

# **Agilent Technologies E444xAU Option HN9**

Installation Guide



# **Agilent Technologies E444xAU Option HN9**

## **Installation Guide**

### **Retrofit Kit for the PSA Instruments**

**Use this manual with the following documents:**

E4440A, E4443A, E4445A, E4446A and E4448A



**Agilent Technologies**

**Manufacturing Part Number: E4440-90602**

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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.

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<b>WARNING</b>	<b>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.</b>
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<b>CAUTION</b>	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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# General Information

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## Description

The E444xAU Option HN9 provides at least an 80 MHz wide baseband IF centered at 321.4 MHz for input center frequencies of less than 3 GHz.

This manual incorporates the installation of the following similar instrument models E4440A, E4443A, E4445A, E4446A, E4448A with Option HN9. They are referred to as E444xAU throughout this document.

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## Verifying the Shipment

Inspect the shipping container. If the container or packing material is damaged, it should be kept until the contents of the shipment have been checked mechanically and electrically. If there is physical damage please notify the nearest Agilent Technologies office. Refer to [“Contacting Agilent” on page 15](#). Keep the damaged shipping materials (if any) for inspection by the carrier and an Agilent Technologies representative.

**Table 1 E444xAU Option HN9 Kit Content List (E4440-60357)**

<b>Description</b>	<b>Agilent Part Number</b>	<b>Qty</b>
3.9214 GHz Bandpass Filter	0955-1529	1
4.4 GHz Lowpass Filter	0955-0519	1
Cable (4 GHz, LB)	E4446-20047	1
Cable (4 GHz, BPF)	E4446-20048	1
E444xA Option HN9 User's and Service Guide Supplement	E4440-90557	1
E444xAU Option HN9 Installation Guide	E4440-90602	1
Label (Option HN9)	E4440-80566	1
Option HN9 License Entitlement Certificate	5964-5141	1

## Installation Information

Products Affected:	PSA E4440A,E4443A, E4445A, E4446A, E4448A
To Be Performed By:	(X) Agilent Service Center (X) Personnel Qualified by Agilent
Estimated Installation Time:	2Hour
Estimated Adjustment and Verification Time:	6 Hour
Performance Test and Adjustments	<a href="#">Page 10</a>

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## Installation Procedure

### Removing the Feet, Handles and Covers

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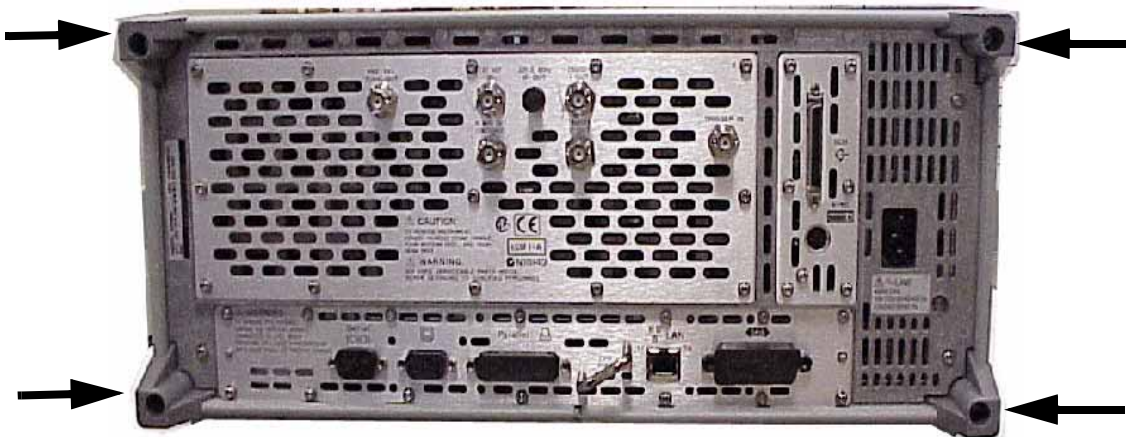
**NOTE** Keep all of the hardware (screws, nuts, etc.) for re-use when installing the assemblies.

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Follow the steps outlined below to install the Option HN9 retrofit kit.

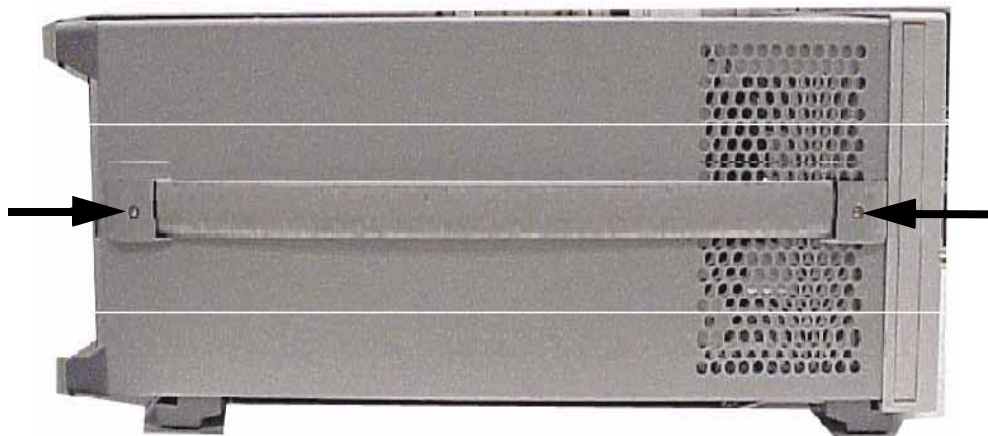
1. Remove the four rear panel feet on the PSA using a #20 Torx driver. Refer to [Figure 1](#). Torque the rear panel feet to 21 in-lb when re-installing.

**Figure 1 Rear Panel Feet**



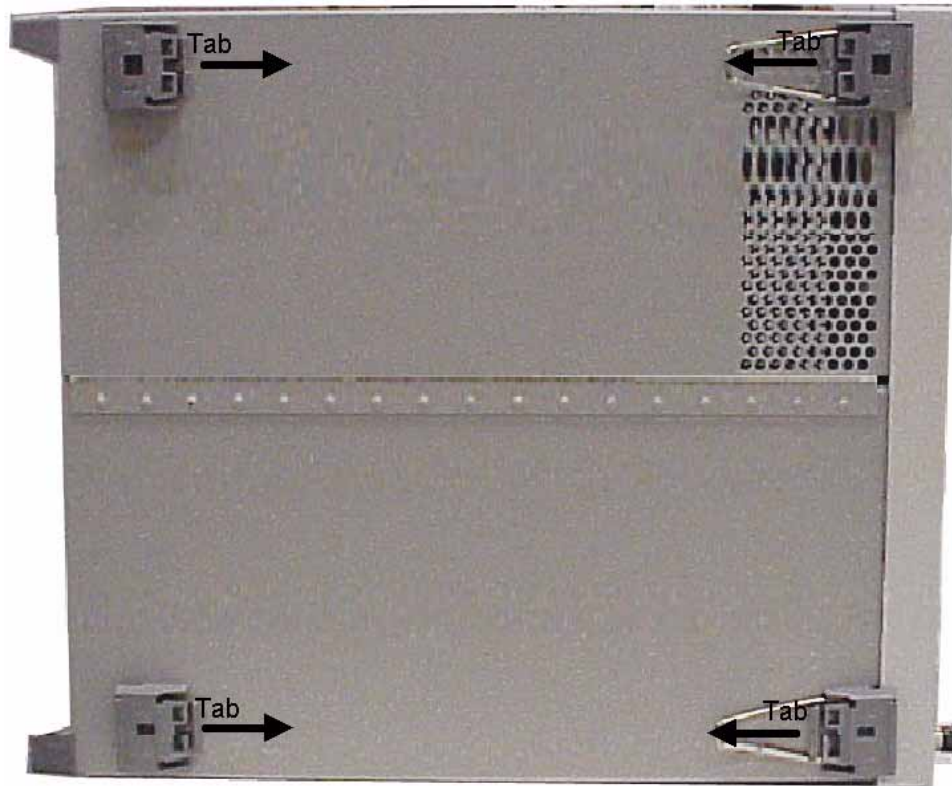
2. Remove the two side handles on the PSA by using a #20 Torx driver. Refer to [Figure 2](#). Torque the side handles to 21 in-lb when re-installing.

**Figure 2 Side Handles**



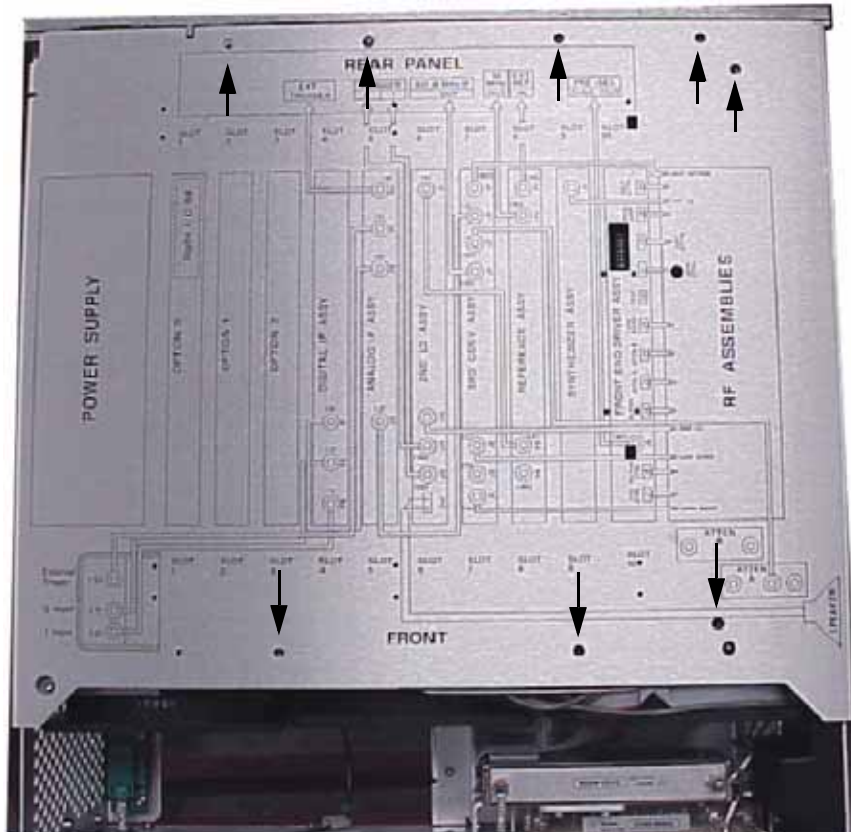
3. Remove the four feet from the bottom of the PSA instrument by pulling the tabs away from the instrument and sliding the feet toward the center of the instrument. Refer to [Figure 3](#).
4. Remove the outside cover by sliding it toward the rear of the instrument.

**Figure 3 Bottom Feet Orientation**



5. Remove the chassis cover using a #10 Torx driver. There are ten screws to remove from the “speaker” side of the chassis cover and two screws from the “power supply” side of the chassis cover. Place all hardware in a safe location for re-installation. Refer to [Figure 4](#) for location of top screws.

**Figure 4 Chassis Cover**



## Bandpass Filter Replacement

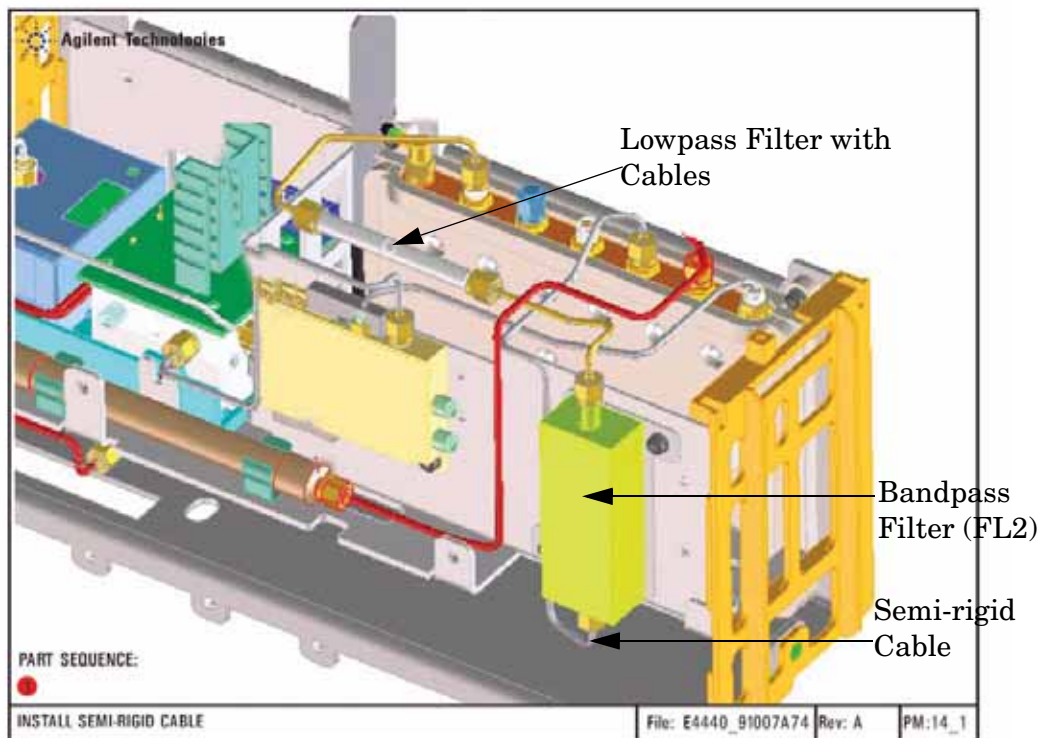
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**NOTE** Keep all of the hardware (screws, nuts, etc.) for re-use when installing the assemblies.

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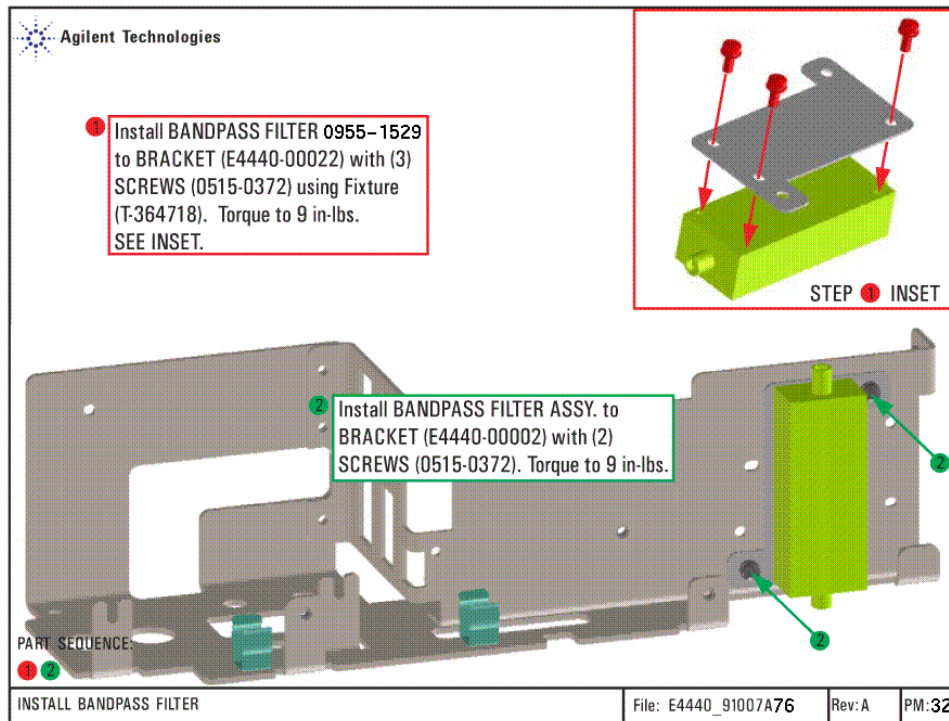
1. Remove the lowband filter and the semi-rigid cables. Discard the lowband filter and the cables.
2. Locate the bandpass filter (FL2) in the instrument and disconnect the semi-rigid cable from the bottom of bandpass filter. Do *not* remove the other end of this cable.

**Figure 5 Lowpass Filter and Cable Removal**



3. Remove the bandpass filter/bracket assembly from the instrument. Keep the two screws.
4. Remove and discard the bandpass filter from the bracket. Keep the three screws and the bracket.
5. Install the Option HN9 bandpass filter (0955-1529) using the three screws that were removed in [step 4](#). Torque 9 in-lb.
6. Install the filter/bracket assembly into the instrument using the two screws removed in [step 3](#).
7. Reinstall the semi-rigid cable to the bottom of the bandpass filter, disconnected in [step 2](#). Torque to 10 in-lb.

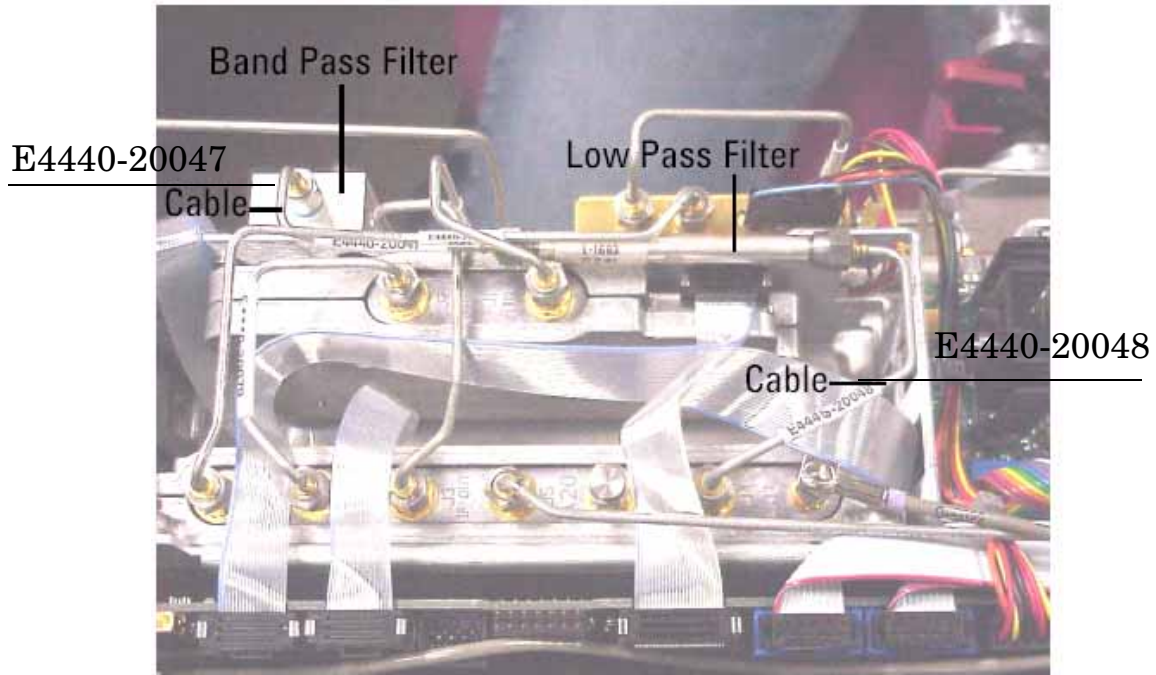
**Figure 6 Bandpass Filter and Bracket Assembly**





8. Install the two semi-rigid cables (E4446-20047 and E4446-20048) to the lowpass filter (0955-0519). Connect the E4446-20047 cable to the bandpass filter. Connect the E4446-20048 cable to J4 on the A20 lowband assembly.  
Torque all connections to 10 in-lb. Refer to [Figure 7](#) and [Figure 5](#) on page 7.

**Figure 7 Lowpass Filter and Cable Installation**



## **Update the Firmware to Include Option HN9**

The Agilent Software License Entitlement certificate is in the kit. Refer to the instructions on the certificate to redeem the license.

Enter the license keyword into the instrument by following the instructions in the license redemption e-mail.

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## **Performance Tests and Adjustments**

The tests outlined in this section are to verify the operation of Option HN9 and should be used in conjunction with the standard PSA manuals.

Perform the following performance verification tests using the PSA-Series Calibration Software:

- DANL (Displayed Average Noise Level)
- Frequency Response (300 kHz to 3 GHz)
- Absolute Amplitude Accuracy

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## Safety and Regulatory Information

### Introduction

Review this product and related documentation to familiarize yourself with safety markings and instructions before you operate the instrument. The documentation contains information and warnings that must be followed by the user to ensure safe operation and to maintain the product in a safe condition.

### Connector Care and Cleaning

If alcohol is used to clean the connectors, the power cord to the instrument must be removed. All cleaning should take place in a well ventilated area. Allow adequate time for the fumes to disperse and moist alcohol to evaporate prior to energizing the instrument.

### 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 15](#). 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

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**WARNING** The **WARNING** notice denotes a hazard. It calls attention to a procedure 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.

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Warnings applicable to this instrument are:

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**WARNING** To prevent electrical shock, disconnect the Agilent Technologies model E444xAU HN9 from mains before cleaning. Use a dry cloth or one slightly dampened with water to clean the external case parts. Do not attempt to clean internally.

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**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.

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

- United States—F 0.5A/250V, Part Number 2110-0202
- Europe—F 3.15A/250V, Part Number 2110-0655

The use of other fuses or material is prohibited.

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**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 product is likely to make the product dangerous. Intentional interruption is prohibited.

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**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.

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**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.

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**WARNING** This product is designed for use in Installation Category II and Pollution Degree 2 per IEC 61010-1: 2001.

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

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**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

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**CAUTION**     The CAUTION notice denotes a hazard. It calls attention to an procedure that, if not correctly performed or adhered to, could result in damage to or destruction of the product. 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:

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**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 product is designed for use in Installation Category II and Pollution Degree 2 per IEC 61010-1:2001.

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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.
	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.

This information supersedes all prior HP contact information.			
<b>Online assistance:</b> <a href="http://www.agilent.com/find/assist">www.agilent.com/find/assist</a>			
<b>Americas</b>			
<b>Brazil</b> (tel) (+55) 11 3351 7012 (fax) (+55) 11 3351 7024	<b>Canada</b> (tel) +1 877 894 4414 (fax) +1 303 662 3369	<b>Mexico</b> (tel) 1 800 254 2440 (fax) 1 800 254 4222	<b>United States</b> (tel) 800 829 4444 (alt) (+1) 303 662 3998 (fax) 800 829 4433
<b>Asia Pacific and Japan</b>			
<b>Australia</b> (tel) 1 800 225 574 (fax) 1 800 681 776 (fax) 1 800 225 539	<b>China</b> (tel) 800 810 0508 (alt) 800 810 0510 (fax) 800 810 0507 (fax) 800 810 0362	<b>Hong Kong</b> (tel) 800 933 229 (fax) 800 900 701	<b>India</b> (tel) 1600 112 626 (fax) 1600 112 727 (fax) 1600 113 040
<b>Japan (Bench)</b> (tel) 0120 32 0119 (alt) (+81) 426 56 7799 (fax) 0120 01 2144	<b>Japan (On-Site)</b> (tel) 0120 802 363 (alt) (+81) 426 56 7498 (fax) (+81) 426 60 8953	<b>Singapore</b> (tel) 1 800 275 0880 (fax) (+65) 6755 1235 (fax) (+65) 6755 1214	<b>South Korea</b> (tel) 080 778 0011 (fax) 080 778 0013
<b>Taiwan</b> (tel) 0800 047 669 (fax) 0800 047 667 (fax) 886 3492 0779	<b>Thailand</b> (tel) 1 800 2758 5822 (alt) (+66) 2267 5913 (fax) 1 800 656 336	<b>Malaysia</b> (tel) 1800 880 399 (fax) 1800 801 054	
<b>Europe</b>			
<b>Austria</b> (tel) 0820 87 44 11* (fax) 0820 87 44 22	<b>Belgium</b> (tel) (+32) (0)2 404 9340 (alt) (+32) (0)2 404 9000 (fax) (+32) (0)2 404 9395	<b>Denmark</b> (tel) (+45) 7013 1515 (alt) (+45) 7013 7313 (fax) (+45) 7013 1555	<b>Finland</b> (tel) (+358) 10 855 2100 (fax) (+358) (0) 10 855 2923
<b>France</b> (tel) 0825 010 700* (alt) (+33) (0)1 6453 5623 (fax) 0825 010 701*	<b>Germany</b> (tel) 01805 24 6333* (alt) 01805 24 6330* (fax) 01805 24 6336*	<b>Ireland</b> (tel) (+353) (0)1 890 924 204 (alt) (+353) (0)1 890 924 206 (fax) (+353) (0)1 890 924 024	<b>Israel</b> (tel) (+972) 3 9288 500 (fax) (+972) 3 9288 501
<b>Italy</b> (tel) (+39) (0)2 9260 8484 (fax) (+39) (0)2 9544 1175	<b>Luxemburg</b> (tel) (+32) (0)2 404 9340 (alt) (+32) (0)2 404 9000 (fax) (+32) (0)2 404 9395	<b>Netherlands</b> (tel) (+31) (0)20 547 2111 (alt) (+31) (0)20 547 2000 (fax) (+31) (0)20 547 2190	<b>Russia</b> (tel) (+7) 095 797 3963 (alt) (+7) 095 797 3900 (fax) (+7) 095 797 3901
<b>Spain</b> (tel) (+34) 91 631 3300 (alt) (+34) 91 631 3000 (fax) (+34) 91 631 3301	<b>Sweden</b> (tel) 0200 88 22 55* (alt) (+46) (0)8 5064 8686 (fax) 020 120 2266*	<b>Switzerland (French)</b> (tel) 0800 80 5353 opt. 2* (alt) (+33) (0)1 6453 5623 (fax) (+41) (0)22 567 5313	<b>Switzerland (German)</b> (tel) 0800 80 5353 opt. 1* (alt) (+49) (0)7031 464 6333 (fax) (+41) (0)1 272 7373
<b>Switzerland (Italian)</b> (tel) 0800 80 5353 opt. 3* (alt) (+39) (0)2 9260 8484 (fax) (+41) (0)22 567 5314	<b>United Kingdom</b> (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 11/16/04			

