X-Series Signal Analyzer

UXA N9042B Signal Analyzer

KEYSIGHT

GETTING STARTED GUIDE

Notices

Trademark Acknowledgments

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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.

Product and Solution Cybersecurity

Keysight complies with multinational regulations for the cybersecurity of its own products and is committed to providing information to assist you in protecting your products and solutions from external cyber threats. For more information, see:

https://www.keysight.com/us/en/about/quality-and-security/security/product-and-solution-cyber-security.html

Keysight also recommends that you secure your IT environments using appropriate third-party tools. For instruments that run the Microsoft Windows operating system, Keysight concurs with Microsoft's recommendations for ensuring that the instrument is protected:

- Get the latest critical Windows updates

- For network-connected instruments, use an Internet firewall (in Keysight instruments, Windows Firewall is enabled by default)

- For network-connected instruments, use up-to-date antivirus and anti-spyware software

Responsible Disclosure Program

Keysight recommends that security researchers share the details of any suspected vulnerabilities across any asset owned, controlled, or operated by Keysight (or that would reasonably impact the security of Keysight and our users) using this form:

https://www.keysight.com/us/en/contact/responsible-disclosure-program.html

Report a Product Cybersecurity Issue

If you discover a cybersecurity issue that you suspect may involve Keysight's proprietary software, or third-party software supplied by Keysight as part of a product, or that may affect the operation of Keysight products, we encourage you to report it to us using this form:

https://www.keysight.com/us/en/about/quality-and-security/security/product-and-solution-cyber-security/report-a-product-cybersecurity-issue

In This Guide...

This guide contains the following information:

1 Quick-Start

This chapter explains how to initialize the signal analyzer and view a signal.

2 Front and Rear Panel Features

Refer to this chapter for information on front- and rear-panel key functionality, and display annotations.

3 Instrument Operating System

This chapter describes the Microsoft Windows 10 or 11 configuration and the settings used with the Keysight instrument software.

4 Using Windows Tools

The information in this chapter provides some guidelines for using the Microsoft Windows 10 and 11 feature capabilities with the signal analyzer.

5 Troubleshooting

This chapter details some basic steps that may solve any problems you are experiencing with either the signal analyzer or Microsoft Windows 10 or 11.

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1 Quick Start

This section explains how to initialize the Signal Analyzer and view a signal.

The following topics can be found in this section:

"Initial Inspection" on page 10

"Instrument Location and Rack Mounting Requirements" on page 11

"Turning on the Analyzer the First Time" on page 12

"Anti-Virus Software and Firewalls" on page 17

"Instrument Information" on page 18

Initial Inspection

Inspect the shipping container and the cushioning material for signs of stress. Retain the shipping materials for future use, as you may wish to ship the analyzer to another location or to Keysight Technologies for service.

Verify the Contents

Verify the shipping container contents using the box contents list.

Shipping Problems?

If the shipping materials are damaged or the contents of the container are incomplete:

- Contact the nearest Keysight Technologies office.
- Keep the shipping materials for the carrier's inspection.
- If you must return an analyzer to Keysight Technologies, use the original (or comparable) shipping materials. See "Returning an Analyzer for Service" on page 97.

Instrument Location and Rack Mounting Requirements

Locating the Analyzer

Make sure that the fan inlet and exhaust vent areas on the sides of the analyzer are not obstructed. The minimal required clearance is 2 inches. Airflow restrictions cause additional airflow noise and cause the fans to speed up so they can draw in enough air for the required cooling. This results in excessive audible noise.

Cooling and Rack Mounting

Do not rack mount the analyzer side-by-side with any other instrument with side-by-side ventilation. Make sure the exhaust air from the first instrument is directed away from the inlet of the second unit. If the pre-heated air from the first instrument is directed into the second instrument, it can cause excessive operating temperatures in the second unit and can cause instrument failures. When facing the front panel, the analyzer draws air in from the left side and exhausts air from the right side.

WARNING **The equipment is heavy. Consult your Health and Safety department for guidance prior to lifting or moving the equipment.**

WARNING **Safety of any system incorporating the equipment is the responsibility of the assembler of the system.**

CAUTION When installing the product in a cabinet, the convection into and out of the product must not be restricted. The ambient temperature (outside the cabinet) must be less than the maximum operating temperature of the product by 4° C for every 100 watts dissipated in the cabinet. If the total power dissipated in the cabinet is greater than 800 watts, then forced convection must be used.

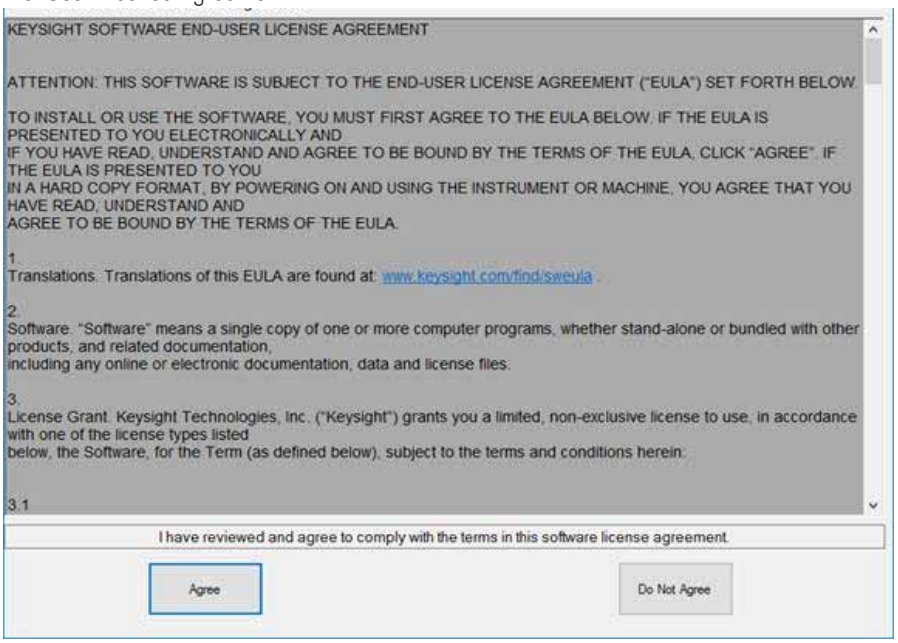
Only Keysight approved accessories shall be used.

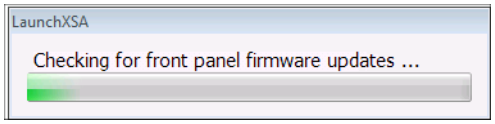
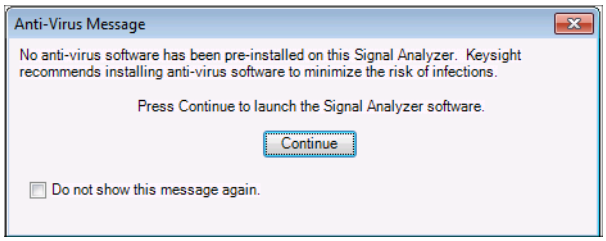
Turning on the Analyzer the First Time

Initial power-on of the analyzer can be accomplished using the following methods:

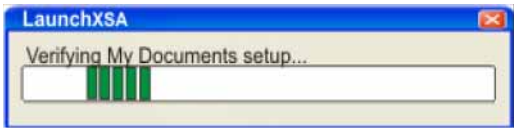
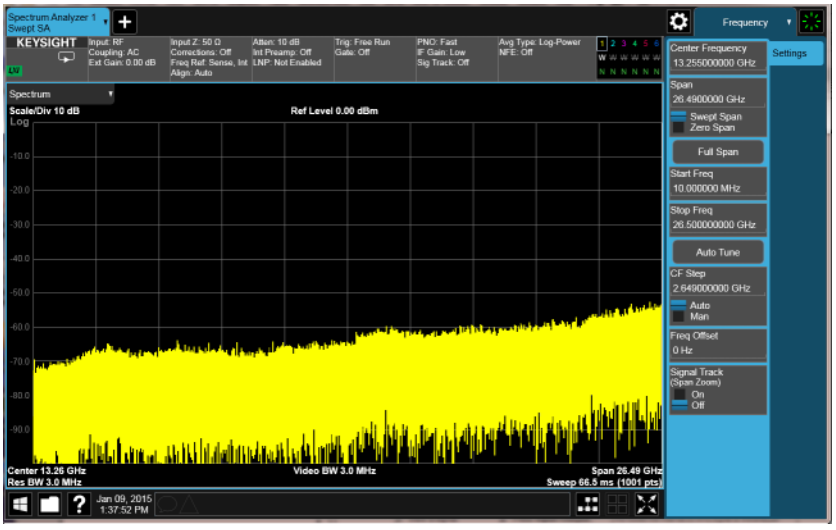
Initializing the Analyzer

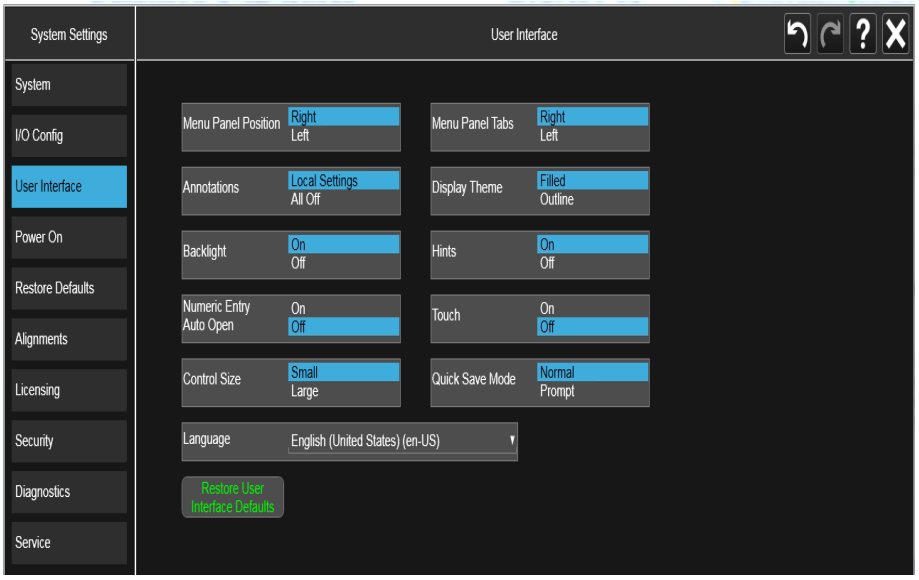
NOTE Proper Ergonomics should be considered when using accessories such as a keyboard or a mouse.

Steps	Actions	Notes
1. Power on the analyzer	**a.** Position the analyzer so you have easy access to the power cord and plug it in.	See "Instrument Location and Rack Mounting Requirements and "Power Requirements" on page 18 for more details.
	b. Press the power switch (located in the lower left corner of the analyzer's front panel) to turn the analyzer on.	The analyzer can require more than 5 minutes to power-on. The Keysight Technologies screen appears followed by a screen that allows you to select Windows or the Recovery option.
2. Viewing the End-User License Agreement	After a brief startup, the following window appears giving you information about the End-User License Agreement.  At this time, it is safe to turn off the instrument before initializing the software. See "Instrument Power Down Process" on page 16 for more details.	

Steps	Actions	Notes
3. Reboot and log on	– Select **OK**.	When the instrument restarts, the following message window appears: 
		This window appears and covers the Launch window.

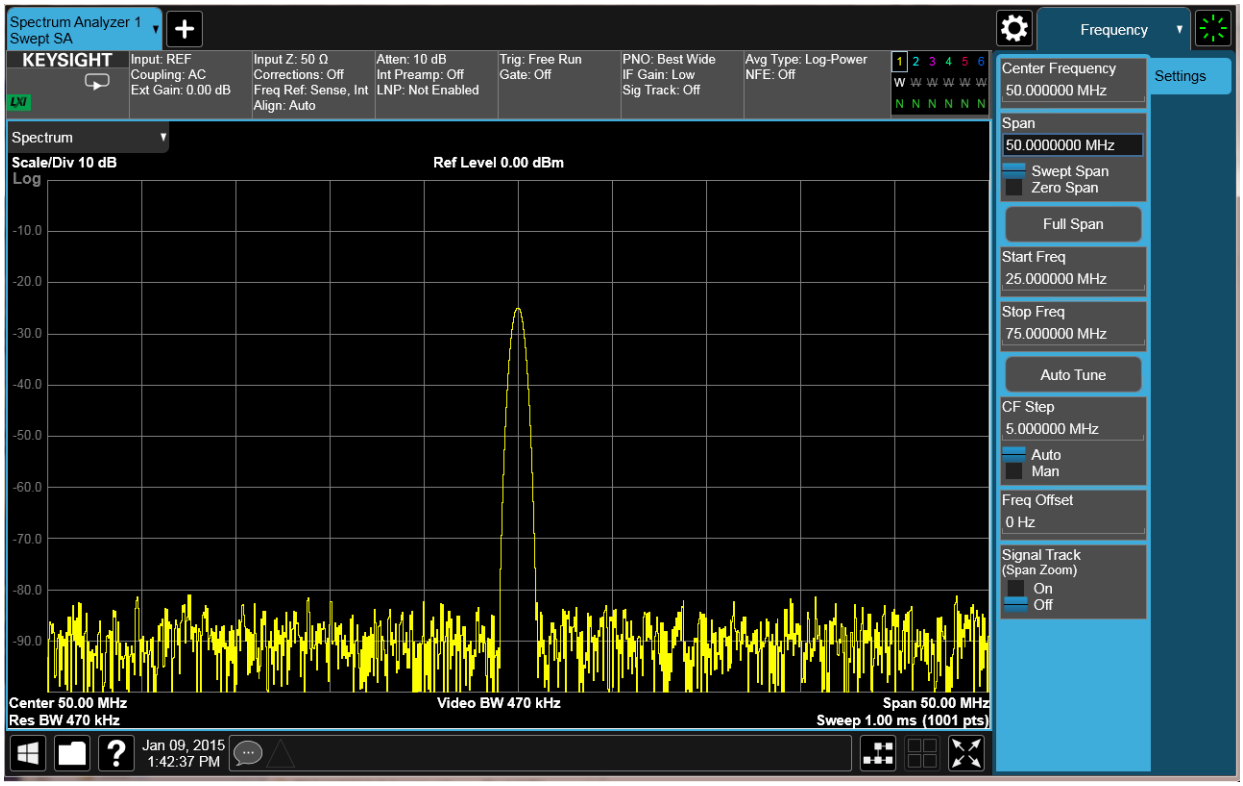
NOTE If you do not check the “Do not show this message again” check box, this message will be displayed each time the analyzer is turned on. No application will start while this message is displayed. Before continuing, make sure that you carefully read the Anti-Virus message and determine what action is appropriate.

4. Disable the Anti-Virus message	– Select the check box and select **Continue**.	Messages similar to the following continue to appear:  Several required processes continue. The application initializes
5. When the installation is complete, you should see a display like this:		

Steps	Actions	Notes
6. Set user interface language	**a.** On the instrument, select **System**, **User Interface** tab. **b.** Choose the desired language from the **Language** drop-down menu.	The System key is the  in the upper right corner of the screen.
		
7. Verify the installation	**a.** On the instrument, select **System**, **Show System**. **b.** Verify that the purchased application(s) appear in the list or have an entitlement certificate.	If you require further assistance, contact the Keysight support team. Online assistance: http://www.keysight.com/find/assist

Steps	Actions	Notes
8. View a signal	**a.** Select **Input/Output**, **RF Calibrator**, **50 MHz**. **b.** Select **FREQ**, then select **Center Frequency**, **50 MHz**. **c.** Select **Span**, **50 MHz**.	This routes the internal 50 MHz signal to the analyzer input.

The 50 MHz reference signal appears on the display.



Instrument Power Down Process

The following steps ensure that your data is saved before the instrument shuts down.

Recommended Instrument Shut Down

Step
1. Briefly press the front panel power button. **CAUTION** Do not hold the button down (since this signals the processor to immediately shut down before saving data, which could potentially cause disk corruption).
2. The instrument will begin the power down sequence where the instrument performs clean-up activities such as closing applications and writing data to disk. The “Shutting Down” Message will appear on screen. **CAUTION** Do not disconnect the AC power at this time. It is important that the instrument be able to complete all power down activities before power is interrupted.
3. When the display goes blank, the fans stop, and the front panel yellow standby light turns on, the instrument is completely shut down.
4. You may safely remove the power cable at this time.

Anti-Virus Software and Firewalls

No third-party anti-virus software is shipped with the analyzer. It is recommended that you install anti-virus software if your analyzer is connected to the LAN. Check with your IT department to see what they recommend.

Do not modify the default network settings as this may cause problems with the operating system of the analyzer.

The analyzer is shipped with the Windows firewall enabled and Windows Defender.

To adjust Windows Defender settings you must be logged in as an "administrator" (default password:"Keysight4u!"). Minimize the X-Series Application, click the Start button and type: defender. Then click on Windows Defender from the Best match column.

NOTE Having antivirus software installed may have a slight impact on the instrument performance.

Instrument Information

Power Requirements

The only physical installation of your Keysight signal analyzer is a connection to a power source. Line voltage does **not** need to be selected.

This analyzer does **not** contain customer serviceable fuses.

NOTE The instruments can operate with mains supply voltage fluctuations up to ±10% of the nominal voltage.

WARNING **The input terminals for this product are classified as Measurement Category None (No Transients).**

NOTE The input terminals for this product are classified as Measurement Category None.

WARNING **This is a Safety Class 1 Product (provided with a protective earthing ground incorporated in the power cord). The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. Any interruption of the protective conductor inside or outside of the product is likely to make the product dangerous. Intentional interruption is prohibited.**

Failure to ground the analyzer properly can result in personal injury. Before turning on the analyzer, you must connect its protective earth terminals to the protective conductor of the main power cable. Insert the main power cable plug into a socket outlet that has a protective earth contact only. DO NOT defeat the earth-grounding protection by using an extension cable, power cable, or autotransformer without a protective ground conductor.

CAUTION This product is designed for use in Installation Category II and Pollution Degree 2 and Measurement Category None.
This instrument has autoranging line voltage input. Be sure the supply voltage is within the specified range.

The Mains wiring and connectors shall be compatible with the connector used in the premise electrical system. Failure to ensure adequate earth grounding by not using the correct components may cause product damage, and serious injury.

AC Power Cord

The analyzer is equipped with a three-wire power cord, in accordance with international safety standards. This cable grounds the analyzer cabinet when connected to an appropriate power line outlet. The cable appropriate to the original shipping location is included with the analyzer.

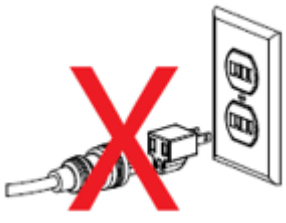
CAUTION Always use the three-prong AC power cord supplied with this product. Failure to ensure adequate earth grounding by not using this cord can cause product damage.

WARNING **If this product is not used as specified, the protection provided by the equipment could be impaired. This product must be used in a normal condition (in which all means for protection are intact) only.**
Install the instrument so that the detachable power cord is readily identifiable and easily reached by the operator. The detachable power cord is the instrument disconnecting device. It disconnects the mains circuits from the mains supply before other parts of the instrument. The front panel switch is only a standby switch and is not a LINE switch.

WARNING **DO NOT use a power strips which is not suitable for the installation. These devices may not be sufficiently rated to carry the required current and may become a safety hazard.**

WARNING **DO NOT use extension cords to power your equipment.**

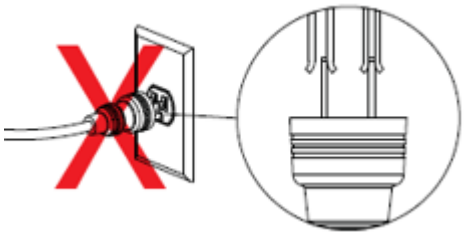
WARNING **DO NOT use any converters or adapters.**



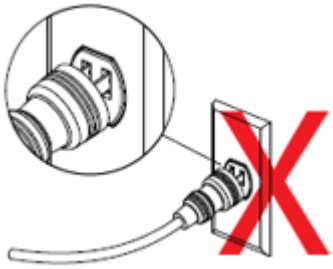
WARNING **The AC Voltage source (outlet) must be in proper working order and provide a secure electrical connection.**

Do not use the outlet if the power cord makes a loose connection or if the power cord plug does not match the outlet. Do not use the outlet if it is damaged or if the voltage is outside the required range.

WARNING **DO NOT use outlet if the power cord makes a loose connection.**



WARNING **DO NOT allow plug to bend down or become loose.**



Protecting Against Overpowering

The input circuitry of the analyzer can be damaged by applying signals that exceed the maximum safe input level of +30 dBm average total power. If the instrument signal path is set to Full Bypass, the maximum safe input level is reduced. Refer to the analyzer's specification guide for more details regarding the Maximum Safe Input Level. Repairing damage to the input circuitry can be expensive.

If the analyzer will be used to measure signals which might be near the maximum safe input level, use external attenuators and/or limiters to help protect the analyzer input. The External Gain, amplitude Corrections, and/or Ref Lvl Offset features may be used to compensate for the gains and losses of external devices. External Gain and Corrections are under the Input/Output menu and Ref Lvl Offset is under the AMPTD Y-Scale menu.

Fiber Optic Care for Optical Data Interface (ODI)

WARNING **Embedded Class 1 Invisible Laser Radiation. Do Not Expose Users or View Directly with telescopes.**

The fiber optic connector care is vital to maintain good measurements and avoid costly repairs caused by damage to fiber optic connectors on optical test equipment.

Improper connector care, cleaning, or use of mismatched cable connectors can invalidate the published specifications and damage connectors. Clean all cables before applying to any connector. Repair of damaged connectors due to improper use is not covered under warranty.

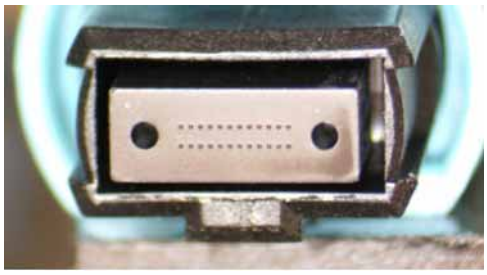
Treat all fiber-optic connectors like the high-quality lens of an expensive camera. Damage to the connectors on calibration and verification devices, test ports, cables, and other devices can:

– Degrade measurement accuracy and repeatability

– Cause expensive damage to instruments

Because fiber-optic connectors are susceptible to damage that is not immediately obvious to the naked eye, it is very easy to make bad measurements without being aware of a connector problem. Learning about proper handling and cleaning techniques will help you to avoid any degradation in connector performance. With glass-to-glass interfaces, any damage of the ferrule or end of the fiber, any stray particles, or finger oil can have a significant effect on fiber-optic connectors.

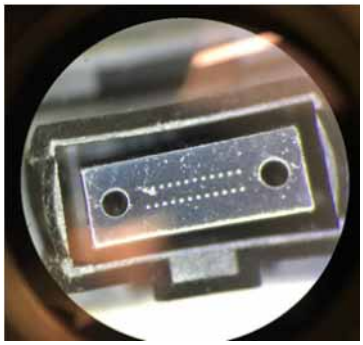
This picture shows the end of a clean, problem free fiber optic connector.

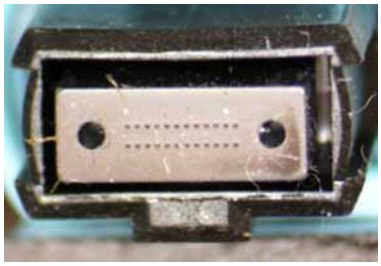


This picture shows physical damage to the glass fiber end of the optical cable caused by either repeated connections made without removing loose particles from the fiber end or by using improper cleaning procedures.

This damage can be severe enough to transfer the damage from the connector end to a good connector with which it comes in contact.

To ensure this does not happen visual inspection of fiber ends is required. Contamination or imperfections on the cable end face can be detected as well as cracks or chips in the fiber itself. Use a microscope to inspect the entire end face for contaminations, scratches on the fiber core, raised metal or dents, and any other imperfections.





Guidelines

WARNING **Embedded Class 1 invisible laser radiation. Do not expose users or view directly with telescopes.**

- Use a fiber-optic inspection scope to visually inspect the fiber-optic end.
- Always remove both ends of fiber-optic cables from any instrument, system, or device before visually inspecting the fiber ends. Disable all optical sources before disconnecting fiber-optic cables.
- Never use metal or sharp objects to clean a connector and never scrape the connector.
- When inserting a fiber-optic cable into a connector:
  - Gently insert it in as straight a line as possible. Tipping and inserting at an angle can scrape material off the inside of the connector or even break the inside sleeve of connectors made with ceramic material.
  - Ensure that the fiber end does not touch the outside of the mating connector or adapter.

Cleaning

WARNING If flammable fluids are used to clean connectors, the fluid shall not be placed on the instrument during use or when connected to mains voltage. Cleaning the connectors shall take place in ventilated area to allow fluid vapors to dissipate and reduce the risk of fire. Make sure that the instrument is powered off and unplugged before cleaning.

Keep all fiber-optic connectors clean using professional fiber-optic cleaning products. Many products are available and are easily located via an Internet search on "fiber optic cleaning products". You can purchase tools designed specifically for the type of fiber-optic connector that you are using. For the 24-fiber MPO interface, purchase one for an MTP connector.

Fiber Optic inspection scopes are available, which can give a very clear view of the fiber end and even provide some analysis capability.

WARNING Always remove both ends of fiber-optic cables from any instrument, system, or device before visually inspecting the fiber ends. Disable all optical sources before disconnecting fiber-optic cables. Failure to do so may result in permanent injury to your eyes.

Environmental and Regulatory Information

Environmental Information

Samples of this product have been type tested in accordance with the Keysight Environmental Test Manual and verified to be robust against the environmental stresses of Storage, Transportation and End-use; those stresses include but are not limited to temperature, humidity, shock, vibration, altitude and power line conditions. Test Methods are aligned with IEC 60068-2 and levels are similar to MIL-PRF-28800F Class 3.

Regulatory Information

This product has been designed and tested in accordance with accepted industry standards, and has been supplied in a safe condition. The documentation contains information and warnings that must be followed by the user to ensure safe operation and to maintain the product in a safe condition.

EMC Compliance

This product complies with the essential requirements of the European EMC Directive and the UK Electromagnetic Compatibility Regulations 2016 as well as current editions of the following standards (dates and editions are cited in the Declaration of Conformity):

- IEC/EN 61326-1
- CISPR Pub 11, Group 1, class A

CAUTION **This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.**

- AS/NZS CISPR 11
- CAN ICES/NMB-001(A)

  This ISM device complies with Canadian ICES-001.

  Cet appareil ISM est conforme a la norme NMB-001 du Canada.

NOTE **This is a sensitive measurement apparatus by design and may have some performance loss (up to 25 dBm above the Spurious Responses, Residual specification of –100 dBm) when exposed to 3V/m ambient continuous electromagnetic phenomenon in the range of 80 MHz to 6 GHz (similar to those used in testing per IEC 61000-4-3).**

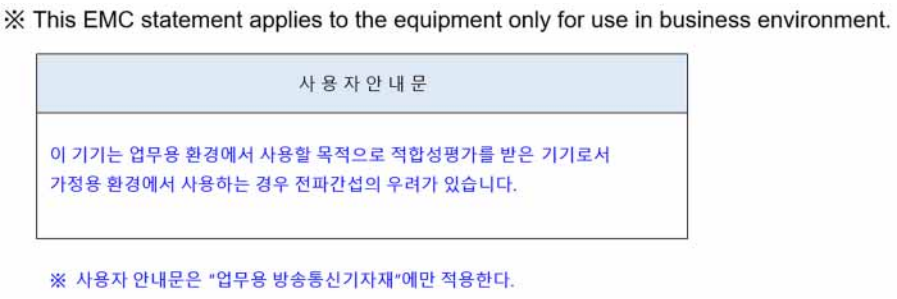
Safety

This product complies with the essential requirements of the European Low Voltage Directive as well as current editions of the following standards (dates and editions are cited in the Declaration of Conformity):

- IEC/EN 61010-1
- Canada: CSA C22.2 No. 61010-1
- USA: UL std no. 61010-1

South Korean Class A EMC declaration (pending)

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



Acoustic Statement: (European Machinery Directive)

Acoustic noise emission

LpA <70 dB

Operator position

Normal Operation mode per ISO 7779

Declaration of Conformity

To find a current Declaration of Conformity for a specific Keysight product, go to: http://www.keysight.com/go/conformity.

Instrument Maintenance

Cleaning the Instrument

WARNING **To prevent electrical shock, disconnect the signal analyzer from mains before cleaning. Use a dry cloth or one slightly dampened with water to clean the external case parts. Do not attempt to clean internally.**

Cleaning Connectors

Cleaning connectors with alcohol shall only be done with the instrument power cord removed, and in a well-ventilated area. Allow all residual alcohol moisture to evaporate, and the fumes to dissipate prior to energizing the instrument.

WARNING

Keep isopropyl alcohol away from heat, sparks, and flame. Store in a tightly closed container. It is extremely flammable. In case of fire, use alcohol foam, dry chemical, or carbon dioxide; water may be ineffective.

Use isopropyl alcohol with adequate ventilation and avoid contact with eyes, skin, and clothing. It causes skin irritation, may cause eye damage, and is harmful if swallowed or inhaled. It may be harmful if absorbed through the skin. Wash thoroughly after handling.

In case of spill, soak up with sand or earth. Flush spill area with water.

Dispose of isopropyl alcohol in accordance with all applicable federal, state, and local environmental regulations.

Battery Information

The analyzer uses a lithium battery located on the CPU board. This is not an operator replaceable part. See “Returning an Analyzer for Service” on page 97.

DO NOT THROW BATTERIES AWAY BUT
COLLECT AS SMALL CHEMICAL WASTE.

Protecting against electrostatic discharge

Electrostatic discharge (ESD) can damage or destroy electronic components (the possibility of unseen damage caused by ESD is present whenever components are transported, stored, or used).

Test Equipment and ESD

To help reduce ESD damage that can occur while using test equipment:

WARNING **Do not use these first three techniques when working on circuitry with a voltage potential greater than 500 volts.**

- Before connecting any coaxial cable to an analyzer connector for the first time each day, momentarily short the center and outer conductors of the cable together.
- Personnel should be grounded with a 1 MΩ resistor-isolated wrist-strap before touching the center pin of any connector and before removing any assembly from the analyzer.
- Be sure that all instruments are properly earth-grounded to prevent build-up of static charge.
- Perform work on all components or assemblies at a static-safe workstation.
- Keep static-generating materials at least one meter away from all components.
- Store or transport components in static-shielding containers.
- Always handle printed circuit board assemblies by the edges. This reduces the possibility of ESD damage to components and prevent contamination of exposed plating.

Additional Information About ESD

For more information about ESD and how to prevent ESD damage, contact the Electrostatic Discharge Association (http://www.esda.org). The ESD standards developed by this agency are sanctioned by the American National Standards Institute (ANSI).

2 Front and Rear Panel Features

This section describes the following features:

"Front-Panel Features" on page 30

"Display Features" on page 33

"Rear-Panel Features" on page 40

"Front and Rear Panel Symbols" on page 42

Front-Panel Features

Item		Description
#	Name	
1	Measurement Keys	These keys (in the shaded area) enable you to set the parameters used for making measurements in the current Mode and Measurement.
2	Preset Keys	Mode Preset - local to the current mode, global to all measurements in the mode, affects most but not all parameters in the mode, does not affect Input/Output or System variables User Preset - local to the current mode, global to all measurements in the mode, affects all parameters in the mode as well as the Input/Output variables. Does not affect System variables.
3	Save/Recall Keys	Save - enables you to save states, traces, screen images and other items from the analyzer to files on the analyzer's internal storage, to removable devices, and to directories on the network. Quick Save - enables you to repeat the previous Save. Whatever you saved before gets saved again to the same directory. Recall - enables you to recall previously saved states, traces and other items to the analyzer from files on the analyzer's internal storage, from removable devices, and from directories on the network.

Item		Description
#	Name	
4	Sweep Keys	Single/Cont - toggles between single and continuous measurement sweeps. Restart - restarts the measurement.
5	Mode/Measurement Key	This key enables you to select the desired Mode (measurement application), Measurement, and/or View.
6	Enter and Arrow Keys	The Enter key terminates data entry when either no unit of measure is needed, or you want to use the current unit. The arrow keys: – Increment and decrement the value of the current measurement selection. (up/down = large increment, left/right = small increment) – Navigate within tables.
7	Knob	Increments and decrements the value of the current active function.
8	Utility Keys	The following keys are available in the Utility section: Numeric key pad System Help Local/Cancel/(Esc) Back-space Delete Control Alt Undo/Redo Touch On/Off Onscreen Keyboard Tab
9	RF Input	Connector for inputting an external signal. Make sure that the total power of all signals at the analyzer input does **not** exceed +30 dBm (1 watt). (Option 575) Connector at different location, left of Cal Out (16). Make sure that the total power of all signals above 50 GHz at the analyzer input does not exceed +18 dBm (63.1 milliwatts).
10	USB 3.0, Type A Connectors	Standard USB 3.0 ports, Type A Connect to external peripherals such as a mouse, keyboard, DVD drive, or hard drive. USB 3.0 connectors are capable of higher data throughput that is required for certain peripherals. If your peripheral device has a "blue" USB connector, you should connect it to a USB connector with a blue colored insulator to ensure that it works as advertised.
11	USB 2.0, Type A Connectors The two USB connectors in the middle)	Standard USB 2.0 ports, Type A Connect to external peripherals such as a mouse, keyboard, DVD drive, or hard drive.
12	USB 3.0, Type C Connector	USB 3.0 Type C. Provides charging power for other devices.
13	High IF In	(Option EXW) Connection to V3050A frequency extender.
14	High LO Out	(Option EXW) Connection to V3050A frequency extender.
15	Ext Mixer	Provides LO output signal to and receives IF input signals from an external mixer. See the Specifications Guide for details on signal levels.

Item		Description
#	Name	
16	Cal Out	Internal calibrator output.
17	Power Standby/ On	Turns the analyzer on. A green light indicates power on. A yellow light indicates standby mode. **NOTE** The front-panel switch is a standby switch, **not** a LINE switch (disconnecting device). The analyzer continues to draw power even when the front-panel switch is in standby. The main power cord can be used as the system disconnecting device. It disconnects the mains circuits from the mains supply.
18	Wide IF Out	(Option CRW) Wide bandwidth IF output.

Display Features

This section describes the regions of the display.

Invalid Data Indicator

The invalid data indicator is displayed whenever the data on the display does not match the settings of the analyzer. The most common example of this is when instrument settings have changed in the time since the data in the traces on the display was taken. This means that the screen annotation cannot be guaranteed to match the trace data. For example, if you change Center Frequency, the invalid data indicator will display until a new sweep has completed.

If any Trace is in View mode (displaying but not updating) and analyzer settings are changed, the invalid data indicator will display as long as that trace remains in View. Traces that are blanked do not turn on the invalid data indicator.

Not all analyzer settings require display of the invalid data indicator when they change, only changes that require a new acquisition will cause it to display. For example, changing the Y-Axis scale of the analyzer does not cause the invalid data indicator to display, unless the attenuation changes.

Also, the invalid data indicator is turned on:

– When the counter is turned on, until the completion of the first count

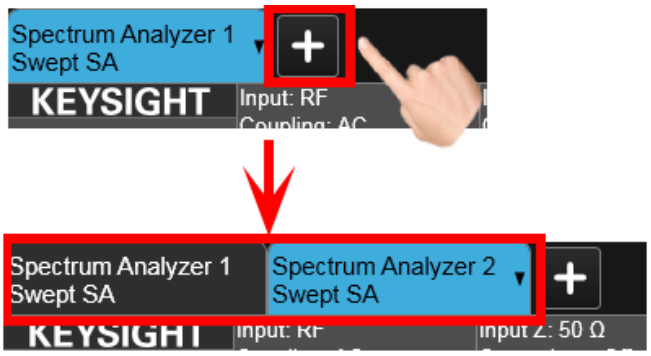
– When a trace is imported from mass storage and the trace's parameters do not match the current analyzer settings

– When a trace is sent to the analyzer from a remote interface (since there is no way to know if its settings match)

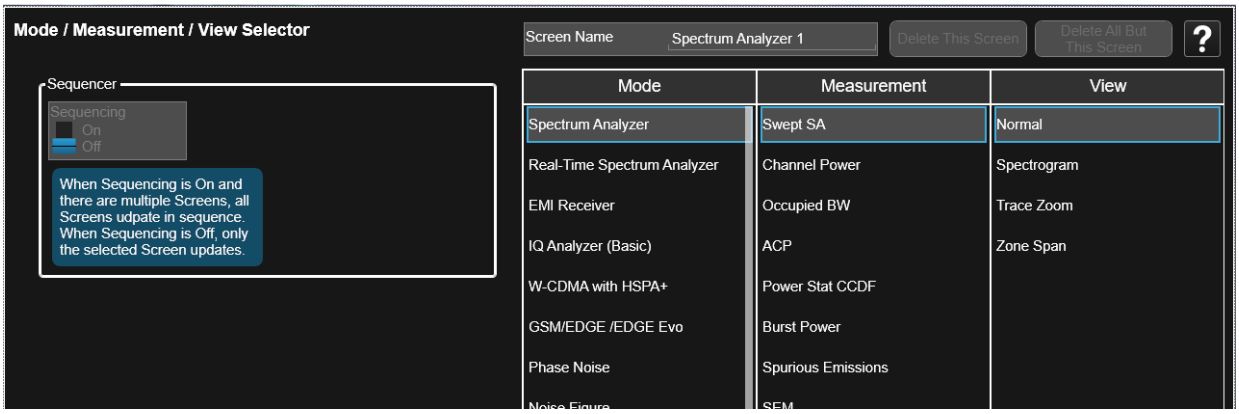
NOTE The Data Invalid Indicator has an associated status bit that can be checked at any time to see if it is on.

Screen Tabs

Along the top of the display are tabs, one for each measurement screen you have defined. Tap the + icon to create a new tab as a "clone" of the current measurement, which can be changed once it is created:



Tap the current screen tab (or press the Mode/Meas hardkey) to display the following dialog:



This dialog allows you to choose a Mode, Measurement and View.

When you select a mode, the measurements that are available in the mode are displayed in the Measurement column.

When you select the desired measurement, the views available for the measurement are displayed under the View column.

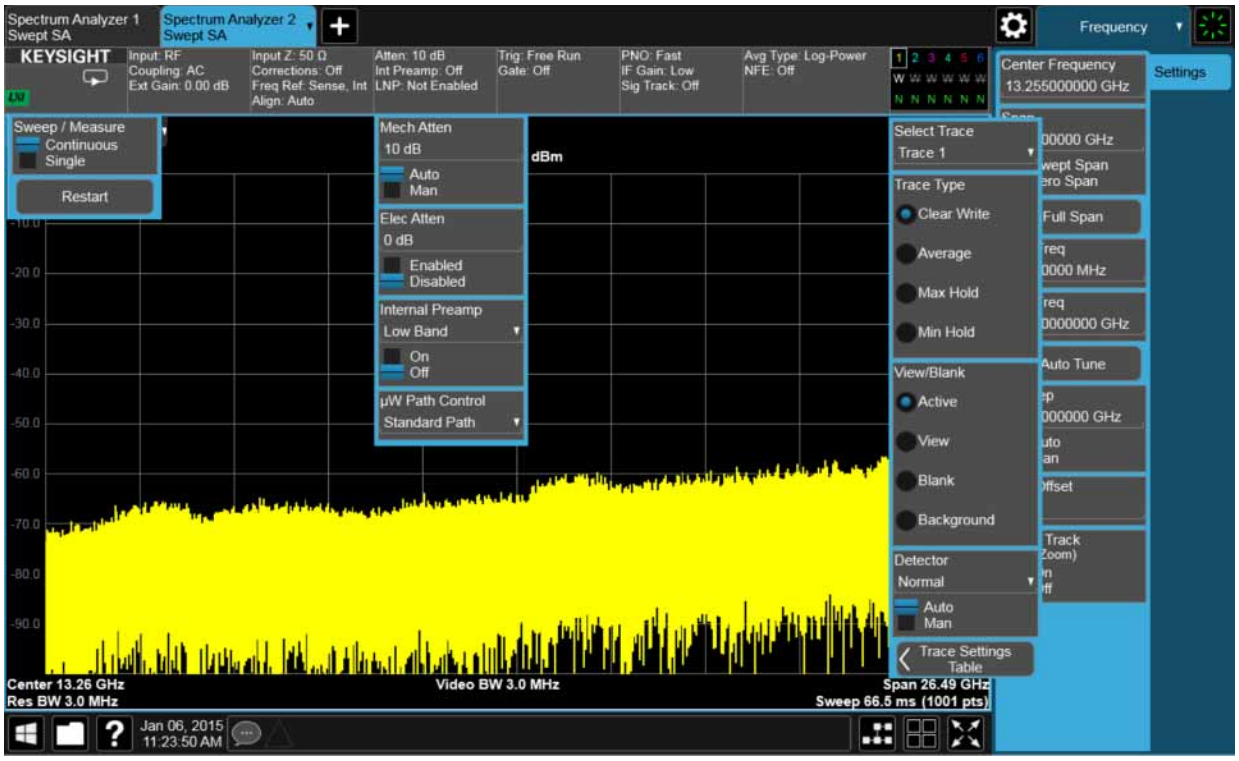
You can have up to 16 measurement tabs, but only 6 can be viewed at one time. If the tabs overfill the top bar, they scroll left and right using the arrows to the left and right of the tabs.

You switch screens by touching the tabs. To view multiple screens, press the

 icon on the Bottom Bar.

Meas Bar

The Meas Bar shows general measurement settings and information. The annotations on this bar can be used to change settings. Tap anywhere in the annotation box to access the drop-down panel that contains relevant parameters. The following graphic shows some of the drop-down menus and the parameters they contain.



 Indicates single/continuous measurement.

Measurement Display

This area shows the measurement results in graphical and tabular form. You can interact with this area using pinch, drag, scroll and tap gestures.

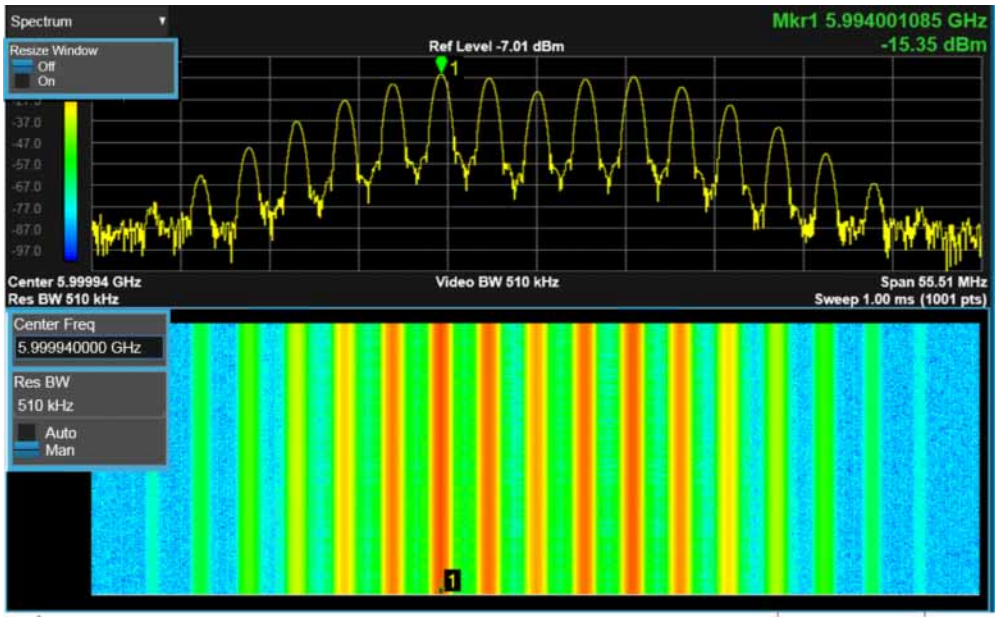
On the signal:
Horizontal pinch - changes the span of the analyzer
Horizontal drag - changes the center frequency
Vertical pinch - changes the vertical scaling
Vertical drag - changes the reference level

Markers  may be moved by dragging them to the desired location

Touch and hold - simulates a right click

Swipe scroll - allows you to view information that extends beyond the window area. When you begin to scroll, the scroll bar appears and fades once you stop scrolling.

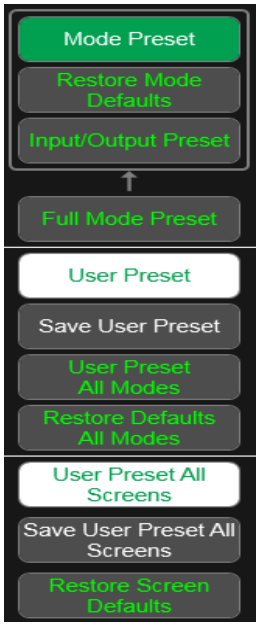
The annotation drop-downs in the window area allow you to change parameters. The window title drop-down allows you to resize the windows in the multi-window format. When you tap in those areas, the drop-down control menus appear as shown in the following graphic.



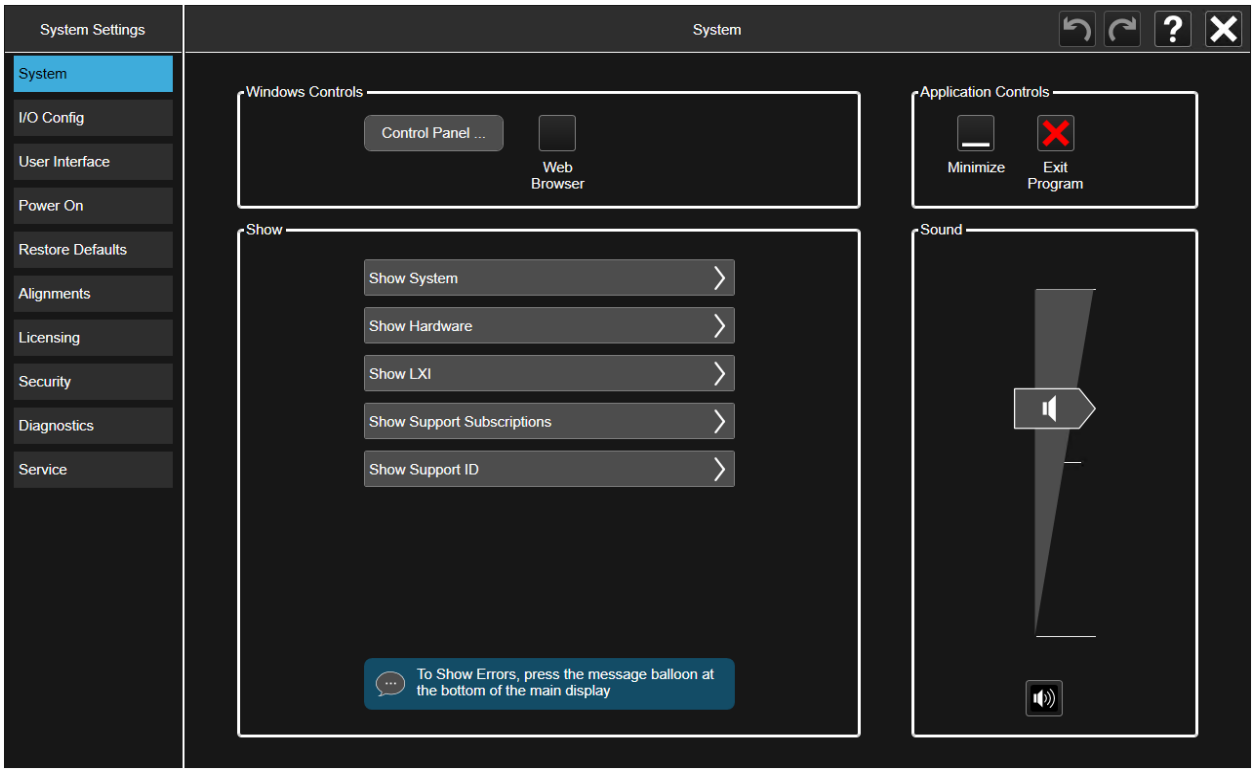
Menu Panel

At the top of the menu panels are two icons:

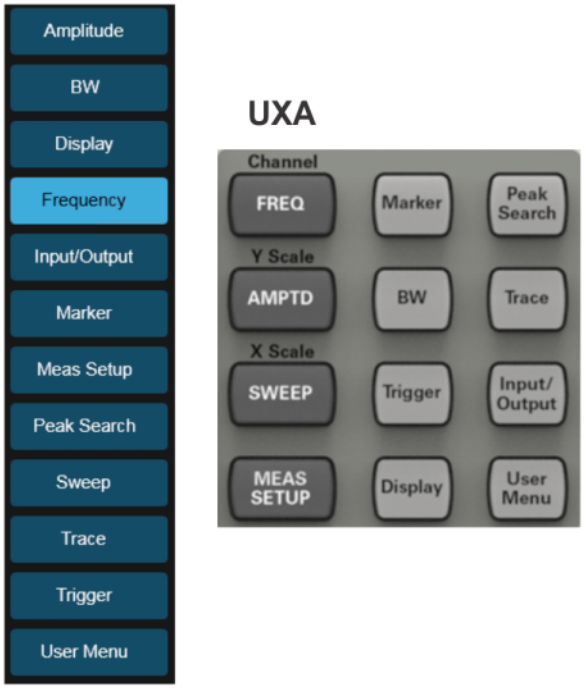
The Preset icon  accesses the following control menu:



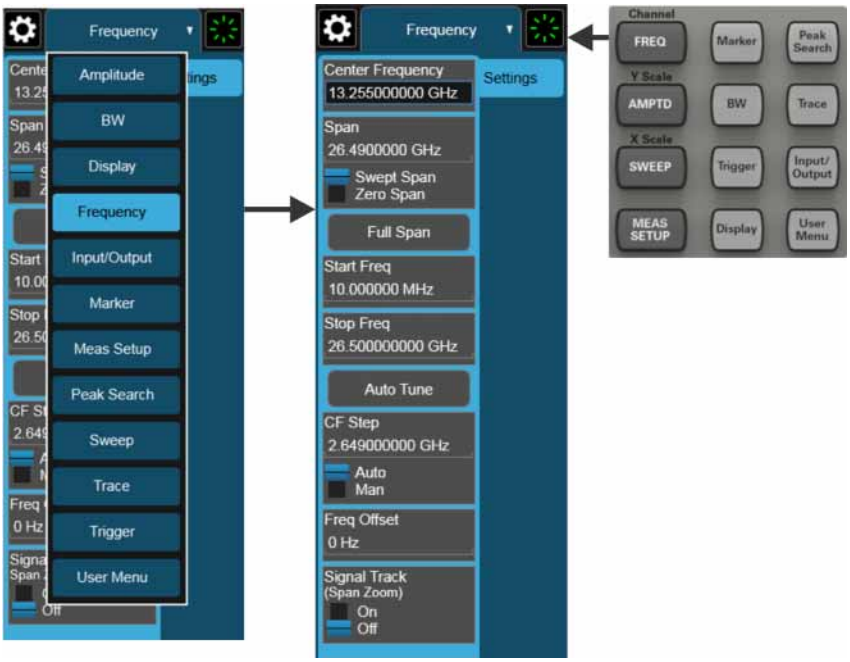
The System icon  accesses the following dialog:



The hardkey drop-down panel contains the measurement controls. These are the same as the hardkeys in the shaded area of the keypad:



You can select functions using either the keypad or the drop-down menu.

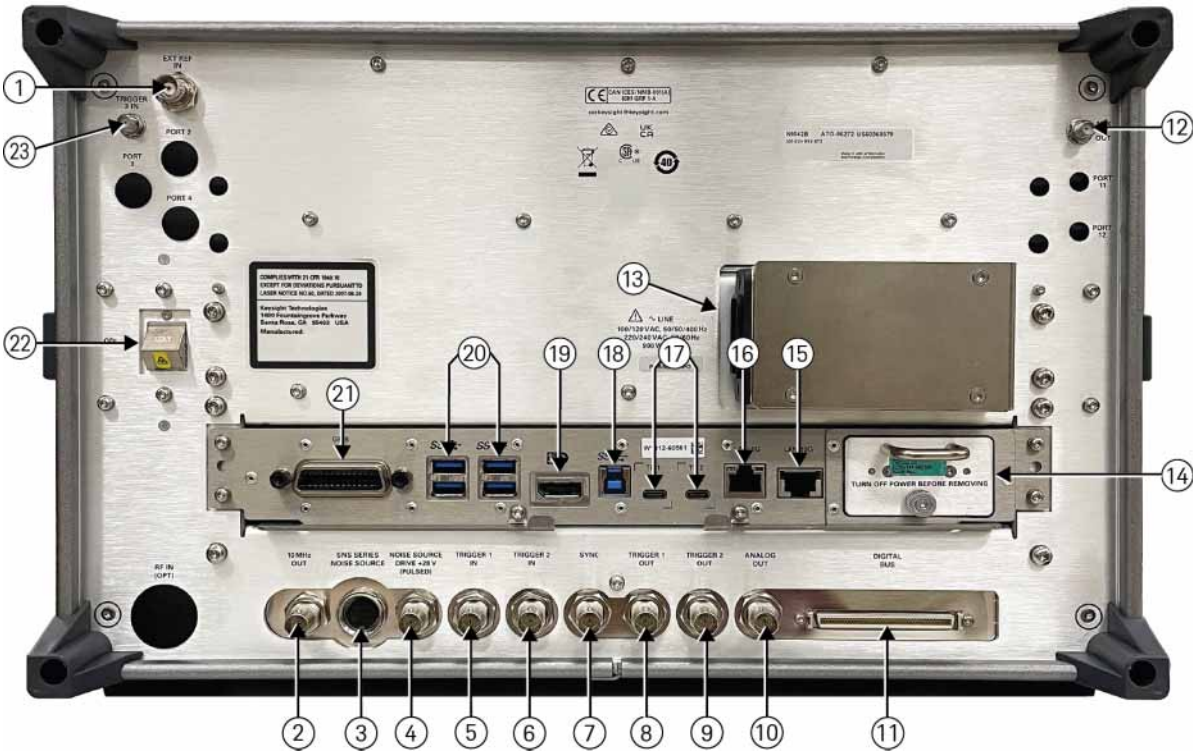


Notice that the Frequency panel has a Settings tab on the right side. Other panels may have multiple tabs. The tabs access controls for the particular parameter noted on the tab.

Bottom Bar

The bottom bar contains several icons that access various controls.

Rear-Panel Features



Item		Description
#	Name	
1	EXT REF IN	Input for an external frequency reference signal.
2	10 MHz OUT	An output of the analyzer internal 10 MHz frequency reference that the analyzer is currently using internally.
3	SNS Series Noise Source	For use with Keysight N4000A, N4001A, N4002A Smart Noise Sources (SNS).
4	Noise Source Drive +28 V (Pulsed)	For use with Keysight 346A, 346B, and 346C Noise Sources.
5	TRIGGER 1 IN	Allows external triggering of measurements.
6	TRIGGER 2 IN	Allows external triggering of measurements.
7	Sync	Reserved for future use.
8	TRIGGER 1 OUT	A trigger output used to synchronize other test equipment with the analyzer. Configurable from the Input/Output keys.
9	TRIGGER 2 OUT	A trigger output used to synchronize other test equipment with the analyzer. Configurable from the Input/Output keys.

Item		Description
#	Name	
10	Analog Out	For Option YAS: Screen Video For Option YAV: Screen Video Log Video Linear Video For Option EMC or N9063C or N9063EM0E Analog Demod Measurement Application: Demod Audio
11	Digital Bus	For Option RTL (Real Time Link)
12	Aux IF Out	For Option CR3: Second IF Out For Option CRP: Arbitrary IF Out For Option ALV: Log Video
13	Line power input	The AC power connection. See the product specifications for more details.
14	Removable Disk Drive	M2 disk drive. Standard on all analyzers.
15	10G LAN	LAN (RJ45) 10 G Base-T Ethernet port
16	1G LAN	LAN (RJ45) 1 G Base-T Ethernet port
17	Thunderbolt 3	USB Type C, female (2 ports), 5V, 1.0 A max.
18	USB 3.0 Type B	Super Speed USB 3.0 port, Type B. USB TMC (test and measurement class) connects to an external PC controller to control the instrument and for data transfers over a 480 Mbps link.
19	DisplayPort	Used for video output. Accepts a standard display port connector, or adapter for connection of an external monitor.
20	USB 3.0 Type A	Super Speed USB 3.0 Type A, Host ports. Connect to external peripherals such as a mouse, keyboard, printer, DVD drive, or hard drive.
21	GPIB	A General Purpose Interface Bus (GPIB, IEEE 488.1) connection that can be used for remote analyzer operation.
22	ODI	For Option ST1 or ST2: Multi-fiber, Push On connector (MPO) Optical Digital Interface. Optical interconnect for very high speed streaming applications between instruments, processors, and storage.
23	Trigger 3 In	Wide bandwidth external trigger.

Front and Rear Panel Symbols

The table below lists the definitions of markings that may be on or with the product. Familiarize yourself with each marking and its meaning before operating the instrument.

This symbol indicates the equipment requires ergonomic and safety considerations for moving and lifting due to its weight.

This symbol marks the standby position of the power line switch.

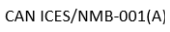
This symbol indicates the input power required is AC.

The instruction documentation symbol. The product is marked with this symbol when it is necessary for the user to refer to instructions in the documentation.

This symbol indicates the presence of a class 1 Laser device.

The CE mark is a registered trademark of the European Community (if accompanied by a year, it is the year when the design was proven). It indicates that the product complies with all relevant directives.

The UK conformity mark is a UK government owned mark. Products showing this mark comply with all applicable UK regulations.



Canada EMC label. Interference-Causing Equipment Standard for industrial, scientific and medical (ISM) equipment. Matériel industriel, scientifique et médical (ISM)

CE/ICES/ISM label.

This is a symbol of an Industrial Scientific and Medical Group 1 Class A product. (CISPR 11, Clause5).

The Keysight email address is required by EU directives applicable to our product.

The CSA mark is a registered trademark of the CSA International.

The RCM mark is a registered trademark of the Australian Communications and Media Authority.

South Korean Certification (KC) mark. It includes the marking's identifier code.

The crossed-out wheeled bin symbol indicates that separate collection for waste electric and electronic equipment (WEEE) is required, as obligated by the EU DIRECTIVE and other National legislation. Please refer to www.keysight.com/go/takeback to understand your trade-in options with Keysight, in addition to product takeback instructions.

China Restricted Substance Product Label. The EPUP (environmental protection use period) number in the center indicates the time period during which no hazardous or toxic substances or elements are expected to leak or deteriorate during normal use and generally reflects the expected useful life of the product.

Universal recycling symbol.This symbol indicates compliance with the China standard GB 18455-2001 as required by the China RoHS regulations for paper/fiberboard packaging.

Heavy product. Requires ergonomic and safety considerations before moving or lifting.

3 Instrument Operating System

This chapter describes the Microsoft Windows 10 or 11 configuration and the settings used with the Keysight instrument software. It includes information about changing some of the system settings. And it describes the Windows operating system configuration and the software installations that are present on the Disk Drive when the instrument leaves the factory.

It is possible to use the front panel and touchscreen for changing operating system configuration items, but it is easier to perform these tasks with a USB mouse and external keyboard. For more useful shortcuts, see “Navigating Windows Without a Mouse” on page 74.

The following topics can be found in this chapter:

“Microsoft Windows” on page 46

“Installed Software ” on page 46

“Customer installation of software” on page 47

“User Accounts” on page 48

“Keysight X-Series Analyzer Licensing Options” on page 50

“Licensing New Measurement Application Software - After Initial Purchase” on page 53

“Windows Configuration” on page 55

“Configuring Printers” on page 58

“Configuring LAN” on page 59

“Windows Security” on page 60

“System Maintenance” on page 62

“USB Connections” on page 63

“Disk Drive Partitioning and Use” on page 65

“Disk Drive Recovery Process” on page 69

Microsoft Windows

Your instrument has Microsoft Windows installed at the factory. Keysight has already configured many of the settings in Microsoft Windows for optimal behavior in your instrument. This chapter contains details about many of these settings.

Installed Software

Signal Analyzer Software

The N9060EM1E Spectrum Analyzer Measurement Application software is installed in the signal analyzer. Additional measurement applications are available. Each application requires a license to execute the software. All of these applications are installed by the factory at the time of manufacture, even if the licenses have not been purchased. You may purchase additional licenses at a later date.

Vector Signal Analyzer Software

The 89600 VSA software is installed in the signal analyzer. This software was installed by the factory at the time of manufacture, even if the license was not purchased. You may purchase the license at a later date.

Customer installation of software

3rd Party Software Verified by Keysight

Keysight has verified that the following programs are compatible with the instrument's applications:

– MathWorks MATLAB

Installation of Other 3rd Party Software

The X-Series Signal Analyzer platform is an Open Windows environment, so you can install software on the instrument. However, installation of non-approved software may affect instrument performance. Keysight does not warrant the performance of the analyzers with non-approved software installed.

NOTE

Before installing any additional programs on the instrument, you should exit the Signal Analyzer application.

Also, you must not remove any applications or programs that were installed on the instrument when it was shipped from the factory.

If you install programs other than those that Keysight has tested, it could cause problems with the instrument's applications. If this happens, you should try uninstalling the program that has caused the problem, or try changing the program's configuration. If this does not correct the problem, you may have to use the Instrument Recovery system to reinstall the instrument's system software.

User Accounts

The instrument ships with a number of different accounts already set up. In addition you can create your own accounts if you desire. The privileges associated with each account determine what you can and cannot do from that account.

Administrator Account

The default Administrator password that ships from the factory is "Keysight4u!".

Using the Administrator account you can perform the following operations:

- Install software
- Configure network and printer access
- Access all files on the instrument
- Add or change user accounts and passwords
- Change Firewall settings
- Change Windows settings (e.g., using Device Manager)
- Change the time and date
- Run any application

Instrument Accounts

The default user account that ships from the factory is “Instrument” with the password “measure4u”. This user is a member of the standard Users group. Using the Instrument account, you may perform the following operations:

- Configure network and printer access (although not local printer access)
- Access files on the instrument that are accessible to the Users group
- Run applications that are accessible to the Users group

Keysight Only User Account

The instrument contains a user account called "KeysightOnly" that can be used by Customer Support in the event that the customer has changed the Administrator password and has forgotten the password. You must not remove or modify the KeysightOnly account.

Service User Accounts

There are user accounts defined in the instrument for servicing the instrument.

Customer Creation of Accounts

You can create additional user accounts and decide on the level of security granted to any new user accounts created. For example, the level of security can be assigned as administrator, power user, standard user, backup operators. User names are not case sensitive but passwords are case sensitive.

It is Keysight's expectation that each user's My Documents folder is mapped to the D: drive. This is to avoid overwriting the user's data in the event the Instrument Recovery must be performed. Also, this facilitates convenient backup by copying the contents of the D: drive to external media. All user accounts created by the factory already have My Documents mapped to the D: drive. It is recommended to map all new users' My Documents folders to the D: drive.

Keysight X-Series Analyzer Licensing Options

The Keysight X-Series Signal Analyzers have four licensing types that have one of two terms attached. The terms are P (Perpetual) and L (1 year). These licensing types and terms are available on all existing measurement applications except the Spectrum Analyzer Measurement Application, which requires a fixed perpetual license (shipped Standard). Fixed Perpetual licenses are also required to enable hardware options.

Fixed Licenses

Fixed licenses are the traditional license type with the same duration that have been available for all features since the introduction of the X-Series analyzers. Fixed licenses are identified by the “F” in the second character and a “P” or an "L" in the third character of the option designator:

Example: N9068EM0E-1FP or N9068EM0E-1FL

A license key is instrument model and serial number dependent. You can only install the license key on the specific instrument for which it was created.

Transportable Licenses

Transportable licenses are a type of license offering deployment duration that is not fixed to a specific instrument model and serial number. Transportable licenses are identified in the product structure by a “T” in the second character and a “P” or an "L" in the third character of the option designator:

Example: N9068EM0E-1TP or N9068EM0E-1TL

Transportable licenses require a connection to the Keysight server only for managing the transfer of the license to and from the instrument. The connection to the Keysight server may be via the instrument itself or an external PC. The Keysight licensing server also provides for storage of unused licenses that have been transported off instruments but are awaiting assignment to new instruments. The server will limit the number of transports per 30 day period per application license to 10.

Transportable licenses require redemption and installation of the license before the first use. This allows the user to determine on which instrument to initially install the application license.

It is recommended that instruments be at the same instrument software release to ensure the latest code is available on each instrument so that the user experience is identical between instruments. This is particularly important when transporting the license for a newly-released application, which may only be available in the latest software release.

Network Licenses

Network licenses are available over the customer's network from a server the customer configures. Network licenses are identified in the product structure by an "N" in the second character and either a "P" or an "L" in the third character, indicating a term of either Perpetual or 1 year (12 months), respectively.

Example: N9068EM0E-1NP

The server has a count for each license and will only allow instruments to "check-out" a license up to that count. Once the count is reached for a specific license, further check-outs fail until one of the licenses is checked back in to the server. Therefore, it is possible for an instrument to have different features available to it based on what licenses are available on the server when it tries to get the licenses.

Setting up network licenses is done via the Keysight Floating License Manager. Refer to the Installation Guide that can be downloaded from this web page.

Application license

Application licenses (like N9077EM0E-1NP) are automatically checked out when entering the mode that uses them, and they are automatically checked-in when leaving that mode. Because the server may have already checked out the last license for the application to another instrument, there is a possibility that a mode switch will fail because a required license could not be checked out from the server. If the server has a limited number of licenses compared to the number of users desiring to use that license, this may mean that switching from mode A to mode B then back to mode A may fail when returning to mode A because another instrument checked out the last available license while the user was in mode B. Also, for modes with multiple licenses for different features (like Multi-Standard Radio), the features available may also change when switching out of the mode and back into it.

USB Portable Licenses

The USB Portable license is implemented with a physical dongle that is a USB device like a USB thumb drive. It has a Host ID fixed in the dongle hardware. It does not contain any writable data and so is acceptable to high security A/D customers. Transporting licenses from one instrument to another just requires moving the dongle and license files to the desired instrument. The license files can be installed on many instruments, but they will only be valid on the one instrument that has the dongle.

USB Portable licenses are identified in the product structure by an "U" in the second character and either a "P" or an "L" in the third character, indicating a term of either Perpetual or 1 year (12 months), respectively.

Example: N9068EM0E-1UP

With USB portable licenses, the pre-installed Keysight Floating License Manager is used to add licenses to the instrument's server.

USB Portable licenses with a limited count are checked out and in like Network licenses. Because the licenses are local, there will be no network latency involved in the check-out/check-in, but there can still be a slight performance degradation compared to Fixed and Transportable licenses.

USB Portable licenses that are "uncounted", will perform comparably to the Fixed and Transportable licenses.

Plugging/un-plugging the dongle is equivalent to transporting a license to/from the instrument, however, the XSA application must be restarted whenever the dongle is plugged in.

Configuring Network and USB Licenses

The Keysight Floating License Manager must be used to configure the Network or USB Portable licenses before the licenses can be used. An instrument can be configured for Network or USB Portable licenses or both. To set up USB Portable licenses, in the Keysight Floating License Manager select "Start a floating license server with a license file" and add files containing the USB Portable licenses desired. To set up Network licenses, in the Keysight Floating License Manager select "Connect to a floating license server" and enter the network server's name preceded by the "@" character (example: "@myserver"). To set up both Network and USB Portable license, first configure the USB Portable license, then configure the Network licenses, but append ";@localhost" to the server name (example: "@myserver;@localhost"). Whenever the configuration is changed, the X-Series software must be restarted.

Licensing New Measurement Application Software – After Initial Purchase

Additional measurement application software can be ordered after your initial purchase of the signal analyzer. Software upgrades are provided in a kit that includes an option based Entitlement Certificate and a license agreement. The licenses are downloaded from the license Web site onto a USB storage device so they can be loaded into the instrument.

For all new measurement application installations, we recommend that the latest version of the instrument software be installed. This ensures that the measurement application being licensed and activated is installed and is the most current version.

The latest revision of the software may be downloaded from:

http://www.keysight.com/find/xseries_software

A license key is usually for one Host ID only. The Host ID for Fixed and Transportable is the instrument model and serial number, for Network it is the server's MAC address, and for USB Portable it is the USB Dongle's number (printed on the dongle).

NOTE No calibration is required after a measurement application installation.

Installation Procedure Over USB for Fixed Licenses

Step	Action	Notes
1. Redeem the Option Upgrade Entitlement Certificate	Follow the instructions on the Certificate	After redeeming your Option Upgrade Entitlement Certificate you will receive an e-mail with an attached License File.
2. Save the license file	Save the .lic file to the root directory of a USB storage device	
3. Load the license file	Connect the USB storage device to one of the signal analyzer USB ports.	Windows will detect the new hardware and may display the configuration menu. The signal analyzer will automatically load the license file. (This may take a few minutes) Upon completion, the Keysight License Service will display a "Successful License Installation" message.
NOTE	Alternatively the license file can be manually installed over USB or LAN by placing the license file in the following folder on the signal analyzer. C:\Program Files\Agilent\licensing	

Step	Action	Notes
4. Verify installation	– Cycle the power on the signal analyzer.	The application will not be available for use until after the power has been cycled.
	– Press **System, Show System**.	This displays the list of installed applications.
	– Verify that the new application appears in the list.	If you require further assistance, please contact the Keysight support team. Online assistance: http://www.keysight.com/find/assist If you do not have access to the Internet, contact your local Keysight Technologies Sales and Service Office, or if in the United States, call 1-800-829-4444.

NOTE

For other license types:

– Transportable licenses use the Keysight License Manager to perform a transport

– Network licenses are loaded on the server and set up with the Keysight Floating License Manager

– USB Portable licenses are loaded onto the instrument and configured with the Keysight Floating License Manager. License files should be loaded onto the
D: drive to prevent losing them in the case of a System Recovery.

Windows Configuration

The Windows settings have been optimized for the best measurement performance. Any modifications to these settings may degrade instrument performance and measurement speed. In general, most Windows System settings (typically set through the Windows Control Panel) should not be modified. Those that can be safely modified are listed below.

CAUTION To recover from problems caused by changing Windows Systems settings, you may have to reinstall the Windows system and instrument applications using the "Disk Drive Recovery Process" on page 69.

Settings that Can Be Changed

You may change the following Windows settings or administrative tasks (available from the Windows Control Panel) to suit your own personal preferences. It is recommended that you document any changes to the instrument's configuration in case an Instrument Recovery is performed and the configuration is reset.

NOTE Some of these actions can only be performed with Administrator privileges.

You May Use This Feature:	To Do This...
 Windows Update	Configure Microsoft Windows Automatic Updates. Microsoft recommends that you always get the latest critical Windows updates to ensure that the instrument's Windows operating system is protected. If the instrument has Internet access, the instrument default is set to automatically check for critical Windows Updates and notify you.
 User Accounts	Setup new user accounts. **CAUTION** Do not delete or modify the "KeysightOnly" user account. Doing so may prevent Keysight from servicing the instrument.
 Network and Sharing Center	Add the Instrument to a network
 Devices and Printers	Install and configure a printer
 Date and Time	Set the time and date

You May Use This Feature:	To Do This...
 System	If you click on “Advanced System Settings” a dialog will open called “System Properties.” On this dialog there is an “Advanced” tab, which opens up a dialog with a number of settings options. One of these is “Performance”, and if you click on the “Settings” button under “Performance”, you will see another dialog with a number of settings options. The default is “Let Windows choose what’s best for my computer.” You can also select “Adjust for best performance.” You should leave the remaining selections unchanged.

Settings that Must Not Be Changed

Avoid changing the settings described below (available from the Windows Control Panel). Changes to these settings may degrade instrument performance, screen displays, and measurement speed.

Do NOT Use This Feature:	To Do This...
 Power Options	Do not change Power Options.
 System	If you click on “Advanced System Settings” a dialog will open called “System Properties.” On this dialog there is a tab called “Hardware.” You should not modify any settings under the “Hardware” tab. On this dialog there is also a tab called “Advanced.” You should not modify any settings under the “Advanced” tab except as described above under “Settings that can be changed”.
 Fonts	Do not remove installed Fonts
 Display	Do not change the following Display Settings: – Screen Saver settings (under “Personalization) – Screen resolution (under “Adjust Resolution”) – DPI setting (under “Set custom text size”)
 Region and Language	Do not change any settings under “Region and Language” or the instrument keyboard and display may not operate properly
 User Accounts	Do not delete or modify the "KeysightOnly" user account.

In addition, Do Not:

- Add, delete, or modify disk drive partitions.
- Delete or modify Keysight registry entries.
- Change the contents of any directories containing the name "Keysight".
- Stop the IIS server
- Tamper with any virtual directories (or their contents) that came configured with the instrument.
- Uninstall these libraries, interfaces, or programs:
    - The I/O Libraries
    - The .NET Framework or any Hotfixes or Service Packs for the .NET Framework
    - The “Microsoft Visual J# .NET Redistributable Package 1.1”
    - Programs that begin with "Keysight"
    - The Adobe Acrobat reader
- Modify:
    - The I/O Library “GPIB27”, “GPIB28” interfaces shown as configured Instrument I/O in the Connection Expert or I/O Config

Autoplay/Autorun

Since the introduction of Windows XP, the term Autoplay (sometimes also called Autorun) has come to be associated with the feature which assists users in selecting appropriate actions when new media and devices are detected. The Autoplay/Autorun feature is turned off in the instrument, by default, for heightened security, unless the Administrator account is running.

If you wish to re-enable Autoplay/Autorun, you may use the Auto Play function in the Control Panel. However, be aware that if you do this you may be more subject to virus attack from portable media such as USB flash drives.

Configuring Printers

Printers are configured using the Microsoft Windows Control Panel. It is easily accessed from the Windows Start menu or from under the front panel System key. This setup process can be done using the touch screen and front-panel keys. See “Navigating Windows Without a Mouse” on page 74.

When setting up a new printer, you may need to load the printer driver (unless you are using a network printer that your IT department has set up to include the driver). The manufacturer of the printer supplies the driver software and process. That may require that you attach an external USB disk drive. An alternative is to connect the instrument to the LAN and download the driver from the printer manufacturer’s internet site.

Configuring LAN

Hostname

The Computer Name, or Hostname, is preconfigured from the factory. It must be a unique name such that it does not conflict with other equipment on your LAN. The preconfigured Computer Name is A-<model number>-xxxxx, where xxxxx is the last 5 digits of the instrument's serial number.

IP Address & Gateway

The instrument is preconfigured to obtain an IP Address via DHCP. You can change the IP Address and Gateway as you desire.

You must be logged in as an "administrator" (default password:"Keysight4u!") to make changes.

Connecting To A Network Shared Folder

The instrument contains standard Windows networking. The time required to authenticate is dependent on your LAN infrastructure. You may have improved performance by mapping a network drive to the shared folder that you need to access.

Windows Security

Microsoft recommends the following to ensure the instrument's Windows operating system is protected:

- Use an internet firewall.
- Get the latest critical Windows updates.
- Use up-to-date antivirus software.

Windows Firewall

The instrument is shipped with the Windows Firewall enabled. You can verify the status of Windows Firewall by going to the Control Panel and clicking on System and Security, Windows Firewall.

Windows Firewall Exceptions for programs and ports have been added to allow proper operation of the instrument over a network. Modifying these settings may cause the instrument to not operate properly.

Automatic Updates

Microsoft recommends that you always get the latest critical Windows updates to ensure that the instrument's Windows operating system is protected. If the instrument has internet access, the instrument default is set to automatically check for critical Windows Updates and notify you.

You can change the configuration of the Microsoft Automatic Updates. You can choose not to have automatic updates. However, if you do this then you should manually update Windows periodically.

NOTE

Be aware that downloading and installing Windows Updates can be network and CPU usage intensive (impacting the instrument performance), and some Windows Updates automatically reboot the instrument. It is recommended that Windows Updates be performed when the instrument is not in normal use.

Spyware Protection

There is no anti-spyware software installed on the instrument. This should not be a problem if you do not use the instrument for a lot of internet browsing. Having spyware in the instrument could have an impact on the instrument performance.

System Maintenance

Backup

It is recommended that you have a regular backup strategy. Your IT department may already have a backup strategy in place that is suitable for the instrument and its data. Using the Instrument Recovery system in conjunction with a regular backup strategy should allow full recovery of the instrument data.

Windows has a Backup utility that you can use to archive files and folders in case of a disk drive failure. You can also use third party backup utilities. However, you must ensure that this third party software is compatible with the instrument's system software. See "Customer installation of software" on page 47 for more information.

When performing backups, we recommend that you backup the data to an external storage device connected to the network or one of the instrument's USB connectors. Also, you should perform backups at times when the instrument is not being used for normal operations, as it may impact the instrument's overall performance.

System Restore

Windows contains the capability to restore the system to a previous point in time. System Restore is enabled with default settings as provided by Microsoft. However, System Restore is not always 100% successful. Therefore, it is not recommended that you rely on System Restore to protect your instrument. System Restore has not been tested to verify successful restoring.

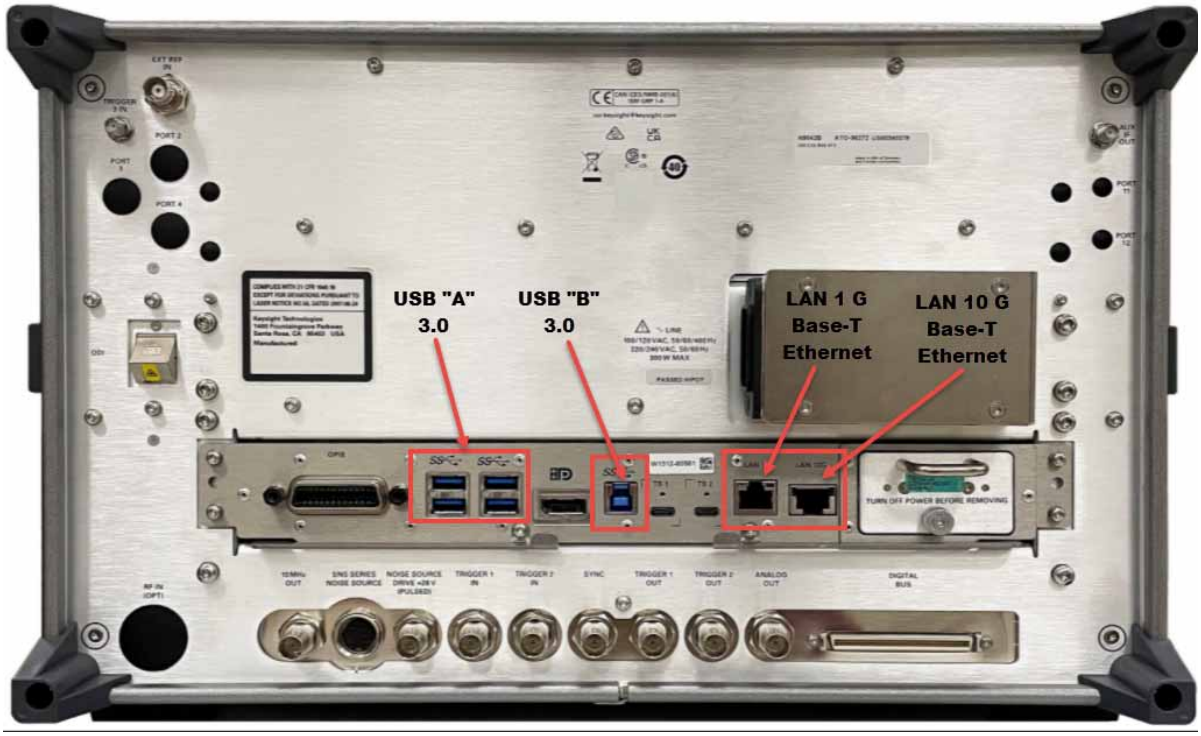
Disk Defragmenting

The instrument has a solid state drive. Disk defragmenting is not recommended.

USB Connections

There are five USB ports on the front panel. Two are USB 2.0 Type A, two are USB 3.0 Type A (far right with blue USB connector), and one is a USB 3.0 Type C. On the rear panel there are seven USB ports, four are USB 3.0 Type A, one is USB 3.0 Type B and two are Thunderbolt/USB Type C. These ports can be used to connect USB mass storage devices and printers. The front panel USB 3.0 Type C connector is used for charging and for connection to the Keysight V3050A Frequency Extender. The instrument USB Host support includes the standard Microsoft Windows USB drivers for human interface, mass storage, printing, scanning, and imaging devices. A complete up-to-date list of the Windows USB class driver support is available on the Microsoft website.

The square USB port (see graphic below) on the rear panel is a USB 3.0 Series “B” port and is used for controlling the instrument over USB. Information to help you program your instrument is documented in the X-Series Programmer’s Guide. The instrument USB device driver included in the instrument software supports the test and measurement industry standard USBTMC-USB488 device class.



Keysight Technologies does not support or warrant correct instrument operation if additional USB drivers from third parties are installed in the instrument. It is possible that additional drivers could break the normal USB operation. If USB operation is broken, recovery would require reinstalling the instrument application using the Instrument recovery process.

Disk Drive Partitioning and Use

The drive is partitioned into 3 sections: C:, D: and E:

- The **C: partition** contains the Windows operating system and software installed by Keysight. This is an Open System which means you can install additional software, and these should be installed on the C: drive. However, only a limited set of software applications are tested for use with the Keysight measurement software. The installation and/or use of other software is not warranted and could interfere with the operation of the measurement software. If instrument repair is ever needed, the Keysight version of the C: drive is the only part of the instrument software that is restored by the Instrument Recovery process. You must reload any other software that you have added in the instrument.
- The **D: partition** is reserved for data storage. The User Accounts that are configured by Keysight have their My Documents folder mapped to the D: drive. This is for the convenience of backing-up the measurement data. You should always back-up the data on the D: drive to an external device. This allows you to restore the data if you ever need to replace the disk drive.
- The **E: partition** is reserved for Keysight's use. The primary use of the E: drive is for housing the Calibration and Alignment data. Do not change or overwrite the files on this drive. This could cause your instrument to not meet specifications, or even to stop functioning correctly. Do not use this drive for data storage. It is also recommended that you back up the contents of this drive by using the factory calibration data backup utility.

Backing-up Factory Calibration Data Using Alignment Data Wizard

NOTE

When the instrument is manufactured or following an adjustment at the service center, the calibration data is automatically backed up to an internal instrument flash memory location. Therefore, this procedure is intended to be used if you want to create a calibration data back up to an external device such as a USB Drive.

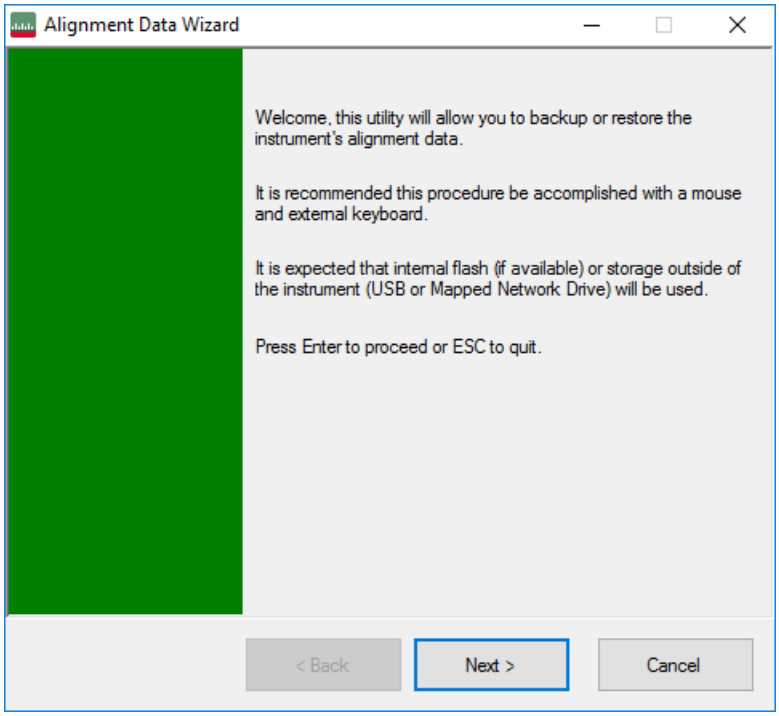
The Alignment Data Wizard is launched directly from the instrument application software interface, so you do ***not*** need to exit the application software before proceeding.

To back up the factory calibration data using the Data Wizard, you will need to plug in a USB storage device, a USB mouse, and a USB keyboard.

Step	Notes
1. Press **System** > **Alignments** > **Backup or Restore Align Data...**.	You may be prompted for the administrator password. Enter Keysight4u! An information window appears that informs you that the instrument must shut down to complete the backup: `"Press OK to force shut down and proceed. Press Cancel to exit."`

2. Select OK.

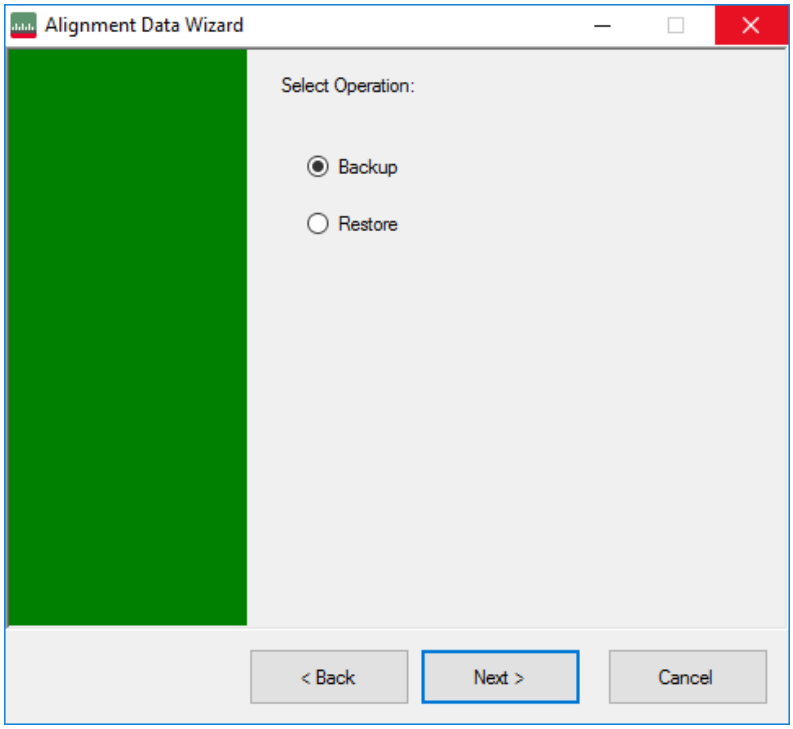
The Alignment Data Wizard appears:



3. Select **Next** to proceed.

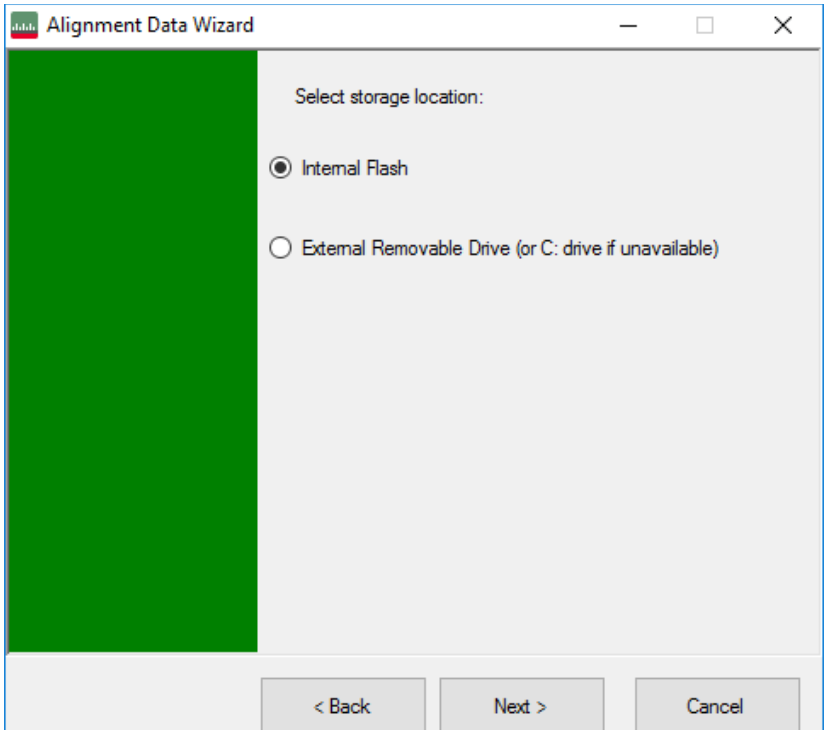
Step	Notes

The Select Operation window appears:



4. Select **Backup** > **Next** to proceed.

Step	Notes
The Select Storage window appears:	



5. Select the desired storage location, then click **Next** and follow the wizard's on-screen instructions to back up the calibration data.	Internal Flash is the default location. If you select **External Removable Drive**, you can browse to the location of the memory device.

Disk Drive Recovery Process

The Instrument Recovery System can be used to repair errors on the instrument's C: drive partition or to restore the original factory configuration of the system software on the disk drive. The Instrument Recovery System is stored in a separate hidden disk drive partition.

Restoring the original factory system software does not restore any of the following items:

- Additional software that has been installed after the instrument was shipped from the factory. (Thus, following an Instrument Recovery any software installed after the instrument was shipped from the factory will need to be re-installed.)
- System configurations (for example user accounts, windows configurations) that have been made after the instrument was shipped from the factory. (Thus, following an Instrument Recovery configuration changes will have to be performed.)
- The Instrument Recovery overwrites the contents of the C: partition. It does not affect the D: or E: partitions.

It is recommended that the customer use a regular back up strategy. Your IT department may already have a backup strategy in place that is suitable for the instrument and its data. Using the Instrument Recovery System in conjunction with a regular back up strategy should allow you to fully recover the instrument's software and data.

Table 3-1 Recovery Process

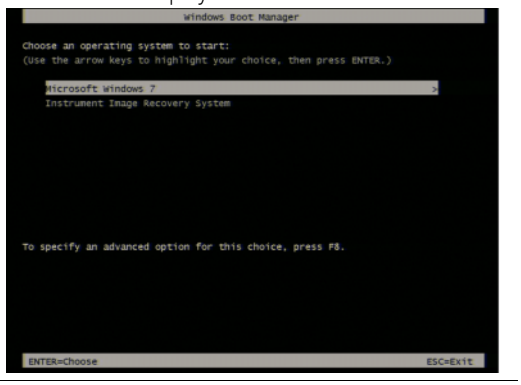
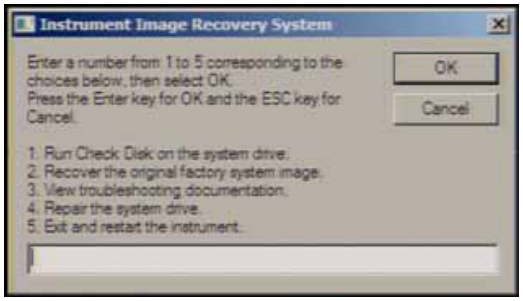
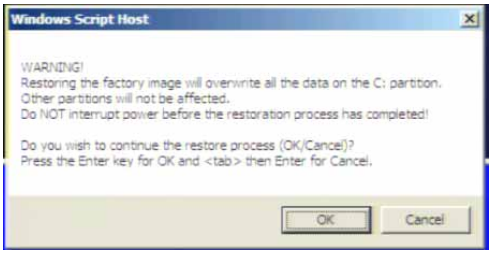
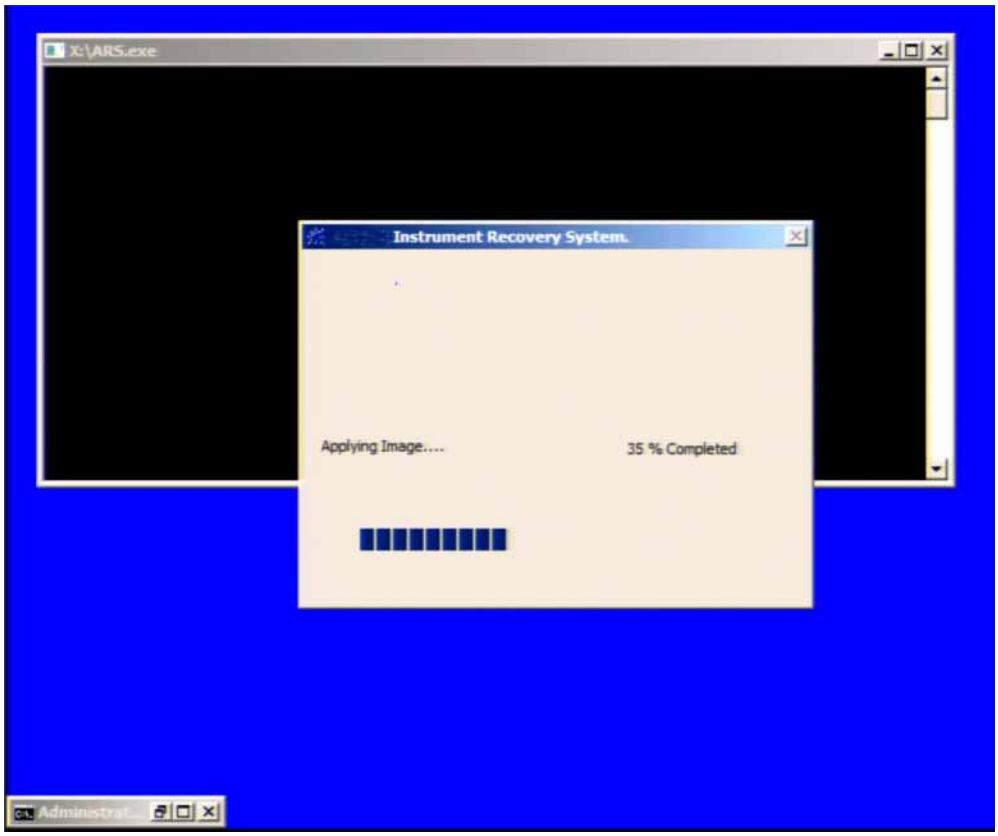
Step	Notes
1. Make sure the instrument is turned off.	
2. Turn on the instrument. – Press the down arrow key to move the highlight to **Instrument Recovery System**, then press **Enter**.	After the Keysight Technologies screen is displayed, This screen is displayed for five seconds. 

Table 3-1 Recovery Process

Step	Notes
3. When the Instrument Recovery System has booted, follow the on-screen instructions to recover the image of the C: drive. – Press **2**, then press **Enter** to select the recovery.	
4. A warning message appears. – Press **Enter** to start the recovery, which may take up to 25 minutes to complete.	
	
5. Press **Enter** to exit and reboot the instrument once this portion of the recovery has completed.	

NOTE Additional recovery steps may be required to fully recover the system to a more current working state. This could involve restoring your own backups of the instrument information or re-installing applications, data and performing system customizations.

Updating the Software (required after a recovery)

To install the latest software version, the software and installation instructions are available at:
http://www.keysight.com/find/xseries_software

Table 3-2 Installing the Software

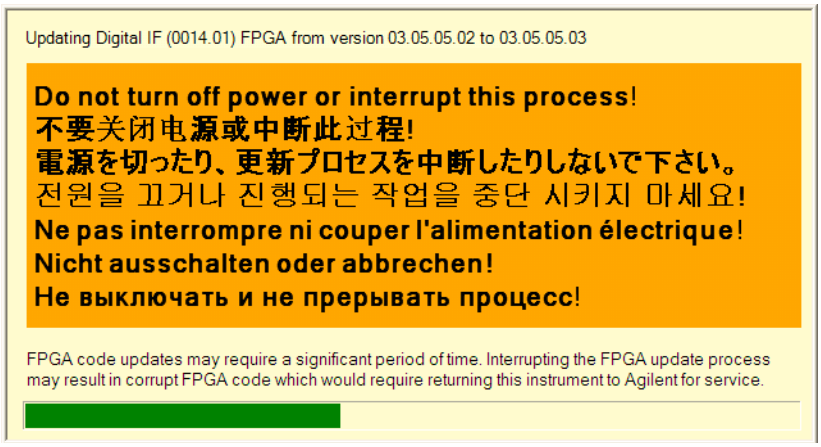
Step
1. Log out of the default user (instrument):
– Select the Start icon  , select the **Change account settings** icon  ., **Sign out**.
2. At the log in prompt enter:
– User Name: **administrator**
– Password: **Keysight4u!**
3. Follow the instructions on the software update web page.
CAUTION When you see the message `Programming FPGAs...Do NOT turn off power to the instrument`, be sure to do as it says and **DO NOT** turn off the instrument power at this time for ANY reason. If this process is interrupted the instrument most likely will need to be sent back to an Keysight Service Center for servicing before it will be usable again.


Table 3-2 Installing the Software

Step	
NOTE	The installation process can take up to 45 minutes. **Do not** turn the instrument power off or serious damage may occur. If any pop up windows appear, click **OK** or **Ignore** to proceed.
4. When the installation has finished, select **Yes, I want to restart my computer now**, **Finish**.	
5. After the instrument restarts, the newly installed version of the X-Series instrument software will run.	

4 Using Windows Tools

NOTE

The capabilities described in this section are Microsoft Windows 10 and 11 features. The discussion provided here gives some guidelines for using the capabilities with the instrument. You need to refer to the help documentation of your Windows operating system for more information. Your version of Windows may not match these instructions exactly.

You need an external keyboard and mouse to fully use these features.

"Navigating Windows Without a Mouse" on page 74

"Remote Desktop: Using the X-Series Signal Analyzers Remotely" on page 75

"Embedded Web Server: Using the X-Series Signal Analyzers Remotely" on page 84

"Windows Shortcuts and Miscellaneous Tasks" on page 90

Navigating Windows Without a Mouse

Key Presses	Actions
Esc	Exits/closes a Windows dialog box (does not exit an Application window)
Enter	Does the current "default action". If a menu item or a button is currently highlighted, then the Enter key activates that menu item or button.
Alt	Moves focus/control to the pull down menus bar in the active Window
Right Arrow	In pull-down menu: opens the next menu to the right, or opens a submenu In a dialog box: selects an option button
Left Arrow	In pull-down menu: opens the next menu to the left, or opens a submenu In dialog box: selects an option button
Up Arrow	In pull-down menu: Moves to next selection up in the menu In dialog box: selects an option button
Down Arrow	In pull-down menu: Moves to next selection down in the menu In dialog box: selects an option button
Tab	In dialog box: moves to the next/previous field
Del	Deletes the currently selected item
Alt + **Tab**	Switches between the next/previous Application
Alt + **Enter**	Shows the Properties of the currently selected item
Alt + **Esc**	Cycles through items in the order that they had been opened
Backspace	In My Computer or Windows Explorer: move up one level In Internet Explorer: works like the BACK arrow key
Ctrl + **Left arrow**	Moves to the left one word at a time
Ctrl + **Right arrow**	Moves to the right one word at a time
Ctrl + **Tab**	In dialog box: moves to the next/previous Tab location
Ctrl + **Esc**	Opens the Windows Start Menu
Ctrl + **Alt** + **Delete**	Opens a window that enables you to select the Windows Task Manager

Remote Desktop: Using the X-Series Signal Analyzers Remotely

Windows Remote Desktop is recommended for remote control of the instrument. It offers fully-interactive control that is almost identical to direct face-to-face control of the instrument. You can also remotely control the instrument using the Embedded Web Server interface. The Embedded Web Server functionality provides a communications method that does not require login to the instrument. However, due to its slower response time, it is only recommended for setup and data exchanges that do not involve instrument control.

NOTE

The Remote Desktop functionality is a Microsoft Windows 10 and 11 capability. The following discussion provides some guidelines for using this capability with the instrument. You need to refer to the Windows 10 or 11 help documentation for more information. As Windows evolves, these instructions may no longer be exact.

You need an external keyboard and mouse to fully use this functionality.

Overview of Remote Desktop Operation

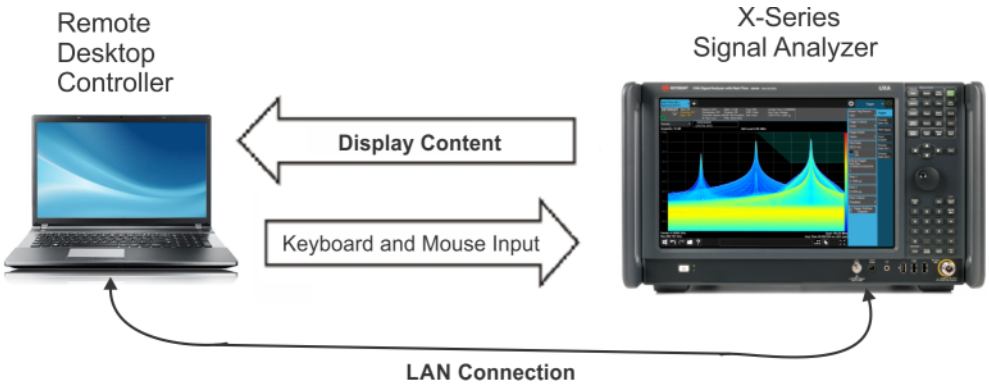
Using the Remote Desktop functionality of the instrument allows you to control and interact with the instrument from a remote computer as though you were sitting in front of the instrument.

When you have configured the instrument for remote connectivity, and configured a separate computer to act as a Remote Desktop Host, you can send commands to the instrument from the remote computer, and you can see the instrument display on the screen of the remote computer.

This section provides full details of how to set up the instrument for remote connectivity, and also how to set up a computer running any version of Microsoft Windows as a Remote Desktop Host.

Setting Up Remote Desktop Operation

Figure 4-1 Basic setup for remote desktop operation



NOTE To perform this operation successfully, you must have Administrator level access to the instrument.

Table 4-1 Setting up a remote desktop connection

Step	Action
1. On the instrument, open the Windows Control Panel	– From the instrument application, press **System**, **Control Panel**,
2. Select System functions	– From the Adjust your computers settings menu, click **System**.
3. Access Remote setting	– In the Control Panel Home window, select **Remote settings**
4. Select the Remote option	– On the Remote tab, in the Remote Desktop section, click the appropriate checkbox.
5. To add users	– Click **Select Users**, **Add**.
6. Follow the on screen instructions.	

Setting Up the Remote Computer

The procedure depends on which version of Microsoft Windows the Remote Computer to be set up is running.

Remote Computer Running Windows 10 or 11

Windows 10 and 11 include the Remote Desktop Connectivity Client software, so no additional setup is required.

Remote Computer Running Another Version of Windows

You can use any version of Windows to install and run the Client software for Remote Desktop Connectivity. However, you need to have available a Windows installation CD-ROM, because that contains the Client software.

NOTE

The following instructions relate to software provided by Microsoft Corporation. Keysight offers no warranty regarding the operation of such software. The procedure described here may be changed by Microsoft at some future time.

Table 4-2 Installing the Client software

Step	Notes
1. When the Welcome Screen appears, click **Perform additional tasks**	
2. From the **What do you want to do?** screen, click **Set up Remote Desktop Connection**.	The Remote Desktop Connection InstallShield Wizard appears.
3. Click **Next**.	Follow the on screen instructions provided by the Wizard.
4. To access the installed software, click **Start** > **All Programs** > **Accessories** > **Communications** > **Remote Desktop Connection**.	

How to Locate the Computer Name of the Instrument

To connect a remote computer to the instrument, you need to know its Computer Name. The Computer Name can be displayed as follows:

Table 4-3 Locating the name from the Keysight application

Step	Notes
On the instrument front panel, press **System**, **Show System**.	A page listing various parameters appears.The instrument's computer name is shown in the list next to the title Computer Name.

Table 4-4 Locating the name from the Windows desktop (with a mouse):

Step	Notes
1. Click **Start**, **Control Panel**.	
2. Double-click **System**	The Computer name is listed in the Computer name, domain, and workgroup settings section.

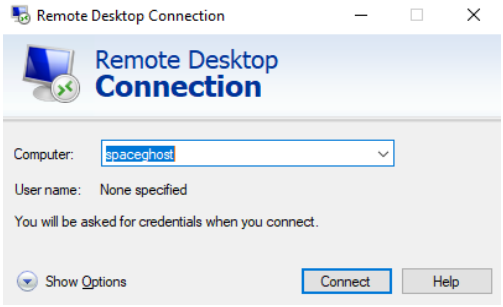
Running a Remote Desktop Session

Initializing a Remote Desktop Session

NOTE To initialize a Remote Desktop Session, you need to know the Computer Name of the instrument.

After setting up the remote computer for Remote Desktop Connectivity, as described in "Setting Up Remote Desktop Operation" on page 76, you are ready to start a Remote Desktop session.

Table 4-5 Starting a session

Step	Notes
1. Click Windows > **Start menu** >Programs, **Accessories** > **Remote Desktop Connection.**	A Remote Desktop Connection dialog appears: 
2. Enter the computer name of the instrument.	
3. Click **Connect**.	A login dialog box appears.
4. Enter the login account name and password.	The default account name is **Instrument** and the default password is **measure4u**, but these parameters may be changed by instrument users.

NOTE

Only the current User or an Administrator can remotely log into the instrument. To see who the current user of the instrument is, press **Ctrl**+**Esc** on the instrument until you can view the current user name on the Start menu. If no one is currently logged into the instrument, any valid instrument user can remotely log in.

The instrument display appears on the screen of the remote computer, from which the instrument can be operated entirely by the remote computer. For example, the remote computer mouse and keyboard can be used to change instrument measurement settings. On the actual instrument the current user will be logged out once remote connection is successful.

Windows Remote Desktop Options

Table 4-6 Setting Remote Desktop options

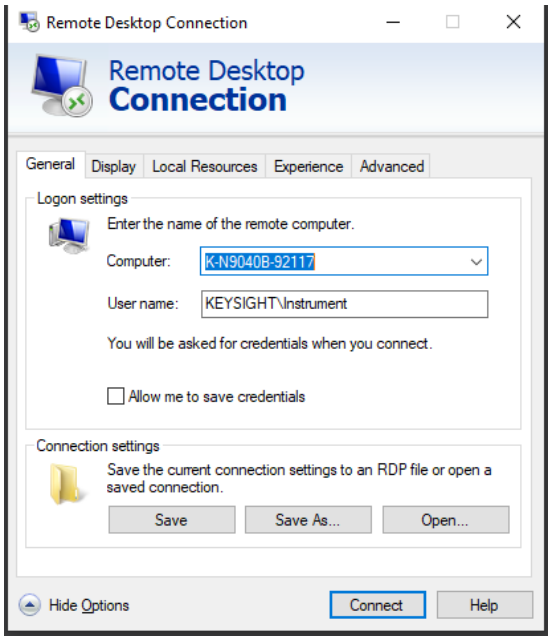
Step	Notes
1. On the Remote Desktop Connection menu, select **Options**.	 The Options dialog has several tabs. Generally, the default settings are correct.
2. Under the **General** tab, ensure that the Computer name and User name are set correctly.	You may choose to enter the password and save it for future sessions, by checking the Save my password box.

Table 4-6 Setting Remote Desktop options

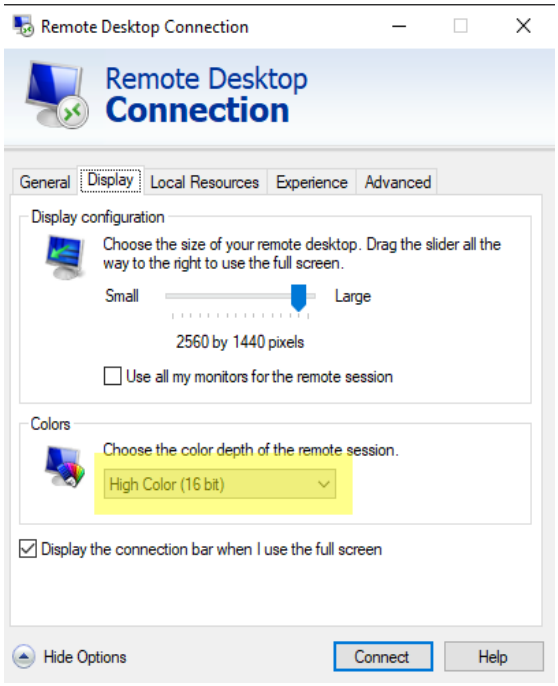
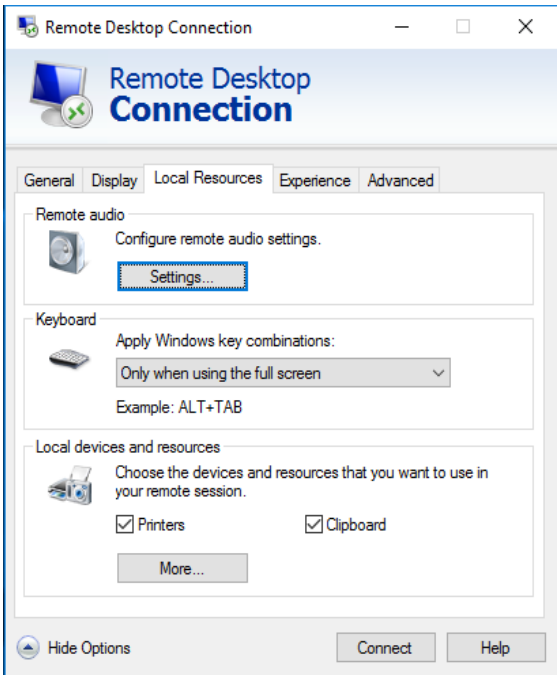
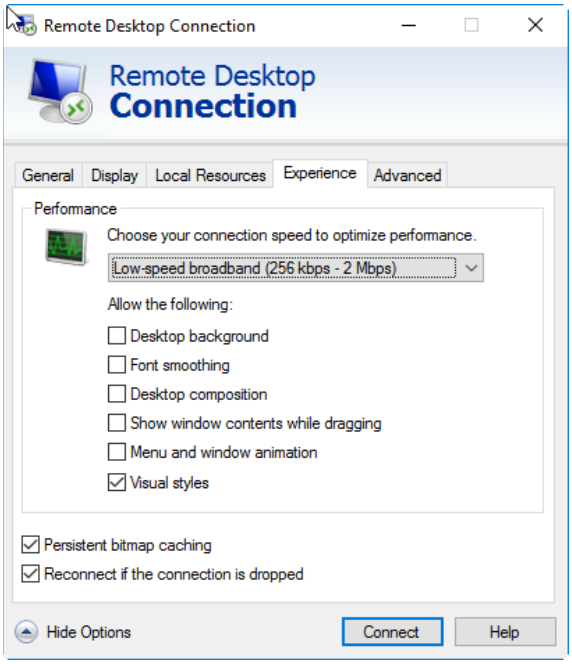
Step	Notes
3. Click the **Display** tab. – Under **Display configuration**, you may select the size of the window in which the instrument display appears. Do **not** select any size smaller than the instrument's front panel display. Selecting a remote desktop size smaller than the instrument's front panel display results in some of the items on the instrument display not being fully visible. In such circumstances, scroll bars do not appear, so portions of the display are not accessible. – Under **Colors**, set this to 16 bits. If you operate Remote Desktop with greater color depth (e.g., 32-bit) your windows may have a different appearance than they do on the instrument display because transparency becomes enabled.	

Table 4-6 Setting Remote Desktop options

Step	Notes
4. Click the **Local Resources** tab. – Select the desired setting for Remote audio using the Setting... button. – Select the desired Keyboard configuration from the drop-down list. – Select the desired Local devices and resources you want to use in the remote session using the check-boxes and other selections accessed from the More... button.	
5. Click the **Experience** tab.	To Optimize the performance of the Remote Desktop session, choose the appropriate connection format from the drop-down list. 

Ending a Remote Desktop Session

There are two ways to disconnect the remote computer from the instrument, ending the session:

Table 4-7 Ending a session

Step	Notes
1. Click the **X**, then click **OK**.	For full-screen, the X appears at the top center of the window. For non full-screen, the X appears in a red box at the right of the window's title bar.
or	
2. When the remote desktop is full screen, move the cursor to the bottom left of the window: – Click **Start**, **Disconnect**. – Click **Disconnect**.	You are asked to confirm that you want to disconnect.

Embedded Web Server: Using the X-Series Signal Analyzers Remotely

The instrument can be controlled using either the Embedded Web Server or Windows Remote Desktop. The Embedded Web Server is a good solution when you do not want to log into the instrument's user account. This allows you to view the display or control the instrument, without logging the current user off. Multiple users can connect at the same time

The web server in the X-Series signal analyzer updates many times per second and it has the advantage over Remote Desktop that it does not lock out the front panel.

NOTE Drag gestures do not work in web control, whereas they do in Remote Desktop.

Browsers that support the X-Series Signal Analyzer Embedded Web Server (these versions or later)

IE	Chrome	Safari	FireFox	iOS Safari	Chrome for Android
11	35	8	34	8	39

Accessing the instrument through the Internet

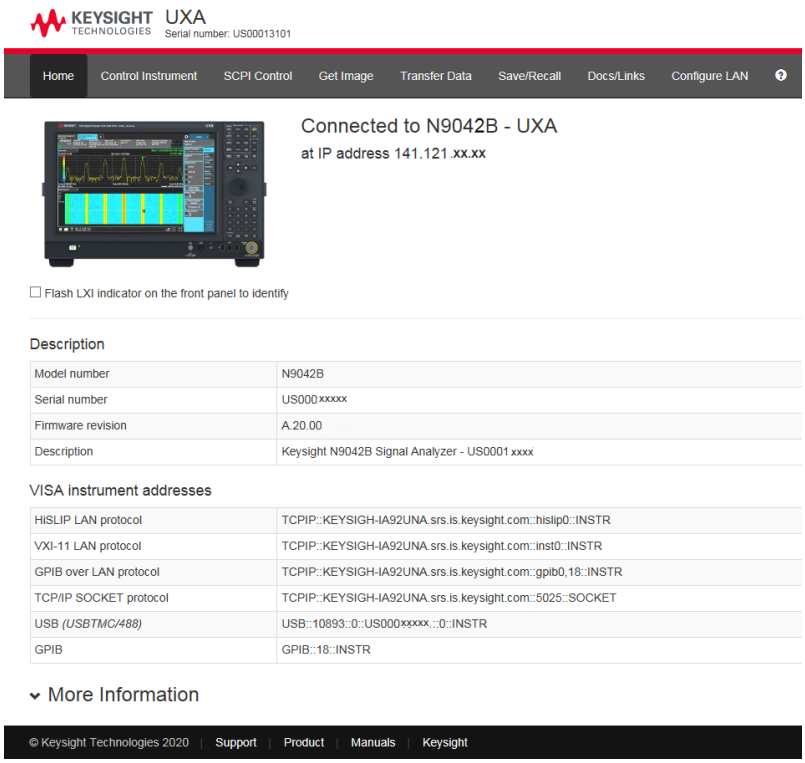
It is possible to access and control the instrument through the Internet and World Wide Web, or a local internet, using the built-in Embedded Server functionality. This section provides details of how to use this functionality.

The instrument may also be accessed and controlled using the Windows Remote Desktop functionality (see the section "Remote Desktop: Using the X-Series Signal Analyzers Remotely" on page 75, for details).

The instrument Embedded Server capabilities are fully compliant with the LXI (LAN eXtensions for Instrumentation) standard.

NOTE To gain access to the instrument from the LAN, you need to know its hostname (or IP Address). For details of how to locate this information using the instrument Display, see "How to Locate the Computer Name of the Instrument" on page 77.

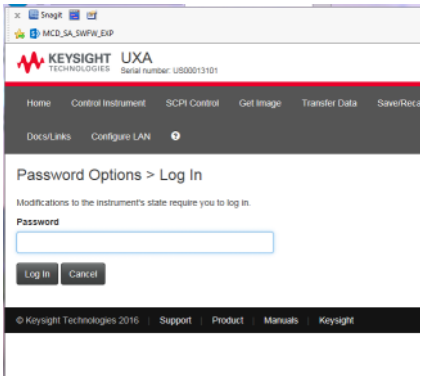
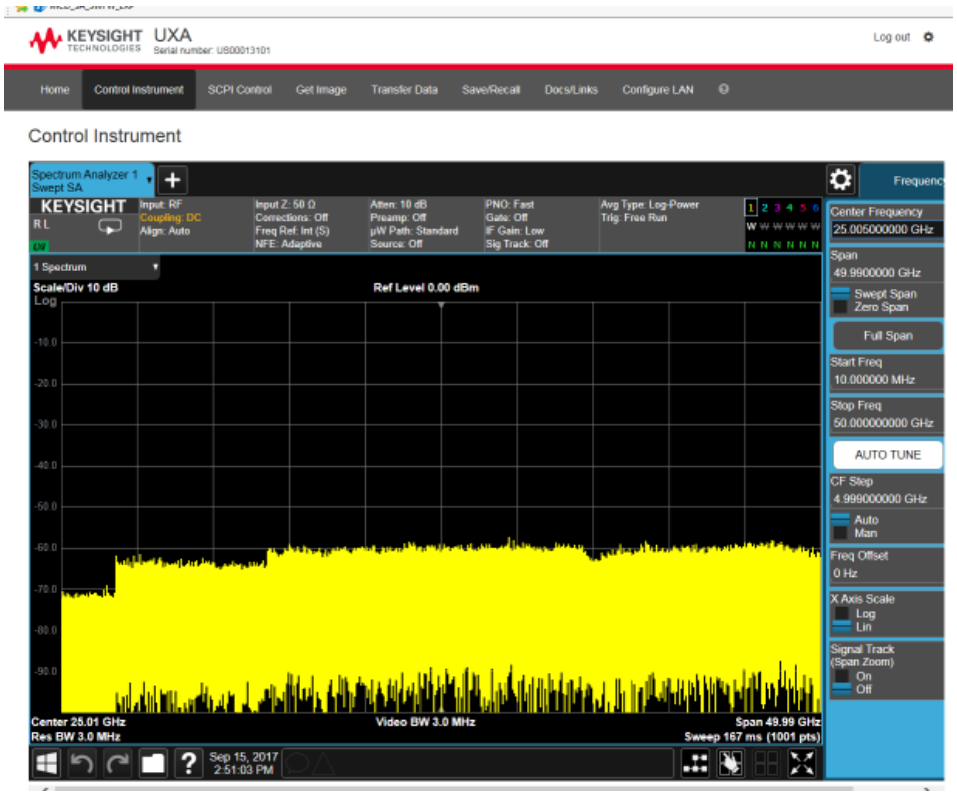
Table 4-8 Accessing the instrument

Step	Notes
1. Enter a URL corresponding to the instrument hostname or IP Address.	**NOTE** This functionality is only fully supported when using Internet Explorer. In this example, the host name is “a-n9042b-00104”. When the connection is made, the welcome page appears.
	
2. Click **More Information**	This displays further settings and configuration information.

Controlling the Instrument

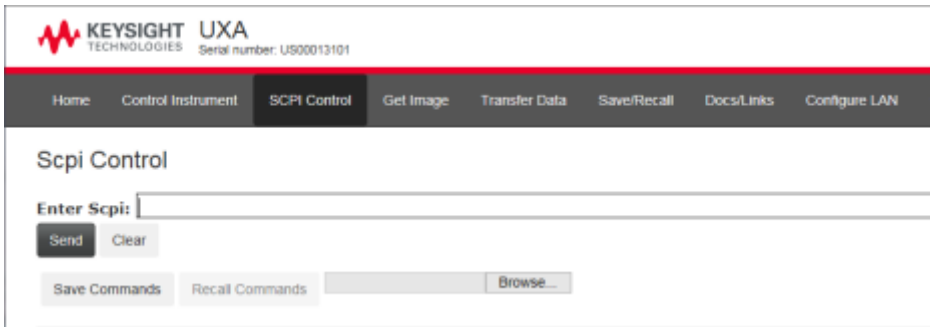
Selecting the Control Instrument tab enables you to view, control and interact with the instrument through the web server.

Table 4-9 Selecting the Control Instrument tab

Step	Notes
1. Select **Control Instrument**	A password entry dialog appears.
	By default, this password is set at the factory as "measure4u". However, you may subsequently change the password. (Select **System**, **I/O Config**, **Web Password Reset** on the instrument front panel to change the password.) When the correct password has been entered, the Control Instrument web page appears.
	
2. You can now enter new settings as required.	

Enabling SCPI Control of the Instrument

Selecting the SCPI control tab enables you to control the instrument via SCPI.



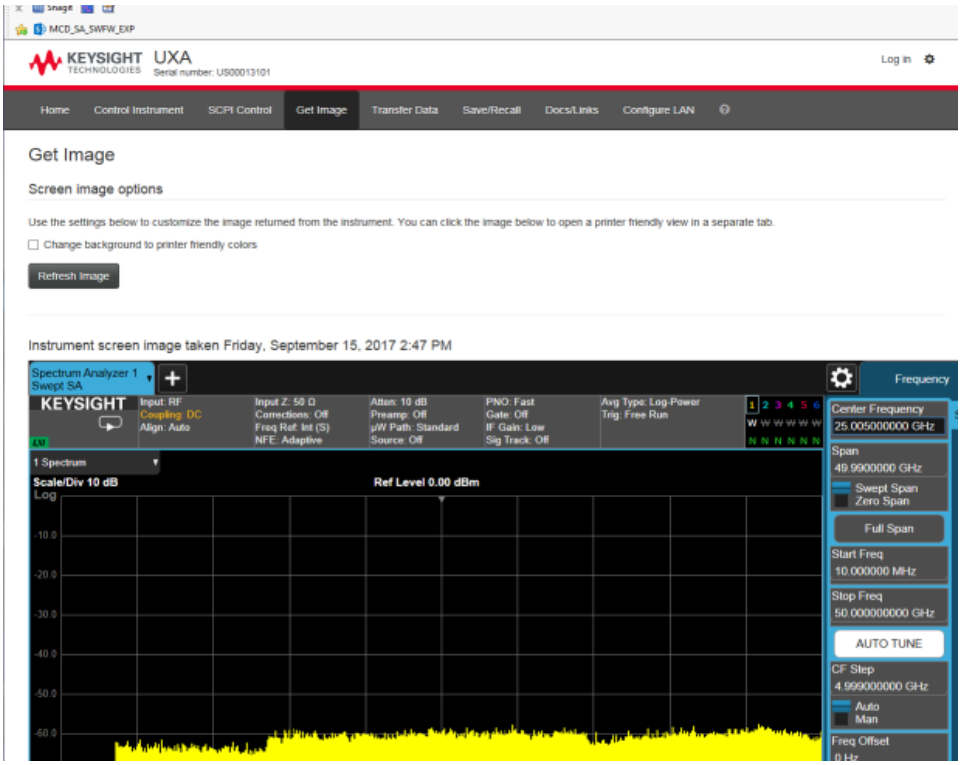
Selecting the Get Image Tab

Selecting the Get Image tab captures a screen image from the Instrument display.

NOTE **To capture a screen image using the web server, the Instrument Application must be running.**

The image is captured as a Portable Network Graphics (PNG) file, to the default file name `Screen.png`. The image file can be saved to the client computer disk drive, or copied to the Windows clipboard.

A typical screen capture image appears as follows:



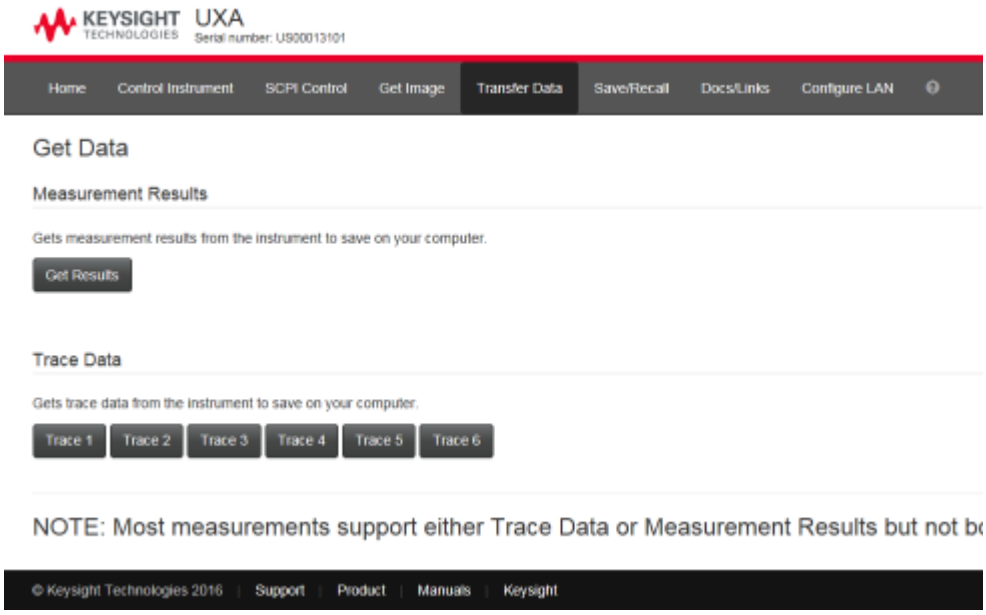
Selecting the Transfer Data Tab

Selecting the Transfer Data tab enables you to capture results from the instrument's currently active measurement. Depending on the current measurement type, captured results consist of either Trace Data or Measurement Results.

NOTE **To capture data using the web server, the instrument application must be running.**

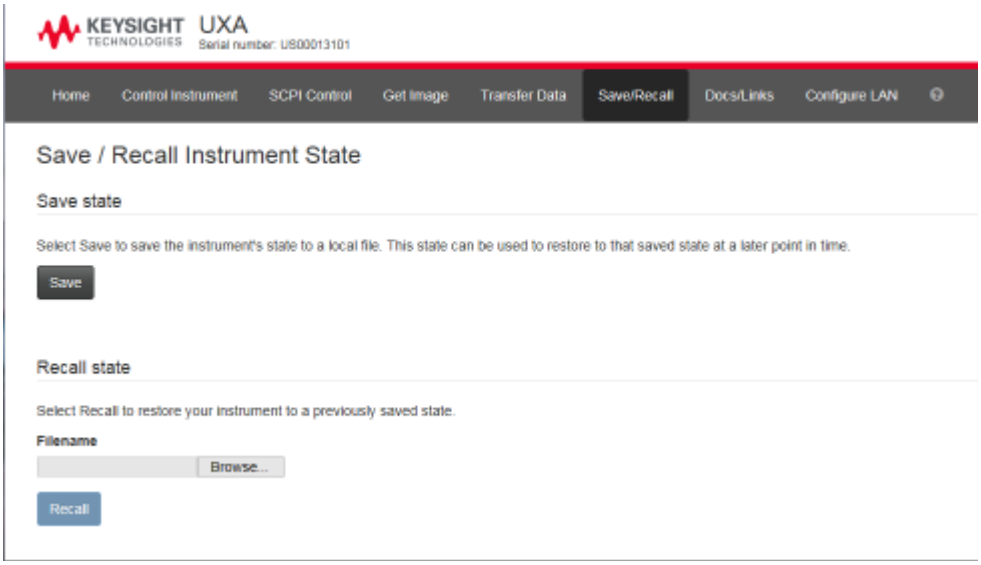
The captured data is formatted as a Comma Separated Value (CSV) file, which may be saved on the client computer's disk drive, or opened with a spreadsheet application such as Microsoft Excel, or imported into a database application such as Microsoft Access.

A typical Transfer Data web page display is shown below:



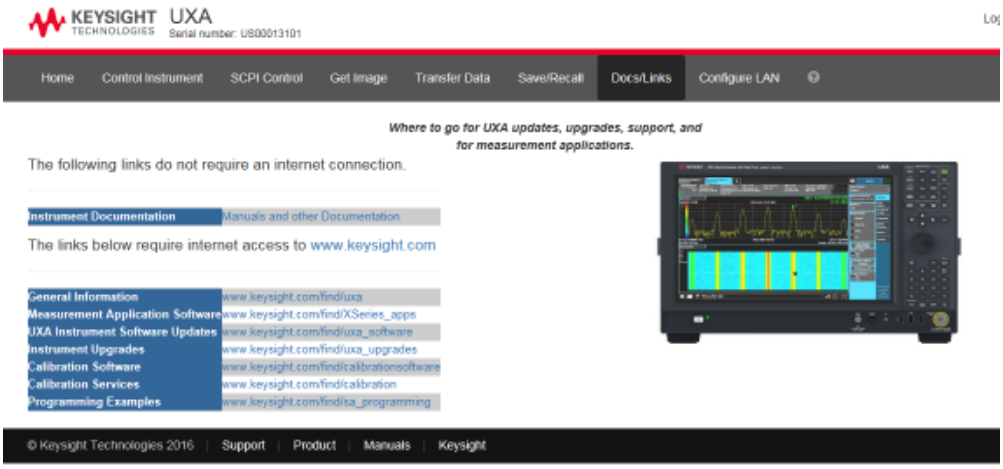
Selecting the Save/Recall Tab

Selecting the Save/Recall tab enables you to save and recall data from the instrument.



Selecting the Docs/Links Tab

Selecting the Docs/Links tab enables access links to the instrument documentation and application software.



Windows Shortcuts and Miscellaneous Tasks

This section provides a list of windows shortcuts (key combinations) that are useful when you operate the instrument without an attached mouse and keyboard. (See also "Navigating Windows Without a Mouse" on page 74.) Although these shortcuts are available in any Windows 10 and 11 system, they are not commonly used when a mouse and keyboard are attached.

Windows Shortcuts (key combinations)

You can use the following combinations of front panel keys to perform basic windows tasks when using the instrument without an attached mouse and keyboard.

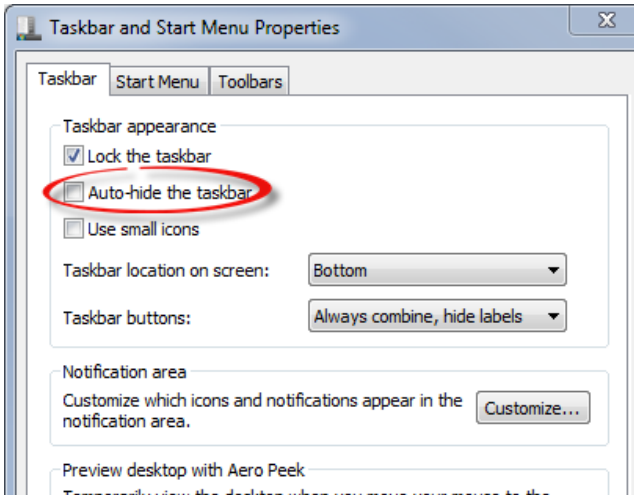
To do the following:	Press:
Display the Windows Start Menu	**Ctrl**+**Esc**
Cycle through all open applications	**Alt**+**Tab**
Select the first menu of a menu bar	**Alt**
Move through menu headings	**Left Arrow**, **Right Arrow**
Open (drop down) a menu	**Down Arrow**
Move through items in an expanded menu	**Up Arrow**, **Down Arrow**
Close the current menu selection	**Esc**
Cancel the current menu bar selection	**Alt**
Open an application's control menu (usually the left-most menu on the menu bar, starting with `File`)	**Alt**+**Down Arrow**
In a dialog: move between tabs	**Ctrl**+**Tab**
In a dialog: move forward through dialog box items	**Tab**
In a dialog: move backward through dialog box items	**Shift**+**Tab**
In a dialog: open a list box	**Alt**+**Down Arrow**
In a dialog list box or check box: select or deselect one item at a time	**Shift**+**Up Arrow**, **Shift**+**Down Arrow**
In `My Computer`, expand a selected folder	**Enter**
In `My Computer`, open a folder one level up from the current folder	**Bk Sp**

Windows Taskbar Auto-hide Feature

The Windows taskbar should always be in the auto-hide mode when using the instrument application. If the taskbar is not set to auto-hide, the lower part of the instrument display is obscured by the taskbar.

If at any time the Windows taskbar is inadvertently set to the non-auto-hide mode, you can restore the auto-hide behavior by doing the following:

Table 4-10 Restoring taskbar auto-hide mode

Step	Notes
1. Click **Start**, **Control Panel**	If not using a mouse, press **Ctrl**+**Esc.**
2. Click **Taskbar and Start Menu**	If you are not using a mouse, use the shortcut key combinations specified in the Section "Windows Shortcuts (key combinations)" on page 90 to make these selections.
3. Click the **Taskbar** tab	The Taskbar and Start Menu Properties dialog appears.
4. Select the **Auto-hide the taskbar** check box	If you are not using a mouse, press **Tab** repeatedly until the auto-hide option is selected, then press **Select** to toggle the check box state.
	
5. Click **OK**.	This applies the change and closes the dialog box.

5 Troubleshooting

"Check the Basics" on page 94

"Problems with Microsoft Windows 10 or 11" on page 96

"Returning an Analyzer for Service" on page 97

WARNING No operator serviceable parts inside. Refer servicing to qualified personnel. To prevent electrical shock do not remove covers.

Check the Basics

- Is there power at the receptacle?
- Is the analyzer turned on? Check to see if the green LED beside the power switch is on. Also, listen for internal fan noise to determine if the analyzer cooling fans are running.
- If other equipment, cables, and connectors are being used with your signal analyzer, make sure they are connected properly and operating correctly.

  If the analyzer cannot completely load or run the operating system, or the instrument application is not successfully launched, the problem could be a corrupt disk drive. If the analyzer gets far enough along in the boot process to run the "Instrument Recovery System", perform the "Disk Drive Recovery Process" as described on page 60.
- Is the Measurement Application running? If not, there is a software launch shortcut/icon on the desktop.
- Does the instrument application have the focus? If not, move focus to the application with Alt-Tab.
- Review the measurement procedures being performed when the problem first appeared. Are all of the settings correct?
- If the analyzer is not functioning as expected, return the analyzer to a known state by pressing **Mode Preset**.

NOTE

Some analyzer settings are not affected by a Preset. If you wish to reset the analyzer settings, press **System**, **Power On**, **Restore Power On Defaults**.

- Is the measurement being performed, and the results that are expected, within the specifications and capabilities of the analyzer?

  Refer to the data sheet for your analyzer.

  N9042B UXA Data Sheet

  Technical manual pdf files are available on the Keysight website.

  N9042B Technical Support
- If the analyzer is not communicating via the LAN connection, check for the presence of blinking yellow LEDs on the rear panel LAN connector. If the ACT LED is not blinking, check the LAN cable and LAN integrity.
- To meet specifications, the analyzer must be aligned. Either the Auto Align (On) feature must be selected (press **System**, **Alignments**, **Auto Align**, and select **Normal**), or the analyzer must be manually aligned.
- Perform an Alignment. Press **System**, **Alignments**, **Align Now, Align All Now**.

- If the previously performed alignments did not resolve the problem, press **System**, **Alignments**, **Restore Align Defaults**. Then press **System**, **Alignments**, **Align Now, Align Now All**.
- If the analyzer exhibits large amplitude errors (> 10 dB) especially at frequencies above 10 GHz, the RF preselector might not be properly centered. Press **AMPTD, Signal Path**, **Presel Center**. If the signal amplitude error is corrected, the preselector characterization should be performed. Press **System**, **Alignments**, **Advanced**, **Characterize Preselector**. The characterization will take several minutes and the analyzer must not be interrupted during this time. If the analyzer is interrupted during the characterization process, the characterization data will be destroyed and it will be necessary to perform the entire process again.
- Is the analyzer displaying an error message? If so, refer to the Instrument Messages Guide.
- Check if the external frequency reference is selected but not available. Verify that it is selected by pressing **Input/Output**, **Freq Ref Input**. If **External** is selected, changing the setting to **Sense** allows the analyzer to sense the presence of an external reference and use it only if it is available. The frequency of the reference should be set correctly.
- If you are using a Windows program other than the instrument application, you may notice it running slow. Place the instrument application in single sweep/measurement.

NOTE Visit the Keysight Support page at https://support.keysight.com

Problems with Microsoft Windows 10 or 11

The Microsoft Windows 10 and 11 operating system settings have been optimized for the best performance. Modification of these settings may degrade instrument performance and measurement speed. Those that can be safely modified are described in "Settings that Can Be Changed" on page 55.

The X-Series Signal Analyzers operate in an open Windows environment, so you can install software on the instrument. However, installation of non-approved software may affect instrument performance. Keysight does not warrant the performance with non-approved software installed.

Returning an Analyzer for Service

Contacting Keysight Technologies

Keysight Technologies has offices around the world to provide you with complete support for your analyzer. To obtain servicing information or to order replacement parts, contact the nearest Keysight Technologies office shown on the following webpage. In any correspondence or telephone conversations, refer to your analyzer by its product number, full serial number, and software revision. With this information the Keysight representative can quickly determine whether your unit is still within its warranty period.

NOTE

Press **System**, **Show System**, and the product number, serial number, and software revision information will be displayed on your analyzer screen. A serial number label is also attached to the rear panel of the analyzer.

By internet, phone, or fax, get assistance with all your test and measurement needs.

https://www.keysight.com/find/contactus

Use the link below for a list of other service locations:

https://www.keysight.com/find/assist

Read the Warranty

The warranty for your analyzer is in the front of your Specifications Guide. Please read it and become familiar with its terms.

If your analyzer is covered by a separate maintenance agreement, please be familiar with its terms.

Service Options

Keysight Technologies offers several optional maintenance plans to service your analyzer after the warranty has expired. Call your Keysight Technologies office for full details.

If you want to service the analyzer yourself after the warranty expires, you can download the service documentation that provides all necessary troubleshooting and maintenance information from the Keysight web page.

https://www.keysight.com/find/n9042b_support

Performance Verification and Adjustment tests require the N7814A Keysight X-Series Signal Analyzer Calibration Application Software. Information regarding the N7814A Keysight X-Series Analyzer Calibration Application Software can be found at:
http://www.keysight.com/find/calibrationsoftware

Failure Description

If an instrument is being returned to Keysight for servicing please be as specific as possible about the nature of the failure in order for Keysight to expedite the repair.

Helpful failure descriptions:

- Signal level measures 10 dB too low at 1 GHz
- LO Unlock error message appears on screen in spans < 10 MHz
- Analyzer will not complete boot up sequence to signal analyzer mode

Failure descriptions that will most likely increase repair time:

- Analyzer broken
- Analyzer will not make accurate measurements
- Signal drifts

If you have recorded any error messages that appeared on the analyzer display, or have completed a Functional Test or Performance Verification Test, or have any other specific data on the performance of the instrument, please send a copy of this information with the instrument.

Packaging the Instrument

To prepare the instrument for shipment to a Keysight location, use original packaging or comparable. It is best to pack the instrument in the original factory packaging materials if they are available.

CAUTION

Analyzer damage can result from using packaging materials other than those specified. Never use styrene pellets in any shape as packaging materials. They do not adequately cushion the equipment or prevent it from shifting in the carton. They cause equipment damage by generating static electricity and by lodging in the analyzer louvers, blocking airflow.

If the original materials were not retained you can repackage the analyzer with commercially available materials, as follows:

Step	Notes
1. Protect the control panel with cardboard.	
2. Wrap the analyzer in anti-static plastic to reduce the possibility of damage caused by electrostatic discharge	
3. Use a strong shipping container.	The carton must be both large enough and strong enough to accommodate the analyzer. A double-walled, corrugated cardboard carton with 159 kg (350 lb) bursting strength is adequate. Allow at least 3 to 4 inches on all sides of the analyzer for packing material.
4. Surround the equipment with three to four inches of packing material and prevent the equipment from moving in the carton.	If packing foam is not available, the best alternative is plastic bubble-pak. This material looks like a plastic sheet filled with 1-1/4 inch air bubbles. Use the pink-colored bubble which reduces static electricity. Wrapping the equipment several times in this material should both protect the equipment and prevent it from moving in the carton.
5. Seal the shipping container securely with strong nylon adhesive tape.	
6. Mark the shipping container "**FRAGILE, HANDLE WITH CARE**" to assure careful handling.	
7. Retain copies of all shipping papers.	

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