DS280MB810EVM User's Guide

The DS280MB810 is an 8 Channel Linear Repeater with the ability to extend the reach and robustness of high speed serial links for up to 28 Gbps interfaces. Simplified equalization control, low power consumption, and ultra-low additive jitter make the DS280MB810 ideal for front-port interfaces such as 100G-SR4/LR4/CR4 and backplane applications. The small 8 mm x 13 mm package easily fits behind numerous standard front-port connectors, including SFP28, QSFP28, CFP2/CFP4, and CDFP, without the need for a heat sink. The optimized package dimensions, high-speed signal escape, and the pin-compatible retimer portfolio make the DS280MB810 well-suited for high-density backplane and front port applications. The DS280MB810 can be configured via the default SMBus slave mode or with an external EEPROM. With this kit, users can quickly evaluate the linear equalizer's performance.

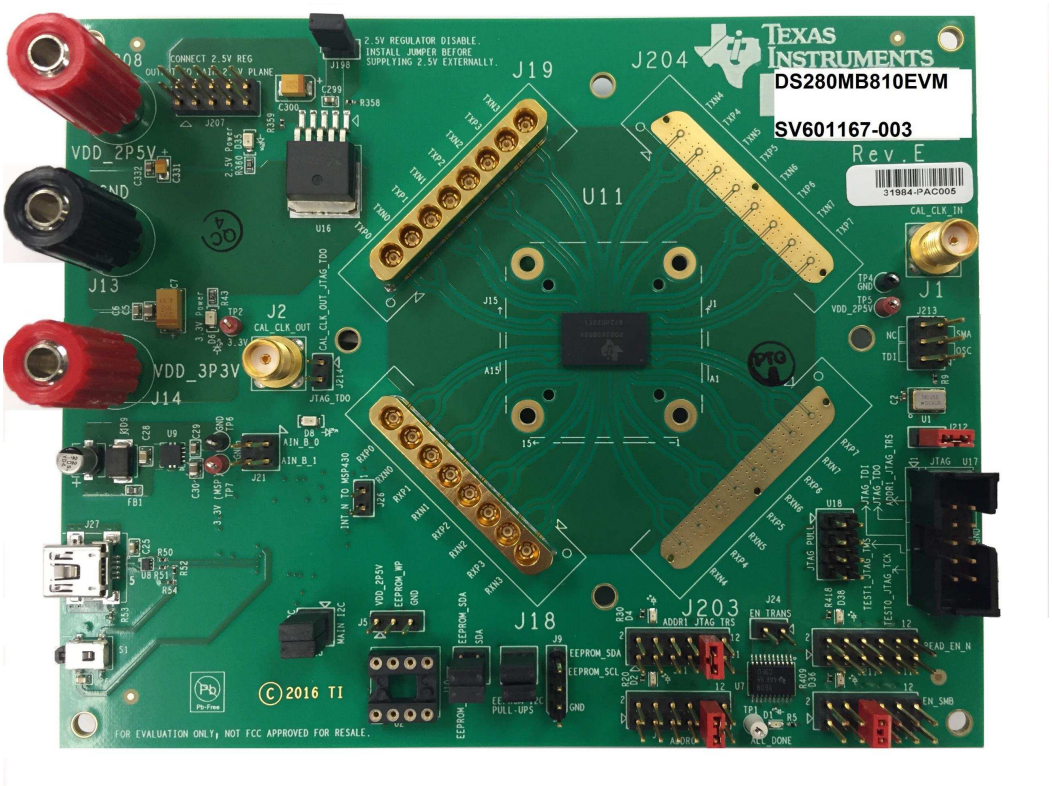

Figure 1. DS280MB810EVM.

Contents

List of Figures

List of Tables

Trademarks

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1 Features

- 8-Channel Unidirectional Repeater operating at rates up to 28 Gbps; 4 channels available for EVM testing
- Linear Equalization that allows for support of link training protocols
- Programmed by external EEPROM or SMBus interfaces
- Single supply operation: 2.5V ± 5% or 3.3 V ± 5%

2 Applications

- Front-Port Eye Opener for Optical (28G-VSR and CAUI-4) and Copper Cables (100G-CR4)
- Backplane Reach Extension (100G-KR4)
- SFP28, QSFP28, CFP2/CFP4, CDFP

3 Ordering Information

Table 1. DS280MB810 Ordering Information

EVM ID	DEVICE ID	DEVICE PACKAGE
DS280MB810EVM	DS280MB810	nfBGA (135)

NOTE: Huber+Suhner MXP cable assembles are not provided with this EVM. Users are expected to provide cabling to connect to other boards and test equipment. For MXP cabling recommendations please see Section 8.

4 Setup

This section describes the jumpers and connectors on the EVM as well as how to connect, set up, and use the DS280MB810EVM.

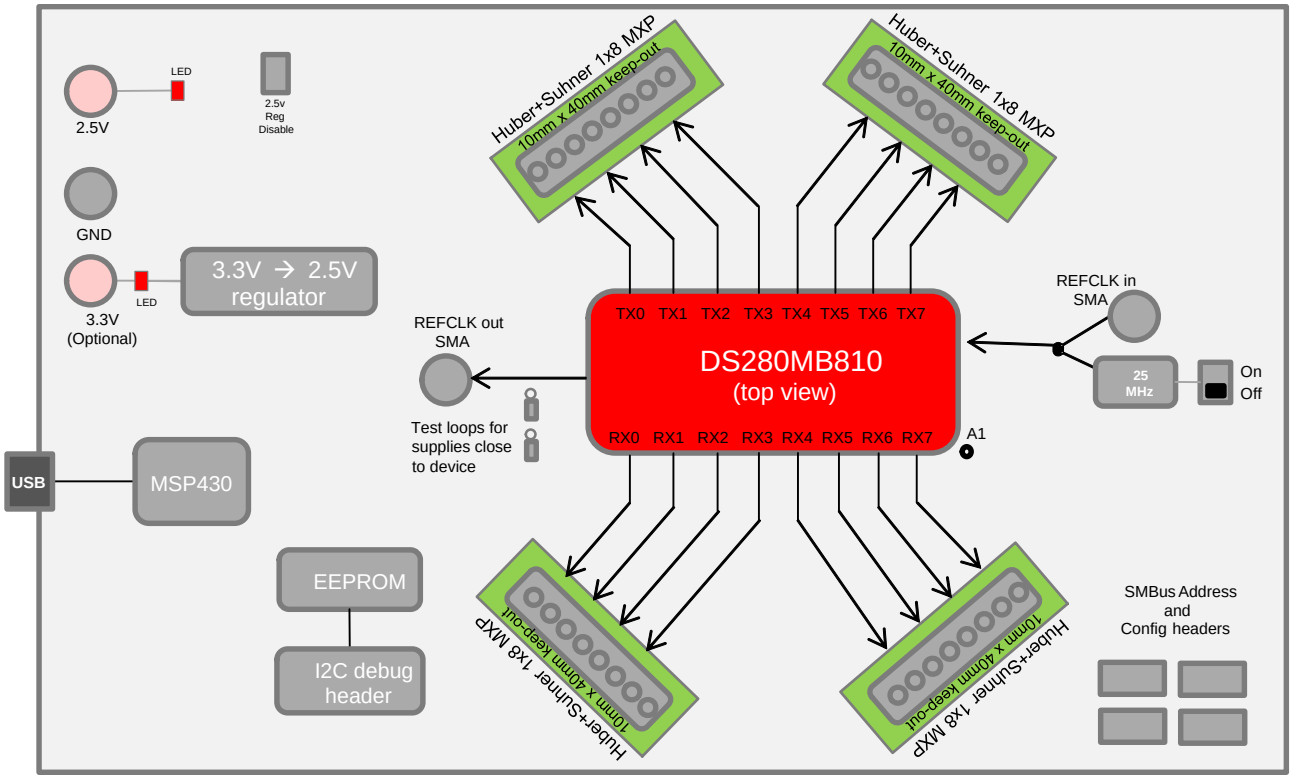

Figure 2. DS280MB810EVM Block Diagram.

4.1 Modes of Programmable Communication

The DS280MB810EVM can be programmed in one of two modes:

1. **SMBus Mode** – Provides full access to the DS280MB810 status and control settings via the on-board USB2ANY. ADDR0 and ADDR1 pins are used to set the SMBus slave address.
2. **External EEPROM** – Provides access to the DS280MB810's EEPROM programmable control settings via an 8 pin EEPROM. Only a subset of SMBus slave register bits is written to EEPROM. The EEPROM can program up to 16 slave devices.

For convenient use, a USB-to-Mini cable provides a direct connection via J27.

4.2 Configuration Overview

The following tables provide a description of the connectors on the DS280MB810EVM.

Table 2. Description of SMBus and EEPROM Connections

Component	Name	Description
J18.1, J18.2, J18.3, J18.4, J18.5, J18.6, J18.7, J18.8	RXN3, RXP3, RXN2, RXP2, RXN1, RXP1, RXN0, RXP0	High-speed differential input pairs
J19.1, J19.2, J19.3, J19.4, J19.5, J19.6, J19.7, J19.8	TXP0, TXN0, TXP1, TXN1, TXP2, TXN2, TXP3, TXN3	High-speed differential output pairs
J14.1, J14.3	SDA, SCL	SMBus Access (OPTIONAL)
J6	ADDR0	4-level strap pins used to set
J11	ADDR1	the SMBus address
J209	EN_SMB	4-level input to select between SMBus master (float) or slave mode (high)
J211	READ_EN_N	Weak pull up for SMBus Master or Slave Mode
U2	EEPROM	8-pin DIP Socket for EEPROM
J1	CAL_CLK_IN	External 25MHz Calibration Clock Input
J2	CAL_CLK_OUT	External 25MHz Calibration Clock Output
J208	PWR	2.5 V for DC Power
J14	PWR	3.3 V for DC Power
J19	GND	Ground
J27	USB2ANY	USB connection for EVM software control

Table 3. Test Point Connections (Output Voltage)

Component	Name	Description
TP4	GND	Common Ground
TP5	VDD	+2.5 V Input
TP6	GND	Common Ground
TP7	VDD	+3.3 V Input

4.3 Software Setup with SigCon Architect

The general procedure for setting up and testing with the DS280MB810EVM is as follows. For hardware setup and connections in the steps below, reference the illustrations in Figure 2 and Figure 4 to implement the appropriate setup.

1. **(One-time step)** Choose one of the TI SigCon Architect installers to download from the SigCon Architect Tools Folder on TI.com. Follow the prompts to install software.
   - **SNLC055:** With LabVIEW RTE embedded. Download this folder to install SigCon Architect on a computer without Internet access.
   - **SNLC054:** Without LabVIEW RTE embedded. Download this folder to install SigCon Architect on a computer with Internet access.
2. **(One-time step)**Download the relevant zip folder for the desired profile. For this evaluation module, select the zip folder for all available repeater profiles.
   - **SNLC056:** Repeater profile updaters.

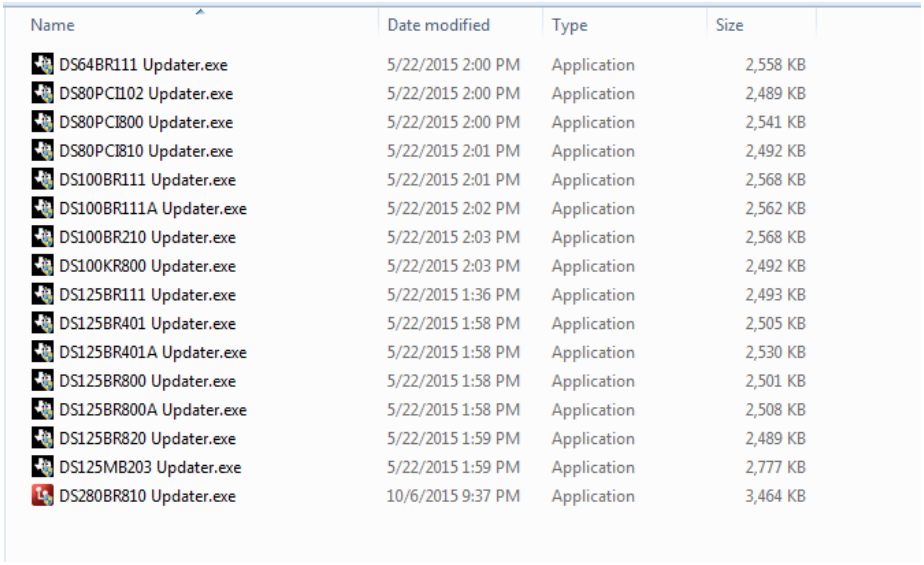

Figure 3. Repeater Profile Updater Installers.

Choose the Updater.exe profile for the relevant device. In this case, install “DS280MB810 Updater.exe.” Follow the prompts to install.

Once SigCon Architect and the correct updater profiles are installed, close any existing instance of SigCon Architect again.

3. Connect 2.5 V power via banana plugs to VIN on J208 and GND to GND on J13, or connect 3.3 V power via banana plugs to VIN on J14 and GND to GND on J13.
   - For VDD = 2.5 V: Tie J198 jumper pins 1-2.
   - For VDD = 3.3 V: Remove jumper shunt between pins 1 and 2 on J198. Tie J207 jumper pins 10-9, 8-7, 6-5, 4-3, and 2-1.
4. Install the appropriate jumper shunt to operate with an internal or external calibration clock.

NOTE: The Reference Clock is not required for DS280MB810 operation.

5. Install the appropriate jumper shunts to operate in default configuration with VDD = 2.5 V in SMBus Slave Mode or EEPROM Master Mode. The default configuration for the DS280MB810EVM operates in SMBus Slave Mode, as shown below in Figure 4.
   - J6 and J11: Tie jumper pins 10-9 in order to set the device slave address = 0x30. For all other SMBus slave addresses, reference the DS280MB810 data sheet.
   - J25: Tie jumper pins 3-1 and 4-2 in order to connect the SMBUS signals.
   - J10: Tie jumper pins 3-1 and 4-2.
   - J8: Tie jumper pins 2-1 and 4-3.
   - **(SMBus Only)** J209: Tie jumper pins 6-5 to set ENSMB = 1 (1 kΩ to VDD).
   - **(EEPROM Only)** J209: Float the jumper shunt to set ENSMB=F.

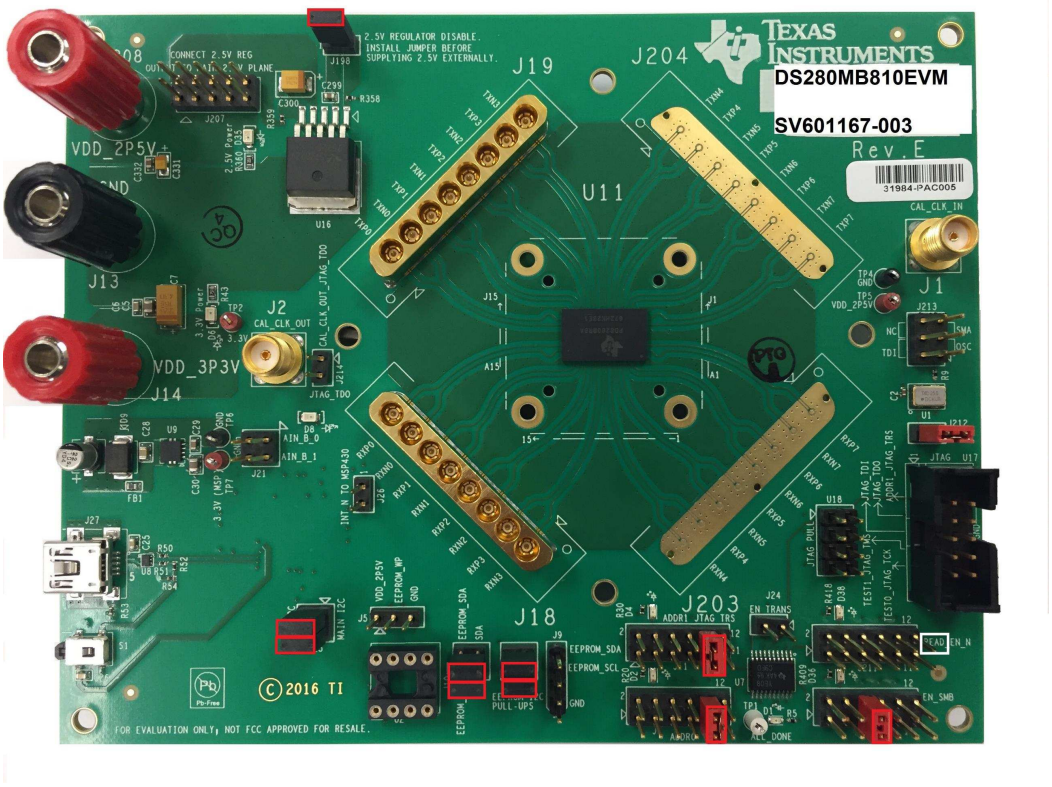

Figure 4. DS280MB810EVM Default Configuration.

NOTE: The jumper on J211 (if present) is connected only to pin 12, which is the pin in the white box in Figure 4 (the top right pin).

6. Connect a PC to DS280MB810EVM with a USB-to-Mini cable via J27.
7. Open SigCon Architect, and navigate to the “Configuration” page of DS280MB810 via the “Selection” column. Choose “Slave Address” “0x30” from the drop down menu. Verify the “USB2ANY Details” specify “USB2ANY 0," and click “Apply." Successful connection is indicated by the green “CONNECTED” indicator on the bottom of the application, as seen below in Figure 5. Once connection is successfully established, users can read and write various settings to the device in real-time, as described in the following steps.

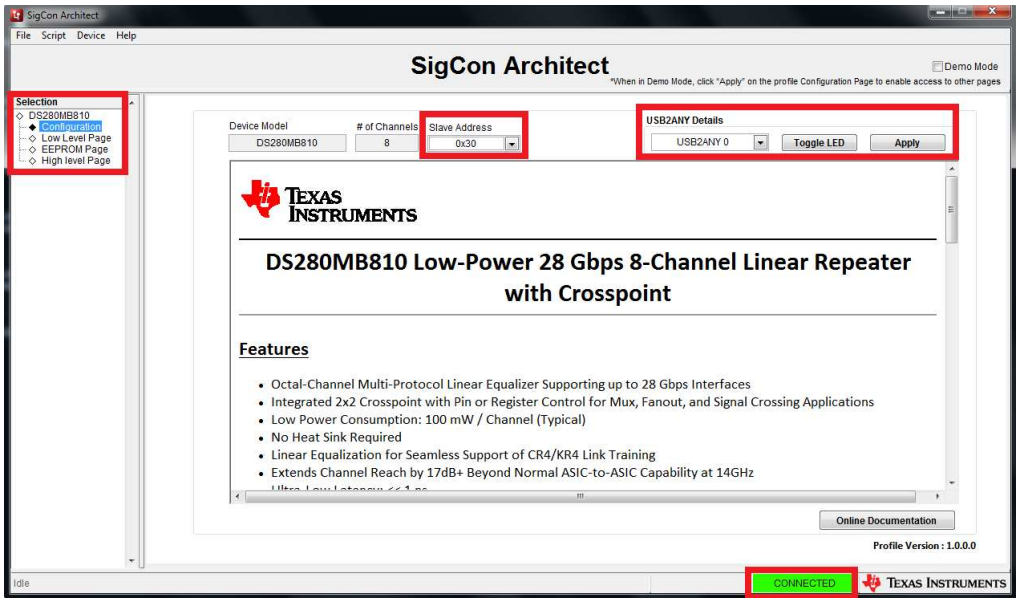

Figure 5. SigCon Architect Configuration Page.

8. In order to read and write to all registers on the DS280MB810, navigate to the “Low Level Page," as shown below in Figure 6. Only in SMBus Slave Mode can the user read and write to all programmable registers. Click “Read All” in order to load the data in each register from the device to the “Register Map."
   - **Read Register:** Type the readable address in the “Current Address” text box. Click “Read Register." The data in this register will appear in the “Data” text box.
   - **Write Register:** Type the writable address in the “Current Address” text box, and type the data to write to this address in the “Data” text box. Click “Write Register.”

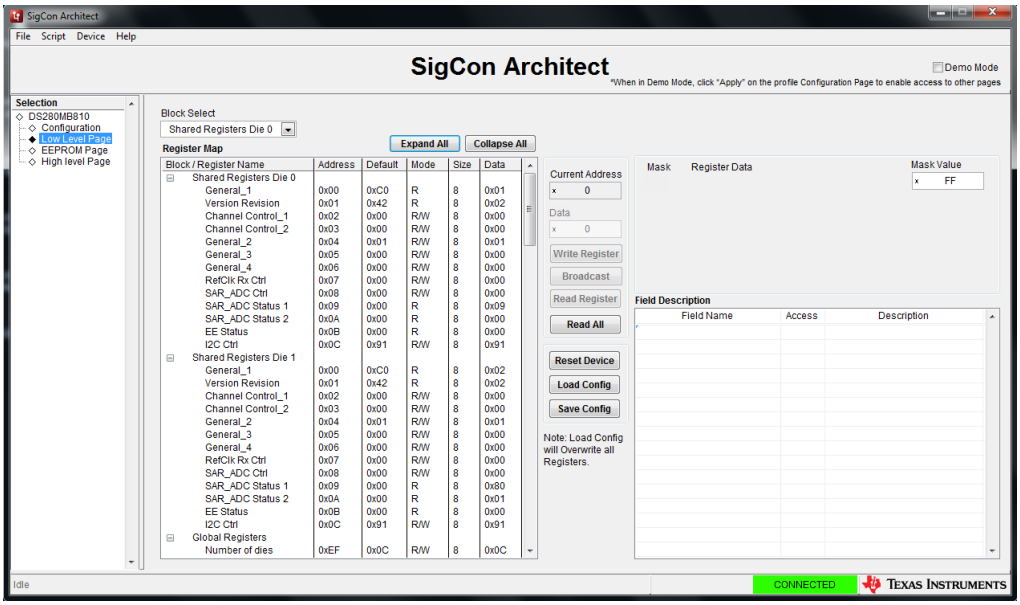

Figure 6. SigCon Architect Low Level Page.

9. In order to view a high level summary of the device status and control settings, navigate to the “High Level Page," and remain on the “Device Status tab” as shown below in Figure 7. Click “Refresh From Device” to ensure the settings shown are from the device. The settings on this page are not editable.
   - **Signal Detect Status:** For each channel the device status is displayed as “Signal Not Detected” if there is not a signal present at the RX side of this channel or “Signal Detected” if there is a signal present at the RX side of this channel.
   - **Driver Power:** The Driver Power can be turned on or off and the current status is displayed on the Device Status page. The Driver Power is detected at the TX side of each channel.
   - **Control Settings:** The remaining control settings are programmable through SigCon Architect. The displayed values are the current settings programmed on the device. Step 10 describes how to edit these settings.

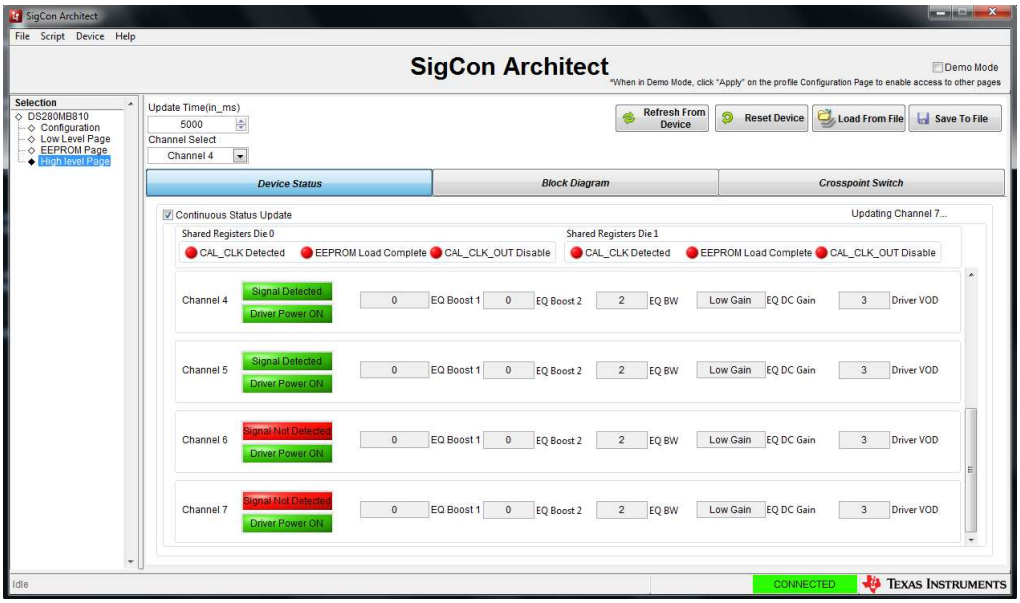

Figure 7. SigCon Architect High Level Page: Device Status.

10. In order to program high level settings, navigate to the “Block Diagram” tab on the “High Level Page” as shown below in Figure 8. The EQ Settings and Output Configurations are programmable from this page. In order to navigate to specific channels use the “Channel Select” drop down menu. Click “Refresh from Device” to apply the device’s current settings to the control setting boxes. Click “Apply to Channel” to program the device from the “Block Diagram” page. After programming the device, the changed settings can be verified on the “Device Status” page, Figure 7. The CAL_CLK Detected indicator provides a visual representation of whether a calibration clock is active.
    - **EQ Settings:**
        - The Equalizer works as a high pass filter compensating for input channel loss.
        - The EQ Boost 1, EQ Boost 2, and EQ Boost BW values respectively apply boost to their respective segments as shown below on the block diagram.
        - The EQ DC Gain setting can be either Low or High Gain.
    - **Driver Output:**
        - A linear equalizer does not utilize a limiting amplifier. Linear equalizers are necessary for an application with link training or end to end equalization.
        - Driver VOD and EQ DC Gain settings can be changed on this page. The Approximate DC gain in dB ranges from -4.5 to +5.0 dB.

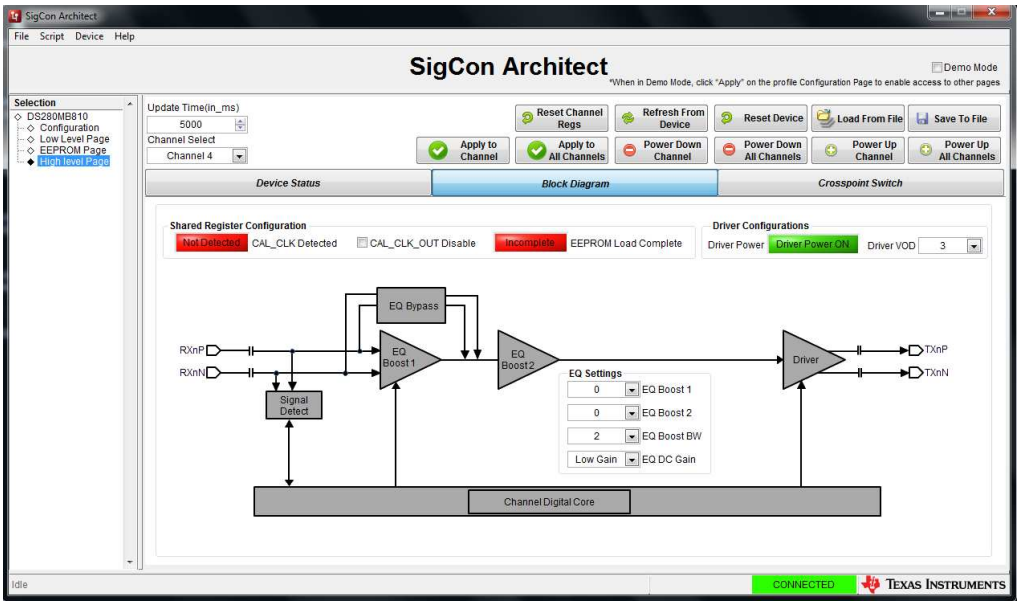

Figure 8. SigCon Architect High Level Page: Block Diagram.

11. In order to program each of the internal 2x2 crosspoints, navigate to the “Crosspoint Switch” tab on the “High Level Page” as shown below in Figure 9. The Crosspoint Switch Status of the entire device is displayed on the right-hand side. The colors help to show the configuration of each channel in the DS280MB810.
    - **Crosspoint Configuration:**
        - Default: Results in a 1:1 function.
        - Fanout: Results in a 1:2 function
        - Lane Crossing: Swaps the outputs within the 2x2 crosspoint

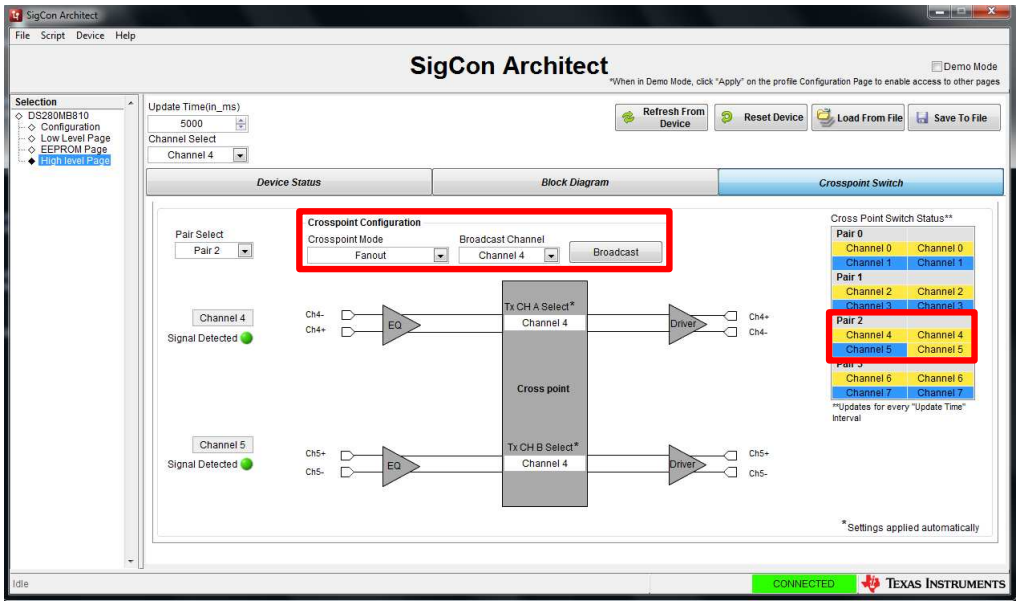

Figure 9. SigCon Architect High Level Page: Crossspoint Switch.

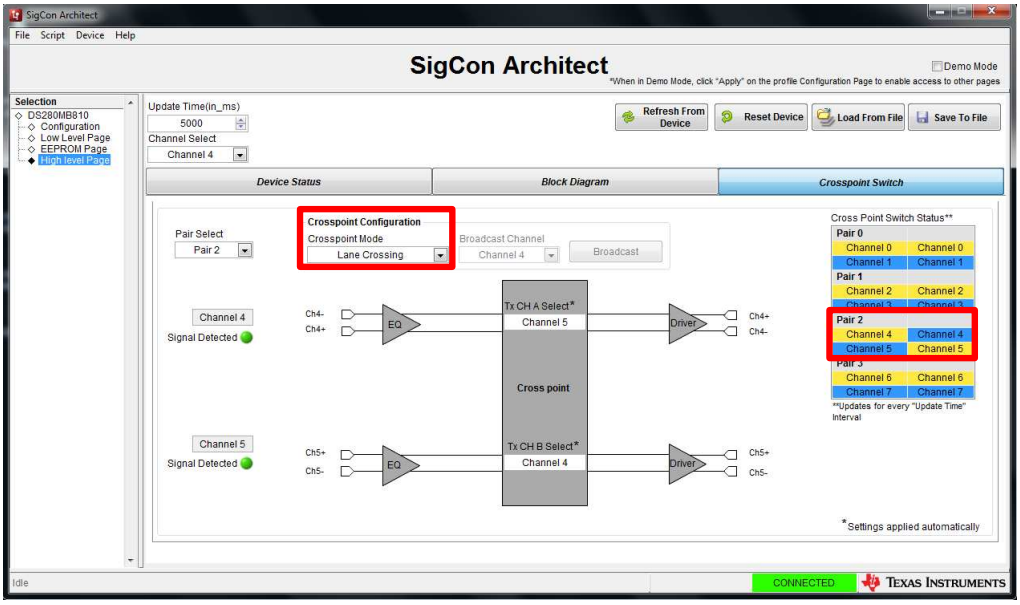

Figure 10. SigCon Architect High Level Page: Crosspoint Switch.

12. In order to create a Hex file programmable to an EEPROM, navigate to the “EEPROM Page," as shown in Figure 11. In order to update the settings from the device click “Update Slot from Device." In order to create the programmable hex file, click “Write to EEPROM Hex." The evaluation module does not include an EEPROM, but an external EEPROM can be used. SigCon Architect cannot directly program the EEPROM. The EEPROM Hex File can be burned on the EEPROM via I2C communication (i.e. AARDVARK or equivalent interface adapter). The EEPROM control settings are described in greater detail below.
    - **Output Configurations:** If this box is checked, all channels receive the same configuration. Different devices can receive different configurations, but within one device, all channels will receive the same configuration. If this box is unchecked, then the EEPROM will store the configurations as unique channel configurations. Each of the four channels can receive a unique configuration.
    - **EEPROM > 256:**
        - This setting must be enabled if there are more than 4 EEPROM slots.
        - When this box is checked, the “EEPROM Size” drop down menu is automatically populated by 512 Bytes if previously populated by 256 Bytes.
        - When this box is unchecked, the “EEPROM Size” drop down menu is automatically populated by 256 Bytes. Up to 4 EEPROM slots can be programmed.
    - **Enable CRC:** If enabled, each device will have a CRC value specific to the base header, address map header, and data. If disabled, the CRC is not computed.
    - **Slot Update Details:** The number of slots refers to the total number of unique SMBus register settings to load from the EEPROM. The user can choose to update all slots, or which slot number to update the SigCon Architect EEPROM page from.
    - **EEPROM Size:** The EEPROM size must be set to 256, 512, or 1024 bytes. A single external EEPROM can be used by up to 16 x DS280MB810 devices.
        - The first 3 bytes of EEPROM data is the base header. The base header contains the CRC Enable Bit, Aaddress Map Header Enable Bit, EEPROM > 256 Bytes Enable Bit, device count, and maximum EEPROM burst size settings.
        - If multiple devices are programmed, an address map header is needed for each device. The address map header specifies the CRC value and the Device EEPROM Start Address.
        - If EEPROM Size > 256 Bytes Enable Bit is NOT set:
            - EEPROM Size = 3 Bytes (Base Header) + Number of devices x 8 Bytes/device (Address Header) + Number of slots x 66 Bytes/slot (Data)
        - If EEPROM Size > 256 Bytes Enable Bit is set:
            - EEPROM Size = 3 Bytes (Base Header) + Number of devices x 12 Bytes/device (Address Header) + Number of slots x 66 Bytes/slot (Data)

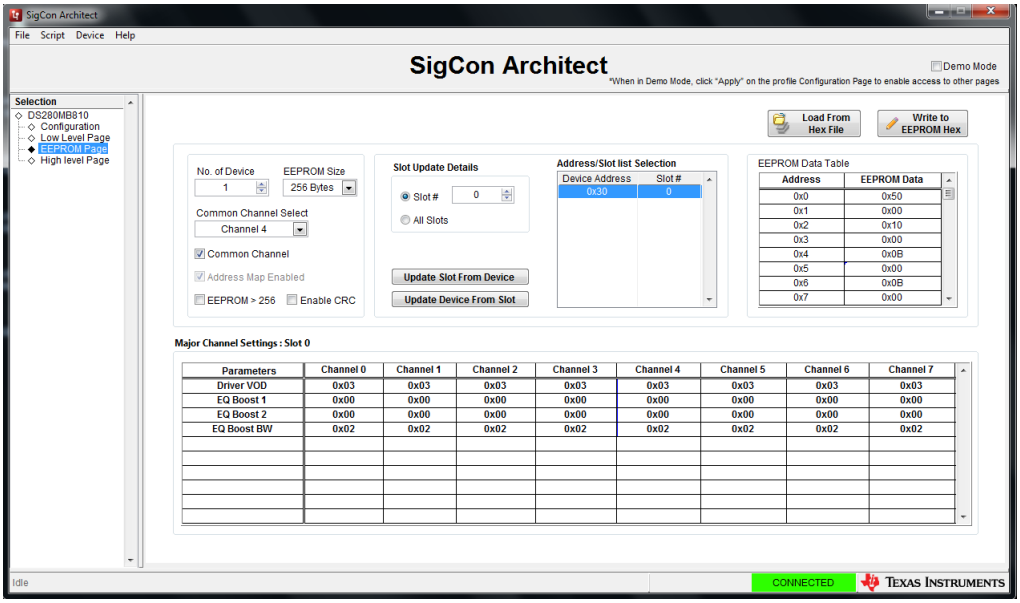

Figure 11. SigCon Architect EEPROM Page.

NOTE: Profile versions 1.0.1.0 and earlier do not support CRC with EEPROM size set to larger 256 bytes. This feature will be available in future releases.

5 Example Hardware Test Setup

In order to test the functionality of the DS280MB810EVM, connect TXP0 and TXN0 with MXP cable assemblies to DC blocking capacitors and a Keysight DCA-x Oscilloscope or equivalent (50 Ω terminated). Connect the data source, high speed BERT or other device with MXP cable assemblies to RXP0 and RXN0. Add input and output channels as desired to emulate a system topology. Use the Jitter/Noise and Eye/Mask functions on the Oscilloscope to view the output. The test set up can be seen below in Figure 12.

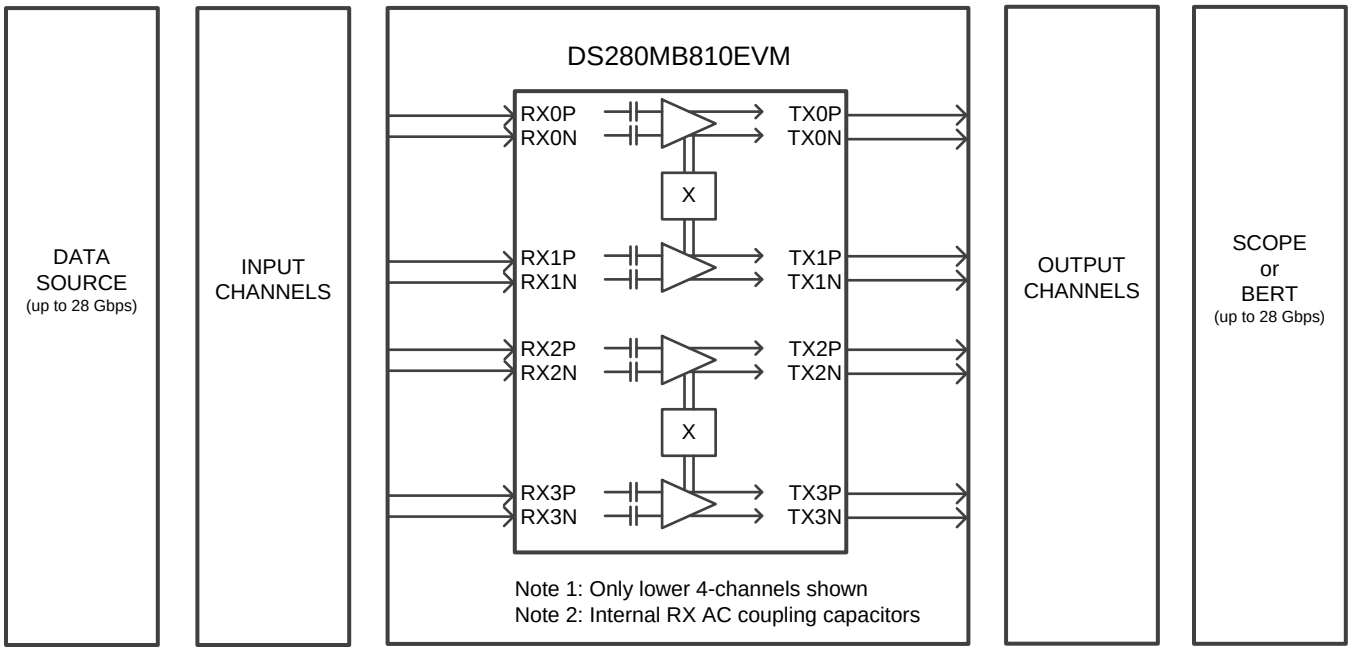

Figure 12. Example Test Set Up

5.1 Equalizing Moderate Pre-Channel Loss

The following is an example test setup configuration which demonstrates the DS280MB810 equalizing for moderate pre-channel insertion loss introduced by an FR4 channel at 25.78125 Gbps and 10.3125 Gbps.

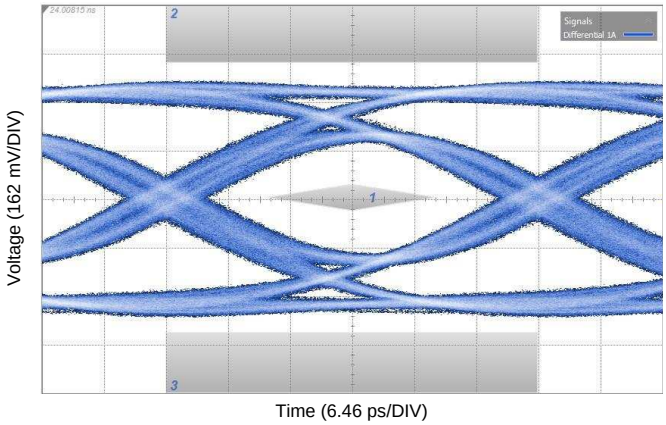

Figure 13. 25.78125 Gbps CAUI-4 Eye Mask with 5in input channel and minimal output channel

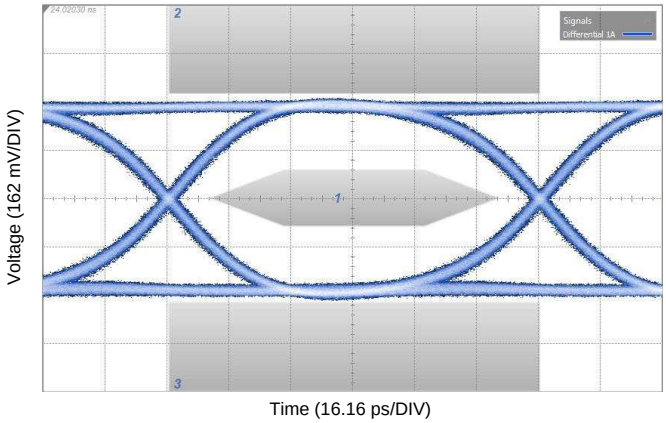

Figure 14. 10.3125 Gbps nPPI Eye Mask with 5in Input Channel and Minimal Output Channel

Table 4. Settings and Measurements for CAUI-4 and nPPI with 5in Input Channel and Minimal Output Channel

	25.78125 Gbps (CAUI-4)	10.3125 Gbps (nPPI)
Transmission Line 1	5 in 5 mil FR4 + 8in SMA cable	5 in 5 mil FR4 + 8 in SMA cable
DS280MB810 Rx Channel Loss	14 dB @ 12.9 GHz (includes 4 dB from the EVM and Huber+Suhner cable assembly)	6 dB @ 5.2 GHz (includes 2 dB from the EVM and Huber+Suhner cable assembly)
DS280MB810 Tx Channel Loss	4.5 dB @ 12.9 GHz (includes 4 dB from the EVM and Huber+Suhner cable assembly)	2 dB @ 5.2 GHz (attributed to the EVM and Huber+Suhner cable assembly)
EQ BST1	3	3
EQ BST2	0	0
EQ BW	3	3
VOD	3	2
EQ DC Gain Mode	Low	Low
Total Jitter @ 1E-15	11.9 ps_{P-P}	13.0 ps_{P-P}
Differential Eye Height @ 1E-15	338 mV_{P-P}	544 mV_{P-P}
Mask violations	0	0

5.2 Equalizing High Pre-Channel Loss

The following is an example test setup configuration which demonstrates the DS280MB810 equalizing for high pre-channel insertion loss introduced by an FR4 channel at 25.78125 Gbps and 10.3125 Gbps

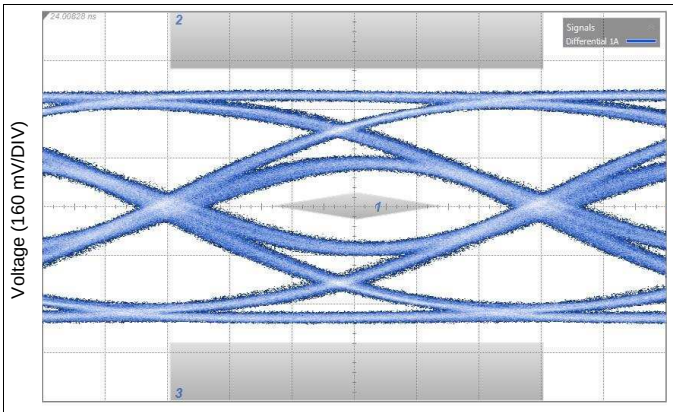

Figure 15. 25.78125 Gbps CAUI-4 Eye Mask with 10in Input Channel and Minimal Output Channel

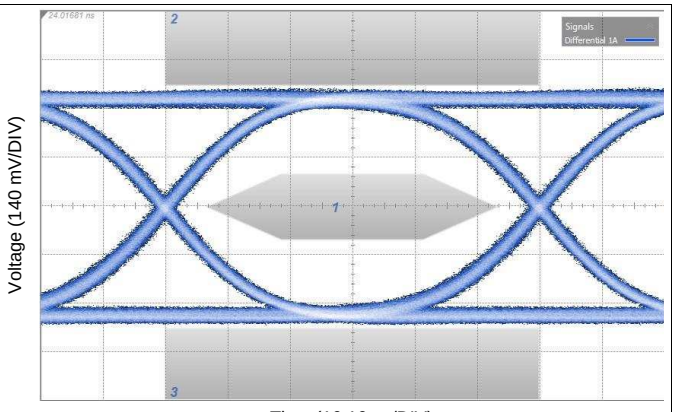

Figure 16. 10.3125 Gbps nPPI Eye Mask with 10in Input Channel and Minimal Output Channel

Table 5. Settings and Measurements for CAUI-4 and nPPI with 10in Input Channel and Minimal Output Channel

	25.78125 Gbps (CAUI-4)	10.3125 Gbps (nPPI)
Transmission Line 1	10 in 5 mil FR4 + 8in SMA cable	10 in 5 mil FR4 + 8 in SMA cable
DS280MB810 Rx Channel Loss	22 dB @ 12.9 GHz (includes 4 dB from the EVM and Huber+Suhner cable assembly)	10 dB @ 5.2 GHz (includes 2 dB from the EVM and Huber+Suhner cable assembly)
DS280MB810 Tx Channel Loss	4.5 dB @ 12.9 GHz (includes 4 dB from the EVM and Huber+Suhner cable assembly)	2 dB @ 5.2 GHz (attributed to the EVM and Huber+Suhner cable assembly)
EQ BST1	6	6
EQ BST2	1	1
EQ BW	3	3
VOD	3	2
EQ DC Gain Mode	Low	Low
Total Jitter @ 1E-15	11.3 ps_{P-P}	13.5 ps_{P-P}
Differential Eye Height @ 1E-15	210 mV_{P-P}	532 mV_{P-P}
Mask violations	0	0

6 Common Problems and Possible Solutions

PROBLEM	ADDITIONAL INFORMATION	POSSIBLE SOLUTIONS
Cannot power on the EVM.	2.5 Volt Power. D35 LED is off.	• J198: jumper pins 1-2 tied. • J207: jumper pins should be set to float. • Verify configuration with Figure 4 .
	3.3 Volt Power. D35 LED is off.	• J198: remove jumper shunt, pins 1-2 cannot be tied in order to enable 2.5 V regulator. • J207: jumper pins 10-9, 8-7, 6-5, 4-3, and 2-1 tied.
Cannot program with an interface adapter in SMBus Slave Mode.	SigCon Architect is operating in Demo Mode.	• Verify the jumper settings are correct (Figure 4).
		• Verify the slave address is set to 0x30 for SMBus Slave Mode.
		• Verify the device is powered on.
		• Update Firmware on EVM using “USB2ANY Explorer."
	Never used SigCon Architect, and cannot establish connection with device.	• Reinstall SigCon Architect. It is essential SigCon Architect is closed during any portion of the installation process.
Oscilloscope’s Output Eye Diagram is not as expected.	Pattern does not lock on oscilloscope.	• Transmit a signal from the BERTScope with a different PRBS pattern. Once initial pattern lock is established, re-attempt desired pattern.
		• Transmit a signal from the BERTScope with a lower frequency. Once initial pattern lock is established, re-attempt desired frequency.
	Eye diagram does not pass mask.	• Vary EQ Boost Settings as seen in Figure 8.
Cannot burn EEPROM Hex File to EEPROM with SigCon Architect.		• SigCon Architect can only be used to generate the Hex File. Another interface adapter must be used to burn the Hex File to the EPPROM. (i.e. AARDVARK or equivalent).

7 Bill of Materials

#	QUANTITY	REFERENCE	VALUE	PART NUMBER	DESCRIPTION
1	1	C327	1 uF	C0603X5R0J105M030BC	CAP CER 1UF 6.3V 20% X5R 0201
2	1	C2	0.1uF	C1005X7R1H104K050BB	CAP CER 0.1UF 50V 10% X7R 0402
3	12	C68,C69,C70,C71,C329,C330,C333,C334,C335,C336,C337,C338	0.1uF	C0603X5R1E104K030BB	CAP CER 0.1UF 25V 10% X5R 0201
4	1	C5	10 uF	GRM21BR61E106KA73L	CAP CER 10UF 25V 10% X5R 0805
5	1	C6	1 uF	GRM188R61E105KA12D	CAP CER 1UF 25V 10% X5R 0603
5	1	C7	22 uF	T491C226M016ZT	CAP TANT 22UF 16V 20% 2413
6	1	C18	2.2 nF	C0603C222M3RACTU	CAP CER 2200PF 25V 20% X7R 0603
7	3	C19,C22,C24	0.1 uF	GRM155R71C104KA88D	CAP CER 0.1UF 16V 10% X7R 0402
8	2	C20,C21	30 pF	GRM1885C1H300JA01D	CAP CER 30PF 50V 5% NP0 0603
9	1	C23	0.47 uF	EMK107B7474KA-T	CAP CER 0.47UF 16V 10% X7R 0603
10	1	C25	0.1 uF	C0603C104K4RACTU	CAP CER 0.1UF 16V 10% X7R 0603
11	2	C26,C31	220 pF	C0603C221K5RACTU	CAP CER 220PF 50V 10% X7R 0603
12	1	C27	22 uF	EEE-1AA220WR	CAP ALUM 22UF 10V 20% SMD
13	1	C28	1 uF	C2012X7R1C105K125AA	CAP CER 1UF 16V 10% X7R 0805
14	1	C29	0.01 uF	CGJ3E2X7R1C103K080AA	CAP CER 10000PF 16V 10% X7R 0603
15	1	C30	2.2 uF	LMK212B7225KG-T	CAP CER 2.2UF 10V 10% X7R 0805
16	2	C299,C332	1 uF	CC0603ZRY5V6BB105	CAP CER 1UF 10V Y5V 0603
17	1	C300	47 uF	TAJB476K010RNJ	CAP TANT 47UF 10V 10% 1210
18	1	C328	10 uF	AMK105CBJ106MV-F	CAP CER 10UF 4V 20% X5R 0402
19	1	C331	10 uF	TAJP106M010RNJ	CAP TANT 10UF 10V 20% 0805
20	5	D1,D2,D4,D36,D38	LED	LTST-C191KGKT	LED GREEN CLEAR THIN 0603 SMD.
21	3	D6,D8,D35	RED-LED	LS M67K-J2L1-1-Z	LED MINI TOPLED RED 630NM SMD
22	1	D9	1SMB5922BTS	1SMB5922BT3G	DIODE ZENER 7.5V 3W SMB
23	1	FB1	BK1608HS600-T	BK1608HS600-T	FERRITE BEAD 60 OHM 0603
24	2	J1,J2	SMA	142-0701-201	CONN SMA JACK STR 50 OHM PCB
25	2	J5,J210	HEADER_3	87224-3	CONN HEADER VERT .100 3POS 15AU
26	4	J6,J11,J209,J211	HEADER 6X2	87227-6	CONN HEADER VERT .100 12POS 15AU
27	4	J8,J10,J21,J25	HEADER 2X2	87227-2	CONN HEADER VERT .100 4POS 15AU
28	1	J9	4 HEADER	901200764	CONN HEADER 4POS .100" STR GOLD
29	1	J13	Binding Post, Keystone 7007, Black	7007	POST BINDING ECON NYLON-INS BLK
30	2	J14,J208	Binding Post, Keystone 7006, Red	7006	POST BINDING ECON NYLON-INS RED

#	QUANTITY	REFERENCE	VALUE	PART NUMBER	DESCRIPTION
31	4	J18,J19,J203,J204	1x8A_81_MXP-S50-0-2	1x8A_81_MXP-S50-0-2/111_NE	
32	2	J24,J26	HEADER 2	87224-2	CONN HEADER VERT .100 2POS 15AU
33	1	J27	USB_Conn_1734035-2	1734035-2	CONN MINI USB RCPT RA TYPE B SMD
34	1	J198	HEADER, 2-PIN	87224-2	CONN HEADER VERT .100 2POS 15AU
35	1	J207	HEADER 5x2/SM_1	87227-5	CONN HEADER VERT .100 10POS 15AU
36	1	Q1	BSS138	BSS138	MOSFET N-CH 50V 220MA SOT-23
37	3	R1,R3,R48	4.7K	ERJ-2GEJ472X	RES 4.7K OHM 1/10W 5% 0402 SMD
38	2	R2,R4	100	CRCW0402100RFKEDHP	RES 100 OHM .125W 1% 0402 SMD
39	6	R5,R20,R30,R47,R409,R418	249	RC1005F2490CS	RES 249 OHM 1/16W 1% 0402
40	3	R6,R7,R8	2.7K	ERJ-2GEJ272X	RES 2.7K OHM 1/10W 5% 0402 SMD
41	2	R9,R10	0	ERJ-2GE0R00X	RES 0.0 OHM 1/10W JUMP 0402 SMD
42	5	R13,R14,R15,R17,R18	2.7K	ERJ-2GEJ272X	RES 2.7K OHM 1/10W 5% 0402 SMD
43	2	R16,R19	4.7K	ERJ-2GEJ472X	RES 4.7K OHM 1/10W 5% 0402 SMD
44	8	R21,R27,R33,R37,R406,R408,R415,R417	1K	ERJ-2GEJ102X	RES 1.0K OHM 1/10W 5% 0402 SMD
45	4	R26,R36,R407,R416	10K	ERJ-2GEJ103X	RES SMD 10K OHM 5% 1/10W 0402
46	1	R43	750	ERJ-3GEYJ751V	RES 750 OHM 1/10W 5% 0603 SMD
47	1	R45	33k	RC0402JR-0733KL	RES 33K OHM 1/16W 5% 0402 SMD
48	1	R46	200	ERJ-3GEYJ201V	RES 200 OHM 1/10W 5% 0603 SMD
49	1	R49	10.0K	ERJ3EKF1002V	RES 10K OHM 1/10W 1% 0603 SMD
50	2	R50,R51	33	CRCW040233R2FKEDHP	RES 33.2 OHM .125W 1% 0402 SMD
51	1	R52	1.5K	CRCW04021K50FKEDHP	RES 1.50K OHM .125W 1% 0402 SMD
52	1	R53	33K	ERJ-2GEJ333X	RES 33K OHM 1/10W 5% 0402 SMD
53	1	R54	1.2M	ERJ-2GEJ125X	RES 1.2M OHM 1/10W 5% 0402 SMD
54	2	R358,R359	10K	CRCW040210K0FKEDHP	RES 10.0K OHM .125W 1% 0402 SMD
55	1	R360	360	ERJ-3GEYJ361V	RES 360 OHM 1/10W 5% 0603 SMD
56	1	SW1	SW_DIP_SWITCH	76STD01T	SWITCH DIP TOGGLE 1POS
57	1	S1	EVQPSD02K	EVQ-PSD02K	SWITCH TACTILE SPST-NO 0.05A 12V
58	1	TP1	TEST POINT	5002	TEST POINT PC MINI .040"D WHITE
59	3	TP2,TP5,TP7	TEST POINT	5000	TEST POINT PC MINI .040"D RED
60	2	TP4,TP6	TEST POINT	5001	TEST POINT PC MINI .040"D BLACK
61	1	U1	Oscillator, 25 MHz, 2.5V	7C-25.000MCB-T	OSC XO 25.000MHZ CMOS SMD
62	1	U2	PDIP	111-43-308-41-001000	IC SOCKET 8PIN .300 SOLDER TAIL
63	1	U6	MSP430	MSP430F5529IPN or MSP430F5529IPNR	IC MCU 16BIT 128KB FLASH 80LQFP
64	1	U7	TXB0108	TXB0108PWR	IC 8-BIT TRNSTR 15KV ESD 20TSSOP

#	QUANTITY	REFERENCE	VALUE	PART NUMBER	DESCRIPTION
65	1	U8	TPD4E004DRY	TPD4E004DRYR	TVS DIODE 6SON
66	1	U9	TPS73533DRB	TPS73533DRBT	IC REG LDO 3.3V 0.5A 8SON
67	1	U11	DS280MB810		
68	1	U16	TPS75725	TPS75725KTTRG3	IC REG LDO 2.5V 3A DDPAK
69	1	Y1	24.0 MHz	ECS-240-20-5PX-TR	CRYSTAL 24.000MHZ 20PF SMD
70	1	SV601167 REVE BOARD PCB			

8 EVM Cable Assemblies

The DS280MB810EVM uses Huber+Suhner 1x8 MXP cable assemblies. For Huber+Suhner quotes or additional information requests, please contact:
Info.us@hubersuhner.com
HUBER+SUHNER Inc.
8530 Steele Creek Place Drive, Suite H
Charlotte-NC- 28273
+1 704-790-7300

Below are suggested part numbers that can be used with this EVM. Other part numbers and cable lengths have not been tested, but can be considered for use.

1. 85014420, MF53/1x8A_21MXP/21SMA/152: “MXP-18 cable assembly”. This is a lower cost cable assembly compared to the MXP-40, but the SI performance is very good and more than adequate for 25Gbps operation.
2. 84099607, MF53/1x8A_21MXP/11SK/305: “MXP-40 cable assembly”. This cable assembly is designed specifically for 40+ GHz. It features a male cable end and longer cable length options.
3. 84098900, MF53/1x8A_21MXP/21SK_ergo/305: “MXP-40 cable assembly”. This cable assembly is designed specifically for 40+ GHz. It features a female cable end and longer cable length options.
4. 84099634, MF53/1x8A_21MXP/21/MXP/305: "MXP-50 cable assembly". This cable assembly is designed specifically for 50+ GHz. It features a MXP connections on both ends of the cable for board bridging and longer cable length options.

Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Original (October 2016) to A Revision	Page
• Initial public release	3

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