

# Keysight 11500I and 11500J 1 mm Test Port Cables

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# Notices

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### CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

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## 11500I/J 1.0 mm Test Port Cables

### Introduction

Both the 11500I and the 11500J are test port cables designed specifically for a Keysight Technologies single-connection, single-sweep network analyzer system.

#### 11500I

The 11500I is a single cable 8.8 cm (3.46 inches) long, fitted with 1.0 mm female to 1.0 mm female connectors.

#### 11500J

The 11500J is a single cable 16.0 cm (6.3 inches) long, fitted with 1.0 mm female to 1.0 mm male connectors.

### Operation

Cables will typically last thousands of mild bend cycles. However, one sharp bend can shorten the useful life of the cable, or, in the extreme case, cause a failure.

It is strongly recommended that you have an extra cable or cable set on hand as a spare. If the cables must be bent as part of a test set-up, it is also recommended that you leave the cables in the bent position when you disassemble the test set-up. This will minimize the number of bending cycles.

## How to Prolong the Life of Your Cables

To prolong the life of your cables, use the following procedure.

1. Minimize the bending and flexing of the cables. If needed, the cable can bend about its long axis. The larger the bend radius, the smaller the magnitude and phase errors due to bending.
2. Do not straighten the cables when you remove them from the test set. Simply store them in their flexed position.
3. When you next use the cables, try to use the existing flexed position. Make as few bending changes as possible, and do not completely reverse any bend.
4. A few cm of cable immediately behind the connectors must always remain straight. Do not bend the cable near the connectors because the cable-connector interface can tolerate very little stress.
5. Do not subject the cables to torque or twisting. Always turn the nut to make a connection and always use a back-up wrench.

## Connecting Your Cables to Test Sets and Devices

Observe the following precautions when connecting cables to test sets or other devices.

1. Inspect the contact surfaces of the 1.0 mm connectors before use. Look for dirt, nicks and other signs of damage or wear. Magnification is helpful when inspecting connectors, but it is not required and may actually be misleading. Defects and damage that cannot be seen without magnification generally have no effect on electrical or mechanical performance. Magnification is of great use in analyzing the nature and cause of damage and in cleaning connectors, but it is not required for inspection.
2. When you are preparing a measurement set-up, loosely attach the cables to the test set ports first. The cables will then have some freedom of movement while you prepare the rest of the set-up. This greatly reduces their torsional stress. Tighten the cable-to-test port connection as the final step in your set-up procedure.

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### CAUTION

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Only 1.0 mm connectors that meet all the requirements of the IEEE 287 Precision Connector Standard should be mated to these cables. Mating to connectors that do not meet this standard can damage your cable.

## Where to Find More Information

The inspection, counter-rotation, and torquing procedures are explained in detail in the 85059A 1.0 mm calibration kit manual. It can be viewed online by searching for part number 85059-90003 at [www.keysight.com](http://www.keysight.com). The 85059A calibration kit contains the necessary torque wrenches and materials for cleaning and inspection.

## Performance Data

Keysight Technologies guarantees that the performance of your cables will equal or exceed the following specifications, at frequencies up to 110 GHz.

### Return Loss

Return loss is measured by connecting a 50-ohm fixed load termination (available in the 85059A calibration kit) to the test port cable. Then attach the other end of the test port cable to port one of the network analyzer.

The effects of an imperfect load are “gated out” using the gating capability of the network analyzer, as follows:

1. Set the network analyzer for “time domain - bandpass” operation (refer to the network analyzer’s Help system for more information).
2. Set start at -0.05 ns (-50 ps).
3. Set stop at 0.425 ns for the 11500I, or 0.774 ns for the 11500J.
4. Turn the gating function on, return to frequency domain, and use 2% smoothing for the tests.

Return Loss ..... 17 dB min.

### Insertion Loss

Insertion loss is measured by terminating the cable with a short (available in the 85059A calibration kit) and then measuring return loss. The values shown on the display represent an out-and-back path for the signal, which is twice the insertion loss for the cable. As an example, the measurement value of 1.5 dB would show on the display as 3.0 dB.

Frequency	11500I	11500J
0 to 50 GHz	1.2 dB Max	2.25 dB Max
50 to 75 GHz	1.4 dB Max	2.5 dB Max
75 to 110 GHz	1.7 dB Max	3.2 dB Max

## Performance Data

## Environmental Requirements

**Table 1** *Environmental Requirements*

Parameter	Required Values/Ranges
Operating Temperature	0 to 55 °C (32 to 131 °F)
Storage Temperature	–40 to +75 °C (–40 to +167 °F)
Altitude	
Operation	< 15,000 meters (≈50,000 feet)
Storage	< 15,000 meters (≈ 50,000 feet)
Relative Humidity	Always Non-Condensing
Operation	0 to 80% (26 °C maximum dry bulb)
Storage	0 to 90%

## Supplemental Characteristics

Phase Stability is measured by terminating the cable with a short (available in the 85059A calibration kit) and then attaching the other end of the test port cable to a port on the network analyzer. The measurement represents an out-and-back path for the signal, and the performance is typical up to 110 GHz.

**Table 2** *Supplemental Characteristics*

Cable	Cable Length		Minimum <sup>1</sup> Recommended Bend Radius		Normal Use <sup>2</sup> Typical <sup>3</sup> Phase Stability	Random Use <sup>4</sup> Typical Phase <sup>3</sup> Stability
<b>11500I</b>	8.8 cm	3.45 in	2.5 cm	1.0 in	± 3.0° max	± 8° max
<b>11500J</b>	16.0 cm	6.30 in	2.5 cm	1.0 in	± 3.0° max	± 8° max

1. A minimum bend radius of 25 mm (1 inch) is recommended to prevent degradation of performance and maximize the life of the cable.
2. Normal use is defined as a 19 mm (3/4 inch) movement of the end of an 11500I cable or a 25 mm (1 inch) movement of the end of an 11500J cable.
3. As Typical numbers, you should expect the performance of any individual cable to vary somewhat from these average numbers.
4. Random use is defined as flexing the cable in four different directions to a swept 90× angle over the length of the cable.

## Contacting Keysight

Assistance with test and measurement needs and information on finding a local Keysight office are available on the Web at:

[www.keysight.com/find/assist](http://www.keysight.com/find/assist).

In any correspondence or telephone conversation, refer to the Keysight product by its model number and full serial number. With this information, the Keysight representative can determine whether your product is still within its warranty period.



**Performance Data**

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