

COM13: Eye-BERT MicroX30 0.0 SFP28-25GSR-85 G2001028915

BERT: PRBS 63, Inverted

6.117e-15

Errors: **2.000e+00**

Count: **3.270e+14**

Time: **0d 03:47:03** Reset

Transceiver

Rx: **-1.3** dBm

Signal Sync

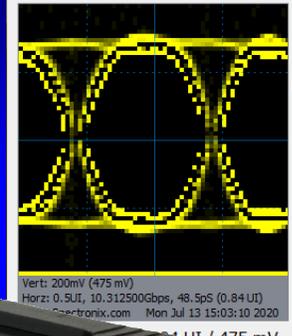
0.44 UI / 288 mV

Tx: **+0.1** dBm

850.00 nm

Utilities 48

Eye Scan



Vert: 200mV (475 mV)

Horz: 0.5UI, 10.312500Gbps, 48.5pS (0.84 UI)

Spectronix.com Mon Jul 13 15:03:10 2020

Features

- 1.244 to 29Gbps
- PRBS 2⁷ to 2⁶³
- Eye Scanning
- Eye Opening Monitor
- Tunable Wavelength
- User Replaceable SFP
- SFP Register Read/Write
- Automated SFP Testing
- Compact Package

Applications

- Automated Test Sets
- Dedicated Link Verification
- SFP Identification and Testing

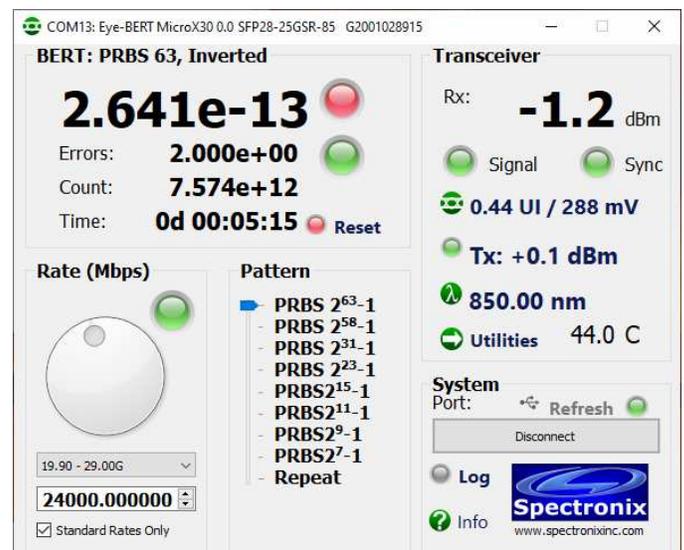
Overview

The Eye-BERT MicroX is a compact, easy to use test solution offering high performance bit error rate testing at a fraction of the cost of competing solutions. The unit is offered in two speed grades including the X10 which operates up to 14.5Gbps, and the X30 which extends the data rate to 29Gbps. Its broad data rate capabilities and long test patterns make this unit suitable for testing nearly all optical SFP, SFP+, and SFP28 transceivers in production with just one unit.

The real-time eye opening monitor and eye scanning capability can aid in troubleshooting by providing the operator with additional link quality information. Other features include Autonomous pattern detection, SFP diagnostic tools, and wavelength tuning (per transceiver capability). With a click of a button the Eye-BERT MicroX will automatically test an SFP module based on its advertised capabilities and generate a detailed test report complete with manufacturer, part number, serial number, date code, fiber type, link length, speed, and test results. The Unit is supplied with anti-skid bumpers and is small enough to be integrated into larger systems for dedicated link verification.

BER Testing

All products in the Eye-BERT Micro family use the same Windows software shown below. The interface allows the user to choose a standard or custom data rate and specify one of eight PRBS patterns. A repeat / retime mode is also provided allowing the unit to retransmit a reduced jitter copy of the received data. In repeat mode, the pattern detector and error counters are still active allowing in-line BER testing without interrupting the downstream data.



COM13: Eye-BERT MicroX30 0.0 SFP28-25GSR-85 G2001028915

BERT: PRBS 63, Inverted

2.641e-13

Errors: **2.000e+00**

Count: **7.574e+12**

Time: **0d 00:05:15** Reset

Transceiver

Rx: **-1.2** dBm

Signal Sync

0.44 UI / 288 mV

Tx: **+0.1** dBm

850.00 nm

Utilities 44.0 C

Rate (Mbps)

19.90 - 29.00G

24000.000000

Standard Rates Only

Pattern

- PRBS 2⁶³-1
- PRBS 2⁵⁸-1
- PRBS 2³¹-1
- PRBS 2²³-1
- PRBS 2¹⁵-1
- PRBS 2¹¹-1
- PRBS 2⁹-1
- PRBS 2⁷-1
- Repeat

System Port: Refresh

Disconnect

Log

Info

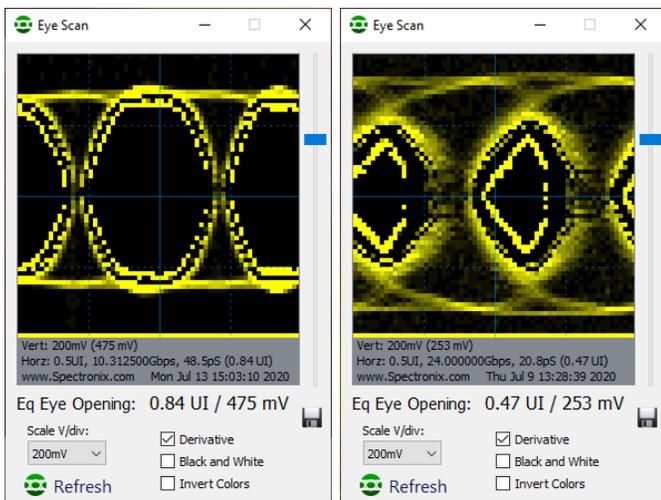
 www.spectronixinc.com

Error rate, error count, bit count, and test time are displayed along with signal, sync, and error indicators. Real time display of receive and transmit power, wavelength, temperature, and eye opening (quality) are also provided. The transmitter can be enabled or disabled at any time by selecting the transmit power indicator.

One unique feature of the Eye-BERT MicroX is its ability to automatically identify and lock to any supported PRBS pattern and polarity regardless of the selected transmit pattern. This feature is especially useful for testing signals which originate from other equipment or for testing long links with an Eye-BERT MicroX at each end.

Eye Scanning and Monitoring

The real-time eye opening monitor measures and displays the eye width and height on the main screen whenever a valid input signal is present. The eye diagram can be viewed by selecting the eye monitor icon to display the Eye-Scan window shown below. Several Eye-Scan measurement and display options are provided along with the ability to save the eye scan image.



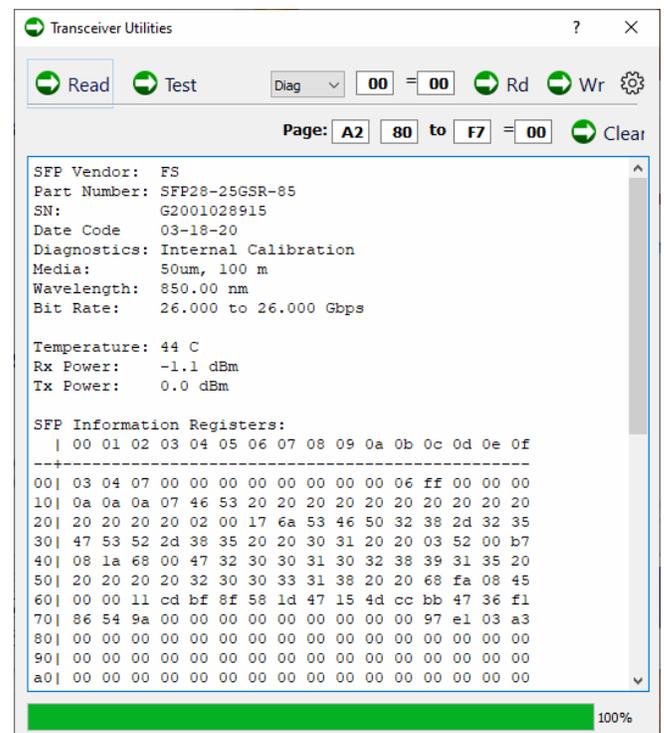
Wavelength Tunable Transmitter

When using a tunable transceiver, the user can adjust the wavelength or frequency using the pop-up control shown below.



SFP Utilities and Testing

The utilities window allows the user to read and edit transceiver registers and perform “one-click” SFP testing. The automated test compares the measured transceiver performance to its advertised capabilities and generates a detailed test report.



Pressing the “Test” button from the transceiver window initiates the automated SFP test. After about 20 seconds a detailed report is generated complete with manufacturer, part number, serial number, date code, fiber type, link length, speed, and test results. A sample test report is shown below.



Eye-BERT MicroX Bit Error Rate Tester 1.25 to 29Gbps with Eye-Monitoring/Scanning

Data Sheet 7/8/2020

100495A

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SFP INFORMATION:
SFP Vendor: FS
Part Number: SFP28-25GSR-85
SN: G2001028915
Date Code 03-18-20
Diagnostics: Internal Calibration
Media: 50um, 100 m
Wavelength: 850.00 nm
Speed Range: 26000.00 Mbps to 26000.00 Mbps

Temperature: 46 C
Rx Power: -1.1 dBm sig
Tx Power: 0.0 dBm

SFP TRANSMITTER / RECEIVER TEST RESULTS:
Temperature(46 C): pass
Tx: -40.0 dBm(off) 0.0 dBm(on) pass
Rx: -40.0 dBm(off) -1.1 dBm(on) pass

Bit Error Rate Testing @ PRBS 2^31-1 (1 sec)
Rate (Gbps) LOS BER UI/mV Results
26.000000 OK 8.046E-18 0.34/215 pass
26.000000 OK 1.835E-17 0.34/215 pass
1.528500 OK 0.000E00 0.43/662 pass*
3.056500 OK 0.000E00 0.90/675 pass*
6.112500 OK 0.000E00 0.90/662 pass*
12.225000 OK 5.257E-15 0.78/612 pass*
24.450000 OK 0.000E00 0.46/253 pass*
Note: * indicates the device is not specified at this speed

*** all tests passed ***
*** Tests may be invalid for SFP, see data sheet ***
*** Tested by Eye-BERT MicroX www.spectronixinc.com ***

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Custom Programming

The Eye-BERT MicroX uses USB / serial port emulation along with a straight forward communication protocol making custom user application development straight forward.

Ordering Information

Part Number	Description
100495A-X30	Eye-BERT Micro X30 (1.244 to 29Gbps), with power supply, USB cable, USB driver, Windows GUI, and users manual
100495A-X10	Eye-BERT Micro X10 (1.244 to 14.5Gbps), with power supply, USB cable, USB driver, Windows GUI, and users manual

Specifications

Parameter	Units	Typical Specifications
Data Rates for BER testing (X30 model) ¹	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 BER testing (X10 model) ¹	Gbps	1.244 to 1.813, 2.488 to 3.625, 4.975 to 7.25, 9.95 to 14.5
Rates for Eye Opening Monitor / Scan (X30) ¹	Gbps	4.975 to 7.25, 9.95 to 14.5, 19.9 to 29.0
Rates for Eye Opening Monitor / Scan (X10) ¹	Gbps	4.975 to 7.25, 9.95 to 14.5
Variable Data Rate Resolution	Kbps	1
Detector / Generator Test Patterns ¹		PRBS 2 ⁷ -1, 2 ⁹ -1, 2 ¹¹ -1, 2 ¹⁵ -1, 2 ²³ -1, 2 ³¹ -1, 2 ⁵⁸ -1, 2 ⁶³ -1, normal or inverted (Gen: inverted only)
Frequency Accuracy	ppm	50
Input Data Rate Tolerance	ppm	100
Compatible Transceivers		MSA compliant SFP28, SFP+, SFP
BER Measurement range		0 to 1E-6
Eye Scan Resolution		64 x 64
Eye Scan Acquisition Time	Sec	< 3
Computer Interface		USB-2
Computer Requirements		Windows 10 with USB or Ethernet
Power		5VDC, 2A max
Unit Dimensions		3.5" x 2.5" x 1.5" with rubber bumpers

Notes:

1. Data rate and patterns may be limited by transceiver capabilities.