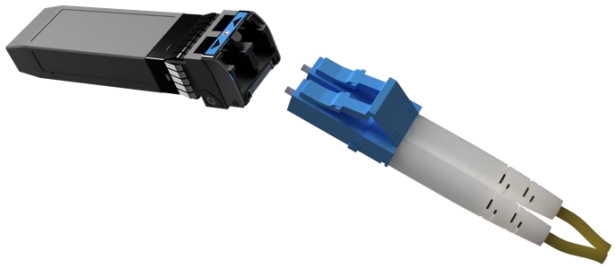
ML7007 Series

Automated Transceiver Test Solutions

Overview

Optical transceivers are a cornerstone of the data center. Filling row upon row of servers and switches, these devices are a prime candidate for the most common point of failure in data center infrastructure. With losses due to such failures amounting up to $9,000 per minute, rapid, accurate transceiver testing is as necessary as the devices themselves.



However, these tests bring with them issues of their own: transceivers are complicated, with many different parameters to account for, and manual testing of each one cannot be efficiently conducted at the scale required by the modern day data center. An automated solution is essential for adequate scalability. MultiLane has responded to this demand with the ML7007: a user friendly automated transceiver testing solution with configurations for 10G-100G, 200G, and 400G.

The ML7007 tests both the transmitter parameters and bit error rate receiver sensitivity of either Wavelength Division Multiplexing (WDM) or Parallel Fiber optical transceivers with the push of a button. The series' Productivity automation software controls the equipment, executes the tests, and generates a summary report with pass/fail information, all from a laptop and without the need for any human intervention.

The ML7007 is ideal for return merchandise authorization (RMA) testing, new supplier validation, optical transceiver characterization, failure analysis of faulty transceivers and pass/fail determination in final stages of manufacturing. Data center hardware equipment manufacturers and infrastructure providers, transceiver manufacturers and their contract manufacturers, and value added transceiver resellers can all benefit from the automated simple, scalable setup the ML7007 provides.

Testing Capabilities

The ML7007 has automated the following tests*:

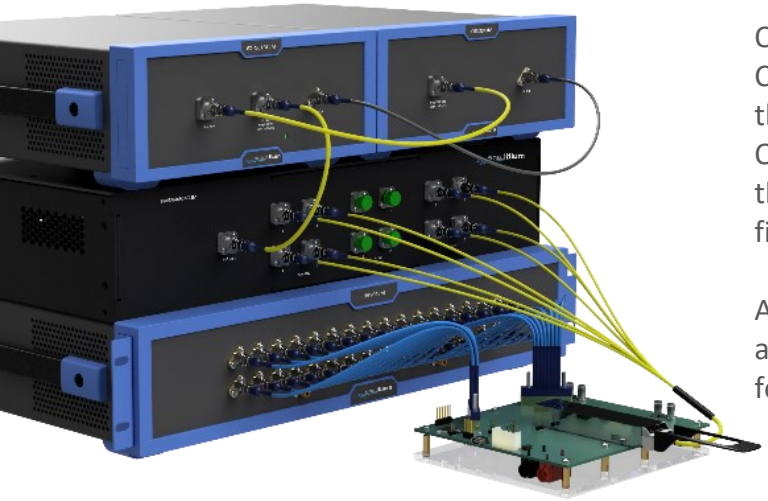
Tx**	Rx
Extinction Ratio	Receiver Sensitivity Power (OMA)
Mask Margin	Receiver Sensitivity Power (AOP)
Average Optical Power (AOP)	DOM Accuracy
Optical Modulation Amplitude (OMA)	Power Consumption

*List is not exhaustive, consult the ML7007 Brochure for a complete list along with sample tests.
**TDECQ will be available for 200G in early Q4 of 2021, and for 400G in Q1 of 2022.

Setup

All versions of the ML7007 solution include a MultiLane Bit Error Rate Tester (BERT), a variant of the MLO4034 Optical Switch Box – depending on the specifications of the DUTs – and the ML4015D Digital Sampling Oscilloscope (DSO), with the 400G variants for Quad WDM/Quad Parallel Fiber Transceivers also including the ML1016D-CR Optical Clock Recovery Module.

The standard ML7007 setup for 10-100G uses the ML4070-QSFP BERT, while the 200G setup uses an ML4039D BERT, and the 400G setup uses the ML4079D 400G BERT for both quad and octa WDM and parallel lane transceivers.



Quad WDM transceivers up to 400G use the MLO4034-CWDM4 or LR4 variant, while Octa WDM transceivers use the MLO4034-LR8 variant.
Quad and dual parallel fiber transceivers up to 400G use the MLO4034-PSM4 or SR4 variant, while Octa parallel fiber transceivers use the MLO4034-SR8 variant.

All ML7007 solutions for 200G and above use the appropriate MultiLane Module Compliance Board (MCB) for the DUT's form factor.

Testing Methodology

For WDM transceiver Tx testing, a signal is sent from the MultiLane BERT through the DUT. The MLO4034 then demultiplexes the signal and sends each one through to the ML4015D DSO.
For Parallel Fiber transceiver Tx testing, a signal is also sent from the MultiLane BERT, through the DUT. The MLO4034 then uses 2x2 switches to route each fiber's signal to be processed one at a time by the ML4015D DSO. At 400G, for both Quad Parallel Fiber and Quad WDM transceiver Tx testing, the signal is passed through the ML1016D-CR Clock Recovery Module before being sent to the DSO.

Rx testing can be conducted using either the Tx from the transceiver itself or a reference Tx determined by the user. In all cases, the signal is routed through either a single – in the case of WDM transceivers – or multiple – in the case of parallel fibers – VOA in the switch, and then through a Power Meter, before being picked up by the transceiver's Rx side.

More Information

Customers can find the specific details of each testing setup, a full list of supported form factors, and which configuration works best for their needs by consulting the website link and the ML7007 brochure.

To inquire or receive a quote for your desired test solution please contact our sales department at sales@multilaneinc.com.