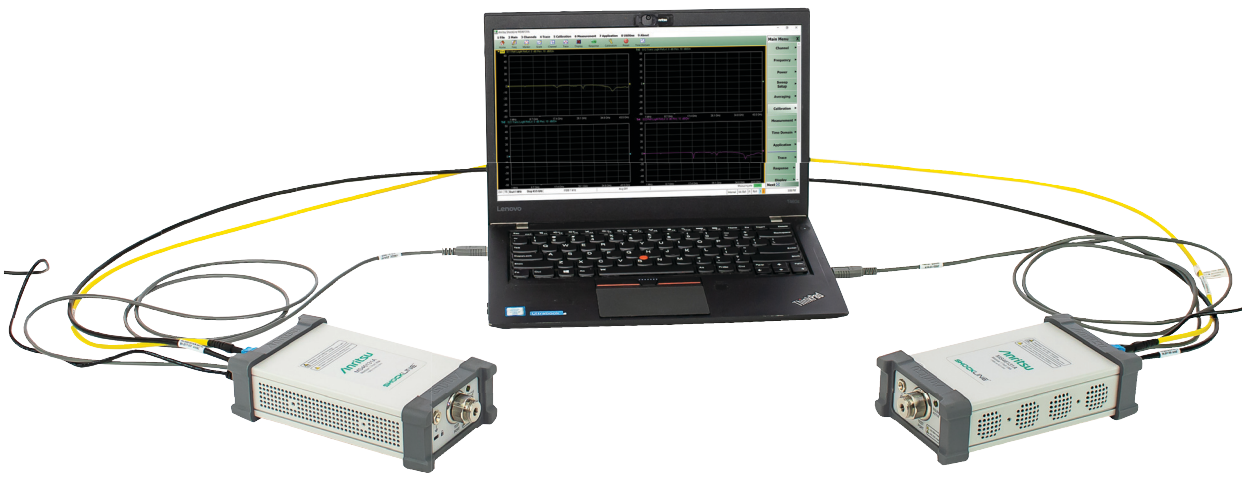
Quick Start Guide

ShockLine™ ME7868A

Modular 2-Port Vector Network Analyzer System



ME7868A Modular 2-Port Vector Network Analyzer System

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ShockLine ME7868A Modular 2-Port Vector Network Analyzer System

This guide provides quick setup instructions for the ME7868A Modular 2-Port VNA System. For additional safety and compliance information, see the *ShockLine™ Product Information, Compliance, and Safety Guide (PICS) – 10410-00067*.

This and all other documentation that supports the ME7868A is available on the ShockLine MS46131A product web page:

http://www.anritsu.com/test-measurement/products/MS46131A

On this web page, you can select various tabs for more information about your instrument. Included is a Library tab which contains links to all the latest technical documentation related to this instrument.

ME7868A System Main Components

The ME7868A Modular VNA is a two-port VNA consisting mainly of:

- Two MS46131A 1-port VNAs with the PhaseLync™ option (MS46131A-012)
- PhaseLync cabling connecting the two VNAs:
  - 2 and 5 meter setups will have two separate PhaseLync cables: PhaseLync electrical cable (PLE) and PhaseLync optical cable (PLO).
  - 25 meter and longer will have a single combined PhaseLync cable.
- A customer-provided PC

This creates the ability to make vector S-parameter measurements over a large displaced physical distance. Depending on the separation, the two modules can be controlled directly by one PC and two USB interfaces (distances up to 5 meters), or by one PC and USB extensions provided by two MN25131A Multi-Function Extenders (for distances starting from 5 to 25 meters or longer). The extenders also allow the user to operate a two-port vector system in environments where AC power is difficult to access and they provide flexibility to place the control of the PC at either end of the system.

ME7868A System Configuration Options

Table 1. ME7868A System Configuration Options (1 of 2)

System	Consists Of	Comments
2 Meter ME7868A-010-2: 1 MHz to 8 GHz ME7868A-020-2: 1 MHz to 20 GHz ME7868A-043-2: 1 MHz to 43.5 GHz	• Two MS46131A Modular 1-Port VNAs: Each VNA must have one frequency option 010/020/043 Each VNA must have Option 012 PhaseLync • One 2000-2011-R (2 meter) PhaseLync Optical Cable (PLO) • One 2000-2013-R (2 meter) PhaseLync Electrical Cable (PLE)	

Table 1. ME7868A System Configuration Options (2 of 2)

System	Consists Of	Comments
5 Meter ME7868A-010-5: 1 MHz to 8 GHz ME7868A-020-5: 1 MHz to 20 GHz ME7868A-043-5: 1 MHz to 43.5 GHz	• Two MS46131A Modular 1-Port VNAs: Each VNA must have one frequency option 010/020/043 Each VNA must have Option 012 PhaseLync • One 2000-2012-R (5 meter) PhaseLync Optical Cable (PLO) • One 2000-2014-R (5 meter) PhaseLync Electrical Cable (PLE) • Two 3 meter USB extension cables	
25 Meter ME7868A-010-25: 1 MHz to 8 GHz ME7868A-020-25: 1 MHz to 20 GHz ME7868A-043-25: 1 MHz to 43.5 GHz	• Two MS46131A Modular 1-Port VNAs: Each VNA must have one frequency option 010/020/043 Each VNA must have Option 012 PhaseLync • One 2000-2025-R (25 meter) PhaseLync Cable Assembly • One 2000-2007-R PhaseLync Accessory Kit	The PhaseLync Accessory Kit enables: • Longer separation based on fiber USB extension with the MN25131A Extenders. • Users at both ends to communicate and to adjust the measurement.
For distances > 25 meters, please contact the factory.		

Table 2. PhaseLync Accessory Kit

System	Consists Of
2000-2007-R PhaseLync Accessory Kit	• Two MN25131A Multifunction Extenders • USB Monitor • USB Keyboard/Mouse • Two USB Headsets • Extender Connection Cables

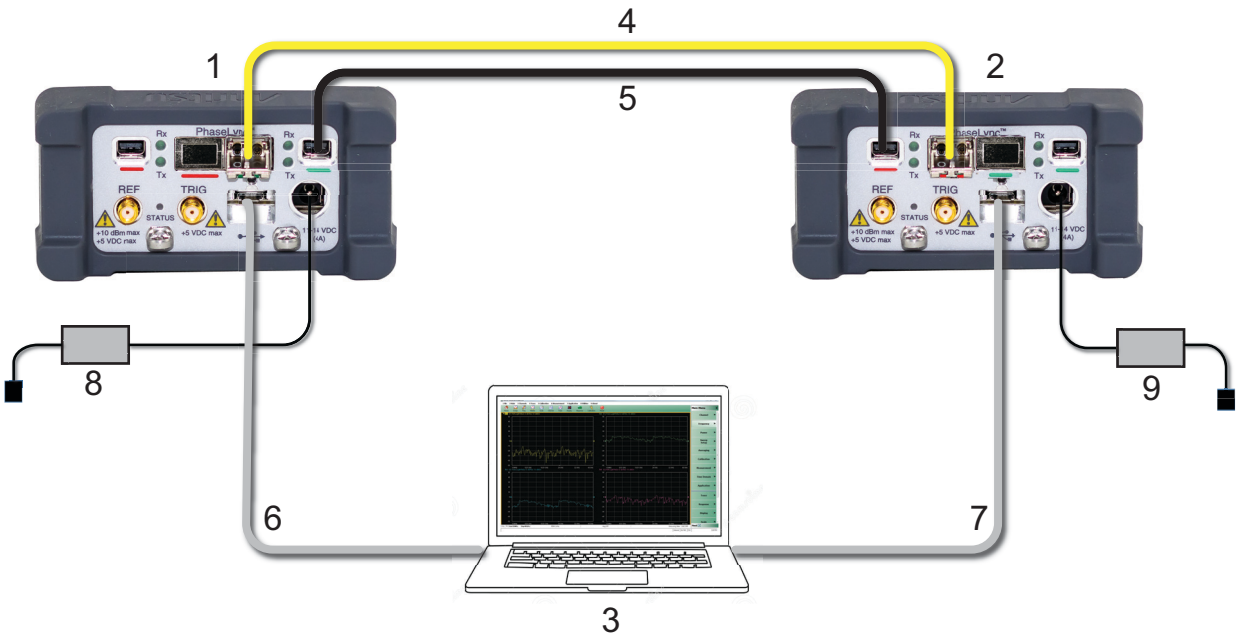

Figure 1 ME7868A — 2 Meter System

Table 3. ME7868A — 2 Meter System Components

Ref	Item	Comments
1	MS46131A w/Option 012	SFP is inserted in the Green socket of the PhaseLync interface[a].
2	MS46131A w/Option 012	SFP is inserted in the Red socket of the PhaseLync interface[a].
3	Windows PC	User supplied.
4	PhaseLync Optical Cable	Connects the PhaseLync optical signal between the two MS46131A VNAs.
5	PhaseLync Electrical Cable	Connects the PhaseLync electrical signal between the two MS46131A VNAs.
6, 7	1.8 meter USB-A to USB-B Cable	USB cables supplied with the MS46131A VNA modules.
8, 9	AC/DC Power Supply	Power supply module and AC power cord.

a.The system requires the two MS46131As to have the PhaseLync cables connected to opposite color sockets. Therefore Red-to-Green or Green-to-Red configurations are allowed. Both ends going to the same color will not work.

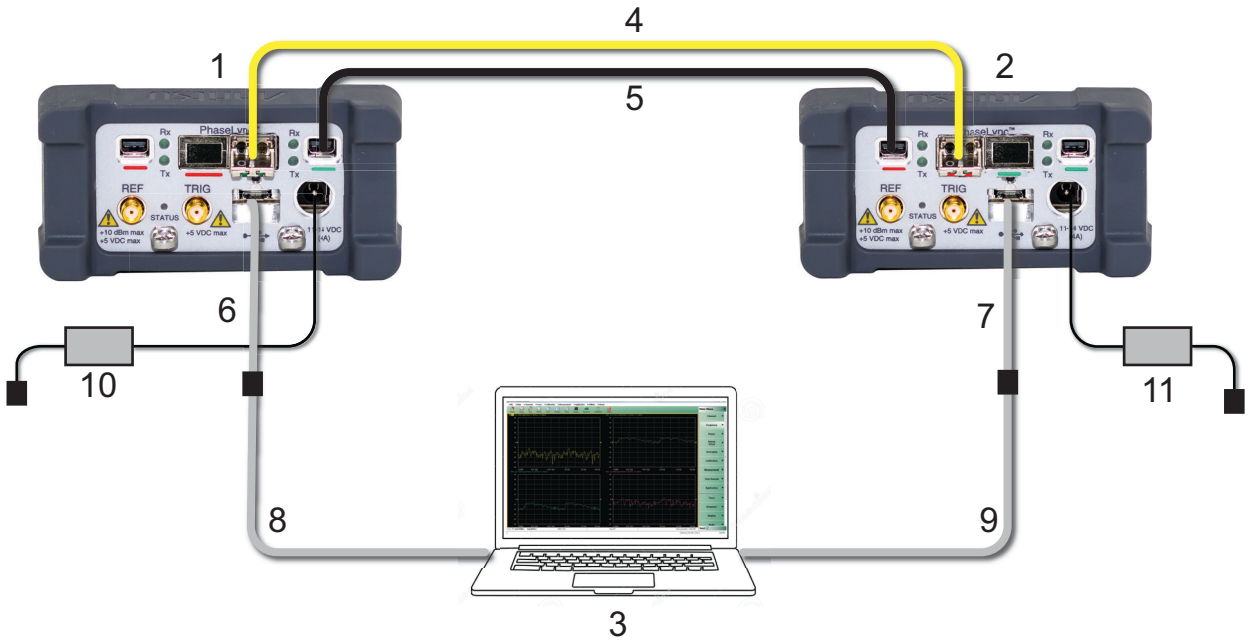

Figure 2 ME7868A — 5 Meter System

Table 4. ME7868A — 5 Meter System Components

Ref #	Item	Comments
1	MS46131A w/Option 012	SFP is inserted in the Green socket of the PhaseLync interface[a].
2	MS46131A w/Option 012	SFP is inserted in the Red socket of the PhaseLync interface[a].
3	Windows PC	User supplied.
4	PhaseLync Optical Cable	Connects the PhaseLync optical signal between the two MS46131A VNAs.
5	PhaseLync Electrical Cable	Connects the PhaseLync electrical signal between the two MS46131A VNAs.
6, 7	1.8 meter USB-A to USB-B Cable	USB cables supplied with the MS46131A VNA modules.
8, 9	3 meter USB Extension Cable	Use extension cables as needed to properly position the PC. Note: Maximum length of a USB 2.0 cable connection is 5 meters.
10, 11	AC/DC Power Supply	Power supply module and AC power cord.

a.The system requires the two MS46131As to have the PhaseLync cables connected to opposite color sockets. Therefore Red-to-Green or Green-to-Red configurations are allowed. Both ends going to the same color will not work.

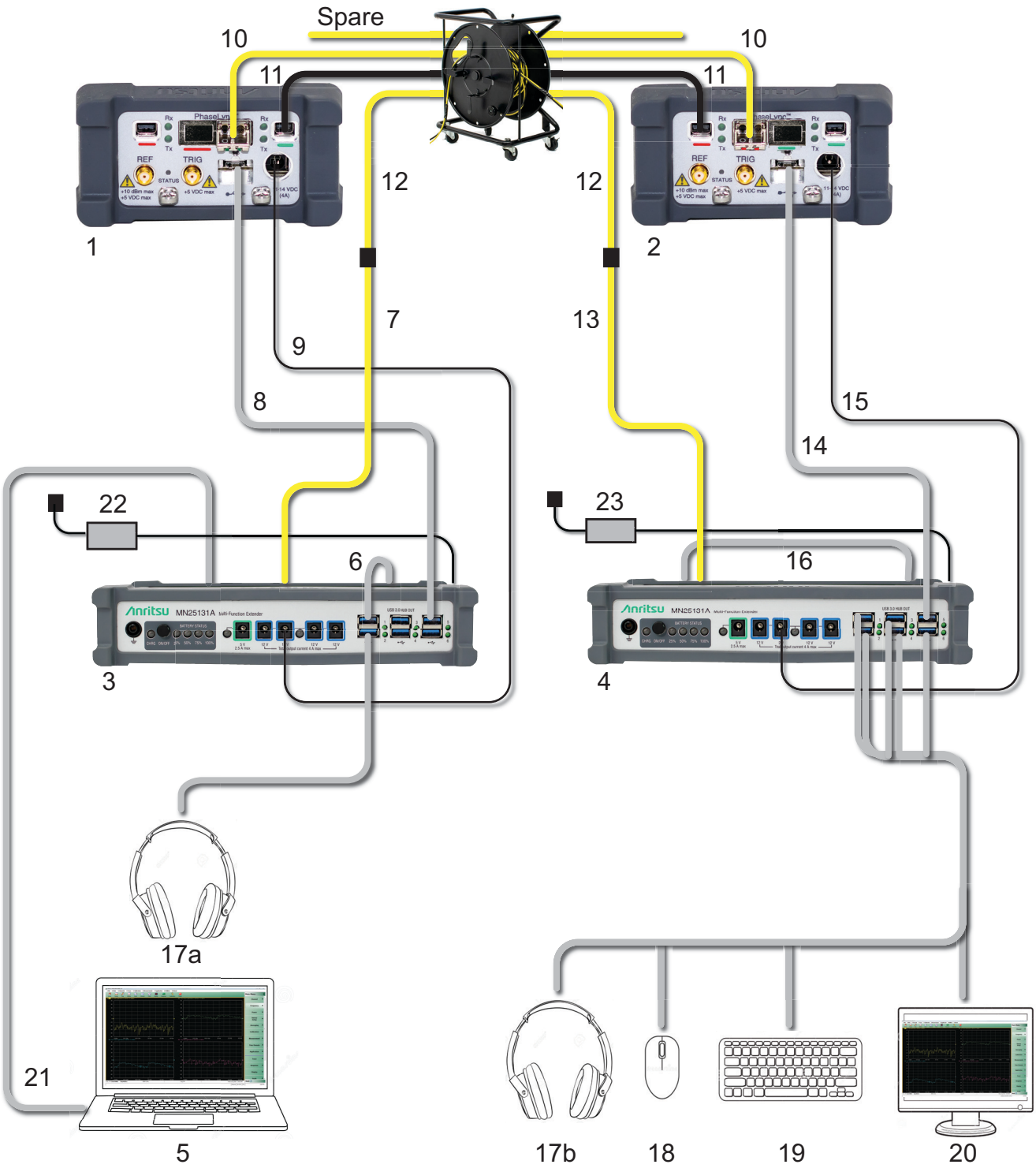

Figure 3 ME7868A — 25 Meter System (PhaseLync Cables #10, #11, # 12, and the spare are shown in Figure 4. Connections to MN25131A #3 and #4 are shown in Figure 5 and Figure 6.)

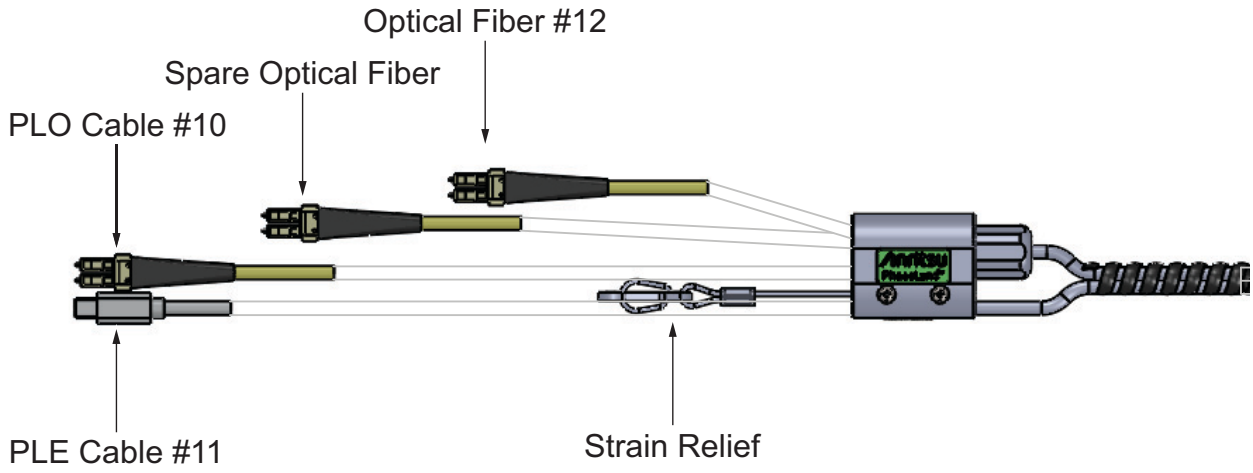

Figure 4 PhaseLync Cables #10, #11, # 12, and spare

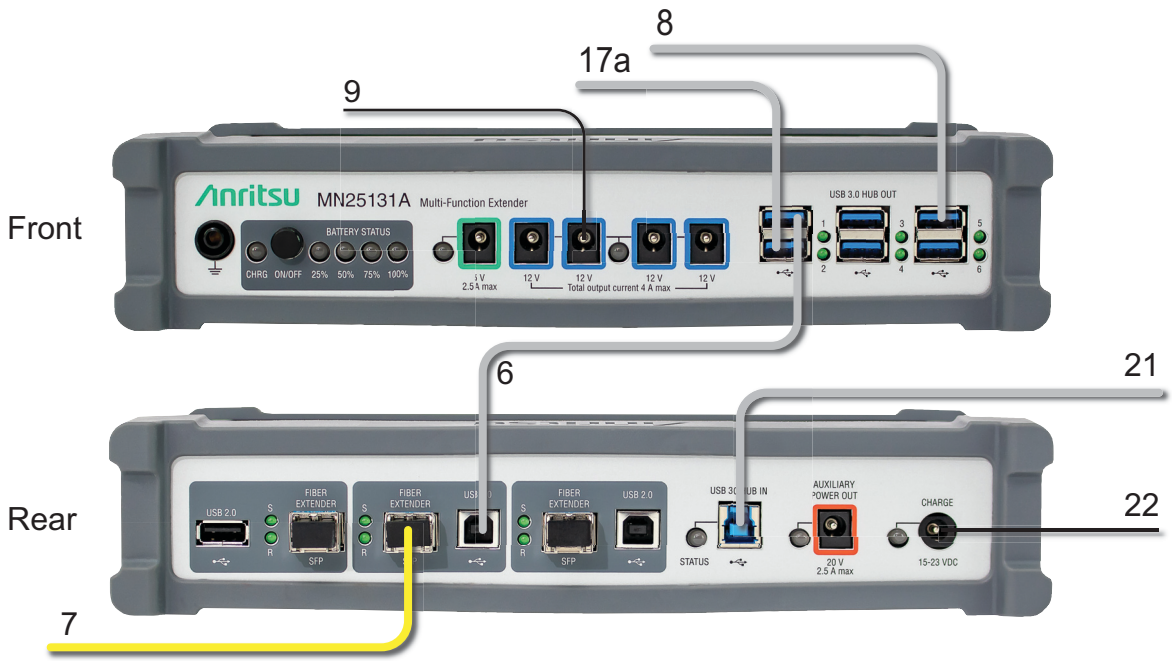

Figure 5 MN25131A #3 Front and Rear Panel Connections — 25 Meter System

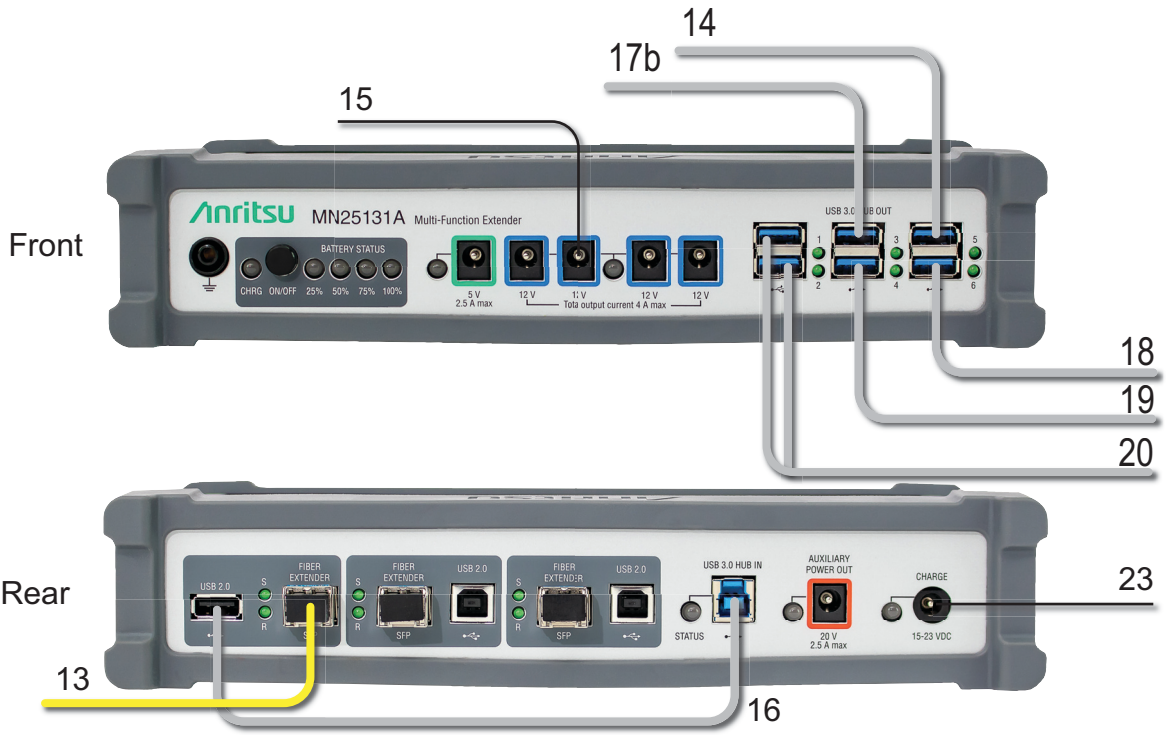

Figure 6 MN25131A #4 Front and Rear Panel Connections — 25 Meter System

Table 5. ME7868A — 25 Meter System Components (1 of 2)

Ref #	Item	Comments
1	MS46131A w/Option 012	SFP is inserted in the Green socket of the PhaseLync interface[a].
2	MS46131A w/Option 012	SFP is inserted in the Red socket of the PhaseLync interface[a].
3, 4	MN25131A	Multi-Function Extender.
5	Windows PC	User Supplied.
6	0.5 meter USB-A to USB-B Cable	Connect from one of the front panel USB connectors on unit #3 to a USB B connector on the rear panel of unit #3.
7	1.8 meter Fiber Jumper	Connect from the output of the unit #3 Extender on the rear of unit #3 to the fiber coupler output of the PhaseLync cable (#12).
8	1.8 meter USB-A to USB-B Cable	USB cable supplied with the MS46131A VNA module. Connect from a front panel USB connector on unit #3 to the VNA module #1.
9	1.8 meter DC Power Cable	Connect from a 12V connector on unit #3 to the VNA module #1.
10[b]	PhaseLync Optical Cable	Connects the PhaseLync optical signal between the two MS46131A VNAs.
11[b]	PhaseLync Electrical Cable	Connects the PhaseLync electrical signal between the two MS46131A VNAs.
12[b]	PhaseLync Fiber Coupler Cable	Used with the fiber jumper cables (#13) to create a fiber-optic link between the two MN25131A extender units to enable long distance USB communications.

Table 5. ME7868A — 25 Meter System Components (2 of 2)

Ref #	Item	Comments
13	1.8 meter Fiber Jumper	Connect from the output of the MN25131A extender that has a USB-A input on the rear of unit #4 to the fiber coupler output of the PhaseLync cable (#12).
14	1.8 meter USB-A to USB-B Cable	USB cable supplied with the MS46131A VNA module. Connect from a front panel USB connector on unit #4 to the VNA module #2.
15	1.8 meter DC Power Cable	Connect from a 12V connector on unit #4 to the VNA module #2.
16	0.5 meter USB-A to USB-B Cable	Connect from the USB-A connector on the MN25131A extender that has a fiber connected on the rear panel of unit #4 to the USB-B input on the rear panel of unit #4.
17a	USB Headset	Connect the headset to a USB connector on the front of unit #3.
17b, 18, 19	USB Accessories	Connect the keyboard, mouse, and headset to the USB connectors on the front of unit #4.
20	Remote Display	Connect the remote display with the USB cable that has two A connectors and one micro B connector to two of the USB ports on the front of unit #4.
21	1.8 meter USB-A to USB-B Cable	Connect the user PC to the USB-B input on the rear panel of unit #3.
22, 23	AC/DC power supply	Power supply module and AC power cord. (Optional if you are using batteries in the extender units (#3 and #4).)

a.The system requires the two MS46131As to have the PhaseLync cables connected to opposite color sockets. Therefore Red-to-Green or Green-to-Red configurations are allowed. Both ends going to the same color will not work.

b.Cables #10, #11, and #12 are bundled together, along with a spare PhaseLync Optical Cable. The PhaseLync cable bundle should be treated similarly to any high frequency measurement cabling. Avoid twisting or kinking and minimize tension on the cable bundle as it is pulled off the cable reel. Pull the cable from the metal bulkhead clamp at the end of the assembly. Pay particular attention to not stress the breakout cables at each end.

System Turn On/Check

1. **IMPORTANT:** Use the PhaseLync Optical Cable Cleaning tool to clean the connections on the SFPs and optical cables before connecting. Make sure that the protective caps are installed on any unused SFP sockets.
2. For the 25-meter system:
   a. Configure the user PC to share a duplicate display with the remote monitor. Push the Windows and "P" keys on the keyboard simultaneously and then select the Duplicate mode for the projection configuration.
   b. The remote monitor will automatically be recognized in the Windows 10 environment. Consult the manufacturer's website for other drivers.
   c. Continue with the steps in "Configure the User PC to support Dual Headsets (In Windows 10)".

Configure the User PC to support Dual Headsets (In Windows 10)[1]

1. In Windows 10 click on the Start Button.
2. Type Sound, then click on Sound.

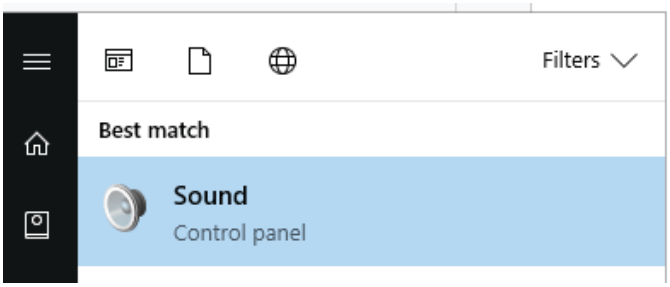

Figure 7 Control Panel — Sound

3. Note the device names.

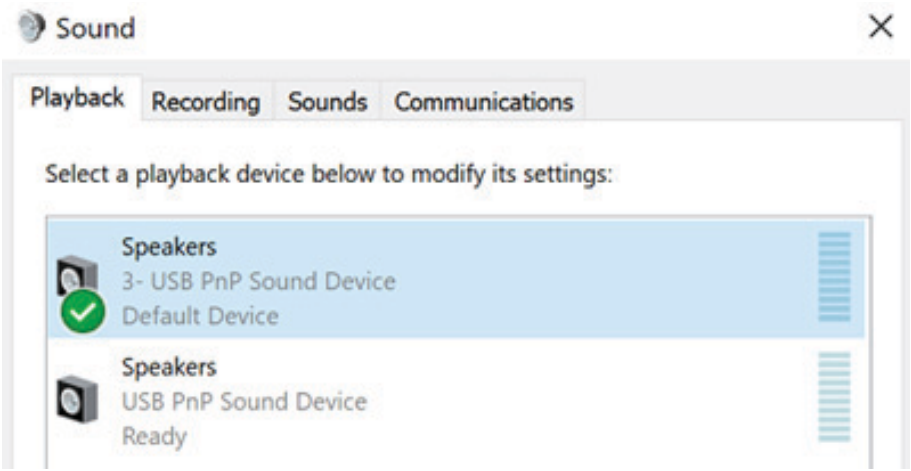

Figure 8 Sound Window — Playback Tab

4. Select the Recording tab open the first device.

1. Procedure may be different for other Window Operating Systems. Consult your PC documentation.

5. Select the Listen tab.
   a. Check Listen to this device.
   b. From the Playback through this device dropdown, select the second device
   c. Click OK.

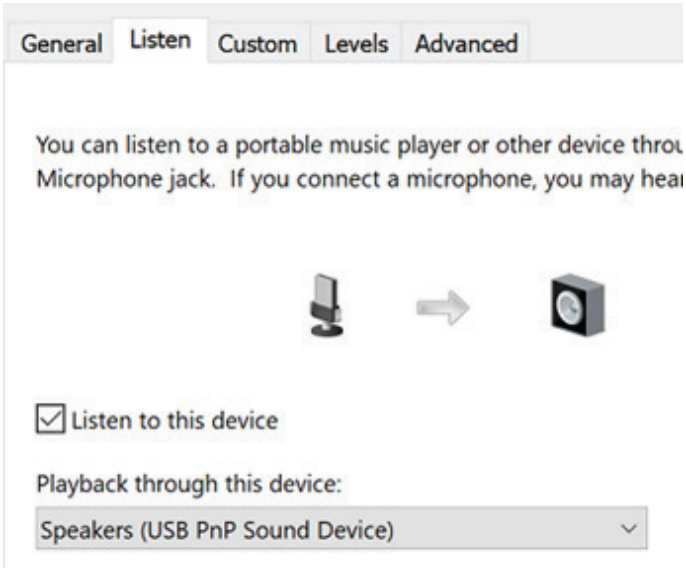

Figure 9 Sound Window — Recording Tab, Second Speaker

6. From the Recording tab open the second device.
7. Select the Listen tab.
   a. Check Listen to this device.
   b. From the Playback through this device dropdown, select the first device.
   c. Click OK.

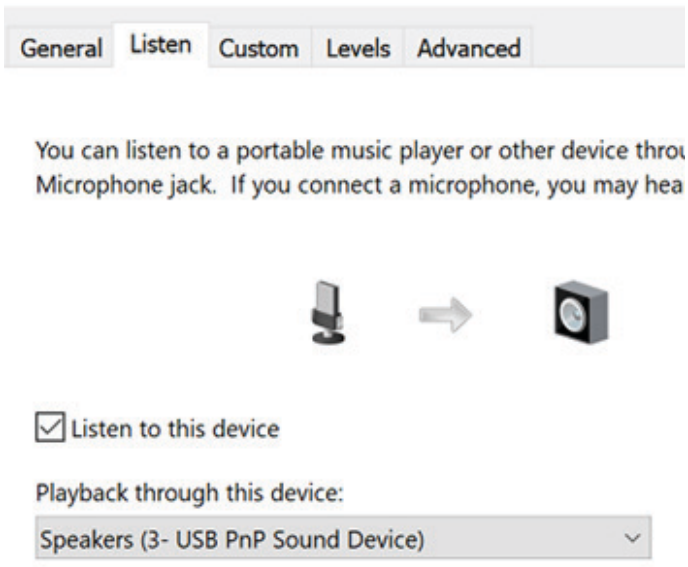

Figure 10 Sound Window — Listen Tab, First Speaker

8. Once configured, leave the remote headset in the same USB Hub location to insure proper configuration

Installing the Shockline Application Software

1. Search for the MS46131A product at www.Anritsu.com and open the Downloads information.
2. Download and install the MS46131A ShockLine latest software onto the PC from the Anritsu website.
3. If the download is successful, a ShockLine icon will appear on your PC screen.
4. Run the ShockLine software installer as Administrator and follow the instructions displayed on the monitor to complete the installation of the software into the PC.

Note	By default the Shockline application is designed to run in Admin mode. To change the default, one can right-click on the Shockline application icon and then select Properties. In Properties select the Shortcut tab and the Advance button. In the Advanced Properties dialog, uncheck the Run as administrator box and then OK. Now users with standard access to the PC will be able to log into the PC and access the Shockline application.

Running the Shockline Application

1. Start the Shockline Application by double clicking on the Shockline Icon on the PC desktop.
2. A Shockline splash screen will appear as the application is initiating:

Figure 11 ShockLine — Splash Screen

3. When the configuration display appears, select the appropriate port for each MS46131A VNA and select which VNA will be the Master (the Master module is the one that will supply the frequency reference for the system). The port selection refers to the serial number of each MS46131A and is important to

confirm the port orientation in your setup. It is also important to maintain that configuration over time to make sure the measurements are consistent for recalled setups. See Figure 12.

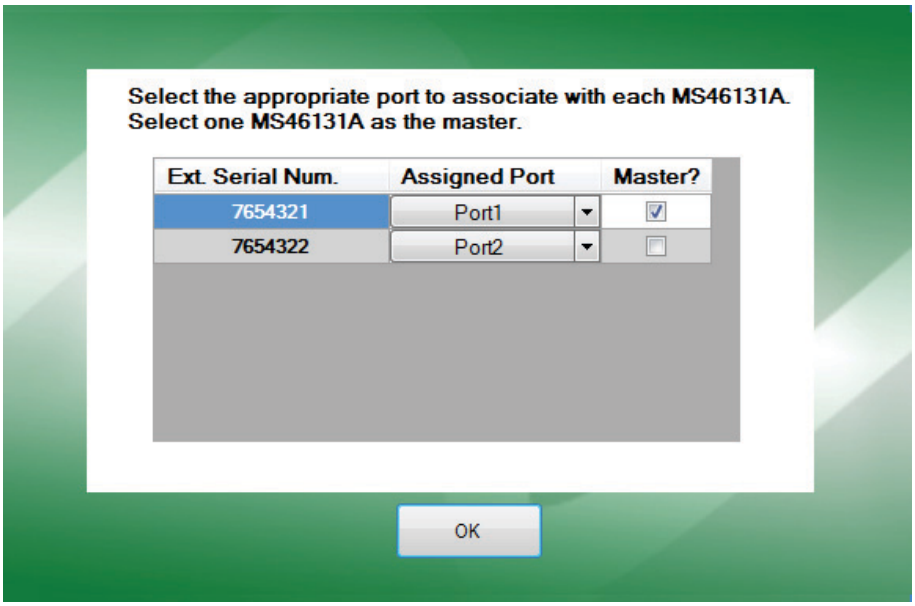

Figure 12 ShockLine — Port and Master Configuration

4. When fully in operate mode, the computer controlling the Shockline MS46131A Series VNAs displays the main trace display with the application menus on the right side. See Figure 13.

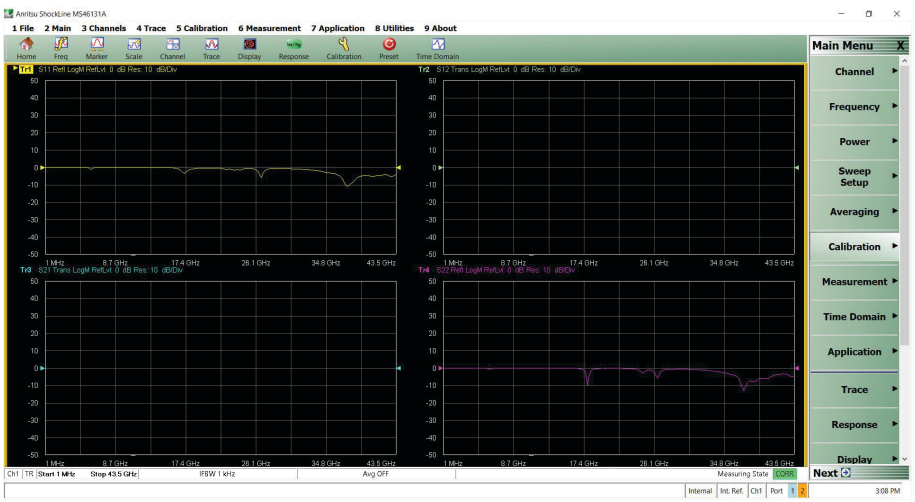

Figure 13 ShockLine — Operating Mode

Note	When placing the Shockline MS46131A Series VNAs in operation, allow at least 30 minutes of warm-up time in the operate mode before using the VNA to assure stable operation and the highest possible accuracy.

Note	Refer to the MS46131A Operation Manual and Measurement Guide for more detailed information regarding using the application and making measurements.

Customer PC requirements

CPU: Intel® Core™ i5-6300U Processor

RAM: 4 GB

Disk: 120 GB

DirectX: Version 9 with Windows Display Driver Model (WDDM) installed
ShockLine software is compatible with Windows® 7, 8, 8.1, or10; 32- or 64-bit operating systems.

USB: One USB 2.0 or higher type A port per MS46131A used.
To increase the number of USB ports available, an externally-powered USB hub may also be used.

Environmental Specifications

MIL-PRF-28800F Class 2:

- Operating Temperature Range: -10 C to 55 C
- Storage Temperature Range: 51 C to 71 C
- Maximum Relative Humidity: 95% RH at 30 C, non-condensing
- Altitude: 600 meters, operating and non-operating

Regulatory

- European Union:
  EMC 2014/30/EU, EN 6 1326:2013, CSPR 11/EN 55011, IEC/EN 61000-4-2/3/4/5/6/8/11
    - Low Voltage Directive 2014/35/EU
    - Safety EN 6010-1:2010
    - RoHS Directive 2011/65/EU as amended by 2015/863 applies to instruments with CE marking placed on the market after July 22, 2017.
- Australia and New Zealand: RCM AS/N25 4417-2012
- South Korea: KCC-REM-A21-0004

Warranty

One year from date of purchase

ME7868A Supplemental Parts

Table 6. ME7868A Supplemental Parts

Part Number	Description
2000-2006-R	1.8 meter DC Power Cable with 2.1 x 5.5 mm male connectors
2000-2005-R	1.8 meter USB-Type A to USB-Type B 3.0 Cable
2000-2004-R	0.5 meter USB-Type A to USB-Type B 3.0 Cable
2000-2027-R	2.0 meter USB3 A to Micro USB B +PWR Cable
2000-2009-R	3.0 meter USB-Type A to USB-Type B 2.0 Cable
2000-2011-R	2.0 meter Single-mode Fiber Cable
2000-2021-R	USB Keyboard and Mouse
2000-2022-R	USB Monitor
2000-2023-R	USB Headset
68-11-R	SFP Transceiver
2000-1984-R	Optical Connector Cleaner Kit

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Anritsu utilizes recycled paper and environmentally conscious inks and toner.

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