



SL-402 RELT Board

User Guide

Sil-UG-1004-B

August 2014

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1. Overview

Simplay Labs, LLC™ (SimplayLabs) has prepared this document to describe the features and operation of the SL-402-x RELT Board for Mobile High-Definition Link (MHL®) Specification 3.x compliance testing. SL-402 comes in 2 variations. The SL-402-A RELT Board is designed for Agilent probes while SL-402-T RELT Board is designed for Tektronix probes.

1.1. How to Use this Document

This document should be used in conjunction with the following documents:

- Mobile High-Definition Link (MHL®) Compliance Test Specification 3.x
- Mobile High-Definition Link (MHL®) Method of Implementation from relevant manufacturer

1.2. System Setup Requirements

Connect 12 V power supply to SL-402-x RELT Board.

1.3. SL-402 RELT Board

Figure 1.1 shows the SL-402-x RELT Board Interface.



Figure 1.1. SL-402-x RELT Board Interface

Item	Label	Description
1	12V	12 V power receptacle
2	D1	LED for state of eCBUS Relay Control [CN1]
CN1	CN1	eCBUS Relay Control
CN2	CN2	eCBUS +/- Relay
CN3	CN3	eCBUS +/- Relay
CN4	CN4	eCBUS +/- Relay
CN5	CN5	eCBUS +/- Relay
CN6	CN6	eCBUS +/- Relay
CN7	CN7	eCBUS +/- Relay
CN8	CN8	TMD5 +/- Input
CN9	CN9	Reference Clock Output to Test Equipment
CN10	CN10	TMD5 +/- Input

2. RELT Board – Frequency Divider

This section describes the frequency divider portion of the RELT Board.

2.1. Frequency Divider

The Frequency Divider portion of the RELT Board takes the TMDS input from the Device Under Test (DUT) and divides down the frequency to provide a reference clock to the test equipment. The frequency division is set through resistor configuration on the RELT Board. RELT Board supports divide by 1, divide by 2, divide by 4, and divide by 8 frequency divisions. The DUT TMDS +/- signals are connected to CN8 and CN10 of the RELT Board. CN9, output reference clock, is connected to the test equipment.

Table 2.1. Maximum Input Frequency Support

	Divide by 1	Divide by 2	Divide by 4	Divide by 8 [Default]
Maximum Input Frequency	1.5 GHz	3.0 GHz	3.0 GHz	3.0 GHz

Table 2.2. “Divide By” Resistor Configuration

Divide By	R9	R10
1	Open	Open
2	Open	0 Ω
4	0 Ω	Open
8	0 Ω	0 Ω

Note: See [Figure 3.1](#) for locations of R9 and R10.

3. RELT Board – Relay

This section describes the relay portion of the RELT Board.

3.1. Relay

The Relay portion of the RELT Board takes eCBUS signals and routes them between DUT and test equipment. One eCBUS path, PATH 1 as shown in [Figure 3.2](#), allows the testing of the DUT. The second eCBUS path, PATH 2 as shown in [Figure 3.2](#), allows for configuration of the DUT through the eCBUS SINK/SOURCE Boards. The Relay paths are control through Relay Switch CN1.

Table 3.1. eCBUS Paths

Relay Switch State [CN1]	Signal Path	
0 [PATH 1]	CN2 ↔ CN3	CN4 ↔ CN5
1 [PATH 2]	CN2 ↔ CN7	CN4 ↔ CN6

Note: See [Figure 3.2](#).

3.2. Differential eCBUS

CN2/CN4, CN3/CN5, and CN6/CN7 are connected to the eCBUS differential +/--pairs. The +/- pairs are interchangeable with the options shown in [Table 3.2](#).

Table 3.2. eCBUS Differential eCBUS Options

Pair	Option 1		Option 2	
	eCBUS+	eCBUS–	eCBUS+	eCBUS–
1	CN2	CN4	CN4	CN2
2	CN3	CN5	CN5	CN3
3	CN7	CN6	CN6	CN7

3.3. Single Ended eCBUS

Either CN2/CN3/CN7 or CN4/CN5/CN6 path can be used for single ended eCBUS testing. One path allows the test equipment to configure the DUT into the necessary test mode. The second path allows the test equipment to run the test.

3.4. eCBUS Probe Points

Signal	Description
+3.3V	Test point for 3.3V supply
5V	Test point for 5.0V supply
J9	Test point for 12.0V supply
GND	Test point for GND
J4/GND	Test point for GND
J8/GND	Test point for GND
J1.1	CN6 GND
J1.2	CN6 SIGNAL
J1.3	CN7 SIGNAL
J1.4	CN7 GND
J2.1	CN5 GND
J2.2	CN5 SIGNAL
J2.3	CN3 SIGNAL
J2.4	CN3 GND
JP1	For test purposes only

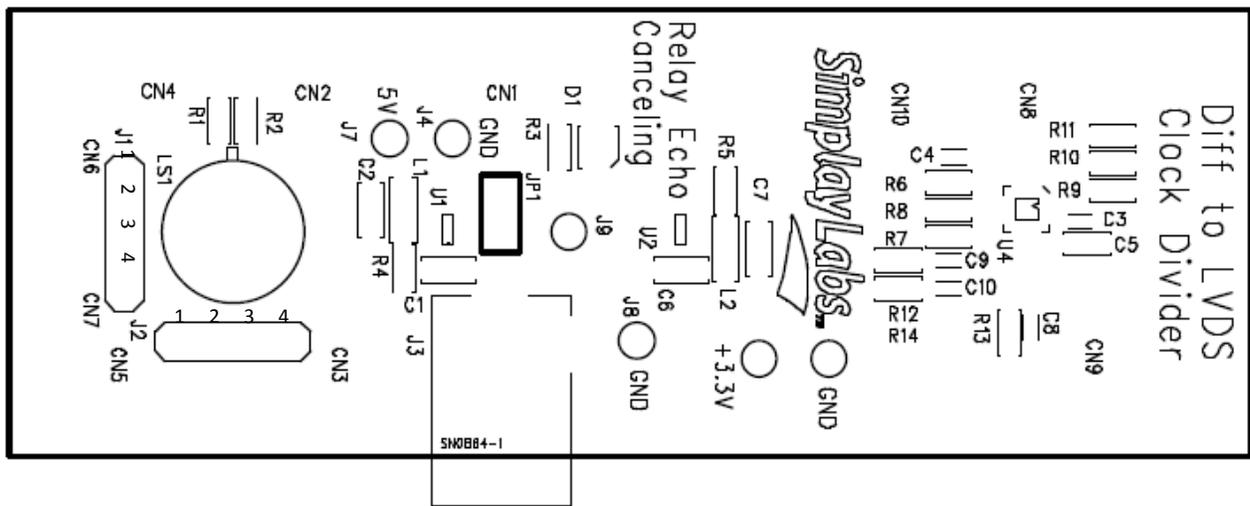


Figure 3.1. RELT Board Silkscreen Markings

Headers J1 and J2 are probe points for the oscilloscope probes. SL-402-A and SL-402-T use different headers since Agilent probes and Tektronix probes have different probe tips. For Tektronix 4.0 GHz P7240 Active Probe or similar probes, the GND socket is recessed vs. the probe tip socket. In this case, users should use Tektronix GND pin length adapters (Tektronix part number: 016-1773-00) when connecting the probe to J1.

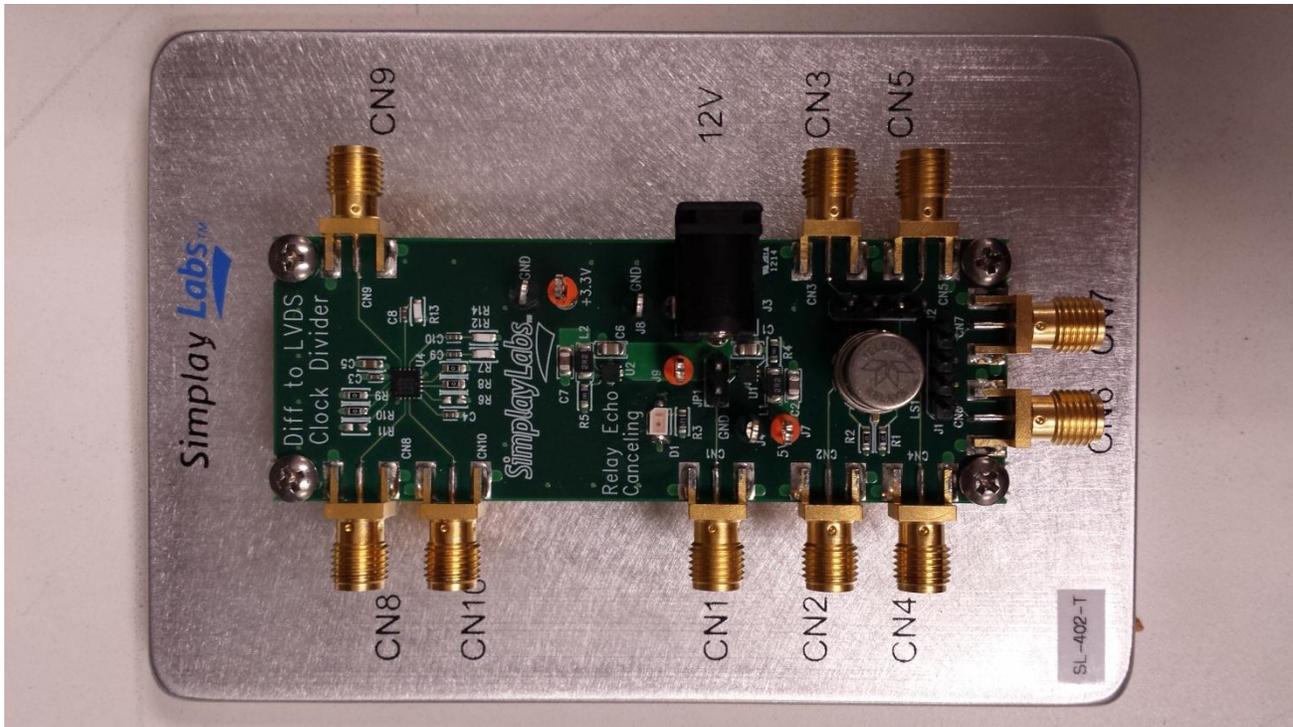


Figure 3.2. eCBUS Relay Paths

Revision History

Revision B, August 2014

Moved legal information to the back.

Revision A, June 2014

First production release.

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