Lab Advisor Diagnostic Result

Summary **QQQ Power On Diagnostics** **Failed**

Started at 8/27/2019 12:12:21 PM

Item		Result
Versions	SG14087005	Done
Check Power Supply Voltages	SG14087005	Passed
Ramp EMV supply	SG14087005	Passed
Ramp HED supply	SG14087005	Passed
Check Turbo Pump Current	SG14087005	Passed
Report Faults	SG14087005	Failed
Ramp Drying Gas Pressure	SG14087005	Passed
Ramp Nebulizer Pressure	SG14087005	Passed
Pump Status	SG14087005	Passed
MS1 RFPA functionality	SG14087005	Passed
MS2 RFPA functionality	SG14087005	Passed
Read MS1 RFPA ID	SG14087005	Passed
Read MS2 RFPA ID	SG14087005	Passed
Ramp Collision Cell Entrance Lens	SG14087005	Passed
Ramp Collision Cell Hexapole DC	SG14087005	Passed
Ramp Collision Cell Exit Lens	SG14087005	Passed
Collision Cell RF Drive Level	SG14087005	Passed
Ramp Collision Cell RF	SG14087005	Failed
Ramp Collision Cell Gas	SG14087005	Done
MS 1 Heater	SG14087005	Passed
MS 2 Heater	SG14087005	Failed
Initialize High Voltage Lenses	SG14087005	Failed
Ramp fragmentor	SG14087005	Failed
Ramp skimmer 1	SG14087005	Failed
Ramp octopole 1 dc	SG14087005	Failed
Ramp octopole shroud	SG14087005	Failed
Ramp lens 1 dc	SG14087005	Failed
Ramp MS1 Pre-Filter DC	SG14087005	Failed
Ramp MS1 Shroud	SG14087005	Failed
Ramp iris	SG14087005	Failed
Ramp MS1 Post-Filter DC	SG14087005	Failed
Ramp MS2 PreFilter DC	SG14087005	Failed
Ramp Octopole RF	SG14087005	Failed
Octopole RF Drive Level	SG14087005	Failed
Ramp MS2 Shroud	SG14087005	Failed

Finished at 8/27/2019 12:24:35 PM

Lab Advisor Diagnostic Result

Versions — Done

SG14087005

These tests evaluate the communication between the connected computer and instrument, and displays the relevant electronics version information from the instrument.

Started at 8/27/2019 12:12:21 PM

Results

Item	Value	Result
Instrument Serial Number	SG14087005	Done
SmartCard Instrument Firmware Version	A.00.08.61	Done
SmartCard DSP Firmware Version	A.00.08.25	Done
Mainboard 1 Logic ID	0x23010004	Done
Mainboard 2 Logic ID	0x23010004	Done
Diagnostics software version	1.2.0.5	Done

Finished at 8/27/2019 12:12:22 PM

Check Power Supply Voltages — Passed

SG14087005

This test evaluates Power Supply outputs from the instrument. Listed Power Supplies include the Turbo Pump Power Supply/Supplies, Main Power Supply Voltages (+ 15 VDC, +24 VDC), 48 Volt Power Supply (+48 VDC), and Quad Driver DC Voltage Supplies. NOTE: The +5 VDC and –15 VDC voltages from the Main Power Supply are not tested; +5 VDC is tested indirectly by instrument communication, and – 15 VDC is not tested (it must be manually measured).

Started at 8/27/2019 12:12:23 PM

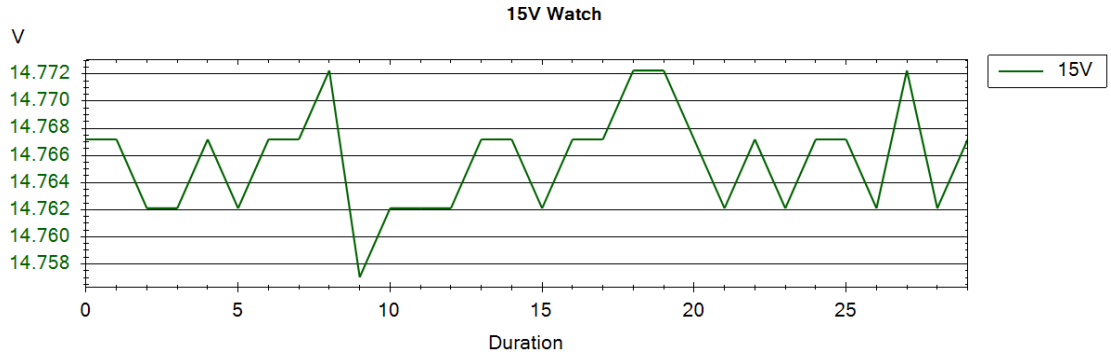
Results

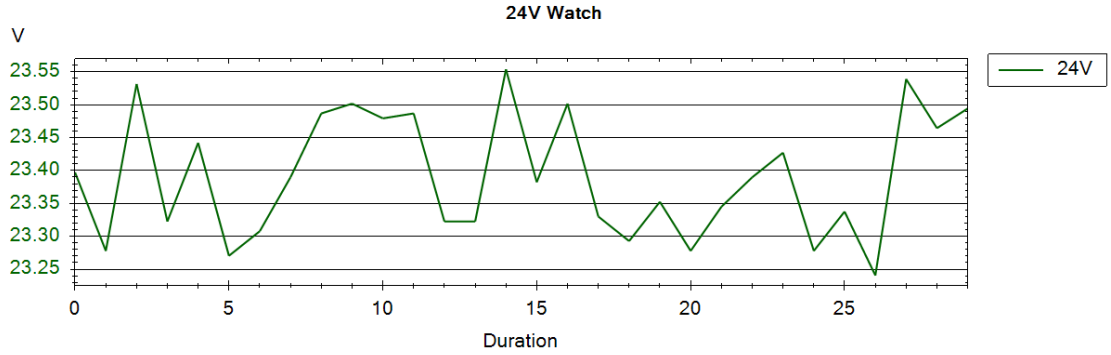
Item	Value	Result
Turbo pump 1 speed	100.00 [95.00 to 105.00] %	Passed
Turbo pump 1 current	2.98 [0.00-5.00] A	Passed
15V power supply	14.76 [14.40-15.60] V	Passed
24V power supply	23.32 [22.80-25.20] V	Passed
48V power supply	48.03 [46.00-50.00] V	Passed
U- drive on MB1	15.21 [10.00-50.00] V	Passed
U+ drive on MB1	15.48 [10.00-50.00] V	Passed
U rail voltage on MB1	81.64 [60.00-90.00] V	Passed
vcap/vcham	5000.18	Done
U- drive on MB2	15.24 [10.00-50.00] V	Passed
U+ drive on MB2	14.63 [10.00-50.00] V	Passed
U rail voltage on MB2	82.61 [60.00-90.00] V	Passed

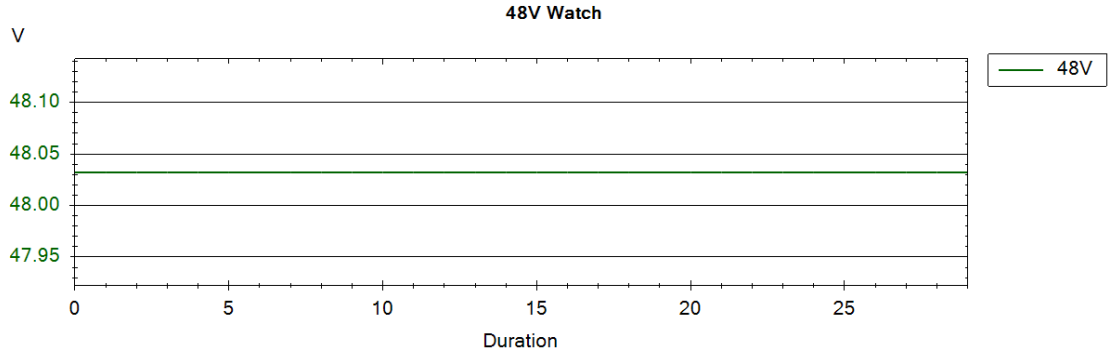
Finished at 8/27/2019 12:12:27 PM

Lab Advisor Diagnostic Result

Signals







Lab Advisor Diagnostic Result

Limits	Name	Limit
	15V power supply	14.4 ... 15.6 V
	24V power supply	22.8 ... 25.2 V
	48V power supply	46 ... 50 V
	EMV voltage	1000 ... 1500 V
	HED current	0.005 ... 0.06 A
	HED Voltage	9000 ... 10000 V
	U- drive on MB1	10 ... 50 V
	U+ drive on MB1	10 ... 50 V
	U rail voltage on MB1	60 ... 90 V
	U- drive on MB2	10 ... 50 V
	U+ drive on MB2	10 ... 50 V
	U rail voltage on MB2	60 ... 90 V
	Turbo pump 1 speed	95 ... 105 %
	Turbo pump 1 current	0 ... 5 A
	Turbo pump 2 speed	95 ... 105 %
	Turbo pump 2 current	0 ... 5 A

Lab Advisor Diagnostic Result

Ramp EMV supply — Passed

SG14087005

This test evaluates the Electron Multiplier Voltage (EMV) Power Supply output from the instrument. The EMV Power Supply is ramped for 0 to -3000 VDC and plotted against the monitored voltage; a linear response is expected.

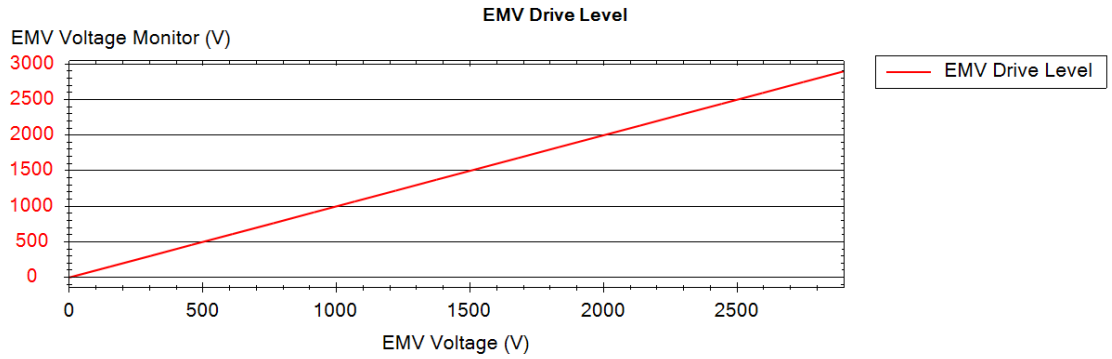
Started at 8/27/2019 12:12:27 PM

Results

Item	Value	Result
MB 1 Lens supply	320.63 [264.00-396.00] V	Passed
Pre Ramp EMV voltage	1439.94 V	Done
Residual	1.00	Done
Post Ramp Emv voltage	143.92 V	Done

Finished at 8/27/2019 12:12:33 PM

Signals



Limits

Name	Limit
MB 1 Lens supply	264 ... 396 V
MB 2 Lens supply	264 ... 396 V

Ramp HED supply — Passed

SG14087005

This test evaluates the High Energy Dynode (HED) Power Supply output from the instrument. The HED Power Supply is ramped for both 0 to -10000 VDC (for Positive Ion Mode) and 0 to +10000 VDC (for Negative Ion Mode) and plotted against the monitored voltage; a linear response is expected.

Started at 8/27/2019 12:12:33 PM

Results

Item	Value	Result
Pre Ramp HED voltage	11873.86 V	Done
Set voltage	2500.00 V	Done
monitor voltage	2500.00 V	Done
Set voltage	2720.59 V	Done
monitor voltage	2720.30 V	Done
Set voltage	2941.18 V	Done
monitor voltage	2941.17 V	Done

Lab Advisor Diagnostic Result

Item	Value	Result
Set voltage	3161.76 V	Done
monitor voltage	3161.47 V	Done
Set voltage	3382.35 V	Done
monitor voltage	3382.34 V	Done
Set voltage	3602.94 V	Done
monitor voltage	3602.64 V	Done
Set voltage	3823.53 V	Done
monitor voltage	3823.51 V	Done
Set voltage	4044.12 V	Done
monitor voltage	4043.81 V	Done
Set voltage	4264.71 V	Done
monitor voltage	4264.68 V	Done
Set voltage	4485.29 V	Done
monitor voltage	4484.98 V	Done
Set voltage	4705.88 V	Done
monitor voltage	4705.85 V	Done
Set voltage	4926.47 V	Done
monitor voltage	4926.15 V	Done
Set voltage	5147.06 V	Done
monitor voltage	5147.02 V	Done
Set voltage	5367.65 V	Done
monitor voltage	5367.32 V	Done
Set voltage	5588.24 V	Done
monitor voltage	5588.19 V	Done
Set voltage	5808.82 V	Done
monitor voltage	5808.49 V	Done
Set voltage	6029.41 V	Done
monitor voltage	6029.36 V	Done
Set voltage	6250.00 V	Done
monitor voltage	6249.66 V	Done
Set voltage	6470.59 V	Done
monitor voltage	6470.53 V	Done
Set voltage	6691.18 V	Done
monitor voltage	6690.83 V	Done
Set voltage	6911.76 V	Done
monitor voltage	6911.70 V	Done

Lab Advisor Diagnostic Result

Item	Value	Result
Set voltage	7132.35 V	Done
monitor voltage	7132.00 V	Done
Set voltage	7352.94 V	Done
monitor voltage	7352.87 V	Done
Set voltage	7573.53 V	Done
monitor voltage	7573.17 V	Done
Set voltage	7794.12 V	Done
monitor voltage	7794.04 V	Done
Set voltage	8014.71 V	Done
monitor voltage	8014.34 V	Done
Set voltage	8235.29 V	Done
monitor voltage	8235.21 V	Done
Set voltage	8455.88 V	Done
monitor voltage	8455.51 V	Done
Set voltage	8676.47 V	Done
monitor voltage	8676.38 V	Done
Set voltage	8897.06 V	Done
monitor voltage	8896.68 V	Done
Set voltage	9117.65 V	Done
monitor voltage	9117.55 V	Done
Set voltage	9338.24 V	Done
monitor voltage	9337.84 V	Done
Set voltage	9558.82 V	Done
monitor voltage	9558.72 V	Done
Set voltage	9779.41 V	Done
monitor voltage	9779.01 V	Done
Set voltage	10000.00 V	Done
monitor voltage	9999.89 V	Done
Residual	1.00 [-5.00-5.00]	Passed
Post Ramp HED voltage	11873.86 V	Done
Pre Ramp HED voltage	11873.86 V	Done
Set voltage	2500.00 V	Done
monitor voltage	2500.00 V	Done
Set voltage	2720.59 V	Done
monitor voltage	2720.30 V	Done
Set voltage	2941.18 V	Done

Lab Advisor Diagnostic Result

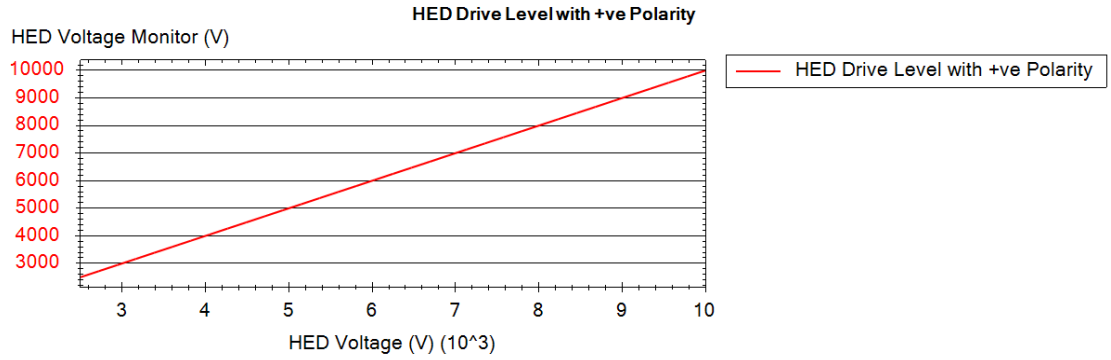
Item	Value	Result
monitor voltage	2941.17 V	Done
Set voltage	3161.76 V	Done
monitor voltage	3161.47 V	Done
Set voltage	3382.35 V	Done
monitor voltage	3382.34 V	Done
Set voltage	3602.94 V	Done
monitor voltage	3602.64 V	Done
Set voltage	3823.53 V	Done
monitor voltage	3823.51 V	Done
Set voltage	4044.12 V	Done
monitor voltage	4043.81 V	Done
Set voltage	4264.71 V	Done
monitor voltage	4264.68 V	Done
Set voltage	4485.29 V	Done
monitor voltage	4484.98 V	Done
Set voltage	4705.88 V	Done
monitor voltage	4705.85 V	Done
Set voltage	4926.47 V	Done
monitor voltage	4926.15 V	Done
Set voltage	5147.06 V	Done
monitor voltage	5147.02 V	Done
Set voltage	5367.65 V	Done
monitor voltage	5367.32 V	Done
Set voltage	5588.24 V	Done
monitor voltage	5588.19 V	Done
Set voltage	5808.82 V	Done
monitor voltage	5808.49 V	Done
Set voltage	6029.41 V	Done
monitor voltage	6029.36 V	Done
Set voltage	6250.00 V	Done
monitor voltage	6249.66 V	Done
Set voltage	6470.59 V	Done
monitor voltage	6470.53 V	Done
Set voltage	6691.18 V	Done
monitor voltage	6690.83 V	Done
Set voltage	6911.76 V	Done

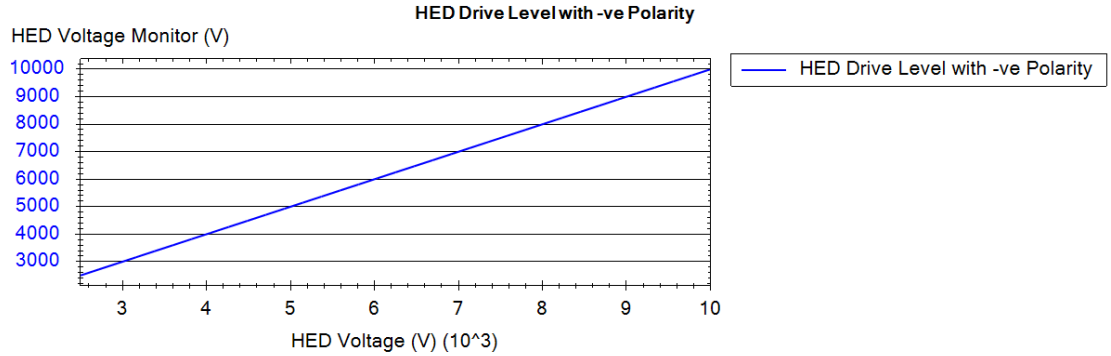
Lab Advisor Diagnostic Result

Item	Value	Result
monitor voltage	6911.70 V	Done
Set voltage	7132.35 V	Done
monitor voltage	7132.00 V	Done
Set voltage	7352.94 V	Done
monitor voltage	7352.87 V	Done
Set voltage	7573.53 V	Done
monitor voltage	7573.17 V	Done
Set voltage	7794.12 V	Done
monitor voltage	7794.04 V	Done
Set voltage	8014.71 V	Done
monitor voltage	8014.34 V	Done
Set voltage	8235.29 V	Done
monitor voltage	8235.21 V	Done
Set voltage	8455.88 V	Done
monitor voltage	8455.51 V	Done
Set voltage	8676.47 V	Done
monitor voltage	8676.38 V	Done
Set voltage	8897.06 V	Done
monitor voltage	8896.68 V	Done
Set voltage	9117.65 V	Done
monitor voltage	9117.55 V	Done
Set voltage	9338.24 V	Done
monitor voltage	9337.84 V	Done
Set voltage	9558.82 V	Done
monitor voltage	9558.72 V	Done
Set voltage	9779.41 V	Done
monitor voltage	9779.01 V	Done
Set voltage	10000.00 V	Done
monitor voltage	9999.89 V	Done
Residual	1.00 [-5.00-5.00]	Passed
Post Ramp HED voltage	11873.86 V	Done
Post Ramp HED voltage	11873.86 V	Done

Finished at 8/27/2019 12:13:14 PM

Signals





Limits

Name	Limit
Residual	-5 ... 5

Check Turbo Pump Current — Passed

SG14087005 This test evaluates the power consumption Turbo Pump(s). The Turbo Current is read by the instrument and reported.

Started at 8/27/2019 12:13:15 PM

Results

Item	Value	Result
Turbo pump 1 current	2.98E+000 [0.00E+000-5.00E +000] A	Passed

Finished at 8/27/2019 12:13:15 PM

Limits

Name	Limit
Turbo pump 1 current	0 ... 5 A

Lab Advisor Diagnostic Result

Report Faults — Failed

SG14087005

This test reports back any faults currently active on the instrument Mainboard(s) registers. Note: this test will not display any faults which are not generated by the Mainboard(s) (e.g., Ion Funnel faults will not be displayed in this test).

Started at 8/27/2019 12:13:15 PM

Results

Item	Value	Result
Mainboard 1 register 1	10000000000000000000000000000000	Done
Mainboard 1 register 1 bit 31	Emod Fan Fault	Failed
Mainboard 1 register 2	OK	Done
Mainboard 2 register 1	OK	Done
Mainboard 2 register 2	10000000000	Done
Mainboard 2 register 2 bit 11	Collision Cell Cable Fault.	Failed

Finished at 8/27/2019 12:13:16 PM

Ramp Drying Gas Pressure — Passed

SG14087005

This test evaluates a ramp of the drying gas set point. Note: the instrument controls the Drying Gas by varying a pressure measured across a fixed restrictor, which is correlated to the Drying Gas Flow set point. A linear response ramp is expected.

Results

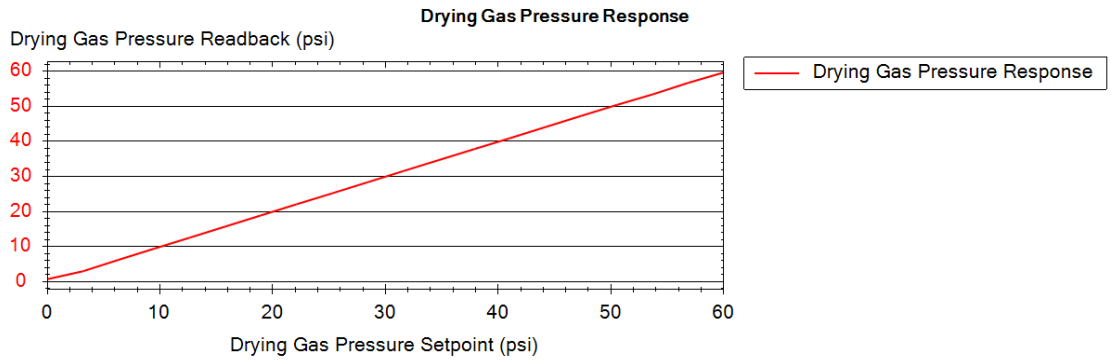
Lab Advisor Diagnostic Result

Started at 8/27/2019 12:13:16 PM

Item	Value	Result
Pre Ramp Drying Gas Pressure	28.00 psi	Done
Pre Ramp Nebulizer Pressure	41.64 psi	Done
Setting nebulizer gas pressure	10.00 psi	Done
Set nebulizer gas pressure	9.26 psi	Done
Setting pressure	0.00 psi	Done
Setting pressure	3.16 psi	Done
Setting pressure	6.32 psi	Done
Setting pressure	9.47 psi	Done
Setting pressure	12.63 psi	Done
Setting pressure	15.79 psi	Done
Setting pressure	18.95 psi	Done
Setting pressure	22.11 psi	Done
Setting pressure	25.26 psi	Done
Setting pressure	28.42 psi	Done
Setting pressure	31.58 psi	Done
Setting pressure	34.74 psi	Done
Setting pressure	37.89 psi	Done
Setting pressure	41.05 psi	Done
Setting pressure	44.21 psi	Done
Setting pressure	47.37 psi	Done
Setting pressure	50.53 psi	Done
Setting pressure	53.68 psi	Done
Setting pressure	56.84 psi	Done
Setting pressure	60.00 psi	Done
Residual	1.00 [0.04-1.00]	Passed
Post Ramp Drying Gas Pressure	28.24 psi	Done
Post Ramp Nebulizer Pressure	41.39 psi	Done

Finished at 8/27/2019 12:14:14 PM

Signals



Limits

Name	Limit
Residual	0.04 ... 1

Ramp Nebulizer Pressure — Passed

SG14087005 This test evaluates a ramp of the nebulizer pressure set point. A linear response ramp is expected.

Results

Lab Advisor Diagnostic Result

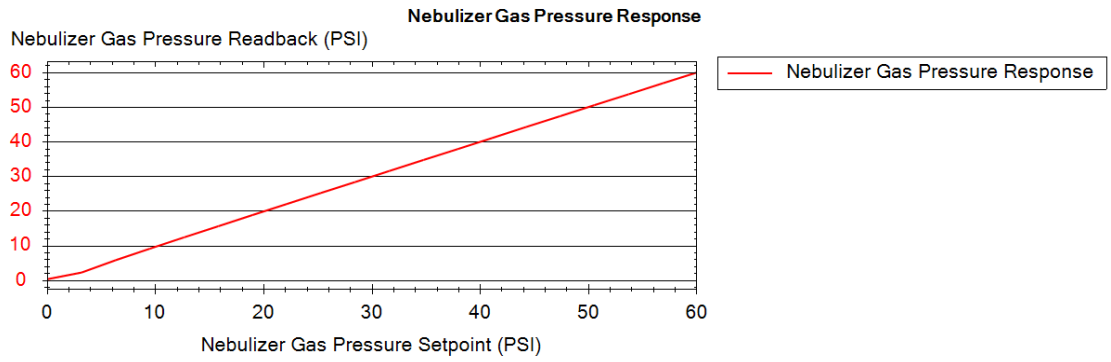
Started at 8/27/2019 12:14:14 PM

Item	Value	Result
Pre Ramp Drying Gas Pressure	28.00 psi	Done
Pre Ramp Nebulizer Pressure	41.46 psi	Done
Setting drying gas pressure	10.00 psi	Done
Set drying gas pressure	12.40 psi	Done
Setting pressure	0.00 psi	Done
Setting pressure	3.16 psi	Done
Setting pressure	6.32 psi	Done
Setting pressure	9.47 psi	Done
Setting pressure	12.63 psi	Done
Setting pressure	15.79 psi	Done
Setting pressure	18.95 psi	Done
Setting pressure	22.11 psi	Done
Setting pressure	25.26 psi	Done
Setting pressure	28.42 psi	Done
Setting pressure	31.58 psi	Done
Setting pressure	34.74 psi	Done
Setting pressure	37.89 psi	Done
Setting pressure	41.05 psi	Done
Setting pressure	44.21 psi	Done
Setting pressure	47.37 psi	Done
Setting pressure	50.53 psi	Done
Setting pressure	53.68 psi	Done
Setting pressure	56.84 psi	Done
Setting pressure	60.00 psi	Done
Residual	1.00 [0.04-1.00]	Passed
Post Ramp Drying Gas Pressure	27.91 psi	Done
Post Ramp Nebulizer Pressure	41.46 psi	Done

Finished at 8/27/2019 12:15:10 PM

Lab Advisor Diagnostic Result

Signals



Limits

Name	Limit
Residual	0.04 ... 1

Lab Advisor Diagnostic Result

Pump Status — Passed

SG14087005

This test evaluates the vacuum system by monitoring the Mainboard (1) controls for the vacuum pumps and gauges, and displaying the turbo power and speed reading(s) and vacuum levels.

Started at 8/27/2019 12:15:10 PM

Results

Item	Value	Result
Rough Pump Enabled	True	Passed
Turbo Pump 1 Enabled	True	Passed
Foreline Gauge Enabled	True	Passed
Ion Gauge 1 Enabled	True	Passed
Foreline Pressure	1.68 [0.01-10.00] torr	Passed
Turbo 1 Speed	100.00 [95.00-100.00] %	Passed
Turbo 1 Current	2.98 [0.50-5.00] A	Passed
High Vacuum Pressure	3.644E-005 [1.000E-006-1.500E-004] torr	Passed
Quad Zone Temperature	100.00 [90.00-110.00] °C	Passed

Finished at 8/27/2019 12:15:11 PM

Limits

Name	Limit
Foreline Pressure	0.01 ... 10 torr
Turbo 1 Speed	95 ... 100 %
Turbo 2 speed	95 ... 100 %
Turbo 1 Current	0.5 ... 5 A
Turbo 2 Current	0.5 ... 5 A
High Vacuum Pressure	1E-06 ... 0.00015 torr
Quad Zone Temperature	90 ... 110 °C
Rough Pump Enabled	1
Turbo Pump 1 Enabled	1
Turbo Pump 2 Enabled	1
Foreline Gauge Enabled	1
Ion Gauge 1 Enabled	1

MS1 RFPA functionality — Passed

SG14087005

This test electronically evaluates the selected Quad Driver by ramping the DC and RF voltages of the selected Quad Driver.

Results

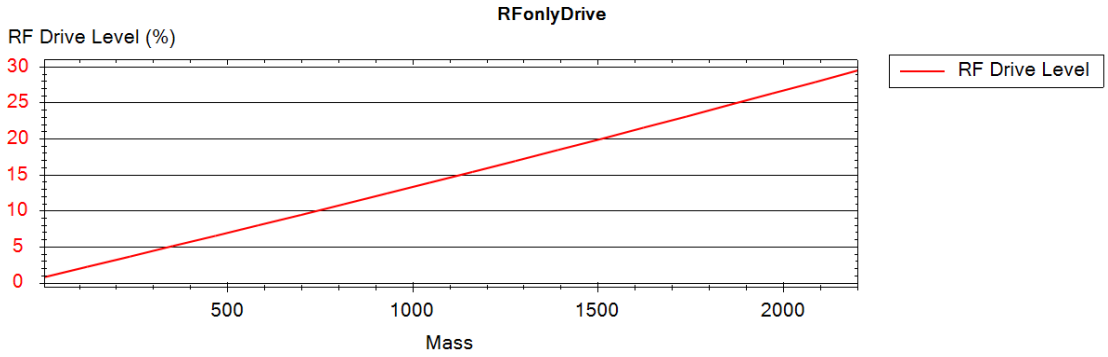
Lab Advisor Diagnostic Result

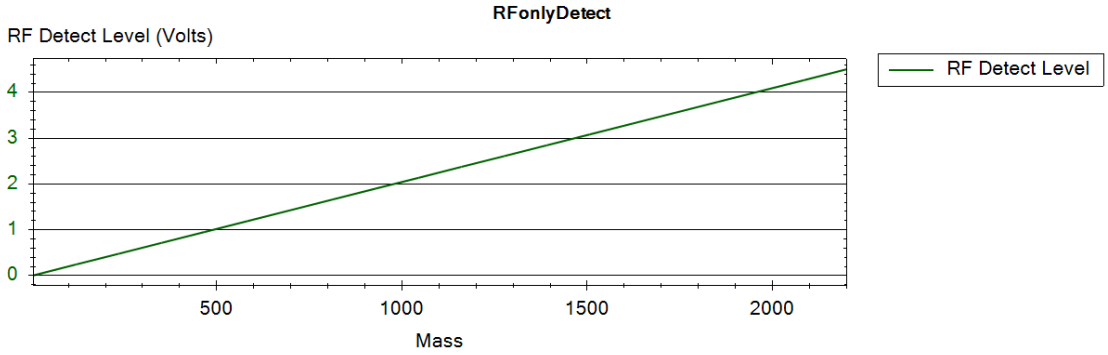
Started at 8/27/2019 12:15:12 PM

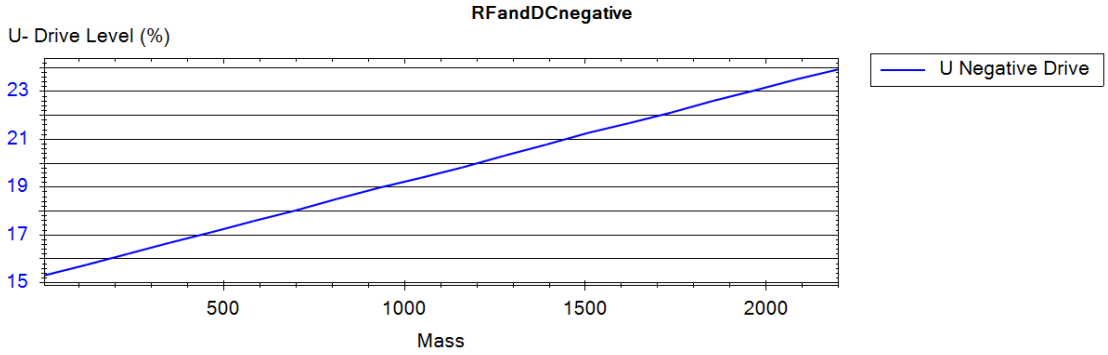
Item	Value	Result
Main Board 1 Status register	1000000100000	Done
Shutdown bit	False	Done
U- Rail	15.21 [10.00-50.00] V	Passed
U+ Rail	15.48 [10.00-50.00] V	Passed
U- Rail (backdoor value)	0.76 V	Done
U+ Rail (backdoor value)	0.77 V	Done
U-/U+ delta voltage	0.01 [-0.50-0.50] V	Passed
U Rail drive voltage	1020.45 [1000.00-1050.00] V	Passed
MB 1 Lens supply	321.00	Done
Turbo pump 1 speed	100.00 %	Passed
Board 1 Analyser register	1000010111011	Done
RF Drive Residual	9.998E-001	Passed
RF Drive Slope	0.01	Done
RF Drive Intercepts	0.48	Done
RF Detect Residual	1.000E+000	Passed
RF Detect Slope	0.00	Done
RF Detect Intercepts	0.00	Done
U- Drive Residual	1.000E+000	Passed
U- Drive Slope	0.00	Done
U- Drive Intercepts	15.29	Done
U+ Drive Residual	1.000E+000	Passed
U+ Drive Slope	0.00	Done
U+ Drive Intercepts	14.64	Done

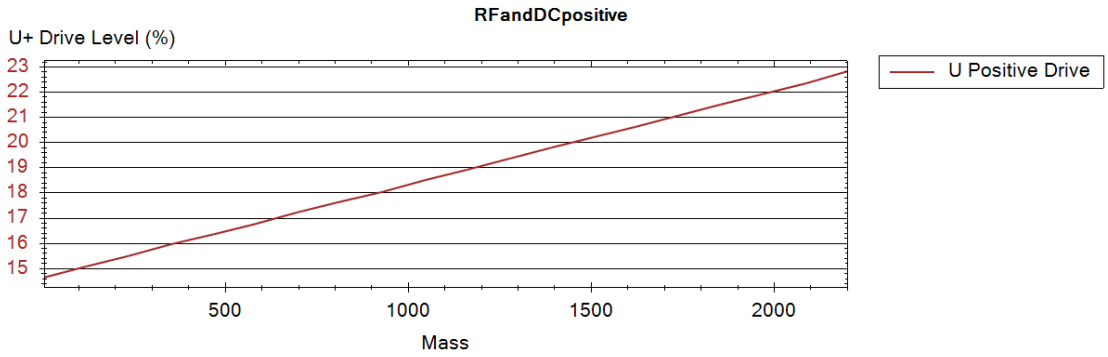
Finished at 8/27/2019 12:15:30 PM

Signals


RFonlyDrive
RF Drive Level (%)
30
25
20
15
10
5
0
500
1000
1500
2000
Mass
RF Drive Level


RFonlyDetect
RF Detect Level (Volts)
4
3
2
1
0
500
1000
1500
2000
Mass
RF Detect Level


RFandDCnegative
U- Drive Level (%)
23
21
19
17
15
500
1000
1500
2000
Mass
U Negative Drive


RFandDCpositive
U+ Drive Level (%)
23
22
21
20
19
18
17
16
15
500
1000
1500
2000
Mass
U Positive Drive

Limits

Name	Limit
U+ Rail	10 ... 50 V
U- Rail	10 ... 50 V
U-/U+ delta voltage	-0.5 ... 0.5 V
U Rail drive voltage	1000 ... 1050 V
Lens Rail Readback	264 ... 396 V
Turbo pump 1 speed	95 ... 100 %
RF Detect Residual	0 ... 100
RF Drive Residual	0 ... 100
U+ Drive Residual	0 ... 100
U- Drive Residual	0 ... 100

MS2 RFPA functionality — Passed

SG14087005 This test electronically evaluates the selected Quad Driver by ramping the DC and RF voltages of the selected Quad Driver.

Results

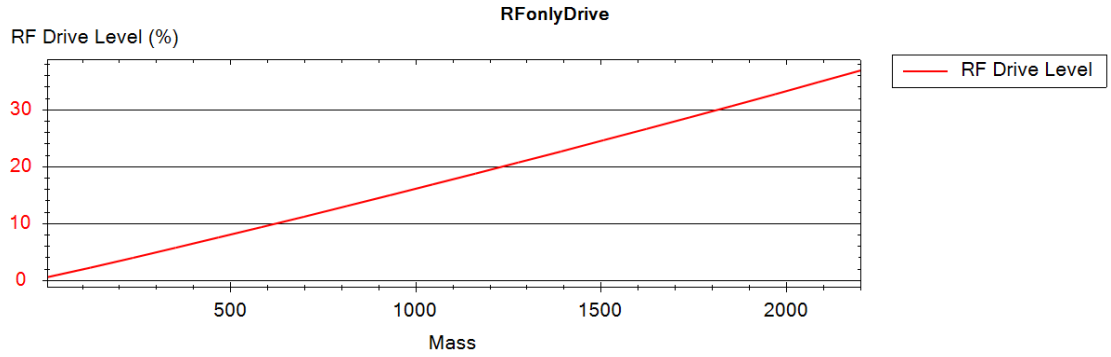
Lab Advisor Diagnostic Result

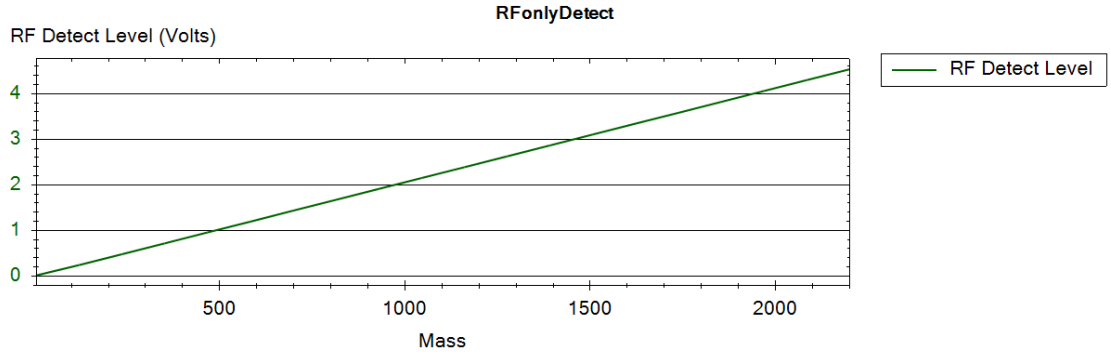
Started at 8/27/2019 12:15:30 PM

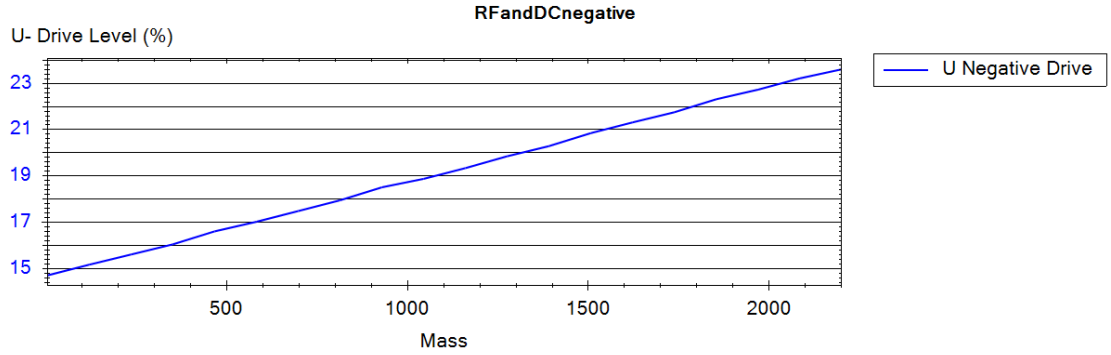
Item	Value	Result
Main Board 2 Status register	100101011000000000	Done
Shutdown bit	False	Done
U- Rail	15.26 [10.00-50.00] V	Passed
U+ Rail	14.60 [10.00-50.00] V	Passed
U- Rail (backdoor value)	0.76 V	Done
U+ Rail (backdoor value)	0.73 V	Done
U-/U+ delta voltage	-0.03 [-0.50-0.50] V	Passed
U Rail drive voltage	1032.66 [1000.00-1050.00] V	Passed
MB 2 Lens supply	336.87	Done
Turbo pump 1 speed	100.00 %	Passed
Board 2 Analyser register	1000001010011	Done
RF Drive Residual	9.996E-001	Passed
RF Drive Slope	0.02	Done
RF Drive Intercepts	-0.11	Done
RF Detect Residual	1.000E+000	Passed
RF Detect Slope	0.00	Done
RF Detect Intercepts	-0.01	Done
U- Drive Residual	9.999E-001	Passed
U- Drive Slope	0.00	Done
U- Drive Intercepts	14.64	Done
U+ Drive Residual	9.999E-001	Passed
U+ Drive Slope	0.00	Done
U+ Drive Intercepts	14.38	Done

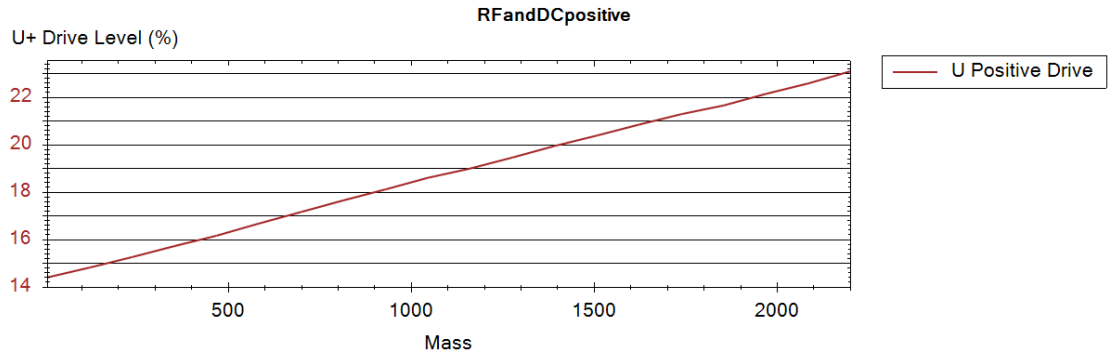
Finished at 8/27/2019 12:15:49 PM

Signals


RFonlyDrive
RF Drive Level (%)
30
20
10
0
500
1000
1500
2000
Mass
RF Drive Level


RFonlyDetect
RF Detect Level (Volts)
4
3
2
1
0
500
1000
1500
2000
Mass
RF Detect Level


RFandDCnegative
U- Drive Level (%)
23
21
19
17
15
500
1000
1500
2000
Mass
U Negative Drive


RFandDCpositive
U+ Drive Level (%)
22
20
18
16
14
500
1000
1500
2000
Mass
U Positive Drive

Limits

Name	Limit
U+ Rail	10 ... 50 V
U- Rail	10 ... 50 V
U-/U+ delta voltage	-0.5 ... 0.5 V
U Rail drive voltage	1000 ... 1050 V
Lens Rail Readback	264 ... 396 V
Turbo pump 1 speed	95 ... 100 %
RF Detect Residual	0 ... 100
RF Drive Residual	0 ... 100
U+ Drive Residual	0 ... 100
U- Drive Residual	0 ... 100

Read MS1 RFPA ID — Passed

SG14087005 Read MS1 RFPA ID

Started at 8/27/2019 12:15:49 PM

Results

Item	Value	Result
Quad nominal frequency	965 [800-1400] Hz	Passed

Finished at 8/27/2019 12:15:50 PM

Limits

Name	Limit
Quad nominal frequency	800 ... 1400 Hz

Read MS2 RFPA ID — Passed

SG14087005 Read MS2 RFPA ID

Started at 8/27/2019 12:15:50 PM

Results

Item	Value	Result
Quad nominal frequency	1005 [800-1400] Hz	Passed

Finished at 8/27/2019 12:15:52 PM

Limits

Name	Limit
Quad nominal frequency	800 ... 1400 Hz

Lab Advisor Diagnostic Result

Ramp Collision Cell Entrance Lens — Passed

SG14087005 This test evaluates the response of the Collision Cell Entrance Lens voltage supply

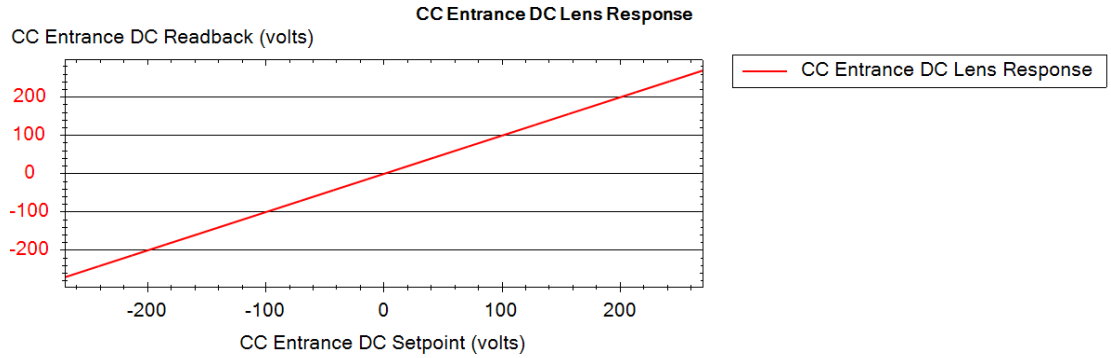
Started at 8/27/2019 12:15:52 PM

Results

Item	Value	Result
MB 1 Lens Supply	320.88	Done
MB 2 Lens Supply	336.87	Done
Pre Ramp lense voltage	24.45 V	Done
Setting DC	-270.00 V	Done
Setting DC	-241.58 V	Done
Setting DC	-213.16 V	Done
Setting DC	-184.74 V	Done
Setting DC	-156.32 V	Done
Setting DC	-127.89 V	Done
Setting DC	-99.47 V	Done
Setting DC	-71.05 V	Done
Setting DC	-42.63 V	Done
Setting DC	-14.21 V	Done
Setting DC	14.21 V	Done
Setting DC	42.63 V	Done
Setting DC	71.05 V	Done
Setting DC	99.47 V	Done
Setting DC	127.89 V	Done
Setting DC	156.32 V	Done
Setting DC	184.74 V	Done
Setting DC	213.16 V	Done
Setting DC	241.58 V	Done
Setting DC	270.00 V	Done
Residual	1.00	Done
Post Ramp lense voltage	24.45 V	Done

Finished at 8/27/2019 12:16:04 PM

Signals



Limits

Name	Limit
MB 1 Lens supply	264 ... 396 V
MB 2 Lens supply	264 ... 396 V

Ramp Collision Cell Hexapole DC — Passed

SG14087005 This test evaluates the response of the Collision Cell Hexapole Entrance voltage supply

Results

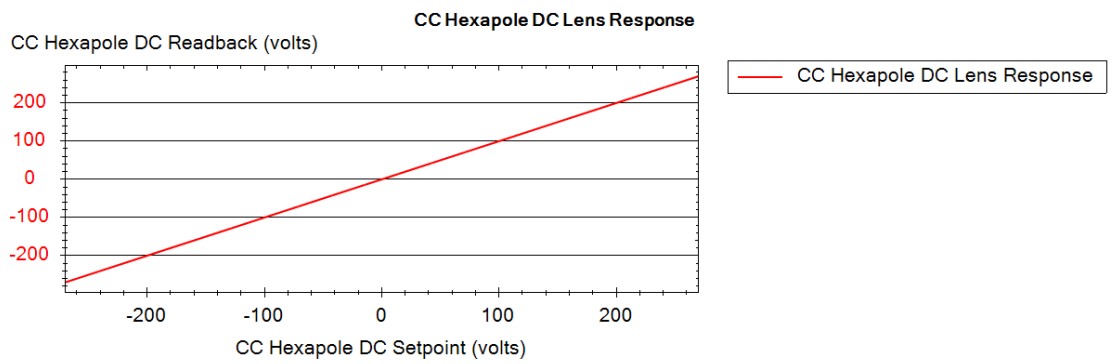
Lab Advisor Diagnostic Result

Started at 8/27/2019 12:16:04 PM

Item	Value	Result
MB 1 Lens Supply	320.88	Done
MB 2 Lens Supply	336.87	Done
Pre Ramp lense voltage	-0.45 V	Done
Setting DC	-270.00 V	Done
Setting DC	-241.58 V	Done
Setting DC	-213.16 V	Done
Setting DC	-184.74 V	Done
Setting DC	-156.32 V	Done
Setting DC	-127.89 V	Done
Setting DC	-99.47 V	Done
Setting DC	-71.05 V	Done
Setting DC	-42.63 V	Done
Setting DC	-14.21 V	Done
Setting DC	14.21 V	Done
Setting DC	42.63 V	Done
Setting DC	71.05 V	Done
Setting DC	99.47 V	Done
Setting DC	127.89 V	Done
Setting DC	156.32 V	Done
Setting DC	184.74 V	Done
Setting DC	213.16 V	Done
Setting DC	241.58 V	Done
Setting DC	270.00 V	Done
Residual	1.00	Done
Post Ramp lense voltage	-0.45 V	Done

Finished at 8/27/2019 12:16:16 PM

Signals



Limits

Name	Limit
MB 1 Lens supply	264 ... 396 V
MB 2 Lens supply	264 ... 396 V

Ramp Collision Cell Exit Lens — Passed

SG14087005 This test evaluates the response of the Collision Cell Exit Lens voltage supply

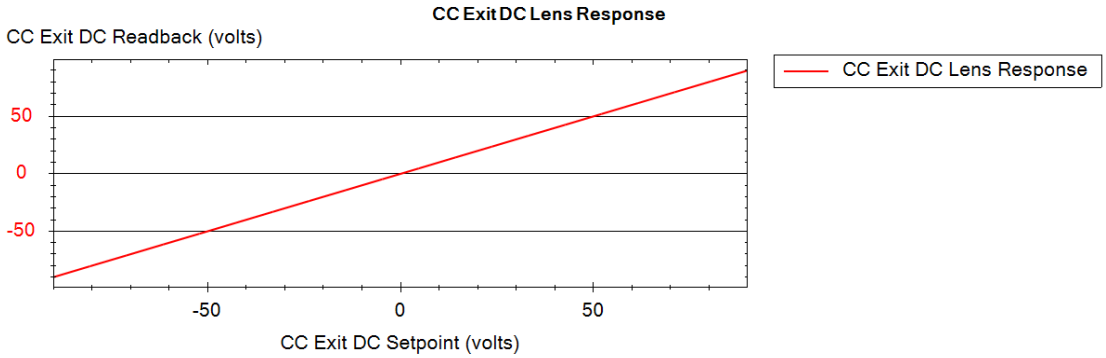
Started at 8/27/2019 12:16:16 PM

Results

Item	Value	Result
MB 1 Lens Supply	320.88	Done
MB 2 Lens Supply	336.87	Done
Pre Ramp lense voltage	-8.20 V	Done
Setting DC	-90.00 V	Done
Setting DC	-80.53 V	Done
Setting DC	-71.05 V	Done
Setting DC	-61.58 V	Done
Setting DC	-52.11 V	Done
Setting DC	-42.63 V	Done
Setting DC	-33.16 V	Done
Setting DC	-23.68 V	Done
Setting DC	-14.21 V	Done
Setting DC	-4.74 V	Done
Setting DC	4.74 V	Done
Setting DC	14.21 V	Done
Setting DC	23.68 V	Done
Setting DC	33.16 V	Done
Setting DC	42.63 V	Done
Setting DC	52.11 V	Done
Setting DC	61.58 V	Done
Setting DC	71.05 V	Done
Setting DC	80.53 V	Done
Setting DC	90.00 V	Done
Residual	1.00	Done
Post Ramp lense voltage	-8.20 V	Done

Finished at 8/27/2019 12:16:28 PM

Signals



Limits

Name	Limit
MB 1 Lens supply	264 ... 396 V
MB 2 Lens supply	264 ... 396 V

Collision Cell RF Drive Level — Passed

SG14087005 This test evaluates Drive Level of the Collision Cell Hexapole RF voltage supply

Results

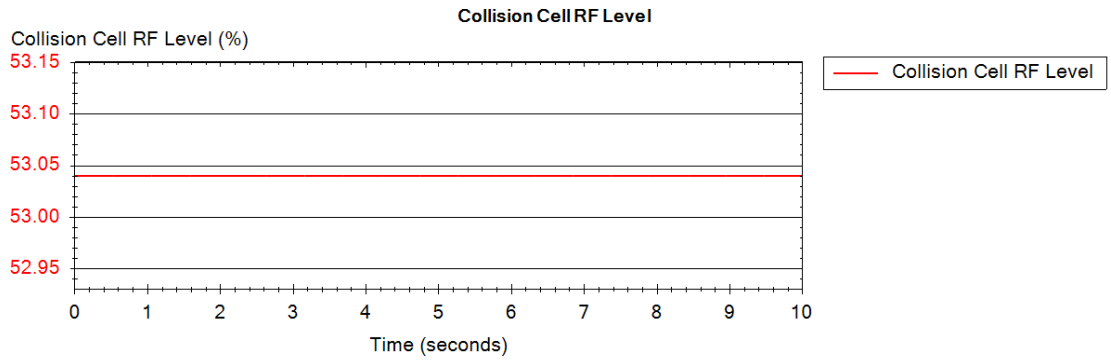
Lab Advisor Diagnostic Result

Started at 8/27/2019 12:16:28 PM

Item	Value	Result
MB 1 Lens Supply	320.76	Done
MB 2 Lens Supply	336.87	Done
Turbo pump 1 speed	100.00 [95.00-100.00] %	Passed
Start cc rf voltage	200.00 V	Done
Mainboard 2 registry	1000001010001	Done
Setting cc rf voltage	100.00 V	Done
Monitoring cc rf, elapsed time	0.00	Done
Monitoring cc rf, elapsed time	0.53	Done
Monitoring cc rf, elapsed time	1.05	Done
Monitoring cc rf, elapsed time	1.58	Done
Monitoring cc rf, elapsed time	2.11	Done
Monitoring cc rf, elapsed time	2.63	Done
Monitoring cc rf, elapsed time	3.16	Done
Monitoring cc rf, elapsed time	3.68	Done
Monitoring cc rf, elapsed time	4.21	Done
Monitoring cc rf, elapsed time	4.74	Done
Monitoring cc rf, elapsed time	5.26	Done
Monitoring cc rf, elapsed time	5.79	Done
Monitoring cc rf, elapsed time	6.32	Done
Monitoring cc rf, elapsed time	6.84	Done
Monitoring cc rf, elapsed time	7.37	Done
Monitoring cc rf, elapsed time	7.89	Done
Monitoring cc rf, elapsed time	8.42	Done
Monitoring cc rf, elapsed time	8.95	Done
Monitoring cc rf, elapsed time	9.47	Done
Monitoring cc rf, elapsed time	10.00	Done
Residual	0.00	Done
Range in rf Level	0.00 %	Done
Reset cc rf voltage	200.00	Done

Finished at 8/27/2019 12:16:45 PM

Signals



Limits

Name	Limit
MB 1 Lens supply	264 ... 396 V
MB 2 Lens supply	264 ... 396 V
Turbo pump 1 speed	95 ... 100 %

Ramp Collision Cell RF — Failed

SG14087005 This test evaluates the response of the Collision Cell Hexapole RF voltage supply

Started at 8/27/2019 12:16:45 PM

Results

Item	Value	Result
MB 1 Lens Supply	320.76	Done
MB 2 Lens Supply	336.75	Done
Analyzer Control Register	1000001010001	Done
Status 2	10000000000	Done
Status 2 bit 11	Collision Cell Cable Fault.	Failed
Analyzer Control Register	1000001010001	Done

Finished at 8/27/2019 12:16:46 PM

Limits

Name	Limit
MB 1 Lens supply	264 ... 396 V
MB 2 Lens supply	264 ... 396 V
Slope	0.004 ... 0.006
Intercept	-0.1 ... 0.1
Residual	0 ... 1

Ramp Collision Cell Gas — Done

SG14087005 Ramp collision cell gas.

Lab Advisor Diagnostic Result

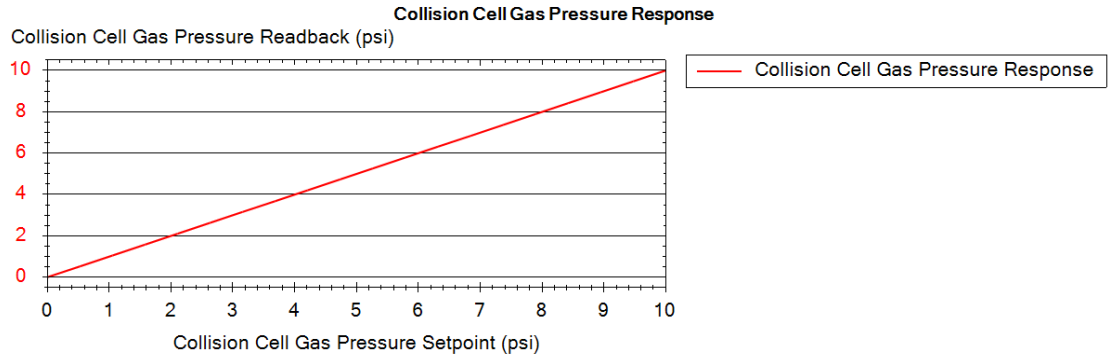
Started at 8/27/2019 12:16:46 PM

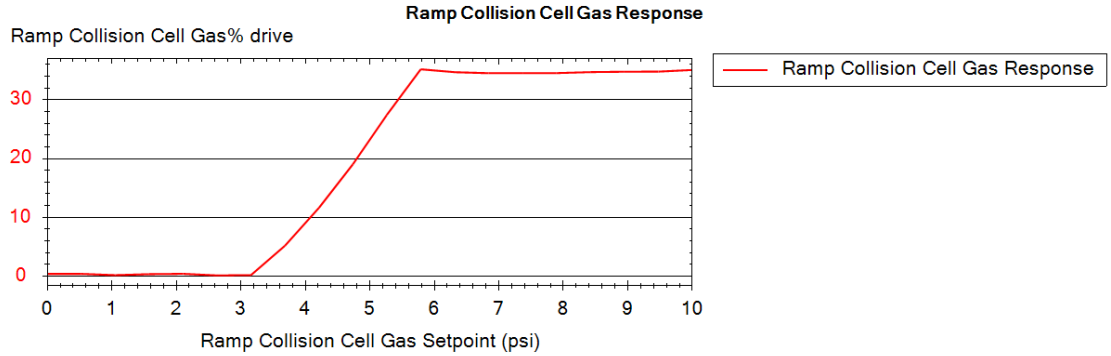
Results

Item	Value	Result
Inlet control register	1000000	Done
drying gas pressure	3.81 psi	Done
Setting pressure	0.00	Done
Setting pressure	0.53	Done
Setting pressure	1.05	Done
Setting pressure	1.58	Done
Setting pressure	2.11	Done
Setting pressure	2.63	Done
Setting pressure	3.16	Done
Setting pressure	3.68	Done
Setting pressure	4.21	Done
Setting pressure	4.74	Done
Setting pressure	5.26	Done
Setting pressure	5.79	Done
Setting pressure	6.32	Done
Setting pressure	6.84	Done
Setting pressure	7.37	Done
Setting pressure	7.89	Done
Setting pressure	8.42	Done
Setting pressure	8.95	Done
Setting pressure	9.47	Done
Setting pressure	10.00	Done
Residual	1.00	Done
collision cell top gas	3.81 psi	Done
Inlet control register	1000000	Done

Finished at 8/27/2019 12:16:57 PM

Signals





MS 1 Heater — Passed

SG14087005 This test evaluates the response of MS1 Quadrupole heater circuit.

Started at 8/27/2019 12:16:57 PM

Results

Item	Value	Result
Initial Temperature	100.00 °C	Done
Set Temperature	100.50	Done
Actual Temperature	100.13	Done
Drive	25.32	Done
Set Temperature	101.00	Done
Actual Temperature	100.25	Done
Drive	30.39	Done
Set Temperature	101.50	Done
Actual Temperature	100.63	Done
Drive	34.69	Done
Set Temperature	102.00	Done
Actual Temperature	101.13	Done
Drive	38.48	Done
Set Temperature	102.50	Done

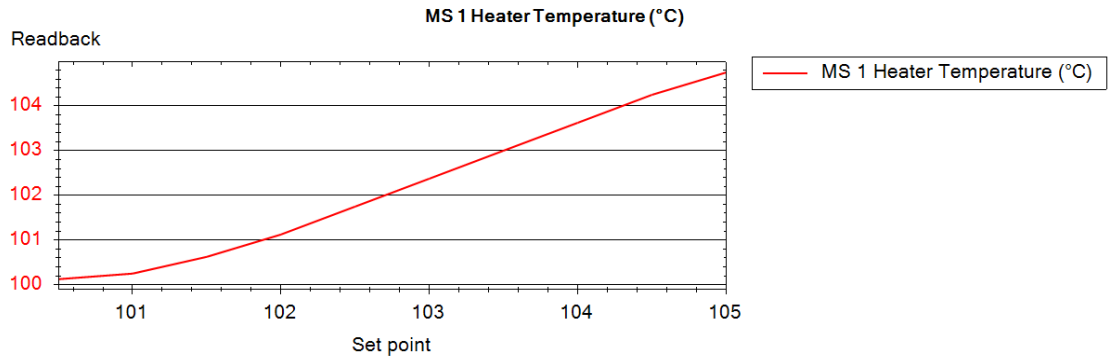
Lab Advisor Diagnostic Result

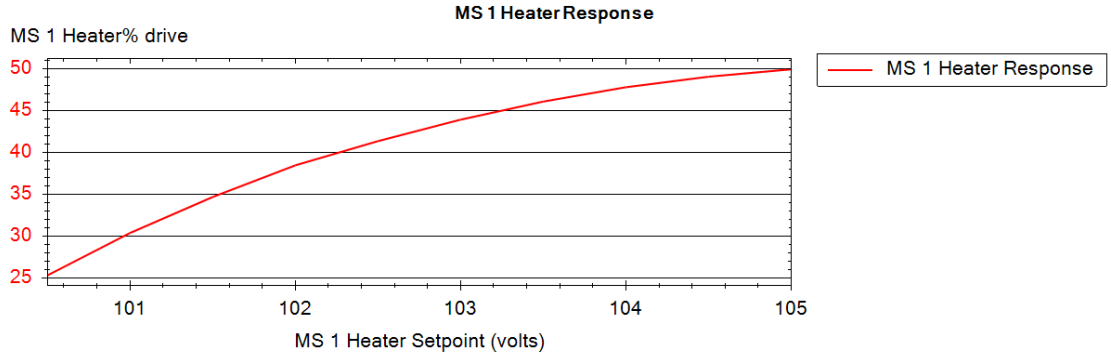
Item	Value	Result
Actual Temperature	101.75	Done
Drive	41.37	Done
Set Temperature	103.00	Done
Actual Temperature	102.38	Done
Drive	43.94	Done
Set Temperature	103.50	Done
Actual Temperature	103.00	Done
Drive	46.10	Done
Set Temperature	104.00	Done
Actual Temperature	103.63	Done
Drive	47.81	Done
Set Temperature	104.50	Done
Actual Temperature	104.25	Done
Drive	49.07	Done
Set Temperature	105.00	Done
Actual Temperature	104.75	Done
Drive	49.95	Done
Slope	1.10	Done
Intercept	-10.99	Done
Residual	0.99 [0.00-1.00]	Passed
Final temperature	104.50 V	Done

Finished at 8/27/2019 12:22:32 PM

Lab Advisor Diagnostic Result

Signals





Limits

Name	Limit
Residual	0 ... 1

Tables

MS 1 Heater

Set Temperature	Actual Temperature	Drive
100.50	100.13	25.32
101.00	100.25	30.39
101.50	100.63	34.69
102.00	101.13	38.48
102.50	101.75	41.37
103.00	102.38	43.94
103.50	103.00	46.10
104.00	103.63	47.81
104.50	104.25	49.07
105.00	104.75	49.95

Lab Advisor Diagnostic Result

MS 2 Heater — Failed

SG14087005 This test evaluates the response of MS2 Quadrupole heater circuit.

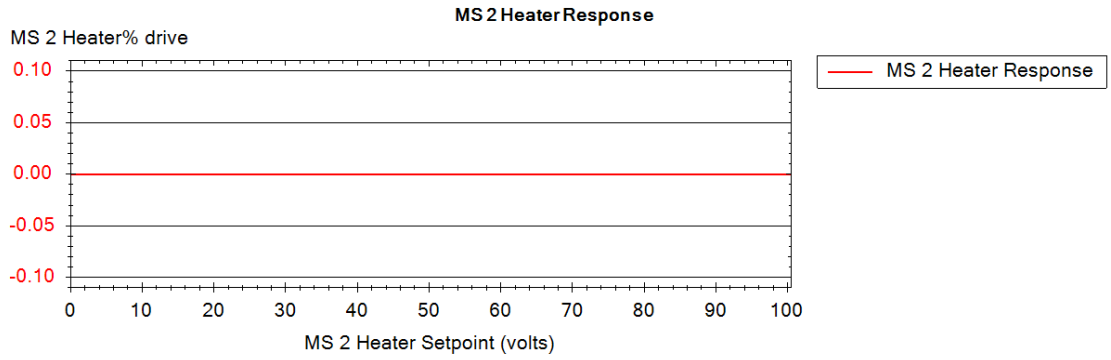
Started at 8/27/2019 12:22:32 PM

Results

Item	Value	Result
Initial Temperature	100.00 °C	Done
Set Temperature	100.50	Done
Slope	0.00	Done
Intercept	0.00	Done
Residual	0.00 [0.00-1.00]	Passed

Finished at 8/27/2019 12:23:38 PM

Signals



Limits

Name	Limit
Residual	0 ... 1

Initialize High Voltage Lenses — Failed

SG14087005 This test initializes the Mainboard(s) to operate the selected Lens Driver(s).

Execution #2 of 2

Started at 8/27/2019 12:24:24 PM
Finished at 8/27/2019 12:24:24 PM

Lab Advisor Diagnostic Result

Ramp fragmentor — Failed

SG14087005 The test evaluates the selected Voltage Supply on a Mainboard which is nominally connected to the optical lens element

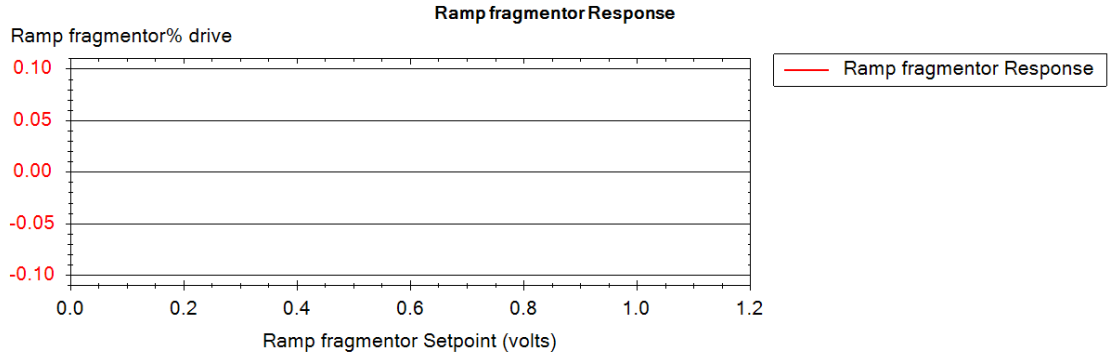
Execution #2 of 2 **Started at 8/27/2019 12:24:25 PM**

Results

Item	Value	Result
Residual	0.00 [0.00-1.00]	Passed

Finished at 8/27/2019 12:24:25 PM

Signals



Limits

Name	Limit
Residual	0 ... 1

Lab Advisor Diagnostic Result

Ramp skimmer 1 — Failed

SG14087005 Ramp skimmer 1

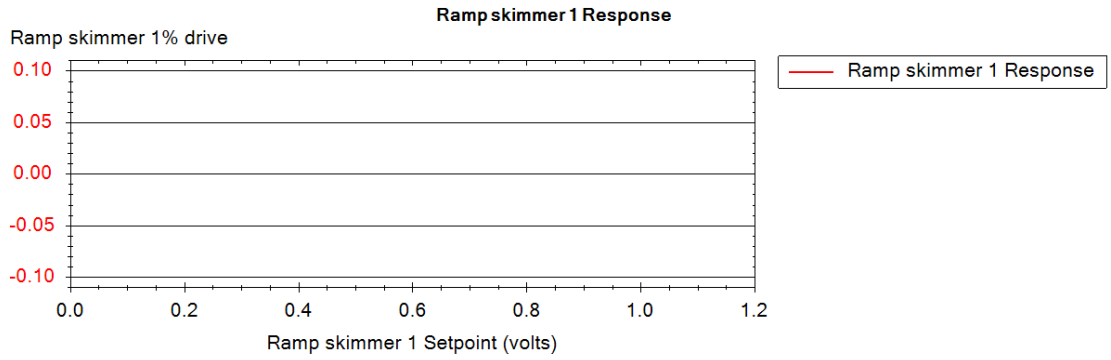
Execution #2 of 2 **Started at 8/27/2019 12:24:25 PM**

Results

Item	Value	Result
Residual	0.00 [0.00-1.00]	Passed

Finished at 8/27/2019 12:24:26 PM

Signals



Limits

Name	Limit
Residual	0 ... 1

Lab Advisor Diagnostic Result

Ramp octopole 1 dc — Failed

SG14087005 Ramp octopole 1 dc

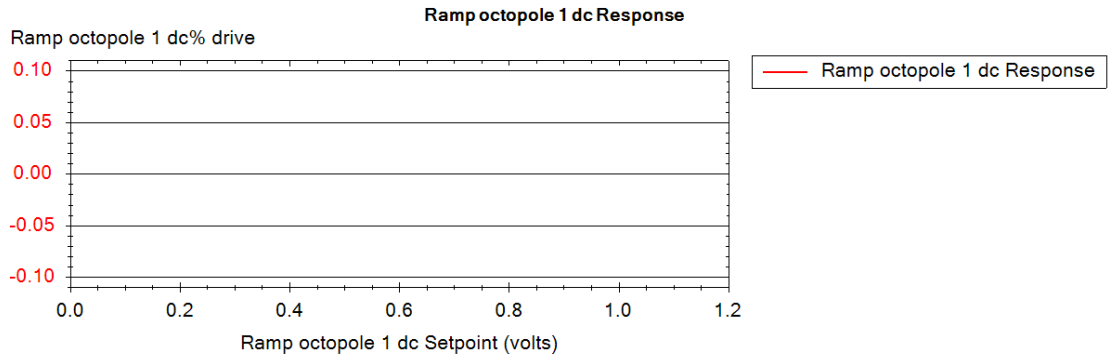
Execution #2 of 2 **Started at 8/27/2019 12:24:26 PM**

Results

Item	Value	Result
Residual	0.00 [0.00-1.00]	Passed

Finished at 8/27/2019 12:24:27 PM

Signals



Limits

Name	Limit
Residual	0 ... 1

Lab Advisor Diagnostic Result

Ramp octopole shroud — Failed

SG14087005 Ramp octopole shroud

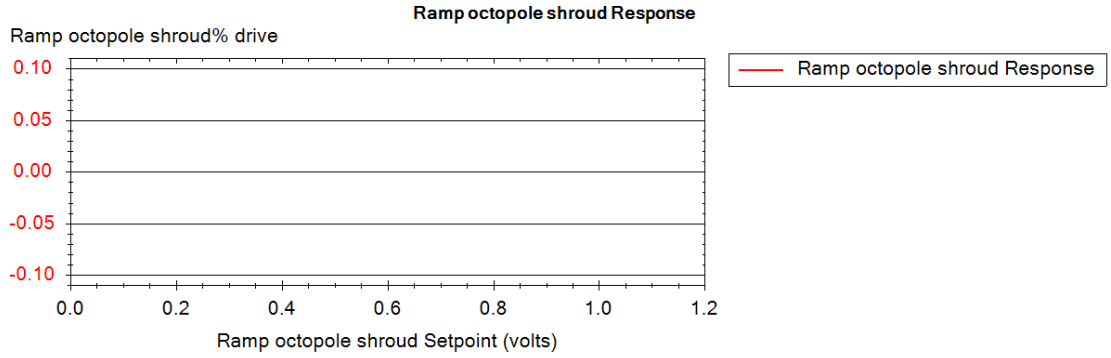
Execution #2 of 2 **Started at 8/27/2019 12:24:27 PM**

Results

Item	Value	Result
Residual	0.00 [0.00-1.00]	Passed

Finished at 8/27/2019 12:24:27 PM

Signals



Limits

Name	Limit
Residual	0 ... 1

Lab Advisor Diagnostic Result

Ramp lens 1 dc — Failed

SG14087005 Ramp lens 1 dc

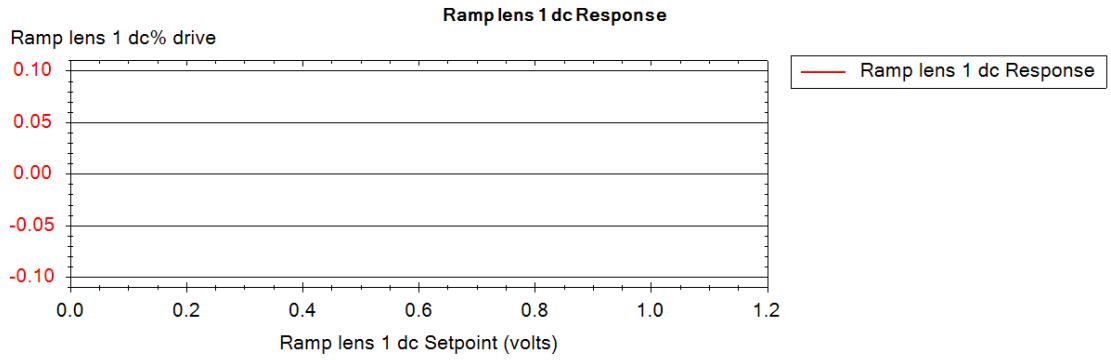
Execution #2 of 2 **Started at 8/27/2019 12:24:28 PM**

Results

Item	Value	Result
Residual	0.00 [0.00-1.00]	Passed

Finished at 8/27/2019 12:24:28 PM

Signals



Limits

Name	Limit
Residual	0 ... 1

Lab Advisor Diagnostic Result

Ramp MS1 Pre-Filter DC — Failed

SG14087005 Ramp lens 2 dc

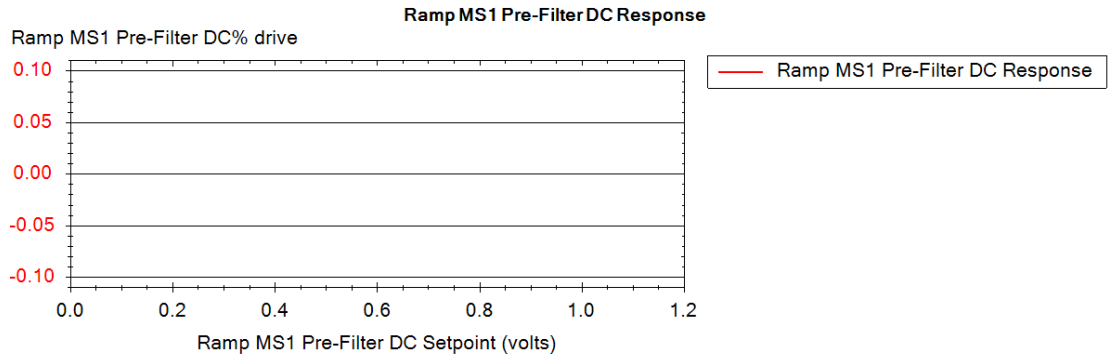
Execution #2 of 2 **Started at 8/27/2019 12:24:28 PM**

Results

Item	Value	Result
Residual	0.00 [0.00-1.00]	Passed

Finished at 8/27/2019 12:24:29 PM

Signals



Limits

Name	Limit
Residual	0 ... 1

Lab Advisor Diagnostic Result

Ramp MS1 Shroud — Failed

SG14087005 Ramp MS1 Shroud

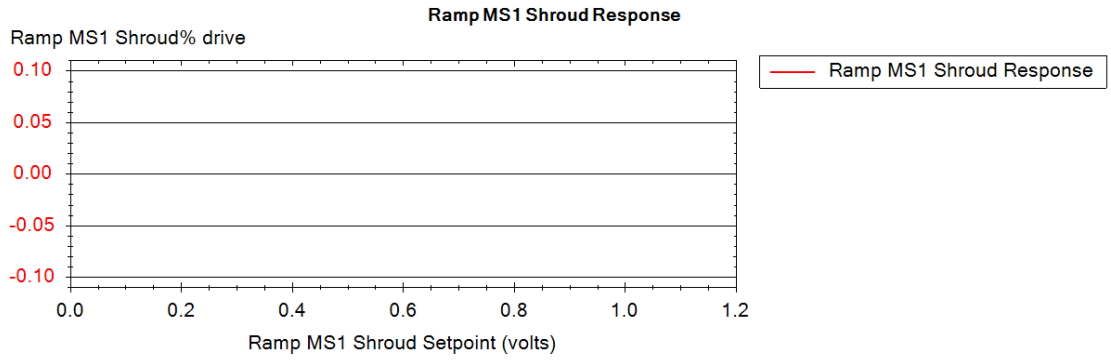
Execution #2 of 2 **Started at 8/27/2019 12:24:29 PM**

Results

Item	Value	Result
Residual	0.00 [0.00-1.00]	Passed

Finished at 8/27/2019 12:24:30 PM

Signals



Limits

Name	Limit
Residual	0 ... 1

Lab Advisor Diagnostic Result

Ramp iris — Failed

SG14087005 Ramp iris

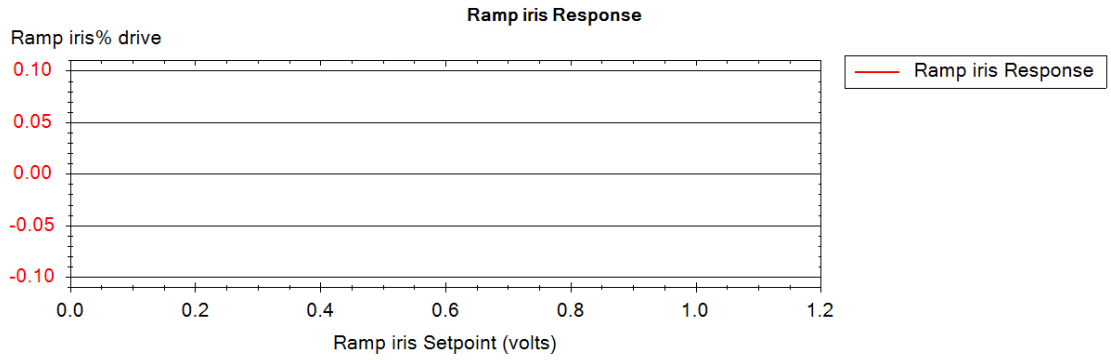
Execution #2 of 2 **Started at 8/27/2019 12:24:30 PM**

Results

Item	Value	Result
Residual	0.00 [0.00-1.00]	Passed

Finished at 8/27/2019 12:24:31 PM

Signals



Limits

Name	Limit
Residual	0 ... 1

Lab Advisor Diagnostic Result

Ramp MS1 Post-Filter DC — Failed

SG14087005 Ramp MS1 Post-Filter DC

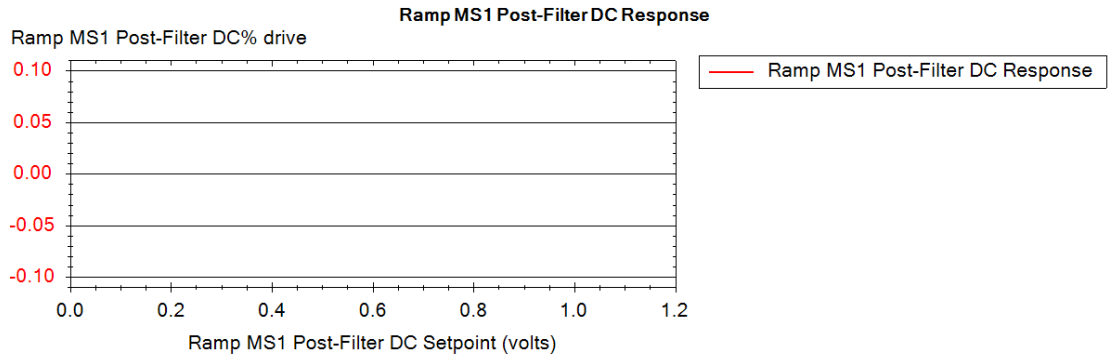
Execution #2 of 2 **Started at 8/27/2019 12:24:31 PM**

Results

Item	Value	Result
Residual	0.00 [0.00-1.00]	Passed

Finished at 8/27/2019 12:24:32 PM

Signals



Limits

Name	Limit
Residual	0 ... 1

Ramp MS2 PreFilter DC — Failed

SG14087005 Ramp MS2 PreFilter DC

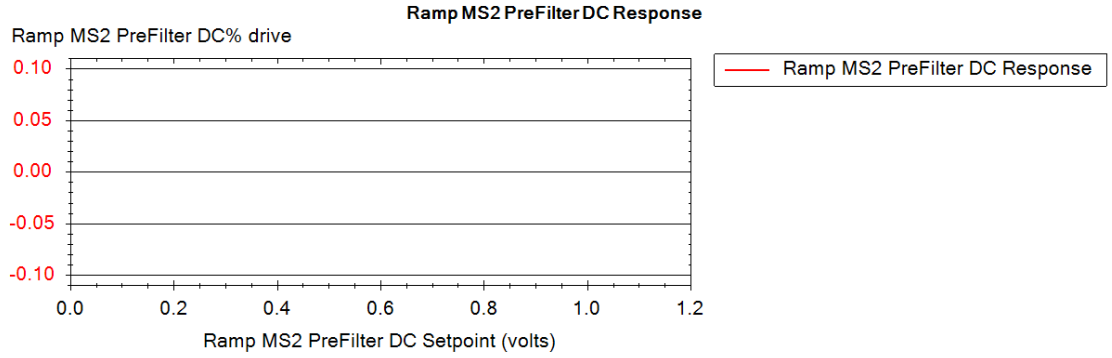
Execution #2 of 2 **Started at 8/27/2019 12:24:32 PM**

Results

Item	Value	Result
Residual	0.00 [0.00-1.00]	Passed

Finished at 8/27/2019 12:24:33 PM

Signals



Limits

Name	Limit
Residual	0 ... 1

Ramp Octopole RF — Failed

SG14087005 This test evaluates the response of the Octopole Board Octopole RF voltage supply

Execution #2 of 2 **Started at 8/27/2019 12:24:33 PM**
Finished at 8/27/2019 12:24:34 PM

Limits

Name	Limit
Residual	0 ... 1

Octopole RF Drive Level — Failed

SG14087005 This test evaluates Drive Level of the Octopole RF voltage supply

Execution #2 of 2 **Started at 8/27/2019 12:24:34 PM**
Finished at 8/27/2019 12:24:34 PM

Limits

Name	Limit
Residual	0 ... 1

Lab Advisor Diagnostic Result

Ramp MS2 Shroud — Failed

SG14087005 Ramp MS2 Shroud

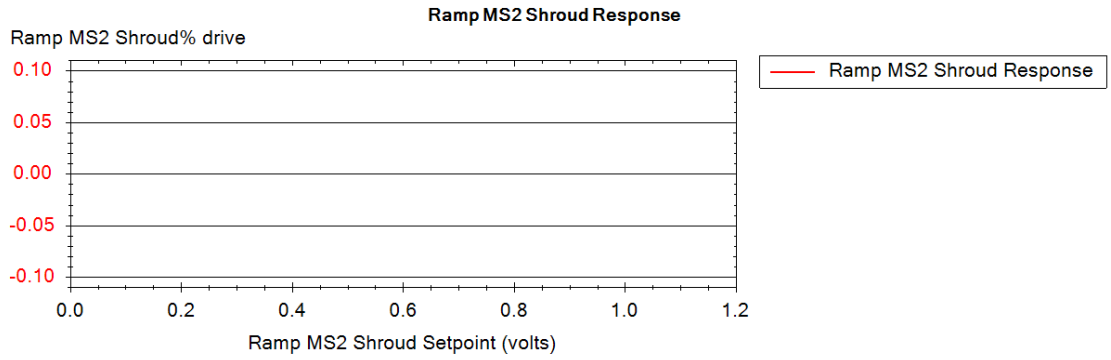
Execution #2 of 2 **Started at 8/27/2019 12:24:35 PM**

Results

Item	Value	Result
Residual	0.00 [0.00-1.00]	Passed

Finished at 8/27/2019 12:24:35 PM

Signals



Limits

Name	Limit
Residual	0 ... 1

Signature: .....