SFH-05SFSF-AB

G-Band Balanced Harmonic Mixer, 16th Harmonic

SFH-05SFSF-AB is a G-Band balanced harmonic mixer that is specially designed for use with spectrum analyzers 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 16 of a 8.75 to 13.75 GHz LO at +16 dBm to translate 140 to 220 GHz. The harmonic mixer has a typical conversion loss of 35 dB. The harmonic mixer can be used as other even harmonic numbers with various conversion loss performance. In general, the lower the harmonics, the lower the conversion loss.

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
RF Frequency	140 GHz		220 GHz
LO Frequency (12th Harmonic)	11.67 GHz		18.33 GHz
LO Frequency (16th Harmonic)	8.75 GHz		13.75 GHz
LO Frequency (36th Harmonic)	3.89 GHz		6.11 GHz
IF Frequency	DC		1.6 GHz
RF Power		-20 dBm	+19 dBm
LO Power		+16 dBm	+19 dBm
Conversion Loss (12th Harmonic)		30 dB	
Conversion Loss (16th Harmonic)		35 dB	
Conversion Loss (36th Harmonic)		40 dB	
Specification Temperature		+25°C	
Operating Temperature	0°C		+50°C

Mechanical Specifications:

Item	Specification
RF Ports	WR-05 Waveguide with UG-387/U-M Anti-Cocking Flange
LO Port	SMA (F)
IF Port	SMA (F)
Case Material	Brass
Finish	Gold Plated
Outline	FH-G2-A-2

ECCN

3A001.b.7

FEATURES

- Full Waveguide Band Operation
- No External Bias Required
- Even Harmonic Detection
- Calibrated for 16th Harmonic Detection

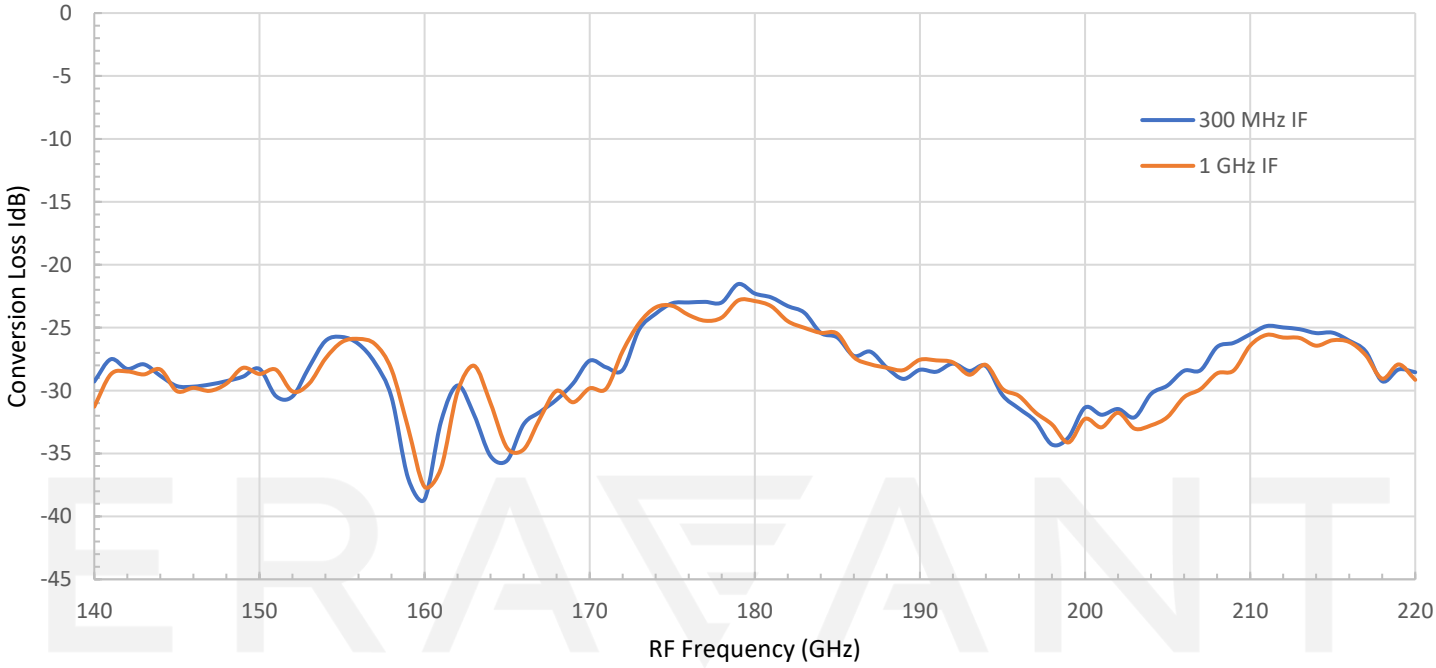
APPLICATIONS

- Spectrum Analyzers
- Frequency Meters
- Phase Locked Loops

SUPPLEMENTAL DETAILS

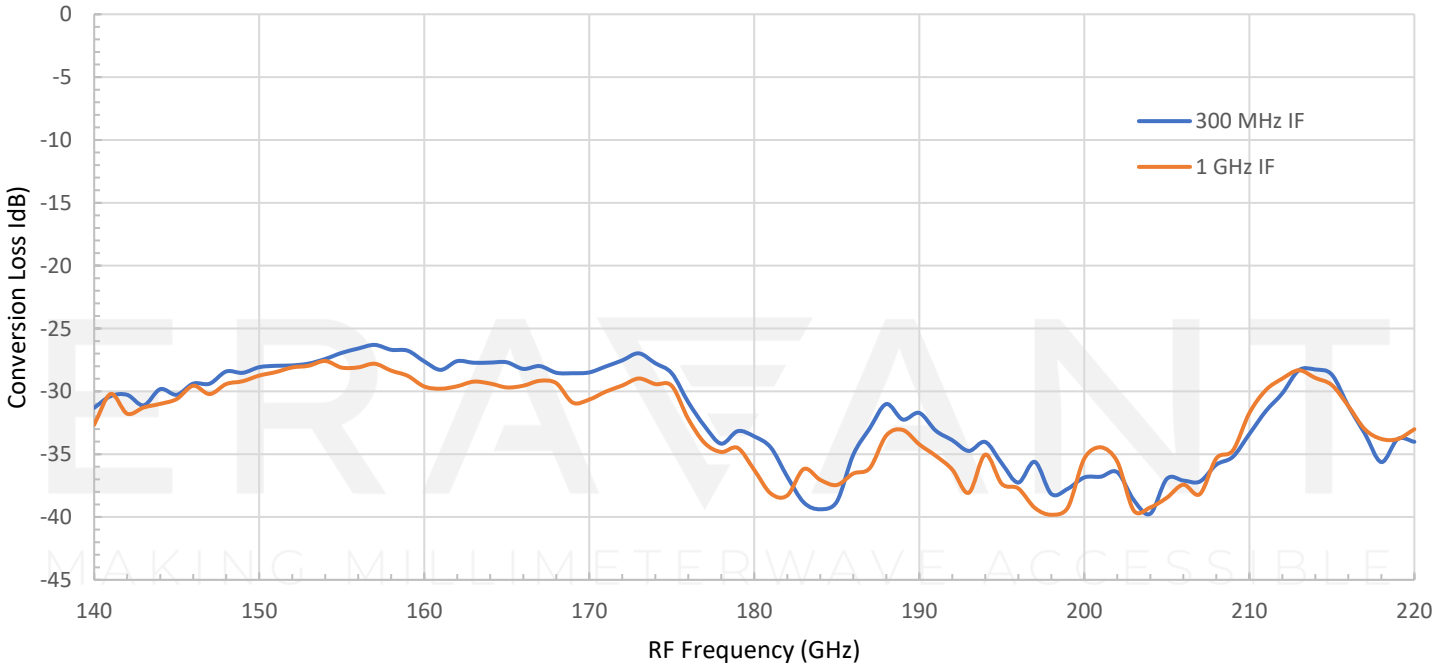
Conversion Loss vs Frequency

Harmonic #: 12, RF: -20 dBm, LO: +16 dBm



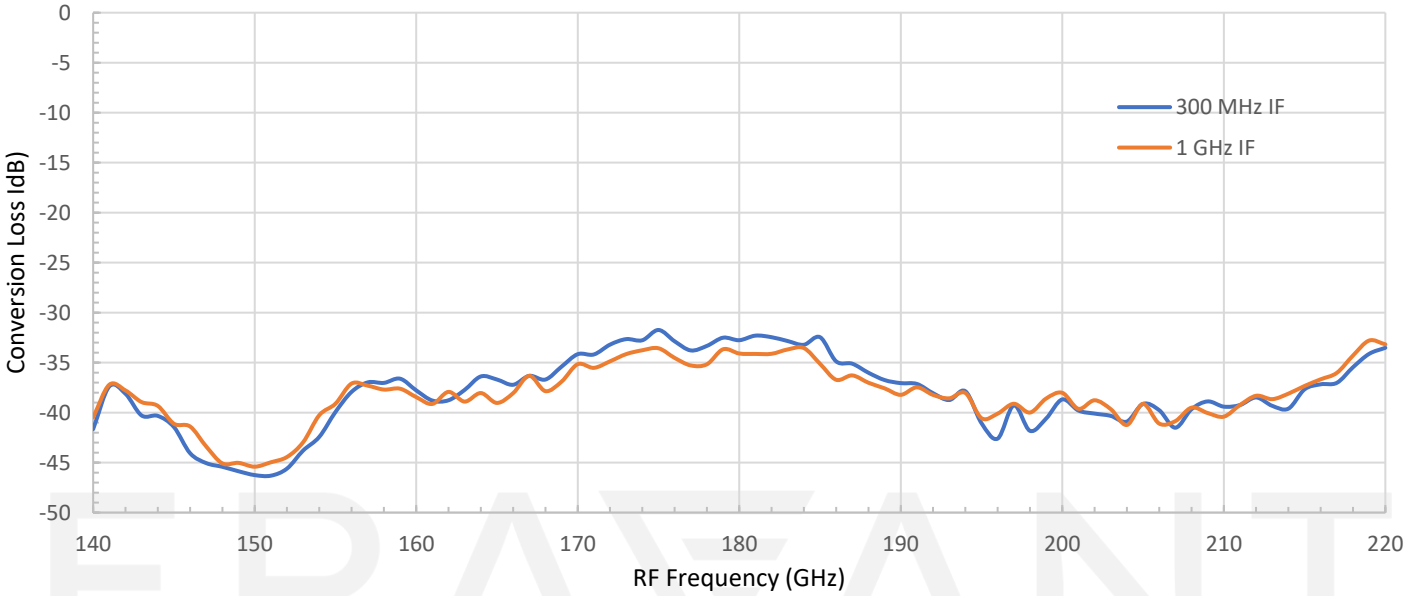
Conversion Loss vs Frequency

Harmonic #: 16, RF: -20 dBm, LO: +16 dBm

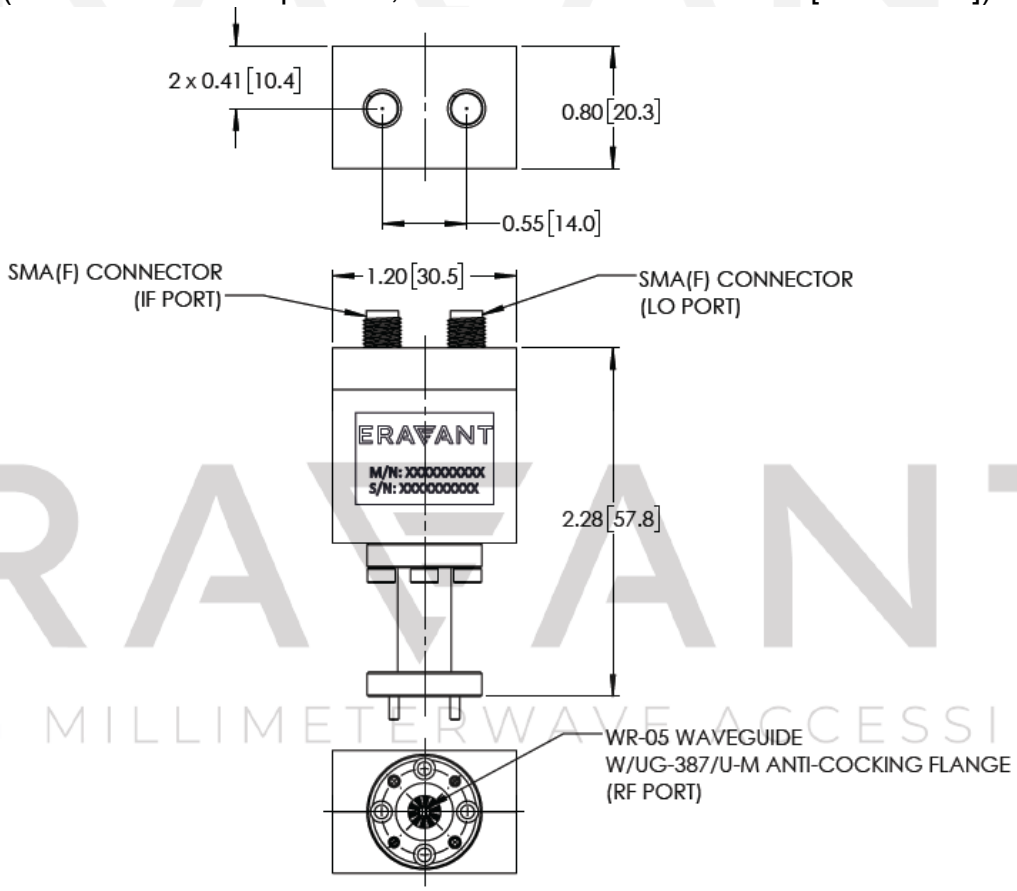


Conversion Loss vs Frequency

Harmonic #: 36, RF: -20 dBm, LO: +16 dBm



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



NOTE:

- Test data provided is collected from a sample lot. Actual data may vary slightly from unit to unit.
- All testing is performed under +25 °C room temperature.
- The harmonic mixer is for small signal detection. The recommended the RF power range is -10 dBm or below.
- Conversion loss listed is for 12^{th}, 16^{th} and 36^{th} harmonics. The harmonic mixer works in any even harmonics of LO to yield the IF frequency in the range of DC to 1.6 GHz with differing conversion loss.
- Conversion loss plots for 12^{th} and 36^{th} harmonic are provided for reference only.
- Other harmonic numbers can be tested upon request.
- Eravant 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 harmonic mixer is a static sensitive device. Always follow ESD rules when working with the mixer.
- Eravant recommends the use of ESD wrist and ankle straps, grounded ESD dissipative surfaces, and air ionizers when handling 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.

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