

Keysight X8711A IoT Device Functional Test Solution

Notices

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Manual Part Number

X8711-90000

Edition

Edition 6, February 2020

Printed in:

Printed in Malaysia

Published by:

Keysight Technologies
Bayan Lepas Free Industrial Zone,
11900 Penang, Malaysia

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Safety Information

CAUTION









A CAUTION notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Safety Symbols

The following symbols on the instrument and in the documentation indicate precautions which must be taken to maintain safe operation of the instrument.

	Direct current (DC)		Alternating current (AC)
	Caution, risk of electric shock		Caution, risk of danger (refer to this manual for specific Warning or Caution information)
	Standby supply. Unit is not completely connected from AC mains when switched off		Frame or chassis (ground) terminal
	Protective earth (ground) terminal		Equipment protected throughout by double insulation or reinforced insulation

Safety Considerations

Read the information below before using this instrument.

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards for design, manufacture, and intended use of the instrument. Keysight Technologies assumes no liability for the customer's failure to comply with these requirements.

General

Do not use this product in any manner not specified by the manufacturer. The protective features of this product may be impaired if it is used in a manner not specified in the operation instructions.

Before Applying Power

Verify that all safety precautions are taken. Make all connections to the unit before applying power and select the appropriate power line voltage on the fuse module.

Ground the Instrument

This product is provided with protective earth terminals. To minimize shock hazard, the instrument must be connected to the ac power mains through a grounded power cable, with the ground wire firmly connected to an electrical ground (safety ground) at the power outlet. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal will cause a potential shock hazard that could result in personal injury.

Do Not Operate in an Explosive Atmosphere

Do not operate the instrument in the presence of flammable gases or fumes.

Do Not Remove the Instrument Cover

Only qualified, service-trained personal who are aware of the hazards involved should remove instrument covers. Always disconnect the power cable and any external circuits before removing the instrument cover.

Do Not Modify the Instrument

Do not install substitute parts or perform any unauthorized modification to the product. Return the product to a Keysight Sales and Service Office for service and repair to ensure that safety features are maintained.

In Case of Damage

Instruments that appear damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by qualified service personnel.

Environmental Conditions

The X8711A is designed for indoor use and in an area with low condensation. The table below shows the general environmental requirements for this instrument.

Environmental condition	Requirement
Temperature	Operating condition
	– 0 to 40 °C
	Storage condition
	– –40 to 70 °C
Humidity	Operating condition
	– Up to 80% RH at 40 °C (non-condensing)
	Storage condition
	– Up to 95% RH at 40 °C (non-condensing)
Altitude	Up to 2000 m
Pollution degree	2

Regulatory Information

The X8711A complies with the following safety and Electromagnetic Compatibility (EMC) compliances:

Safety compliance

- IEC 61010-1:2010/EN 61010-1:2010; IEC 61010-2-030:2010/EN61010-2-030:2010
- Canada: CAN/CSA-C22.2 No.61010-1-12; CAN/CSA-C22.2 No. 61010-2-030-12
- USA: ANSI/UL Std. No. 61010-1:2012; ANSI/UL Std No.61010-2-030:2012

EMC compliance

- IEC 61326-1:2012 / EN 61326-1:2013
- Canada: ICES/NMB-001:2006
- Australia/New Zealand: AS/NZS CISPR 11:2011

South Korean Class A EMC Declaration







A 급 기기 (업무용 방송통신기자재)

Information to the user:

This equipment has been conformity assessed for use in business environments.
In a residential environment this equipment may cause radio interference.

사 용 자 안 내 문
이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

Regulatory Markings

 <p>The CE mark is a registered trademark of the European Community. This CE mark shows that the product complies with all the relevant European Legal Directives.</p>	 <p>The CSA mark is a registered trademark of the Canadian Standards Association, with the 'C' and 'US' subscript indicates the instrument is certified to the applicable Canadian and United States of America standards respectively.</p>
<p>ICES/NMB-001</p> <p>ICES/NMB-001 indicates that this ISM device complies with the Canadian ICES-001. Cet appareil ISM est conforme a la norme NMB-001 du Canada.</p>	 <p>The RCM mark is a registered trademark of the Spectrum Management Agency of Australia. This signifies compliance with the Australia EMC Framework regulations under the terms of the Radio Communication Act of 1992.</p>
 <p>This instrument complies with the WEEE Directive (2002/96/EC) marking requirement. This affixed product label indicates that you must not discard this electrical or electronic product in domestic household waste.</p>	 <p>This symbol indicates the time period during which no hazardous or toxic substance elements are expected to leak or deteriorate during normal use. Forty years is the expected useful life of the product.</p>
 <p>This symbol is a South Korean Class A EMC Declaration. This is a Class A instrument suitable for professional use and in electromagnetic environment outside of the home.</p>	

Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC

This instrument complies with the WEEE Directive (2002/96/EC) marking requirement. This affixed product label indicates that you must not discard this electrical or electronic product in domestic household waste.

Product category

With reference to the equipment types in the WEEE directive Annex 1, this instrument is classified as a “Monitoring and Control Instrument” product.

The affixed product label is as shown below.



Do not dispose in domestic household waste.

To return this unwanted instrument, contact your nearest Keysight Service Center, or visit <http://about.keysight.com/en/companyinfo/environment/takeback.shtml> for more information.

Sales and Technical Support

To contact Keysight for sales and technical support, refer to the support links on the following Keysight websites:

- www.keysight.com/find/X8711A
(product-specific information and support, software and documentation updates)
- www.keysight.com/find/assist
(worldwide contact information for repair and service)

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Keysight X8711A

IoT Device Functional Test Solution Quick Start Guide

Overview

The X8711A IoT device functional test solution is a cost effective, over-the-air (OTA) signaling tester that verifies the functionality of IoT devices in their operating mode and final form.

It supports *Bluetooth*® Low Energy (LE) 4.2 signaling and WLAN (b/g/n) testing, offering quantitative measurements to objectively test the IoT device's transmitter with Tx power measurement and its receiver's quality with packet error rate (PER) and sensitivity tests.

The X8711A operates in the Test Automation Platform (TAP) software platform and comprises:

Radio Type	<i>Bluetooth</i> ® 4.2	WLAN (b/g/n)	<i>Bluetooth</i> ® 4.2 and WLAN (b/g/n)
Hardware	<ul style="list-style-type: none"> – 34972A LXI Data Acquisition Unit – Keysight 34999A Radio Frequency (RF) Module (X8711A-001) 	<ul style="list-style-type: none"> – 34972A LXI Data Acquisition Unit – Keysight 34999A Radio Frequency (RF) Module (X8711A-002) 	<ul style="list-style-type: none"> – 34972A LXI Data Acquisition Unit – Keysight 34999A Radio Frequency (RF) Module (X8711A-100)
Software	<ul style="list-style-type: none"> – KS8400A TAP Developer's System or KS8000A TAP Deployment System – KS83301A or KS83301B measurement suite license 	<ul style="list-style-type: none"> – KS8400A TAP Developer's System or KS8000A TAP Deployment System – KS83302A or KS83302B measurement suite license 	<ul style="list-style-type: none"> – KS8400A TAP Developer's System or KS8000A TAP Deployment System – KS83301A or KS83301B measurement suite license – KS83302A or KS83302B measurement suite license

To Prepare Instrument for Use

Equipment requirements

- Keysight 34972A LXI Data Acquisition / Switch Unit
- Keysight 34999A RF Module
- Power cord
- 34999-60009 USB cables Type A/B
- 34999-60011 USB cables Type A/Micro B
- RF cable*
- Shield box*
- Device under test (DUT)*

NOTE

* These accessories are not included in the X8711A IoT device functional test solution.

Software requirements

- Keysight License Manager version 5.2 or above

NOTE

For those who are using USB portable license, download and install Keysight License Manager 6 at www.keysight.com/find/KLM6.

- Keysight IO Libraries Suite version 18.0 or above
- Keysight Test Automation Platform (TAP) Software version 8.7
 - KS8400A TAP Developer's System or KS8000A TAP Deployment System
- Keysight 34999A Utility software version 2.1 or above

NOTE

The KS8400A TAP Developer's System will install Keysight License Manager if not already installed.

System and installation requirements

PC operating system

- Windows 7 SP1
- Windows 10

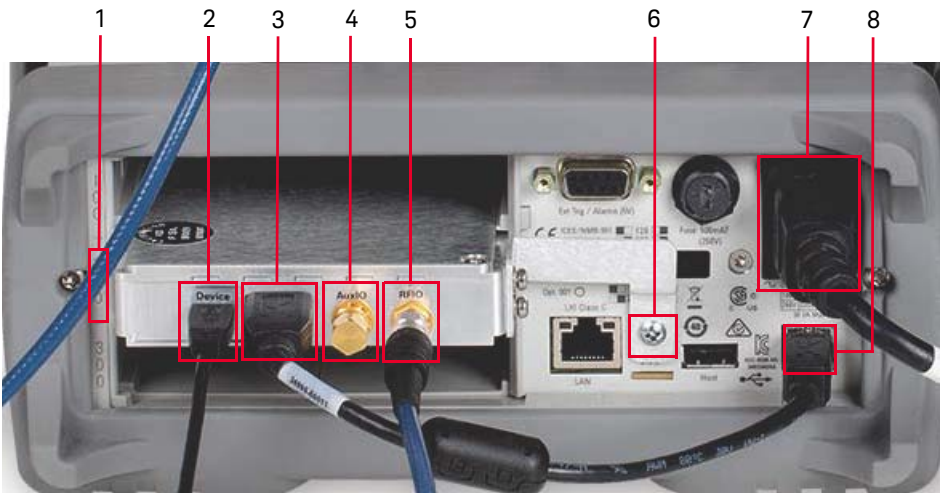
Characteristics and specifications

For characteristics and specifications of the X8711A IoT device functional test solution, refer to the data sheet at

<http://literature.cdn.keysight.com/litweb/pdf/5992-2810EN.pdf>

Hardware Setup

Follow the instructions below to configure the connection between the 34972A and 34999A module as shown below.



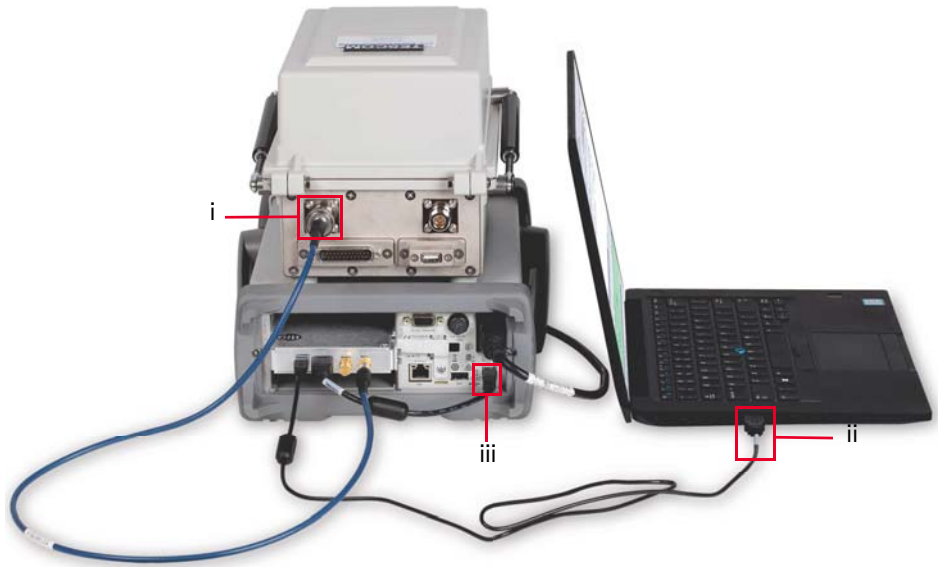
Description		Description	
1	Slot Identifier	5	RFIO Port
2	Micro-USB Port	6	Chassis Ground Screw
3	USB Port	7	Power-Line Fuse-Holder Assembly
4	AuxIO Port	8	USB Interface Connector

NOTE

Refer to the [34972A LXI Data Acquisition / Switch Unit Service Guide](#) for the full description of the rear panel.

- 1 Attach the L locking bracket to the 34999A module and insert them into **1 (slot 200)**. Ensure that you have tightened the L locking bracket with a screw on **6**.

- 2 Connect the following cables with reference to the image below.
- i **RF cable** from the **5** of 34999A module to the back of the shield box. Do not remove the terminator at **4**.
 - ii **34999-60009** USB cable from **2** of 34999A to the USB port of your PC.
 - iii **34999-60011** USB cable from **3** of the 34999A RF module to **8**.



- 3 Plug in the power cord to **7** and then to the source of electricity.

NOTE

Before you power on the 34972A, go to **Install Wizard** to download and install the software in your PC. Allow 15 seconds for your PC to detect the instrument and its VISA address.

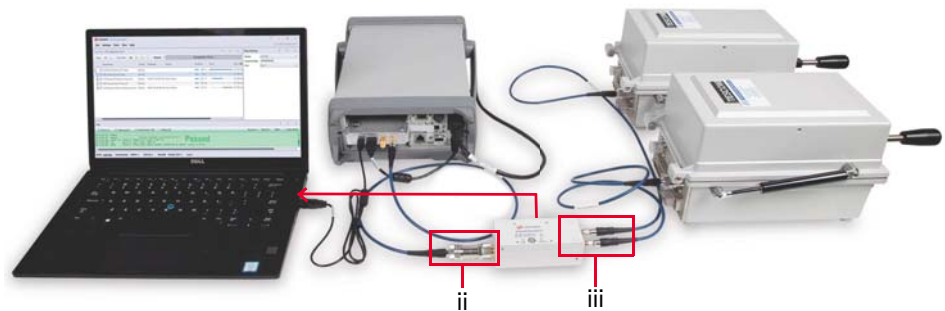
X8753A Multi-Up Configuration

The multi-up configuration supports a maximum of two devices under test (DUT) in the respective shield boxes subject to the amount of ports available in the USB Coaxial Switch. Without the switch, the system can only test one DUT (in a shield box) at any one time.

Additional hardware required:

- USB Coaxial Switch (U1810B) that comes with a N-type female to female adaptor (1250-3274), a USB cable (8121-0506) and three RF cables.

- 1** Attach the L locking bracket to the 34999A module and insert them into **1 (slot 200)**. Ensure that you have tightened the L locking bracket with a screw on **6**.
- 2** Connect the **34999-60009** USB cable from **2** of 34999B to PC.
- 3** Connect the **34999-60011** USB cable from **3** to **8**.
- 4** For this step, refer to the connections of the U1810B switch as shown below.



- The red arrow indicates the connection of the U1810B cable (P/N 8121-0506) to the USB port on your PC. Once it is connected, the LED indicator at Ports 1 or 2 will light up.
- Connect the N-type female to female adaptor (P/N 1250-3274) to the common port of U1810B before connecting the RF cable from the adaptor to **5** of 34999A/34999B. Do not remove the terminator at **4**.
- Connect the respective RF cables from the back of the shield boxes to Port 1 and 2 of U1810B switch.

- 5 Plug in the power cord to **7 (Power Line Fuse Holder Assembly)** and then to the source of electricity.
- 6 Download and install the software listed in the next section, then power on the 34972A. Allow 15 seconds after powering on the 34972A for your PC to detect the instrument and its VISA address.

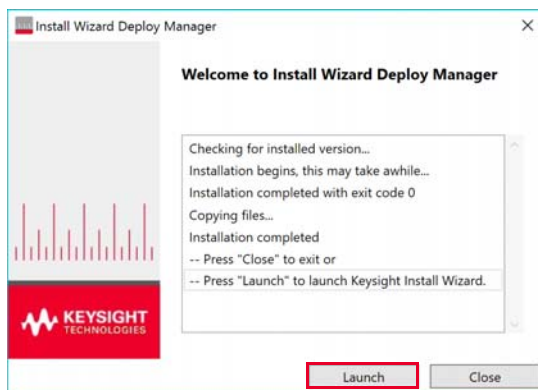
NOTE

Refer to the **U1810B Operating and Service Manual** for more information on troubleshooting and calibration.

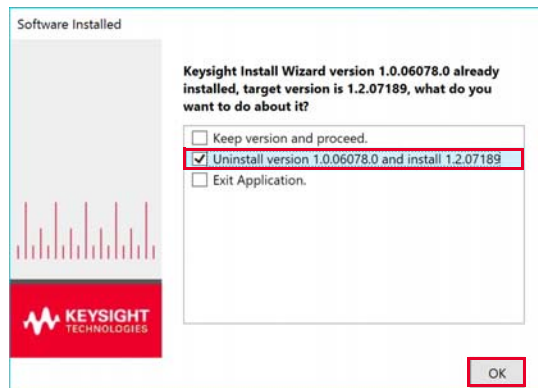
Install Wizard

This Install wizard is a centralized application that provides all the necessary installers and software packages for the X8711A solution. Ensure that your PC is connected to the internet before running the Install wizard.

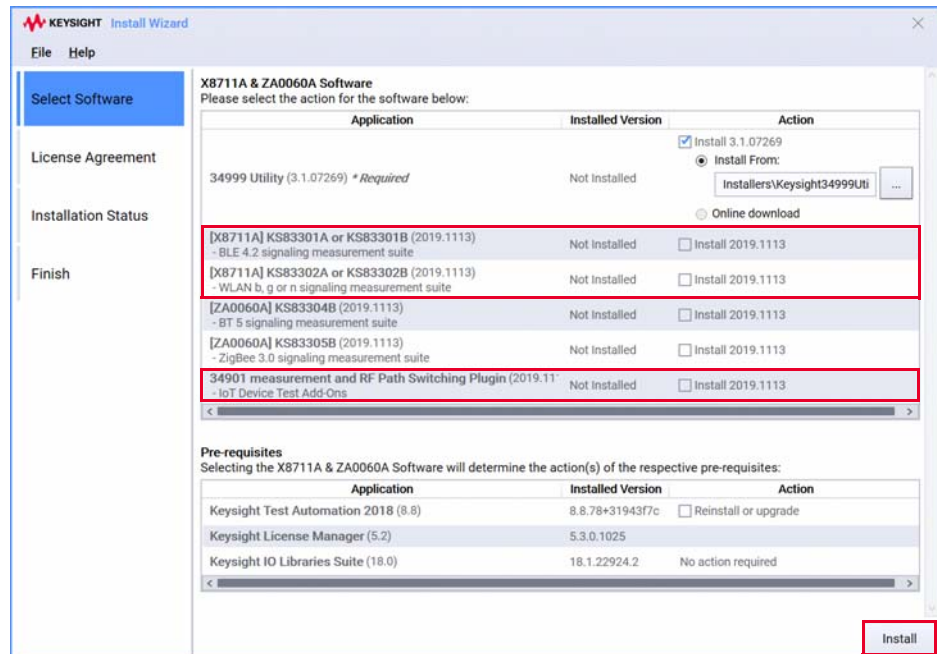
- 1 Download and install the latest Install wizard from www.keysight.com/find/X8711A-installwizard.
- 2 Follow the on-screen instructions to complete installation.
- 3 Click **Launch** when you see the pop-up below.



- 4 For those who have installed the previous version of Install wizard, select the second option to install the latest version as shown below. Click **OK**.



- 5 Next, select the check boxes to install the measurement suites and software prerequisites. The 34999 Utility application is a compulsory software and will be selected by default when there is an update.
- 6 Select the **Install 2019.1113** option to overwrite the existing 2019.0118 version in your PC.

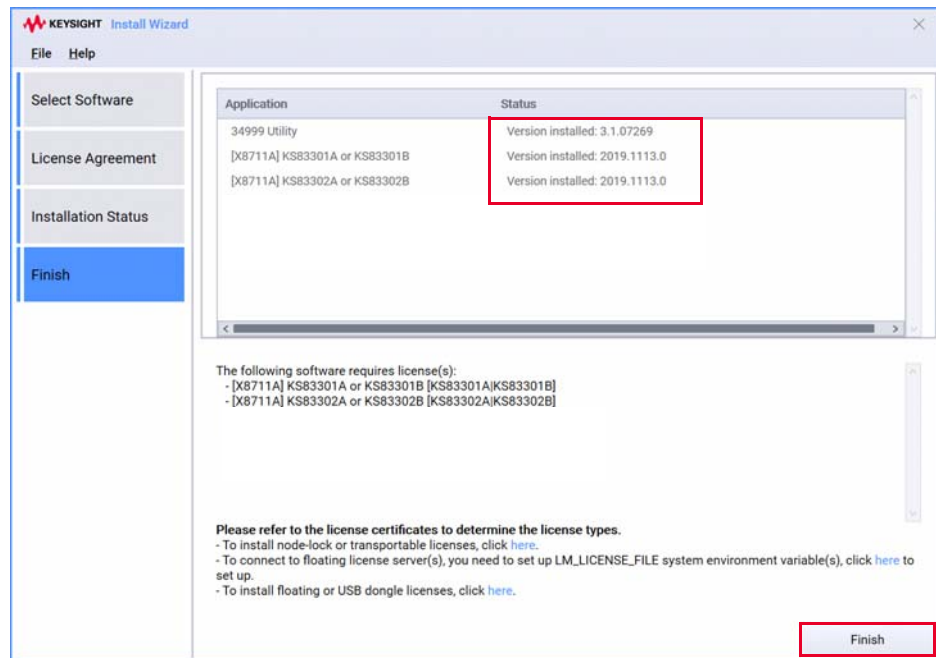


NOTE

Ensure that the measurement suite selected matches the license purchased:

- **KS83301A** or **KS83301B** license for *Bluetooth*® LE 4.2 signaling
- **KS83302A** or **KS83302B** license for WLAN b, g or n signaling
- **KS8400A** license is required to install the 34901 measurement and RF path switching plugin (IoT Device Test Add-Ons) package for the X8753A multi-up configuration.

- 7 When the status reflects the latest version installed, click **Finish** and close the Install wizard. Next, proceed to redeem your licenses.

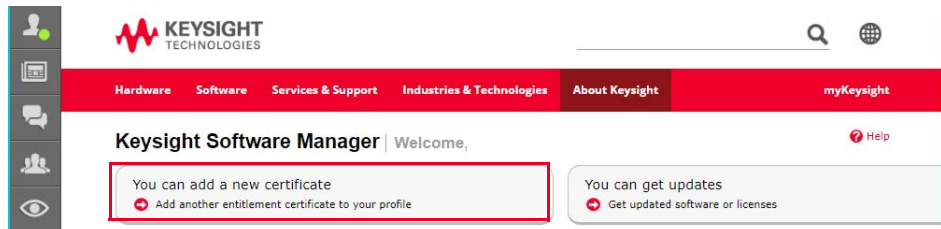


TAP and Measurement Suite License Redemption

NOTE

Go to **TAP and Measurement Suite License Installation** section if you have redeemed your licenses based on the instructions in the certificates.

- 1 Refer to the email or printed **Keysight License Entitlement Certificate** for instructions on how to redeem your license.
- 2 Log in to Keysight Software Manager (KSM) using your myKeysight account at www.keysight.com/find/softwaremanager. First time users need to create a new account and add the Keysight Software Manager capability.
- 3 Click **You can add a new certificate**.



- 4 Enter the **Order Number** and **Certificate Number** from your Keysight License Entitlement Certificate. Click **Continue**.

Enter your certificate information

Order Number	<input type="text"/>	?
Certificate Number	<input type="text"/>	?

Certificates already in your profile:

Order Number	Certificate Number
--------------	--------------------

- 5 Review the summary of the licenses on your certificate and click **Add Certificate**. You should see a confirmation message indicating that you have successfully added the certificate.
- 6 When you see the selection below, click **Yes** followed by **OK** to redeem your licenses.

Do you want to get your licenses now?

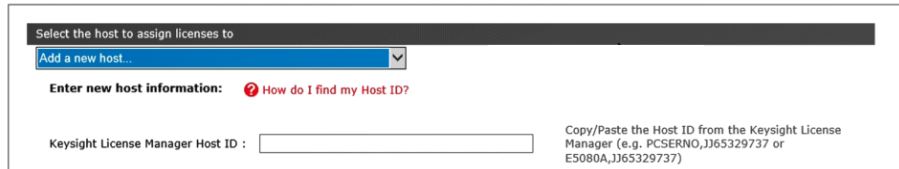
- ☒ Yes
☐ No, I will get them later.

OK

- 7 Select a host to assign your licenses. Depending on the type of license(s) purchased, you are required to provide any one of the following information.

Assign licenses to hosts, then click **Continue** to proceed.

 Help



Select the host to assign licenses to

Add a new host...

Enter new host information: [How do I find my Host ID?](#)

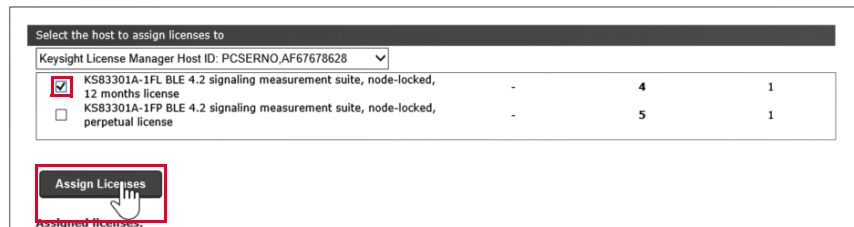
Keysight License Manager Host ID :

Copy/Paste the Host ID from the Keysight License Manager (e.g. PCSEKNO,J165329737 or E5080A,J165329737)

- a For node-locked licenses, click **Add a new host** and enter the Host ID from the Keysight License Manager.
- b For floating licenses, click **Add a new MAC Address host** and enter the MAC address of your server.
- c For USB portable licenses, click **Add a new USB Portable FlexNet ID host** and enter the Flexnet ID printed on the USB dongle.
- 8 Select the license to assign and click **Assign Licenses**. Review the details before you click **Continue**.

Assign licenses to hosts, then click **Continue** to proceed.

 Help



Select the host to assign licenses to

Keysight License Manager Host ID: PCSEKNO,AF67678628

<input checked="" type="checkbox"/>	KS83301A-1FL BLE 4.2 signaling measurement suite, node-locked, 12 months license	-	4	1
<input type="checkbox"/>	KS83301A-1FP BLE 4.2 signaling measurement suite, node-locked, perpetual license	-	5	1

Assign Licenses

Assigned licenses:

- 9 You should see a page similar to as below. Click **Yes** to assign more license(s) to other hosts. Otherwise, click **No** and followed by **Continue**.

The screenshot shows a web interface for license management. At the top, under the heading "Assigned Licenses:", there is a table with one row containing the text "Keysight License Manager Host ID: PCSERNO, AF67678628" and "KS83301A-1FL BLE 4.2 signaling measurement suite, node-locked, 1..." followed by "(Quantity 1)". Below the table, a message states "(You still have licenses available.)". A question is posed: "Do you want to assign more licenses to hosts now?". There are two radio button options: "Yes" and "No, I will assign these later.", with the "No" option selected. At the bottom left is a "< Back" button. At the bottom right are "Cancel" and "Continue >" buttons, with the "Continue >" button highlighted by a red rectangle.

- 10 Enter your email address and click **Submit**. You should receive an email shortly.

NOTE

For more information, view the [Keysight Software Manager Help File](#).

TAP and Measurement Suite License Installation

Node-Locked License

- 1 You will receive an email for the license file(s). Copy the attachment with the .lic extension to your PC.
- 2 Launch Keysight License Manager.
- 3 Perform the following steps with reference to the image below.
 - a Click the tools icon (1) followed by **Install License File (2)**.



- b Locate the local copy of the License file (.lic) and click **Open**.
 - c Successful license installation will be listed as below.

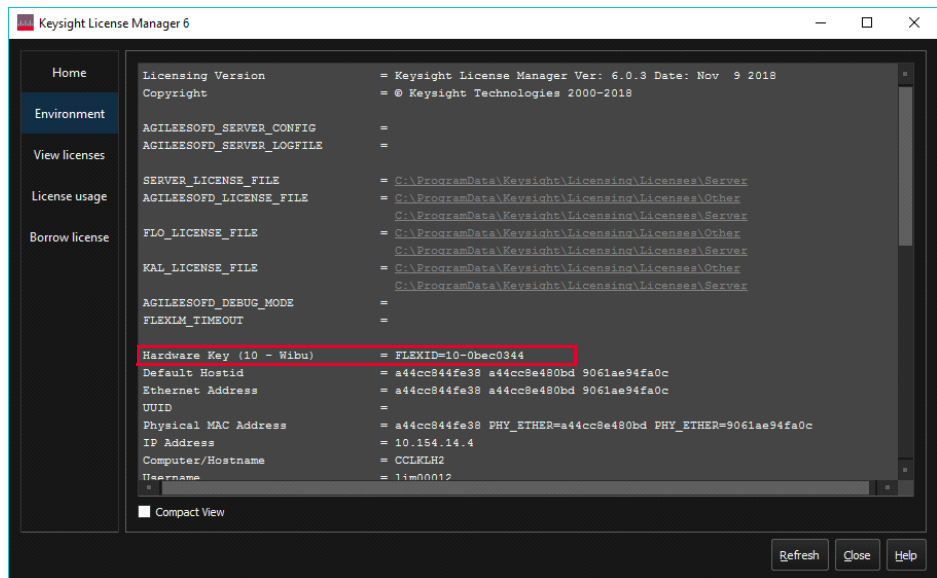
Feature	Description	Version	Expiration	Type	Count	Location
KS83301A	KS83301A	1.000	2018/02/06	Fixed	Unlimited	Local
KS83302A	KS83302A	1.000	2018/02/06	Fixed	Unlimited	Local
KS8400A	Test Automation Platform	2.200	2018/01/06	Fixed	Unlimited	Local

- 4 Repeat steps 1 through 3 to install more than one licenses.

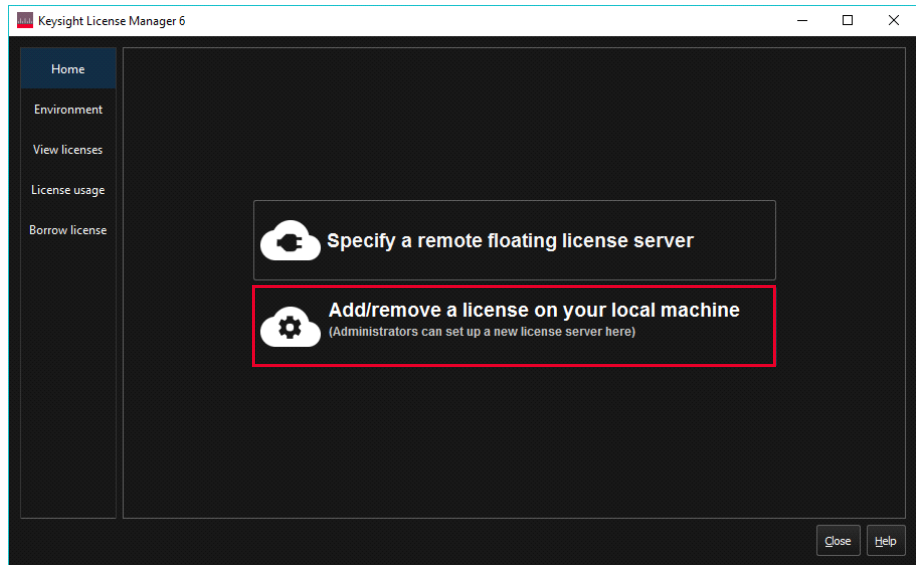
You have completed the hardware setup and software installation for the X8711A solution. Go to [X8711A User's Guide](#) to get started using the X8711A.

USB Portable License

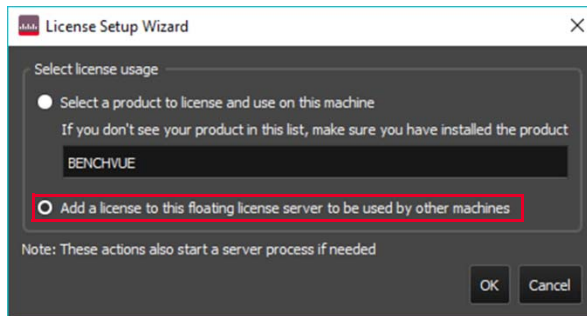
- 1 You will receive an email for the license file(s). Copy the attachment with the .lic extension to your PC.
- 2 Download and install Keysight License Manager 6 at www.keysight.com/find/KLM6. Double-click the installer and follow the instructions to complete installation.
- 3 Download and install the FLEXID10 USB Dongle Driver package at www.keysight.com/find/licensingusbdriver.
 - a Extract the files to a convenient location.
 - b Execute the Setup64.exe (on 64-bit Windows) or Setup32.exe (on 32-bit Windows). Follow the instructions, accepting the default values.
- 4 Connect the dongle to a USB port. The Flexnet ID is printed on the USB dongle. With the USB dongle connected to your PC, you can also retrieve the FlexNet ID in the Environment tab of KLM 6 as shown below.



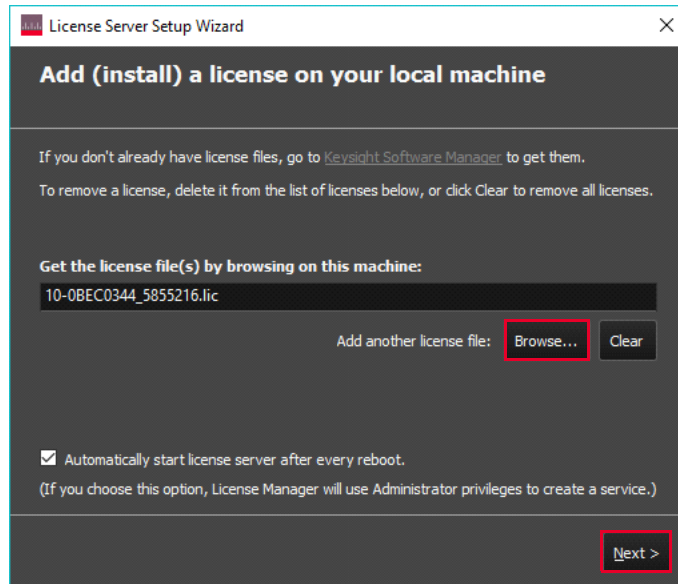
- 5 Launch Keysight License Manager 6 from your computer's Start menu. Click the **Add/remove a license to your local machine**.



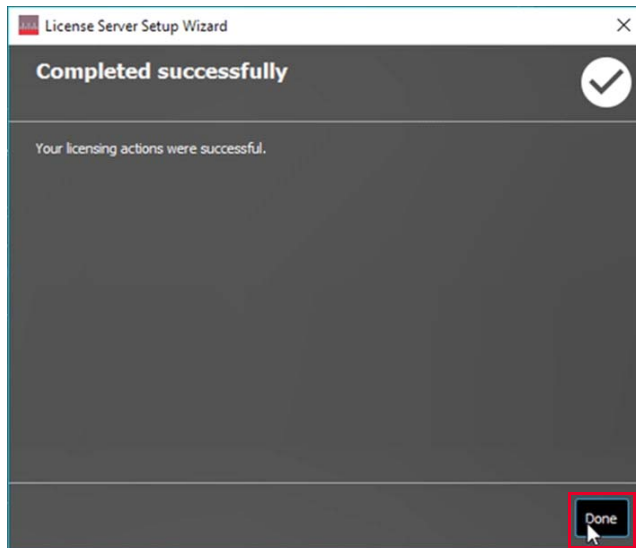
- 6 Click the **Add a license to this floating license server to be used by other machines** option.



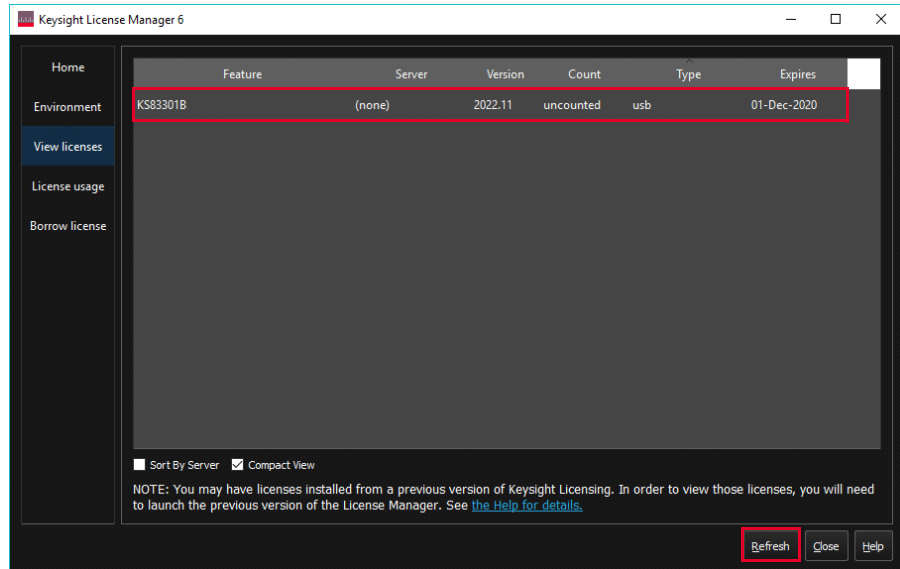
- 7 Click **Browse** and browse to the location of the license File. Click **Next**. When you are prompted to run a service in a pop-up window, click **Yes**.



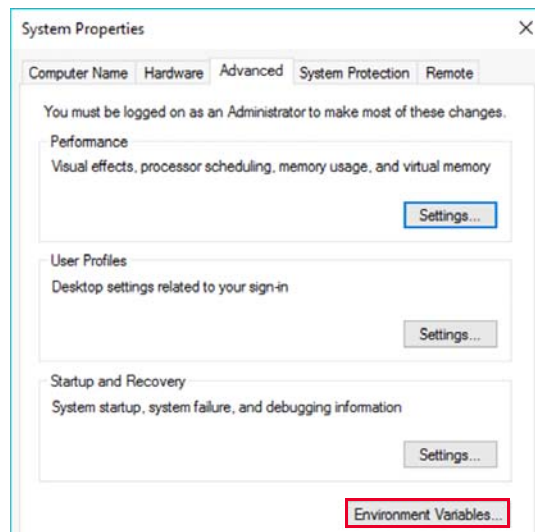
- 8 You should see the image below the licensing actions were completed successfully. Click **Done**.



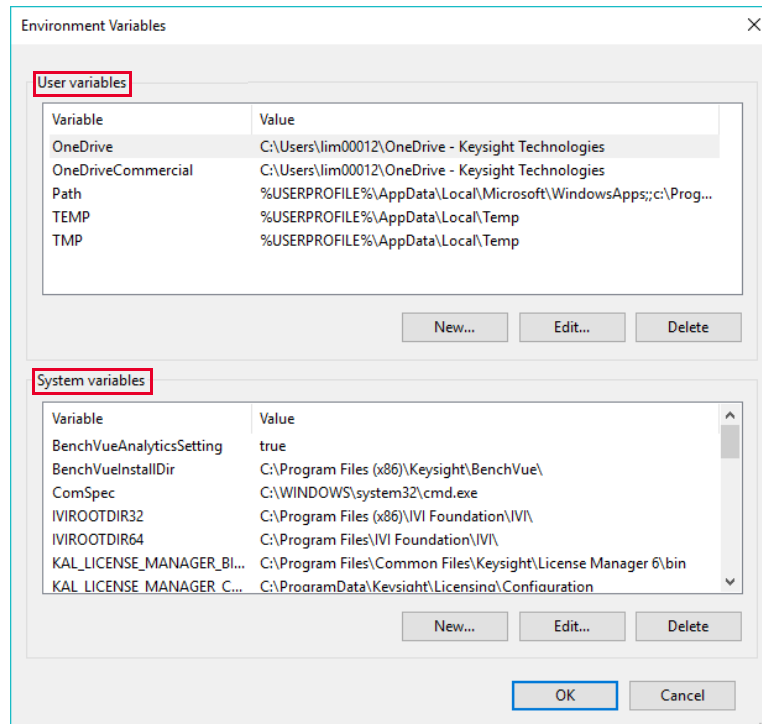
- 9 Select the View Licenses tab to view the license and the details of the license. You may need to click **Refresh** if it is not listed. In this example, KS83301B is successfully installed in the KLM 6.



- 10 Go to the Windows menu, search for 'Edit the system environment variables' and press **Enter** to view the window below. Click **Environment variables**.



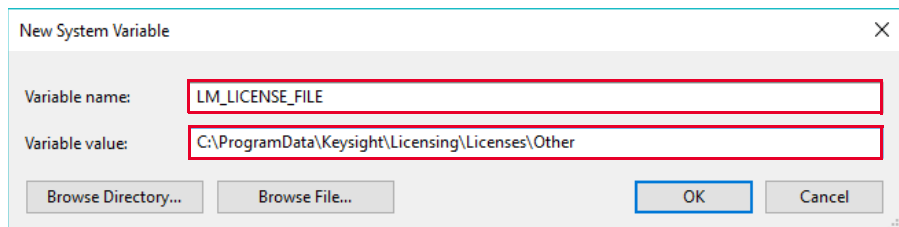
- 11 Search for the **LM_LICENSE_FILE** in the User and System variables. You will need to create one if it is not listed in either User or System variables.



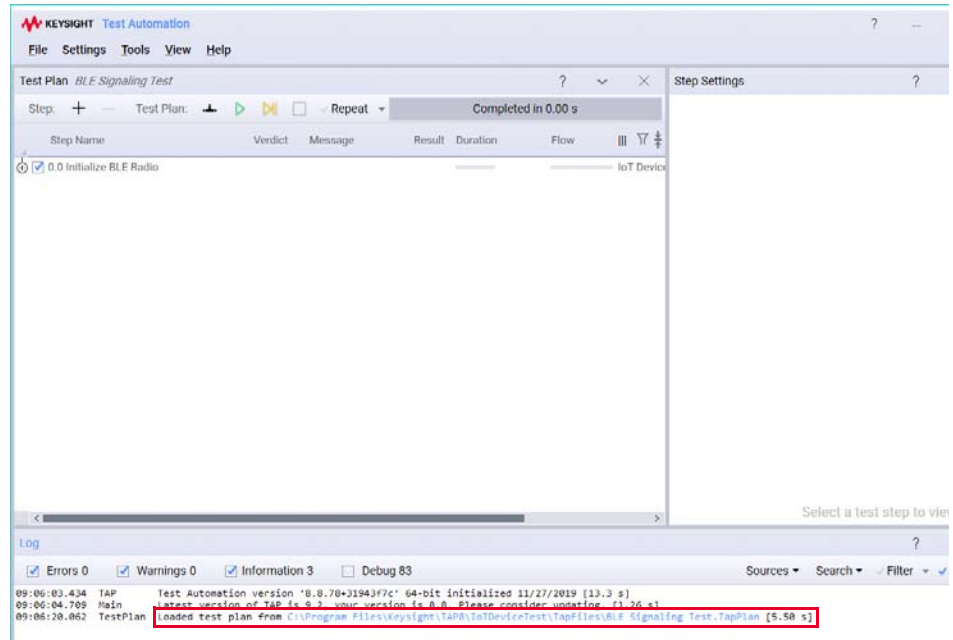
NOTE

Ensure that only one of **LM_LICENSE_FILE** variable is created in either User or System variables.

- 12 Click **New** to create the **LM_LICENSE_FILE** variable and enter the information as shown below. Click **OK** and you may close all the windows related to environmental variables.



- 13 Launch TAP and verify if you can load any of the test plans from the installed measurement suite. Based on the example below, you can now load the test plans from the BLE measurement suite in TAP with the KS83301B license installed.



- 14 Repeat these steps on each machine on which you plan to use the USB portable license.

NOTE

View the [Keysight Licensing Administrator's Guide](#) for more information.

You have completed the hardware setup and software installation for the X8711A solution. Go to [X8711A User's Guide](#) to get started using the X8711A.

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This information is subject to change without notice. Always refer to the English version at the Keysight website for the latest revision.

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Edition 6, February 2020

Printed in Malaysia



X8711-90000

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