

09/25/2020 jjc

upon booting up system:

The screenshot displays the Agilent ChemStation software interface. At the top, the window title is "Instrument 2 (online): Method and Run Control". The menu bar includes "File", "RunControl", "Instrument", "Method", "Sequence", "View", "Abort", and "Help". The toolbar shows "Methods" (TRILA.M) and "Sequences" (DEF\_LC.S). A status bar at the top indicates "Not Ready", "Last Run", "0.0", "Method: TRILA.M", "Sequence: DEF\_LC.S", and "EMF".

The main workspace contains a "MSD Acquisition: Warning" dialog box with the following text:

The tune file 022420.JJC.TUN in the current method contains an incorrect parameter setting and is inappropriate for data acquisition.

To correct this, edit the method to specify a different tune file. Alternatively, go to the MSD Tune View, load the 022420.JJC.TUN file, retune, and save the tune file.

An "OK" button is visible at the bottom of the dialog box.

The background of the main workspace shows the "ChemStation" logo, "Rev. B.04.03 [16]", "Initializing: Startup Macros", and "Copyright © Agilent Technologies (2001-2010)".

The Windows taskbar at the bottom shows the "start" button, the "Instrument 2 (online)..." taskbar icon, and the system tray with "Instrument 2 Busy" and the time "1:28 PM".

MSD Pumpdown:

The screenshot displays the 'Instrument 2 (online): Diagnosis' software interface. The main window title is 'Instrument 2 (online): Diagnosis TRILA.M, DEFAULT.D, ATUNES.TUN'. The menu bar includes 'File', 'Diagnosis', 'Maintenance', 'View', 'Abort', and 'Help'. The status bar shows 'Test Results/Logbooks', 'OQ/PV Analytic', 'Observed Symptoms', 'Poor Area Precision', 'Possible Causes', and 'Rotor Seal Defective'. The left sidebar contains icons for 'Tests...', 'System On', and 'System Off', along with a vertical menu with options: 'Method and Run Control', 'Data Analysis', 'Report Layout', 'Verification (OQ/PV)', 'Diagnosis', and 'MSD Tune'. The main area features a 'Diagnosis' window with a 'Memo Pad' and 'Rotor Seal Defective' section. A central dialog box titled 'MSD Pumpdown: Instrument 2' is open, showing a progress bar and the following parameters:

Parameter	Value
Quadrupole Temperature	80 °C
Turbo 1 Speed	99.0 %
Turbo 1 Power	101.4 W
Vacuum Rough	2.24 torr
Vacuum High	0.017 mtorr
Turbo 2 Speed	0 %
Turbo 2 Power	0 W

The dialog box also includes 'Start', 'Close', and 'Help' buttons. The bottom taskbar shows the Windows Start button, open applications 'Instrument 2 (online)...' and '092520 Notes on Get...', and the system tray with 'Instrument 2 Ready' and the time '1:44 PM'.

# Quadrupole RF Test:

The screenshot displays the 'Instrument 2 (online): Diagnosis' software interface. The main window title is 'Instrument 2 (online): Diagnosis TRILA.M, DEFAULT.D, ATUNES.TUN'. The menu bar includes 'File', 'Diagnosis', 'Maintenance', 'View', 'Abort', and 'Help'. The status bar shows 'Test Results/Logbooks', 'OQ/PV', 'Analytic', 'Observed Symptoms', 'Poor Area Precision', and 'Possible Causes: Rotor Seal Defective'. The left sidebar contains icons for 'Tests...', 'System On', and 'System Off', along with a navigation pane with buttons for 'Method and Run Control', 'Data Analysis', 'Report Layout', 'Verification (OQ/PV)', 'Diagnosis', and 'MSD Tune'. The main area shows a 'Test Selection' dialog box for the 'MSD Quadrupole Electronics Test'. This dialog has 'Explain' and 'Abort' buttons and a table with the following data:

Result Status		
MSD Quadrupole Electronics Test		
Expected total time: approx. 4 min.		
Test Procedure:		
1. Change loaded tune file from ATUNES.TUN to ...	ATUNES.TUN	done
2. Automated Quadrupole Electronics Test		Processing ...

At the bottom of the interface, a status bar indicates 'Setting quad frequency to 1006350 Hz' and 'Instrument 2 Busy'. The Windows taskbar at the very bottom shows the 'start' button, open applications including 'Instrument 2 (online)...', 'Agilent ChemStation ...', and '092520 Notes on Get...', along with the system clock showing '1:59 PM'.

# Results of Quad Electronics Test = passed

The screenshot shows the 'Diagnosis' window of the Agilent ChemStation software. The main window title is 'Instrument 2 (online): Diagnosis TRILA.M, DEFAULT.D, ATUNES.TUN'. The 'Possible Causes' dropdown menu is set to 'Rotor Seal Defective'. A dialog box titled 'MSD Quadrupole Electronics Test' is open, displaying the following information:

**MSD Quadrupole Electronics Test**  
Expected total time: approx. 4 min.

Test Procedure:

	Result	Status
1. Change loaded tune file from ATUNES.TUN to ...	ATUNES.TUN	done
2. Automated Quadrupole Electronics Test	Passed	done

The dialog box also features 'Explain' and 'Close' buttons. On the right side of the main window, a vertical list of 'Res' (Results) is visible, with the top entry being 'Pass'.

Diagnosis

- Tests...
- System On
- System Off

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Method and Run Control

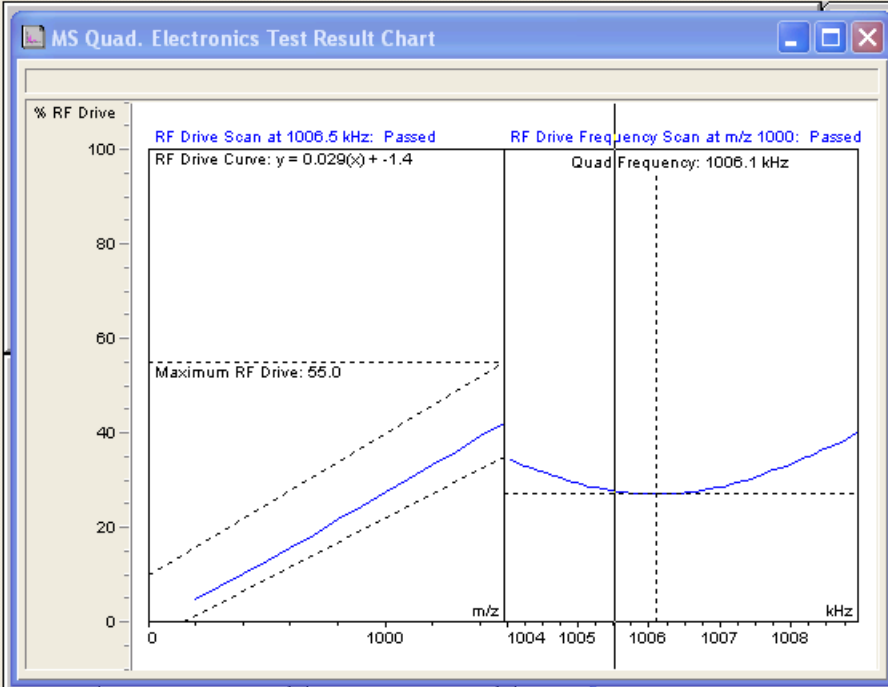
Data Analysis

Report Layout

Verification (OQ/PV)

**Diagnosis**

MSD Tune



**Rotor Seal Defective**

3752

Start

is the MSD pole working

**Results**

	Limits	Measured	Res
	< 55.0	42.0	Pass
	$0.017 < x < 0.039$	0.029	Pass
	$-4.0 < x < 10.0$	-1.4	Pass
	< 37	27.1	Pass
	< 1000 Hz	350 Hz	Pass

More Quad Electronics Test Results:

Instrument 2 (online): Diagnosis TRILA.M, DEFAULT.D, ATUNES.TUN

File Diagnosis Maintenance View Abort Help

Test Results/Logbooks OQ/PV Analytic Observed Symptoms Poor Area Precision Possible Causes Rotor Seal Defective

Diagnosis

Tests...  
System On  
System Off

Method and Run Control  
Data Analysis  
Report Layout  
Verification (OQ/PV)  
Diagnosis  
MSD Tune

MSD (Detector) - G1956A - US72900179

Procedures List

MSD Noise Test  
MSD Signal Test  
MSD Ion Optics  
MSD Vacuum Test  
MSD Quadrupole  
MSD APPI Lamp

Description:  
The MSD Vacuum Test executes a partial vent and pumpdown, monitoring the rough and high vacuum readings, turbo pump speed, and turbo pump power

MS Quad. Electronics Test Results

	Limits	Measured	Result
Date: 9/25/2020; Time: 1:59:22 PT			
Max RF Drive, mass scan	< 55.0	42.0	Passed
RF Drive slope, mass scan	0.017 <x< 0.039	0.029	Passed
RF Drive intercept, mass scan	-4.0 <x< 10.0	-1.4	Passed
Min RF drive, frequency scan	< 37	27.1	Passed
Quad. frequency delta	< 1000 Hz	350 Hz	Passed

Instrument 2 Ready

start Instrument 2 (online)... Agilent ChemStation ... 092520 Notes on Get... 4:00 PM

# MSD Optics Test:

The screenshot displays the Agilent ChemStation software interface. The main window is titled "Instrument 2 (online): Diagnosis TRILA.M, DEFAULT.D, ATUNES.TUN". The menu bar includes "File", "Diagnosis", "Maintenance", "View", "Abort", and "Help". The "Diagnosis" menu is open, showing "Test Results/Logbooks", "OQ/PV", "Analytic", "Observed Symptoms", "Poor Area Precision", "Possible Causes", and "Rotor Seal Defective".

The "Diagnosis" sidebar on the left contains icons for "Tests...", "System On", and "System Off". Below this, there are buttons for "Method and Run Control", "Data Analysis", "Report Layout", "Verification (OQ/PV)", "Diagnosis", and "MSD Tune".

The main area shows a "Test Selection" window with a "MSD Ion Optics Test" dialog box. The dialog box has "Explain" and "Abort" buttons. It contains a table with the following data:

	Result	Status
MSD Ion Optics Test		
Expected total time: approx.5 min.		
Test Procedure:		
1. Change loaded tune file from ATUNES.TUN to ...		Processing . . .
2. Automated Ion Optics Test		

Below the table is a "Select Tune File" dialog box. It shows the path "C:\CHEM32\1\1956ATUN\" and a list of files: "022420.JJC.TUN", "091520.JJC.TUN", "ATUNES.TUN", and "ATUNESTEST.TUN". The "ATUNES.TUN" file is selected. Below the list, there are two radio button options: "Positive Polarity (Standard)" (selected) with a timestamp of "09/24/2020, 13:04:18", and "Negative Polarity (Standard)" with a timestamp of "02/28/2020, 18:34:30". The dialog box has "OK", "Cancel", and "Help" buttons.

The Windows taskbar at the bottom shows the "start" button, the "Instrument 2 (online)..." application, "Agilent ChemStation ...", and "092520 Notes on Get...". The system tray shows "Instrument 2 Busy" and the time "2:38 PM".

MSD Optics Test Failure Explanation:

Instrument 2 (online): Diagnosis TRILA.M, DEFAULT.D, ATUNES.TUN

File Diagnosis Maintenance View Abort Help

Test Results/Logbooks OQ/PV Analytic Observed Symptoms Poor Area Precision Possible Causes Rotor Seal Defective

Diagnosis

Tests...  
System On  
System Off

Method and Run Control  
Data Analysis  
Report Layout  
Verification (OQ/PV)  
Diagnosis  
MSD Tune

Test Selection

MS Ion Optics Test Results

	Result
Date: 9/25/2020; Time: 2:38:51	
Initial Scan (Pos.)	Passed
Turned off (Pos.)	Passed
On Maximum (Pos.)	Passed
On Maximum (Neg.)	Passed
Ramping Test	Error: Not enough signal at m/z 1218 for ramping test

MSD Ion Optics Test

Explain Close

	Result	Status
MSD Ion Optics Test		
Expected total time: approx. 5 min.		
Test Procedure:		
1. Change loaded tune file from ATUNES.TUN to ...	ATUNES.TUN	done
2. Automated Ion Optics Test	Failed	done

Measured Res

3752	
42.0	Pass
0.029	Pass
-1.4	Pass
27.1	Pass
350 Hz	Pass

Instrument 2 Ready 2:43 PM



MSD Signal Test Passed:

Instrument 2 (online): Diagnosis TRILA.M, DEFAULT.D, ATUNES.TUN

File Diagnosis Maintenance View Abort Help

Test Results/Logbooks OQ/PV Analytic Observed Symptoms Poor Area Precision Possible Causes Rotor Seal Defective

Diagnosis

Tests...  
System On  
System Off

Method and Run Control  
Data Analysis  
Report Layout  
Verification (OQ/PV)  
Diagnosis  
MSD Tune

**MS Signal Test Result Chart**

\*MS Signal Test Passed. Min: 2467; Max: 27002; Period: 0.0242

**MSD Signal Test**

Explain Close

Result Status		
MSD Signal Test		
Expected total time: approx. 2 min.		
Test Procedure:		
1. Automated Signal Test	Passed	done

Limits Measu

Limits	Measu
< 2.0	
< 2.0	
	2466.8
	27001.8

Instrument 2 Ready

start Instrument 2 (online)... Agilent ChemStation ... 092520 Notes on Get... 2:59 PM

Instrument 2 (online): Diagnosis TRILA.M, DEFAULT.D, ATUNES.TUN

File Diagnosis Maintenance View Abort Help

Test Results/Logbooks OQ/PV Analytic Observed Symptoms Poor Area Precision Possible Causes Rotor Seal Defective

Diagnosis

Tests...  
System On  
System Off

Method and Run Control  
Data Analysis  
Report Layout  
Verification (OQ/PV)  
Diagnosis  
MSD Tune

MSD (Detector) - G1956A - US72900179

Procedures List

- MSD Noise Test
- MSD Signal Test
- MSD Ion Optics Test
- MSD Vacuum
- MSD Quadrupole
- MSD Application

Description:  
The MSD Signal Test verifies the signal path from the log amplifier input, through the amplifier, through analog-to-digital conversion, and into software.

MS Signal Test Results

	Limits	Measured	Result
Date: 9/25/2020; Time: 2:45:16 PM			
Minima rel. Std. Dev.	< 2.0	0.6	Passed
Maxima rel. Std. Dev.	< 2.0	0.1	Passed
Period rel. Std. Dev.	< 2.0	1.6	Passed
Mean Minima	> 1800 cts and < 4200 cts	2466.8 cts	Passed
Mean Maxima	> 20000 cts and < 30000 cts	27001.8 cts	Passed

Measured Res

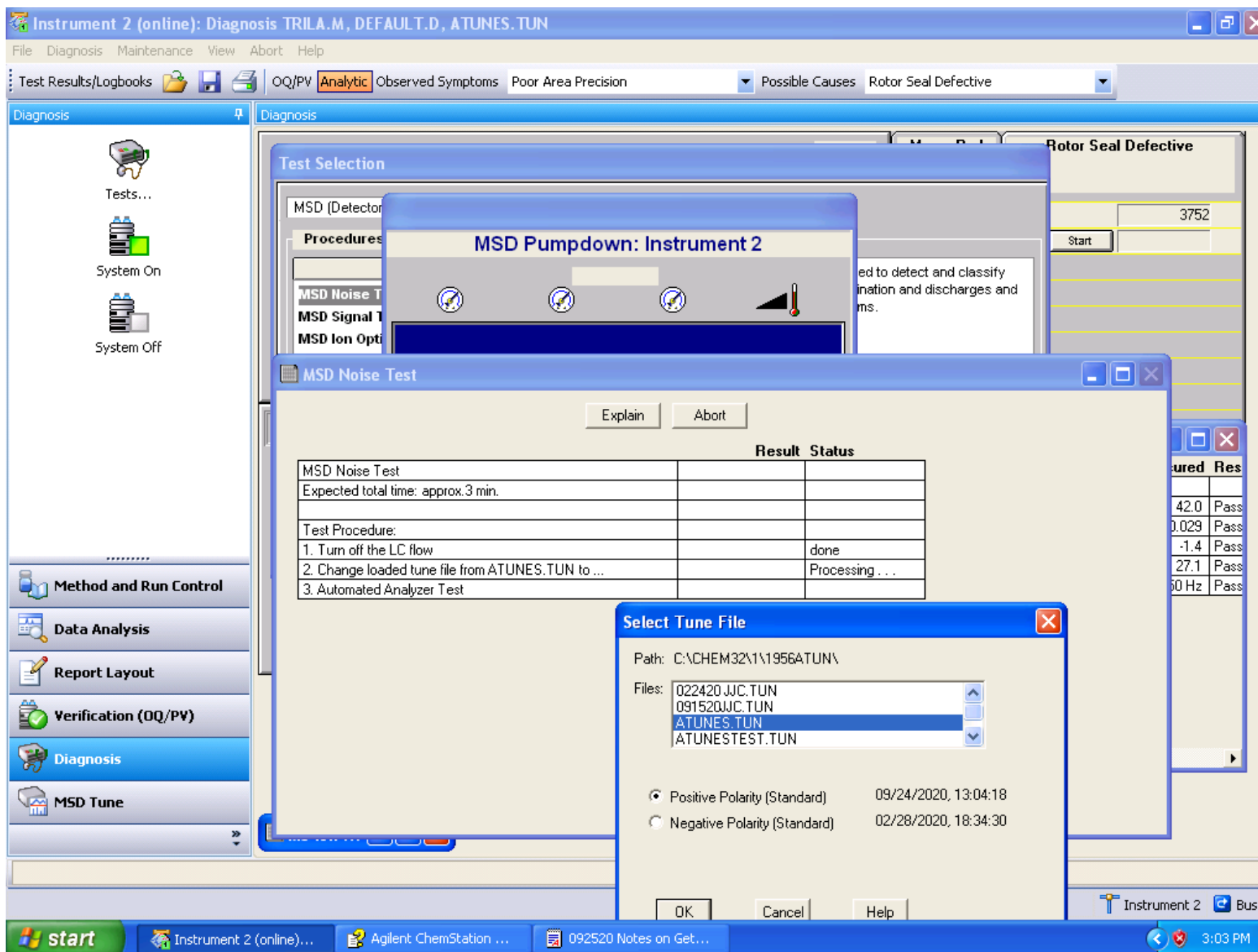
42.0	Pass
0.029	Pass
-1.4	Pass
27.1	Pass
350 Hz	Pass

MS lon ...

Instrument 2 Ready

start Instrument 2 (online)... Agilent ChemStation ... 092520 Notes on Get... 3:00 PM

MSD Noise Test:



MSD Noise Test passed:

Diagnosis

- Tests...
- System On
- System Off

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Method and Run Control

Data Analysis

Report Layout

Verification (OQ/PV)

**Diagnosis**

MSD Tune

Diagnosis

MS Noise Test Result Chart

\*Initial Scan: done Base peak: m/z 491.6; Max Abund: 25

MSD Noise Test

Explain Close

Result Status		
MSD Noise Test		
Expected total time: approx 3 min.		
Test Procedure:		
1. Turn off the LC flow		done
2. Change loaded tune file from ATUNES.TUN to ...	ATUNES.TUN	done
3. Automated Analyzer Test	Passed	done

Rotor Seal Defective

3752

Start

d classify charges and

Diagnosis

- Tests...
- System On
- System Off

---

Method and Run Control

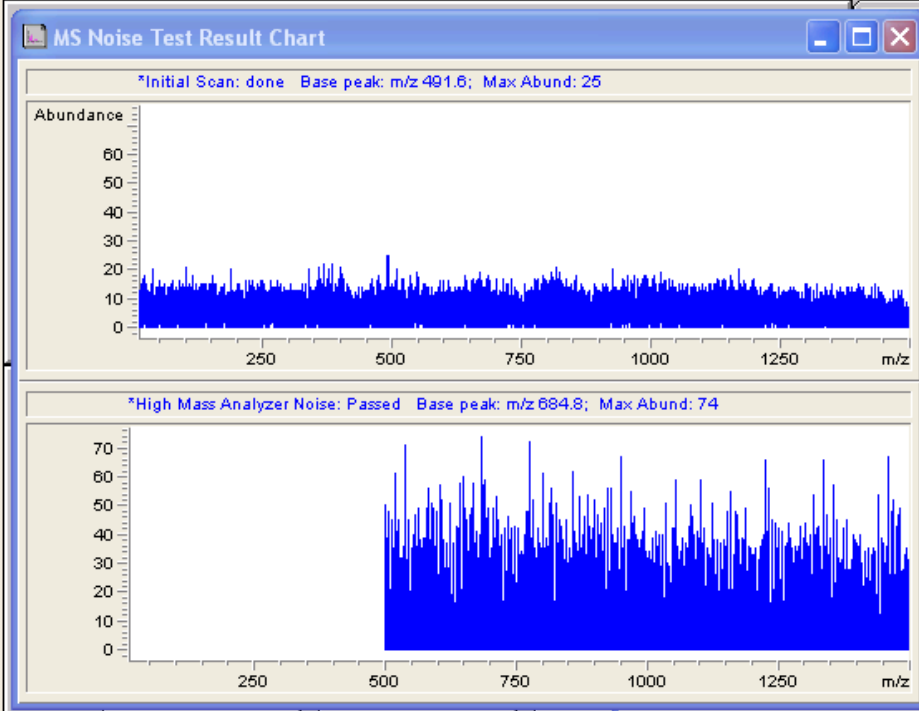
Data Analysis

Report Layout

Verification (OQ/PV)

**Diagnosis**

MSD Tune



**Rotor Seal Defective**

3752

Start

and classify charges and

Results

Result	
M	done
	Passed
	Max Abund. < 1000
	# Spikes over 200 < 10
	Max Abund. < 50

MS Ion ...

MSD Vacuum Test:

Instrument 2 (online): Diagnosis TRILA.M, DEFAULT.D, ATUNES.TUN

File Diagnosis Maintenance View Abort Help

Test Results/Logbooks OQ/PV Analytic Observed Symptoms Poor Area Precision Possible Causes Rotor Seal Defective

Diagnosis

Tests...  
System On  
System Off

Method and Run Control  
Data Analysis  
Report Layout  
Verification (OQ/PV)  
Diagnosis  
MSD Tune

Test Selection

MSD (Detector) - G1956A - US72900179

Procedures List

- MSD Noise Test
- MSD Signal Test
- MSD Ion Optics Test

Description:

The MSD Vacuum Test executes a partial vent and pumpdown, monitoring the rough and high vacuum readings, turbo pump speed, and turbo pump power readings. These readings are analyzed to evaluate if the vacuum system is working properly and to point out

MSD Vacuum Test

Explain Abort

Result Status		
MSD Vacuum Test		
Expected total time: approx.15 min.		
This test will shutdown your system and restart it again.		
The instrument LEDs will turn red during the test phase.		
Please, don't power cycle the instruments during the test.		
1. Automated vacuum test	17 min 13 s	Processing . . .
2. Evaluating vacuum test		

high vacuum value is 6.76e+07

Instrument 2 Busy

start Instrument 2 (online)... Agilent: ChemStation ... 092520 Notes on Get... 3:12 PM

MSD Vacuum Test Results (vent time failed):

Instrument 2 (online): Diagnosis TRILA.M, DEFAULT.D, ATUNES.TUN

File Diagnosis Maintenance View Abort Help

Test Results/Logbooks OQ/PV Analytic Observed Symptoms Poor Area Precision Possible Causes Rotor Seal Defective

Diagnosis

Tests...  
System On  
System Off

Method and Run Control  
Data Analysis  
Report Layout  
Verification (OQ/PV)  
Diagnosis  
MSD Tune

MS Ion ...

MSD Vacuum Test Results

MSD (Detector) - G1956A - US72900179

Procedures List

- MSD Noise Test
- MSD Signal Test
- MSD Ion Optics Test
- MSD Vacuum Test
- MSD Quadrupole Electronics Test

Description:

The MSD Vacuum Test executes a partial vent and pumpdown, monitoring the rough and high vacuum readings, turbo pump speed, and turbo pump power readings. These readings are analyzed to evaluate if the vacuum system is working properly and to point out where the failures might have occurred.

Date And Time	Limits	Measured	Result
Vent Time	< 420 sec	440 sec	Failed
Pump Down Time	< 600 sec	270 sec	Passed
Rough Vacuum Time	< 15 sec	5 sec	Passed
Rough Vacuum Steady State	< 3 torr	1.94 torr	Passed
High Vacuum Time	< 600 sec	263 sec	Passed
High Vacuum Steady State	< 0.00002 torr	0.000013 torr	Passed
Turbo 1 at 90% Speed	< 180 sec	83 sec	Passed
Turbo 1 Peak Power	> 150 W	176.1 W	Passed
Turbo1 Power Steady state	< 140 W	101.4 W	Passed

Instrument 2 Ready

start Instrument 2 (online)... Agilent ChemStation ... 092520 Notes on Get... 3:30 PM

Received this message, but the LC pump/system was on and pumping:

The screenshot shows the Agilent ChemStation software interface. The main window is titled "Instrument 2 (online): Diagnosis TRILA.M, DEFAULT.D, ATUNES.TUN". The "Possible Causes" dropdown menu is set to "Rotor Seal Defective". The "Diagnosis" menu is open, showing options like "Tests...", "System On", and "System Off". A "Test Selection" dialog box is open, displaying the "MSD Vacuum Test" procedure. A warning message box is overlaid on the test selection dialog, stating: "The LC may have been turned off as part of the MSD Vacuum Test. To turn it on, select 'System On' from the Diagnosis menu." The warning message box has an "OK" button. In the background, a table titled "Measured Res" is visible, showing various test results.

Measured Res	Pass
42.0	Pass
0.029	Pass
-1.4	Pass
27.1	Pass
60 Hz	Pass

Procedure	Time	Status
1. Automated vacuum test	4 min 18 s	Processing ...
2. Evaluating vacuum test		



MSD Vacuum Test passed:

Instrument 2 (online): Diagnosis TRILA.M, DEFAULT.D, ATUNES.TUN

File Diagnosis Maintenance View Abort Help

Test Results/Logbooks OQ/PV Analytic Observed Symptoms Poor Area Precision Possible Causes Rotor Seal Defective

Diagnosis

Tests...  
System On  
System Off

Method and Run Control  
Data Analysis  
Report Layout  
Verification (OQ/PV)  
Diagnosis  
MSD Tune

Test Selection

MSD (Detector) - G1956A - US72900179

Procedures List

- MSD Noise Test
- MSD Signal Test
- MSD Ion Optics Test

Description:

The MSD Vacuum Test executes a partial vent and pumpdown, monitoring the rough and high vacuum readings, turbo pump speed, and turbo pump power readings. These readings are analyzed to evaluate if the vacuum system is working properly and to point out

MSD Vacuum Test

Explain Close

Result Status		
MSD Vacuum Test		
Expected total time: approx. 15 min.		
This test will shutdown your system and restart it again.		
The instrument LEDs will turn red during the test phase.		
Please, don't power cycle the instruments during the test.		
1. Automated vacuum test	done	done
2. Evaluating vacuum test	IgMSGGetTestResults	done

EDTAB 156: Column Justify not found in DDT !

Instrument 2 Ready

start Instrument 2 (online)... Agilent ChemStation ... 092520 Notes on Get... 3:55 PM

Final Screenshot of the day; MSD system still not ready and there was no "not ready information" to display, the option was greyed-out:

The screenshot shows the Agilent Instrument 2 (online) Method and Run Control software interface. The top status bar indicates the instrument is "Not Ready". The main interface displays various instrument parameters and status windows.

**MSD Status:**

DryingGas	
Quad Temp	
Turbo1Spd	33.0 %
Neb Pres	15 psig
Qd TpDrv	9.6 %

**Column Thermostat Status:**

Actual	Left: 30.0 °C	Right: 20.4 °C
Setpoint	Left: 30.0 °C	Right: none
Valve	Column 1	

**Quaternary Pump Status:**

A:	50.0 %	Flow:	0.500 ml/min
		Press:	2 bar

**Injector Status:**

Standard Injection			
Volume:	5.0 µl	Vial:	1

The "Not Ready Information" option in the context menu is greyed out, indicating that the system is not ready for the run.