

# 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
<b>8x50G</b>	ML4064-MCB	ML4064-HCB	ML4064-LB	ML4066-ANA-OSFP
	ML4064-MCB-TR			ML4066-OSFP
				ML4054-OSFP
<b>8x112G</b>	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

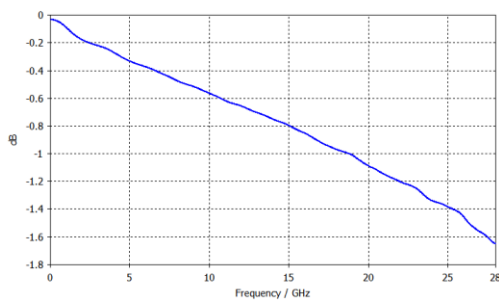


Figure 1: ML4064-MCB Insertion Loss

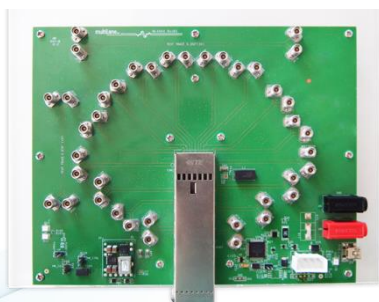


Figure 2: ML4064-MCB

## 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

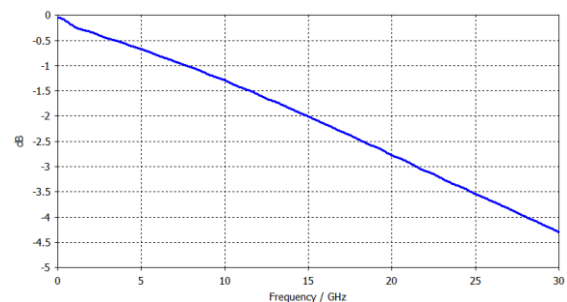


Figure 3: ML4064-HCB Insertion Loss

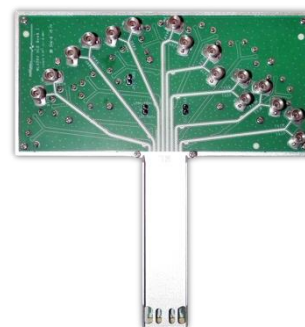


Figure 4: ML4064-HCB

## 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

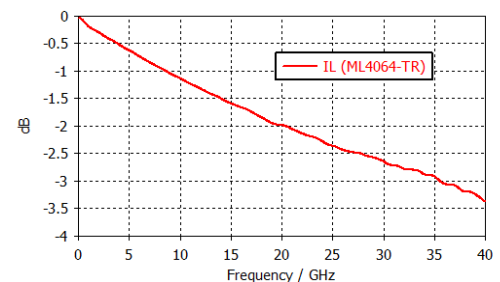


Figure 7: ML4064-MCB-TR Insertion Loss

## 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

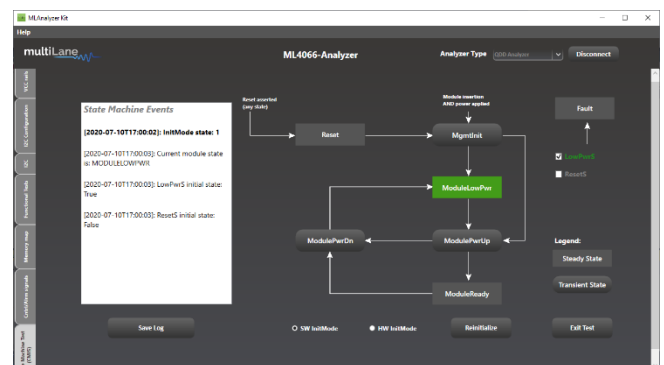


Figure 9: Paged Memory Modules

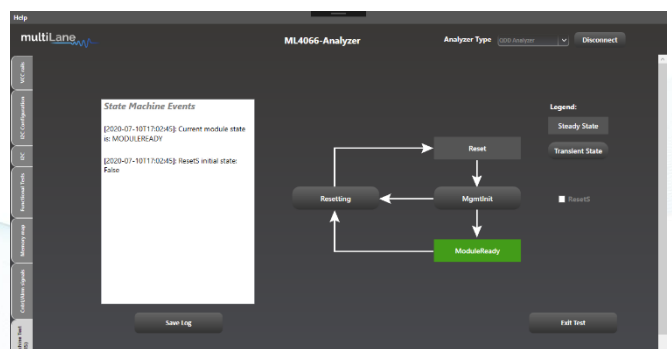


Figure 10: Flat Memory Modules

## 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

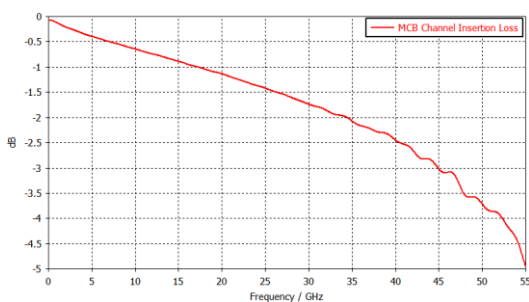


Figure 11: ML4064-MCB-112 Insertion Loss

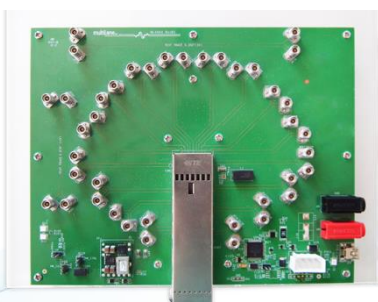


Figure 12: ML4064-MCB-112

## 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

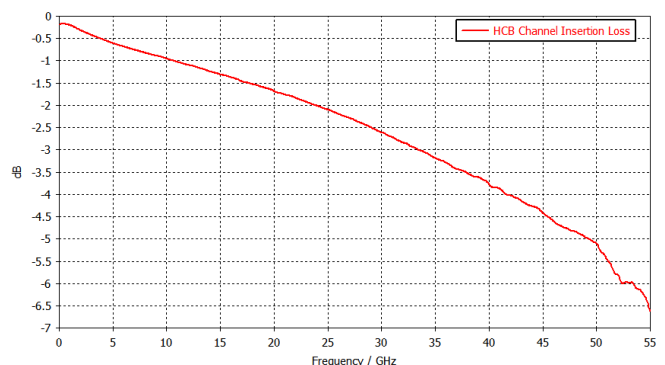


Figure 13: ML4064-HCB-112 Insertion Loss

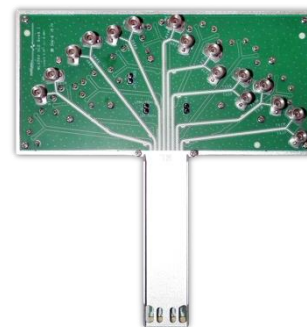


Figure 14: ML4064-HCB-112



## 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

