



**M12HWD Series  
WR12 Harmonic Mixers  
60 to 90 GHz**

**DESCRIPTION**

The M12HWD Series will expand your existing Spectrum Analyzer capabilities so you can conduct millimeter wave measurements in WR12 (60-90 GHz). These harmonic mixers are compatible with spectrum analyzers that offer an external mixer option (e.g., Advantest, Anritsu, Keysight, IFR (Marconi), Rohde & Schwarz, and Tektronix). Please indicate your target spectrum analyzer so OML can characterize the harmonic mixer using the corresponding LO, IF, and multiplier settings. Test data supplied (optional electronic in CSV format is also available).



**HIGHLIGHTS**

- Useful tool to extend measurements to mm-wave
- Optional diplexer simplifies connectivity
- -30 dBm recommended input power
- Industry waveguide compatibility
- Ergonomic design is bench friendly
- Modular design increases dynamic range
- Test data enables amplitude corrections
- Optional electronic CSV format available

**APPLICATIONS**

- Identify signal levels and lock conditions
- One diplexer per spectrum analyzer
- Linearity practical for active tests
- Minimize needs for adapters and transitions
- Connections and usability are straightforward
- Optimize test setup for maximum performance
- Accurate amplitude readouts with corrections applied
- Conveniently archive and recall test data



**ELECTRICAL AND PERFORMANCE SPECIFICATIONS (+25°C)**

After a 0.5 hour warm-up period, the M12HWD will satisfy the following specifications.

<b>Electrical Characteristics<sup>1</sup></b>	<b>MIN</b>	<b>TYP</b>	<b>MAX</b>
System Operating Frequency (GHz)	60	--	90
RF Port Match (dB) <sup>2</sup>	--	7.5	--
1 dB Compression (dBm) <sup>2</sup>	--	-10	--
Third Order Intercept (dBm) <sup>2</sup>	--	0	--
LO Input (dBm)	+12	+15	+17
Usable LO Input w/ Degraded Conversion Loss (dB)	+6	--	+18
IF Frequency Range (MHz) <sup>3</sup>	200	322	2,400
Mixer Bias (mA) <sup>4</sup>	-10	--	+10
Operating Temperature Range (°C)	20°	25°	30°

<b>Module Characteristics<sup>1</sup></b>	<b>Description</b>
System Waveguide Interface (dB) <sup>5</sup>	WR-12
Typical Conversion Loss (dB) <sup>6</sup>	42
System LO/IF Interface	SMA (f)
Sensitivity (dBm) <sup>7</sup>	-102
Typical RF Power to Avoid Compression (dBm) <sup>2</sup>	-20 dBm (10 μW)
Maximum Power, RF+LO (mW, dBm)	100 mW (20 dBm)
Size (L x W x H)	2.9" x 0.9" x 0.8"
Weight	< 6 ounces

<sup>1</sup> Specifications are typical and subject to change without notice

<sup>2</sup> Not tested

<sup>3</sup> Limited by diplexer's IF characteristics

<sup>4</sup> Current limits predetermined by spectrum analyzer manufacturer; actual bias specified on test data

<sup>5</sup> Test Port Flange Configuration is compatible with MIL-DTL-3922/67E

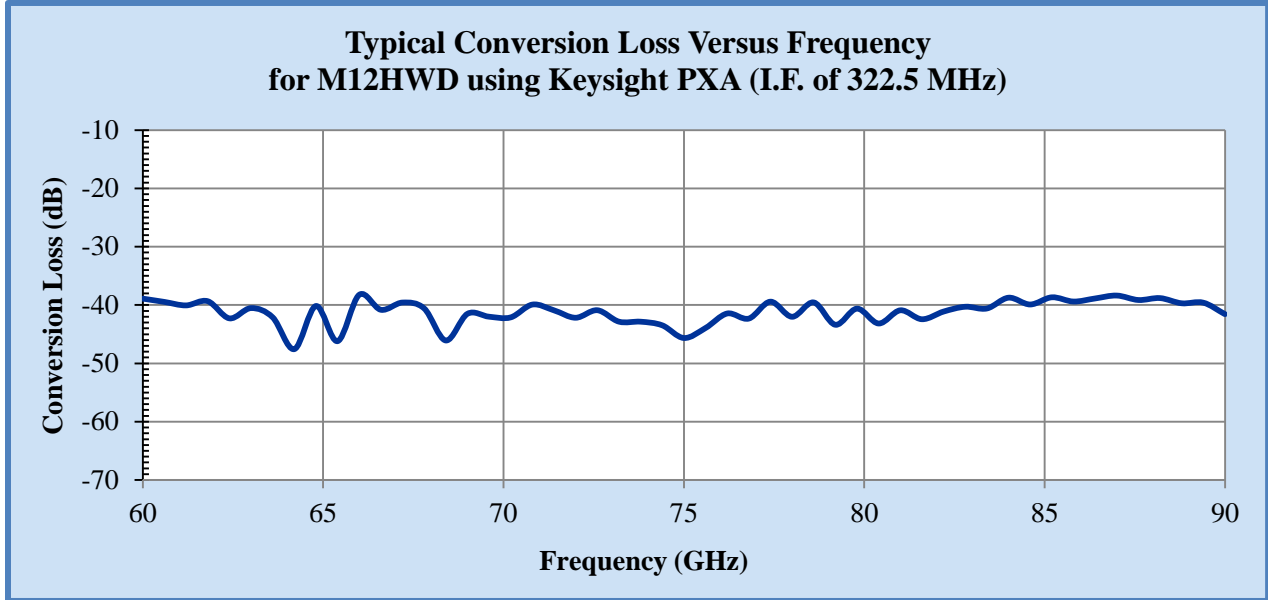
<sup>6</sup> Typical value for Keysight PXA settings at -30 dBm RF input

<sup>7</sup> Calculate Sensitivity (RBW of 1 kHz) = -144 dBm + conversion loss; represents theoretical minimum discernable signal



### TYPICAL PERFORMANCE

The following typical performance is available when used with the Keysight PXA.



### ORDER INFORMATION

Model Number	Waveguide Interface	Frequency (GHz)
M12HWD	WR-12	60-90
M12HWDX (with CSV Data)		
<b>Diplexers</b>		
<b>DPL26</b>	Diplexer, L.O. 2-7.5 GHz, I.F. < 1 GHz for Keysight	
<b>DPL313B</b>	Diplexer, L.O. 3-13 GHz, I.F. < 1 GHz	
<b>DPL518</b>	Diplexer, L.O. 5-18 GHz, I.F. < 2 GHz	
<b>Diplexer Standard Accessories (Each diplexer includes the following items)</b>		
<b>V00LOIF</b>	Test Port Ext. Cable, DC to 18 GHz, 3 ft, SMA(m) - SMA(m), 50 Ohm	
<b>M00IF</b>	IF Test Port Ext. Cable, DC to 1 GHz, 5 inches, SMA(m) - SMA(m), 50 Ohm	
<b>M00DLP</b>	Adapter, DC to 18 GHz, SMA(m)-SMA(m), 50 Ohm	

### MECHANICAL DIMENSIONS (If necessary, contact OML for more detailed drawings)

