



## **GRL Platform Solutions**

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

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# 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 GRL Platform Solutions support at [support@grlps.com](mailto:support@grlps.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@grlps.com](mailto:support@grlps.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 Platform Solutions 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 Platform Solutions 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. <i>Test Conditions Sink Device 1 and Sink Device 2.</i> |
| Control Computer (laptop or desktop)                       | 1    | Windows 10+ OS<br>For automation control                                                                                                                                      |
| 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 Platform Solutions Download Center— <https://www.grlps.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.

### 4.2 Install GRL-USB-PD-A1-EPR Analyzer Software

1. On a Windows 10 (or above) computer, download the GRL-USB-PD-A1-EPR software from the GRL Platform Solutions Download Center— <https://www.grlps.com/en-us/download-center#GRL-USB-PD-A1-EPR>.
2. Save the ZIP archive in a convenient folder and extract the GRL-USB-PD-A1-EPR 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-USB-PD-A1-EPR.
5. 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.

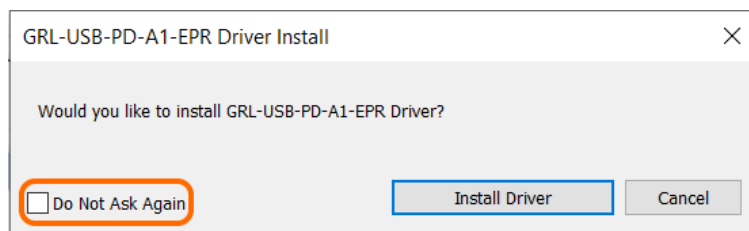


Figure 1. Prompt for GRL-USB-PD-A1-EPR Driver Installation

## 4.3 Start Up and Navigate GRL-SCIS Software

Once installed, launch the GRL-SCIS software. The main screen will be displayed as shown in the following example:

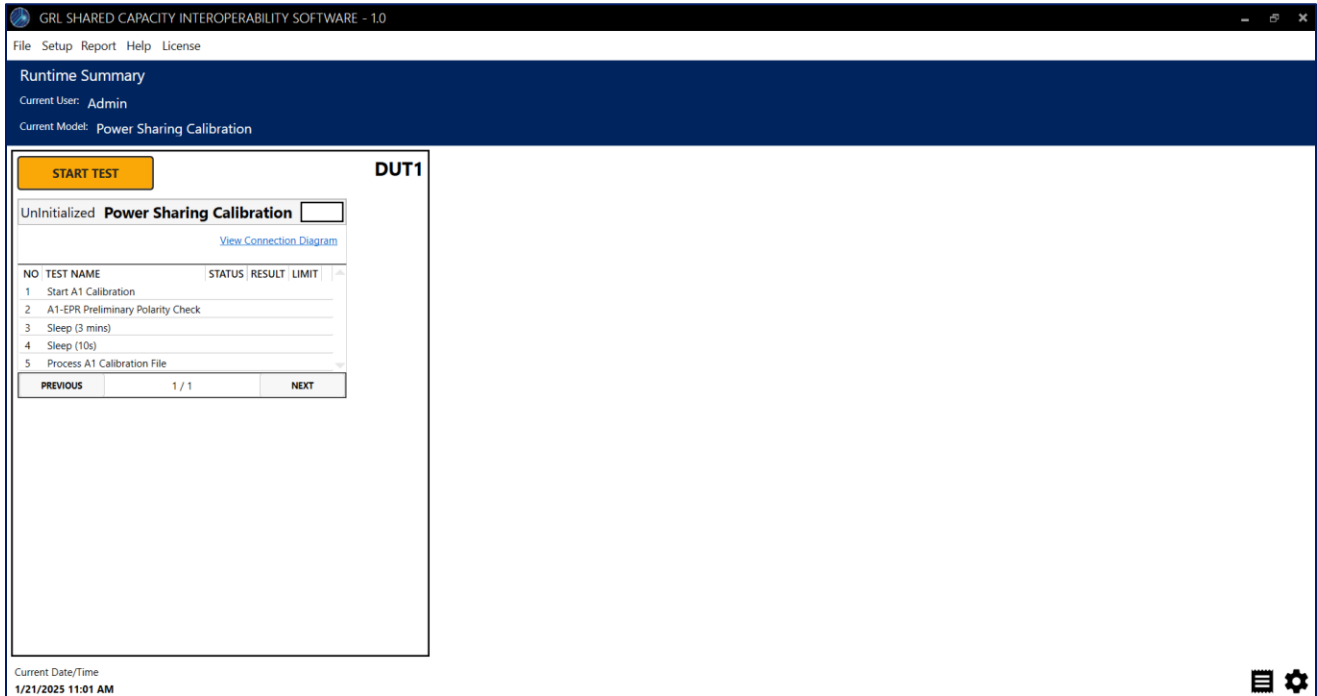


Figure 2. GRL-SCIS Main Screen Example

### 4.3.1 Access Main Screen Menus

- On the main screen, you can select the   menu buttons at the bottom right of the screen to access the corresponding features:
  - Test Reports**  – This allows you to view and manage test reports for all automated test runs for each DUT. You can also choose to delete any selected individual or all test records from the list. See *Section 7 for more details*.
  - Settings**  – This allows you to load the required test model for test execution. See *Section 5 for more details*.
- You can select other drop-down menus above the main screen of the GRL-SCIS to access the following:

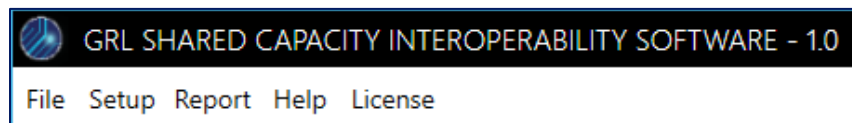


Figure 3. GRL-SCIS Top Drop-Down Menu Bar

- Select the **File** drop-down menu to exit the GRL-SCIS application.

- b) Select the **Setup** drop-down menu to load the required test model for test execution. This is similar to the  menu button at the bottom right of the main screen. See *Section 5 onwards for more details*.
- c) Select the **Report** drop-down menu to view and manage test reports for all automated test runs for each DUT. You can also choose to delete any selected individual or all test records from the list. This is similar to the  menu button at the bottom right of the main screen. See *Section 7 for more details*.
- d) Select the **Help** drop-down menu to change the language displayed on the GRL-SCIS or access the User Guide (this document) and software information of the GRL-SCIS.

### 4.3.2 Check and Activate License

1. From the top menu bar of the GRL-SCIS main screen, select the **License** drop-down menu to view the license status or check for the latest updates for the GRL-SCIS. See more details below:
  - a) From the **License** drop-down menu, select **Open License Info**.

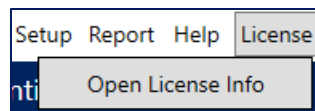


Figure 4. Open GRL-SCIS License Details

- b) Check the license status for the installed software.

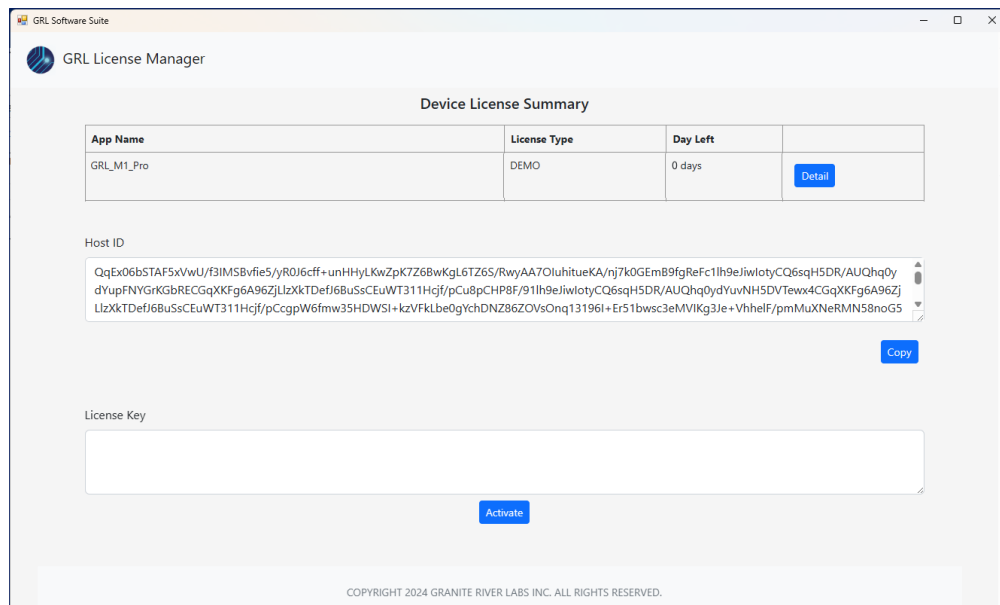


Figure 5. Check License for Installed Software

- c) If you have an Activation Key, enter it in the **License Key** field provided and select **Activate**. The installed software is ready for use upon successful activation.

- d) If you do not have an Activation Key, close the above window to use a demo version of the software 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 software on the same computer by contacting [support@grlps.com](mailto:support@grlps.com).*

## 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 USB Type-C® Power Delivery Performance 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 the GRL-USB-PD-A1-EPR analyzers are connected to a control computer running the GRL-SCIS software 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.*

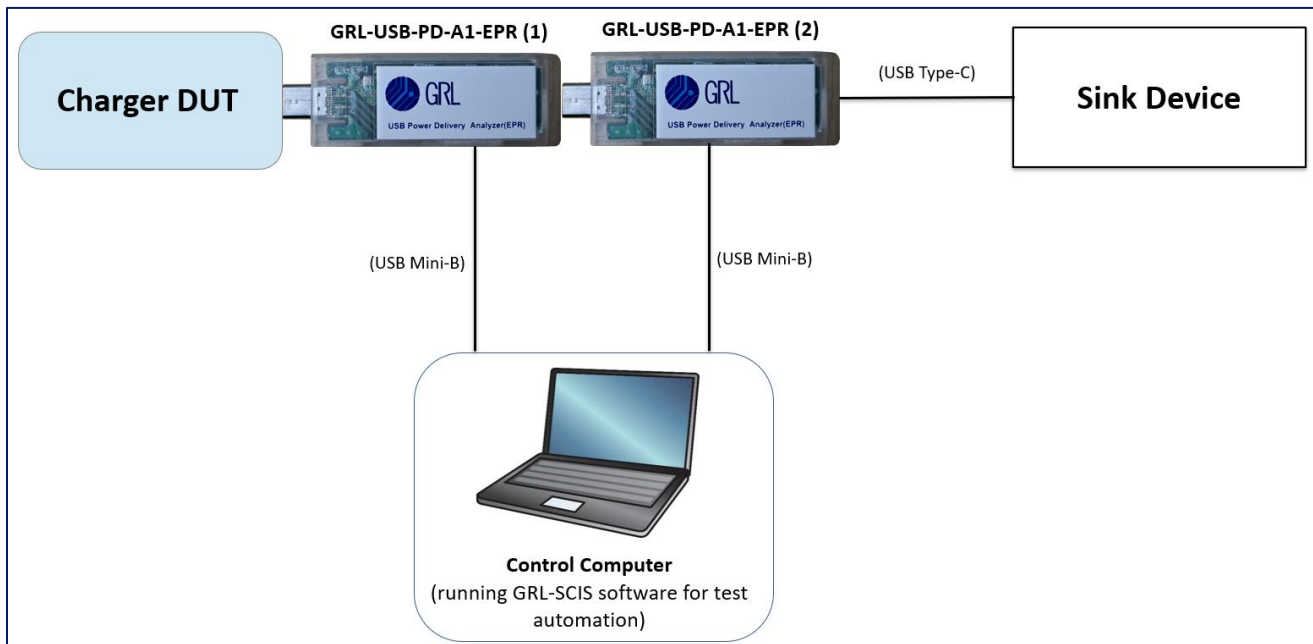
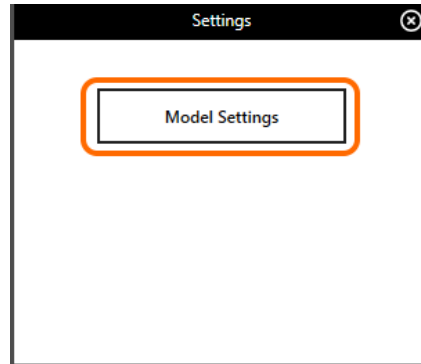


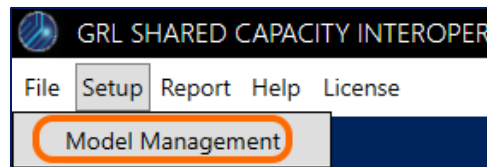
Figure 6. Hardware Connection Setup for USB Type-C® Shared Capacity Interoperability Calibration

The calibration will take approximately 3 minutes to complete. Follow the instructions on the GRL-SCIS software or refer to the steps below to perform the calibration.

1. Connect the devices according to the above connection diagram.
2. Click on the **Settings**  icon at the bottom right of the main screen. Select **Model Settings** to access the Runtime Management screen as shown in the Figure 7 example below.



- Alternatively, click on the **Setup** drop-down menu above the main screen of the GRL-SCIS. Select **Model Management** to access the Runtime Management screen as shown in the Figure 7 example below.



| Runtime Management                |            |      |      |                      |              |                        |      |      |       |
|-----------------------------------|------------|------|------|----------------------|--------------|------------------------|------|------|-------|
| MODEL NAME                        | ACTUAL QTY | PASS | FAIL | LAST UPDATED         | STATUS       | REMARKS                |      |      |       |
| Power Sharing Calibration         | 0          | 0    | 0    | 7/29/2024 2:30:53 PM | READY TO RUN |                        | LOAD | EDIT | RESET |
| Power Sharing Condition 6 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:11 PM |              |                        | LOAD | EDIT | RESET |
| Power Sharing Condition 5 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:21 PM |              |                        | LOAD | EDIT | RESET |
| Power Sharing Condition 4 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:34 PM |              |                        | LOAD | EDIT | RESET |
| Power Sharing Condition 3 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:44 PM |              |                        | LOAD | EDIT | RESET |
| Power Sharing Condition 2 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:54 PM |              |                        | LOAD | EDIT | RESET |
| Power Sharing Condition 1 (Debug) | 0          | 0    | 0    | 7/29/2024 2:32:06 PM |              |                        | LOAD | EDIT | RESET |
| Power Sharing Process CSV Only    | 0          | 0    | 0    | 7/29/2024 2:32:15 PM |              |                        | LOAD | EDIT | RESET |
| Power Sharing Full Run            | 0          | 0    | 0    | 7/29/2024 2:32:26 PM |              | Power Sharing Full Run | LOAD | EDIT | RESET |

Figure 7. Runtime Management Screen Example for Loading Test Model

- In the Runtime Management screen, click on the **Load** button for the “Power Sharing Calibration” model. The status will display **Ready To Run** which means the test model is now ready for calibration. Select **X** at the bottom right of the screen to close it and return to the main screen.
- Ensure the DUT power is turned OFF before starting the calibration.
- Click on the **Start Test**  button to start running the calibration as shown in Figure 8 below. The GRL-SCIS software will guide you through the calibration by prompting you to perform the necessary actions.

### Runtime Summary

Current User: Admin

Current Model: Power Sharing Calibration

START TEST

UnInitialized **Power Sharing Calibration**

[View Connection Diagram](#)

| NO | TEST NAME                         | STATUS | RESULT | LIMIT |
|----|-----------------------------------|--------|--------|-------|
| 1  | Start A1 Calibration              |        |        |       |
| 2  | A1-EPR Preliminary Polarity Check |        |        |       |
| 3  | Sleep (3 mins)                    |        |        |       |
| 4  | Sleep (10s)                       |        |        |       |
| 5  | Process A1 Calibration File       |        |        |       |

PREVIOUS

1 / 1

NEXT

DUT1

Figure 8. Start Calibration

## 6 Perform Automated DUT Compliance Tests

This section describes how to run automated tests for the selected test model 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 9 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 Analyzers on each charger port. Both the GRL-USB-PD-A1-EPR's 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.*

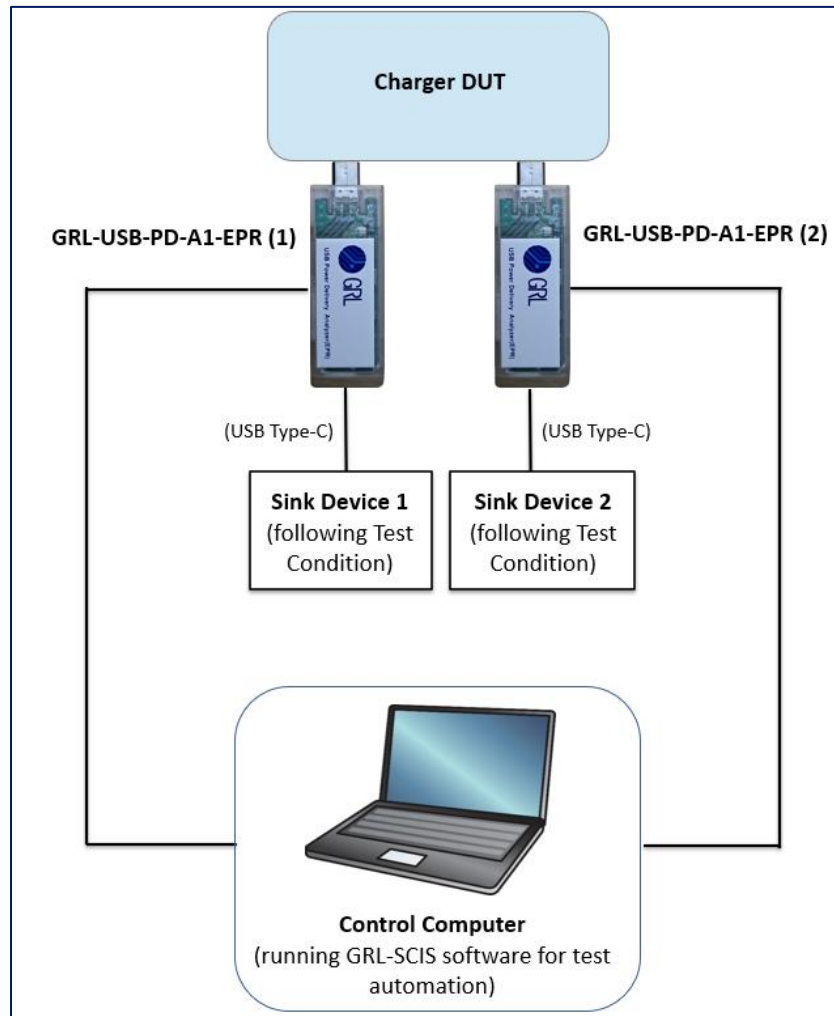
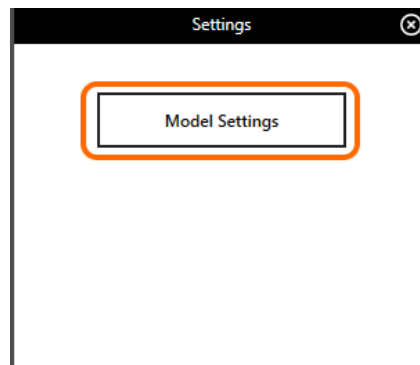


Figure 9. Hardware Connection Setup for USB Type-C® Shared Capacity Interoperability Compliance Test

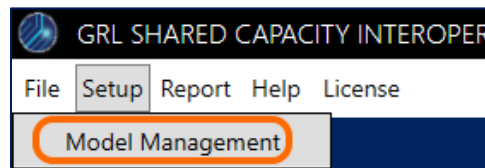
When tests have completed, the GRL-SCIS software will generate a test report detailing all results obtained from the test runs.

## 6.2 Test Procedure

1. Click on the **Settings**  icon at the bottom right of the main screen. Select **Model Settings** to access the Runtime Management screen as shown in the Figure 10 example below.



2. Alternatively, click on the **Setup** drop-down menu above the main screen of the GRL-SCIS. Select **Model Management** to access the Runtime Management screen as shown in the Figure 10 example below.



| MODEL NAME                        | ACTUAL QTY | PASS | FAIL | LAST UPDATED         | STATUS                 | REMARKS |      |      |       |            |        |        |
|-----------------------------------|------------|------|------|----------------------|------------------------|---------|------|------|-------|------------|--------|--------|
| Power Sharing Calibration         | 0          | 0    | 0    | 7/29/2024 2:30:53 PM | READY TO RUN           |         | LOAD | EDIT | RESET | DUPPLICATE | EXPORT | DELETE |
| Power Sharing Condition 6 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:11 PM |                        |         | LOAD | EDIT | RESET | DUPPLICATE | EXPORT | DELETE |
| Power Sharing Condition 5 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:21 PM |                        |         | LOAD | EDIT | RESET | DUPPLICATE | EXPORT | DELETE |
| Power Sharing Condition 4 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:34 PM |                        |         | LOAD | EDIT | RESET | DUPPLICATE | EXPORT | DELETE |
| Power Sharing Condition 3 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:44 PM |                        |         | LOAD | EDIT | RESET | DUPPLICATE | EXPORT | DELETE |
| Power Sharing Condition 2 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:54 PM |                        |         | LOAD | EDIT | RESET | DUPPLICATE | EXPORT | DELETE |
| Power Sharing Condition 1 (Debug) | 0          | 0    | 0    | 7/29/2024 2:32:06 PM |                        |         | LOAD | EDIT | RESET | DUPPLICATE | EXPORT | DELETE |
| Power Sharing Process CSV Only    | 0          | 0    | 0    | 7/29/2024 2:32:15 PM |                        |         | LOAD | EDIT | RESET | DUPPLICATE | EXPORT | DELETE |
| Power Sharing Full Run            | 0          | 0    | 0    | 7/29/2024 2:32:26 PM | Power Sharing Full Run |         | LOAD | EDIT | RESET | DUPPLICATE | EXPORT | DELETE |

IMPORT MODEL
ADD NEW MODEL

Current Date/Time  
1/11/2025 2:37 PM

Figure 10. Runtime Management Screen Example for Loading Test Model

3. In the Runtime Management screen, click on the **Load** button for the respective test model (if there is more than one test model). The status will display **Ready To Run** which means the test model is now ready for testing. Select  at the bottom right of the screen to close it and return to the main screen.

Runtime Management

| MODEL NAME                        | ACTUAL QTY | PASS | FAIL | LAST UPDATED         | STATUS       | REMARKS                |      |      |       |           |        |        |
|-----------------------------------|------------|------|------|----------------------|--------------|------------------------|------|------|-------|-----------|--------|--------|
| Power Sharing Calibration         | 0          | 0    | 0    | 7/29/2024 2:30:53 PM |              |                        | LOAD | EDIT | RESET | DUPLICATE | EXPORT | DELETE |
| Power Sharing Condition 6 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:11 PM |              |                        | LOAD | EDIT | RESET | DUPLICATE | EXPORT | DELETE |
| Power Sharing Condition 5 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:21 PM |              |                        | LOAD | EDIT | RESET | DUPLICATE | EXPORT | DELETE |
| Power Sharing Condition 4 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:34 PM |              |                        | LOAD | EDIT | RESET | DUPLICATE | EXPORT | DELETE |
| Power Sharing Condition 3 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:44 PM |              |                        | LOAD | EDIT | RESET | DUPLICATE | EXPORT | DELETE |
| Power Sharing Condition 2 (Debug) | 0          | 0    | 0    | 7/29/2024 2:31:54 PM |              |                        | LOAD | EDIT | RESET | DUPLICATE | EXPORT | DELETE |
| Power Sharing Condition 1 (Debug) | 0          | 0    | 0    | 7/29/2024 2:32:06 PM |              |                        | LOAD | EDIT | RESET | DUPLICATE | EXPORT | DELETE |
| Power Sharing Process CSV Only    | 0          | 0    | 0    | 7/29/2024 2:32:15 PM |              |                        | LOAD | EDIT | RESET | DUPLICATE | EXPORT | DELETE |
| Power Sharing Full Run            | 0          | 0    | 0    | 7/29/2024 2:32:26 PM | READY TO RUN | Power Sharing Full Run | LOAD | EDIT | RESET | DUPLICATE | EXPORT | DELETE |

IMPORT MODEL

ADD NEW MODEL

Current Date/Time  
1/1/2025 2:42 PM

X

Figure 11. Load Test Model to Run Tests

- On the main screen, you can view the hardware connection setup diagram to make sure all connections are proper prior to testing by selecting **View Connection Diagram**.

### Runtime Summary

Current User: Admin

Current Model: Power Sharing Full Run

START TEST

DUT1

UnInitialized

Power Sharing ☐

View Connection Diagram

| NO | TEST NAME                                                                          | STATUS | RESULT | LIMIT |
|----|------------------------------------------------------------------------------------|--------|--------|-------|
| 1  | Prompt Message (Set up power sharing connection condition 1)                       |        |        |       |
| 2  | Prompt Message (Turn ON DUT Power)                                                 |        |        |       |
| 3  | Automate A1 Initialization (C1 First Output.csv & C1 Second Output.csv)            |        |        |       |
| 4  | Prompt Message (Turn OFF DUT Power)                                                |        |        |       |
| 5  | Automate A1 Capture (C1 First Output.csv & C1 Second Output.csv)                   |        |        |       |
| 6  | Prompt Message (Turn ON DUT Power)                                                 |        |        |       |
| 7  | Sleep (25s)                                                                        |        |        |       |
| 8  | Prompt Message (Please disconnect Apple Macbook M4 (EPR))                          |        |        |       |
| 9  | Sleep (25s)                                                                        |        |        |       |
| 10 | Prompt Message (Please reconnect Apple Macbook M4 (EPR))                           |        |        |       |
| 11 | Sleep (25s)                                                                        |        |        |       |
| 12 | Prompt Message (Please disconnect Google Pixelbook Go)                             |        |        |       |
| 13 | Sleep (25s)                                                                        |        |        |       |
| 14 | Prompt Message (Please reconnect Google Pixelbook Go)                              |        |        |       |
| 15 | Sleep (25s)                                                                        |        |        |       |
| 16 | Automate A1 Stop and Save (C1 First Output.csv & C1 Second Output.csv)             |        |        |       |
| 17 | Prompt Message (Turn OFF DUT Power)                                                |        |        |       |
| 18 | Process CSV For Power Sharing (C1 First Output CSV.csv & C1 Second Output CSV.csv) |        |        |       |
| 19 | C1_V1: Gang Advertised Not More Than Maximum Output W                              |        |        |       |
| 20 | C1_V2: Port Advertised >= 7.5W While Powered                                       |        |        |       |
| 21 | C1_V3: Ports Notified When Power Reserve Changes                                   |        |        |       |

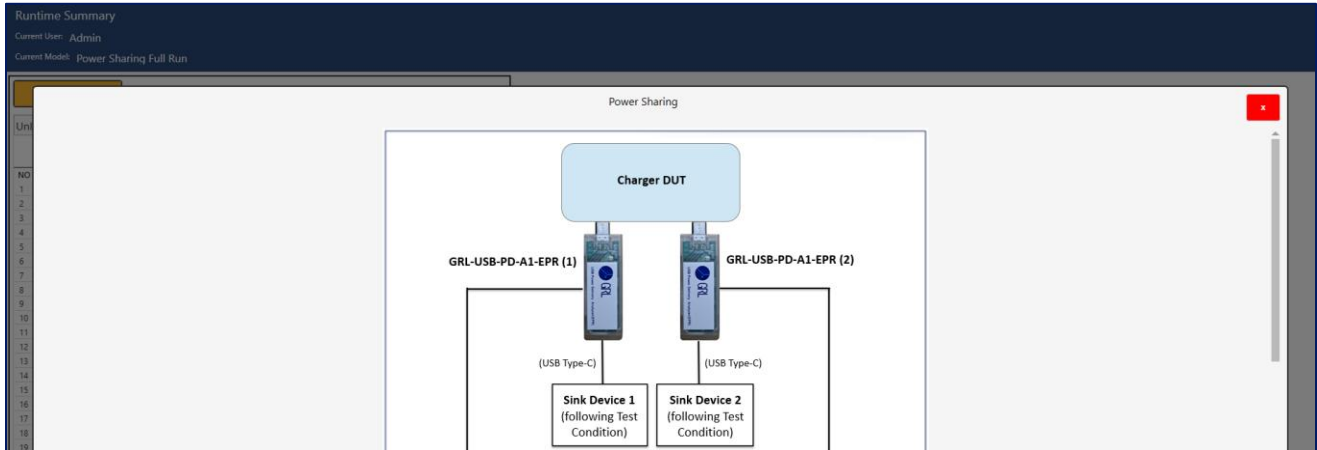


Figure 12. View Hardware Connection Diagram Example

- Click on the **Start Test**  button to start running tests as shown in the example below. 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.

Runtime Summary  
Current User: Admin  
Current Model: Power Sharing Full Run

START TEST

DUT1

Uninitialized

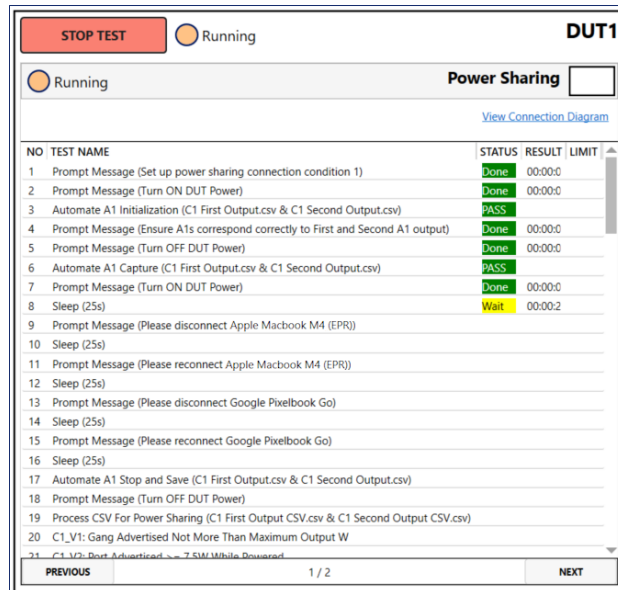
Power Sharing

View Connection Diagram

| NO | TEST NAME                                                                          | STATUS | RESULT | LIMIT |
|----|------------------------------------------------------------------------------------|--------|--------|-------|
| 1  | Prompt Message (Set up power sharing connection condition 1)                       |        |        |       |
| 2  | Prompt Message (Turn ON DUT Power)                                                 |        |        |       |
| 3  | Automate A1 Initialization (C1 First Output.csv & C1 Second Output.csv)            |        |        |       |
| 4  | Prompt Message (Turn OFF DUT Power)                                                |        |        |       |
| 5  | Automate A1 Capture (C1 First Output.csv & C1 Second Output.csv)                   |        |        |       |
| 6  | Prompt Message (Turn ON DUT Power)                                                 |        |        |       |
| 7  | Sleep (25s)                                                                        |        |        |       |
| 8  | Prompt Message (Please disconnect Apple Macbook M4 (EPR))                          |        |        |       |
| 9  | Sleep (25s)                                                                        |        |        |       |
| 10 | Prompt Message (Please reconnect Apple Macbook M4 (EPR))                           |        |        |       |
| 11 | Sleep (25s)                                                                        |        |        |       |
| 12 | Prompt Message (Please disconnect Google Pixelbook Go)                             |        |        |       |
| 13 | Sleep (25s)                                                                        |        |        |       |
| 14 | Prompt Message (Please reconnect Google Pixelbook Go)                              |        |        |       |
| 15 | Sleep (25s)                                                                        |        |        |       |
| 16 | Automate A1 Stop and Save (C1 First Output.csv & C1 Second Output.csv)             |        |        |       |
| 17 | Prompt Message (Turn OFF DUT Power)                                                |        |        |       |
| 18 | Process CSV For Power Sharing (C1 First Output CSV.csv & C1 Second Output CSV.csv) |        |        |       |
| 19 | C1_V1: Gang Advertised Not More Than Maximum Output W                              |        |        |       |
| 20 | C1_V2: Port Advertised >= 7.5W While Powered                                       |        |        |       |
| 21 | C1_V3: Ports Notified When Power Recieve Change                                    |        |        |       |

Figure 13. Start Test Run Example

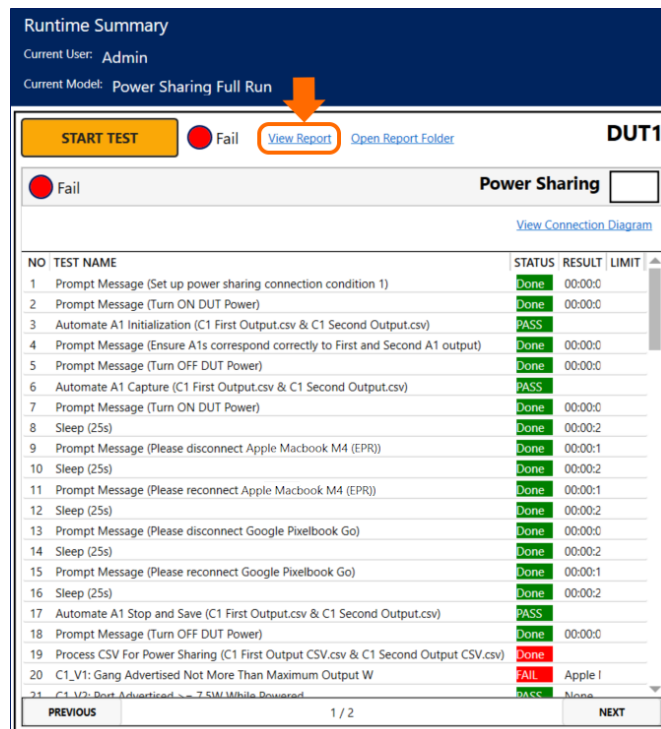
6. As tests are running, results of each test will be populated along with their respective status.



| NO | TEST NAME                                                                          | STATUS | RESULT | LIMIT   |
|----|------------------------------------------------------------------------------------|--------|--------|---------|
| 1  | Prompt Message (Set up power sharing connection condition 1)                       | Done   |        | 00:00:0 |
| 2  | Prompt Message (Turn ON DUT Power)                                                 | Done   |        | 00:00:0 |
| 3  | Automate A1 Initialization (C1 First Output.csv & C1 Second Output.csv)            | PASS   |        |         |
| 4  | Prompt Message (Ensure A1s correspond correctly to First and Second A1 output)     | Done   |        | 00:00:0 |
| 5  | Prompt Message (Turn OFF DUT Power)                                                | Done   |        | 00:00:0 |
| 6  | Automate A1 Capture (C1 First Output.csv & C1 Second Output.csv)                   | PASS   |        |         |
| 7  | Prompt Message (Turn ON DUT Power)                                                 | Done   |        | 00:00:0 |
| 8  | Sleep (25s)                                                                        | Wait   |        | 00:00:2 |
| 9  | Prompt Message (Please disconnect Apple Macbook M4 (EPR))                          |        |        |         |
| 10 | Sleep (25s)                                                                        |        |        |         |
| 11 | Prompt Message (Please reconnect Apple Macbook M4 (EPR))                           |        |        |         |
| 12 | Sleep (25s)                                                                        |        |        |         |
| 13 | Prompt Message (Please disconnect Google Pixelbook Go)                             |        |        |         |
| 14 | Sleep (25s)                                                                        |        |        |         |
| 15 | Prompt Message (Please reconnect Google Pixelbook Go)                              |        |        |         |
| 16 | Sleep (25s)                                                                        |        |        |         |
| 17 | Automate A1 Stop and Save (C1 First Output.csv & C1 Second Output.csv)             |        |        |         |
| 18 | Prompt Message (Turn OFF DUT Power)                                                |        |        |         |
| 19 | Process CSV For Power Sharing (C1 First Output CSV.csv & C1 Second Output CSV.csv) |        |        |         |
| 20 | C1_V1: Gang Advertised Not More Than Maximum Output W                              |        |        |         |

Figure 14. Test Results and Status Example

7. To terminate testing at any time, click on the **Stop Test** button. This will stop all test runs in progress for the test model.
8. When all test runs have completed, you can access the test report by selecting **View Report**.



| NO | TEST NAME                                                                          | STATUS | RESULT  | LIMIT   |
|----|------------------------------------------------------------------------------------|--------|---------|---------|
| 1  | Prompt Message (Set up power sharing connection condition 1)                       | Done   |         | 00:00:0 |
| 2  | Prompt Message (Turn ON DUT Power)                                                 | Done   |         | 00:00:0 |
| 3  | Automate A1 Initialization (C1 First Output.csv & C1 Second Output.csv)            | PASS   |         |         |
| 4  | Prompt Message (Ensure A1s correspond correctly to First and Second A1 output)     | Done   |         | 00:00:0 |
| 5  | Prompt Message (Turn OFF DUT Power)                                                | Done   |         | 00:00:0 |
| 6  | Automate A1 Capture (C1 First Output.csv & C1 Second Output.csv)                   | PASS   |         |         |
| 7  | Prompt Message (Turn ON DUT Power)                                                 | Done   |         | 00:00:0 |
| 8  | Sleep (25s)                                                                        | Done   |         | 00:00:2 |
| 9  | Prompt Message (Please disconnect Apple Macbook M4 (EPR))                          | Done   |         | 00:00:1 |
| 10 | Sleep (25s)                                                                        | Done   |         | 00:00:2 |
| 11 | Prompt Message (Please reconnect Apple Macbook M4 (EPR))                           | Done   |         | 00:00:1 |
| 12 | Sleep (25s)                                                                        | Done   |         | 00:00:2 |
| 13 | Prompt Message (Please disconnect Google Pixelbook Go)                             | Done   |         | 00:00:0 |
| 14 | Sleep (25s)                                                                        | Done   |         | 00:00:2 |
| 15 | Prompt Message (Please reconnect Google Pixelbook Go)                              | Done   |         | 00:00:1 |
| 16 | Sleep (25s)                                                                        | Done   |         | 00:00:2 |
| 17 | Automate A1 Stop and Save (C1 First Output.csv & C1 Second Output.csv)             | PASS   |         |         |
| 18 | Prompt Message (Turn OFF DUT Power)                                                | Done   |         | 00:00:0 |
| 19 | Process CSV For Power Sharing (C1 First Output CSV.csv & C1 Second Output CSV.csv) | Done   |         |         |
| 20 | C1_V1: Gang Advertised Not More Than Maximum Output W                              | FAIL   | Apple I |         |

Figure 15. Test Run Completed Example

## 7 Access Test Reports

After running a set of tests, the GRL-SCIS allows full reports to be created as shown in the following example:

GRL

Instrument Information

GRL M1-VUP software version:

Test Result ID:

Test Start:

Test End:

1.0

Report\_234\_PowerSharingProcessCSVOnly\_16\_1369\_20250114224144\_P

1/14/2025 10:41:38 PM

1/14/2025 10:41:44 PM

Test Results

Result for Process CSV(1369):

Max DUT Power

40W

Max Port One Power

40W

Max Port Two Power

40W

Condition 6: Samsung S21 Phone and Google Pixel 10 Phone

Overall: Pass

Remarks: None

Verification 1 Result

Verification 2 Result

Verification 3 Result

Verification 4 Result

Verification 5 Result

Result: Pass

Result: Pass

Result: Pass

Result: Pass

Result: Pass

Remarks: None

Remarks: None

Remarks: None

Remarks: None

Remarks: Google Pixel 10 Phone (C6 Second Output CSV) WMC Packet #22/45: Google Pixel 10 Phone (C6 Second Output CSV) contains Hard Reset messages but passes conventional USBPD reset protocol

Remarks: None

Other Verification Result

Result: Pass

Remarks: None

| Index | Port | Timestamp      | WMC Index | Power      | Data Type           | Description                                                                                                                              | Port 1 Advertised Power | Port 2 Advertised Power | Total Advertised Power | Port 1 Negotiated Power | Port 2 Negotiated Power | Total Negotiated Power | Total DUT Power |
|-------|------|----------------|-----------|------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------|------------------------|-------------------------|-------------------------|------------------------|-----------------|
| 0     | 1    | 5s 175ms 228us | 0         | Source DFP | Source_Capabilities | [1] 5000[mV]/3000[ma] (Unconstrained)(Peak Current=0) [2] 9000[mV]/2220[ma] (Peak Current=0) [3]5000-11000[mV]/2200[ma](PPSPowerLimited) | 19.98                   | 0                       | 19.98                  | 0                       | 0                       | 0                      | 40              |
| 1     | 1    | 5s 176ms 160us | 1         | Sink UFP   | GoodCRC             |                                                                                                                                          | 19.98                   | 0                       | 19.98                  | 0                       | 0                       | 0                      | 40              |
| 2     | 1    | 5s 185ms 219us | 2         | Sink UFP   | Request             | Position=1 (Operating Current=3000[ma])(Max Operating Current=3000[ma])(USB Communications Capable)(No USB Suspend)                      | 19.98                   | 0                       | 19.98                  | 0                       | 0                       | 0                      | 40              |
| 3     | 1    | 5s 185ms 940us | 3         | Source DFP | GoodCRC             |                                                                                                                                          | 19.98                   | 0                       | 19.98                  | 0                       | 0                       | 0                      | 40              |
| 4     | 1    | 5s 192ms 112us | 4         | Source DFP | Accept              |                                                                                                                                          | 19.98                   | 0                       | 19.98                  | 15                      | 0                       | 15                     | 40              |
| 5     | 1    | 5s 192ms 666us | 5         | Sink UFP   | GoodCRC             |                                                                                                                                          | 19.98                   | 0                       | 19.98                  | 15                      | 0                       | 15                     | 40              |
|       |      | 5s 224ms       |           |            |                     | [1] 5000[mV]/3000[ma] (Unconstrained)(Peak Current=0) [2] 9000[mV]/2220[ma]                                                              | 19.98                   | 19.98                   | 39.96                  | 15                      | 0                       | 15                     | 40              |

Figure 16. Test Report Example

There are two ways that you can view or manage test reports:

- On the main screen after test runs have completed, select **View Report** above the test results.

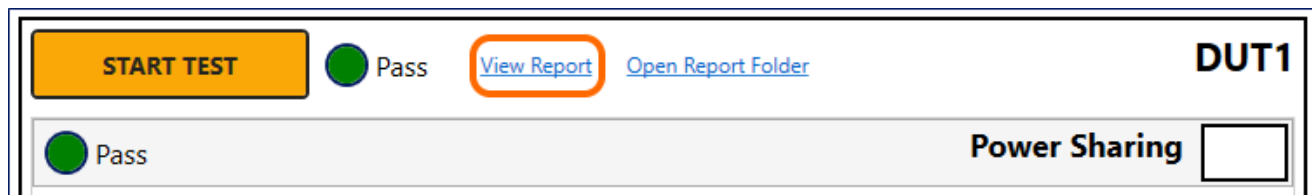


Figure 17. View Test Report from Main Screen After Test Run

- From the Test Report  icon at the bottom of the main screen. This will display a pop-up screen that allows you to view and manage test reports for a selected test run.

| Power Sharing Full Run                                                                                                                                                           |                                                |                 |      |        |                      |                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-----------------|------|--------|----------------------|---------------------------------------|
| All Results:                                                                                                                                                                     |                                                |                 |      |        |                      |                                       |
| SELECT                                                                                                                                                                           | RESULT SERIAL NO                               | SCANNED BARCODE | PORT | RESULT | DATE                 | ACTIONS                               |
| <input type="checkbox"/>                                                                                                                                                         | 232_PowerSharingFullRun_10_1341_20240322150240 |                 | 1    | Pass   | 3/22/2024 3:02:19 PM | VIEW REPORT DELETE OPEN FILE LOCATION |
| <input type="checkbox"/>                                                                                                                                                         | 232_PowerSharingFullRun_10_1341_20240322142245 |                 | 1    | Pass   | 3/22/2024 2:14:07 PM | VIEW REPORT DELETE OPEN FILE LOCATION |
| <input type="button" value="Uncheck All"/> <input type="button" value="Check All"/> <input type="button" value="Delete Selected"/> <input type="button" value="Open Directory"/> |                                                |                 |      |        |                      |                                       |

Figure 18. View and Manage Test Reports for Selected Test Run

- i) Use the top drop-down menu to select a test model to display all test results for the model as shown in the following example:

| Power Sharing Full Run                                                                                                                                                           |                                                |                 |      |        |                      |                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-----------------|------|--------|----------------------|---------------------------------------|
| Power Sharing Full Run                                                                                                                                                           |                                                |                 |      |        |                      |                                       |
| Power Sharing Process CSV Only                                                                                                                                                   |                                                |                 |      |        |                      |                                       |
| SELECT                                                                                                                                                                           | RESULT SERIAL NO                               | SCANNED BARCODE | PORT | RESULT | DATE                 | ACTIONS                               |
| <input type="checkbox"/>                                                                                                                                                         | 232_PowerSharingFullRun_10_1341_20240322150240 |                 | 1    | Pass   | 3/22/2024 3:02:19 PM | VIEW REPORT DELETE OPEN FILE LOCATION |
| <input type="checkbox"/>                                                                                                                                                         | 232_PowerSharingFullRun_10_1341_20240322142245 |                 | 1    | Pass   | 3/22/2024 2:14:07 PM | VIEW REPORT DELETE OPEN FILE LOCATION |
| <input type="button" value="Uncheck All"/> <input type="button" value="Check All"/> <input type="button" value="Delete Selected"/> <input type="button" value="Open Directory"/> |                                                |                 |      |        |                      |                                       |

Figure 19. Select a Test Model to View Results

- ii) For each test, select **View Report** to view the HTML test report or select **Delete** to remove the test from the list. To access the report file directory, select **Open File Location**.

The buttons at the bottom of the screen allow you to perform the following functions:

|                                            |                                          |                                                |                                               |
|--------------------------------------------|------------------------------------------|------------------------------------------------|-----------------------------------------------|
| <input type="button" value="Uncheck All"/> | <input type="button" value="Check All"/> | <input type="button" value="Delete Selected"/> | <input type="button" value="Open Directory"/> |
|--------------------------------------------|------------------------------------------|------------------------------------------------|-----------------------------------------------|

- **Uncheck All** – Un-select all tests.
- **Check All** – Select all tests.
- **Delete Selected** – Select a test to be removed from the list.
- **Open Directory** – Access the directory of the folder containing reports of all tests in the list.

To navigate to the test report folder of the current test run, select **Open Report Folder** above the test results.

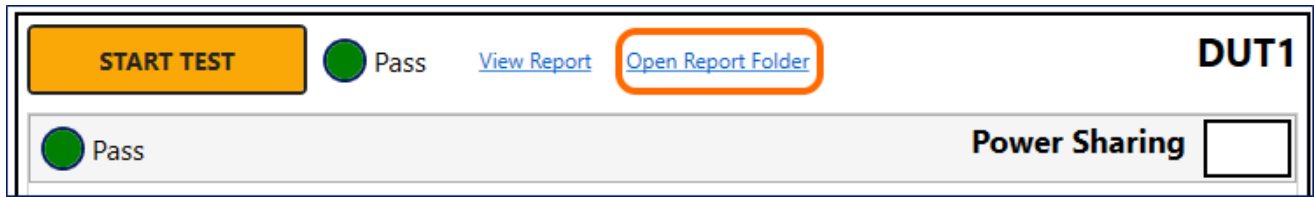


Figure 20. Open Test Report Folder from Main Screen After Test Run

## 8 Appendix A: Run Offline CSV Processing Model

The offline CSV processing model is specifically used for processing singular condition CSV from a previous test run. To run offline CSV processing, the user needs to load the “Power Sharing Process CSV Only” model as shown below.

| MODEL NAME                       | ACTUAL QTY | PASS | FAIL | LAST UPDATED         | STATUS       | REMARKS |                                                                                                          |
|----------------------------------|------------|------|------|----------------------|--------------|---------|----------------------------------------------------------------------------------------------------------|
| Power Sharing Process CSV Only 0 | 0          | 0    |      | 4/15/2024 4:05:06 PM | READY TO RUN |         | <div>LOAD</div> <div>EDIT</div> <div>RESET</div> <div>DUPLICAT</div> <div>EXPORT</div> <div>DELETE</div> |

- To perform a quick run, go to the GRL-SCIS directory and locate the “Power Sharing Offline Processing” folder.

|                                                                                                                    |                    |             |
|--------------------------------------------------------------------------------------------------------------------|--------------------|-------------|
|  ja-JP                            | 1/4/2024 3:07 PM   | File folder |
|  Logs                             | 29/2/2024 12:20 PM | File folder |
|  Migrations                       | 1/4/2024 3:07 PM   | File folder |
|  Modules                          | 16/4/2024 12:04 PM | File folder |
|  Power Sharing Offline Processing | 16/4/2024 11:39 AM | File folder |
|  Power Sharing Output             | 14/4/2024 10:12 PM | File folder |
|  Report                          | 15/4/2024 11:29 PM | File folder |

- The user needs to include the following files 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

|                                                                                                                  |                    |                       |        |
|------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------|--------|
|  Put Files In This Folder.txt | 13/1/2025 10:50 AM | Text Document         | 0 KB   |
|  A1Cal.txt                    | 15/1/2025 12:56 PM | Text Document         | 1 KB   |
|  Sample VIF.xml               | 29/7/2024 10:56 PM | Microsoft Edge HT...  | 19 KB  |
|  C5 First Output CSV.csv      | 15/1/2025 1:08 PM  | Microsoft Excel Co... | 892 KB |
|  C5 Second Output CSV.csv     | 15/1/2025 1:08 PM  | Microsoft Excel Co... | 909 KB |

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 “C5 First Output CSV” and “C5 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.

For A1Cal.txt, the file should be shared from the PC setup that ran the test.

3. Once these four files are available inside the folder, return to the GRL-SCIS software and run the test for the offline CSV processing model. 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**