounds by LC/MS/MS



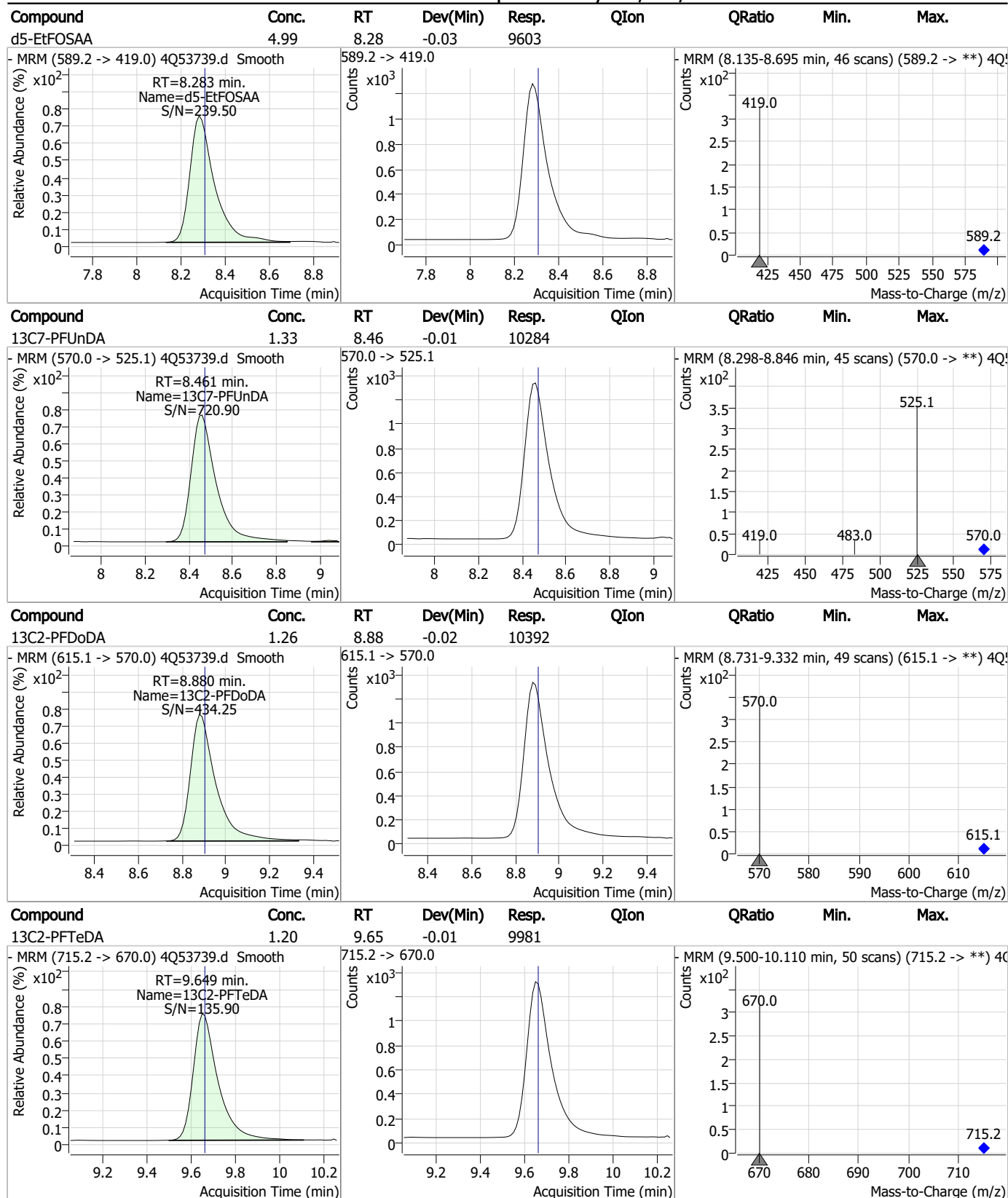
Perfluorinated Compounds by LC/MS/MS



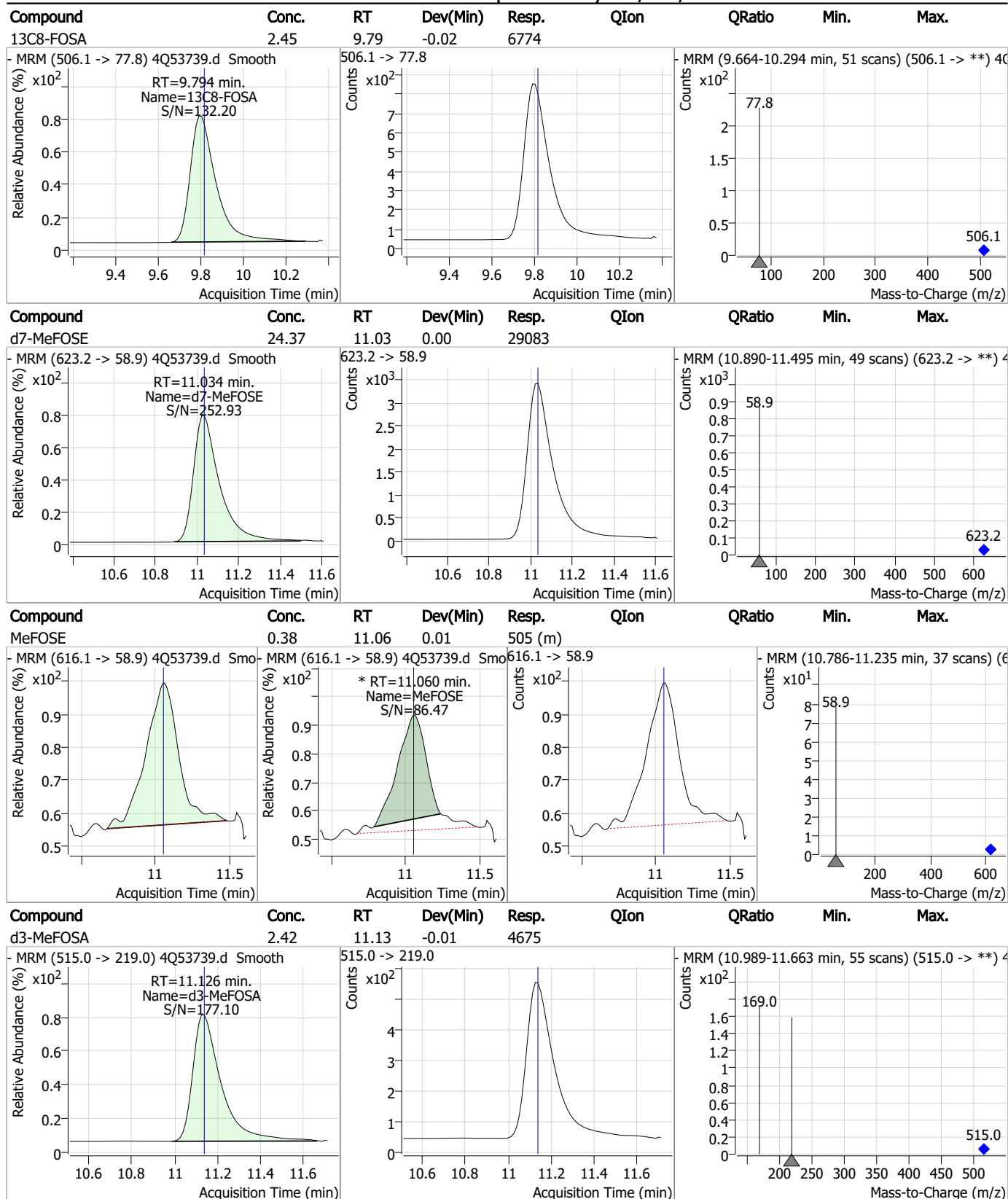
Perfluorinated Compounds by LC/MS/MS



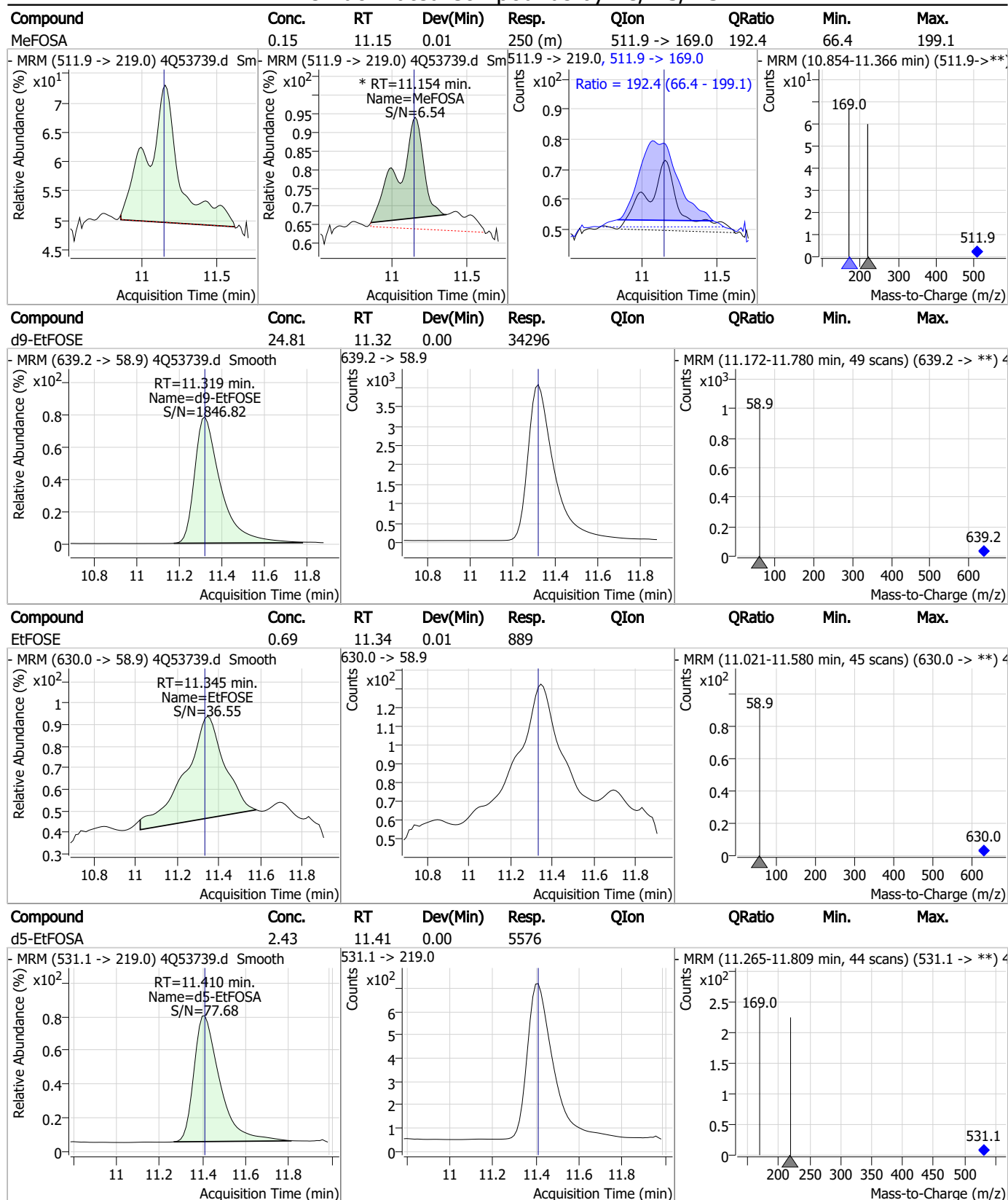
Perfluorinated Compounds by LC/MS/MS



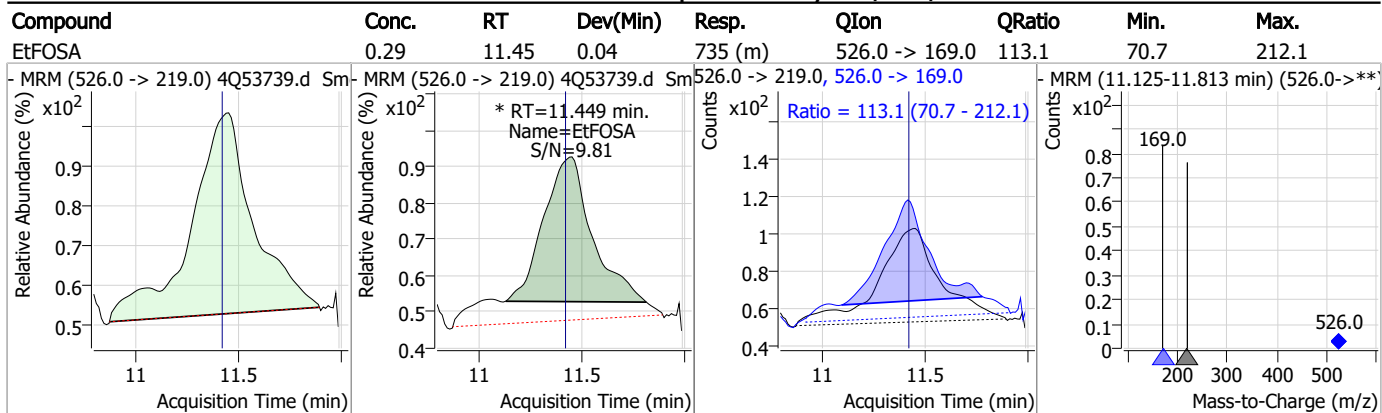
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.2.2
7

Manual Integration Approval Summary

Sample Number: S4Q785-IBLK

Method: EPA DRAFT 1633

Lab FileID: 4Q53739.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 17:57

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
MeFOSE	24448-09-7		11.06	Split peak
MeFOSA	31506-32-8		11.15	Split peak
EtFOSA	4151-50-2		11.45	Split peak

7.2.2.1
7

Natasha Gumtie
11/14/23 15:56

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53744.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 7:11:19 PM
 Sample Name : op99997-bs
 Vial : P4-D1
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	29903	10.00 µg/L	-0.013
M5-PFPeA	4.137	268.3 -> 223.0	35556	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	27246	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	25696	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	29924	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	13103	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8313	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10616	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10302	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9329	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	5287	2.50 µg/L	-0.025
M3-PFBS	5.165	302.1 -> 79.9	7787	2.50 µg/L	-0.038
M3-PFHxS	7.017	402.1 -> 79.9	6499	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6379	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	761	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1672	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2322	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	11754	5.00 µg/L	-0.025
M3-HFPO-DA	5.664	286.9 -> 168.9	24704	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	9440	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	20143	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	27934	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	4816	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3578	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5410	2.50 µg/L	-0.026
13C3-PFBA	2.691	216.0 -> 172.0	37356	5.00 µg/L	-0.013
18O2-PFHxS	7.016	403.0 -> 83.9	3724	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	29372	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	8568	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	11283	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	26715	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	761	5.97 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 119.4%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1672	6.23 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 124.6%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2322	6.13 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.6%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10302	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.6%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9329	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C3-PFBS	5.165	302.1 -> 79.9	7787	2.79 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.5%		
13C3-PFHxS	7.017	402.1 -> 79.9	6499	2.82 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.6%	
13C4-PFBA	2.686	216.8 -> 171.9	29903	3.84 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 38.4%	
13C4-PFHpA	6.267	367.1 -> 322.0	25696	2.76 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.3%	
13C5-PFHxA	5.310	318.0 -> 273.0	27246	2.73 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.4%	
13C5-PFPeA	4.137	268.3 -> 223.0	35556	5.46 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.1%	
13C6-PFDA	7.992	519.1 -> 474.1	8313	1.32 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.5%	
13C7-PFUnDA	8.448	570.0 -> 525.1	10616	1.46 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 116.5%	
13C8-FOSA	9.794	506.1 -> 77.8	5287	2.04 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.8%	
13C8-PFOA	6.964	421.1 -> 376.0	29924	2.85 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.1%	
13C8-PFOS	8.117	507.1 -> 79.9	6379	2.47 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C9-PFNA	7.509	472.1 -> 427.0	13103	1.47 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 117.8%	
d3-MeFOSAA	8.074	573.2 -> 419.0	11754	5.73 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.6%	
13C3-HFPO-DA	5.664	286.9 -> 168.9	24704	10.87 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 108.7%	
d3-MeFOSA	11.126	515.0 -> 219.0	3578	1.98 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 79.3%	
d5-EtFOSAA	8.283	589.2 -> 419.0	9440	5.25 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.1%	
d7-MeFOSE	11.034	623.2 -> 58.9	20143	18.07 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 72.3%	
d9-EtFOSE	11.319	639.2 -> 58.9	27934	21.64 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 86.6%	
d5-EtFOSA	11.397	531.1 -> 219.0	4816	2.25 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.9%	
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	11571	7.69 µg/L	97
		327.1 -> 80.9	5079		
6:2FTS	6.737	427.1 -> 407.0	15085	8.34 µg/L	97
		427.1 -> 80.9	5521		
8:2FTS	7.804	527.1 -> 507.0	11046	8.75 µg/L	99
		527.1 -> 80.8	4650		
EtFOSAA	8.284	584.2 -> 419.1	4066	2.41 µg/L	#m 70
		584.2 -> 526.0	1939		
FOSA	9.798	498.1 -> 77.9	5739	2.23 µg/L	99
		498.1 -> 478.0	202		
MeFOSAA	8.087	570.1 -> 419.0	4492	2.15 µg/L	96
		570.1 -> 483.0	744		
PFBA	2.695	212.8 -> 168.9	9594	8.82 µg/L	100
PFBS	5.153	298.7 -> 79.9	5649	2.04 µg/L	98
		298.7 -> 98.8	2122		
PFDA	8.005	512.9 -> 469.0	14581	2.14 µg/L	97
		512.9 -> 219.0	3114		
PFDODA	8.880	613.1 -> 569.0	18615	2.22 µg/L	97
		613.1 -> 319.0	3240		
PFDS	9.020	599.0 -> 79.9	3811	2.31 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	1954	2.27	µg/L	98
		363.1 -> 319.0	36655			
PFHpS	7.612	363.1 -> 169.0	6667	2.41	µg/L	100
		449.0 -> 79.9	6071			
PFHxA	5.300	449.0 -> 98.9	3090	2.27	µg/L	98
		313.0 -> 269.0	21609			
PFHxS	7.018	313.0 -> 118.9	711	2.13	µg/L	84
		398.7 -> 79.9	4174			
PFNA	7.510	398.7 -> 98.9	2165	2.11	µg/L	99
		463.0 -> 419.0	17629			
PFNS	8.586	463.0 -> 219.0	4579	2.63	µg/L	98
		548.8 -> 79.9	3207			
PFOA	6.965	548.8 -> 98.9	1641	2.16	µg/L	100
		413.0 -> 369.0	31359			
PFOS	8.119	413.0 -> 169.0	6396	2.18	µg/L	82
		498.9 -> 79.9	6308			
PFPeA	4.139	498.9 -> 98.8	3087	4.52	µg/L	100
		263.0 -> 219.0	34998			
PFPeS	6.257	349.1 -> 79.9	4718	2.21	µg/L	99
		349.1 -> 98.9	2027			
PFTeDA	9.650	713.1 -> 669.0	16177	2.28	µg/L	100
		713.1 -> 168.9	1719			
PFTrDA	9.279	663.0 -> 619.0	20099	2.20	µg/L	98
		663.0 -> 168.9	2953			
PFUnDA	8.449	563.1 -> 519.0	18565	2.14	µg/L	98
		563.1 -> 269.1	4171			
11CI-PF3OUdS	9.306	630.9 -> 450.9	33648	4.36	µg/L	100
		632.9 -> 452.9	10368			
9CI-PF3ONS	8.451	530.8 -> 351.0	33575	4.31	µg/L	95
		532.8 -> 353.0	10789			
ADONA	6.544	376.9 -> 250.9	86515	5.06	µg/L	100
		376.9 -> 84.8	21521			
HFPO-DA	5.665	284.9 -> 168.9	12303	4.70	µg/L	99
		284.9 -> 184.9	1130			
3:3FTCA	3.617	241.0 -> 177.0	2243	13.24	µg/L	99
		241.0 -> 117.0	194			
5:3FTCA	5.996	341.0 -> 237.1	85089	50.80	µg/L	99
		341.0 -> 217.0	62391			
7:3FTCA	7.536	441.0 -> 316.9	41414	55.11	µg/L	95
		441.0 -> 336.9	97400			
EtFOSA	11.399	526.0 -> 219.0	9718	4.47	µg/L	92
		526.0 -> 169.0	12771			
EtFOSE	11.332	630.0 -> 58.9	11944	11.44	µg/L	100
		511.9 -> 219.0	6025			
MeFOSA	11.128	511.9 -> 169.0	8860	4.64	µg/L	88
		616.1 -> 58.9	9980			
MeFOSE	11.047	699.1 -> 79.9	2988	10.87	µg/L	100
		699.1 -> 98.8	1674			
PFDoDS	9.777	295.0 -> 201.0	3443	5.48	µg/L	89
		295.0 -> 84.9	1013			
NFDHA	5.191	279.0 -> 85.1	22429	5.03	µg/L	100
		229.0 -> 84.9	15538			
PFMBA	3.290	314.8 -> 134.9	34670	4.60	µg/L	98
		314.8 -> 82.9	1212			

= Qualifier out of range, m = manually integrated, + = Area summed

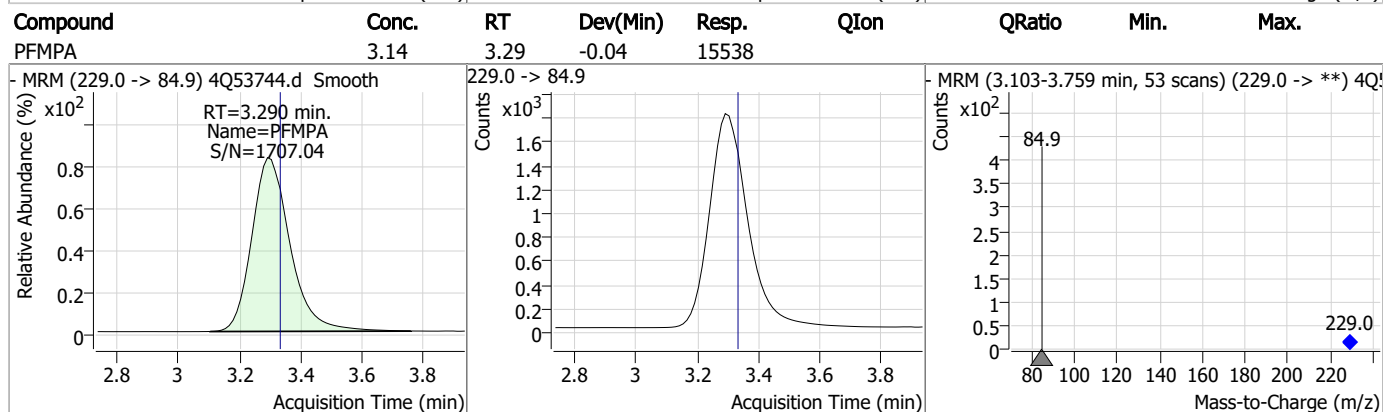
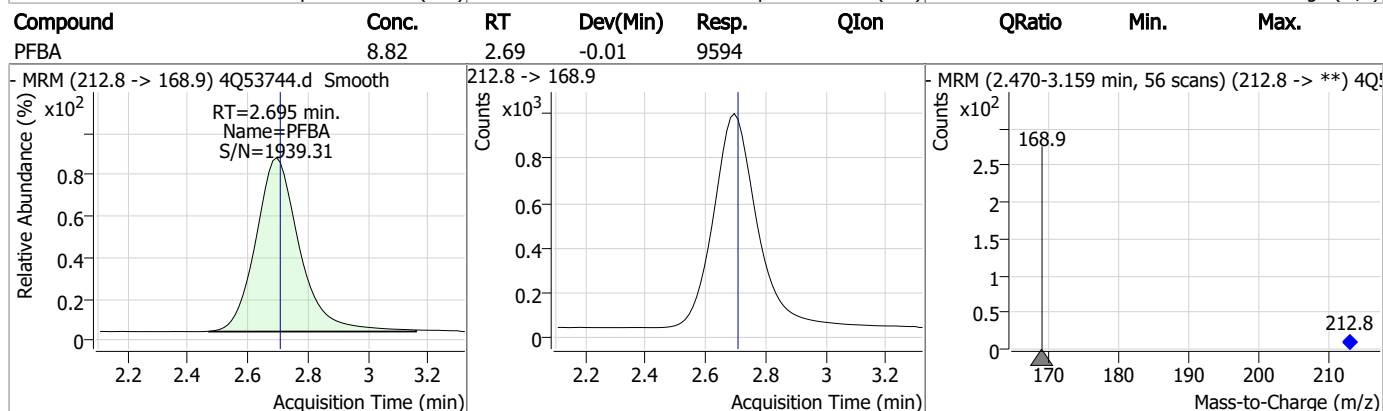
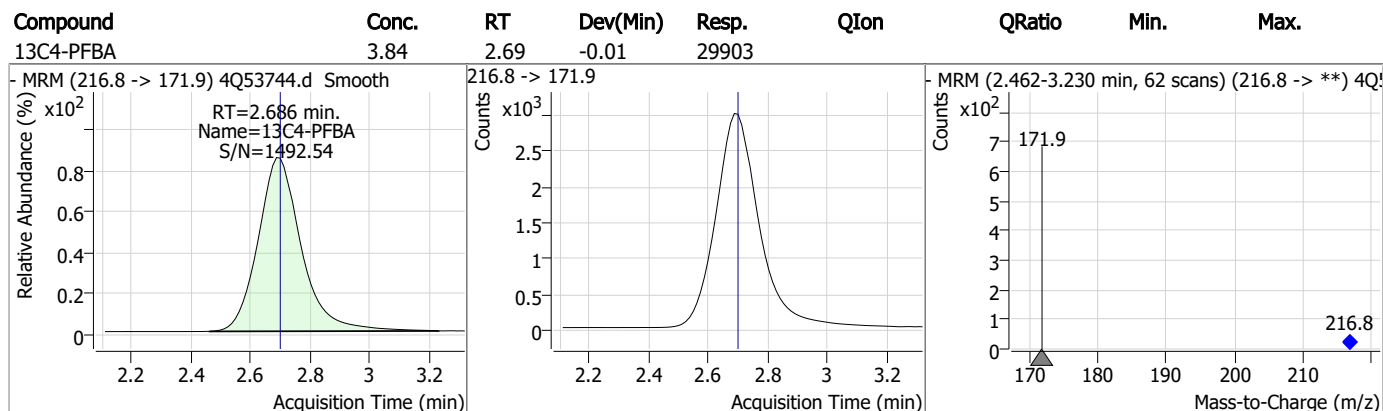
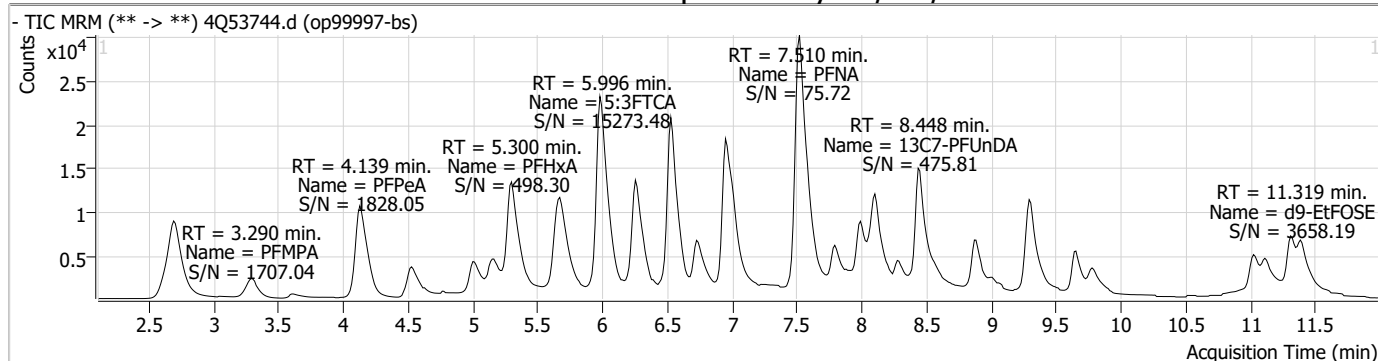
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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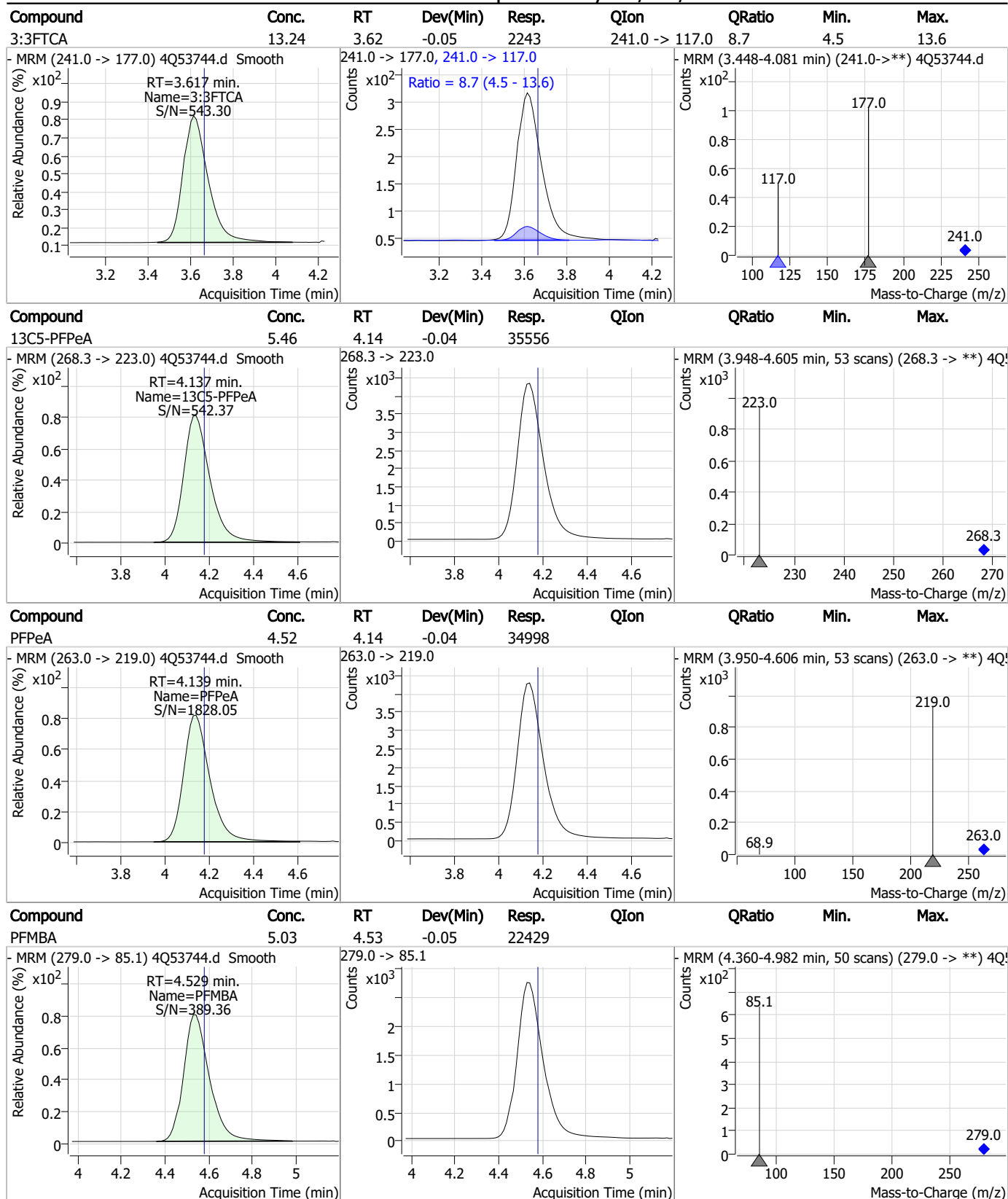
7.3.1
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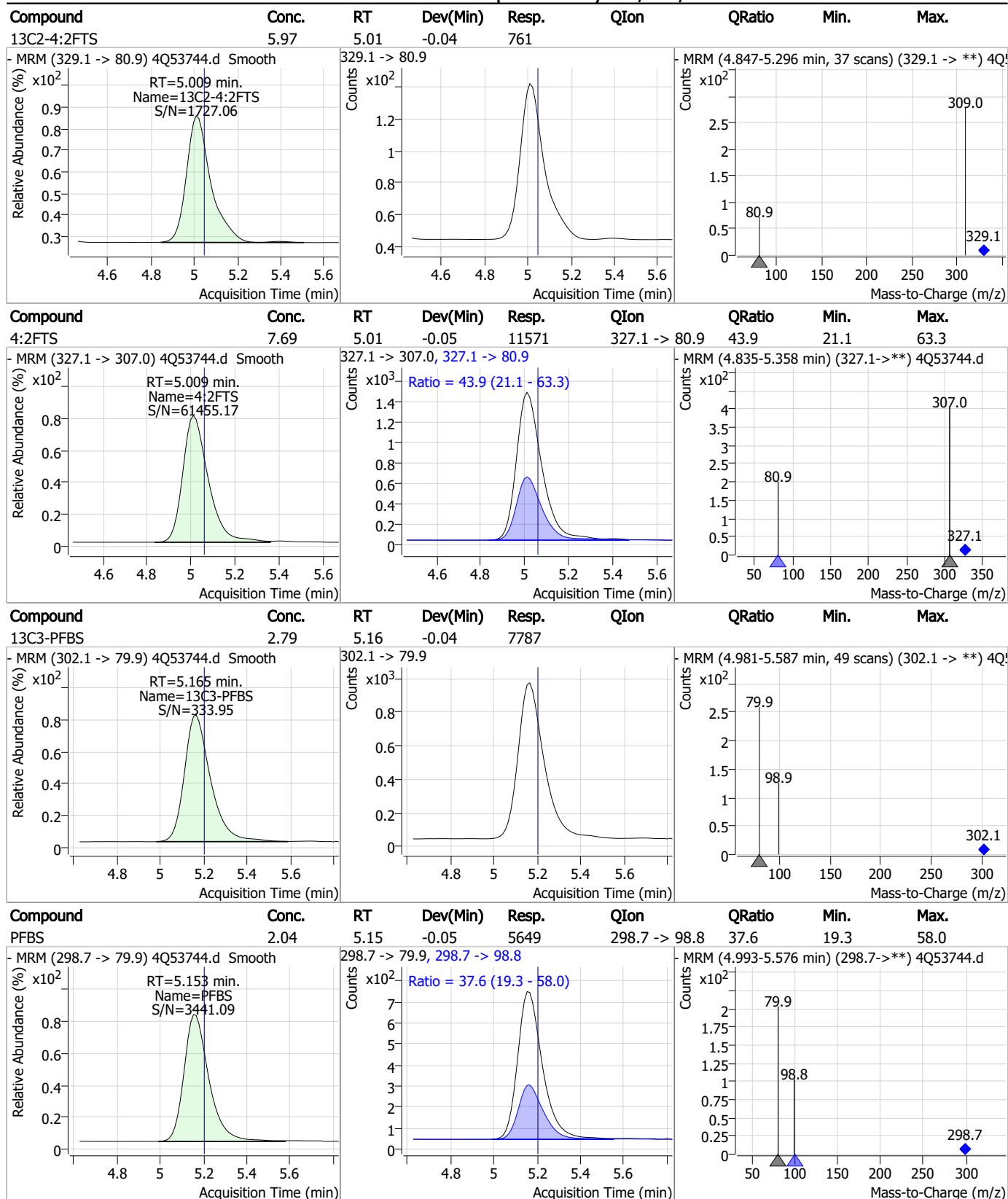
Perfluorinated Compounds by LC/MS/MS



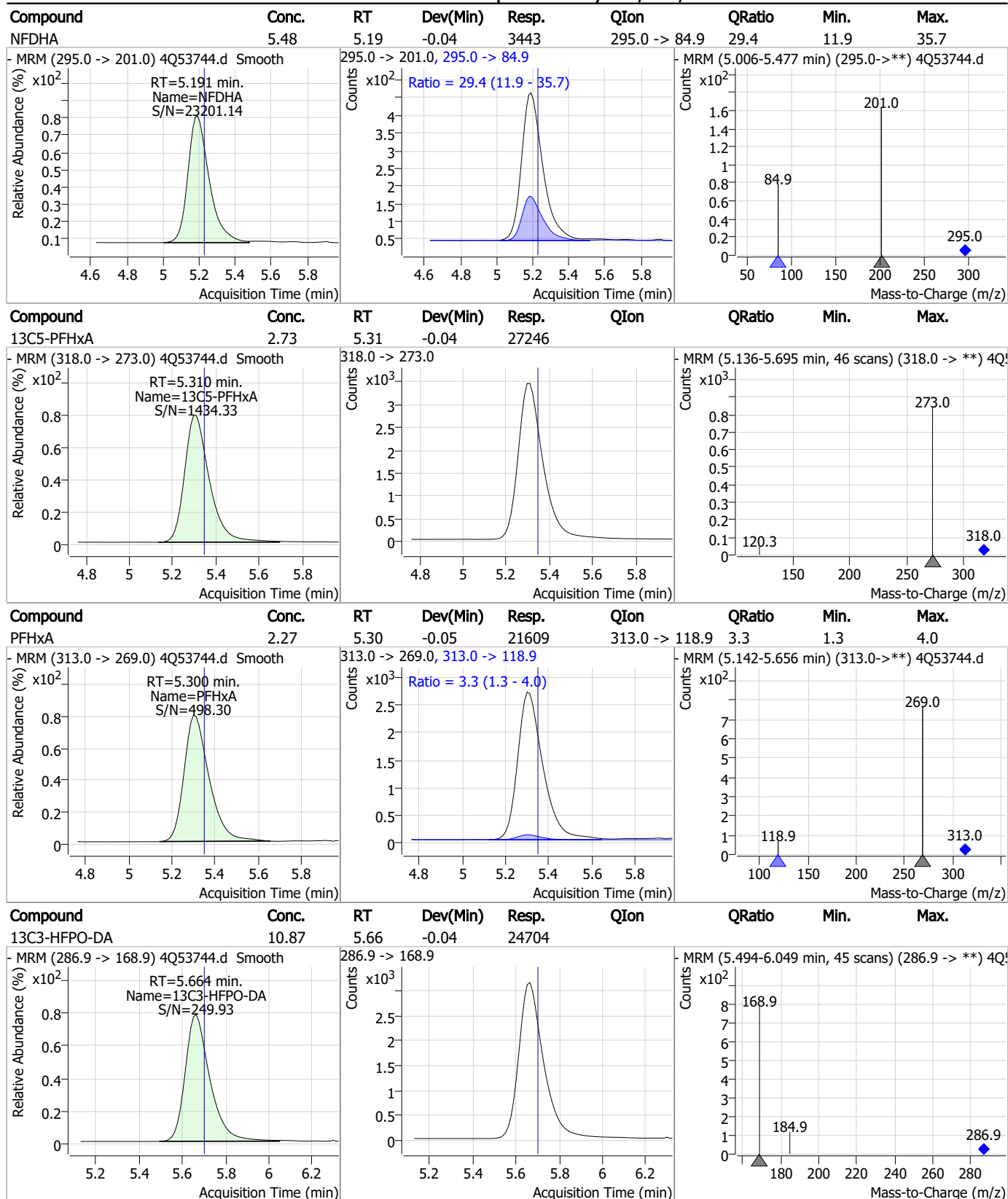
Perfluorinated Compounds by LC/MS/MS



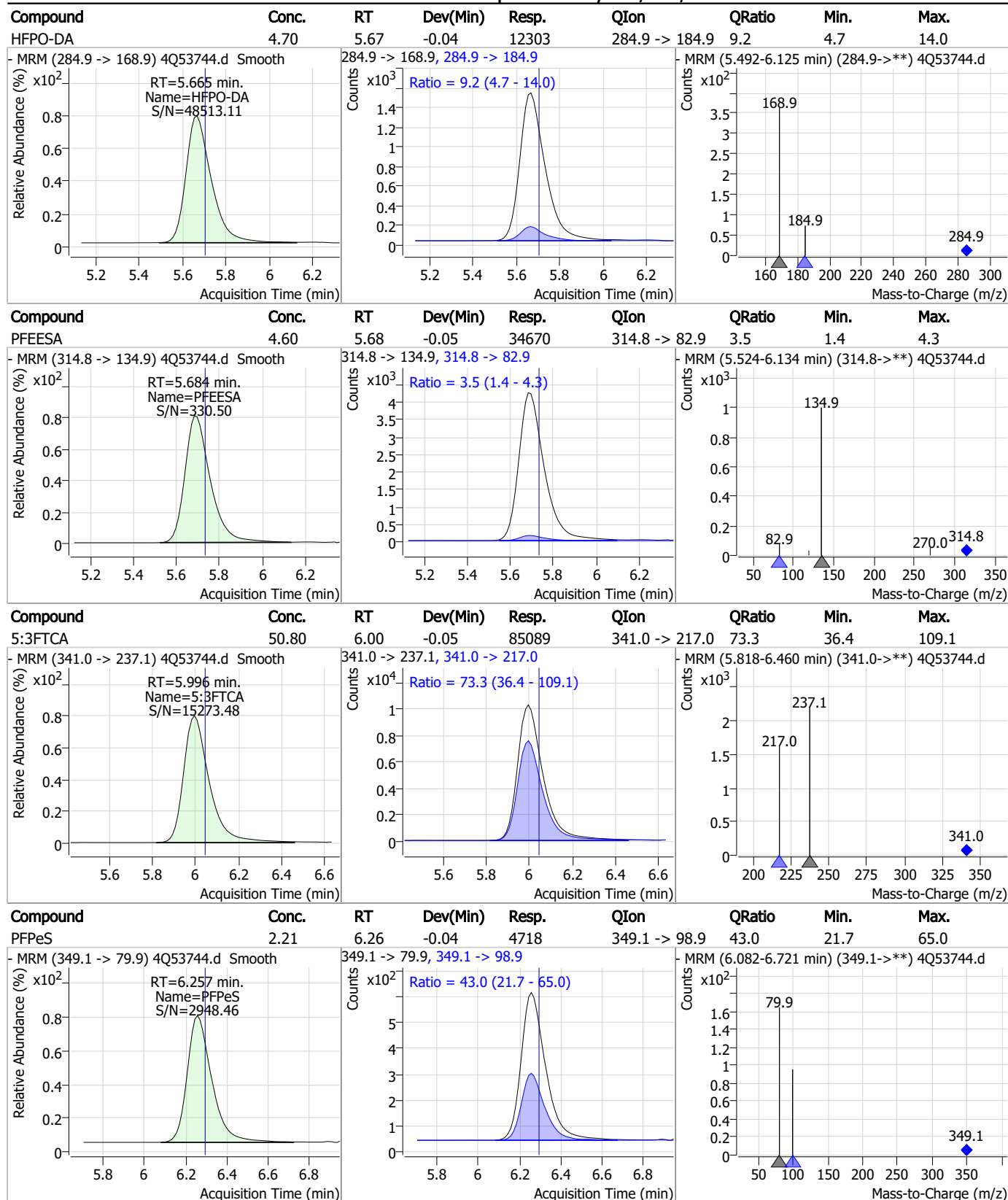
Perfluorinated Compounds by LC/MS/MS



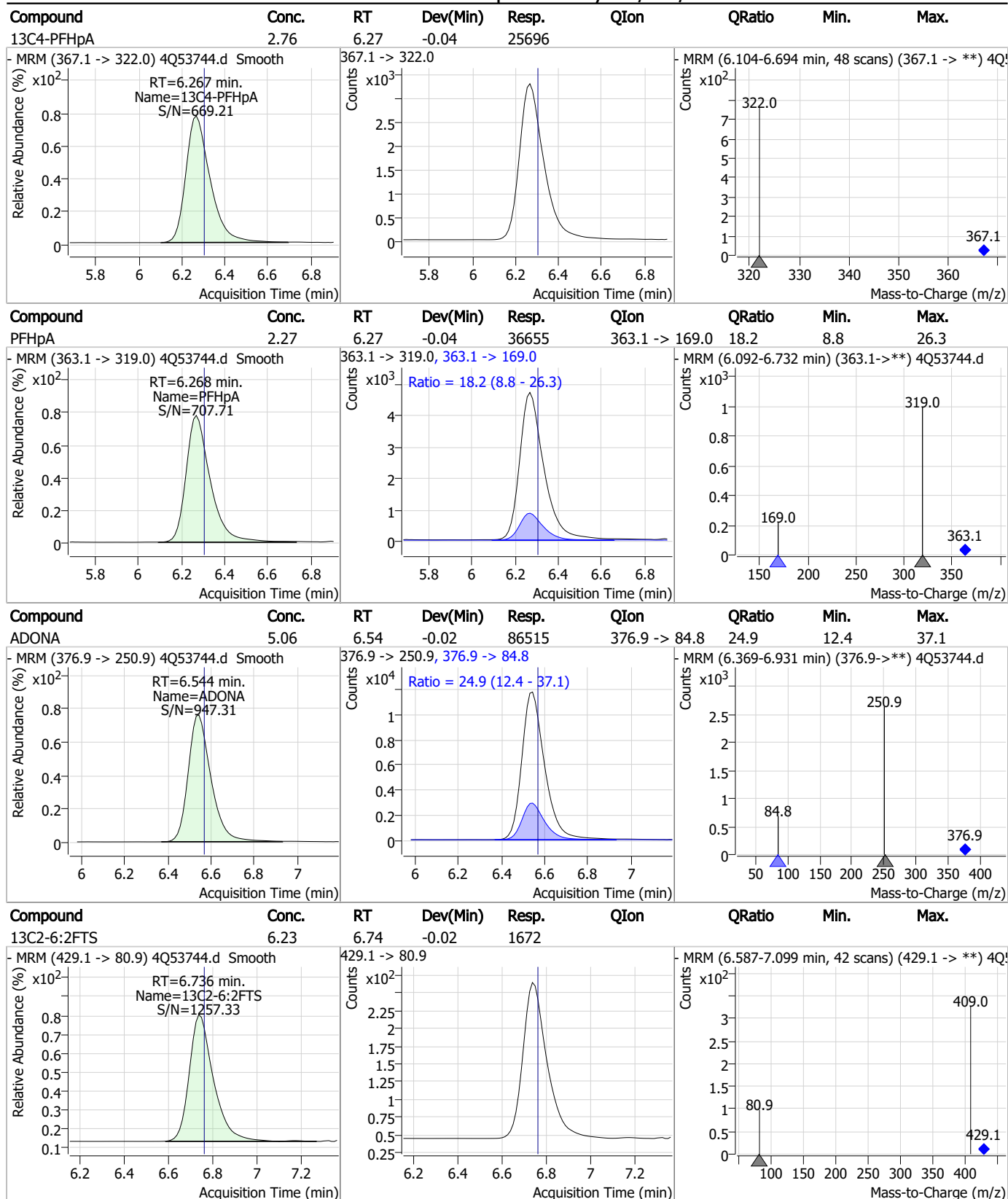
Perfluorinated Compounds by LC/MS/MS



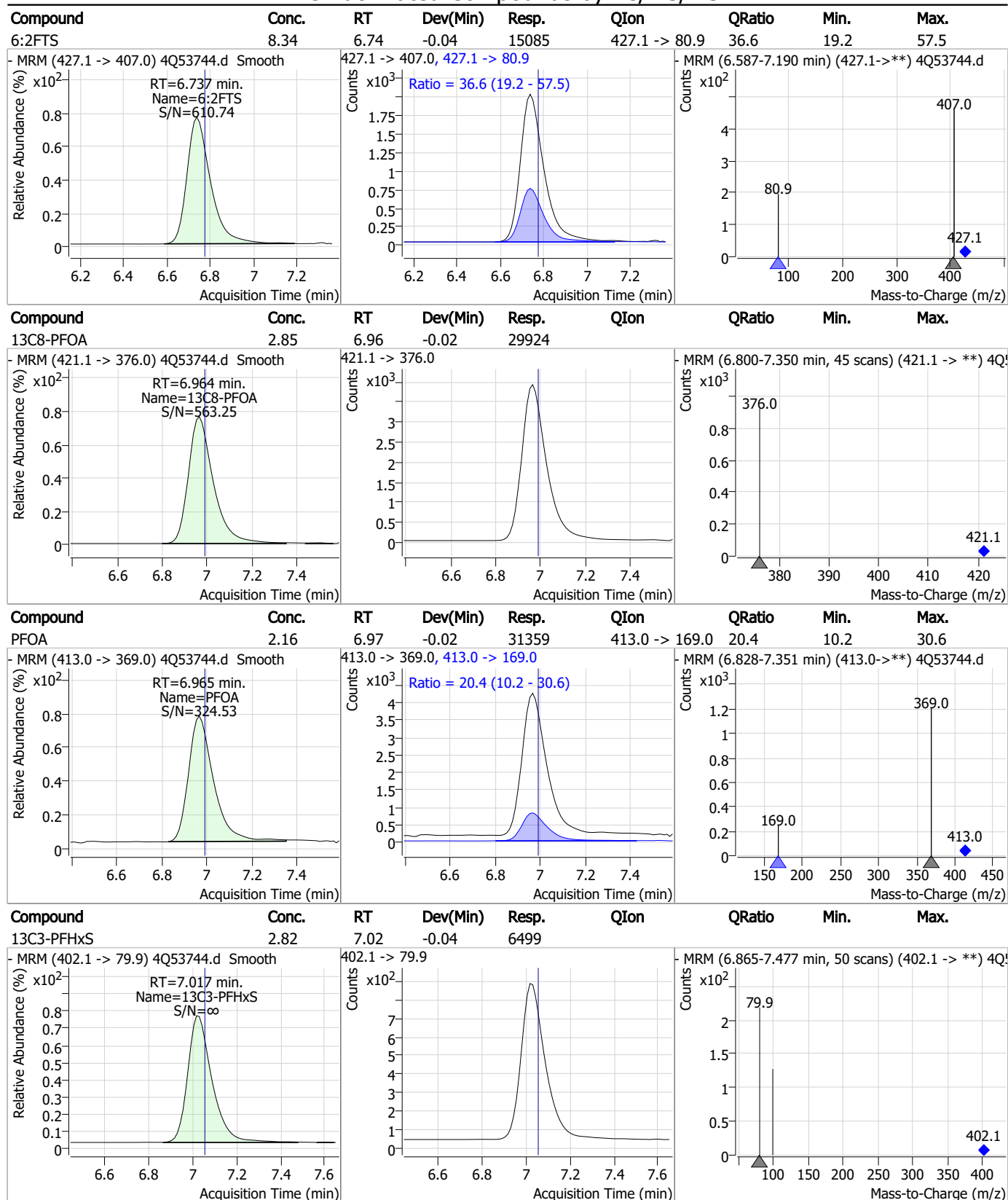
Perfluorinated Compounds by LC/MS/MS



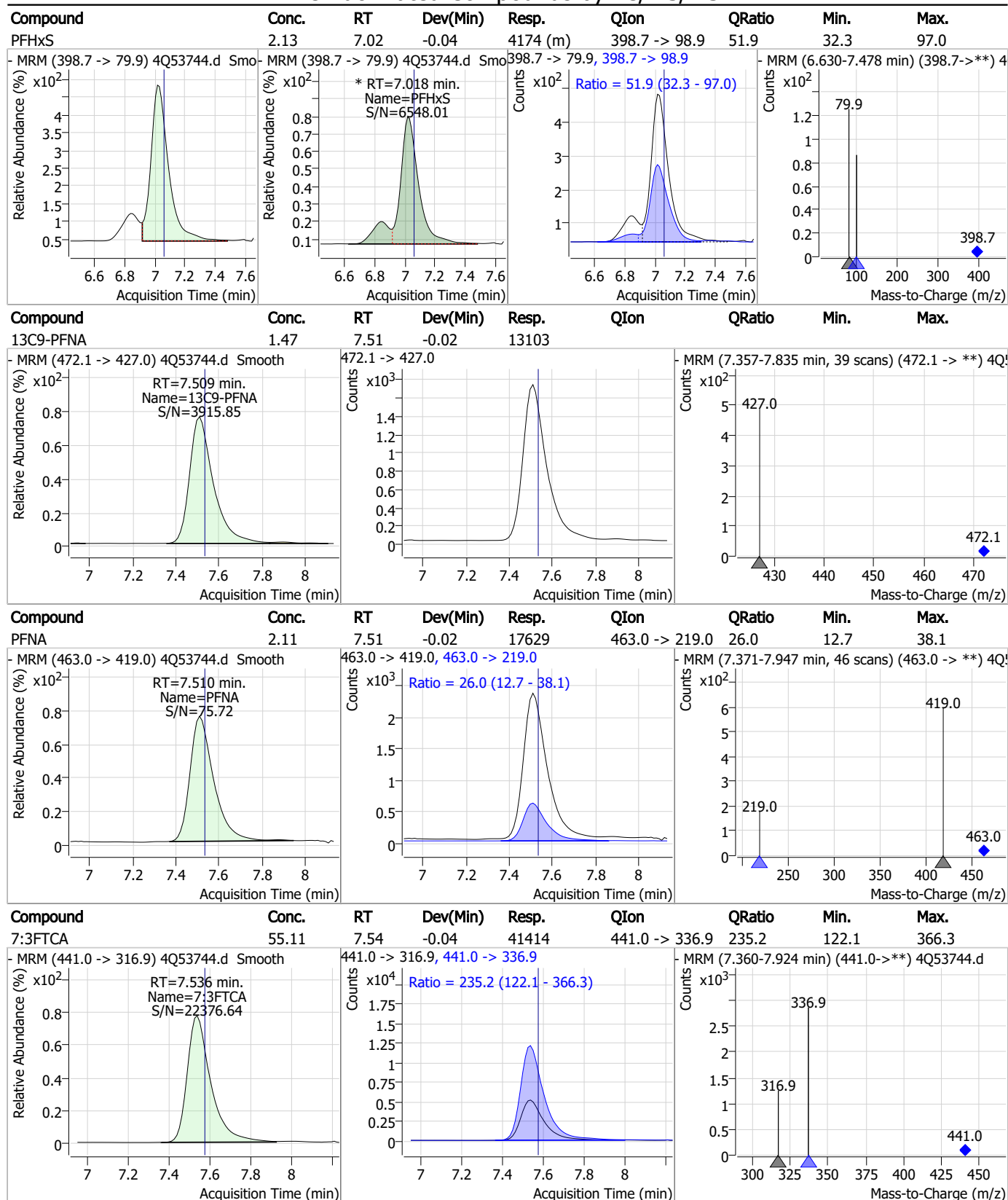
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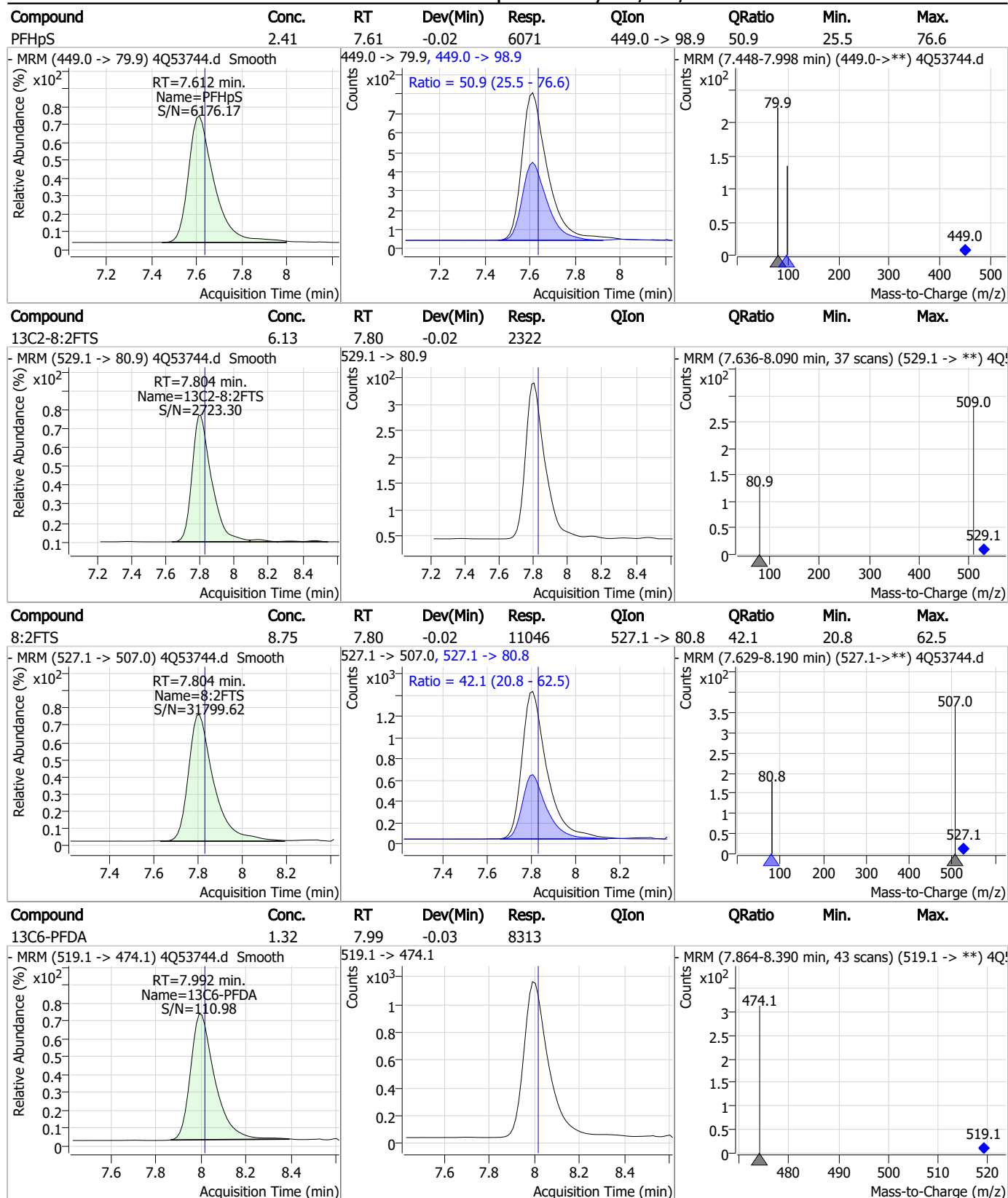
Perfluorinated Compounds by LC/MS/MS



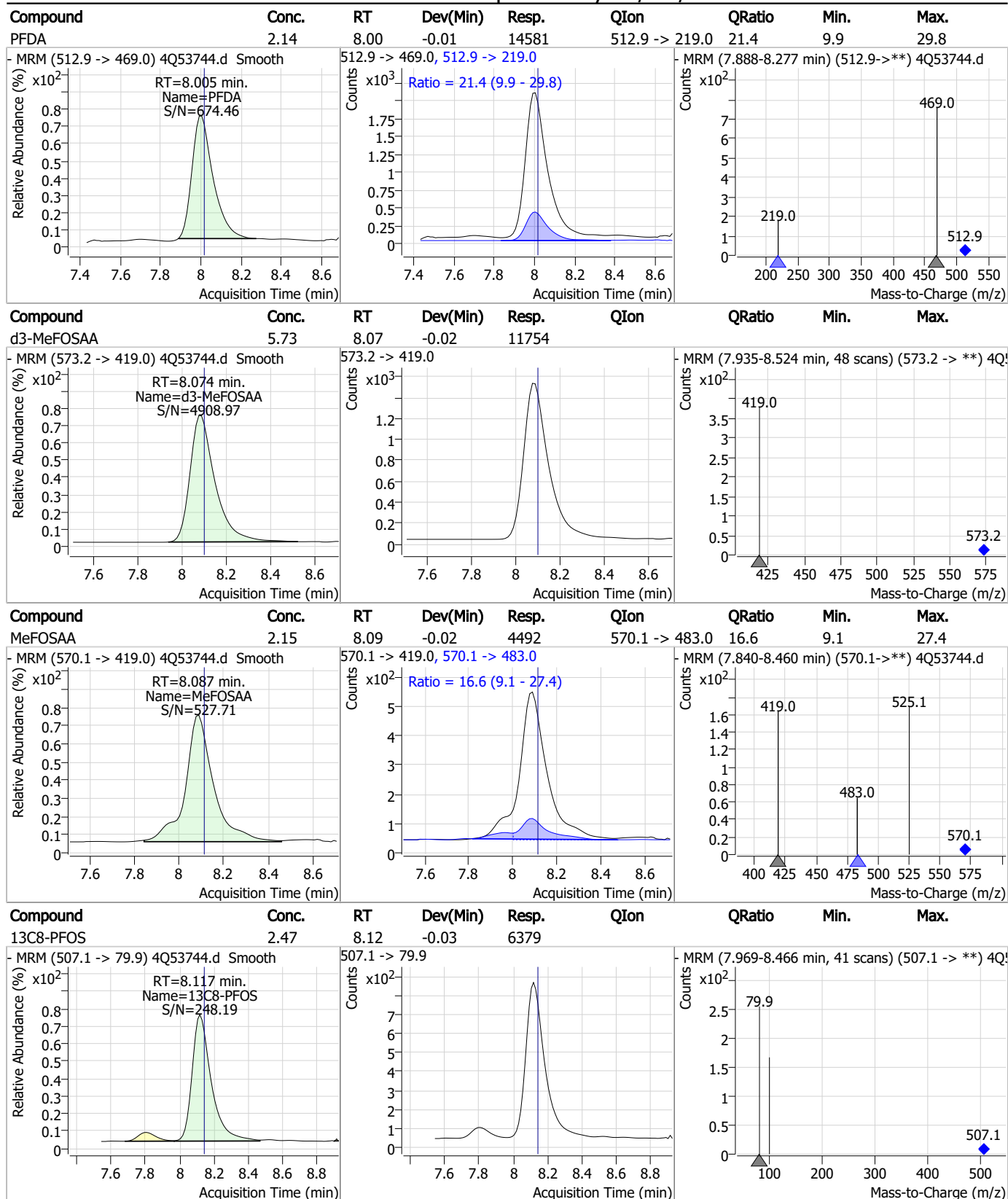
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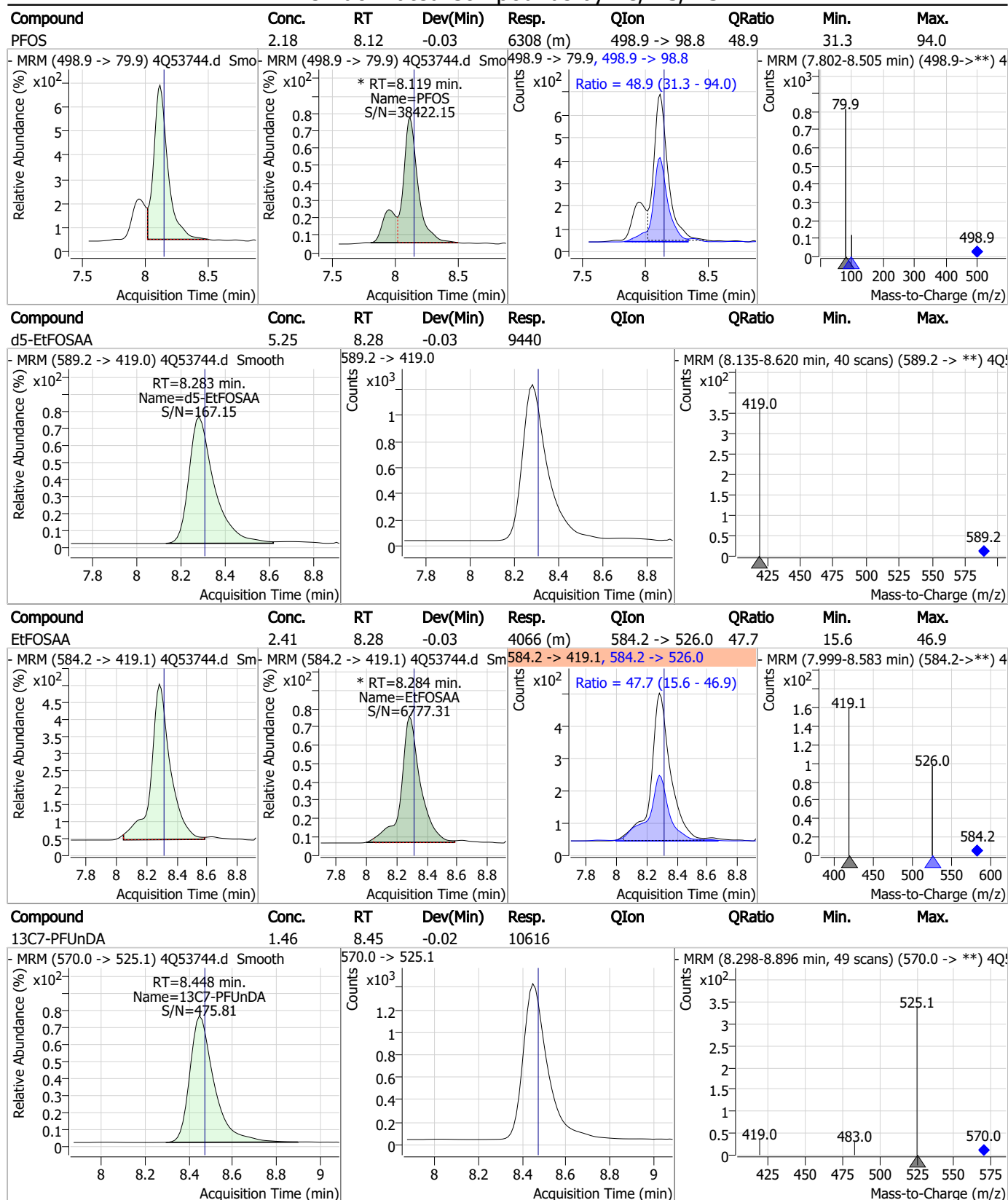
Perfluorinated Compounds by LC/MS/MS



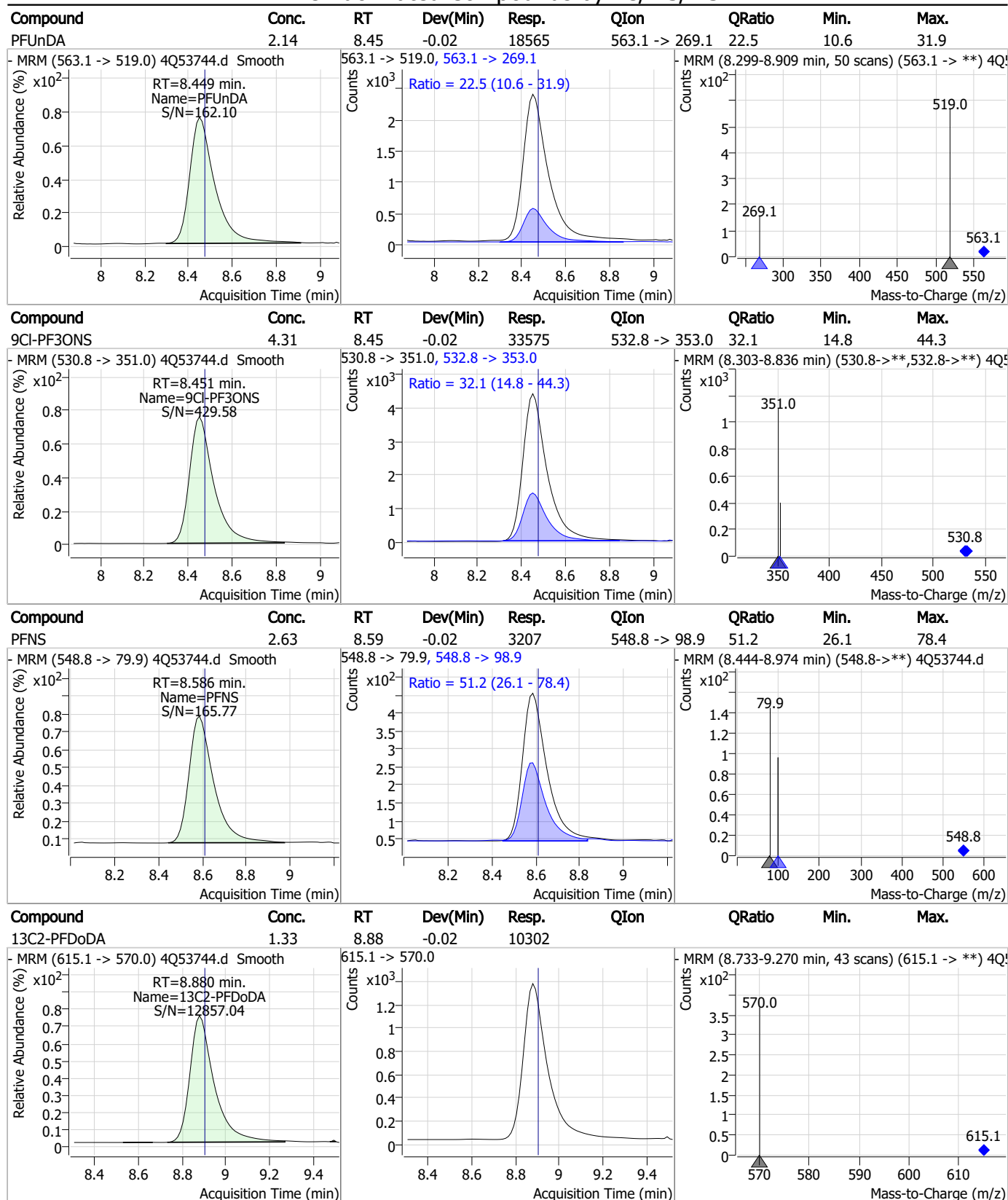
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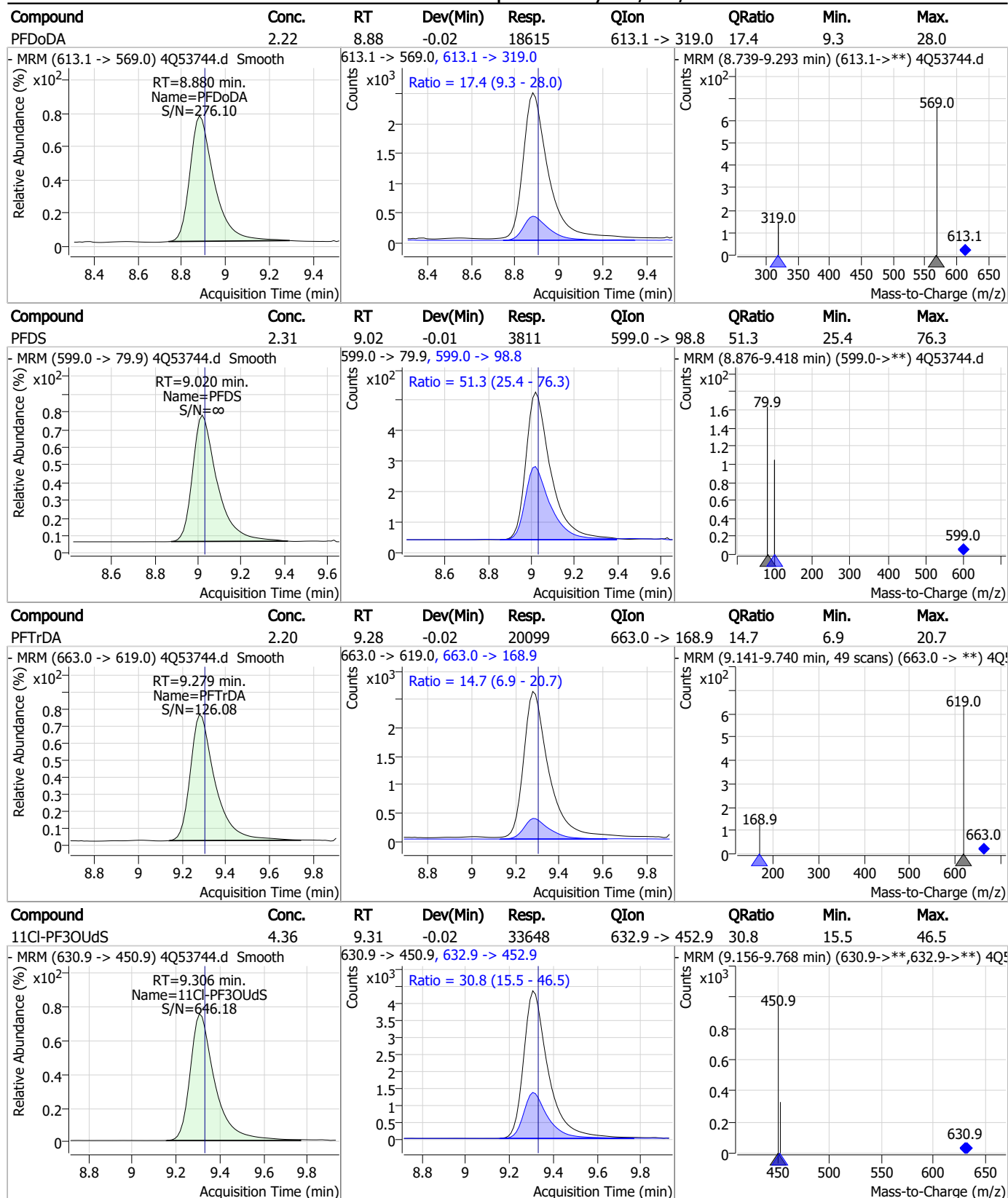
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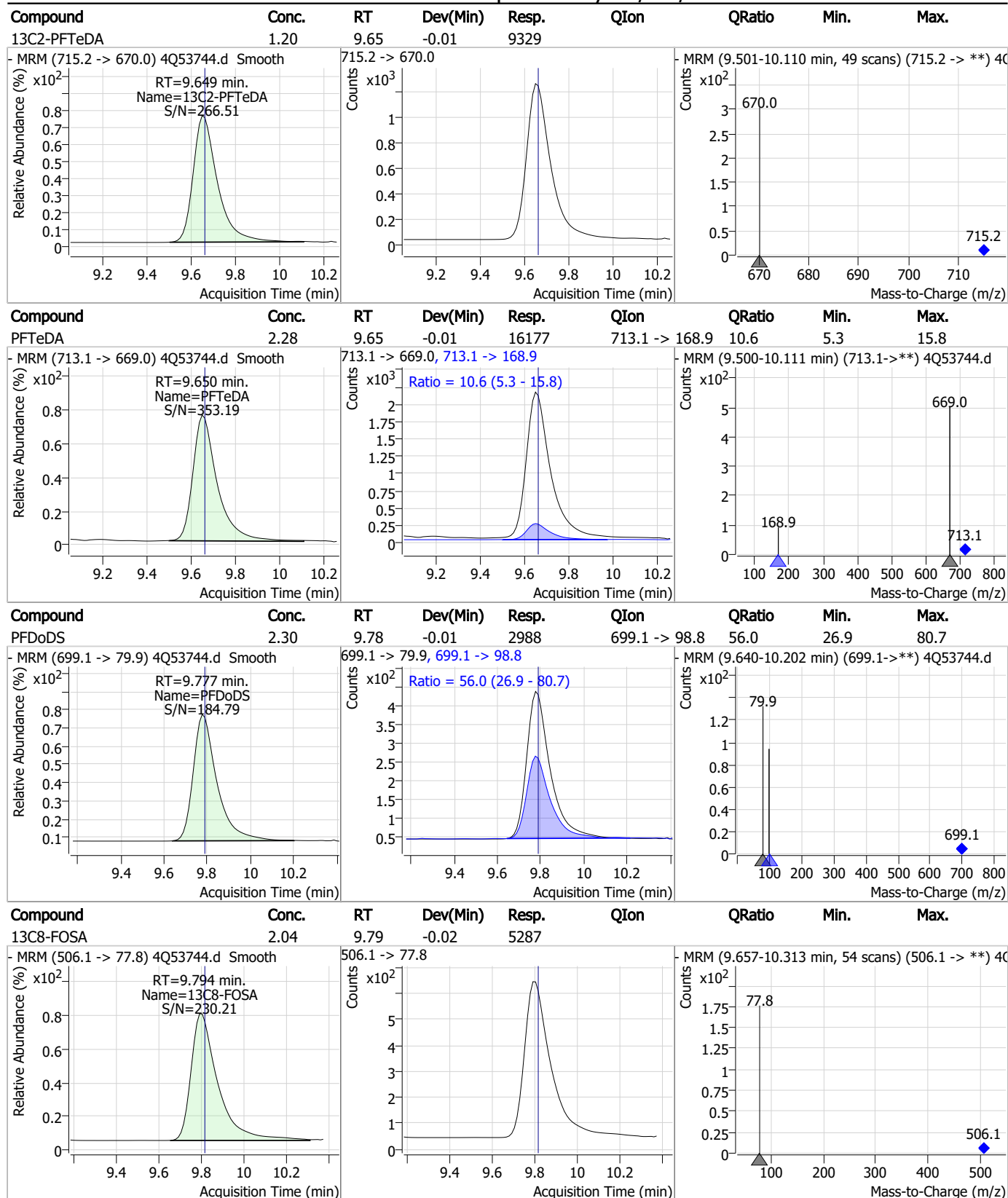
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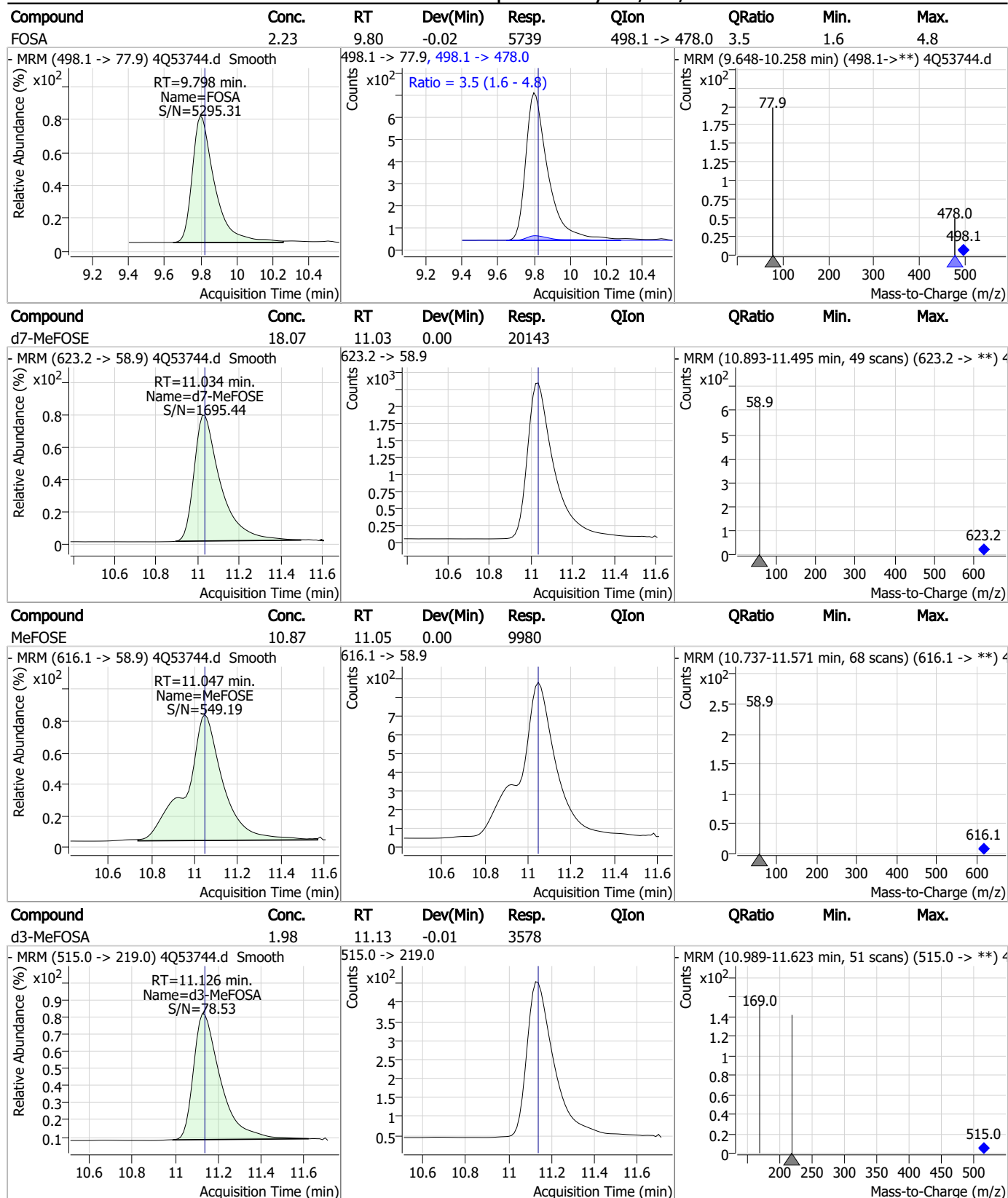
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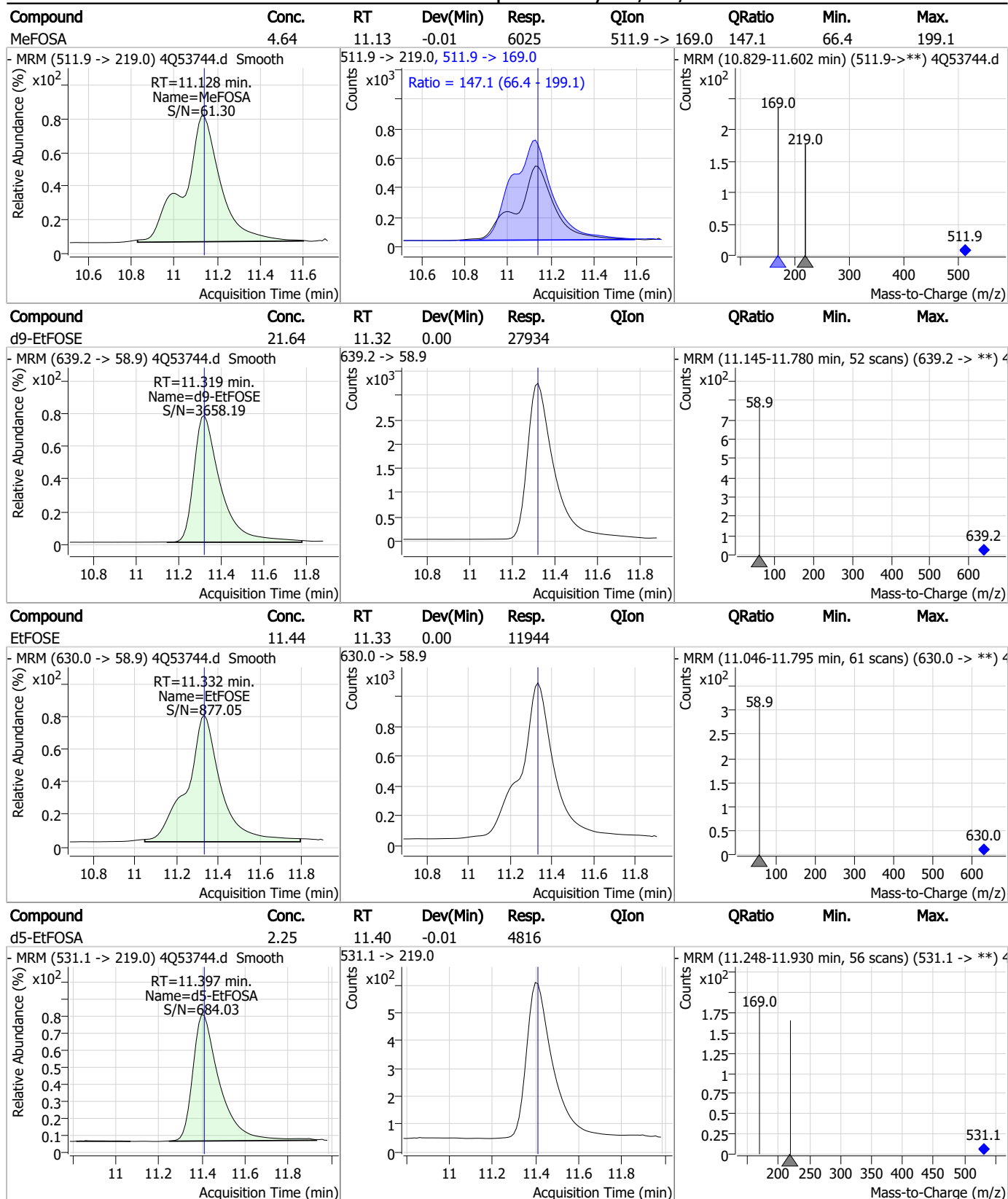
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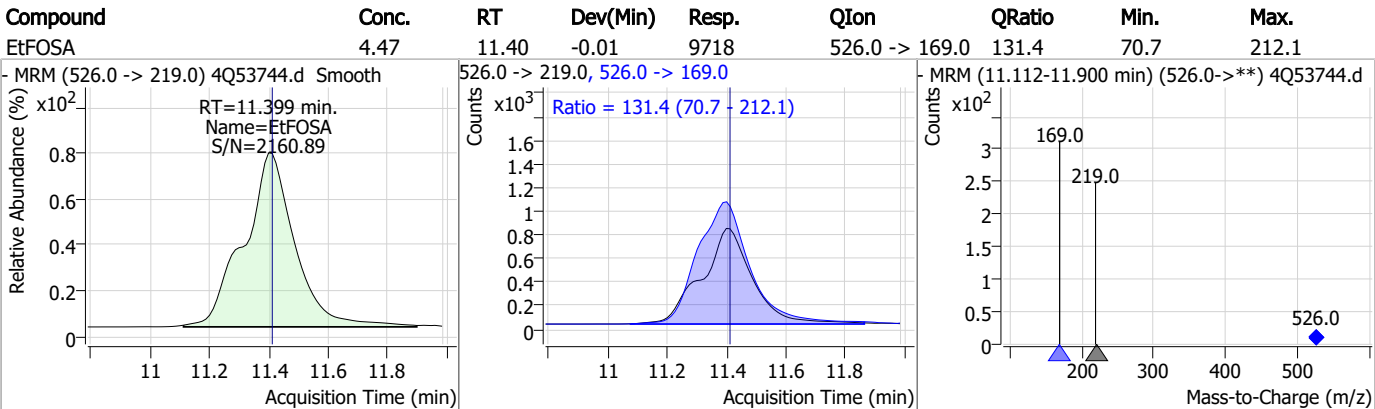
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.31
7

Manual Integration Approval Summary

Sample Number: OP99997-BS

Method: EPA DRAFT 1633

Lab FileID: 4Q53744.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 19:11

Supervisor approved: 11/14/23 15:56 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak

7.3.1.1
7

Natasha Gumtie
11/14/23 15:56

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53745.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 7:26:03 PM
 Sample Name : op99997-llbs:3
 Vial : P4-D2
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	92296	10.00 µg/L	0.000
M5-PFPeA	4.137	268.3 -> 223.0	37510	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	28191	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	26639	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	31131	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12767	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	9062	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	10763	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10165	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9160	1.25 µg/L	-0.012
M8-FOSA	9.806	506.1 -> 77.8	5617	2.50 µg/L	-0.012
M3-PFBS	5.165	302.1 -> 79.9	8080	2.50 µg/L	-0.038
M3-PFHxS	7.029	402.1 -> 79.9	6980	2.50 µg/L	-0.025
M8-PFOS	8.117	507.1 -> 79.9	7322	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	794	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1635	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2057	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	11818	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	25994	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	9658	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	20131	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	26600	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	4512	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	3127	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	5559	2.50 µg/L	-0.026
13C3-PFBA	2.691	216.0 -> 172.0	39262	5.00 µg/L	-0.013
18O2-PFHxS	7.028	403.0 -> 83.9	3912	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	30816	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	8717	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	12182	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	27239	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	794	5.93 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.6%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1635	5.80 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.9%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2057	5.17 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10165	1.29 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9160	1.16 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.6%		
13C3-PFBS	5.165	302.1 -> 79.9	8080	2.75 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.1%		
13C3-PFHxS	7.029	402.1 -> 79.9	6980	2.88 µg/L	-0.025

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 115.1%		
13C4-PFBA	2.699	216.8 -> 171.9	92296	11.28 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 112.8%		
13C4-PFHpA	6.267	367.1 -> 322.0	26639	2.80 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 112.1%		
13C5-PFHxA	5.310	318.0 -> 273.0	28191	2.77 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.0%		
13C5-PFPeA	4.137	268.3 -> 223.0	37510	5.65 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.9%		
13C6-PFDA	8.004	519.1 -> 474.1	9062	1.41 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 113.0%		
13C7-PFUnDA	8.448	570.0 -> 525.1	10763	1.45 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 116.1%		
13C8-FOSA	9.806	506.1 -> 77.8	5617	2.11 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 84.6%		
13C8-PFOA	6.964	421.1 -> 376.0	31131	2.83 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.2%		
13C8-PFOS	8.117	507.1 -> 79.9	7322	2.76 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.3%		
13C9-PFNA	7.509	472.1 -> 427.0	12767	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.3%		
d3-MeFOSAA	8.086	573.2 -> 419.0	11818	5.61 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.1%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	25994	11.21 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 112.1%		
d3-MeFOSA	11.139	515.0 -> 219.0	3127	1.69 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 67.4%		
d5-EtFOSAA	8.283	589.2 -> 419.0	9658	5.23 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.6%		
d7-MeFOSE	11.034	623.2 -> 58.9	20131	17.58 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 70.3%		
d9-EtFOSE	11.319	639.2 -> 58.9	26600	20.05 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 80.2%		
d5-EtFOSA	11.410	531.1 -> 219.0	4512	2.05 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 82.0%		
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	3911	2.49 µg/L	98
		327.1 -> 80.9	1610		
6:2FTS	6.737	427.1 -> 407.0	4962	2.80 µg/L	94
		427.1 -> 80.9	2091		
8:2FTS	7.804	527.1 -> 507.0	3637	3.25 µg/L	93
		527.1 -> 80.8	1680		
EtFOSAA	8.297	584.2 -> 419.1	1476	0.85 µg/L	82
		584.2 -> 526.0	608		
FOSA	9.798	498.1 -> 77.9	2109	0.77 µg/L	97
		498.1 -> 478.0	50		
MeFOSAA	8.087	570.1 -> 419.0	1654	0.79 µg/L	96
		570.1 -> 483.0	331		
PFBA	2.695	212.8 -> 168.9	9931	2.96 µg/L	100
PFBS	5.166	298.7 -> 79.9	1942	0.68 µg/L	90
		298.7 -> 98.8	638		
PFDA	8.005	512.9 -> 469.0	5190	0.70 µg/L	96
		512.9 -> 219.0	1127		
PFDODA	8.880	613.1 -> 569.0	6358	0.77 µg/L	95
		613.1 -> 319.0	1052		
PFDS	9.020	599.0 -> 79.9	1348	0.71 µg/L	96

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	653	0.75	µg/L	98
		363.1 -> 319.0	12571			
PFHpS	7.612	363.1 -> 169.0	2326	0.66	µg/L	90
		449.0 -> 79.9	1907			
PFHxA	5.313	449.0 -> 98.9	1110	0.73	µg/L	96
		313.0 -> 269.0	7184			
PFHxS	7.030	313.0 -> 118.9	282	0.66	µg/L	97
		398.7 -> 79.9	1382			
PFNA	7.510	398.7 -> 98.9	861	0.78	µg/L	96
		463.0 -> 419.0	6323			
PFNS	8.586	463.0 -> 219.0	1463	0.77	µg/L	96
		548.8 -> 79.9	1078			
PFOA	6.965	548.8 -> 98.9	598	0.70	µg/L	98
		413.0 -> 369.0	10553			
PFOS	8.119	413.0 -> 169.0	2230	0.71	µg/L	84
		498.9 -> 79.9	2364			
PFPeA	4.139	498.9 -> 98.8	1189	1.47	µg/L	100
		263.0 -> 219.0	11986			
PFPeS	6.257	349.1 -> 79.9	1634	0.71	µg/L	98
		349.1 -> 98.9	733			
PFTeDA	9.650	713.1 -> 669.0	4617	0.66	µg/L	95
		713.1 -> 168.9	565			
PFTrDA	9.279	663.0 -> 619.0	6880	0.76	µg/L	98
		663.0 -> 168.9	993			
PFUnDA	8.449	563.1 -> 519.0	6767	0.77	µg/L	100
		563.1 -> 269.1	1430			
11CI-PF3OUdS	9.306	630.9 -> 450.9	11302	1.39	µg/L	97
		632.9 -> 452.9	3348			
9CI-PF3ONS	8.451	530.8 -> 351.0	11701	1.43	µg/L	97
		532.8 -> 353.0	3649			
ADONA	6.544	376.9 -> 250.9	30163	1.68	µg/L	99
		376.9 -> 84.8	7325			
HFPO-DA	5.665	284.9 -> 168.9	4234	1.54	µg/L	100
		284.9 -> 184.9	396			
3:3FTCA	3.630	241.0 -> 177.0	1389	2.66	µg/L	95
		241.0 -> 117.0	103			
5:3FTCA	5.996	341.0 -> 237.1	30246	17.45	µg/L	99
		341.0 -> 217.0	21697			
7:3FTCA	7.536	441.0 -> 316.9	13514	17.38	µg/L	96
		441.0 -> 336.9	34012			
EtFOSA	11.399	526.0 -> 219.0	2989	1.47	µg/L	95
		526.0 -> 169.0	4027			
EtFOSE	11.332	630.0 -> 58.9	3784	3.81	µg/L	100
		511.9 -> 219.0	2175			
MeFOSA	11.128	511.9 -> 169.0	3017	1.92	µg/L	95
		616.1 -> 58.9	3496			
MeFOSE	11.047	699.1 -> 79.9	1030	0.69	µg/L	99
		699.1 -> 98.8	564			
PFDoDS	9.777	295.0 -> 201.0	1227	1.89	µg/L	90
		295.0 -> 84.9	353			
NFDHA	5.191	279.0 -> 85.1	7735	1.65	µg/L	100
		229.0 -> 84.9	9019			
PFMBA	3.303	314.8 -> 134.9	12256	1.57	µg/L	100
		314.8 -> 82.9	351			
PFEESA	5.696					

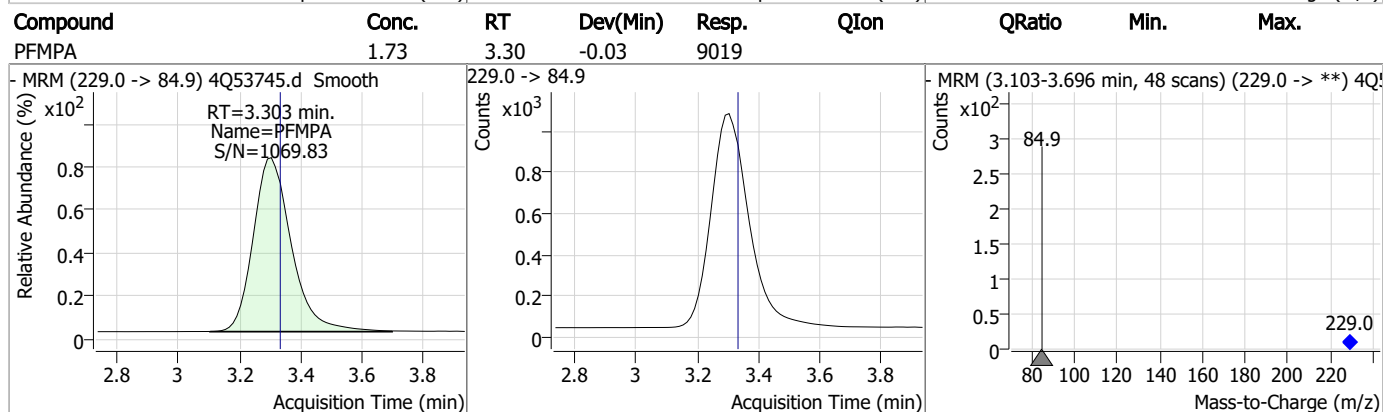
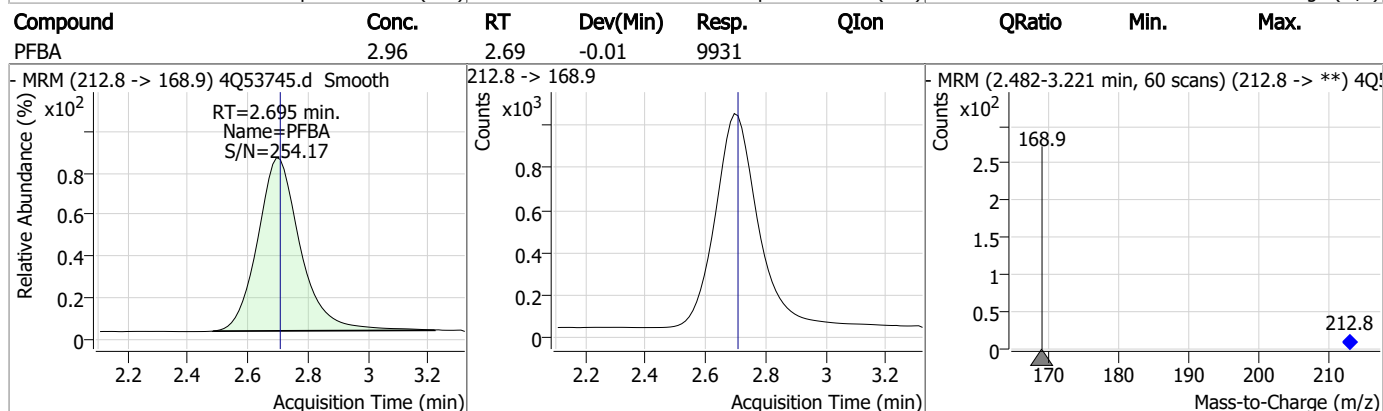
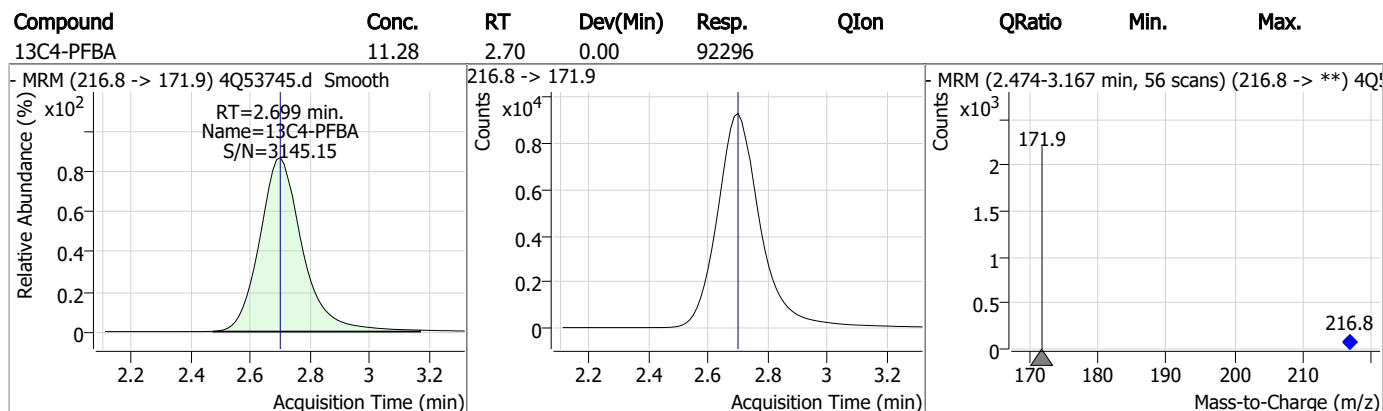
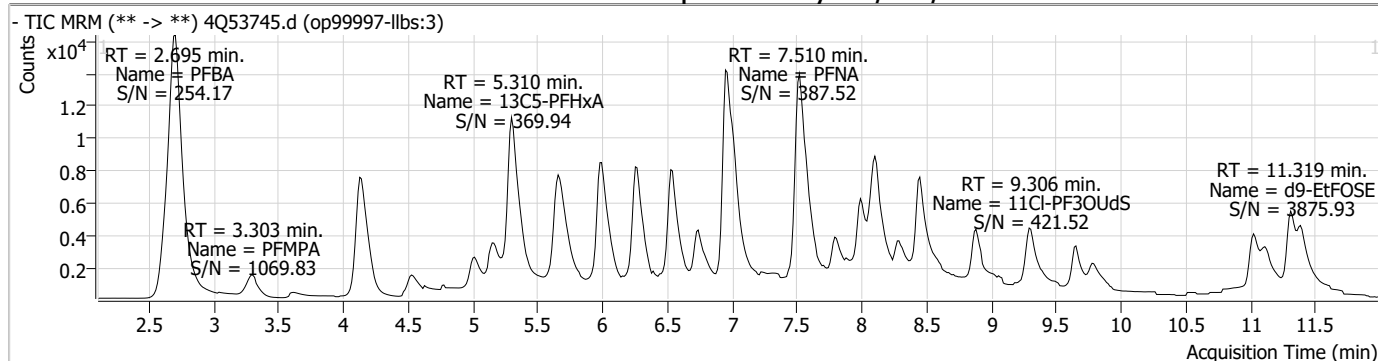
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

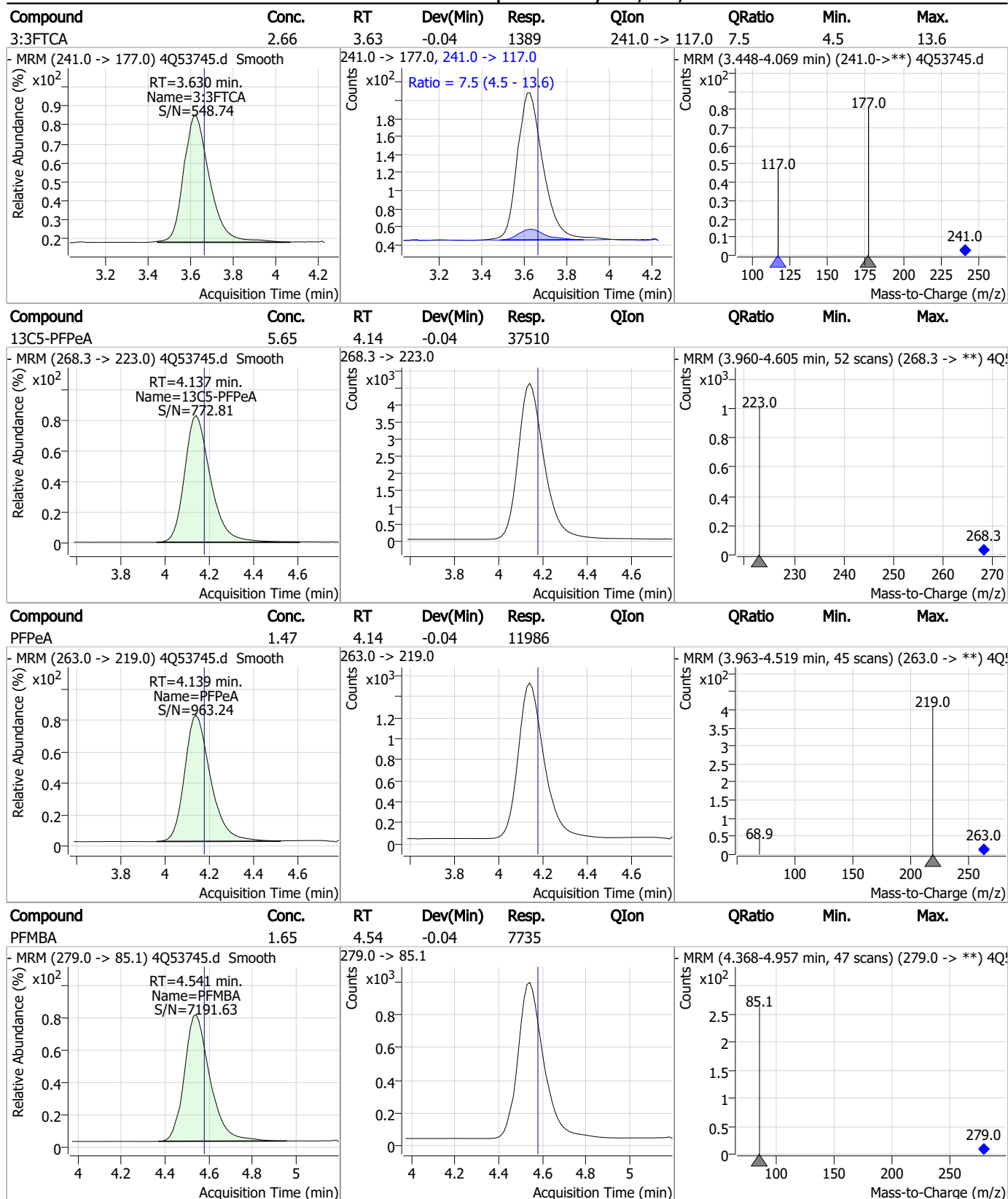
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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7.3.2
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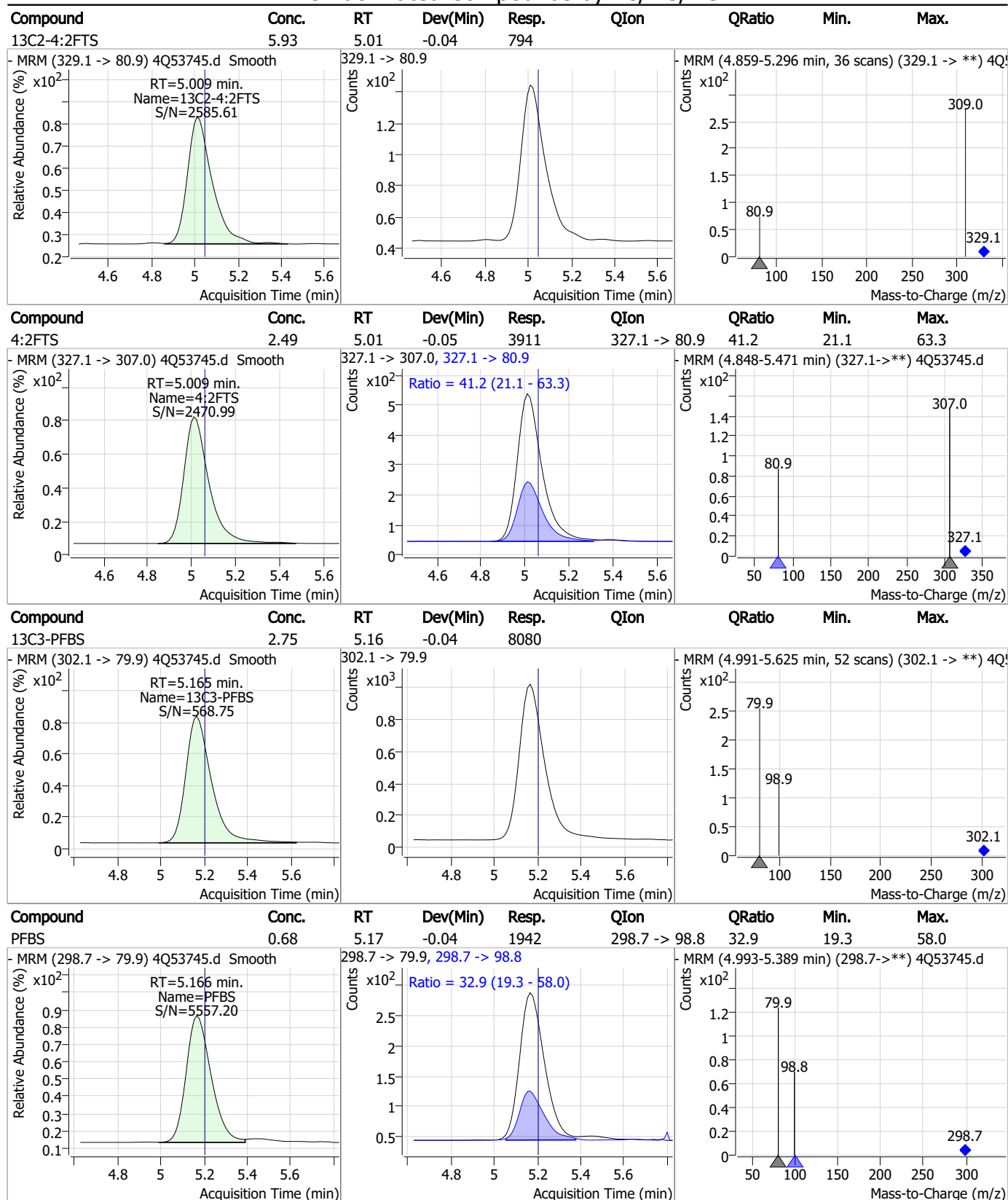
Perfluorinated Compounds by LC/MS/MS



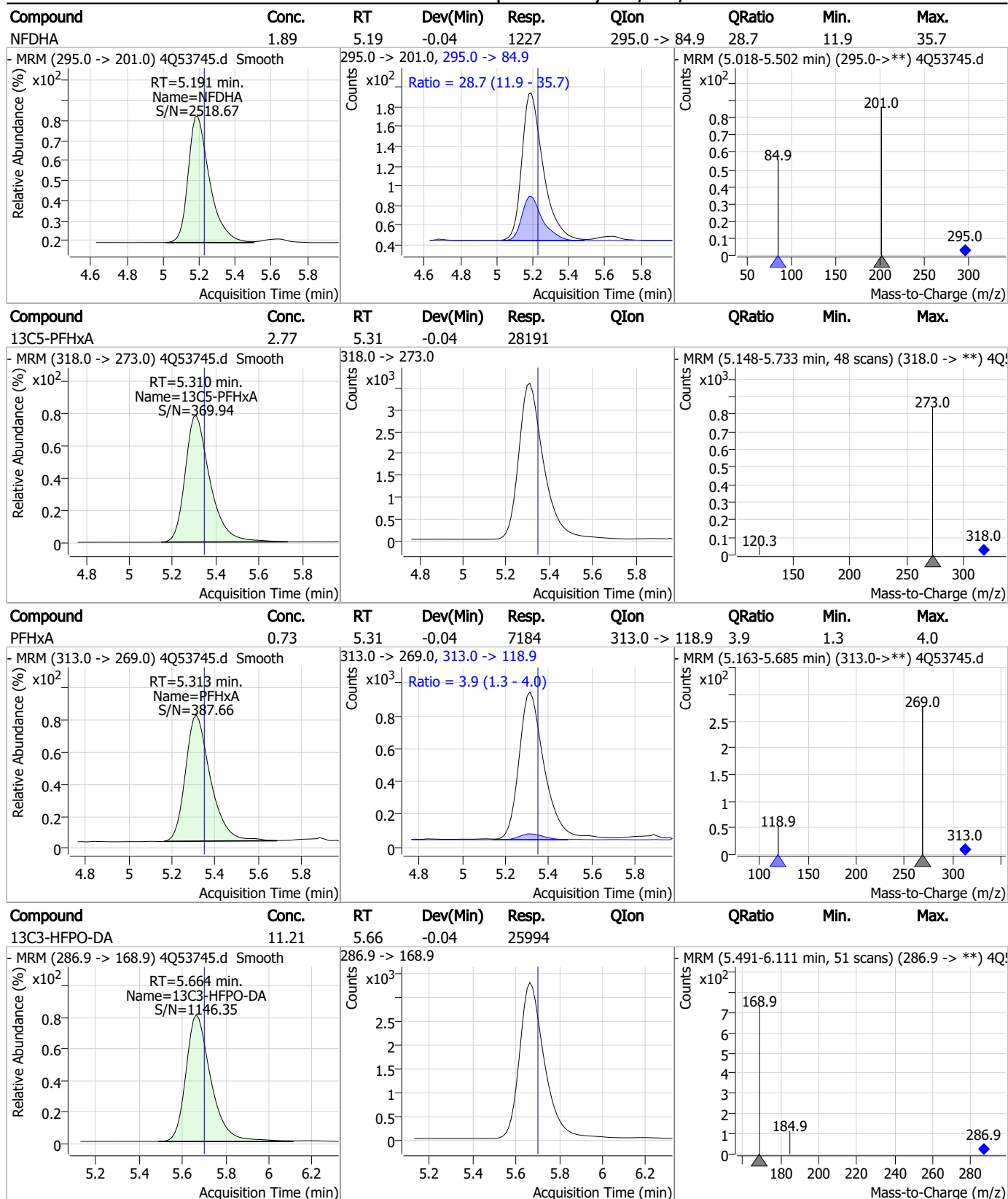
Perfluorinated Compounds by LC/MS/MS



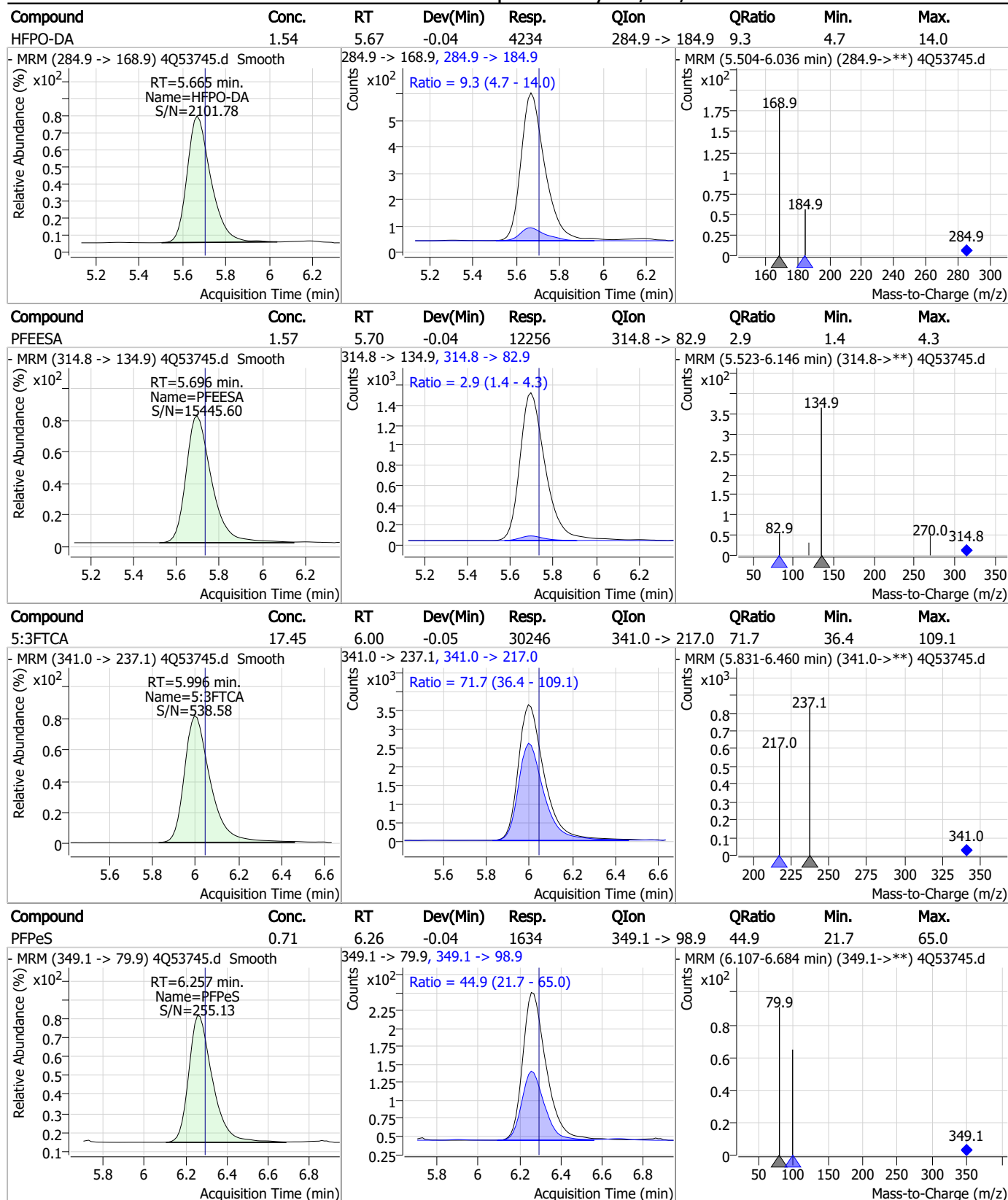
Perfluorinated Compounds by LC/MS/MS



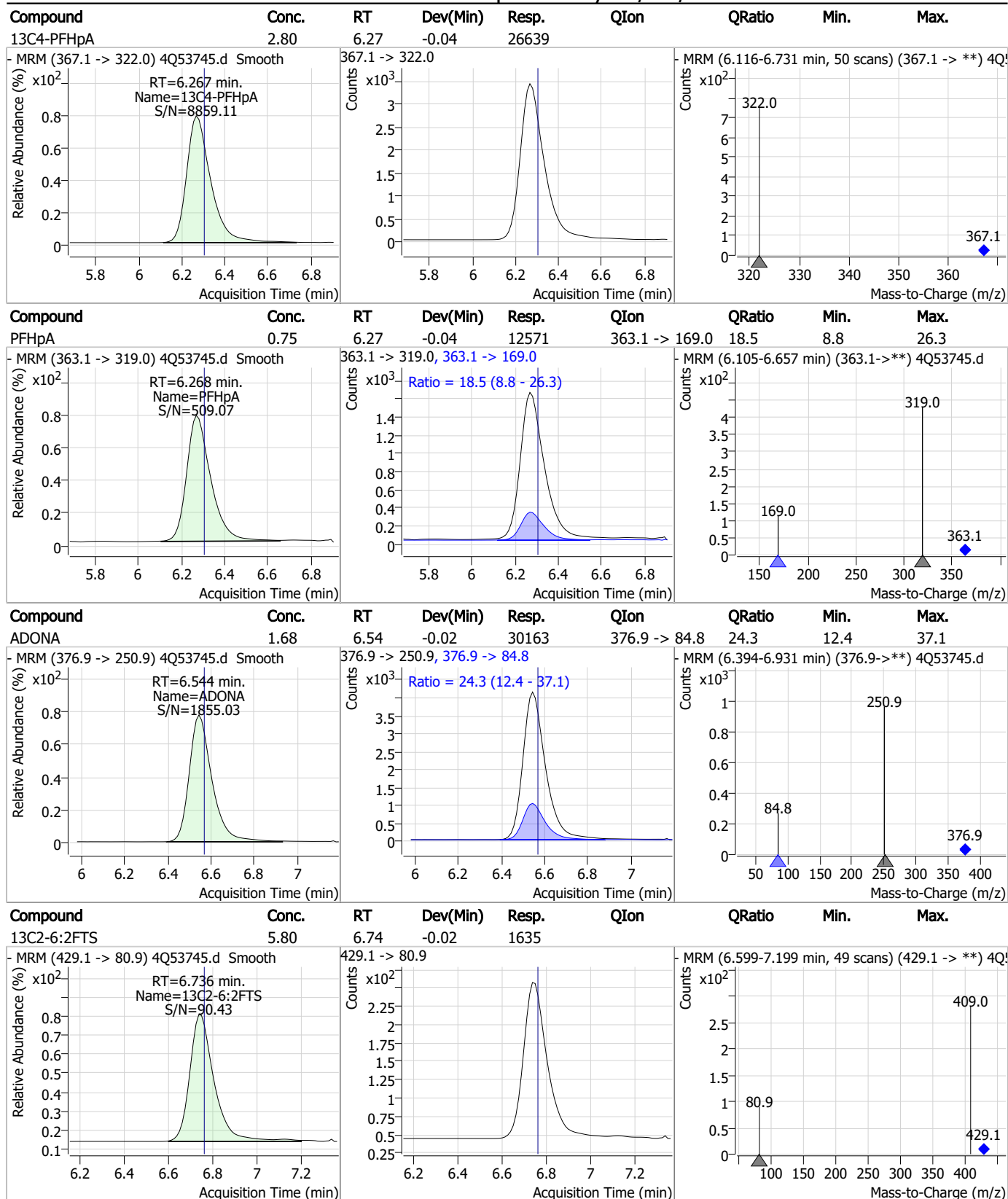
Perfluorinated Compounds by LC/MS/MS



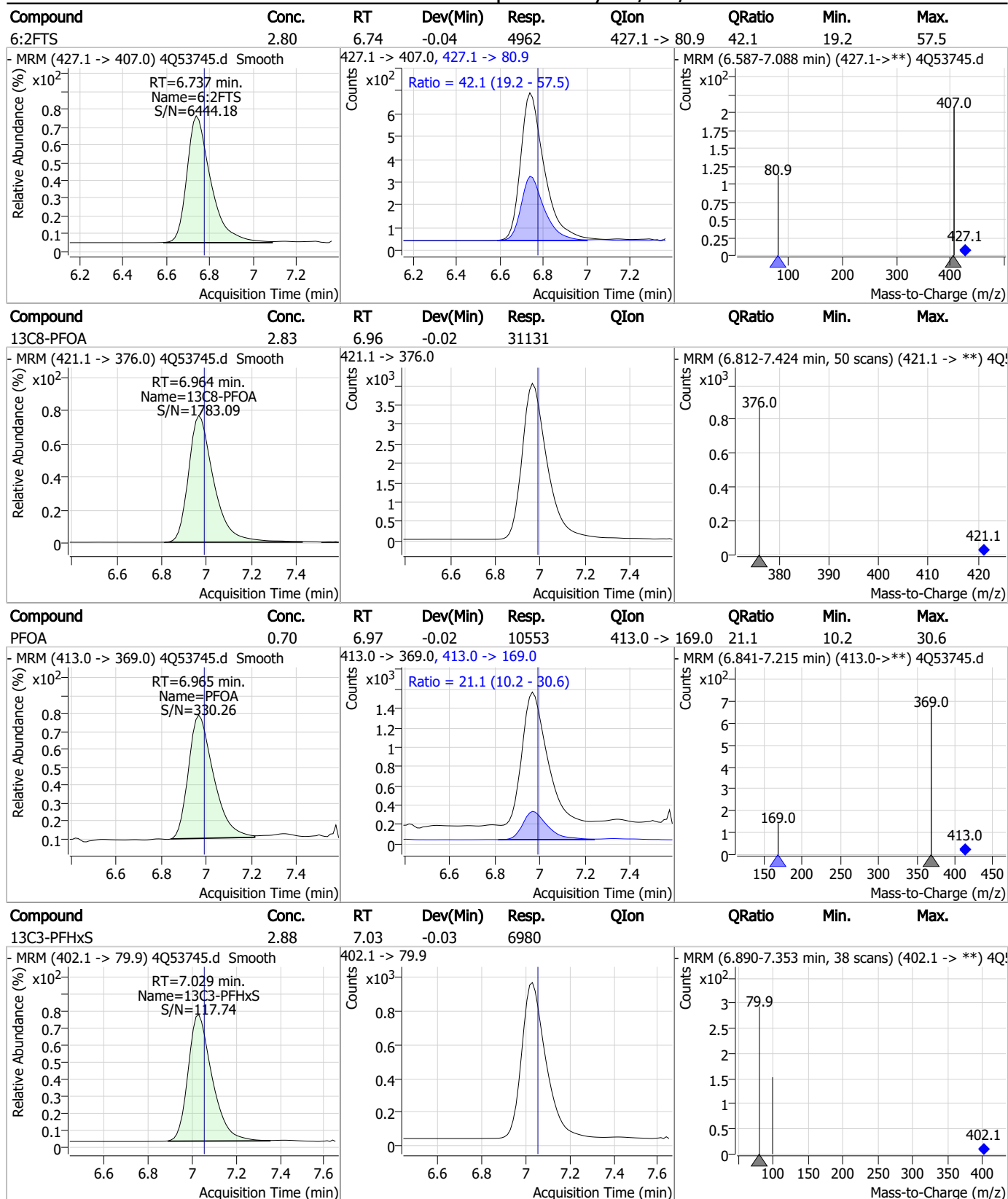
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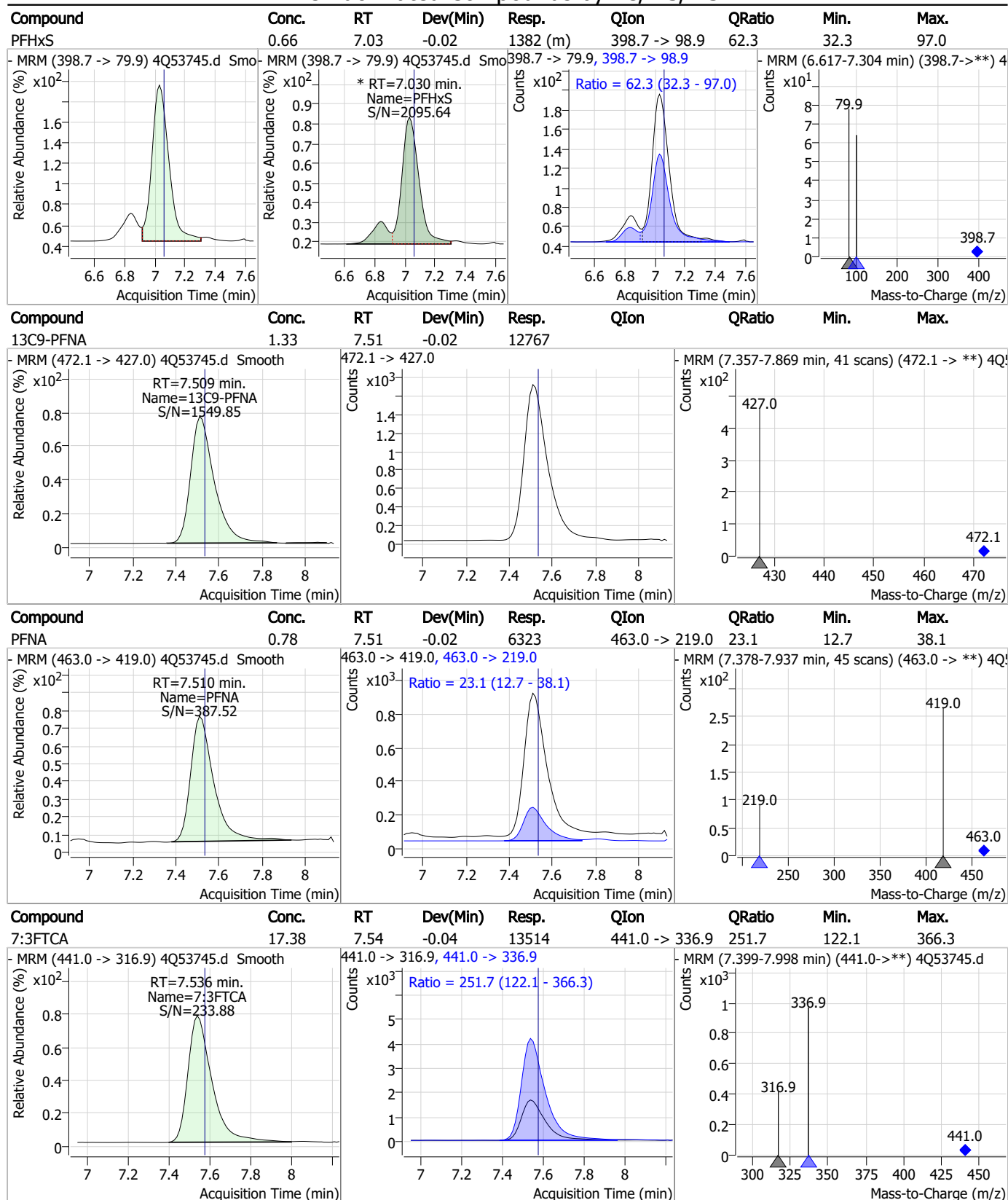
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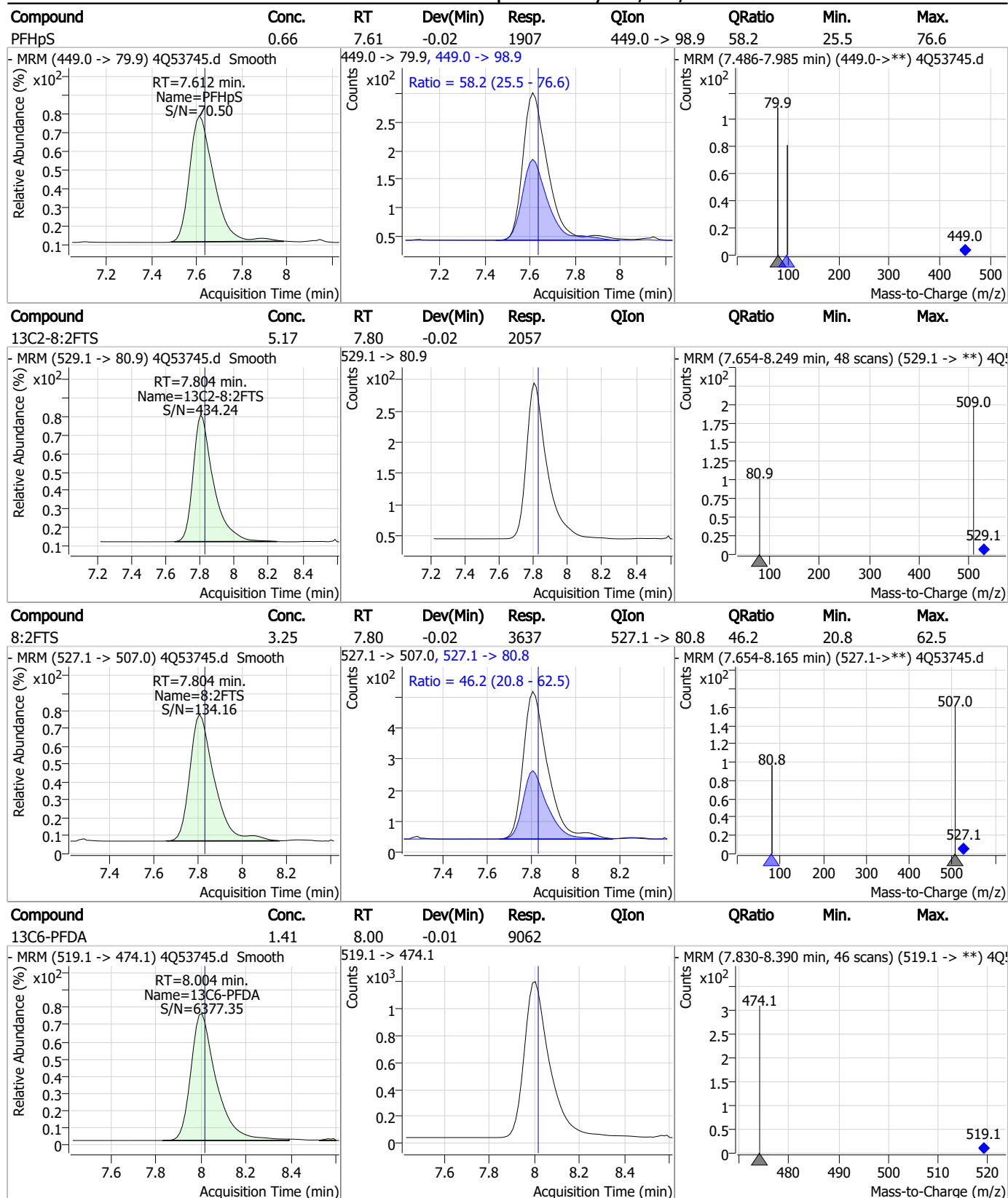
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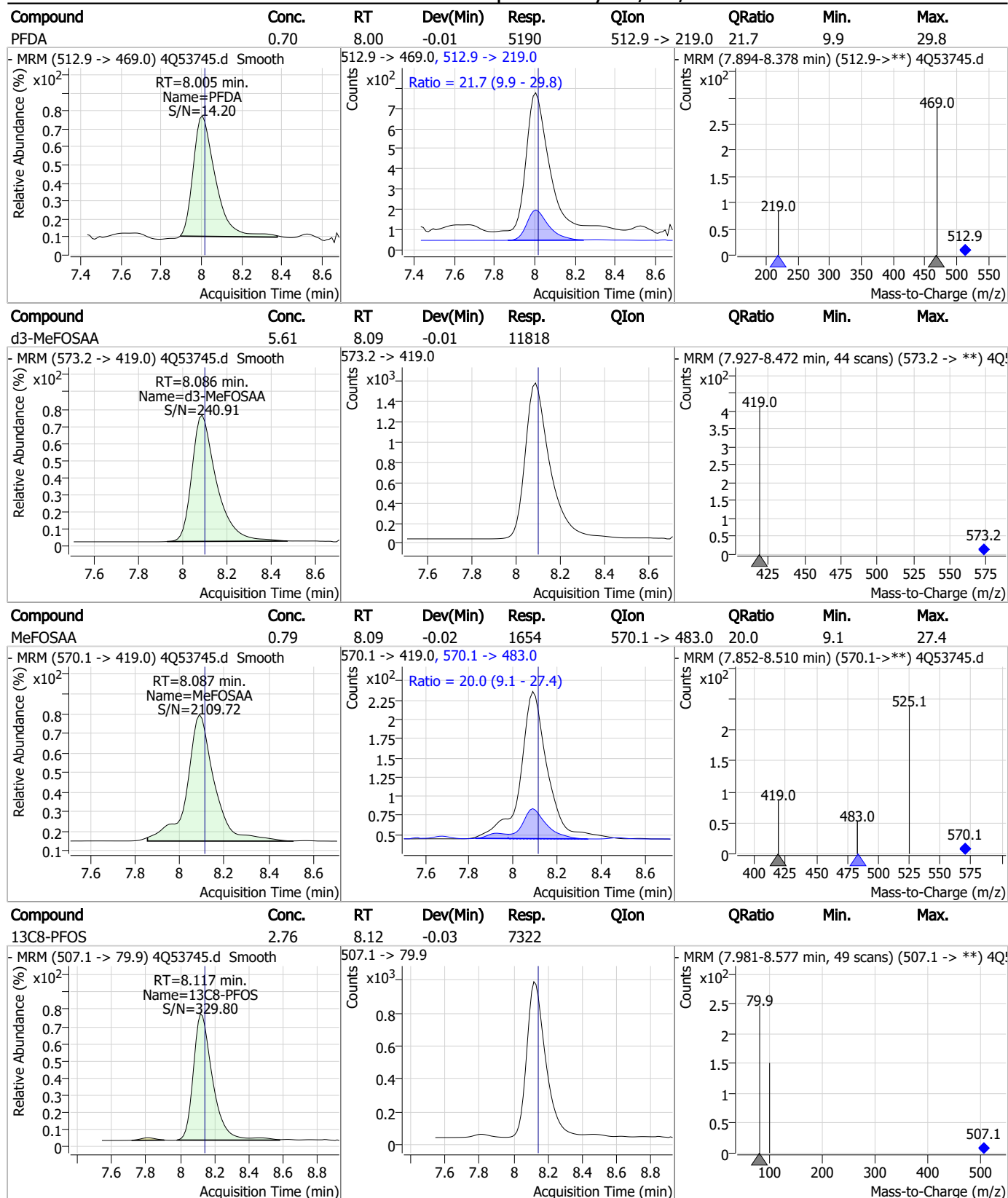
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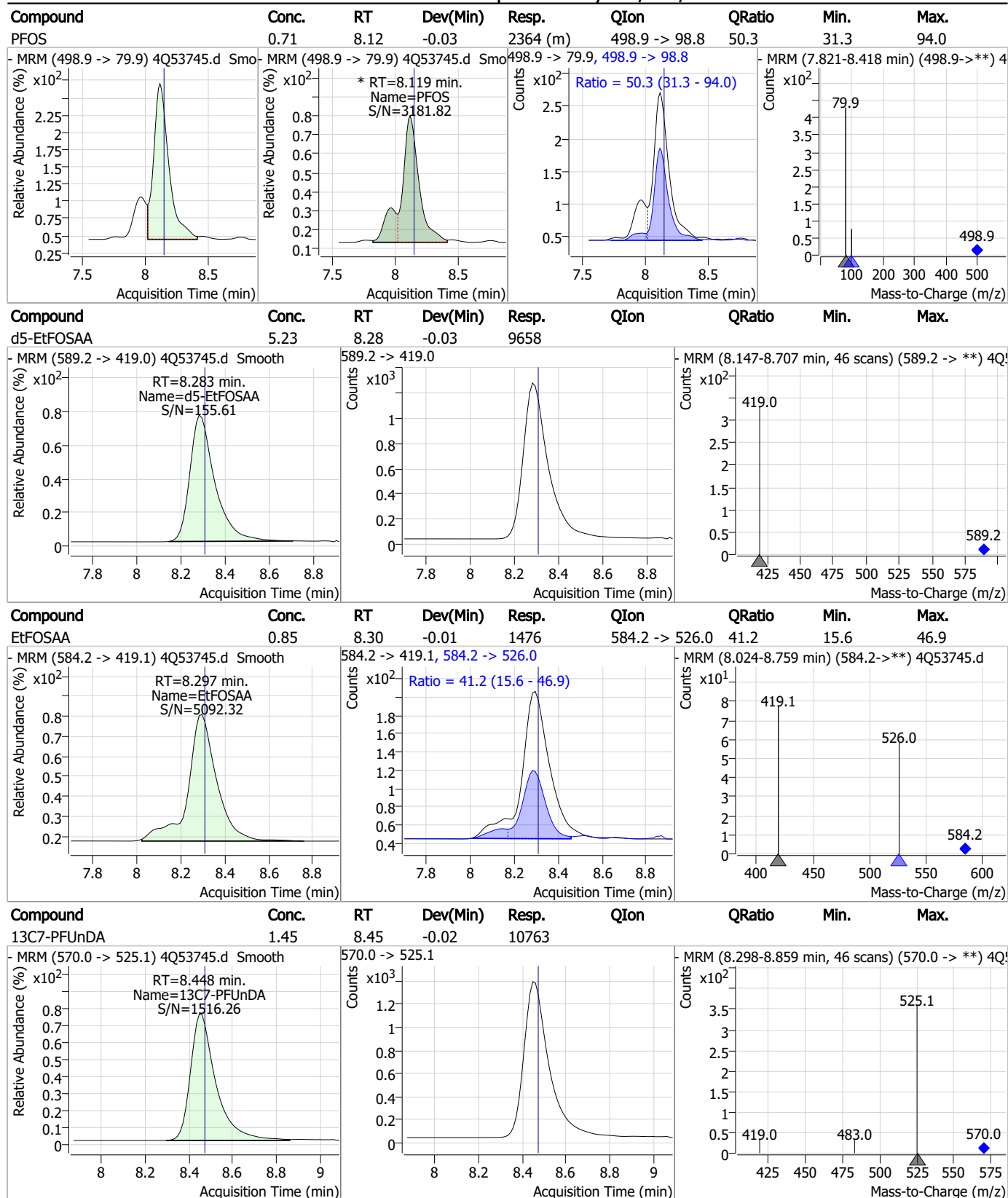
Perfluorinated Compounds by LC/MS/MS



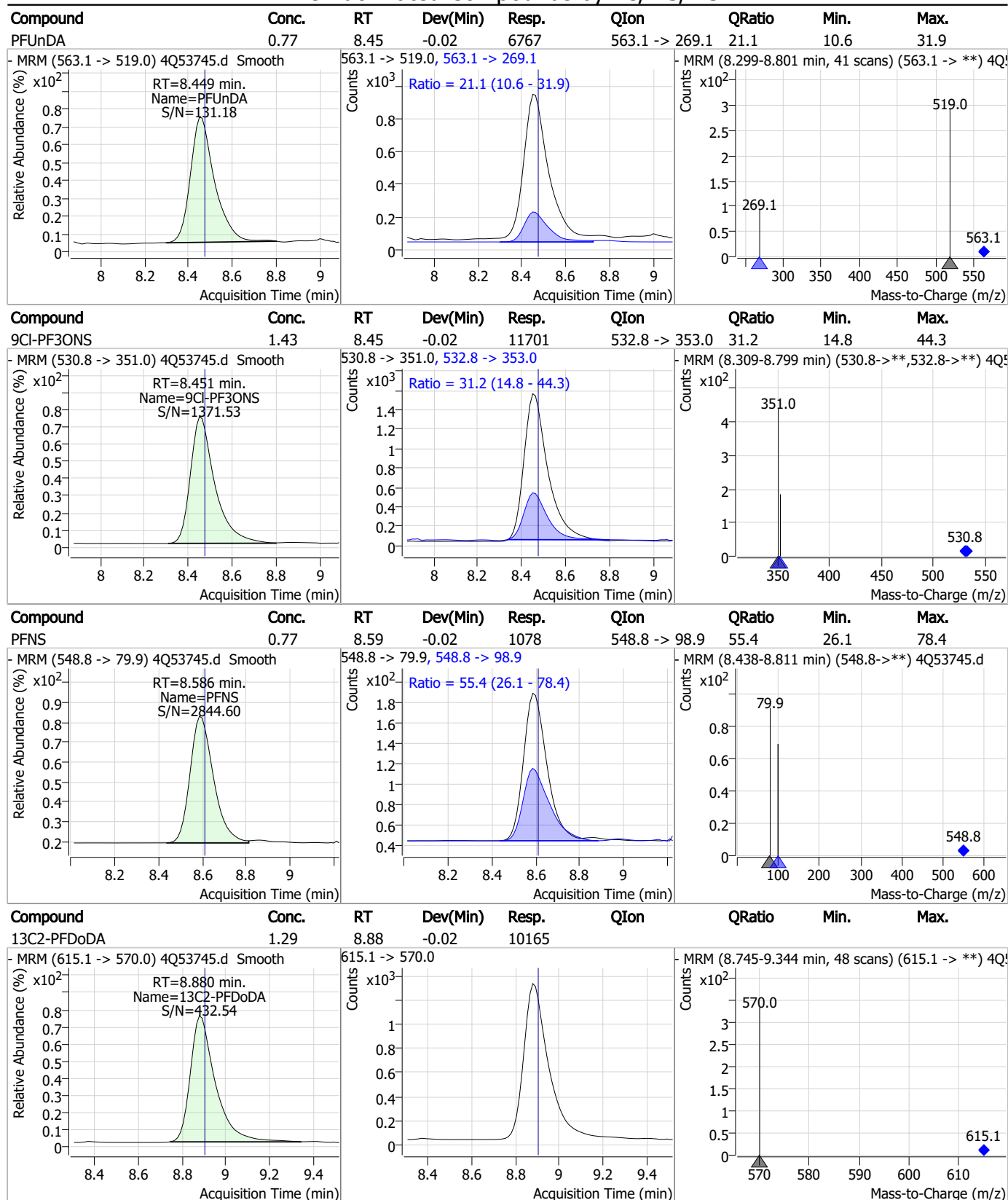
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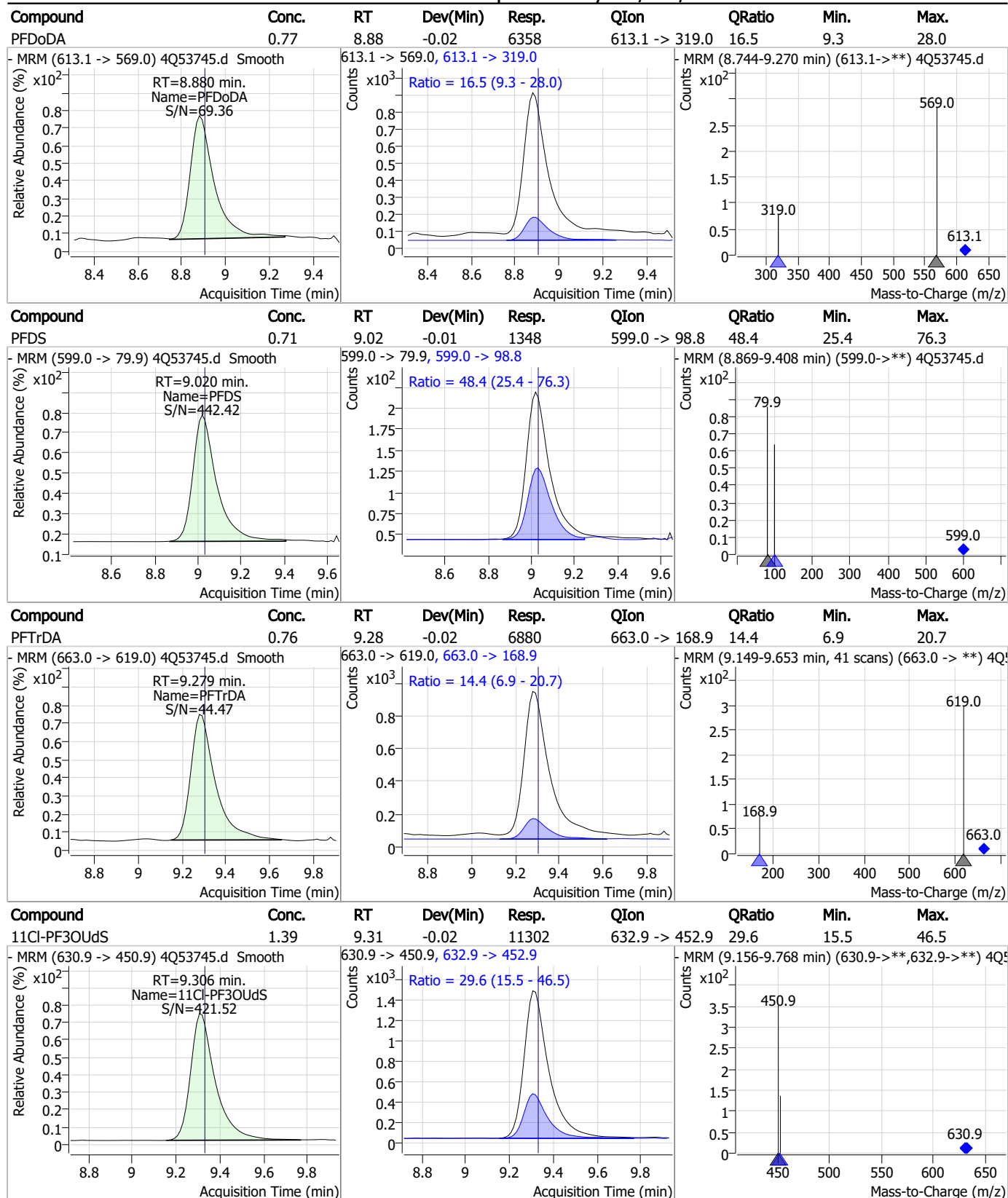
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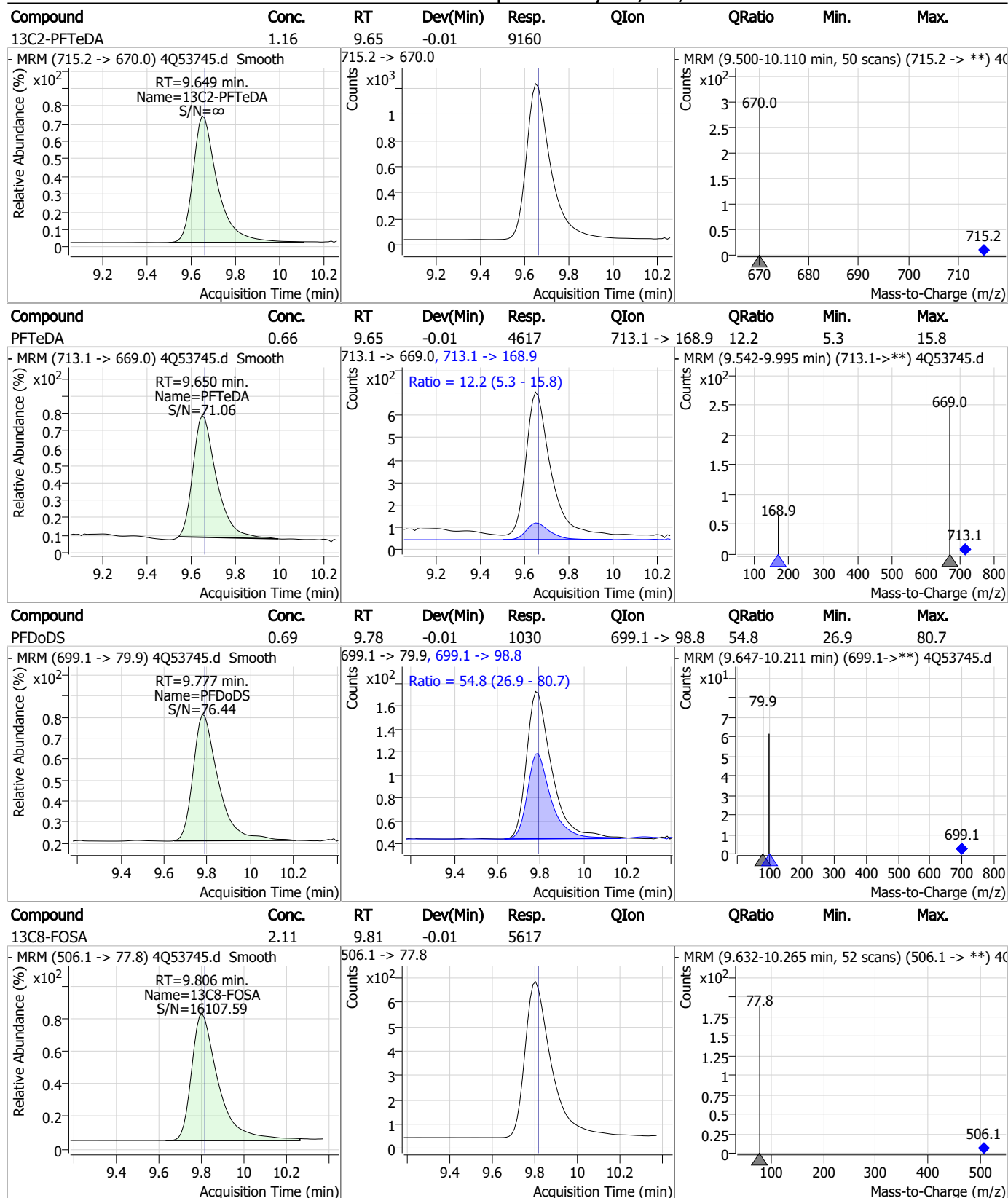
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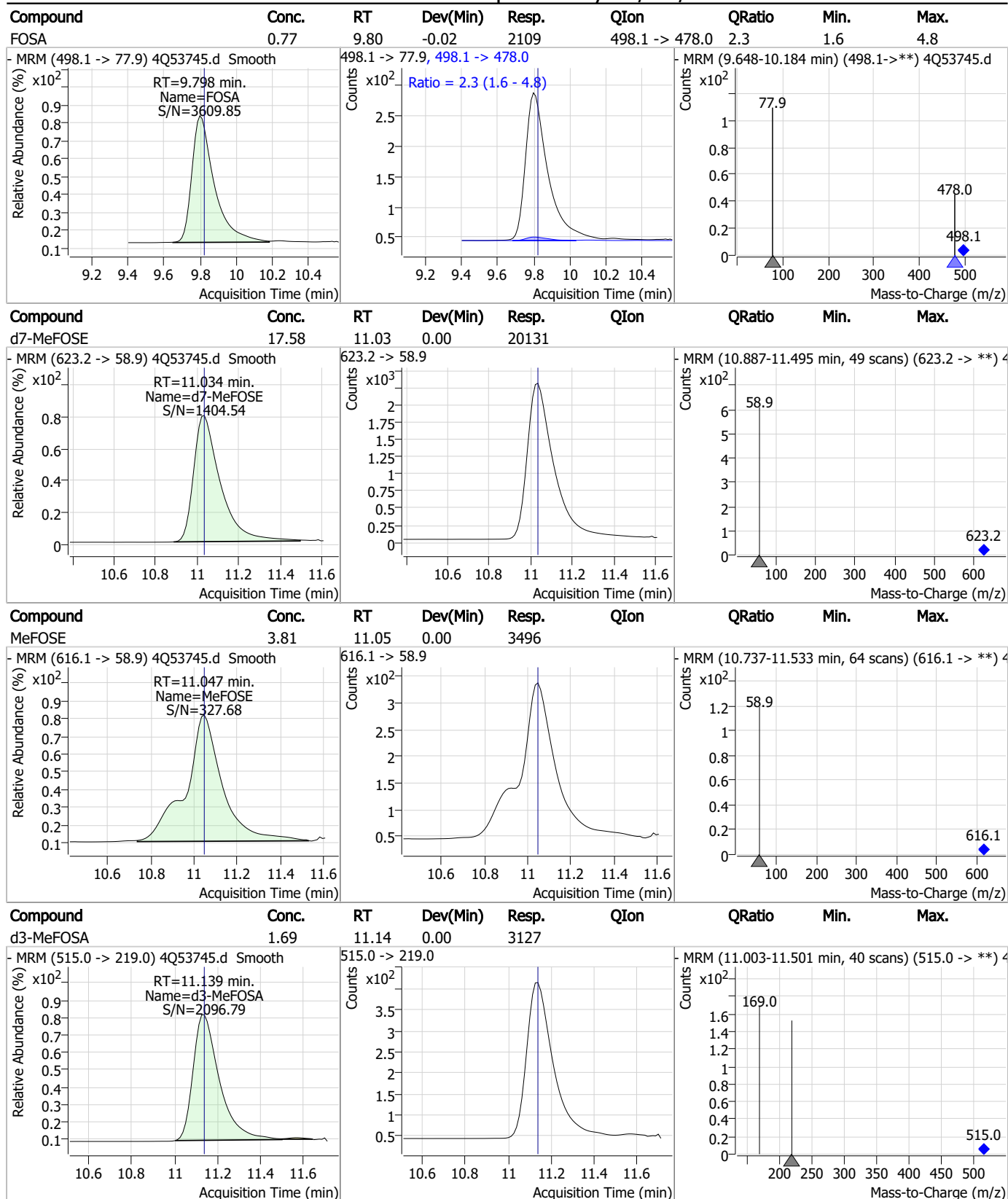
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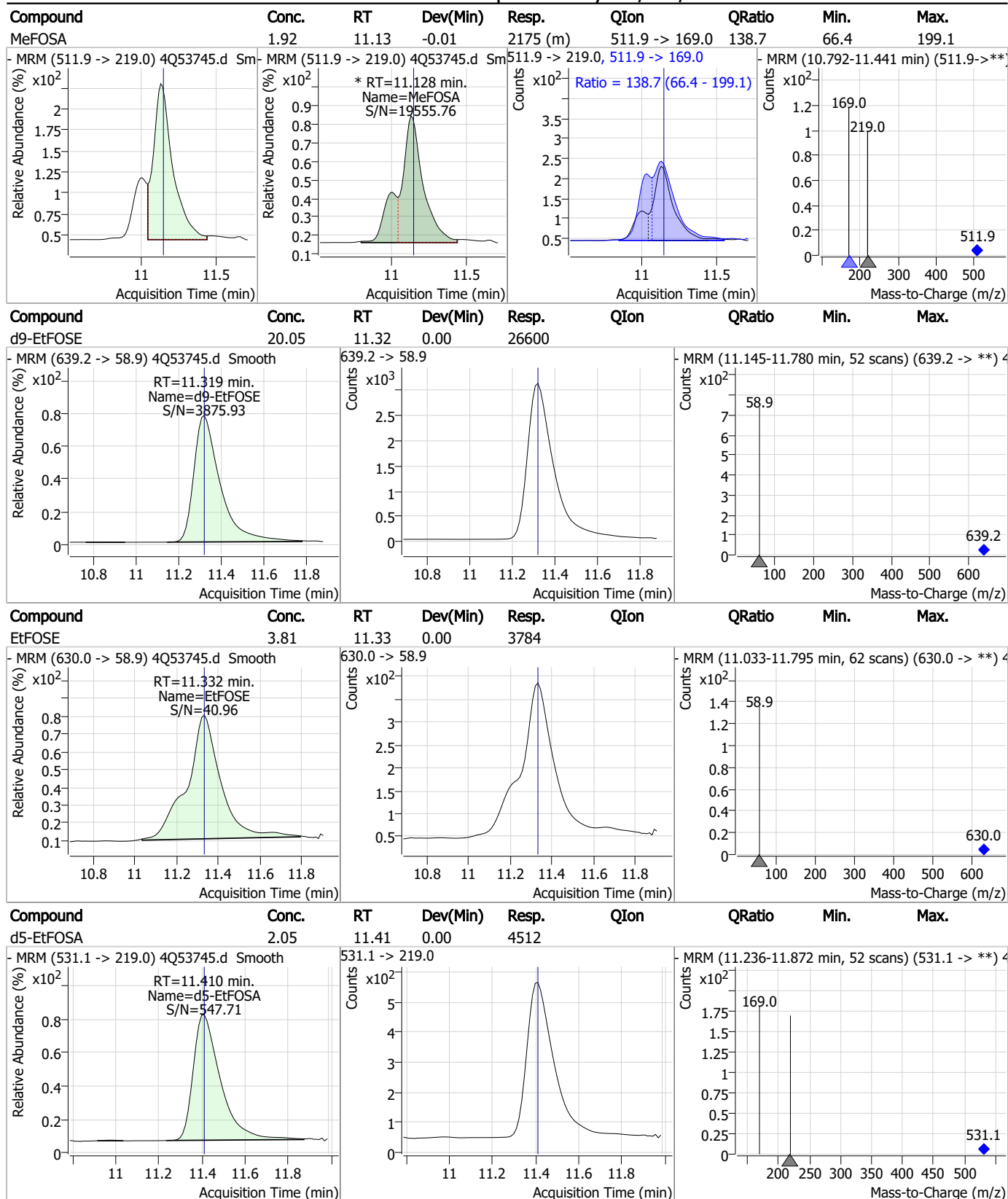
Perfluorinated Compounds by LC/MS/MS



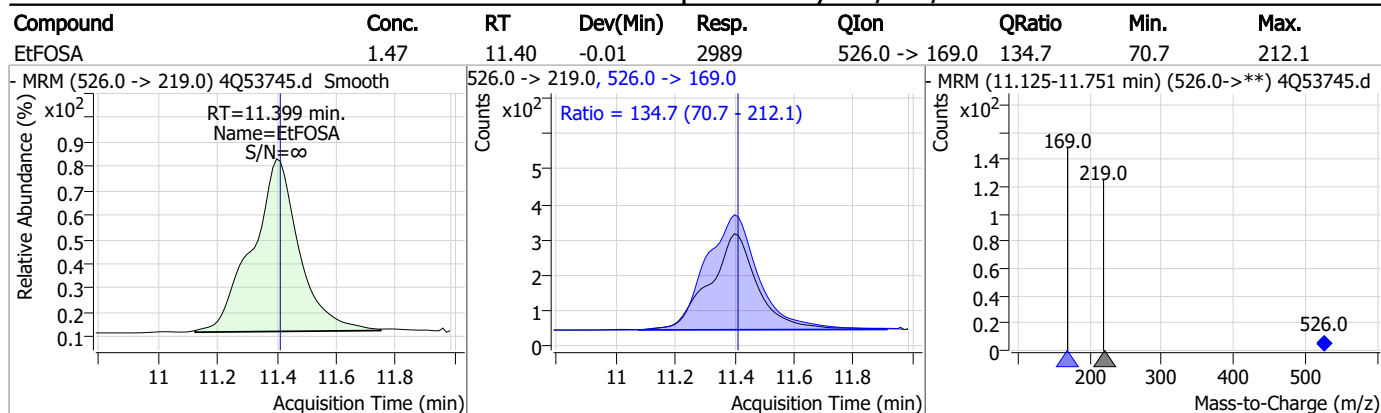
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Manual Integration Approval Summary

Sample Number: OP99997-LLBS

Method: EPA DRAFT 1633

Lab FileID: 4Q53745.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 19:26

Supervisor approved: 11/14/23 15:56 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.03	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.3.2.1
7

Natasha Gumtie
11/14/23 15:56

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53750.d
Operator : annal
Acq. Method : 1633full_4Q.m
Acq. Date-Time : 11/13/2023 8:39:48 PM
Sample Name : op99997-ms
Vial : P4-D7
DA Method File : 1633_111323_S4Q785.quantmethod.xml
Batch Name : s4q785.batch.bin
Sample Information : OP99997,S4Q785,520,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	76974	10.00 µg/L	0.000
M5-PFPeA	4.137	268.3 -> 223.0	37661	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	27892	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	26002	2.50 µg/L	-0.037
M8-PFOA	6.952	421.1 -> 376.0	30348	2.50 µg/L	-0.037
M9-PFNA	7.509	472.1 -> 427.0	12927	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	8201	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	10060	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9316	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	7818	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	5992	2.50 µg/L	-0.025
M3-PFBS	5.165	302.1 -> 79.9	8202	2.50 µg/L	-0.038
M3-PFHxS	7.017	402.1 -> 79.9	6908	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7031	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	590	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1332	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1933	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	10465	5.00 µg/L	-0.025
M3-HFPO-DA	5.664	286.9 -> 168.9	26097	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	8762	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	22782	25.00 µg/L	-0.012
M9-EtFOSE	11.306	639.2 -> 58.9	28653	25.00 µg/L	-0.012
M5-EtFOSA	11.397	531.1 -> 219.0	4974	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3748	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5581	2.50 µg/L	-0.026
13C3-PFBA	2.691	216.0 -> 172.0	38916	5.00 µg/L	-0.013
18O2-PFHxS	7.016	403.0 -> 83.9	3711	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	30218	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	8639	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	11393	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	27027	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	590	4.64 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.9%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1332	4.98 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C2-8:2FTS	7.804	529.1 -> 80.9	1933	5.13 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9316	1.19 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C2-PFTeDA	9.649	715.2 -> 670.0	7818	1.00 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 79.7%		
13C3-PFBS	5.165	302.1 -> 79.9	8202	2.95 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 117.9%		
13C3-PFHxS	7.017	402.1 -> 79.9	6908	3.00 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 120.1%	
13C4-PFBA	2.699	216.8 -> 171.9	76974	9.49 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.9%	
13C4-PFHpA	6.267	367.1 -> 322.0	26002	2.76 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.3%	
13C5-PFHxA	5.310	318.0 -> 273.0	27892	2.77 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.7%	
13C5-PFPeA	4.137	268.3 -> 223.0	37661	5.71 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.2%	
13C6-PFDA	8.004	519.1 -> 474.1	8201	1.29 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C7-PFUnDA	8.448	570.0 -> 525.1	10060	1.37 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.5%	
13C8-FOSA	9.794	506.1 -> 77.8	5992	2.25 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.9%	
13C8-PFOA	6.952	421.1 -> 376.0	30348	2.81 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.5%	
13C8-PFOS	8.117	507.1 -> 79.9	7031	2.64 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C9-PFNA	7.509	472.1 -> 427.0	12927	1.44 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 115.1%	
d3-MeFOSAA	8.074	573.2 -> 419.0	10465	4.94 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C3-HFPO-DA	5.664	286.9 -> 168.9	26097	11.35 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 113.5%	
d3-MeFOSA	11.126	515.0 -> 219.0	3748	2.01 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 80.5%	
d5-EtFOSAA	8.283	589.2 -> 419.0	8762	4.73 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.6%	
d7-MeFOSE	11.022	623.2 -> 58.9	22782	19.82 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 79.3%	
d9-EtFOSE	11.306	639.2 -> 58.9	28653	21.52 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 86.1%	
d5-EtFOSA	11.397	531.1 -> 219.0	4974	2.25 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.1%	
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	9949	8.54 µg/L	98
		327.1 -> 80.9	4321		
6:2FTS	6.737	427.1 -> 407.0	13405	9.30 µg/L	95
		427.1 -> 80.9	4732		
8:2FTS	7.804	527.1 -> 507.0	9282	8.83 µg/L	98
		527.1 -> 80.8	3987		
EtFOSAA	8.284	584.2 -> 419.1	3616	2.30 µg/L	85
		584.2 -> 526.0	1422		
FOSA	9.798	498.1 -> 77.9	6600	2.26 µg/L	99
		498.1 -> 478.0	183		
MeFOSAA	8.087	570.1 -> 419.0	4123	2.22 µg/L	94
		570.1 -> 483.0	858		
PFBA	2.695	212.8 -> 168.9	24315	8.69 µg/L	100
PFBS	5.166	298.7 -> 79.9	5339	1.83 µg/L	100
		298.7 -> 98.8	2074		
PFDA	7.992	512.9 -> 469.0	14746	2.20 µg/L	95
		512.9 -> 219.0	3272		
PFDODA	8.880	613.1 -> 569.0	17072	2.25 µg/L	99
		613.1 -> 319.0	3150		
PFDS	9.020	599.0 -> 79.9	3528	1.94 µg/L	97

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	1726	2.24	µg/L	97
		363.1 -> 319.0	36463			
PFHpS	7.612	363.1 -> 169.0	6801	2.03	µg/L	84
		449.0 -> 79.9	5649			
PFHxA	5.300	449.0 -> 98.9	3509	2.23	µg/L	100
		313.0 -> 269.0	21723			
PFHxS	7.018	313.0 -> 118.9	581	2.17	µg/L	85
		398.7 -> 79.9	4516			
PFNA	7.510	398.7 -> 98.9	2395	2.12	µg/L	97
		463.0 -> 419.0	17499			
PFNS	8.586	463.0 -> 219.0	4721	2.18	µg/L	99
		548.8 -> 79.9	2920			
PFOA	6.965	548.8 -> 98.9	1507	2.20	µg/L	98
		413.0 -> 369.0	32323			
PFOS	8.119	413.0 -> 169.0	6366	2.05	µg/L	80
		498.9 -> 79.9	6542			
PFPeA	4.139	498.9 -> 98.8	3101	4.29	µg/L	100
		263.0 -> 219.0	35186			
PFPeS	6.257	349.1 -> 79.9	4398	1.94	µg/L	93
		349.1 -> 98.9	2092			
PFTeDA	9.650	713.1 -> 669.0	14536	2.45	µg/L	97
		713.1 -> 168.9	1674			
PFTrDA	9.279	663.0 -> 619.0	18268	2.21	µg/L	100
		663.0 -> 168.9	2519			
PFUnDA	8.449	563.1 -> 519.0	16865	2.05	µg/L	96
		563.1 -> 269.1	3925			
11CI-PF3OUdS	9.306	630.9 -> 450.9	28974	3.56	µg/L	99
		632.9 -> 452.9	8813			
9CI-PF3ONS	8.451	530.8 -> 351.0	34233	4.16	µg/L	97
		532.8 -> 353.0	9634			
ADONA	6.531	376.9 -> 250.9	89356	4.95	µg/L	98
		376.9 -> 84.8	21147			
HFPO-DA	5.665	284.9 -> 168.9	12316	4.46	µg/L	99
		284.9 -> 184.9	1122			
3:3FTCA	3.630	241.0 -> 177.0	4100	9.40	µg/L	100
		241.0 -> 117.0	367			
5:3FTCA	5.996	341.0 -> 237.1	91812	53.54	µg/L	99
		341.0 -> 217.0	65775			
7:3FTCA	7.536	441.0 -> 316.9	42612	55.39	µg/L	93
		441.0 -> 336.9	98851			
EtFOSA	11.399	526.0 -> 219.0	9442	4.21	µg/L	99
		526.0 -> 169.0	13218			
EtFOSE	11.332	630.0 -> 58.9	12009	11.22	µg/L	100
		511.9 -> 219.0	6429			
MeFOSA	11.128	511.9 -> 169.0	8978	4.73	µg/L	94
		616.1 -> 58.9	10933			
MeFOSE	11.047	699.1 -> 79.9	2519	10.53	µg/L	100
		699.1 -> 98.8	1443			
PFDoDS	9.777	295.0 -> 201.0	3348	1.76	µg/L	95
		295.0 -> 84.9	979			
NFDHA	5.191	279.0 -> 85.1	22658	5.20	µg/L	89
		229.0 -> 84.9	25555			
PFMBA	4.541	314.8 -> 134.9	35611	4.80	µg/L	100
PFMPA	3.290	314.8 -> 82.9	1240	4.87	µg/L	100
PFEESA	5.696			4.62	µg/L	98

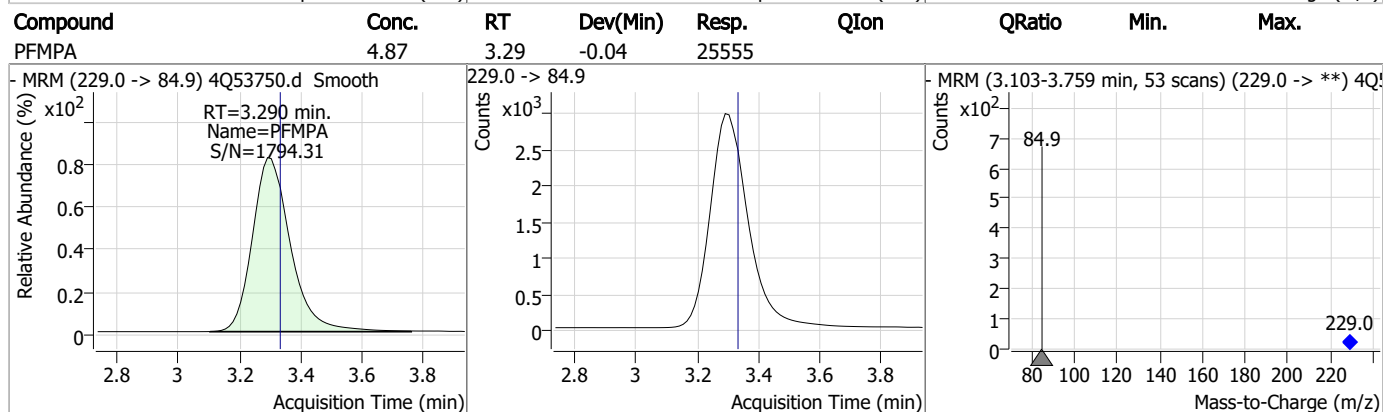
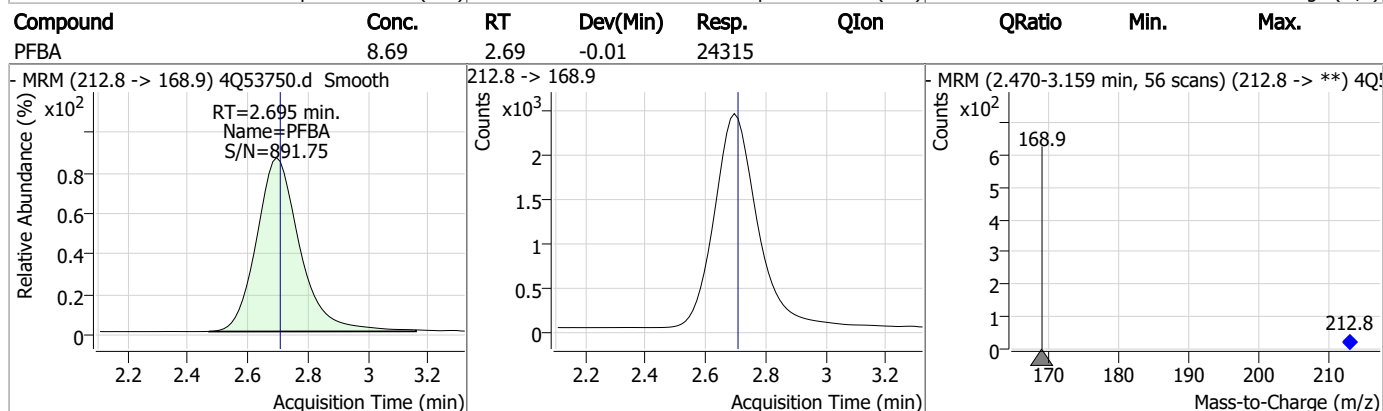
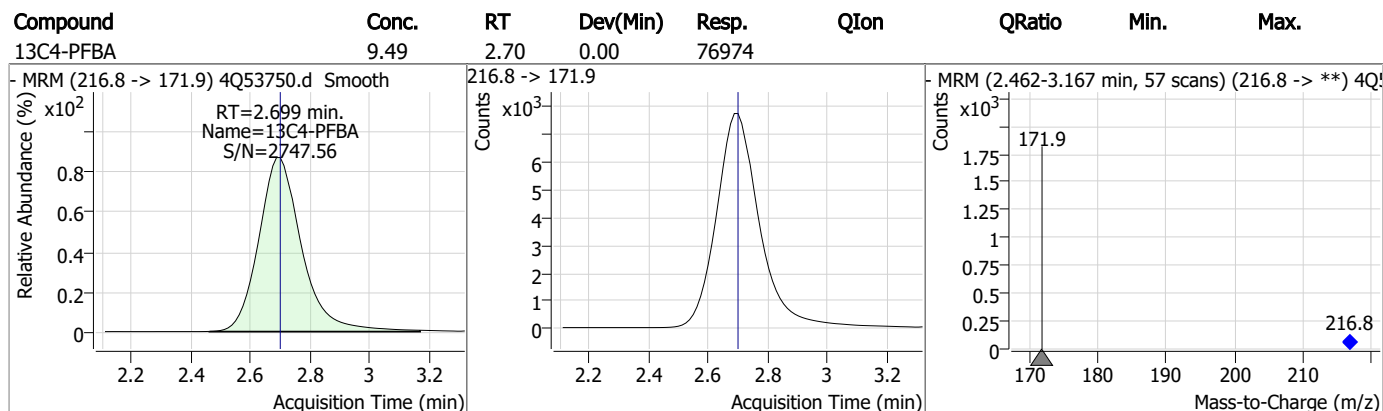
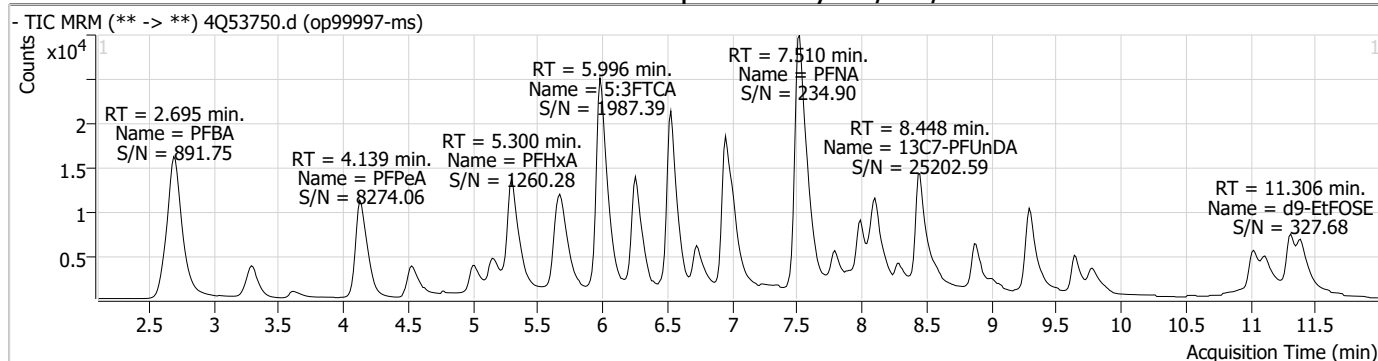
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

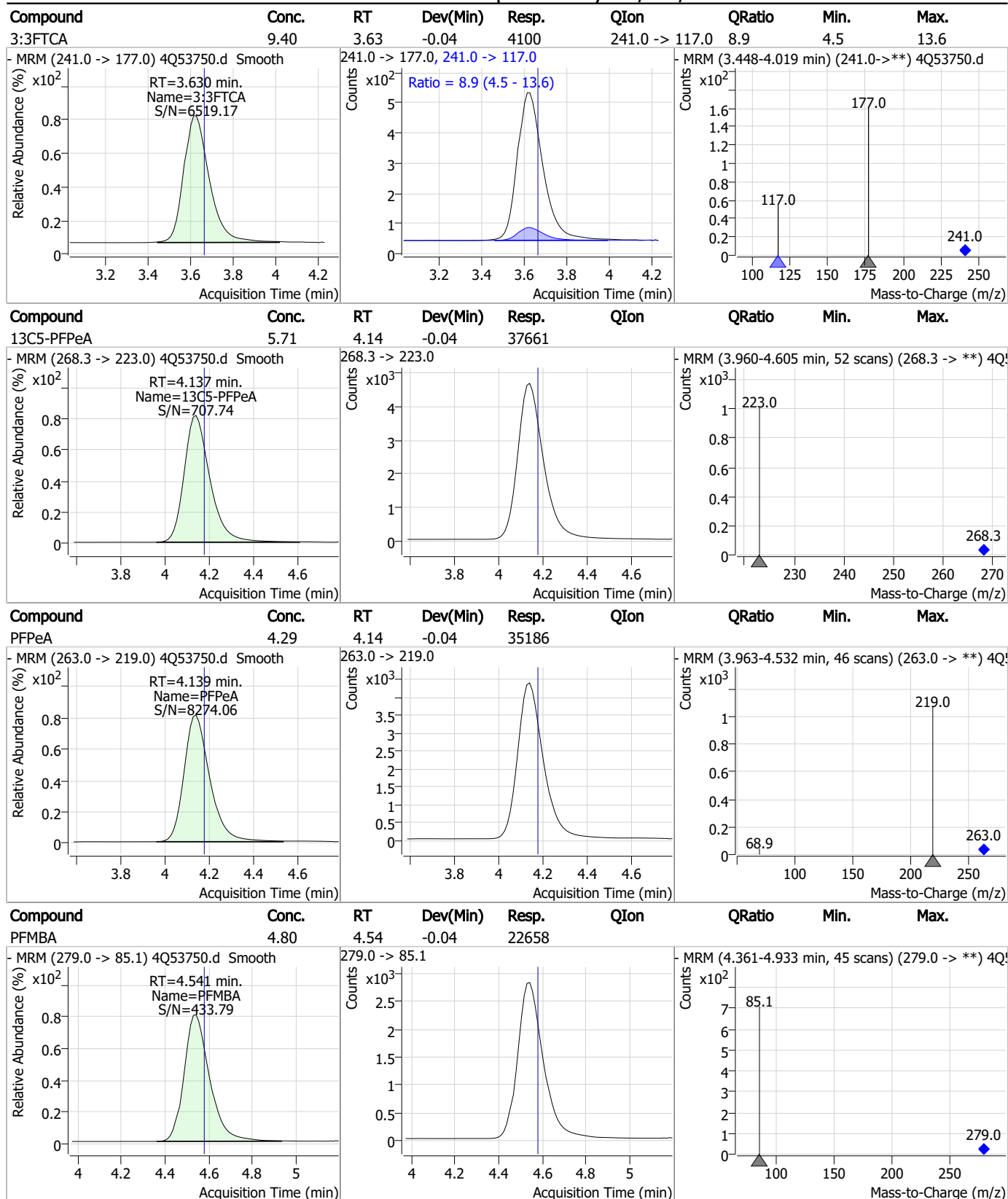
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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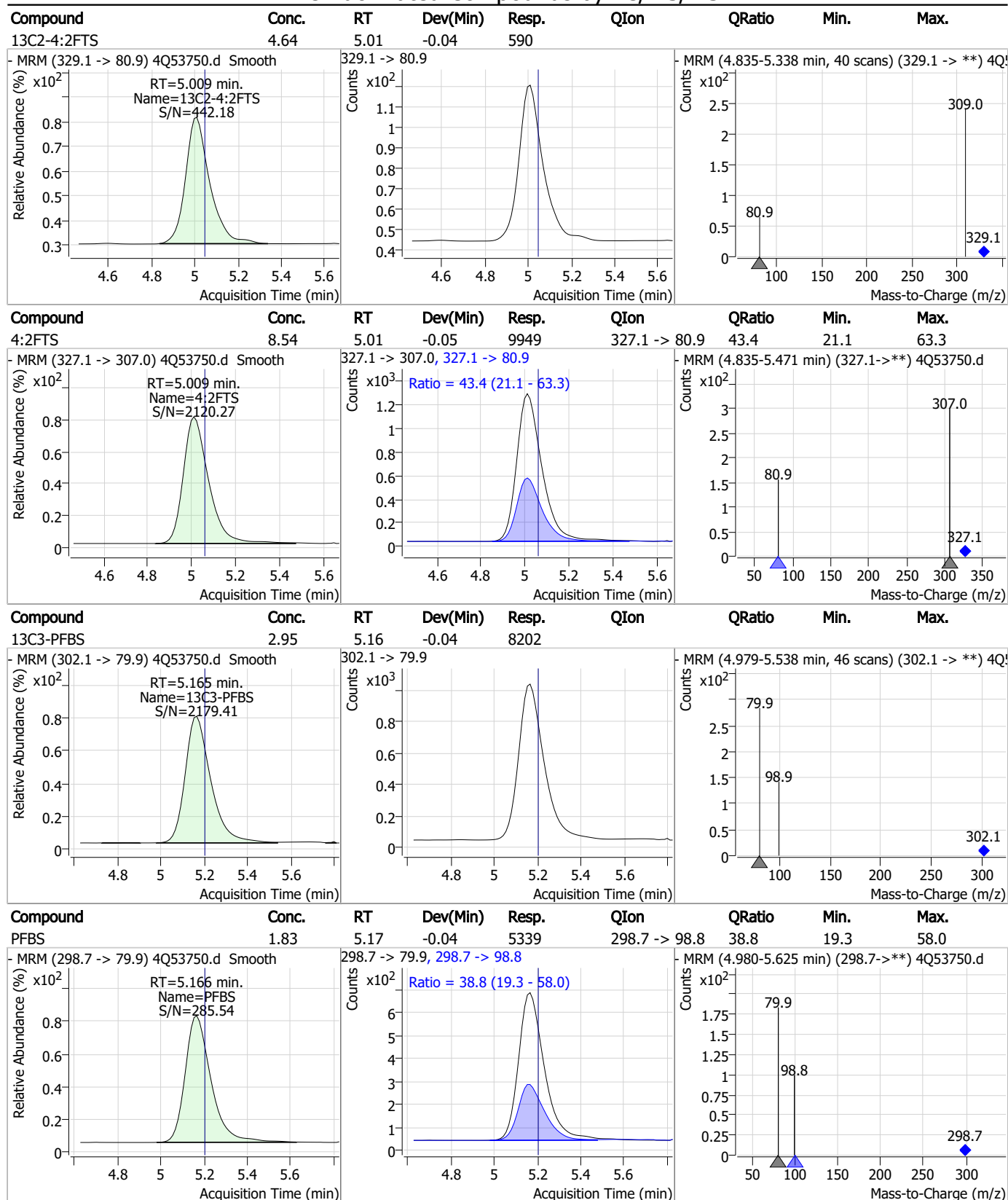
Perfluorinated Compounds by LC/MS/MS



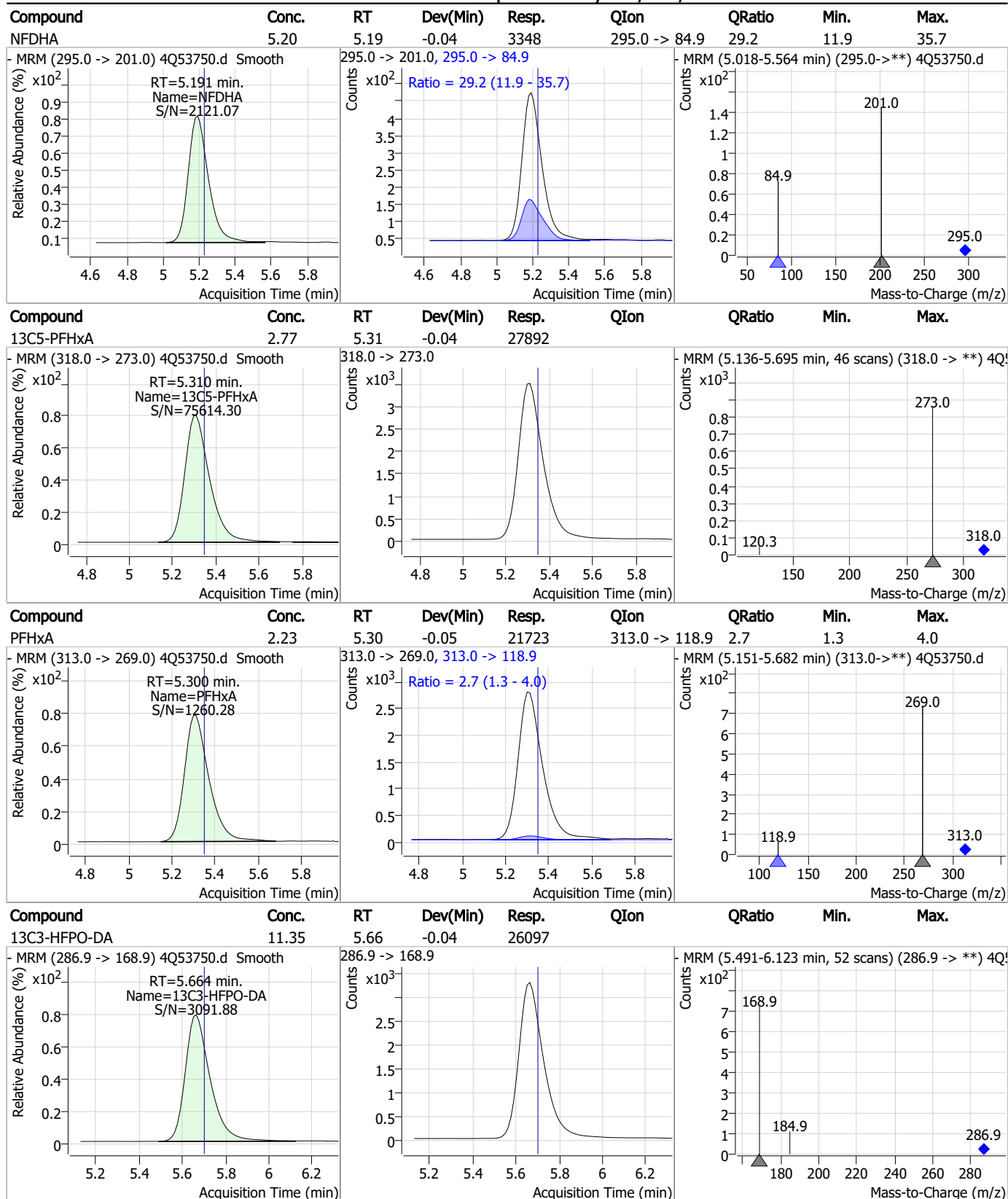
Perfluorinated Compounds by LC/MS/MS



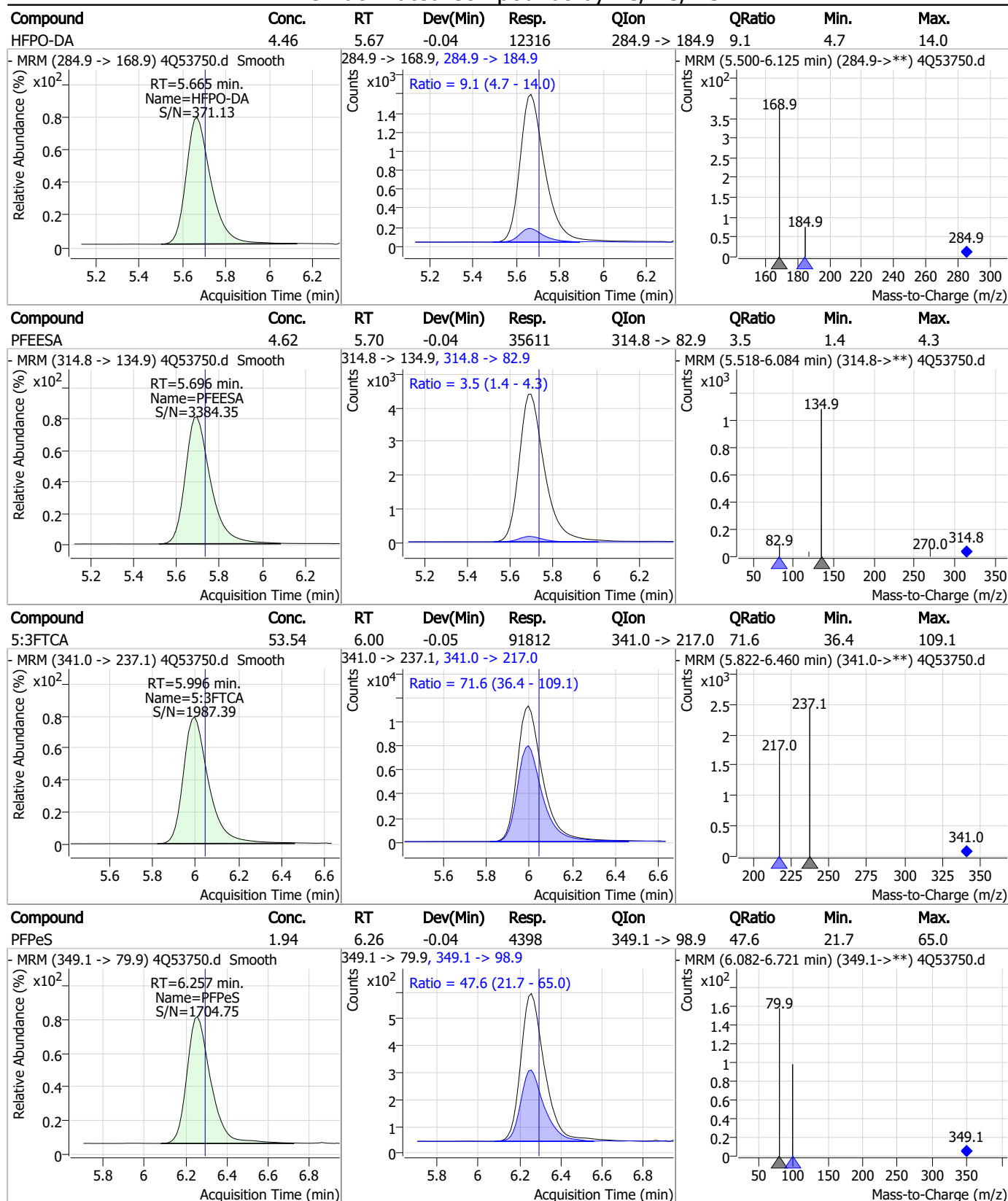
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



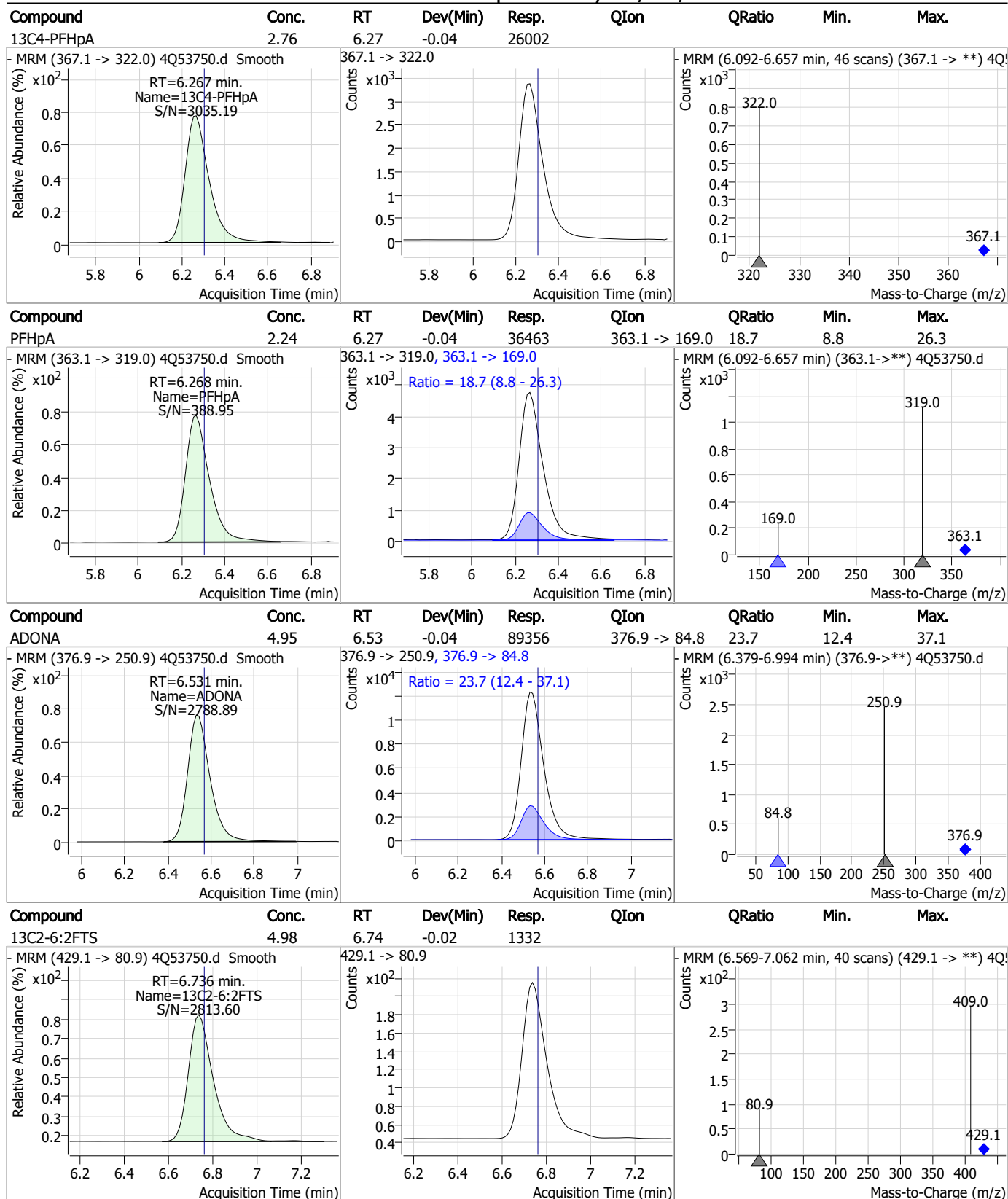
Perfluorinated Compounds by LC/MS/MS



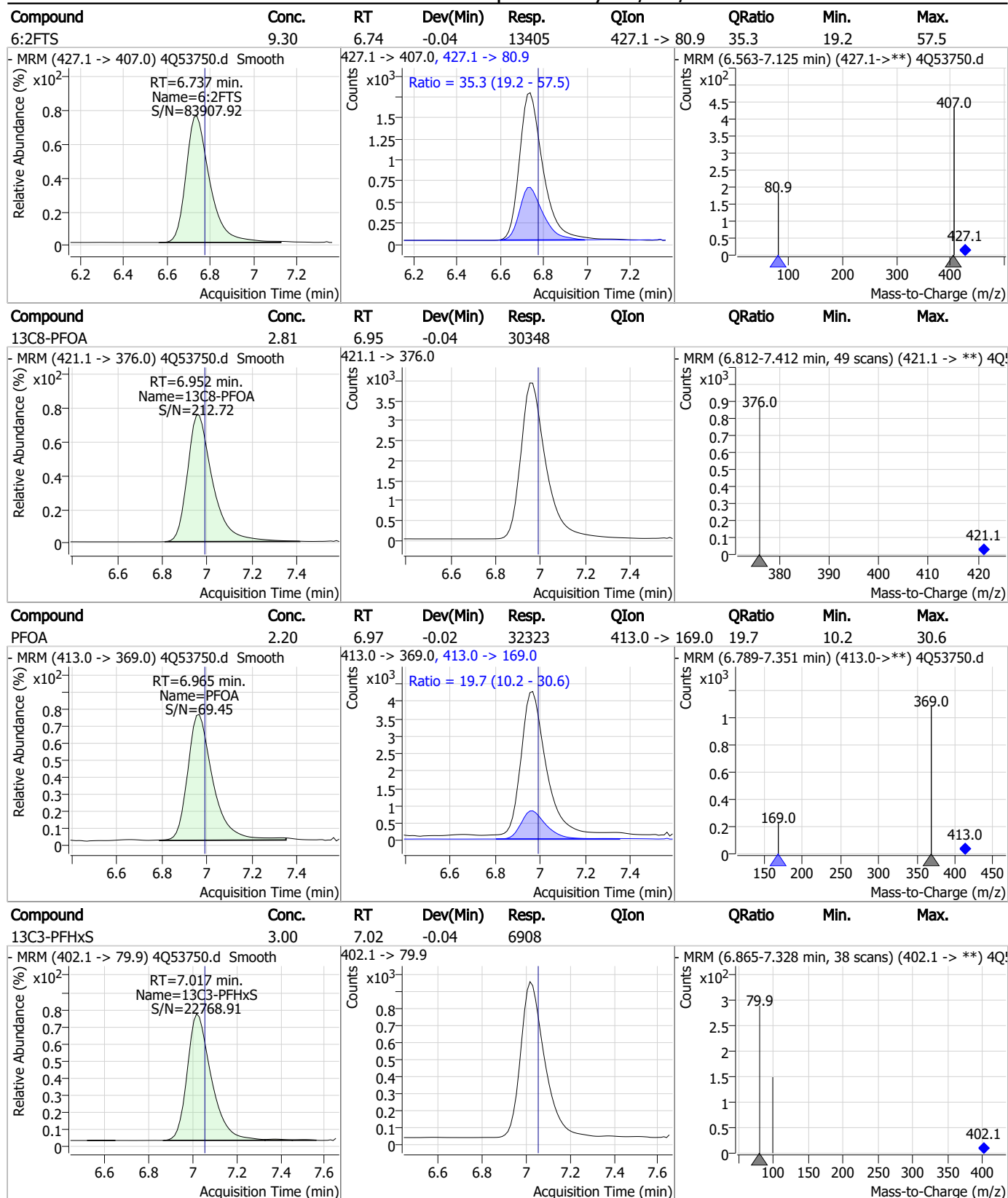
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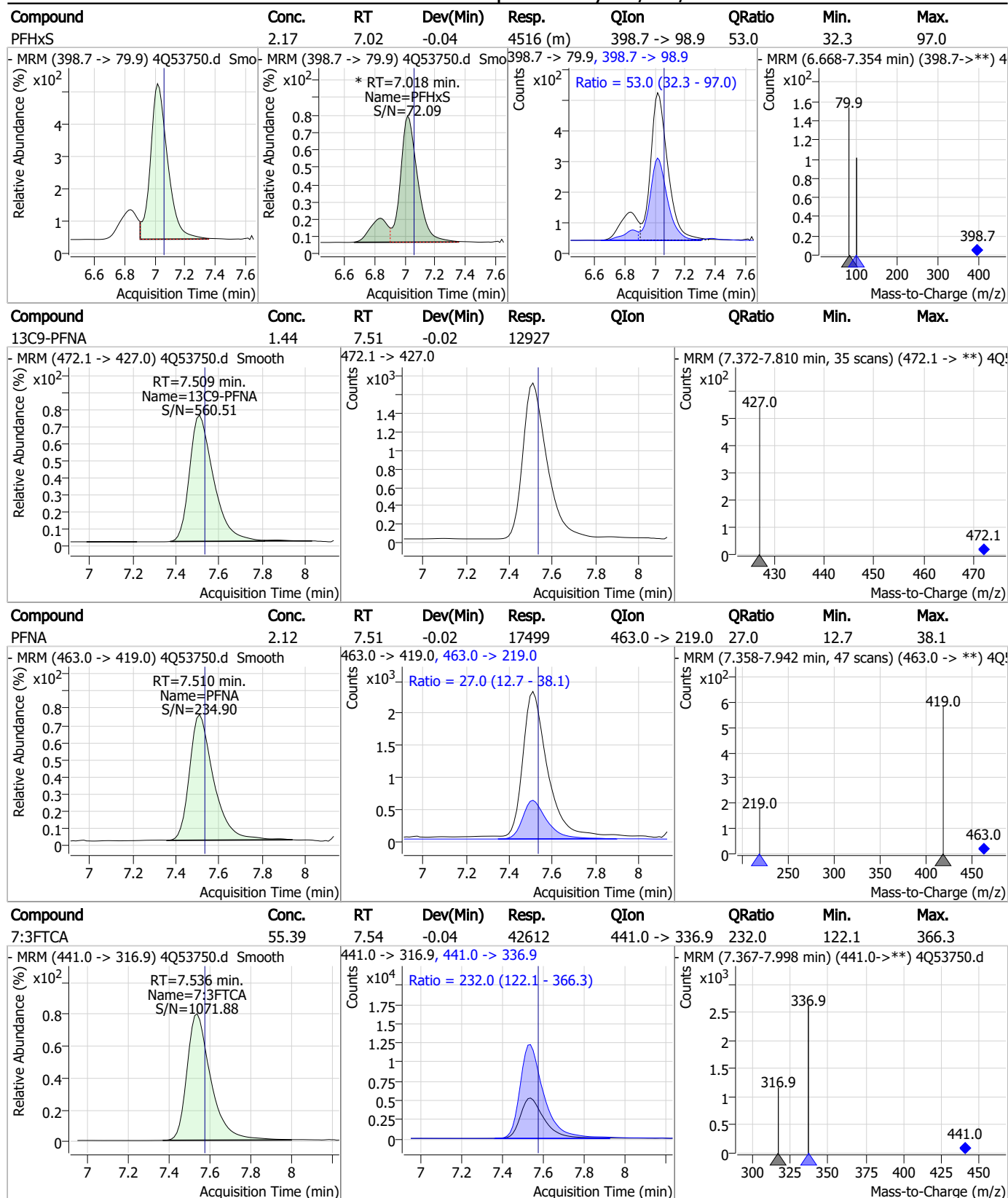
Perfluorinated Compounds by LC/MS/MS



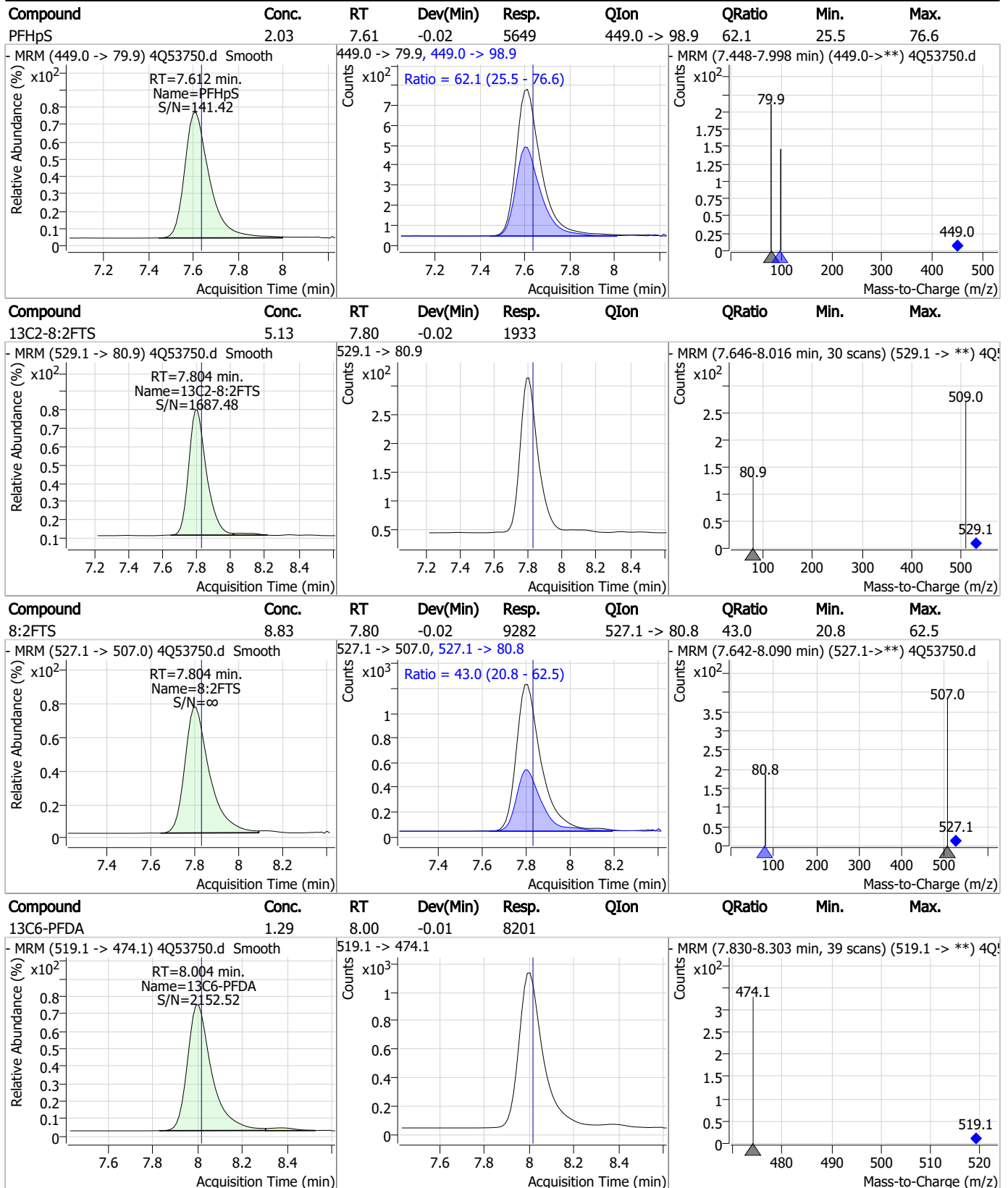
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



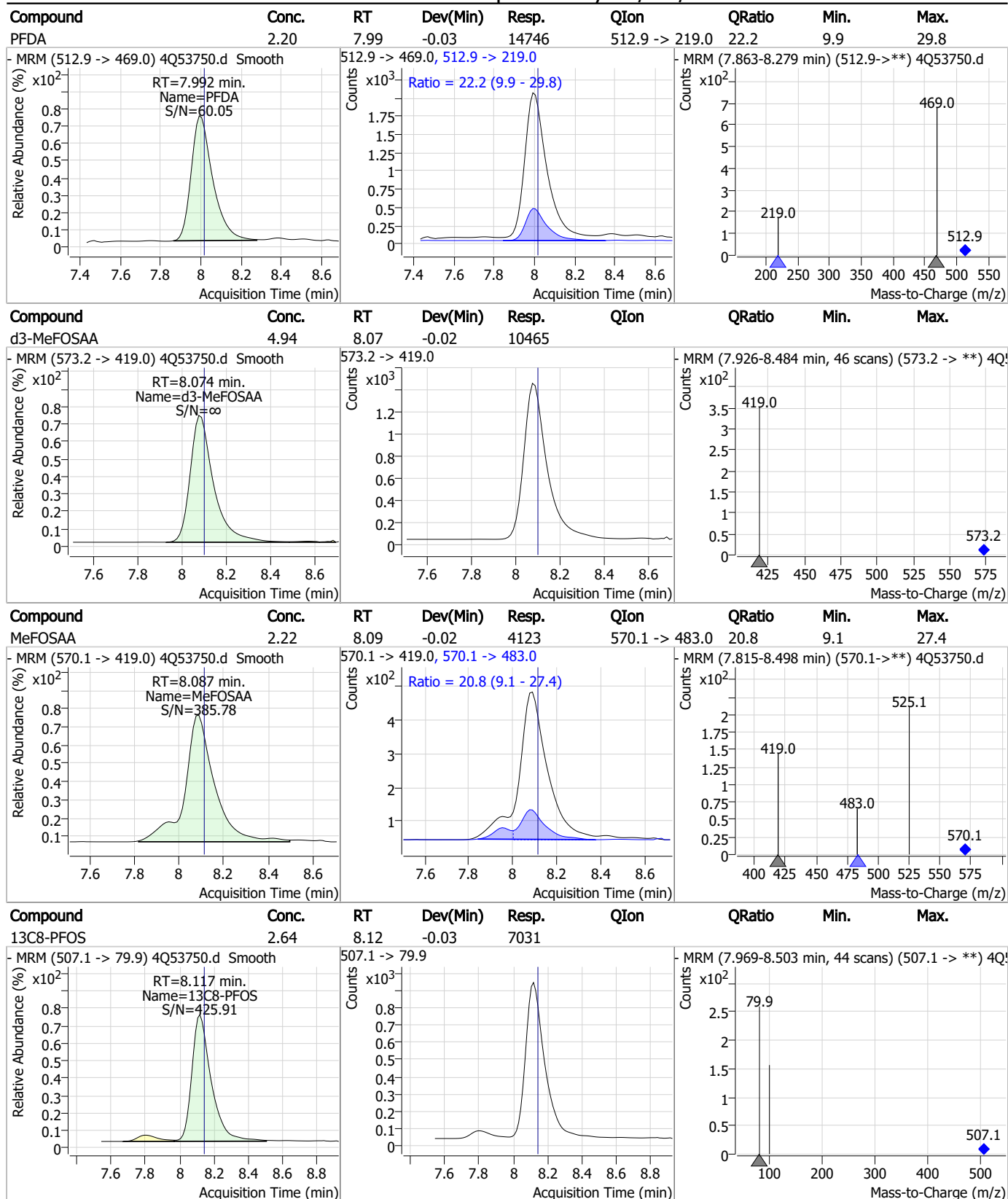
Perfluorinated Compounds by LC/MS/MS



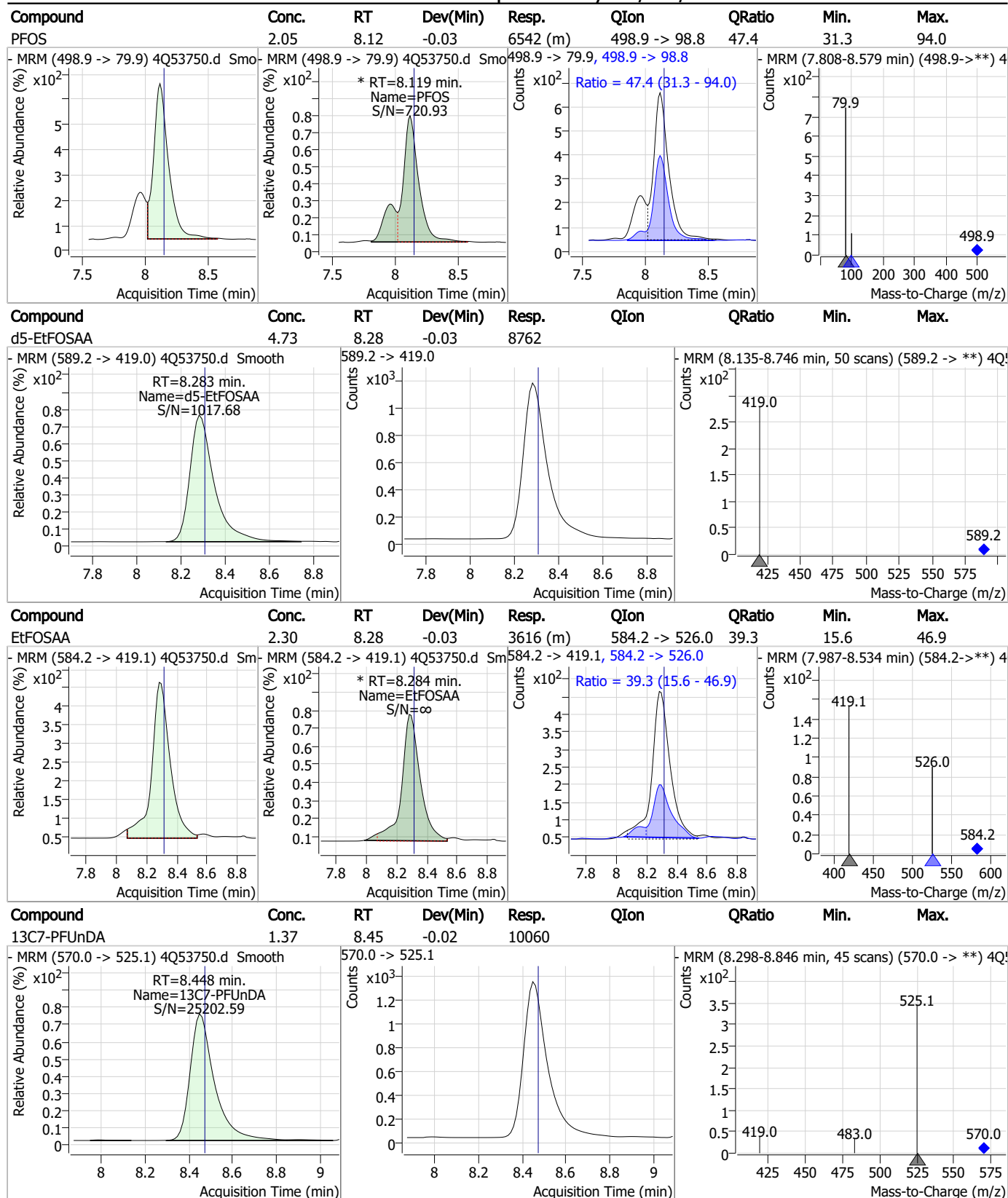
7.4.1

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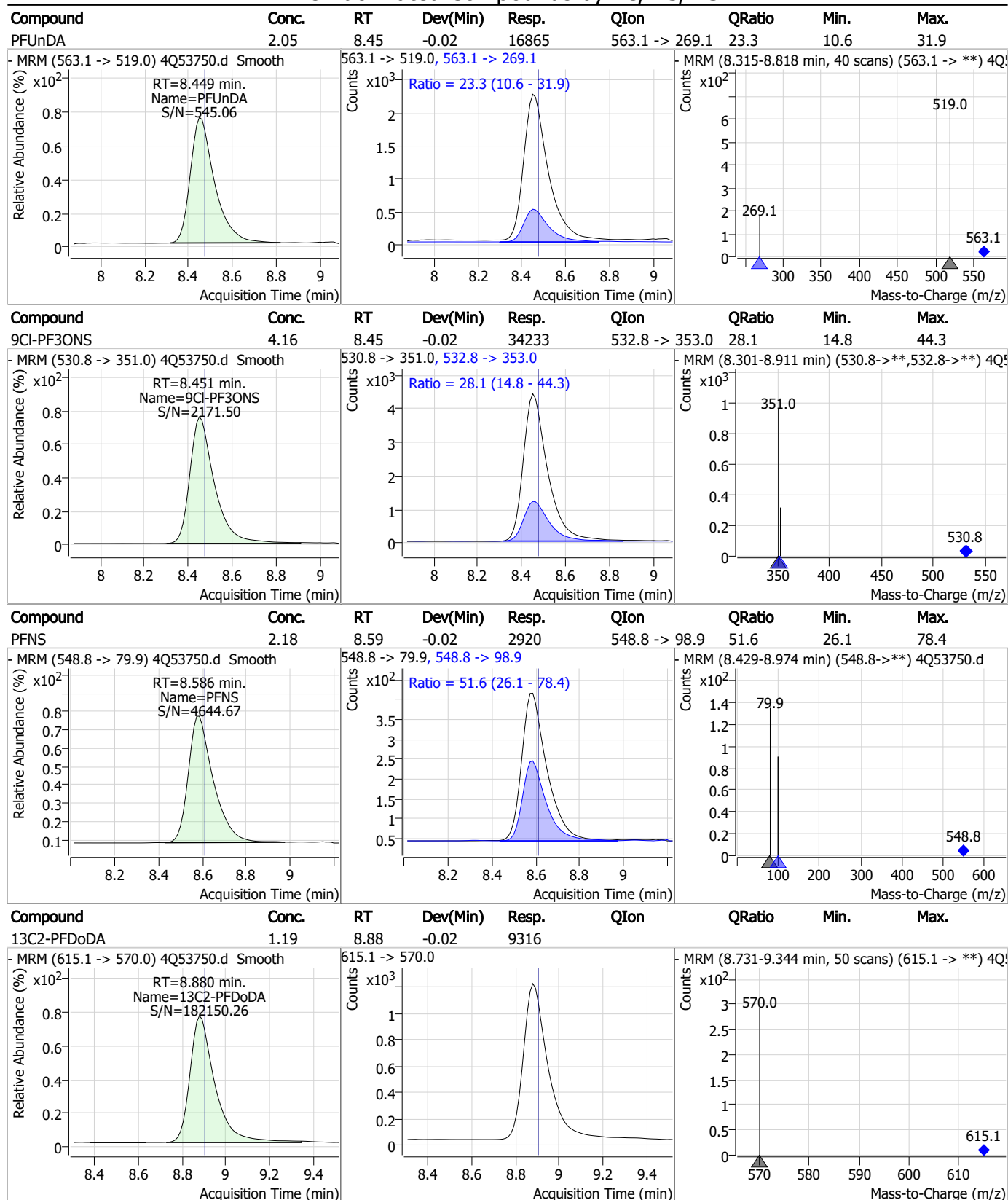
Perfluorinated Compounds by LC/MS/MS



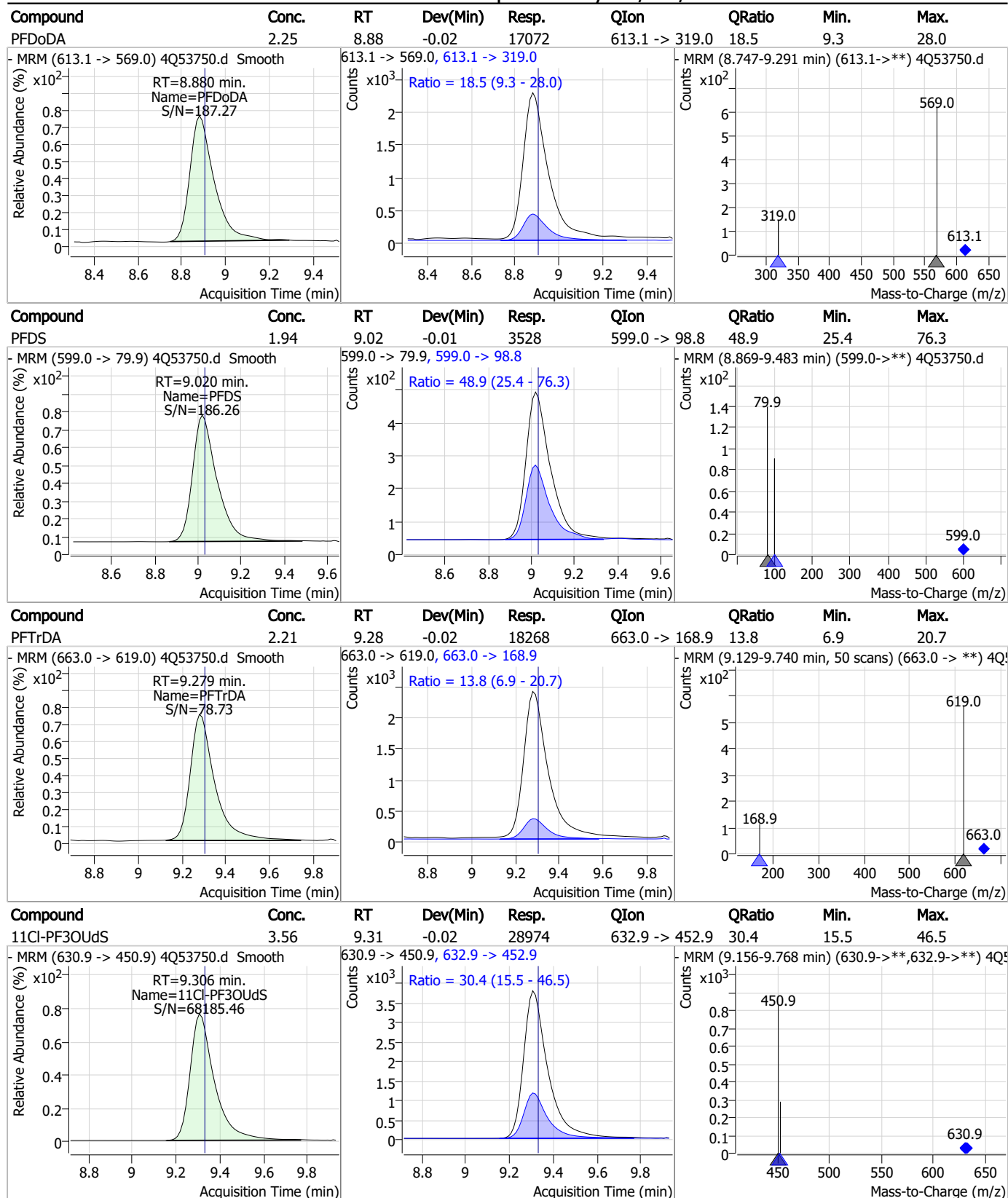
Perfluorinated Compounds by LC/MS/MS



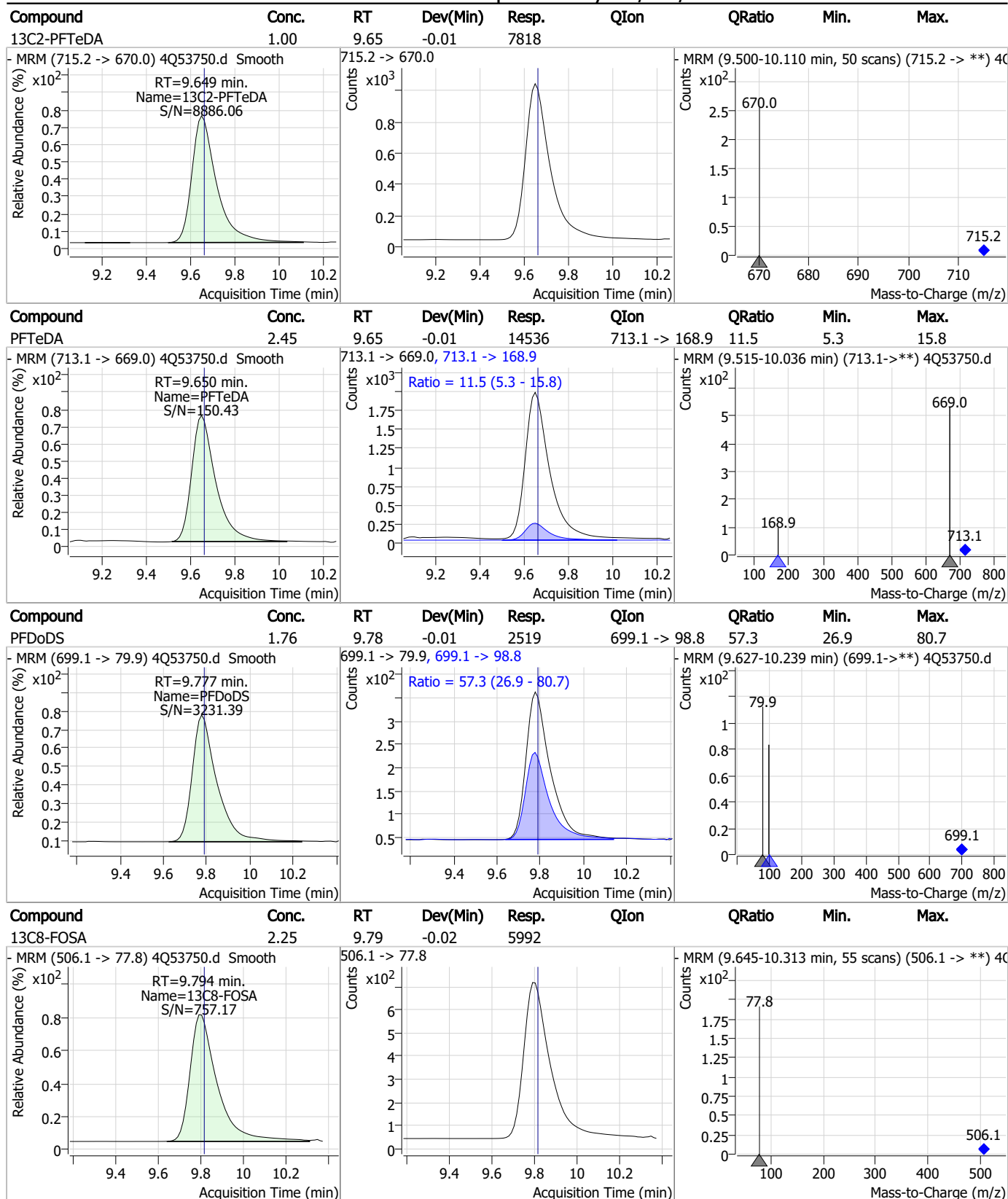
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



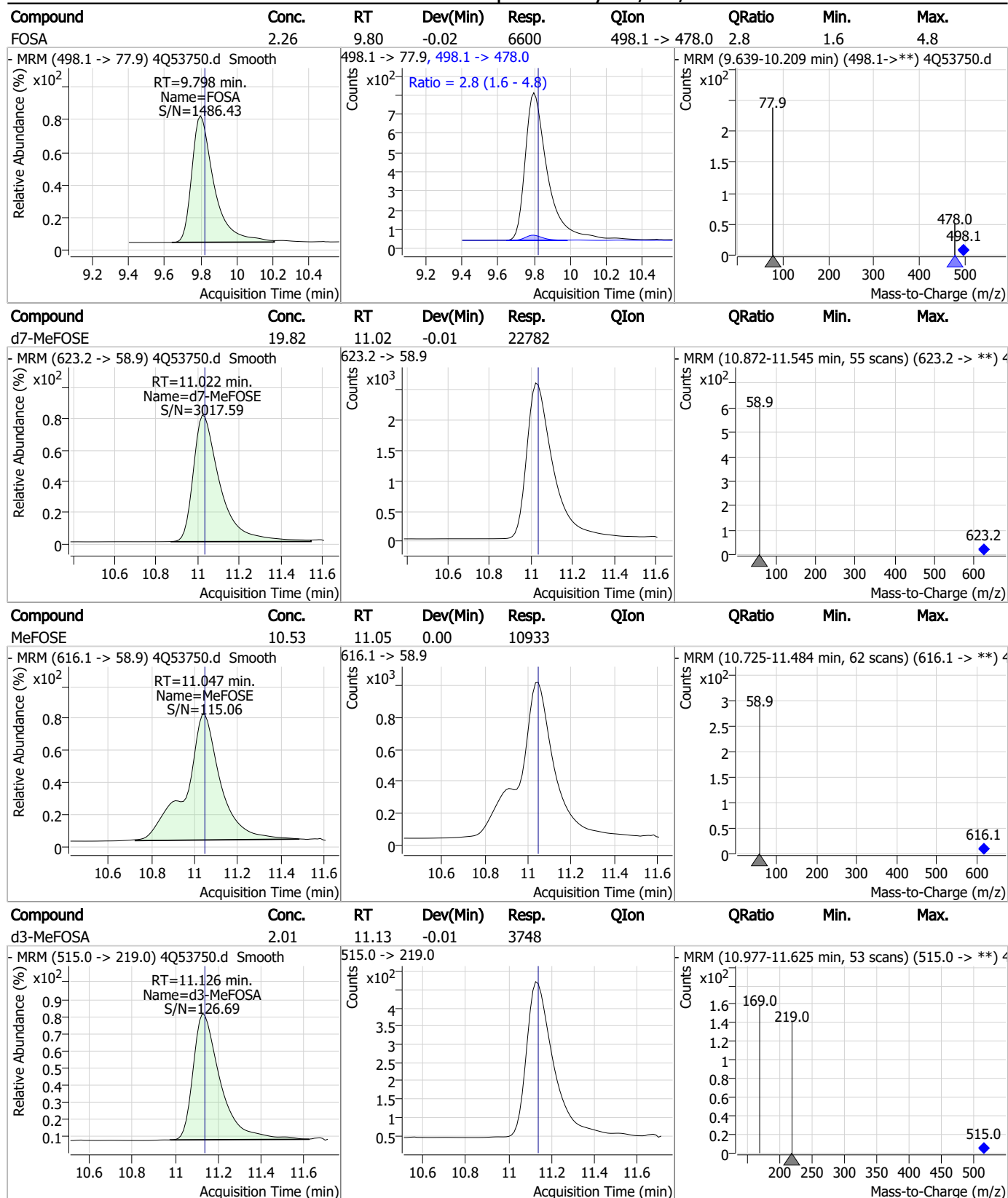
Perfluorinated Compounds by LC/MS/MS



7.4.1

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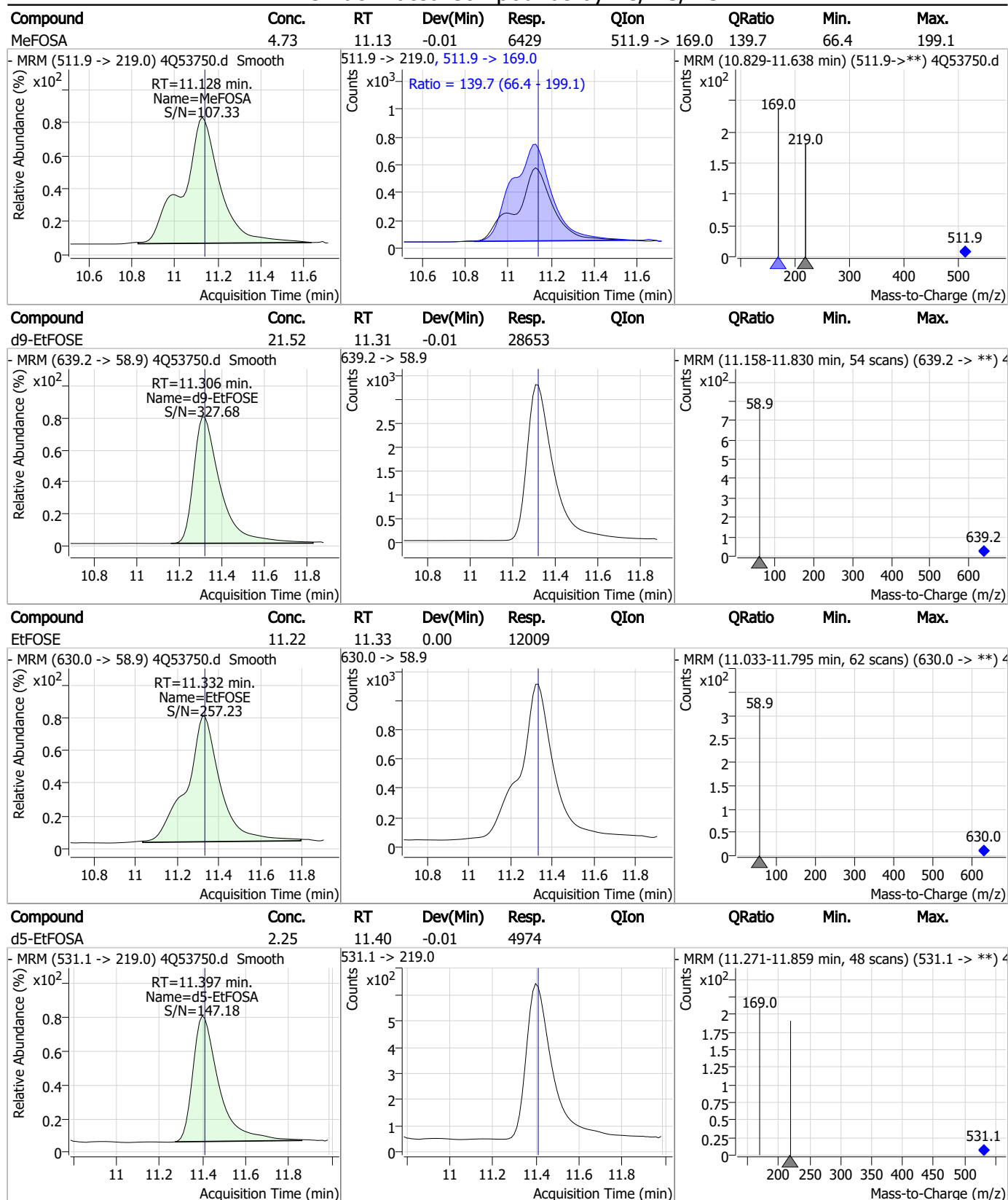
Perfluorinated Compounds by LC/MS/MS



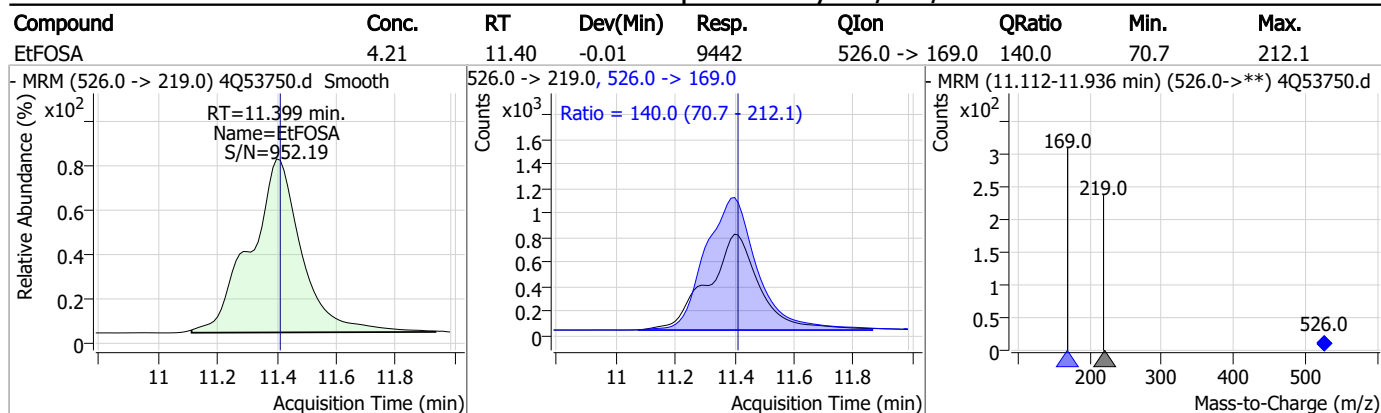
7.4.1

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.4.1

7

Manual Integration Approval Summary

Sample Number: OP99997-MS

Method: EPA DRAFT 1633

Lab FileID: 4Q53750.D

Analyst approved: 11/14/23 13:57 Anna Ludwig

Injection Time: 11/13/23 20:39

Supervisor approved: 11/14/23 15:56 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak

7.4.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53752.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 9:09:15 PM
 Sample Name : op99997-dup
 Vial : P4-D9
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,530,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	78057	10.00 µg/L	-0.013
M5-PFPeA	4.137	268.3 -> 223.0	33355	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	25507	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	24724	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	27812	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	11402	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	7675	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	9698	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	8463	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	7408	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	5471	2.50 µg/L	-0.025
M3-PFBS	5.165	302.1 -> 79.9	7590	2.50 µg/L	-0.038
M3-PFHxS	7.017	402.1 -> 79.9	5867	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6349	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	662	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1410	5.00 µg/L	-0.025
M2-8:2FTS	7.791	529.1 -> 80.9	1892	5.00 µg/L	-0.037
M3-MeFOSAA	8.074	573.2 -> 419.0	9518	5.00 µg/L	-0.025
M3-HFPO-DA	5.664	286.9 -> 168.9	23594	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	7432	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	21982	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	27276	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	4866	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3626	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5466	2.50 µg/L	-0.026
13C3-PFBA	2.691	216.0 -> 172.0	35419	5.00 µg/L	-0.013
18O2-PFHxS	7.016	403.0 -> 83.9	3800	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	27890	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	8527	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	10466	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	24969	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	662	5.09 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1410	5.15 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C2-8:2FTS	7.791	529.1 -> 80.9	1892	4.90 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C2-PFDoDA	8.880	615.1 -> 570.0	8463	1.10 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.0%		
13C2-PFTeDA	9.649	715.2 -> 670.0	7408	0.96 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 76.5%		
13C3-PFBS	5.165	302.1 -> 79.9	7590	2.66 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.5%		
13C3-PFHxS	7.017	402.1 -> 79.9	5867	2.49 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C4-PFBA	2.686	216.8 -> 171.9	78057	10.58 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 105.8%		
13C4-PFHpA	6.267	367.1 -> 322.0	24724	2.84 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.5%		
13C5-PFHxA	5.310	318.0 -> 273.0	25507	2.74 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.5%		
13C5-PFPeA	4.137	268.3 -> 223.0	33355	5.48 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.5%		
13C6-PFDA	7.992	519.1 -> 474.1	7675	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C7-PFUnDA	8.448	570.0 -> 525.1	9698	1.34 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.0%		
13C8-FOSA	9.794	506.1 -> 77.8	5471	2.09 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 83.8%		
13C8-PFOA	6.964	421.1 -> 376.0	27812	2.79 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.7%		
13C8-PFOS	8.117	507.1 -> 79.9	6349	2.43 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C9-PFNA	7.509	472.1 -> 427.0	11402	1.38 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 110.5%		
d3-MeFOSAA	8.074	573.2 -> 419.0	9518	4.59 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.8%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	23594	11.10 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 111.0%		
d3-MeFOSA	11.126	515.0 -> 219.0	3626	1.99 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 79.5%		
d5-EtFOSAA	8.283	589.2 -> 419.0	7432	4.09 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 81.9%		
d7-MeFOSE	11.022	623.2 -> 58.9	21982	19.52 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 78.1%		
d9-EtFOSE	11.319	639.2 -> 58.9	27276	20.91 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 83.7%		
d5-EtFOSA	11.397	531.1 -> 219.0	4866	2.25 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.0%		

Target Compounds

QValue

4:2FTS	-	327.1 -> 307.0	-	N.D.
		327.1 -> 80.9		
6:2FTS	-	427.1 -> 407.0	-	N.D.
		427.1 -> 80.9		
8:2FTS	-	527.1 -> 507.0	-	N.D.
		527.1 -> 80.8		
EtFOSAA	-	584.2 -> 419.1	-	N.D.
		584.2 -> 526.0		
FOSA	-	498.1 -> 77.9	-	N.D.
		498.1 -> 478.0		
MeFOSAA	-	570.1 -> 419.0	-	N.D.
		570.1 -> 483.0		
PFBA	-	212.8 -> 168.9	-	N.D.
PFBS	-	298.7 -> 79.9	-	N.D.
		298.7 -> 98.8		
PFDA	-	512.9 -> 469.0	-	N.D.
		512.9 -> 219.0		
PFDODA	-	613.1 -> 569.0	-	N.D.
		613.1 -> 319.0		
PFDS	-	599.0 -> 79.9	-	N.D.

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11CI-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9CI-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

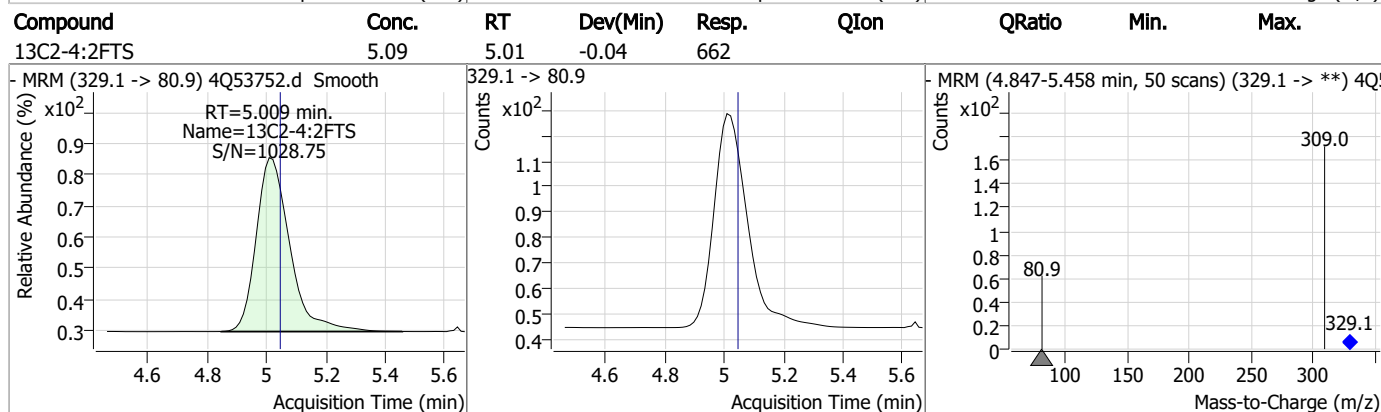
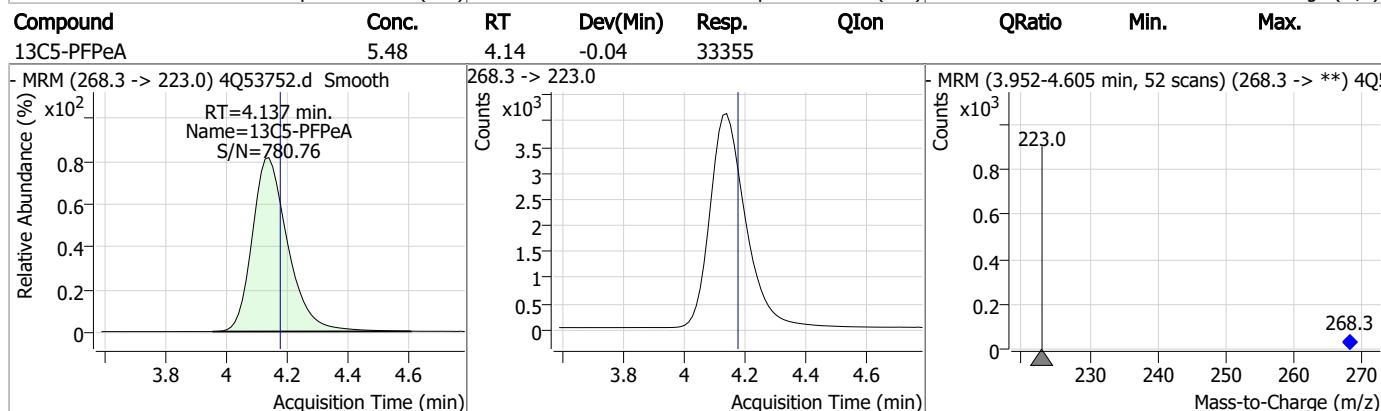
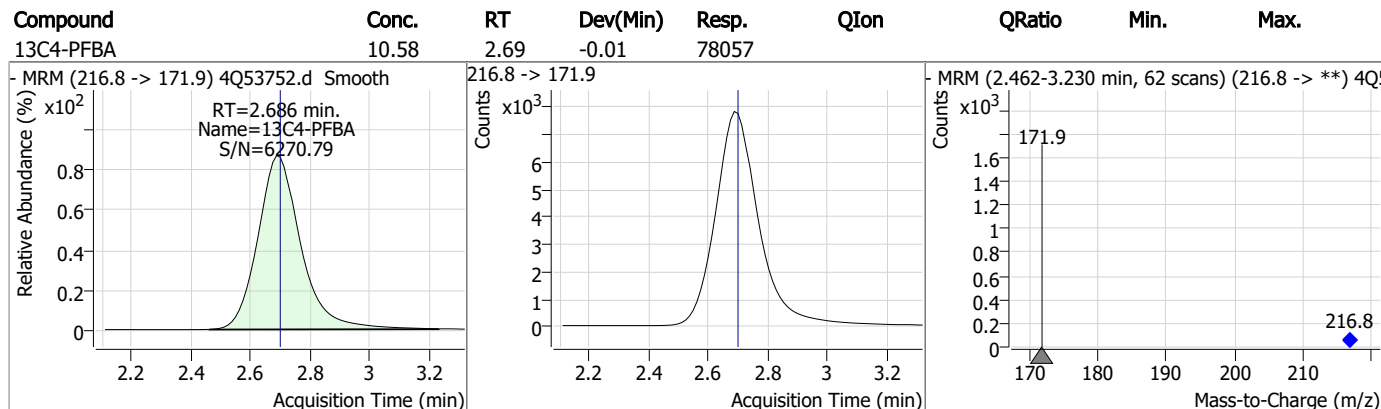
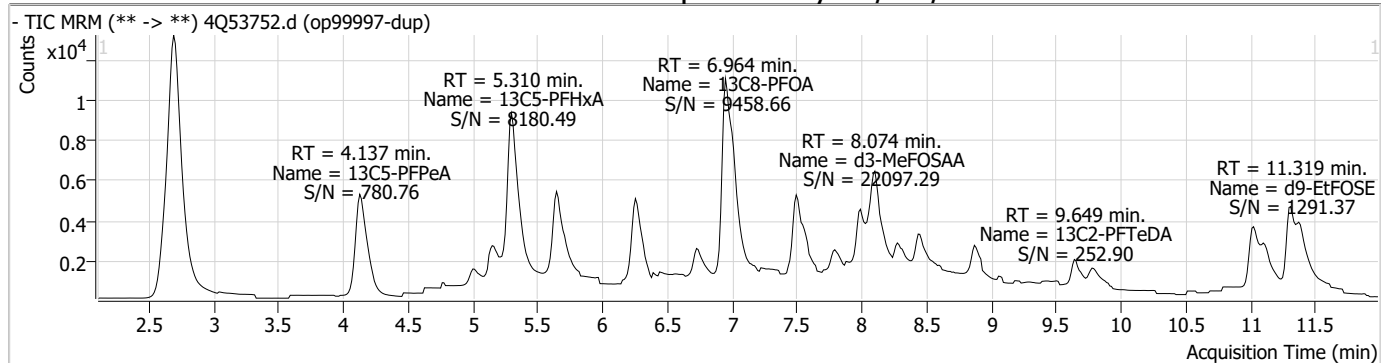
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

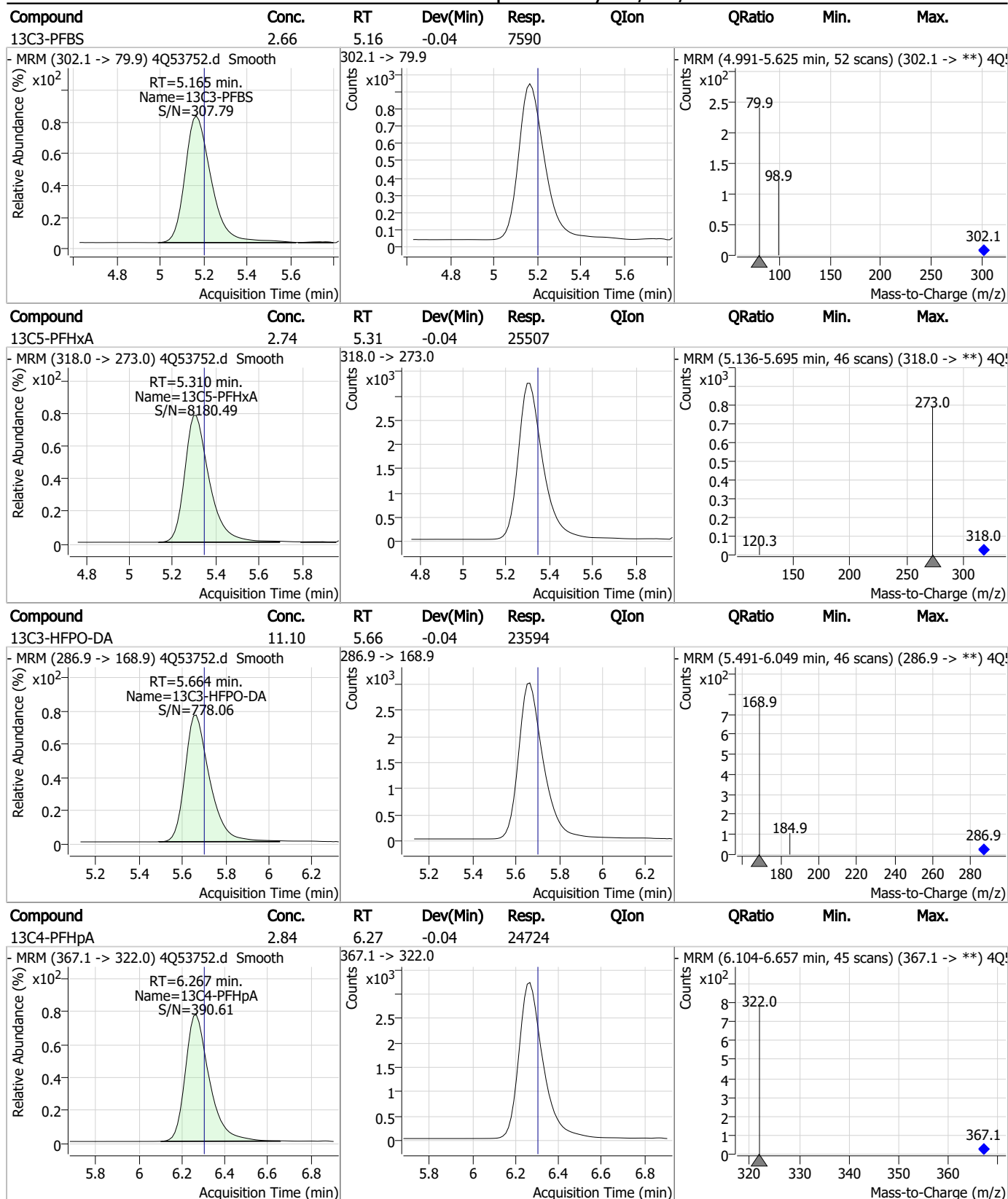
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.5.1
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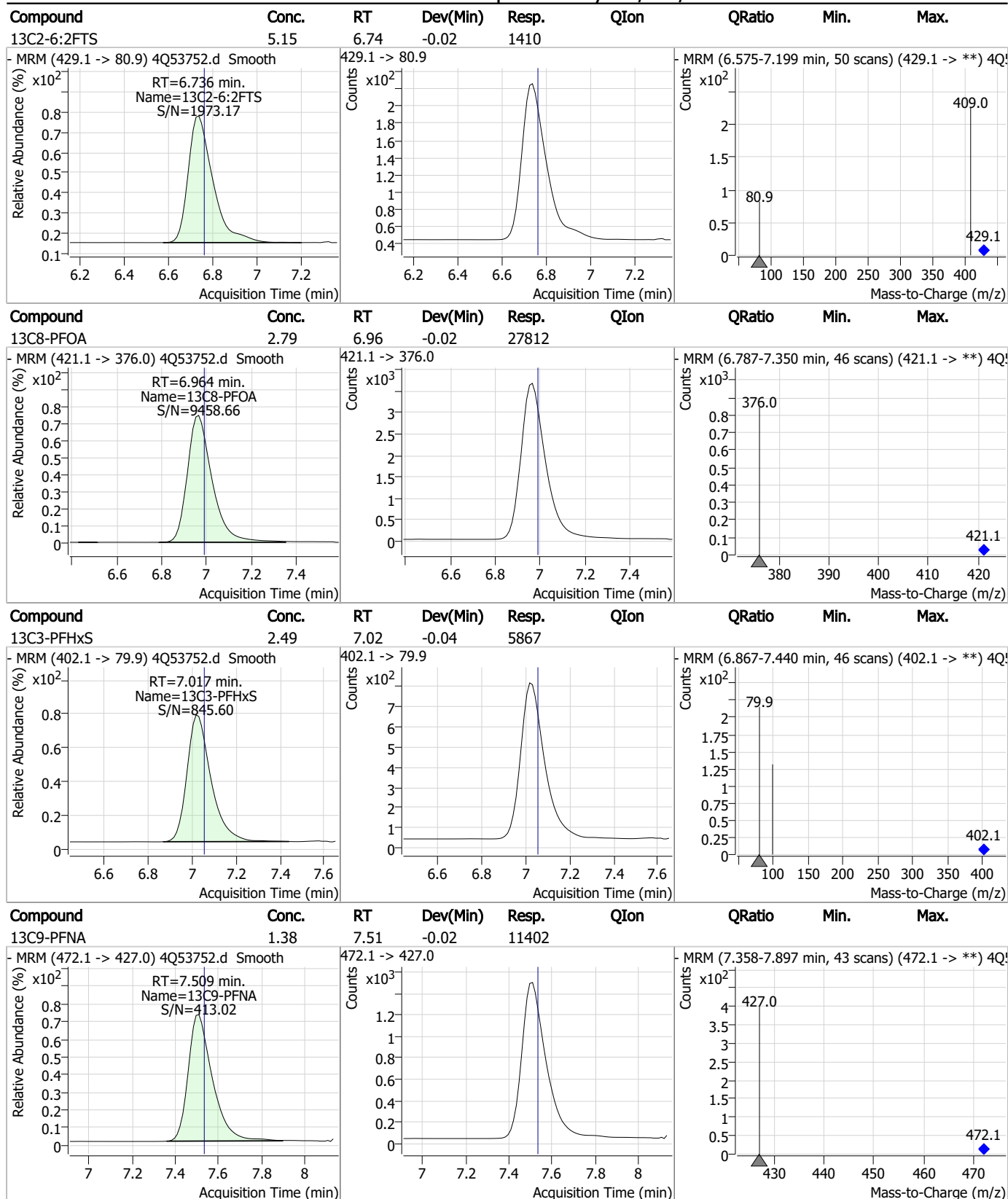
Perfluorinated Compounds by LC/MS/MS



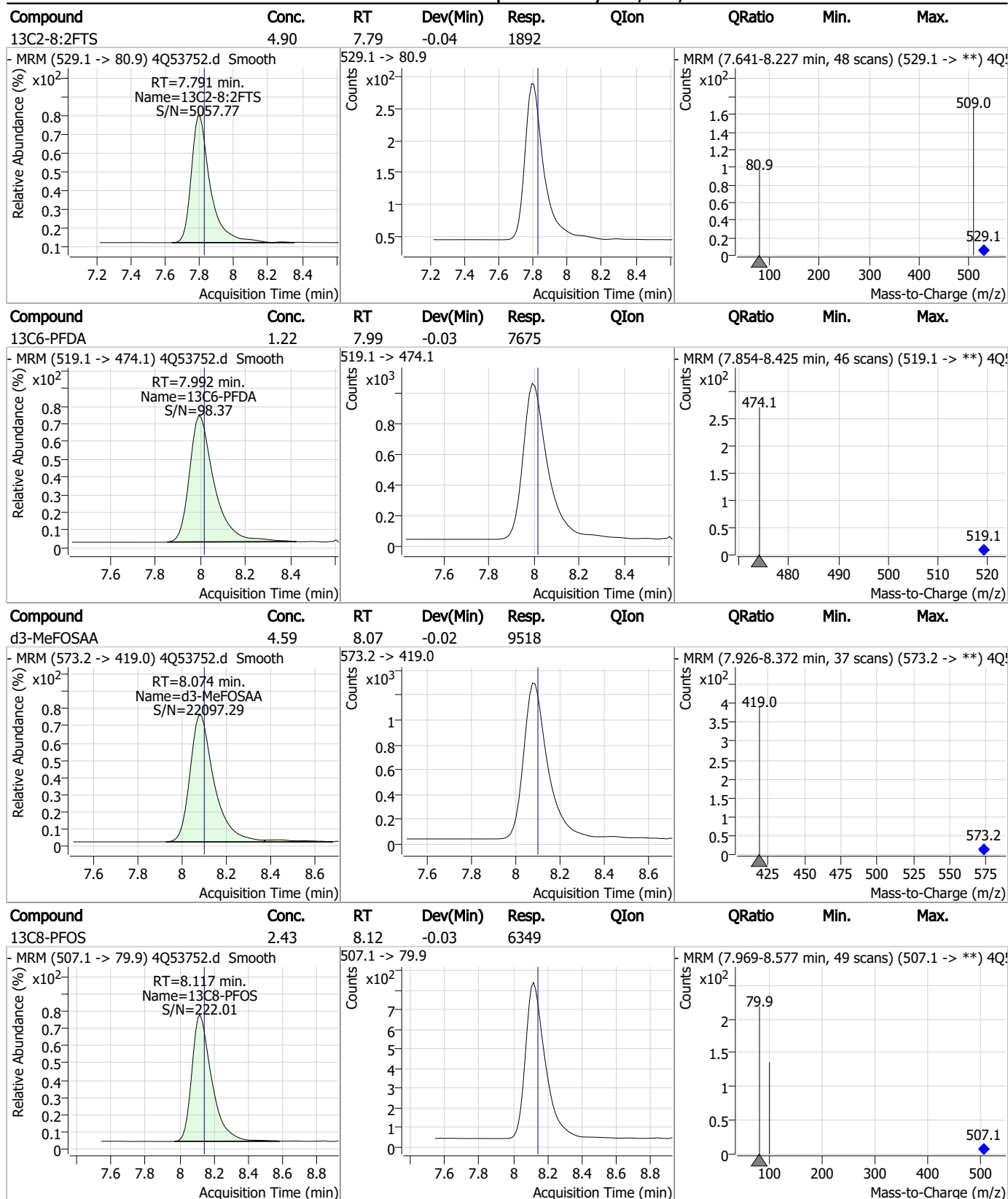
Perfluorinated Compounds by LC/MS/MS



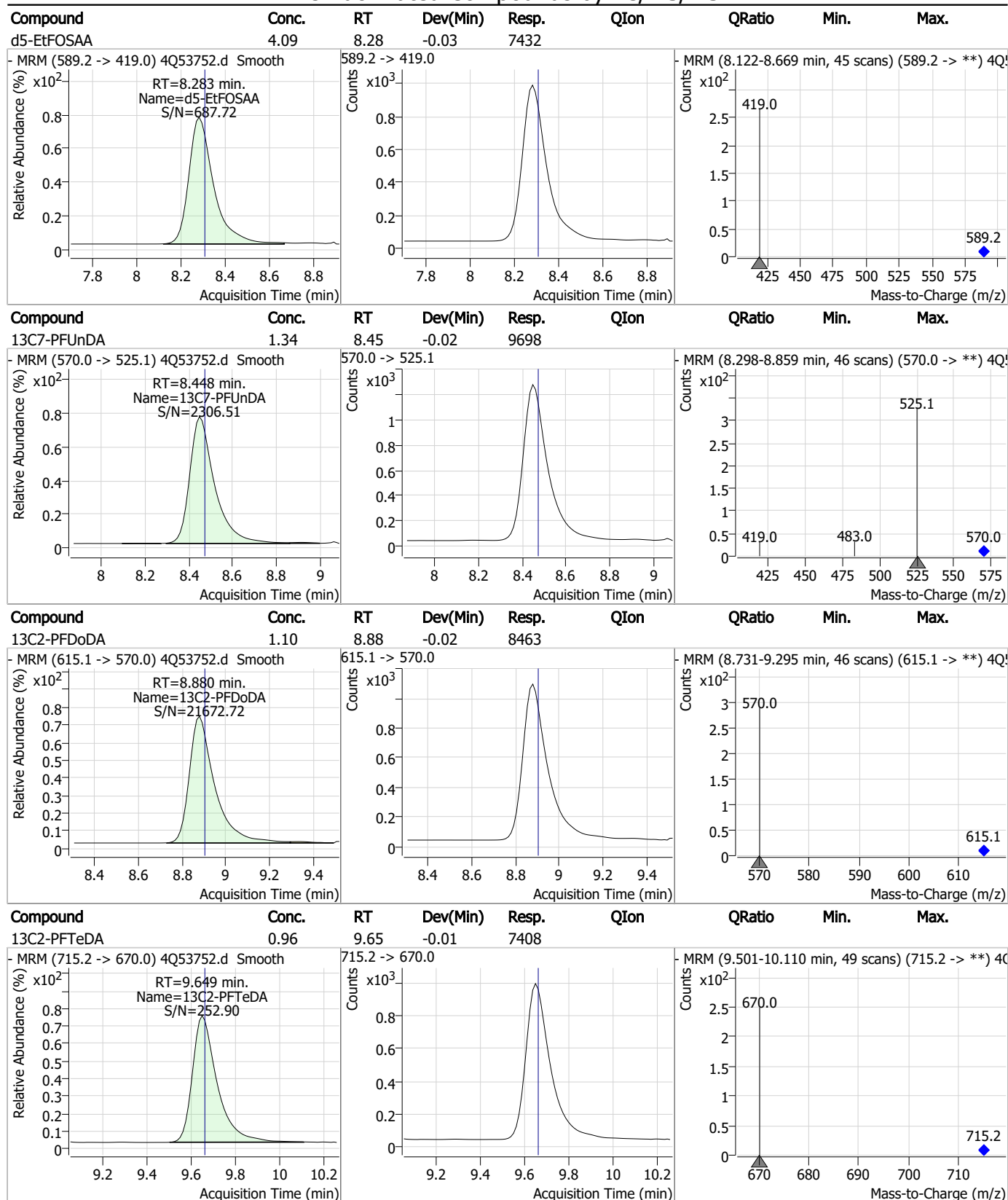
Perfluorinated Compounds by LC/MS/MS



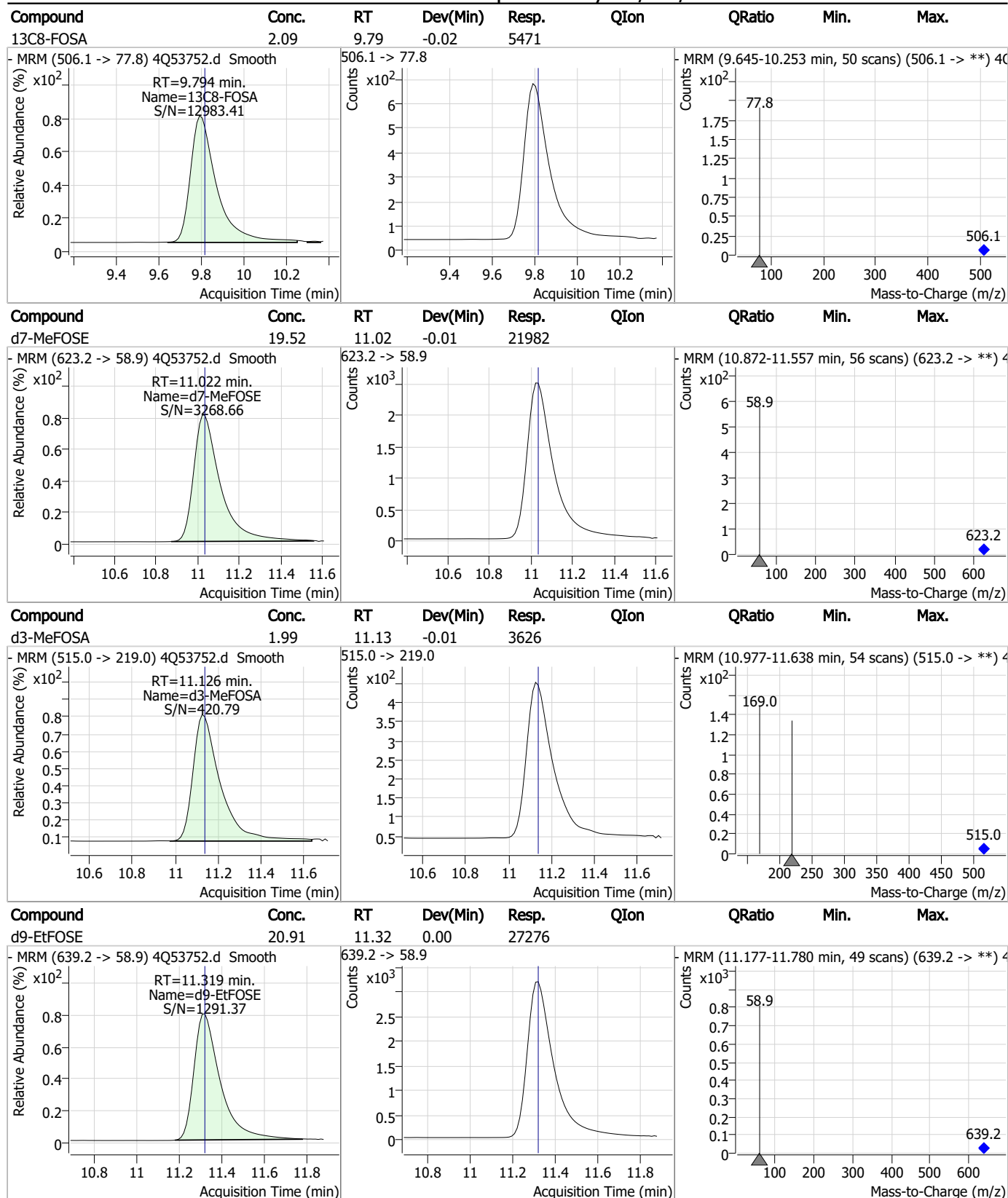
Perfluorinated Compounds by LC/MS/MS



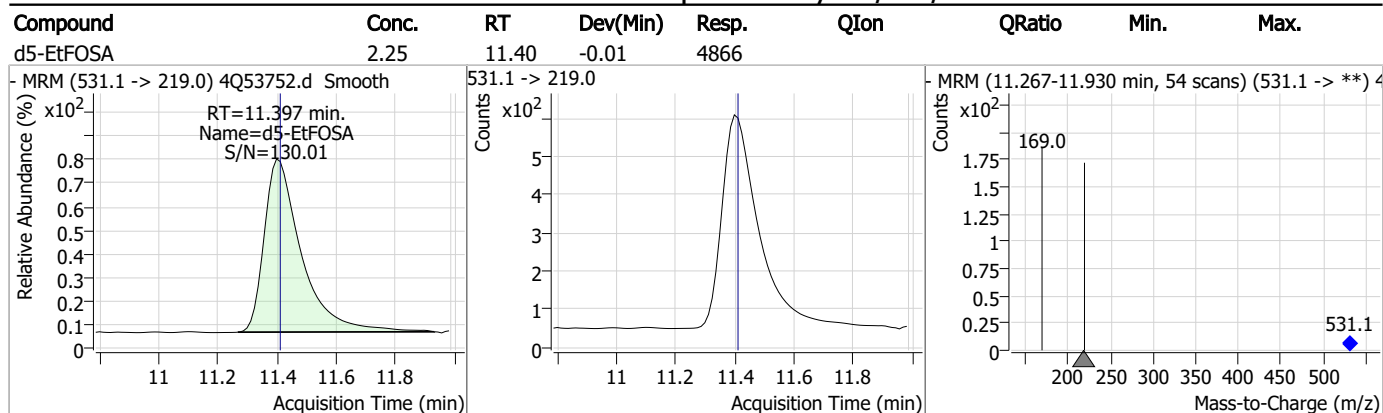
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Natasha Guntie
11/14/23 15:48

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53728.d
Operator : annal
Acq. Method : 1633full_4Q.m
Acq. Date-Time : 11/13/2023 2:55:58 PM
Sample Name : RT TDCA
Vial : P1-B1
DA Method File : TDCA.quantmethod.xml
Batch Name : s4q785_TDCA.batch.bin
Sample Information : OP98180,S4Q785,500,,,5.0,1,water

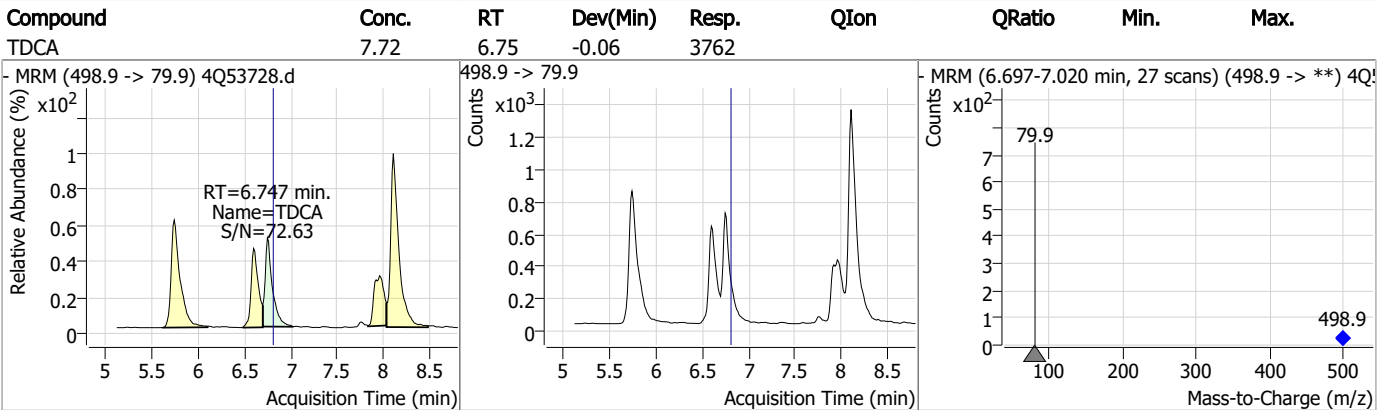
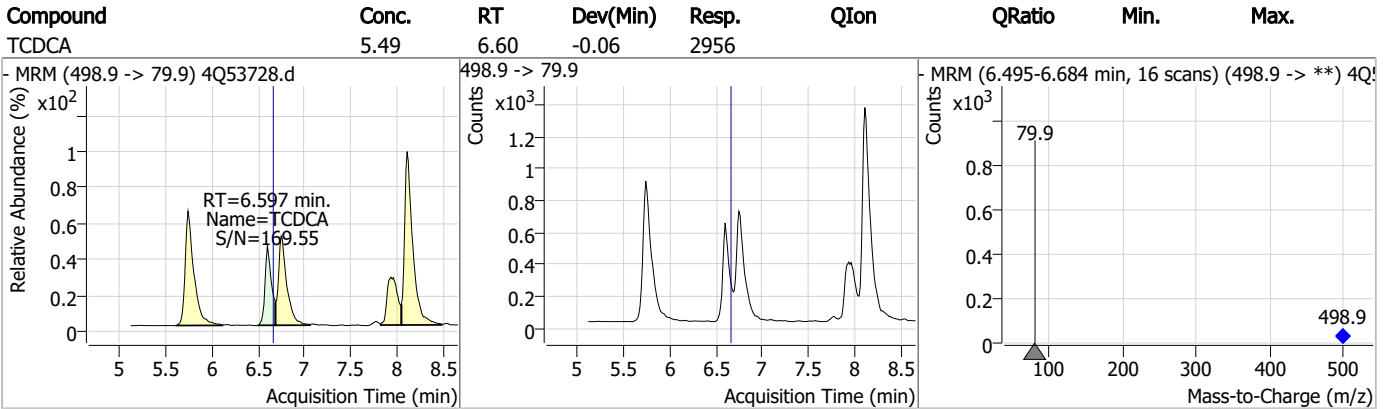
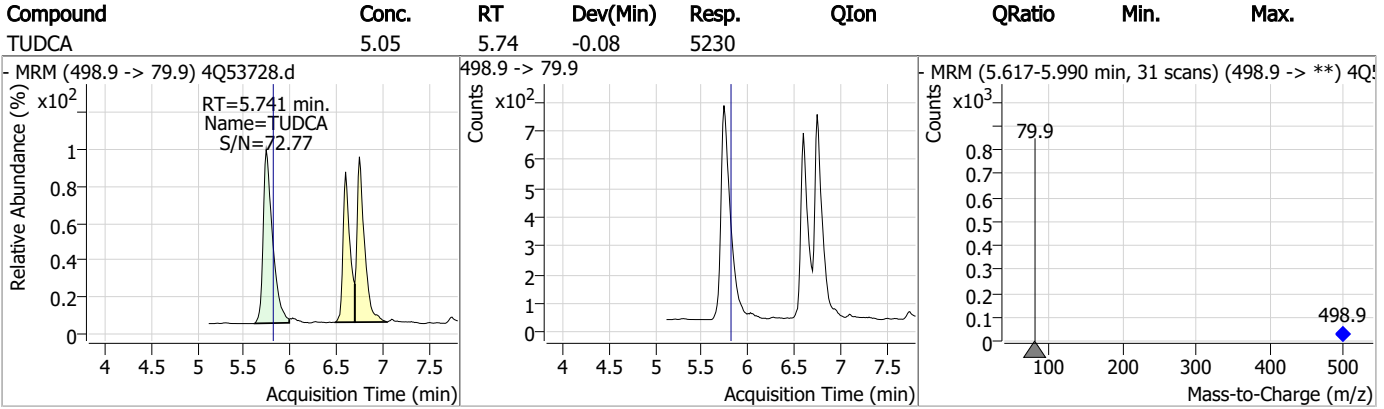
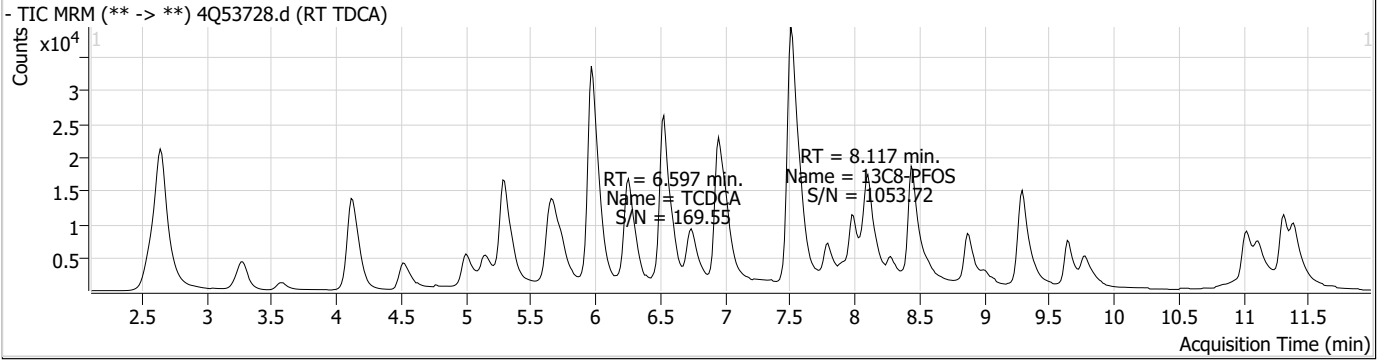
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Internal Standards						
M8-PFOS	8.117	507.1 -> 79.9	11669	2.50	µg/L	-0.076
13C4-PFOS	8.118	502.8 -> 79.9	9951	2.50	µg/L	-0.076
System Monitoring Compounds						
13C8-PFOS	8.117	507.1 -> 79.9	11669	2.97	µg/L	-0.076
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 119.0%			
Target Compounds						
PFOS	8.119	498.9 -> 79.9	11135	2.79	µg/L	97
		498.9 -> 98.8	5434		m	
TCDCA	6.597	498.9 -> 79.9	2956	5.49	ng/ml	100
TDCA	6.747	498.9 -> 79.9	3762	7.72	ng/ml	100
TUDCA	5.741	498.9 -> 79.9	5230	5.05	ng/ml	100

= Qualifier out of range, m = manually integrated, + = Area summed

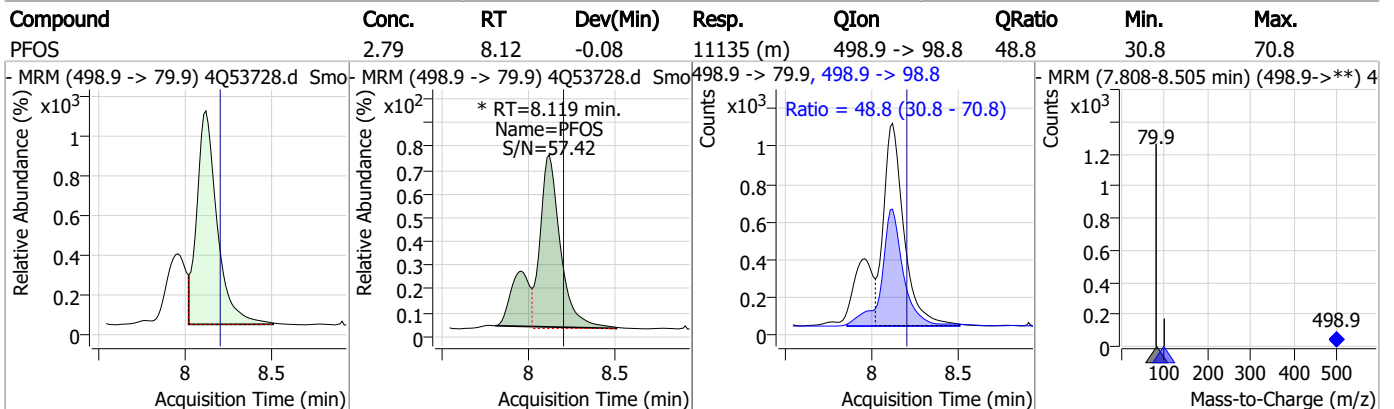
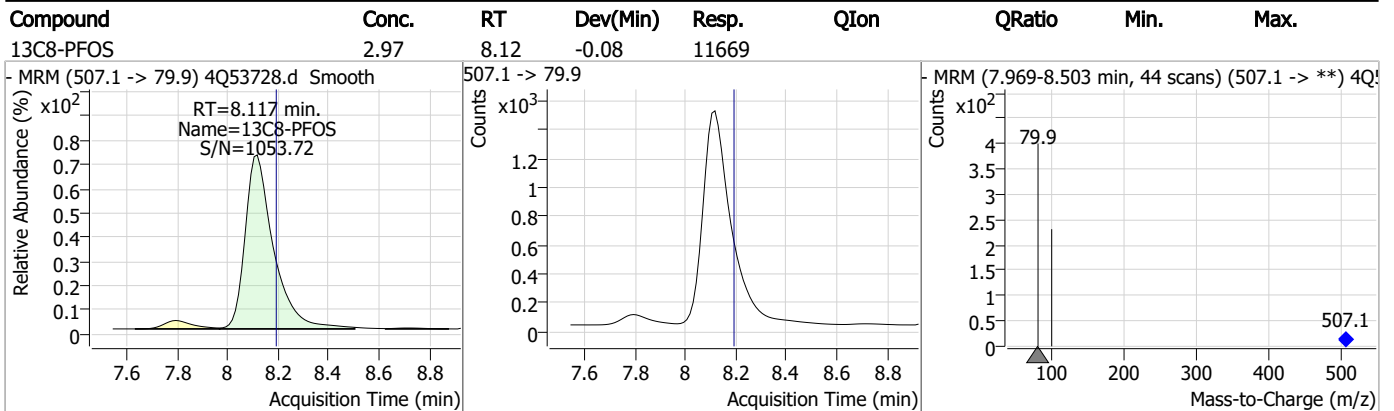
7.6.1

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.1

7

Manual Integration Approval Summary

Sample Number: S4Q785-RT

Method: EPA DRAFT 1633

Lab FileID: 4Q53728.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 14:55

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak

7.6.1.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53729.d
Operator : annal
Acq. Method : 1633full_4Q.m
Acq. Date-Time : 11/13/2023 3:10:43 PM
Sample Name : RT BR_LN
Vial : P1-B2
DA Method File : 1633_111323_S4Q785.quantmethod.xml
Batch Name : s4q785.batch.bin
Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	104183	10.00 µg/L	-0.075
M5-PFPeA	4.125	268.3 -> 223.0	43528	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	35013	2.50 µg/L	-0.050
M4-PFHpA	6.255	367.1 -> 322.0	33413	2.50 µg/L	-0.050
M8-PFOA	6.964	421.1 -> 376.0	37118	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	15475	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	11432	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	12515	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	12708	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	13444	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	8528	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	9918	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	8191	2.50 µg/L	-0.037
M8-PFOS	8.105	507.1 -> 79.9	8607	2.50 µg/L	-0.038
M2-4:2FTS	4.996	329.1 -> 80.9	844	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	1714	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2387	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	13674	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	32864	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	11323	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	34785	25.00 µg/L	-0.012
M9-EtFOSE	11.306	639.2 -> 58.9	43421	25.00 µg/L	-0.012
M5-EtFOSA	11.397	531.1 -> 219.0	7180	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	6235	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	7246	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	49500	5.00 µg/L	-0.075
18O2-PFHxS	7.016	403.0 -> 83.9	4883	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	41121	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	11593	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	14874	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	37748	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	844	5.05 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1714	4.87 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2387	4.81 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C2-PFDoDA	8.880	615.1 -> 570.0	12708	1.21 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C2-PFTeDA	9.649	715.2 -> 670.0	13444	1.28 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C3-PFBS	5.152	302.1 -> 79.9	9918	2.71 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.3%		
13C3-PFHxS	7.017	402.1 -> 79.9	8191	2.71 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.3%	
13C4-PFBA	2.624	216.8 -> 171.9	104183	10.10 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C4-PFHpA	6.255	367.1 -> 322.0	33413	2.54 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C5-PFHxA	5.297	318.0 -> 273.0	35013	2.49 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C5-PFPeA	4.125	268.3 -> 223.0	43528	4.73 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C6-PFDA	7.992	519.1 -> 474.1	11432	1.34 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.2%	
13C7-PFUnDA	8.448	570.0 -> 525.1	12515	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C8-FOSA	9.794	506.1 -> 77.8	8528	2.46 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C8-PFOA	6.964	421.1 -> 376.0	37118	2.53 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-PFOS	8.105	507.1 -> 79.9	8607	2.49 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C9-PFNA	7.509	472.1 -> 427.0	15475	1.32 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.5%	
d3-MeFOSAA	8.074	573.2 -> 419.0	13674	4.98 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	32864	10.23 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.3%	
d3-MeFOSA	11.126	515.0 -> 219.0	6235	2.58 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.2%	
d5-EtFOSAA	8.283	589.2 -> 419.0	11323	4.70 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.1%	
d7-MeFOSE	11.022	623.2 -> 58.9	34785	23.31 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 93.2%	
d9-EtFOSE	11.306	639.2 -> 58.9	43421	25.12 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
d5-EtFOSA	11.397	531.1 -> 219.0	7180	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	72391	43.38 µg/L	100
		327.1 -> 80.9	30496		
6:2FTS	6.737	427.1 -> 407.0	87272	47.06 µg/L	97
		427.1 -> 80.9	31972		
8:2FTS	7.804	527.1 -> 507.0	61097	47.08 µg/L	98
		527.1 -> 80.8	26185		
EtFOSAA	8.284	584.2 -> 419.1	27477	13.55 µg/L	m 85
		584.2 -> 526.0	10903		
FOSA	9.798	498.1 -> 77.9	119520	28.75 µg/L	99
		498.1 -> 478.0	3408		
MeFOSAA	8.075	570.1 -> 419.0	29417	12.10 µg/L	95
		570.1 -> 483.0	6055		
PFBA	2.632	212.8 -> 168.9	186639	49.26 µg/L	100
PFBS	5.153	298.7 -> 79.9	37739	10.72 µg/L	97
		298.7 -> 98.8	13887		
PFDA	7.992	512.9 -> 469.0	104340	11.16 µg/L	100
		512.9 -> 219.0	20527		
PFDODA	8.880	613.1 -> 569.0	134288	12.96 µg/L	96
		613.1 -> 319.0	22833		
PFDS	9.020	599.0 -> 79.9	27081	12.16 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.255	599.0 -> 98.8	13329	12.23	µg/L	98
		363.1 -> 319.0	256236			
PFHpS	7.612	363.1 -> 169.0	46679	11.85	µg/L	100
		449.0 -> 79.9	40343			
PFHxA	5.300	449.0 -> 98.9	20559	12.38	µg/L	99
		313.0 -> 269.0	151395			
PFHxS	7.018	313.0 -> 118.9	4588	11.50	µg/L	82
		398.7 -> 79.9	28425			
PFNA	7.496	398.7 -> 98.9	14386	25.18	µg/L	100
		463.0 -> 419.0	248471			
PFNS	8.586	463.0 -> 219.0	63483	12.00	µg/L	99
		548.8 -> 79.9	19716			
PFOA	6.965	548.8 -> 98.9	10508	24.52	µg/L	99
		413.0 -> 369.0	440645			
PFOS	8.119	413.0 -> 169.0	91734	11.72	µg/L	80
		498.9 -> 79.9	45777			
PFPeA	4.127	498.9 -> 98.8	21541	25.72	µg/L	100
		263.0 -> 219.0	243549			
PFPeS	6.245	349.1 -> 79.9	30804	11.44	µg/L	97
		349.1 -> 98.9	13866			
PFTeDA	9.650	713.1 -> 669.0	127081	12.45	µg/L	100
		713.1 -> 168.9	13257			
PFTrDA	9.279	663.0 -> 619.0	153070	13.57	µg/L	100
		663.0 -> 168.9	20819			
PFUnDA	8.449	563.1 -> 519.0	124841	12.20	µg/L	100
		563.1 -> 269.1	26869			
11CI-PF3OUdS	9.306	630.9 -> 450.9	232791	22.69	µg/L	99
		632.9 -> 452.9	71213			
9CI-PF3ONS	8.451	530.8 -> 351.0	229794	22.18	µg/L	98
		532.8 -> 353.0	70551			
ADONA	6.531	376.9 -> 250.9	597362	26.27	µg/L	100
		376.9 -> 84.8	148504			
HFPO-DA	5.653	284.9 -> 168.9	82009	23.56	µg/L	100
		284.9 -> 184.9	7826			
3:3FTCA	3.573	241.0 -> 177.0	36107	61.17	µg/L	100
		241.0 -> 117.0	3246			
5:3FTCA	5.983	341.0 -> 237.1	664977	308.91	µg/L	99
		341.0 -> 217.0	480609			
7:3FTCA	7.524	441.0 -> 316.9	298779	309.39	µg/L	95
		441.0 -> 336.9	703887			
EtFOSA	11.399	526.0 -> 219.0	130810	40.40	µg/L	97
		526.0 -> 169.0	180462			
EtFOSE	11.332	630.0 -> 58.9	125429	77.31	µg/L	100
		511.9 -> 219.0	90224			
MeFOSA	11.128	511.9 -> 169.0	129576	39.87	µg/L	91
		616.1 -> 58.9	130471			
MeFOSE	11.047	699.1 -> 79.9	20997	82.32	µg/L	100
		699.1 -> 98.8	11560			
PFDoDS	9.777	295.0 -> 201.0	20644	11.95	µg/L	98
		295.0 -> 84.9	5298			
NFDHA	5.179	279.0 -> 85.1	138577	25.41	µg/L	100
		229.0 -> 84.9	155822			
PFMBA	3.265	314.8 -> 134.9	216148	22.33	µg/L	99
		314.8 -> 82.9	7290			
PFEESA	5.684					

= Qualifier out of range, m = manually integrated, + = Area summed

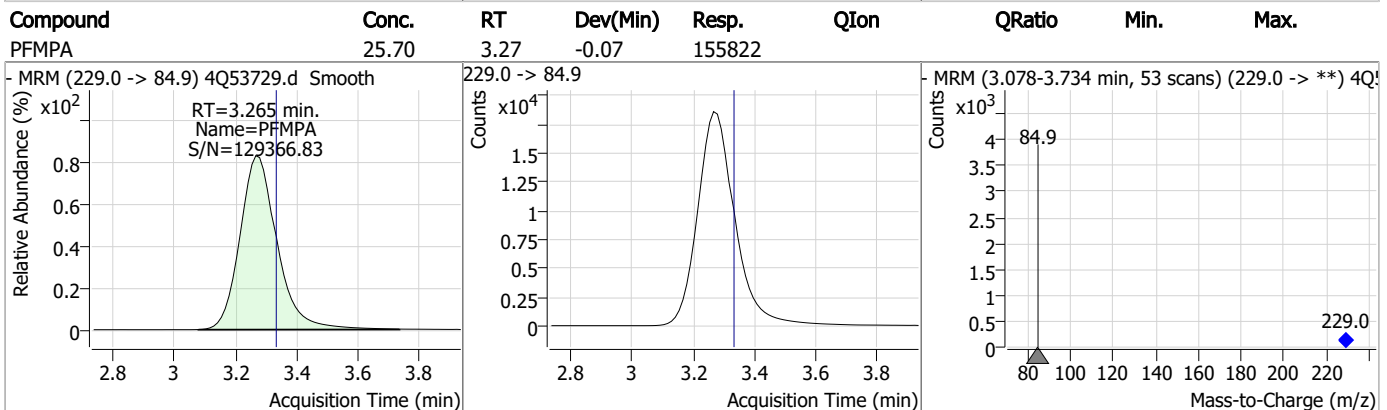
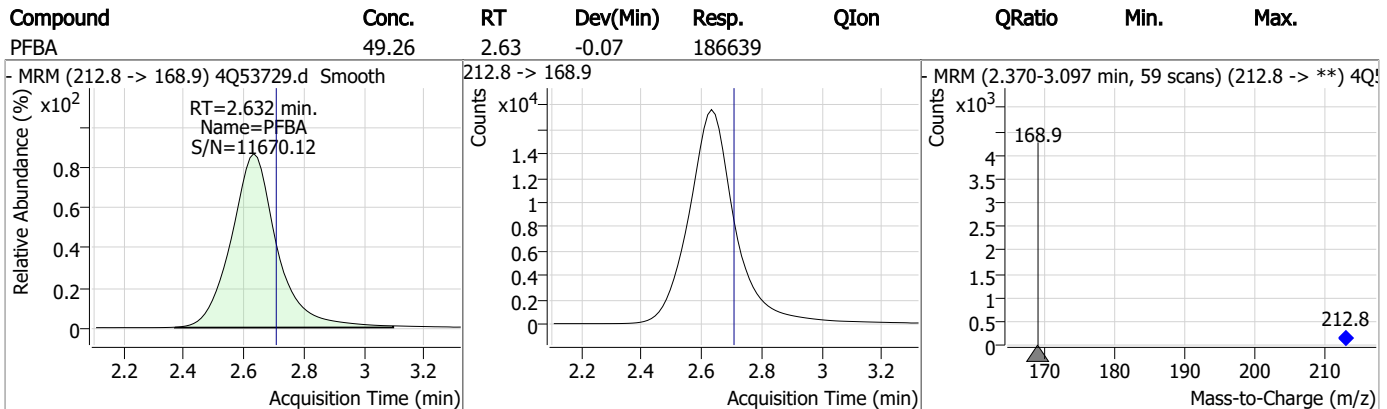
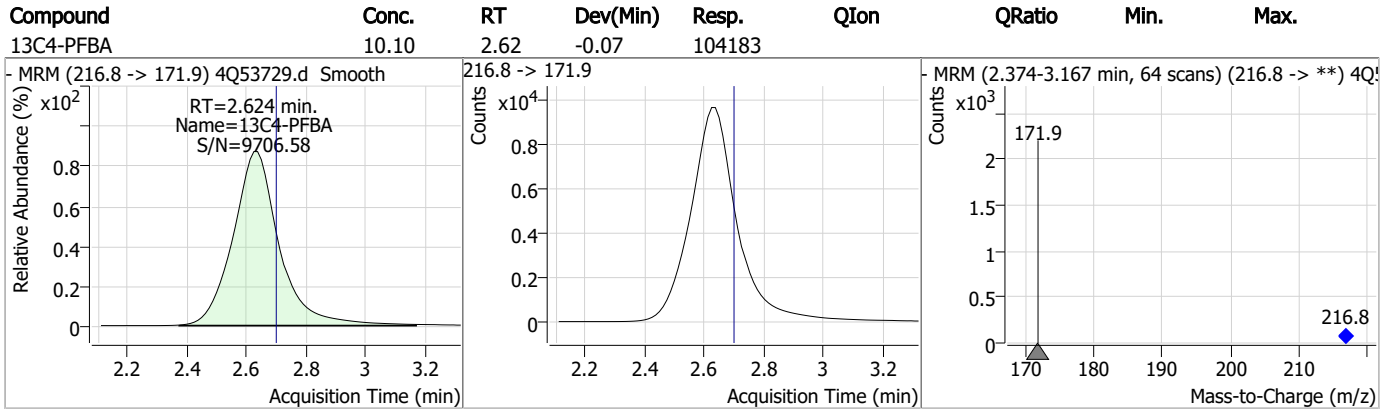
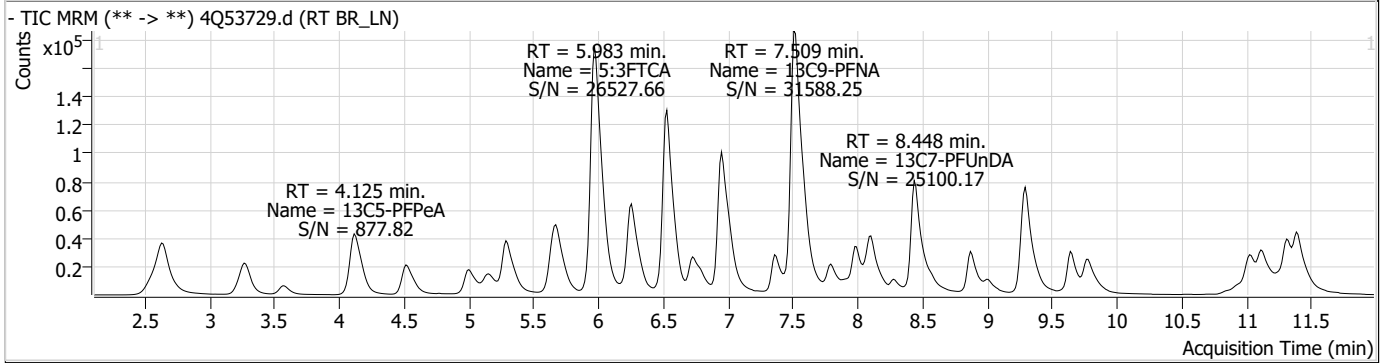
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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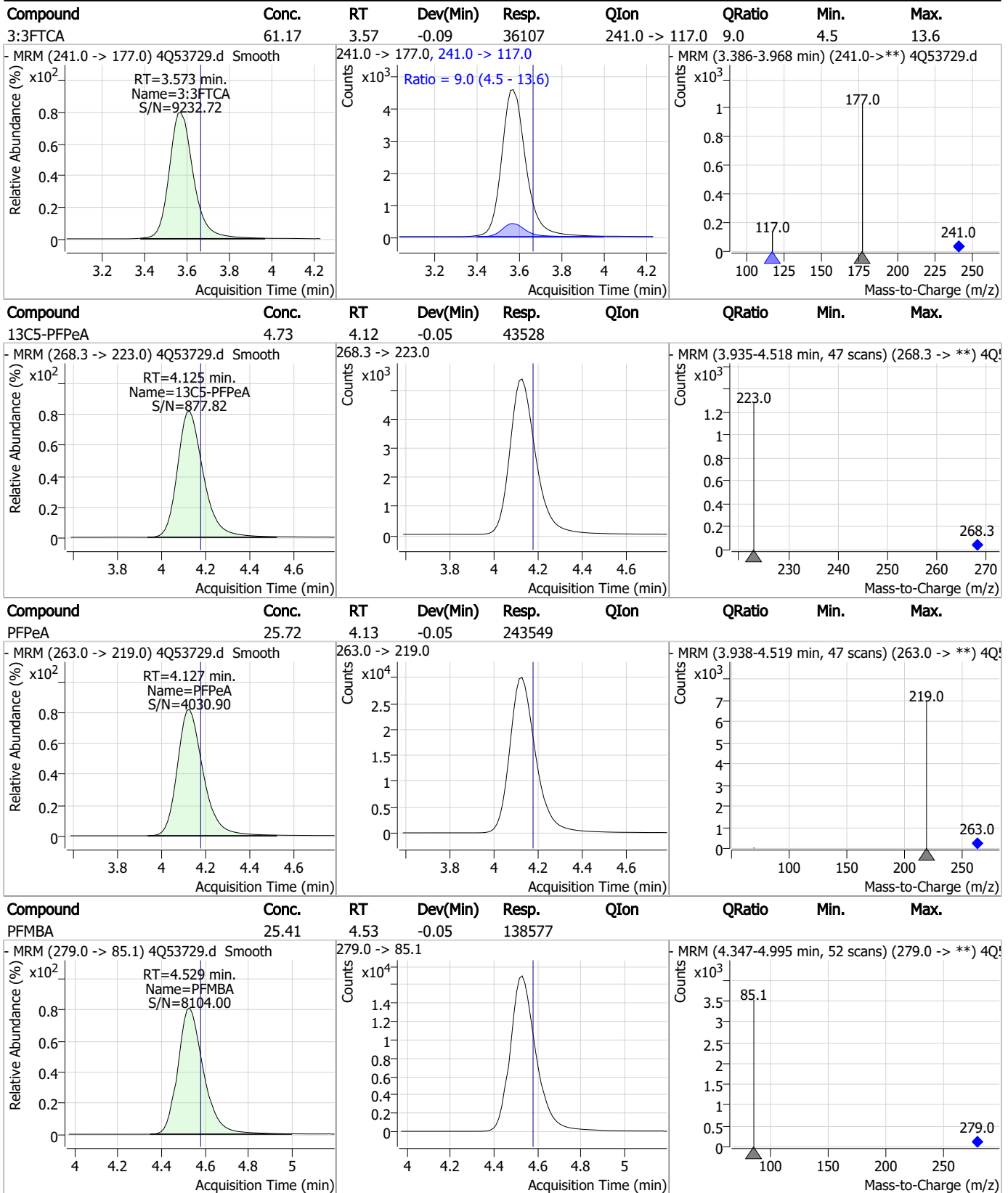
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Perfluorinated Compounds by LC/MS/MS



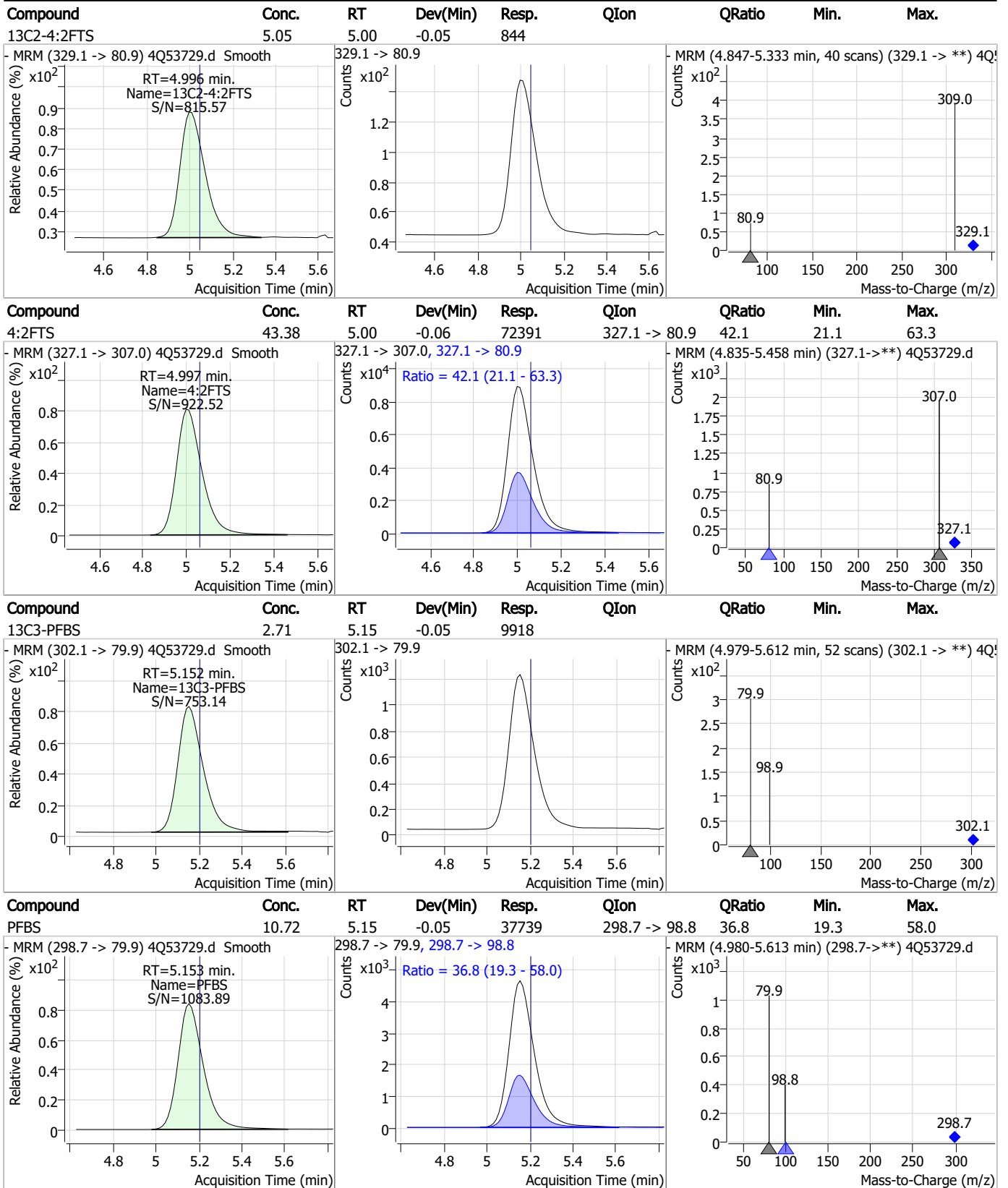
Perfluorinated Compounds by LC/MS/MS



7.6.2

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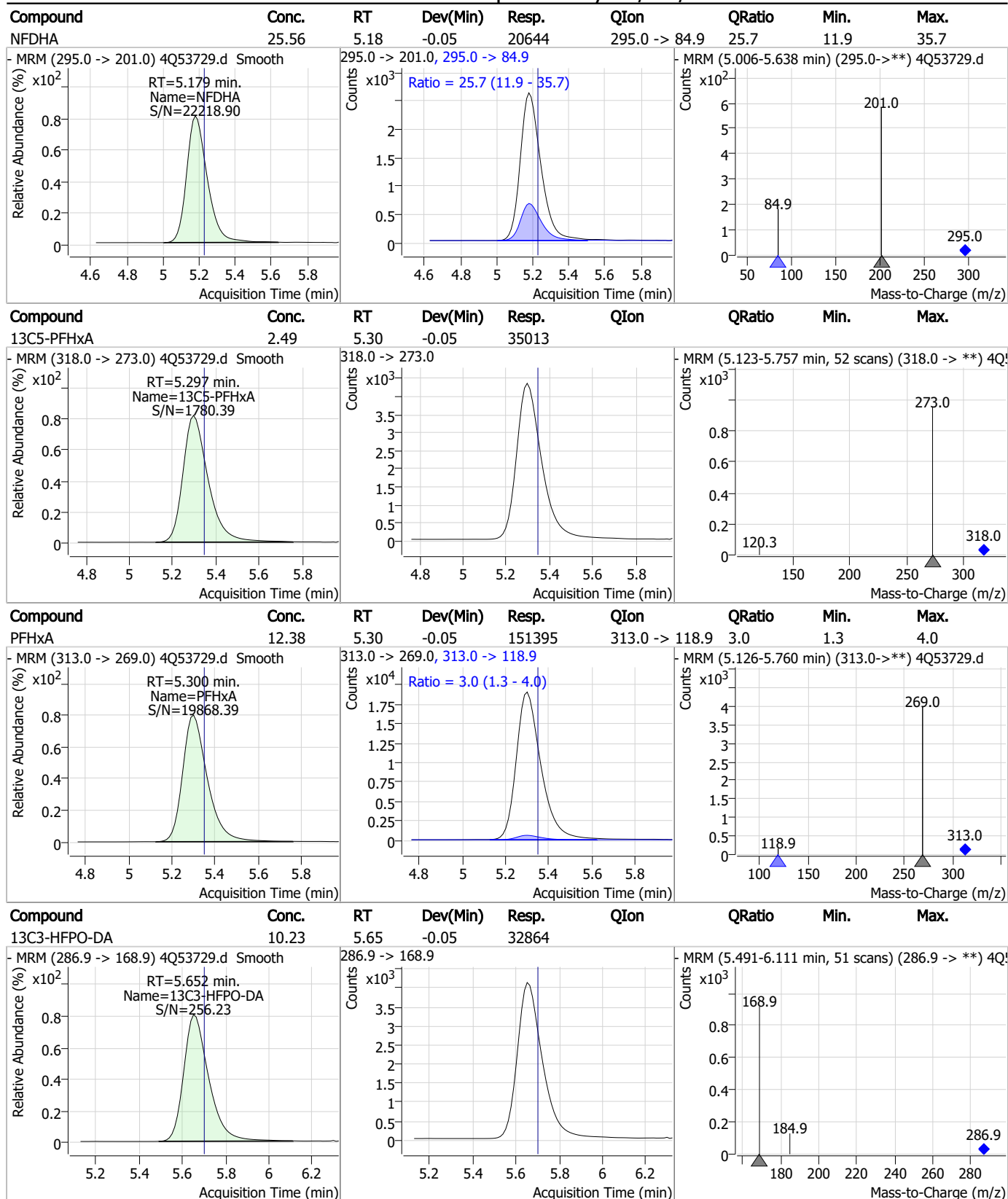
Perfluorinated Compounds by LC/MS/MS



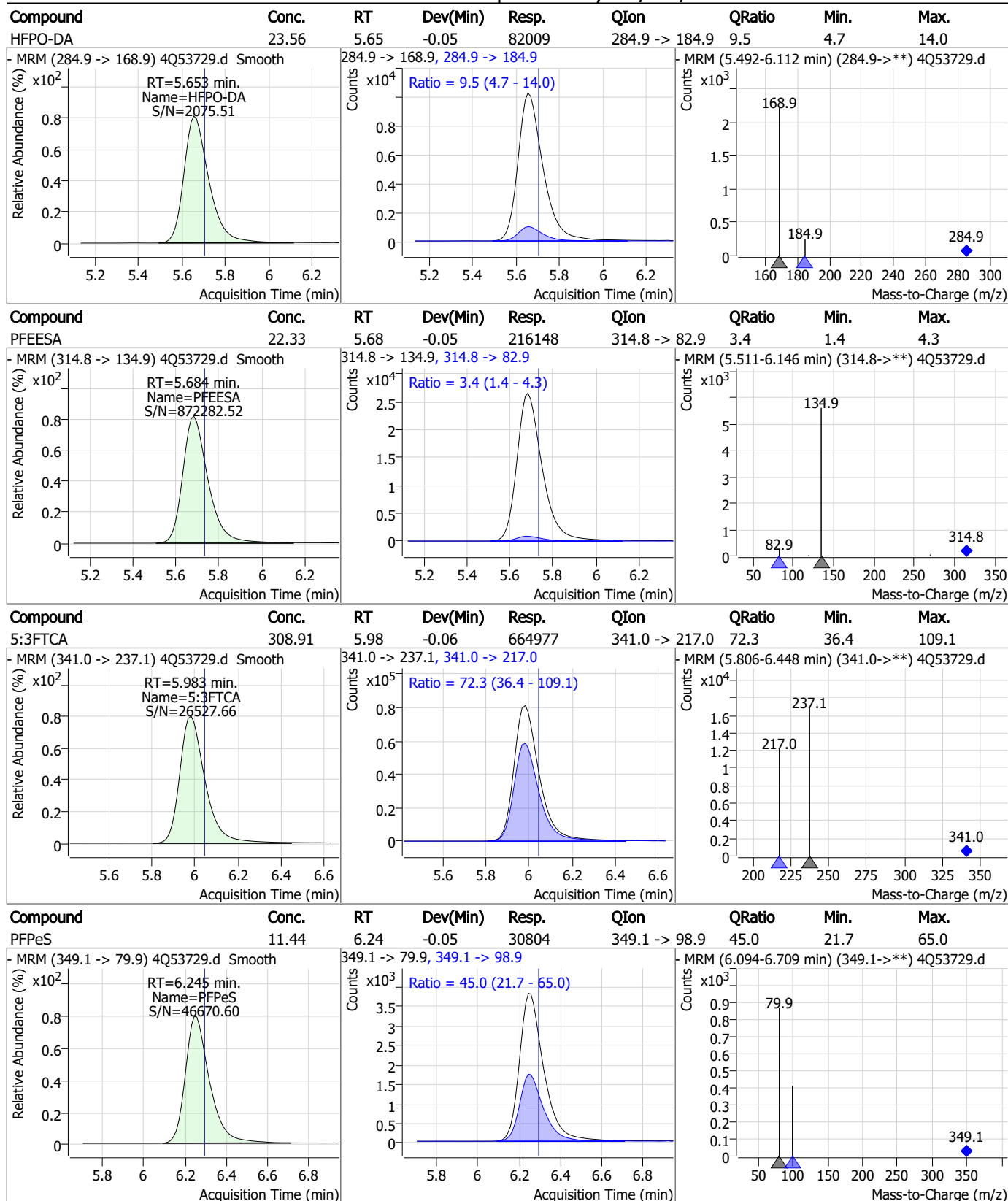
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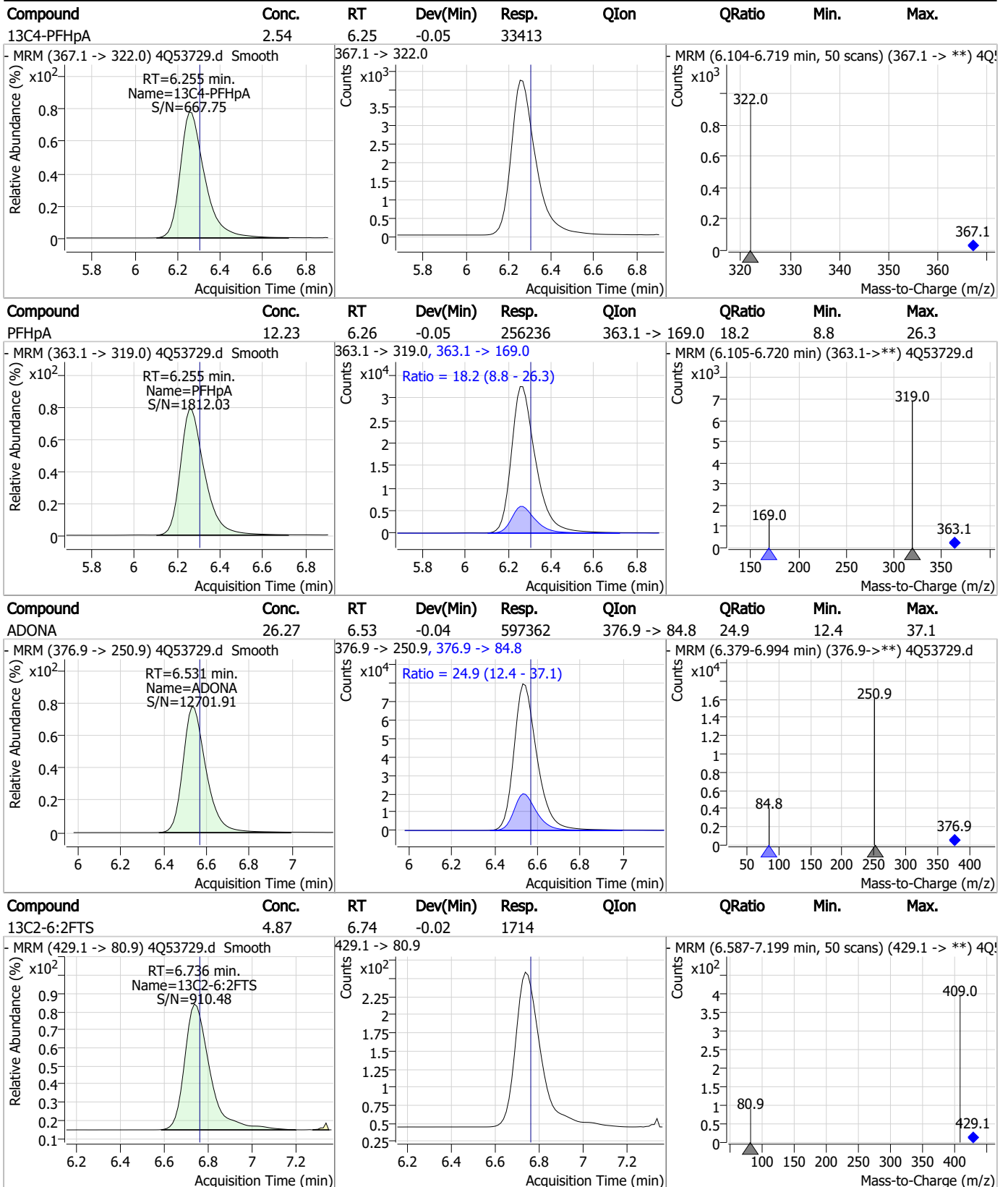
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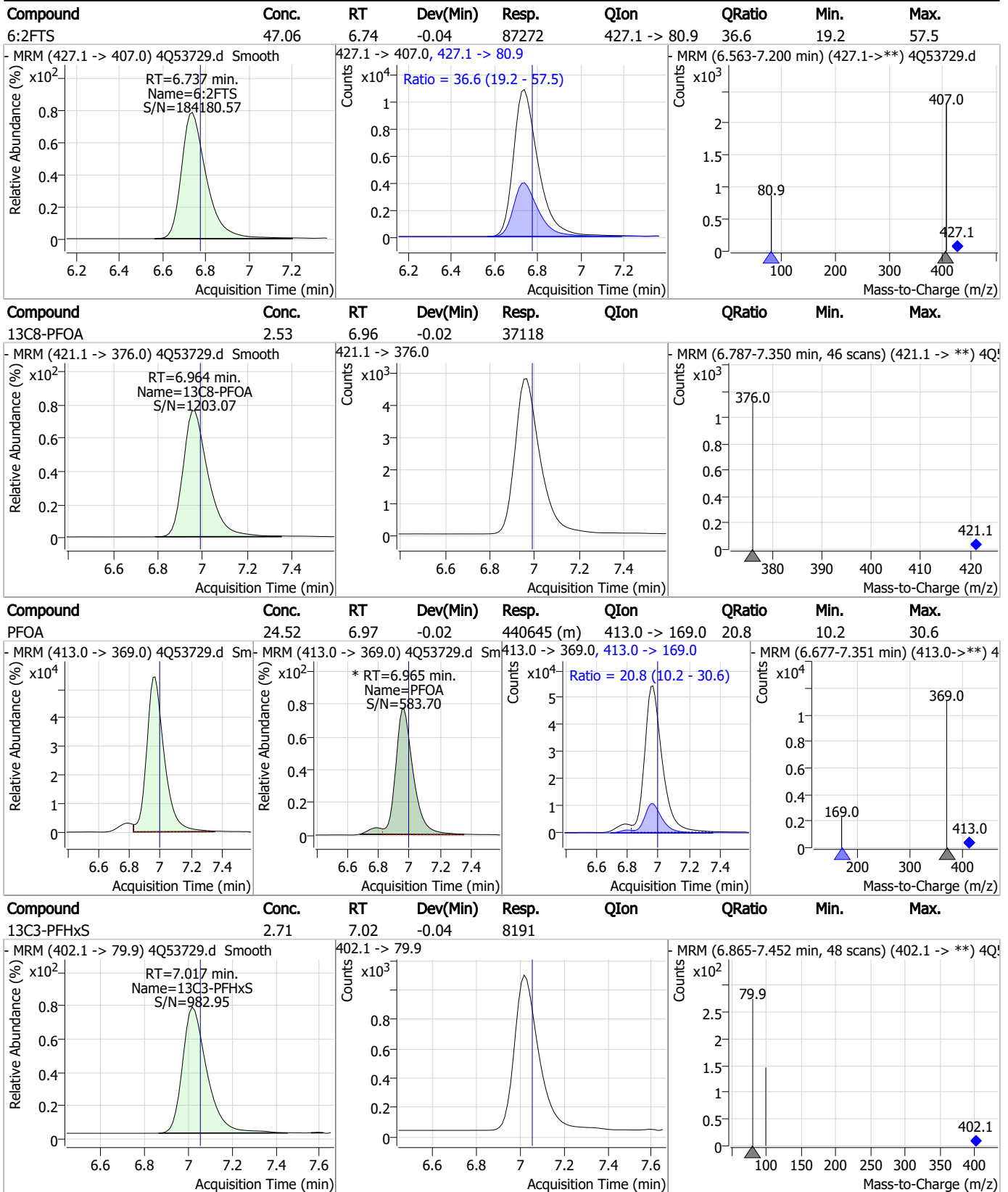
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



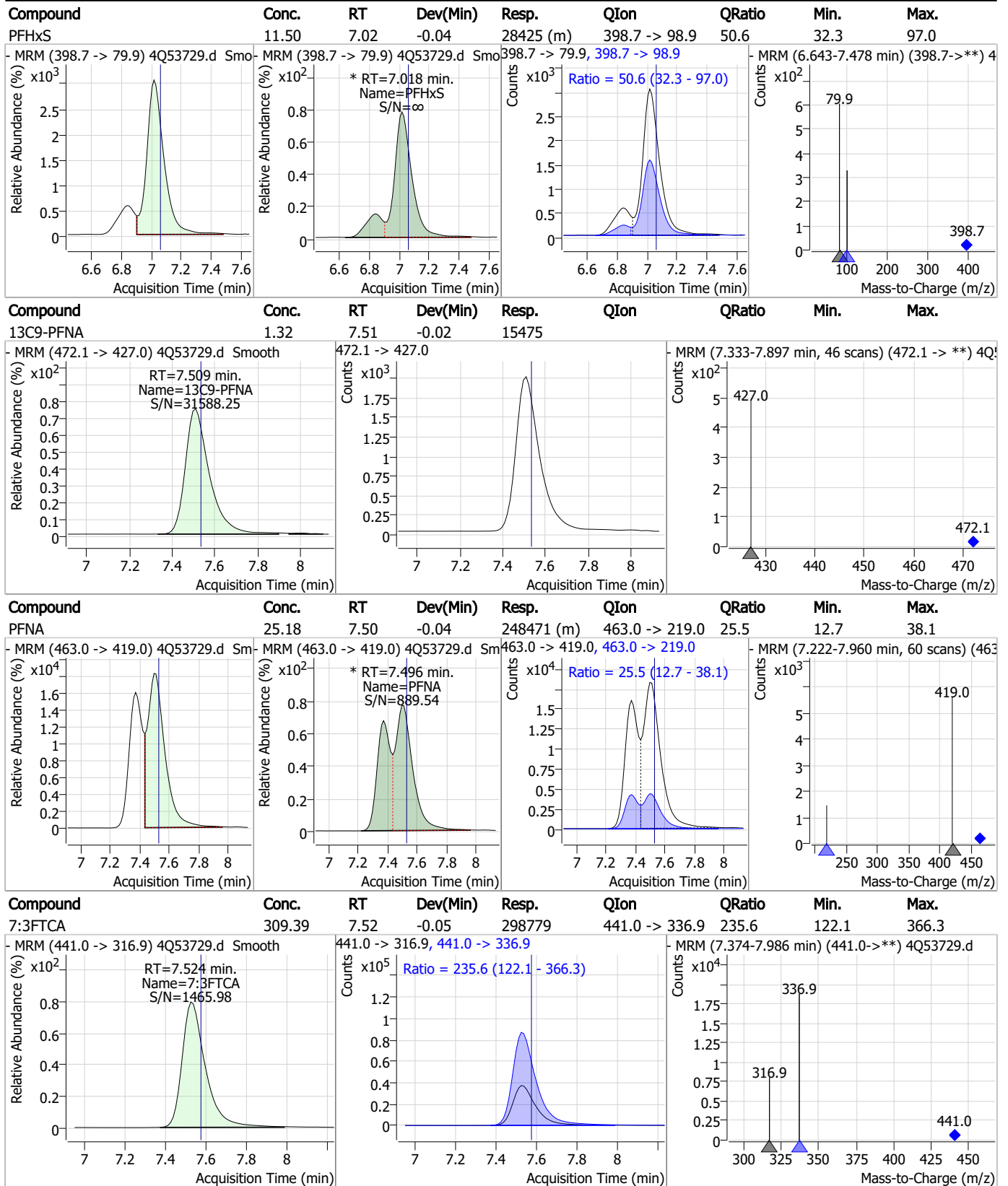
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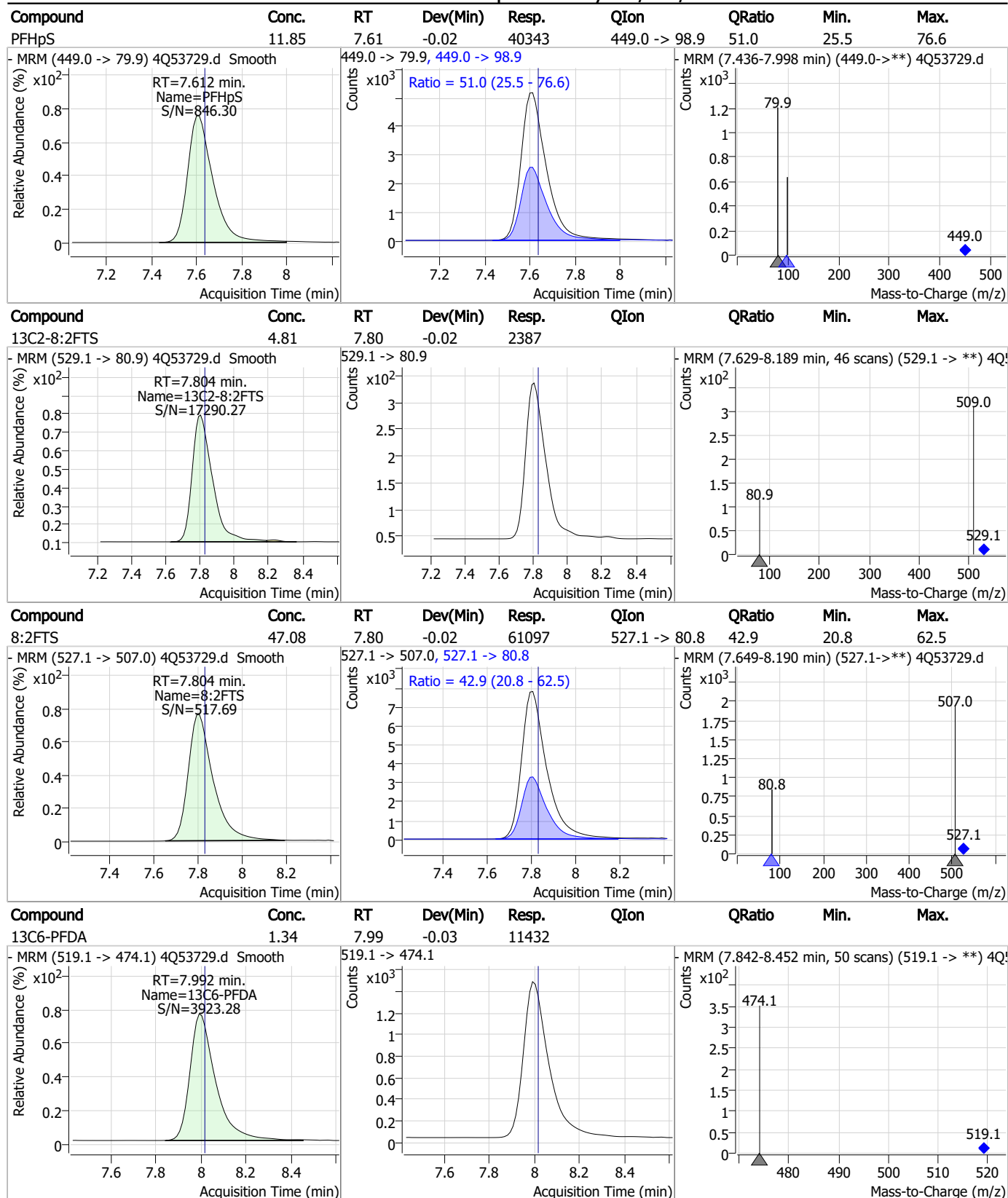
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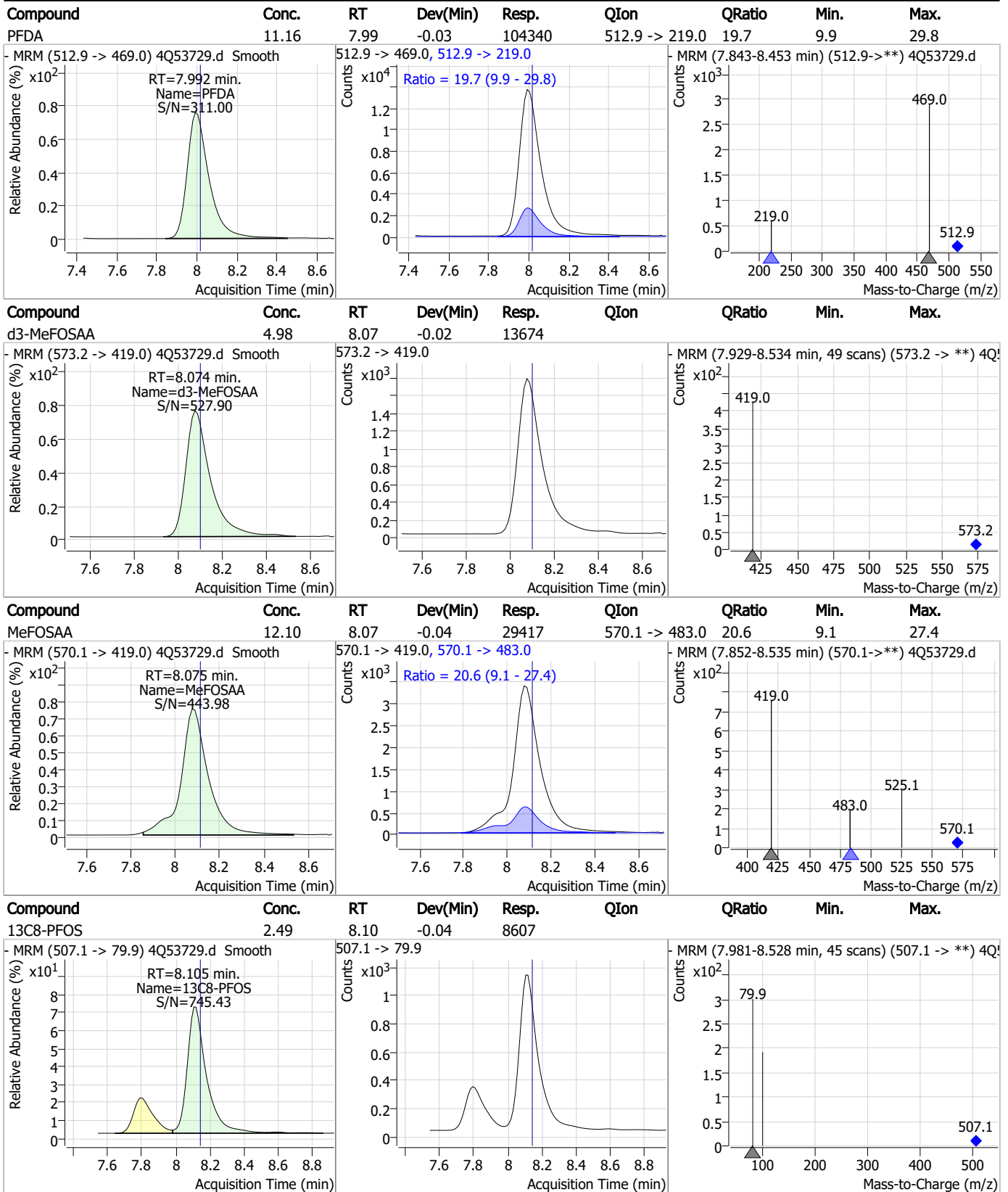
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Perfluorinated Compounds by LC/MS/MS



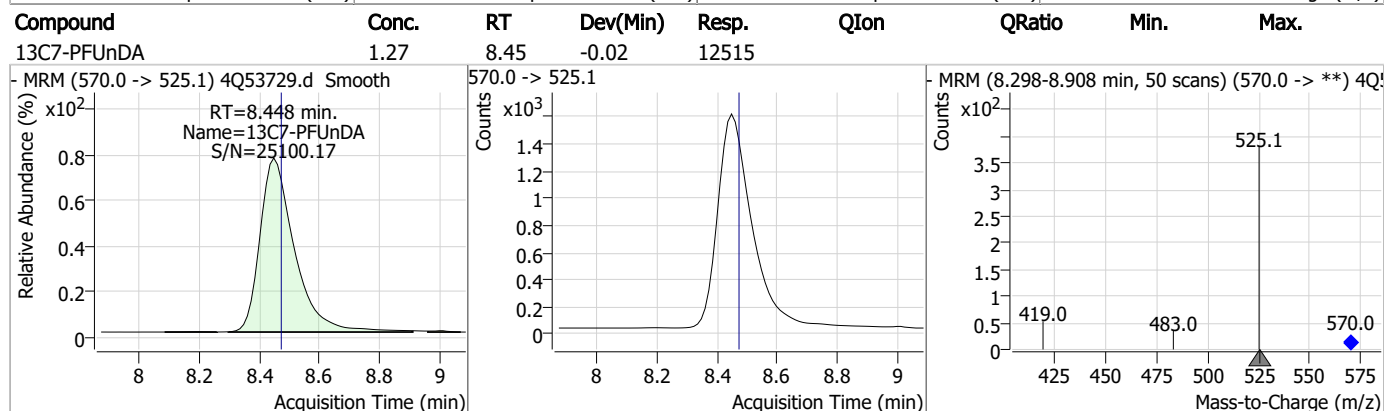
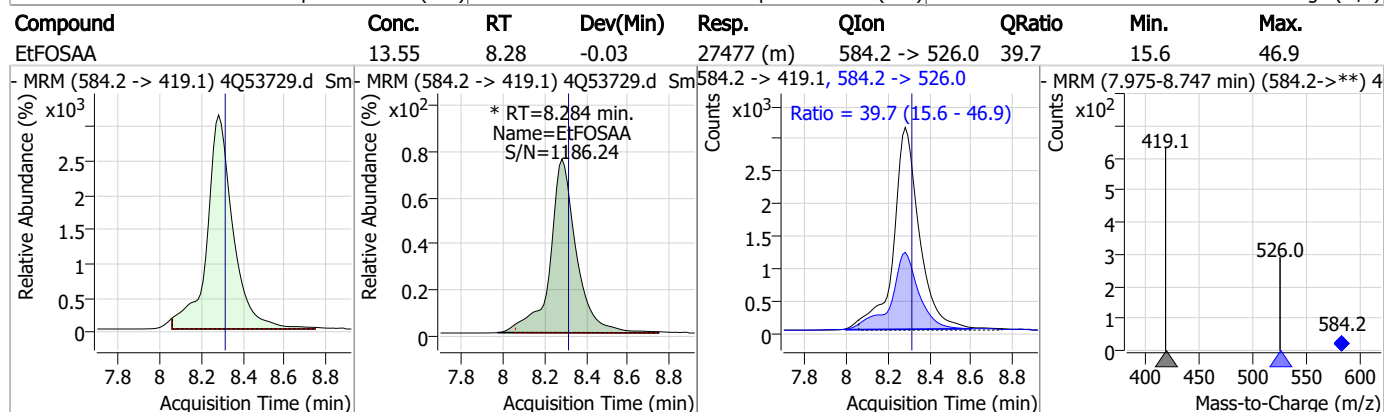
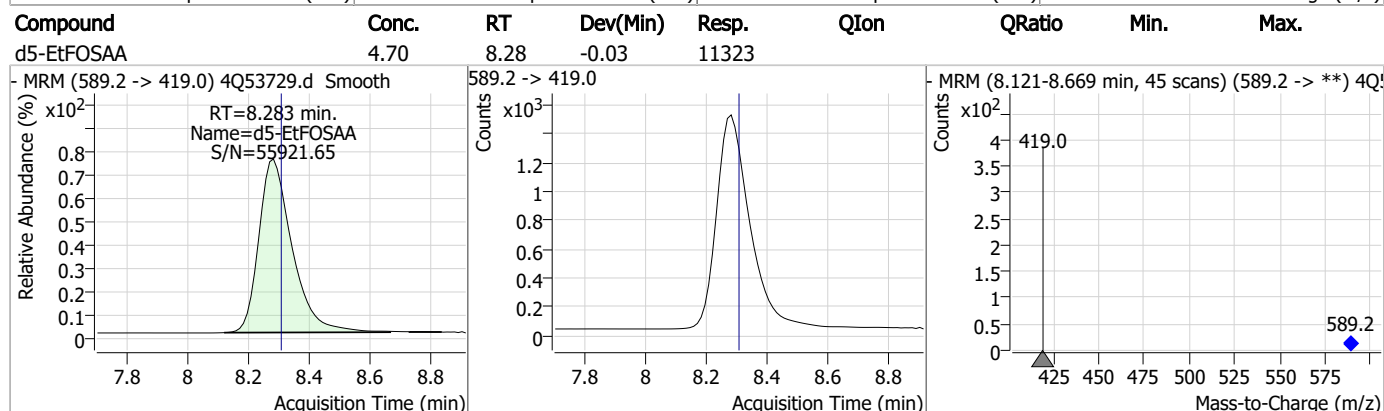
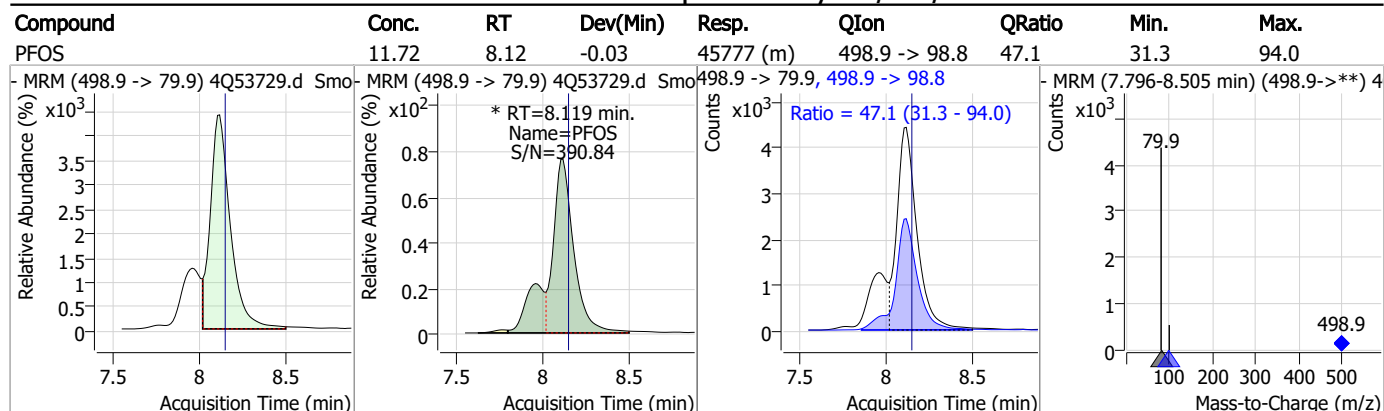
Perfluorinated Compounds by LC/MS/MS



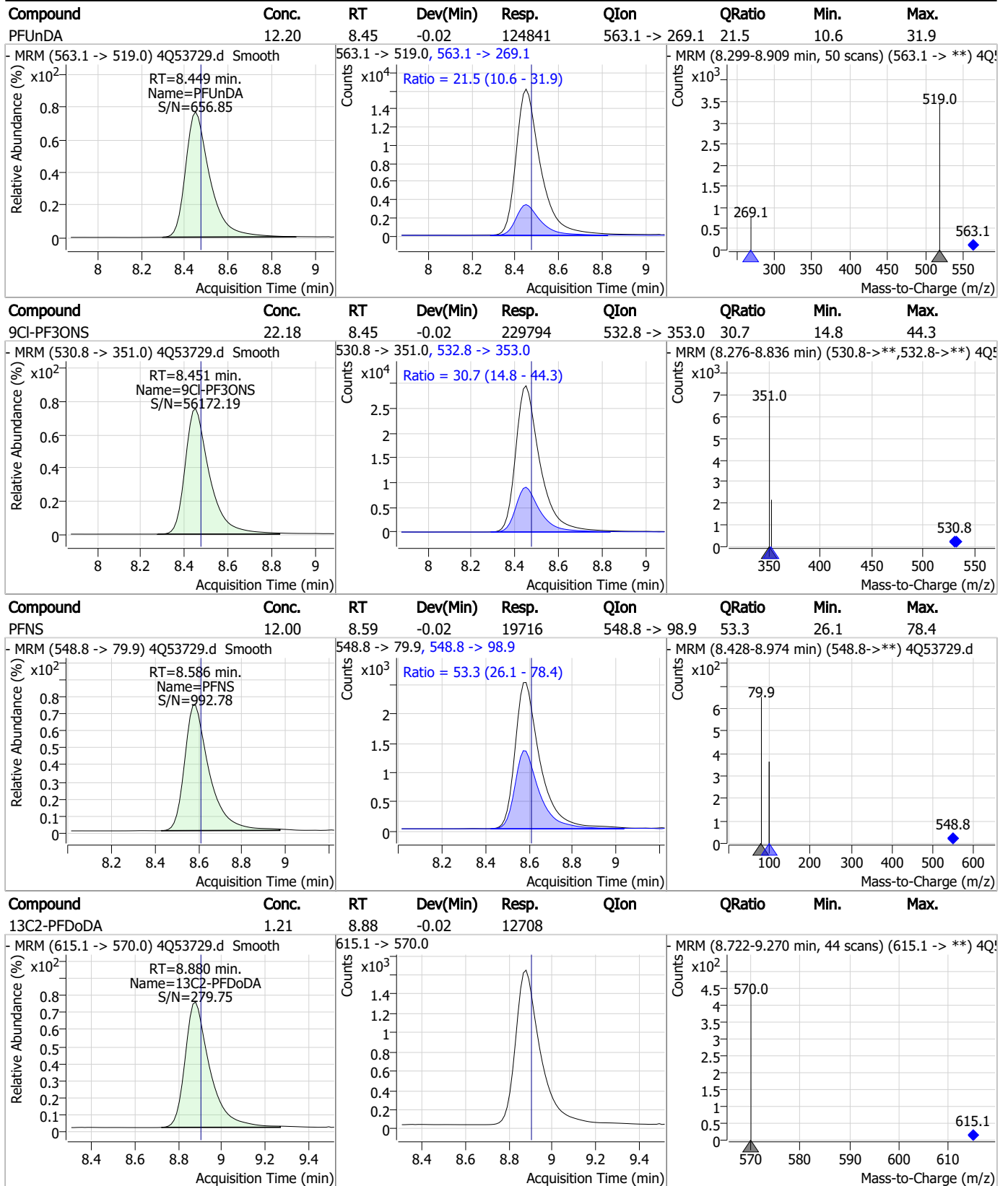
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Perfluorinated Compounds by LC/MS/MS



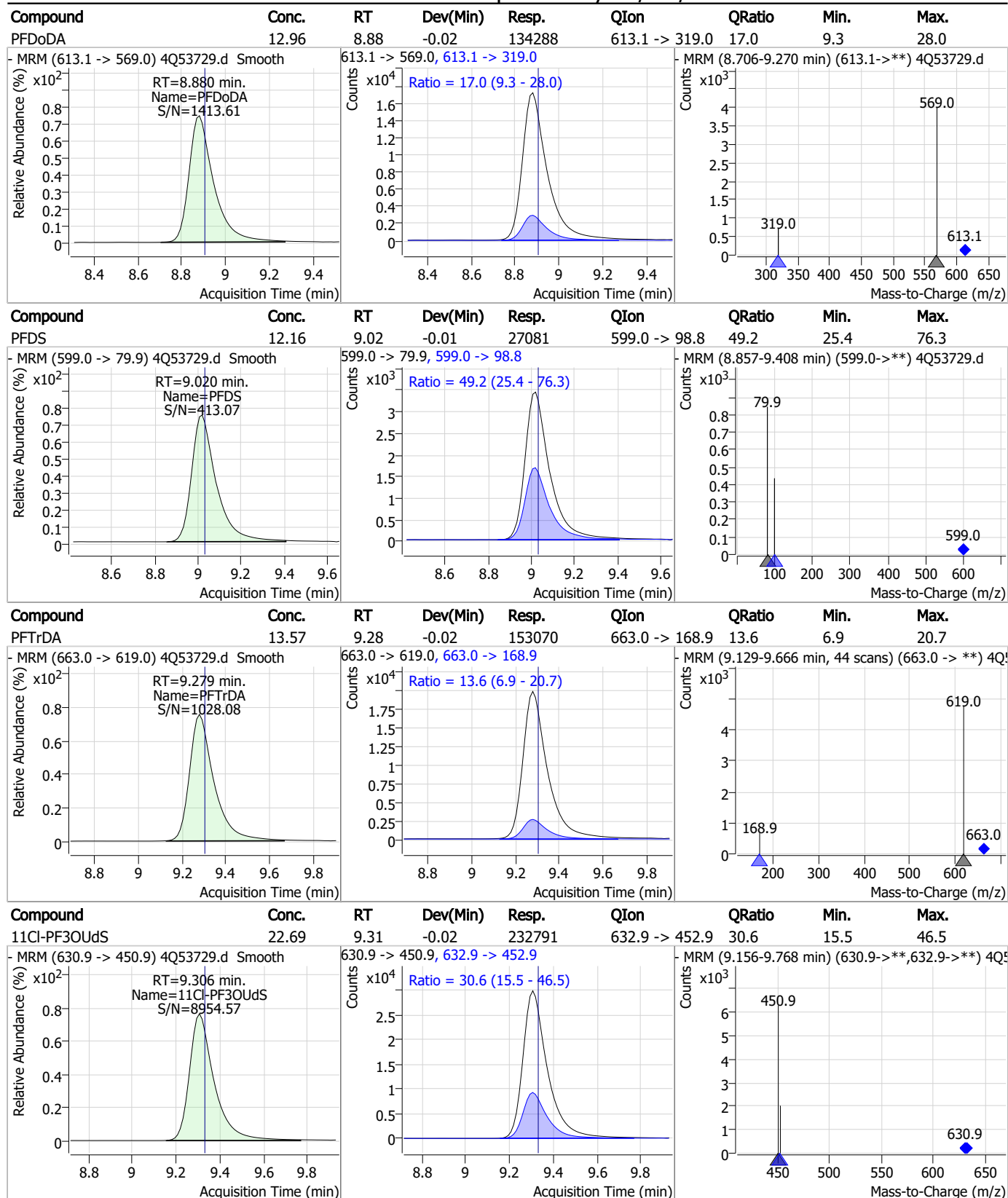
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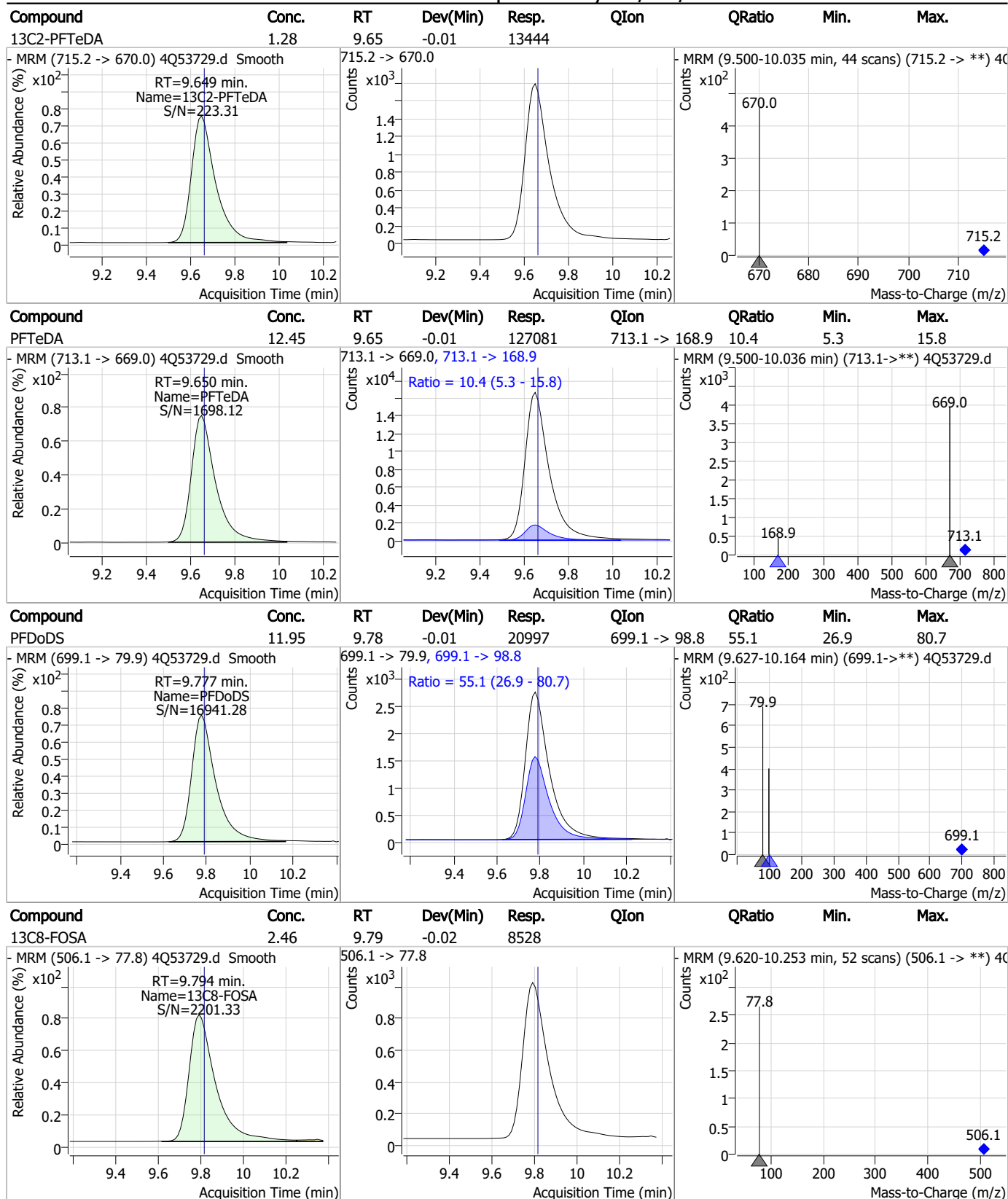
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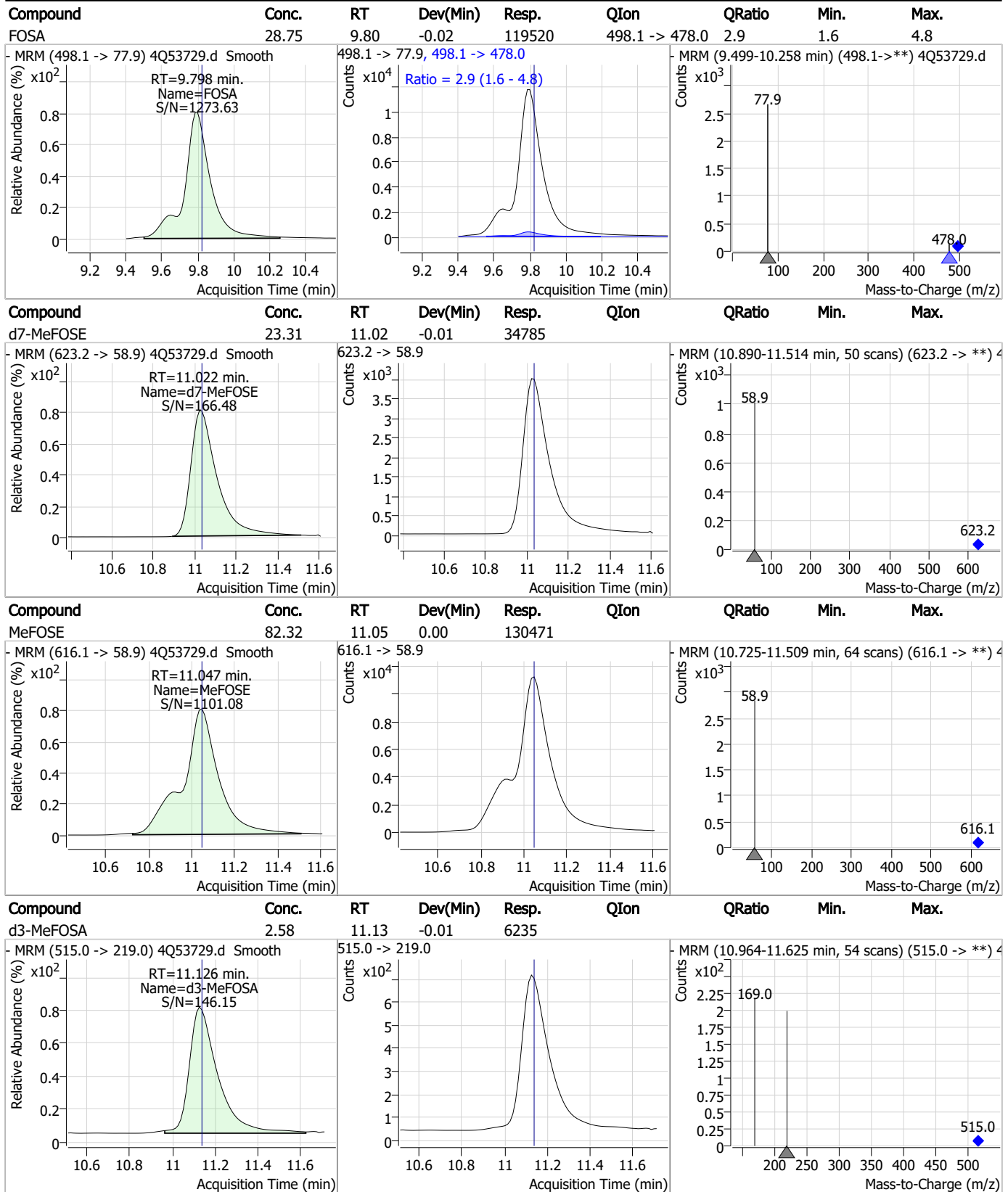
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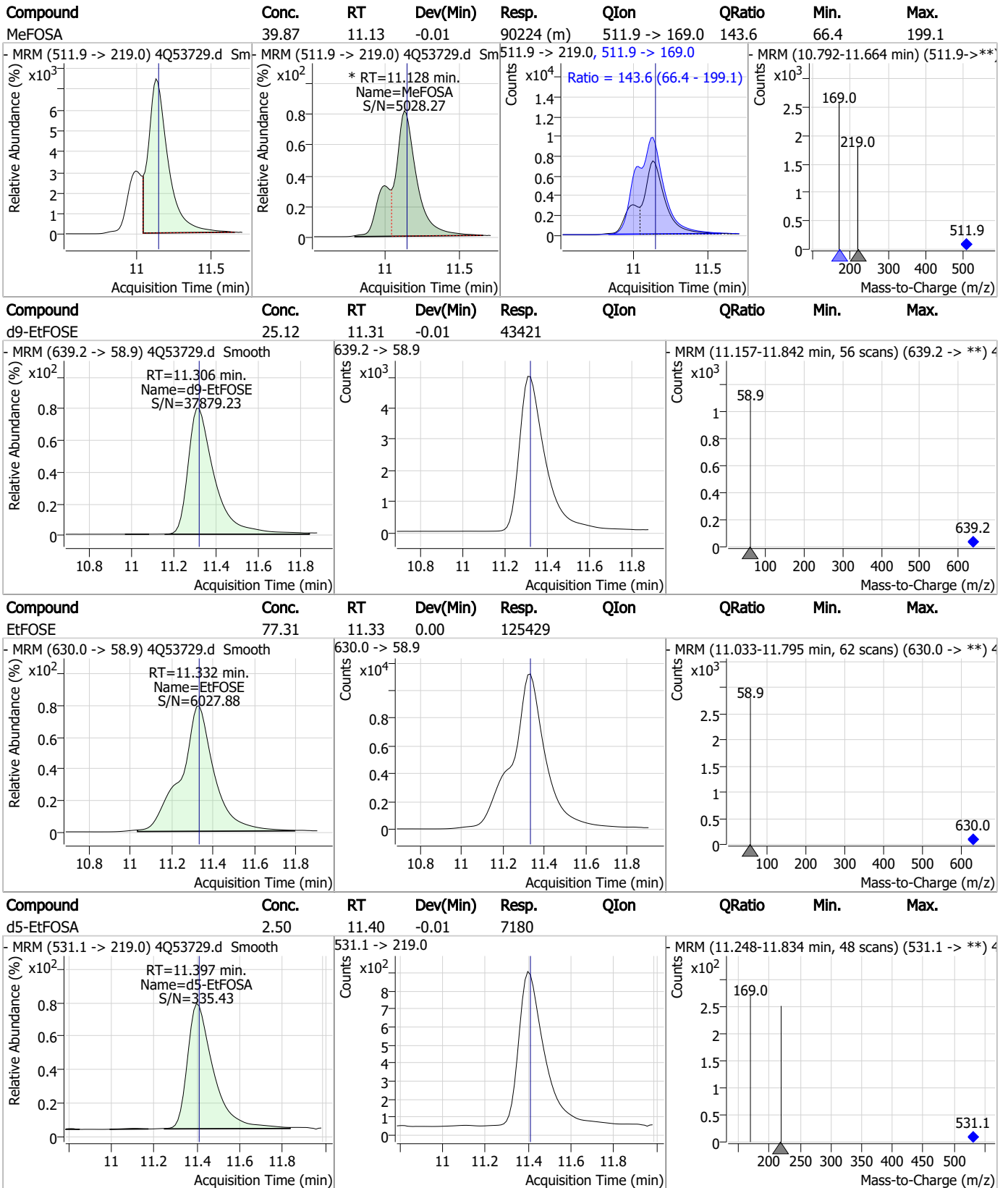
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



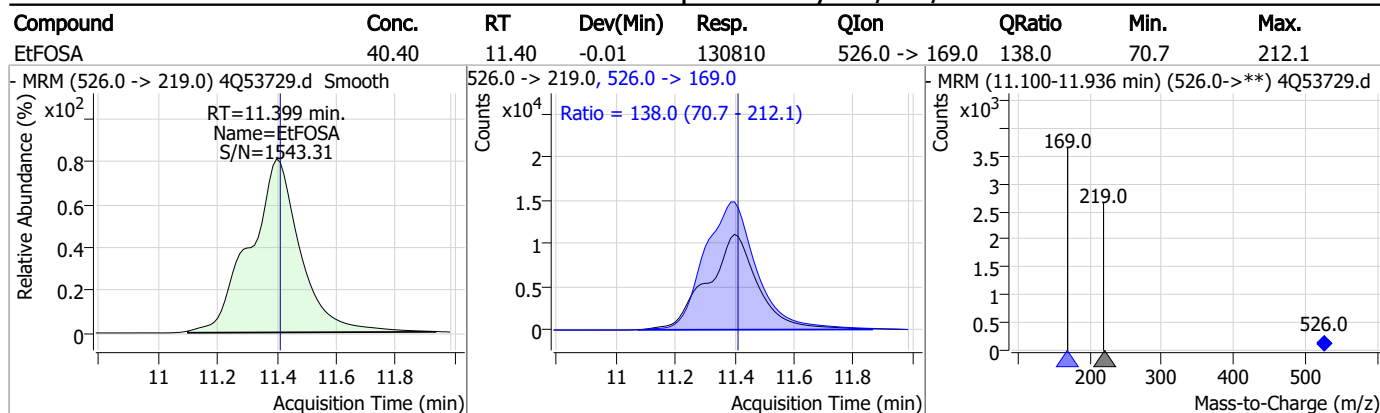
Perfluorinated Compounds by LC/MS/MS



7.6.2

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Perfluorinated Compounds by LC/MS/MS



7.6.2

7

Manual Integration Approval Summary

Sample Number: S4Q785-RT

Lab FileID: 4Q53729.D

Injection Time: 11/13/23 15:10

Method: EPA DRAFT 1633

Analyst approved: 11/14/23 13:55 Anna Ludwig

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		6.96	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorononanoic acid	375-95-1		7.50	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.6.2.1
7

QQQ Check Tune Report



Instrument Name LCMS4-Q
MS Model G6470A
MS Instrument Serial SG2004G105
Software_Firmware Version 10.0.142, FW: A.00.08.100
Tune Date & Time 13 November 2023 10:54:12
Data Path D:\MassHunter\Tune\QQQ\G6470A\atunes.TUNE.XML
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.70E+0 [R] (Torr); 3.52E-5 [H] (Torr)

Source Parameters	
Parameter	Negative
Gas Temp (°C)	300
Gas Flow (l/min)	8
Nebulizer (psi)	15
Capillary (V)	4000
Nozzle Voltage (V)	1500
Sheath Gas Temp (°C)	250
Sheath Gas Flow (l/min)	7

7.7.1
7

QQQ Check Tune Report



Agilent

Trusted Answers

Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.00	0.01	Pass	0.70	0.70	0.00	Pass	227368
302.00	302.01	0.01	Pass	0.70	0.70	0.00	Pass	138519
601.98	602.01	0.03	Pass	0.70	0.69	-0.01	Pass	305367
1033.99	1034.02	0.03	Pass	0.70	0.69	-0.01	Pass	427801
1633.95	1633.99	0.04	Pass	0.70	0.69	-0.01	Pass	806592
2233.91	2233.91	0.00	Pass	0.70	0.71	0.01	Pass	499029

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.08	0.08	Pass	0.70	0.59	-0.11	Pass	46573
112.99	112.99	0.00	Pass	0.70	0.69	-0.01	Pass	163290
302.00	302.01	0.01	Pass	0.70	0.68	-0.02	Pass	135624
601.98	601.98	0.00	Pass	0.70	0.69	-0.01	Pass	202321
1033.99	1033.98	-0.01	Pass	0.70	0.68	-0.02	Pass	319410
1633.95	1633.92	-0.03	Pass	0.70	0.71	0.01	Pass	584341
2233.91	2233.89	-0.02	Pass	0.70	0.70	0.00	Pass	576793

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.81	-0.18	Pass	1.20	1.63	0.43	Pass	322328
302.00	301.86	-0.14	Pass	1.20	1.24	0.04	Pass	213939
601.98	601.88	-0.10	Pass	1.20	1.14	-0.06	Pass	429920
1033.99	1033.97	-0.02	Pass	1.20	1.13	-0.07	Pass	663252
1633.95	1633.97	0.02	Pass	1.20	1.14	-0.06	Pass	1580095
2233.91	2233.96	0.05	Pass	1.20	1.18	-0.02	Pass	1032815

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.10	0.10	Pass	1.20	1.07	-0.13	Pass	65678
112.99	113.00	0.01	Pass	1.20	1.18	-0.02	Pass	232383
302.00	301.99	-0.01	Pass	1.20	1.32	0.12	Pass	206553
601.98	601.97	-0.01	Pass	1.20	1.41	0.21	Pass	388803
1033.99	1033.98	-0.01	Pass	1.20	1.50	0.30	Pass	697863
1633.95	1633.94	-0.01	Pass	1.20	1.39	0.19	Pass	2088363
2233.91	2233.94	0.03	Pass	1.20	1.23	0.03	Pass	1456858

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.69	-0.30	Pass	2.50	2.91	0.41	Pass	367627
302.00	301.80	-0.20	Pass	2.50	2.46	-0.04	Pass	268105
601.98	601.79	-0.19	Pass	2.50	2.57	0.07	Pass	645149
1033.99	1033.51	-0.48	Pass	2.50	2.69	0.19	Pass	1354719
1633.95	1633.50	-0.45	Pass	2.50	2.90	0.40	Pass	4797595
2233.91	2233.37	-0.54	Pass	2.50	3.15	0.65	Pass	4318898

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.05	0.05	Pass	2.50	2.33	-0.17	Pass	82745
112.99	112.98	-0.01	Pass	2.50	2.47	-0.03	Pass	312208
302.00	301.99	-0.01	Pass	2.50	2.57	0.07	Pass	272432
601.98	601.97	-0.01	Pass	2.50	2.61	0.11	Pass	589767
1033.99	1034.00	0.01	Pass	2.50	2.67	0.17	Pass	1223328
1633.95	1633.96	0.01	Pass	2.50	2.49	-0.01	Pass	4323037
2233.91	2233.89	-0.02	Pass	2.50	2.23	-0.27	Pass	4496058

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53731.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 3:40:26 PM
 Sample Name : ic785-1
 Vial : P1-A2
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.661	216.8 -> 171.9	81965	10.00 µg/L	-0.037
M5-PFPeA	4.125	268.3 -> 223.0	34245	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	26337	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	25012	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	27853	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12072	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8068	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	9873	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9523	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9448	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	6548	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7102	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6107	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6458	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	661	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1410	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1991	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	10065	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	23394	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	9273	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	28685	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	32095	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5469	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4321	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5697	2.50 µg/L	-0.026
13C3-PFBA	2.653	216.0 -> 172.0	38453	5.00 µg/L	-0.050
18O2-PFHxS	7.028	403.0 -> 83.9	3990	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	32218	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	8564	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	11786	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	27755	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	661	4.84 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1410	4.90 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C2-8:2FTS	7.804	529.1 -> 80.9	1991	4.91 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9523	1.23 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9448	1.21 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-PFBS	5.152	302.1 -> 79.9	7102	2.37 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.9%		
13C3-PFHxS	7.017	402.1 -> 79.9	6107	2.47 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C4-PFBA	2.661	216.8 -> 171.9	81965	10.23 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C4-PFHpA	6.267	367.1 -> 322.0	25012	2.58 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C5-PFHxA	5.297	318.0 -> 273.0	26337	2.54 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C5-PFPeA	4.125	268.3 -> 223.0	34245	5.06 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C6-PFDA	7.992	519.1 -> 474.1	8068	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C7-PFUnDA	8.448	570.0 -> 525.1	9873	1.36 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.4%		
13C8-FOSA	9.794	506.1 -> 77.8	6548	2.40 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C8-PFOA	6.964	421.1 -> 376.0	27853	2.42 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C8-PFOS	8.117	507.1 -> 79.9	6458	2.37 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C9-PFNA	7.509	472.1 -> 427.0	12072	1.30 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.9%		
d3-MeFOSAA	8.086	573.2 -> 419.0	10065	4.66 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.2%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	23394	9.90 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.0%		
d3-MeFOSA	11.126	515.0 -> 219.0	4321	2.27 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.9%		
d5-EtFOSAA	8.283	589.2 -> 419.0	9273	4.90 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
d7-MeFOSE	11.022	623.2 -> 58.9	28685	24.44 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.8%		
d9-EtFOSE	11.319	639.2 -> 58.9	32095	23.61 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 94.5%		
d5-EtFOSA	11.397	531.1 -> 219.0	5469	2.43 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.0%		
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	998	0.76 µg/L	100
		327.1 -> 80.9	418		
6:2FTS	6.737	427.1 -> 407.0	1207	0.79 µg/L	100
		427.1 -> 80.9	466		
8:2FTS	7.792	527.1 -> 507.0	874	0.81 µg/L	85
		527.1 -> 80.8	447		
EtFOSAA	8.297	584.2 -> 419.1	257	0.15 µg/L	#m 47
		584.2 -> 526.0	155		
FOSA	9.798	498.1 -> 77.9	570	0.18 µg/L	100
		498.1 -> 478.0	18		
MeFOSAA	8.075	570.1 -> 419.0	441	0.25 µg/L	#m 77
		570.1 -> 483.0	36		
PFBA	2.657	212.8 -> 168.9	2106	0.71 µg/L	100
PFBS	5.153	298.7 -> 79.9	436	0.17 µg/L	83
		298.7 -> 98.8	123		
PFDA	7.992	512.9 -> 469.0	1445	0.22 µg/L	92
		512.9 -> 219.0	234		
PFDODA	8.880	613.1 -> 569.0	1588	0.20 µg/L	92
		613.1 -> 319.0	239		
PFDS	9.020	599.0 -> 79.9	309	0.18 µg/L	87

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	184	0.18	µg/L	95
		363.1 -> 319.0	2865			
PFHpS	7.599	363.1 -> 169.0	433	0.20	µg/L	71
		449.0 -> 79.9	498			
PFHxA	5.300	449.0 -> 98.9	154	0.18	µg/L	99
		313.0 -> 269.0	1668			
PFHxS	7.018	313.0 -> 118.9	41	0.17	µg/L	76
		398.7 -> 79.9	310			
PFNA	7.522	398.7 -> 98.9	141	0.17	µg/L	98
		463.0 -> 419.0	1307			
PFNS	8.574	463.0 -> 219.0	320	0.15	µg/L	85
		548.8 -> 79.9	181			
PFOA	6.965	548.8 -> 98.9	114	0.20	µg/L	97
		413.0 -> 369.0	2681			
PFOS	8.119	413.0 -> 169.0	508	0.22	µg/L	65
		498.9 -> 79.9	646			
PFPeA	4.127	498.9 -> 98.8	228	0.35	µg/L	100
		263.0 -> 219.0	2623			
PFPeS	6.245	349.1 -> 79.9	328	0.16	µg/L	86
		349.1 -> 98.9	171			
PFTeDA	9.650	713.1 -> 669.0	1279	0.18	µg/L	97
		713.1 -> 168.9	122			
PFTrDA	9.279	663.0 -> 619.0	1282	0.15	µg/L	82
		663.0 -> 168.9	272			
PFUnDA	8.449	563.1 -> 519.0	1383	0.17	µg/L	95
		563.1 -> 269.1	264			
11CI-PF3OUdS	9.306	630.9 -> 450.9	2539	0.35	µg/L	98
		632.9 -> 452.9	815			
9CI-PF3ONS	8.451	530.8 -> 351.0	2710	0.37	µg/L	90
		532.8 -> 353.0	941			
ADONA	6.544	376.9 -> 250.9	6000	0.37	µg/L	100
		376.9 -> 84.8	1496			
HFPO-DA	5.653	284.9 -> 168.9	889	0.36	µg/L	91
		284.9 -> 184.9	112			
3:3FTCA	3.573	241.0 -> 177.0	375	0.81	µg/L	94
		241.0 -> 117.0	27			
5:3FTCA	5.983	341.0 -> 237.1	7073	4.37	µg/L	93
		341.0 -> 217.0	4749			
7:3FTCA	7.536	441.0 -> 316.9	3095	4.26	µg/L	95
		441.0 -> 336.9	7825			
EtFOSA	11.399	526.0 -> 219.0	819	0.33	µg/L	98
		526.0 -> 169.0	1177			
EtFOSE	11.332	630.0 -> 58.9	1204	1.00	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	593	0.38	µg/L	77
		511.9 -> 169.0	949			
MeFOSE	11.047	616.1 -> 58.9	1125	0.86	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	260	0.20	µg/L	90
		699.1 -> 98.8	122			
NFDHA	5.166	295.0 -> 201.0	213	0.35	µg/L	75
		295.0 -> 84.9	77			
PFMBA	4.529	279.0 -> 85.1	1525	0.36	µg/L	100
PFMPA	3.278	229.0 -> 84.9	1619	0.34	µg/L	100
PFEESA	5.684	314.8 -> 134.9	2143	0.29	µg/L	99
		314.8 -> 82.9	67			

= Qualifier out of range, m = manually integrated, + = Area summed

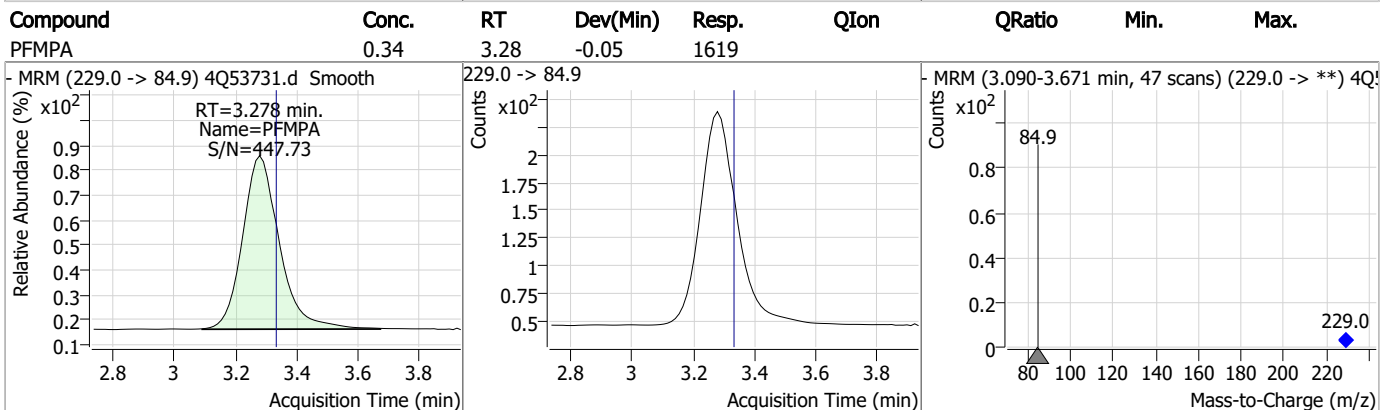
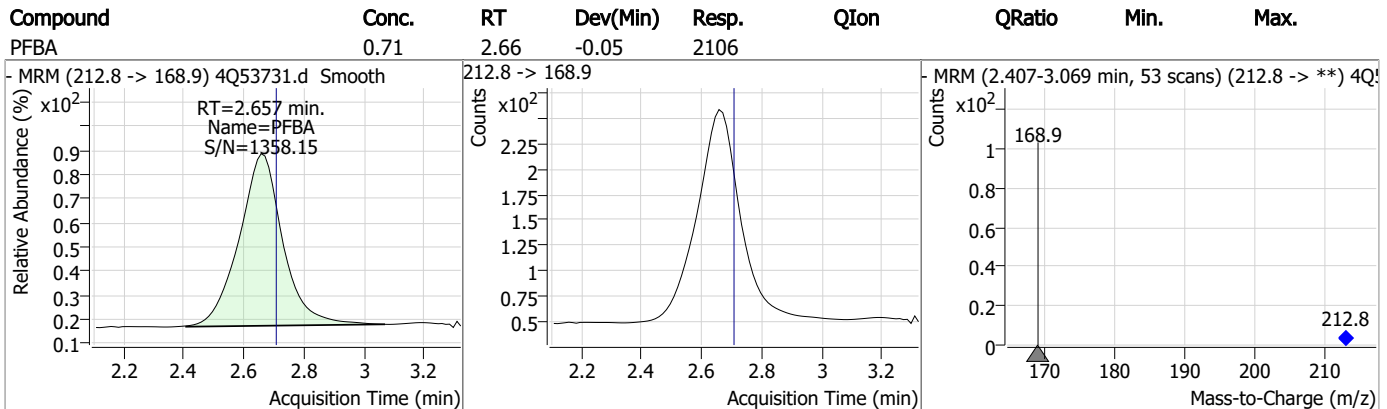
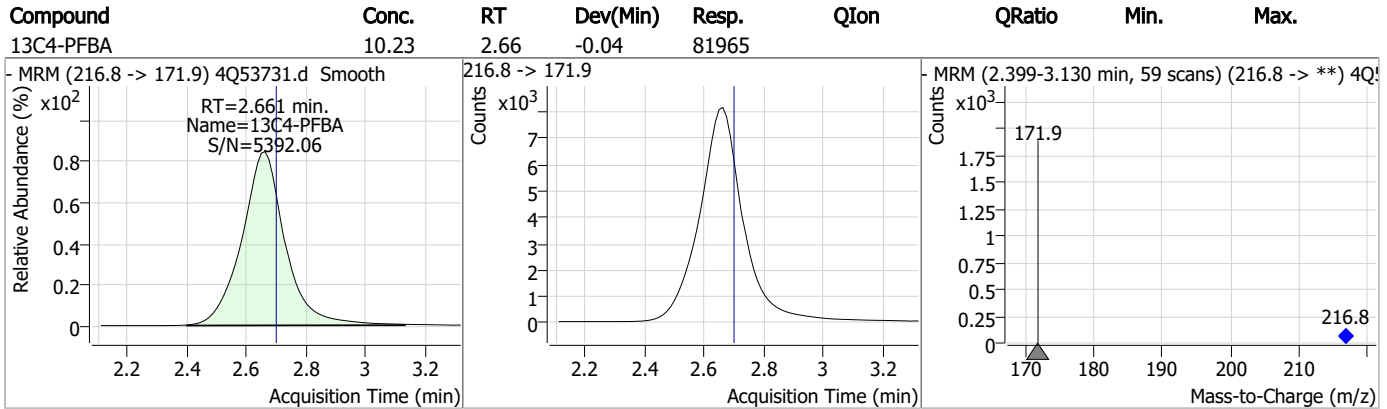
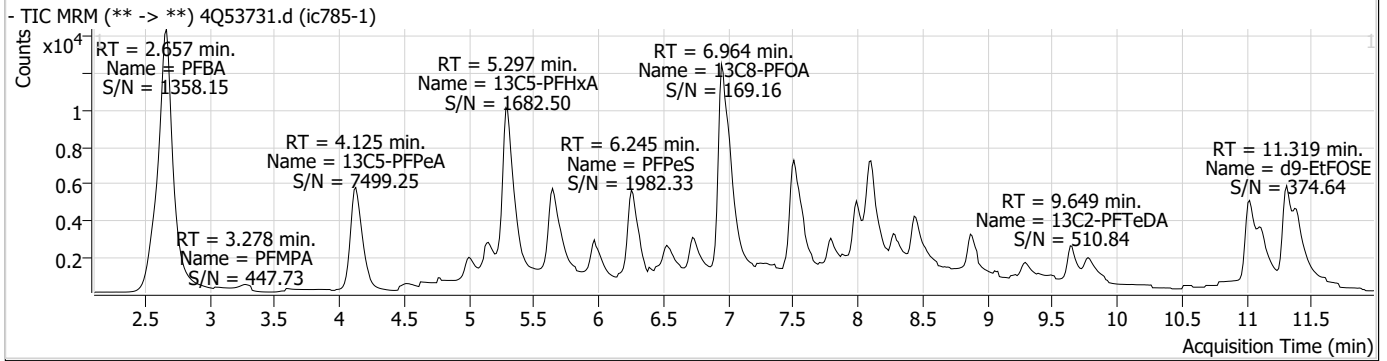
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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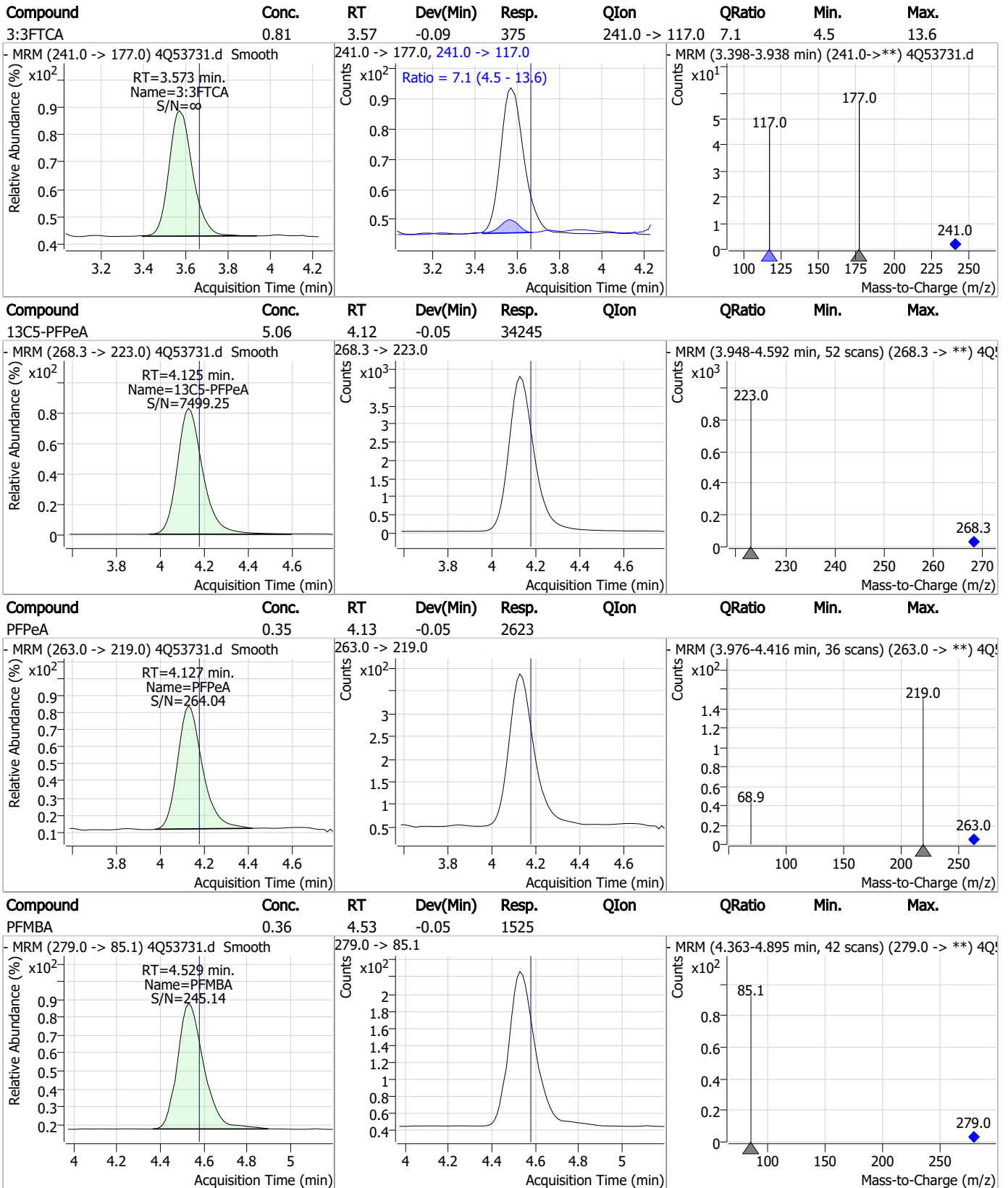
7.7.2

7

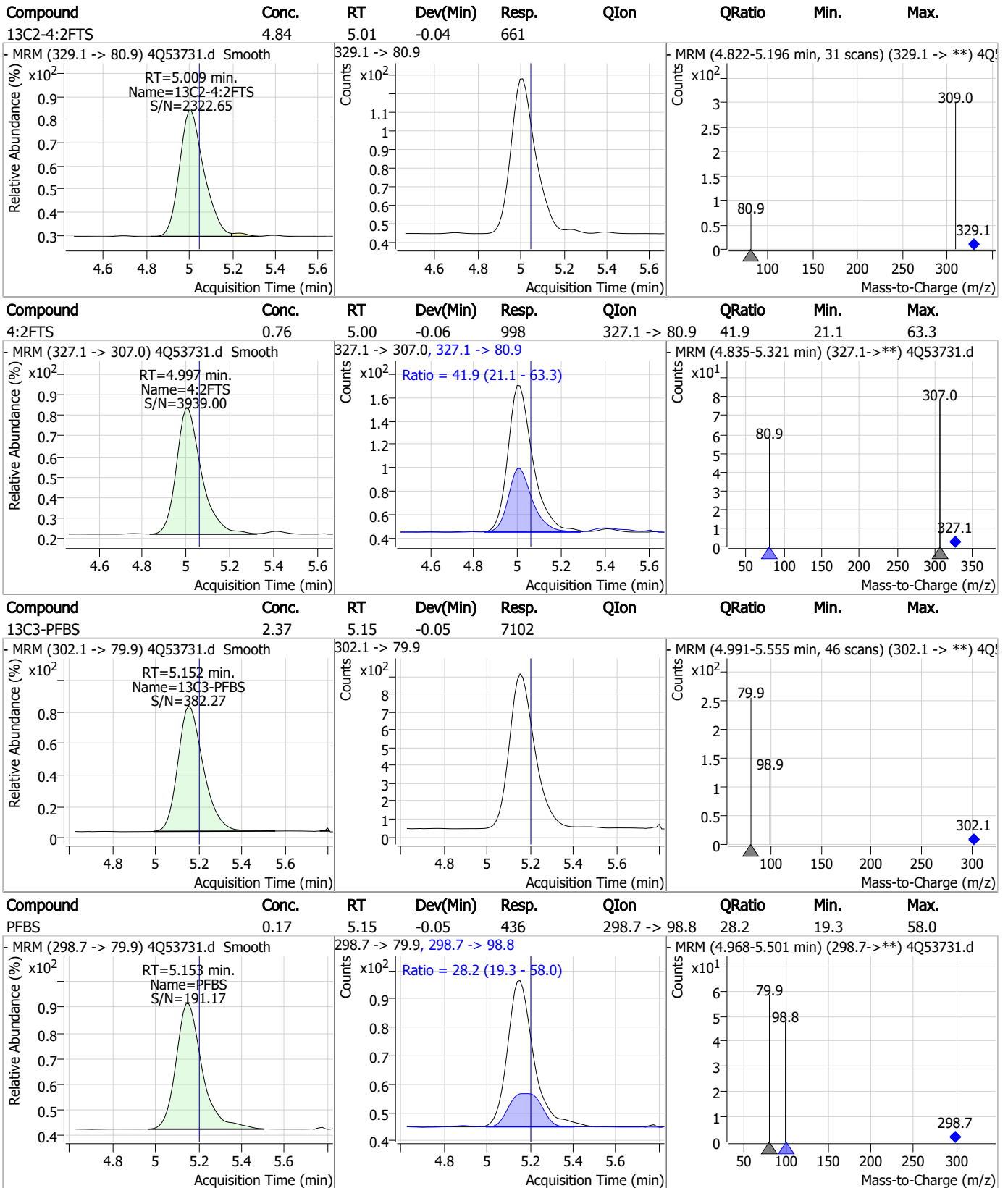
Perfluorinated Compounds by LC/MS/MS



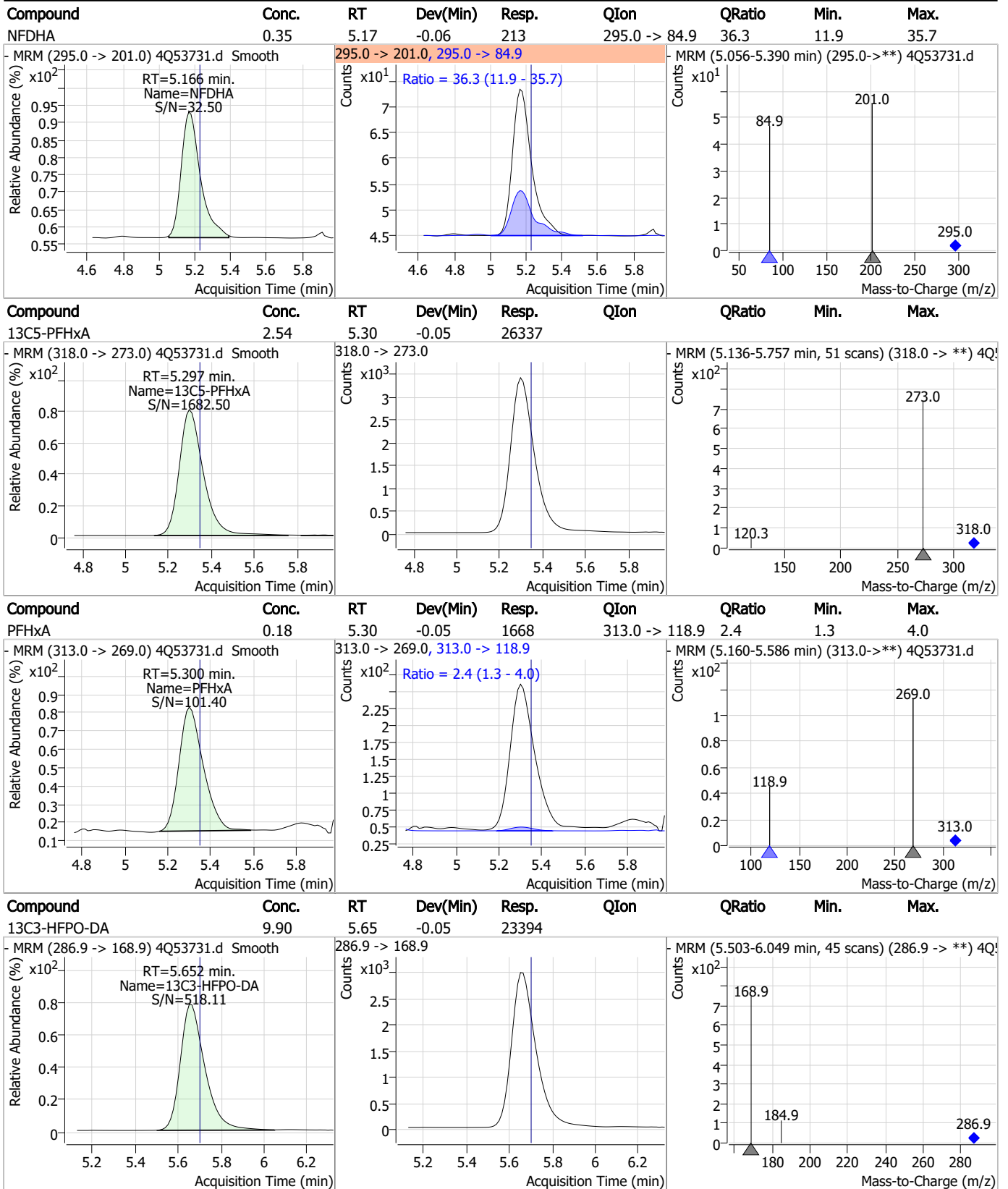
Perfluorinated Compounds by LC/MS/MS



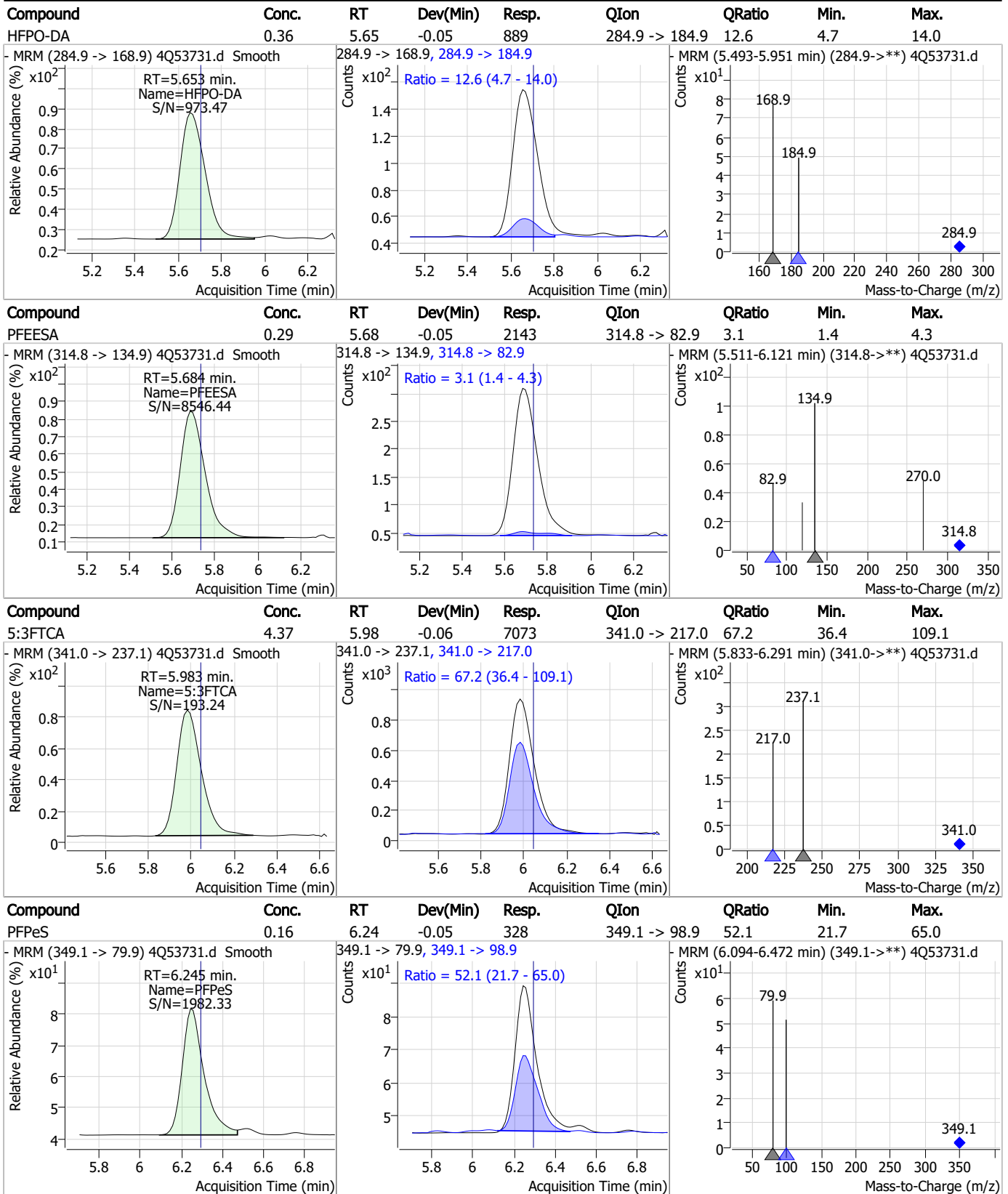
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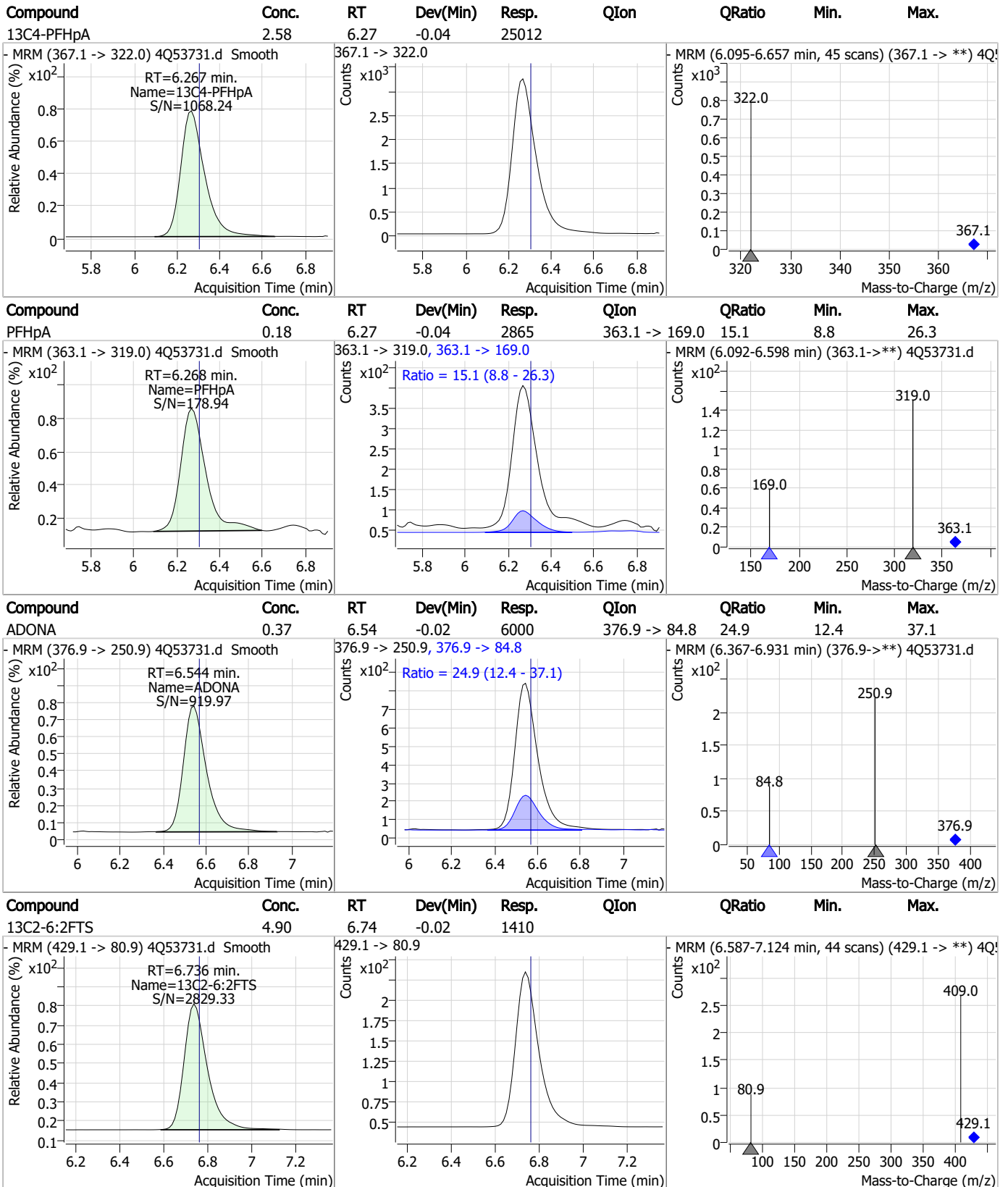
Perfluorinated Compounds by LC/MS/MS



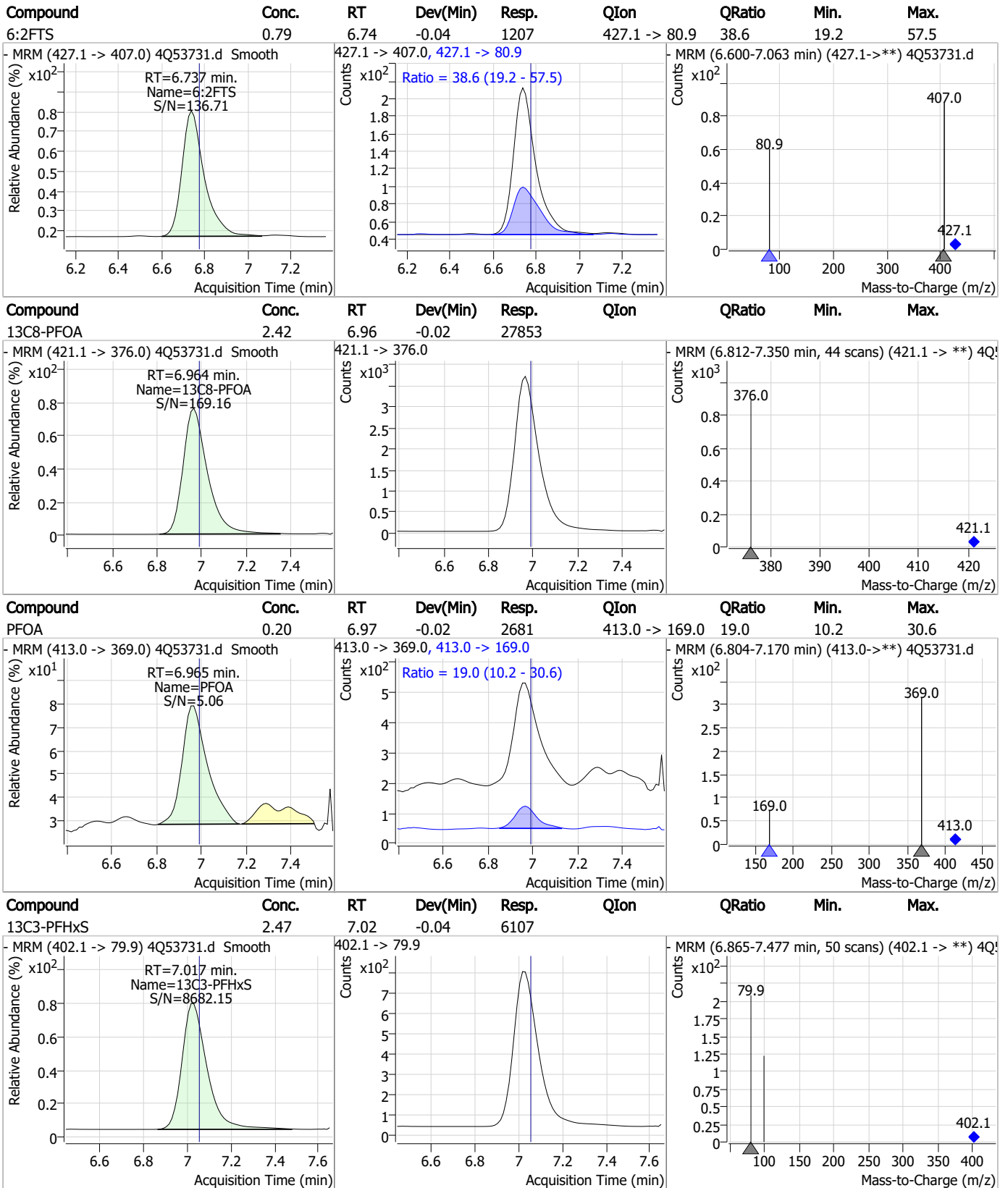
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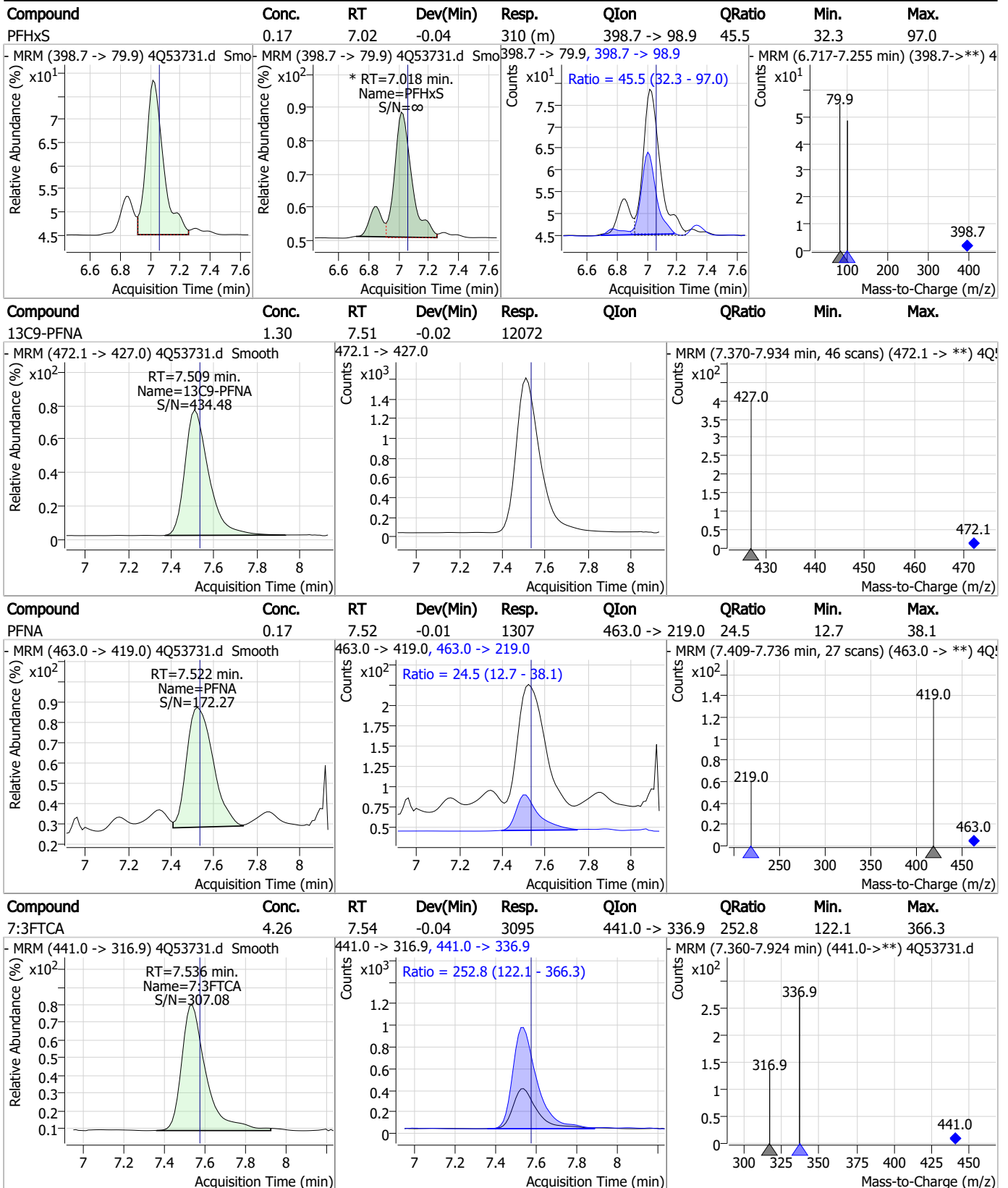
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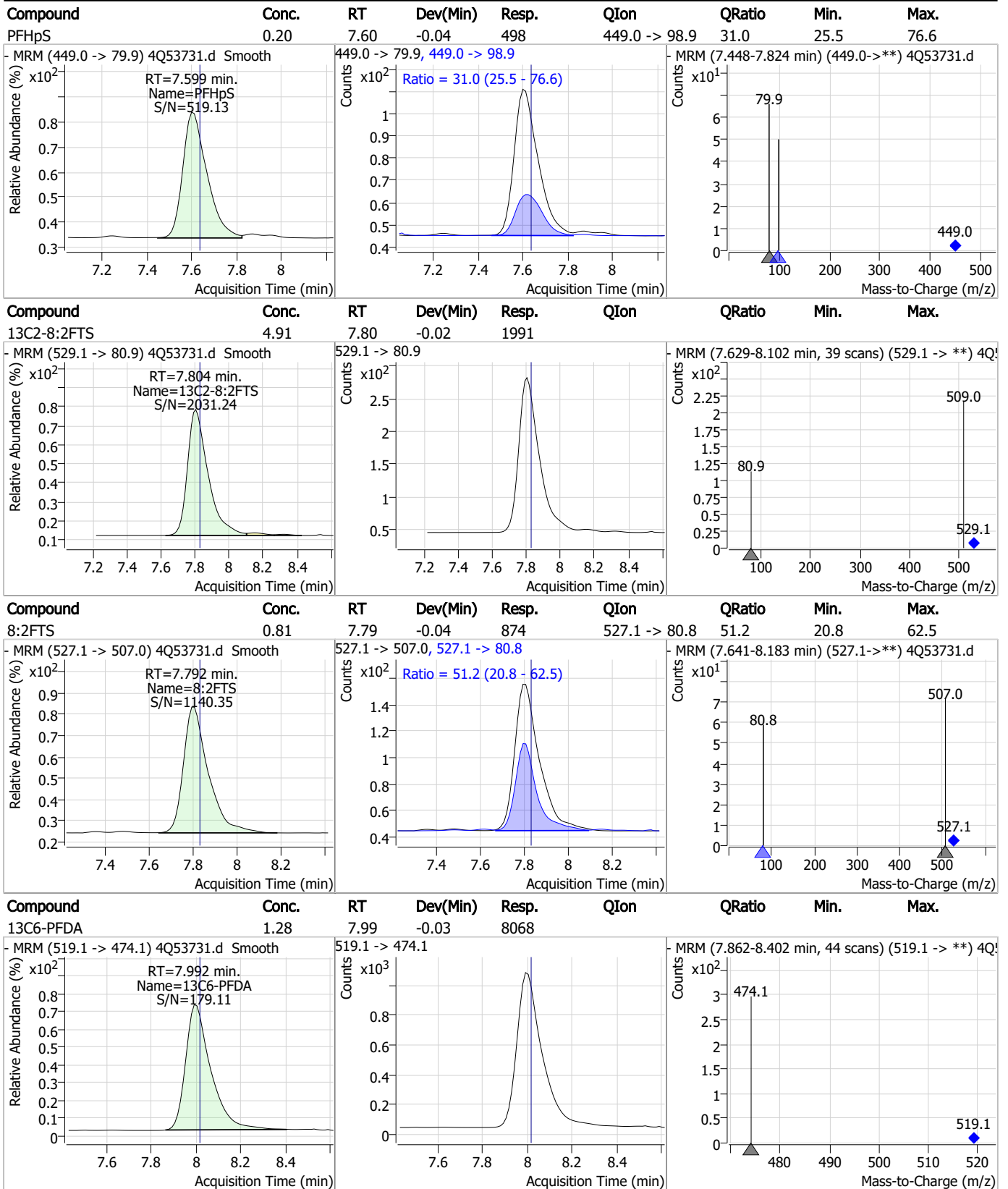
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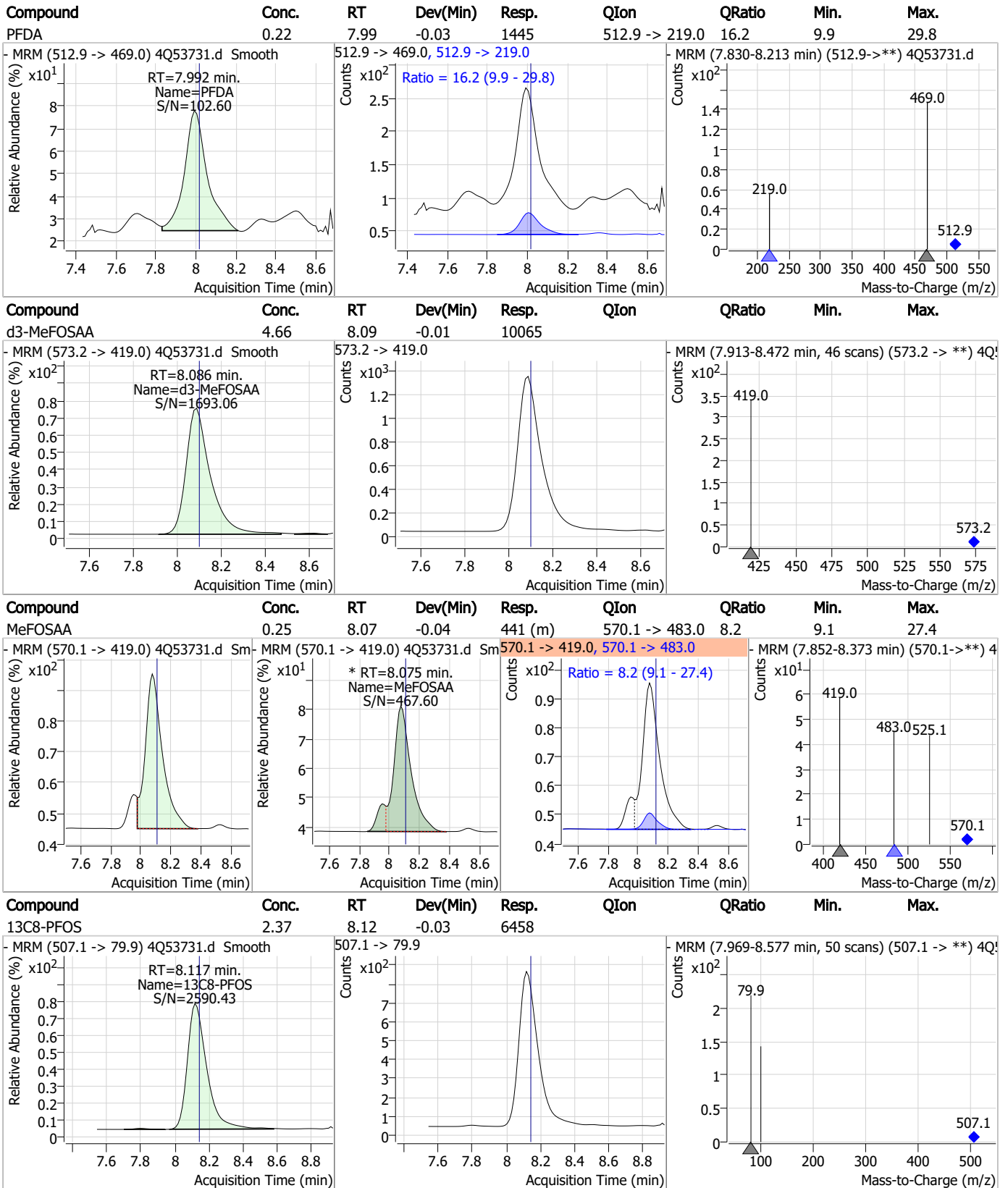
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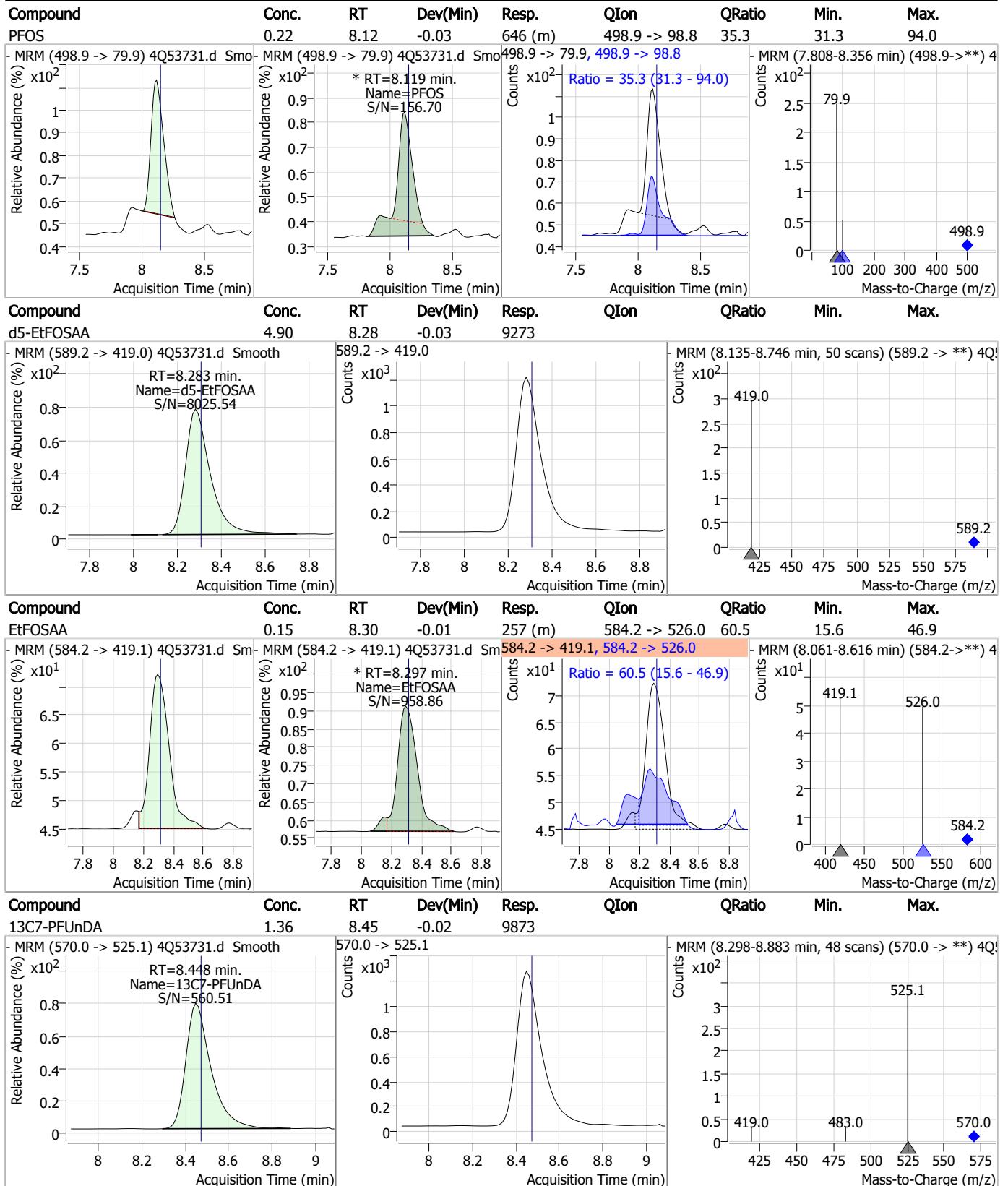
Perfluorinated Compounds by LC/MS/MS



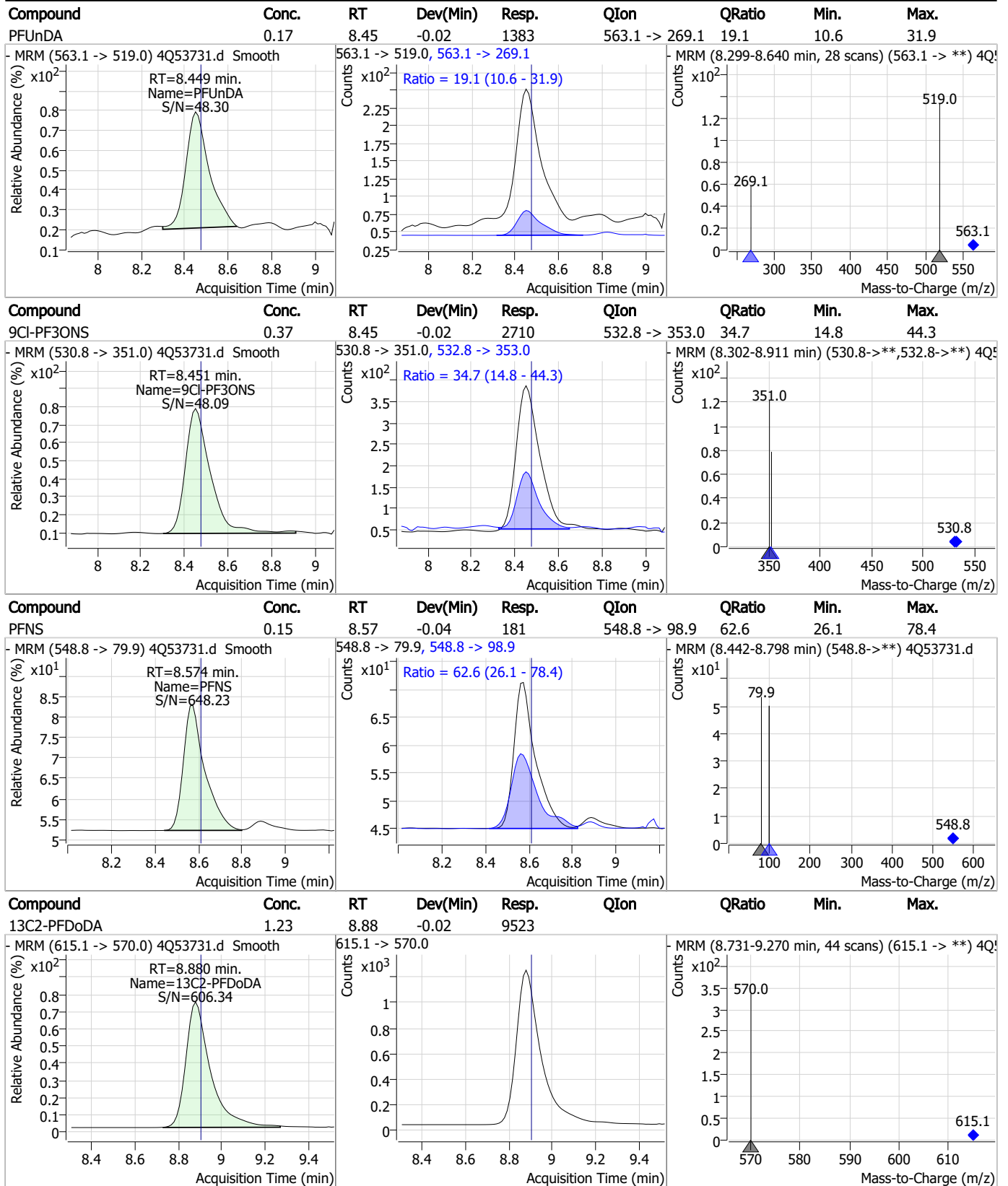
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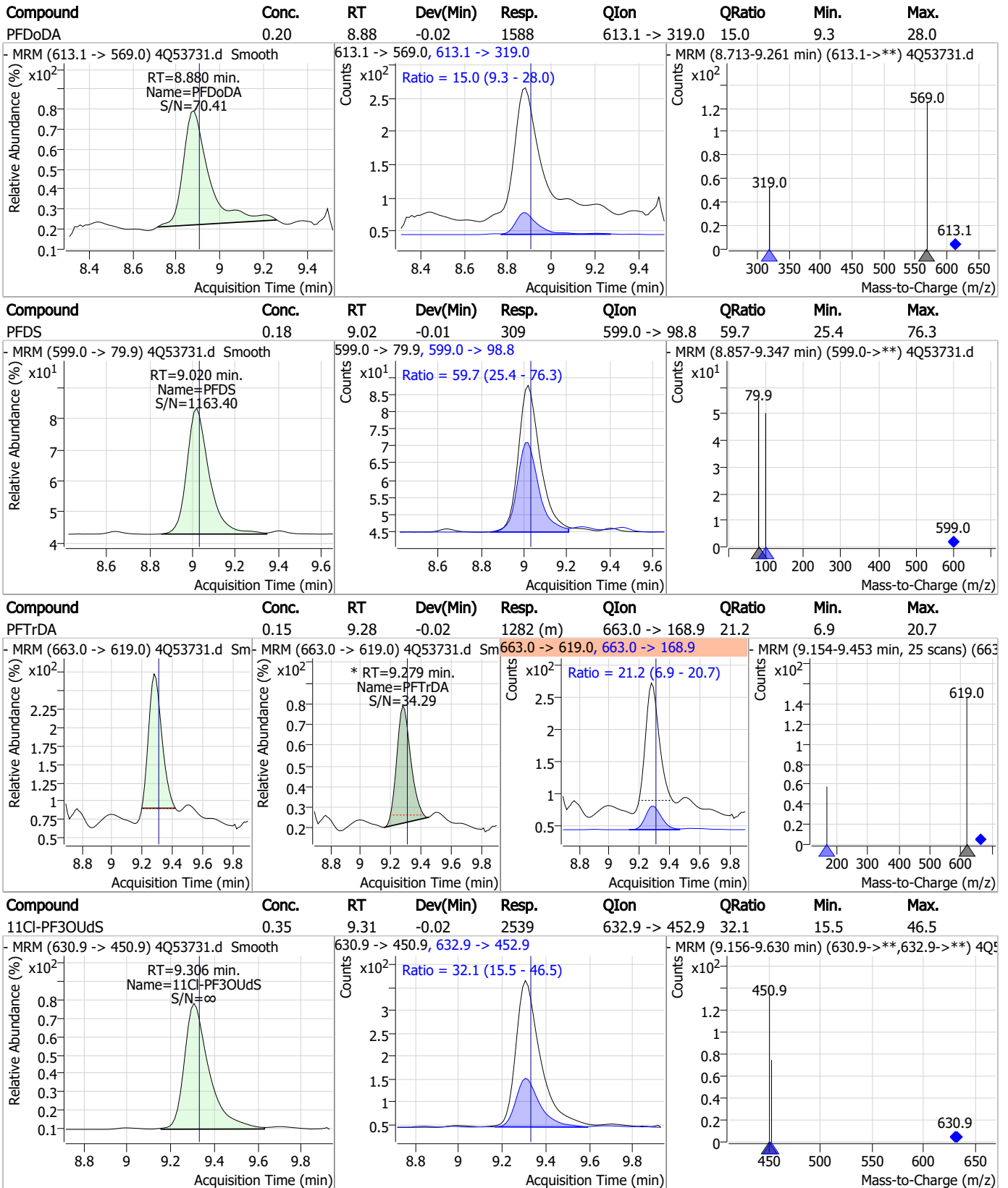
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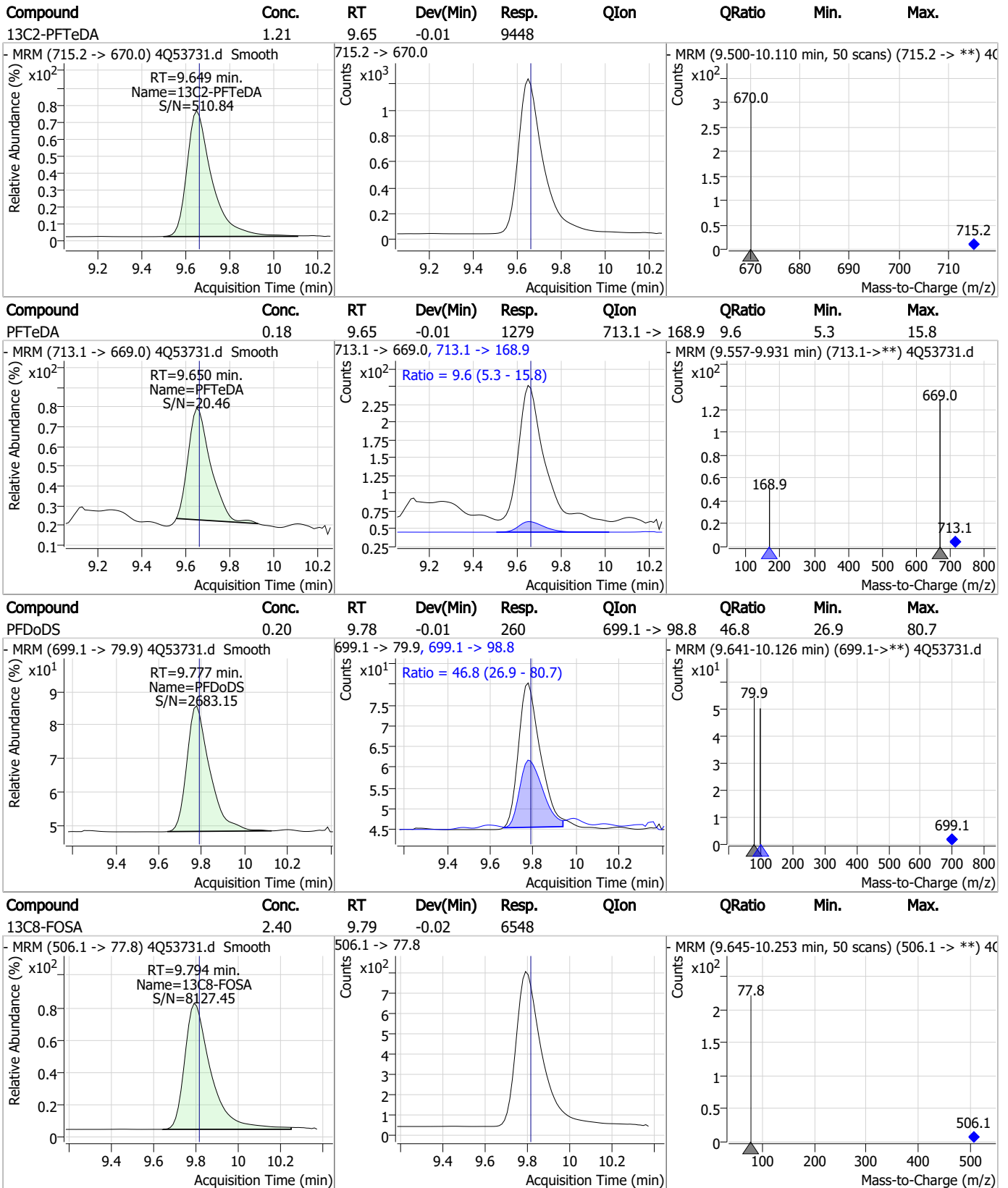
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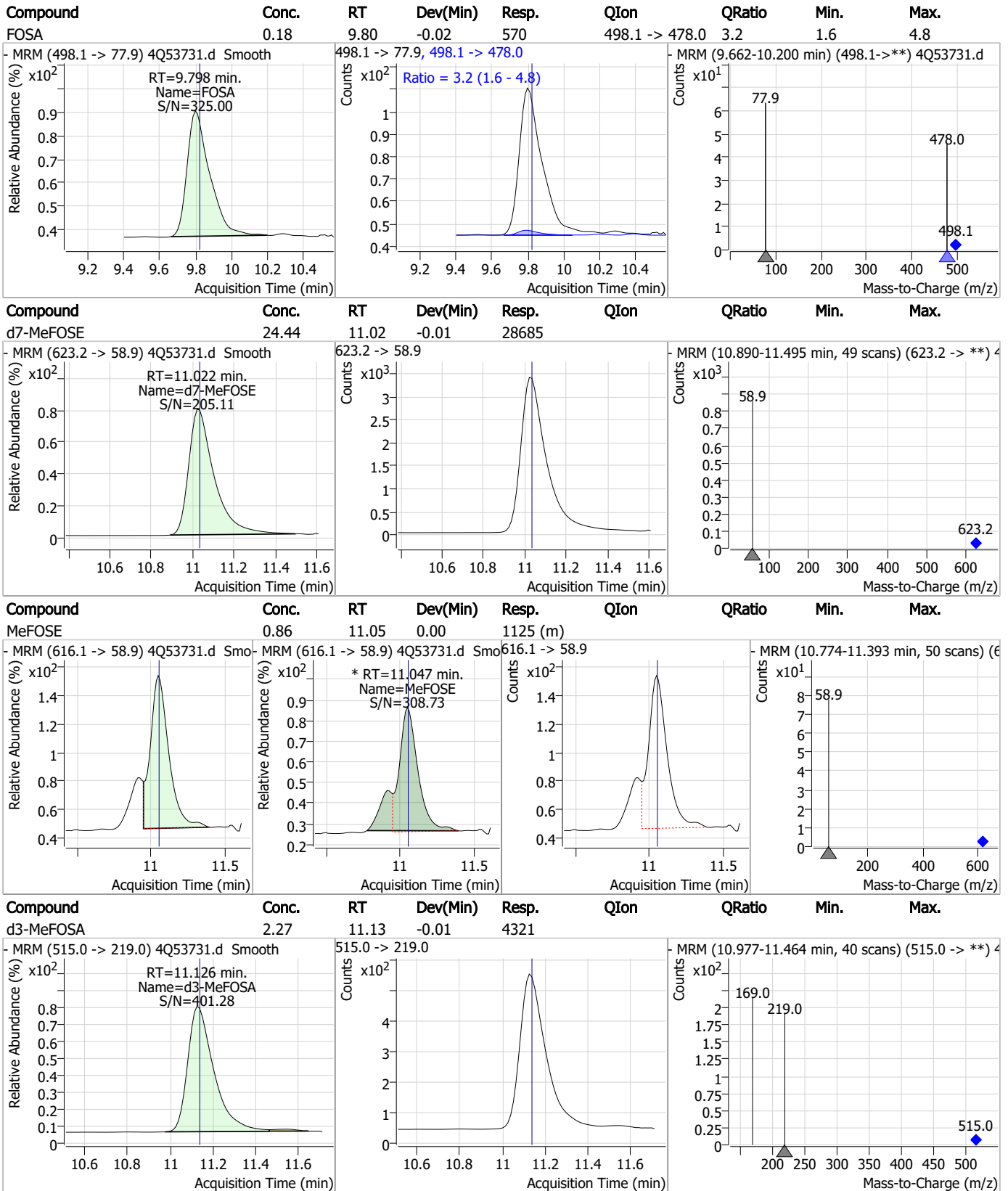
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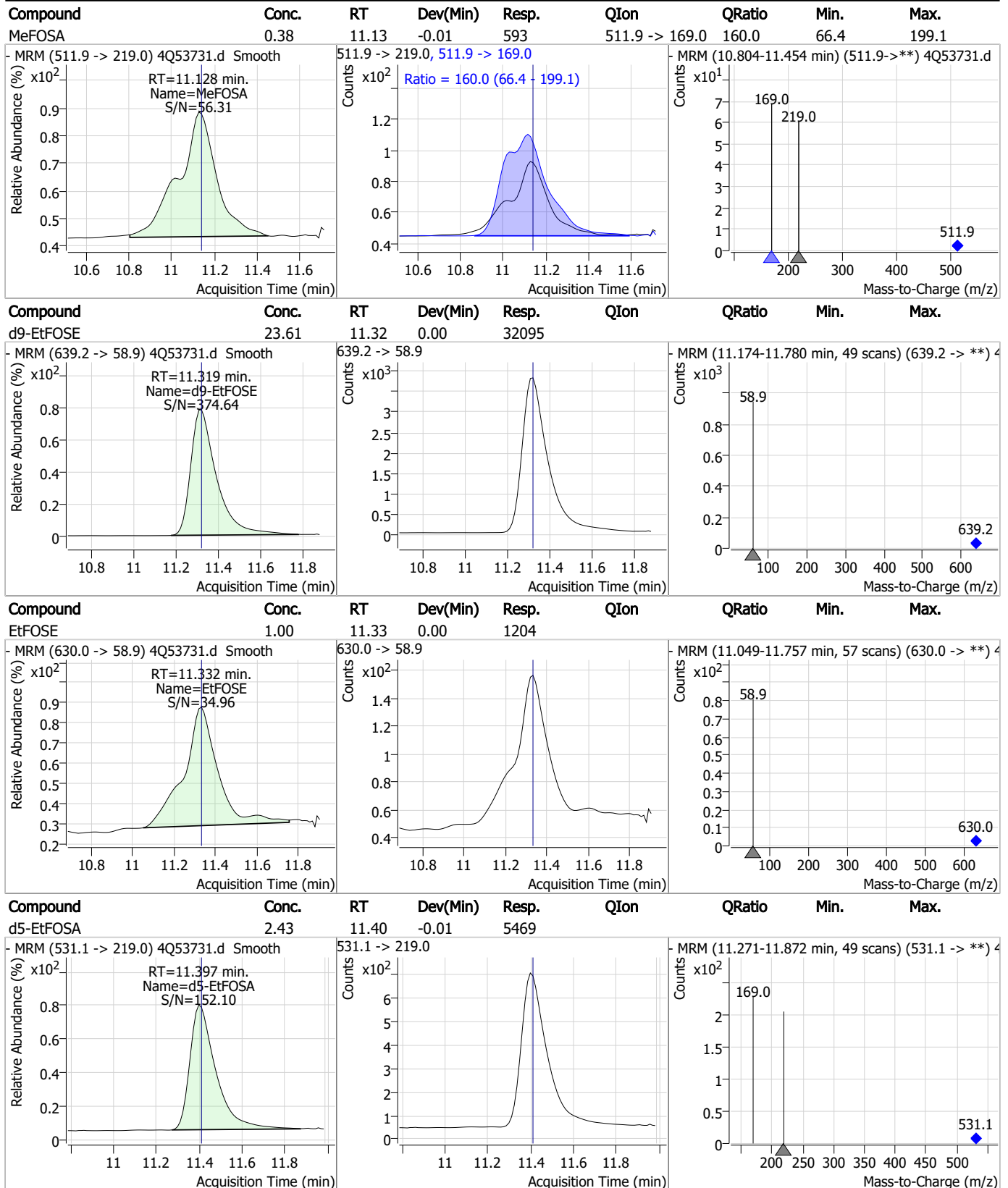
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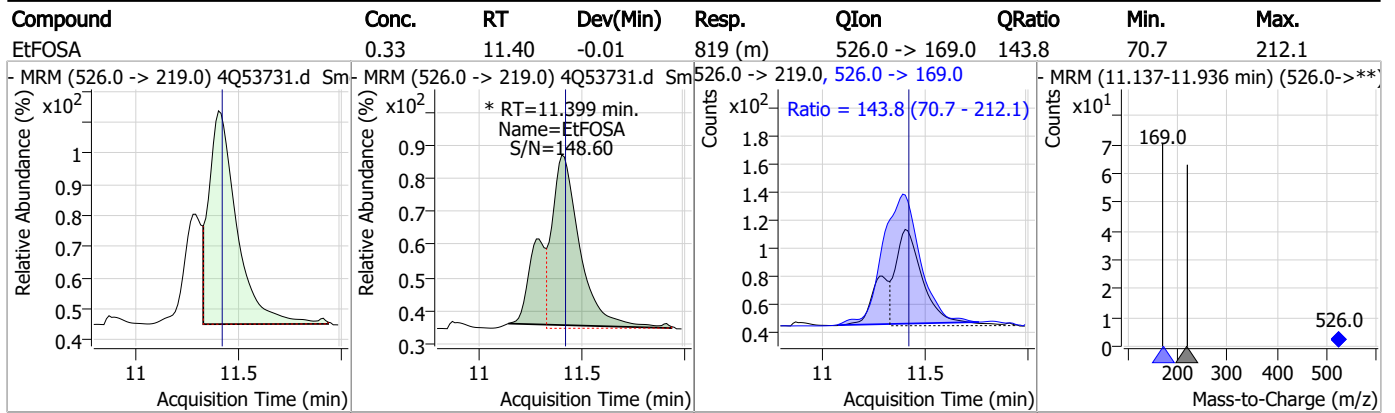
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.7.2

7

Manual Integration Approval Summary

Sample Number: S4Q785-IC785

Method: EPA DRAFT 1633

Lab FileID: 4Q53731.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 15:40

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
MeFOSAA	2355-31-9		8.07	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
Perfluorotridecanoic acid	72629-94-8		9.28	Poor instrument integration
MeFOSE	24448-09-7		11.05	Split peak
EtFOSA	4151-50-2		11.40	Split peak

7.7.2.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53732.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 3:55:10 PM
 Sample Name : ic785-2
 Vial : P1-A3
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	81429	10.00 µg/L	-0.075
M5-PFPeA	4.112	268.3 -> 223.0	34526	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	26376	2.50 µg/L	-0.050
M4-PFHpA	6.255	367.1 -> 322.0	25213	2.50 µg/L	-0.050
M8-PFOA	6.964	421.1 -> 376.0	28859	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12292	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	8648	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	10124	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9808	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9484	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	6694	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7570	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6294	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6843	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	713	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	1480	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2286	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	11187	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	24217	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	9637	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	29681	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	36714	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5500	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4601	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5563	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	38759	5.00 µg/L	-0.087
18O2-PFHxS	7.016	403.0 -> 83.9	3946	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	32017	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	8499	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	11908	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	27909	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	713	5.28 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1480	5.20 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2286	5.70 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.0%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9808	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9484	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C3-PFBS	5.152	302.1 -> 79.9	7570	2.56 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C3-PFHxS	7.017	402.1 -> 79.9	6294	2.57 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C4-PFBA	2.624	216.8 -> 171.9	81429	10.08 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C4-PFHpA	6.255	367.1 -> 322.0	25213	2.59 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C5-PFHxA	5.297	318.0 -> 273.0	26376	2.53 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C5-PFPeA	4.112	268.3 -> 223.0	34526	5.07 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C6-PFDA	8.004	519.1 -> 474.1	8648	1.38 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 110.6%		
13C7-PFUnDA	8.448	570.0 -> 525.1	10124	1.40 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 112.1%		
13C8-FOSA	9.794	506.1 -> 77.8	6694	2.52 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C8-PFOA	6.964	421.1 -> 376.0	28859	2.52 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C8-PFOS	8.117	507.1 -> 79.9	6843	2.58 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C9-PFNA	7.509	472.1 -> 427.0	12292	1.31 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.7%		
d3-MeFOSAA	8.086	573.2 -> 419.0	11187	5.30 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.1%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	24217	10.20 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.0%		
d3-MeFOSA	11.126	515.0 -> 219.0	4601	2.48 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.2%		
d5-EtFOSAA	8.283	589.2 -> 419.0	9637	5.22 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.3%		
d7-MeFOSE	11.022	623.2 -> 58.9	29681	25.90 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 103.6%		
d9-EtFOSE	11.319	639.2 -> 58.9	36714	27.66 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 110.6%		
d5-EtFOSA	11.397	531.1 -> 219.0	5500	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%		
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	2171	1.54 µg/L	94
		327.1 -> 80.9	831		
6:2FTS	6.737	427.1 -> 407.0	2322	1.45 µg/L	97
		427.1 -> 80.9	853		
8:2FTS	7.804	527.1 -> 507.0	1660	1.34 µg/L	95
		527.1 -> 80.8	742		
EtFOSAA	8.284	584.2 -> 419.1	586	0.34 µg/L	# 59
		584.2 -> 526.0	314		
FOSA	9.798	498.1 -> 77.9	1326	0.41 µg/L	98
		498.1 -> 478.0	51		
MeFOSAA	8.087	570.1 -> 419.0	589	0.30 µg/L	# 59
		570.1 -> 483.0	216		
PFBA	2.620	212.8 -> 168.9	4382	1.48 µg/L	100
PFBS	5.153	298.7 -> 79.9	957	0.36 µg/L	96
		298.7 -> 98.8	394		
PFDA	8.005	512.9 -> 469.0	2589	0.37 µg/L	98
		512.9 -> 219.0	533		
PFDODA	8.880	613.1 -> 569.0	2897	0.36 µg/L	91
		613.1 -> 319.0	655		
PFDS	9.020	599.0 -> 79.9	615	0.35 µg/L	86

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.255	599.0 -> 98.8	374	0.36	µg/L	92
		363.1 -> 319.0	5667			
PFHpS	7.612	363.1 -> 169.0	1191	0.31	µg/L	81
		449.0 -> 79.9	828			
PFHxA	5.300	449.0 -> 98.9	533	0.36	µg/L	96
		313.0 -> 269.0	3301			
PFHxS	7.018	313.0 -> 118.9	131	0.36	µg/L	79
		398.7 -> 79.9	680			
PFNA	7.510	398.7 -> 98.9	327	0.40	µg/L	84
		463.0 -> 419.0	3135			
PFNS	8.586	463.0 -> 219.0	544	0.42	µg/L	89
		548.8 -> 79.9	546			
PFOA	6.953	548.8 -> 98.9	243	0.40	µg/L	96
		413.0 -> 369.0	5531			
PFOS	8.131	413.0 -> 169.0	1035	0.30	µg/L	99
		498.9 -> 79.9	942			
PFPeA	4.114	498.9 -> 98.8	580	0.76	µg/L	100
		263.0 -> 219.0	5678			
PFPeS	6.257	349.1 -> 79.9	770	0.37	µg/L	100
		349.1 -> 98.9	334			
PFTeDA	9.650	713.1 -> 669.0	2834	0.39	µg/L	97
		713.1 -> 168.9	334			
PFTrDA	9.279	663.0 -> 619.0	3182	0.37	µg/L	95
		663.0 -> 168.9	503			
PFUnDA	8.449	563.1 -> 519.0	2731	0.33	µg/L	85
		563.1 -> 269.1	769			
11CI-PF3OUdS	9.306	630.9 -> 450.9	5255	0.70	µg/L	95
		632.9 -> 452.9	1768			
9CI-PF3ONS	8.451	530.8 -> 351.0	5490	0.72	µg/L	95
		532.8 -> 353.0	1769			
ADONA	6.531	376.9 -> 250.9	14024	0.84	µg/L	99
		376.9 -> 84.8	3509			
HFPO-DA	5.653	284.9 -> 168.9	2095	0.82	µg/L	99
		284.9 -> 184.9	206			
3:3FTCA	3.561	241.0 -> 177.0	879	1.90	µg/L	98
		241.0 -> 117.0	75			
5:3FTCA	5.983	341.0 -> 237.1	14792	9.12	µg/L	99
		341.0 -> 217.0	10634			
7:3FTCA	7.524	441.0 -> 316.9	7321	10.06	µg/L	81
		441.0 -> 336.9	15496			
EtFOSA	11.399	526.0 -> 219.0	2000	0.81	µg/L	95
		526.0 -> 169.0	2701			
EtFOSE	11.332	630.0 -> 58.9	2583	1.88	µg/L	100
		511.9 -> 219.0	1312			
MeFOSA	11.128	511.9 -> 169.0	1899	0.79	µg/L	90
		616.1 -> 58.9	2728			
MeFOSE	11.047	699.1 -> 79.9	449	2.02	µg/L	100
		699.1 -> 98.8	292			
PFDoDS	9.777	295.0 -> 201.0	600	0.32	µg/L	84
		295.0 -> 84.9	150			
NFDHA	5.179	279.0 -> 85.1	3321	0.77	µg/L	100
		229.0 -> 84.9	3662			
PFMBA	3.253	314.8 -> 134.9	5124	0.76	µg/L	100
		314.8 -> 82.9	177			
PFEESA	5.684			0.70	µg/L	98

= Qualifier out of range, m = manually integrated, + = Area summed

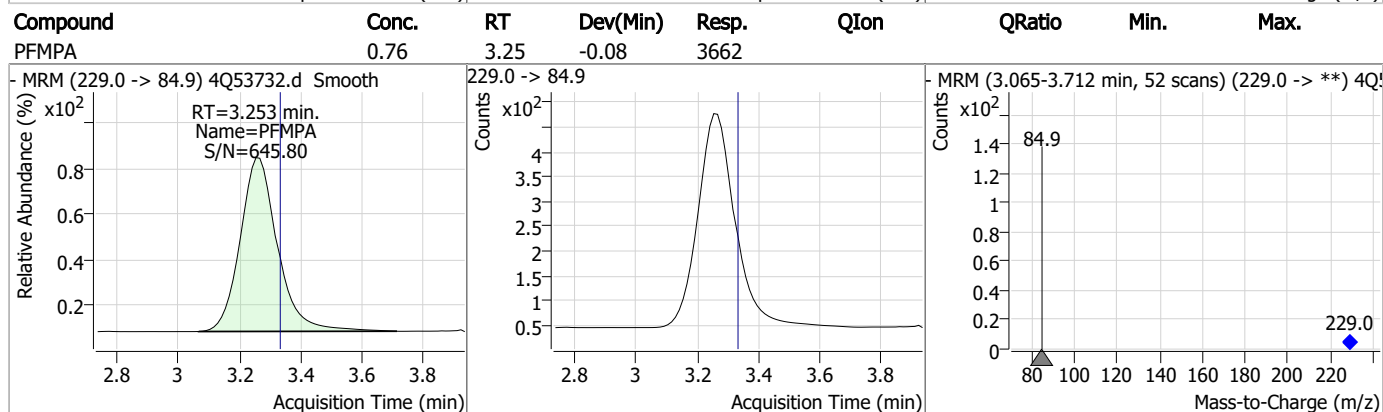
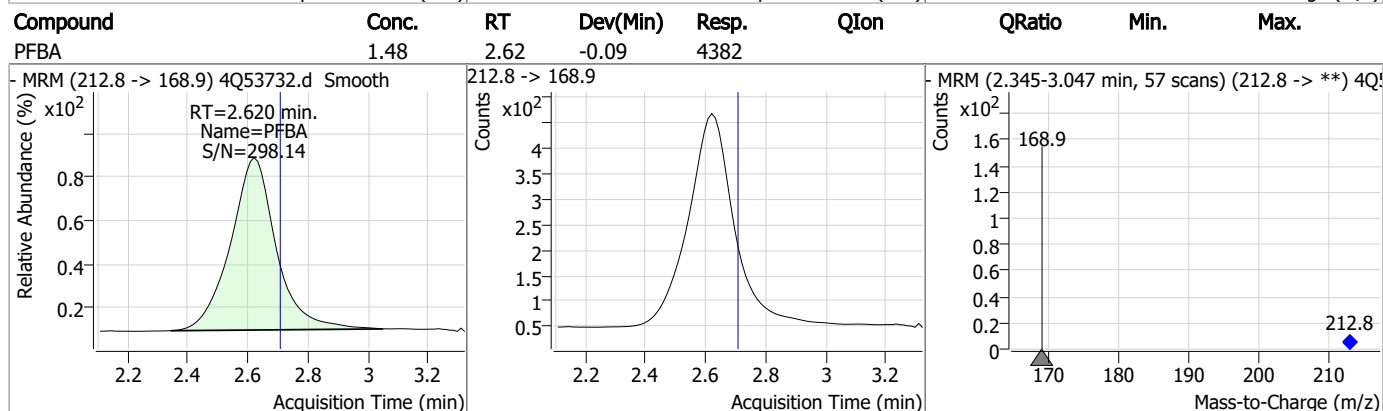
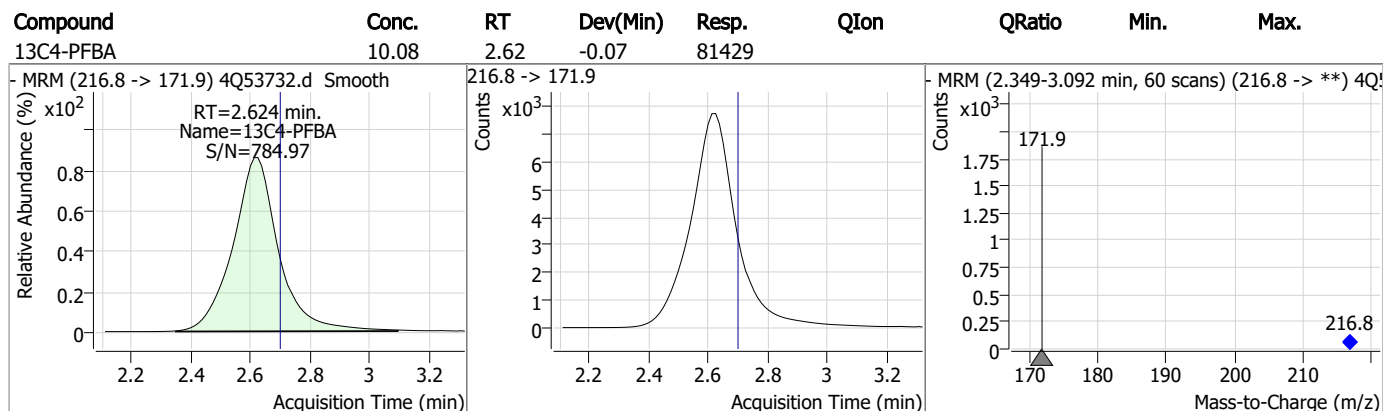
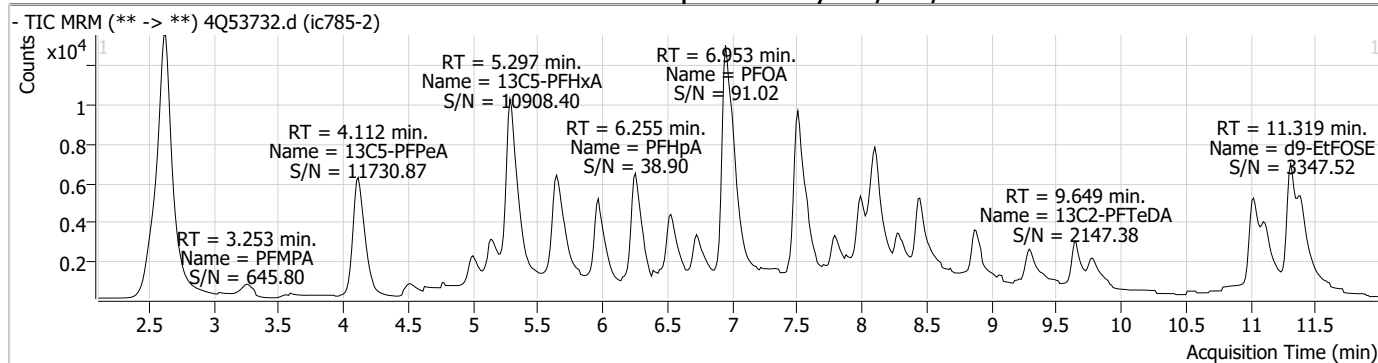
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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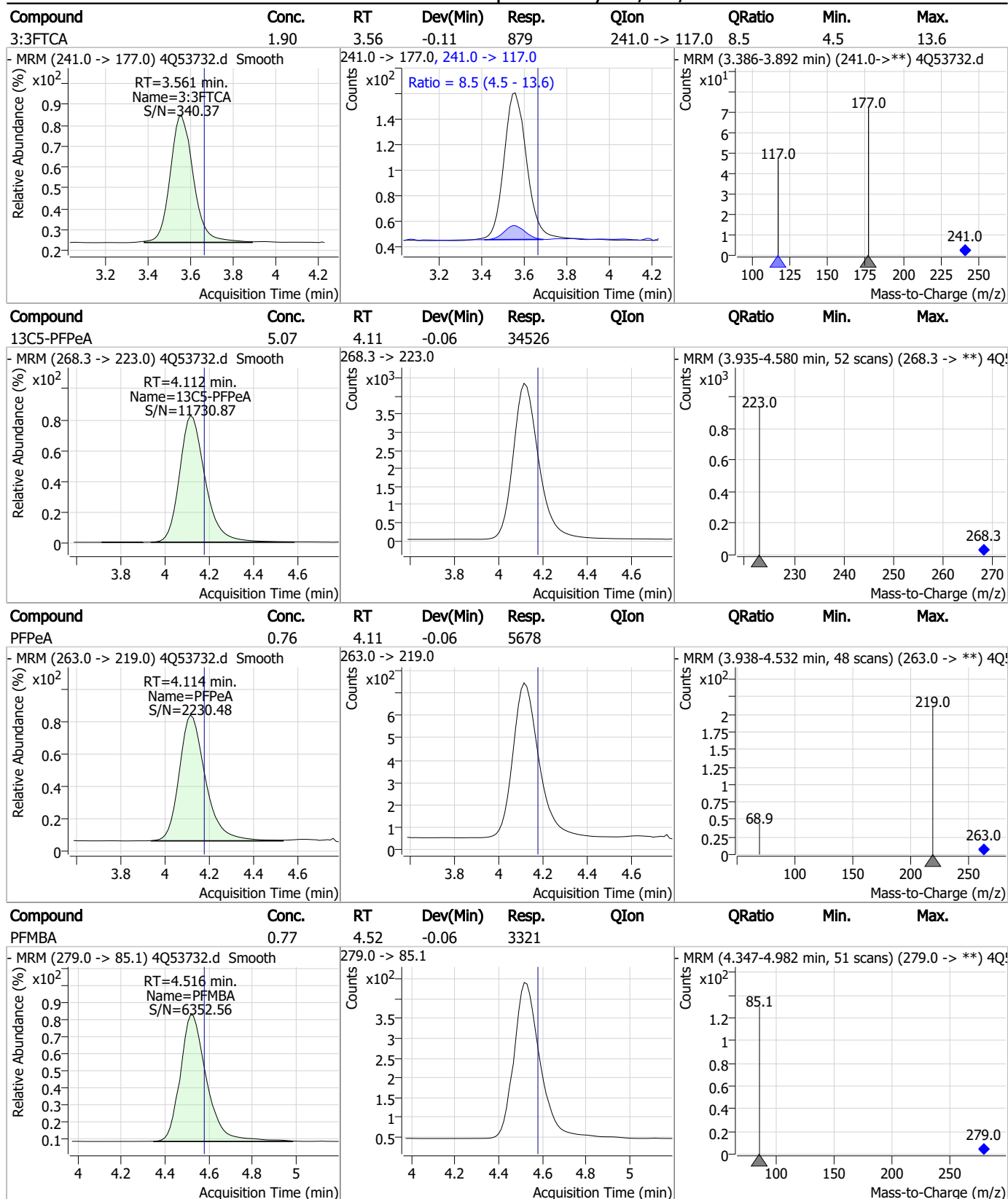
7.7.3

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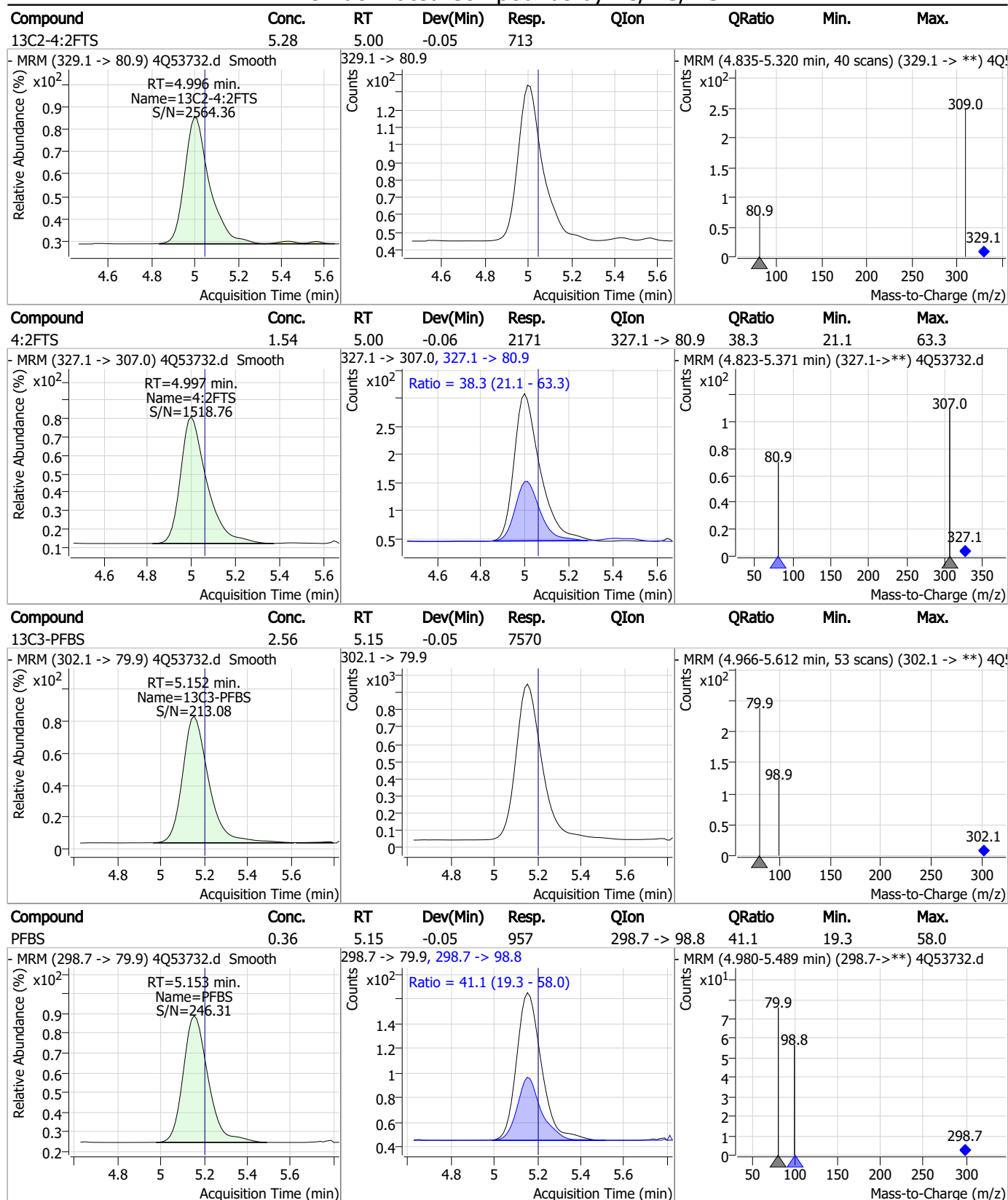
Perfluorinated Compounds by LC/MS/MS



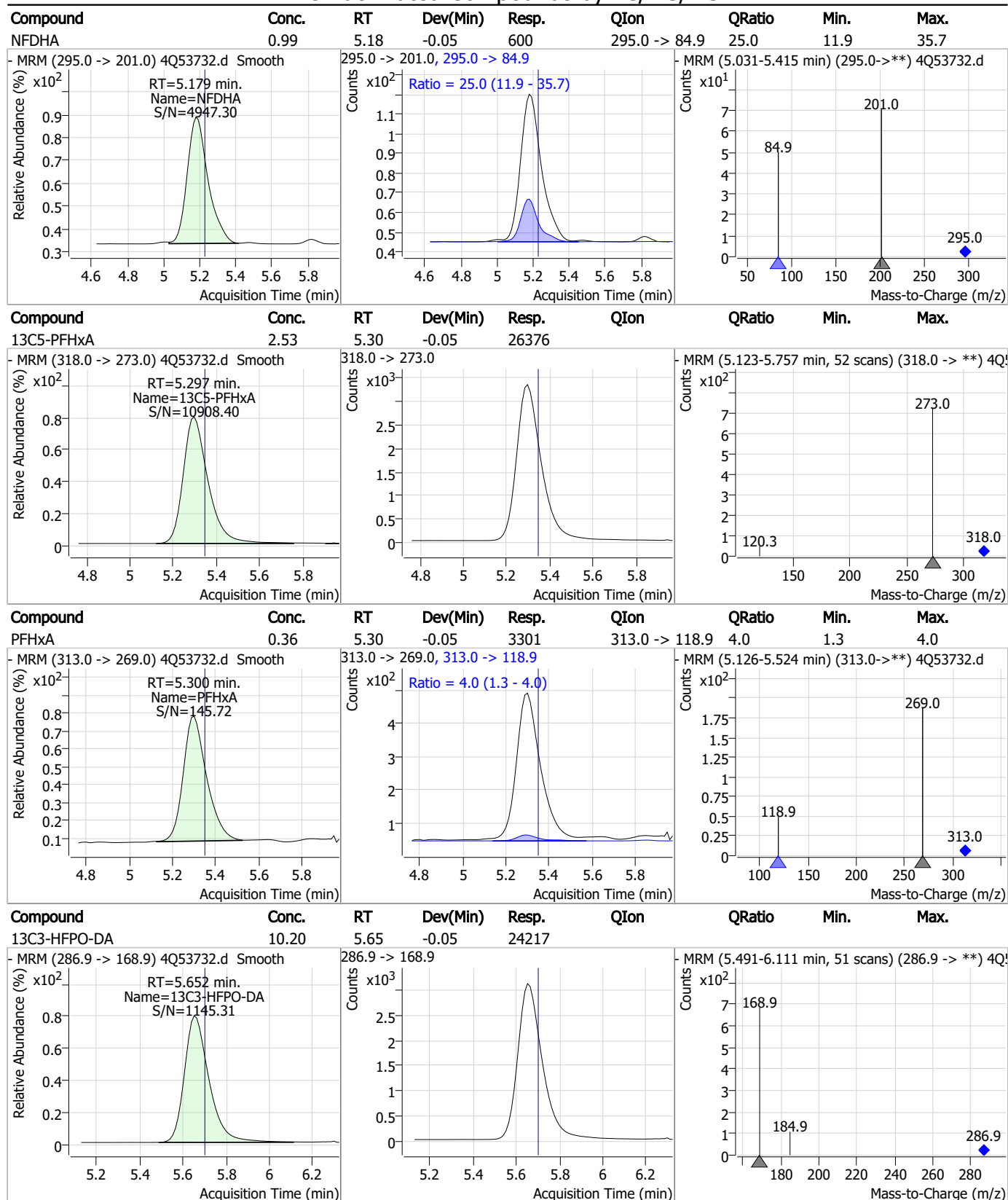
Perfluorinated Compounds by LC/MS/MS



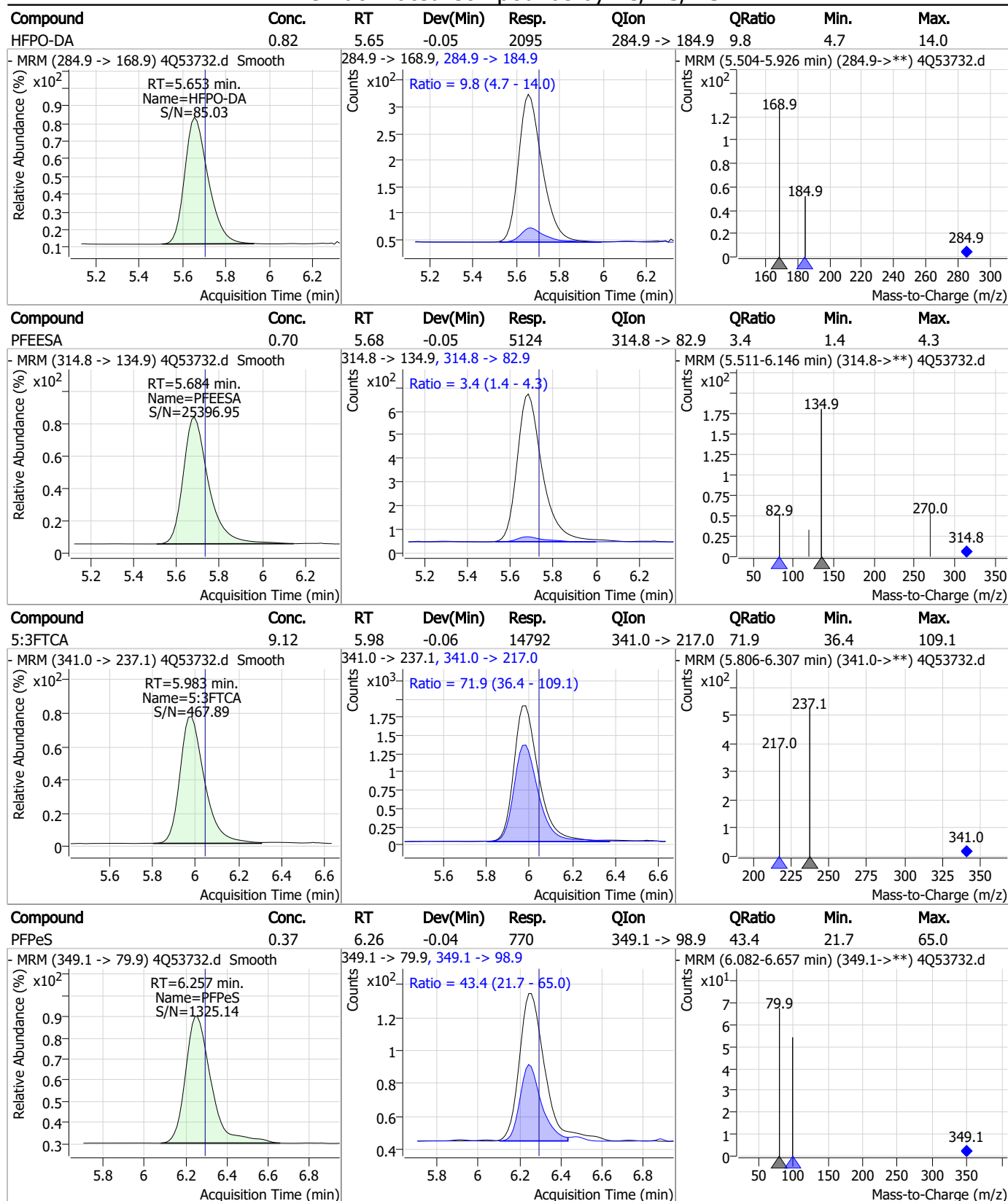
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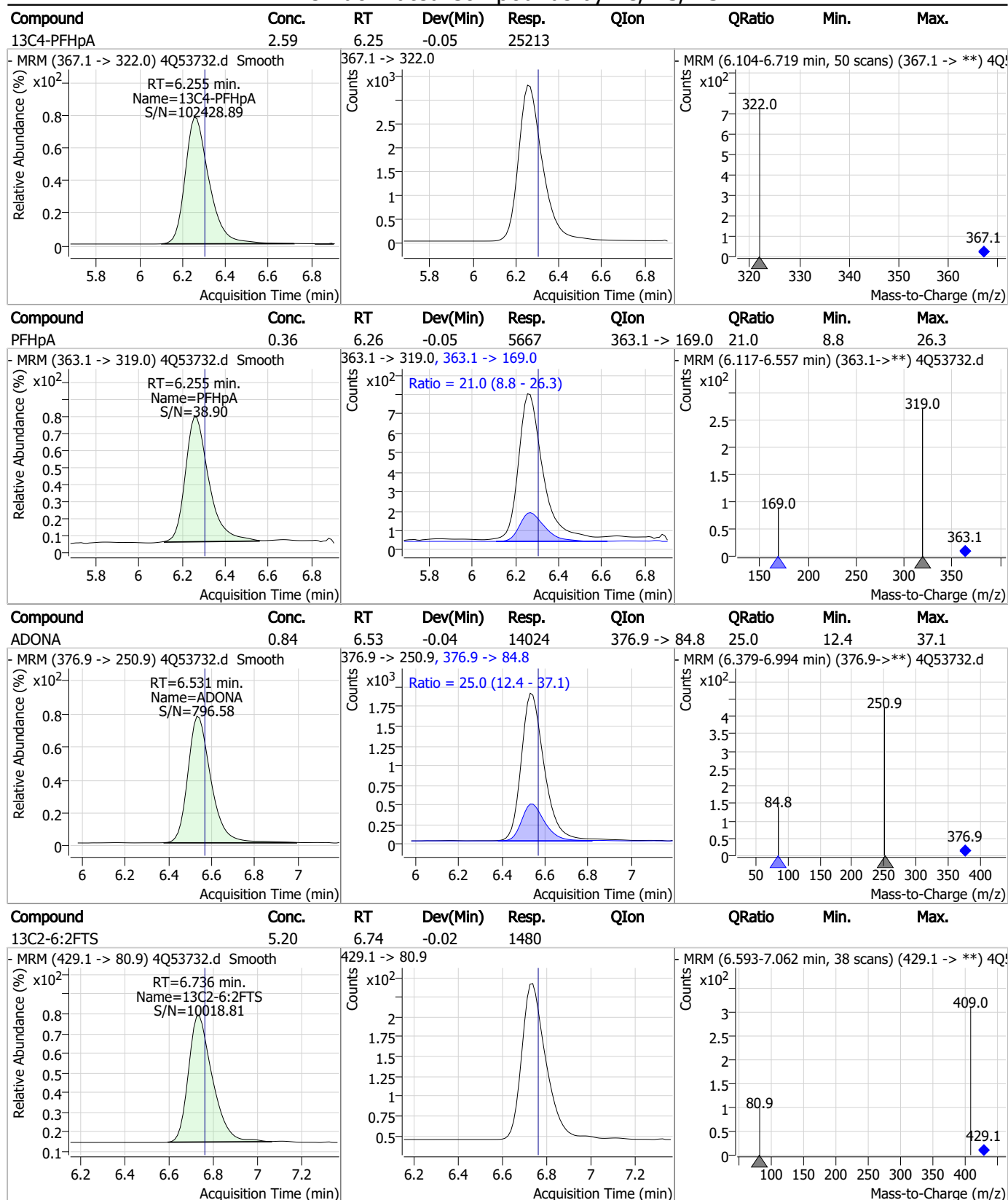
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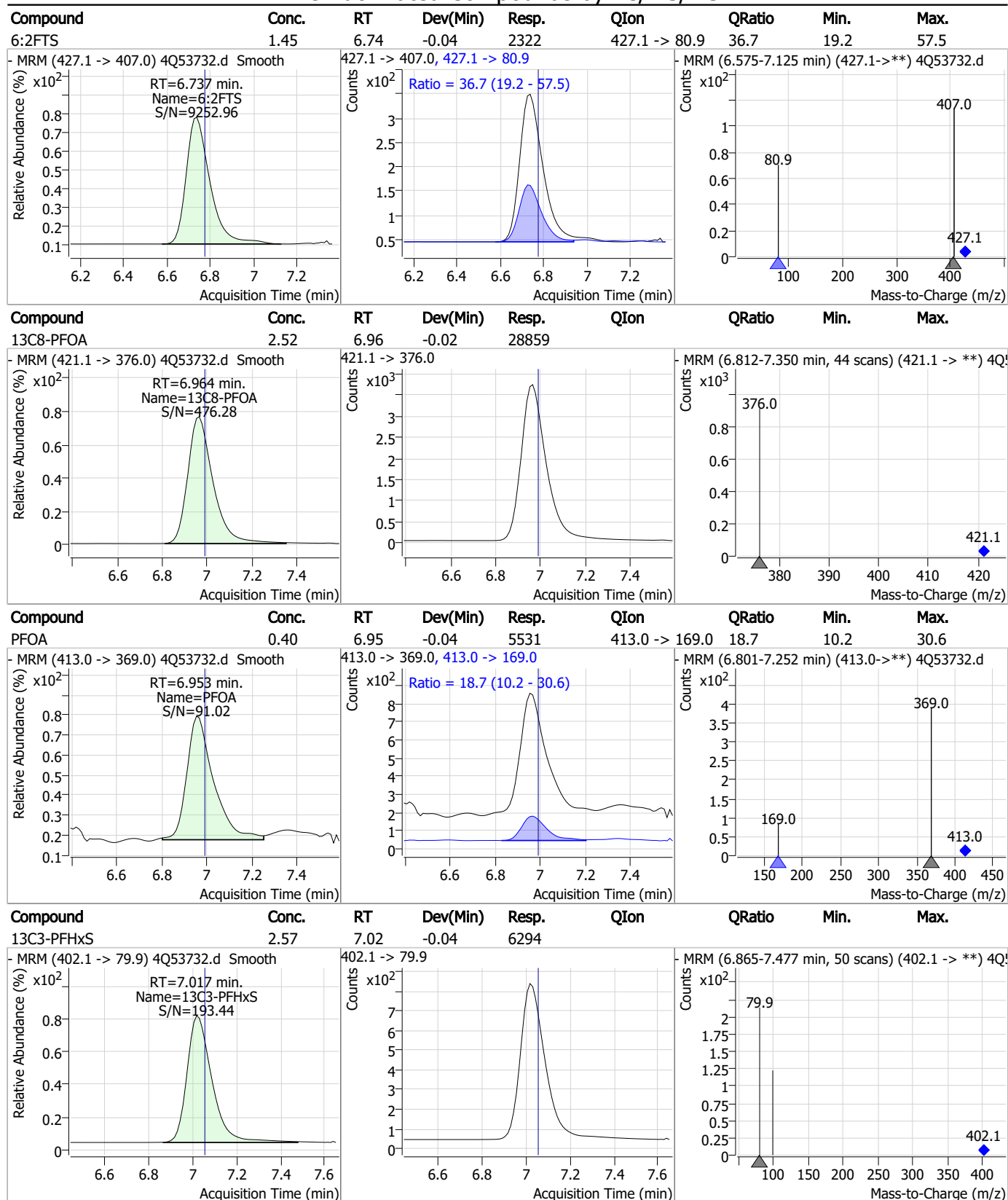
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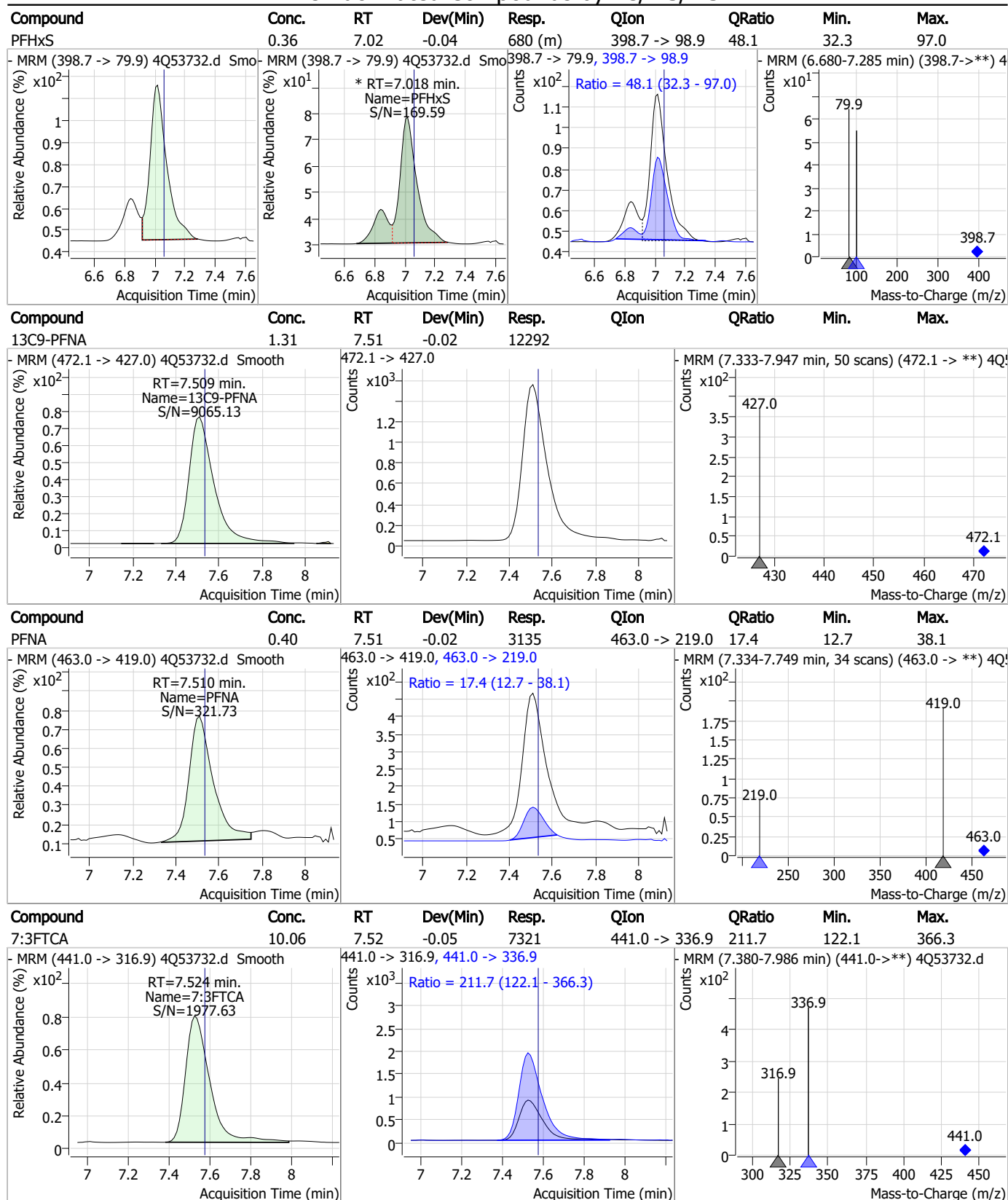
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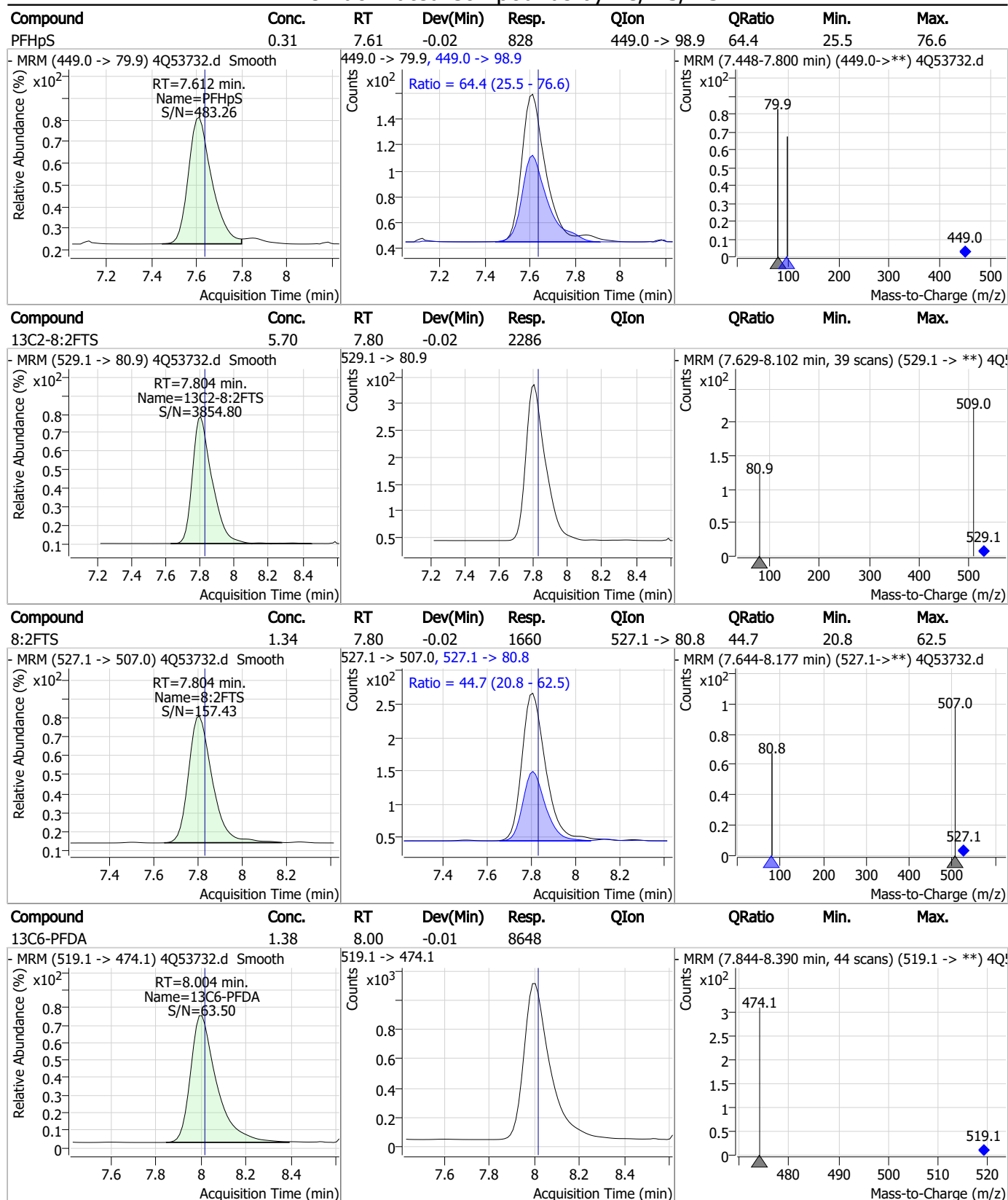
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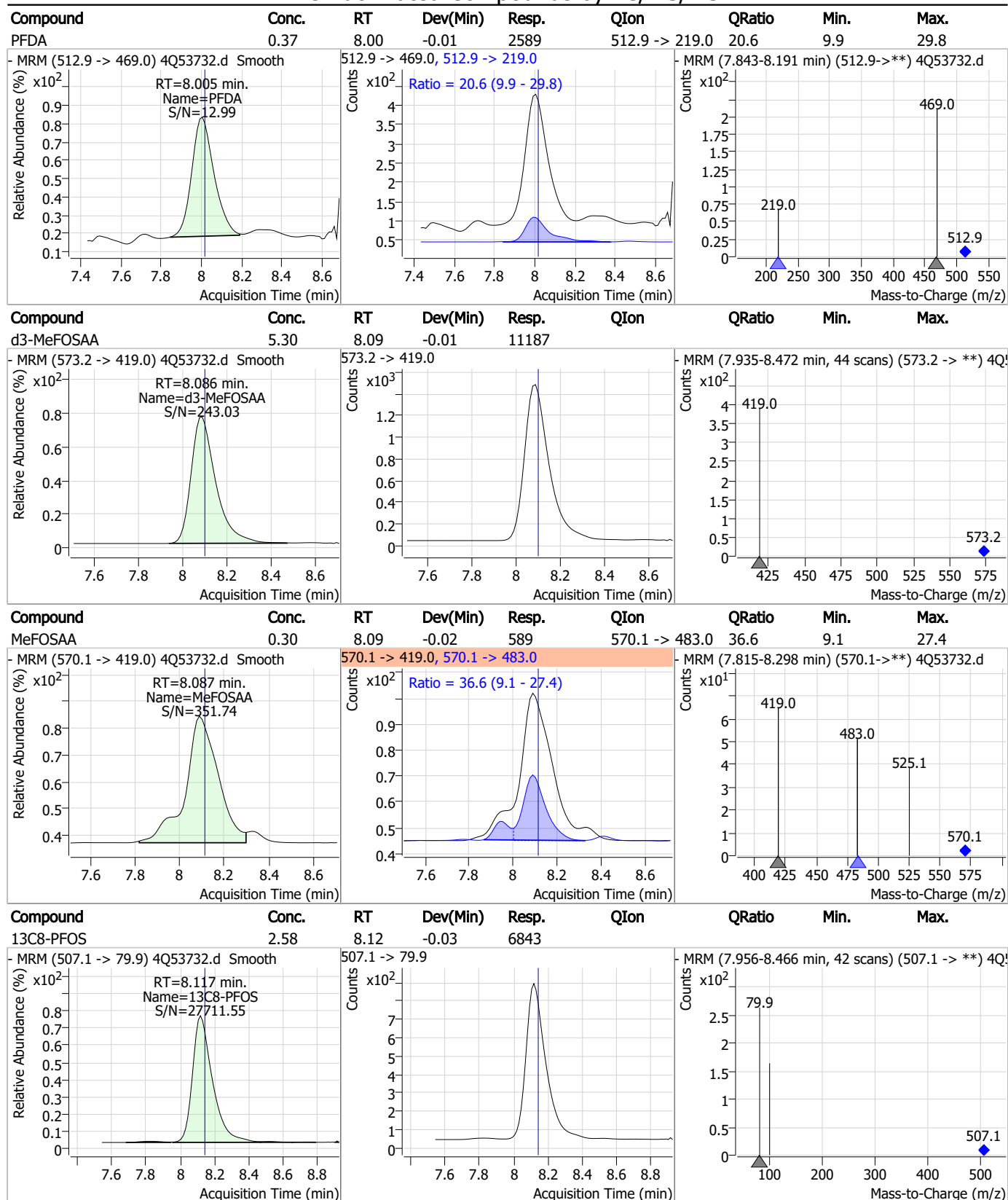
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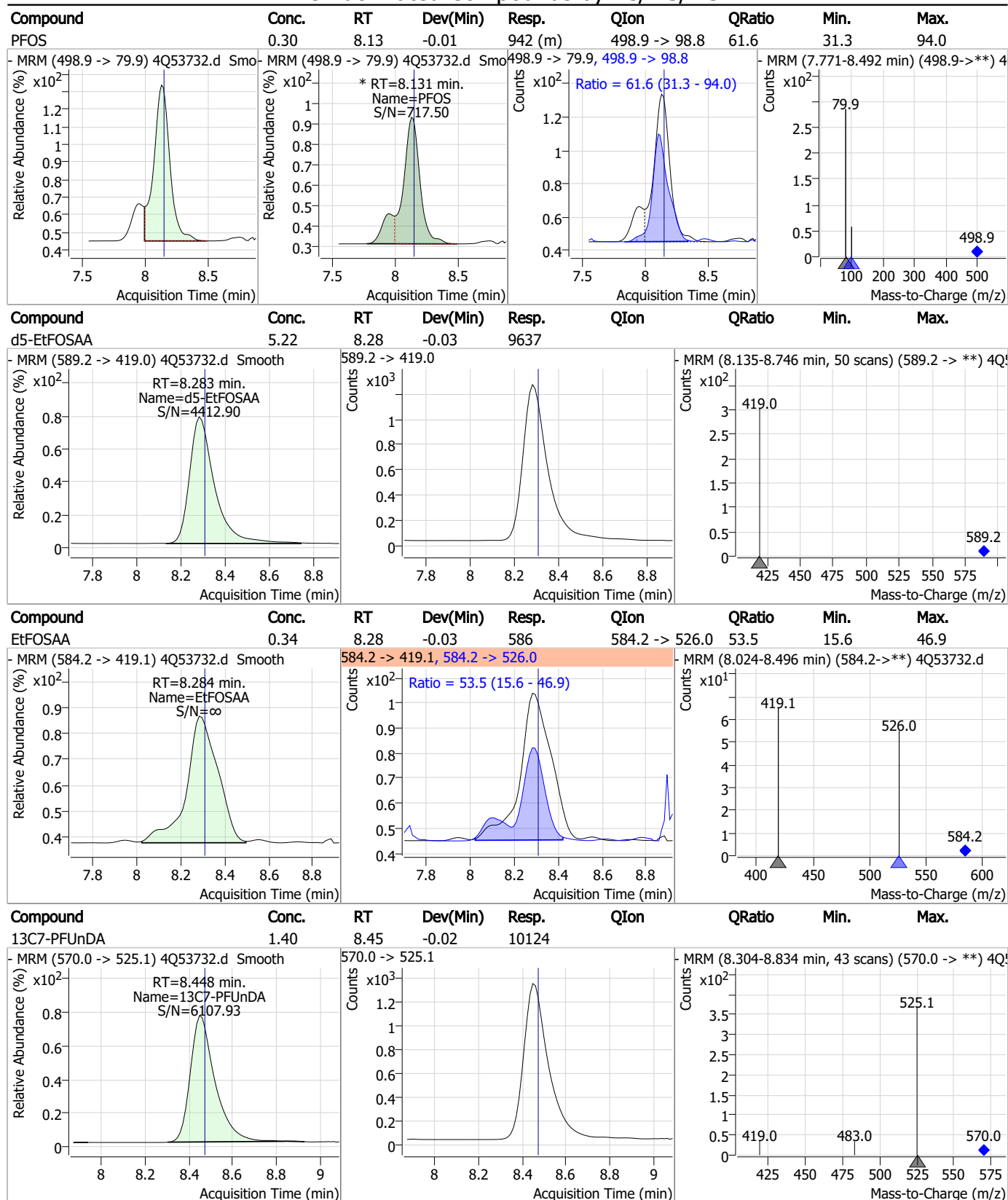
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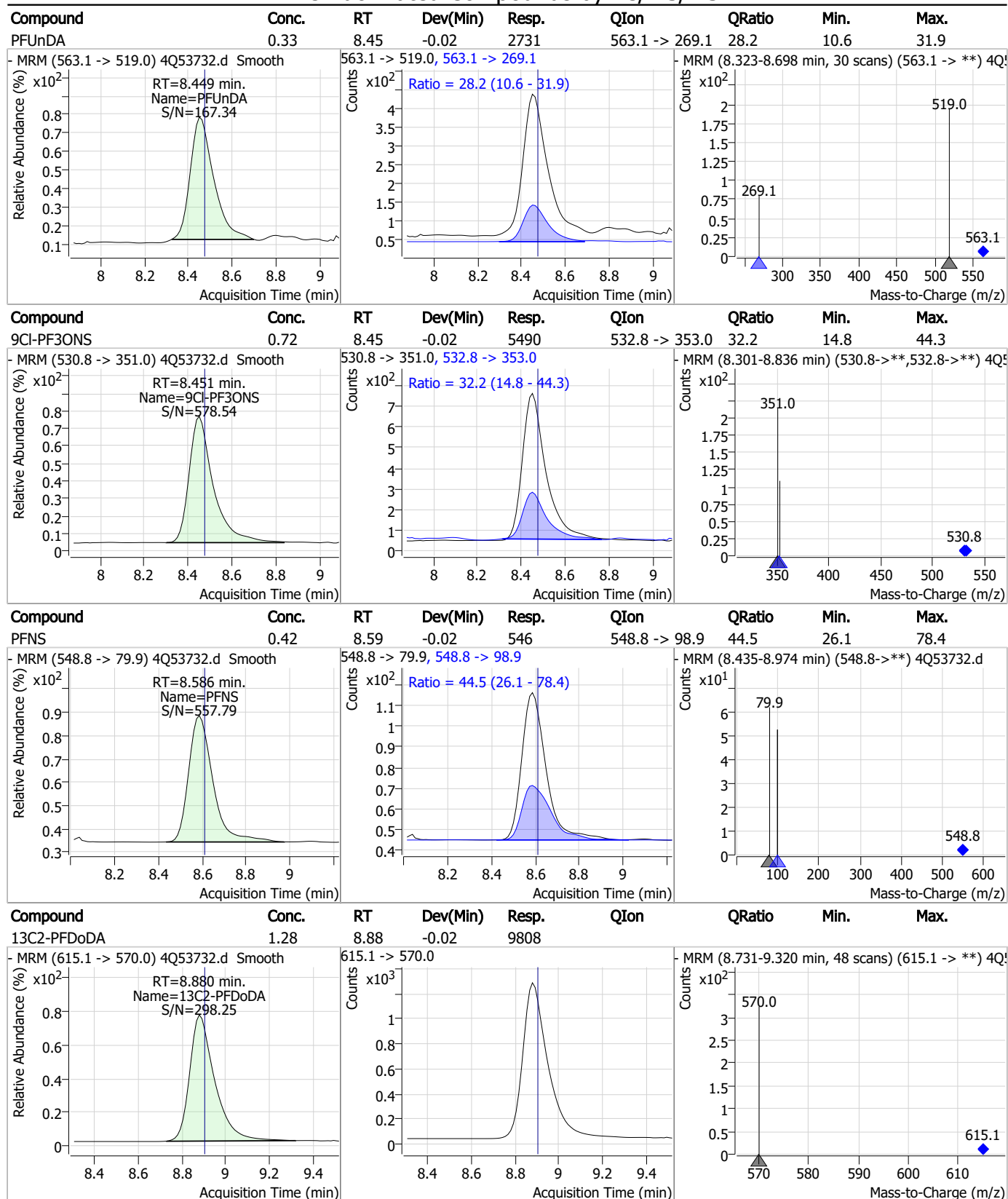
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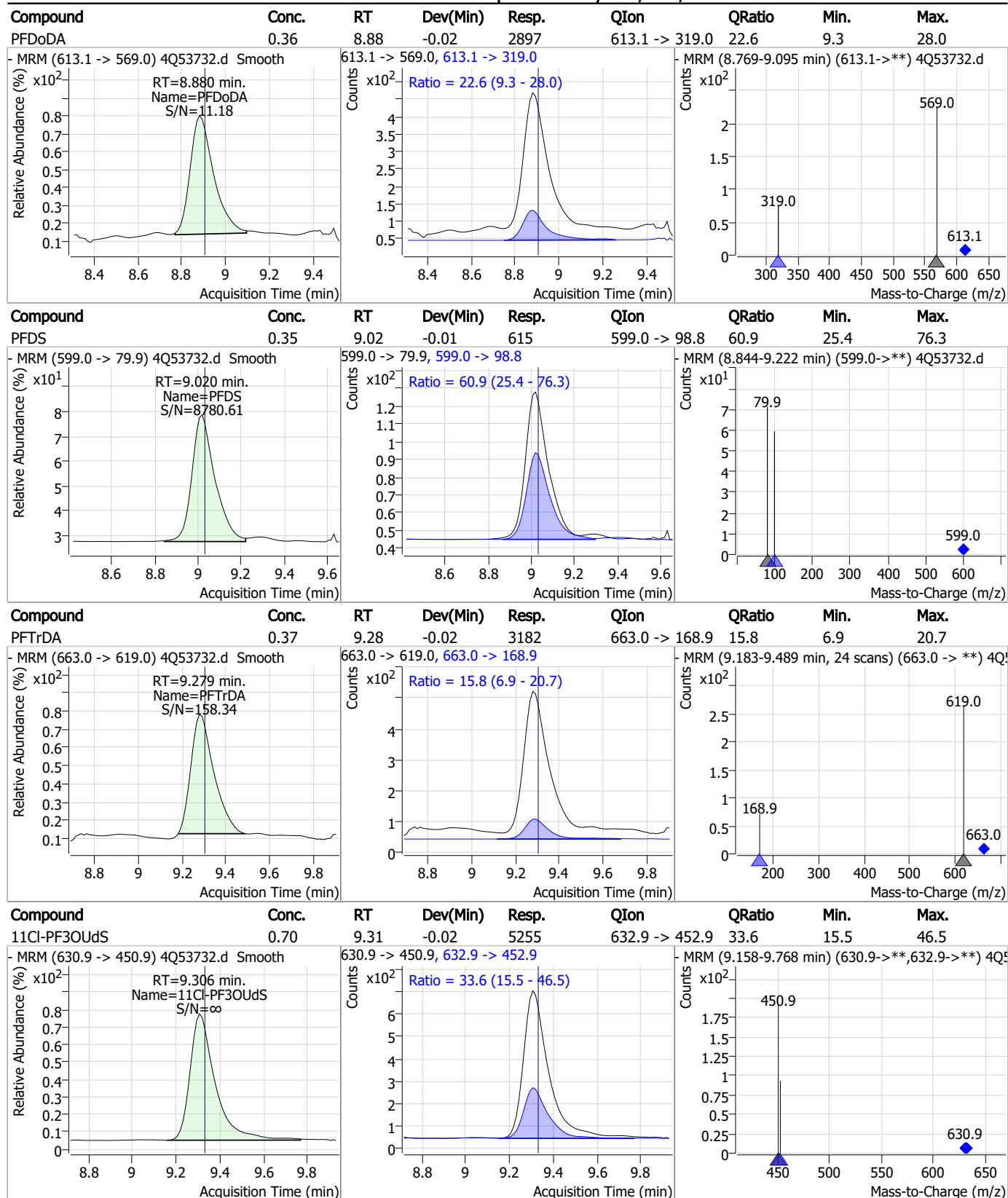
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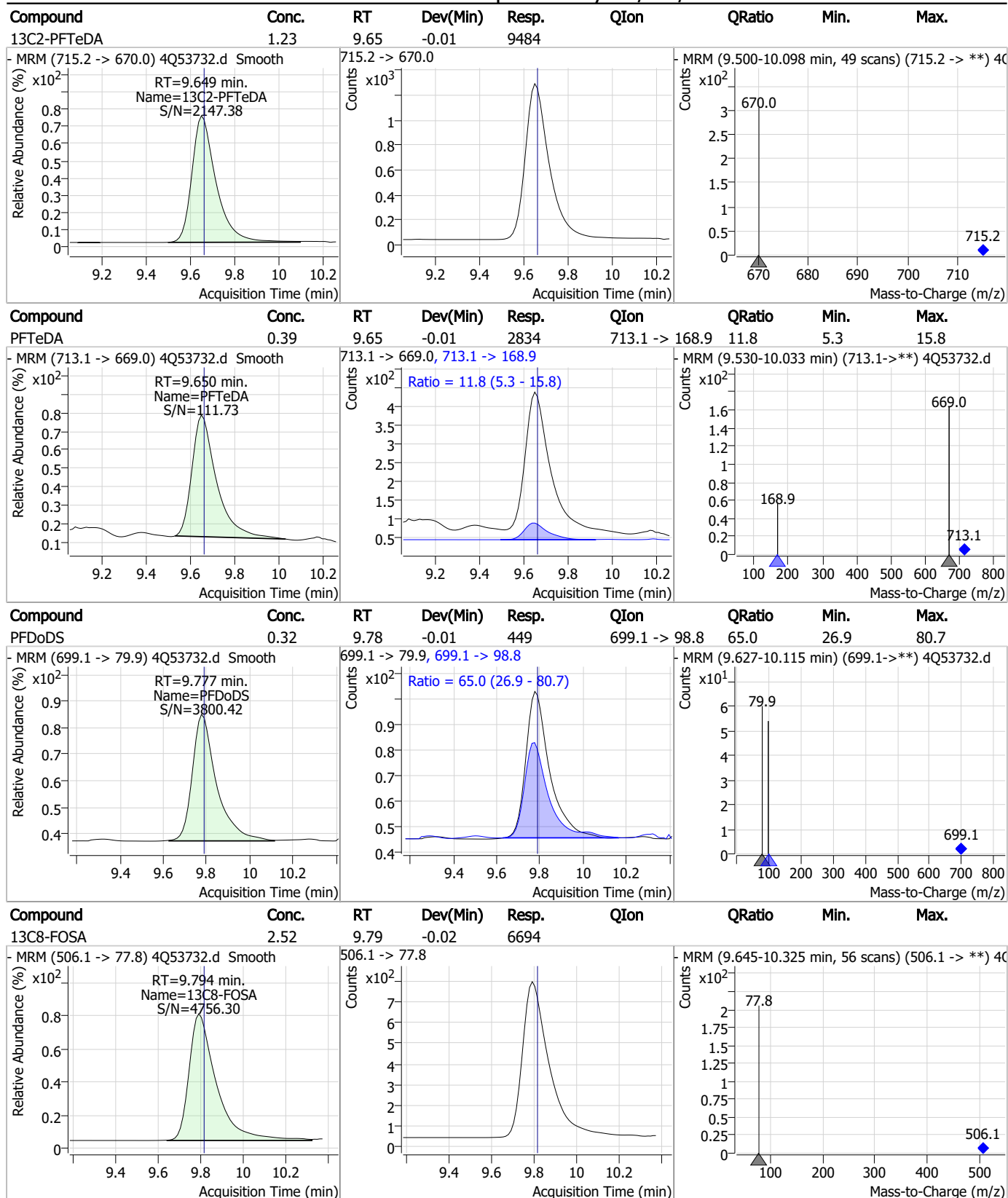
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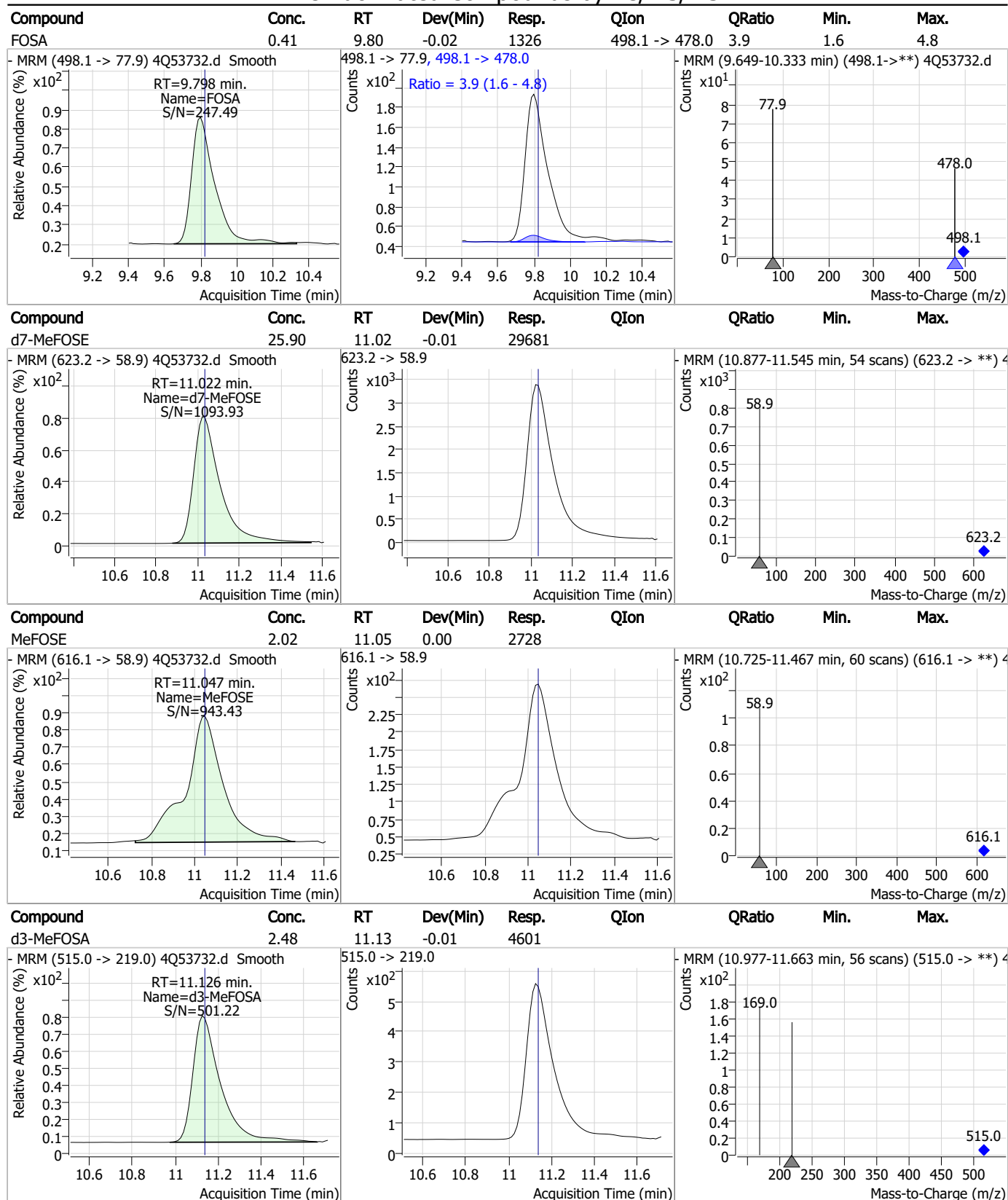
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



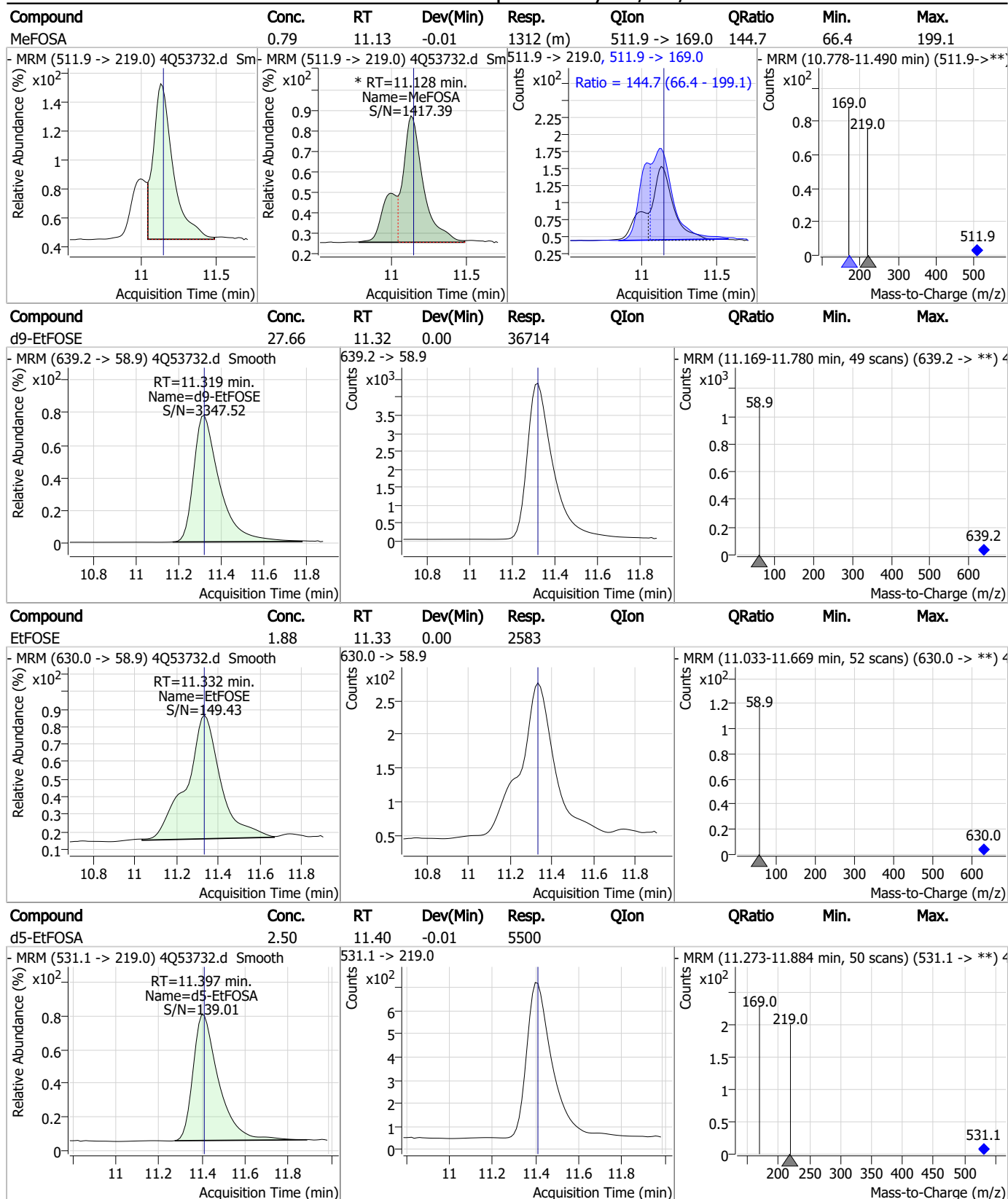
Perfluorinated Compounds by LC/MS/MS



7.7.3

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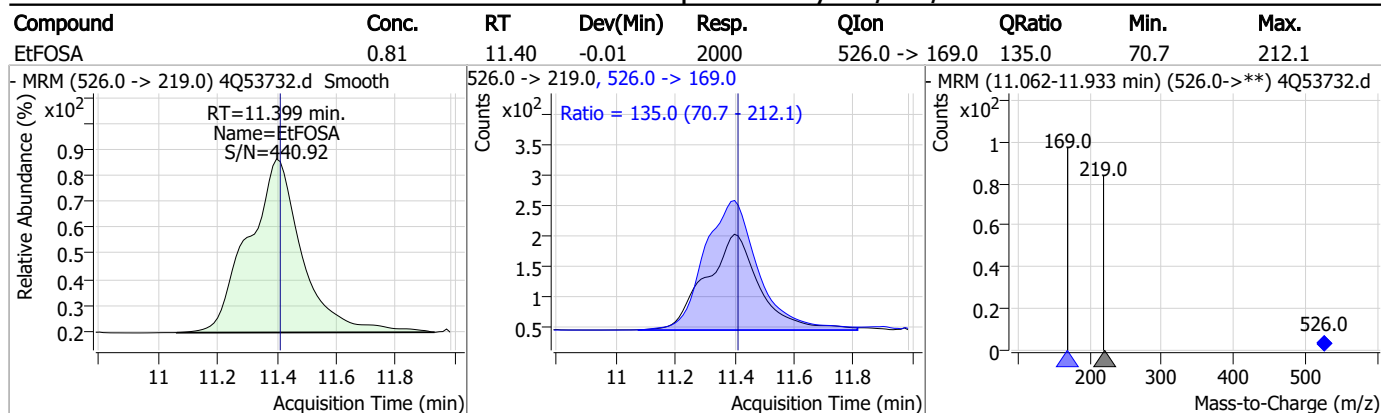
Perfluorinated Compounds by LC/MS/MS



7.7.3

7

Perfluorinated Compounds by LC/MS/MS



7.7.3

7

Manual Integration Approval Summary

Sample Number: S4Q785-IC785

Method: EPA DRAFT 1633

Lab FileID: 4Q53732.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 15:55

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.3.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53733.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 4:09:55 PM
 Sample Name : ic785-3
 Vial : P1-A4
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	88140	10.00 µg/L	-0.075
M5-PFPeA	4.125	268.3 -> 223.0	36839	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	28307	2.50 µg/L	-0.050
M4-PFHpA	6.255	367.1 -> 322.0	26761	2.50 µg/L	-0.050
M8-PFOA	6.964	421.1 -> 376.0	31629	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	13199	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	9211	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	10527	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10580	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	11164	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7256	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7951	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6460	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7275	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	742	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	1623	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2197	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	11969	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	26439	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	9919	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	31099	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	36570	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	6220	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4946	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6173	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	43253	5.00 µg/L	-0.075
18O2-PFHxS	7.016	403.0 -> 83.9	4573	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	35372	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	10172	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	13292	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	30831	2.50 µg/L	-0.050

System Monitoring Compounds

13C2-4:2FTS	4.996	329.1 -> 80.9	742	4.74 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1623	4.92 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2197	4.73 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10580	1.15 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.2%		
13C2-PFTeDA	9.649	715.2 -> 670.0	11164	1.21 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C3-PFBS	5.152	302.1 -> 79.9	7951	2.32 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.7%		
13C3-PFHxS	7.017	402.1 -> 79.9	6460	2.28 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.2%		
13C4-PFBA	2.624	216.8 -> 171.9	88140	9.78 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C4-PFHpA	6.255	367.1 -> 322.0	26761	2.49 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C5-PFHxA	5.297	318.0 -> 273.0	28307	2.46 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C5-PFPeA	4.125	268.3 -> 223.0	36839	4.90 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C6-PFDA	8.004	519.1 -> 474.1	9211	1.23 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C7-PFUnDA	8.448	570.0 -> 525.1	10527	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C8-FOSA	9.794	506.1 -> 77.8	7256	2.46 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C8-PFOA	6.964	421.1 -> 376.0	31629	2.50 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C8-PFOS	8.117	507.1 -> 79.9	7275	2.47 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C9-PFNA	7.509	472.1 -> 427.0	13199	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.7%		
d3-MeFOSAA	8.086	573.2 -> 419.0	11969	5.11 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	26439	10.08 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
d3-MeFOSA	11.126	515.0 -> 219.0	4946	2.40 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.1%		
d5-EtFOSAA	8.283	589.2 -> 419.0	9919	4.84 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.8%		
d7-MeFOSE	11.022	623.2 -> 58.9	31099	24.46 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.8%		
d9-EtFOSE	11.319	639.2 -> 58.9	36570	24.83 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
d5-EtFOSA	11.397	531.1 -> 219.0	6220	2.55 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.8%		
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	6976	4.76 µg/L	97
		327.1 -> 80.9	3067		
6:2FTS	6.737	427.1 -> 407.0	7890	4.49 µg/L	98
		427.1 -> 80.9	3141		
8:2FTS	7.804	527.1 -> 507.0	5668	4.74 µg/L	92
		527.1 -> 80.8	2646		
EtFOSAA	8.284	584.2 -> 419.1	2319	1.31 µg/L	89
		584.2 -> 526.0	861		
FOSA	9.798	498.1 -> 77.9	4222	1.19 µg/L	99
		498.1 -> 478.0	152		
MeFOSAA	8.087	570.1 -> 419.0	2449	1.15 µg/L	95
		570.1 -> 483.0	505		
PFBA	2.620	212.8 -> 168.9	15402	4.80 µg/L	100
PFBS	5.153	298.7 -> 79.9	3141	1.11 µg/L	94
		298.7 -> 98.8	1105		
PFDA	7.992	512.9 -> 469.0	8759	1.16 µg/L	96
		512.9 -> 219.0	1580		
PFDODA	8.880	613.1 -> 569.0	10433	1.21 µg/L	99
		613.1 -> 319.0	1988		
PFDS	9.020	599.0 -> 79.9	2113	1.12 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	1079	1.23	µg/L	100
		363.1 -> 319.0	20563			
PFHpS	7.599	363.1 -> 169.0	3571	1.17	µg/L	99
		449.0 -> 79.9	3363			
PFHxA	5.300	449.0 -> 98.9	1738	1.19	µg/L	99
		313.0 -> 269.0	11778			
PFHxS	7.018	313.0 -> 118.9	355	1.20	µg/L	86
		398.7 -> 79.9	2338			
PFNA	7.510	398.7 -> 98.9	1260	1.17	µg/L	98
		463.0 -> 419.0	9859			
PFNS	8.586	463.0 -> 219.0	2382	1.26	µg/L	88
		548.8 -> 79.9	1745			
PFOA	6.965	548.8 -> 98.9	1064	1.20	µg/L	99
		413.0 -> 369.0	18298			
PFOS	8.119	413.0 -> 169.0	3625	1.12	µg/L	89
		498.9 -> 79.9	3712			
PFPeA	4.127	498.9 -> 98.8	2012	2.43	µg/L	100
		263.0 -> 219.0	19493			
PFPeS	6.257	349.1 -> 79.9	2363	1.11	µg/L	92
		349.1 -> 98.9	1141			
PFTeDA	9.650	713.1 -> 669.0	10262	1.21	µg/L	100
		713.1 -> 168.9	1066			
PFTrDA	9.279	663.0 -> 619.0	12535	1.33	µg/L	100
		663.0 -> 168.9	1709			
PFUnDA	8.449	563.1 -> 519.0	11165	1.30	µg/L	96
		563.1 -> 269.1	2564			
11CI-PF3OUdS	9.306	630.9 -> 450.9	18272	2.21	µg/L	99
		632.9 -> 452.9	5590			
9CI-PF3ONS	8.451	530.8 -> 351.0	19628	2.36	µg/L	99
		532.8 -> 353.0	5651			
ADONA	6.531	376.9 -> 250.9	48922	2.67	µg/L	99
		376.9 -> 84.8	11940			
HFPO-DA	5.653	284.9 -> 168.9	6554	2.34	µg/L	99
		284.9 -> 184.9	641			
3:3FTCA	3.561	241.0 -> 177.0	2925	5.86	µg/L	99
		241.0 -> 117.0	258			
5:3FTCA	5.983	341.0 -> 237.1	51860	29.80	µg/L	99
		341.0 -> 217.0	37438			
7:3FTCA	7.524	441.0 -> 316.9	24198	30.99	µg/L	93
		441.0 -> 336.9	56290			
EtFOSA	11.399	526.0 -> 219.0	6763	2.41	µg/L	92
		526.0 -> 169.0	8895			
EtFOSE	11.332	630.0 -> 58.9	8030	5.88	µg/L	100
		511.9 -> 219.0	4383			
MeFOSA	11.128	511.9 -> 169.0	6501	2.44	µg/L	87
		616.1 -> 58.9	8900			
MeFOSE	11.047	699.1 -> 79.9	1792	6.28	µg/L	100
		699.1 -> 98.8	965			
PFDoDS	9.777	295.0 -> 201.0	1624	1.21	µg/L	100
		295.0 -> 84.9	396			
NFDHA	5.179	279.0 -> 85.1	11316	2.45	µg/L	100
		229.0 -> 84.9	12661			
PFMBA	3.265	314.8 -> 134.9	17363	2.47	µg/L	100
		314.8 -> 82.9	633			
PFEESA	5.684			2.22	µg/L	98

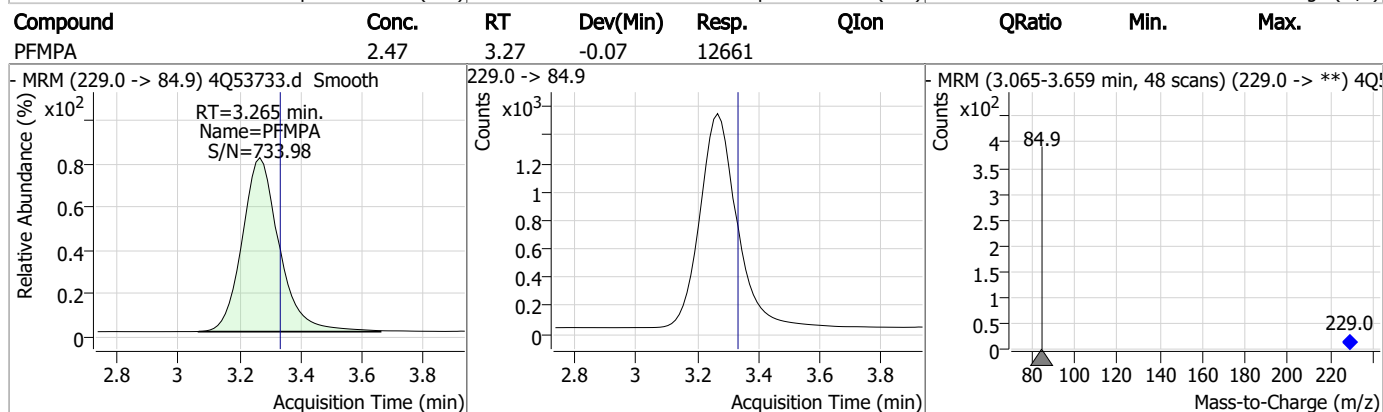
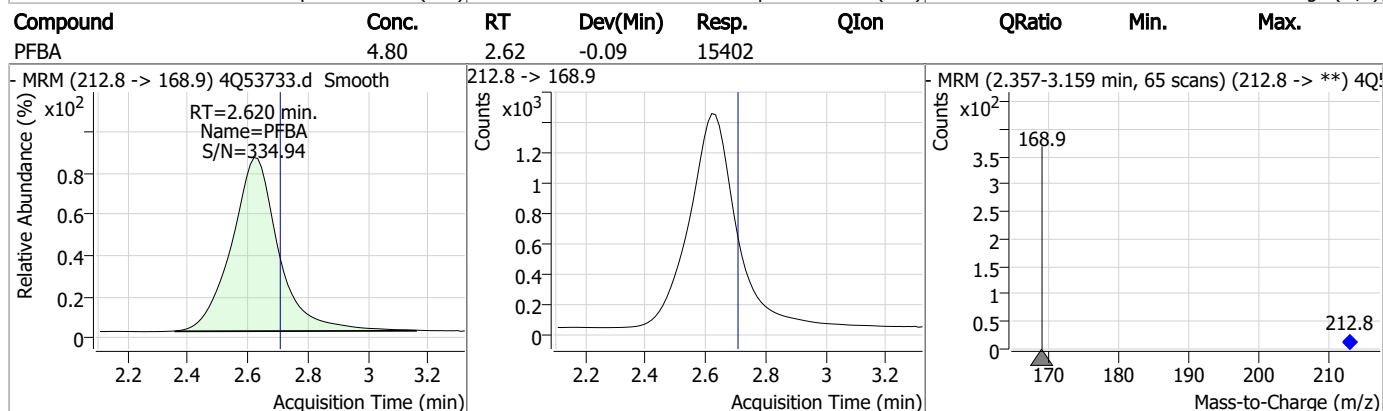
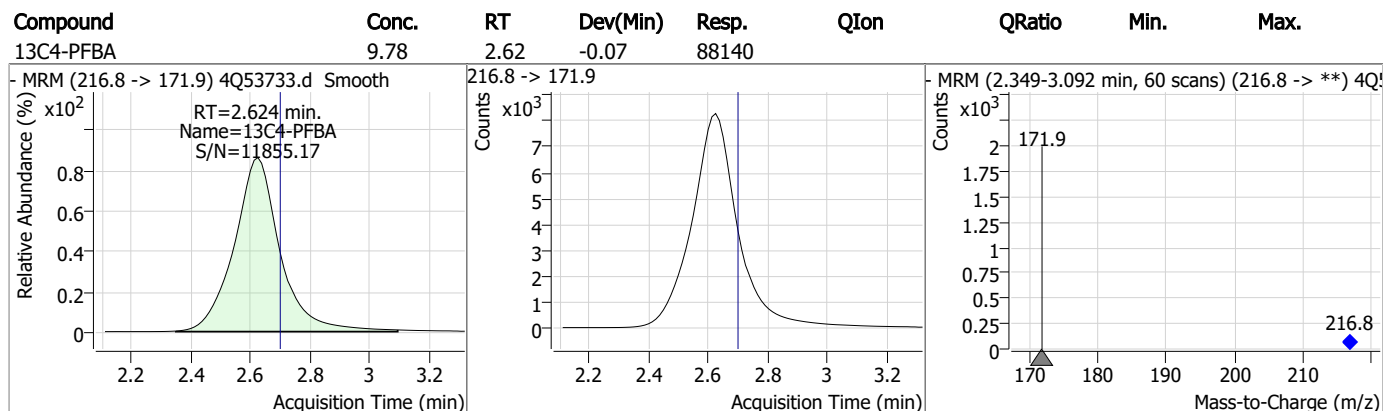
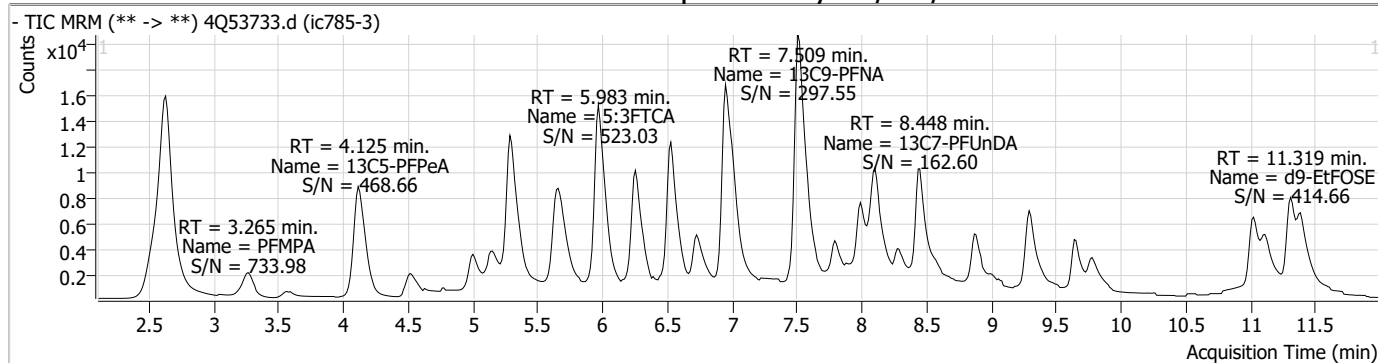
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Perfluorinated Compounds by LC/MS/MS

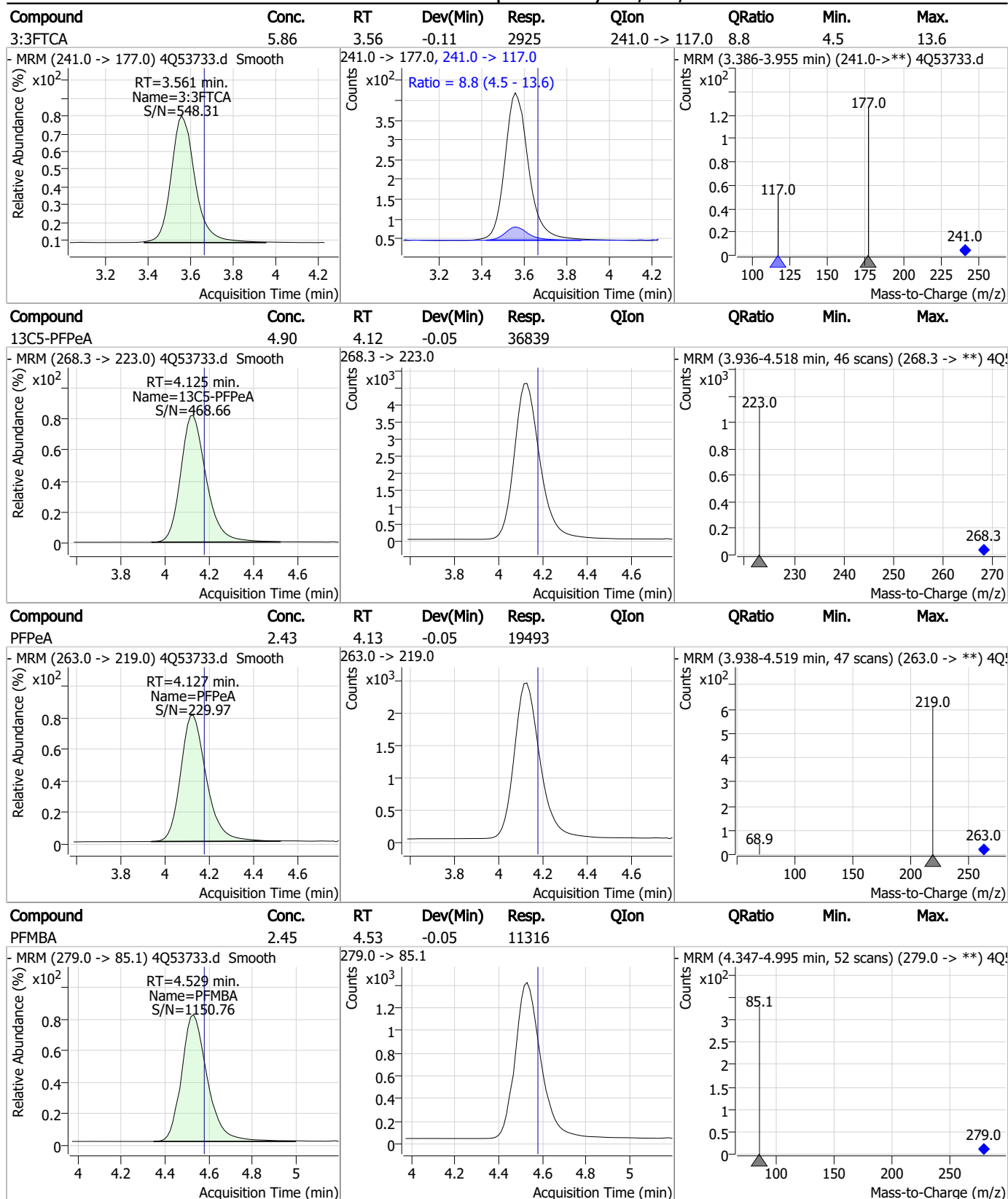
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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7.7.4
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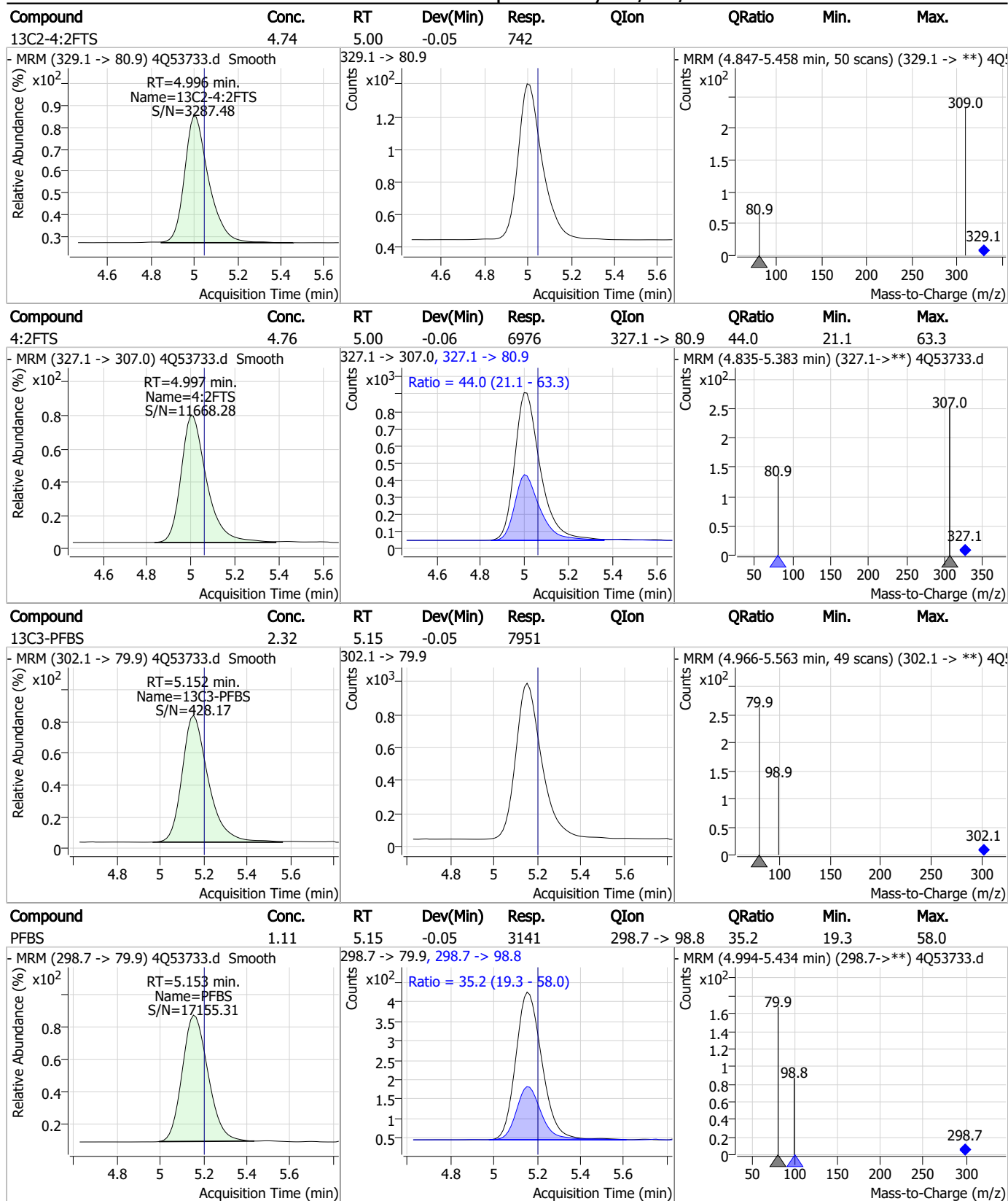
Perfluorinated Compounds by LC/MS/MS



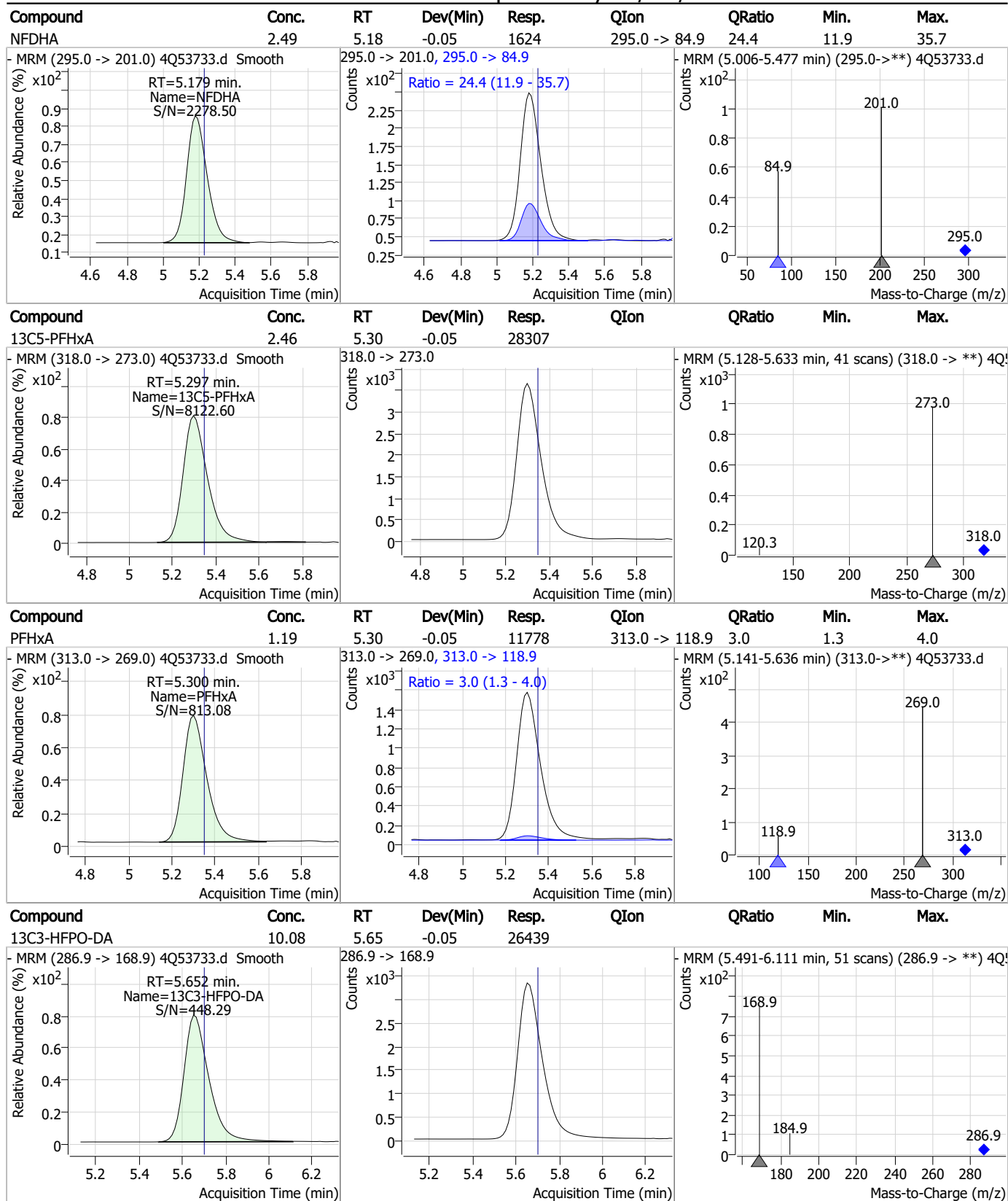
Perfluorinated Compounds by LC/MS/MS



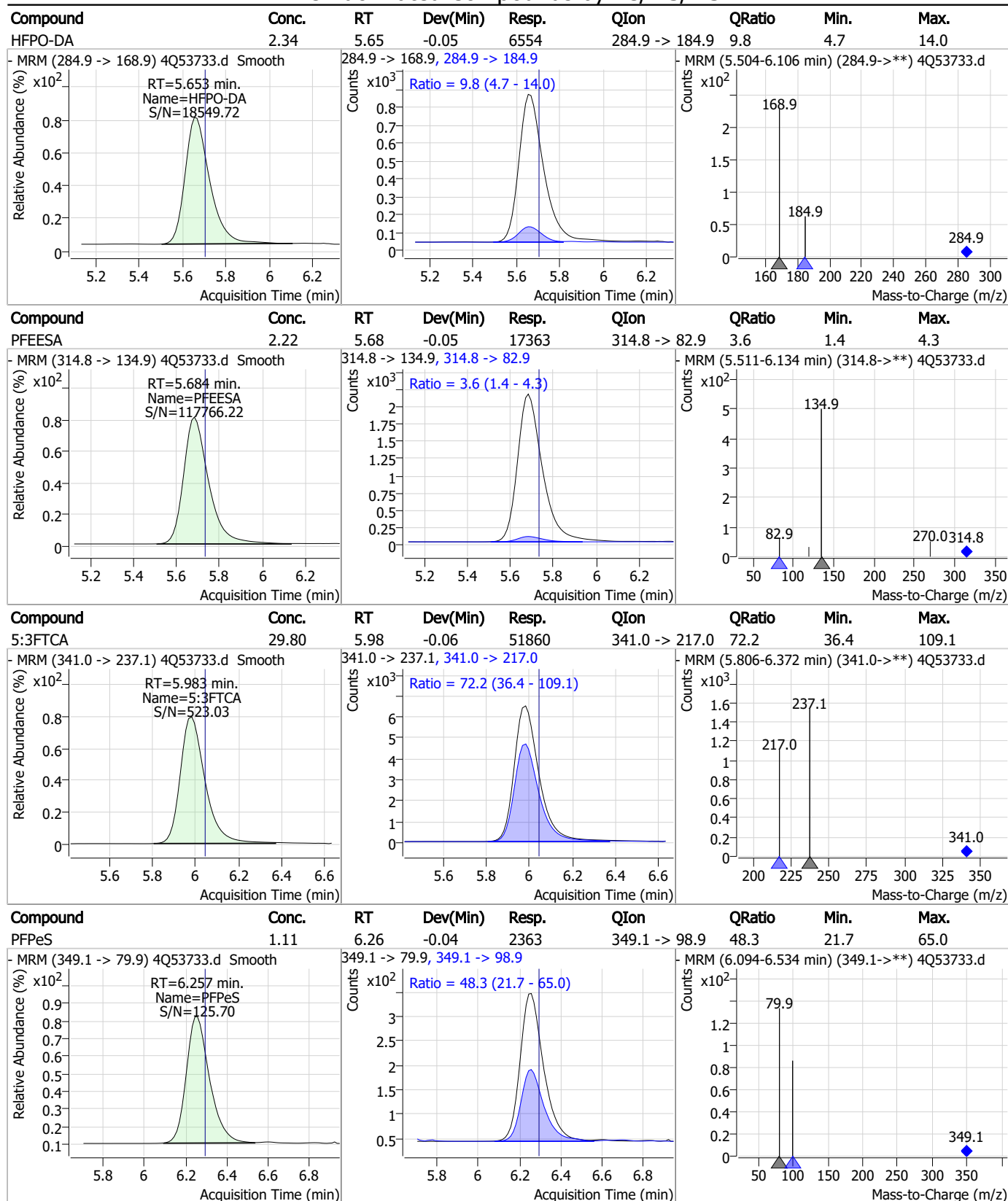
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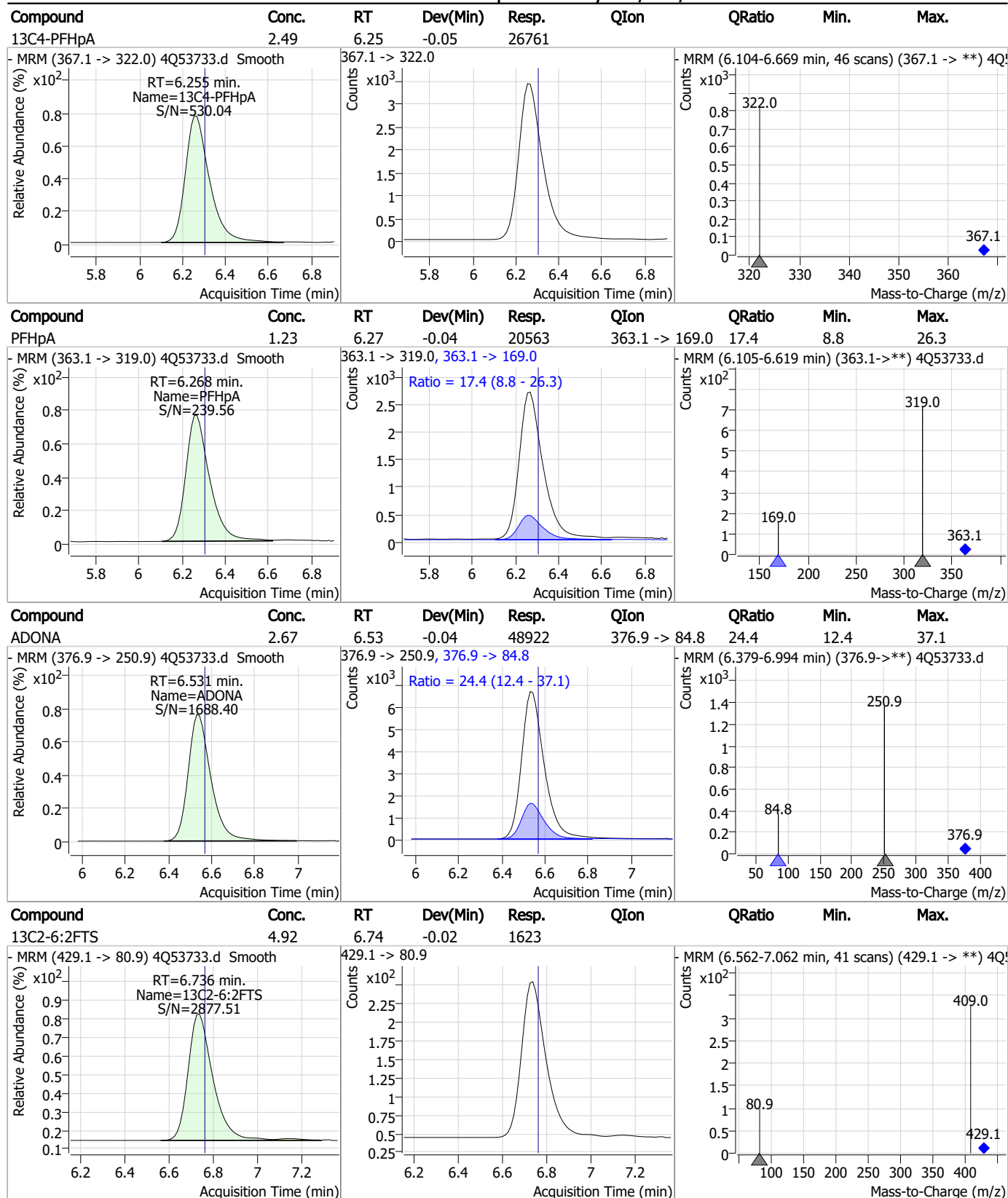
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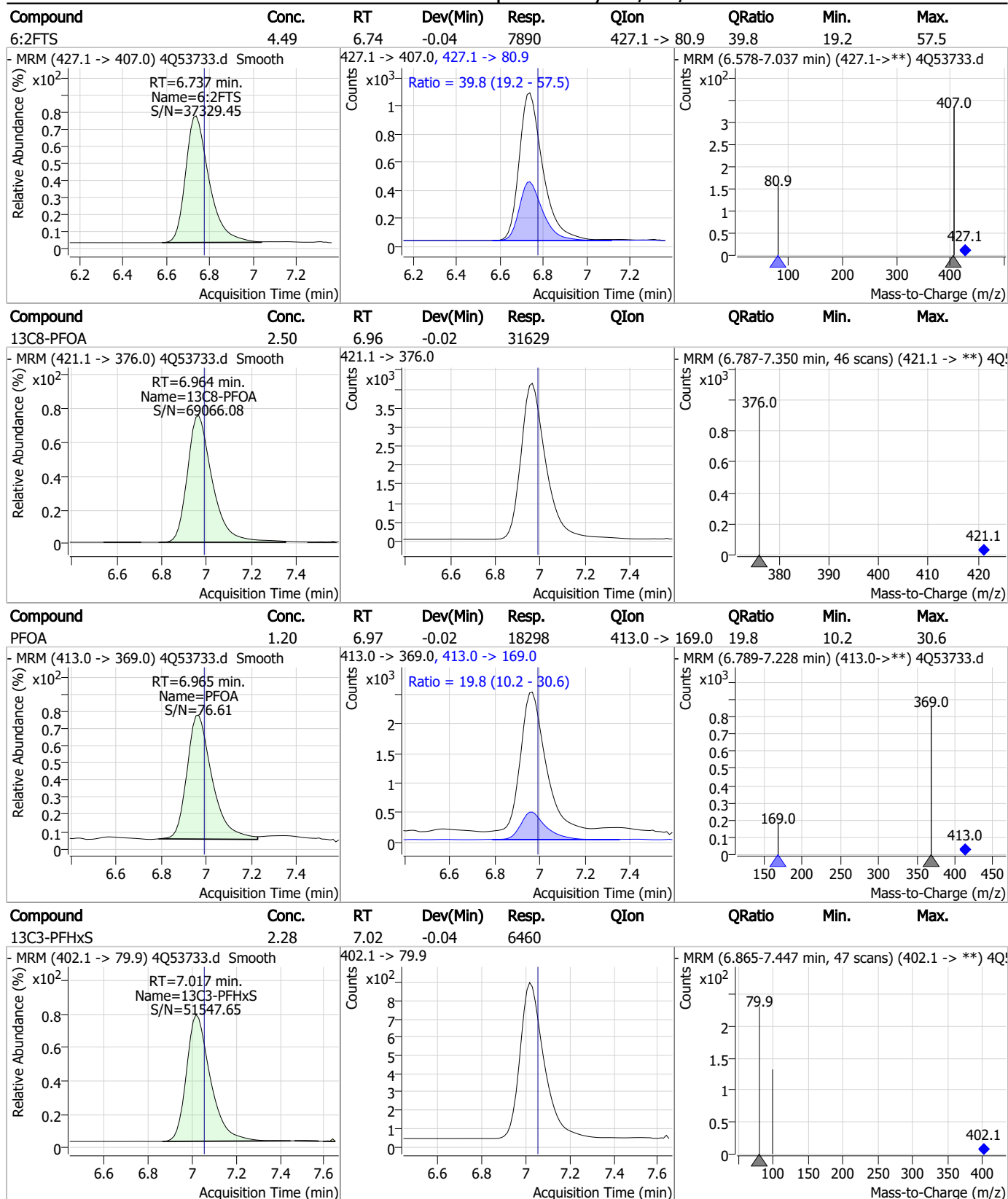
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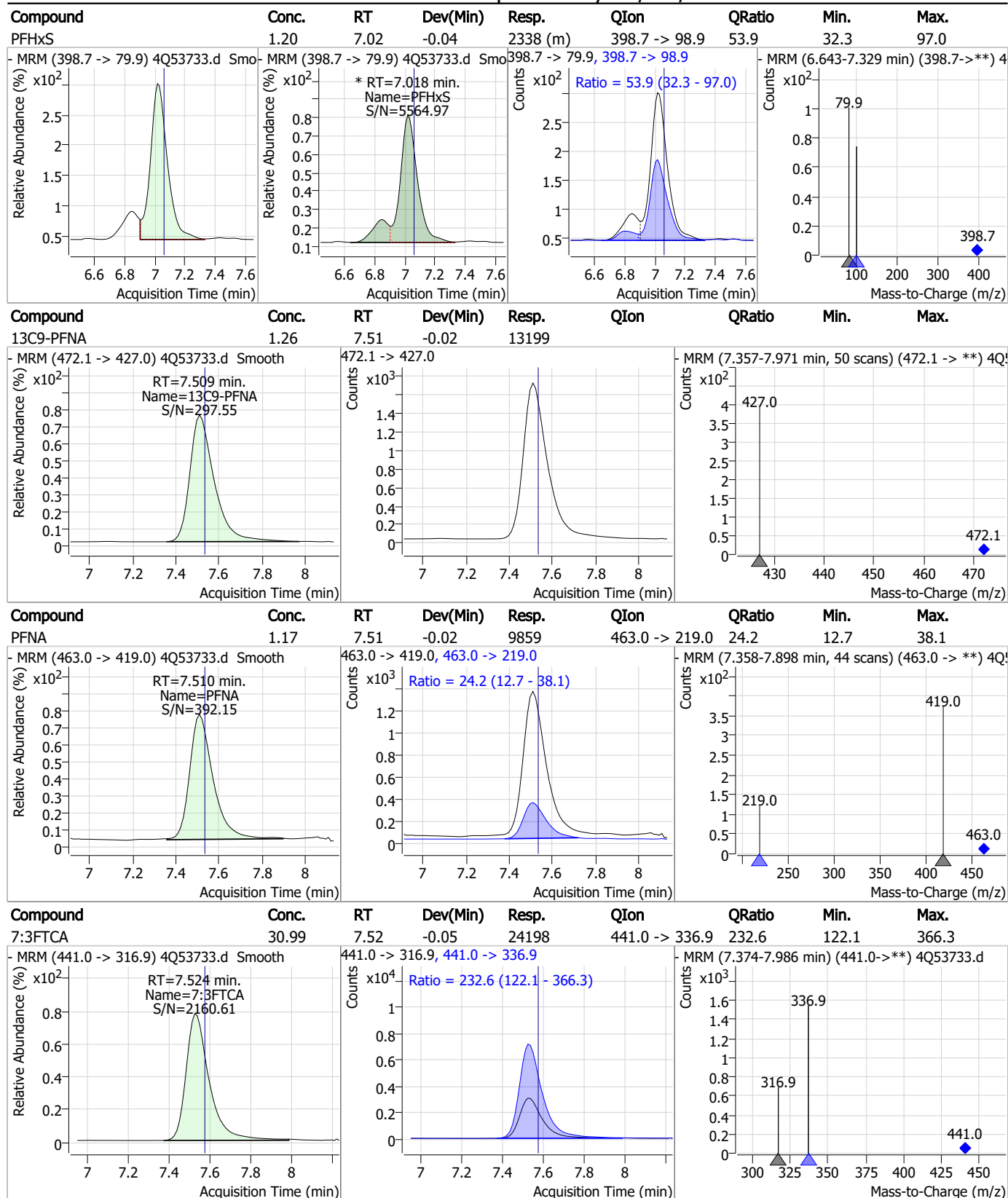
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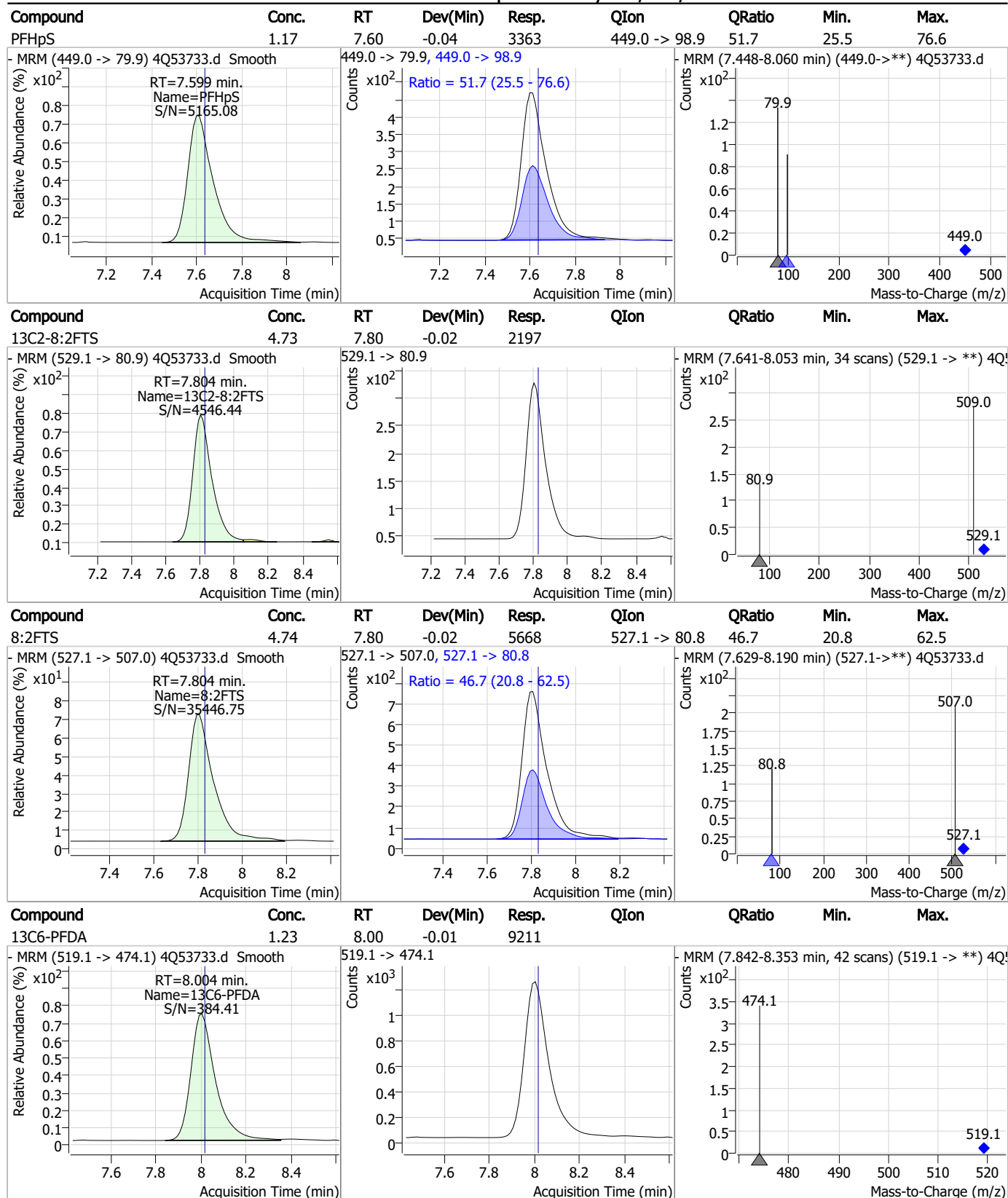
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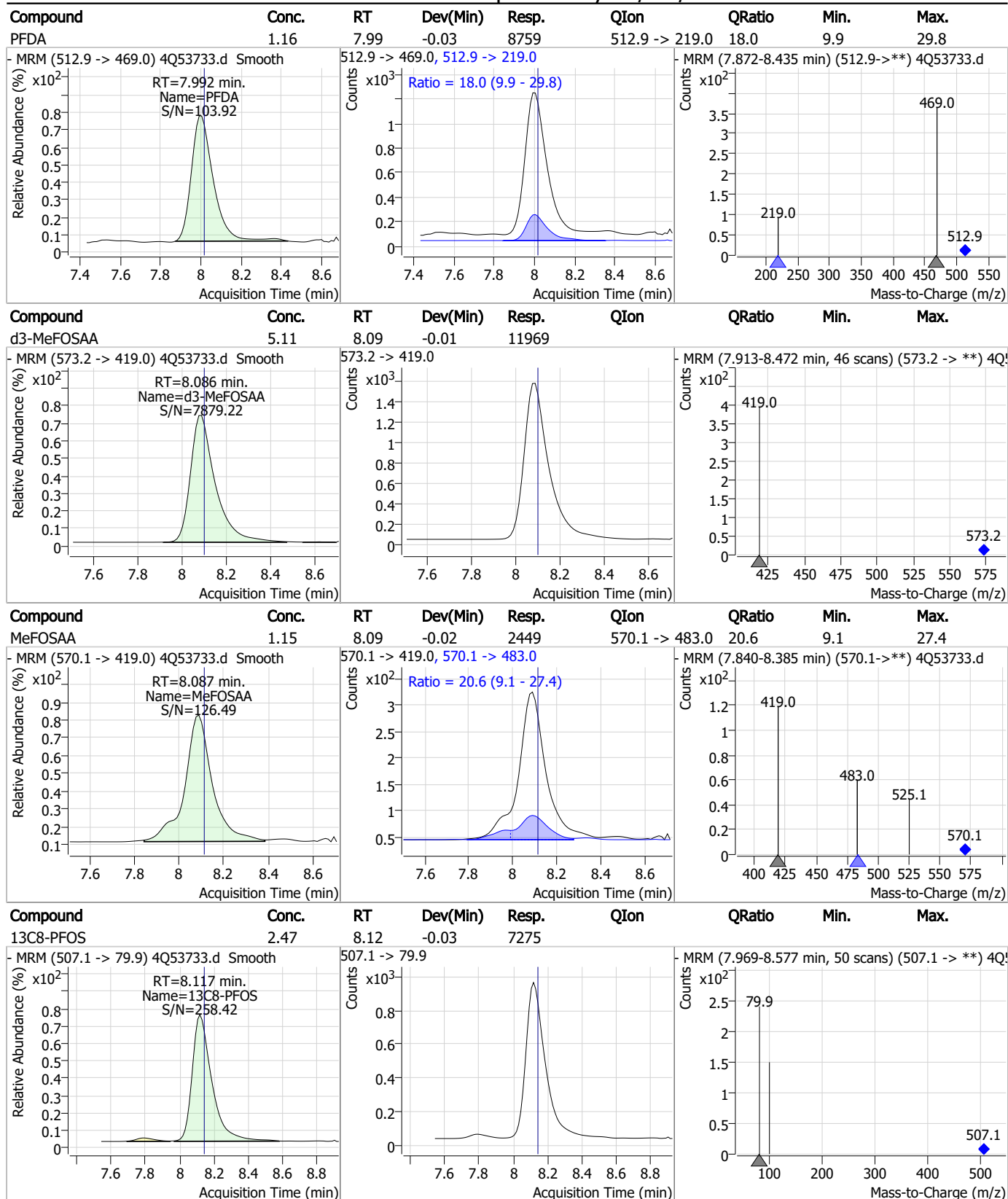
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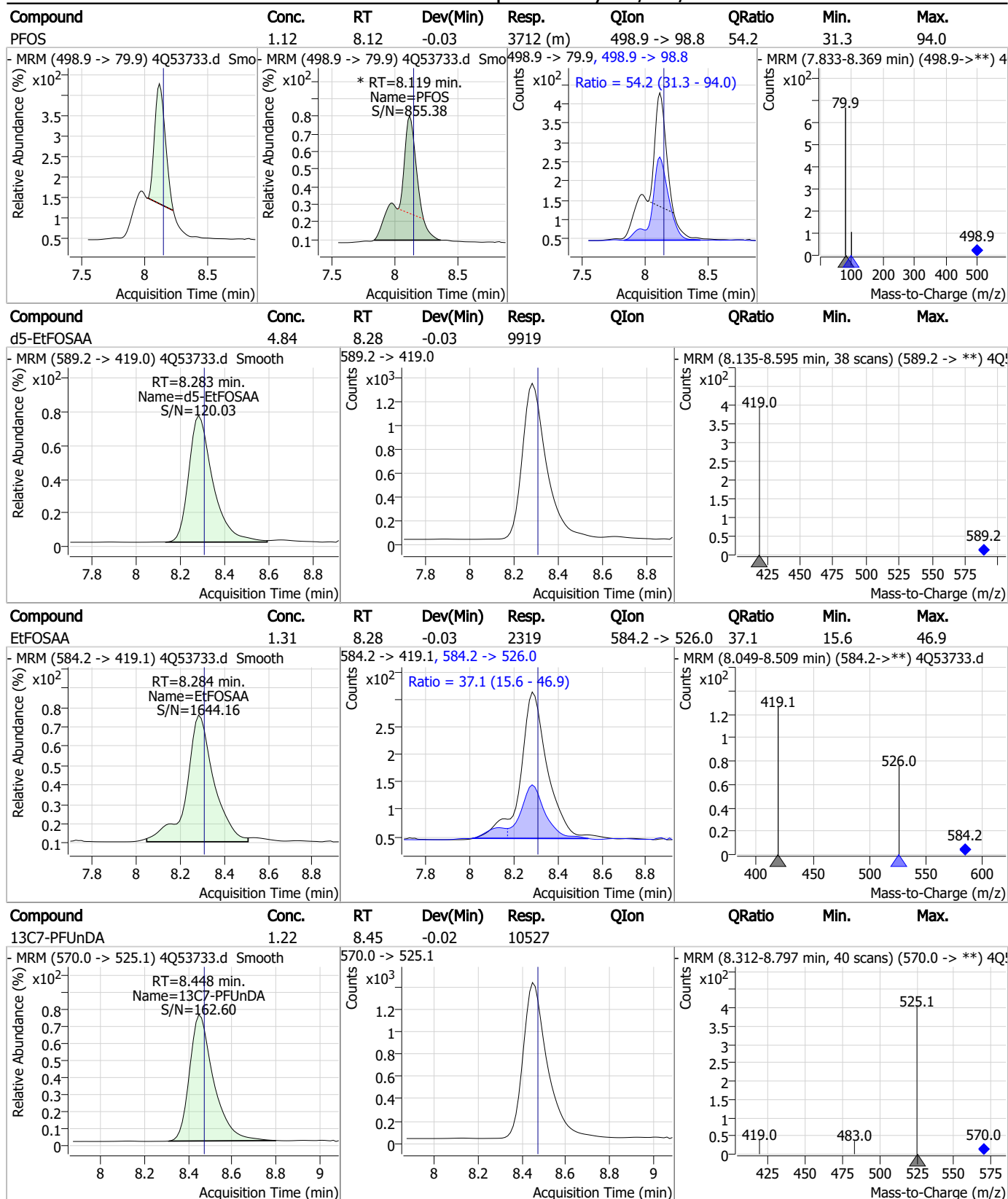
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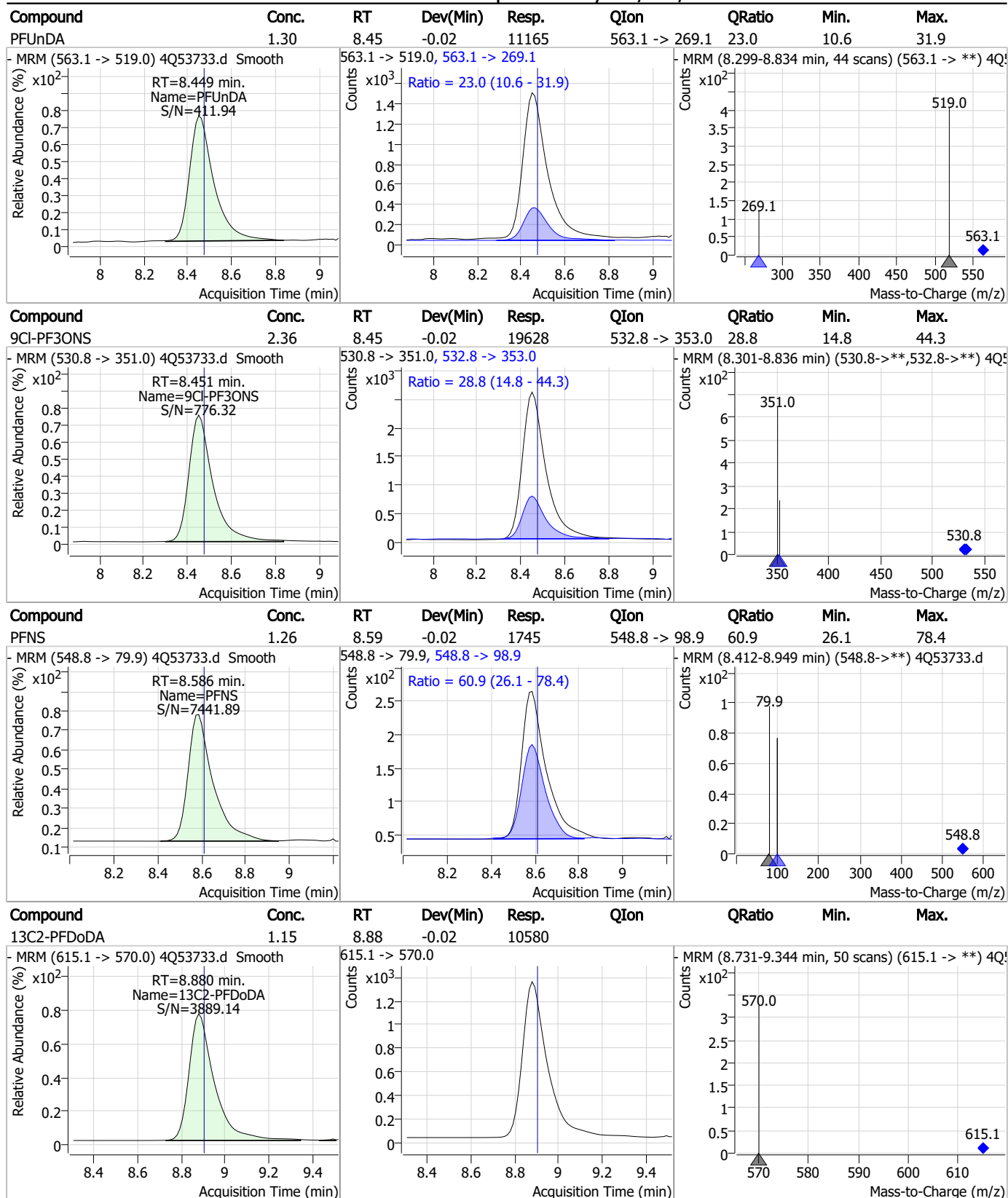
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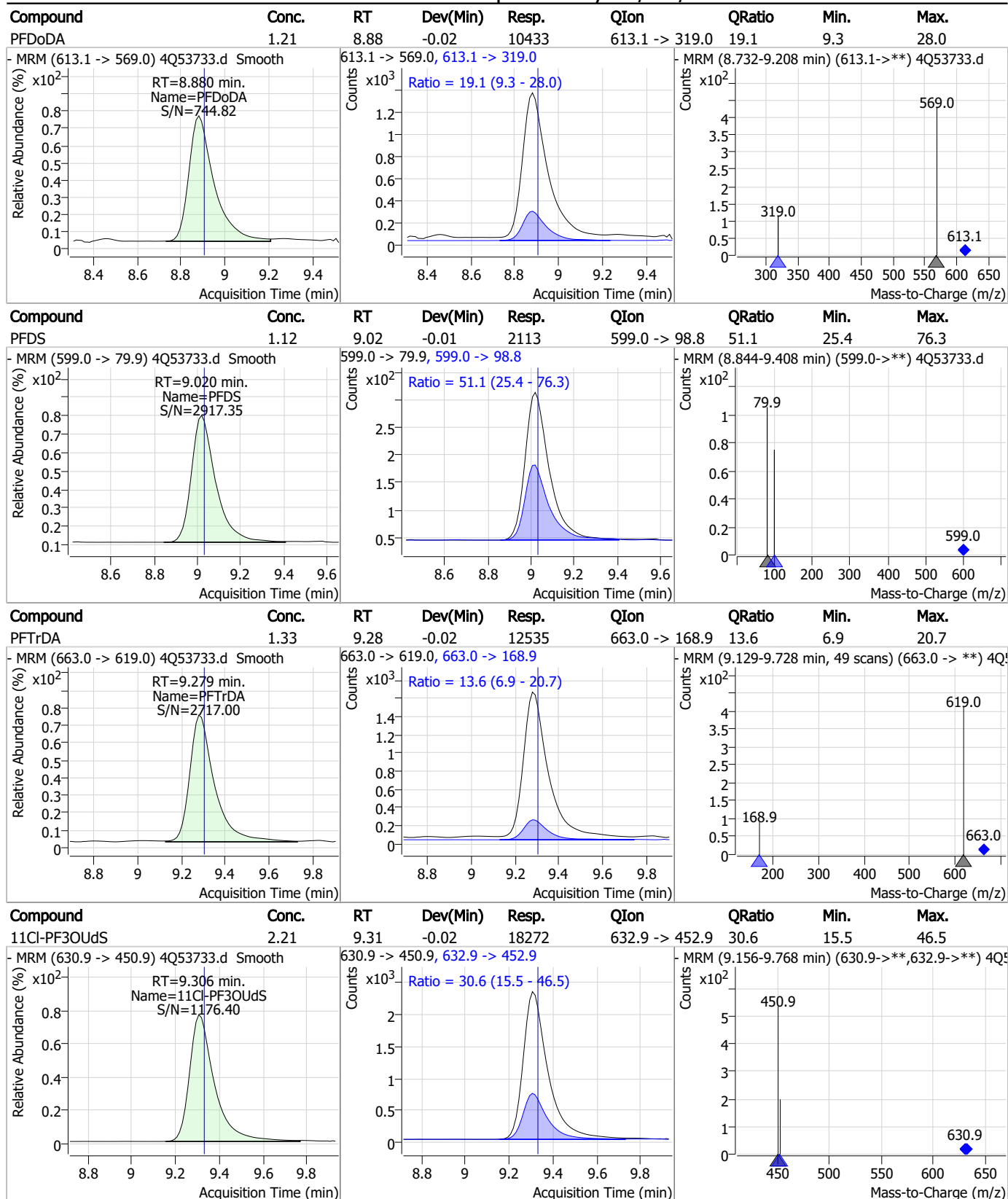
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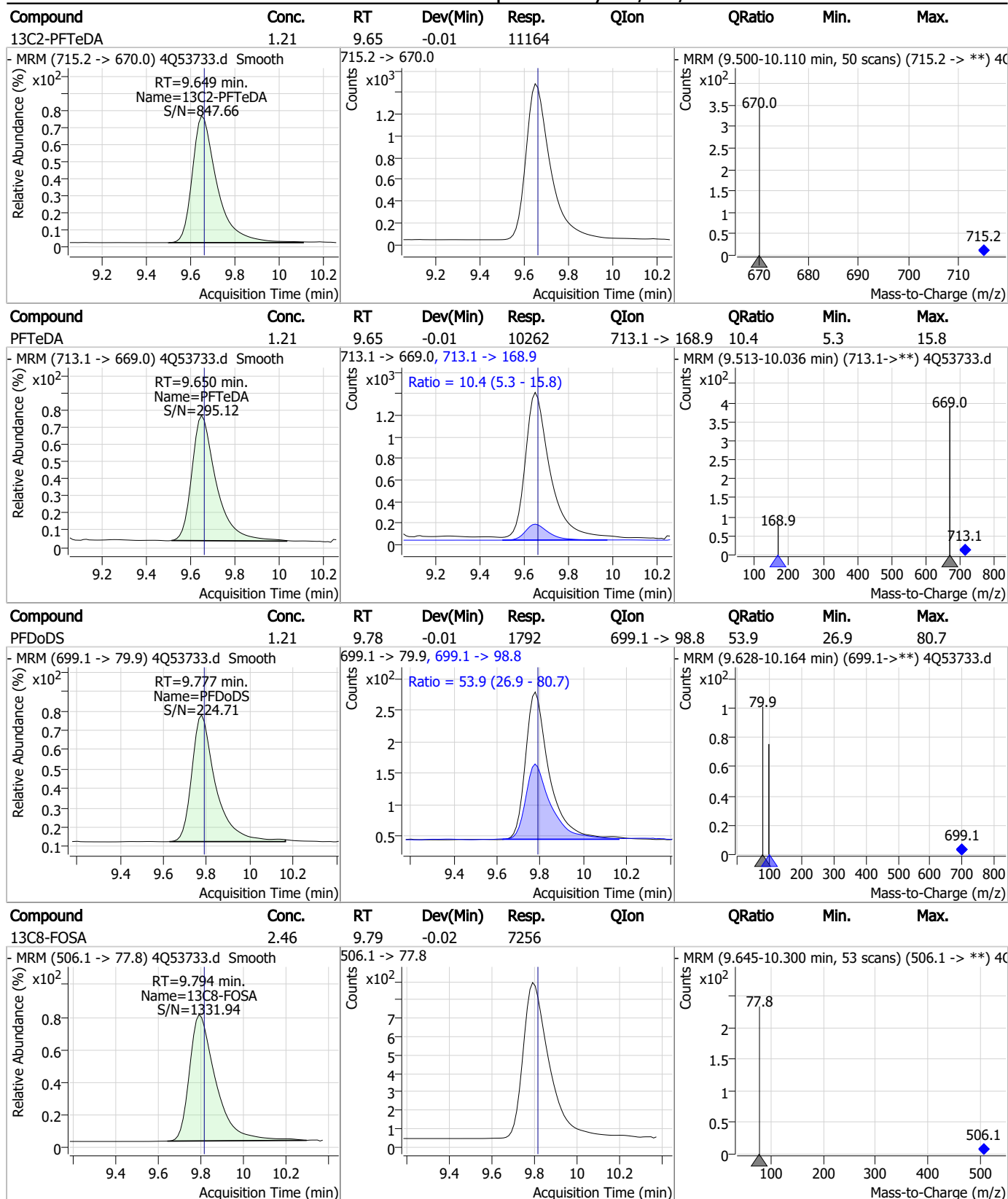
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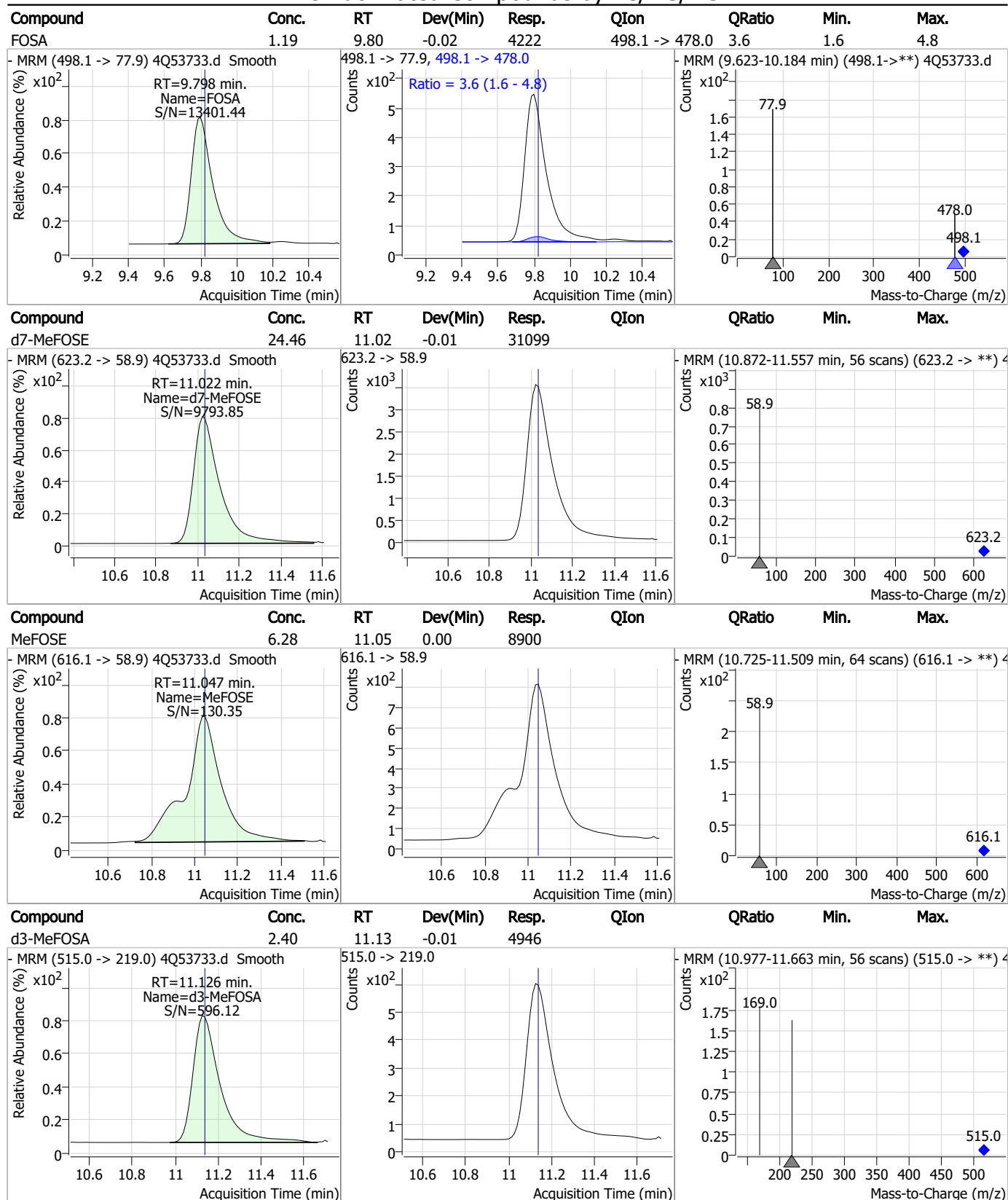
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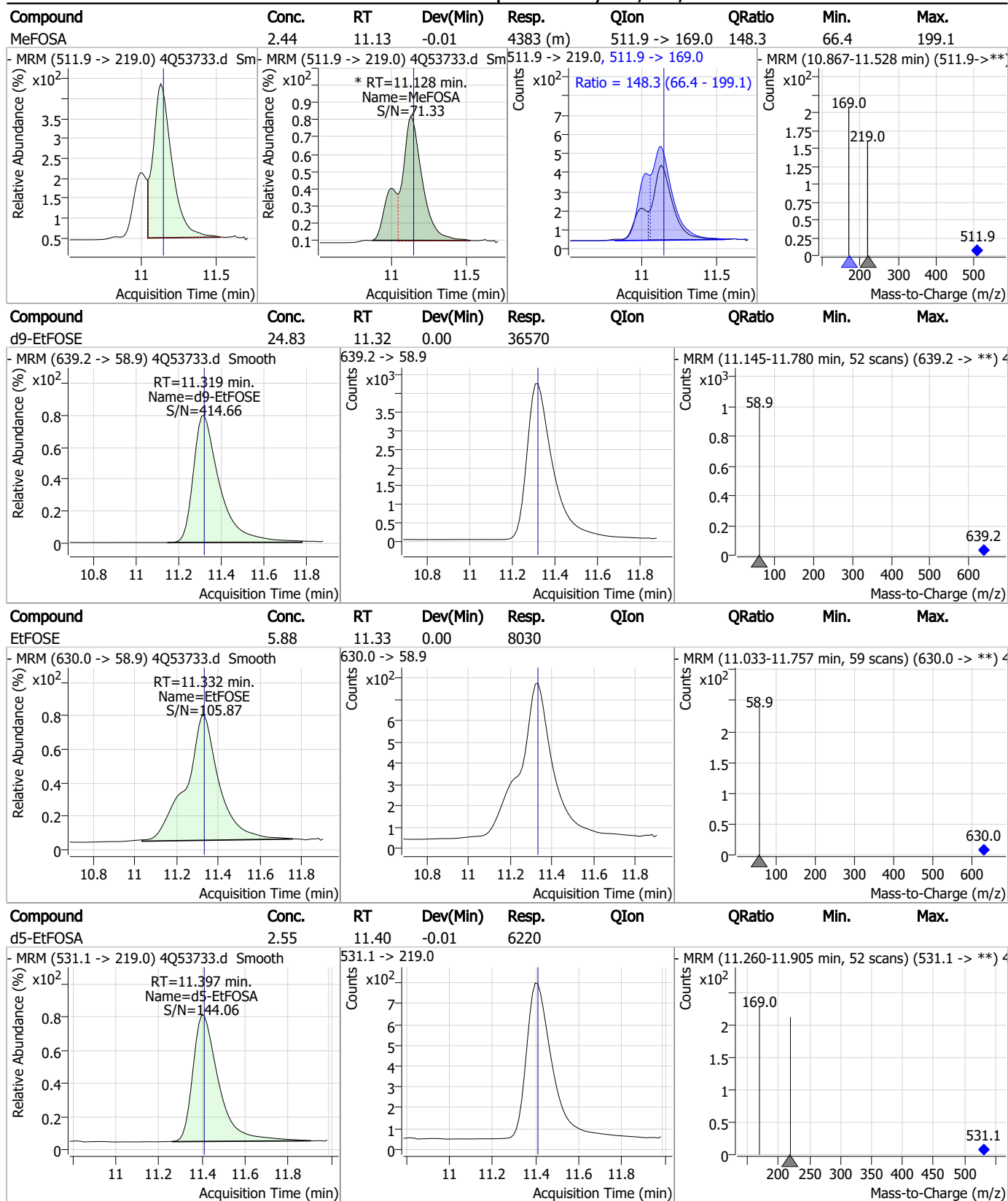
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



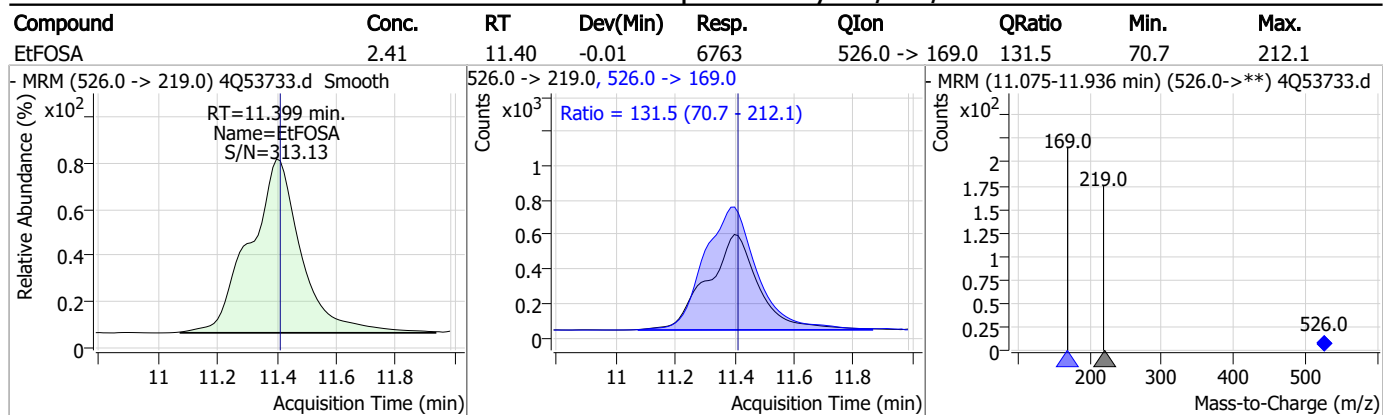
Perfluorinated Compounds by LC/MS/MS



7.7.4

7

Perfluorinated Compounds by LC/MS/MS



7.7.4

7

Manual Integration Approval Summary

Sample Number: S4Q785-IC785

Method: EPA DRAFT 1633

Lab FileID: 4Q53733.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 16:09

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.4.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53734.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 4:43:47 PM
 Sample Name : icc785-4
 Vial : P1-A5
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	91117	10.00 µg/L	0.000
M5-PFPeA	4.175	268.3 -> 223.0	38047	5.00 µg/L	0.000
M5-PFHxA	5.347	318.0 -> 273.0	28159	2.50 µg/L	0.000
M4-PFHpA	6.304	367.1 -> 322.0	25330	2.50 µg/L	0.000
M8-PFOA	6.989	421.1 -> 376.0	28427	2.50 µg/L	0.000
M9-PFNA	7.534	472.1 -> 427.0	12113	1.25 µg/L	0.000
M6-PFDA	8.017	519.1 -> 474.1	8008	1.25 µg/L	0.000
M7-PFUnDA	8.473	570.0 -> 525.1	10255	1.25 µg/L	0.000
M2-PFDoDA	8.905	615.1 -> 570.0	9955	1.25 µg/L	0.000
M2-PFTeDA	9.662	715.2 -> 670.0	11033	1.25 µg/L	0.000
M8-FOSA	9.818	506.1 -> 77.8	7592	2.50 µg/L	0.000
M3-PFBS	5.202	302.1 -> 79.9	7831	2.50 µg/L	0.000
M3-PFHxS	7.054	402.1 -> 79.9	6470	2.50 µg/L	0.000
M8-PFOS	8.143	507.1 -> 79.9	6415	2.50 µg/L	0.000
M2-4:2FTS	5.046	329.1 -> 80.9	700	5.00 µg/L	0.000
M2-6:2FTS	6.761	429.1 -> 80.9	1416	5.00 µg/L	0.000
M2-8:2FTS	7.828	529.1 -> 80.9	1746	5.00 µg/L	0.000
M3-MeFOSAA	8.099	573.2 -> 419.0	10279	5.00 µg/L	0.000
M3-HFPO-DA	5.702	286.9 -> 168.9	24173	10.00 µg/L	0.000
M5-EtFOSAA	8.309	589.2 -> 419.0	8979	5.00 µg/L	0.000
M7-MeFOSE	11.034	623.2 -> 58.9	30476	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	34312	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	5583	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	4672	2.50 µg/L	0.000
13C4-PFOS	8.144	502.8 -> 79.9	5220	2.50 µg/L	0.000
13C3-PFBA	2.703	216.0 -> 172.0	43453	5.00 µg/L	0.000
18O2-PFHxS	7.054	403.0 -> 83.9	4137	2.50 µg/L	0.000
13C4-PFOA	6.989	417.1 -> 372.0	31223	2.50 µg/L	0.000
13C2-PFDA	8.029	515.1 -> 470.1	8807	1.25 µg/L	0.000
13C5-PFNA	7.534	468.0 -> 423.0	12220	1.25 µg/L	0.000
13C2-PFHxA	5.348	315.1 -> 270.0	29243	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.046	329.1 -> 80.9	700	4.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C2-6:2FTS	6.761	429.1 -> 80.9	1416	4.75 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.9%		
13C2-8:2FTS	7.828	529.1 -> 80.9	1746	4.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 83.0%		
13C2-PFDoDA	8.905	615.1 -> 570.0	9955	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C2-PFTeDA	9.662	715.2 -> 670.0	11033	1.38 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 110.4%		
13C3-PFBS	5.202	302.1 -> 79.9	7831	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C3-PFHxS	7.054	402.1 -> 79.9	6470	2.52 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C4-PFBA	2.699	216.8 -> 171.9	91117	10.06 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C4-PFHpA	6.304	367.1 -> 322.0	25330	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C5-PFHxA	5.347	318.0 -> 273.0	28159	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C5-PFPeA	4.175	268.3 -> 223.0	38047	5.33 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.7%	
13C6-PFDA	8.017	519.1 -> 474.1	8008	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C7-PFUnDA	8.473	570.0 -> 525.1	10255	1.37 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.5%	
13C8-FOSA	9.818	506.1 -> 77.8	7592	3.04 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 121.7%	
13C8-PFOA	6.989	421.1 -> 376.0	28427	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C8-PFOS	8.143	507.1 -> 79.9	6415	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.0%	
13C9-PFNA	7.534	472.1 -> 427.0	12113	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.6%	
d3-MeFOSAA	8.099	573.2 -> 419.0	10279	5.19 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C3-HFPO-DA	5.702	286.9 -> 168.9	24173	9.71 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.1%	
d3-MeFOSA	11.139	515.0 -> 219.0	4672	2.68 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.3%	
d5-EtFOSAA	8.309	589.2 -> 419.0	8979	5.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
d7-MeFOSE	11.034	623.2 -> 58.9	30476	28.34 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 113.4%	
d9-EtFOSE	11.319	639.2 -> 58.9	34312	27.55 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 110.2%	
d5-EtFOSA	11.410	531.1 -> 219.0	5583	2.70 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.1%	

Target Compounds

					QValue
4:2FTS	5.059	327.1 -> 307.0	13378	9.67 µg/L	100
		327.1 -> 80.9	5647		
6:2FTS	6.774	427.1 -> 407.0	15005	9.80 µg/L	100
		427.1 -> 80.9	5754		
8:2FTS	7.829	527.1 -> 507.0	10482	11.04 µg/L	100
		527.1 -> 80.8	4367		
EtFOSAA	8.310	584.2 -> 419.1	4233	2.63 µg/L	92
		584.2 -> 526.0	1512		
FOSA	9.823	498.1 -> 77.9	8997	2.43 µg/L	100
		498.1 -> 478.0	289		
MeFOSAA	8.112	570.1 -> 419.0	4379	2.40 µg/L	100
		570.1 -> 483.0	799		
PFBA	2.707	212.8 -> 168.9	32973	9.95 µg/L	100
PFBS	5.203	298.7 -> 79.9	6184	2.23 µg/L	100
		298.7 -> 98.8	2393		
PFDA	8.017	512.9 -> 469.0	16092	2.46 µg/L	100
		512.9 -> 219.0	3198		
PFDODA	8.905	613.1 -> 569.0	21042	2.59 µg/L	100
		613.1 -> 319.0	3929		
PFDS	9.032	599.0 -> 79.9	4251	2.56 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.305	599.0 -> 98.8	2162	2.46	µg/L	100
		363.1 -> 319.0	39067			
PFHpS	7.637	363.1 -> 169.0	6854	2.51	µg/L	100
		449.0 -> 79.9	6361			
PFHxA	5.350	449.0 -> 98.9	3248	2.62	µg/L	100
		313.0 -> 269.0	25764			
PFHxS	7.055	313.0 -> 118.9	689	2.14	µg/L	93
		398.7 -> 79.9	4185			
PFNA	7.534	398.7 -> 98.9	2484	2.39	µg/L	100
		463.0 -> 419.0	18470			
PFNS	8.611	463.0 -> 219.0	4688	2.65	µg/L	100
		548.8 -> 79.9	3249			
PFOA	6.990	548.8 -> 98.9	1698	2.54	µg/L	100
		413.0 -> 369.0	34912			
PFOS	8.144	413.0 -> 169.0	7132	2.35	µg/L	84
		498.9 -> 79.9	6829			
PFPeA	4.177	498.9 -> 98.8	3406	4.97	µg/L	100
		263.0 -> 219.0	41164			
PFPeS	6.294	349.1 -> 79.9	4948	2.33	µg/L	100
		349.1 -> 98.9	2145			
PFTeDA	9.662	713.1 -> 669.0	20299	2.42	µg/L	100
		713.1 -> 168.9	2137			
PFTrDA	9.304	663.0 -> 619.0	24192	2.74	µg/L	100
		663.0 -> 168.9	3341			
PFUnDA	8.474	563.1 -> 519.0	21052	2.51	µg/L	100
		563.1 -> 269.1	4474			
11CI-PF3OUdS	9.331	630.9 -> 450.9	37472	4.97	µg/L	100
		632.9 -> 452.9	11614			
9CI-PF3ONS	8.475	530.8 -> 351.0	38016	4.99	µg/L	100
		532.8 -> 353.0	11229			
ADONA	6.568	376.9 -> 250.9	53922	3.22	µg/L	100
		376.9 -> 84.8	13342			
HFPO-DA	5.703	284.9 -> 168.9	13124	5.13	µg/L	100
		284.9 -> 184.9	1229			
3:3FTCA	3.667	241.0 -> 177.0	6272	12.15	µg/L	100
		241.0 -> 117.0	569			
5:3FTCA	6.045	341.0 -> 237.1	108535	62.69	µg/L	100
		341.0 -> 217.0	78915			
7:3FTCA	7.574	441.0 -> 316.9	44235	56.96	µg/L	100
		441.0 -> 336.9	108020			
EtFOSA	11.412	526.0 -> 219.0	12672	5.03	µg/L	100
		526.0 -> 169.0	17919			
EtFOSE	11.332	630.0 -> 58.9	16237	12.67	µg/L	100
		511.9 -> 219.0	9159			
MeFOSA	11.140	511.9 -> 169.0	13028	5.40	µg/L	92
		616.1 -> 58.9	14611			
MeFOSE	11.047	699.1 -> 79.9	3447	10.52	µg/L	100
		699.1 -> 98.8	1855			
PFDoDS	9.789	295.0 -> 201.0	3445	2.63	µg/L	100
		295.0 -> 84.9	819			
NFDHA	5.229	279.0 -> 85.1	23494	4.93	µg/L	100
		229.0 -> 84.9	26105			
PFMBA	4.578	314.8 -> 134.9	33942	4.92	µg/L	100
		314.8 -> 82.9	978			
PFMPA	3.332			4.36	µg/L	100
PFEESA	5.734			4.36	µg/L	100

= Qualifier out of range, m = manually integrated, + = Area summed

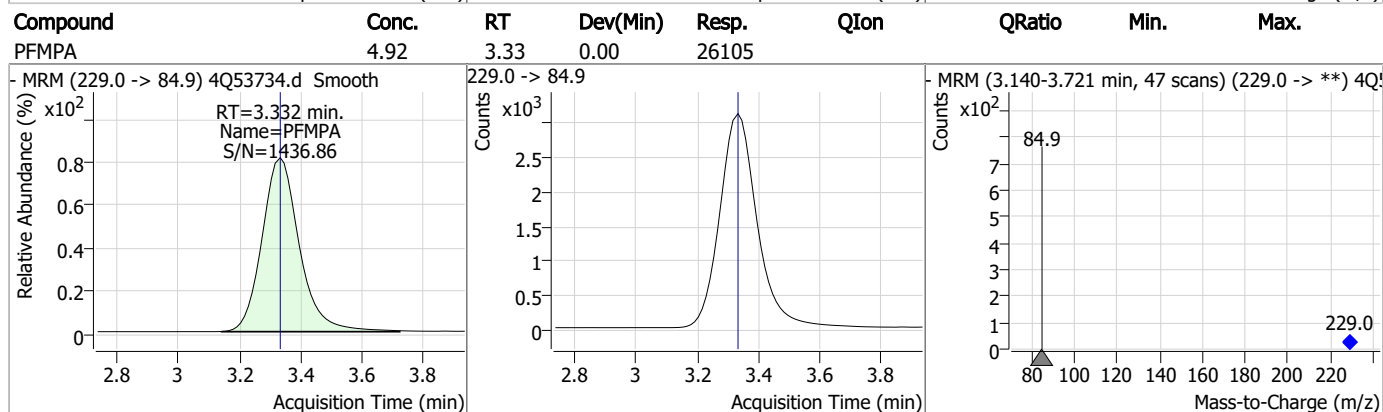
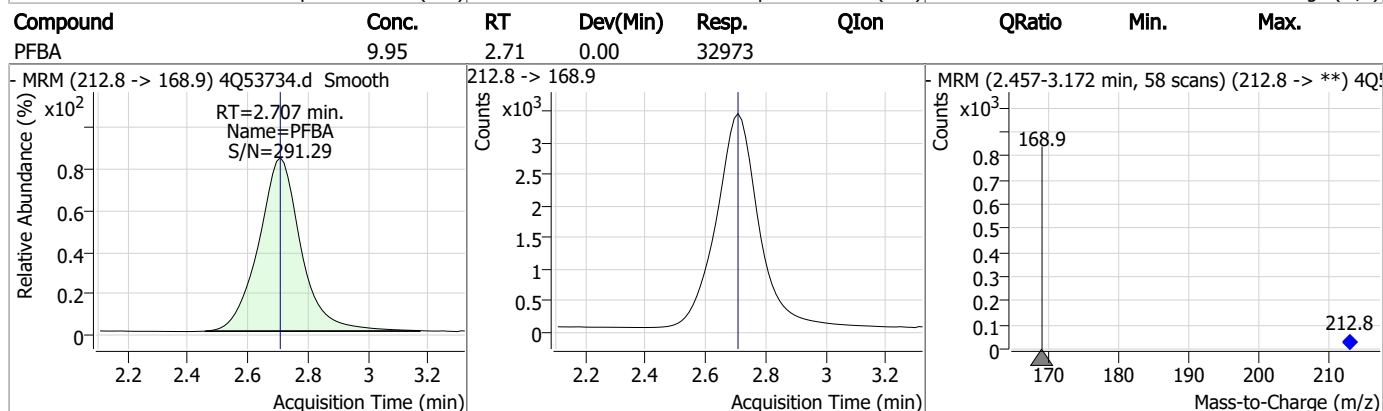
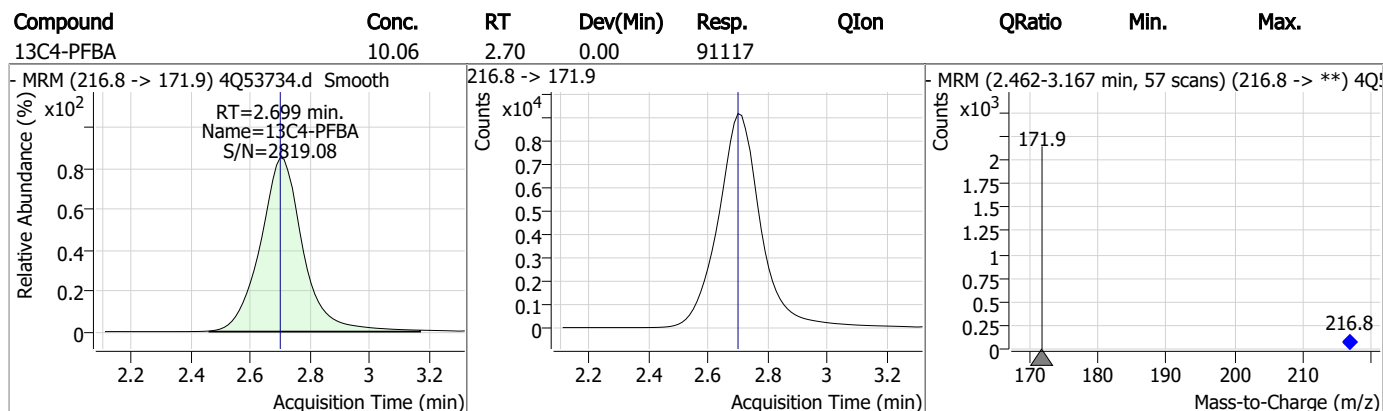
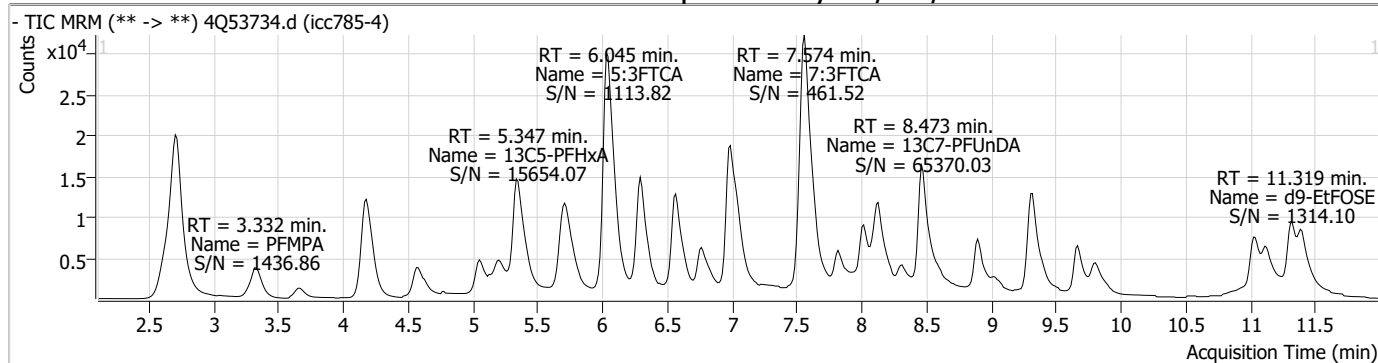
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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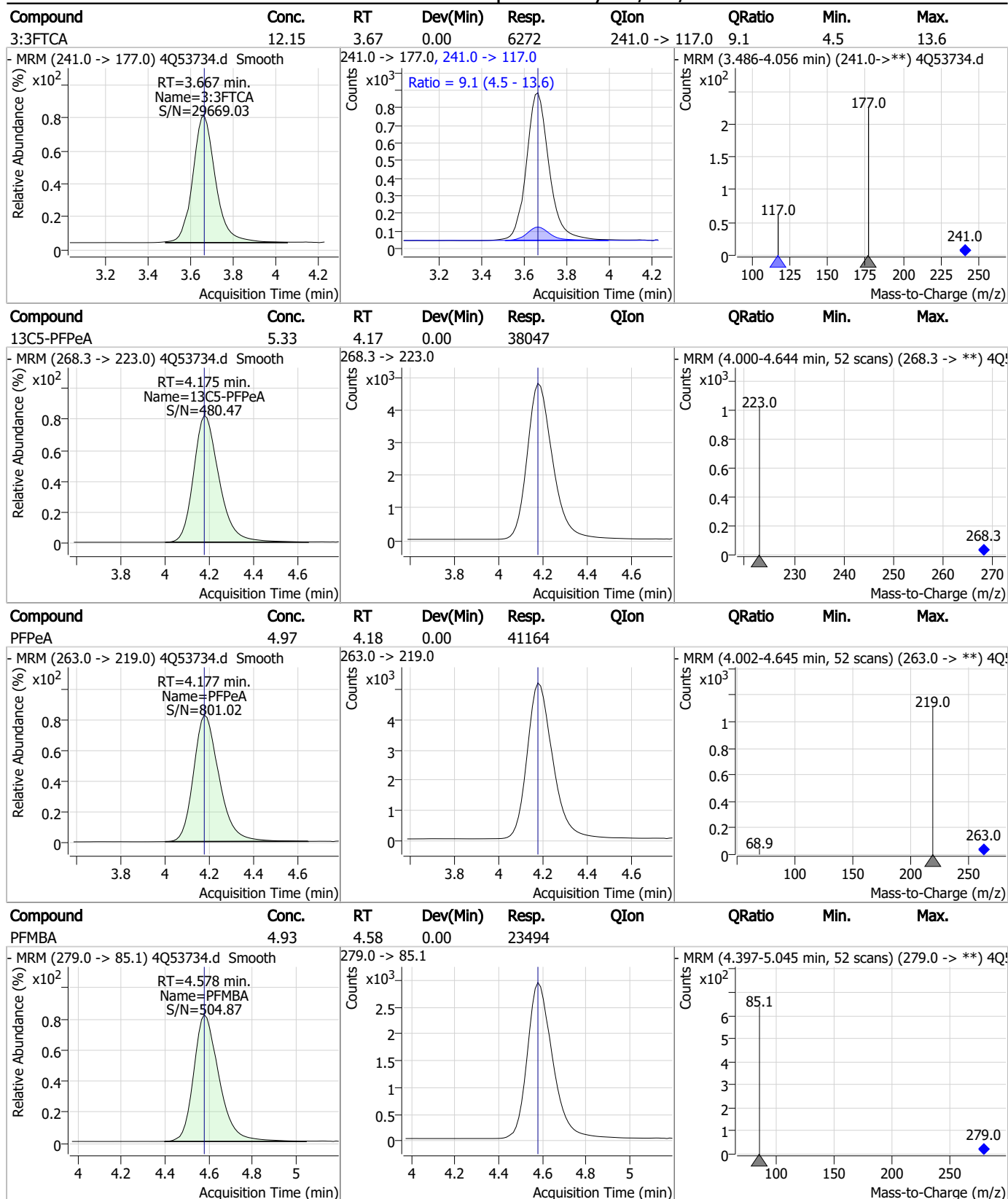
7.7.5

7

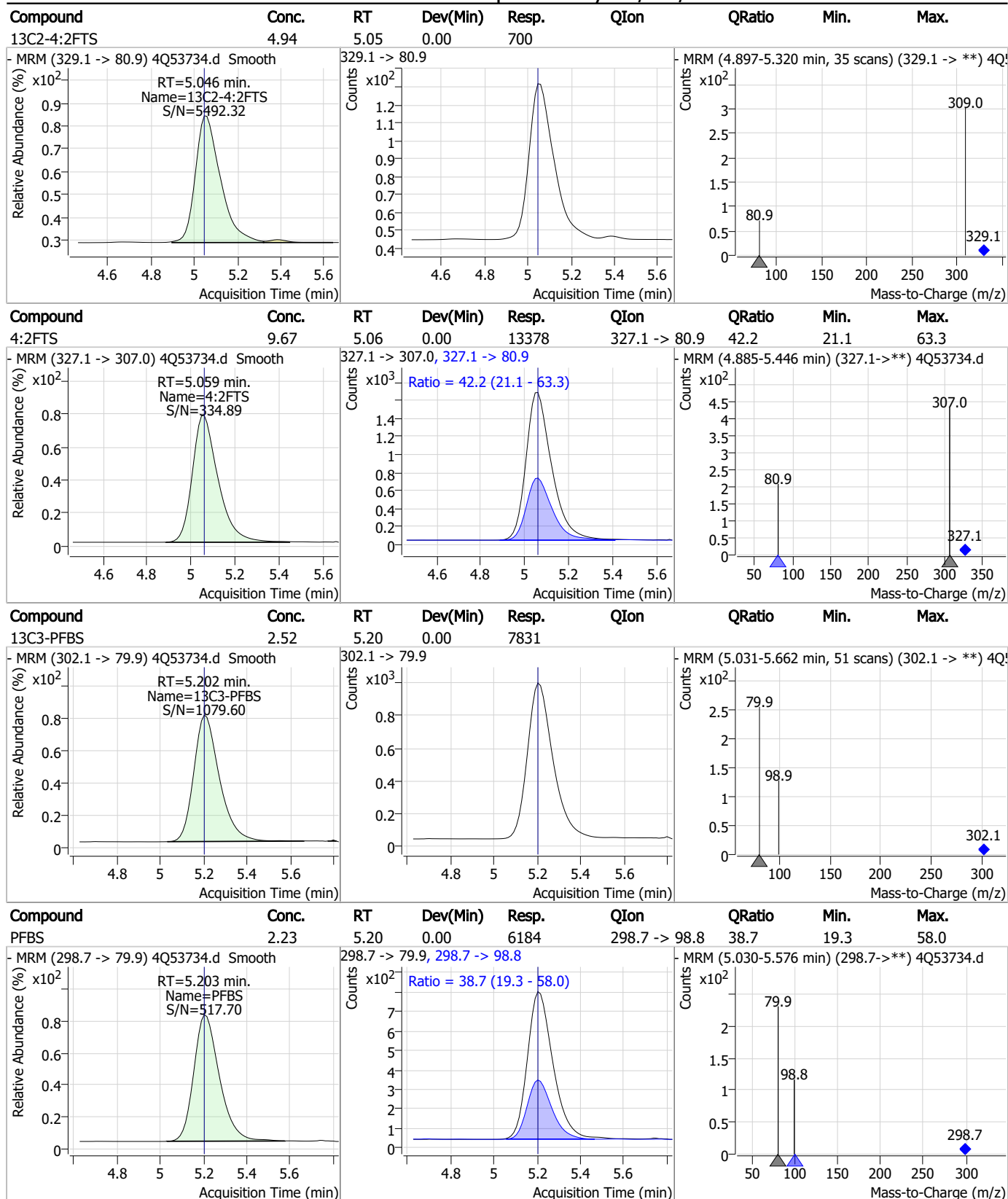
Perfluorinated Compounds by LC/MS/MS



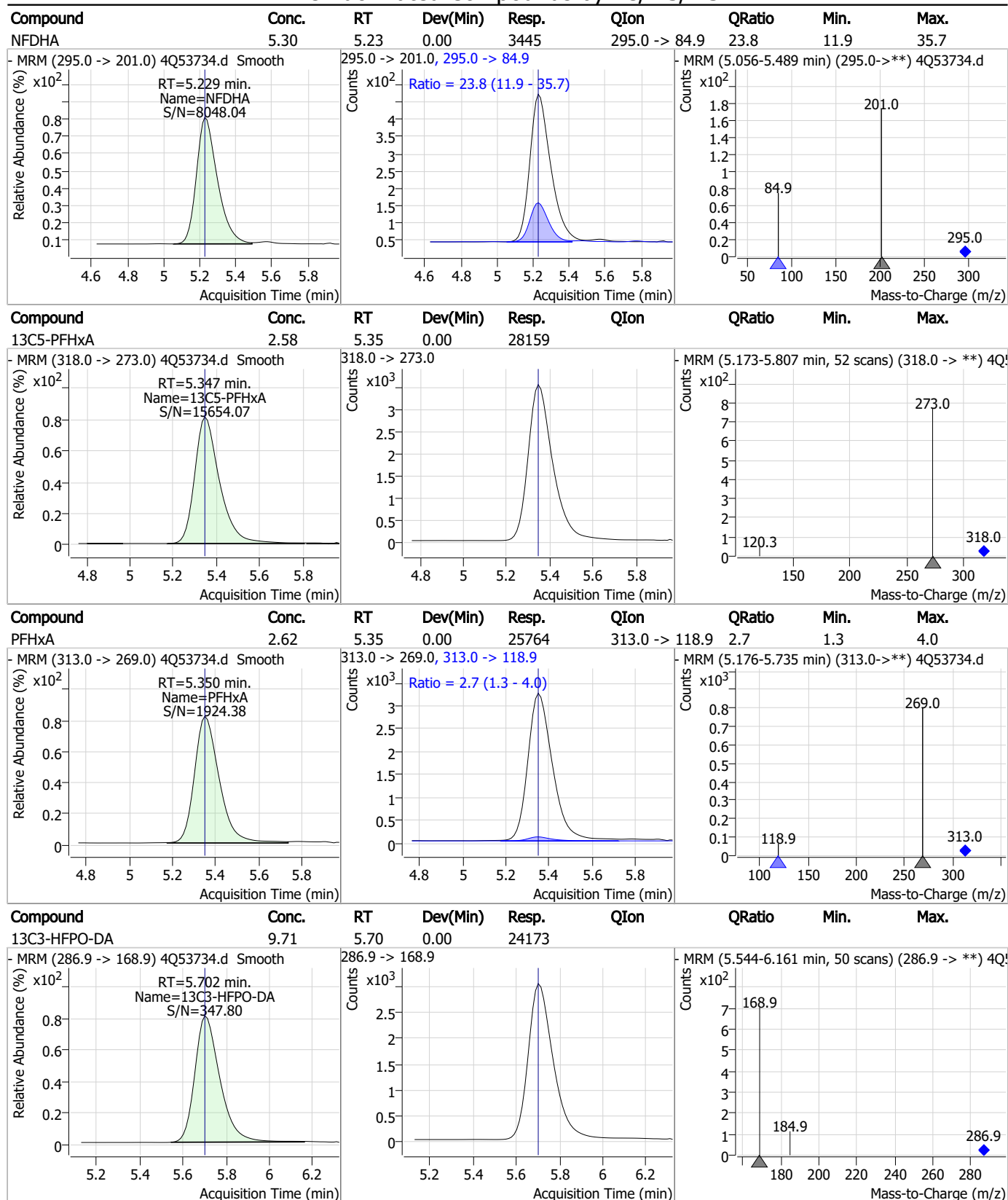
Perfluorinated Compounds by LC/MS/MS



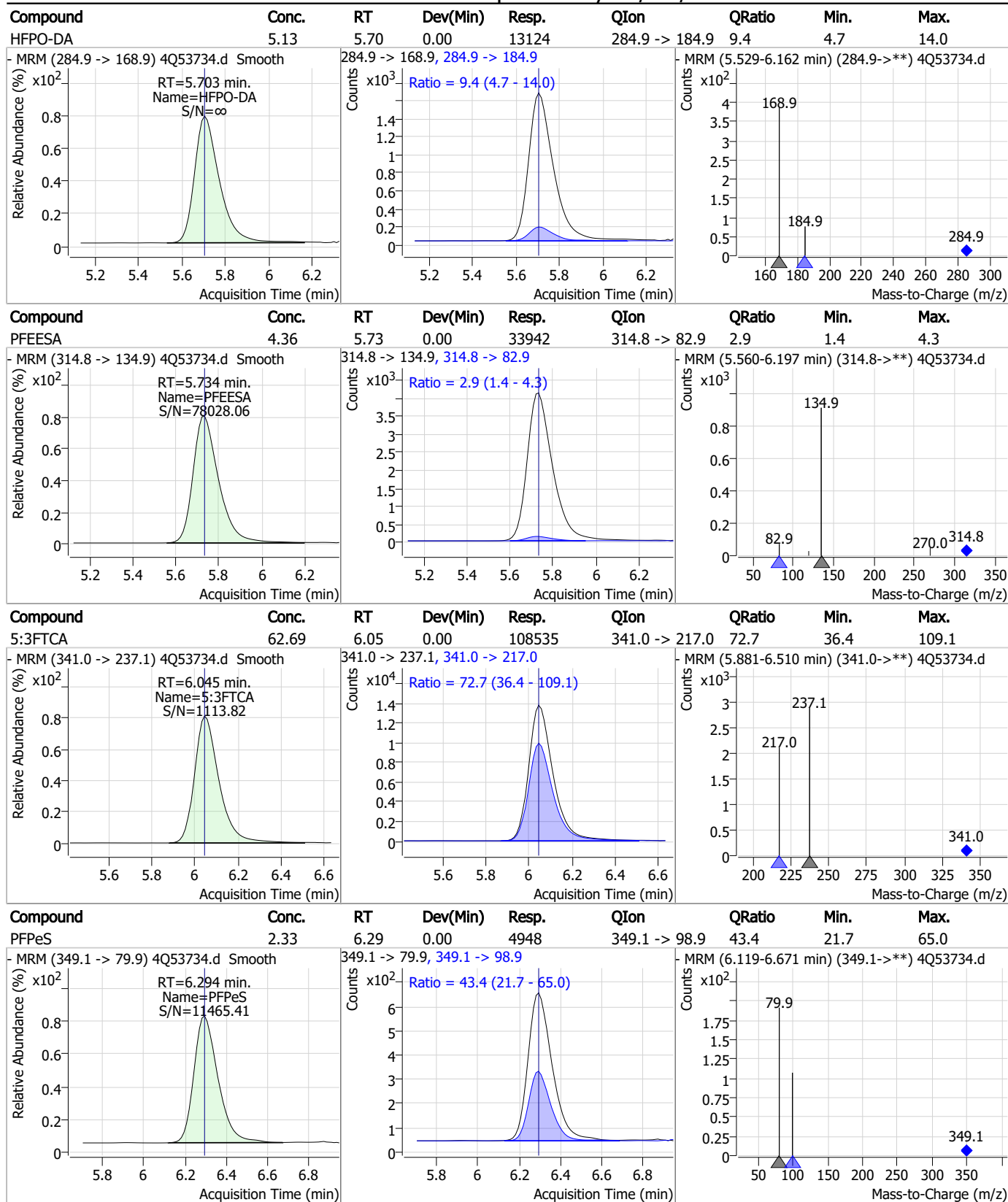
Perfluorinated Compounds by LC/MS/MS



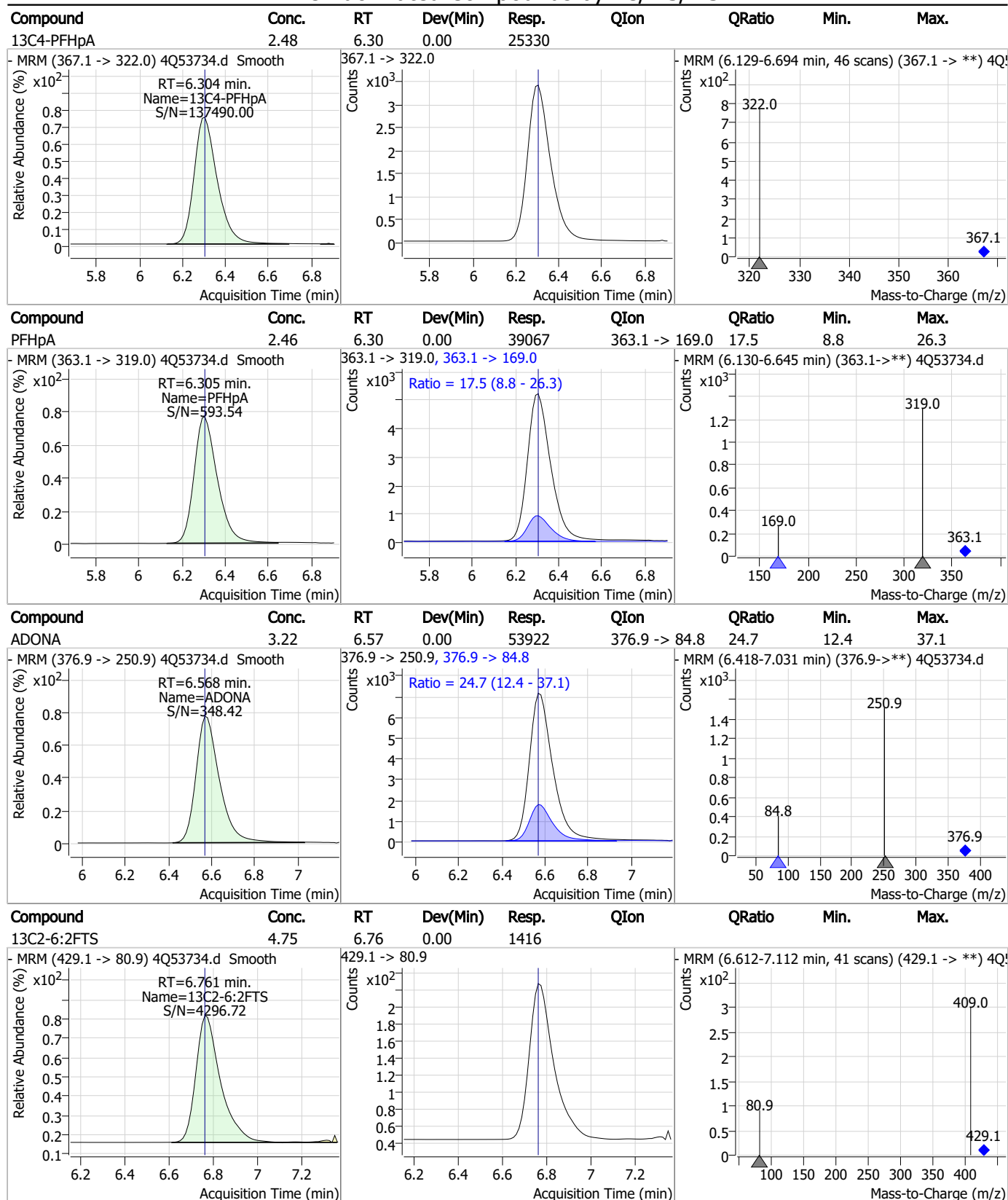
Perfluorinated Compounds by LC/MS/MS



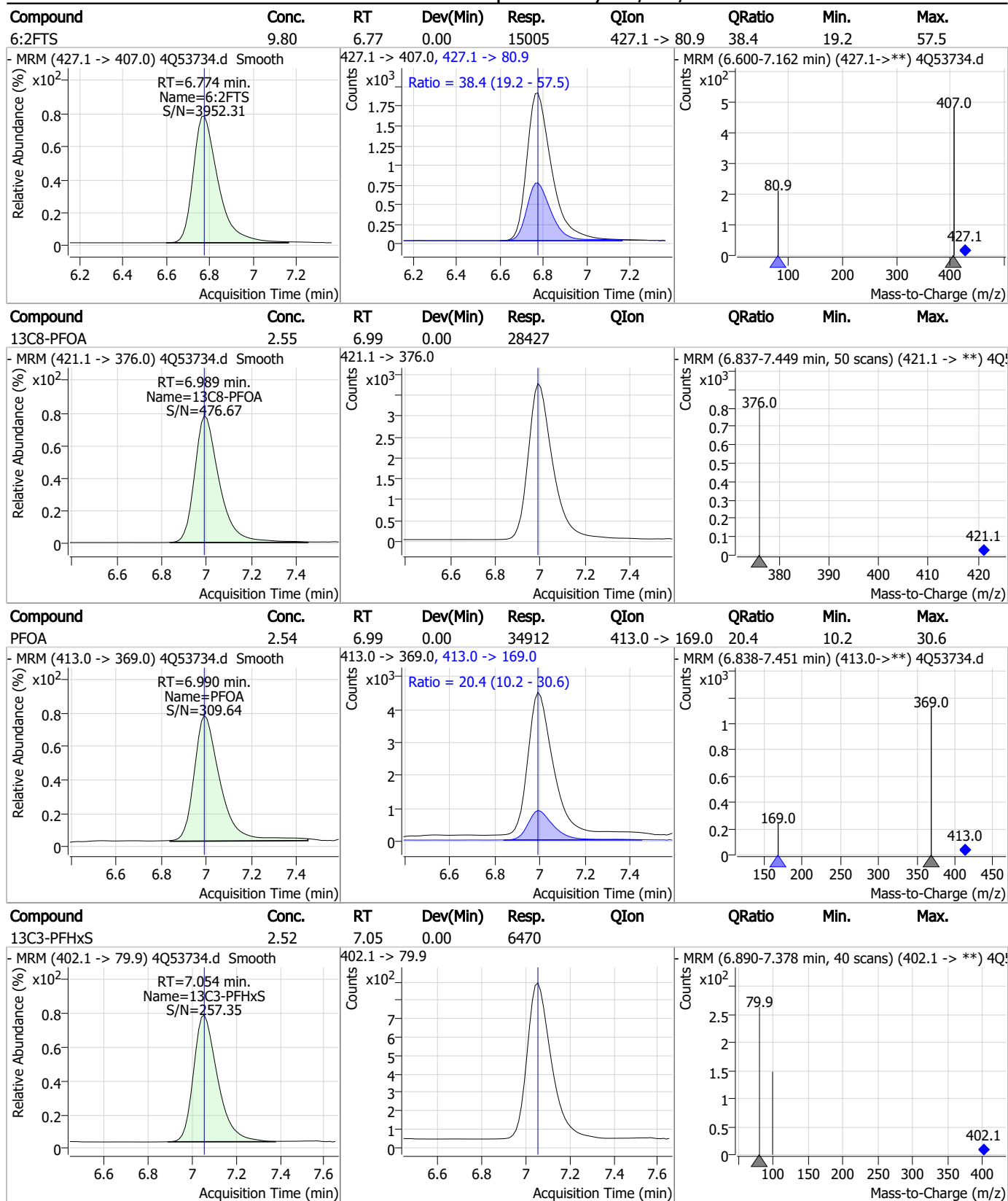
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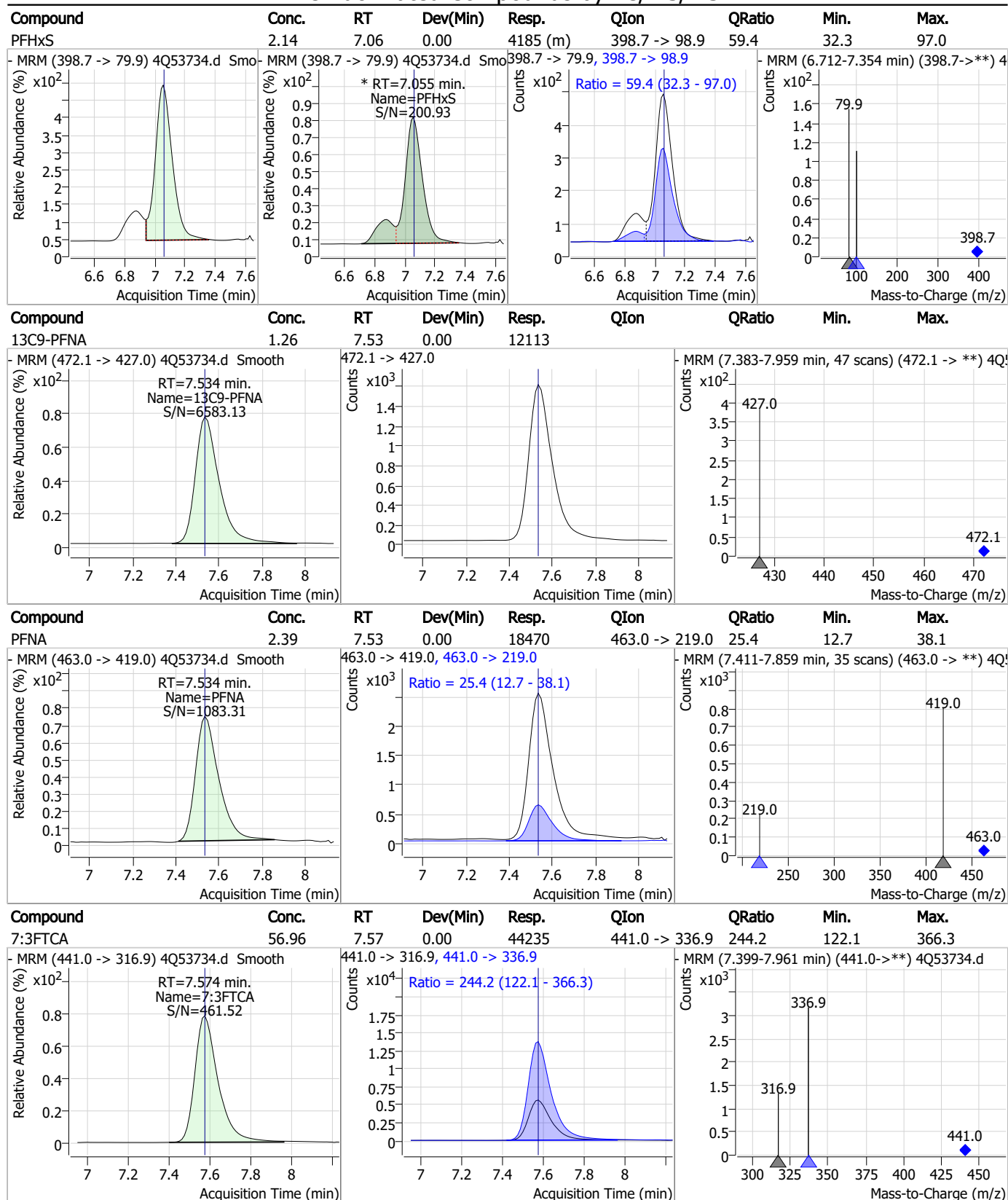
Perfluorinated Compounds by LC/MS/MS



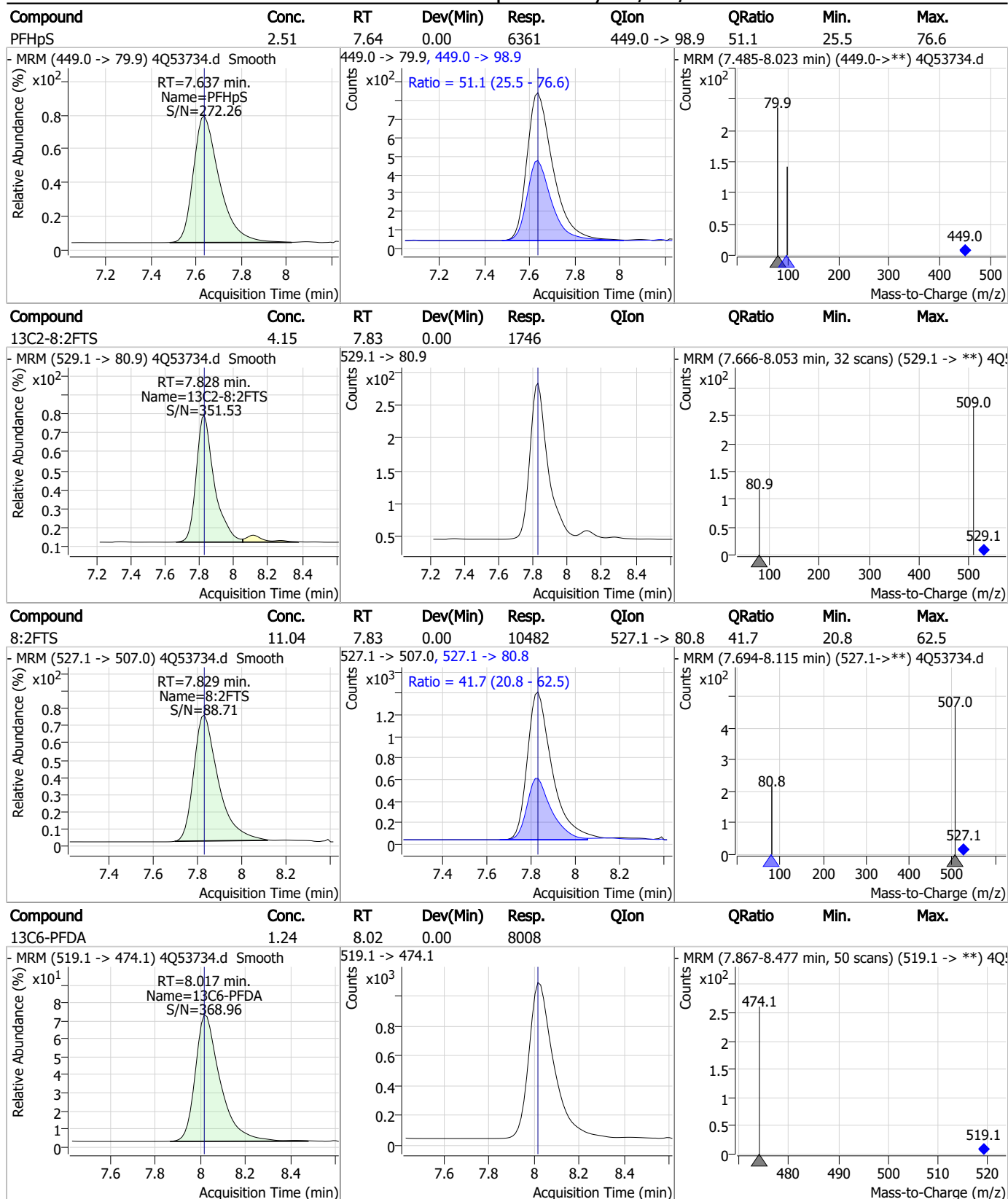
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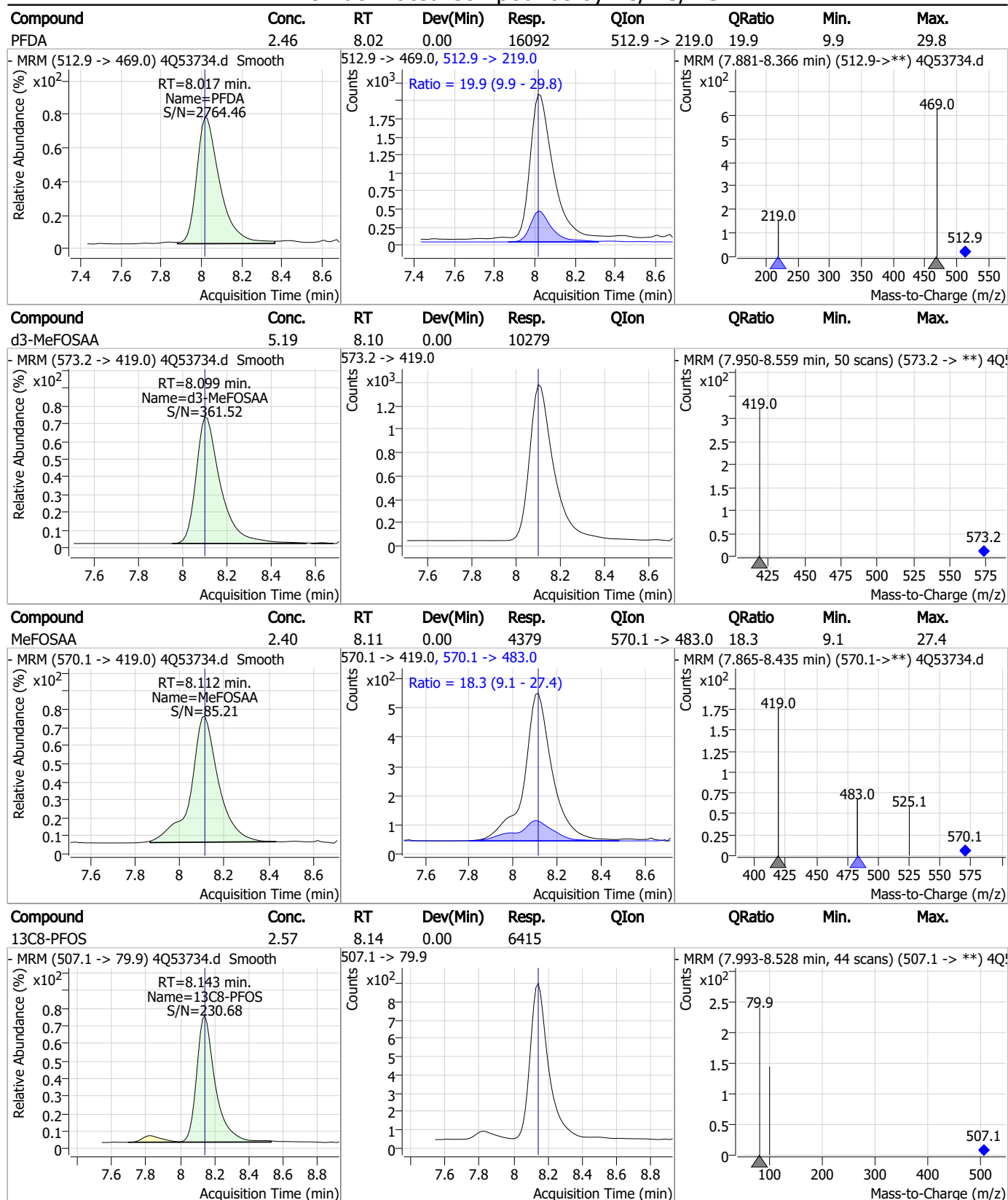
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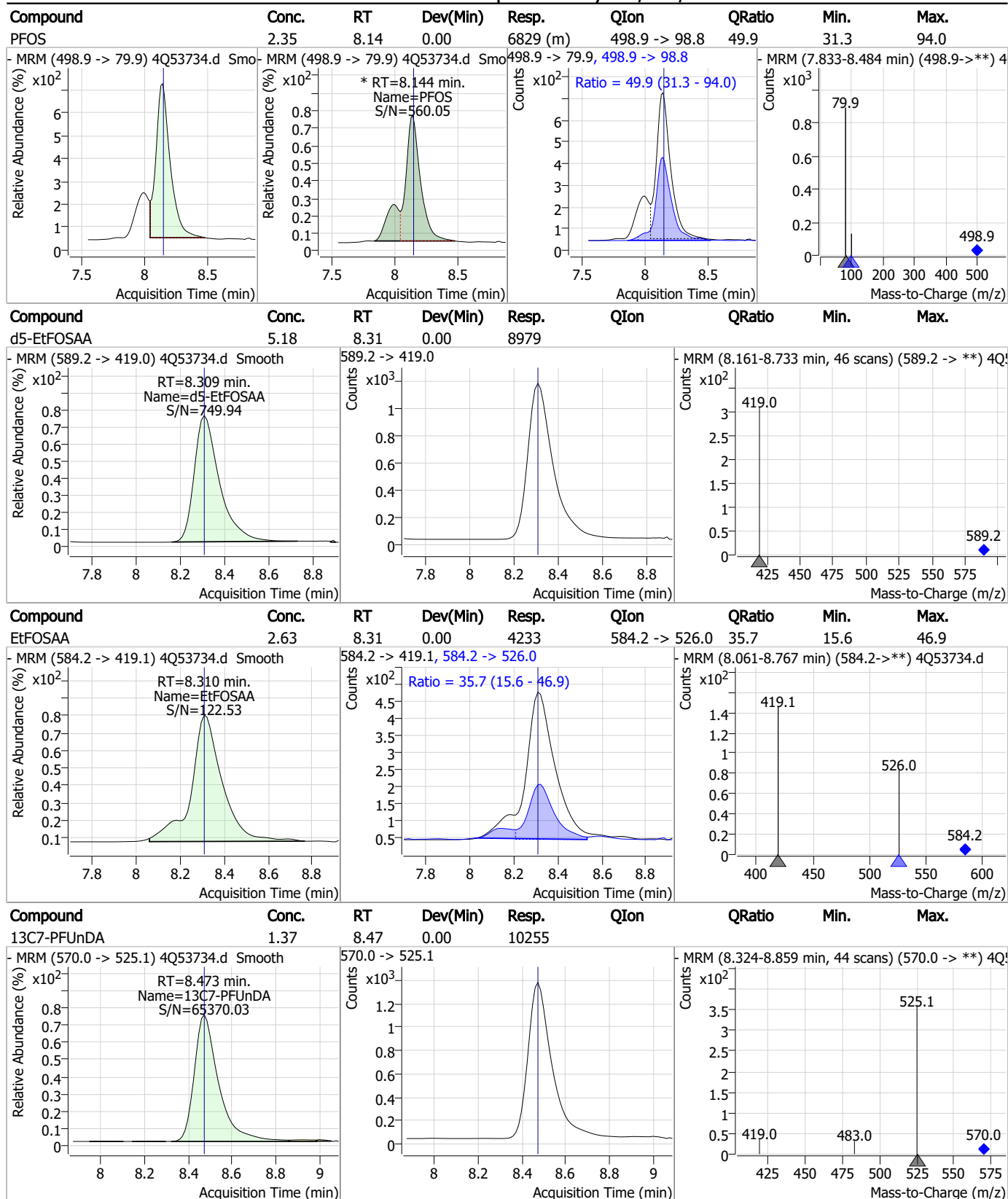
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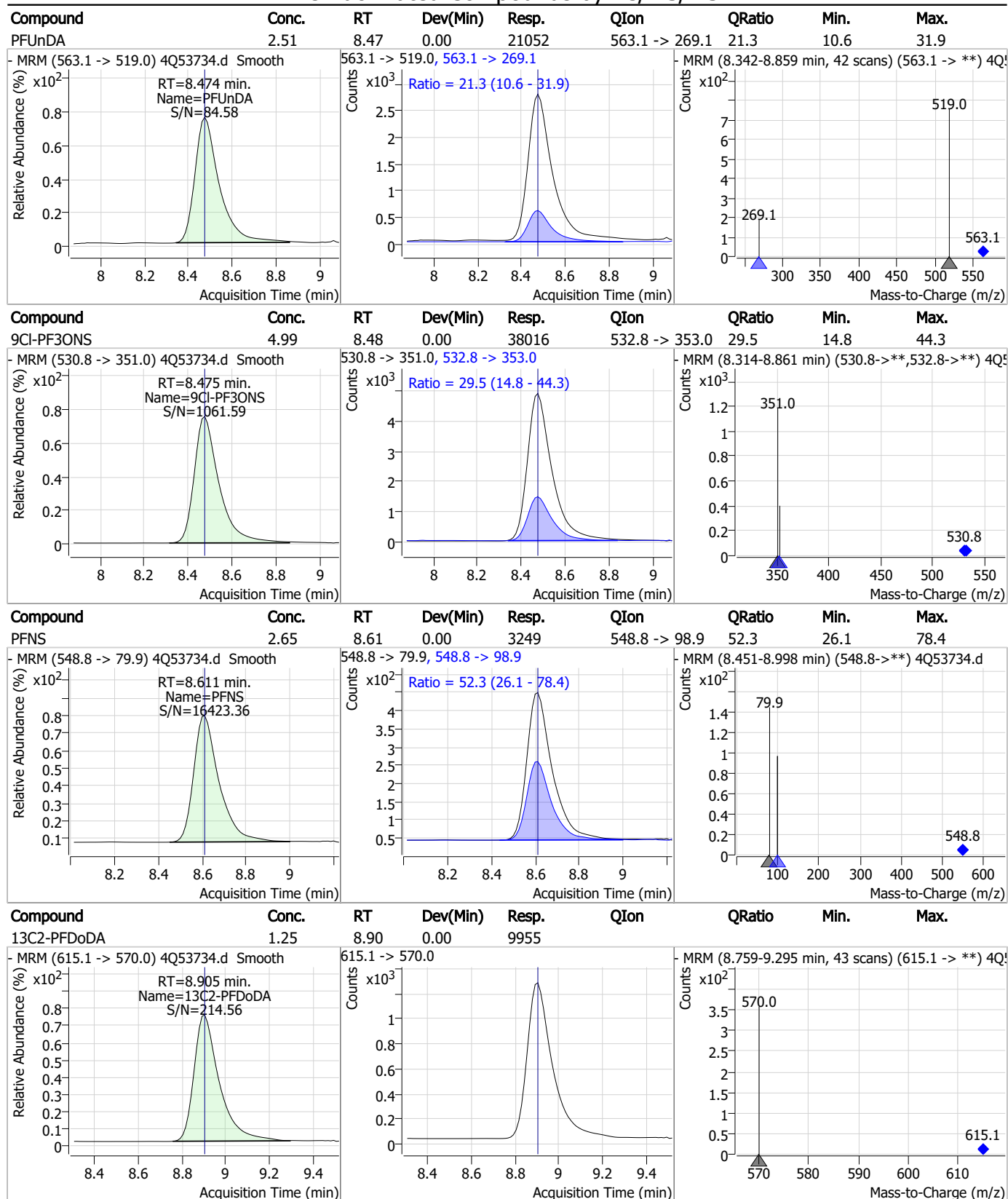
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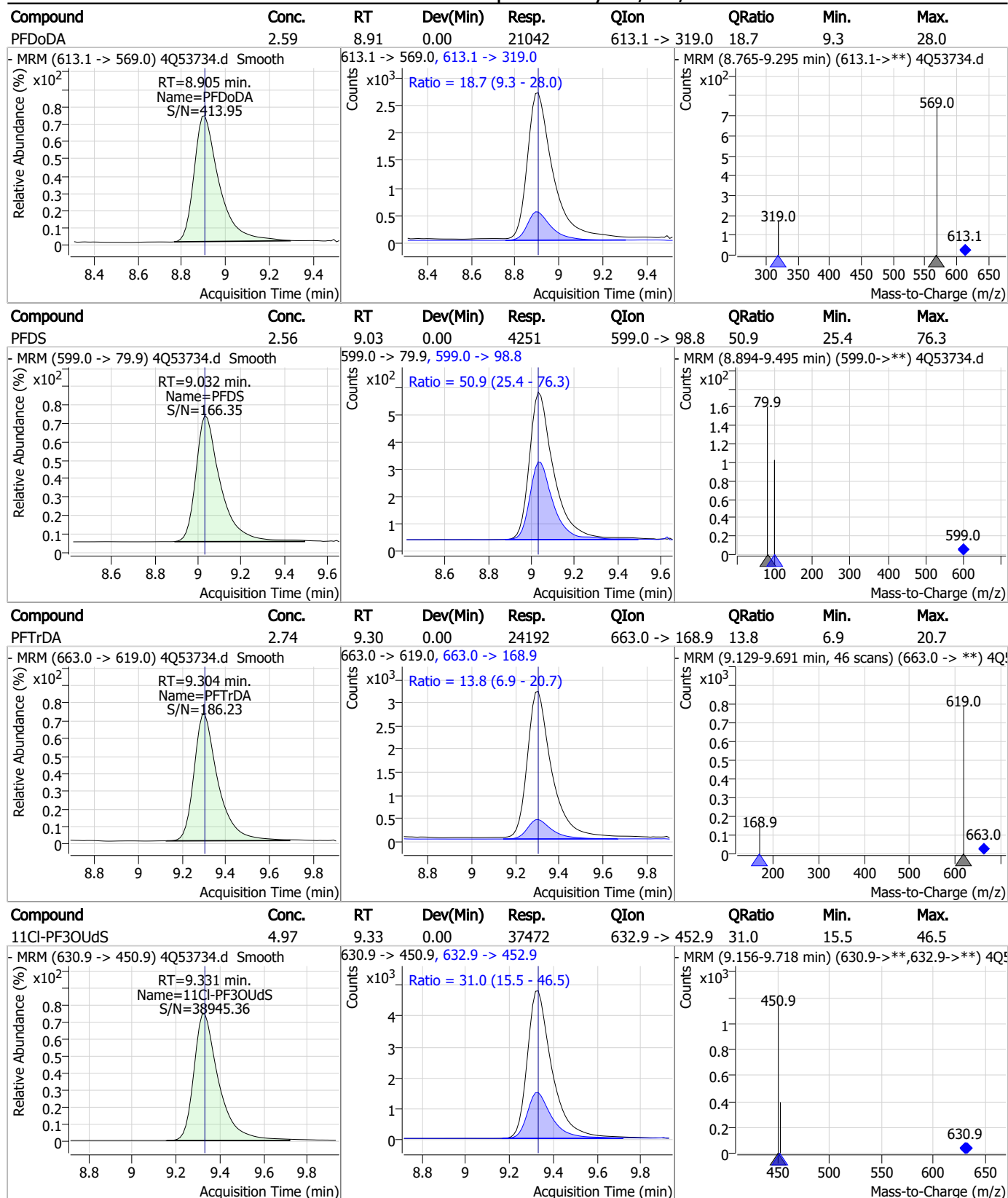
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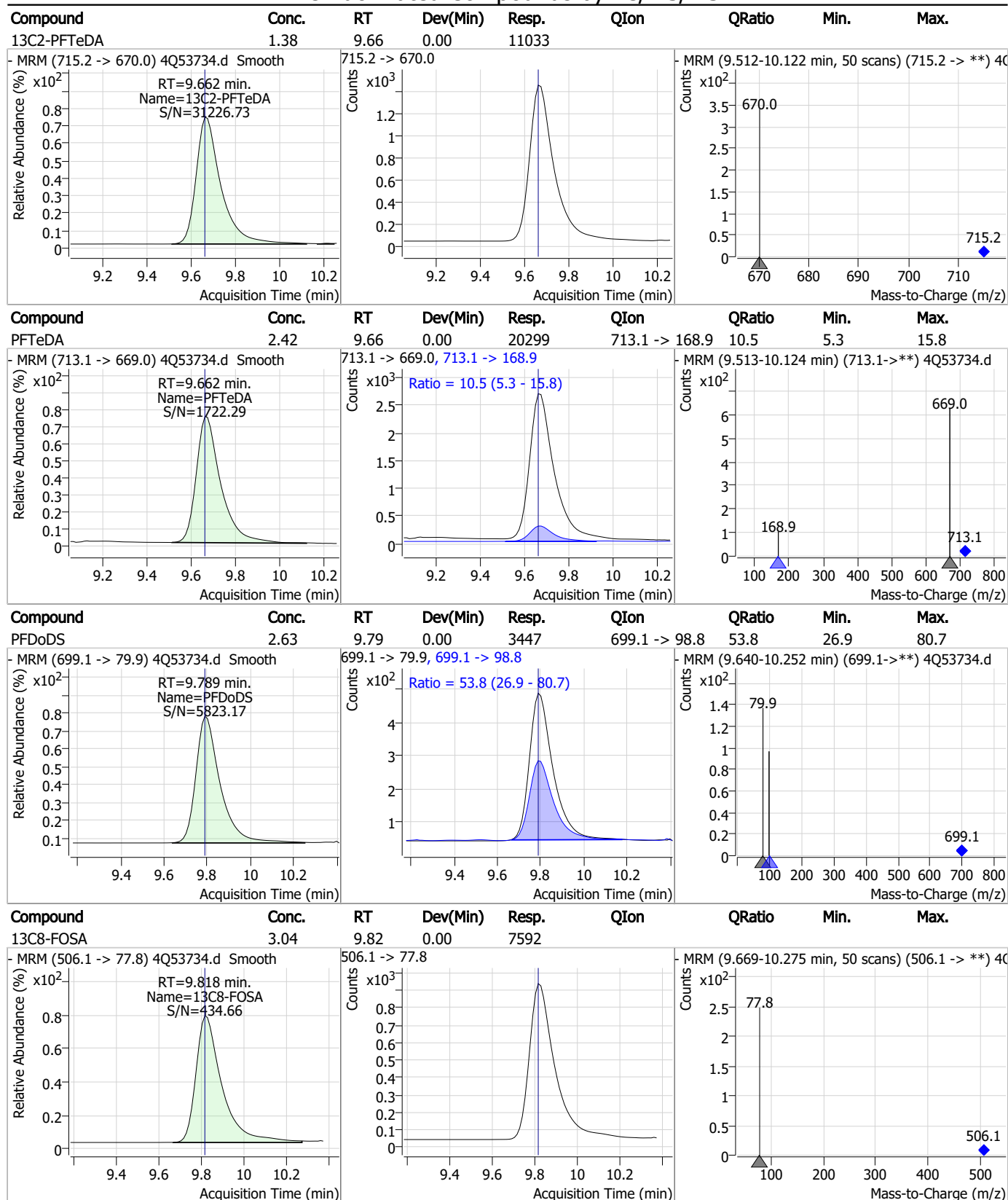
Perfluorinated Compounds by LC/MS/MS



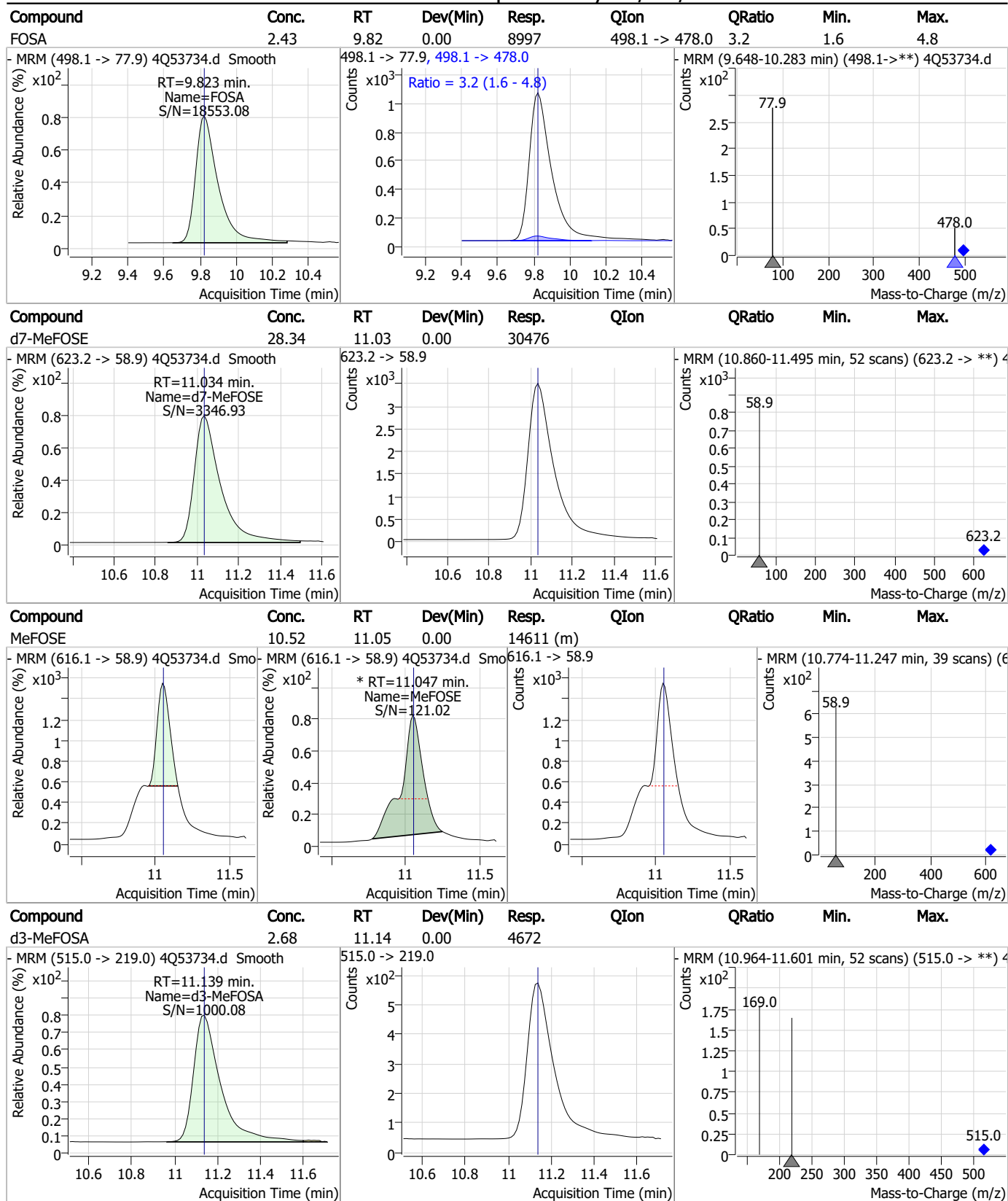
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



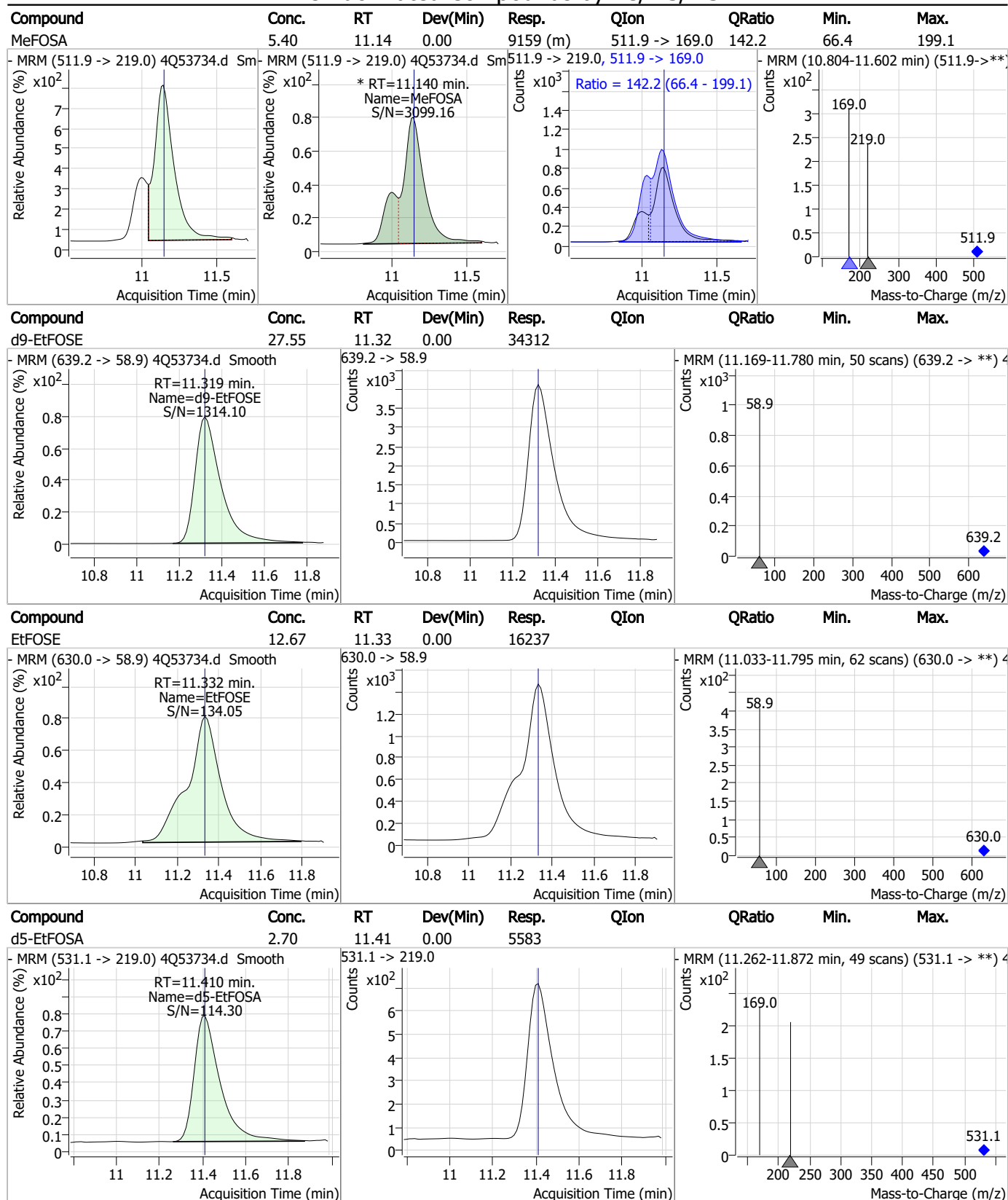
Perfluorinated Compounds by LC/MS/MS



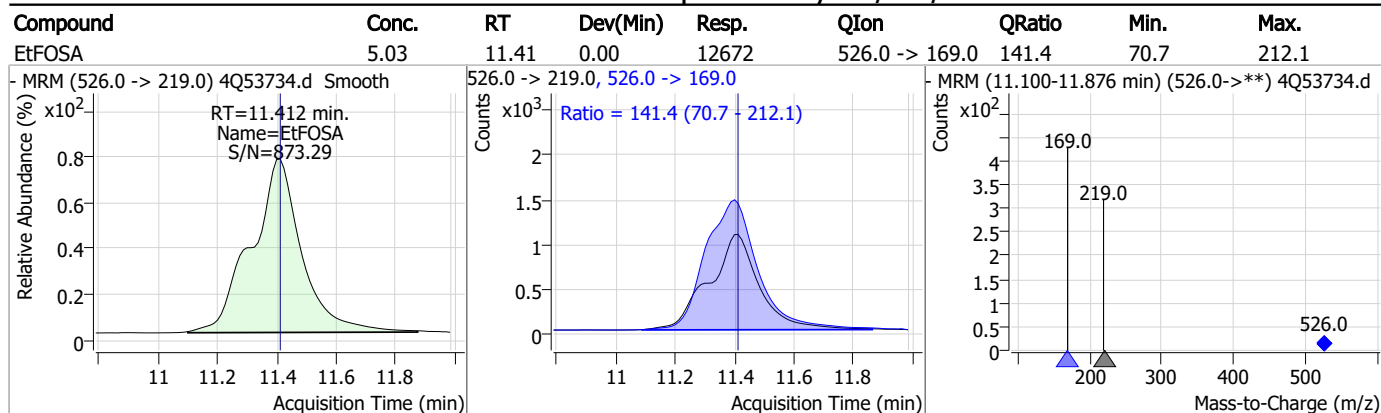
7.7.5

7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.7.5

7

Manual Integration Approval Summary

Sample Number: S4Q785-ICC785

Method: EPA DRAFT 1633

Lab FileID: 4Q53734.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 16:43

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.05	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.14	Split peak
MeFOSE	24448-09-7		11.05	Split peak
MeFOSA	31506-32-8		11.14	Split peak

7.7.5.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53735.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 4:58:34 PM
 Sample Name : ic785-5
 Vial : P1-A6
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.636	216.8 -> 171.9	92381	10.00 µg/L	-0.062
M5-PFPeA	4.125	268.3 -> 223.0	39544	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	29966	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	28498	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	32352	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12908	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	9649	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10343	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	11374	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	11453	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7605	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	8489	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	7288	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7434	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	825	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1704	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2307	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	12802	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	27196	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	11101	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	32717	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	35806	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5897	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	5178	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6671	2.50 µg/L	-0.026
13C3-PFBA	2.641	216.0 -> 172.0	44146	5.00 µg/L	-0.062
18O2-PFHxS	7.016	403.0 -> 83.9	4638	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	35178	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	10179	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	14071	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	31690	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	825	5.20 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1704	5.10 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2307	4.89 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C2-PFDoDA	8.880	615.1 -> 570.0	11374	1.24 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C2-PFTeDA	9.649	715.2 -> 670.0	11453	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C3-PFBS	5.152	302.1 -> 79.9	8489	2.44 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C3-PFHxS	7.017	402.1 -> 79.9	7288	2.53 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C4-PFBA	2.636	216.8 -> 171.9	92381	10.04 µg/L	-0.062
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C4-PFHpA	6.267	367.1 -> 322.0	28498	2.58 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C5-PFHxA	5.297	318.0 -> 273.0	29966	2.54 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C5-PFPeA	4.125	268.3 -> 223.0	39544	5.12 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C6-PFDA	7.992	519.1 -> 474.1	9649	1.29 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C7-PFUnDA	8.448	570.0 -> 525.1	10343	1.19 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C8-FOSA	9.794	506.1 -> 77.8	7605	2.39 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C8-PFOA	6.964	421.1 -> 376.0	32352	2.58 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C8-PFOS	8.117	507.1 -> 79.9	7434	2.33 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.4%		
13C9-PFNA	7.509	472.1 -> 427.0	12908	1.16 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.1%		
d3-MeFOSAA	8.086	573.2 -> 419.0	12802	5.06 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	27196	10.08 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
d3-MeFOSA	11.126	515.0 -> 219.0	5178	2.33 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.1%		
d5-EtFOSAA	8.283	589.2 -> 419.0	11101	5.01 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.2%		
d7-MeFOSE	11.034	623.2 -> 58.9	32717	23.81 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.2%		
d9-EtFOSE	11.319	639.2 -> 58.9	35806	22.50 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 90.0%		
d5-EtFOSA	11.397	531.1 -> 219.0	5897	2.23 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 89.3%		
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	31500	19.31 µg/L	100
		327.1 -> 80.9	13210		
6:2FTS	6.737	427.1 -> 407.0	37453	20.31 µg/L	97
		427.1 -> 80.9	13765		
8:2FTS	7.804	527.1 -> 507.0	28152	22.44 µg/L	99
		527.1 -> 80.8	11556		
EtFOSAA	8.297	584.2 -> 419.1	10090	5.08 µg/L	m 84
		584.2 -> 526.0	4052		
FOSA	9.798	498.1 -> 77.9	19973	5.39 µg/L	100
		498.1 -> 478.0	615		
MeFOSAA	8.087	570.1 -> 419.0	11546	5.07 µg/L	100
		570.1 -> 483.0	2092		
PFBA	2.645	212.8 -> 168.9	72922	21.71 µg/L	100
PFBS	5.153	298.7 -> 79.9	14240	4.73 µg/L	100
		298.7 -> 98.8	5494		
PFDA	7.992	512.9 -> 469.0	39865	5.05 µg/L	100
		512.9 -> 219.0	7975		
PFDODA	8.880	613.1 -> 569.0	50514	5.45 µg/L	98
		613.1 -> 319.0	9004		
PFDS	9.020	599.0 -> 79.9	10268	5.34 µg/L	97

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	5025	5.26	µg/L	98
		363.1 -> 319.0	94005			
PFHpS	7.612	363.1 -> 169.0	17236	5.23	µg/L	99
		449.0 -> 79.9	15362			
PFHxA	5.300	449.0 -> 98.9	7970	5.29	µg/L	99
		313.0 -> 269.0	55393			
PFHxS	7.018	313.0 -> 118.9	1764	4.84	µg/L	85
		398.7 -> 79.9	10633			
PFNA	7.510	398.7 -> 98.9	5628	5.70	µg/L	98
		463.0 -> 419.0	46939			
PFNS	8.586	463.0 -> 219.0	11458	5.26	µg/L	99
		548.8 -> 79.9	7468			
PFOA	6.965	548.8 -> 98.9	3848	5.08	µg/L	100
		413.0 -> 369.0	79562			
PFOS	8.119	413.0 -> 169.0	16343	5.13	µg/L	81
		498.9 -> 79.9	17317			
PFPeA	4.127	498.9 -> 98.8	8277	10.64	µg/L	100
		263.0 -> 219.0	91562			
PFPeS	6.257	349.1 -> 79.9	11617	4.85	µg/L	97
		349.1 -> 98.9	5262			
PFTeDA	9.650	713.1 -> 669.0	48403	5.57	µg/L	98
		713.1 -> 168.9	4654			
PFTrDA	9.279	663.0 -> 619.0	58338	5.78	µg/L	99
		663.0 -> 168.9	7924			
PFUnDA	8.449	563.1 -> 519.0	50970	6.03	µg/L	98
		563.1 -> 269.1	10440			
11CI-PF3OUdS	9.306	630.9 -> 450.9	88721	10.45	µg/L	99
		632.9 -> 452.9	27152			
9CI-PF3ONS	8.451	530.8 -> 351.0	88631	10.34	µg/L	99
		532.8 -> 353.0	26729			
ADONA	6.531	376.9 -> 250.9	225779	12.00	µg/L	100
		376.9 -> 84.8	56105			
HFPO-DA	5.653	284.9 -> 168.9	30687	10.65	µg/L	97
		284.9 -> 184.9	3219			
3:3FTCA	3.573	241.0 -> 177.0	13444	25.69	µg/L	99
		241.0 -> 117.0	1195			
5:3FTCA	5.983	341.0 -> 237.1	250328	135.88	µg/L	97
		341.0 -> 217.0	176690			
7:3FTCA	7.536	441.0 -> 316.9	112745	136.42	µg/L	94
		441.0 -> 336.9	263832			
EtFOSA	11.399	526.0 -> 219.0	30569	11.49	µg/L	97
		526.0 -> 169.0	41926			
EtFOSE	11.332	630.0 -> 58.9	36440	27.24	µg/L	100
		511.9 -> 219.0	20525			
MeFOSA	11.128	511.9 -> 169.0	30555	10.92	µg/L	86
		616.1 -> 58.9	41853			
MeFOSE	11.047	699.1 -> 79.9	8060	28.08	µg/L	100
		699.1 -> 98.8	4493			
PFDoDS	9.777	295.0 -> 201.0	7808	5.31	µg/L	97
		295.0 -> 84.9	2070			
NFDHA	5.179	279.0 -> 85.1	52874	11.30	µg/L	94
		229.0 -> 84.9	59196			
PFMBA	4.529	314.8 -> 134.9	80648	9.73	µg/L	98
PFMPA	3.265	314.8 -> 82.9	2770			
PFEESA	5.684					

= Qualifier out of range, m = manually integrated, + = Area summed

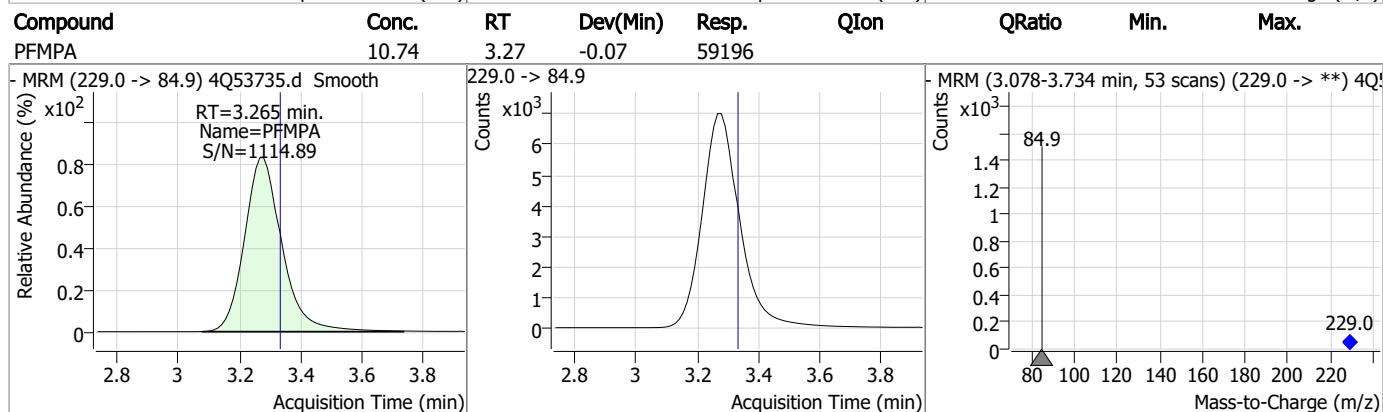
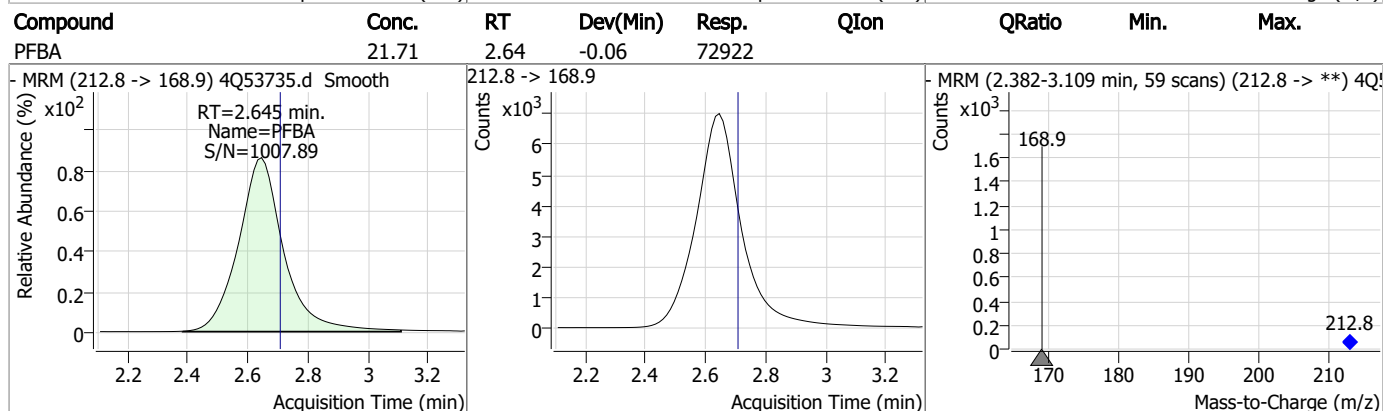
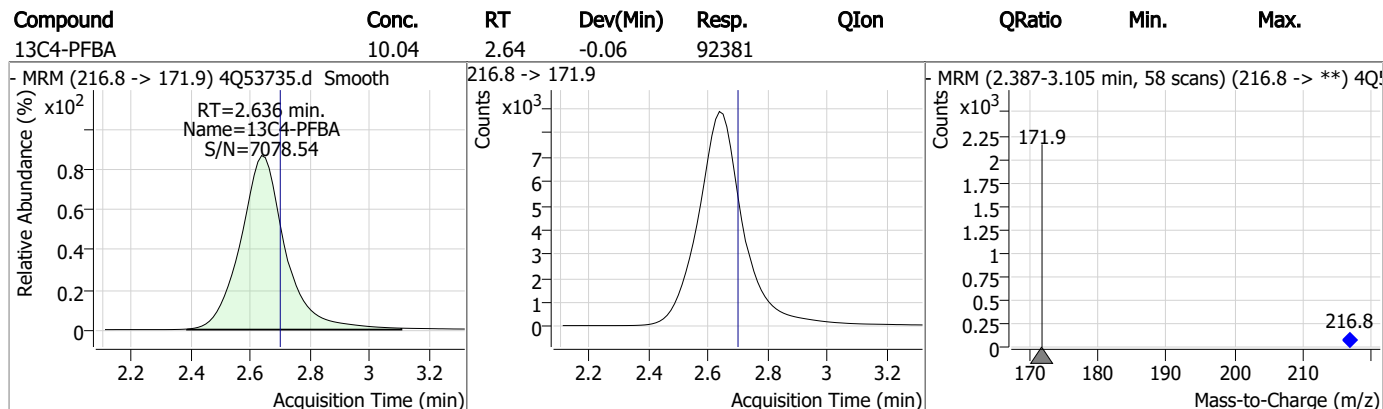
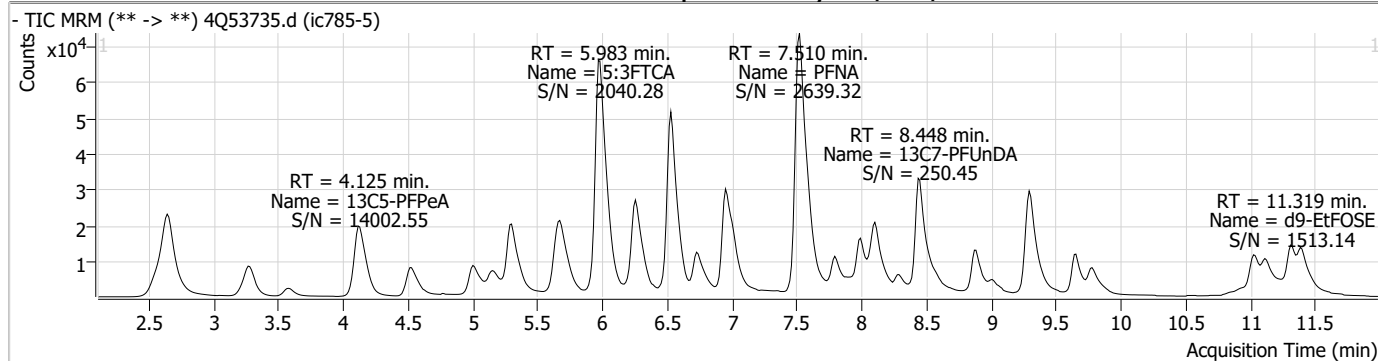
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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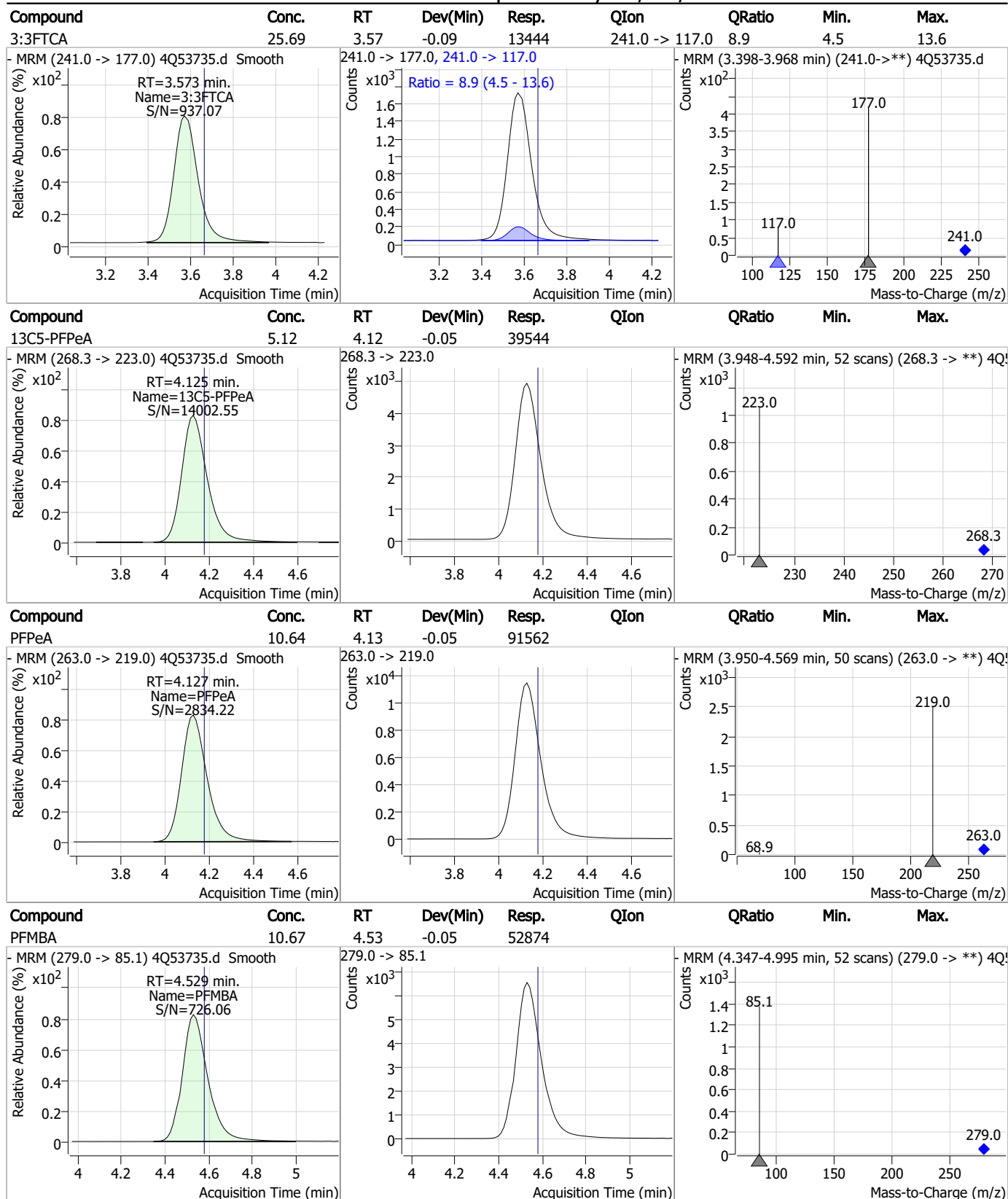
7.7.6

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Perfluorinated Compounds by LC/MS/MS



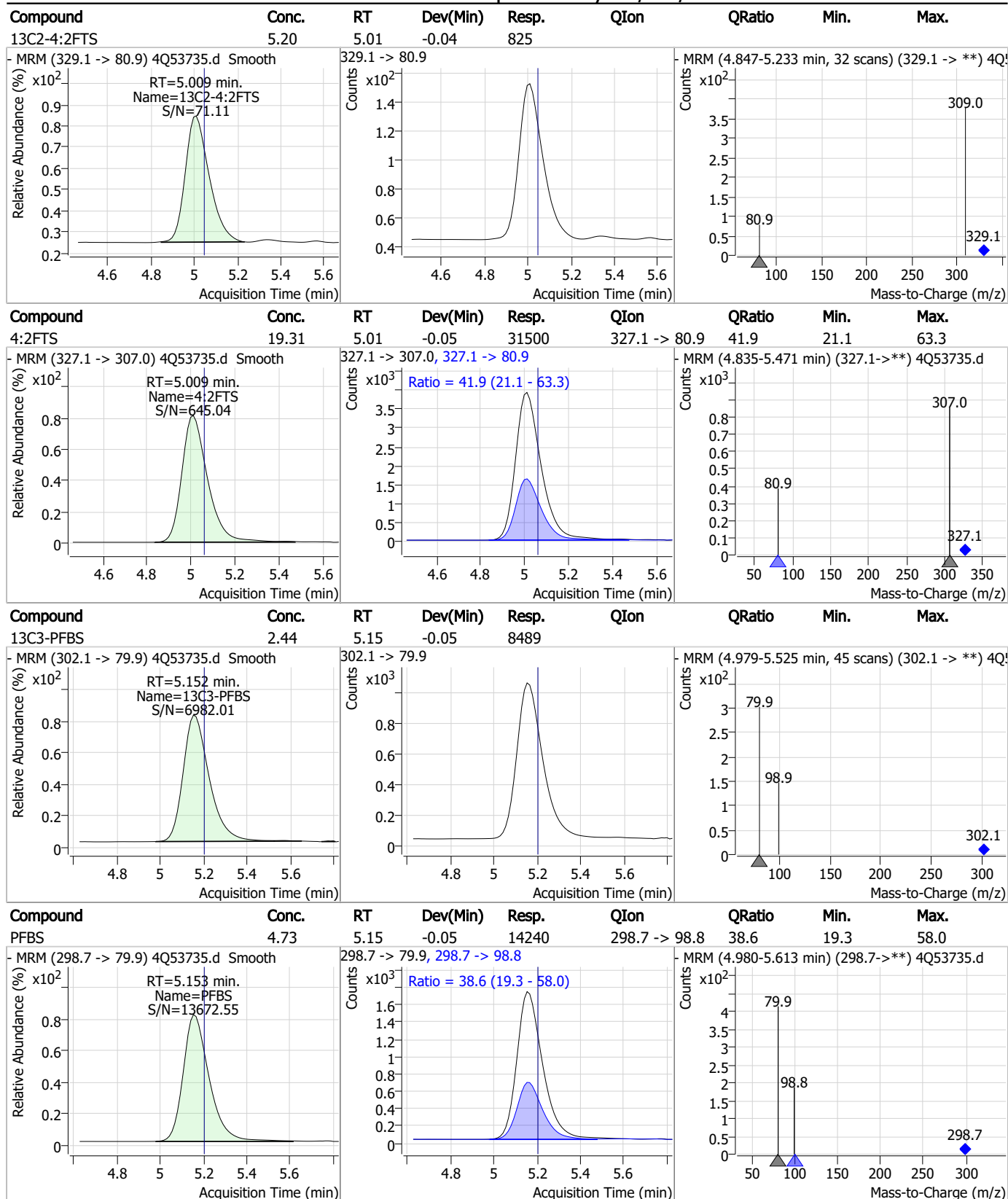
Perfluorinated Compounds by LC/MS/MS



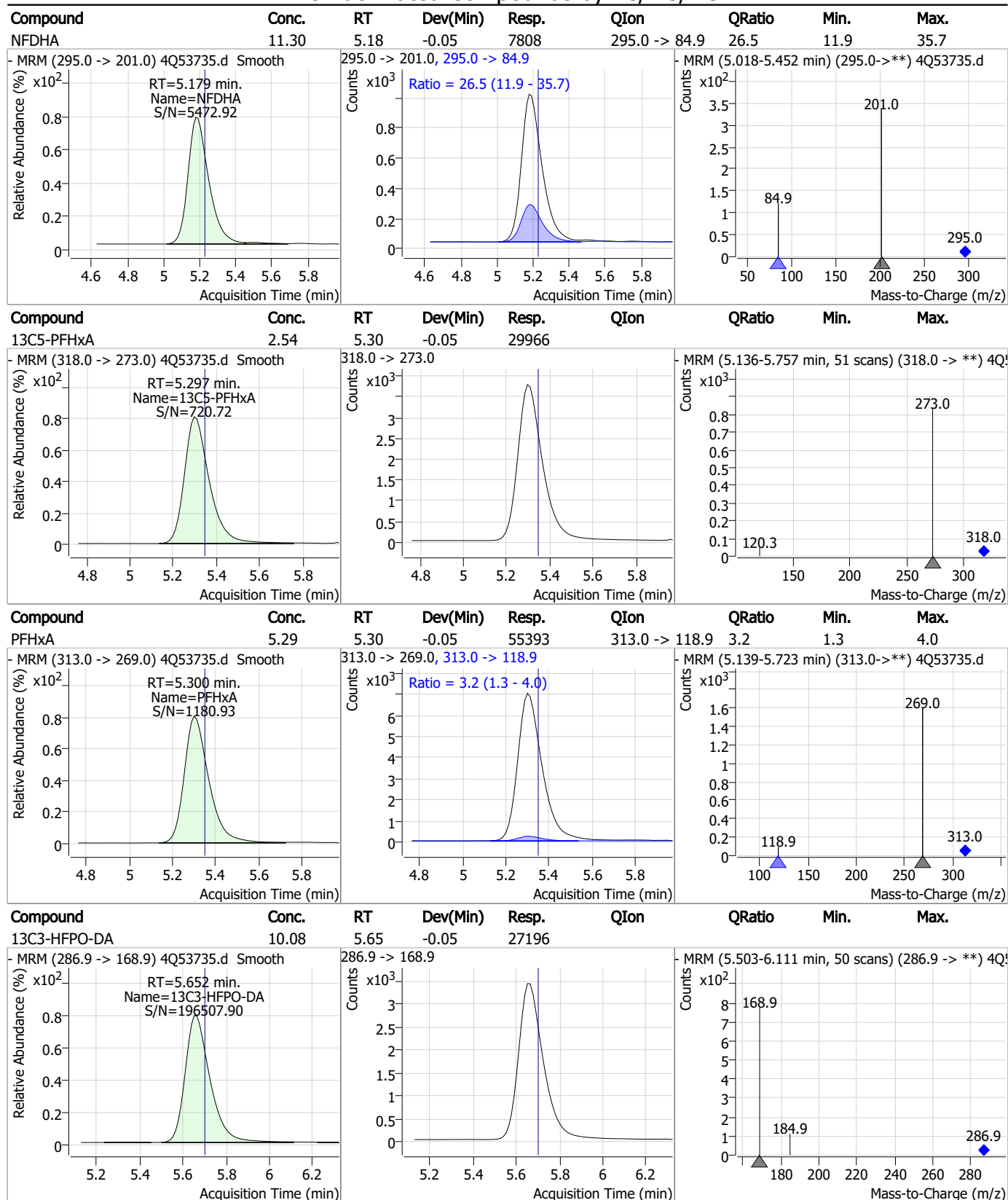
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Perfluorinated Compounds by LC/MS/MS



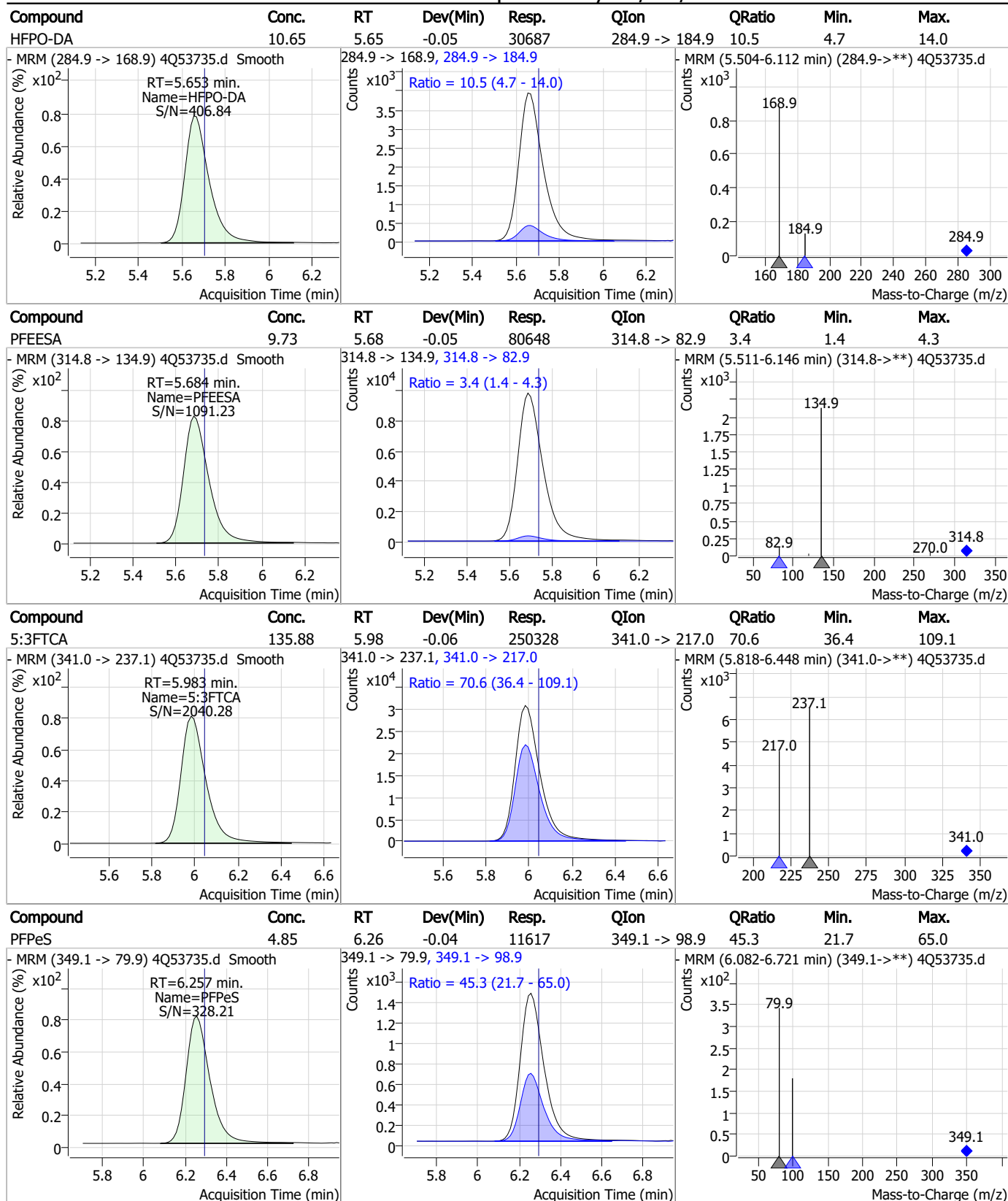
Perfluorinated Compounds by LC/MS/MS



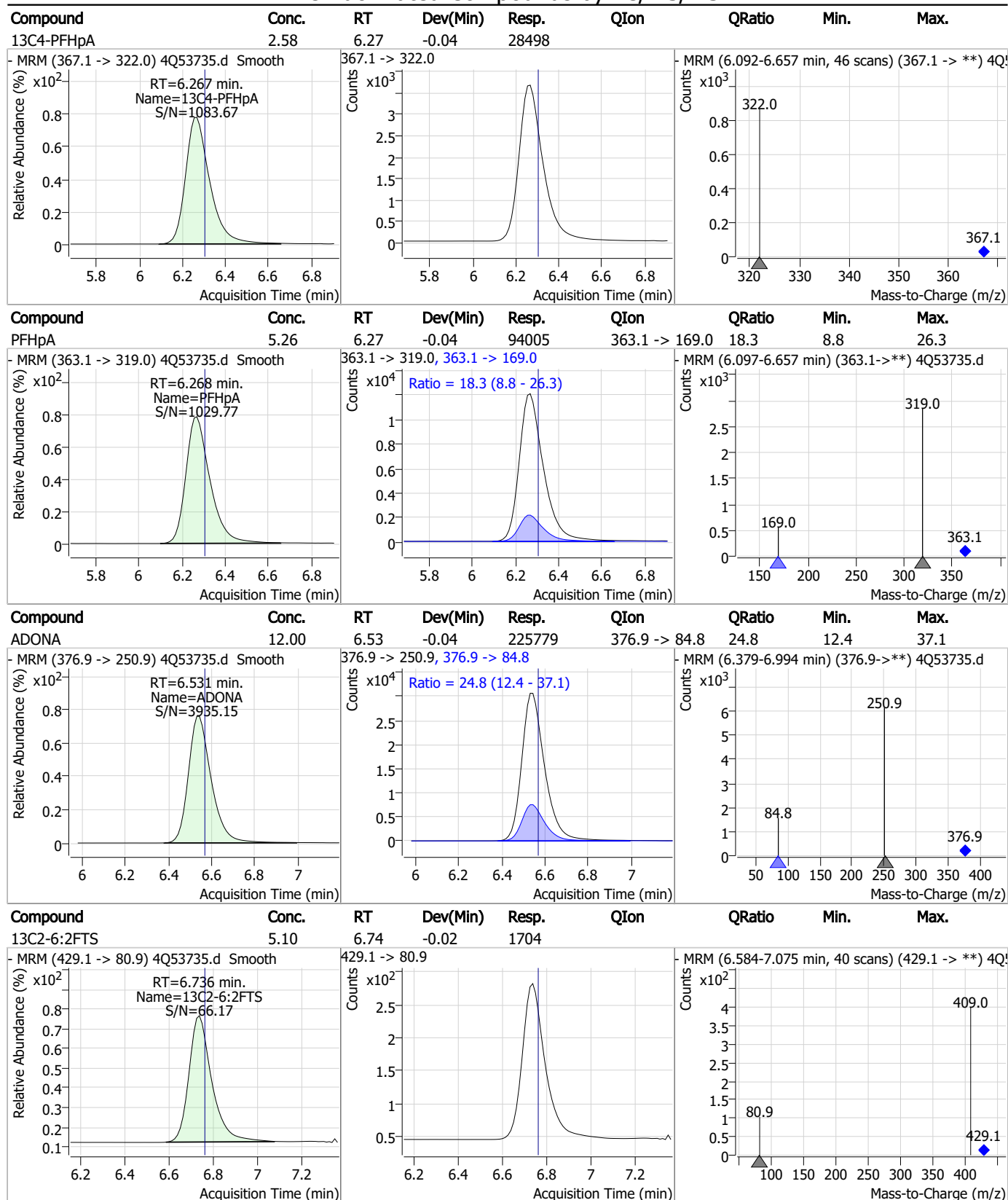
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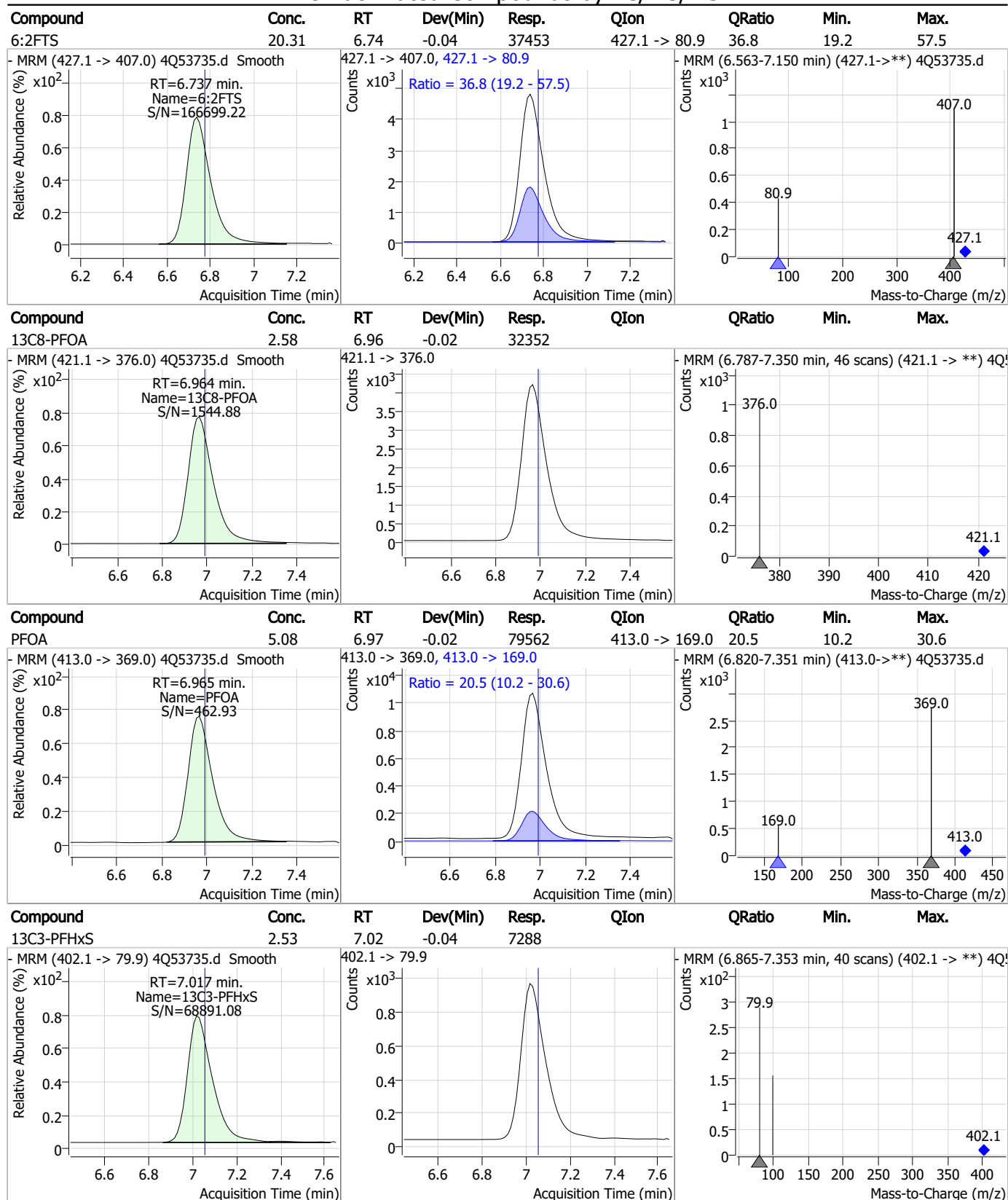
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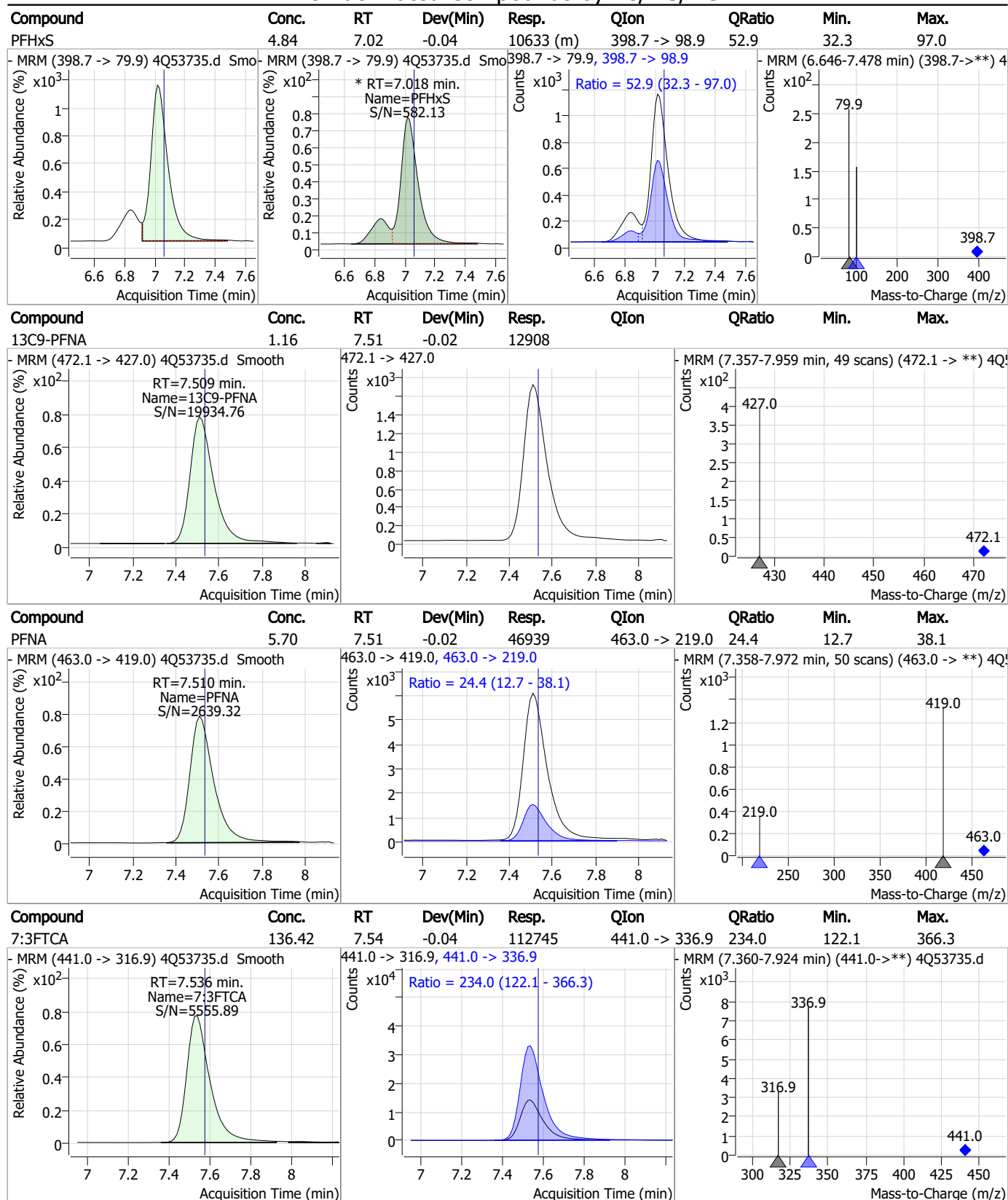
Perfluorinated Compounds by LC/MS/MS



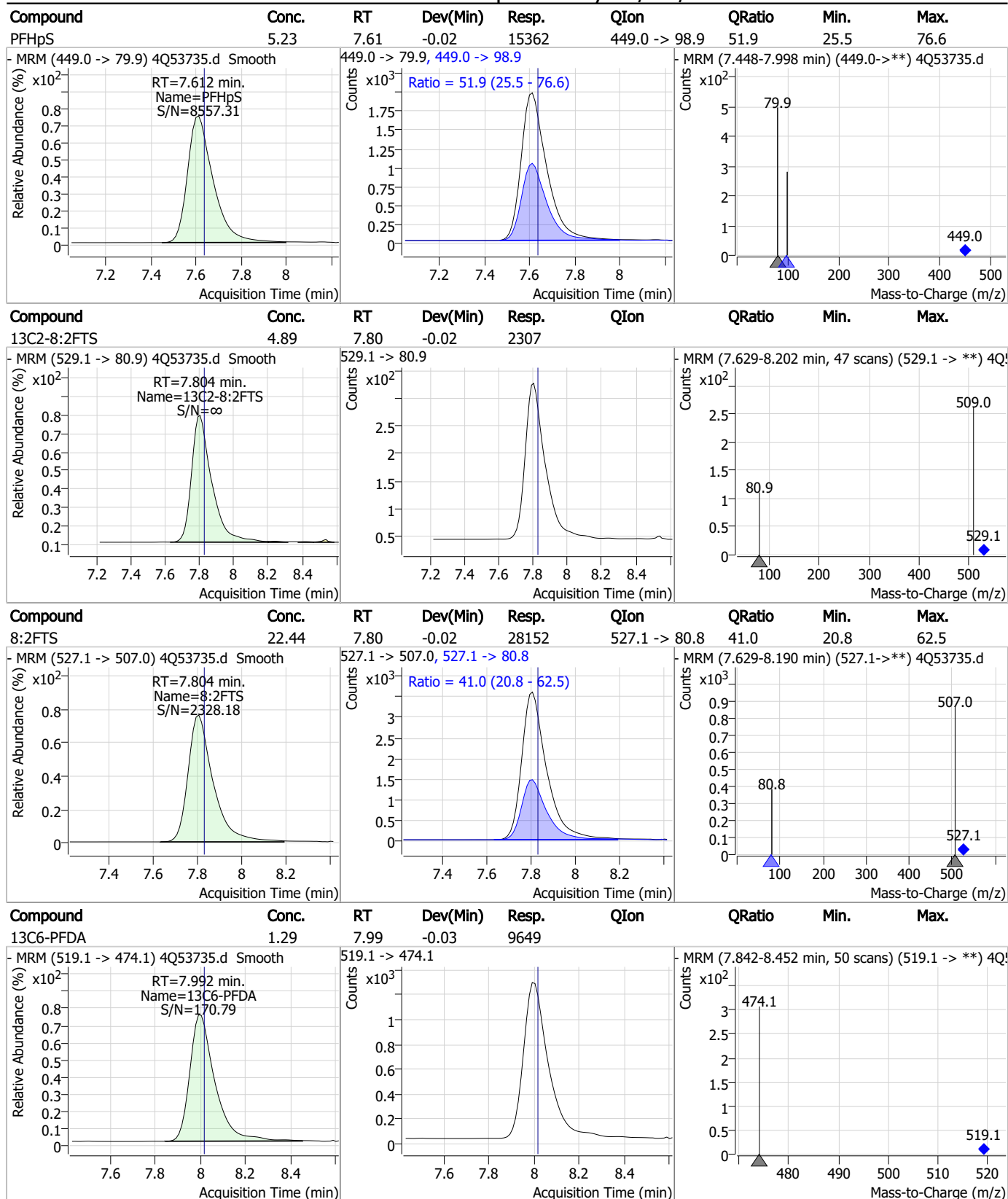
Perfluorinated Compounds by LC/MS/MS



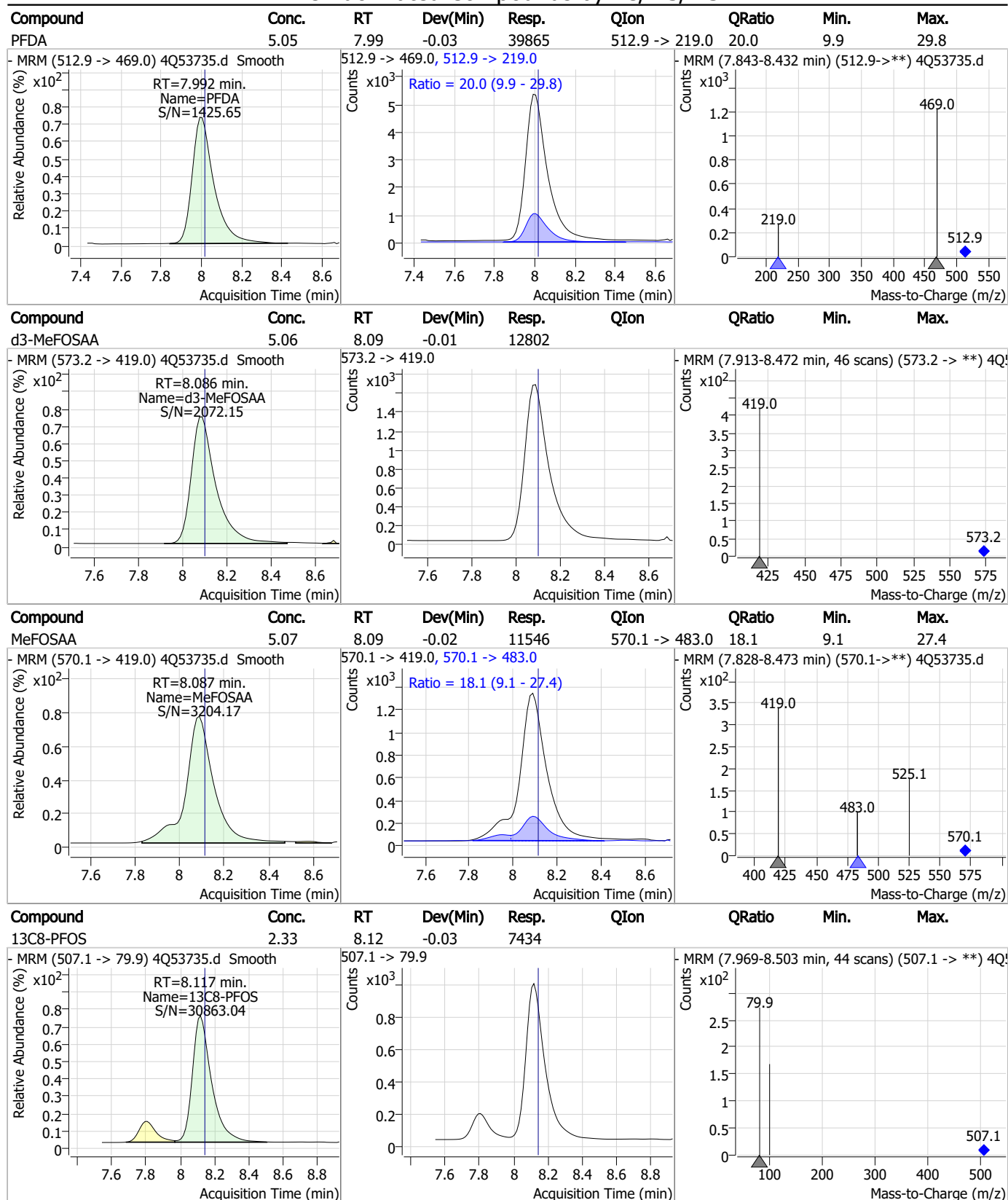
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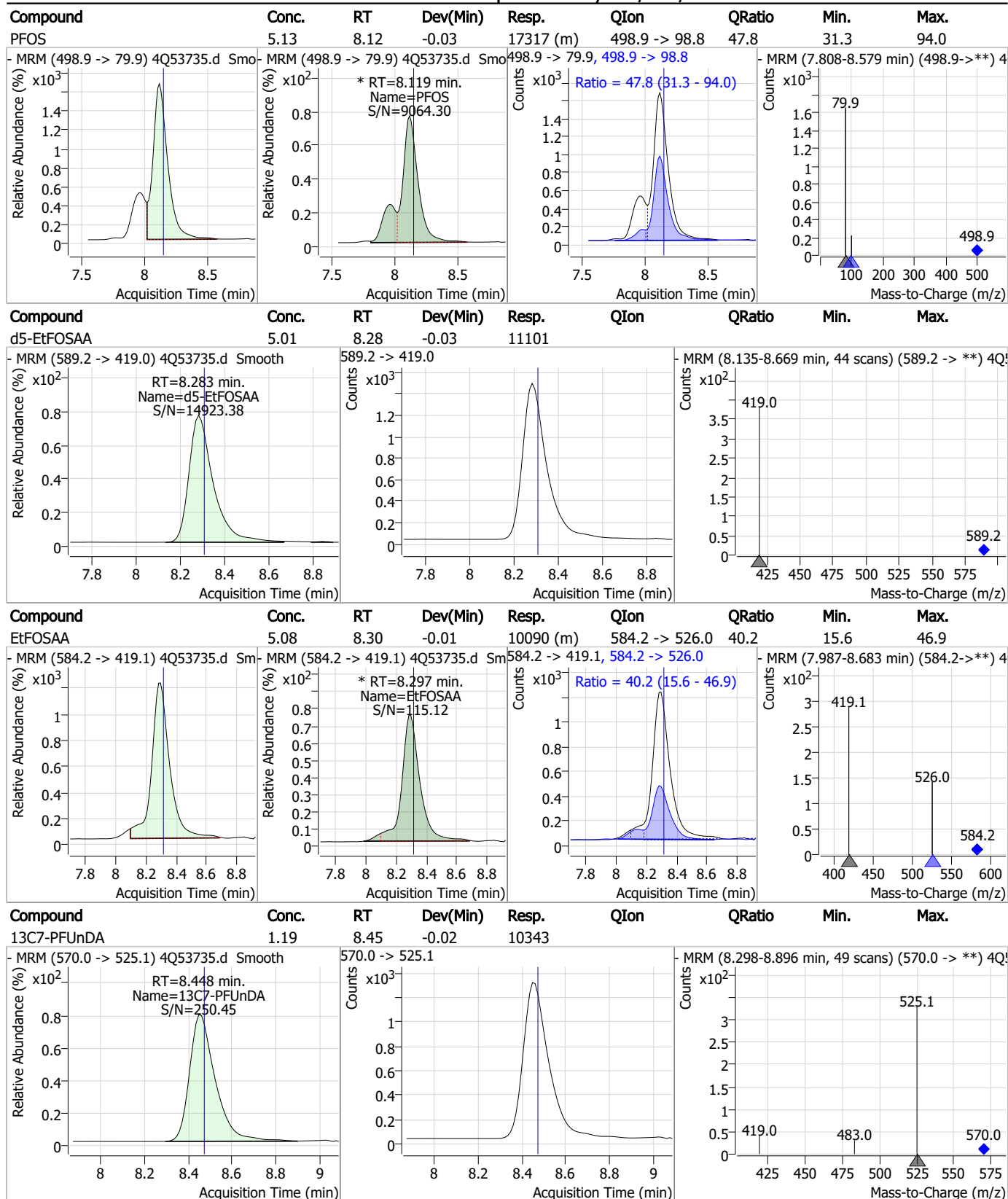
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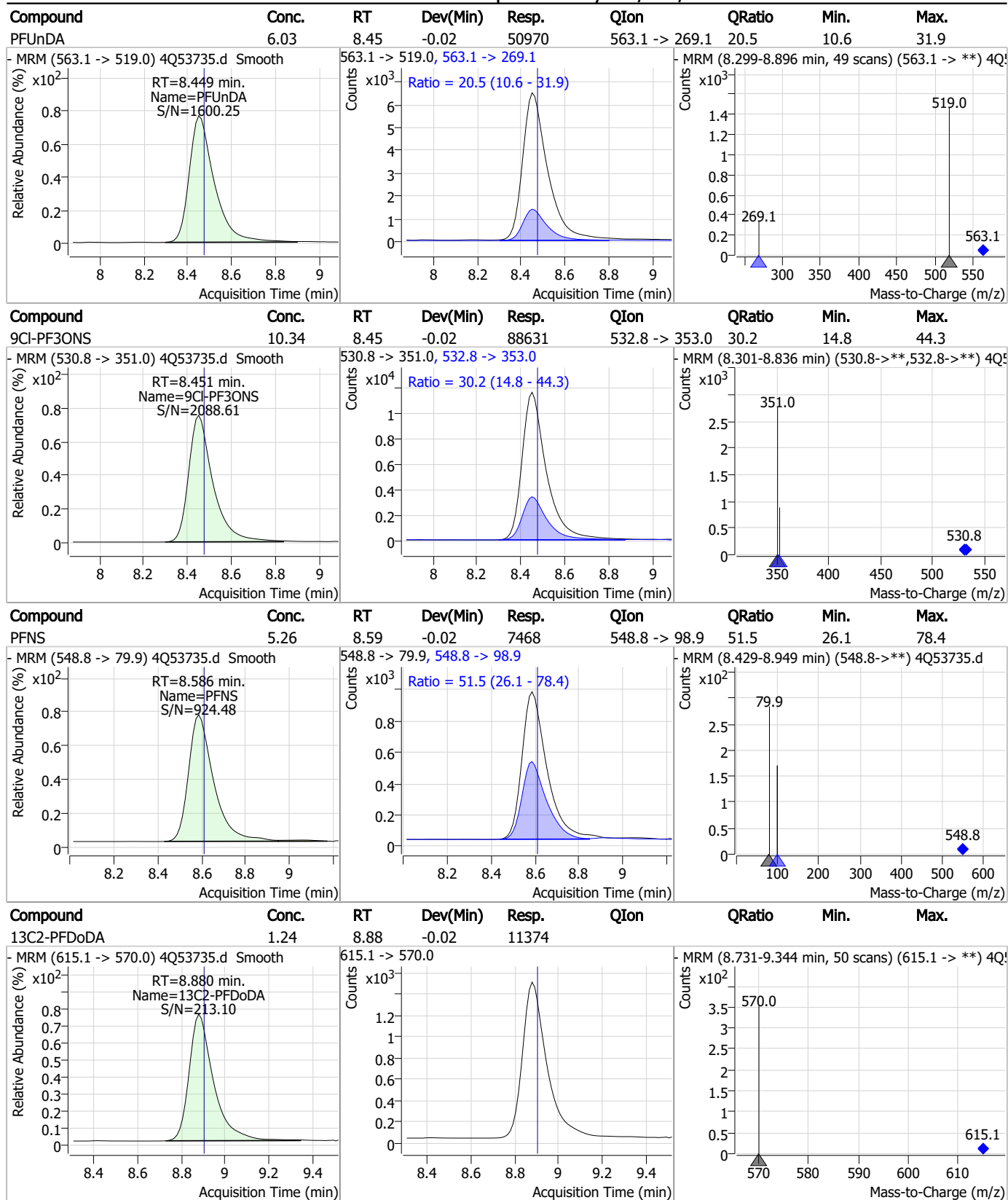
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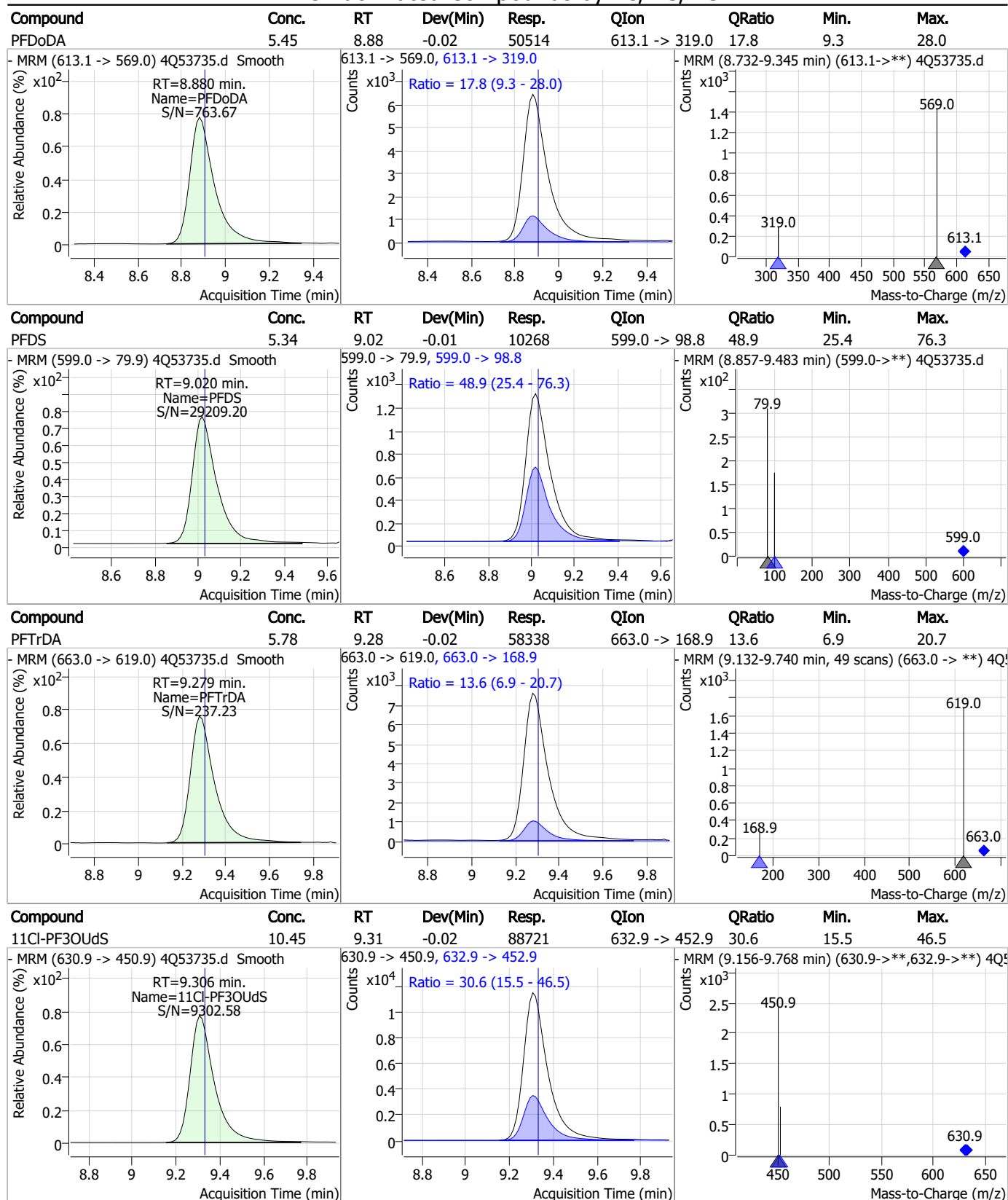
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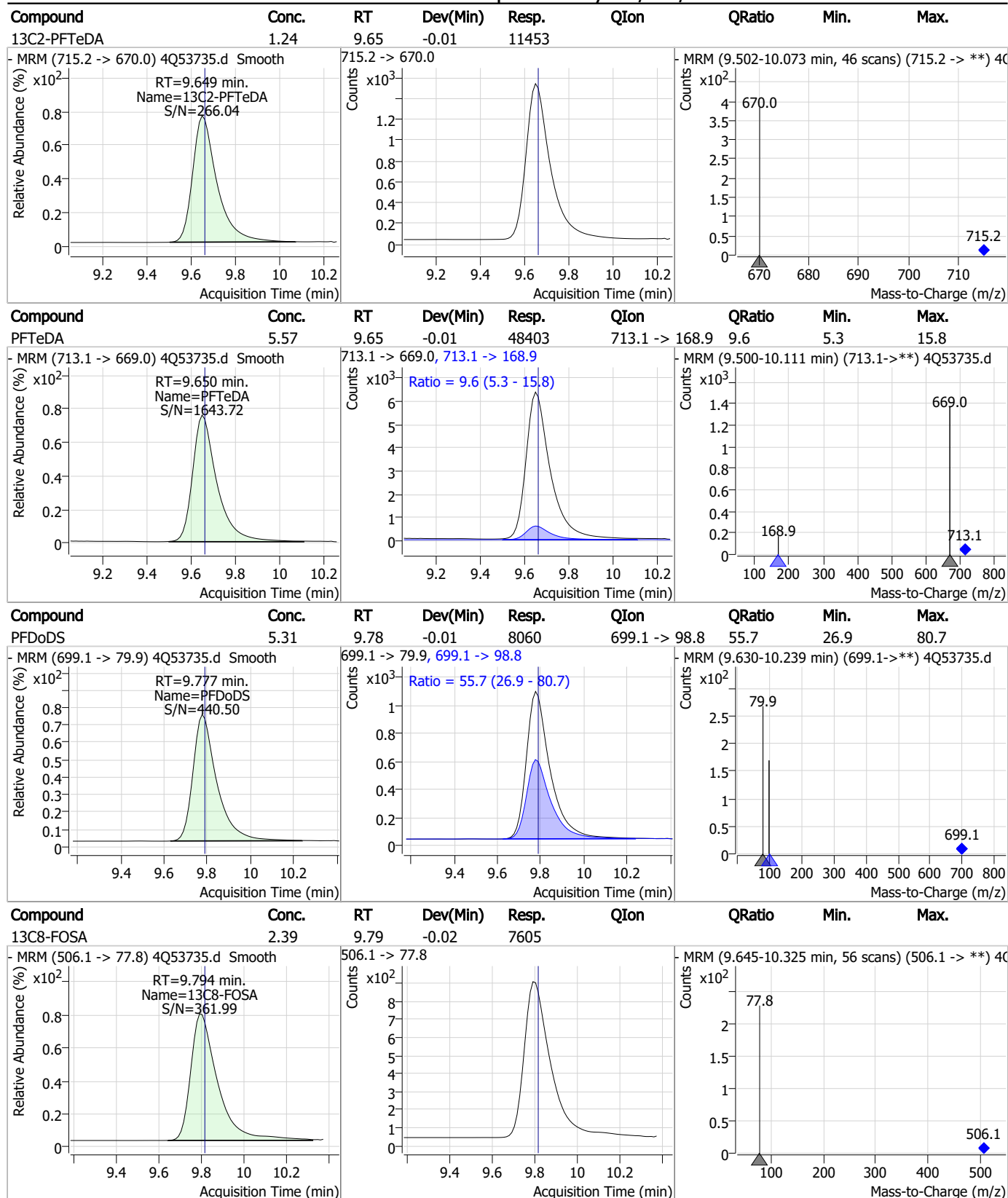
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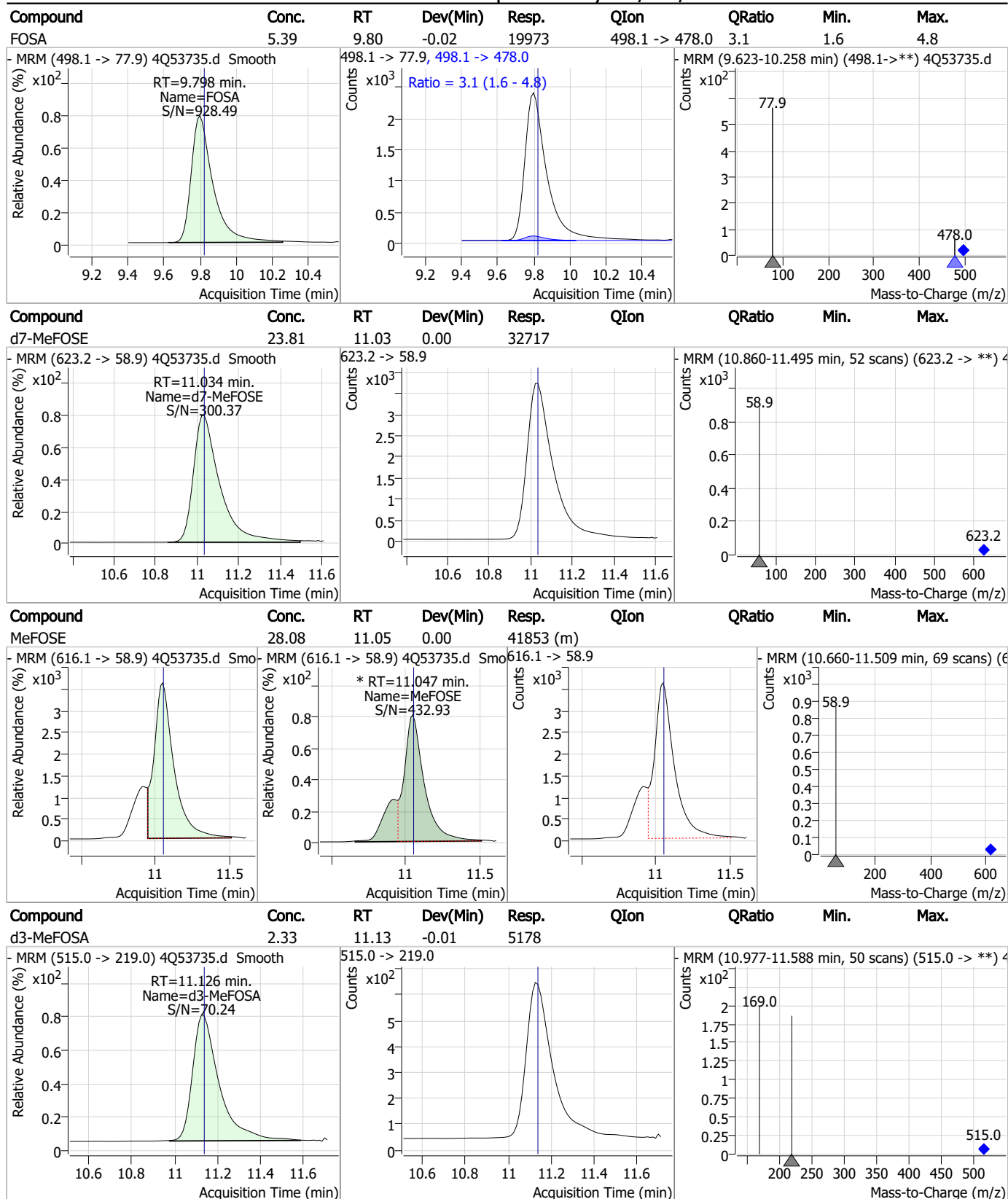
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



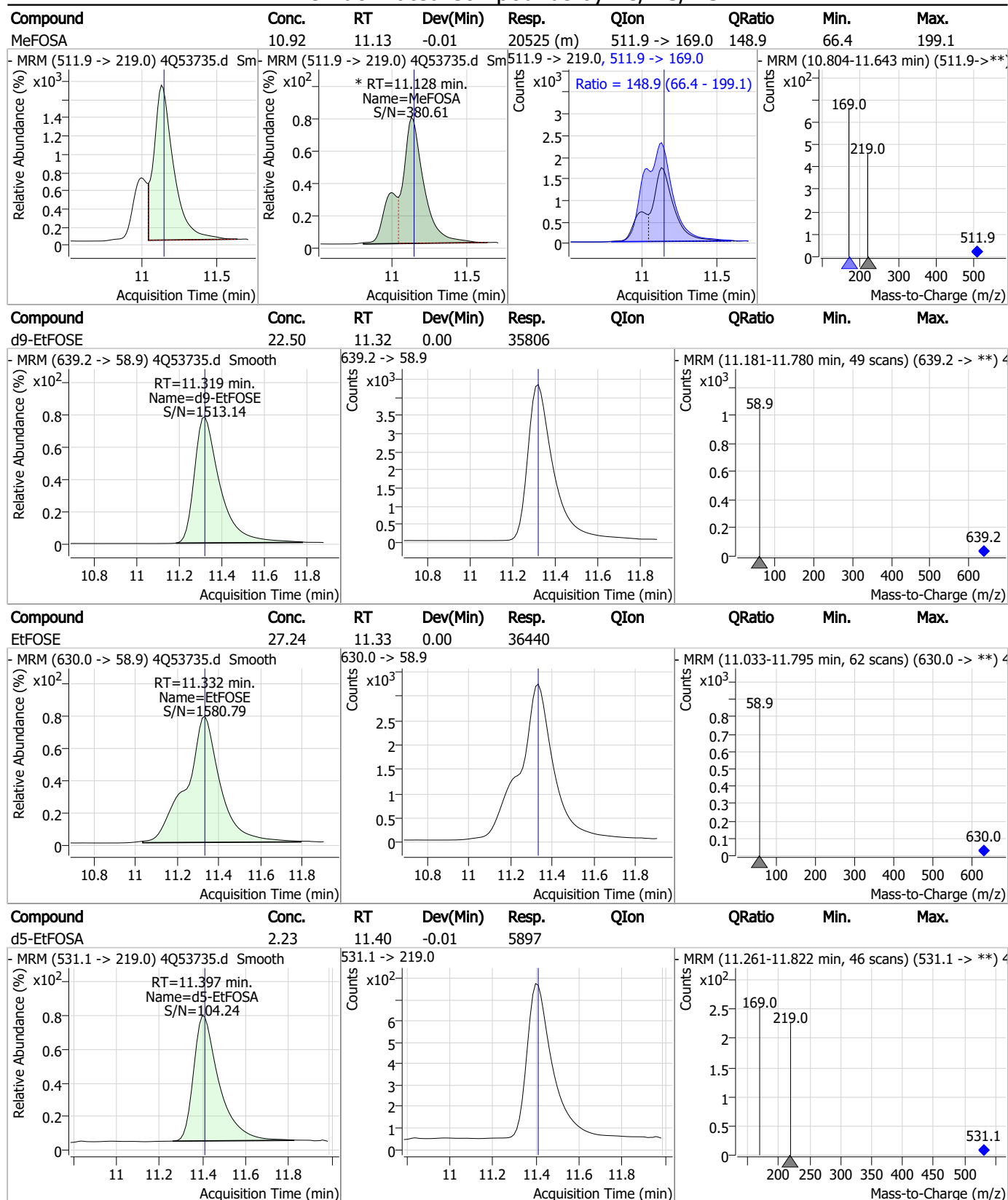
Perfluorinated Compounds by LC/MS/MS



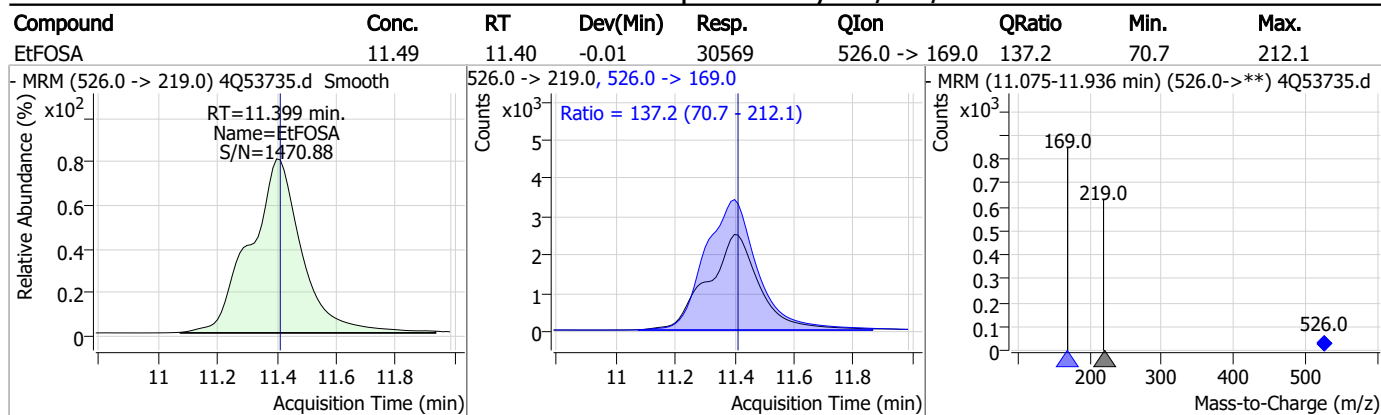
7.7.6

7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.7.6

7

Manual Integration Approval Summary

Sample Number: S4Q785-IC785

Method: EPA DRAFT 1633

Lab FileID: 4Q53735.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 16:58

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
MeFOSE	24448-09-7		11.05	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.6.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53736.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 5:13:19 PM
 Sample Name : ic785-6
 Vial : P1-A7
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	101423	10.00 µg/L	-0.075
M5-PFPeA	4.112	268.3 -> 223.0	44264	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	35040	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	33077	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	37726	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	17045	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	12122	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	13587	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	14949	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	13781	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	8881	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	9874	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	8463	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	9931	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	944	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	2074	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	3279	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	14049	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	32031	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	13039	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	38218	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	45896	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	7680	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	6280	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	7722	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	48228	5.00 µg/L	-0.087
18O2-PFHxS	7.016	403.0 -> 83.9	5491	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	43226	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	13115	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	17090	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	38220	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	944	5.02 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C2-6:2FTS	6.736	429.1 -> 80.9	2074	5.24 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.8%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3279	5.87 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	14949	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C2-PFTeDA	9.649	715.2 -> 670.0	13781	1.16 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.6%		
13C3-PFBS	5.152	302.1 -> 79.9	9874	2.40 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C3-PFHxS	7.017	402.1 -> 79.9	8463	2.49 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C4-PFBA	2.624	216.8 -> 171.9	101423	10.09 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C4-PFHpA	6.267	367.1 -> 322.0	33077	2.48 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C5-PFHxA	5.297	318.0 -> 273.0	35040	2.46 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C5-PFPeA	4.112	268.3 -> 223.0	44264	4.75 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C6-PFDA	8.004	519.1 -> 474.1	12122	1.26 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C7-PFUnDA	8.448	570.0 -> 525.1	13587	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C8-FOSA	9.794	506.1 -> 77.8	8881	2.41 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C8-PFOA	6.964	421.1 -> 376.0	37726	2.44 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C8-PFOS	8.117	507.1 -> 79.9	9931	2.69 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.7%		
13C9-PFNA	7.509	472.1 -> 427.0	17045	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.2%		
d3-MeFOSAA	8.074	573.2 -> 419.0	14049	4.80 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	32031	9.85 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.5%		
d3-MeFOSA	11.126	515.0 -> 219.0	6280	2.44 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.5%		
d5-EtFOSAA	8.283	589.2 -> 419.0	13039	5.08 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.7%		
d7-MeFOSE	11.022	623.2 -> 58.9	38218	24.02 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.1%		
d9-EtFOSE	11.319	639.2 -> 58.9	45896	24.91 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.6%		
d5-EtFOSA	11.397	531.1 -> 219.0	7680	2.51 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.5%		

Target Compounds

					QValue
4:2FTS	5.009	327.1 -> 307.0	70971	38.05 µg/L	98
		327.1 -> 80.9	28881		
6:2FTS	6.737	427.1 -> 407.0	85547	38.12 µg/L	97
		427.1 -> 80.9	31437		
8:2FTS	7.804	527.1 -> 507.0	60896	34.15 µg/L	99
		527.1 -> 80.8	25806		
EtFOSAA	8.284	584.2 -> 419.1	25163	10.78 µg/L	82
		584.2 -> 526.0	10299		
FOSA	9.798	498.1 -> 77.9	45724	10.56 µg/L	100
		498.1 -> 478.0	1439		
MeFOSAA	8.087	570.1 -> 419.0	27131	10.87 µg/L	98
		570.1 -> 483.0	5190		
PFBA	2.620	212.8 -> 168.9	163791	44.41 µg/L	100
PFBS	5.153	298.7 -> 79.9	32775	9.35 µg/L	99
		298.7 -> 98.8	12468		
PFDA	7.992	512.9 -> 469.0	94868	9.57 µg/L	100
		512.9 -> 219.0	18740		
PFDODA	8.880	613.1 -> 569.0	117847	9.67 µg/L	98
		613.1 -> 319.0	20743		
PFDS	9.020	599.0 -> 79.9	23899	9.30 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	11821	10.84	µg/L	100
		363.1 -> 319.0	224820			
PFHpS	7.612	363.1 -> 169.0	39665	9.19	µg/L	99
		449.0 -> 79.9	36068			
PFHxA	5.300	449.0 -> 98.9	18279	10.67	µg/L	99
		313.0 -> 269.0	130589			
PFHxS	7.018	313.0 -> 118.9	3957	9.67	µg/L	83
		398.7 -> 79.9	24675			
PFNA	7.510	398.7 -> 98.9	12647	10.18	µg/L	97
		463.0 -> 419.0	110657			
PFNS	8.586	463.0 -> 219.0	26475	9.47	µg/L	99
		548.8 -> 79.9	17954			
PFOA	6.965	548.8 -> 98.9	9300	10.47	µg/L	100
		413.0 -> 369.0	191220			
PFOS	8.119	413.0 -> 169.0	38578	8.18	µg/L	84
		498.9 -> 79.9	36868			
PFPeA	4.114	498.9 -> 98.8	18649	22.48	µg/L	100
		263.0 -> 219.0	216436			
PFPeS	6.257	349.1 -> 79.9	26744	9.62	µg/L	100
		349.1 -> 98.9	11641			
PFTeDA	9.650	713.1 -> 669.0	110340	10.55	µg/L	99
		713.1 -> 168.9	11158			
PFTrDA	9.279	663.0 -> 619.0	135078	10.18	µg/L	100
		663.0 -> 168.9	18514			
PFUnDA	8.449	563.1 -> 519.0	111429	10.03	µg/L	99
		563.1 -> 269.1	23236			
11CI-PF3OUdS	9.306	630.9 -> 450.9	207831	20.78	µg/L	99
		632.9 -> 452.9	63249			
9CI-PF3ONS	8.451	530.8 -> 351.0	207141	20.52	µg/L	100
		532.8 -> 353.0	61570			
ADONA	6.531	376.9 -> 250.9	533610	24.07	µg/L	99
		376.9 -> 84.8	128766			
HFPO-DA	5.653	284.9 -> 168.9	72568	21.39	µg/L	99
		284.9 -> 184.9	7101			
3:3FTCA	3.561	241.0 -> 177.0	31420	54.68	µg/L	100
		241.0 -> 117.0	2891			
5:3FTCA	5.983	341.0 -> 237.1	585796	271.92	µg/L	99
		341.0 -> 217.0	419538			
7:3FTCA	7.524	441.0 -> 316.9	259966	269.00	µg/L	97
		441.0 -> 336.9	620798			
EtFOSA	11.399	526.0 -> 219.0	70962	20.49	µg/L	98
		526.0 -> 169.0	98692			
EtFOSE	11.332	630.0 -> 58.9	86864	50.66	µg/L	100
		511.9 -> 219.0	47397			
MeFOSA	11.128	511.9 -> 169.0	68635	20.79	µg/L	90
		616.1 -> 58.9	93200			
MeFOSE	11.047	699.1 -> 79.9	18557	53.52	µg/L	100
		699.1 -> 98.8	10633			
PFDoDS	9.777	295.0 -> 201.0	18700	9.16	µg/L	95
		295.0 -> 84.9	4856			
NFDHA	5.179	279.0 -> 85.1	123139	22.20	µg/L	100
		229.0 -> 84.9	137682			
PFMBA	3.265	314.8 -> 134.9	188207	22.33	µg/L	100
		314.8 -> 82.9	6508			
PFEESA	5.684			19.43	µg/L	98

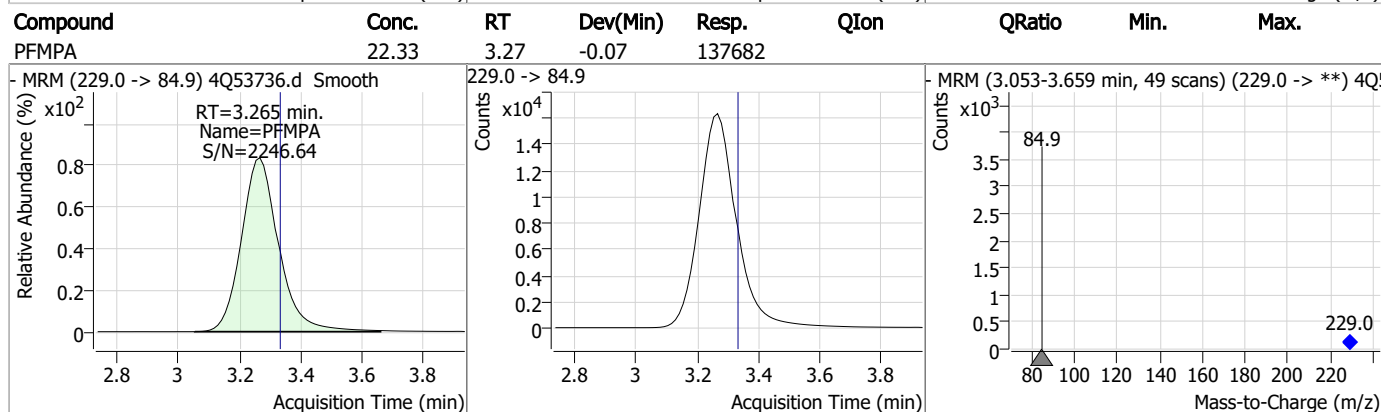
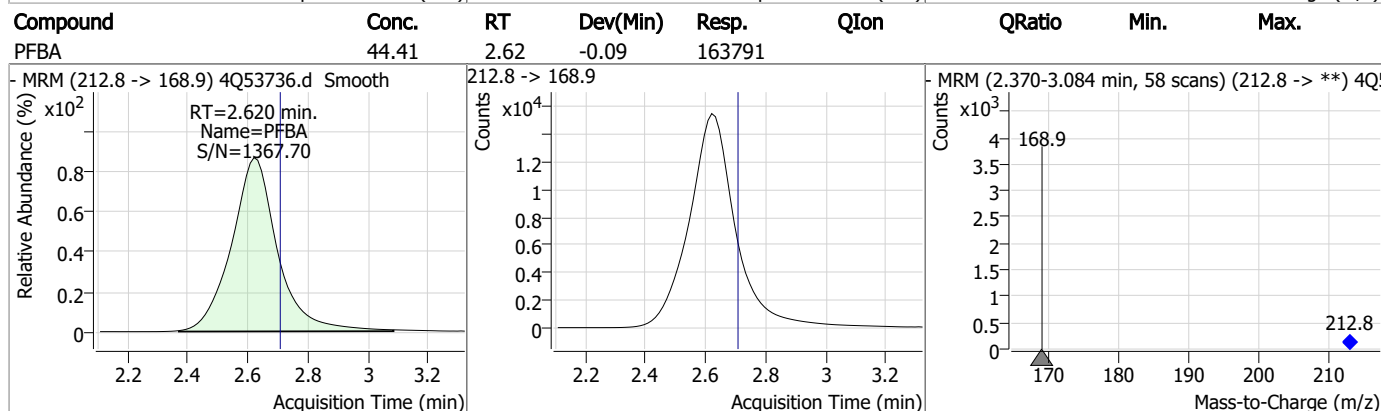
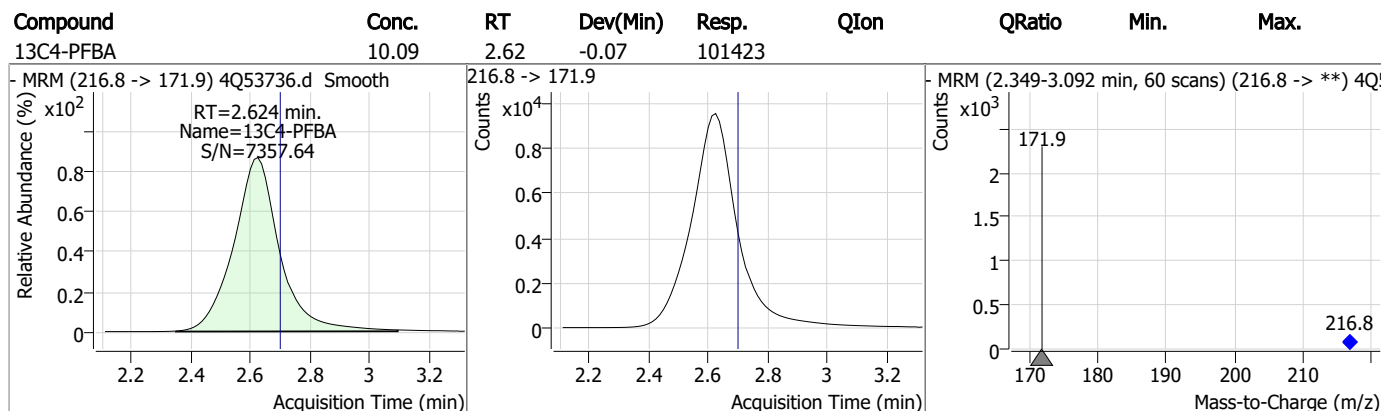
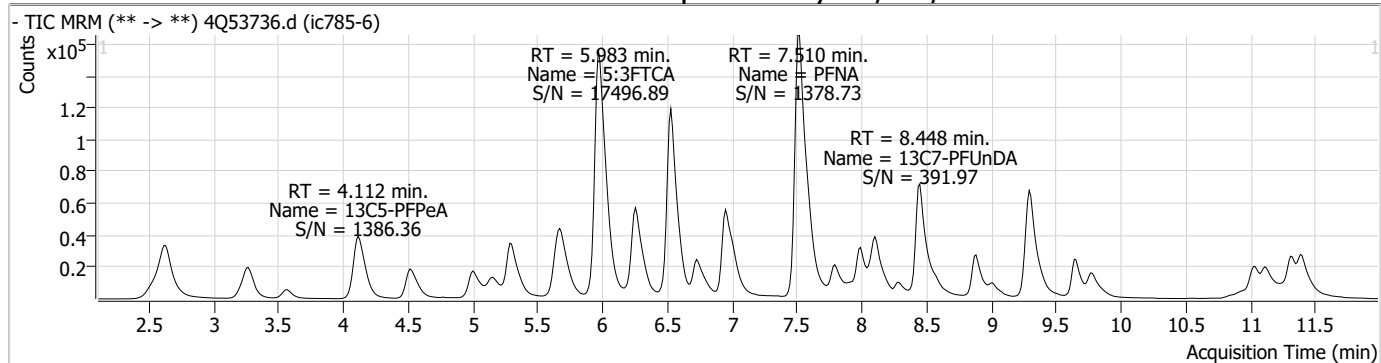
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

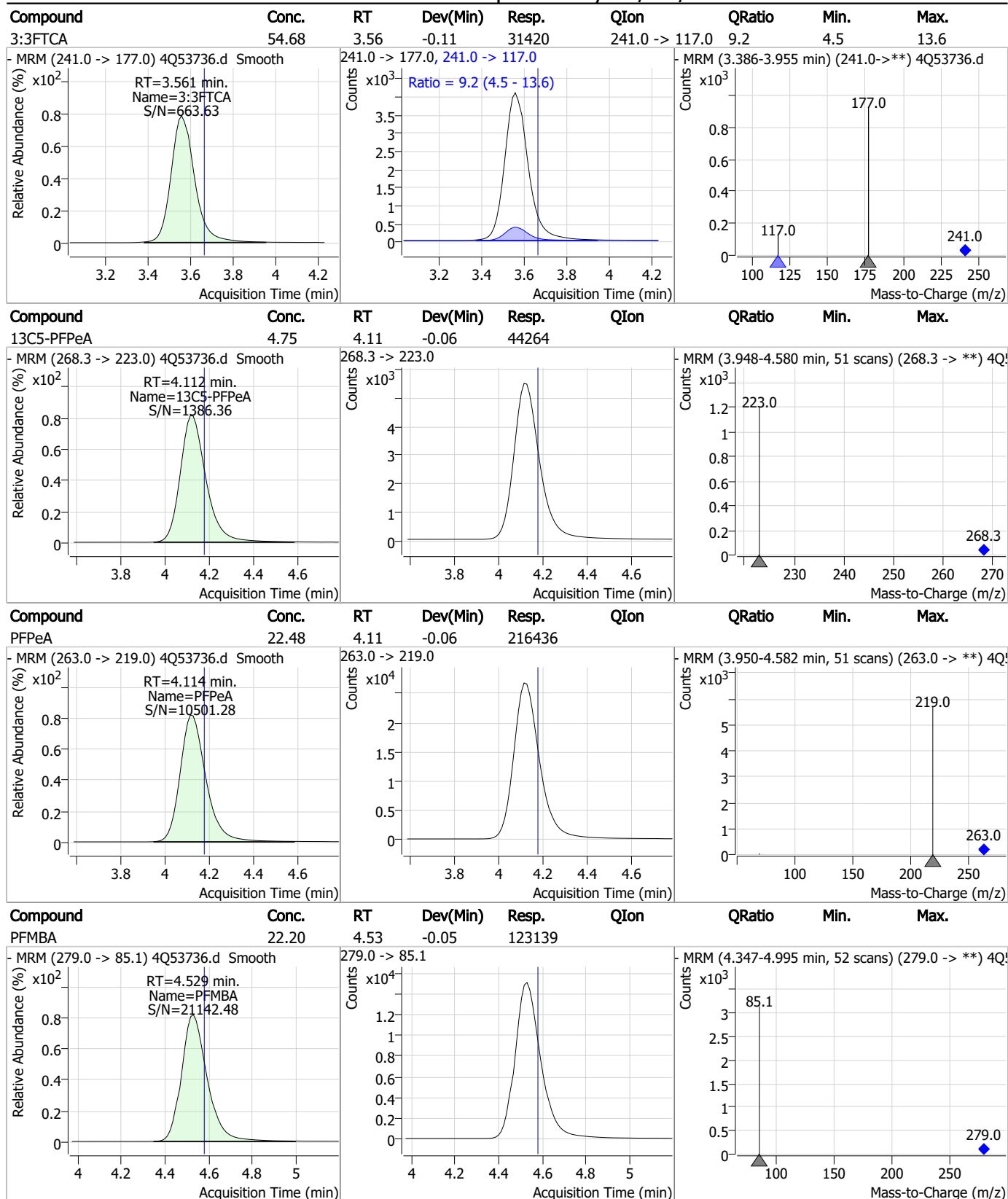
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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7.7.7
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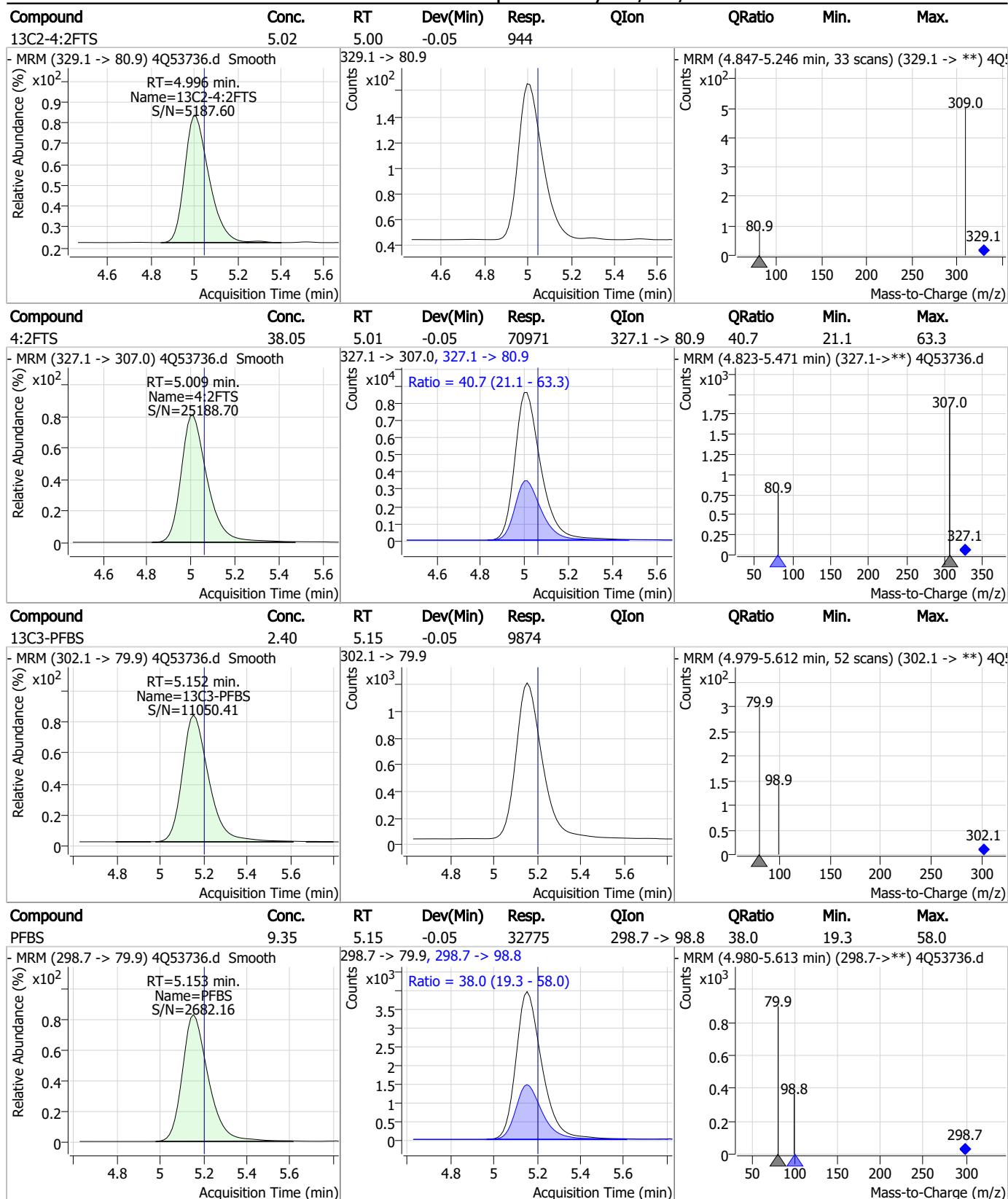
Perfluorinated Compounds by LC/MS/MS



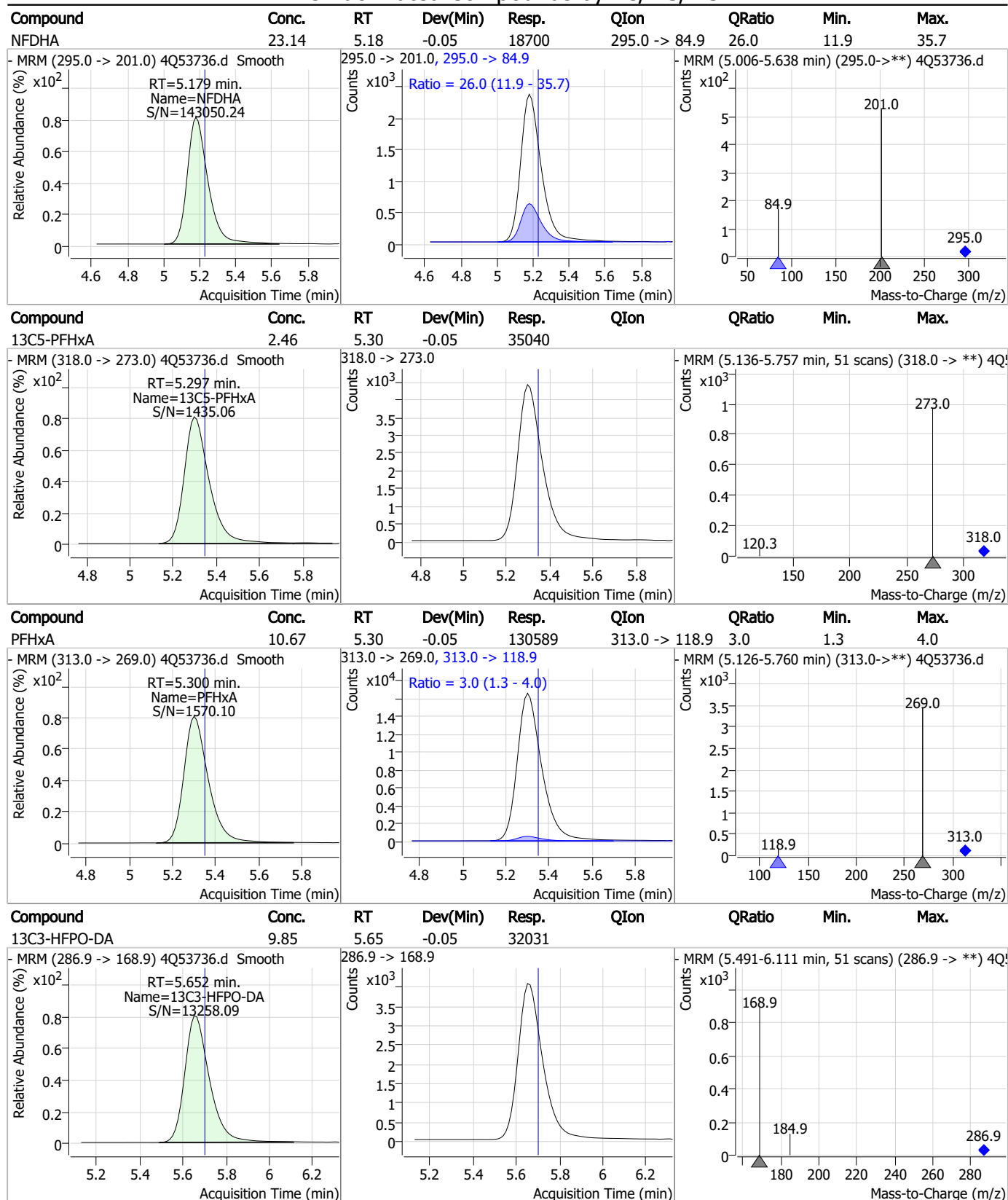
Perfluorinated Compounds by LC/MS/MS



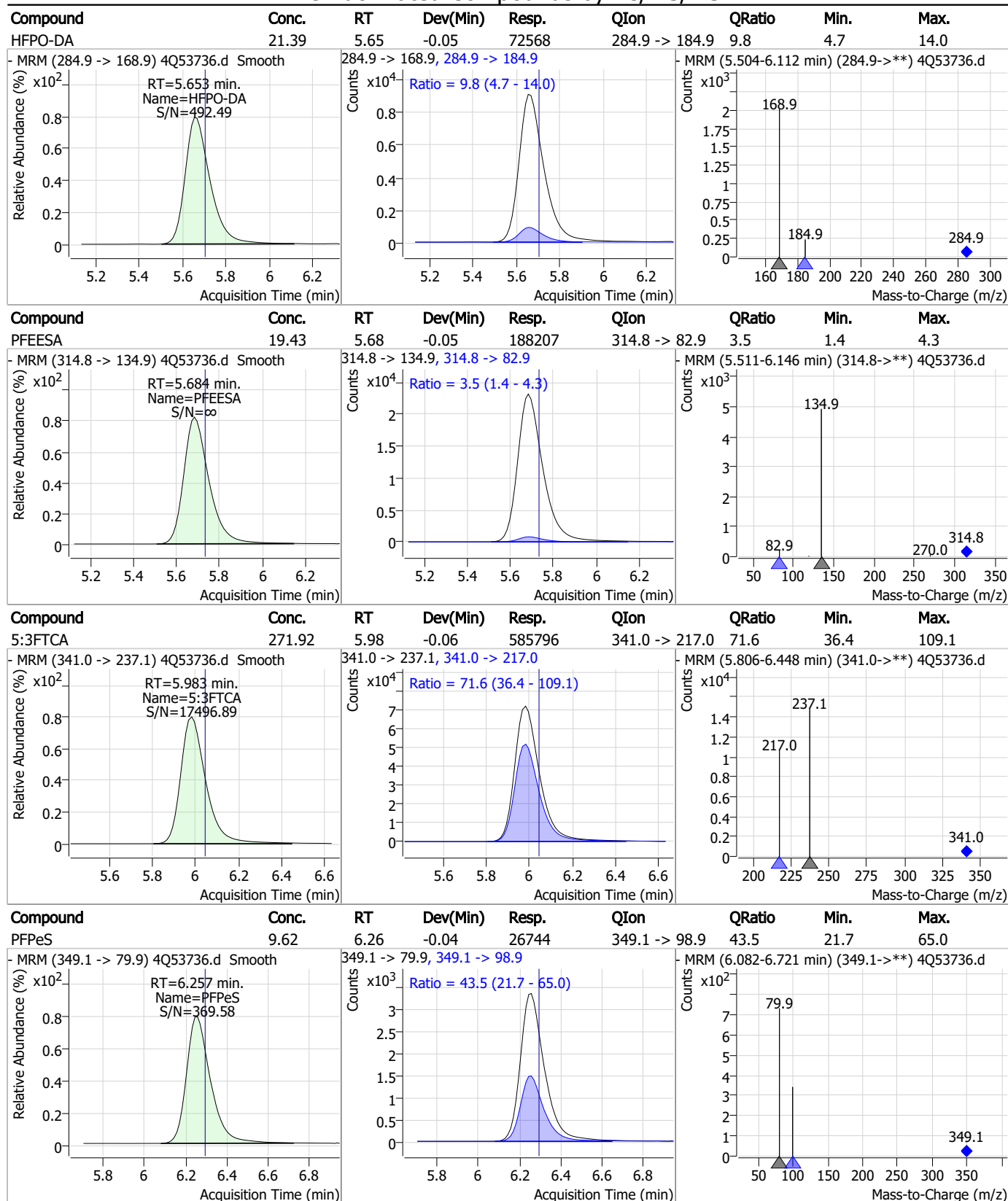
Perfluorinated Compounds by LC/MS/MS



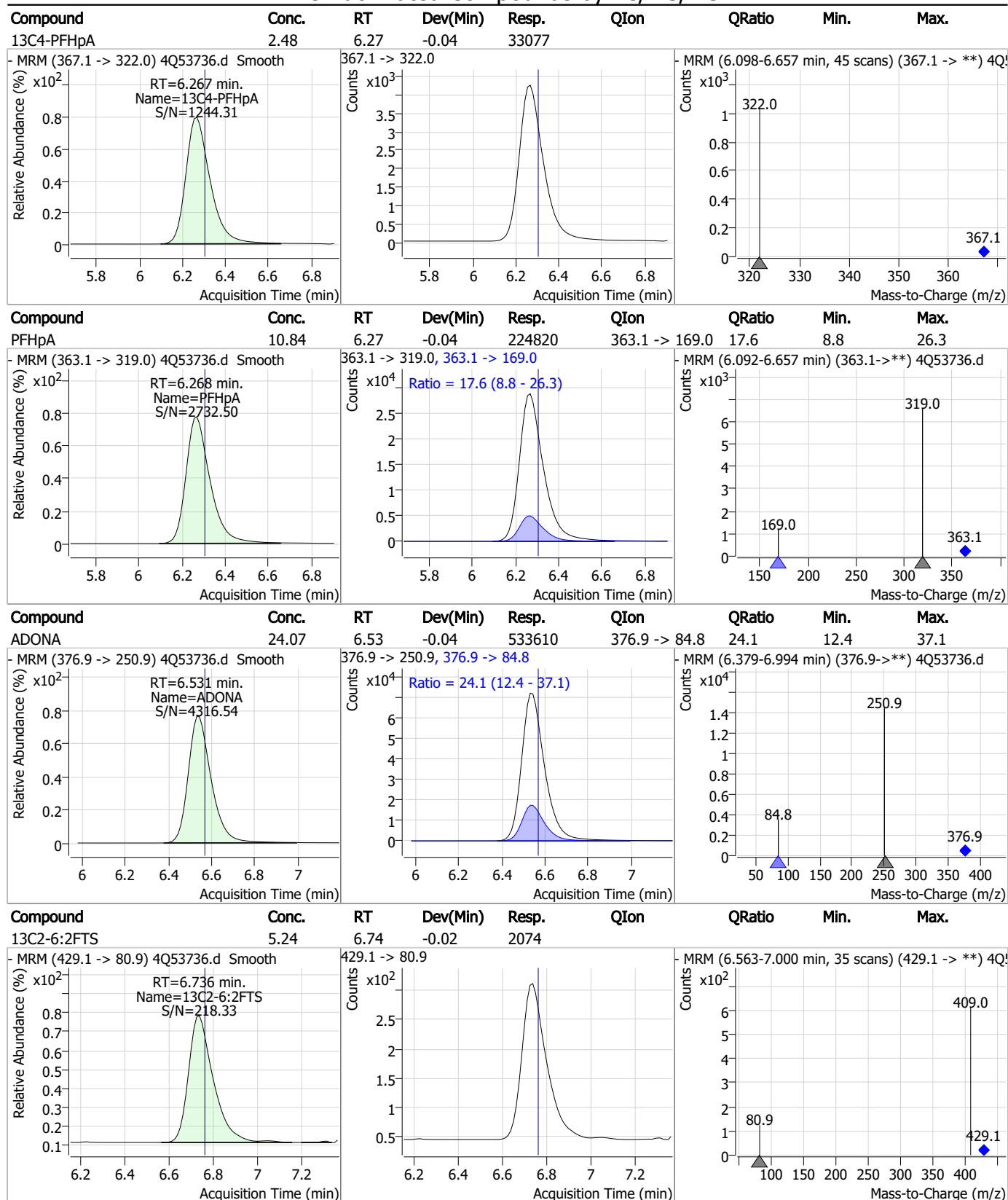
Perfluorinated Compounds by LC/MS/MS



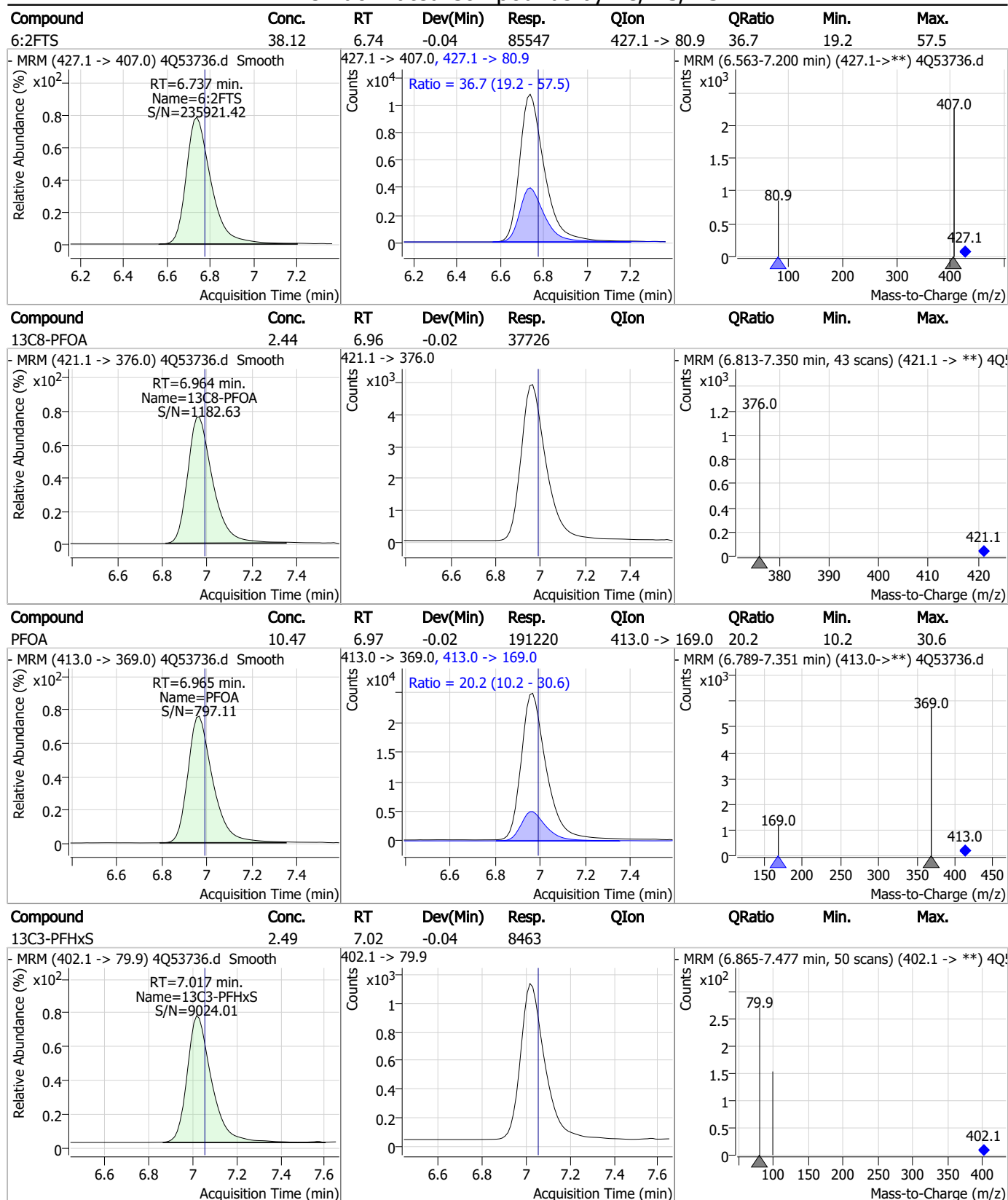
Perfluorinated Compounds by LC/MS/MS



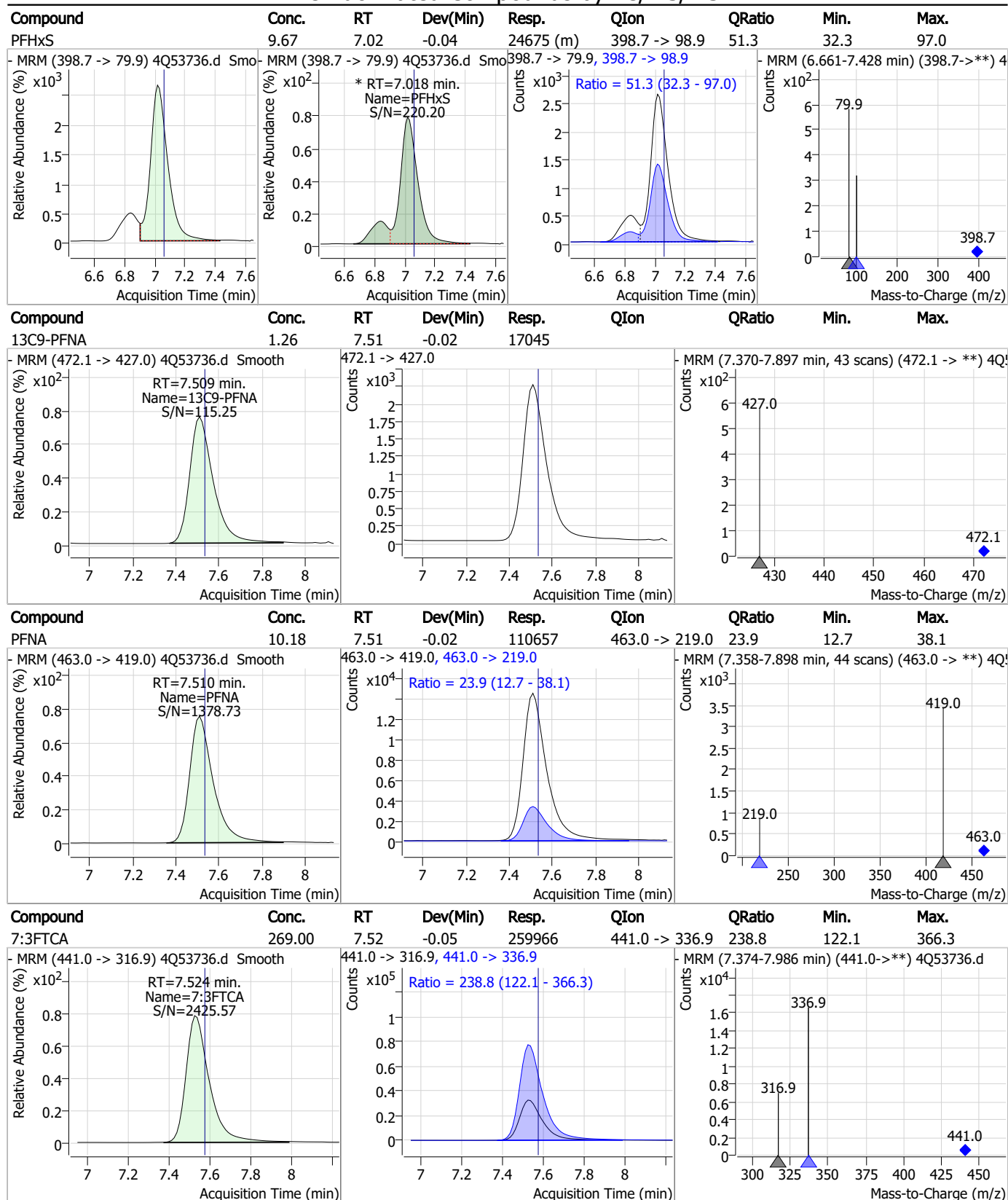
Perfluorinated Compounds by LC/MS/MS



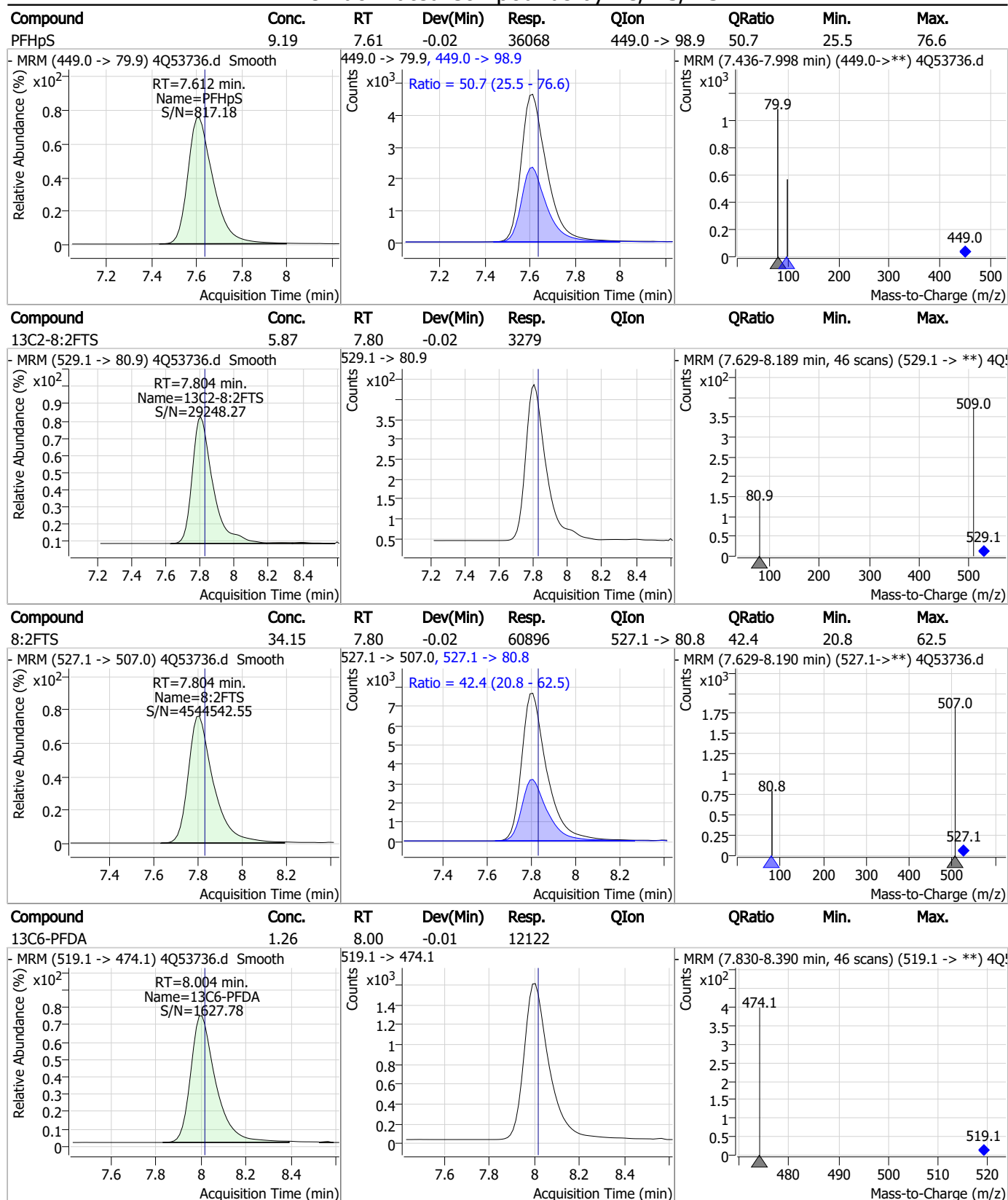
Perfluorinated Compounds by LC/MS/MS



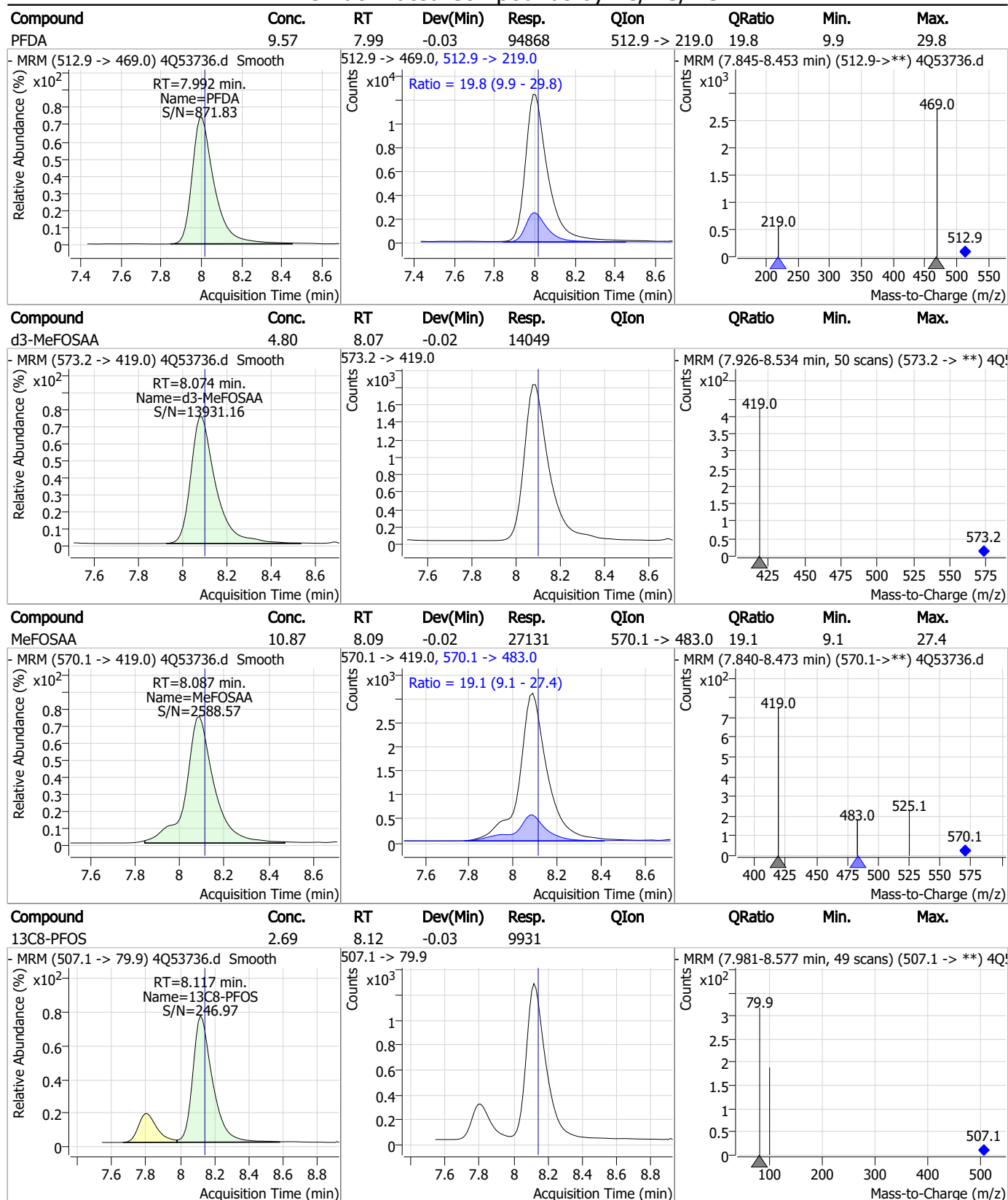
Perfluorinated Compounds by LC/MS/MS



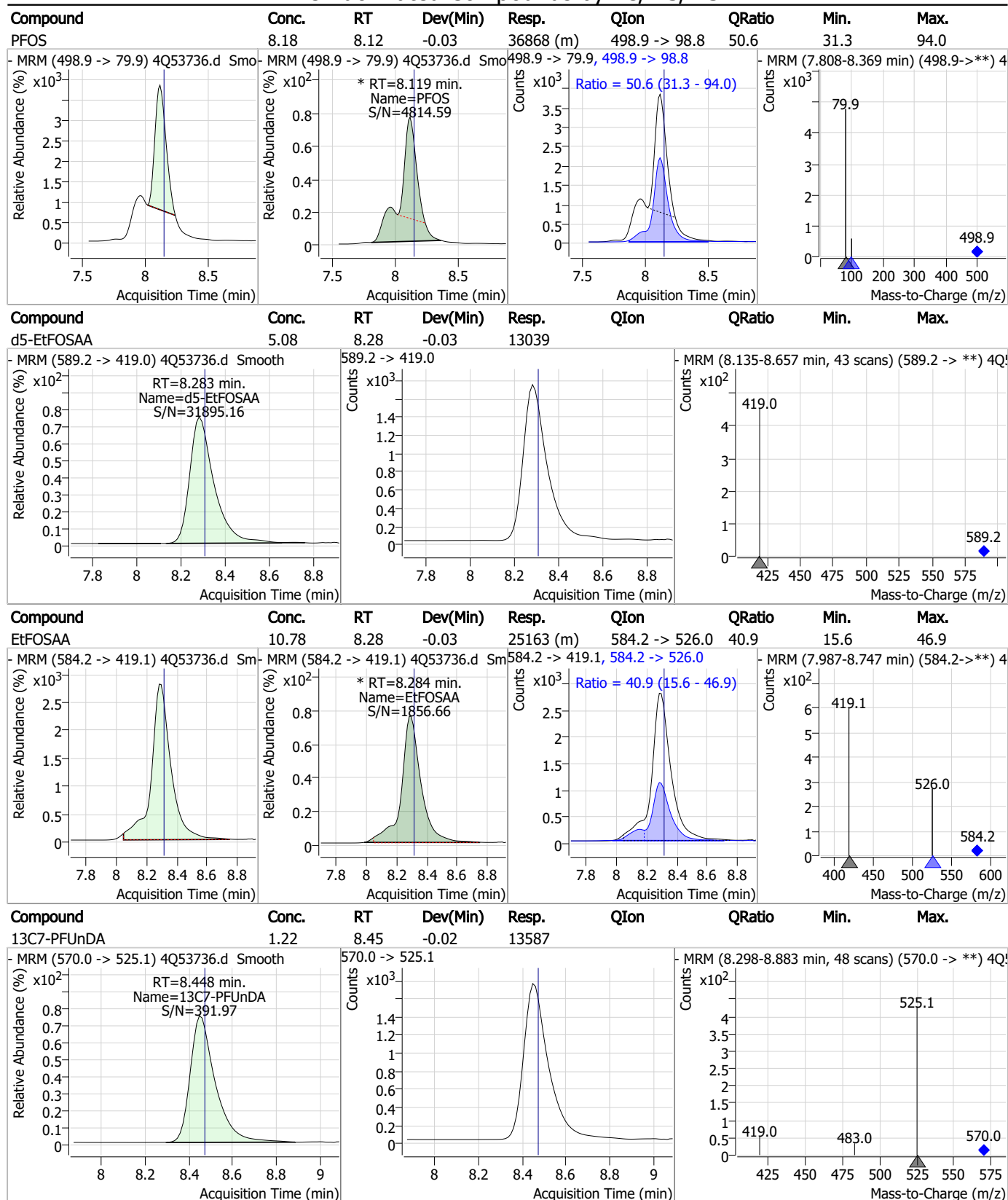
Perfluorinated Compounds by LC/MS/MS



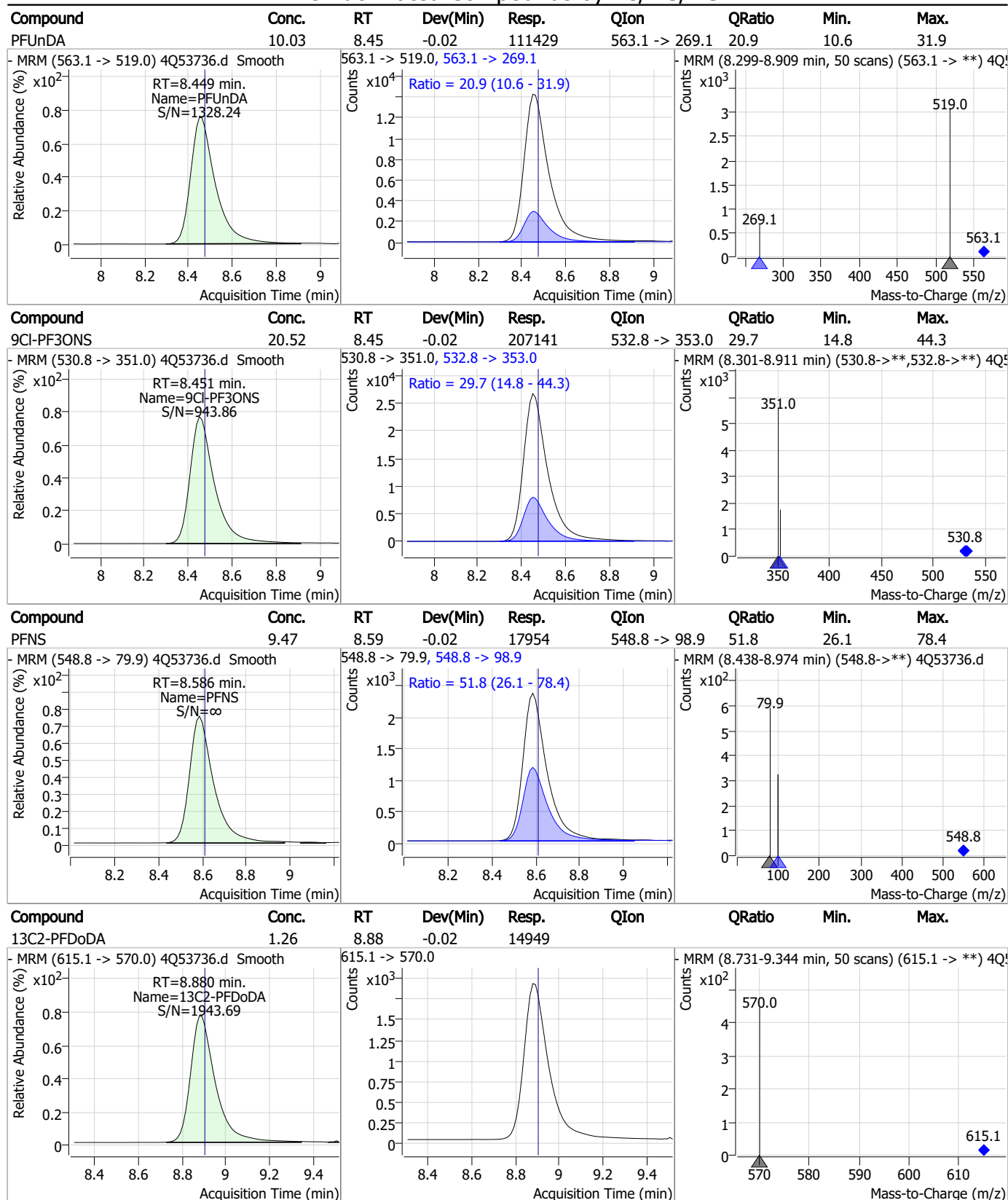
Perfluorinated Compounds by LC/MS/MS



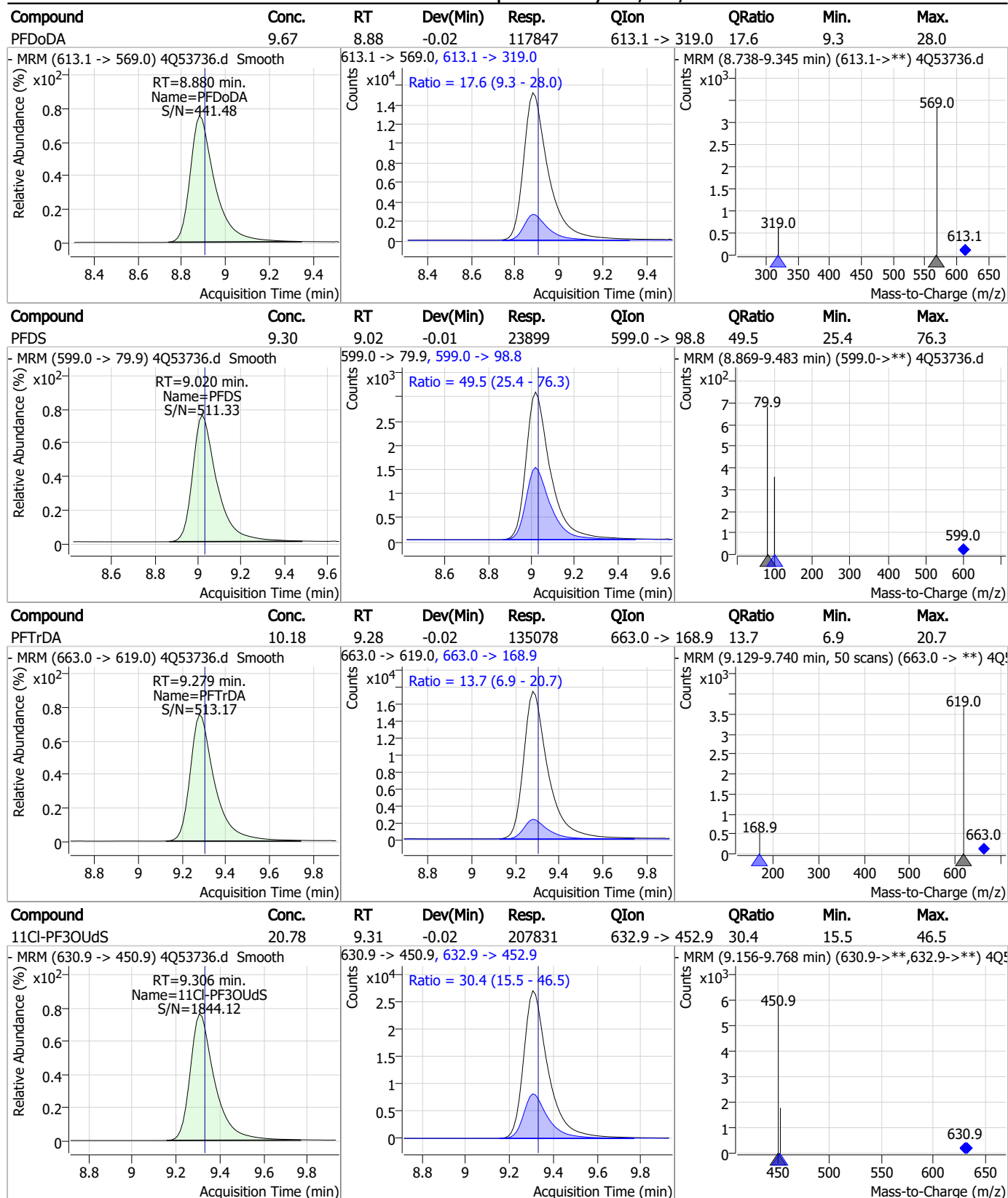
Perfluorinated Compounds by LC/MS/MS



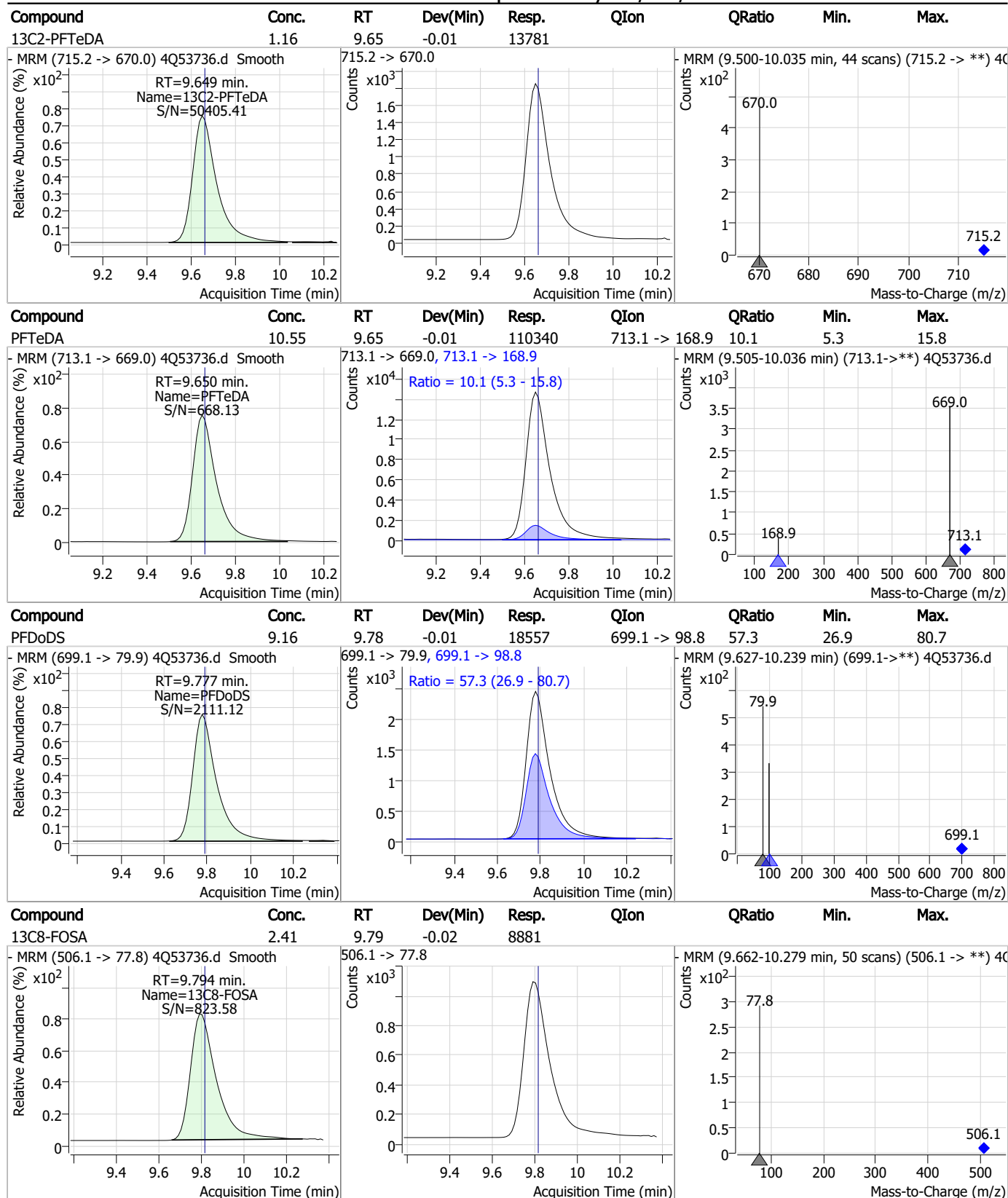
Perfluorinated Compounds by LC/MS/MS



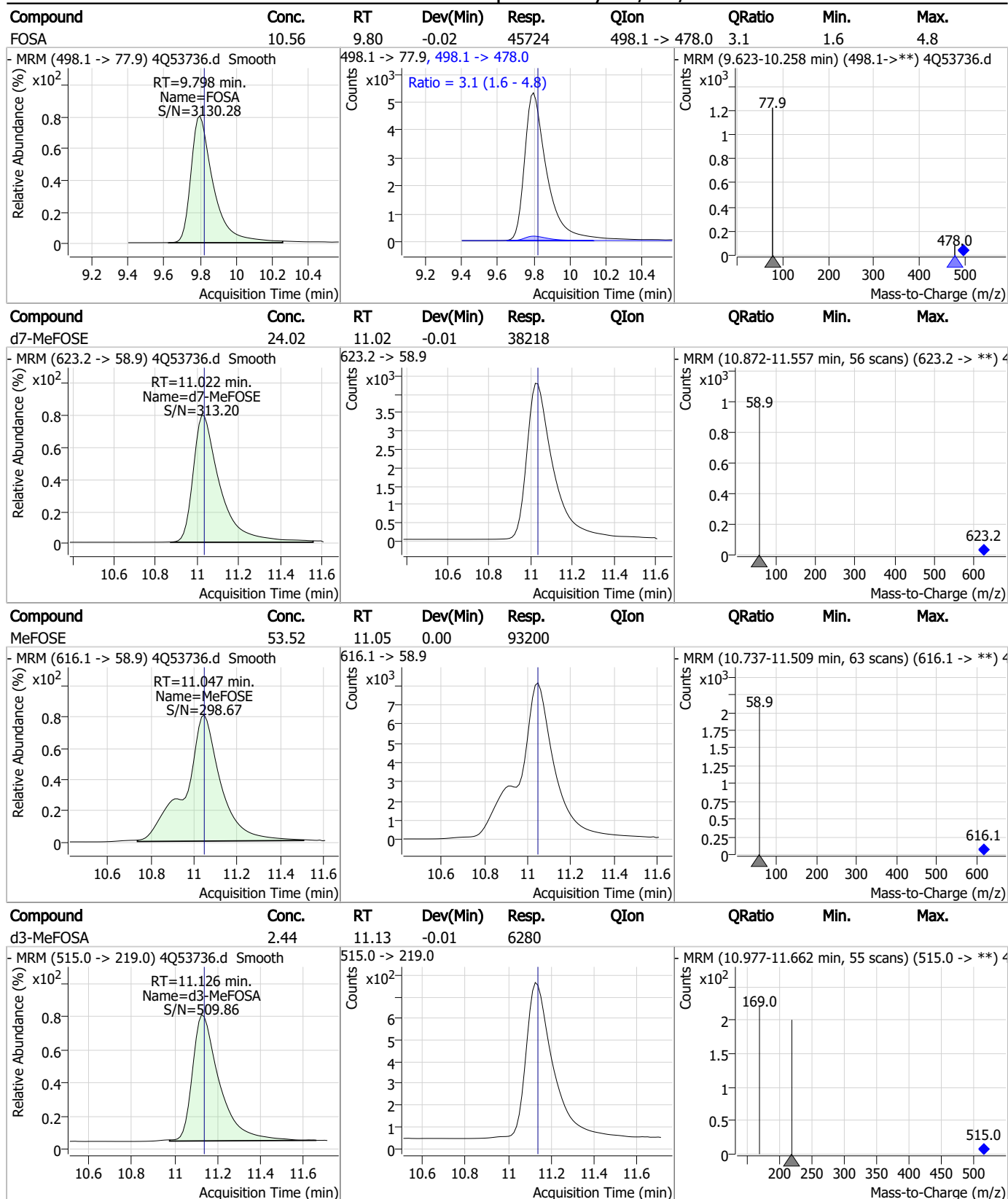
Perfluorinated Compounds by LC/MS/MS



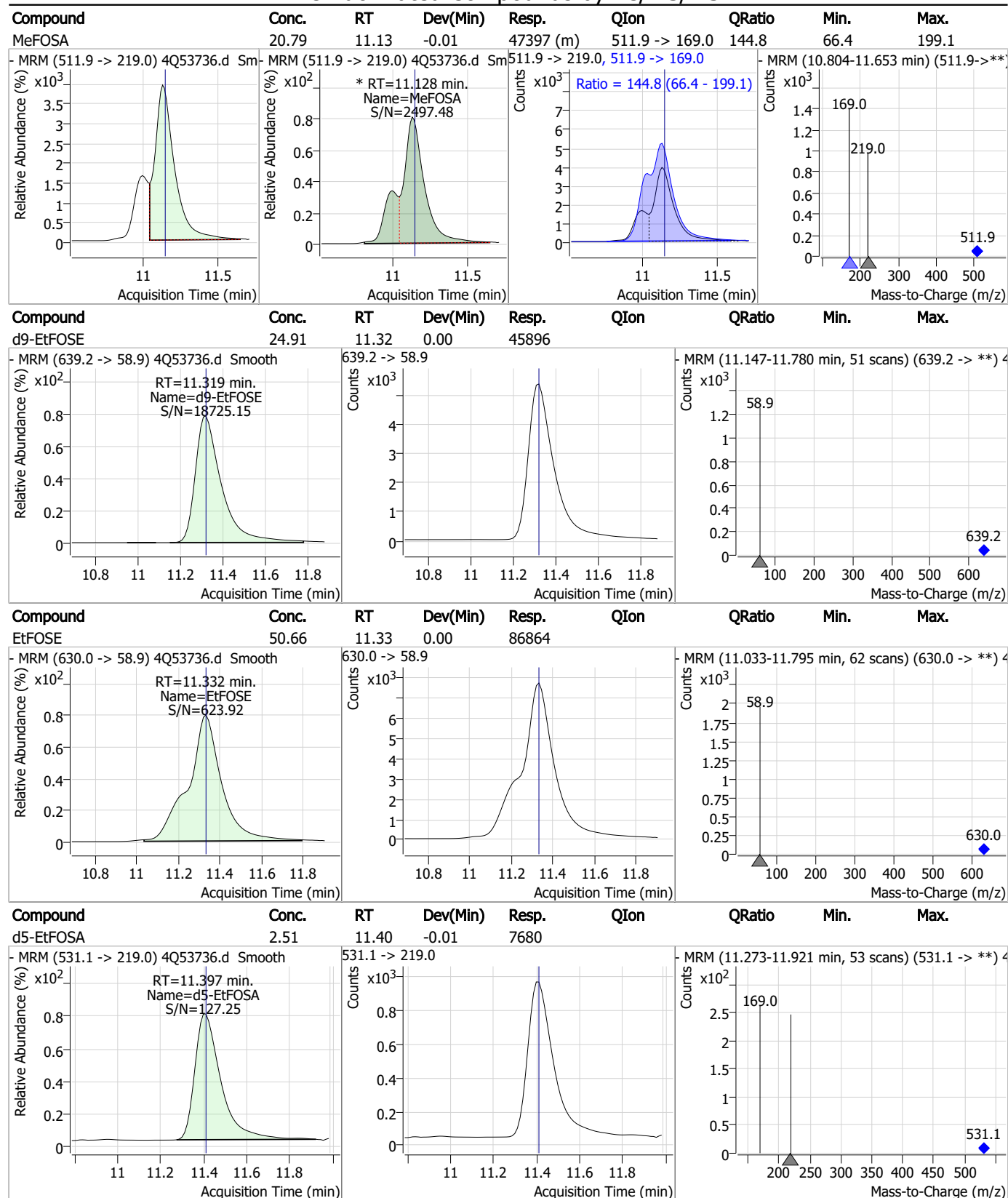
Perfluorinated Compounds by LC/MS/MS



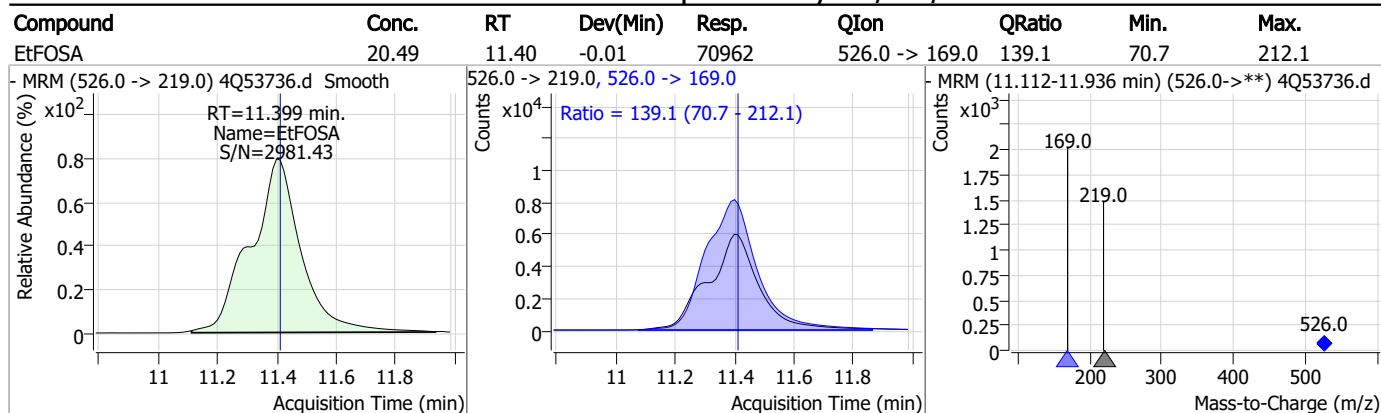
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Manual Integration Approval Summary

Sample Number: S4Q785-IC785

Method: EPA DRAFT 1633

Lab FileID: 4Q53736.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 17:13

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak
MeFOSA	31506-32-8		11.13	Split peak

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Manual Integrations
APPROVED
(compounds with "m" flag)

Natasha Gumtje
11/14/23 15:48

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53737.d
Operator : annal
Acq. Method : 1633full_4Q.m
Acq. Date-Time : 11/13/2023 5:28:03 PM
Sample Name : ic785-7
Vial : P1-A8
DA Method File : 1633_111323_S4Q785.quantmethod.xml
Batch Name : s4q785.batch.bin
Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.612	216.8 -> 171.9	75407	10.00 µg/L	-0.087
M5-PFPeA	4.112	268.3 -> 223.0	33838	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	25676	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	23529	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	26804	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	11867	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	7825	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	8918	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9926	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9943	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	6121	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7389	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	5786	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6497	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	643	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1316	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1709	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	10341	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	23756	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	8815	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	27365	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	31385	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5586	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4810	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5536	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	36562	5.00 µg/L	-0.087
18O2-PFHxS	7.028	403.0 -> 83.9	3593	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	30520	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	8514	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	11895	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	27941	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	643	5.23 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1316	5.08 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C2-8:2FTS	7.804	529.1 -> 80.9	1709	4.68 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.6%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9926	1.29 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9943	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C3-PFBS	5.152	302.1 -> 79.9	7389	2.74 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.7%		
13C3-PFHxS	7.017	402.1 -> 79.9	5786	2.60 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C4-PFBA	2.612	216.8 -> 171.9	75407	9.90 µg/L	-0.087
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C4-PFHpA	6.267	367.1 -> 322.0	23529	2.41 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C5-PFHxA	5.297	318.0 -> 273.0	25676	2.46 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C5-PFPeA	4.112	268.3 -> 223.0	33838	4.96 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C6-PFDA	8.004	519.1 -> 474.1	7825	1.25 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C7-PFUnDA	8.448	570.0 -> 525.1	8918	1.23 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C8-FOSA	9.794	506.1 -> 77.8	6121	2.31 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.5%	
13C8-PFOA	6.964	421.1 -> 376.0	26804	2.46 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C8-PFOS	8.117	507.1 -> 79.9	6497	2.46 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C9-PFNA	7.509	472.1 -> 427.0	11867	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.2%	
d3-MeFOSAA	8.086	573.2 -> 419.0	10341	4.93 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	23756	9.99 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d3-MeFOSA	11.126	515.0 -> 219.0	4810	2.60 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.2%	
d5-EtFOSAA	8.283	589.2 -> 419.0	8815	4.79 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.9%	
d7-MeFOSE	11.022	623.2 -> 58.9	27365	23.99 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.0%	
d9-EtFOSE	11.319	639.2 -> 58.9	31385	23.76 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.0%	
d5-EtFOSA	11.397	531.1 -> 219.0	5586	2.55 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	125524	98.83 µg/L	99
		327.1 -> 80.9	52100		
6:2FTS	6.737	427.1 -> 407.0	151688	106.48 µg/L	97
		427.1 -> 80.9	55722		
8:2FTS	7.804	527.1 -> 507.0	110735	119.17 µg/L	99
		527.1 -> 80.8	45613		
EtFOSAA	8.284	584.2 -> 419.1	48239	30.56 µg/L	m 84
		584.2 -> 526.0	19206		
FOSA	9.798	498.1 -> 77.9	84016	28.16 µg/L	100
		498.1 -> 478.0	2618		
MeFOSAA	8.087	570.1 -> 419.0	52401	28.51 µg/L	97
		570.1 -> 483.0	10298		
PFBA	2.620	212.8 -> 168.9	309227	112.76 µg/L	100
PFBS	5.153	298.7 -> 79.9	60823	23.19 µg/L	99
		298.7 -> 98.8	23934		
PFDA	8.005	512.9 -> 469.0	174452	27.26 µg/L	99
		512.9 -> 219.0	35275		
PFDODA	8.880	613.1 -> 569.0	225169	27.81 µg/L	97
		613.1 -> 319.0	39072		
PFDS	9.020	599.0 -> 79.9	45180	26.87 µg/L	99
SGS Orlando 4Q53737.d	Page 2 of 21			Generated at 11:06 AM on 11/14/2023	

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	22540	28.98	µg/L	100
		363.1 -> 319.0	427587			
PFHpS	7.612	363.1 -> 169.0	74914	26.79	µg/L	100
		449.0 -> 79.9	68816			
PFHxA	5.300	449.0 -> 98.9	35156	28.24	µg/L	99
		313.0 -> 269.0	253296			
PFHxS	7.018	313.0 -> 118.9	7671	26.11	µg/L	84
		398.7 -> 79.9	45577			
PFNA	7.510	398.7 -> 98.9	23870	28.27	µg/L	96
		463.0 -> 419.0	213932			
PFNS	8.586	463.0 -> 219.0	50327	25.84	µg/L	98
		548.8 -> 79.9	32044			
PFOA	6.965	548.8 -> 98.9	16346	27.73	µg/L	98
		413.0 -> 369.0	359828			
PFOS	8.119	413.0 -> 169.0	70823	25.71	µg/L	79
		498.9 -> 79.9	75812			
PFPeA	4.114	498.9 -> 98.8	35350	55.60	µg/L	100
		263.0 -> 219.0	409292			
PFPeS	6.257	349.1 -> 79.9	52284	27.49	µg/L	97
		349.1 -> 98.9	23633			
PFTeDA	9.650	713.1 -> 669.0	210787	27.92	µg/L	100
		713.1 -> 168.9	21881			
PFTrDA	9.279	663.0 -> 619.0	250142	28.39	µg/L	100
		663.0 -> 168.9	34284			
PFUnDA	8.449	563.1 -> 519.0	200284	27.46	µg/L	98
		563.1 -> 269.1	40980			
11CI-PF3OUdS	9.306	630.9 -> 450.9	395914	53.38	µg/L	99
		632.9 -> 452.9	119553			
9CI-PF3ONS	8.451	530.8 -> 351.0	371609	49.63	µg/L	98
		532.8 -> 353.0	113391			
ADONA	6.544	376.9 -> 250.9	1004748	61.12	µg/L	100
		376.9 -> 84.8	246447			
HFPO-DA	5.653	284.9 -> 168.9	140545	55.87	µg/L	99
		284.9 -> 184.9	13507			
3:3FTCA	3.561	241.0 -> 177.0	61547	144.07	µg/L	99
		241.0 -> 117.0	5418			
5:3FTCA	5.983	341.0 -> 237.1	1113871	705.63	µg/L	99
		341.0 -> 217.0	798232			
7:3FTCA	7.524	441.0 -> 316.9	494736	698.63	µg/L	94
		441.0 -> 336.9	1158803			
EtFOSA	11.399	526.0 -> 219.0	134530	53.40	µg/L	97
		526.0 -> 169.0	185447			
EtFOSE	11.332	630.0 -> 58.9	162696	138.75	µg/L	100
		511.9 -> 219.0	89879			
MeFOSA	11.128	511.9 -> 169.0	131207	51.49	µg/L	89
		616.1 -> 58.9	174720			
MeFOSE	11.047	699.1 -> 79.9	35336	140.14	µg/L	100
		699.1 -> 98.8	20307			
PFDoDS	9.777	295.0 -> 201.0	32631	55.10	µg/L	93
		295.0 -> 84.9	8815			
NFDHA	5.179	279.0 -> 85.1	232804	54.91	µg/L	100
		229.0 -> 84.9	261021			
PFMBA	3.265	314.8 -> 134.9	360443	50.77	µg/L	99
		314.8 -> 82.9	11678			

= Qualifier out of range, m = manually integrated, + = Area summed

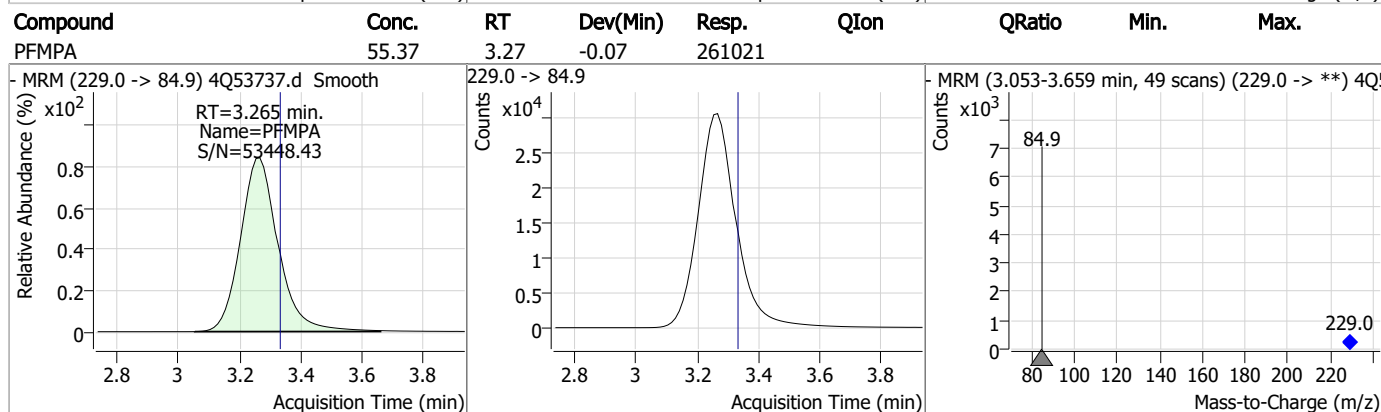
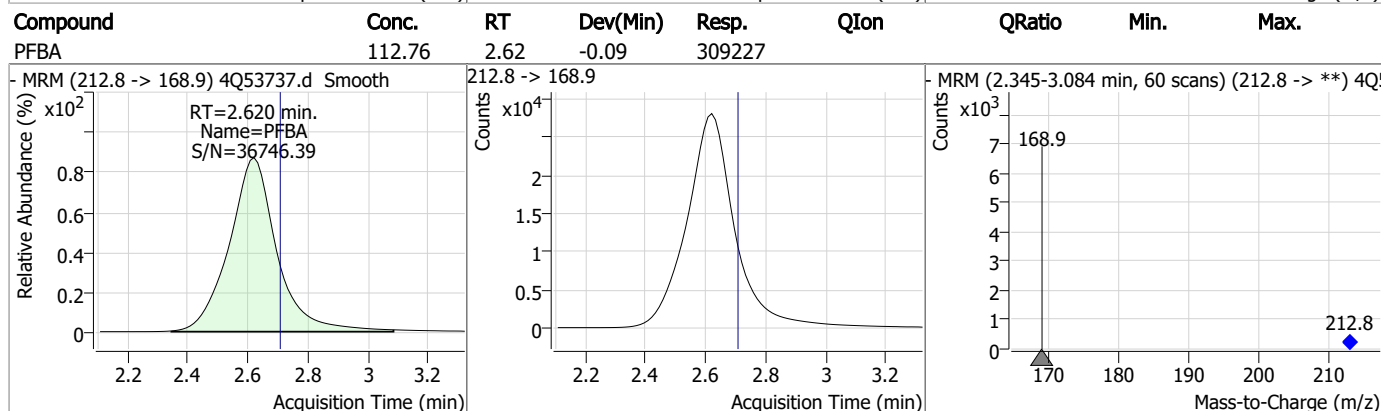
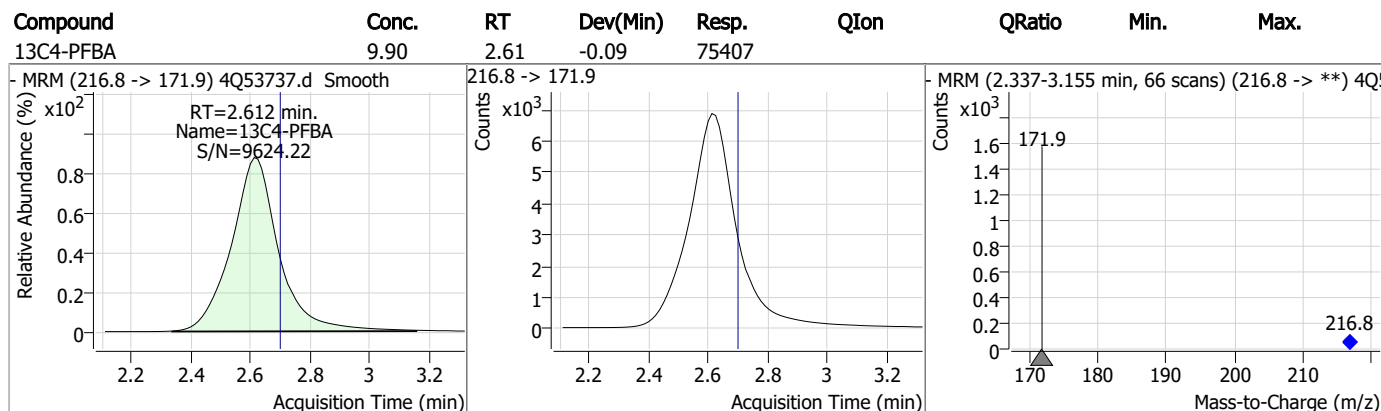
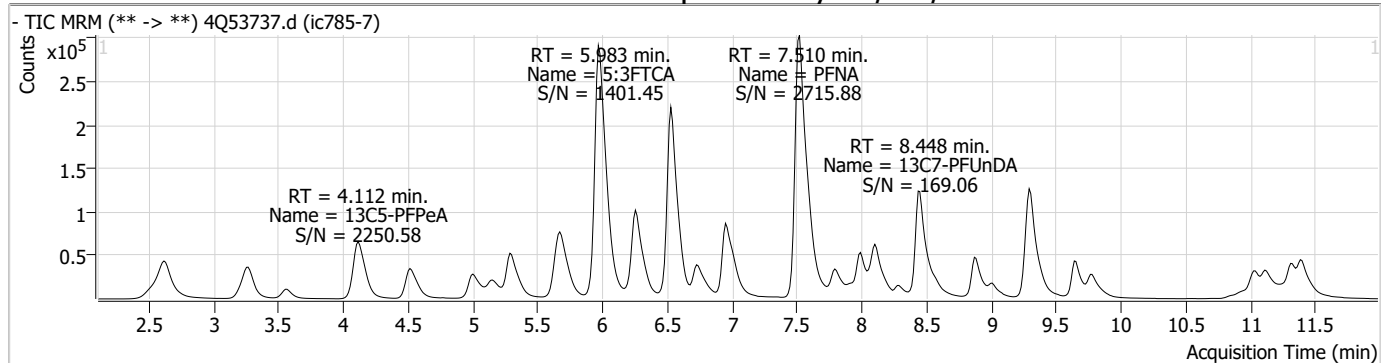
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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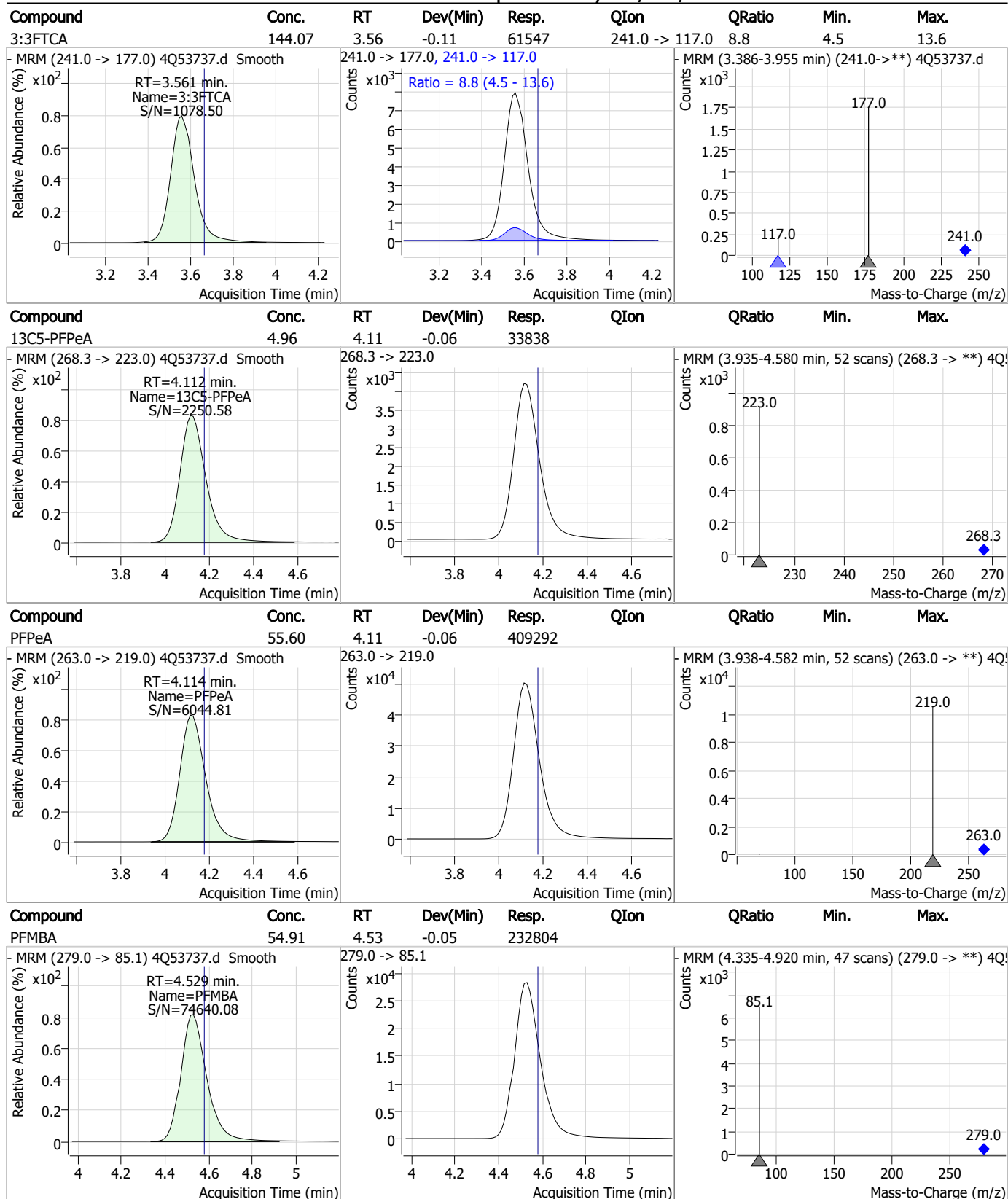
7.7.8

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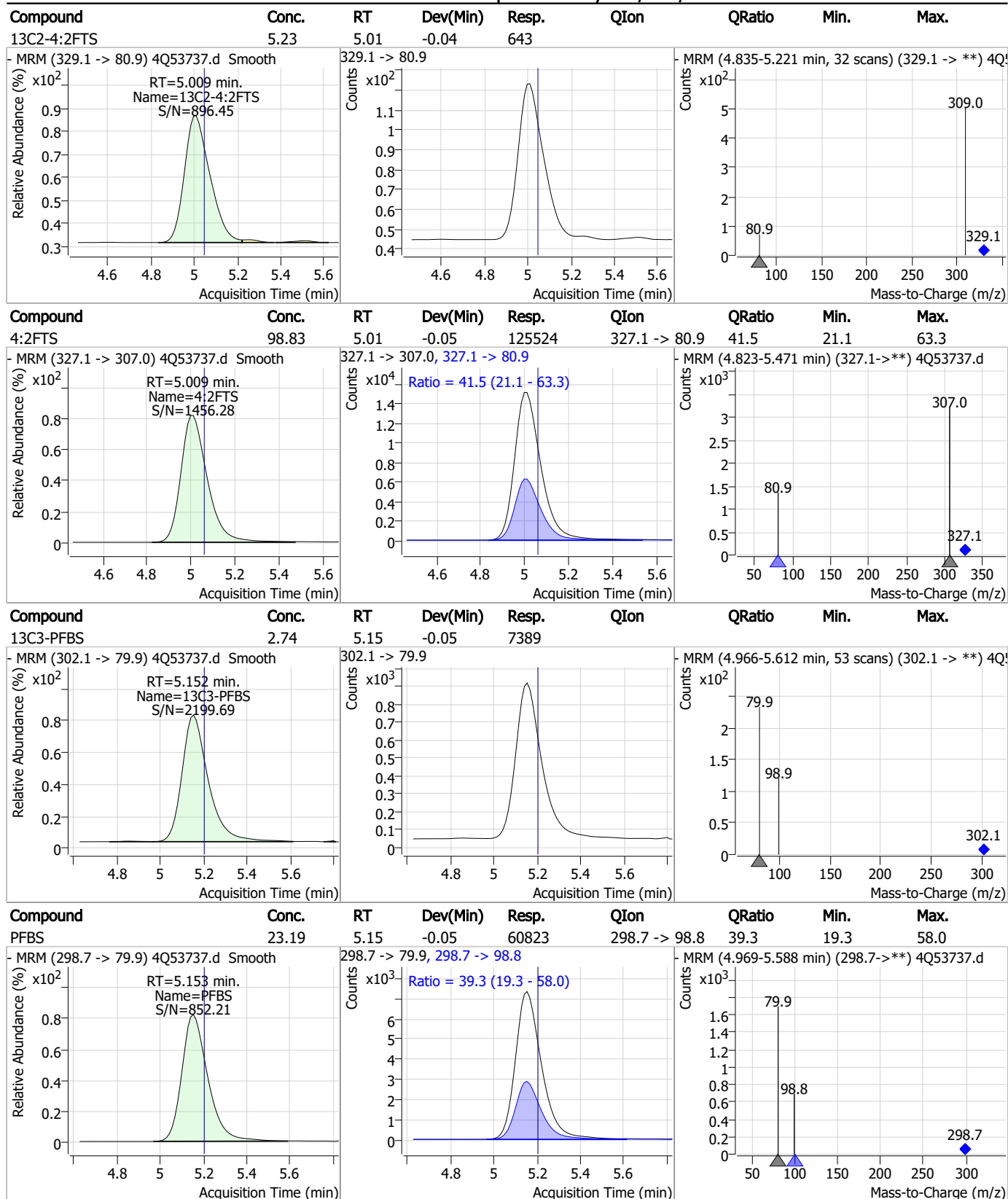
Perfluorinated Compounds by LC/MS/MS



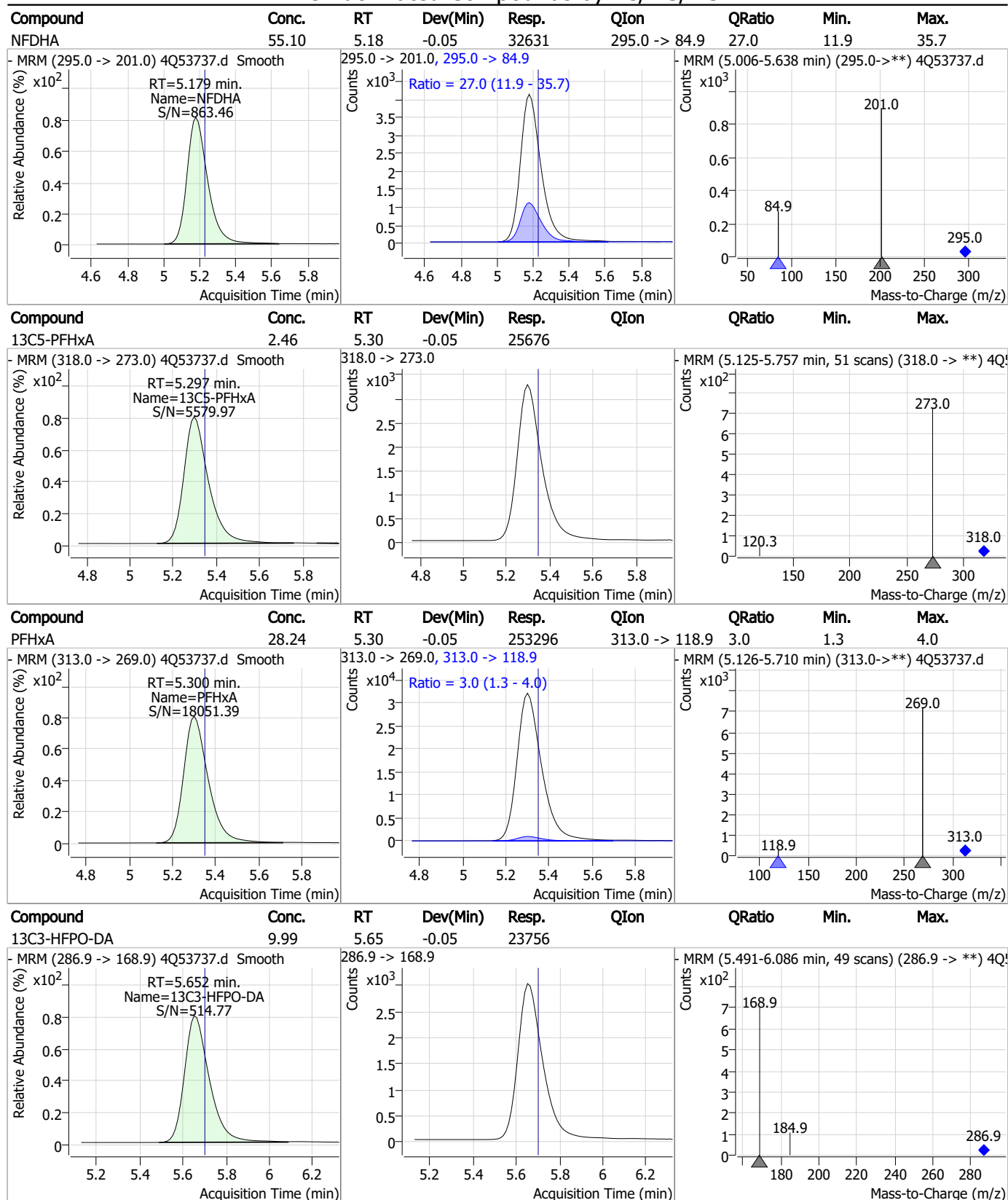
Perfluorinated Compounds by LC/MS/MS



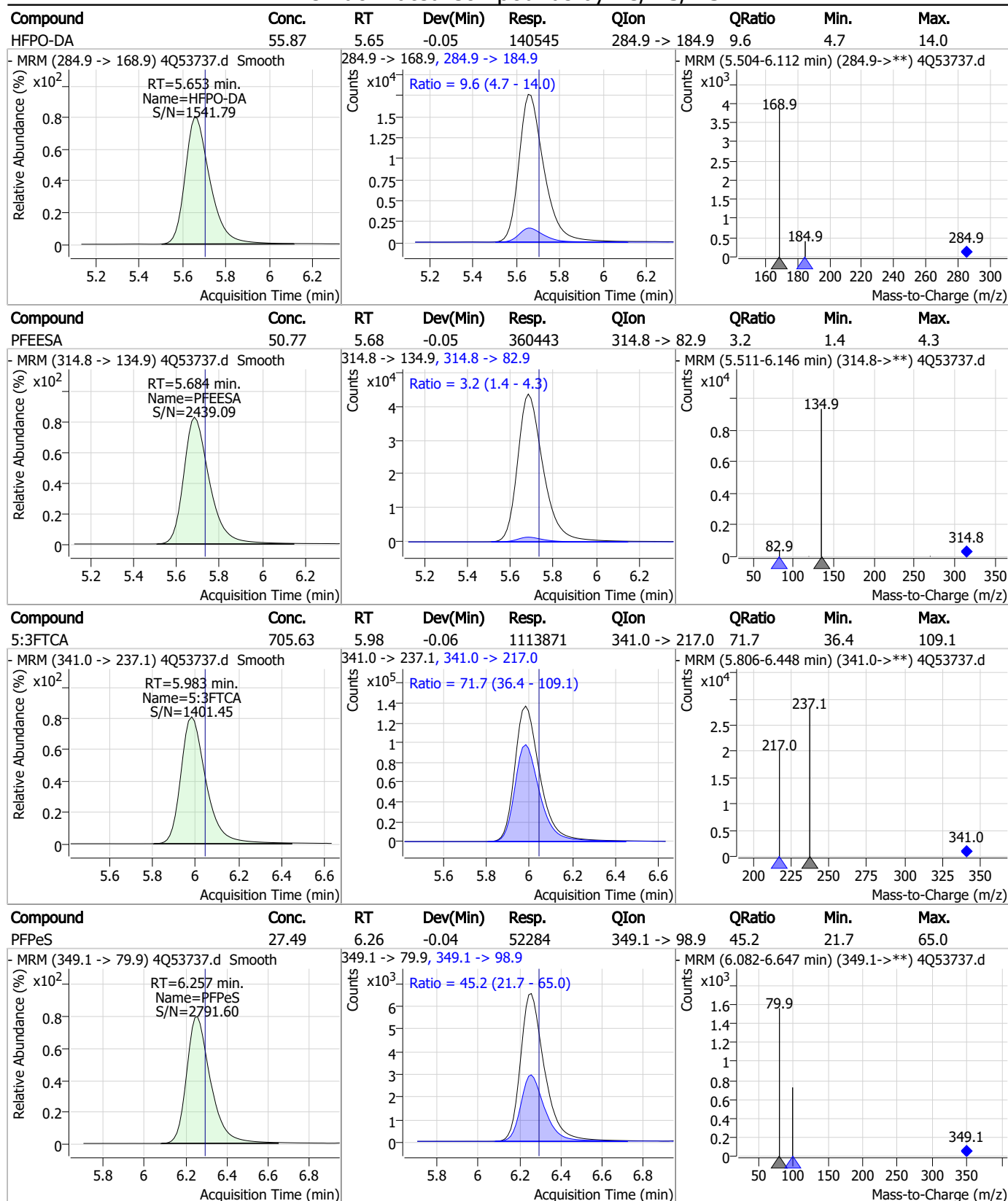
Perfluorinated Compounds by LC/MS/MS



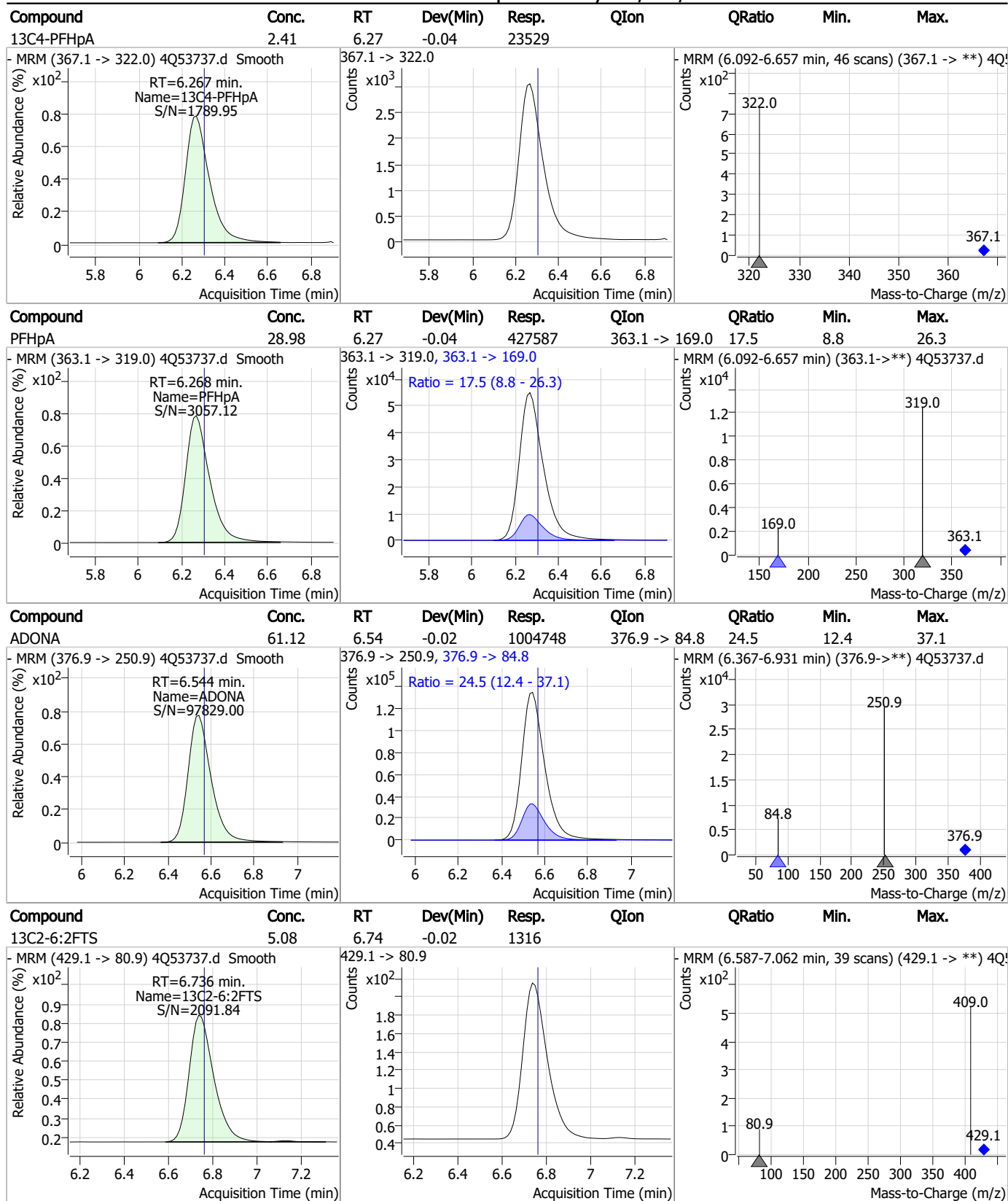
Perfluorinated Compounds by LC/MS/MS



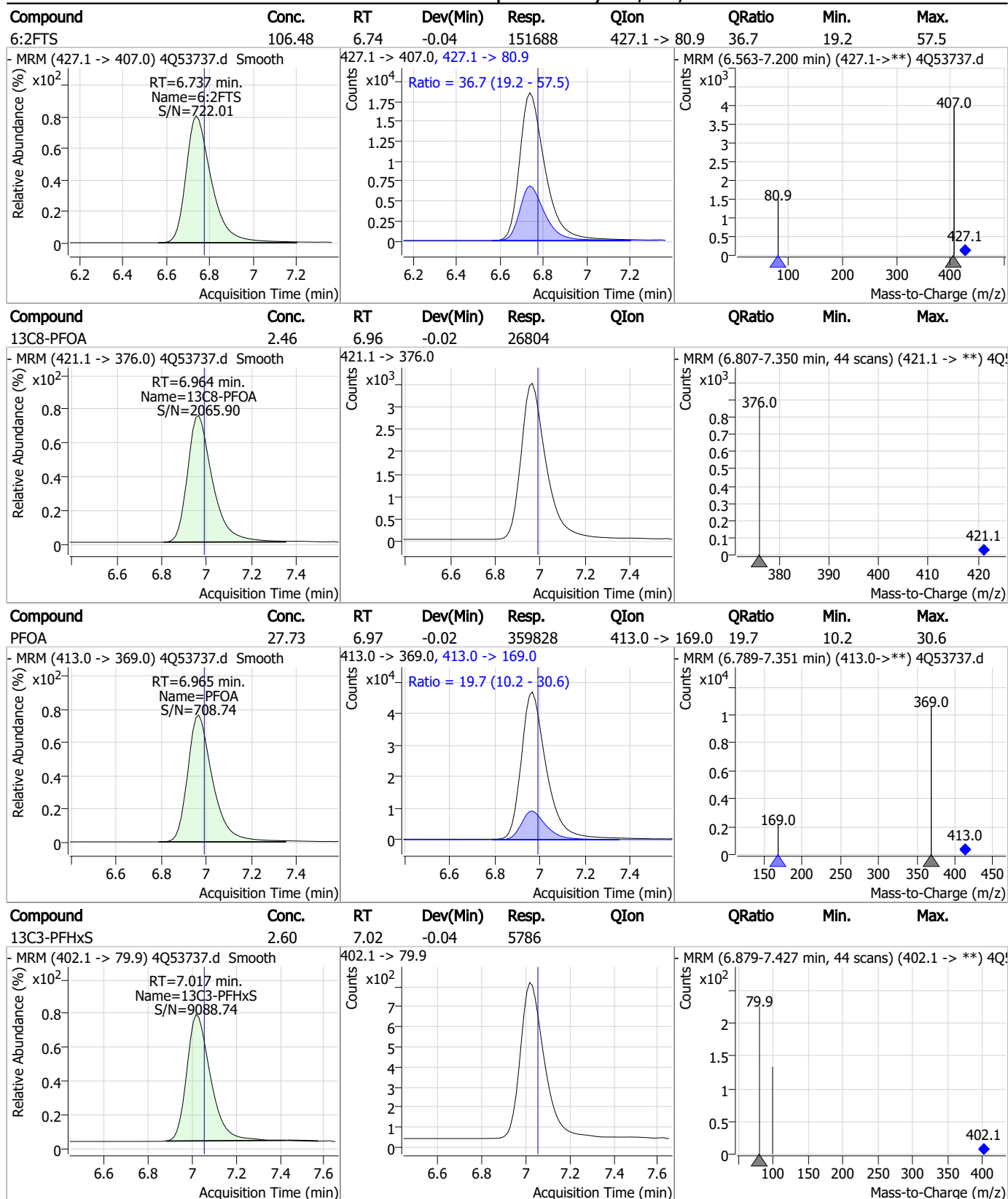
Perfluorinated Compounds by LC/MS/MS



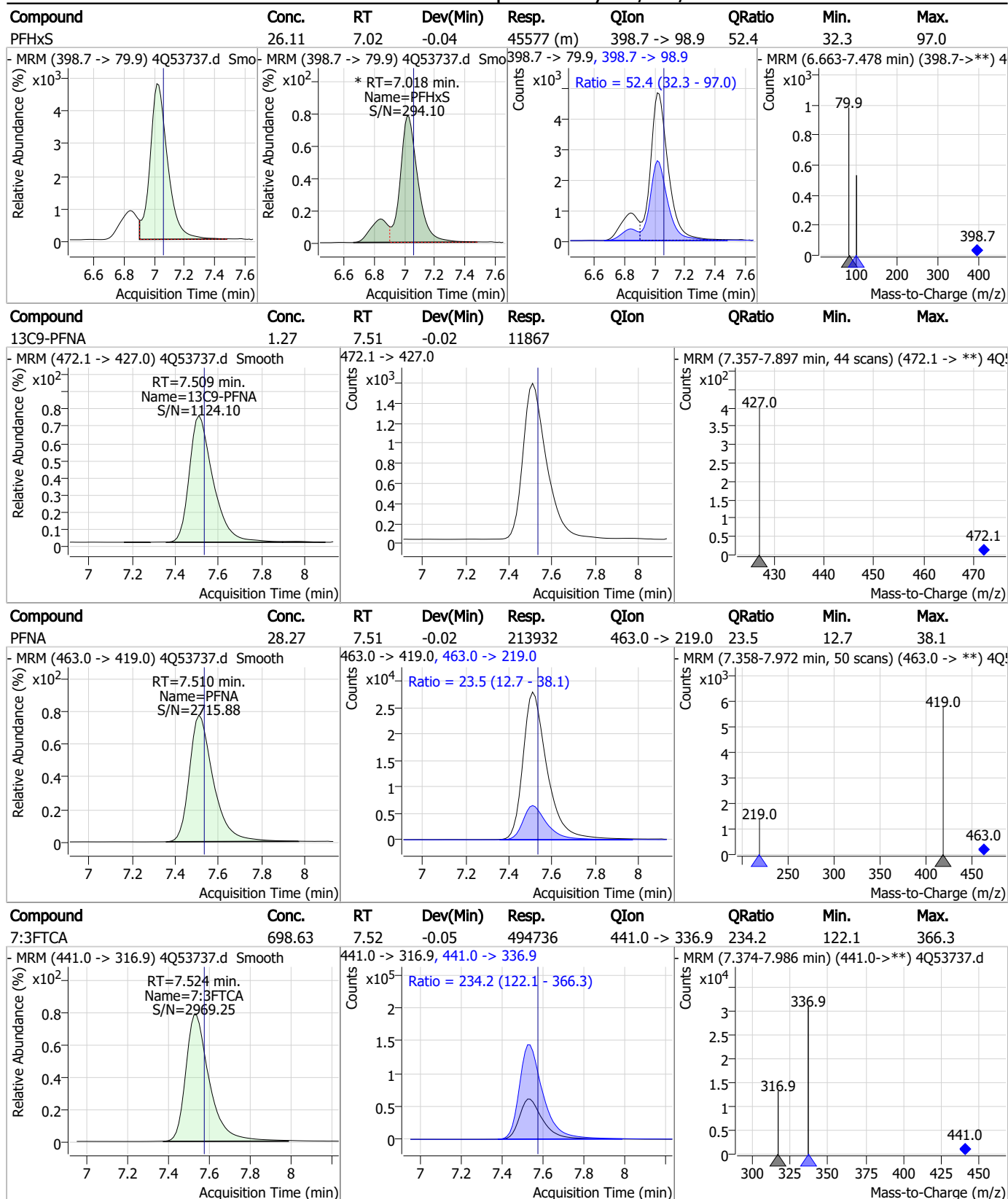
Perfluorinated Compounds by LC/MS/MS



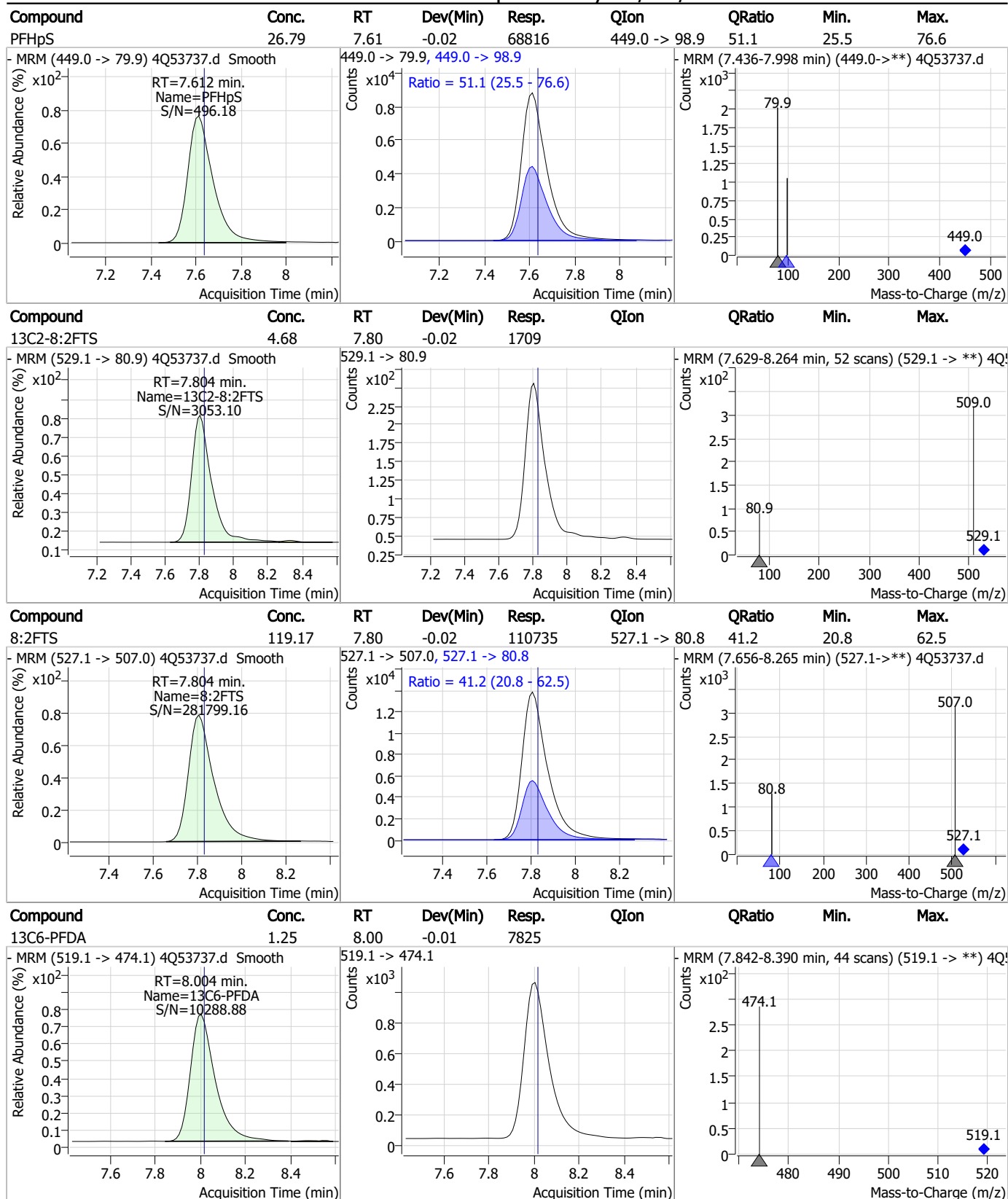
Perfluorinated Compounds by LC/MS/MS



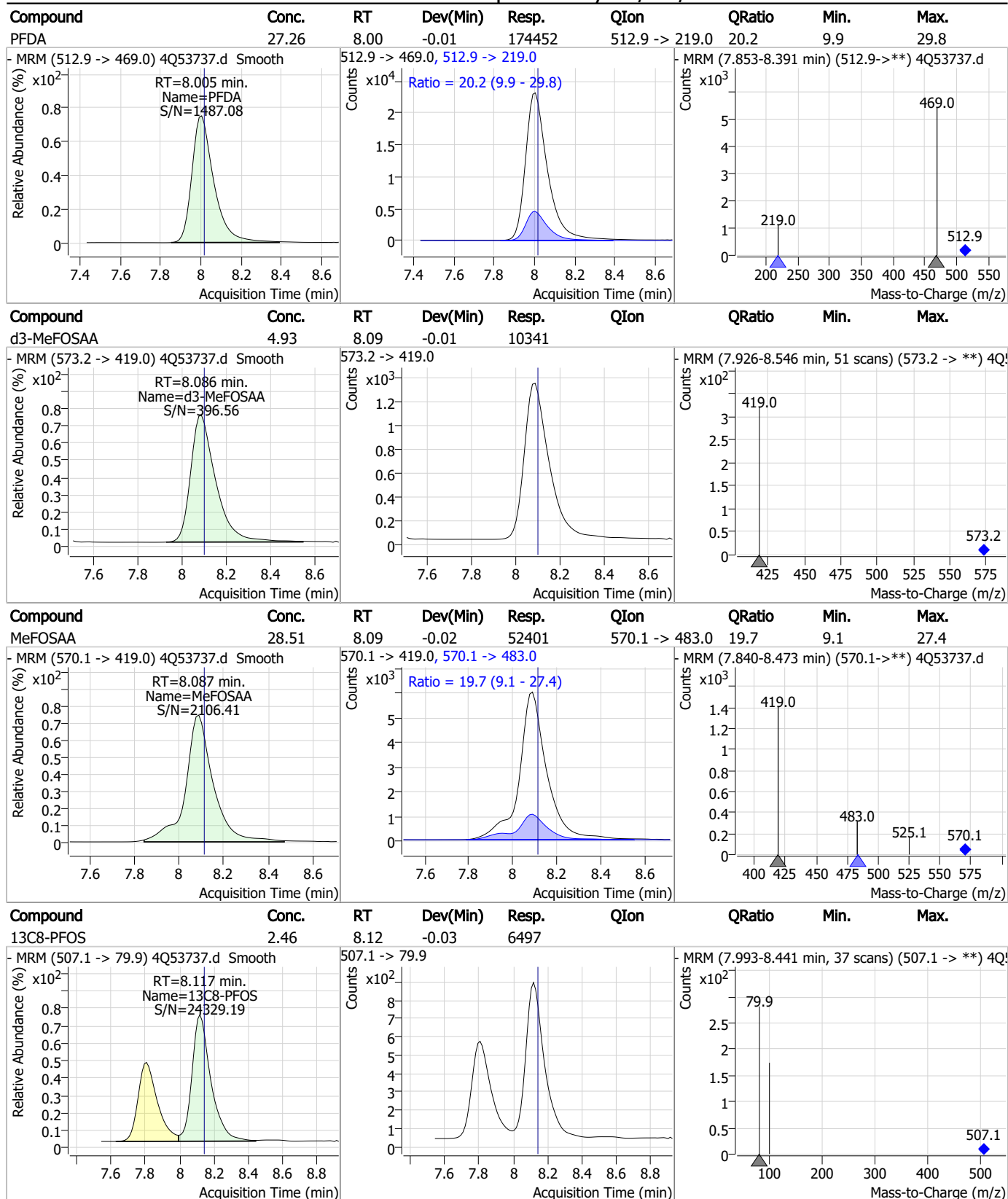
Perfluorinated Compounds by LC/MS/MS



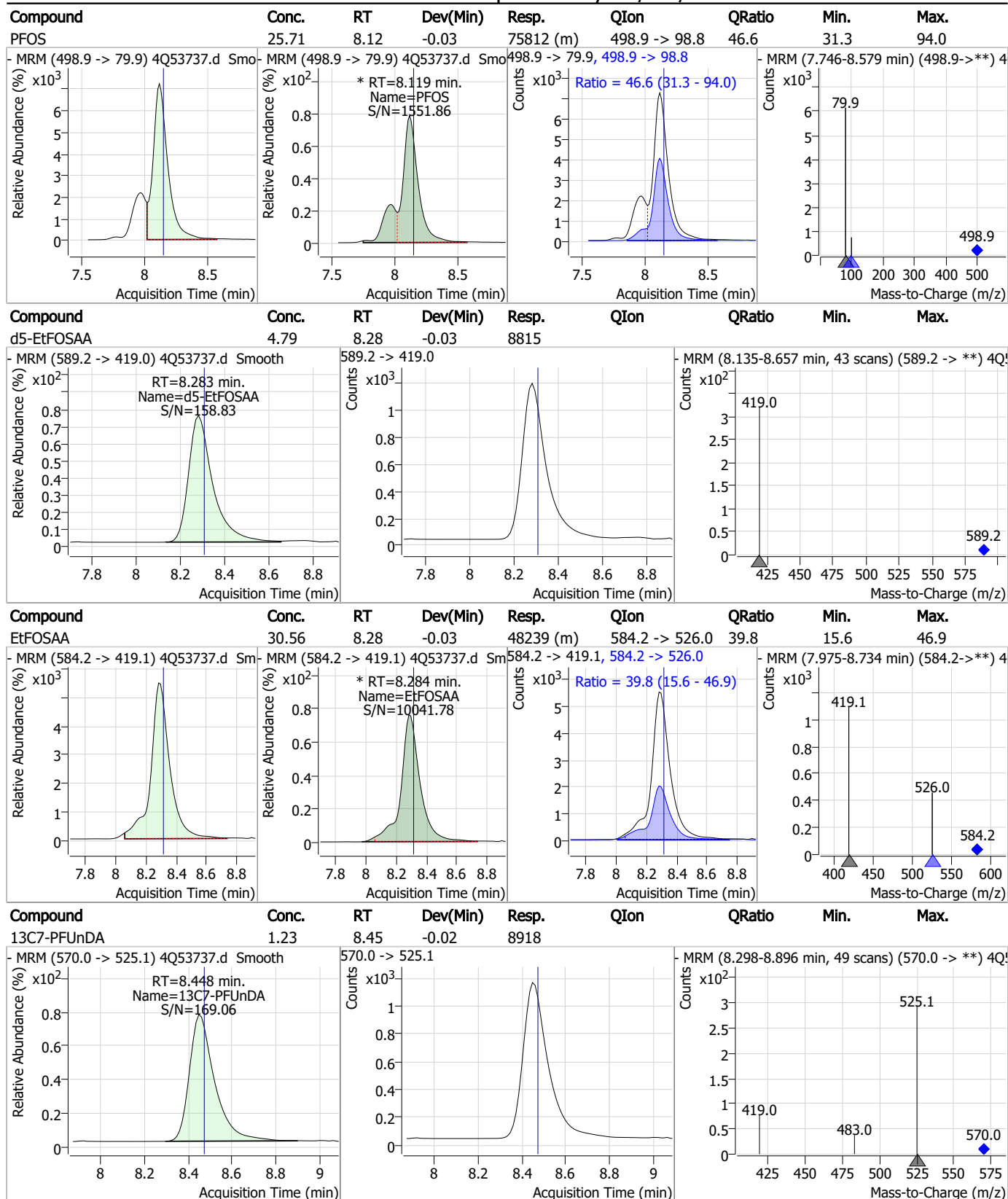
Perfluorinated Compounds by LC/MS/MS



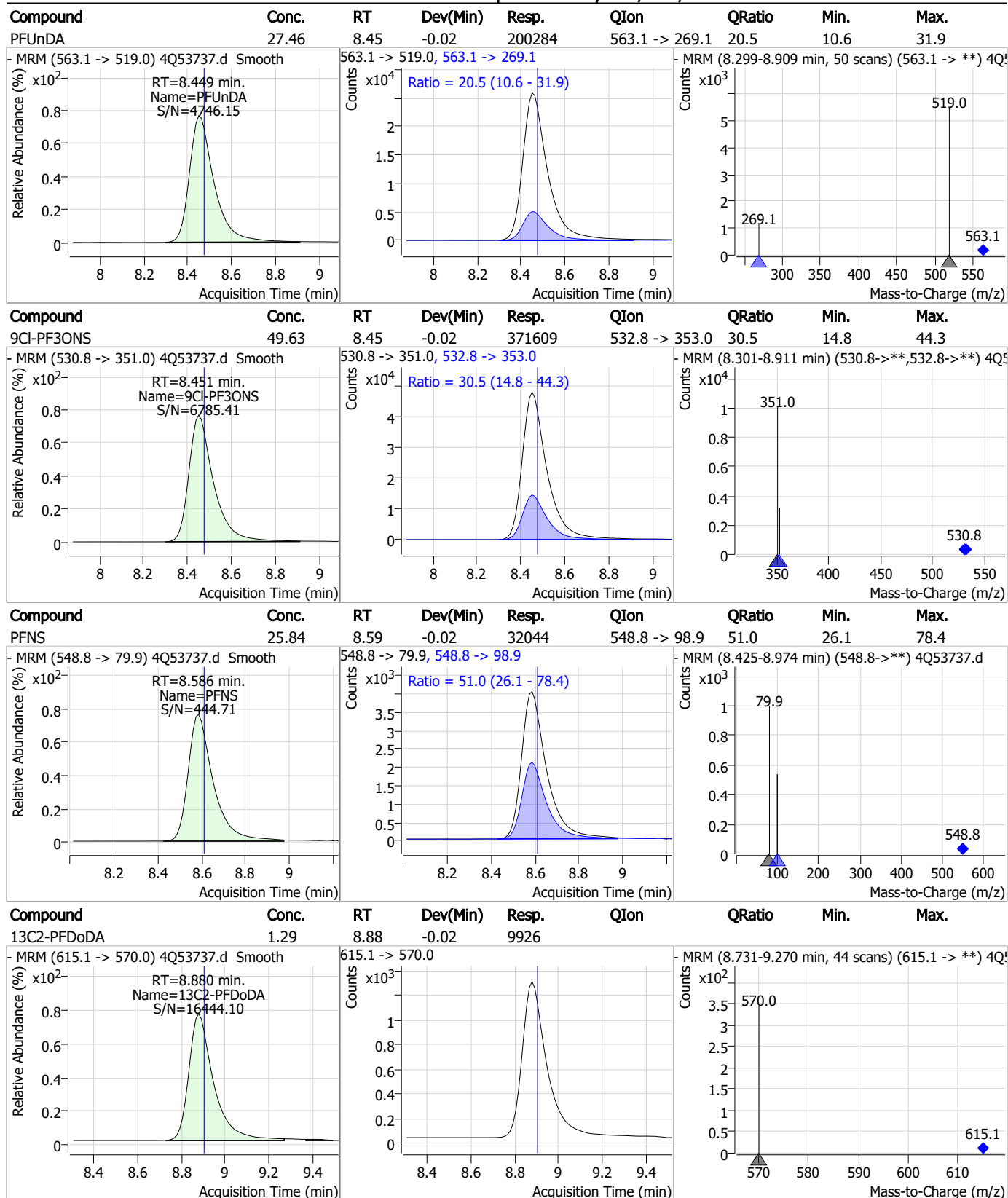
Perfluorinated Compounds by LC/MS/MS



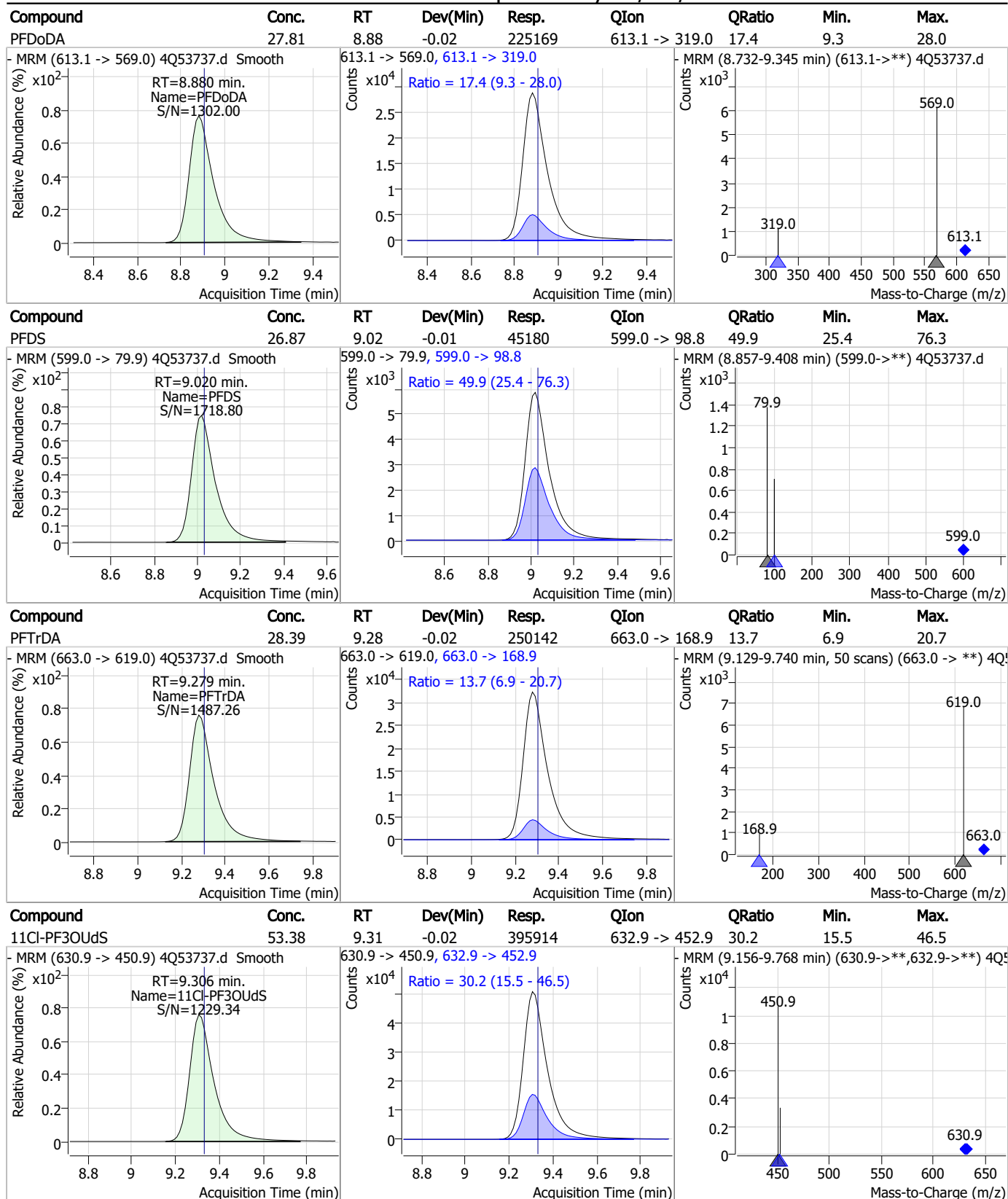
Perfluorinated Compounds by LC/MS/MS



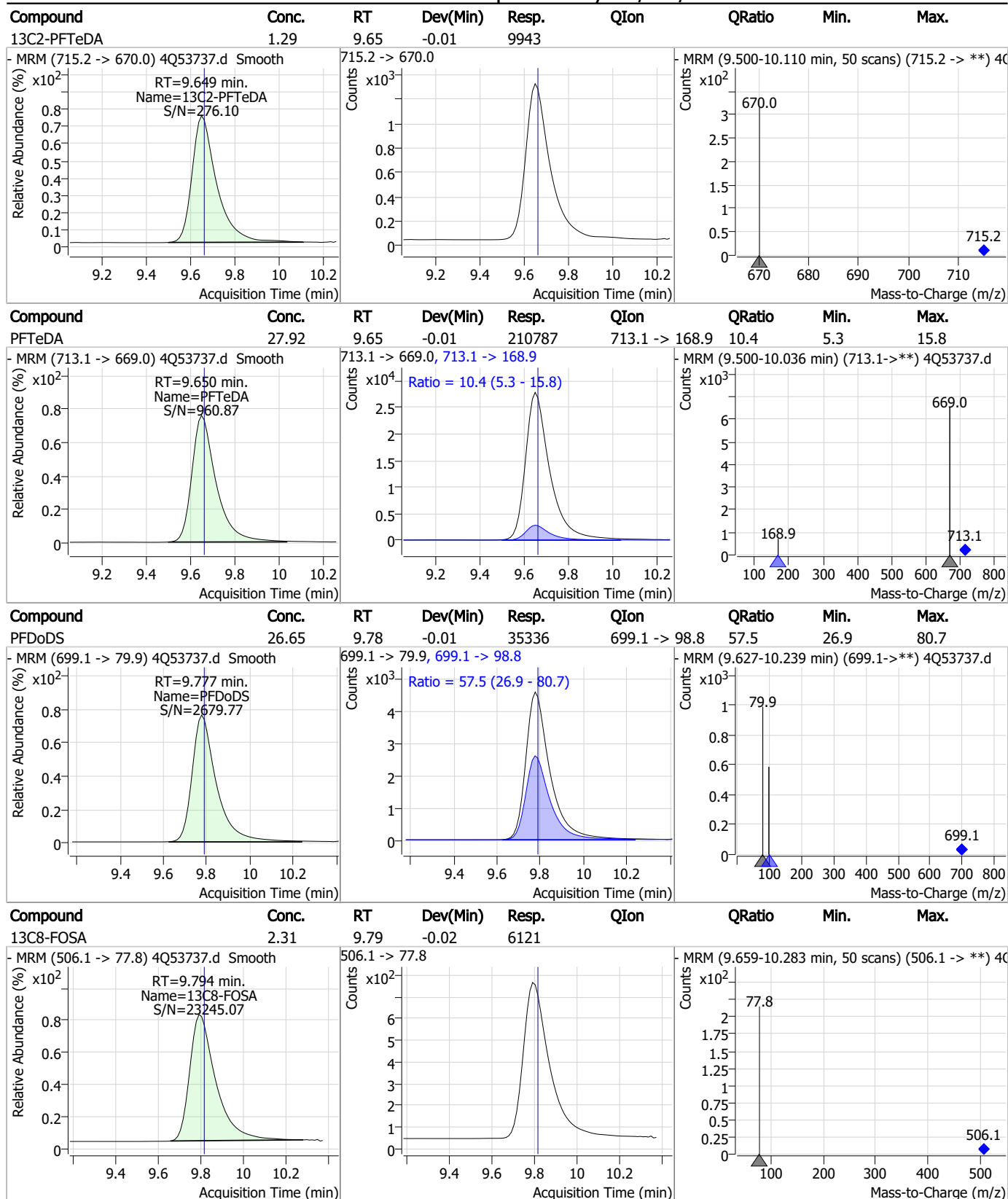
Perfluorinated Compounds by LC/MS/MS



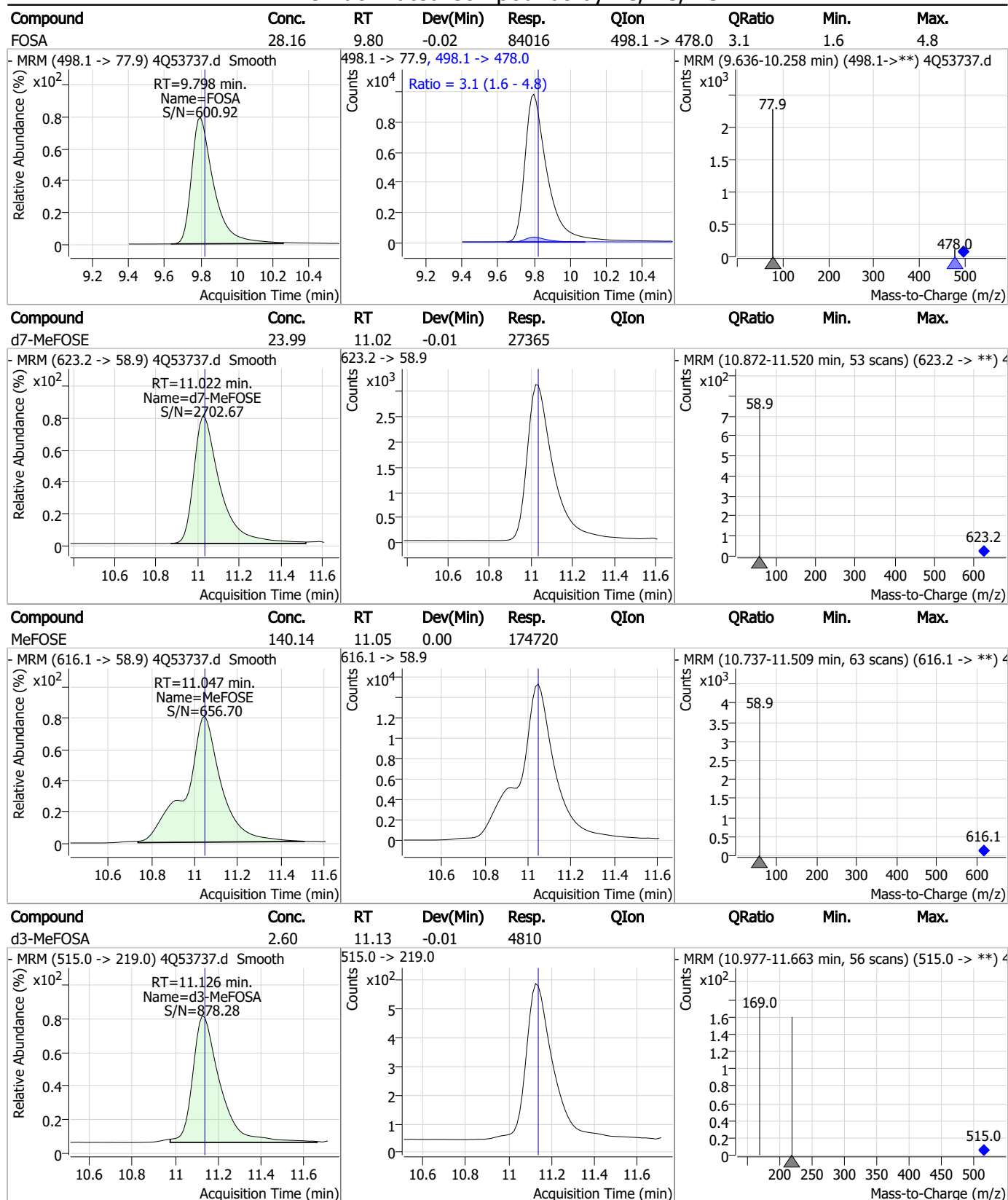
Perfluorinated Compounds by LC/MS/MS



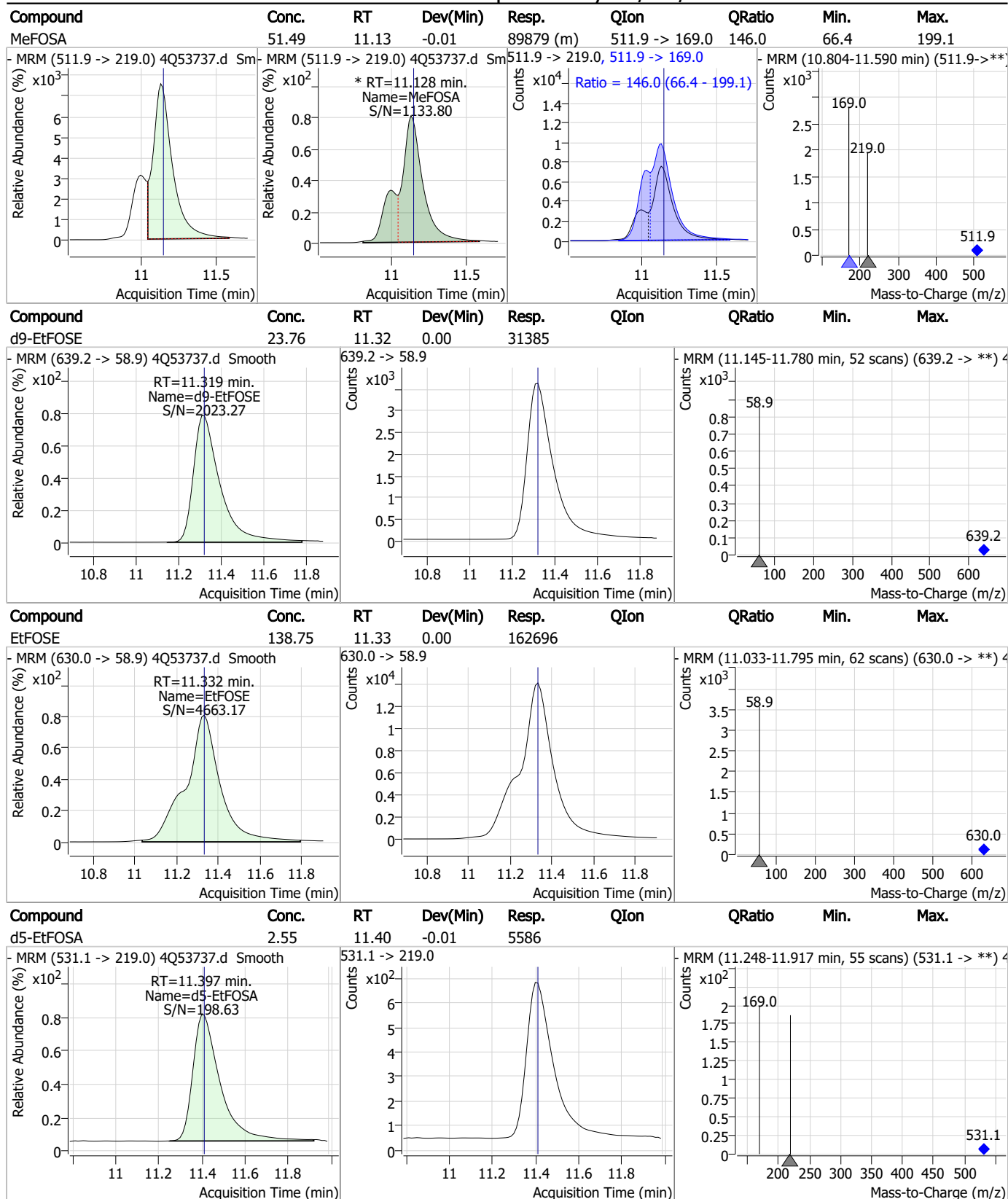
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



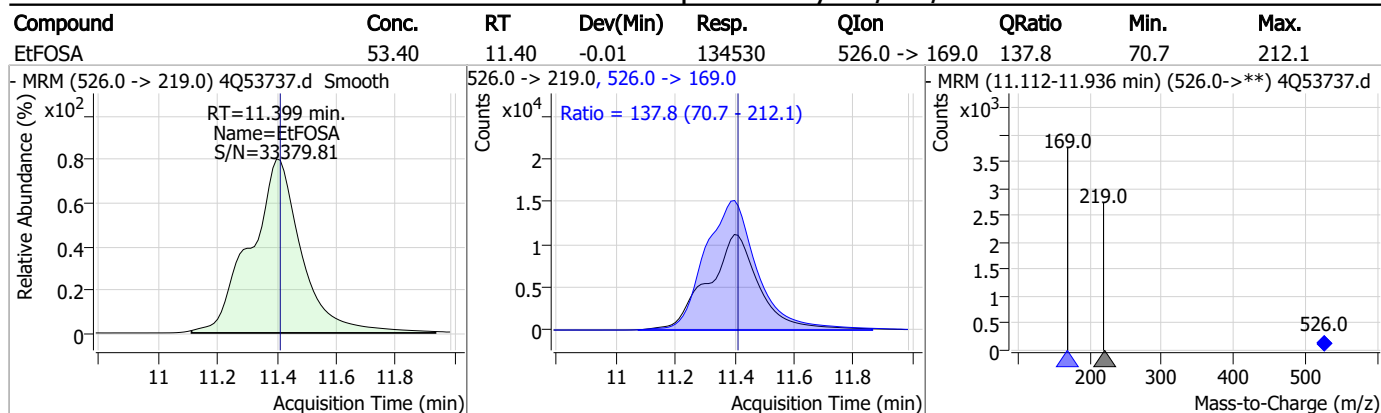
Perfluorinated Compounds by LC/MS/MS



7.7.8

7

Perfluorinated Compounds by LC/MS/MS



7.7.8

7

Manual Integration Approval Summary

Sample Number: S4Q785-IC785

Method: EPA DRAFT 1633

Lab FileID: 4Q53737.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 17:28

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.8.1
7

Natasha Gumtie
11/14/23 15:48

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53738.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 5:42:50 PM
 Sample Name : ic785-8
 Vial : P1-A9
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.636	216.8 -> 171.9	68974	10.00 µg/L	-0.062
M5-PFPeA	4.125	268.3 -> 223.0	31740	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	24433	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	22495	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	25328	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	10855	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	6575	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	7146	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9662	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9696	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	5948	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	6932	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	5482	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6060	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	567	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1210	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1798	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	9451	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	23441	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	8322	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	25958	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	30259	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	5053	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	4695	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5035	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	33739	5.00 µg/L	-0.075
18O2-PFHxS	7.016	403.0 -> 83.9	3489	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	28178	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	8298	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	11636	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	27047	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	567	4.75 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1210	4.81 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C2-8:2FTS	7.804	529.1 -> 80.9	1798	5.07 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9662	1.29 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9696	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C3-PFBS	5.152	302.1 -> 79.9	6932	2.65 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.0%		
13C3-PFHxS	7.017	402.1 -> 79.9	5482	2.54 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C4-PFBA	2.636	216.8 -> 171.9	68974	9.81 µg/L	-0.062
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C4-PFHpA	6.267	367.1 -> 322.0	22495	2.38 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C5-PFHxA	5.297	318.0 -> 273.0	24433	2.42 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C5-PFPeA	4.125	268.3 -> 223.0	31740	4.81 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C6-PFDA	8.004	519.1 -> 474.1	6575	1.08 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 86.1%		
13C7-PFUnDA	8.448	570.0 -> 525.1	7146	1.01 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 81.0%		
13C8-FOSA	9.794	506.1 -> 77.8	5948	2.47 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C8-PFOA	6.964	421.1 -> 376.0	25328	2.52 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C8-PFOS	8.117	507.1 -> 79.9	6060	2.52 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C9-PFNA	7.509	472.1 -> 427.0	10855	1.18 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.6%		
d3-MeFOSAA	8.074	573.2 -> 419.0	9451	4.95 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	23441	10.18 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.8%		
d3-MeFOSA	11.126	515.0 -> 219.0	4695	2.79 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.8%		
d5-EtFOSAA	8.283	589.2 -> 419.0	8322	4.98 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.5%		
d7-MeFOSE	11.022	623.2 -> 58.9	25958	25.03 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.1%		
d9-EtFOSE	11.319	639.2 -> 58.9	30259	25.19 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.7%		
d5-EtFOSA	11.410	531.1 -> 219.0	5053	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		

Target Compounds

					QValue
4:2FTS	5.009	327.1 -> 307.0	265628	237.09 µg/L	98
		327.1 -> 80.9	108549		
6:2FTS	6.737	427.1 -> 407.0	322310	246.17 µg/L	96
		427.1 -> 80.9	115494		
8:2FTS	7.804	527.1 -> 507.0	236496	241.87 µg/L	98
		527.1 -> 80.8	95575		
EtFOSAA	8.284	584.2 -> 419.1	110140	73.90 µg/L	82
		584.2 -> 526.0	45272		
FOSA	9.798	498.1 -> 77.9	201884	69.64 µg/L	100
		498.1 -> 478.0	6269		
MeFOSAA	8.075	570.1 -> 419.0	117919	70.20 µg/L	100
		570.1 -> 483.0	21598		
PFBA	2.632	212.8 -> 168.9	711730	283.74 µg/L	100
PFBS	5.153	298.7 -> 79.9	144225	58.63 µg/L	98
		298.7 -> 98.8	53876		
PFDA	7.992	512.9 -> 469.0	407196	75.72 µg/L	100
		512.9 -> 219.0	81455		
PFDODA	8.880	613.1 -> 569.0	538567	68.35 µg/L	97
		613.1 -> 319.0	94485		
PFDS	9.020	599.0 -> 79.9	109781	70.00 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	54185	71.81	µg/L	99
		363.1 -> 319.0	1013161			
PFHpS	7.612	363.1 -> 169.0	181521	68.47	µg/L	99
		449.0 -> 79.9	164066			
PFHxA	5.300	449.0 -> 98.9	85373	72.29	µg/L	99
		313.0 -> 269.0	617068			
PFHxS	7.018	313.0 -> 118.9	18592	60.97	µg/L	89
		398.7 -> 79.9	100822			
PFNA	7.510	398.7 -> 98.9	56868	73.20	µg/L	97
		463.0 -> 419.0	506663			
PFNS	8.586	463.0 -> 219.0	121508	62.67	µg/L	97
		548.8 -> 79.9	72476			
PFOA	6.965	548.8 -> 98.9	36307	67.65	µg/L	100
		413.0 -> 369.0	829524			
PFOS	8.119	413.0 -> 169.0	168758	63.64	µg/L	79
		498.9 -> 79.9	175005			
PFPeA	4.127	498.9 -> 98.8	80945	141.46	µg/L	100
		263.0 -> 219.0	976775			
PFPeS	6.257	349.1 -> 79.9	125797	69.83	µg/L	99
		349.1 -> 98.9	55212			
PFTeDA	9.650	713.1 -> 669.0	511571	69.50	µg/L	99
		713.1 -> 168.9	51114			
PFTrDA	9.279	663.0 -> 619.0	567279	66.15	µg/L	100
		663.0 -> 168.9	77273			
PFUnDA	8.449	563.1 -> 519.0	427831	73.20	µg/L	99
		563.1 -> 269.1	92565			
11CI-PF3OUdS	9.306	630.9 -> 450.9	914560	124.96	µg/L	100
		632.9 -> 452.9	283958			
9CI-PF3ONS	8.451	530.8 -> 351.0	808630	109.43	µg/L	98
		532.8 -> 353.0	249374			
ADONA	6.544	376.9 -> 250.9	2395745	147.68	µg/L	100
		376.9 -> 84.8	588816			
HFPO-DA	5.653	284.9 -> 168.9	335478	135.14	µg/L	99
		284.9 -> 184.9	32534			
3:3FTCA	3.573	241.0 -> 177.0	154191	394.59	µg/L	99
		241.0 -> 117.0	13624			
5:3FTCA	5.983	341.0 -> 237.1	2705526	1801.08	µg/L	99
		341.0 -> 217.0	1950465			
7:3FTCA	7.524	441.0 -> 316.9	1210006	1795.55	µg/L	94
		441.0 -> 336.9	2826738			
EtFOSA	11.399	526.0 -> 219.0	328854	144.31	µg/L	97
		526.0 -> 169.0	452537			
EtFOSE	11.332	630.0 -> 58.9	385462	340.95	µg/L	100
		511.9 -> 219.0	226137			
MeFOSA	11.128	511.9 -> 169.0	321173	132.72	µg/L	92
		616.1 -> 58.9	437268			
MeFOSE	11.047	699.1 -> 79.9	84263	369.73	µg/L	100
		699.1 -> 98.8	47118			
PFDoDS	9.777	295.0 -> 201.0	73977	68.13	µg/L	97
		295.0 -> 84.9	18851			
NFDHA	5.179	279.0 -> 85.1	562838	141.53	µg/L	100
		229.0 -> 84.9	637303			
PFMBA	3.265	314.8 -> 134.9	828431	144.12	µg/L	100
		314.8 -> 82.9	28421			
PFEESA	5.684			122.62	µg/L	98

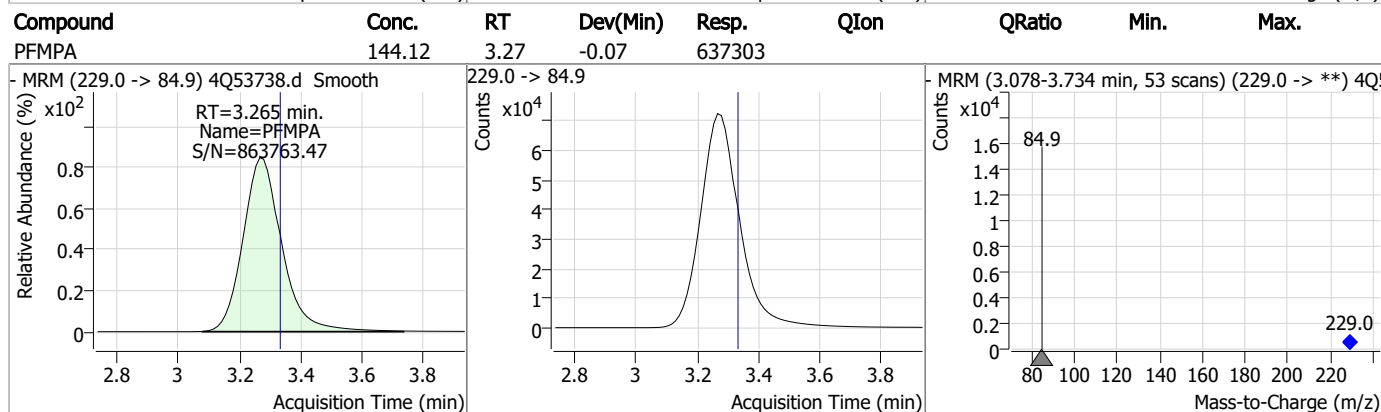
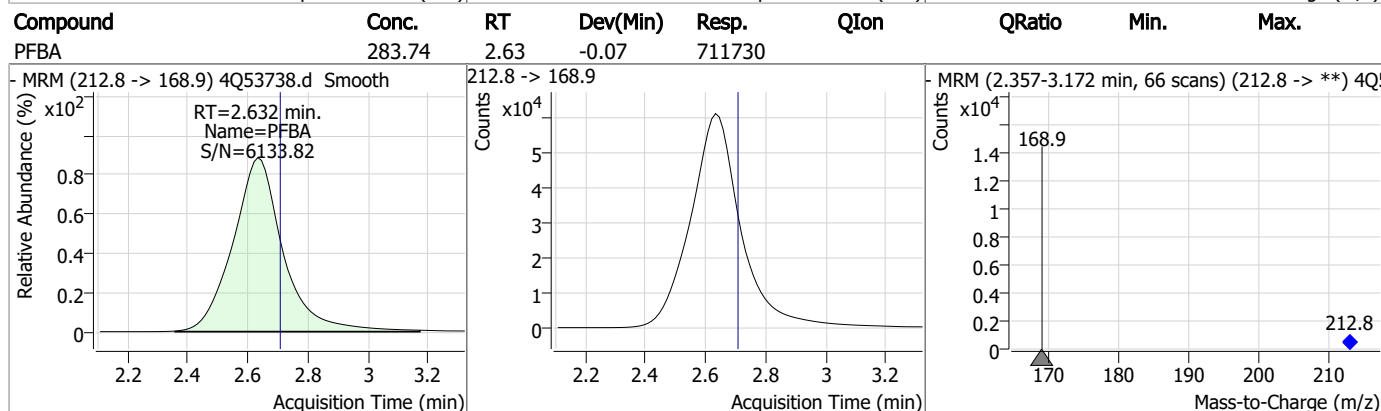
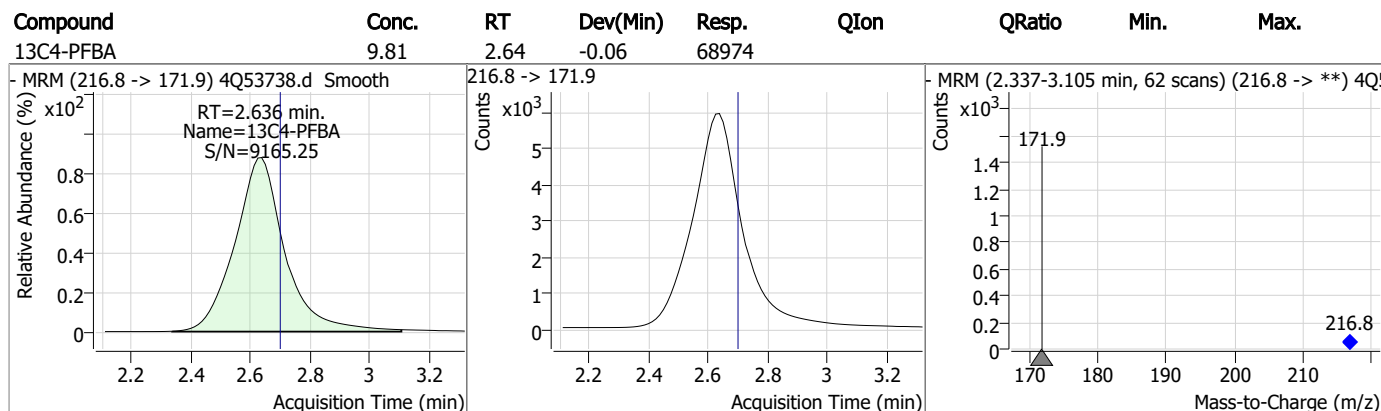
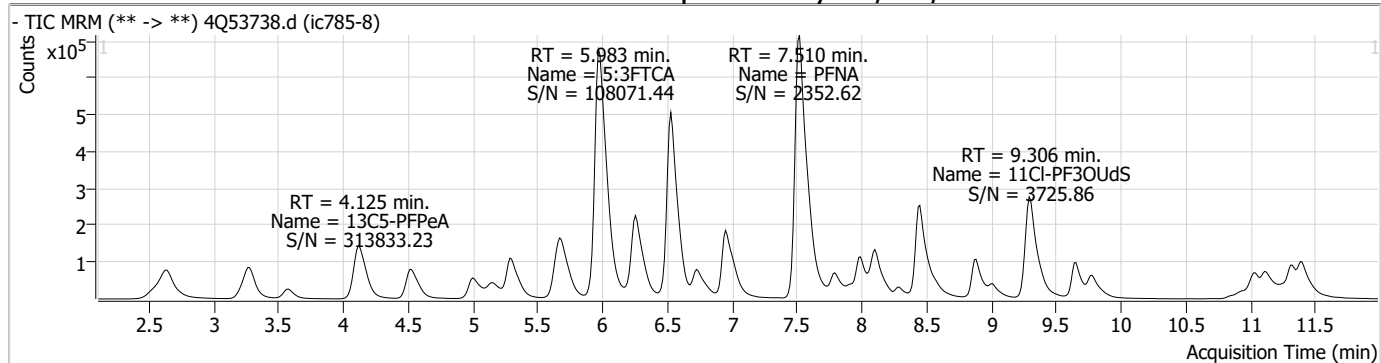
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

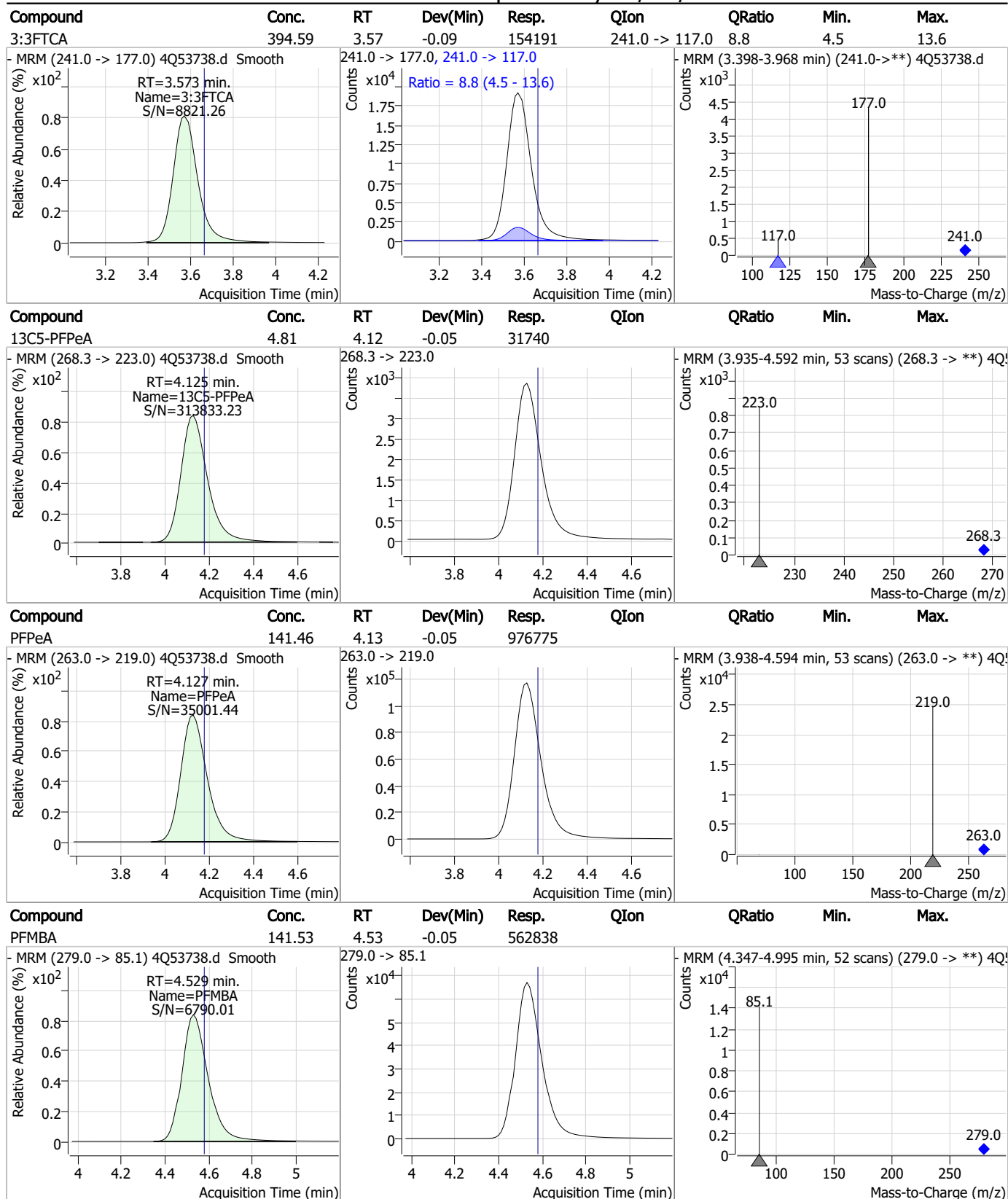
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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7

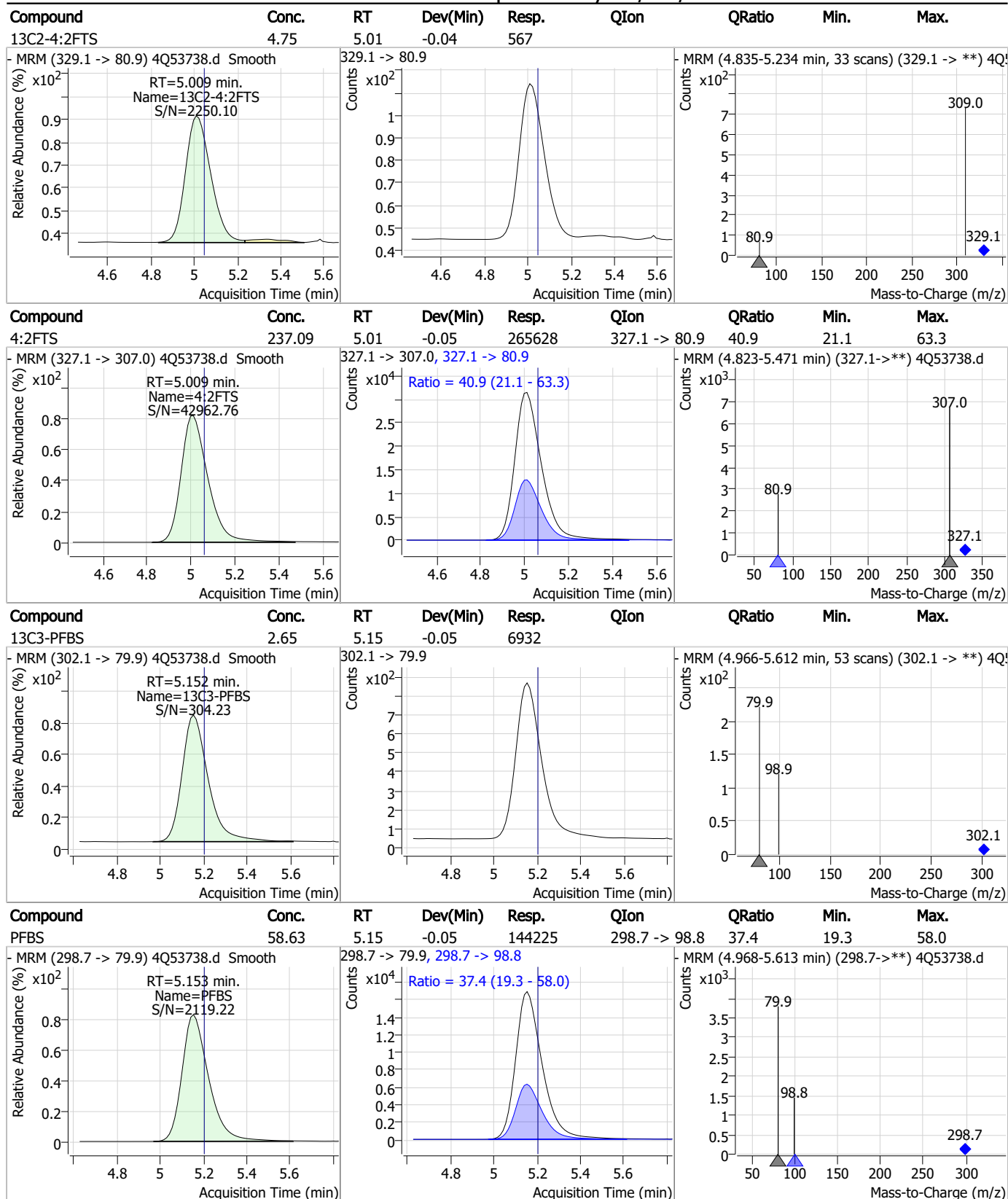
Perfluorinated Compounds by LC/MS/MS



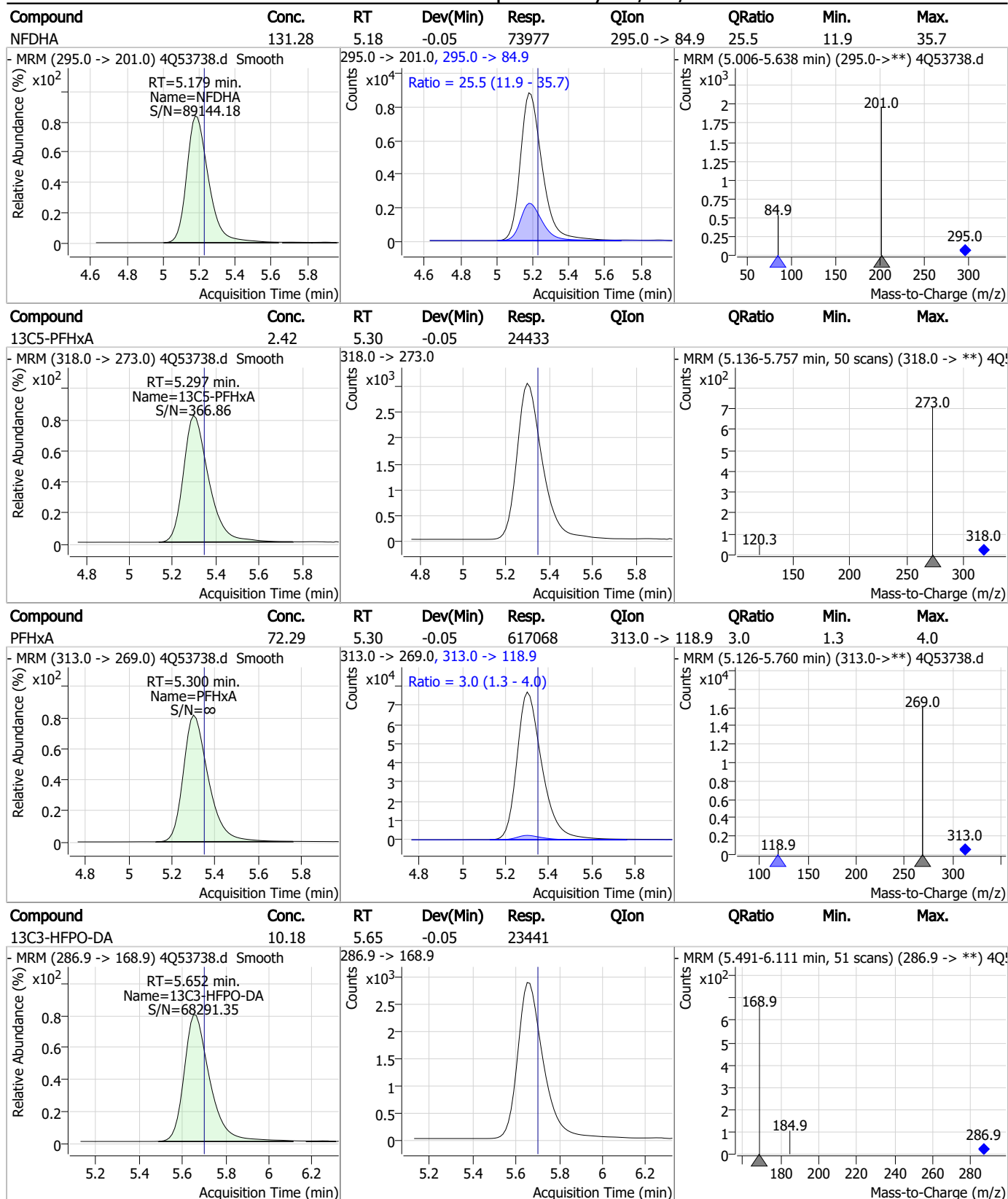
Perfluorinated Compounds by LC/MS/MS



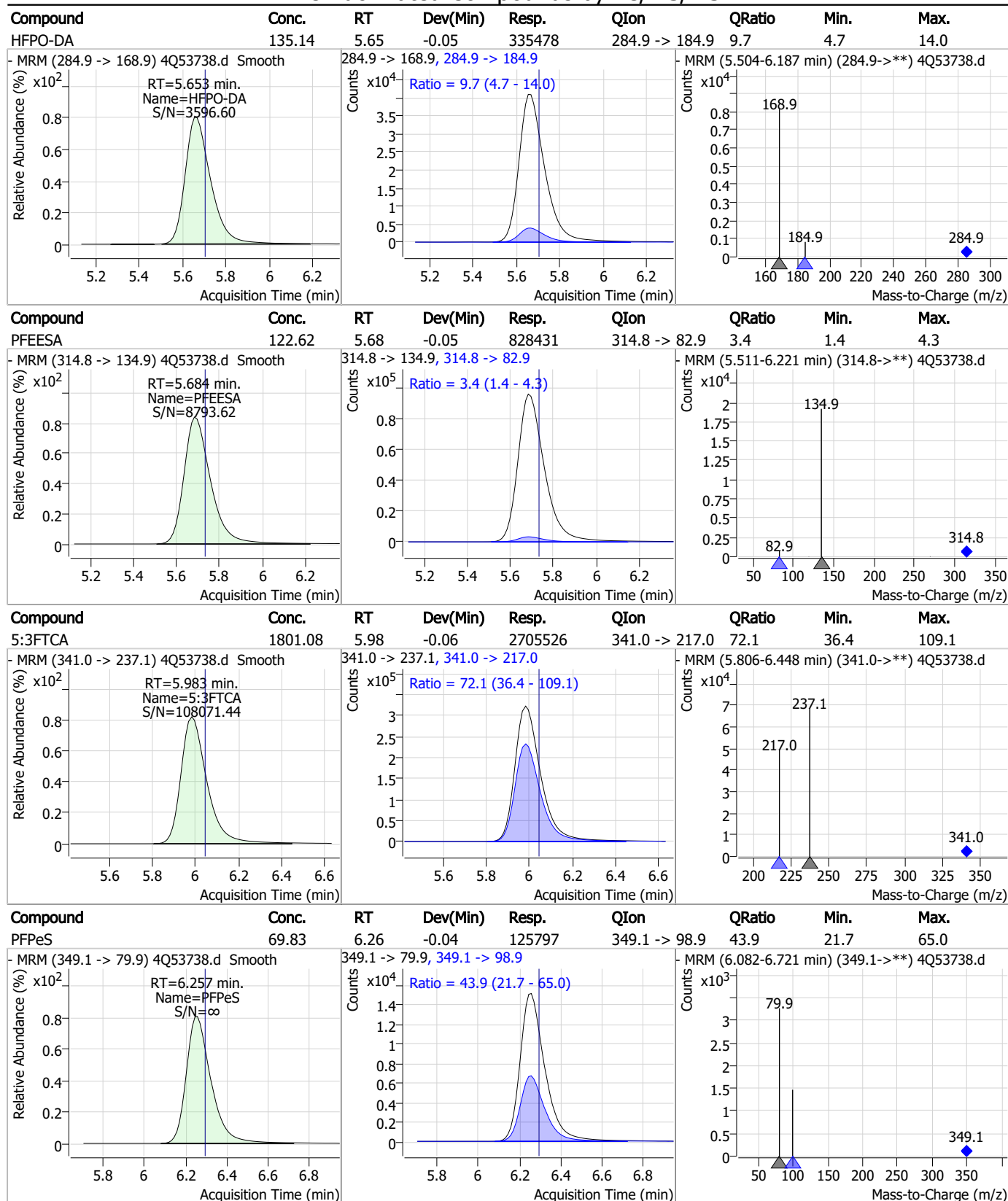
Perfluorinated Compounds by LC/MS/MS



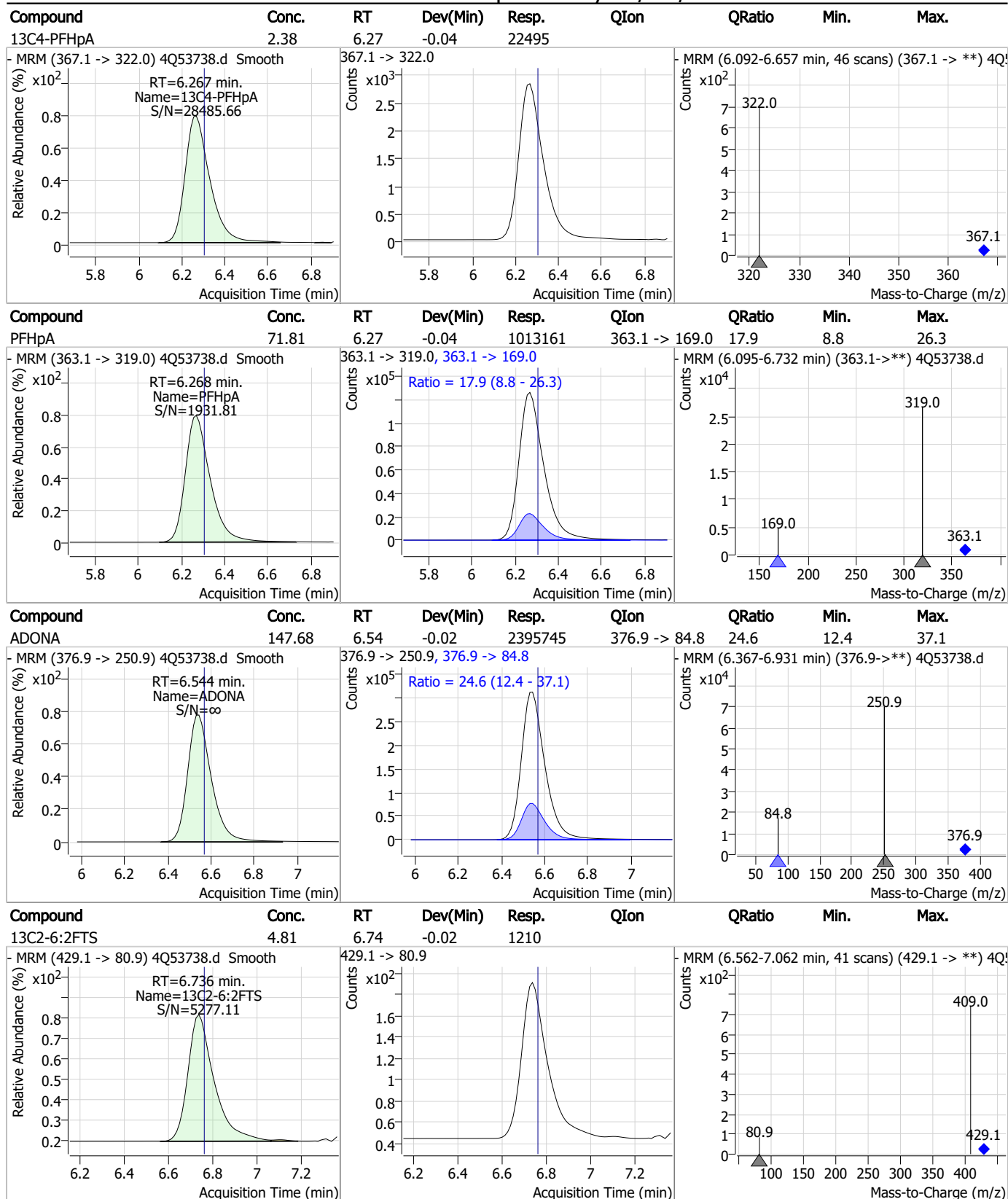
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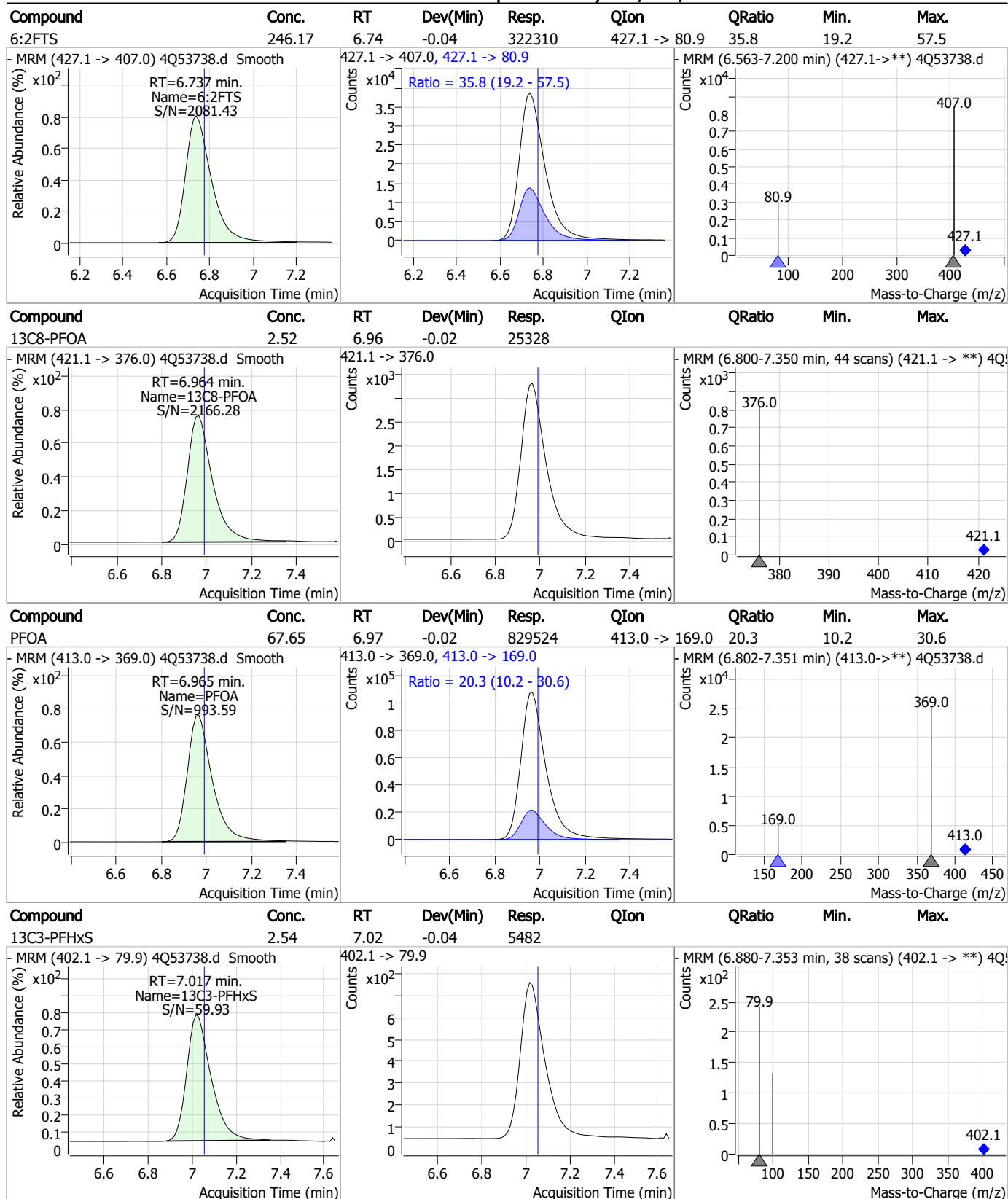
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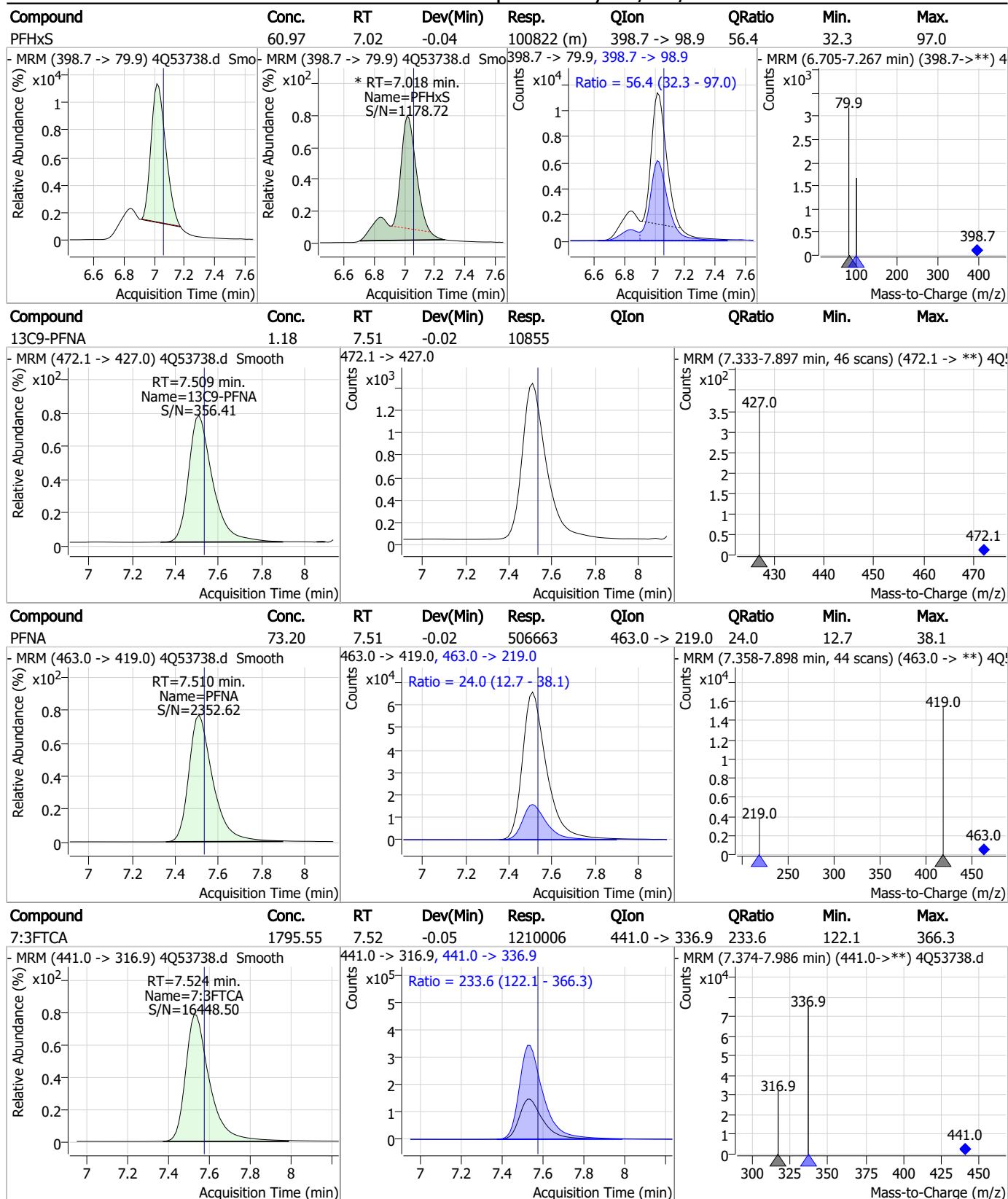
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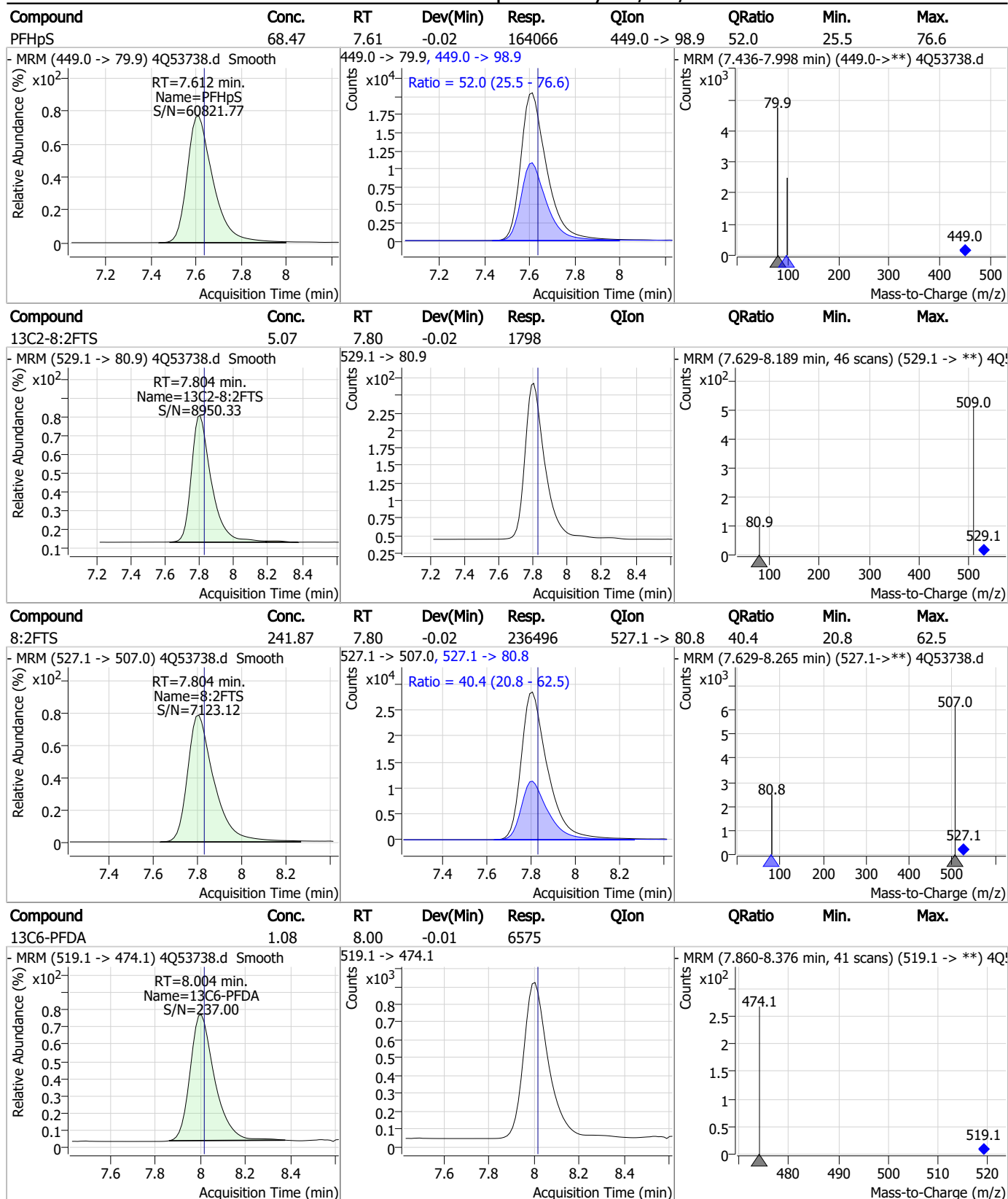
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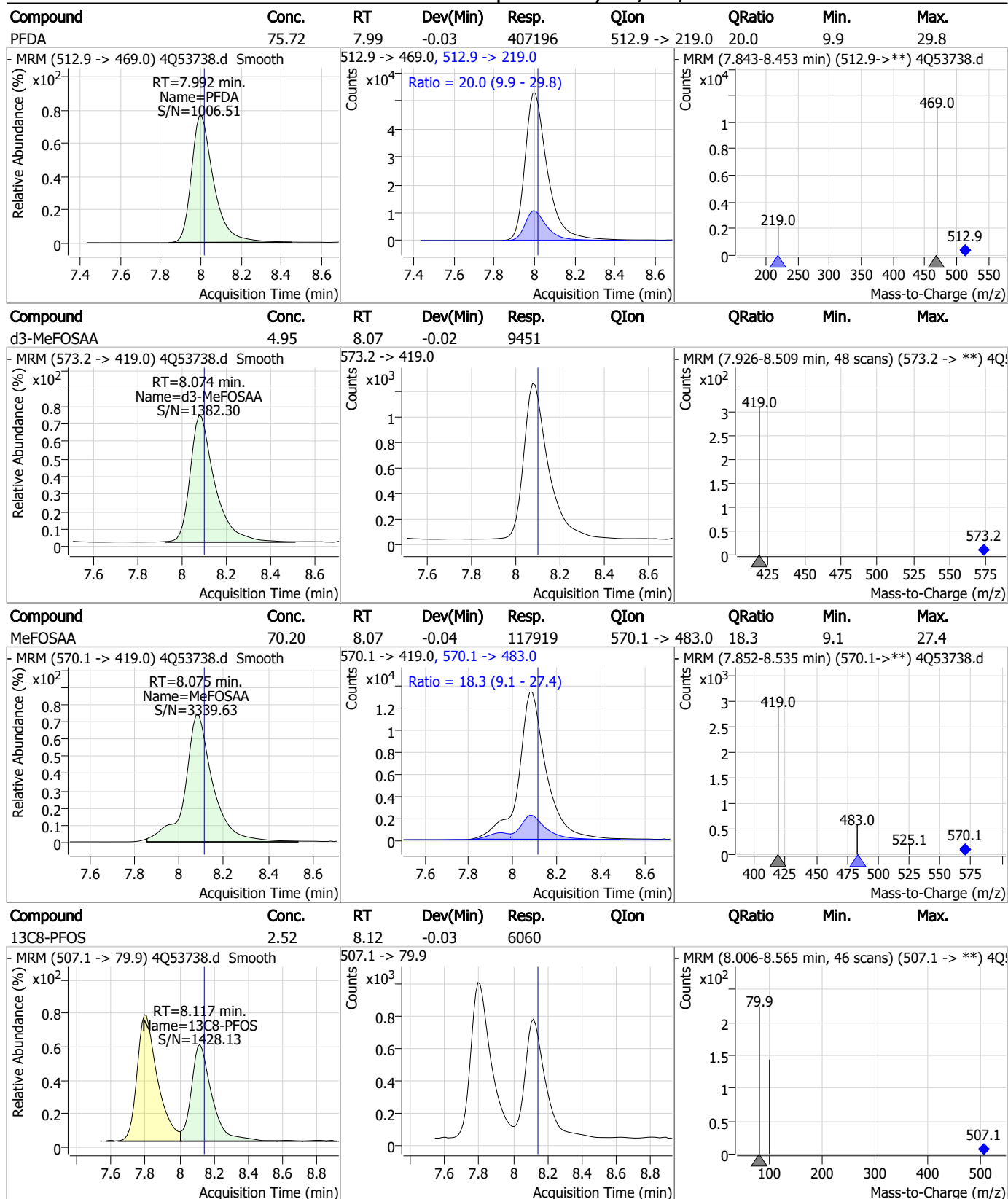
Perfluorinated Compounds by LC/MS/MS



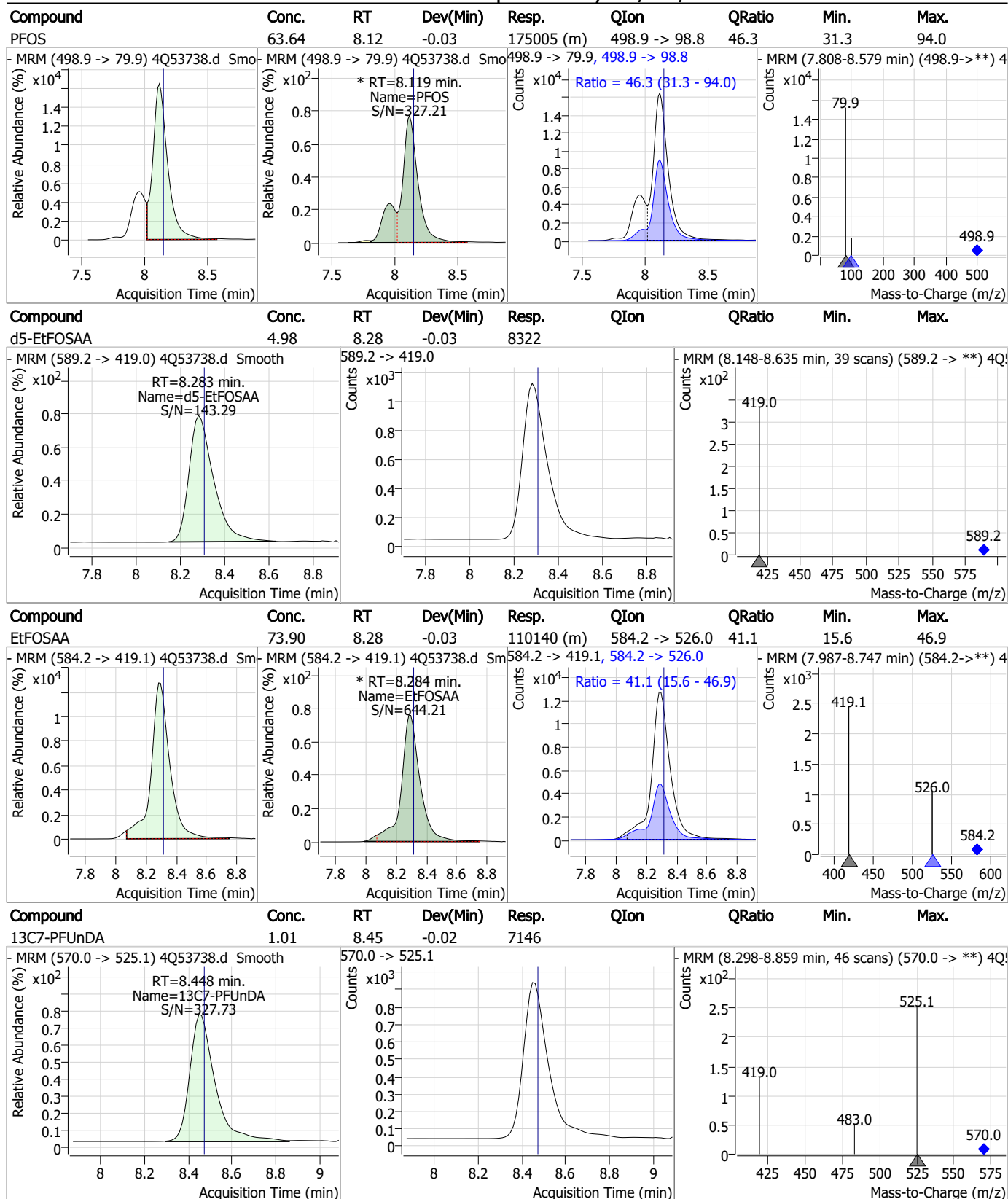
Perfluorinated Compounds by LC/MS/MS



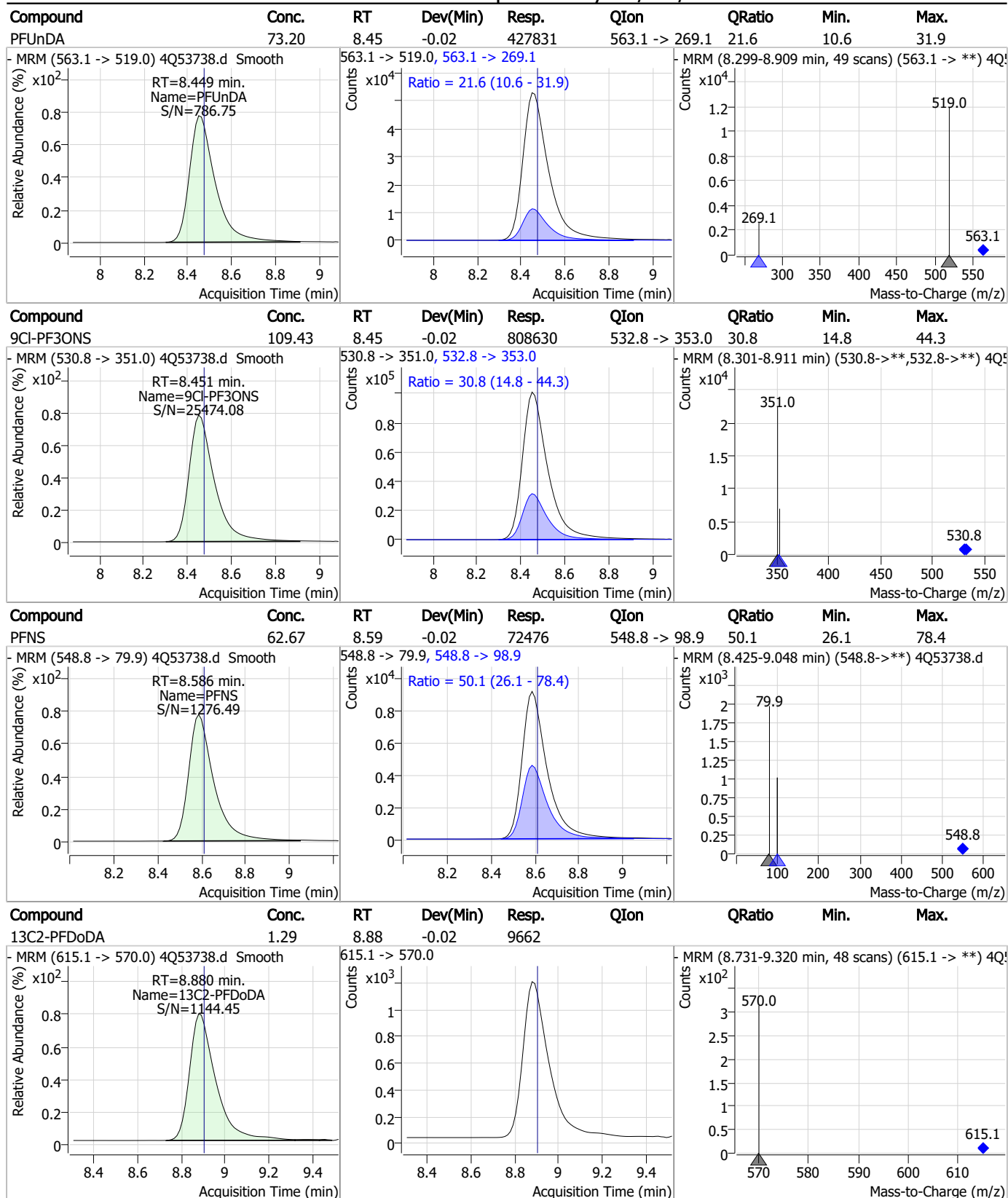
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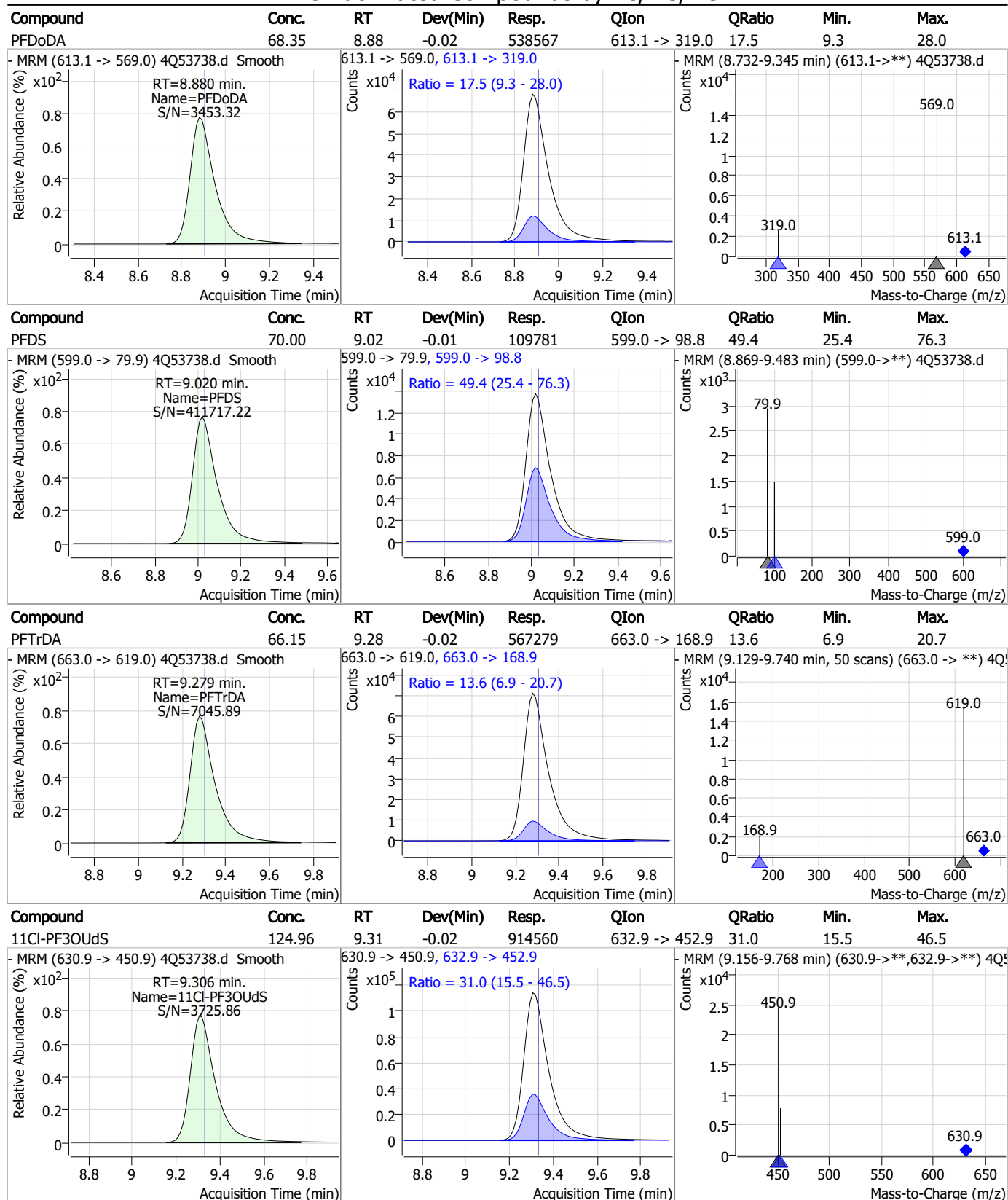
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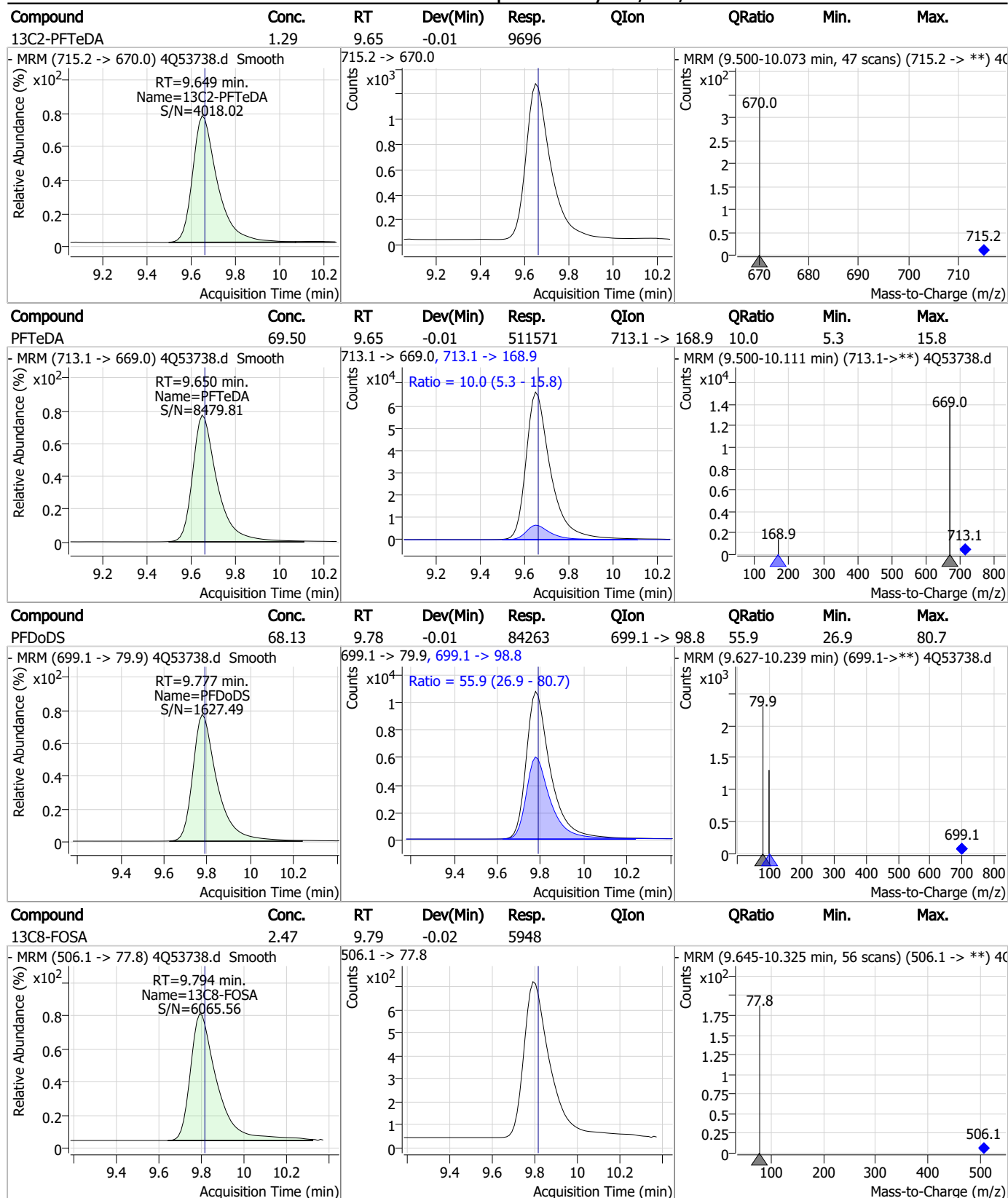
Perfluorinated Compounds by LC/MS/MS



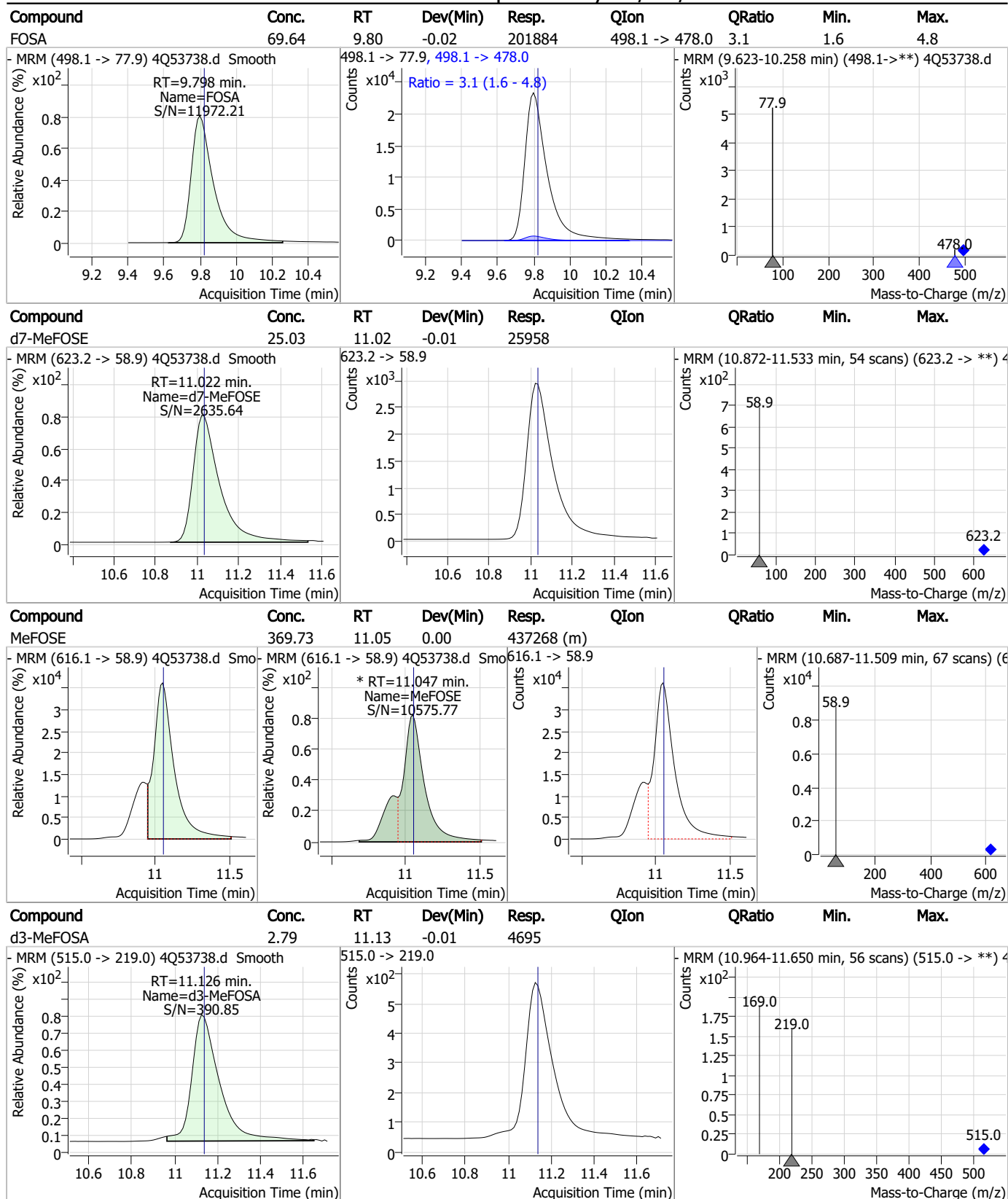
Perfluorinated Compounds by LC/MS/MS



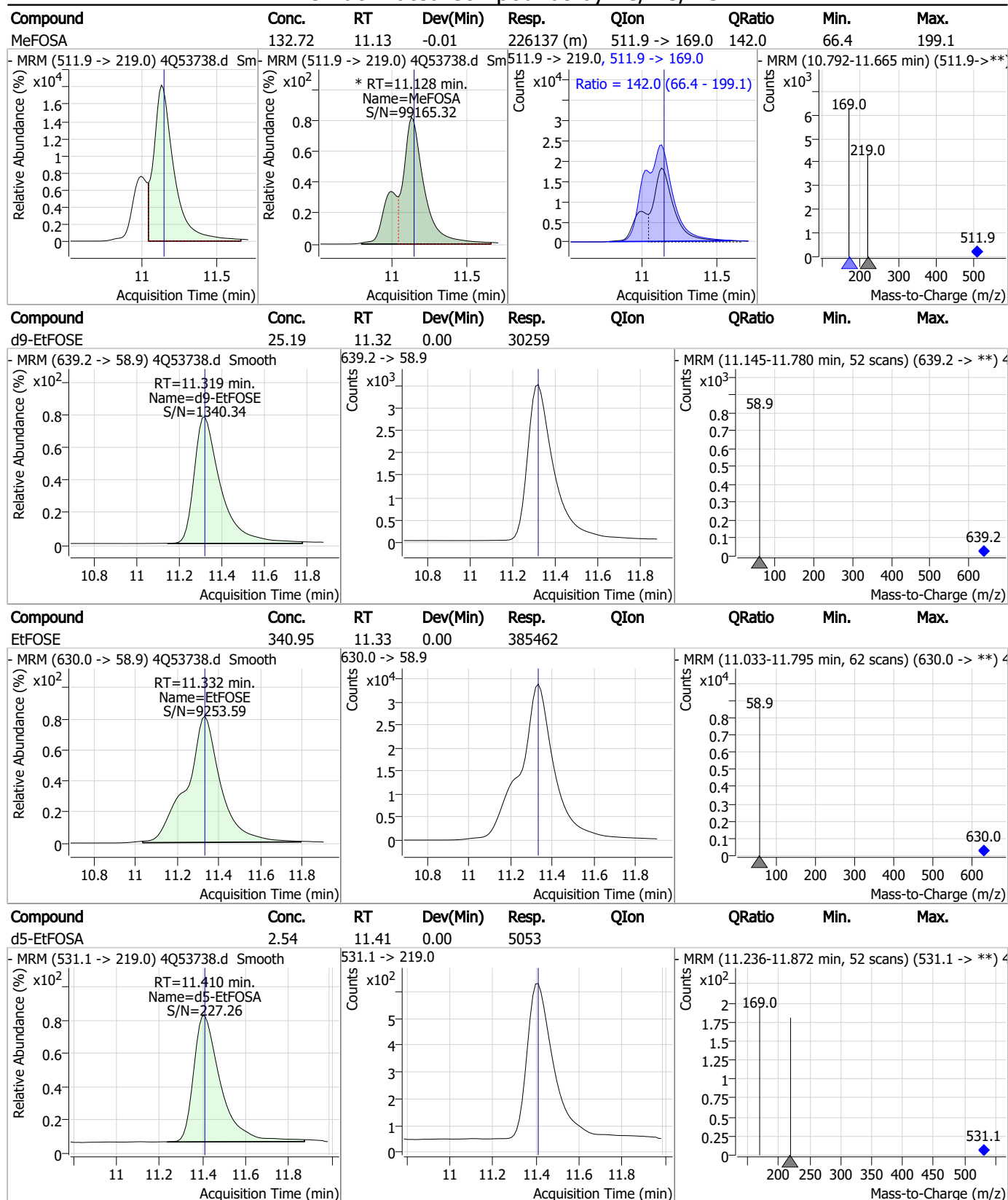
Perfluorinated Compounds by LC/MS/MS



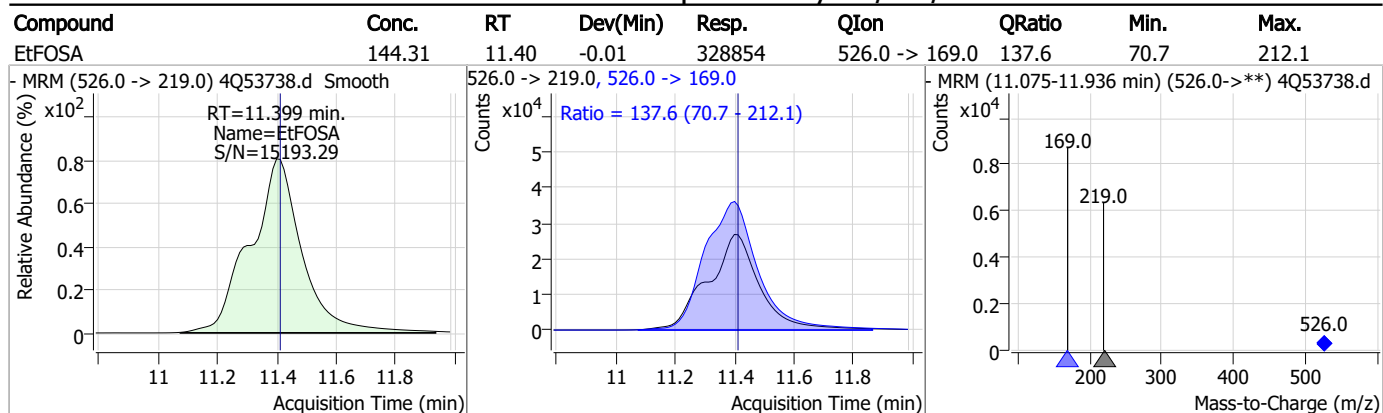
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.7.9

7

Manual Integration Approval Summary

Sample Number: S4Q785-IC785

Method: EPA DRAFT 1633

Lab FileID: 4Q53738.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 17:42

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak
MeFOSE	24448-09-7		11.05	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.9.1
7

Natasha Gumtie
11/14/23 15:48

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53740.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 6:12:22 PM
 Sample Name : icv785-4
 Vial : P1-B3
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	91086	10.00 µg/L	-0.075
M5-PFPeA	4.112	268.3 -> 223.0	38704	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	30443	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	28170	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	31628	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	13639	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	9559	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	11458	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	11245	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	11351	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7646	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	8546	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6570	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7558	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	925	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1632	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2328	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	13119	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	26751	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	10087	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	31421	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	36290	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	6039	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4833	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6428	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	43251	5.00 µg/L	-0.075
18O2-PFHxS	7.016	403.0 -> 83.9	4466	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	36230	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	10134	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	13040	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	32003	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	925	6.05 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.0%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1632	5.07 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2328	5.13 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	11245	1.23 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C2-PFTeDA	9.649	715.2 -> 670.0	11351	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C3-PFBS	5.152	302.1 -> 79.9	8546	2.55 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C3-PFHxS	7.017	402.1 -> 79.9	6570	2.37 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.9%		
13C4-PFBA	2.624	216.8 -> 171.9	91086	10.11 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C4-PFHpA	6.267	367.1 -> 322.0	28170	2.52 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C5-PFHxA	5.297	318.0 -> 273.0	30443	2.55 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C5-PFPeA	4.112	268.3 -> 223.0	38704	4.96 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C6-PFDA	8.004	519.1 -> 474.1	9559	1.28 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C7-PFUnDA	8.448	570.0 -> 525.1	11458	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.4%		
13C8-FOSA	9.794	506.1 -> 77.8	7646	2.49 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C8-PFOA	6.964	421.1 -> 376.0	31628	2.45 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C8-PFOS	8.117	507.1 -> 79.9	7558	2.46 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C9-PFNA	7.509	472.1 -> 427.0	13639	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.1%		
d3-MeFOSAA	8.074	573.2 -> 419.0	13119	5.38 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.6%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	26751	9.82 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.2%		
d3-MeFOSA	11.126	515.0 -> 219.0	4833	2.25 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.1%		
d5-EtFOSAA	8.283	589.2 -> 419.0	10087	4.72 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.5%		
d7-MeFOSE	11.022	623.2 -> 58.9	31421	23.73 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 94.9%		
d9-EtFOSE	11.319	639.2 -> 58.9	36290	23.66 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 94.6%		
d5-EtFOSA	11.397	531.1 -> 219.0	6039	2.37 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.9%		

Target Compounds

					QValue
4:2FTS	5.009	327.1 -> 307.0	15577	8.52 µg/L	99
		327.1 -> 80.9	6429		
6:2FTS	6.737	427.1 -> 407.0	18273	10.34 µg/L	99
		427.1 -> 80.9	6878		
8:2FTS	7.804	527.1 -> 507.0	13418	10.60 µg/L	96
		527.1 -> 80.8	5943		
EtFOSAA	8.284	584.2 -> 419.1	5237	2.90 µg/L	86
		584.2 -> 526.0	2047		
FOSA	9.798	498.1 -> 77.9	8990	2.41 µg/L	100
		498.1 -> 478.0	283		
MeFOSAA	8.087	570.1 -> 419.0	5522	2.37 µg/L	97
		570.1 -> 483.0	1087		
PFBA	2.620	212.8 -> 168.9	32434	9.79 µg/L	100
PFBS	5.153	298.7 -> 79.9	6169	2.03 µg/L	98
		298.7 -> 98.8	2466		
PFDA	8.005	512.9 -> 469.0	18159	2.32 µg/L	98
		512.9 -> 219.0	3796		
PFDODA	8.880	613.1 -> 569.0	22197	2.42 µg/L	99
		613.1 -> 319.0	4210		
PFDS	9.020	599.0 -> 79.9	4552	2.33 µg/L	97

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	2419	2.48	µg/L	97
		363.1 -> 319.0	43766			
PFHpS	7.612	363.1 -> 169.0	8154	2.49	µg/L	95
		449.0 -> 79.9	7429			
PFHxA	5.300	449.0 -> 98.9	3547	2.32	µg/L	97
		313.0 -> 269.0	24623			
PFHxS	7.018	313.0 -> 118.9	923	2.55	µg/L	83
		398.7 -> 79.9	5053			
PFNA	7.510	398.7 -> 98.9	2592	2.44	µg/L	98
		463.0 -> 419.0	21232			
PFNS	8.586	463.0 -> 219.0	5203	2.38	µg/L	99
		548.8 -> 79.9	3435			
PFOA	6.965	548.8 -> 98.9	1813	2.36	µg/L	98
		413.0 -> 369.0	36189			
PFOS	8.119	413.0 -> 169.0	7700	2.15	µg/L	90
		498.9 -> 79.9	7372			
PFPeA	4.114	498.9 -> 98.8	4045	4.92	µg/L	100
		263.0 -> 219.0	41399			
PFPeS	6.257	349.1 -> 79.9	4953	2.29	µg/L	87
		349.1 -> 98.9	2558			
PFTeDA	9.650	713.1 -> 669.0	20611	2.39	µg/L	99
		713.1 -> 168.9	2264			
PFTrDA	9.279	663.0 -> 619.0	26131	2.62	µg/L	100
		663.0 -> 168.9	3635			
PFUnDA	8.449	563.1 -> 519.0	23372	2.49	µg/L	99
		563.1 -> 269.1	4920			
11CI-PF3OUdS	9.306	630.9 -> 450.9	39295	4.70	µg/L	100
		632.9 -> 452.9	12136			
9CI-PF3ONS	8.451	530.8 -> 351.0	40084	4.75	µg/L	99
		532.8 -> 353.0	12107			
ADONA	6.544	376.9 -> 250.9	102870	5.56	µg/L	99
		376.9 -> 84.8	25018			
HFPO-DA	5.665	284.9 -> 168.9	13709	4.84	µg/L	98
		284.9 -> 184.9	1377			
3:3FTCA	3.561	241.0 -> 177.0	6152	11.92	µg/L	98
		241.0 -> 117.0	526			
5:3FTCA	5.983	341.0 -> 237.1	110953	59.28	µg/L	99
		341.0 -> 217.0	79965			
7:3FTCA	7.524	441.0 -> 316.9	50091	59.66	µg/L	98
		441.0 -> 336.9	120956			
EtFOSA	11.399	526.0 -> 219.0	13974	5.13	µg/L	95
		526.0 -> 169.0	18861			
EtFOSE	11.332	630.0 -> 58.9	17339	12.79	µg/L	100
		511.9 -> 219.0	9616			
MeFOSA	11.128	511.9 -> 169.0	13744	5.48	µg/L	91
		616.1 -> 58.9	18129			
MeFOSE	11.047	699.1 -> 79.9	3715	12.66	µg/L	100
		699.1 -> 98.8	2076			
PFDoDS	9.777	295.0 -> 201.0	3611	5.14	µg/L	95
		295.0 -> 84.9	956			
NFDHA	5.179	279.0 -> 85.1	23702	4.89	µg/L	100
		229.0 -> 84.9	26450			
PFMBA	3.265	314.8 -> 134.9	36393	4.32	µg/L	98
		314.8 -> 82.9	1306			

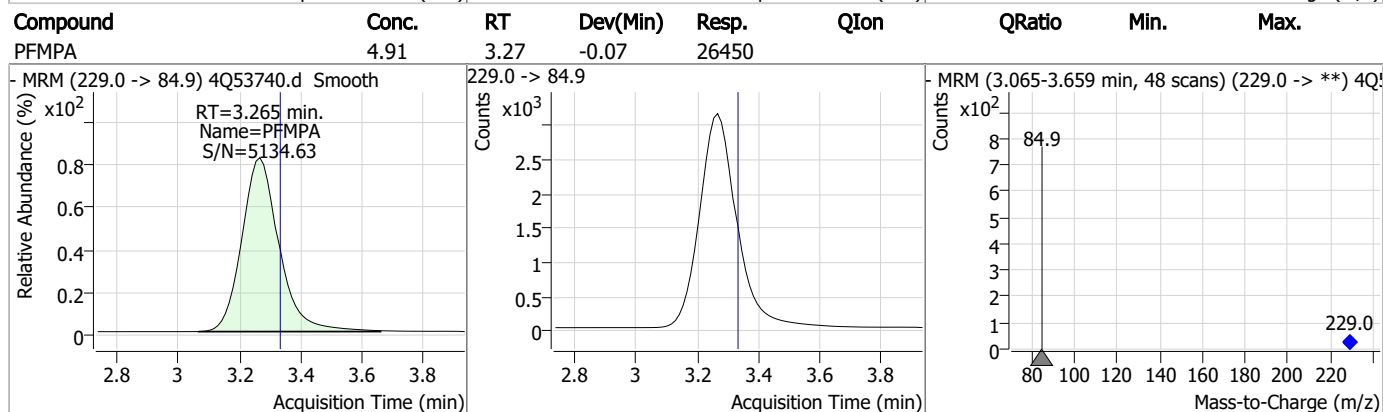
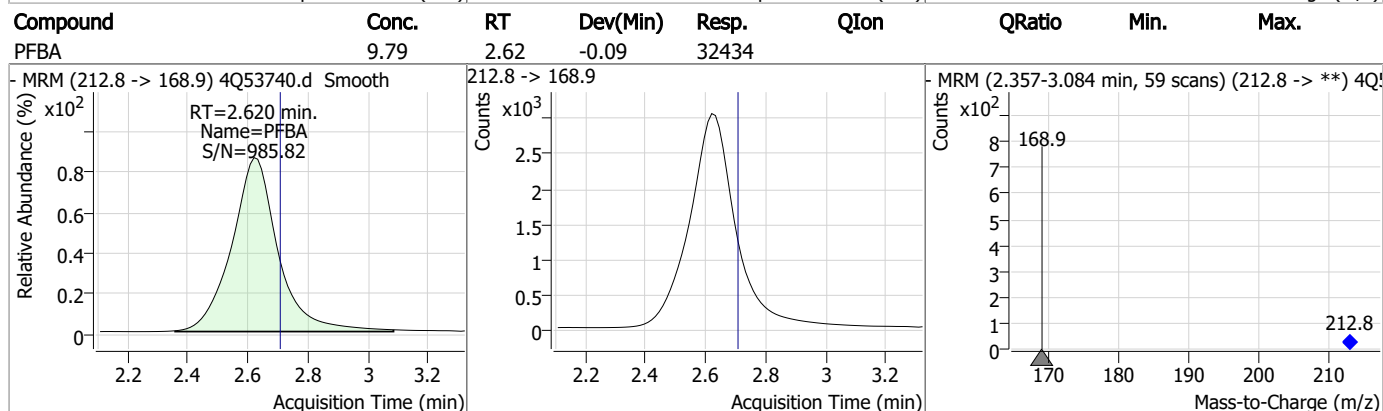
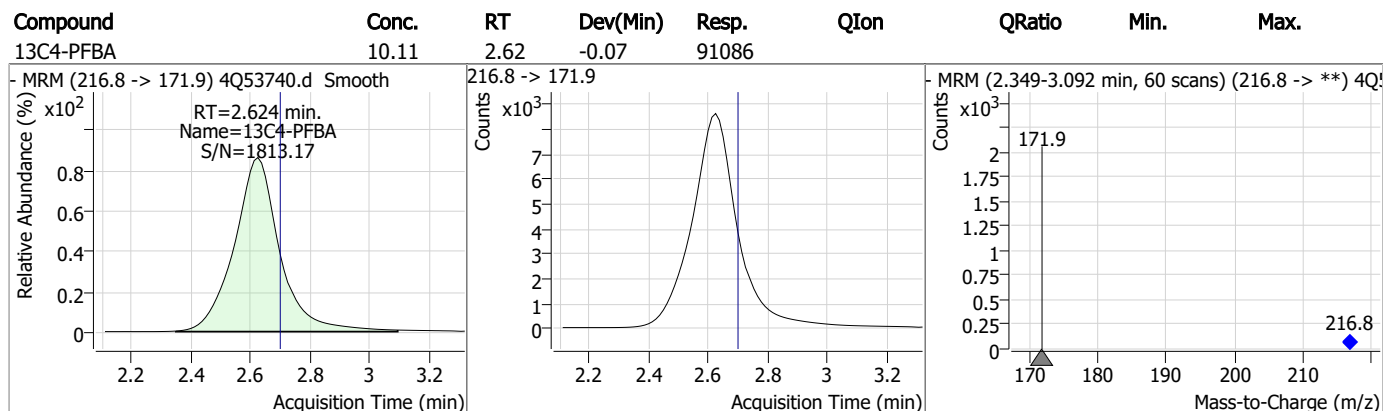
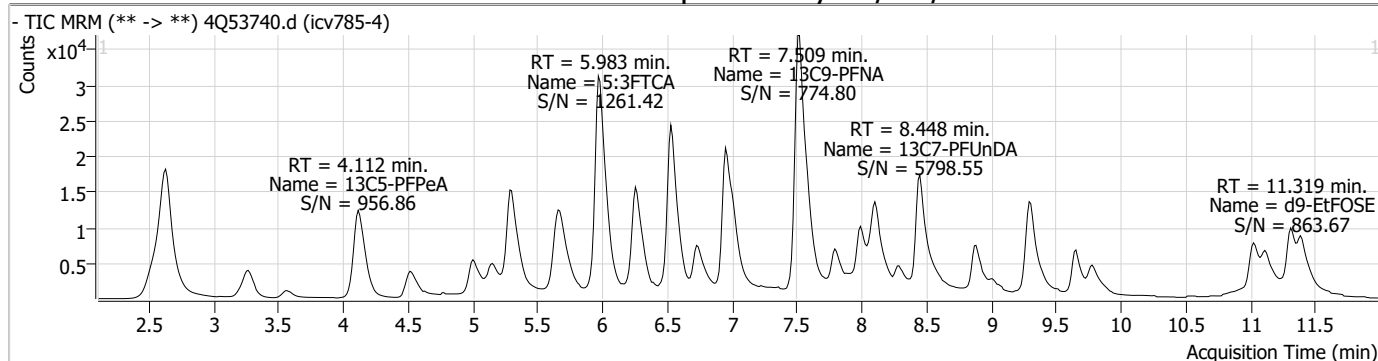
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

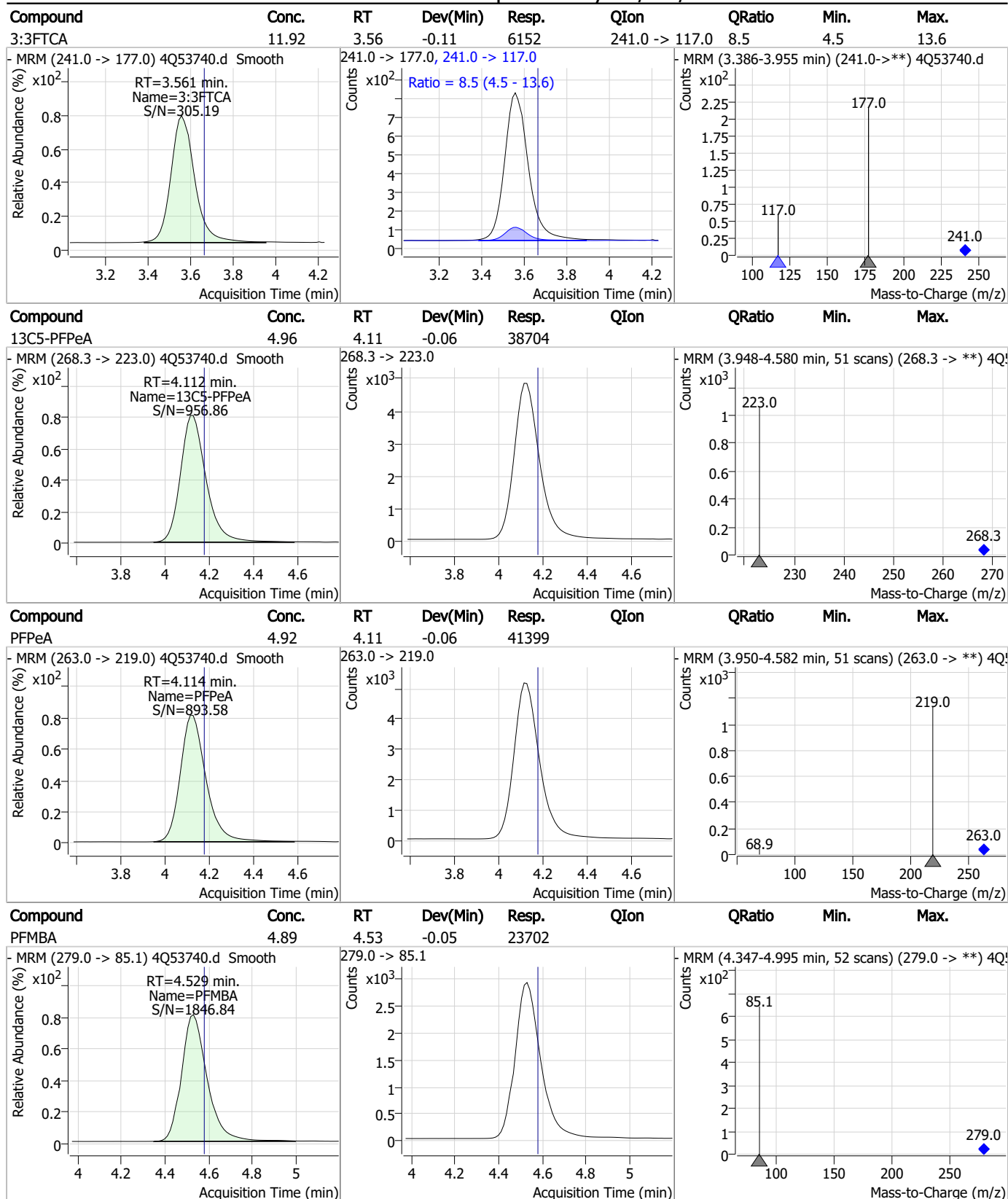
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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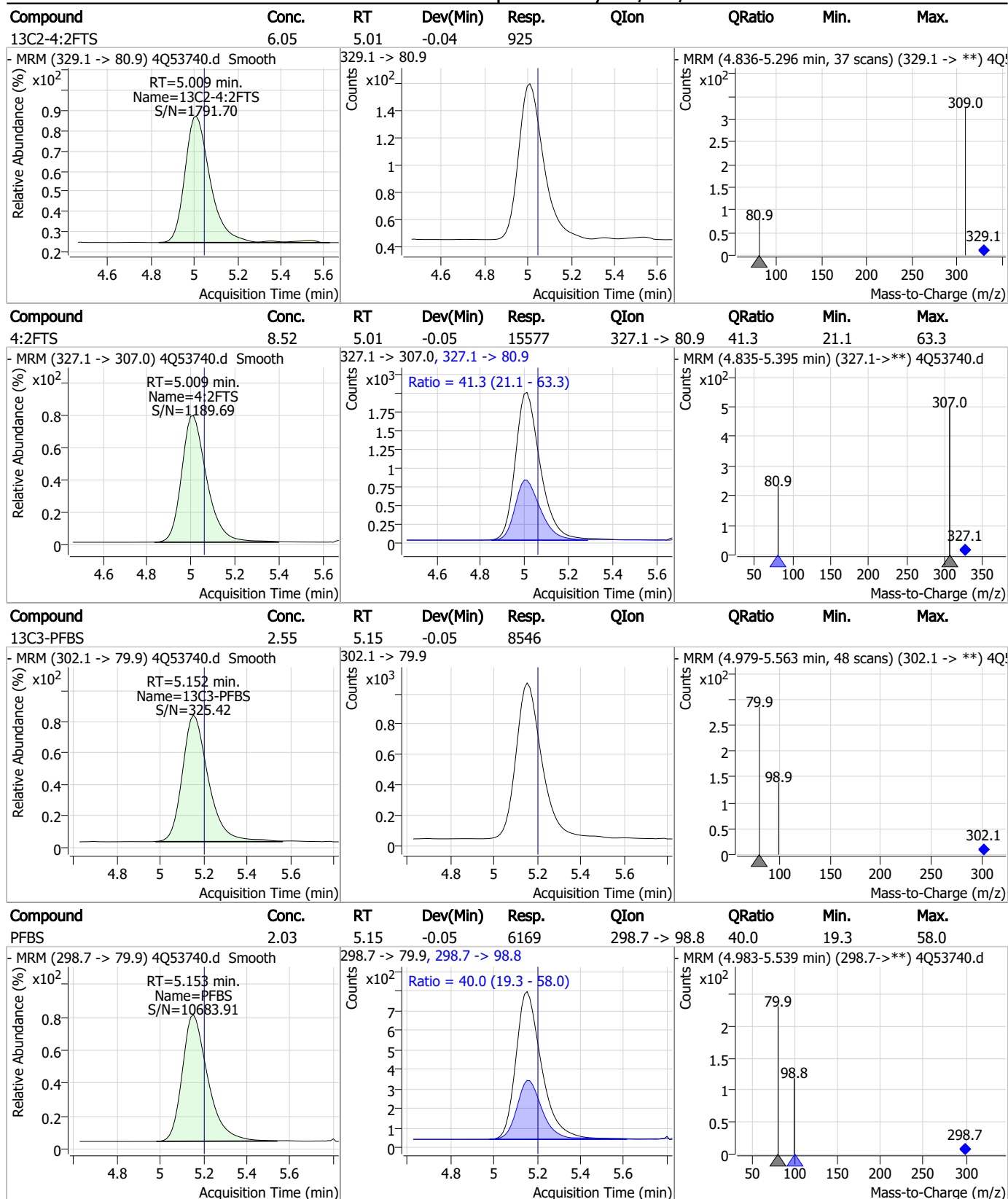
Perfluorinated Compounds by LC/MS/MS



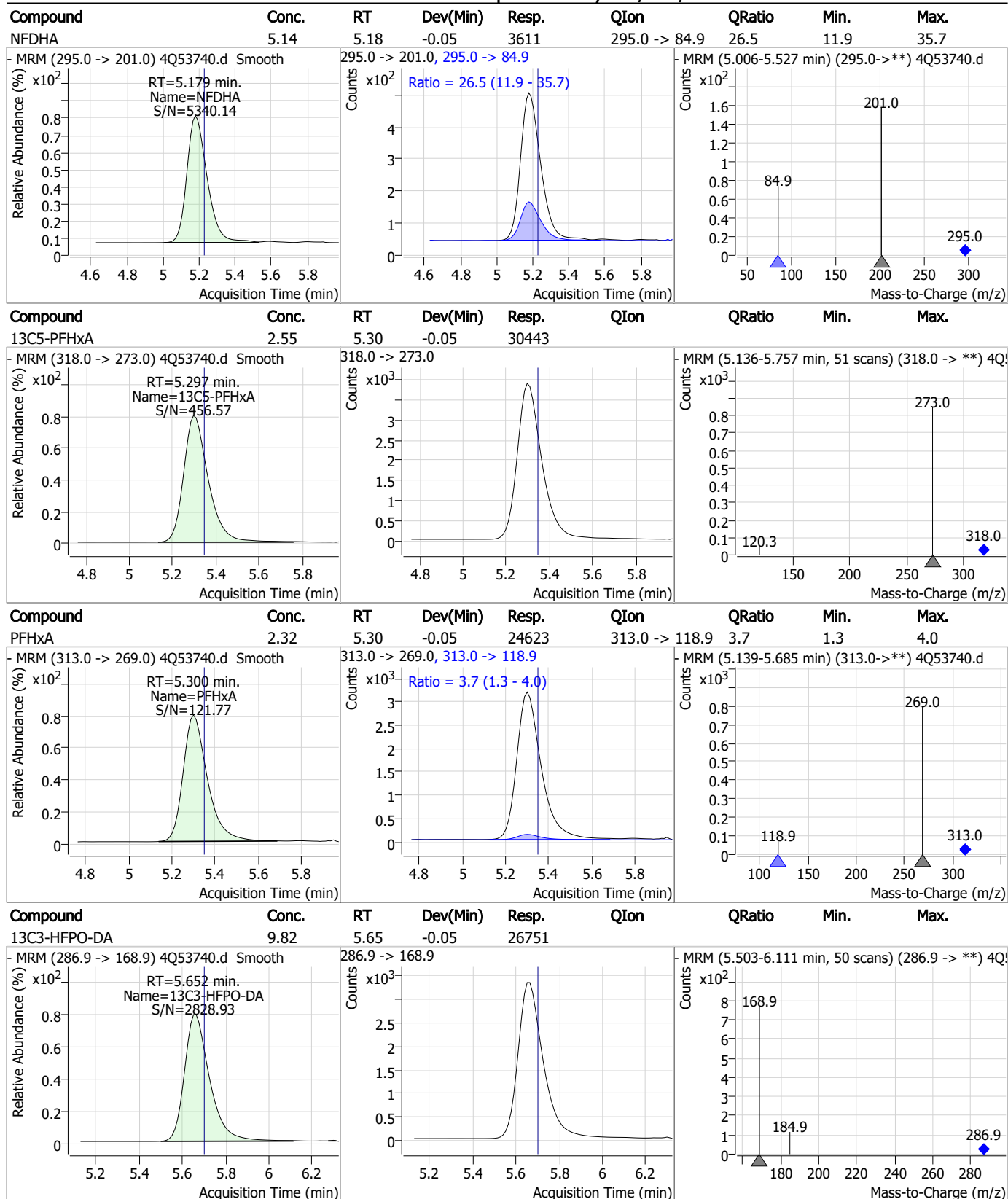
Perfluorinated Compounds by LC/MS/MS



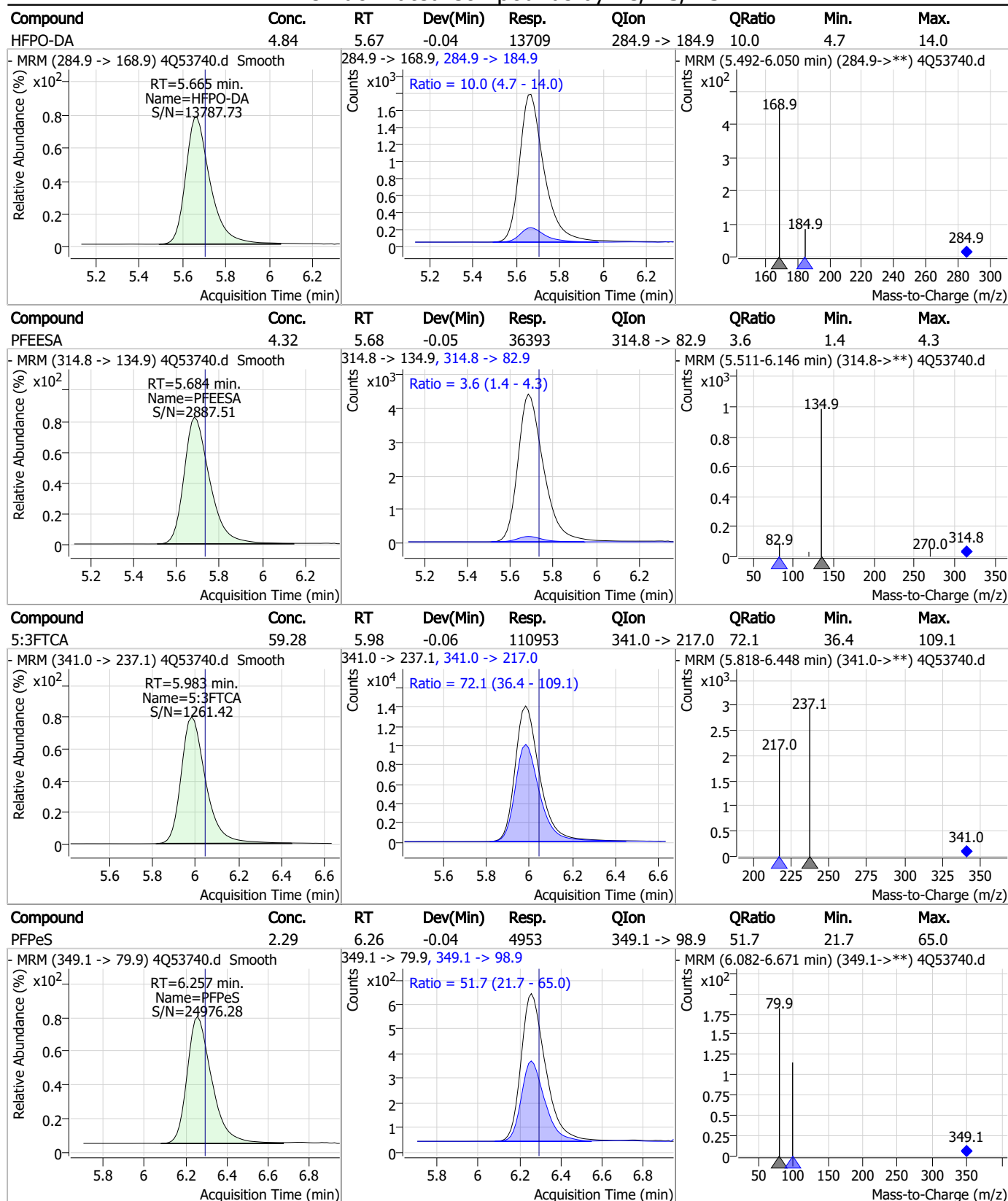
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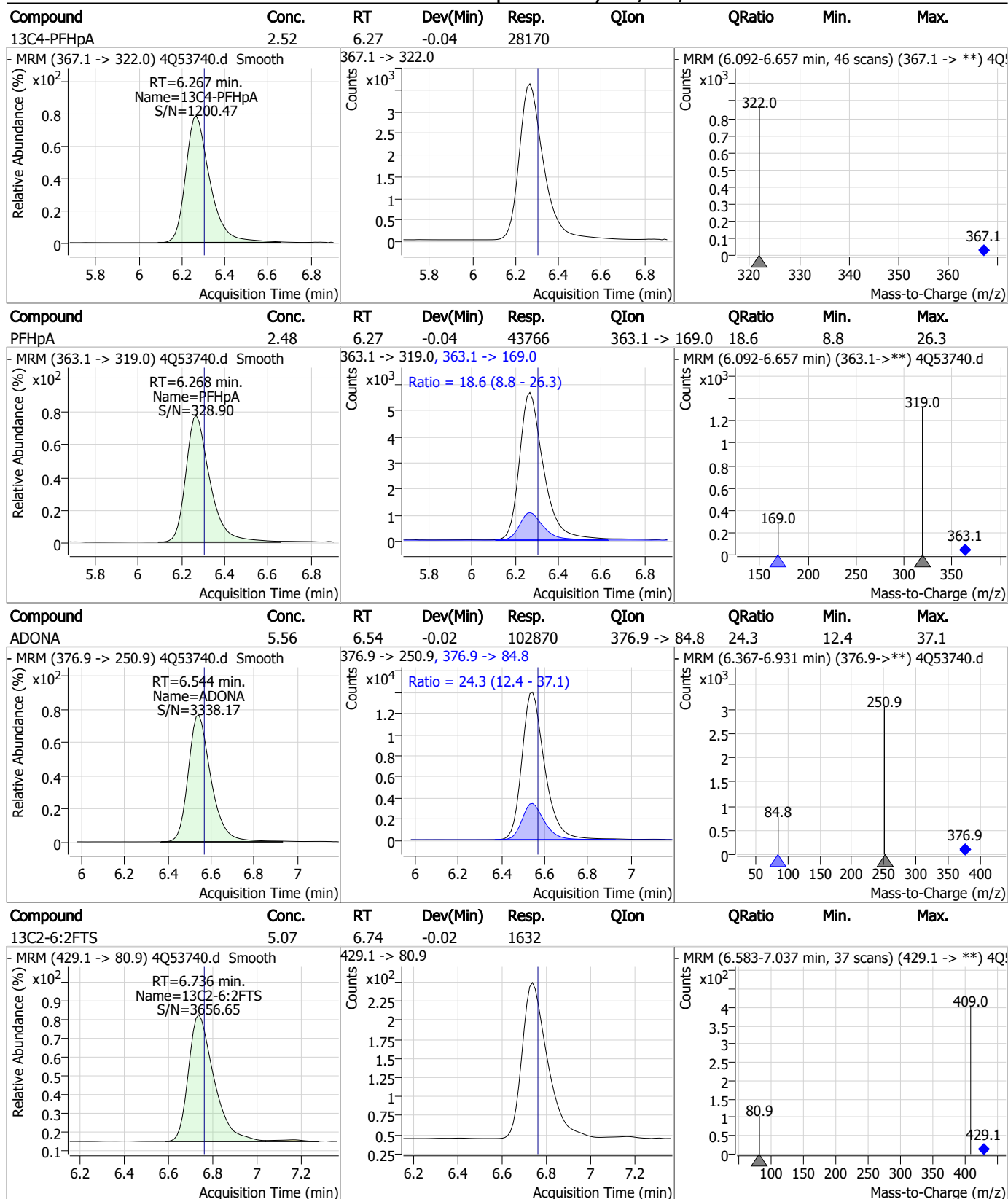
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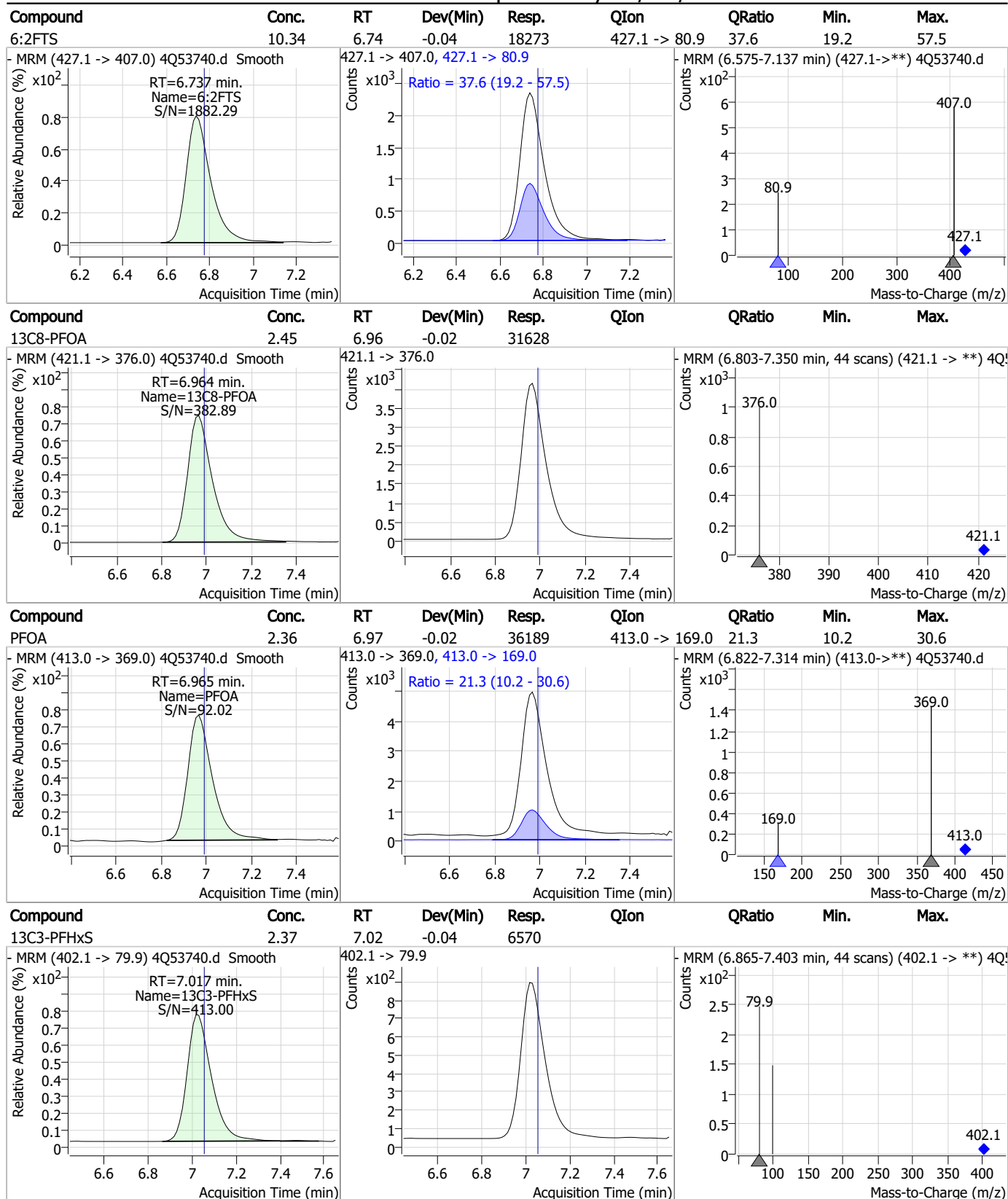
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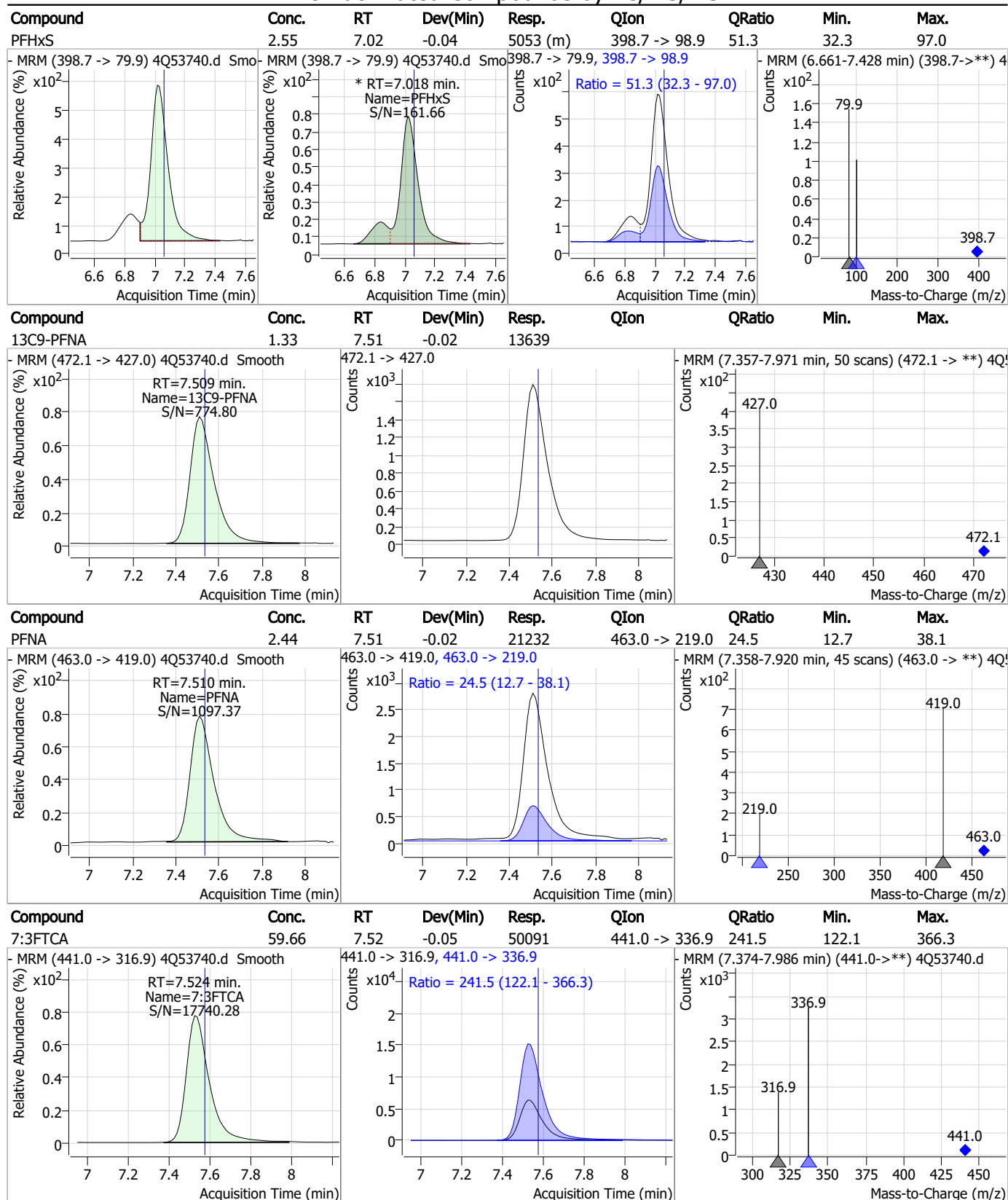
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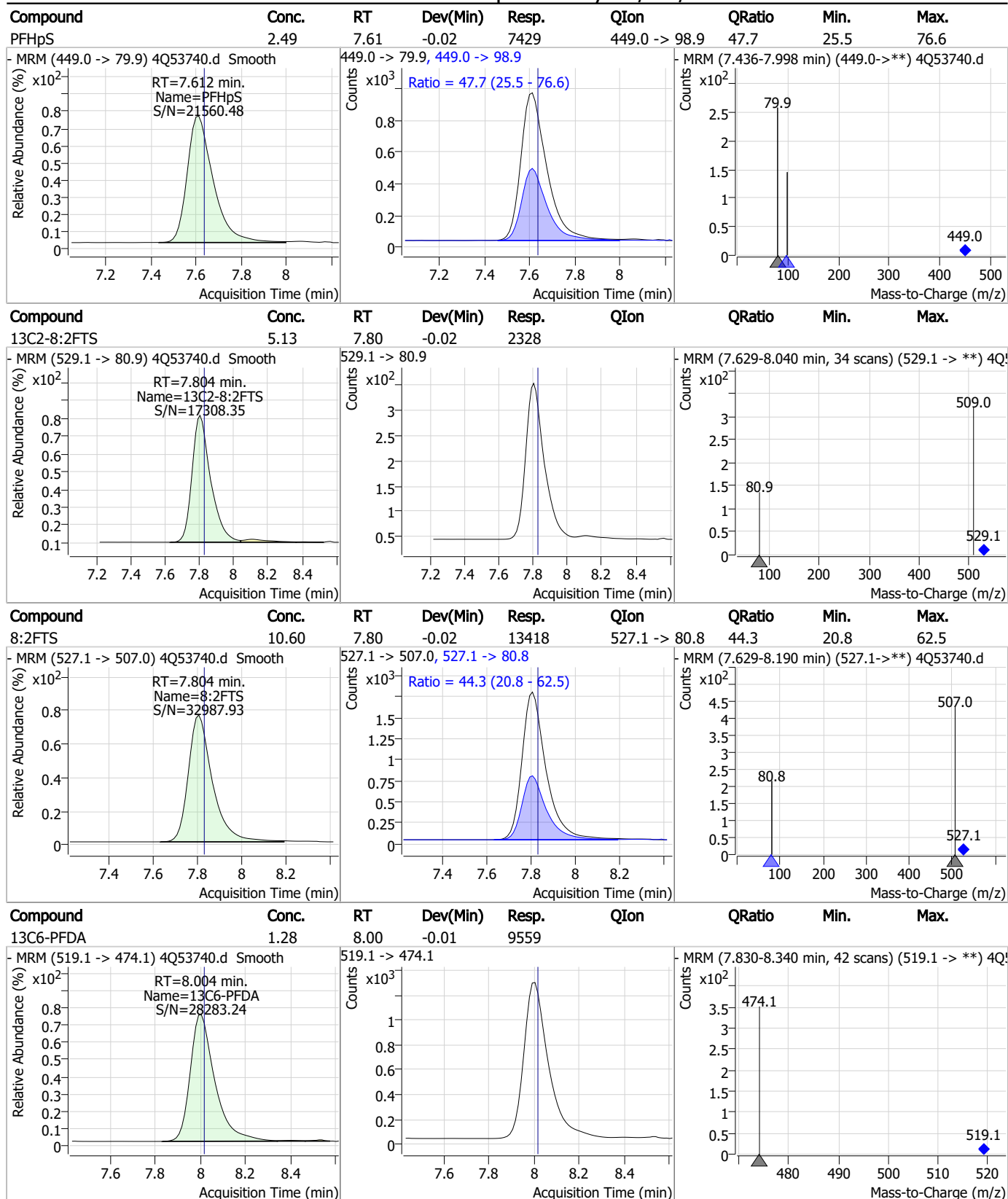
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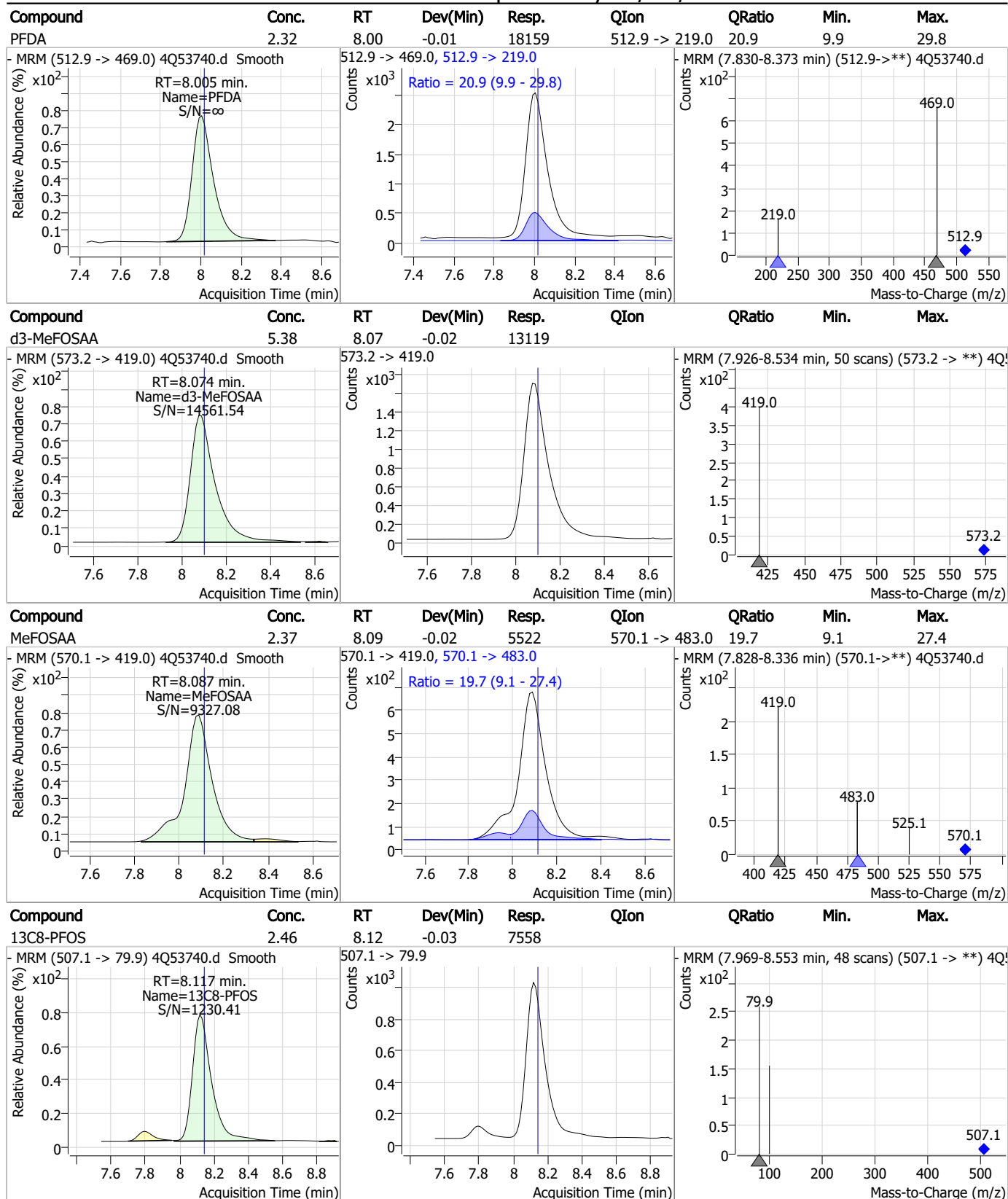
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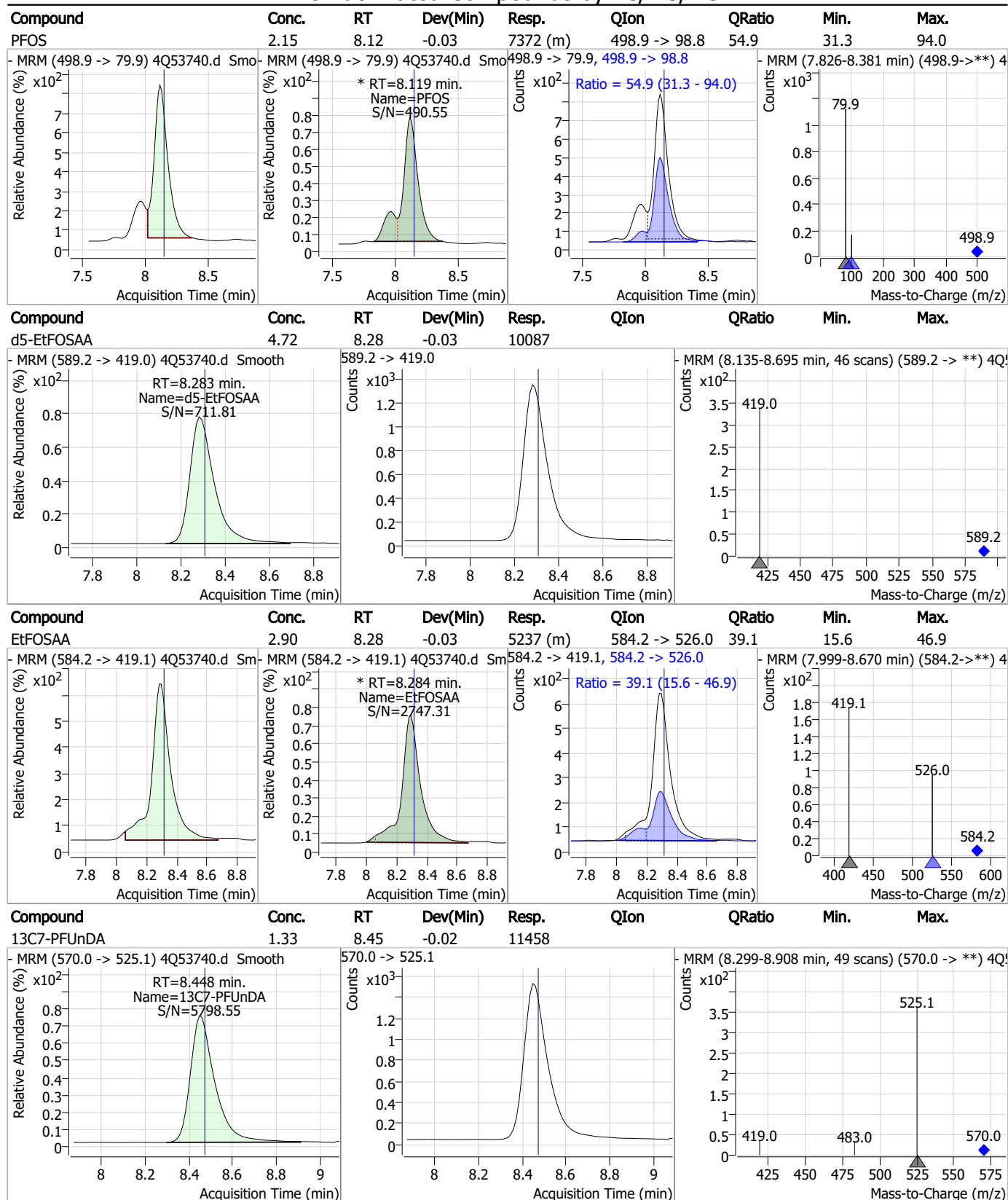
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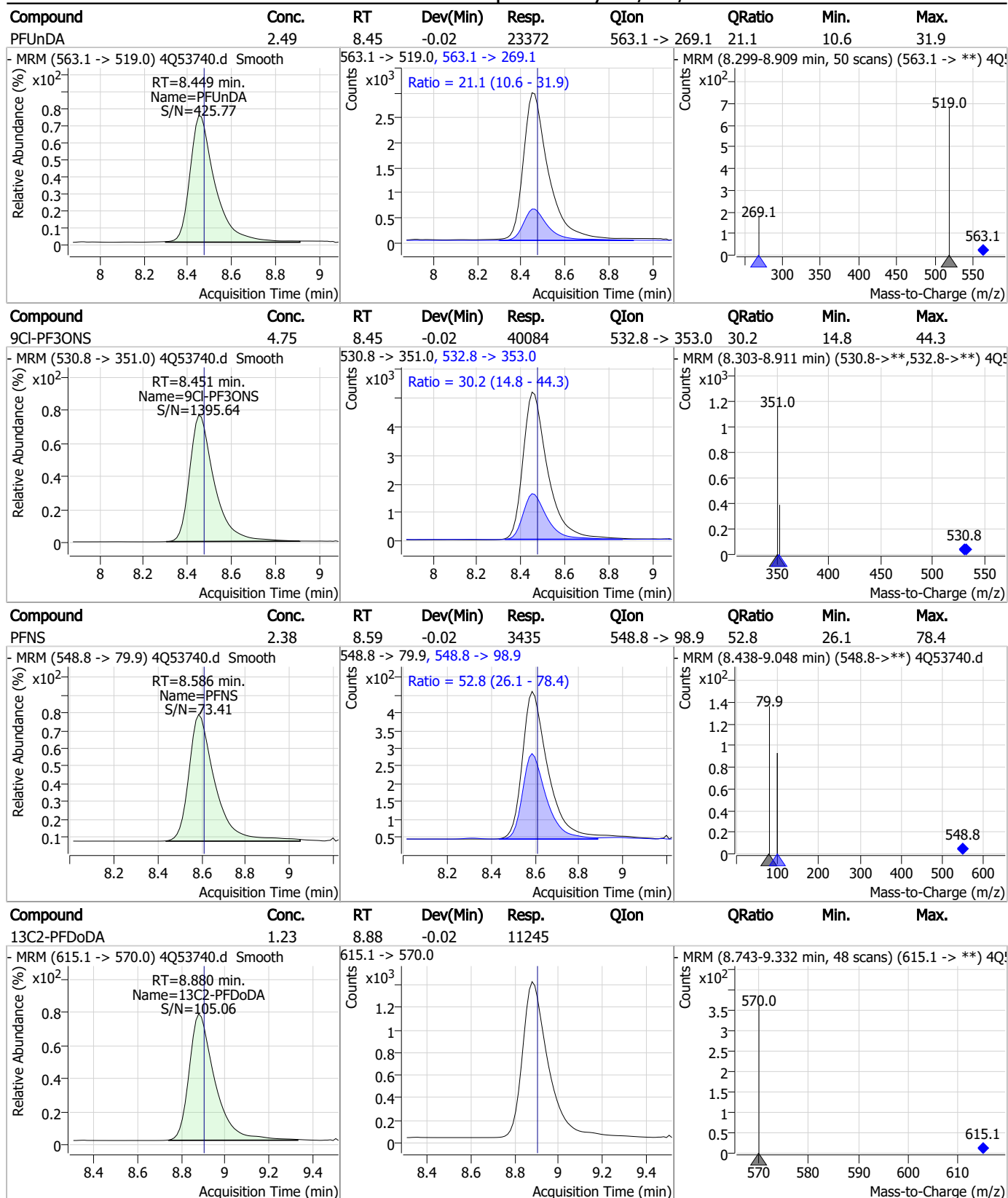
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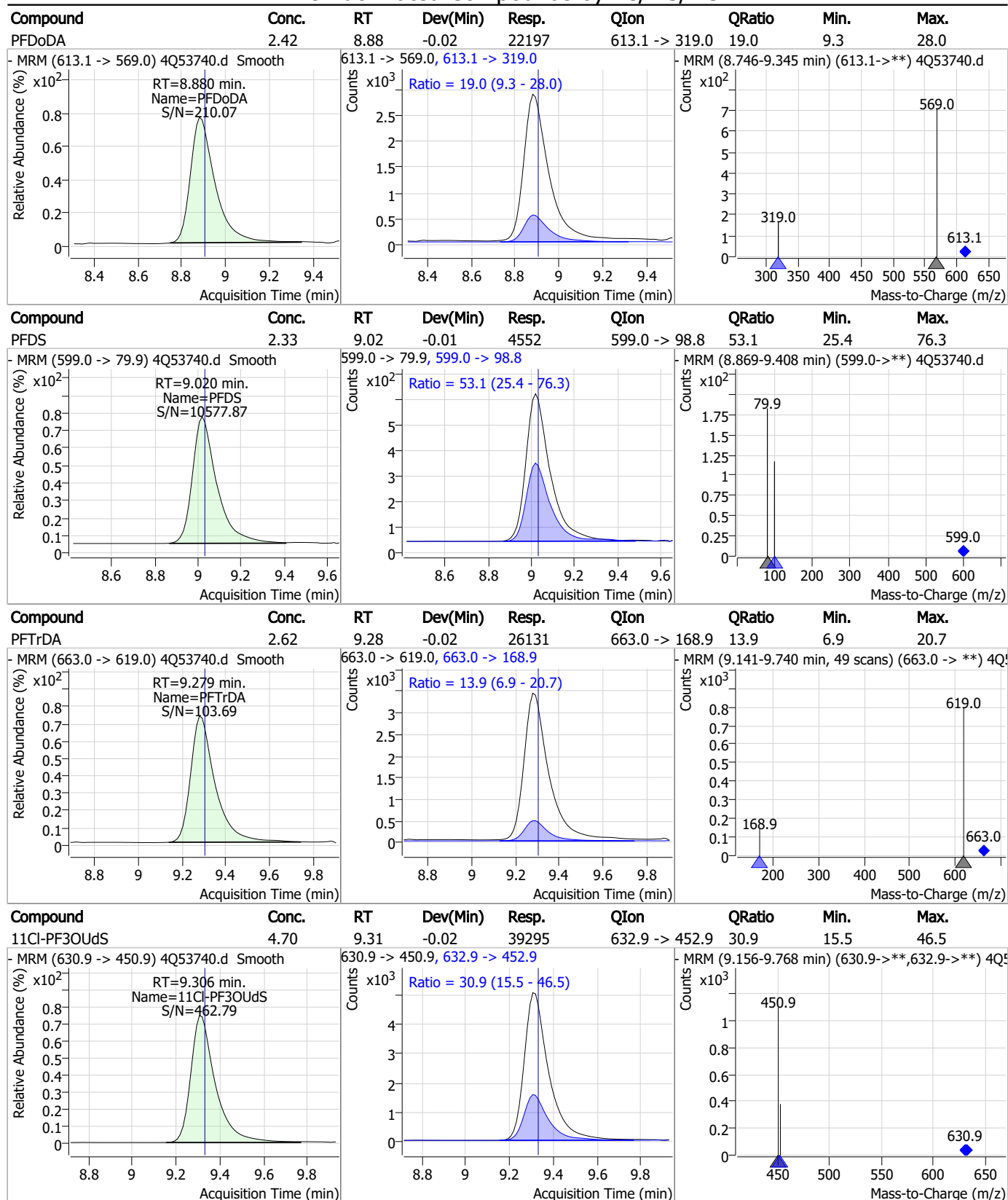
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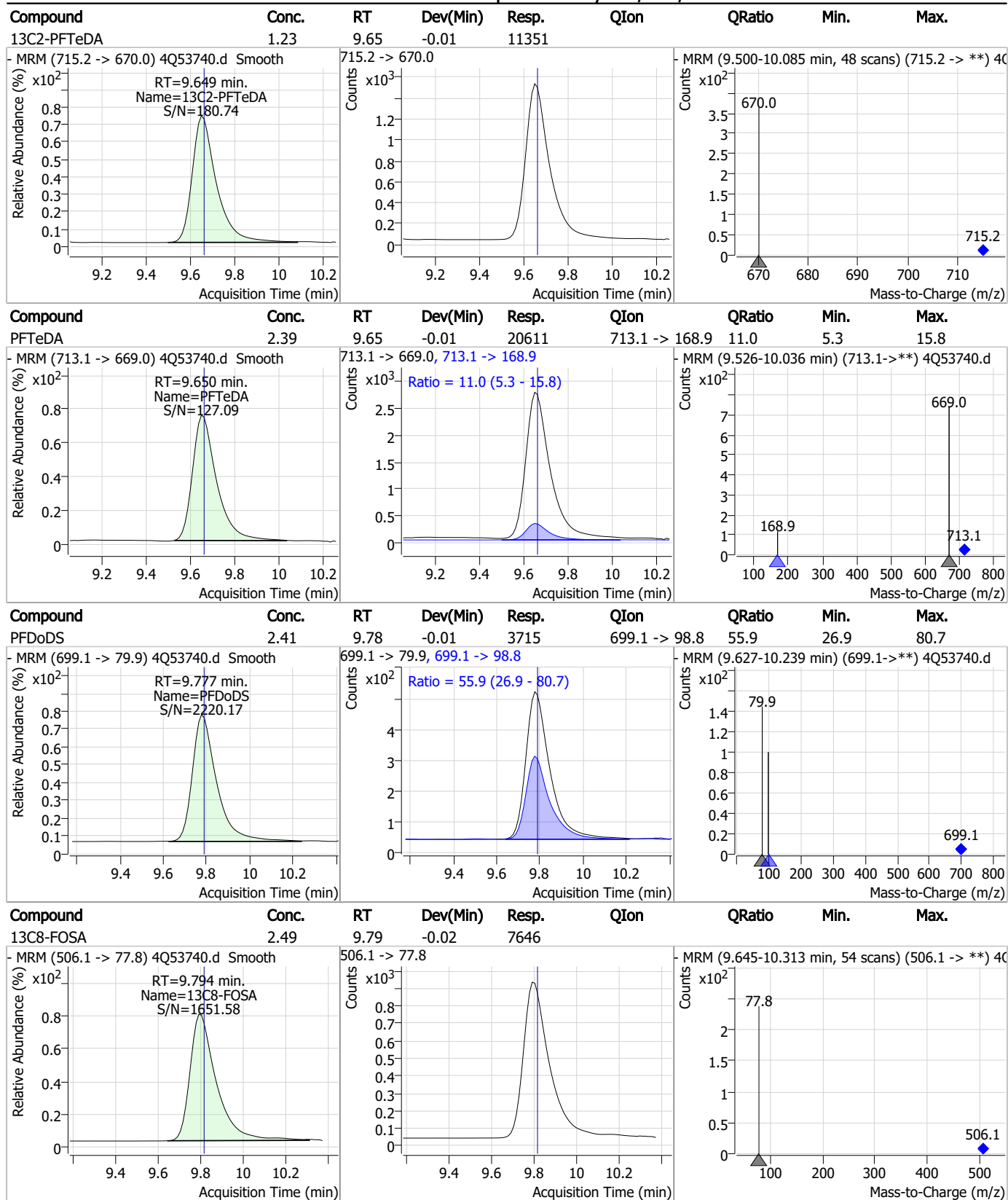
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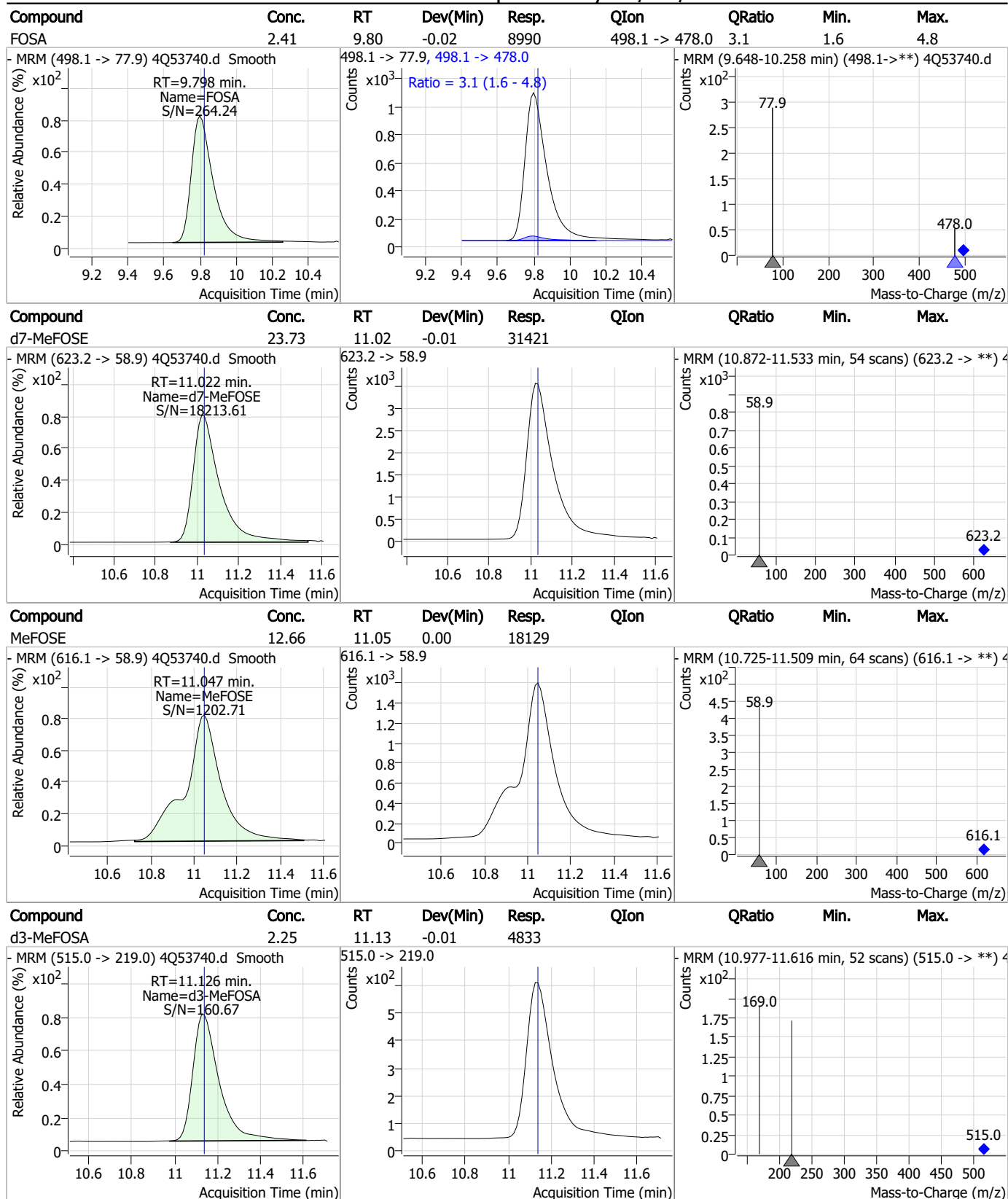
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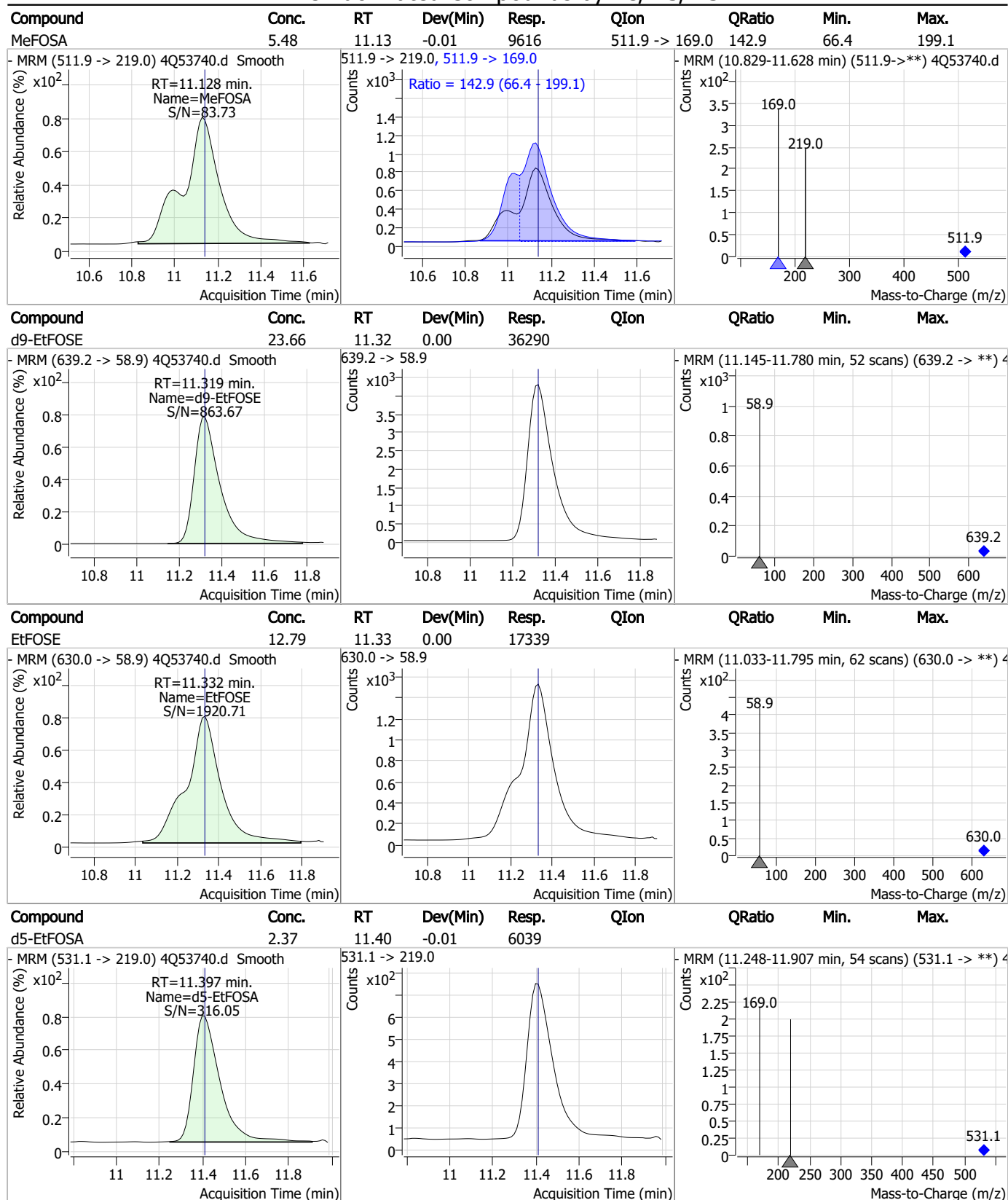
Perfluorinated Compounds by LC/MS/MS



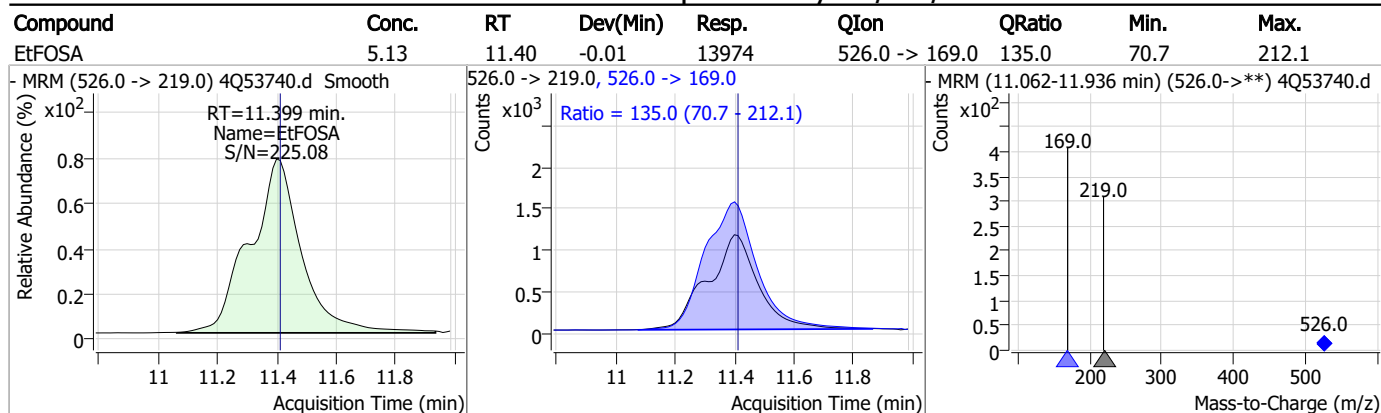
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

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Manual Integration Approval Summary

Sample Number: S4Q785-ICV785

Method: EPA DRAFT 1633

Lab FileID: 4Q53740.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 18:12

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Poorly defined baseline
Perfluorooctanesulfonic acid	1763-23-1		8.12	Poorly defined baseline
EtFOSAA	2991-50-6		8.28	Poorly defined baseline

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Natasha Gumtie
11/14/23 15:48

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53741.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 6:27:06 PM
 Sample Name : icv785-20
 Vial : P1-B4
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	114032	10.00 µg/L	-0.075
M5-PFPeA	4.125	268.3 -> 223.0	48802	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	36604	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	33820	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	40160	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	16154	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	10950	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	12821	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	14297	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	14337	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	9003	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	10592	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	8648	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	9394	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	1010	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1962	5.00 µg/L	-0.025
M2-8:2FTS	7.791	529.1 -> 80.9	2981	5.00 µg/L	-0.037
M3-MeFOSAA	8.074	573.2 -> 419.0	15147	5.00 µg/L	-0.025
M3-HFPO-DA	5.664	286.9 -> 168.9	33895	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	12771	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	36558	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	45246	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	7410	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	6246	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	7933	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	54544	5.00 µg/L	-0.075
18O2-PFHxS	7.028	403.0 -> 83.9	5428	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	43091	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	12041	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	16894	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	39940	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	1010	5.44 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.7%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1962	5.01 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C2-8:2FTS	7.791	529.1 -> 80.9	2981	5.40 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.1%		
13C2-PFDoDA	8.880	615.1 -> 570.0	14297	1.32 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C2-PFTeDA	9.649	715.2 -> 670.0	14337	1.31 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C3-PFBS	5.152	302.1 -> 79.9	10592	2.60 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.1%		
13C3-PFHxS	7.017	402.1 -> 79.9	8648	2.57 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C4-PFBA	2.624	216.8 -> 171.9	114032	10.03 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C4-PFHpA	6.267	367.1 -> 322.0	33820	2.43 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C5-PFHxA	5.297	318.0 -> 273.0	36604	2.46 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C5-PFPeA	4.125	268.3 -> 223.0	48802	5.01 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C6-PFDA	7.992	519.1 -> 474.1	10950	1.24 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C7-PFUnDA	8.448	570.0 -> 525.1	12821	1.25 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C8-FOSA	9.794	506.1 -> 77.8	9003	2.37 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C8-PFOA	6.964	421.1 -> 376.0	40160	2.61 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C8-PFOS	8.117	507.1 -> 79.9	9394	2.48 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C9-PFNA	7.509	472.1 -> 427.0	16154	1.21 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.0%		
d3-MeFOSAA	8.074	573.2 -> 419.0	15147	5.04 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	33895	9.97 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.7%		
d3-MeFOSA	11.126	515.0 -> 219.0	6246	2.36 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.4%		
d5-EtFOSAA	8.283	589.2 -> 419.0	12771	4.85 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.9%		
d7-MeFOSE	11.034	623.2 -> 58.9	36558	22.37 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 89.5%		
d9-EtFOSE	11.319	639.2 -> 58.9	45246	23.90 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.6%		
d5-EtFOSA	11.397	531.1 -> 219.0	7410	2.36 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.4%		

Target Compounds

					QValue
4:2FTS	5.009	327.1 -> 307.0	39198	19.65 µg/L	97
		327.1 -> 80.9	15770		
6:2FTS	6.737	427.1 -> 407.0	46482	21.89 µg/L	97
		427.1 -> 80.9	16903		
8:2FTS	7.804	527.1 -> 507.0	32210	19.87 µg/L	98
		527.1 -> 80.8	13749		
EtFOSAA	8.284	584.2 -> 419.1	46920	20.52 µg/L	89
		584.2 -> 526.0	17412		
FOSA	9.798	498.1 -> 77.9	79745	18.17 µg/L	99
		498.1 -> 478.0	2382		
MeFOSAA	8.087	570.1 -> 419.0	49844	18.51 µg/L	100
		570.1 -> 483.0	9185		
PFBA	2.632	212.8 -> 168.9	74350	17.93 µg/L	100
PFBS	5.153	298.7 -> 79.9	67891	18.06 µg/L	99
		298.7 -> 98.8	26629		
PFDA	8.005	512.9 -> 469.0	175213	19.56 µg/L	99
		512.9 -> 219.0	35862		
PFDODA	8.880	613.1 -> 569.0	201555	17.28 µg/L	97
		613.1 -> 319.0	34837		
PFDS	9.020	599.0 -> 79.9	45623	18.77 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	22708	19.20	µg/L	100
		363.1 -> 319.0	407172			
PFHpS	7.612	363.1 -> 169.0	71534	17.93	µg/L	98
		449.0 -> 79.9	66588			
PFHxA	5.300	449.0 -> 98.9	35104	19.98	µg/L	99
		313.0 -> 269.0	255480			
PFHxS	7.018	313.0 -> 118.9	7731	20.35	µg/L	80
		398.7 -> 79.9	53093			
PFNA	7.510	398.7 -> 98.9	26166	21.04	µg/L	96
		463.0 -> 419.0	216665			
PFNS	8.586	463.0 -> 219.0	50650	18.01	µg/L	100
		548.8 -> 79.9	32286			
PFOA	6.965	548.8 -> 98.9	16926	17.67	µg/L	99
		413.0 -> 369.0	343611			
PFOS	8.119	413.0 -> 169.0	68741	17.25	µg/L	77
		498.9 -> 79.9	73552			
PFPeA	4.127	498.9 -> 98.8	33191	18.96	µg/L	100
		263.0 -> 219.0	201339			
PFPeS	6.257	349.1 -> 79.9	54956	19.34	µg/L	97
		349.1 -> 98.9	24914			
PFTeDA	9.650	713.1 -> 669.0	215283	19.78	µg/L	100
		713.1 -> 168.9	22797			
PFTrDA	9.279	663.0 -> 619.0	225487	17.77	µg/L	100
		663.0 -> 168.9	31179			
PFUnDA	8.449	563.1 -> 519.0	198138	18.90	µg/L	99
		563.1 -> 269.1	41086			
11CI-PF3OUdS	9.306	630.9 -> 450.9	203142	19.20	µg/L	100
		632.9 -> 452.9	62725			
9CI-PF3ONS	8.451	530.8 -> 351.0	199647	18.69	µg/L	99
		532.8 -> 353.0	59514			
ADONA	6.531	376.9 -> 250.9	500837	21.35	µg/L	99
		376.9 -> 84.8	122103			
HFPO-DA	5.665	284.9 -> 168.9	67567	18.82	µg/L	99
		284.9 -> 184.9	6525			
3:3FTCA	3.561	241.0 -> 177.0	11639	18.02	µg/L	100
		241.0 -> 117.0	1051			
5:3FTCA	5.983	341.0 -> 237.1	44194	19.64	µg/L	98
		341.0 -> 217.0	31569			
7:3FTCA	7.524	441.0 -> 316.9	17750	17.58	µg/L	99
		441.0 -> 336.9	43521			
EtFOSA	11.412	526.0 -> 219.0	58275	17.44	µg/L	76
		526.0 -> 169.0	65298			
EtFOSE	11.332	630.0 -> 58.9	164806	97.49	µg/L	100
		511.9 -> 219.0	40712			
MeFOSA	11.128	511.9 -> 169.0	47976	17.96	µg/L	87
		616.1 -> 58.9	163247			
MeFOSE	11.047	699.1 -> 79.9	33921	98.01	µg/L	100
		699.1 -> 98.8	19282			
PFDoDS	9.777	295.0 -> 201.0	17138	17.69	µg/L	96
		295.0 -> 84.9	4293			
NFDHA	5.179	279.0 -> 85.1	110466	20.30	µg/L	97
		229.0 -> 84.9	124349			
PFMBA	4.529	314.8 -> 134.9	177172	18.07	µg/L	100
		314.8 -> 82.9	6058			
PFMPA	3.265			18.29	µg/L	100
PFEESA	5.684			17.51	µg/L	98

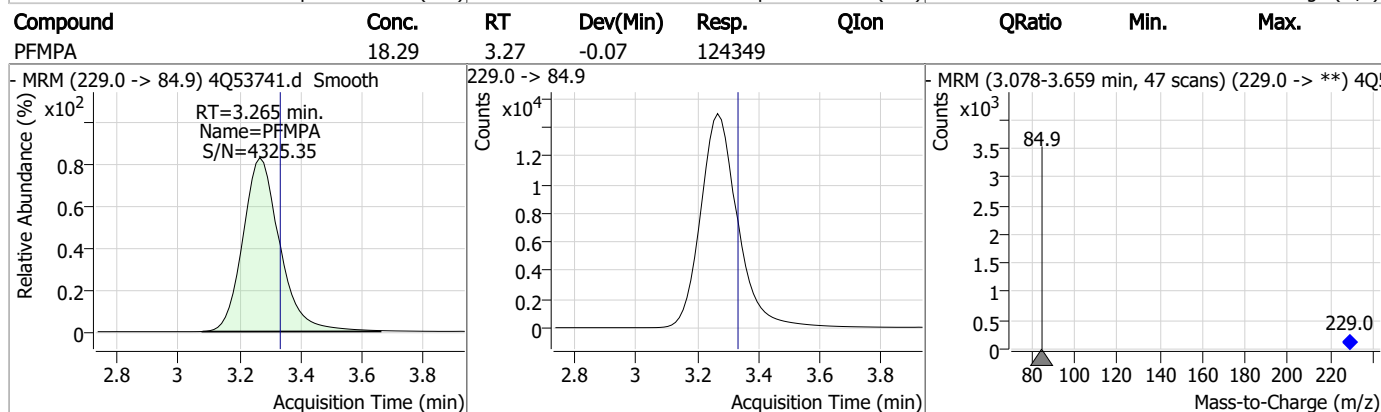
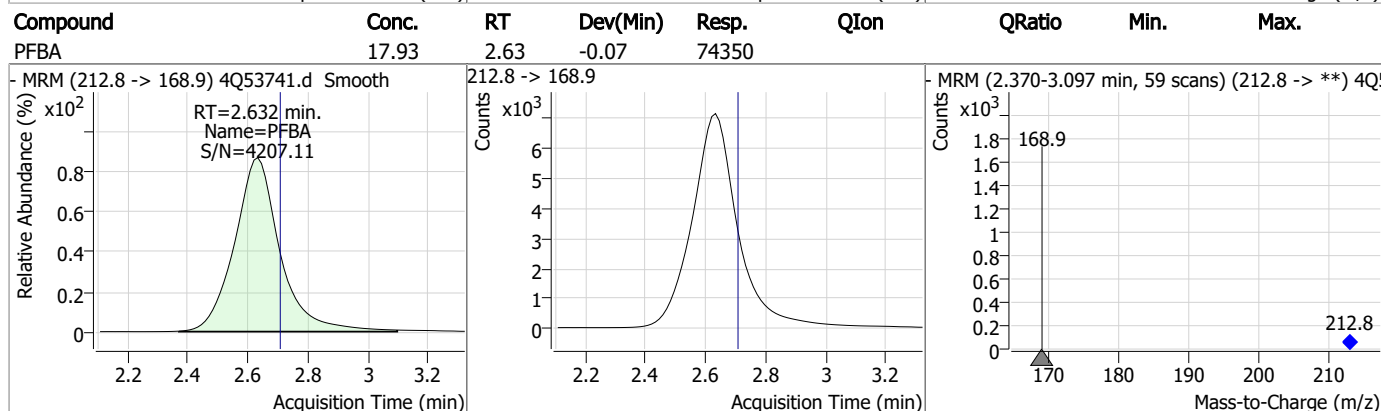
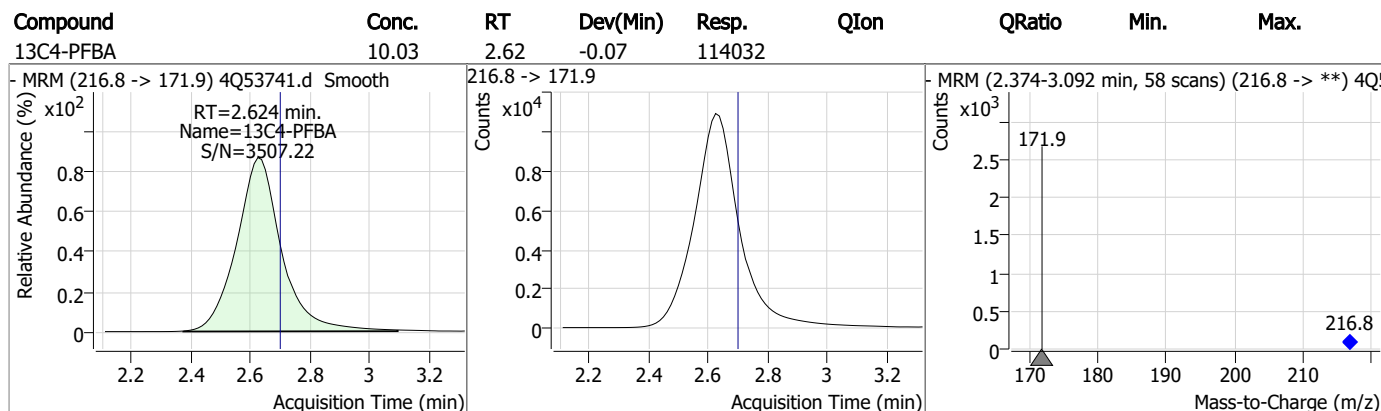
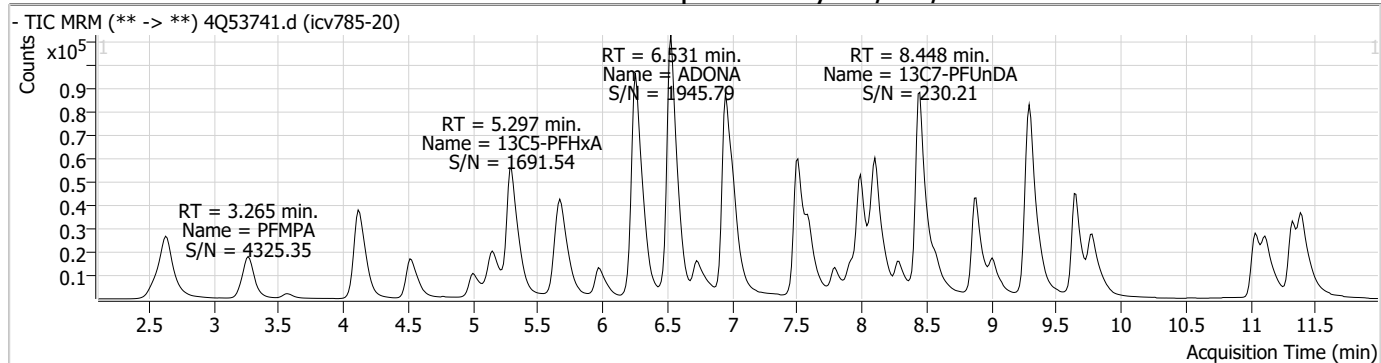
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

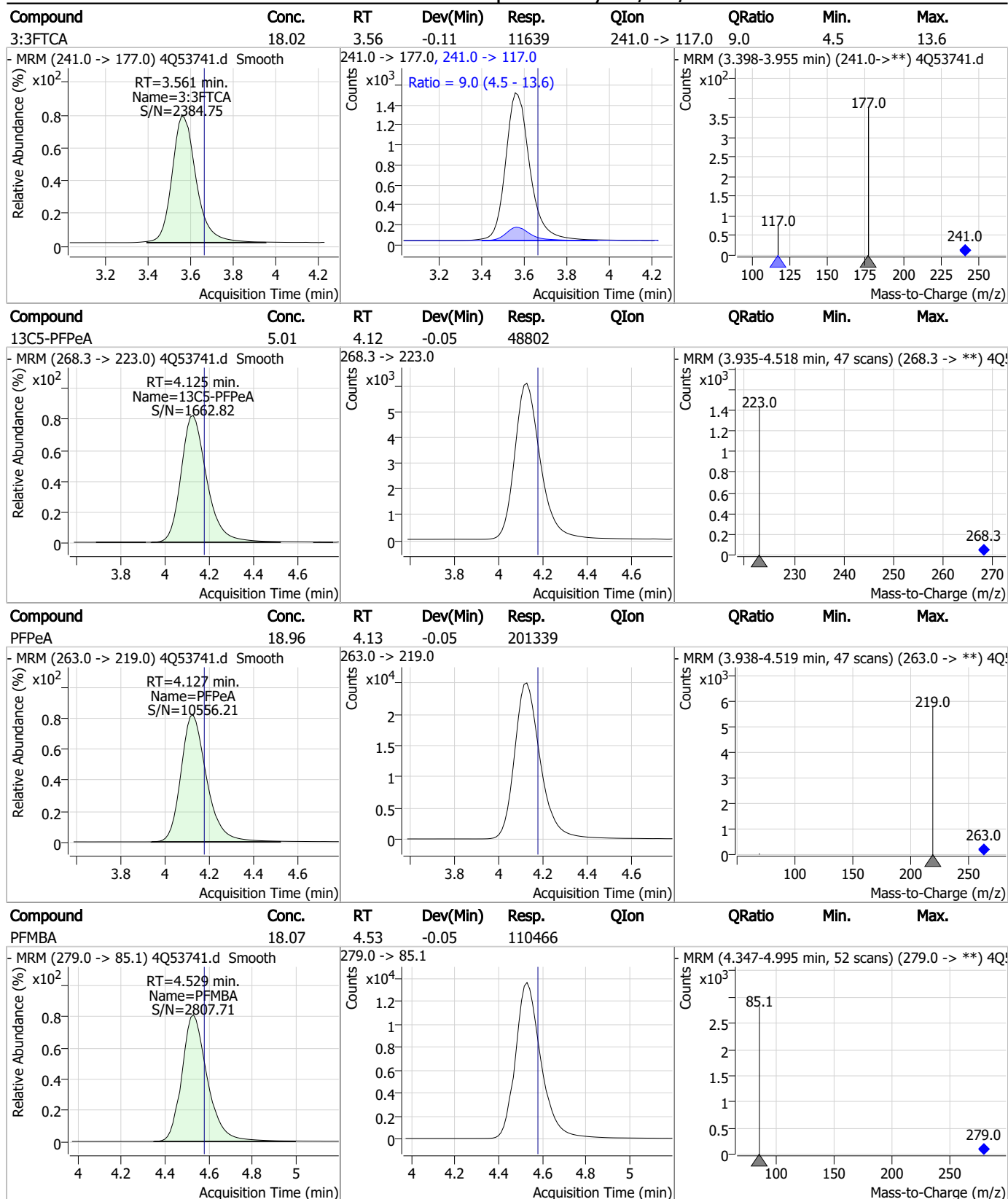
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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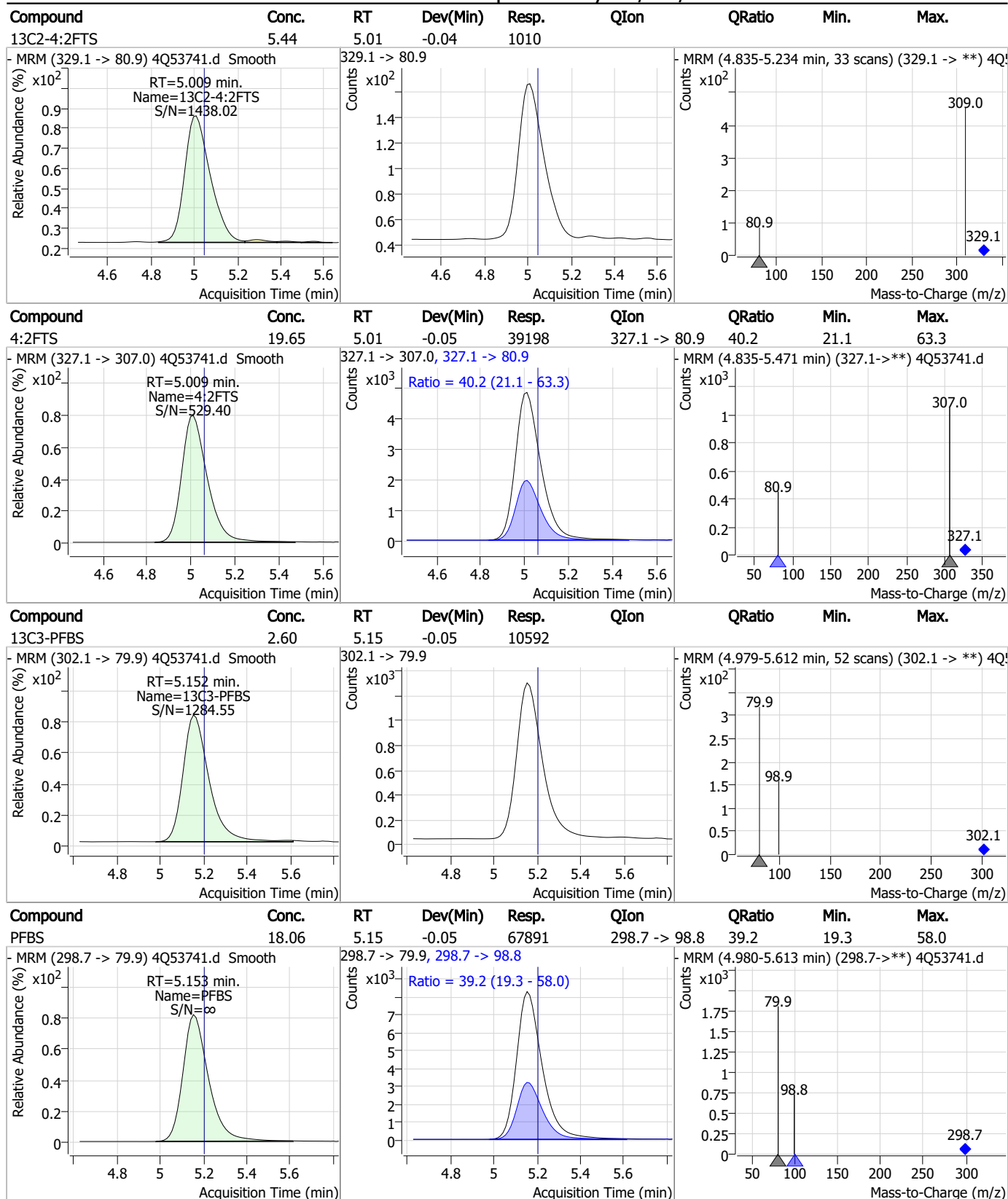
Perfluorinated Compounds by LC/MS/MS



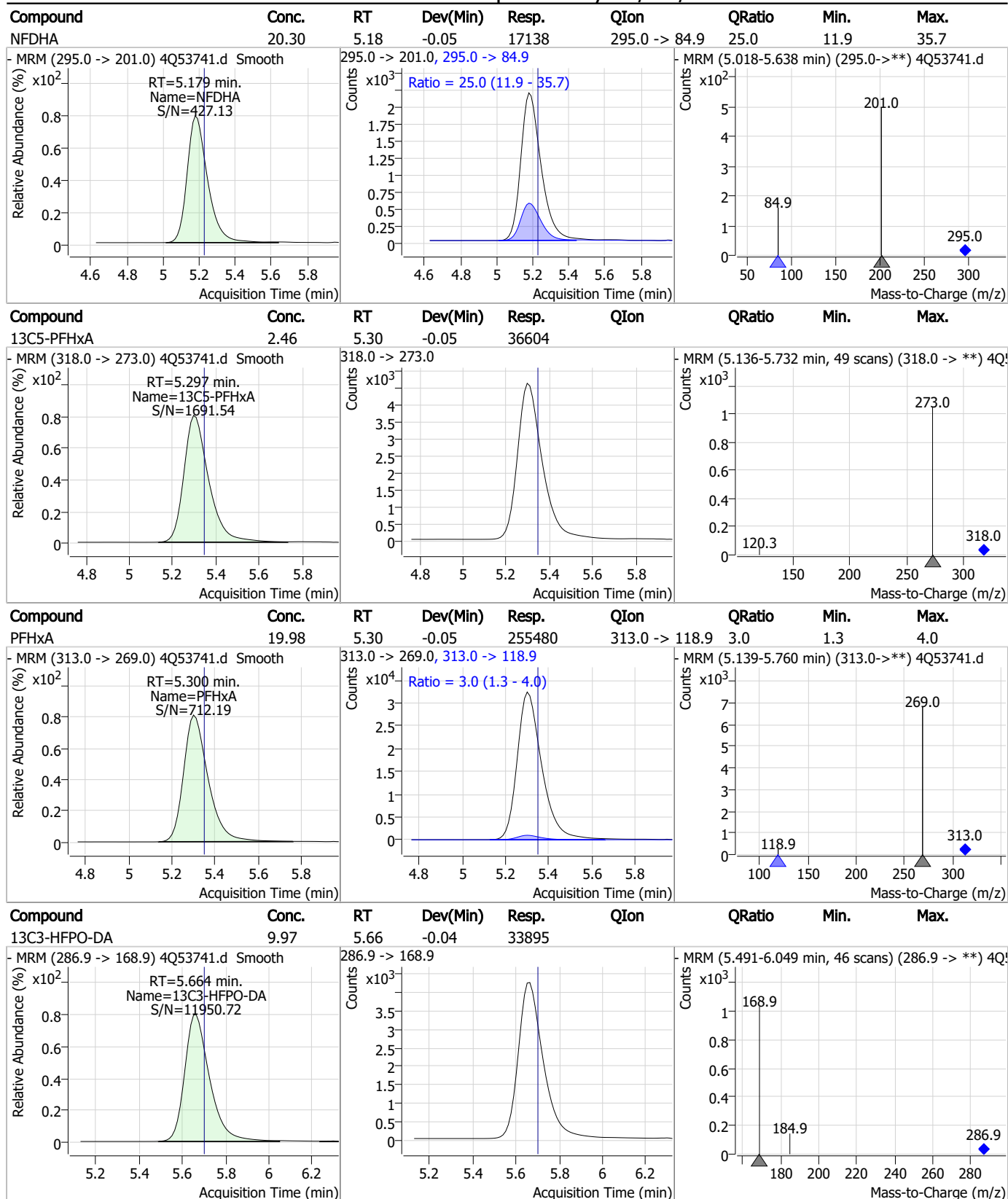
Perfluorinated Compounds by LC/MS/MS



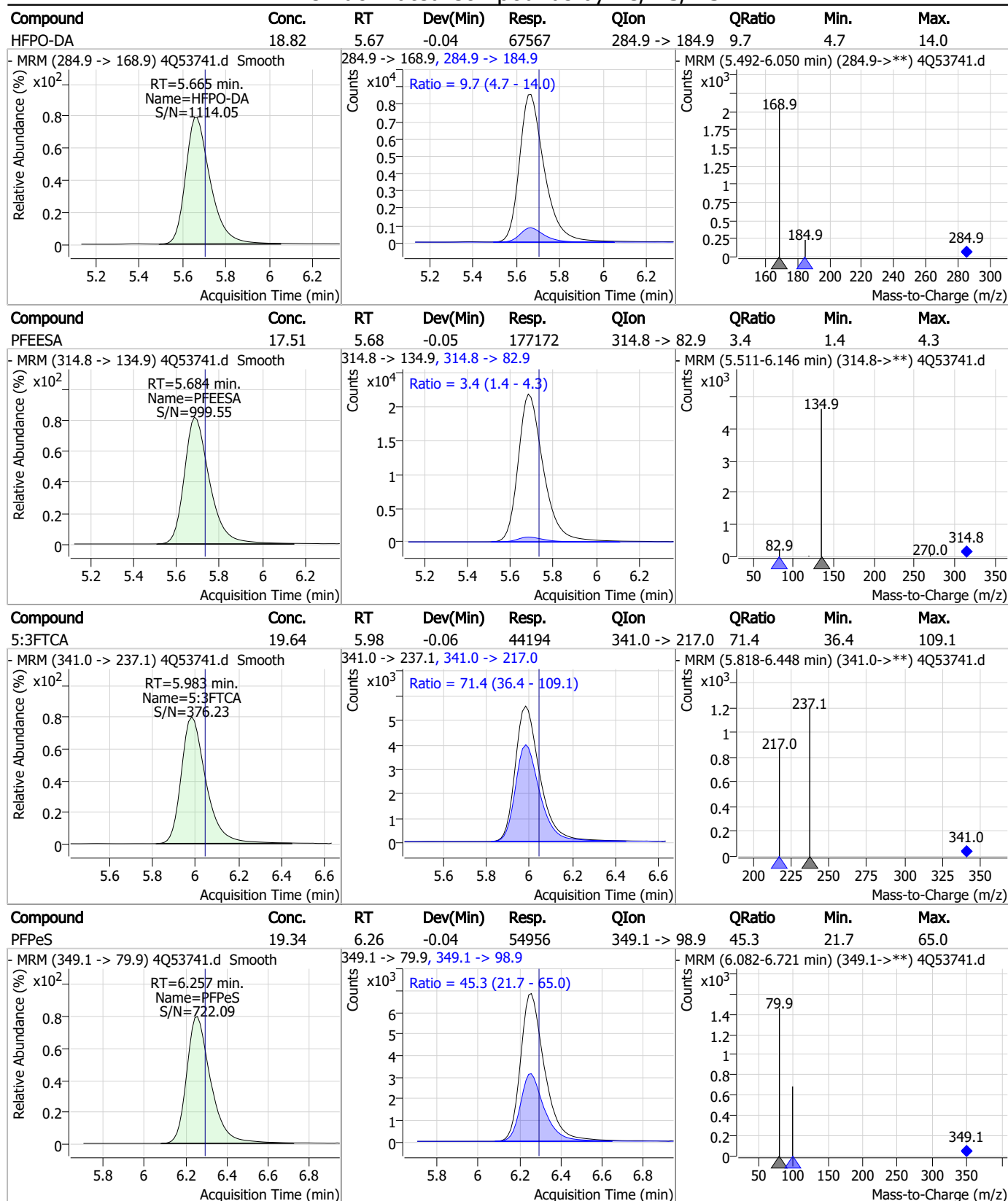
Perfluorinated Compounds by LC/MS/MS



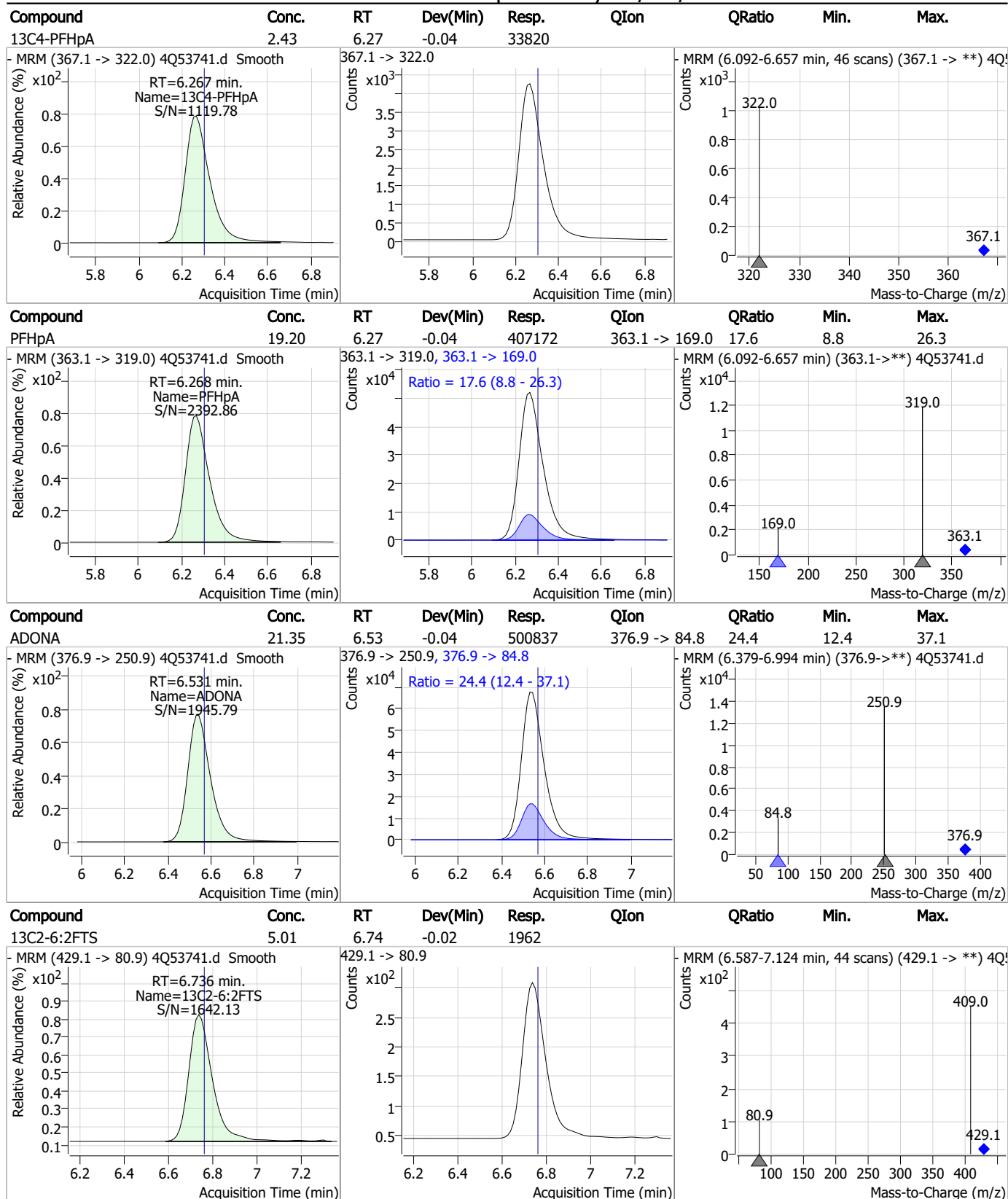
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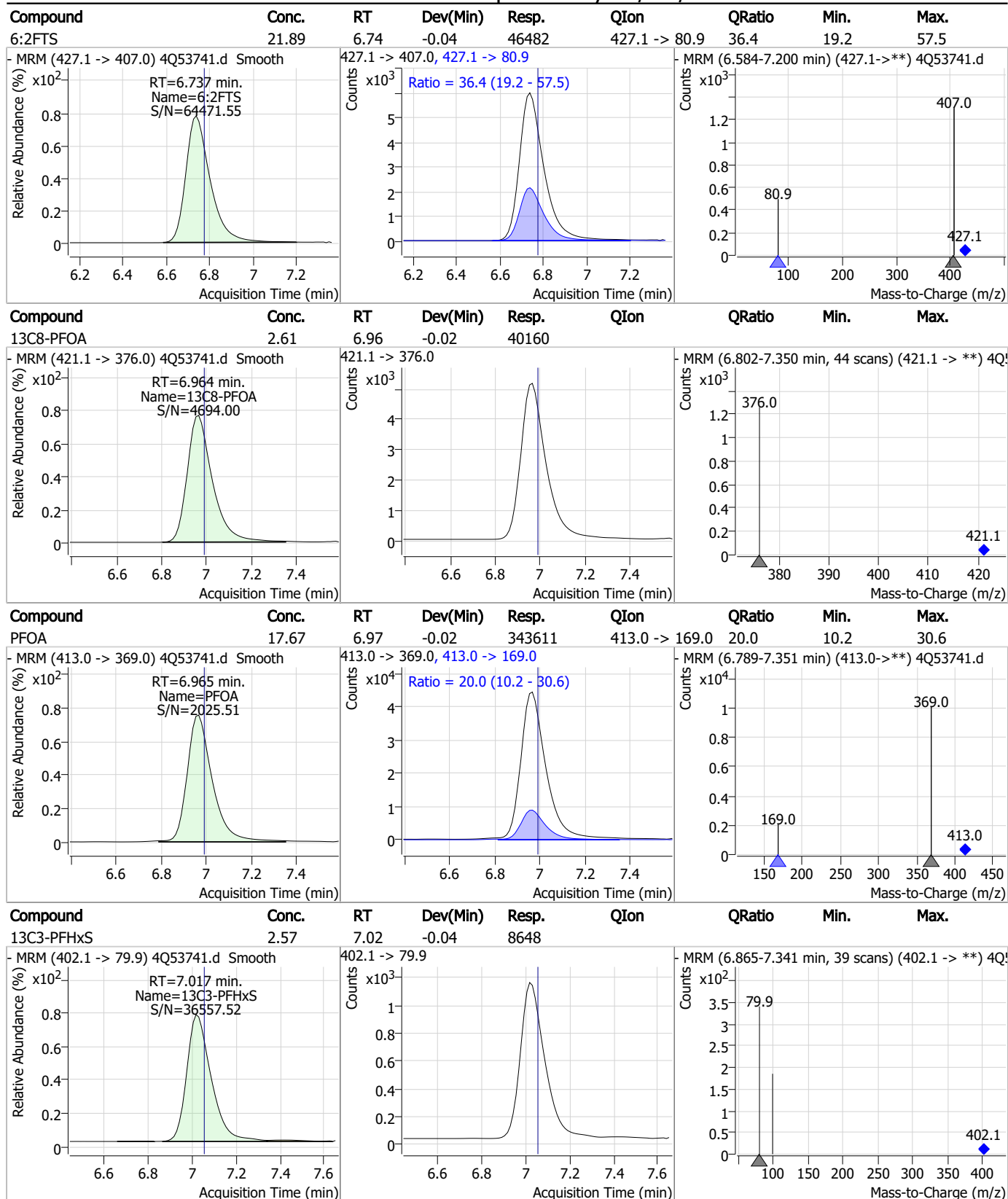
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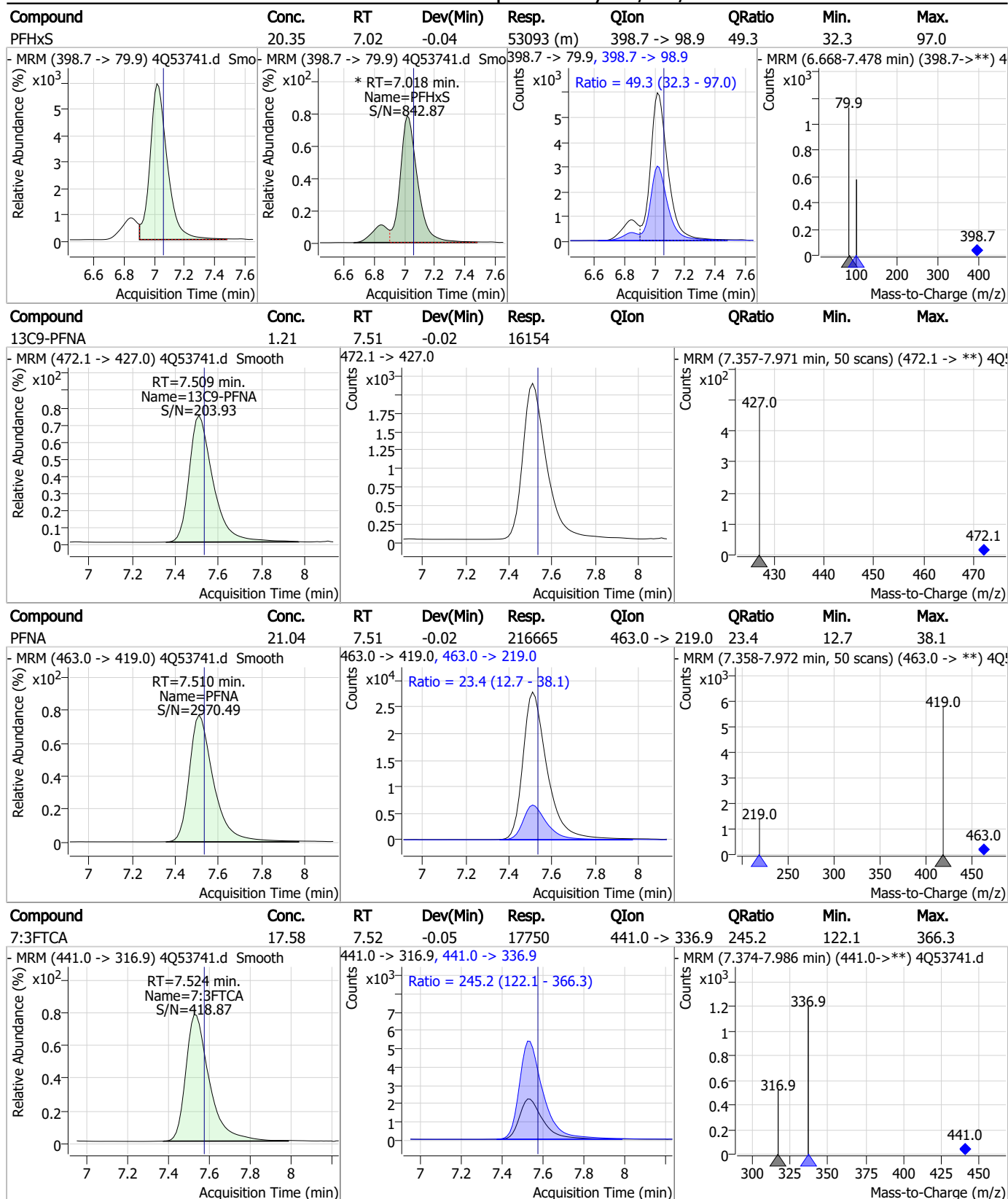
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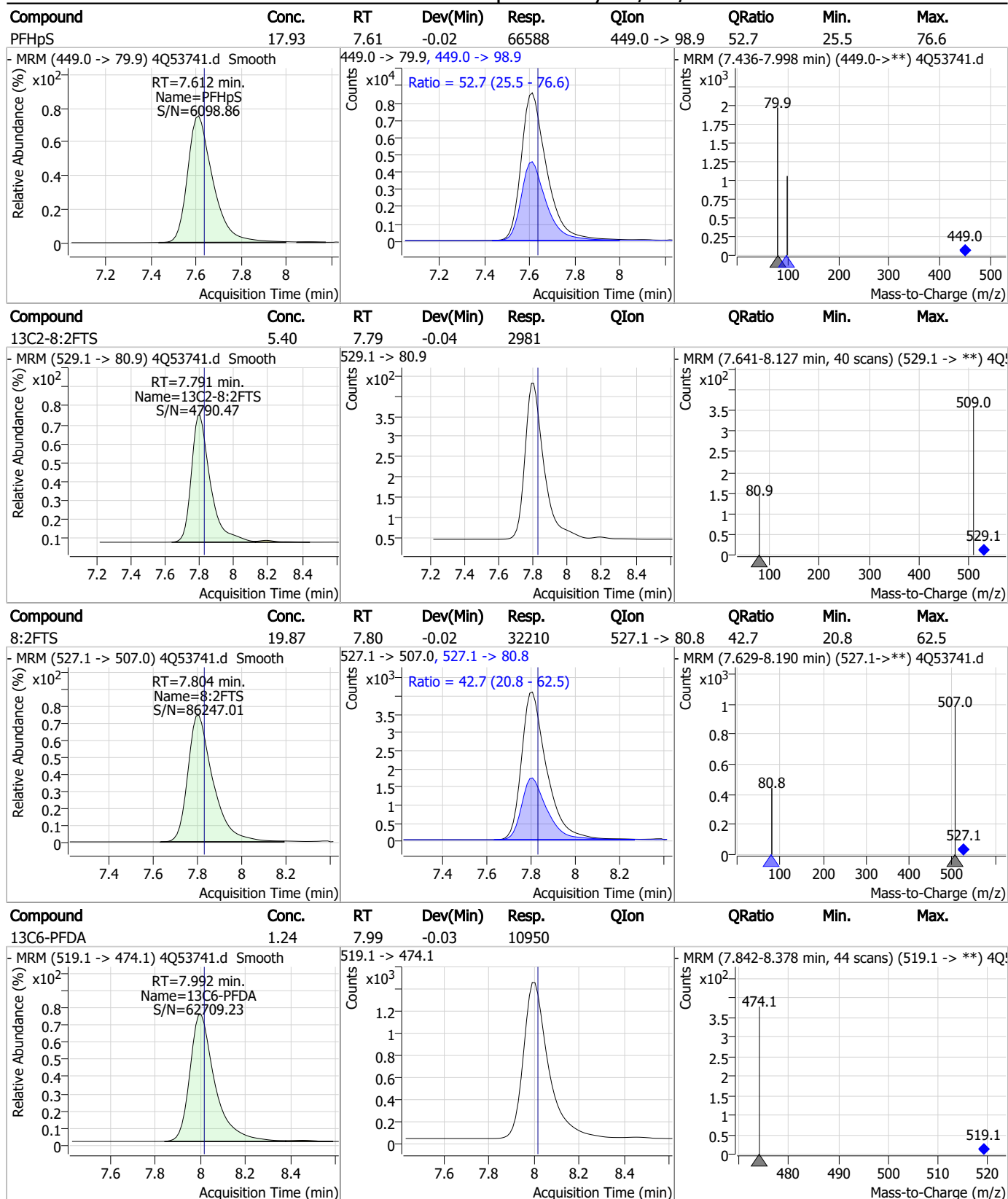
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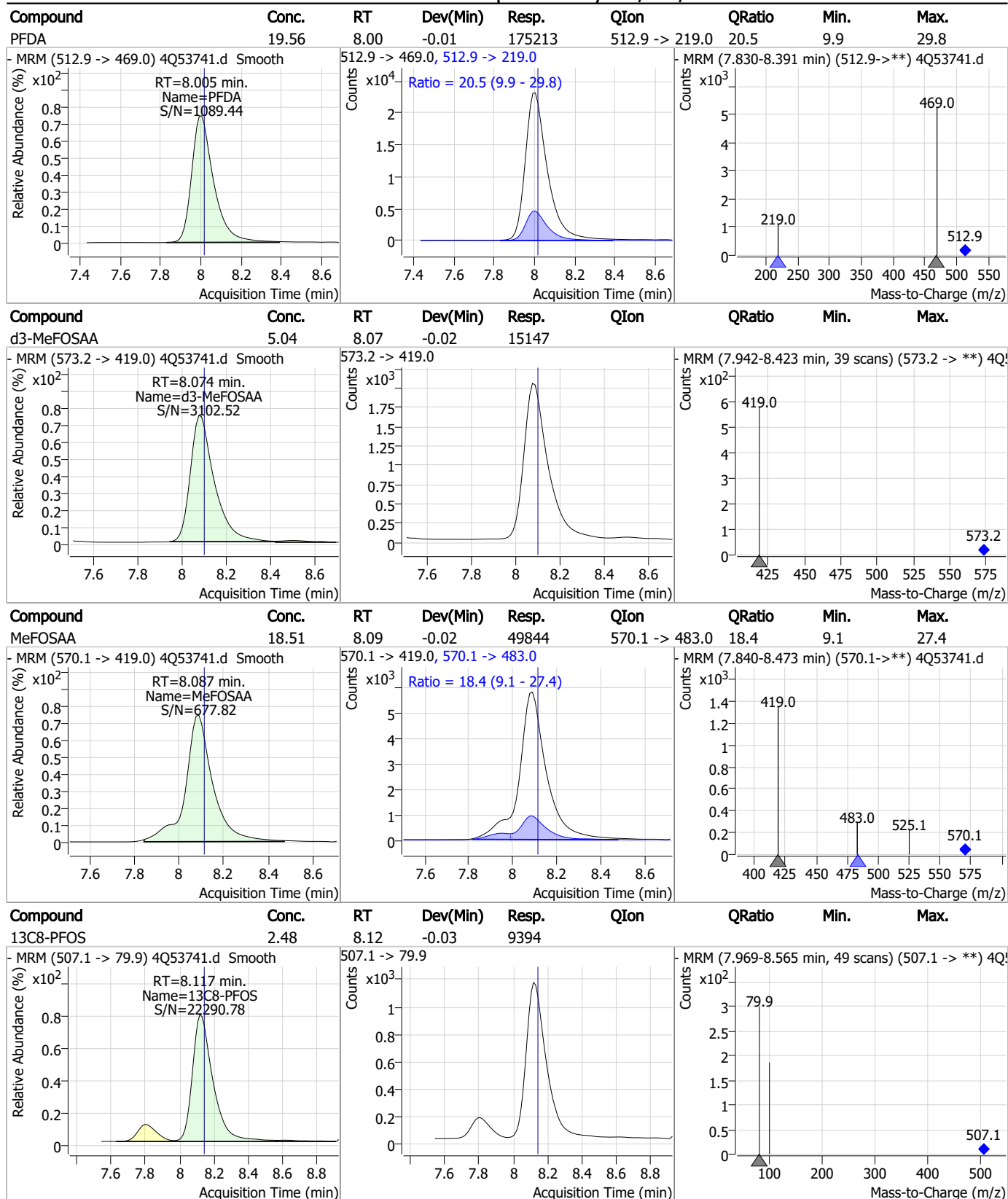
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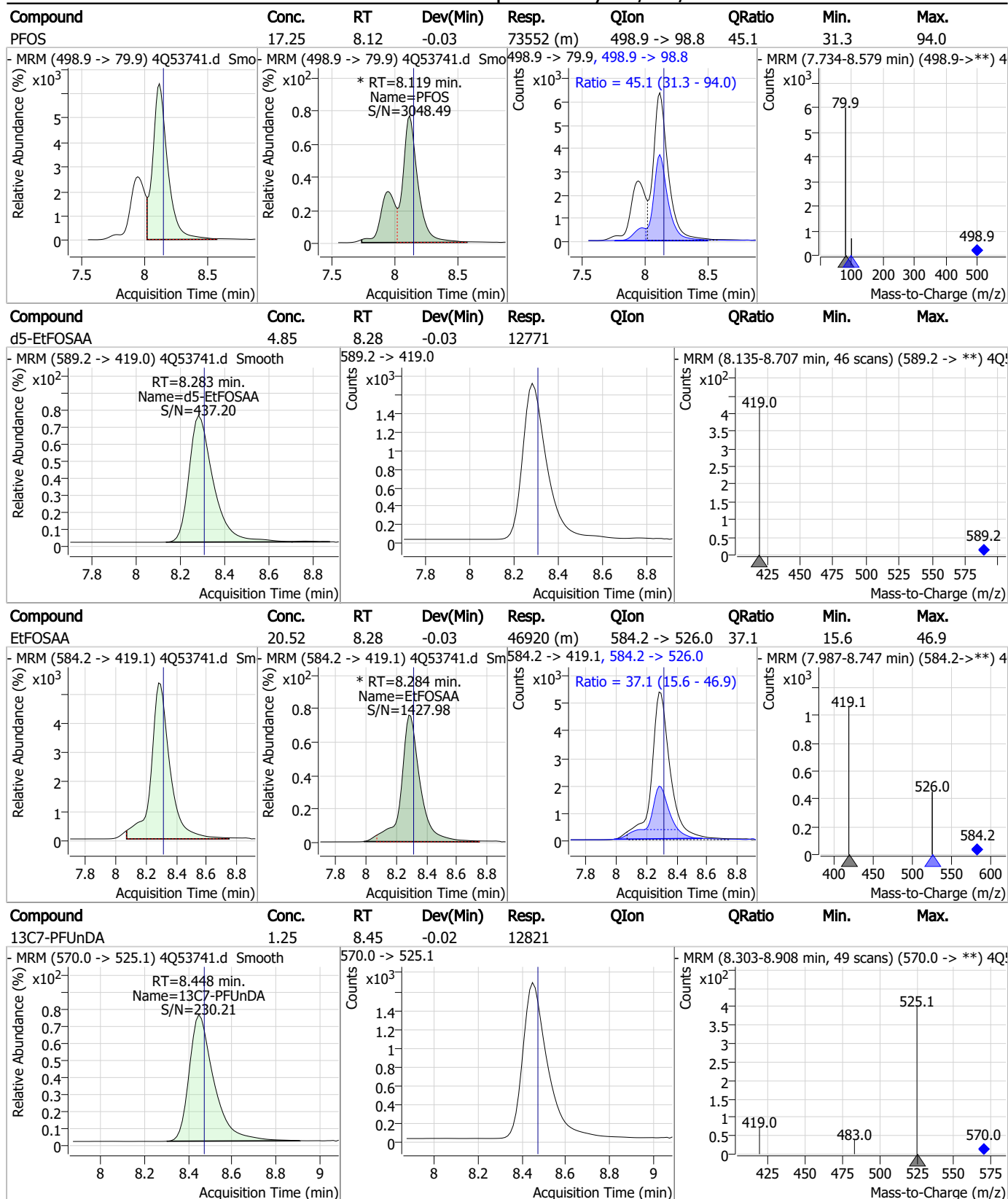
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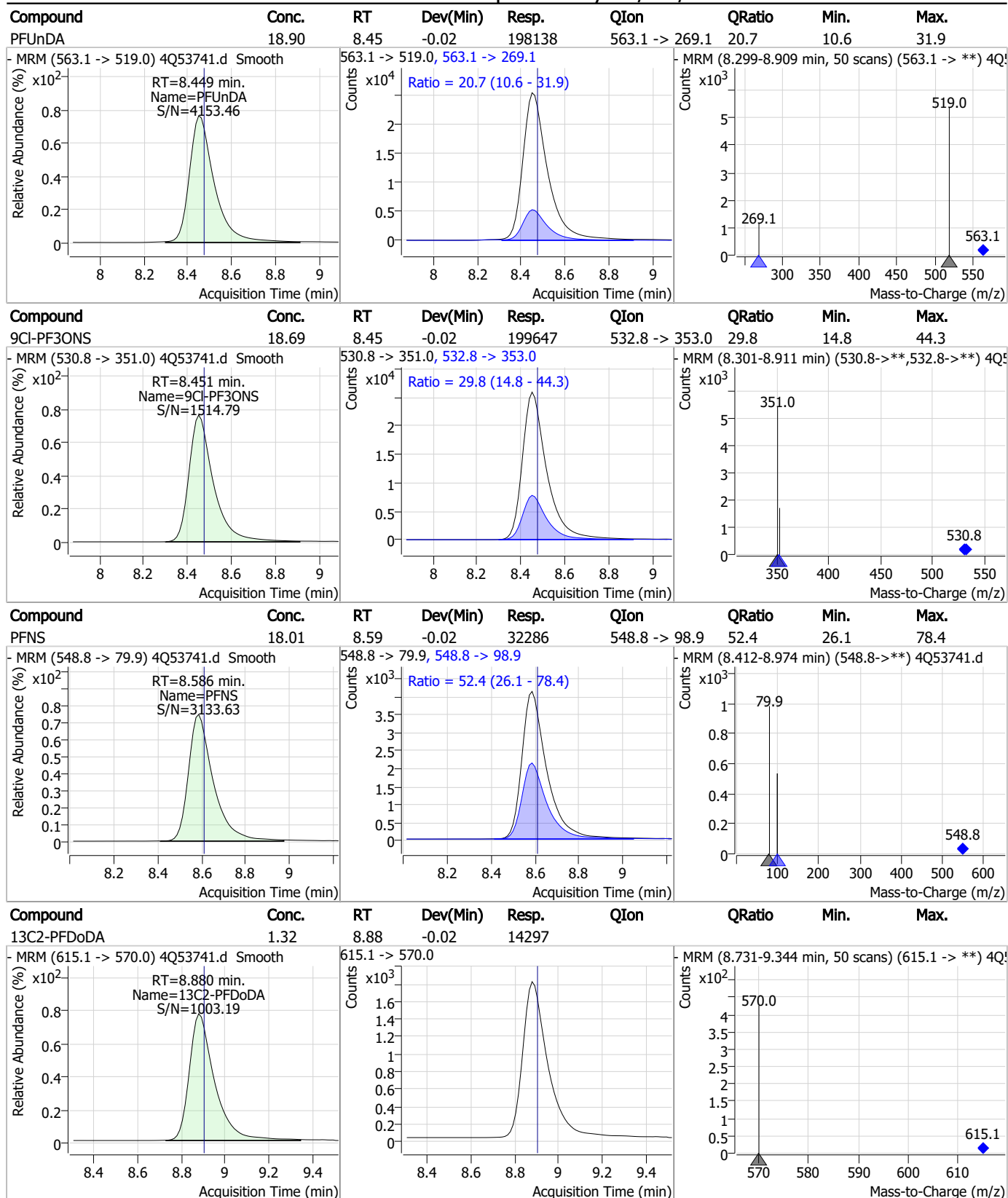
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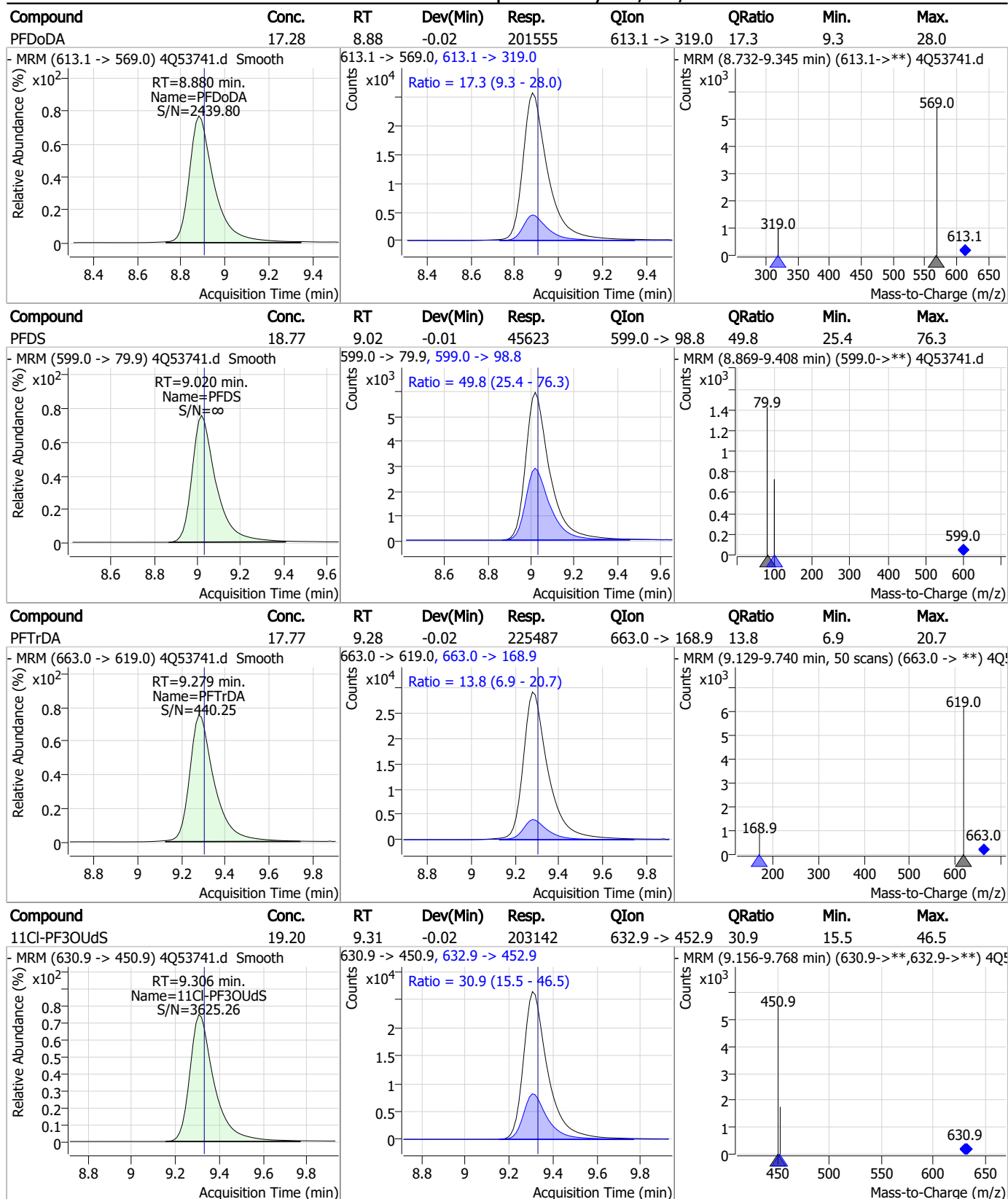
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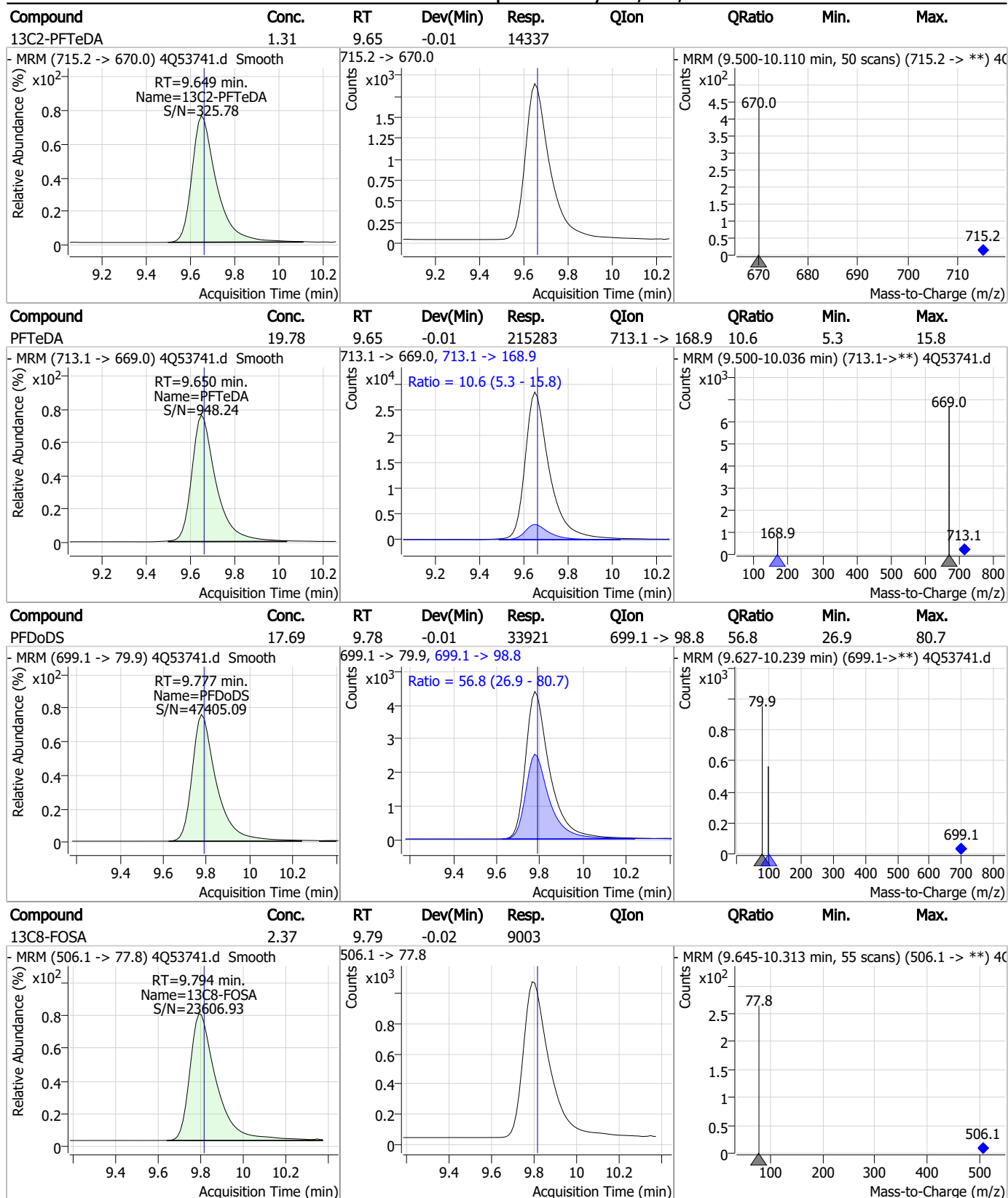
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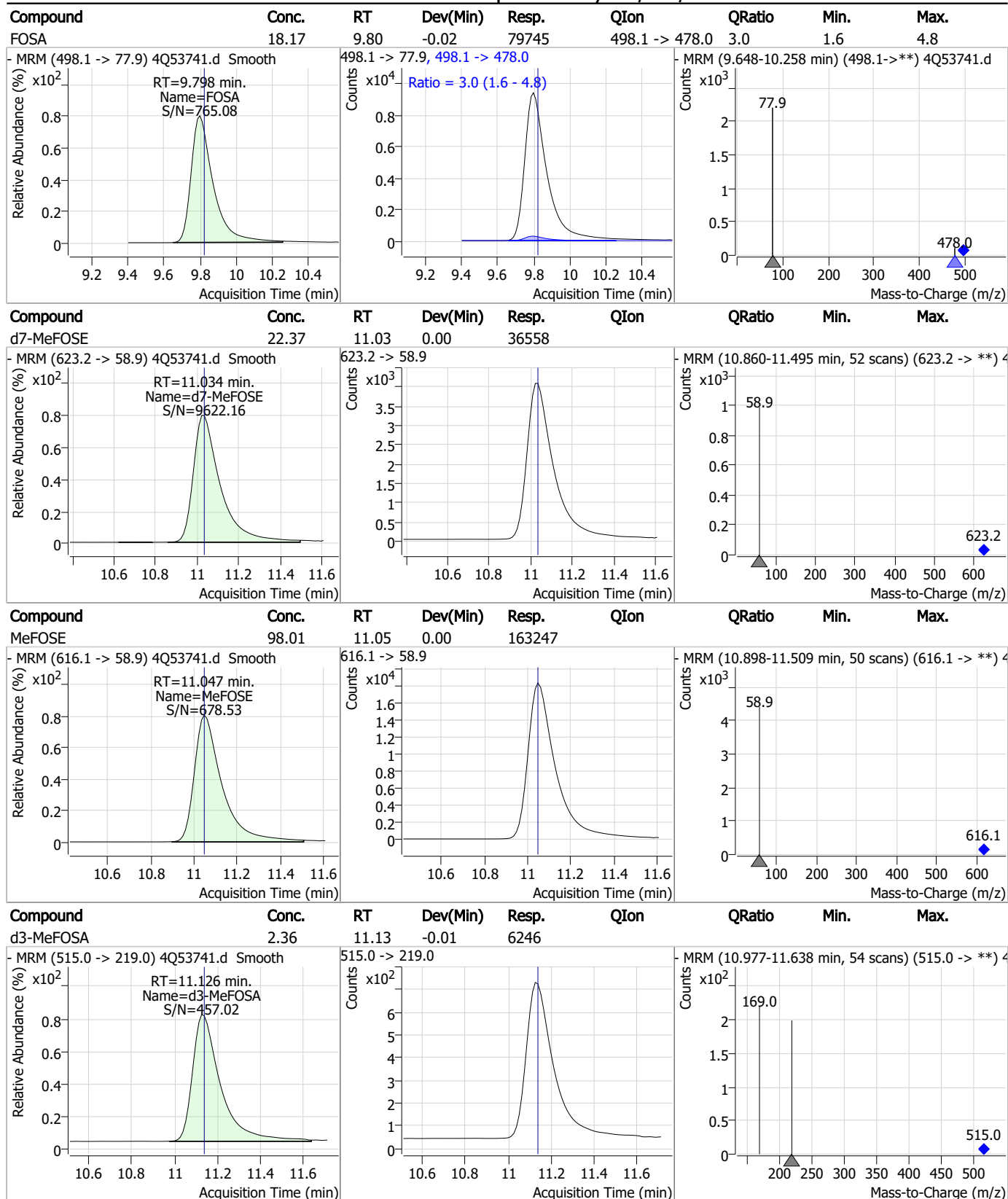
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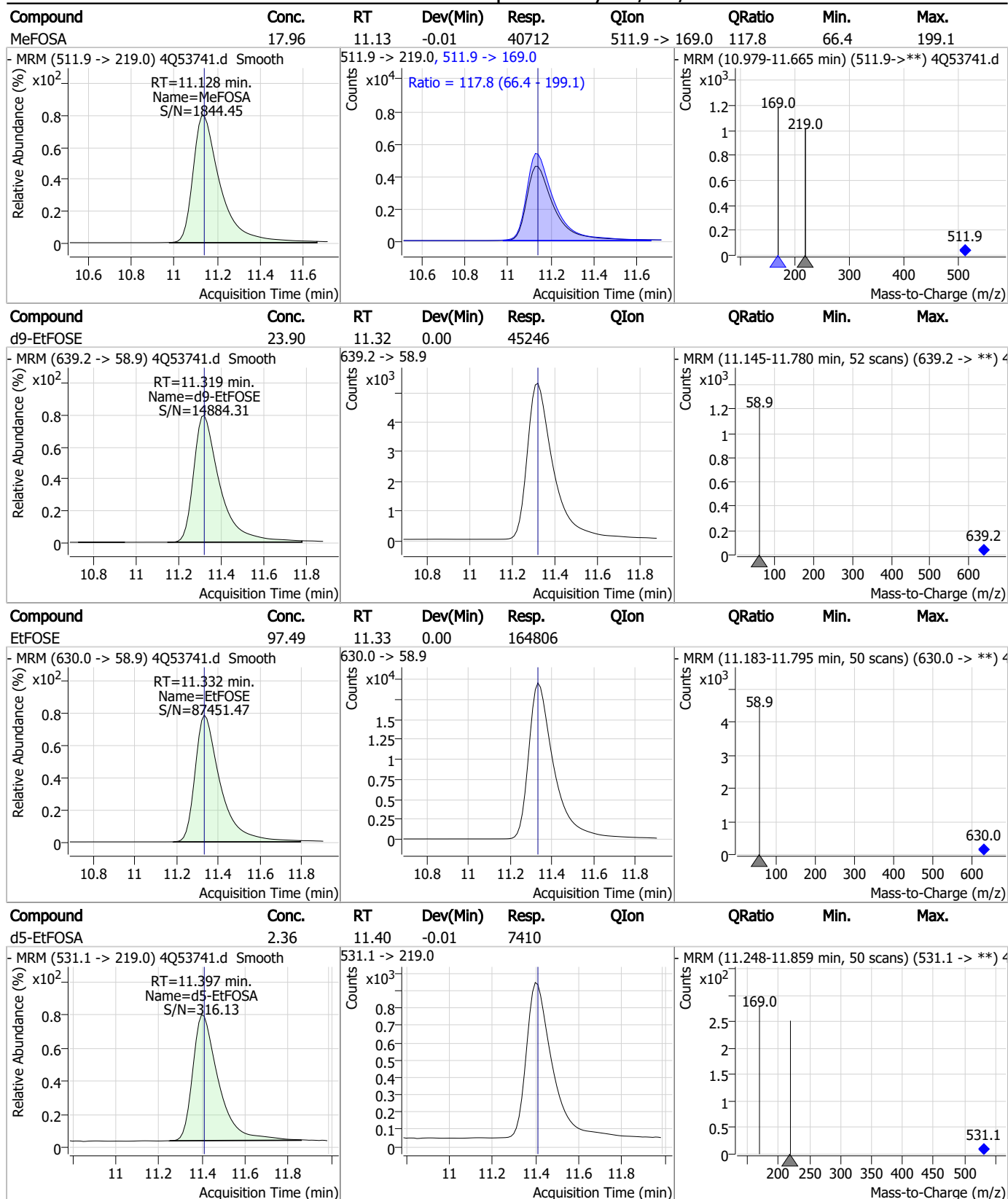
Perfluorinated Compounds by LC/MS/MS



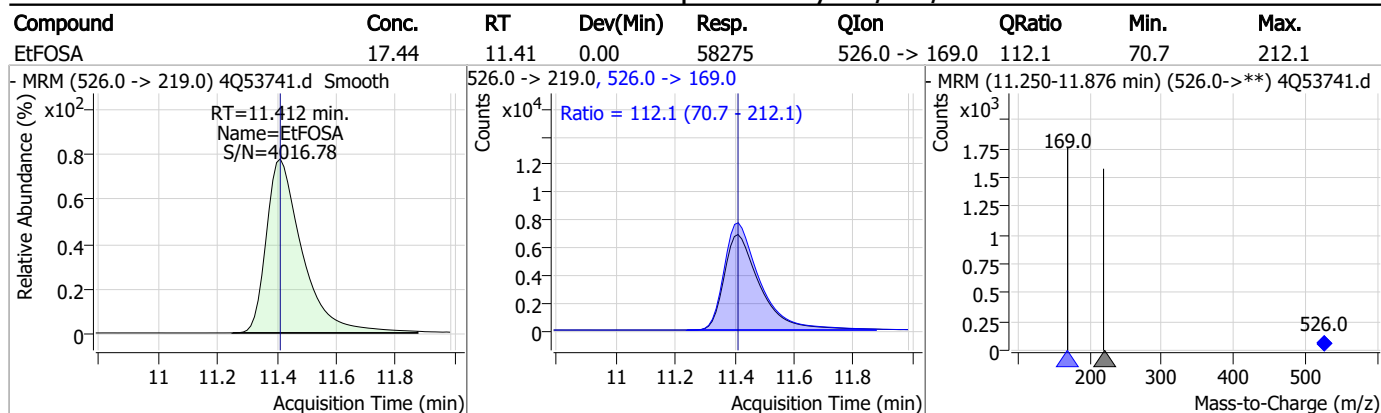
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Manual Integration Approval Summary

Sample Number: S4Q785-ICV785

Method: EPA DRAFT 1633

Lab FileID: 4Q53741.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 18:27

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak

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Natasha Gumtie
11/14/23 15:48

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53742.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 6:41:50 PM
 Sample Name : cc785-4
 Vial : P1-A5
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.612	216.8 -> 171.9	84842	10.00 µg/L	-0.087
M5-PFPeA	4.125	268.3 -> 223.0	36139	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	27564	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	26800	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	31152	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12934	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8906	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10367	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10957	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	10640	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7052	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	8123	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6884	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6927	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	880	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1651	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2307	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	12065	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	25339	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	9913	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	30289	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	35084	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5910	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4249	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6003	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	41260	5.00 µg/L	-0.087
18O2-PFHxS	7.028	403.0 -> 83.9	4323	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	33995	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	9541	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	12469	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	30486	2.50 µg/L	-0.050

System Monitoring Compounds

13C2-4:2FTS	5.009	329.1 -> 80.9	880	5.94 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.9%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1651	5.30 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.9%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2307	5.25 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10957	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C2-PFTeDA	9.649	715.2 -> 670.0	10640	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C3-PFBS	5.152	302.1 -> 79.9	8123	2.50 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C3-PFHxS	7.017	402.1 -> 79.9	6884	2.57 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C4-PFBA	2.612	216.8 -> 171.9	84842	9.87 µg/L	-0.087
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C4-PFHpA	6.267	367.1 -> 322.0	26800	2.52 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C5-PFHxA	5.297	318.0 -> 273.0	27564	2.42 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C5-PFPeA	4.125	268.3 -> 223.0	36139	4.86 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C6-PFDA	7.992	519.1 -> 474.1	8906	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C7-PFUnDA	8.448	570.0 -> 525.1	10367	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C8-FOSA	9.794	506.1 -> 77.8	7052	2.46 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C8-PFOA	6.964	421.1 -> 376.0	31152	2.57 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C8-PFOS	8.117	507.1 -> 79.9	6927	2.42 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C9-PFNA	7.509	472.1 -> 427.0	12934	1.32 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.2%	
d3-MeFOSAA	8.086	573.2 -> 419.0	12065	5.30 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.0%	
13C3-HFPO-DA	5.664	286.9 -> 168.9	25339	9.77 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.7%	
d3-MeFOSA	11.126	515.0 -> 219.0	4249	2.12 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.9%	
d5-EtFOSAA	8.283	589.2 -> 419.0	9913	4.97 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
d7-MeFOSE	11.034	623.2 -> 58.9	30289	24.50 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
d9-EtFOSE	11.319	639.2 -> 58.9	35084	24.49 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
d5-EtFOSA	11.397	531.1 -> 219.0	5910	2.49 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	15083	8.68 µg/L	98
		327.1 -> 80.9	6166		
6:2FTS	6.737	427.1 -> 407.0	18399	10.30 µg/L	97
		427.1 -> 80.9	6698		
8:2FTS	7.804	527.1 -> 507.0	13134	10.47 µg/L	97
		527.1 -> 80.8	5755		
EtFOSAA	8.284	584.2 -> 419.1	4578	2.58 µg/L	#m 71
		584.2 -> 526.0	2158		
FOSA	9.798	498.1 -> 77.9	8994	2.62 µg/L	100
		498.1 -> 478.0	279		
MeFOSAA	8.087	570.1 -> 419.0	5037	2.35 µg/L	98
		570.1 -> 483.0	965		
PFBA	2.620	212.8 -> 168.9	31083	10.07 µg/L	100
PFBS	5.153	298.7 -> 79.9	6036	2.09 µg/L	99
		298.7 -> 98.8	2384		
PFDA	7.992	512.9 -> 469.0	17079	2.34 µg/L	98
		512.9 -> 219.0	3548		
PFDODA	8.880	613.1 -> 569.0	21349	2.39 µg/L	98
		613.1 -> 319.0	3839		
PFDS	9.020	599.0 -> 79.9	4535	2.53 µg/L	94

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	2134			
		363.1 -> 319.0	41943	2.50	µg/L	98
		363.1 -> 169.0	7737			
PFHpS	7.612	449.0 -> 79.9	6800	2.48	µg/L	98
		449.0 -> 98.9	3393			
PFHxA	5.300	313.0 -> 269.0	24036	2.50	µg/L	98
		313.0 -> 118.9	792			
PFHxS	7.018	398.7 -> 79.9	4845	2.33	µg/L	m
		398.7 -> 98.9	2426			81
PFNA	7.510	463.0 -> 419.0	21050	2.55	µg/L	98
		463.0 -> 219.0	5178			
PFNS	8.574	548.8 -> 79.9	3363	2.54	µg/L	100
		548.8 -> 98.9	1756			
PFOA	6.965	413.0 -> 369.0	36725	2.44	µg/L	100
		413.0 -> 169.0	7473			
PFOS	8.119	498.9 -> 79.9	7613	2.42	µg/L	m
		498.9 -> 98.8	3810			84
PFPeA	4.114	263.0 -> 219.0	39852	5.07	µg/L	100
PFPeS	6.257	349.1 -> 79.9	5453	2.41	µg/L	97
		349.1 -> 98.9	2262			
PFTeDA	9.650	713.1 -> 669.0	19646	2.43	µg/L	100
		713.1 -> 168.9	2032			
PFTrDA	9.279	663.0 -> 619.0	25210	2.59	µg/L	99
		663.0 -> 168.9	3613			
PFUnDA	8.449	563.1 -> 519.0	20785	2.45	µg/L	98
		563.1 -> 269.1	4601			
11CI-PF3OUdS	9.306	630.9 -> 450.9	38194	4.83	µg/L	99
		632.9 -> 452.9	11968			
9CI-PF3ONS	8.451	530.8 -> 351.0	38471	4.82	µg/L	99
		532.8 -> 353.0	11555			
ADONA	6.544	376.9 -> 250.9	99654	5.68	µg/L	99
		376.9 -> 84.8	23872			
HFPO-DA	5.653	284.9 -> 168.9	13295	4.95	µg/L	99
		284.9 -> 184.9	1303			
3:3FTCA	3.561	241.0 -> 177.0	5705	11.87	µg/L	99
		241.0 -> 117.0	535			
5:3FTCA	5.983	341.0 -> 237.1	105533	62.27	µg/L	100
		341.0 -> 217.0	76401			
7:3FTCA	7.524	441.0 -> 316.9	47942	63.06	µg/L	98
		441.0 -> 336.9	115163			
EtFOSA	11.399	526.0 -> 219.0	13220	4.96	µg/L	99
		526.0 -> 169.0	18505			
EtFOSE	11.332	630.0 -> 58.9	16822	12.83	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	8828	5.73	µg/L	m
		511.9 -> 169.0	13426			84
MeFOSE	11.047	616.1 -> 58.9	18351	13.30	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	3504	2.48	µg/L	95
		699.1 -> 98.8	2012			
NFDHA	5.179	295.0 -> 201.0	3514	5.53	µg/L	96
		295.0 -> 84.9	775			
PFMBA	4.529	279.0 -> 85.1	22832	5.04	µg/L	100
PFMPA	3.265	229.0 -> 84.9	25438	5.05	µg/L	100
PFEESA	5.684	314.8 -> 134.9	35021	4.60	µg/L	99
		314.8 -> 82.9	1176			

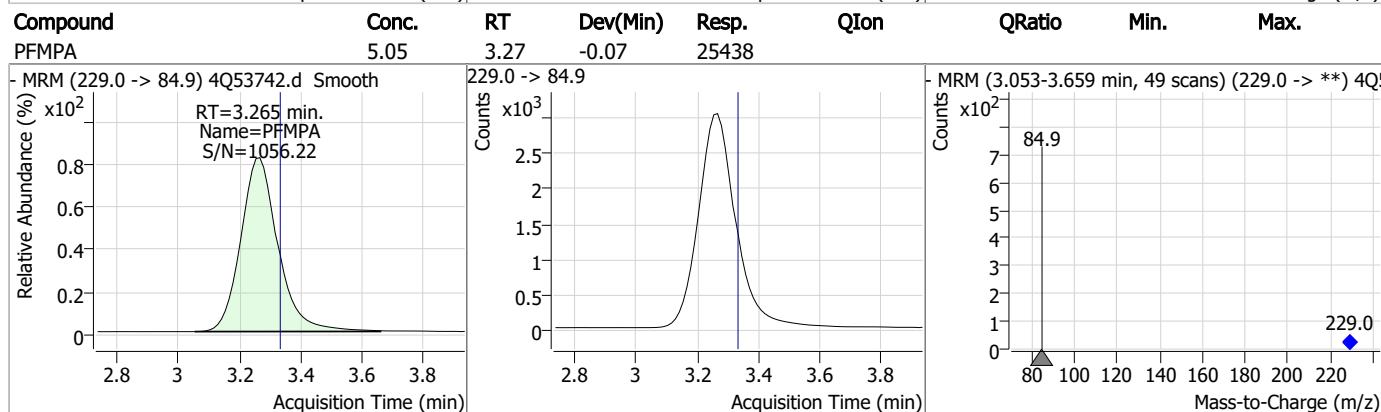
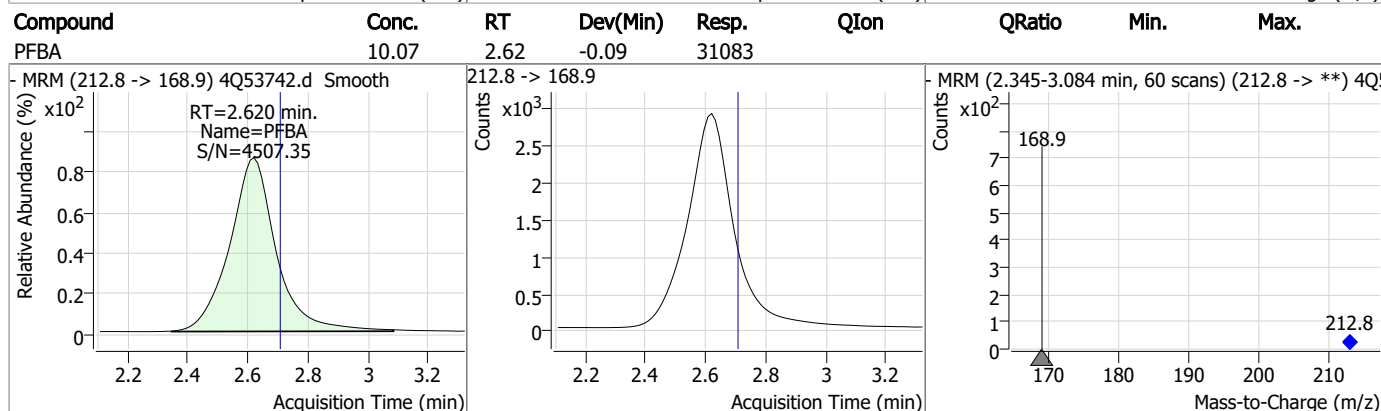
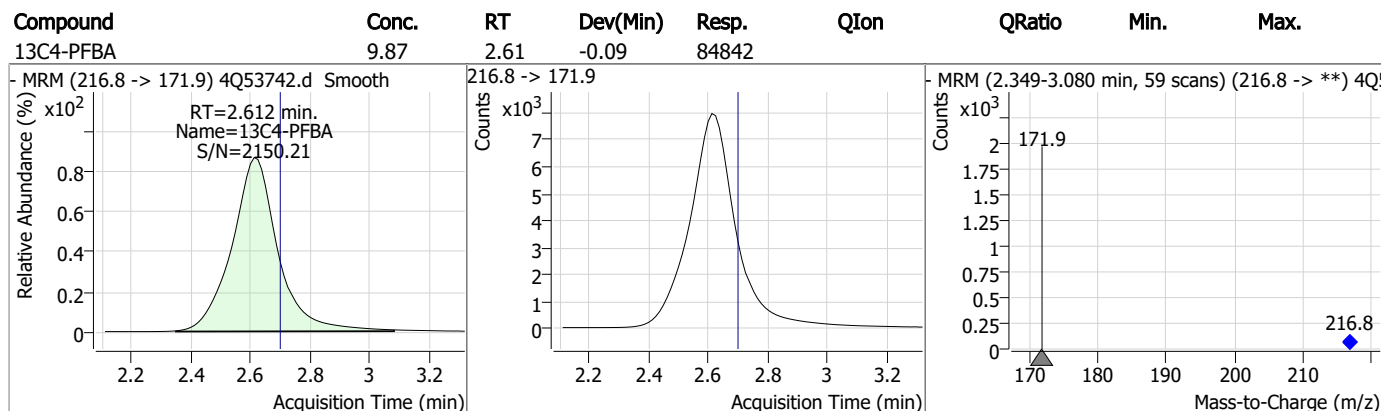
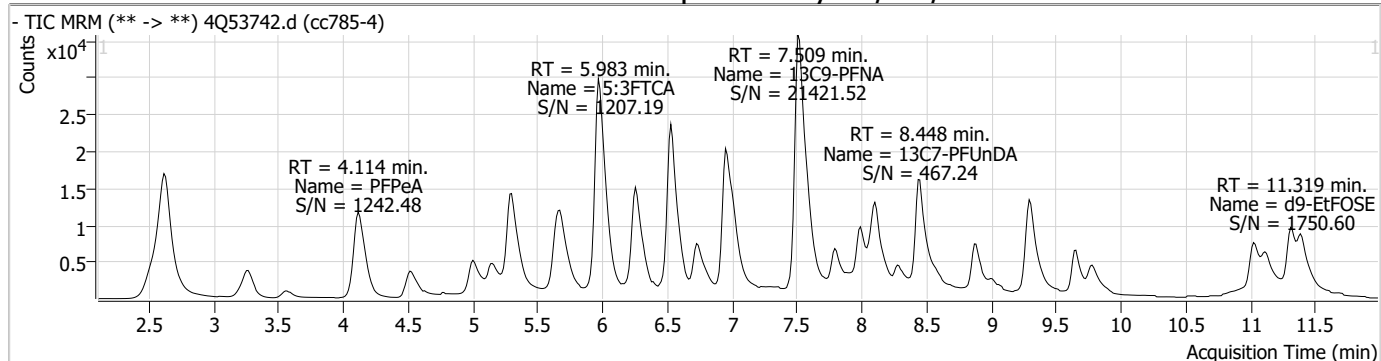
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

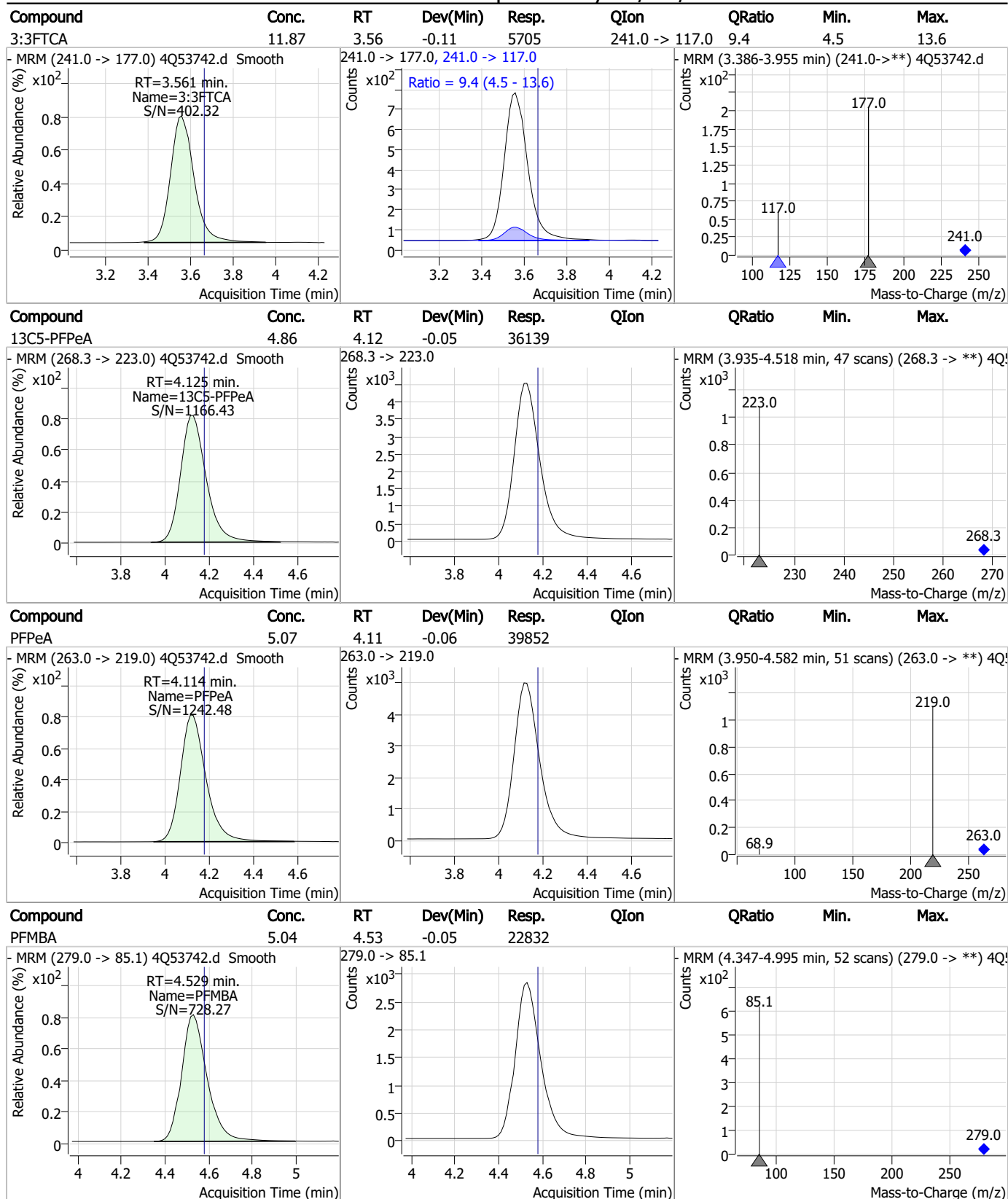
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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Perfluorinated Compounds by LC/MS/MS



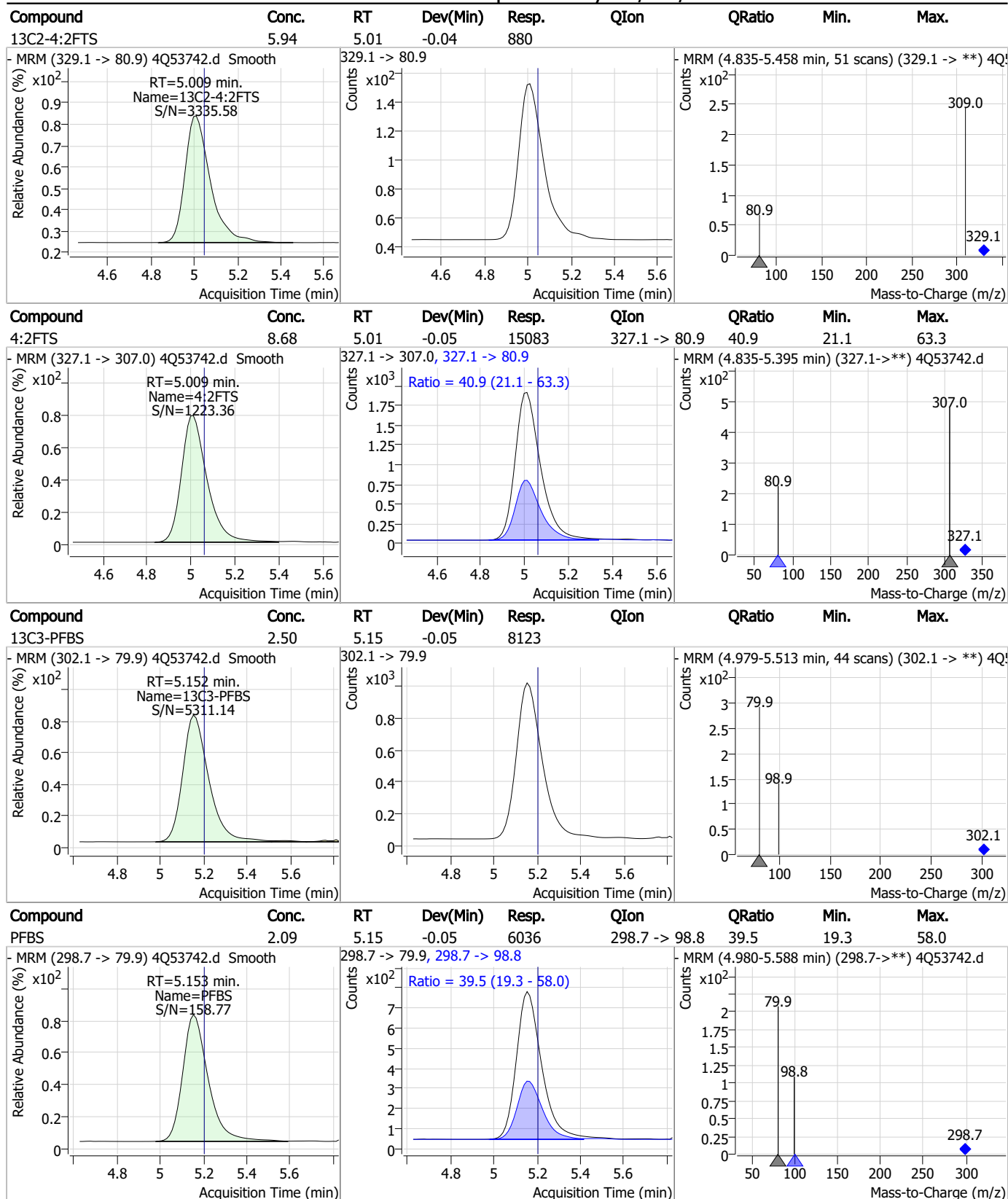
Perfluorinated Compounds by LC/MS/MS



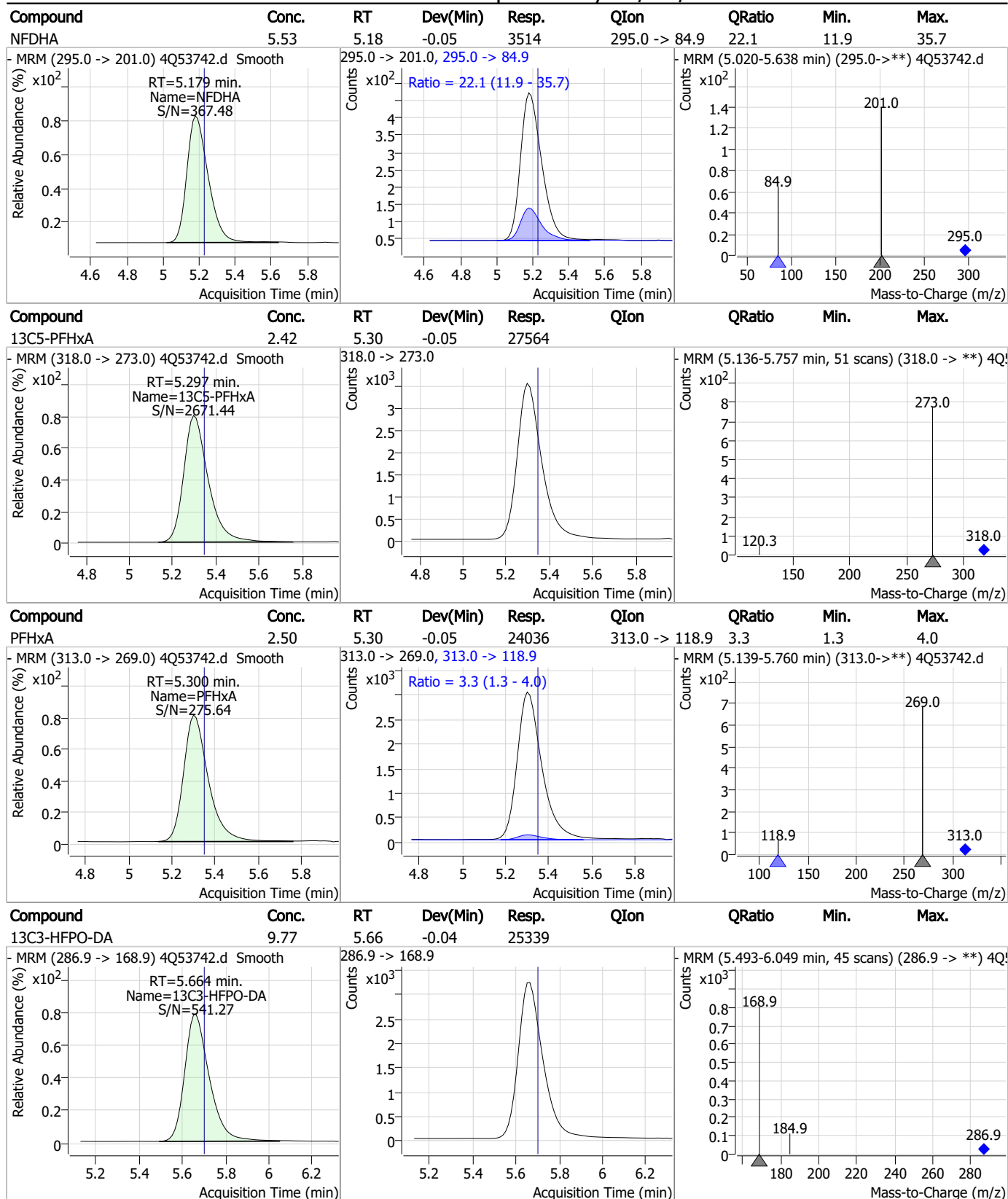
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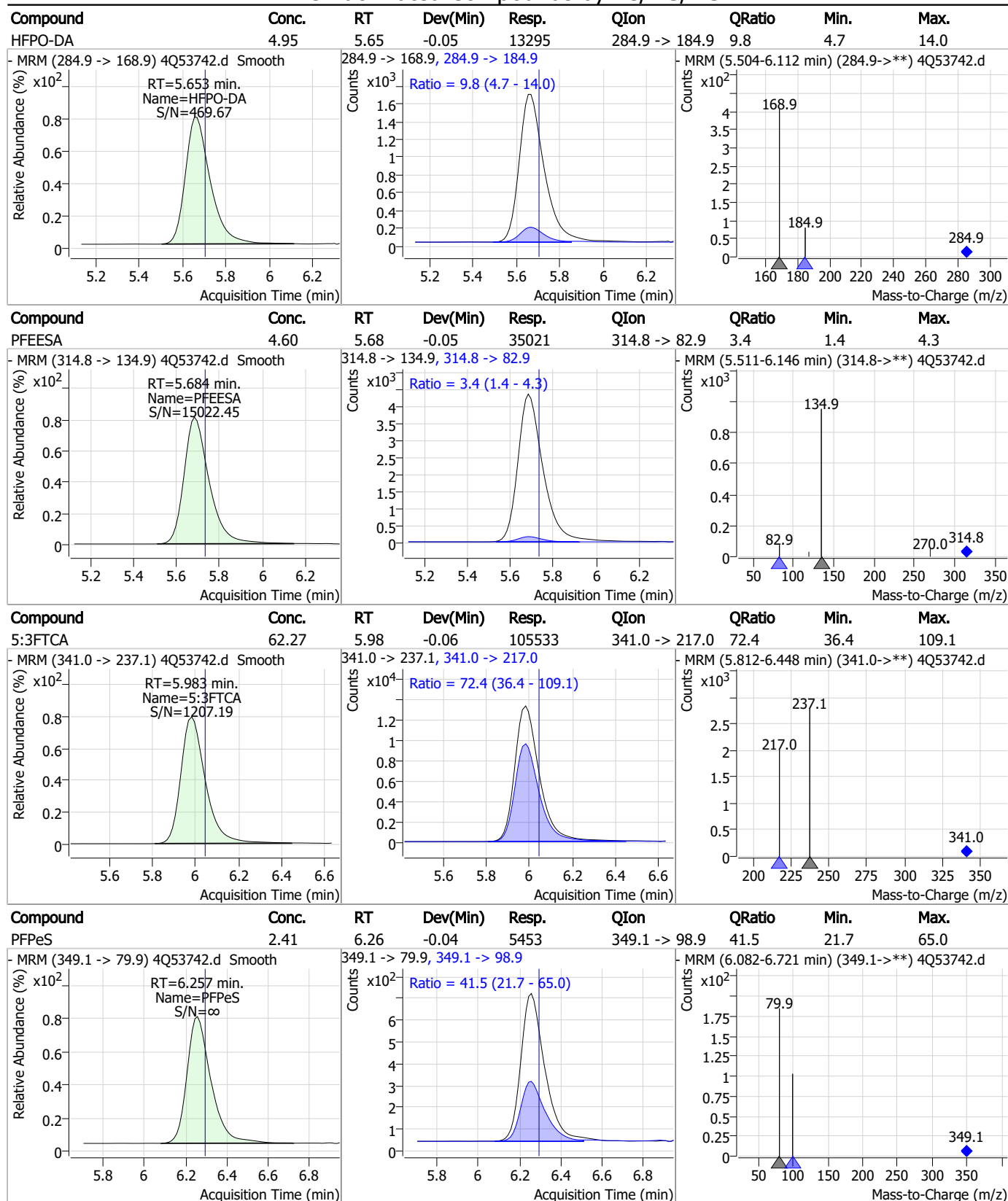
Perfluorinated Compounds by LC/MS/MS



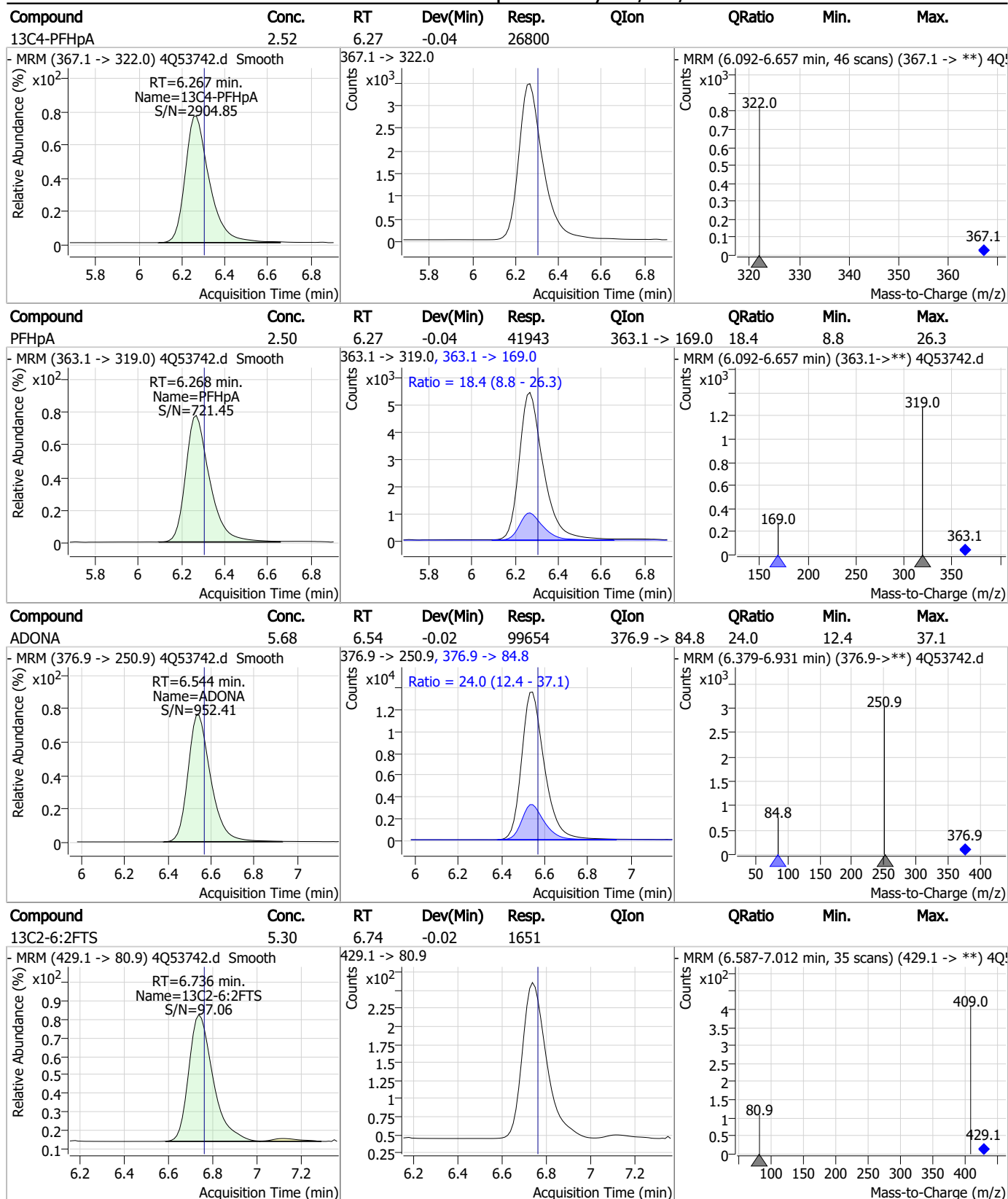
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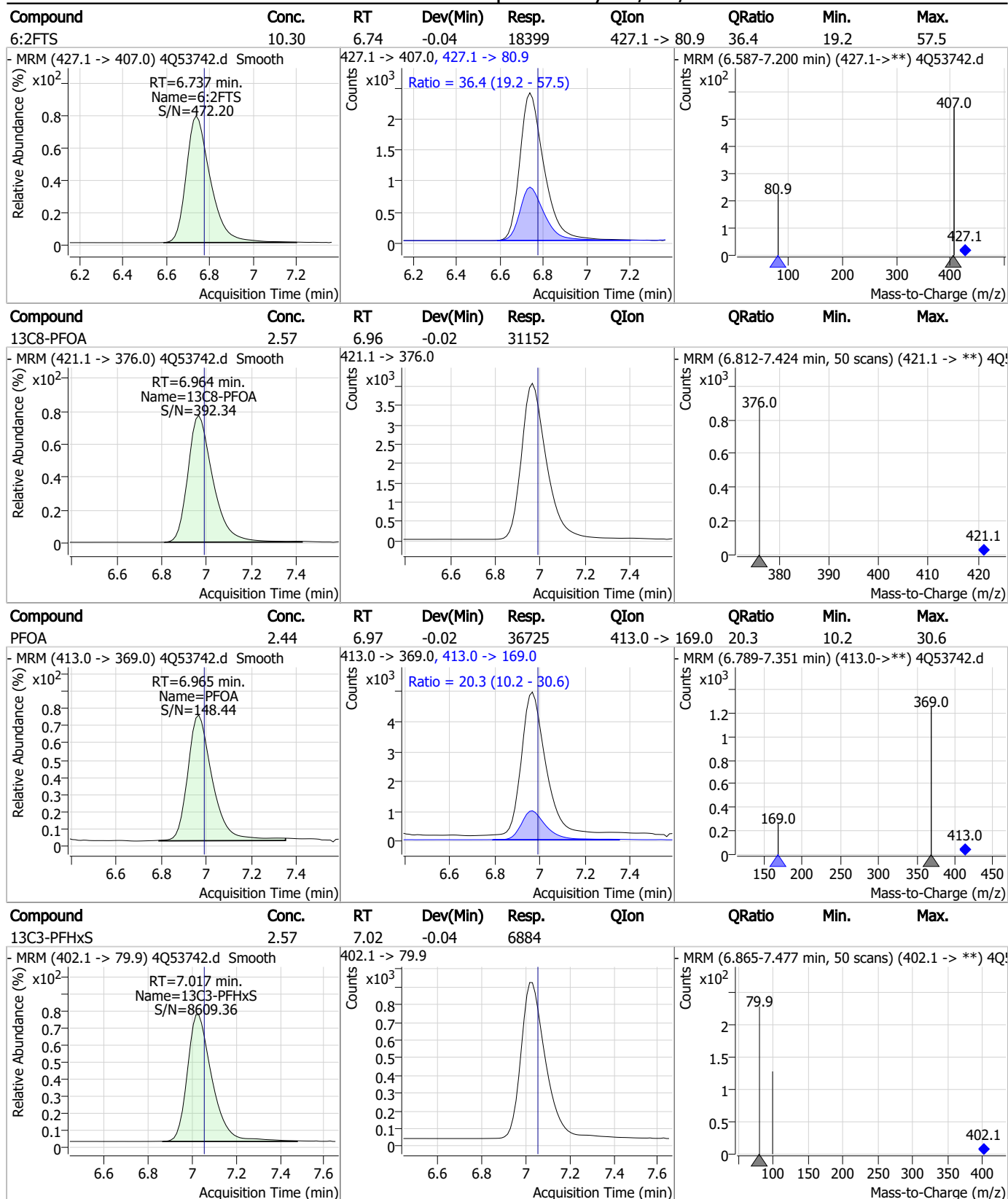
Perfluorinated Compounds by LC/MS/MS



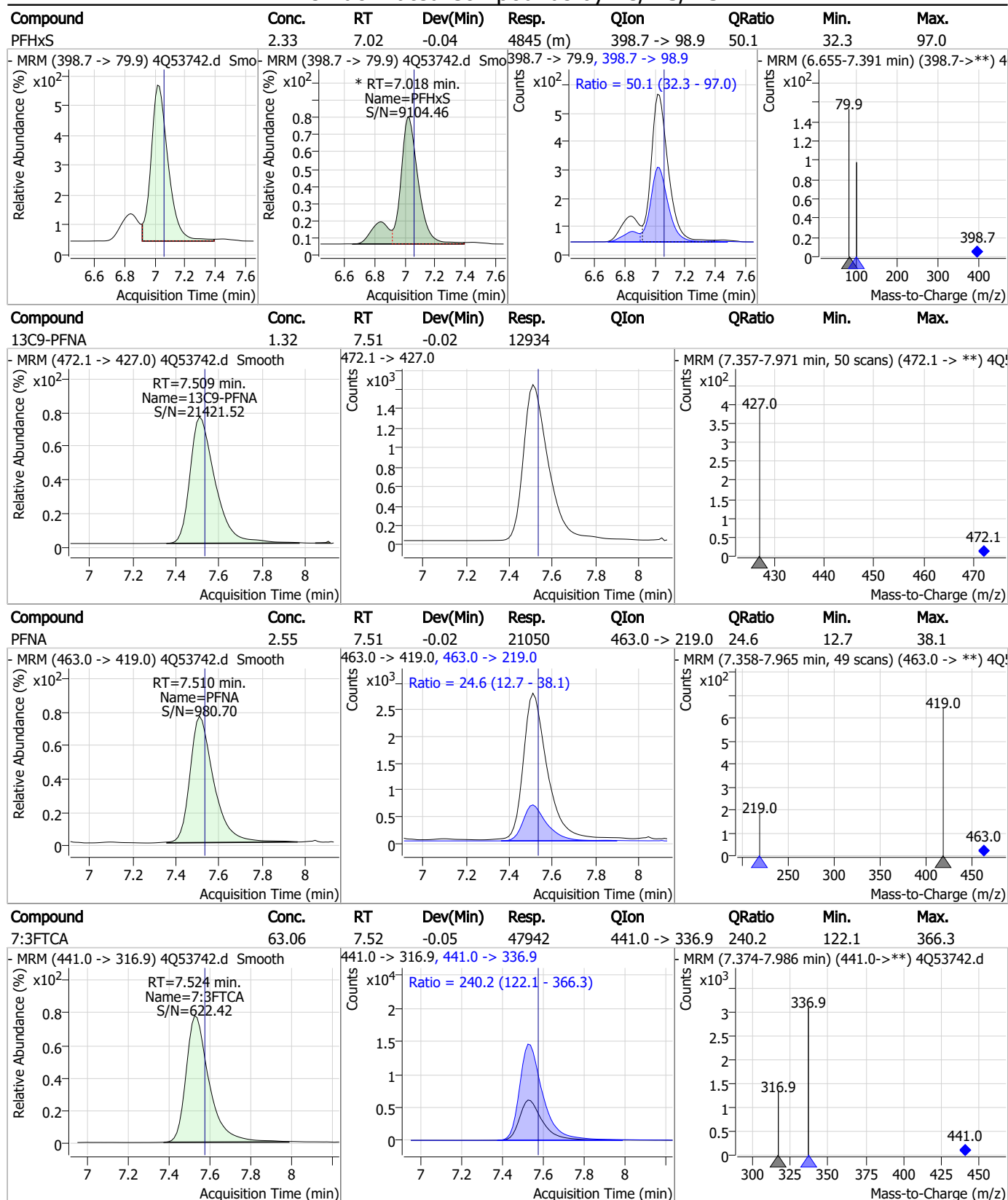
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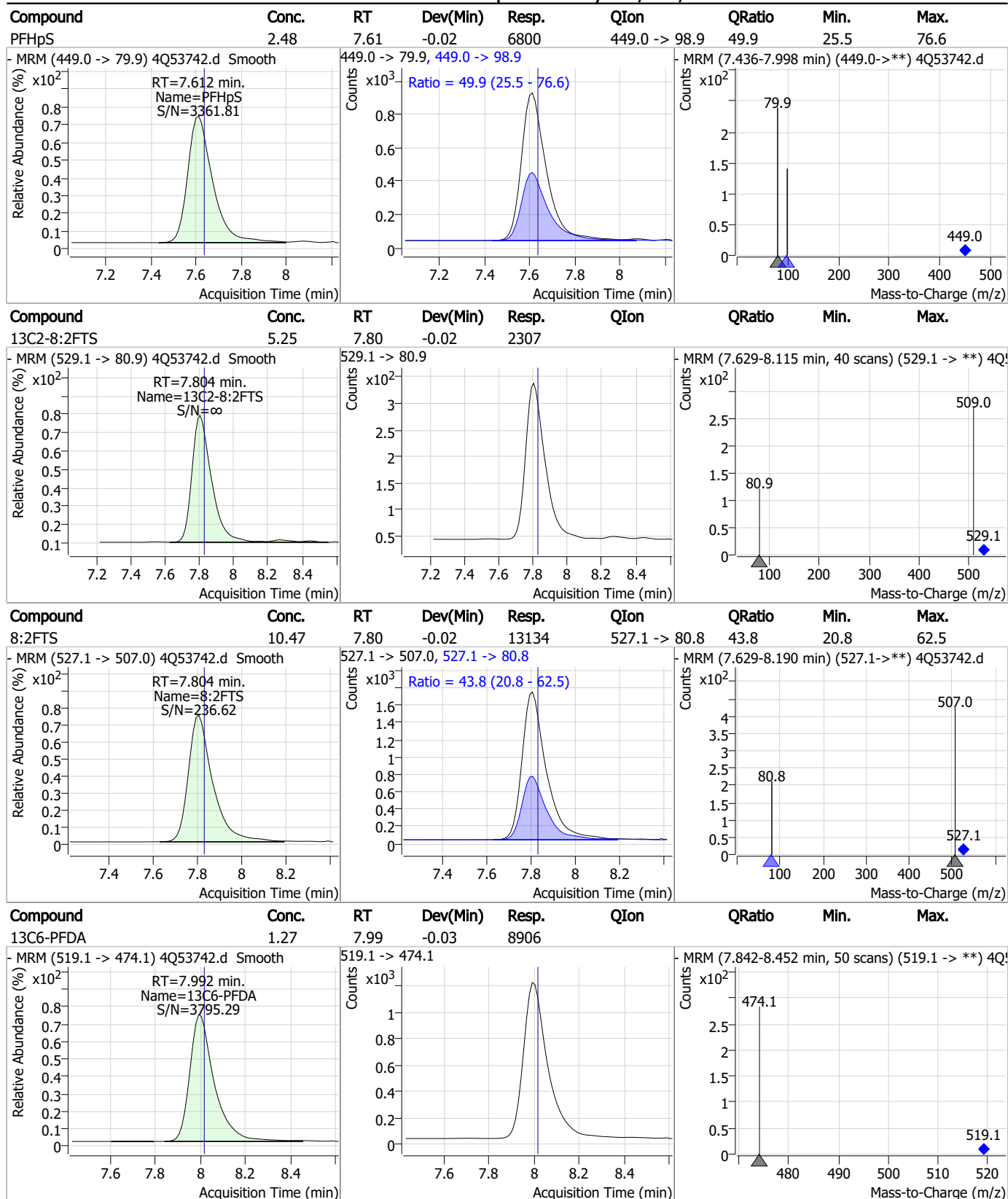
Perfluorinated Compounds by LC/MS/MS



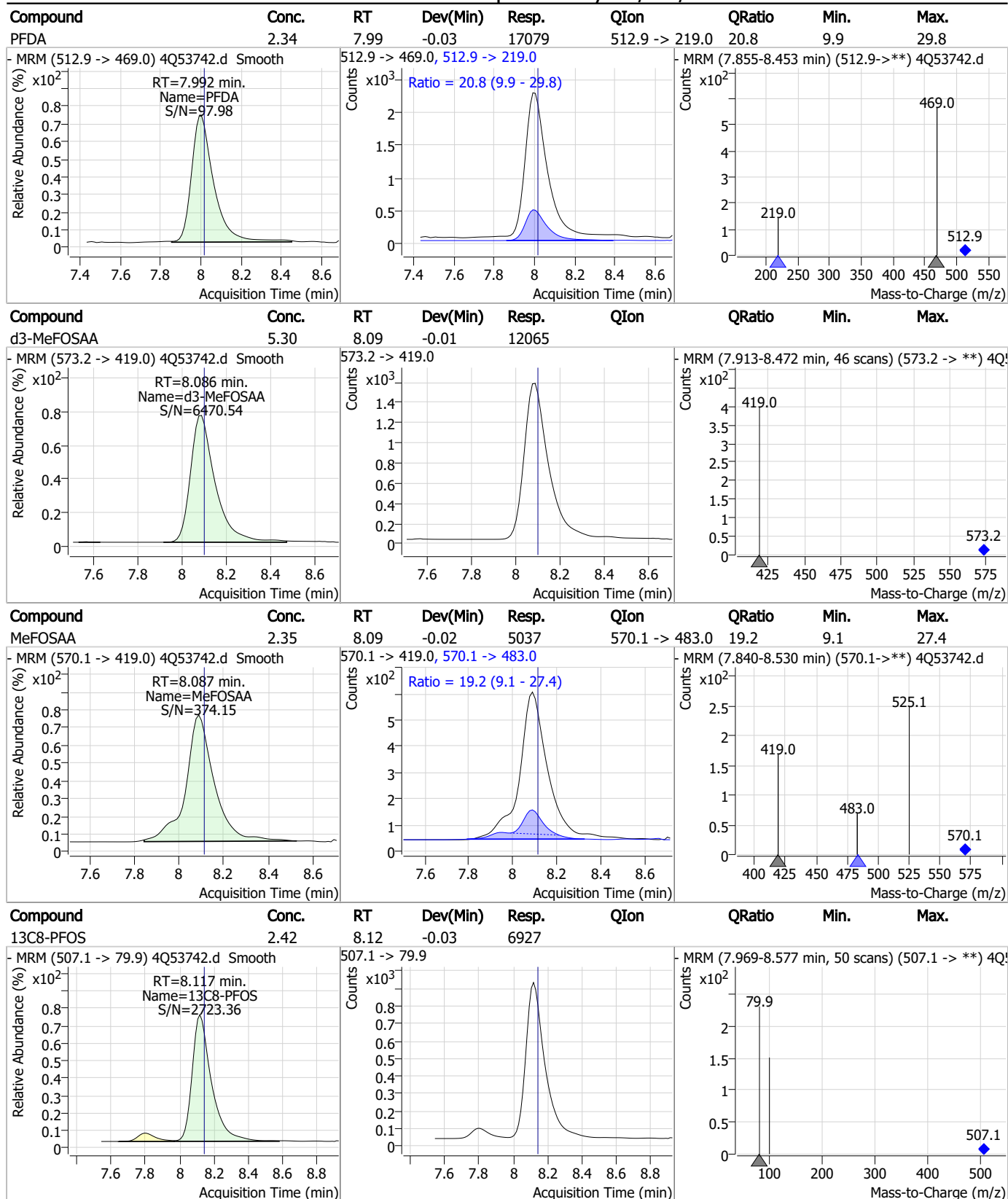
Perfluorinated Compounds by LC/MS/MS



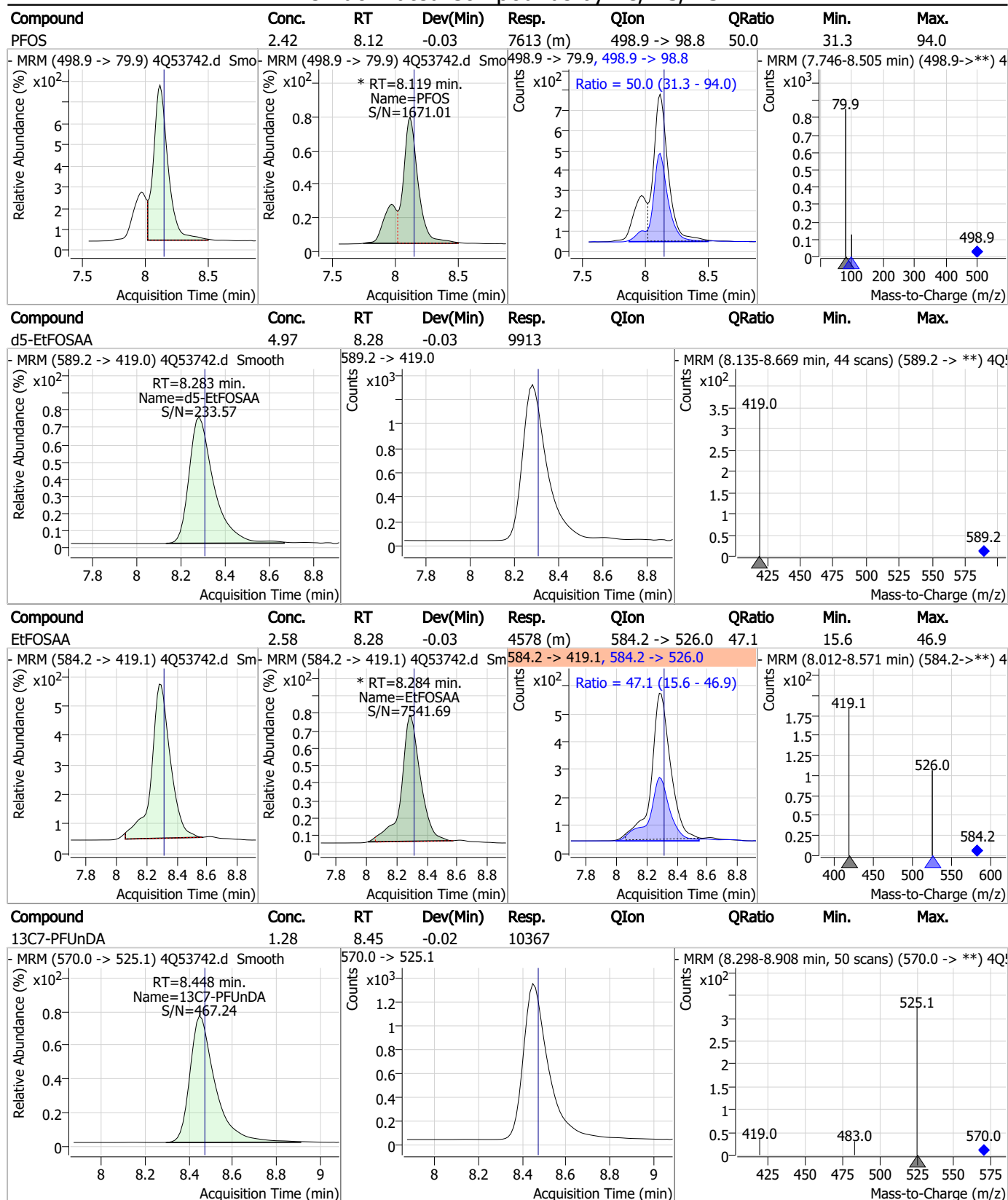
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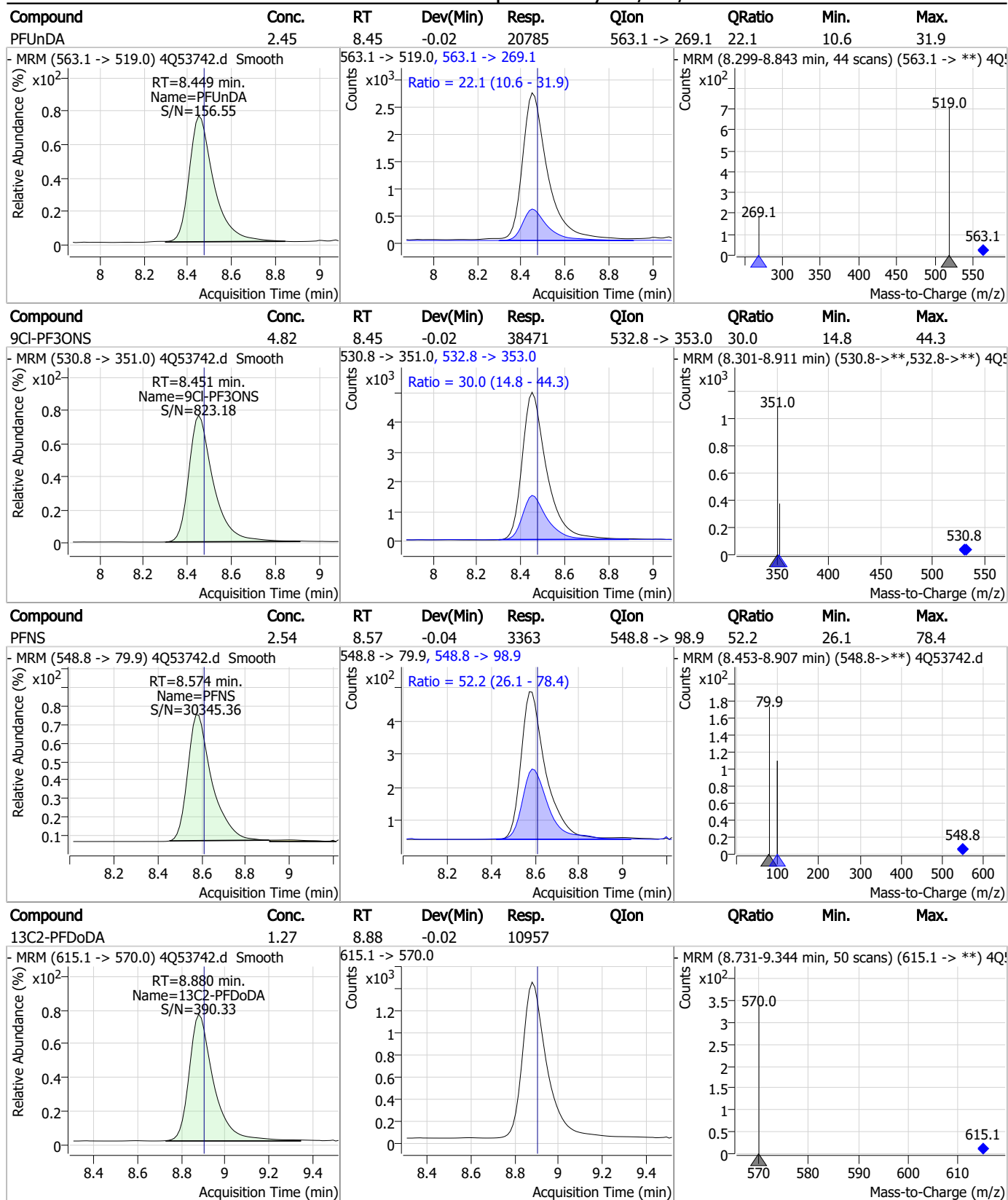
Perfluorinated Compounds by LC/MS/MS



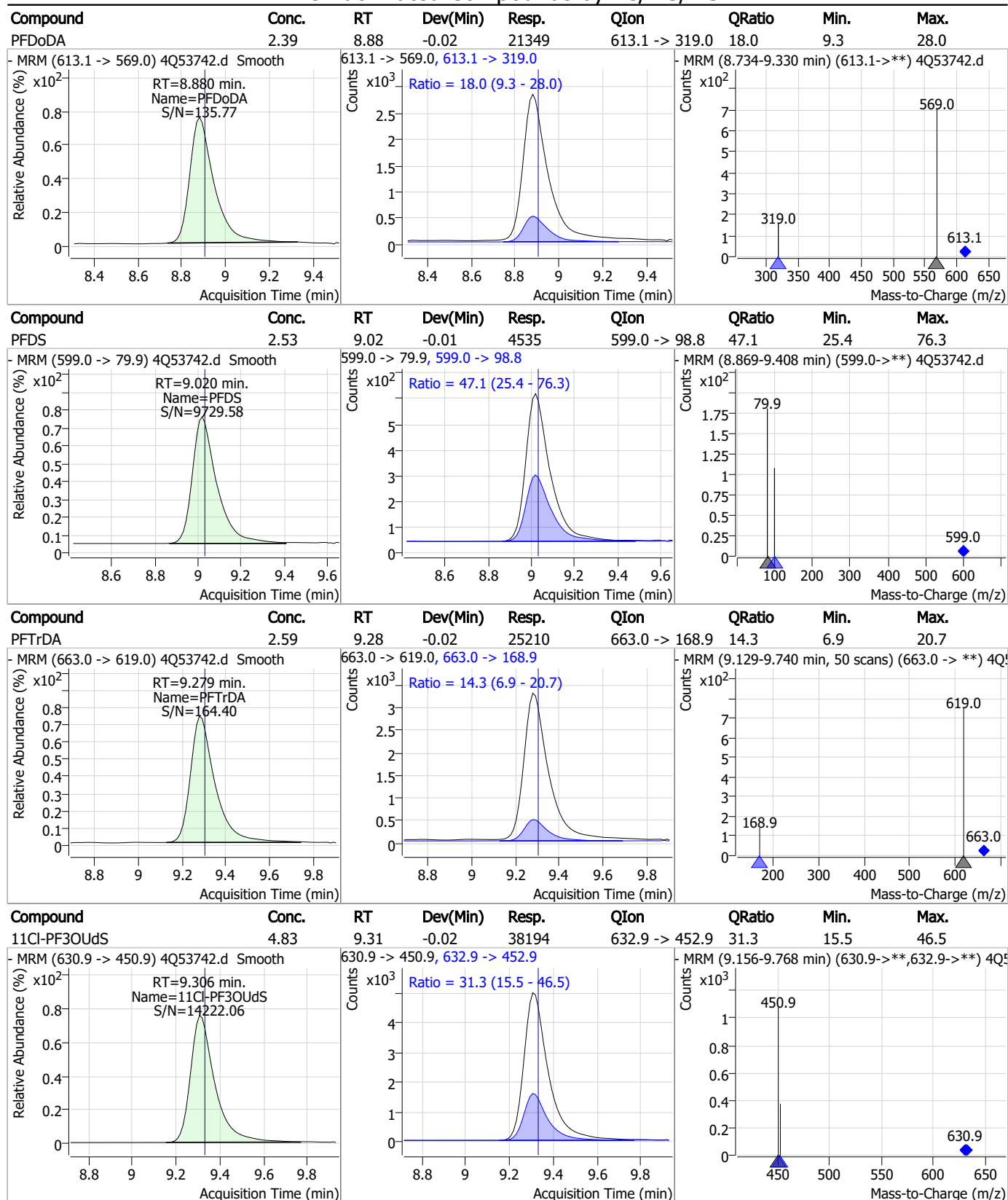
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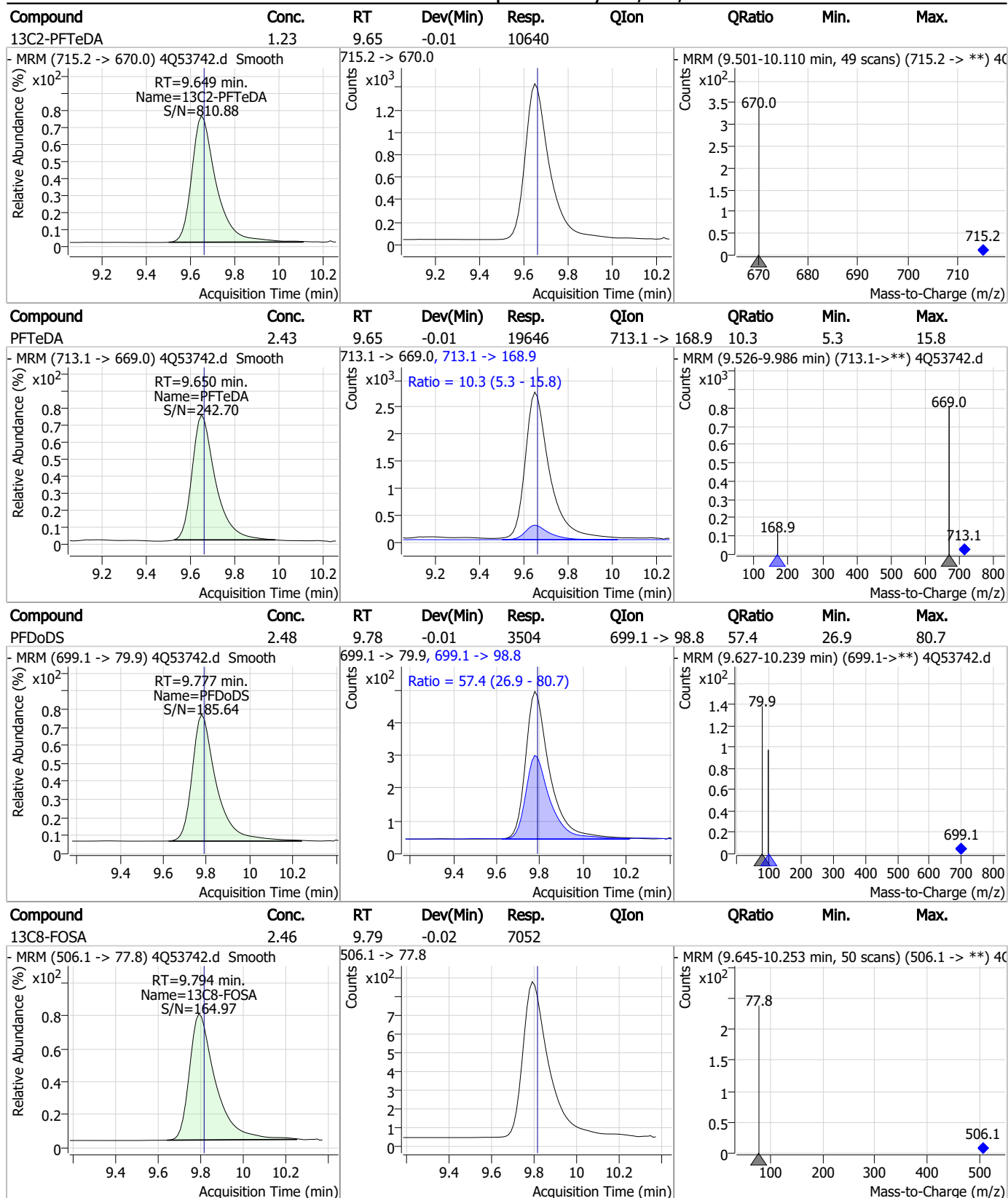
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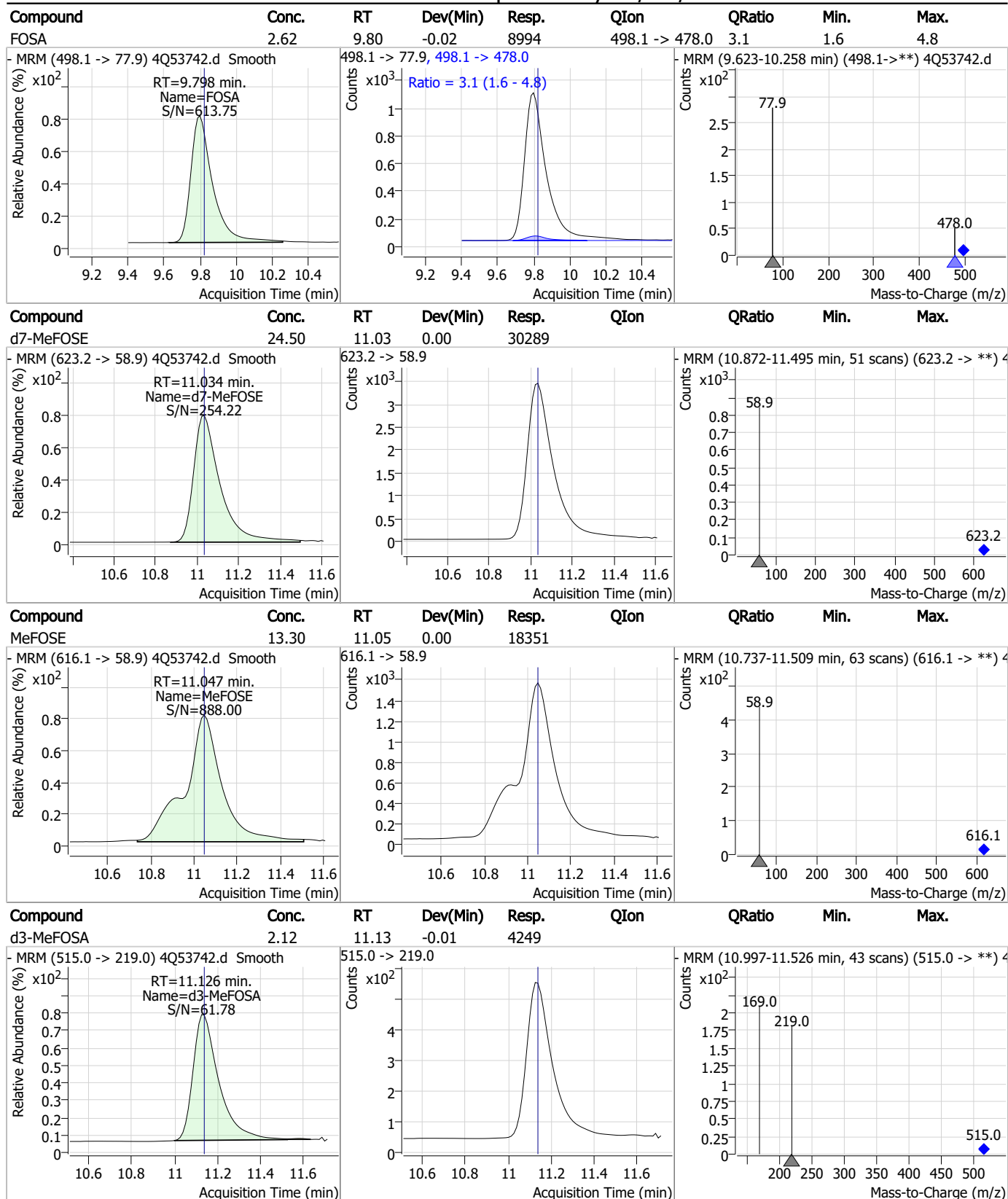
Perfluorinated Compounds by LC/MS/MS



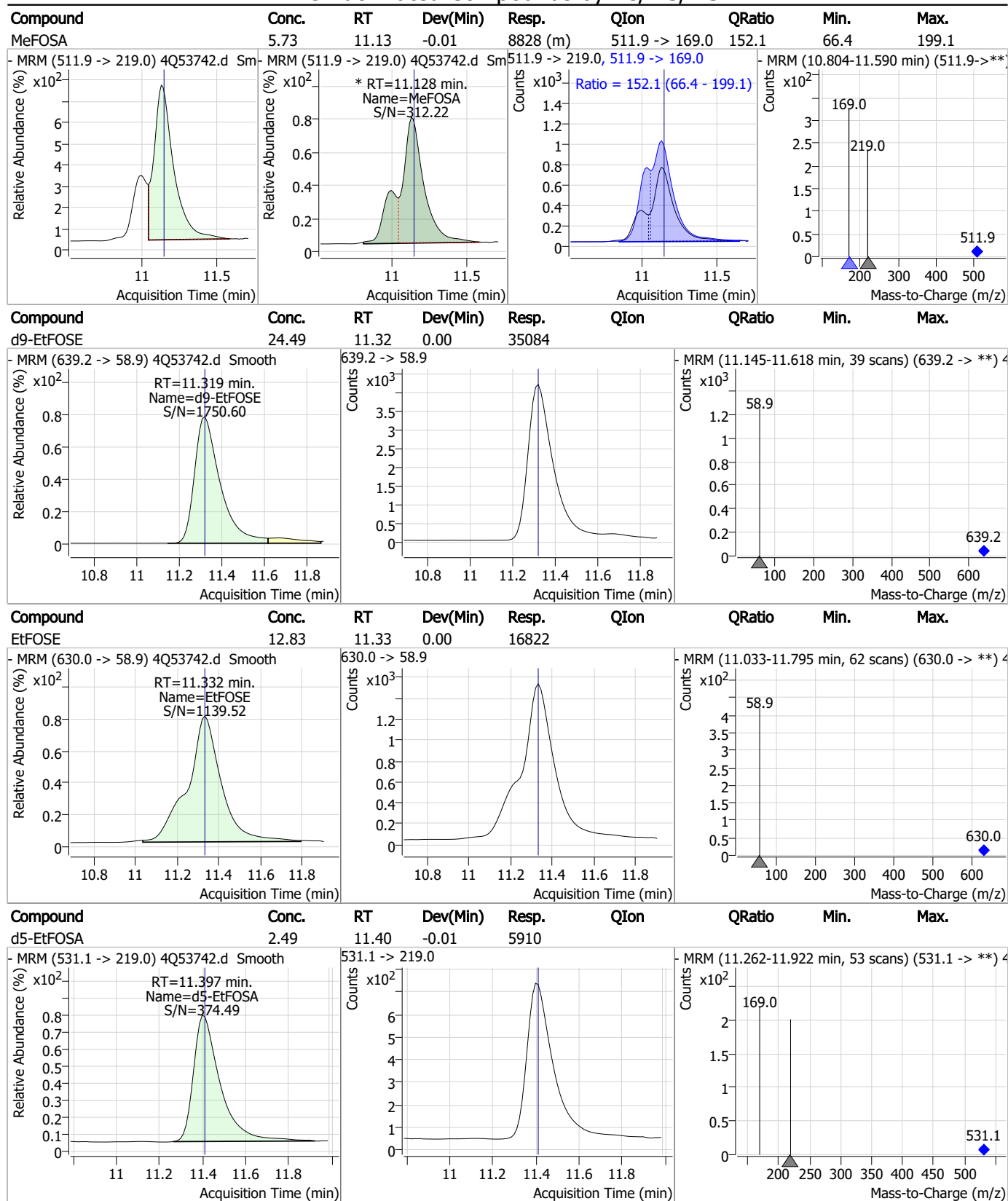
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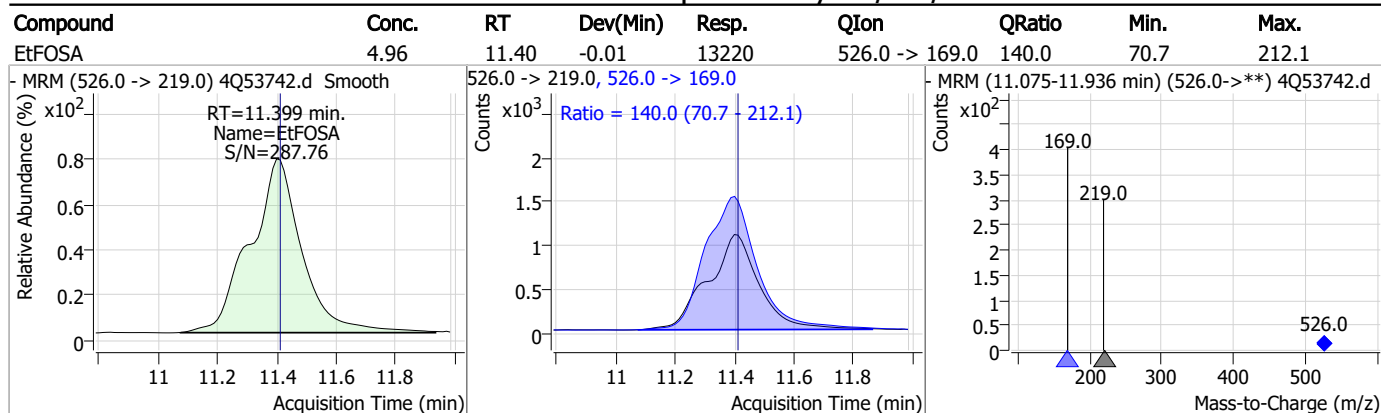
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q785-CC785

Method: EPA DRAFT 1633

Lab FileID: 4Q53742.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 18:41

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak
MeFOSA	31506-32-8		11.13	Split peak

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Natasha Gumtie
11/14/23 15:48

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53743.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 6:56:34 PM
 Sample Name : cc785-1.0LL
 Vial : P1-A2
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.612	216.8 -> 171.9	81281	10.00 µg/L	-0.087
M5-PFPeA	4.112	268.3 -> 223.0	34240	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	26658	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	23941	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	28762	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	11972	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8881	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10311	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10467	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9737	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	6868	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7659	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6288	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6721	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	798	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	1515	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2158	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	11562	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	23574	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	9122	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	28847	25.00 µg/L	-0.012
M9-EtFOSE	11.306	639.2 -> 58.9	32374	25.00 µg/L	-0.012
M5-EtFOSA	11.397	531.1 -> 219.0	5291	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4258	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5609	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	38512	5.00 µg/L	-0.087
18O2-PFHxS	7.016	403.0 -> 83.9	3973	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	30801	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	8478	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	12410	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	27050	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	798	5.87 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.4%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1515	5.29 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.8%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2158	5.34 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.9%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10467	1.37 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 109.5%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9737	1.26 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C3-PFBS	5.152	302.1 -> 79.9	7659	2.57 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C3-PFHxS	7.017	402.1 -> 79.9	6288	2.55 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C4-PFBA	2.612	216.8 -> 171.9	81281	10.13 µg/L	-0.087
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C4-PFHpA	6.267	367.1 -> 322.0	23941	2.54 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C5-PFHxA	5.297	318.0 -> 273.0	26658	2.64 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.7%	
13C5-PFPeA	4.112	268.3 -> 223.0	34240	5.19 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C6-PFDA	7.992	519.1 -> 474.1	8881	1.42 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 113.9%	
13C7-PFUnDA	8.448	570.0 -> 525.1	10311	1.43 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 114.4%	
13C8-FOSA	9.794	506.1 -> 77.8	6868	2.56 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C8-PFOA	6.964	421.1 -> 376.0	28762	2.62 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.6%	
13C8-PFOS	8.117	507.1 -> 79.9	6721	2.51 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C9-PFNA	7.509	472.1 -> 427.0	11972	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.9%	
d3-MeFOSAA	8.086	573.2 -> 419.0	11562	5.44 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.7%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	23574	10.24 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
d3-MeFOSA	11.126	515.0 -> 219.0	4258	2.28 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.0%	
d5-EtFOSAA	8.283	589.2 -> 419.0	9122	4.90 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.9%	
d7-MeFOSE	11.022	623.2 -> 58.9	28847	24.97 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d9-EtFOSE	11.306	639.2 -> 58.9	32374	24.19 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.8%	
d5-EtFOSA	11.397	531.1 -> 219.0	5291	2.38 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.3%	
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	1094	0.69 µg/L	90
		327.1 -> 80.9	392		
6:2FTS	6.737	427.1 -> 407.0	1283	0.78 µg/L	97
		427.1 -> 80.9	467		
8:2FTS	7.804	527.1 -> 507.0	880	0.75 µg/L	87
		527.1 -> 80.8	296		
EtFOSAA	8.284	584.2 -> 419.1	264	0.16 µg/L	#m 36
		584.2 -> 526.0	176		
FOSA	9.785	498.1 -> 77.9	594	0.18 µg/L	# 93
		498.1 -> 478.0	5		
MeFOSAA	8.087	570.1 -> 419.0	409	0.20 µg/L	m 90
		570.1 -> 483.0	57		
PFBA	2.620	212.8 -> 168.9	2061	0.70 µg/L	100
PFBS	5.153	298.7 -> 79.9	431	0.16 µg/L	99
		298.7 -> 98.8	170		
PFDA	8.005	512.9 -> 469.0	1208	0.17 µg/L	81
		512.9 -> 219.0	348		
PFDODA	8.880	613.1 -> 569.0	1601	0.19 µg/L	86
		613.1 -> 319.0	195		
PFDS	9.032	599.0 -> 79.9	280	0.16 µg/L	91

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	160	0.19	µg/L	100
		363.1 -> 319.0	2820			
		363.1 -> 169.0	490			
PFHpS	7.612	449.0 -> 79.9	478	0.18	µg/L	98
		449.0 -> 98.9	238			
PFHxA	5.300	313.0 -> 269.0	1675	0.18	µg/L	99
		313.0 -> 118.9	52			
PFHxS	7.018	398.7 -> 79.9	317	0.17	µg/L	100
		398.7 -> 98.9	205			
PFNA	7.522	463.0 -> 419.0	1330	0.17	µg/L	97
		463.0 -> 219.0	359			
PFNS	8.586	548.8 -> 79.9	212	0.17	µg/L	92
		548.8 -> 98.9	98			
PFOA	6.965	413.0 -> 369.0	2196	0.16	µg/L	95
		413.0 -> 169.0	398			
PFOS	8.119	498.9 -> 79.9	619	0.20	µg/L	69
		498.9 -> 98.8	237			
PFPeA	4.114	263.0 -> 219.0	2540	0.34	µg/L	100
PFPeS	6.257	349.1 -> 79.9	315	0.15	µg/L	75
		349.1 -> 98.9	188			
PFTeDA	9.650	713.1 -> 669.0	1380	0.19	µg/L	98
		713.1 -> 168.9	153			
PFTrDA	9.279	663.0 -> 619.0	1904	0.20	µg/L	99
		663.0 -> 168.9	254			
PFUnDA	8.449	563.1 -> 519.0	1653	0.20	µg/L	95
		563.1 -> 269.1	314			
11CI-PF3OUdS	9.306	630.9 -> 450.9	2489	0.34	µg/L	97
		632.9 -> 452.9	730			
9CI-PF3ONS	8.451	530.8 -> 351.0	2385	0.32	µg/L	96
		532.8 -> 353.0	760			
ADONA	6.544	376.9 -> 250.9	6110	0.37	µg/L	99
		376.9 -> 84.8	1484			
HFPO-DA	5.665	284.9 -> 168.9	769	0.31	µg/L	98
		284.9 -> 184.9	68			
3:3FTCA	3.548	241.0 -> 177.0	392	0.85	µg/L	96
		241.0 -> 117.0	30			
5:3FTCA	5.983	341.0 -> 237.1	6623	4.04	µg/L	98
		341.0 -> 217.0	4941			
7:3FTCA	7.524	441.0 -> 316.9	3107	4.23	µg/L	99
		441.0 -> 336.9	7645			
EtFOSA	11.399	526.0 -> 219.0	1013	0.42	µg/L	69
		526.0 -> 169.0	1049			
EtFOSE	11.320	630.0 -> 58.9	1325	1.10	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	502	0.32	µg/L	54
		511.9 -> 169.0	938			
MeFOSE	11.047	616.1 -> 58.9	1278	0.97	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	217	0.16	µg/L	93
		699.1 -> 98.8	127			
NFDHA	5.179	295.0 -> 201.0	241	0.39	µg/L	99
		295.0 -> 84.9	56			
PFMBA	4.529	279.0 -> 85.1	1435	0.33	µg/L	100
PFMPA	3.265	229.0 -> 84.9	1706	0.36	µg/L	100
PFEESA	5.684	314.8 -> 134.9	2230	0.30	µg/L	98
		314.8 -> 82.9	49			

= Qualifier out of range, m = manually integrated, + = Area summed

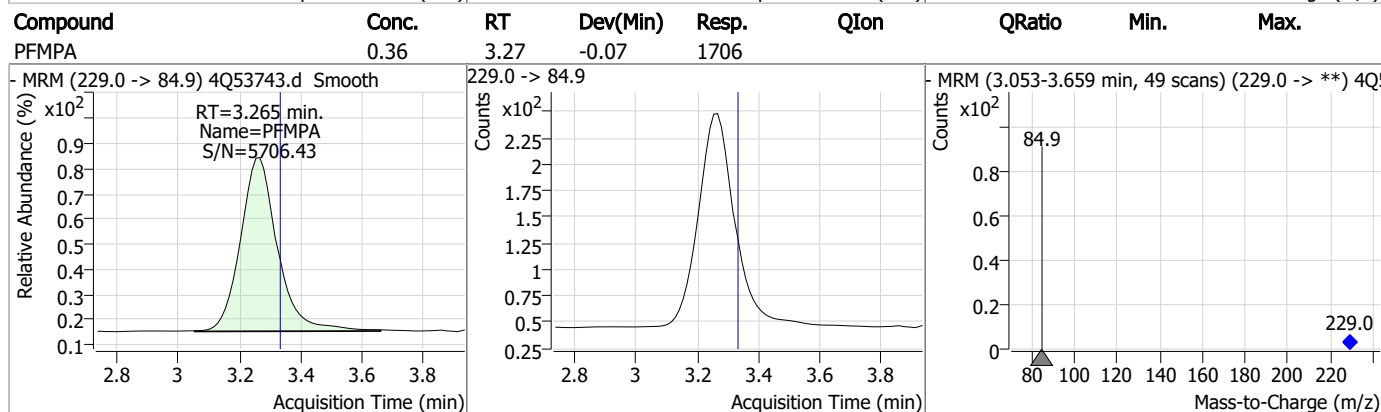
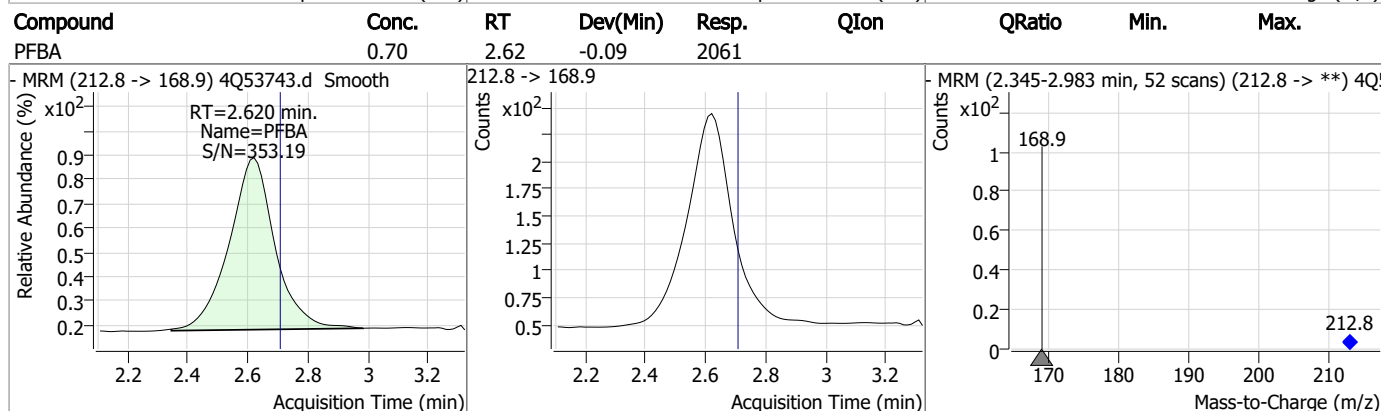
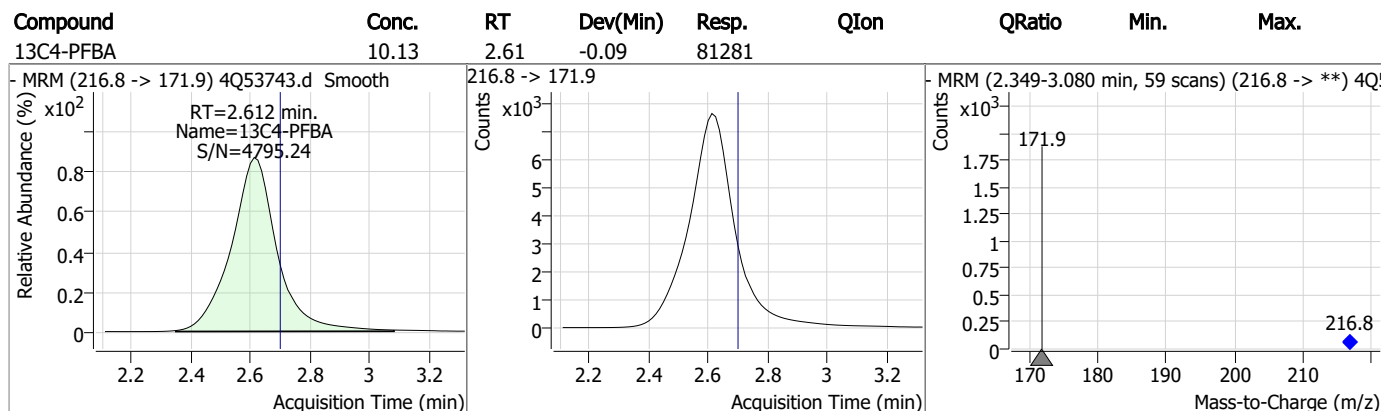
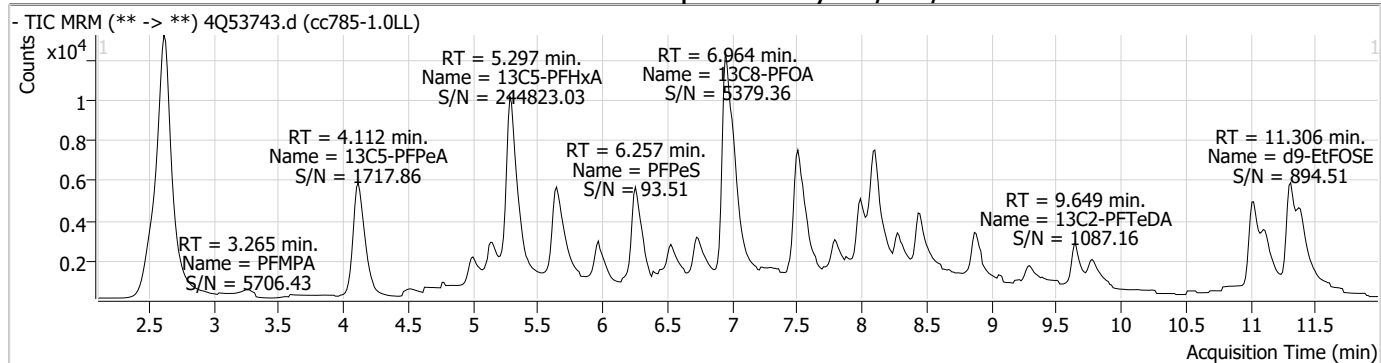
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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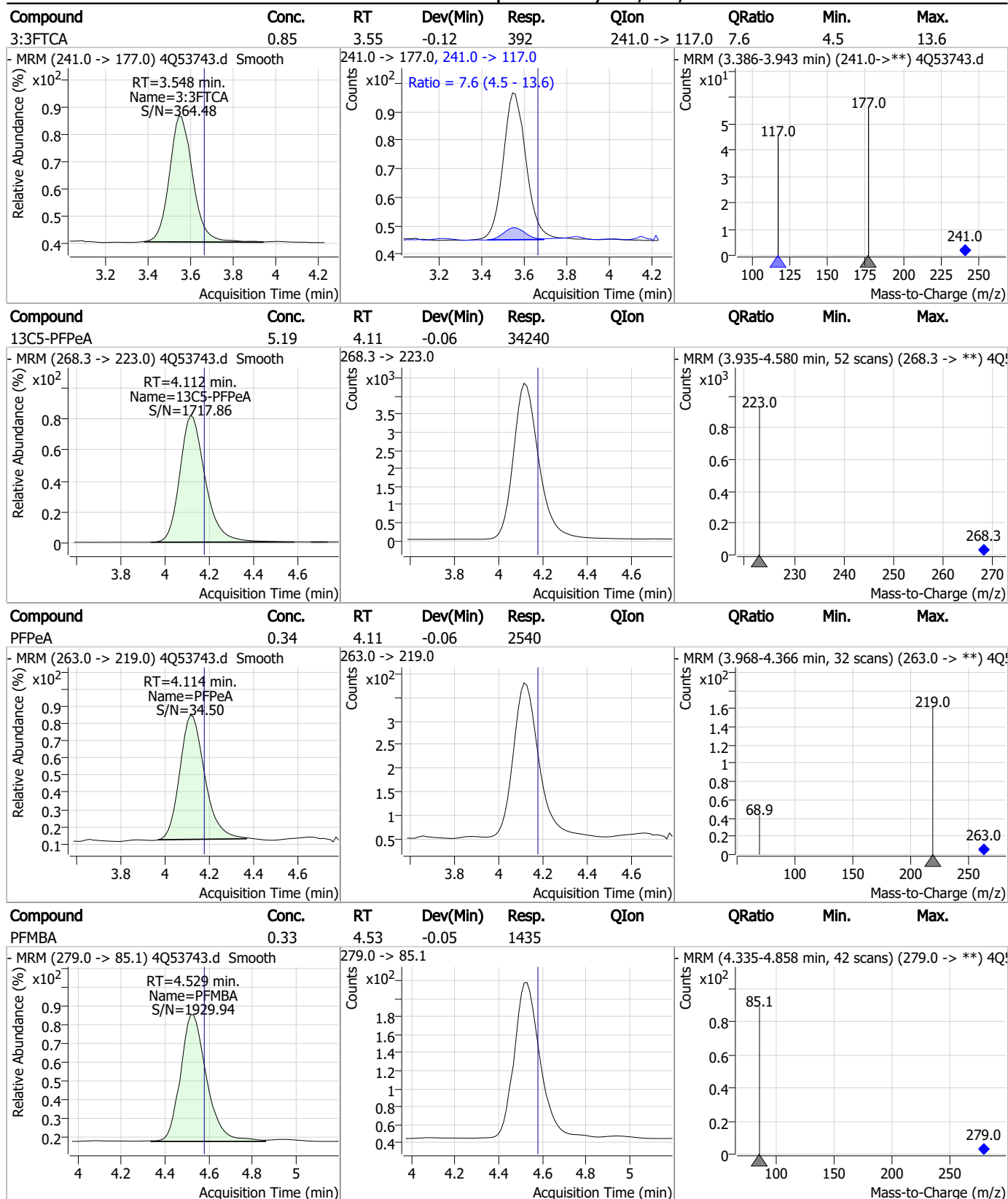
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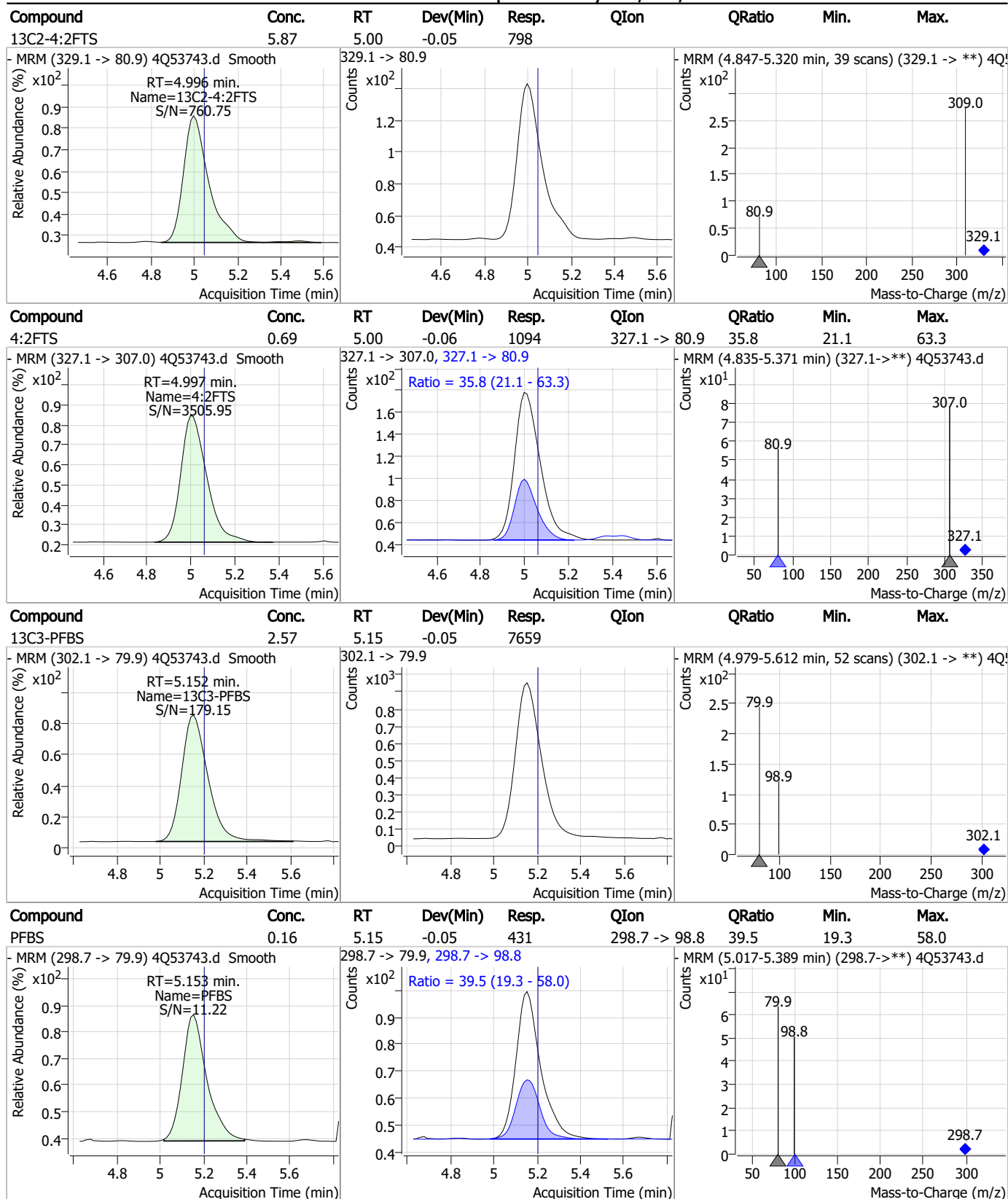
Perfluorinated Compounds by LC/MS/MS



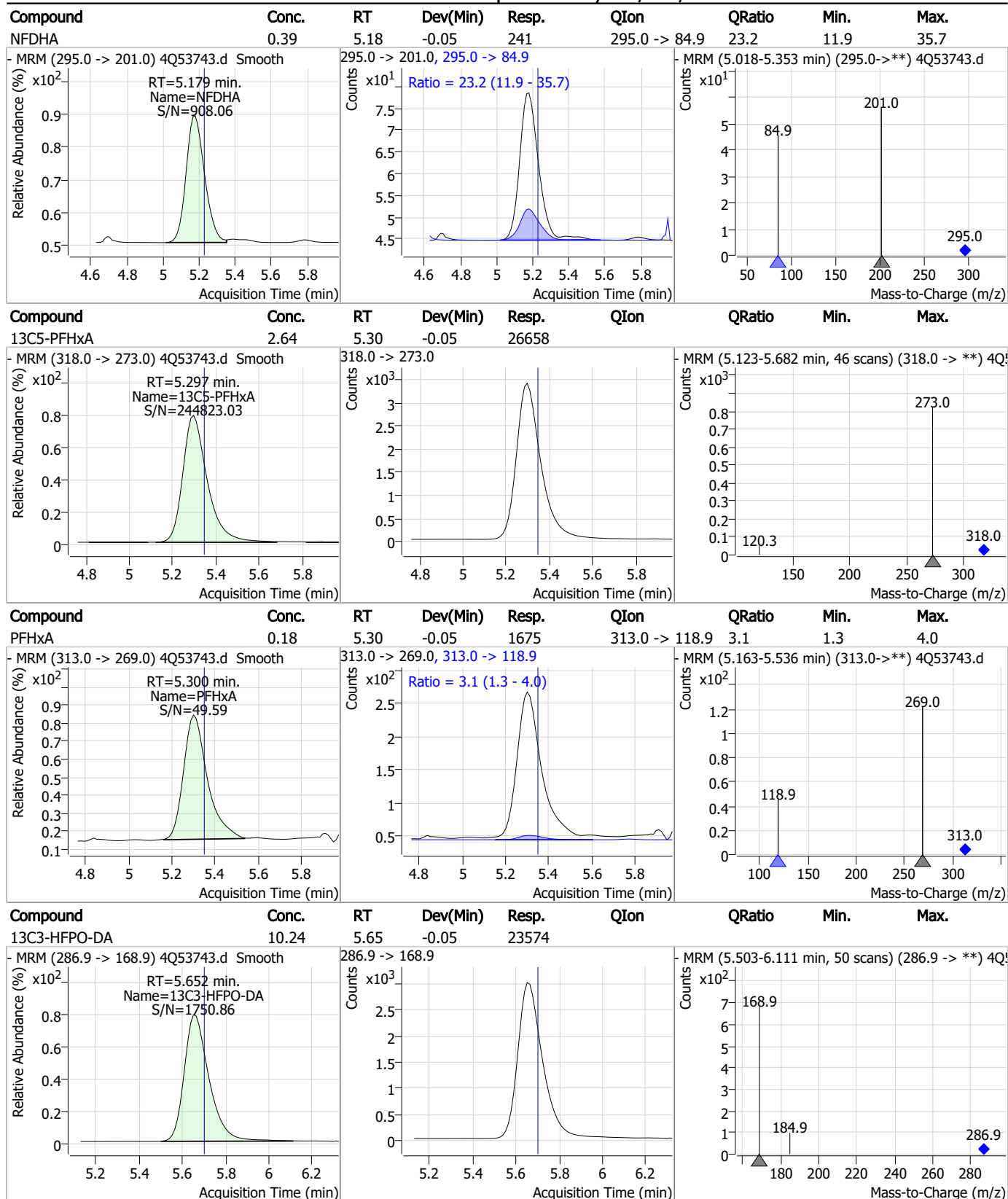
Perfluorinated Compounds by LC/MS/MS



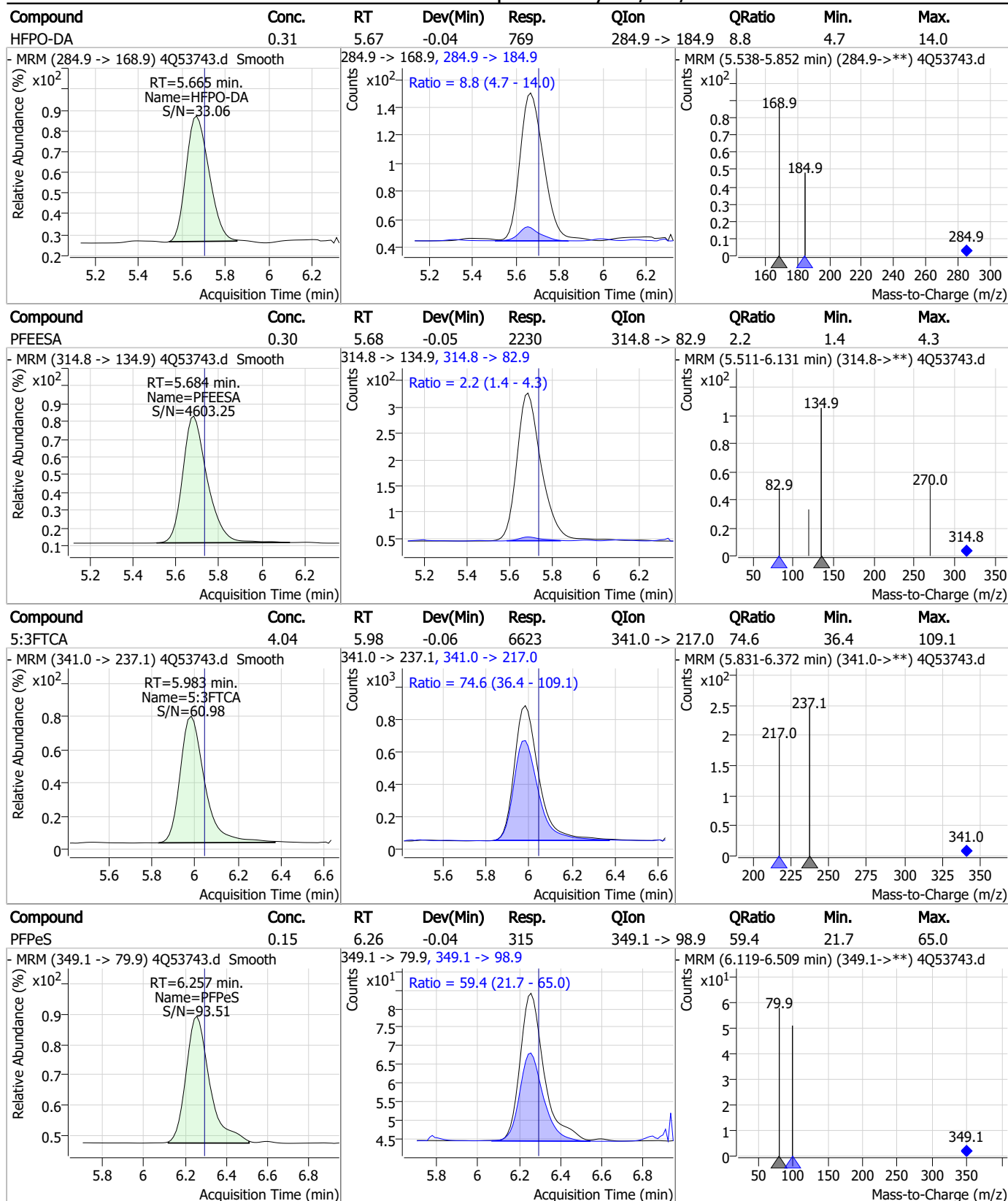
Perfluorinated Compounds by LC/MS/MS



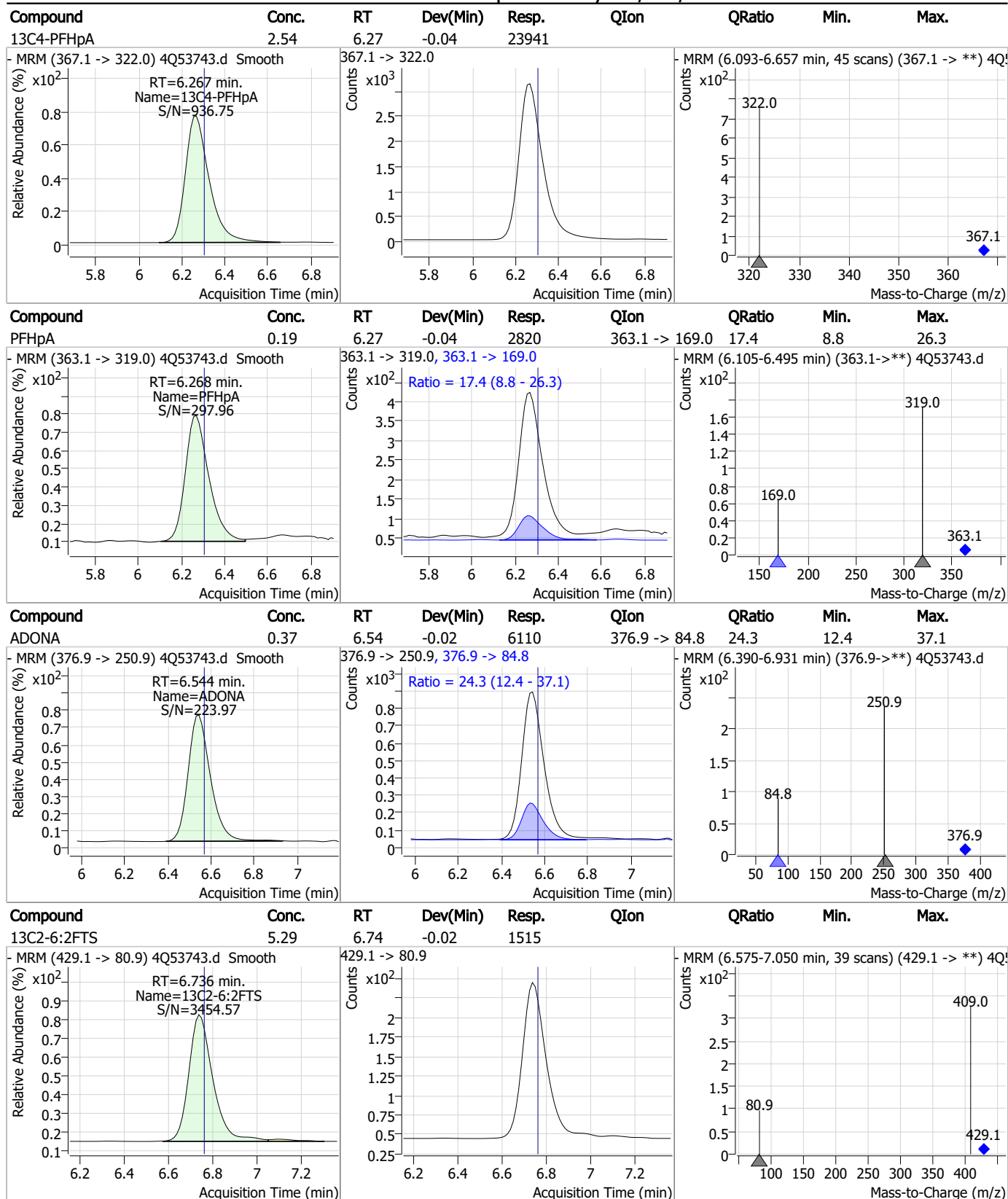
Perfluorinated Compounds by LC/MS/MS



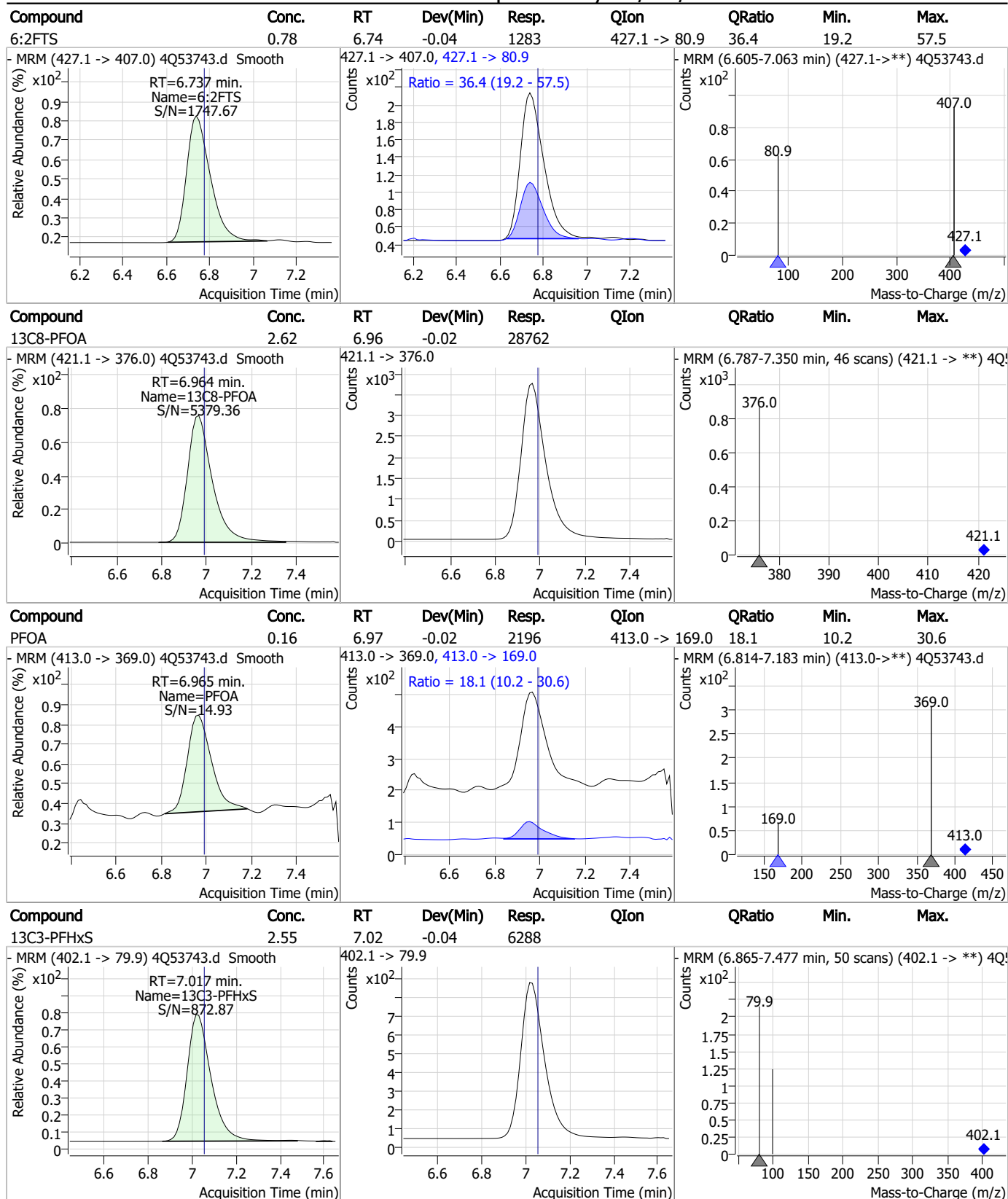
Perfluorinated Compounds by LC/MS/MS



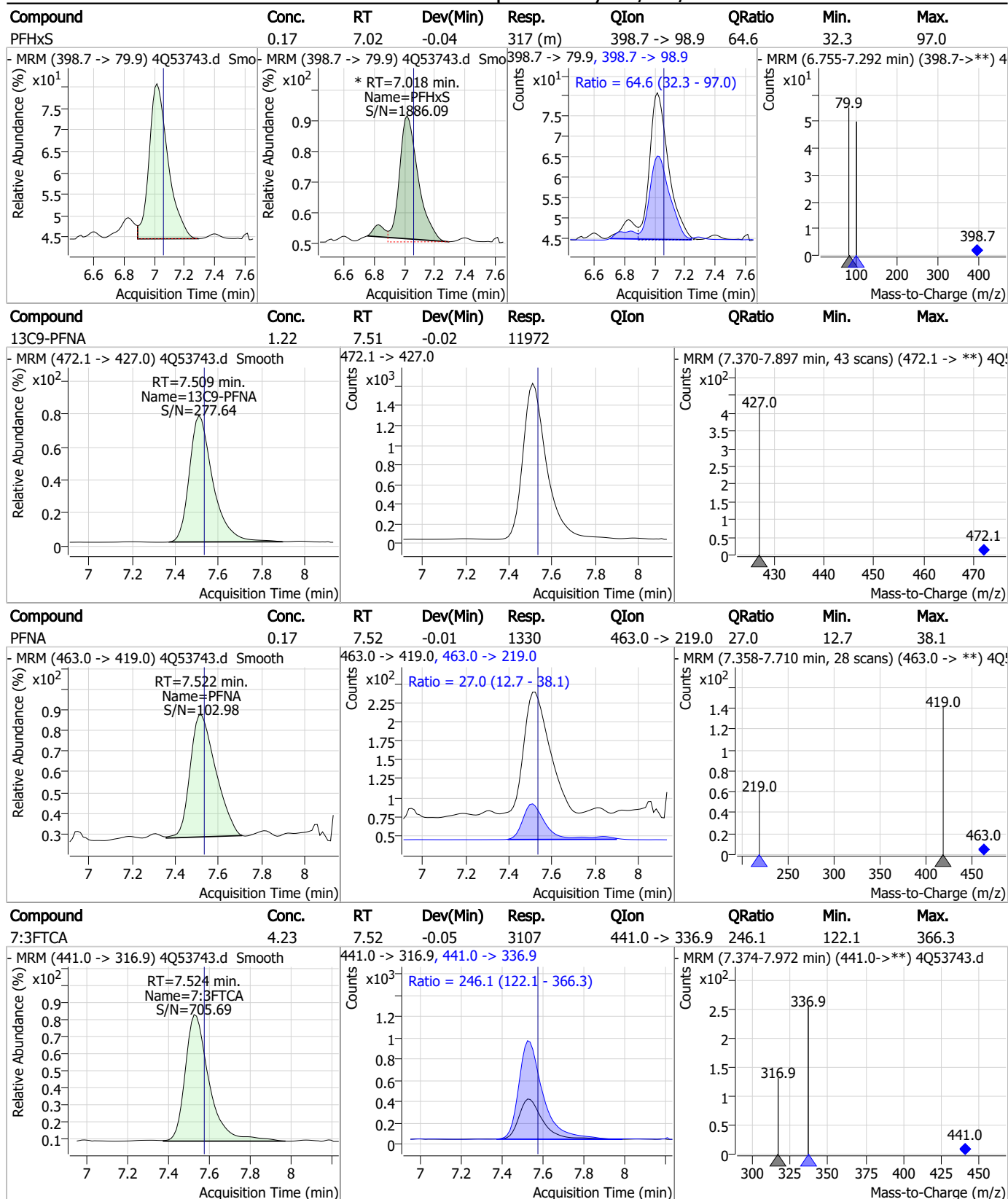
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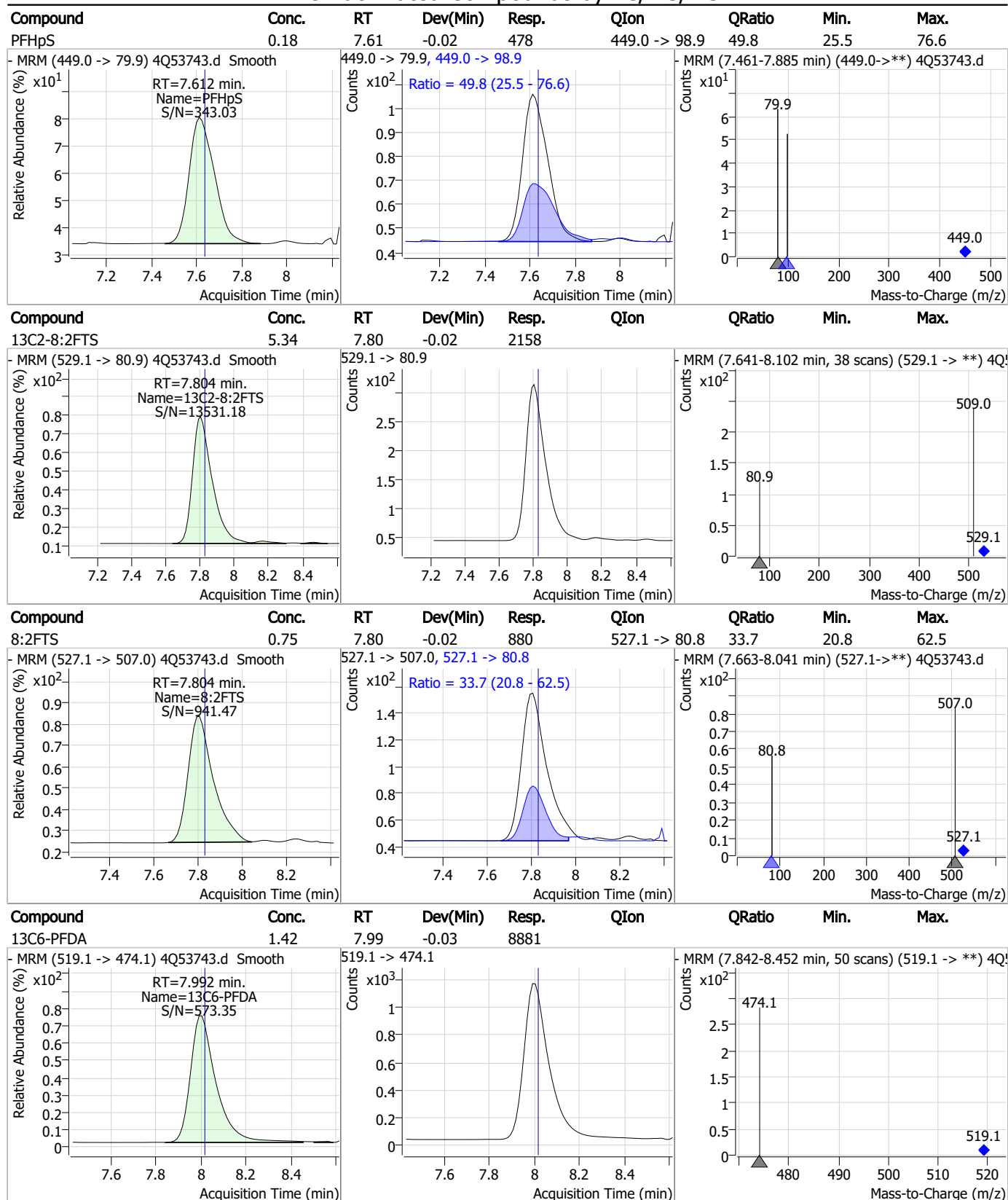
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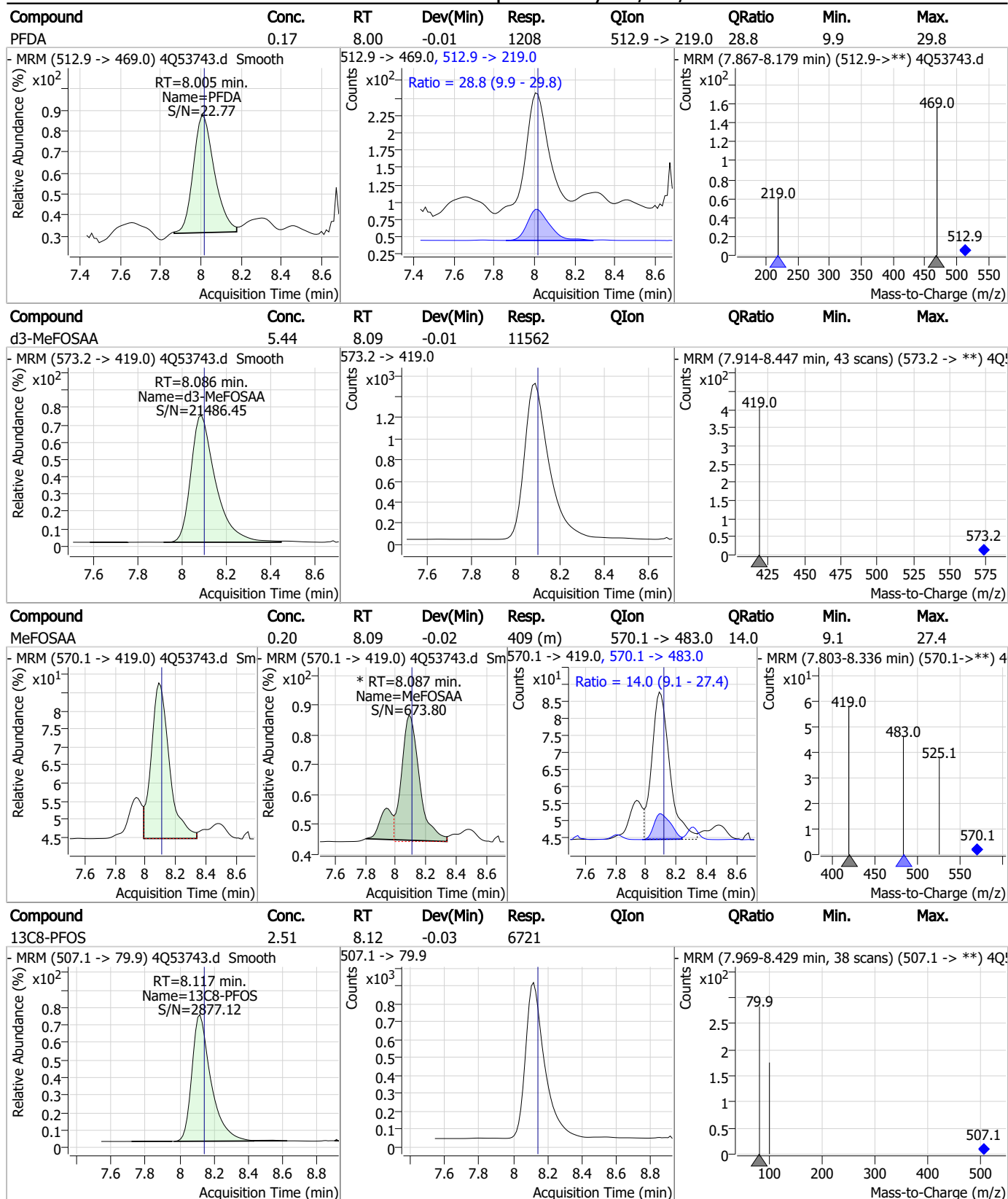
Perfluorinated Compounds by LC/MS/MS



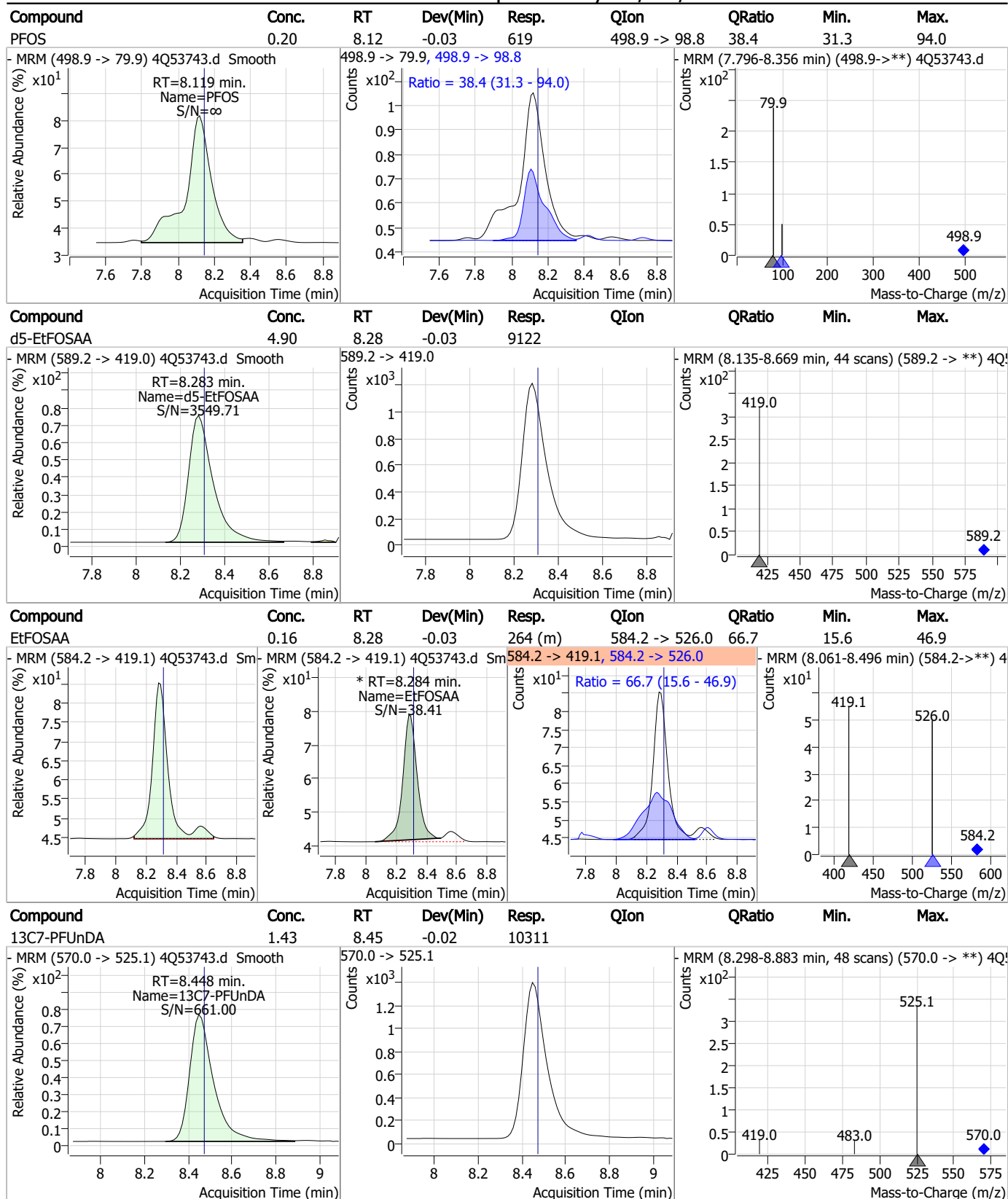
Perfluorinated Compounds by LC/MS/MS



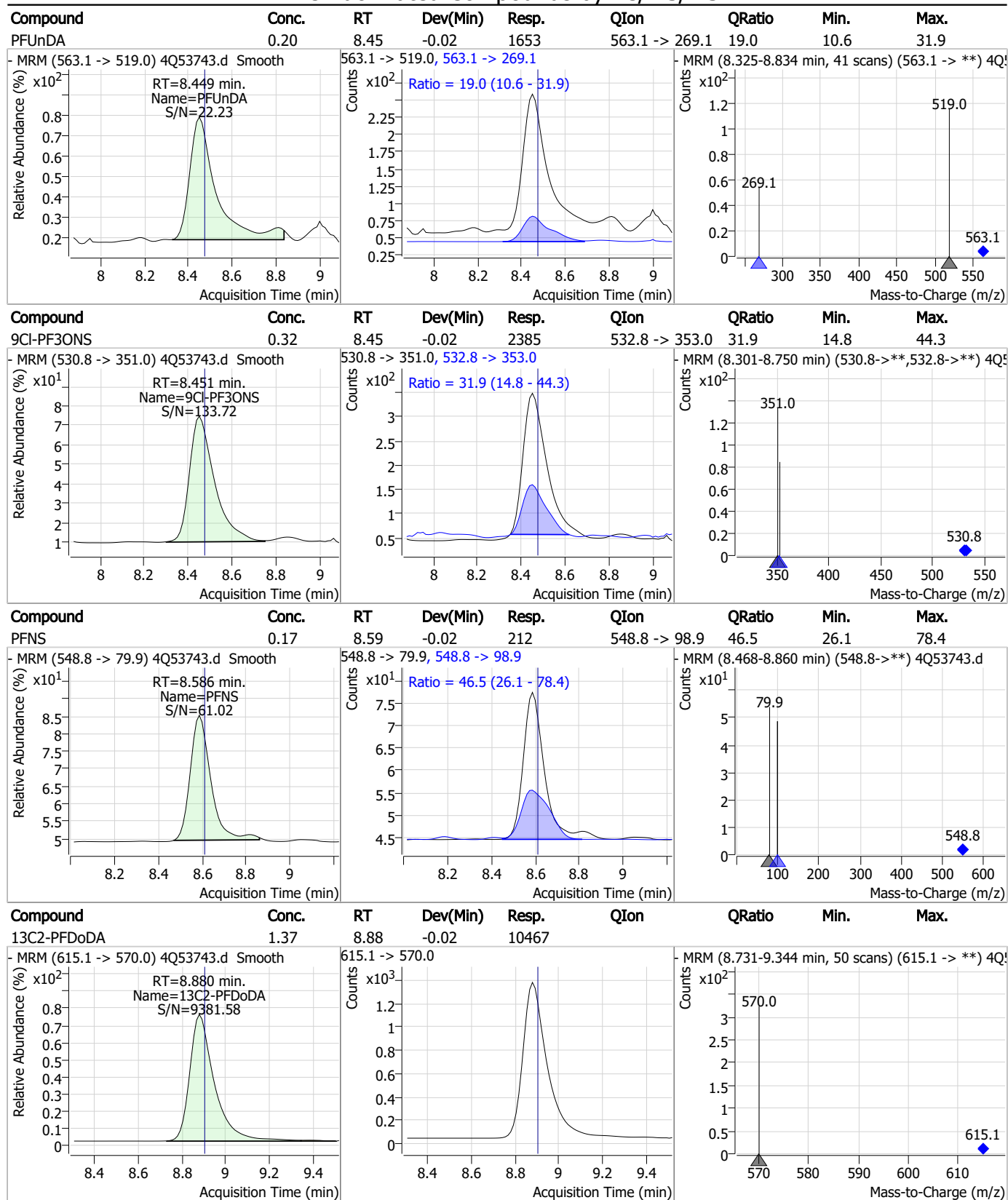
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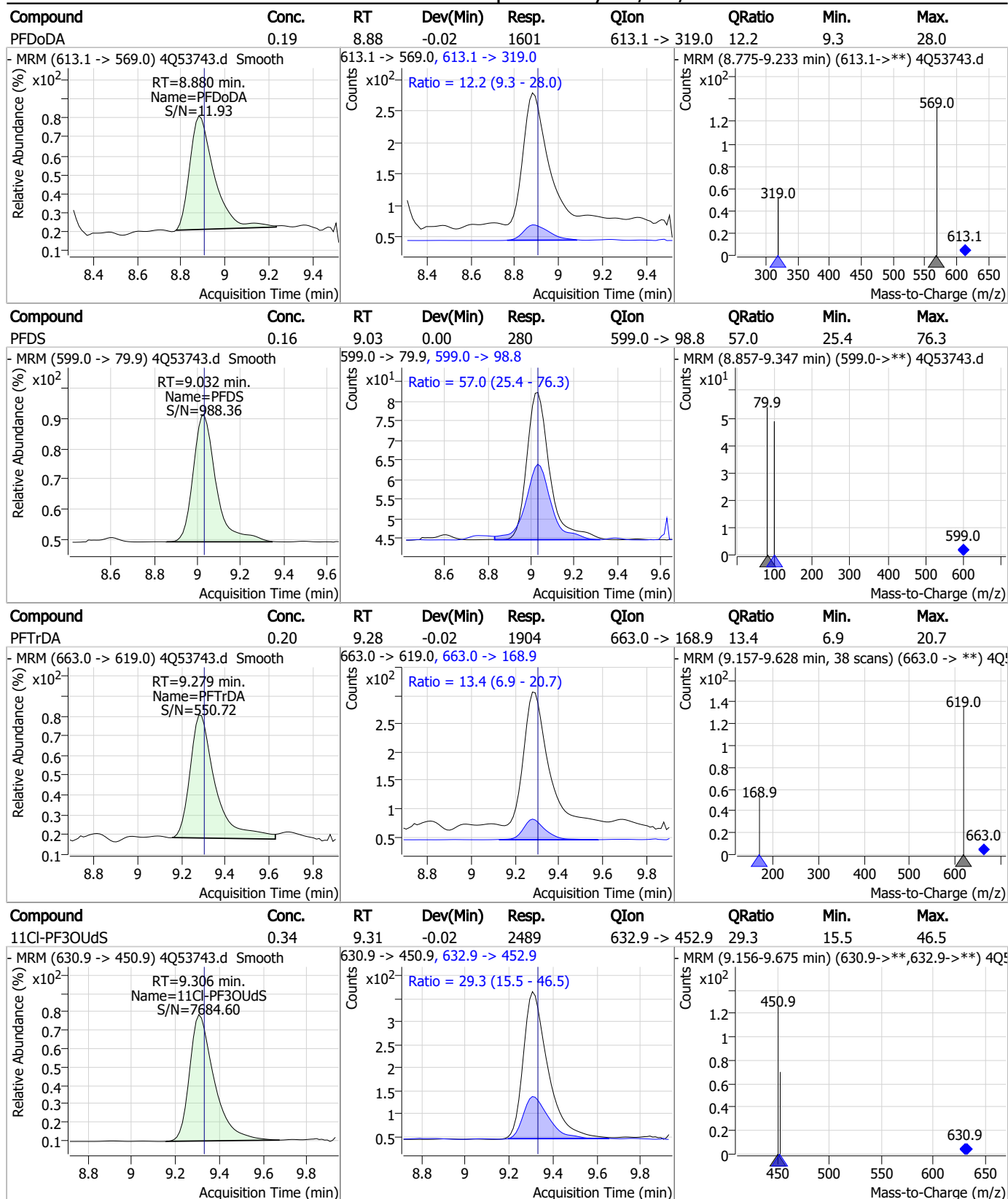
Perfluorinated Compounds by LC/MS/MS



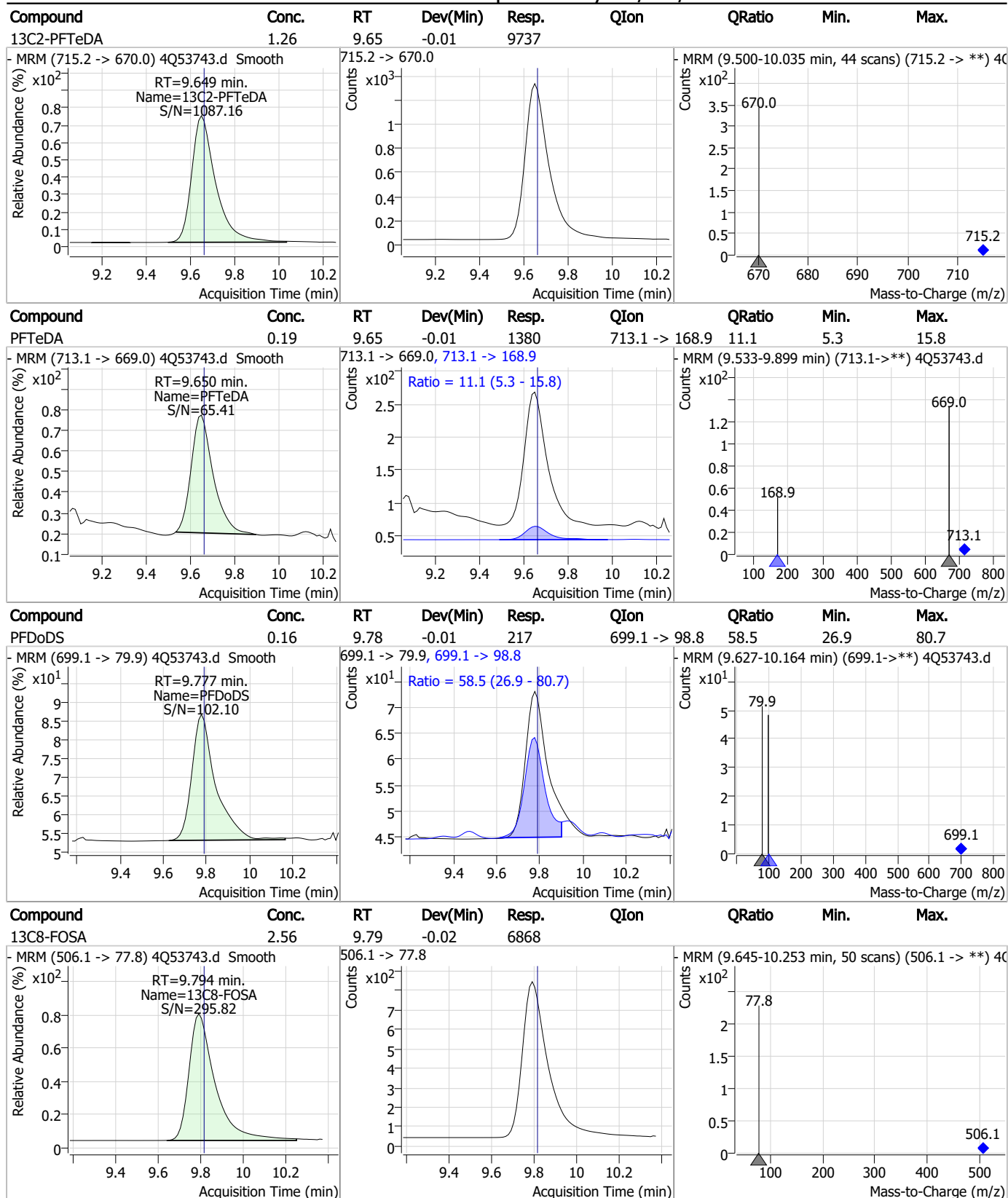
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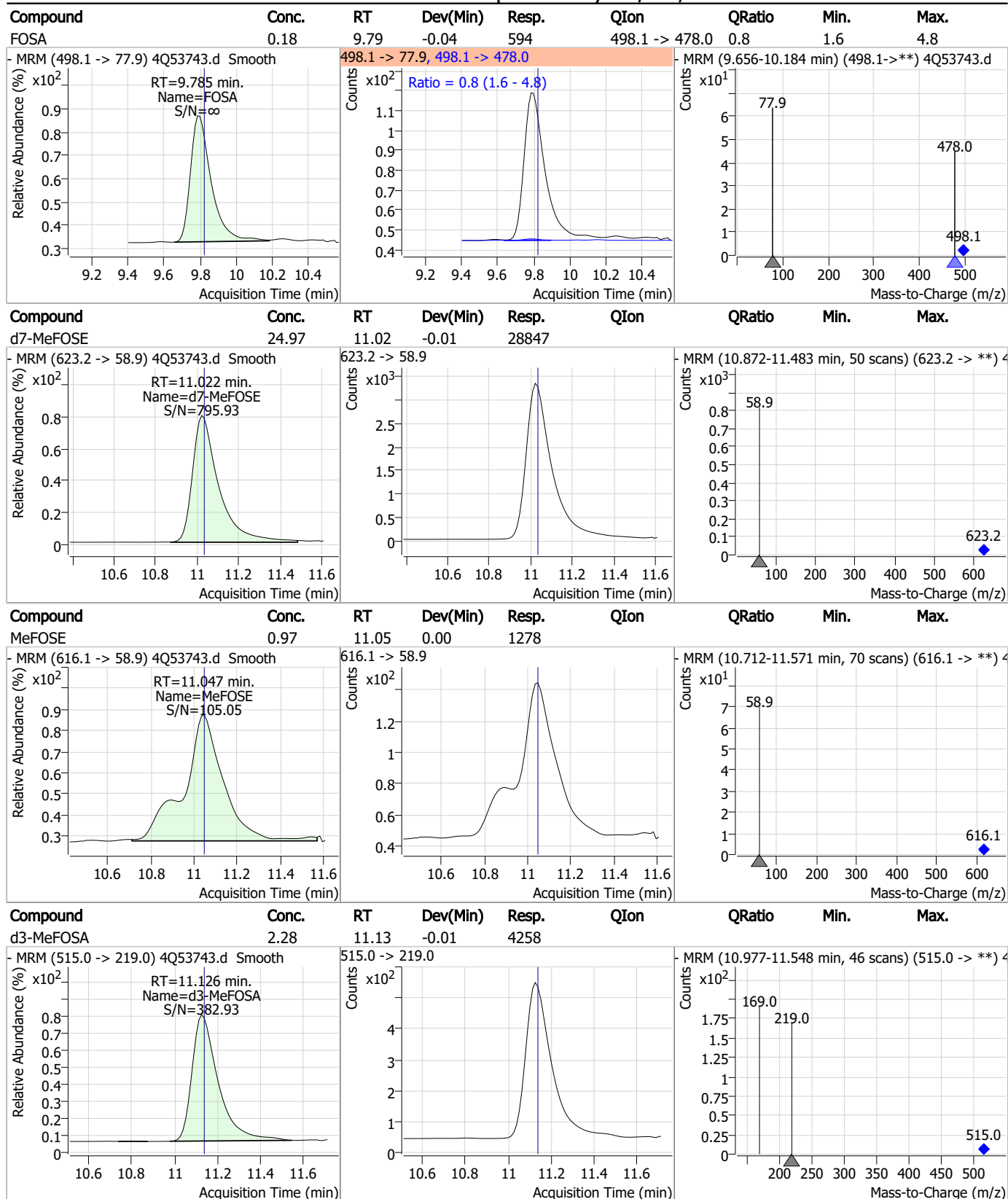
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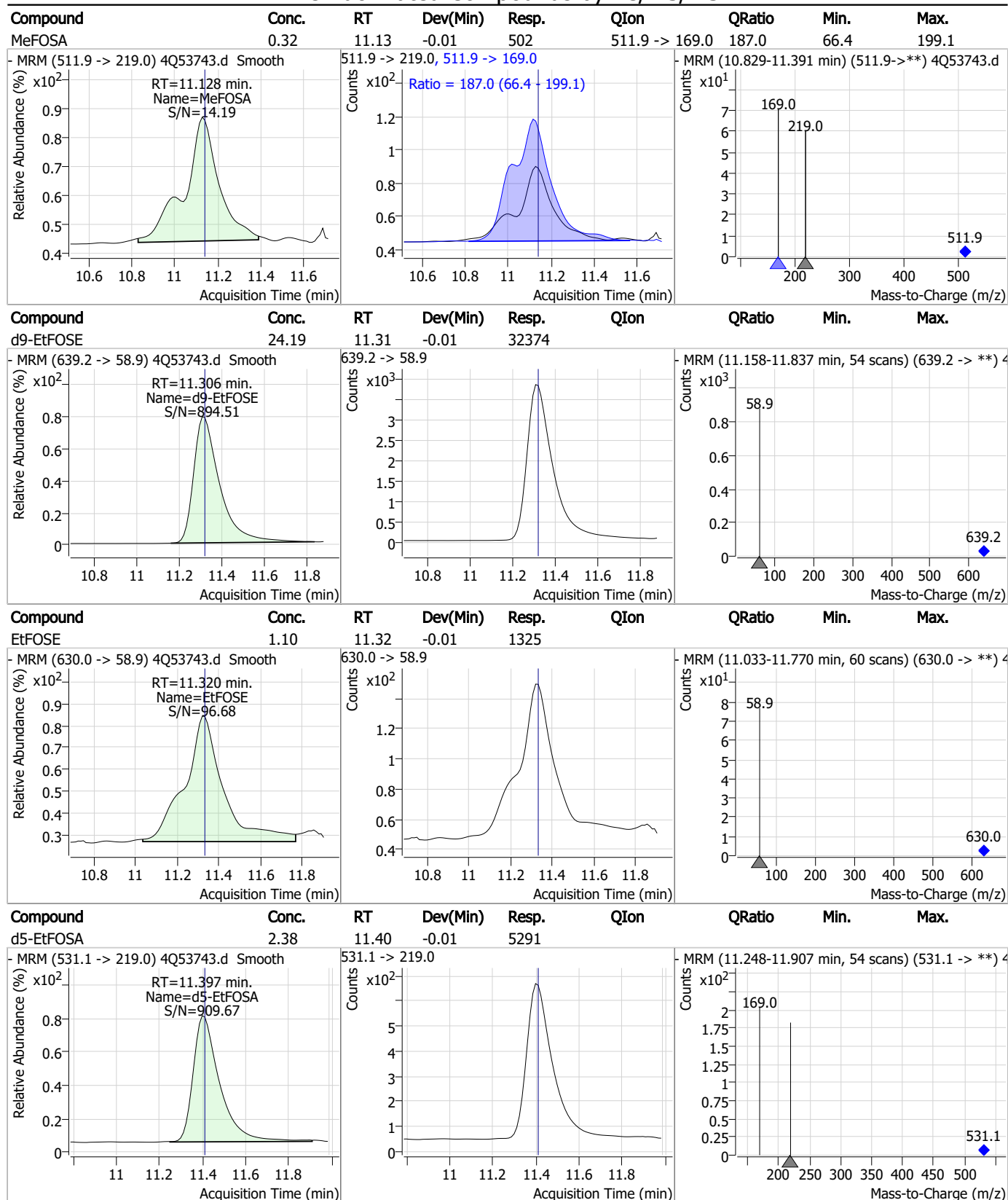
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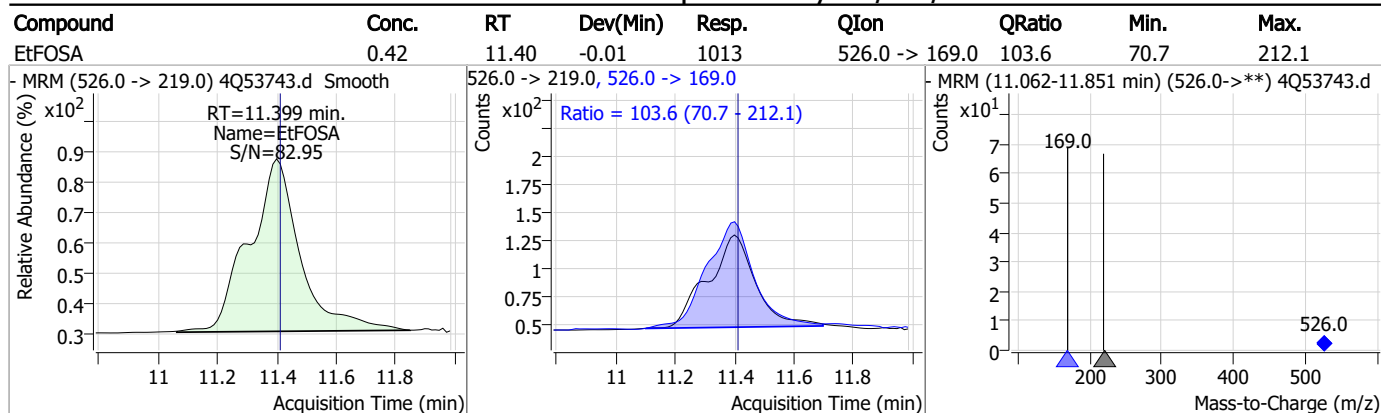
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q785-CC785

Method: EPA DRAFT 1633

Lab FileID: 4Q53743.D

Analyst approved: 11/14/23 13:55 Anna Ludwig

Injection Time: 11/13/23 18:56

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
MeFOSAA	2355-31-9		8.09	Split peak
EtFOSAA	2991-50-6		8.28	Split peak

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Natasha Gumtie
11/14/23 15:48

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53754.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 9:38:45 PM
 Sample Name : cc785-4
 Vial : P1-A5
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.612	216.8 -> 171.9	86629	10.00 µg/L	-0.087
M5-PFPeA	4.112	268.3 -> 223.0	37159	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	28510	2.50 µg/L	-0.050
M4-PFHpA	6.255	367.1 -> 322.0	26259	2.50 µg/L	-0.050
M8-PFOA	6.952	421.1 -> 376.0	30894	2.50 µg/L	-0.037
M9-PFNA	7.509	472.1 -> 427.0	12462	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8593	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10302	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10527	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	11003	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7054	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	8316	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6768	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7281	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	746	5.00 µg/L	-0.050
M2-6:2FTS	6.724	429.1 -> 80.9	1417	5.00 µg/L	-0.037
M2-8:2FTS	7.791	529.1 -> 80.9	2018	5.00 µg/L	-0.037
M3-MeFOSAA	8.074	573.2 -> 419.0	11962	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	25599	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	9856	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	30904	25.00 µg/L	-0.012
M9-EtFOSE	11.306	639.2 -> 58.9	34978	25.00 µg/L	-0.012
M5-EtFOSA	11.397	531.1 -> 219.0	6116	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4587	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6018	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	42067	5.00 µg/L	-0.087
18O2-PFHxS	7.016	403.0 -> 83.9	4120	2.50 µg/L	-0.038
13C4-PFOA	6.952	417.1 -> 372.0	34306	2.50 µg/L	-0.037
13C2-PFDA	7.992	515.1 -> 470.1	9948	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	14031	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	30844	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	746	5.29 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.8%		
13C2-6:2FTS	6.724	429.1 -> 80.9	1417	4.77 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C2-8:2FTS	7.791	529.1 -> 80.9	2018	4.82 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10527	1.17 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.8%		
13C2-PFTeDA	9.649	715.2 -> 670.0	11003	1.22 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C3-PFBS	5.152	302.1 -> 79.9	8316	2.69 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.6%		
13C3-PFHxS	7.017	402.1 -> 79.9	6768	2.65 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.0%	
13C4-PFBA	2.612	216.8 -> 171.9	86629	9.88 µg/L	-0.087
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C4-PFHpA	6.255	367.1 -> 322.0	26259	2.44 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C5-PFHxA	5.297	318.0 -> 273.0	28510	2.48 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C5-PFPeA	4.112	268.3 -> 223.0	37159	4.94 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C6-PFDA	7.992	519.1 -> 474.1	8593	1.17 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.9%	
13C7-PFUnDA	8.448	570.0 -> 525.1	10302	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C8-FOSA	9.794	506.1 -> 77.8	7054	2.45 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C8-PFOA	6.952	421.1 -> 376.0	30894	2.52 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C8-PFOS	8.117	507.1 -> 79.9	7281	2.53 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C9-PFNA	7.509	472.1 -> 427.0	12462	1.13 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 90.1%	
d3-MeFOSAA	8.074	573.2 -> 419.0	11962	5.24 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	25599	9.75 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.5%	
d3-MeFOSA	11.126	515.0 -> 219.0	4587	2.28 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.4%	
d5-EtFOSAA	8.283	589.2 -> 419.0	9856	4.93 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.6%	
d7-MeFOSE	11.022	623.2 -> 58.9	30904	24.93 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
d9-EtFOSE	11.306	639.2 -> 58.9	34978	24.36 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.4%	
d5-EtFOSA	11.397	531.1 -> 219.0	6116	2.57 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.7%	
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	12819	8.69 µg/L	99
		327.1 -> 80.9	5312		
6:2FTS	6.737	427.1 -> 407.0	15535	10.13 µg/L	97
		427.1 -> 80.9	5650		
8:2FTS	7.792	527.1 -> 507.0	10653	9.71 µg/L	96
		527.1 -> 80.8	4711		
EtFOSAA	8.284	584.2 -> 419.1	4778	2.71 µg/L	m 89
		584.2 -> 526.0	1784		
FOSA	9.785	498.1 -> 77.9	8638	2.51 µg/L	99
		498.1 -> 478.0	305		
MeFOSAA	8.075	570.1 -> 419.0	4890	2.30 µg/L	91
		570.1 -> 483.0	1100		
PFBA	2.620	212.8 -> 168.9	31326	9.94 µg/L	100
PFBS	5.153	298.7 -> 79.9	6221	2.11 µg/L	94
		298.7 -> 98.8	2648		
PFDA	7.992	512.9 -> 469.0	17948	2.55 µg/L	100
		512.9 -> 219.0	3566		
PFDODA	8.880	613.1 -> 569.0	22461	2.62 µg/L	98
		613.1 -> 319.0	4023		
PFDS	9.020	599.0 -> 79.9	4533	2.41 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.255	599.0 -> 98.8	2321	2.55	µg/L	99
		363.1 -> 319.0	42066			
PFHpS	7.599	363.1 -> 169.0	7534	2.43	µg/L	96
		449.0 -> 79.9	6989			
PFHxA	5.300	449.0 -> 98.9	3394	2.45	µg/L	99
		313.0 -> 269.0	24355			
PFHxS	7.018	313.0 -> 118.9	771	2.45	µg/L	85
		398.7 -> 79.9	5011			
PFNA	7.510	398.7 -> 98.9	2664	2.65	µg/L	99
		463.0 -> 419.0	21068			
PFNS	8.574	463.0 -> 219.0	5274	2.52	µg/L	98
		548.8 -> 79.9	3505			
PFOA	6.953	548.8 -> 98.9	1782	2.41	µg/L	98
		413.0 -> 369.0	36107			
PFOS	8.119	413.0 -> 169.0	7727	2.34	µg/L	81
		498.9 -> 79.9	7736			
PFPeA	4.114	498.9 -> 98.8	3685	5.00	µg/L	100
		263.0 -> 219.0	40456			
PFPeS	6.257	349.1 -> 79.9	5171	2.33	µg/L	98
		349.1 -> 98.9	2295			
PFTeDA	9.650	713.1 -> 669.0	20087	2.40	µg/L	98
		713.1 -> 168.9	2258			
PFTrDA	9.279	663.0 -> 619.0	24866	2.66	µg/L	100
		663.0 -> 168.9	3469			
PFUnDA	8.449	563.1 -> 519.0	20866	2.48	µg/L	99
		563.1 -> 269.1	4574			
11CI-PF3OUdS	9.306	630.9 -> 450.9	37622	4.71	µg/L	98
		632.9 -> 452.9	12080			
9CI-PF3ONS	8.451	530.8 -> 351.0	39468	4.89	µg/L	95
		532.8 -> 353.0	12625			
ADONA	6.531	376.9 -> 250.9	101530	5.73	µg/L	98
		376.9 -> 84.8	24077			
HFPO-DA	5.653	284.9 -> 168.9	13310	4.91	µg/L	97
		284.9 -> 184.9	1382			
3:3FTCA	3.561	241.0 -> 177.0	5857	11.93	µg/L	100
		241.0 -> 117.0	529			
5:3FTCA	5.983	341.0 -> 237.1	107190	61.15	µg/L	99
		341.0 -> 217.0	77477			
7:3FTCA	7.524	441.0 -> 316.9	47157	59.97	µg/L	100
		441.0 -> 336.9	115362			
EtFOSA	11.399	526.0 -> 219.0	13145	4.77	µg/L	99
		526.0 -> 169.0	18361			
EtFOSE	11.332	630.0 -> 58.9	16218	12.41	µg/L	100
		511.9 -> 219.0	8994			
MeFOSA	11.128	511.9 -> 169.0	13128	5.40	µg/L	89
		616.1 -> 58.9	17690			
MeFOSE	11.035	699.1 -> 79.9	3768	12.56	µg/L	100
		699.1 -> 98.8	1998			
PFDoDS	9.777	295.0 -> 201.0	3531	2.54	µg/L	99
		295.0 -> 84.9	927			
NFDHA	5.179	279.0 -> 85.1	22680	5.37	µg/L	95
		229.0 -> 84.9	25785			
PFMBA	4.529	314.8 -> 134.9	35299	4.87	µg/L	100
PFMPA	3.265	314.8 -> 82.9	1249	4.98	µg/L	100
PFEESA	5.684			4.48	µg/L	98

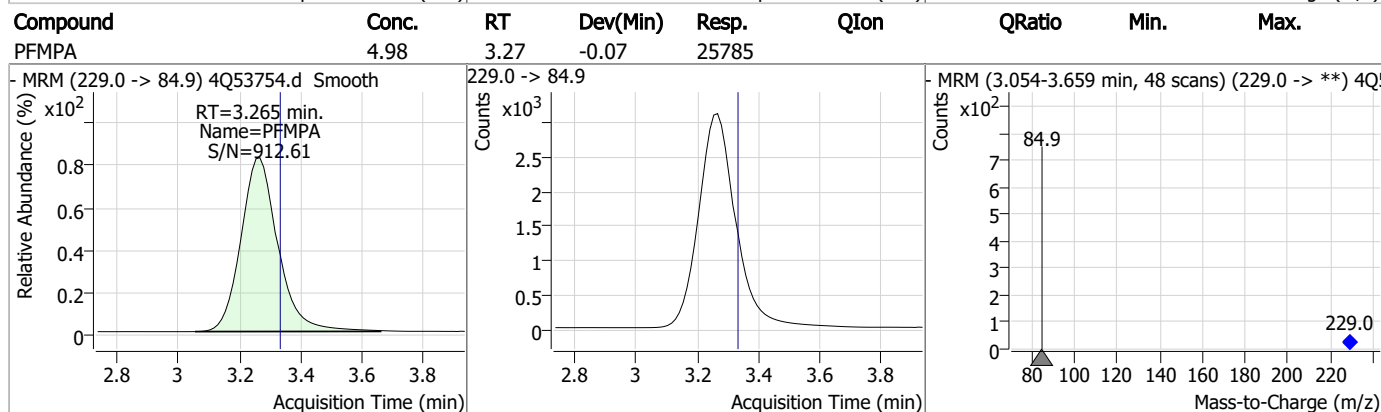
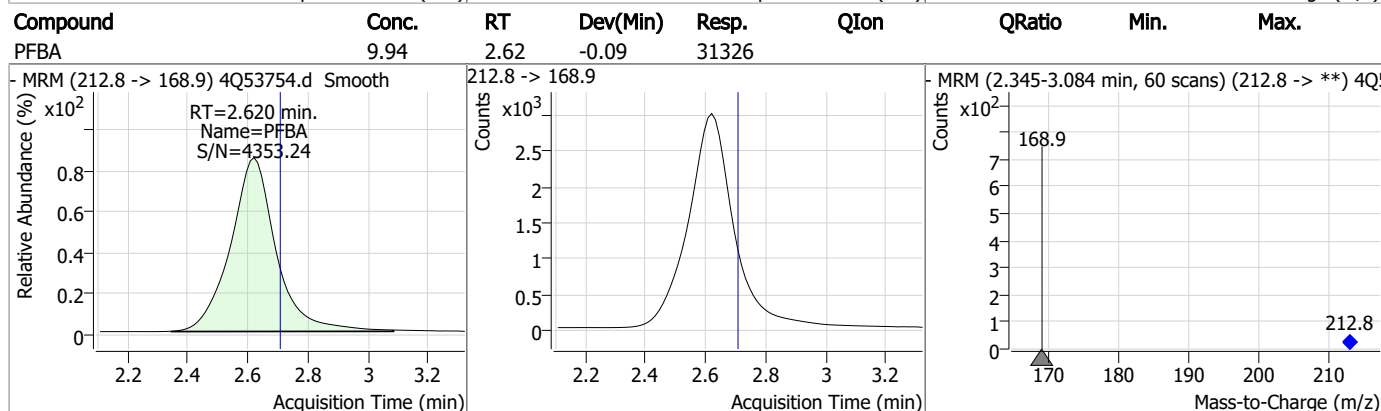
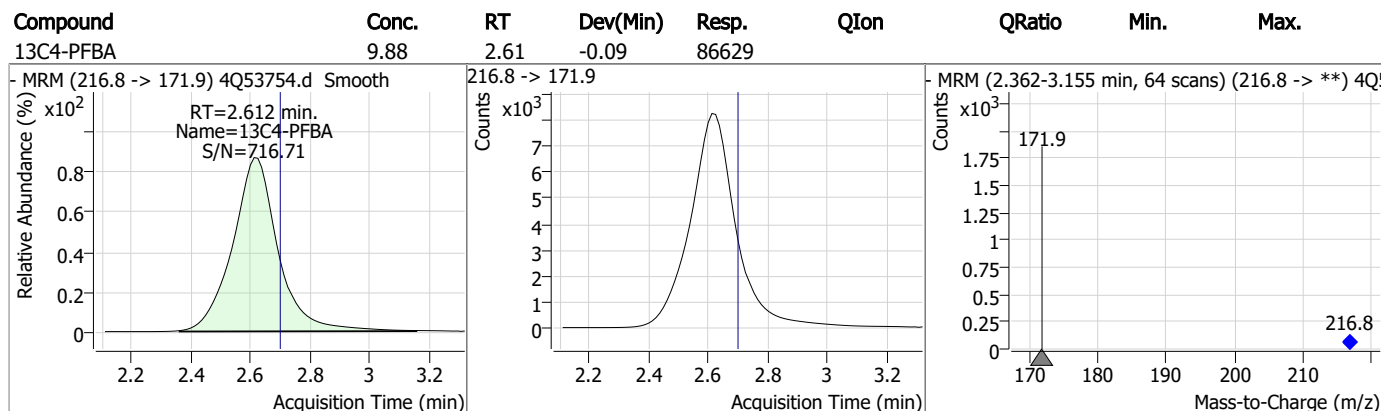
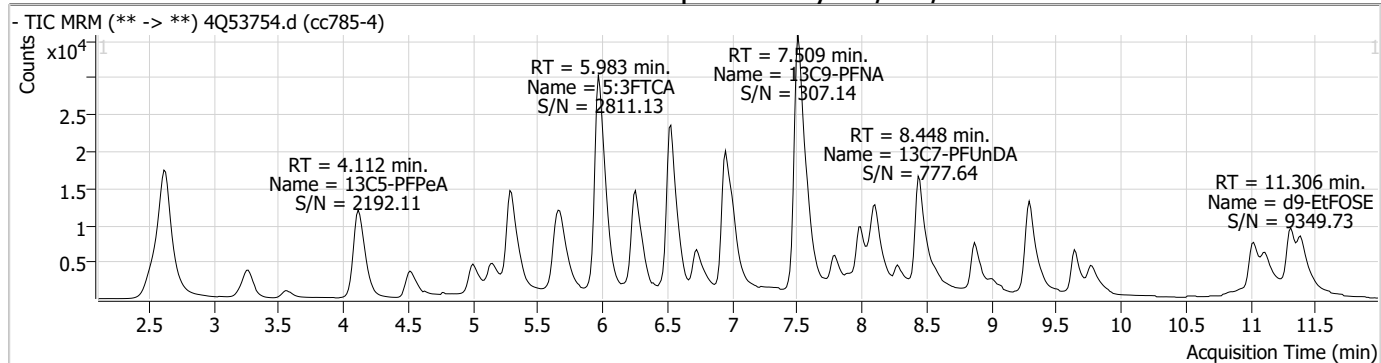
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

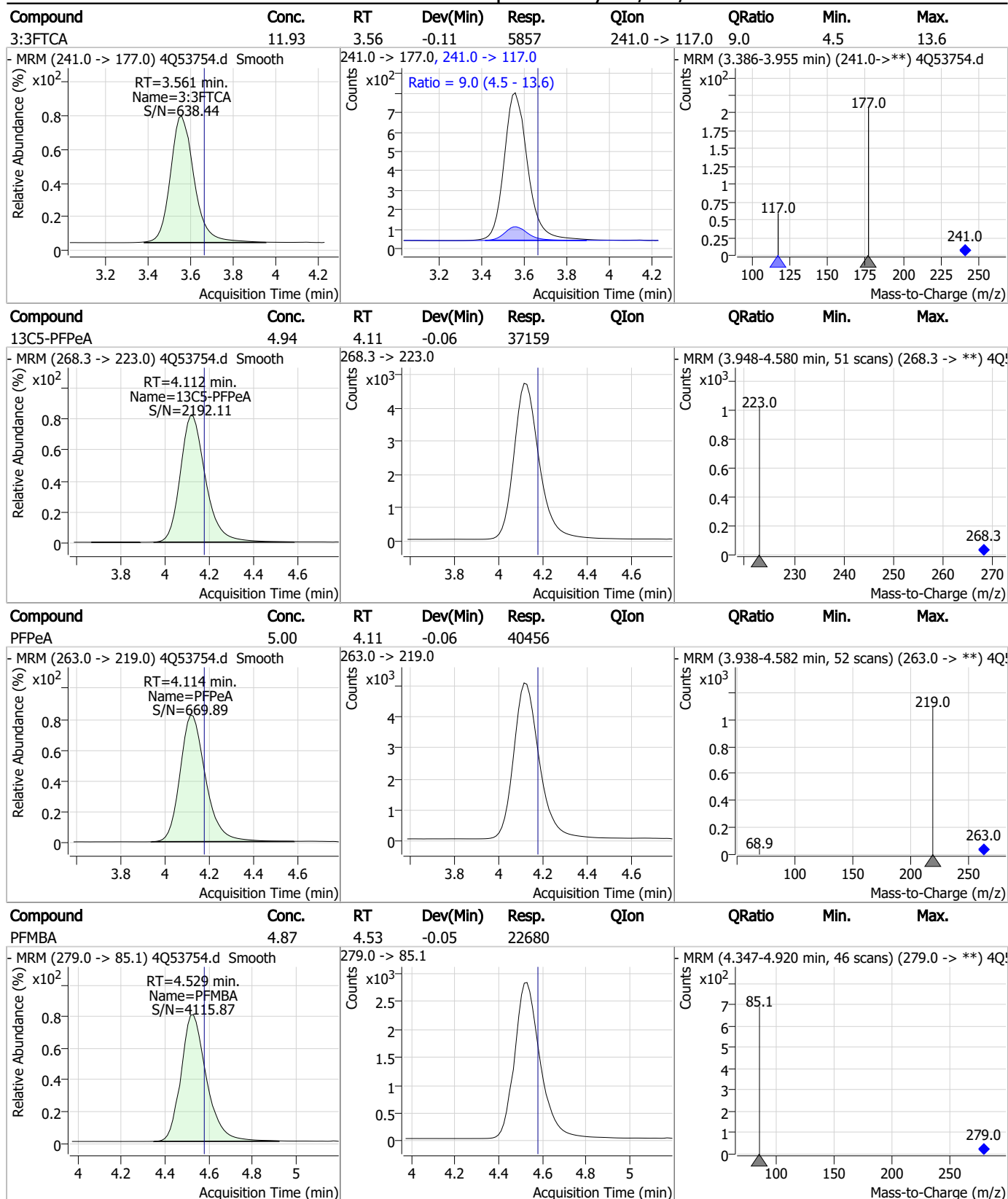
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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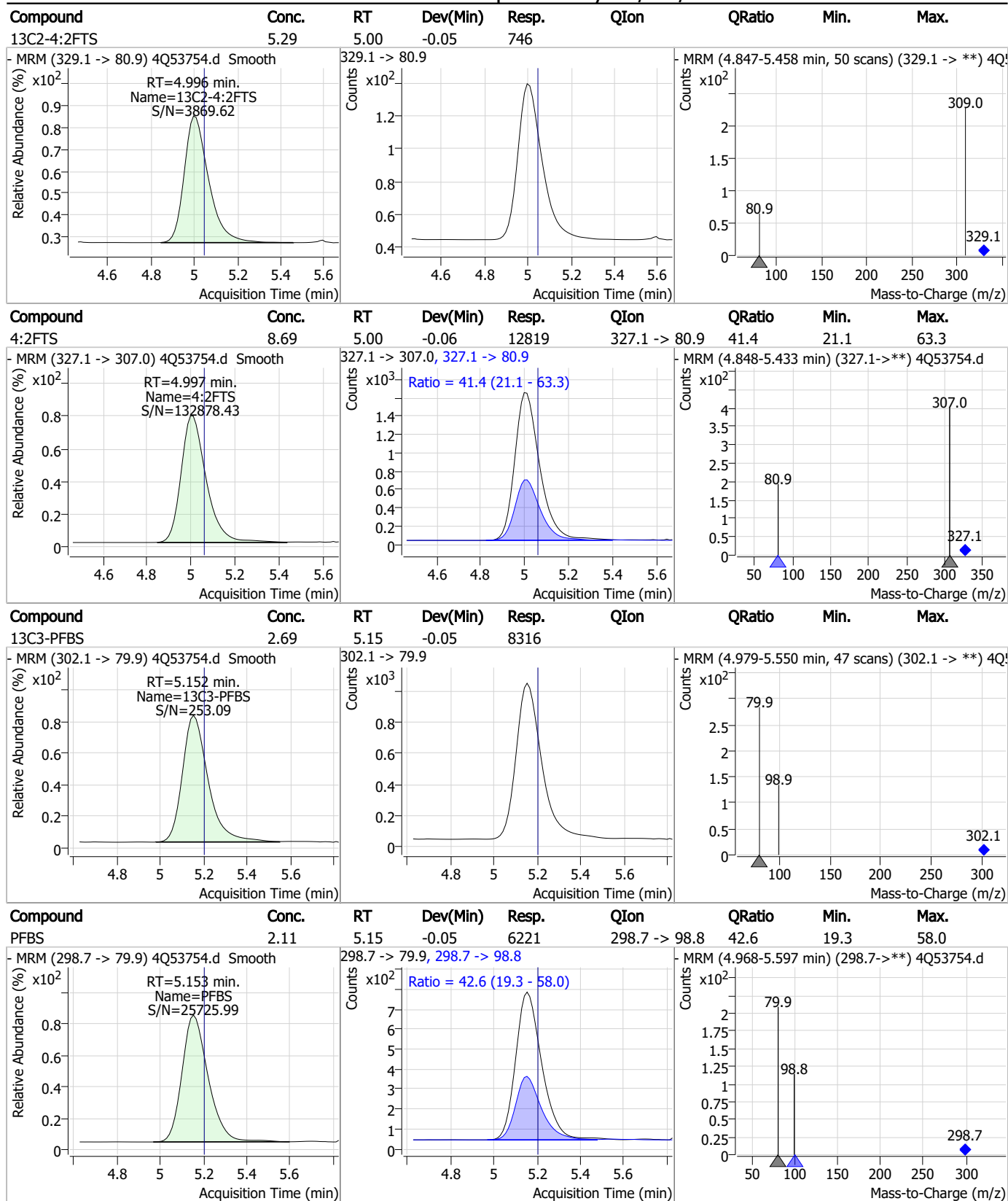
Perfluorinated Compounds by LC/MS/MS



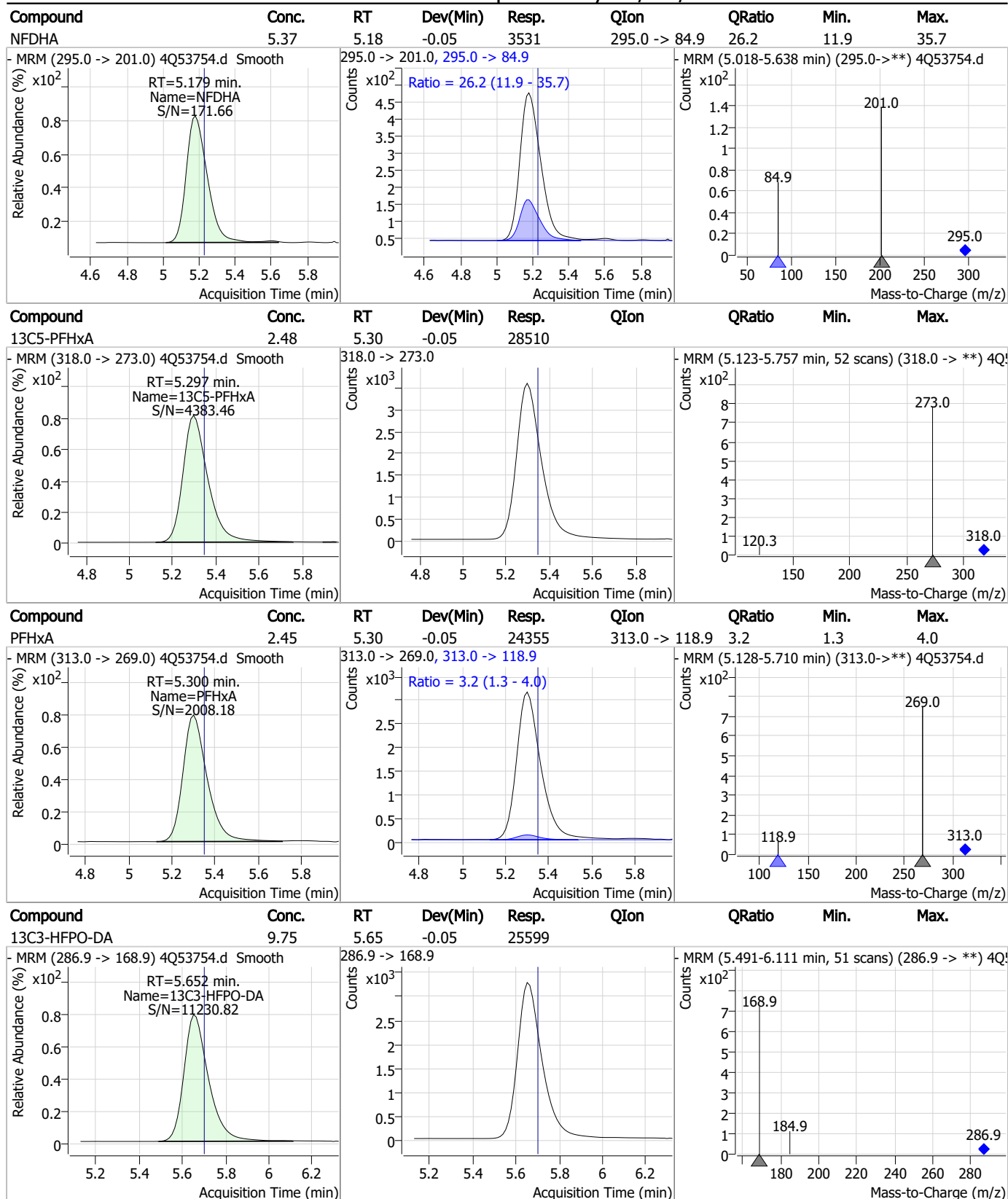
Perfluorinated Compounds by LC/MS/MS



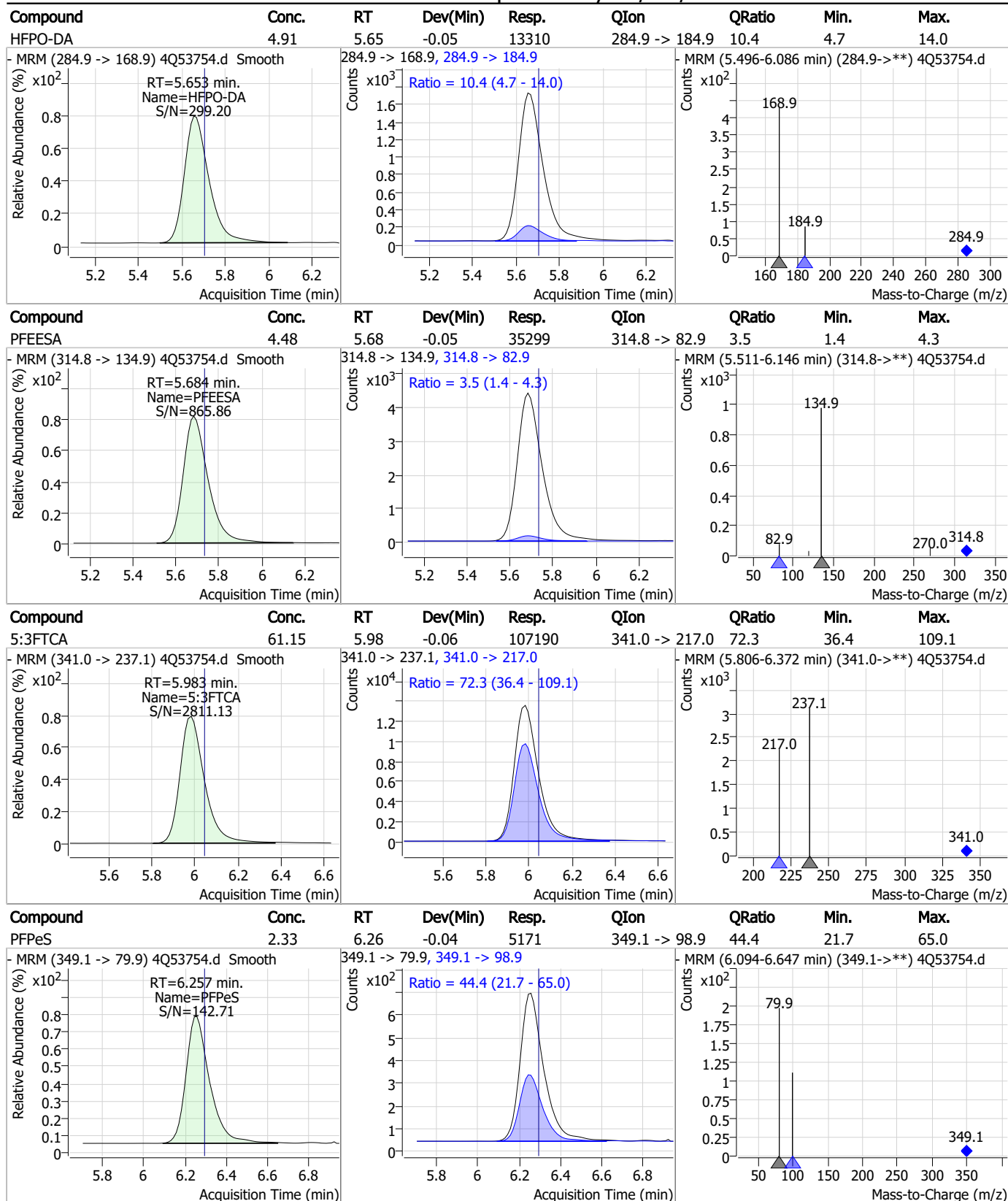
Perfluorinated Compounds by LC/MS/MS



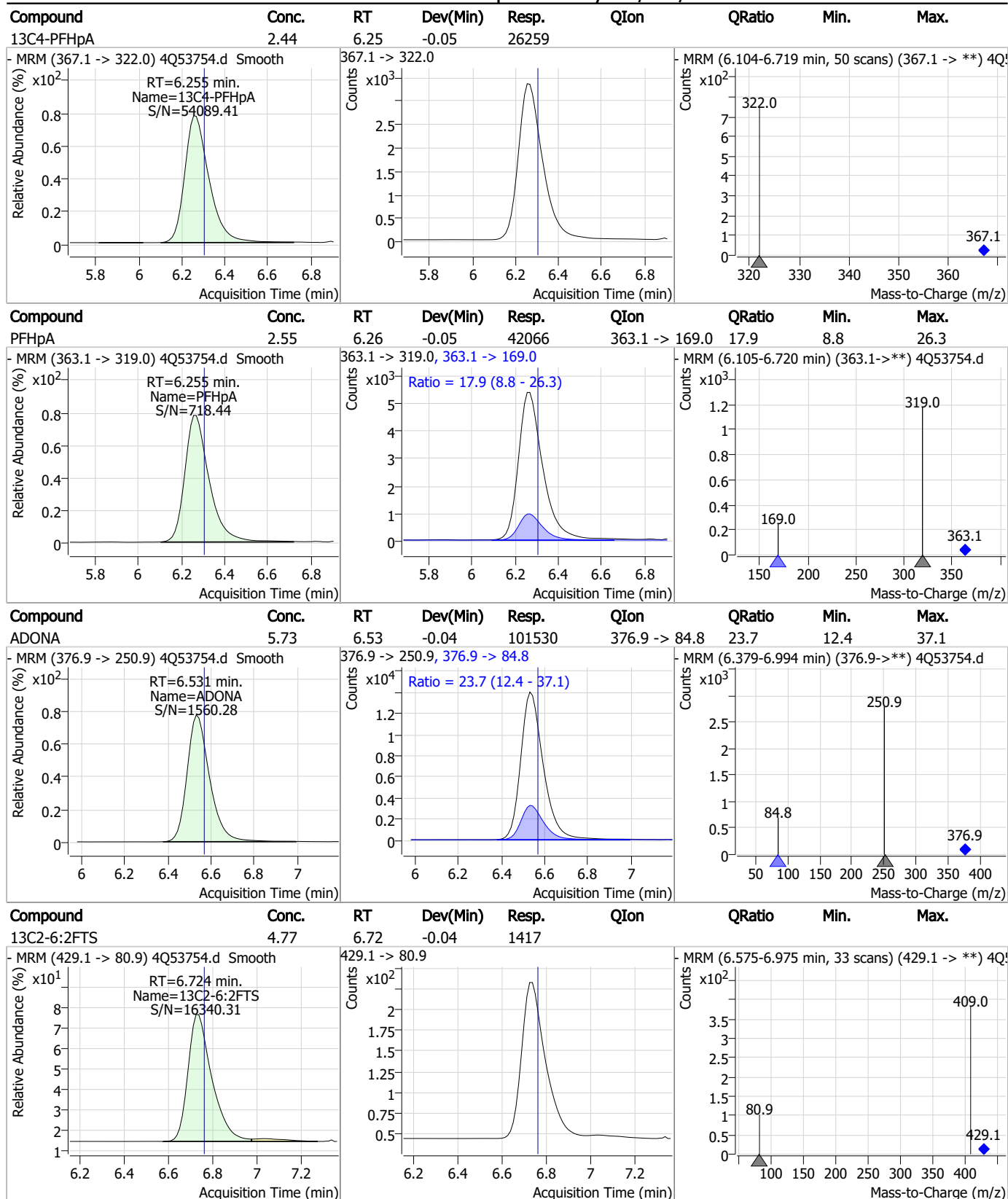
Perfluorinated Compounds by LC/MS/MS



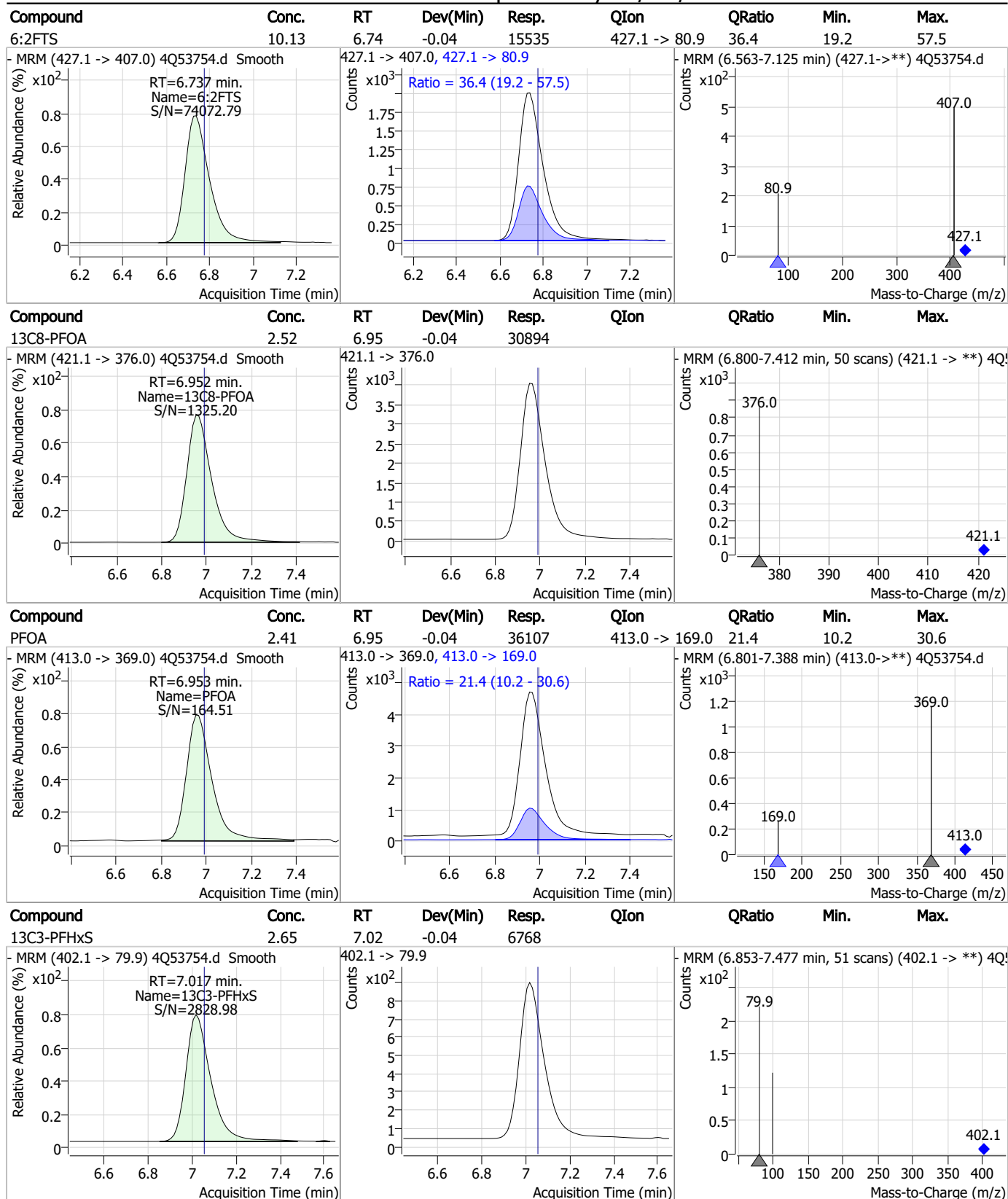
Perfluorinated Compounds by LC/MS/MS



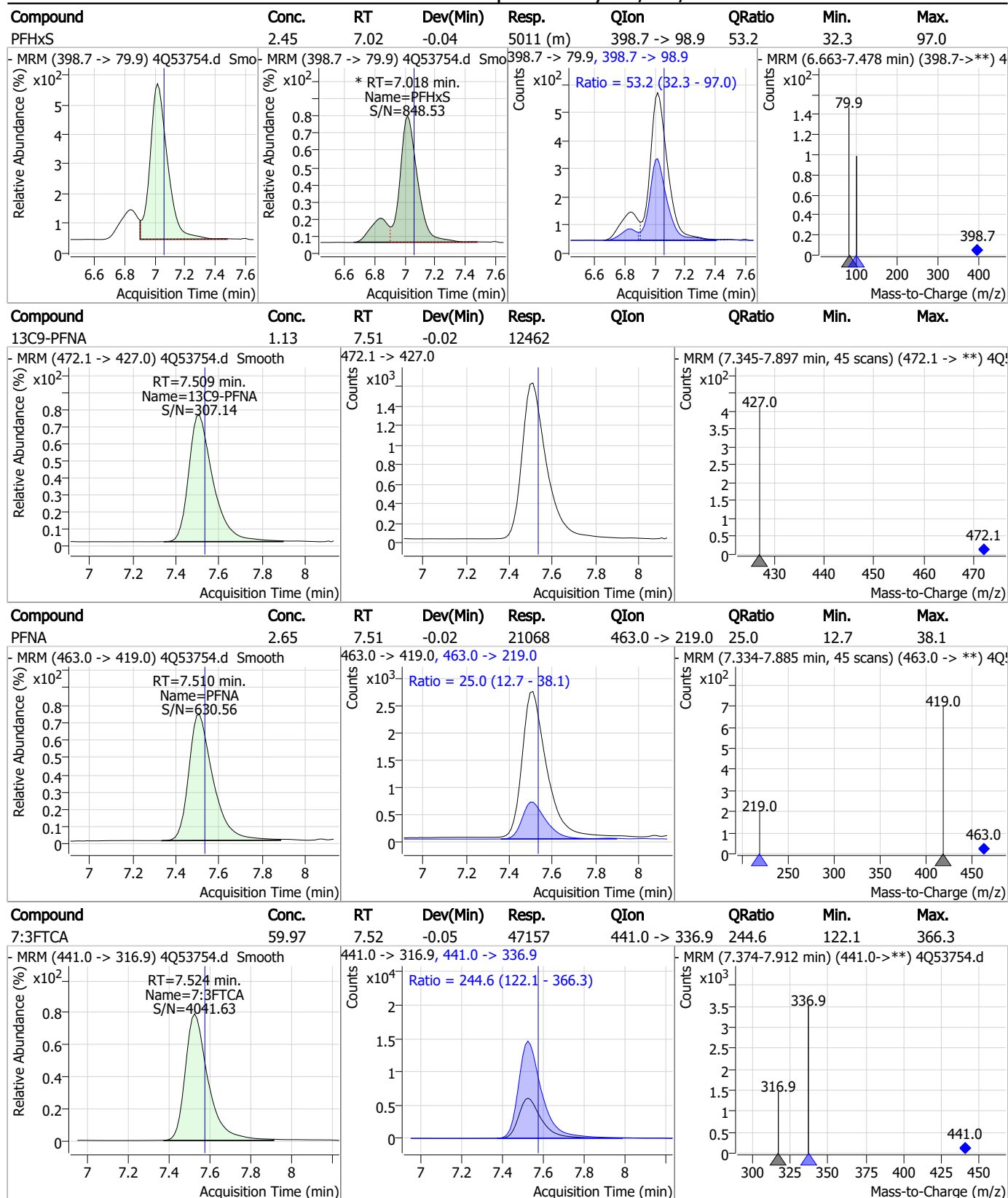
Perfluorinated Compounds by LC/MS/MS



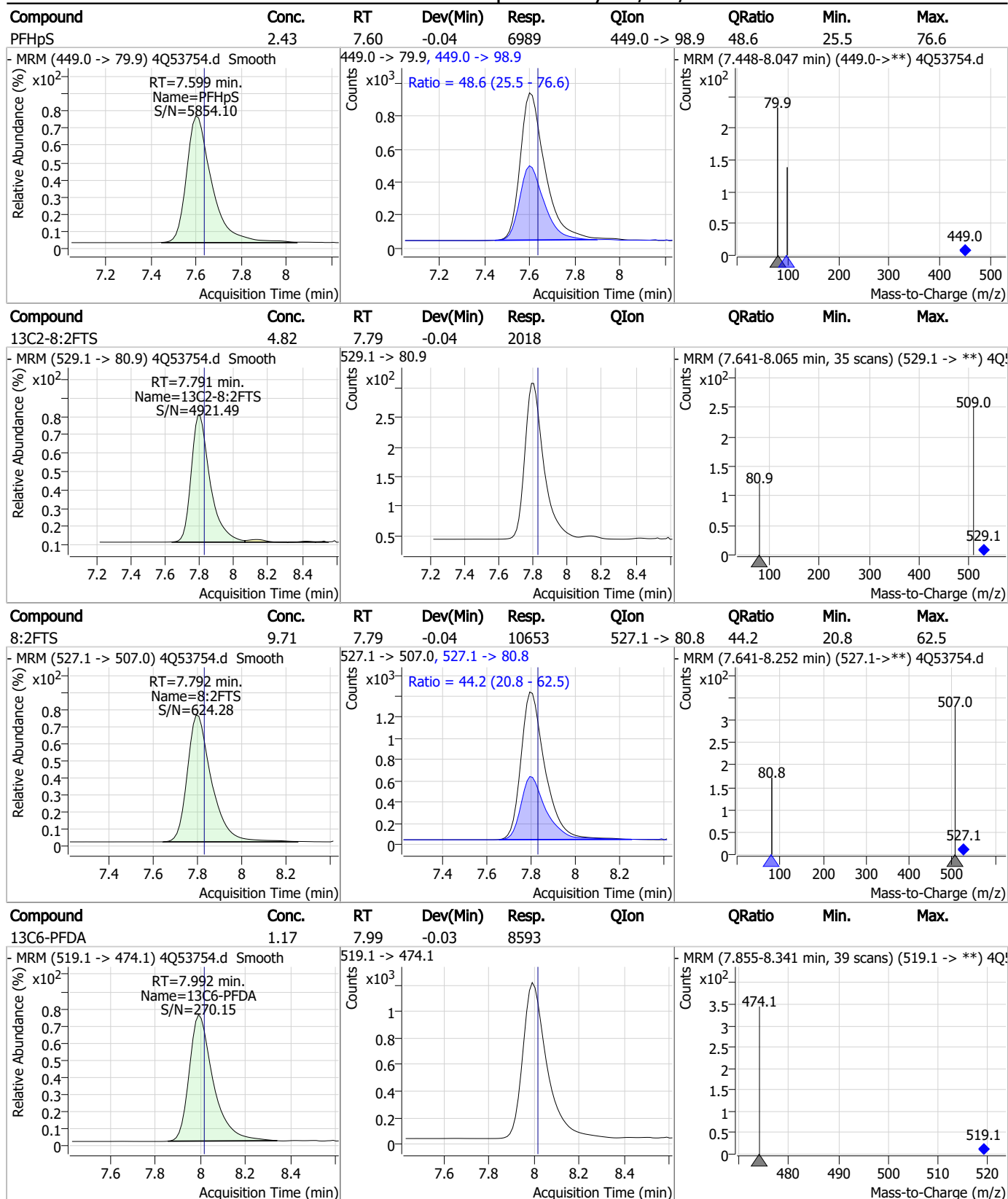
Perfluorinated Compounds by LC/MS/MS



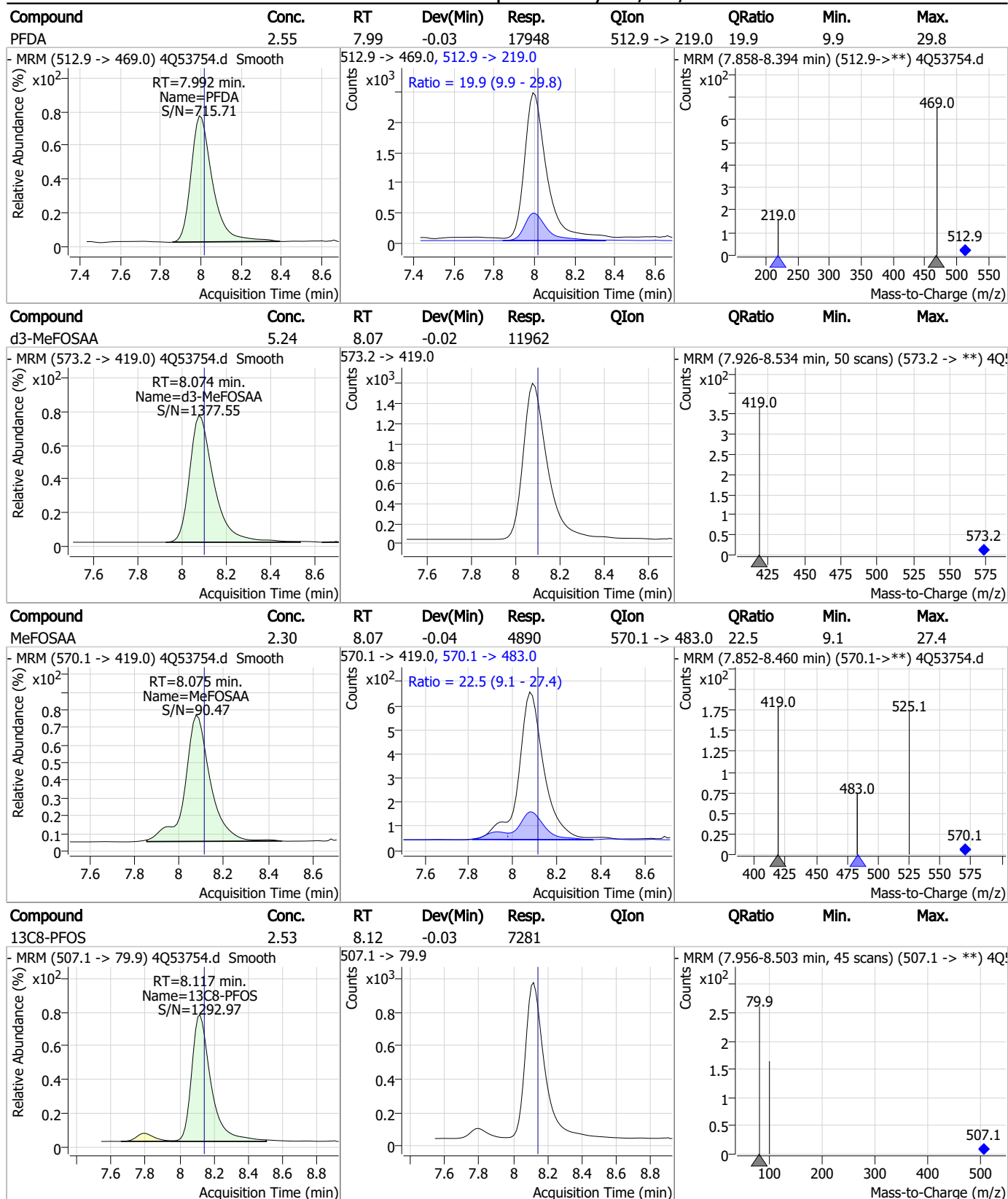
Perfluorinated Compounds by LC/MS/MS



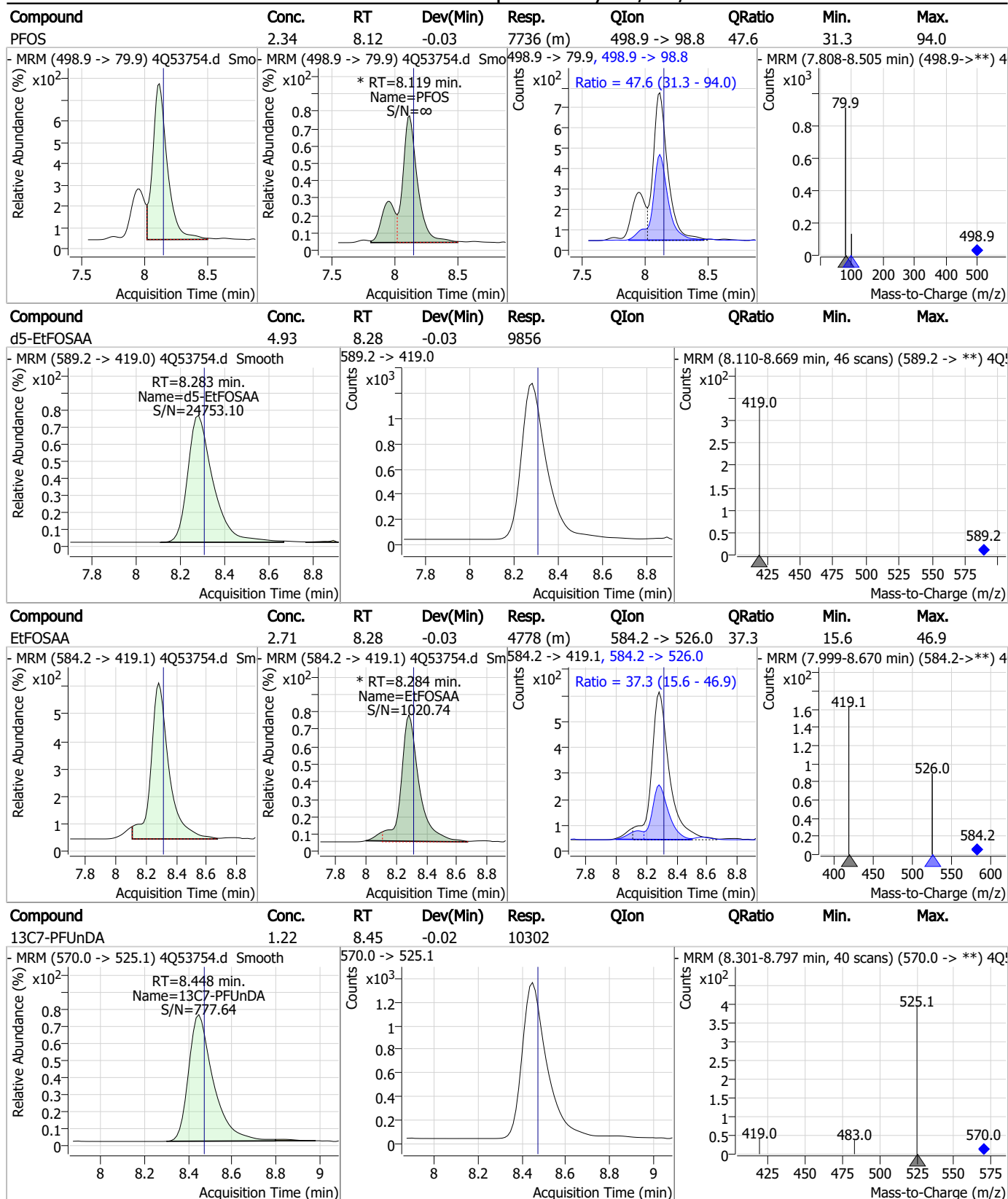
Perfluorinated Compounds by LC/MS/MS



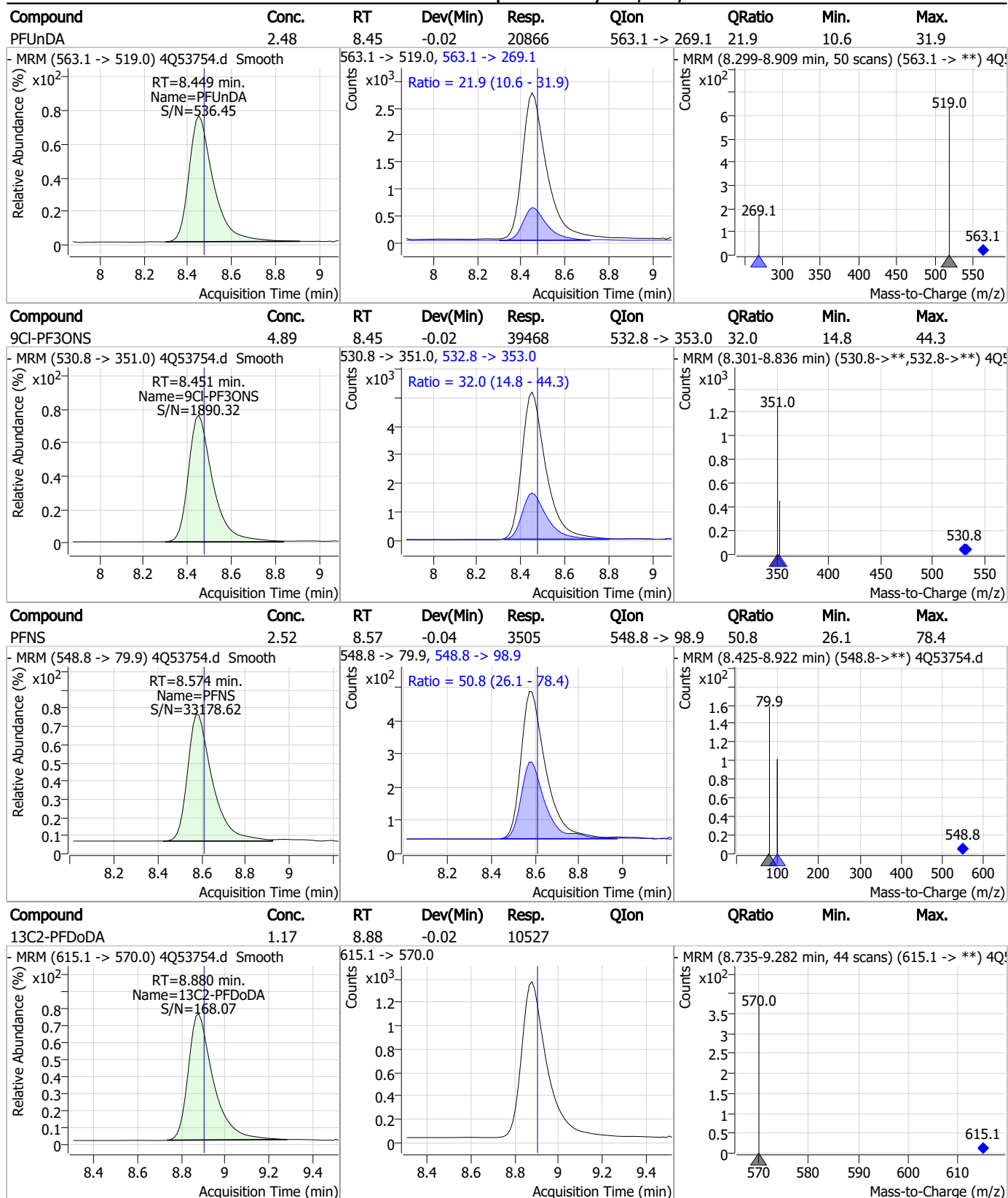
Perfluorinated Compounds by LC/MS/MS



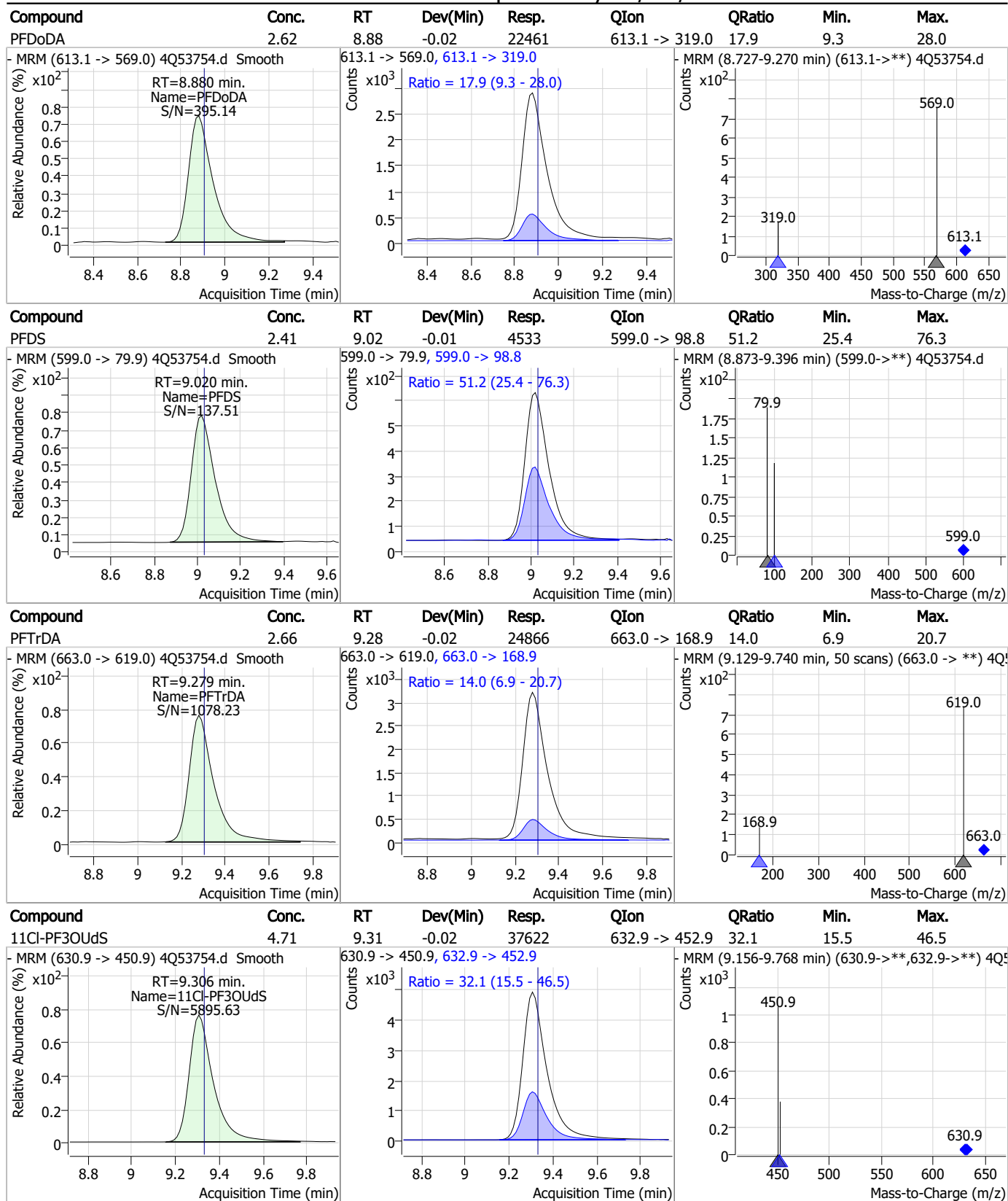
Perfluorinated Compounds by LC/MS/MS



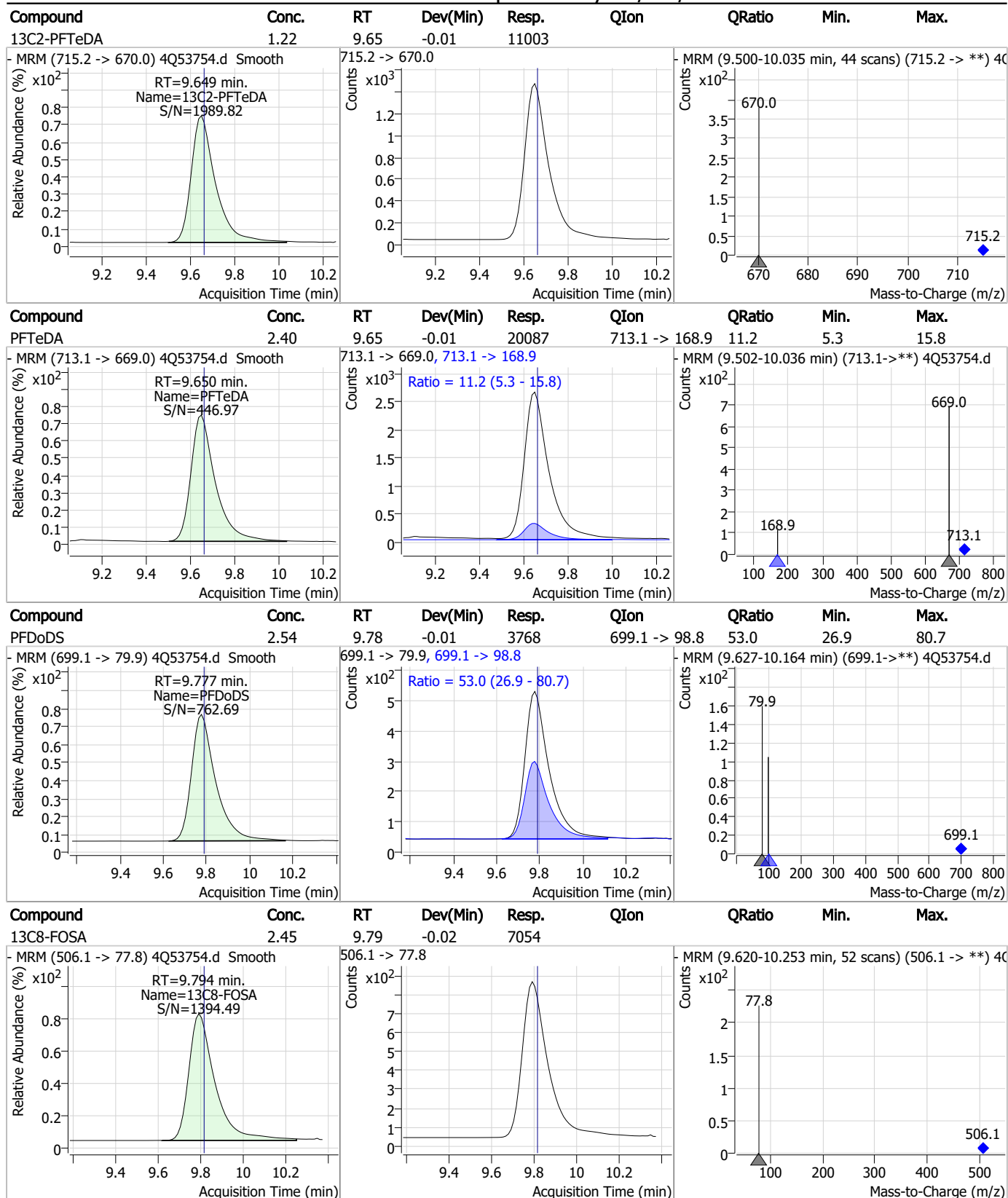
Perfluorinated Compounds by LC/MS/MS



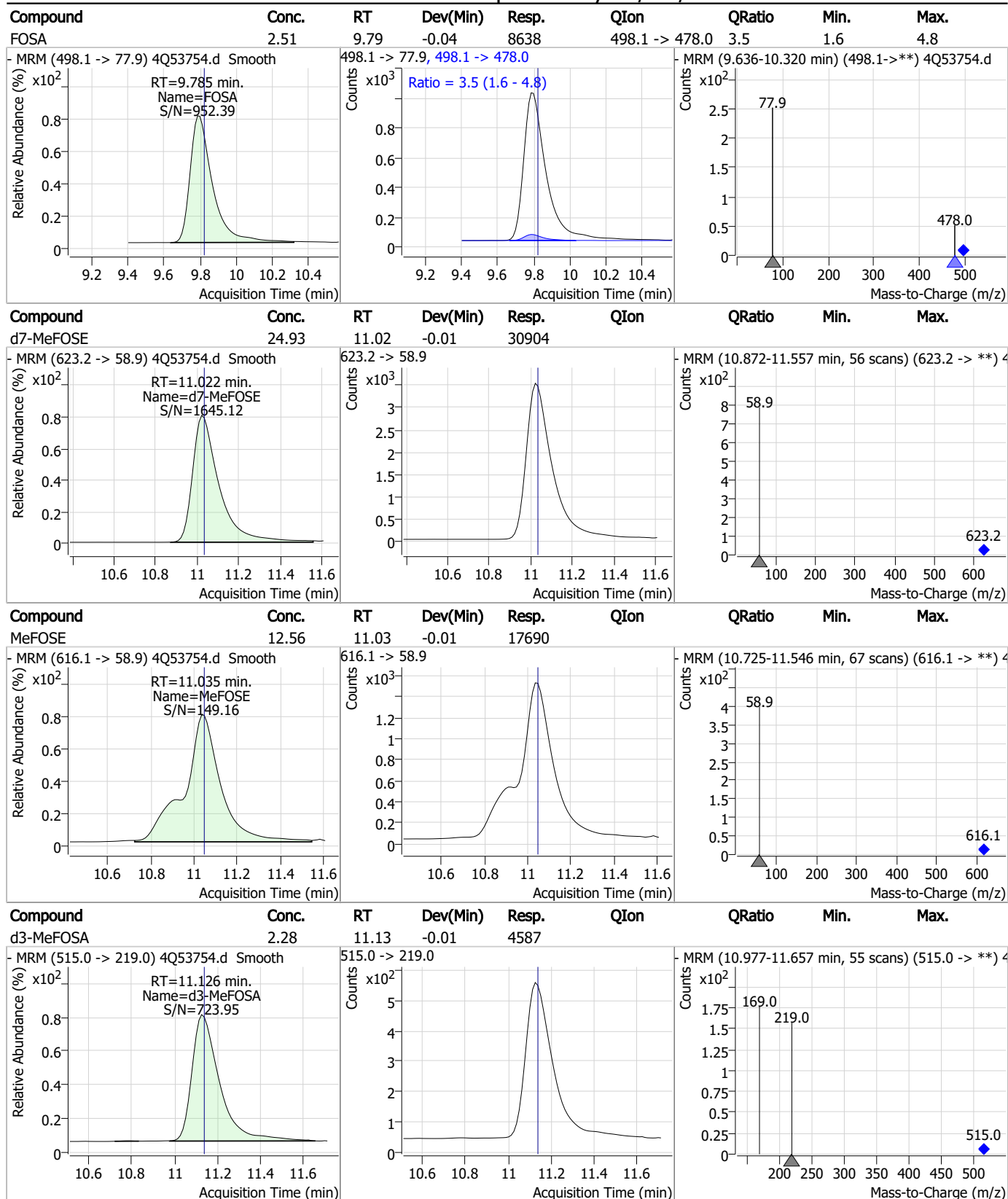
Perfluorinated Compounds by LC/MS/MS



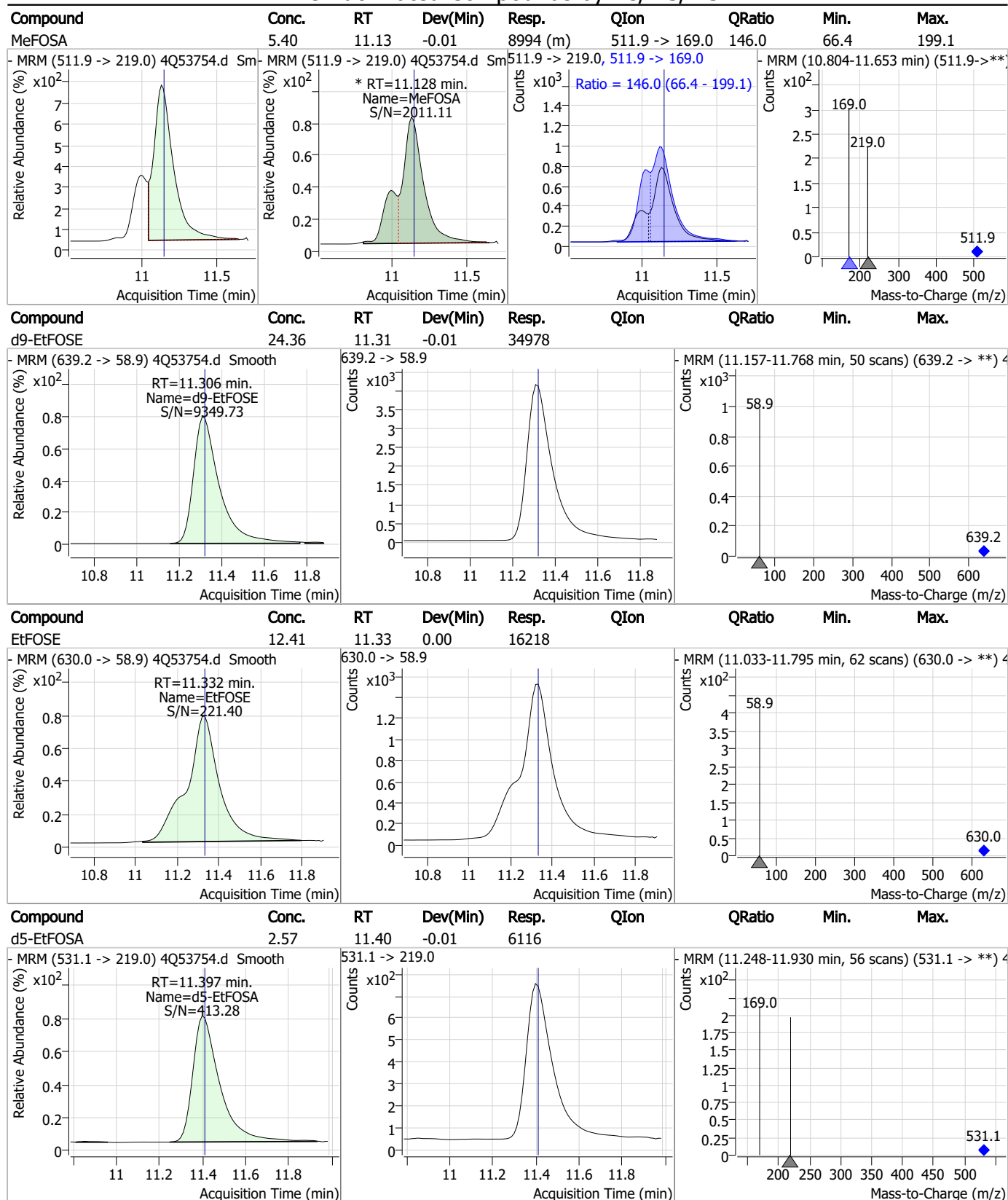
Perfluorinated Compounds by LC/MS/MS



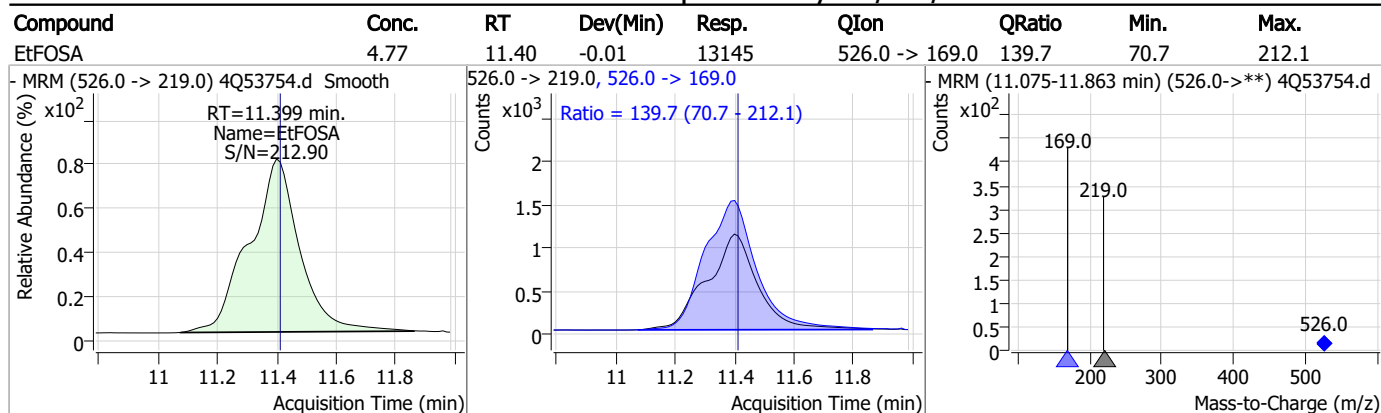
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.7.14

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Manual Integration Approval Summary

Sample Number: S4Q785-CC785

Lab FileID: 4Q53754.D

Injection Time: 11/13/23 21:38

Method: EPA DRAFT 1633

Analyst approved: 11/14/23 13:55 Anna Ludwig

Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.14.1

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LCMS4-4Q ANALYSIS LOG

DATE:	11/13/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

METHODS:	1633
PROC. METH:	1633_111323_S4Q785
CAL DATE:	11/13/23
ANALYST:	AL
RUN BATCH:	S4Q785

ELUENT A LOT #:	233675 w5%ACN 226166 2mMAMAC-11706
ELUENT B LOT #:	ACN 226166
IC/CC STD LOT #:	LCMS 2192E
ICV STD LOT #:	LCMS 2199
ISTD/D STD LOT #:	12087D + 12030I

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q53716.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
2	4Q53717.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
3	4Q53718.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
4	4Q53719.d	P1-B2	RT BR_LN	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
5	4Q53720.d	P1-A9	high std	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
6	4Q53721.d	P1-A1	iblk	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
7	4Q53722.d	P1-A5	cc784-4	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
8	4Q53723.d	P1-A2	cc784-1.0LL	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	adona fail low
9	4Q53724.d	P1-A2	cc784-1.0LL	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	fail - recal
10	4Q53725.d	P1-A2	cc784-1.0LL	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	fail - recal
11	4Q53726.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
12	4Q53727.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
13	4Q53728.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
14	4Q53729.d	P1-B2	RT BR_LN	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
15	4Q53730.d	P1-A1	ic785-0	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	check tune file
16	4Q53731.d	P1-A2	ic785-1	1633full_4Q.m	Calibration	1.6/500	OP98180,S4Q785:500,,,5.0,1,water	pass
17	4Q53732.d	P1-A3	ic785-2	1633full_4Q.m	Calibration	3.2/500	OP98180,S4Q785:500,,,5.0,1,water	pass
18	4Q53733.d	P1-A4	ic785-3	1633full_4Q.m	Calibration	10/500	OP98180,S4Q785:500,,,5.0,1,water	pass
19	4Q53734.d	P1-A5	ic785-4	1633full_4Q.m	Calibration	20/500	OP98180,S4Q785:500,,,5.0,1,water	adona 68.2% - pass
20	4Q53735.d	P1-A6	ic785-5	1633full_4Q.m	Calibration	40/500	OP98180,S4Q785:500,,,5.0,1,water	pass
21	4Q53736.d	P1-A7	ic785-6	1633full_4Q.m	Calibration	100/500	OP98180,S4Q785:500,,,5.0,1,water	pass
22	4Q53737.d	P1-A8	ic785-7	1633full_4Q.m	Calibration	200/500	OP98180,S4Q785:500,,,5.0,1,water	pass
23	4Q53738.d	P1-A9	ic785-8	1633full_4Q.m	Calibration	1x	OP98180,S4Q785:500,,,5.0,1,water	pass
24	4Q53739.d	P1-A1	iblk	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
25	4Q53740.d	P1-B3	icv785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q785:500,,,5.0,1,water	pass
26	4Q53741.d	P1-B4	icv785-20	1633full_4Q.m	QC	100/500	OP98180,S4Q785:500,,,5.0,1,water	pass
27	4Q53742.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q785:500,,,5.0,1,water	pass
28	4Q53743.d	P1-A2	cc785-1.0LL	1633full_4Q.m	QC	1.6/500	OP98180,S4Q785:500,,,5.0,1,water	pass
29	4Q53744.d	P4-D1	op99997-bs	1633full_4Q.m	Sample		OP99997,S4Q785:500,,,5.0,1,water	✓
30	4Q53745.d	P4-D2	op99997-llbs:3	1633full_4Q.m	Sample		OP99997,S4Q785:500,,,5.0,1,water	✓
31	4Q53746.d	P4-D3	op99997-mb	1633full_4Q.m	Sample		OP99997,S4Q785:500,,,5.0,1,water	✓
32	4Q53747.d	P4-D4	fc11014-1	1633full_4Q.m	Sample		OP99997,S4Q785:520,,,5.0,1,water	✓
33	4Q53748.d	P4-D5	fc11062-1	1633full_4Q.m	Sample		OP99997,S4Q785:530,,,5.0,1,water	✓
34	4Q53749.d	P4-D6	fc11062-2	1633full_4Q.m	Sample		OP99997,S4Q785:520,,,5.0,1,water	✓
35	4Q53750.d	P4-D7	op99997-ms	1633full_4Q.m	Sample		OP99997,S4Q785:520,,,5.0,1,water	✓

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LCMS4-4Q ANALYSIS LOG

36	4Q53751.d	P4-D8	fc11062-3	1633full_4Q.m	Sample		OP99997.S4Q785.530,,,5.0,1,water	✓
37	4Q53752.d	P4-D9	op99997-dup	1633full_4Q.m	Sample		OP99997.S4Q785.530,,,5.0,1,water	✓
38	4Q53753.d	P4-E1	fc11062-4	1633full_4Q.m	Sample		OP99997.S4Q785.500,,,5.0,1,water	✓
39	4Q53754.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP98180.S4Q785.500,,,5.0,1,water	pass
40	4Q53755.d	P1-A1	iccb	1633full_4Q.m	Sample		OP98180.S4Q785.500,,,5.0,1,water	nd
41	4Q53756.d	P4-E2	fc11062-5	1633full_4Q.m	Sample		OP99997.S4Q785.540,,,5.0,1,water	✓
42	4Q53757.d	P4-E3	fc11062-6	1633full_4Q.m	Sample		OP99997.S4Q785.550,,,5.0,1,water	✓
43	4Q53758.d	P5-F8	op99956-bs	1633full_4Q.m	Sample		OP99956.S4Q785.500,,,5.0,1,water	✓
44	4Q53759.d	P5-F9	op99956-llbs:3	1633full_4Q.m	Sample		OP99956.S4Q785.500,,,5.0,1,water	✓
45	4Q53760.d	P6-A1	op99956-mb	1633full_4Q.m	Sample		OP99956.S4Q785.500,,,5.0,1,water	✓
46	4Q53761.d	P6-A2	fc10708-1	1633full_4Q.m	Sample		OP99956.S4Q785.525,,,5.0,1,water	✓
47	4Q53762.d	P6-A3	fc10708-2	1633full_4Q.m	Sample		OP99956.S4Q785.520,,,5.0,1,water	✓
48	4Q53763.d	P6-A4	fc10708-3	1633full_4Q.m	Sample		OP99956.S4Q785.530,,,5.0,1,water	✓
49	4Q53764.d	P6-A5	fc10708-4	1633full_4Q.m	Sample		OP99956.S4Q785.525,,,5.0,1,water	✓
50	4Q53765.d	P6-A6	fc10708-5	1633full_4Q.m	Sample		OP99956.S4Q785.525,,,5.0,1,water	✓
51	4Q53766.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP99956.S4Q785.500,,,5.0,1,water	pass
52	4Q53767.d	P1-A1	iccb	1633full_4Q.m	Sample		OP99956.S4Q785.500,,,5.0,1,water	nd
53	4Q53768.d	P6-A7	fc10708-6	1633full_4Q.m	Sample		OP99956.S4Q785.525,,,5.0,1,water	✓
54	4Q53769.d	P6-A8	fc10708-7	1633full_4Q.m	Sample		OP99956.S4Q785.520,,,5.0,1,water	✓
55	4Q53770.d	P6-A9	fc10708-8	1633full_4Q.m	Sample		OP99956.S4Q785.520,,,5.0,1,water	✓
56	4Q53771.d	P6-B1	fc10708-9	1633full_4Q.m	Sample		OP99956.S4Q785.525,,,5.0,1,water	✓
57	4Q53772.d	P6-B2	fc10708-10	1633full_4Q.m	Sample		OP99956.S4Q785.520,,,5.0,1,water	✓
58	4Q53773.d	P6-B3	fc10708-11	1633full_4Q.m	Sample		OP99956.S4Q785.530,,,5.0,1,water	✓
59	4Q53774.d	P6-B4	fc10708-12	1633full_4Q.m	Sample		OP99956.S4Q785.530,,,5.0,1,water	✓
60	4Q53775.d	P6-B5	fc10708-13	1633full_4Q.m	Sample		OP99956.S4Q785.525,,,5.0,1,water	✓
61	4Q53776.d	P6-B6	fc10708-14	1633full_4Q.m	Sample		OP99956.S4Q785.525,,,5.0,1,water	✓
62	4Q53777.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP99956.S4Q785.500,,,5.0,1,water	pass
63	4Q53778.d	P1-A1	iccb	1633full_4Q.m	Sample		OP99956.S4Q785.500,,,5.0,1,water	nd
64	4Q53779.d	P6-B7	fc10708-15	1633full_4Q.m	Sample		OP99956.S4Q785.525,,,5.0,1,water	✓
65	4Q53780.d	P6-B8	op99956-ms	1633full_4Q.m	Sample		OP99956.S4Q785.520,,,5.0,1,water	✓
66	4Q53781.d	P6-B9	op99956-msd	1633full_4Q.m	Sample		OP99956.S4Q785.530,,,5.0,1,water	✓
67	4Q53782.d	P6-C1	fc10708-16	1633full_4Q.m	Sample		OP99956.S4Q785.530,,,5.0,1,water	✓
68	4Q53783.d	P6-C2	fc10708-17	1633full_4Q.m	Sample		OP99956.S4Q785.530,,,5.0,1,water	✓
69	4Q53784.d	P6-C3	op99926-bs	1633full_4Q.m	Sample		OP99926.S4Q785.500,,,5.0,1,water	3:3 high - ok
70	4Q53785.d	P6-C4	op99926-llbs:3	1633full_4Q.m	Sample		OP99926.S4Q785.500,,,5.0,1,water	✓
71	4Q53786.d	P6-C5	op99926-mb	1633full_4Q.m	Sample		OP99926.S4Q785.500,,,5.0,1,water	✓
72	4Q53787.d	P6-C6	fc10691-1	1633full_4Q.m	Sample		OP99926.S4Q785.520,,,5.0,1,water	✓
73	4Q53788.d	P6-C7	fc10691-2	1633full_4Q.m	Sample		OP99926.S4Q785.500,,,5.0,1,water	✓
74	4Q53789.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP99956.S4Q785.500,,,5.0,1,water	pass
75	4Q53790.d	P1-A1	iccb	1633full_4Q.m	Sample		OP99956.S4Q785.500,,,5.0,1,water	nd
76	4Q53791.d	P6-C8	fc10703-1	1633full_4Q.m	Sample		OP99926.S4Q785.540,,,5.0,1,water	✓
77	4Q53792.d	P6-C9	op99926-ms	1633full_4Q.m	Sample		OP99926.S4Q785.540,,,5.0,1,water	✓
78	4Q53793.d	P6-D1	fc10703-2	1633full_4Q.m	Sample		OP99926.S4Q785.535,,,5.0,1,water	✓

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LCMS4-4Q ANALYSIS LOG

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79	4Q53794.d	P6-D2	op99926-dup	1633full_4Q.m	Sample	OP99926.S4Q785.535,,,5.0,1,water	✓
80	4Q53795.d	P6-D3	fc10703-3	1633full_4Q.m	Sample	OP99926.S4Q785.540,,,5.0,1,water	✓
81	4Q53796.d	P6-D4	fc10703-4	1633full_4Q.m	Sample	OP99926.S4Q785.535,,,5.0,1,water	✓
82	4Q53797.d	P6-D5	fc10703-5	1633full_4Q.m	Sample	OP99926.S4Q785.530,,,5.0,1,water	✓
83	4Q53798.d	P6-D6	fc10703-6	1633full_4Q.m	Sample	OP99926.S4Q785.550,,,5.0,1,water	✓
84	4Q53799.d	P6-D7	fc10703-7	1633full_4Q.m	Sample	OP99926.S4Q785.530,,,5.0,1,water	✓
85	4Q53800.d	P6-D8	fc10703-8	1633full_4Q.m	Sample	OP99926.S4Q785.550,,,5.0,1,water	rt 2 x e flag pass
86	4Q53801.d	P1-A5	cc785-4	1633full_4Q.m	QC	OP99956.S4Q785.500,,,5.0,1,water	
87	4Q53802.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1,water	nd
88	4Q53803.d	P6-D9	fc10703-9	1633full_4Q.m	Sample	OP99926.S4Q785.545,,,5.0,1,water	✓
89	4Q53804.d	P6-E1	fc10703-10	1633full_4Q.m	Sample	OP99926.S4Q785.535,,,5.0,1,water	✓
90	4Q53805.d	P6-E2	fc10703-11	1633full_4Q.m	Sample	OP99926.S4Q785.525,,,5.0,1,water	✓
91	4Q53806.d	P6-E3	fc10703-12	1633full_4Q.m	Sample	OP99926.S4Q785.525,,,5.0,1,water	✓
92	4Q53807.d	P6-E4	fc10703-13	1633full_4Q.m	Sample	OP99926.S4Q785.535,,,5.0,1,water	✓
93	4Q53808.d	P6-E5	fc10636-32	1633full_4Q.m	Sample	OP99872.S4Q785.370,,,5.0,10,water	✓
94	4Q53809.d	P6-E6	fc10636-39	1633full_4Q.m	Sample	OP99872.S4Q785.390,,,5.0,10,water	✓
95	4Q53810.d	P6-E7	fc10636-41	1633full_4Q.m	Sample	OP99872.S4Q785.415,,,5.0,10,water	✓
96	4Q53811.d	P6-E8	fc10643-1	1633full_4Q.m	Sample	OP99872.S4Q785.380,,,5.0,5,water	✓
97	4Q53812.d	P1-A5	ecc785-4	1633full_4Q.m	QC	OP99956.S4Q785.500,,,5.0,1,water	pass
98	4Q53813.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1,water	nd

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2192A-E	1033 Cal wtd. (Spike)	LCMS 2191	PFAA- Bg-10 PFAA- Bg-10	Sgs Labs	n/a	12/28/23	2 ppm 5 ppm	250 µL	4 mL	125 312.5 ppb	1633 n/a 12/28/23	9/24/23	12/28/23	mw
		11940	PFAA- Bg-10	Wellington	4-19-28	9/21/23	1-4 ppm	250 µL		125 250 ppb				
		11908	MXH			9/24/23								
		11947B	PFAA		3-24-26	9/15/24	2 ppm	250 µL		125 ppb				
		11969	MXF		12-1-27	9/24/24	2 ppm	250 µL		125 ppb				
		11948A	PFAA		3-28-28	9/15/24	4-20 ppm	250 µL		312 1160 ppb				
		11948B	MXG		05/13/27	9/24/24	50 ppm	200 µL	2.0 mL	5 ppb	95% MeOH 5% H ₂ O	09/25/23	03/25/24	JR
LCMS 2193	FOSE Std	11971 12010A	MXJ	Wellington Labs		09/25/24								
		11409	N-Et- FOSE		05/13/27	09/25/24								
		11410	N-Me- FOSE		05/13/27	09/25/24								
LCMS 2194	Full List 40 Spike (cal std)	11904/ 12006	PFAA- DOP (28 Comp)	Absolute	03/13/28	09/11/24	1.0 ppm	400 µL	4.0 mL	100 ppb	95% MeOH 5% H ₂ O	09/25/23	10/18/23	JR
		LCMS 2179	40 List Add-on#1	Sgs Std	-	10/18/23								
		LCMS 2156	40 List Add-on#2		-	02/07/24								
		LCMS 2193	FOSE Std.		-	03/25/24	5.0 ppm			500 ppb				
LCMS 2195	PFC Spike	12006	PFAA- DOP (28 Comp)	Absolute	04/26/28	09/19/24	1.0 ppm	2 mL	5.0 mL	400 ppb	95% MeOH 5% H ₂ O	09/25/23	03/13/24	JR
		11432	N-Me FOSAM	Wellington Labs	02/28/27	03/13/24	50 ppm	40 µL						
		11793	FOSA-1		02/01/28	08/08/24								
		11742	FH-SA-1		12/01/27	08/08/24								
		11332	PFECHS		03/28/27	04/18/24								

* based on date opened as specified in each SGS - Orlando SOP.

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[illegible]

* based on date opened as specified in each SGS - Orlando SOP.

* based on data

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Organic Standards Preparation Log

[illegible]

* based on date opened as specified in each SGS - Orlando SOP.

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2156	LIST 40 ADD ON #2	11513	FBSA-1	Wellington	11/10/26	4/18/24	50 ppm	80 uL	4.0 mL	1 ppm	95% meth 5% H ₂ O	8/7/23	2/2/24	MJ
↓	↓	11514	PHSA1	↓	12/29/26	4/18/24	↓	↓	↓	↓	(37600)	↓	↓	↓
↓	↓	11140B	1-PFAS	↓	7/12/26	5/9/24	↓	↓	↓	↓	↓	↓	↓	↓
LCMS 2157	1033 RT BR-LN	11496	br-Fosa	Wellington	10/7/27	12/28/23	50 ppm	10 uL 5 uL	5 mL	100 ppb	1033 mix	8/7/23	12/28/23	MJ
↓	↓	11497	br-N meFosa	↓	8/23/27	↓	↓	10 uL	↓	↓	(4930)	↓	↓	↓
↓	↓	11498	br-N ETFOA	↓	10/7/27	↓	↓	↓	↓	↓	↓	↓	↓	↓
↓	↓	11494	br-N meFose	↓	10/7/27	↓	↓	↓	↓	↓	↓	↓	↓	↓
↓	↓	11495	br-N ETFOE	↓	10/7/27	↓	↓	↓	↓	↓	↓	↓	↓	↓
↓	↓	11502	T-PFOA	↓	01/27/27	↓	↓	↓	↓	↓	↓	↓	↓	↓
↓	↓	11527	1-PFNA	↓	01/10/27	↓	↓	↓	↓	↓	↓	↓	↓	↓
LCMS 2158 AE	1033 Cul std. Spike	LCMS 2159 (21405)	Br-LN ET-me PFAC	SGS LABO	N/A	12/28/23	2 ppm 5 ppm 1-4 ppm	25 uL	4 mL	125 312.5 ppb	1033 mix 2088 uL	8/7/23	12/28/23	MJ
↓	↓	11930	MXH	Wellington	4/19/28	7/31/24 8/7/24	↓	↓	↓	62.5 125 250 ppb	↓	↓	↓	↓
↓	↓	11931A	PFAC	↓	7-31-24	8-7-24	2 ppm	↓	↓	125 ppb	↓	↓	↓	↓
↓	↓	11931B	MXF	↓	3/24/26	8-7-24	2 ppm	↓	↓	125 ppb	↓	↓	↓	↓
↓	↓	11907	PFAC	↓	7-31-24	8-7-24	2 ppm	↓	↓	125 ppb	↓	↓	↓	↓
↓	↓	11932A	MXB	↓	12/1/27	8-7-24	2 ppm	↓	↓	125 ppb	↓	↓	↓	↓
↓	↓	11933A	PFAC	↓	7-31-24	8-7-24	4-20 ppm	312 uL	↓	312 1100 ppb	↓	↓	↓	↓
↓	↓	11933B	MXJ	↓	3-28-28	8-7-24	↓	↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	MA Confirm next page 8/7/23	↓	↓	↓	↓	↓	↓	↓	↓

* based on date opened as specified in each SGS - Orlando SOP.

ORLD-QAC-0017-6-03-FORM-Icms std prep log.xls 030819

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2192A-	1033 Cal std. (spike)	LCMS 2191	PFAC ^{MT} BET-Me	SGS Labs	n/a	12/28/23	2 ppm	250 µL	4 mL	125 312.5 ppb	1633 704 1268840	9/24/23	12/28/23	mw
		11940	PFAC		4/19/28	9/21/23	1-4 ppm	250 µL		62.5 125 250 ppb				
		11908	MX-H	Wellington	4/19/28	9/24/23								
		11947B	PFAC		3-24/26	9/15/24	2 ppm	250 µL		125 ppb				
		11964	MX-F		12-1-27	9/24/24	2 ppm	250 µL		125 ppb				
		11948A	PFAC		3-28/28	9/15/24	4-20 ppm	250 µL		312 1100 ppb				
		11948B	MX-G		05/13/27	09/25/24	50 ppm	200 µL	2.0 mL	5 ppb	95/Meth 5/H ₂ O	09/25/23	03/25/24	JR
		11971	PFAC		05/13/27	09/25/24								
		11992	MX-J		05/13/27	09/25/24								
LCMS 2193	FOSE Std	11409	N-ET- FOSE	Wellington Labs	05/13/27	09/25/24	50 ppm	200 µL	2.0 mL	5 ppb	95/Meth 5/H ₂ O	09/25/23	03/25/24	JR
		11410	N-Me- FOSE		05/13/27	09/25/24								
		11904/	FOA- DOP		03/13/28	09/11/24	1.0 ppm	400 µL	4.0 mL	100 ppb	95/Meth 5/H ₂ O	09/25/23	10/16/23	JR
LCMS 2194	Full List 40 Spike (cal std)	12006	28 Comp	Absolute										
		LCMS 2179	40 List Add-m#1	SGS Std	-	10/18/23								
		LCMS 2156	40 List Add-m#2		-	02/07/24								
		LCMS 2193	FOSE Std.		-	03/25/24	5.0 ppm			500 ppb				
LCMS 2195	PFC Spike	12006	FOA- DOP	Absolute	06/26/28	09/19/24	1.0 ppm	2 mL	5.0 mL	400 ppb	95/Meth 5/H ₂ O	09/28/23	03/13/24	JR
		11432	N-Me FOA-M	Wellington Labs	02/28/27	03/13/24	50 ppm	40 µL						
		11793	FOSA-1		02/01/28	08/08/24								
		11792	FHSA-1		12/01/27	08/08/24								
		11332	PFECHS		03/28/27	04/18/24								

* based on date opened as specified in each SGS - Orlando SOP.

ORLD-QAC-0017-6-03-FORM-lcms std prep log.xls 030819

Page 7 of 50

12087 A-J
rev'd: 10/11/23

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-ES

Mass-Labelled PFAS Extraction Standard Solution/Mixture

PRODUCT CODE:

MPFAC-HIF-ES

LOT NUMBER:

MPFACHIFES0623

SOLVENT(S):

Methanol/Isopropanol (1%)/Water (<1%)

DATE PREPARED: (mm/dd/yyyy)

06/19/2023

LAST TESTED: (mm/dd/yyyy)

06/20/2023

EXPIRY DATE: (mm/dd/yyyy)

06/20/2026

RECOMMENDED STORAGE:

Refrigerate ampoule

DESCRIPTION:

MPFAC-HIF-ES is a solution/mixture of ten mass-labelled (^{13}C) perfluoroalkylcarboxylic acids (C_4 - C_{12} , C_{14}), three mass-labelled (^{13}C) perfluoroalkanesulfonates (C_4 , C_6 , and C_8), three mass-labelled (one ^{13}C and two ^2H) perfluoro-1-octanesulfonamides, three mass-labelled (^{13}C) fluorotelomer sulfonates (4:2, 6:2, and 8:2), two mass-labelled (^2H) perfluorooctanesulfonamidoacetic acids, two mass-labelled (^2H) perfluorooctanesulfonamidoethanols, and mass-labelled (^{13}C) hexafluoropropylene oxide dimer acid ($^{13}\text{C}_3$ -GenX, M3HFPO-DA). The components and their concentrations are given in Table A.

The individual ^{13}C -labelled components all have chemical purities >98% and isotopic purities of $\geq 99\%$. The individual ^2H -labelled components all have chemical purities >98% and isotopic purities of $\geq 98\%$.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture

Figure 1: LC/MS Data (SIR)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

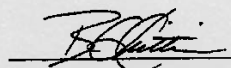
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Tab. : MPFAC-HIF-ES; Components and Concentrations
(ng/mL, \pm 5% in methanol/isopropanol (1%)/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
Perfluoro-n-($^{13}\text{C}_4$)butanoic acid	MPFBA	2000		1
Perfluoro-n-($^{13}\text{C}_5$)pentanoic acid	M5PFPeA	1000		2
Perfluoro-n-(1,2,3,4,6- $^{13}\text{C}_6$)hexanoic acid	M5PFHxA	500		5
Perfluoro-n-(1,2,3,4- $^{13}\text{C}_4$)heptanoic acid	M4PFHpA	500		7
Perfluoro-n-($^{13}\text{C}_8$)octanoic acid	M8PFOA	500		10
Perfluoro-n-($^{13}\text{C}_9$)nonanoic acid	M9PFNA	250		11
Perfluoro-n-(1,2,3,4,5,6- $^{13}\text{C}_6$)decanoic acid	M6PFDA	250		14
Perfluoro-n-(1,2,3,4,5,6,7- $^{13}\text{C}_7$)undecanoic acid	M7PFUdA	250		18
Perfluoro-n-(1,2- $^{13}\text{C}_2$)dodecanoic acid	MPFDoA	250		19
Perfluoro-n-(1,2- $^{13}\text{C}_2$)tetradecanoic acid	M2PFTeDA	250		24
Perfluoro-1-($^{13}\text{C}_8$)octanesulfonamide	M8FOSA	500		16
N-Methyl- d_3 -perfluoro-1-octanesulfonamide	d-N-MeFOSA	500		21
N-Ethyl- d_5 -perfluoro-1-octanesulfonamide	d-N-EtFOSA	500		23
N-Methyl- d_3 -perfluoro-1-octanesulfonamidoacetic acid	d3-N-MeFOSAA	1000		15
N-Ethyl- d_5 -perfluoro-1-octanesulfonamidoacetic acid	d5-N-EtFOSAA	1000		17
2-(N-Methyl- d_3 -perfluoro-1-octanesulfonamido)ethan- d_2 -ol	d7-N-MeFOSE	5000		20
2-(N-Ethyl- d_5 -perfluoro-1-octanesulfonamido)ethan- d_4 -ol	d9-N-EtFOSE	5000		22
2,3,3,3-Tetrafluoro-2-((1,1,2,2,3,3,3-heptafluoropropoxy)($^{13}\text{C}_3$)propanoic acid	M3HFPO-DA	2000		6
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-(2,3,4- $^{13}\text{C}_3$)butanesulfonate	M3PFBS	500	466	3
Sodium perfluoro-1-(1,2,3- $^{13}\text{C}_3$)hexanesulfonate	M3PFHxS	500	474	8
Sodium perfluoro-1-($^{13}\text{C}_8$)octanesulfonate	M8PFOS	500	479	12
Sodium 1H,1H,2H,2H-perfluoro-(1,2- $^{13}\text{C}_2$)hexanesulfonate	M2-4:2FTS	1000	938	4
Sodium 1H,1H,2H,2H-perfluoro-(1,2- $^{13}\text{C}_2$)octanesulfonate	M2-6:2FTS	1000	951	9
Sodium 1H,1H,2H,2H-perfluoro-(1,2- $^{13}\text{C}_2$)decanesulfonate	M2-8:2FTS	1000	960	13

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 06/22/2023
(mm/dd/yyyy)

12030 A-5
rec'd: 09/18/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

Mass-Labelled PFAS Injection
Standard Solution/Mixture

PRODUCT CODE: MPFAC-HIF-IS
LOT NUMBER: MPFACHIFIS0723
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 07/05/2023
LAST TESTED: (mm/dd/yyyy) 07/05/2023
EXPIRY DATE: (mm/dd/yyyy) 07/05/2028
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (^{13}C) perfluoroalkyl/carboxylic acids (C_4 , C_6 , C_8 - C_{10}) and two mass-labelled (^{18}O and ^{13}C) perfluoroalkanesulfonates (C_8 and C_9). The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkyl/carboxylic acids and perfluoroalkanesulfonates all have chemical purities of >98% and isotopic purities of $\geq 99\%$ per ^{13}C or >94% per ^{18}O .

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

MPFACHIFIS0723 (1 of 5)
rev0

Table A: MPFAC-HIF-IS; Components and Concentrations (ng/mL, \pm 5% in methanol/water (<1%))

Table A:

MPFAC-HIF-IS; Components and Concentrations

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
Perfluoro-n-(2,3,4- ¹³ C ₃)butanoic acid	M3PFBA	1000		1
Perfluoro-n-(1,2- ¹³ C ₂)hexanoic acid	MPFHxA	500		2
Perfluoro-n-(1,2,3,4- ¹³ C ₄)octanoic acid	MPFOA	500		4
Perfluoro-n-(1,2,3,4,5- ¹³ C ₅)nonanoic acid	MPFNA	250		5
Perfluoro-n-(1,2- ¹³ C ₂)decanoic acid	MPFDA	250		7
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-hexane(¹⁸ O ₂)sulfonate	MPFHxS	500	474	3
Sodium perfluoro-1-(1,2,3,4- ¹³ C ₄)octanesulfonate	MPFOS	500	479	6

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 07/07/2023
(mm/dd/yyyy)

12016 A-B
rec'd: 09/11/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic Acid Solution/Mixture

PRODUCT CODE: PFAC-MXJ
LOT NUMBER: PFACMXJ0323
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 03/27/2023
LAST TESTED: (mm/dd/yyyy) 03/28/2023
EXPIRY DATE: (mm/dd/yyyy) 03/28/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

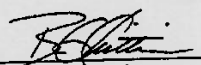
PFACMXJ0323 (1 of 5)
rev0

A:

PFAC-MXJ; Components and Concentrations ($\mu\text{g/mL}$; $\pm 5\%$ in methanol)

Compound	Acronym	Concentration ($\mu\text{g/mL}$)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By:


B.G. Chittim, General Manager

Date: 04/12/2023
(mm/dd/yyyy)

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXJ0323 (3 of 5)
rev0



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT

Part Number: 64029
Lot Number: 062623
Description: Perfluorooctanoic acid (PFPOA)
Expiration Date: 06/26/2023
Recommended Storage: 2-8°C
Nominal Concentration (g/mL): 100.0
NIST Test Date: 06/26/2023

Volumes shown below were combined and diluted to (mL):
Note: All assigned values are mean concentrations.

Formulated By: *[Signature]*
Reviewed By: *[Signature]*
DATE: 06/26/23
DATE: 06/26/23

Component	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty (mL)	Final Conc. (g/mL)	Final Uncertainty (g/mL)	SUS Information (Solvent Safety Info. On Attached PG.)	LOSO
1. Perfluorooctanoic acid (PFPOA)	99242	110622	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
2. Perfluorooctanoic acid (PFPOA)	99243	011723	0.02	2.00	0.017	50.3	1.01	0.02	375-29-4 N/A
3. Perfluorooctanoic acid (PFPOA)	99199	031023	0.02	2.00	0.017	50.2	1.00	0.02	375-29-4 N/A
4. Perfluorooctanoic acid (PFPOA)	99197	110622	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
5. Perfluorooctanoic acid (PFPOA)	99202	030523	0.02	2.00	0.017	50.2	1.00	0.02	375-29-4 N/A
6. Perfluorooctanoic acid (PFPOA)	99200	110622	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
7. Perfluorooctanoic acid (PFPOA)	99195	110622	0.02	2.00	0.017	50.2	1.00	0.02	375-29-4 N/A
8. Perfluorooctanoic acid (PFPOA)	99205	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
9. Perfluorooctanoic acid (PFPOA)	99198	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
10. Perfluorooctanoic acid (PFPOA)	99204	110622	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
11. Perfluorooctanoic acid (PFPOA)	99203	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
12. Perfluorooctanoic acid (PFPOA)	99201	110622	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
13. Methylperfluorooctanoic acid (MPFOA)	4162	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
14. Methylperfluorooctanoic acid (MPFOA)	4163	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
15. Perfluorooctanoic acid (PFPOA)	99194	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
16. Perfluorooctanoic acid (PFPOA)	99244	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
17. Perfluorooctanoic acid (PFPOA)	99196	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
18. Perfluorooctanoic acid (PFPOA)	99201	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
19. Perfluorooctanoic acid (PFPOA)	99201	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
20. Perfluorooctanoic acid (PFPOA)	99201	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
21. Perfluorooctanoic acid (PFPOA)	99201	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
22. Perfluorooctanoic acid (PFPOA)	99201	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
23. Perfluorooctanoic acid (PFPOA)	99201	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
24. Perfluorooctanoic acid (PFPOA)	99201	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
25. Perfluorooctanoic acid (PFPOA)	99201	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
26. Perfluorooctanoic acid (PFPOA)	99201	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
27. Perfluorooctanoic acid (PFPOA)	99201	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A
28. Perfluorooctanoic acid (PFPOA)	99201	030523	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4 N/A

*Qualitative standard (Sect. 3.13) is available for PFPOA that contains the linear and branched isomers (Wellington Labs Cat. No. T-100A, or equivalent). This PFPOA standard must be purchased and used to identify the retention times of the branched PFPOA isomers. The linear PFPOA standard must be used for quantitation (Sect. 12.2) until a quantitative PFPOA standard containing the branched and linear isomers becomes commercially available.

*The certified value is the concentration calculated from gravimetric and volumetric measurements after appropriate dilution.
*All standards are certified to 0.1% of the stated value, unless otherwise noted.
*All standards are stored under nitrogen and under appropriate laboratory conditions.
*Certification Reference Material (CRM) is a material that has been certified by the National Institute of Standards and Technology (NIST) for use as a reference material for the determination of the concentration of a substance in a sample.
*NIST Certificate No. 1297, U.S. Government Printing Office, Washington, DC, 1994.



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

11994
rec'd: 08/13/23

PRODUCT CODE:

FPePA (5:3)

LOT NUMBER:

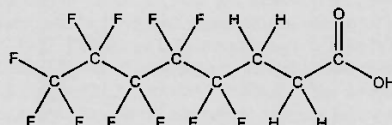
FPePA0722

COMPOUND:

3-Perfluoropentyl propanoic acid

STRUCTURE:**CAS #:**

914637-49-3

**MOLECULAR FORMULA:** $C_8H_5F_{11}O_2$ **MOLECULAR WEIGHT:**

342.11

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/02/2022

EXPIRY DATE: (mm/dd/yyyy)

08/02/2027

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <0.5% of the unsaturated 5:3 telomer acid ($C_8H_3F_{11}O_2$) as an impurity determined by 1H NMR.

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Certified By:

B.G. Chittim, General Manager

Date: 08/10/2022

(mm/dd/yyyy)

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WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

11992
rec'd 108/13/23

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

PRODUCT CODE:	PFAC-MXJ
LOT NUMBER:	PFACMXJ0323
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	03/27/2023
LAST TESTED: (mm/dd/yyyy)	03/28/2023
EXPIRY DATE: (mm/dd/yyyy)	03/28/2028
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

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

Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23


PFACMXJ0323 (1 of 5)
rev0

7.9.1

7

Table A: PFAC-MXJ; Components and Concentrations ($\mu\text{g/mL}$; $\pm 5\%$ in methanol)

Compound	Acronym	Concentration ($\mu\text{g/mL}$)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By: 

B.G. Chittim, General Manager

Date: 04/12/2023

(mm/dd/yyyy)

11971
rec'd: 08/22/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXJ
<u>LOT NUMBER:</u>	PFACMXJ0323
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	03/27/2023
<u>LAST TESTED:</u> (mm/dd/yyyy)	03/28/2023
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	03/28/2028
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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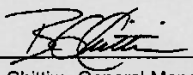
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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXJ0323 (1 of 5)
rev0

Table A: PFAC-MXJ; Components and Concentrations (µg/mL; ± 5% in methanol)

Compound	Acronym	Concentration (µg/mL)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By: 
B.G. Chittim, General Manager

Date: 04/12/2023
(mm/dd/yyyy)



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

11968
rec'd 08/22/23

PFAC-MXH

Native PFAS Solution/Mixture

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0423
SOLVENT(S): Methanol/Isopropanol (2%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 04/06/2023
LAST TESTED: (mm/dd/yyyy) 04/19/2023
EXPIRY DATE: (mm/dd/yyyy) 04/19/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₆, C₇, C₈, C₁₀ and C₁₂ linear; C₆ and C₈ linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Table B: Isomeric Components and Percent Composition of N-MeFOSAA
Table C: Isomeric Components and Percent Composition of N-EtFOSAA
Table D: Isomeric Components and Percent Composition of PFHxSK
Table E: Isomeric Components and Percent Composition of PFOSK
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXH0423 (1 of 11)
rev1

e A:

PFAC-MXH; Components and Concentrations
(ng/mL, \pm 5% in methanol/isopropanol (2%)/water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		23
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		24
N-Methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: Σ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid ^b	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: Σ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanesulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexanesulfonate ^c	PFHxSK: linear isomer	811	741	9
	PFHxSK: Σ branched isomers	189	173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctanesulfonate ^d	PFOSK: linear isomer	788	732	15
	PFOSK: Σ branched isomers	211	196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNS	1000	962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1000	970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4000	3750	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4000	3800	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4000	3840	16

^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.

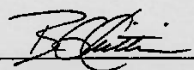
^b See Table C for percent composition of linear and branched N-EtFOSAA isomers.

^c See Table D for percent composition of linear and branched PFHxSK isomers.

^d See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By:


B.G. Chittim, General Manager

Date: 05/11/2023

(mm/dd/yyyy)

Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

PFACMXH0423 (3 of 11)
rev1

11948 A-B
rec'd. 08/09/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic
Acids and Sulfonate Solution/Mixture

PRODUCT CODE: PFAC-MXG
LOT NUMBER: PFACMXG1122
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 11/30/2022
LAST TESTED: (mm/dd/yyyy) 12/01/2022
EXPIRY DATE: (mm/dd/yyyy) 12/01/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXG is a solution/mixture of three native perfluoroalkyl ether carboxylic acids and a native perfluoroalkyl ether sulfonate. The components and their concentrations are given in Table A.

The individual components all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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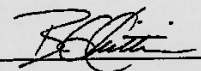
PFACMXG1122 (1 of 5)
rev0

Table A: PFAC-MXG; Components and Concentrations (ng/mL; $\pm 5\%$ in methanol/water ($<1\%$))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
Perfluoro-4-oxapentanoic acid	PF4OPeA	2000		A
Perfluoro-5-oxahexanoic acid	PF5OHxA	2000		B
Perfluoro-3,6-dioxahexanoic acid	3,6-OPFHxA	2000		D
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro(2-ethoxyethane)sulfonate	PFEESA	2000	1780	C

* Concentrations have been rounded to three significant figures.

Certified By:


B.G. Chittim, General Manager

Date: 12/09/2022
(mm/dd/yyyy)

11947A-B
rec'd: 08/09/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS Solution/Mixture

PRODUCT CODE: PFAC-MXF
LOT NUMBER: PFACMXF0323
SOLVENT(S): Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 03/23/2023
LAST TESTED: (mm/dd/yyyy) 03/24/2023
EXPIRY DATE: (mm/dd/yyyy) 03/24/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonoate (NaDONA), the major and minor components of F-53B (9CI-PF3ONS and 11CI-PF3OUdS), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Revision#: 9, Revised 2020-12-23

PFACMXF0323 (1 of 5)
rev0

Table A: PFAC-MXF; Components and Concentrations (ng/mL; \pm 5% in Methanol/Water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	HFPO-DA	2000		A
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium dodecafluoro-3H-4,8-dioxanonoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

* Concentrations have been rounded to three significant figures.

Certified By: _____

B.G. Chittim, General Manager

Date: 03/29/2023
(mm/dd/yyyy)



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

11946 A-B
rec'd: 08/09/23

PFAC-MXH

Native PFAS
Solution/Mixture

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0423
SOLVENT(S): Methanol/Isopropanol (2%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 04/06/2023
LAST TESTED: (mm/dd/yyyy) 04/19/2023
EXPIRY DATE: (mm/dd/yyyy) 04/19/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C_4 - C_{14}), eight native perfluoroalkanesulfonates (C_4 , C_6 , C_7 , C_8 , C_{10} and C_{12} linear; C_6 and C_8 linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Table B: Isomeric Components and Percent Composition of N-MeFOSAA
Table C: Isomeric Components and Percent Composition of N-EtFOSAA
Table D: Isomeric Components and Percent Composition of PFHxSK
Table E: Isomeric Components and Percent Composition of PFOSK
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Revision#: 9, Revised 2020-12-23

PFACMXH0423 (1 of 11)
rev1

Table A: PFAC-MXH; Components and Concentrations
(ng/mL, \pm 5% in methanol/isopropanol (2%)/water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		23
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		24
N-Methylperfluorooctanesulfonamidoacetic acid *	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: Σ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid *	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: Σ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanefulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexanesulfonate *	PFHxSK: linear isomer	811	741	9
	PFHxSK: Σ branched isomers	189	173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctanesulfonate *	PFOSK: linear isomer	788	732	15
	PFOSK: Σ branched isomers	211	196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNS	1000	962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1000	970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4000	3750	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4000	3800	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4000	3840	16

* See Table B for percent composition of linear and branched N-MeFOSAA isomers.

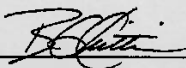
* See Table C for percent composition of linear and branched N-EtFOSAA isomers.

* See Table D for percent composition of linear and branched PFHxSK isomers.

* See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By:


B.G. Chittim, General Manager

Date: 05/11/2023
(mm/dd/yyyy)



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

11796
rec'd: 05/15/23

br-NEtFOSE

2-(N-Ethylperfluorooctanesulfonamido)ethanol
Isomeric Mix

PRODUCT CODE: br-NEtFOSE
LOT NUMBER: brNEtFOSE1022
CONCENTRATION: 50.0 ± 2.5 µg/mL
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 09/12/2022
LAST TESTED: (mm/dd/yyyy) 09/12/2022 (HRGC/LRMS)
10/07/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 10/07/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% 2-(N-ethylperfluorooctanesulfonamido)ethanol linear and branched isomers. The full name, structure, and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
Figure 3: LC/MS Data (SIR)
Figure 4: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 1691-99-2 (for linear isomer).

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brNEtFOSE1022 (1 of 7)
rev1



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CERTIFICATE OF ANALYSIS DOCUMENTATION

11795
rec'd 10/15/23

br-NMeFOSE

2-(N-Methylperfluorooctanesulfonamido)ethanol
Isomeric Mix

PRODUCT CODE: br-NMeFOSE
LOT NUMBER: brNMeFOSE0922
CONCENTRATION: 50.0 ± 2.5 µg/mL
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 09/02/2022
LAST TESTED: (mm/dd/yyyy) 09/07/2022 (HRGC/LRMS)
10/07/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 10/07/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% 2-(N-methylperfluorooctanesulfonamido)ethanol linear and branched isomers. The full name, structure, and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
Figure 3: LC/MS Data (SIR)
Figure 4: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 24448-09-7 (for linear isomer).

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brNMeFOSE0922 (1 of 7)
rev1

11794
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PRODUCT CODE:

PFECHS

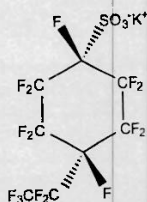
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COMPOUND:

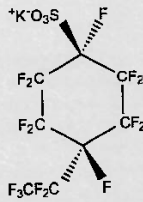
Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

STRUCTURE:

CAS #: 335-24-0



cis-isomer



trans-isomer

MOLECULAR FORMULA:

$C_9F_{15}SO_3K$

MOLECULAR WEIGHT: 500.22

CONCENTRATION:

50.0 ± 2.5 µg/mL (K salt)
46.2 ± 2.3 µg/mL (PFECHS acid)
46.1 ± 2.3 µg/mL (PFECHS anion)

SOLVENT(S): Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/14/2023

EXPIRY DATE: (mm/dd/yyyy)

03/14/2028

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains a mixture of the *cis/trans* isomers of PFECHS at a ratio of 1:1.27 (*cis:trans*, by ^{19}F NMR).

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Certified By:

B.G. Chittim, General Manager

Date: 03/16/2023
(mm/dd/yyyy)

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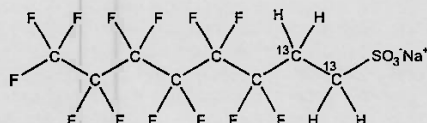
11762 rec'd: 04/20/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS1122
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-(1,2-¹³C₂)octanesulfonate
STRUCTURE: **CAS #:** 2708218-89-5



MOLECULAR FORMULA: ¹³C₂¹²C₆H₄F₁₃SO₃Na **MOLECULAR WEIGHT:** 452.13
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
 47.6 ± 2.4 µg/mL (M2-6:2FTS acid)
 47.5 ± 2.4 µg/mL (M2-6:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 11/24/2022 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 11/24/2027
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

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Certified By:
 B.G. Chittim, General Manager

Date: 12/13/2022
 (mm/dd/yyyy)

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11710
rec'd: 03/17/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSA-M

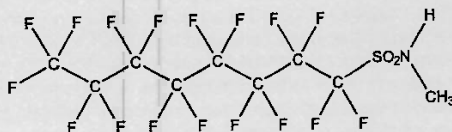
COMPOUND:

N-Methylperfluoro-1-octanesulfonamide

LOT NUMBER: NMeFOSA1122M

STRUCTURE:

CAS #: 31506-32-8



MOLECULAR FORMULA:

C₉H₄F₁₇NO₂S

CONCENTRATION:

50.0 ± 2.5 µg/mL

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/11/2022

EXPIRY DATE: (mm/dd/yyyy)

11/11/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

MOLECULAR WEIGHT:

513.17

SOLVENT(S):

Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 11/25/2022

(mm/dd/yyyy)

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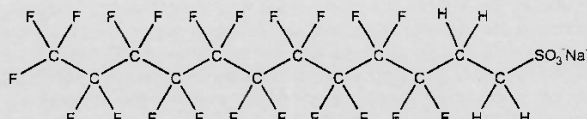
11649 Rec. 02/13/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 10:2FTS **LOT NUMBER:** 102FTS1122
COMPOUND: Sodium 1H,1H,2H,2H-perfluorododecanesulfonate
STRUCTURE: **CAS #:** 108026-35-3



MOLECULAR FORMULA: $C_{12}H_4F_{21}SO_3Na$ **MOLECULAR WEIGHT:** 650.18
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
 48.3 ± 2.4 µg/mL (10:2FTS acid)
 48.2 ± 2.4 µg/mL (10:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/01/2022
EXPIRY DATE: (mm/dd/yyyy) 12/01/2027
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 12/09/2022
 (mm/dd/yyyy)

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11648 Rec. 02/13/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

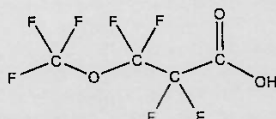
PF4OPeA

LOT NUMBER: PF4OPeA0722**COMPOUND:**

Perfluoro-4-oxapentanoic acid

SYNONYM:

Perfluoro-3-methoxypropanoic acid (PFMPA)

STRUCTURE:**CAS #:** 377-73-1**MOLECULAR FORMULA:** $C_4H_7O_3$ **MOLECULAR WEIGHT:** 230.04**CONCENTRATION:** $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/02/2022

EXPIRY DATE: (mm/dd/yyyy)

08/02/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By:

B.G. Chittim, General Manager

Date: 08/15/2022

(mm/dd/yyyy)

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11514 rec'd 11/14/22

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHxSA-I

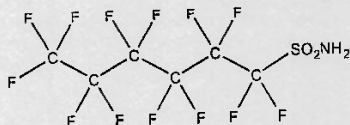
COMPOUND:

Perfluoro-1-hexanesulfonamide

LOT NUMBER: FHxSA1221I

CAS #: 41997-13-1

STRUCTURE:



MOLECULAR FORMULA:

$C_6H_2F_{13}NO_2S$

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/mL}$

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/29/2021

EXPIRY DATE: (mm/dd/yyyy)

12/29/2026

RECOMMENDED STORAGE:

Refrigerate ampoule

MOLECULAR WEIGHT: 399.13

SOLVENT(S): Isopropanol

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 01/10/2022
(mm/dd/yyyy)

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FHxSA1221I (1 of 4)

1513 rec'd 11/14/22



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FBSA-I

LOT NUMBER:

FBSA11211

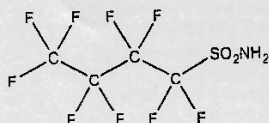
COMPOUND:

Perfluoro-1-butanefulfonamide

CAS #:

30334-69-1

STRUCTURE:



MOLECULAR FORMULA:

C₄H₂F₉NO₂S

MOLECULAR WEIGHT:

299.11

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/10/2021

EXPIRY DATE: (mm/dd/yyyy)

11/10/2026

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 11/10/2021
(mm/dd/yyyy)

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11498



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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSA

N-Ethylperfluorooctanesulfonamide Isomeric Mix

<u>PRODUCT CODE:</u>	br-NEtFOSA
<u>LOT NUMBER:</u>	brNEtFOSA0922
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	08/23/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	10/07/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	10/07/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-ethylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 4151-50-2 (for linear isomer).

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

brNEtFOSA0922 (1 of 6)
rev1

11497

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**br-NMeFOSA****N-Methylperfluorooctanesulfonamide**
Isomeric Mix

PRODUCT CODE: br-NMeFOSA
LOT NUMBER: brNMeFOSA0822
CONCENTRATION: 50.0 ± 2.5 µg/mL
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 08/18/2022
LAST TESTED: (mm/dd/yyyy) 08/23/2022
EXPIRY DATE: (mm/dd/yyyy) 08/23/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-methylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 31506-32-8 (for linear isomer).

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Revision#:9, Revised 2020-12-23

brNMeFOSA0822 (1 of 6)
rev1

11465



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PF5OHxA

LOT NUMBER:

PF5OHxA0722

COMPOUND:

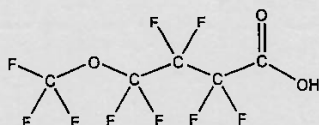
Perfluoro-5-oxahexanoic acid

SYNONYM:

Perfluoro-4-methoxybutanoic acid (PFMBA)

STRUCTURE:**CAS #:**

863090-89-5

**MOLECULAR FORMULA:** $C_5H_9F_9O_3$ **MOLECULAR WEIGHT:**

280.05

CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):**Methanol
Water (<1%)**CHEMICAL PURITY:**

>98%

LAST TESTED: (mm/dd/yyyy)

08/02/2022

EXPIRY DATE: (mm/dd/yyyy)

08/02/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date:

08/26/2022
(mm/dd/yyyy)

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Form# 27, Issued 2004-11-10
Revision# 9, Revised 2020-12-23

PF5OHxA0722 (1 of 4)
rev0



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CERTIFICATE OF ANALYSIS DOCUMENTATION

11410

7.9.1
7

PRODUCT CODE:

N-MeFOSE-M

LOT NUMBER:

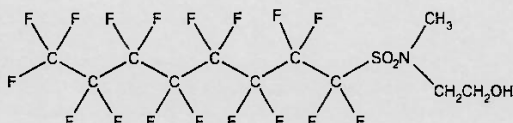
NMeFOSE0522M

COMPOUND:

2-(N-methylperfluoro-1-octanesulfonamido)ethanol

STRUCTURE:**CAS #:**

24448-09-7

**MOLECULAR FORMULA:** $C_{11}H_{17}F_{17}NO_3S$ **MOLECULAR WEIGHT:**

557.22

CONCENTRATION:50.0 \pm 2.5 μ g/mL**SOLVENT(S):**

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/13/2022 (HRGC/LRMS)

05/13/2022 (LC/MS)

EXPIRY DATE: (mm/dd/yyyy)

05/13/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS Data (Full Scan and Mass Spectrum)

Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

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Certified By:

B.G. Chittim, General Manager

Date: 06/14/2022

(mm/dd/yyyy)

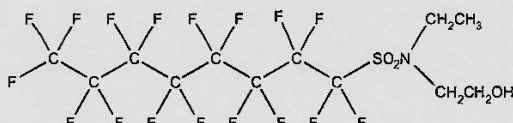
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PRODUCT CODE: N-EtFOSE-M **LOT NUMBER:** NEtFOSE0622M
COMPOUND: 2-(N-ethylperfluoro-1-octanesulfonamido)ethanol
STRUCTURE: **CAS #:** 1691-99-2



MOLECULAR FORMULA: $C_{12}H_{16}F_{17}NO_3S$ **MOLECULAR WEIGHT:** 571.25
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/13/2022 (HRGC/LRMS)
05/13/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 05/13/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

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Certified By:
B.G. Chittim, General Manager

Date: 07/13/2022
(mm/dd/yyyy)

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11140



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PRODUCT CODE:

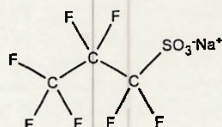
L-PFPrS

LOT NUMBER: LPFPrS0721**COMPOUND:**

Sodium perfluoro-1-propanesulfonate

STRUCTURE:**CAS #:**

Not available

**MOLECULAR FORMULA:** $C_3F_7SO_3Na$ **MOLECULAR WEIGHT:**

272.07

CONCENTRATION:

50.0 ± 2.5 µg/mL (Na salt)
 46.0 ± 2.3 µg/mL (PFPrS acid)
 45.8 ± 2.3 µg/mL (PFPrS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/12/2021

EXPIRY DATE: (mm/dd/yyyy)

07/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager
Date: 08/04/2021
(mm/dd/yyyy)

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FP-PA(3:3FTEA) 1116 B



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DOCUMENTATION

PRODUCT CODE:

FP-PA

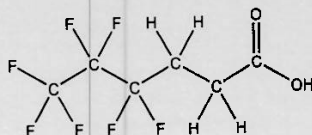
LOT NUMBER: FP-PA0122

COMPOUND:

3-Perfluoropropyl propanoic acid

STRUCTURE:

CAS #: 356-02-5



MOLECULAR FORMULA:

$C_6H_5F_7O_2$

MOLECULAR WEIGHT: 242.09

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/mL}$

SOLVENT(S): Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

02/03/2022

EXPIRY DATE: (mm/dd/yyyy)

02/03/2027

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <1% of the unsaturated 3:3 telomer acid ($C_6H_3F_7O_2$) as an impurity determined by ^{19}F NMR.

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Certified By:

B.G. Chittim, General Manager

Date: 02/04/2022
(mm/dd/yyyy)

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1116 A.B. ^{new}

1116B on the back new



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PRODUCT CODE:

FHpPA

LOT NUMBER:

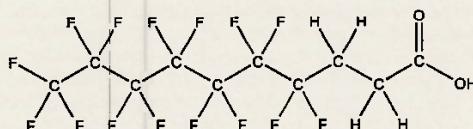
FHpPA1020

COMPOUND:

3-Perfluoroheptyl propanoic acid

STRUCTURE:**CAS #:**

812-70-4

**MOLECULAR FORMULA:** $C_{10}H_5F_{15}O_2$ **MOLECULAR WEIGHT:**

442.12

CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):**

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/12/2020

EXPIRY DATE: (mm/dd/yyyy)

11/12/2025

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**Certified By:**

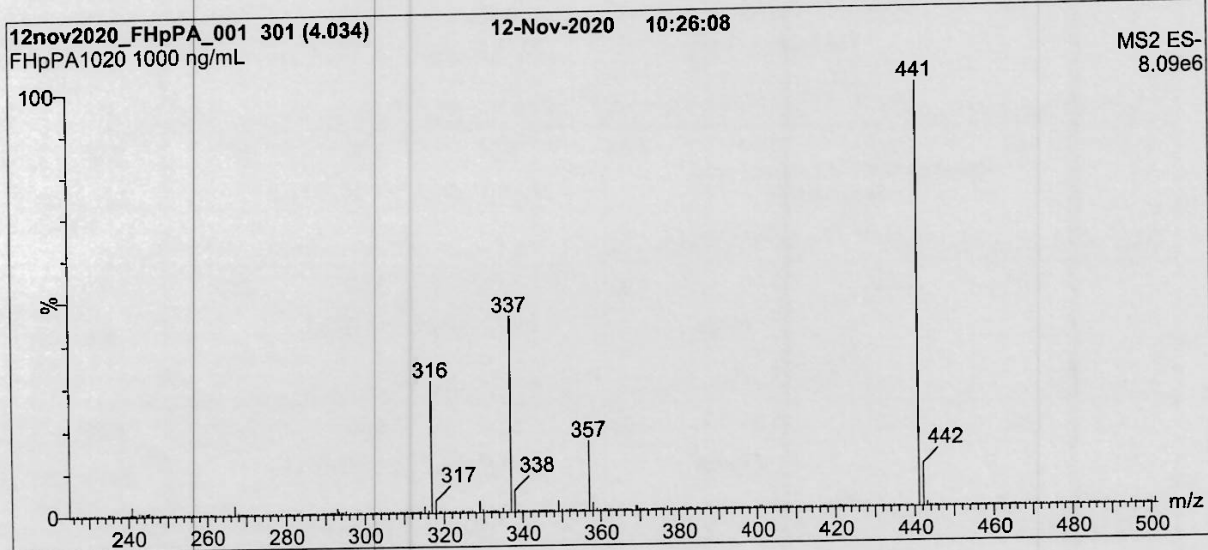
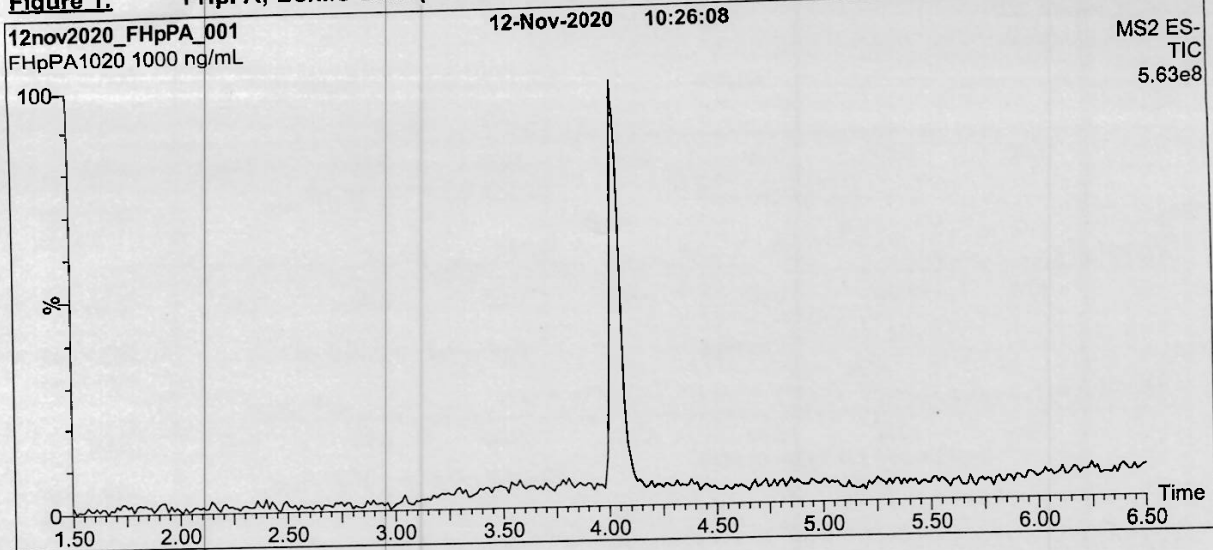
B.G. Chittim, General Manager
Date: 11/27/2020
(mm/dd/yyyy)

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Form#: 27, Issued 2004-11-10
Revision#: 8, Revised 2020-09-10

FHpPA1020 (1 of 4)
rev0

Figure 1: FHpPA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 28.50
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (L/hr) = 1000



CERTIFICATE OF ANALYSIS

DOCUMENTATION

1084² * NG 01/18/23

PRODUCT CODE:

PFHxDA

LOT NUMBER:

PFHxDA0421

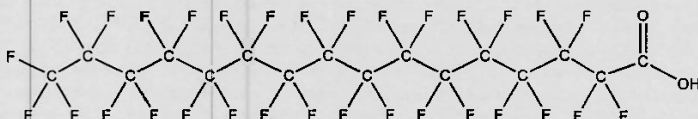
COMPOUND:

Perfluoro-n-hexadecanoic acid

STRUCTURE:

CAS #:

67905-19-5



MOLECULAR FORMULA:

$$\text{C}_{16}\text{HF}_{31}\text{O}_2$$

MOLECULAR WEIGHT:

814.13

CONCENTRATION:

 $50.0 \pm 2.5 \mu\text{g/mL}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/07/2021

EXPIRY DATE: (mm/dd/yyyy)

05/07/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)


Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


B.G. Chittim, General Manager

Date: 05/25/2021
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

Form#:27, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFHxDA0421 (1 of 4)
rev0



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFODA

LOT NUMBER:

PFODA0821

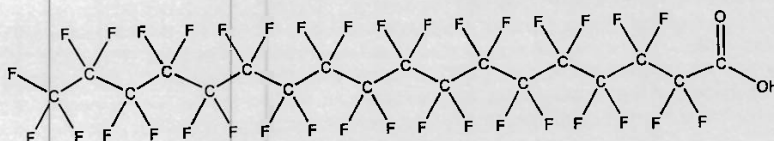
COMPOUND:

Perfluoro-n-octadecanoic acid

CAS #:

16517-11-6

STRUCTURE:



MOLECULAR FORMULA:

$C_{18}H_{35}O_2$

MOLECULAR WEIGHT:

914.14

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/mL}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/03/2021

EXPIRY DATE: (mm/dd/yyyy)

09/03/2026

RECOMMENDED STORAGE:

Store ampoule at ambient temperature in a dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- The solubility of this product in methanol is very sensitive to storage conditions and solvent composition. The stated validity period applies to the sealed ampoules stored at ambient temperature.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 09/28/2021

(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

10840

PRODUCT CODE:

L-PFDoS

LOT NUMBER:

LPFDoS0721

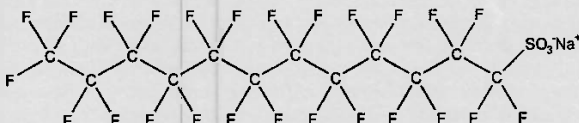
COMPOUND:

Sodium perfluoro-1-dodecanesulfonate

STRUCTURE:

CAS #:

1260224-54-1



MOLECULAR FORMULA:

$C_{12}F_{25}SO_3Na$

MOLECULAR WEIGHT:

722.14

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/mL}$ (Na salt)

SOLVENT(S):

Methanol

$48.5 \pm 2.4 \mu\text{g/mL}$ (PFDoS acid)

$48.4 \pm 2.4 \mu\text{g/mL}$ (PFDoS anion)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/09/2021

EXPIRY DATE: (mm/dd/yyyy)

07/09/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~0.2% of perfluoro-n-dodecanoic acid (PFDoA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 07/16/2021

(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-EtFOSA-M

10837

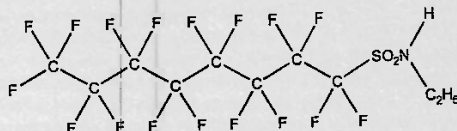
COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

LOT NUMBER: NEtFOSA0821M

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA:

$C_{10}H_{17}F_{17}NO_2S$

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/mL}$

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/12/2021

EXPIRY DATE: (mm/dd/yyyy)

08/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

MOLECULAR WEIGHT:

527.20

SOLVENT(S):

Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 08/16/2021

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA

10765 A-13



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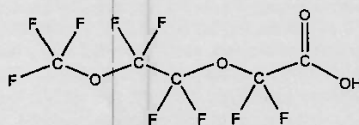
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

rec'd
WPH
8/20/21**LOT NUMBER:** 36OPFHpA0320**COMPOUND:**

Perfluoro-3,6-dioxiheptanoic acid

STRUCTURE:**CAS #:** 151772-58-6**MOLECULAR FORMULA:** $C_7HF_9O_4$ **MOLECULAR WEIGHT:**

296.04

CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**Methanol
Water (<1%)**CHEMICAL PURITY:**

>98%

LAST TESTED: (mm/dd/yyyy)

03/31/2020

EXPIRY DATE: (mm/dd/yyyy)

03/31/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager
Date: 05/27/2020
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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Form# 27, Issued 2004-11-10
Revision# 7, Revised 2020-01-09

36OPFHpA0320 (1 of 4)
rev0



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

11969
rec'd: 08/22/23

PFAC-MXF

Native Replacement PFAS
Solution/Mixture

PRODUCT CODE: PFAC-MXF
LOT NUMBER: PFACMXF0323
SOLVENT(S): Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 03/23/2023
LAST TESTED: (mm/dd/yyyy) 03/24/2023
EXPIRY DATE: (mm/dd/yyyy) 03/24/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonoate (NaDONA), the major and minor components of F-53B (9CI-PF3ONS and 11CI-PF3OUdS), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXF0323 (1 of 5)
rev0

Tab A: PFAC-MXF; Components and Concentrations (ng/mL; $\pm 5\%$ in Methanol/Water ($<1\%$))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	HFPO-DA	2000		A
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium dodecafluoro-3H-4,8-dioxananoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 03/29/2023
(mm/dd/yyyy)

SGS - ORLANDO

Date/Time: 11/09/23 08:40
Started (mm/dd/yy 24:00)Date/Time: 11/10/23 1200
Finished (mm/dd/yy 24:00)Batch#: OP99997Ext. By: GH

Conc. By: _____

Viald By: _____

SPE LIQUID SAMPLE PREP REPORT

Method: EPA 1633 Draft (QSM) List 40

Balance ID: _____

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount (ul)	Spike Amount (ul)	Final Volume (ml)	Manifold ID	Comments
OP99997 MB		500	6	N/A	25		5	AL	
OP99997 BS		500	6						
OP99997 LLBS		500	6			200			
FC11014-1	2	520	6			60			
FC11062-1	2	530	6						
2	2	520	6						
3	2	530	6						
4	2	500	6						
5	2	540	6						
6	2	550	6	N/A	25		5	AL	
GH 11/01/23									
OPFC11062-2MS	3	520	6	N/A	25	200	5	AL	
OP MSD									
OPFC11062-3 DUP	3	530	6	N/A	25		5	AL	

Comments:

EIS (Surr) ID: 121336-I Conc: 250-5000 ng/mL Exp. Date: 11/02/24 Inj. By: GH Ver. By: KG
 SPIKE.1 ID: LCMS222A Conc: VARIED Exp. Date: 04/04/24 Inj. By: GH Ver. By: KG
 SPIKE.2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 12115 1-J Conc: 250-10000 ng/L Exp. Date: 11/02/24 Inj. By: AL Ver. By: JL

TurboVap Temp (Therm ID): _____ N-Evap Temp (Therm ID): _____
 Observed Temp °C: _____ Corr. Temp °C: _____ Observed Temp °C: _____ Corr. Temp °C: _____

Methanol Lot # 232089 1% NH4OH MeOH PF 711 SPE Lot # 6752454-01
 Water Lot# OP99443 0.3M Formic Acid PF 694-712 Syringe filter Lot # _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 205423
 0.1M Formic PF 708 PF 713 5% Formic Acid _____ Carbon Lot# 99687

Relinquished By: Y. Williams
 Accepted By: Am J

Date: 11/09/23Date: 11/10/23

1633 AQ extraction 042222.xls NF