



## F-Band Harmonic Mixer, 12<sup>th</sup> Harmonic, Spectrum Analyzer

### Description:

**Model SFH-08SFSF-A3-2** is a F-Band balanced harmonic mixer that is specially designed for use with separate LO and IF ports. The mixer employs high performance, GaAs Schottky diodes and a balanced configuration to produce a superior RF performance. With an IF range of DC to 1.6 GHz, the harmonic mixer uses the harmonic number 12 of a 5.0 to 12.0 GHz LO at +16 dBm to translate 90.0 to 140.0 GHz. The harmonic mixer has a typical conversion loss of 42 dB. The mixer can be used as other even harmonic numbers, such as 10, 14, and 16 etc. with various conversion loss performance. In general, the lower the harmonics, the lower the conversion loss. Other models, such as **SFH-08SFSF-A3** are offered for the spectrum models other than Keysight's 856X series are also offered in the our website [here](#).



### Features:

- Full Waveguide Band Operation
- No External Bias Required
- Even Harmonic Detection
- Calibrated for 12<sup>th</sup> Harmonic Detection

### Applications:

- Spectrum Analyzers
- Frequency Meters
- Phase Locked Loops

### Electrical Specifications:

Parameter	Minimum	Typical	Maximum
RF Frequency	90 GHz		140 GHz
LO Frequency	5.0 GHz		12.0 GHz
IF Frequency	DC		1.6 GHz
RF Power		- 20 dBm	+19 dBm
LO Power		+16 dBm	+19 dBm
Harmonic Number		12	
Conversion Loss		42 dB	
Specification Temperature		+25 °C	
Operating Temperature	0 °C		+50 °C

### Mechanical Specifications:

Item	Specification
RF Port	WR-08 Waveguide with UG-387/U-M Anti-Cocking Flange
LO Port	SMA (F)
IF Port	SMA (F)
Case Material	Brass
Finish	Gold Plated
Weight	5.4 Oz
Outline	FH-F2-A

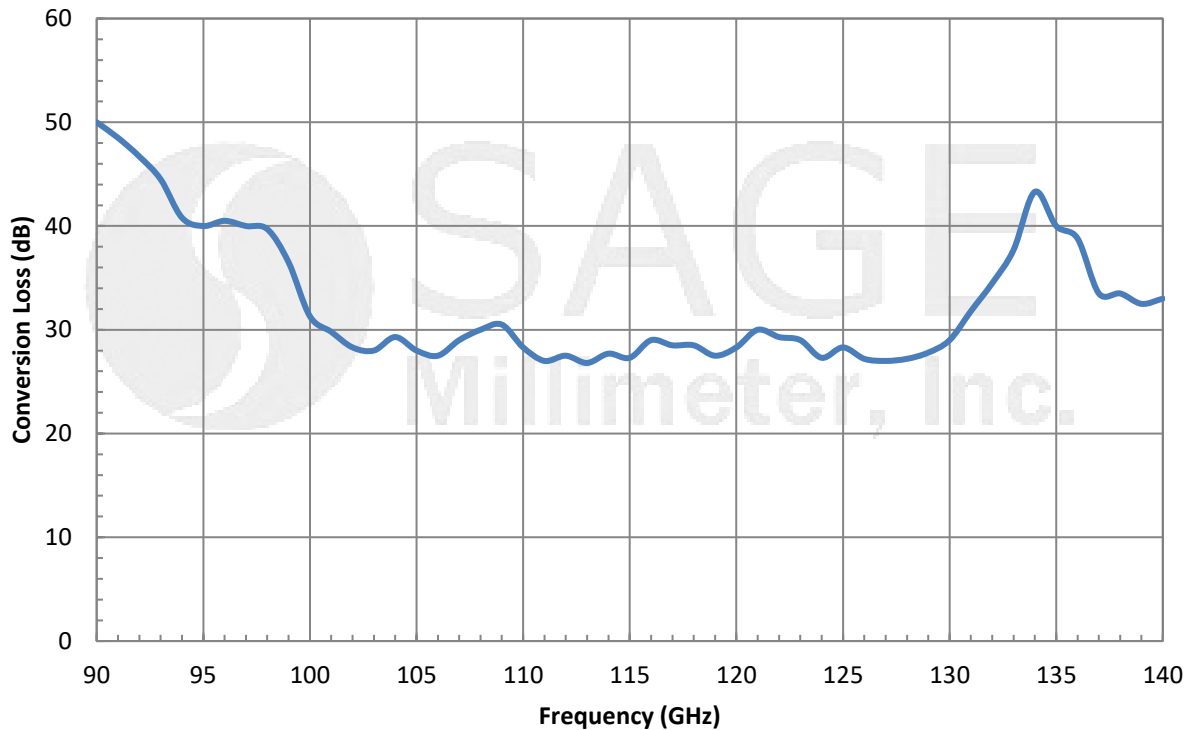




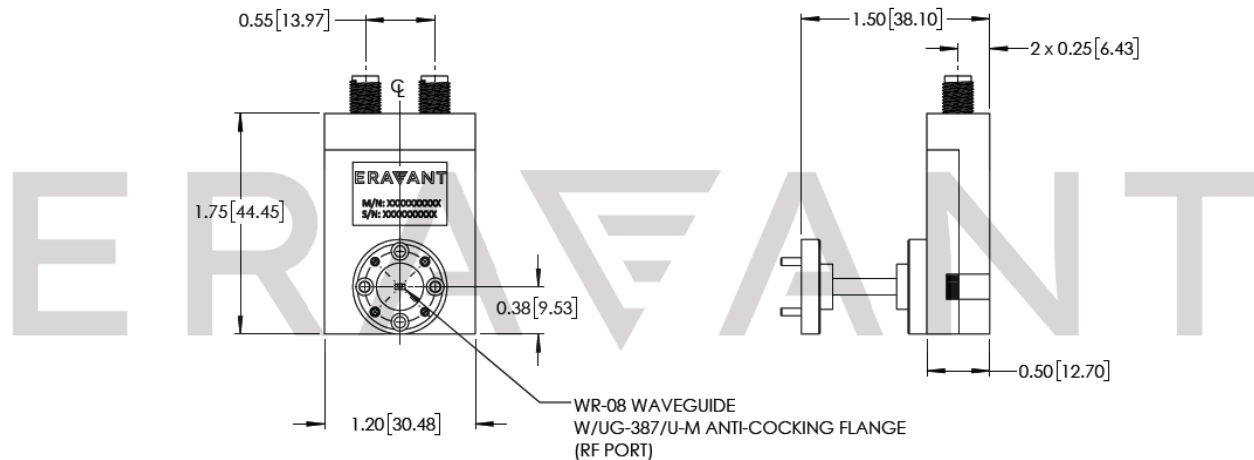
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### Typical Conversion Loss vs. Frequency

$P_{RF} = -20$  dBm



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





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### Note:

- 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 harmonics of LO to yield the IF frequency in the range of DC to 1.6 GHz with different conversion loss.
- 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,  $8.0 \pm 0.15$  inch-pounds ( $0.92 \pm 0.05$  Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**

