



Granite River Labs

User Guide

GRL WPC Qi Wireless Test Power Receiver Tester (GRL-WP-TPR-C3) Test Setup & Execution Using Tektronix High- Performance Real-Time Oscilloscope and GRL-WP-TPR-C3 Automation Test Browser Application

This material is provided as a reference to set up and execute tests with the Granite River Labs (GRL) WPC Qi Wireless Test Power Receiver Tester (GRL-WP-TPR-C3) Hardware and Tektronix High-Performance Real-Time Oscilloscope via the GRL-WP-TPR-C3 Automation Test Browser Application.

For software support, contact support@graniteriverlabs.com.

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1 Scope of this User Guide

This User Guide describes the connection setup and execution of test cases using the GRL-WPTPR-C3 (aka GRL-C3) WPC Qi Wireless Test Power Receiver Tester Hardware and Tektronix HighPerformance Real-Time Oscilloscope. The GRL-C3 Automation Test Browser Application is used as the user interface for configuration and execution of these test cases when run on a Control PC.

For information on how to get started with the GRL-C3 tester hardware and Browser App, please refer to <https://www.graniteriverlabs.com/en-us/test-solutions/protocol-power-testsolutions/grl-wp-bst-c3>.

For purchase orders, licensing questions and concerns, please contact Granite River Labs support at support@graniteriverlabs.com.

2 Test/Equipment Requirements

For purchase or information of the following items, contact info@graniteriverlabs.com.

- GRL-C3 WPC Qi Wireless Test Power Receiver Tester Hardware
- Tektronix High-Performance Real-Time Oscilloscope (see Section 2.1 below for Scope requirements)
- 2 × Ethernet Cables



Note: If the laptop/desktop PC has only one Ethernet port then a USB to Ethernet adapter will be required.

- USB Type-A to USB Micro B USB Cable



- Scope Probes
- TPR Coils
- Laptop/Desktop PC

2.1 Oscilloscope Requirements

The Tektronix Scope to be used in the test setup must meet the following minimum requirements:

- Frequency: ≥ 500 MHz
- Sampling Rate: ≥ 2 ns
- Resolution: ≥ 65 ms
- No. of Channels: 2
- LAN Cable: Required
- USB Device: Required
- Scope Calibration: Required

3 Connect Oscilloscope with GRL-C3

The following procedure describes how to connect the Scope with the GRL-C3 tester hardware and Control PC (for running the GRL-C3 Browser App).

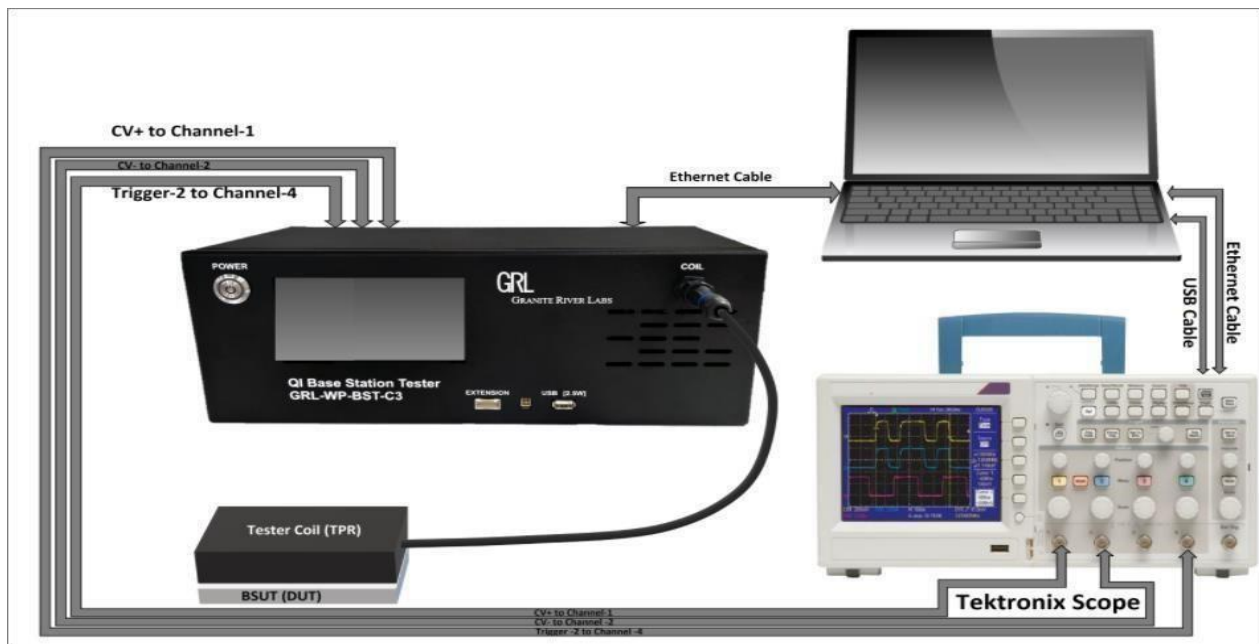


FIGURE 3.1: SCOPE & GRL-C3 CONNECTION SETUP

1. Connect CV+ at the rear of the GRL-C3 tester hardware to Channel 1 on the Scope.
2. Connect CV- at the rear of the GRL-C3 tester hardware to Channel 2 on the Scope.
3. Connect Trigger-2 at the rear of the GRL-C3 tester hardware to Channel 4 on the Scope.

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4. Connect an Ethernet cable from the Scope to the PC using an Ethernet adapter.
5. Connect a USB Type-A to Type-B cable from the Scope to the PC.
 - i. Connect the USB Type-B receptacle to the rear of the Scope and the USB Type-A receptacle to the PC.
6. Connect the GRL-C3 Ethernet cable to the PC.

4 Process Flow Preceding Test Execution on Scope

The following procedure summarizes the flow of processes that must be completed before starting any test run on the Scope.

- a. Ethernet connection settings of the GRL-C3 and Scope.
- b. Installation of TekVISA on the Control PC.
- c. Sharing folder on the Scope without password protection with the GRL-C3.
- d. Set up connection between Scope and GRL-C3.

4.1 Set Ethernet Connection for GRL-C3 and Scope

The Ethernet port on the control PC needs to be configured correctly for the GRL-C3 tester hardware to recognize the control PC and vice versa.

To make sure the network connection is set up correctly, open the Network Connections panel from the Control Panel.

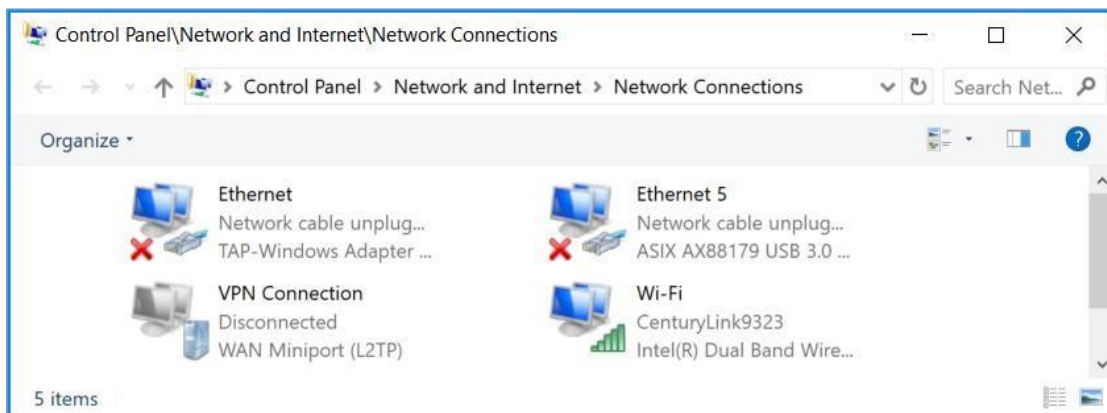


FIGURE 4.1: NETWORK CONNECTIONS BEFORE CONNECTING GRL-C3

Open the Ethernet panel for the Ethernet port that will connect to the GRL-C3 tester hardware, select “Internet Protocol Version 4 (TCP/IPv4)” and click on the “Properties” button below and to the right.

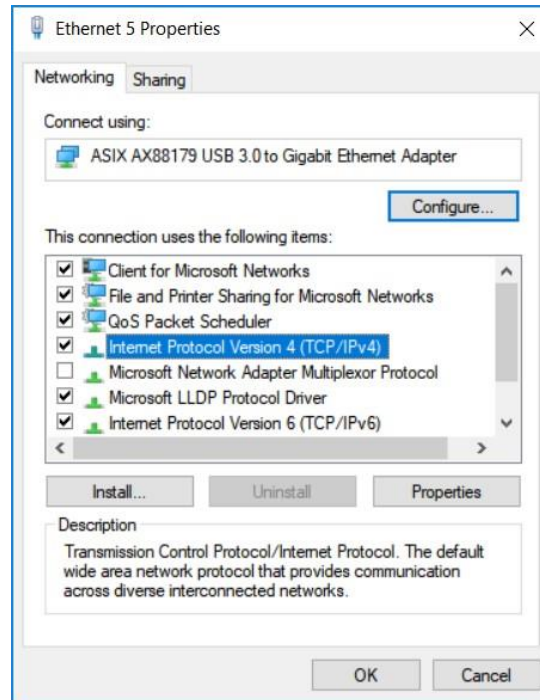


FIGURE 4.2: ETHERNET PROPERTIES

Set up the TCP/IPv4 properties as shown below.

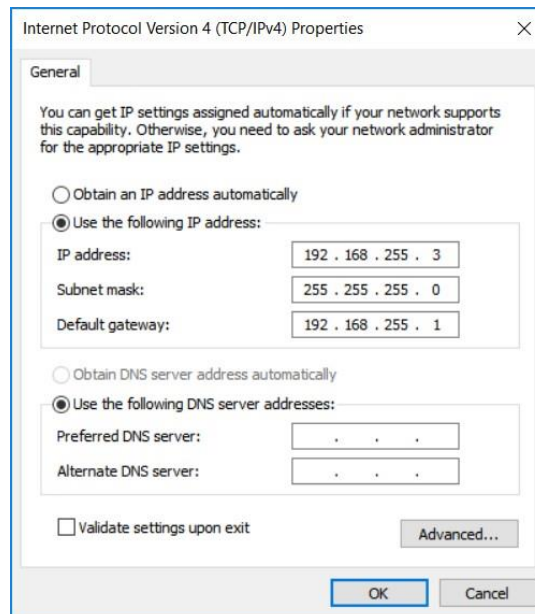


FIGURE 4.3: ETHERNET PROPERTIES WITH TCP/IPV4 SELECTED

Select a static IP address (“Use the following IP address:”) which should be 192.168.255. n where n is any number between 2 and 255. The subnet mask should be 255.255.255.0 and the default gateway should be 192.168.255.1. The rest of the items should remain unchanged.

Click on the “OK” button on the Internet Protocol Properties and close the Ethernet Properties. Make sure the GRL-C3 tester hardware is powered on and completely booted up (front panel display shows firmware version number) and then connect the Ethernet cable from the GRL-C3 tester hardware to the PC’s Ethernet port that was just set up. The network connections window should now look as pictured in Figure 4.4 below:

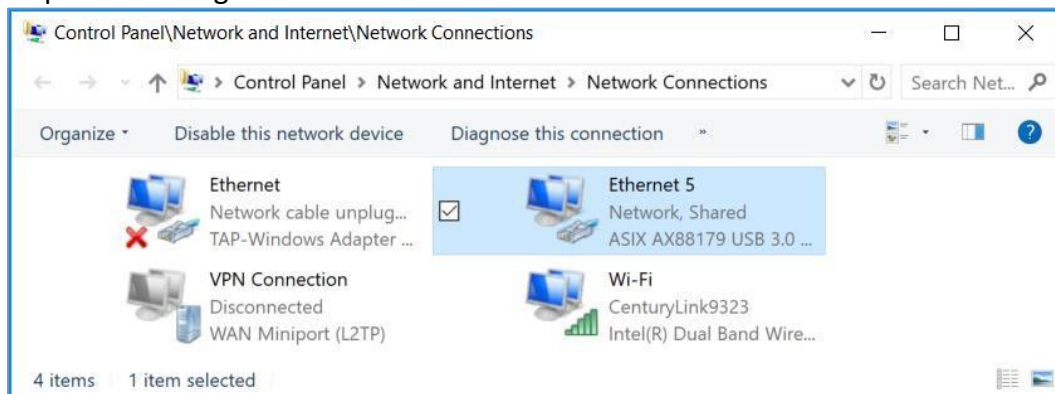


FIGURE 4.4: NETWORK CONNECTIONS AFTER SETUP AND CONNECTION OF GRL-C3 The

GRL-C3 tester hardware is now set up and ready for use.

Before running any tests, it is recommended that you verify that the control PC and the GRL-C3 are communicating by going to the “Connection Setup” screen on the GRL-C3 Browser App and clicking on the “Connect” button. The tester status should display “Connected”.

Note: Please follow the same procedure for Scope Ethernet settings. Make sure to use a different IP address, e.g., 192.168.255.10.

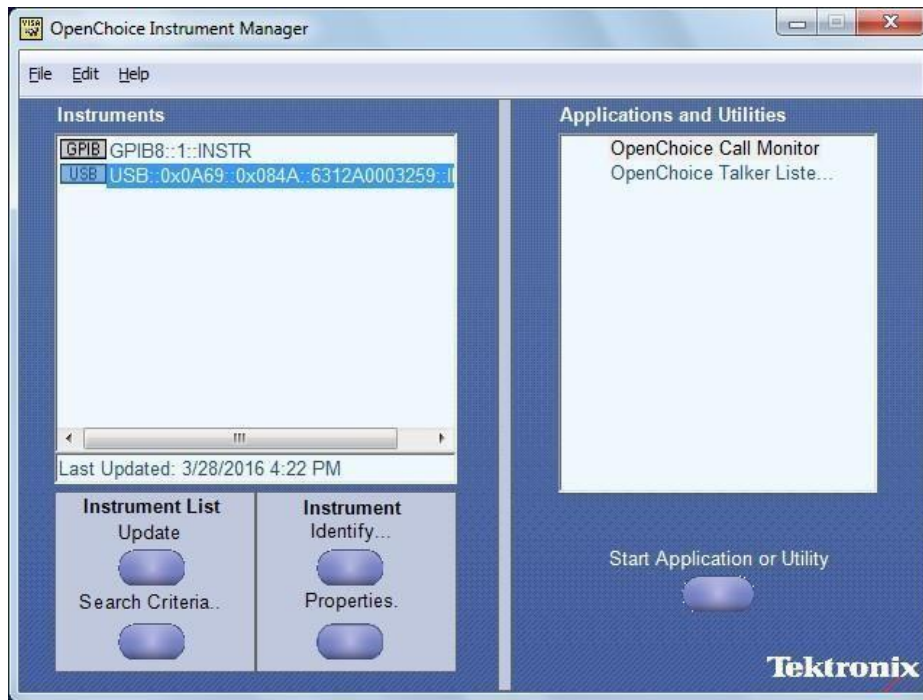
4.2 Install TekVISA on Control PC

1. Click on the below link to download the TekVISA software:

https://graniteriverlabs1-my.sharepoint.com/:u:/g/personal/india-drive_graniteriverlabs_com/EUhQgX9imI1EqPZEYQOokIQBU6enEDCrdfqfQONNU7b4NA?e=aKiQ_W4

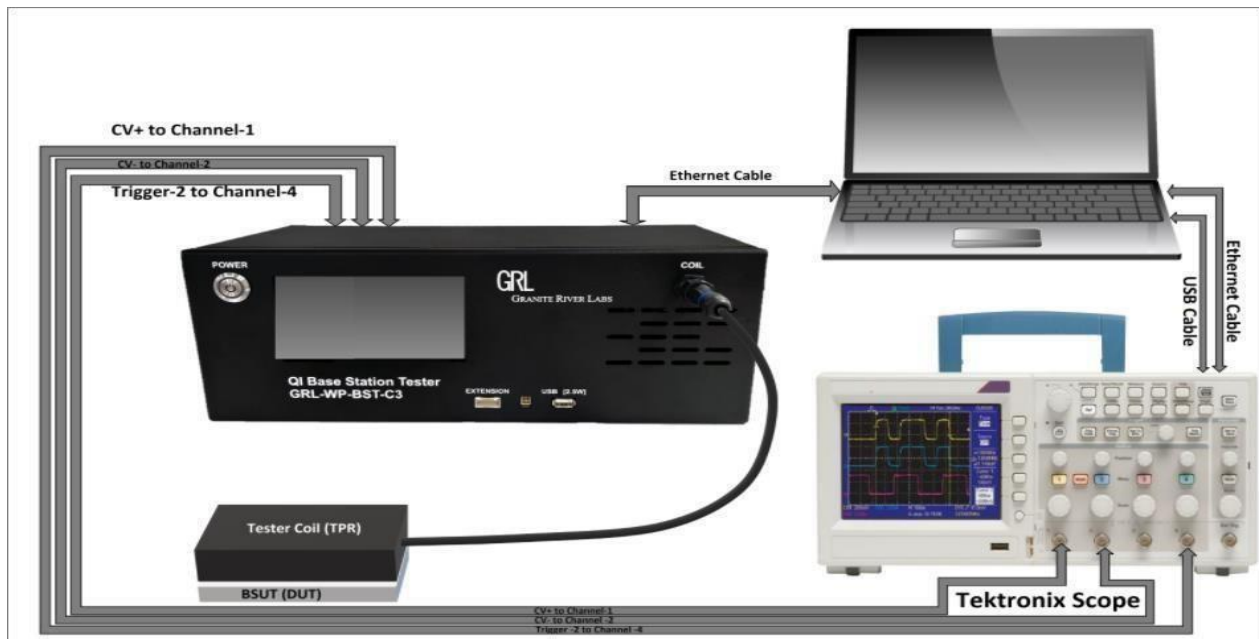
2. Connect a USB cable from the Tektronix Scope to the Control PC.
3. Click on download folder and double-click on the “OpenChoiceTekVisa_Deployment_Package_066093812” file.

4. Install the TekVISA software on the Control PC.
5. Once installed, the TekVISA software will ask to reset the Control PC.
6. Restart the PC and open the TekVISA application.
7. Makes sure the Tektronix Scope instrument is displayed in the “Instruments” panel.



4.3 Set Up Equipment Connection for Testing

Make sure the following connections are set up and established successfully before executing tests.



1. Set up the hardware connection as described in Section 3.

2. Ensure the latest GRL-C3 Browser App and TekVISA software have been installed on the Control PC.
3. After the USB Type-A to Micro B cable is connected from the Scope to the Control PC (in order to read Scope waveforms), make sure the TekVISA application pop-up is detected and appear in the toolbars.
4. Connect the BSUT to the GRL-C3 using a TPR coil as shown in the above image.

5 Execute Tests

This section provides the steps to execute or run test cases after setting up the hardware connection.

1. Select the appropriate Transmitter Type, DUT Profile and Potential Power of the connected BSUT from the Test configuration panel in the GRL-C3 Browser App.
2. Select the Scope required test cases and click on the **Start Execution** button.

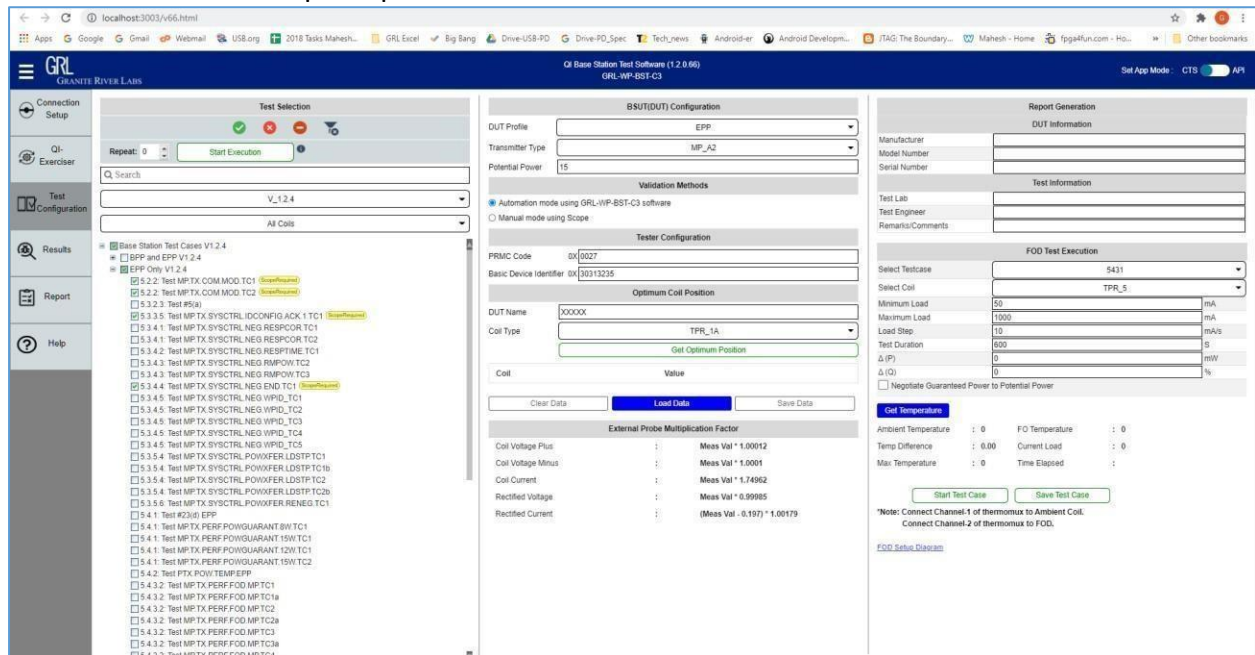


FIGURE 5.1: SELECT SCOPE REQUIRED TEST CASES AND START TEST EXECUTION

3. Once execution of the test cases starts, take note of the IP address pop-up dialog as shown in Figure 5.2.

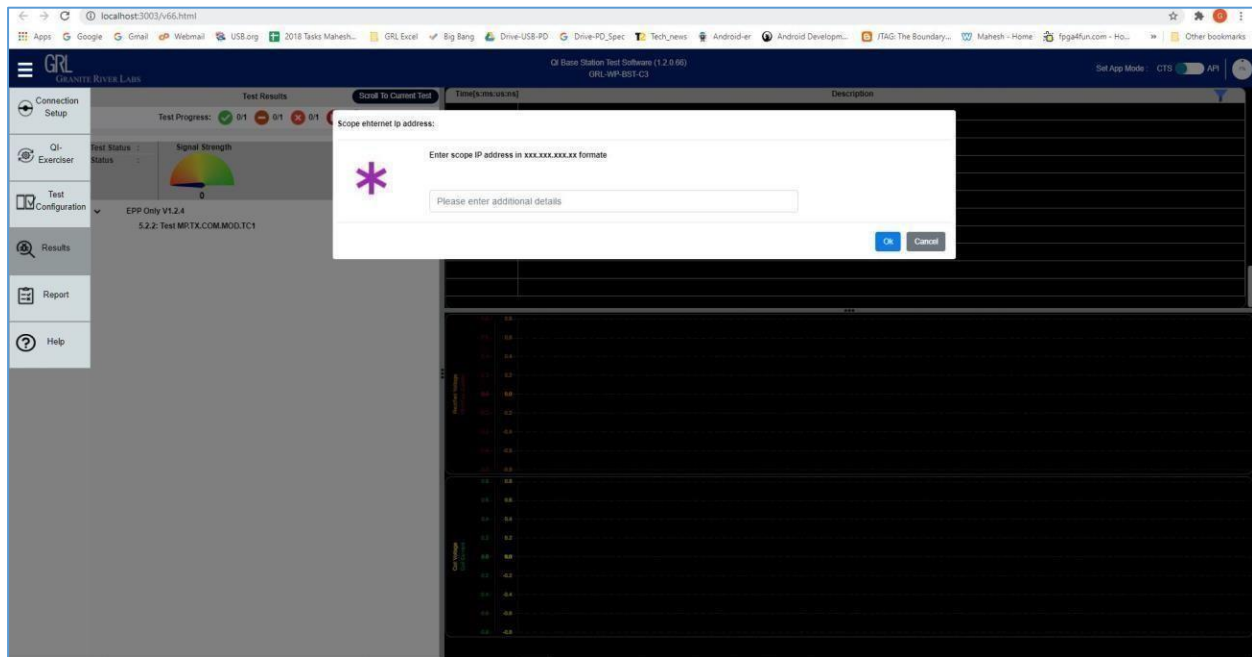


FIGURE 5.2: SCOPE ETHERNET IP ADDRESS POP-UP DIALOG

4. Enter the Scope IP address in the given format and click on the **Ok** button.
5. After entering the IP address, take note of subsequent pop-up messages, e.g., 'remove/place coil from Base station', etc. Follow the instructions on these pop-up messages and click on the **Ok** button.
6. Ensure that the TPR coil has been placed in the optimum position.
7. Once a certain test sequence is run and completed, verify whether or not the signal has been acquired by the Scope. If the Scope signal has been acquired, click on the **Ok** button in the pop-up dialog as shown in Figure 5.3. If the Scope signal has not been acquired, remove and place the coil again.

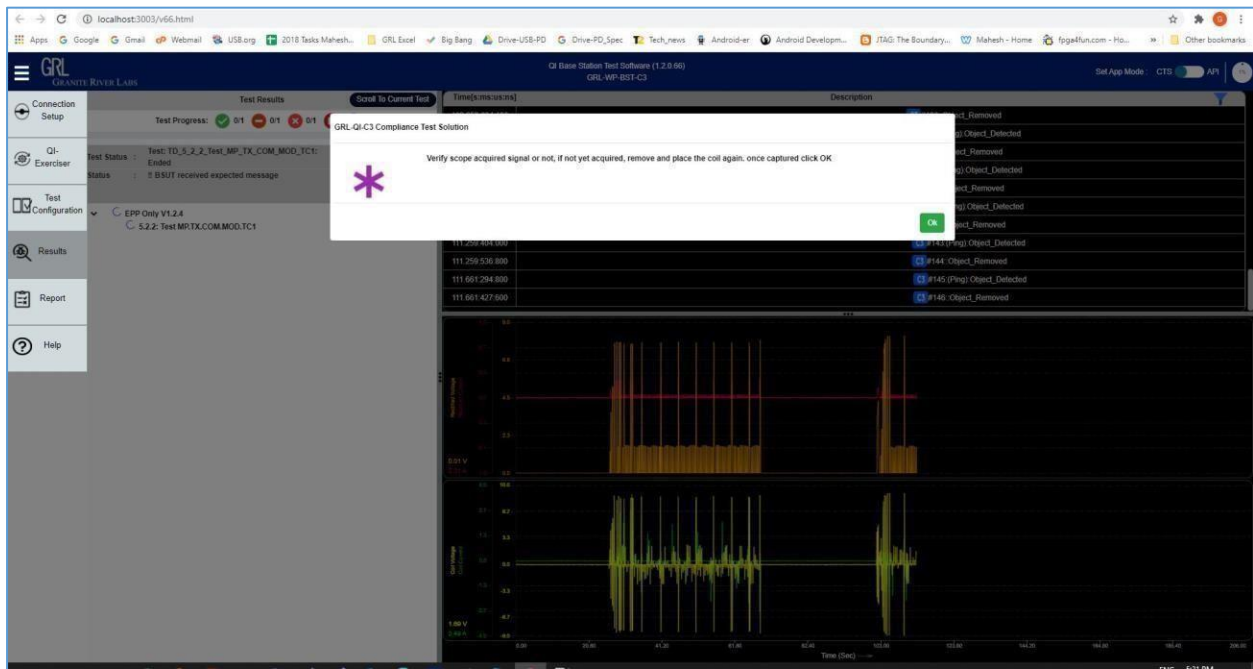


FIGURE 5.3: VERIFY SCOPE SIGNAL ACQUISITION DIALOG

8. After the test execution is completed, check if the test report is generated along with Scope capture in the “C:\GRL\GRL-C3_Browser_App\Report” path.

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