

SONET-Framed Bit Error Rate Tester (BERT) Load Module

Ixia's family of SONET-framed BERT Load Modules deliver cost-effective Layer 1 testing capabilities. Available for use in small footprint desktop and rack-mount chassis, or in field portable units, these Load Modules allow manufacturers and network operators to stress test their equipment using industry standard PRBS patterns.

With extensive access to SONET overhead bytes and the ability to monitor for and inject errors in individual SONET frames, Ixia's BERT Load Modules deliver comprehensive Layer 1 performance verification. Ixia's BERT is available in dedicated Load Modules or as a feature on Ixia's OC-192c POS/Ethernet Universal Load Module.



Specifications

Module Type/Slots Occupied	OC-48c/1 Slot	OC-192UniPHY	OC-192c
Optical Interface	1310 nm or 1550 nm Singlemode	1310 nm or 1550 nm Singlemode	VSR-1
Extinction Ratio (db)	8.2	7.0	6 min, 10 typical
Optical Tx Power (dBm)	-10 min to 0 max	-6 min to 2 max	-10 min to -5 max
Optical Rx Sensitivity (dBm)	-21 min to -1 max	-14 min to -1 max	-16 min to -3 max
PRBS Patterns	2 ⁿ -1, n={11,15,20,23,31}, PRBS can be Inverted All Zeros, Alternating Ones/Zeros, User-Defined		
Alarms	Link State, Line Speed, Section LOS, Section LOF, Line and Path AIS, RDI, Path PLM (C2), Path LOP		
Counters and Rates	Section BIP (B1), Line BIP (B2), Path BIP (B3), Line and Path REI (FEFE), Mismatched 1s, Mismatched 0s		
Error and Alarm Generation	Insert single, continuous or user-defined rates for bit errors, Section LOF, B1, B2, B3, Line and Path AIS, REI (FEFE), and RDI., J0, J1 Trace Message Insertion/Capture; D1-D12 Data Communication Channel Insertion/Capture		
VSR-1 Error Insertion (OC-192c VSR-1 only)	Momentary or continuous, per channel error insertion for Section BIP, CRC, Frame Delimiter, Channel Skew, 8b/10b Violations		
Statistics	Bits Sent/Received, Bit Errors Sent/Received, Pattern Lock Indicator, Block Error State, Elapsed Test Time, Receive power (OC192c only)		
G.826 Measurements (Counts and Rates)	Errored Seconds, Severely Errored Seconds, Error Free Seconds, Available Seconds, Unavailable Seconds, Errored Blocks, Background Block Errors, Bit Error Ratio, Errored Seconds Ratio, Severely Errored Seconds Ratio, Background Block Error Ratio, Counts of errored and unavailable seconds for every supported SONET alarm and error type		
APS Testing	K1/K2 Bytes – set/read; Service Disruption (min, max, last, cumulative) – millisecond granularity		
Eye-Pattern Generation (OC-192c only)	311.04 MHz +/- 20-PPM clock output via a front-panel SMA connector		

Precision APS Testing

Ixia’s BERT Load Modules offer precision, user-definable rates for SONET alarm and error insertions. Combined with the module’s Service Disruption measurement capabilities, users can easily validate Automatic Protection Switchover (APS) thresholds for a variety of error modes.

POS / 10 Gigabit Ethernet WAN Upgradeable

Ixia BERT Load Modules are firmware upgradeable to include Packet Over SONET functionality. This flexibility to move up from Layer 1 testing gives users the utmost in space efficiency and cost effectiveness. The OC-192c BERT Load Module is also upgradeable to 10 Gigabit Ethernet LAN and WAN functionality in addition to Packet Over SONET, yielding a quad mode card.

VSR-1 Support

Used for intra-POP, short distance connections, the VSR-1 interface is a cost-effective alternative to long-range optics. Ixia’s OC-192c BERT Load Module is available with a VSR-1 interface, which uses 12 parallel fiber optic lines operating at 1.25Gbps each. The Ixia VSR-1 interface offers extensive access to the VSR-1 framer for error insertion and statistics collection.

Tcl API

Ixia’s BERT Load Modules are supported by a full Tcl Application Programming Interface (API). This API allows users to develop custom scripts and integrate the modules into automated test environments.

Compatibility

Ixia’s BERT Load Modules use industry standard PRBS patterns and G.826 statistics and are fully compatible with SONET-framed BERTs from other vendors.

Chassis Support

The BERT Load Modules are supported in the IXIA 250, IXIA 400T, and IXIA 1600T. Multiple BERT interfaces and interface speeds can be combined within a single chassis.

Product Ordering Information

LMOC48311.....	OC-48c -1 port 1310 nm Upgradeable to POS/BERT Singlemode
LMOC48312.....	OC-48c - 1 port 1550 nm Upgradeable to POS/BERT Singlemode
LM10GULF +..... OPTOC 192 BERT	OC-192c – 1 port 1310 nm Upgradeable to POS/ LAN/WAN Singlemode
LM10GUEF +..... OPTOC 192 BERT	OC-192c – 1 port 1550 nm Upgradeable to POS/ LAN/WAN Singlemode
LMOC192368.....	1 Port OC-192c-VSR Parallel optics SONET/BERT Load Module
LMOC192468.....	1 Port Multilayer OC-192c-VSR Parallel optics Packet Over SONET/BERT Load Module