DATASHEET

Spirent B2 800G Appliance

Native QSFP-DD and OSFP Test Platforms

Network bandwidth needs continue to grow at a rapid pace. Network equipment manufacturers are developing highly flexible multi-rate products to support the latest generation of High-Speed Ethernet devices. Service Providers and hyperscale data centers are deploying multi-rate networking infrastructure solutions to meet this growing market.

With these multi-rate requirements, customers demand higher density test equipment. Flexibility is needed to validate the next generation of routers and data center fabrics.

Spirent B2 800G Appliance was developed to meet these specific needs with its industry-leading 2x density advantage for QSFP-DD and OSFP from nearest competitor. It is designed with 4-ports and supports 1x800G in addition to 2x400G, 4x200G, and 8x100G in 112Gbps PAM4 modes in line with IEEE 802.3ck and Ethernet Technology Consortium 800GBASE-R, and 2x200G and 8x50G in 56Gbps PAM4 mode per IEEE 802.3cd.

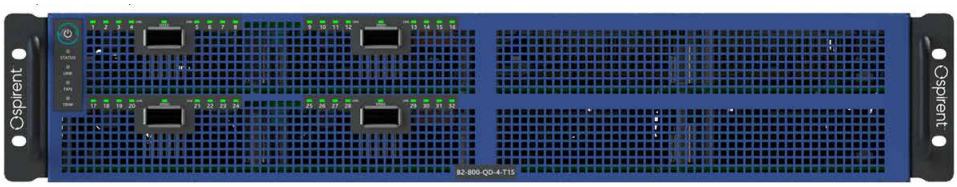
This appliance also supports Auto Negotiation and Link Training (AN/LT) for 2x400G, 4x200G, 8x100G , 2x200G, and 8x50G speeds, Link Training for 1x800G, and Spirent Smart Port Technology, a licensed feature that allows single port and speed upgrades for maximum value and flexibility.

Applications

Cloud Computing/Streaming Services—Validate data plane QoS on thousands of flows at line rate and test complex routing, data center and access protocols on switches and routers.

Data Center ToR and EoR Switches and Fabrics—Validate forwarding performance, latency, MAC capacity and functional capabilities of ultra-high-scale, next generation enabled multi-terabit cloud data center fabrics. This platform will allow synchronized timing of 255 systems with no requirement for external timing devices or specialized cabling.

Terabit Routers—Test latest generation of core routers with high-scale, multiprotocol topologies.



Spirent B2 800G Appliance

Features

- Delivers the highest density High-Speed Ethernet solution
- Each port supports the following speeds: 1x800G, 2x400G, 4x200G, 2x200G, 8x100G, 8x50G PAM4
- Support for Ethernet (FEC), Auto Negotiation (AN) and Link Training (LT) for 2x400G, 4x200G, 8x100G, 2x200G, and 8x50G, and Link Training for 1x800G
- Protocol testing for L2/3 routing/switching and data center applications

Benefits

- Industry's first and highest density QSFP-DD and OSFP test platform
- Provides large capacity testing for a variety of services
- Extensive Layer-1 debug tools and features
- Support of optical transceivers, passive copper cable (DAC), and active electrical copper cable (AEC)

Productivity

- Intelligent Results™
- User definable Health Indicator views provide real-time health monitoring and error isolation capability that allows engineers to accurately and quickly pinpoint errors, even in the most complex test configurations. Customizable Time Series charts, overlaid with Events, provide correlation between real-time metrics and system events, allowing rapid debugging of problems and accelerating development
- High performance database underneath a modern web UI processes billions of real-time results to validate tests, identify problems, and provide customizable reports
- Delivers more results with tight correlation, and more information to find those obscure bugs. With more coverage and more information, Spirent answers questions faster, and in a single test run, where multiple runs are necessary with other test tools
- Interesting streams uses real-time results data mining to dynamically filter through mountains of data and display the results that matter
- Powerful automation with Command Sequencer (Visual Programming) and GUI to Script empowers the test operator to:
  - Construct sophisticated, stressful, automated test cases without programming experience
  - Combine numerous individual test cases into a single run to save regression test time
  - Develop a catalog of broad automated test cases in a fraction of the time
  - Export automated test cases to run from a command line for headless test execution that can be integrated with any automated regression system

Extensive, Flexible Reporting

Real-time statistics for critical variables across all protocols. Using Spirent's iTest platform, your device under test results can easily be correlated and compared with Spirent's results.

Spirent B2 800G Appliance

Technical Specifications	
Spirent B2 800G Appliance	
MSA Interface	QSFP-DD800, OSFP800
Line clocking and packet time-stamping	Stratum-3 rated oscillator is the default time source. Transmit line clock is at the precise nominal Ethernet rate ± < 1 PPM on initial shipment. Accurate to ± 4.6 PPM 15 years of operation. • Frame time-stamp resolution of 2.5ns • GPS and CDMA-based external time sources are supported • IEEE 1588v2 and NTP packet-based external time sources are supported • TIA/EIA-95B-based external time sources are supported
Appliance time synchronization	Appliance features • Spirent-patented self-calibrating inter-chassis timing chain using dedicated port on chassis control • Appliance delivers precise synchronization ± 20ns • Ability to daisy chain up to 255 appliances for large density testing • Synchronization via external GPS or CDMA network • Using IEEE 1588 or NTP packet-based approaches • With TIS/EIA-95B timing inputs
Operating temperature range	Supported for 41° to 86° F (5° to 30° C) ambient temperature. 20% to 80% relative humidity
Max power draw	Maximum 2100W at 100-240 VAC
Product Dimensions	29.5 in L x 17 in W x 3.5 in H (2U)

Spirent B2 800G Appliance (cont'd)

Technical Specifications	
Spirent TestCenter Layer 2-3 Generator and Analyzer	
Number of streams	• Stats/Streams (Tx/Rx in K): 800G (4/32), 400G (16/32), 200G (8/16), 100G (4/8), 50G (2/4) • Stream fields can be varied to create billions of flows • Stats/Stream: Tx Count (frames), Rx Count(frames), Tx Rate (fps), Rx Rate (fps), Tx Rate (bps), Rx Rate (bps), Rx Sig Count (Frames), Avg Latency (us), Min Latency (us), Max Latency (us)
Number of paths / Raw streamblocks	127 (800/50G), 511 (400/200G), 255 (100G)
Frame transmit modes	Port based (rate per port), stream based (rate per stream), burst, timed, random frame size with unique seed
Min/max frame size (w/CRC)	64-16383
Min/max Tx rates	1 packet per 1.37 seconds to 101% of line rate
Real-time Tx stream adjustments	Change rate and frame length settings without stopping the generator or analyzer for truly interactive, cause and effect analysis
Per-stream statistics analyzed in real time	Tx and Rx frame counts and rates • Tx and Rx Layer 1 byte counts and rates • FCS errors and rates • Min, Max, and Average Latency (32K streams) • Real Time Dropped Frame count
Flow control	Support Priority Flow Control
Per-port statistics analyzed in real time	Tx and Rx frame counts and rates • Tx and Rx Layer 1 byte counts and rates • PRBS errors • FCS errors and rates
Transmit timestamp resolution	2.5 ns Tx timestamp resolution with intra-chassis and inter-chassis synchronization
Supported encapsulations	• Layer 2: Ethernet II, 802.1Q, 802.1ad • Layer 3/4: IPv4, IPv6, TCP, UDP
Supported Tx signature capability	Fully compatible with Spirent hardware; contains sequence number & highly accurate timestamp
Capture buffer size	1 MB per port
Capture buffer controls—Spirent TestCenter's unique capture capability allows maximum effectiveness when debugging hard to find hardware or protocol problems	• Several modes of operation include: Filter by protocol fields, Filter by byte offset and range; store full-frames; store full frame with signature; store tx/rx control plane with data plane; real-time mode for control plane traffic; wrap or stop buffer at end • User defined pattern definitions can logically combine 8 filters of up to 32 total bytes • Patterns can be applied to start, filter (quality), or stop capture • In addition to user-patterns, filtering, starting, and stopping capture contains the following pre-defined events: FCS, IPv4 checksum, and TCP/UDP/IGMP checksum; undersize, oversize, jumbo, and user-defined frame length; IPv4, and IPv6 packets; test signature present and test stream ID match. Each event can be independently set to ignore, include or exclude. • Support UDC (user-defined counters), Capture byte offset mode, and Capture pattern matching
Latency modes	Benchmark tests support LIFO, LILO, FIFO or FILO latency calculation methods
Route Insertion Table (RIT) entries per port	128K (800/400/200G), 64K (100G), 32K (50G) 4-byte entries for dynamic label or random IP/MAC address assignments
RIT or List VFD entries per stream	• 8 RIT insertions per stream (800/400/200/50G) • 6 RIT insertions per stream (100G) • 4 VFD insertions per stream for all supported speeds
Layer 1 Functionality	
QSFP/OSFP Interconnects	CR, SR, LR, FR, DR, ZR at multi-rate (800/400/200/100/50G)
Media support and FEC options	Support varies by speed mode • **112 Gbps PAM4 mode** – Optical Transceiver ▪ 1x800G: 800GBASE-SR8, 800GBASE-DR8 ▪ 2x400G: 800GBASE-SR8, 800GBASE-2FR4, 400GBASE-DR4, 400GBASE-FR4 ▪ 4x200G: 800GBASE-SR8 ▪ 8x100G: 800GBASE-SR8 – Copper Cable* ▪ 1x800G/2x400G/4x200G/8x100G: 800GBASE-CR8 • **56 Gbps PAM4 mode** – Optical Transceiver ▪ 8x50G: 400GBASE-SR8 – Copper Cable* ▪ 2x200G/8x50G: 400BASE-CR8, 200GBASE-CR4 **Copper Cable types listed above include Direct Attached Copper Cable (DAC), Active Electrical Cable (AEC), and breakout cable.*
AN/LT	• Direct Attach Copper, AN/LT supported for 2x400G, 4x200G, 8x100G, 2x200G, and 8x50G • Link Training supported for 1x800G
Layer-1 debug tools & features	Tx Emphasis settings, Rx Eye view, FEC Counters, PRBS Gen/Check, Front-end L1 Summary Status, Xcvr MDIO access, PCS monitoring

Ordering Information - OSFP	
Part Number	**Description**
Base Packages	
B2-800-OSFP-2-1550A	B2 Native OSFP 800G/200G/400G/100G/50G 2-Port Enabled Bundle
B2-800-OSFP-2-1300A	B2 Native OSFP 800G/400G/100G 2-Port Enabled Bundle
B2-800-OSFP-2-1200A	B2 Native OSFP 800G/400G 2-Port Enabled Bundle
B2-800-OSFP-2-800A	B2 Native OSFP 800G Only 2-Port Enabled Bundle
B2-800-OSFP-4-1550A	B2 4-Port Native OSFP 800G/400G/200G/100G/50G Bundle
B2-800-OSFP-4-1300A	B2 4-Port Native OSFP 800G/400G/100G Bundle
B2-800-OSFP-4-1200A	B2 4-Port Native OSFP 800G/400G Bundle
B2-800-OSFP-4-800A	B2 4-Port Native OSFP 800G Only Bundle
Hardware Upgrades (available as add on after purchase of initial base package bundle)	
HWO-B2-800-OSFP-4-100G	8X100G PAM4 Hardware Speed Option for B2-800-OSFP-4-T1S
HWO-B2-800-OSFP-4-200G	4X200G PAM4 Hardware Speed Option for B2-800-OSFP-4-T1S
HWO-B2-800-OSFP-4-400G	2X400G PAM4 Hardware Speed Option for B2-800-OSFP-4-T1S
HWO-B2-800-OSFP-4-50G	8X50G PAM4 Hardware Speed Option for B2-800-OSFP-4-T1S
HWO-B2-800-OSFP-4-800G	1X800G PAM4 Hardware Speed Option for B2-800-OSFP-4-T1S
HWO-B2-800-OSFP-4-PORT	Spirent B2-800-OSFP-4 Single Port Enablement

Ordering Information - QSFP-DD	
Part Number	**Description**
Base Packages	
B2-800-QD-2-1550A	B2 Native QSFP-DD800 800G/200G/400G/100G/50G 2-Port Enabled Bundle
B2-800-QD-2-1300A	B2 Native QSFP-DD800 800G/400G/100G 2-Port Enabled Bundle
B2-800-QD-2-1200A	B2 Native QSFP-DD800 800G/400G 2-Port Enabled Bundle
B2-800-QD-2-800A	B2 Native QSFP-DD800 800G Only 2-Port Enabled Bundle
B2-800-QD-4-1550A	B2 4-Port Native QSFP-DD800 800G/400G/200G/100G/50G Bundle
B2-800-QD-4-1300A	B2 4-Port Native QSFP-DD800 800G/400G/100G Bundle
B2-800-QD-4-1200A	B2 4-Port Native QSFP-DD800 800G/400G Bundle
B2-800-QD-4-800A	B2 4-Port Native QSFP-DD800 800G Only
Hardware Upgrades (available as add on after purchase of initial base package bundle)	
HWO-B2-800-QD-4-50G	8x50G PAM4 Hardware Speed Option for B2-800-QD-4-T1S
HWO-B2-800-QD-4-100G	8x100G PAM4 Hardware Speed Option for B2-800-QD-4-T1S
HWO-B2-800-QD-4-200G	4x200G PAM4 Hardware Speed Option for B2-800-QD-4-T1S
HWO-B2-800-QD-4-400G	2x400G PAM4 Hardware Speed Option for B2-800-QD-4-T1S
HWO-B2-800-QD-4-800G	1X800G PAM4 Hardware Speed Option for B2-800-QD-4-T1S
HWO-B2-800-QD-4-PORT	Spirent B2-800 QSFP-DD800-4P Single Port Enablement

Requirements

- Windows-based workstation with 10/100/1000 Mbps Ethernet NIC; mouse and color monitor required for GUI operation
- Linux- or Windows-based workstation for automation scripting
- Mac-, Linux, or Windows-based workstation for Rest API support