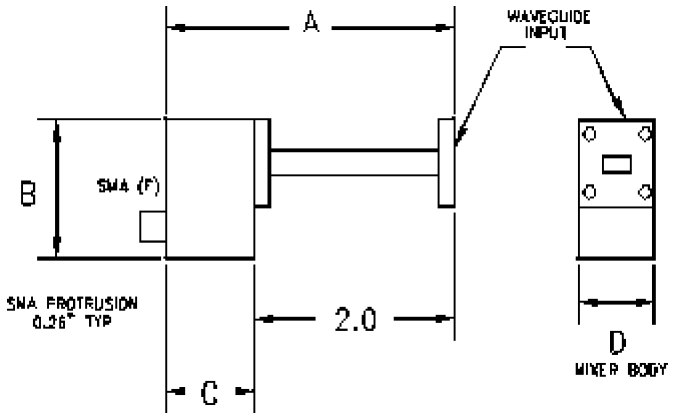
Millimeter Wave Single Diode Unbalanced Harmonic Mixers

OML is pleased to quote this full waveguide bandwidth harmonic mixer product line covering 18 to 325 GHz. These mixers are typically equivalent in performance to Tek WM780/490 series mixers. External diplexers are not needed for use with: Advantest R3271A, 3272, 3273, Anritsu MS2668C, MS2667C, 2802, 710, and Rohde & Schwarz FSEx, FSIQ. External diplexers are required for use with: HP/Agilent 71209A, 8566B, 856x, E4407B, and IFR/Marconi 9xx, 18xx, 239x, 684x. Tektronix # 015-0385-00 external diplexer is required for use with Tektronix 279x, 275x, 49x series analyzers. The mixers can be used with other manufacturer's equipment, consult the equipment's operation manual. **Typical delivery is: 60 days ARO for M42HW thru M10HW, 90 days ARO for M08HW thru M03HW. These products are subject to U.S. Government. Export Regulations and Licensing.**



Specifications:	Model Number	Frequency GHz	Sensitivity dBm (2)	Waveguide Flange (3)	Dimensions (in) A-B-C-D max.
WR-42	M42HWD	18-26.5	-105	68-001KM	3.0x 1.6x 1.0x 0.9
WR-28	M28HWD	26.5-40	-100	68-001AM	2.9x 1.2x 0.9x 0.8
WR-22	M22HWD	33-50	-100	67B-006	2.9x 1.3x 0.9x 1.2
WR-19	M19HWD	40-60	-100	67B-007	2.9x 1.3x 0.9x 1.2
WR-15	M15HWD	50-75	-95	67B-008	2.9x 0.9x 0.9x 0.8
WR-12	M12HWD	60-90	-95	67B-009	2.9x 0.9x 0.9x 0.8
WR-10	M10HWD	75-110	-90	67B-010	2.9x 0.9x 0.9x 0.8
WR-08	M08HWD	90-140	-80	67B-M08	2.9x 0.9x 0.9x 0.8
WR-06	M06HWD	110-170	(Note 4)	67B-M06	2.9x 0.9x 0.9x 0.8
WR-05	M05HWD	140-220	(Note 4)	67B-M05	2.9x 0.9x 0.9x 0.8
WR-04	M04HWD	170-260	(Note 4)	67B-M04	2.9x 0.9x 0.9x 0.8
WR-03	M03HWD	220-325	(Note 4)	67B-M03	2.9x 0.9x 0.9x 0.8
LO/IF Diplexer	Includes a diplexer, a 1 m. mixer to diplexer cable, and necessary interface adapters. Diplexers available for Anritsu, Agilent/HP, IFR, Marconi, etc. Specify manufacturer / model. Tektronix diplexer not available.				
LO Freq.:	Up to 18.6 GHz (M42HW, K Band, up to 13.25 GHz).				
LO Level:	+12 to +15 dBm nom. at the mixer (useable +6 to +18 dBm with degraded conversion loss).				
Mixer Bias:	0 to 10 mA typical, 20 mA max. Typically provided by the spectrum				

analyzer. An adjustable DC current supplied thru a 1 kW resistor and a bias T will allow optimization of conversion loss for given LO power and frequency conditions. If bias is not available in the user's application, the mixer can utilize self bias if a DC return path is provided. Optimization of the DC return resistance may be required for best performance. A 1 dB pad in the IF path can serve as a DC return with possible degraded conversion loss.

All mixers tested for proper operation and delivered with a "Certificate of Conformance." Measured conversion loss data are included with all mixers up to 110 GHz using spectrum analyzer emulation data supplied by the analyzer manufacturer, see the list below for available emulations. Measured conversion loss data are not available above 110 GHz as there are no recognized power standards above 110 GHz for reference. The spectrum analyzer make and model must be identified on purchase order. Mixers covering above 110 GHz are tested for proper operation using an OML # 40200WGS source at two frequencies with Tek 2782 spectrum analyzer plots supplied. OML can not specify conversion loss as it is not possible to duplicate each type of spectrum analyzer. Conversion loss can vary with each individual spectrum analyzer.

Mixer conversion loss data is available only for the following spectrum analyzers. The manufacturers of these analyzers have provided OML with emulation data for use with the "Oleson Microwave Labs Millimeter Wave Harmonic Mixer Test Set."

Advantest	R3271/ A R3272 R3273 R3172 R3182	Internal diplexer Internal diplexer Internal diplexer Internal diplexer Internal diplexer
Anritsu	710C/D 2702/ 2802 2667C 2668C	Some models have internal diplexer otherwise diplexer required Internal diplexer Internal diplexer Internal diplexer
Agilent (HP)	71209A 8566B 856x E4407B	External diplexer required External diplexer required, must use HP 11975A LO amplifier External diplexer required, mixers not available for 8565A, 8569A/B External diplexer required
IFR	930/ 940 1800 239xA 684x	External diplexer required External diplexer required External diplexer required External diplexer required
Marconi	2393	External diplexer required
R & S	FSEK/ M FSIQ ESMI	Internal diplexer, external diplexer possible Internal diplexer, external diplexer possible Internal diplexer, external diplexer possible
Tektronix	49x/ 27xx 2782/ 84	Requires Tektronix external diplexer P/N 015-0385-00 Internal diplexer

The OML harmonic mixers are useable with other instruments (older spectrum analyzers not listed, EIP counters, some surveillance receivers, etc). The mixers are also useable in scientific applications such as radio astronomy, as phase locking mixers, etc. OML can not provide conversion loss data for these applications. There is not a "delete" price option for the conversion loss data. Customers with these "non listed applications" can chose an analyzer from the above list that will have performance parameters similar to their application or OML will suggest a suitable test

emulation if the customer will provide L.O. and I.F. data for his application.

Scientific Atlanta (S.A) receivers are specifically not included in the available test emulations. S.A. utilized harmonic mixers in a very unusual manner. S.A. utilized the mixer diode self-generated bias current as a signal for their L.O. leveling loop. S.A. did not provide mixer conversion loss data when it sold mixers for this system. OML has no method for testing to this system design. Many users have reported excellent results using OML mixers in S.A. systems following the system's standard set-up and calibration procedure.

Notes:	1)	Maximum power = 100 mW (RF + LO power).
	2)	Equivalent average noise level typical with a full spec. Tek. 2750 or 490 series Spectrum Analyzer using a 1 KHz RBW, with peaking optimized.
	3)	Mixers are compatible with the MIL.-F-3922/xx spec. flange. Insert the listed number for /xx.
	4)	Measured conversion loss data are not available above 110 GHz as there are no recognized reference standards available.
	5)	Because these mixers are passive components, receiving only LO power from customer-owned equipment, CE testing is not required.
	6)	**International and Export contact: Radar Systems Technology 650 949 8041 Fax 650 949 8082**

Revised 12/18/2002

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