J-Band VNA Frequency Extender

Tx/Rx Module, 12.22 to 18.33 GHz Input

STO-03203N05-C-E1 is a J-Band vector network analyzer (VNA) frequency extender Tx/Rx designed to achieve full 2-port, S-parameter testing at 220 to 330 GHz. It is compatible with modern vector network analyzers such as the Rohde & Schwarz ZNA, Anritsu VectorStar™, Keysight PNA-X Series, and Copper Mountain CobaltFx. The VNA needs dual sources to be extended. The frequency extender can achieve a dynamic range up to 95 dB for certain passive products that require high rejection, isolation, and return loss testing such as directional couplers, orthomode transducers, and filters. An AC to DC Power adapter and two **Proxi-Flange™ Contactless Flanges (STQ-WG-03010-FB-CF and STQ-WG-03025-FB-CF)**, are included. The Eravant **Wave-Glide™ Rail System (STQ-TL-RW-S10-M1)** is highly recommended for the J-Band VNA test set. Each VNA extender is packaged individually in a rugged equipment box with additional hardware and tools.

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Frequency Range	220 GHz		330 GHz
Test Port Output Power (No Attenuation)		-8 dBm	
Test Port Input Power (Damage)			+25 dBm
Dynamic Range @ 10 Hz BW		95 dB	
Test Port Match		20 dB	
Directivity		20 dB	
RF Source Input Frequency	12.22 GHz		18.33 GHz
RF Source Input Power	-3 dBm	0 dBm	+3 dBm
LO Source Input Frequency (RF±IF)	9.17 GHz		13.75 GHz
LO Source Input Power	0 dBm	+3 dBm	+6 dBm
IF Frequency Range	10 MHz		1000 MHz
Multiplication Factor (RF/LO)		18/24	
Magnitude Stability @ 300 Hz BW		±0.30 dB	
Phase Stability @ 300 Hz BW		±6°	
Specification Temperature	+20°C		+30°C
Operating Temperature	0°C		+50°C

ECCN

3A001.b.7

FEATURES

- Full Band Coverage
- Dynamic Range of 95 dB
- AC Power Input: 100 to 240 VAC

APPLICATIONS

- VNA Frequency Extension
- S-Parameter Characterization
- Test Lab Instrumentation

Recommended Pairing

- Waveguide-Glide™ Rail System
- Waveguide Quick Connects
- Cable: SCW-SMSM040-F1-A-PM

Recommended Pairing

- Contactless WG Flange & mmW-THz Test Set Up Applications
- VNA Extender Configuration Guide
- VNA Extenders and Cal Kits

## Mechanical Specifications:

| Item	Specification
Test Port	WR-03 Waveguide with UG-387/U-M Precision Anti-Cocking Flange
RF and LO Source Input Port	SMA (F), SMA (F)
IF Output Port	SMA (F)
IF Reference Port	SMA (F)
DC Power Receptacle	LEMO EGG.0B.304.CLL
Finish	Black Anodized
Weight (Per Module)	4.4 lbs.
Size (Without Adjustable Feet)	11.50" (L) x 3.00" (W) x 1.90" (H)
Outline	TO-S03-A

Included Components:

Item	Eravant Model Number	Quantity
Proxi-Flange™ Contactless Flange, 1.0" Long	STQ-WG-03010-FB-CF	1
Proxi-Flange™ Contactless Flange, 2.5" Long	STQ-WG-03025-FB-CF	1
Waveguide Screws, 3/32 Hex Head	SWH-332-SS-10	1 (10 Screws Total)
Waveguide Screwdriver, 3/32 Hex Head	SWH-332-DS	1
SMA Connector Torque Wrench	SCH-08008-S1	1
AC-to-DC Power Adapter	STU-110006005-HF	1

Connecting Cables are not included. Eravant coaxial cable, model **SCW-SMSM040-F1-A-PM**, is highly recommended. A total of four (4) cables are required for full operation.
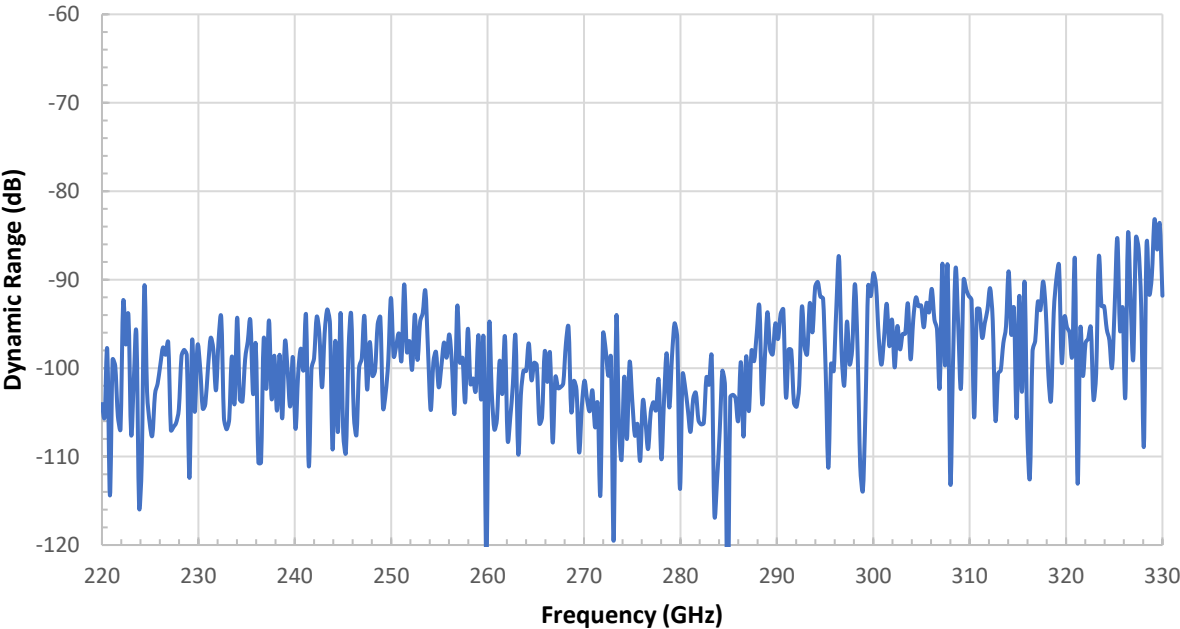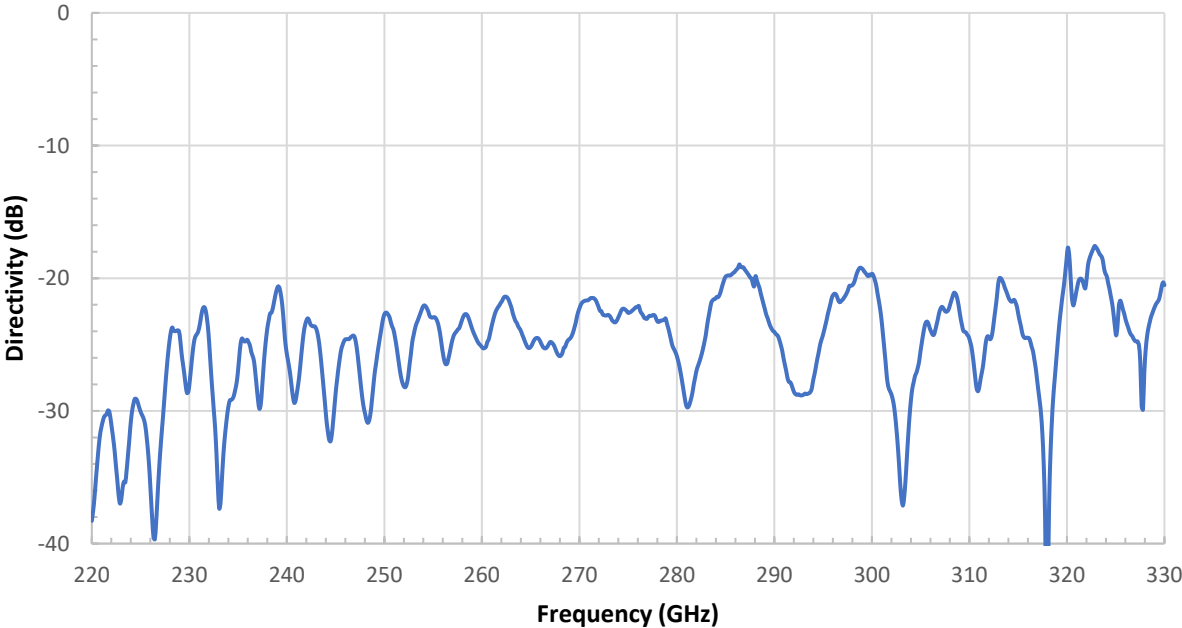
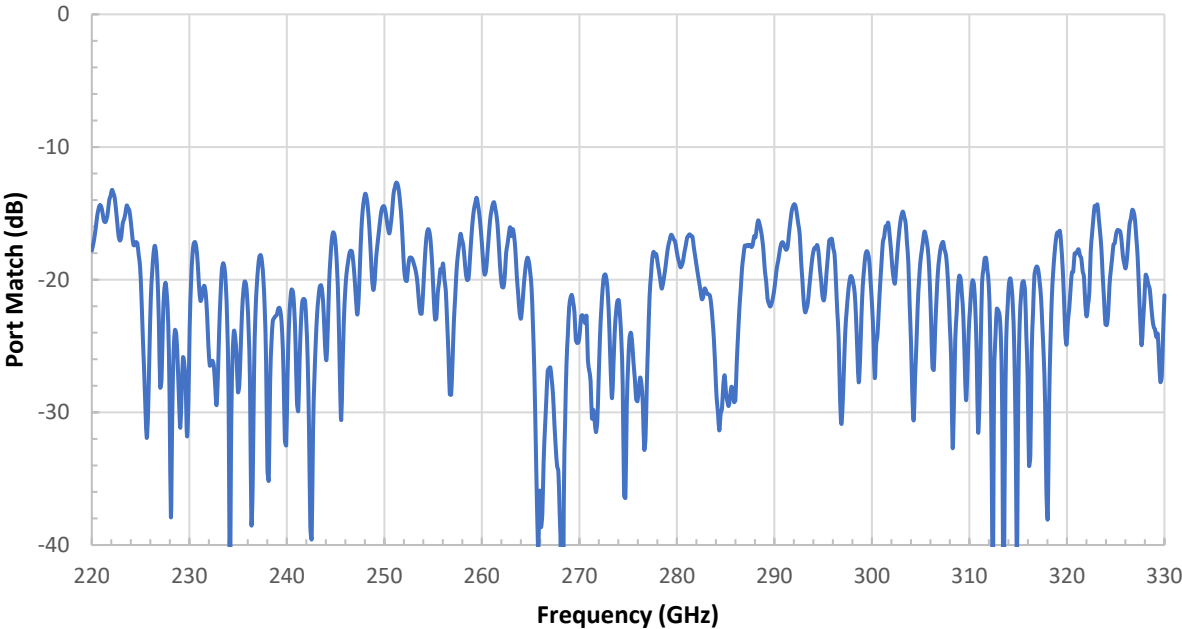## Simplified Block Diagram
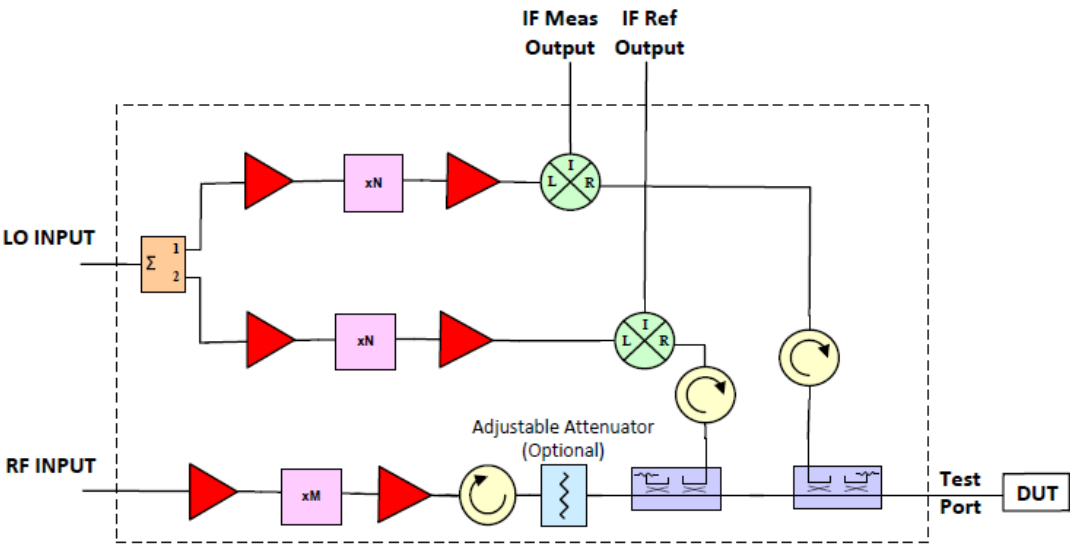
Output Power vs. Frequency
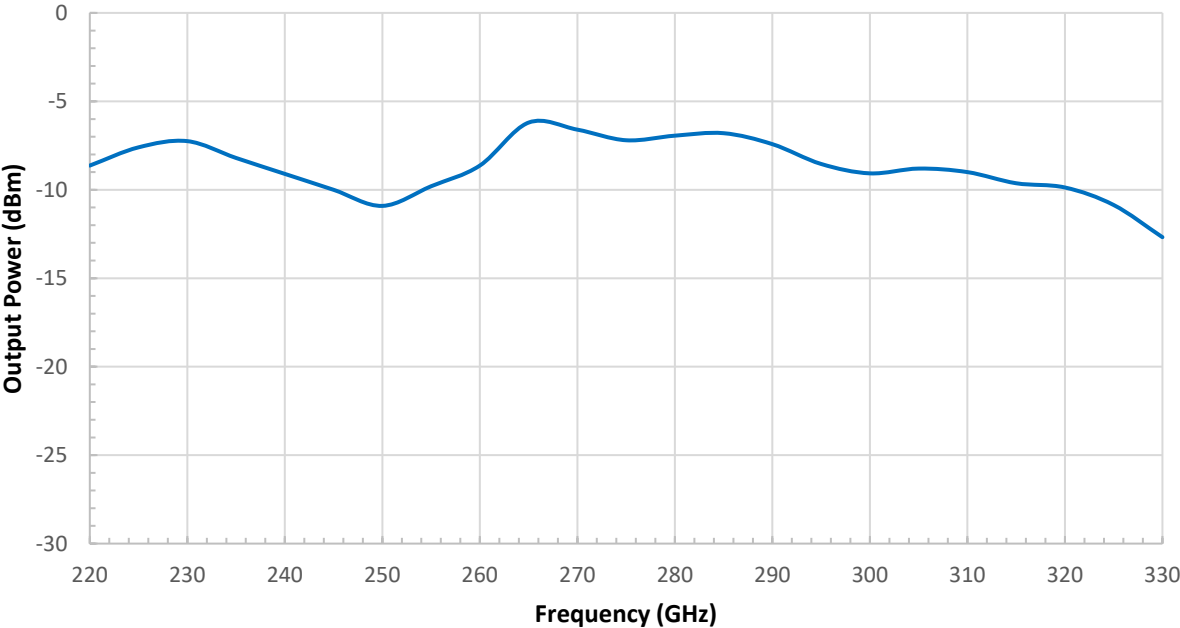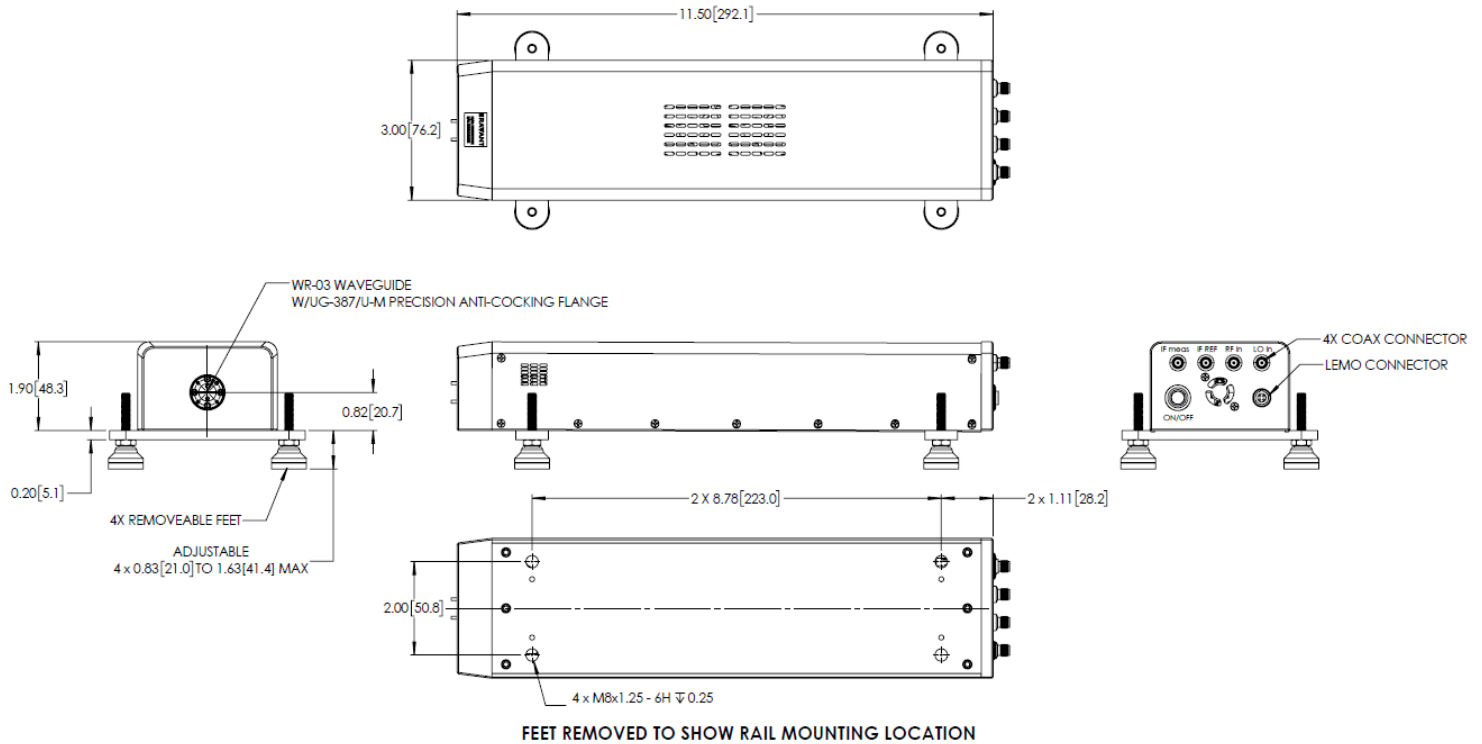

Dynamic Range vs. Frequency

Directivity vs. Frequency

Port Match vs. Frequency

Final Rev 1.2

Mechanical Outline: (Unless otherwise specified, all dimensions are in inches [millimeters])

WR-03 WAVEGUIDE
W/UG-387/U-M PRECISION ANTI-COCKING FLANGE

4X COAX CONNECTOR
LEMO CONNECTOR

IF meas   IF REF   RF In   LO In
ON/OFF

1.90[48.3]
0.82[20.7]
0.20[5.1]

4X REMOVEABLE FEET
ADJUSTABLE
4 x 0.83[21.0]TO 1.63[41.4] MAX

2 X 8.78[223.0]
2 x 1.11[28.2]
2.00[50.8]

4 x M8x1.25 - 6H ⩒ 0.25

FEET REMOVED TO SHOW RAIL MOUNTING LOCATION

11.50[292.1]
3.00[76.2]

NOTE:
- **Only one extender module is included in STO-03203N05-C-E1: Tx/Rx module. A pair of extenders is offered under a different model number and can be found on our** VNA Frequency Extenders **page.**
- Eravant reserves the right to change the information presented without notice.

CAUTION:
- Exceeding absolute maximum ratings shown will damage the extenders.
- Any foreign objects in the waveguide will cause performance degradation or damage the device.
- **For 1.35 mm, 1.85 mm, 2.4 mm, 2.92 mm, and SMA connectors proper torque should be applied: 8.0 ± 0.15 inch-pounds (0.90 ± 0.02 Nm). Torque wrench model** SCH-08008-S1 **is highly recommended.**

Appendix: Case View with Included Components

AC-to-DC Power Adapter
VNA Frequency Extender
SMA Connector Torque Wrench
Waveguide Screwdriver, 3/32 Hex Head
Waveguide Screws, 3/32 Hex Head
Proxi-Flange™ Contactless Flange, 1" Long
Proxi-Flange™ Contactless Flange, 2.5" Long