

Agilent Technologies
E444xAU Option H7L
Installation Guide

Agilent Technologies E444xAU Option H7L

Installation Guide

**Use this manual with the following PSA Modules
E4440A/E4443A/E4445A/E4446A/E4448A**



Agilent Technologies

Manufacturing Part Number: E4440-90574

**Printed in USA
December 2004**

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Safety Notes

The following safety notes are used throughout this document. Familiarize yourself with each of these notes and its meaning before performing any of the procedures in this document.

WARNING	Warning denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a warning note until the indicated conditions are fully understood and met.
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CAUTION	Caution denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in damage to or destruction of the instrument. Do not proceed beyond a caution sign until the indicated conditions are fully understood and met.
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Definitions

- Specifications describe the performance of parameters covered by the product warranty (temperature – 0 to 55 °C, unless otherwise noted.)
- *Typical* describes additional product performance information that is not covered by the product warranty. It is performance beyond specification that 80% of the units exhibit with a 95% confidence level over the temperature range 20 to 30 °C. Typical performance does not include measurement uncertainty.
- *Nominal* values indicate expected performance, or describe product performance that is useful in the application of the product, but is not covered by the product warranty.

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Chapter 1

Description

The E444xAU Option H7L is a retrofit kit installing an Amplitude Video Output of the RF Input signal. The video is a logarithmic conversion of the RF signal amplitude to a linear voltage. (The output is wideband and unfiltered signal supplied to the rear panel using a BNC connector). The Log linearity is typically ± 1.2 dB with a maximum limit of ± 1.5 dB. The maximum output voltage is 2.7 Volts. The Video Load is $100 \Omega (\pm 10\%)$.

Verifying the Contents

Verify the items received in Table 1 to insure that you have a complete shipment. If there are any signs of damage that may have occurred during shipment, or any accessories appear to be damaged or missing, call your nearest Agilent Technologies sales or service office. Refer to “Contacting Agilent” on page 11 for the nearest office.

Table 1 Content List

Description	Agilent Part Number	Quantity
Lock Washer	2190-0102	1
Hex Nut	2950-0035	1
Option Upgrade Entitlement Certificate	5964-5141	1
Rear Panel Option H7L Label	7121-8080	1
Cable Assembly, SMA (m) to SMA (m)	8120-5066	1
Cable Assembly, BNC (f) to SMA (m)	8120-8787	1
Cable Assembly, SMA (m) to SMA (f)	70340-60013	1
Rear Plate	E4440-00059	1
Log Video PC board	E4440-60416	1
E444xA Option H7L User’s Guide	E4440-90551	1
E444xAU Option H7L Installation Guide	E4440-90574	1

Removal of Assemblies

Follow the steps as outlined in the Agilent PSA Spectrum Analyzer Service Guide

1. Instrument Outer Case
2. Chassis Cover
3. Rear Panel Assembly

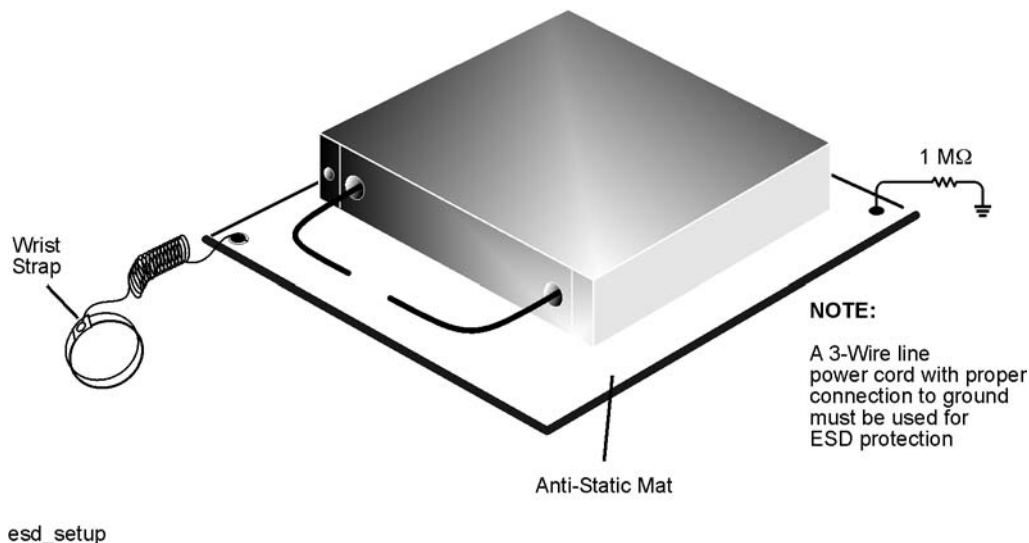
Electrostatic Discharge Protection

Protection against electrostatic discharge (ESD) is essential while removing assemblies from or connecting cables to the network analyzer. Static electricity can build up on your body and can easily damage sensitive internal circuit elements when discharged. Static discharges too small to be felt can cause permanent damage. To prevent damage to the instrument:

- *always* have a grounded, conductive table mat in front of your test equipment.
- *always* wear a grounded wrist strap, connected to a grounded conductive table mat, having a 1 M Ω resistor in series with it, when handling components and assemblies or when making connections.
- *always* wear heel straps when working in an area with a conductive floor. If you are uncertain about the conductivity of your floor, wear heel straps.
- *always* ground yourself before you clean, inspect, or make a connection to a static-sensitive device or test port. You can, for example, grasp the grounded outer shell of the test port or cable connector briefly.
- *always* ground the center conductor of a test cable before making a connection to the analyzer test port or other static-sensitive device. This can be done as follows:
 1. Connect a short (from your calibration kit) to one end of the cable to short the center conductor to the outer conductor.
 2. While wearing a grounded wrist strap, grasp the outer shell of the cable connector.
 3. Connect the other end of the cable to the test port and remove the short from the cable.

Figure 1 shows a typical ESD protection setup using a grounded mat and wrist strap.

Figure 1 ESD Protection Setup



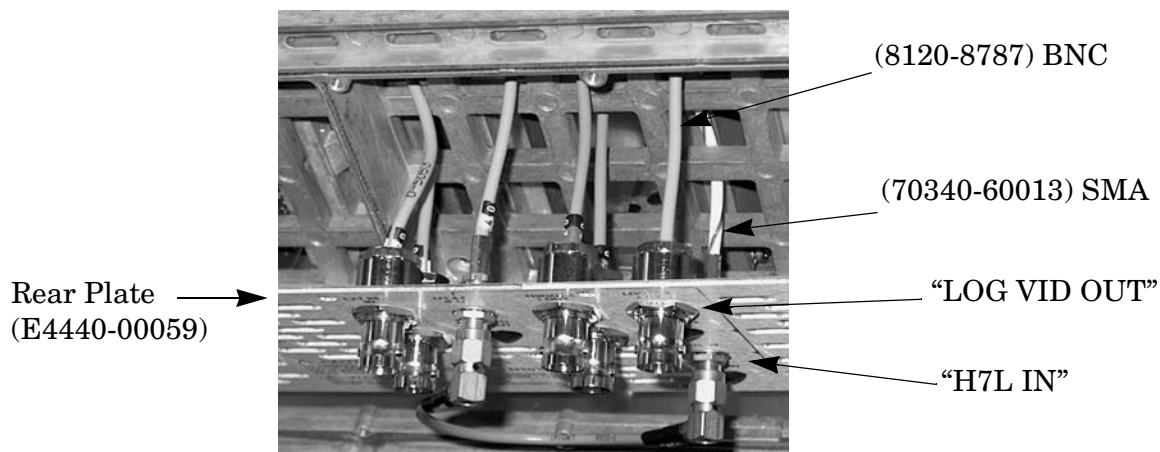
CAUTION Use ESD precautions when performing these installation procedures.

NOTE If the instrument contains Options H70, H7L, or HNQ, a jumper is added to the rear Plate for connecting the 321.4 MHz IF OUT to the desired input (for the above mentioned options). While these three options can reside in the same instrument, they cannot function simultaneously, as they require the instrument's 321.4 MHz IF OUT. For this reason, a rear plate jumper is added to allow the user to have all three options in one instrument.

Installation

1. Remove the rear plate. Carefully, pull the rear plate away from the instrument so as not to damage any of the cables. Retain the hardware for use in Step 8.
2. If the rear plate (E4440-00059) supplied with this kit is the same as that on the instrument, proceed to Step 5.
3. Disconnect the cables from the old rear plate (E4440-00052), noting the orientation of the cable connections.
4. Using the new rear plate (E4440-00059), install each cable into its proper location. Torque the BNC connectors to 21 in-lb and the SMA connectors to 10 in-lb.
5. Insert the BNC to SMA cable (8120-8787) and the SMA to SMA (m-f) cable (70340-60013) into the rear plate. The BNC connector is inserted in the “LOG VID OUT” hole and the SMA connector is inserted in the “H7L IN”. Refer to Figure 2 for location.

Figure 2 Installing Cables to the Rear Plate



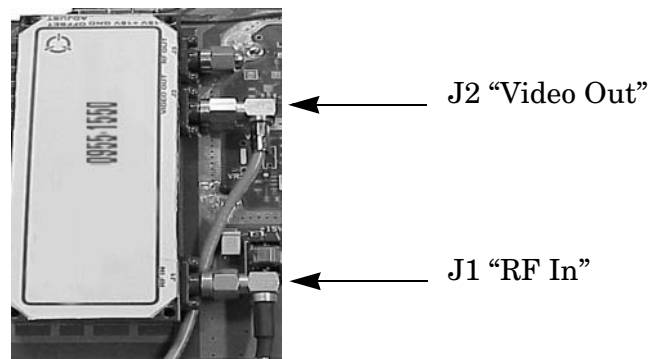
6. Add the washer (2190-0102) and nut (2950-0035) to the BNC connector. Torque the BNC connector to 21 in-lb. See left picture in Figure 3.
7. The SMA connector includes the nut and washer. Torque the SMA connector to 10 in-lb. See right picture in Figure 3.

Figure 3 Log Video Out and H7L Input Connectors



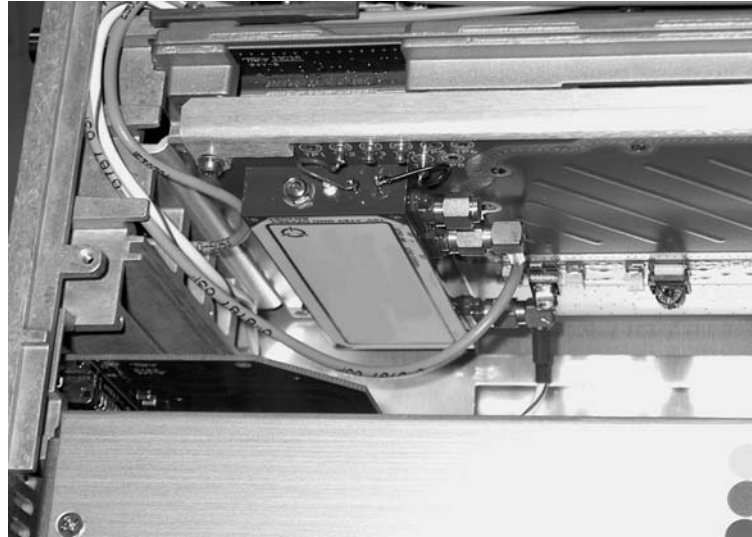
8. Route the cables through the rear web frame and connect the rear plate. Torque the thirteen rear plate screws, that were removed in Step 1, to 9 in-lb.
9. Connect the two cables from the rear plate to the Video Amplifier (0955-1550) on the Log Video Board (E4440-60416). Connect the gray cable (8120-8787) to J2 “Video Out” and the white/purple cable (70340-60013) to J1 “RF In” on the Video Amplifier. Torque to 10 in-lb. Refer to Figure 4.

Figure 4 Connecting the Cables to the Amplifier



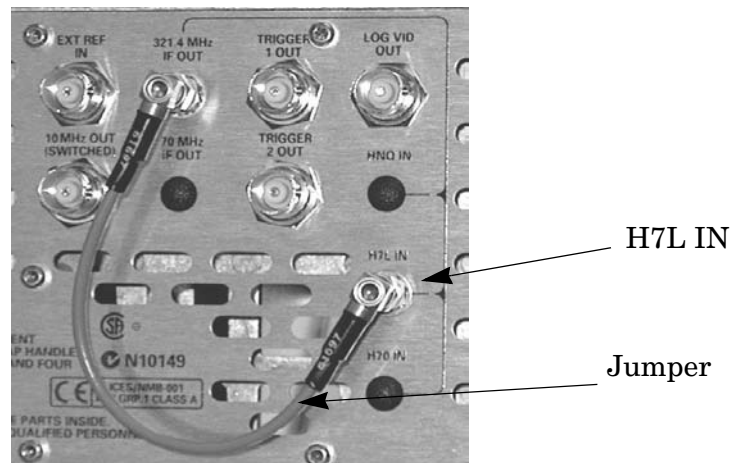
10. Insert the PC board into an available option slot in the PSA.
Refer to Figure 5.

Figure 5 PC Board in Option Slot



11. Install the jumper (8120-5066) to the rear plate from the 321.4 MHz IF OUT connector to the H7L IN connector. Refer to Figure 6.

Figure 6 Rear Plate Jumper



12. Place the Option H7L Label (7121-8080) in the serial tag option field on the rear panel.
13. Install the chassis and instrument cover as per the standard assembly procedures.
14. Install licence key(s) to enable Option H7L. Refer to the Option Upgrade Entitlement Certificate for installation procedure.

This concludes the installation of the E4440xAU Option H7L into the PNA instrument. Refer to the E4440A Option H7L User's and Service Guide for the performance verification procedure.

Safety and Regulatory Information

Introduction

Review this product and related documentation to familiarize yourself with safety markings and instructions before you operate the instrument. This product has been designed and tested in accordance with international standards.

Before Applying Power

Verify that the product is configured to match the available main power source. If this product is to be powered by autotransformer, make sure the common terminal is connected to the neutral (grounded) side of the ac power supply.

Shipping Instructions

You must always call the Agilent Technologies Instrument Support Center to initiate service before retuning your instrument to a service office. See "Contacting Agilent" on page 11. Always transport or ship the instrument using the original packaging if possible. If not, comparable packaging must be used. Attach a complete description of the failure symptoms.

Warnings

WARNING The **WARNING** notice denotes a hazard. It calls attention to a procedure, practice, or the like, which if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood and met.

Warnings applicable to this instrument are:

WARNING If this instrument is not used as specified, the protection provided by the equipment could be impaired. This instrument must be used in a normal condition (in which all means for protection are intact) only.

WARNING For continued protection against fire hazard replace line fuse only with same type and rating:

- United States—F 3A/250V, Part Number 2110-0780
- Europe—F 3.15A/250V, Part Number 2110-0655

The use of other fuses or material is prohibited.

WARNING This is a Safety Class I product (provided with a protective earthing ground incorporated in the power cord). The mains plug shall be inserted only into a socket outlet provided with a protective earth contact. Any interruption of the protective conductor, inside or outside the instrument, is likely to make the instrument dangerous. Intentional interruption is prohibited.

WARNING The power cord is connected to internal capacitors that may retain dangerous electrical charges for 5 seconds after disconnecting the plug from its power supply.

WARNING These servicing instructions are for use by qualified personnel only. To avoid electrical shock, do not perform any servicing unless you are qualified to do so.

WARNING The opening of covers or removal of parts is likely to expose dangerous voltages. Disconnect the instrument from all voltage sources while it is being opened.

WARNING This product is designed for use in Installation Category II and Pollution Degree 2 per IEC 1010 and 664 respectively.

WARNING No operator serviceable parts inside. Refer servicing to qualified personnel. To prevent electrical shock do not remove covers.

WARNING	If this product is not used as specified, the protection provided by the equipment could be impaired. This product must be used in a normal condition (in which all means for protection are intact) only.
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Cautions

CAUTION	The CAUTION notice denotes a hazard. It calls attention to an operating procedure, practice, or the like, which 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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Cautions applicable to this instrument are:

CAUTION	Always use the three-prong ac power cord supplied with this instrument. Failure to ensure adequate earth grounding (by not using this cord) can cause instrument damage.
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CAUTION	This instrument has autoranging line voltage input; be sure the supply voltage is within the specified range.
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CAUTION	Ventilation Requirements: When installing the instrument in a cabinet, the convection into and out of the instrument must not be restricted. The ambient temperature (outside the cabinet) must be less than the maximum operating temperature of the instrument by 4 °C for every 100 watts dissipated in the cabinet. If the total power dissipated in the cabinet is greater than 800 watts, forced convection must be used.
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Instrument Markings

	When you see this symbol on your instrument, you should refer to the instrument's instruction manual for important information.
	This symbol indicates hazardous voltages.
	The laser radiation symbol is marked on products that have a laser output.
	This symbol indicates that the instrument requires alternating current (ac) input.
	The CE mark is a registered trademark of the European Community. If it is accompanied by a year, it indicates the year the design was proven.
	The CSA mark is a registered trademark of the Canadian Standards Association.
ISM1-A	This text indicates that the instrument is an Industrial Scientific and Medical Group 1 Class A product (CISPR 11, Clause 4).
	This symbol indicates that the power line switch is ON.
	This symbol indicates that the power line switch is OFF or in STANDBY position.
	This symbol indicates the product meets the Australian Standards.

**Safety
 Earth
 Ground** 

This is a Safety Class I product (provided with a protective earthing terminal). An uninterruptible safety earth ground must be provided from the main power source to the product input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, the product must be made inoperative and secured against any unintended operation.

Contacting Agilent

By internet, phone, or fax, get assistance with all your test and measurement needs.

Online assistance: www.agilent.com/find/assist			
Americas			
Brazil (tel) (+55) 11 4197 3600 (fax) (+55) 11 4197 3800	Canada (tel) 877 894 4414 (fax) (+1) 905 282-6495	Mexico (tel) (+52) 55 5081 9469 (alt) 01800 5064 800 (fax) (+52) 55 5081 9467	United States (tel) 800 829 4444 (alt) (+1) 303 662 3998 (fax) 800 829 4433
Asia Pacific and Japan			
Australia (tel) 1800 629 485 (alt) 1800 143 243 (fax) 1800 142 134	China (tel) 800 810 0189 (alt) (+86) 10800 650 0021 (fax) 800 820 2816	Hong Kong (tel) 800 930 871 (alt) (+852) 3197 7889 (fax) (+852) 2 506 9233	India (tel) 1600 112 929 (fax) 000800 650 1101
Japan (tel) 0120 421 345 (alt) (+81) 426 56 7832 (fax) 0120 421 678	Malaysia (tel) 1800 888 848 (alt) 1800 828 848 (fax) 1800 801 664	Singapore (tel) 1800 375 8100 (alt) (+65) 6 375 8100 (fax) (+65) 6836 0252	South Korea (tel) 080 769 0800 (alt) (+82) 2 2004 5004 (fax) (+82) 2 2004 5115
Taiwan (tel) 0800 047 866 (alt) 00801 651 317 (fax) 0800 286 331	Thailand (tel) 1800 226 008 (alt) (+66) 2 268 1345 (fax) (+66) 2 661 3714		
Europe			
Austria (tel) 0820 87 44 11* (fax) 0820 87 44 22	Belgium (tel) (+32) (0)2 404 9340 (alt) (+32) (0)2 404 9000 (fax) (+32) (0)2 404 9395	Denmark (tel) (+45) 7013 1515 (alt) (+45) 7013 7313 (fax) (+45) 7013 1555	Finland (tel) (+358) 10 855 2100 (fax) (+358) 10 855 2923
France (tel) 0825 010 700* (alt) (+33) (0)1 6453 5623 (fax) 0825 010 701*	Germany (tel) 01805 24 6333* (alt) 01805 24 6330* (fax) 01805 24 6336*	Ireland (tel) (+353) (0)1 890 924 204 (alt) (+353) (0)1 890 924 206 (fax) (+353) (0)1 890 924 024	Israel (tel) (+972) 3 9288 500 (fax) (+972) 3 9288 501
Italy (tel) (+39) (0)2 9260 8484 (fax) (+39) (0)2 9544 1175	Luxemburg (tel) (+32) (0)2 404 9340 (alt) (+32) (0)2 404 9000 (fax) (+32) (0)2 404 9395	Netherlands (tel) (+31) (0)20 547 2111 (alt) (+31) (0)20 547 2000 (fax) (+31) (0)20 547 2190	Russia (tel) (+7) 095 797 3963 (alt) (+7) 095 797 3900 (fax) (+7) 095 797 3901
Spain (tel) (+34) 91 631 3300 (alt) (+34) 91 631 3000 (fax) (+34) 91 631 3301	Sweden (tel) 0200 88 22 55* (alt) (+46) (0)8 5064 8686 (fax) 020 120 2266*	Switzerland (French) (tel) 0800 80 5353 opt. 2* (alt) (+33) (0)1 6453 5623 (fax) (+41) (0)22 567 5313	Switzerland (German) (tel) 0800 80 5353 opt. 1* (alt) (+49) (0)7031 464 6333 (fax) (+41) (0)1 272 7373
Switzerland (Italian) (tel) 0800 80 5353 opt. 3* (alt) (+39) (0)2 9260 8484 (fax) (+41) (0)22 567 5314	United Kingdom (tel) (+44) (0)7004 666666 (alt) (+44) (0)7004 123123 (fax) (+44) (0)7004 444555		
(tel) = primary telephone number; (alt) = alternate telephone number; (fax) = FAX number; * = in country number			

