Keysight E6640A
EXM Wireless Test Set

Configuration Guide

KEYSIGHT
TECHNOLOGIES

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, 802.11a/b/g/n/ac, Bluetooth®, GNSS, and digital video.
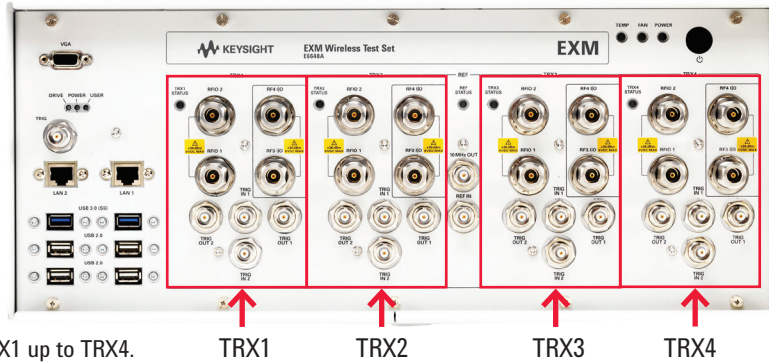
Overview

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

- PXIe chassis: 18 slot
- PXIe embedded controller: Quad-core Intel Core i7, Microsoft Windows Embedded Standard (WES) 7 operating system
- PXIe 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
- Getting Started Guide in hardcopy

Select Hardware (required)

Configure your EXM with TRX1 up to TRX4.

TRX1   TRX2   TRX3   TRX4

Select the E6640A TRX configuration with the desired TRX capabilities	
Ordering number	**Description**
E6640A-001	**Add TRX1 to EXM (required)**
Choose frequency range option for the first TRX (select one)	
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)	
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-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)	
E6640A-B85	80 MHz bandwidth
E6640A-B1X	160 MHz bandwidth
E6640A-003	**Add TRX3 to EXM (optional, requires E6640A-002 and E6630A-001)**
Choose frequency range option for the third TRX (select one)	
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)	
E6640A-B85	80 MHz bandwidth
E6640A-B1X	160 MHz bandwidth
E66 40A-004	**Add TRX4 to EXM (optional, requires E6640A-003, E6640A-002, and E6630A-001)**
Choose frequency range option for the fourth TRX (select one)	
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)	
E6640A-B85	80 MHz bandwidth
E6640A-B1X	160 MHz bandwidth

The standard measurement bandwidth for all TRXs is 40 MHz.

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.

Step 1. Choose the measurement applications (required)

Fixed perpetual	Transportable perpetual	Description
Cellular communications		
V9071B GSM/EDGE measurement application		
V9071B-2FP	V9071B-2TP	GSM/EDGE measurement application
V9071B-3FP	V9071B-3TP	EDGE Evo measurement application; requires V9071B-2FP/2TP
V9072B cdma2000 measurement application		
V9072B-2FP	V9072B-2TP	cdma2000 measurement application
V9073B W-CDMA measurement application		
V9073B-1FP	V9073B-1TP	W-CDMA measurement application
V9073B-2FP	V9073B-2TP	HSDPA/HSUPA measurement application; requires V9073B-1FP/1TP
V9073B-3FP	V9073B-3TP	HSPA+ measurement application; requires V9073B-1FP/1TP and V9073B-2FP/2TP
V9076B 1xEV-DO measurement application		
V9076B-1FP	V9076B-1TP	1xEV-DO measurement application
V9079B TD-SCDMA measurement application		
V9079B-1FP	V9079B-1TP	TD-SCDMA measurement application
V9079B-2FP	V9079B-2TP	TD-HSPA measurement application; requires V9079B-1FP/1TP
V9080B LTE FDD measurement application		
V9080B- 1FP	V9080B-1TP	LTE FDD measurement application
V9082B LTE TDD measurement application		
V9082B-1FP	V9082B-1TP	LTE TDD measurement application
Wireless connectivitzy		
V9077B WLAN measurement application		
V9077B-2FP	V9077B-2TP	WLAN 802.11a/b/g measurement application
V9077B-3FP	V9077B-3TP	WLAN 802.11n measurement application; requires V9077B-2FP/2TP
V9077B-4FP*	V9077B-4TP*	WLAN 802.11ac measurement application; requires V9077B-2FP/2TP and V9077B-3FP/3TP
V9077B-TFP	V9077B-TTP	True MIMO for WLAN measurement application; requires E6640A-XFP/XTP, V9077B-2FP/2TP, and V9077B-3FP/3TP for 802.11n true MIMO; requires E6640A-XFP/XTP, V9077B-2FP/2TP, V9077B-3FP/3TP and V9077B-4FP/4TP for 802.11ac true MIMO
V9081B Bluetooth® measurement application		
V9081B-2FP	V9081B-2TP	Bluetooth measurement application
General purpose		
V9063B analog demodulation measurement application		
V9063B-2FP	V9063B-2TP	Analog demodulation measurement application
TRX synchronization capability		
E6640A-XFP	E6640A-XTP	TRX synchronization capability; enables the synchronization of multiple TRXs (sources or analyzers). For example, this option is required for WLAN true MIMO
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

V9077B-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.

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**
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 R9
N7624B-SFP	N7624B-STP	Advanced LTE FDD R9
N7624B-JFP	N7624B-JTP	Basic LTE-Advanced FDD R10
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/n/ac		
N7617B-EFP	N7617B-ETP	Basic 802.11a/b/g/j/p WLAN
N7617B-QFP	N7617B-QTP	Advanced 802.11a/b/g/j/p WLAN
N7617B-FFP	N7617B-FTP	Basic 802.11n WLAN
N7617B-RFP	N7617B-RTP	Advanced 802.11n WLAN
N7617B-SFP	N7617B-STP	Update to 802.11n WLAN
N7617B-GFP	N7617B-GTP	Basic 802.11ac WLAN
N7617B-TFP	N7617B-TTP	Advanced 802.11ac WLAN
N7617B-HFP	N7617B-HTP	Update to 802.11a/b/g/j/p and 802.11n
N7606B Signal Studio for Bluetooth		
N7606B-QFP	N7606B-QTP	Advanced *Bluetooth* V 1.1
N7606B-RFP	N7606B-RTP	Advanced *Bluetooth* V 2.1+EDR
N7606B-SFP	N7606B-STP	Advanced *Bluetooth* Low Energy
N7609B Signal Studio for Global Navigation Satellite		
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*	Waveform license 50-pack 4 to 10

[1]Signal Studio supports up to the TRX(s) frequency range ordered.

*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 and Start-Up Assistance (optional)

Step 1. Choose a warranty plan (optional)	
Ordering number	**Description**
Standard	Return-to-Keysight warranty: 3 years*
R-51B-001-5Z	Warranty Assurance Plan - Return to Keysight: 5 years
Step 2. Choose services (optional)	
Ordering number	**Description**
PS-S2 0	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

*Note: 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**
E6640AU-TRX	Add TRX to EXM
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*, select one)	
E6640AU-B85	80 MHz bandwidth
E6640AU-B1X	160 MHz bandwidth

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

Hardware upgrade to add capabilities to your existing TRX via license key*	
Upgrade TRX frequency range and measurement bandwidth for your existing TRX via license key	
Ordering number	**Description**
Upgrade frequency range option for any one existing TRX (optional)	
E6640AK-516	Upgrade from 504 to 506
E6640AK-526	Upgrade from 5WC to 506
Upgrade measurement bandwidth option for any one existing TRX (optional)	
E6640AK-B85	Upgrade from 40 to 80 MHz
E6640AK-B1X	Upgrade from 40 to 160 MHz
E6640AK-BU5	Upgrade from 80 to 160 MHz

*The upgrade of a TRX frequency range and measurement bandwidth for your existing TRX does not require additional hardware; they are license-key upgradeable. If you need to add frequency range or measurement bandwidth capabilities for more than one TRXs, please upgrade each TRX individually.

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-504	380 MHz to 3.8 GHz
	E6640A-002	Add TRX2 to EXM
	E6640A-504	380 MHz to 3.8 GHz
	E6640A-003	Add TRX3 to EXM
	E6640A-504	380 MHz to 3.8 GHz
	E6640A-004	Add TRX4 to EXM
	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

2-up TRX for WLAN 802.11a/b/g/n/ac, 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
Software	V9077B-2FP or 2TP	WLAN 802.11a/b/g measurement application
	V9077B-3FP or 3TP	WLAN 802.11n measurement application
	V9077B-4FP or 4TP	WLAN 802.11ac measurement application
	E6640A-XFP or XTP	TRX synchronization capability
	V9077B-TFP or TTP	True MIMO for WLAN measurement application
	V9065B-SFP or STP	Switched MIMO capability
	V9081B-2FP or 2TP	*Bluetooth* measurement application

Example Configurations (continued)

Hardware upgrade configuration – Example 1		
Add two TRXs: One for wireless connectivity, the other f or cellular communications		
	Ordering	**Description**
	E6640AU-TRX	Add 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-TRX	Add TRX to EXM
	E6640AU-504	380 MHz to 3.8 GHz
Hardware upgrade configuration – Example 2		
Add capabilities to y our existing TRX via license key		
	Ordering	**Description**
Upgrade frequency range and measurement bandwidth for your existing TRX1		
	E6640AK-516	Upgrade from 504 to 506
	E6640AK-B1X	Upgrade from 40 to 160 MHz
Upgrade frequency range for your existing TRX2		
	E6640AK-526	Upgrade from 5WC to 506

myKeysight

www.keysight.com/find/mykeysight
A personalized view into the information most relevant to you.

www.pxisa.org

PCI eXtensions for Instrumentation (PXI) modular instrumentation delivers a rugged, PC-based high-performance measurement and automation system.

Three-Year Warranty

www.keysight.com/find/ThreeYearWarranty
Keysight's commitment to superior product quality and lower total cost of ownership. The only test and measurement company with three-year warranty standard on all instruments, worldwide.

Keysight Assurance Plans

www.keysight.com/find/AssurancePlans
Up to five years of protection and no budgetary surprises to ensure your instruments are operating to specification so you can rely on accurate measurements.

www.keysight.com/go/quality

Keysight Technologies, Inc.
DEKRA Certified ISO 9001:2008
Quality Management System

Keysight Channel Partners

www.keysight.com/find/channelpartners
Get the best of both worlds: Keysight's measurement expertise and product breadth, combined with channel partner convenience.

Bluetooth is a trademark owned by Bluetooth SIG, Inc. U.S.A. and licensed to Keysight Technologies, Inc.

cdma2000 is a US registered certification mark of the Telecommunications Industry Association.

www.keysight.com/find/exm
www.keysight.com/find/E6640A

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at:
www.keysight.com/find/contactus

Americas

Canada	(877) 894 4414
Brazil	55 11 3351 7010
Mexico	001 800 254 2440
United States	(800) 829 4444

Asia Pacific

Australia	1 800 629 485
China	800 810 0189
Hong Kong	800 938 693
India	1 800 112 929
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Other AP Countries	(65) 6375 8100

Europe & Middle East

Austria	0800 001122
Belgium	0800 58580
Finland	0800 523252
France	0805 980333
Germany	0800 6270999
Ireland	1800 832700
Israel	1 809 343051
Italy	800 599100
Luxembourg	+32 800 58580
Netherlands	0800 0233200
Russia	8800 5009286
Spain	800 000154
Sweden	0200 882255
Switzerland	0800 805353
	Opt. 1 (DE)
	Opt. 2 (FR)
	Opt. 3 (IT)
United Kingdom	0800 0260637

For other unlisted countries:
www.keysight.com/find/contactus
(BP-09-23-14)

KEYSIGHT
TECHNOLOGIES