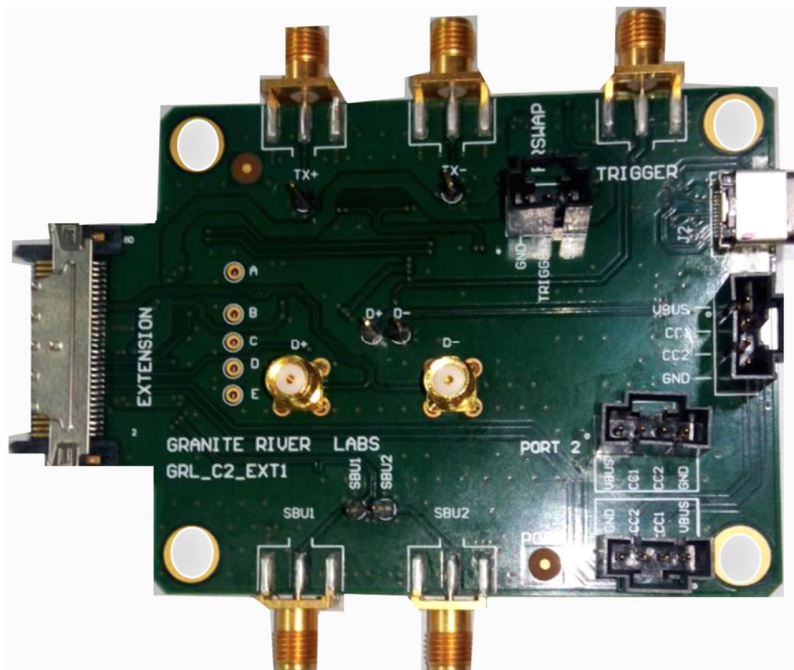


Granite River Labs

Addendum

for Hardware Setup with GRL-USB-PD-DPC Fixture and GRL USB Type-C Power Delivery Tester and Analyzer (GRL- USB-PD-C2)



This material is provided as a reference to set up the hardware for DisplayPort over Type-C (DPoC) Source testing using the Granite River Labs GRL-USB-PD-DPC fixture and GRL-USB-PD-C2 test controller.

For software support, contact support@graniteriverlabs.com.

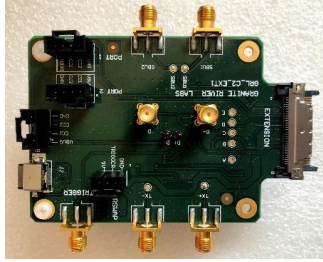
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1 Scope of this Addendum

This Addendum serves as the supplementary documentation for how to connect the GRL DisplayPort over Type-C PHY Tx Automation Test Board (GRL-USB-PD-DPC) to the GRL-USB-PD-C2 USB Type-C Test Controller. The GRL-USB-PD-DPC extension fixture can be used for DisplayPort Alt Mode over Type-C automated testing and controlling Low Frequency Periodic Signaling (LFPS) sequences in USB 3.0 system when connected to the GRL-USB-PD-C2 controller.

The GRL-USB-PD-DPC Board consists of a DP PHY extension fixture as follows:



GRL-C2-EXT1 DisplayPort Fixture, LFPS Control Board – EXT1 extension fixture for GRL-USB-PD-C2 test controller, used to provide support for DP PHY automation.

The GRL-USB-PD-DPC fixture interfaces with the GRL-USB-PD-C2 controller using the GRL-C2-EXT1 Extension Module controlling the SBU lines and Side-band signals (GND, CC1, CC2, Vbus).

The GRL-USB-PD-C2 (GRL-C2) hardware can be used as a DisplayPort over Type-C Source PHY test controller. It is designed to be used with DP Approved PHY test fixtures such as the GRL-C2-EXT1 DP fixture that attach to high performance oscilloscopes for automated PHY testing.

The GRL-C2 hardware can also be ordered as GRL-USB-PD-C2-CTRL, which is a version of the hardware that only provides PHY controller capability with Power Delivery features disabled.

The GRL-C2 hardware has an integrated DP AUX Controller with access provided over the SBU1/SBU2 lines for changing the PHY Data Rate, Swing, and Pre-Emphasis levels using DPCD (DisplayPort Configuration Data) control.

The GRL-C2 hardware also has available (through its SS USB Tx lines) LFPS Control signals for USB Tx PHY testing.

2 DPoC Test Setups with GRL-C2-EXT1 DP Fixture

Below are some test setup examples using the GRL-C2-EXT1 DP extension fixture as well as the Wilder-Tech or LS-ICT and the Keysight PHY test fixtures.

2.1.1 DPoC Test Setups Using GRL-C2-EXT1 and Wilder-Tech or LS-ICT Test Fixtures

The following shows setup for DP 4-Lane testing using GRL-C2, GRL-C2-EXT1 and Wilder-Tech plug fixtures.

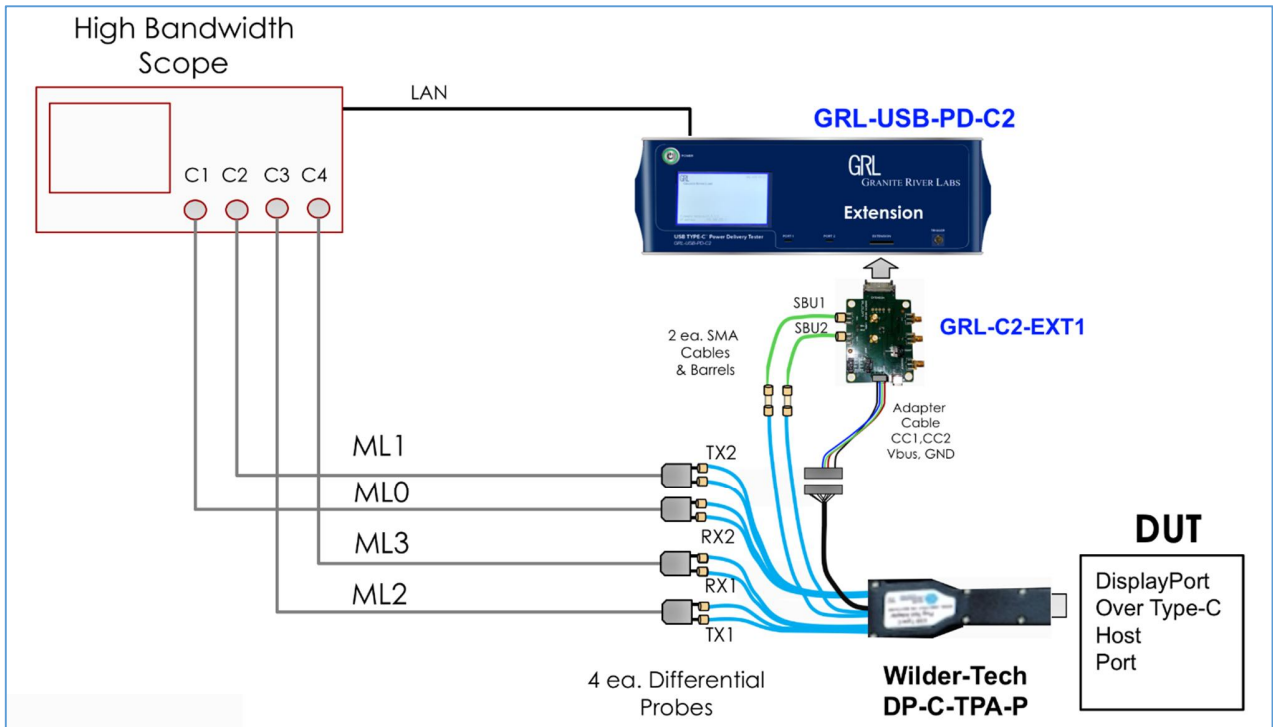


FIGURE 1. DP 4-LANE TESTING USING GRL-C2, GRL-C2-EXT1 AND WILDER-TECH PLUG FIXTURES

The following shows setup for DP 2+2 testing using GRL-C2, GRL-C2-EXT1 and Wilder-Tech fixtures. A SMA breakout fixture and SS USB thumb drive are used to create crosstalk between USB Link and DP Main Link signals.

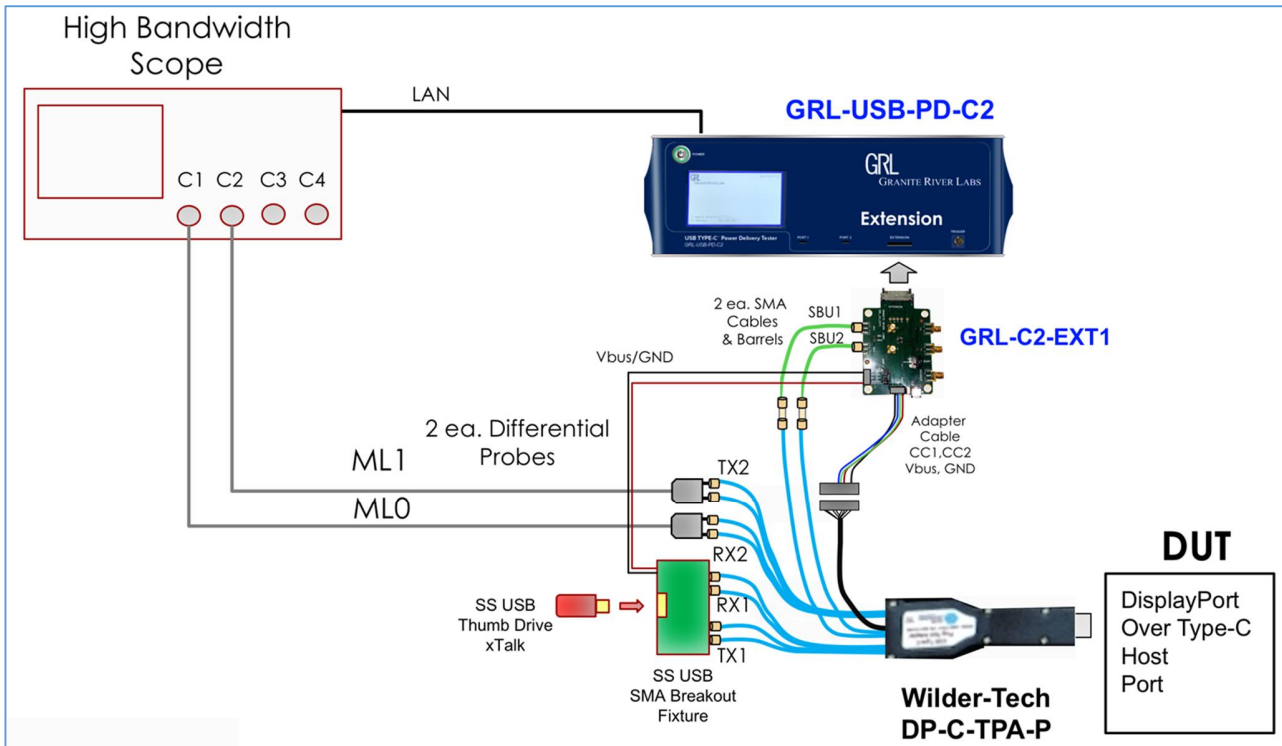


FIGURE 2. DP 2+2 TESTING USING GRL-C2, GRL-C2-EXT1 AND WILDER-TECH PLUG FIXTURES AND CROSSTALK

The test setup for the LS-ICT Plug fixture is similar except the (GND, CC1, CC2, Vbus) are on a 4-pin header instead of a 8-pin connector.

2.1.2 DPoC Test Setups Using Keysight PHY Test Fixtures

Below show setups for DP 4-Lane and 2+2 testing using GRL-C2, GRL-C2-EXT1 and Keysight PHY fixtures.

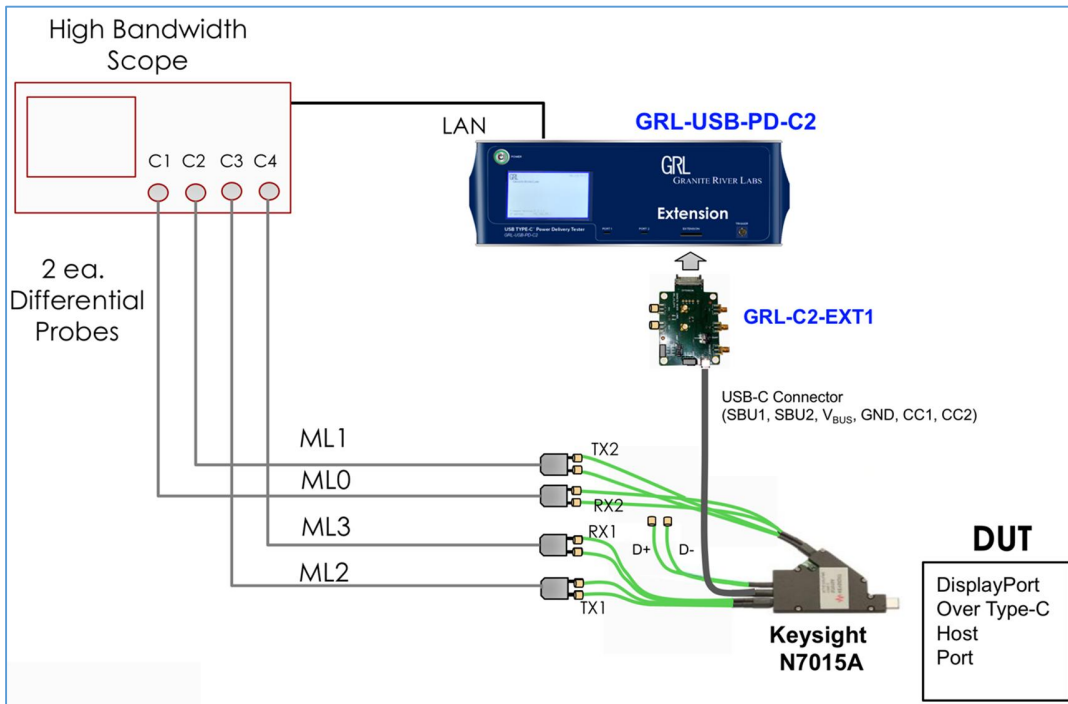


FIGURE 3. DP 4-LANE TESTING USING GRL-C2, GRL-C2-EXT1 AND KEYSIGHT PLUG FIXTURES

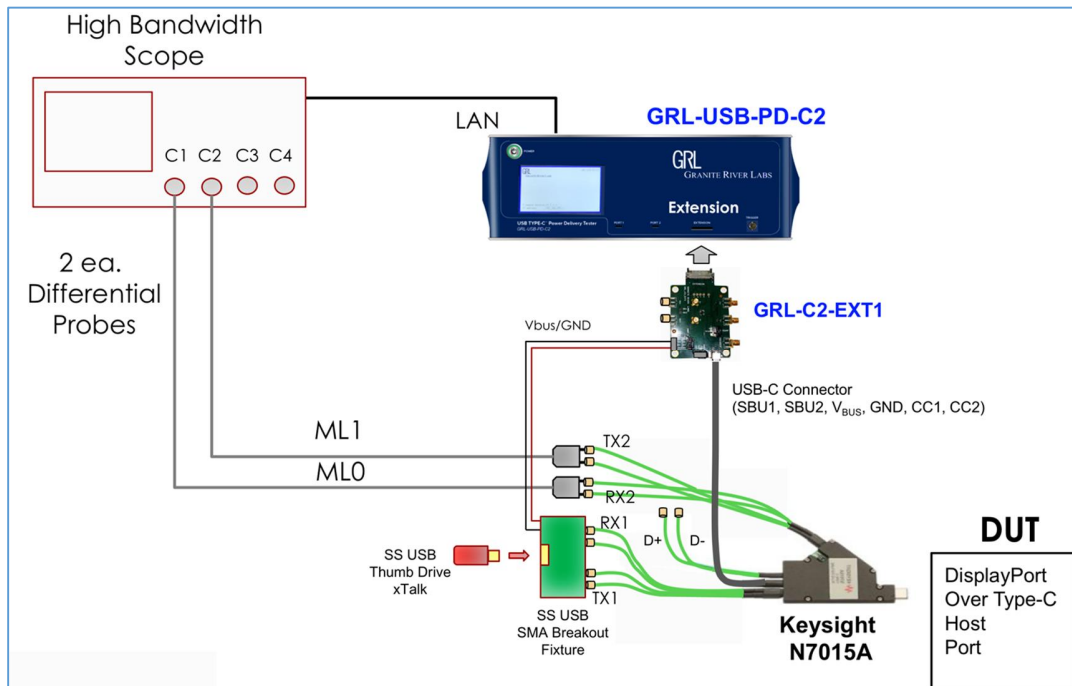


FIGURE 4. DP 2+2 TESTING USING GRL-C2, GRL-C2-EXT1 AND KEYSIGHT PLUG FIXTURES AND CROSSTALK

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