

DOCUMENT TITLE:	CALIBRATION/MAINTENANCE FOR TE82943	
DOCUMENT TYPE:	☒ Calibration	☒ Preventive Maintenance
EQUIPMENT NAME:	ACQUITY SDS AUTOMATED TESTER	
EQUIPMENT NUMBER:	TE82943	

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EQUIPMENT REQUIRED

Quantity	Part Number	Description
1	NA	DMM with a minimum of 1mVolt accuracy and resolution.
1	NA	VDC source (2.000 vdc level) with a minimum of 1mVolt accuracy and resolution.
1	NA	Flat blade screwdriver, for TUV.
1	289002450	Test Shunt for TUV. (Distribution PN 700002825).
1	402000351	ASSY, HB DEUTERIUM LAMP

DISPOSABLES REQUIRED

Quantity	Part Number	Description
NA	NA	NA

REFERENCE DOCUMENTATION

Document Number	Description
NA	NA

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1. TE82943 TEST BOX - INPUT DC VOLTAGE VERIFICATION – (PM LABEL)

The Input DC Voltage Verification consists of verifying a calibrated DC input voltage. The intent of this test is to verify the TE82943 Test Box while attached to the test station.

- 1.1. Ensure the USB cable is connected from the test system computer to the tester TE82943.
- 1.2. Turn the PC ON and boot up using the following:
User Name: tester
Password: tester
- 1.3. Connect a calibrated voltage source of 0.000 VDC to the Green Interface connectors I and II that would normally interface the BSM. Analog Input 1 is at (+)pin 11 and (-) pin 12 on Green Connector I. Analog Input 2 is at (+)pin 11 and (-) pin 12 on Green Connector II.
- 1.4. From the Windows Desktop, launch the “TE82943 Calibration” icon.
- 1.5. The TE82943 Calibration program will display the voltage of both channels in VDC at about 1 second intervals.
- 1.6. Compare this value to the calibrated voltage the source is delivering to the Test System.
- 1.7. The TE82943 tester must read 0.000 +/- 0.022 VDC max.
- 1.8. Adjust the calibrated voltage source to 2.000 VDC.
- 1.9. The TE82943 tester must read 2.000 +/- 0.022 VDC max.
- 1.10. Input DC Voltage Verification Complete.

2. TUV VERIFICATION – (PM LABEL)

Test Stations that are setup to test the QSM will contain a Waters TUV containing a flow cell specified for the QSM testing. The TUV Verification will consist of a Lamp hours check, replace lamp if necessary, Wavelength Calibration, and a Noise & Drift Test Verification. The intent of this test is to verify the TUV while attached to the test station.

- 2.1. Lamp Hours Check::
- 2.2. Connect the Ethernet Cable, normally used to connect to the rear of the UUT, into the rear of the TUV.
- 2.3. Turn the TUV ON.
- 2.4. Wait approximately 8 minutes or so until the TUV Lamp LED is in a Green ON Steady State.
- 2.5. On the PC, Click the desktop icon “Stop Acquity Processes”.
- 2.6. Click the icon, “ACQUITY Console”.
- 2.7. Using Console, click on “TUV Detector” on the top left of the window.
- 2.8. The Display will show “Lamp Hours”.
- 2.9. The lamp is considered good if there is less than 2000 hours. However, if the TUV is being PM'ed at it's yearly interval and if the TUV Lamp Hours are greater than 1000 hours, the Lamp must be replaced.
- 2.10. Lamp Replacement::
- 2.11. Turn the TUV OFF.
- 2.12. Open the front cover.
- 2.13. Unplug the TUV Lamp, and using a flat blade screwdriver unscrew the two holding screws.
- 2.14. Remove the Lamp.

- 2.15. Replace with new Lamp, Part Number 402000351 or equivalent.
- 2.16. Reinstall screws and reconnect plug.
- 2.17. Turn the TUV ON.
- 2.18. Wait approximately 8 minutes or so until the TUV Lamp LED is in a Green ON Steady State.
- 2.19. On the PC, Click the desktop icon "Stop Acquity Processes".
- 2.20. Click the icon, "ACQUITY Console".
- 2.21. Using Console, click on "TUV Detector" on the top left of the window.
- 2.22. Click on the "Maintain" tab at the top middle of the window.
- 2.23. Click on "Lamp".
- 2.24. Click on "New Lamp".
- 2.25. Type in "1" for serial number.
- 2.26. Click on "OK".
- 2.27. The display will show the Lamp Hours set back to 0.00.
- 2.28. Click the "Close" button.
- 2.29. Wavelength Calibration, and Noise & Drift Test Verification::
- 2.30. Open the TUV front cover. Loosen the three thumb screws holding the Flow Cell.
- 2.31. Carefully remove the Flow Cell and set it on top of the TUV. Note: This should be done without having to disconnect any of the lines to the Inlet or Outlet of the Flow Cell.
- 2.32. Insert the Test Shunt (PN 289002450) into the TUV in place of the Flow Cell.
- 2.33. Evenly tighten the three thumb screws on the Test Shunt.
- 2.34. Click on the "Maintain" tab at the top middle of the window.
- 2.35. Click on "Calibrate Wavelength".
- 2.36. Click on "Start", to start the procedure.
- 2.37. When completed, click "Close".
- 2.38. Click on the "Troubleshoot" tab at the top middle of the window.
- 2.39. Click on "Noise and Drift".
- 2.40. "Select test" option to "Noise Test".
- 2.41. Click "Results>>" button to show result fields.
- 2.42. Click "Start" button to start the noise test.
- 2.43. The test will take about 18 minutes to complete. Upon completion, take note of the result "Segment peak noise:".
- 2.44. Passing Results for this Test Station will be the following.
- 2.45. $-10.00 \text{ uAU} < Results < 10.00 \text{ uAU}$.
- 2.46. The TUV can be re-run again if the results do not pass initially.
- 2.47. "Select test" option to "Drift Test".
- 2.48. Click "Start" button to start the drift test.
- 2.49. The test will take about 75 minutes to complete. Upon completion, take note of the result "Total Drift:".
- 2.50. Passing Results for this Test Station will be the following.
- 2.51. $-375.00 \text{ uAU} < Results < 375.00 \text{ uAU}$.

- 2.52. The TUV can be re-run again if the results do not pass initially.
- 2.53. Click the “Close” button.
- 2.54. Exit the Console program.
- 2.55. Remove the Ethernet Cable from the rear of the TUV.
- 2.56. Turn the TUV OFF.
- 2.57. Remove the Test Shunt and reinstall the Flow Cell. Be sure to align and tighten the three thumb screws.
- 2.58. Turn the TUV ON.
- 2.59. On the PC, Click the desktop icon “Stop Acquity Processes”.
- 2.60. TUV Calibration complete.
- 2.61. Note: The TUV will be ready for production test when the blinking Lamp LED goes to steady state green. This takes approximately 8 minutes from TUV power on.

3. DEGASSER VERIFICATION – (PM LABEL)

Test Stations that are setup to test the UPC2 BSM will contain a Waters Degasser PN186001273. The Degasser Verification consists of verifying the Degasser is functioning properly as determined by it's on-board system self checks. The intent of this test is to verify the Degasser while attached to the test station.

- 3.1. If necessary, power-on the Degasser. Wait just over 10 minutes and observe the LED. The LED must be a steady Green state to “pass”. Any LED changes, i.e. off, yellow, or blinking yellow, etc., indicate a failure. Any unusual motor sounds, i.e. grinding, indicate a failure.
- 3.2. Degasser Calibration complete.

4. AND BALANCE CALIBRATION – (CAL LABEL)

The AnD Balance Calibration consists of the Calibration House Technician performing Calibration on site at the test station.

- 4.1. Remove the beaker from the Balance.
- 4.2. Perform Calibration.
- 4.3. Replace beaker.
- 4.4. AnD Calibration complete