

Diagnostic Report

Date & Time Tuesday, February 21, 2017 12:00 PM
Instrument Model TSQ Quantiva
Instrument Serial TQH-Q1-0576
Software Version 2.0.1292.15

Name	Result	Value	Minimum	Maximum	Comment
Initial Startup Calibration	Passed	-	-	-	-
Q1 Coarse Calibration	Passed	-	-	-	-
Q3 Coarse Calibration	Passed	-	-	-	-
Q1 Autotune	Passed	-	-	-	-
Q3 Autotune	Passed	-	-	-	-
EM Gain Calibration	Passed	-	-	-	-
Q1 Mass and Resolution Calibration	Passed	-	-	-	-
Q3 Mass and Resolution Calibration	Passed	-	-	-	-
Q3 High Speed Mass and Resolution Calibration	Passed	-	-	-	-
Q2 Low Mass Calibration	Passed	-	-	-	-

Initial Startup Calibration:

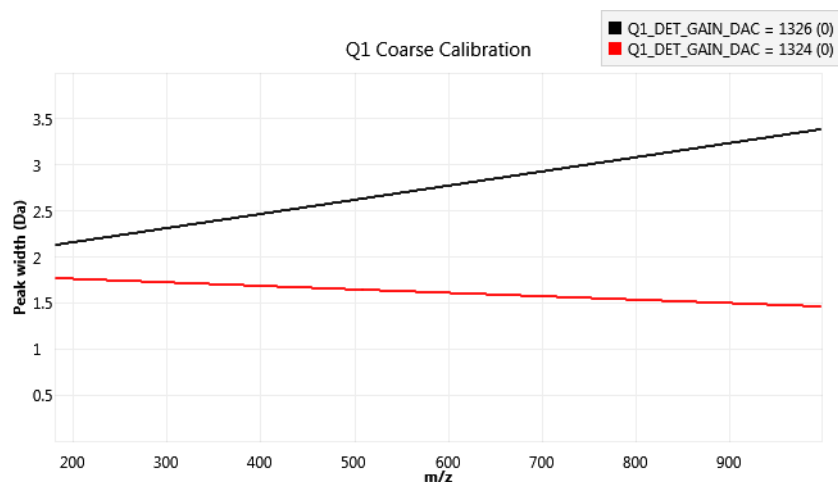
Determining correct quad polarity settings.

Selecting 0 for positive Q1 Rod Polarity

Selecting 1 for negative Q1 Rod Polarity

Selecting 0 for positive Q3 Rod Polarity

Selecting 1 for negative Q3 Rod Polarity

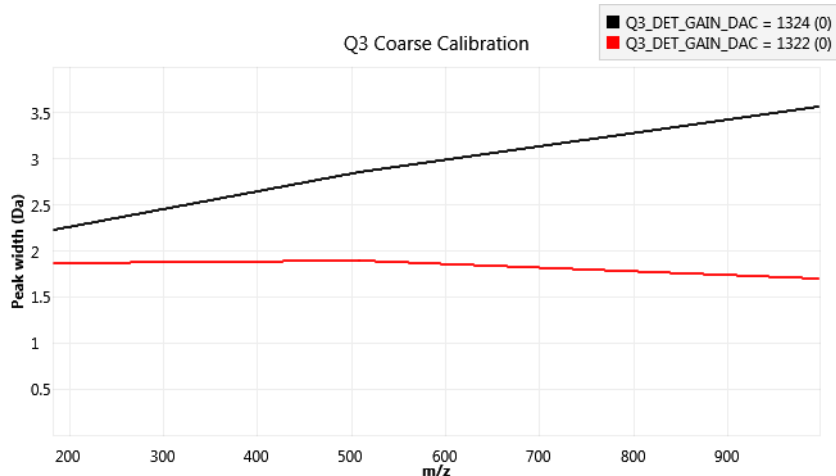


Q1 coarse calibration result:

Gain DAC value= 1324

m/z	FWHM
182.08	1.76
508.21	1.64
997.40	1.46

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Q3 coarse calibration result:

Gain DAC value= 1322

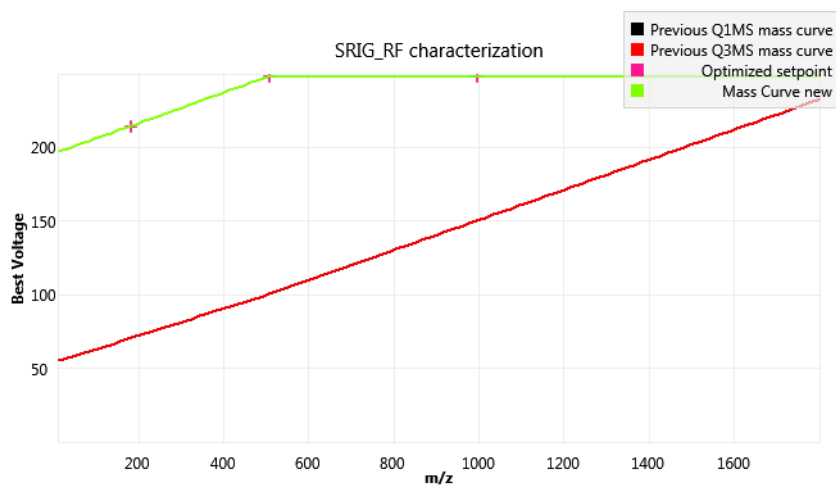
m/z	FWHM
182.08	1.86
508.21	1.89
997.40	1.69

Target Mass	Observed Mass	Mass Jitter	Intensity
182.08	182.11	0.24	141771132.00
508.21	508.15	0.12	80553021.20
997.40	997.23	0.16	33728563.80

SRIG_RF characterization

Calibrant mass Optimized voltage

182.11	214.15
508.15	248.18
997.23	248.18

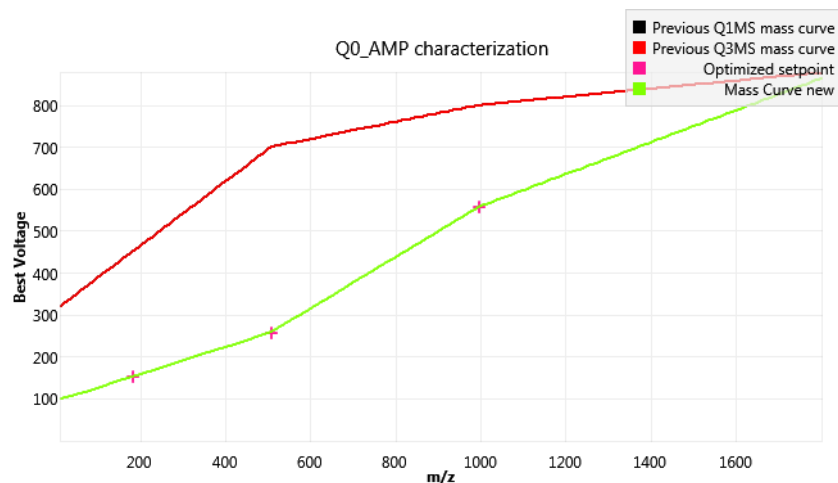


Q0_AMP characterization

Calibrant mass Optimized voltage

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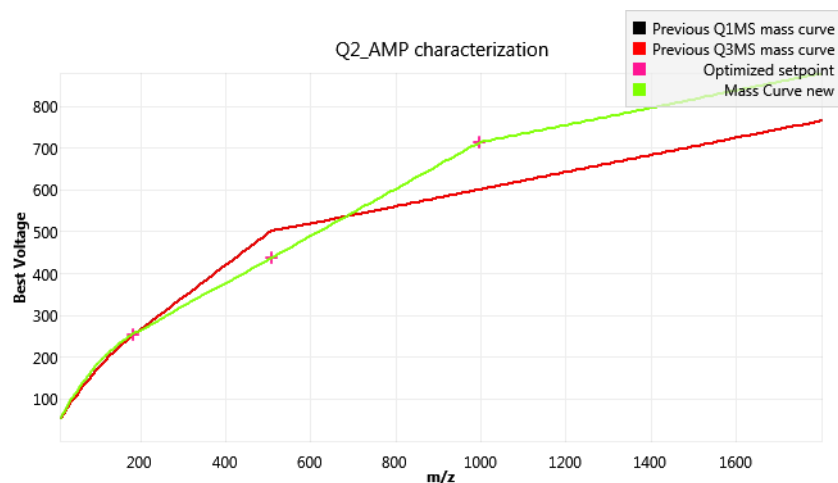
```
-----
182.11      151.33
508.15      257.32
997.23      557.64
=====
```



Q2_AMP characterization

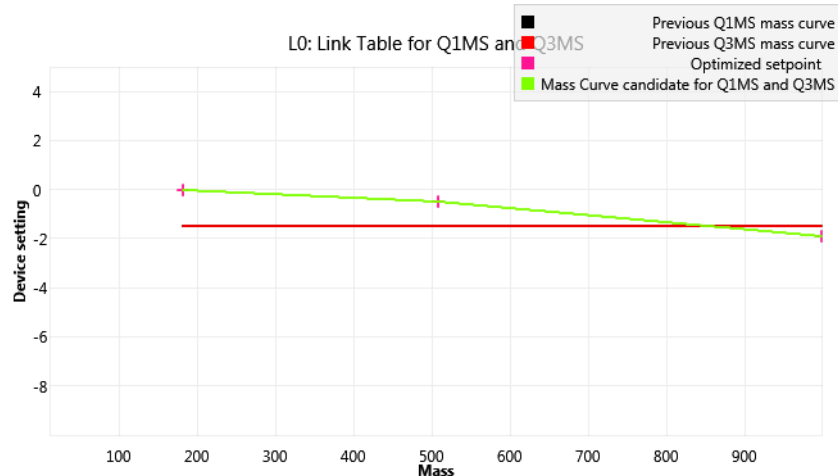
```
=====
Calibrant mass  Optimized voltage
-----
```

```
182.11      253.24
508.15      436.61
997.23      712.12
=====
```



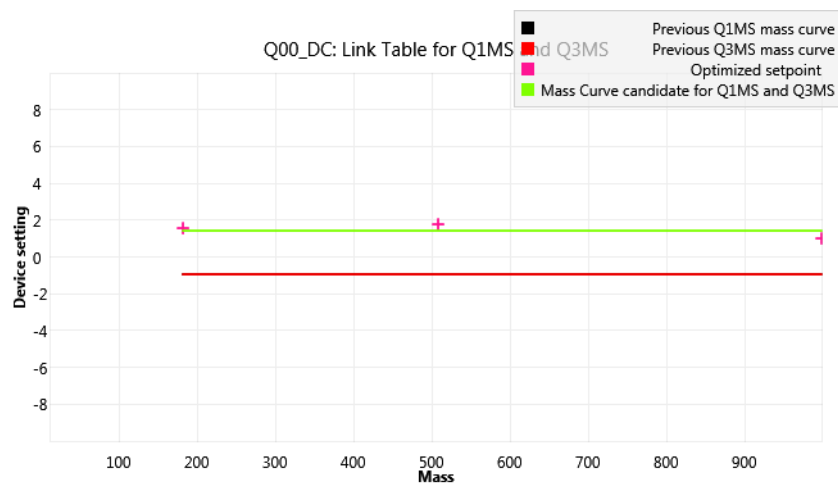
1: Optimize L0 Offset for Q1MS and Q3MS

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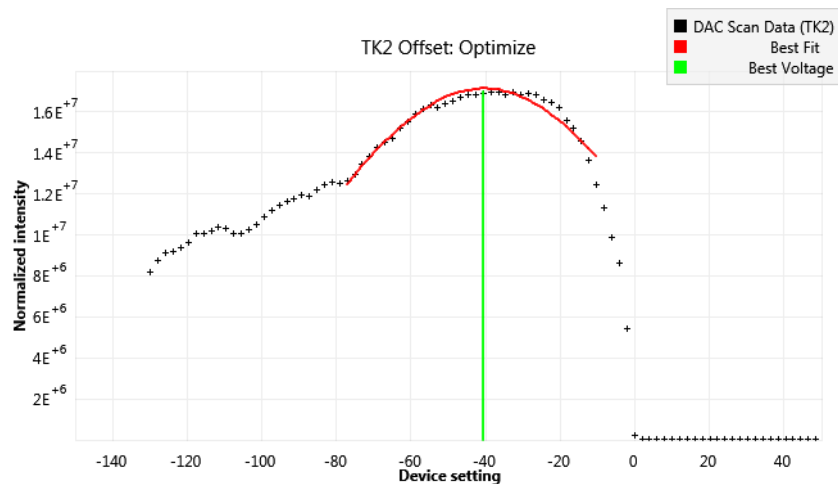
TIC changed 3.83 % Keep the candidate setting

2: Optimize Q00 Offset for Q1MS and Q3MS

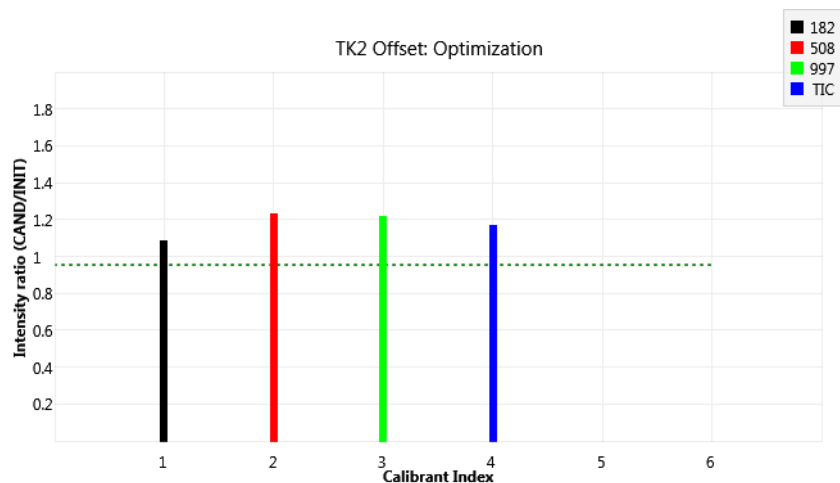
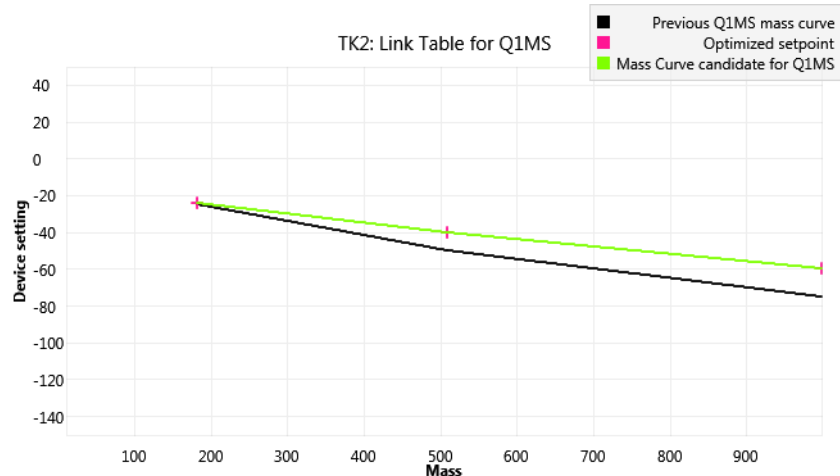


TIC changed 41.80 % Keep the candidate setting

3: Optimize TK2 Offset for Q1MS

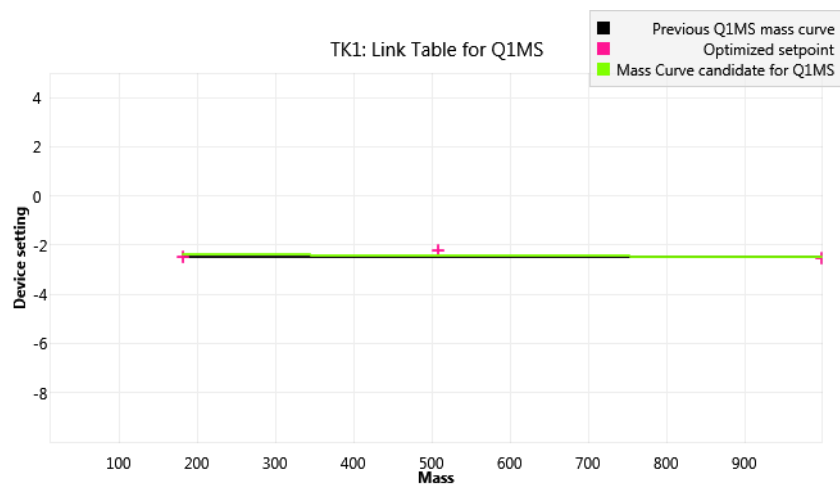


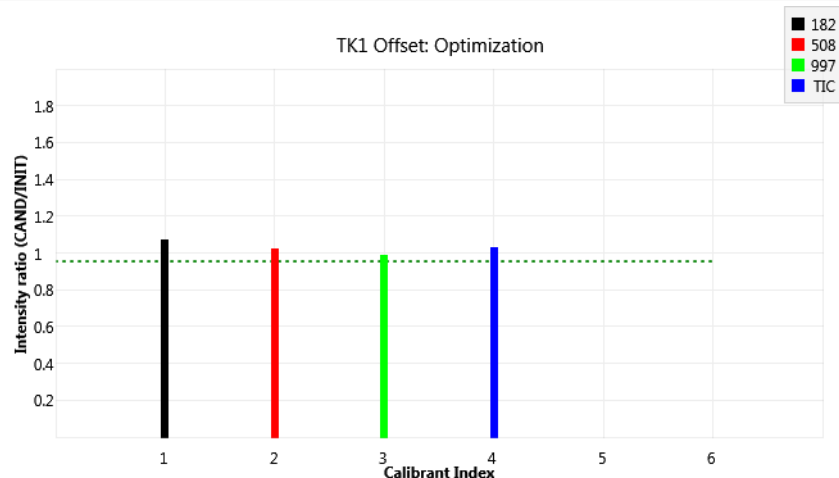
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TIC changed 16.76 % Keep the candidate setting

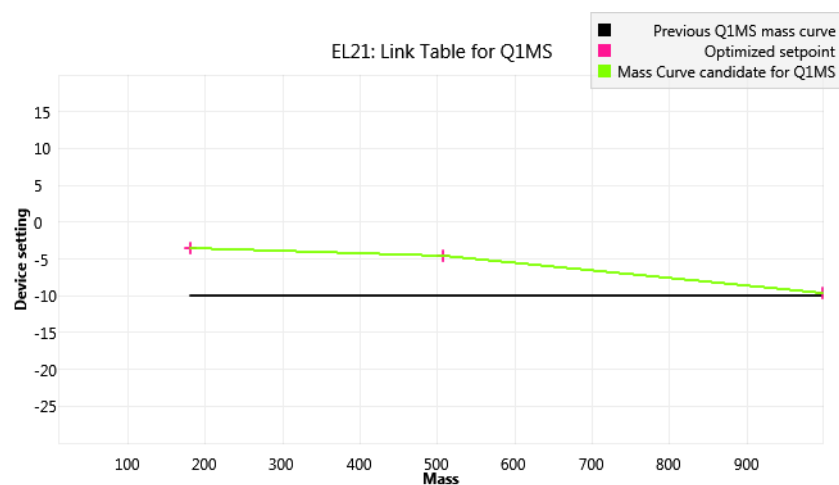
4: Optimize TK1 Offset for Q1MS





TIC changed 3.03 % Keep the candidate setting

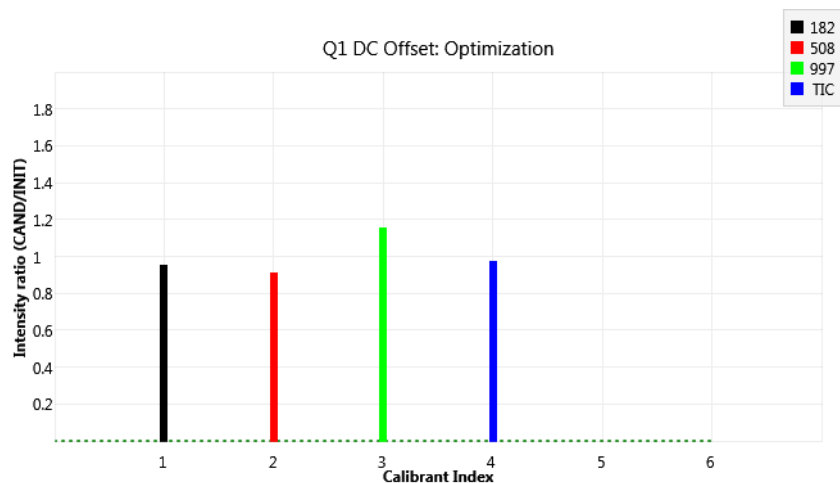
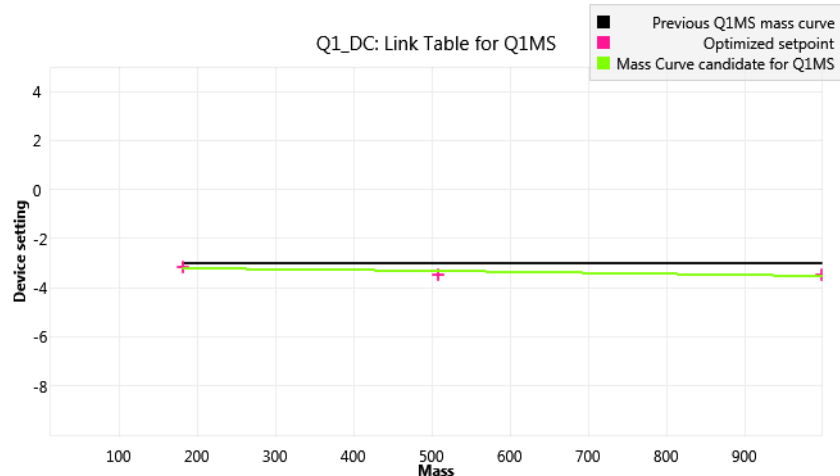
5: Optimize EL21 Offset for Q1MS



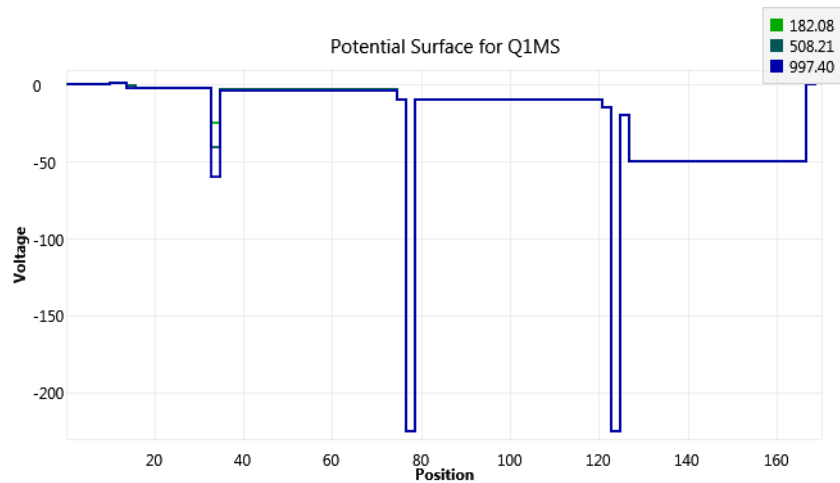
Initial setting is already optimized. Keep the initial setting

6: Optimize Q1 DC Offset for Q1MS

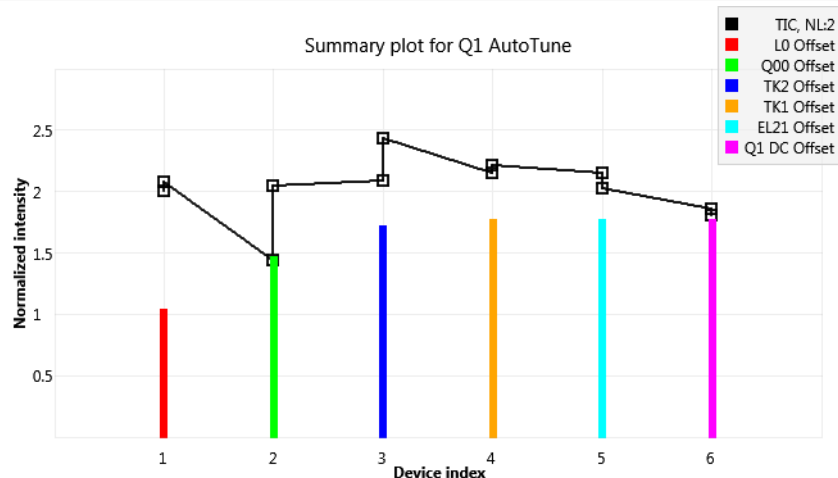
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TIC changed -2.86 % Keep the candidate setting



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Q1 AutoTune Summary

Device	Previous Setting	Current Setting
SRIG_RF	70.00	214.15
SRIG_RF	100.00	248.18
SRIG_RF	150.00	248.18
Q0_AMP	450.00	151.33
Q0_AMP	700.00	257.32
Q0_AMP	800.00	557.64
Q2_AMP	250.00	253.24
Q2_AMP	500.00	436.61
Q2_AMP	600.00	712.12
L0	-1.50	-0.06
L0	-1.50	-0.51
L0	-1.50	-1.95
Q00_DC	-1.00	1.41
Q00_DC	-1.00	1.41
Q00_DC	-1.00	1.41
TK2	-25.00	-24.33
TK2	-50.00	-40.40
TK2	-75.00	-59.84
TK1	-2.50	-2.38
TK1	-2.50	-2.42
TK1	-2.50	-2.49
EL21	-10.00	-3.67
EL21	-10.00	-4.68
EL21	-10.00	-9.75
Q1_DC	-3.00	-3.23
Q1_DC	-3.00	-3.36
Q1_DC	-3.00	-3.54

Target Mass	Observed Mass	Mass Jitter	Intensity
182.08	181.99	0.26	175672055.20
508.21	507.96	0.31	184737938.40
997.40	997.14	0.12	80347641.20

SRIG_RF characterization

Calibrant mass Optimized voltage

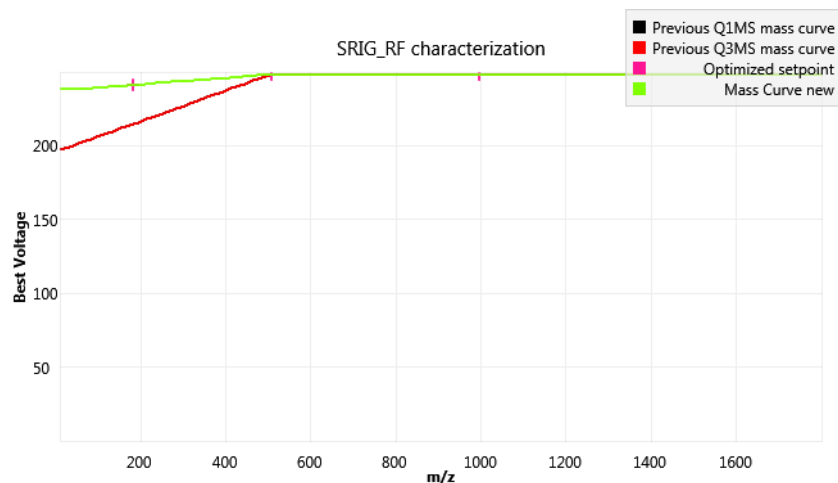
Serial Number: TQH-Q1-0576

Signature:

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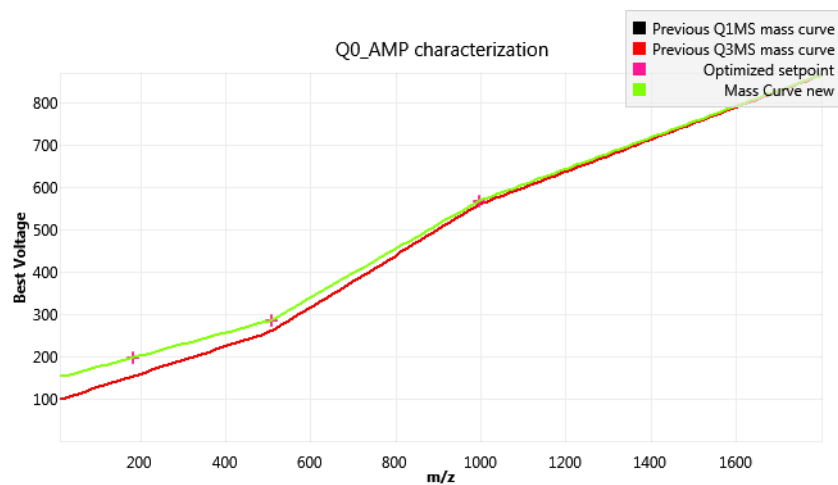
```
-----
181.99      240.89
507.96      248.18
997.14      248.18
=====
```



Q0_AMP characterization

```
=====
Calibrant mass  Optimized voltage
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```

```
181.99      195.49
507.96      283.82
997.14      566.48
=====
```

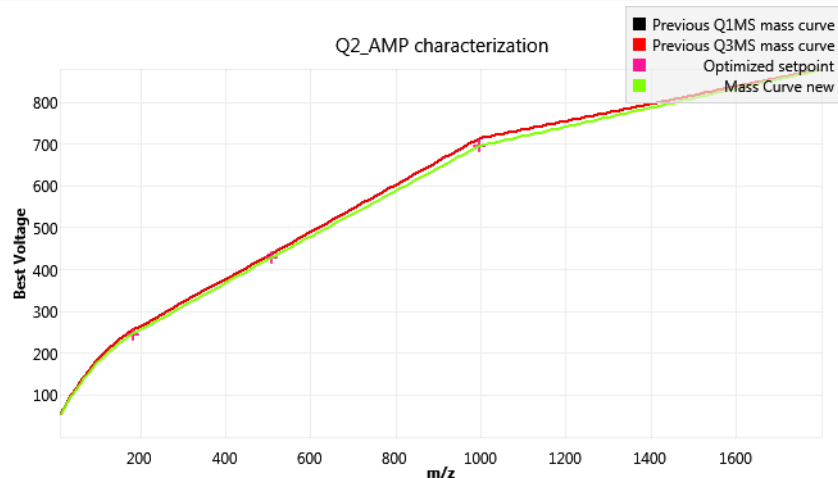


Q2_AMP characterization

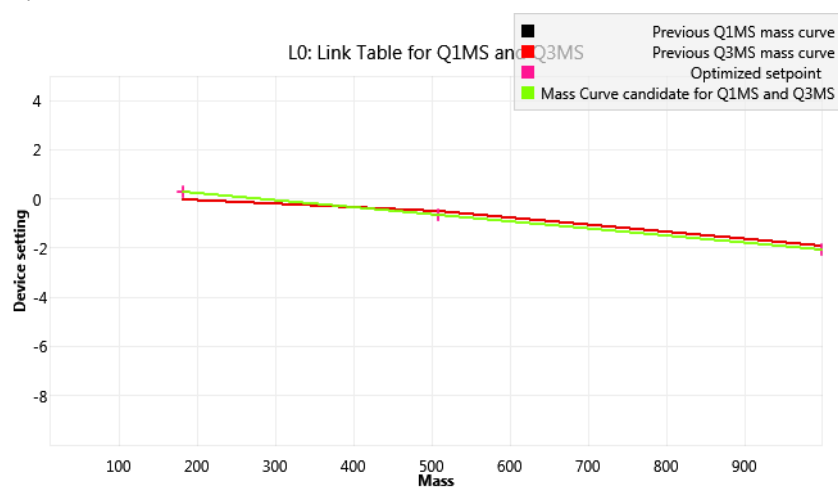
```
=====
Calibrant mass  Optimized voltage
-----
```

```
181.99      243.91
507.96      427.72
997.14      694.35
=====
```

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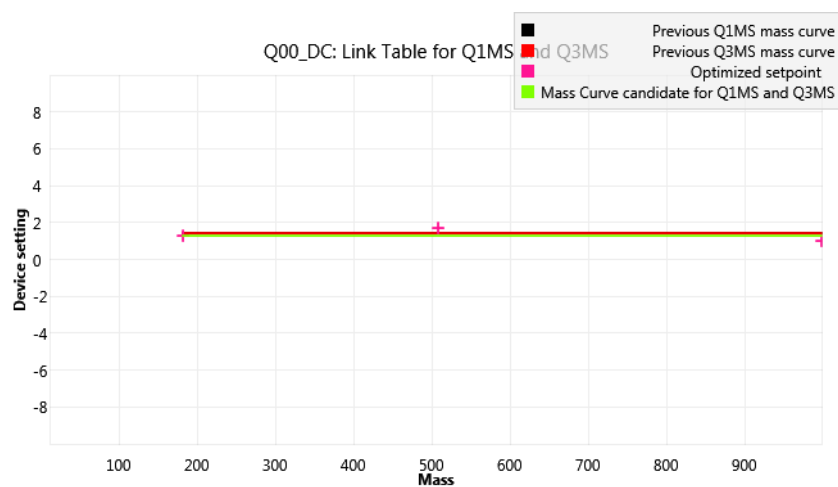


1: Optimize L0 Offset for Q1MS and Q3MS



TIC changed -3.91 % Keep the candidate setting

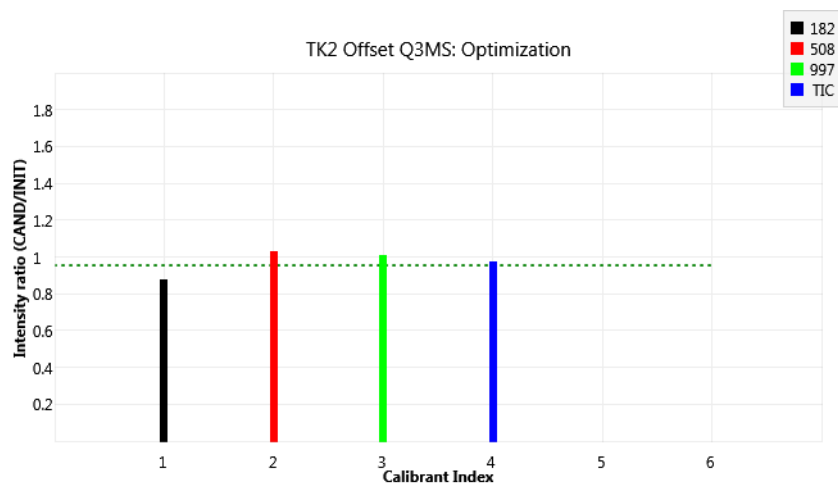
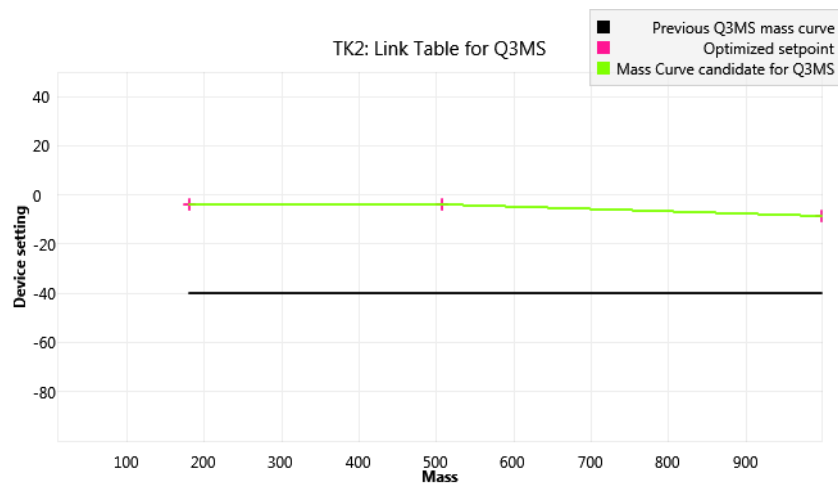
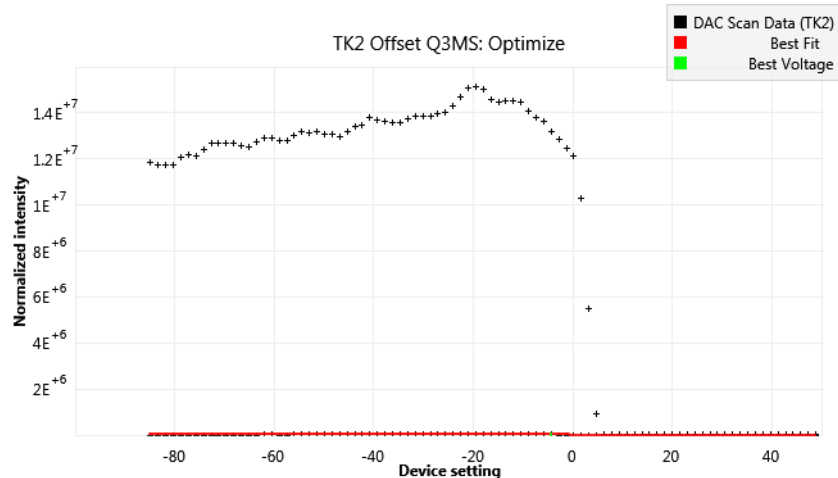
2: Optimize Q00 Offset for Q1MS and Q3MS



TIC changed -4.58 % Keep the candidate setting

3: Optimize TK2 Offset Q3MS for Q3MS

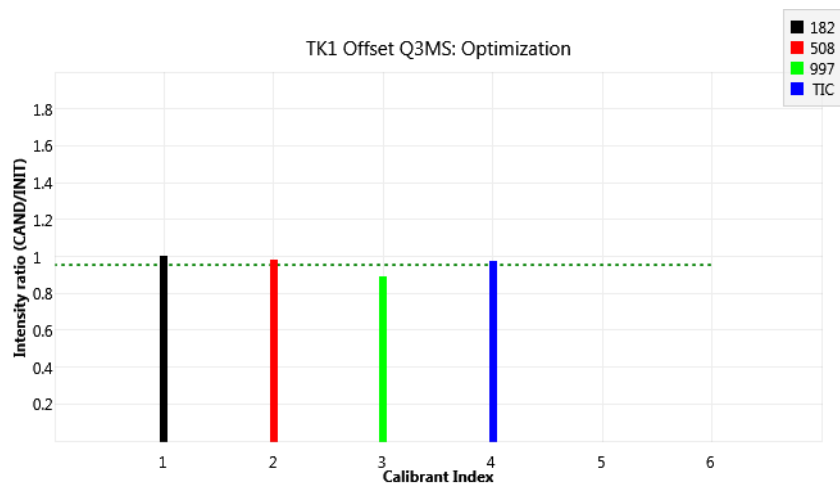
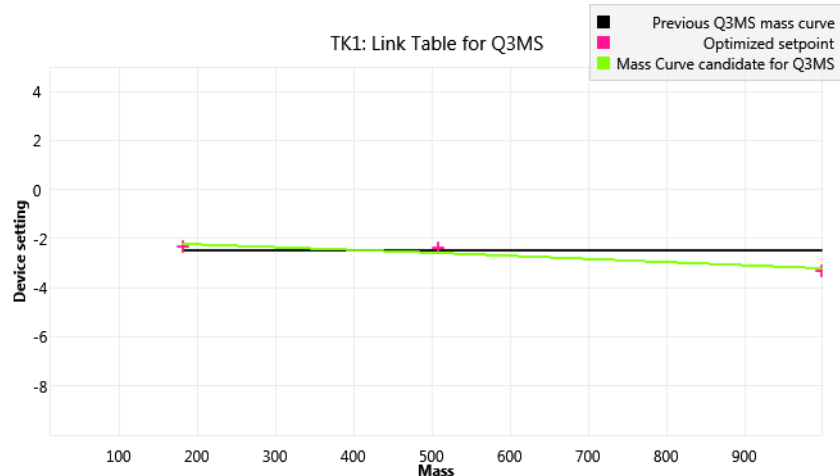
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TIC changed -2.63 % Keep the candidate setting

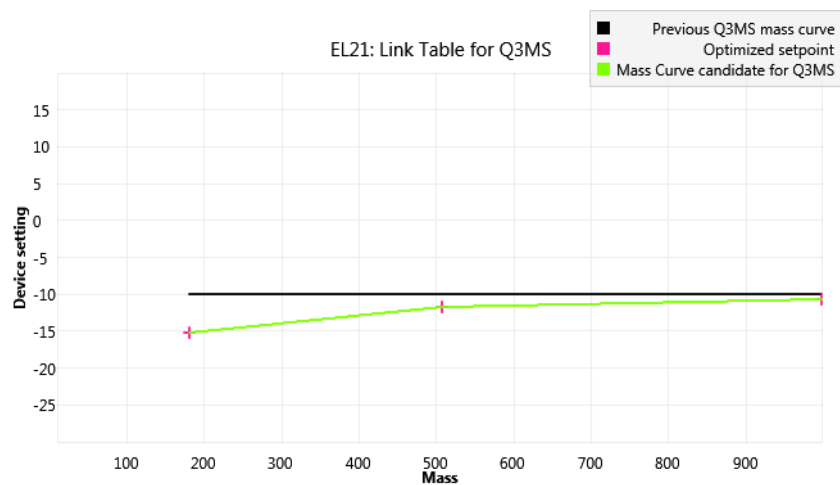
4: Optimize TK1 Offset Q3MS for Q3MS

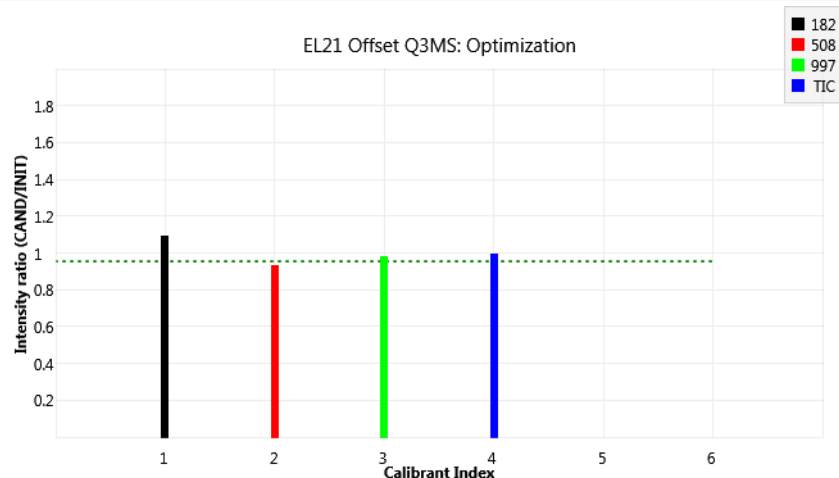
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TIC changed -2.67 % Keep the candidate setting

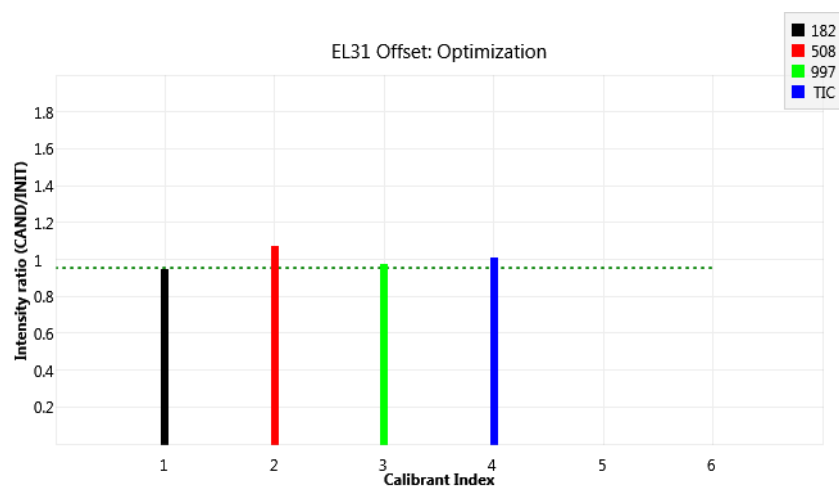
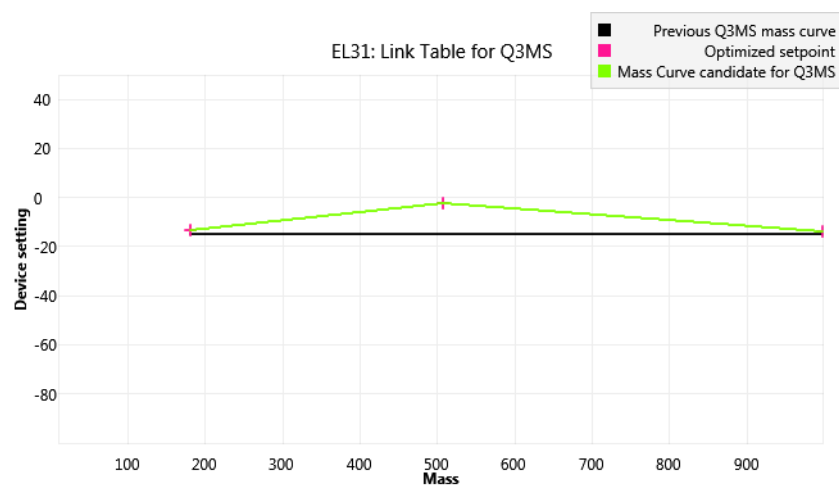
5: Optimize EL21 Offset Q3MS for Q3MS





TIC changed -0.64 % Keep the candidate setting

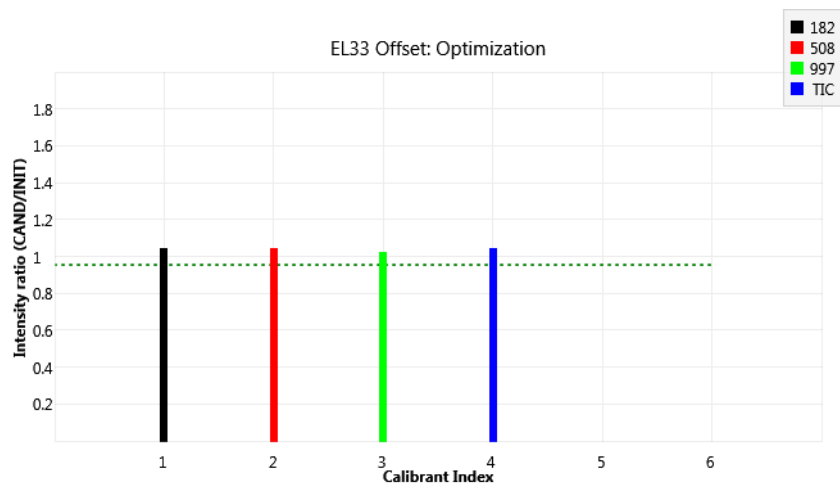
6: Optimize EL31 Offset for Q3MS



TIC changed 0.69 % Keep the candidate setting

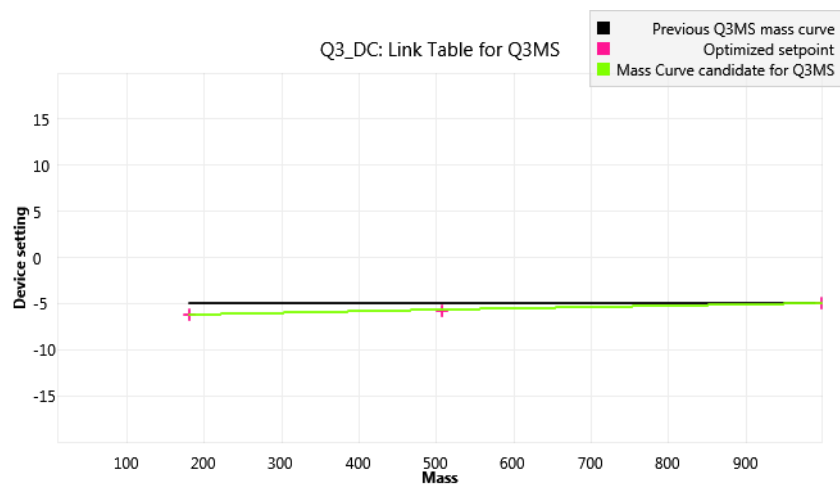
7: Optimize EL33 Offset for Q3MS

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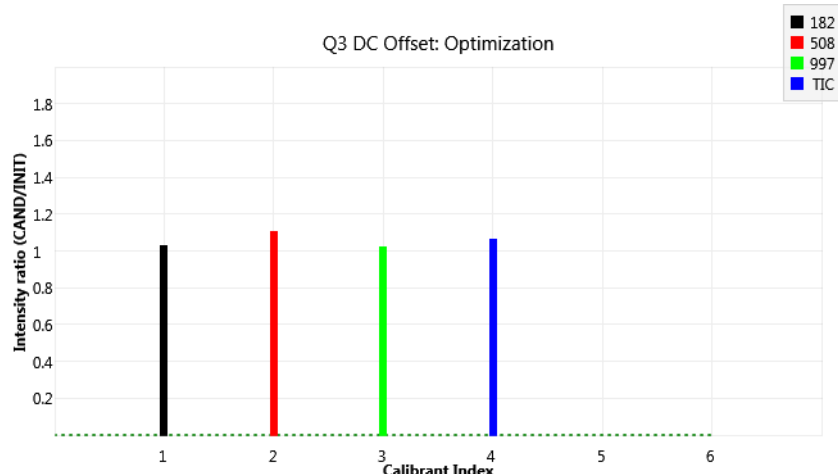


TIC changed 3.94 % Keep the candidate setting

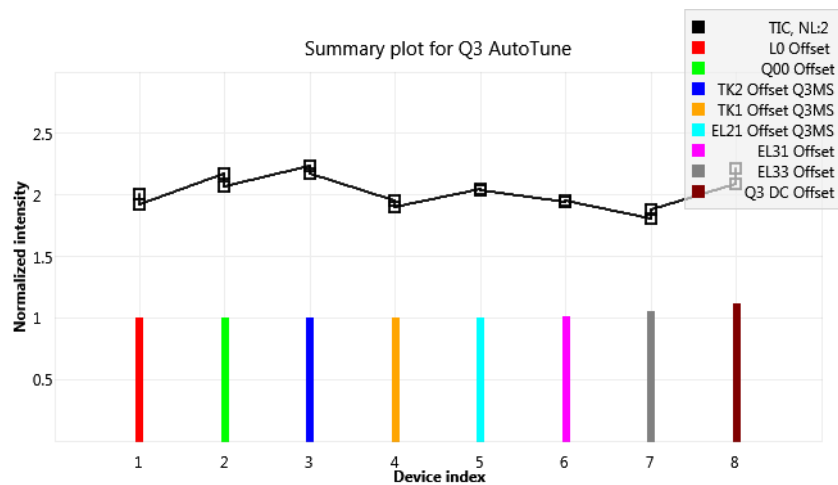
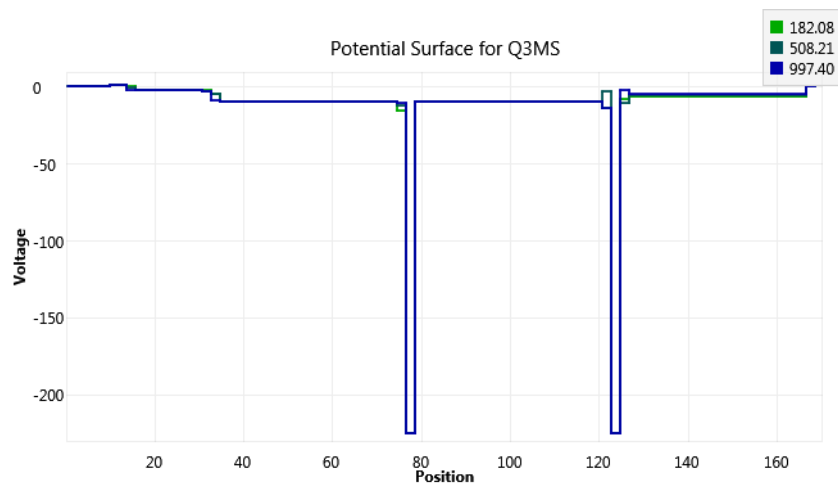
8: Optimize Q3 DC Offset for Q3MS



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TIC changed 6.39 % Keep the candidate setting



Q3 AutoTune Summary

Device	Previous Setting	Current Setting
SRIG_R	214.15	240.89
SRIG_R	248.18	248.18
SRIG_R	248.18	248.18
Q0_AMP	151.33	195.49

Serial Number: TQH-Q1-0576

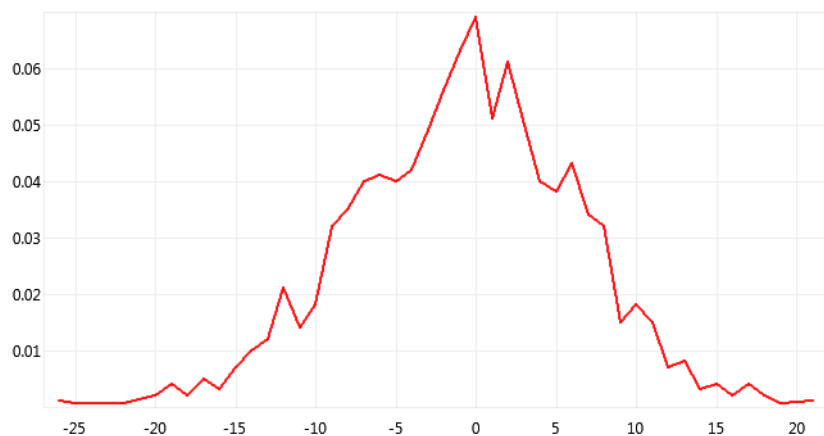
Signature:

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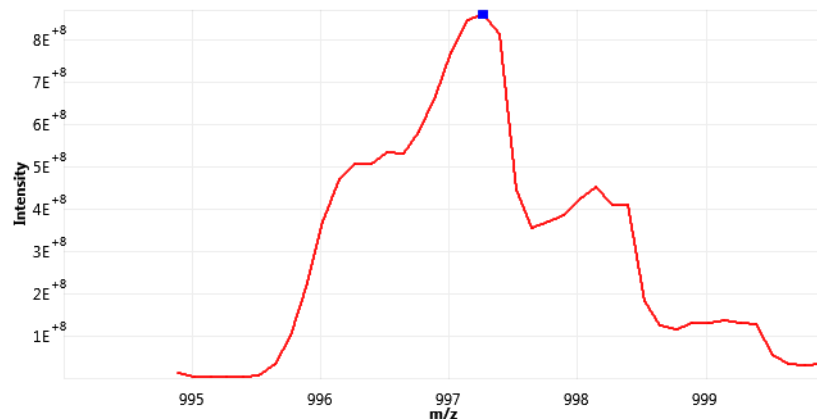
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Q0_AMP	257.32	283.82
Q0_AMP	557.64	566.48
Q2_AMP	253.24	243.91
Q2_AMP	436.61	427.72
Q2_AMP	712.12	694.35
L0	-0.06	0.26
L0	-0.51	-0.66
L0	-1.95	-2.10
Q00_DC	1.41	1.29
Q00_DC	1.41	1.29
Q00_DC	1.41	1.29
TK2	-40.00	-4.30
TK2	-40.00	-4.30
TK2	-40.00	-8.86
TK1	-2.50	-2.23
TK1	-2.50	-2.63
TK1	-2.50	-3.23
EL21	-10.00	-15.32
EL21	-10.00	-11.77
EL21	-10.00	-10.76
EL31	-15.00	-13.42
EL31	-15.00	-2.78
EL31	-15.00	-14.15
EL33	-20.00	-8.05
EL33	-20.00	-10.71
EL33	-20.00	-2.00
Q3_DC	-5.00	-6.26
Q3_DC	-5.00	-5.77
Q3_DC	-5.00	-5.02

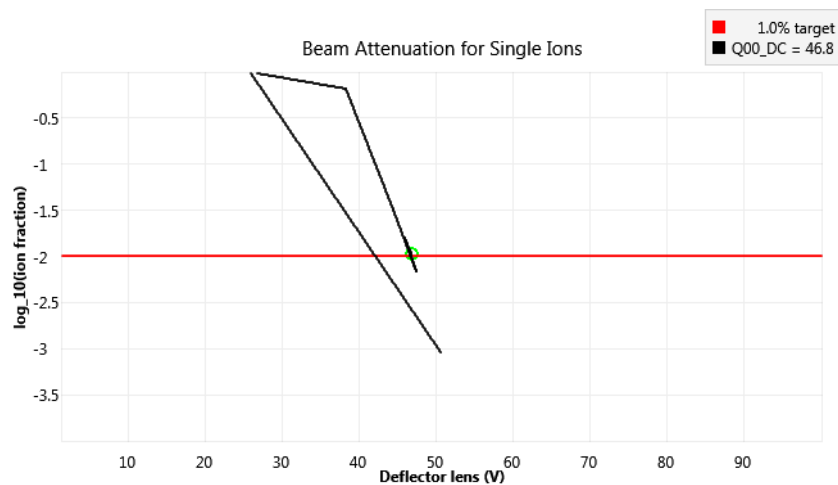
Electrometer Noise: -0.8 +/- 7 ADC units



Optimizing Q1 Isolation around 997.40



Fraction of hot pixels is out of tolerance after 10 cycles.

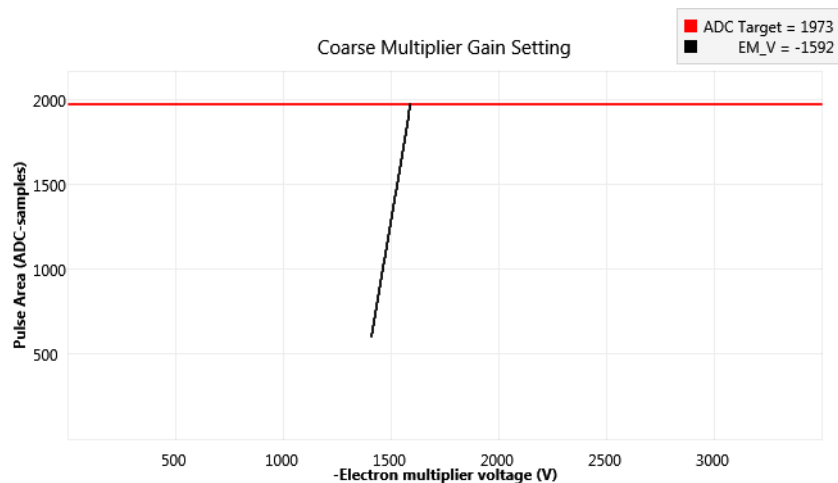


Single ions detected for Q00_DC at 46.7879

Finding the Maximum EM Voltage

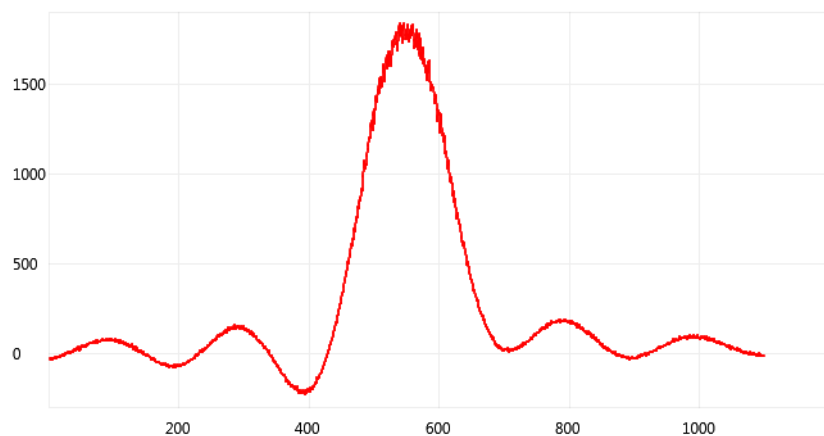
CoarseMGSetting for LowGain: EM_V = -1414.78

HighGain ADC Target = 1973.19



Maximum EM_V: -1592.94

Electrometer Pulse Profile



Measure Gain vs Voltage

Terminating gain curve measurement early.

More than 10% decline in number of detected pulses.

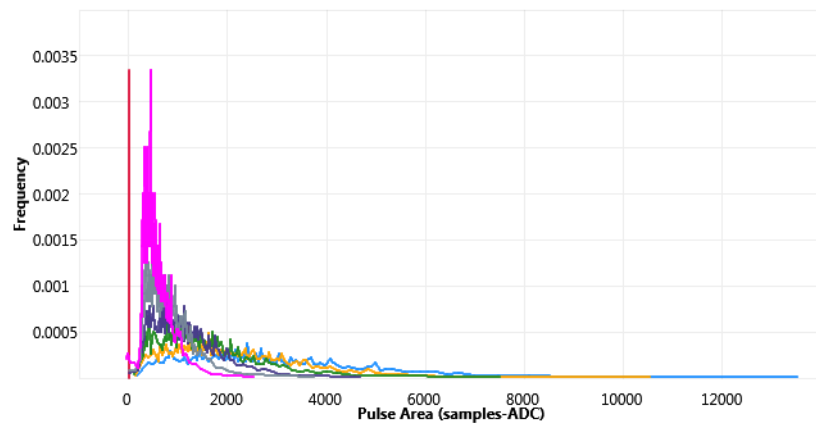
This is possibly due to high electrometer noise or source instability

EM Voltage #P.A. Array Estimated Gain Est. Height/Gain

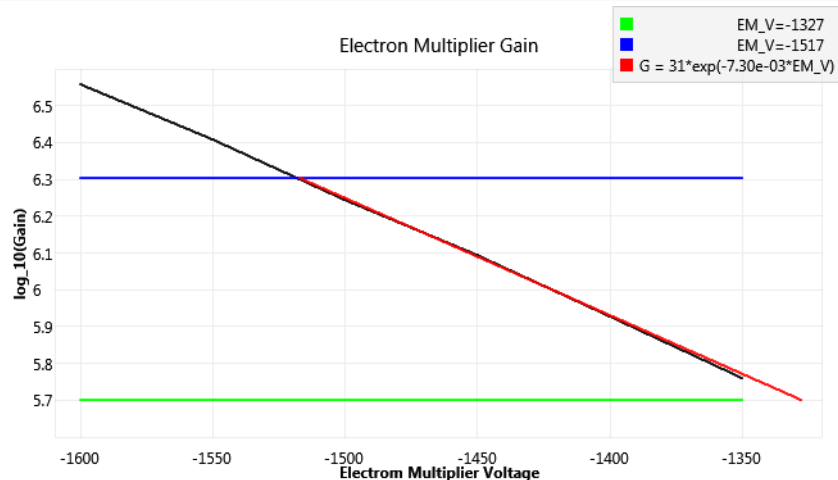
-1600.00	3074.00	3588430.05	0.89
-1550.00	3041.00	2556695.37	0.93
-1500.00	3140.00	1752234.75	0.97
-1450.00	3235.00	1242654.63	1.01
-1400.00	2740.00	844057.02	1.06
-1350.00	2395.00	572690.44	1.11

Single Ion Pulse Area Histogram

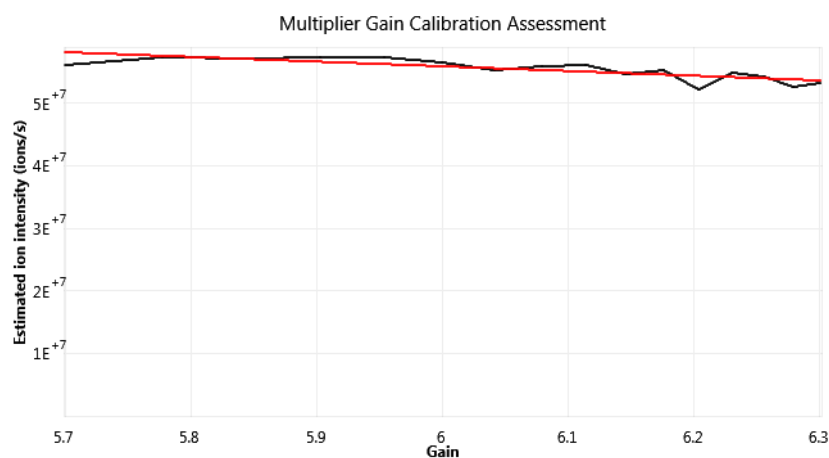
-1350



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Gain assessment: normalized slope = -0.13091



posA = 30.789850215813
posB = -0.0073042719673097
Gain=500000: posEMVoltage=-1327.329858961

negA = 100
negB = -0.007
Gain=500000: negEMVoltage -1216.741884488

Calibration parameter comparison passed.

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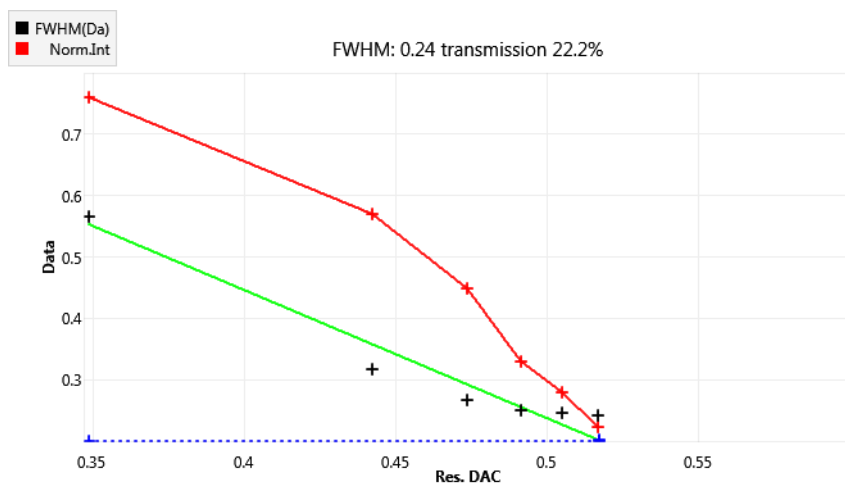
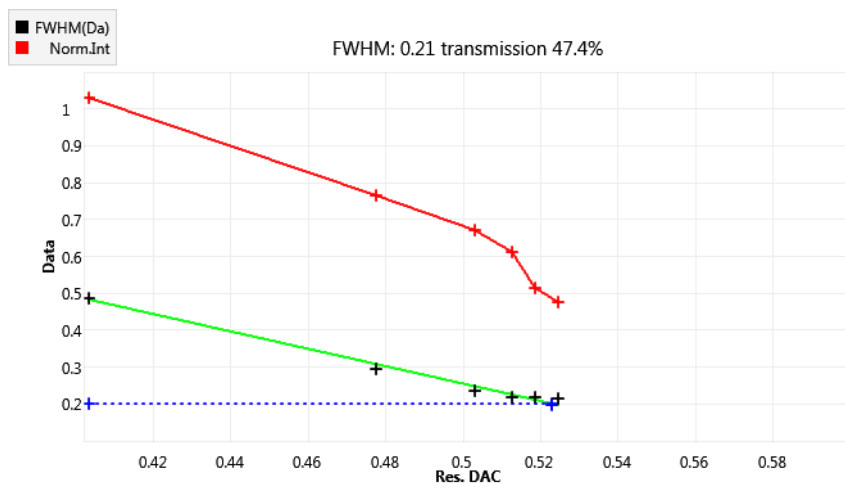
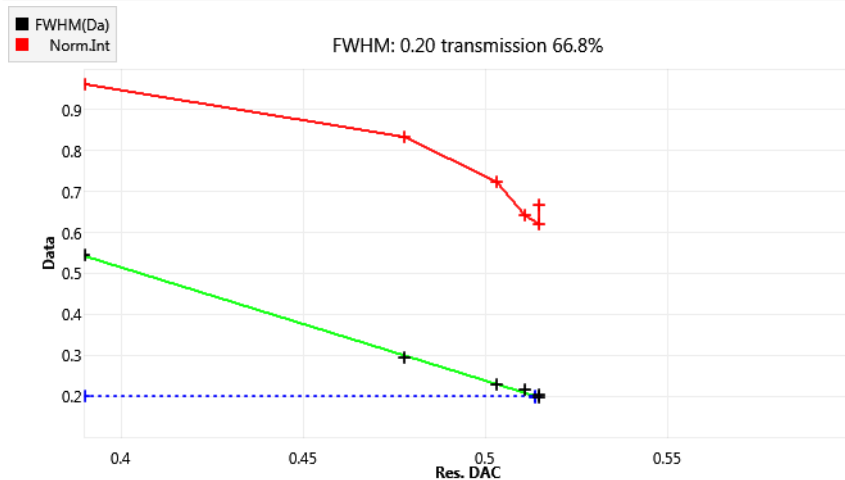
EM Gain Calibration Results

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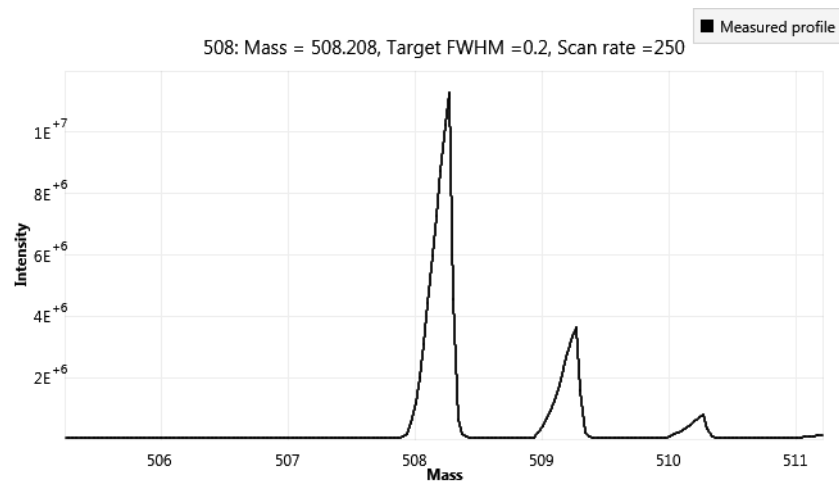
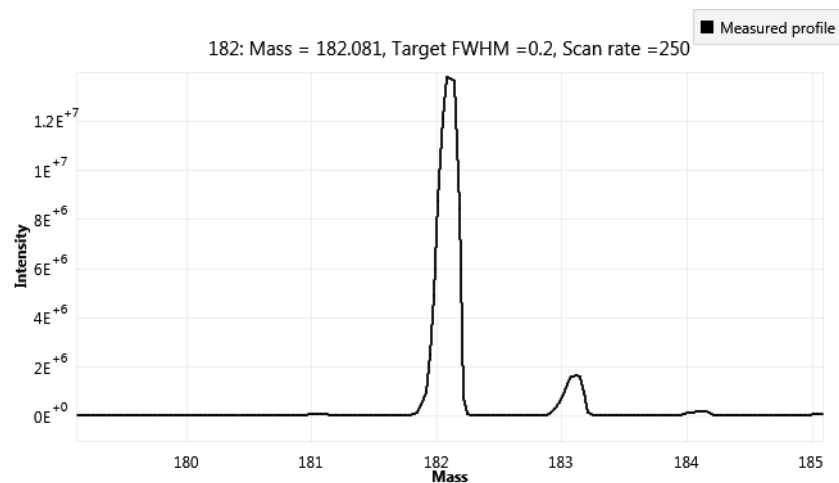
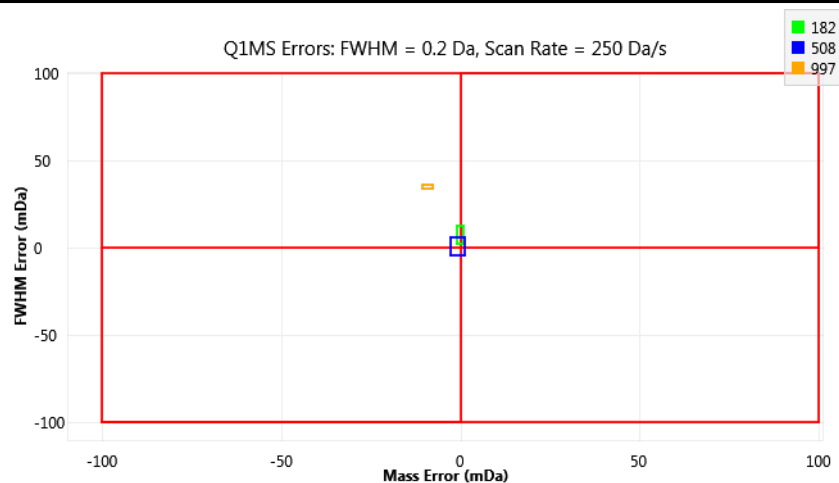
A= 30.7899
B= -0.00730427
Full Scan EM Voltage= -1327.33
SRM Scan EM Voltage= -1517.12
Q1 coarse calibration result:
Gain DAC value= 1324

m/z	FWHM
182.08	1.82
508.21	1.75
997.40	1.49

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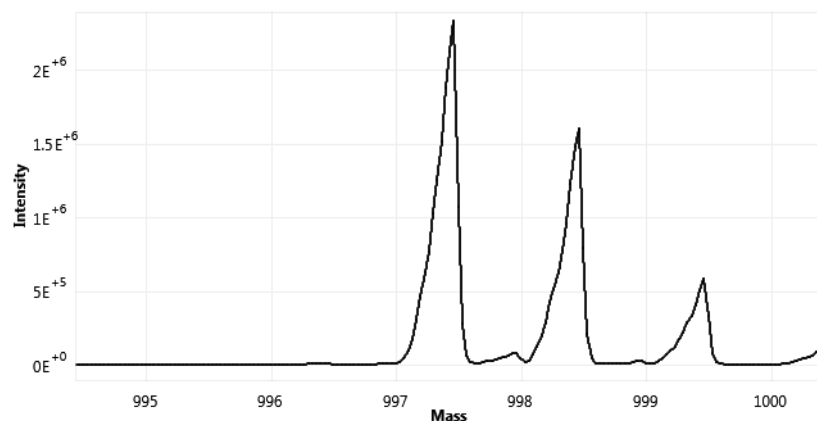
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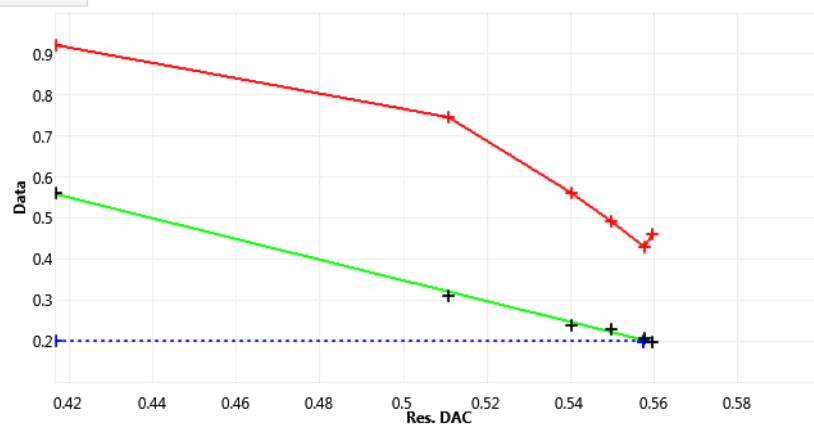
997: Mass = 997.398, Target FWHM = 0.2, Scan rate = 250

■ Measured profile



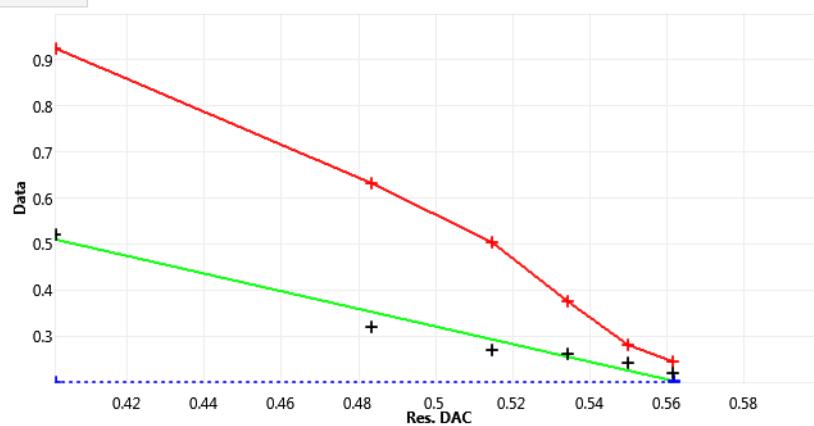
■ FWHM(Da)
■ Norm.Int

FWHM: 0.20 transmission 46.0%

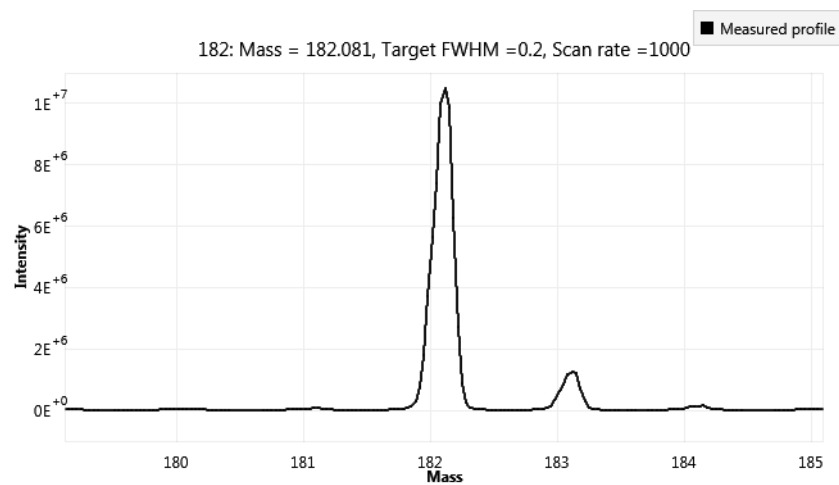
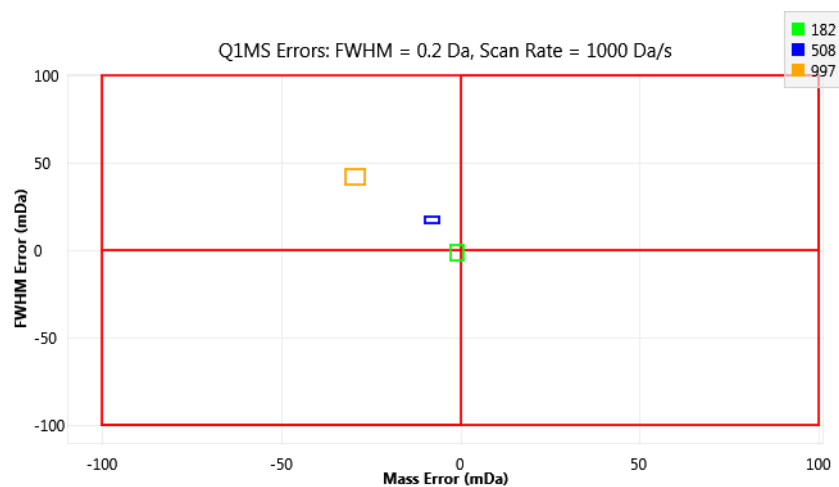
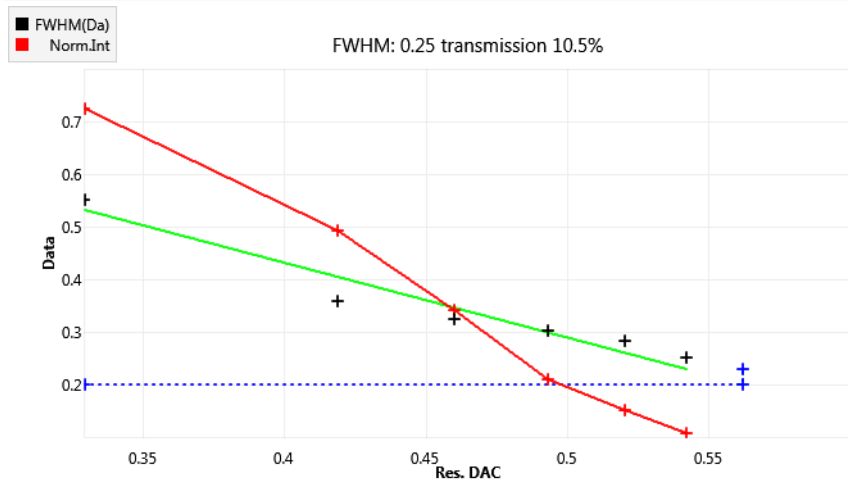


■ FWHM(Da)
■ Norm.Int

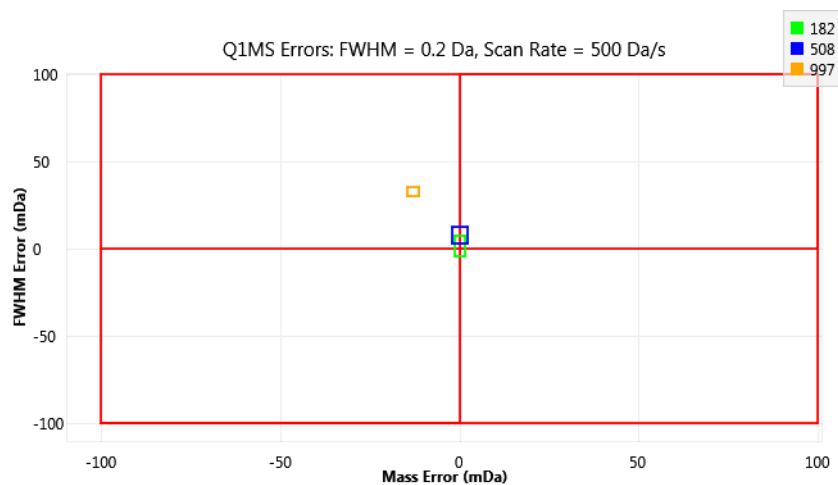
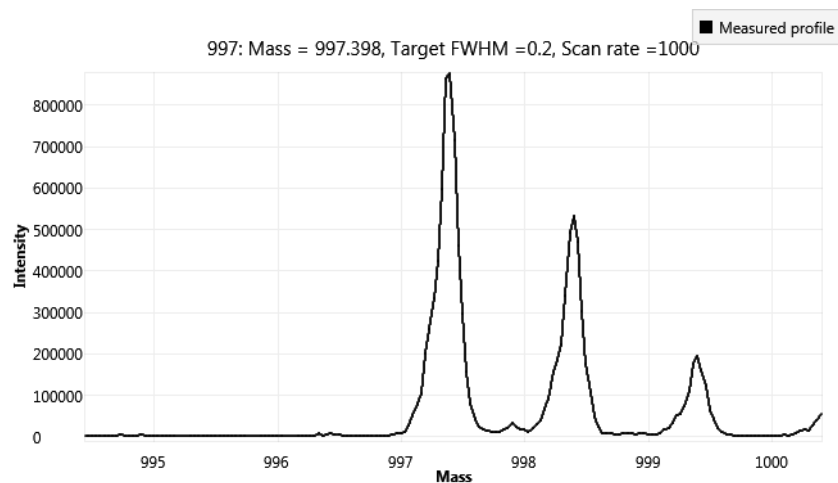
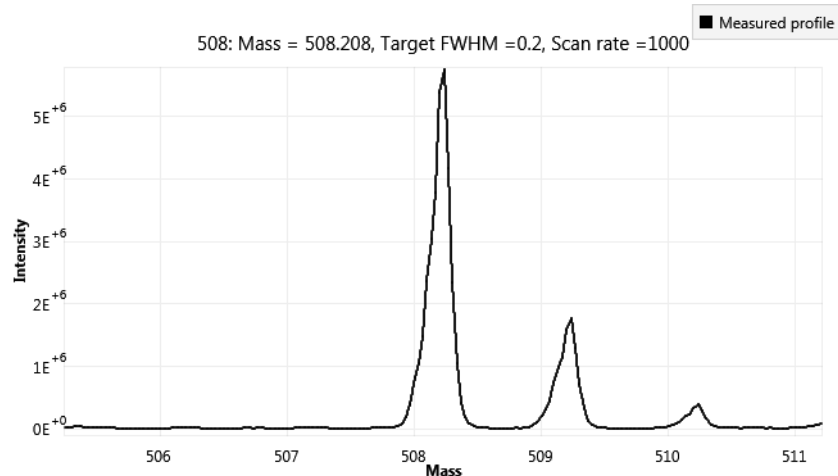
FWHM: 0.22 transmission 24.3%



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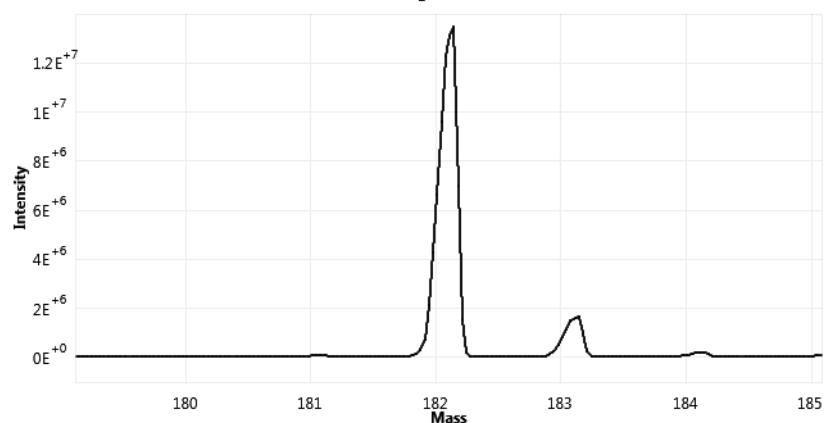


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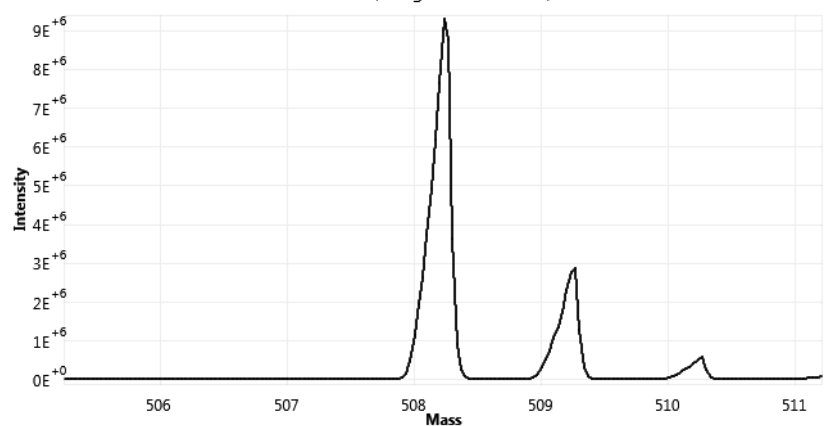


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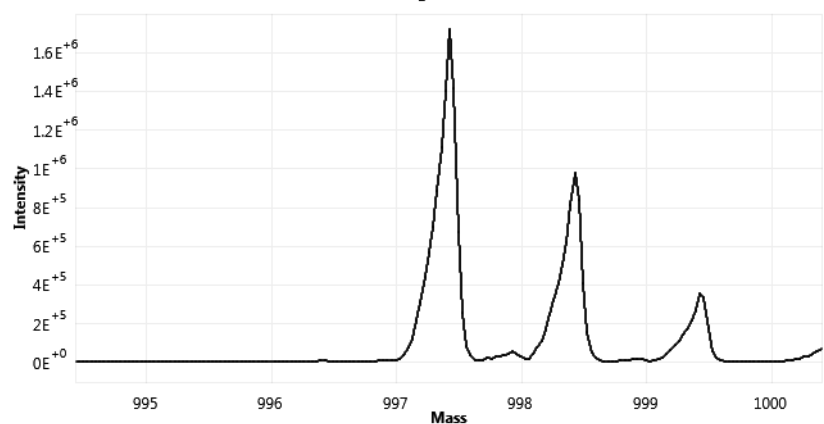
182: Mass = 182.081, Target FWHM = 0.2, Scan rate = 500



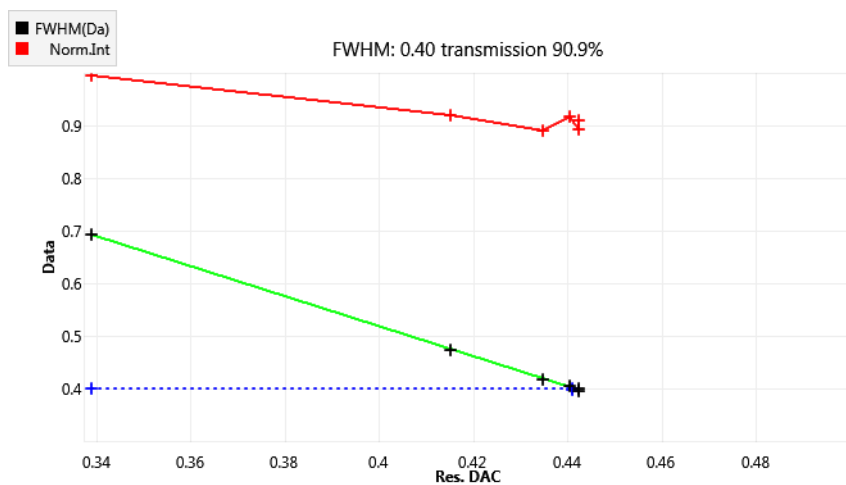
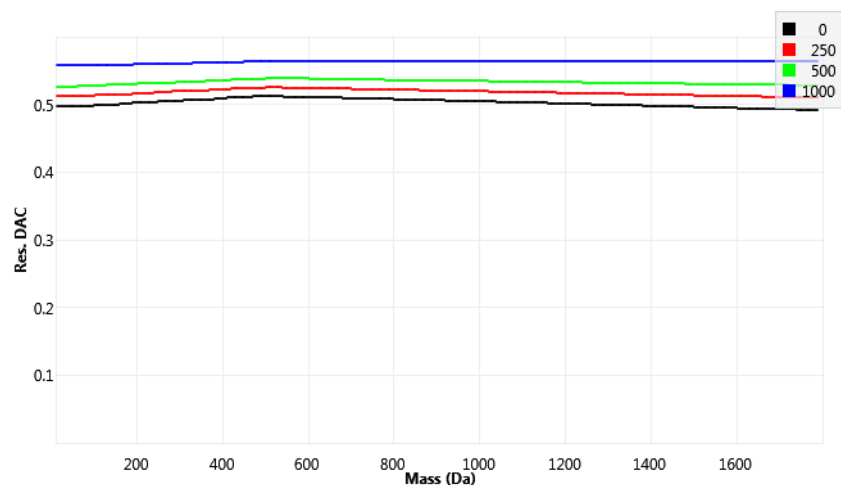
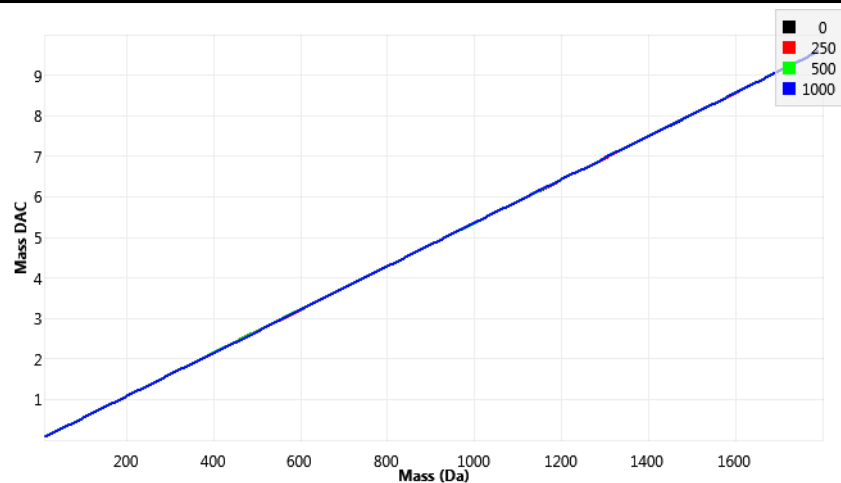
508: Mass = 508.208, Target FWHM = 0.2, Scan rate = 500



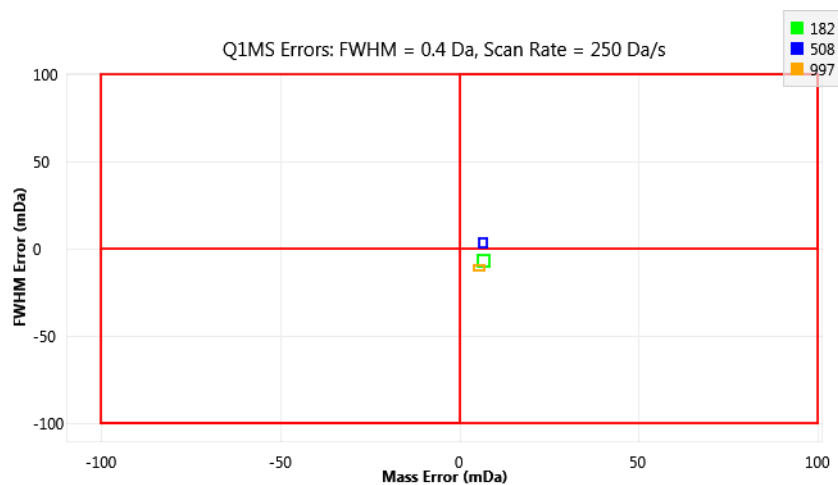
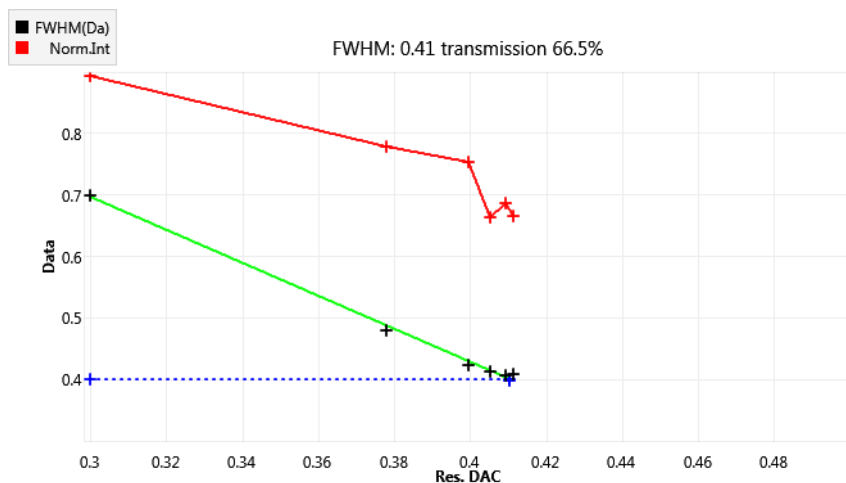
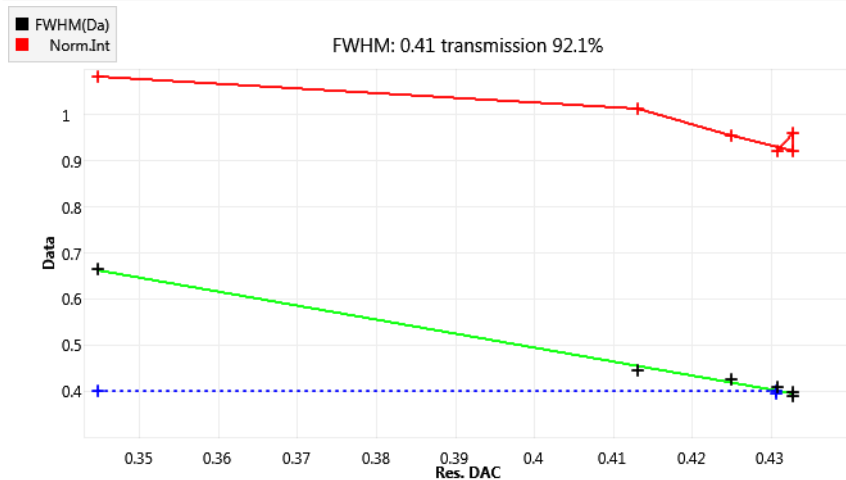
997: Mass = 997.398, Target FWHM = 0.2, Scan rate = 500



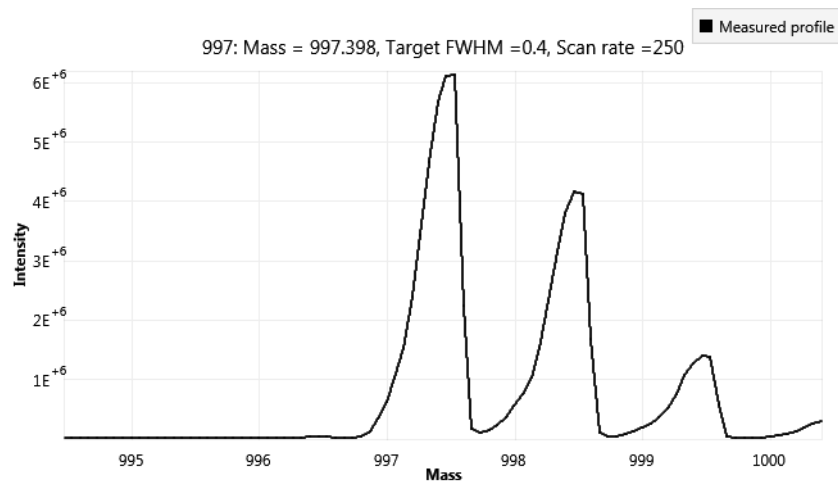
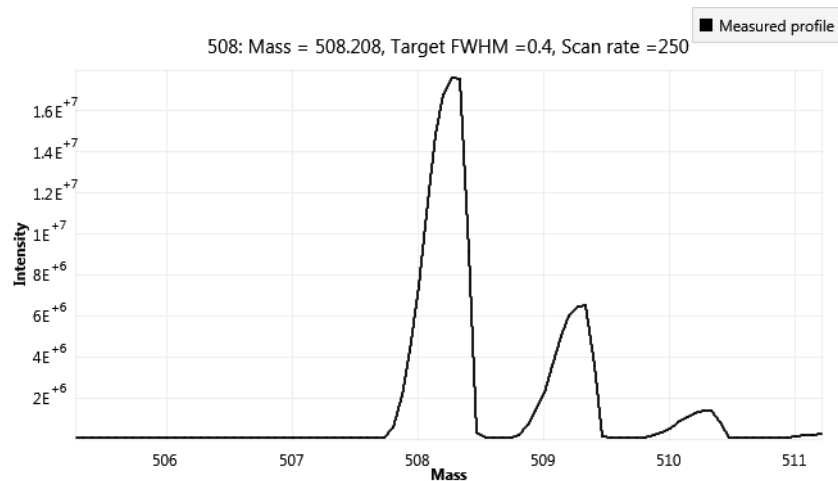
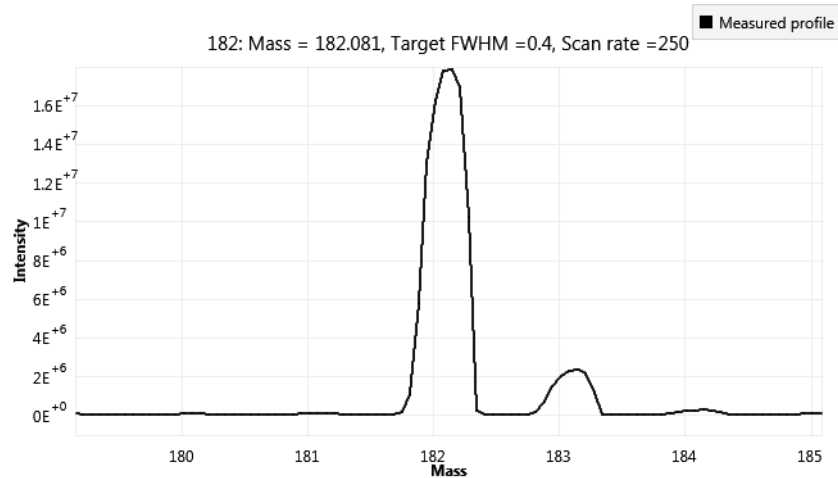
Diagnostic Report



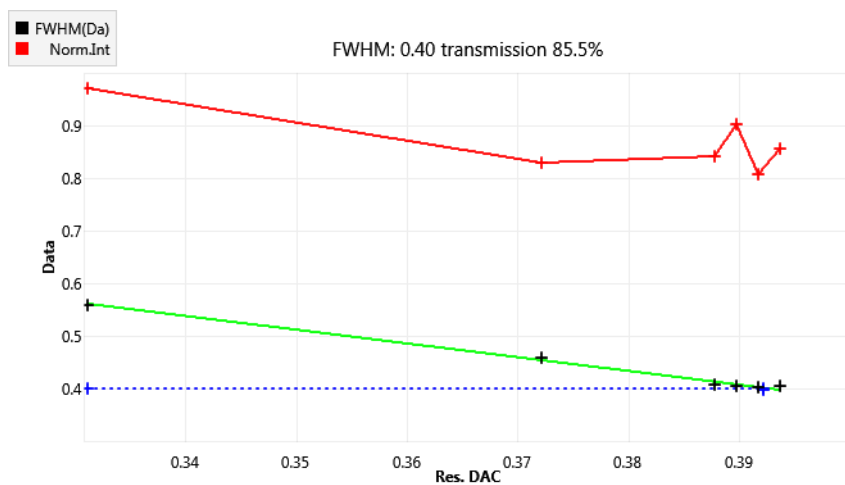
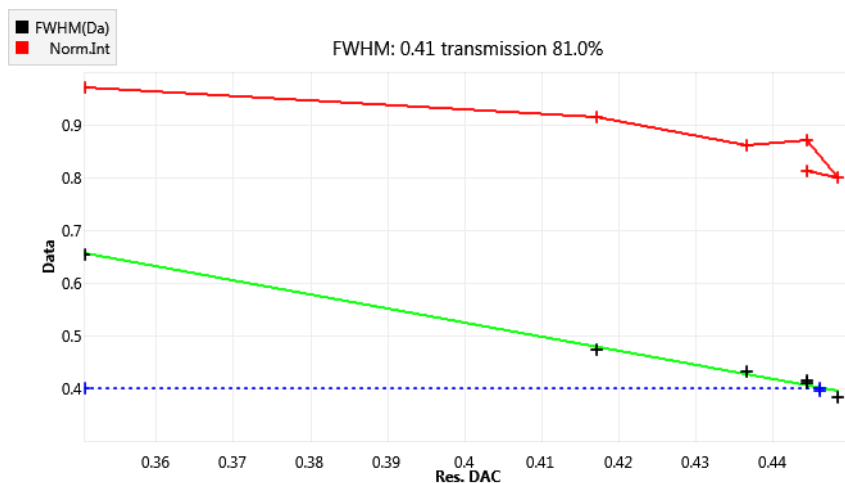
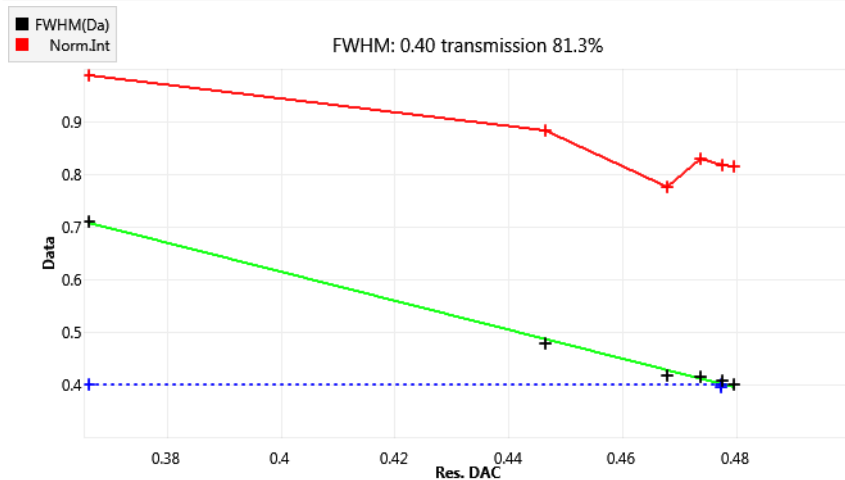
Diagnostic Report



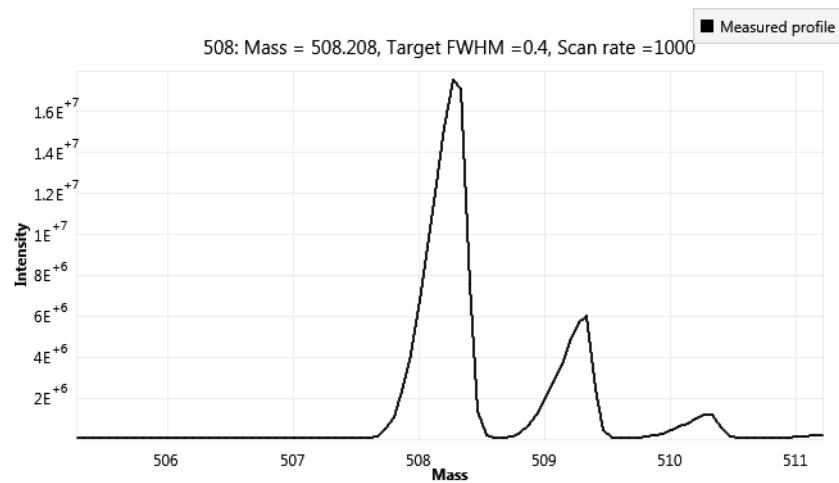
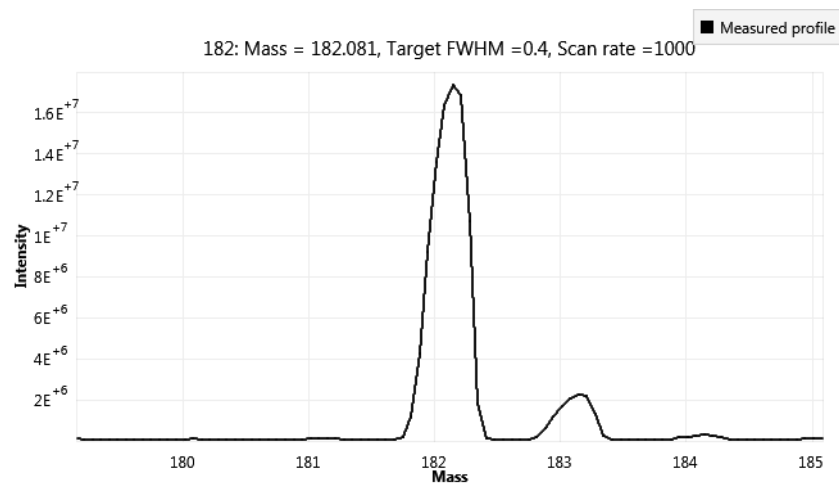
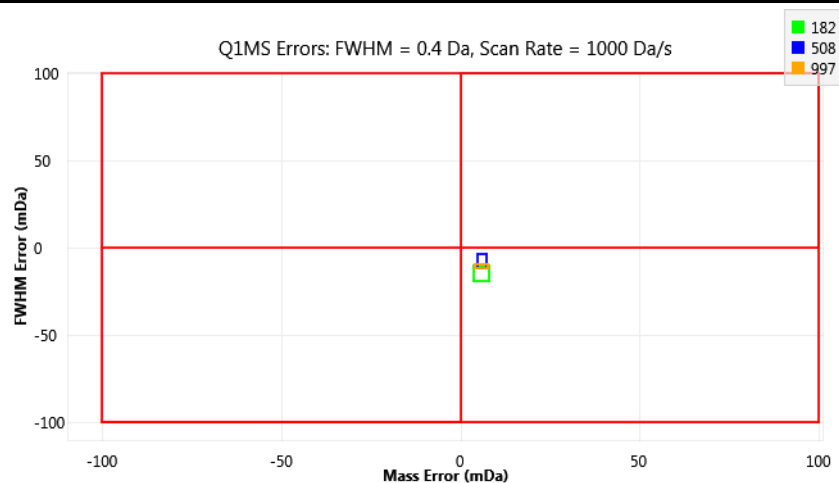
Diagnostic Report



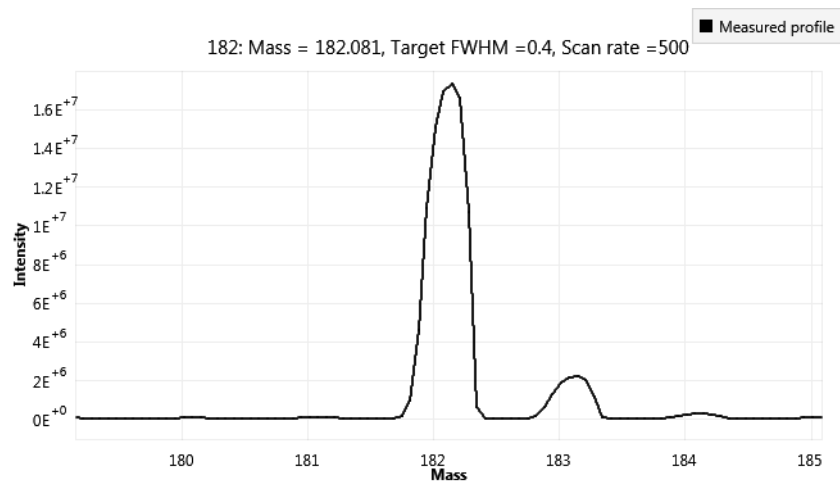
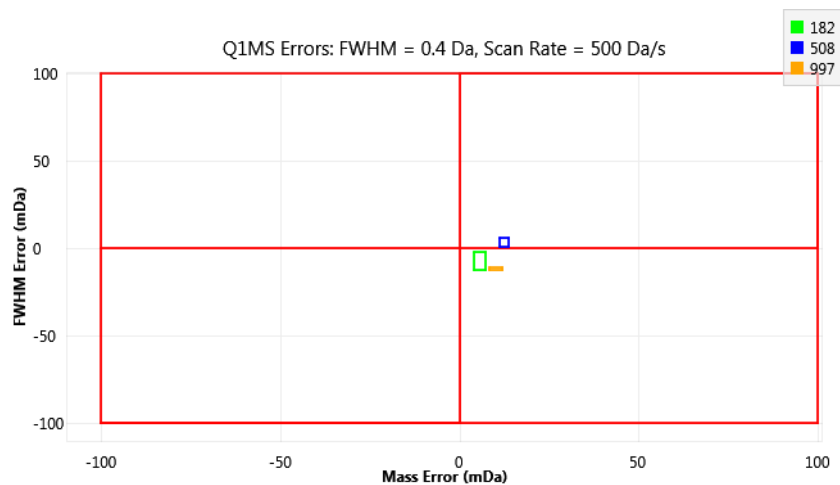
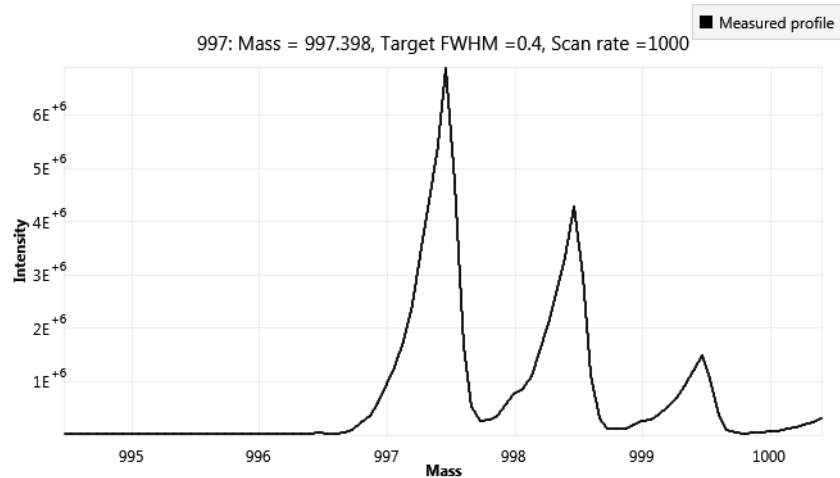
Diagnostic Report



Diagnostic Report

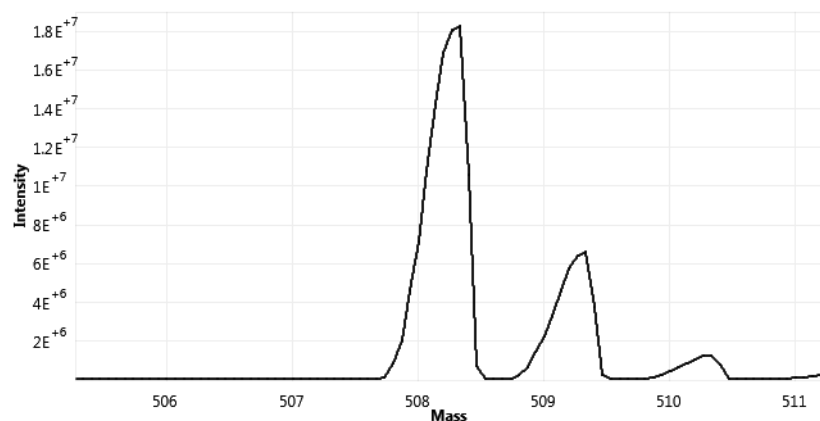


Diagnostic Report

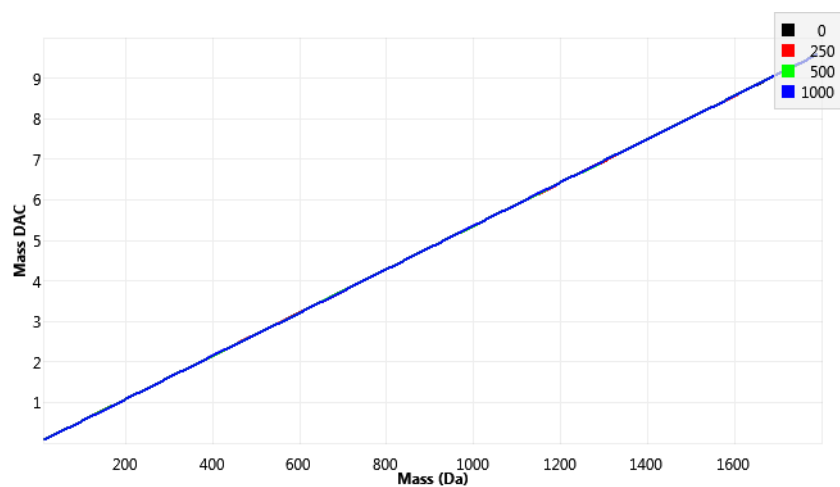
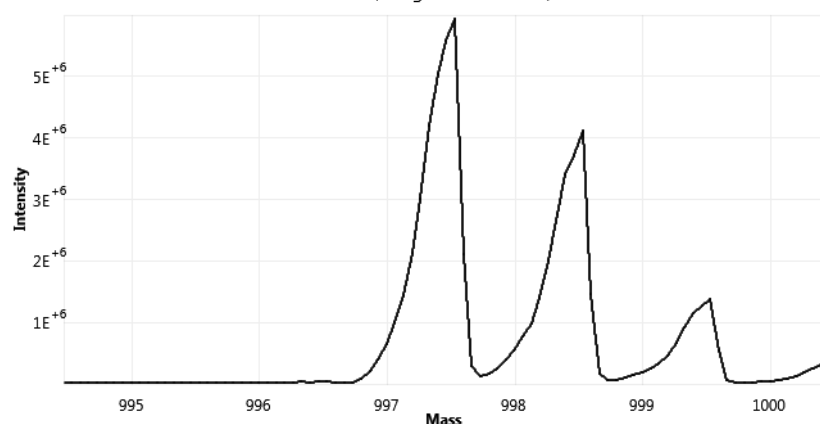


Diagnostic Report

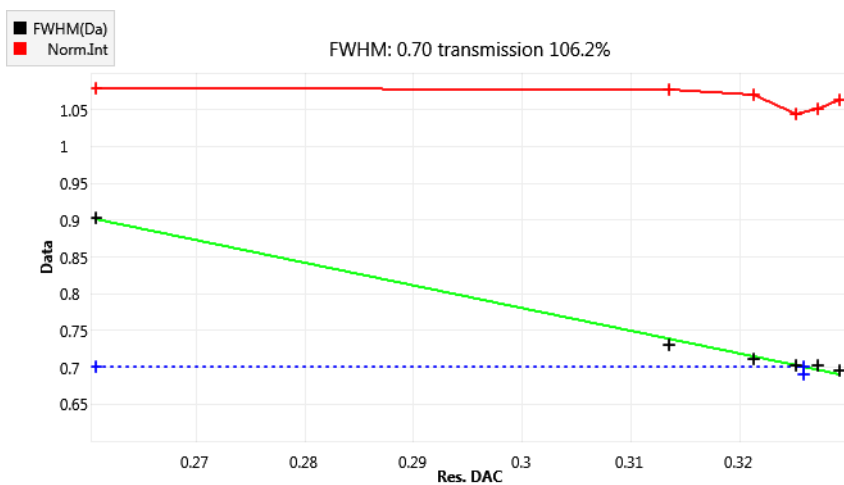
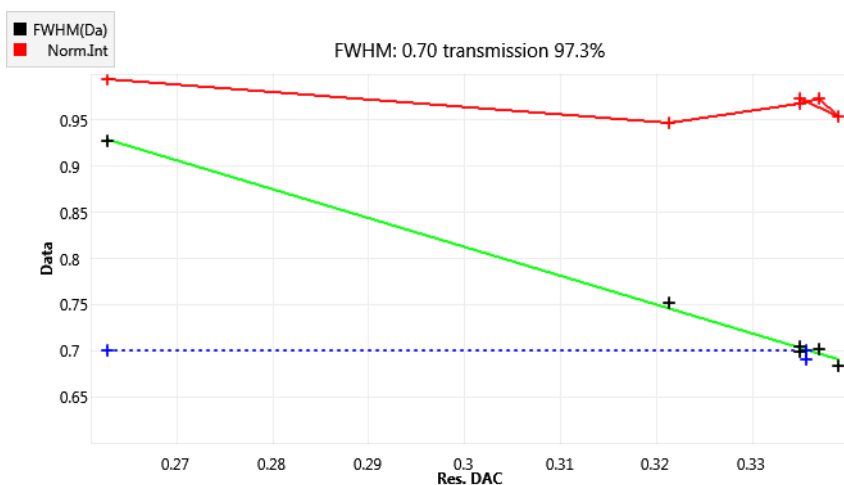
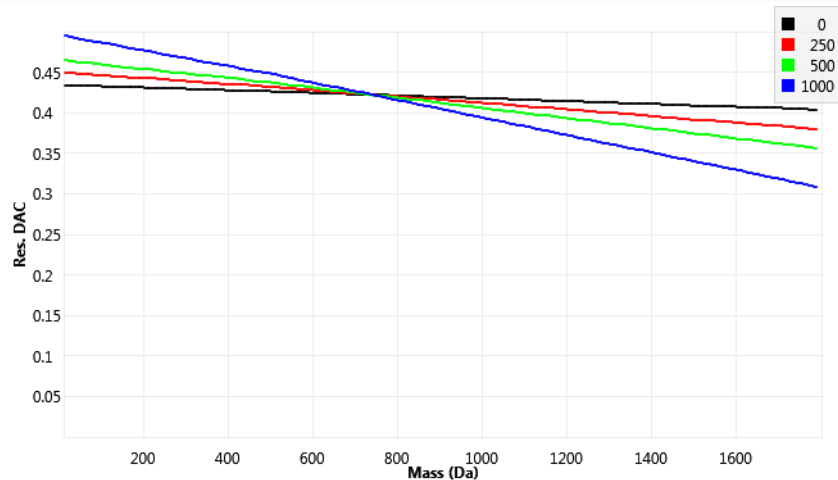
508: Mass = 508.208, Target FWHM = 0.4, Scan rate = 500



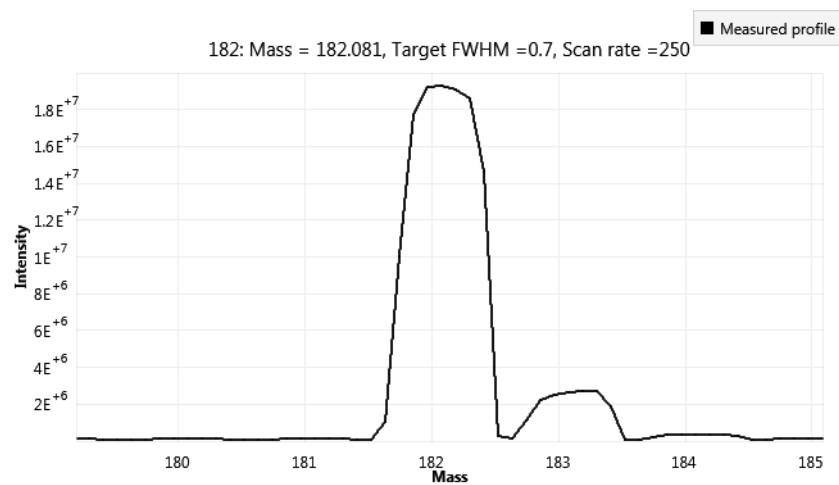
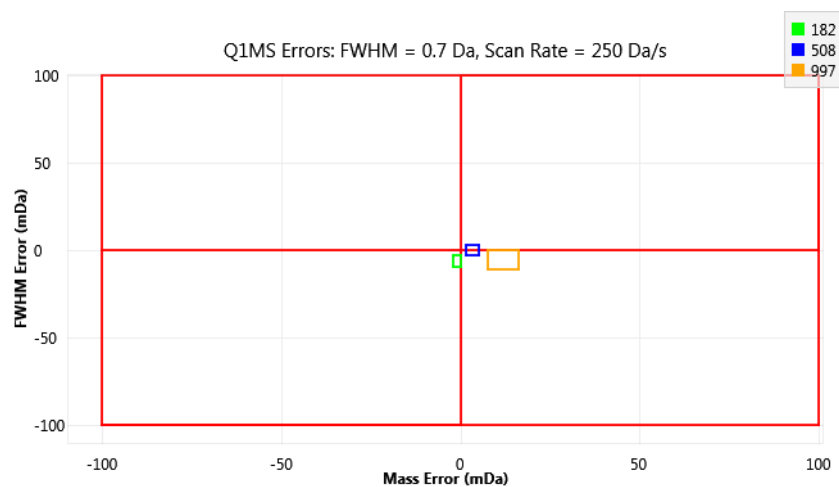
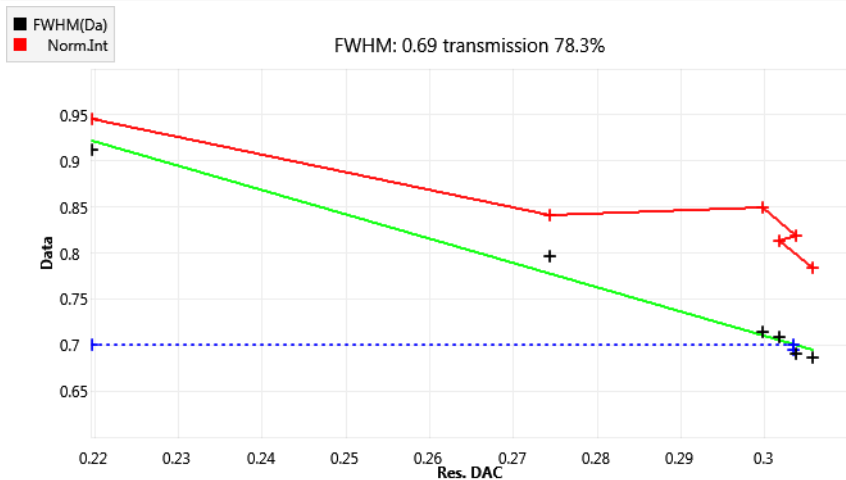
997: Mass = 997.398, Target FWHM = 0.4, Scan rate = 500



Diagnostic Report

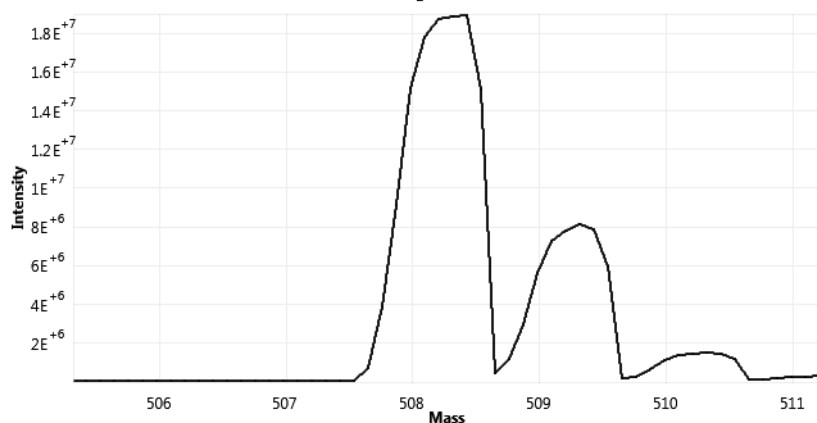


Diagnostic Report

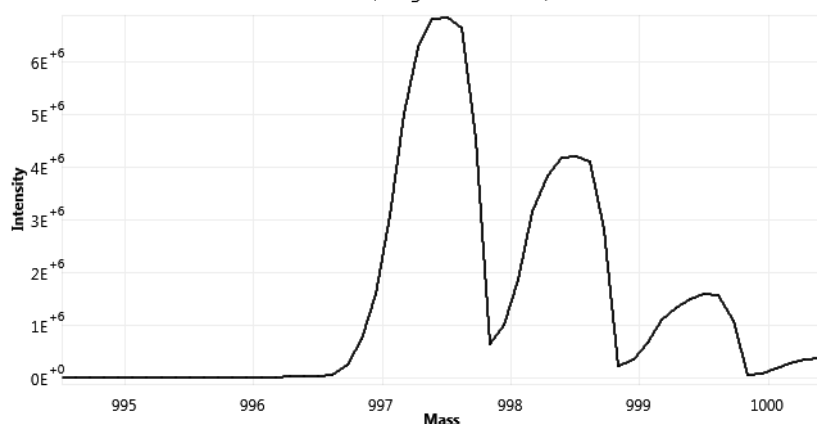


Diagnostic Report

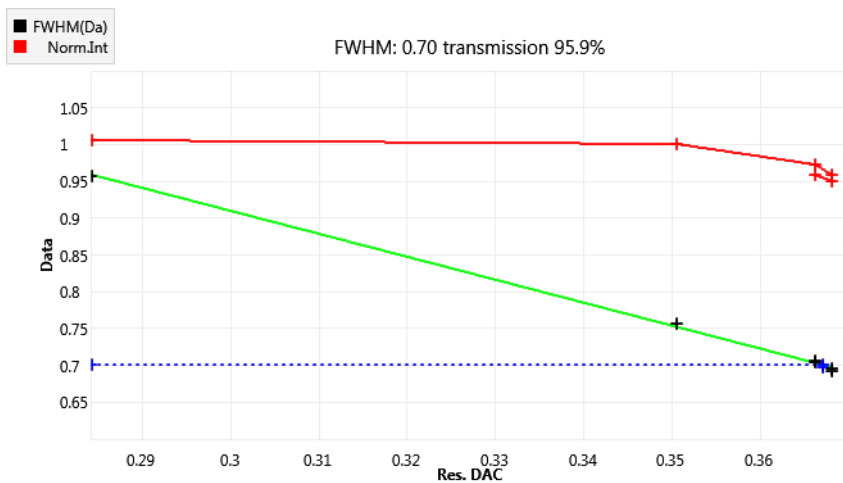
508: Mass = 508.208, Target FWHM = 0.7, Scan rate = 250



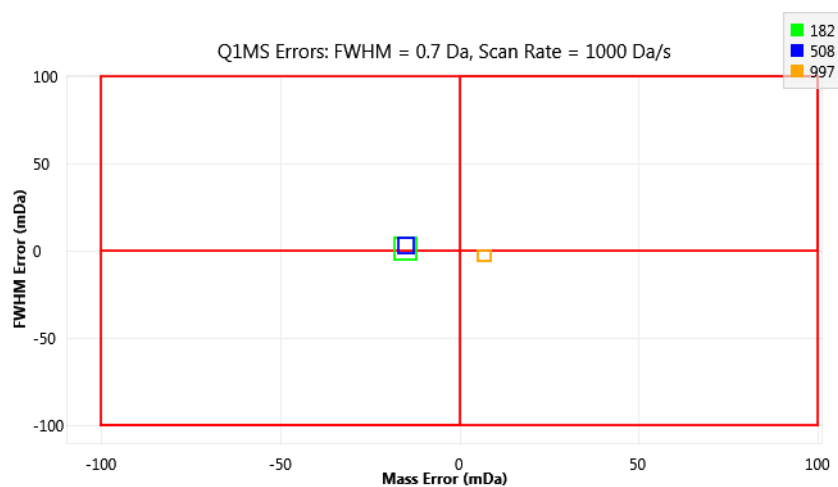
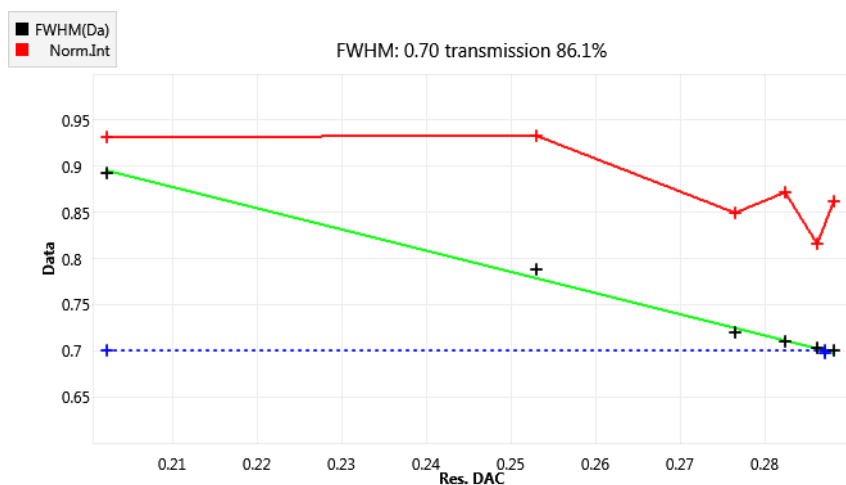
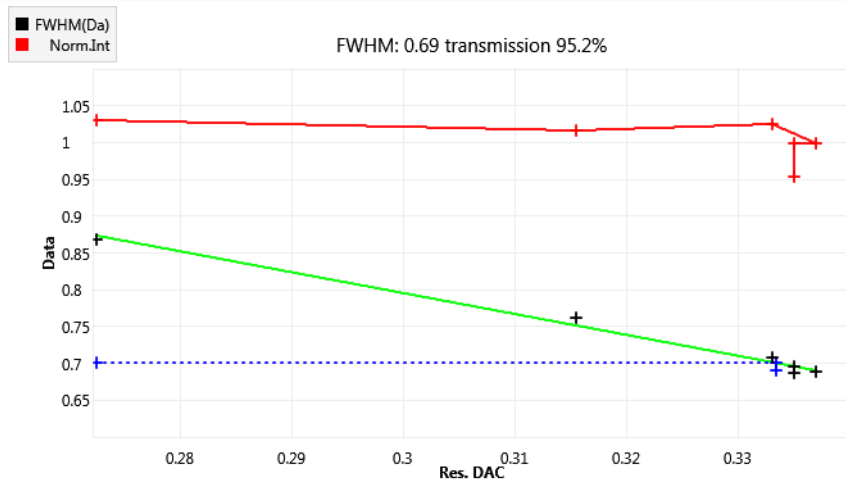
997: Mass = 997.398, Target FWHM = 0.7, Scan rate = 250



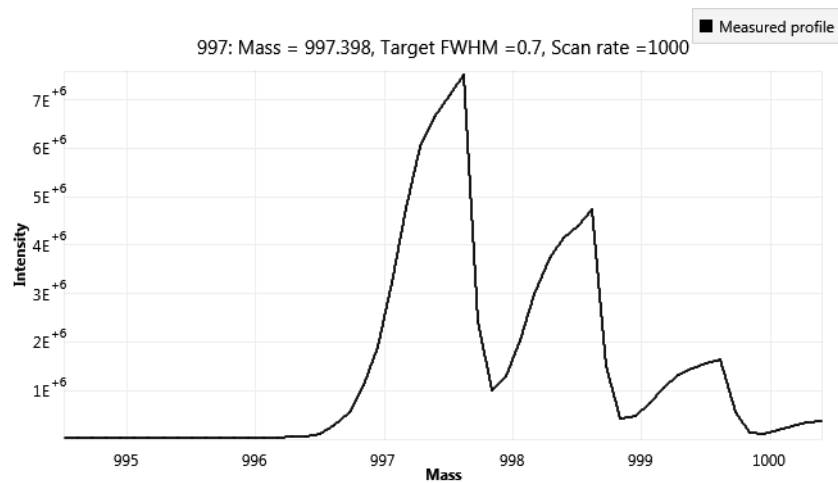
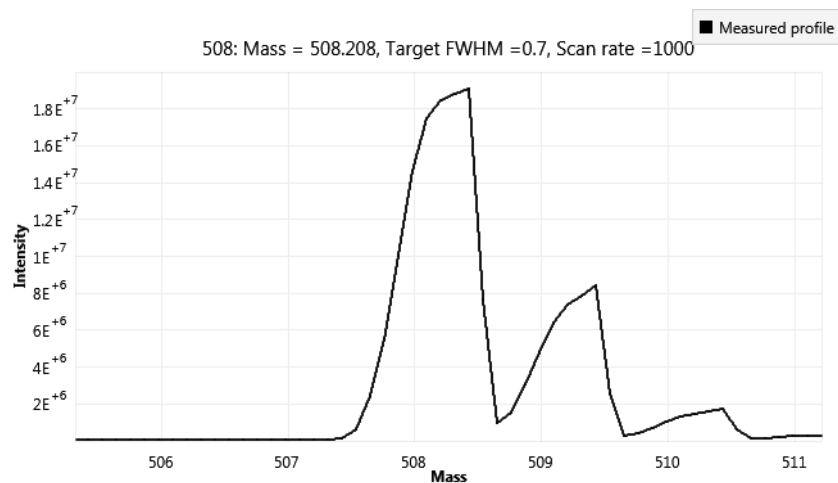
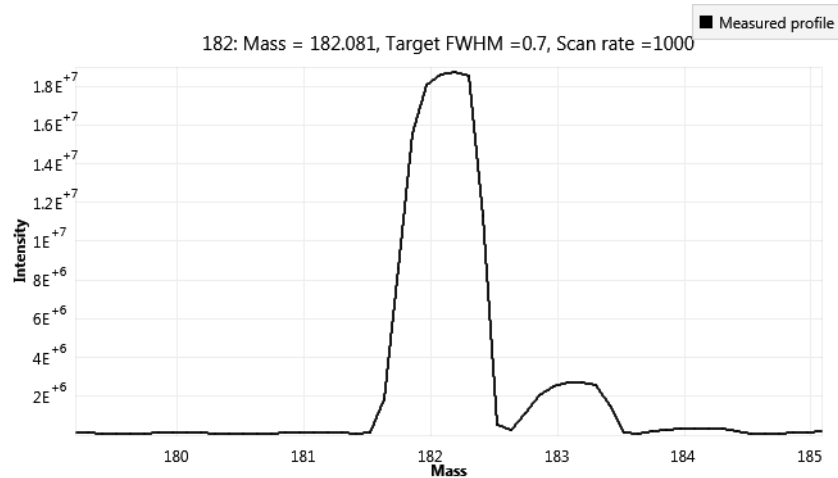
FWHM: 0.70 transmission 95.9%



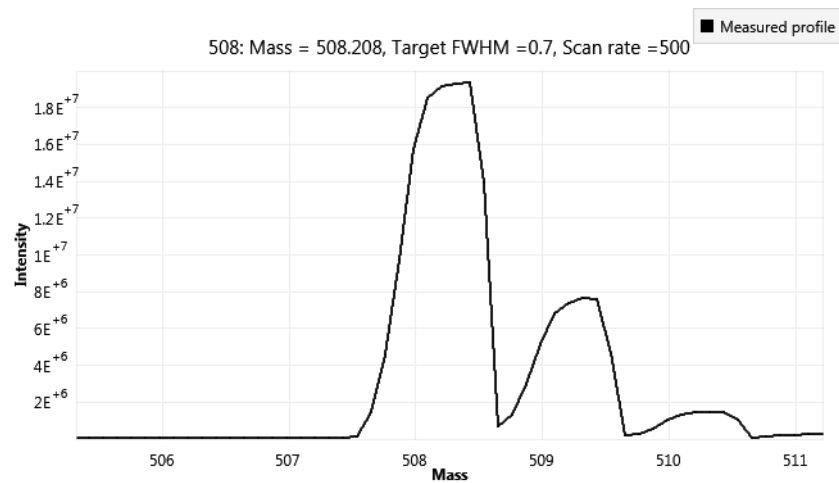
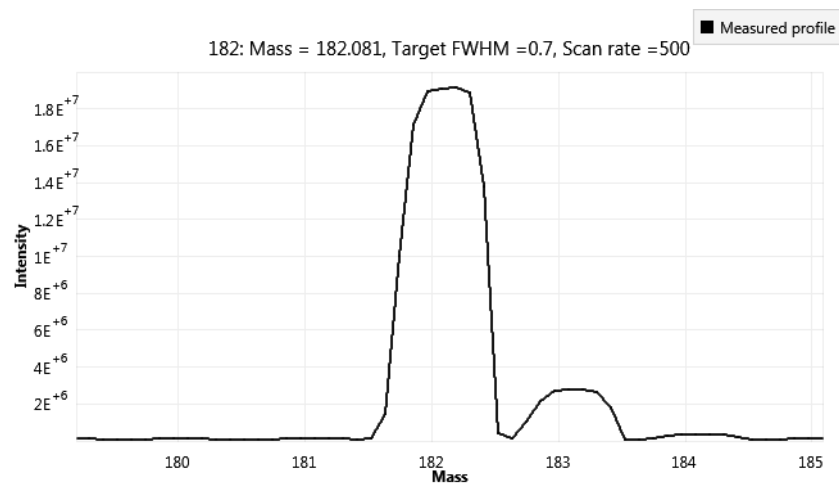
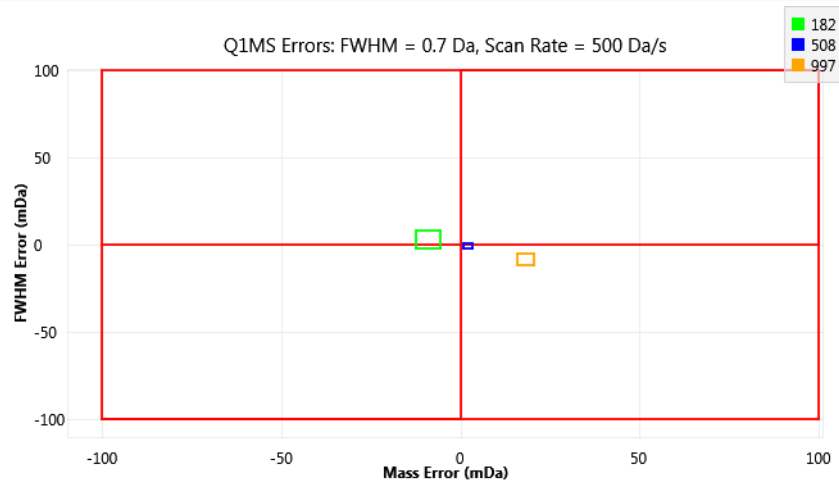
Diagnostic Report



Diagnostic Report



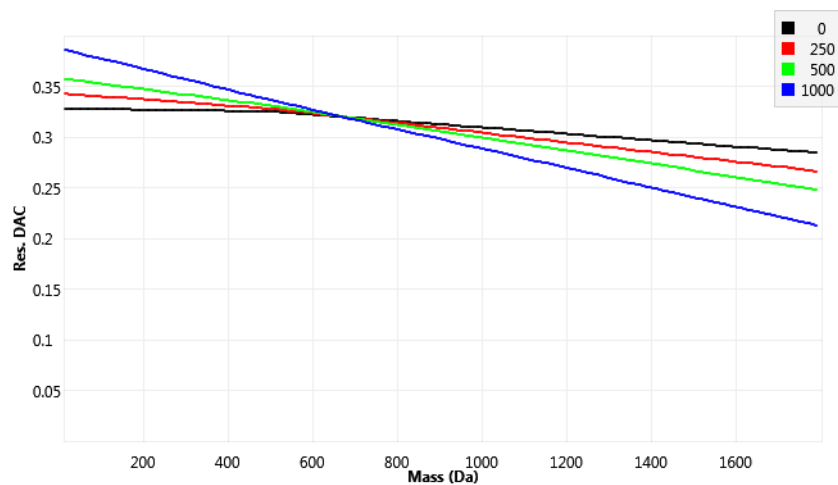
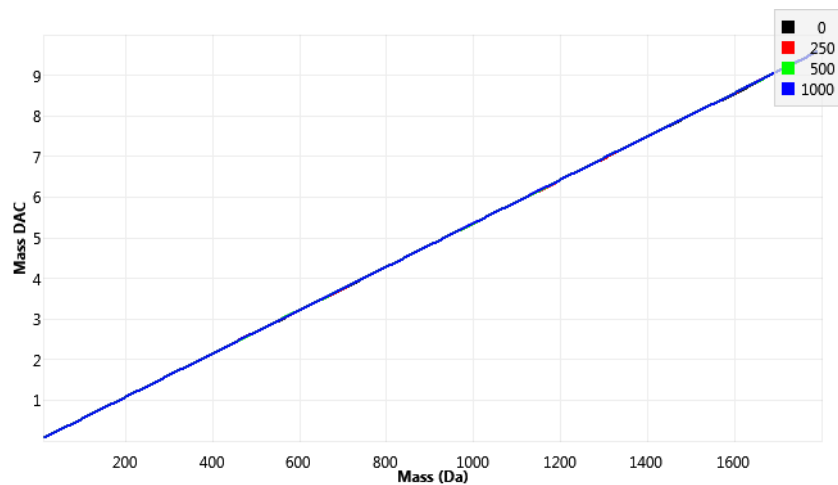
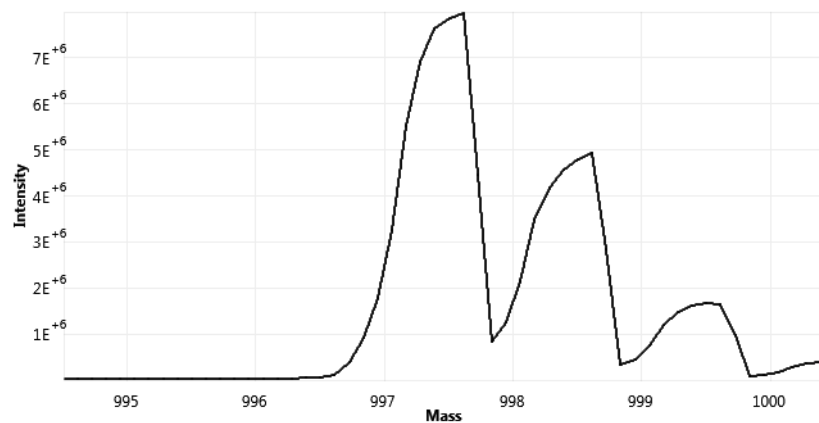
Diagnostic Report



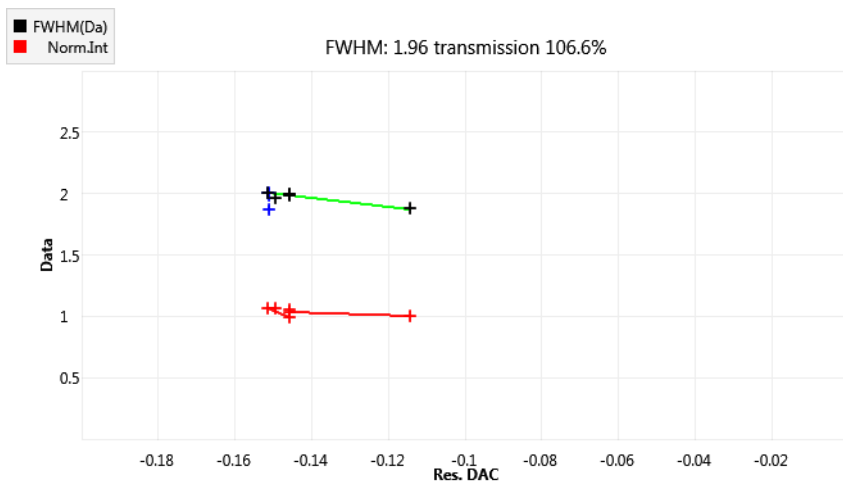
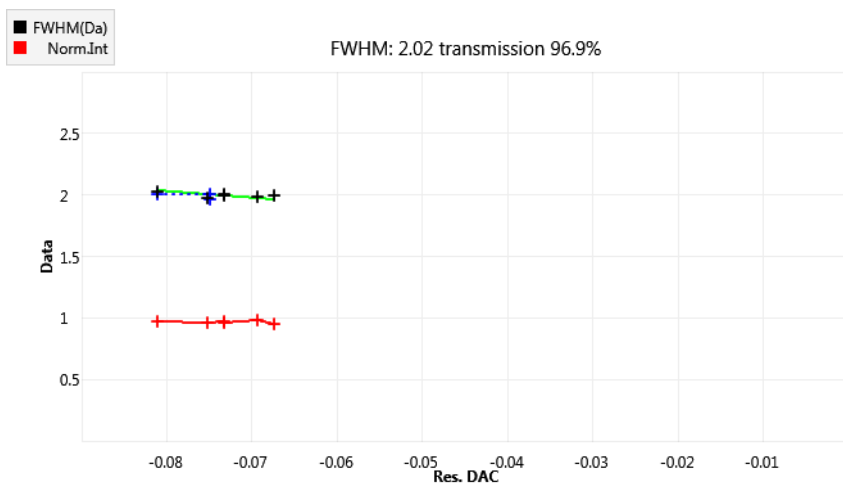
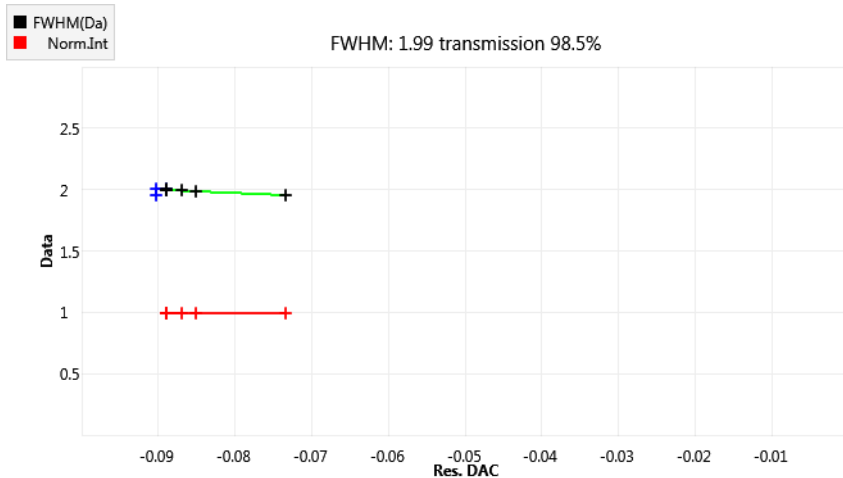
Diagnostic Report

997: Mass = 997.398, Target FWHM = 0.7, Scan rate = 500

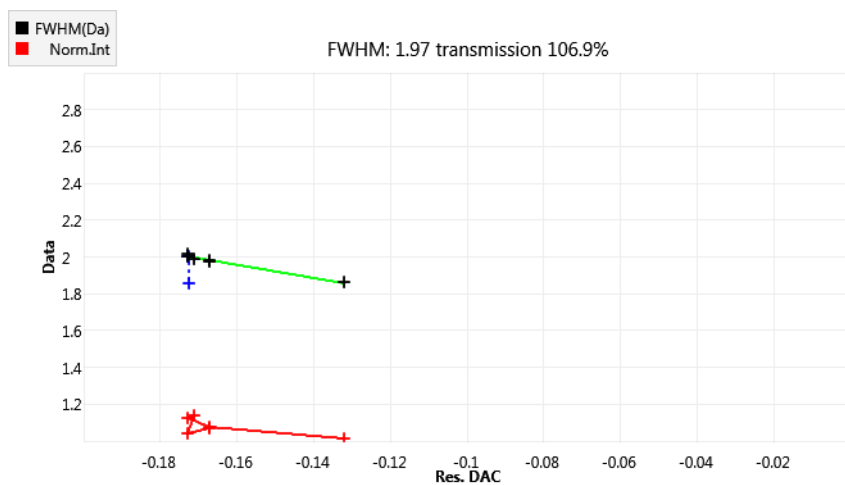
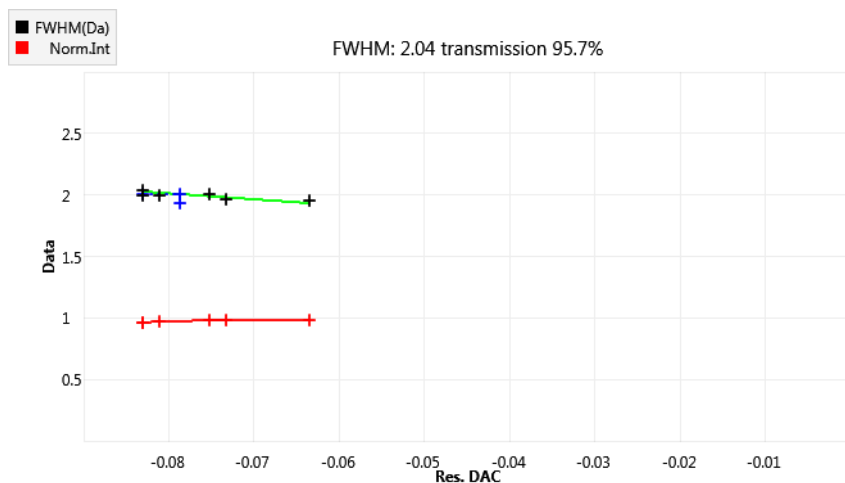
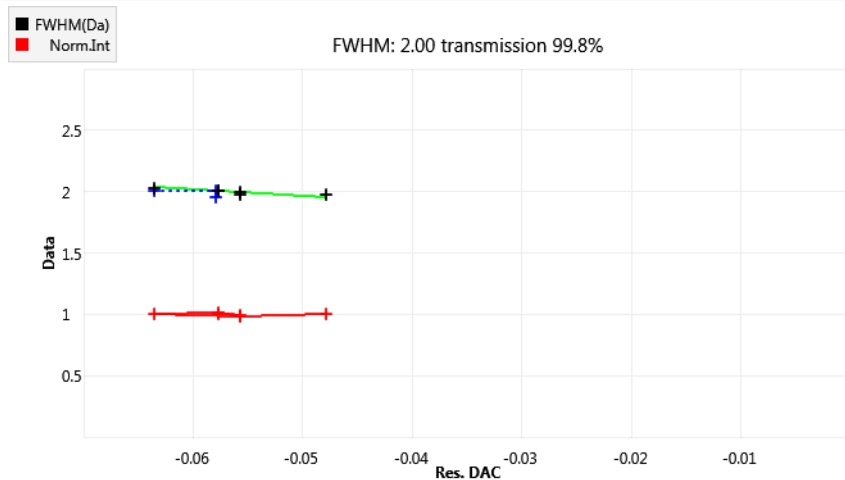
■ Measured profile



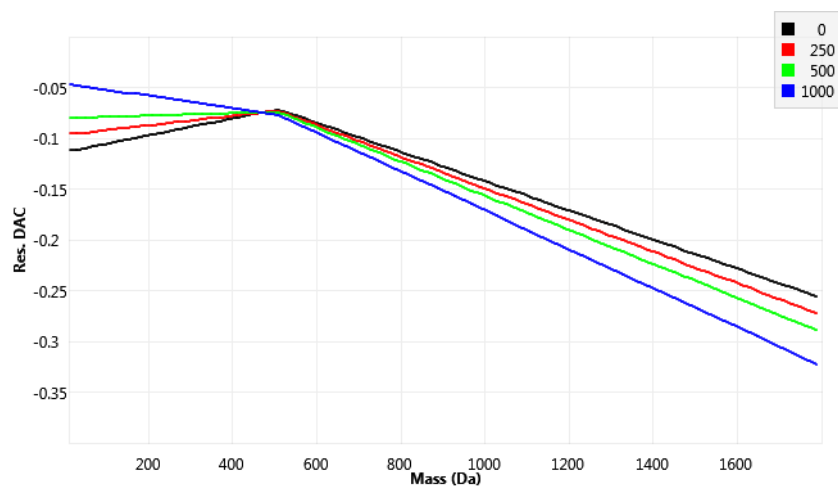
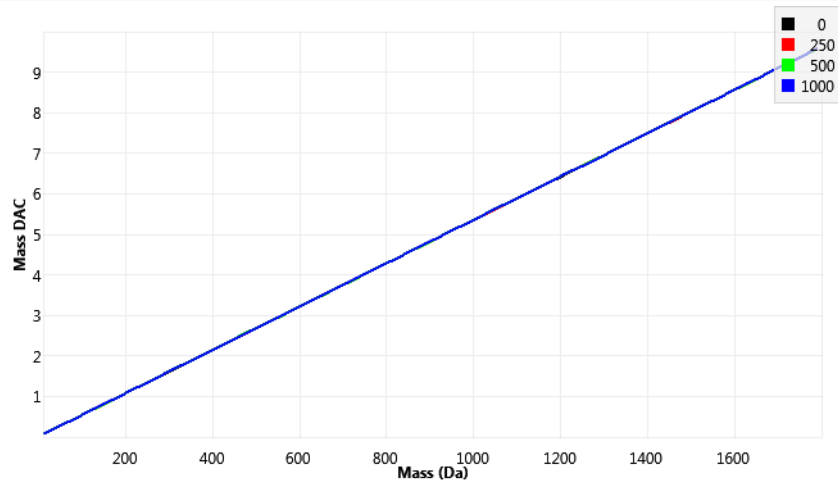
Diagnostic Report



Diagnostic Report



Diagnostic Report

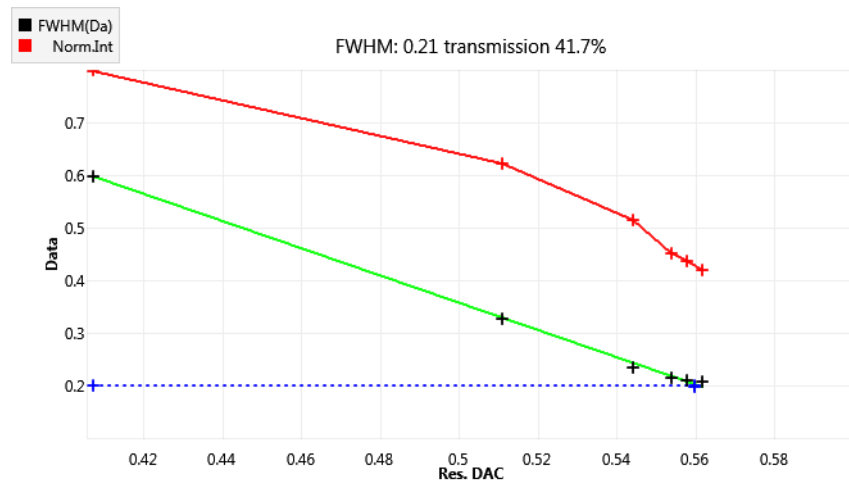


Mass And Resolution Calibration succeeded.

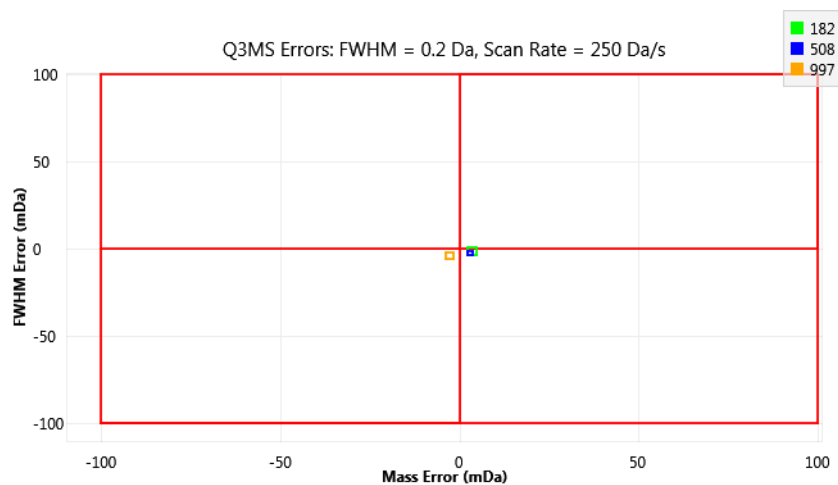
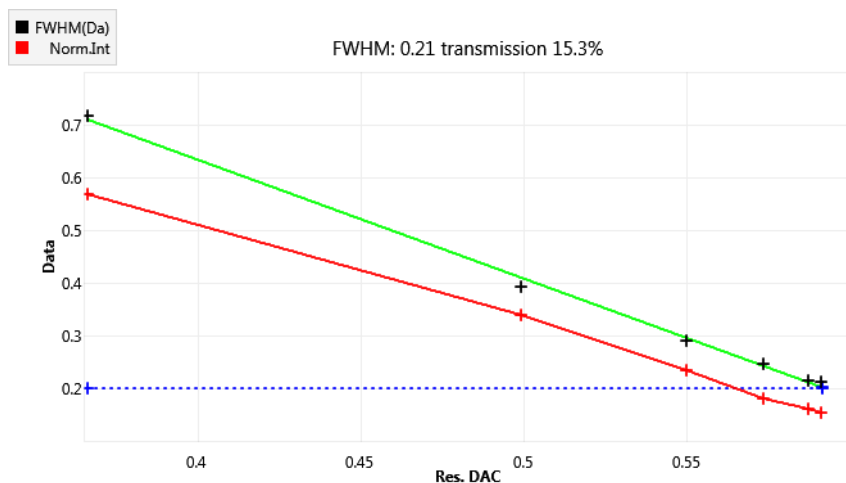
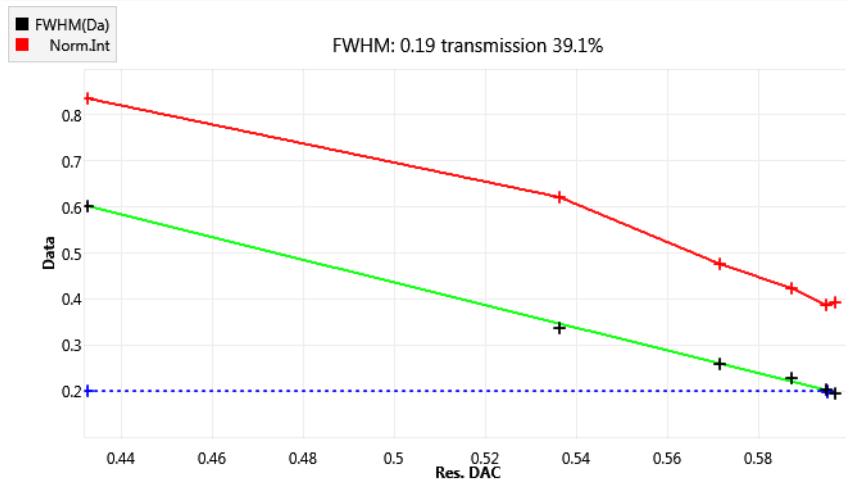
Q3 coarse calibration result:

Gain DAC value= 1322

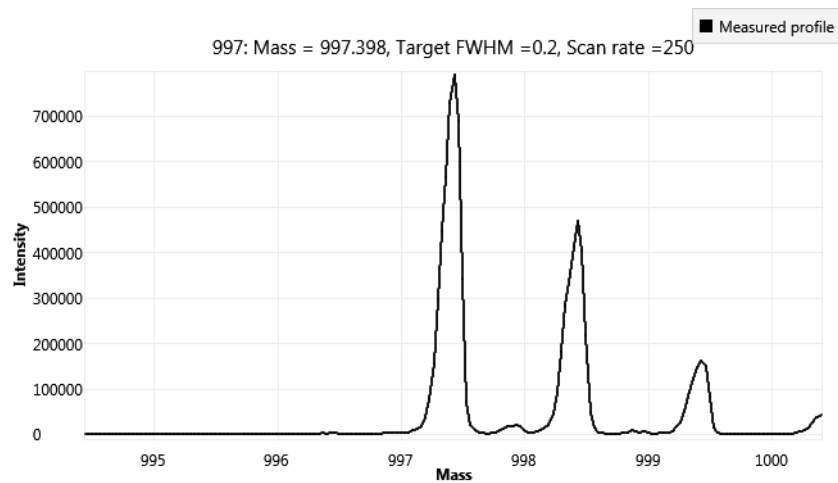
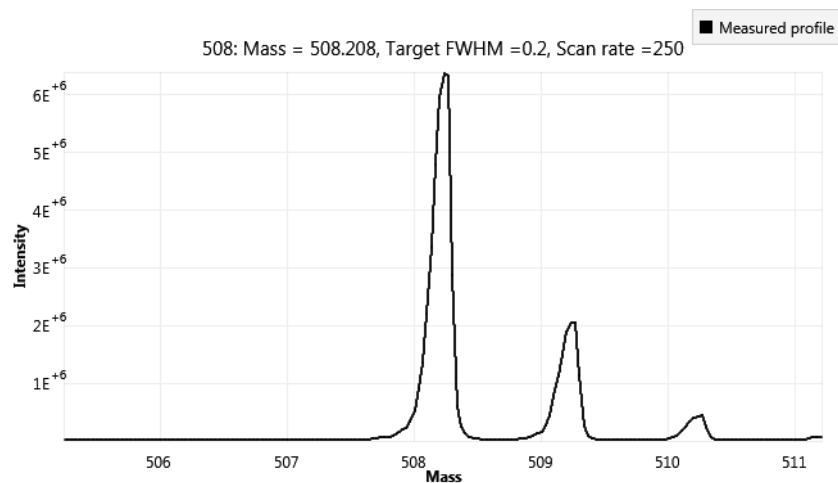
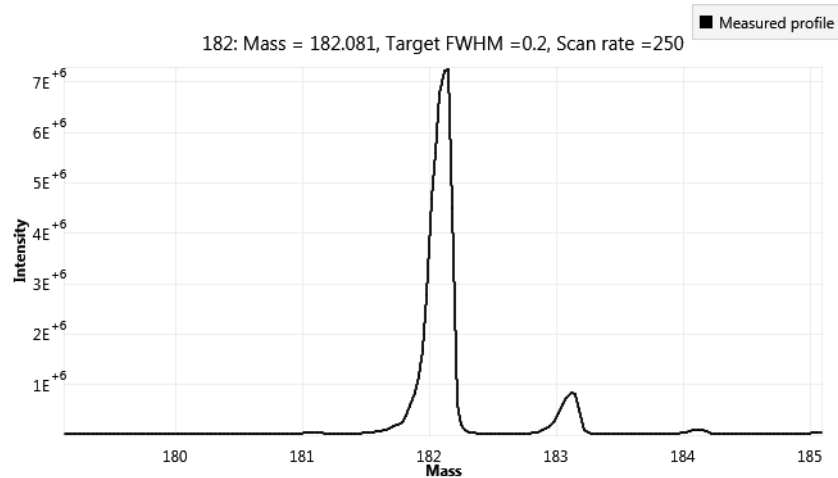
m/z	FWHM
182.08	1.92
508.21	2.01
997.40	1.66



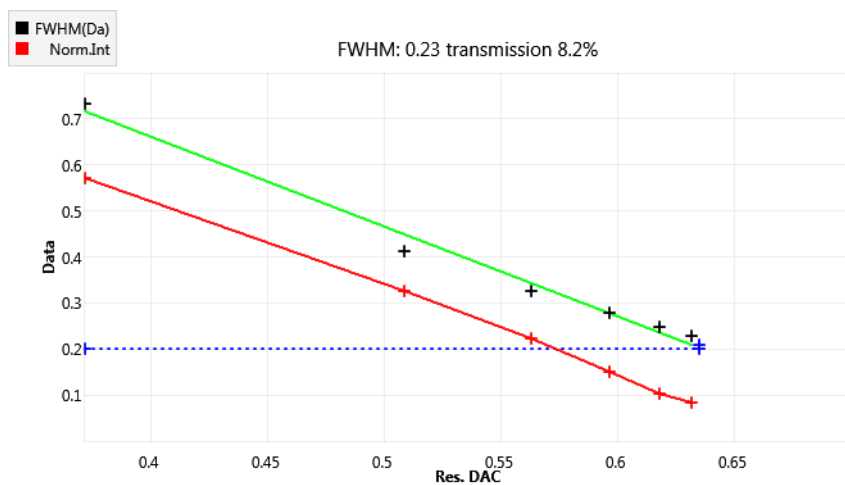
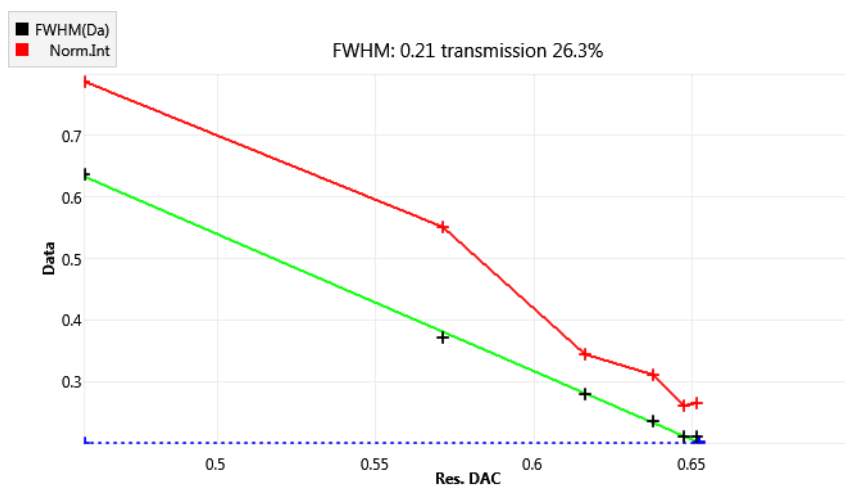
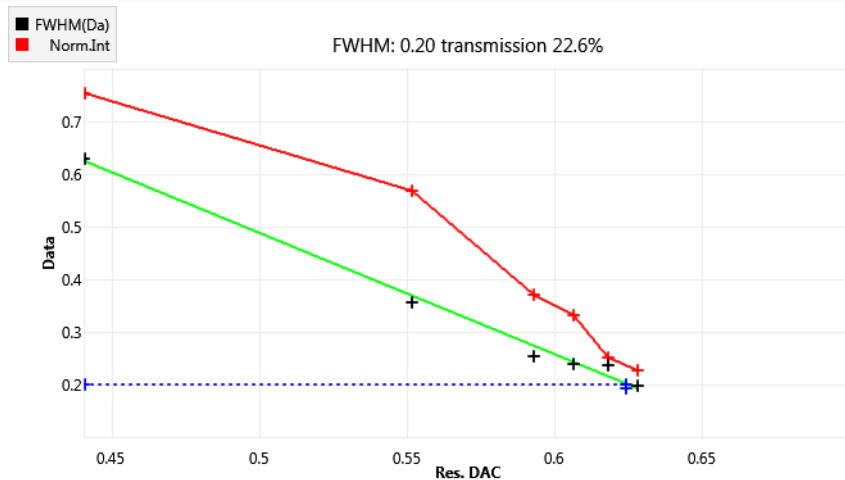
Diagnostic Report



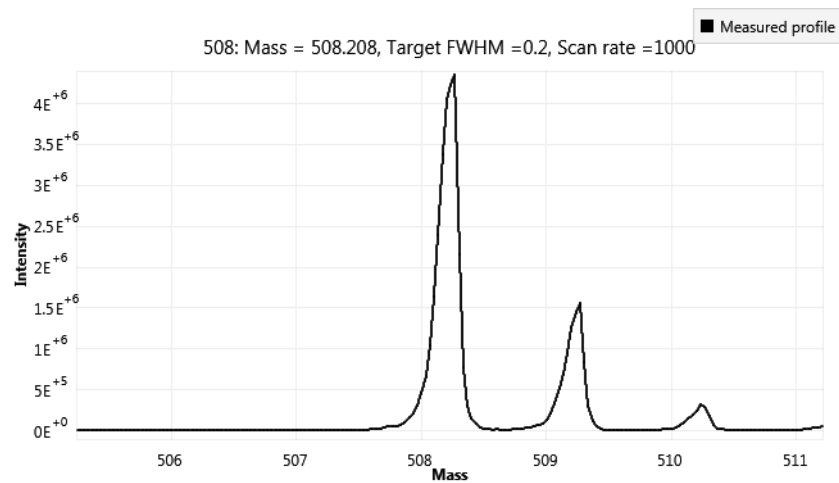
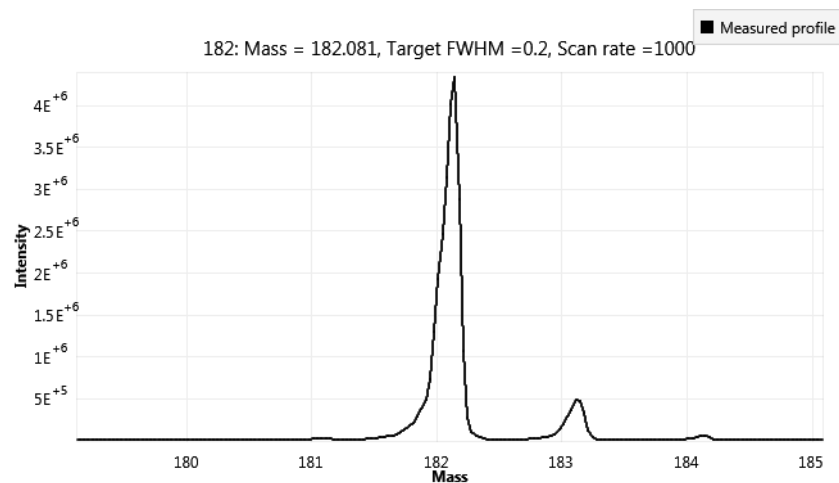
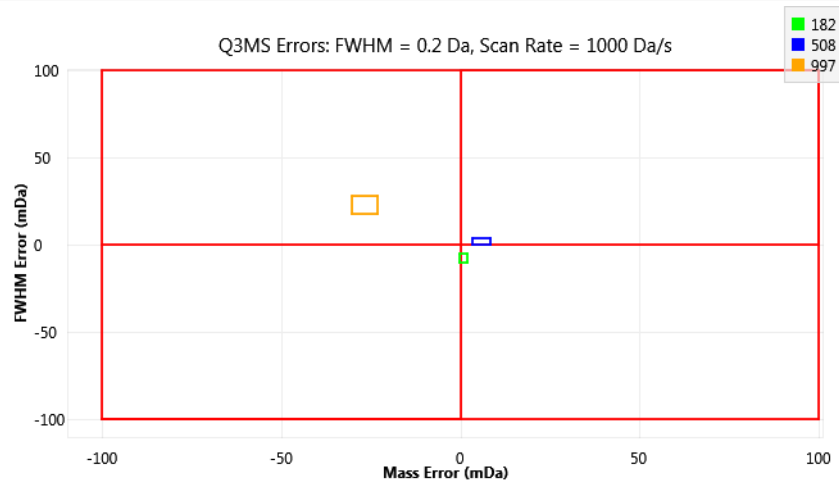
Diagnostic Report



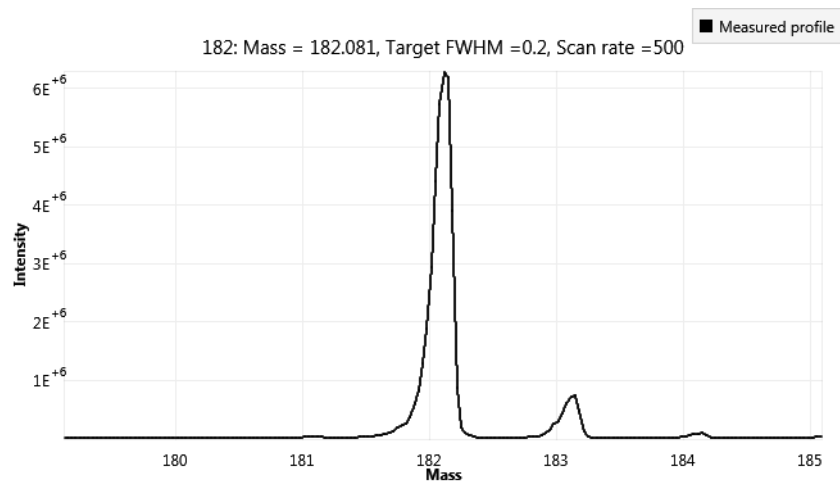
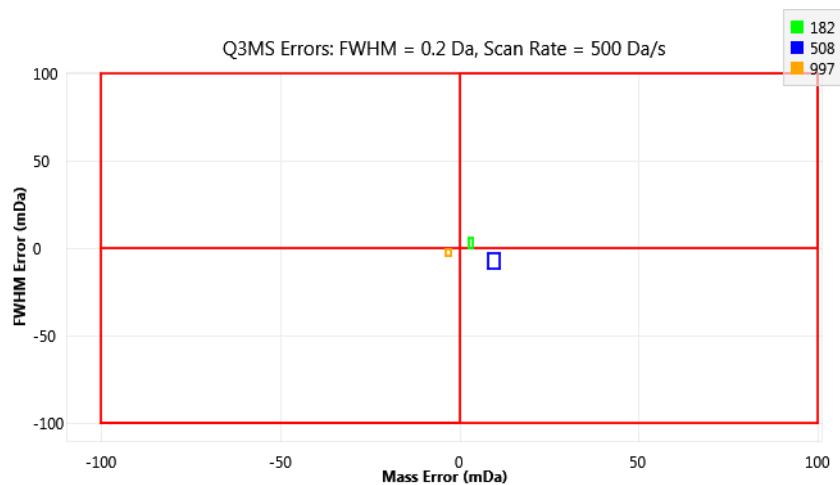
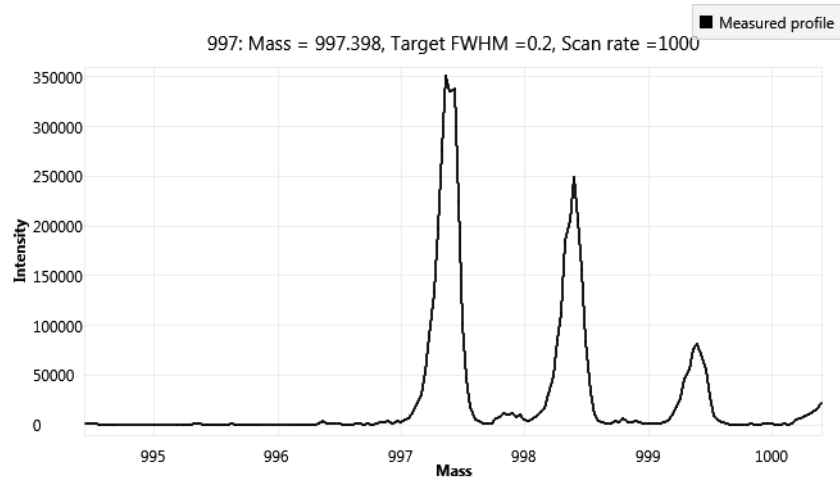
Diagnostic Report



Diagnostic Report



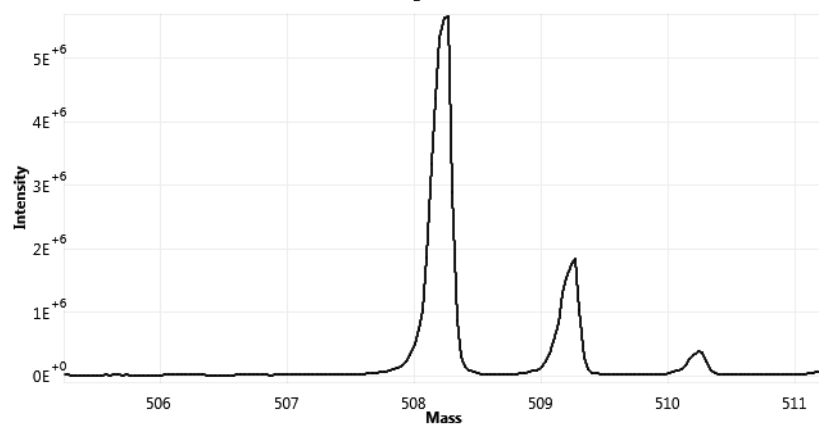
Diagnostic Report



Diagnostic Report

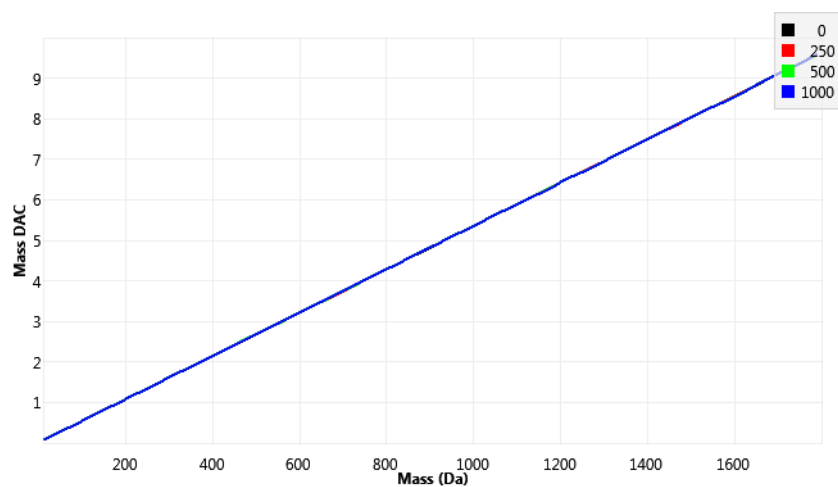
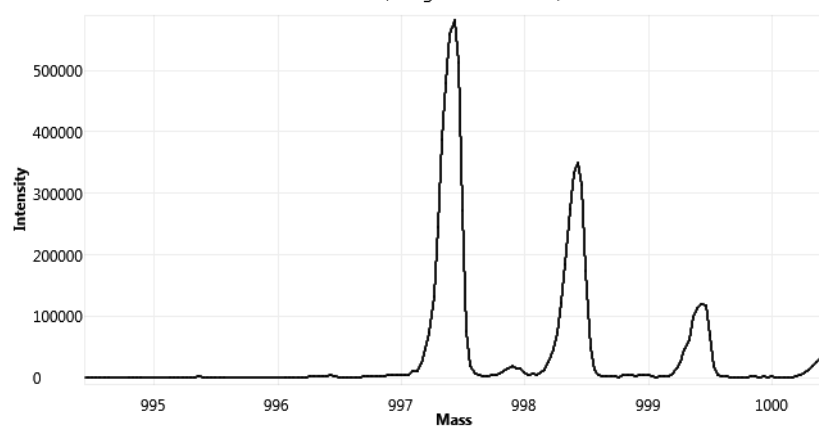
508: Mass = 508.208, Target FWHM = 0.2, Scan rate = 500

■ Measured profile

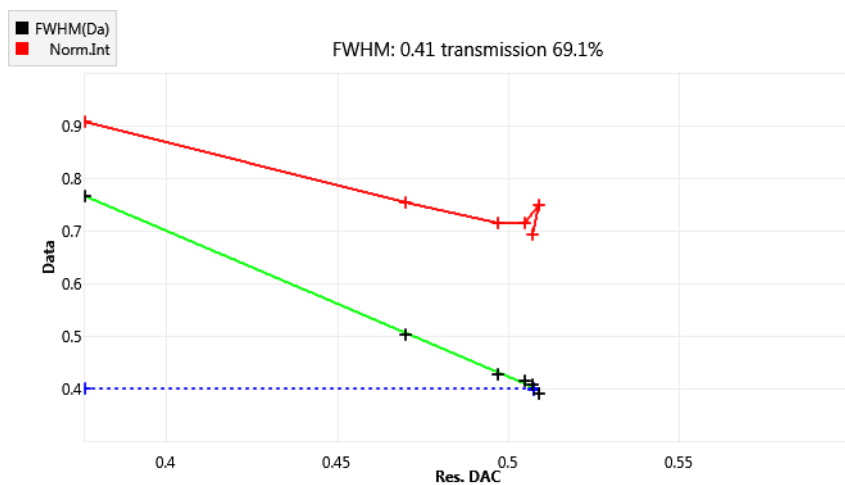
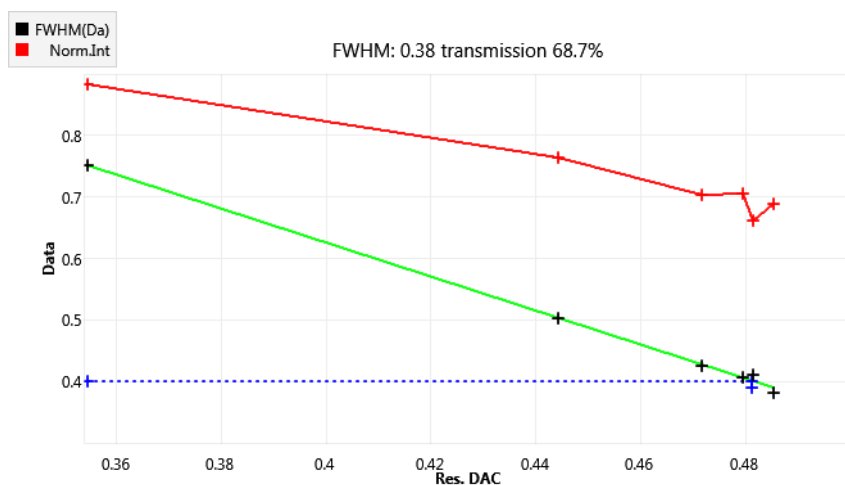
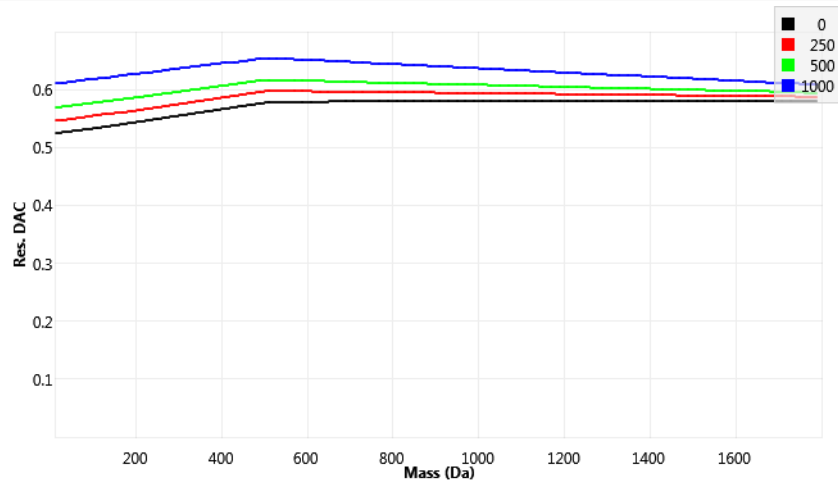


997: Mass = 997.398, Target FWHM = 0.2, Scan rate = 500

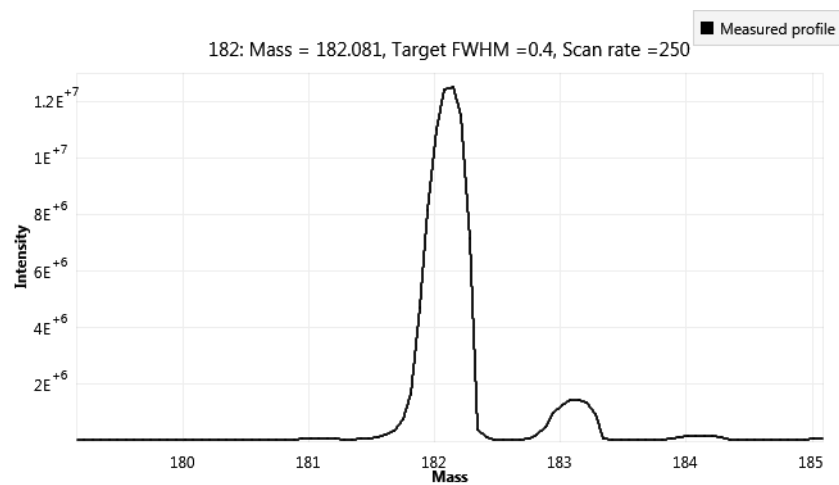
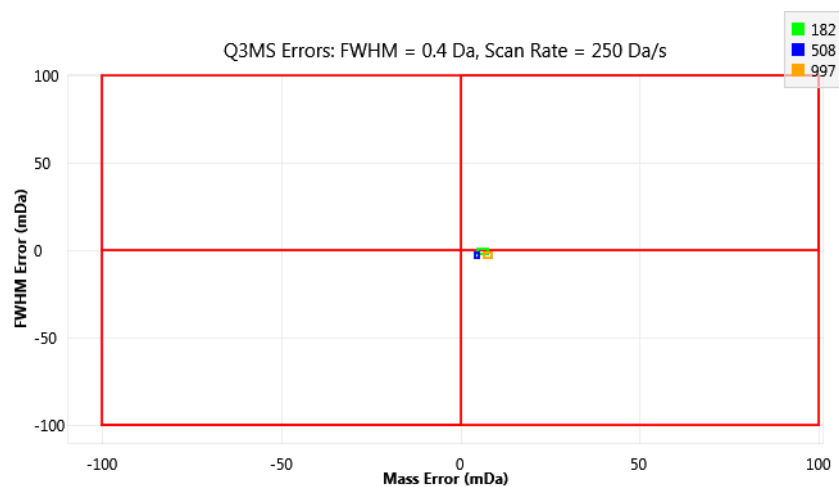
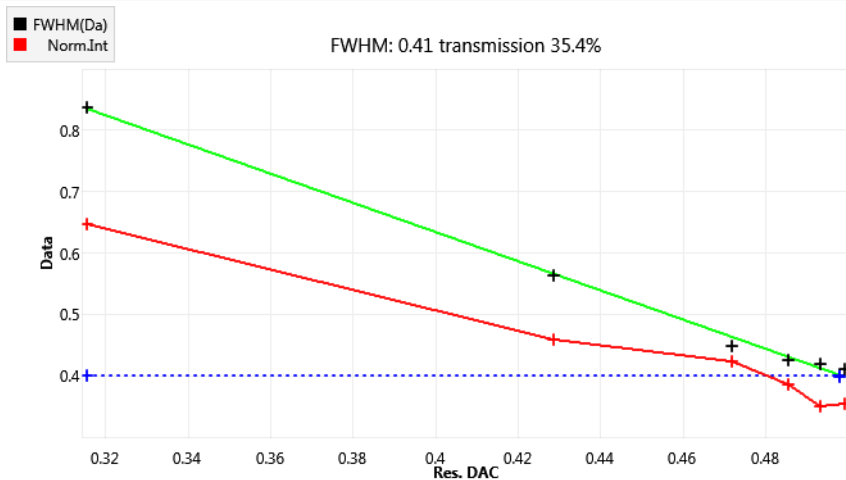
■ Measured profile



Diagnostic Report

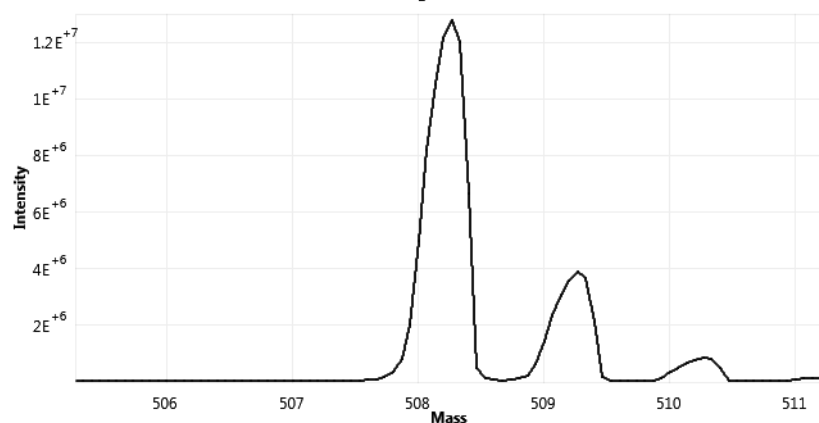


Diagnostic Report

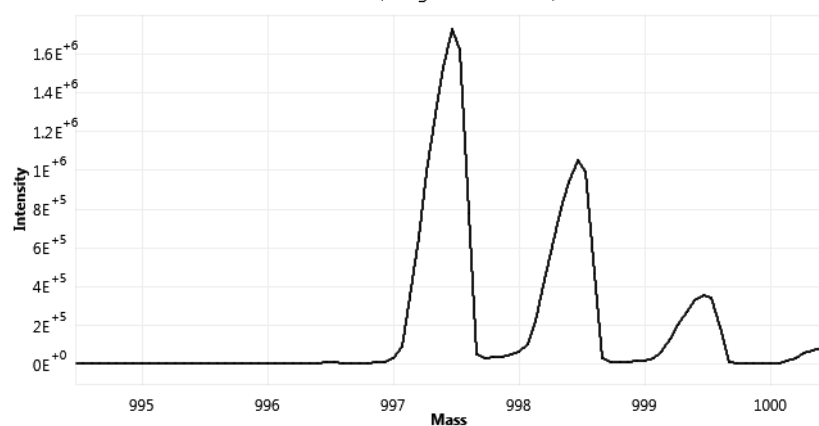


Diagnostic Report

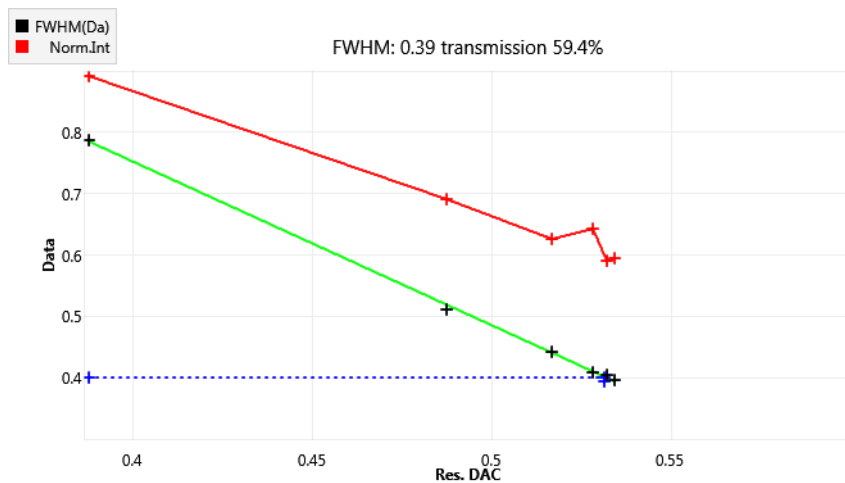
508: Mass = 508.208, Target FWHM = 0.4, Scan rate = 250



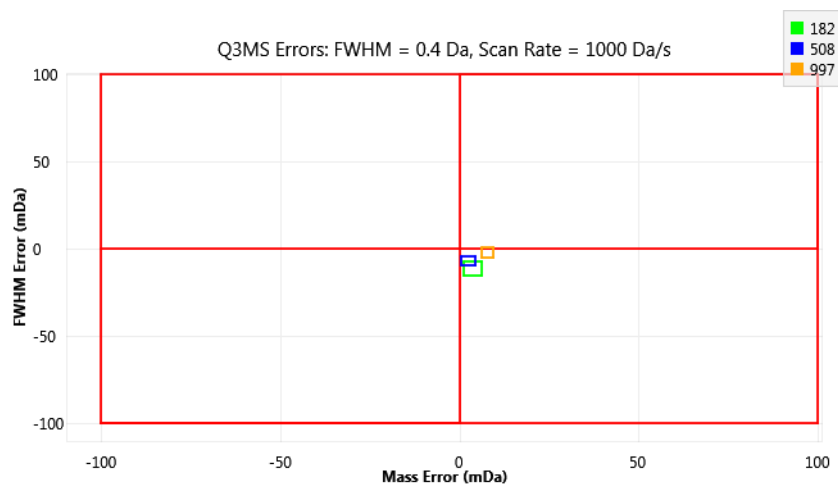
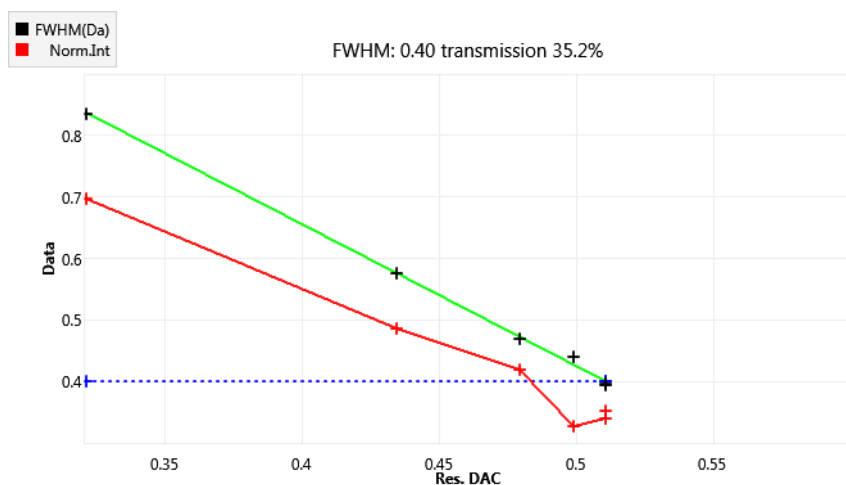
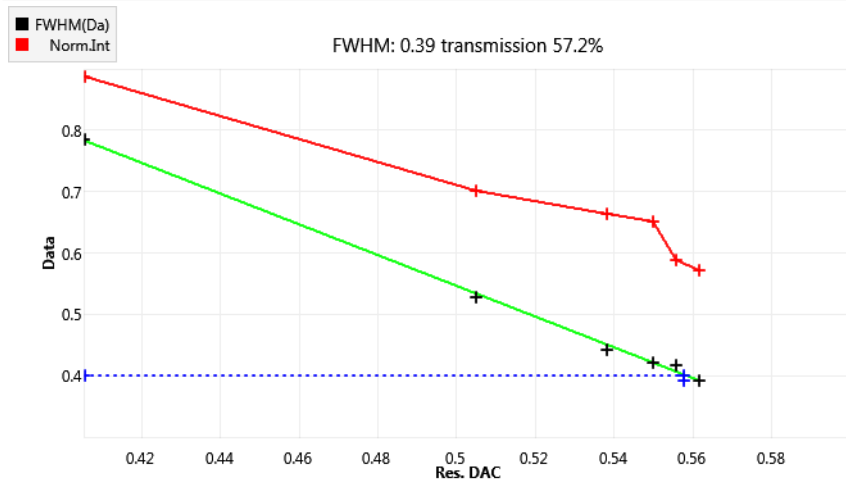
997: Mass = 997.398, Target FWHM = 0.4, Scan rate = 250



FWHM: 0.39 transmission 59.4%

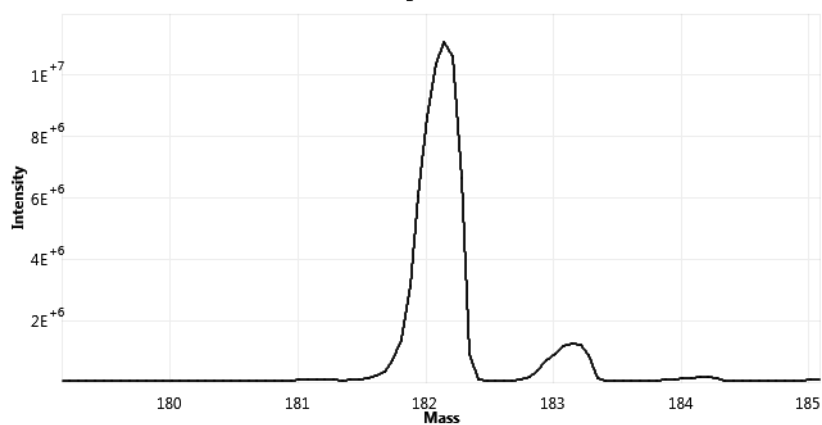


Diagnostic Report

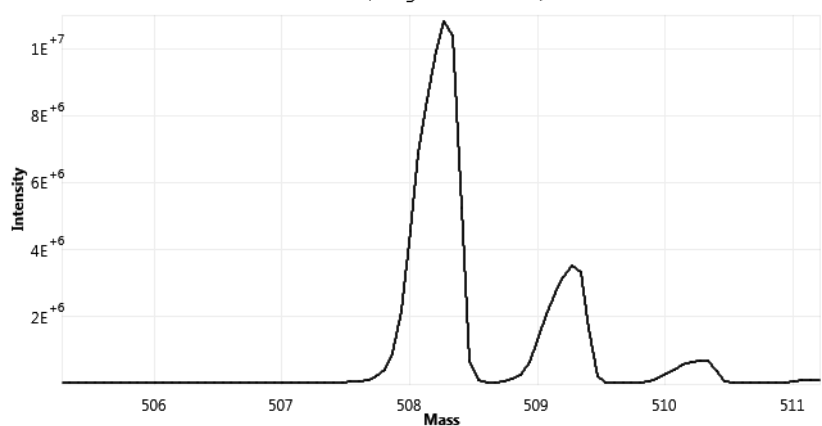


Diagnostic Report

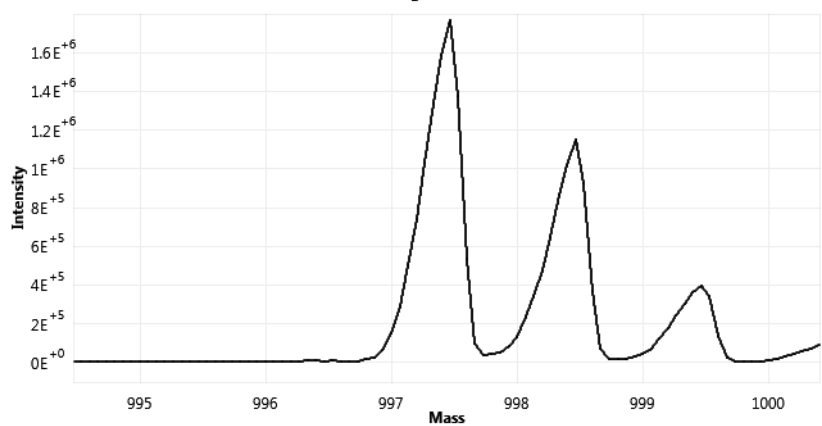
182: Mass = 182.081, Target FWHM = 0.4, Scan rate = 1000



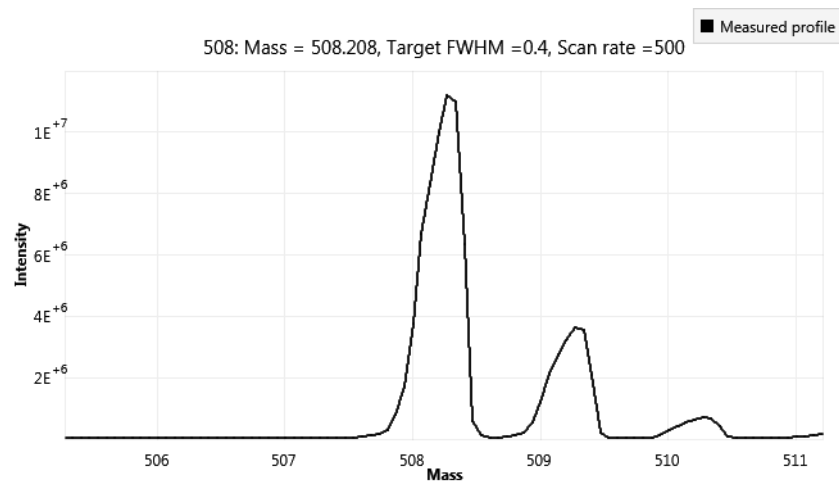
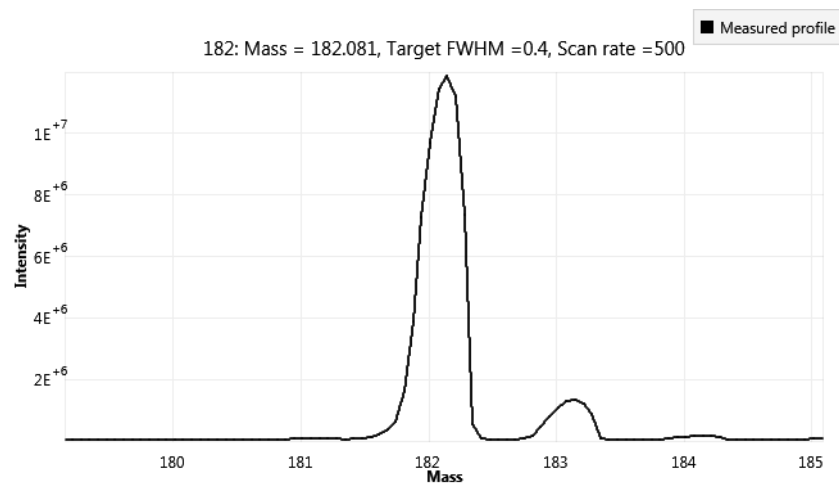
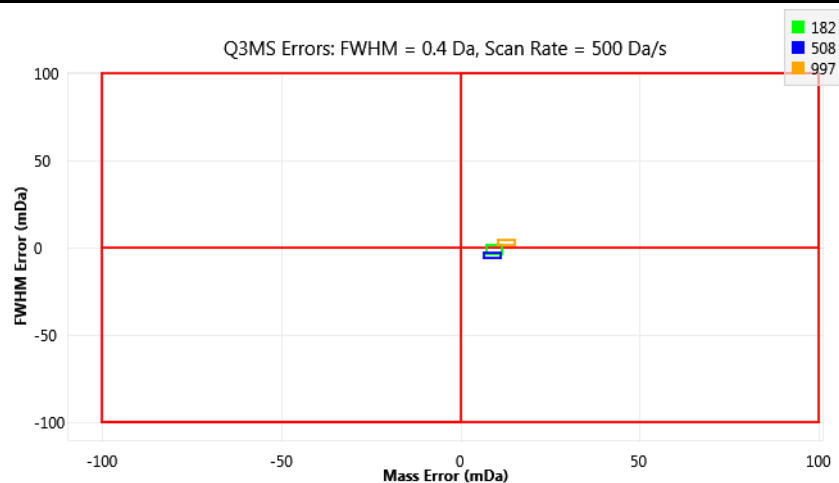
508: Mass = 508.208, Target FWHM = 0.4, Scan rate = 1000



997: Mass = 997.398, Target FWHM = 0.4, Scan rate = 1000



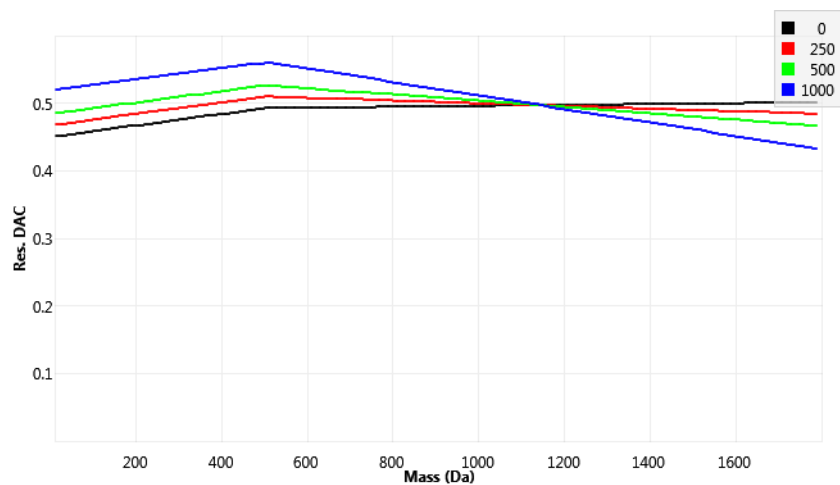
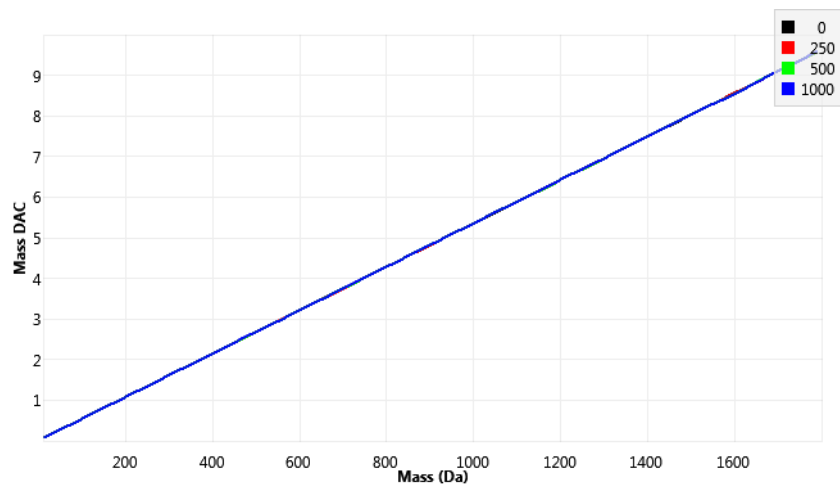
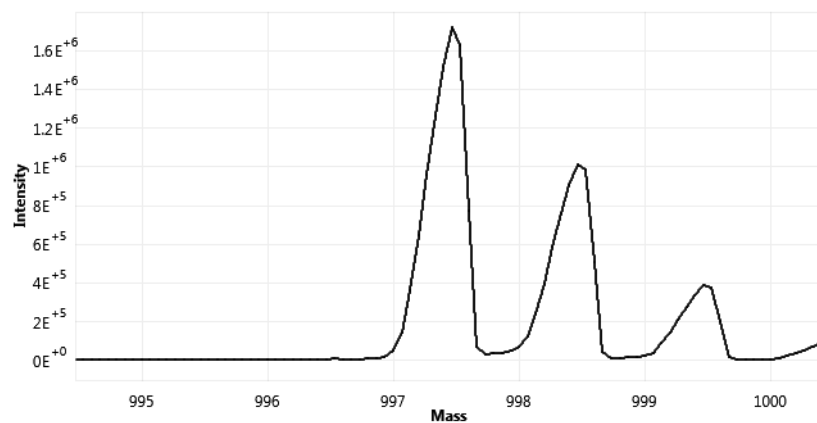
Diagnostic Report



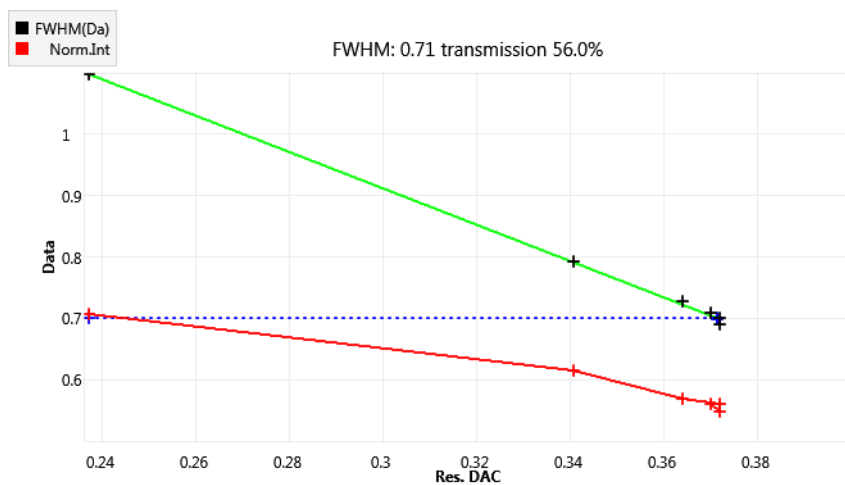
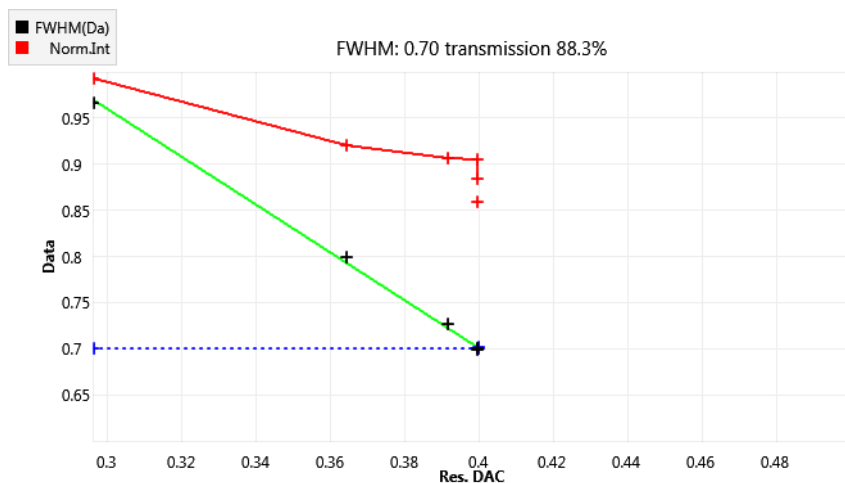
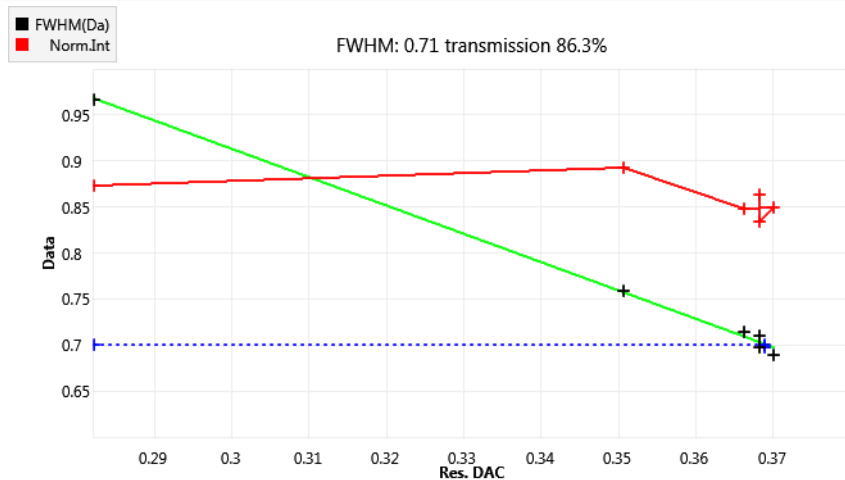
Diagnostic Report

997: Mass = 997.398, Target FWHM = 0.4, Scan rate = 500

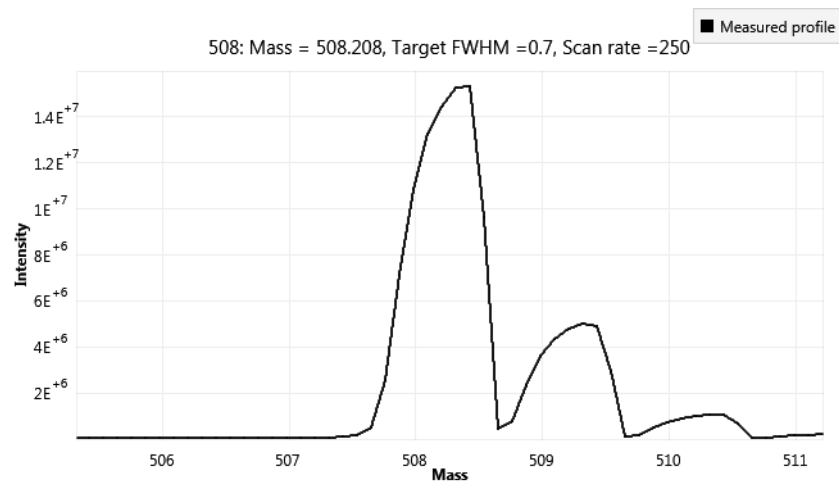
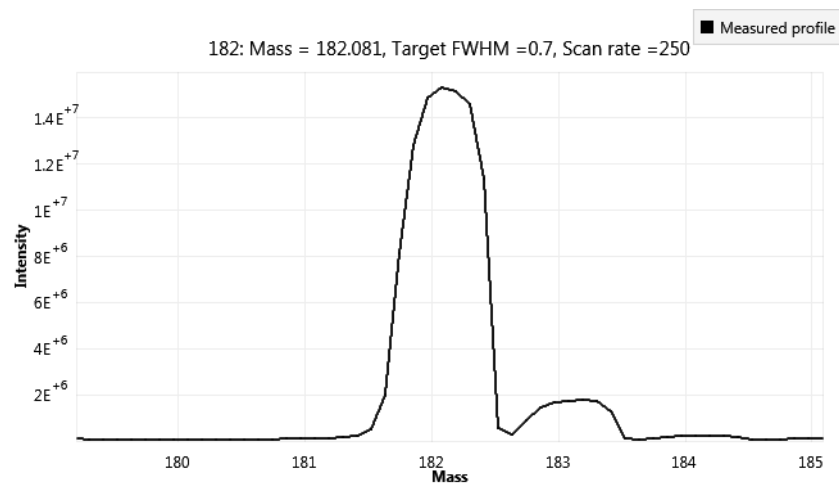
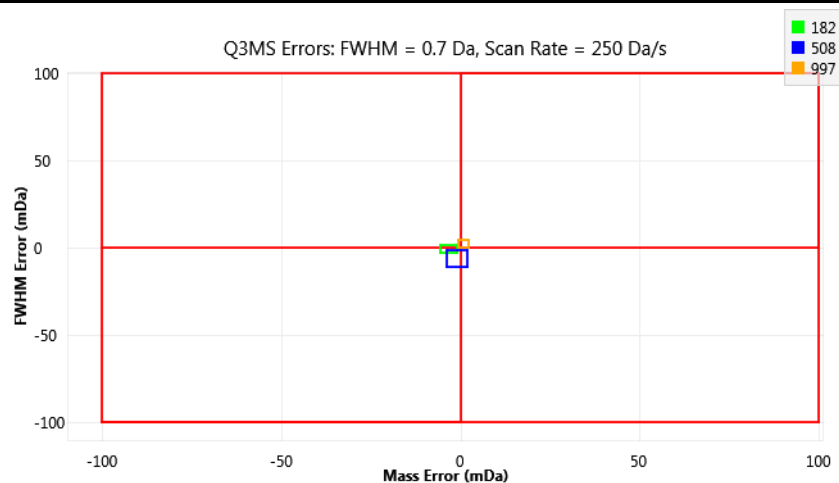
■ Measured profile



Diagnostic Report



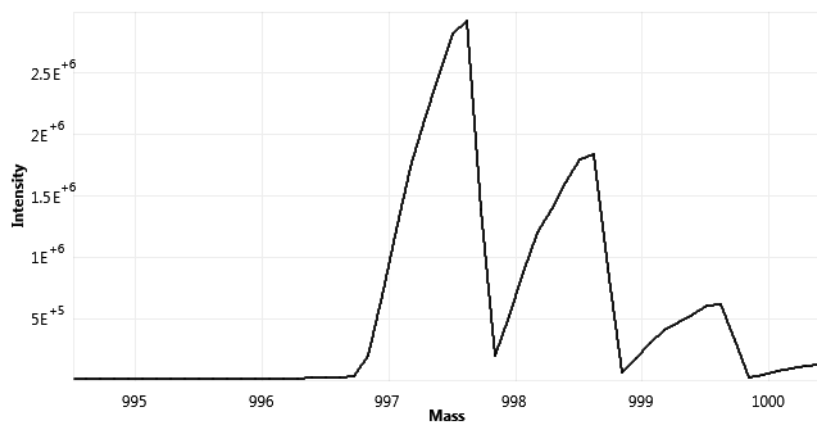
Diagnostic Report



Diagnostic Report

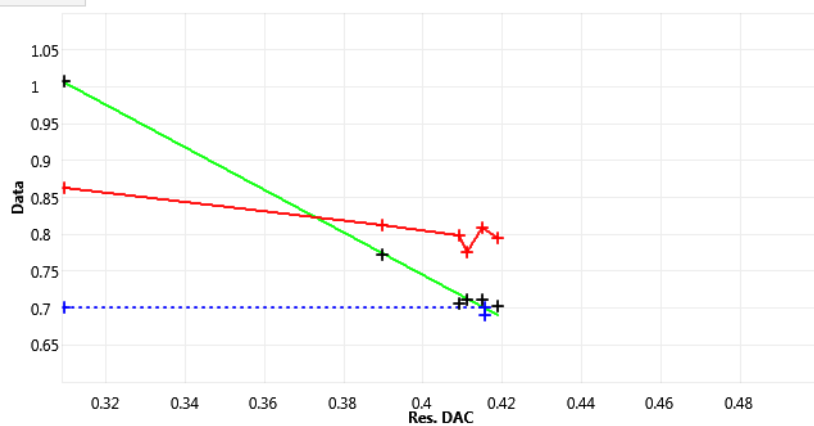
997: Mass = 997.398, Target FWHM = 0.7, Scan rate = 250

■ Measured profile



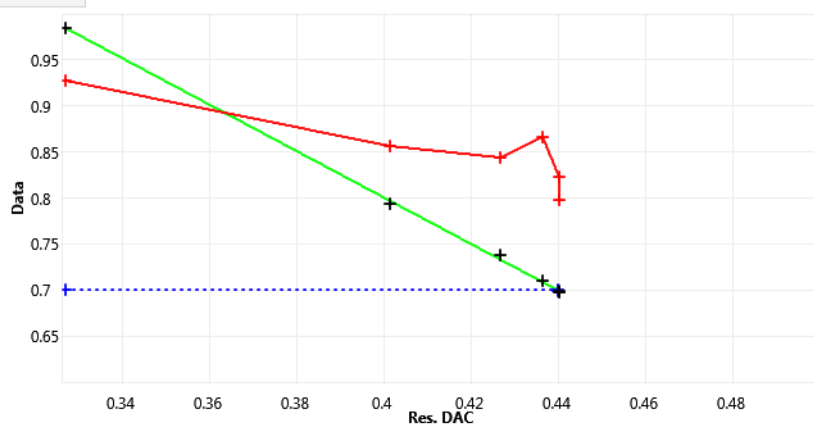
■ FWHM(Da)
■ Norm.Int

FWHM: 0.70 transmission 79.4%

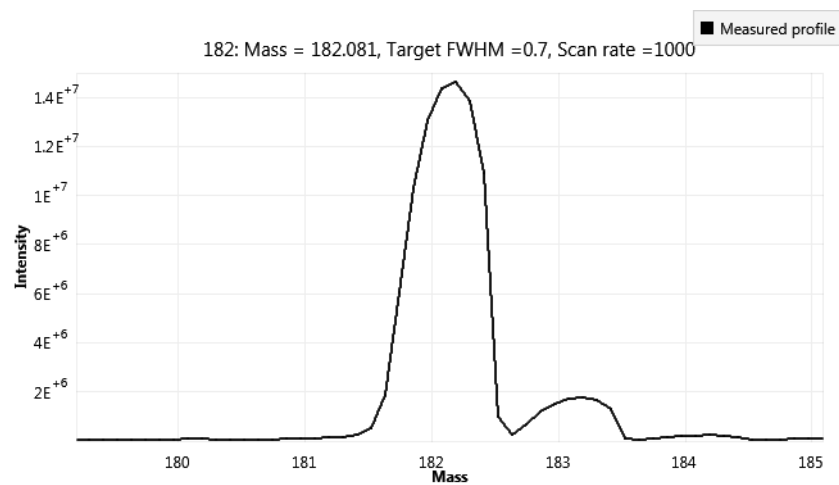
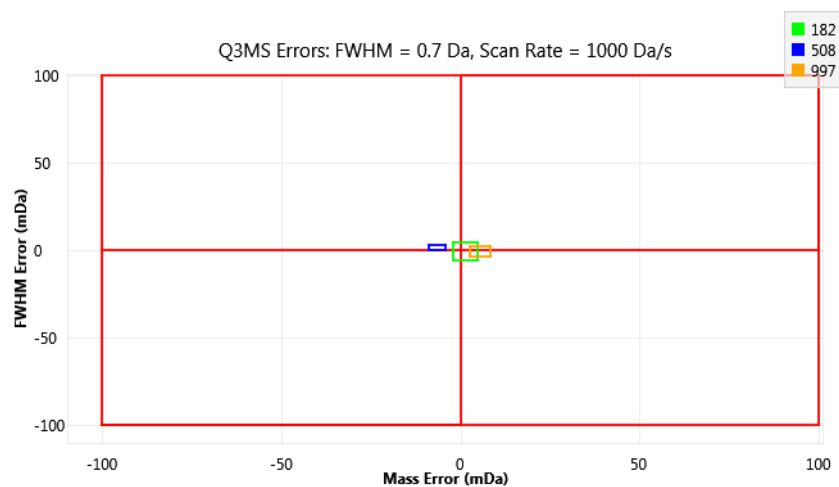
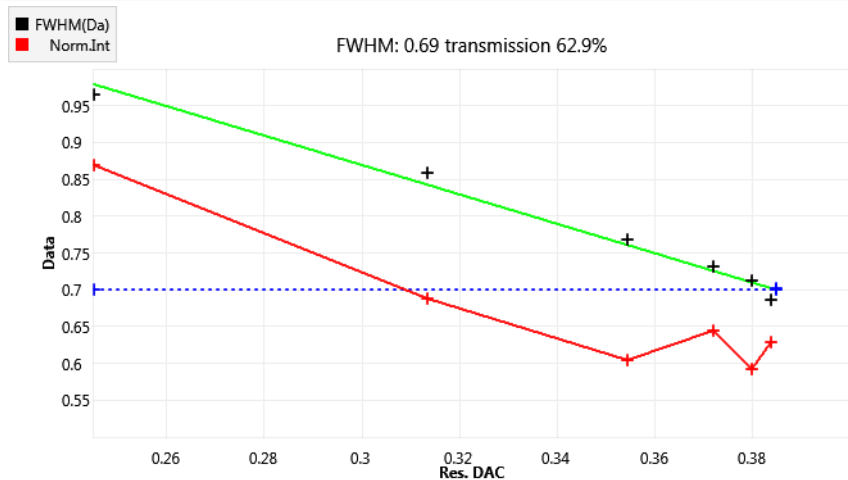


■ FWHM(Da)
■ Norm.Int

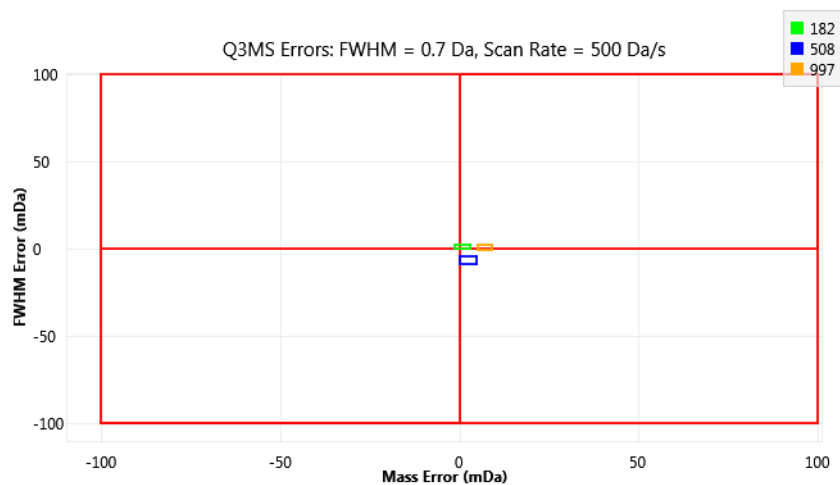
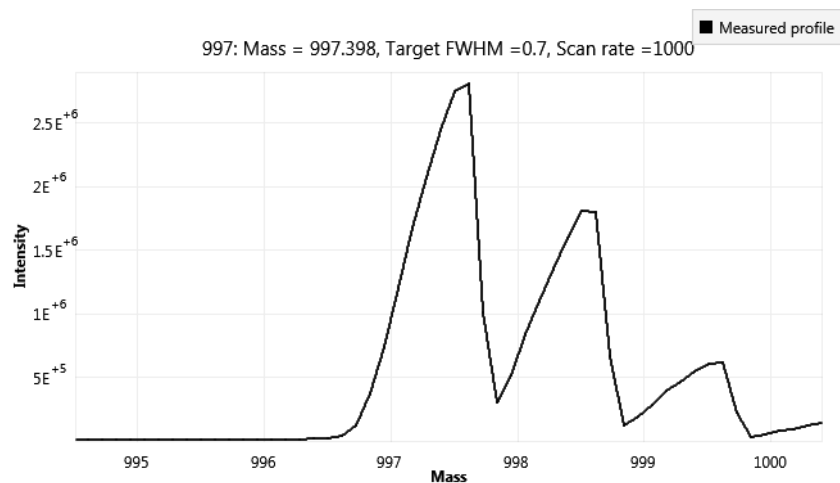
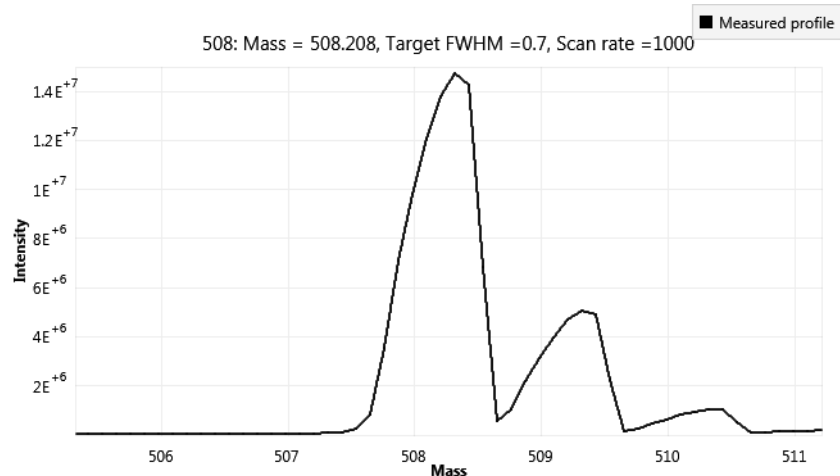
FWHM: 0.70 transmission 79.7%



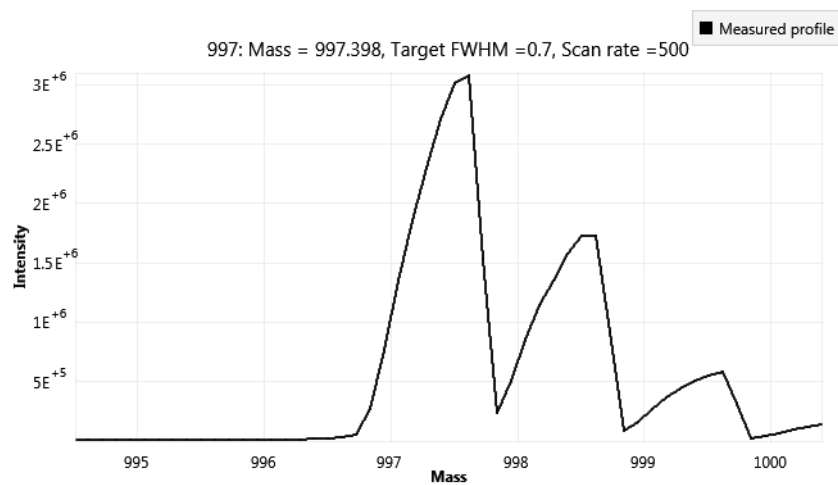
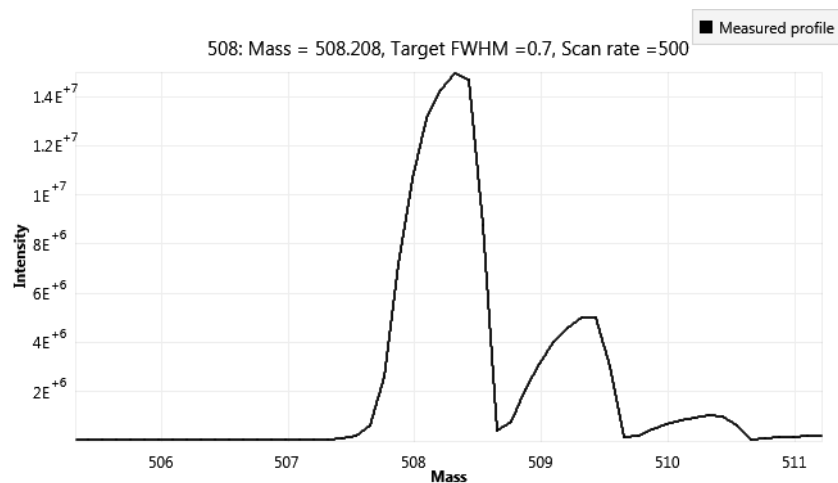
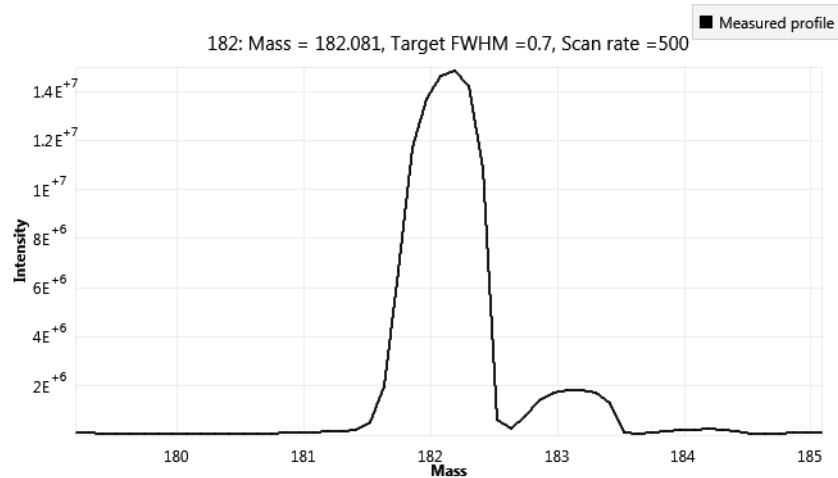
Diagnostic Report



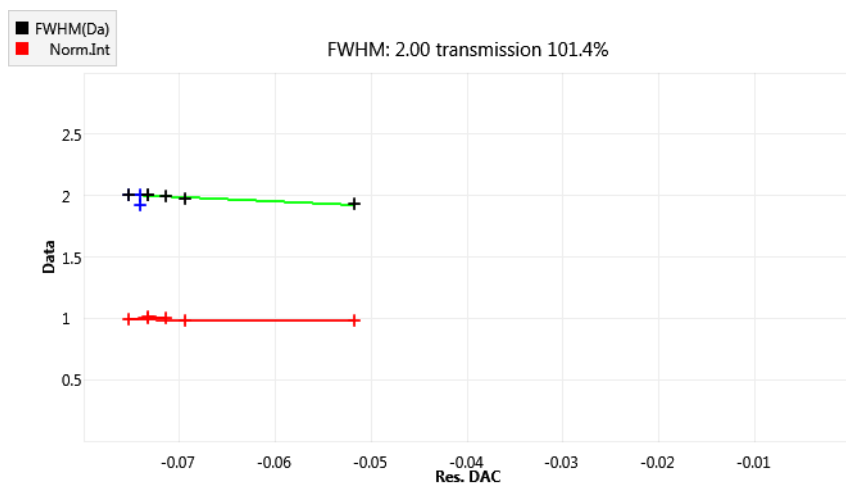
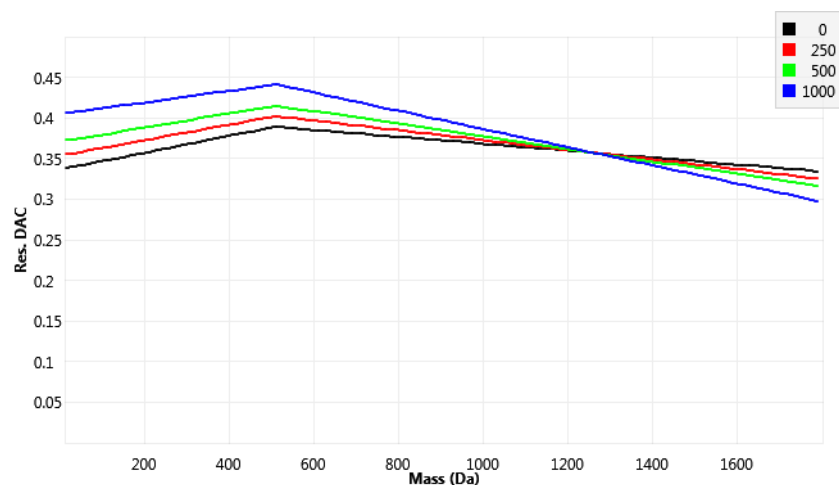
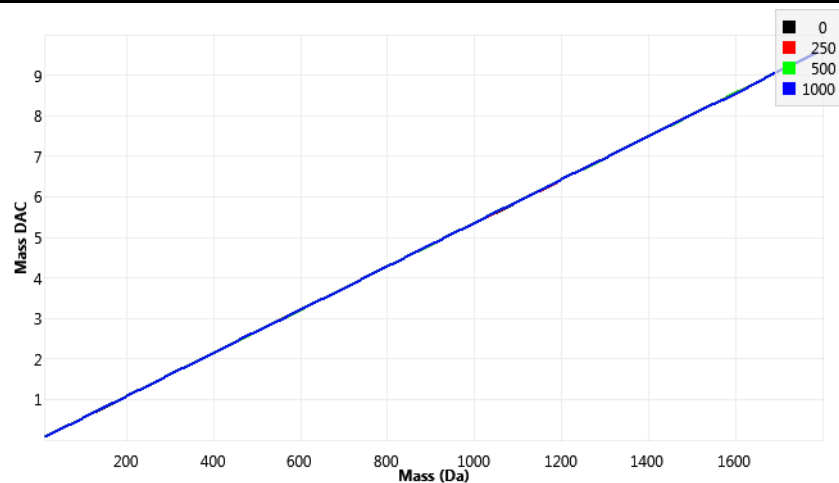
Diagnostic Report



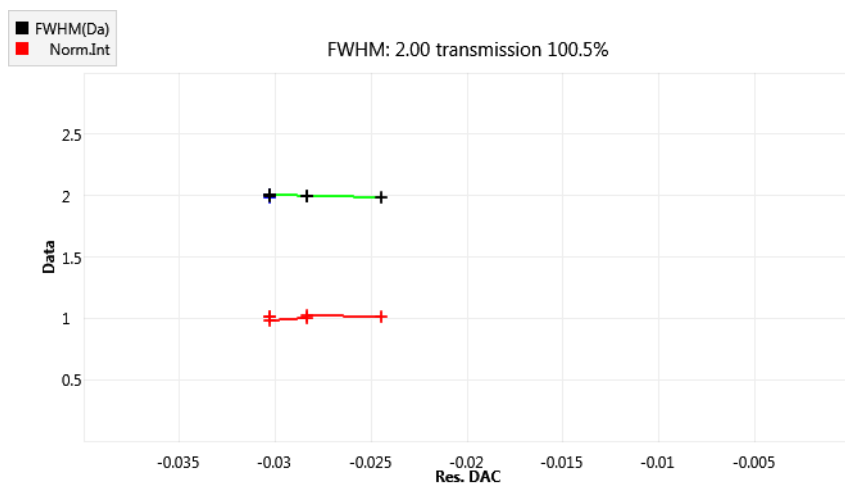
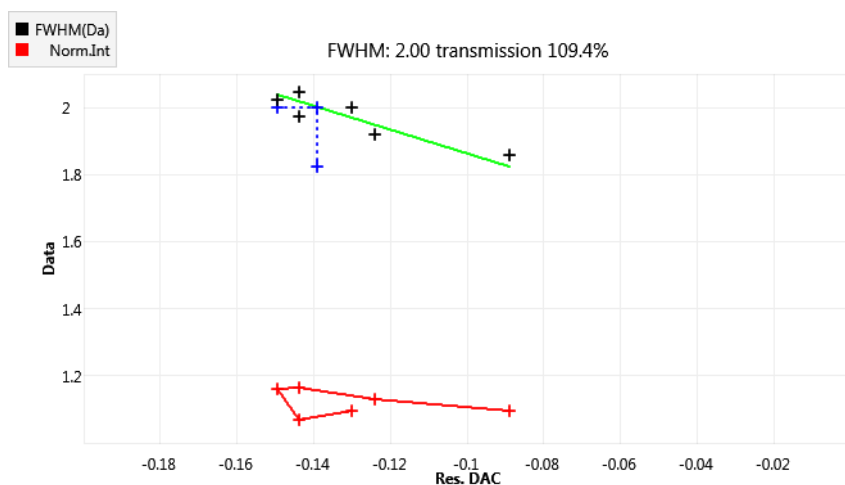
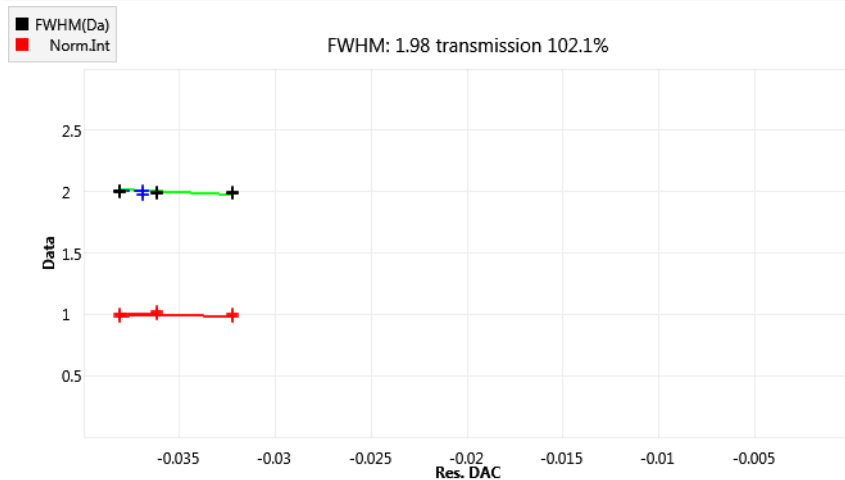
Diagnostic Report



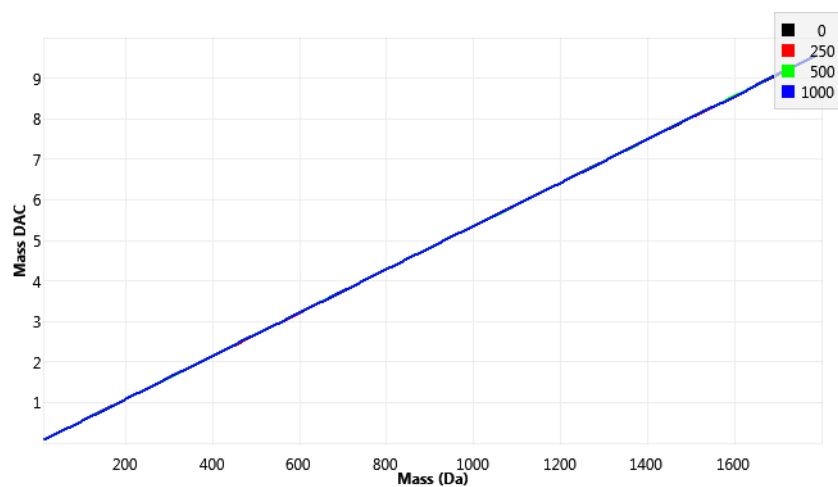
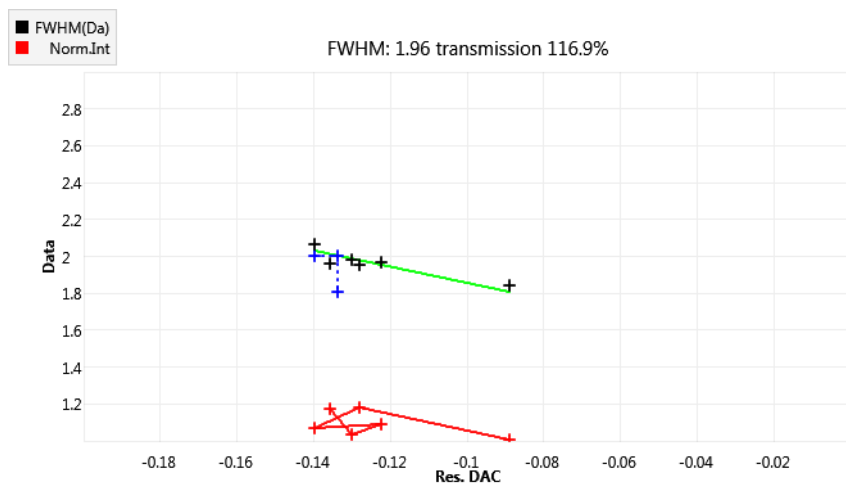
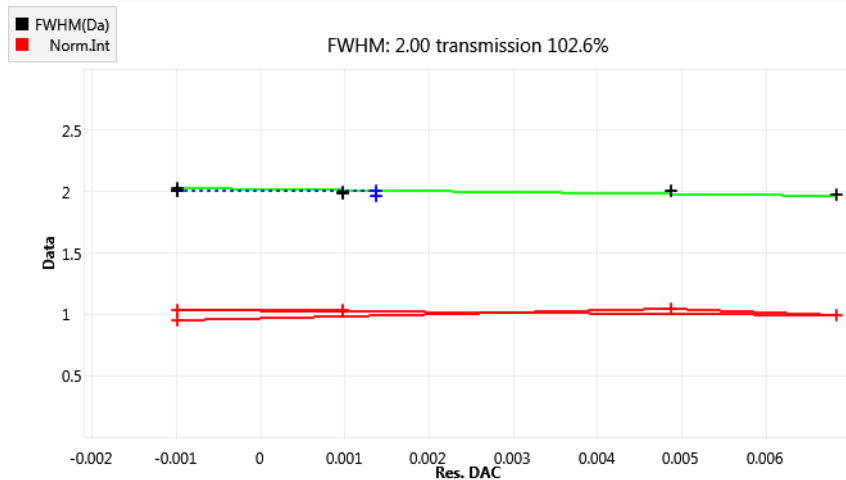
Diagnostic Report



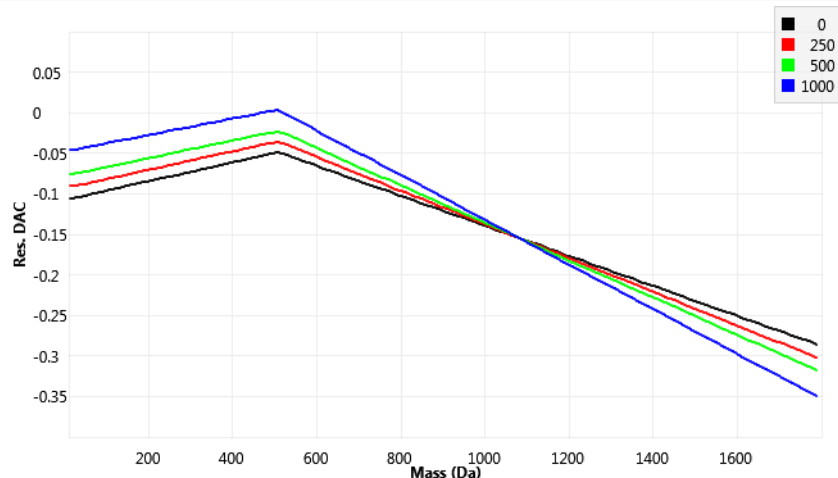
Diagnostic Report



Diagnostic Report

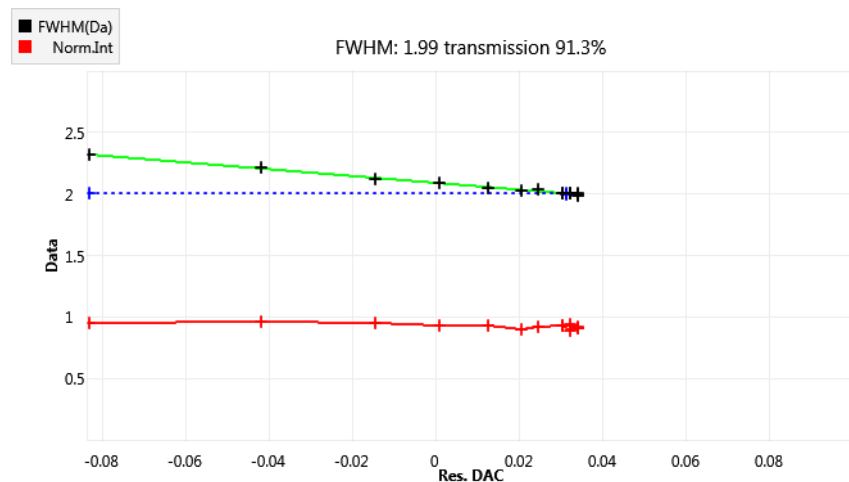
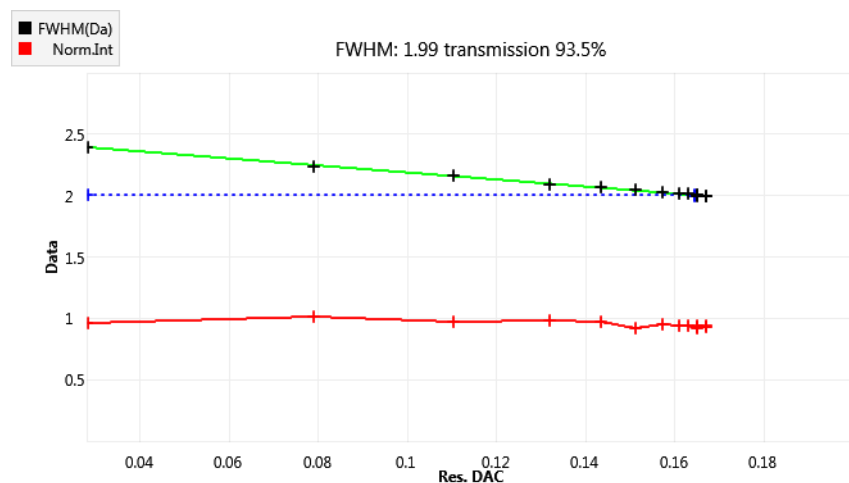


Diagnostic Report

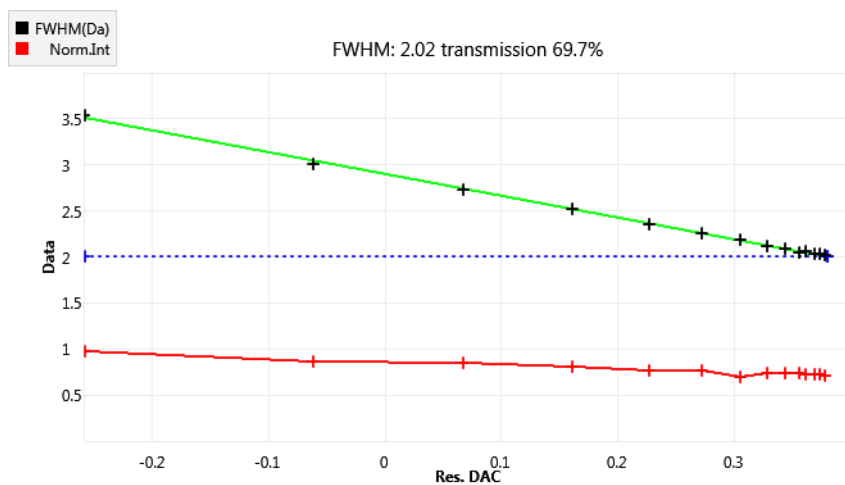
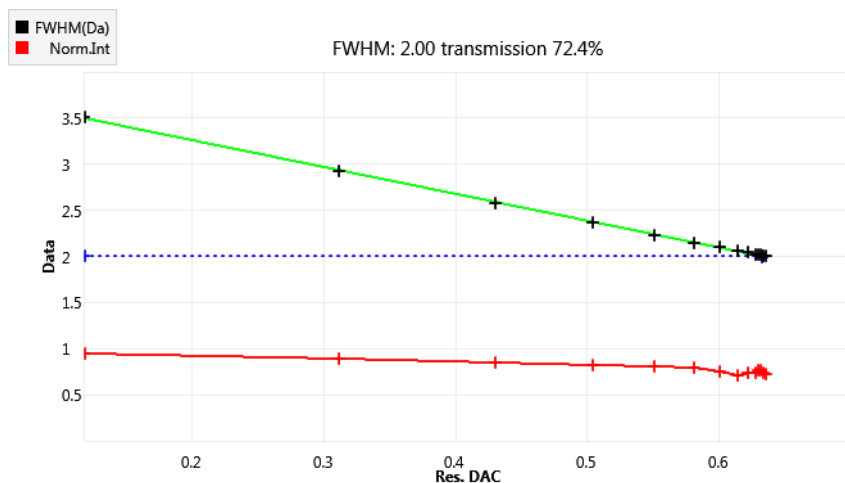
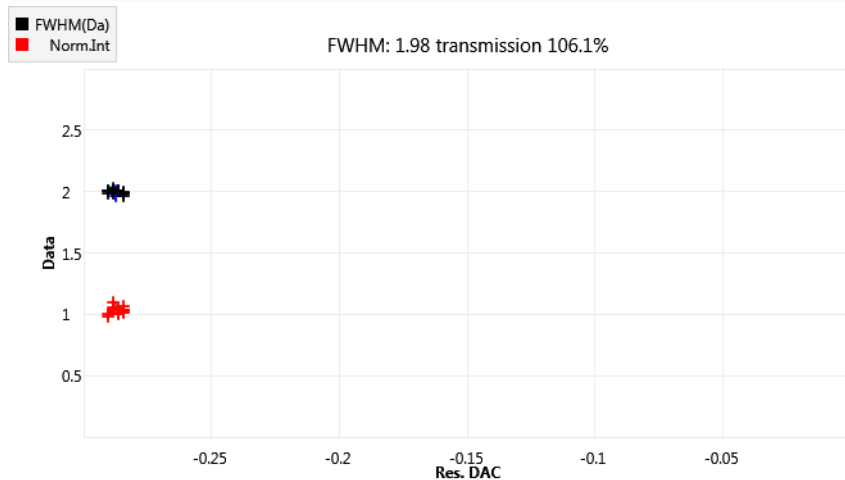


Mass And Resolution Calibration succeeded.

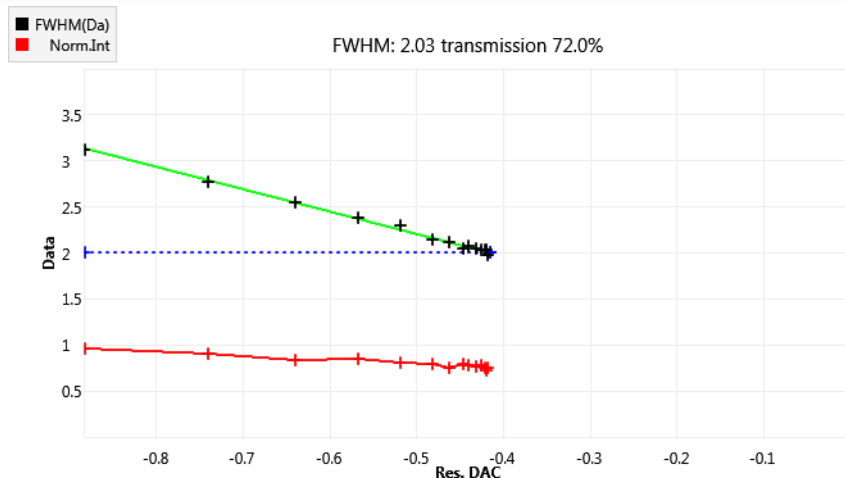
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===Extra High Scan Rate Calibration Start=====



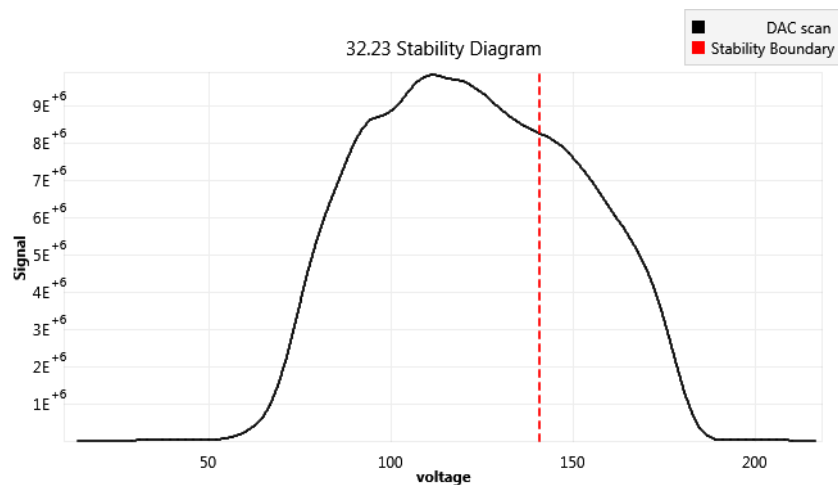
Diagnostic Report



Diagnostic Report



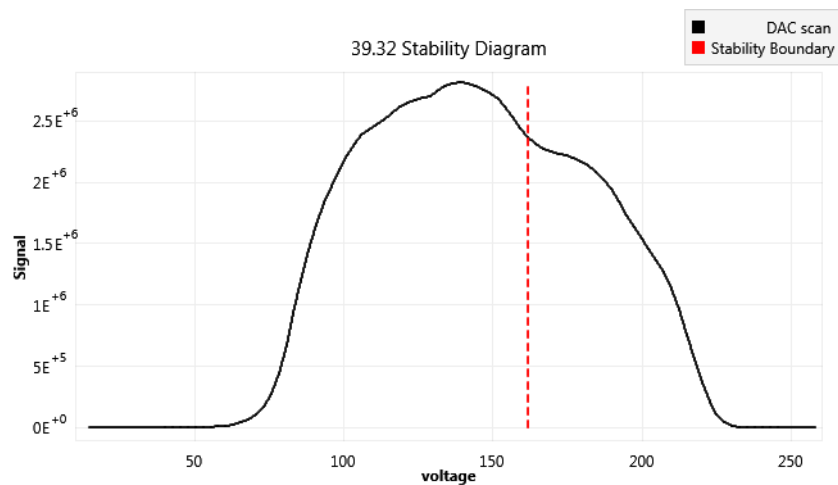
Extra high scan rate calibration passed



Q2 AMP mass to V

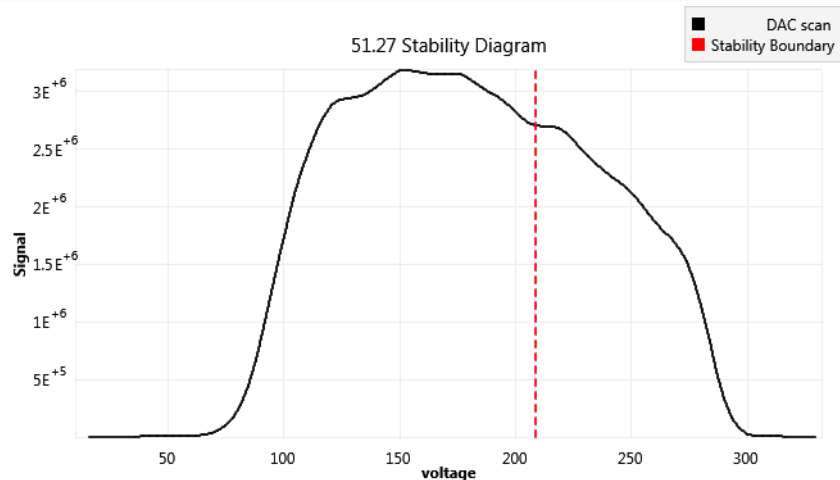
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mass	voltage
32.23	140.59

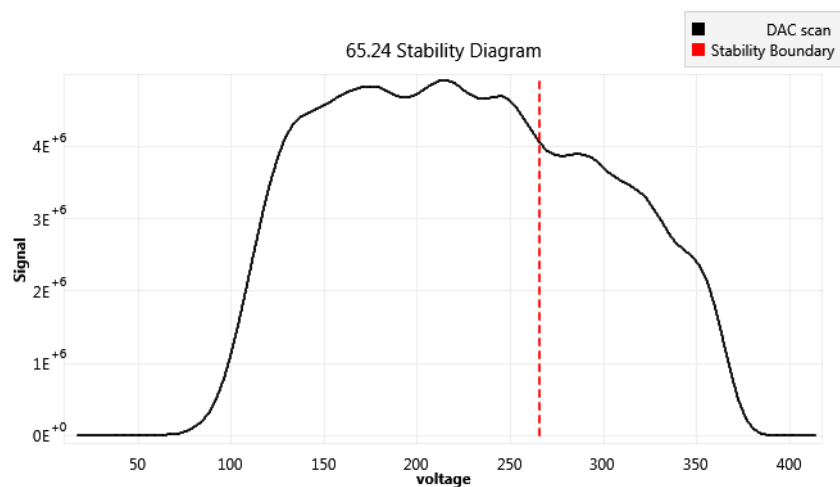


39.32 161.90

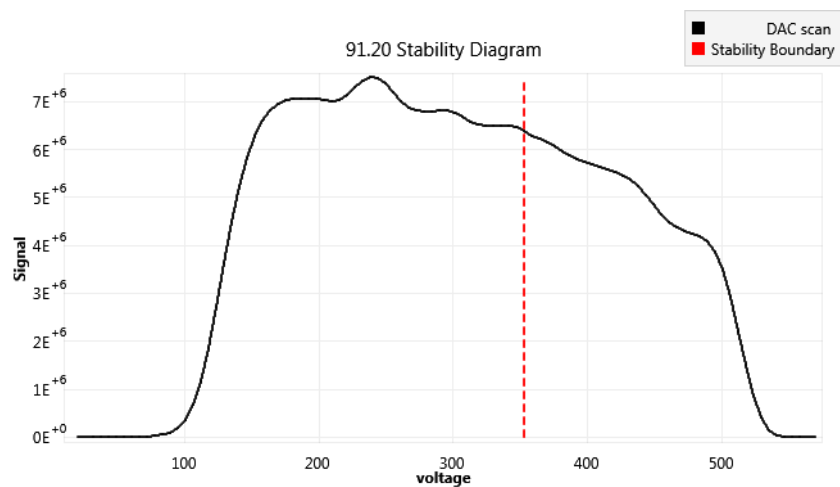
Diagnostic Report



51.27 208.91

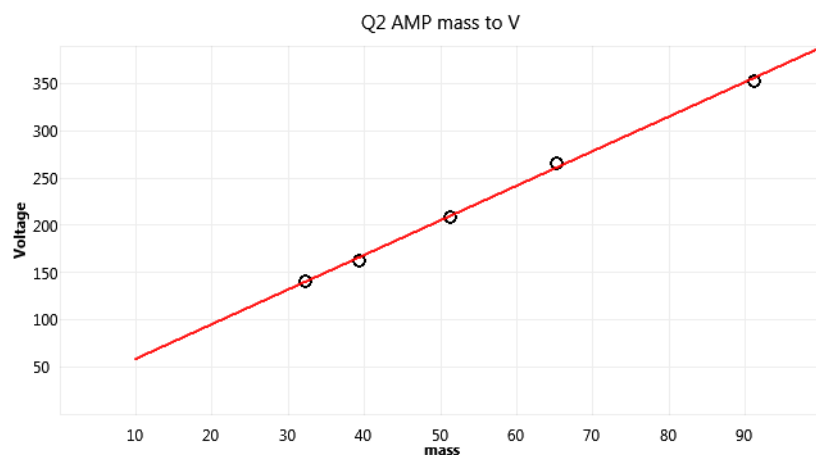


65.24 265.53



91.20 352.68

=====



System Configuration:

DevMode	false
BreadboardDevMode	false
SetAnalogChannelEnabled(0, false)	
SetAnalogChannelEnabled(1, false)	
DivertValveConfig	1
SyringePumpConfigured	true
ContactClosureConfig	0
CIDGasType	0
WaitForGasFlowsToStabilize	true
WaitForTemperaturesToStabilize	true
DisableRunCheck	false
KeepLastMethodSettings	true
SetDivertValveSerialNumber("A", "1245")	
SetDivertValveSerialNumber("B", "4567")	
ActiveSourceType	1
InstalledSourceType	1
EnableSweepGasForNSISource	true
LockMassSourceConfigured	false
ETDSOURCEConfigured	false
EnableIonGaugeCheck	true
EnableVacuumCheck	true
EnableTurboCheck	true
EnableBoardIdentification	true
EnableIonSourceIdentification	true
LowConvectronGaugePressureWarning	true
LowSheathGasFlowWarning	true
LowAuxGasFlowWarning	true
LowSweepGasFlowWarning	true
LowCollisionGasFlowWarning	true
CurrentCalMix	0

Embedded System Information:

Acquisition Driver	2015-0830-0002
DSP Driver	2015-0830-0002

Serial Number: TQH-Q1-0576

Signature:

Tuesday, February 21, 2017 12:00 PM

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Diagnostic Report

DSP Image	02.00.046.2 20150830
General Purpose Linux Driver	2015-0830-0002
Linux Kernel	2.6.35-ts-powerpc
PPC Image	02.00.046.02 20150830
PPC MAC Address	00:01:EC:00:E4:52
CPU	02.00.117.0 20150429 20140207
Electrometer	02.0D.053.0 20160810 20150428
Host FPGA	02.00.117.0 20150429
LBP	02.0D.048.0 20150428 20150427
RD	02.0D.048.0 20150428 20150427
RD2	02.0D.048.0 20150428 20150427
RFA1	02.0D.048.0 20150428 20150427
RFA2	02.0D.048.0 20150428 20150427
RFC1	02.0D.048.0 20150428 20150427
RFC2	02.0D.048.0 20150428 20150427
SRC	02.0D.048.0 20150428 20150427