

# mmWave Coaxial Components

## W1 (1.0 mm) Components up to 110 GHz

### Components for Passive and Active Measurements

Anritsu offers the largest line of W1 coaxial components that can address millimeter-wave (mmWave) applications from electronic warfare testing to optical correction and device characterization. With coverage from nearly DC to 110 GHz, these components provide a substantial benefit to customers, as most test systems now feature a coaxial interface that provides a direct-connect operation and avoids the use of adapters.

Test and measurement equipment for 110 GHz frequency coverage have a premium price and a user should never settle for sub-par component performance when making measurements. All 110 GHz components are metrology-grade, feature the best repeatability possible, and have low measurement uncertainties. Not only do these new components have excellent electrical specifications, they also have key MIL-STD-202F environmental standard conformity providing a very robust component.

### W1 Component Highlights

- Operable from low frequency to 110 GHz allowing for broadband frequency scalability
- Direct connection 1.0 mm test port
- Saves setup time and complexity by having a common interface between DUT, test ports, and component
- Offers flexibility for measurements by providing new component types where limited or non-existent component solutions exist
- MIL-STD-202F qualified for high reliability and robustness
- True parameter performance through guaranteed electrical performance



### Is your current measurement solution easy?

As the frequency of a measurement moves up, the component interface becomes smaller and smaller. For many measurements, while waveguides have been the de facto solution, there can be a long setup time working with them in the W band (75-110 GHz) (e.g., establishing proper torque along fastening screws, checking aperture alignment, and adjusting waveguide-to-coaxial component geometries to fit a given area). With mixed media setups like waveguide-to-coax, there can also be added complications like de-embedding or loss accounting. When making measurements for R&D or production, the setup should be simple so that long measurement times can be avoided. This is accomplished by maintaining a coaxial-to-coaxial interface when possible.

### Broadband characterization requires broadband components

Optical communication applications are similar to high-speed digital and use time domain analysis for device characterization. Time domain analysis requires broadband frequency bandwidth, including a low-frequency term, to see low-pass time domain (which is necessary for evaluating impedance mismatches and discontinuities on a DUT). The new Anritsu W1 components can be added to a time domain test setup with minimal effect on signal fidelity and match.



### Key Specifications

<b>41W Series Attenuators</b> DC to 110 GHz	
<b>41W-3 3 dB Attenuator</b> DC to 110 GHz	
Return Loss	10 db min
Insertion Loss	5 dB max
<b>41W-6 6 dB Attenuator</b> DC to 110 GHz	
Return Loss	10 db min
Insertion Loss	7.5 dB max
<b>41W-10 10 dB Attenuator</b> DC to 110 GHz	
Return Loss	10 db min
Insertion Loss	11.5 dB max
<b>W240A Power Divider</b> DC to 110 GHz	
Return Loss	10 db min
Insertion Loss	9 dB max
<b>W241A Power Splitter</b> DC to 110 GHz	
Return Loss	9 db min
Insertion Loss	9.5 dB max
<b>MN25110A Directional Coupler</b> 20 GHz to 110 GHz	
Return Loss	10 db min
Insertion Loss	5.5 dB max
<b>W265 DC Block</b> 50 kHz to 110 GHz	
Return Loss	8 db min
Insertion Loss	2.5 dB max
<b>W255XX Bias Tee</b> 50 kHz to 110 GHz	
Return Loss	8 db min
Insertion Loss	2.8 dB max
<b>W252XX Kelvin Bias Tee</b> 100 MHz to 110 GHz	
Return Loss	8 dB min
Insertion Loss	3.5 dB max

### Recommended Instruments

Anritsu's new 110 GHz components are standalone components that can be used with any test and measurement instruments. For Anritsu instruments below, these new components are good accessories and will allow for easier and time saving setups.

#### Vector Network Analyzer

VectorStar ME7838A4	2-Port, 110 GHz, broadband VNA
ME7838E4/A4/D4	4-Port, 110 GHz, broadband VNA

#### Signal Quality Analyzer-R

MP1900A	8-slot, modular, high-performance BERT
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#### Spectrum Analyzer

MS2760A	1 port, 110 GHz, Ultraportable spectrum analyzer
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### W1 Connectors

Anritsu not only offers test and measurement equipment up to 110 GHz, Anritsu also offers cable, sparkplug, and flange connectors. These connectors are MIL-STD-202 rated with great electrical and mechanical specifications from DC to 110 GHz for any millimeter-wave frequency applications.

#### Cable Connectors

W1-101F	Female, W1, Cable Connector
W1-101M	Male, W1, Cable Connector

#### Spark Plug Connectors

W1-102F	Female, W1, Hermetic Sparkplug
W1-102M	Male, W1, Hermetic Sparkplug
W1-105F	Female, W1, Non-Hermetic Sparkplug
W1-105M	Male, W1, Non-Hermetic Sparkplug

#### 2-Hole Flange Connector

W1-103F	Female, W1, Flange Connector
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For more information go to [www.anritsu.com](http://www.anritsu.com)