Getting Started Guide

Agilent Technologies E7473A, E7474A,
E7475A, E7476A, E7477A
Indoor Wireless Solutions

Safety and Regulatory Information

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

For more details on Safety and Regulatory Information, refer to "Safety and Regulatory Information" on page 97.

MUST READ FIRST

WARNING **The WARNING notice denotes a hazard. It calls attention to a procedure, practice, or the like, that, 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.**

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.

Welcome

Thank you for choosing Agilent Technologies. In this guide, you'll find the setup instructions you need to begin taking indoor measurements.

Follow These Steps

To Do This	See This
1 Load the backpack with equipment.	"Arranging Hardware in the Backpack" on page 13
2 Connect the equipment and turn it on.	"Connecting the Hardware" on page 17
3 Put on the backpack and begin taking measurements.	"Suiting Up to Take Measurements" on page 36

If You Need Help...

To Do This...	See This
Get training	http://agilent.com/find/networks Check the web site for information about training registration, software updates, phone support, FAQs, and more.
Get help	Once you start the software, press **F1** to use the extensive help system.
Confirm the contents of your system.	*Agilent System Information Guide* (also available on the CD-ROM that came with your system).

Online Getting Started Guide

This guide has been installed in PDF[1] format on your hard drive as a part of the typical installation. You can also check the following web site for the latest version:

http://agilent.com/find/manuals, and then search for your system type.

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1. Portable Document Format - online version that can be viewed using Adobe® Acrobat reader. For more information, refer to http://www.adobe.com.

For more information on accessing this and other online documentation, refer to .

Systems Covered By This Guide

The following table outlines the indoor wireless solutions covered by this guide.

System Part Number	Description
E7473A, option 180	CDMA Cellular and PCS Indoor Measurement System
E7474A, option 180	TDMA Cellular and PCS Indoor Measurement System
E7475A, option 180	GSM900, DCS1800 and GSM1900 Indoor Measurement System
E7476A, option 180	W-CDMA (UMTS) Indoor Measurement System
E7477A, option 180	CDMA 2000 Indoor Measurement System
86154A, option 030	Pen computer kit, including pen tablet, travel case, and more
86154A, option 032	Pen computer accessory kit, including pen computer auto power adapter
86154A, option 034	Pen computer accessory kit, including battery, battery charger, and more
86154A, option 036	4-port USB kit
86154A, option 425	Multi-band antenna key
86154A, option 500	Receiver battery kit
86154A, option 507	Indoor backpack, phone pouch, and more

- For detailed software and hardware specifications, or lists of system options and accessories, refer to the *Agilent System Information Guide*.

Contents

6. Safety and Regulatory Information

1

Loading, Connecting, and Using the Backpack

What You'll Find in This Chapter

To Do This	See This
Load your backpack.	"Arranging Hardware in the Backpack" on page 13 covers where in the backpack each part of your system belongs for maximum comfort and effectiveness.
Connect the antenna.	"Automatic Configuration" on page 20
Arrange cables in the backpack.	"Running Cables Through the Backpack Straps" on page 25
Setup the USB serial connector.	"Connecting the USB Serial Converter (86154A, option 36)" on page 26
Connect the hardware in the backpack.	"Hardware Installation Tips" on page 18 covers important setup information. "Connecting the Hardware" on page 17 shows how to connect hardware in several configurations, from single receiver and/or phone systems to multiple receiver and/or phone systems.
Put on the backpack.	"Suiting Up to Take Measurements" on page 36 covers how to wear the backpack, in addition to how to carry the pen tablet for hands-free operation.
Protect the backpack and equipment in foul weather.	"Using the All-Weather Cover" on page 46
Start the software.	"Preparing to Take Indoor Measurements" on page 47

Arranging Hardware in the Backpack

Using the
Backpack

You are going to carry your measurement system on your back, so Agilent has made certain that the backpack design arranges equipment for maximum measurement efficiency, while making your comfort a priority. We have incorporated padding and support strapping into a rugged, lightweight backpack, with a space for everything you need to take measurements in an indoor or outdoor environment.

Since you will need to remove and replace equipment, such as batteries, the following illustrations remind you of the best way to arrange the equipment in the backpack.

Backpack with Two Receivers and Phone
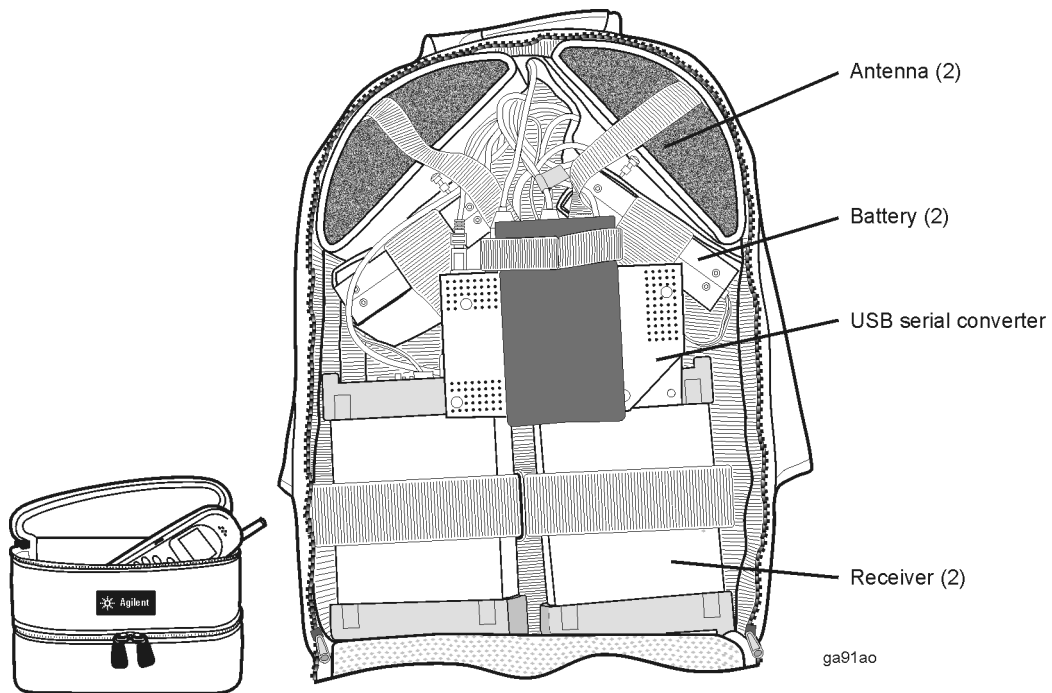
Figure 1-1 Arranging receivers and phones

Backpack with One Receiver, No Phone

USB serial converter

Antenna

Battery

Receiver

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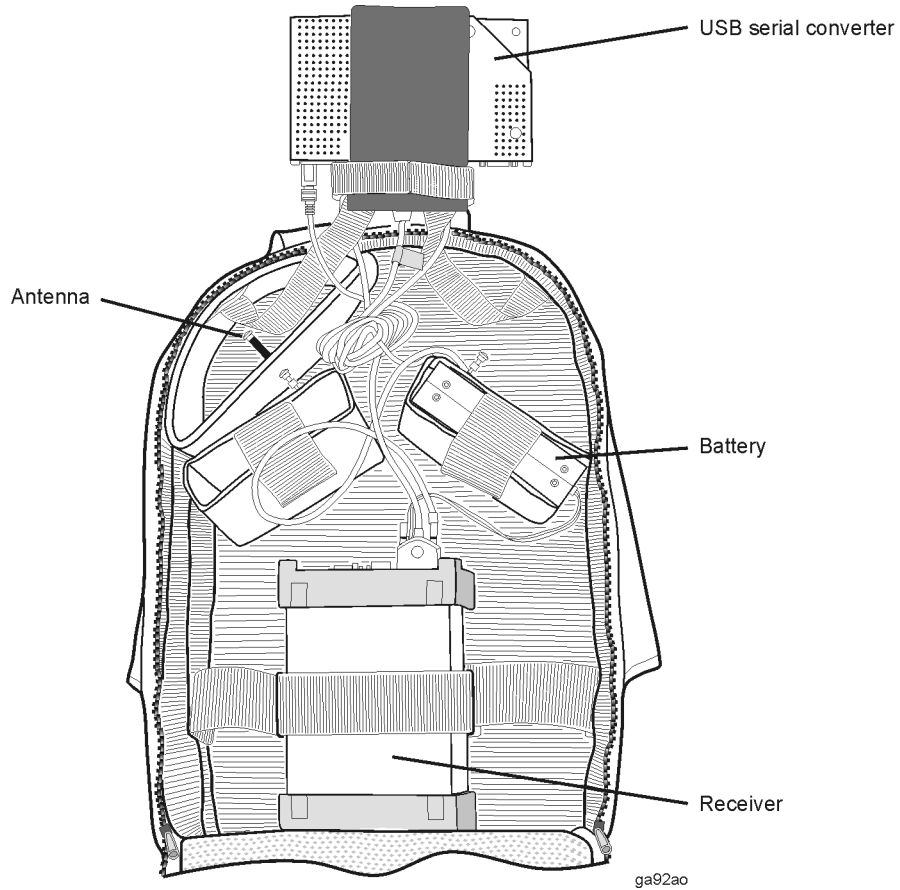
Figure 1-2 Arranging a receiver-only system

NOTE The USB serial converter is optional. The receiver can connect to the computer via an RS-232 null modem cable.

Phone Only

The phone pouch can accommodate up to two phones. They are laid flat, one in each pocket of the pouch (see Figure 1-3 on page 16). The pouch attaches to your belt with the velcro straps on its back. As an alternative, you can attach the phones directly to your belt.

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Figure 1-3 Placing a phone in the phone pouch

Connecting the Hardware

It is recommended that you read through the "Hardware Installation Tips" on page 18 before you begin to connect the hardware. Then refer to Table 1-1 for directions to the configuration instructions for receiver, phone, and combination systems.

Table 1-1 Hardware Connections

If you have this system	See this topic
Receiver only	"Configuring a Receiver-Only System" on page 29
Phone only	"Configuring a Phone-Only System" on page 31
Receiver and phone	"Configuring a Receiver and Phone System" on page 33

NOTE   Your system can be configured using either Agilent Technologies-supplied or customer-supplied components.

NOTE   The software *must* be installed before you connect the hardware. If your system includes the 86154A, option 030, a pen tablet computer, the software was factory-installed. If you are using your own computer, use the Agilent Wireless Solutions CD and follow the instructions in "Installing the Software" on page 51.

Hardware Installation Tips

Item	Information
Hardware security key	The hardware security key must be connected to the PC. The application runs with a limited feature set without the key. You cannot configure projects or collect data without the key.
PC turn on	After all cables are connected, turn on the PC. **The PC should be the last device you turn on.**
Configuring hardware	The Agilent Wireless Solutions system assigns the serial port of the receiver to COM1 by default. If you want to use a different port, modify the serial port setting for the receiver in the application software as follows.
	1 After starting the Agilent E74xx application software, click the **Configuration** button.
	2 Select the **Hardware** tab and highlight the Agilent E645x receiver. Click the **Modify** button.
	3 Set the desired COM port. It is recommended that you accept the program defaults for other settings.
Cable handling	Cables can be damaged. Please handle them carefully.
USB hub	Draws power from the USB port and does not require external power (which can damage the unit).
Dual Socket I/O card	As an alternative to the USB serial converter, you can use a dual Socket I/O card to connect up to two phones or receivers to the pen tablet.
Troubleshooting	See "Solving Problems and Updating Your System" on page 81 for troubleshooting information.

CAUTION

- For optimum performance, it is recommended no more than -40 dBm be applied to the input of all other types of receivers.

- The Agilent E74xx receivers do not protect against the ingress of water. The receiver protects against entry of solid foreign objects greater than, or equal to, one millimeter.

Using the Backpack

Automatic Configuration

The Agilent Wireless Solutions Software can automatically configure hardware that has been connected to your laptop. By clicking the **Auto Config** button, you begin the automatic configuration wizard (see Figure 1-4 on page 21). This wizard checks a defined list of COM ports for recognized hardware. Once all ports have been checked, the attached hardware is automatically set up with the correct settings.

The automatic configuration wizard can be used for setting up new hardware and projects, or for updating previously saved configurations.

You can speed up the configuration process by selecting the types of hardware to be attached to your system and the COM ports used. This limits the list of hardware types and COM ports searched during configuration. To enable this feature select **Tools > Options > Other >"Enable auto-config COM and device customization"**. See Figure 1-5 on page 21, and Figure 1-6 on page 22.

NOTE   If your receiver has internal GPS and you configure a project with automatic configuration, the project is configured with the internal GPS. To run the indoor application, you must replace internal GPS in the Hardware Configuration with a computer pen. See **Making an Indoor Measurement** in the online help for information.

Automatic
Configuration
button

Figure 1-4 Accessing the Automatic Configuration Wizard
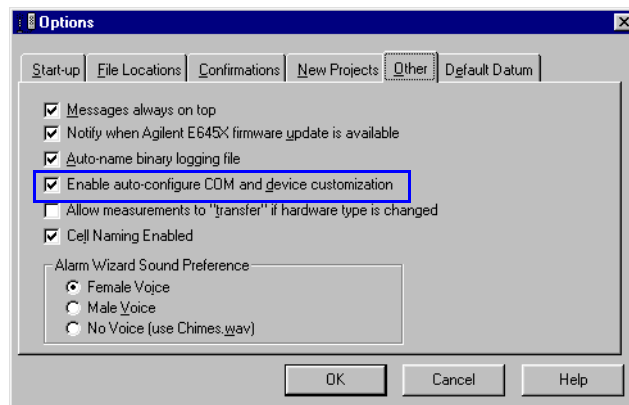
Figure 1-5 Enabling the auto-configuration customization features

Figure 1-6 Defining COM ports and device types to be searched during the configuration process

Connecting the Antenna (86154A, option 425)

Your indoor measurement system includes three antenna stubs, labeled with green, orange, and yellow dots as follows.

GREEN dot: 824 - 894 Cellular band

                    1850 - 1990 PCS and 1900 GSM bands

                    832 - 925 JCDMA band

ORANGE dot: 880 - 960 GSM 900 band

                    1710 - 1880 DCS and Korean CDMA bands

YELLOW dot: 1920 - 2170 3GPP band

To Connect an Antenna

1. Remove the antenna cable from the ground plane (see), if it is attached..

2. If the antenna was not ordered with the backpack and/or the antenna cable connector is not connected to the ground plane:

   ❍ Place the O-ring beneath the flange-end connector and hold it on one side of the ground plate.
   ❍ Place the lock washer, then the nut, then the non-flange end connector and hold it on the opposite side of the ground plate.
   ❍ Screw the two together.

3. Remove the protective foam and the fabric antenna pocket from the top-inside corner of the backpack, and open the flaps of the fabric antenna enclosure.

4. Remove the fabric antenna enclosure from the top-inside of the backpack, and open the flaps of the fabric antenna enclosure.

5. Slide the ground plate into the fabric enclosure, with the longer end of the bulkhead connector facing outward, and refasten the velcro.

6. Screw on the antenna stub that is appropriate for your measurements, and place the antenna assembly in the top-right, or top-left corner of the backpack.

7. Insert the foam with the opening toward the back.

8. Attach the antenna cable.

9. Reattach the battery compartment flap to the side of the pack (if it has become detached), and then slide the entire antenna assembly into the backpack compartment.

10. Attach the antenna cable to the receiver.

③ Ground plate in fabric envelope

④ Antenna stub

⑤ Protective foam

⑥ Antenna cable connector

⑦ Battery compartment flap attaches behind antenna assembly
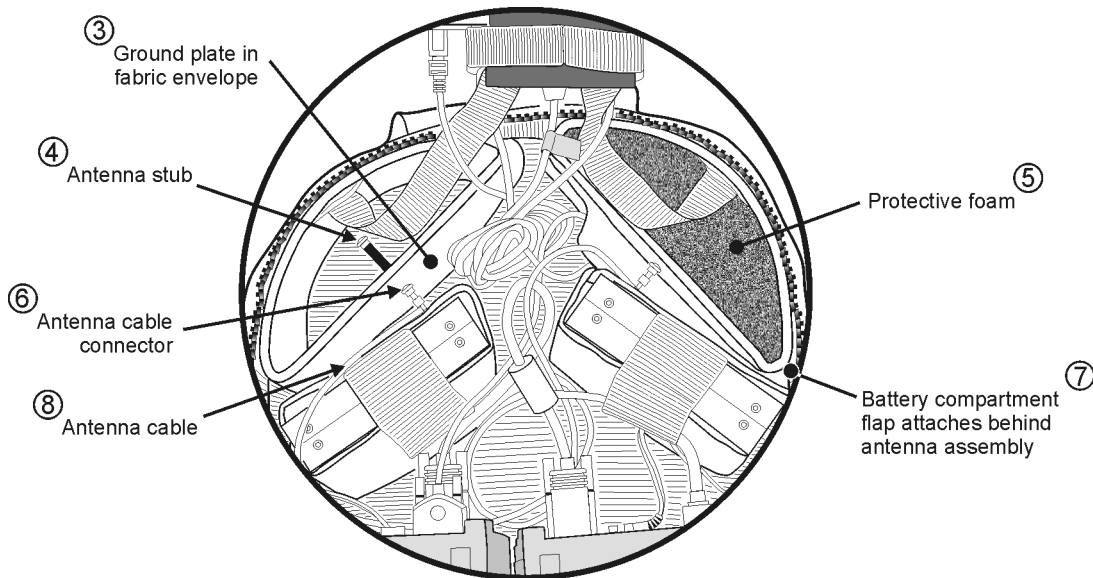
⑧ Antenna cable

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Figure 1-7 Antennas in place in the top portion of the backpack

Repeat the procedure for the second antenna assembly.

Running Cables Through the Backpack Straps

To minimize the display of cables and the potential for snagging them, they are threaded through the shoulder straps in the backpack, as shown below.

Phone cables   USB Connector
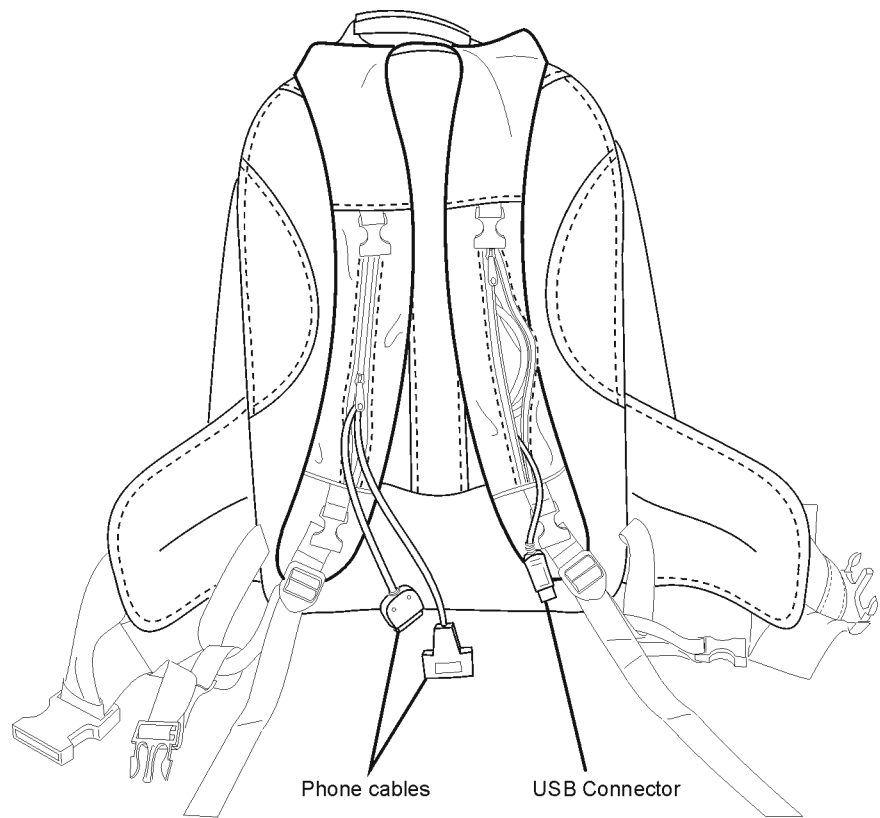
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Figure 1-8 Running cables through the backpack straps

Connecting the USB Serial Converter (86154A, option 36)

The USB-to-Serial Converter, EdgePort/4, from Inside Out Networks™ is a true Plug-and-Play compatible device. It reduces the number of cables exiting the backpack by multiplexing up to four serial ports onto one USB cable. To use the device, you connect the serial devices to the converter, then connect the converter to the computer.

NOTE   Windows 98 and Windows NT provide USB and Plug-and-Play capability. These instructions apply to Windows 98 and Windows NT only.

To Connect the USB Serial Converter for Backpack Usage

For Indoor systems, Agilent Technologies pre-installs the software drivers. You do not need to install or configure software to use the USB serial converter.

1. Unzip the left shoulder strap pocket.

2. Feed the USB connector up through the strap, out through the top, then down through the hole in the top of the backpack (see Figure 1-8 on page 25).

3. Pull the cable into the inside of the backpack, and plug it into the USB serial converter.

4. Fasten the USB hub into the case (see Figure 1-1 on page 14).

5. Switch on the power to the pen tablet and start the software.

Windows makes the following COM port assignments:

Converter Port	Windows
1	COM5
2	COM6
3	COM7
4	COM8

WARNING **Do not connect power to the EdgePort/4 USB. It does not require external power, even though there is a power connector on the back. Any power source that is of an incorrect voltage, such as the receiver battery, will permanently damage the EdgePort/4.**

CAUTIONS
- The USB connector attaches to the pen tablet on the outside of the case. As you collect data, be careful not to bump the USB connector against your surroundings. Dropping or bumping the system may cause the measurement system to fail.

- USB connectors other than Inside Out Network's EdgePort/4 are not guaranteed to work with the Agilent system and may, in fact, cause problems with the software.

NOTES
- The USB serial converter has an optional +5V input which is NOT required for use. The USB connection provides sufficient power to the converter to support four serial devices.

- If you ordered 86154A, option 36, the 4-port USB serial converter, but did NOT order your pen tablet from Agilent Technologies, you need to first install the device drivers from the floppy disk that came with the option, using the floppy drive.

To Connect the USB Serial Converter for Use with a Laptop or a Non-Agilent-Provided Pen Tablet

This procedure is for customers wishing to use the device on laptop systems in a drive test environment, or indoor customers installing on their own computing device.

1. Plug in the EdgePort/4 to the USB port. The device is recognized by Windows 98 or Windows NT as new hardware.

2. Insert the Inside Out Network's EdgePort/4 driver diskette in the device's floppy drive.

   (For the Fujitsu Stylistic 2300 pen tablet computer, the floppy drive is connected via a connector exposed by removing the battery. This must be done with external power connected.)

3. Follow the directions in the New Hardware wizard to select the floppy drive as the source for the drivers.

The drivers load and are configured automatically. The converter is now ready to use.

Configuring a Receiver-Only System

NOTE   It is recommended that you configure the measurement project before you load equipment into the backpack.

1. Connect the hardware security key to the pen tablet PC, and slide the pen tablet into the pen tablet case.

2. If you are using a USB serial converter, thread the USB serial converter cable through the left shoulder strap of the backpack. See "Connecting the USB Serial Converter (86154A, option 36)" on page 26 for more information.

   If you are connecting directly via COM1, thread the RS-232 null modem cable through the right shoulder strap of the backpack.

3. Load the hardware into the backpack as shown in "Backpack with One Receiver, No Phone" on page 15.

NOTES   • Be sure to secure the receiver in place using the strapping system.

• When you are using two receivers, be sure to load them with the RF connectors toward the middle of the pack for best connections. Place one receiver facing forward, the other facing backward.

4. Set the battery cable switch to the OFF position and connect the battery cable to the receiver.

NOTE   The battery must be fully charged and ready for prolonged testing.

5. Connect the RF antenna cable to the RF input of the receiver. (See Figure 1-10 on page 34 for a cabling illustration.)

6. If you are using a USB serial converter, secure it in place, connect the Agilent digital receiver using the RS-232 null modem cable, and connect the USB cable to the hub. (Or, if you are connecting directly to COM1, connect the Agilent digital receiver to the RS-232 null modem cable.)

7. Switch on the battery(ies), and close up the backpack.

8. Put on the backpack (see "Suiting Up to Take Measurements" on page 36 for details), pick up the pen tablet in the case, and connect the USB 4-port converter cable to the USB port of the pen tablet PC (or connect the RS-232 null modem cable to the pen tablet serial port).

9. Turn on the pen tablet's power and start the Agilent Technologies application software. Find instructions for using the software in the online help by pressing **F1**.

Configuring a Phone-Only System

Phone connection,
right side (serial port)
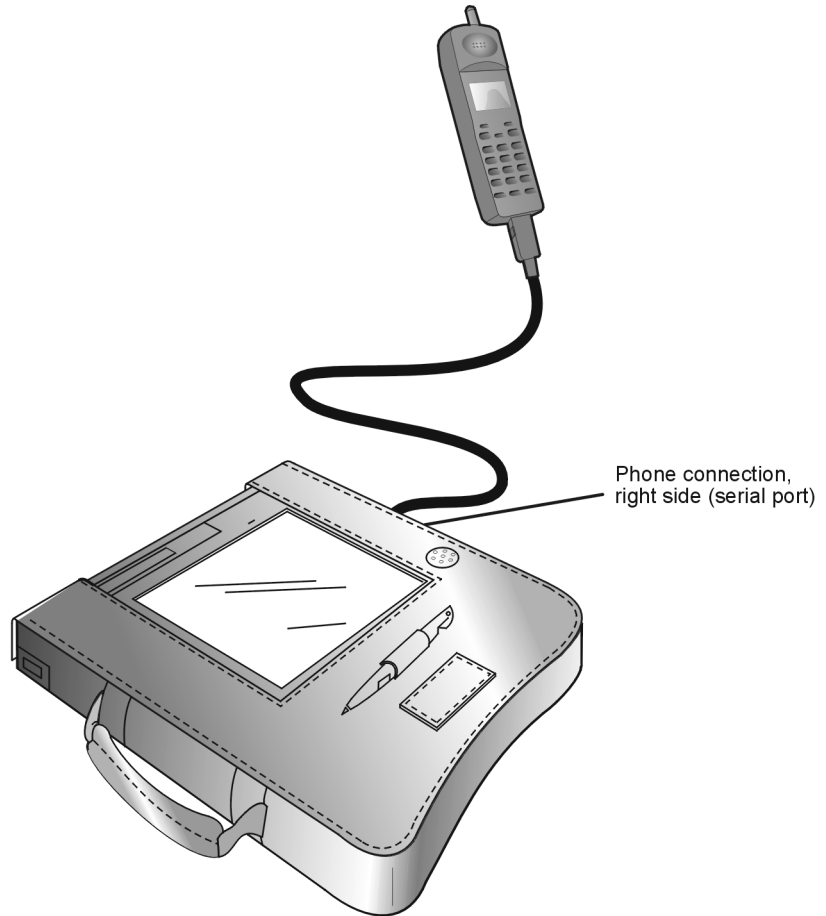
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Figure 1-9   Connecting a phone to the pen tablet

NOTES

- It is recommended that you configure the measurement project before you load equipment into the backpack.

- If you are using multiple phones, you need to insert a dual Socket I/O card to which you can attach two phones. The card is inserted in the pen tablet's PCMCIA slot.

1. Connect the hardware security key to the parallel port of the pen tablet PC, and slide the pen tablet into the pen tablet case.

2. Connect the phone cable(s) to the phone(s) and place them in the phone pouch (if you are using one), as shown in "Connecting a phone to the pen tablet" on page 31, or connect the phones to your belt.

3. Connect the phone cable(s) to the pen tablet, pick up the pen tablet, and turn on all power.

4. Start the Agilent Technologies application software. Find instructions for running the software in the online help by pressing **F1**.

Configuring a Receiver and Phone System

Using the Backpack

NOTE   It is recommended that you configure the measurement project before you load equipment into the backpack.

1. Connect the hardware security key to the parallel port of the pen tablet PC, and slide the pen tablet into the pen tablet case.

2. If you are using a USB serial converter, thread the USB serial converter cable through the left shoulder strap of the backpack. See "Connecting the USB Serial Converter (86154A, option 36)" on page 26 for more information.

   If you are connecting directly via COM1, thread the RS-232 null modem cable through the right shoulder strap of the backpack.

3. Load the hardware into the backpack as shown in "Backpack with Two Receivers and Phone" on page 14.

NOTES
- Be sure to secure the receiver in place using the strapping system.

- When you are using two receivers, be sure to load them with the RF connectors toward the middle of the pack for best connections. Place one receiver facing forward, the other facing backward.

4. Set the battery cable switch to the OFF position and connect the battery cable to the receiver.

The battery should be fully charged and ready for prolonged testing.

5. Connect the RF antenna cable to the RF input of the Agilent digital
    receiver. (See Figure 1-10 for a cabling illustration.)
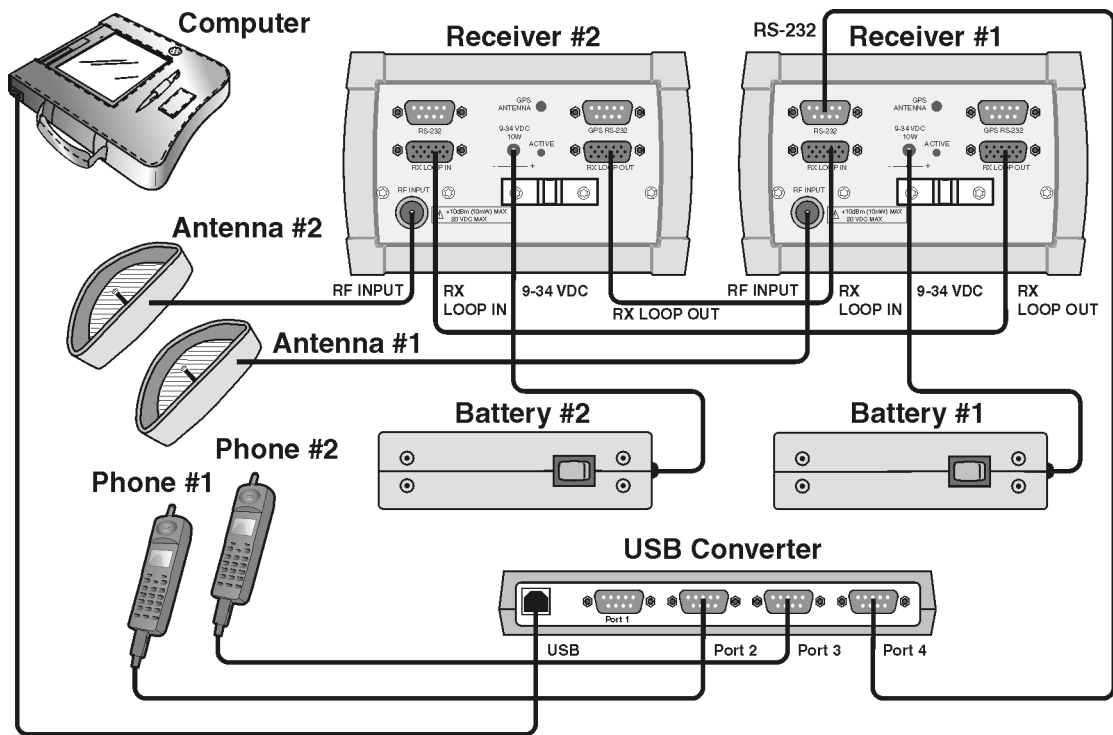
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Figure 1-10 Connecting receivers and phones via the USB serial converter

6. If you are using a USB serial converter, secure it in place, connect the
    Agilent digital receiver using the RS-232 null modem cable, and connect
    the USB cable to the hub. (Or, if you are connecting directly to COM1,
    connect the Agilent digital receiver to the RS-232 null modem cable.)

7. Connect the phone cable(s) to the phone(s) and place them in the phone pouch, as shown in "Arranging receivers and phones" on page 14.

8. Connect the phone pouch to your belt or to the backpack waist belt.

9. Switch on the battery(ies), and close up the backpack.

10. Put on the backpack (see "Suiting Up to Take Measurements" on page 36 for details), pick up the pen tablet in the case, and connect the USB 4-port converter cable to the USB port of the pen tablet PC (or connect the RS-232 null modem cable to the pen tablet serial port).

11. Turn on the power to the pen tablet and start the Agilent Technologies application software. Find instructions for running the software in the online help by pressing **F1**.

**Using the
Backpack**

Suiting Up to Take Measurements

There are three main configurations which you will use for taking indoor measurements:

- Backpack, phone pouch, and pen tablet
- Backpack and pen tablet
- Phone(s) and pen tablet using the harness

Each one is pictured and described in this section.
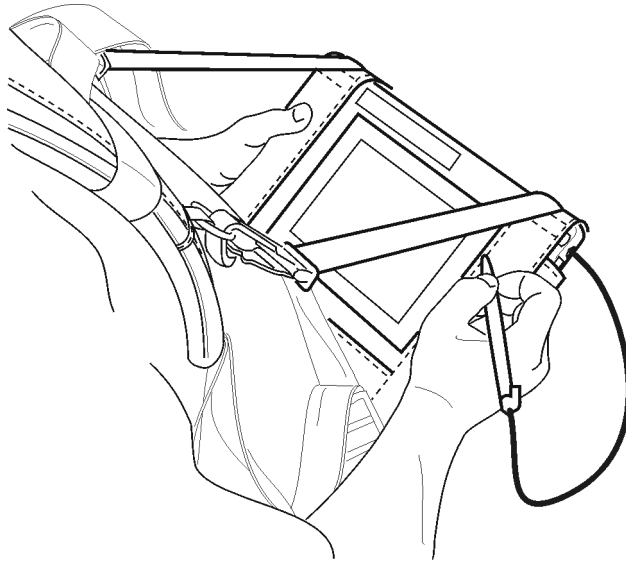
ga910ao

Figure 1-11 Using the pen tablet

NOTE   Adjust the backpack properly so that it is comfortable to wear. If at any time
              you suffer from any discomfort, stop testing and adjust the backpack and other
              equipment.

Adjust the Straps

The backpack and the harness use a system of ladderlocks to make adjusting
the straps easy.

To tighten the straps, pull the strap closest to the tab of the ladderlock. To
loosen the straps, pull the strap closest to the tab upward. (See Figure 1-12 on
page 38.)
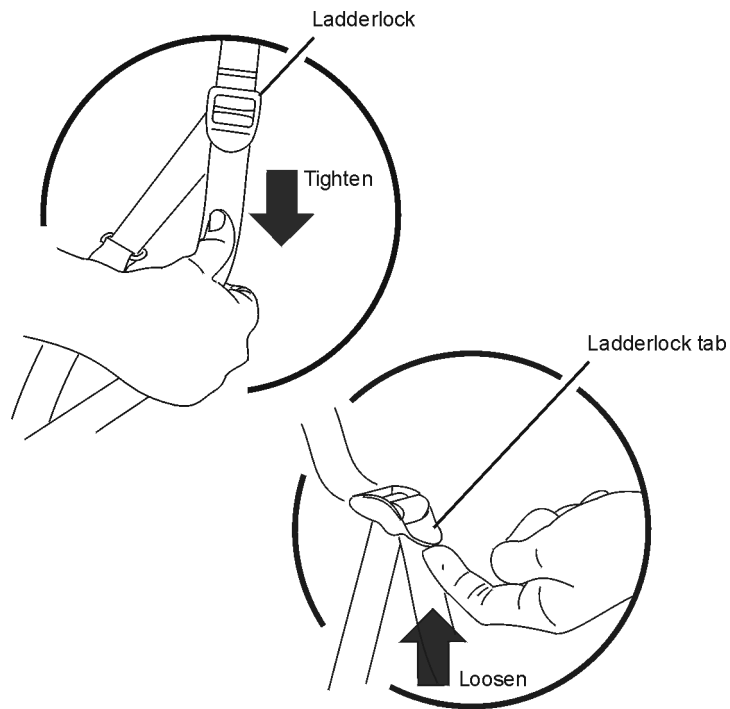
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Figure 1-12 Tightening and loosening the straps

Put On the Backpack

With a loaded backpack, it is recommended that you connect the straps in the following order (refer to Figure 1-12 on page 38 for information on tightening and loosening straps):

1. Loosen all straps and place the pack on your back.

2. Fasten the waist belt and tighten it so that it rests on your hips. The waist belt should always remain on your hips, even after the harness is adjusted.

3. Tighten the shoulder straps until the pack feels comfortable (see Figure 1-13 on page 39). The backpack's weight should be carried on your hips for maximum comfort. The shoulder straps help stabilize the pack on your body.

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Figure 1-13   Tightening the shoulder straps on the backpack

4. Connect and tighten the sternum strap (see Figure 1-14 on page 40). You can change the vertical position so that the strap fits comfortably across your chest. The sternum strap reduces shoulder fatigue and increases mobility by pulling the shoulder straps inward.

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Figure 1-14 Tightening the sternum strap

NOTE   Once the backpack is loaded with equipment and you have put it on, check the cable lengths. If they need adjusting, remove the backpack, adjust the lengths, and put the backpack on again.

Hands-free Pen Tablet, Backpack, and Phone Pouch

The hands-free platform attaches directly to the pen tablet case.

To Attach the Pen Tablet to the Hands-free Platform

1. Lay the pen tablet in its case face down on a table or counter.

2. Press the hands-free platform onto the pen tablet case placing it so that the velcro tabs align. (Refer to Figure 1-15 on page 41.)

3. Fasten the tabs down.
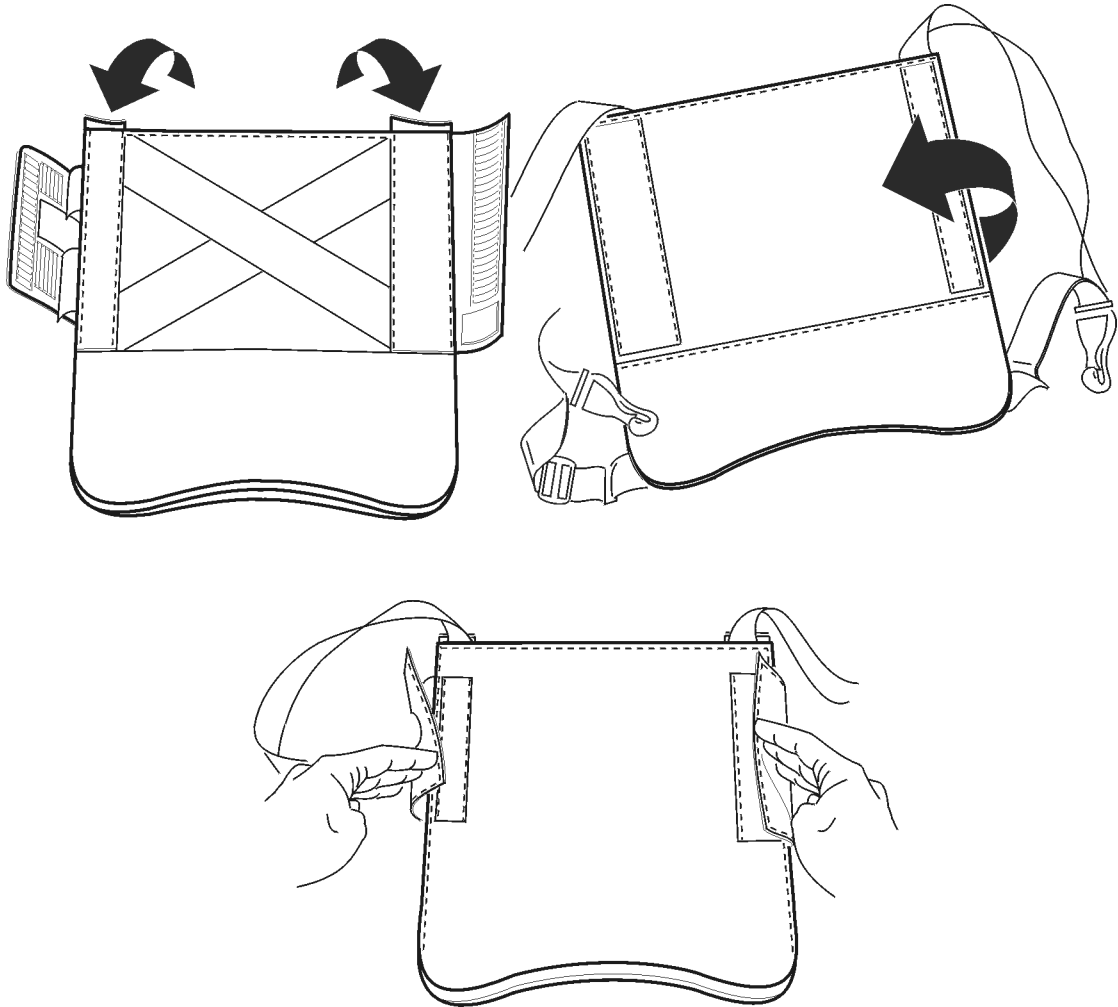
ga913ao

Figure 1-15 Attaching the pen tablet to the hands-free platform

4. Turn the pen tablet over and check that the strap lengths are approximately the same. Spread the straps to the sides.

5. Put on the backpack (see "Put On the Backpack" on page 38).

6. Attach the platform to the D-rings on the harness, selecting the set that best accommodates your height. Make sure the connectors snap completely into place (see Figure 1-16 on page 42).
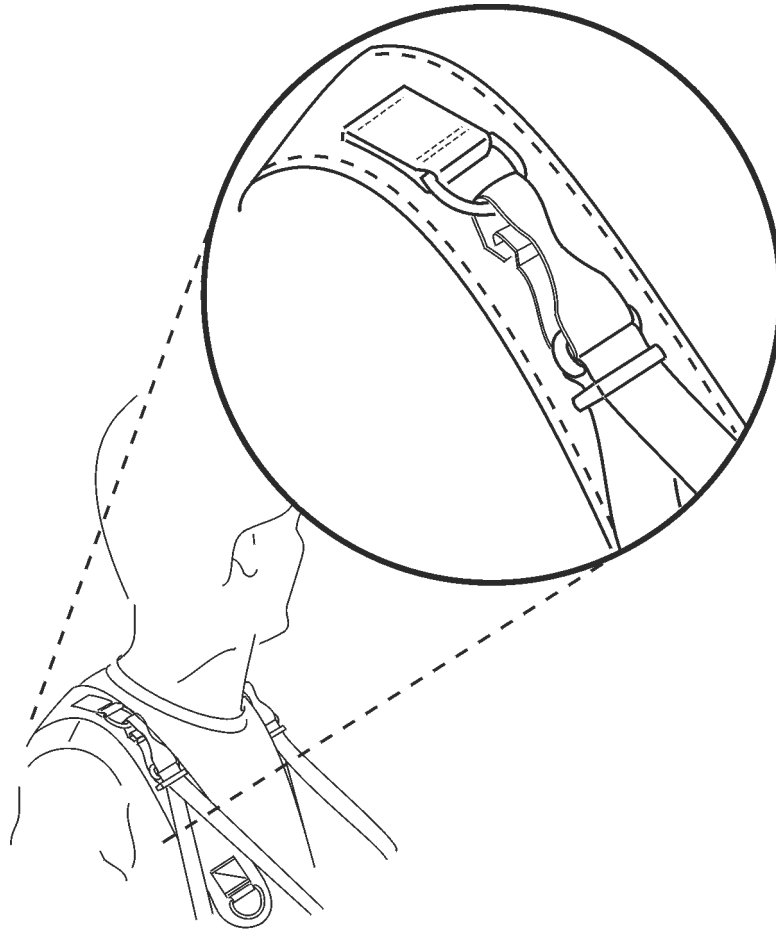
ga914ao

Figure 1-16 Attaching the pen tablet straps to the backpack harness

7. Attach the phone pouch to the backpack waist belt as shown in Figure 1-17 on page 43, or loop the pouch straps over your own belt.

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Figure 1-17 *Attaching the phone pouch to the backpack*

To remove the backpack and pen tablet, disconnect the connectors from the backpack to remove the pen tablet, then remove the backpack.

Hands-free Pen Tablet and Phone Pouch

You can use the pen tablet without the backpack by connecting it to the harness. The phone pouch attaches directly to your belt, or you can attach the phones to your belt directly.

To Attach the Pen Tablet to the Hands-free Platform

Refer to Figure 1-15 on page 41.

1. Lay the pen tablet in its case face down on a table or counter.

2. Press the hands-free platform onto the pen tablet case placing it so that the velcro tabs align.

3. Fasten the tabs down.

4. Turn the pen tablet over and check that the strap lengths are approximately the same.

To Put on the Harness and Attach It to the Pen Tablet

1. Put the harness straps over your shoulders, positioned so that the Agilent label on the webbing falls approximately between your shoulder blades.

2. Sit in a chair, place the pen tablet in your lap, and connect the back of it to the harness at the waist.

3. Tighten the waist straps by pulling the strap toward the rear (refer to Figure 1-12 on page 38). This helps to keep the harness positioned correctly on your torso.

4. Attach the platform connectors to the D-rings on the harness, selecting the set that best accommodates your height. Make sure the connectors snap completely into place. See Figure 1-16 on page 42.

5. Stand and adjust the length of the pen tablet platform straps to the proper length. (Refer to Figure 1-12 on page 38 for information on tightening and loosening straps)

6.   Loop the phone pouch straps over your belt, or attach the phone(s)
     directly to your belt.

To remove the harness, sit down and disconnect all four connectors.

Pen Tablet Tilted for Safety

WARNING   **Whenever you navigate stairs, escalators, or elevators, be sure to tilt the pen
tablet for visibility (see Figure 1-18 on page 45). You can tilt it and hold it in place
with only one hand.**

ga916ao

Figure 1-18   Tilt the pen tablet for safety on stairways.

Using the All-Weather Cover

The all-weather cover protects the backpack and its contents from dust, sand, rain, snow, or hot sun.

To Use the Cover

1. Take the cover out of the bottom velcro storage compartment.

2. Drape it over the front and top of the pack. The elastic should enable the cover to snugly surround the whole backpack with no gaps.

3. Fasten the leash behind the shoulder straps to secure the cover in place.

Leash for securing cover

Velcro

Velcro tab

Elastic holds cover around backpack

Velcro pocket
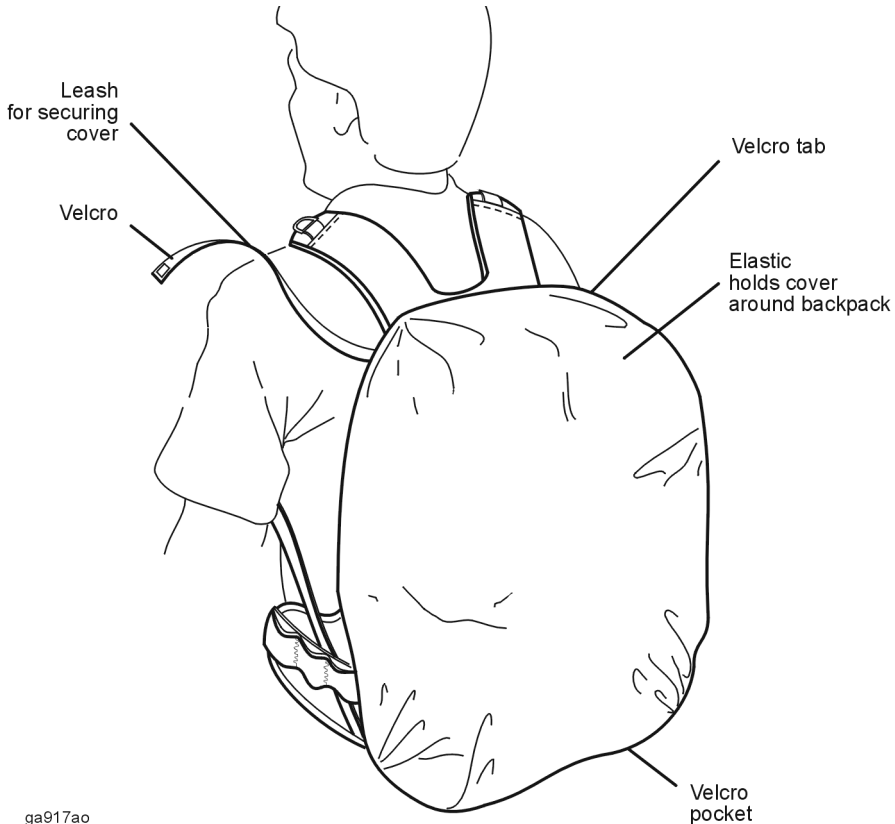
ga917ao

Figure 1-19 All-weather cover

Preparing to Take Indoor Measurements

Once all equipment has been configured, and the backpack has been loaded correctly, you are ready to make measurements. The indoor test system relies on the user inputting positional information. This is done by setting waypoints where measurements are to be taken against an imported map file.

The user moves from one waypoint to the next and, as each waypoint is highlighted, measurements are interpolated from the last checked point.

There is no need for a GPS or other positional information. Positions relative to external GPS coordinates can be defined during the setup procedure.

To Start the Software

Do This	See This
1 Choose the **Start** menu and click **Programs**	
2 Click **Agilent E74xx** (the name of your Agilent Wireless Solutions)	A sub-menu should appear, listing the components of the Wireless software.
3 Click 📱 **Agilent E74xx Series** to start the software.	The copyright screen appears for a few seconds, then the software appears on your screen, ready to use.
	Note: The first time you start the software you have the opportunity to run the online tutorial, a tool that is designed to help you get the most from the software.

NOTE   As an alternative to using the pen for input/selections, you can display a pen-activated keyboard (including all standard keys and function keys) on the screen. To do that, choose **Start > Programs > PenX 1.51 > Onscreen Keyboard**.

Configuring a Project

The E74xx software provides an Auto Configure feature that sets up measurement projects for you. Each project consists of measurements and the hardware you have connected. The online help provides instructions for all procedures.

NOTE

If you are using a receiver with internal GPS and you use Auto Configure, the software will find the GPS unit. To perform indoor measurements, you need to delete the GPS resource and replace it with a computer pen. Check the online help for instructions.

Setting Up GPS

The backpack has been designed to accommodate a GPS receiver and antenna, as an alternative configuration. The GPS antenna fits snugly in the pocket in the top flap of the backpack, and the antenna cable fits through the opening in the top of the backpack.

NOTE
The E74xx software works with either a GPS receiver or a computer pen, not both at the same time. It is recommended that you configure separate projects for each use. Refer to the online help for details.

To Set Up the Backpack for Use with GPS

1. Position equipment as you see in Figure 1-1 on page 14, with a single Agilent receiver.

2. Fasten the GPS receiver into the second receiver position, using the system of straps.

3. Place the GPS antenna in the pocket in the top flap of the backpack, as shown in Figure 1-20 on page 50.

4. Thread the GPS antenna cable down through the hole in the top of the backpack and connect it to the GPS receiver.

5. Connect the RS-232 cable to the GPS receiver, then connect the other end to the Agilent receiver.

Flap, top of backpack
Lift up for access.

Flap, lifted

GPS antenna
in pocket

Handle,
top of backpack
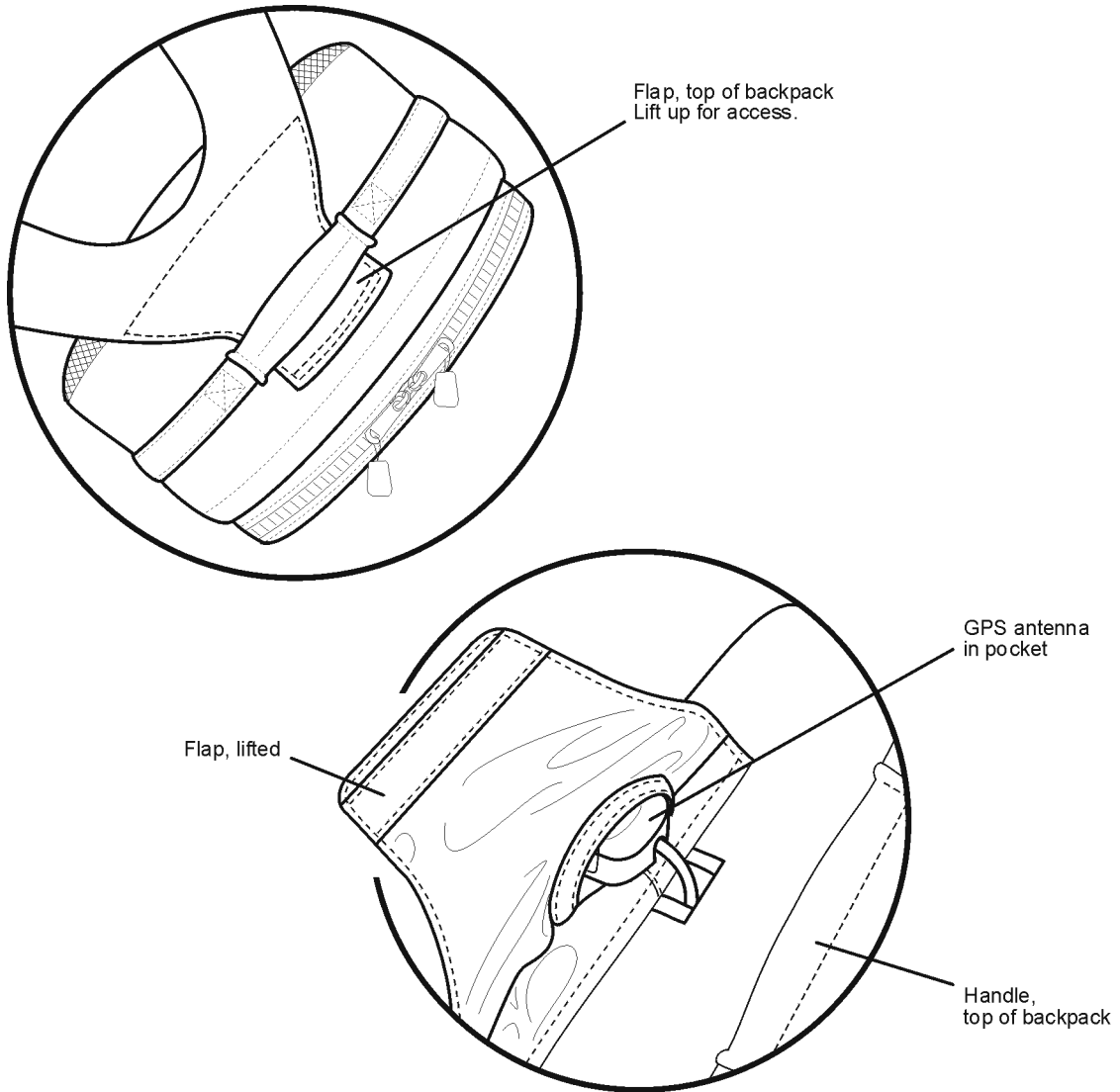
ga919ao

Figure 1-20 Inserting a GPS antenna

2

Installing the Software

What You'll Find in This Chapter

To Do This	See This
Install the system software.	"Installing the Software" on page 53
Install the License Manager Software.	"Agilent License Manager" on page 56
Install Adobe Reader.	"Installing Adobe Reader" on page 59
Install other drivers, including LAN, socket I/O, and others.	"Installing Other Drivers" on page 61
Check requirements for the computer.	"Installing Other Drivers" on page 61

Agilent-Purchased Pen Tablet Users Read This First

If you purchased your pen tablet computer from Agilent Technologies, it is equipped with a LAN card to enable you to connect to your company's local area network. In addition, the software came factory-installed. To install other software on your pen tablet computer, including system updates, you must first configure network parameters for your network in order to connect to your company LAN. Contact your system administrator for the required parameters.

The pre-installed software includes:

- Agilent Wireless Solutions software
- USB serial converter software for Inside Out Network's Edgeport 4
- 3COM® 10/100® Megahertz LAN card software
- Dual Socket I/O™ card software
- Documentation in PDF format, located in the c:\Program Files\Agilent Technologies\E74xx\documents subdirectory
- Adobe Acrobat Reader (for viewing and printing PDF files)

Installing the Software

If your software has not been pre-installed, before you begin installing the software, your computer system must be configured with the minimum requirements. Check "Computer Requirements" on page 65.

Follow These Steps

Do This	See This
1 Connect the pen tablet to your LAN via the LAN card that was factory-installed. (If you did not purchase your pen tablet PC from Agilent, you may need to use another means to install the software, such as a CD-ROM.)	Confer with your system administrator for information and assistance on connecting your pen tablet PC to your company's LAN.
2 Once connected to the LAN, insert the CD-ROM that came with your system into a host computer that is accessible via the LAN.	When the Welcome screen appears on the host computer, choose Cancel, since you are not installing on the computer containing the CD, but onto the pen tablet.
3 Using the Windows Explorer, over the LAN locate the computer that contains the Indoor Wireless Solutions CD-ROM, and double-click **setup.exe**.	A Welcome dialog box appears instructing you to close any currently running Windows applications before you begin installation.
4 Click **Next** when you are ready to continue the installation. Type your name and the name of the company you work for, then click **Next**.	The "Choose Destination Location" dialog box appears. The default folder for installation is C:\Program Files\Agilent Technologies\E74xx (depending on the system you're installing).
5 If you wish to install the program in a folder other than the default, click **Browse** to display text. When the correct destination folder appears in the field, click **Next**.	The Setup Type box appears.
6 Select which language you would like to see the online help and tutorial displayed in, click **Next.**	For more information see "Online Help and Tutorial Language Options" on page 55

Install the
Software

Do This	See This
7 Select the type of installation you want: typical, compact, or custom, and click **Next**.	The Destination Folder box appears.
•Typical: Includes Agilent E74xx application, online help files, PDF files of this and other guides, and tutorial. •Compact: Includes Agilent E74xx application and online help files •Custom: Lets you select individual components.	Agilent Technologies recommends using the Typical installation. Verify you have enough disk space available to perform the Typical installation before proceeding.
8 Select the destination folder for the program. The default folder is "Agilent E74xx" or you can select a different folder that can be found on your system. Click **Next**.	The list of folders found on your system is displayed. Agilent Technologies recommends using the default folder "Agilent E74xx".
9 Verify that Setup Type, Target Folder, and User Information are correct, and click **Next**.	The software installs from CD to PC.
10 Click **Finish** to complete the installation.	Depending on the files installed or updated, you may be prompted to reboot your system.

NOTE   It is recommended that new users go through the online tutorial before using the software. When you start the software for the first time, you will have the option of viewing the tutorial before working in the software.

Online Help and Tutorial Language Options

During the software installation, you can select the language for the online help and tutorial (English is always the most up-to-date). The measurement software does not change. The currently supported languages are:

- Simplified Chinese
- Korean

- English (default)
- Brazilian Portuguese

- Japanese
- Latin American Spanish

To change the language, once the installation is complete, you must re-install the software.

Install the
Software

Agilent License Manager

The hardware key that came with your Agilent Technologies system enables and secures the functionality you purchased from Agilent Technologies. In addition to the parallel port hardware key, the License Manager also supports the Sentinal SuperPro USB port hardware key. The Agilent License Manager, automatically installed when you install the Agilent E74xx software, enables you to manage licensing security information. You can use the software to:

- Add product options to license keys. You can add licenses (temporary or permanent) to the license key by entering a string obtained from an Agilent representative.
- Transfer licensed product options between license keys in order to consolidate licenses onto one key.
- Transfer a license from one key to another.
- Transfer licenses between keys on different computers. You can move license options to license keys on another computer that is located anywhere from the same room to another country.

Starting the License Manager

Make sure to plug your hardware key into the parallel or USB port (depending on the key you're using) before you begin this process.

Do This	See This
1 Choose the **Start** menu and click **Programs**.	
2 Click **Agilent E74xx** (the name of your Agilent Wireless Solutions)	A sub-menu should appear, listing the components of the Wireless software.
3 Click **License Manager** to start the software.	The License Manager begins showing the enabled software options.

Learning the License Manager

For further information about the Agilent Technologies License Manager, refer to the following resources:

Resource	Description
Online Help	Available from the License Manager Help menu or by pressing F1, covers all functionality. It is the program's reference and includes step-by-step instructions for basic operations.
Support	Available from the Help menu, directs you to the support provided by Agilent Technologies.

Transferring Licenses

Your software license key contains the code necessary to enable your measurement and control features.

Using the License Manager software, you can transfer license options between software license keys. To limit the number of software license keys you have attached to your PC, you can consolidate the license codes onto one key. shows the principle of software license management.

Install the
Software

License Option 100   License Option 150

Connect All keys to PC and
use the License Manager to transfer key codes

Note: The license options function if they are left on the individual keys.

License Option 100 with 150   Blank key
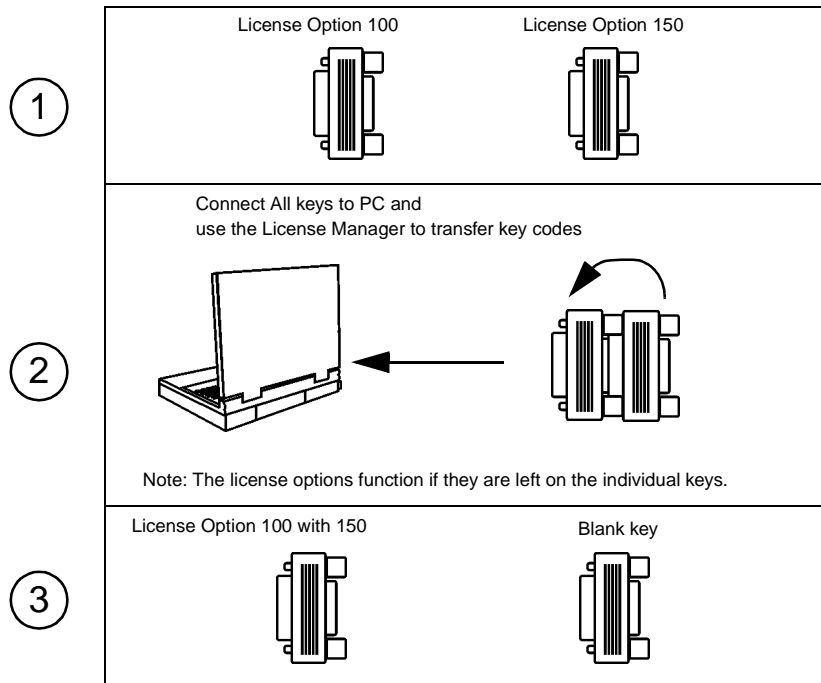
Figure 2-1 Example showing license key transfer process

Adobe Acrobat Reader

This getting started guide, along with the *Agilent Technologies System Information Guide* and the *Agilent Technologies Wireless Solutions Getting Started Guide*, have been pre-installed in the **\documents** directory on your hard drive, if:

- You purchased your pen tablet from Agilent.

- You installed the software using the typical install.

The documents are also included on your system CD-ROM in the **\documents** directory in PDF format. To view or print PDF documents, Adobe Reader *must* be installed.

NOTES
- If you purchased your pen tablet from Agilent, the Adobe Reader was installed along with the software. Or, if you installed the software on your own computer using the typical install, the Adobe Reader was installed.

- If your pen tablet was not purchased from Agilent, it may not include a LAN card. You can access the CD-ROM via a CD-ROM drive. If neither option is available to you, contact Agilent Technologies for assistance.

- Upgrades to the Adobe Reader can be found on the Adobe web site, **http://www.adobe.com**

Installing Adobe Reader
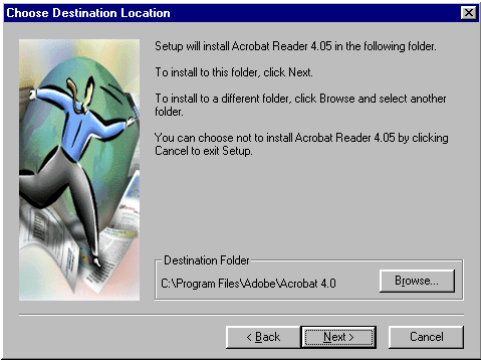
NOTE
Before starting the installation process, ensure that you have removed previous versions of Adobe reader. This version is Adobe Reader 4.05.

Do This	See This
1 Insert the CD-ROM into the CD-ROM drive, choose **Start>Run**, and type **d:\Acrobat\rs405eng.exe** where d: is the drive containing the software CD-ROM. Click **OK**.	A Welcome dialog box appears detailing copyright information.
2 Click **Next** when you are ready to continue the installation.	The "Choose Destination Location" dialog box appears. The default folder for installation is C:\Program Files\Adobe\Acrobat4.0
3 If you wish to install the program in a folder other than the default, click **Browse** to display text. When the correct destination folder appears in the field, click **Next**.	The software will install from CD to PC.
4 Once the installation has completed. Click **OK**.	PDF User Guide for the Adobe Reader has been provided on the CD.

Installing Other Drivers

Pen tablets purchased from Agilent Technologies (86154A, option 30) have all required software pre-installed, including:

- Serial I/O software driver. Agilent includes the Socket Ruggedized Dual Serial I/O card™. See Chapter 3, "Software Setup" of the *Serial I/O ™ and Ruggedized Serial I/O Card ™ User's Guide* for instructions on installing the software for that specific card.
- USB serial converter software driver (if you are using a USB serial converter) Agilent includes Inside Out Network's Edgeport 4.
- LAN card software driver. Agilent includes the 3COM® 10/100® Megahertz LAN card.

If you are supplying your own pen tablet, you must install a software driver for any devices that you are using. These are separate from the Agilent indoor measurement system software and are included with the device itself. Refer to the installation instructions that come with the device.

Additional Documentation

Additional documents are supplied with your system. These include:

- *Agilent Technologies Wireless Solutions Getting Started Guide*: a guide that describes how to setup the elements of the drive test solution, including configuring GPS units, verifying the system, and starting the system (PDF format).

- *Agilent Technologies Indoor Test System Setup Guide*: (this guide) a guide that describes how to setup the elements of the indoor solution, including the backpack, the hands-free platform, and the receiver batteries (PDF format).

- *Agilent Technologies System Information Guide*: a guide containing software and hardware specifications, system options and accessories, including part numbers.

- Various background technical-papers and application notes.
  Note: These documents were valid at time of shipping. However, since that time there may have been some updates or additional documents created. To ensure that you have the lastest information, please look at the Agilent web site.

These documents can be viewed online or printed.

Location of Online Documents

The documents were installed with your software application, if you used the typical installation option. The documents were installed in the following location:

C:\Program Files\Agilent Technologies\E74xx\Documents

If you chose not to install the documents during software installation, you can copy them from the CD. The documents can be found in the following location on the CD:

D:\documents

(d: represents the drive letter of your CD-ROM reader.)

Viewing and Printing Online Documents

Before you can view and print these documents, you must have the Adobe Reader installed on your system. For more information about PDF files and the Adobe Reader, refer to the Adobe Web site (**http://www.adobe.com**).

The Adobe Reader is supplied on your CD and is installed as part of the typical installation. Refer to for more information.

NOTE   The latest version of the Adobe Reader can also be downloaded from the Adobe Web site (**http://www.adobe.com**).

To View a PDF Document Installed with Your System

Do This	Additional Information
1 From the program task bar, select **Start > Programs > Adobe > Adobe Reader.**	The Reader software is displayed.
2 From the File menu of the Reader, select Open.	A dialog box appears listing the available drives you can read.

Do This	Additional Information
3 Select the C: drive and then select the documents folder. *C:\Program Files\Agilent Technologies\E74xx\Documents*	The dialog box displays the PDFs contained on your CD.
4 Choose the document you wish to view.	• **Getting Started Guide.PDF** - a PDF file of this Guide. • **Support Information.PDF** - a guide containing system and accessory options and part numbers. • **Indoor Getting Started Guide.PDF** - a guide that helps you set up your system for indoor measurements (Option 180).
5 Search for the information you require.	This can be done using: • Hypertext links (blue text) • The Adobe Reader search tool, found on the Tools menu.

To print a PDF document or sections from it

Do This	See This
1 With the document opened, search for the information you require to be printed.	
2 Note the page number(s) displayed at the bottom of the Reader.	**Note**: The page numbers shown in the document may not correspond to the page numbers displayed by the reader.
3 Select **File > Print** and configure the print options for your printer.	**CAUTION**: when printing sections from the Getting Started Guide, ensure that a page or page range is specified. The Getting Started Guide is approximately 100 pages.

Computer Requirements

Personal Computer Recommendations, Minimum

The PC requirements differ depending on the operating system, and on whether you wish to collect data from a single phone or multiple phones.

Single phone

Single phone

- Windows 95/98
    - Minimum: 233 MHz Pentium, 64 Mbytes RAM
    - Recommended: 266 MHz Pentium II or III, 64 Mbytes RAM
- Windows NT/2000
    - Minimum: 233 MHz Pentium, 64 Mbytes RAM
    - Recommended: 266 MHz Pentium II or III, 96 Mbytes RAM

Multiple phone

- Windows 95/98
    - Minimum: 233 MHz Pentium, 64 Mbytes RAM
    - Recommended: 366 MHz Pentium II or III, 64 Mbytes RAM
- Windows NT/2000
    - Minimum: 266 MHz Pentium, 64 Mbytes RAM
    - Recommended: 366 MHz Pentium II or III, 96 Mbytes RAM

Common Requirements

- RS-232 DB9 Serial Port
- Parallel port: 25-pin bi-directional
- 90 Mbytes disk space for software installation
- 200 Mbytes disk space for data (recommended)
- CD-ROM drive recommended
- 800 x 600 display resolution minimum

3

Product Features and Usage

What You'll Find in This Chapter

To Do This	See This
Learn about backpack features	"Backpack Features" on page 69
Learn about phone pack features	"Phone Pouch Features" on page 71
Learn about the pen tablet case	"Pen Tablet Case Features" on page 72

Backpack Features

Flap covers
cord exit hole
and pocket for
GPS antenna

Vent

Front pocket holds
pen computer case
with pocket inside
for folders

Organizer pocket
for pens, etc.

Vent

Sliplock system
for phone pouch

Pocket under front
that holds
all-weather cover
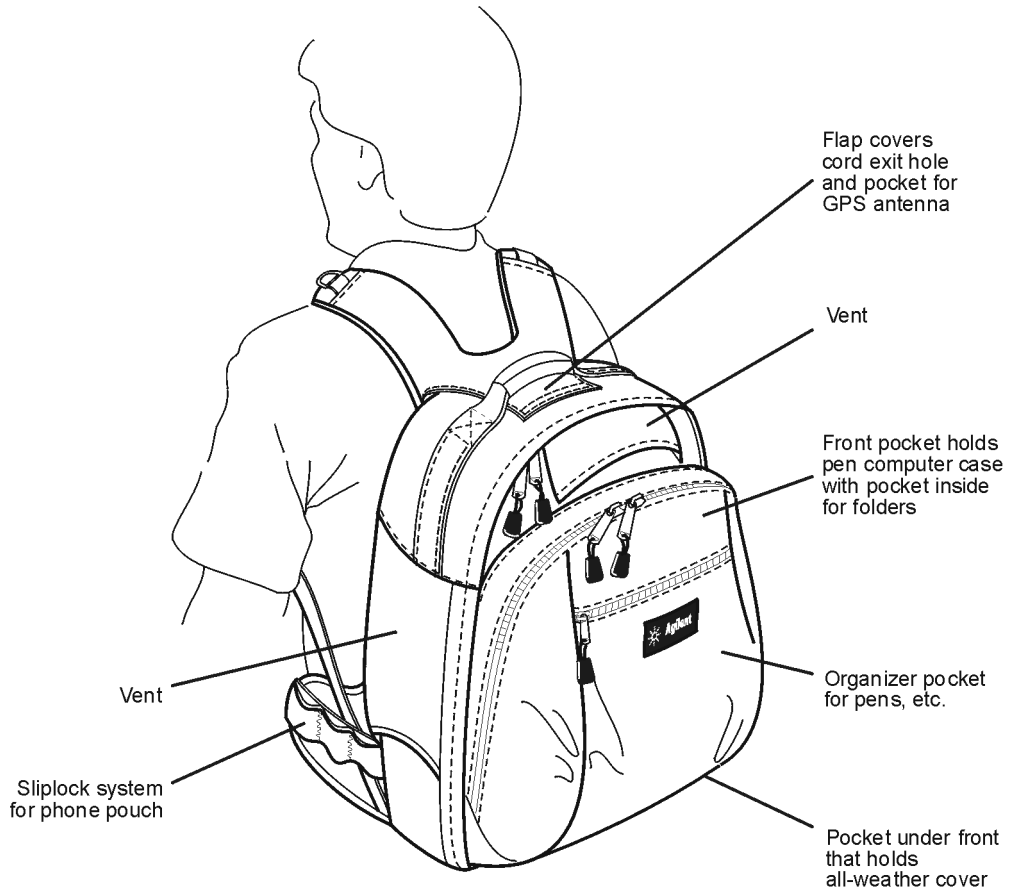
ga925a0

Figure 3-1 Backpack features

Flap covers
cable exit hole
and cables

Also holds
GPS antenna

Cell phone
cables (2)

Shoulder
strap

Cable exit hole
top of backpack

USB cable

Shoulder
strap

ga920ao

Figure 3-2 View of the backpack top

Phone Pouch Features
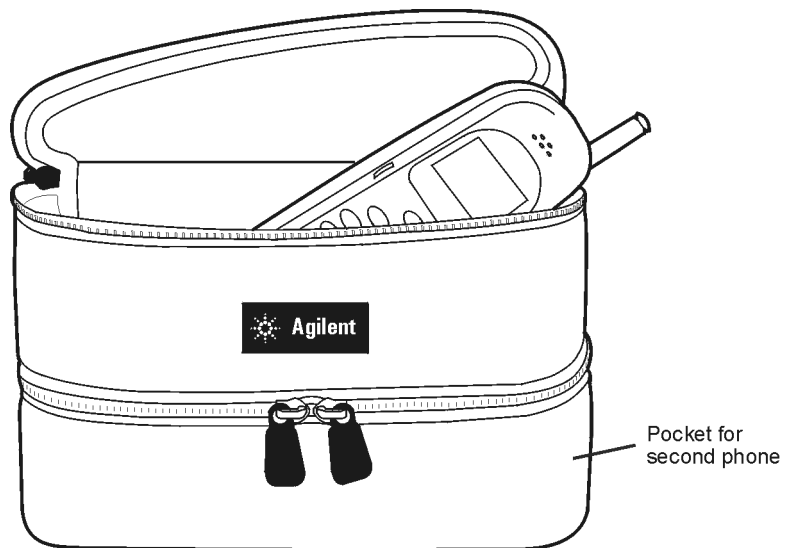
ga921ao

Figure 3-3 Phone pouch features

Pen Tablet Case Features

Power button

PC Card opening

Serial Port
opening

Elastic bands

Back View

Microphone

USB

Front View

Stored
pen

Pen plug-in
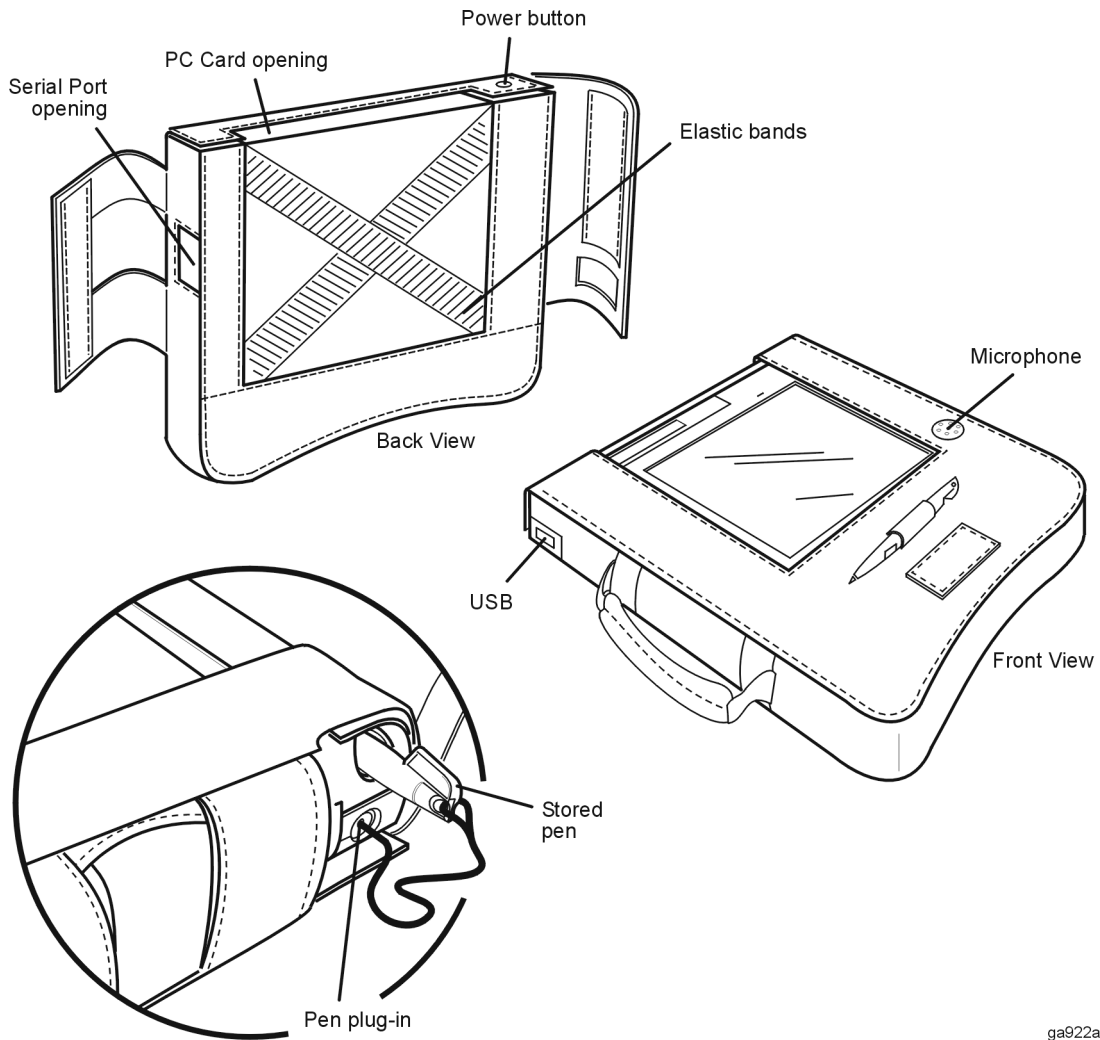
ga922ao

Figure 3-4 Pen tablet case features

4

Receiver Battery Use and Care

What You'll Find in This Chapter

To Do This	See This
Operate the battery	"Battery Operation (86154A, option 500)" on page 75
Charge the battery	"Battery Charging" on page 75
Troubleshoot the battery	"Troubleshooting" on page 77
Understand the battery characteristics	"Battery Characteristics" on page 78
Dispose of the battery	"Battery Disposal" on page 79
Use the power cable	"Power Cable" on page 79

Battery Operation (86154A, option 500)

Follow these battery operation tips for best results:

- To enable the battery to operate the receiver, place the battery pack in the backpack, plug it into the receiver, and turn it on.
- To turn on the battery, locate the on/off switch and switch it to ON (0 = off; 1 = on).
- The led, when lighted, indicates that the power is turned on.
- When not in use, the battery should be turned off to save the charge.

WARNING **The charger must not be connected to the battery pack when the battery pack is attached to the receiver. There are no serviceable parts inside. Do not disassemble.**

Receivcer
Battery Use

Battery Charging

A fully-charged battery powers the receiver for four to four and one-half hours.

CAUTION Do not use any charger other than the Agilent 86154-60019. (The charger is marked with the part number.)

1. Remove the battery pack from the backpack.

2. Plug the battery pack into the charger.

3. Connect the AC line cord to the charger and to the AC line.

4. Turn the battery switch to the ON position.

When the battery pack begins its charging cycle, the status LED flashes yellow, then switches to solid yellow during the charge. When the battery pack is fully charged, the status LED turns green. No LED indicates that there is no battery installed, or that the battery is over voltage.

WARNING **This is a Safety Class 1 product when the battery is being charged and is provided with a protective earthing ground incorporated in the power cord. The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. Any interruption of the protective conductor inside or outside of the product is likely to make the product dangerous. Intentional interruption is prohibited.**

NOTE Continuing to charge the battery pack after the green status LED lights does not damage the unit. It continues to charge in the trickle charge mode.

It takes four hours for an initial charge or to charge a fully depleted battery at room temperature. Charging the battery at elevated temperatures increases the charge time.

Troubleshooting

If the battery pack does not work, follow these steps to determine the cause and resolve the problem:

1. Make sure the receiver works with the DC power supply.

2. If the receiver operates on DC power from the power supply, check all of your connections. Is the battery connector firmly in place? Is the power switch set to ON? The green LED on the receiver should be continuously on if there is a DC power supply.

3. Make sure that the battery pack is taking a charge from the charger. Follow the recharging procedure. Usually batteries near the end of their life will still take a partial charge. If there is no charge at all, you may need to replace the charger or the battery pack:

   ❍ Receiver battery kit, part number 86154-60005

      ▲ Receiver battery 86154-60051
      ▲ Receiver battery charger 86154-60019
      ▲ Receiver battery power cord for non-US option (localization same as option 030)

**Receivcer
Battery Use**

Battery Characteristics

NOTE   All characteristics are at 25° and at the beginning of the battery life.

Characteristic	Description
Output voltage	14.4 volts
Capacity	45 watt hours
Service life	500 cycles to 80% initial capacity (at 25°)
Chemistry	Nickel metal hydride
Operating time	4.5 hours
Charge time	4 hours
Charging temperature	0° to 40° C
Discharging temperature	-10° to 45° C
Storage temperature	-20° to 45° C
Maximum relative humidity	35% to 85% RH non-condensing
Physical Characteristics	
Weight	1.9 lb. (0.86 Kg)
Height	139 mm
Width	88 mm
Depth	40 mm
Charger Supply Requirements	
Nominal input voltage	100/115/230/240 VAC
Input voltage range	85-265 VAC
Nominal input frequency	50-60 Hz
Input frequency range	47-63 Hz
Output power	30 watts maximum
Charge Rate	1.3 A
Environmental Conditions	
Portable Altitude	Up to 4,572 meters (15,000 feet)

Battery Disposal

When the battery is exhausted and/or ready for disposal, dispose of it according to your country's requirements. Within the US, you may contact Rechargeable Battery Recycling Corporation (RBRC) for disposal.

The RBRC seal on the nickel metal hydride battery pack indicates that Agilent Technologies is voluntarily participating in an industry program to collect and recycle these battery packs at the end of their useful life, when taken out of service within the United States. The RBRC program provides a convenient alternative to placing spent nickel metal hydride battery packs into the trash or municipal waste stream, which is illegal in some areas.

For information on recycling the battery outside the US, please check with your local Agilent sales office.

Power Cable

The battery pack charger is equipped with a three-wire power cable, in accordance with international safety standards. When connected to an appropriate power line outlet, this cable grounds the charger power supply case. Various power cables are available to connect the charger power supply to the types of AC power outlets unique to specific geographic areas.

WARNING   **Failure to ground the charger properly can result in personal injury. Insert the main power cable plug only into a socket outlet that has a protective earth contact. Do not defeat the earth-grounding protection by using an extension cable, power cable, or autotransformer without a protective ground conductor.**

If you are using an autotransformer, make sure its common terminal is connected to the protective earth contact of the power source outlet socket.

Receivcer
Battery Use

5

Solving Problems and Updating Your System

What You'll Find in This Chapter

To Do This	See This
Troubleshoot resource problems	"Resource Problems" on page 83.
Troubleshoot COM errors	"COM Errors" on page 84. For more information refer to "Installing the Software" on page 51.
Update the software	"Updating the Software" on page 89.
Update the firmware	"Updating the Firmware" on page 90.
Get telephone assistance	"Calling for Assistance" on page 92.
Return an Agilent Technologies receiver for service	"Returning the System for Service" on page 94.

Troubleshooting Resource Problems and COM Errors

Resource Problems

CAUTION   It is possible to exceed Windows 95/98 allocated resource levels by opening too many windows while running your Agilent E74xx system. This will cause erratic behavior of the application and require the operator to reboot the operating system in order to recover. This will also corrupt an open Agilent E74xx database, with potential loss of data. Windows 95/98 will not display any warning or feedback when this occurs.

The number of allowable open windows is dependent on the types you choose, as different windows require varying amounts of Windows 95/98 resources. The maximum number of windows is approximately 12, although up to 14 can be opened in certain configurations.

To provide the maximum amount of available Windows 95/98 resources to the measurement application, it is strongly recommended that you close all other applications before running the Agilent E74xx software. This includes all applications found in the Startup folder. It is also recommended that you run the Windows 95/98 resource meter in a minimized configuration in order to monitor available remaining resources.

To start the Windows 95/98 resource meter:

1. Choose **Start > Programs > Accessories > System Tools > Resource Meter**. The Resource Meter dialog box appears.

2. Click **OK**.

While this application utilizes system resources, it provides a way of determining when the system is running low on available resources. Opening

new windows with less than 20% remaining resources in any of the three categories could cause Windows 95/98 to overrun its resources.

One solution for increasing the potential number of measurements made in a given project without exceeding Windows 95/98 resources is to configure the measurement with the associated virtual front panel turned off. You will be able to record the data but not display it. This can be done in Configuration mode, under the Display/Logging tab found under the Measurement tab.

The only solution for increasing the number of windows available during a measurement is to use Windows NT. It does not have the same systems resource limitations as Windows 95/98.

COM Errors

The following procedure is suggested for locating and eliminating COM errors when using the Agilent Technologies RF wireless network test system.

NOTE   To ensure that hardware is configured correctly, it is highly recommended that you use the **automatic configuration wizard** for setting up your projects. Refer to the online help for information.

Table 5-1

Do This	Additional Information
1 Check the **project** and **configuration** being used by the application.	• Does the hardware configuration for the project selected match the actual system hardware?
	• Is the correct Agilent receiver model number and COM port selection shown in **Configuration** under the **Hardware** tab?
	• Is the correct phone model number and COM port selection shown in the **Configuration** under the **Hardware** tab?
2 Check system hardware components.	• Is DC power provided to the Agilent digital receiver?

NOTE   COM Errors may occur if the SAGEM phone is not set in the correct operating mode. The correct mode is **TRACE**.

When the SAGEM phone is in DATA mode, the interface connection is used for transmitting fax and other data transmission types. When the SAGEM phone is in TRACE mode, the interface connection is used for transmitting measurement reports.

To change the mode, switch on the phone and use the following phone keystrokes:

- **[Menu], [44],** Down Arrow, **[#], [8]**
- Use the up and down arrows to select TRACE mode, then select OK.

Troubleshoot
& Upgrade

Do This	Additional Information
2 (Continued) Check system hardware components.	• Is the phone turned on and does the battery show sufficient power (phone-based system)?
	• Is the interface cable connected between the phone and the PC (phone-based system)?
	• Is the second COM port defined and functioning (phone-based system)?
3 Troubleshoot COM errors.	• Verify steps 1 and 2 are true.
	• Check the Agilent E645x receiver by performing **Verification Test 1, 2, or 3** and confirm no COM errors by going to **Collection** mode and viewing the **Spectrum virtual front panel**. Refer to Chapter 4 in the *Agilent Technologies Wireless Solutions Getting Started Guide*, available in PDF format in the \documents directory, for information on verification tests.
	• Check the phone by defining a new project with only the correct phone model number and COM port selection, then going to **Collection** mode and viewing the **Phone Measurements virtual front panel** (phone-based system).

Do This	Additional Information
3 (Continued) Troubleshoot COM errors.	• Check the RS-232 interface cable between the PC and Receiver.
	• If the RS-232 connection between the Receiver and PC is bad (broken or damaged cable or connectors) or communication is broken, then the error displayed will indicate that the Receiver may be in fault. Check the RS-232 cable or replace it. If the fault persists, contact Agilent Technologies.
	• Check the connection between the USB serial converter and the PC.

Troubleshoot & Upgrade

Do This	Additional Information
4 If all else fails.	• Define a new project, checking on all items listed in steps 1 and 2.
	• Use a different database by selecting **File, Open Database**, or creating a new database by selecting **File**, **New Database**, then defining a new project, checking on all items listed in steps 1 and 2.
	• Repair the existing database by creating a new database, then using **Tools**, **Database Utilities**, **Repair** to open the original database (usually *data.mdb*). Once repaired, return to the original database by selecting **File**, **Open Database** with the original file name. Select the original project, checking on all items listed in steps 1 and 2.
	• Use a brand new database. Using **Windows Explorer**, copy the file *Design.mdb* found in the working directory for the application (usually *\Program Files \Agilent Technologies \E74xx*), to a new file name then repeat step 4.
	• When nothing else works, re-install the application. Copy the database in question to another location. Uninstall the current installation of the application by using the **Add/Remove Program** application, found in the **Control Panel** under **Start**, **Settings**. Once the application has been uninstalled, re-install the application.

Updating the Software

Software updates are available to download from the web. Your computer must be web-enabled to perform this process: you must have a modem or LAN access to the web, a service provider, and a web browser. If you are set up to access the web, go to the following web site and follow the links to your particular system:

http://agilent.com/find/networks

Once you have found your system, click on the **Support** link for information on software updates.

**NOTE**   If you are unable to access the web, contact your Agilent Technologies representative for information about updating the software.

Troubleshoot & Upgrade

Updating the Firmware

Sometimes a software update (see "Updating the Software" on page 89) also
requires a firmware update. With the software update installed, when you run
the updated software and select Collection mode, you will be notified if a
firmware update is required. A series of messages will walk you through the
firmware update process. Before you update the firmware, you must first
insert a firmware write enable key (E6450-60007) into the RX LOOP OUT
connector, as shown in Figure 5-1, then follow the instructions on the screen.
Remember to remove and safely store the firmware write enable key when
you are prompted to do so by the software.

firmkey.cdr
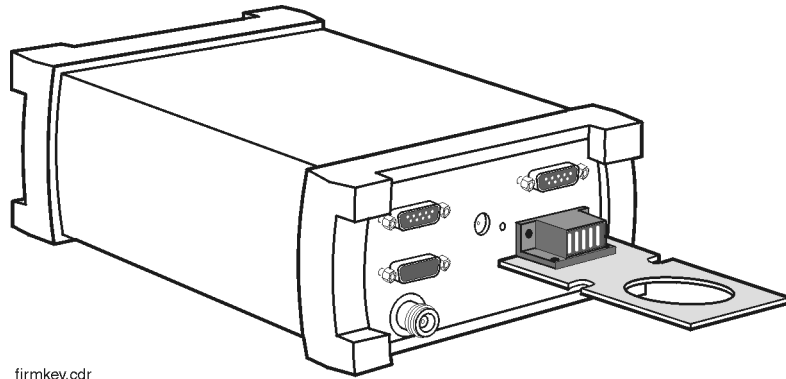
Figure 5-1 Firmware Write Enable Key

Replacement Firmware Security Key

If you have misplaced your firmware write enable key, you can order a new one (order from your Agilent Technologies representative, E6450-60007), or you can substitute a piece of wire that shorts pins 8 to 10 on the RX LOOP OUT connector (see Figure 5-2). Remember to follow on screen instructions, and remove the wire when you are prompted by the software.
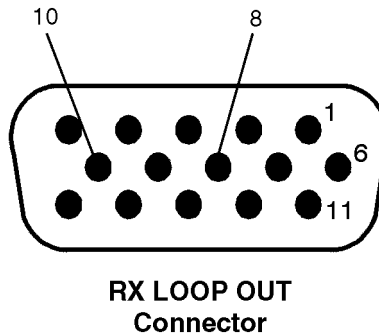
rxloop.cdr

Figure 5-2 Short These Pins to Update the Firmware

If you are set up to access the web, go to the following web site and follow the links to your particular system:

http://agilent.com/find/networks

Once you have found your system, click on the **Support** link for information on software updates.

Calling for Assistance

Your indoor wireless solution is designed to provide dependable service. It is unlikely that you will experience a problem. However, Agilent Technologies sales and service organization is ready to provide the support you need.

If You Have a Problem

If you have a problem, refer to the following for possible help:

- This guide (also in PDF format on your CD)
- The E74xx Getting Started Guide (in PDF format on your CD)
- Online help
- Online tutorial

If you are unable to resolve your problem, refer to the information in the following section.

Frequenctly Asked Questions

If you need installation or application assistance, refer to the web site at:

http://www.tm.agilent.com/

To access the frequently asked questions section:

1. Click on the **Technical Support** link.

2. Type **drive test** in the dialog box under the title **Enter a Search Word or Phrase:** on the right of the screen.

3. In the **Search Only For Document Type(s):** list, select **Frequently Asked Questions** as your search item.

4. In the **Specify Your Search Criteria Matches** box, select **exact phrase**.

5.   Click the Search button.

If you do not have access to the web, contact your local Agilent Technologies representative for information.

Technical Telephone Assistance

Your network test solution comes with 12 months of technical telephone assistance and a 12 month hardware warranty period. To use the telephone assistance:

1.   Install the software.

2.   The Customer Business Center will provide you with a packet of information, which includes your system handle number. Please refer to that number when calling for support.

    To establish a Support Contact, please call the Customer Business Center.

3.   Ask the Agilent Technologies engineer your question.

Numbers to Call

For a more detailed list of contact numbers, please refer to the above web site or contact your local Agilent Technologies Sales and Service Office.

Before calling, ensure you have all the information described above.

Table 5-2

Region	Phone Number
Americas	+1-800-698-0061, press 3
Asia, Australasia	+65 271 0915
Europe, Africa, Middle East	+31 20 547 9900

Troubleshoot & Upgrade

Returning the System for Service

The instructions in this section show you how to properly package the system for return to Agilent Technologies.

Warranty

If the system is still under warranty or is covered by an Agilent Technologies maintenance contract, it will be repaired under the terms of the warranty or contract (the warranty is at the front of this manual). If the system is no longer under warranty or is not covered by an Agilent Technologies maintenance plan, Agilent Technologies will notify you of the cost of the repair after examining the unit.

When a system is returned to Agilent Technologies for servicing, it must be adequately packaged (see "Preparing the System for Shipping" on page 95) and have a complete description of the failure symptoms attached.

When describing the failure, please be as specific as possible about the nature of the problem. Include copies of additional failure information (such as receiver or computer failure settings, data related to system failure, and error messages) along with the system being returned.

Please notify Agilent Technologies before returning your system for service. Any special arrangements for the system can be discussed at this time. This will help Agilent Technologies repair and return your system as quickly as possible.

Preparing the System for Shipping

Do This	Additional Information
1 Write a complete description of the failure and attach it to the system.	Include any specific performance details related to the problem. The following information should be returned with the system:
	• Type of service required
	• Date system was returned for repair
	• Description of the problem:
	• Whether problem is constant or intermittent
	• Whether system is temperature-sensitive
	• Whether system is vibration sensitive
	• System settings required to reproduce the problem
	• Error Code
	• Performance data
	• Company Name and return address
	• Name and phone number of technical contact person
	• Model number of returned system
	• Full serial number of returned system
	• List of any accessories returned with the system
2 Cover all front and rear panel connectors that were originally covered when you first received the system.	
3 Pack the system in the original shipping containers. Original materials are available through Agilent Technologies office. See step 4 for more information.	

Troubleshoot & Upgrade

Do This	Additional Information
4 Wrap the system in antistatic plastic to reduce the possibility of damage caused by electrostatic discharge.	• For systems weighing less than 54 kg (120 lbs), use a double-walled, corrugated cardboard carton of 159 kg (350 lbs) test strength.
	• The carton must be large enough to allow 3 to 4 inches on all sides of the system for packing material, and strong enough to accommodate the weight of the system.
	• Surround the equipment with 3 to 4 inches of packing material, to protect the system and prevent it from moving in the carton. If packing foam is not available, the best alternative is S.D-240 Air Cap™ from Sealed Air Corporation (Commerce, California 90001). Air Cap looks like a plastic sheet filled with air bubbles. Use the pink (antistatic) Air Cap to reduce static electrical damage. Wrapping the system several times in this material will protect the system and prevent it from moving in the carton.
5 Seal the carton with strong nylon adhesive tape and mark it "FRAGILE, HANDLE WITH CARE".	
6 Retain copies of all shipping papers.	

CAUTION

- Cover electrical connectors to protect sensitive components from electrostatic damage.

- Instrument damage can result from using packaging materials other than the original materials. Never use styrene pellets as packaging material. They do not adequately cushion the system or prevent it from shifting in the carton. They may also cause system damage by generating static electricity.

6

Safety and Regulatory Information

Warning and Caution Notices

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

WARNING   **The WARNING notice denotes a hazard. It calls attention to a procedure, practice, or the like, that, 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.**

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.

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.
⎓	This symbol indicates that the instrument requires direct current (dc) input.
CE	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.
CSA	The CSA mark is a registered trademark of the Canadian Standards Association.
ISM 1-A	This text indicates that the instrument is an Industrial Scientific and Medical Group 1 Class A product (CISPER 11, Clause 4).
I	This symbol indicates that the power line switch is ON.
☾	This symbol indicates that the power line switch is in STANDBY position.
N279	The C-Tick mark is a registered trademark of the Spectrum Management Agency of Australia. This signifies compliance with the Australian EMC Framework Regulations under the terms of the Radio communications Act of 1992
O	This symbol indicates that the power line switch is in OFF position.

Safety Information

General Safety Considerations

The Agilent digital receiver has been designed and tested in accordance with IEC Publication 1010, Safety Requirements for Electronic Measuring Apparatus, and has been supplied in a safe condition. The documentation contains information and warnings which must be followed by the user to ensure safe operation and to maintain the product in a safe condition.

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.**

- **No operator serviceable parts are inside this system. Refer servicing to a qualified Agilent Technologies, Inc. service center. To prevent electrical shock, do not remove the covers.**

- **To prevent electrical shock, disconnect the Agilent E74xx receiver 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 the receiver internally.**

Product Installation, Use, and Storage

CAUTION
- This Agilent digital receiver is designed for use in INSTALLATION CATEGORY II and POLLUTION DEGREE 2, per IEC 1010 and 664 respectively.

- Enclosure protection IP40 according to IEC 529.

- Install the system according to the enclosure protection provided. This system does not protect against the ingress of water. This instrument protects against entry of solid foreign objects greater than, or equal to, one millimeter.

Product Power

CAUTION
- The input power to the Agilent digital receiver should not exceed –15 dBm. Power levels greater than +10 dBm will damage the instrument.

- For continued protection against fire hazard, replace the line fuse (cigarette lighter/2 amp 32 V FB fuse) only with the same type of rating (type nA/nV). The use of other fuses or materials is prohibited.

- If you use external power, install the instrument so the detachable power cord is readily identifiable and is easily reached by the operator. The detachable power cord is the instrument disconnecting device. It disconnects the mains circuit from the mains supply before other parts of the instrument.

- If you do not use external power, position the product so you can easily operate the disconnecting device.

Safety
Information

Declarations of Conformity

<table>
<tr><td colspan="2" align="center">**Declaration of Conformity**
according to ISO/IEC Guide 22 and EN45014</td></tr>
<tr><td>**Manufacturer's Name:**</td><td>Agilent Technologies, Inc.</td></tr>
<tr><td>**Manufacturer's Address:**</td><td>1400 Fountaingrove Parkway
Santa Rosa, CA 95403-1799
USA</td></tr>
<tr><td colspan="2">Declares that the product</td></tr>
<tr><td>**Product Name:**</td><td>**Drive Test System**</td></tr>
<tr><td>**Model Numbers:**</td><td>Agilent E7473A, Agilent E7474A, Agilent E7476A, Agilent E7477A</td></tr>
<tr><td>**Product Options:**</td><td>This declaration covers all options of the above products.</td></tr>
<tr><td colspan="2">Conforms to the following product specifications:</td></tr>
<tr><td>EMC:</td><td>CISPR 11:1990/EN 55011:1991 Group 1, Class A
IEC 801-2:1984/EN 50082-1:1992 4 kV CD, 8 kV AD
IEC 801-3:1984/EN 50082-1:1992 3 V/m, 27-500 MHz
IEC 801-4:1988/EN 50082-1:1992 0.5 kV sig. lines, 1 kV power lines</td></tr>
<tr><td>Safety:</td><td>IEC 61010-1:1990 + A1:1992 + A2:1995 / EN 61010-1:1993 +A2:1995
CAN/CSA-C22.2 No. 1010.1-92</td></tr>
<tr><td colspan="2">**Supplementary Information:**</td></tr>
<tr><td colspan="2">The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC, and carries the CE-marking accordingly.</td></tr>
<tr><td colspan="2">

Santa Rosa, CA, USA   **25 April 2000**
    Location   **Date**   **Greg Pfeiffer**
                                       Quality Engineering Manager</td></tr>
<tr><td colspan="2">For further information, please contact your local Agilent Technologies sales Office, agent, or distributor</td></tr>
</table>

Declaration of Conformity
according to ISO/IEC Guide 22 and EN45014

Manufacturer's Name:	Agilent Technologies, Inc.
Manufacturer's Address:	1400 Fountaingrove Parkway Santa Rosa, CA 95403-1799 USA

Declares that the product

Product Name:	**Over Air Maintenance Tool**
Model Numbers:	Agilent E7490A
Product Options:	This declaration covers all options of the above products.

Conforms to the following product specifications:

EMC:	CISPR 11:1990/EN 55011:1991 Group 1, Class A IEC 801-2:1984/EN 50082-1:1992 4 kV CD, 8 kV AD IEC 801-3:1984/EN 50082-1:1992 3 V/m, 27-500 MHz IEC 801-4:1988/EN 50082-1:1992 0.5 kV sig. lines, 1 kV power lines
Safety:	IEC 61010-1:1990 + A1:1992 + A2:1995 / EN 61010-1:1993 +A2:1995 CAN/CSA-C22.2 No. 1010.1-92

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC, and carries the CE-marking accordingly.

Santa Rosa, CA, USA	**25 April 2000**	
Location	**Date**	**Greg Pfeiffer** **Quality Engineering Manager**

For further information, please contact your local Agilent Technologies sales Office, agent, or distributor

Safety Information

<div style="border:1px solid black">

Declaration of Conformity

according to ISO/IEC Guide 22 and CEN/CENELEC EN45014

Manufacturer's Name: **Agilent Technologies**

Manufacturer's Address: South Queensferry
West Lothian, EH30 9TG
Scotland, United Kingdom

Declares that the product

Product Name: **GSM Drive Test System**

Model Numbers: Agilent E7475A

Product Options: This declaration covers all options of the above product as detailed in
TCF A-5951-9852-09.

Conforms with the protection requirements of European Council Directive 89/336/EEC on the approximation of the laws of the member states relating to electromagnetic compatibility, against EMC test specifications EN 55011:1991 (Group 1, Class A) and EN 50082-1:1992 .

As Detailed in: Electromagnetic Compatibility (EMC)
Technical Construction File (TCF) No. A-5951-9852-02

Assessed by: DTI Appointed Competent Body
EMC Test Centre, GEC-Marconi Avionics Ltd.,
Maxwell Building, Donibristle Industrial Park,
Hillend, Dunfermline, KY11 9LB
Scotland, United Kingdom

Technical Report Number:6893/2201/CBR, dated 23 September 1997

Safety:

The product conforms to the following safety standards:

IEC 61010-1(1990) +A1(1992) +A2(1995) / EN 61010-1:1993
IEC 60825-1(1993) / EN 60825-1:1994
Canada / CSA-C22.2 No. 1010.1-93

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC, and carries the CE mark accordingly.

South Queensferry, Scotland   **28 April 2000**

Location   **Date**   R. M. Evans
Quality Manager

For further information, please contact your local Agilent Technologies sales Office, agent, or distributor

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