



## U-Band, X4 Active Frequency Multiplier, 40 to 60 GHz, +18 dBm P<sub>out</sub>

### Description:

**Model SFA-194SF-E1** is an active X4 frequency multiplier. The multiplier has an input frequency of 10 to 15 GHz with a minimum input power of 0 dBm and an output frequency of 40 to 60 GHz with a typical output power of +18 dBm. The multiplier also has a typical harmonic suppression of -15 dBc. The DC power requirement for the multiplier is +8 V<sub>DC</sub>/800 mA. The input port configuration is a female K connector and the output is WR-19 Uni-Guide™ waveguide. Other port configurations are available under different model numbers.



### Features:

- Full Waveguide Band Coverage
- Low Harmonic Emission
- High Output Power
- Low Harmonic Components

### Applications:

- 5G
- Frequency Extenders
- Source Module
- Communication Systems

### Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Input Frequency	10 GHz		15 GHz
Input Power		0 dBm	+20 dBm
Output Frequency	40 GHz		60 GHz
Output Power		+18 dBm	
Harmonic Suppression		-15 dBc	
Spurious		-60 dBc	
Port Return Loss		15 dB	
DC Voltage	+6 V <sub>DC</sub>	+8 V <sub>DC</sub>	+12 V <sub>DC</sub>
DC Supply Current		800 mA	
Specification Temperature		+25 °C	
Operating Temperature	0 °C		+50 °C

### Mechanical Specifications:

Item	Specification
Input Port	SMA (F)
Output Port	WR-19 Uni-Guide™ Waveguide with UG-383/U-M Anti-Cocking Flange
Bias	Solder Pin
Case Material	Aluminum
Finish	Gold Plated
Weight	1.6 Oz
Size	1.59" (L) X 1.20" (W) X 1.13" (H)
Outline	FA-SU-2CW-A

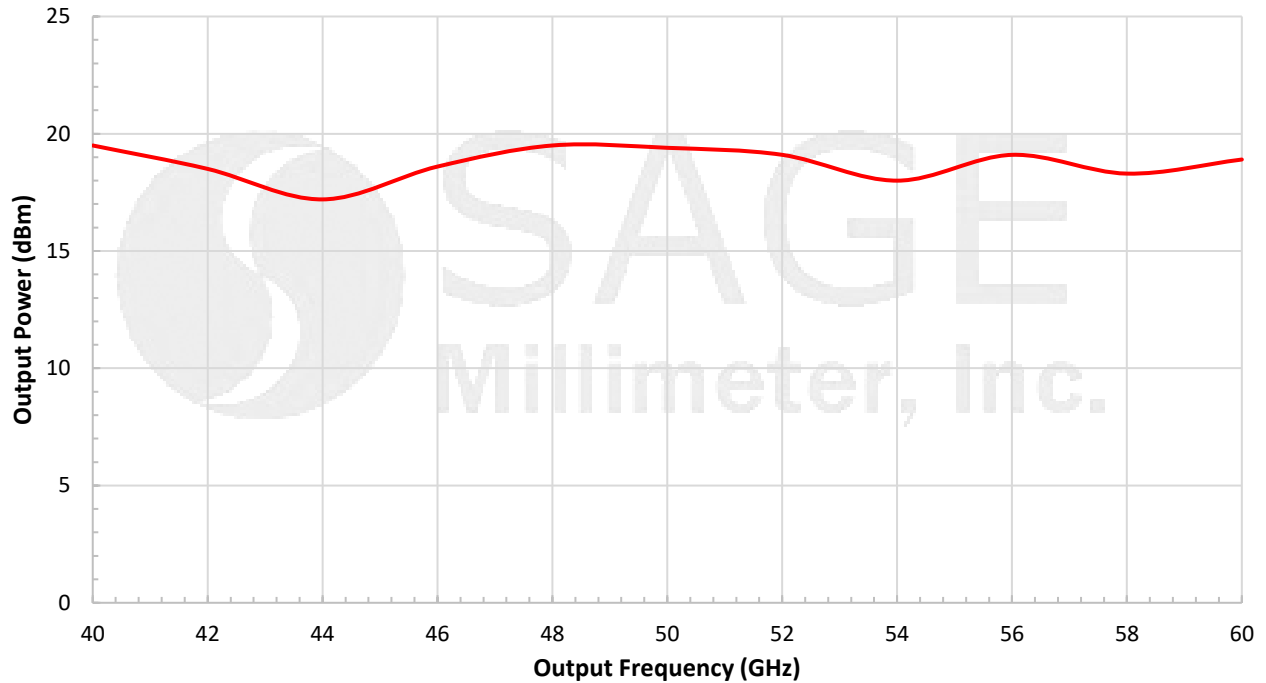




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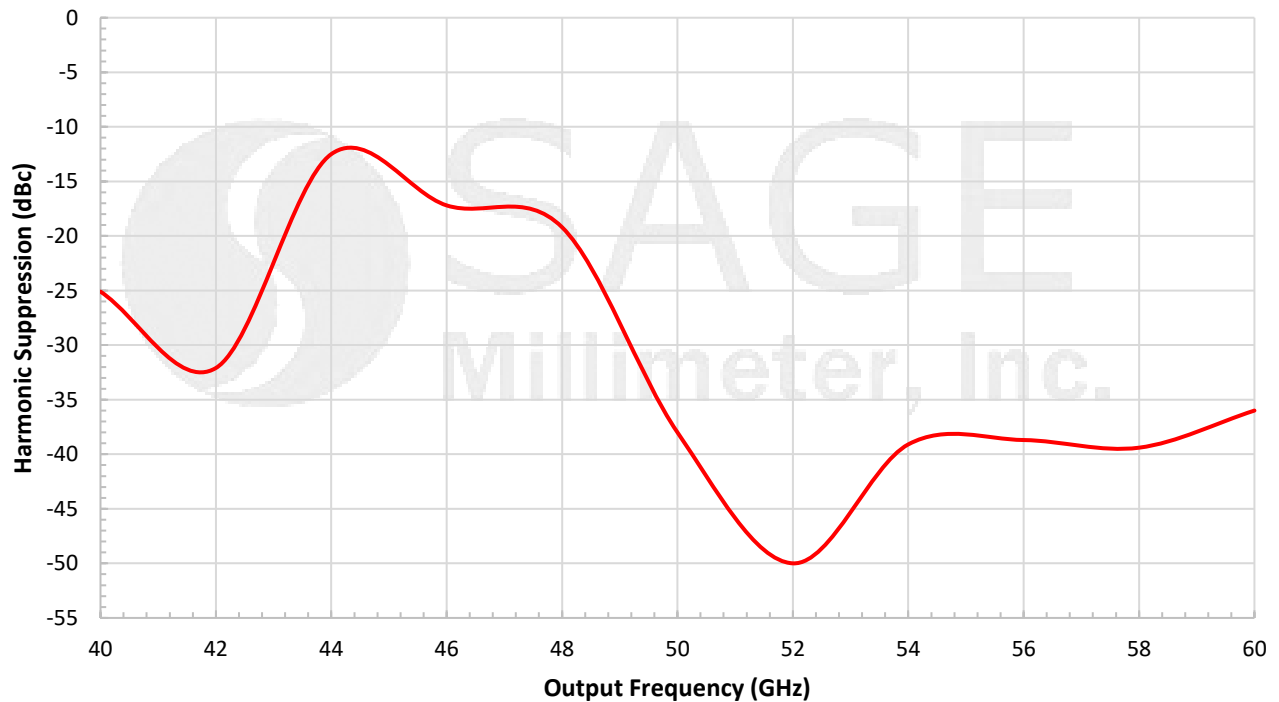
### Typical Output Power vs. Output Frequency

Bias: +8 V<sub>DC</sub>/800 mA; Input Power: 0 dBm



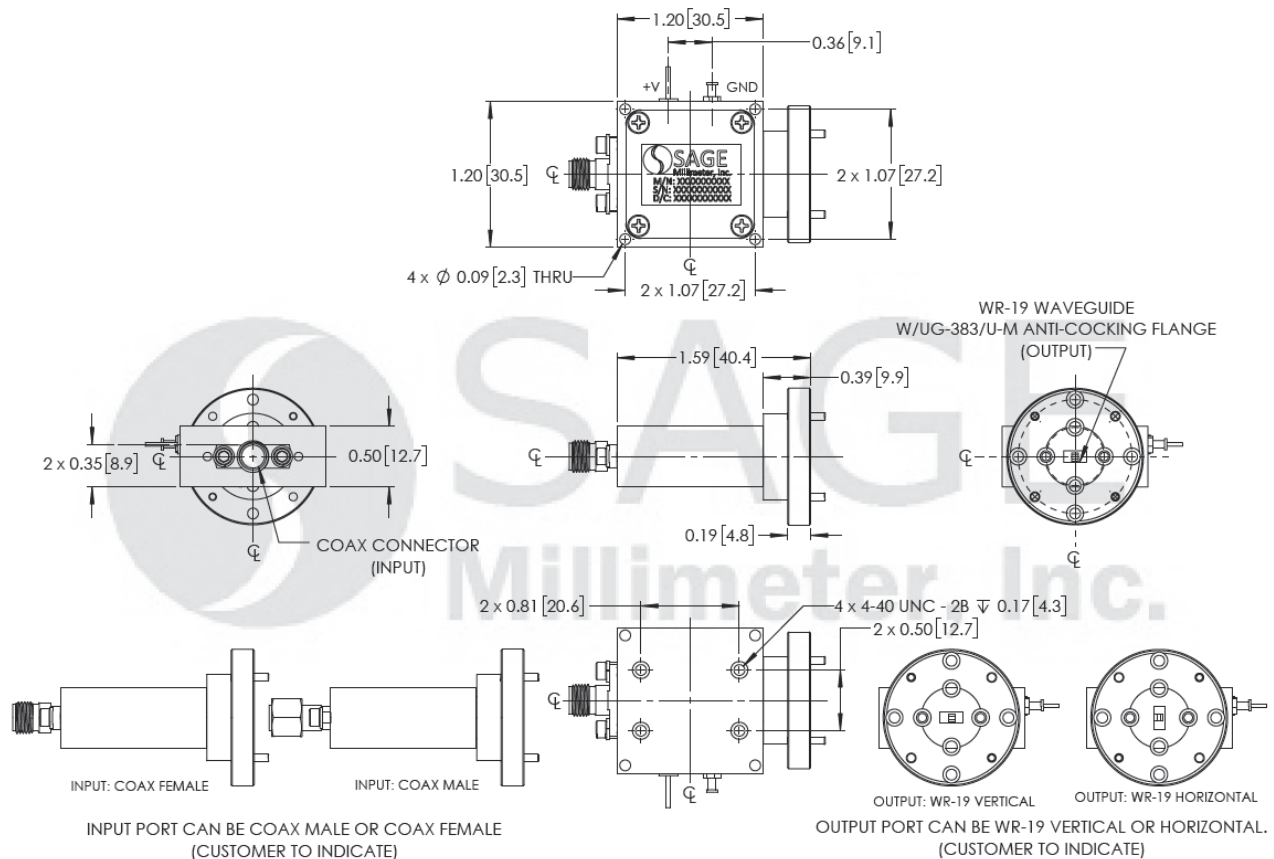
### Typical Harmonic Suppression vs. Output Frequency

Bias: +8 V<sub>DC</sub>/800 mA; Input Power: 0 dBm



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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.
- All testing was performed under +25 °C case temperature.
- The active multiplier employs SAGE Millimeter's trademarked and patent pending technology, the **Uni-Guide™**, as its output waveguide interface. The orientation of output waveguides can be specified through corresponding model numbers. For example, the model number for a horizontal output waveguide configuration would be **SFA-19H4SF-E1** instead of the default **SFA-194SF-E1** which indicates vertical orientation output.
- Other mechanical configurations are available under different model numbers.
- 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 case temperature of the device shall never exceed +50 °C. Use proper heatsink or fan if necessary.



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- Any foreign objects in the waveguide will cause performance degradation and may damage the device.
- Proper torque,  $8.0 \pm 0.15$  inch-pounds ( $0.90 \pm 0.02$  Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**

