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ABN 43 064 478 842

231 osborne avenue clayton south, vic 3169
PO box 1548, clayton south, vic 3169
t 03 9265 7400 f 03 9558 0875
freecall 1800 680 680
www.tmgtestequipment.com.au

Test & Measurement

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- repair
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Complimentary Reference Material

This PDF has been made available as a complimentary service for you to assist in evaluating this model for your testing requirements.

TMG offers a wide range of test equipment solutions, from renting short to long term, buying refurbished and purchasing new. Financing options, such as Financial Rental, and Leasing are also available on application.

TMG will assist if you are unsure whether this model will suit your requirements.

Call TMG if you need to organise repair and/or calibrate your unit.

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Form 080/01

NATA   CERTIFIED MANAGEMENT SYSTEM   AIDN

SmartBits®
10 GIGABIT ETHERNET XENPAK MSA MODULES

10-Gigabit Ethernet (10GbE) has become the preferred network interface for linking workgroup switches, data center backbones in campus networks, managing large 1GbE link aggregation and interconnecting large enterprise networks.

APPLICATIONS AND BENEFITS

- Accelerates the development and deployment of 10GbE networking equipment through automated performance and functional testing

- Both 10GbE LAN and WAN Layer-2 protocols are supported on SmartMetrics and TeraMetrics test modules

- A pluggable XAUI interface extender module is available for testing of XAUI-based devices. The XAUI interface extender module is pluggable to the XLW-3720A/3721A test module, just like a XENPAK transceiver. It has an integrated SMA connector and cable break-out scheme for individual XAUI lane testing. SmartWindow' provides a programmable MDIO functional test capability that includes building reusable MDIO test templates

- SmartBits correlates multiple key measurements like packet loss, latency, frame sequencing, stream identification and load from one test iteration. This gives test engineers unique insight into how buffering and queuing mechanisms affect packet IP QoS, while other test tools require executing multiple tests to gather the same information

- Tests core router performance by simultaneously creating routing events and tracking the effect on data plane traffic. Run an RFC-2544 data plane test while testing the BGP protocol

- Stresses a router by having it perform a different routing decision for each and every frame

- Tests the aggregated performance of switches when many 10/100 Mbps or Gigabit Ethernet ports are sending traffic to one or more 10 Gigabit Ethernet ports

- Tests the performance of switches and routers using RFC-2544 and RFC-2889 test methodologies. (Transmit round robin traffic pattern at wire rate with one packet per burst)

- Performs negative testing by injecting errored traffic

- Tests IP multicast performance, as well as Diffserv and VLAN-enabled devices

- Tests the forwarding performance of devices with a mix of IPv6 and IPv4 streams on the same port

The SmartBits 10GbE XENPAK test modules provide highly scalable line-rate testing of switches, switch routers and routers. These modules generate realistic traffic at different OSI layers and analyze data frame, packet and stream metrics for each layer. The test modules, which can simultaneously manage data plane tests with control plane traffic required for metropolitan and enterprise routing, provide the most realistic performance measurements available in the industry.

Two high performance 10GbE test modules are offered for the SmartBits product line:
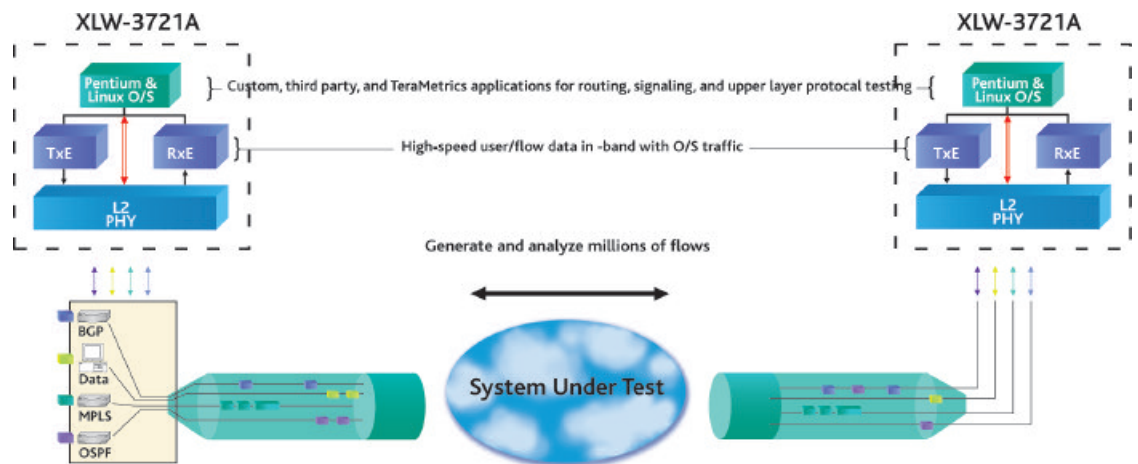
XLW-3720A

The SmartBits XLW-3720A SmartMetrics™ module provides Layer-2 and Layer-3 switch and switch router benchmark and performance testing at a low cost. The SmartMetrics version is an excellent functional test platform for 10-Gigabit Ethernet hardware and firmware development, manufacturing and quality assurance applications.

XLW-3721A

The SmartBits XLW-3721A TeraMetrics™ module provides Layer-2 through Layer-7 testing, and is superior for switch routers, and routing protocol benchmark and performance testing. It features a dedicated Pentium® processor that provides integrated and highly scalable control and data plane performance testing. The TeraMetrics version is an excellent platform for 10GbE development, routing protocol performance testing, quality assurance and system test applications.

Both SmartBits 10GbE XENPAK-MSA – based test modules are used to measure the performance and test the interoperability of IPv4 and IPv6 networking devices. All SmartBits 10-Gigabit Ethernet test modules are compliant with the IEEE 802.3ae standard.

Environment using SmartBits 600x/6000x chassis equipped with XLW-3720A/3721A modules

KEY FEATURES

Transmit Side

- Stream-based, wire-rate traffic generation at all frame sizes

- Frame sizes of 42 to 16,384 bytes

- Up to 512 independent IP transmit streams

- Varies multiple address fields per stream to create millions of unique flows

- Supports random IFG generation

- Arbitrary stream sequencing enables the mixing of various frame rates

- Supports 802.1p, 802.1q, and 802.3ac VLAN tagged frames

- Supports 802.3x flow control commands

- Transmission modes: continuous, single-burst, multiburst, continuous multiburst and echo

- Ports are completely independent in operation

- Allows mask-based address skipping for easy test setup

Receive Side

- Analyzes up to 64,000 unique streams in histograms

- Provides real-time analysis of TOS and Diffserv values, giving rates and events per traffic class

- Simultaneously measures packet loss, latency and frame sequencing for each stream, and correlates to traffic load

- Unicast, broadcast, and multicast traffic effects can be analyzed

- 32MB capture buffer enables the logging and exporting of filtered events to external protocol analysis equipment

- Per-port statistics include counters for transmitted / received frames, total bytes, CRC errors, over- and under-sized frames, VLAN tagged frames, data integrity, IP checksum, signature field, jumbo frames and pause frames.

- Data integrity checking of payload

- IP header checksum verification

Protocol Support

IPv4, IPv6, UDP, TCP, ARP, ICMP, IGMP, RIP, BGP-4, OSPF, STP and MPLS. See SmartBits routing datasheets for details.

Internetworking Tests

The TeraMetrics XENPAK module, in combination with other SmartBits modules, can perform internetworking tests with 10/100/1000 Mbps Ethernet, Fibre Channel, ATM, Frame Relay, PPP, or Packet over SONET devices.

Both test modules support the XENPAK MSA standard specifications, including key XENPAK management features.

SUPPORTED MODULES

The XENPAK MSA interface allows users to change the XENPAK optical transceiver to support different 10GbE laser wavelengths, reach ranges and 10GbE serial LAN data link layer protocols. The XENPAK optical transceiver is hot-pluggable to the XLW test module. The hot-pluggable feature of the XENPAK MSA optical assembly allows the user to change the test system configuration as desired by simply changing the XENPAK MSA transceiver. The XLW test module automatically reconfigures itself to adapt to the different optic types.

The XENPAK MSA transceivers can be ordered from Spirent Communications.

Supported Applications
- AST II™
- Automated RFC 2544 and 2889 test scripts
- SmartFlow™
- SmartMulticast IP
- SmartWindow™
- Spirent Connect™
- TeraRouting Tester™ (XLW-3721A only)
- TeraDot1x Tester™

REQUIREMENTS
- The XLW-3720A and XLW-3721A modules require two slots in a SmartBits 600B or 6000C chassis
- IBM or compatible Pentium® PC running Windows® 2000/NT/XP, with mouse and color monitor
- For chassis and module control: one Ethernet cable with RJ-45 connectors (use a crossover cable if directly connected from a PC to the SmartBits chassis or module), and a 10/100 Mbps half-duplex Ethernet controller card (in the PC/workstation)

10 Gigabit Ethernet Test Module Specifications		
Feature	XLW-3720A SmartMetrics 2-slot Module	XLW-3721A TeraMetrics 2-slot Module
Optical transceiver types	XENPAK MSA	
Laser wavelengths	850nm, 1310nm, 1550nm	
10GbE IEEE 802.3ae protocol modes	Serial LAN, WAN	
Optical cabling	Multi-mode, single mode fiber	
Signal rate	10.3125Gbps LAN, 9.58464Gbps WAN	
Maximum receive streams	64,000	
Minimum / maximum frame size without CRC	42 – 16,384 bytes	
Deficit Idle Count support (DIC)	LAN and WAN modes / ON or OFF selectable	
Link Fault Signaling (LFS)	LAN and WAN modes / ON or OFF selectable	

ORDERING INFORMATION

10 GbE XENPAK Modules

SmartMetrics 10 Gig Ethernet XENPAK, 1 Port Module, (2-slot), W/O Transceiver
(P/N XLW-3720A)

TeraMetrics 10 Gig Ethernet XENPAK, 1 Port Module, (2-slot), W/O Transceiver
(P/N XLW-3721A)

XENPAK Optical Assemblies

Optical Transceiver, XENPAK MSA, 10GbE, 10GBASE-LR, 1310nm, SM (P/N ACC-6022A)

Optical Transceiver, XENPAK MSA, 10GbE, 10GBASE-ER, 1550nm, SM (P/N ACC-6023A)

Optical Transceiver, XENPAK MSA, 10GbE, 10GBASE-SR, 850nm, MM (P/N ACC-6024A)

Optical Transceiver, XENPAK MSA, 10GbE, LAN-WAN, 1310, SM (P/N ACC-6028A)

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SPIRENT
Communications

Spirent Communications
15200 Omega Drive
Rockville, MD 20850 USA

Spirent Communications
26750 Agoura Road
Calabasas, CA 91302 USA

SALES AND INFORMATION
sales-spirent@spirentcom.com
www.spirentcom.com

Americas
T: +1 800.SPIRENT
    +818 676.2683

Europe, Middle East, Africa
T: +33 1 6137.2250

Asia Pacific
T: +852 2511.3822