
# Granite River Labs

## GRL Shared Capacity Interoperability Software (GRL-SCIS) User Guide

*Published on 24 February 2026*

DISCLAIMER

This document is provided “as is” with no warranties whatsoever, including any warranty of merchantability, no infringement, fitness for any particular purpose, or any warranty otherwise arising out of any proposal, specification, or sample. The GRL disclaims all liability for infringement of proprietary rights, relating to use of information in this specification. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted herein.

All product names are trademarks, registered trademarks, or service marks of their respective owners.

# TABLE OF CONTENTS

# 1 Scope of this User Guide

This User Guide describes how to use the GRL-SCIS software to test a USB Type-C® Shared Capacity source product with a shared power gang on USB Type-C® ports to meet the USB Type-C® Interoperability compliance standards.

The GRL-SCIS software will automate test runs for the device under test (DUT) according to USB Type-C® Shared Capacity Charger Interoperability Compliance Test Specification.

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

## 1.1 Licensing Requirements

The GRL-SCIS software for USB Type-C® shared capacity interoperability compliance test requires licensing upon purchase. Please contact support@graniteriverlabs.com for more information.

# 2 Test Criteria

The test will be performed for the Shared Capacity Charger DUT with two USB Type-C® ports where each port will be connected to a Sink device through the GRL-USB-PD-A1-EPR USB Type-C® Power Delivery Performance Analyzer. When running tests, the GRL-SCIS software will prompt the user to connect the ports on the charger DUT to the following Sink Device 1 and Sink Device 2:

Table 1. Test Conditions

| Test Condition | Sink Device 1 | Sink Device 2 |
|---|---|---|
| C1 | Apple Macbook M4 (EPR) | Google Pixelbook Go |
| C2 | Apple Macbook M4 (EPR) | Samsung S21 Phone |
| C3 | Apple Macbook M4 (EPR) | Google Pixel 10 Phone |
| C4 | Google Pixelbook Go | Samsung S21 Phone |
| C5 | Google Pixelbook Go | Google Pixel 10 Phone |
| C6 | Samsung S21 Phone | Google Pixel 10 Phone |

*Note:*

- *The Sink devices mentioned in Table 1 above are not provided by GRL and need to be procured separately.*
- *The Sink devices could change in the future when the USB-IF might make changes to the Sink devices.*

The GRL-SCIS software will verify that the following requirements for each of the above test conditions described in Table 1 are met to determine if the test passes or fails:

Table 2. Test Verification

| Verification | Test Pass/Fail Requirements |
|---|---|
| V1 | The gang does not advertise more than the total gang power |
| V2 | Each port advertises at least 7.5W while the charger is powered |
| V3 | The charger notifies all ports when the power reserve changes |
| V4 | The port power contracts settle within 3s after a power reserve change |
| V5 | The port power rebalancing is completed without using Hard Reset, Error Recovery, or Disabled |
| Others | Any other USB Power Delivery specification related |

# 3 Equipment Requirements

Table 3 lists the equipment required for the typical test setup (for a USB Type-C® two-port power gang).

Table 3. Equipment List

| Equipment/Device | Qty. | Description |
|---|---|---|
| GRL USB Type-C® Power Delivery Analyzer | 2 | GRL-USB-PD-A1-EPR USB Type-C® Power Delivery Performance Analyzer |
| USB Type-C® based Sink Device | 4 | Mobile phones or laptop computers with USB Type-C® connectors for power-in charging, as listed in Section 2, Table 1. *Test Conditions Sink Device 1 and Sink Device 2*. |
| Control Computer (laptop or desktop)<br>• VISA (Virtual Instrument Application Architecture) API Application | 1 | Windows 10+ OS (for automation control)<br>The VISA application is required to be installed on the control PC running the GRL-SCIS software. GRL's application framework has been tested to work with all three versions of VISA available on the market:<br>1. NI-VISA: http://www.ni.com/download/ni-visa-17.0/6646/en/<br>2. Keysight IO Libraries: www.keysight.com *(Search on IO Libraries)*<br>3. Tektronix TekVISA: www.tek.com *(Downloads > Application > TekVisa)* |
| USB Type-C® based Device Under Test (DUT) | 1 | Source devices with multiple USB Type-C® connectors such as multi-port chargers |

# 4 GRL-SCIS Software Setup

This section describes how to install the GRL-SCIS software and prepare your setup for running the USB Type-C® Shared Capacity Interoperability compliance tests.

*Note: With any version updates of the GRL-SCIS software, it is required to perform a clean uninstall of the existing software before reinstalling with the updated software. Previously ran test results can be obtained from the Report folder.*

## 4.1 Install GRL-SCIS Software

1. On a Windows 10 (or above) computer, download the GRL-SCIS software from the GRL Download Center— https://www.graniteriverlabs.com/en-us/download-center#GRL-SCIS.
2. Save the ZIP archive in a convenient folder and extract the GRL-SCIS installer by right-clicking the downloaded archive and selecting “Extract All”.
3. Run the installer by double clicking the extracted executable.
4. Make sure to click “Yes” when the system prompt asks if you want to allow the installer to make changes to your system. Then follow the on-screen instructions to complete installation for the GRL-SCIS software.
5. Once the GRL-SCIS installation is completed, you will be prompted to install the GRL-USB-PD-A1-EPR application. Follow the on-screen instructions to complete installation for the GRL-USB-PD-A1-EPR.
6. After installation is completed, when you first open the GRL-USB-PD-A1-EPR application the following pop-up message will appear prompting you to install the driver. Click on the “Install Driver” button and select the “Do Not Ask Again” checkbox. Then follow the on-screen instructions to complete the driver installation.

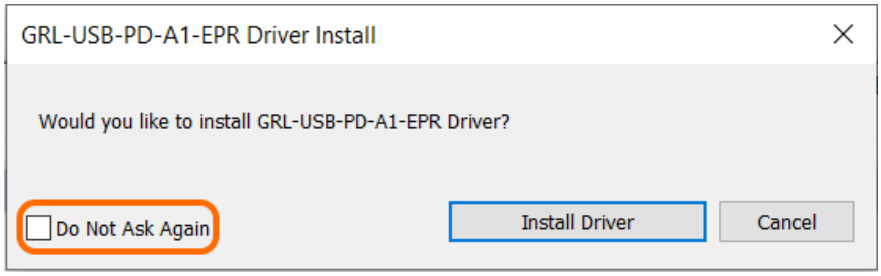



Figure 1. Prompt for GRL-USB-PD-A1-EPR Driver Installation

## 4.2 Launch and Set Up GRL-SCIS Software

1. Once the GRL-SCIS application is installed, open the GRL folder from the Windows Start menu. Click on **GRL – Automated Test Solutions** within the GRL folder to launch the GRL application framework.

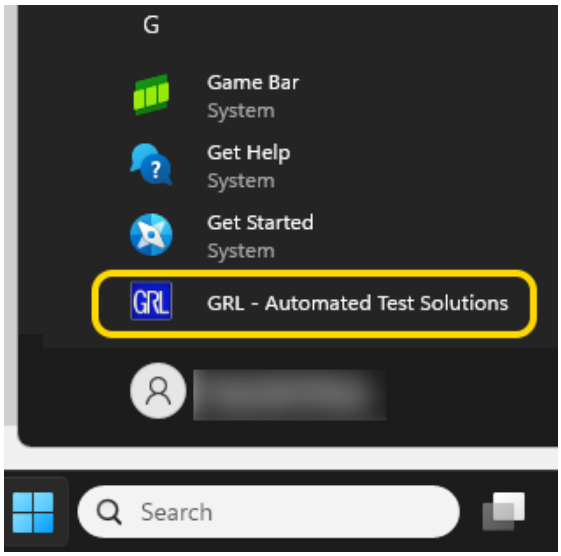



Figure 2. Select and Launch GRL Framework

2. From the Application → PD Test Solution drop-down menu, select 'GRL Shared Capacity Interoperability Software' to start the GRL-SCIS application. If the selection is grayed out, it means that your license has expired.

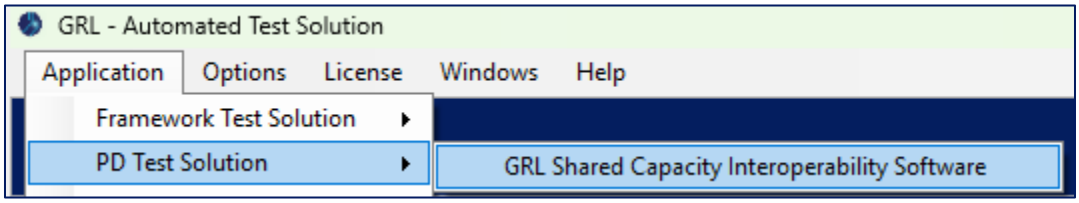



Figure 3. Start GRL-SCIS Application

3. To enable license, go to License → License Info.

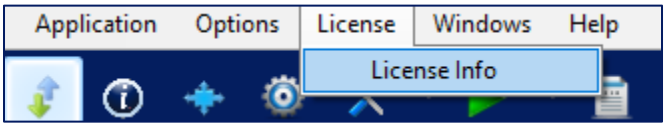



Figure 4. See License Details

a) Check the license status for the installed application.

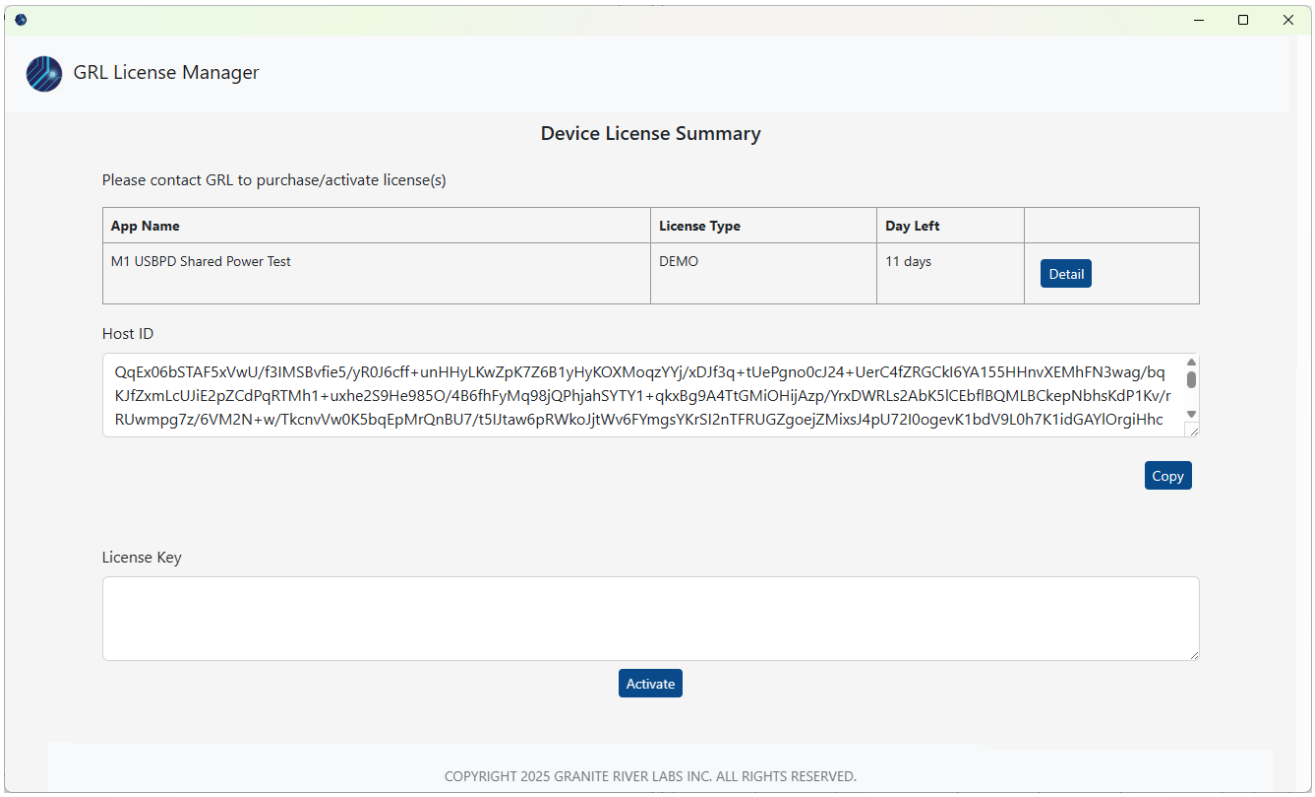



Figure 5. Check License for Installed Application

b) Activate a License:

- If you have an Activation Key, enter it in the **License Key** field provided and select **Activate**. The installed application is ready for use upon successful activation.
- If you do not have an Activation Key, close the above window to use a demo version of the application over a free 12-day trial period.

***Note:*** *Once the 12-day trial period ends, you will need to request an Activation Key to continue using the application on the same computer by contacting support@graniteriverlabs.com.*

4. On the control PC, obtain the serial numbers of all the connected GRL-USB-PD-A1-EPR Analyzers from the device settings. Note these serial numbers as they will be used to connect the analyzers to the GRL-SCIS application.
5. Select the Equipment Setup icon on the GRL Shared Capacity Interoperability Software menu.
6. Type in the serial number of each connected GRL-USB-PD-A1-EPR Analyzer into the 'Address' field.
7. Then select the "lightning" button ( ) for each connected analyzer.

The “lightning” button should turn green ( ) once the application has successfully established connection with each analyzer.

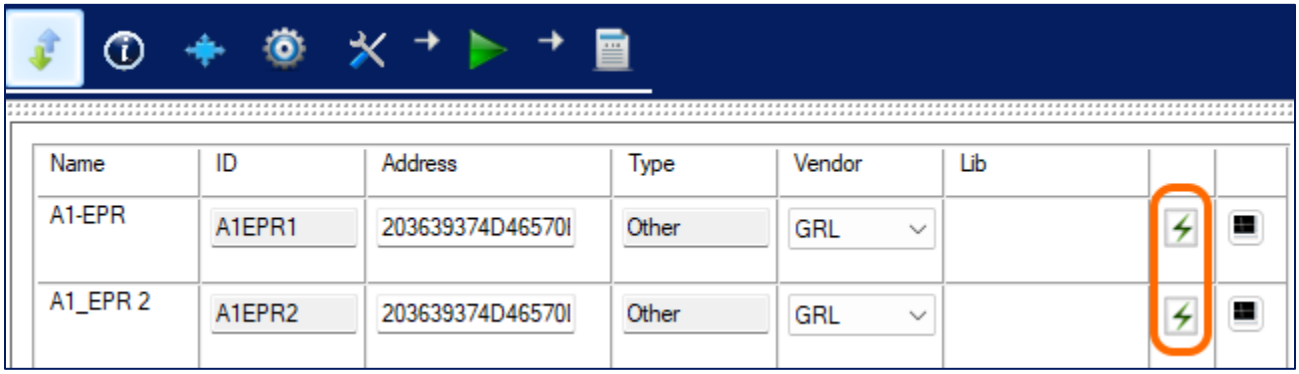



Figure 6. Connect GRL-USB-PD-A1-EPR Analyzers with GRL-SCIS Application

## 4.3 Pre-Configure GRL-SCIS Application Before Calibration/Testing

Once all equipment is successfully connected from the previous section, proceed to set up the preliminary settings before going to the advanced measurement setup.

### 4.3.1 Enter Test Session Information

Select from the menu to access the **Session Info** screen. Enter the information as required for the test session that is currently being run. The information provided will be included in the test report generated by the GRL-SCIS application once tests have completed.

- The fields under **DUT Info** and **Test Info** are defined by the user.
- The **Software Info** field is automatically populated by the application.

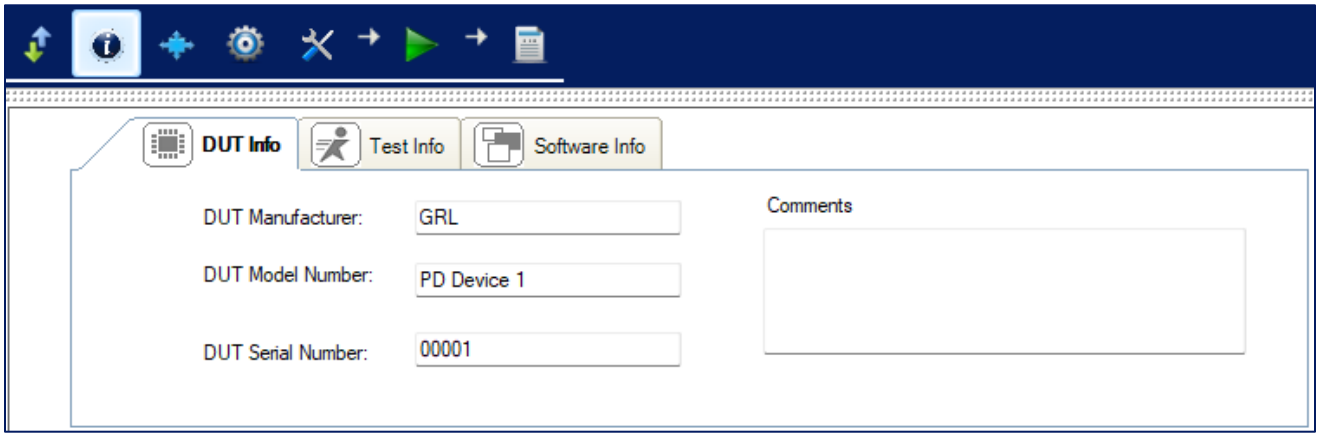



Figure 7. Session Info Screen

# 5 Perform Automated Calibration

Calibration should be performed before running the USB Type-C® Shared Capacity Interoperability compliance tests to ensure more accurate test results. Before any full test run is executed, the user is required to perform calibration at least once with their pair of GRL-USB-PD-A1-EPR analyzers that will be used for testing. If the user decides to test using a different pair of GRL-USB-PD-A1-EPR analyzers after calibration has been performed, the user should also re-run the calibration.

The setup for calibration requires a USB Type-C®/Power Delivery based charger DUT to be connected to a Sink device through a pair of GRL-USB-PD-A1-EPR analyzers. Both GRL-USB-PD-A1-EPR analyzers are connected to a control computer running the GRL-SCIS application for test automation control. See the connection diagram below.

*Note that any DUT can be used in this calibration (the DUT does not need to be the one used for testing). Make sure that both the Sink and Source devices used are functioning correctly according to the USB Power Delivery specifications.*

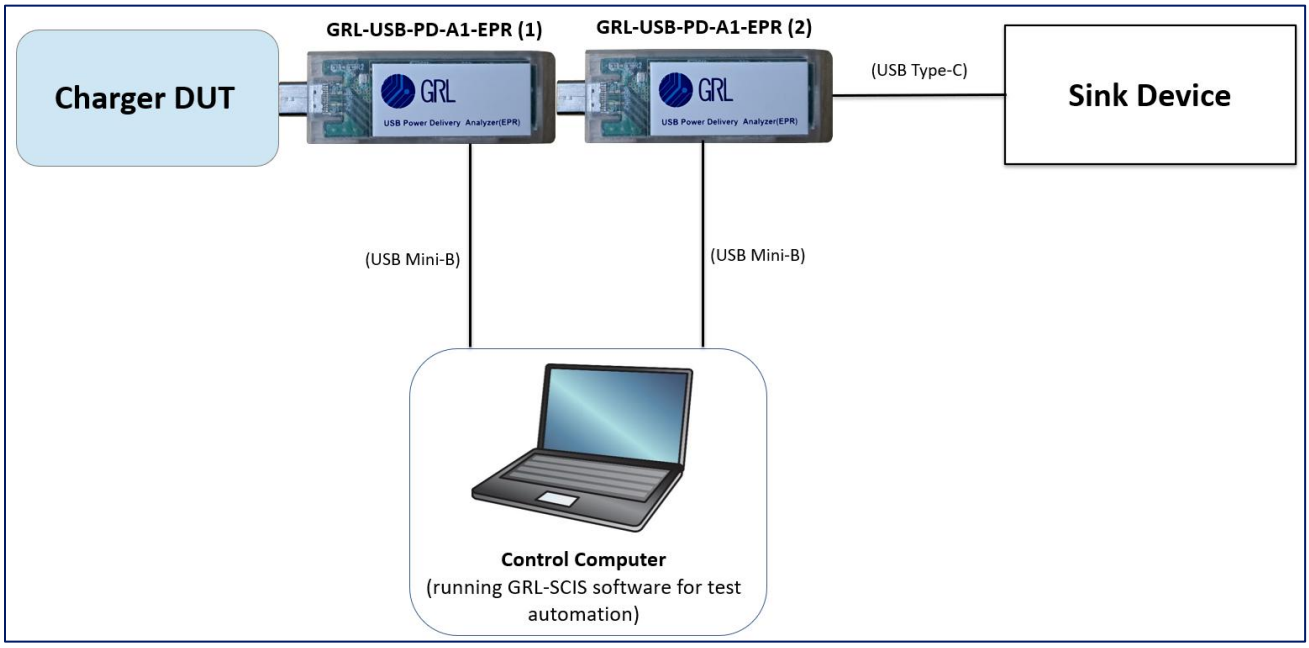



Figure 8.Hardware Connection Setup for USB Type-C® Shared Capacity Interoperability Calibration

Connect the devices according to the above connection diagram. The calibration will take approximately 3 minutes to complete. When calibration is completed, the GRL-SCIS application will generate a test report detailing all results obtained from the calibration.

## 5.1 Select Shared Capacity Interoperability Calibration

On the left of the screen, select the **A1-EPR Calibration** checkbox. The GRL-SCIS software will automatically run the selected calibration when initiated.

***Ensure the DUT power is turned OFF before starting the calibration.***

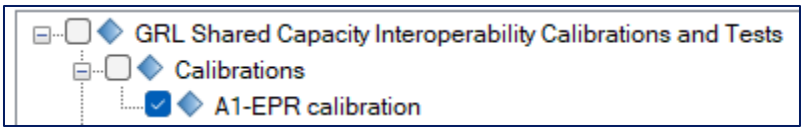



Figure 9. Select Shared Capacity Interoperability Calibration

*Note: The marking shown on the left of each calibration/test indicates the status of the calibration/test result. In the above example, ◆ indicates that calibration/testing has not been run for the respective calibration/test. When calibration/testing has been run and completed successfully for the respective calibration/test with a Pass result, this will be indicated with ✓.*

## 5.2 Configure Calibration Parameters

After selecting the calibration, the user can select  from the GRL-SCIS software menu to access the **Configurations** screen. Set the required parameters for calibration as described below.

To return all parameters to their default values, select the 'Set Default' button.


Figure 10. Calibration Parameters Configuration Screen

Table 4. Calibration Parameters Description

| Parameter | Description |
|---|---|
| **A1 Startup Path** | Enter the path to call the GRL-USB-PD-A1-EPR file for calibration. |

## 5.3 Run Calibration

Select  in the main software menu to access the Run Tests page.

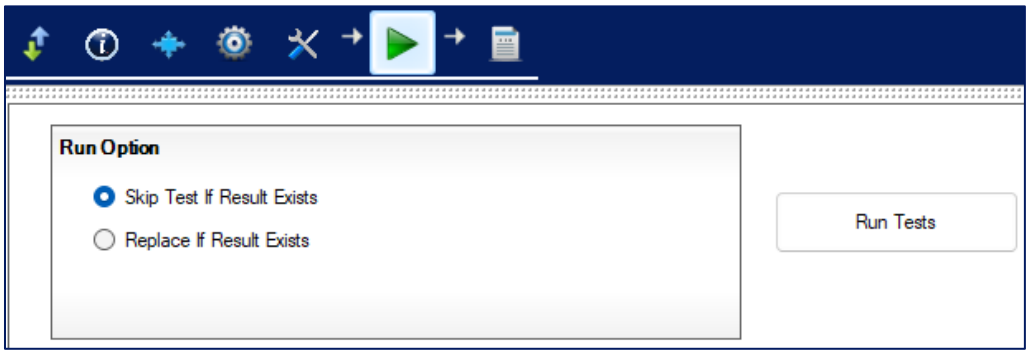



Figure 11. Run Calibration

Select the Run Option before clicking the “Run Tests” button to start selected calibration:

- **Skip Test if Result Exists.** If previous calibration results exist, then the software will *skip* the calibration steps that have existing reports.
- **Replace if Result Exists.** If previous calibration results exist, then the software will *replace* each step in the calibration with new results.

When calibration is running, the connection setup diagram of the respective calibration will initially appear as a guide for the user to make sure all connections are proper before calibration is performed.

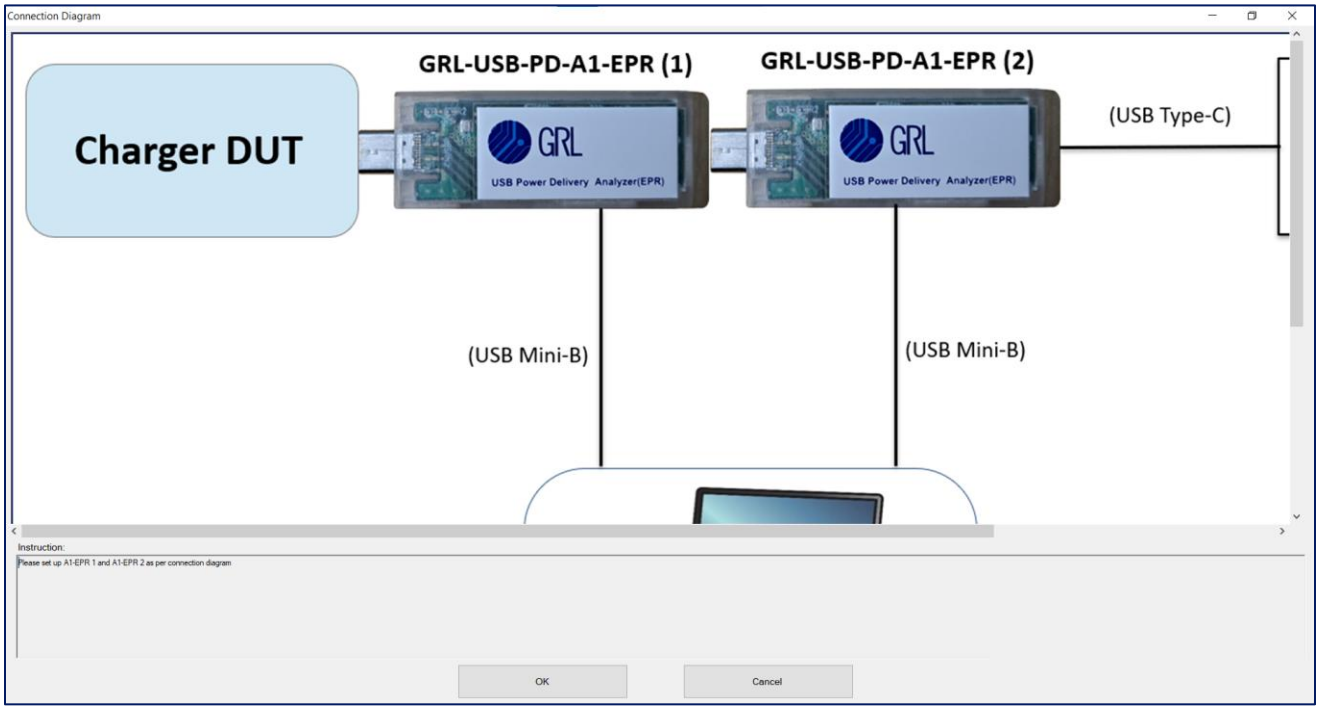



Figure 12. Calibration Connection Setup Diagram Dialog Example

The GRL-SCIS software will guide you through the calibration by prompting you to perform the necessary actions.

# 6 Perform Automated DUT Compliance Tests

This section describes how to run automated tests for compliance with the USB Type-C® Specification for shared capacity source power management requirements for USB Type-C® ports.

## 6.1 Hardware Connection Setup

Figure 13 below shows an example hardware setup for testing a USB Type-C®/Power Delivery based two-port charger DUT which is connected to a Sink device through the GRL-USB-PD-A1-EPR analyzer on each charger port. Both GRL-USB-PD-A1-EPR analyzers are connected to a control computer running the GRL-SCIS software for test automation control.

*Note: The Sink devices listed as Test Condition 1 to 6 in Section 2, Test Criteria will be used as the Sink Device 1 and Sink Device 2 respectively.*

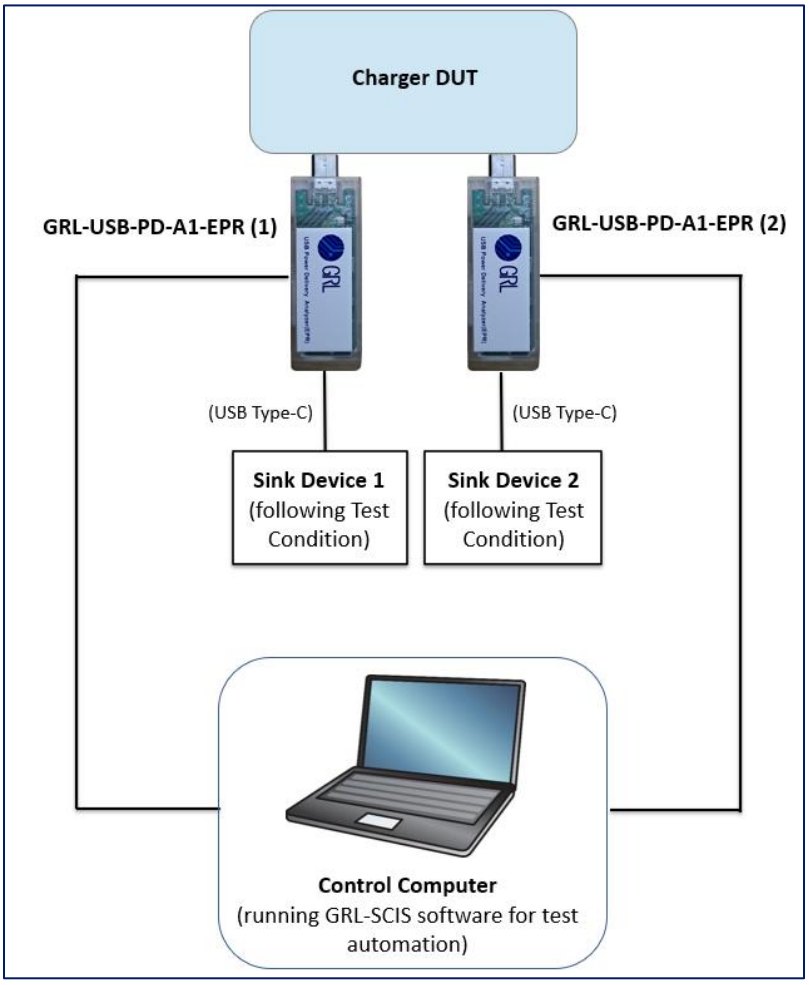



Figure 13. Hardware Connection Setup for USB Type-C® Shared Capacity Interoperability Compliance Test

Connect the devices according to the above connection diagram. When tests have completed, the GRL-SCIS software will generate a test report detailing all results obtained from the test runs.

## 6.2 Select Test Conditions

Select  from the GRL-SCIS software menu to access the **Power Sharing Conditions** screen to select the Test Condition 1 to 6. When running tests, the GRL-SCIS software will prompt the user to connect the ports on the charger DUT to the Sink Device 1 and Sink Device 2 for the selected Test Condition (see Section 2, Test Criteria).

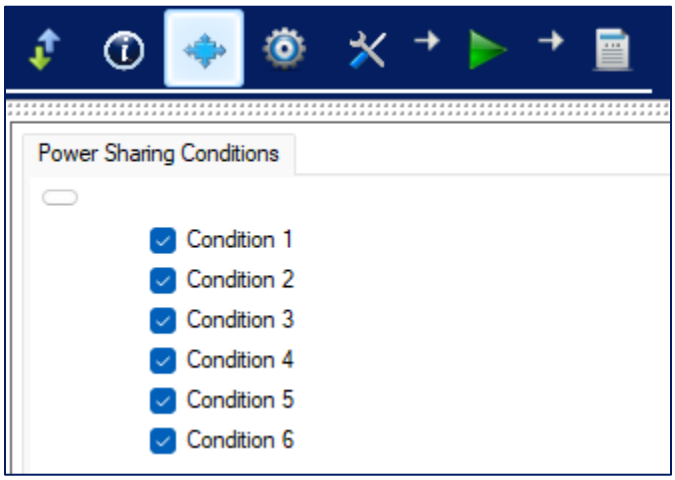



Figure 14. Select Test Conditions

## 6.3 Configure Test Conditions

The Sink Device 1 and Sink Device 2 for each Test Condition are defined in the specification by USB-IF. To change the Sink devices for a Test Condition, select  from the GRL-SCIS software menu and select the 'Enable Custom Sink' checkbox. Enter the name of the custom Sink device in the fields provided. If the default values are required again, just un-select the checkbox to allow all existing values to be reset to default.

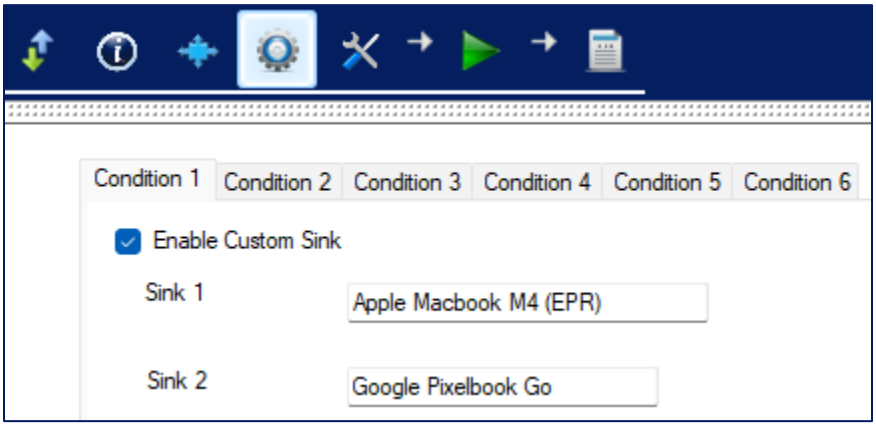



Figure 15. Configure Test Conditions

## 6.4 Select Shared Capacity Interoperability Test

On the left of the screen, select the **Power Sharing Test** checkbox. The GRL-SCIS software will automatically run the selected test when initiated.

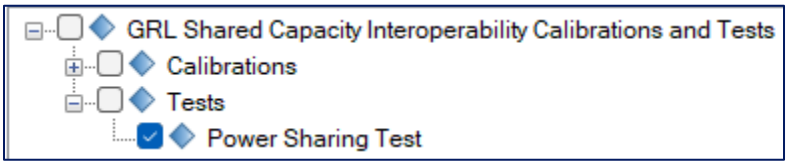



Figure 16. Select Shared Capacity Interoperability Test

*Note: The marking shown on the left of each calibration/test indicates the status of the calibration/test result. In the above example, ◆ indicates that calibration/testing has not been run for the respective calibration/test. When calibration/testing has been run and completed successfully for the respective calibration/test with a Pass result, this will be indicated with ✓.*

## 6.5 Configure Test Parameters

After selecting the test, select  from the menu to access the Configurations screen. Set the required parameters for testing as described below.

To return all parameters to their default values, select the 'Set Default' button.

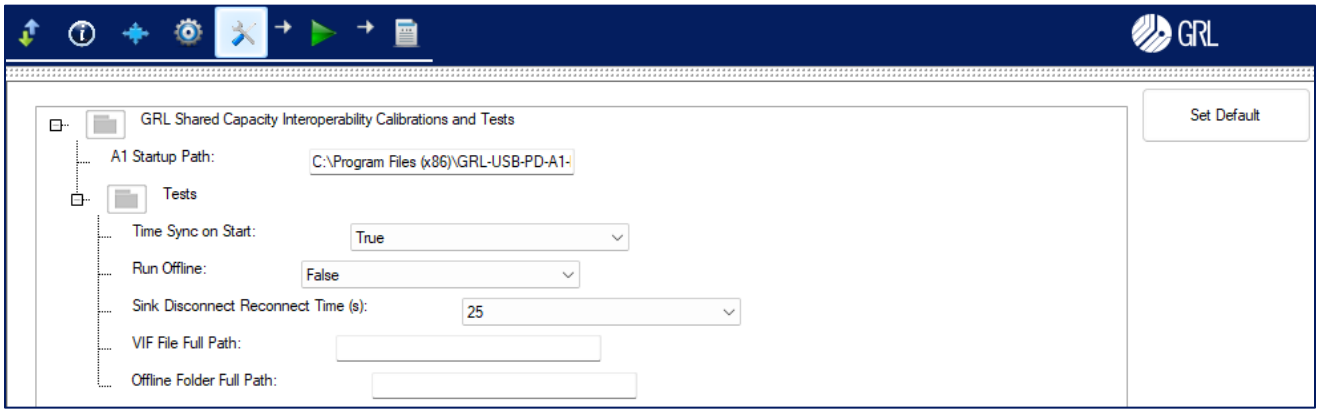



Figure 17. Test Parameters Configuration Screen

Table 5. Test Parameters Description

| Parameter | Description |
|---|---|
| **Time Sync on Start** | 'True' is set as default. To disable time synchronization at the start of test automation, select 'False'. |
| **Run Offline** | 'False is set as default. To perform test validation when the system is offline or powered off, select 'True'. *Refer to Section 9, Appendix A: Run Offline CSV Processing for more details.* |

| | |
|---|---|
| **Sink Disconnect Reconnect Time (s)** | Select the time duration (in seconds) to connect and disconnect the Sink devices as per the Test Conditions 1 to 6 during testing. |
| **VIF File Full Path** | Enter the path to call and load information from a selected Vendor Information File (VIF) for compliance testing. |
| **Offline Folder Full Path** | If running tests in the offline mode, enter the folder path to call and load the necessary test configuration. *Refer to Section 9, Appendix A: Run Offline CSV Processing for more details.* |

## 6.6 Run Automation Tests

Once the test has been selected and set up from the previous sections, the test is now ready to be run.

Select  from the menu to access the Run Tests screen. The GRL-SCIS application automatically runs the selected test when initiated.

Before running the test, select the option to:

- **Skip Test if Result Exists** – If results from the previous test exist, the GRL application will *skip* the test.
- **Replace if Result Exists** – If results from the previous test exist, the GRL application will *replace* the test with new results.

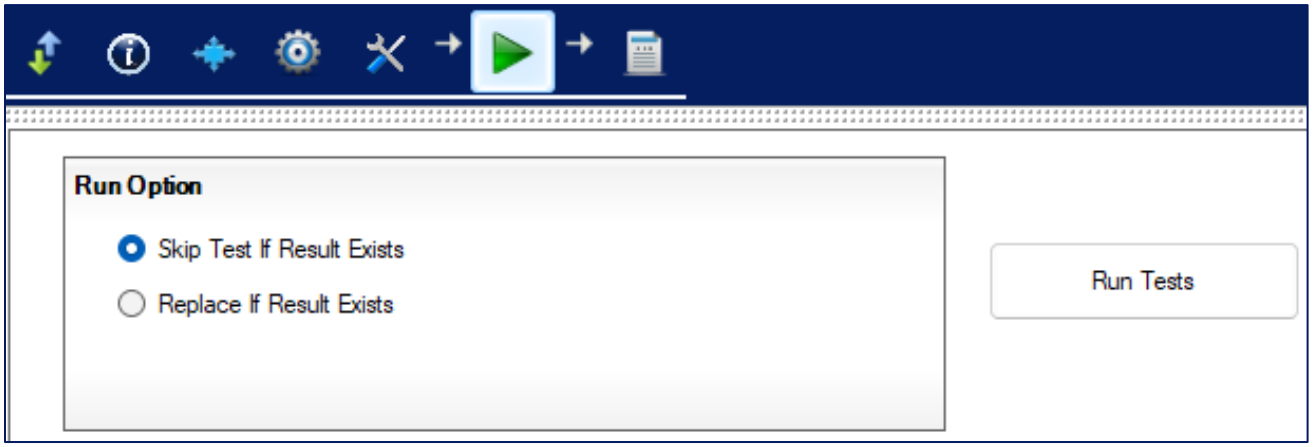



Figure 18. Run Tests Screen

Select the **Run Tests** button to start running the selected test. The connection diagram for the test being run will initially appear to allow the user to make sure all connections are proper prior to testing.

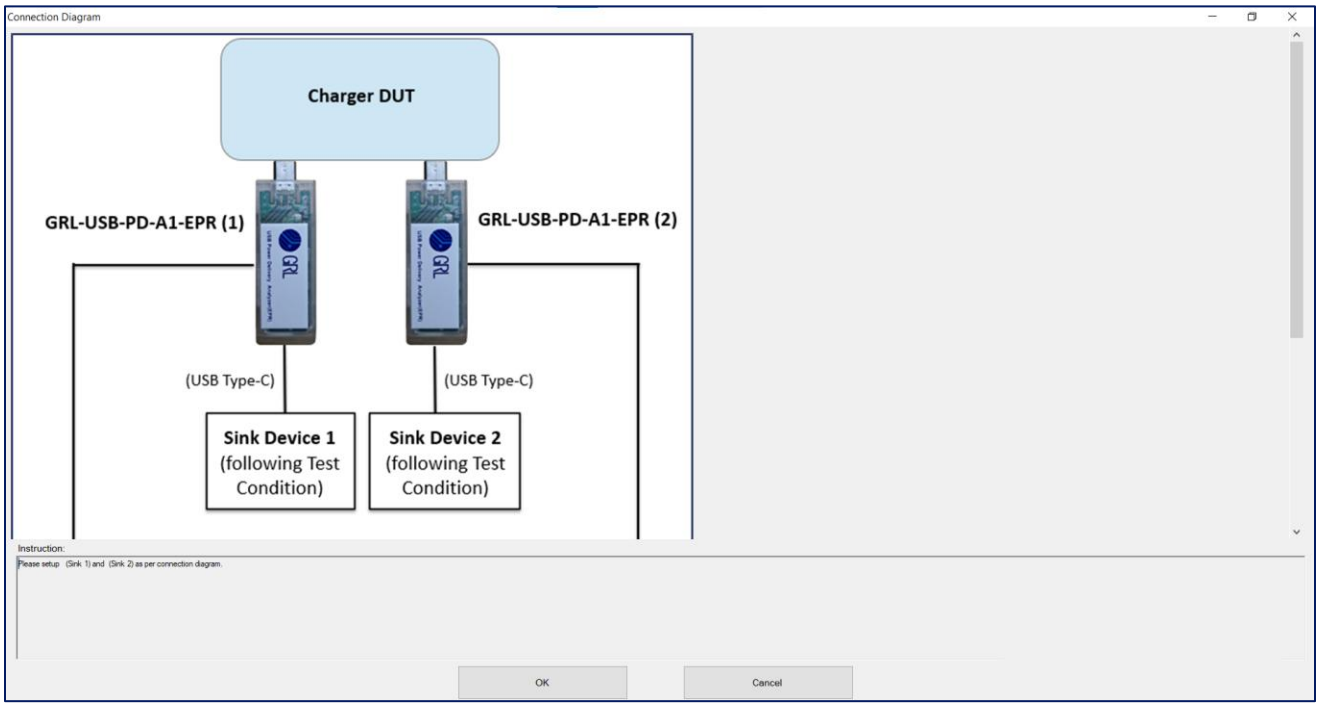



Figure 19. Test Connection Setup Pop-Up Diagram

The GRL-SCIS software will guide you through the test run by prompting you to perform the necessary actions, e.g., connect and disconnect the Sink devices, etc. as per the Test Conditions C1 to C6 (*see Section 2, Test Criteria*). At the same time, the GRL-SCIS software will perform verification checks V1 to V5 for each Test Condition to determine Pass/Fail for each test requirement.

# 7 Interpreting GRL-SCIS Test Report

When all calibration and test runs have completed from the previous section, the GRL-SCIS application will automatically display the results on the **Report** screen.

Select  from the menu to access the Report page for a quick view of all results.

If some of the results are not desired, they can be individually deleted by clicking on the **Delete** button.

For a detailed test report, click on the **Generate Report** button to generate a PDF report.

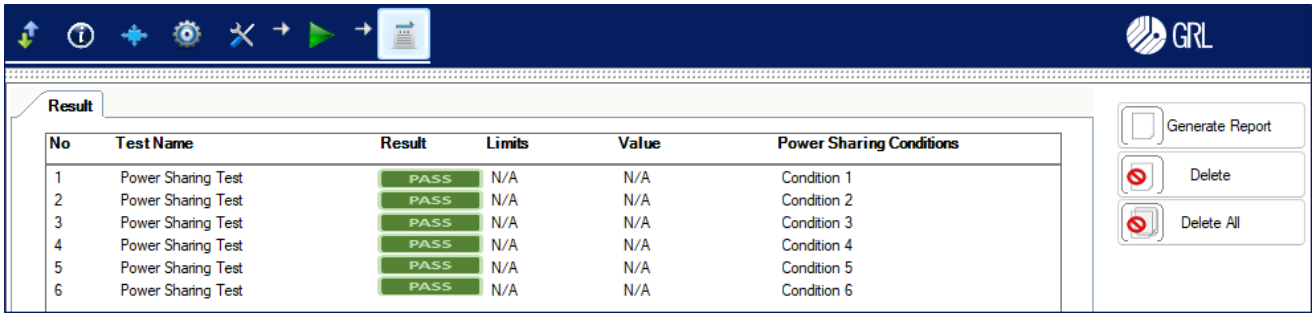



Figure 20. Test Report Page

## 7.1 Understand Test Report Information

This section gives a general overview of the test report to help users familiarize themselves with the format. Click on the **Generate Report** button to generate the test report.

### 7.1.1 Test Session Information

This portion displays the information previously entered on the **Session Info** page.

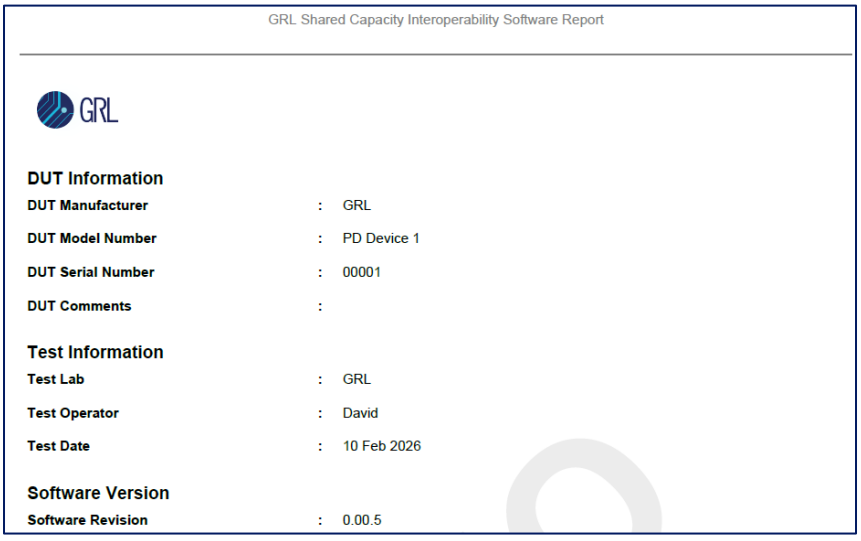



Figure 21. Test Session Information Example

### 7.1.2 Test Summary Table

This table provides an overall view of all the tests performed along with their conditions and results.

**GRL Shared Capacity Interoperability Software Report**

| No | TestName | Limits | Value | Results | Power Sharing Conditions |
|---|---|---|---|---|---|
| 1 | Power Sharing Test | N/A | N/A | Pass | Condition 1 |
| 2 | Power Sharing Test | N/A | N/A | Pass | Condition 2 |
| 3 | Power Sharing Test | N/A | N/A | Pass | Condition 3 |
| 4 | Power Sharing Test | N/A | N/A | Pass | Condition 4 |
| 5 | Power Sharing Test | N/A | N/A | Pass | Condition 5 |
| 6 | Power Sharing Test | N/A | N/A | Pass | Condition 6 |

Figure 22. Test Summary Table Example

### 7.1.3 Test Results

This portion displays the results in detail for each test run.

**6. Power Sharing Test [C6]**

| | | |
|---|---|---|
| Pass/Fail Stats | : | Pass |
| DUT Max Power | : | 68W |
| DUT Port 1 Power | : | 60W |
| DUT Port 2 Power | : | 60W |
| A1-EPR Serial Number 1 | : | 203639374D46570E0039001C |
| A1-EPR Serial Number 2 | : | 203639374D46570D0029002E |
| Sink 1 | : | Samsung S21 Phone |
| Sink 2 | : | Google Pixel 10 Phone |
| Verification 1 Result | : | Pass |
| Verification 1 Remark | : | - |
| Verification 2 Result | : | Pass |
| Verification 2 Remark | : | - |
| Verification 3 Result | : | Pass |
| Verification 3 Remark | : | - |
| Verification 4 Result | : | Pass |
| Verification 4 Remark | : | - |
| Verification 5 Result | : | Pass |
| Verification 5 Remark | : | - |
| Verification 6 Result | : | Pass |
| Verification 6 Remark | : | - |
| Overall Remark | : | None |
| Test completed time | : | 06 February 2026 15:22:59 PM |

Figure 23. Test Results Example

## 7.2 Delete Test Results

To individually delete any unwanted calibration/test results, select the corresponding result row and click on the **Delete** button.

To entirely remove all existing calibration/test results, click on the **Delete All** button.

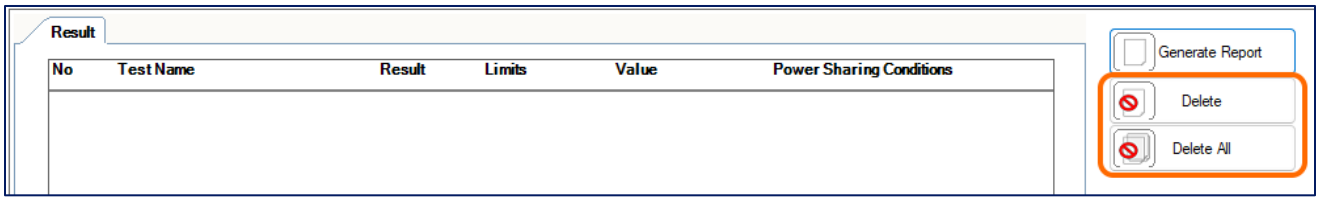



Figure 24. Delete Test Results

# 8 Saving and Loading GRL-SCIS Test Sessions

The usage model for the GRL-SCIS application is that the test results are created and maintained as a 'Live Session' in the application. This allows the user to quit the application and return later to continue where the user left off.

Save and Load Sessions are used to save a test session that the user may want to recall later. The user can 'switch' between different sessions by saving and loading them when needed.

- To ***save a test session***, with all of the test parameter information, test results, and any waveforms, select the Options drop-down menu and then select 'Save Session'.
- To ***load a test session*** back into the application, including the saved test parameter settings, select Options → 'Load Session'.
- To ***create a new test session*** and return the application back to the default configuration, select Options → 'New Session'.

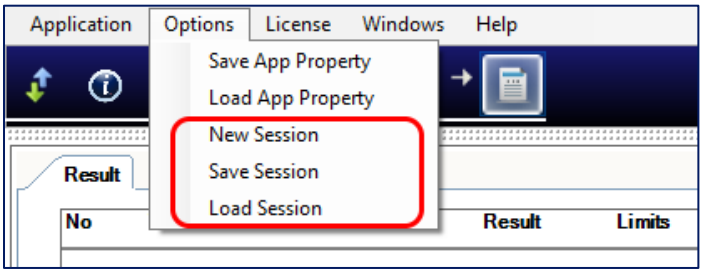



Figure 25. Save/Load/Create Test Sessions

The test configuration and session results are saved in a file with the '.ses' extension, which is a compressed zip-style file, containing a variety of information.

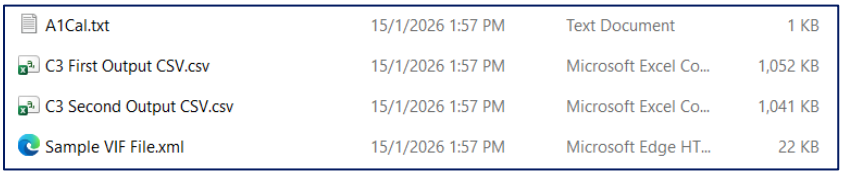
# 9 Appendix A: Run Offline CSV Processing

The offline CSV processing function is specifically used for processing the CSV file of Test Condition 1 to 6 from a previous test run.

1. To run offline CSV processing, the user needs to place the following files in a specific folder for the offline CSV processing to work properly.

   - First CSV output file
   - Second CSV output file
   - VIF XML file
   - A1Cal.txt file that was used by the setup to record the results

   See example below:

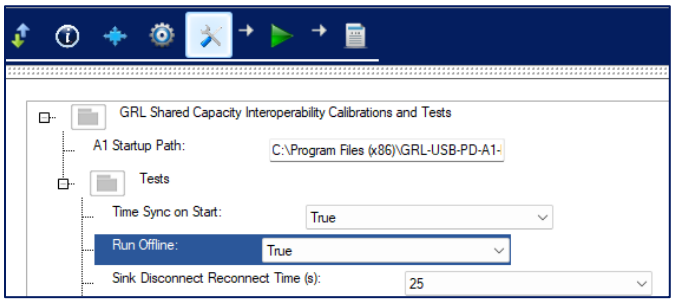



   Any VIF file with the XML extension can be used.

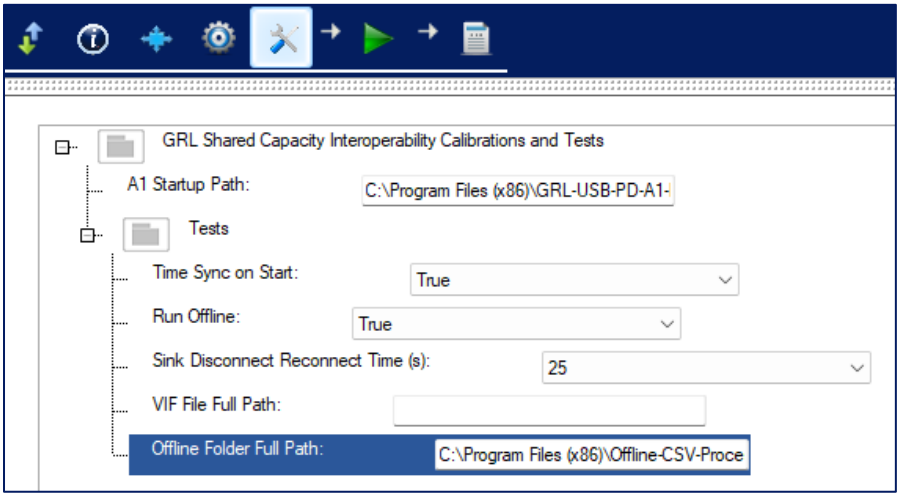
   The CSV files, however, require a certain naming convention for the files to be read by the GRL-SCIS software. For example, there are two CSV files called “C3 First Output CSV” and “C3 Second Output CSV” respectively. The GRL-SCIS software will look for the condition being run based on the starting name of “C1/C2/C3/C4/C5/C6” which denotes the condition they are currently running. Next, the GRL-SCIS software will look for whether the CSV file has the name “First” or “Second” in it. If there is, then the file with the “First” in its name will be designated as the first CSV while the file with the “Second” in its name will be designated as the second CSV.

   The A1Cal.txt that was generated after calibration is performed can be found within the AppData's Power Sharing Output folder (default path: “*C:\GRL\PD Test Solution\Applications\PDSharedCapacity\AppData\Power Sharing Output*”).

2. Once these four files are available inside the folder, return to the GRL-SCIS software and select  from the menu to access the Configurations screen. Set “Run Offline” to **True**:



3. Type in the path of the folder that contains the files in the “Offline Folder Full Path” field; example as shown below:




4. Select  from the menu to run the test for offline CSV processing. The GRL-SCIS software will process the CSV and VIF data and then proceed to check for each verification of the condition.

**End of Document**