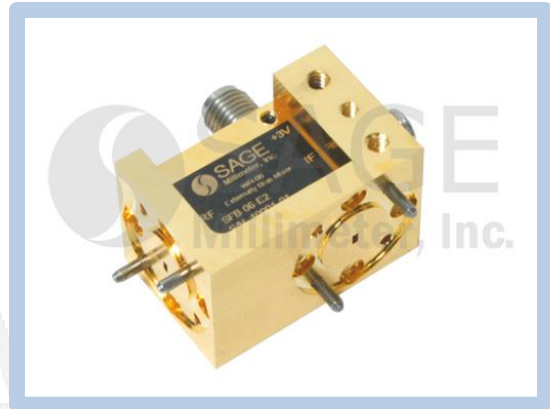




## F-Band Balanced Mixer with W-Band LO Port, DC to 35 GHz IF

### Description:

**Model SFB-90314415-0810KF-N1** is an F-Band balanced mixer with W-Band LO port that utilizes high performance GaAs Schottky beam-lead diodes and a balanced circuit configuration to offer superior RF performance. The mixer supports the operation for RF frequencies from 90 to 140 GHz with a broad IF output from DC to 35 GHz. The LO frequencies cover 75 to 110 GHz. The mixer offers a conversion loss of 12 dB typical and a high RF to LO port isolation of 30 dB. The RF port of the mixer is a WR-08 waveguide with UG-387/U-M anti-cocking flange and the LO Port is WR-10 waveguide with UG-387/U-M anti-cocking flange to accommodate the lower LO frequency operation.



### Features:

- Full Waveguide Band Coverage
- RF in F Band and LO in W Band
- IF Frequency DC to 35 GHz

### Applications:

- Radar Systems
- Communication Systems
- Test Equipment

### Electrical Specifications:

Parameter	Minimum	Typical	Maximum
RF Frequency Range	90 GHz		140 GHz
LO Frequency Range	75 GHz		110 GHz
IF Frequency Range	DC		35 GHz
LO Pumping Power		+13 dBm	+15 dBm
Conversion Loss		12 dB	15 dB
RF Input P <sub>1dB</sub>		-3 dBm	
Combined RF and LO Power			+18 dBm
Specification Temperature		+25 °C	
Operation Temperature	-40 °C		+85 °C

Note: The RF input P<sub>-1dB</sub> is LO pumping power related. The value shown is at LO power +13 dBm. Higher LO power results higher input P<sub>-1dB</sub>

### Mechanical Specifications:

Item	Specification
RF Port	WR-08 Waveguide with UG-387/U-M Anti-Cocking Flange
LO Port	WR-10 Waveguide with UG-387/U-M Anti-Cocking Flange
IF Port	K(F)
Case Material	Aluminum
Finish	Gold Plated
Weight	0.8 Oz
Size	1.16" (L) X 0.75" (W) X 0.75" (H)
Outline	FB-NFW-A

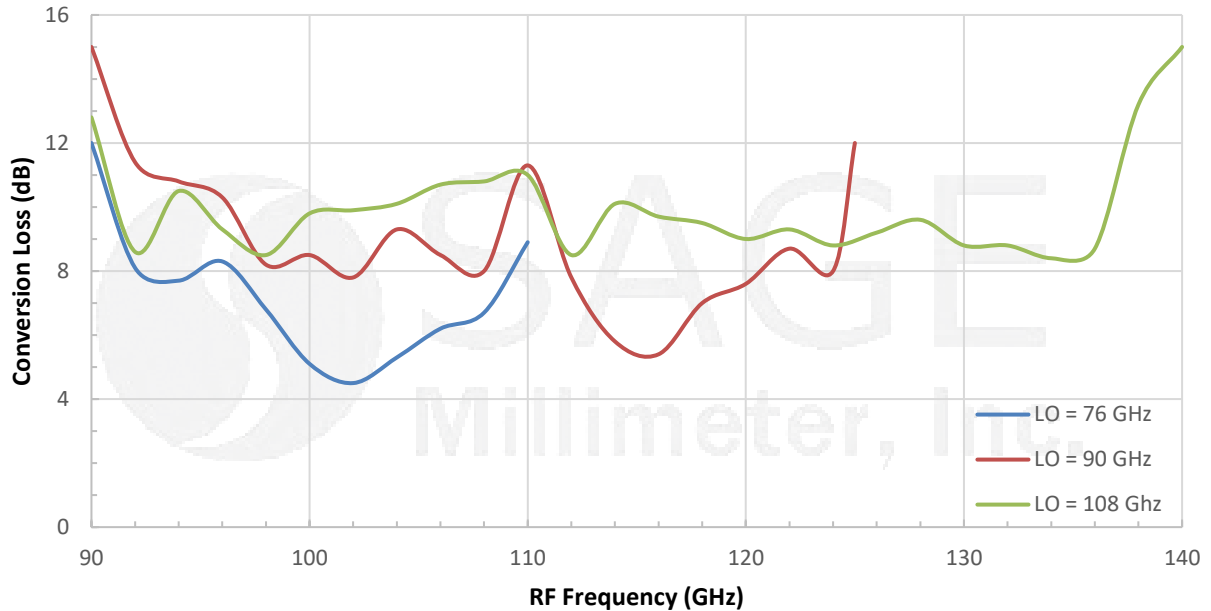




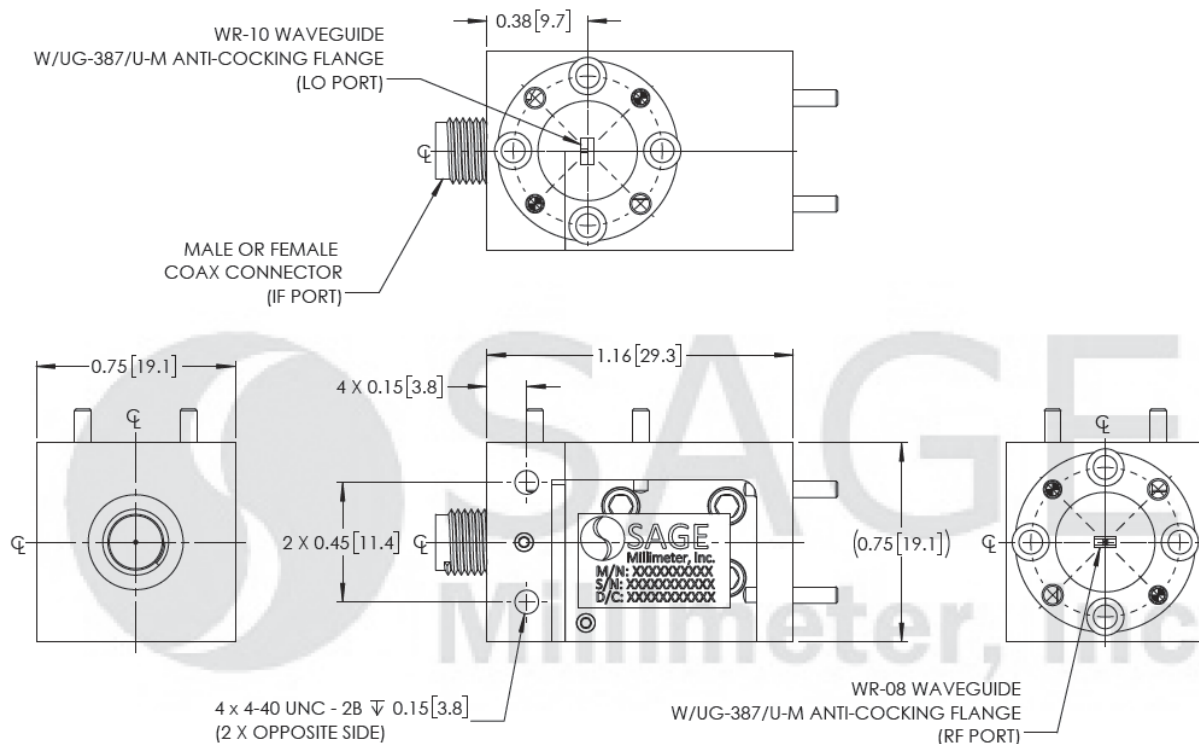
## F-Band Balanced Mixer with W-Band LO Port, DC to 35 GHz IF

### Typical Conversion Loss vs. Frequency

RF = -20 dBm & LO = +12 dBm



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





## F-Band Balanced Mixer with W-Band LO Port, DC to 35 GHz IF

### 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.
- A DC block at IF port may be required when connecting to a device, such as an IF low noise amplifier or a base band mixer which input port is DC coupled.
- SAGE Millimeter, Inc. reserves the right to change the information presented without notice.

### Caution:

- Exceeding absolute maximum ratings shown will damage the device.
- The device is static sensitive. Always follow ESD rules when working with the device.
- The IF port of the mixer is DC coupled. Use a DC block when connecting to other devices.
- **Never apply an external bias voltage to the IF port because the mixer will be damaged.**
- Any foreign objects in the waveguide will cause performance degradation and can possibly damage the device.
- Proper torque,  $8.0 \pm 0.15$  inch-pounds ( $0.90 \pm 0.02$  Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**

