

**Agilent**  
**85130D**  
**NMD 3.5 mm to 3.5 mm**  
**Adapter Kit**

**Operating and Service**  
**Manual**



85130-90012



**Agilent Technologies**

# Notices

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## Manual Part Number

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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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A **WARNING** 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 personal injury or death. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood and met.

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## 85130D 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.agilent.com](http://www.agilent.com).

### Description

The 85130D adapter kit contains two NMD-3.5 mm to 3.5 mm adapters. The test set end of the adapters has a NMD-3.5 mm connector while the Device Under Test (DUT) end has a precision slotless 3.5 mm connector (PSC-3.5). The NMD-3.5 mm to PSC-3.5 (m) adapter is used as a connector saver on the test port of the test set. The NMD-3.5 mm to PSC-3.5 (f) adapter is used when a female test port is required.

### Contents

The 85130D kit contains the following:

- Test port adapter, NMD-3.5 mm (f) to (m) (Agilent part number 85130-60006)
- Test port adapter, NMD-3.5 mm (f) to (f) (Agilent part number 85130-60005)
- Storage box, foam-lined
- Operating and Service Manual
- Spanner wrench

## Specifications

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

| Frequency     | Return Loss |
|---------------|-------------|
| DC – 8 GHz    | ≥ 34 dB     |
| 8 – 18 GHz    | ≥ 30 dB     |
| 18 – 26.5 GHz | ≥ 28 dB     |

The allowable recession of the center conductor of the NMD-3.5 mm (f) connector is 0.0006 to 0.0022 inches (0.015 to 0.056 mm) below the mating surface of the outer conductor.

The allowable recession of the center conductor of the NMD-3.5 mm (m) connector is 0.0006 to 0.0010 inches (0.015 to 0.0254 mm) below the mating surface of the outer conductor.

The allowable recession of the center conductor of the 3.5 mm precision connectors (3.5 mm (m) and PSC-3.5) is 0.0006 to 0.0010 inches (0.015 to 0.0254 mm) below the mating surface of the outer conductor.

## Proper Use

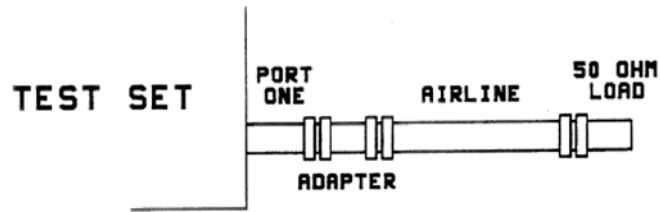
Attach the adapters to the test ports and tighten them finger tight. Use the spanner wrench to hold the test set end of the adapter and torque the test set connector with a 20 mm torque wrench set to 96 N-cm (8 in-lb).

## 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 above, or if they need to be replaced. An initial period of one year between performance tests is recommended.

| Required Equipment   | Agilent Model or Part Number  |
|--|---|
| Network analyzer – 26.5 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) |
| 3.5 mm loads (included in the 85052B calibration kit)  | 00902-60003 (male)<br>00902-60004 (female)  |
| 3.5 mm 50 ohm airline, 7.5 cm (included in the 85053B verification kit)                      | 85053-60005   |

**Figure 1**      **Return Loss Setup**



85130\_010\_002

Return loss is measured by connecting a 50 ohm fixed load termination through a 7.5 cm airline to the adapter, then attaching the adapter to port one of the test set (see [Figure 1](#)).

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

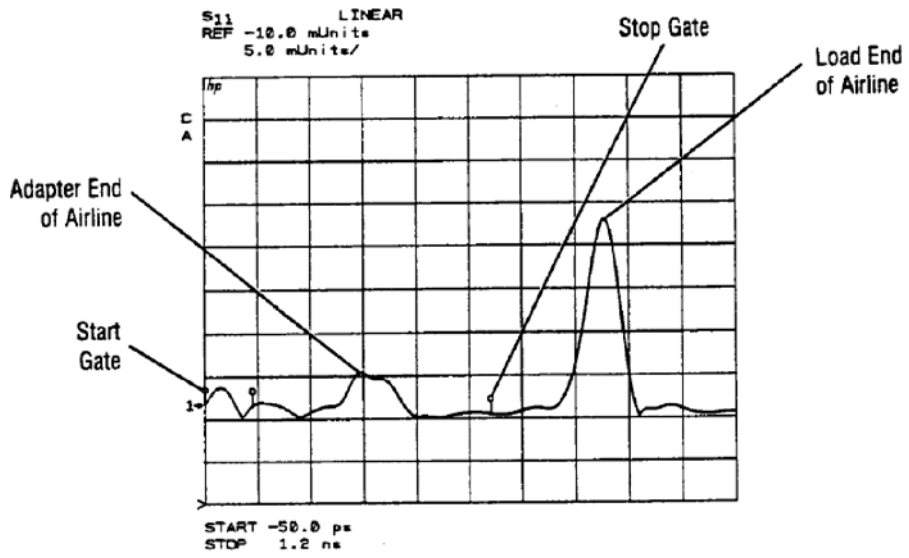
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**NOTE**      Refer to your network analyzer's Help system for specific instructions on using the functions mentioned in the return loss test below.

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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 26.5 GHz.
4. Set an IF bandwidth of 100 Hz.
5. Perform, and then save, a 3.5 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 1.2 nano-seconds.
9. Select the gating function and gate-out everything but the adapter. See [Figure 2](#).
10. Select the analyzer's frequency domain mode.
11. Use the markers to read the return loss value.

Figure 2 Analyzer Trace Showing Location of Gates and Airline



85130\_012\_001

## Performance Test Record

| ELECTRICAL SPECIFICATIONS    |                    |              |          |
|------------------------------|--------------------|--------------|----------|
| Tested by: _____             |                    |              |          |
| Date: _____                  |                    |              |          |
| Adapter                      | Frequency Range    | Return Loss  | Measured |
| NMD-3.5 mm (f) to (m)<br>and | DC to 8 GHz        | $\geq 34$ dB |          |
|                              | 8 GHz to 18 GHz    | $\geq 30$ dB |          |
| NMD-3.5 mm (f) to (f)        | 18 GHz to 26.5 GHz | $\geq 28$ 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 85130D adapter kit.

| Item   | Part Number                        |
|--|------------------------------------|
| 3.5 mm gage set (part of the 85052B calibration kits)                        | 11752-60105 (f)<br>11752-60106 (m) |
| Torque wrench, 5/16", 96 N-cm (8 in-lb) (part of the 85052B calibration kit) | 8710-1765                          |
| Torque wrench, 20 mm, 96 N-cm (8 in-lb)                                      | 8710-1764                          |
| Document: <i>Connector Care for RF and Microwave Coaxial Connectors</i>      | 08510-90064                        |

## Contacting Agilent

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

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

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

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