

Eye-BERT 100G 100416A



100Gbps Bit Error Rate Tester and Eye Monitor

Eye Scan

QSFP28

SFP28

Electrical

Clock Out



Features:

- 1.25 to 116Gbps
- PRBS 2^7 to $2^{63} - 1$
- QSFP, SFP, SMA
- Wavelength Tunable
- Standalone Operation
- SFP/QSFP Diagnostic Monitor
- Configurable Rx/Tx Clock Output
- Individual Output Invert and Enable
- Post Equalizer Eye Opening Monitor
- Compact Rugged Package
- USB / Ethernet
- Data Logging



Applications:

- Bit Error Rate Tester
- CDR, Media Converter
- Stressed Eye Testing
- QSFP / SFP Tester

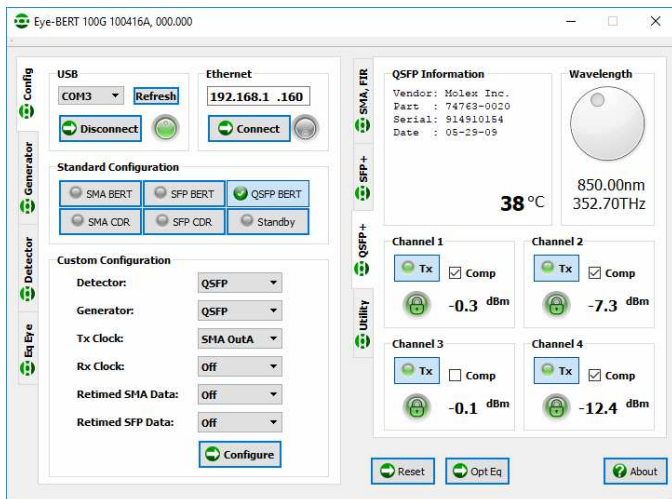
Overview

The Eye-BERT 100G is a low cost, full-featured, stand-alone communication test set with an integrated post equalizer eye opening monitor / scanner. Ultimate flexibility is provided with three different physical interfaces, 13 different configurations, and configurable transmit and receive clocks. The tester supports PRBS patterns up to $2^{63}-1$ and select data rates from 1.25 to 29Gbps on up to 4 simultaneous channels. Unlike competing products, fast post equalizer eye monitoring and scanning is included and can be performed on any input channel above 5Gbps.

The device communicates via USB or Ethernet interface using the supplied Windows application; the tester can also be used in stand alone mode without a computer. Users can develop custom applications using the simple command / messaging protocol. The unit is supplied with anti-skid bumpers and is small enough to be integrated into larger systems for dedicated link verification.

BER Testing

Once the Eye-BERT is connected to a computer, simply select either a standard test mode or use the drop down boxes to perform mixed media testing, configure output clocks, or repeat input data on other interfaces. Data rate, test pattern, and clock divide ratios are configured using generator screen, additionally each output can be disabled, inverted, and its amplitude and equalization adjusted.

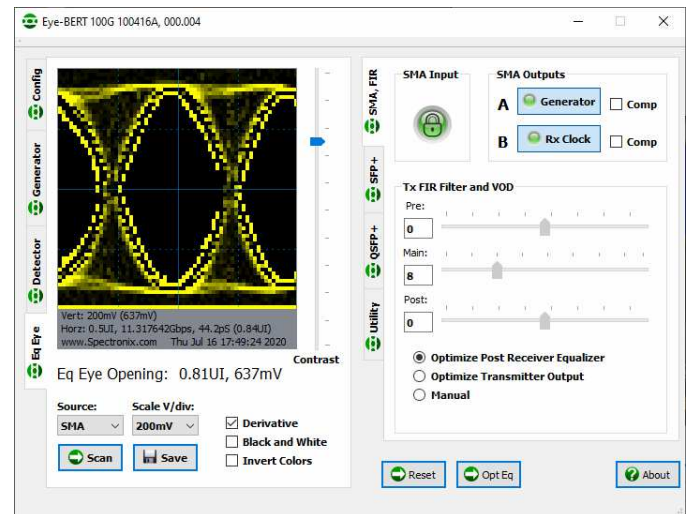


One unique feature of the Eye-BERT 100G is its ability to automatically identify and lock to

any supported PRBS pattern and polarity regardless the configured generator pattern. Bit error rates, error counts, and test times for each channel are displayed on the detector tab; front panel lock and error indicators along with an error reset button is also provided for convenience and stand alone operation.

Eye Scanning and Monitoring

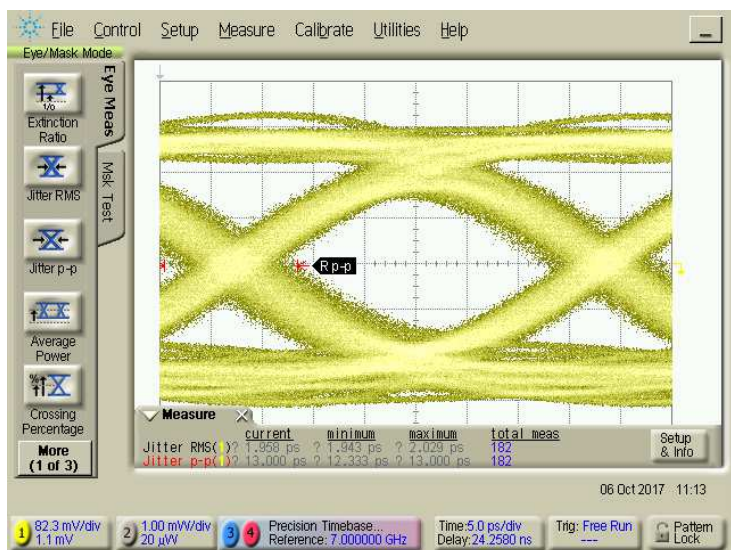
The Eq Eye tab is used to monitor the instantiations post equalizer eye opening and perform a fast eye scan of any input channel in less than two seconds. The post equalizer eye opening monitor measures the eye opening after of the internal receiver equalizer. Because the receiver equalizer has a fixed high frequency boost of 8dB at 14GHz, the reported eye opening may not agree with the eye opening at the input to the Eye-BERT particularly at rates above 20Gbps; refer to the user's manual for more information. Several eye opening display options are provided along with the ability to save the eye scan image.



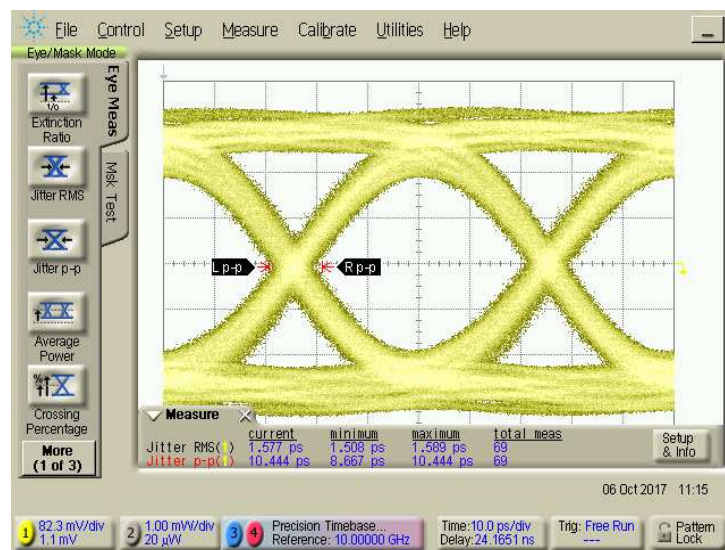
Transceiver Capabilities

The Eye-BERT 100G can accept any MSA compliant QSFP28, QSFP+, QSFP, SFP28, SFP+, or SFP transceiver allowing a wide variety of interface options including: single/multi mode fiber, wavelength, DWDM, multiplexed, etc. Wavelength tuning can be performed from the user interface for SFP transceivers that support this feature. The transceiver can be queried for the model number, serial number, date code, and registers data.

Electrical Eye at 28Gbps



Electrical Eye at 20Gbps



Specifications

Parameter	Units	Typical Specifications
Data Rates for BER testing (per channel)	Gbps	1.244 to 1.813, 2.488 to 3.625, 4.975 to 7.25, 9.95 to 14.5, 19.9 to 29.0
Data Rates for Eye Opening Monitor / Scan	Gbps	4.975 to 7.25, 9.95 to 14.5, 19.9 to 29.0
Variable Data Rate Resolution	Kbps	1
Test Patterns		PRBS 2^7 , 2^9 , 2^{11} , 2^{15} , 2^{23} , 2^{31} , 2^{58} , 2^{63} (normally inverted)
Frequency Accuracy	ppm	50
Input Data Rate Tolerance	ppm	100
Test Interfaces		MSA compatible QSFP28, QSFP+, QSFP, SFP28, SFP+, SFP, SMA
RX or Tx Output Clock Divide Ratios		2, 4, 8, 16, 32
BER Measurement range		0 to 1E-6
Eye Scan Resolution		64 x 64
Eye Scan Acquisition Time	Sec	< 2
Eye Scan Input Selection		SMA, SFP, QSFP CH1, CH2, CH3 or CH4
Differential Output Voltage	Vpp	1.1V max (adjustable)
Differential Input Voltage Range	Vpp	0.2 to 1.2
RMS Output Jitter (1.25 to 29Gbps)	pS	2.0 (SMA output and recovered clock)
Computer Interface		USB-2, Ethernet
Computer Requirements		Windows 10 with USB or Ethernet
Power		5VDC, 4A max
Unit Dimension		3.5" x 5.5" x 1.5" with rubber bumpers