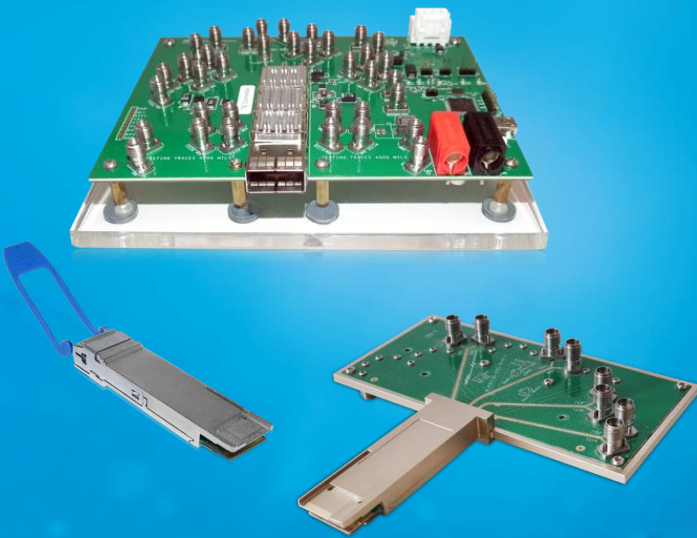


Innovation for the next generation

QSFP-DD800

Module Compliance Boards | Host Compliance Boards | Loopbacks | 8x112G

ML4062-MCB-112 | ML4062-MCB-112-MXPM70 | ML4062-HCB1-112 | ML4062-HCB2-112 | ML4062-HCB-112-MXPM70 | ML4062-LB-112 | ML4062-LB2a-112 | ML4062-LB2a-6/9dB | ML4062-LB2b-112 | ML4062-CNT-Gen2



Summary

As 400G claims more and more of the data center market share, the industry is already planning for still greater speeds in 800G. Increased speeds bring with them new form factors, of which QSFP-DD800 has emerged as a leading standard to drive the development of 800G interconnectivity. To guarantee that our customers can navigate this new frontier with ease, MultiLane provides a QSFP-DD800 development kit that includes a module compliance board, a host compliance board and a variety of loopback modules.

The QSFP-DD800 development kit is an essential tool to ensure the validity of your QSFP-DD800 products. The module compliance board (MCB) is used to test transceivers, AOCs, and DACs, while the host compliance board (HCB) enables the testing of system host ports. The loopback modules (LB) provide an economical way to test thermal capacity and signal integrity of system host ports at every stage of the process: R&D validation, production testing, and field testing.

QSFP-DD800

QSFP-DD800 MCB

ML4062-MCB-112

Key Features

- Supports 8x112G interfaces
- Compliant with CEI-112G-VSR-PAM4 and CEI-56G-VSR-NRZ
- I2C master driven from both on board microcontroller or external pin headers
- Current sensor
- Matched differential trace length for all 8 channels
- High performance signal integrity traces from 2.4 or 1.85 mm connectors to QSFP-DD host connector.
- On-board LEDs display MSA output alarm states
- Built with high performance PCB material
- On-board buttons/jumpers for MSA input control signals
- User friendly GUI for I2C R/W commands and loading custom MSA memory maps
- Command Data Block (CDB) option enabled with a purchasable license key.
 - Advanced feature for accelerated module diagnostic functionality
- Four corner testing capability
- USB interface

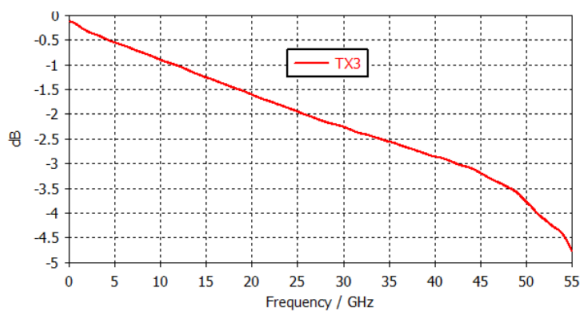


Figure 1: ML4062-MCB-112 Insertion Loss

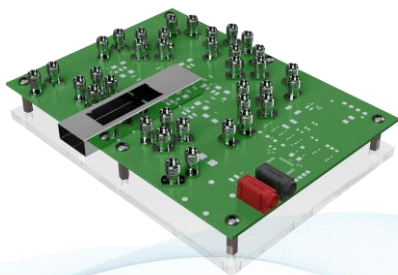


Figure 2: ML4062-MCB-112

QSFP-DD800 MCB

ML4062-MCB-112-MXPM70

Key Features

- Supports 8x112G interfaces
- Compliant with CEI-112G-VSR-PAM4 and CEI-56G-VSR-NRZ
- I2C master driven from both on board microcontroller or external pin headers
- Current sensor
- Matched differential trace length for all 8 channels
- High performance signal integrity traces from MXPM70 connectors to QSFP-DD host connector.
- On-board LEDs display MSA output alarm states
- Built with high performance PCB material
- On-board buttons/jumpers for MSA input control signals
- User friendly GUI for I2C R/W commands and loading custom MSA memory maps
- Command Data Block (CDB) option enabled with a purchasable license key.
 - Advanced feature for accelerated module diagnostic functionality
- Four corner testing capability
- USB interface
- Uses 2 MXPM70 cables

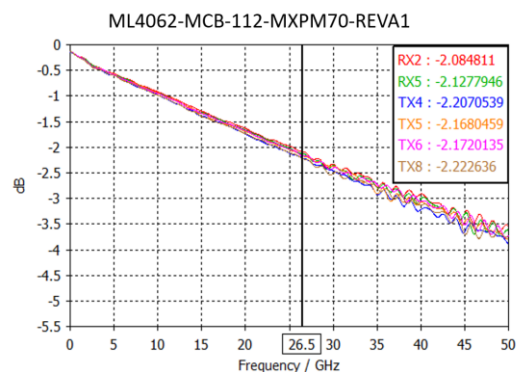


Figure 3: ML4062-MCB-112-MXPM70 Insertion Loss

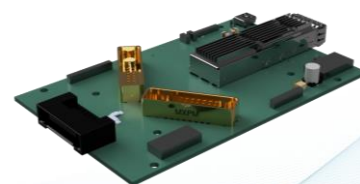


Figure 4: ML4062-MCB-112-MXPM70

QSFP-DD800 HCB

ML4062-HCB1-112

Key Features

- High performance signal integrity traces
- Compliant with CEI-112G-VSR-PAM4 and CEI-56G-VSR-NRZ
- QSFP-DD MSA Form Factor
- Same low Insertion Loss for all traces
- Supports 4x112G
- Built with high performance PCB Material
- High speed signals accessible through 2.4- or 1.85-mm connectors
- 4 channels: 4 TX and the corresponding 4 RX
- Matched trace lengths of 5972.48 mils

CH1		CH2		CH3		CH4	
TX1	RX1	TX2	RX2	TX3	RX3	TX4	RX4

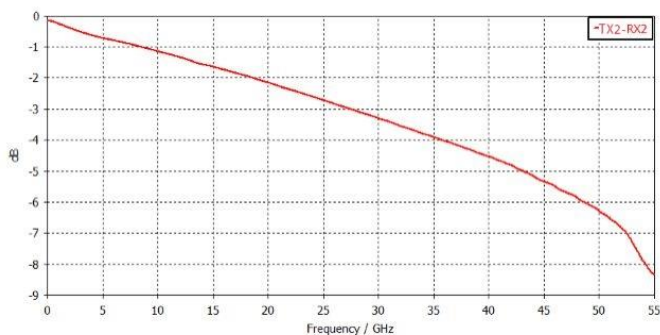


Figure 5: ML4062-HCB1-112 Insertion Loss

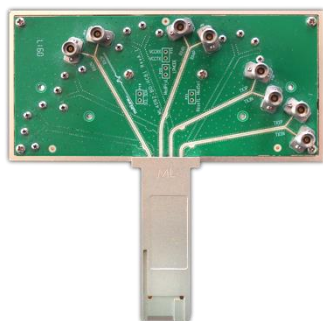


Figure 6: ML4062-HCB1-112

QSFP-DD800 HCB

ML4062-HCB2-112

Key Features

- High performance signal integrity traces
- Compliant with CEI-112G-VSR-PAM4 and CEI-56G-VSR-NRZ
- QSFP-DD MSA Form Factor
- Same low Insertion Loss for all traces
- Supports 4x112G
- Built with high performance PCB Material
- High speed signals accessible through 2.4- or 1.85-mm connectors
- 4 channels: 4 TX and the corresponding 4 RX
- Matched trace lengths of 5972.48 mils

CH5		CH6		CH7		CH8	
TX5	RX5	TX6	RX6	TX7	RX7	TX8	RX8

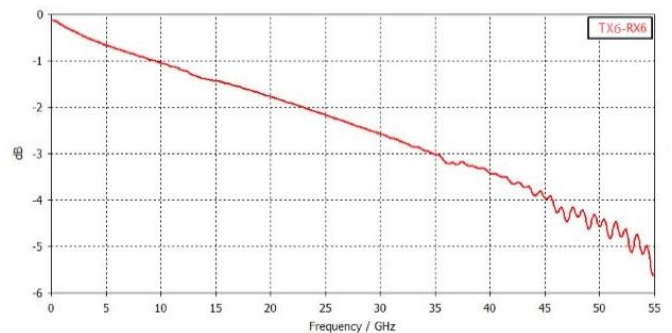


Figure 7: ML4062-HCB2-112 Insertion Loss

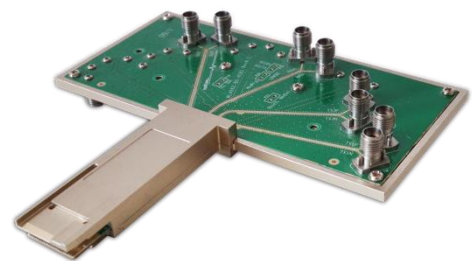


Figure 8: ML4062-HCB2-112

QSFP-DD800 HCB

ML4062-HCB-112-MXPM70

Key Features

- High performance signal integrity traces
- Compliant with CEI-112G-VSR-PAM4 and CEI-56G-VSR-NRZ
- QSFP-DD MSA Form Factor
- Same low Insertion Loss for all traces
- Supports 8x112G
- Built with high performance PCB Material
- High speed signals accessible through MXPM70 connectors
- 8 channels: 8 TX and the corresponding 8 RX
- Matched trace lengths of 5972.48 mils
- Uses 2 MXPM70 cables

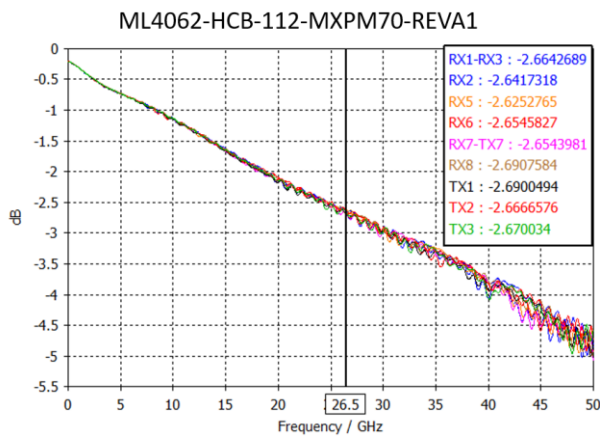


Figure 9: ML4062-HCB-112-MXPM70 Insertion Loss

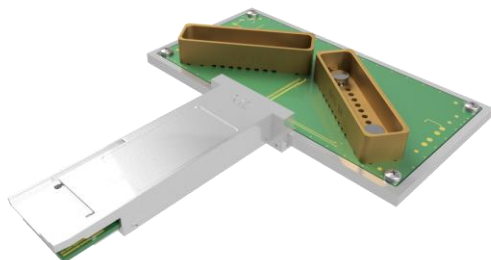


Figure 10: ML4062-HCB-112-MXPM70

QSFP-DD800 Loopbacks

ML4062-LB-112

Key Features

- Loops back TX & RX with good performance SI Traces
- Built with advanced PCB Material
- MSA Compliant Shell with latching mechanism
- Four thermal spots
- Emulation of all QSFP-DD power classes
- Programmable power dissipation up to 16 W via the thermal loads
- Temperature sensor
- I2C Terminated by microcontroller, I2C slave compliant with MSA
- Implements MSA Memory Map with programmable new pages
- Ability to control/monitor all low speed signals
- Insertion Counter
- Front LED Indicator
- Hot Pluggable
- Cut-off temperature preventing module overheating
- AC-coupled High-Speed Interface

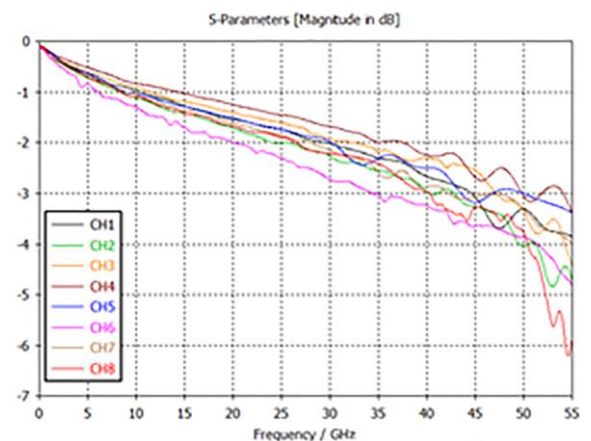


Figure 11: ML4062-LB-112 Insertion Loss



Figure 12: ML4062-LB-112

QSFP-DD800 Loopbacks

ML4062-LB2a-112

Summary

The ML4062-LB2a-112 is used for testing QSFP-DD transceiver ports under board level tests, by substituting a full-featured QSFP-DD800 transceiver with the ML4062-LB2a-112. The ML4062-LB2a-112 covers all QSFP-DD800 power classes.

The ML4062-LB2a-112 is packaged in standard MSA housing compatible with all QSFP-DD ports. It provides an economical way to exercise QSFP-DD ports during R&D validation, production testing, and field testing.

Note that the ML4062-LB2a-112 follows the CMIS Rev 4.0 standard.

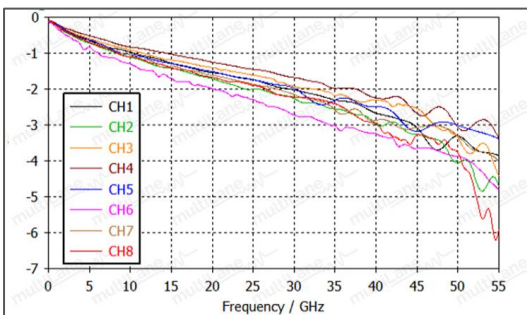


Figure 13: ML4062-LB2a-112 Insertion Loss

Key Features

- Loops back TX & RX with good performance SI Traces
- Built with advanced PCB Material
- MSA Compliant Shell with latching mechanism
- MSA Compatible Configuration and EEPROM
- Emulation of all QSFP-DD power classes
- Programmable power dissipation up to 30 W via the thermal loads
- Temperature sensor
- I2C Terminated by microcontroller, I2C slave compliant with MSA
- Implements MSA Memory Map with programmable pages
- Ability to control/monitor all low speed signals
- Insertion Counter
- LCD display/LED indicator/Pin Header
- Hot Pluggable
- Cut-off temperature preventing module overheating
- AC-coupled High-Speed Interface
- Type 2A heatsink

Ordering Options

Option	Part Number	Description
#1 - LCD Display	ML4062-LB2a-112-LCD	Temperature and other Monitoring values
#2 - LED Indicator	ML4062-LB2a-112-LED	Power Mode and Alarms Monitoring
#3 - Pin Header	ML4062-LB2a-112-CON	Board to Board Connection



#1 LCD Display



#2 LED Indicator



#3 Pin Header

QSFP-DD800 Loopbacks

ML4062-LB2a-6/9dB

Summary

The ML4062-LB2a-6/9dB is used for testing QSFP-DD transceiver ports under board level tests, by substituting a full-featured QSFP-DD800 transceiver with the ML4062-LB2a-112-6/9 dB. The ML4062-LB2a-6/9dB covers all QSFP-DD800 power classes.

The ML4062-LB2a-6/9dB is packaged in standard MSA housing compatible with all QSFP-DD ports. It provides an economical way to exercise QSFP-DD ports during R&D validation, production testing, and field testing.

Note that the ML4062-LB2a-6/9dB follows the CMIS Rev 4.0 standard.

Key Features

- Loops back TX to RX on all 8 ports
- Built with advanced PCB material
- Loss Target Loopbacks with 6 and 9 dB attenuation at 26 GHz to emulate specific DAC loss profiles
- Programmable MSA memory pages
- I2C Interface
- Separate daughter card for power spots
- 4 independent power heaters, dissipating up to 30 W
- 4 temperature sensors
- Voltage Sense
- 2 status LED Indicator
- Insertions counter
- Cut-off temperature preventing module overheating
- Hot Pluggable module
- Type 2A module with heat sink height 3.4 mm

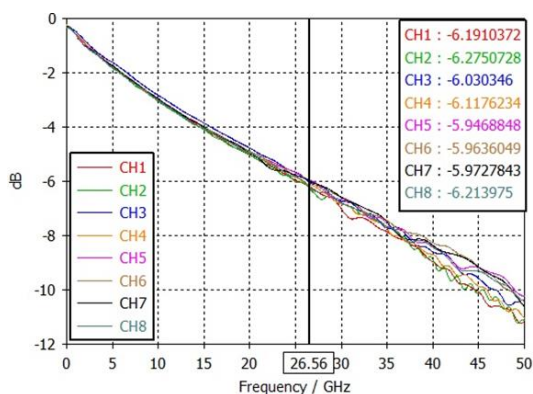


Figure 14: ML4062-LB2a-6dB Insertion Loss

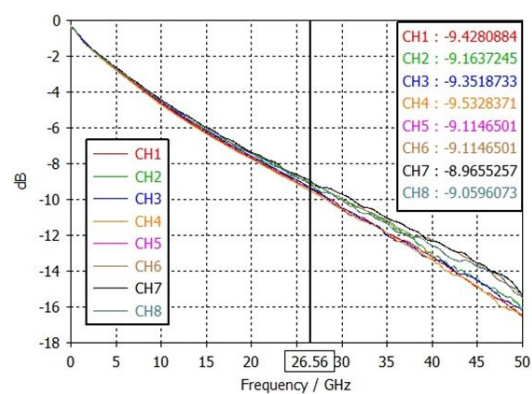


Figure 15: ML4062-LB2a-9dB Insertion Loss

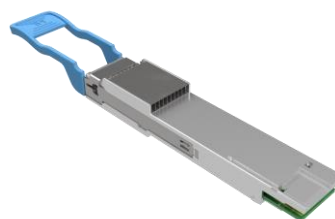


Figure 16: ML4062-LB2a-112-6/9dB

QSFP-DD800 Loopbacks

ML4062-LB2b-112

Summary

The ML4062-LB2b-112 is used for testing QSFP-DD transceiver ports under board level tests, by substituting a full-featured QSFP-DD800 transceiver with the ML4062-LB2b-112. The ML4062-LB2b-112 covers all QSFP-DD800 power classes.

The ML4062-LB2b-112 is packaged in standard MSA housing compatible with all QSFP-DD ports. It provides an economical way to exercise QSFP-DD ports during R&D validation, production testing, and field testing.

Note that the ML4062-LB2b-112 follows the CMIS Rev 4.0 standard.

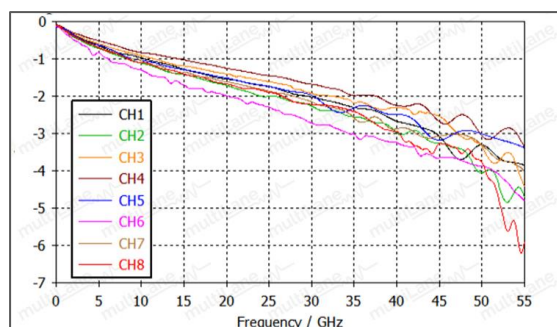


Figure 17: ML4062-LB2b-112 Insertion Loss

Key Features

- Loops back TX & RX with good performance SI Traces
- Built with advanced PCB Material
- MSA Compliant Shell with latching mechanism
- MSA Compatible Configuration and EEPROM
- Emulation of all QSFP-DD power classes
- Programmable power dissipation up to 30 W via the thermal loads
- Temperature sensor
- I2C Terminated by microcontroller, I2C slave compliant with MSA
- Implements MSA Memory Map with programmable pages
- Ability to control/monitor all low speed signals
- Insertion Counter
- LCD display/LED indicator/Pin Header
- Hot Pluggable
- Cut-off temperature preventing module overheating
- AC-coupled High-Speed Interface
- Type 2B heatsink

Ordering Options

Option	Part Number	Description
#1 - LCD Display	ML4062-LB2b-112-LCD	Temperature and other Monitoring values
#2 - LED Indicator	ML4062-LB2b-112-LED	Power Mode and Alarms Monitoring
#3 - Pin Header	ML4062-LB2b-112-CON	Board to Board Connection



#1 LCD Display



#2 LED Indicator



#3 Pin Header

QSFP-DD800 Controller

ML4062-CNT-Gen2

Summary

The ML4062-CNT-Gen2 is designed to provide an efficient and easy method of programming and testing the ML4062-TL2a-CON modules. It provides power and I2C communication to the modules, allowing the user to access any register in the memory through I2C bus, where user is able to control the power, monitor the voltage, temperature, etc...

Key Features

- Supports up to 150 W in total
- Supports up to 19 W/port maximum
- Eight interfaces allowing to operate eight modules simultaneously
- I2C master driven from on board microcontroller
- Current Sensor at each port
- User friendly GUI for I2C R/W commands and loading custom MSA memory maps
- USB interface



Figure 18: ML4062-CNT-Gen2

Ordering Information

Interconnects	Description
ML4062-MCB-112-24	QSFP-DD800 MCB 2.4 mm connector
ML4062-MCB-112-18	QSFP-DD800 MCB 1.85 mm connector
ML4062-MCB-112-MXPM70	QSFP-DD800 MCB MXPM70 connector
ML4062-HCB-112-24	QSFP-DD800 HCB 2.4 mm connector, set of HCB1 and HCB2
ML4062-HCB-112-18	QSFP-DD800 HCB 1.85 mm connector, set of HCB1 and HCB2
ML4062-HCB-112-MXPM70	QSFP-DD800 HCB MXPM70 connector
ML4062-LB-112	QSFP-DD800 Loopback
ML4062-LB2a-112-LCD	QSFP-DD800 Loopback with LCD display, type A
ML4062-LB2a-112-LED	QSFP-DD800 Loopback with LED indicator, type A
ML4062-LB2a-112-CON	QSFP-DD800 Loopback with Pin header, type A
ML4062-LB2a-6dB	QSFP-DD800 Loss Target Loopback with 6 dB attenuation
ML4062-LB2a-9dB	QSFP-DD800 Loss Target Loopback with 9 dB attenuation
ML4062-LB2b-112-LCD	QSFP-DD800 Loopback with LCD display, type B
ML4062-LB2b-112-LED	QSFP-DD800 Loopback with LED indicator, type B
ML4062-LB2b-112-CON	QSFP-DD800 Loopback with Pin header, type B
ML4062-CNT-Gen2	QSFP-DD800 Controller

Recommended Accessories

Interconnects	Recommended <i>Phase matched cable pairs</i>	Alternative <i>Phase matched cable sets</i>	Comments
ML4062-MCB-112-24	16x MLCBPM-2.4-30/60	2x MLCBPM-2.4-30/60-16	2.4 mm connector 2x16 channel 30 or 60 cm
ML4062-MCB-112-18	16x MLCBPM-1.85-30/60	2x MLCBPM-1.85-30/60-16	1.85 mm connector 2x16 channel 30 or 60 cm
ML4062-HCB-112-24	16x MLCBPM-2.4-30/60	2x MLCBPM-2.4-30/60-16	2.4 mm connector 2x16 channel 30 or 60 cm
ML4062-HCB-112-18	16x MLCBPM-1.85-30/60	2x MLCBPM-1.85-30/60-16	1.85 mm connector 2x16 channel 30 or 60 cm
ML4062-MCB-112-MXPM70	2x MF53/2x8A_11MXPM/11PC185/152	NA	Sold separately by Huber+Suhner
ML4062-HCB-112-MXPM70	2x MF53/2x8A_11MXPM/11PC185/152	NA	Sold separately by Huber+Suhner



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