

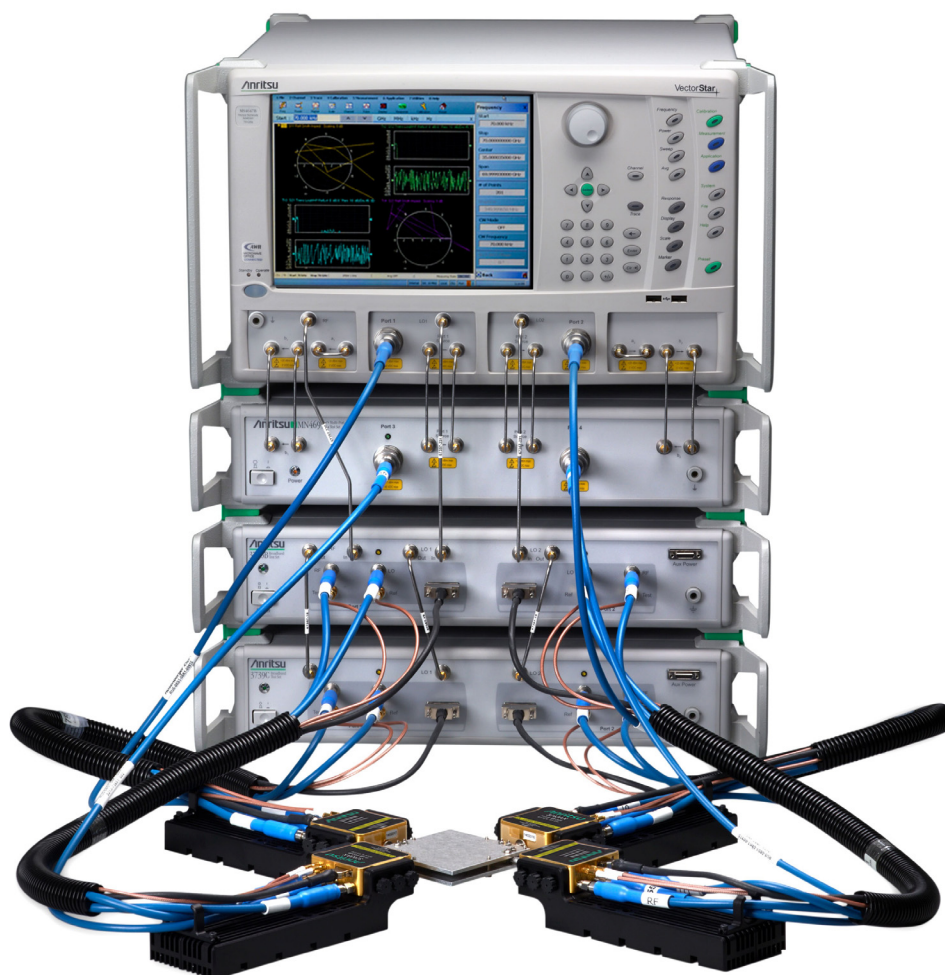
## Quick Start Guide

# VectorStar™ ME7838A4/A4X Multiport Broadband/Banded mmWave System

High Performance Modular Broadband/Banded mmWave Vector Network Analyzer (VNA) Multiport Measurement System

ME7838A4, 70 kHz to 110 (125) GHz

ME7838A4X, 70 kHz to 125 GHz



**Anritsu**

# High Performance Modular Broadband/Banded mmWave Vector Network Analyzer (VNA) Measurement System, 70 kHz to 125 GHz

This guide provides quick setup instructions for the ME7838A4/A4X Multiport Broadband/Banded mmWave VNA System assembly. For additional safety and compliance information, and for more details about the assembly, configuration, setup, and initial testing of the equipment, refer to the *VectorStar™ ME7838x4/x4X Series Multiport Broadband Vector Network Analyzers Installation Guide – 10410-00734*.

This and all other documentation that supports the ME7838A4/A4X is available on the ME7838x4 web page:

<http://www.anritsu.com/test-measurement/products/me7838a4>

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.

## 1. ME7838A4/A4X Main Components

### ME7838A4/A4X Broadband Systems

The ME7838A4/A4X Multiport Broadband system consists of the following components:

- MS4647A or MS4647B VNA with Option 007 (Receiver Offset) and Option 08x (Modular Broadband Connection Capability). The ME7838A4X requires a MS4647B VNA.
- MN4697C Multiport Test Set
- 3736B Broadband Test Set
- 3739C Broadband Test Set
- Four 3743A/AX mmWave Modules
- Front and rear panel cables

### ME7838A4/A4X Banded Systems

The ME7838A4/A4X Multiport Banded system consists of the following components:

- MS464xA/B VNA with Option 08x
- MN4694C Multiport Test Set
- 3736B Broadband Test Set
- 3739C Broadband Test Set
- Four 3744A-EE, 3744A-EW, or four OML/VDI mmWave Modules
- Front and rear panel cables

#### Caution



A MS464xA/B VNA unit is heavy. To avoid personal injury, it must be lifted and maneuvered by at least two people during installation.

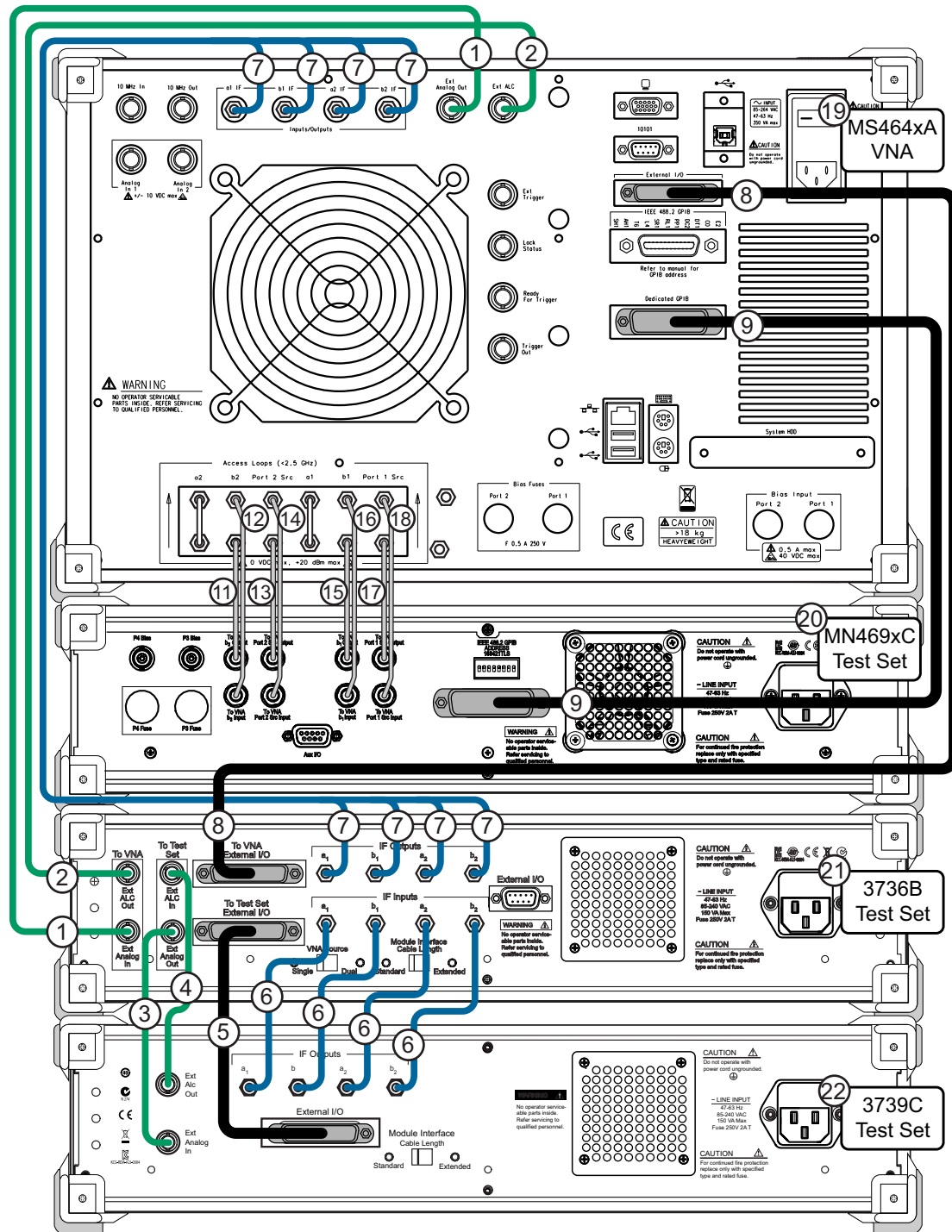
If mounting on a workbench surface, first position the 3739C Broadband Test Set with access to its front and rear panels. Stack the remaining test sets on top of one another, then finally the VNA.

If mounting into rack or console, make sure the Test Sets have been installed, and that the rack/console is carefully positioned on a flat and level surface. If equipped, make sure any casters are locked. Use two people to lift the VNA unit and two to guide it into its shelf rails.

The test loops on the front and rear panels of the VNA are delicate. Be careful not to bump or bend the test loops.

## 2. Rear Panel Connections Between System Components (MS464xA VNA)

In this section, connect the cables between the VNA and the Test Sets as shown in [Figure 1](#) and [Table 1](#).



**Figure 1** ME7838A4 – Rear Panel Cable Connections (MS464xA VNA)

## 2. Rear Panel Connections Between System Components (MS464xA VNA)

**Table 1.** ME7838A4 Multiport Rear Panel Cable Connections (1 of 2)

| Index | Part Number                                | Cable Description                                                               | Connection From                                                                                                       | Connection To                                                                                                   |
|-------|--------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| 1     | 3-806-225                                  | BNC (male-male), 24 in                                                          | MS464xA port labeled:<br><b>Ext Analog Out</b>                                                                        | 3736B port labeled:<br><b>EXT ANALOG IN</b>                                                                     |
| 2     | 3-806-225                                  | BNC (male-male), 24 in                                                          | MS464xA port labeled:<br><b>Ext ALC</b>                                                                               | 3736B port labeled:<br><b>EXT ALC OUT</b>                                                                       |
| 3     | 3-806-225                                  | BNC (male-male), 24 in                                                          | 3736B port labeled:<br><b>(To Test Set) EXT ANALOG OUT</b>                                                            | 3739C port labeled:<br><b>EXT ANALOG IN</b>                                                                     |
| 4     | 3-806-225                                  | BNC (male-male), 24 in                                                          | 3736B port labeled:<br><b>(To Test Set) EXT ALC IN</b>                                                                | 3739C port labeled:<br><b>EXT ALC OUT</b>                                                                       |
| 5     | 3-73598-1 <sup>a</sup><br>(5 cable bundle) | DB-25                                                                           | 3736B port labeled:<br><b>TO TEST SET EXTERNAL I/O</b>                                                                | 3739C port labeled:<br><b>EXTERNAL I/O</b>                                                                      |
| 6     |                                            | SMA male-male flexible:<br>3-72243-1<br>3-72243-2<br>3-72243-3<br>3-72243-4     | 3736B ports labeled:<br><b>(IF INPUTS)</b><br><br><b>a1</b><br><b>b1</b><br><b>a2</b><br><b>b2</b>                    | 3739C ports labeled:<br><b>(IF OUTPUTS)</b><br><br><b>a1</b><br><b>b1</b><br><b>a2</b><br><b>b2</b>             |
| 7     |                                            | SMA male-male flexible:<br>3-72243-21<br>3-72243-22<br>3-72243-23<br>3-72243-24 | MS464xA ports labeled:<br><b>(Inputs/Outputs)</b><br><br><b>a1 IF</b><br><b>b1 IF</b><br><b>a2 IF</b><br><b>b2 IF</b> | 3736B ports labeled:<br><b>(IF OUTPUTS)</b><br><br><b>a1 IF</b><br><b>b1 IF</b><br><b>a2 IF</b><br><b>b2 IF</b> |
| 8     |                                            | DB-25                                                                           | MS464xA port labeled:<br><b>External I/O</b>                                                                          | 3736B port labeled:<br><b>TO VNA EXTERNAL I/O</b>                                                               |
| 9     | 2100-1-R                                   | GPIOB, 1 m                                                                      | MS464xA port labeled:<br><b>Dedicated GPIOB</b>                                                                       | MN469xC port labeled:<br><b>IEEE 488.2 GPIOB</b>                                                                |
| 11    | 3-62112-81 <sup>a</sup>                    | SMA male-male semi-rigid                                                        | MS464xA port labeled:<br><b>b2 loop out</b>                                                                           | MN469xC port labeled:<br><b>TO VNA b2 OUTPUT</b>                                                                |
| 12    | 3-62112-80 <sup>a</sup>                    | SMA male-male semi-rigid                                                        | MS464xA port labeled:<br><b>b2 loop in</b>                                                                            | MN469xC port labeled:<br><b>TO VNA b2 INPUT</b>                                                                 |
| 13    | 3-62112-81 <sup>a</sup>                    | SMA male-male semi-rigid                                                        | MS464xA port labeled:<br><b>P2 source loop out</b>                                                                    | MN469xC port labeled:<br><b>TO VNA Port 2 Src OUTPUT</b>                                                        |
| 14    | 3-62112-80 <sup>a</sup>                    | SMA male-male semi-rigid                                                        | MS464xA port labeled:<br><b>P2 source loop in</b>                                                                     | MN469xC port labeled:<br><b>TO VNA Port 2 Src INPUT</b>                                                         |
| 15    | 3-62112-81 <sup>a</sup>                    | SMA male-male semi-rigid                                                        | MS464xA port labeled:<br><b>b1 loop out</b>                                                                           | MN469xC port labeled:<br><b>TO VNA b1 OUTPUT</b>                                                                |
| 16    | 3-62112-80 <sup>a</sup>                    | SMA male-male semi-rigid                                                        | MS464xA port labeled:<br><b>b1 loop in</b>                                                                            | MN469xC port labeled:<br><b>TO VNA b1 INPUT</b>                                                                 |
| 17    | 3-62112-81 <sup>a</sup>                    | SMA male-male semi-rigid                                                        | MS464xA port labeled:<br><b>P1 source loop out</b>                                                                    | MN469xC port labeled:<br><b>TO VNA Port 1 Src OUTPUT</b>                                                        |

## 2. Rear Panel Connections Between System Components (MS464xA VNA)

**Table 1.** ME7838A4 Multiport Rear Panel Cable Connections (2 of 2)

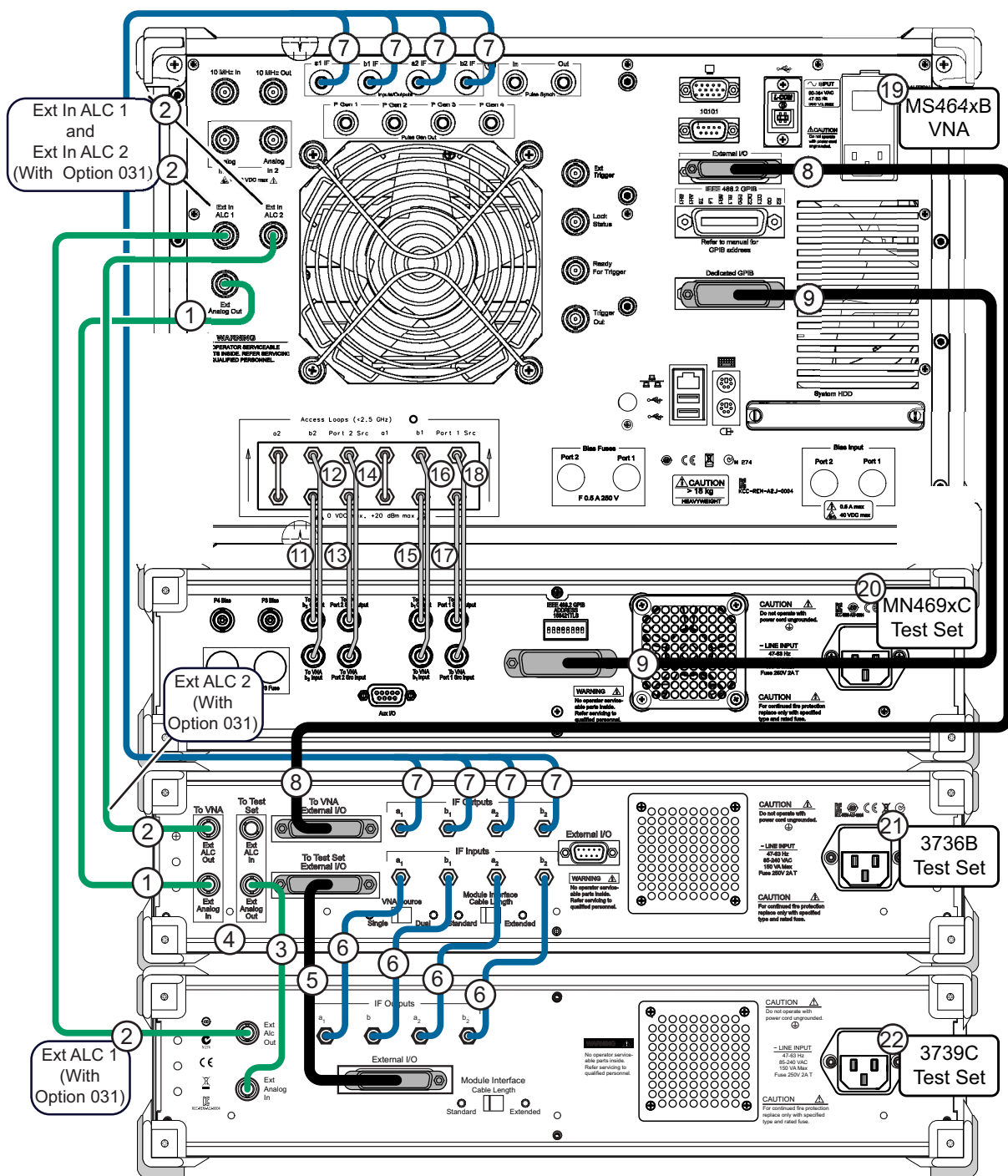
| Index | Part Number             | Cable Description           | Connection From                                   | Connection To                                           |
|-------|-------------------------|-----------------------------|---------------------------------------------------|---------------------------------------------------------|
| 18    | 3-62112-80 <sup>a</sup> | SMA male-male<br>semi-rigid | MS464xA port labeled:<br><b>P1 source loop in</b> | MN469xC port labeled:<br><b>TO VNA Port 1 Src INPUT</b> |
| 19    | MS464xA VNA             |                             |                                                   |                                                         |
| 20    | MN469xC Test Set        |                             |                                                   |                                                         |
| 21    | 3736B Test Set          |                             |                                                   |                                                         |
| 22    | 3739C Test Set          |                             |                                                   |                                                         |

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).

### 3. Rear Panel Connections Between Components (MS464xB VNA)

In this section, connect the cables between the VNA and the Test Sets as shown in [Figure 2](#) or [Figure 3](#), and [Table 2](#).

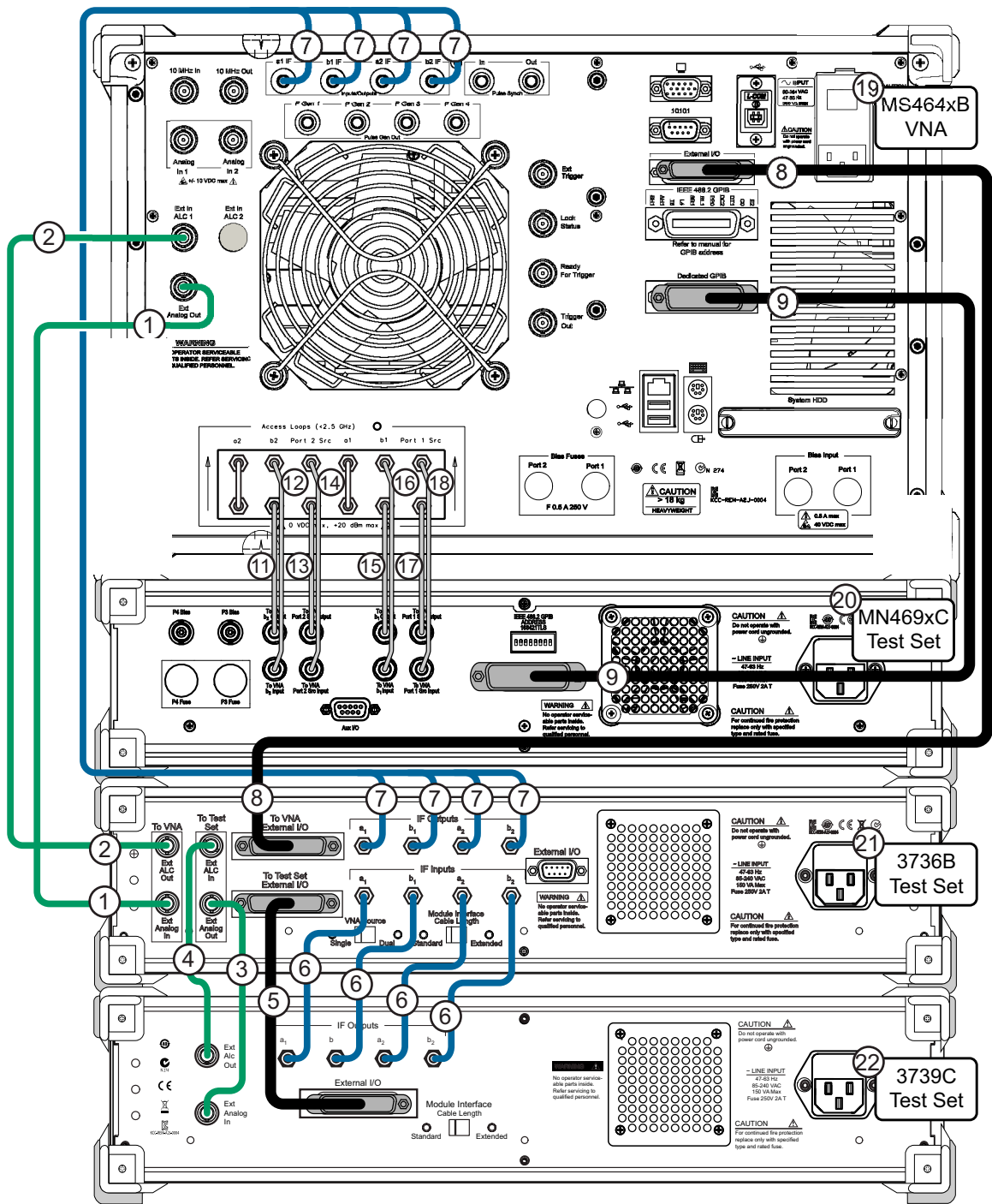
#### Cable Connections (Systems with Option 031 Dual Source Architecture)



**Figure 2** ME7838A4/A4X Multiport BB/mmW VNA System – Rear Panel Cables (With Option 031)



# Cable Connections (Systems without Option 031)



**Figure 3** ME7838A4/A4X Multiport BB/mmW VNA System – Rear Panel Cables (No Option 031)

### 3. Rear Panel Connections Between Components (MS464xB VNA)

**Table 2.** ME7838A4/A4X Multiport Rear Panel Cable Connections (MS464xB) (1 of 2)

| Index | Part Number                                | Cable Description                                                               | Connection From                                                                                                       | Connection To                                                                                                   |
|-------|--------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| 1     | 3-806-225                                  | BNC (male-male), 24 in                                                          | MS464xB port labeled:<br><b>Ext Analog Out</b>                                                                        | 3736B port labeled:<br><b>EXT ANALOG IN</b>                                                                     |
| 2     | 3-806-225                                  | BNC (male-male), 24 in                                                          | VNA port labeled:<br><b>Ext In ALC 1</b><br><i>(No Option 031)</i> (Figure 3)                                         | 3736B port labeled:<br><b>EXT ALC OUT</b>                                                                       |
|       | 3-806-225                                  | BNC (male-male), 24 in                                                          | VNA port labeled:<br><b>Ext In ALC 1</b><br><i>(With Option 031)</i> (Figure 2)                                       | 3739C port labeled:<br><b>EXT ALC OUT</b>                                                                       |
|       | 3-806-225                                  | BNC (male-male), 24 in                                                          | VNA port labeled:<br><b>Ext In ALC 2</b><br><i>(With Option 031)</i> (Figure 2)                                       | 3736B port labeled:<br><b>EXT ALC OUT</b>                                                                       |
| 3     | 3-806-225                                  | BNC (male-male), 24 in                                                          | 3736B port labeled:<br><b>(To Test Set) EXT ANALOG OUT</b>                                                            | 3739C port labeled:<br><b>EXT ANALOG IN</b>                                                                     |
| 4     | 3-806-225                                  | BNC (male-male), 24 in                                                          | 3736B port labeled:<br><b>(To Test Set) EXT ALC IN</b><br>(Figure 3)<br><i>(Not used with Option 031)</i>             | 3739C port labeled:<br><b>EXT ALC OUT</b>                                                                       |
| 5     | 3-73598-1 <sup>a</sup><br>(5 cable bundle) | DB-25                                                                           | 3736B port labeled:<br><b>TO TEST SET EXTERNAL I/O</b>                                                                | 3739C port labeled:<br><b>EXTERNAL I/O</b>                                                                      |
| 6     |                                            | SMA male-male flexible:<br>3-72243-1<br>3-72243-2<br>3-72243-3<br>3-72243-4     | 3736B ports labeled:<br><b>(IF INPUTS)</b><br><br><b>a1</b><br><b>b1</b><br><b>a2</b><br><b>b2</b>                    | 3739C ports labeled:<br><b>(IF OUTPUTS)</b><br><br><b>a1</b><br><b>b1</b><br><b>a2</b><br><b>b2</b>             |
| 7     |                                            | SMA male-male flexible:<br>3-72243-21<br>3-72243-22<br>3-72243-23<br>3-72243-24 | MS464xB ports labeled:<br><b>(Inputs/Outputs)</b><br><br><b>a1 IF</b><br><b>b1 IF</b><br><b>a2 IF</b><br><b>b2 IF</b> | 3736B ports labeled:<br><b>(IF OUTPUTS)</b><br><br><b>a1 IF</b><br><b>b1 IF</b><br><b>a2 IF</b><br><b>b2 IF</b> |
| 8     |                                            | DB-25                                                                           | MS464xB port labeled:<br><b>External I/O</b>                                                                          | 3736B port labeled:<br><b>TO VNA EXTERNAL I/O</b>                                                               |
| 9     | 2100-1-R                                   | GPIOB, 1 m                                                                      | MS464xB port labeled:<br><b>Dedicated GPIOB</b>                                                                       | MN469xC port labeled:<br><b>IEEE 488.2 GPIOB</b>                                                                |
| 11    | 3-62112-81 <sup>a</sup>                    | SMA male-male semi-rigid                                                        | MS464xB port labeled:<br><b>b2 loop out</b>                                                                           | MN469xC port labeled:<br><b>TO VNA b2 OUTPUT</b>                                                                |
| 12    | 3-62112-80 <sup>a</sup>                    | SMA male-male semi-rigid                                                        | MS464xB port labeled:<br><b>b2 loop in</b>                                                                            | MN469xC port labeled:<br><b>TO VNA b2 INPUT</b>                                                                 |
| 13    | 3-62112-81 <sup>a</sup>                    | SMA male-male semi-rigid                                                        | MS464xB port labeled:<br><b>P2 source loop out</b>                                                                    | MN469xC port labeled:<br><b>TO VNA Port 2 Src OUTPUT</b>                                                        |



### 3. Rear Panel Connections Between Components (MS464xB VNA)

**Table 2.** ME7838A4/A4X Multiport Rear Panel Cable Connections (MS464xB) (2 of 2)

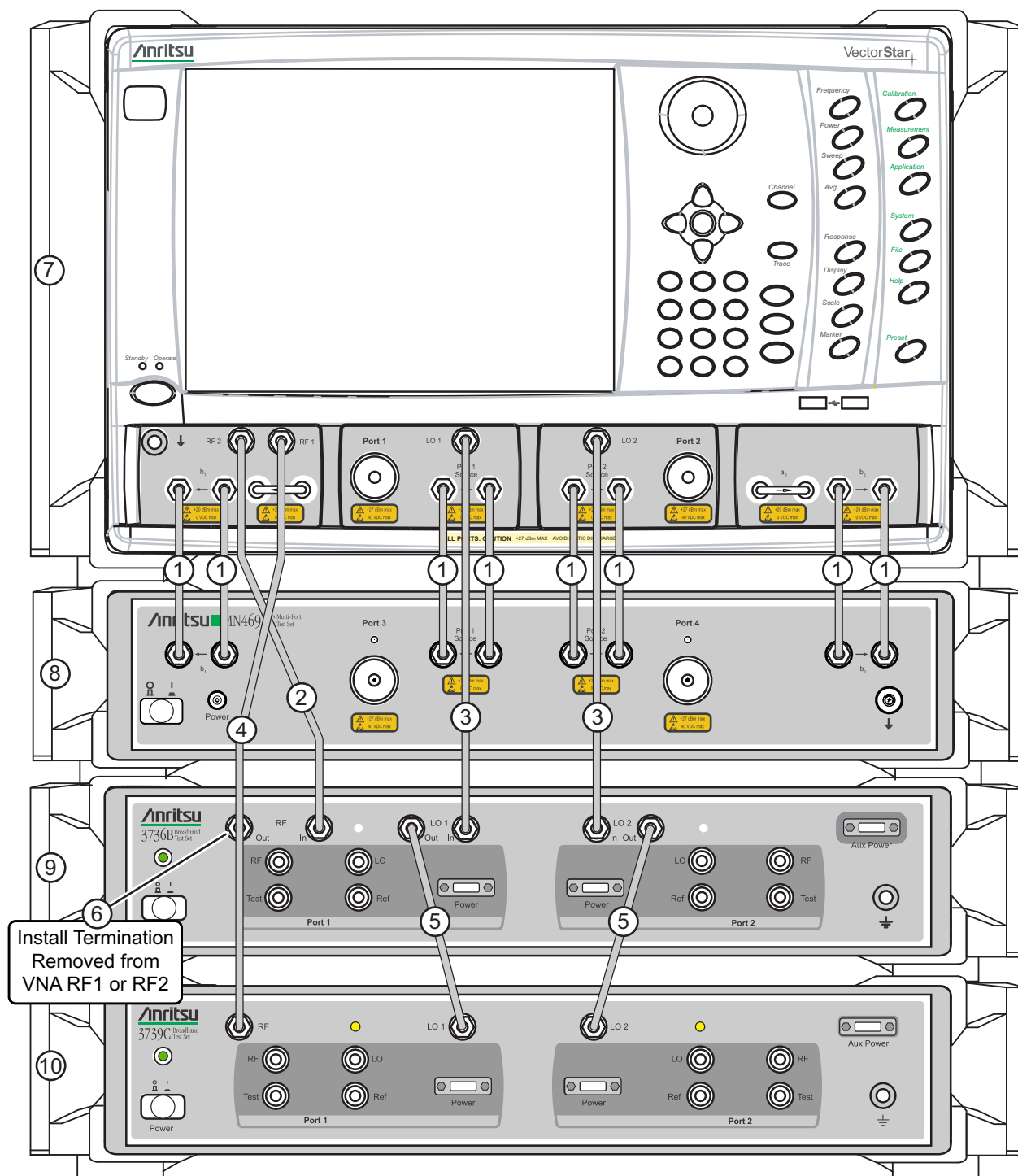
| Index | Part Number             | Cable Description        | Connection From                                    | Connection To                                            |
|-------|-------------------------|--------------------------|----------------------------------------------------|----------------------------------------------------------|
| 14    | 3-62112-80 <sup>a</sup> | SMA male-male semi-rigid | MS464xB port labeled:<br><b>P2 source loop in</b>  | MN469xC port labeled:<br><b>TO VNA Port 2 Src INPUT</b>  |
| 15    | 3-62112-81 <sup>a</sup> | SMA male-male semi-rigid | MS464xB port labeled:<br><b>b1 loop out</b>        | MN469xC port labeled:<br><b>TO VNA b1 OUTPUT</b>         |
| 16    | 3-62112-80 <sup>a</sup> | SMA male-male semi-rigid | MS464xB port labeled:<br><b>b1 loop in</b>         | MN469xC port labeled:<br><b>TO VNA b1 INPUT</b>          |
| 17    | 3-62112-81 <sup>a</sup> | SMA male-male semi-rigid | MS464xB port labeled:<br><b>P1 source loop out</b> | MN469xC port labeled:<br><b>TO VNA Port 1 Src OUTPUT</b> |
| 18    | 3-62112-80 <sup>a</sup> | SMA male-male semi-rigid | MS464xB port labeled:<br><b>P1 source loop in</b>  | MN469xC port labeled:<br><b>TO VNA Port 1 Src INPUT</b>  |
| 19    | MS464xB VNA             |                          |                                                    |                                                          |
| 20    | MN469xC Test Set        |                          |                                                    |                                                          |
| 21    | 3736B Test Set          |                          |                                                    |                                                          |
| 22    | 3739C Test Set          |                          |                                                    |                                                          |

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).

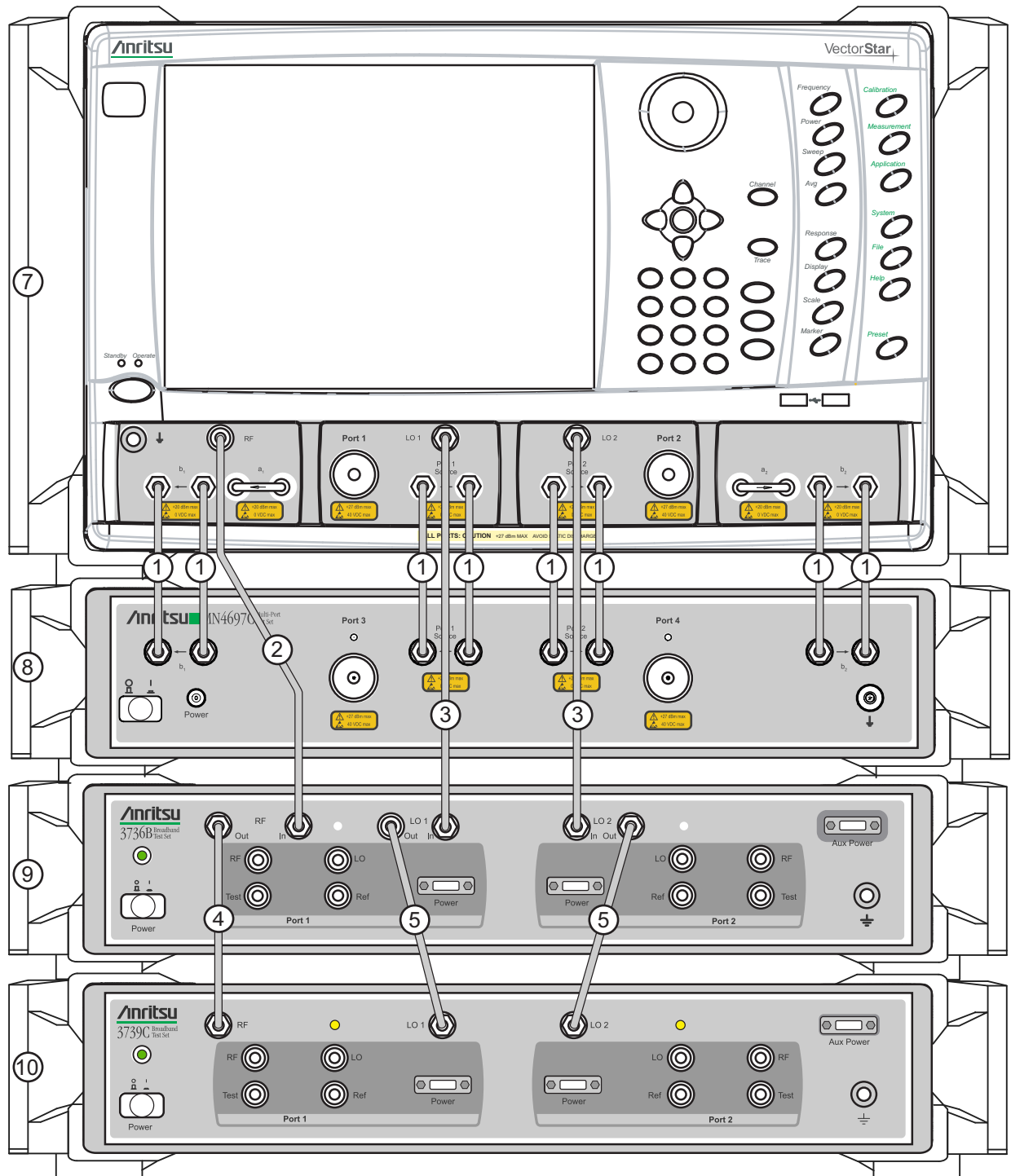
### 4. Semi-rigid Cable Connections Between System Components

Make the semi-rigid cable connections as shown in [Figure 4](#) or [Figure 5](#), and in [Table 3](#).

If your system has Option 031 Dual Source Architecture (MS464xB only), use [Figure 4](#). If your system does not have Option 031, use [Figure 5](#).



**Figure 4** ME7838A4/A4X Multiport Semi-rigid Cable Connections (with Option 031 Dual Source Architecture)



**Figure 5** ME7838A4/A4X Multiport Semi-rigid Cable Connections (No Option 031)

#### 4. Semi-rigid Cable Connections Between System Components

**Table 3.** ME7838A4/A4X Multiport semi-rigid Cable Interconnect Part Numbers and Locations (1 of 2)

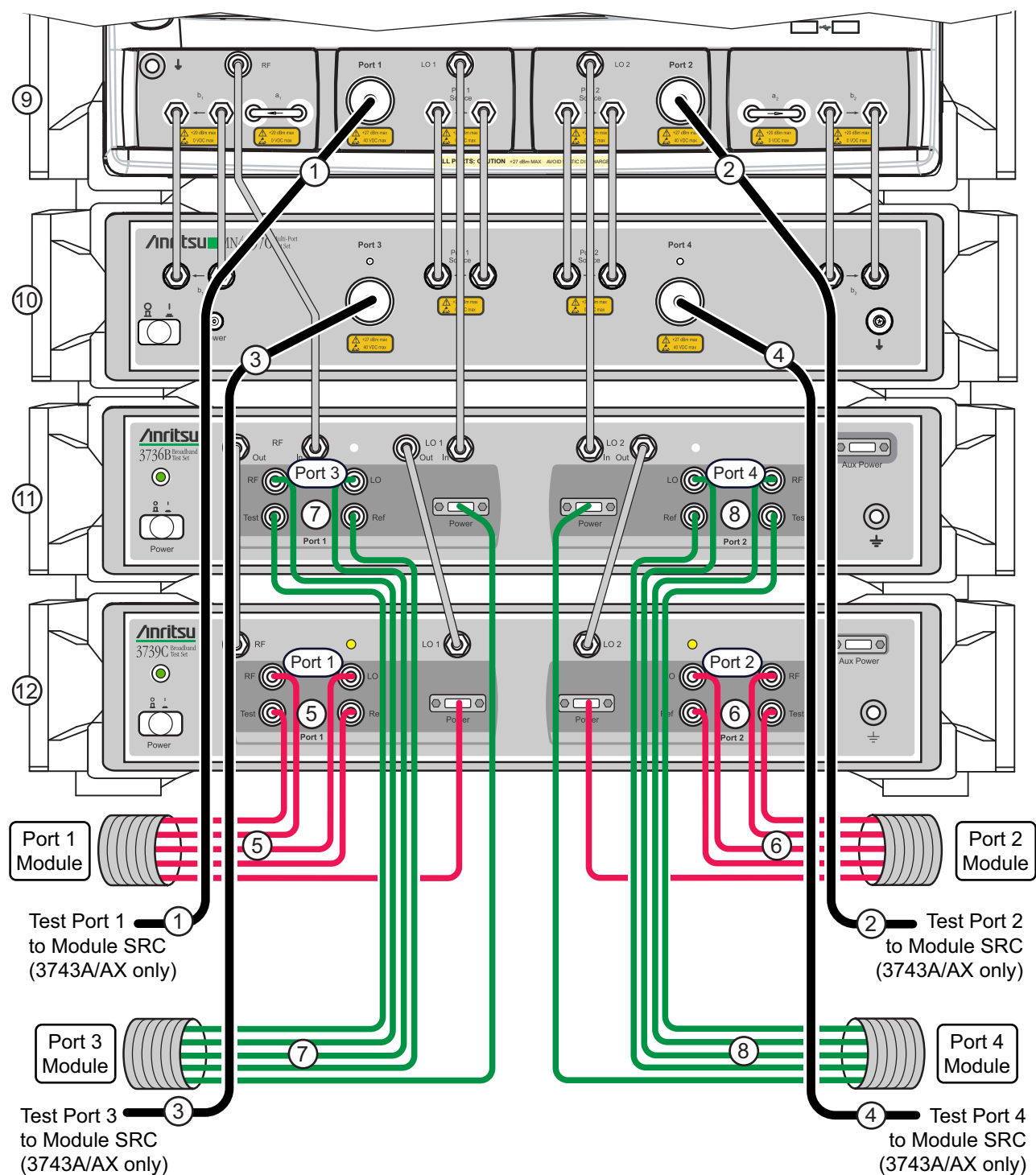
| Index | Part Numbers                                                                 | Description/Torque                                                                                                                                            | Connection From                                                                | Connection To                                           |
|-------|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------|
| 1     | 3-62109-42<br>V (m-m)<br>(MN4697C)<br><br>3-67357-38<br>K (m-m)<br>(MN4694C) | <b>Front Panel RF Cable</b> (4 each)<br>V or K male-male semi-rigid<br><br>Tighten using an 8 mm (5/16 in)<br>torque end wrench set to 0.9 N·m<br>(8 lbf·in). | VNA port labeled:<br><b>b1</b> (In)                                            | MN469xC port labeled:<br><b>b1</b> (In)                 |
|       |                                                                              |                                                                                                                                                               | VNA port labeled:<br><b>b1</b> (Out)                                           | MN469xC port labeled:<br><b>b1</b> (Out)                |
|       |                                                                              |                                                                                                                                                               | VNA port labeled:<br><b>Port 1 Source</b> (In)                                 | MN469xC port labeled:<br><b>Port 1 Source</b> (In)      |
|       |                                                                              |                                                                                                                                                               | VNA port labeled:<br><b>Port 1 Source</b> (Out)                                | MN469xC port labeled:<br><b>Port 1 Source</b> (Out)     |
|       |                                                                              |                                                                                                                                                               | VNA port labeled:<br><b>Port 2 Source</b> (In)                                 | MN469xC port labeled:<br><b>Port 2 Source</b> (In)      |
|       |                                                                              |                                                                                                                                                               | VNA port labeled:<br><b>Port 2 Source</b> (Out)                                | MN469xC port labeled:<br><b>Port 2 Source</b> (Out)     |
|       |                                                                              |                                                                                                                                                               | VNA port labeled:<br><b>b2</b> (In)                                            | MN469xC port labeled:<br><b>b2</b> (In)                 |
|       |                                                                              |                                                                                                                                                               | VNA port labeled:<br><b>b2</b> (Out)                                           | MN469xC port labeled:<br><b>b2</b> (Out)                |
| 2     | 3-67357-230                                                                  | <b>Front Panel RF Cable</b><br>K male-male semi-rigid<br><br>Tighten using an 8 mm (5/16 in)<br>torque end wrench set to 0.9 N·m<br>(8 lbf·in).               | VNA port labeled:<br><b>RF 2</b> (Figure 4)<br>(With Option 031)               | 3736B Test Set port<br>labeled:<br><b>RF In</b>         |
|       |                                                                              |                                                                                                                                                               | VNA port labeled:<br><b>RF</b> (Figure 5)<br>(No Option 031)                   | 3736B Test Set port<br>labeled:<br><b>RF In</b>         |
| 3     | 3-67357-231                                                                  | <b>Front Panel LO Cable</b> (2 each)<br>K male-male semi-rigid<br><br>Tighten using an 8 mm (5/16 in)<br>torque end wrench set to 0.9 N·m<br>(8 lbf·in).      | VNA port labeled:<br><b>LO 1</b>                                               | 3736B Test Set port<br>labeled:<br><b>LO 1 In</b>       |
|       |                                                                              |                                                                                                                                                               | VNA port labeled:<br><b>LO 2</b>                                               | 3736B Test Set port<br>labeled:<br><b>LO 2 In</b>       |
| 4     | 3-67357-232<br>(With Option 031)                                             | <b>Front Panel RF Cable</b><br>K male-male semi-rigid<br><br>Tighten using an 8 mm (5/16 in)<br>torque end wrench set to 0.9 N·m<br>(8 lbf·in).               | VNA port labeled:<br><b>RF 1</b> (Figure 4)<br>(With Option 031)               | 3739C Test Set port<br>labeled:<br><b>RF</b>            |
|       | 3-67357-18<br>(No Option 031)                                                |                                                                                                                                                               | 3736B Test Set port<br>labeled:<br><b>RF Out</b> (Figure 5)<br>(No Option 031) | 3739C Test Set port<br>labeled:<br><b>RF</b>            |
| 5     | 3-67357-19                                                                   | <b>Front Panel LO Cable</b> (2 each)<br>K male-male semi-rigid<br><br>Tighten using an 8 mm (5/16 in)<br>torque end wrench set to 0.9 N·m<br>(8 lbf·in).      | 3736B Test Set port<br>labeled:<br><b>LO 1 Out</b>                             | 3739C Test Set port<br>labeled:<br><b>LO 1</b>          |
|       |                                                                              |                                                                                                                                                               | 3736B Test Set port<br>labeled:<br><b>LO 2 Out</b>                             | 3739C Test Set port<br>labeled:<br><b>LO 2</b>          |
| 6     | V210                                                                         | <b>Termination (With Option 031)</b><br><br>Tighten using an 8 mm (5/16 in)<br>torque end wrench set to 0.9 N·m<br>(8 lbf·in).                                | Remove from VNA port<br>labeled:<br><b>RF 1 or RF 2</b><br>(With Option 031)   | Add to 3736B Test Set<br>port labeled:<br><b>RF Out</b> |

**Table 3.** ME7838A4/A4X Multiport semi-rigid Cable Interconnect Part Numbers and Locations (2 of 2)

| Index | Part Numbers        | Description/Torque                           | Connection From | Connection To |
|-------|---------------------|----------------------------------------------|-----------------|---------------|
| 7     | MS464xA VNA         | Option 051, 061, or 062, and 08x (Banded)    |                 |               |
|       | MS464xB VNA         | Option 051, 061, or 062, and 08x (Banded)    |                 |               |
|       | MS4647A VNA         | Option 051, 061, or 062, and 08x (Broadband) |                 |               |
|       | MS4647B VNA         | Option 051, 061, or 062, and 08x (Broadband) |                 |               |
| 8     | MN4694C<br>Test Set | (Banded)                                     |                 |               |
|       | MN4697C<br>Test Set | (Broadband)                                  |                 |               |
| 9     | 3736B Test Set      |                                              |                 |               |
| 10    | 3739C Test Set      |                                              |                 |               |

## 5. Front Panel Cable Connections

Make the cable connections as shown in [Figure 6](#) and in [Table 4](#).



**Figure 6** Front Panel to mmWave Module Connections

**Note**

The cables for Test Port 1 through Test Port 4 to Module SRC are not used with mmWave modules 3744A-EE, 3744A-EW, or 3744A-Rx.



**Table 4.** ME7838A4/A4X Cable Interconnect Part Numbers and Locations (1 of 2)

| Index | Part Number                                                | Description                                                                                                                                                                                                            | Connection From                                     | Connection To                               |
|-------|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------|
| 1     | 806-209-R <sup>a,b</sup>                                   | <b>Coaxial Cable</b> (4 each)<br>V male-female flexible, 36 in                                                                                                                                                         | MN469xC port labeled:                               | 3743A/AX port labeled:                      |
| 2     |                                                            | Used with 3743A/AX Broadband Modules only<br><br>Tighten at Test Set using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).                                                                              | <b>Port 1</b>                                       | (Port 1 Module) <b>SRC</b>                  |
| 3     |                                                            |                                                                                                                                                                                                                        | <b>Port 2</b>                                       | (Port 2 Module) <b>SRC</b>                  |
| 4     |                                                            |                                                                                                                                                                                                                        | <b>Port 3</b>                                       | (Port 3 Module) <b>SRC</b>                  |
|       |                                                            |                                                                                                                                                                                                                        | <b>Port 4</b>                                       | (Port 4 Module) <b>SRC</b>                  |
| 5     | 3-75685-1 <sup>a</sup>                                     | <b>mmWave Module Interface Cables</b><br>(for 3743A/AX, 3744A-EE, 3744A-EW modules)<br>Group of 5 cables for each port<br><br>Tighten at Test Set using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in). | 3739C Test Set:<br>Port 1, Port 2                   | mmWave Modules:<br>Port 1, Port 2 Modules   |
| 6     |                                                            |                                                                                                                                                                                                                        | <b>RF, LO, Test, Ref, Power/Signal</b>              | <b>RF, LO, Test, Ref, Power/Signal</b>      |
| 7     |                                                            |                                                                                                                                                                                                                        | 3736B Test Set<br>Port1, Port 2<br>(Port 3, Port 4) | mmWave Modules<br>Port 3, Port 4 Modules    |
| 8     |                                                            |                                                                                                                                                                                                                        | <b>RF, LO, Test, Ref, Power/Signal</b>              | <b>RF, LO, Test, Ref, Power/Signal</b>      |
| 5     | 3-75685-2 <sup>a</sup>                                     | <b>OML Module Interface Cables</b><br>Group of 4 cables for each port<br><br>Tighten at Test Set using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).                                                  | 3739C Test Set<br>Port 1, Port 2                    | OML Modules<br>Port 1, Port 2 Modules       |
| 6     |                                                            |                                                                                                                                                                                                                        | <b>RF, LO, Test, Ref</b>                            | <b>RF, LO, Test IF, Ref IF</b>              |
| 7     |                                                            | 3736B Test Set<br>Port1, Port 2<br>(Port 3, Port 4)                                                                                                                                                                    | OML Modules<br>Port 3, Port 4 Modules               |                                             |
| 8     |                                                            |                                                                                                                                                                                                                        | <b>RF, LO, Test, Ref</b>                            | <b>RF, LO, Test IF, Ref IF</b>              |
|       |                                                            | <b>VDI Module Interface Cables</b><br>Group of 4 cables for each port<br><br>Tighten at Test Set using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).                                                  | 3739C Test Set<br>Port 1, Port 2                    | VDI Modules<br>Port 1, Port 2 Modules       |
|       |                                                            |                                                                                                                                                                                                                        | <b>RF, LO, Test, Ref</b>                            | <b>RF Input, LO Input, Meas. IF, Ref IF</b> |
|       |                                                            |                                                                                                                                                                                                                        | 3736B Test Set<br>Port1, Port 2<br>(Port 3, Port 4) | VDI Modules<br>Port 3, Port 4 Modules       |
|       |                                                            |                                                                                                                                                                                                                        | <b>RF, LO, Test, Ref</b>                            | <b>RF Input, LO Input, Meas. IF, Ref IF</b> |
| 5     | 3-75685-3 <sup>a</sup>                                     | <b>mmWave Module Interface Cables (for 3744A-Rx modules)</b> Group of 3 cables for each port<br><br>Tighten at Test Set using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).                           | 3739C Test Set<br>Port 1, Port 2                    | Rx Modules<br>Port 1, Port 2 Modules        |
| 6     |                                                            |                                                                                                                                                                                                                        | <b>LO, Test, Power/Signal</b>                       | <b>LO, Test, Power/Signal</b>               |
| 7     |                                                            |                                                                                                                                                                                                                        | 3736B Test Set<br>Port1, Port 2<br>(Port 3, Port 4) | Rx Modules<br>Port 3, Port 4 Modules        |
| 8     |                                                            |                                                                                                                                                                                                                        | <b>LO, Test, Power/Signal</b>                       | <b>LO, Test, Power/Signal</b>               |
| 9     | MS464xA VNA – Option 051, 061, or 062, and 08x (Banded)    |                                                                                                                                                                                                                        |                                                     |                                             |
|       | MS464xB VNA – Option 051, 061, or 062, and 08x (Banded)    |                                                                                                                                                                                                                        |                                                     |                                             |
|       | MS4647A VNA – Option 051, 061, or 062, and 08x (Broadband) |                                                                                                                                                                                                                        |                                                     |                                             |
|       | MS4647B VNA – Option 051, 061, or 062, and 08x (Broadband) |                                                                                                                                                                                                                        |                                                     |                                             |

## 5. Front Panel Cable Connections

**Table 4.** ME7838A4/A4X Cable Interconnect Part Numbers and Locations (2 of 2)

| Index | Part Number                  | Description | Connection From | Connection To |
|-------|------------------------------|-------------|-----------------|---------------|
| 10    | MN4694C Test Set (Banded)    |             |                 |               |
|       | MN4697C Test Set (Broadband) |             |                 |               |
| 11    | 3736B Test Set               |             |                 |               |
| 12    | 3739C Test Set               |             |                 |               |

- a. Do not yet connect the cable ends to the mmWave modules. Module connection instructions follow this section.
- b. The 806-209-R Coaxial Cable is not included or required when using the 3744A-EE, 3744A-EW mmWave modules, or the 3744A-Rx Receiver Module.

## 6. Front Panel to mmWave Module Connections

Connect the 3736B and 3739C Broadband Test Set test port cables to the 3743A/AX, 3744A-EE, 3744A-EW, or 3744A-Rx Modules as shown below, observing the correct torque limits for each connector. See [Figure 7](#) and [Table 5](#). Route the cable assemblies through the module cable restraint.

### Note

It is easier to first connect the cables to the module and then mount the module in its bracket.

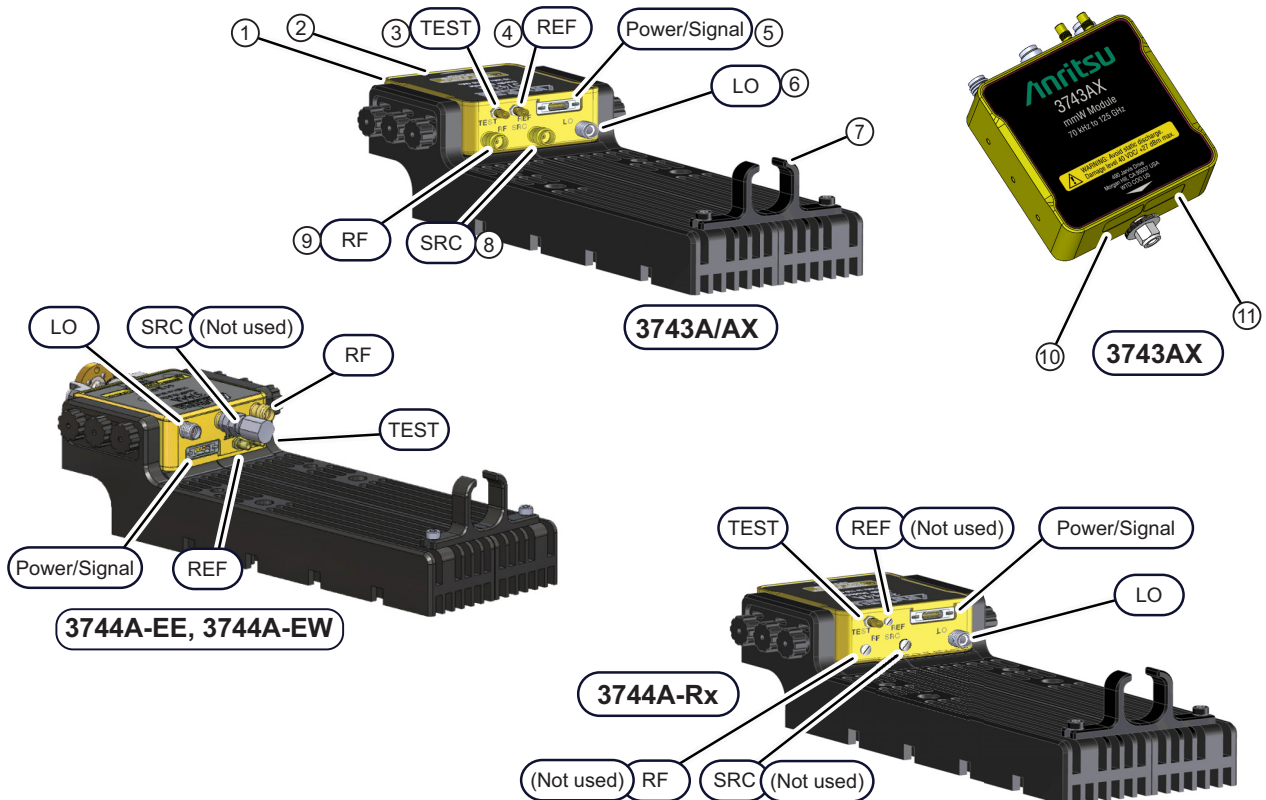
Observe torque instructions where indicated. Each module (except the 3744A-Rx) is characterized for a specific VNA Serial Number and VNA Test Port as designated on the module port assignment label. Ensure the module matches the correct VNA and Test Set port.

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

### Inverting a Module

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

1. Remove the six knurled head thumbscrews from the module.
2. Turn the module over.
3. Install the six thumbscrews.



**Figure 7** mmWave Module Connections

## 6. Front Panel to mmWave Module Connections

**Table 5.** mmWave Module Connections

| Index | Cable P/N                                                | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | N/A                                                      | mmWave Module in bracket                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 2     | N/A                                                      | <b>W1</b> – 1 mm Connector ( <i>3743A/AX, 3744A-Rx modules</i> ) <ul style="list-style-type: none"> <li>• Tighten using a torque end wrench and a plain end wrench</li> <li>• 6 mm Torque End Wrench set to 0.45 N·m (4 lbf·in). Recommended is Anritsu 01-504.</li> <li>• 6 mm / 7 mm Open End Wrench. Recommended is Anritsu 01-505.</li> </ul> <b>WR-10 or WR-12 Adapter</b> – 1 mm connector ( <i>3744A-EE, 3744A-EW modules</i> ) <ul style="list-style-type: none"> <li>• Use Waveguide Adapter Toolkits (3-74394-2, 3-3-74394-3, or 3-3-74394-4).</li> <li>• Tighten using a torque end wrench and a plain end wrench.</li> <li>• 6 mm Torque End Wrench set to 0.45 N·m (4 lbf·in). Recommended is Anritsu 01-504.</li> <li>• 6 mm / 7 mm Open End Wrench. Recommended is Anritsu 01-505.</li> </ul> |
| 3     | 3-75685-1 <sup>a</sup><br>or<br>3-75685-3 <sup>b,c</sup> | <b>TEST</b> – SSMC Connector ( <i>3743A/AX, 3744A-EE, 3744A-EW, and 3744A-Rx modules</i> ) <ul style="list-style-type: none"> <li>• Tighten using a 4 mm (5/32 in) torque end wrench set to less than 0.17 N·m (1.5 lbf·in).</li> <li>• Recommended is Anritsu 01-529-R torque wrench.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 4     |                                                          | <b>REF</b> – SSMC Connector ( <i>3743A/AX, 3744A-EE, and 3744A-EW modules</i> ) <ul style="list-style-type: none"> <li>• Tighten using a 4 mm (5/32 in) torque end wrench set to less than 0.17 N·m (1.5 lbf·in).</li> <li>• Recommended is Anritsu 01-529-R torque wrench.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 5     |                                                          | <b>Power/Signal Bi-Lobe™</b> Connector ( <i>3743A/AX, 3744A-EE, 3744A-EW, 3744A-Rx</i> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 6     |                                                          | <b>LO</b> – K Connector ( <i>3743A/AX, 3744A-EE, 3744A-EW, and 3744A-Rx modules</i> ) <ul style="list-style-type: none"> <li>• Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).</li> <li>• Recommended is Anritsu 01-201.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 7     |                                                          | Module Power and I/O Cable Restraint                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 8     | 806-209-R <sup>d</sup>                                   | <b>SRC</b> – V Connector ( <i>3743A/AX module only</i> ) <ul style="list-style-type: none"> <li>• Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).</li> <li>• Recommended is Anritsu 01-201.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 9     | 3-75685-1 <sup>a</sup>                                   | <b>RF</b> – V Connector ( <i>3743A/AX, 3744A-EE, and 3744A-EW modules</i> ) <ul style="list-style-type: none"> <li>• Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).</li> <li>• Recommended is Anritsu 01-201.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 10    | N/A                                                      | Factory Calibrated Port Assignment Label                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 11    | N/A                                                      | Module Serial Number Label                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

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

b. The REF cable is not used in the 3-75685-3 cable assembly.

c. 3744A-Rx module uses cable assembly 3-75685-3.

d. The 806-209-R Coaxial Cable is used only with the 3743A/AX modules.

### mmWave Module Operating Environment

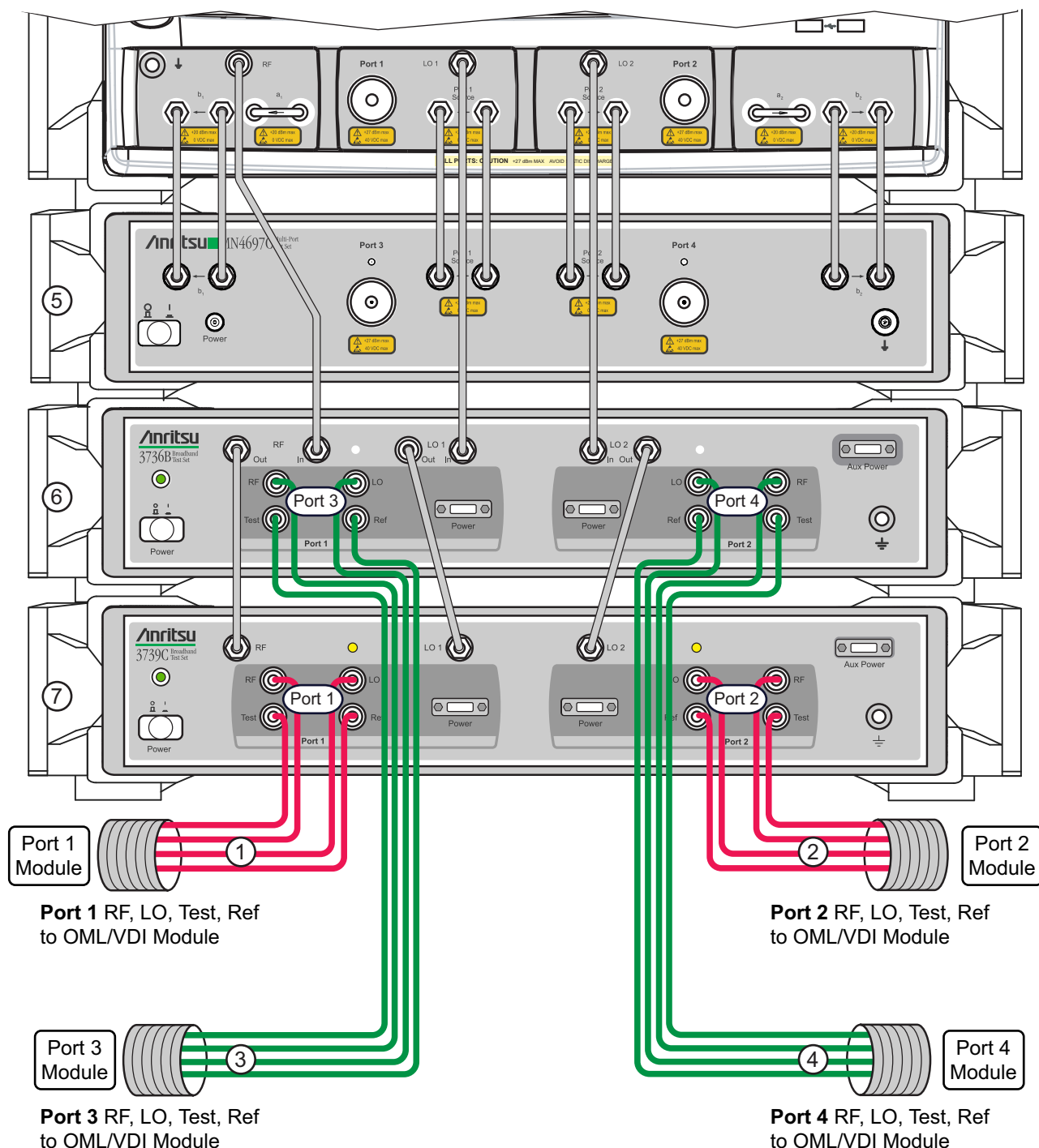
The following notes should be observed when operating the 3743A/AX and 3744A-xx mmWave Modules:

- Thermal heat sinking similar to the supplied mounting brackets of the mmWave Module should be considered in custom mounting applications.
- Each 3743A/AX Module consumes a maximum of 12 watts.
- Each 3744A-EE and 3744A-EW Module consumes a maximum of 12 watts.
- Each 3744A-Rx Module consumes a maximum of 7 watts.
- The primary heat sink paths for the module is the two side mounting surfaces of the mounting bracket.
- With the attached cable mounting brackets, the case temperature rise is approximately 15 °C to 20 °C above ambient.
- A three (3) Year warranty is valid for all versions of 3744A and 3743A/AX modules, with or without mounting brackets attached.

## 7. Front Panel to OML/VDI Module Connections

Connect the front panel cables between the 3736B and 3739C Test Sets, and the OML or VDI frequency extension modules as shown in [Figure 8](#), [Figure 9](#), and [Figure 10](#), and as described in [Table 6](#), [Table 7](#), and [Table 8](#).

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

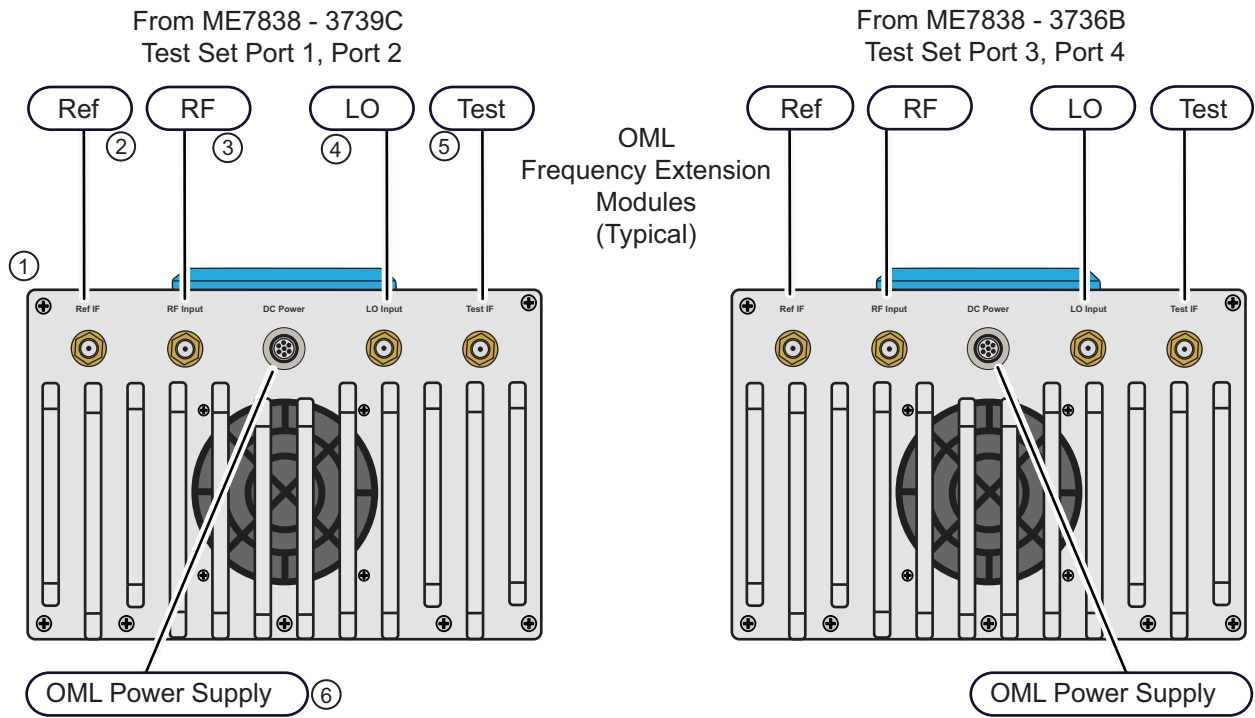


**Figure 8** Cable Connections between 3736B, 3739C Test Sets, and OML or VDI Frequency Extension Modules

## 7. Front Panel to OML/VDI Module Connections

**Table 6.** ME7838A4/A4X OML/VDI Cable Interconnect Part Numbers and Locations

| Index | Part Number           | Description                                                             | Connection From                                                                                                 | Connection To                                                                                                         |
|-------|-----------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| 1     | 3-75685-2<br>(2 each) | OML Module Interface Cable Assembly<br>Group of 4 cables for each port  | 3739C Test Set<br>Port 1, Port 2<br><br><b>Ref</b><br><b>RF</b><br><b>LO</b><br><b>Test</b>                     | OML Modules:<br>Port 1, Port 2 Modules<br><br><b>Ref IF</b><br><b>RF Input</b><br><b>LO Input</b><br><b>Test IF</b>   |
| 2     |                       | OML Module Interface Cable Assembly<br>Group of 4 cables for each port  | 3736B Test Set<br>Port 1, Port 2<br>(Port 3, Port 4)<br><br><b>Ref</b><br><b>RF</b><br><b>LO</b><br><b>Test</b> | OML Modules:<br>Port 3, Port 4 Modules<br><br><b>Ref IF</b><br><b>RF Input</b><br><b>LO Input</b><br><b>Test IF</b>   |
| 3     | 3-75685-2<br>(2 each) | VDI Module Interface Cables Assembly<br>Group of 4 cables for each port | 3739C Test Set<br>Port 1, Port 2<br><br><b>RF</b><br><b>Ref</b><br><b>Test</b><br><b>LO</b>                     | VDI Modules:<br>Port 1, Port 2 Modules<br><br><b>RF Input</b><br><b>Ref. IF</b><br><b>Meas. IF</b><br><b>LO Input</b> |
| 4     |                       | VDI Module Interface Cables Assembly<br>Group of 4 cables for each port | 3736B Test Set<br>Port 1, Port 2<br>(Port 3, Port 4)<br><br><b>RF</b><br><b>Ref</b><br><b>Test</b><br><b>LO</b> | VDI Modules:<br>Port 3, Port 4 Modules<br><br><b>RF Input</b><br><b>Ref. IF</b><br><b>Meas. IF</b><br><b>LO Input</b> |
| 5     | MN469xC Test Set      |                                                                         |                                                                                                                 |                                                                                                                       |
| 6     | 3736B Test Set        |                                                                         |                                                                                                                 |                                                                                                                       |
| 7     | 3739C Test Set        |                                                                         |                                                                                                                 |                                                                                                                       |



**Figure 9** VNA/ Test Set Cable Connections to OML Modules

**Table 7.** OML Module Connections

| Index | Cable P/N | Description                                                                                                                                                                                             |
|-------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | N/A       | OML Module                                                                                                                                                                                              |
| 2     | 3-75685-2 | <b>Ref IF – SMA Connector</b> <ul style="list-style-type: none"><li>• Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).</li><li>• Recommended is Anritsu 01-201.</li></ul>   |
| 3     |           | <b>RF Input – SMA Connector</b> <ul style="list-style-type: none"><li>• Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).</li><li>• Recommended is Anritsu 01-201.</li></ul> |
| 4     |           | <b>LO Input – SMA Connector</b> <ul style="list-style-type: none"><li>• Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).</li><li>• Recommended is Anritsu 01-201.</li></ul> |
| 5     |           | <b>Test IF – SMA Connector</b> <ul style="list-style-type: none"><li>• Tighten using an 8 mm (5/16 in) torque end wrench set to 0.9 N·m (8 lbf·in).</li><li>• Recommended is Anritsu 01-201.</li></ul>  |
| 6     | N/A       | OML Module Power Supply Connector                                                                                                                                                                       |



7. Front Panel to OML/VDI Module Connections

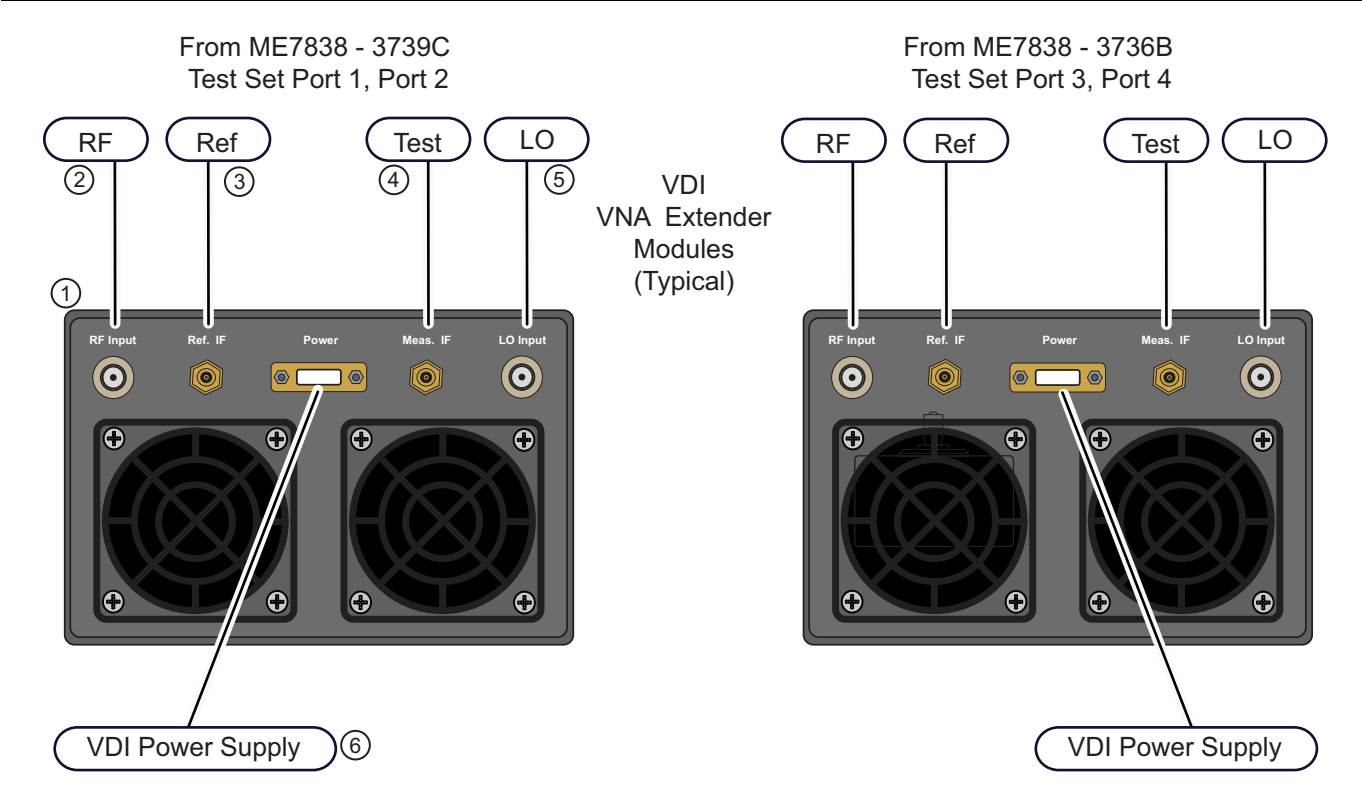


Figure 10 VNA/ Test Set Cable Connections to VDI Modules

Table 8. VDI Module Connections

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

a.The VDI module connectors may differ slightly from 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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