Keysight Y1300A Cable Accessory Kit for VXG and M1749A

Notices

M1749A VXG Cable Accessory Kit

Contents

> **NOTE**
>
> The use case and system configuration will determine which cable accessory kit is needed.
> Purchase one Y1300A kit per M1749A that will be used with the VXG.
> Purchase one Y1301A kit per VXG that will be used in a MIMO configuration.

Y1300A SISO Cable Kits, Y1300-60001

Quantity	Description	Part Number
1	USB cable, 2 meters	8121-6238
3	3.5 mm cable (m-m), 2 meters	M6170-60005
1	BNC cable (m-m), 48 inch	8120-2582
2	Adapter, SMA (f-f)	1250-1158
1	Adapter, 2.92 mm (f) - 2.40 mm (f)	1250-3782
1	SMA 50-Ohm Termination	1250-4261
1	Torque wrench, 8 lb-in, 5/16 Inch	8710-1765

Y1301A MIMO Accessory Kit

Quantity	Description	Part Number
1	RF Splitter	11636B

Accessories and Tools required for system setup

— E8257D PSG Signal Generator or N5183B MXG Signal Generator (see Note 1)

— S91X0A Service Manager software

— 11636B Power Splitter (for MIMO setup)

> **NOTE**
>
> The E8257D PSG Signal Generator is recommended to meet data sheet nominal performance.
> System EVM performance may degrade when using the N5183B MXG Signal Generator.

What you will find in this guide

Overview

The Y1300A cable accessory kit is used in a system that will generate a signal with a frequency above the available VXG range with improved EVM quality by trading off a limited power range and bandwidth.

The system utilizes a VXG with M1749A mm Wave Transceiver heads and external signal generators as local oscillator sources. By hooking up the hardware in a supported configuration, the VXG will have a frequency range of 24.25 to 48.2 GHz, and an IF bandwidth of up to 1.4 GHz.

The following configurations are supported:

— SISO - single-channel VXG with PSG/MXG, connected to a M1749A head.

— SISO - dual-channel VXG with two PSG/MXG, connected to two M1749A heads.

— MIMO - dual-channel VXG with PSG/MXG, connected to two M1749A heads.

M9384B VXG Hardware Configurations

NOTE The following hardware configurations are shown using the E8257D PSG Signal Generator. The N5183B MXG Signal Generator can be used in place of the PSG.
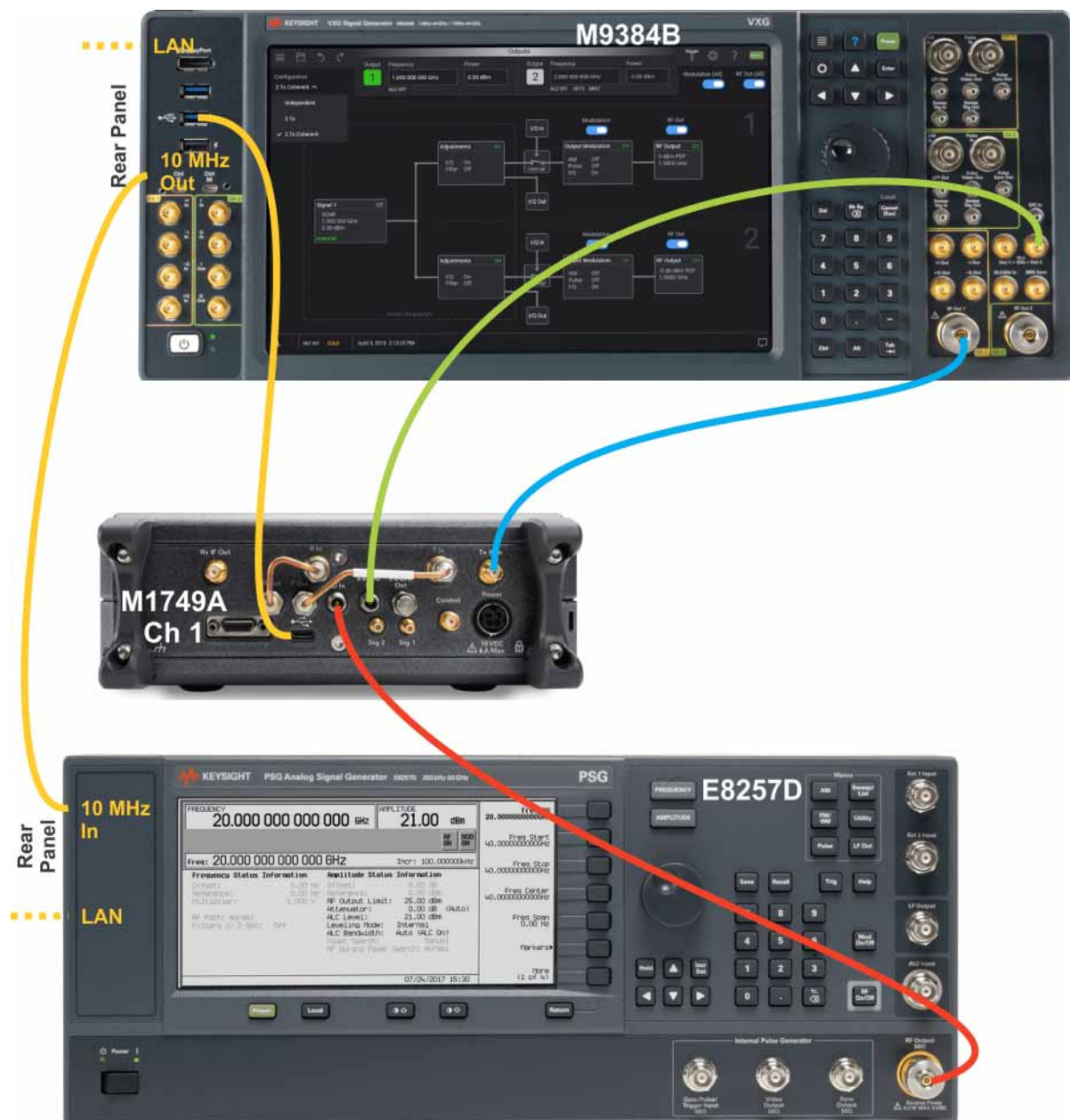
SISO – Single-Channel VXG with PSG Connected to a M1749A head

Figure 1   SISO – Single-Channel VXG System Schematic
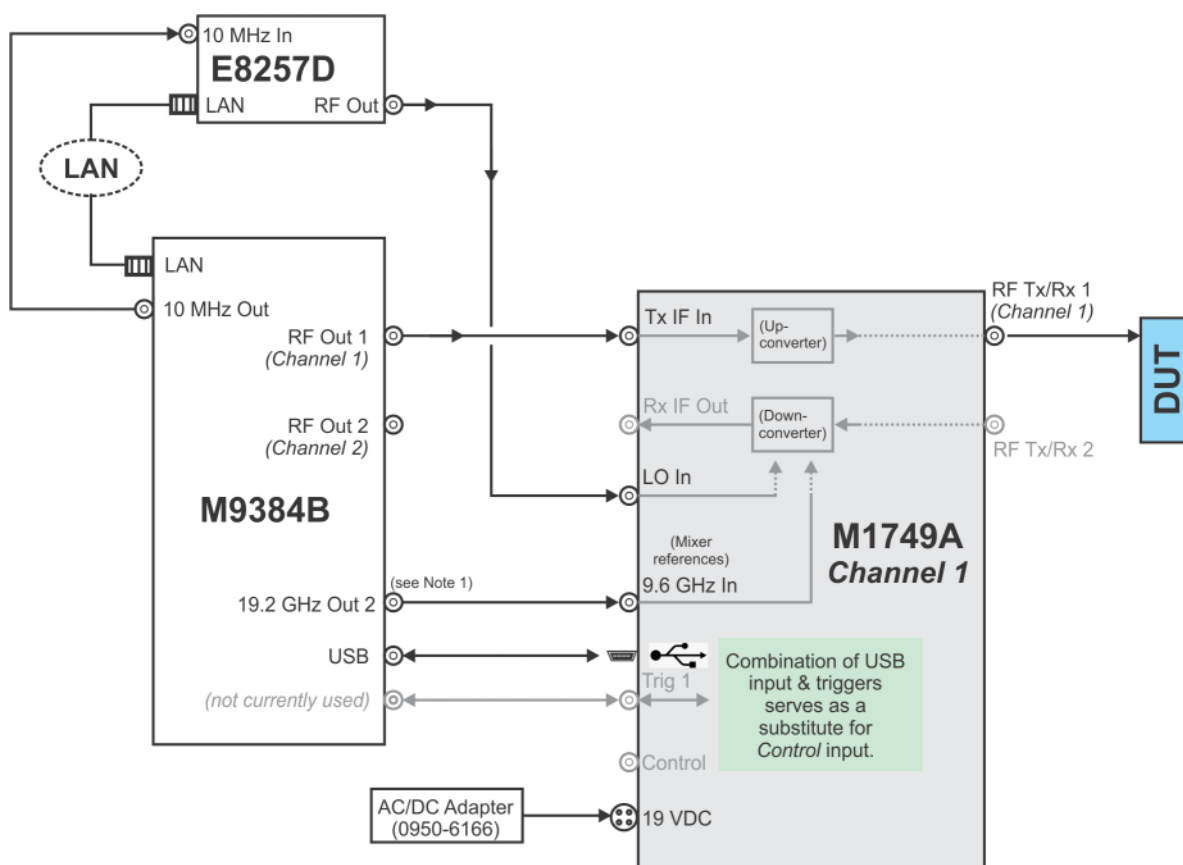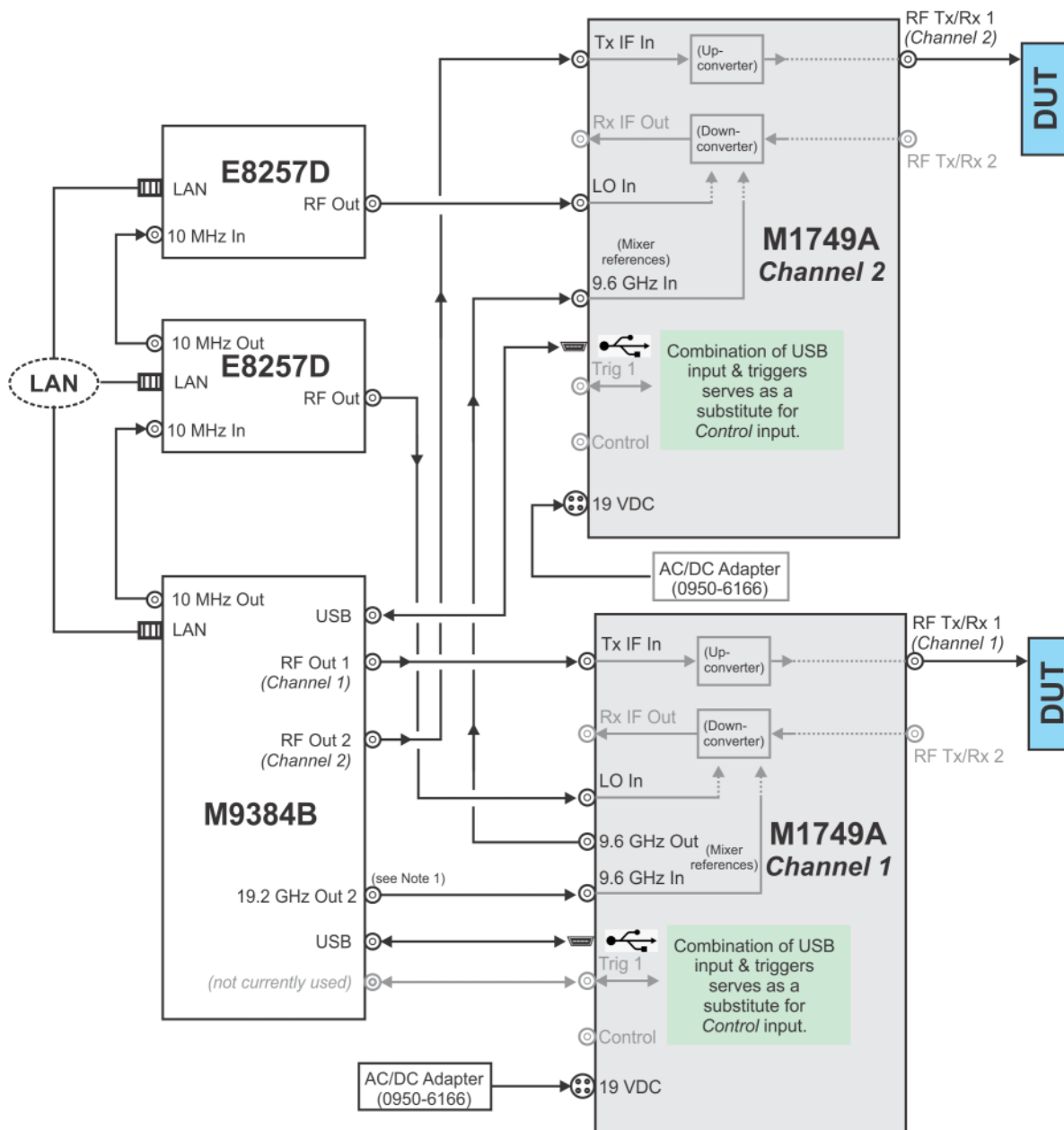

Note 1 – When the M9384B is used with the M1749A, the output signal at the "19.2 GHz Out 2" connector is automatically set to a frequency of 9.6 GHz.

Figure 2   SISO – Single-Channel VXG System Cable Connections

SISO – Dual-Channel VXG with Two PSGs Connected to Two M1749A heads
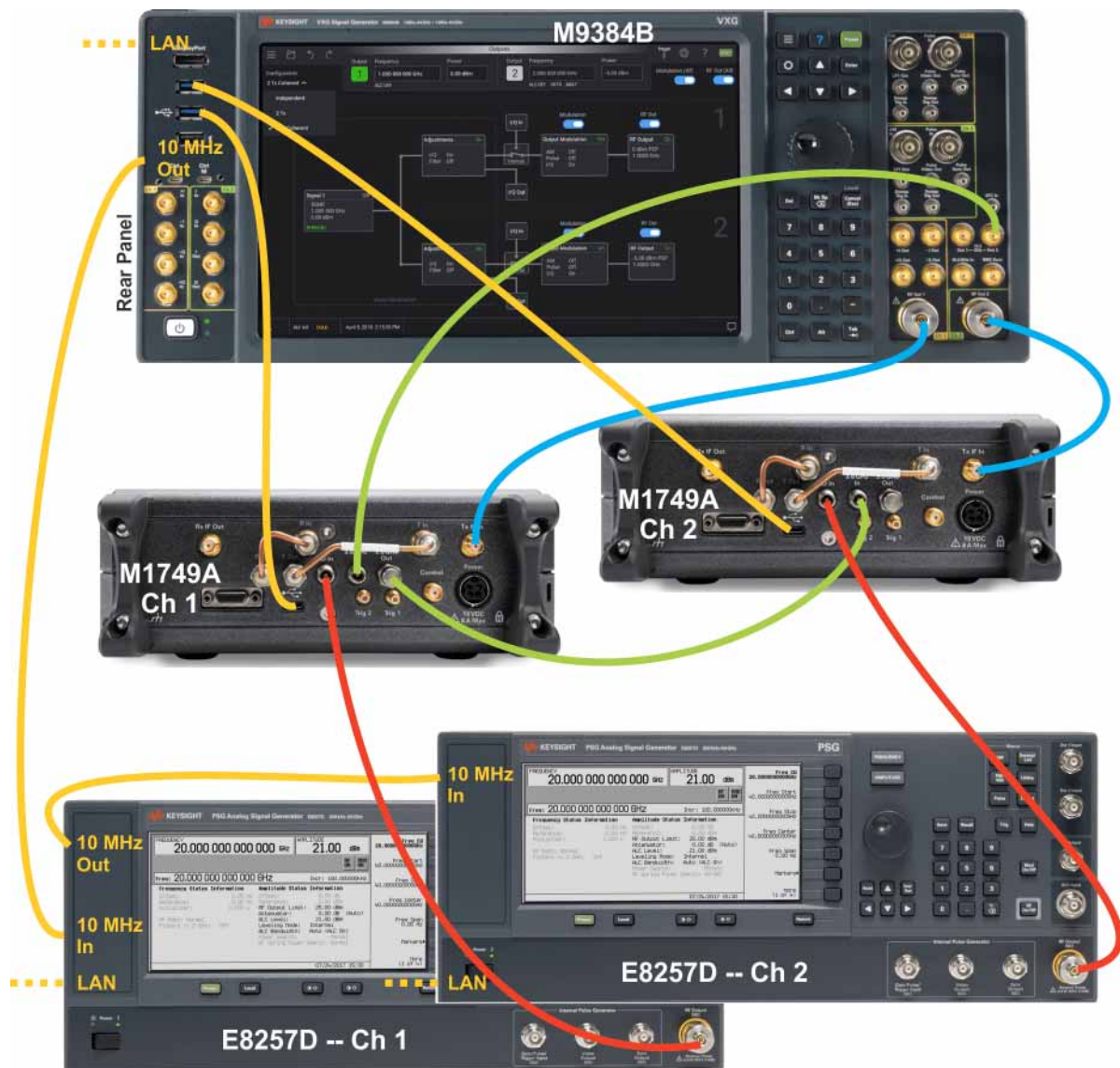
Figure 3   SISO – Dual-Channel VXG System Schematic

Note 1 - When the M9384B is used with the M1749A, the output signal at the "19.2 GHz Out 2" connector is automatically set to a frequency of 9.6 GHz.

Figure 4 SISO - Dual-Channel VXG System Cable Connections

MIMO – Dual-Channel VXG with PSG Connected to Two M1749A heads

Figure 5   MIMO – Dual-Channel VXG System Schematic

Note 1 - When the M9384B is used with the M1749A, the output signal at the "19.2 GHz Out 2" connector is automatically set to a frequency of 9.6 GHz.
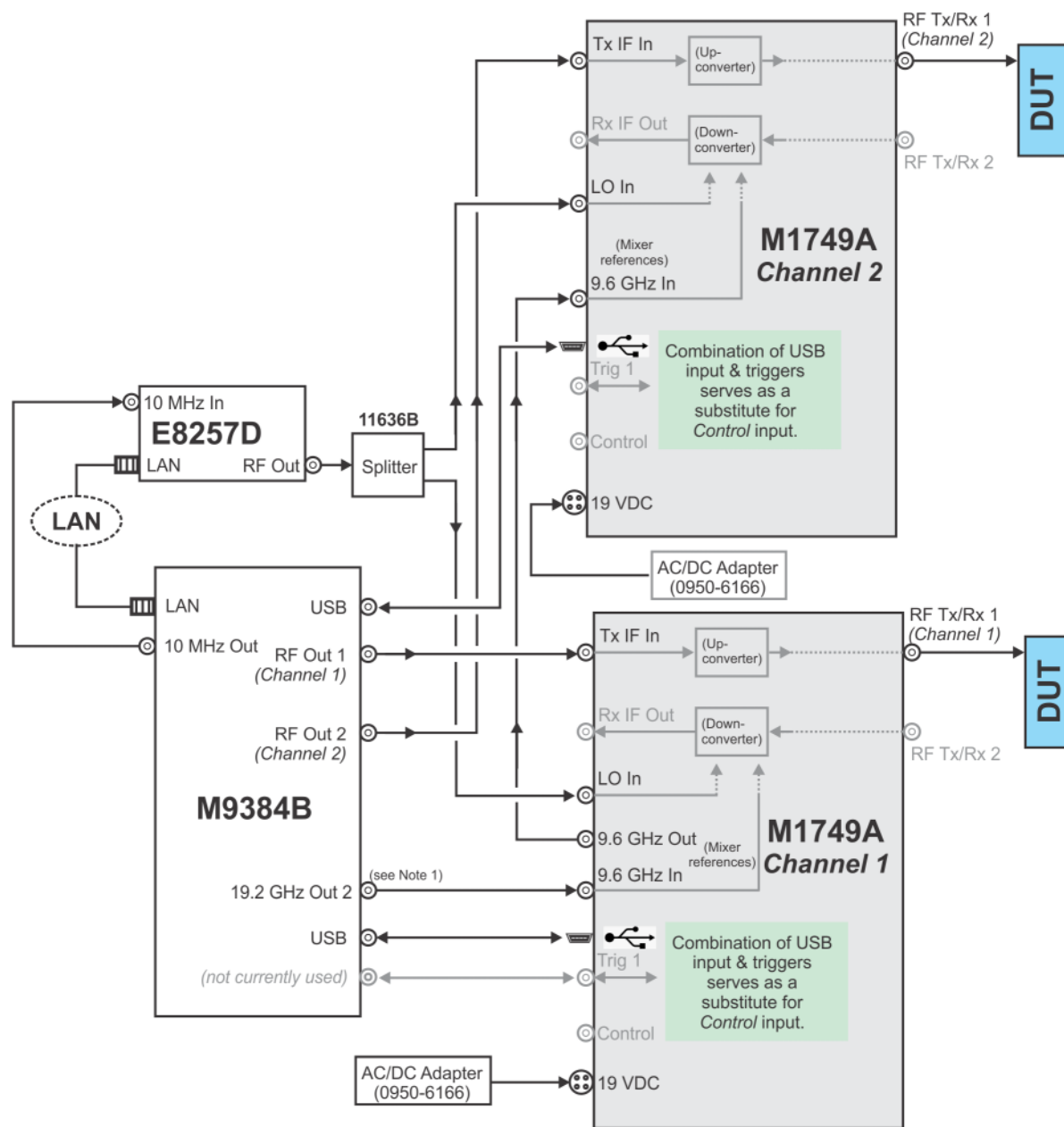
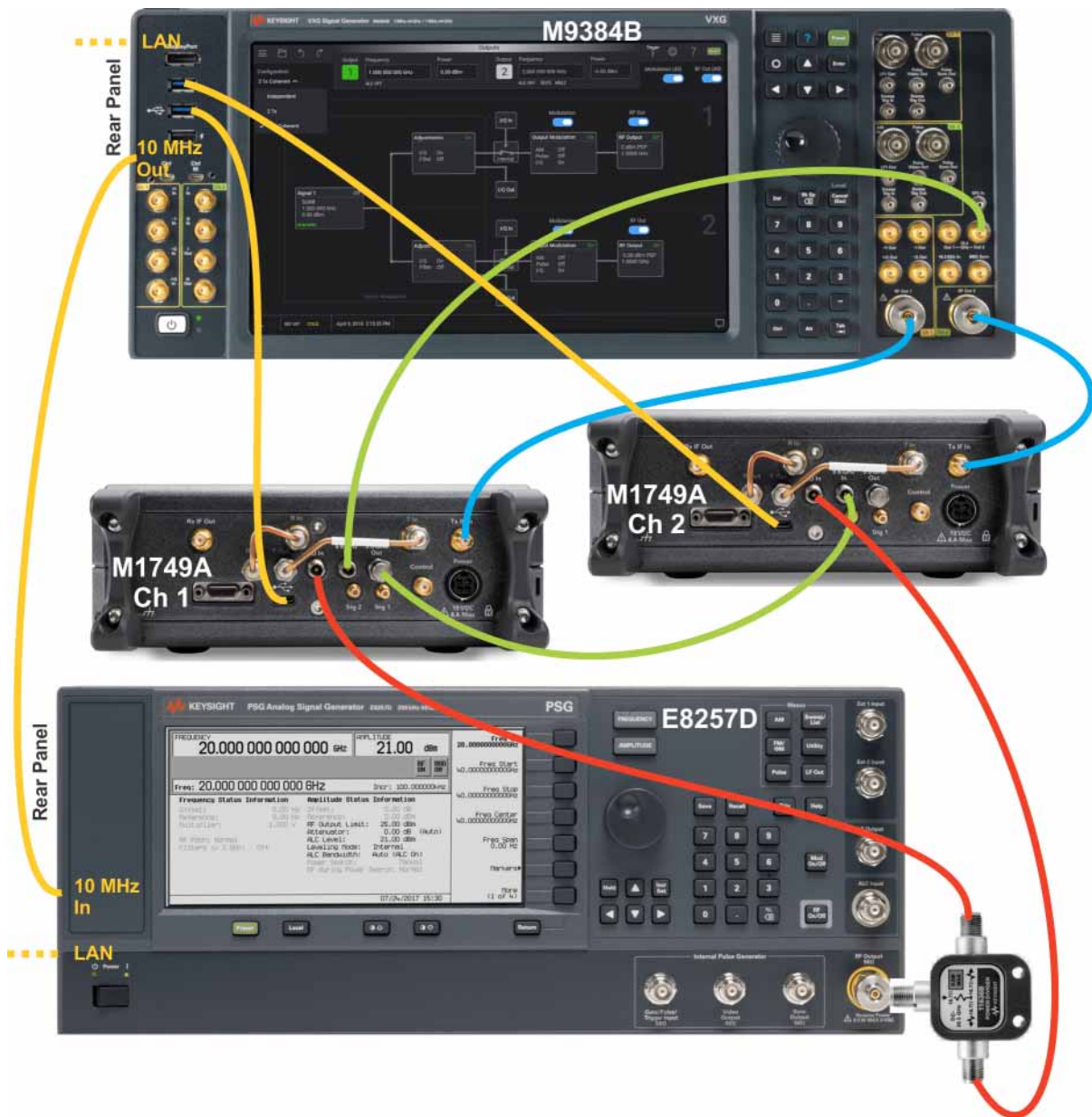Figure 6   MIMO – Dual-Channel VXG System Cable Connections

Software Set Up

There are two downloads required for the software setup.

— Update of the VXG instrument software to version A.07.xx or greater.

— Download and install the S91x0A Service Manager software.

In addition, the S91x0A Service Manager software requires a license.

Download the VXG Instrument Software

The VXG instrument software can be accessed here:

http://www.keysight.com/find/M9384B

NOTE	The VXG instrument software version required for this VXG/M1749A system is A.07.xx or greater. If your instrument already has version A.07.xx or greater, skip this section and continue with Download and Configure the S91x0A Software.

1. From the main page select **Visit Technical Support**.

2. Select **Drivers, Firmware and Software**.

3. Select **M9384B VXG Microwave Signal Generator Instrument Software**.

4. Download the executable file (`Keysight.PathWave.SG.Setup_A.XX.XX.exe`) by clicking on the Download button. Save the file to a location of your choice; recommendation is to use a folder on the D: partition.

   If you do not have the ability to download files directly to the D: partition of the instrument being updated, store the `Keysight.PathWave.SG.Setup_A.XX.XX.exe` file on a large capacity USB storage device for transfer to the instrument. (The file size is ~1.5 GByte.)

NOTE	This will update the instrument software currently running on the instrument. It will not update the version that exists on the recovery partition. Because of this, if the recovery process is performed, the instrument will revert to the version that was originally shipped from the factory. It is recommended you place a copy of this software installer on the D: partition, so you can easily perform an update in the event you need to do a recovery in the future.

Update Procedure

The default user account is **Instrument**, which does not have the required permissions to install the instrument software updates. For the process outlined below, ensure the Instrument user is **Signed Out**, do not use Switch User, then login as the **administrator**.

NOTE	The instrument software upgrade process has an install wizard which removes the old software version and installs new software version without manual steps. The time required for the instrument software update depends on how much difference there is between the currently installed version and the new version. The update may require a number of FPGA updates which are handled automatically during the instrument software update process.

1. If the instrument is not already running, turn the instrument on and allow it to completely boot up.

2. Close the instrument application by pressing the ☰ icon on the top bar of the graphical user interface, then Exit ✕ Exit .

3. **Sign Out** of the default user (**Instrument**): if the Windows task bar is not present at the bottom of the screen, tap the lower section of the display until the Windows task bar appears. Tap the

   Windows Start icon, select the **Change Account settings** icon 🔘 and **Sign out**.

4. At the login prompt enter (factory default indicated, if you have changed the password enter the appropriate password):

   – **administrator**

   – **Keysight4u!**

5. Press the Next arrow to log in.

Instrument Software Install

If you downloaded the instrument software update file to the instrument via LAN, access that file from the location that it was stored and proceed to step 1.

If you downloaded the instrument software update file to a USB storage device, plug it into one of the USB ports on the front of the instrument. Copy the file to the instrument's disk drive, per Note above it is recommended to use the D: partition, then proceed to step 1.

1. Tap the **Windows Start** icon, select **File Explorer** and select the appropriate file location.

2. Double tap the filename "**Keysight.PathWave.SG.Setup_A.XX.XX.exe**"

3. A message will appear providing the license agreement, read and accept:
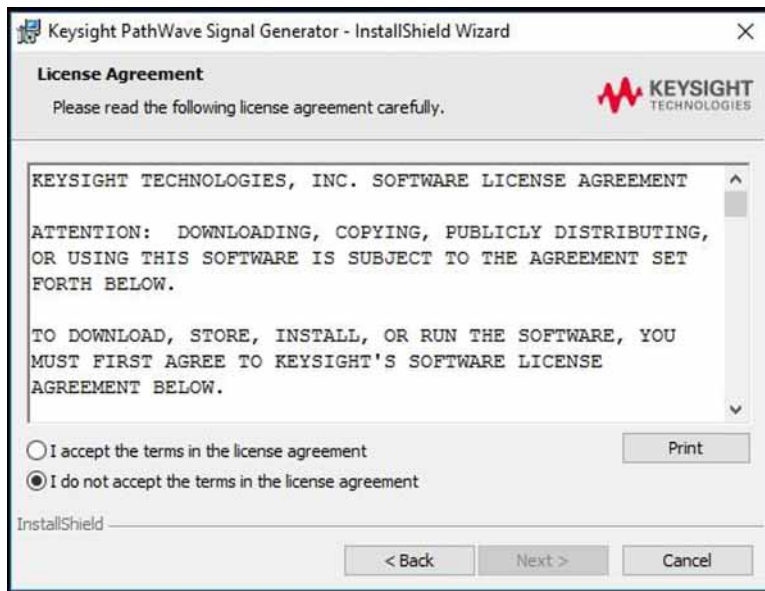

4. The installation process will proceed, you may or may not be prompted for further confirmation during the process (depending on the updating of included component software).

> **CAUTION** **DO NOT** cycle the instrument power for any reason during the process. If this process is interrupted, the instrument may end up in an unusable state, and will likely need to be returned to Keysight Technologies for repair before it will be usable again.

5. When the software installation is complete a prompt is displayed, one of two actions completes the process:

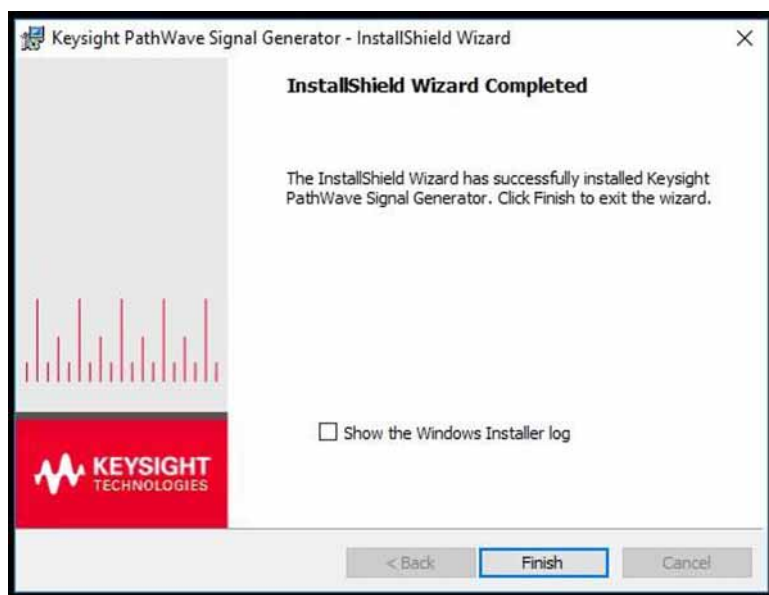   **A.** If the upgrade process updated FPGAs the prompt will be:
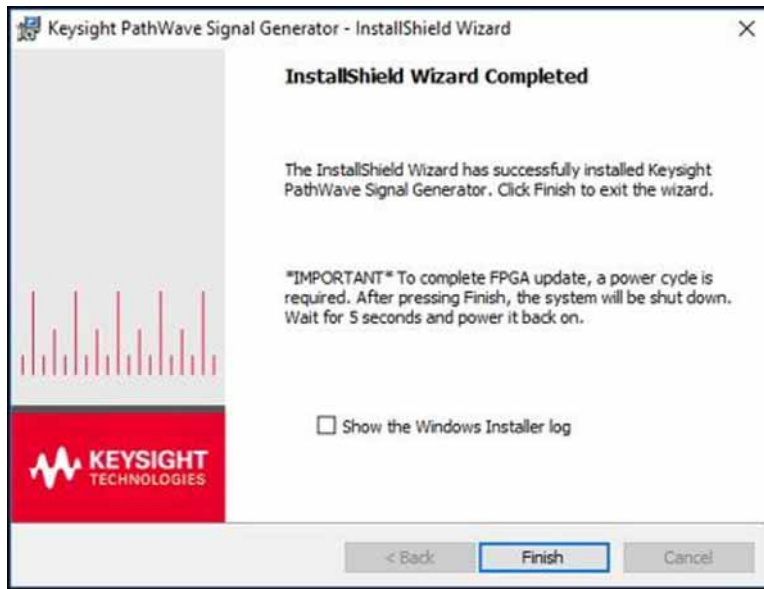
Press **Finish**. With software version A.06.07 and greater you will be notified with this prompt.
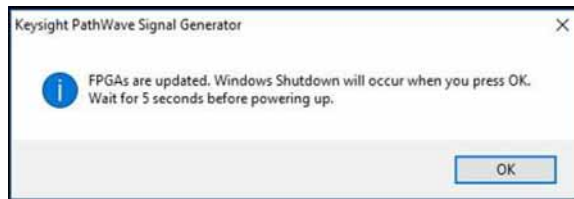
Press **OK**. The instrument will automatically shutdown. After 5 seconds, press the power

button to boot the instrument.

B. If no FPGA updating was necessary, the prompt will be:
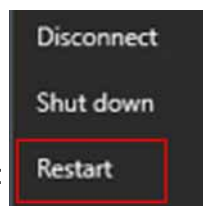

Press **Finish**.

If you are presented this restart prompt, press **Yes**:

If you were not presented the prompt, restart the instrument using the Windows Start icon,

tap on the power icon , then select **Restart**

> **NOTE**
>
> If the instrument does not reboot, remove the USB storage device and cycle power. The boot order for the instrument may have been changed in the instrument BIOS previously, and the instrument may be instructed to boot from USB first, and the internal disk drive second. If this is the case, failure to remove the USB device will result in an error.

6. Check for any errors and verify that the new software version is installed by tapping the gear

icon on the top bar of the graphical user interface, then tap **System**. Look for the "Firmware Version" as shown below.

Download and Configure the S91x0A Software

The S91x0A software can be accessed here:

http://www.keysight.com/find/M9384B

1. From the main page select **Visit Technical Support**.

2. Select **Drivers, Firmware and Software**.

3. Select **M1749A Software for M9384B VXG Microwave Signal Generator**.

4. Download the executable file (`KeysightS91x0A_X.X.X.exe`) by clicking on the Download button. Save the file to a location of your choice.

   If you do not have the ability to download files directly to the instrument, store the `KeysightS91x0A_X.X.X.exe` file on a large capacity USB storage device for transfer to the instrument.

Installation Procedure

The default user account is **Instrument**, which does not have the required permissions to install software updates. For the process outlined below, ensure the Instrument user is **Signed Out**, do not use Switch User, then login as the **administrator**.

1. If the instrument is not already running, turn the instrument on and allow it to completely boot up.

2. Close the instrument application by pressing the ☰ icon on the top bar of the graphical

   user interface, then Exit ✕ Exit .

3. **Sign Out** of the default user (**Instrument**): if the Windows task bar is not present at the bottom of the screen, tap the lower section of the display until the Windows task bar appears. Tap the

   Windows Start icon, select the **Change Account settings** icon 👤 and **Sign out**.

4. At the login prompt enter (factory default indicated, if you have changed the password enter the appropriate password):

   – **administrator**

   – **Keysight4u!**

5. Press the Next arrow to log in.

S91x0A Software Install

If you downloaded the S91x0A software file to the instrument via LAN, access that file from the location that it was stored and proceed to step 1.

If you downloaded the software file to a USB storage device, plug it into one of the USB ports on the front of the instrument. Copy the file to the instrument's disk drive and proceed to step 1.

1. Tap the **Windows Start** icon, select **File Explorer** and select the appropriate file location.

2. Double tap the filename "**KeysightS91x0A_X.X.X.exe**"

3. The installation process will proceed, you may or may not be prompted for further confirmation during the process.

4. The InstallShield Wizard requires the use of Microsoft .NET Framework for installation. If you have internet access on the VXG, click on **Install** at this point.
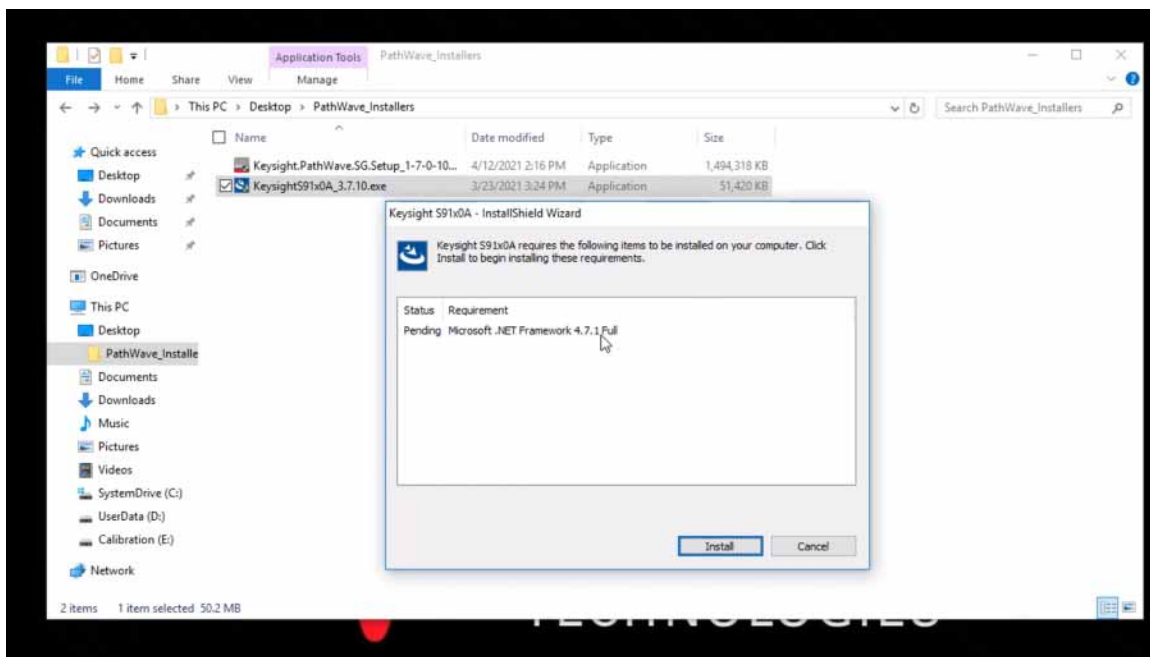
If you don't have internet access on the VXG when installing, it will be necessary to manually download the Offline Installer.

The .NET 4.7.1 Offline installer pack can be accessed here:

http://go.microsoft.com/fwlink/?linkid=852107

Microsoft .NET Framework 4.7.1 (Offline Installer) for Windows 7 SP1, Windows 8.1, Windows 10 Anniversary Update, Windows 10 Creators Update, Windows Server 2008 R2 SP1, Windows Server 2012, Windows Server 2012 R2 and Windows Server 2016

Important! Selecting a language below will dynamically change the complete page content to that language.

Select Language: English   Download

The Microsoft .NET Framework 4.7.1 is a highly compatible, in-place update to the Microsoft .NET Framework 4, 4.5, 4.5.1, 4.5.2, 4.6, 4.6.1, 4.6.2, and 4.7. The offline package can be used in situations where the web installer cannot be used due to lack of internet connectivity.

⊕ Details

⊕ System Requirements

⊕ Install Instructions

⊕ Additional Information

5. Follow the installer instructions.

S91x0A License Installation

The S91x0A requires a license. To see if the license is already installed on the VXG, launch Keysight License Manager KLM 5 by navigating to the question mark at the upper right of the screen. Touch **License Managers**, then **KLM 5**:
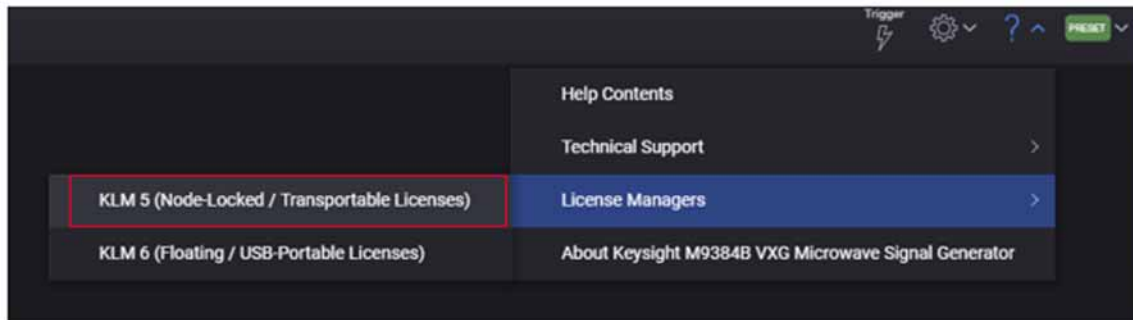
In Keysight License Manager see if the Feature N90E1S91A is listed:
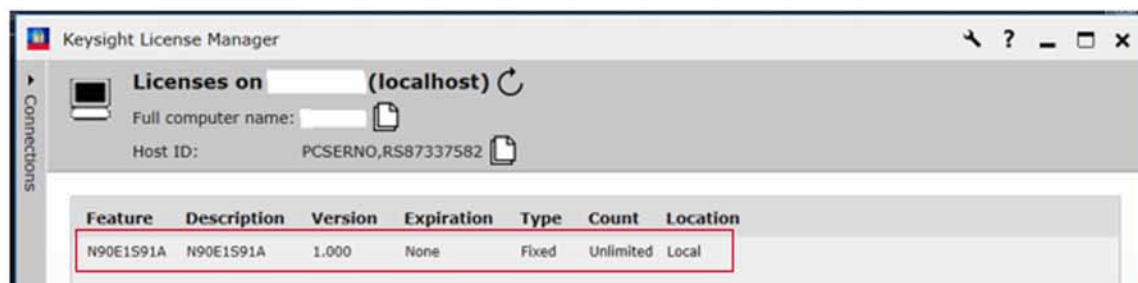
If it is, the VXG is licensed for the S91x0A.
If it is not listed, contact Keysight support at:

www.keysight.com/find/contactus

Configure the S91x0A Software

Before the S91x0A software can be configured, it is necessary to set up the system and make all connections for one of the hardware configurations shown previously.

Once all components are connected and powered up, perform the following procedure to configure the S91x0A software:

1. Upon booting the VXG after installing the M1749A/S91x0A software, the S91x0A must be configured. The configuration is to be done with the M1749A connected to the VXG via USB with the M1749A powered up. Close the VXG application by pressing the ☰ icon on the top bar of the graphical user interface, then Exit ✕ Exit .

2. The Service Manager will start automatically. At this point the error can be ignored and the Service Manager can be closed.
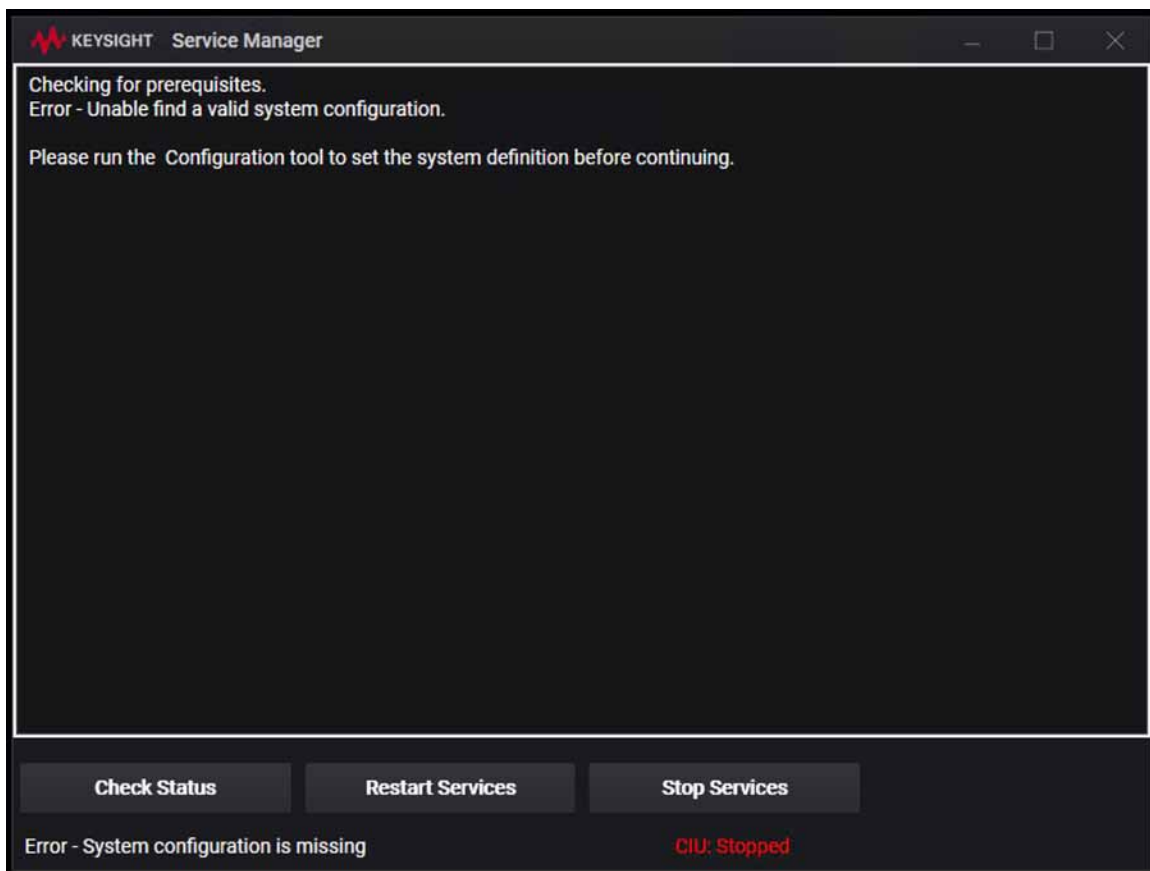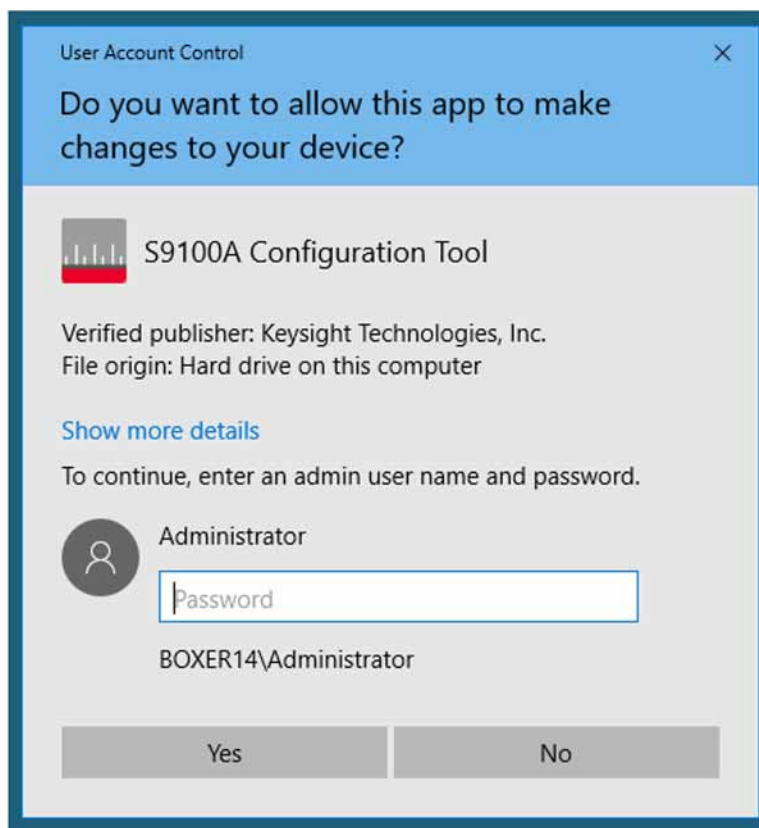
3. Run the Configuration Tool by tapping on the **Windows Start** icon, navigate to Keysight S91x0A and expand the folder. Tap on **Configuration Tool**:
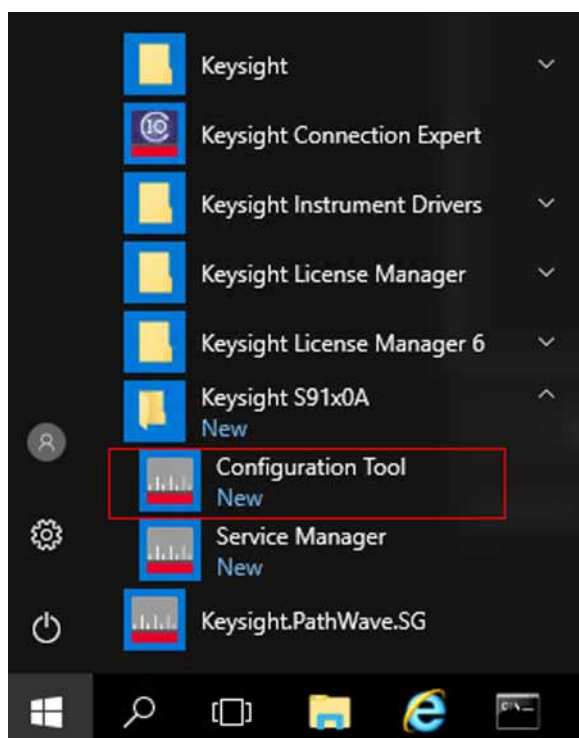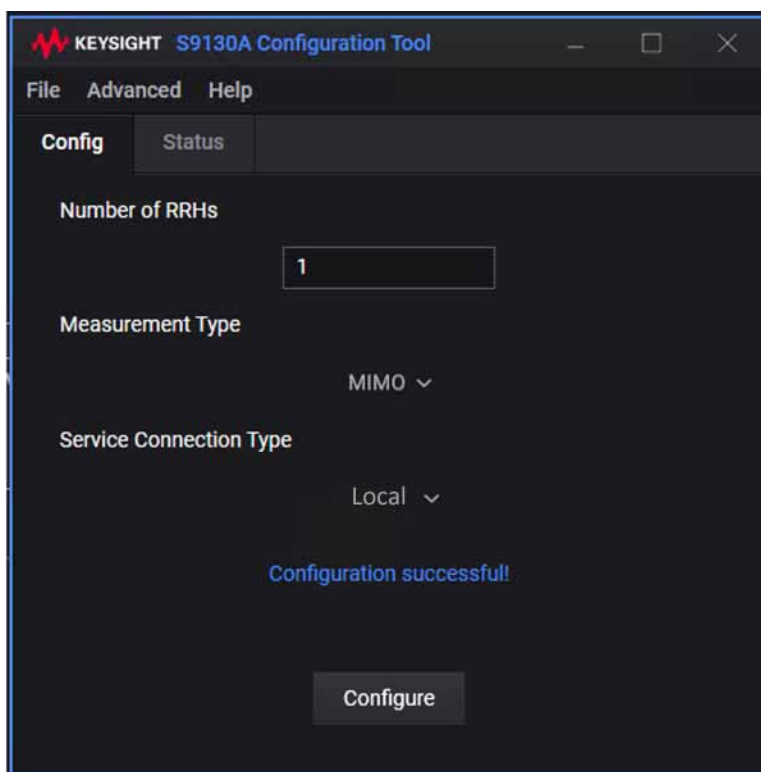
4. At the User Account Control prompt enter the Administrator's password. The default password is:

Keysight4u!

5. In the S9130A Configuration Tool enter the Number of RRHs (M1749As) that you will be using with the instrument. There is no need to change the Measurement Type or Service Connection Type. Select **Configure**:
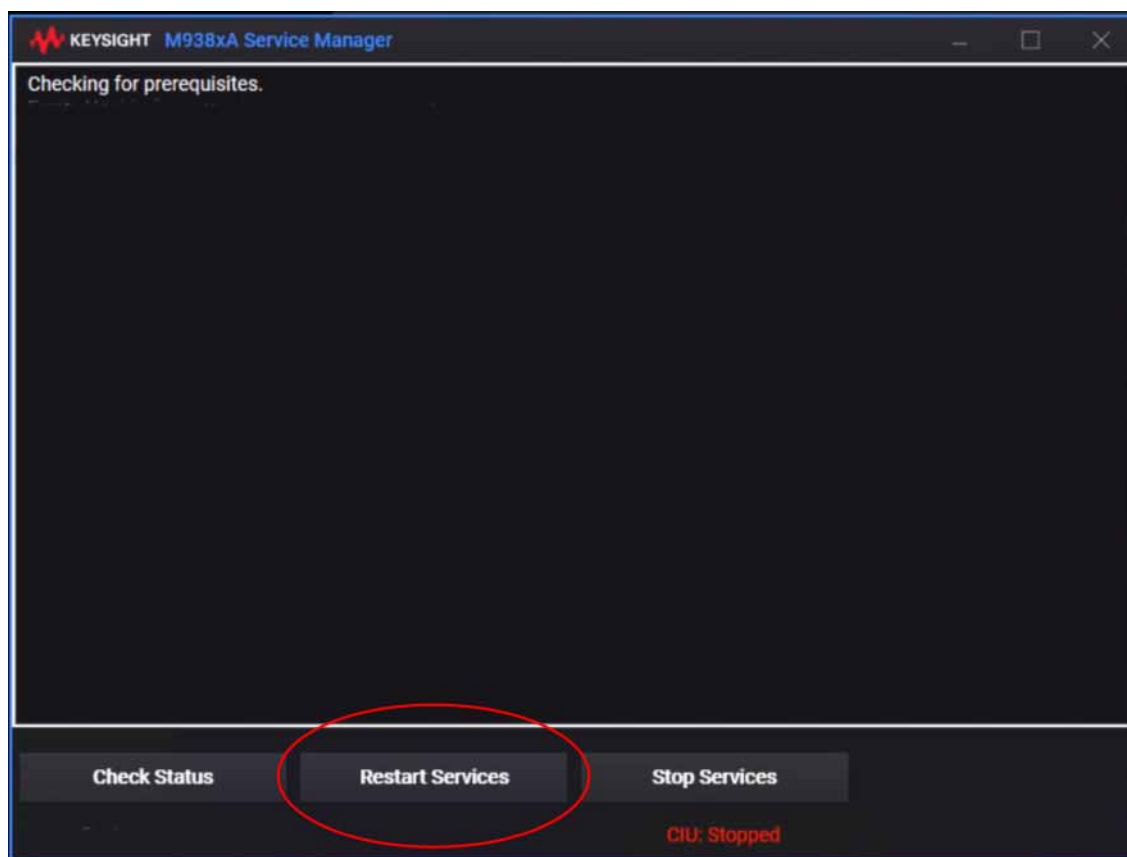

6. Exit the Configuration Tool.

7. Open the Service Manager by tapping on the **Windows Start** icon, navigate to Keysight S91x0A and expand the folder. Tap on **Service Manager**:
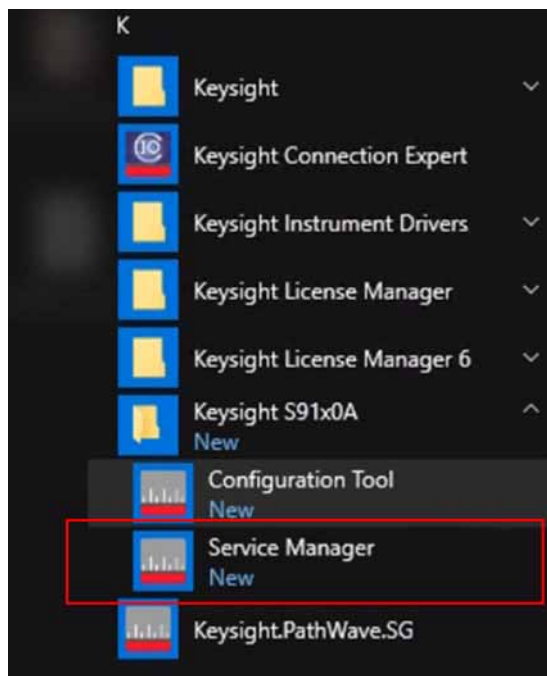
8. At the S91x0A Service Manager, select **Restart Service**.

The service manager will read the configuration just written by the Configuration Tool and begin starting the S91x0A services. After the S91X0A is configured on the VXG, continue with the setup using the Keysight Connection Expert.

Keysight Connection Expert

On power-up, the heads are detected/discovered via VISA (USB connections), while external local frequency oscillators are described as VISA aliases. If the hardware configuration is disrupted/broken during runtime, actions of the VXG will error-out and indicate that the communication between the VXG and the M1749A heads is inoperable.

While the VXG is on, use the Keysight Connection Expert to add the external LOs as VISA aliases.

1. Run the Keysight Connection Expert by tapping on the **Windows Start** icon, navigate to and tap on **Keysight Connection Expert**:

2. To add instruments in the Connection Expert window, click on **Add**, **LAN instrument**.
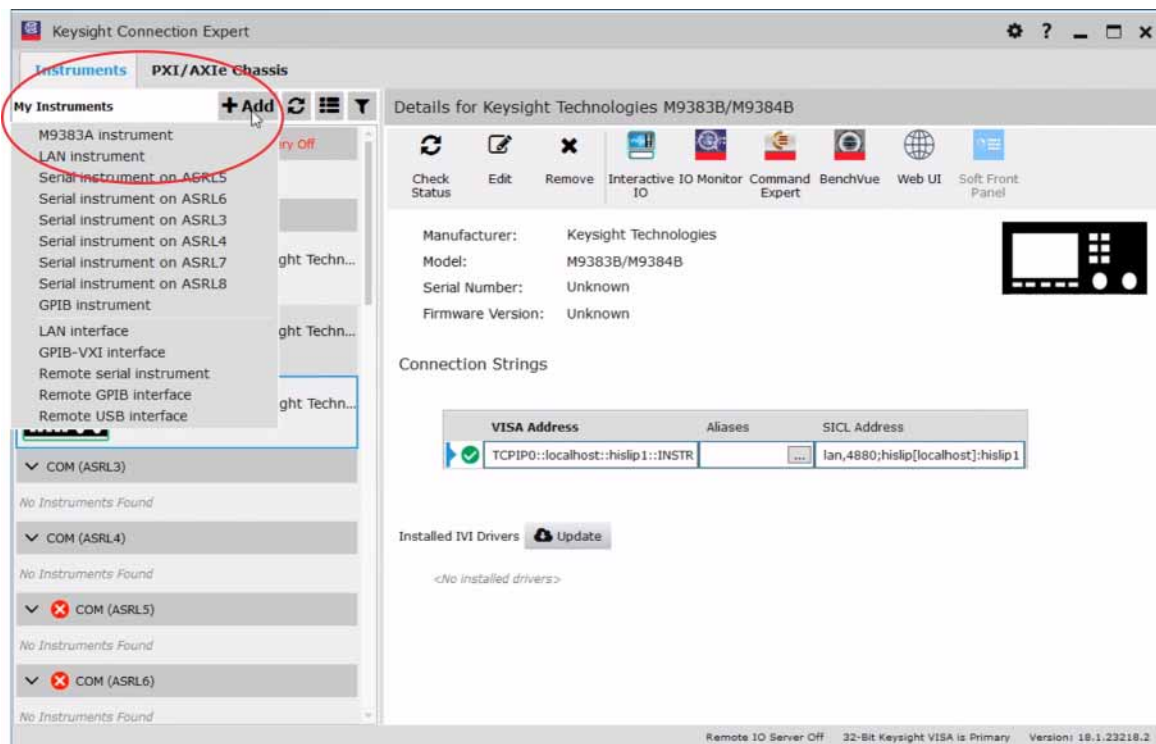
3. In the **Add a LAN device** window, enter an **IP address or Hostname**.

To verify the instrument connection, click on **Test This VISA Address** to send a query.

4. After adding the device to the My Instruments list, a VISA alias address must be created.

5. Refer to the following figure to create a VISA alias address:
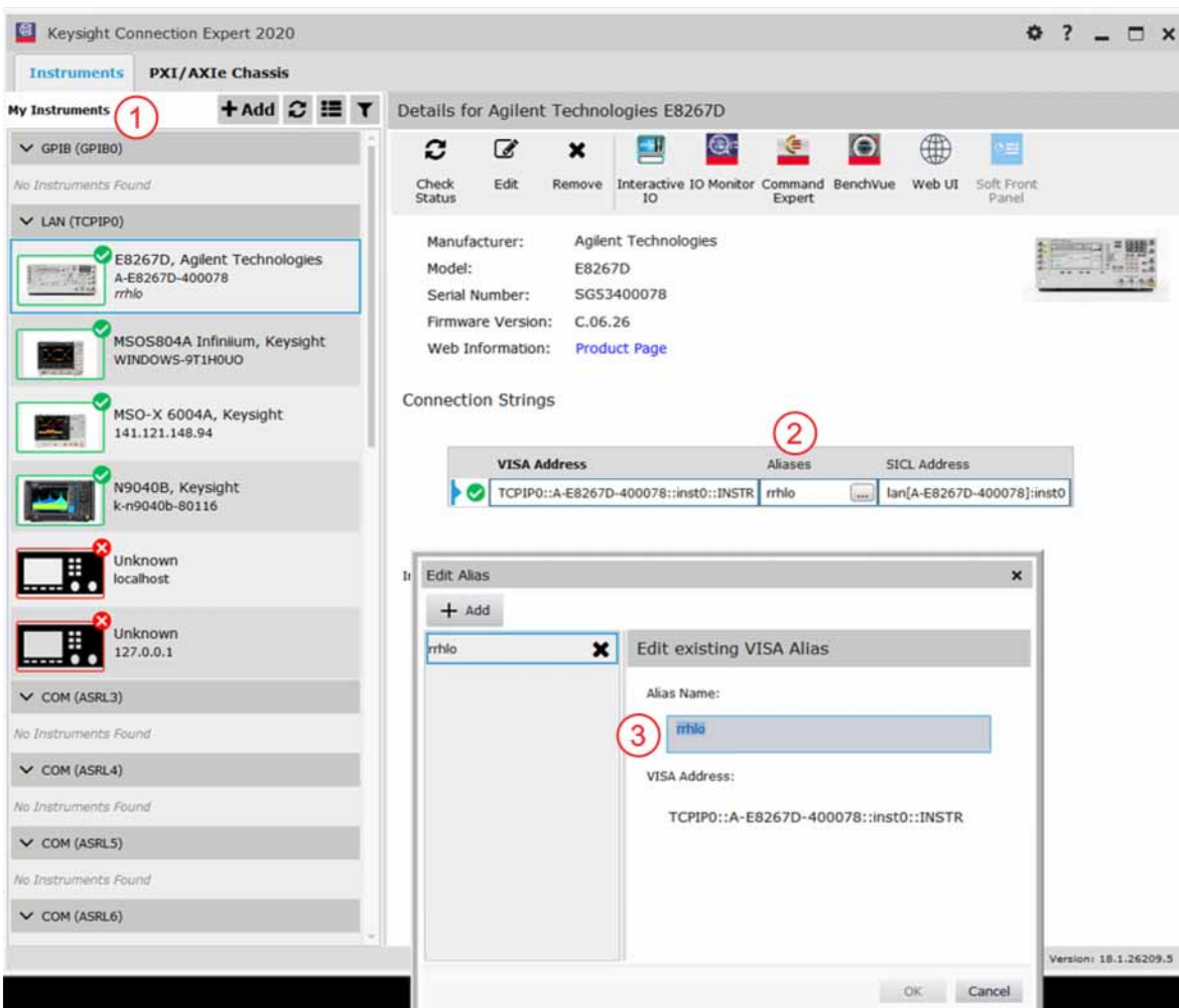

6. In the **My Instruments** column (1), select the instrument you want to alias (assuming the source has already been added into IO Libs).

7. Under **Connection Strings**, click the ellipsis in the **Aliases** column (2).

8. In the **Edit Alias** popup, enter the name of the alias in the **Alias Name:** field (3). The alias should be named "rrhlo" when the common external LO is to be used in dual-channel MIMO. The alias should be named "rrhlo1" for single-channel SISO. For dual-channel SISO, the aliases should be named "rrhlo1" and "rrhlo2."

**9.** Click **OK**.

Complete System Setup

Once the external LOs have been setup in the Keysight Connection Expert, perform the following steps to complete the system setup.

1. Turn off the VXG, then connect and power up the M1749A ww Wave Transceiver(s) in the desired configuration.

2. Reboot the VXG and it will detect the configuration on startup.

3. Allow the instruments to warm up to their respective warm up times.

4. Run the internal alignments on the VXG.

   – On the VXG, select the **Gear** icon > **Alignments** > **Run**. These alignments will take longer than a standard internal alignment. It will take approximately 10-15 minutes per channel.
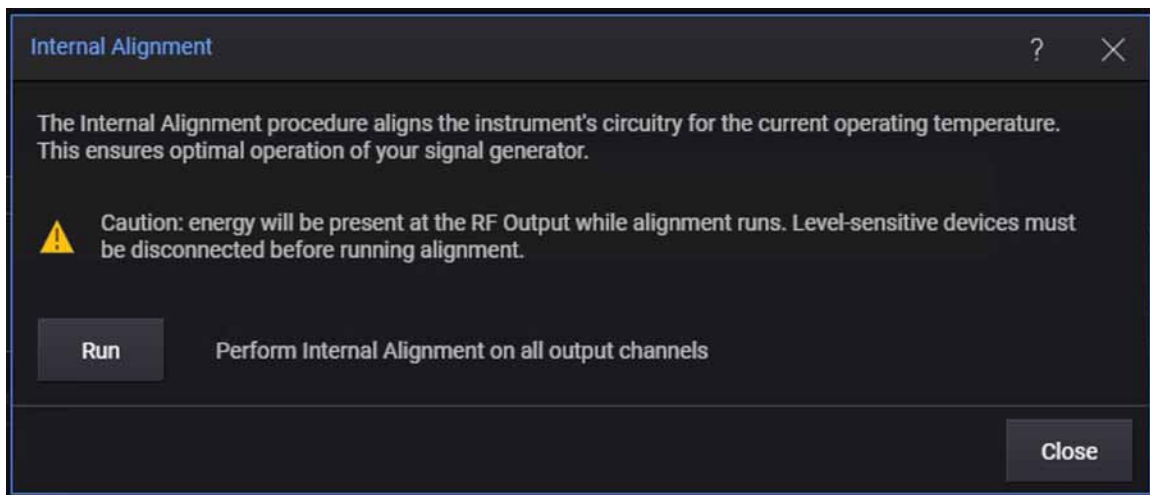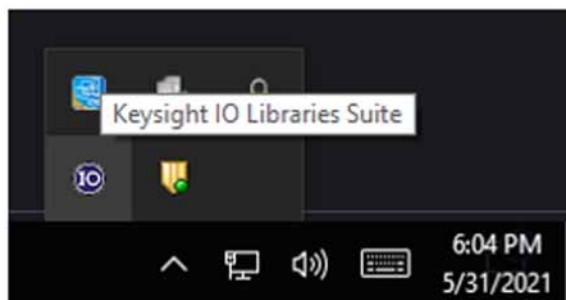

The instrument is now ready for use.

If you encounter this error at boot, continue with the steps below. Click **Cancel** to continue.
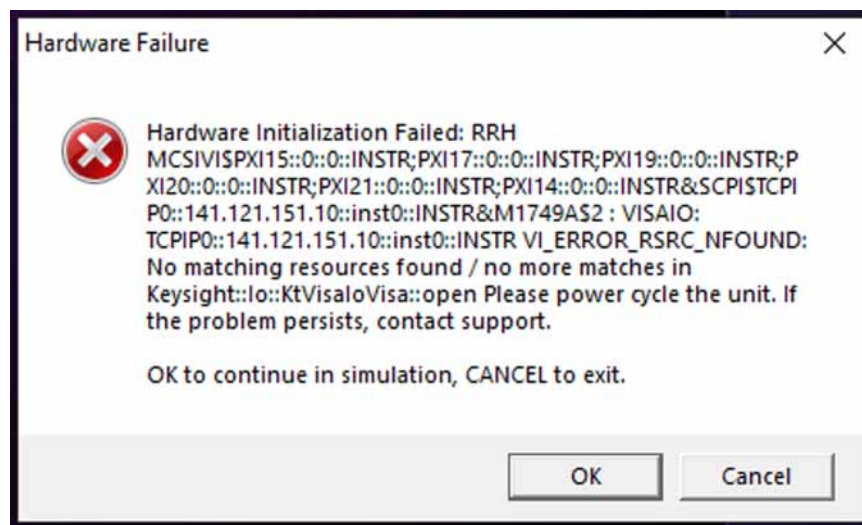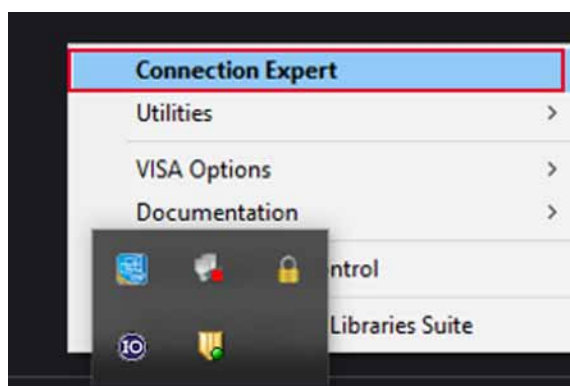
Increase the Keysight Connection Expert LAN timeout values. To do this, navigate to the Windows task tray, right-mouse on the **IO Libraries** icon:
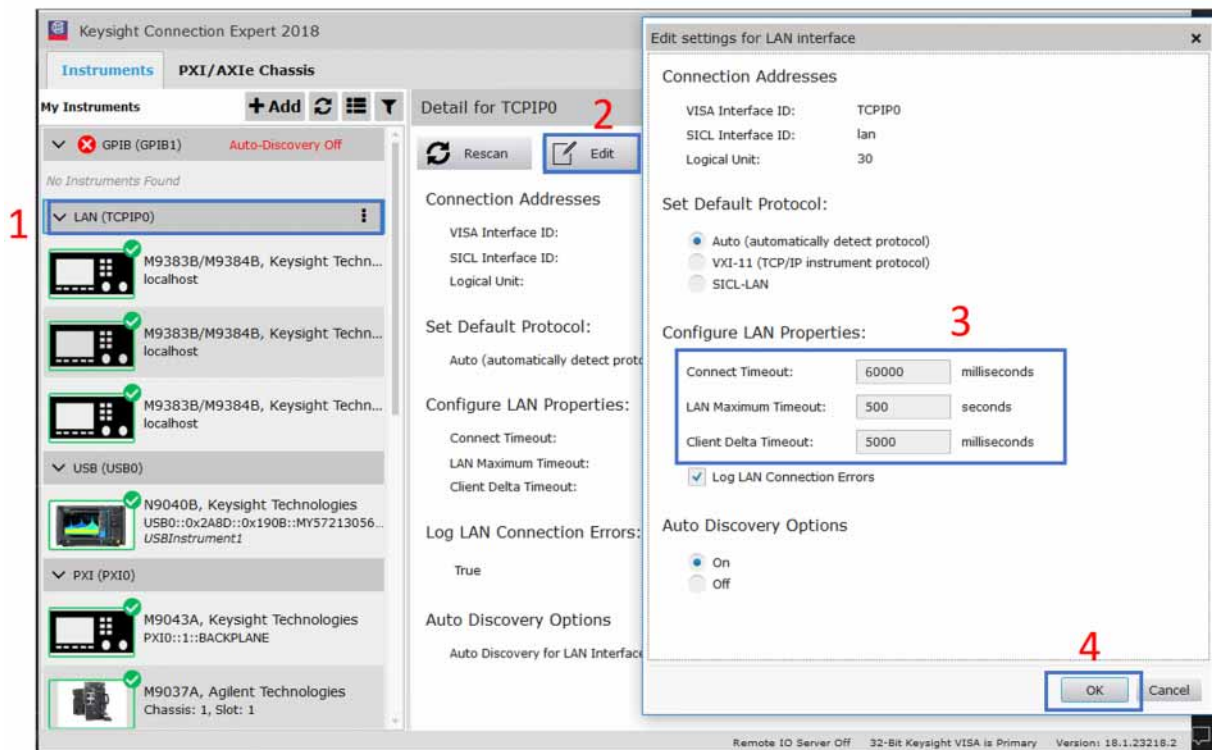

Then select **Connection Expert**:

Refer to the screen below. In the Instruments tab, click on the **LAN (TCPIP0)** selection **(1)**, then **Edit (2)**. In the **Configure LAN Properties (3)**, increase the timeout values for **Connect Timeout** and **LAN Maximum Timeout**, then select **OK (4)**. Suggested values are as indicated.

**NOTE** The **Connect Timeout** value may need to be greater than 60000 ms depending on the instrument setup.

Exit Keysight Connection Expert and reboot the VXG to resume operation.

Return the System to Default Configuration

To return the system to its default configuration, if possible, leave the M1749A(s) connected while the software is uninstalled:

1. Exit the instrument application.

2. **Sign Out** of the default user (**Instrument**): if the Windows task bar is not present at the bottom of the screen, tap the lower section of the display until the Windows task bar appears. Tap the

   Windows Start icon, select the **Change Account settings** icon ⬤ and **Sign out**.

3. At the login prompt enter (factory default indicated, if you have changed the password enter the appropriate password):

   – **administrator**

   – **Keysight4u!**

4. Press the Next arrow to log in.

5. In the M9384xA Service Manager dialog, Stop the Services:
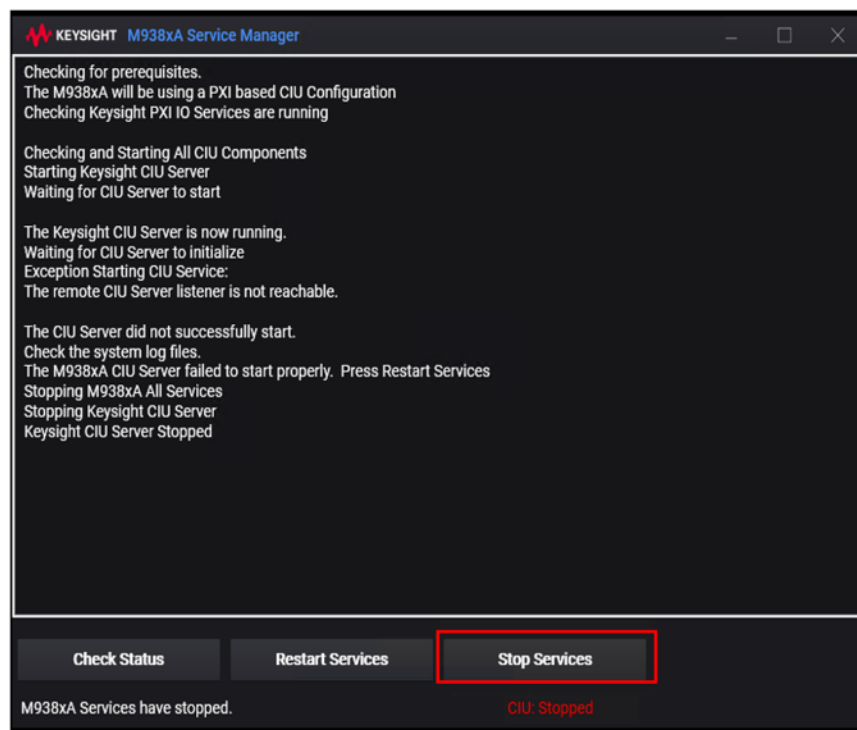
6. Navigate to the Control Panel, Programs, Programs and Features. Select the Keysight S91x0A application and Uninstall:
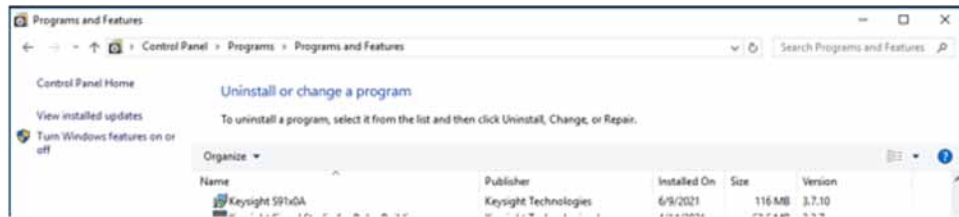
Follow the prompts.

7. After the Keysight S91x0A has been uninstalled, turn off the VXG, disconnect the M1749A(s), then reboot the VXG.

> **NOTE**
>
> If the M1749A(s) have been disconnected before this process is performed, the same steps can be followed. However, you will need to wait at least 5 minutes at the M9384xA Service Manager dialog for the software to recognize the device(s) have been disconnected and the Stop Services button becomes active.

KEYSIGHT