

# Keysight 85130G NMD 2.4 mm to 2.4 mm Adapter Kit

This manual applies directly to Keysight 85130G adapters with serial number 101 and above. An adapter with an earlier (or no) serial number is not specified above 40 GHz.

NOTICE: This document contains references to Agilent Technologies. Agilent's former Test and Measurement business has become Keysight Technologies. For more information, go to [www.keysight.com](http://www.keysight.com).



# Notices

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## Safety Notices

### 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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# 85130G Adapter Kit

## General Information

To obtain optimum performance from this adapter kit, observe these simple precautions:

- Make connections carefully to avoid misalignment and connector damage, which will result in inaccurate measurements.
- Keep the connectors free of dirt and any particles.
- When you clean the connectors, try using compressed air first. Do not use abrasives. With a clean foam swab, apply only isopropyl alcohol.
- For more information, refer to the *Connector Care for RF and Microwave Coaxial Connectors* document. It can be viewed online by searching for part number 08510-90064 at [www.keysight.com](http://www.keysight.com).

## Description

The 85130G contains two adapters, designed to protect 2.4 mm connectors (on a test set, for example). If the application requires a male test port, use the NMD-2.4 mm (f) to NMD-2.4 mm (m) adapter. If the application requires a female test port, use the NMD-2.4 mm (f) to PSC-2.4 mm (f) (precision slotless connector) adapter.

## Precision Slotless Connectors

When properly used, a precision slotless connector should have the same lifespan as a standard slotted connector. Keysight Technologies designed the precision slotless contacts to mate with all connectors within a connector series *when those connectors meet published interface dimensions*. Mating a connector that does not meet published specifications can damage a precision slotless connector. For this reason, ensure that any device you connect is within its specifications.

## Contents

The 85130G kit contains the following:

- Test port adapter, NMD-2.4 mm (f) to NMD-2.4 mm (m) (Keysight part number 85130-60015)
- Test port adapter, NMD-2.4 mm (f) to PSC-2.4 mm (f) (Keysight part number 85130-60016)
- Storage box, foam-lined
- Operating and Service Manual
- Spanner wrench

## Device Serial Numbers

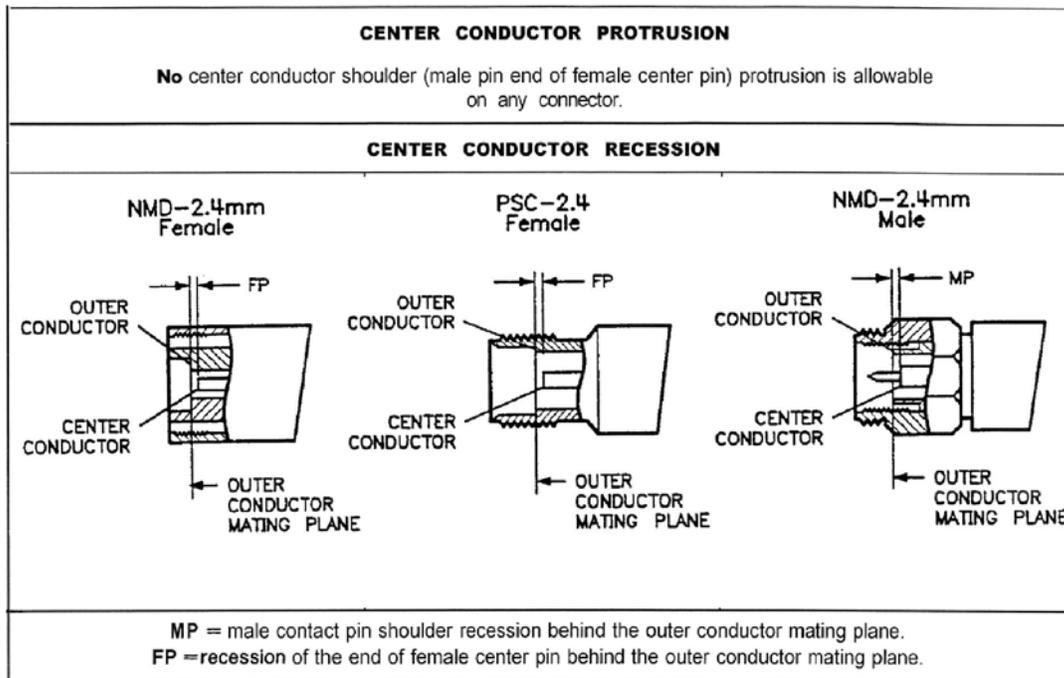
The adapters in this kit are individually serialized. To help avoid confusing these adapters with similar adapters from other kits, record the serial numbers in the following table.

Serialized Adapter	Serial Number
NMD-2.4 mm (f) to NMD-2.4 mm (m)	
NMD-2.4 mm (f) to PSC-2.4 mm (f)	

## Specifications

Keysight Technologies guarantees that your adapters will equal or exceed the following specifications.

**Figure 1 85130G Specifications**



Connector	Allowable Recession	
	mm	in
NMD-2.4 mm female	+0.015 to +0.056	+0.0006 to +0.0022
NMD-2.4 mm male	+0.015 to +0.0254	+0.0006 to +0.0010
PSC-2.4 mm female	+0.015 to +0.0254	+0.0006 to +0.0010
ELECTRICAL		
Adapter	Frequency Range	Return Loss
NMD-2.4 mm (f) to NMD-2.4 mm (m) and NMD-2.4 mm (f) to PSC-2.4 mm (f)	DC to 26.5 GHz	≥ 28 dB
	26.5 GHz to 40 GHz	≥ 23 dB
	40 GHz to 50 GHz <sup>a</sup>	≥ 20 dB

a. Adapters with serial number  $\geq 101$ .

## Proper Use

Attach the adapters to the test ports and tighten them finger tight. Use the spanner wrench to hold the test set end of the adapter and torque the test set connector with a 20 mm torque wrench set to 96 N-cm (8 in-lb).

## Performance Tests

Use a network analyzer to perform the following return loss test on your adapters as soon as you receive them. Periodically repeat the test to determine if the performance meets the electrical specifications stated on the previous page, or if they need to be replaced. An initial period of one year between performance tests is recommended.

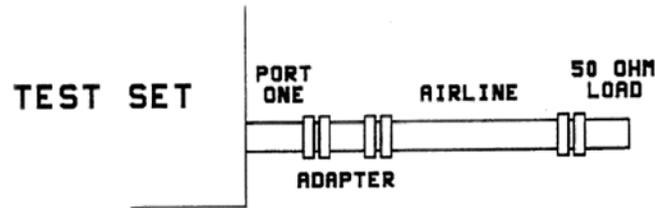
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**NOTE** If you are testing adapters that are not specified above 40 GHz (serial numbers below 101 and *no* serial numbers), replace the 50 GHz value in the previous table with the 40 GHz value.

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Required Equipment	Keysight Model or Part Number
Network analyzer – 50 GHz (or higher) measurement capability – with time domain option 010	PNA with Option 010 (See <i>PNA Family Microwave Network Analyzers Configuration Guide</i> , part number 5990-7745EN)
2.4 mm loads (included in the 85056A calibration kit)	00901-60003 (male) 00901-60004 (female)
2.4 mm 50 ohm airline, 5.0 cm (included in the 85057B verification kit)	85057-60001

**Figure 2 Return Loss Setup**



85130\_010\_002

Return loss is measured by connecting a 50 ohm fixed load termination through a 5.0 cm airline to the adapter, then attaching the adapter to port one of the test set (see [Figure 2](#)).

The effects of an imperfect load may be gated out using the network analyzer time domain option.

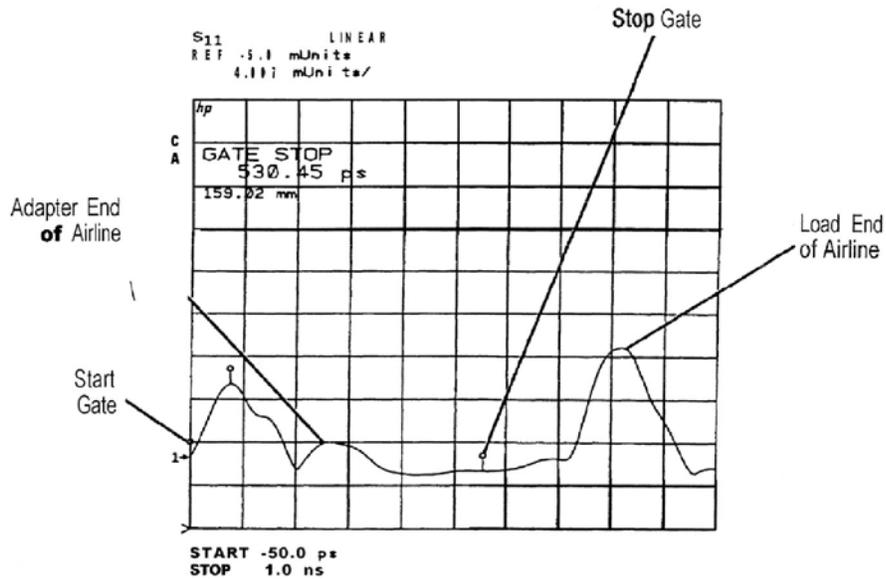
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**NOTE** Refer to your network analyzer's Help system for specific instructions on using the functions mentioned in the return loss test below.

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1. Preset the analyzer.
2. Set a stimulus start frequency of the analyzer's lowest frequency.
3. Set a stimulus stop frequency of 50 GHz.
4. Set an IF bandwidth of 100 Hz.
5. Perform, and then save, a 2.4 mm 1-port  $S_{11}$  calibration.
6. With correction turned on, select the time domain mode.
7. Set a stimulus start time for the sweep to  $-0.05$  nano-seconds.
8. Set a stimulus stop time for the sweep to 1.0 nano-seconds.
9. Select the gating function and gate-out everything but the adapter. See [Figure 3](#).
10. Select the analyzer's frequency domain mode.
11. Use the markers to read the return loss value.

**Figure 3 Analyzer Trace Showing Location of Gates and Airline**



85130\_030\_002

**Performance Test Record**

ELECTRICAL SPECIFICATIONS			
Tested by: _____			
Date: _____			
Adapter	Frequency Range	Return Loss	Measured
NMD-2.4 mm (f) to NMD-2.4 mm (m) and	DC to 26.5 GHz	≥ 28 dB	
	26.5 GHz to 40 GHz	≥ 23 dB	
NMD-2.4 mm (f) to PSC-2.4 mm (f)	40 GHz to 50 GHz	≥ 20 dB	

**Replaceable Parts**

There are no replaceable components for the adapters. A worn or damaged adapter must be replaced in whole.

## Equipment and Supplies

The following equipment and supplies are required for the maintenance and use of, but are not supplied with, your 85130G adapter kit.

Item	Part Number
2.4 mm gage set (part of 85056A calibration kit)	11752-60107 (f) 11752-60108 (m)
Torque wrench, 20 mm, 96 N-cm (8 in-lb)	8710-1764
Torque wrench, 5/16", 96 N-cm (8 in-lb) (part of the 85052B calibration kits)	8710-1765
Document: <i>Connector Care for RF and Microwave Coaxial Connectors</i>	08510-90064

## 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)

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**NOTE** 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.

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