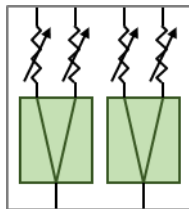


50Ω    500-6000 MHz    2 in / 4 out



## Product Overview

ZT-279 is an integrated splitter / combiner system housing 2 x 2-way devices with programmable attenuation on each path. The system is bi-directional and can be operated as a series of power splitters with variable path loss on each output, or as a series of power combiners with variable path loss on each input. The attenuation on each path can be independently controlled from 0 to 95 dB in 0.25 dB steps.

This configuration allows simulation of “real-world” conditions for wireless handsets, radio-heads, antenna systems, base-stations and nodes. Typical applications include:

- Varying path loss between a wireless device and node during transmission
- Hand-over from one node to another as a wireless device moves out of range
- Verification of device performance in the presence of multiple radio signals & interferers

The system is housed in a 1U height, 19-inch rack chassis with SMA RF connectors on the front and rear panels. The system can be controlled via USB or Ethernet (supporting SSH, HTTP & Telnet network protocols). Full software support is provided, including our user-friendly GUI application for Windows and a full API with programming instructions for Windows and Linux environments (both 32-bit and 64-bit systems).

## Key Features

Feature	Advantages
Splitter / attenuator matrix	Split or combine signals from multiple sources at precisely controlled signal levels
Rack chassis	Compact rack-mountable chassis for easy integration into automated test environments
Ethernet Control	Remote control from any computer or device with a network connection (SSH, HTTP or Telnet protocols).

**Mechanical Specifications**

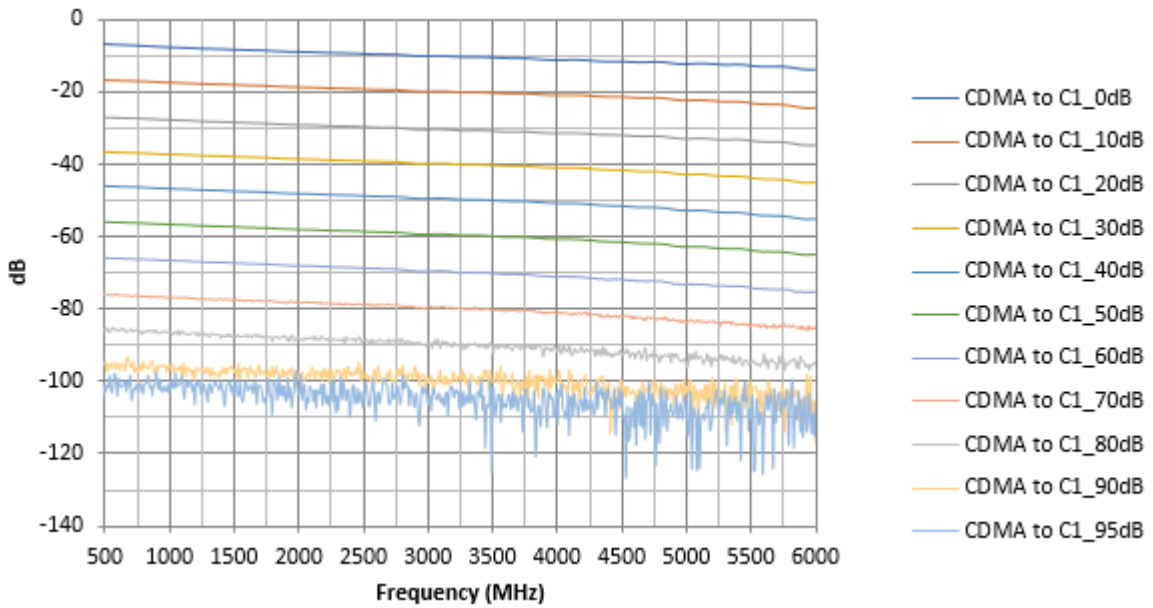
<b>Dimensions</b>	19" (W) x 1U (H) x 13" (D)			
<b>Case Drawing</b>	99-01-2762			
<b>Case Material</b>	• Aluminum (with protective coating to prevent corrosion)			
<b>RF Connectors</b>	<b>Panel</b>	<b>Connector</b>	<b>Quantity</b>	<b>Port Descriptions</b>
	Front			
	Rear	4	Splitter output ports	
<b>Panel Items</b>	<b>Front Panel</b>		<b>Rear Panel</b>	
<b>Panel Marking</b>	<ul style="list-style-type: none"> <li>• ZT-279</li> <li>• 4 x 2 CDMA / WiFi Test Box</li> <li>• 500-6000 MHz</li> </ul>		<ul style="list-style-type: none"> <li>• CE</li> <li>• EAC</li> <li>• Serial number / date code / model name</li> </ul>	
<b>Other Connectors</b>			<ul style="list-style-type: none"> <li>• AC mains power input (IEC C14 inlet)</li> <li>• USB type B socket</li> <li>• RJ45 (LAN) socket</li> <li>• Serial In (D-Sub 9-pin)</li> <li>• Serial Out (D-Sub 9-pin)</li> </ul>	
<b>Other</b>	<ul style="list-style-type: none"> <li>• Power on / off switch with LED</li> <li>• Carry handles</li> </ul>			
<b>Power Supply</b>	AC mains power input (90-260 V, 47-63 Hz)			
<b>Fuse</b>	2A, 250V rating			
<b>Temperature</b>	Operating: 0 to +50 °C			

**Electrical Specifications at 25°C**

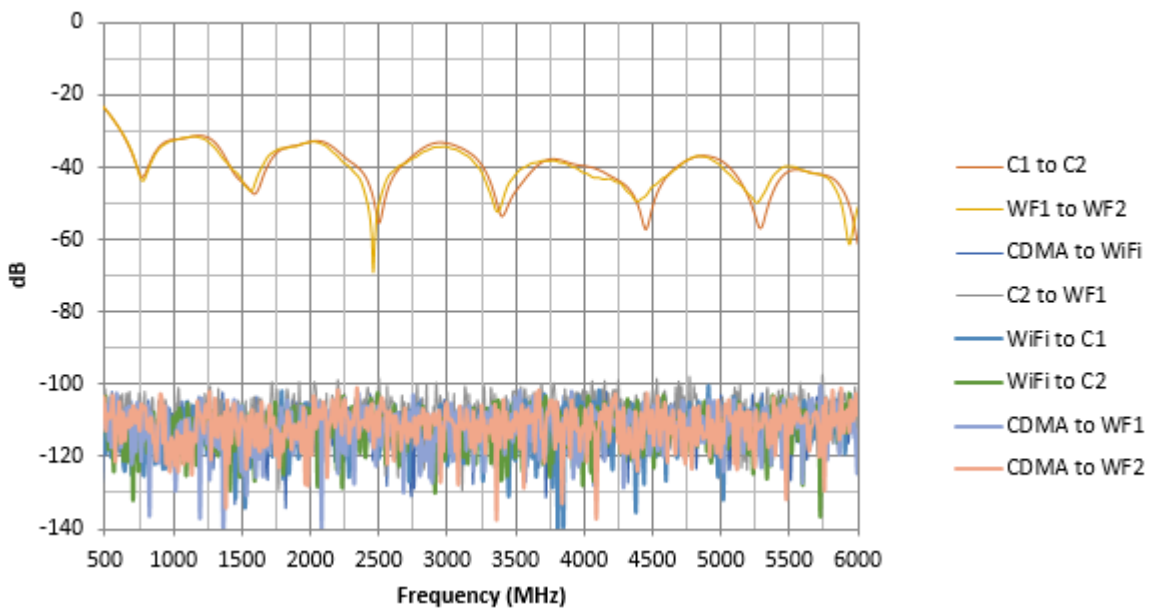
Parameter	Conditions	Min	Typ	Max	Units
<b>Frequency</b>		500	-	6000	MHz
<b>Path Loss</b>	500 MHz @ 0 dB attenuation	-	9	11	dB
	6000 MHz @ 0 dB attenuation	-	14	16	
<b>Return Loss</b>		-	12	-	dB
<b>Attenuation Range</b>	Per path, 0.25 dB steps	0	-	95	dB
<b>Isolation</b>	Between splitter sum ports	20	35	-	dB
	Between adjacent outputs	90	100	-	
<b>Input Power</b>	Per port into splitter sum ports	-	-	+30	dBm
	Per port into splitter outputs	-	-	+23	

**Typical Performance Data**

**Insertion Loss & Attenuation**

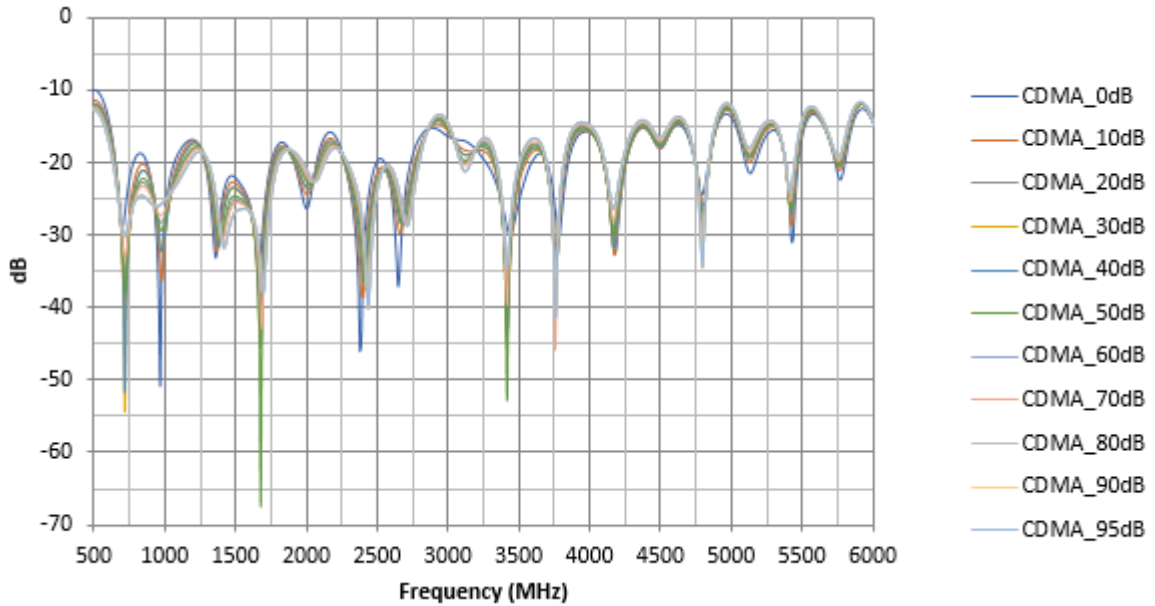


**Isolation**

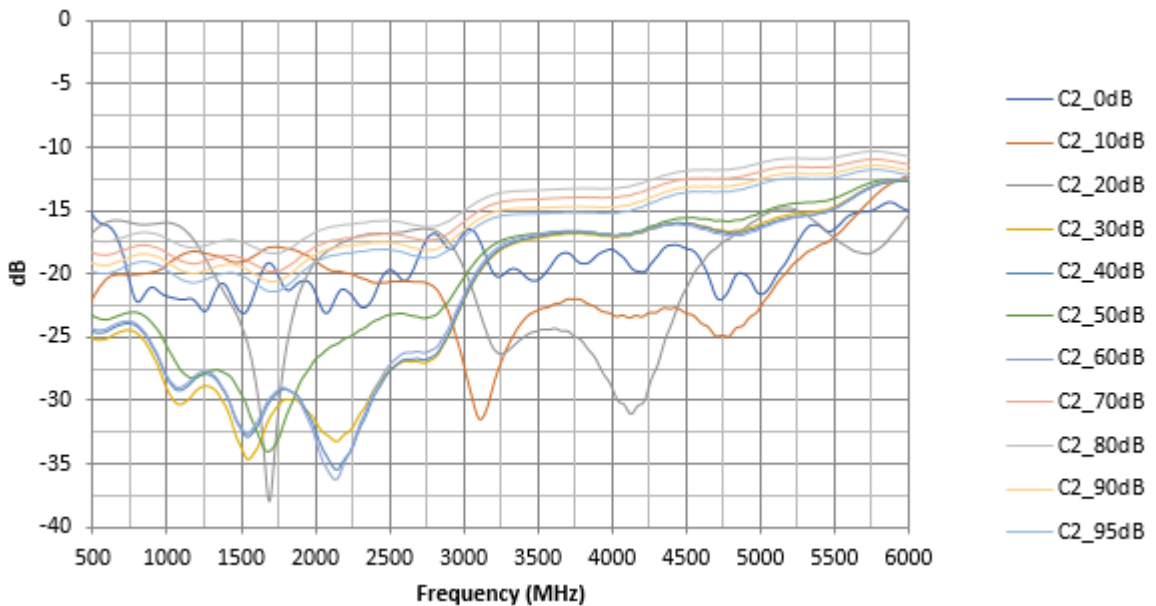


**Typical Performance Data**

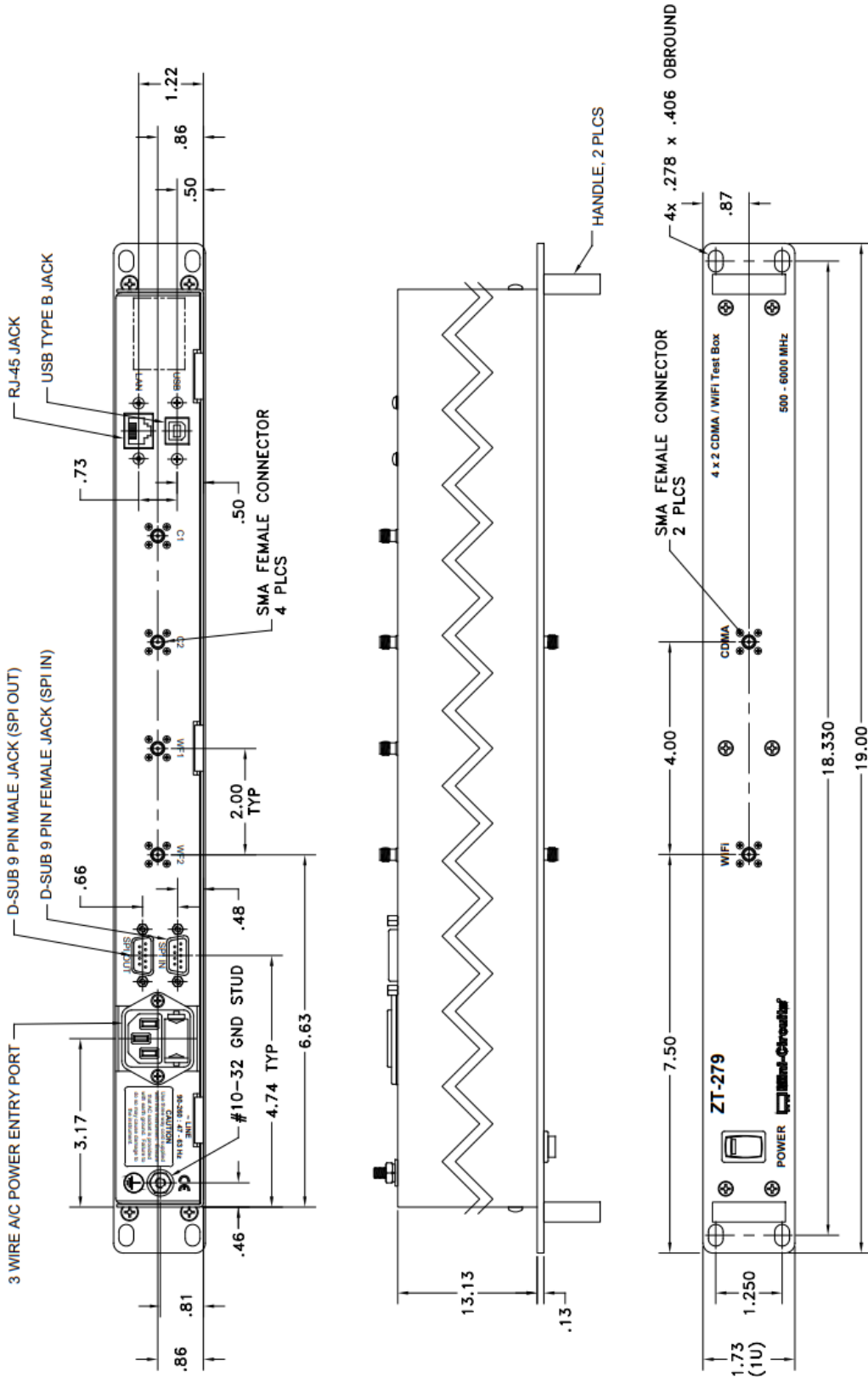
**Input Return Loss**



**Output Return Loss**



**Outline Drawing**



## Software Specifications

- Please contact [testsolutions@minicircuits.com](mailto:testsolutions@minicircuits.com) for support

<b>Ethernet Control</b>	<b>Supported Protocols</b>	TCP / IP, SSH, HTTP, Telnet, DHCP, UDP
	<b>Max Data Rate</b>	100 Mbps (100Base-T Full Duplex)
<b>USB Control</b>	<b>Supported Protocols</b>	HID - High Speed
	<b>Min Communication Time</b>	400 $\mu$ s typ
<b>Software Support</b>	<ul style="list-style-type: none"> <li>• Mini-Circuits' Universal GUI for USB &amp; LAN control (Windows only)</li> <li>• ASCII / SCPI command syntax for LAN programming (all OS)</li> <li>• ActiveX / .Net DLL APIs for USB programming (Windows only)</li> <li>• Interrupt codes for direct USB programming (all OS)</li> <li>• Full programming instructions and examples for a wide range of languages</li> </ul>	
<b>Downloads</b>	<b>Software &amp; Documentation</b>	<a href="https://www.minicircuits.com/softwaredownload/multiatt.html">https://www.minicircuits.com/softwaredownload/multiatt.html</a>

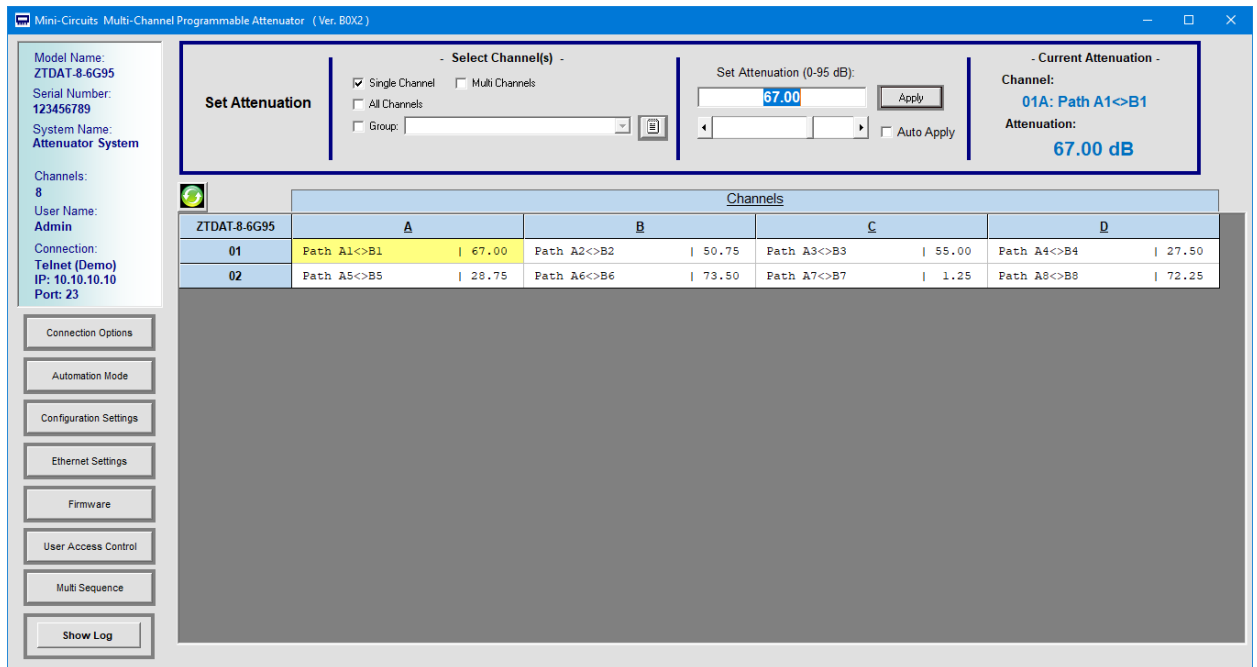
## Programming Commands

- The key ASCII / SCPI commands for control of the system are summarized below
- These can be sent via the USB or Ethernet API
- Please refer to the programming manual for full details

Command / Query	Description
:MN?	Read model name
:SN?	Read serial number
:FIRMWARE?	Read firmware version
: [address] :CHAN: [channels] :SETATT: [Att]	Set attenuation: [address] <ul style="list-style-type: none"> <li>• Address of the 4-channel attenuator module</li> <li>• SL can be used to refer to all 4-channel modules</li> </ul> [channels] <ul style="list-style-type: none"> <li>• Channel number (1 to 4) within the 4-channel module</li> <li>• Multiple channels can be listed, separated by “:”</li> </ul> [Att] <ul style="list-style-type: none"> <li>• Attenuation value (0-95)</li> </ul> Examples: <b>:01:CHAN:1:SETATT:10.25</b> Sets channel 1 of RS4DAT 01 to 10.25dB <b>:01:CHAN:1:2:3:SETATT:10.25</b> Sets channels 1, 2, & 3 of RS4DAT 01 to 10.25dB <b>:SL:CHAN:1:2:3:4:SETATT:10.25</b> Sets channels 1, 2, 3, & 4 of all RS4DATs to 0.25dB
: [address] :CHAN: [channels] :ATT?	Returns the attenuation of a single channel <ul style="list-style-type: none"> <li>• [address] : Address of the RS4DAT (01, 02, ..., SL)</li> <li>• [channels] : Channel of the RS4DAT (1, 2, 3, 4)</li> </ul> Examples: <b>:01:CHAN:1:ATT?</b> Returns the attenuation of channel 1 of RS4DAT 1

## Graphical User Interface (GUI) for Windows - Key Features

- Connect via USB or Ethernet
- Run GUI in “demo mode” to evaluate software without a hardware connection
- View and set all attenuator states
- Configure Ethernet settings
- Upgrade firmware



## Ordering Information

Please contact Mini-Circuits' Test Solutions department for price and availability:

[testsolutions@minicircuits.com](mailto:testsolutions@minicircuits.com)

## Included Accessories

Model Name	Quantity	Description
CBL-3W-xx*	1	AC power cord (IEC C13 connector to local plug)
USB-CBL-AB-7+	1	USB cable (6.8 ft)
CBL-RJ45-MM-5+	1	Ethernet cable (5 ft)
HT-4-SMA	1	SMA Cable Wrench (4 in)

Cable Model	Region
CBL-3W-US	USA
CBL-3W-EU	Europe
CBL-3W-IL	Israel
CBL-3W-UK	UK
CBL-3W-AU	Australia / China

\*Please specify one option on the purchase order, at no charge

### Additional Notes

- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)