



# Granite River Labs

## User Guide

### for GRL USB Type-C Power Delivery Tester and Analyzer (GRL-USB-PD-C2-EPR) IEC Safety Test Compliance

This material is provided as a reference to perform safety tests for both functional and controller aspects of the GRL-USB-PD-C2-EPR tester hardware in compliance with the IEC safety requirements.

For customer support, contact [support@graniteriverlabs.com](mailto:support@graniteriverlabs.com).

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## TABLE OF CONTENTS

|  |          |
|--|----------|
| <b>1 IEC FUNCTIONAL SAFETY TESTING</b>         | <b>5</b> |
| 1.1 IEC FUNCTIONAL SAFETY TEST PROCEDURE ..... | 5        |
| <b>2 IEC CONTROLLER SAFETY TESTING</b>         | <b>7</b> |
| 2.1 IEC CONTROLLER SAFETY TEST PROCEDURE ..... | 7        |

## LIST OF FIGURES

|  |   |
|--|---|
| Figure 1.1: GRL-USB-PD-C2-EPR Safety License Activation.....     | 5 |
| Figure 1.2: GRL-C2-EPR IEC Functional Safety Tests.....          | 5 |
| Figure 1.3: IEC Functional Safety Test Run Example .....         | 6 |
| Figure 1.4: IEC Functional Safety Test Report Example.....       | 6 |
| Figure 2.1: IEC Controller Safety Test Connection Setup .....    | 7 |
| Figure 2.2: GRL-C2-EPR IEC Controller Safety Test .....          | 7 |
| Figure 2.3: Controller Self-Test Run Pop-Up Message Example..... | 7 |

# 1 IEC Functional Safety Testing

To perform the IEC functional safety tests, the **GRL-C2-EPR-SAFETY** license activation is required as indicated in the GRL-USB-PD-C2-EPR Browser App. See Figure 1.1 below.

| License Information        |                             |                |
|----------------------------|-----------------------------|----------------|
| License Name               | License Type                | License Period |
| USB PD3 - 240W             | Permanent License Activated | -              |
| USB PD3 - 100W ⓘ           | Permanent License Activated | -              |
| USB-C Functional Tests     | Permanent License Activated | -              |
| GRL-C2-EPR-SAFETY          | Permanent License Activated | -              |
| Thunderbolt 3 Power Tests  | Permanent License Activated | -              |
| DP AUX Sniffer             | Permanent License Activated | -              |
| Quick Charge 3 Plus Tests  | Permanent License Activated | -              |
| Quick Charge 3 Tests       | Permanent License Activated | -              |
| Quick Charge 4 - IOP Tests | Permanent License Activated | -              |
| Quick Charge 4 Tests       | Permanent License Activated | -              |

FIGURE 1.1: GRL-USB-PD-C2-EPR SAFETY LICENSE ACTIVATION

For details on the GRL-USB-PD-C2-EPR test solution, see related user documentation at <http://graniteriverlabs.com/download-center/>. For any licensing questions and concerns, contact [support@graniteriverlabs.com](mailto:support@graniteriverlabs.com).

## 1.1 IEC Functional Safety Test Procedure

1. Connect the Unit Under Test (UUT) to the GRL-USB-PD-C2-EPR (aka GRL-C2-EPR) tester hardware.
2. Open the GRL-C2-EPR Browser App and go to the Test Configuration screen. Select the **IEC Functional Safety Tests** under the “All Certifications” category and run the tests. See Figure 1.2 below.

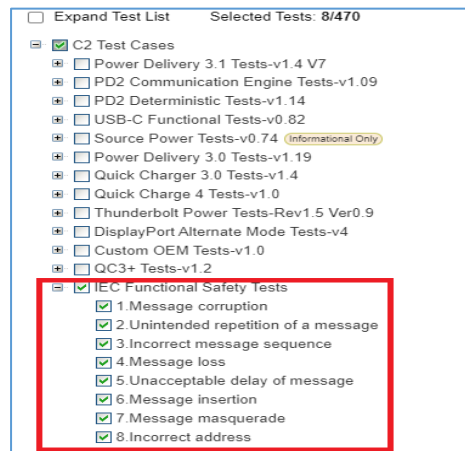


FIGURE 1.2: GRL-C2-EPR IEC FUNCTIONAL SAFETY TESTS

3. Details of the test run can be viewed in the Results screen as shown in the Figure 1.3 example below.

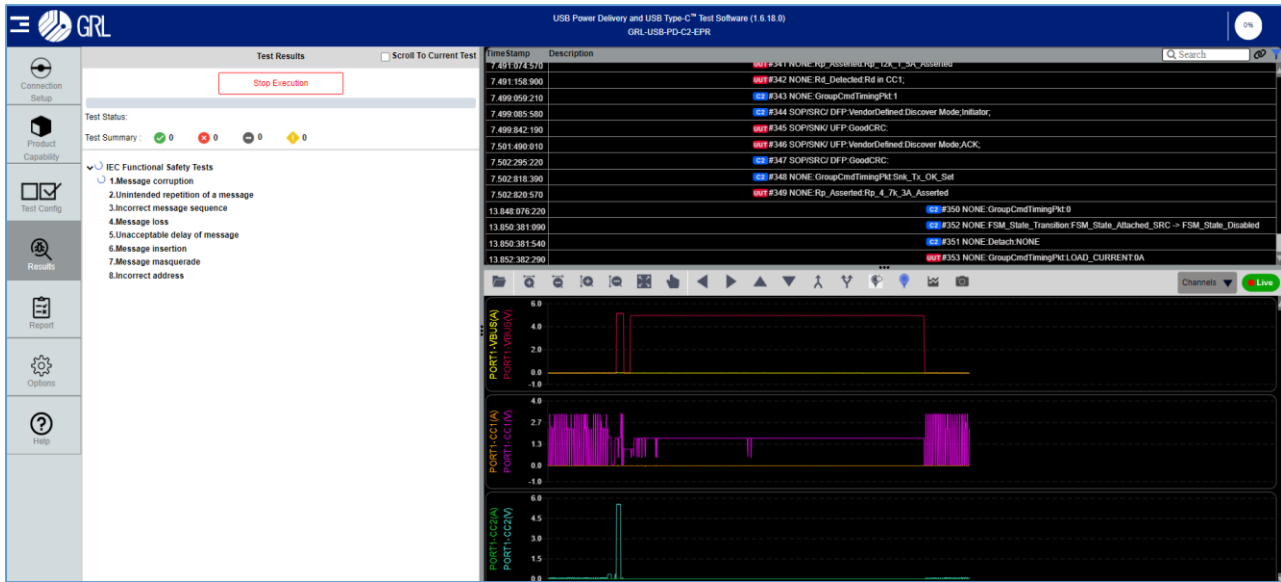


FIGURE 1.3: IEC FUNCTIONAL SAFETY TEST RUN EXAMPLE

4. After the tests have completed, test reports will be generated in the **TempReport** folder at “C:\GRL\USBPD-C2-Browser-App\Report\TempReport\C2EPR”. You can also view the test report on the Report screen. Below shows an example of the test report.

| IEC Functional Safety Tests(IEC 62368-1/IEC 61784-3) |  |             |
|--|--|-------------|
| Sl No  | Test Name  | Test Result |
| 1  | <a href="#">1.Message corruption</a>                 | PASS        |
| 2  | <a href="#">2.Unintended repetition of a message</a> | PASS        |
| 3  | <a href="#">3.Incorrect message sequence</a>         | PASS        |
| 4  | <a href="#">4.Message loss</a>                       | PASS        |
| 5  | <a href="#">5.Unacceptable delay of message</a>      | PASS        |
| 6  | <a href="#">6.Message insertion</a>                  | PASS        |
| 7  | <a href="#">7.Message masquerade</a>                 | PASS        |
| 8  | <a href="#">8.Incorrect address</a>                  | PASS        |

FIGURE 1.4: IEC FUNCTIONAL SAFETY TEST REPORT EXAMPLE

## 2 IEC Controller Safety Testing

To perform the IEC controller safety test, the **GRL-CAL-KIT fixture & cable** needs to be connected to the GRL-C2-EPR tester Ports as shown in Figure 2.1 below.



FIGURE 2.1: IEC CONTROLLER SAFETY TEST CONNECTION SETUP

### 2.1 IEC Controller Safety Test Procedure

1. After connecting the GRL-CAL-KIT fixture & cable, go to the **Options** screen and click on the **Controller Self Test** button under the “Config Controller” tab, as indicated in Figure 2.2 below.



FIGURE 2.2: GRL-C2-EPR IEC CONTROLLER SAFETY TEST

2. The GRL-C2-EPR tester will then run eight tests and display pop-up messages such as the example in Figure 2.3 below during the test run. Click “Ok” to proceed.

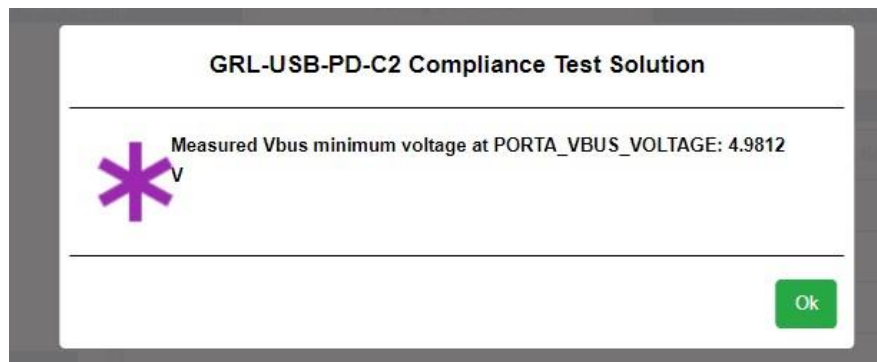


FIGURE 2.3: CONTROLLER SELF-TEST RUN POP-UP MESSAGE EXAMPLE

3. After the test has completed successfully, the test report will be generated in the **TempReport** folder at “C:\GRL\USBPD-C2-Browser-App\Report\TempReport\C2EPR\ControllerSelfTest”.

**END\_OF\_DOCUMENT**