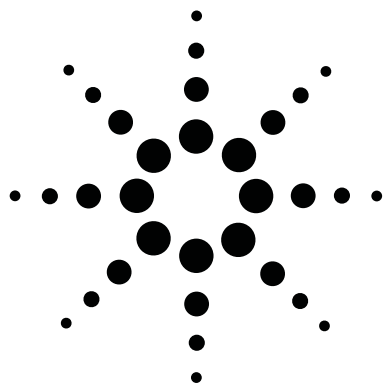
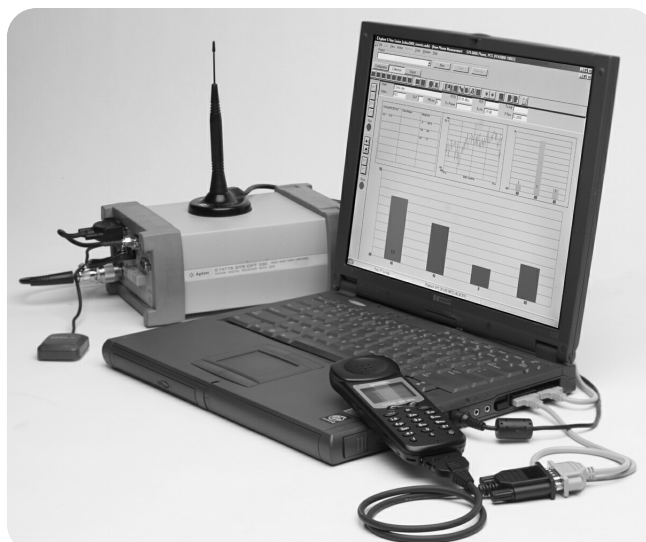




Agilent

E7477A cdma2000 Drive-Test System

Configuration Guide



The Agilent E7477A cdma2000 drive-test system is a scalable drive test platform used to obtain RF coverage and service performance measurements for wireless communications networks using cdmaOne and cdma2000 technologies. The system software runs on a PC that interfaces with an Agilent digital RF receiver and/or cdmaOne and cdma2000 mobile phones. The system can control up to four receivers and four phones simultaneously.

The Agilent E7477A cdma2000 Drive-Test System is available in the following configuration:

- ☐ Phone-based systems
- ☐ Data test based systems
- ☐ Receiver-based systems
- ☐ Combined phone- and receiver- based systems
- ☐ Combined phone- and receiver- based systems with data test add on

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 E7477A Technical Specifications, literature number 5980-2306E which describes the features and functionality in detail. This document is divided into several parts:

- ☐ Part 1: Basic description of product configuration
- ☐ Part 2: Software options
- ☐ Part 3: Receiver hardware options
- ☐ Part 4: Accessories
- ☐ Part 5: Upgrading existing systems
- ☐ Part 6: Ordering examples



Agilent Technologies

Part 1: Basic description of product configuration

The system is made up of software, receiver hardware, and accessories.
To order a system you:

1. Choose the software functionality that you want (option numbers in the 100s)
2. Choose the data test functionality that you want (option numbers in the 200s)
3. Choose the receiver hardware that you want (option numbers in the 300s)
4. Choose the accessories that you want (Agilent 86154A and E6473A model numbers)

Each system requires an Agilent digital receiver, a cdmaOne or cdma2000 mobile phone, or a combination of both. The system also requires a PC with Windows 95®, 98, NT, 2000, or Millennium Edition running the measurement software. A GPS receiver and GPS antenna is required in order to log the position information and provide timing for the receiver cdma2000 measurements.

IMPORTANT: At least one option must be ordered for the product configuration to be valid.

Figure 1 illustrates the process of choosing the specific options to order with your Agilent E7477A system.

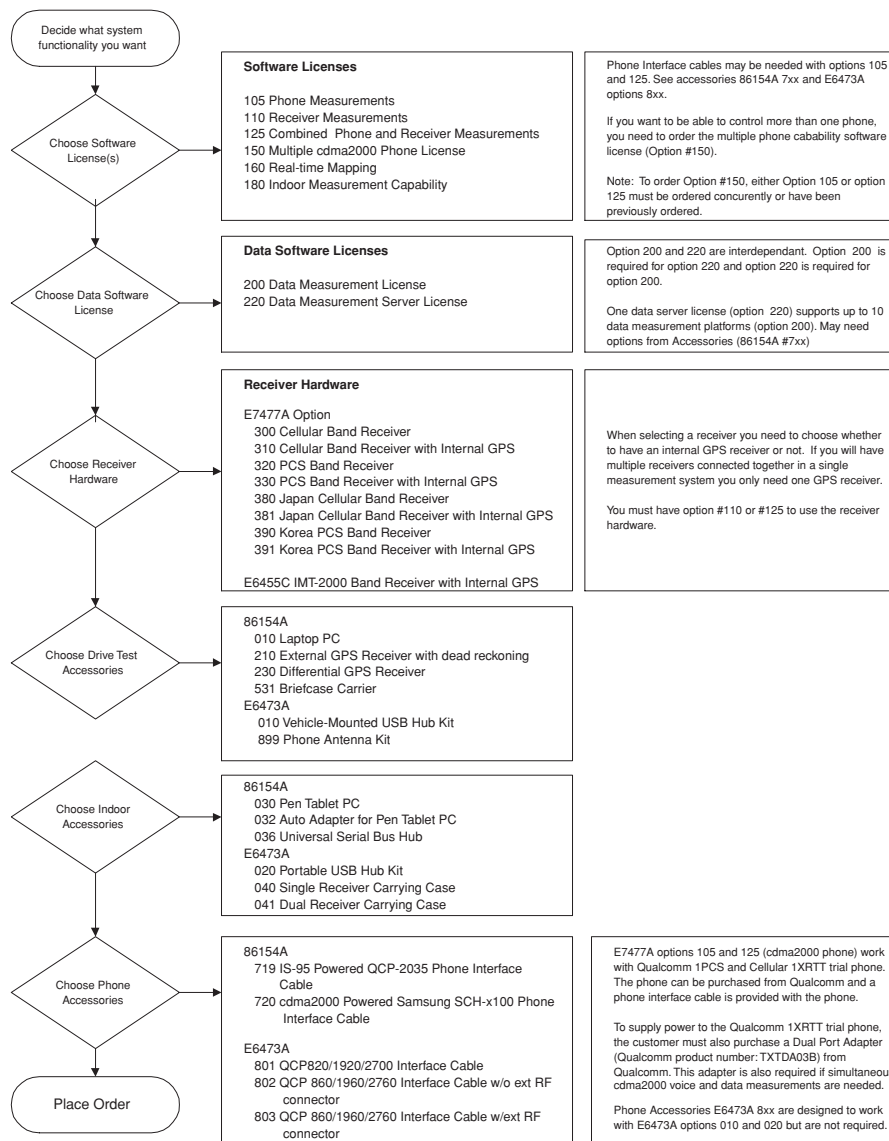


Figure 1. Ordering Decision Process - New Systems

Part 2: Software options

This part of the document assumes that you are creating a new system.

If you are adding functionality to an existing system, refer to Part 5: *Upgrading existing systems*.

The following software options are available on the Agilent E7477A:

Agilent E7477A

- ☐ Option 105: cdma2000 phone-based system software license
- ☐ Option 110: cdma2000 receiver-based system software license
- ☐ Option 125: cdma2000 combined phone- and receiver-based software license
- ☐ Option 150: cdma2000 multiple phone capability software license
- ☐ Option 160: Real-time mapping software license
- ☐ Option 180: Indoor measurement capability software license
- ☐ Option 200: Data measurement software license
- ☐ Option 220: Data measurement server software license

Use Table 1 below to determine which software option(s) you require for your application. For a detailed description of the functionality, please refer to the Agilent E7477A technical specifications, 5980-2306E.

Options 160 and 180 can be combined with any other valid set of options. Option 125 should not be ordered along with Option 105 or 110; Option 125 has all of the functionality of Option 105 and 110 combined. Option 150 should only be ordered along with Option 105 or 125 or by a customer who already has Option 105 or 125. Option 200 and 220 can be combined with any other valid set of 1xx options, however Option 200 should only be ordered along with 220 or by a customer who already has 220. Option 220 is a server license and can support up to 10 clients (Option 200).

Desired Functionality	Software Option(s) Required
Phone-based drive system measurements (single phone)	105
Phone-based drive system measurements (up to four phones)	105 and 150
Receiver-based drive system measurements (up to four receivers)	110
Phone-based drive system measurements (single phone) and receiver-based drive system measurements (up to four receivers)	125
Phone-based drive system measurements (up to four phones) and receiver-based drive system measurements (up to four receivers)	125 and 150
Real-time mapping capability (can be combined with all software functionality)	160 (can be combined with any or all other software option numbers)
Indoor measurement capability (can be combined with all other software functionality)	180 (can be combined with any or all software option numbers)
Data measurement software license (can be combined with all other software functionality listed in options 1xx. Must purchase concurrently or already have Data Measurement Server Software License, Option 220).	200 (can be combined with any or all 1xx software option numbers) Must purchase concurrently or already have data measurement server software license Option 220)
Data measurement server software license (can be combined with all other software functionality listed in options Option 1xx.) Must purchase concurrently or already have data measurement server software license Option 200. Note - One server license Option 220 works with 10 clients, Option 200.	220 (can be combined with all other software functionality listed in options 1xx) Must purchase concurrently or already have data measurement server software license, Option 200. Note - One server license, Option 220 works with 10 clients, Option 200.

Table 1: Software functionality

Each software order includes the following components:

- CD with software and documentation
- Getting Started Guide
- Parallel port software license key (includes licenses on this key)
- USB license key (initialized but no licenses on this key)

If Option 150 is ordered with Option 105 or 125, the software licenses will be placed on a single parallel port security key. If Option 150 is ordered as an upgrade, its license will be supplied on a separate parallel port security key. The license can then be transferred to the customer's existing parallel port security key using the supplied license manager software. Licenses can be transferred to the customer's USB key.

Options 105, 125, and 150 each include a socket I/O rugged single serial port PCMCIA card for connecting phones to the PC.

IMPORTANT: Cables are required to connect cdmaOne and cdma2000 handsets to the PC. For cable options for supported handsets, refer to Part 4: *Accessories*.

Option 220 is placed on separate security keys since this license is required on a server and is separated from the client software which resides on a different computer.

Part 3: Receiver hardware options

This part of the document assumes that you are creating a new system. If you are adding functionality to an existing system, refer to Part 5: Upgrading existing systems.

The following digital receiver hardware options are available:

E7477A

- ☐ Option 300: Cellular Band Digital Receiver
 - ☐ Option 310: Cellular Band Digital Receiver with Internal GPS Receiver
 - ☐ Option 320: PCS Band Digital Receiver
 - ☐ Option 330: PCS Band Digital Receiver with Internal GPS Receiver
 - ☐ Option 380: Japan Cellular Band Receiver
 - ☐ Option 381: Japan Cellular Band Receiver with Internal GPS Receiver
 - ☐ Option 390: Korea PCS Band Receiver
 - ☐ Option 391: Korea PCS Band Receiver with Internal GPS Receiver
- ☐ E6544C : IMT-2000 Band digital receiver with internal GPS receiver (this is not an option to the E7477A.

Software option 110 or 125 is required to operate the Agilent receivers. Each software option package can control up to four receivers.

When selecting a measurement receiver you have the option of having GPS internal to the receiver. Internal GPS provides portability and simplifies system configuration. 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 RF receivers with internal GPS cannot be used with an external GPS. Agilent offers an external GPS with dead reckoning capability. Refer to Part 4: *Accessories*.

For receiver specifications and a detailed description of the receiver functionality, please refer to the Agilent E7477A Technical Specifications, literature number 5980-2306E.

You need to 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, you need to order two measurement receivers.

In multiple receiver configurations, only one of the receivers requires GPS. If you are using multiple receivers in your system, you should only select one of the receivers with internal GPS.

Each receiver includes the following components:

- Magnetic-mount RF antenna for the corresponding frequency band
- TNC-to-typeN adapter for RF antenna
- RS-232 cable for connection to PC¹
- Cable for connecting in multiple receiver configuration
- AC/DC power supply¹
- DC power cord – cigarette lighter type¹
- Mounting kit (brackets and screws for mounting receiver in a vehicle)

The receivers with internal GPS receivers (options 310, 330, 361, 381, and 391) also include the following components:

- Magnetic-mount GPS antenna with cable

Part 4: Drive test accessories

In addition to the E7477A system components for drive testing, Agilent supplies a range of accessory products to supplement and enhance your E7477A measurement system. The accessories can be divided up into the following categories:

- ☐ Drive test system accessories
- ☐ Phone accessories
- ☐ Drive test system replacement accessories
- ☐ Indoor (portable) measurement system accessories

The following accessories are ordered under the 86154A or E6473A accessories product numbers, not the E7477A cdma2000 drive-test product. The accessory model number is provided for each option to distinguish which product number should be used.

Drive test system accessories

The following accessories are provided for drive testing (in-vehicle measurements). The drive test accessories are ordered using Agilent 86154A and/or E6473A accessories product numbers.

86154A Option 010

Laptop PC

86154A Option 210

Trimble Placer GPS 455 with dead-reckoning

86154A Option 230

Differential GPS receiver

N3419A

Vehicle-mounted display system

¹ 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 4: Accessories

86154A Option 531

Briefcase carrier

The briefcase carrier is a lightweight briefcase carrier designed for one test mobile, one Agilent digital receiver, a laptop PC, and connecting cables. The case is designed for transporting the system. It is not intended that the system be operated from within the case.

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
- ☐ USB hub to Agilent digital receiver interface cable. 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 Option 020 Portable 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.

Drive test replacement accessories

The following list of drive test accessories includes replacement accessories that are included with the E7477A cdma2000 drive-test system. In most cases, these options are only ordered to replace lost or damaged accessories.

Option 099

Multiple receiver interconnect kit

Option 510

Vehicle-mounting kit

Phone accessories

The following list describes all of the phone accessories available for the E7477A cdma2000 drive-test system. Phone cabling accessories are provided using two separate model numbers: 86154A and E6473A. Phone cables listed as options under 86154A connect directly to the PC. The cable options listed under E6473A are designed especially for use with the E6473A Option 010 – Vehicle-mounted USB hub kit or the E6473A Option 020 – portable USB hub kit. As mentioned previously, these kits provide both cabling and powering for phones connected to the E7477A cdma2000 drive test system. For users wanting to use the E6473A phone cabling options without the USB hub kits, an adapter is provided for connecting the phone cable directly to the PC. However, there is no method to power the phone.

Agilent 86154A Phone accessories

- ☐ Option 719 - Powered Kyocera 2035 Phone interface cable
- ☐ Option 720 – Powered Samsung SCH-x100 cdma2000 Phone interface cable

Note: The Qualcomm 1XRTT trial phone for PCS and Cellular frequencies will work with the E7477A Options 105 and 125. The phone can be purchased directly from Qualcomm and the phone interface cable is included with the phone. To simultaneously perform data test measurements and RF measurements using the Qualcomm phones, the user must purchase the dual port adapter, model TXDTA03B, from Qualcomm. This dual port adapter also powers the phone.

Agilent E6473A Phone accessories

These phone cables are designed to work with the E6473A option 010 - Vehicle-Mounted USB hub and E6473A option 020 - Portable USB hub kits, but are not required. However, if the USB hub kits are not used, there is no way to power the phones.

- ☐ Option 801 - QCP820/1920/2700 Phone interface cable
- ☐ Option 802 – QCP860/1960/2760 Phone interface cable
- ☐ Option 803 – QCP860/1960/2760 Phone interface cable without external RF connection

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 (publication 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

86154A Option 034

Pen tablet battery kit

The pen tablet battery kit includes:

- ☐ Pen tablet battery
- ☐ Battery charger

86154A Option 036

4-Port Hub

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
- ☐ USB hub to Agilent digital receiver interface cable. 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.

Please note that indoor receiver-based pilot channel analysis and code domain power measurements are limited due to difficulty with GPS timing. Please refer to Agilent E7477A cdma2000 Drive-Test System, Technical Specification (literature number 5980-2306E) for a detailed description of cdma2000 indoor measurements.

Part 5: Upgrading existing systems

The Agilent E7477A is a scaleable system. You can start with one set of capability and integrate additional capability later. Some examples includes:

- Start with a phone based system and upgrade to include receiver-based measurements.
- Start with a receiver-based system and upgrade to include phone-based measurements.
- Start with a single phone system and upgrade to include multiple phone capability
- Start with an outdoor drive-test system and upgrade to include indoor measurement capability.

Additionally, there is a unique option number to upgrade from cdmaOne functionality to cdma2000 functionality. This one case is when a customer has purchased an E7473A CDMA Drive Test System option 100 - CDMA Phone-based software license or 120 - Combined CDMA phone and receiver-based software license, and wishes to upgrade to cdma2000 phone functionality. This upgrade would be:

- Start with E7473A option 100 or 120 and upgrade to E7477A option 105 or 125, respectively for cdma2000 functionality. The upgrade option to make this happen is the E7473A option 126.

The system is made up of software, receiver hardware, and accessories. Upgrading a system is similar to ordering a new system. You simply order those system elements that you need. To upgrade a system:

1. Decide what system capability you want.
2. Identify the capability you currently have.
3. Choose the software options that you want (option numbers in the 100s and 200s), refer to Part 2: Software Options.
4. Choose the hardware options that you want (option numbers in the 300s), refer to Part 3: Receiver hardware options.
5. Choose the accessories that you want (Agilent 86154A and/or E6473A model numbers,), refer to Part 4: Accessories.

Figure 2 illustrates the process of choosing the specific options to order when you are upgrading an Agilent E7477A system.

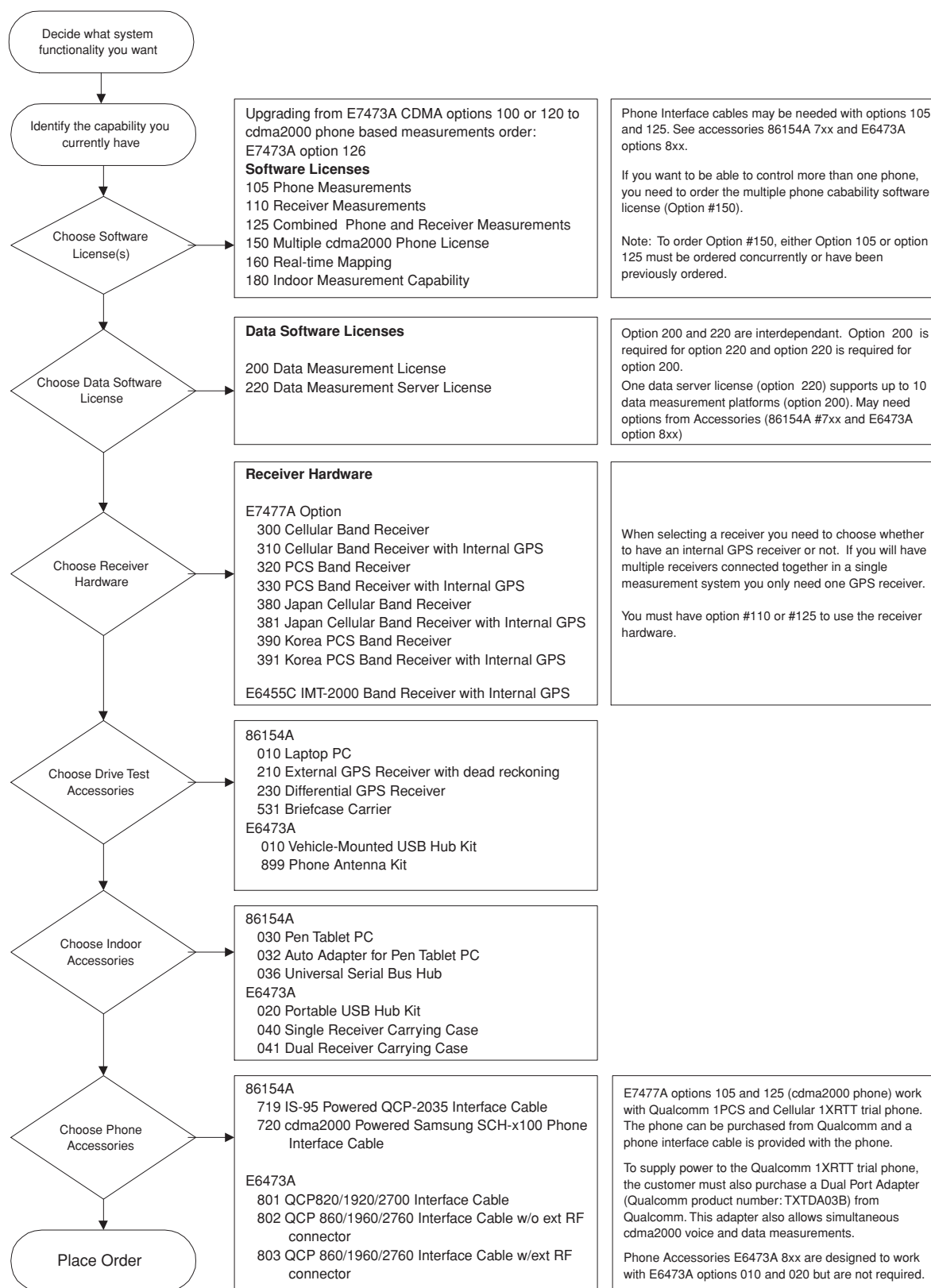


Figure 2. Ordering Decision Process - Upgrades

Part 6: Ordering examples

Table 5 lists several typical E7477A system configurations along with the products and options that need to be ordered for each configuration. This is not a complete list of all possible configurations, but it uses typical configurations to illustrate the ordering process.

Desired System Capability	You need to order:	Description	Quantity
Phone Based Measurement System (single phone). You will provide your own GPS and laptop. You will provide your own cdma2000 phone and interface cable (i.e. QUALCOMM 1XR TT trial phone which includes interface cable from QUALCOMM). Data Test Measurements for one client. Note: Phones supplied by customer.	E7477A	cdma2000 Drive Test system	1
	Option 105	cdma2000 Phone Measurement Software	1
	Option 200	Data Measurement Software License	1
	Option 220	Data Measurement Server Software License	1
	QUALCOMM 1XR TT Phone QUALCOMM Dual Port Adapter	QUALCOMM cdma2000 trial phone with interface cable QUALCOMM dual port adapter to get voice and data measurements simultaneously - also powers phone.	Purchase from QUALCOMM (1 each)
Phone Based Measurement System (single phone). Desire real-time mapping. Cable for Samsung SCH-x100 cdma2000 phone. Carrying Case for the system. You want GPS and laptop PC included with system. Note: Phones – including Samsung SCH-x100 - must be supplied by customer.	E7477A	cdma2000 Drive Test System	1
	Option 105	cdma2000 Phone Measurement Software	1
	Option 160	Real-time Mapping Software License	1
	Agilent 86154A	Drive System Accessories	1
	Option 010	Laptop PC	1
	Option 020	External GPS with DR	1
	Option 531	Briefcase Carrier	1
	Option 720	Interface Cable for Samsung SCH-x100	1
Phone Based Measurement System (four phones). Cable for IS-95 QCP 860, Cable for QCP2760 (no need for external RF). Want to power up phones. Want to use QUALCOMM 1XR TT Trail Phone. In vehicle use. You provide own GPS and PC. Note: Phones – including QCP860, QCP2760, and QUALCOMM 1XR TT trial phone - must be supplied by customer.	E7477A	cdma2000 Drive Test System	1
	Option 105	cdma2000 Phone Measurement Software	1
	Option 150	Multiple Phone License	1
	E6473A	Network Optimization Solution - Accessories	1
		In Vehicle USB Hub	2
	#010	QCP 860/2960/2760 Phone Interface Cable w/o external RF Connection	
	#802		
	QUALCOMM 1XR TT Phone QUALCOMM Dual Port Adapter	QUALCOMM cdma2000 trial phone with interface cable QUALCOMM dual port adapter to power up phones.	Purchase from QUALCOMM (1 each)
Receiver based measurement system for the cellular band. Carrying case for the system. You will provide your own GPS and laptop.	E7477A	cdma2000 Drive test system	1
	Option 110	Receiver measurement software	1
	Option 300	Cellular band RF digital receiver	1
	Agilent 86154A	Drive system accessories	1
	Option 531	Briefcase carrier	1
Receiver based measurement system for the cellular band with internal GPS. Carrying case for the system. You will provide your own laptop.	E7477A	cdma2000 Drive test system	1
	Option 110	Receiver measurement software	1
	Option 310	Cellular receiver with internal GPS	1
	Agilent 86154A	Drive system accessories	1
	Option 531	Briefcase carrier	1

Receiver based measurement system for the cellular band. Dead reckoning. Carrying case for the system. You want the GPS included with the system. You will provide your own laptop.	E7477A	Drive test system	1
	Option 110	Receiver measurement software	1
	Option 300	Cellular band RF digital receiver	1
	Agilent 86154A	Drive system accessories	1
	Option 210	External GPS with DR	1
	Option 531	Briefcase carrier	1
Combined Phone- and Receiver-based measurement system for the cellular band (single phone). Want Internal GPS. Using QUALCOMM 1XRTT Trial Phone. Need data test measurements for 2 clients. Need carrying case. You provide own laptop.	E7477A	cdma2000 Drive Test System	1
	Option 125	cdma2000 combination Phone- and Receiver- based measurement software	1
	Option 200	Data Measurement Software License	2
	Option 220	Data Measurement Server Software License.	1
	Option 310	Cellular receiver with internal GPS	1
	86154A	Drive System Accessories	1
	Option 531	Briefcase Carrier	1
	QUALCOMM 1XRTT trial phone	QUALCOMM cdma2000 phone with phone interface cable	Purchase from QUALCOMM (1 each)
	QUALCOMM Dual Port Adapter	QUALCOMM dual port adapter to power phone and to get voice and data measurements simultaneously	
Combined Phone- and Receiver-based measurement system for the PCS band (four phone). Want to measure up to 4 frequencies simultaneously on the receivers. Want Internal GPS. Want real-time mapping. Want data test measurements for 1 client. Using Samsung SCH-x100 phone. Using QUALCOMM 1XRTT trial phone. Using QCP 2760 phone. Also using cdmaOne QCP 2760 phone. Want to power up all phones. Want carrying case. You provide own laptop.	E7477A	cdma2000 Drive Test System	1
	Option 125	cdma2000 combination Phone- and Receiver-based measurement software.	1
	Option 150	Multiple Phone License	1
	Option 160	Real-time mapping software License	1
	Option 200	Data Measurement Software License	1
	Option 220	Data Server Measurement Software License	1
	Option 320	PCS Band Receiver	1
	Option 330	PCS Band Receiver with Internal GPS	1
	E6473A	Network Optimization Solution - Accessories	1
	Option 010	Vehicle Mount USB Hub	1
	Option 802	QCP 860/2960/2760 Phone Interface Cable w/o external RF Connection	1
	86154A	Drive System Accessories	1
	Option 531	Briefcase Carrier	1
	Option 720	Samsung SCH-x100 non-powered Phone Interface Cable	1
Note: Phones - including QCP 2760, Samsung SCH-x100, and QUALCOMM 1XRTT trial phone - must be supplied by customer.	QUALCOMM 1XRTT trial phone	QUALCOMM cdma2000 phone with interface cable	Purchase from QUALCOMM (1 each)
	QUALCOMM dual port adapter	QUALCOMM dual port adapter to power up phone and to get voice and data measurements simultaneously	
Already have E7473A Options 100 or 120 and need cdma2000 capabilities. Need data test capabilities for one client.	E7473A	CDMA Drive Test System	1
	Option 126	cdma2000 phone based measurement software upgrade from cdmaOne phone measurement	1
	E7477A	cdma2000 Drive Test System	1
	Option 200	Data Measurement Software License	1
	Option 220	Data Server Measurement Software License	1

Table 4. Typical ordering configurations

Product Literature

Configuration guides

E7474A TDMA Drive-Test5968-5861E

E7475A GSM Drive-Test5968-5563E

E7490A CDMA Over-Air

Maintenance Tool.....5968-8696E

Technical specifications

E7473A CDMA Drive-Test5968-5555E

E7474A TDMA Drive-Test5968-5556E

E7475A GSM Drive-Test5968-5564E

E7477A cdma2000 Drive-Test5980-2306E

E7490A CDMA BTS

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E7490A CDMA Over-Air

Maintenance Tool.....5968-8697E

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Agilent Indoor Wireless

Measurement Systems5968-8691E

Product Notes

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Our Promise

Our Promise means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

Your Advantage

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