multiLane

OSFP
Development Platform
Preliminary Specs

Summary

The **MultiLane OSFP Development Kit** provides the necessary development tools and reference modules required for the development of OSFP based products. This kit is essential for development, testing and characterization of OSFP based products. It can also be used for testing 400G CDRs, 400G Gearbox devices, 400G OSFP ports on routers and line-cards, electro-optical modules, and OSFP active optical cables.

OSFP Modules					
	MCB	**HCB**	**Loopback Module**	**Adapters**	
8x50G	ML4064-MCB	ML4064-HCB	ML4064-LB	ML4066-ANA-OSFP	
	ML4064-MCB-TR			ML4066-OSFP	
				ML4054-OSFP	
8x112G	ML4064-MCB-112-24	ML4064-HCB-112-24	ML4064-LB-112		
	ML4064-MCB-112-18	ML4064-HCB-112-18			

OSFP

OSFP Module Compliance Board

ML4064-MCB

Key Features

- Supports 8x50G interfaces
- I2C master driven from both on board microcontroller or external pin headers
- 40 GHz 2.92 mm K Connectors
- Current Sense
- Matched differential trace length
- All 8 channels come with matching trace length
- High performance signal integrity traces from K connectors to OSFP 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
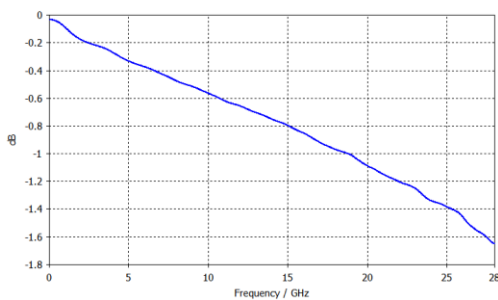- Four corner testing capability
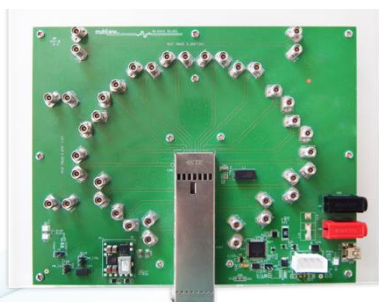- USB interface

Figure 1: ML4064-MCB Insertion Loss

Figure 2: ML4064-MCB

OSFP Host Compliance Board

ML4064-HCB

Key Features

- High performance signal integrity traces
- OSFP MSA Form Factor
- Same low Insertion Loss for all traces
- Built with high performance PCB material
- Supports 8x50G
- Built with high performance PCB Material
- High speed signals accessible through K-Connectors
- 8 channels: 8 TX and the corresponding 8 RX
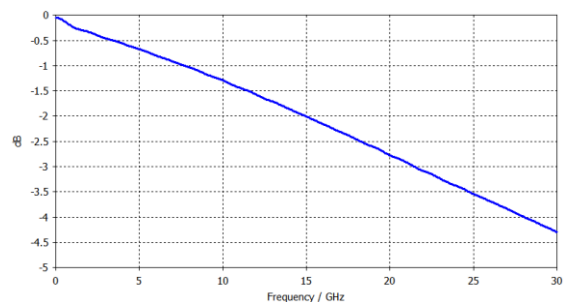- Matched trace length 5972.48 mils

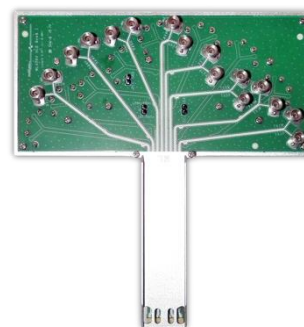**Figure 3: ML4064-HCB Insertion Loss**

Figure 4: ML4064-HCB

OSFP Passive Loopback

ML4064-LB

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
- Can emulate all OSFP power classes
- Can dissipate up to 16 W via the thermal loads
- Temp sense
- 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 5: ML4064-LB

OSFP Module Compliance Board

ML4064-MCB-TR

Key Features

- Consumable, low-cost MCB for volume testing to be used in combination with a replaceable multi-channel cable
- I2C master driven from either on-board microcontroller or external pin headers
- Current sensor
- Voltage sensor
- Two temperature sensors
- Matched differential trace length across all channels
- High performance signal integrity traces from TR40 connectors to OSFP host connector
- On-board LEDs display MSA output alarm states
- On-board jumpers for MSA input control signals
- User friendly GUI for I2C R/W commands and loading custom MSA memory maps
- Four corner testing capability
- USB interface
- OSFP analyzer interface for ML4066-ANA I2C CMIS testing
- No components near OSFP cage makes thermal testing easy to achieve

For MSA compliance testing, MultiLane recommends the ML4064-MCB.
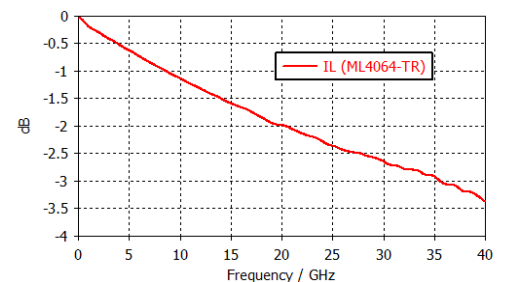

Figure 6: ML4064-MCB-TR

Figure 7: ML4064-MCB-TR Insertion Loss

OSFP to OSFP Adapter

ML4066-OSFP

Key Features

- All high-speed signals are connected from the OSFP Plug to the front OSFP host connector with superior SI traces
- Low insertion loss PCB traces
- Power pins are accessible via pin headers and can be jumped to connect them to the plugged OSFP transceiver
- All low speed management signals are accessible via pin headers, and can be jumped to connect them to the plugged OSFP transceiver
- I2C SCL and SDA signals accessible via pin headers or can be jumped to connect them to the plugged OSFP transceiver
- Ability to drive I2C from external pin headers, or connect I2C packet analyzer
- Ability to drive 3.3 V from external source for power supply margining
- Ability to break 3.3 V power from Host to module allowing voltage and current measurement
- Push button for Reset Signal
- Interface to connect SFF Analyzer board

CMIS State Machine Analyzer

- Analyzer test available on all OSFP modules that are CMIS 4.0 compliant
- Ability to test different state transitions
- Paged memory map and flat memory map show the module's current state and transition signals

Figure 8: ML4066-OSFP ADP/ANA

SFF Analyzer

ML4066-ANA-OSFP

Key Features

- All high-speed signals are connected from the OSFP Plug to the front OSFP host connector with superior SI traces
- Low insertion loss PCB traces
- Power pins are accessible via pin headers and can be jumped to connect them to the plugged OSFP transceiver
- All low speed management signals are accessible via pin headers, and can be jumped to connect them to the plugged OSFP transceiver
- I2C SCL and SDA signals accessible via pin headers or can be jumped to connect them to the plugged OSFP transceiver
- Ability to drive I2C from external pin headers, or connect I2C packet analyzer
- Ability to drive 3.3 V from external source for power supply margining
- Ability to break 3.3 V power from Host to module allowing voltage and current measurement
- Push button for Reset Signal
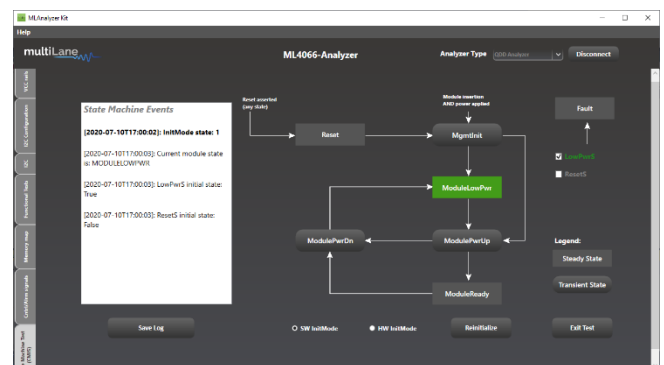- Interface to connect SFF Analyzer board
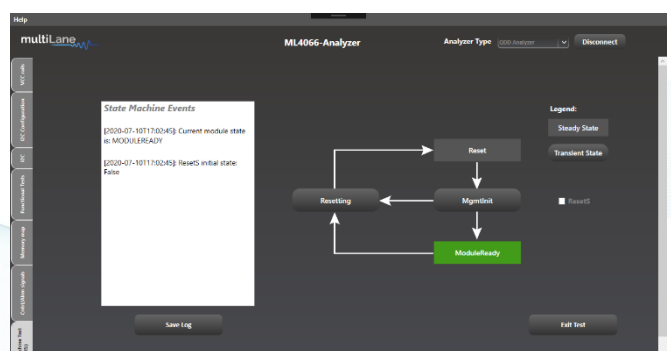
Figure 9: Paged Memory Modules

Figure 10: Flat Memory Modules

800G OSFP MCB

ML4064-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
- 2.4 or 1.85mm connectors
- Current Sense
- Matched differential trace length
- All 8 channels come with matching trace length
- High performance signal integrity traces from 2.4 or 1.85mm connectors to OSFP 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
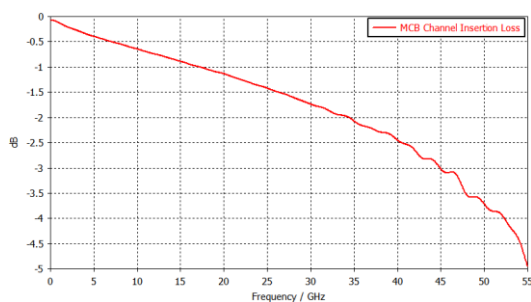- Four corner testing capability
- USB interface
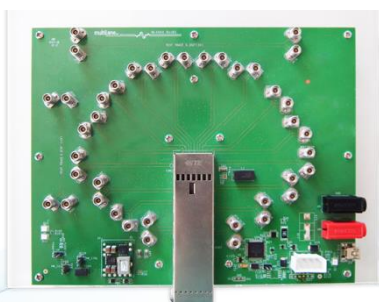

Figure 11: ML4064-MCB-112 Insertion Loss

Figure 12: ML4064-MCB-112

800G OSFP HCB

ML4064-HCB-112

Key Features

- High performance signal integrity traces
- Compliant with CEI-112G-VSR-PAM4 and CEI-56G-VSR-NRZ
- OSFP MSA Form Factor
- Same low Insertion Loss for all traces
- Built with high performance PCB material
- Supports 8x112G
- Built with high performance PCB Material
- High speed signals accessible through 2.4 or 1.85mm connectors
- 8 channels: 8 TX and the corresponding 8 RX
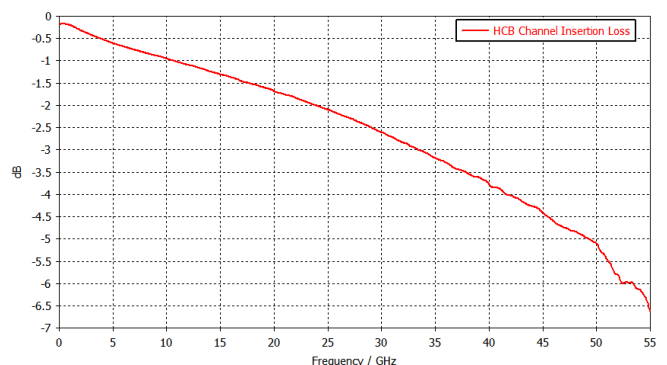- Matched trace length 5972.48 mils

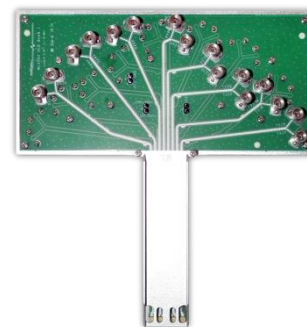**Figure 13: ML4064-HCB-112 Insertion Loss**

Figure 14: ML4064-HCB-112

800G OSFP Loopback

ML4064-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
- Can emulate all OSFP power classes
- Can dissipate up to 16 W via the thermal loads
- Temp sense
- 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 15: ML4064-LB-112

RELATED PRODUCT

CFP8 to OSFP Adapter

ML4054-OSFP

High speed signals are connected from the CFP8 Plug to the front OSFP host connector with superior SI traces.

For more info, please find full datasheet here.

Figure 16: ML4054-OSFP