Keysight N109228CA OIF CEI 3.1 Compliance Test Application



Getting Started

Notices

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Keysight N109228CA OIF CEI 3.1 Compliance and Debug Application Getting Started

1 Introduction

Use the instructions in this Guide to install and set up the N109228CA OIF CEI 3.1 Compliance Test Application. Once the procedures in this document are completed, you can begin compliance testing. Information on using the application is included in the application's Online Help.

Your licenses determine where you install the N109228CA and FlexDCA applications. The N109228CA license allows you to install the application on either a specific PC or a specific 86100D or N1000A DCA-X instrument. This selection is made at the time you redeem your licenses.

Configuration	DCA-X Supported Configurations	DCA-M Supported Configurations
N109228CA on a PC with FlexDCA	A PC attached to N1000A or 86100D DCA-X oscilloscope (in Legacy configuration) over LAN. The PC has N109228CA OIF CEI 3.1 software application, N1010A FlexDCA, 86100DU-400 for 86100D, N1010100A (F-AEYE) or 86100DU-401 license, and IO Connection Expert installed on it.	A PC directly connected to the N109X with a USB cable. The PC has N109228CA OIF CEI 3.1 software application, N1010A FlexDCA, N109x-401 or N1010100A License, and IO Connection Expert installed on it.
N109228CA on a PC without FlexDCA	A PC attached to N1000A or 86100D DCA-X oscilloscope (in Standard configuration) over LAN. The PC has N109228CA OIF CEI 3.1 software application, 86100DU-400 for 86100D, N1010100A (F-AEYE) or 86100DU-401 licenses, and IO Connection Expert installed on it.	 Configuration 1: Connect the primary test system PC to a low-cost modern PC via LAN. The FlexDCA interface resides on the second PC. The second PC is then connected to the N109x via USB. This eliminates most issues of compatibility between an existing test system PC and the N109X hardware and can greatly simplify converting an 86100D system to an N109X system. Configuration 2: An N1000A or 86100D mainframe connected to the N109X with a USB cable. The N1000A or 86100D has FlexDCA installed on it. The N1000A or 86100D can then be controlled via GPIB or LAN by a PC that has N109228CA installed on it. The PC with N109228CA has N109x-401 or N1010100A License and IO Connection Expert installed on it.
N109228CA on the oscilloscope	N1000A or 86100D DCA-X oscilloscope in Standard configuration. The oscilloscope has N109228CA OIF CEI 3.1, FlexDCA, and IO Connection Expert installed on it.	An N1000A or 86100D mainframe connected to the N109X with a USB cable. The N1000A or 86100D has FlexDCA and N109228CA installed on it.

Installing the N109228CA OIF CEI 3.1 Compliance Test Application

- Select from one of the three different test-equipment configurations shown in the following pages. The configuration that you select depends on where the N109228CA OIF CEI 3.1 Compliance Test Application is installed, as determined by the licenses, and whether you are using the N1010A FlexDCA application.
- 2 After locating the figure that matches your setup, follow the recommended procedure.



Recommended Equipment

Table 1 lists the recommended equipment. The equipment you select depends on the supported test equipment that is available to you.

Table 1 Recommended equipment to run tests on the N109228CA OIF CEI 3.1 Compliance Test Application

Equipment	CEI 6G-LR/SR CEI 11G-LR/MR/SR	CEI 6G-LR/SR CEI 11G-LR/MR/SR CEI 25G-LR CEI 28G-SR/VSR	Qty	
Oscilloscope	N1000A D N1000A-LO. N1000A-PLK Patt F-JIT Enhanced Jitter Analysis F-EQ Equalizers option o 86100D D 86100D-200 Enhanced Jitter Analysis or F-JIT Enha 86100D-201 Advanced Waveform Analysis or F Or a N1092 C/E Optical N1094A Two N1094B Fou	CA-X with options: J Low jitter timebase eren lock trigger hardware option under N1010100A R&D package under N1010100A R&D package Or CA-X with options: R Extended Trigger nced Jitter Analysis option under N1010100A R&D package i-EQ Equalizers option under N1010100A R&D package any of these + Two Electrical Channels o Electrical Channels r Electrical Channels	1	
Single Module Solution	86108A or 86108B-LBW/216 N1060A	86108B-HBW/232 N1060A	1	
Multiple Module Solution	86112A, 86117A, 86118A-H01, N1045A, N1045B, N1046A 75/85/100 GHz, N1055A, or 54754A	86117A, 86118A-H01, N1045A, N1045B, N1046A 75/85/100 GHz, or N1055A	1	
	86107A (any option)	86107A (any option)	1	
Clock/Data Recovery and Demultiplexer *	N4877A-216 or N4877A-232 N1076 A/B, N1077A, N1078A Clock Data Recovery	N4877A-232 N1076 A/B, N1077A, N1078A Clock Data Recovery	1	
Software	N109228CA FlexDCA A.05.80 or higher Keysight I/O Libraries, 16.3 or higher 86100DU-400 (<i>for Jitter Transfer</i>) [†] 86100DU-401 or Advanced Eye Analysis option under N ⁷ Keysight I/O Libraries, 16.3 or higher, 16.3 if running N10	1010100A R&D package <i>(for PRBS31)</i> [‡] D10A on a PC	1 1 1 1	
Performance Network Analyzer **	N5221A, N5222A, N5230C-120/125, or N5241A	N5224A, N5222A, N5227A, N5230C-420/425, or N5244A	1	
Impedance Analyzer ^{†† #}	– 4294A Precision Impedance Analyzer (recom E5061B ENA Series Network Analyzer (recom		1	
Matched Cable Set	86108B-CA3 (recommended)	86108B-CA2 (recommended)	1	
Phase Trimmers	86108B-PT3 (recommended)	86108B-PT2 (recommended)	2	
DC Block	86108B-DC3 (recommended)	86108B-DC2 (recommended)	2	
Pick-Off	N4815A-015 (recommended) N4915A-015 (recommended)			

* Required if using the multiple module solution instead of an 86108A/B.

⁺ The 86100DU-400 software is required *only* for testing the CEI 11G-SR (Short Reach) interface only, when running the Jitter Transfer Bandwidth, 11G-SR and Jitter Transfer Peaking, 11G-SR tests.

- * The 86100DU-401 software is *only* required for testing the CEI 6G and CEI 11G interfaces, when you select a PRBS31 pattern length when testing jitter.
- **Required for return-loss tests. Later PNA models with higher frequency range will also work with the N109228CA.
- tt Required for Very Short Reach (VSR) tests. The instrument must be able to measure impedance at 1 MHz.
- # The impedance analyzer is not remotely controlled by the N109228CA.

NOTE

The N109228CA OIF CEI 3.1 Compliance Test Application *cannot* be installed on an 86100A, 86100B, or 86100C.

Installing N109228CA and N1010A FlexDCA on a PC

If your licenses allow for installing the software as marked by the red star in the following diagrams, go to Chapter 2, "Installing N109228CA and FlexDCA on a PC".







Figure 2 N109228CA and N1010A FlexDCA installed on PC connected to N1000A DCA-X Oscilloscope



Figure 3 N109228CA and N1010A FlexDCA Installed on PC connected to N1094B DCA-M Oscilloscope

Installing the N109228CA on a PC without FlexDCA

If your licenses allow for installing the software as marked by the red star in this diagram, go to Chapter 3, "Installing N109228CA on a PC Without N1010A FlexDCA".



Figure 4 N109228CA Installed on PC connected to 86100D DCA-X Oscilloscope



Figure 5 N109228CA Installed on PC connected to N1000A DCA-X Oscilloscope



Figure 6 N109228CA Installed on PC Without N1010A FlexDCA connected to N1094B DCA-M Oscilloscope via another PC



Figure 7 N109228CA Installed on PC Without N1010A FlexDCA connected to N1094B DCA-M Oscilloscope via 86100 DCA-X Oscilloscope



Figure 8 N109228CA Installed on PC Without N1010A FlexDCA connected to N1094B DCA-M Oscilloscope via N1000A DCA-X Oscilloscope

Installing N109228CA on the DCA-X Oscilloscope

If your licenses allow for installing the software as marked by the red star in this diagram, go to Chapter 4, "Installing N109228CA on the oscilloscope".





Figure 10 N109228CA Installed on N1000A



Figure 11 N109228CA Installed on 86100D connected to a DCA-M setup



Figure 12 N109228CA Installed on N1000A connected to a DCA-M setup

Starting the N109228CA OIF CEI 3.1 Compliance Test Application

After you install the N109228CA OIF CEI 3.1 Compliance Test Application on a PC (with or without the N1010A FlexDCA interface) or on the N1000A or 86100D Oscilloscope, refer to the following sections to start the N109228CA OIF CEI 3.1 Compliance Test Application:

- If the N109228CA OIF CEI 3.1 Compliance Test Application and the N1010A FlexDCA Software are installed on the same PC and the DCA-X or DCA-M Oscilloscope is being accessed remotely, see "Starting the N109228CA OIF CEI 3.1 Compliance Test Application" on page 53.
- If the N109228CA OIF CEI 3.1 Compliance Test Application is installed on a PC (but the N1010A FlexDCA Software is not installed) and the DCA-X or DCA-M Oscilloscope is being accessed remotely, see "Starting the N109228CA OIF CEI 3.1 Compliance Test Application" on page 77.
- If the N109228CA OIF CEI 3.1 Compliance Test Application is installed on the N1000A or 86100D Oscilloscope, see "Starting the N109228CA OIF CEI 3.1 Compliance Test Application" on page 92.

Connecting to External Instruments

Most of the measurements in the N109228CA OIF CEI 3.1 Compliance Test Application use an N1000A or 86100D DCA-X or a supported DCA-M (N1092C/E, N1094A, N1094B) sampling oscilloscope. However, for return loss compliance tests, a network analyzer is required.

The current version of the N109228CA OIF CEI 3.1 Compliance Test Application requires Socket connections for PNAs.

Note that the Keysight I/O Library Suite must be installed before you proceed with connecting to the network analyzer. The user interface for Keysight Connection Expert 2017 (Version 18.0) and higher is slightly different from its previous versions, such as Version 17.2 or earlier.

Connection using Keysight Connection Expert v17.2 (or earlier)

- 1 Locate and record the PNA instrument's Hostname (Full Computer Name). Refer to the respective network analyzer's documentation for locating this information.
- 2 From the Windows Start menu, click All Programs>Keysight Connection Expert to launch Connection Expert. Refer to Keysight IO Libraries Suite for information on how to install the Keysight Connection Expert.



Figure 13 Launching the Keysight Connection Expert

3 In Keysight Connection Expert, click the **Manual Configuration** tab.



Figure 14 Tabs within Keysight Connection Expert

4 Under Add New Instruments / Interfaces, select LAN instrument.

Keysight Connection Expert		
Instruments PXI/AXIe Chassis	Manual Configuration	Settings
Add New Instruments/Interfaces	Edit Existing Instruments/	Interfaces
LAN instrument	Add a LAN device	

Figure 15 Performing Manual Configuration in Keysight Connection Expert

- 5 In the **Add a LAN device** pane, perform the following steps:
 - a Under **Set LAN Address:**, enter the Hostname (recorded in step 1) in the **Hostname or IP Address:** field. Note that your Hostname entry will be different from what is shown in the image.
 - *b* Under **Set Protocol:**, select **Socket** and enter the port number.
 - c Under Verify Connection:, click Test This VISA Address to verify the connection.

Keysight Connection Expert			? _ 🗆 ×
Instruments PXI/AXIe Chassis	Manual Configuration	Settings	
Add New Instruments/Interfaces	Edit Existing Instruments	/Interfaces	ß
LAN instrument	Add a LAN device		
Serial Instrument on ASKL3 LAN interface Remote serial instrument Remote GPIB interface	Set LAN Address:	:: K-E5080A-xxxx	x
Remote USB interface	TCPIP Interface ID:	ТСРІРО	•
	Set Protocol:		
	Instrument	Remote Name:	inst0
	Socket	Port Number:	5025
	HiSLIP	Remote Name:	hislip0
	Verify Connection: Allow *IDN Query Test This VISA Address	s TCPIP0::K-E508	0A-xxxxx::5025::SOCKET
	View Web Page: Instrument Web Inter	face	
			Accept Cancel
Messages: 0 Clear	Remote IO Serve	r On 32-Bit Keysight VIS	A is Primary 17.2.20828.2

Figure 16 Adding a LAN device information in the Keysight Connection Expert

6 Once you verify the entered data, click **Accept** to complete the process.

- 7 Copy Network Analyzer SICL Address to the Clipboard:
 - a Click the Instruments tab of the Keysight Connection Expert.
 - *b* Click the PNA listing on the left pane, and copy the SICL address using *Ctrl* + *C* keys. Note that the address on your end will be different from what is shown in the image.

Keysight Connection Expert	? _ 🗆 ×
Instruments PXI/AXIe Chassis Manu	al Configuration Settings
Rescan Filter Instruments: 508 Clear	Details for Keysight Technologies F50804
CONTRACTOR	Manufacturer: Keysight Technologies Model: E5080A Serial Number: xxxxxxxxx Firmware Version: A.11.70.00 Connection Strings VISA Addresses ✓ TCPIP0::K-E5080A-xxxxx::5025::SOCKET VISA Aliases VISA Aliases VISA Aliases VISA Aliases SICL Addresses lan,5025[K-E5080A-xxxxx]
Messages: 0 Clear Remote I	<no drivers="" installed=""> O Server On 32-Bit Keysight VISA is Primary 17.2.20828.2</no>

Figure 17 Copying Network Analyzer's SICL Address

8 Start the N109228CA OIF CEI 3.1 Compliance Test Application. Refer to "Starting the N109228CA OIF CEI 3.1 Compliance Test Application" on page 20 for instructions.

9 Connect to the Network Analyzer:

External I	Instrumen	nts
Name:	PNA	
Address:	Connect	
IDN:	Get	

Figure 18 Default view of External Instruments area in the N109228CA OIF CEI 3.1 Application

- a In the **Name:** field of the **External Instruments** area at the bottom of the N109228CA OIF CEI application's main window, select **PNA** from the drop-down list.
- b Click Connect. The Connect to PNA window appears.

Connect to PNA	? – X
Currently connected to: Change to	<nothing></nothing>
Alias/Address:	
IDN:	<unknown>Get</unknown>
Enter/Select VISA a	ddress/alias (or SICL address):
Select from Keysigh	t Connection Expert 'My Instruments':
	OK Cancel

Figure 19 Connecting to the selected Network Analyzer

- c In the Enter/Select VISA address/alias (or SICL address) field, paste the SICL address using Ctrl + V keys.
- *d* Click **Get** to confirm the connection.
- e Click **OK** to close the dialog box.
- *f* The **External Instruments** field displays the relevant information once the connection to the selected network analyzer is established.

Connection using Keysight Connection Expert 2017 (v18.0 or higher)

- 1 Locate and record the PNA instrument's Hostname (Full Computer Name). Refer to the respective network analyzer's documentation for locating this information.
- 2 From the Windows Start menu, click All Programs>Keysight Connection Expert to launch Connection Expert. Refer to Keysight IO Libraries Suite for information on how to install the Keysight Connection Expert.



Figure 20

Launching the Keysight Connection Expert

3 In Keysight Connection Expert, click the **+ Add** button to manually add instruments and interfaces.



Figure 21 Adding LAN device manually in the Keysight Connection Expert 2017

4 From the drop-down list that appears, select **LAN instrument**.

Keysight Connec	tion Ex	pert 201	17					
Instruments PX	I/AXI	e Chassi	s					
My Instruments		+ Add	C	:=	T	Details	for K	(e)
✓ LAN (TCPIP0)		LAN	l inst ial ins	rume strum	nt ent o	on ASRL3	6	3
86100D, Keysi 141.121.82.130		LAN Ren Ren	l inte note note	erface serial GPIB	insti inter	rument face		łi
		Ren	note	USB	inter	face		5

Figure 22 Selecting LAN instrument in the Keysight Connection Expert 2017

- 5 In the Add a LAN device window,
 - a Select the Enter Address tab.
 - *b* Under **Set LAN Address:**, enter the Hostname (recorded in step 1) in the **Hostname or IP Address:** field. Note that your Hostname entry will be different from what is shown in the image.
 - *c* Under **Set Protocol:**, select **Socket** and enter the port number.
 - *d* Under Verify Connection:, click Test This VISA Address to verify the connection.

Add a LAN device		×
Select from List Enter A	Address	
Set LAN Address:		
Hostname or IP Address:	K-E5080-xxxxx	
TCPIP Interface ID:	TCPIP0	-
Set Protocol:		
Instrument (VXI-11)	Remote Name:	inst0
HiSlip	Remote Name:	hislip0
 Socket 	Port Number:	5025
Verify Connection:		
Allow *IDN Query		
Test This VISA Address		
View Web Page:		
Instrument Web Interface		
		OK Cancel



6 Once you verify the entered data, click **OK** to complete the process.

- 7 Copy Network Analyzer SICL Address to the Clipboard:
 - *a* Click the **Instruments** tab of the Keysight Connection Expert.



Figure 24 Selecting the connected Network Analyzer for SICL Address information

b Click the PNA listing on the left pane, and copy the SICL address using *Ctrl* + *C* keys. Note that the address on your end will be different from what is shown in the image.

0	đ	×		(=		∰+ <u>†</u> ;	
Status	Edit	Remove	IO IO	Expert	Benchvue	Web UI	Panel
Manufa Model:	cturer:	Keysi E508	ight Technologies 0A			Г	
Serial N	lumber:	XXXXXX	XXXXXX			_ L	
Connectio	on String	IS					
Connectio	on String	IS					
Connectio	VISA	JS Address 0::K-E5080)A-xxxx::5025::50CF	Aliases	s 	GICL Address	5 5080A-xxxx
Connectio	VISA	JS Address 0::K-E5080	1A-xxxxx::5025::SOCk	Aliases	s [GICL Address	s 5080A-xxxx
Connectio	VISA / TCPIP	JS Address 0::K-E5080 Update	IA-xxxxx::5025::SOCk	Aliases	s 	GICL Address an,5025[K-E	5 5080A-xxxx
Connectio	VISA / TCPIP(wers	JS Address 0::K-E5080 Update)A-xxxxx::5025::50Ck	Aliases	s 	5ICL Address an,5025[K-E	5 5080A-xxxx
Connectic	VISA / TCPIPU vers 4	JS Address 0::K-E5080 Update	IA-xxxxx::5025::SOCk	Aliases	s 	GICL Address an,5025[K-E	5 5080A-xxxx

Figure 25 Copying Network Analyzer's SICL Address

8 Start the N109228CA OIF CEI 3.1 Compliance Test Application. Refer to "Starting the N109228CA OIF CEI 3.1 Compliance Test Application" on page 20 for instructions.

9 Connect to the Network Analyzer:

External 1	External Instruments					
Name:	PNA					
Address:	Connect					
IDN:	Get					

Figure 26 Default view of External Instruments area in the N109228CA OIF CEI 3.1 Application

- a In the **Name:** field of the **External Instruments** area at the bottom of the N109228CA OIF CEI 3.1 application's main window, select **PNA** from the drop-down list.
- b Click Connect. The Connect to PNA window appears.

Connect to PNA	? 🗆 🗙
Currently connected to:	<nothing></nothing>
Change to	
Allds/Address.	
1DN.	
Enter/Select VISA ad	ddress/alias (or SICL address):
	Ý
Select from Keysight	t Connection Expert 'My Instruments':
	OK Cancel

Figure 27 Connecting to the selected Network Analyzer

- c In the Enter/Select VISA address/alias (or SICL address) field, paste the SICL address using Ctrl + V keys.
- *d* Click **Get** to confirm the connection.
- e Click **OK** to close the dialog box.
- *f* The **External Instruments** field displays relevant information once the connection to the selected network analyzer is established.

1 Introduction

Keysight N109228CA OIF CEI 3.1 Compliance and Debug Application Getting Started

2 Installing N109228CA and FlexDCA on a PC

Follow the instructions in this chapter when you are installing both the N109228CA OIF CEI 3.1 application and the FlexDCA application on the PC. You must purchase and install a license for the 86100DU-401. Once the license is installed, the 86100DU-401 software will be enabled.

NOTE

When you redeem an N109228CA OIF CEI 3.1 license, you must select whether to install the application on a specific 86100D or N1000A oscilloscope or a specific PC.



Figure 28 N109228CA and N1010A FlexDCA Installed on PC (with 86100D DCA-X oscilloscope)





Figure 29 N109228CA and N1010A FlexDCA Installed on PC (with N1000A DCA-X oscilloscope)



Figure 30 N109228CA and N1010A FlexDCA Installed on PC connected to N1094B DCA-M Oscilloscope

NOTE	If you do not connect a network analyzer, you will not be able to perform the return loss compliance tests.
NOTE	The 86100DU-400 software is required only for testing the CEI 11G-SR (Short Reach) interface, when running the Jitter Transfer Bandwidth, 11G-SR and Jitter Transfer Peaking, 11G-SR tests.
NOTE	The 86100DU-401 or N109X-401 software is required only for testing the CEI 6G and CEI 11G interfaces, when you select a PRBS31 pattern length when testing jitter.

Connecting the Equipment

1 For a DCA-X oscilloscope, install one of the module combinations listed in Table 2 into the 86100D or N1000A.

Table 2 Module combinations for DCA-X Oscilloscope

Installed Module Configurations	Requires N4877A	Limited to CEI 6G-LR/SR and CEI 11G-LR/MR/SR Testing Only
86108A		1
86108B-LBW/216		1
86108B-HBW/232		
86112A and 86107A	√ (N4877A-216)	1
54754A and 86107A	√ (N4877A-216)	1
86117A and 86107A	√ (N4877A-232)	
86118A-H01 and 86107A	√ (N4877A-232)	
N1045A and 86107A	√ (N4877A-232)	
N1045B and 86107A	√ (N4877A-232)	
N1055A and 86107A	√ (N4877A-232)	
54754A and 86107A	√ (N4877A-232)	
N1046A and 86107A	√ (N4877A-232)	
N1060A		

2 For a DCA-M oscilloscope, keep in mind the information in the following table.

Table 3 Supported configurations for DCA-M Oscilloscope

Configurations for DCA-M	Requires N107x	
N1094A	√ (N107xA-232)	
N1094B	√ (N107xA-232)	
N1092 C/E	√ (N107xA-232)	

3 Connect the equipment as shown in Figure 28 or Figure 30 and power on all of the instruments.
Installing the I/O Library Suite

1 Navigate to www.keysight.com/find/iosuite and download the Keysight I/O Library Suite.

NOTE

Keysight's I/O Library Suite is free software that automatically detects instruments connected to your PC and configures the interfaces. It reduces the overall setup and configuration time. The N109228CA OIF CEI 3.1 Compliance Test Application requires I/O Libraries Suite 16.3 or higher.

2 Install the I/O Library Suite on the PC.

Installing the N1010A FlexDCA Application

Follow the steps below to install the N1010A FlexDCA Software and its license as well as the license for the 86100DU-401.

- 1 Search for the N1010A FlexDCA Software on Keysight website.
- 2 Download the installer file and install the application on the PC for which you have redeemed the license.

When you redeem an N1010A FlexDCA Software license, you must specify the information for the PC, where the software will be installed for remotely accessing the Oscilloscope.

- 3 Save the license file that you received from Keysight in a folder on the local disk or in an accessible memory device.
- 4 From the Windows **Start** menu, click **All Programs>Keysight License Manager** to launch the Keysight License Manager.



Figure 31 Launchi

NOTE

NOTE

Keysight License Manager version 5.1 (and higher) have a different user interface than version 5.0 (or earlier). Even though the path to launch the Keysight License Manager is the same for both versions, refer to the *Keysight License Manager Online Help* for the respective versions to find more information about the functionality of the application.

To install the N1010A FlexDCA Software license using Keysight License Manager version 5.1 or higher

1 Click the Tools icon on the top-right corner of the Keysight License Manager window.

📕 Keysight License Mana	ıger	* ? _ 🗆 ×
 Connections 	Licenses on (localhost) C.	Why do I need these tools?
		Install License File
+ Add Connection	Full computer name: ************************************	Install License from Text
XXXXXXXXXX(localhost)	Host ID:	View License Alerts
		Explore Transport URLs
		About Keysight License Manage
Manage licenses remotely	Feature Description Version Expiration Type	Count Location

2 Click Install License File.... The Select License File(s) to Install on <PC Hostname> appears.

Select License File(s) to Install on XXXXXXXXX(localhost)					
🖉 🖉 🖉 Keysight	► Licenses - 47	Search Licenses			
Organize 🔻 New folde	r	:= 🕶 🔟 🔞			
🐌 Downloads 🔺	Name	Date modified Type			
Recent Places	1677859_1002001660.lic	5/15/2017 11:35 PM LIC File			
Clevel Dhatas	1677859_20170515120537.lic	5/15/2017 11:36 PM LIC File			
W ICloud Photos	1001740845_1634928.lic	1/25/2017 2:29 PM LIC File			
	7				
	*	4			
File na	ame: 1677859_20170515120537.lic 🔹	License files (*.lic) Open Cancel			

Figure 33 Selecting license file from the folder

- 3 Navigate to the folder where the N1010A FlexDCA Software licenses are saved.
- 4 Select the license and click **Open**. The license files are installed and an entry is displayed in the Keysight License Manager.

Figure 32 Installing license file on Keysight License Manager version 5.1 & above

Keysight License Man	ager					∢?	_ 🗆 ×
 Connections 	Licens	es on 💥 💥	*******	(localhost) ()		
+ Add Connection	Full comp	outer name:💥	.m	sr.is.keysight.	com 🗋		
(localhost)	Host ID:	*****	********				
Manage licenses remotely	Feature	Description	Version	Expiration	Туре	Count	Location
Keysight License Service	FlexDca_Demo	FlexDca_Demo	1.000	2018/05/15	Fixed	Unlimited	Local

Figure 34 Licenses displayed in Keysight License Manager version 5.1 & above

5 Close the Keysight License Manager.

To install the N1010A FlexDCA's license using Keysight License Manager version 5.0 or earlier

1 From the Keysight License Manager window's main menu, click **File>Install...** or right-click within the left pane of the Keysight License Manager window and select **Install...**.

	Keysight License Manager		
	File Edit View Tools Help		
Install	localhost	Host System	
Delete	E-@ Local Licenses	Host Name :	×****
Transport	EnhancedJ	Host ID :	
Connect	₽ 100 Product 86100	Interface Type	Windows
Exit	□ AdvancedV □ □ □ □ Product 86100	Licensed Product	s and Features

Figure 35 Installing license file on Keysight License Manager version 5.0 or earlier

Install License File(s)				×
C V V V V V V V V V V V V V V V V V V V	Documents > FlexDCA > Apps > Licenses	•	Search License	²⁵ P
Organize 🔻 New folder			E	
ጵ Favorites 📃 Desktop	Documents library		Arrange	e by: Folder 🔻
Downloads	Name	Date modified	Туре	Size
🕍 Recent Places	1677859_1002001660.lic	5/15/2017 11:05 AM	LIC File	1 KB
🔚 Libraries	1677859_20170515120537.lic	5/15/2017 11:06 AM	LIC File	1 KB
🕦 Computer 🏜 SystemDrive (C:) 👝 UserData (D:) 🗣 Network				
File nan	ne: 1677859_20170515120537.lic		✓ License files (*.li Open ↓	ic) Cancel

2 The Install License File(s) dialog box appears.

Figure 36 Selecting license file from the folder

3 Navigate to the folder where the N1010A FlexDCA Software licenses are saved.

4 Select the license and click **Open**. The license files are installed and an entry is displayed in the Keysight License Manager.

Keysight License Manager				
File Edit View Tools Help	-			
	Product Summary			
E- Droduct 98100D 200	Product Number :	86100D-ALL		
Enhanced litterAnaly	Product Version :	unspecified		
Product 86100D-201	Licensed Features	,		
AdvancedWaveform	Feature	Version	Description	Туре
	FlexDca_Demo	1.000	Demo All FlexDCA Features	Removable
□-√ Product 86100D-300				
AmplitudeAnalysis (
₽-••• Product 86100D-401 =				
401AdvancedEye (1				
🖶 🎣 Product 86100D-500				
ProductivityPackage				
Product 86100D-ALL				
- 🗋 FlexDca_Demo (1.0				
🖻 📢 Product 86100D-SIM				
InfiniiSim-DCA (1.00				
Product N1012A-CEI				
OIF_CEI_Compliand				
Product N1014A-1TP				
SFF-8431_Host_Me				
Product N1014A-2TP				
CEE-8431 Module	•	III		4
Product 86100D-ALL				

Figure 37 Licenses displayed in Keysight License Manager version 5.0 or earlier

5 Close the Keysight License Manager.

Installing the N109228CA OIF CEI 3.1 Compliance Test Application

Follow the steps below to install the N109228CA OIF CEI 3.1 Compliance Test Application and its license as well as the license for the 86100DU-401.

- 1 Search for the N109228CA OIF CEI 3.1 Compliance Test Application on Keysight website.
- 2 Download the installer file and install the application on the PC for which you have redeemed the license.

NOTE When you redeem an N109228CA OIF CEI 3.1 license, you must select whether to install the application on the Oscilloscope or a specific PC.

- 3 Save the license file that you received from Keysight in a folder on the local disk or in an accessible memory device.
- 4 If not already done, purchase an 86100DU-401 or N109x-401 license. Save the license file that you received from Keysight in a folder on the local disk or in an accessible memory device.
- 5 If the FlexDCA is running on your PC, close FlexDCA.
- 6 From the Windows **Start** menu, click **All Programs>Keysight License Manager** to launch the Keysight License Manager.



Figure 38 Launching Keysight Connection Expert from the Start menu

NOTE

Keysight License Manager version 5.1 (and higher) have a different user interface than version 5.0 (or earlier). Even though the path to launch the Keysight License Manager is the same for both versions, refer to the *Keysight License Manager Online Help* for the respective versions to find more information about the functionality of the application.

To install the N109228CA OIF CEI 3.1 Compliance Test Application's license using Keysight License Manager version 5.1 or higher

1 Click the **Tools** icon on the top-right corner of the Keysight License Manager window.

🗕 Keysight License Man	ager	* ? _ 🗆 ×
Connections	Licenses on 💥 (localhost) 🖒	Why do I need these tools? Install License File
Add Connection	Host ID:	Install License from Text View License Alerts
Manage licenses remotely	Feature Description Version Expiration Type	Explore Transport URLs About Keysight License Manage Count Location

Figure 39 Installing license file on Keysight License Manager version 5.1 & above

2 Click Install License File.... The Select License File(s) to Install on <PC Hostname> appears.

Select License File(s) to Install on XXXXXXXXXX (localhost)					
COO V 📕 « Keysight 🕨	Licenses 👻 🍕	Search Licenses	٩		
Organize 👻 New folder		!≡ ▼ □	0		
★ Favorites	Name	Date modified	Гуре		
Oreative Cloud Fi	1677859_1002001660.lic	5/15/2017 11:35 PM	IC File		
🧮 Desktop	1677859_20170515120537.lic	5/15/2017 11:36 PM	IC File		
🗼 Downloads 🔤	1001740845_1634928.lic	1/25/2017 2:29 PM	IC File		
📃 Recent Places 🗮					
🝊 OneDrive					
iCloud Photos					
🧮 Desktop					
🥽 Libraries					
Documents					
J Music					
Pictures					
Videos 🔻 🗸	III		F.		
File nam	e: 1677859 1002001660.lic 🗸	License files (*.lic)	-		
		Open 🔽 Canc	el		

Figure 40 Selecting license file from the folder

- 3 Navigate to the folder where the N109228CA OIF CEI 3.1 licenses are saved.
- 4 Select the license and click **Open**. The license files are installed and an entry is displayed in the Keysight License Manager.
- 5 Close the Keysight License Manager.

To install the N109228CA OIF CEI 3.1 Compliance Test Application's license using Keysight License Manager version 5.0 or earlier

1 From the Keysight License Manager window's main menu, click **File>Install...** or right-click within the left pane of the Keysight License Manager window and select **Install...**.

	Keysight License Manager					
	File Edit View Tools Help					
Install	 localhost 	Host System				
Delete	⊢© Local Licenses ⊨© Product 86100	Host Name :	*****			
Transport	EnhancedJ	Host ID :				
Connect	⊡ 🗐 Product 86100	Interface Type	Windows			
Exit	Product 86100	Licensed Product	s and Features			

Figure 41 Installing license file on Keysight License Manager version 5.0 or earlier

2 The Install License File(s) dialog box appears.

Install License File(s)					×
😋 🔾 🗢 📕 🕨 Libraries 🕨	Documents + FlexDCA + Apps + Licenses	•	4 7	Search Licenses	Q
Organize 🔻 New folder				•=== •	. ?
★ Favorites ■ Desktop	Documents library			Arrange by: Fol	der 🔻
Downloads	Name	Date modified	Туре	Size	
🕍 Recent Places	1677859_1002001660.lic	5/15/2017 11:05 AM	LIC F	ile	1 KB
 Libraries Computer SystemDrive (C:) UserData (D:) KINGSTON (E:) Network 					
File nam	ne: 1677859_1002001660.lic		•	License files (*.lic) Open	▼ ncel

Figure 42 Selecting license file from the folder

- 3 Navigate to the folder where the N109228CA OIF CEI 3.1 licenses are saved.
- 4 Select the license and click **Open**. The license files are installed and an entry is displayed in the Keysight License Manager.
- 5 Close the Keysight License Manager.

Connecting N1010A FlexDCA to 86100D or N1000A



Figure 43 86100D Oscilloscope's hostname

4 Record the Computer Name (corresponds to hostname) as you will need this name later in this procedure.

86100D Computer Name: _____

5 Close the **About 86100D** dialog box.

NOTE If you are accessing the 86100D Oscilloscope's FlexDCA interface remotely on your PC using any remote connectivity applications, Keysight recommends closing the remote-connection application before you try establishing connectivity between FlexDCA Software and the remote 86100D Oscilloscope.

6 On the Windows **Start** menu on your PC, click **All Programs>Keysight FlexDCA>Keysight FlexDCA** to launch the N1010A FlexDCA Software.



Figure 44 Launching the N1010A FlexDCA Software on PC



7 When FlexDCA starts, the **Extended Module Configuration** window is displayed automatically. Click **Connect** if the 86100D Oscilloscope's Hostname is already displayed else click **Setup**.

Figure 45 Extended Module Configuration dialog box for connecting N1010A FlexDCA to 86100D

If the **Extended Module Configuration** window does not appear, from the FlexDCA interface's main menu, click **Setup>DCA Connection Setup**.

- 8 On the FlexDCA Connection Setup dialog box,
 - a Ensure that LAN is selected in the Connect Using: area.
 - *b* Enter the 86100D's **Hostname** that you recorded in step 4.

Alternatively, you may also enter the IP Address of the remote 86100D Oscilloscope.

FlexDCA Connection Setup	? Close				
Remote DCA Connect Using:	Not Connected				
Hostname: KEYS	SIGHT-URU2RFT				
DCA Connection Mode O Standard (Recommended) Compatibility					
On Connect / Disconnect					
✓ Pull State from Instrument on Connect					
Push State to Instrument on Disconnect					
Disconne	Connect				

Figure 46 N1010A FlexDCA Connection Setup to connect to 86100D Oscilloscope

9 Click Connect.

If connection is established successfully, the **FlexDCA Connection Setup** dialog box displays status as **Connected**.

FlexDCA Connection Setup	? Close				
Remote DCA					
Connect Using:					
GPIB	Connected				
Hostname:	KEYSIGHT-URU2RFT				
DCA Connection Mode					
On Connect / Disconnect —					
Pull State from Instrument on	Connect				
Push State to Instrument on D	visconnect				
Disconnect	Connect				

Figure 47 86100D Oscilloscope connection status on the FlexDCA Connection Setup

- 10 Click Close to exit the FlexDCA Connection Setup dialog box.
- 11 Click Close to exit the Extended Module Configuration window.

Extended Module Configuration	_	_	_	? Close
Standad Modules HatsJac Clock Data Na822/A Clock Data Na822/A Clock Data N109x DCA-M				
To add/configure extended modules: 1. Drag desired extended module from the pak 2. Once in a slot, click on the module to config To remove an existing extended module, disco	ette above to an a jure its connectior onnect or drag it b	available slot below n, if needed. back to the palette,	above.	
Remote DCA Connection Image: KEYSIGHT-URU2RFT Host Name: KEYSIGHT-URU2RFT The status: Status: Connected (slots 1-4 are reserved for this connection) Disconnect				
	Slot 5	Slot 6	Slot 7	Slot 8

Figure 48 86100D Oscilloscope connection status on the Extended Module Configuration window

12 In FlexDCA, click Tools > SCPI Programming Tools > SCPI Server Setup to open the dialog box.

- 13 Confirm that the Sockets and HiSLIP interfaces are selected (Enabled) as shown in Figure 49.
- 14 Close the dialog box.

SCPI Server Setup				? Close
The following interfaces are available	ailable to re	emotely control this software:		
Interface	Enabled	VISA Address	SICL Address	
VXI-11 ("inst1")		TCPIP0::KEYSIGHT-DA20C19::inst1::INSTR	lan[KEYSIGHT-DA20C19]:inst1	Setup
Telnet (Port 5024)		(not applicable)	(not applicable)	Setup
Sockets (Port 5025)	\checkmark	TCPIP0::KEYSIGHT-DA20C19::5025::SOCKET	lan,5025[.KEYSIGHT-DA20C19]	Setup
HiSLIP ("hislip0", Port 4880)	<	TCPIP0::KEYSIGHT-DA20C19::hislip0,4880::INSTR	lan,4880;hislip[KEYSIGHT-DA20C19]:hislip0	Setup

Figure 49 FlexDCA's SCPI Server Setup Dialog Box

15 Once the connection is established, you may proceed to launch the N109228CA OIF CEI 3.1 Compliance Test Application on your PC.

Connecting N1010A FlexDCA to N109X Oscilloscope and N107X

Perform the following steps to connect your N109X oscilloscope with N107X clock data recovery using FlexDCA:

- 1 Launch FlexDCA.
- 2 When FlexDCA starts, the **Extended Module Configuration** window is displayed automatically. If the **Extended Module Configuration** window does not appear, from the FlexDCA interface's main menu, click **Setup>Configure Extended Modules...**.
- 3 Configure Slot 7 to be the N109X module.
- 4 Configure Slot 8 to be the N107X module.
- 5 Remove any other N109X/N107X that is configured for Slot 5 and Slot 6.



- 6 Click Close to exit the Extended Module Configuration window.
- 7 Once the connection is established, you may proceed to launch the N109228CA Compliance Test Application on your PC.

Starting the N109228CA OIF CEI 3.1 Compliance Test Application

After you install the N109228CA OIF CEI 3.1 Compliance Test Application on a PC along with the N1010A FlexDCA interface, start the N109228CA OIF CEI 3.1 Compliance Test Application in one of the following ways:

Access the N109228CA OIF CEI 3.1 Compliance Test Application directly from the Start menu

Refer to "Starting the N109228CA OIF CEI 3.1 Compliance Test Application" on page 77, where the procedure to start the application directly (that is, without launching the N1010A FlexDCA Software) is described.

Access the N109228CA OIF CEI 3.1 Compliance Test Application using the N1010A FlexDCA Software on your PC

- 1 Ensure that the N1010A FlexDCA Software is connected to the Oscilloscope. Refer to the earlier sections for steps.
- 2 After a connection between the N1010A FlexDCA Software and the Oscilloscope is established, the N1010A FlexDCA Software on your PC may indicate that it is remotely controlled, as shown in Figure 50.



Figure 50 N1010A FlexDCA Remote App under Remote Control

To view the N1010A FlexDCA's main menu, click the **Local** button (towards the upper right corner).

KEYSIGHT File	Setup Measure Tools	Apps Help	0	 Auto Scale Run Single Clear	
Waveform 🕟					
24.00000 ns			ананананананананананананананананананан		
	KEYSIGHT File Waveform D			Revision File O O Waveform Image: Comparison of the second secon	Image: Secure Tools Apps Help Image: Secure Tools Apps Help

Figure 51 N1010A FlexDCA under Remote Control

- 3 From the FlexDCA's main menu, click Apps>Automated Test Apps>N109228CA OIF CEI 31.
- 4 The N109228CA OIF CEI 3.1 Compliance Test Application banner appears. Afterwards. the default view of the N109228CA OIF CEI 3.1 Compliance Test Application appears.

-	N10922	8CA OIF CEI 3_1 Application N109228CA OIF CEI 3_1 Device 1	
F	ile View	Tools Help	
5	Set Up Set	elect Tests Configure Connect Run Automate Results HTML Repo	t -
	General		Â
	Comme	nts	
	Test Filt	er	
	O CEI	6G-LR - Long Reach	
	CEI	6G-SR - Short Reach	
	CEI	11G-LR MR - Long and Medium Reach	
s	CEI	11G-SR - Short Reach	
	O CEI	25G-LR - Long Reach	
C	O CEI	28G-SR - Short Reach	
p	🔵 CEI	28G-VSR Host to Module at TP1a	
	🔵 CEI	28G-VSR Module to Host at TP4	
	CEI	28G-MR Medium Reach	
	CEI	28G-VSR Crosstalk Tests	
	🔵 Utili	ities - choose only one	j.
	External	Instruments	
	Name:	PNA	
	Address	: Connect	
N	1essages		+
ŝ	Summari	es (click for details) Details	
>	2019-06	-24 02:37:36:711 AM Ready - Application	initialized and ready for use.

Figure 52 Default window of the N109228CA OIF CEI 3.1 Compliance Test Application

Connecting to the Network Analyzer

Refer to "Connecting to External Instruments" on page 21 for connecting to the network analyzer you are using.

Connecting to the N4877A

The N4877A is used whenever multiple 86100D or N1000A modules are used in the test setup rather than an 86108A/B module. Refer to Table 2 on page 36.

On the 86100D, click **Setup** > **Configure Extended Modules**. In the dialog box, perform the following two steps:

- 1 Configure **Slot 8** to be the N4877A.
- 2 Remove any other N4877A that is configured for **Slot 5**, **Slot 6**, or **Slot 7**.

For more information, click the Help button that is in the title bar of the Extended Module Configuration dialog box.



Figure 53 The Extended Module Configuration with the N4877A in Slot 8

Keysight N109228CA OIF CEI 3.1 Compliance and Debug Application Getting Started

3

Installing N109228CA on a PC Without N1010A FlexDCA

Follow the instructions in this chapter when you are installing the N109228CA OIF CEI 3.1 application on a PC, but you are *not* installing the N1010A FlexDCA application on the same PC. You must purchase and install a license for the 86100DU-401. Once the license is installed, the 86100DU-401 software will be enabled.









Figure 55 N109228CA Installed on PC Without N1010A FlexDCA connected to N1000A DCA-X Oscilloscope



Figure 56 N109228CA Installed on PC Without N1010A FlexDCA connected to N1094B DCA-M Oscilloscope via another PC



Figure 57 N109228CA Installed on PC Without N1010A FlexDCA connected to N1094B DCA-M Oscilloscope via 86100 DCA-X Oscilloscope



N109228CA Installed on PC Without N1010A FlexDCA connected to N1094B DCA-M Oscilloscope via Figure 58 N1000A DCA-X Oscilloscope

NOTE

If you do not connect a network analyzer, you will not be able to perform the return loss compliance tests.

The 86100DU-400 software is required only for testing the CEI 11G-SR (Short Reach) interface, NOTE when running the Jitter Transfer Bandwidth, 11G-SR and Jitter Transfer Peaking, 11G-SR tests. NOTE

The 86100DU-401 or N109X-401 software is required only for testing the CEI 6G and CEI 11G interfaces, when you select a PRBS31 pattern length when testing jitter.

Connecting the Equipment

1 For a DCA-X oscilloscope, install one of the module combinations listed in Table 4 into the 86100D or N1000A.

Table 4 Module combinations for DCA-X Oscilloscope

Installed Module Configurations	Requires N4877A	Limited to CEI 6G-LR/SR and CEI 11G-LR/MR/SR Testing Only
86108A		1
86108B-LBW/216		1
86108B-HBW/232		
86112A and 86107A	√ (N4877A-216)	1
54754A and 86107A	√ (N4877A-216)	1
86117A and 86107A	√ (N4877A-232)	
86118A-H01 and 86107A	√ (N4877A-232)	
N1045A and 86107A	√ (N4877A-232)	
N1045B and 86107A	√ (N4877A-232)	
N1055A and 86107A	√ (N4877A-232)	
54754A and 86107A	√ (N4877A-232)	
N1046A and 86107A	√ (N4877A-232)	
N1060A		

2 For a DCA-M oscilloscope, keep in mind the information in the following table.

Table 5 Supported configurations for DCA-M Oscilloscope

Configurations for DCA-M	Requires N107x
N1094A	√ (N107xA-232)
N1094B	√ (N107xA-232)
N1092 C/E	√ (N107xA-232)

3 Connect the equipment as shown in the connection diagrams above and power on all of the instruments.

Installing the I/O Library Suite

1 Navigate to www.keysight.com/find/iosuite and download the Keysight I/O Library Suite.

NOTE

Keysight's I/O Library Suite is free software that automatically detects instruments connected to your PC and configures the interfaces. It reduces the overall setup and configuration time. The OIF CEI 3.1 Compliance Test Application requires I/O Libraries Suite 16.3 or higher.

2 Install the I/O Library Suite on the PC.

Installing the N109228CA OIF CEI 3.1 Compliance Test Application

Follow the steps below to install the N109228CA OIF CEI 3.1 Compliance Test Application and its license as well as the license for the 86100DU-401. When the license for 86100DU-401 is installed, the 86100DU-401 software is enabled.

1 Search for the N109228CA OIF CEI 3.1 Compliance Test Application on the Keysight website. Download and install the application on the PC for which you have redeemed the license.

NOTE When you redeem an N109228CA OIF CEI 3.1 license, you must select whether to install the application on the Oscilloscope or a specific PC.

- 2 Save the license file that you received from Keysight in a folder on the local disk or in an accessible memory device.
- 3 If not already done, purchase an 86100DU-401 or N109X-401 license. Save the license file that you received from Keysight in a folder on the local disk or in an accessible memory device.
- 4 If the N1010A FlexDCA is running on your PC, close FlexDCA.
- 5 From the Windows **Start** menu, click **All Programs>Keysight License Manager** to launch the Keysight License Manager.



Figure 59 Launching Keysight Connection Expert from the Start menu

NOTE

Keysight License Manager version 5.1 (and higher) have a different user interface than version 5.0 (or earlier). Even though the path to launch the Keysight License Manager is the same for both versions, refer to the *Keysight License Manager Online Help* for the respective versions to find more information about the functionality of the application.

To install the N109228CA OIF CEI 3.1 Compliance Test Application's license using Keysight License Manager version 5.1 or higher

1 Click the **Tools** icon on the top-right corner of the Keysight License Manager window.

Keysight License Manager		* ? _ □ ×
 Connections 	Licenses on WWWWWWWWW(localhost) (*	Why do I need these tools?
		Install License File
+ Add Connection	Full computer name:>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	Install License from Text
XXXXXXXXXX(localhost)	Host ID:	View License Alerts
		Explore Transport URLs
		About Keysight License Manage
Manage licenses remotely Fea	ture Description Version Expiration Type	Count Location

Figure 60 Installing license file on Keysight License Manager version 5.1 & above

2 Click Install License File.... The Select License File(s) to Install on <PC Hostname> appears.

Select License File(s) to Insta Select License File(s) to Insta	all on XXXXXXXXX(localhost)	_	x
Keysight	Licenses 👻 🔩	Search Licenses	٩
Organize 🔻 New folder		:≡ ▼ 🔳 (0
★ Favorites	Name	Date modified Type	
🔞 Creative Cloud Fi	1677859_1002001660.lic	5/15/2017 11:35 PM LIC F	ile
🧮 Desktop	1677859_20170515120537.lic	5/15/2017 11:36 PM LIC F	ile
🗼 Downloads 🔤	1001740845_1634928.lic	1/25/2017 2:29 PM LIC Fi	ile
🗐 Recent Places			
🝊 OneDrive			
licloud Photos			
🧮 Desktop			
🥽 Libraries			
Documents			
J Music			
Pictures			
🛃 Videos 📼 🗸	III		÷.
File nan	ne: 1677859 1002001660.lic 🗸	License files (*.lic)	-
	-	Open 🔻 Cancel	ן

Figure 61 Selecting license file from the folder

- 3 Navigate to the folder where the N109228CA OIF CEI 3.1 licenses are saved.
- 4 Select the license and click **Open**. The license files are installed and an entry is displayed in the Keysight License Manager.
- 5 Close the Keysight License Manager.

To install the N109228CA OIF CEI 3.1 Compliance Test Application's license using Keysight License Manager version 5.0 or earlier

1 From the Keysight License Manager window's main menu, click **File>Install...** or right-click within the left pane of the Keysight License Manager window and select **Install...**.

	🔟 Keysight License Manager			
	File Edit View Tools Help			
Install	localhost	Host System		
Delete	Local Licenses	Host Name :	*****	Сору
Transport	EnhancedJ	Host ID :		Сору
Connect	Product 86100	Interface Type	Windows	
Exit	Product 86100	Licensed Product:	s and Features	

Figure 62 Installing license file on Keysight License Manager version 5.0 or earlier

2 The Install License File(s) dialog box appears.

Install License File(s)					×
🔾 🗢 📕 🕨 Libraries I	Documents ➤ FlexDCA ➤ Apps ➤ Licenses	•	Search Licen	;es	9
Organize 🔻 New folder	·			= -	?
☆ Favorites ■ Desktop	Documents library		Arran	ge by: Folder 🔻	
Downloads	Name	Date modified	Туре	Size	
The cent Places	1677859_1002001660.lic	5/15/2017 11:05 AM	LIC File	1 KB	
 Libraries Computer SystemDrive (C:) UserData (D:) KINGSTON (E:) Network 					
File na	me: 1677859_1002001660.lic		✓ License files (* Open S	lic) Cancel	•

Figure 63 Selecting license file from the folder

- 3 Navigate to the folder where the N109228CA OIF CEI 3.1 licenses are saved.
- 4 Select the license and click **Open**. The license files are installed and an entry is displayed in the Keysight License Manager.
- 5 Close the Keysight License Manager.

Validating 86100D's or N1000A's SCPI Server Setup

- 1 On the 86100D/N1000A Oscilloscope or the PC hosting the FlexDCA software, launch the Keysight FlexDCA application.
- 2 Click Tools > SCPI Programming Tools > SCPI Server Setup.
- 3 In the **SCPI Server Setup** dialog, confirm that the **Sockets** and **HiSLIP** interfaces are selected and enabled as shown in Figure 64.

SCPI Server Setup				? Close
The following interfaces are ava	ilable to re	motely control this software:		
Interface	Enabled	VISA Address	SICL Address	
GPIB (Address 7)	\checkmark	GPIB0::7::INSTR	gpib0,7	Setup
VXI-11 ("inst0", Address 7)		TCPIP0::KEYSIGHT-URU2RFT::inst0::INSTR	lan[KEYSIGHT-URU2RFT]:inst0	Setup
Telnet (Port 5024)	\checkmark	(not applicable)	(not applicable)	Setup
Sockets (Port 5025)	\checkmark	TCPIP0::KEYSIGHT-URU2RFT::5025::SOCKET	lan,5025[KEYSIGHT-URU2RFT]	Setup
HiSLIP ("hislip0", Port 4880)	\checkmark	TCPIP0::KEYSIGHT-URU2RFT::hislip0,4880::INSTR	lan,4880;hislip[KEYSIGHT-URU2RFT]:hislip0	Setup

Figure 64 86100D's SCPI Server Setup Dialog Box

4 Close the SCPI Server Setup dialog box.

NOTE

Adding 86100D or N1000A to Keysight Connection Expert

Most of the measurements in the N109228CA OIF CEI 3.1 Compliance Test Application use a supported DCA-X or DCA-M sampling oscilloscope.

Note that the Keysight I/O Library Suite must be installed before you proceed with connecting to the network analyzer. The user interface for Keysight Connection Expert 2017 (Version 18.0 or higher) is slightly different from its previous versions, such as Version 17.2 or earlier.

This section lists the steps for 86100D DCA-X oscilloscope. Perform similar steps for the N1000A DCA-X oscilloscope.

Connection using Keysight Connection Expert v17.2 (or earlier)

- 1 On the 86100D Oscilloscope, launch the Keysight FlexDCA application.
- 2 From the FlexDCA's main menu, click Help > About FlexDCA.... The About 86100D dialog box appears.
- 3 In the **System Information** area, scroll down to view the **Computer Name** entry. Alternatively, you can obtain the computer name from the Windows **System** properties.

About 86100D	? Close
FlexDCA N1000-Seri Copyright (C) 200	ies System Software 06-2016 Keysight Technologies, Inc.
Model: 86100D ETR,0	GPI
Serial #: MY54360313	
System Information — Empeaded: Free Disk Space:	res 16.4 GB
Graphics Performance:	Low
CPU Class:	Intel Core 2 Duo
OS:	Windows Embedded Standard 64 Bit Service Pack 1
Computer Name:	KEYSIGHT-URU2RFT
Internal Temp:	28.6 °C
Driver Version:	2.0
∩ Modules ———	
Slot 1 Module:	86108B HBW,232,300,400,PTB,JSA MY52130514
(Running via Remote De. http://www.keysight.com	sktop) h/find/FlexDCA
	Save Support Info
Beta P.05.60.225	

Figure 65 86100D Oscilloscope's hostname

4 Record the Computer Name (corresponds to hostname) as you will need this name later in this procedure.

86100D Computer Name:	
-----------------------	--

- 5 Close the **About 86100D** dialog box.
- 6 On the Windows **Start** menu of your PC, click **All Programs>Keysight Connection Expert** to launch Connection Expert. Refer to Keysight IO Libraries Suite for information on how to install the Keysight Connection Expert.

 Default Programs Desktop Gadget Gallery DTS Studio Sound Excel 2016 Google Chrome Infiniium Offline Internet Explorer Keysight Connection Expert model Keysight Test Automation Putform 	Control Panel Devices and Printers Default Programs Help and Support
Search programs and files	Shut down D

Figure 66 Launching the Keysight Connection Expert

7 In Keysight Connection Expert, click the Manual Configuration tab.

Keysight Connection Expert			?	-	×	
Instruments	PXI/AXIe Chassis	Manual Configuration	Settings			
Rescan	Filter Instruments:	Clear				

Figure 67 Tabs within Keysight Connection Expert

8 Under Add New Instruments / Interfaces, select LAN instrument.

Keysight Connection Expert			
Instruments PXI/AXIe Chassis	Manual Configuration	Settings	
Add New Instruments/Interfaces	Edit Existing Instruments/Interfaces		
LAN instrument	Add a LAN device		
Serial instrument on ASRL3			

Figure 68 Performing Manual Configuration in Keysight Connection Expert

9 In the Add a LAN device pane,

- a Under **Set LAN Address:**, enter the Hostname (recorded in step 1) in the **Hostname or IP Address:** field. Note that your Hostname entry will be different from what is shown in the image.
- *b* Under **Set Protocol:**, select **Socket** and enter the port number.
- c Under Verify Connection:, click Test This VISA Address to verify the connection.

Keysight Connection Expert					?	-		×
Instruments PXI/AXIe Chassis	Manual Configuration	Settings						
Add New Instruments/Interfaces	Edit Existing Instruments/Interfaces							
LAN instrument Serial instrument on ASRL1 Serial instrument on ASRL3 MAwg instrument MDsr instrument LAN interface Remote serial instrument Remote GPIB interface Remote USB interface	Edit Existing Instruments/Interfaces Add a LAN device Set LAN Address: Hostname or IP Address: TCPIP Interface ID: TCPIPO<							
	Test This VISA Address View Web Page:	This VISA Address TCPIP0::KEYSIGHT-URU2RFT::hislip0::INSTR						
				Accept		Can	cel	

Figure 69 Adding the 86100D device information in the Keysight Connection Expert

10 Once you verify the entered data, click **Accept** to complete the process.

- 11 To verify that the 86100D Oscilloscope is connected, click the **Instruments** tab of the Keysight Connection Expert.
- 12 Click the 86100D Oscilloscope's listing on the left pane. A check mark encircled in green indicates that the Oscilloscope is connected to your PC remotely on the LAN. Note that the address on your end will be different from what is shown in the image.

Keysight Connection Expert		? _ 🗆 ×			
Instruments PXI/AXIe Chassis Manual Configuration	Settings				
Clear					
86100D, Keysight Technologies Oscilloscope	Details for Keysight Technologies 86100D	Oscilloscope			
TCPIPO::KEYSIGHT-URU2RFT::hislip0::INSTR	Manufacturer: Keysight Technologies Model: 86100D Serial Number: MY54360313 Firmware Version: P.05.60.225	View Instrument Information Online Start Instrument Web Interface Delete User-Added Connections			
	Connection Strings				
	VISA Addresses TCPIP0::KEYSIGHT-URU2RFT::hislip0::INSTR	Send Commands To This Instrument Start IO Monitor			
	VISA Aliases <no aliases="" configured="" visa=""> SICL Addresses </no>	Add or Change Aliases			
	Installed Drivers	Update Drivers			

Figure 70 Validating 86100D Oscilloscope's connection

13 Close the Keysight Connection Expert window.

Connection using Keysight Connection Expert 2017 (v18.0 or higher)

- 1 On the 86100D Oscilloscope, launch the Keysight FlexDCA application.
- 2 From the FlexDCA's main menu, click **Help** > **About FlexDCA...**. The **About 86100D** dialog box appears.
- 3 In the **System Information** area, scroll down to view the **Computer Name** entry. Alternatively, you can obtain the computer name from the Windows **System** properties.



Figure 71 86100D Oscilloscope's hostname

4 Record the Computer Name (corresponds to hostname) as you will need this name later in this procedure.

86100D Computer Name:

- 5 Close the About 86100D dialog box.
- 6 On the Windows **Start** menu of your PC, click **All Programs>Keysight Connection Expert** to launch Connection Expert 2017. Refer to Keysight IO Libraries Suite for information on how to install the Keysight Connection Expert 2017.


Figure 72 Launching the Keysight Connection Expert 2017

7 In Keysight Connection Expert 2017, click the **+ Add** button to manually add instruments and interfaces.

Keysight Connection Expert 2017						
Instruments	PXI/AXIe Chassis					
My Instruments	★Add C III ▼ Detail for TCPIP0					
✓ LAN (TCPIP0)	Manually add instruments and interfaces					
Instruments found your list.	on local subnet, click [+Add] to add to Connection Addresses					

Figure 73 Adding 86100D Oscilloscope manually in the Keysight Connection Expert 2017

8 From the drop-down list that appears, select LAN instrument.

Keysight Connection Expert 2017								
Instruments PXI/AXIe Chassis								
My Instruments	+Add 🕄 🗄 🕇 Detail for TC	PIP0						
V LAN (TCPIP0)	LAN instrument 📐 Serial instrument on ASRL3	Edit	+ Instrument					
Instruments found on local subne your list.	LAN interface	ddroccoc						
✓ COM (ASRL3)	Remote Serial Instrument Remote GPIB interface	iuuresses	TCDIDO					
No Instruments Found	Remote USB interface	e ID:	ICPIPU					



- 9 In the Add a LAN device window,
 - a Select the Enter Address tab.
 - *b* Under **Set LAN Address:**, enter the Hostname (recorded in step 1) in the **Hostname or IP Address:** field. Note that your Hostname entry will be different from what is shown in the image.
 - *c* Under **Set Protocol:**, select **Socket** and enter the port number.
 - *d* Under Verify Connection:, click Test This VISA Address to verify the connection.

Add a LAN device					×
Select from List	Enter Add	ress			
Set LAN Address:					
Hostname or IP	Address:	KEYSIGHT-URU2R	FT]	
TCPIP Interface	ID:	ТСРІРО	•]	
Set Protocol:					
Instrument	(VXI-11)	Remote Name:	inst0		
• HiSlip	HiSlip		hislip0		
Socket	Socket		5025		
Verify Connection:	:				
✓ Allow *IDN (Query				
Test This VISA	Address				
View Web Page:					
Instrument Web I	nterface				
				OK Car	ncel

Figure 75 Adding 86100D Oscilloscope's device information in the Keysight Connection Expert 2017

10 Once you verify the entered data, click **OK** to complete the process.

- 11 To verify that the 86100D Oscilloscope is connected, click the **Instruments** tab of the Keysight Connection Expert.
- 12 Click the 86100D Oscilloscope's listing on the left pane. A check mark encircled in green indicates that the Oscilloscope is connected to your PC remotely on the LAN. Note that the address on your end will be different from what is shown in the image.

Keysight Connection Expert 2017		🌣 ? 💶 🗆 🗙
Instruments PXI/AXIe Chassis		
My Instruments + Add 2 II T	Details for Keysight Technologies 86100D	
V LAN (TCPIPO)	C 🕜 🗙 🔜 🔤	
86100D, Keysight Technologies KEYSIGHT-URU2RFT	Check Edit Remove Interactive IO Monitor Commar Status IO Expert	nd BenchVue Web UI Soft Front Panel
 ✓ COM (ASRL3) No Instruments Found ✓ USB (USB0) No Instruments Found 	Manufacturer: Keysight Technologies Model: 86100D Serial Number: MY54360313 Firmware Version: P.05.60.225 Web Information: Product Page Connection Strings MIAddress VISA Address Aliase Installed Drivers Update	s SICL Address
	Remote IO Server	· Off 32-Bit Keysight VISA is Primary Version: 18.0.21916.2

Figure 76 Validating 86100D Oscilloscope's connection

13 Close the Keysight Connection Expert window.

Connecting N1010A FlexDCA to N109X Oscilloscope and N107X

Perform the following steps to connect your N109X oscilloscope with N107X clock data recovery using FlexDCA:

- 1 Launch FlexDCA.
- 2 When FlexDCA starts, the **Extended Module Configuration** window is displayed automatically. If the **Extended Module Configuration** window does not appear, from the FlexDCA interface's main menu, click **Setup>Configure Extended Modules...**.
- 3 Configure Slot 7 to be the N109X module.
- 4 Configure Slot 8 to be the N107X module.
- 5 Remove any other N109X/N107X that is configured for Slot 5 and Slot 6.



- 6 Click Close to exit the Extended Module Configuration window.
- 7 Once the connection is established, you may proceed to launch the N109228CA Compliance Test Application on your PC.

Starting the N109228CA OIF CEI 3.1 Compliance Test Application

After you install the N109228CA OIF CEI Compliance Test Application on a PC without the N1010A FlexDCA interface, follow the steps below to start the N109228CA OIF CEI 3.1 Compliance Test Application:

- 1 Ensure that the 86100D or N1000A Oscilloscope is added to the Keysight Connection Expert and that the connection is active. Refer to "Adding 86100D or N1000A to Keysight Connection Expert" on page 68.
- 2 From the Windows Start menu, navigate to Start>All Programs>Keysight FlexDCA Applications>N109228CA OIF CEI 3_1 and click Launch 'N109228CA OIF CEI 3_1'.
- 3 The N109228CA OIF CEI 3.1 Compliance Test Application banner appears followed by the **Connect to FlexDCA** dialog.

Connect to FlexDca	? 🗆 🗙
Currently connected to:	<nothing></nothing>
Change to	
Alias/Address:	
IDN:	<unknown> Get</unknown>
Enter/Select VISA ad	ddress/alias (or SICL address):
Select from Keysight	Connection Expert 'My Instruments':
	OK Cancel

Figure 77 N109228CA OIF CEI 3.1 Application launching banner

- 4 Enter the SICL address or VISA alias, if known, else select the **Select from Keysight Connection Expert** option to find the SICL Address/VISA alias.
- 5 Click **OK** to connect.

The default view of the N109228CA OIF CEI 3.1 Compliance Test Application appears.

Z	🗹 N109228CA OIF CEI 3_1 Application N109228CA OIF CEI 3_1 Device 1										
F	File View Tools Help										
s	et Up	Select Tests	Configure	Connect	Run	Automate	Results	HTML	Report		*
	General										
	Com	ments								i	
	Test	Filter —									
	0	CEI 6G-LR - Lo	ng Reach								
	\bullet	cei 6G-SR - Si	nort Reach								
		CEI 11G-LR MF	R - Long and	I Medium R	leach						
s	•	CEI 11G-SR - \$	Short Reach								
ET	•	cei 25g-lr - l	ong Reach								F
-	CEI 28G-SR - Short Reach										
p	CEI 28G-VSR Host to Module at TP1a										
	CEI 28G-VSR Module to Host at TP4										
	CEI 28G-MR Medium Reach										
	•	CEI 28G-VSR (Crosstalk Tes	sts							
	•	Utilities - choo	se only one								
	External Instruments										
	Name	e: PNA								$\mathbf{\Sigma}$	
	Addre	ess: Connect									۷
Μ	lessag	es									-
ŝ	Summ	aries (click for	details)					Details			

Figure 78 Default window of the N109228CA OIF CEI 3.1 Compliance Test Application

NOTE

If you click the View 'N109228CA OIF CEI 3_1' in Demo Mode option under Start>All Programs>Keysight FlexDCA Applications>N109228CA OIF CEI 3_1, click File>Connect to Scope... to access the Connect to FlexDCA dialog. However, since it is a demo application, it has limited features. Connecting to the Network Analyzer

Refer to "Connecting to External Instruments" on page 21 for connecting to the network analyzer you are using.

Connecting to the N4877A

The N4877A is used whenever multiple 86100D or N1000A modules are used in the test setup rather than an 86108A/B module. Refer to Table 4 on page 62.

On the 86100D, click **Setup** > **Configure Extended Modules**. In the dialog box, perform the following two steps:

- 1 Configure **Slot 8** to be the N4877A.
- 2 Remove any other N4877A that is configured for **Slot 5**, **Slot 6**, or **Slot 7**.

For more information, click the Help button that is in the title bar of the Extended Module Configuration dialog box.



Figure 79 The Extended Module Configuration with the N4877A in Slot 8

Keysight N109228CA OIF CEI 3.1 Compliance and Debug Application Getting Started

4 Installing N109228CA on the oscilloscope

Follow the instructions in this chapter when you are installing both the N109228CA application and the FlexDCA application on the 86100D or N1000A oscilloscope. You must purchase and install a license for the 86100DU-401. Once the license is installed, the 86100DU-401 software will be enabled.







Figure 81 N109228CA Installed on N1000A



Figure 82 N109228CA Installed on 86100D connected to a DCA-M setup



NOTE The 86100DU-400 software is required only for testing the CEI 11G-SR (Short Reach) interface, when running the Jitter Transfer Bandwidth, 11G-SR and Jitter Transfer Peaking, 11G-SR tests.

NOTE

The 86100DU-401 or N109X-401 software is required only for testing the CEI 6G and CEI 11G interfaces, when you select a PRBS31 pattern length when testing jitter.

Connecting the Equipment

1 For a DCA-X oscilloscope, install one of the module combinations listed in Table 6 into the oscilloscope.

 Table 6
 Module combinations for 86100D Oscilloscope

Installed Module Configurations	Requires N4877A	Limited to CEI 6G-LR/SR and CEI 11G-LR/MR/SR Testing Only
86108A		1
86108B-LBW/216		1
86108B-HBW/232		
86112A and 86107A	√ (N4877A-216)	1
54754A and 86107A	√ (N4877A-216)	1
86117A and 86107A	√ (N4877A-232)	
86118A-H01 and 86107A	√ (N4877A-232)	
N1045A and 86107A	√ (N4877A-232)	
N1045B and 86107A	√ (N4877A-232)	
N1055A and 86107A	√ (N4877A-232)	
54754A and 86107A	√ (N4877A-232)	
N1046A and 86107A	√ (N4877A-232)	
N1060A		

2 For a DCA-M oscilloscope, keep in mind the information in the following table.

Table 7 Supported configurations for DCA-M Oscilloscope

Configurations for DCA-M	Requires N107x
N1094A	√ (N107xA-232)
N1094B	√ (N107xA-232)
N1092 C/E	√ (N107xA-232)

3 Connect the equipment as shown in the relevant diagrams above and turn on all of the instruments.

Installing the I/O Library Suite

1 Navigate to www.keysight.com/find/iosuite and download the Keysight I/O Library Suite.

NOTE

Keysight's I/O Library Suite is free software that automatically detects instruments connected to your PC and configures the interfaces. It reduces the overall setup and configuration time. The N109228CA OIF CEI 3.1 Compliance Test Application requires I/O Libraries Suite 16.3 or higher.

2 Install the I/O Library Suite on the same 86100D or N1000A where you will install the N109228CA.

Installing the N109228CA OIF CEI 3.1 Compliance Test Application



Figure 84 Launching Keysight Connection Expert from the Start menu

NOTE

Keysight License Manager version 5.1 (and higher) have a different user interface than version 5.0 (or earlier). Even though the path to launch the Keysight License Manager is the same for both versions, refer to the *Keysight License Manager Online Help* for the respective versions to find more information about the functionality of the application.

To install the N109228CA OIF CEI 3.1 Compliance Test Application's license using Keysight License Manager version 5.1 or higher

1 Click the **Tools** icon on the top-right corner of the Keysight License Manager window.

Keysight License M	lanager	* ? _ 🗆 ×
 Connections 	Licenses on (() () () () () () () () () () () () ()	Why do I need these tools?
+ Add Connection	Full computer name::::::::::::::::::::::::::::::::::::	Install License File Install License from Text
(localhost)	Host ID:	View License Alerts
		Explore Transport URLs
Manage licenses remotely	Feature Description Version Expiration Type	Count Location

Figure 85 Installing license file on Keysight License Manager version 5.1 & above

2 Click Install License File.... The Select License File(s) to Install on <PC Hostname> appears.

Select License File(s) to Install on XXXXXXXX(localhost)								
Search Licenses								
Organize 🔻 New folder			!≡ ▼ [
🔶 Favorites	Name		Date modified	Туре				
🔞 Creative Cloud Fi	1677859_1002001660.lic		5/15/2017 11:35 PM	LIC File				
🧮 Desktop	1677859_20170515120537.lic		5/15/2017 11:36 PM	LIC File				
🐌 Downloads	1001740845_1634928.lic		1/25/2017 2:29 PM	LIC File				
🖳 Recent Places 🗮								
🝊 OneDrive								
🜸 iCloud Photos								
Desktop								
📜 Libraries								
Documents								
J Music								
Pictures								
🛃 Videos 🔻 ∢				F.				
File name	: 1677859 1002001660.lic	Ţ	License files (*.lic)	-				
		(Open 🔽 Ca	ncel				

Figure 86 Selecting license file from the folder

- 3 Navigate to the folder where the N109228CA OIF CEI 3.1 licenses are saved.
- 4 Select the license and click **Open**. The license files are installed and an entry is displayed in the Keysight License Manager.
- 5 Close the Keysight License Manager.

To install the N109228CA OIF CEI 3.1 Compliance Test Application's license using Keysight License Manager version 5.0 or earlier

1 From the Keysight License Manager window's main menu, click **File>Install...** or right-click within the left pane of the Keysight License Manager window and select **Install...**.

	🧧 Keysight License Manager			
	File Edit View Tools Help	1		
Install	 localhost 	Host System		
Delete	□-@ Local Licenses ⊡-@ Product 86100	Host Name :		Сору
Transport	EnhancedJ	Host ID :		Сору
Connect	⊡-@ Product 86100	Interface Type	Windows	
Exit	Product 8610(Licensed Product	s and Features	

Figure 87 Installing license file on Keysight License Manager version 5.0 or earlier

2 The Install License File(s) dialog box appears.

Install License File(s)					×
🔾 🗢 📕 🕨 Libraries	▶ Documents ▶ FlexDCA ▶ Apps ▶ Licenses	•	← Search License	5	٩
Organize 🔻 New folder	r		8	= - 🔟	?
🔆 Favorites	Documents library		Arrange	e by: Folder 🔻	
Downloads	Name	Date modified	Туре	Size	
Kecent Places	1677859_1002001660.lic	5/15/2017 11:05 AM	LIC File	1 KB	
 Libraries Computer SystemDrive (C:) UserData (D:) KINGSTON (E:) Network 					
File na	me: 1677859_1002001660.lic		License files (*.I Open	ic) Cancel	 ■ ■

Figure 88 Selecting license file from the folder

- 3 Navigate to the folder where the N109228CA OIF CEI 3.1 licenses are saved.
- 4 Select the license and click **Open**. The license files are installed and an entry is displayed in the Keysight License Manager.
- 5 Close the Keysight License Manager.

Configuring FlexDCA's SCPI Server Setup

- 1 On the 86100D or N1000A, click **Apps** > **FlexDCA** to start FlexDCA.
- 2 In FlexDCA, click Tools > SCPI Programming Tools > SCPI Server Setup to open the dialog box.
- 3 Confirm that the **Sockets** and **HiSLIP** interfaces are selected (Enabled) as shown in Figure 89.
- 4 Close the dialog box.

SCPI Server Setup													
The following interfaces are available to remotely control this software:													
Interface	Enabled	VISA Address	SICL Address										
VXI-11 ("inst1")		TCPIP0::KEYSIGHT-DA20C19::inst1::INSTR	lan[KEYSIGHT-DA20C19]:inst1	Setup									
Telnet (Port 5024)		(not applicable)	(not applicable)	Setup									
Sockets (Port 5025)	\checkmark	TCPIP0::KEYSIGHT-DA20C19::5025::SOCKET	lan,5025[.KEYSIGHT-DA20C19]	Setup									
HiSLIP ("hislip0", Port 4880)	\checkmark	TCPIP0::KEYSIGHT-DA20C19::hislip0,4880::INSTR	lan,4880;hislip[KEYSIGHT-DA20C19]:hislip0	Setup									

Figure 89 FlexDCA's SCPI Server Setup Dialog Box

5 Minimize the FlexDCA application *and* the 86100D application so that you can view the Windows desktop.

Connecting N1010A FlexDCA to N109X Oscilloscope and N107X

Perform the following steps to connect your N109X oscilloscope with N107X clock data recovery using FlexDCA:

- 1 Launch FlexDCA.
- 2 When FlexDCA starts, the **Extended Module Configuration** window is displayed automatically. If the **Extended Module Configuration** window does not appear, from the FlexDCA interface's main menu, click **Setup>Configure Extended Modules...**.
- 3 Configure Slot 7 to be the N109X module.
- 4 Configure Slot 8 to be the N107X module.
- 5 Remove any other N109X/N107X that is configured for Slot 5 and Slot 6.



- 6 Click Close to exit the Extended Module Configuration window.
- 7 Once the connection is established, you may proceed to launch the N109228CA Compliance Test Application on your PC.

Starting the N109228CA OIF CEI 3.1 Compliance Test Application

After you install the N109228CA OIF CEI 3.1 Compliance Test Application on the 86100D or N1000A Oscilloscope, follow the steps below to start the N109228CA OIF CEI 3.1 Compliance Test Application:

- 1 On the Oscilloscope, launch the Keysight FlexDCA application.
- 2 From the FlexDCA's main menu, click Apps>Automated Test Apps>N109228CA OIF CEI 3_1.
- 3 The N109228CA OIF CEI 3.1 Compliance Test Application banner appears. Afterwards, the default view of the N109228CA OIF CEI 3.1 Compliance Test Application appears.

¥	🖌 N109228CA OIF CEI 3_1 Application N109228CA OIF CEI 3_1 Device 1										
File View Tools Help											
s	et Up	Select Tests	Configure	Connect	Run	Automate	Results	HTML Report			-
	Gener	al									Â
	Comn	nents									
	Test Filter										
	O CEI 6G-LR - Long Reach										
	CEI 6G-SR - Short Reach										
	CEI 11G-LR MR - Long and Medium Reach										
s	CEI 11G-SR - Short Reach										
FT	CEI 25G-LR - Long Reach										
	• c	EI 28G-SR - 9	Short Reach								
p	CEI 28G-VSR Host to Module at TP1a										
	CEI 28G-VSR Module to Host at TP4										
	CEI 28G-MR Medium Reach										
	00	EI 28G-VSR (Crosstalk Tes	sts							
	0 U	Itilities - choos	se only one								
	Exter	nal Instrumen	ts								
	Name	: PNA									$\mathbf{\Sigma}$
	Addre	ss: Connect									¥
Messages											
s	Summa	aries (click for	details)					Details			
P	2019-	06-24 02:37:	36.711 AM I	Ready			1	Application ini	itialized and read	dy for use.	

Figure 90 Default window of the N109228CA OIF CEI 3.1 Compliance Test Application

Connecting to the Network Analyzer

Refer to "Connecting to External Instruments" on page 21 for connecting to the network analyzer you are using.

Connecting to the N4877A

The N4877A is used whenever multiple 86100D or N1000A modules are used in the test setup rather than an 86108A/B module. Refer to Table 6 on page 85.

On the 86100D or N1000A, click **Setup** > **Configure Extended Modules**. In the dialog box, perform the following two steps:

- 1 Configure **Slot 8** to be the N4877A.
- 2 Remove any other N4877A that is configured for **Slot 5**, **Slot 6**, or **Slot 7**.

For more information, click the Help button that is in the title bar of the Extended Module Configuration dialog box.



Figure 91 The Extended Module Configuration with the N4877A in Slot 8