



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

Description:

Model SFQ-75311415-1010SF-N1-M 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.



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 Amplitude Unbalance | | ±1.0 dB | |
| I/Q Phase Unbalance | | ±15° | |
| LO to RF Isolation | | 30 dB | |
| Combined Damage RF & LO Power | | | +20 dBm |
| Specification Temperature | | +25 °C | |
| Operating Temperature | 0 °C | | +50 °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 |

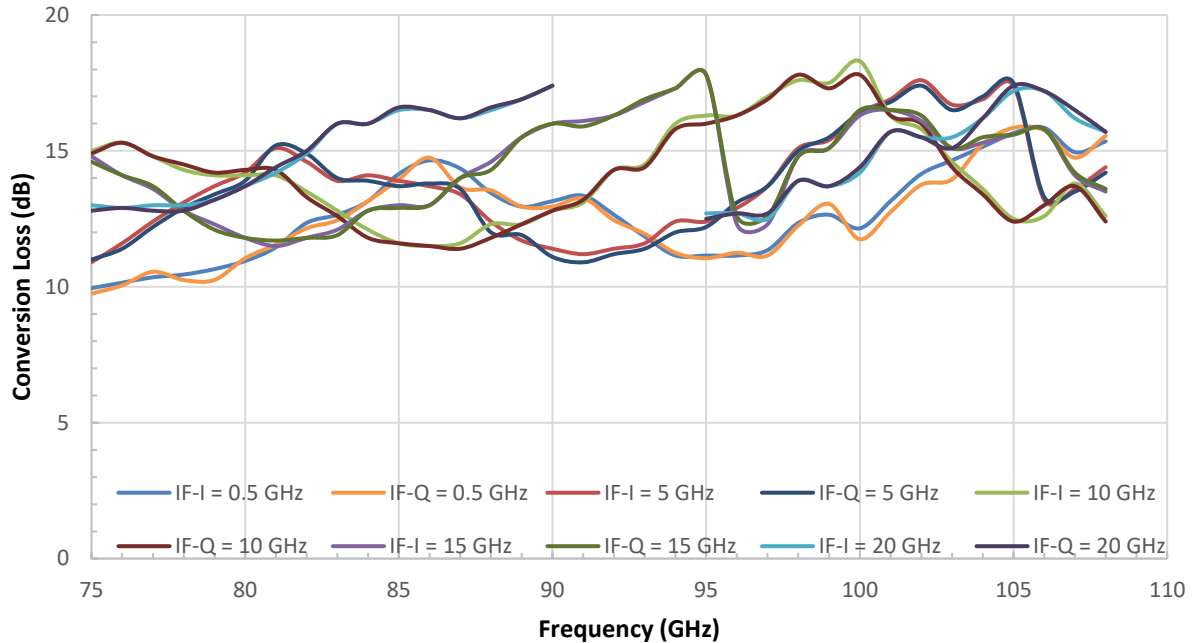




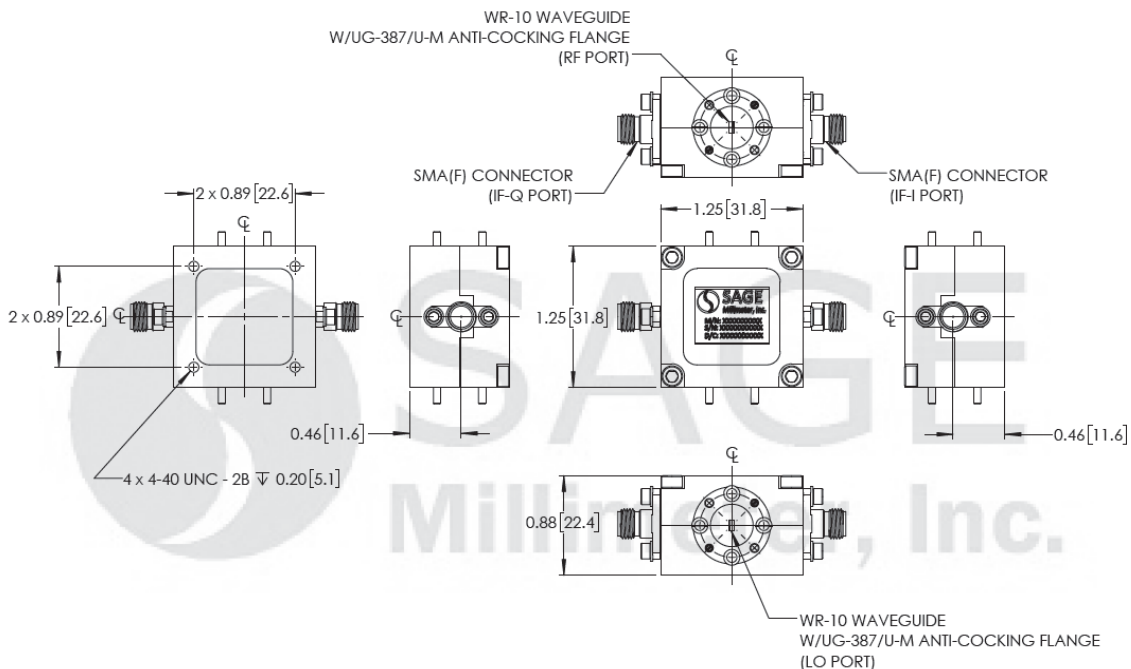
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Typical Conversion Loss vs. Frequency

RF= -20 dBm (Typ) ; LO= +15 dBm (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.
- 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 (0.90 ± 0.02 Nm), should be applied. **Eravant torque wrench, model SCH-08008-S1, is highly recommended.**

