

Quick Start Guide

ShockLine™ Series

Vector Network Analyzers

Verification Kits and

Performance Verification Software

MS46122B Series VNAs

MS46322B Series VNAs

MS46522B Series VNAs

MS46524B Series VNAs

ME7868A Modular VNA

ME7869A Modular VNA



Anritsu

1. Introduction to the Quick Start Guide

This quick start guide provides a brief overview of the installation and use of ShockLine Verification Kits and the 3-2300-610 Performance Verification Software (PVS) with ShockLine Series VNAs.

2. Verification Kit Components

The supplied Verification Kit components are listed in the general reference figure below. The actual appearance of individual verification/calibration kits and components varies.

Note

The ShockLine “A” models (MS46122A, MS46322A, MS46522A, and MS46524A) use a different performance verification software than the “B” model. For more information on the "A" model PVS kits, please contact your local sales representative.



3668-3 K Connector Verification Kit Shown

MS46xxxB Models 3668-3 K Connector Verification Kit	MS46xxxB Models 3663-3 N Connector Verification Kit
1. USB Flash Drive with Software and Documentation containing: <ul style="list-style-type: none">• Performance Verification Software and Test Definition Data• Quick Start Guide – 10410-00766• Characterization Data	USB Flash Drive with Software and Documentation containing: <ul style="list-style-type: none">• Performance Verification Software and Test Definition Data• Quick Start Guide – 10410-00766• Characterization Data
2. Precision Airline (m-f)	Precision Airline (m-f)
3. Beatty Airline (m-f)	Beatty Airline (m-f)
4. 20 dB Offset (Pad) Attenuator (m-f)	20 dB Offset (Pad) Attenuator (m-f)
5. 50 dB Offset (Pad) Attenuator (m-f)	50 dB Offset (Pad) Attenuator (m-f)

Figure 1. ShockLine Verification Kit Components

Calibration/Verification Kit Components

Summary of Required Hardware

The table below summarizes the required support hardware for each verification kit. Only one calibration kit, automatic or manual, is required. Note also that the PC Controller and the connecting GPIB cable are required for all VNAs and all verification kits.

Table QSG-1. Summary of Required Hardware

Ver Kit VNAs Adapters	VNA Test Port Required Adapter and/or Through Line	Compatible Manual Calibration Kits	Recommended Test Port Cables
3668-4 Type K Connector Verification Kit MS46524B-043 MS46522B-043 MS46322B-043 MS46122B-043 ME7868A-043 ME7869A-043 Two Adapters	<ul style="list-style-type: none"> Test Port 1 K (m) 33KFKF50C K (f) to K (f) Adapter on Port 1 		3670K50-2 Test Port Cable Ruggedized Semi-Rigid 61 cm (24") – K (f) to K (m)
	<ul style="list-style-type: none"> Test Port 2 K (m) Through Line Cable on Port 2 33KKF50C K (m) to K (f) on cable above 	TOSLKF50A-43.5 – K(f) TOSL CAL 43.5 GHz TOSLK50A-43.5 – K(m) TOSL CAL 43.5 GHz	3671KFK50-100 Test Port Cable Flexible Phase Stable 100 cm (39.4")- K (f) to K (m)
3668-3 Type K Connector Verification Kit MS46524B-020 MS46522B-020 MS46322B-020 MS46122B-020 ME7868A-020 ME7869A-020 Two Adapters	<ul style="list-style-type: none"> Test Port 1 K (m) 33KFKF50B K (f) to K (f) Adapter on Port 1 		3670K50-2 Test Port Cable Ruggedized Semi-Rigid 61 cm (24") – K (f) to K (m)
	<ul style="list-style-type: none"> Test Port 2 K (m) Through Line Cable on Port 2 33KKF50B K (m) to K (f) on cable above 	TOSLKF50A-40 – K(f) TOSL CAL 40 GHz TOSLK50A-40 – K(m) TOSL CAL 40 GHz	3671KFK50-100 Test Port Cable Flexible Phase Stable 100 cm (39.4")- K (f) to K (m)
3663-3 Type N Connector Verification Kit MS46524B-010 MS46522B-010 MS46322B-010 MS46122B-010 ME7868A-010 ME7869A-010 Three Adapters	<ul style="list-style-type: none"> Test Port 1 K (m) Test Port Cable on Port 2 71693-R K (f) to N (f) Adapter on cable above 		3671KFK50-60 Test Port Cable Flexible Phase Stable 60 cm (23.6") - K (f) to K (m)
	<ul style="list-style-type: none"> Test Port 2 K (m) Test Port Cable on Port 2 71693-R K (f) to N (f) Adapter on cable above 33NN50B N (m) to N (m) Adapter on adapter above 	TOSLNF50A-18 N(f) TOSL CAL 18 GHz TOSLN50A-18 N(m) TOSL CAL 18 GHz	3671KFK50-60 Test Port Cable Flexible Phase Stable 60 cm (23.6") - K (f) to K (m)

3. Required PC Controller Equipment

The following Personal Computer (PC) Controller equipment and software are required to control the ShockLine Series VNA. The PC Controller and the VNA are connected over an Ethernet network. The required Ethernet cable, test port adapters, and phase-stable through line with any required adapters are not included in the verification kit.

The PVS must be run on a PC controller equipped as described in [Table 1](#), with NI-VISA library and NI-VISA Run-Time Engine 4.1 or later. The NI-VISA Run-Time license is available from National Instruments (NI) as a stand-alone software package. Please contact NI for additional details.

Table 1. Required PC Controller Equipment

Component	Description
PC Controller	Personal computer with: <ul style="list-style-type: none">• Microsoft Windows XP SP3, 7, or Microsoft Windows 10• Minimum 233 MHz single or dual processor (recommended: Intel Pentium/Celeron processor or AMD K6/Athlon-/Duron processor)• 1 GB RAM• USB 2.0 Type A Ports• 20 MB of free hard disk space• Mouse• Keyboard• Monitor with minimum display resolution of 1024 x 786
National Instruments	The following software is required from NI: <ul style="list-style-type: none">• NI-VISA 4.1 or higher (no later than version 18.0)

4. PC Controller Cable Connections to VNA

ME7868A Verification Component Connection

The basic connections between the PC Controller, the ME7868A VNA, and the verification components are shown below. See [Figure 2](#) below. Note that the setup for any given verification kit varies slightly with additional adapters.

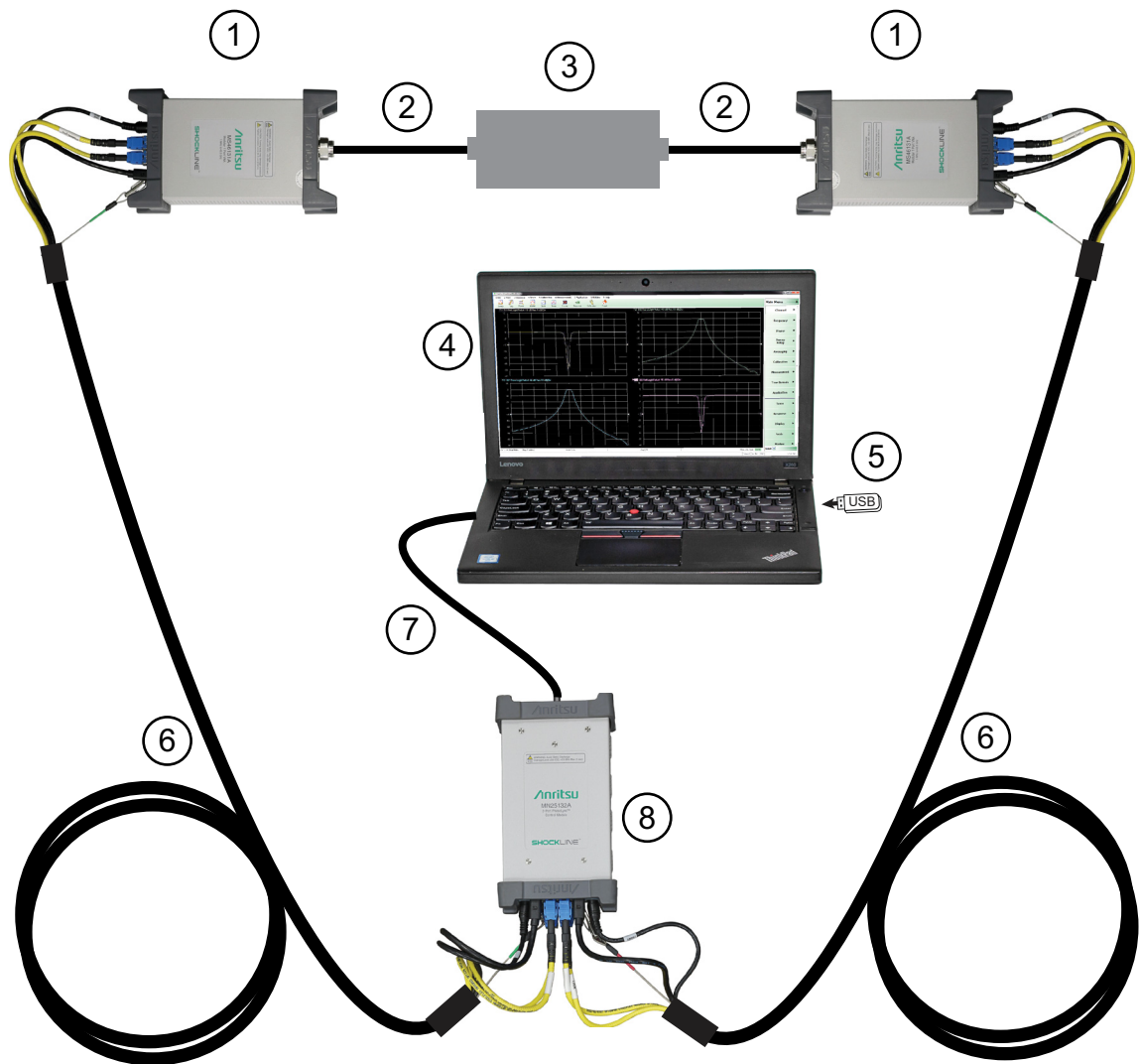


1. PC Controller: With installed 3-2300-610 PVS application	4. Test Port Through Line Cable
2. USB cable connectivity	5. Calibration or verification components
3. MS46131A	6. PhaseLync Cable
	7. Verification Kit USB Device with characterization data

Figure 2. ME7868A VNA Connections

ME7869A Verification Component Connection

The basic connections between the PC Controller, the ME7869A VNA, and the verification components are shown below. See Figure 2 below. Note that the setup for any given verification kit varies slightly with additional adapters.

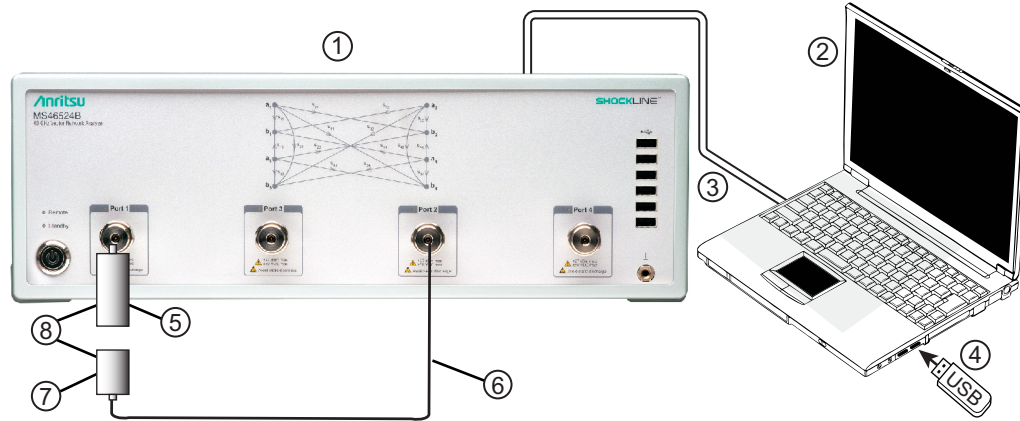


1. MS46131A	5. Verification Kit USB Device with characterization data
2. Test Port Through Line Cable	6. PhaseLync Cable
3. Calibration or verification components	7. USB cable connectivity
4. PC Controller: With installed 3-2300-610 PVS application	8. MN25132A

Figure 3. ME7869A VNA Connections

MS46524B Verification Component Connection

The basic connections between the PC Controller, the MS46524B VNA, and the verification components are shown below. See [Figure 4](#) below. Note: For the MS46524B: Port-1/Port-2 are verified as a set and Port-3 and Port-4 are verified as a set.

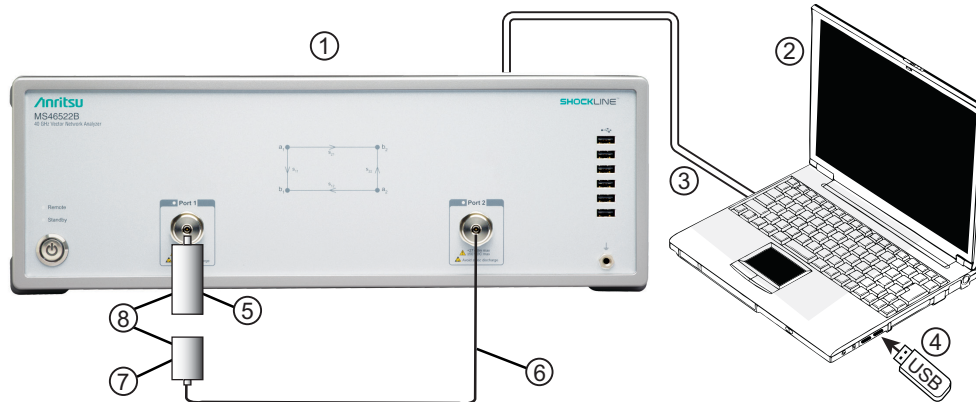


- | | |
|---|--|
| 1. ShockLine Series VNA | 5. Port 1 Adapter (if needed) |
| 2. PC Controller: | 6. Test Port Through Line M-F Cable |
| • With installed NI VISA Library | 7. Adapter attached to Through Line and Port 2 |
| • With installed 3-2300-610 PVS application | 8. Insert calibration or verification components here. |
| 3. Ethernet connectivity | Note that the setup for any given verification kit varies slightly with additional adapters. |
| 4. Verification Kit USB Device with characterization data | |

Figure 4. MS46524B VNA Connections

MS46522B Verification Component Connection

The basic connections between the PC Controller, the MS46522B VNA, and the verification components are shown below. See [Figure 5](#) below.

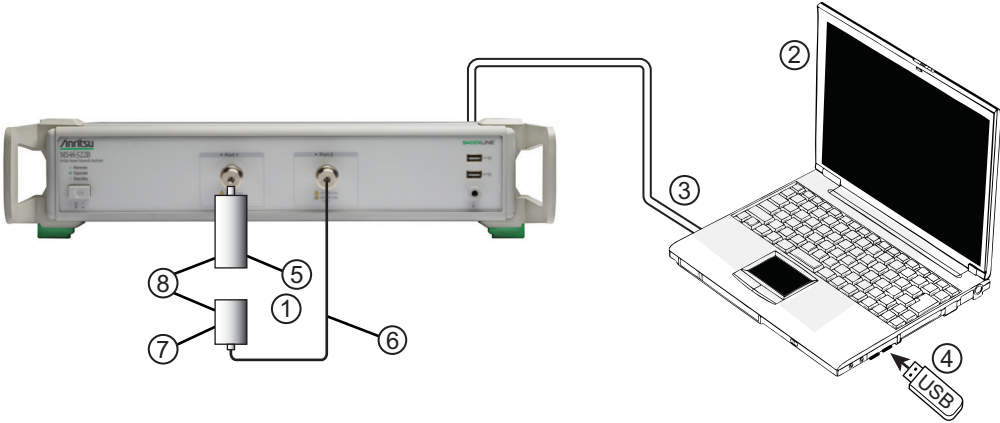


- | | |
|---|--|
| 1. ShockLine Series VNA | 5. Port 1 Adapter (if needed) |
| 2. PC Controller: | 6. Test Port Through Line M-F Cable |
| • With installed NI VISA Library | 7. Adapter attached to Through Line and Port 2 |
| • With installed 3-2300-610 PVS application | 8. Insert calibration or verification components here. |
| 3. Ethernet connectivity | Note that the setup for any given verification kit varies slightly with additional adapters. |
| 4. Verification Kit USB Device with characterization data | |

Figure 5. MS46522B VNA Connections

MS46322B Verification Component Connection

The basic connections between the PC Controller, the MS46322B VNA, and the verification components are shown below. See Figure 6 below.

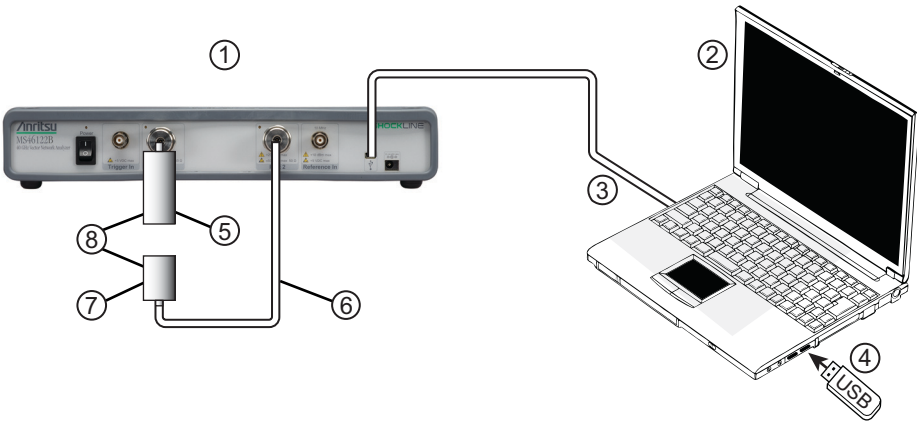


- | | |
|--|--|
| 1. ShockLine Series VNA | 5. Port 1 Adapter (if needed) |
| 2. PC Controller: <ul style="list-style-type: none">• With installed NI VISA Library• With installed 3-2300-610 PVS application | 6. Test Port Through Line M-F Cable |
| 3. Ethernet connectivity | 7. Adapter attached to Through Line and Port 2 |
| 4. Verification Kit USB Device with characterization data | 8. Insert calibration or verification components here. |
| Note that the setup for any given verification kit varies slightly with additional adapters. | |

Figure 6. MS46322B VNA Connections

MS46122B Verification Component Connection

The basic connections between the PC Controller, the MS46122B VNA, and the verification components are shown below. See Figure 7 below.



- | | |
|--|--|
| 1. ShockLine Series VNA | 5. Port 1 Adapter (if needed) |
| 2. PC Controller: <ul style="list-style-type: none">• With installed NI VISA Library• With installed 3-2300-610 PVS application | 6. Test Port Through Line M-F Cable |
| 3. USB connectivity | 7. Adapter attached to Through Line and Port 2 |
| 4. Verification Kit USB Device with characterization data | 8. Insert calibration or verification components here. |
| Note that the setup for any given verification kit varies slightly with additional adapters. | |

Figure 7. MS46122B VNA Connections

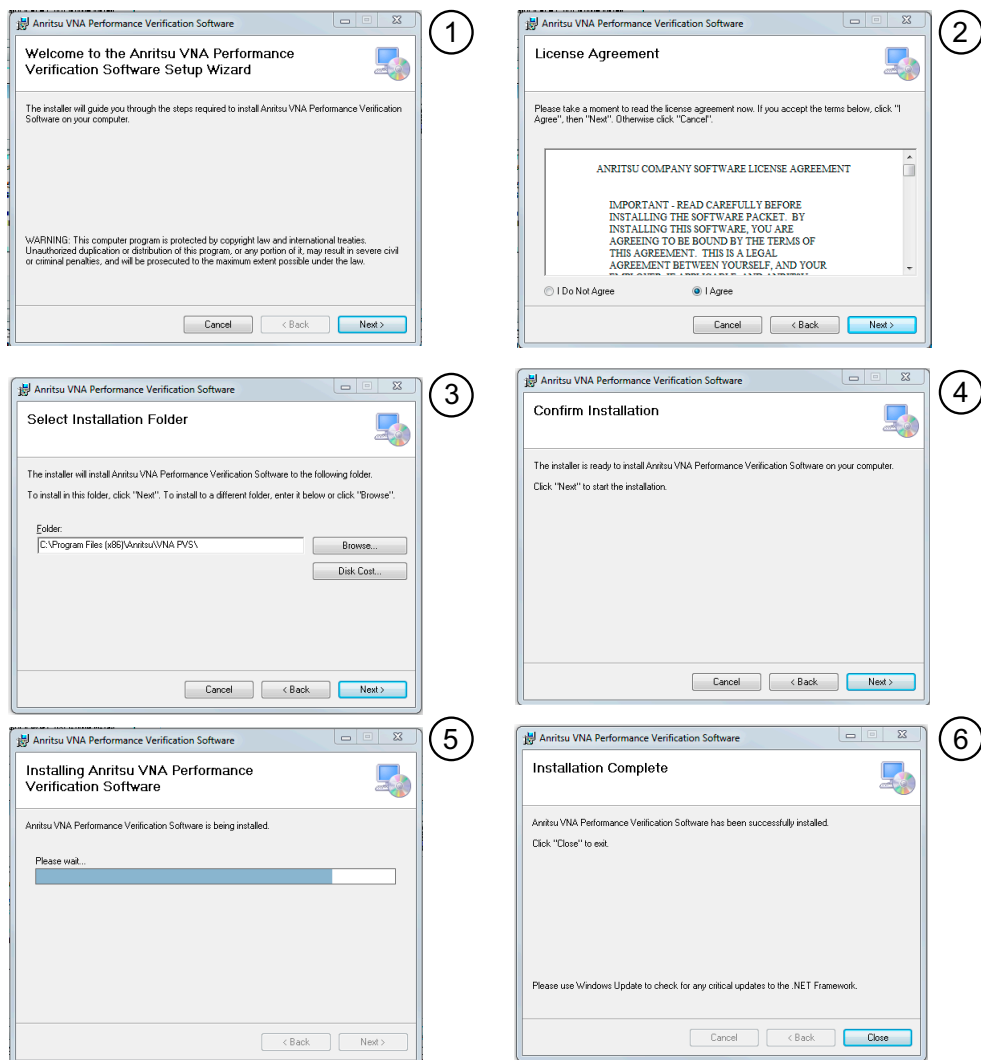
5. Installing the ShockLine Performance Verification Software (PVS).

This section describes how to install the Performance Verification Software (PVS) application and how to use the PVS user interface functions.

Installing the Software

The software is contained on the USB Memory Device supplied with each Verification Kit. Refer to [Section 2. “Verification Kit Components” on page QSG-2](#) for a listing of the Verification Kit components and software.

1. Insert the USB Memory Device into a USB port on the PC Controller.
2. Click through the next several screens that appear during the installation process as prompted.



1. Welcome to the Anritsu ShockLine Verification Application Setup Wizard Screen
2. License Agreement Screen
3. Select Installer Folder Screen

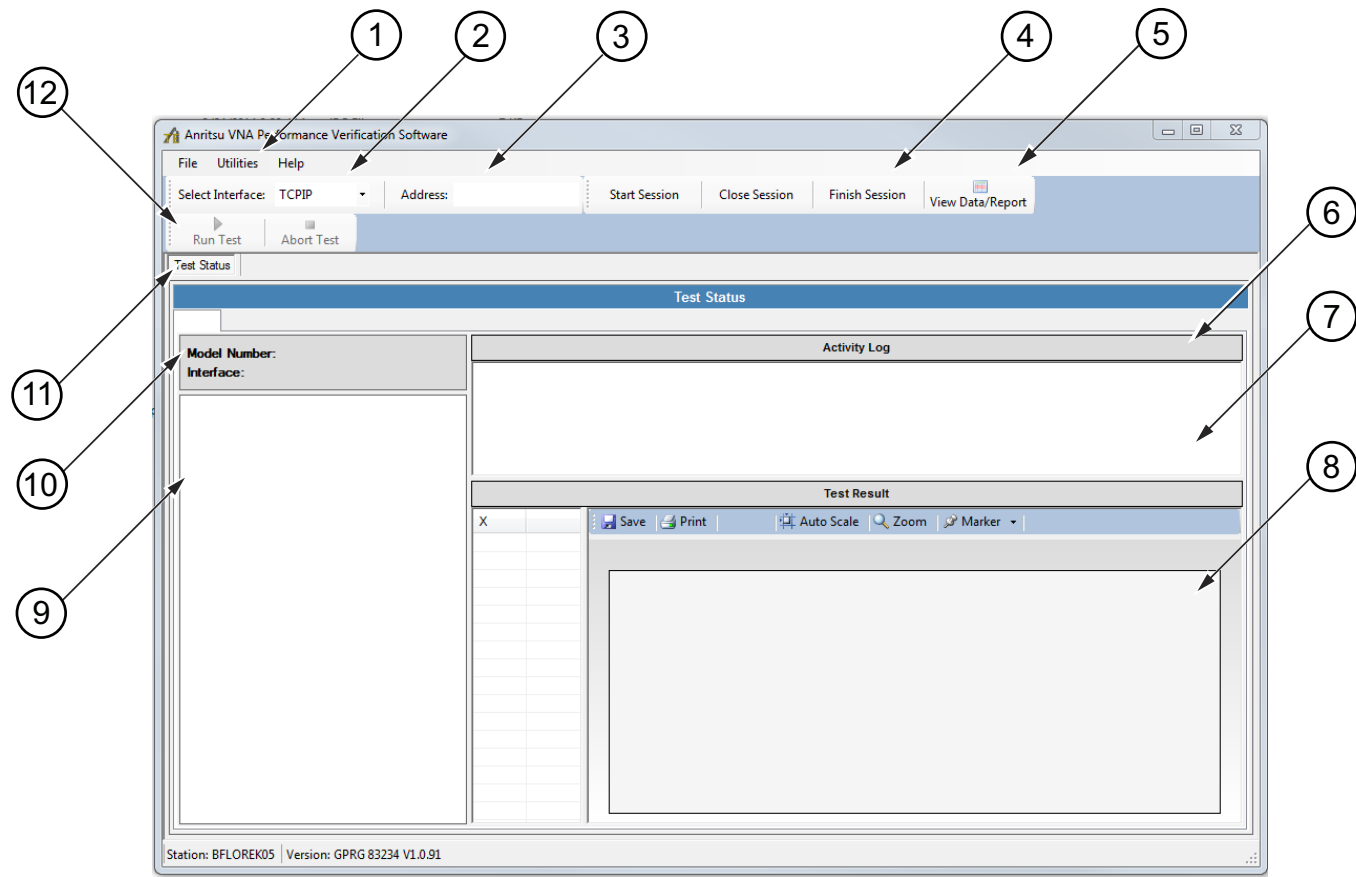
4. Confirm Installation screen
5. Installation In-process Screen
6. Installation Complete Screen

Figure 8. Anritsu ShockLine Verification Application Setup Wizard screens

3. Double-click the ShockLine Verification desktop icon to open the Anritsu ShockLine Verification Application.
 - The splash screen appears when the application has loaded.

Anritsu ShockLine Verification Program Screen

When the PVS Installation is complete, the Verification Software navigation page will then appear. See [Figure 9](#).



- | | |
|---|---|
| 1. Menu Bar – File, Utilities, Help | 8. Test Result – Test results Display |
| 2. Communication Type – TCPIP, USB, TCPIP Socket | 9. Test Selection Window – Test selection and status |
| 3. VNA Network Address – Network Address Field | 10. VNA Model / Interface Display – Displays Model and Interface |
| 4. Testing – Start testing, Close Session, Finish Session | 11. Test Status – Tab selection displays Test Status |
| 5. View Report – Test results | 12. Run Test / Abort Test – To run or Abort Test |
| 6. Activity Log – Scrolling log of test events | |
| 7. Info - Display Tab - Test Progress - display shows testing progress | |

Figure 9. PVS Verification Program Main Screen and User Interface Controls

Setup the VNA and Verification Performance Software communication

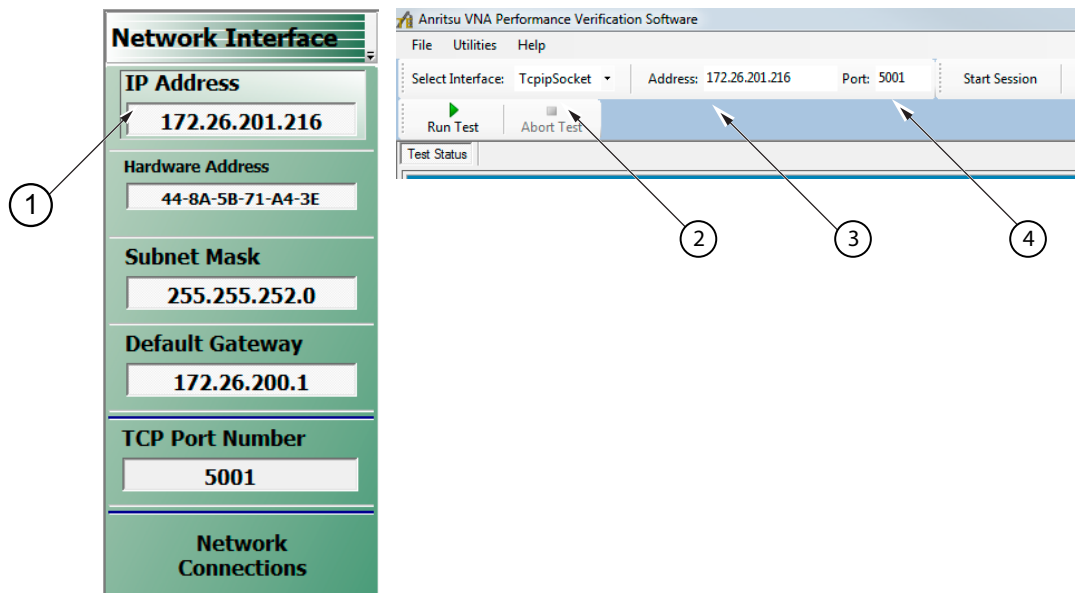
The Performance Verification Software program must be set-up to communicate with the VNA. To locate the VNA Network Address, on the VNA select: Main Menu | System | Network Interface.

Refer to [Figure 10](#). To set-up the VNA/Performance Verification Software (PVS) program communication:

1. From the PVS Select Interface pull down menu:
 - a. For MS46122B, select TcpipSocket (TCP port number is 5001).
 - b. For MS46322B, MS46522B, and MS46524B, select Tcpip, either raw socket with TCP port number 5001) or VXI-11.
 - c. For ME7868A and ME7869A, select Tcpip raw socket (TCP port number is 5001).
2. Locate the PVS Address field.
3. Enter the IP Address as is displayed from the VNA Network Interface IP Address.
4. Enter the TCP Port number from the Network Interface menu into the Port field.

Note

ShockLine Software must be running when running PVS with a single controller on a MS46122B. When running the PVS for a MS46122B, enter local host address (127.0.0.1) into the PVS Address field and enter 5001 into the Port field.



1. ShockLine VNA Address
2. Select Interface
3. Address Field
4. Port Field

Figure 10. Instrument Address

6. Adding Performance Verification Tools

This section describes how to enter the required testing tools and components into the PVS program to perform a full performance verification.

Adding the PVS Tools

The following tools are required to perform a full VNA performance verification:

Verification Kit

- 50 ohm airline
- Beatty standard airline
- 20 dB Attenuator
- 50 dB Attenuator

Cal Kits

- Male
- Female

Refer to [Figure 9 on page QSG-10](#). From the PVS Menu Bar:

1. Select Utilities.
2. Select the drop down Asset Utility.
3. The Station Asset Utility menu will appear. See [Figure 11](#).

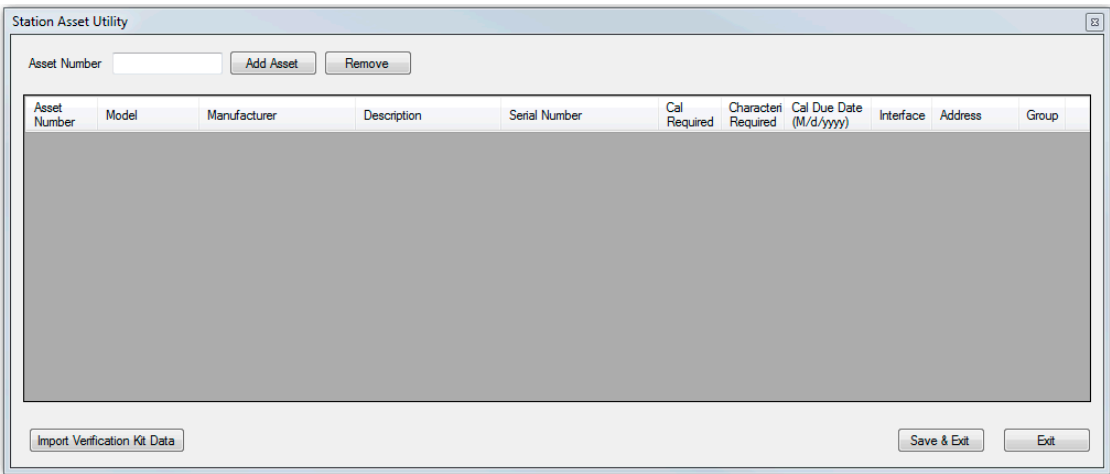


Figure 11. Station Asset Utility Menu

4. Select the Import Verification Kit Data tab on lower left of the Station Asset Utility menu.
 - A Import Verification Kit Data screen will appear. See [Figure 12](#)

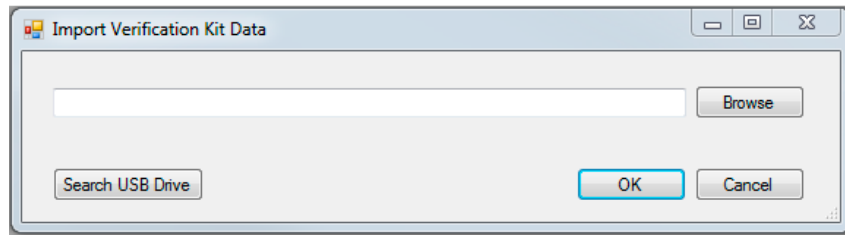


Figure 12. Import Verification Kit Data Screen

5. Insert the MS46xxxB Models 3-2300-610 USB Flash Drive into a USB port on the PC.
6. Select the Search USB Drive button.
7. The verification kit data file is named VerKitInfo.ini. If the verification kit data file is found on the USB drive, the path and file name of the file is entered in the filename field. If the file cannot be found, click the Browse button to manually locate the data.
8. Click OK to import the data.
9. Verify the Verification Kit components have successfully populated the Station Asset Utility screen. For an example, see [Figure 13](#).

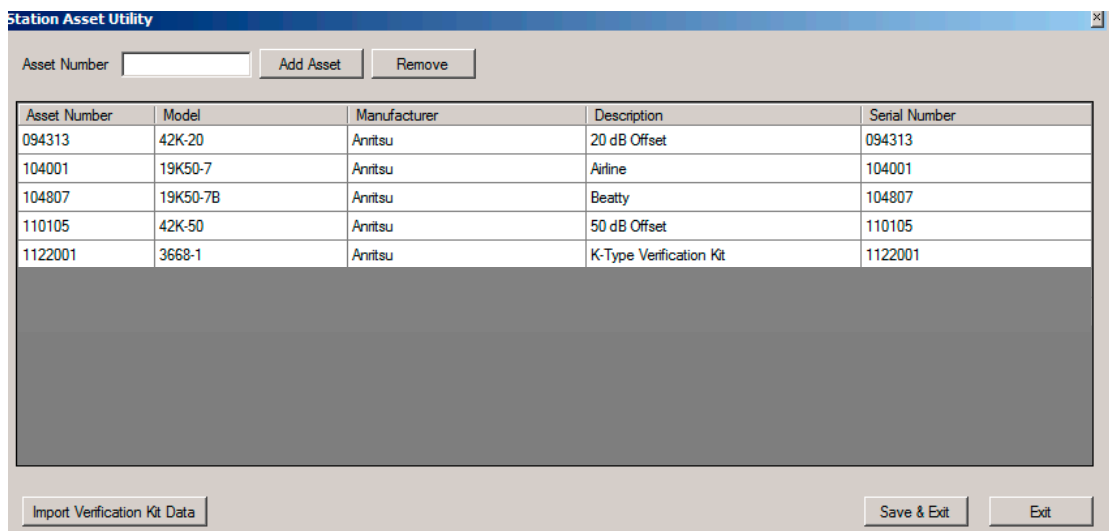


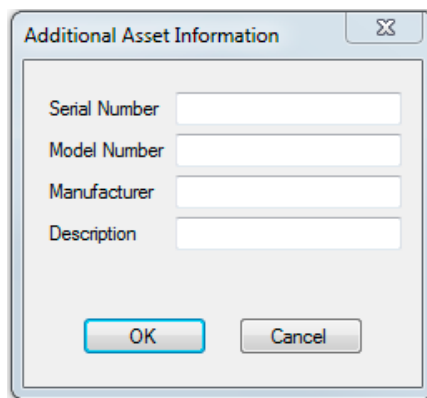
Figure 13. Station Asset Utility List

To Add More Components:

10. Enter an asset number in the Asset Number field.
11. Select the Add Asset button from the Station Asset Utility menu.
 - The Additional Asset Information tab will appear. See [Figure 14](#).
12. From the Station Asset Utility menu, select Add Asset.

6. Adding Performance Verification Tools

- Add components to the Station Asset Utility list that are required for the Performance Verification testing, e.g. TOSLKF50A-40 and TOSLK50A-40.

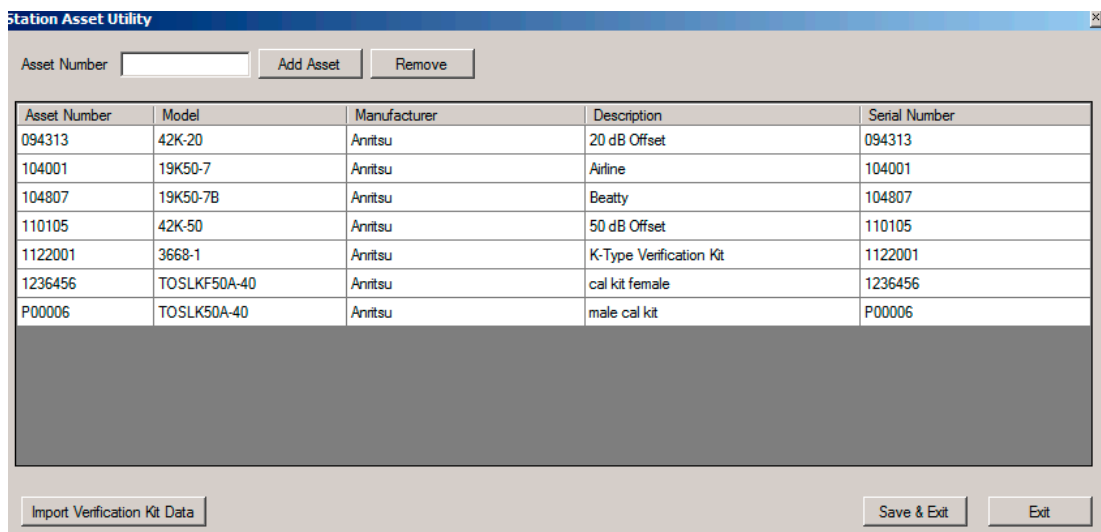


A dialog box titled "Additional Asset Information" with a close button (X) in the top right corner. It contains four text input fields labeled "Serial Number", "Model Number", "Manufacturer", and "Description". At the bottom, there are two buttons: "OK" and "Cancel".

Figure 14. Additional Asset Information

13. Enter the Performance Verification tools adapters etc. into each field.
14. Select OK.
15. Select the Save and Exit button on the Station Asset Utility screen.
 - The added equipment will be appear in the Station Asset Utility menu as shown in [Figure 15](#).

Note To start the verification testing, all the required verification equipment must be added to the Station Asset Utility list.



A screenshot of the "Station Asset Utility" window. It features a table with five columns: Asset Number, Model, Manufacturer, Description, and Serial Number. The table contains seven rows of data. Above the table, there is an "Asset Number" input field and "Add Asset" and "Remove" buttons. Below the table, there is an "Import Verification Kit Data" button and "Save & Exit" and "Exit" buttons.

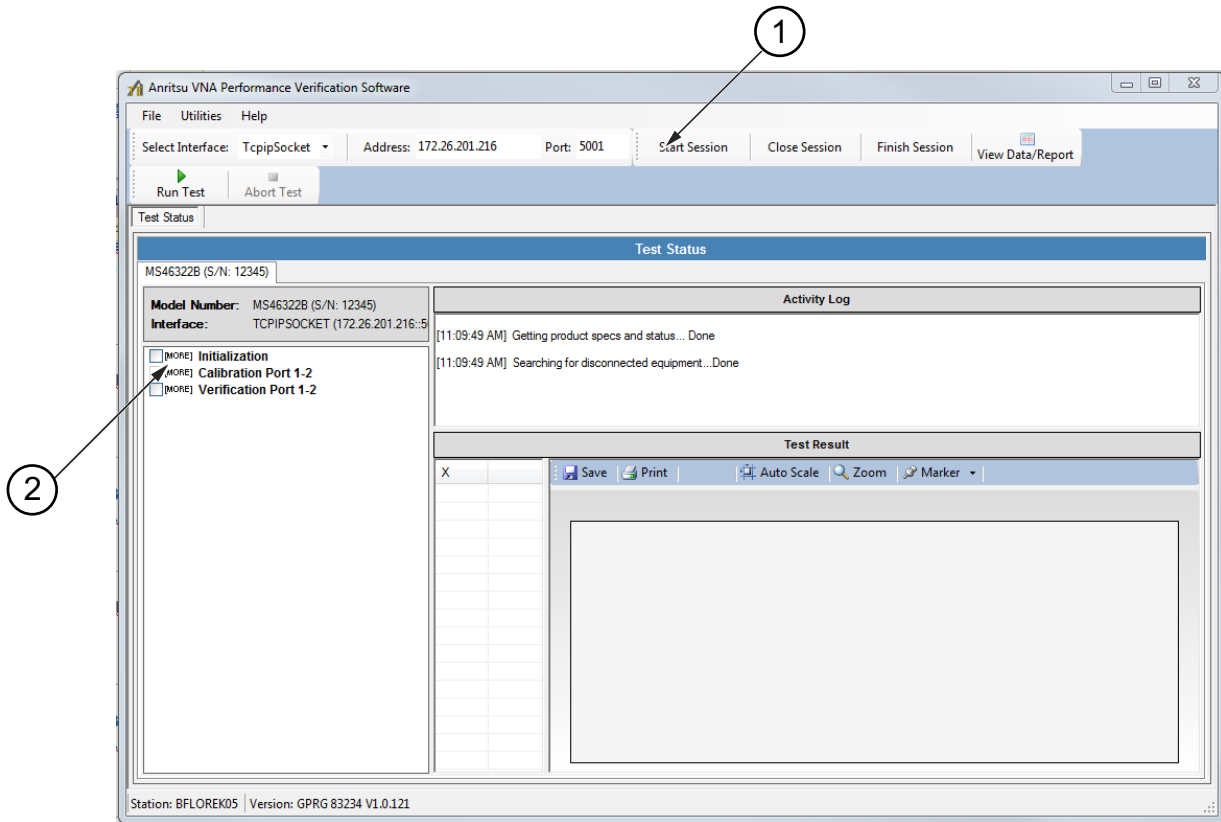
Asset Number	Model	Manufacturer	Description	Serial Number
094313	42K-20	Anritsu	20 dB Offset	094313
104001	19K50-7	Anritsu	Airline	104001
104807	19K50-7B	Anritsu	Beatty	104807
110105	42K-50	Anritsu	50 dB Offset	110105
1122001	3668-1	Anritsu	K-Type Verification Kit	1122001
1236456	TOSLKF50A-40	Anritsu	cal kit female	1236456
P00006	TOSLK50A-40	Anritsu	male cal kit	P00006

Figure 15. Verification Tools Added

7. Starting Performance Verification Testing

This section describes the performance verification testing process.

1. From the main Performance Verification Menu screen, select **Start Session** located at the top center part of the PVS screen. See [Figure 16](#).



- | | |
|--|--|
| 1. Start Session – Starts the Performance Verification Test Session | 2. Test Selection Window – Select test to run |
|--|--|

Figure 16. Start Session Screen

- When the **Start Session** button is selected, a message screen will appear. If there is no performance verification session saved for this particular unit, this screen will appear See [Figure 17](#).
- If there is a session saved for this unit, a different screen will appear stating that a session already exists for the unit and asking if the operator wants to continue with that session or finish it and open a new session. Refer to the [Section “Return to the Unfinished Session” on page QSG-19](#) below.

7. Starting Performance Verification Testing

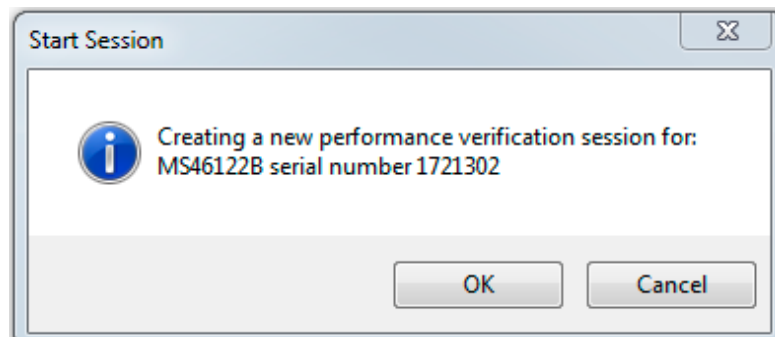
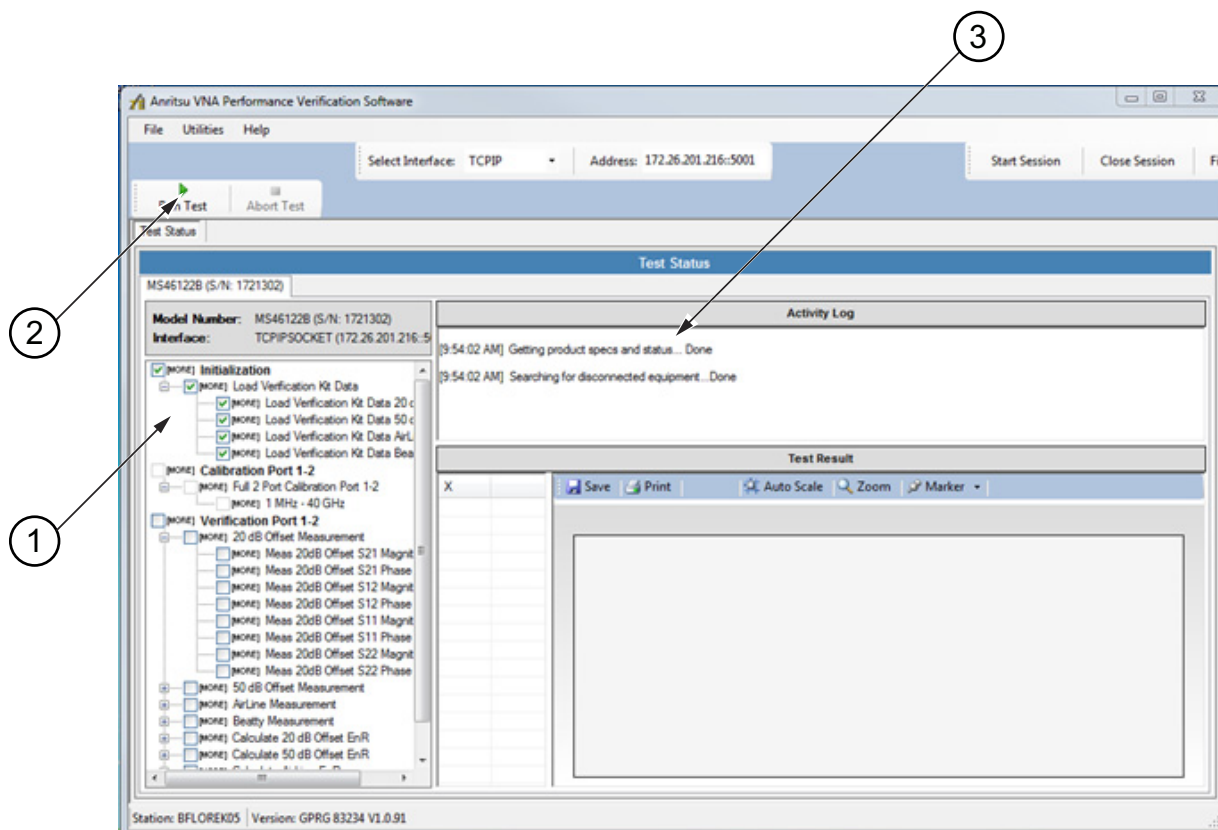


Figure 17. Starting New Session (Example)

2. Select OK to start Performance Verification testing.
 - An Unable to Connect Message will display when there is a discrepancy in the setup. The problem must be resolved before continuing with testing.
3. Select the [More] checkbox from the Test Selection Window to expand the selected verification testing list. See [Figure 18](#).
4. Select the appropriate checkbox) to run.



1. **Test Selection Window** – Testing Sequence.
2. **Run Test** – Starts Test
3. **Activity Log** – Testing is logged

Figure 18. Run Test Window

Note

Test(s) that appear grayed-out indicate that not all equipment required those tests have been entered in the Station Asset Utility list. See [Figure 19](#). Hover the mouse over the grayed test to display the test equipment that is not available. To enter the asset of the missing test equipment, go to [Section “To Add More Components:”](#) on page QSG-13.

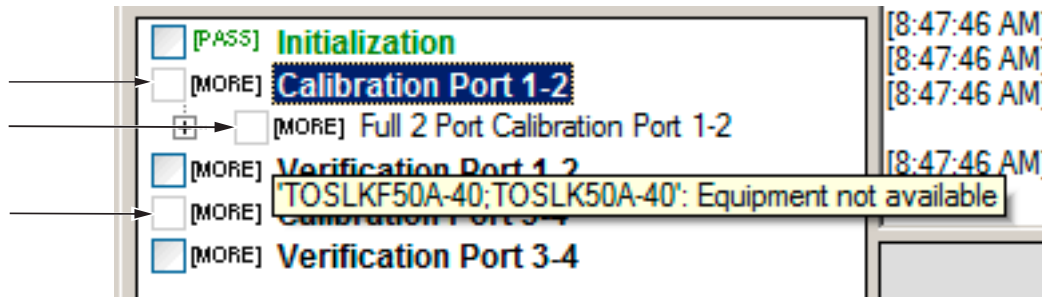


Figure 19. Grayed Test Sequences

Run the verification test

1. Select Run Test.

- A status light indicator appears next to the Run Test/Abort Test buttons. The light displays status of the testing process for each test. Green is pass. Red is fail. Yellow is action required.

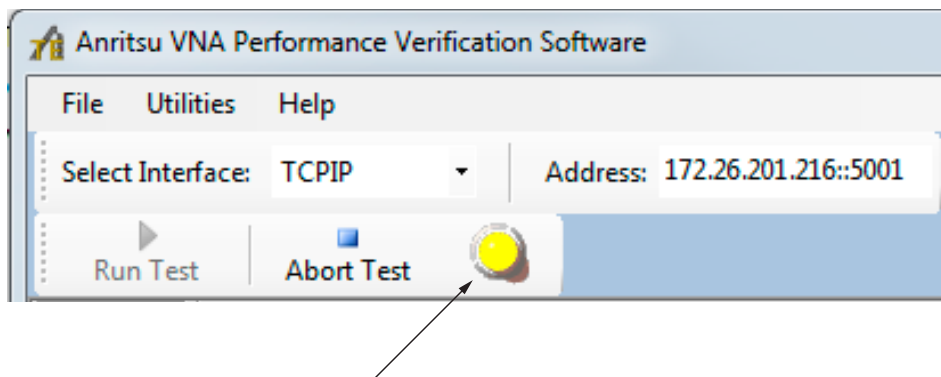
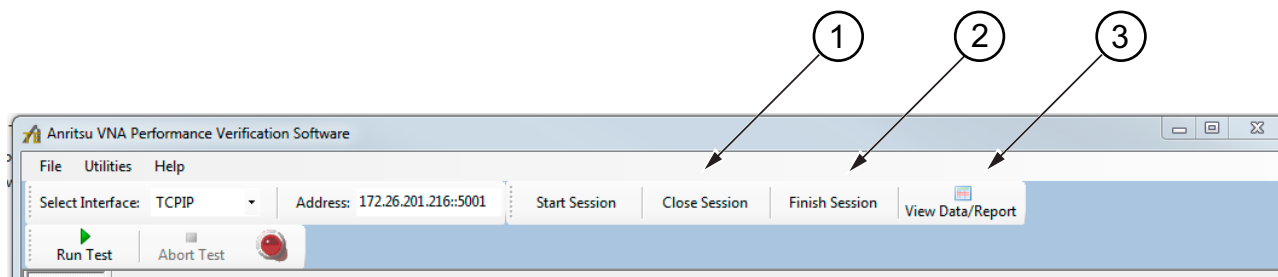


Figure 20. Light Test Status Indicator

- As each test is selected and run, the Activity Log will display the testing activity. See [Figure 18](#) above.
2. Continue to run all the tests until the Performance Verification Testing is complete.

Close/Finish/View Data Report

You can either close a session and continue later, or finish a session when all testing is complete and then view the testing data results.



1. **Close Session** – Closes and saves the test session.
2. **Finish Session** – Closes and finishes the test session.
3. **View Data/Report** – View the testing results

Figure 21. Close/Finish/View Report

Close Session

Closes the test session and saves the session so that it can be restarted at a later time. This is useful if the tests can not all be run at the same time or if testing must be interrupted for some reason. To resume testing, connect the unit and click the **Start Session** button (see [“Return to the Unfinished Session”](#)).

1. Select **Close Session** if rerunning tests or completing the testing later.
 - A Remove DUT dialog box will display. See [Figure 22](#).
2. Select **Yes** to remove the DUT or **No** to continue testing the existing DUT.

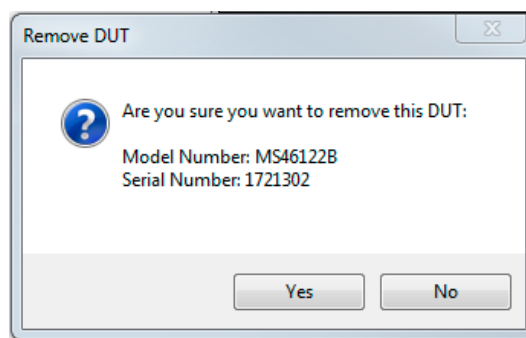


Figure 22. Remove DUT

Finish Session

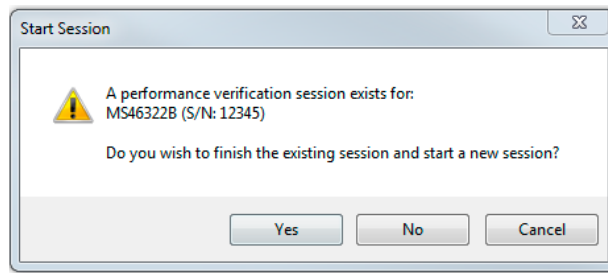
Current test results are saved and can be referred to at a later time. Subsequent testing can be performed in a new test session and the results of those tests will not replace the current test results. This is useful when a record of the verification test results at a particular time is required.

Once the Performance Verification is complete:

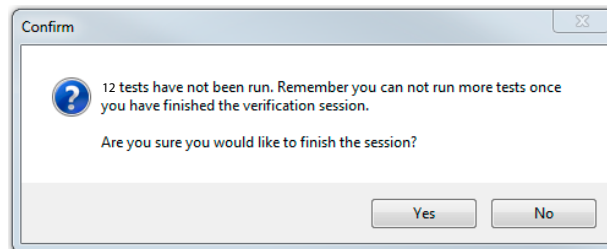
1. Select **Finish Session**.
 - A dialog box will appear if testing is complete or that not all tests have run as is shown in [Figure 24](#).
2. Select **View Data/Report** to view the test data results.

Return to the Unfinished Session

1. Select **Start Session** from the Performance Verification Software main screen.
 - A dialog box will appear indicating a performance verification session already exists for your model/serial number.

**Figure 23.** Existing Session

2. Select **No** to continue with the existing test session. If you want to finish an existing test session without running any more tests, select **No** to start the existing session, then click the **Finish Session** button to finish the session.
3. Select **Yes** to finish the existing session and then start testing in a new session. A confirmation window is then displayed where you choose **Yes** or **No**. See [Figure 24](#).

**Figure 24.** Confirmation Dialog

7. Starting Performance Verification Testing

- The dialog box will appear as shown below. See [Figure 25](#).
-

View Data/Report

Model Number:

Serial Number:

Select test session from the list below:

Calibration Date	Model Description	Serial Number
9/19/2017 9:48 AM	MS46122B	1721302
9/19/2017 10:55 AM	MS46122B	1721302

Report Options

☒ Include Test Summary

☒ Include Test Equipment Used Summary

Figure 25. View Data/Report

From here, select from the list displayed or enter in the Model Number and Serial Number to obtain the data to be displayed.

Other report options include:

- Include Test Summary: Includes a tabular summary of the test results in the report.
- Include Test Equipment Summary: Displays the test equipment used that are listed in the Station Asset Utility from [Section 6. “Adding Performance Verification Tools”](#) on page QSG-12.



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