

FULLBAND FREQUENCY DOUBLERS



DESCRIPTION

Millitech series MUD frequency doublers are balanced resistive-mode multipliers covering full waveguide bands. Power flatness for a given input power level for these units is typically ± 2.0 dB across the band.

These doublers are offered in both standard and high power versions. The standard version operates with 16 dBm input power and typically provides +1 to +3 dBm of output power depending on frequency, except for the WR-05 model, which operates with 12 dBm input power and provides -3 dBm. The high power version operates with +17 to +20 dBm of input power and provides +1 to +5 dBm output power depending on frequency (see performance tables on the following page). Input VSWR is 2.5:1

FEATURES:

- Fullband performance
- Low input power requirement
- Output power flatness
- Wide input power range

APPLICATIONS:

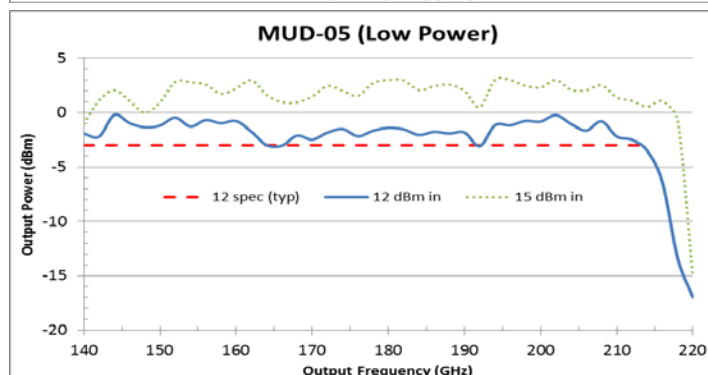
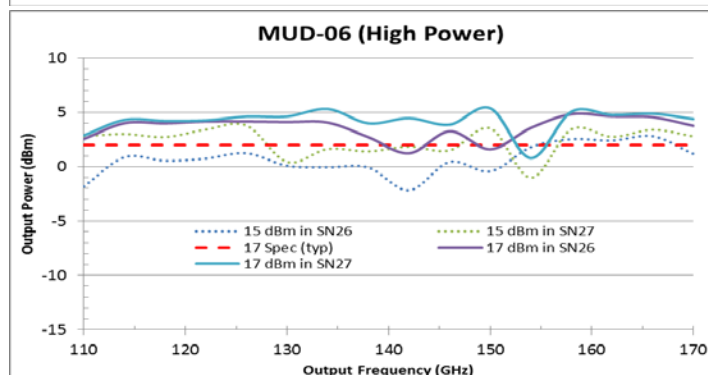
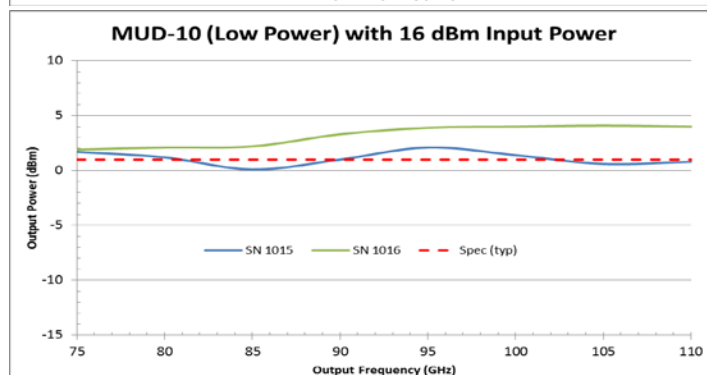
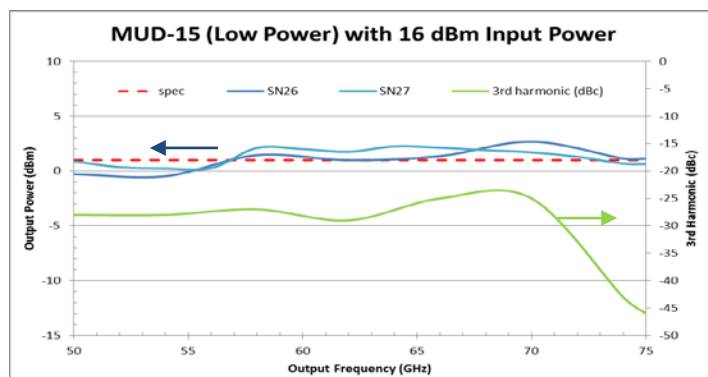
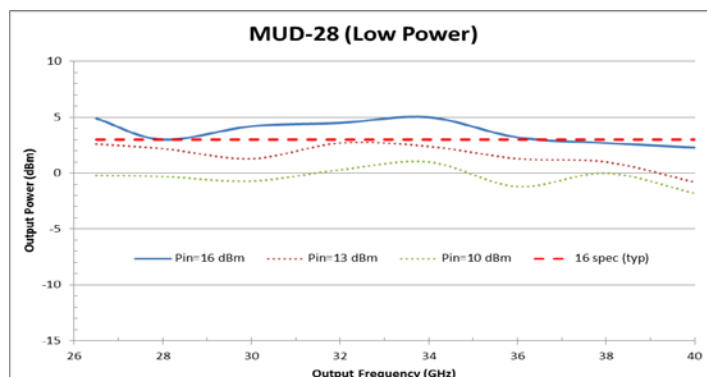
- Frequency extension
- Test equipment/laboratory use
- Transceivers

and third harmonic content is -25 dBc typically.

Both versions operate over a wide range of input power levels, and can be tested at customer-specified power levels. These frequency doublers 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 MUD doublers 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	MUD-28	MUD-22	MUD-15	MUD-12	MUD-10	MUD-08	MUD-06	MUD-05
Frequency Band and Range (GHz)* ¹	Ka 26.5-40	Q 33-50	V 50-75	E 60-90	W 75-110	F 90-140	D 110-170	G 140-214
Input Frequency Range (GHz)	13.25-20	16.5-25	25-37.5	30-45	37.5-55	45-70	60-85	70-107
Input Frequency Band	Coax (2.92mm)	Coax (2.92mm)	WR-28	WR-22	WR-19	WR-15	WR-12	WR-10
Standard (Low Power) Version								
Input Power (dBm)	16	16	16	---	16	---	---	12
Output Power (dBm) (typ) * ¹	3	2	1	---	1	---	---	-3
Max Input Power	18	18	18	---	18	---	---	16
High Power Version								
Input Power (dBm)	20	20	20	20	18	17	17	
Output Power (dBm) (typ) * ¹	5	5	4	4	2	1	2	
Max Input Power	23	23	23	22	23	22	22	

*¹ – Power output specifications apply over waveguide band. Output power can be optimized over narrower frequency range.

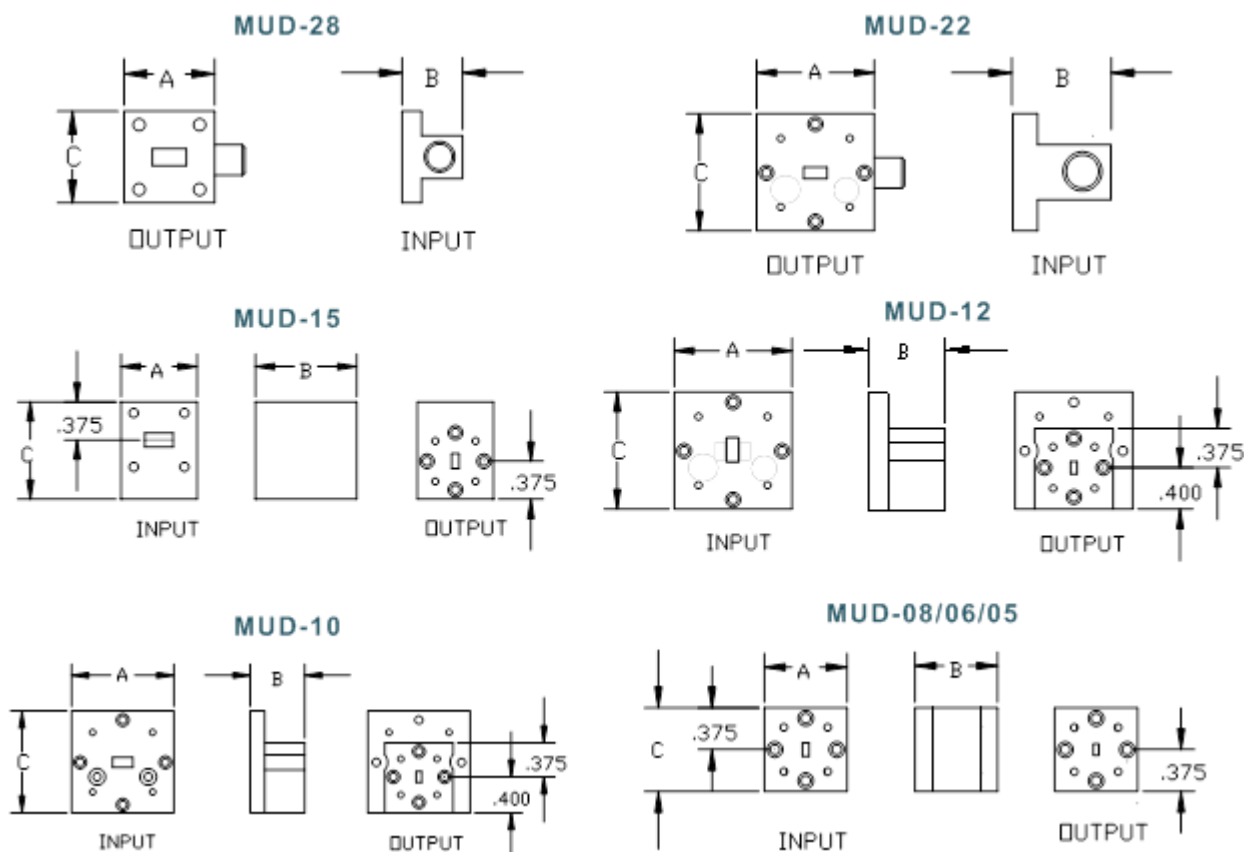
MECHANICAL SPECIFICATIONS

Model Number	MUD-28	MUD-22	MUD-15	MUD-12	MUD-10	MUD-08	MUD-06	MUD-05
A (in/mm)	0.750/19.10	1.125/28.60	0.750/19.10	1.125/28.60	1.125/28.60	0.750/19.10	0.750/19.10	0.750/19.10
B (in/mm)	0.500/12.70	0.750/19.10	1.000/25.40	1.000/25.40	0.600/15.20	1.000/25.40	1.000/25.40	1.000/25.40
C (in/mm)	0.750/19.10	1.125/28.60	0.959/24.40	1.125/28.60	1.125/28.60	0.750/19.10	0.750/19.10	0.750/19.10
Input Connection	2.92mm-female ^{*1}	2.92mm-female ^{*1}	/54-003 ^{*2} (WR-28)	/67C-006 (WR-22)	/67C-007 (WR-19)	/67C-008 (WR-15)	/67C-009 (WR-12)	/67C-010 (WR-10)
Output Connection: MIL-DTL-3922	/54-003 ^{*2}	/67C-006	/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.

OUTLINE DRAWINGS



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

HOW TO ORDER

Specify Model Number MUD-XX-AB000	
XX = Waveguide Band WR – number	
A = Input Power Level (measurement conditions for test data, input power in dBm) H – higher 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 levels provided upon request.

EXAMPLE:

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

Specify: MUD-15-LF000