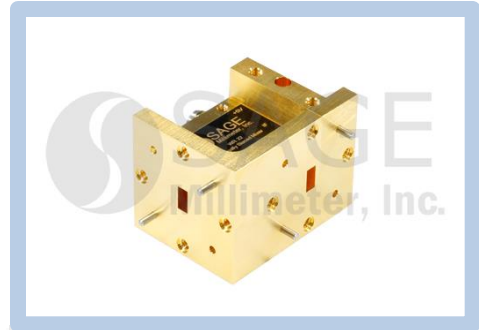




## V-Band Externally Biased Balanced Mixer, 55 to 75 GHz

### Description:

**Model SFB-55375307-1519SF-E2** is a V-Band, externally biased balanced mixer. The mixer supports a wide waveguide band operation with an RF frequency of 55 to 75 GHz, a LO frequency of 40 to 60 GHz, and an IF output from DC to 25 GHz. The mixer offers a typical conversion loss of 8 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 +3 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:

- Near 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	55 GHz		75 GHz
LO Frequency	40 GHz		60 GHz
IF Frequency	DC		25 GHz
LO Pumping Power		+3 dBm	
Conversion Loss		8 dB	
RF Input P-1dB		-10 dBm	
RF to LO Isolation		30 dB	
Combined Damage RF and LO Power			+13 dBm
External Bias Voltage		+5 V <sub>DC</sub> /2 mA	+5 V <sub>DC</sub> /5 mA
Specification Temperature		+25°C	
Operating Temperature	-40°C		+85°C

### Mechanical Specifications:

Item	Specification
RF	WR-15 Waveguide with UG-385/U Anti-Cocking Flange
LO	WR-19 Waveguide with UG-383/U-M Anti-Cocking Flange
IF	SMA (F)
External Bias	SMA (F)
Case Material	Aluminum
Finish	Gold Plated
Weight	1.8 Oz
Outline	FB-EVU-2-A

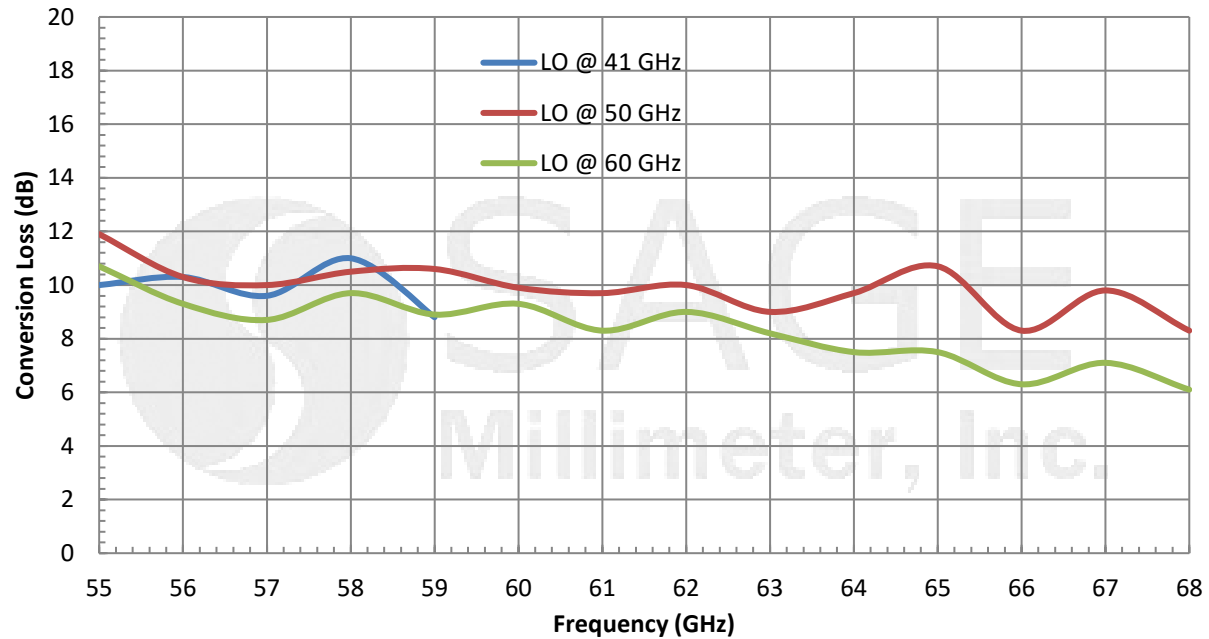




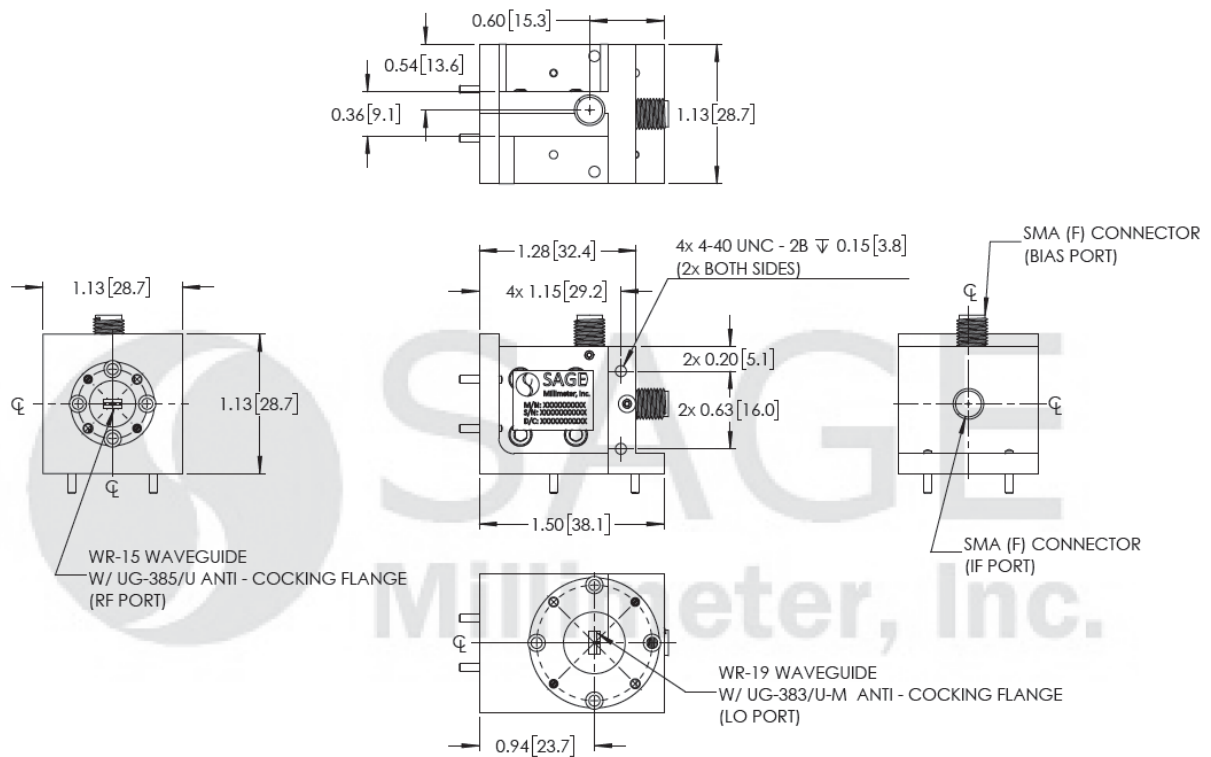
## V-Band Externally Biased Balanced Mixer, 55 to 75 GHz

### Typical Conversion Loss vs. Frequency

RF: -20 dBm; LO: +3 dBm; Bias: +5 V<sub>DC</sub>/1 mA



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





## V-Band Externally Biased Balanced Mixer, 55 to 75 GHz

### 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.
- 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 mixer is a small signal device. The typical RF input level is – 10 dBm or lower.**
- The device is static sensitive. Always follow ESD rules when working with the device.
- The IF port of the externally biased mixer is DC coupled. Due to the external bias, it has a small DC offset voltage (+0.7 V<sub>DC</sub>), which could upset the connecting device performance or even damage the device. 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 ± 0.15 inch-pounds (0.92 ± 0.05 Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**

