

Operating and Service Manual

Agilent Technologies
85130F
NMD 2.4 mm to 3.5 mm
Adapter Kit

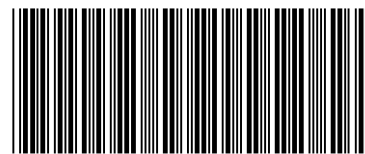


Manufacturing Part Number: 85130-90030

Printed in USA

Print Date: May 1988

© Agilent Technologies, Inc. 1988



85130-90030

Hewlett-Packard to Agilent Technologies Transition

This manual may contain references to HP or Hewlett-Packard. Please note that Hewlett-Packard's former test and measurement, semiconductor products and chemical analysis businesses are now part of Agilent Technologies. To reduce potential confusion, the only change to product numbers and names has been in the company name prefix: where a product number/name was HP XXXX the current name/number is now Agilent XXXX. For example, model number HP 85130F is now model number Agilent 85130F.

Documentation Warranty

THE MATERIAL CONTAINED IN THIS DOCUMENT IS PROVIDED "AS IS," AND IS SUBJECT TO BEING CHANGED, WITHOUT NOTICE, IN FUTURE EDITIONS. FURTHER, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, AGILENT DISCLAIMS ALL WARRANTIES, EITHER EXPRESS OR IMPLIED WITH REGARD TO THIS MANUAL AND ANY INFORMATION CONTAINED HEREIN, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. AGILENT SHALL NOT BE LIABLE FOR ERRORS OR FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE FURNISHING, USE, OR PERFORMANCE OF THIS DOCUMENT OR ANY INFORMATION CONTAINED HEREIN. SHOULD AGILENT AND THE USER HAVE A SEPARATE WRITTEN AGREEMENT WITH WARRANTY TERMS COVERING THE MATERIAL IN THIS DOCUMENT THAT CONFLICT WITH THESE TERMS, THE WARRANTY TERMS IN THE SEPARATE AGREEMENT WILL CONTROL.

DFARS/Restricted Rights Notice

If software is for use in the performance of a U.S. Government prime contract or subcontract, Software is delivered and licensed as “Commercial computer software” as defined in DFAR 252.227-7014 (June 1995), or as a “commercial item” as defined in FAR 2.101(a) or as “Restricted computer software” as defined in FAR 52.227-19 (June 1987) or any equivalent agency regulation or contract clause. Use, duplication or disclosure of Software is subject to Agilent Technologies’ standard commercial license terms, and non-DOD Departments and Agencies of the U.S. Government will receive no greater than Restricted Rights as defined in FAR 52.227-19(c)(1-2) (June 1987). U.S. Government users will receive no greater than Limited Rights as defined in FAR 52.227-14 (June 1987) or DFAR 252.227-7015 (b)(2) (November 1995), as applicable in any technical data.

Printing Copies of Documentation from the Web

To print copies of documentation from the Web, download the PDF file from the Agilent web site:

- Go to <http://www.agilent.com>.
- Enter the document’s part number (located on the title page) in the **Search** box.
- Click **Search**.
- Click on the hyperlink for the document.
- Click the printer icon located in the tool bar.

Contacting Agilent

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

<http://www.agilent.com/find/assist>

If you do not have access to the Internet, please contact your Agilent field engineer.

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.
-------------	---

This page has been intentionally left blank.

HP 85130F 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 compressed air first. Do not use abrasives. With a clean foam swab, apply **only** Freon TF as a solvent.
- For more information, refer to the Microwave Connector Care manual.

DESCRIPTION

The HP 85130F adapter kit consists of two NMD-2.4 mm to 3.5 mm adapters and a spanner wrench. The test set end of the adapters has a NMD-2.4 mm connector while the Device Under Test (DUT) end has a precision connector. The NMD-2.4 mm to NMD-3.5 mm (m) adapter is used when a male test port is required. The NMD-3.5 mm to PSC-3.5 (f) (precision **slotless** connector) adapter is used when a female test port is required.

CONTENTS

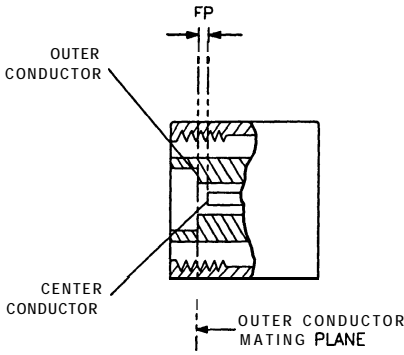
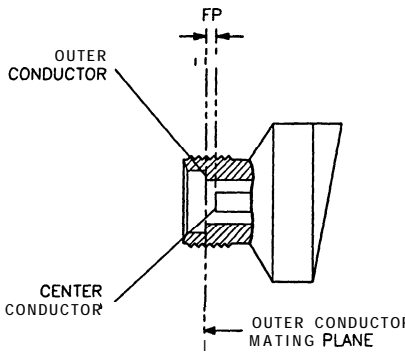
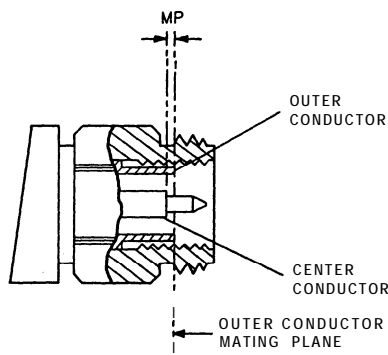
The HP 85130F kit contains the following:

Description	Quantity	Replacement Part Number
Test port adapters		
NMD-2.4 mm to NMD-3.5 mm (m)	1	85130-60010
NMD-2.4 mm to PSC-3.5 (f)	1	85130-60011
Storage box, foam lined	1	85130-60013
Operating and Service Manual	1	85130-90030
Spanner wrench	1	08513-20014

SPECIFICATIONS

Hewlett-Packard guarantees that your adapters will equal or exceed the following specifications:

Table 1. HP 85130F Specifications

CENTER CONDUCTOR PROTRUSION		
No center conductor shoulder (male pin end of female center pin) protrusion is allowable on any connector.		
CENTER CONDUCTOR RECESSION		
NMD-2.4 mm Female 	PSC-3.5 Female 	NMD-3.5 mm Male 
MP = male contact pin shoulder recession behind the outer conductor mating plane. FP = recession of the end of female center pin behind the outer conductor mating plane.		
Connector	Allowable Recession	
	mm	in
NMD-2.4 mm female	+0.000 to +0.056	+0.000 to +0.0022
PSC-3.5 female	+ 0.00254 to + 0.0127	+0.0001 to +0.0005
NMD-3.5 mm male	+ 0.00254 to + 0.0127	+0.0001 to +0.0005
ELECTRICAL		
Adapter	Frequency Range	Return Loss
NMD-2.4 mm to PSC-3.5 female and	DC to 8 GHz	≥32 dB
	8 GHz to 18 GHz	≥28 dB
NMD-2.4 mm to NMD-3.5 mm male	18 GHz to 26.5	≥26 dB

PERFORMANCE TESTS

Using an HP 8510 Network Analyzer perform the following test on your adapters as soon as you receive them, and periodically repeat the test to determine if their performance meets the electrical specifications stated above or if they need to be replaced. An initial period of one year between performance tests is recommended.

Required Equipment	HP Model/Part Number
HP 8510B Network Analyzer	HP 8510 Option 010
with time domain option and B.04.0X firmware or higher	
HP 8516A S-parameter Test Set	
HP 834XX Synthesized Sweeper	
NOTE: Refer to the HP 8516A Operating and Service Manual for information on instrument compatibility.	
3.5 mm loads	
(part of the HP 850528 calibration kit)	
male85052-60010
female	85052-60010
3.5 mm 50Ω airline, 7.5 cm	
85053-60005	
(part of the HP 850538 verification kit)	

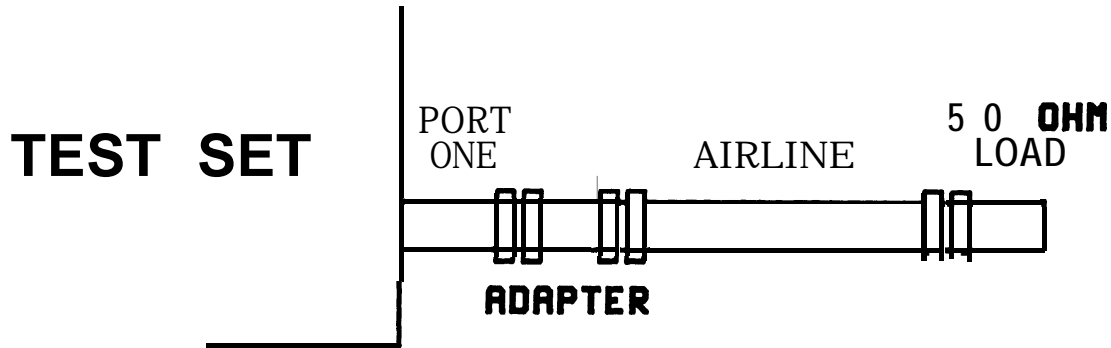


Figure 1. Return Loss Set-up

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 7).

The effects of an imperfect load may be gated out using the HP 8510 time domain option as follows:

1. Press **[PRESET]**. The HP 8510 will be set to a predetermined state.
2. Under STIMULUS, press **[START] [4] [5] [M/μ]**. This sets the start frequency to 45 MHz.
3. Under STIMULUS, press **[STOP] [2] [6] [.] [5] [G/n]**. This sets the stop frequency to 26.5 GHz.
4. Perform a 2.4 mm one port sliding load **S11** calibration with 32 averaging at port one of your test set, as described in the HP 8510 Operating and Programming manual. Save the calibration. Set up as shown in Figure 1.

5. With correction turned on, under MENUS, press **[DOMAIN]**. This brings up a set of time domain and frequency functions to the softkeys. Select **[TIME BANDPASS]**. This puts you in time domain mode.
6. Under STIMULUS, press **[START] [-] [.] [0] [5] [G/n]**. This sets the start time of the sweep to **-.05** nanoseconds.
7. Under STIMULUS, press **[STOP] [1] [G/n]**. This sets the stop time of the sweep to 1 nanosecond.
8. Under RESPONSE, press **[AUTO]**. This brings the trace on screen.
9. Under the **softkey** functions, press **[SPECIFY GATE]**. A new menu should appear that will allow you to press **[STOP]** **softkey**.
10. Using the RPG, adjust the stop gate to the center of the airline (see Figure 2).
11. Under the **softkey** functions press **[GATE ON]**. The HP 8510 will now compute the gate coefficients to gate out everything but the adapter.
12. Press the **[PRIOR MENU]** button just to the right of the **softkeys** and a new menu should appear that will allow you to press the **[FREQUENCY]** **softkey**.
13. Under MENUS, press **[MARKER]**. This brings up a set of functions to the softkeys. Select **[MORE]** **[MAXIMUM]** **softkeys**.
14. You can now read the return loss value from the screen marker value, and record the results on the Performance Test Record provided.

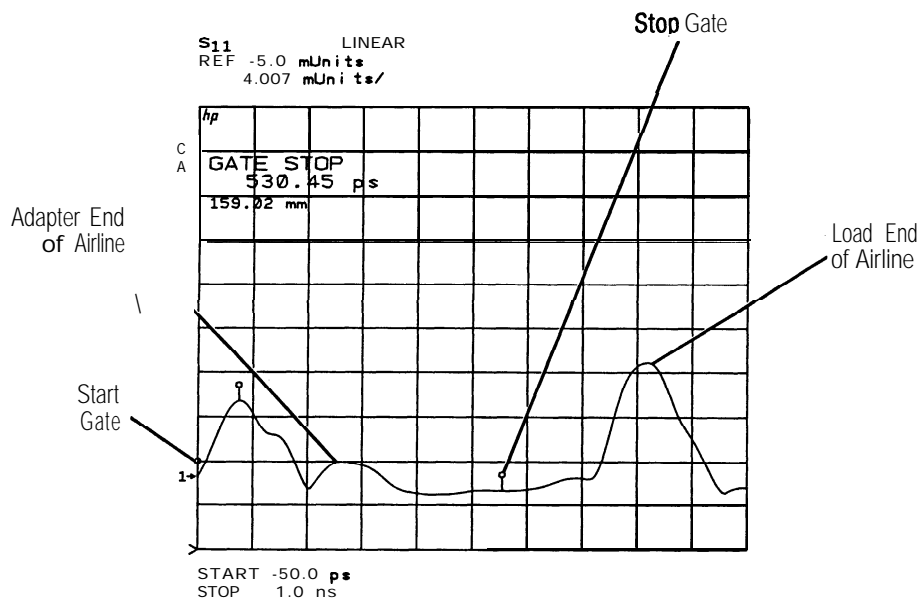


Figure 2. Location of Gates and Airline

Performance Test Record

ELECTRICAL SPECIFICATIONS		Tested by: _____	
		Date: _____	
Adapter	Frequency Range	Return Loss	Measured
NMD-2.4 mm to PSC-3.5 female and NMD-2.4 mm to NMD-3.5 mm male	DC to 8 GHz	≥32 dB	
	8 GHz to 18 GHz	≥28 dB	
	18 GHz to 26.5 GHz	≥26 dB	

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). Attach a non-rotating clamp to each test port.

REPLACEABLE PARTS

There no replaceable parts in the HP **85130F** adapter kit. 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 HP **85130F** adapter kit.

- 3.5 mm gage kit **85052-80010**
(part of the HP **85052A/B** calibration kits)
- Torque wrench, 20 mm, 96 N-cm (8 in-lb) **8710-1764**
- Torque wrench, **5/16** inch, 96 N-cm (8 in-lb) **8710-1765**
(part of the HP **85052A/B** calibration kits)
- Microwave Connector Care Manual **08510-90064**
- Connector cleaning kit **92193Z**
- Non-rotating Clamp **08515-60003**
(two included with the HP **8516A** test set)