SFB-19-N1-M

Rev 1.1

U-Band Balanced Mixer, High Port Isolation

Description:

Model SFB-19-N1-M is a U Band balanced mixer that utilizes high performance pHEMT based GaAs MMIC to offer superior RF performance. The mixer supports the full waveguide band operation for both LO and RF frequencies from 40 to 60 GHz with an IF output from DC to 20 GHz. The mixer offers a conversion loss of 11 dB typical, high LO to RF port isolation of 40 dB, a Lo to IF port isolation of 30 dB and an RF to IF port isolation of 30 dB. The RF and LO ports are WR-19 Uni-Guide™ waveguides, and IF port has SMA female connector.

Features:

- Compact Package
- Low Conversion Loss
- High Port Isolations
- IF Port DC Coupled

Applications:

- Speed and Ranging Radar Systems
- Communication Systems
- Test Equipment

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
RF Frequency	40 GHz		60 GHz
LO Frequency	40 GHz		60 GHz
LO Pumping Power		+13 dBm	+18 dBm
IF Frequency	DC		20 GHz
Conversion Loss		11 dB	
RF Input P_{-1dB}		0 dBm	
LO to RF Port Isolation		40 dB	
LO to IF Port Isolation		30 dB	
RF to IF Port Isolation		30 dB	
Combined RF & LO Power			+27 dBm
Specification Temperature		+25 ˚C	
Operating Temperature	-40 ˚C		+85 ˚C

Note: The RF input P_{-1dB} is LO pumping power related. The value shown is at LO power +13 dBm. The higher the LO power, the higher the input P_{-1dB}.

Mechanical Specifications:

Item	Specification
RF Port	WR-19 Uni-Guide™ Waveguide with a UG-383/U-M Anti-Cocking Flange
LO Port	WR-19 Uni-Guide™ Waveguide with a UG-383/U-M Anti-Cocking Flange
IF Port	SMA (F)
Case Material	Aluminum
Finish	Gold Plated
Weight	1.1 Oz
Outline	FB-NUM-2

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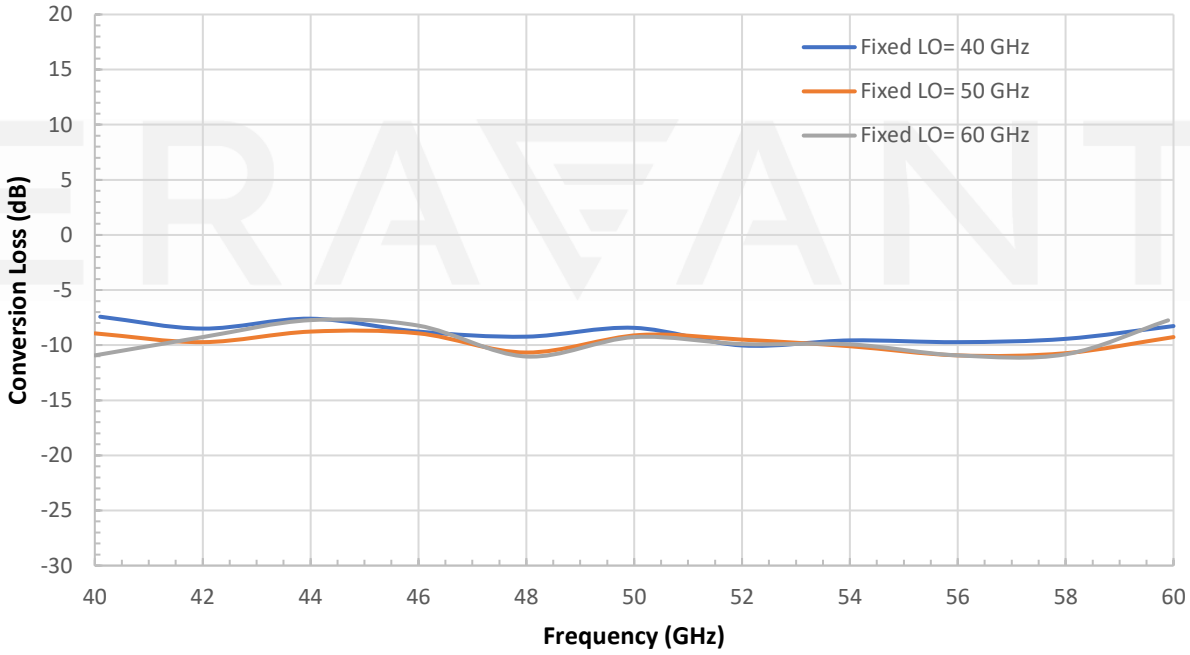
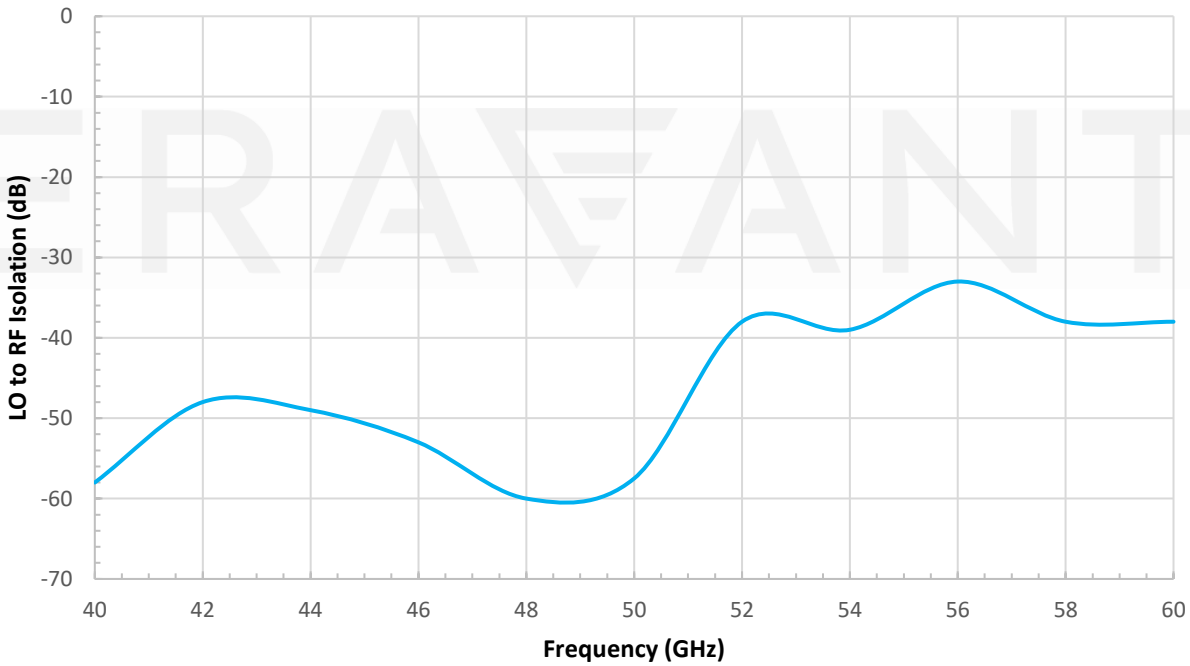
Typical Conversion Loss vs. Frequency

RF: -20 dBm; LO: +13 dBm



Typical LO to RF Isolation vs. Frequency



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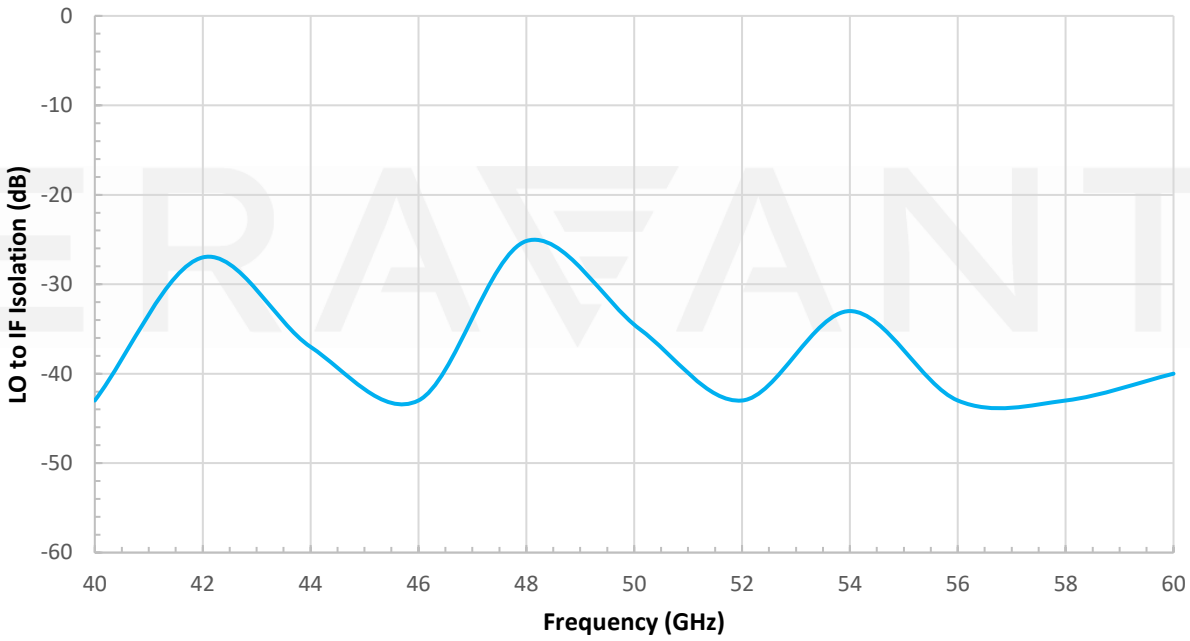
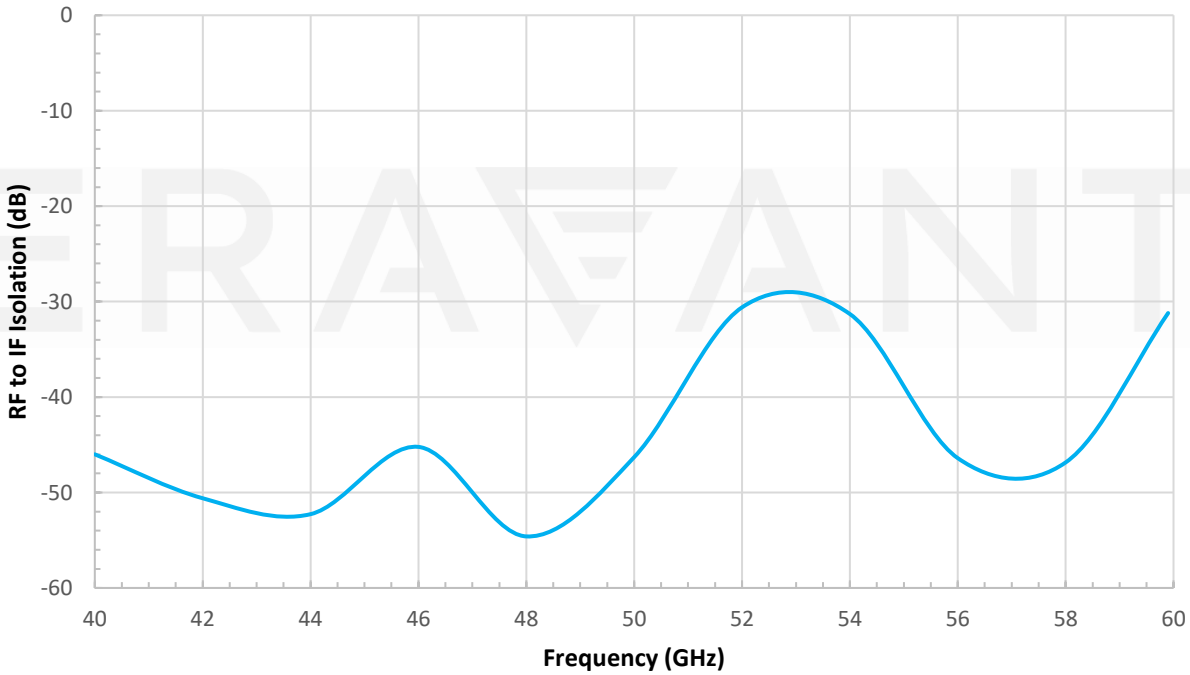
Typical LO to IF Isolation vs. Frequency



Typical RF to IF Isolation vs. Frequency



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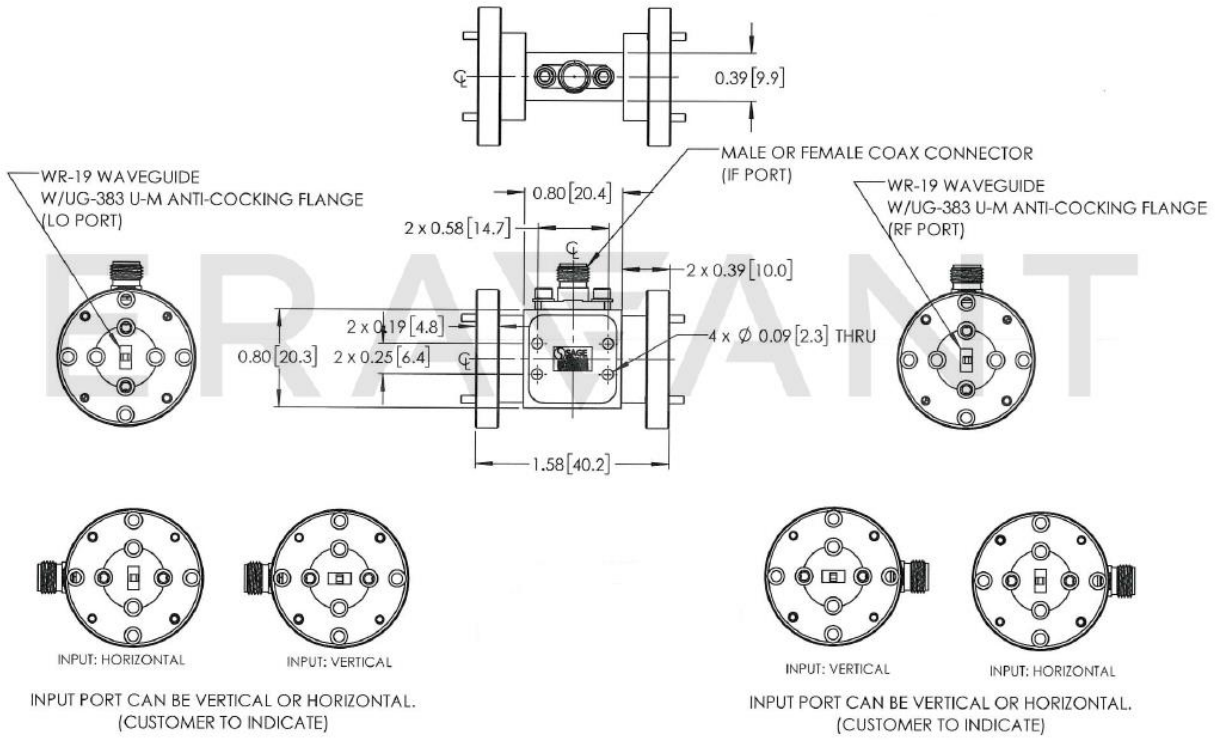
Mechanical Outline: (Unless otherwise specified, all dimensions are in inches [millimeters])



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.
- The mixer employs Eravant's trademarked and patent pending technology, UniGuide™, as its waveguide interfaces.
- Eravant 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. It will damage the mixer.**
- 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. **Eravant torque wrench, model SCH-08008-S1, is highly recommended.**

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