Stressed Eye Generator

Key Features

- 850 nm, 1310 nm and 1550 nm wavelength options
- Operational from 155 Mb/s to 10.71 Gb/s data rates
- Adjustable extinction ratio
- Four selectable data paths (reference, OMA, internal BT filter or external filter)
- Accepts sinusoidal amplitude interference inputs
- Front panel LCD or GPIB control

Applications

- Manufacturing and R&D receiver testing including 10 Gb/s Ethernet and Fiber Channel
- Manufacturing and R&D Datacom/Telecom reference transmitter
- Dispersion penalty testing
- System testing

Safety Information

Complies to CE requirements plus UL3101-1 and CAN/CSA-C22.2 No. 1010.1 Meets the requirements of Class 1 (1310,1550 nm) and Class 3B (850 nm) in standard IEC 60825-1(2002) and complies with 21CFR1040.10 except deviations per Laser Notice No. 50, July 2001.

CLASS 1 LASER PRODUCT
(IEC 60825-1, 2002)

INVISIBLE LASER RADIATION
AVOID EXPOSURE TO BEAM
CLASS 3R LASER PRODUCT
(IEC 60825-1, 2002)
700-1400 NM

The JDS Uniphase Stressed Eye Generator provides a cost effective IEEE Std. 802.3ae™ Stressed Eye reference for manufacturing and research and development (R&D) compliance testing. This optical transmitter can operate with data rates ranging from 155 Mb/s to 10.71 Gb/s and provides adjustable extinction ratio control and selectable inter-symbol-interference paths.

The Stressed Eye Generator accepts sinusoidal interference rates from 2.0 GHz to 0.1 GHz. All features are accessible via the front panel (no PC required) or remotely by GPIB with SCPI compatibility.

The Stressed Eye Generator is available at 850 nm, 1310 and 1550 nm wavelengths.

Continued

Data Source Requirements

The JDS Uniphase 10 Gb/s Reference Transmitter has several features that allow the user to build a stressed eye per IEEE Std. 802.3ae™ Clause 52. The transmitter provides the user with the ability to insert AM interference and provides a switched path for OMA calibration, insertion of an internal 4th order low pass Bessel Thomson filter or externally supplied filter.

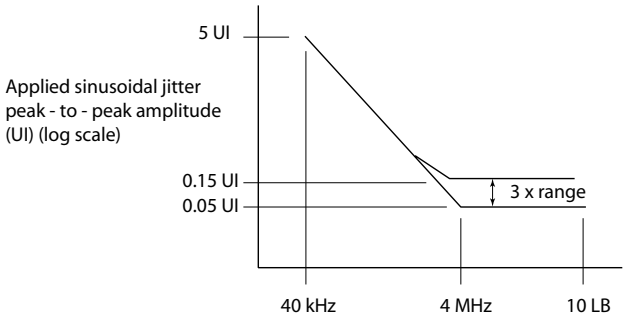
NOTE: The 10 Gb/s Reference Transmitter does not supply timing jitter for the stressed eye test. Timing jitter is supplied by the data source.

The following are the requirements of the data source for compliance to IEEE Std. 802.3ae™ :

- Wideband Jitter p-p < 0.2 UI
- Data input amplitude 0.5 to 1.5 V p-p
- T_{rise} and T_{fall} < 30 ps

Data source must be able to add 0.05 to 0.15 UI of added sinusoidal jitter p-p at the frequency range shown below via an external clock input:

- Frequency range of jitter: 40 kHz to 10X Loop-Bandwidth of DUT (~ 80 MHz)



Mask of the sinusoidal component of jitter tolerance (informative)

3

Specifications

Parameter	Specification		
General			
Optical wavelength	850 ± 10 nm	1310 ± 20 nm	1550 ± 20 nm
Root mean square (RMS) spectral width	< 0.45 nm	< 0.1 nm	< 0.1 nm
Optical fiber	Multimode fiber (MMF) 50/125	Single-mode fiber (SMF) 9/125	Single-mode fiber (SMF) 9/125
Operational data rate	155 Mb/s to 10.71 Gb/s		
Data patterns	PRBS 2^{31} - 1, 2^{7}-1, $A_nA_iA_nA_i$, $B_nB_iB_nB$, (11110000)		
Data input (internal AC coupled)	0.5 V to 1.5 V		
PRESET button	Selects factory default OMA mode setting of 3.5 dB ER and OMA mode		
Operator interface	Front panel LCD interface SCPI compatible GPIB command set		
Reference Mode[1]			
Average optical output power	> - 1 dBm	> - 1 dBm	> - 1 dBm
Extinction ratio at 10.3125 Gb/s, Pseudo-random binary sequence (PRBS) 2^{31}-1 bit stream	Adjustable from 6 to 10 dB		
Rise and fall time (20 to 80 %)	<35 ps[2]	< 30 ps	< 30 ps
Vertical eye closure penalty (1% center region of eye)	< 1.0 dB[3]	< 0.5 dB	< 0.5 dB
Eye mask margin	15 %, using IEEE Std. 802.3ae™ -2002 Eye Mask definition, PRBS 2^{31}-1, 1000 waveforms		
Relative intensity noise (RIN)	< -136 dB/Hz		
Jitter	< 0.2 UI p-p (input signal <0.1 UI p-p jitter)		
Internal Stressed Eye Mode[1]			
Vertical eye closure penalty resulting from selection of internal ISI filter 10.3125 Gb/s	>2.33 dB	>1.47 dB	>1.80 dB
Extinction ratio at 10.3125 Gb/s, PRBS 2^{31}-1 bit stream	Adjustable from 3 to 4 dB		
Sinusoidal interferer input frequency range	100 MHz to 2.0 GHz		
Sinusoidal interference input level	< 20 dBm		
External ISI filter port	SMA female connectors for passive devices only - apply no AC or DC voltages		
General			
Input voltage	100 to 240 V AC, 50 to 60 Hz		
Power consumption	75 V A maximum		
Operating temperature	0 to 50 °C		
Storage temperature	- 30 to 60 °C		
Humidity	maximum 95 % RH non-condensing from 0 to 45 °C		
Dimensions (W x H x D)	13.2 x 44.9 x 50.0 cm (19 inch x 3U x 20 inch)		
Weight	12.4 kg		

1. Specification guaranteed at these data rates: 9.95328, 10.3125, 10.51875 Gb/s.
2. IEEE Std. 802.3ae Reference Transmitter rise and fall time (20 to 80 %) specification is < 30 ps.
3. IEEE Std. 802.3ae Reference Transmitter vertical eye closure penalty (1% center region of eye) specification is < 0.5 dB.

4

Ordering Information

For more information on this or other products and their availability, please contact your local JDS Uniphase account manager or JDS Uniphase directly at 1-800-498-JDSU (5378) in North America and +800-5378-JDSU worldwide or via e-mail at sales@jdsu.com.

Sample: OPTX10+1O13FP

OPTX10+1 **O** □ □ □□

Code	Wavelength
1	1550 nm
3	850 nm
4	1310 nm

Code	Connector Type
FP	FC/PC

Code	Fiber Type (µm)
1	MM 50/125 (850 nm wavelength only)
3	SM 9/125