

490 Series Waveguide Mixers

The 490 Series Tektronix Waveguide Mixers cover from 18 GHz to 220 GHz with optimum sensitivity. They are designed specifically for use with the Tektronix 492/492P and 7L18 Spectrum Analyzers.

The two microwave mixers cover ranges 18 GHz to 26.5 GHz and 26.5 GHz to 40 GHz. They have field replaceable diodes and frequency response of ± 3 dB when used with the spectrum analyzers indicated above.

Seven millimeter wave mixers cover the 40 GHz to 220 GHz range in the standard Mil-spec band ranges. A mixer designed specifically for the 140 GHz to 220 GHz band is available, or a flange transition (119-1729-00) can be used to allow the 90 GHz to 140 GHz mixer to cover this range.

The mixers are all gold plated brass, conforming to MIL-G-45204 Class I, Type 1 specifications and will withstand harsh environments. Each set comes complete with a container for spare diodes, a 28-inch cable, an instruction manual and a wood storage box with foam cutout storage locations for five mixers.

CHARACTERISTICS

For All Waveguide Mixers — Maximum cw RF input level: +10 dBm (10 mW).

Maximum PULSED RF Input Level — 1 W peak with 0.001 maximum duty factor and 1 μ s maximum pulse width.

L.O. Requirement — +7 dBm minimum, +15 dBm maximum, +10 dBm typical.

Bias Requirement — -2.0 V to +0.5 V with respect to the mixer body through a current limiting resistor, to provide 0 mA to 20 mA of bias current.

For the 18 GHz to 60 GHz Waveguide Mixers — 3 dB compression point (saturation): -10 dBm (typical).

Conversion Loss — 30 dB typical (when used in the proper spectrum analyzer frequency band).

ORDERING INFORMATION

Performance Specified Mixers and Sets:

18 GHz to 26.5 GHz Frequency Range —

Order WM 490K

26.5 GHz to 40 GHz Frequency Range —

Order WM 490A

40 GHz to 60 GHz Frequency Range —

Order WM 490U

50 GHz to 75 GHz Frequency Range —

Order WM 490V

60 GHz to 90 GHz Frequency Range —

Order WM 490E

75 GHz to 110 GHz Frequency Range —

Order WM 490W

90 GHz to 140 GHz Frequency Range —

Order WM 490F

110 GHz to 170 GHz Frequency Range —

Order WM 490D

ELECTRICAL CHARACTERISTICS

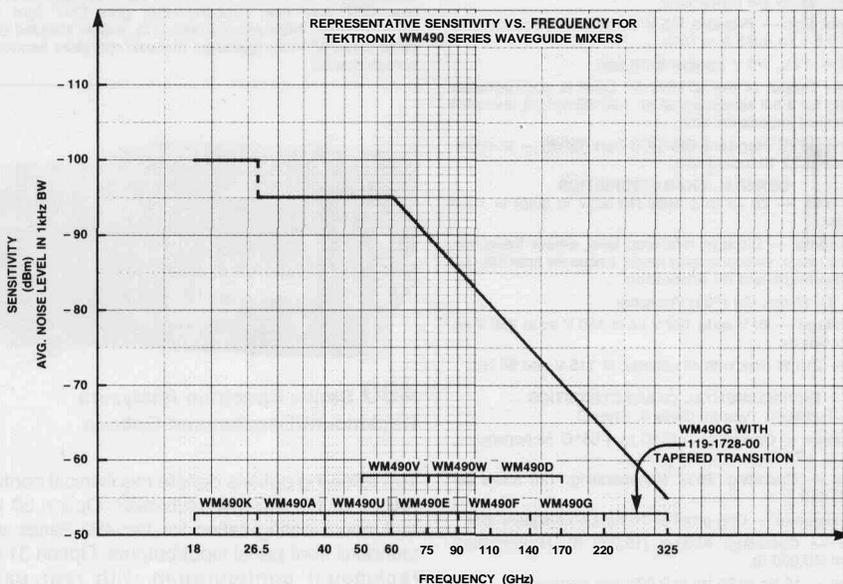
| Frequency Range (GHz) | Tektronix Model No | Band Designation | Sensitivity (dBm) ^{*1} | Frequency Response ^{*2} | Amplitude Accuracy ^{*3} | 3 dB Compression Point (Saturation) |
|-----------------------|--------------------|------------------|---------------------------------|----------------------------------|----------------------------------|-------------------------------------|
| 18 to 26.5 | WM 490K | K | -100 | ± 3 dB | ± 6 dB | -10 dBm typical |
| 26.5 to 40 | WM 490A | A | -95 | ± 3 dB | ± 6 dB | -10 dBm typical |
| 40 to 60 | WM 490U | U | -95 | ± 3 dB | ± 6 dB | -10 dBm typical |
| 50 to 75 | WM 490V | V | -95 at 50 GHz | ± 3 dB | | -10 dBm at 50 GHz |
| | | | -90 at 75 GHz | typical ^{*4} | | -10 dBm at 75 GHz |
| | | | | typical | | typical |
| 60 to 90 | WM 490E | E | -95 at 60 GHz | ± 3 dB | | -10 dBm at 60 GHz |
| | | | -85 at 90 GHz | typical ^{*4} | | -5 dBm at 90 GHz |
| | | | | typical | | typical |
| 75 to 110 | WM 490W | W | -90 at 75 GHz | ± 3 dB | | -10 dBm at 75 GHz |
| | | | -80 at 110 GHz | typical ^{*4} | | 0 dBm at 110 GHz |
| | | | | typical | | typical |
| 90 to 140 | WM 490F | F | -85 at 90 GHz | ± 3 dB | | -5 dBm at 90 GHz |
| | | | -75 at 140 GHz | typical ^{*4} | | 0 dBm at 140 GHz |
| | | | | typical | | typical |
| 110 to 170 | WM 490D | D | -80 at 110 GHz | ± 3 dB | | 0 dBm at 110 GHz |
| | | | -70 at 170 GHz | typical ^{*4} | | +5 dBm at 170 GHz |
| | | | | typical | | typical |
| 140 to 220 | WM 490G | G | -75 at 140 GHz | ± 3 dB | | 0 dBm at 140 GHz |
| | | | -65 at 220 GHz | typical ^{*4} | | +10 dBm at 220 GHz |
| | | | | typical | | typical |

^{*1} Equivalent average noise level at 1 kHz bandwidth.

^{*2} Maximum amplitude variation across each waveguide mixer band (with peaking control optimized at each frequency in response to a -30 dBm CW input signal to the mixer).

^{*3} Maximum reference level error with respect to the internal calibrator. Amplitude accuracy can be improved 3 dB by measuring amplitude with respect to a known external (waveguide) reference signal.

^{*4} Over any 5 GHz bandwidth for millimeter wave mixers above 60 GHz.



140 GHz to 220 GHz Frequency Range —

Order WM 490G