# STO-1920316-CM-E1

## U-Band VNA Frequency Extender TX/RX Module, 10 to 15 GHz Input

**STO-1920316-CM-E1** is a U-Band vector network analyzer (VNA) frequency extender Tx/Rx designed to achieve full 1-port, S-parameter testing at 40 to 60 GHz. It is compatible with modern vector network analyzers such as the Copper Mountain CobaltFx. The VNA needs dual sources to be extended. The frequency extender can achieve a dynamic range up to 120 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-19010-FB-CF and STQ-WG-19025-FB-CF)**, are included. The Eravant calibration kit (**STQ-TO-19-S1-CKIT1**) is highly recommended to complete the U-Band VNA test set. VNA extender is packaged individually in a rugged equipment box with additional hardware and tools.

## Electrical Specifications:

| Parameter | Minimum | Typical | Maximum |
|---|---|---|---|
| Frequency Range | 40 GHz | | 60 GHz |
| Test Port Output Power (No Attenuation) | | +16 dBm | |
| Test Port Input Power (Damage) | | | +30 dBm |
| Output Power Control Range | | 30 dB | |
| Dynamic Range @ 10 Hz BW | 100 dB | 120 dB | |
| Test Port Match | | 20 dB | |
| Directivity | | 20 dB | |
| RF Source Input Frequency | 10 GHz | | 15 GHz |
| RF Source Input Power | -3 dBm | 0 dBm | +3 dBm |
| LO Source Input Frequency (RF±IF) | 10 GHz | | 15 GHz |
| LO Source Input Power | 0 dBm | +3 dBm | +6 dBm |
| IF Frequency Range | 10 MHz | | 1000 MHz |
| Multiplication Factor | | 4 | |
| Magnitude Stability @ 300 Hz BW | | ±0.1 dB | |
| Phase Stability @ 300 Hz BW | | ±2.5° | |
| Specification Temperature | +20°C | | +30°C |
| Operating Temperature | 0°C | | +50°C |

### ECCN

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### FEATURES

- Full Band Coverage
- Dynamic Range of 120 dB
- AC Power Input: 100 to 240 VAC

### APPLICATIONS

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

### Recommended Pairing

- Cal Kit: STQ-TO-19-S1-CKIT1
- Waveguide-Glide™ Rail System
- Waveguide Quick Connects
- Cable: SCW-SMSM040-F1-A-PM

### Recommended Pairing

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

## Mechanical Specifications:

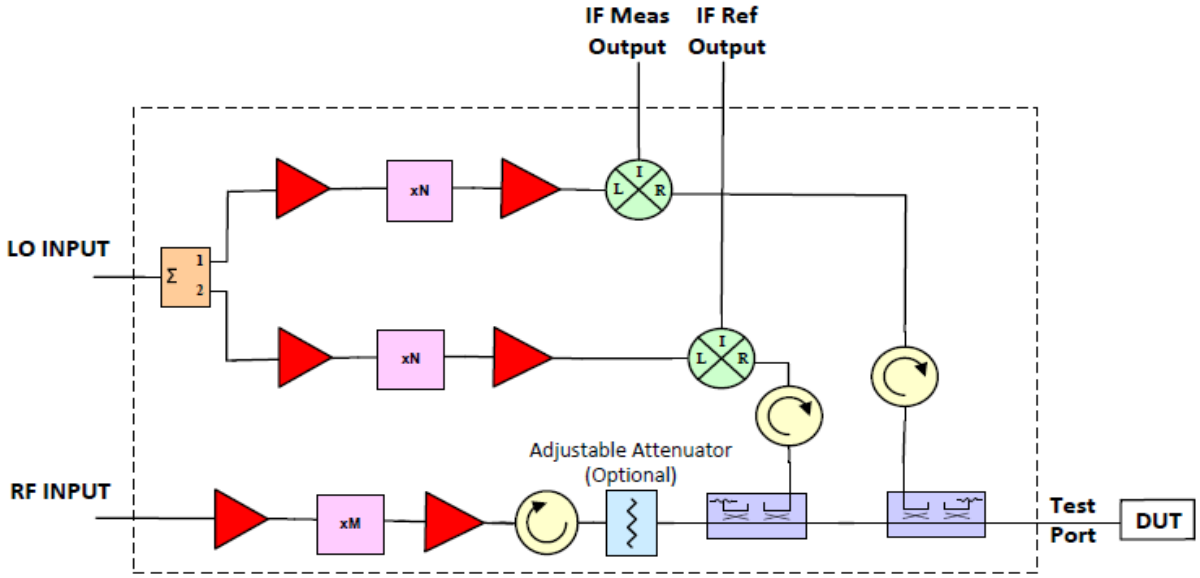
| Item | Specification |
|---|---|
| Test Port | WR-19 Waveguide with UG-383/U Precision Anti-Cocking Flange |
| RF and LO Source Input Port | SMA (F), SMA (F) |
| IF Output Port | SMA (F) |
| IF Reference Port | SMA (F) |
| DC Power Receptacle | LEMO EGG.0B.304.CLL |
| Finish | Black Anodized |
| Weight (Per Module) | 4.4 lbs. |
| Size (Without Adjustable Feet) | 11.50” (L) x 3.00” (W) x 2.20” (H) |
| Outline | TO-SU-A-M |

## Included Components:

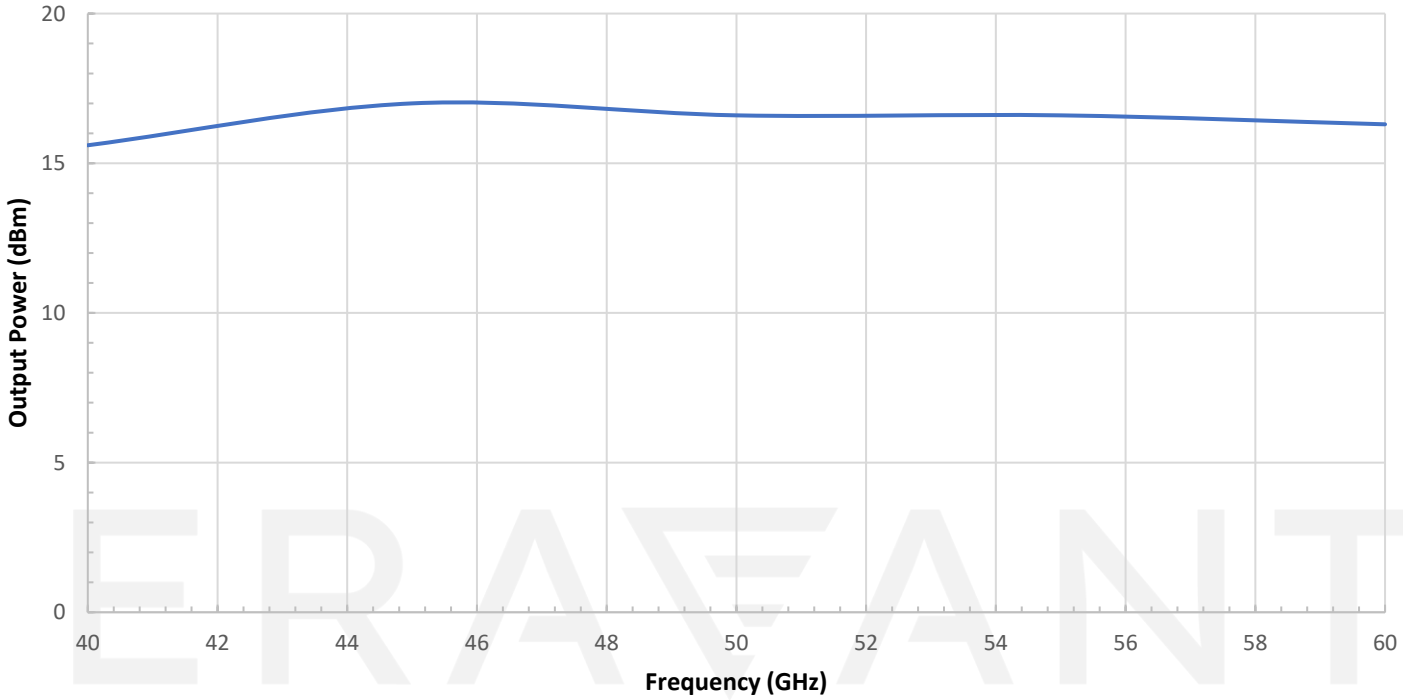
| Item | Eravant Model Number | Quantity |
|---|---|---|
| Proxi-Flange™ Contactless Flange, 1.0” Long | STQ-WG-19010-FB-CF | 1 |
| Proxi-Flange™ Contactless Flange, 2.5” Long | STQ-WG-19025-FB-CF | 1 |
| Waveguide Screws, 3/32 Hex Head | SWH-332-SS-10 | 1 (10 Screws Total) |
| Waveguide Screwdriver, 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. Four (4) cables are required to connect this module with VNA

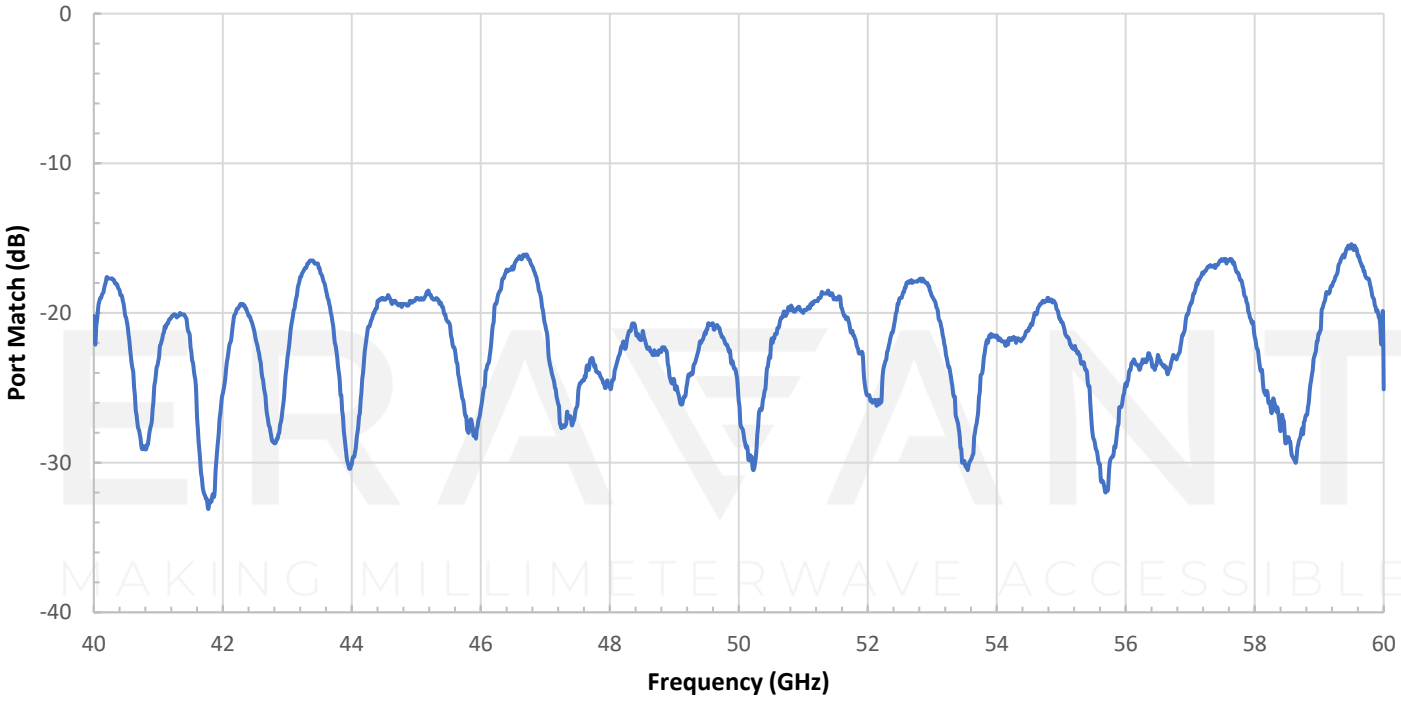
## Simplified Block Diagram:



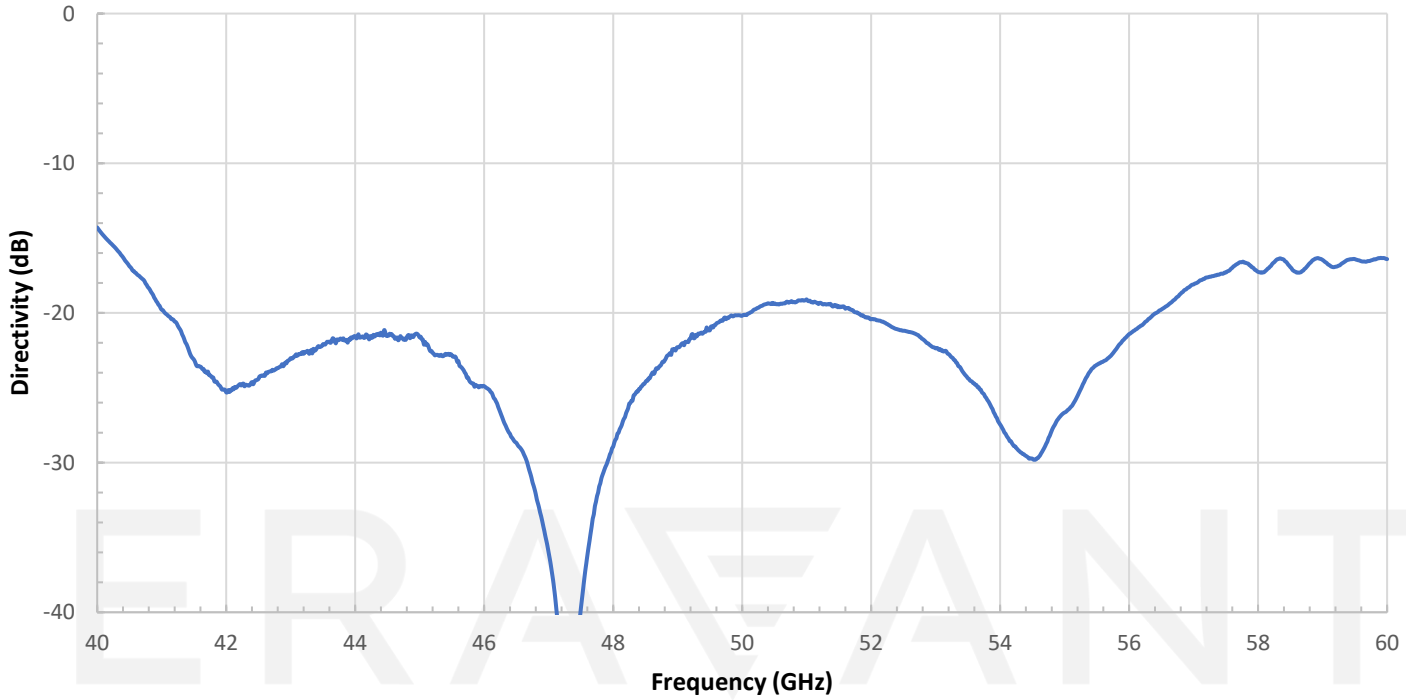
## Output Power vs. Frequency



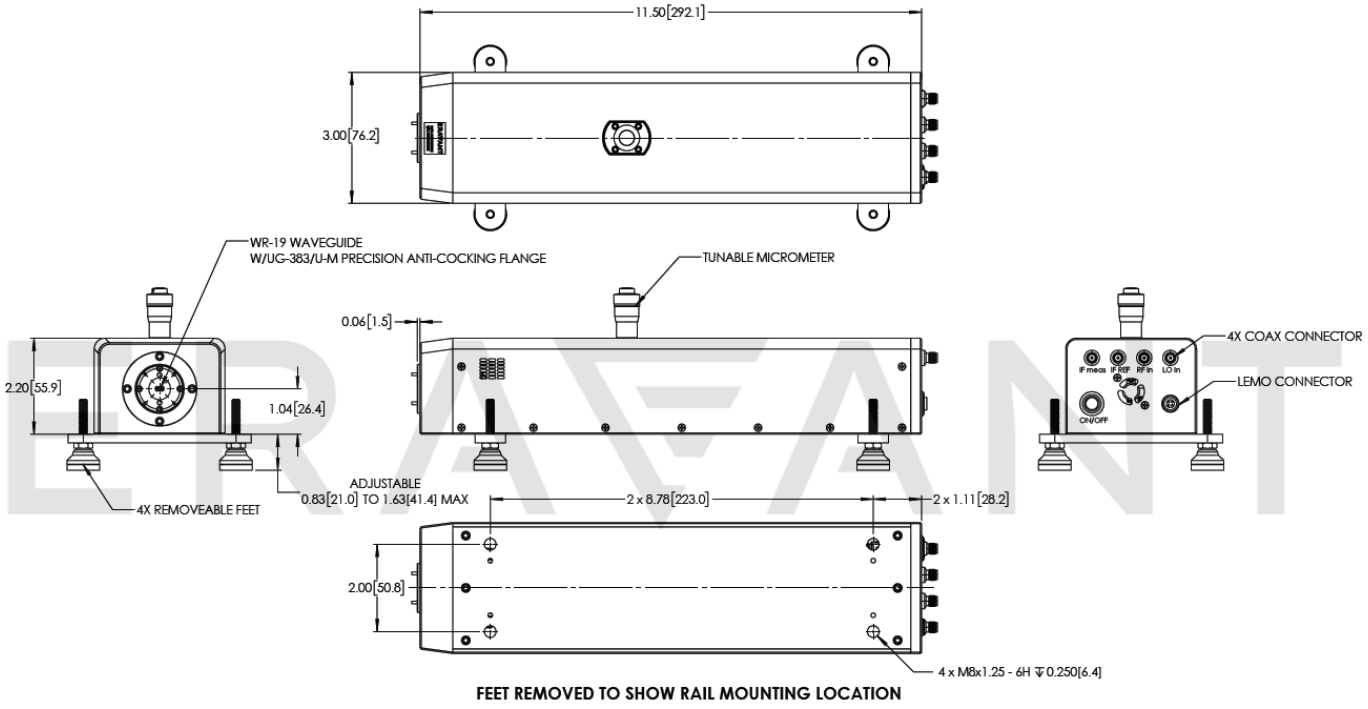

## Port Match vs. Frequency



## Directivity vs. Frequency




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



**NOTE:**

- **Only one extender module is included in STO-1920316-CM-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.
- If a waveguide is present, any foreign objects in the waveguide will cause performance degradation and may damage or destroy the unit.
- 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