SFQ-75311415-1010SF-N1-M-ET

Rev 1.1

W-Band Quadrature Mixer or Phase Detector, 75 to 108 GHz, Extended Temperature

Description:

Model SFQ-75311415-1010SF-N1-M-ET is a W Band quadrature mixer that covers the frequency range of 75 to 108 GHz. The typical conversion loss of the quadrature mixer is 15 dB with an LO driving power of +15 dBm. Since the IF port of the quadrature mixer is DC coupled, the mixer can be used as a phase detector. In addition, the mixer can be readily configured into an image rejection mixer or single sideband modulator by adding an IF quadrature coupler. This model is tested to operate in the extended temperature range of -40° C to +85° C.

Features:

- Compact Package
- Low Conversion Loss
- High Port Isolations
- IF Port DC Coupled for Phase Detection

Applications:

- Phase Detection
- Speed and Ranging Radar Systems
- Communication Systems
- Test Equipment

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
RF Frequency	75 GHz		108 GHz
LO Frequency	75 GHz		108 GHz
LO Pumping Power		+15 dBm	+20 dBm
IF Frequency	DC		20 GHz
Conversion Loss		15 dB	
I/Q Phase Unbalance		±15°	
Combined Damage RF & LO Power			+20 dBm
Specification Temperature		+25 °C	
Operating Temperature	-40 °C		+85 °C

Mechanical Specifications:

Item	Specification
RF Port	WR-10 Waveguide with Anti-Cocking UG-387/U-M
LO Port	WR-10 Waveguide with Anti-Cocking UG-387/U-M
IF-I, IF-Q Ports	SMA(F), SMA(F)
Case Material	Aluminum
Finish	Gold Plated
Weight	0.68 Oz
Size	1.25” (L) 1.25” (W) X 0.88” (H)
Outline	FQ-W1M-A

www.sagemillimeter.com | 3043 Kashiwa Street, Torrance, CA 90505
Phone: 424-757-0168 | Fax: 424-757-0188 | Email: sales@sagemillimeter.com

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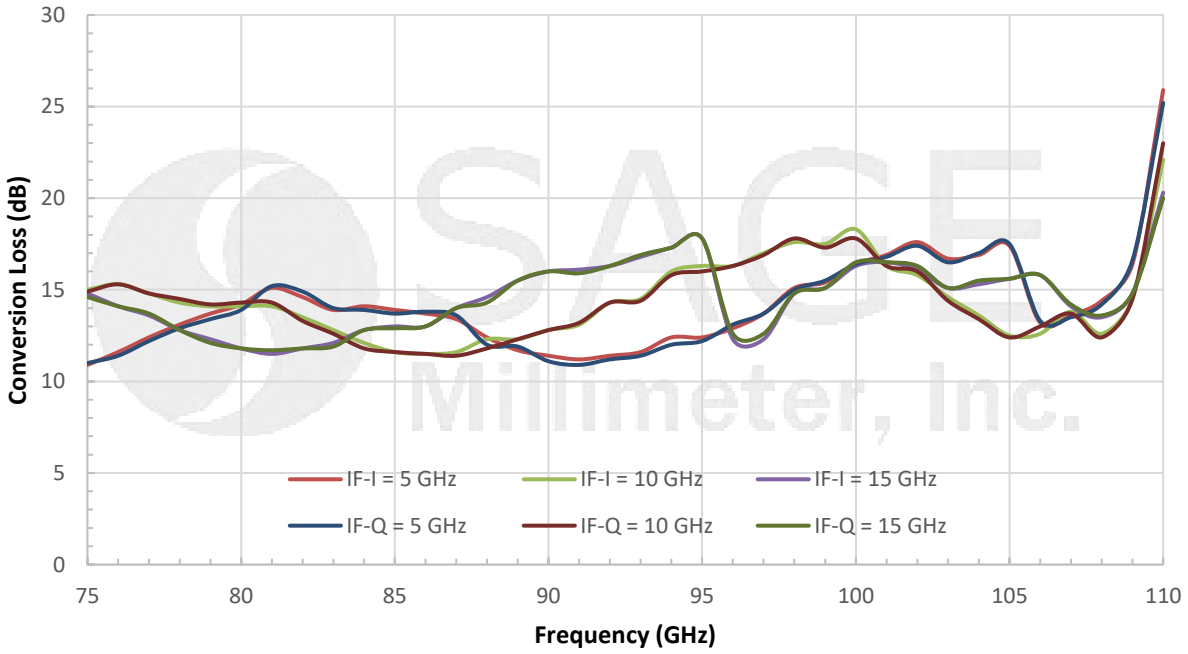
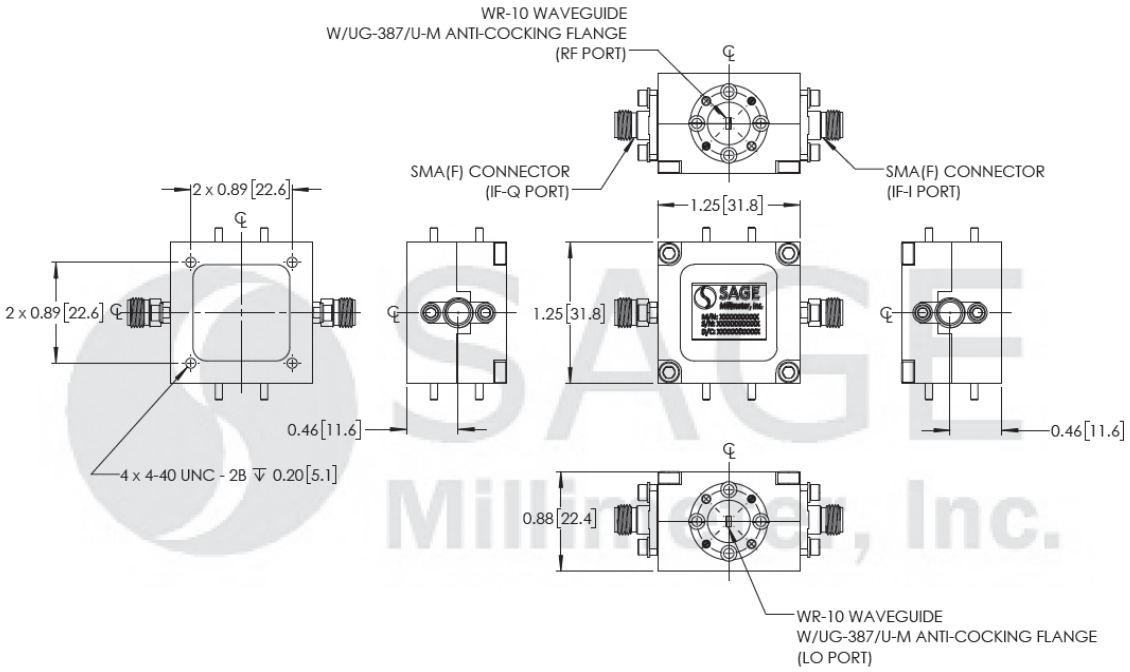
Conversion Loss vs. Frequency

LO Power = 15 dBm (typ); RF Power = -20 (typ)



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



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Note:

- All data presented is collected from a sample lot. Actual data may vary unit to unit.
- All testing was performed under +25 ˚C case temperature.
- The I/Q mixer can be configured as an image rejection mixer or used as an I/Q up-converter, single sideband modulator and phase detector.
- SAGE Millimeter, Inc. reserves the right to change the information presented without notice.

Caution:

- Exceeding absolute maximum ratings will damage the device.
- The mixer is a static sensitive device. Always follow ESD rules when working with the device.
- The IF ports are DC coupled. Use DC blocks if necessary. **Do not apply an external bias voltage to the IF port.**
- Proper torque, 8.0 ± 0.15 inch-pounds (0.90 ± 0.02 Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**