

VectorStar™ Broadband/Banded Millimeter-Wave Modules

MA25300A Broadband Millimeter-Wave Module

3743A Broadband Millimeter-Wave Module

3743E Broadband Millimeter-Wave Module

3744A-EE Banded Millimeter-Wave Module

3744E-EE Banded Millimeter-Wave Module

3744A-EW Banded Millimeter-Wave Module

3744E-EW Banded Millimeter-Wave Module

3744A-Rx Receiver Millimeter-Wave Module

3744E-Rx Receiver Millimeter-Wave Module

EE and EW Waveguide Adapter Kits

MA25300A



3743A
3743E

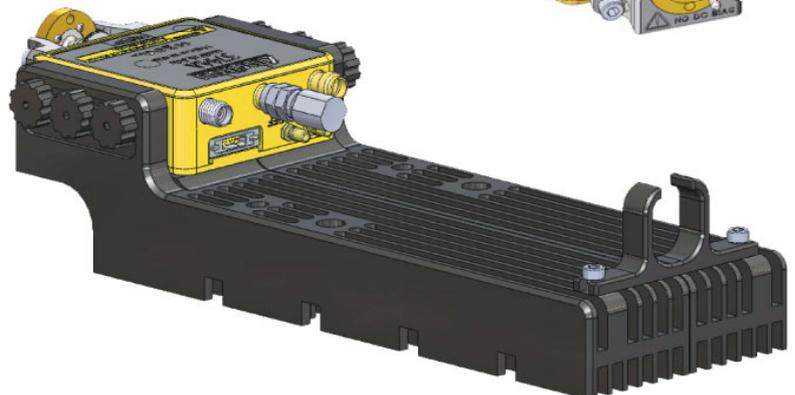


3744A-EE
3744A-EW

3744E-EE
3744E-EW



3744A-Rx
3744E-Rx



Anritsu

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印刷线路板 (PCA)	×	○	×	×	○	○
机壳、支架 (Chassis)	×	○	×	×	○	○
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Chapter 1 — General Information

1-1 Introduction

This chapter provides information about the VectorStar[®] Broadband/Banded Millimeter-Wave Modules. These modules are used with the ME7838 Series VectorStar[®] Broadband/Banded Millimeter-Wave VNA Systems.

1-2 Broadband/Banded Millimeter-Wave Modules

Table 1-1. Millimeter-Wave Module Models

Model	Description	Frequency Band
MA25300A	Broadband Millimeter-Wave Module	70 kHz to 145 GHz
3743A	Broadband Millimeter-Wave Module	70 kHz to 125 GHz
3743E	Broadband Millimeter-Wave Module	70 kHz to 110 GHz
3744A-EE	Banded Millimeter-Wave Module	56 GHz to 95 GHz
3744A-EW	Banded Millimeter-Wave Module	65 GHz to 110 GHz
3744E-EE	Banded Millimeter-Wave Module	56 GHz to 95 GHz
3744E-EW	Banded Millimeter-Wave Module	65 GHz to 110 GHz
3744A-Rx	Receiver Module	30 GHz to 125 GHz
3744E-Rx	Receiver Module	30 GHz to 110 GHz
–	Waveguide Accessory Kit ^a , 3744A-EE and 3744A-EW	–
SM6540	WG Adapter Kit, V Band	WR-15
35WR12WF-EE	WG Adapter Kit, E Band	WR-12
35WR10WF-EW	WG Adapter Kit, W Band	WR-10

a. The Waveguide Accessory Kit comes without the adapter bracket, waveguide to coax adapter, and V210 termination. These items come already attached to the 3744A-EE, 3744A-EW, 3744E-EE, and 3744E-EW mmW modules.

1-3 Related Documentation

The following document lists are applicable to the modules covered in this reference manual.

ME7838A Documents

- The following documentation is available for the VectorStar ME7838A Broadband/Millimeter-Wave VNA System:
- ME7838A Modular Broadband/Millimeter-Wave Technical Data Sheet – 11410-00593
- ME7838A Modular Broadband/Millimeter-Wave Quick Start Guide – 10410-00292
- ME7838 Series Modular Broadband/Millimeter-Wave Installation Guide – 10410-00293
- ME7838 Series Modular Broadband/Millimeter-Wave Maintenance Manual – 10410-00306

ME7838D Documents

The following documentation is available for the VectorStar ME7838x Broadband/Millimeter-Wave VNA System:

- ME7838D Modular Broadband/Millimeter-Wave Technical Data Sheet – 11410-00778
- ME7838D Modular Broadband/Millimeter-Wave Quick Start Guide – 10410-00732
- ME7838 Series Modular Broadband/Millimeter-Wave Installation Guide – 10410-00293
- ME7838 Series Modular Broadband/Millimeter-Wave Maintenance Manual – 10410-00306

ME7838E Documents

The following documentation is available for the VectorStar ME7838E Broadband/Millimeter-Wave VNA System:

- ME7838E Modular Broadband/Millimeter-Wave Technical Data Sheet – 11410-00767
- ME7838E Modular Broadband/Millimeter-Wave Quick Start Guide – 10410-00729
- ME7838 Series Modular Broadband/Millimeter-Wave Installation Guide – 10410-00293
- ME7838 Series Modular Broadband/Millimeter-Wave Maintenance Manual – 10410-00306

Other Documentation

Most VectorStar VNA manuals are available for download as a PDF file.

The Acrobat Reader program is required to view the manual, and is available free from Adobe at:

<http://www.adobe.com>.

Except for the maintenance manual, all documents are available for free on the Anritsu Internet site.

Printed copies of manuals and the maintenance guide are available for sale at nominal prices. Updates to this manual, if any, may also be downloaded from the Anritsu Internet site at:

<http://www.anritsu.com>

Chapter 2 — MA25300A mm-Wave Module

2-1 Introduction

This chapter provides a description of the MA25300A Millimeter-Wave (mm-Wave or as labeled, mmW) Module. The MA25300A Module is used with the VectorStar ME7838 Series Broadband/Millimeter-Wave (BB/mm-Wave) VNA System.

When the ME7838 system is ordered, the typical configuration provides a 3739C Broadband Test Set and two mm-Wave modules to be used with the VNA. Each module is characterized for a specific VNA Serial Number and a specific VNA Test Port. Additional information for heat sinking and user-defined mounting is given in [Chapter 7](#). Complete installation documentation is in the applicable VectorStar ME7838 Series System Installation Guide. Refer to [Section 1-3 “Related Documentation” on page 1-2](#) for the document part number.

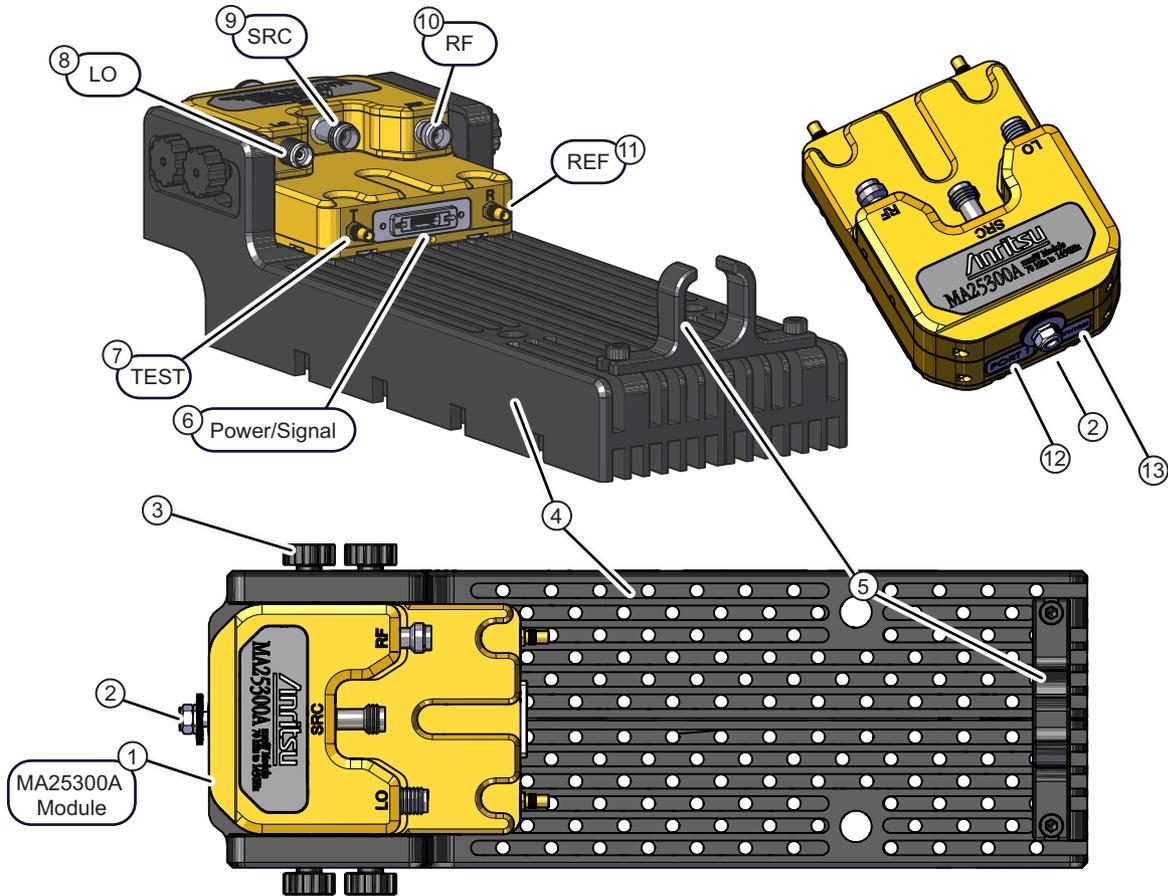
2-2 MA25300A mm-Wave Module and Bracket

As-Shipped Configuration

[Figure 2-1 on page 2-2](#) shows the MA25300A module-to-bracket orientation, connection assignments, and torque values in the as-shipped configuration. It is easier to make the cable connections before mounting the module to the bracket. The shipping container provides the following components for one module:

- MA25300A Module, mounted in bracket assembly
- Bracket Assembly and Knurled Thumbscrews, M3 x 8 mm, four each, holding the module into the bracket

Caution	To avoid connector damage or inaccurate measurements, before making any connections, ensure the connectors are clean, undamaged, and meet pin depth specification. Observe connector torque requirements where indicated in this guide.
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Index	Description
1	MA25300A Millimeter-Wave Module in Bracket as-shipped.
2	0.8 mm Connector <ul style="list-style-type: none"> To tighten, use a torque end wrench and a plain end wrench. 0.8 - 6 mm Torque End Wrench set to 0.45 N·m (4 lbf·in). Recommended is Anritsu 01-524. 0.8 - 6 mm / 7 mm Open End Wrench. Recommended is Anritsu 01-525.
3	Knurled Head Thumbscrews (4 total) M3 × 8 mm. <ul style="list-style-type: none"> Threaded hole in module is 8.6 mm deep. Tighten finger tight. Do not over torque. Do not bottom out screws. If the module is installed in a user-provided bracket, use hand tightening, making sure that between 5 mm and 6 mm of screw threads are engaged in the module body.
4	Module Mounting Bracket
5	Module Power/Signal Cable Restraint
6	Power/Signal Latching Bi-Lobe™ Connector
7	TEST SSMC Connector <ul style="list-style-type: none"> To tighten, use a 4 mm (5/32 in) torque end wrench set to less than 0.23 N·m (2 lbf·in). Recommended is Anritsu 01-511 torque wrench.
8	LO K Connector <ul style="list-style-type: none"> To tighten, use an 8 mm (5/16") torque end wrench set to 0.9 N·m (8 lbf·in). Recommended is Anritsu 01-201.

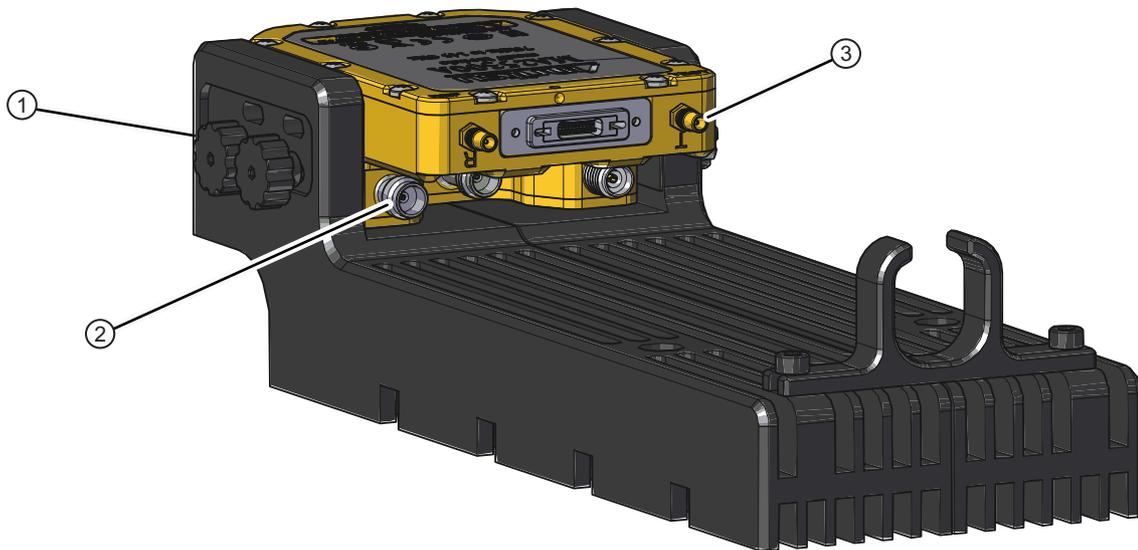
Figure 2-1. MA25300A Millimeter-Wave Module Description (1 of 2)

9	<p>SRC Connector</p> <p>To tighten, use an 8 mm (5/16”) torque end wrench set to 0.9 N·m (8 lbf·in). Recommended is Anritsu 01-201.</p>
10	<p>RF V Connector</p> <ul style="list-style-type: none"> To tighten, use an 8 mm (5/16”) torque end wrench set to 0.9 N·m (8 lbf·in). Recommended is Anritsu 01-201.
11	<p>REF SSMC Connector</p> <ul style="list-style-type: none"> To tighten, use a 4 mm (5/32 in) torque end wrench set to less than 0.23 N·m (2 lbf·in). Recommended is Anritsu 01-511 torque wrench.
12	Factory Calibrated Port Assignment Label
13	Module Serial Number Label

Figure 2-1. MA25300A Millimeter-Wave Module Description (2 of 2)

Alternate Configuration

If required, the module can be turned over for different 0.8 mm connector access as shown in [Figure 2-2](#).



Index	Description
1	<p>The module can be mounted in an alternate position by removing the knurled thumbscrews and turning the module upside down.</p> <ul style="list-style-type: none"> In this orientation, the 0.8 mm connector is farthest from the top of the bracket. For ease of connection, attach the cables before mounting the module in the bracket.
2	<p>Before attaching the module to the bracket, connect to the bottom row of connectors first, starting with the middle and using torque factors described above:</p> <ul style="list-style-type: none"> RF SRC LO
3	<p>Connect the top row of connectors left and right side, the middle. Use the torque factors described above:</p> <ul style="list-style-type: none"> REF Power/Signal TEST

Figure 2-2. MA25300A Millimeter-Wave Module – In Bracket – Alternate Module Orientation

Chapter 3 — 3743A/3743E mm-Wave Module

3-1 Introduction

This chapter provides a description of the 3743A and 3743E Millimeter-Wave (mm-Wave or as labeled, mmW) Modules. The modules are used with the VectorStar ME7838 Series Broadband/Millimeter-Wave (BB/mm-Wave) VNA System.

When the ME7838 system is ordered, the typical configuration provides a 3739C Broadband Test Set and two mm-Wave Modules to be used with the VNA. Each module is characterized for a specific VNA Serial Number and a specific VNA Test Port. Additional information for heat sinking and user-defined mounting is given in [Chapter 7](#). Complete installation documentation is in the applicable VectorStar ME7838 Series System Installation Guide. Refer to [Section 1-3 “Related Documentation” on page 1-2](#) for the document part number.

3-2 3743A/3743E mm-Wave Module and Bracket

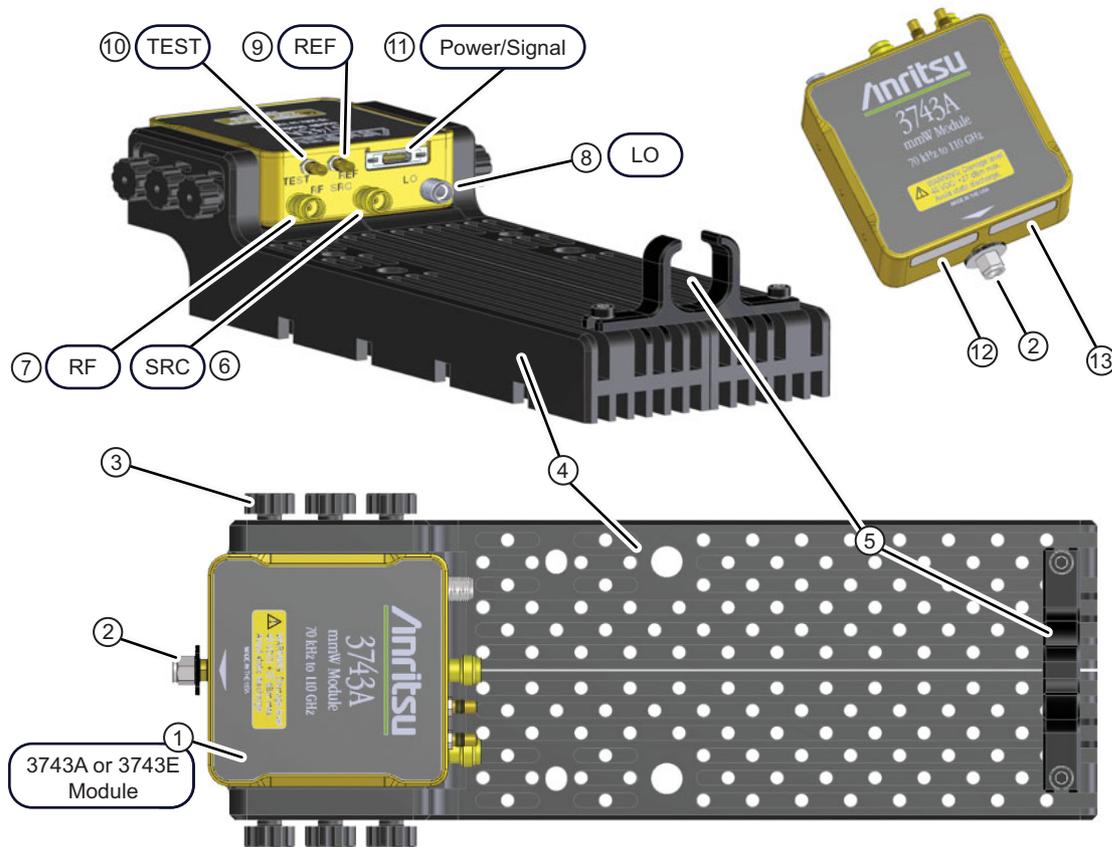
As-shipped Configuration

[Figure 3-1 on page 3-2](#) shows the module-to-bracket orientation, connection assignments, and torque values of a 3743A in the as-shipped configuration. The 3743E has the same mechanical profile. It is easier to make the cable connections before mounting the module to the bracket. The following components are provided:

- 3743A or 3743E Module
- Bracket Assembly and Knurled Thumbscrews, M2 x 8 mm, six each, holding the module into the bracket

Caution

To avoid connector damage or inaccurate measurements, before making any connections, ensure the connectors are clean, undamaged, and meet pin depth specification. Observe connector torque requirements where indicated in this guide.



Index	Description
1	3743A or 3743E Millimeter-Wave Module in Bracket as-shipped.
2	W Connector <ul style="list-style-type: none"> To tighten, use 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	Knurled Head Thumbscrews (6 total) M2 × 8 mm. <ul style="list-style-type: none"> Threaded hole in module is 8.6 mm deep. Tighten finger tight. Do not over torque. Do not bottom out screws. If the module is installed in a user-provided bracket, use hand tightening, making sure that between 5 mm and 6 mm of screw threads are engaged in the module body.
4	Module Mounting Bracket
5	Module Power/Signal Cable Restraint
6	SRC V Connector <ul style="list-style-type: none"> To tighten, use an 8 mm (5/16") torque end wrench set to 0.9 N·m (8 lbf·in). Recommended is Anritsu 01-201.
7	RF V Connector <ul style="list-style-type: none"> To tighten, use an 8 mm (5/16") torque end wrench set to 0.9 N·m (8 lbf·in). Recommended is Anritsu 01-201.
8	LO K Connector <ul style="list-style-type: none"> To tighten, use an 8 mm (5/16") torque end wrench set to 0.9 N·m (8 lbf·in). Recommended is Anritsu 01-201.

Figure 3-1. 3743A/E Millimeter-Wave Module Description (1 of 2)

9	REF SSMC Connector <ul style="list-style-type: none"> To tighten, use a 4 mm (5/32 in) torque end wrench set to less than 0.23 N·m (2 lbf·in). Recommended is Anritsu 01-511 torque wrench.
10	TEST SSMC Connector <ul style="list-style-type: none"> To tighten, use a 4 mm (5/32 in) torque end wrench set to less than 0.23 N·m (2 lbf·in). Recommended is Anritsu 01-511 torque wrench.
11	Power/Signal Latching Bi-Lobe™ Connector
12	Factory Calibrated Port Assignment Label
13	Module Serial Number Label

Figure 3-1. 3743A/E Millimeter-Wave Module Description (2 of 2)

Alternate Configuration

If required, the module can be turned over for different **W** connector elevation as shown below in [Figure 3-2](#).



Index	Description
1	The module can be placed in an alternate position by removing the Knurled Thumbscrews and turning the module upside down. <ul style="list-style-type: none"> In this orientation, the W connector is farthest from the bottom of the bracket. The W connector is on the same plane as the SRC connector.
2	Connect the bottom row of connectors first, from middle to right side, and then left side, using torque factors described above: <ul style="list-style-type: none"> REF TEST Power/Signal
3	Connect the top row of connectors last, from middle to right side, then left side, using torque factors described above: <ul style="list-style-type: none"> SRC RF LO

Figure 3-2. 3743A/E Millimeter-Wave Module – In Bracket – Alternate Module Orientation

Chapter 4 — 3744x-EE/EW mm-Wave Module

4-1 Introduction

This chapter provides description for the 3744A-EE, 3744A-EW, 3744E-EE, and 3744E-EW Millimeter-Wave (mm-Wave or as labeled, mmW) Modules. The modules are used with the VectorStar ME7838 Series Broadband/Millimeter-Wave (BB/mm-Wave) VNA.

When the ME7838 system is ordered, the typical configuration provides a 3739C Broadband Test Set and two mm-Wave modules to be used with the VNA. Each module is characterized for a specific VNA Serial Number and a specific VNA Test Port. Additional information for heat sinking and user-defined mounting is given in [Chapter 7](#). Complete installation documentation is in the applicable VectorStar ME7838 Series System Installation Guide. Refer to [Section 1-3 “Related Documentation” on page 1-2](#) for the document part number.

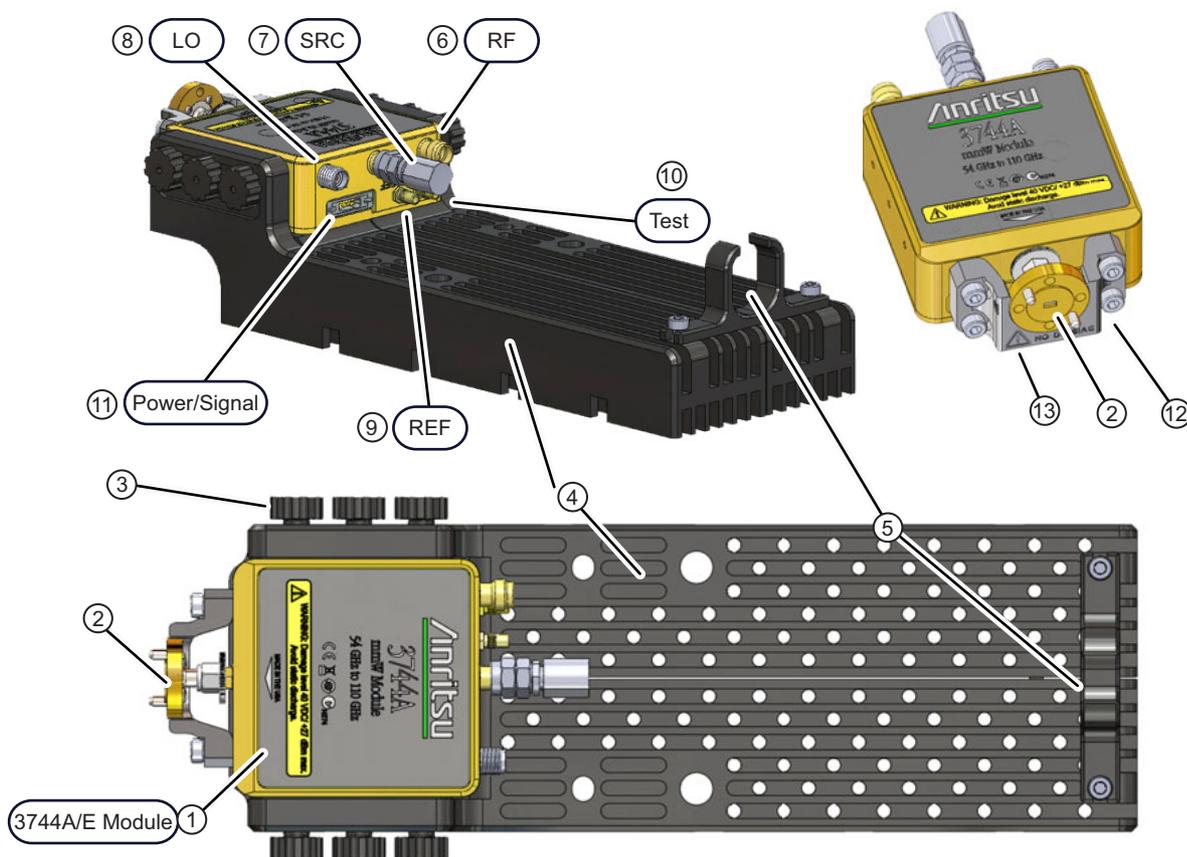
4-2 3744x-EE/EW mm-Wave Module and Bracket

As-shipped Configuration

[Figure 4-1 on page 4-2](#) shows the module-to-bracket orientation, connection assignments, and torque values of a 3744A-EE/EW in the as-shipped configuration. The 3743E-EE/EW has the same mechanical profile. It is easier to make the cable connections before mounting the module to the bracket. The shipping container provides the following components for one module:

- 3744A-EE/EW or 3744E-EE/EW Module, mounted in bracket assembly
- Bracket Assembly and Knurled Thumbscrews, M2 x 8 mm, six each, holding the module into the bracket.

Caution	To avoid connector damage or inaccurate measurements, before making any connections, ensure the connectors are clean, undamaged, and meet pin depth specification. Observe connector torque requirements where indicated in this guide.
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Index	Description
1	3744x-EE/EW Millimeter-Wave Module in bracket
2	WR-10 or WR-12 Waveguide Adapter 1mm Connector <ul style="list-style-type: none"> • 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	Knurled Head Thumbscrews (6 total) M2 × 8 mm. <ul style="list-style-type: none"> • Threaded hole in module is 8.6 mm deep • Tighten finger tight. Do not over torque. Do not bottom out screws • If the module is installed in a user-provided bracket, use hand tightening, making sure that between 5 mm and 6 mm of screw threads are engaged in the module body.
4	Module Mounting Bracket
5	Module Power/I/O Cable Restraint
6	RF V Connector <ul style="list-style-type: none"> • To tighten, use an 8 mm (5/16") torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.
7	SRC V Connector (Terminated) <ul style="list-style-type: none"> • To tighten, use an 8 mm (5/16") torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.
8	LO K Connector <ul style="list-style-type: none"> • To tighten, use an 8 mm (5/16") torque end wrench set to 0.9 N·m (8 lbf·in). • Recommended is Anritsu 01-201.

Figure 4-1. Millimeter-Wave 3744A/E-xx Module Description (1 of 2)

9	REF SSMC Connector <ul style="list-style-type: none"> To tighten, use a 4 mm (5/32") torque end wrench set to less than 0.22 N·m (2 lbf·in). Recommended is Anritsu 01-511 torque wrench.
10	TEST SSMC Connector <ul style="list-style-type: none"> To tighten, use a 4 mm (5/32") torque end wrench set to less than 0.22 N·m (2 lbf·in). Recommended is Anritsu 01-511 torque wrench.
11	Power/Signal Latching Bi-Lobe™ Connector
12	Factory Calibrated Port Assignment Label
13	Module Serial Number Label

Figure 4-1. Millimeter-Wave 3744A/E-xx Module Description (2 of 2)

Alternate Mounting Configuration

If required, the module can be turned over for different connector elevation as shown below in [Figure 4-2](#).



Index	Description
1	The module can be placed in an alternate position by removing the Knurled Thumbscrews and turning the module upside down. <ul style="list-style-type: none"> In this orientation, the W connector is farthest from the bottom of the bracket. The W connector is on the same plane as the SRC connector.
2	Connect the bottom row of connectors first, from middle to right side, and then left side, using torque factors described above: <ul style="list-style-type: none"> REF TEST Power/Signal
3	Connect the top row of connectors last, from middle to right side, then left side, using torque factors described above: <ul style="list-style-type: none"> SRC RF LO

Figure 4-2. 3744A/E-xx Millimeter-Wave Module – In Bracket – Alternate Module Orientation

Chapter 5 — 3744x-Rx Receiver Module

5-1 Introduction

This chapter provides a description of the 3744A-Rx and 3744E-Rx Receiver Modules. The modules are used with the VectorStar ME7838 Series Broadband/Millimeter-Wave (BB/mm-Wave) VNA System.

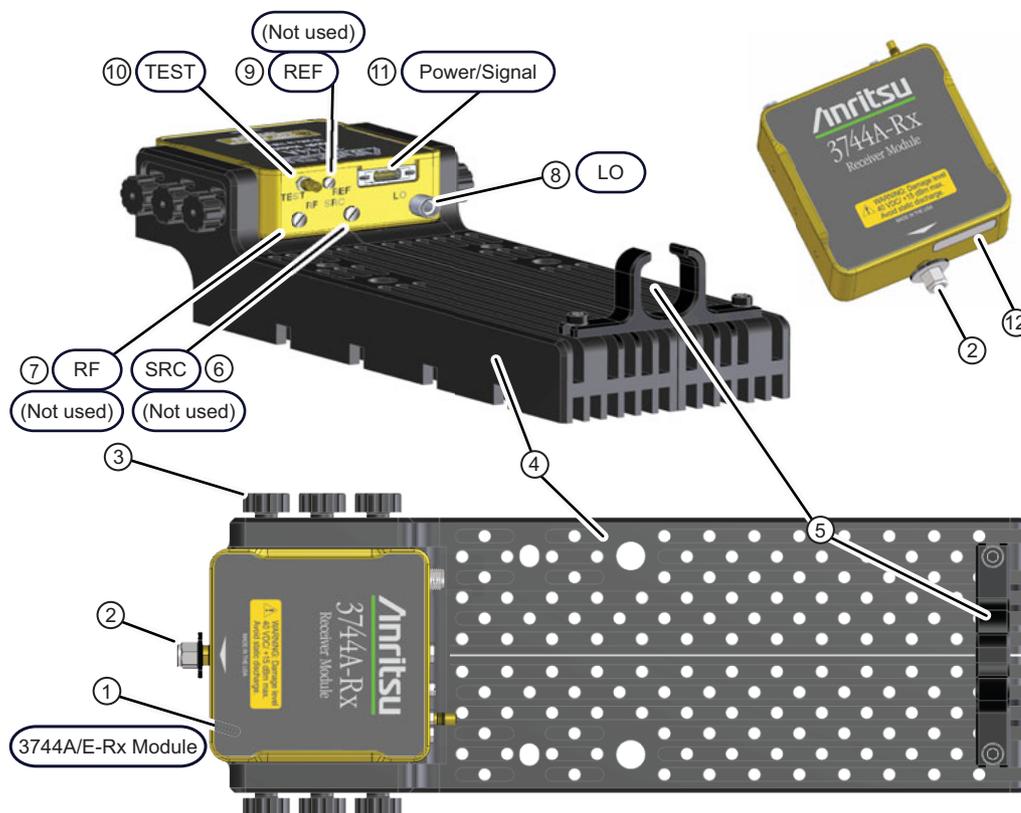
The module is typically ordered as an accessory to the ME7838 system. When ordering this module, the base VectorStar VNA must have Noise Figure Option 041. Additional information for heat sinking and user-defined mounting is given in [Chapter 7](#). Complete installation documentation is in the applicable VectorStar ME7838 Series System Installation Guide. Refer to [Section 1-3 “Related Documentation” on page 1-2](#) for the document part number. *Note:* To avoid connector damage or inaccurate measurements, before making any connections, ensure the connectors are clean, undamaged, and meet pin depth specification. Observe connector torque requirements where indicated in this guide.

5-2 3744x-Rx Millimeter-Wave Module and Bracket

As-shipped Configuration

[Figure 5-1](#) shows the module-to-bracket orientation, connection assignments, and torque values of a 3744A-Rx in the as-shipped configuration. The 3744E-Rx has the same mechanical profile. It is easier to make the cable connections before mounting the module to the bracket. The shipping container provides the following components for one module:

- 3744A-Rx or 3744E-Rx Module, mounted in the bracket assembly
- Bracket Assembly and Knurled Thumbscrews, M2 x 8 mm, six each, holding the module into the bracket



Index	Description
1	3744A/E-Rx Millimeter-Wave Module in bracket
2	W Connector <ul style="list-style-type: none"> To tighten, use 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	Knurled Head Thumbscrews (6 total) M2 × 8 mm. <ul style="list-style-type: none"> Threaded hole in module is 8.6 mm deep Tighten finger tight. Do not over torque. Do not bottom out screws If the module is installed in a user-provided bracket, use hand tightening, making sure that between 5 mm and 6 mm of screw threads are engaged in the module body.
4	Module Mounting Bracket
5	Module Power/I/O Cable Restraint
6	SRC V Connector - Not used
7	RF V Connector - Not used
8	LO - K Connector <ul style="list-style-type: none"> To tighten, use an 8 mm (5/16") torque end wrench set to 0.9 N·m (8 lbf·in). Recommended is Anritsu 01-201.
9	REF SSMC - Not used
10	TEST SSMC Connector <ul style="list-style-type: none"> To tighten, use a 4 mm (5/32") torque end wrench set to less than 0.22 N·m (2 lbf·in). Recommended is Anritsu 01-511 torque wrench.
11	Power/Signal Latching Bi-Lobe™ Connector
12	Module Serial Number Label

Figure 5-1. Millimeter-Wave 3744A/E-Rx Module Description

Alternate Mounting Configuration

If required, the module can be turned over for different W connector elevation as shown below in [Figure 5-2](#).



1	1 – The module can be placed in an alternate position by removing the Knurled Thumbscrews and turning the module upside down. <ul style="list-style-type: none"> • In this orientation, the WR connector is farthest from the bottom of the bracket. • The WR connector is opposite the SRC connector.
2	2 – Connect the bottom row of connectors first, using torque factors described above: <ul style="list-style-type: none"> • TEST; REF (No Connection); Power/Signal
3	3 – Connect the top row of connectors last, using torque factors described above: <ul style="list-style-type: none"> • LO; SRC (No Connection); RF (No Connection)

Figure 5-2. 3744A/E-Rx Millimeter-Wave Module – In Bracket – Alternate Module Orientation

Chapter 6 — Waveguide Adapter Kit Instructions

6-1 Introduction

This chapter provides instructions for mounting waveguide to coaxial adapters applicable to 3744A-EE, 3744E-EE, 3744A-EW, and 3744E-EW modules. Kit contents are described in [Figure 6-2 on page 6-2](#). Below is a listing of the kits applicable to this document.

Table 6-1. Waveguide Adapter Kits

Model	Description	Frequency Band
–	Waveguide Accessory Kit ^a , 3744x-EE and 3744x-EW	–
SM6540	WG Adapter Kit, V Band	WR-15
35WR12WF-EE	WG Adapter Kit, E Band	WR-12
35WR10WF-EW	WG Adapter Kit, W Band	WR-10

a. The Waveguide Accessory Kit comes without the adapter bracket, the waveguide to coax adapter, and the V210 termination. These items ship already attached to the 3744A-EE, 3744A-EW 3744E-EE, and 3744E-EW mmW modules.

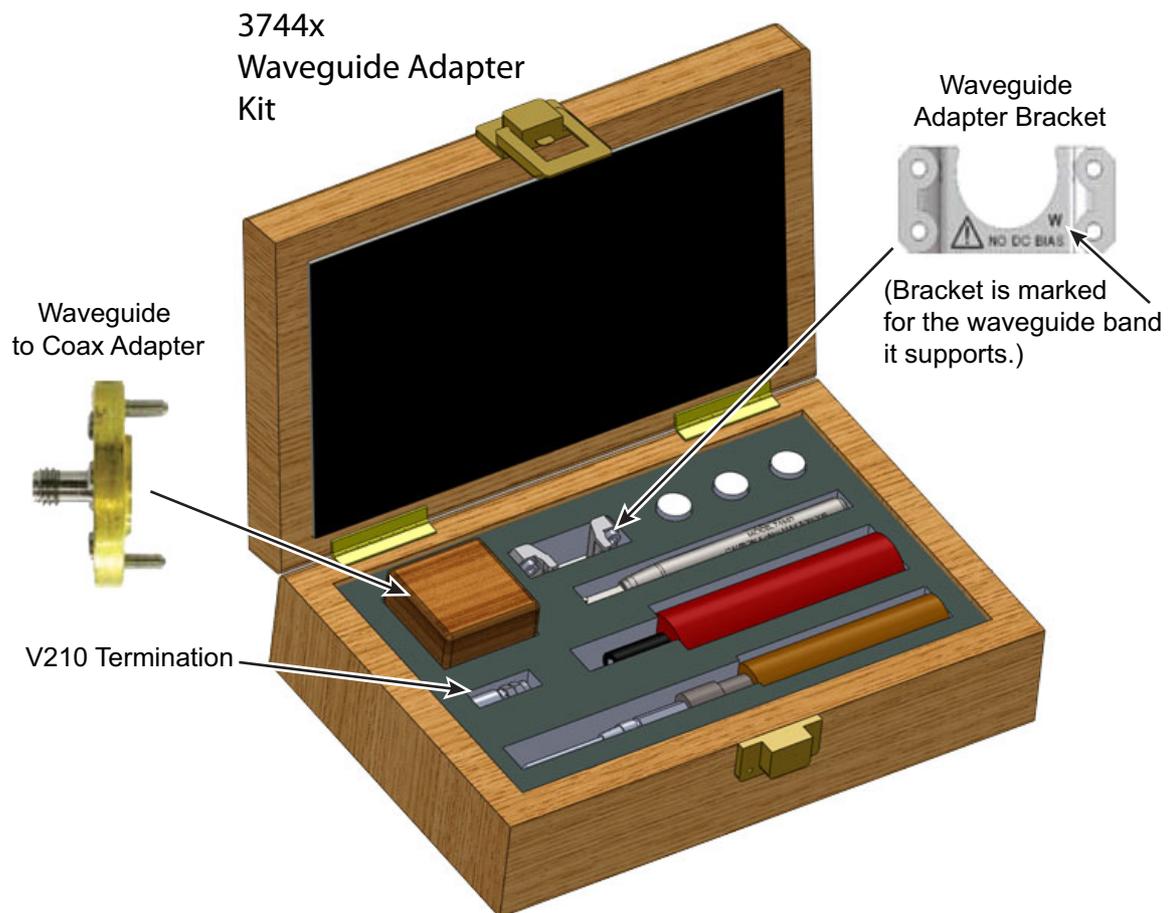
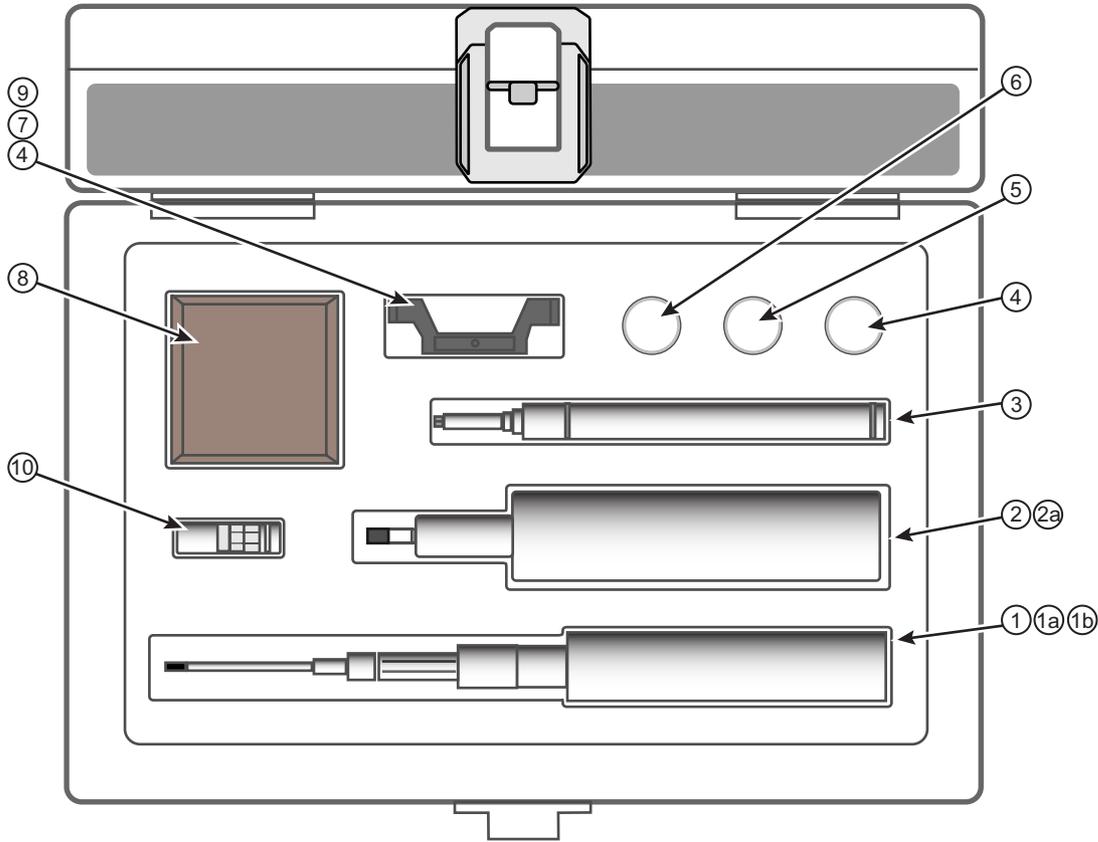


Figure 6-1. Waveguide Accessory Kit



Index	Description	Part Number	Index	Description	Part Number
1	Hex Torque Driver 0.042 N·m (6 ozf·in)	01-520	5	Waveguide flange socket head screws (small metric head), 4-40 x 7 mm long	3-900-945
1a	Hex Insert Pin Chuck	01-521	6	Waveguide flange socket head screws, 4-40 x 5/16 in long	900-562
1b	Hex Bit (0.035 in)	01-522	7	Socket Head Screw (installed on bracket (item 9)), M3 x 9 mm long	3-74212
2	Hex Torque Driver 0.564 N·m (5 lbf·in)	01-519	8 ^a	Waveguide to coax adapter - WR-10 (W band system only)	3-1091-400
				Waveguide to coax adapter - WR-12 (E band system only)	3-1091-401
				Waveguide to coax adapter - WR-15 (V band system only)	3-1091-402
2a	01-523 Hex Bit (2.5 mm)	01-523	9 ^a	Adapter Bracket (W band)	3-74057-1
				Adapter Bracket (E band)	3-74057-2
				Adapter Bracket (V band)	3-74057-3
3	Hex wrench, metric, 2 mm	74640	10 ^a	V Termination	V210
4	Set Screws M2 x 3 mm long (quantity 3 installed on bracket (9) + quantity 3 spares in vial)	3-905-2779			

Figure 6-2. Waveguide Accessory Kit Contents

a. Items 8, 9, and 10 ship already attached to the mmW module, so are not included in the Waveguide Accessory Kit.

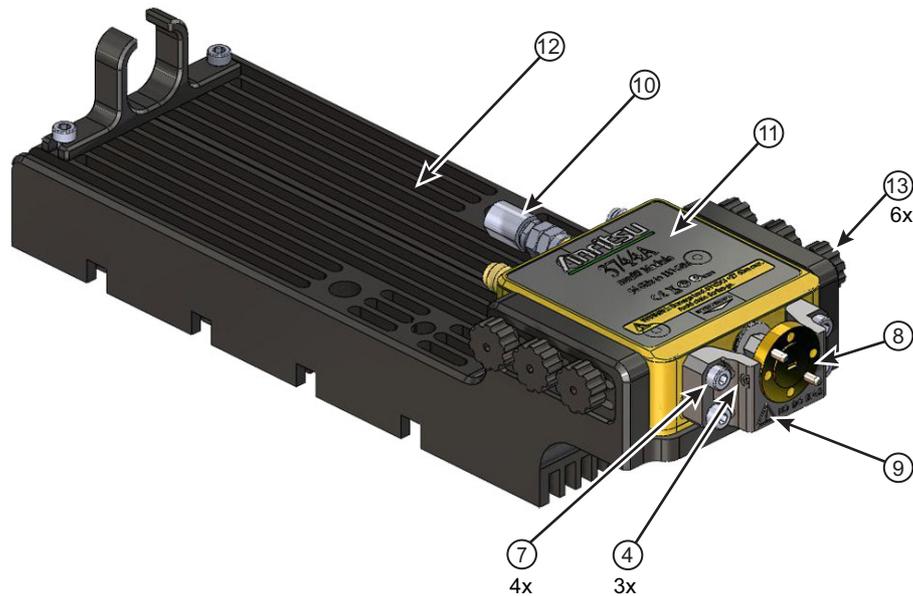
6-2 Adapter Installation

Caution To avoid connector damage or inaccurate measurements, before making any connections, ensure the connectors are clean, undamaged, and meet pin depth specification. Observe connector torque requirements where indicated in this guide.

During installation, refer to [Figure 6-3](#) for item number reference.

Note The following required items are not included in the Waveguide Adapter Kit.

- 01-201 Torque Wrench 0.90 N·m (8 lbf·in) for V and K connector)
- 01-504 Torque Wrench 0.45 N·m (4 lbf·in) for 1 mm connector)



Index	Description	Part Number	Index	Description	Part Number
4	Set Screws M2 x 3 mm long (quantity 3 installed on bracket (9) + quantity 3 spares in vial)	3-905-2779	11	mmW Module	3744x-EE 3744x-EW
7	Socket Head Screw (installed on bracket (item 9)), M3 x 9 mm long	3-74212	12	Heat Sink Assembly	3-73611 3-73612
8	Waveguide Adapter - WR-10 Waveguide Adapter - WR-12 Waveguide Adapter - WR-15	3-1091-400 3-1091-401 3-1091-402	13	Thumb Screws (Part of Heat Sink Assembly, Qty - 6)	3-73615
9	Adapter Bracket (W band) Adapter Bracket (E band) Adapter Bracket (V band)	3-74057-1 3-74057-2 3-74057-3	14	01-201 Torque Wrench 0.90 N·m (8 lbf·in) for V and K connector <i>Not included in WG Adapter Kit</i>	
10	V Termination	V210	15	01-504 Torque Wrench 0.45 N·m (4 lbf·in) for 1 mm connector <i>Not included in WG Adapter Kit</i>	

Figure 6-3. Waveguide Installation Reference

1. Remove Waveguide to W Coax Adapter (Item 8) from the kit.

Note

If there isn't access for waveguide flange mounting screws on the DUT, the Waveguide flange socket head screws (Item 5) must be installed from the back side of the Waveguide to Coax Adapter (Item 8) before proceeding to install the adapter to the 3744x mm Module (Item 11) (see [Figure 6-4](#)). Only the flange mounting screws (Item 5) with the small metric head will work. Special Metric Hex Wrench (Item 3) is used to tighten the flange screws in the limited space.

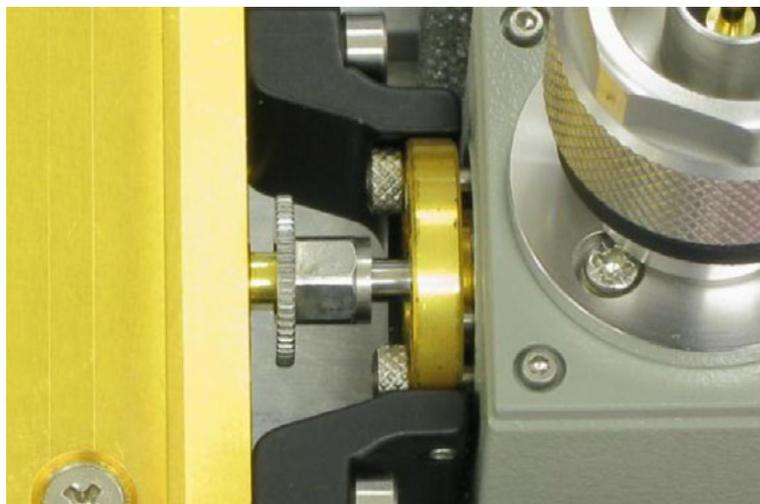


Figure 6-4. Installing WG Flange with Limited DUT Space

2. Carefully connect the coax end of the Waveguide to Coax Adapter (Item 8) into the W connector of the 3744x mmW Module (Item 11).
3. Use Torque Wrench, (Item 15) - 0.45 N·m (4 lbf·in) to tighten the W connection between the 3744x mmW Module and Waveguide to Coax Adapter.
4. Inspect the Adapter Mounting Bracket (Item 9).
Ensure the three set screws (Item 4) do not protrude out into the semicircular area.

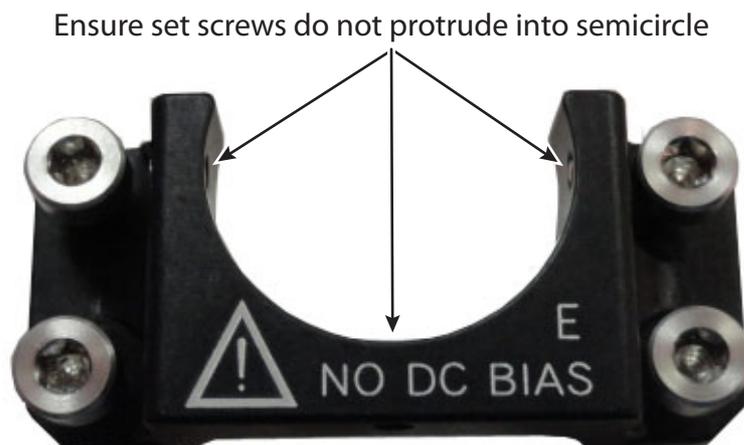


Figure 6-5. Adapter Mounting Bracket Set Screws

5. Slide the Adapter Mounting Bracket semi-circular opening over the Waveguide to Coax Adapter (Item 8) and align four captivated Socket Head Screws (Item 7) to the four holes of the 3744x mmW module (Item 11).
6. Carefully tighten the four Socket Head Screws to the 3744x Module using the Hex Torque Driver, (Item 2) - 0.56 N·m (5 lbf·in). **Do not over tighten.**
7. If the waveguide aperture is not in the desired orientation, loosen the W connection and rotate the waveguide adapter.
Re-tighten the W connector using the Torque Wrench while holding the flange in position.
8. Secure the waveguide adapter in place by tightening the three set screws (Item 4) in the Adapter Mounting Bracket shown in [Figure 6-6](#). This requires the following sequence for both tightening and loosening using the Hex Torque Driver, (Item 1) - 0.042 N·m (6 ozf·in).
 - a. The left and right side set screws shown with arrows in the figure should be tightened first.
Alternating between the left and right screws, tighten both set screws evenly until the flat point of each set screw is just touching the Waveguide Adapter flange.
 - b. Proceed left then right with short even turns on both set screws until the Hex Torque driver reaches its 6 ozf·in torque limit.
 - c. After the left and right set screws are torqued, adjust the bottom set screw (shown with a vertical arrow in [Figure 6-6](#)) until it just touches the Waveguide to Coax Adapter (Item 8) flange.
Do not torque the bottom set screw. Leave it just touching the waveguide adapter flange.

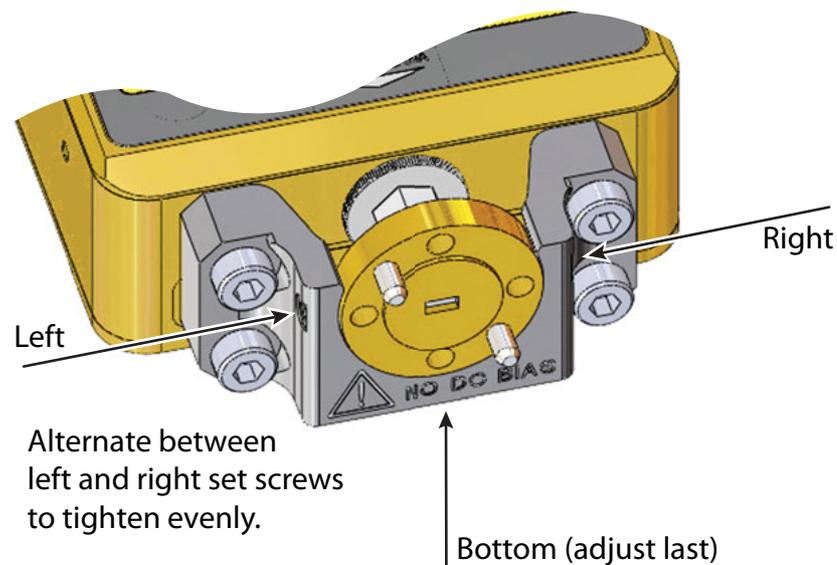


Figure 6-6. Set Screw Tightening

9. Connect the V Termination (Item 10) to the “SRC” connector of the 3744x mmW Module. Tighten the termination using the Torque Wrench, (Item 14) - 0.90 N·m (8 lbf·in).
10. Installation is complete. For a 2 port system repeat Steps 1 through 9 for the second module, then proceed to [Section 6-3](#) for two-port alignment instructions.

6-3 Two-Port Alignment

1. Prepare Port 1 for alignment by loosening the six Thumb Screws (Item 13) a small amount.
See [Figure 6-7](#).
2. Prepare Port 2 for alignment by loosening the W Nut, the three Set Screws (Item 4), and the six Thumb Screws (Item 13) a small amount.

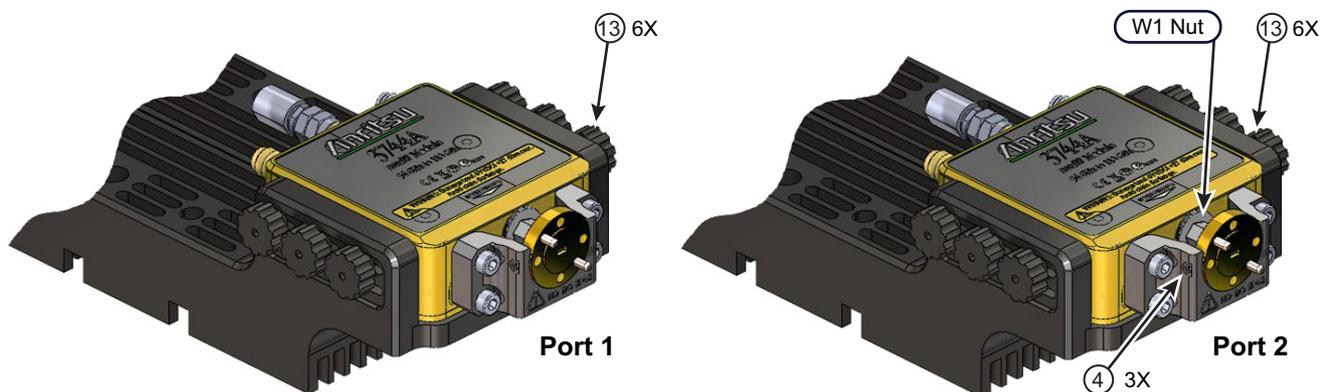


Figure 6-7. Port 1 and Port 2 Alignment

3. Place the 2 units with the heat sinks resting on a flat surface and the waveguide test ports facing each other. Carefully align the waveguide ports and slide the units together so that ports 1 and 2 are connected. A DUT can be inserted if desired as shown in [Figure 6-8](#).



Figure 6-8. Two Port Alignment with DUT

4. Tighten the Port 2 W Nut with the 0.45 N·m (4 lbf·in) Torque Wrench while holding the waveguide flange to prevent it from rotating. Check that the two waveguide test ports can be disconnected and reconnected without binding.
If the waveguide alignment pins do not insert smoothly into the alignment holes, loosen the W Nut and repeat steps 3 and 4.
5. With the waveguide ports connected, evenly tighten the two set screws (Item 4) of Port 2 with the Hex Torque Driver (Item 1) (6 ozf.in).
Check that the waveguide test ports can still be disconnected and reconnected without binding.

6. Adjust the third set screw (Item 4) so it just touches the Waveguide Adapter (Item 8) flange. See step 8 of [Section 6-2](#) for reference.
Do not torque the bottom set screw. Leave it just touching the waveguide adapter flange.
7. With the waveguide ports connected, evenly tighten all six thumb screws on each module.
Check again that the waveguide test ports can be connected and disconnected without binding.
8. Verify that the V Termination (Item 10) is installed on the “SRC” connector of each 3744x mmW Module.

6-4 Waveguide Adapter and Bracket Removal and Installation

This procedure describes how to remove and install the Waveguide to Coax Adapter and the Adapter Mounting Bracket as a single unit.

(See [Figure 6-3](#) for item number reference)

Removal

1. Completely loosen the four captivated Socket Head Screws (Item 7) from the 3744x mmW Module with the Hex Torque Driver (Item 2).
2. Disconnect the Waveguide Adapter (Item 8) from the 3744x mmW Module at the W connector with the Torque Wrench (Item 15).

Installation

1. Connect the Waveguide Adapter (Item 8) to the 3744x mmW Module (Item 11) at the W connector. Leave the W connection just loose enough to allow a small amount of play.
2. Screw the 4 Socket Head Screws (Item 7) into the module housing but leave the screws slightly loose.
3. Tighten the W connector with Torque Wrench, (Item 15) - 0.45 N·m (4 lbf· in).
4. Tighten the 4 Socket Head Screws (Item 7) with Hex Torque Driver - 0.56 N·m (5 lbf· in). **Do not over tighten.**
5. For alignment of a 2 port system see [Section 6-3](#) for instructions.

Chapter 7 — Mounting in User-Supplied Bracket

7-1 Introduction

If required, the user can create their own mounting bracket to meet local needs. This chapter provides outline dimensions for each Millimeter-Wave Module type.

7-2 Module Operating Environment

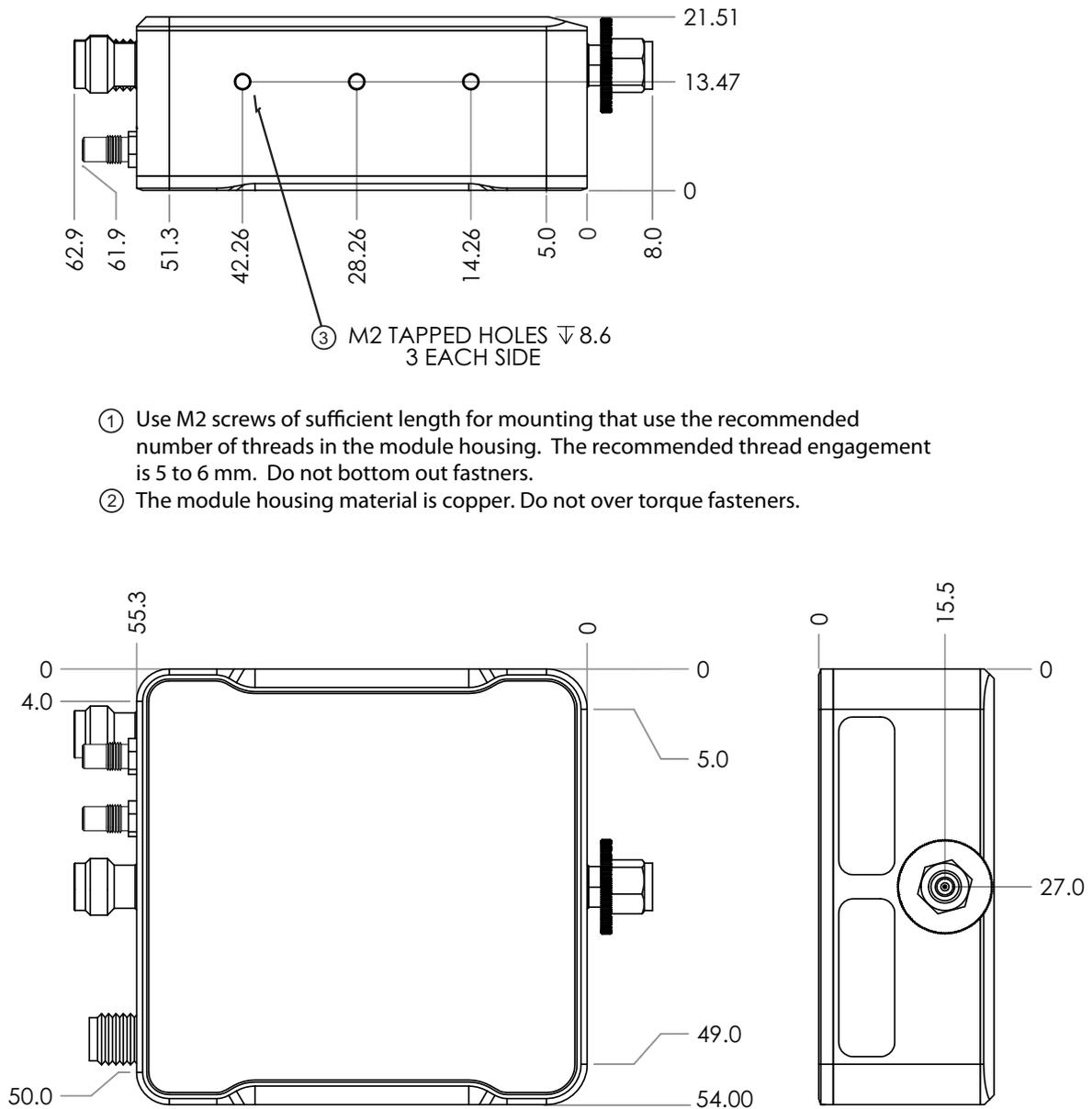
The modules require use of heatsink with adequate air circulation. The following notes should be considered before operating the MA25300A, 3743x, 3744x-xx, and 3743x-Rx Millimeter-Wave Modules:

- Thermal heat sinking similar to the supplied mounting brackets of the Millimeter-Wave Module should be considered in custom mounting applications.
- Each MA25300A Module consumes a maximum of 12 watts.
- Each 3743x Module consumes a maximum of 12 watts.
- Each 3744x-EE and 3744x-EW Module consumes a maximum of 12 watts.
- Each 3744x-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.

Note The three year warranty is valid for all modules, with or without mounting brackets attached.

7-4 3743A/3743E Module Outline

Figure 7-2 shows the outline mechanical requirements for the 3743A/3743E Millimeter-Wave Modules.



- ① Use M2 screws of sufficient length for mounting that use the recommended number of threads in the module housing. The recommended thread engagement is 5 to 6 mm. Do not bottom out fasteners.
- ② The module housing material is copper. Do not over torque fasteners.

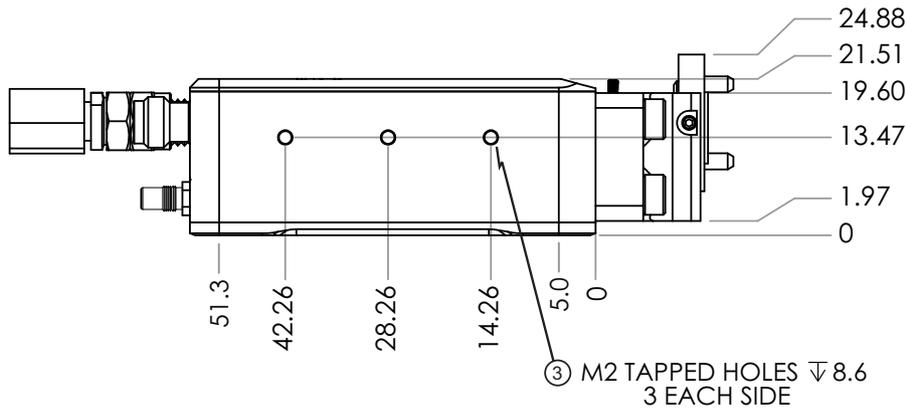
All dimensions in millimeters.

- 1 – For mounting, use M2 screws sufficient length that use the maximum number of module housing threads. A thread engagement of 5 to 6 mm is recommended. Do not bottom out fasteners.
- 2 – The module housing is copper. Do not over torque screws.
- 3 – The threaded module mounting holes are M2 tapped x 8.6 mm deep, three each side, six total.

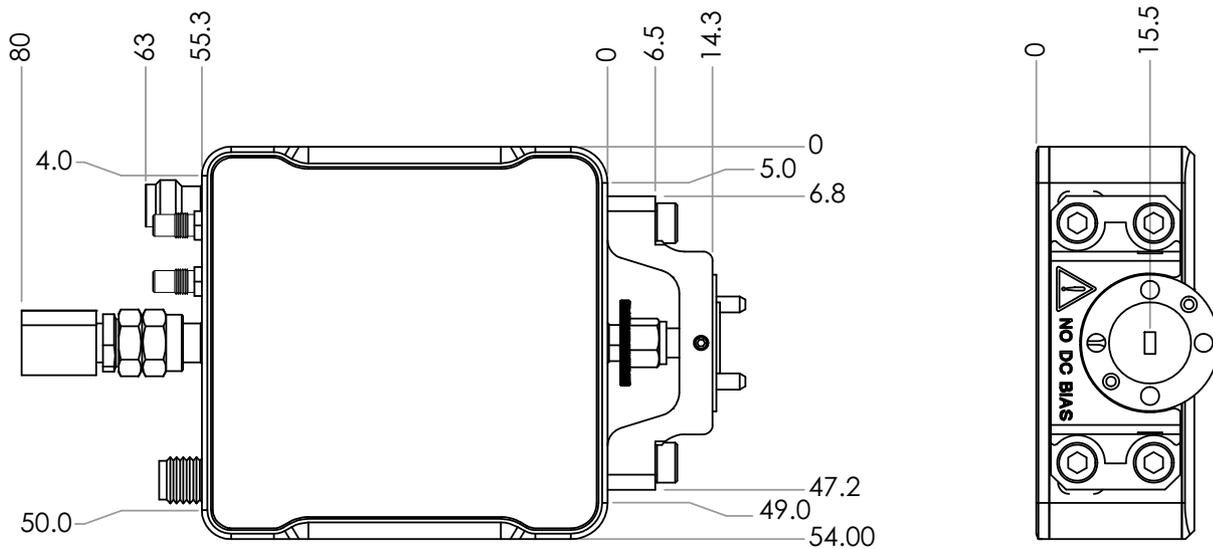
Figure 7-2. 3743A/3743E Millimeter-Wave Module Outline Drawing

7-5 3744x-EE/3744x-EW Module Outline

Figure 7-3 shows the outline mechanical requirements for the 3744A-EE, 3744A-EW, 3744E-EE and 3744E-EW Millimeter-Wave Modules.



- ① Use M2 screws of sufficient length for mounting that use the recommended number of threads in the module housing. The recommended thread engagement is 5 to 6 mm. Do not bottom out fasteners.
- ② The module housing material is copper. Do not over torque fasteners.



All dimensions in millimeters.

1 – For mounting, use M2 screws sufficient length that use the maximum number of module housing threads.

A thread engagement of 5 to 6 mm is recommended.

Do not bottom out fasteners.

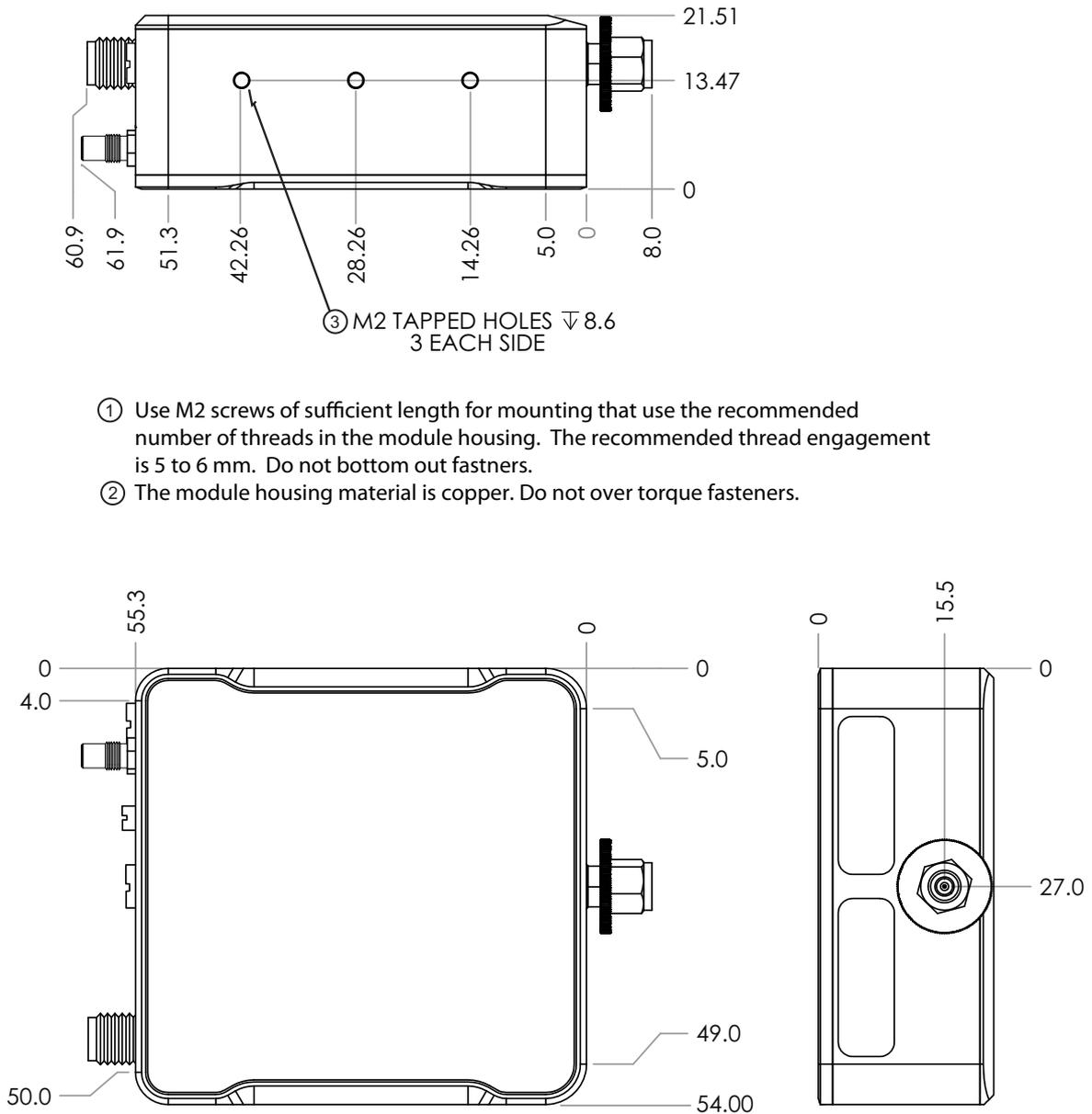
2 – The module housing is copper. Do not over torque screws.

3 – The threaded module mounting holes are M2 tapped x 8.6 mm deep, three each side, six total.

Figure 7-3. 3744x-EE/3744x-EW Millimeter-Wave Module Outline Drawing

7-6 3744x-Rx Module Outline

Figure 7-4 shows the outline mechanical requirements for the 3743A-Rx and 3744E-Rx Millimeter-Wave Modules.



- ① Use M2 screws of sufficient length for mounting that use the recommended number of threads in the module housing. The recommended thread engagement is 5 to 6 mm. Do not bottom out fasteners.
- ② The module housing material is copper. Do not over torque fasteners.

All dimensions in millimeters.

- 1 – For mounting, use M2 screws sufficient length that use the maximum number of module housing threads. A thread engagement of 5 to 6 mm is recommended. Do not bottom out fasteners.
- 2 – The module housing is copper. Do not over torque screws.
- 3 – The threaded module mounting holes are M2 tapped x 8.6 mm deep, three each side, six total.

Figure 7-4. 3744x-Rx Millimeter-Wave Module Outline Drawing

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