



### Features

- 3 speed options
- 125Mbps to 29Gbps
- 4 to 12 Channels
- PRBS 2<sup>7</sup> to 2<sup>63</sup>
- Eye Scanning
- Eye Opening Monitor
- SFP/SFP+/SFP28
- Wavelength Tuning

### Applications

- Production SFP Testing
- DWDM System Testing

## Overview

The MultiChannel Bit Error Rate Tester combines up to 12 independent BERT channels in a compact 1U chassis providing up to 350Gbps of total bandwidth. Each channel can be configured to operate at speeds from either 125Mbps to 4.25Gbps, 1.244G to 14.5Gbps, or 1.25Gbps to 29Gbps. Wide band operation, long BERT test patterns, and eye diagram capabilities make this unit suitable for debug, diagnostics, and performance testing. Other features such as unmonitored operation and the ability to adjust multiple channels in a single operation make this unit convenient for production testing.

## BERT Testing

The supplied software application allows the user to choose from standard or custom data rates and to specify up eight PRBS patterns depending on the speed options. The repeat / retime mode allows 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 BERT testing without interrupting the down-stream data.

Type	BER	Errors	Count	Time	Rx (dBm)	Rx PRBS	Eye (U,mV)
10G	1.682E-11	5.099E+01	3.032E+12	0d 00:05:04	-2.3	2^11i	0.87, 625
10G	0.000E+00	0.000E00	3.685E+12	0d 00:05:07	-1.0	2^7i	0.90, 663
10G	0.000E+00	0.000E00	3.834E+11	0d 00:05:06	-17.3	2^9i	0.26, 663
10G	0.000E+00	0.000E00	3.473E+12	0d 00:05:06	-40.0	2^11i	0.77, 553
2G	3.837E-02	2.635E+09	6.867E+10	0d 00:00:25	..82.3		
2G	0.000E+00	0.000E00	8.513E+11	0d 00:05:19	-14.1	2^7i	
2G	0.000E+00	0.000E00	1.324E+12	0d 00:05:11	0.0	2^23i	
2G	1.019E-05	4.215E+05	4.127E+10	0d 00:05:30	-20.7	2^31i	

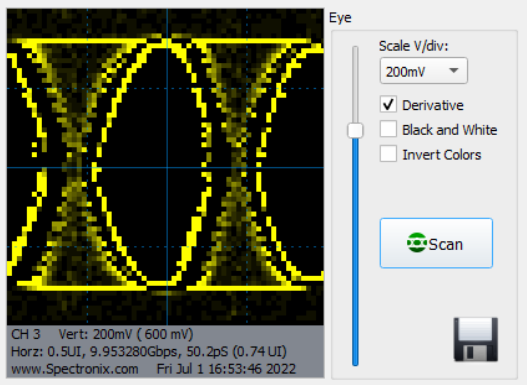
Error rate, error count, bit count, and test time are displayed for each channel in a grid format. Colors are used to indicate lock, error free operation, error history, and real-time bit errors.

Real time display of receive and transmit power, receive and transmit pattern, wavelength, temperature, and eye opening (X10 and X30 models) are also provided. One unique feature of the X10 and X30 models is their 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.

## Eye Scanning and Monitoring

The real-time eye opening monitor of the X10 and X30 measures and displays the eye width and height for each channel whenever a valid input signal is present. The eye diagram can

be viewed by selecting a channel and pressing the “Scan” button. Several display options are provided along with the ability to save the image.



### SFP Interface

Each channel uses a standard SFP, SFP+, or SFP28. When using tunable transceivers, the user can adjust the wavelength / frequency.

### Specifications

Parameter	Units	Typical Specifications
Data Rates for BER testing (X30) <sup>1</sup>	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) <sup>1</sup>	Gbps	1.244 to 1.813, 2.488 to 3.625, 4.975 to 7.25, 9.95 to 14.5
Data Rates for BER testing (X2) <sup>1</sup>	Gbps	125, 155.52, 200, 622.08, 1062.5, 1250, 2125, 2488.32, 2500, 2666.08, 4250
Rates for Eye Opening Monitor / Scan (X30) <sup>1</sup>	Gbps	4.975 to 7.25, 9.95 to 14.5, 19.9 to 29.0
Rates for Eye Opening Monitor / Scan (X10) <sup>1</sup>	Gbps	4.975 to 7.25, 9.95 to 14.5
Variable Data Rate Resolution	Kbps	1
Detector / Generator Test Patterns (X10 and X30) <sup>1</sup>		PRBS 2 <sup>7</sup> -1, 2 <sup>9</sup> -1, 2 <sup>11</sup> -1, 2 <sup>15</sup> -1, 2 <sup>23</sup> -1, 2 <sup>31</sup> -1, 2 <sup>58</sup> -1, 2 <sup>63</sup> -1, normal or inverted (Gen: inverted only)
Detector / Generator Test Patterns for (X2) <sup>1</sup>		PRBS 2 <sup>7</sup> -1, 2 <sup>23</sup> -1, 2 <sup>31</sup> -1 (inverted)
Frequency Accuracy	ppm	50, channels are asynchronous to each other
Input Data Rate Tolerance	ppm	100
Compatible Transceivers		MSA compliant SFP28, SFP+, SFP
BER Measurement range		0 to 1E-6
Eye Scan Resolution (X10 and X30)		64 x 64
Eye Scan Acquisition Time (X10 and X30)	Sec	< 3
Computer Requirements		Windows 10 with USB-2
Power		120/240VAC
Unit Dimensions		1U, 19” rack with mounting ears, 8” deep

### Custom Programming

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

### Ordering Information

The unit contains three bays; each bay can be configured with any combination of two 2G modules (125M to 4.25G), four 10G modules (1.25G to 14.5G), or four 30G modules (1.25G to 29G).

Part Number	Description
100555A- #X2- #X10#X30	MultiChannel BERT, where # is the number of channels at each speed grade. Example: 100555A-2X2-4X10-4X30.