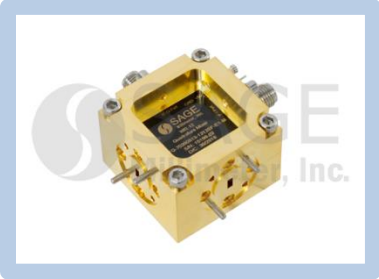
SFQ-60390315-1212SF-E1-M

Rev. 1.4

E-Band Quadrature Mixer or Phase Detector, 60 to 90 GHz

Description:



Model SFQ-60390315-1212SF-E1-M is an E Band quadrature mixer that covers the frequency range of 60 to 90 GHz. The typical conversion loss of the quadrature mixer is 15 dB with an LO driving power of +10 dBm. The typical LO to RF port isolation is 40 dB. 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.

Features:

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

Applications:

- IEEE 802.11.ad WiGig Systems
- Phase Detection
- Speed and Ranging Radar Systems
- Communication Systems
- Test Equipment

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
RF Frequency Range	60 GHz		90 GHz
LO Frequency Range	60 GHz		90 GHz
LO Pumping Power		+10 dBm	+12 dBm
IF Frequency Range	DC		12 GHz
Conversion Loss		15 dB	
I/Q Amplitude Unbalance		±1.5 dB	
I/Q Phase Unbalance		±15°	
RF Input P_{-1dB}		5 dBm	
LO to RF Port Isolation	20 dB	40 dB	
DC Bias		+5 V_{DC}/1mA	+8 V_{DC}/1mA
Operating Temperature	0 °C		+50 °C

Mechanical Specifications:

Item	Specification
RF & LO Ports	WR-12 Waveguide with UG-387/U Anti-Cocking Flange
IF-I & IF-Q Ports	SMA(F)
DC Bias Port	Solder Pin
Case Material	Aluminum
Finish	Gold Plated
Weight	1.8 Oz
Size	1.25” (L) X 1.25” (W) X 0.88” (H)
Outline	FQ-EEM-A

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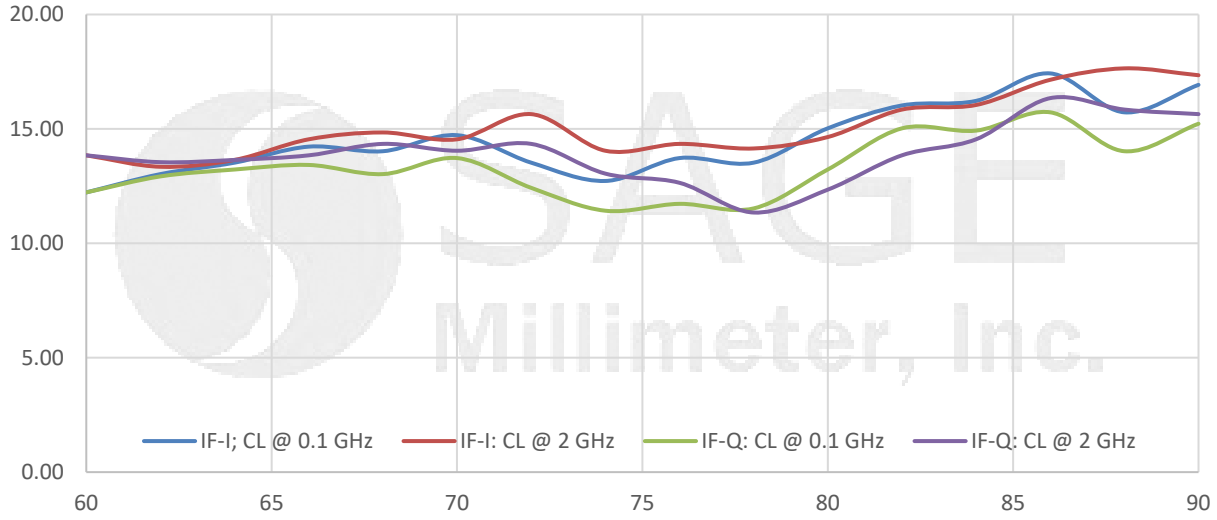
SAGE Millimeter, Inc.

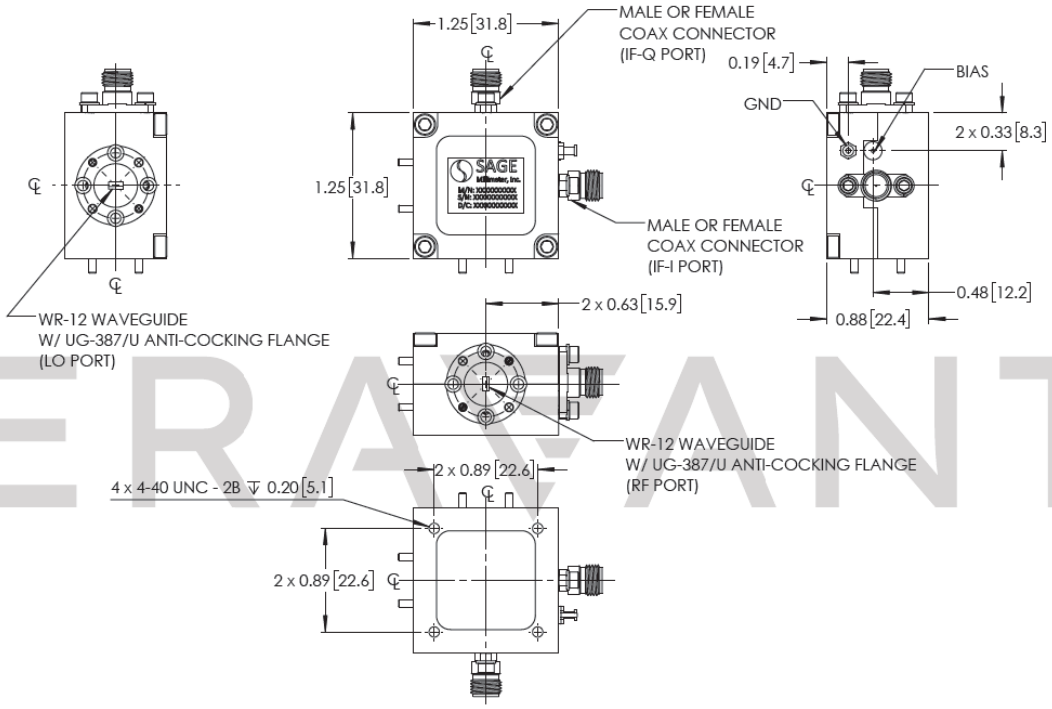
E-Band Quadrature Mixer or Phase Detector, 60 to 90 GHz

Typical Conversion Loss vs. LO Frequency

Bias: +5Vdc/1mA, RF= -20 dBm, LO= +10 dBm



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



E-Band Quadrature Mixer or Phase Detector, 60 to 90 GHz

Note:

- All data presented is collected from a sample lot. Actual data may vary unit to unit, slightly.
- 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.
- Eravant 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 (0.92 ± 0.05 Nm), should be applied. **Eravant torque wrench, model SCH-08008-S1, is highly recommended.**
- Any foreign objects in the waveguide will cause performance degradation and possible device damage.