Agilent E7475A GSM Based Drive-Test System

Configuration Guide

The Agilent Technologies E7475A GSM based drive-test system is a scalable, integrated, air interface measurement system, used to obtain comprehensive RF measurement and call performance data as it relates to a user's location. Depending on the selected hardware options, it can make measurements on E-GSM900, DCS1800, GSM1900 or dual-band GSM/DCS networks. Receiver-based, phone-based or combined measurement capabilities are selected via stackable software licenses that reside on a supplied software protection key. Measurement receivers, which can be supplied with or without an internal GPS receiver, are supplied with magnetic mounting antennas, car mounting brackets and RS-232 connection cables to link to a laptop PC (available as an accessory). Phone software licenses are supplied with dual-port ruggedized PCMCIA serial I/O cards. The system can also be configured with a pen-tablet computer for indoor measurements without GPS.

Agilent Technologies

Introduction

The E7475A GSM drive-test system is a scalable measurement system for wireless optimization. It has three basic configurations that can be used both indoors and outdoors:

- ❏ Phone-based measurement system using test mobile phones covering E-GSM900, DCS1800, and GSM1900 bands.
- ❏ Receiver-based measurement system using single or multiple Agilent digital measurement receivers.
- ❏ Combined phone and receiver-based measurement system using single or multiple receivers and phones.

The purpose of this configuration guide is to assist you in ordering the correct system configuration for your application. It is designed to be used in conjunction with the Agilent E7475A Drive-Test System Technical Specifications (literature number 5968-5564E), which describes the features and functions in detail. This document is divided into five parts:

- ❏ **Part 1:** Basic description of product configuration
- ❏ **Part 2:** System option contents
- ❏ **Part 3:** Option descriptions
- ❏ **Part 4:** Upgrading systems
- ❏ **Part 5:** Drive-test accessory products

Part 1: Basic description of product configuration

Each system requires either an Agilent digital receiver, a GSM test mobile phone or both. The system also requires a PC with Windows® 95, 98 or NT® running the receiver or phone-based measurement software or both. A navigation system, such as a GPS receiver and GPS antenna, is required to obtain longitude and latitude information for logging the position at which the measurements were taken by the receiver or the phone. The GPS receiver may be integrated into the Agilent digital receiver or be an external device. A suitable laptop PC and external GPS receiver can be supplied as drive-test accessory products. Alternatively, the system can be configured for use with a pen-tablet computer for indoor data collection without GPS. The complete system is transportable in a lightweight briefcase that can be supplied as an accessory product.

Part 1: Basic description of product configuration (continued)

The E7475A GSM drive-test system can be configured to supply the software and hardware you require to make the measurements you want. You can easily upgrade the measurement functionality by adding options later as your needs change.

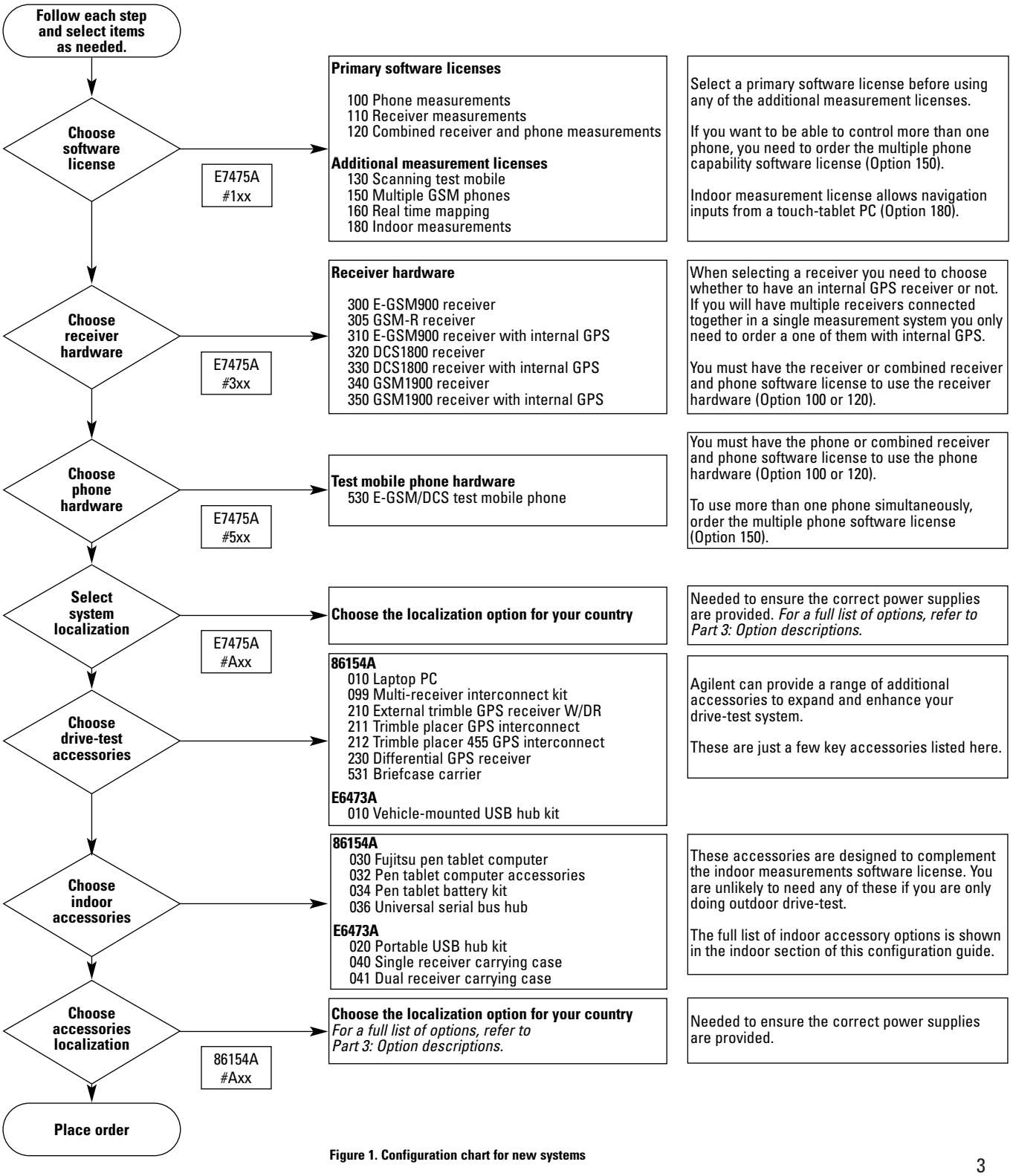

Figure 1. Configuration chart for new systems

Part 1:
Basic description of product configuration (continued)

There are three basic software license options that govern the types of measurement hardware (and therefore measurements) that you can make. Each software license relates to a particular type of hardware. If you have a phone software license (Option 100), you can make phone based measurements. If you have a receiver software license (Option 110), you can make receiver based measurements and so on. With a combined receiver and phone license (Option 120) you have access to the entire range of system measurements. Phone-based measurement licenses are supplied to control a single test mobile phone. If you wish to control more than one test mobile at the same time (for comparing several networks) you need to purchase the multiple phone control software license (Option 150).

When configuring your system, you need to first decide which types of measurements you wish to make and then select the appropriate software license.

Software license options

Option 100 GSM phone system software license
Option 110 GSM receiver system software license
Option 120 GSM receiver and phone system software license

Additional software license options

In addition to the three basic software license options, you can add other measurement capabilities and functions through extra software licenses. For a more detailed description, refer to Part 3: *Option descriptions*.

Option 130 Scanning test mobile software license
Option 150 GSM multiple phone measurement software license
Option 160 Real time mapping software license
Option 180 Indoor measurement software license

Note: Each of these license options is dependent on at least one of the main three (Option 100, 110 or 120) software license options being present. For example, in order to use the Option 150 multiple phone measurement software license, you must already own the Option 100 GSM phone system software license or Option 120 GSM receiver and phone software license.

Once you have selected the software license to enable the measurements you want, you need to purchase the appropriate measurement hardware. There are two classes of measurement hardware, digital measurement receivers (Options 300 to 350) and test mobile phones (Options 500 to 530). The measurement hardware governs the frequency band (or bands) the measurements are made in. You must have the appropriate software license to control and make measurements with the selected hardware. When selecting a measurement receiver, you have the option of having a GPS internal to the receiver. Having the GPS internal to the receiver increases portability and power supply. If you require dead-reckoning with your GPS, you need to use an external GPS and should not select a receiver with internal GPS. Agilent receivers with internal GPS can not be used with an external GPS.

Select the receiver that covers the frequency band in which you want to make measurements. If you need to make measurements in more than one band, for example in a E-GSM900/DCS1800 dual-band environment, you need to order two measurement receivers.

If you are using multiple receivers in your system (for example dual-band measurements) you should only select ONE of the receivers with internal GPS.

GSM measurement receiver options

Option 300 E-GSM900 digital receiver
Option 305 GSM-R digital receiver
Option 310 E-GSM900 digital receiver with internal GPS receiver
Option 320 DCS1800 digital receiver
Option 330 DCS1800 digital receiver with internal GPS receiver
Option 340 GSM1900 digital receiver
Option 350 GSM1900 digital receiver with internal GPS receiver

Part 1: Basic description of product configuration (continued)

GSM test mobile phone options

Option 530 E-GSM900/DCS1800 Sagem test mobile phone

Localization

In addition to the measurement hardware, a localization option will ensure that you receive the correct power cords for your country of operation. For a list of the localization options available, refer to Part 5: *Drive-test accessories*.

Laptop PC requirements

The E7475A system requires a PC to control the measurement hardware and log the collected data. The performance requirements are listed. If you wish to purchase a PC with your system, it is available as a drive-test accessory product (86154A Option 010). For more details, refer to Part 5: *Drive-test accessories*.

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

Minimum PC specifications for use in collecting data from a single phone or single phone and multiple receivers.

PC processor/memory requirements

Single phone and multiple receiver PC requirements

- ❏ Windows 95/98
  - – Minimum: 233MHz Pentium, 64MB RAM
  - – Recommended: 266MHz PII, 64MB RAM

- ❏ Windows NT
  - – Minimum: 233MHz Pentium, 128MB RAM
  - – Recommended: 266MHz PII, 128MB RAM

For a multiple phone configuration, the PC performance requirements are higher. This is due to the greater number of protocol messages that need to be processed in parallel.

Multiple phone and receivers PC requirements

- ❏ Windows 95/98
  - – Minimum: 266MHz PII, 64MB RAM
  - – Recommended: 366MHz PII, 64MB RAM

- ❏ Windows NT
  - – Minimum: 266MHz PII, 128MB RAM
  - – Recommended: 366MHz PII, 128MB RAM

Common requirements

- – RS-232 DB9 serial port
- – Parallel port
- – 40 MB disk space for software installation
- – 200 MB disk space recommended for data
- – CD-ROM drive recommended
- – 800 x 600 display resolution minimum (1024 x 768 recommended)

PC requirements for indoor measurements

In order to make wireless network measurements indoors, where GPS information is not available, a pen-based tablet PC is highly recommended. The Fujitsu tablet PC, as well as accessories, are available from Agilent. For more details, refer to the accessory products section of the configuration guide.

Drive-test accessories

For ordering convenience you may wish to purchase drive-test accessories from Agilent. These accessories include a laptop computer, briefcase carrier and external GPS receiver. For a full description of accessory products, refer to Part 5: *Drive-test accessories*.

Part 1: Basic description of product configuration (continued)

Typical system configurations for outdoors

Use Table 1 below to provide some typical E7475A GSM drive-test system configurations. Localization options have also been included for illustration purposes.

You wish to purchase:	You need to order:	Description	Quantity
GSM900 single phone-based measurement system. You will provide your own GPS and laptop. You are working in Hong Kong.	**E7475A** Option 100 Option 530 Option ARS	Drive-test system Phone measurement software license E-GSM/DCS test mobile phone Asia Pacific localization	1 1 1 1
GSM/DCS dual band phone-based measurement system. You want to buy a briefcase carrier and GPS with dead-reckoning from HP. You will provide your own laptop PC. You are working in the U.K.	**E7475A** Option 100 Option 530 Option ABU **86154A** Option 210 Option 531	Drive-test system Phone measurement software license Dual band test mobile UK localization Drive-test accessory products External GPS with D/R Briefcase carrier	1 1 1 1 1 1 1
GSM900 and DCS1800 Multiple-phone measurement system. You will supply your own laptop and GPS. You are working in Singapore.	**E7475A** Option 100 Option 150 Option 530 Option ARS	Drive-test system Phone measurement software license Multiple-phone measurement capability E-GSM/DCS test mobile phone Asia Pacific localization	1 1 1 2 1
2 x GSM900 Multiple-phone measurement system. You will supply your own laptop and GPS. You are working in Germany.	**E7475A** Option 100 Option 150 Option 530 Option ABB	Drive-test system Phone measurement software license Muiltiple-phone measurement capability E-GSM/DCS test mobile phone Europe localization	1 1 1 1 1
GSM900 receiver and phone based combined measurement system with an internal GPS and carry case. You want Agilent to supply the laptop. You are working in France.	**E7475A** Option 120 Option 310 Option 530 Option ABB **86154A** Option 010 Option 531 Option ABB **E6473A** Option 010	Drive-test system Receiver and phone measurement software license E-GSM 900 receiver with internal GPS E-GSM/DCS test mobile phone Europe localization Drive-test accessory products Laptop PC Briefcase carrier Europe localization (for laptop power) Drive-test accessory products Vehicle-Mounted USB hub kit	1 1 1 1 1 1 1 1 1 1
GSM/DCS dual band receiver and phone combination system. You want the system to have internal GPS. You will provide your own laptop PC. You are working in China.	**E7475A** Option 120 Option 310 Option 320 Option 530 Option AKM	Drive-test system Receiver and phone measurement software license E-GSM900 receiver with internal GPS DCS1800 receiver Dual band test mobile China localization	1 1 1 1 1 1 1
DCS1800 single receiver-based measurement system. You will provide your own GPS and laptop. You are working in Europe.	**E7475A** Option 110 Option 320 Option ABB	Drive-test system Receiver measurement software license DCS1800 receiver Europe localization	1 1 1 1
GSM1900 single receiver-based measurement system. Receiver will have internal GPS. You are working in the USA.	**E7475A** Option 110 Option 350 Option ABA	Drive-test system Receiver measurement software license GSM1900 receiver with internal GPS USA localization	1 1 1 1

Table 1. Agilent E7475A GSM drive-test system typical configurations

Part 1: Basic description of product configuration (continued)

Typical system configurations for indoors

Use Table 2 below to provide some typical E7475A GSM drive-test indoor measurement system configurations. Localization options have also been included for illustration purposes.

You wish to purchase:	You need to order:	Description	Quantity
GSM900 phone-based measurement system (single phone). Indoor measurement capability. Fujitsu pen tablet computer for indoor measurements. Extra battery for pen tablet and pen table accessories. You are working in the U.K	**E7475A**	Drive-test system	1
	Option 100	Phone measurement software license	1
	Option 180	Indoor measurement software license	1
	Option 530	E-GSM/DCS test mobile phone	1
	Option ABU	UK localization	1
	86154A	Drive system accessories	1
	Option 030	Fujitsu pen tablet computer	1
	Option 032	Pen tablet accessories	1
	Option 034	Pen tablet battery kit	1
	Option ABU	UK localization	1
Receiver-based measurement system for the GSM1900. Indoor measurement capability. Fujitsu pen tablet computer for indoor measurements. Ability to carry all necessary measurement equipment for indoor measurements in backpack. You are working in the USA.	**E7475A**	Drive-test system	1
	Option 110	Receiver measurement software	1
	Option 180	Indoor measurement software	1
	Option 340	GSM1900 receiver	1
	Option ABA	USA localization	1
	86154A	Drive system accessories	1
	Option 030	Fujitsu pen tablet computer	1
	Option 032	Pen tablet accessories	1
	Option 034	Pen tablet battery kit	1
	Option ABA	USA localization	1
	E6473A	Drive-test accessory products	
	Option 020	Portable USB hub kit	1
	Option 040	Single receiver carrying case	1
Combine phone and receiver-based measurement system for DCS1800 indoor measurement capability. Fujitsu pen tablet computer for indoor measurements. Ability to carry all necessary measurement equipment for indoor measurements in backpack. You are working in China.	**E7475A**	Drive-test system	1
	Option 120	Phone and receiver software license	1
	Option 180	Indoor measurement software	1
	Option 320	DCS1800 digital receiver	1
	Option 530	E-GSM/DCS test mobile phone	1
	Option AKM	China localization	1
	86154A	Drive system accessories	1
	Option 030	Fijitsu pen tablet computer	1
	Option 032	Pen tablet accessories	1
	Option 034	Pen tablet battery kit	1
	Option AKM	China localization	1
	E6473A	Drive-test accessory products	
	Option 020	Portable USB hub kit	1
	Option 040	Single receiver carrying case	1

Table 2. Agilent E7475A indoor measurement typical configuration examples

Part 2: System option contents

Use Table 3 below to provide a list of the hardware and software that is supplied with each of the system options.

Description	Software license options				Receiver options	Receiver with internal GPS options	Test mobile phone options
	100, 120	110	150	130, 160, 180	300, 305[1], 320, 340	310, 330, 350	530
Software on CD-ROM	x	x		x			
Software license on security key	x	x	x	x			
Measurement receiver					x	x	
Receiver RS-232 cable[2]					x	x	
AC/DC power supply[2] for receiver					x	x	
Magnetic mount measurement antenna					x[1]	x	
Internal GPS receiver						x	
Magnetic and bulkhead mount GPS antenna						x	
Receiver car mount bracket					x	x	
Receiver interconnect cable					x	x	
Cigarette lighter power[2] adapter for receiver					x	x	
Sagem test mobile phone with standard and extra battery							x
Power/Data cable for test mobile phone							x
AC/DC charger for test mobile							x
Dual port ruggedized PCMCIA serial I/O card	x		x				
Software tutorial	x	x	x	x			
Getting started guide	x	x					

Table 3. E7475A GSM drive-test system options and what is included

[1] For GSM-R (Option 305), antenna is not supplied.

[2] Alternatively, Agilent provides optional system accessories that can be used to power and connect simultaneously up to two phones and up to two receivers to the PC. Two configurations are provided E6473A option 010 (vehicle-mounted USB hub kit) and option 020 (portable USB hub kit) for in-vehicle and indoor (portable) wireless measurement applications. Refer to Part 5: Drive-test accessories.

Part 3: Option descriptions

E7475A GSM based drive-test system

This section describes the system options in detail. For technical specifications, please refer to the Agilent E7475A Drive-Test GSM based Technical Specifications (literature number 5968-5564E).

Primary software license options

Option 100 GSM phone system software license

Option 110 GSM receiver system software license

Option 120 GSM receiver and phone software license

The software license options govern the types of measurements you can make. In addition to the software license options you also need the appropriate measurement hardware to perform the measurements. You can start out with a phone only system software license and then add the receiver system license to give the functionality of the combined receiver and phone license.

Additional software license options

In addition to the Primary Software license options, it is possible to extend the measurement capabilities of your system by adding the following extra software licenses:

Option 130 scanning test mobile software license

This option enables you to utilize the frequency-scanning mode of the Sagem GSM test mobiles. To use this option, you must also have either Option 100 GSM phone software license or Option 120 GSM receiver and phone software license. When a test mobile is being used as a frequency scanner, it can not simultaneously be used to make other GSM measurements or set up calls.

Option 150 GSM multiple phone measurement software license

The GSM multiple phone measurement software license is used in conjunction with either the Option 100 GSM phone system software license or Option 120 GSM receiver and phone software license. It enables you to control more than one test mobile simultaneously. Examples of where this software license would be useful would be if you wish to benchmark two or more networks with phone calls set up on each network at the same time. It is also useful if you wish to have one test mobile connected in call set up mode and a second test mobile connected in frequency scanning mode.

Option 160 real time mapping software license

The real time mapping software license provides real-time data mapping. A single measurement parameter is plotted on the map, in color-coded thematic format, as the data is collected. Base station locations are plotted on the map with site names, sector orientations and channel sets. Alarms are plotted on the map; double-clicking on the alarm symbol displays the corresponding alarm text message.

Option 180 indoor measurement license

The indoor measureement software license extends the primary measurement software licenses with the ability to make receiver and phone-based GSM wireless measurements inside of buildings. While walking through a building, waypoints are recorded on a floor plan of the building. Measurement results are interpolated between the waypoints. Indoor measurements require a floor plan or sketch of the building to be measured. The floor plan can be in .gif, .tif, or .png file formats. This option enables navigation indoors without GPS.

The system software is supplied on a CD-ROM and the license on a software security key that connects transparently to the parallel port of your PC.

GSM measurement receiver options

Option 300 E-GSM900 digital receiver
880-915 MHz / 925-960 MHz

Option 305 GSM-R digital receiver
876-915 MHz / 921-960 MHz

Option 320 DCS1800 digital receiver
1710-1785 MHz / 1805-1880 MHz

Option 340 GSM1900 digital receiver
1850-1910 MHz / 1930-1990 MHz

The Agilent range of digital measurement receivers covers the complete set of GSM frequency bands. Each receiver[1] is supplied with a magnetic mount measurement antenna, cigarette lighter power connector, main power adapter, RS-232 cable, multi-receiver interconnect cable and a car-mount bracket. The measurement receivers all have a serial DB9 connector where an external GPS can be connected.

[1] GSM-R receiver is not supplied with the antenna.

Part 3: Options descriptions (continued)

GSM measurement receivers with internal GPS options

Option 310 E-GSM900 digital receiver with internal GPS receiver 880-915 MHz / 925-960 MHz

Option 330 DCS1800 digital receiver with internal GPS receiver 1710-1785 MHz / 1805-1880 MHz

Option 350 GSM1900 digital receiver with internal GPS receiver 1850-1910 MHz / 1930-1990 MHz

If you have selected a receiver with internal GPS, in addition to the standard receiver accessories, you will also get a magnetic mount GPS antenna and connecting cables. The internal GPS receiver has the following specifications:

- ❏ Eight channel internal GPS receiver
- ❏ It is mounted inside the Agilent measurement receiver enclosure
- ❏ SMA antenna connector
- ❏ Magnetic mount antenna with cable
- ❏ Differential compatible
- ❏ Not dead-reckoning compatible
- ❏ Systems with internal GPS do not support connection to external GPS receivers

Test mobile phone options

Option 530 E-GSM900/DCS1800 Sagem test mobile phone

The test mobile phone supported on the E7475A price list is from the Sagem OT-xx range of dual band phones. Each test mobile phone is supplied with an RS-232 interface cable and a power/data cable that can charge the phone's battery while it is in use. Two batteries, one standard and one extended life, are supplied together with a mains charger and user manuals.

The test mobile phones are GSM Phase-II compatible and can be used to make regular voice calls. The user must supply a SIM card to establish connection with the cellular network. For details of the measurements provided by the test mobile phones, please refer to the Agilent E7475A Drive-Test Technical Specifications (literature number 5968-5564E).

Note: The E7475A phone software also supports the Motorola triband timeport mobile and associated M-Plus interface card. This phone will not be included on the Agilent price list, it is readily available commercially and shall be customer furnished.

Note: Sagem OT-35 test mobile phones are supported with a reduced measurement capability. Phone firmware must be at revision L or later for OT-35 models. The E7475A software shall continue to support the now obsolete OT-55 phones but may be subjected to reduced measurement capability at a later date.

Localization Options

The E7475A GSM based drive-test systems are used throughout the world. In order for the correct power supplies and main cables can be supplied with your system, it is necessary to order a localization option with your system. The localization options apply to each of the system products and also to the upgrades and certain accessories. They do not add any incremental cost to the order. The localization options will only change the power cords and mains chargers that are supplied. They will not affect the system software language, which is U.S. English.

Power localization options available:

Option ABU United Kingdom - English localization

Option ABB Europe - English localization

Option ARS Asia Pacific (UK Cord) / English localization

Option ABA U.S. - English localization

Option ABG Australia - English localization

Option ACD Switzerland - English localization

Option ACE Denmark - English localization

Option ACQ S. Africa - English localization

Option AKM China - English localization

Option AKJ Israel - English localization

Option A1X Chile - English localization

Option ARM Argentina - English localization

Option AKL Thailand - English localization

Part 4: Upgrading systems

There are several reasons to upgrade your existing Agilent E7475A drive-test system. For example, if you have the Option 100, phone-based measurement system, you might want to upgrade to add receiver-based measurements, or vice-versa. You may wish to add extra test mobile phones to your system with the Option 150 multiple GSM phone measurements software license and additional test mobile hardware.

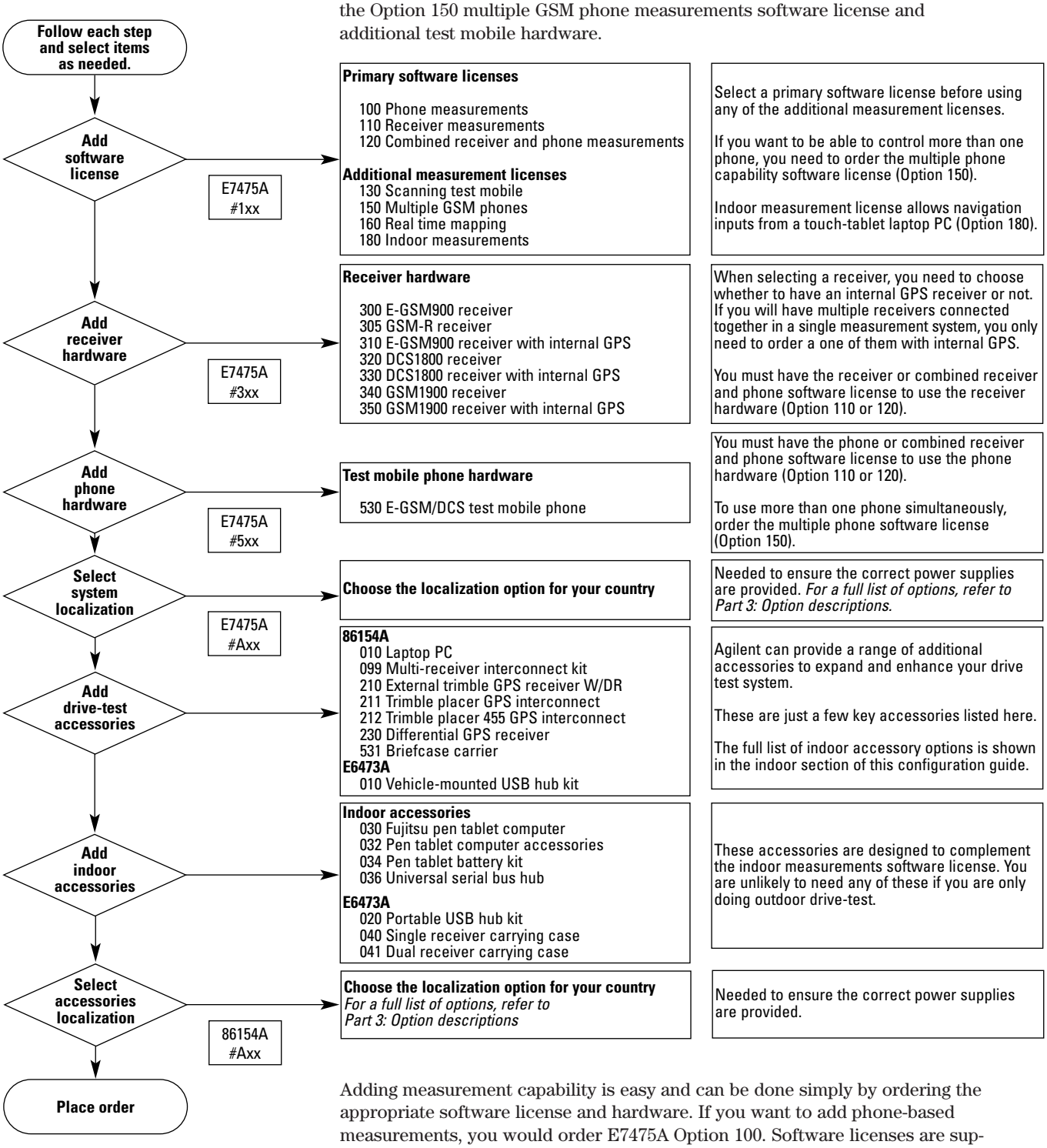

Figure 2. Configuration chart for upgrades

Adding measurement capability is easy and can be done simply by ordering the appropriate software license and hardware. If you want to add phone-based measurements, you would order E7475A Option 100. Software licenses are supplied on hardware security keys. The software licenses can be transferred from one key to another using supplied license management software. Additional measurement hardware is ordered in the same way that you purchased your original parts.

Part 4: Upgrading systems (continued)

Use Table 4 below to provide some E7475E GSM drive-test upgrade samples.

You presently own:	You want to add:	You need to order:	Description	Quantity
E-GSM900 phone-based drive-test system. You have your own external GPS. You are working in Hong Kong.	E-GSM900 Receiver-based measurement capability and hardware.	**E7475A** Option 110 Option 300 Option ARS	Drive-test system Receiver measurement software license E-GSM900 receiver Asia Pacific localization	1 1 1 1
E-GSM900 phone-based drive-test system. You have your own external GPS. You are working in Singapore.	Dual band phone, E-GSM900 and DCS1800 receiver measurement capability. You want to have an internal GPS[1].	**E7475A** Option 110 Option 310 Option 320 Option ARS	Drive-test system Receiver measurement software license E-GSM900 receiver with internal GPS DCS1800 receiver Asia Pacific localization	1 1 1 1 1
GSM1900 phone-based drive-test system. You are working in the USA.	GSM1900 receiver-based measurement capability and hardware. You want to have an internal GPS.	**E7475A** Option 110 Option 350 Option ABA	Drive-test system Receiver measurement software license GSM1900 receiver with internal GPS USA localization	1 1 1 1
DCS1800 combined phone and receiver-based drive-test system. You are working in China.	Multiple phone-based measurement capability and a GSM900 test mobile.	**E7475A** Option 150 Option 530 Option AKM **E6473A** Option 010	Drive-test system Multi-phone measurement software license E-GSM/DCS test mobile phone China localization Drive-test accessory products Vehicle-Mounted USB hub kit	1 1 1 1 1
E-GSM900 receiver-based drive-test system with internal GPS. You are working in the UK.	Multiple phone-based measurements and GSM900 and DCS1800 test mobile phones.	**E7475A** Option 100 Option 150 Option 530 Option ABU **E6473A** Option 010	Drive-test system Phone measurement software license Multi-phone measurement software license E-GSM/DCS test mobile phone UK localization Drive-test accessory products Vehicle-Mounted USB hub kit	1 1 1 2 1 1
E-GSM900 receiver based drive-test system with internal GPS. You are working in France.	E-GSM900 phone-based measurements and a test mobile phone.	**E7475A** Option 100 Option 530 Option ABB	Drive-test system Phone measurement software license E-GSM/DCS test mobile phone Europe localization	1 1 1 1
E-GSM900 combined phone and receiver-based drive-test system. You are working in Sweden.	A briefcase carrier.	**86154A** Option 531	Drive-test accessories Briefcase carrier	1 1
E-GSM900, DCS1800 dual receiver-based drive-test system. The E-GSM900 receiver already has an internal GPS. You are working in Asia.	Two more receivers, one E-GSM900 and one DCS1800. You want to use all four receivers at the same time.	**E7475A** Option 300 Option 320 Option ARS **E6473A** Option 010	Drive-test accessories E-GSM900 receiver DCS1800 receiver Asia Pacific localization Drive-test accessory products Vehicle-Mounted USB hub kit	1 1 1 1 1

Table 4: Agilent E7475A GSM drive-test system upgrade examples

[1] **If you wish to use both phones at the same time you also need to order option 150 multiple GSM phone software license.**

Part 4: Upgrading systems (continued)

Use Table 5 below to provide some E7475A drive-test indoor measurement system upgrade examples. In addition to the E7475A system components for drive testing, Agilent can supply a range of accessories.

You presently own:	You want to add:	You need to order:	Description	Quantity
E-GSM900 phone-based drive-test system. You are working in the UK.	Indoor measurement capability. Fujitsu pen tablet computer for indoor measurements. Extra battery for pen tablet and pen table accessories.	**E7475A**	Drive-test system	1
		Option 180	Indoor measurement software license	1
		86154A	Drive system accessories	1
		Option 030	Fujitsu pen tablet computer	1
		Option 032	Pen tablet accessories	1
		Option 034	Pen tablet battery kit	1
		Option ABU	UK localization	1
GSM1900 phone and receiver-based drive-test. You are working in the USA.	Indoor measurement capability. Fujitsu pen tablet computer for indoor measurements. Ability to carry all necessary measurement equipment for indoor measurement in backpack.	**E7475A**	Drive-test system	1
		Option 180	Indoor measurement software	1
		86154A	Drive system accessories	1
		Option 030	Fujitsu pen tablet computer	1
		Option 032	Pen tablet accessories	1
		Option 034	Pen tablet battery kit	1
		Option ABU	USA localization	1
		E6473A	Drive-test accessory products	
		Option 020	Portable USB hub kit	1
		Option 040	Single receiver carrying case	1
DCS1800 phone and receiver-based drive-test system. You working in China.	Indoor measurement capability. Fujitsu pen tablet computer for indoor measurements. Ability to carry all necessary measurement equipment for indoor measurement in backpack.	**E7475A**	Drive-test system	1
		Option 180	Indoor measurement software	1
		86154A	Drive system accessories	1
		Option 030	Fujitsu pen tablet computer	1
		Option 032	Pen tablet accessories	1
		Option 034	Pen tablet battery kit	1
		Option AKM	China localization	1
		E6473A	Drive-test accessory products	
		Option 020	Portable USB hub kit	1
		Option 040	Single receiver carrying case	1

Table 5: Agilent E7475A GSM drive-test system upgrade examples

Part 5: Drive-test accessories

In addition to the E7475A system components for drive testing, Agilent can supply a range of accessory products to supplement and enhance your measurement system.

The following list of product options are ordered under the 86154A and E6473A drive-test accessories products, not the E7475A drive-test product.

External GPS receiver and accessories

The E7475A system has the ability to work with several types of GPS interfaces. The system is compatible with the communications protocols listed below. The physical interface is RS-232 with a DB9 connector. The E7475A system is also compatible with the Magneti Marelli NAV200 navigation system and the Bosch Travel Pilot RGS08 Professional Navigation system. Agilent does not supply these systems.

Compatible GPS protocols

- ❏ TAIP
- ❏ TSIP
- ❏ NMEA

Agilent 86154A Option 210 adds a Trimble Placer 455-DR GPS receiver with dead-reckoning for external connection to the E7475A systems.

Note: This accessory option is not compatible with Agilent receivers that have the internal GPS fitted.

86154A Option 210
External GPS receiver with dead-reckoning

- ❏ Trimble Placer GPS 455 with dead-reckoning
- ❏ Heading sensor
- ❏ Odometer sensor
- ❏ Interconnect adapter (to connect to an Agilent digital receiver)
- ❏ Interconnect cables
- ❏ Magnetic mount antenna with cable
- ❏ Differential compatible
- ❏ Cigarette lighter power card

86154A Option 211, Option 212
Trimble interconnect cables

Options 211 and 212 are interconnect adapters for connection to certain Trimble GPS receivers. The table below lists several GPS receiver models and the associated interconnect requirements. For other models of external GPS receivers, consult an Agilent representative for adapter availability.

Interconnect cables for external GPS receivers

GPS receiver model	Interconnect requirement
Trimble Placer GPS/DR (obsolete)	Option 211
Trimble Placer GPS 455	Option 212
Trimble SveeSix	Straight through RS-232
Trimble Placer GPS 400 (obsolete)	Straight through RS-232

Table 6. Interconnect requirements

If a GPS receiver is purchased from Agilent as an option to the system, all necessary interconnect parts and a magnetically mounted GPS antenna will be provided. If you order Option 210, you do not need to order Option 211 or 212.

Part 5: Drive-test accessories (continued)

86154A Option 230
Differential GPS receiver

- ❏ Differential corrections, incorporated RDS-3000
- ❏ Magnetic mount antenna
- ❏ Interconnect cables

Differential GPS can be used with the E7475A systems provided the GPS receiver being used is differential compatible. 86154A Option 230 adds a differential GPS receiver to the system.

Note: activation and payment for the differential service is not included. Contact Differential Corrections, Inc., for more information.

Portability accessories

86154A Option 531
Briefcase carrier

- ❏ Lightweight briefcase carrier for one test mobile, Agilent digital receiver, laptop PC and connecting cables.
- ❏ Designed for transporting the system. It is NOT intended that the system be operated from within the case.

Laptop PC

86154A Option 010
Laptop PC
As laptop PC specifications are subject to frequent change, please contact your Agilent representative for current specifications of this option.

Miscellaneous accessories

86154A Option 099
Multi-receiver connection cable kit

- ❏ Contains an extra length connection cable for use in applications where it is necessary to connect together more than three Agilent digital receivers. A regular length cable, as supplied as standard with all digital receivers, is also included in the kit.

E6473A Option 010
Vehicle-mounted USB hub kit
This vehicle-mounted USB hub kit is designed for in-vehicle wireless measurements. The USB hub allows the simultaneous connection of up to two phones and two receivers to the laptop PC. In addition, the kit provides powering capability for the phone(s) and/or receiver(s). The kit includes:

- ❏ USB hub
- ❏ Universal mounting plate
- ❏ Permanent power cable
- ❏ USB to computer interface cables (a 3-foot cable and a 15-foot cable)
- ❏ Auto cigarette lighter power cable
- ❏ Two USB hub to Agilent digital receiver interface cables. The USB hub to phone interface cables are not included in the kit and must be ordered separately.

For portable applications, it is recommended that the equivalent E6473A USB hub kit is used. The same USB hub functionality is provided but the kit itself is designed specifically for indoor and portable wireless measurements.

Indoor (portable) measurement accessories

The following accessories are provided for indoor and portable wireless measurements. For a detailed description of the indoor accessories, please refer to the Agilent Indoor Wireless Measurement System product overview, literature number 5968-8689E.

86154A Option 030
Fujitsu pen tablet computer
The pen tablet computer includes a customized pen tablet computer case. A pen tablet computer is highly recommended for indoor (portable) measurements.

86154A Option 032
Pen tablet computer auto power adapter

Part 5: Drive-test accessories (continued)

86154A Option 034
Pen tablet battery kit

- ❏ Pen tablet battery
- ❏ Battery charger

This option provides an extra battery for the Fujitsu pen tablet computer. It also provides an external charger to charge one battery while the other is in use.

86154A Option 036
Universal serial bus hub

This accessory is useful when the indoor measurement system is being used with more than one receiver or phone in the backpack carry case. It permits a single cable to be connected from the backpack to the pen tablet computer with other receiver and phone interconnects kept within the backpack carry case. The hub converts USB (from tablet computer) to multiple serial ports for connection to the measurement hardware.

E6473A Option 020
Portable USB hub kit

This USB hub kit allows the connection of up to two phones and two receivers to the pen tablet computer. In addition, the kit provides powering capability for the phone(s) and/or receiver(s). The kit includes:

- ❏ USB hub
- ❏ USB hub carrying bag
- ❏ USB hub battery and battery charger
- ❏ USB to pen tablet computer interface cable
- ❏ Auto cigarette lighter power cable
- ❏ Two USB hub to Agilent digital receiver interface cables. The USB hub to phone interface cables are not included in the kit and must be ordered separately..

E6473A Option 040
Single receiver carrying case

The single receiver carrying case is used for portable configurations where only one Agilent digital receiver is used to perform wireless measurements. The single receiver carrying case is recommended for use with the E6473A USB hub kit and includes one tri-band indoor antenna. For dual receiver configurations, the E6473A option 041, dual receiver carrying case is recommended for use with the portable USB hub kit when two receivers are being used.

E6473A Option 041
Dual receiver carrying case

The dual receiver carrying case is used for portable configurations where two Agilent digital receivers are being used to perform wireless measurements. The dual receiver carrying case is recommended when two receivers are used with the E6473A USB Hub kit. The kit includes two tri-band indoor antennas.

Part 5: Drive-test accessories (continued)

E7475A option summary

This is a complete list of all the product options for the E7475A GSM drive-test system.

E7475A GSM Drive-test system

Software license options

Option 100 GSM phone system software license
Option 110 GSM receiver system software license
Option 120 GSM receiver and phone software license
Option 130 Scanning test mobile software license
Option 150 GSM multiple phone measurement software license.
Option 160 Real time mapping software license
Option 180 Indoor measurement software license

Measurement receiver options

Option 300 E-GSM900 digital receiver
Option 305 GSM-R digital receiver
Option 310 E-GSM900 digital receiver with internal GPS receiver
Option 320 DCS1800 digital receiver
Option 330 DCS1800 digital receiver with internal GPS receiver
Option 340 GSM1900 digital receiver
Option 350 E-GSM1900 digital receiver with internal GPS receiver

Test Mobile phone options

Option 530 GSM900/DCS1800 Sagem test mobile phone

Localization options

Option ABU United Kingdom - English localization
Option ABB Europe - English localization
Option ARS Asia Pacific (UK Cord) / English localization
Option ABA U.S. - English localization
Option ABG Australia - English localization
Option ACD Switzerland - English localization
Option ACE Denmark - English localization
Option ACQ S. Africa - English localization
Option AKM China - English localization
Option AKJ Israel - English localization
Option A1X Chile - English localization
Option ARM Argentina - English localization
Option AKL Thailand - English localization

Part 5: Drive-test accessories (continued)

E7475A Drive-test accessory option summary

This is a list of the E7475A GSM drive-test accessory options.

86154A and E6473A drive-test accessory options

External GPS receiver

Option 210 External GPS receiver with dead-reckoning
Option 211 Interconnect cable for Trimble Placer
Option 212 Interconnect cable for Trimble Placer 455
Option 230 Differential GPS receiver

Portability accessories

Option 531 Briefcase carrier

Laptop PC

Option 010 Laptop PC

Vehicle-Mounted USB Hub Kit
E6473A

Option 010 Vehicle-Mounted USB Hub Kit

Indoor measurement accessories

86154A Option 030 Fujitisu pen tablet computer
86154A Option 032 Pen tablet accessories
86154A Option 034 Pen tablet battery kit
86154A Option 036 Universal serial bus hub
E6473A Option 020 - Portable USB Hub Kit
E6473A Option 040 - Single Receiver carrying case
E6473A Option 041 - Dual receiver carrying case

Miscellaneous accessories

86154A Option 099 Multi-receiver connection cable kit

Localization options

Option ABU United Kingdom - English localization
Option ABB Europe - English localization
Option ARS Asia Pacific (UK Cord) / English localization
Option ABA U.S. - English localization
Option ABG Australia - English localization
Option ACD Switzerland - English localization
Option ACE Denmark - English localization
Option ACQ S. Africa - English localization
Option AKM China - English localization
Option AKJ Israel - English localization
Option A1X Chile - English localization
Option ARM Argentina - English localization

Refer to the following literature:

- Technical Specifications 5968-5564E
- Brochure 5968-5562E

Additional literature:

- E7475A GSM Drive-Test System Technical Specifications (literature number 5968-5564E)
- E7475A GSM Drive-Test System Brochure (literature number 5968-5562E)

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