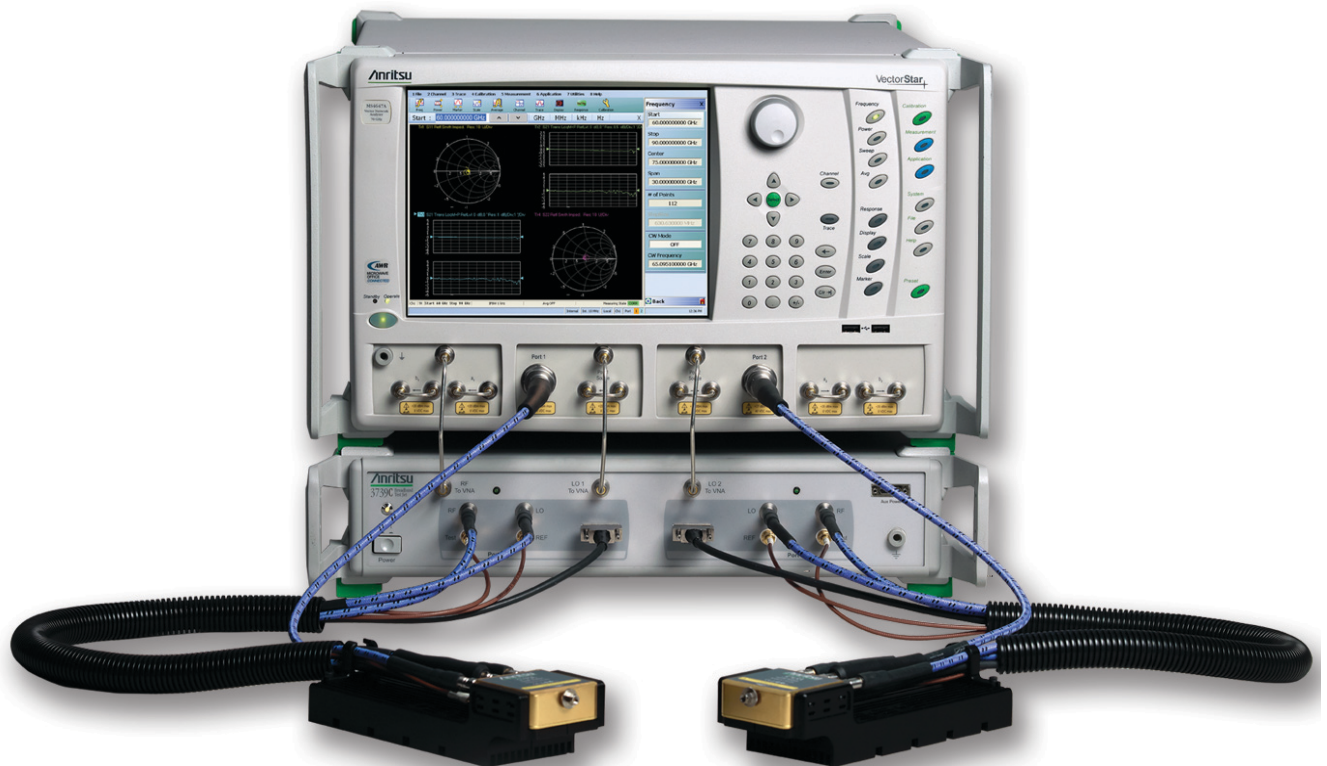


Quick Start Guide

VectorStar™ ME7838E/EX 2-Port Broadband/Banded mmWave System

High Performance Modular Broadband/Banded mmWave Vector Network Analyzer (VNA) Measurement System, 70 kHz to 110 GHz

ME7838E/EX, 70 kHz to 110 GHz



Anritsu

High Performance Modular Broadband/Banded mmWave Vector Network Analyzer (VNA) Measurement System, 70 kHz to 110 GHz

This guide provides quick setup instructions for the ME7838E/EX Broadband/Banded mmWave (millimeter wave) VNA System assembly. For additional safety and compliance information, and for more details about the assembly, configuration, setup, and test of the equipment, refer to the *VectorStar?™ ME7838 Series Broadband/millimeter-Wave System Installation Guide – 10410-00293*.

This and all other documentation that supports the ME7838E/EX is available on the ME7838x product web page:

<http://www.anritsu.com/test-measurement/products/me7838>

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.

The ME7838E/EX Broadband system consists of the MS4647B VNA with Option 007 (Receiver Offset), Option 070 (70 kHz Low End Frequency Extension), Option 08x (Modular Broadband Connection Capability), a 3739B/C Broadband Test Set, two 3743E/EX millimeter-Wave Modules, and the necessary front and rear panel cables. A fully configured broadband system is shown below.

The ME7838E/EX Banded millimeter-Wave system consists of an MS4644B, MS4645B VNA or MS4647B with Option 08x, a 3739B/C Broadband Test Set, and two 3744E-EE, 3744E-EW, or two OML/VDI millimeter-Wave Modules.

1. Installing Rear Panel Cables

This section focuses on installing cables when using a MS464xB VNA. Start the ME7838E/EX assembly by placing the 3739B/C Broadband Test Set so you can access the rear panel for cable connection.

Warning	To avoid injury, use two or more people to lift the VNA to the top of the test set.
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Caution	To avoid connector damage or inaccurate measurements, before making any connections, review the <i>10100-00060-Connector Care Instruction Sheet</i> , that was shipped with this system. Observe connector torque requirements where indicated in this guide.
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1. Installing Rear Panel Cables

Table 1. ME78383E/EX Cable Rear Panel Connections (MS464xB VNA)

Part Number	Index	Description	From VNA Location	To 3739B/C Test Set Location
MS464xB	1	VectorStar VNA		
3739B or 3739C	2	3739B or 3739C Broadband Test Set		
3-73598-1 ^a (5 cable bundle)	3	IF Interface Cables	a1 IF b1 IF a2 IF b2 IF	a1 IF b1 IF a2 IF b2 IF
	4	External I/O Cable ^b	External I/O	External I/O
3-806-225	5	BNC (M-M) Cable	Ext Analog Out	Test Set EXT ANALOG IN
3-806-225	6	BNC (M-M) Cable	Ext In ALC 1 (without Option 031) Ext In ALC 2 (with Option 031)	Test Set EXT ALC OUT
GPIB Cable (Not supplied)	7	Cable for program-matic control	IEEE 488.2 GPIB (for remote controlling ME7838)	NA
GPIB Cable (Not supplied)	8	Cable for program-matic control	Dedicated GPIB (For controlling peripherals such as Power Meter)	NA
Ethernet Cable (Not supplied)	9	Cable for program-matic control	Ethernet Port	NA
USB Type B Cable (Not supplied)		Cable for program-matic control	USB Port (2)	NA
–	10	AC Power Cord ^c	VNA AC Power Input	NA
–	11	AC Power Cord ^c	From 3739B/C Test Set	AC Power Input
	12	Module Interface Cable Length Switch (3739C only)		

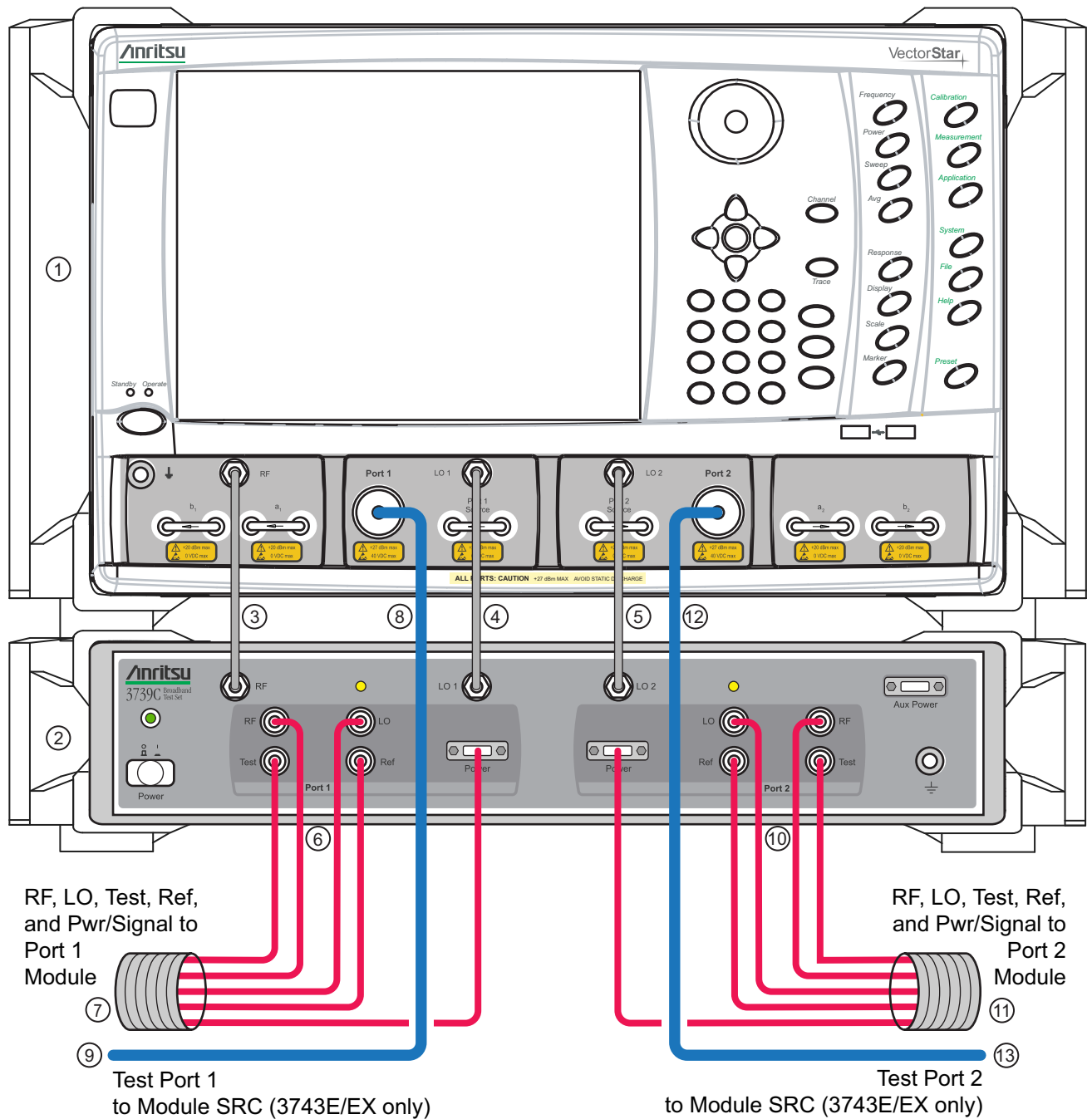
a. Tighten each cable in this group using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).

b. Tighten the connector screws with a flat blade screwdriver.

c. Do not yet connect to AC power cords to the AC source.

2. Installing Front Panel Cables

Connect the front panel cables between the VNA and the 3739B/C Test Set, and between the Test Set and the millimeter-Wave modules as shown below and as described in [Table 2](#).



Example MS464xB VNA equipped with Option 051, 061, or 062 with included Front Panel Loops

Note: The cables for Test Port 1 to Module SRC (key 8 to 9) and Test Port 2 to Module SRC (key 12 to 13) are not used with mmWave modules 3744E-EE, 3744E-EW, or 3744E-Rx.

Figure 2 Front Panel Cables between 3739B/C Test Set, MS464xB VNA, and Modules

2. Installing Front Panel Cables

Table 2. ME7838E/EX Cable Interconnect Part Numbers and Locations

Part Number	Index	Description	Connection From	Connection To
MS464xB	1	VectorStar VNA		
3739B or 3739C	2	3739B or 3739C Broadband Test Set		
3-3-67357-xx (See Note 1)	3	Semi-Rigid (KM-KM) Cable • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).	VNA RF	Test Set RF
3-67357-xx (See Note 1)	4	Semi-Rigid (KM-KM) Cable • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).	VNA LO1	Test Set LO1
3-67357-xx (See Note 1)	5	Semi-Rigid (KM-KM) Cable • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).	VNA LO2	Test Set LO2
3-75685-1	6-7, 10-11	mmWave Module Interface Cables (for 3743E/EX, 3744E-EE, 3744E-EW modules) Group of 5 cables for each port	Test Set (Port 1, Port 2) RF, LO, Test, Ref, Power/Signal	Module (Port 1, Port 2) RF, LO, Test, Ref, Power/Signal
3-75685-2		OML Module Interface Cables Group of 4 cables for each port	Test Set (Port 1, Port 2) RF, LO, Test, Ref	Module (Port 1, Port 2) RF, LO, Test IF, Ref IF
		VDI Module Interface Cables Group of 4 cables for each port	Test Set (Port 1, Port 2) RF, LO, Test, Ref	Module (Port 1, Port 2) RF Input, LO Input, Meas. IF, Ref IF
3-75685-3		mmWave Module Interface Cables (for 3744E-Rx modules) Group of 3 cables	Test Set (Port 1, Port 2) LO, Test, Power/Signal	Module (Port 1, Port 2) LO, Test, Power/Signal
806-2xx-R ^a (See Note 2)	8-9, 12-13	Coaxial Cable	VNA (Port 1, Port 2)	mmWave module (Port 1, Port 2)

Cable Selection Notes

	Cable Selection	Description	
Note 1	3-67357-13	Standard (Non-Rack Mount)	—
	3-67357-67	3739B/C-001 Rack Mount Option	—
Note 2	Cable Selection	Description	
	806-206-R	24 in, 1.85 mm M-F coaxial cable	—
	806-209-R	36 in, 1.85 mm M-F coaxial cable	—

a. The 806-2xx-R Coaxial Cables are not included or required when using the 3744E-EE, 3744E-EW mmWave modules, or the 3744E-Rx Receiver Module.

3. millimeter-Wave Module Connections

Connect the 3739B/C Broadband Test Set Port-1 and Port-2 cables to the 3743E/EX, 3744E-EE, 3744E-EW, or 3744E-Rx Modules as shown below, observing the correct torque limits for each connector. See [Figure 3](#) and [Table 3](#). Route the cable assemblies through the cable restraint.

Note

For ease of connection, the module can be removed from the bracket, then reinstalled after cables are secured. Observe torque instructions where indicated.

Each module (except the 3744E-Rx) is characterized for absolute power for a specific VNA Serial Number and VNA Test Port as designated on the module port assignment label. Ensure the module matches the correct VNA and Test Set port.

If an alternative 3743E/EX mmWave module is used there will be approximately 1 dB of absolute power inaccuracy which can be corrected by performing a power calibration.

For more detailed information on the modules including DUT Waveguide (WG) connection alignment and custom bracket mounting, refer to *10410-00311-VectorStar Broadband/Banded millimeter-Wave Modules Reference Manual*.

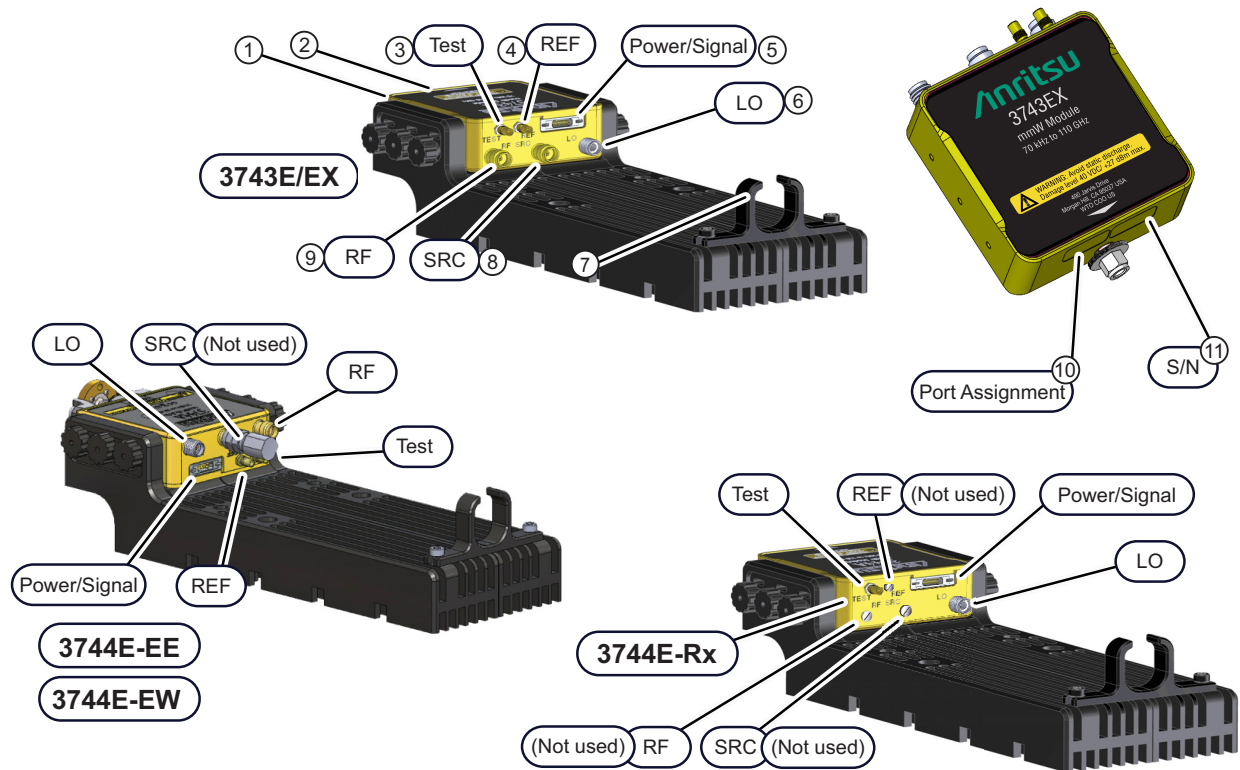


Figure 3 millimeter-Wave Module Connections

Inverting a Module

If necessary, a module can be turned over in the bracket to change the height of the W1 connector. To turn the module over:

1. Remove the six Knurled Head M2 × 8 mm Thumbscrews from the module.
2. Turn the module over.
3. Install the cable assembly.
4. Install the module into the bracket and then install the thumbscrews.

3. millimeter-Wave Module Connections

Table 3. millimeter-Wave Module Connections

Cable P/N	Index	Description
N/A	1	millimeter-Wave Module in bracket
N/A	2	W1 – 1 mm Connector (3743E/EX, 3744E-Rx modules) • Tighten using a torque end wrench and a plain end wrench • 6 mm Torque End Wrench set to 0.45 N·m (4 lbf·in). Recommended is Anritsu 01-504. • 6 mm / 7 mm Open End Wrench. Recommended is Anritsu 01-505. WR-10 or WR-12 Adapter – 1 mm connector (3744E-EE, 3744E-EW modules) • Use Waveguide Adapter Toolkits (3-74394-2, 3-74394-3 3-74394-4). • Tighten using a torque end wrench and a plain end wrench. • 6 mm Torque End Wrench set to 0.45 N·m (4 lbf·in). Recommended is Anritsu 01-504. • 6 mm / 7 mm Open End Wrench. Recommended is Anritsu 01-505.
3-75685-1 ^a or 3-75685-3 ^b	3	TEST – SSMC Connector (3743E/EX, 3744E-EE, 3744E-EW, and 3744E-Rx modules) • Tighten using a 4 mm (5/32 in) torque end wrench set to less than 0.17 N·m (1.5 lbf·in). • Recommended is Anritsu 01-529-R torque wrench.
	4	REF – SSMC Connector (3743E/EX, 3744E-EE, and 3744E-EW modules) • Tighten using a 4 mm (5/32 in) torque end wrench set to less than 0.17 N·m (1.5 lbf·in). • Recommended is Anritsu 01-529-R torque wrench.
	5	Power/Signal Latching Bi-Lobe™ Connector (3743E/EX, 3744E-EE, 3744E-EW, 3744E-Rx) (Bi-Lobe is a registered trademark of Omnetics Corporation.)
	6	LO – K Connector (3743E/EX, 3744E-EE, 3744E-EW, and 3744E-Rx modules) • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.
N/A	7	Module Power and I/O Cable Restraint
806-206-R ^c or 806-209-R ^c	8	SRC – V Connector (3743E/EX module only) • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.
3-75685-1 ^a	9	RF – V Connector (3743E/EX, 3744E-EE, and 3744E-EW modules) • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.
N/A	10	Factory Calibrated Port Assignment Label
N/A	11	Module Serial Number Label

a. 3743E/EX, 3744E-EE, and 3744E-EW modules use cable assembly 3-75685-1.

b. 3744E-Rx module uses cable assembly 3-75685-3.

c. The 806-2xx-R Coaxial Cables are used only with the 3743E/EX module.

millimeter-Wave Module Operating Environment

The following notes should be observed when operating the 3743E/EX and 3744E-xx millimeter-Wave Modules:

- Thermal heat sinking similar to the supplied mounting brackets of the millimeter-Wave Module should be considered in custom mounting applications.
- Each 3743E/EX Module consumes a maximum of 12 watts.
- Each 3744E-EE and 3744E-EW Module consumes a maximum of 12 watts.
- Each 3744E-Rx Module consumes a maximum of 7 watts.
- The primary heat sinking path for the module is on the two external side surfaces used to mount to the support brackets.
- With the attached cable mounting brackets, the case temperature rise is approximately 15 °C to 20 °C above ambient.

4. OML/VDI Module Connections

Connect the front panel cables between the 3739B/C Test Set, and the OML or VDI modules as shown in [Figure 4](#), [Figure 5](#), and [Figure 6](#), and as described in [Table 4](#), [Table 5](#), and [Table 6](#).

Caution To avoid connector damage, observe torque requirements where indicated.

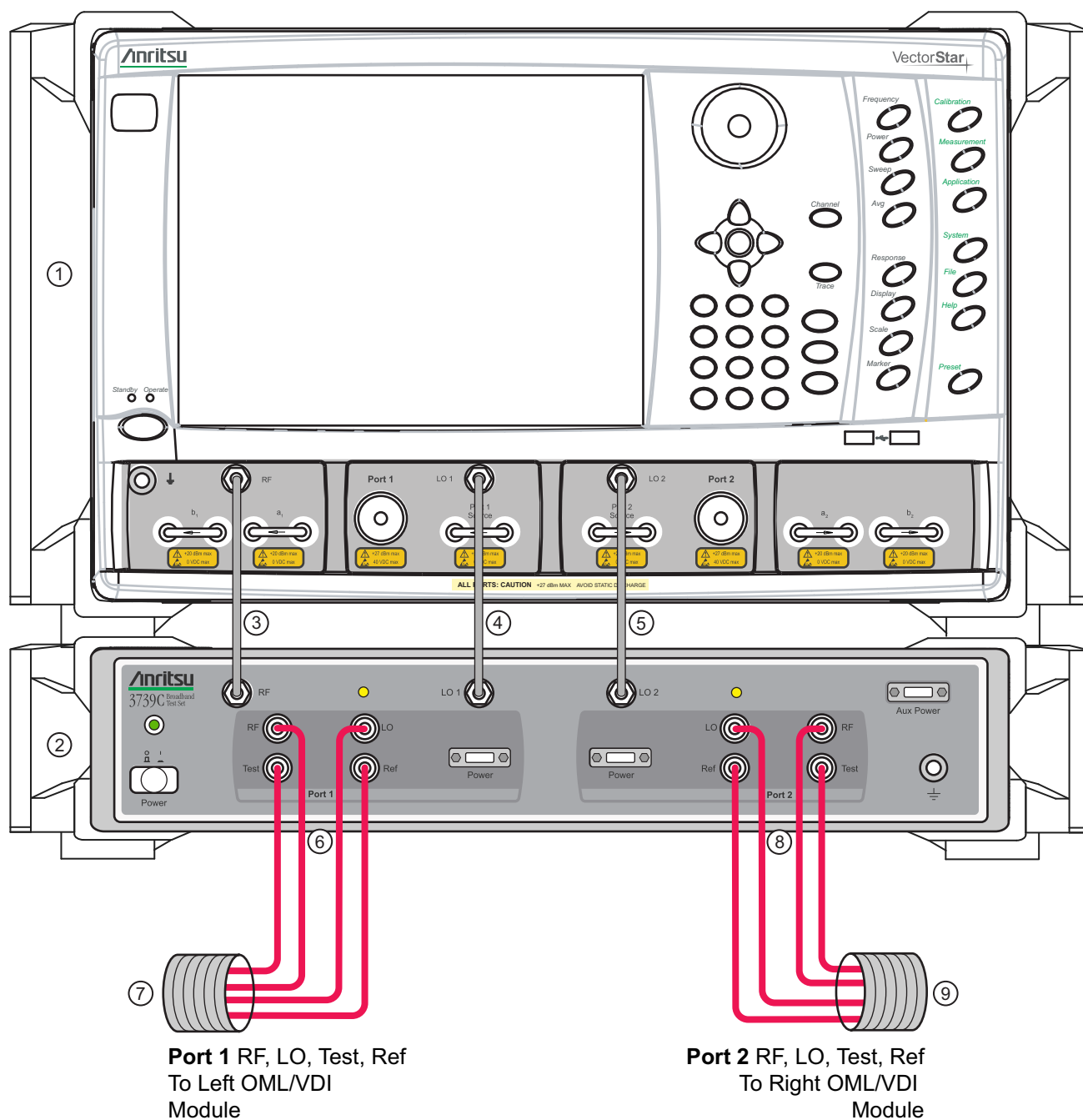


Figure 4 Cable Connections between VNA, 3739B/C Test Set, and OML or VDI Frequency Extension Modules

Table 4 ME7838E/EX Cable Interconnect Part Numbers and Locations

Part Number	Index	Description	Connection From	Connection To
MS464xB	1	VectorStar VNA		
3739B or 3739C	2	3739B or 3739C Broadband Test Set		
3-67357-xx (See Note 1)	3	Semi-Rigid (KM-KM) Cable • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.	VNA RF	Test Set RF
3-67357-xx (See Note 1)	4	Semi-Rigid (KM-KM) Cable • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.	VNA LO1	Test Set LO1
3-67357-xx (See Note 1)	5	Semi-Rigid (KM-KM) Cable • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.	VNA LO2	Test Set LO2
3-75685-2	6-7, 8-9	OML Module Interface Cables Group of 4 cables for each port	Test Set (Port 1, Port 2) Ref RF LO Test	OML Module (Port 1, Port 2) Ref IF RF Input LO Input Test IF
3-75685-2		VDI Module Interface Cables Group of 4 cables for each port	Test Set (Port 1, Port 2) RF Ref Test LO	VDI Module (Port 1, Port 2) RF Input Ref. IF Meas. IF LO Input
Cable Selection Notes				
Note 1	Cable Selection		Description	
	3-67357-13		Standard (Non-Rack Mount)	
	3-67357-67		3739B/C-001 Rack Mount Option	

4. OML/VDI Module Connections

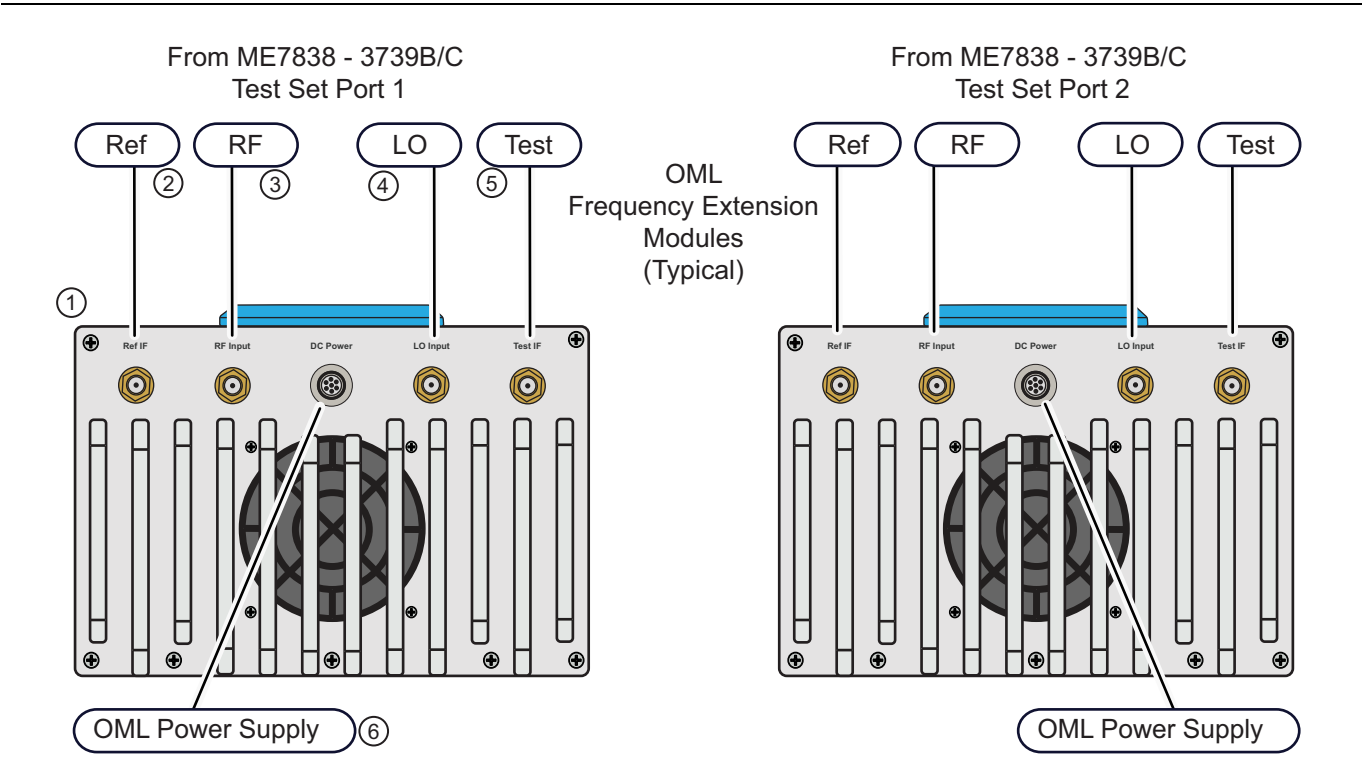


Figure 5 VNA/Test Set Cable Connections to OML Modules

Table 5. OML Module Connections

Cable P/N	Index	Description
N/A	1	OML Module
3-75685-2	2	Ref IF – SMA Connector • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.
	3	RF Input – SMA Connector • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.
	4	LO Input – SMA Connector • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.
	5	Test IF – SMA Connector • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.
N/A	6	OML Module Power Supply

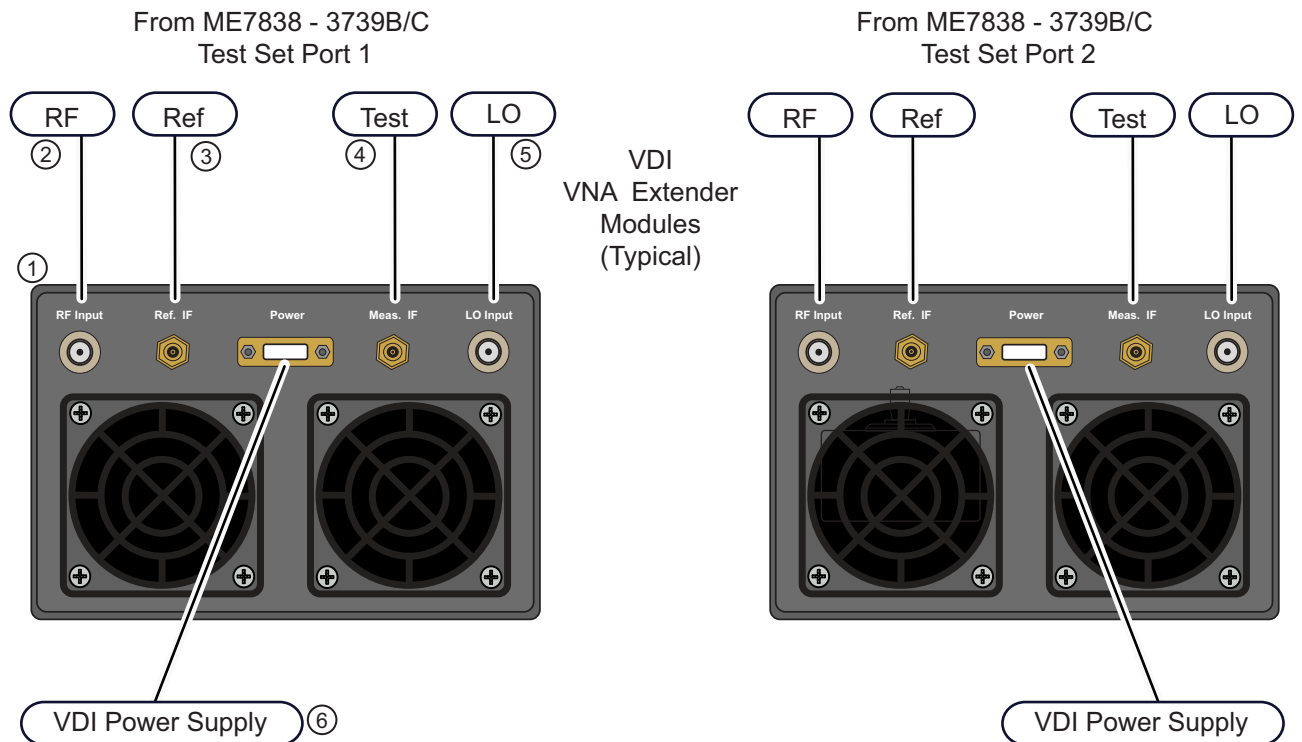


Figure 6 VNA/Test Set Cable Connections to VDI Modules

Table 6. VDI Module Connections

Cable P/N	Index	Description
N/A	1	VDI Module
3-75685-2	2	RF Input – K (2.92 mm) Connector • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.
	3	Ref. IF – SMA Connector • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.
	4	Meas. IF – SMA Connector • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.
	5	LO Input – K (2.92 mm) Connector • Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.
N/A	6 ^a	VDI Module Power Supply

a. The VDI module connectors may differ slightly than on the illustration shown above. For example, depending on the model and date built, the power supply connector may be round instead of rectangular.



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