

Keysight E6640A

EXM Wireless Test Set

Configuration Guide



Introduction

Solve today, evolve tomorrow

The Keysight Technologies, Inc. EXM wireless test set scales with your production needs and is in sync with the latest cellular and WLAN chipsets. Better yet, it delivers the speed, accuracy, and port density you need to ramp up rapidly and optimize full-volume manufacturing. It is optimized for multi-device testing with up to four TRXs: each is a complete vector signal analyzer/vector signal generator (VSA/VSG). It can easily test multi-format devices, including LTE-Advanced, LTE FDD/TDD, HSPA+, W-CDMA, 1xEV-DO, cdma2000®, GSM/EDGE/EDGE Evo, TD-SCDMA, 802.11 a/b/g/n/j/p/ac /af/ah/ax, *Bluetooth*®, GNSS, PHS, Mobile WiMAX™, Zigbee, DECT, and digital video.

Overview

This configuration guide contains a step-by-step process to help you configure your E6640A EXM wireless test set with hardware, software, accessories, and services to meet your specific test requirements, or to add upgrades to an existing EXM.

What is Included in the Base Product

- PXle chassis: 18 slot
- PXle embedded controller: Quad-core Intel Core i7, Microsoft Windows Embedded Standard (WES) 7 operating system
- PXle frequency reference: 10 and 100 MHz
- E6640A-B40: 40 MHz bandwidth on any TRX ordered
- V9060B-2FP: Test set measurement application, fixed perpetual license applies to all TRXs ordered
- V9065B-2FP: Sequence analyzer application, fixed perpetual license applies to all TRXs ordered
- Waveform 50-pack (quantity 3): E6640A-250, E6640A-251, and E6640A-252 apply to all TRXs ordered
- Country-specific power cord
- Display port to VGA adapter
- Getting Started Guide in hardcopy

Select Hardware (required)

Configure your EXM with 1 to 4 TRX



The EXM provides either two full-duplex and two half-duplex ports, or four full-duplex ports, depending on your application requirements)	
Full-duplex	Acts as an input and output simultaneously. For example, it can connect to both the VSA/VSG of a single TRX at the same time. Full-duplex ports are designated as follows: RFIOx where x can be 1 or 2 for the E6640A-2FD option (default) (e.g. RFIO1); and x can be 1, 2, 3, or 4 on Option E6640A-4FD (e.g. RFIO3)
Half duplex	Acts as either input or output but not both simultaneously. The configuration of the half-duplex ports can be set via the front panel or remote programming. The half-duplex ports are designated as RFx I O where x is either 3 or 4 (e.g. RF3 I O)
Ordering number	Description
Select E6640A TRX port type (select one, applies to all TRXs configured within one mainframe)	
E6640A-2FD	TRX configuration for 2 full-duplex (2FD) and 2 half-duplex ports (default selection)
E6640A-4FD	TRX configuration for 4 full-duplex (4FD) ports
Select the E6640A TRX configuration with the desired TRX capabilities	
E6640A-001	Add TRX1 to EXM (required)
Choose frequency range option for the first TRX (select one)	
E6640A-5FM	Frequency range 76-110 MHz and 207-222MHz (Tx only)
E6640A-504	380 MHz to 3.8 GHz (cellular communications)
E6640A-5WC	1.1 to 1.8, 2.3 to 2.6, and 4.8 to 6 GHz (wireless connectivity)
E6640A-506	380 MHz to 6 GHz (cellular communications and wireless connectivity)
Choose measurement bandwidth option for the first TRX (optional, select one. Note: the standard bandwidth for all TRXs is 40 MHz)	
E6640A-B85	80 MHz bandwidth
E6640A-B1X	160 MHz bandwidth
E6640A-002	Add TRX2 to EXM (optional, requires E6640A-001)
Choose frequency range option for the second TRX (select one)	
E6640A-5FM	Frequency range 76-110 MHz and 207-222MHz (Tx only)
E6640A-504	380 MHz to 3.8 GHz (cellular communications)
E6640A-5WC	1.1 to 1.8, 2.3 to 2.6, and 4.8 to 6 GHz (wireless connectivity)
E6640A-506	380 MHz to 6 GHz (cellular communications and wireless connectivity)
Choose measurement bandwidth option for the second TRX (optional, select one. Note: the standard bandwidth for all TRXs is 40 MHz)	
E6640A-B85	80 MHz bandwidth
E6640A-B1X	160 MHz bandwidth
E6640A-003	Add TRX3 to EXM (optional, requires E6640A-002 and E6640A-001)
Choose frequency range option for the third TRX (select one)	
E6640A-5FM	Frequency range 76-110 MHz and 207-222MHz (Tx only)
E6640A-504	380 MHz to 3.8 GHz (cellular communications)
E6640A-5WC	1.1 to 1.8, 2.3 to 2.6, and 4.8 to 6 GHz (wireless connectivity)
E6640A-506	380 MHz to 6 GHz (cellular communications and wireless connectivity)
Choose measurement bandwidth option for the third TRX (optional, select one. Note: the standard bandwidth for all TRXs is 40 MHz)	
E6640A-B85	80 MHz bandwidth
E6640A-B1X	160 MHz bandwidth

Select Hardware (required) (continued)

Ordering number	Description
Select the E6640A TRX configuration with the desired TRX capabilities (continued)	
E6640A-004	Add TRX4 to EXM (optional, requires E6640A-003, E6640A-002, and E6640A-001)
Choose frequency range option for the fourth TRX (select one)	
E6640A-5FM	Frequency range 76-110 MHz and 207-222MHz (Tx only)
E6640A-504	380 MHz to 3.8 GHz (cellular communications)
E6640A-5WC	1.1 to 1.8, 2.3 to 2.6, and 4.8 to 6 GHz (wireless connectivity)
E6640A-506	380 MHz to 6 GHz (cellular communications and wireless connectivity)
Choose measurement bandwidth option for the fourth TRX (optional, select one. Note: the standard bandwidth for all TRXs is 40 MHz)	
E6640A-B85	80 MHz bandwidth
E6640A-B1X	160 MHz bandwidth
Select the license for True MIMO measurement (optional, select one)	
E6640A-M22	Up to 2x2 True MIMO
E6640A-M33	Up to 3x3 True MIMO
E6640A-M44	Up to 4x4 True MIMO

Select Measurement Applications or Software and License Types

All measurement applications, Signal Studio, and waveform pack licenses apply to all TRXs configured in the EXM. Measurement applications that start with the “V” prefix are *measurement only* applications and require waveform pack licenses for waveform playback. Applications that start with the “Y” prefix are combined *measurement and waveform* applications and include the same measurement capability as the corresponding “V” application, as well as unlimited waveform playback capability for the technology selected. Both “V” and “Y” applications can co-exist in the same EXM.

Step 1. Choose the applications (required)		
Fixed perpetual	Transportable perpetual	Description
Cellular communications		
V9071B/Y9071B GSM/EDGE		
V9071B-2FP	V9071B-2TP	GSM/EDGE measurement application
Y9071B-2FP	Y9071B-2TP	GSM/EDGE measurement and waveform application
V9071B-3FP	V9071B-3TP	EDGE Evo measurement application; requires V9071B-2FP/2TP
Y9071B-3FP	Y9071B-3TP	EDGE Evo measurement and waveform application; requires Y9071B-2FP/2TP
V9072B/Y9072B cdma2000		
V9072B-2FP	V9072B-2TP	cdma2000 measurement application
Y9072B-2FP	Y9072B-2TP	cdma2000 measurement and waveform application
V9073B/Y9073B W-CDMA		
V9073B-1FP	V9073B-1TP	W-CDMA measurement application
Y9073B-1FP	Y9073B-1TP	W-CDMA measurement and waveform application
V9073B-2FP	V9073B-2TP	HSDPA/HSUPA measurement application; requires V9073B-1FP/1TP
Y9073B-2FP	Y9073B-2TP	HSDPA/HSUPA measurement and waveform application; requires Y9073B-1FP/1TP
V9073B-3FP	V9073B-3TP	HSPA+ measurement application; requires V9073B-1FP/1TP and V9073B-2FP/2TP
Y9073B-3FP	Y9073B-3TP	HSPA+ measurement and waveform application; requires Y9073B-1FP/1TP and Y9073B-2FP/2TP
V9076B/Y9076B 1xEV-DO		
V9076B-1FP	V9076B-1TP	1xEV-DO measurement application
Y9076B-1FP	Y9076B-1TP	1xEV-DO measurement and waveform application

Select Measurement Applications or Software and License Types (continued)

V9079B/Y9079B TD-SCDMA		
V9079B-1FP	V9079B-1TP	TD-SCDMA measurement application
Y9079B-1FP	Y9079B-1TP	TD-SCDMA measurement and waveform application
V9079B-2FP	V9079B-2TP	TD-HSPA measurement application; requires V9079B-1FP/1TP
Y9079B-2FP	Y9079B-2TP	TD-HSPA measurement and waveform application; requires Y9079B-1FP/1TP
V9080B/Y9080B LTE/LTE-Advanced FDD/NB-IOT and eMTC		
V9080B-1FP	V9080B-1TP	LTE FDD measurement application
Y9080B-1FP	Y9080B-1TP	LTE FDD measurement and waveform application
V9080B-2FP	V9080B-2TP	LTE-Advanced FDD measurement application; requires V9080B-1FP/1TP
Y9080B-2FP	Y9080B-2TP	LTE-Advanced FDD measurement and waveform application; requires Y9080B-1FP/1TP
V9080B-3FP	V9080B-3TP	NB-IoT and eMTC measurement application
V9082B/Y9082B LTE/LTE-Advanced TDD		
V9082B-1FP	V9082B-1TP	LTE TDD measurement application
Y9082B-1FP	Y9082B-1TP	LTE TDD measurement and waveform application
V9082B-2FP	V9082B-2TP	LTE-Advanced TDD measurement application; requires V9082B-1FP/1TP
Y9082B-2FP	Y9082B-2TP	LTE-Advanced TDD measurement and waveform application; requires Y9082B-1FP/1TP
Wireless connectivity		
V9077B/Y9077B WLAN		
V9077B-2FP	V9077B-2TP	WLAN 802.11a/b/g/j/p measurement application
Y9077B-2FP	Y9077B-2TP	WLAN 802.11a/b/g/j/p measurement and waveform application
V9077B-3FP	V9077B-3TP	WLAN 802.11n measurement application; requires V9077B-2FP/2TP
Y9077B-3FP	Y9077B-3TP	WLAN 802.11n measurement and waveform application; requires Y9077B-2FP/2TP
V9077B-4FP ¹	V9077B-4TP ¹	WLAN 802.11ac measurement application; requires V9077B-2FP/2TP and V9077B-3FP/3TP
Y9077B-4FP ¹	Y9077B-4TP ¹	WLAN 802.11ac measurement and waveform application; requires Y9077B-2FP/2TP and Y9077B-3FP/3TP
V9077B-6FP	V9077B-6TP	WLAN 802.11ah measurement application
Y9077B-6FP	Y9077B-6TP	WLAN 802.11ah measurement and waveform application
V9077B-7FP	V9077B-7TP	WLAN 802.11af measurement application
V9077B-8FP ²	V9077B-8TP ²	WLAN 802.11ax measurement application
Y9077B-8FP ²	Y9077B-8TP ²	WLAN 802.11ax measurement application and waveform application
V9077B-MFP ²	V9077B-MTP ²	WLAN 802.11ax Multi-User MIMO and OFDMA measurement; requires V9077B-8FP/8TP
Y9077B-MFP ²	Y9077B-MTP ²	WLAN 802.11ax Multi-User MIMO and OFDMA measurement and waveform application; requires Y9077B-8FP/8TP
Y9077B-EFP ²		WLAN Measurement and Waveform Application Suite; will install Y9077B-2FP/3FP/4FP/8FP/WFP (option-EFP will not be displayed)
V9077B-WFP ²	V9077B-WTP ²	WLAN 802.11ac Wave 2 measurement application; requires V9077B-2FP/2TP and V9077B-3FP/3TP and V9077B-4FP/4TP
Y9077B-WFP ²	Y9077B-WTP ²	WLAN 802.11ac Wave 2 measurement and waveform application; requires Y9077B-2FP/2TP and Y9077B-3FP/3TP and Y9077B-4FP/4TP
V9077B-HFP ²	V9077B-HTP ²	1024QAM measurement; requires V9077B-4FP/4TP or V9077B-8FP/8TP
Y9077B-HFP ²	Y9077B-HTP ²	1024QAM measurement and waveform application; requires Y9077B-4FP/4TP or V9077B-8FP/8TP
V9077B-KFP	V9077B-KTP	WLAN combined stream MIMO measurements
V9077B-VFP ²	V9077B-VTP ²	80+80 measurement application; requires V9077B-4FP/4TP or V9077B-8FP/8TP

1. V/Y9077B-4FP/4TP requires at least E6640A-B85 for WLAN 802.11ac measurement for 80 MHz and E6640A-B1X for WLAN 802.11ac measurement for 160 MHz.

2. Requires M9432A or M9433A: V/Y9077B-8FP/8TP; V/Y9077B-MFP/MTP; Y9077B-EFP; V/Y9077B-WFP/WTP; V/Y9077B-HFP/HTP; V9077B-VFP/VTP

Select Measurement Applications or Software and License Types (continued)

V9081B/Y9081B Bluetooth		
V9081B-2FP	V9081B-2TP	Bluetooth measurement application
Y9081B-2FP	Y9081B-2TP	Bluetooth measurement and waveform application
V9081B-3FP	V9081B-3TP	Advanced Bluetooth 5.0 measurement application; requires V9081B-2FP/2TP
Y9081B-3FP	Y9081B-3TP	Advanced Bluetooth 5.0 measurement and waveform application; requires Y9081B-2FP/2TP
V9075B/Y9075B Mobile WiMAX		
V9075B-2FP	V9075B-2TP	Mobile WiMAX measurement application
Y9075B-2FP	Y9075B-2TP	Mobile WiMAX measurement and waveform application
General purpose		
E6640A-BTS Adds downlink measurement capability; requires V9065B-1FP/1TP		
V9063B analog demodulation measurement application		
V9063B-2FP	V9063B-2TP	Analog demodulation measurement application
V9064B vector signal analysis		
V9064B-1FP	V9064B-1TP	Vector signal analysis application, VXA
V9064B-2FP	V9064B-2TP	Flexible digital modulation analysis measurement
V9065B Sequence analyzer application		
V9065B-1FP	V9065B-1TP	Sequence analyzer for BTS application
V9065B-3FP	V9065B-3TP	Sequence analyzer, IEEE 802.15.4 for ZigBee application
V9065B-4FP	V9065B-4TP	Sequence analyzer, ITU G.9959 for Z-Wave application
Switched MIMO capability		
V9065B-SFP	V9065B-STP	Switched MIMO capability; requires V9077B-2FP/2TP and V9077B-3FP/3TP for 802.11n Switched MIMO; requires V9077B-2FP/2TP, V9077B-3FP/3TP and V9077B-4FP/4TP for 802.11ac Switched MIMO

1. V/Y9077B-4FP/4TP requires at least E6640A-B85 for WLAN 802.11ac measurement for 80 MHz and E6640A-B1X for WLAN 802.11ac measurement for 160 MHz.
2. V/Y9077B-WFP/WTP requires M9432A or M9433A if ordered stand-alone, please contact Keysight for more information.

Select Measurement Applications or Software and License Types (continued)

All measurement applications, Signal Studio, and waveform pack licenses apply to all TRXs configured in the EXM.

Note: If “Y” application licenses are selected you do not need to purchase the corresponding Signal Studio license. The Signal Studio software can be downloaded from www.keysight.com at no charge and unlimited waveforms, for the specific “Y” application purchased, can be created and loaded into the EXM.

Step 2. Choose the Signal Studio software (optional)		
Fixed perpetual	Transportable perpetual	Description
Cellular communications		
N7600B Signal Studio for W-CDMA/HSPA+		
N7600B-EFP	N7600B-ETP	Basic W-CDMA/HSPA R7
N7600B-FFP	N7600B-FTP	Basic W-CDMA/HSPA+ R8
N7600B-QFP	N7600B-QTP	Advanced W-CDMA/HSPA+ R10
N7601B Signal Studio for cdma2000/1xEV-DO		
N7601B-EFP	N7601B-ETP	Basic cdma2000
N7601B-QFP	N7601B-QTP	Advanced cdma2000
N7601B-FFP	N7601B-FTP	Basic 1xEV-DO
N7601B-RFP	N7601B-RTP	Advanced 1xEV-DO
N7602B Signal Studio for GSM/EDGE/EDGE Evo		
N7602B-EFP	N7602B-ETP	Basic GSM/EDGE
N7602B-FFP	N7602B-FTP	Basic EDGE Evo
N7602B-QFP	N7602B-QTP	Advanced GSM/EDGE/EDGE Evo
N7612B Signal Studio for TD-SCDMA/HSDPA		
N7612B-EFP	N7612B-ETP	Basic TD-SCDMA/HSDPA
N7612B-QFP	N7612B-QTP	Advanced TD-SCDMA/HSDPA
N7624B Signal Studio for LTE/LTE-Advanced		
N7624B-HFP	N7624B-HTP	Basic LTE FDD
N7624B-SFP	N7624B-STP	Advanced LTE FDD
N7624B-JFP	N7624B-JTP	Basic LTE-Advanced FDD
N7624B-NFP	N7624B-NTP	Advanced LTE-A Pro FDD
N7625B Signal Studio for LTE/LTE-Advanced TDD		
N7625B-EFP	N7625B-ETP	Basic LTE TDD R9
N7625B-QFP	N7625B-QTP	Advanced LTE TDD R9
N7625B-JFP	N7625B-JTP	Basic LTE-Advanced TDD R10
Wireless connectivity		
N7617B Signal Studio for WLAN 802.11a/b/g/j/p/n/ac/ah/ax		
N7617B-FFP	N7617B-FTP	Basic 802.11a/b/g/j/p/n WLAN
N7617B-RFP	N7617B-RTP	Advanced 802.11a/b/g/j/p/n WLAN
N7617B-GFP	N7617B-GTP	Basic 802.11ac WLAN
N7617B-TFP	N7617B-TTP	Advanced 802.11ac WLAN
N7617B-JFP	N7617B-JTP	Basic 802.11ah
N7617B-UFP	N7617B-UTP	Advanced 802.11ah
N7617B-VFP	N7617B-VTP	Advanced 802.11ax
N7606B Signal Studio for <i>Bluetooth</i>		
N7606B-QFP	N7606B-QTP	Advanced <i>Bluetooth</i> V 1.1
N7606B-RFP	N7606B-RTP	Advanced <i>Bluetooth</i> V 2.1+EDR
N7606B-SFP	N7606B-STP	Advanced <i>Bluetooth</i> Low Energy 4.0
N7606B-TFP	N7606B-TTP	Advanced <i>Bluetooth</i> Low Energy 5.0
N7609B Signal Studio for Global Navigation Satellite Systems (GNSS)		
N7609B-EFP	N7609B-ETP	Basic single satellite waveforms

Select Measurement Applications or Software and License Types (continued)

All measurement applications, Signal Studio, and waveform pack licenses apply to all TRXs configured in the EXM.

Step 2. Choose the Signal Studio software (optional)		
Fixed perpetual	Transportable perpetual	Description
General purpose		
N7611B Signal Studio for Broadcast Radio		
N7611B-RFP	N7611B-RTP	Advanced DAB/DAB+/DMB
N7611B-SFP	N7611B-STP	ETI support for DAB/DMB
N7623B Signal Studio for Digital Video		
N7623B-NFP	N7623B-NTP	Advanced ATSC-M/H
N7623B-PFP	N7623B-PTP	Advanced BER tools
N7623B-QFP	N7623B-QTP	Advanced DVB-T/H/C/J.83 Annex A/C
N7623B-RFP	N7623B-RTP	Advanced ISDB-T
N7623B-SFP	N7623B-STP	Advanced DTMB
N7623B-UFP	N7623B-UTP	Advanced ATSC
N7623B-VFP	N7623B-VTP	Advanced DVB-S
N7623B-WFP	N7623B-WTP	Advanced DVB-S2
N7623B-YFP	N7623B-YTP	Advanced CMMB
N7623B-ZFP	N7623B-ZTP	Advanced DVB-T2
Step 3. Choose the Waveform 5 and 50-pack (optional)		
Ordering number	Description	
E6640A-221-229	Waveform license 5-pack 1 to 9	
E6640A-253-259 ¹	Waveform license 50-pack 4 to 10	

1. Waveform 50-pack (quantity 3): E6640A-250, 251, and 252 are included as standard in the base product.

Select Accessories (optional)

Choose the accessories (optional)	
Ordering number	Description
E6640A-KYB	Keyboard, USB
E6640A-MSE	Mouse, USB
E6640A-1CP	Rack mount and front handle kit
Y1217A	Rack rail kit

Select Warranty, Calibration, and Services (optional)

Ordering number	Description
Step 1. Choose a warranty plan (optional)	
Standard	Return-to-Keysight warranty: 3 years ¹
R-51B-001-5Z	Warranty Assurance Plan - Return-to-Keysight: 5 years
Step 2. Choose calibration certificate	
E6640A-UK6	Commercial calibration certificate with test data
Step 3. Choose services (optional)	
PS-S20	Startup assistance
PS-S20-01	Recommended startup assistance
PS-S10	Remote scheduled productivity assistance. Select 1 to 999 hours
PS-X10	Custom services to be qualified by a Keysight technical consultant

1. For more detailed information on the Keysight 3-year warranty go to www.keysight.com/find/ThreeYearWarranty.

Select Upgrades (optional)

These upgrade options can be added after your initial purchase to increase your product capabilities, including hardware, software, and accessories according to your specific test requirements.

There are two types of hardware upgrades:

1. Add one or more TRX(s) to an existing unit (up to a maximum total of four TRXs per EXM)
2. Upgrade existing TRX(s) capabilities (frequency range and/or measurement bandwidth) via a license key (these do not require additional hardware)

Measurement application and Signal Studio software can be ordered standalone as an upgrade. All measurement application, Signal Studio, and waveform pack licenses apply to all TRXs configured in the EXM.

Hardware upgrade to add TRX	
Increase the TRX count	
Ordering number	Description
Choose TRX type (select one)	
E6640AU-TR2	Add two full-duplex and two half-duplex ports TRX to EXM, may only be added to an existing 2FD unit
E6640AU-TR3	Add four full-duplex ports TRX to EXM, may only be added to an existing 4FD unit
Choose frequency range option for the added TRX (select one)	
E6640AU-504	380 to 3.8 GHz (cellular communications)
E6640AU-5WC	1.1 to 1.8, 2.3 to 2.6, and 4.8 to 6 GHz (wireless connectivity)
E6640AU-506	380 MHz to 6 GHz (cellular communications and wireless connectivity)
Choose measurement bandwidth option for the added TRX (optional ¹ , select one)	
E6640AU-B85	80 MHz bandwidth
E6640AU-B1X	160 MHz bandwidth
Choose commercial calibration certificate for each TRX added (one per TRX) (optional)	
E6640AU-UK6	Commercial calibration certificate with test data

1. The standard measurement bandwidth for all TRXs is 40 MHz.

Hardware upgrade to add capabilities to your existing TRX via license key ¹	
Upgrade TRX frequency range and measurement bandwidth for your existing TRX via license key	
Ordering number	Description
Upgrade frequency range option for any existing 2FD TRX (optional)	
E6640AW-516	Upgrade from 504 to 506 on 2FD TRX
E6640AW-526	Upgrade from 5WC to 506 on 2FD TRX
E6640AW-5FM	Upgrade Frequency range 76-110 MHz and 207-222 MHz
Upgrade measurement bandwidth option for any existing 2FD TRX (optional)	
E6640AW-B85	Upgrade from 40 to 80 MHz on 2FD TRX
E6640AW-B1X	Upgrade from 40 to 160 MHz on 2FD TRX
E6640AW-BU5	Upgrade from 80 to 160 MHz on 2FD TRX
Upgrade frequency range option for any existing 4FD TRX (optional)	
E6640AT-516	Upgrade from 504 to 506 on 4FD TRX
E6640AT-526	Upgrade from 5WC to 506 on 4FD TRX
E6640AT-5FM	Upgrade Frequency range 76-110 MHz and 207-222 MHz
Upgrade measurement bandwidth option for any one existing 4FD TRX (optional)	
E6640AT-B85	Upgrade from 40 to 80 MHz on 4FD TRX
E6640AT-B1X	Upgrade from 40 to 160 MHz on 4FD TRX
E6640AT-BU5	Upgrade from 80 to 160 MHz on 4FD TRX

1. If you need to add frequency range or measurement bandwidth capabilities for more than one TRX, please upgrade each TRX individually.

Select Upgrades (optional) (continued)

Software upgrades	
Ordering number	Description
E6640AU-221-229	Waveform license 5-pack 1 to 9 upgrades
E6640AU-253-259	Waveform license 50-pack 4 to 10 upgrades
Accessory upgrades	
Ordering number	Description
E6640AU-KYB	Keyboard, USB
E6640AU-MSE	Mouse, USB
E6640AU-1CP	Rack mount and front handle kit

Example Configurations

4-up TRX for cellular communications configuration		
	Ordering	Description
Hardware	E6640A-001	Add TRX1 to EXM
	E6640A-5FM	Frequency range 76-110 MHz and 207-222MHz (Tx only)
	E6640A-504	380 MHz to 3.8 GHz
	E6640A-002	Add TRX2 to EXM
	E6640A-5FM	Frequency range 76-110 MHz and 207-222MHz (Tx only)
	E6640A-504	380 MHz to 3.8 GHz
	E6640A-003	Add TRX3 to EXM
	E6640A-5FM	Frequency range 76-110 MHz and 207-222MHz (Tx only)
	E6640A-504	380 MHz to 3.8 GHz
	E6640A-004	Add TRX4 to EXM
	E6640A-5FM	Frequency range 76-110 MHz and 207-222MHz (Tx only)
	E6640A-504	380 MHz to 3.8 GHz
Software	V9071B-2FP or 2TP	GSM/EDGE measurement application
	V9071B-3FP or 3TP	EDGE Evo measurement application
	V9072B-2FP or 2TP	cdma2000 measurement application
	V9073B-1FP or 1TP	W-CDMA measurement application
	V9073B-2FP or 2TP	HSDPA/HSUPA measurement application
	V9073B-3FP or 3TP	HSPA+ measurement application
	V9076B-1FP or 1TP	1xEV-DO measurement application
	V9079B-1FP or 1TP	TD-SCDMA measurement application
	V9079B-2FP or 2TP	TD-HSPA measurement application
	V9080B-1FP or 1TP	LTE FDD measurement application
	V9082B-1FP or 1TP	LTE TDD measurement application

Example Configurations (continued)

2-up TRX for WLAN 802.11a/b/g/n/ac, 802.11ac Wave 2 measurements (with unlimited WLAN waveforms), Switched MIMO, True MIMO, and Bluetooth configuration

	Ordering	Description
Hardware	E6640A-001	Add TRX1 to EXM
	E6640A-5WC	1.1 to 1.8, 2.3 to 2.6, and 4.8 to 6 GHz
	E6640A-B1X	160 MHz bandwidth
	E6640A-002	Add TRX2 to EXM
	E6640A-5WC	1.1 to 1.8, 2.3 to 2.6, and 4.8 to 6 GHz
	E6640A-B1X	160 MHz bandwidth
	E6640A-M22	Up to 2x2 True MIMO
Software	Y9077B-2FP or 2TP	WLAN 802.11a/b/g measurement and waveform application
	Y9077B-3FP or 3TP	WLAN 802.11n measurement and waveform application
	Y9077B-4FP or 4TP	WLAN 802.11ac measurement and waveform application
	Y9077B-WFP or WTP	WLAN 802.11ac Wave 2 measurement and waveform application
	V9065B-SFP or STP	Switched MIMO capability
	V9081B-2FP or 2TP	Bluetooth measurement application

Hardware upgrade configuration – Example 1

Add two TRXs: One for wireless connectivity, the other for cellular communications

	Ordering	Description
	E6640AU-TR2	Add 2FD TRX to EXM
	E6640AU-5WC	1.1 to 1.8, 2.3 to 2.6, and 4.8 to 6 GHz
	E6640AU-B1X	160 MHz bandwidth
	E6640AU-TR2	Add 2FD TRX to EXM
	E6640AU-504	380 MHz to 3.8 GHz

Hardware upgrade configuration – Example 2

Add capabilities to your existing TRX via license key

	Ordering	Description
Upgrade frequency range and measurement bandwidth for your existing 2FD TRX1		
	E6640AW-516	Upgrade from 504 to 506
	E6640AW-B1X	Upgrade from 40 to 160 MHz

Upgrade frequency range for your existing 4FD TRX2

	E6640AT-526	Upgrade from 5WC to 506
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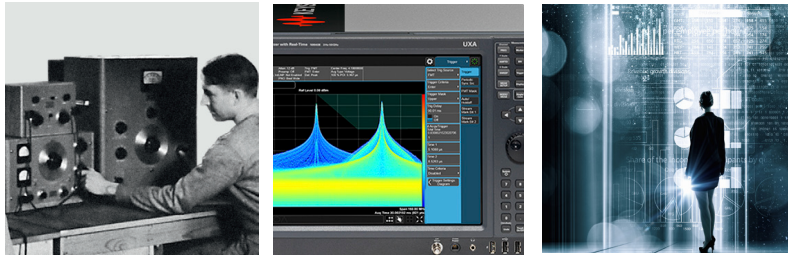
Hardware upgrade configuration – Example 3

Add one 4FD TRX

	Ordering	Description
	E6640AU-TR3	Add TRX to EXM
	E6640AU-504	380 MHz to 3.8 GHz

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