

- 1.85 mm DC to 60 GHz
- 5 ps Risetime



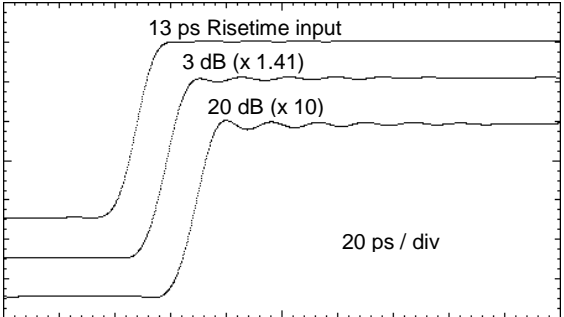
The PSPL Model 5510V Attenuators address a need that has been totally ignored by other microwave component manufacturers who specify their products in the frequency domain, but ignore the time domain responses. For time domain measurements, it is important to also know the transient response of attenuators used in a test set-up. These 1.85 mm attenuators have 5 ps risetimes and are recommended for measuring pulses with risetimes of 13 ps or slower. They are ideal for use with PSPL's Model 4015C, 15 ps pulse generator. For frequency domain measurements, the useful frequency range is DC to 60 GHz. The 1.85 mm connector is compatible with 2.4 mm connectors. PSPL also offers SMA, 18 GHz and 2.92 mm, 40 GHz attenuators.

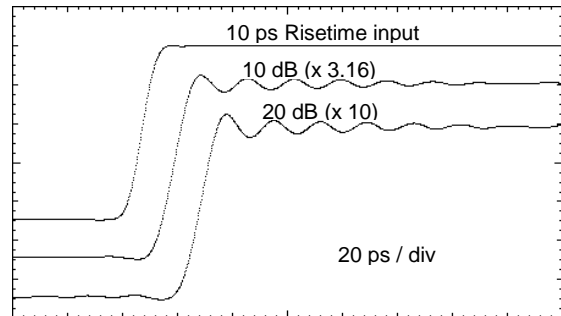
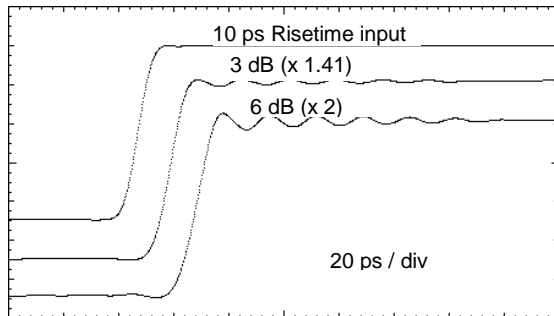
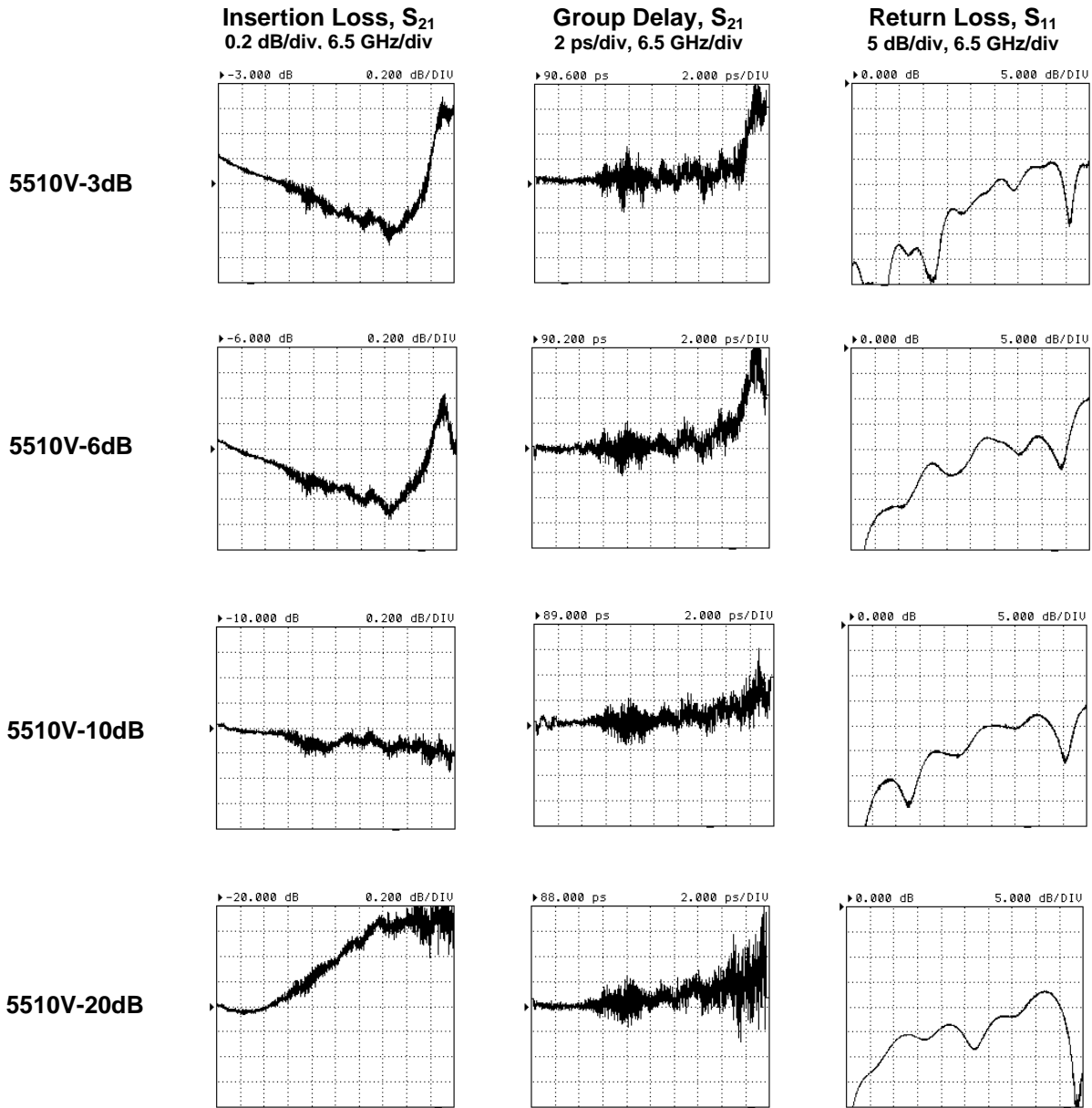
Model Number	5510V-302-XdB	Values Available	3, 6, 10, & 20 dB
Frequency Range	DC to 60 GHz	Connectors	1.85 mm jack & plug
Risetime (10% - 90%) (see typ. plots, p. 2)	5 ps, typical, when tested with 10 ps risetime pulse	Impedance – DC	50 Ω <± 3 Ω typical + 7.5 Ω, – 6.5 Ω max
DC Attenuation Accuracy	± 0.5 dB max. limits guaranteed	Return Loss – DC VSWR – DC	> 30 dB typ, 23 dB min < 1.06 typ, 1.15 max
Attenuation Flatness (see typ. plots, p.2)	<± 0.5 dB f < 18 GHz <± 1.0 dB f < 40 GHz <± 1.2 dB f < 60 GHz	Return Loss – AC (see typ. plots, p.2)	> 20 dB, f < 18 GHz > 15 dB, f < 40 GHz > 12 dB, f < 60 GHz
Delay	90 ps (see typical group delay plots, p. 2)		
Max. Power Input	2 W avg at 25C, derated linearly to 1 W at 85C, 50 W peak, < 0.1 μs pulse		
Temperature Range	–55C to +85C operating, –55C to +125C storage, 0.001 dB/dB/C temp. coeff.		
Dimensions & Weight	28.8 mm length, 8 mm diameter, 8 gm		
Material	stainless steel		
Serial Number	yes		
Warranty	One Year. See PSPL Terms & Conditions of Sale for details		

Note: All parameters listed are typical unless max/min guaranteed limits are provided.

Ordering Information

Model Number	Connector Configuration
5510V-302-XDB where X=attenuation in dB	1.85 mm Jack — Plug





Notes: All plots are from randomly selected samples. The 10 ps step responses were measured using a PSPL Model 4015C pulse generator and an HP-54750, 50 GHz oscilloscope. The frequency responses were measured using an Anritsu 37397A, 65 GHz vector network analyzer.

1.85MM CONNECTOR ADDENDUM

Extreme care is required when handling products with 1.85 mm connectors

Introduction

The 1.85 mm connector used in this product is a precision high-frequency coaxial wave-guide constructed with small geometries necessary to sustain the high frequency performance. EXTREME CARE is required when assembling or disassembling connections using these components. The use of improper handling procedures can result in degraded performance or complete failure of the connection. Improper handling of these components will void the warranty.

Assembly and Disassembly Procedures

THE BODY OF THE COMPONENT MUST NOT BE ALLOWED TO ROTATE DURING THE ASSEMBLY OR DISASSEMBLY PROCESS. Figure 1 shows the correct placement of wrenches for assembly and disassembly.

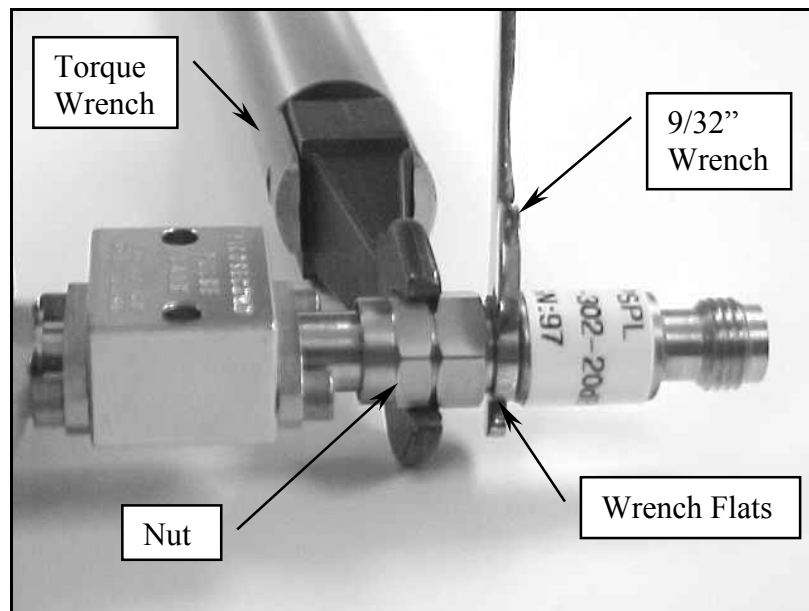


Figure 1. Proper placement of wrenches for assembling and disassembling 1.85mm connectors

Proper Assembly Technique:

1. Carefully align the two connectors to be mated.
2. Securely hold the bodies of both devices to be mated using wrenches at the wrench flats as indicated in Figure 1.
3. Tighten the connecting nut by hand. DO NOT ALLOW THE BODY OF EITHER COMPONENT TO ROTATE.
4. Use a torque wrench to tighten the connection to 8 in/lb (0.90 N-m) while securing the body of the connector with a wrench at the wrench flats. DO NOT ALLOW THE BODY OF EITHER COMPONENT TO ROTATE.

Proper Disassembly Technique:

1. Securely hold the bodies of the devices to be unmated using a wrench on the wrench flats as shown in Figure 1. Use a wrench to loosen the connection. DO NOT ALLOW THE BODY OF EITHER COMPONENT TO ROTATE.
2. Hold the body of the device to be unmated using a wrench on the wrench flats as shown in Figure 1.
3. Loosen the nut by hand. DO NOT ALLOW THE BODY OF EITHER COMPONENT TO ROTATE.

Damage Due to Improper Assembly or Disassembly

Allowing the body of the component to rotate during the assembly or disassembly process can break the center pin captivation or cause wear on the surface of the mating shoulders that form the outer conductor connection that is the ground contact. The surface wear appears as abrasion or galling of the metal surfaces that can cause an air-gap or poor ground contact, either of which create an impedance mismatch that may result in poor microwave performance. EVEN SLIGHT WEAR THAT MAY ONLY BE VISIBLE UNDER A MICROSCOPE CAN HAVE A SIGNIFICANT NEGATIVE IMPACT ON THE PERFORMANCE OF THE CONNECTOR. The photos in Figures 3 and 5 show the damage caused to the ground interface due to improper assembly and disassembly of the 1.85mm Female (Jack) and Male (Plug) connectors, respectively.



Figure 2. New Female Connector



Figure 3. Damaged Female Connector



Figure 4. New Male Connector



Figure 5. Damaged Male Connector

Warranty Issues

Please note that improper handling of these components may result in irreparable damage and will void the warranty.

Additional Information

Additional information and technical support can be obtained by contacting the Picosecond Pulse Labs Sales Department at 303.209.8100 or info@picosecond.com.