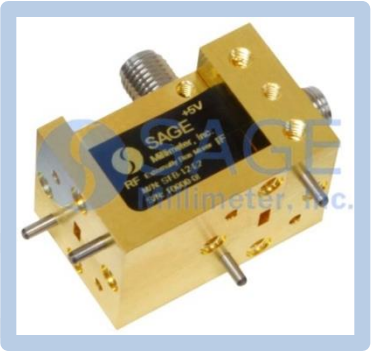
SFU-12-E2

Rev 1.0

E-Band Externally Biased Balanced Up-Converter

Description:



Model SFU-12-E2 is an E-Band, externally biased, balanced up-converter. The up-converter supports the full waveguide band operation for both LO and RF frequencies from 60 to 90 GHz with an extremely broad IF output from DC to 30 GHz. The up-converter offers a typical conversion loss of 9 dB and a high RF to LO port isolation. The main advantage of using an externally biased up-converter is that it only requires a local oscillator (LO) power of 0 to +5 dBm when a bias of +5 V_{DC} 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 30 GHz

Applications:

- 5G Systems
- Radar Systems
- Communication Systems
- Test Equipment

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
RF Frequency	60 GHz		90 GHz
LO Frequency	60 GHz		90 GHz
IF Frequency	DC		30 GHz
LO Pumping Power	+0 dBm	+3 dBm	+5 dBm
Conversion Loss		9 dB	13 dB
RF to LO Isolation		30 dB	
Combined IF and LO Power			+18 dBm
External Bias Voltage		+5 V_{DC}	
Bias Current		1 mA	5 mA
Specification Temperature		+25 °C	
Case Temperature	-40 °C		+85 °C

Mechanical Specifications:

Item	Specification
RF Port	WR-12 Waveguide with UG-387/U Flange
LO Port	WR-12 Waveguide with UG-387/U Flange
IF Port	K(F)
External Bias	SMA(F)
Material	Aluminum
Finish	Gold Plated
Weight	0.8 Oz
Size	1.16” (L) X 0.75” (W) X 0.75” (H)
Outline	FB-EE-2

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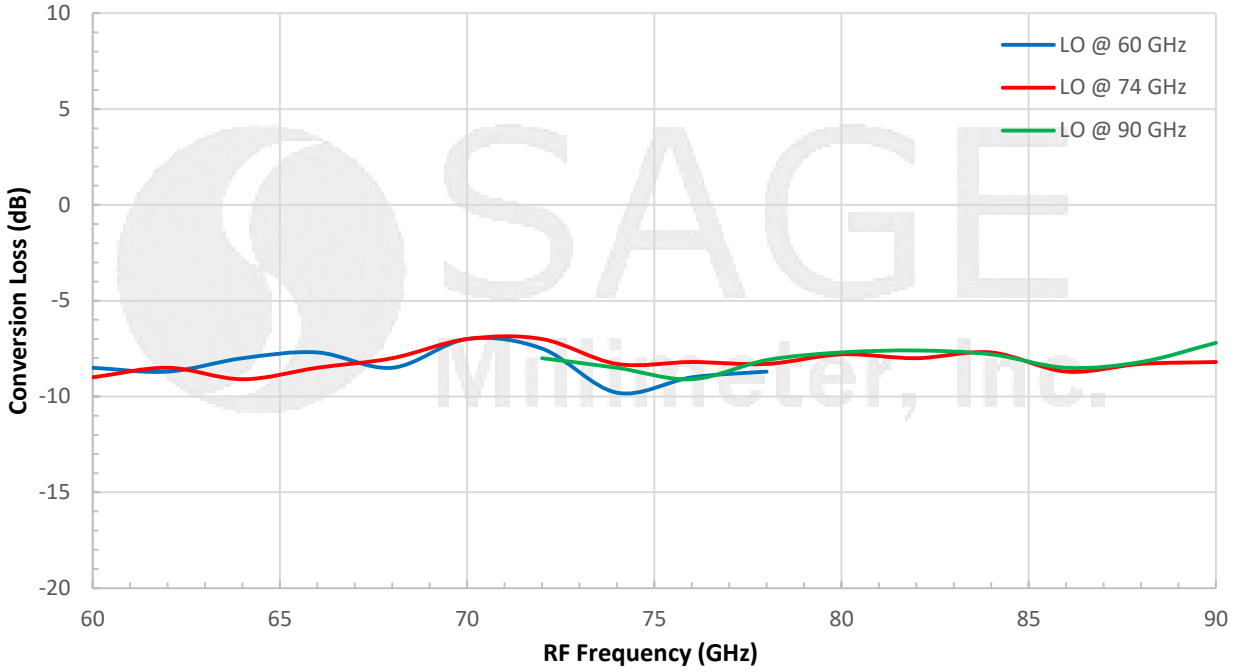
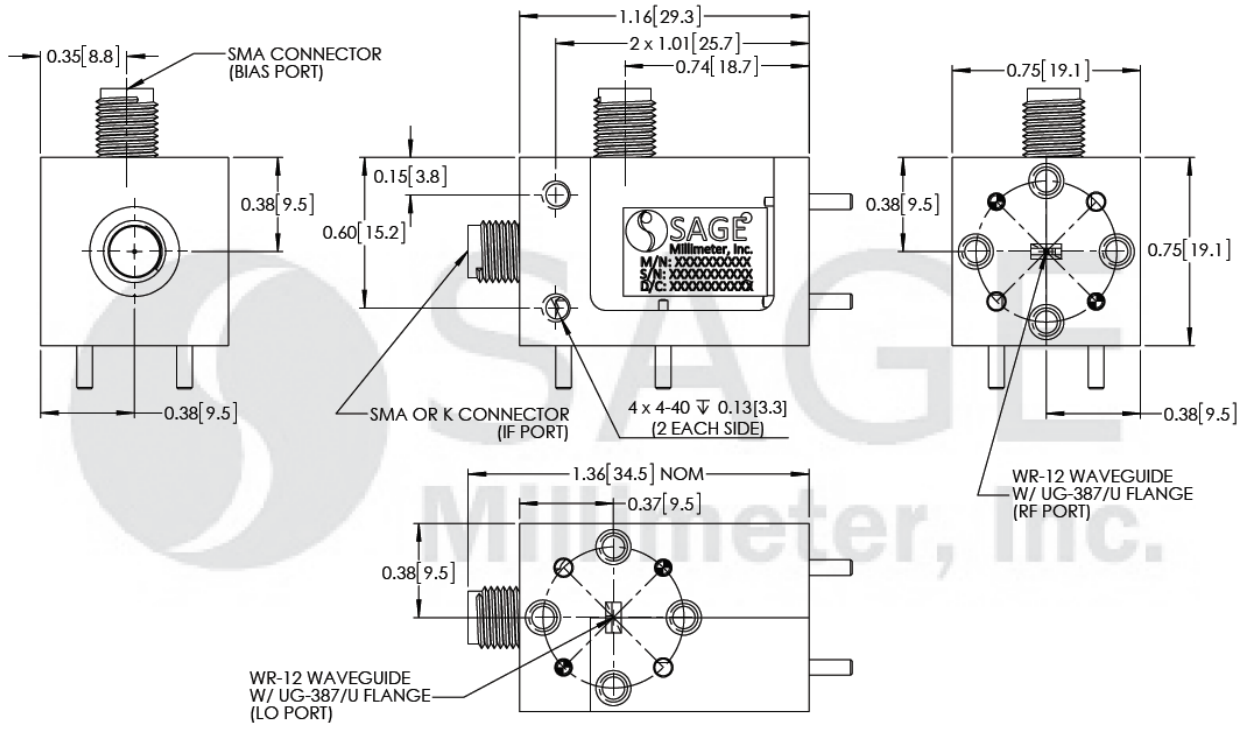
Typical Conversion Loss vs. Frequency

LO: +3 dBm, RF: -20 dBm, Bias: +5 V_{DC}/ 1 mA



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, 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 ± 0.15 inch-pounds (0.92 ± 0.05 Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**

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