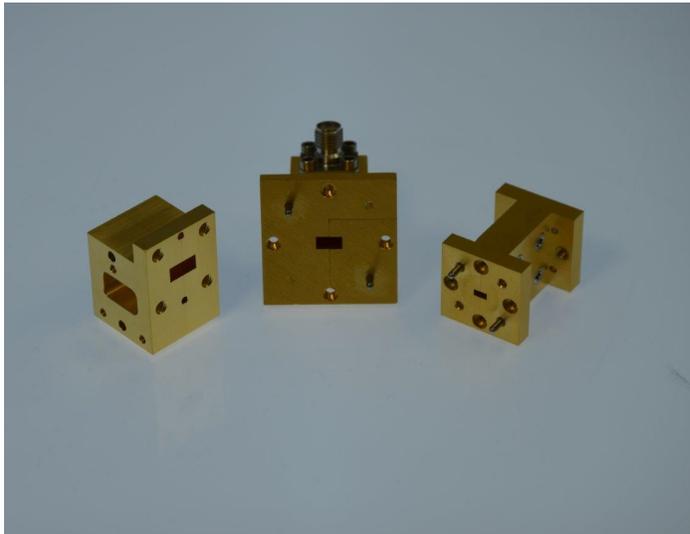


FULLBAND FREQUENCY TRIPLERS



FEATURES:

- Fullband performance
- Small size
- Flat output over frequency

APPLICATIONS:

- Frequency extension
- Test equipment/Laboratory use
- Phase-lock loops

DESCRIPTION

Millitech series MUT frequency triplers are balanced resistive – mode multipliers covering full waveguide bands. Power flatness over the full waveguide band for a given input power level is typically ± 2.0 dB.

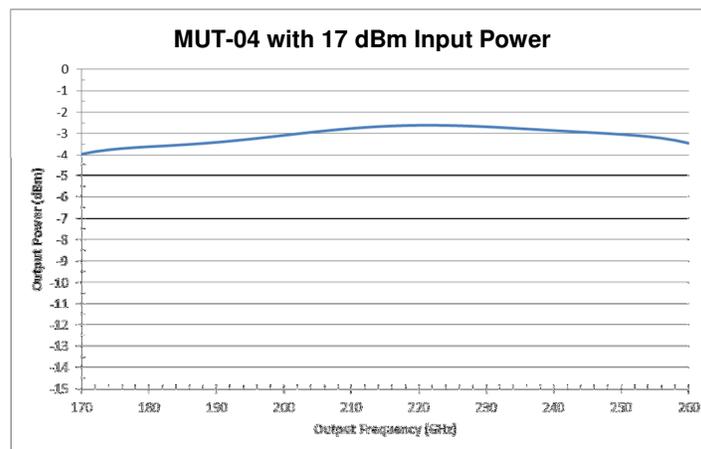
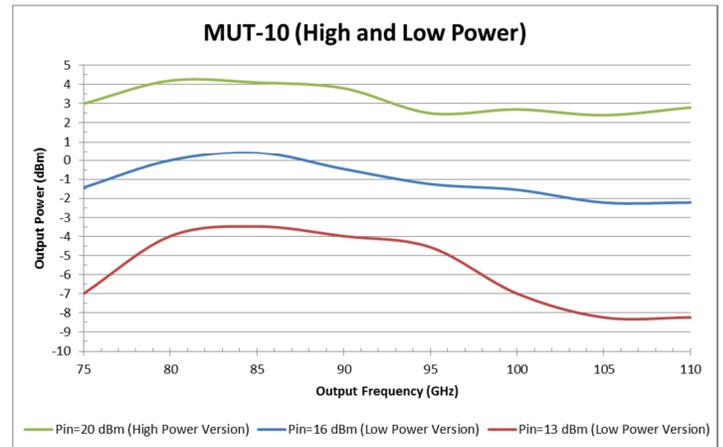
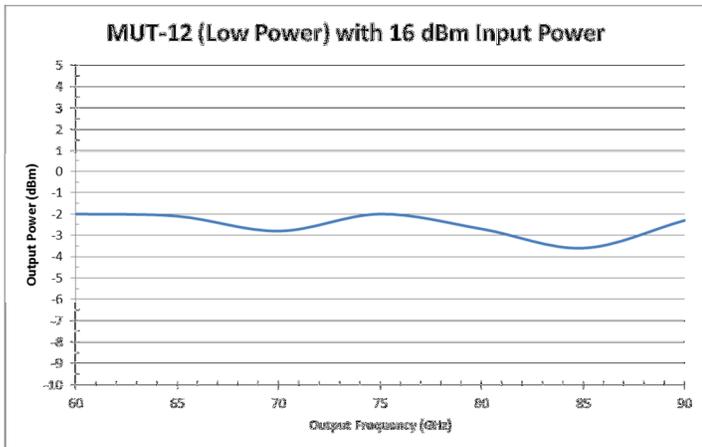
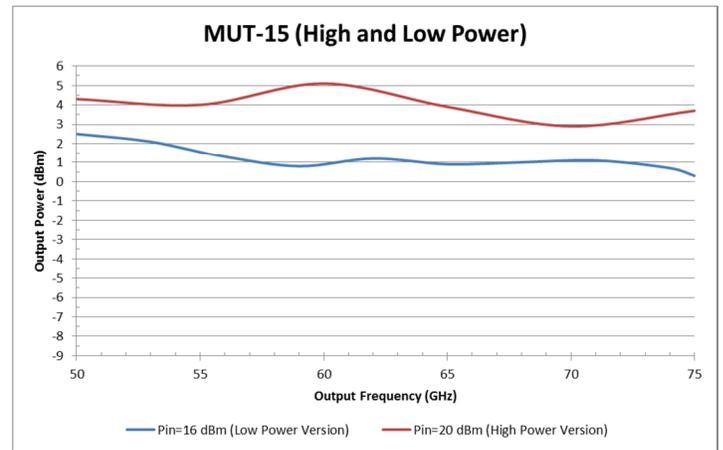
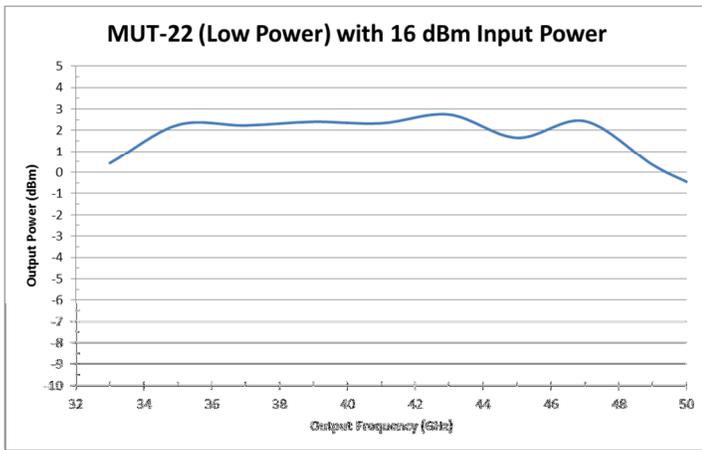
These triplers are offered in both a standard low power and a high power version. The standard version operates with 16 dBm input power and typically provides -2 to +2 dBm of output power depending on frequency. The high power version operates with +20 dBm of input power (+17 dBm for higher frequency bands) and provides -3 to +5 dBm output power depending on frequency and input power. (see performance tables on the following page). Input VSWR is 2.5:1, second harmonic content is less than -30 dBc, and

fourth harmonic content is less than -20 dBc typically.

Both versions operate over a wide range of input power levels, and can be tested at customer-specified power levels. These frequency triplers can be optimized to produce higher output power over narrower-than-full waveguide bandwidth. They are compact in size, typically less than a cubic inch, and require no external DC bias.

Series MUT triplers are particularly useful for extending the use of test equipment into millimeter-wave bands. They are capable of generating enough power to pump biased mixers or detectors, or to lock injection-lockable oscillators and amplifiers.

TYPICAL PERFORMANCE

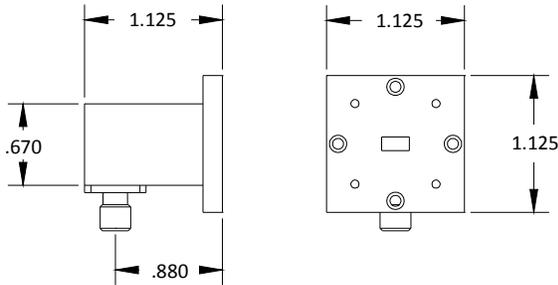


ELECTRICAL SPECIFICATIONS

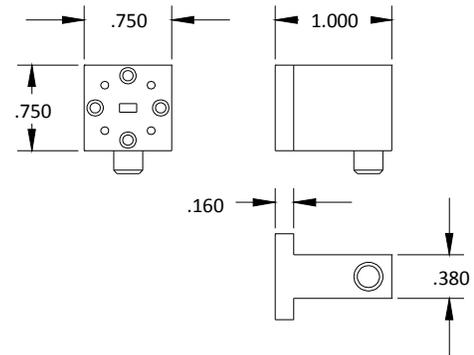
Model Number	MUT-22	MUT-19	MUT-15	MUT-12	MUT-10	MUT-08	MUT-06	MUT-05	MUT-04
Frequency Band and Range (GHz)	Q 33-50	U 40-60	V 50-75	E 60-90	W 75-110	F 90-140	D 110-170	G 140-220	170-260
Input Frequency Range (GHz)	11-16.67	13.33-20	16.67-25	20-30	25-36.67	30-46.67	36.67-56.67	46.67-73.33	56.67-86.67
Input Frequency Band	Coax (SMA)	Coax (SMA)	Coax (2.92mm)	Coax (2.92mm)	WR-28	WR-22	WR-19	WR-15	WR-12
Standard (Low Power) Version									
Input Power (dBm)	16	16	16	16	16				
Output Power (dBm) (typ)	2	2	1	-2	-2				
Max. Input Power (dBm)	18	18	18	18	18				
High Power Version									
Input Power (dBm)	20	20	20	20	20	20	17	17	17
Output Power (dBm) (typ)	5	4	3	2	1	-1	-2	-3	-3
Max. Input Power (dBm)	23	23	23	23	23	23	20	20	20

OUTLINE DRAWINGS*

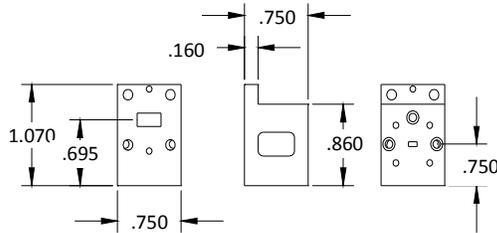
MUT-22/19



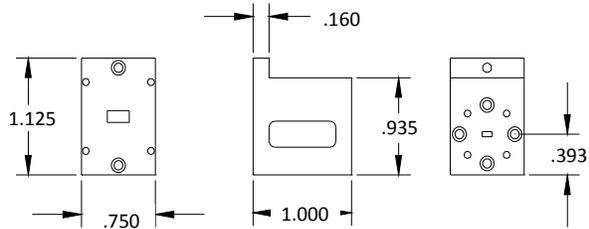
MUT-15/12



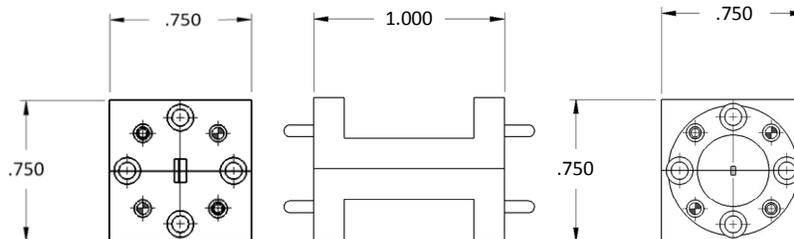
MUT-10



MUT-08/06



MUT-05/04



*The outlines shown may not reflect the latest information. Please contact Millitech for current outline drawings.

MECHANICAL SPECIFICATIONS

Model Number	MUT-22	MUT-19	MUT-15	MUT-12	MUT-10	MUT-08	MUT-06	MUT-05	MUT-04
Input Connection	SMA-female	SMA-female	2.92mm ^{†1} -female	2.92mm ^{†1} -female	/54-003 ^{‡2}	/67C-006	/67C-007	/67C-008	/67C-009
Output Connection: MIL-DTL-3922	/67C-006	/67C-007	/67C-008	/67C-009	/67C-010	Output Flange Pattern Compatible with MIL-DTL-3922/67C. Refer to IS000131.			

*1 – 2.92mm female connector is standard. If male connector is preferred, please specify when ordering.

*2 – With #4-40 threaded holes.

HOW TO ORDER

Specify Model Number MUT-XX-ABØØØ
XX = Waveguide Band WR – number
A = Input Power Level (measurement conditions for test data, input power in dBm) H – high power version L – standard (low power) version N – non-standard (please specify)
B = Bandwidth F – fullband (standard) N – narrowband*
*Specify frequency range for narrowband units

Note: Millitech will supply data for the input power level requested. Data at additional input power provided upon request.

EXAMPLE: To Order: A fullband, standard version series MUT in WR-15

Specify: MUT-15-LFØØØ