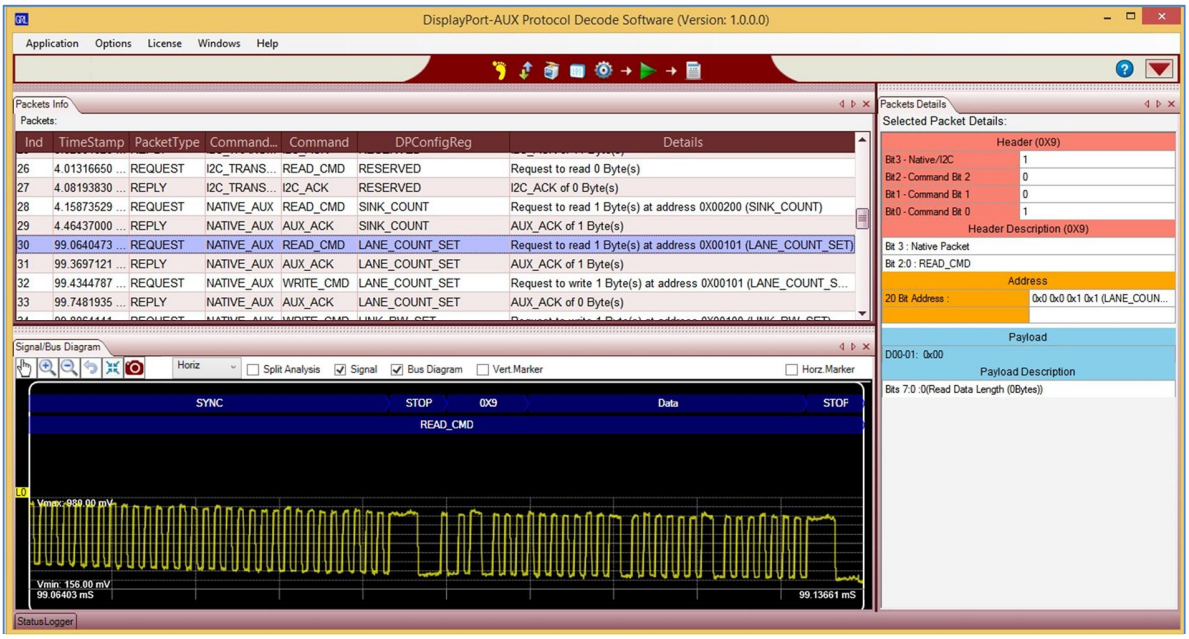
GRL
GRANITE RIVER LABS

GRL DisplayPort AUX Protocol Decode Software GRL-DP-AUX-DEC

Installation and Quick Start Guide



www.graniteriverlabs.com

GRL
GRANITE RIVER LABS

Table of Contents

GRL
GRANITE RIVER LABS

1.Introduction

This Installation and Quick Start Guide provides procedures for installing, configuring, and verifying the operation of the GRL DisplayPort-AUX Protocol Decode Software. It also will help you familiarize yourself with the basic operation of the analyzer.

2.Pre-requisite

Following are pre-requisites for using the software on Keysight Oscilloscope:

1. Keysight Technologies 90000 X-Series, 9000, 90000, or 90000Q Series model oscilloscope
2. Agilent IO software (Pre-installed on the Oscilloscope)
3. Microsoft .NET 4.5 (If not available, please download and install from www.microsoft.com)
4. Differential probes and probe heads (Minimum 1 ea.)
5. Keyboard and Mouse

Following are pre-requisites for using the software on Tektronix Oscilloscope:

1. Tektronix DPO/MSO 70000 Series oscilloscope
2. TekVISA software (Pre-installed on the Oscilloscope)
3. Microsoft .NET 4.5 (If not available, please download and install from www.microsoft.com)
4. Differential probes and probe heads (Minimum 1 ea.)
5. Keyboard and Mouse

3.Installing the software

Download the latest software from www.graniteriverlabs.com. If you have received a product CD carefully open the CD and note the media serial number printed on the CD; you may require this information to obtain the activation key for this software.

Locate the installer file named “GRL Automated Test Solutions - Installer.exe”. Open the application by double clicking the installer file. The install wizard will install the software

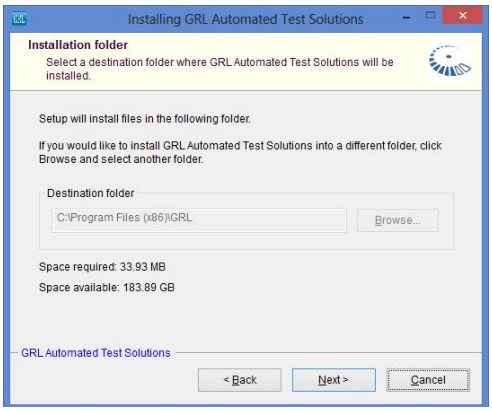
Install the software as follows:

Step 1: Double click Installer.exe.

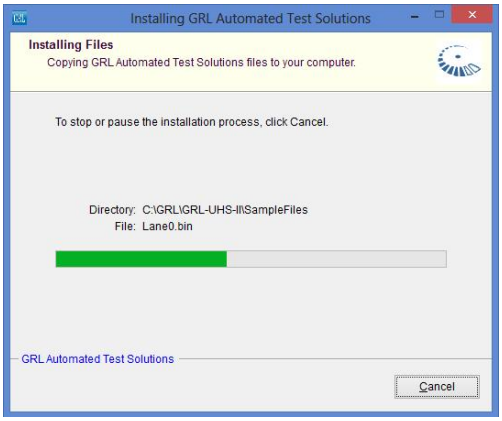
Step 2: Click “Next” in the welcome screen

Step 3: Read and agree the license agreement and click “Next”

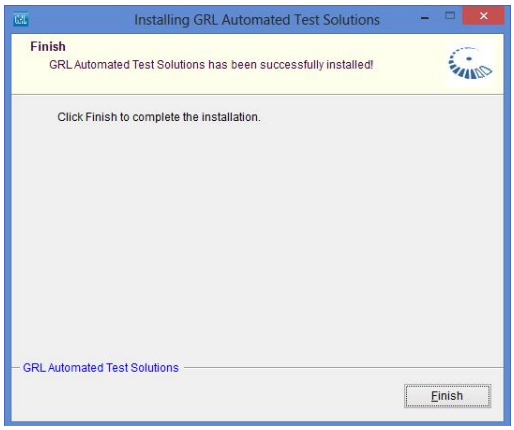
Step 4: Review the install folders and click “Next”



Step 5: Click “Install” and the Install wizard installs all required files.



Step 6: Click “Finish” to complete the installation

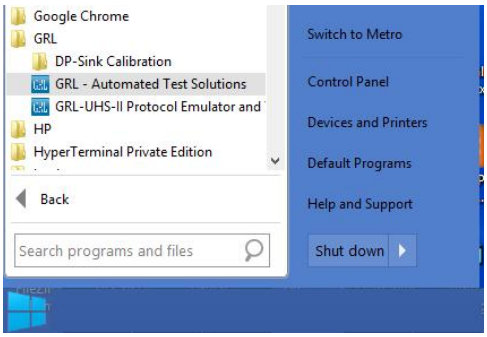


4. Running the Software

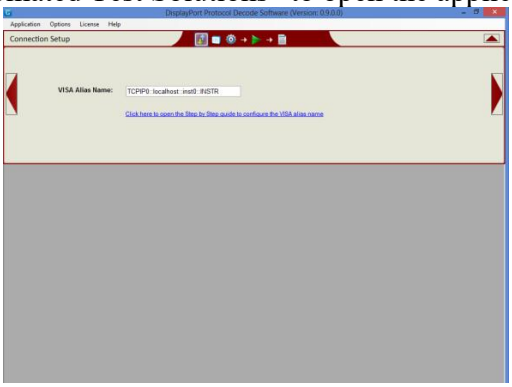
The software installer automatically creates short cuts in the Desktop and Start Menu.

To open the application follow the below procedure:

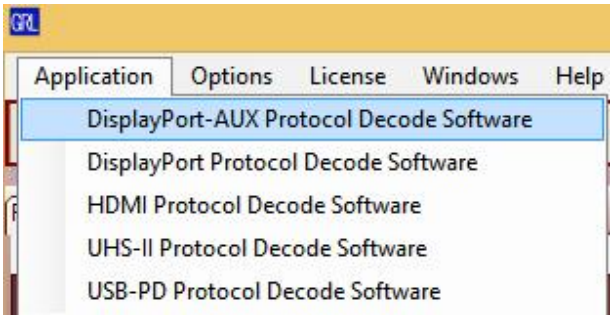
Step 1: Navigate to Start Menu > All Programs > GRL > GRL Automated Test Solutions



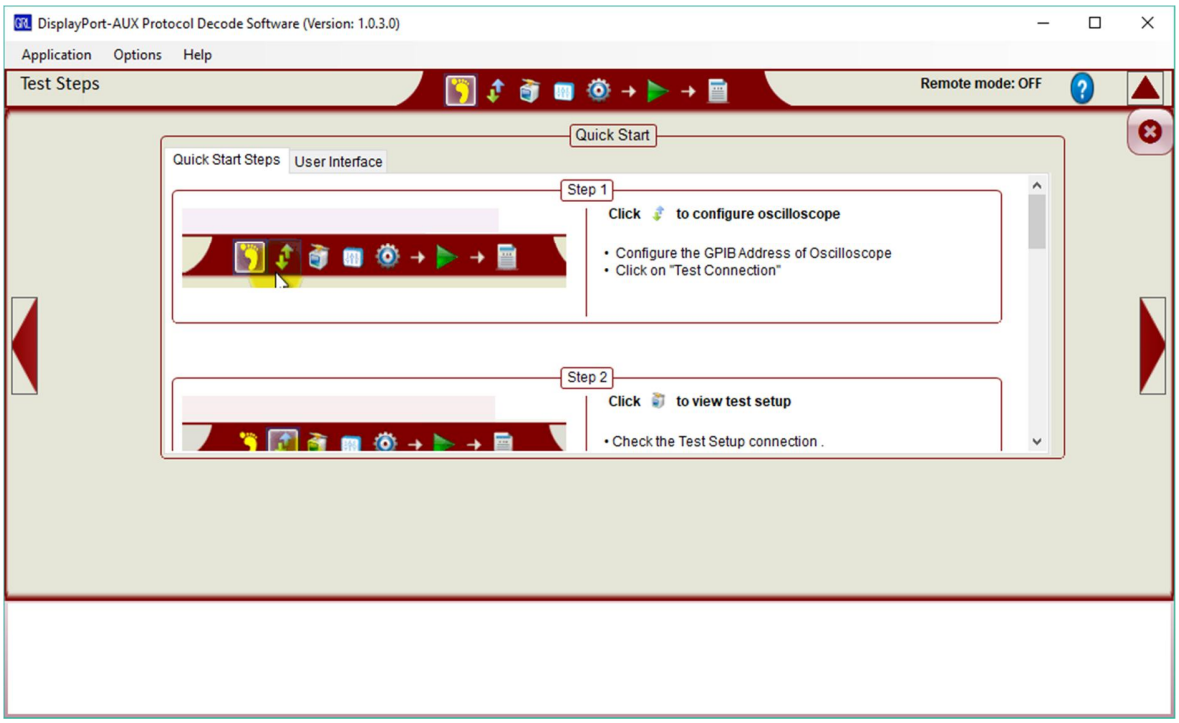
Step 2: Click “GRL- Automated Test Solutions” to open the application.



Step 3: Click the Application Menu, and open “DisplayPort-AUX Protocol Decode Software”



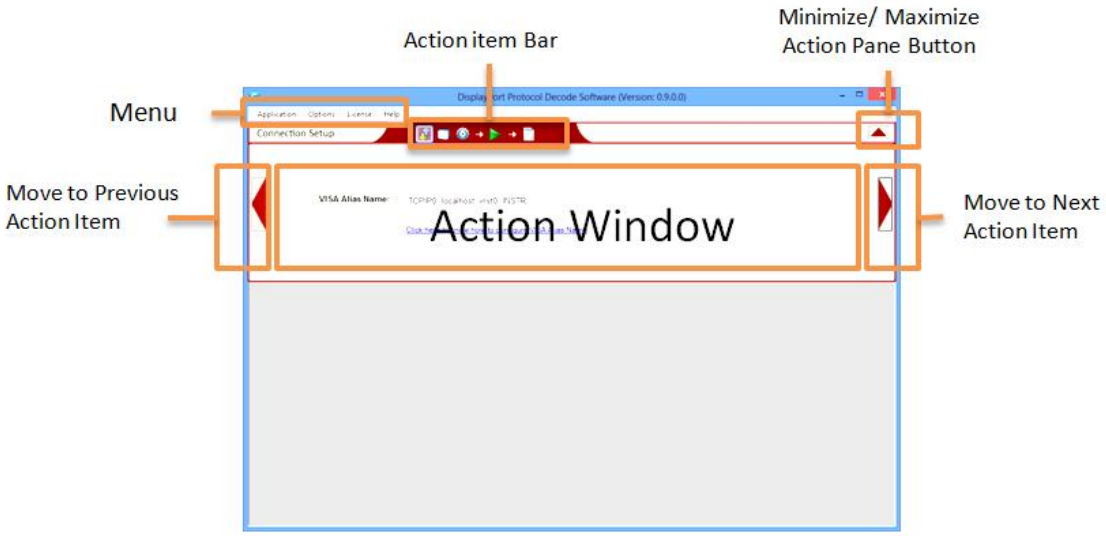
Step 4: DisplayPort AUX Protocol Decode Application is ready to use



GRL
GRANITE RIVER LABS

5.Introduction to Software User Interface

The software user interface includes a Menu, Action Item Bar, and Action Window as shown in the below image. The Action Window changes according to the selection of Action Item Bar.



The Action Item Bar provides access to all functionalities of the software. When an action item is selected, the Action Window is loaded with the Action Item. You can navigate to various Action Items using the arrow bars located in the left and right side of the window. The Minimize/Maximize action button minimizes and maximizes the Action Window.

6.Activating the Application

Application by default is provided with 10 days of activation. Without any activation key the application can be used for 10 days for evaluation.

After the purchase, if you received a CD of the software, you can find the Media number. You may need to use this media number for any further communications.

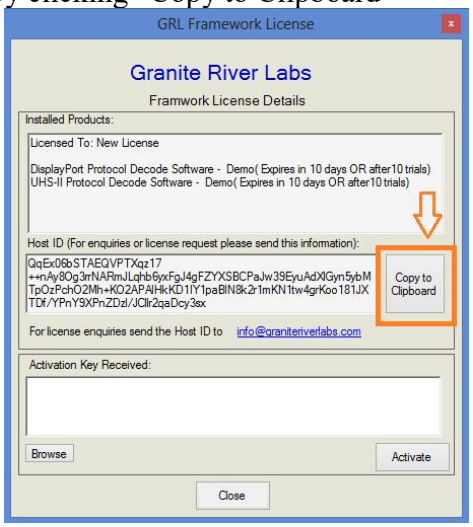
GRL
GRANITE RIVER LABS

Below are the steps to activate the application license:

Step 1: Open the application (For more information, see Running the application)
Step 2: In the application menu, Click License > License Details

Step 3: Review the installed applications

Step 4: Copy the Host ID by clicking “Copy to Clipboard”

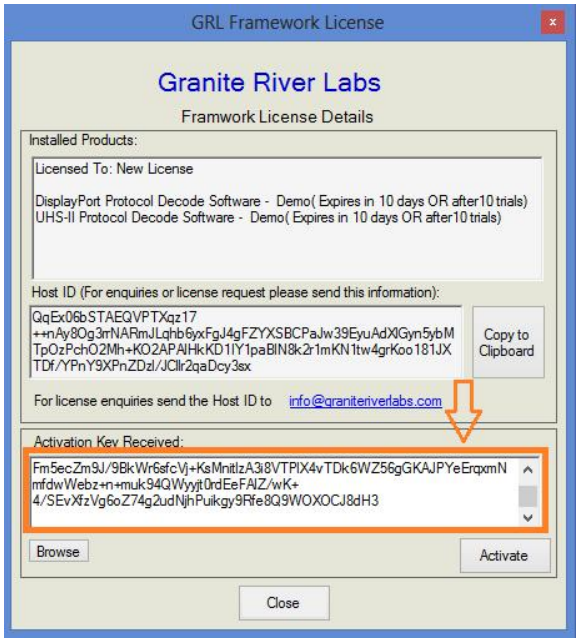


Step 5: Send the following details to info@graniteriverlabs.com:

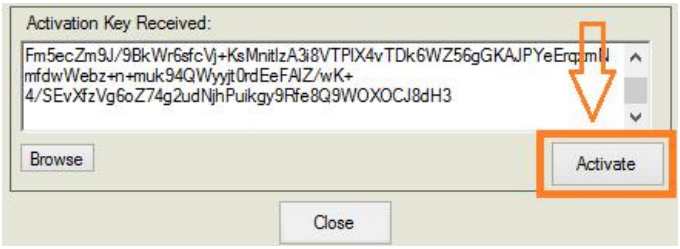
Media Number / Order Number:
Company Name:
Contact person:

Note: Media number will be written on the CD case. If you would have ordered online and received an application installer, use the Order Number specified in the confirmation e-mail.

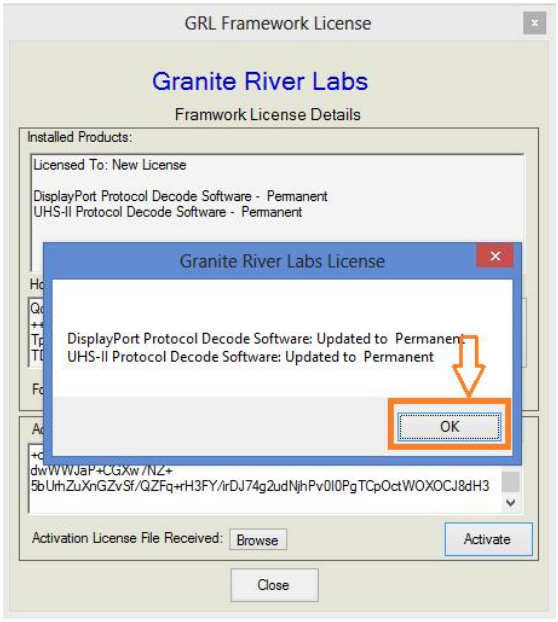
Step 6: Paste the activation key received from info@graniteriverlabs.com in the Activation Key Received text box provided in the License Dialog



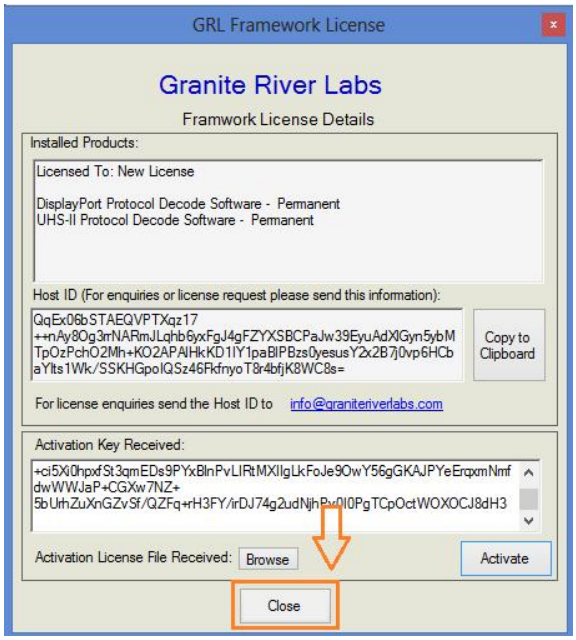
Step 7: Click “Activate”



Step 8: The following Confirmation message will be shown, Click OK



Step 9: Review the license, and click close in the License Dialog



GRL
GRANITE RIVER LABS

7. Instrument/Oscilloscope Configuration

To operate GRL Automated Test Solutions may require configuring the VISA aliasing to make the software communicate with the Oscilloscope.

Click “Oscilloscope Configuration” in the Action Bar button. The following action window appears:

If the software is properly connected to the Oscilloscope, the VISA Alias Name will be shown. Otherwise click the “Refresh” button to repeat the process of detecting the Oscilloscope. Once the Oscilloscope is detected, click the “Test Connection” button to verify for successful connection with the software.

For more help on instrument VISA aliasing, select Click here to know how to configure VISA Alias Name.

For Tektronix Oscilloscope use GPIB8::1::INSTR for the VISA aliasing

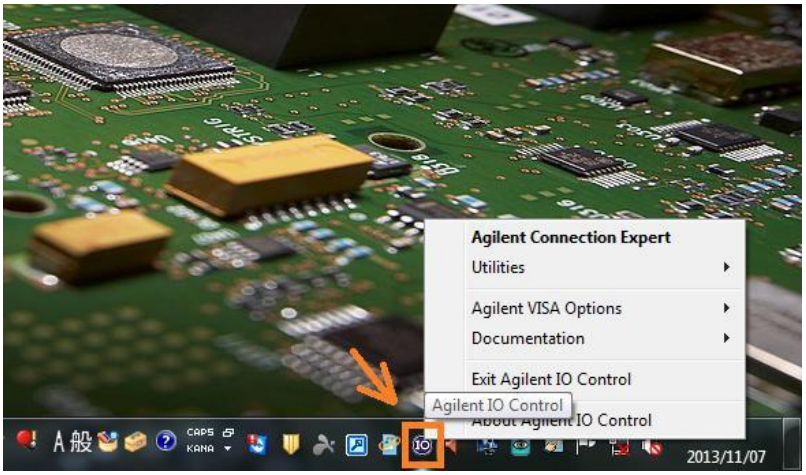
The following instructions helps to configure the VISA aliasing in Agilent Oscilloscope.

Prerequisite:

1. Agilent Technologies 90000 X-Series, 9000, 90000, or 90000Q Series model oscilloscope
2. Keyboard and Mouse
3. GRL Automated Test Solutions Software

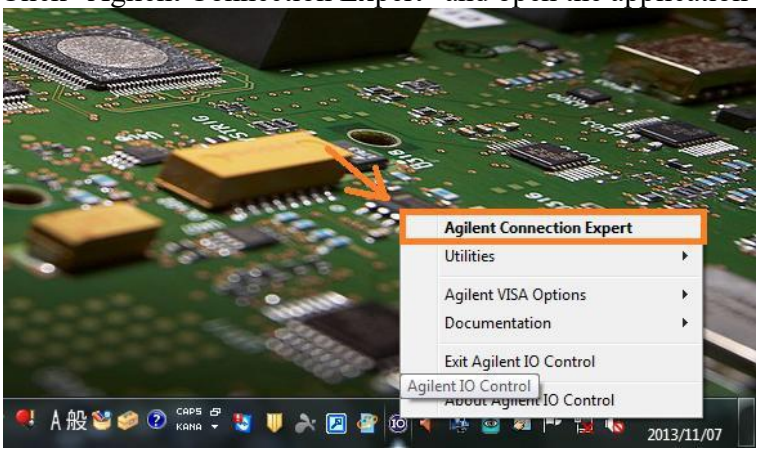
Step 1: Open the Agilent IO Control

Find the Agilent IO icon on the system tray as shown below and **right click** the Agilent IO control.



Step 2: Open Agilent Connection Expert

Click “Agilent Connection Expert” and open the application

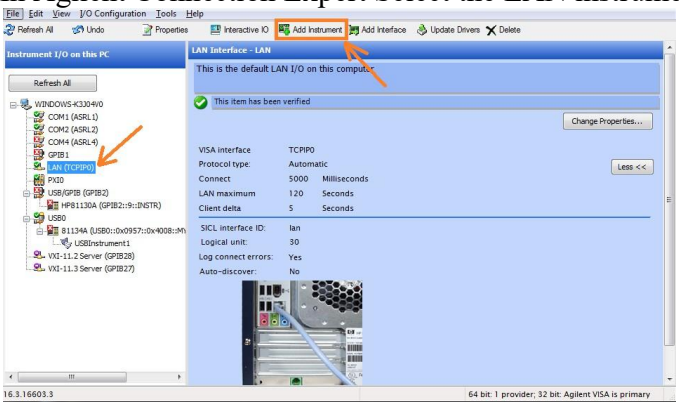


This opens the Agilent Connection Expert as shown below

GRL
GRANITE RIVER LABS

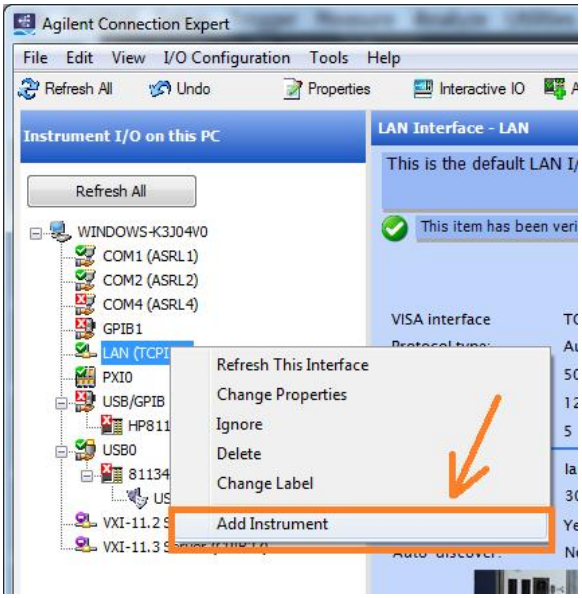
Step 3: Select LAN instrument

In Agilent Connection Expert Select the LAN instrument



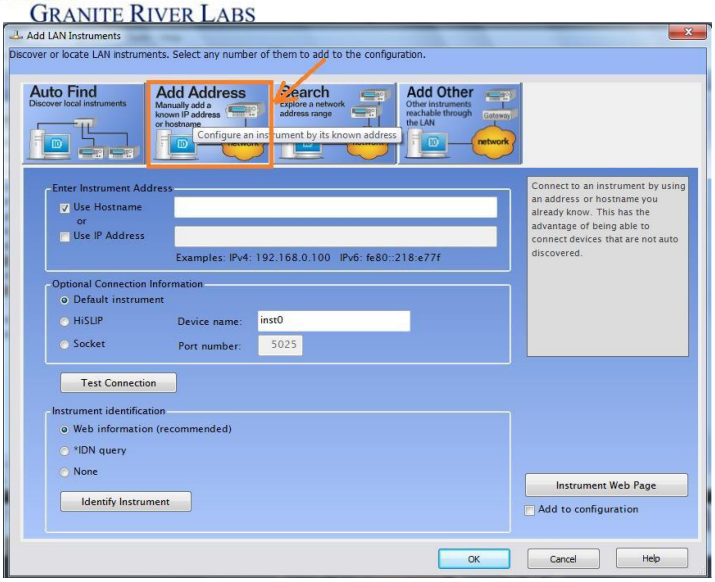
Step 4: Add Instrument

Right click the LAN as shown below and click “Add Instrument” or click “Add Instrument” in the ribbon bar.



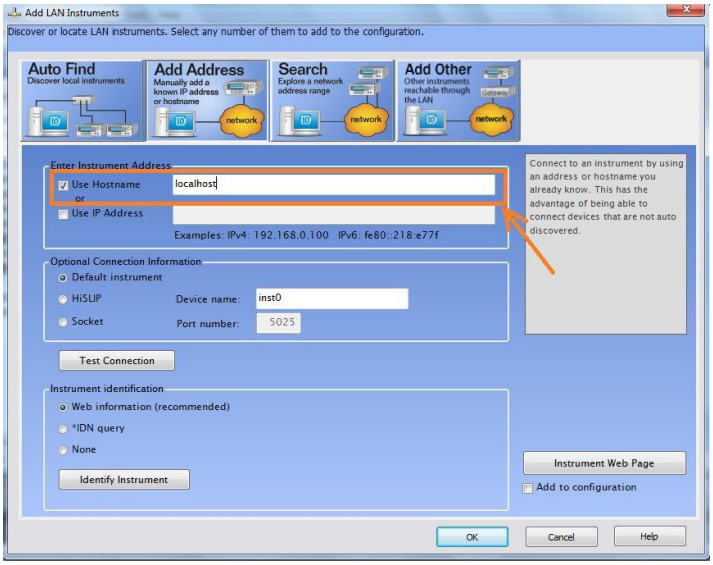
Step 5: Configure the LAN instrument

Click “Add Address” in the “Add LAN Instrument” dialog as shown below:



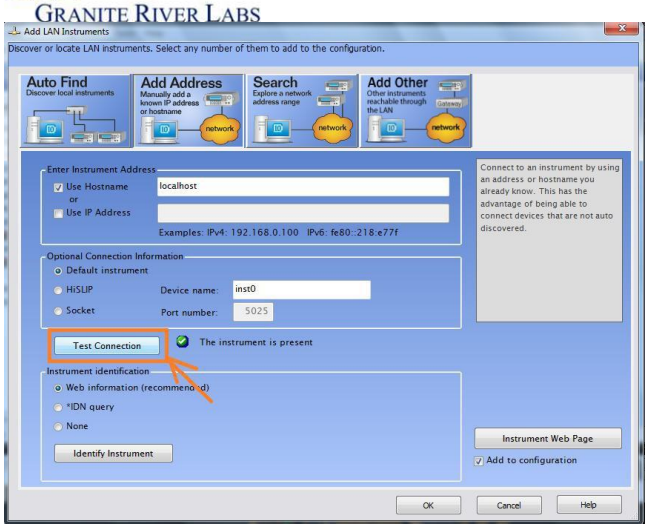
Step 6: Configure the IP address of LAN Instrument

In Add Address page, select "Use Hostname" and type “localhost” in the text box provided for local host.



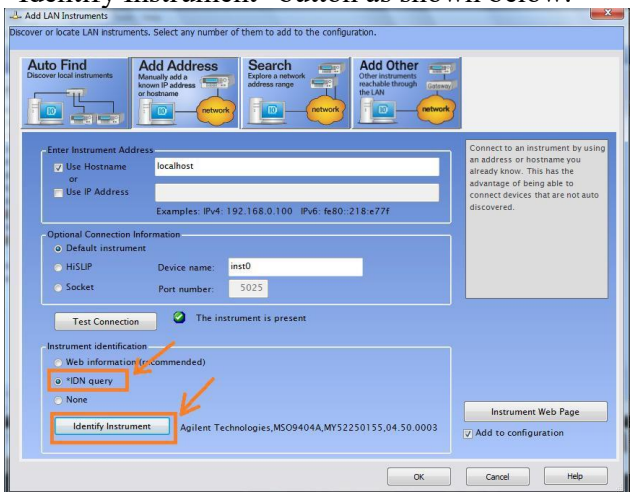
Step 7: Test the connection

Click “Test Connection” to make sure that the Agilent IO configuration is correct. After this you should be able to see "The instrument is present"



Step 8: Check the Instrument Identification

In the instrument identification, select "*IDN Query" and click "Identify Instrument". If the instrument is configured correctly you should be able to see the instrument name next to the "Identify Instrument" button as shown below:

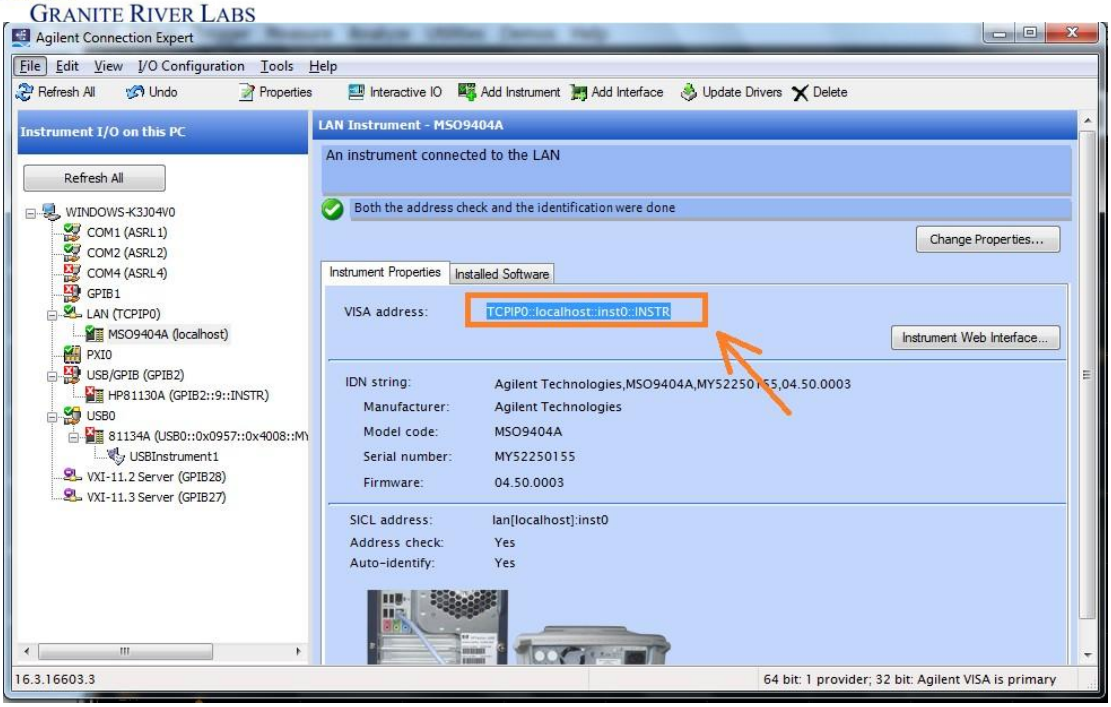


Step 9: Complete Add LAN Instrument

Click "OK" to complete Add LAN Instrument

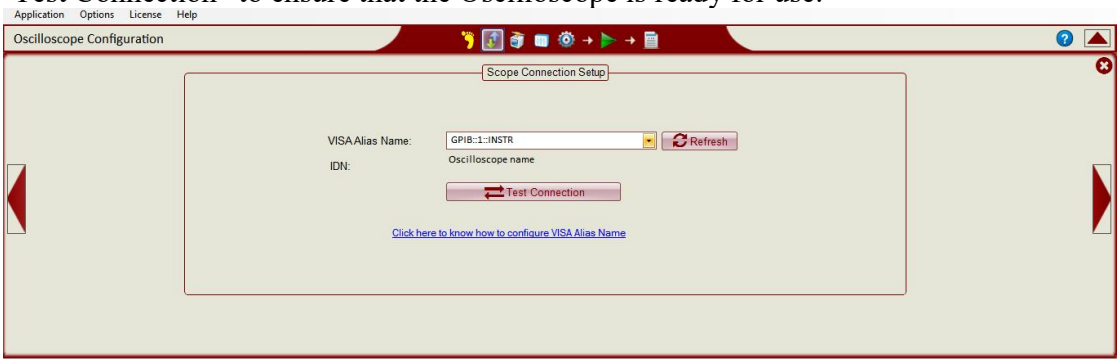
Step 10: Copy VISA alias name

At the end of Step 9, you should be able to see your Oscilloscope in the LAN instrument. Copy or note the VISA address:



Step 11: Configure the GRL Automated Test Solution

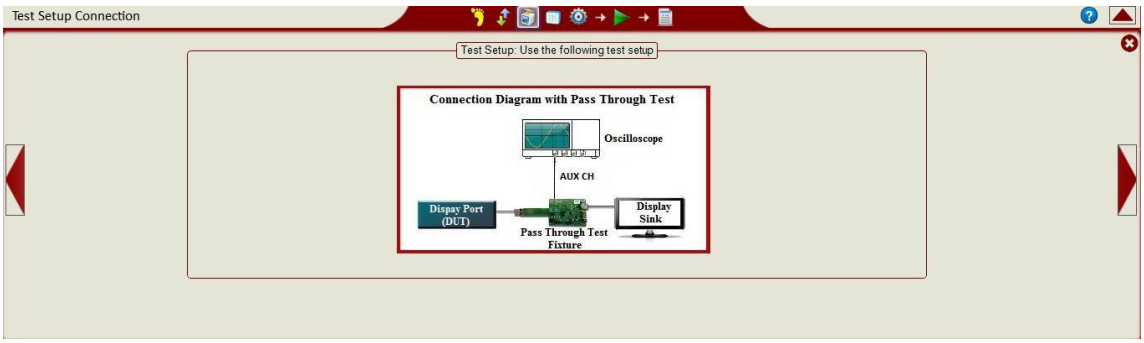
Click the "Refresh" button in the Oscilloscope Configuration setup screen. Then click the "Test Connection" to ensure that the Oscilloscope is ready for use.



GRL
GRANITE RIVER LABS

8. Test Setup Connection

Click “Test Setup Connection” action bar button to view the test setup required to efficiently run the GRL DisplayPort AUX Protocol Decode tool. Connect the AUX signal to Oscilloscope as shown in the image.



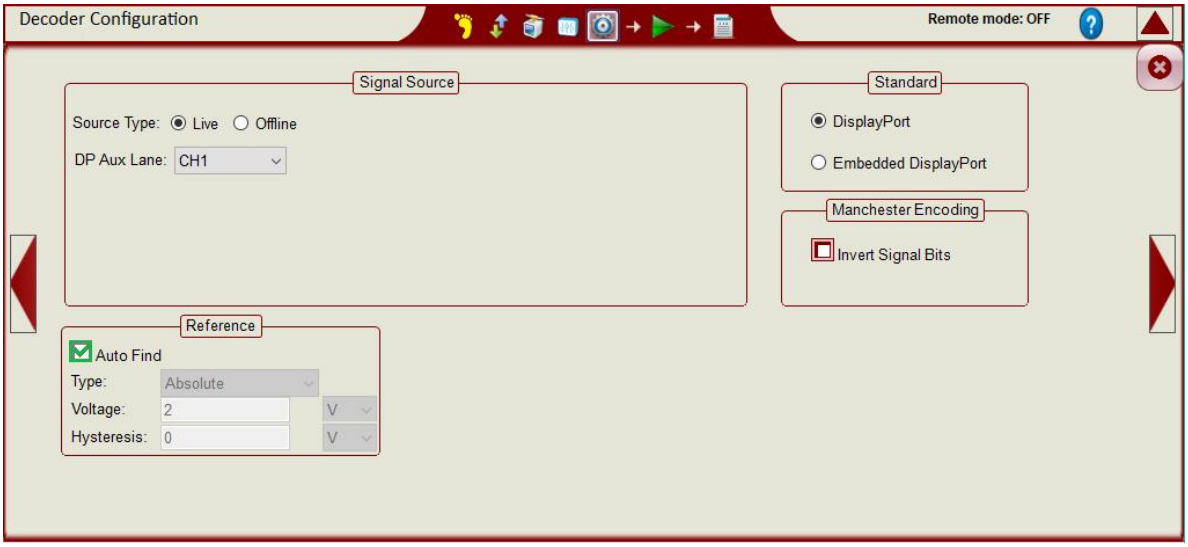
9. Test Selection

(Note: This feature will be supported in a future software version.)

GRL
GRANITE RIVER LABS

10. Decoder Configuration

To configure the decoder, click “Decoder Configuration” button in the Action Bar. It is essential to review this configuration before running the software.



Signal Source:

If you want to analyze the signal using a live waveform captured using Oscilloscope select “Live”. If you want to analyze a waveform stored previously, select “Offline”.

Note: Refer to the datasheet for list of Oscilloscope and waveform formats supported.

For Live Signal Capture, connect the signals as shown in the Test Setup Connection and select the appropriate channels in the software.

To analyze previously stored waveforms, select “Offline Mode” and input the appropriate files in using the “File Browse” button.

Currently the software supports Agilent's BIN file format and Tektronix .wfm file format.

Standard:
Select the type of AUX channel you are probing. Select DisplayPort or embedded DisplayPort depending on the type of source.

Manchester Encoding:
If using self-clocked data signals, select the option to invert Manchester encoded signal bits.

Reference:
If you want to perform an auto search for a DisplayPort reference source, select the “Auto Find” option. Or manually specify the type and parameters for the reference source.

GRL
GRANITE RIVER LABS

11. Run / Start the Decoder

Before Run / Start the Decoder, ensure that:

1. The Oscilloscope configuration is appropriate if you are using live signal mode capture
2. Connect all the probes as per the recommended Test Setup if you are using live signal mode in the decoder configuration
3. Ensure that you have selected the required tests you would like to perform. (Note, this feature will be supported in a future software version)
4. Based on the DisplayPort Source device configuration you have Configured the AUX Decoder software and connected the appropriate signals to the Oscilloscope if you are using Live signal source. Or you have selected the appropriate offline signal files.

Make sure that you have completed all the above required steps before enabling Run/Start on the decoder software. Any inappropriate inputs will lead to un-determined output of the decoder application.

Click the "Run/Start" button in the Action Bar to start the application:

Once you click Run, the decode software takes the inputs from the configuration and decodes the signal.

The status bar displays the progress and shows the activities being carried out. To stop the Decode/Analysis operation, click the "Stop" button as shown below:

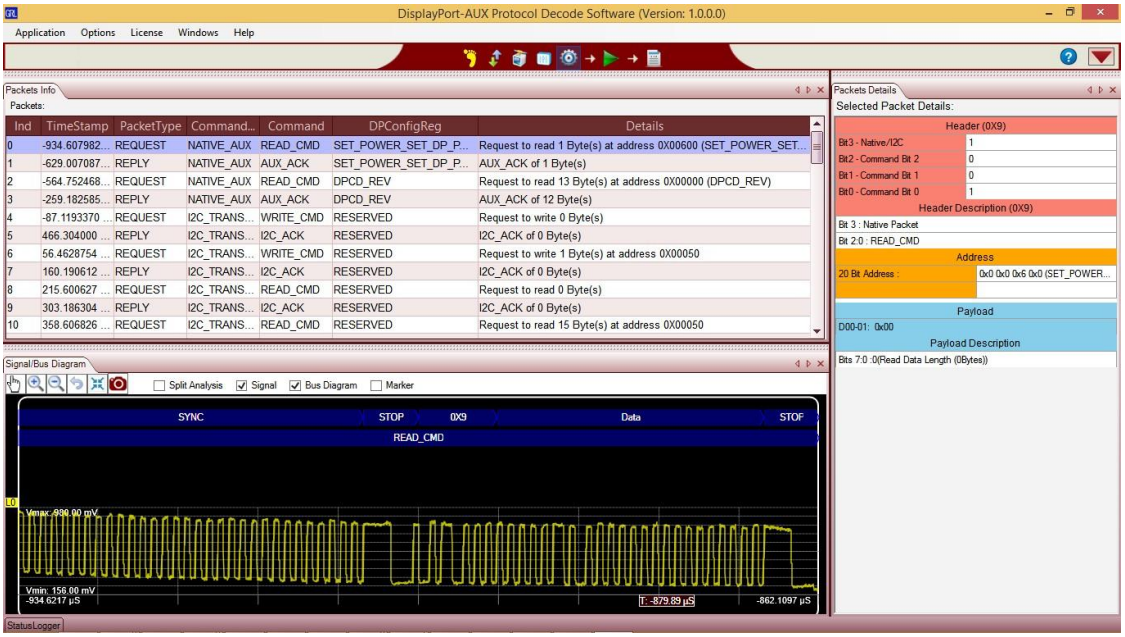
After completing the analysis, the software minimizes the action window and displays the decode results.

12.Analyzing The Results

After completing the decode process, the GRL DisplayPort AUX Protocol Decode software displays comprehensive test results.

Note: If the test results do not meet your expectations, first review the test setup, decoder configuration. Any inappropriate inputs in the decoder configuration may result in incorrect test results.

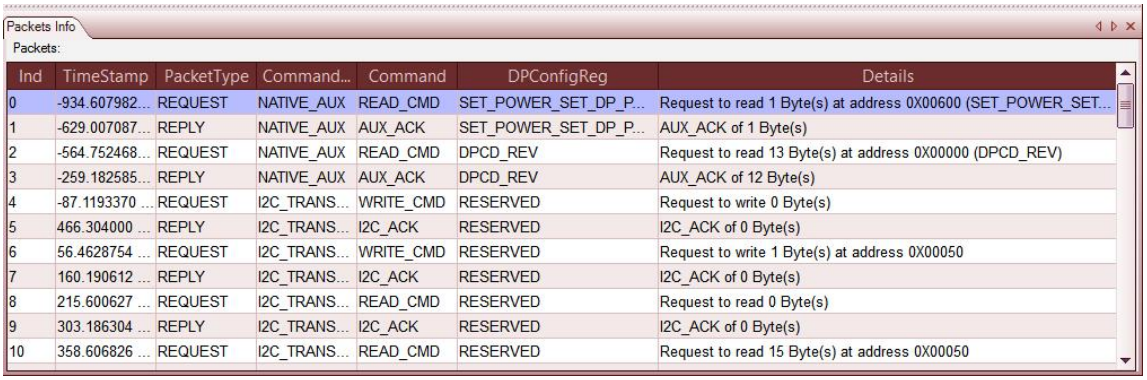
The software provides a list of packets, description of each packets, bus diagram, and physical layer waveforms.



GRL
GRANITE RIVER LABS

Packet List

Packet List provides the list of AUX data transactions with the stamp. By clicking the packet list the packet details and bus diagrams will get updated.

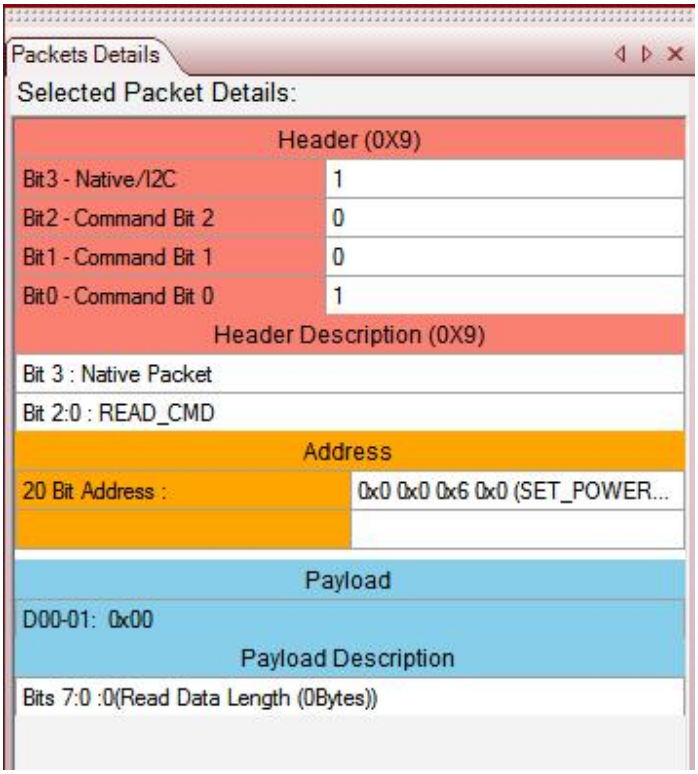

Packets Info

Packets:

Ind	TimeStamp	PacketType	Command...	Command	DPConfigReg	Details
0	-934.607982...	REQUEST	NATIVE_AUX	READ_CMD	SET_POWER_SET_DP_P...	Request to read 1 Byte(s) at address 0X00600 (SET_POWER_SET...
1	-629.007087...	REPLY	NATIVE_AUX	AUX_ACK	SET_POWER_SET_DP_P...	AUX_ACK of 1 Byte(s)
2	-564.752468...	REQUEST	NATIVE_AUX	READ_CMD	DPCD_REV	Request to read 13 Byte(s) at address 0X00000 (DPCD_REV)
3	-259.182585...	REPLY	NATIVE_AUX	AUX_ACK	DPCD_REV	AUX_ACK of 12 Byte(s)
4	-87.1193370 ...	REQUEST	I2C_TRANS...	WRITE_CMD	RESERVED	Request to write 0 Byte(s)
5	466.304000 ...	REPLY	I2C_TRANS...	I2C_ACK	RESERVED	I2C_ACK of 0 Byte(s)
6	56.4628754 ...	REQUEST	I2C_TRANS...	WRITE_CMD	RESERVED	Request to write 1 Byte(s) at address 0X00050
7	160.190612 ...	REPLY	I2C_TRANS...	I2C_ACK	RESERVED	I2C_ACK of 0 Byte(s)
8	215.600627 ...	REQUEST	I2C_TRANS...	READ_CMD	RESERVED	Request to read 0 Byte(s)
9	303.186304 ...	REPLY	I2C_TRANS...	I2C_ACK	RESERVED	I2C_ACK of 0 Byte(s)
10	358.606826 ...	REQUEST	I2C_TRANS...	READ_CMD	RESERVED	Request to read 15 Byte(s) at address 0X00050

Packet description

Packet description provides the details of the selected Packet as per the DisplayPort Specification.


Packets Details

Selected Packet Details:

Header (0X9)	
Bit3 - Native/I2C	1
Bit2 - Command Bit 2	0
Bit1 - Command Bit 1	0
Bit0 - Command Bit 0	1
Header Description (0X9)	
Bit 3 : Native Packet	
Bit 2:0 : READ_CMD	
Address	
20 Bit Address :	0x0 0x0 0x6 0x0 (SET_POWER...
Payload	
D00-01: 0x00	
Payload Description	
Bits 7:0 :0(Read Data Length (0Bytes))	

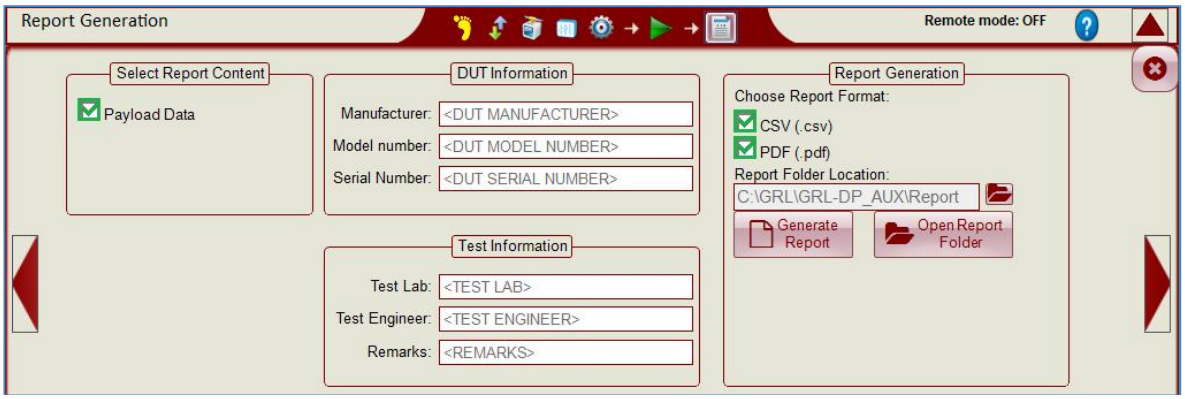
Signal Plot and Bus Diagram

Signal Plot and Bus Diagram provides details of the bus diagram and associated physical layer waveforms.

The plot utilities such as Pan, Zoom, Un-Zoom, Un-do, Fit to screen helps to analyze the data.

13. Test Report

DisplayPort AUX protocol decode software's automated report generation capability provides ability to generate the report to share the test results.



You can also choose to include payload data in the test report as well as customize the test report with the details of the "Device Under Test Information"– you can specify the Manufacturer information, model number, serial number and other test related information.

You can also choose the environment variables such as decoder configuration details, frame image and frame information in the test report.

14.Feedback and Suggestion

Granite River Labs values your feedback on our products. To help us serve you better, please send us your suggestions, ideas, or comments on the DisplayPort-AUX Protocol Decode software. Direct your feedback via e-mail to info@graniteriverlabs.com and include the following information:

General Information

- Instrument model number and hardware options, if any
- Probes used
- Your name, company, mailing address, phone number, FAX number, e-mail id
- Please indicate if you would like to be contacted by Granite River Labs about your suggestions or comments

Program-Specific Information

- Software version number
- Description of the problem such that technical support can duplicate the problem
- The instrument setup files
- Configuration used in the application.
- If possible, save the waveform on which you are performing the test

Once you have gathered this information, you can contact technical support by e-mail. When you use e-mail, be sure to type in the subject line “DisplayPort AUX Protocol Decode Software Problem/Feedback/Suggestion,”