B3 800G 4-port and 8-port Appliances

QSFP-DD and OSFP Test Platforms
800/400/200/100/50G

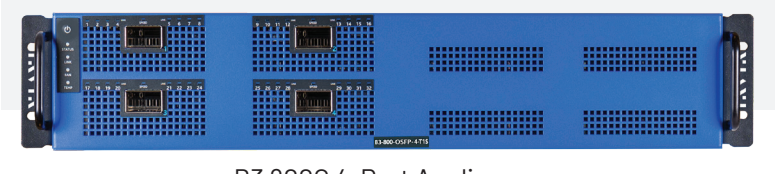
Network bandwidth needs continue to grow at a rapid pace. Network equipment manufacturers are developing highly flexible multi-rate products to support the latest generation of High-Speed Ethernet devices. Service Providers and hyperscale data centers are deploying multi-rate networking infrastructure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

B3 4-port and 8-port QSFP-DD and OSFP 800G appliances were developed to meet these specific needs with its industry-leading 2x density advantage for QSFP- DD and OSFP providing up to 6.4 Tbps of test traffic. B3 appliances support 1x800G, 2x400G, 4x200G, and 8x100G in 112Gbps PAM4 modes in line with Ethernet Technology Consortium 800GBASE-R, IEEE 802.3ck and 802.3df 800GBASE-R, and 1x400G, 2x200G and 8x50G in 56Gbps PAM4 mode per IEEE 802.3cd and IEEE 802.3bs to help validate these deployments.

These appliances support Auto Negotiation and Link Training (AN/LT) in line with IEEE 802.3df for all the supported speed modes and Smart Port Technology, a licensed feature that allows single port and speed upgrades for maximum value and flexibility.

B3 800G 8-Port Appliance



B3 800G 4-Port Appliance

Key Features

- Delivers the highest density 800G High-Speed Ethernet solution
- Each port supports the following speeds: 1x800G, 2x400G, 4x200G, 1x400G, 2x200G, 8x100G, and 8x50G PAM4
- Support for Ethernet (RS-FEC), Auto Negotiation (AN) and Link Training (LT) per IEEE 802.3df
- Support for RoCEv2 and CCL for AI infrastructure high-scale testing use cases
- Protocol testing for L2/3 routing/switching and data center applications
- Autonomous Flow Tracking (AFT) is now supported on B3 8-port 800G modules. Support on 4-port version is coming soon.

Key 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 for RS-FEC performance and interconnect monitoring.
- Provides support to assess AI infrastructures with high scale & real world AI workloads for validating performance and network resiliency
- Support of optical transceivers, Active Optical Cable (AOC), passive copper cable (DAC), and active electrical copper cable (AEC)

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, multi-terabit cloud data center fabrics.

AI Data Center: Validate performance and robustness of AI data center infrastructures by emulating high-scale AI workloads with RoCEv2 and CCL support.

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

Productivity

- Accurate Results – Purpose-built hardware delivers repeatable test execution and precise statistics
- 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, VIAVI answers questions faster, and in a single test run, where multiple runs are necessary with other test tools
- Interesting streams use 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.

Enhanced Performance with XStream

XStream mode raises traffic generation and protocol scale capabilities to meet future increases in routing and switching testing needs, further protecting your investment in B3 Appliances. XStream mode offers increased traffic and statistic features needed for testing high-performance network products. For more details about features and use case, please contact your VIAVI Sales representative with any questions.

Autonomous Flow Tracking (AFT)

Enables customers to test and monitor massive volumes of network flows through their devices or systems under test (DUT/SUT). AFT supports highly complex flow tracking use cases that were previously impossible with traditional stream-based testing statistics, such as BGP router import scenarios. AFT mode tracks flows based on L2/L3 and L4 header fields, including VLAN ID, MPLS, SRv6 SID, IPv6 address, and more.

Technical Specifications

Product Feature	Description
B3 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 • VIAVI-patented self-calibrating inter-chassis timing chain using dedicated port on appliance • 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° F 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 D x 17.1 in W x 3.5 in H (43.4 cm x 8.9 cm x 74.9 cm)

Technical Specifications continued

Product Feature	Description
Product Weight	Unit installed weight: 4-port appliance 53 lb. (24.0 kg) 8-port appliance 57 lb. (25.85 kg)
TestCenter Layer 2-3 Generator and Analyzer	
Number of Streams	Default Mode: • Stats/Streams (Tx/Rx): 800G (4K/32K), 400G (16K/32K), 200G (8K/16 K), 100G (4K/8K), 50G (2K/4K) • Stats/Streams (Tx/Rx): 32K/32K for 800G, 400G, 200G, and 100G mode enabled by the XStream mode
Number of Paths/Raw Streamblocks	127 (800/50G), 511 (400/200G), 255 (100G); 511 (800/400/200/100G) enabled by XStream mode
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 • Advance Sequence Tracking: Duplicate, reordered, late, and inordered
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	800G: 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 VIAVI hardware; contains sequence number & highly accurate timestamp
Capture Buffer Size	1.28 MB per port (MAX)

Technical Specifications continued

Product Feature	Description
Capture Buffer Controls — 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 • 1M (800G), 256K (200/100G) 4-byte entries as primary table, and a secondary 64K (400/200/100G) entries table for dynamic label or random IP/MAC address assignments. Enabled by XStream.
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
AFT Support	
Trackable Flow Count (AFT)	Tx: Millions (SW-capped), Rx: 4K
HW Stream Blocks	128
Max RIT Table Entries	128K
Rx Out of Sequence	Support Out-of-Seq at per flow level
Removed Generator Features	Pattern Fill
Removed Analyzer Features	Pattern Match
Egress Flow Tracking	Supported

Technical Specifications continued

Product Feature	Description
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	**RS (544,514) FEC supported for all PAM4 speed modes** Other supports vary by speed modes • 112 Gbps PAM4 mode — Optical Transceiver • 1x800G: 800GBASE-SR8, 800GBASE-DR8, and 800GBASE-FR8 • 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 • 1x400G: 400GBASE-SR8, 400GBASE-DR4, 400GBASE-FR4, 400GBASE-LR4, 400GBASE-LR8, 400GBASE-ZR, and 400GBASE-ZR+ • 2x200G: 400GBASE-SR8 and 200GBASE-FR4 • 8x50G: 400GBASE-SR8 — Copper Cable* • 1x400G/2x200G/8x50G: 400BASE-CR8, 200GBASE-CR4 *Copper Cable types listed above include Direct Attached Copper Cable (DAC), Active Electrical Cable (AEC), and breakout cable.
Auto-Negotiation/Link Training (AN/LT)(IEEE 802.3 Compliant)	AN/LT supported for 1x800G, 2x400G, 4x200G, 8x100G, 1x400G, 2x200G, and 8x50G
Layer-1 Debug Tools & Features	Pre/Post FEC Codeword statistics, Tx Emphasis settings, Rx Eye view, FEC Counters, PRBS Gen/Check, Front-end L1 Summary Status, Xcvr MDIO access, PCS monitoring
PRBS Patterns	PRBS7, PRBS9, PRBS13, PRBS15, PRBS23, PRBS31, PRBS58, SSPRQ (Tx only)
L1 FEC Alarms	High Symbol Error Rate, Loss of Alignment Marker Payload Sequence, Loss of Alignment

Ordering Information – OSFP

Part Number	Description
Base Packages	
B3-800-OSFP-4-1550A	B3 4-Port OSFP 800G/400G/200G/100G/50G Bundle
B3-800-OSFP-4-1300A	B3 4-Port OSFP 800G/400G/100G Bundle
B3-800-OSFP-4-1200A	B3 4-Port OSFP 800G/400G Bundle
B3-800-OSFP-4-800A	B3 4-Port OSFP 800G Only Bundle
B3-800-OSFP-8-1550A	B3 8-Port OSFP 800G/400G/200G/100G/50G Bundle
B3-800-OSFP-8-1300A	B3 8-Port OSFP 800G/400G/100G Bundle
B3-800-OSFP-8-1200A	B3 8-Port OSFP 800G/400G Bundle
B3-800-OSFP-8-800A	B3 8-Port OSFP 800G Only Bundle
Hardware Upgrades (available as add on after purchase of initial base package bundle)	
HWO-B3-800-OSFP-4-50G	50G 112G/56G PAM4 HW Speed Option for B3-800-OSFP-4-T1S
HWO-B3-800-OSFP-4-100G	100G 112G/56G PAM4 HW Speed Option for B3-800-OSFP-4-T1S
HWO-B3-800-OSFP-4-200G	200G 112G/56G PAM4 HW Speed Option for B3-800-OSFP-4-T1S
HWO-B3-800-OSFP-4-400G	400G 112G/56G PAM4 HW Speed Option for B3-800-OSFP-4-T1S
HWO-B3-800-OSFP-4-800G	800G 112G/56G PAM4 HW Speed Option for B3-800-OSFP-4-T1S
HWO-B3-800-OSFP-4-PORT	B3-800-OSFP-4 Single Port Enablement
HWO-B3-800-OSFP-8-50G	50G 112G/56G PAM4 HW Speed Option for B3-800-OSFP-8-T1S
HWO-B3-800-OSFP-8-100G	100G 112G/56G PAM4 HW Speed Option for B3-800-OSFP-8-T1S
HWO-B3-800-OSFP-8-200G	200G 112G/56G PAM4 HW Speed Option for B3-800-OSFP-8-T1S
HWO-B3-800-OSFP-8-400G	400G 112G/56G PAM4 HW Speed Option for B3-800-OSFP-8-T1S
HWO-B3-800-OSFP-8-800G	800G 112G/56G PAM4 HW Speed Option for B3-800-OSFP-8-T1S
HWO-B3-800-OSFP-8-PORT	B3-800-OSFP-8 Single Port Enablement
Software Upgrades (available as add on after purchase of initial base package bundle)	
SWO-B3-800-OSFP-4-AST	Advanced Sequence Tracking 800/400/200/100G on B3-800-OSFP-4-T1S
HWO-B3-800-OSFP-4-100G-XS	8x100G XStream Enhanced Mode on B3-800-OSFP-4-T1S
HWO-B3-800-OSFP-4-200G-XS	4x200G XStream Enhanced Mode on B3-800-OSFP-4-T1S
HWO-B3-800-OSFP-4-400G-XS	2x400G XStream Enhanced Mode on B3-800-OSFP-4-T1S
HWO-B3-800-OSFP-4-800G-XS	1x800G XStream Enhanced Mode on B3-800-OSFP-4-T1S
Autonomous Flow Tracking	
Autonomous Flow Tracking (AFT) Package*	BPK-1407

*Only supported on B3 8-port 800G only.

Ordering Information – QSFP-DD

Part Number	Description
Base Packages	
B3-800-QD-4-1550A	B3 4-Port QSFP-DD800 800G/400G/200G/100G/50G Bundle
B3-800-QD-4-1300A	B3 4-Port QSFP-DD800 800G/400G/100G Bundle
B3-800-QD-4-1200A	B3 4-Port QSFP-DD800 800G/400G Bundle
B3-800-QD-4-800A	B3 4-Port QSFP-DD800 800G Only
B3-800-QD-8-1550A	B3 8-Port QSFP-DD800 800G/400G/200G/100G/50G Bundle
B3-800-QD-8-1300A	B3 8-Port QSFP-DD800 800G/400G/100G Bundle
B3-800-QD-8-1200A	B3 8-Port QSFP-DD800 800G/400G Bundle
B3-800-QD-8-800A	B3 8-Port QSFP-DD800 800G Only

Ordering Information – QSFP-DD continued

Part Number	Description
Hardware Upgrades (available as add on after purchase of initial base package bundle)	
HWO-B3-800-QD-4-50G	50G 112G/56G PAM4 HW Speed Option for B3-800-QD-4-T1S
HWO-B3-800-QD-4-100G	100G 112G/56G PAM4 HW Speed Option for B3-800-QD-4-T1S
HWO-B3-800-QD-4-200G	200G 112G/56G PAM4 HW Speed Option for B3-800-QD-4-T1S
HWO-B3-800-QD-4-400G	400G 112G/56G PAM4 HW Speed Option for B3-800-QD-4-T1S
HWO-B3-800-QD-4-800G	800G 112G/56G PAM4 HW Speed Option for B3-800-QD-4-T1S
HWO-B3-800-QD-4-PORT	B3-800-QSFP-DD800-4P Single Port Enablement
HWO-B3-800-QD-8-50G	50G 112G/56G PAM4 HW Speed Option for B3-800-QD-8-T1S
HWO-B3-800-QD-8-100G	100G 112G/56G PAM4 HW Speed Option for B3-800-QD-8-T1S
HWO-B3-800-QD-8-200G	200G 112G/56G PAM4 HW Speed Option for B3-800-QD-8-T1S
HWO-B3-800-QD-8-400G	400G 112G/56G PAM4 HW Speed Option for B3-800-QD-8-T1S
HWO-B3-800-QD-8-800G	800G 112G/56G PAM4 HW Speed Option for B3-800-QD-8-T1S
HWO-B3-800-QD-8-PORT	B3-800-QSFP-DD800-8P Single Port Enablement
Software Upgrades (available as add on after purchase of initial base package bundle)	
SWO-B3-800-QD-4-AST	Advanced Sequence Tracking 800/400/200/100G on B3-800-QD-4-T1S
HWO-B3-800-QD-4-100G-XS	8x100G XStream Enhanced Mode on B3-800-QD-4-T1S
HWO-B3-800-QD-4-200G-XS	4x200G XStream Enhanced Mode on B3-800-QD-4-T1S
HWO-B3-800-QD-4-400G-XS	2x400G XStream Enhanced Mode on B3-800-QD-4-T1S
HWO-B3-800-QD-4-800G-XS	1x800G XStream Enhanced Mode on B3-800-QD-4-T1S
Autonomous Flow Tracking	
Autonomous Flow Tracking (AFT) Package*	BPK-1407

* Only supported on B3 8-port 800G only.

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
- Optional software licenses are available for a wide variety of protocol and feature support, please contact your VIAVI sales representative for more information

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