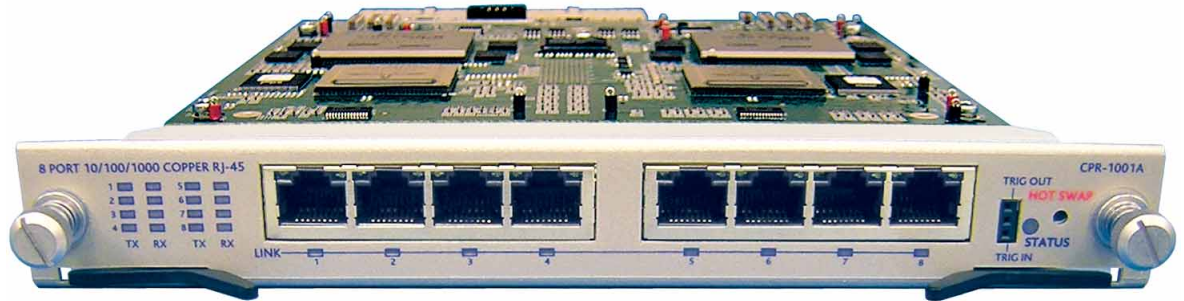# Series 1000 and Series 2000 Gigabit Ethernet Test Modules

CPR-1001A

Product Overview

Spirent TestCenter offers a variety of test modules and a high-density chassis or portable chassis to meet all core technology testing needs. There are Series 1000 and Series 2000 modules with copper only, fiber only, or dual media interfaces. The dual media interface has both copper and fiber interfaces on a single module. 1 gigabit Ethernet port densities range from 4 ports up to 96 ports in a single chassis.

In addition to the 1 gigabit Ethernet test modules, Spirent TestCenter also offers Series 1000 and Series 2000 10 Gigabit Ethernet modules, creating a full spectrum of Ethernet test modules from 10Mbps to 10GbE.

All Spirent TestCenter hardware components can be used to perform testing for intelligent high-density enterprise switches and routers at an economical price. Each port can generate realistic traffic at different layers and analyze specific metrics for each layer. The Spirent TestCenter modules can simultaneously correlate data plane tests with control plane traffic such as routing, to provide the most realistic performance measurements.

The Series 1000 Gigabit Ethernet test modules suit customers that are looking for cost effective, high density Layer 2/Layer 3 scalability with basic routing capabilities. The Series 1000 modules can emulate up to 16,383 streams per port. These attributes make Series 1000 Test modules a very cost-effective solution for production test environments or research and development environments where high scalability performance testing is not required.

The Series 2000 Gigabit Ethernet Test modules suit customers with total flexibility ranging from Layer 2/Layer 3 scalability with basic routing through advanced Layer 3 and advanced routing capabilities. Series 2000 modules can scale up to 32,767 streams per port–when combined with high-scale Spirent TestCenter software components, they offer the complete high performance testing solution.

Applications

Spirent TestCenter customers use Series 1000 modules combined with the SPT-5000A chassis to achieve high volume production testing where high-density, low cost Ethernet ports are required.

Users can test devices from various manufacturers to benchmark their scalability and limitations at a cost-effective price.

Develop and test your device in the lab with the Series 1000 or Series 2000 Test modules, then carry them to your customer site installed in an SPT-2000A portable chassis to prove your device's performance.

Compare and validate network equipment to determine the suitability of a specific application prior to deployment.

GET IT DONE FASTER WITH
Spirent TestCenter

- Series 1000 for cost effective Layer 2/Layer 3 scalability and basic routing
- Series 2000 for high performance advanced Layer 2 Layer 3 testing plus advanced routing
- Hot swappable
- Multiple users per test module for greater efficiency of resources

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SPIRENT
Communications

Analyze | *Assure* | *Accelerate*™

Spirent
TestCenter™
Component

Benefits

- *Reduce lab space and test equipment costs*–High port density modules that support multi-user operation provide maximum efficiency on utilization of hardware resources
- *Protect your investment for future projects*–Dual media test modules provide both copper and fiber Ethernet interfaces (10/100/1000 Mbps and gigabit fiber)
- *Ease of Service*–All Spirent TestCenter modules are hot swappable for easy service or replacement while the chassis is fully operational. They can easily be managed remotely through an IP network. The Spirent TestCenter Administration Application provides a single software tool to manage your entire investment in Spirent TestCenter components
- *Leverage test equipment purchases*–Use the same hardware platform to perform research and development using the interactive capabilities for pinpointing potential issues, performing comprehensive functional testing and high scale performance testing

Key Features

- Wire-rate and beyond wire-rate traffic generation and analysis at Layers 2 and 3
- Compatible with all Spirent TestCenter software applications for comprehensive functional testing and performance analysis all in one system
- Supports sophisticated automated industry standard RFC 2889 LAN switching performance and RFC 2544 L2/L3 performance tests
- Support for all core technologies required to test Enterprise L2/L3 switches, including QOS, IPv4/v6, multicast, routing, spanning tree, VLAN, and DHCP. Simultaneously runs multiple protocols per port to emulate large routed networks
- High port density modules with per-port group reservation, providing multi-user capability
- Dual media test modules provide 10/100/1000 Mbps and Gigabit Ethernet fiber

Technical Specifications

Transmit Generator Specifications

- Up to 32,767 unique streams on a port
- Set packet rate per stream
- Edit up to 6 variable fields per stream
- Test duration: continuous, time burst, frame burst
- Load units: frames/second or % of line rate
- Burst size in frames
- Loads: fixed, stepped, or random with minimum and maximum
- Frame sizes: fixed, stepped, or random with minimum and maximum
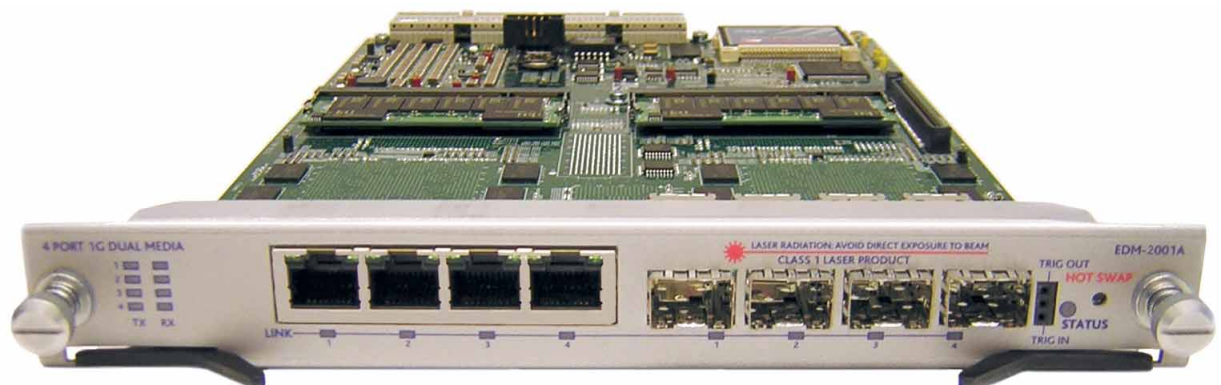
Stream Encapsulations

- Ethernet II, VLANs, stacked VLANs
- MPLS label stack, mixed VLANs / MPLS labels
- IPv4, ToS, Diffserv, TTL
- IP QoS settings per ToS or DSCP
- IPv6–neighbor discovery protocol, header extensions, dual stack
- TCP, UDP
- User defined frames (12 - 16K bytes)
- Error injection

Routing Protocol Emulation

For specifications on all unicast and multicast routing protocols which can run on the Ethernet Test modules, please see separate Spirent TestCenter software datasheets.

Transmit Counters

- Total frame count
- Total byte count
- IPv4 frame count, ARP requests, ARP replies, PING requests, PING replies
- IPv6 frame count, PING requests, PING replies
- Protocol stack frame count
- Transmit frames per stream counter

EDM-2001A

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Series 1000 Specifications			
Feature	**CPR-1001A**	**FBR-1001A**	**EDM-1000A**
# Ports per Module	8	8	4
Connector Type	10/100/1000 RJ-45 Copper	1G SFP Fiber, LC connector	2 connectors per port. 10/100/1000 RJ-45 Copper and 1G SFP Fiber, LC connector
SFP Laser Wavelengths*	N/A	850nm, 1310nm, 1550nm	850nm, 1310nm, 1550nm
Cabling	4 pair CAT5 UTP	Multi-mode, Single mode fiber	4 pair CAT5 UTP or Multi-mode, Single mode fiber
Signal rate	10/100/1000 Mbps	1 Gbps	10/100/1000 Mbps
CPU Memory	256MB	256MB	256MB
Number of variable fields per stream (VFDs)	4	4	4
Minimum frame size (includes CRC)	12 Bytes	12 Bytes	12 Bytes
Maximum frame size	16 Kbytes	16 Kbytes	16 Kbytes
Maximum transmit streams	16,383	16,383	16,383
Maximum receive streams	65,535	65,535	65,535

Receive Analyzer Specifications

Per Port Receive Counters

- Total frame count
- Total byte count
- IPv4 frame count, ARP requests, ARP replies, ICMPv4 destination unreachable frames, PING requests, PING replies
- IPv4 checksum error count
- IPv6 frame count, ICMPv6 destination unreachable frames, PING requests, PING replies
- Protocol stack frame count
- VLAN frame count
- MPLS frame count
- Frames with Spirent signature count
- Jumbo frame count
- Undersized frame count
- Oversized frame count
- FCS-32 error count
- Receive trigger counter – Four 4 byte triggers

Analyzer Results per Stream

- Up to 65,535 streams analyzed per port in real time
- Latency average, minimum, maximum
- Total packet count
- Packets with Spirent signature
- IPv4 checksum errors
- Packets in-sequence count
- Packets out of sequence errors

Analyzer Results Per Stream - Real time viewing

- Total packet count
- Total byte count
- Receive frame rate, per stream, per customized tracking group, IPv4 QoS group (with or without VLAN), MPLS label group
- Average latency
- Packets in sequence count
- IPv4 packet count
- IPv6 packet count

FBR-2001A

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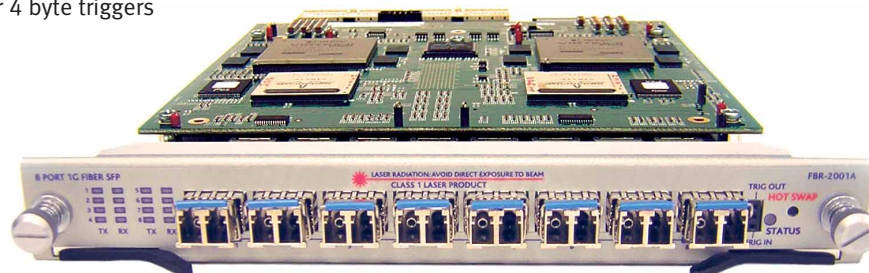
Series 2000 Specifications				
Feature	**CPR-2001A**	**CPR-2002A**	**FBR-2001A**	**EDM-2001A**
# Ports per Module	8	8	8	4
Connector Type	10/100/1000 RJ-45 Copper	10/100 RJ-45 Copper	1G SFP Fiber	2 connectors per port. 10/100/1000 RJ-45 Copper and 1G SFP Fiber, LC connector
SFP Laser Wavelengths*	N/A	N/A	850nm, 1310nm, 1550nm	850nm, 1310nm, 1550nm
Cabling	4 pair CAT5 UTP	4 pair CAT5 UTP	Multi-mode, Single mode fiber	4 pair CAT5 UTP or Multi-mode, Single mode fiber
Signal rate	10/100/1000 Mbps	10/100 Mbps	1 Gbps Mbps and 1 Gbps	10/100/1000 Mbps and 1 Gbps
CPU Memory	512MB	512MB	512MB	512MB
Number of variable fields per stream (VFDs)	6	6	6	6
Minimum frame size (includes CRC)	12 Bytes	12 Bytes	12 Bytes	12 Bytes
Maximum frame size	16 Kbytes	16 Kbytes	16 Kbytes	16 Kbytes
Maximum transmit streams	32,767	32,767	32,767	32,767
Maximum receive streams	65,535	65,535	65,535	65,535

Spirent TestCenter Chassis and Other Modules

Chassis	Description
SPT-2000A	Spirent 2U Chassis and Controller
SPT-5000A	Spirent 5U Chassis and Controller
XFP-1001A	1000 Series - 10G XFP, 1 Port
XFP-2001A	2000 Series - 10G XFP, 1 Port

Requirements

- Pentium™ or greater PC running Windows® 2000 SP4 or XP SP1/1A/2 with mouse/color monitor required for GUI operation
- One Ethernet cable and one 10/100/1000 Ethernet card installed in the PC.
- Fiber ports require separately ordered SFP transceiver

Ordering Information

CPR-1001A	10/100/1000 copper RJ-45, 8 port
EDM-1001A	10/100/1000 dual media, 4 port
FBR-1001A	1G fiber SFP, 8 port
CPR-2001A	10/100/1000 copper RJ-45, 8 port
EDM-2001A	10/100/1000 dual media, 4 port
FBR-2001A	1G fiber SFP, 8 port
CPR-2002A	10/100 copper RJ-45, 8 port
ACC-6025A	1000Base-SX gigabit Ethernet SFP transceiver, multi mode, 850nm, LC connector
ACC-6026A	1000Base-LX gigabit Ethernet SFP transceiver, single mode, 1310nm, LC connector
ACC-7000A	1000Base-ZX gigabit Ethernet SFP transceiver, single mode, 1550nm, LC connector

Spirent Global Services

Spirent Global Services provides a variety of professional services, support services, and education services — all focused on helping customers meet their complex testing and service assurance requirements. For more information, visit the Global Services website at www.spirentcom.com/gs or contact your Spirent sales representative.

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