STH-06SF-S1

Rev. 1.2

D-Band Spectrum Analyzer Harmonic Mixer, Common LO/IF Port

Description:

Model STH-06SF-S1 is a D Band harmonic mixer employing single diode and broadband circuitry to deliver low conversion loss and continuous frequency coverage for full waveguide band operations covering the frequency range of 110 to 170 GHz. The mixer extends the operation frequency of test instruments like the spectrum analyzer and frequency counter from 18 GHz or below to full D band operations. Unlike the balanced harmonic mixer, model numbers SFH-06SFSF-A3 or SFH-06SFSF-A3-2, the spectrum analyzer mixer does not have a built-in frequency diplexer. Therefore, their LO and IF ports are combined to a common coaxial port where its LO and IF signals are shared. This feature provides a convenient connection ability when used with the spectrum analyzer or frequency counter models that have a built-in diplexer, i.e., combined LO and IF port, such as the models offered by Advantest, Anritsu, Rohde & Schwarz, some Keysight models, Tektronix and National Instruments/Phase Matrix (EIP). However, the harmonic mixer can also be used for the spectrum analyzers with separate LO and IF ports if a diplexer is used.

Features:

- Full Waveguide Coverage
- Combined LO and IF Port
- Instrumentation Grade

Applications:

- Phase Lock Loops
- Spectrum Analyzer with built-in Diplexer
- Frequency Counter with built-in Diplexer

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Frequency	110 GHz		170 GHz
IF Frequency	DC	1.0 GHz	2.0 GHz
LO Frequency	4.0 GHz		16.0 GHz
LO Power	+10 dBm	+13 dBm	+16 dBm
Sensitivity		-65 dBm @ 1 kHz RBW	
RF Input Power		-20 dBm	+16 dBm
Specification Temperature		+25 ˚C	
Operating Temperature	0 ˚C		+50 ˚C

Mechanical Specifications:

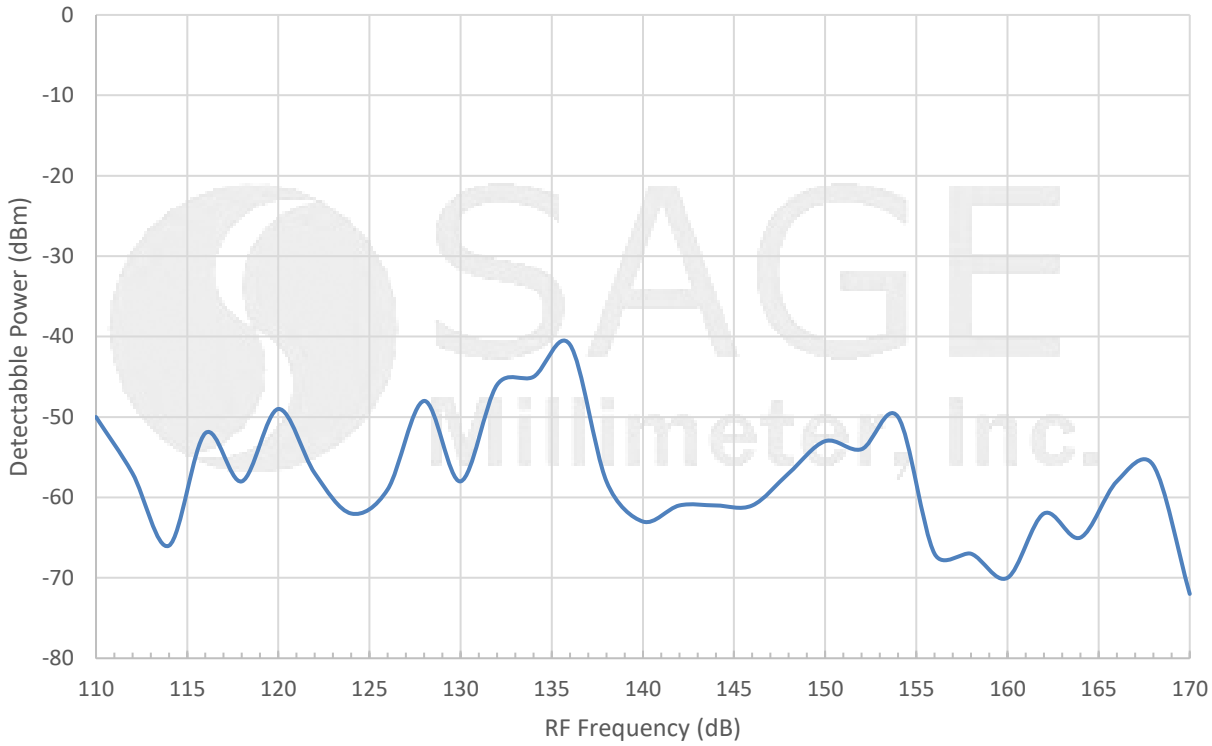
Item	Specification
RF Port	WR-06 Waveguide with UG-387/U-M Anti-Cocking Flange
IF and LO Port	SMA (F)
Material	Aluminum
Finishing	Gold Plated
Weight	1.3 Oz
Size	1.00” (L) x 0.75” (W) x 0.60” (H)
Outline	FD-D1-A

www.eravant.com | 501 Amapola Avenue, Torrance, CA 90501
Phone: 424-757-0168 | Fax: 424-757-0188 | Email: support@eravant.com

D-Band Spectrum Analyzer Harmonic Mixer, Common LO/IF Port

Detectable Power versus RF Frequency

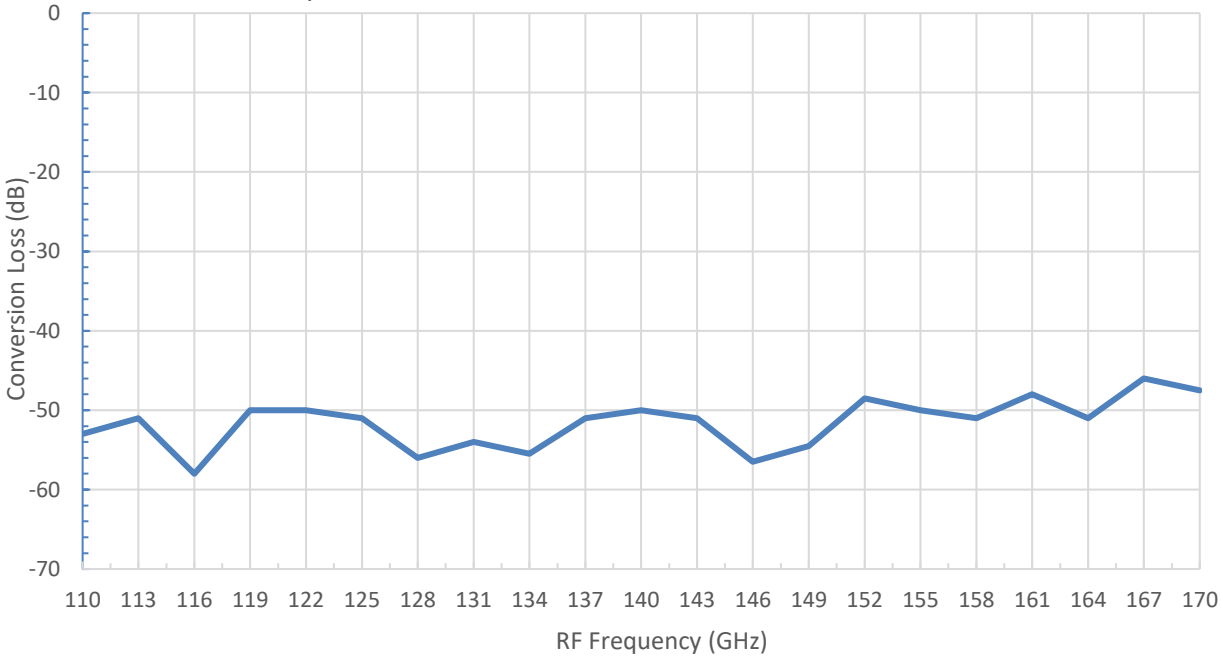
Test Condition: LO Frequency: RF/30; LO Power: +16 dBm; IF: 300 MHz



Conversion Loss vs. RF Frequency

LO Frequency: RF/14; LO Power: +16 dBm; IF: 300 MHz

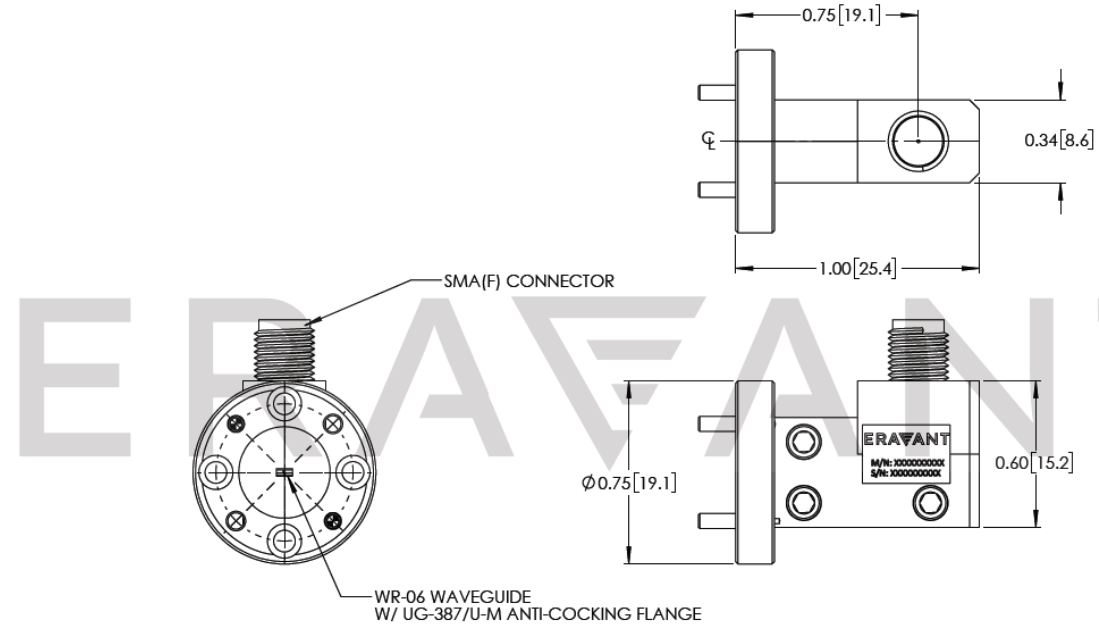
Tested with Tektronix Diplexer Model 015-0385-00



www.eravant.com | 501 Amapola Avenue, Torrance, CA 90501
Phone: 424-757-0168 | Fax: 424-757-0188 | Email: support@eravant.com

D-Band Spectrum Analyzer Harmonic Mixer, Common LO/IF Port

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



Note:

- All data presented is collected from a sample lot. Actual data may vary unit to unit.
- An external diplexer is required where the spectrum analyzer do not have a built-in diplexer.
- The harmonic mixer is for small signal detection. The recommended the RF power range is -10 dBm or below.
- The Harmonic mixer work in any even or odd harmonics of LO to yield the IF frequency in the range of DC to 4.0 GHz with different conversion loss.
- All testing was performed under **+25 ˚C** case temperature.
- SAGE Millimeter, Inc. reserves the right to change the information presented without notice.

Caution:

- Exceeding absolute maximum ratings of the mixer will damage the device.
- Any foreign objects in the waveguide will degrade performance and/or damage the device.
- The mixer is a static sensitive device. Always follow ESD rules when working with the mixer.
- Proper torque, 8.0 ± 0.15 inch-pounds (0.92 ± 0.05 Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**

www.eravant.com | 501 Amapola Avenue, Torrance, CA 90501
Phone: 424-757-0168 | Fax: 424-757-0188 | Email: support@eravant.com