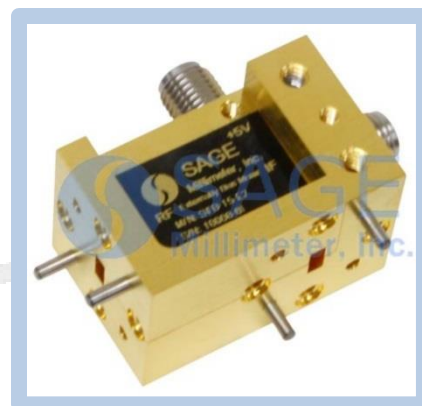


## V-Band Externally Biased Balanced Mixer

### Description:

**Model SFB-15-E2** is a V-Band, externally biased balanced mixer. The mixer supports the full waveguide band operation for both LO and RF frequencies from 50 to 75 GHz with an extremely broad IF output from DC to 25 GHz. The mixer offers a typical conversion loss of 9 dB and a high RF to LO port isolation. The main advantage of using an externally biased mixer is that it only requires a local oscillator (LO) power of 0 to +5 dBm when a bias of +5 V<sub>DC</sub> is applied. This eliminates the need for an expensive local oscillator, making system integrations more affordable.



### Features:

- Full Waveguide Band Coverage
- Low LO Power Requirement
- Low Conversion Loss
- High IF Frequency up to 25 GHz

### Applications:

- IEEE 802.11.ad WiGig Systems
- Radar Systems
- Communication Systems
- Test Equipment

### Electrical Specifications:

Parameter	Minimum	Typical	Maximum
RF Frequency	50 GHz		75 GHz
LO Frequency	50 GHz		75 GHz
IF Frequency	DC		25 GHz
Required LO Pumping Power	+0 dBm	+3 dBm	+5 dBm
Input P <sub>1dB</sub>		-10 dBm	
RF to LO Isolation		30 dB	
Combined Damage RF and LO Power			+13 dBm
External Bias Voltage		+5 V <sub>DC</sub>	
Total DC Current (Caused by Bias and LO)		1 mA	5 mA
Specification Temperature		+25°C	
Operating Temperature	-40°C		+85°C

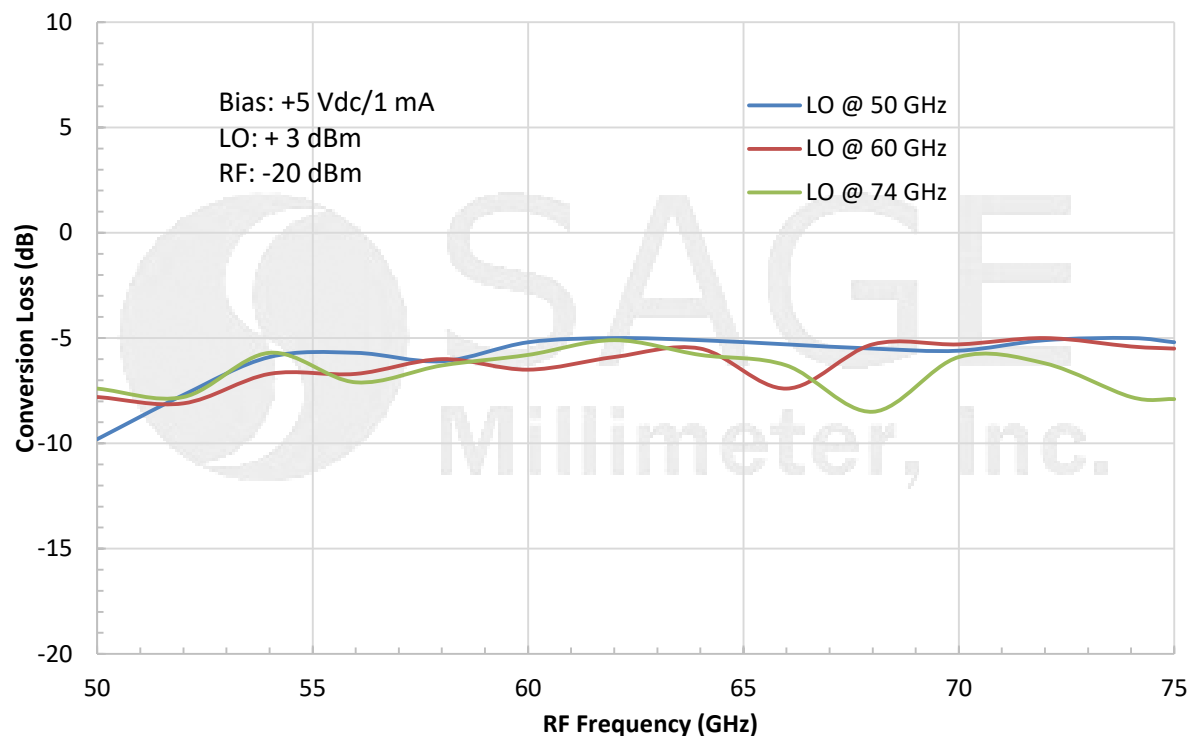
### Mechanical Specifications:

Item	Specification
RF	WR-15 Waveguide with UG-387/U Flange
LO	WR-15 Waveguide with UG-387/U Flange
IF	K (F)
External Bias	SMA (F)
Case Material	Aluminum
Finish	Gold Plated
Weight	0.8 Oz
Outline	FB-EV-2

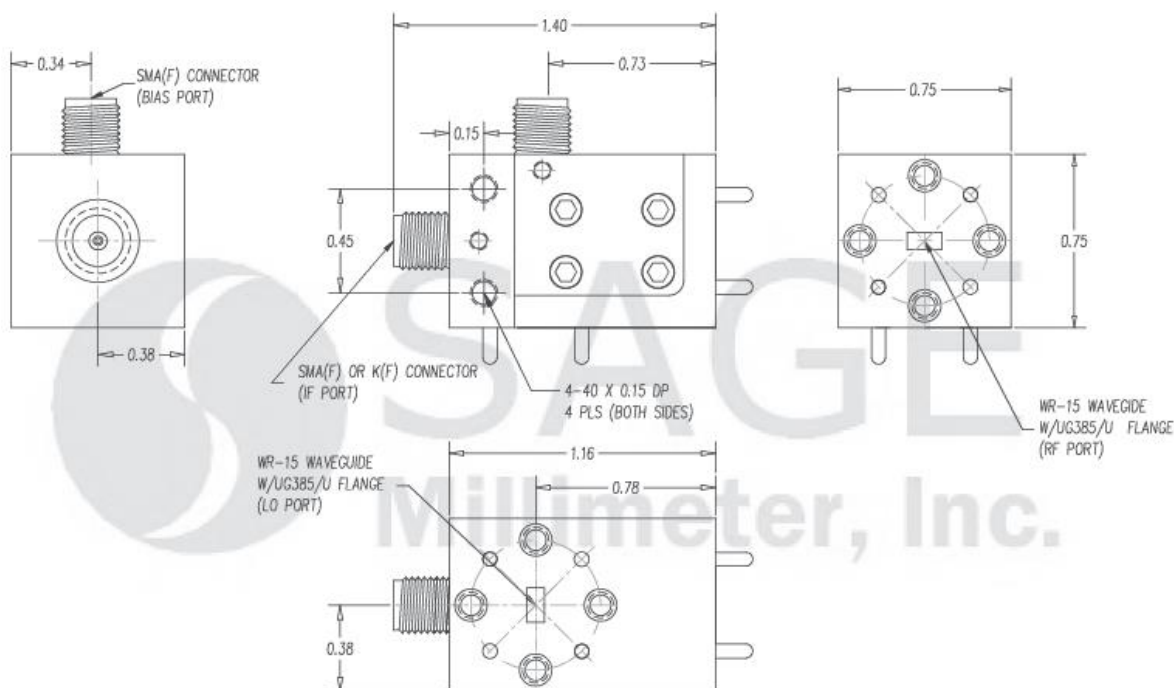


## V-Band Externally Biased Balanced Mixer

## Typical Conversion Loss vs. Frequency



## Mechanical Outline: (Unless otherwise specified, all dimensions are in inches)





## V-Band Externally Biased Balanced Mixer

### 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.
- 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 externally biased mixer has a small offset bias and is DC coupled. Use a DC block when connecting to other devices. **Do not apply an external bias voltage to the IF port.**
- 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 ( $0.92 \pm 0.05$  Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**

