

**Agilent E4991U Option 007  
Temperature Characteristic Test Kit Upgrade Kit**

# **Upgrade Manual**

**Second Edition**



**Agilent Technologies**

**Agilent Part No. E4991-90106**

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## Notices

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## Manual Printing History

The manual's printing date and part number indicate its current edition. The printing date changes when a new edition is printed. (Minor corrections and updates that are incorporated at reprint do not cause the date to change.) The manual part number changes when extensive technical changes are incorporated.

March 2003      First Edition

August 2012      Second Edition

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## Safety Summary

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or with specific WARNINGS elsewhere in this manual may impair the protection provided by the equipment. In addition it violates safety standards of design, manufacture, and intended use of the instrument.

Agilent Technologies assumes no liability for the customer's failure to comply with these requirements.

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### NOTE

E4991A comply with INSTALLATION CATEGORY II and POLLUTION DEGREE 2 in IEC61010-1. E4991A are INDOOR USE product.

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### NOTE

LEDs in E4991A are Class 1 in accordance with IEC60825-1.  
CLASS 1 LED PRODUCT

- Ground The Instrument

To avoid electric shock hazard, the instrument chassis and cabinet must be connected to a safety earth ground by the supplied power cable with earth blade.

- **DO NOT Operate In An Explosive Atmosphere**

Do not operate the instrument in the presence of flammable gasses or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

- **Keep Away From Live Circuits**

Operating personnel must not remove instrument covers. Component replacement and internal adjustments must be made by qualified maintenance personnel. Do not replace components with the power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

- **DO NOT Service Or Adjust Alone**

Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

- **DO NOT Substitute Parts Or Modify Instrument**

Because of the danger of introducing additional hazards, do not install substitute parts or perform unauthorized modifications to the instrument. Return the instrument to a Agilent Technologies Sales and Service Office for service and repair to ensure that safety features are maintained.

- **Dangerous Procedure Warnings**

Warnings, such as the example below, precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed.

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**WARNING**

**Dangerous voltages, capable of causing death, are presenting this instrument. Use extreme caution when handling, testing, and adjusting this instrument.**

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## Safety Symbol

General definitions of safety symbols used on the instrument or in manuals are listed below.



Instruction Manual symbol: the product is marked with this symbol when it is necessary for the user to refer to the instrument manual.



Alternating current.



Direct current.



On (Supply).



Off (Supply).



In position of push-button switch.



Out position of push-button switch.



Frame (or chassis) terminal. A connection to the frame (chassis) of the equipment which

normally include all exposed metal structure.

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**WARNING**

**This warning sign denotes a hazard. It calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, could result in injury or death to personnel.**

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**CAUTION**

This Caution sign denotes a hazard. It calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product.

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**NOTE**

Note denotes important information. It calls attention to a procedure, practice, condition or the like, which is essential to highlight.

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## Warranty

This Agilent Technologies instrument product is warranted against defects in material and workmanship for a period corresponding to the individual warranty periods of its component products. Instruments are warranted for a period of one year. Fixtures and adapters are warranted for a period of 90 days. During the warranty period, Agilent Technologies Company will, at its option, either repair or replace products that prove to be defective.

For warranty service or repair, this product must be returned to a service facility designated by Agilent Technologies. Buyer shall prepay shipping charges to Agilent Technologies and Agilent Technologies shall pay shipping charges to return the product to Buyer. However, Buyer shall pay all shipping charges, duties, and taxes for products returned to Agilent Technologies from another country.

Agilent Technologies warrants that its software and firmware designated by Agilent Technologies for use with an instrument will execute its programming instruction when properly installed on that instrument. Agilent Technologies does not warrant that the operation of the instrument, or software, or firmware will be uninterrupted or error free.

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## Limitation of Warranty

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside the environmental specifications for the product, or improper site preparation or maintenance.

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**IMPORTANT**

No other warranty is expressed or implied. Agilent Technologies specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

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## Exclusive Remedies

The remedies provided herein are buyer's sole and exclusive remedies. Agilent Technologies shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory.

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## Assistance

Product maintenance agreements and other customer assistance agreements are available for Agilent Technologies products.

For any assistance, contact your nearest Agilent Technologies Sales and Service Office. Addresses are provided at the back of this manual.

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## Typeface Conventions

<b>Bold</b>	Boldface type is used when a term is defined. For example: <b>icons</b> are symbols.
<i>Italic</i>	Italic type is used for emphasis and for titles of manuals and other publications.
<b>[Hardkey]</b>	Indicates a hardkey labeled "Hardkey."
<b>Softkey</b>	Indicates a softkey labeled "Softkey."
<b>[Hardkey] - Softkey1 - Softkey2</b>	Indicates keystrokes <b>[Hardkey] - Softkey1 - Softkey2</b> .



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# **1 Upgrade Information**

This chapter describes the information on the E4991U Option 007 to retrofit the Temperature Characteristic Test Kit to the Agilent E4991A. The upgrade information includes the contents of the kit, required tools, installation procedure and post-installation operation verification.

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## The Option 007 Upgrade Kit

The purpose of this kit is to install (retrofit) the option 007 Temperature Characteristic Test Kit into the Agilent E4991A.

This kit is not customer installable. After incoming inspection, this kit should be sent with the Agilent E4991A to the nearest Agilent Technologies service office for option upgrade.

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## Contents of the Agilent E4991U Option 007 Upgrade Kit

The kit includes the parts listed in Table 1-1. If anything is missing, contact the nearest Agilent Technologies office.

Table 1-1

**Contents of the Agilent E4991U Option 007 Upgrade Kit**

Description	Agilent PN	Qty.
Upgrade Manual (This manual)	E4991-90106	1
Heat-Resistant Coaxial Cable	E4991-61010	1
Fixture Stand	E4991-60005	1
Test Head Stand	E4991-60006	1
Heat-Resistant Coaxial Termination Set (contains 7-mm coaxial Open and Short terminations and a case)	E4991-61011	1
RF Extension Cable Assembly	04287-61651	1
Label "OPTION 007"	5182-0431	1
N (m) to SMA (f) Adapter	1250-2879	3
N (f) to SMA (f) Adapter	1250-3157	3
Floppy Disk (Contains temperature characteristics measurement software)	E4991-18002	1
Pad	04291-09001	1
Mount Cable Tie	1400-0584	3



## Required Equipment

The required equipment for the installation of E4991U Option 007 is listed in Table 1-2.

**Table 1-2** Required Equipment

Equipment	Recommended model	Quantity
Power Meter	E4418A/B, E4419A/B or 438A	1
Power Sensor	E4412A, E9304A or 8482A + 8481D	1
Multimeter	3458A	1
Performance Test Kit	16190B	1
Calibration Kit	16195B (furnished with E4991A)	1
BNC (m) - BNC (m) cable, 61 cm	P/N 8120-1839	1
N (m) - BNC (f) Adapter	P/N 1250-0780	1
7 mm - N (f) Adapter	11524A	1
Dual Banana - BNC (f) Adapter	P/N 1251-2277	1
Feed-through Termination	11048C	1
Windows PC	PC-AT Compatible, RAM $\geq$ 64 MBytes, CPU Pentium 200 MHz or faster, Microsoft <sup>®</sup> Windows NT <sup>®</sup> (4.0), Windows 2000 <sup>®</sup> , Windows 98 <sup>®</sup> or Windows 95 <sup>®</sup> , Agilent VEE Rev. 5 or 6, GPIB card 82350A, 82340B or 82341C/D	1
Floppy Disk*	1.44 MB, 2HD	3

\*Note: Floppy disks are required when the E4991A firmware is revision 1.0.

## Installation

To install the E4991U Option 007 Upgrade Kit into the E4991A, perform the following procedures:

1. E4991A firmware upgrade to install revision 1.01 or the latest firmware.  
(The firmware upgrade is required only when the E4991A firmware is revision 1.0.)
2. Installation of temperature characteristics measurement software
3. Post installation verification.

The step-by-step procedure of the Option 007 installation is described in the paragraphs below:

### E4991A Firmware Upgrade

In order to run the Temperature Characteristics Measurement software on the internal VBA, the E4991A must have the firmware later than revision 1.01. If the E4991A firmware is revision 1.0, upgrade the firmware to revision 1.01 or above by downloading the latest firmware file from Agilent Technologies's web site.

The firmware upgrade procedure along with the latest firmware file is provided on the CTU-Kobe web site or Agilent Worldwide Home web site (<http://www.agilent.com>).

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**NOTE**

To verify the revision number of the installed firmware, click "System" in the menu bar on the E4991A measurement screen and, then "About E4991A..." in the pull down menu. The firmware revision number is displayed

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**NOTE**

The firmware upgrade procedure is also described on Appendix C, Firmware Update on the E4991A service manual.

### Installation of Temperature Characteristics Measurement Software

Load the Temperature Characteristics Measurement software into the E4991A from the furnished software disk in accordance with the following procedure:

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**NOTE**

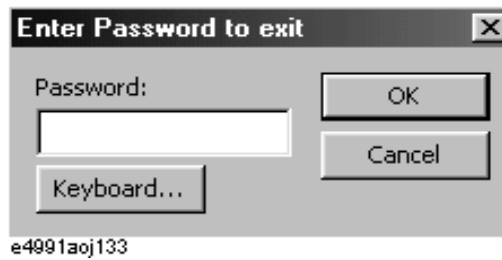
Verify that the E4991A firmware is revision 1.01 or above.

**Step 1.** Connect the mouse and external keyboard to the E4991A. Then turn the E4991A on.

**Step 2.** Exit from the E4991A system program (Measurement view) as follows:

. Click **System - Exit** from the menu bar. This opens the **Enter Password to exit** dialog box as shown in Figure 1-1.

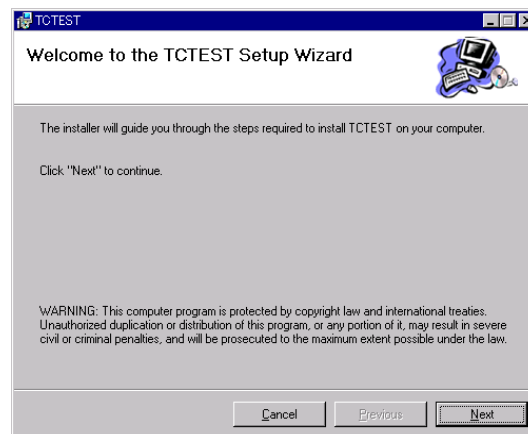
**Figure 1-1** Enter Password to exit dialog box



- a. Enter the password: **e4991a** into the Password box from the external keyboard or from the character input palette that appears by clicking the **Keyboard...** button.
- b. Exit from the E4991A system by clicking the **OK** button. Windows desktop screen is displayed.

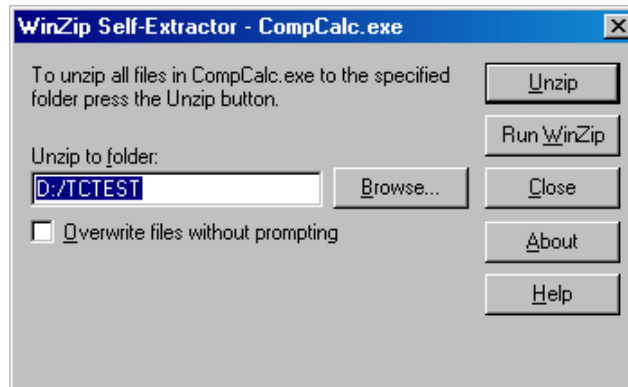
- Step 3.** Insert the furnished Temperature Characteristics Measurement software disk into the disk drive slot of the E4991A.
- Step 4.** Double-click “My Computer” icon on the Windows desktop screen.
- Step 5.** Double-click “3 1/2 Floppy [A:]” icon.
- Step 6.** Double-click “Setup.msi” to activate the installer program in the disk. The TCTEST Setup Wizard will open automatically as shown in Figure 1-2.

**Figure 1-2** TCTEST Setup Wizard



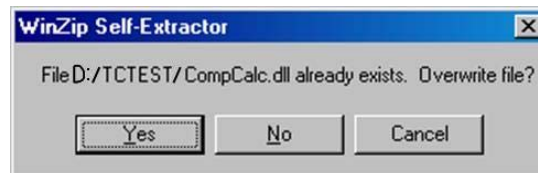
- Step 7.** Click **Next** button on the Setup Wizard. A “Confirm Installation” wizard is displayed.
- Step 8.** Click **Next** button to get the software installation started. An “Installation Complete” wizard appears when the software is successfully loaded into the E4991A from the disk.
- Step 9.** Click **Close** button to exit from the installer program.
- Step 10.** Double-click “CompCalc.exe” icon. A dialog box appears as shown in Figure 1-3.

**Figure 1-3** WinZip Self-Extractor - CompCalc.exe dialog box



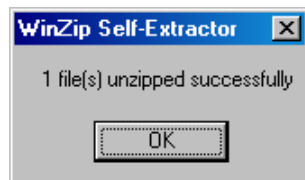
**Step 11.** Click the **Unzip** button. A message box appears as shown in Figure 1-4.

**Figure 1-4** WinZip Self-Extractor message box



**Step 12.** Click **Yes**. The program installation is successfully completed when the following message box appears. Press **OK** to close the message box.

**Figure 1-5** Program installation completed



**Step 13.** Click **Close** in “Winzip Self-Extractor - CompCalc.exe” dialog box (Figure 1-3) to exit from WinZip Self-Extractor.

**Step 14.** Remove the Temperature Characteristics Measurement Software disk from the disk drive.

**Step 15.** Turn the front panel power switch off and wait until the E4991A shuts down. Then, turn it on to reboot the E4991A.

### Post Installation Verification

Perform the post-installation verification procedure to verify that the performance of the Option 007 meets its specifications when the E4991A is equipped with the Option 007 hardware.

1. Install the E4991A and the hardware of the E4991U Option 007 Upgrade Kit as shown in Figure 1-3. The hardware installation procedure is as follows:
  - a. Attach the test head of the E4991A to the Test Head Stand (included in the kit).

- b. Mount the cable holder (attached to the 7-mm coaxial connector module of the Heat-Resistant Cable) on the Fixture Stand with its captive screws.
- c. Place the Fixture Stand on a box (a carton or a substitute) to level the Heat-Resistant Cable at the same height as the DUT Port on the test head. Adjust the height of the Fixture Stand for  $223 \text{ mm} \pm 10 \text{ mm}$  with a spacer (another carton or books) inserted between the Fixture Stand and box as shown in the figure.
- d. Connect the 1 meter RF Extension Cable Assembly and Heat-Resistant Cable to the test head of the E4991A as shown in the figure.

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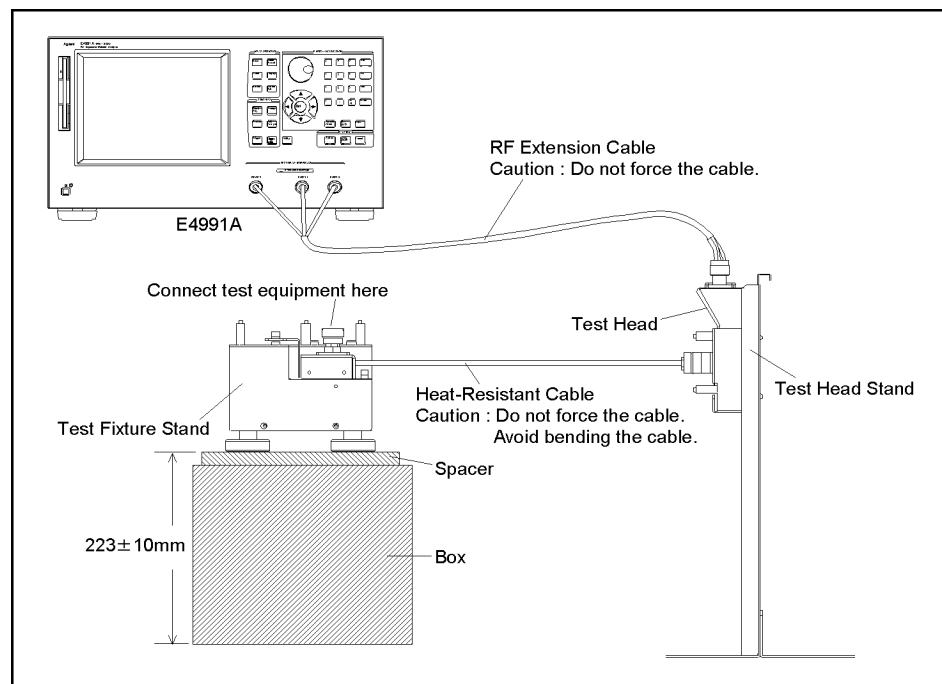
**CAUTION** Do not force the RF extension cable assembly. It is strongly suggested that the RF extension cable assembly be connected last of the setup procedure in order to prevent the joint of SMA connectors on the cable from being forced and damaged.

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**CAUTION** Do not force the heat-resistant cable or else the cable may be impaired. Avoid bending the cable.

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**Figure 1-6 Option 007 Hardware Installation for Performance Verification**



e4991u\_opt00701

2. Connect the test equipment in accordance with the test setup diagrams shown on Chapter 2, Performance Test of the E4991A service manual. Perform the following tests using the Spot Test mode of E4991A Performance Test Program (Revision 1.02 or above).
  - Power Level Accuracy Test for Opt.007 (LevelAccuracy\_007)
  - Impedance Measurement Accuracy Test for Opt.007 (ImpMeas\_007)

A simple diagram of the test setup for each test is displayed on the user-interface screen when the test program is executed. For details of the test procedure, see the Operation

## Upgrade Information Installation

Manual for E4991A Performance Test Program.

Verify that the E4991A with Option 007 passes the above tests.

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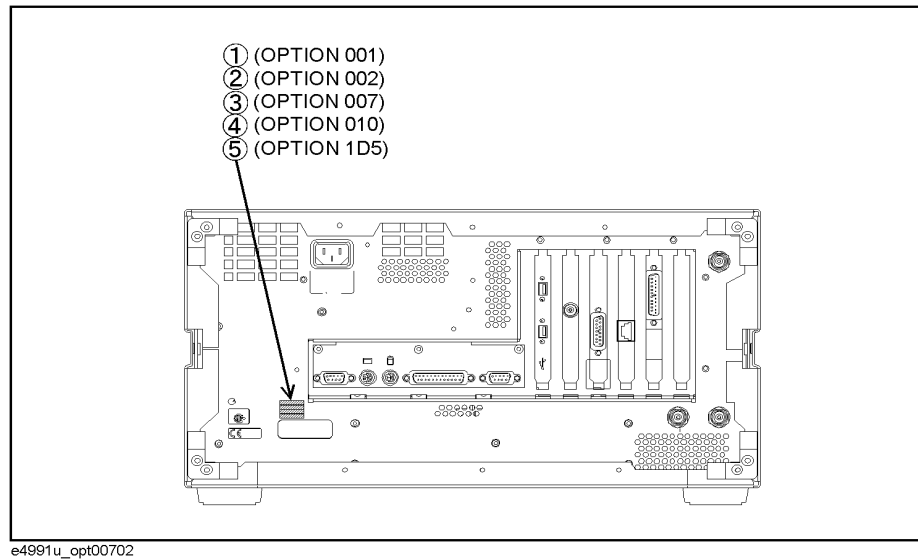
**NOTE**

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Use the Performance Test Program Revision 1.02 or above and, refer to the manual printed later than March 2003.

3. Paste the "OPTION 007" label (P/N 5182-0431) on the E4991A rear panel as shown in Figure 1-5.

**Figure 1-7**      **Option Label Location**



The E4991U Option 007 Upgrade Kit installation procedure ends.