



V-Band Transceiver Sub-Assembly, 50 to 75 GHz, +27 dBm EIRP

Description:

Model SSC-6336337012-SFSF-S1-NU2 is a V-Band transceiver sub-assembly integrated over a baseplate. The transmitter includes a single-side-band modulator and a higher power amplifier to convert an IF frequency of 1 to 2 GHz to 50 to 75 GHz with 38 dB gain and +12 dBm output power. With a 15 dBi gain horn antenna, the EIRP of the transmitter is +27 dBm. The receiver includes a quadrature mixer and a low noise amplifier to achieve 18 dB small signal gain and 25 dB side band rejection. The transceiver LO is realized via an active x6 multiplier and a filter chain to convert a -3 dBm input power in the frequency range of 8.33 to 12.50 GHz to generate the the 50 to 75 GHz power to satisfy the TX/RX modulator's and mixer's requirements. A level setting attenuator is offered to control the output power level with 30 dB control range. The sub-assembly includes an orthomode transducer as an TX/RX diplexer to realize the monn-static operation.



Features:

- High Output Power
- High Gain
- Good Gain Flatness

Applications:

- Radar Systems
- Communication Systems
- Test Bed

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
TX Output Frequency	50 GHz		75 GHz
TX Output Power		+12 dBm	
TX EIRP		+27 dBm	
TX Output Power Control Range		30 dB	
TX IF Input Frequency	1 GHz		2 GHz
TX IF P _{-1dB}		0 dBm	
IF to TX Gain		38 dB	
RX Input Frequency	50 GHz		75 GHz
RX Input Power			0 dBm
RX IF Output Frequency	1 GHz		2 GHz
RX To IF Gain		18 dB	
RX Noise Figure		7 dB	
RX Mixer Conversion Loss		13 dB	
LO Input Frequency	8.33 GHz		12.50 GHz
LO Input Power	-3 dBm		+20 dBm
LO to RF Port Isolations		30 dB	
TX/RX Detector Sensitivity		1,000 mV/mW	



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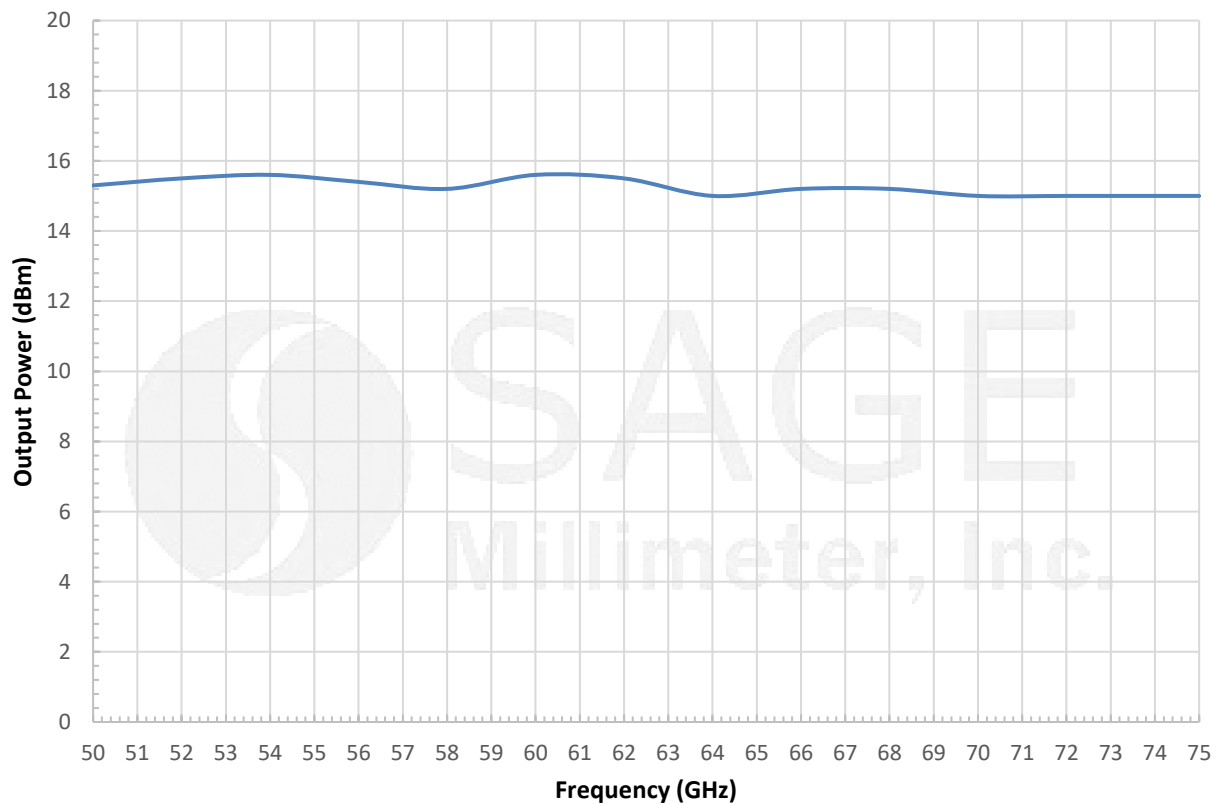
Bias and Environmental Specifications:

Parameter	Minimum	Typical	Maximum
Power Amplifier Bias		+8 V _{DC} / 375 mA	
LNA Bias		+8 V _{DC} / 100 mA	
Active Frequency Multiplier Bias		+8 V _{DC} / 770 mA	
Specification Temperature		+25 °C	
Operating Temperature	0 °C		+50 °C

Mechanical Specifications:

Item	Specification
IF-I and IF-Q Port	K (F)
LO Port	SMA (F)
Bias	Solder Pin
Finish	Gold Plate (Components) and Chem Film (Baseplate)
Size	10.00" (L) X 14.00" (W) X 3.00" (H)
Outline	SC-SV-NU1

Typical TX Output Power vs. Frequency



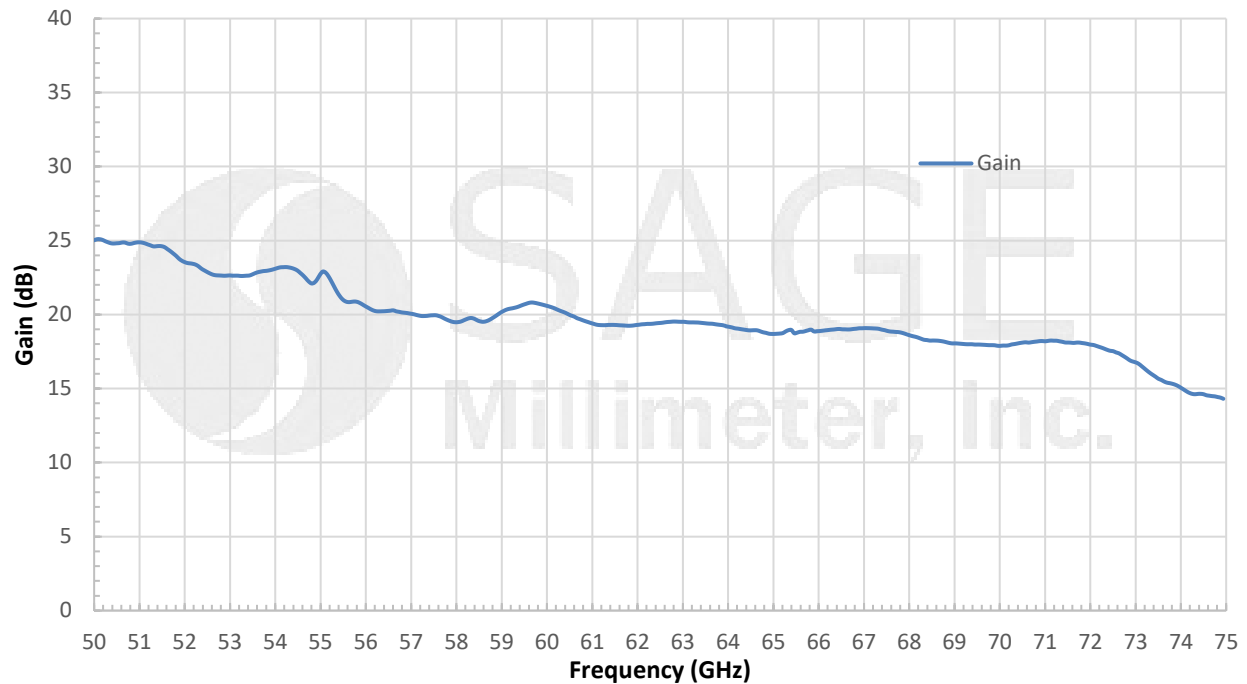
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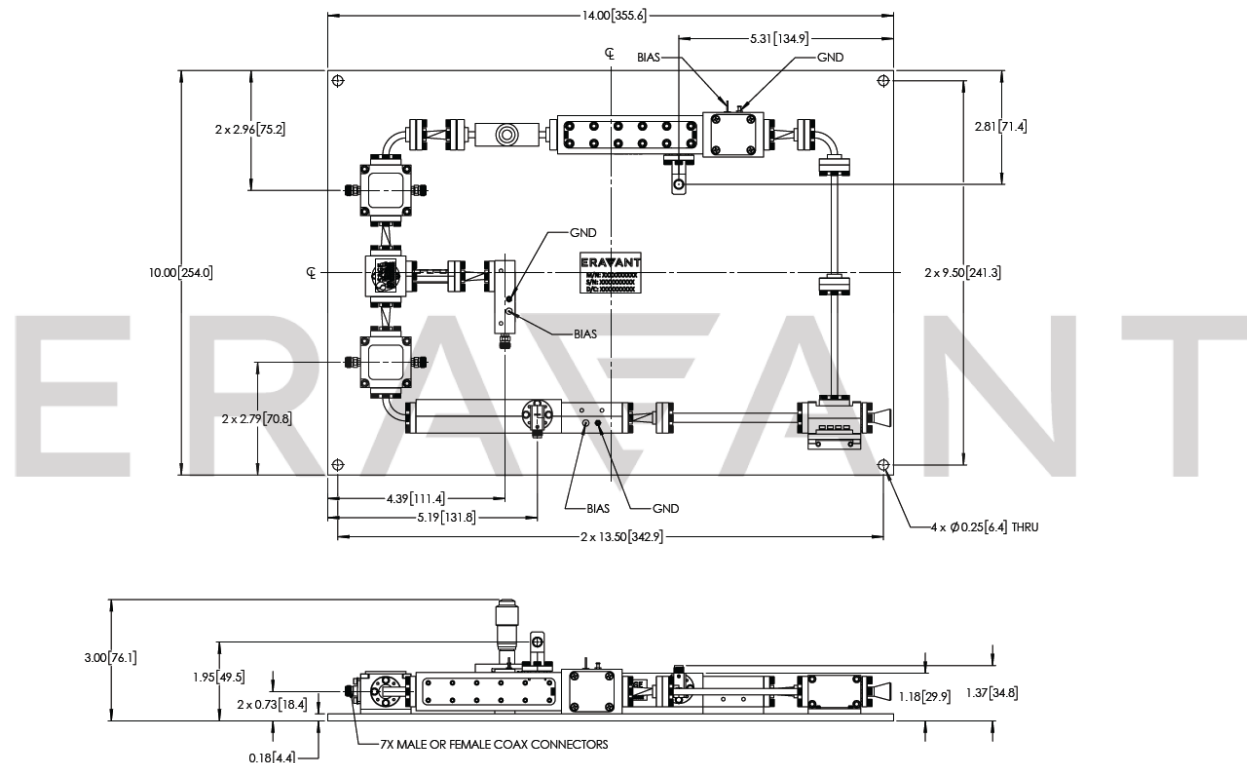


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Typical RX to IF Gain vs. Frequency



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



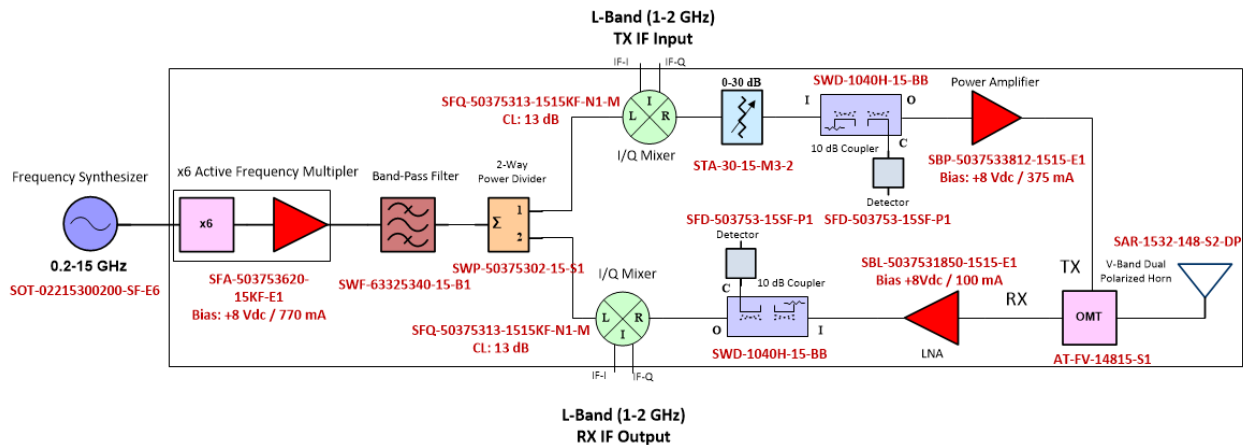
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Block Diagram:



Note:

- All data are presented using a limited sample lot, actual data may vary unit to unit.
- All testing was performed under +25 °C case temperature.
- SAGE Millimeter, Inc. reserves the right to change the information presented without notice.
- Other mechanical configurations are available under different model numbers.

Caution:

- Exceeding absolute maximum ratings shown will damage the device.
- The device is static sensitive. Always follow ESD rules when working with the device.
- Any foreign objects in the waveguide will cause performance degradation and possible device damage.
- The case temperature of the device shall never exceed +50 °C. Use proper heatsink or fan if necessary.
- Proper torque, 8.0 ± 0.15 inch-pounds (0.90 ± 0.02 Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**

