Fiber Optic Test & Measurement Devices

RXT-6402

Advanced Dual 400G Multi-service Test Module

Advanced 2x400GE Multi-service handheld test set for Lab to Field Applications

VeEX® RXT is the industry's most flexible, compact, and future- proof handheld test solution for Core, Metro, Datacenter, and Access applications. The RXT-6402 Dual 400G offers the flexibility of testing current interfaces and supporting future expandability for applications including Transport, Aggregation, cross-connect, 5G x-haul, and NEMs field support.

HIGHLIGHTS

General

- 2x400GE concurrent testing capabilities
- Offers dual ports for all pluggable optics form factors, required for AOC/DAC, fan-out and wrap-around tests (from 10M to 400GE)
- Up to four concurrent and independent tests
- Native QSFP-DD, QSFP56, SFP-DD, and SFP56 PAM4 hardware for best-in-class signal integrity (no adapters required).
- Supports testing for all common form factors, including QSFP-DD, QSFP56, SFP-DD, and SFP56 transceivers, DACs,AOCs, network equipment and 400GE links.
- Advanced and flexible state-of-the-art FPGA-based design provides future-proof hardware support for emerging standards, test functions and applications.
- Wide range of supported 400GE interfaces, including 400GBASE-SR8, FR8, LR8, DR4, FR4, LR4, CR8, CR4 and 400ZR/ZR+.
- Complete industry-standard Ethernet link test feature set for Layers 2, 3 and 4.
- I2C/MDIO registers Read and Write.
- Per-lane PAM4 host pre-emphasis settings.
- Signal integrity check with FEC codeword symbol errors distribution and Skew.
- Transceivers power consumption monitoring (voltage, current) and variable voltage supply.
- Dedicated QSFP-DD head cooling fans (field replaceable) to optimize operating temperature verification of high-power class transceivers, such as ZR/ZR+
- All-in-one solution with common legacy test interfaces.
- Internal and external (cage) QSFP-DD temperature monitoring with overheating protection.
- High-capacity power supply provides support for long range coherent line interface transceivers and 2x400GE applications
- Battery (backup) operation improves mobility and efficiency in large hyperscale data centers, nodes, COs, R&D, evaluation labs and other field applications.
- High-efficiency intelligent cooling system
- Full-feature portable hand-held test set form factor, without compromises.

Applications

- Bring-into-service, verification and troubleshooting of high- speed Ethernet links.
- Optical transceivers verification.
- DAC and AOC verification, requiring full dual port capabilities.
- Fan-out tests.
- Evaluation labs and field support.
- Comprehensive test applications for layers 1-4, from 10M to 400GE.
- Full rate 400GE Throughput and frame loss measurements.
- PCS & RS-FEC layer testing.
- PAM4 signal integrity testing with multi-lane unframed BERT.
- I2C/MDIO verification and programming.
- Advanced optical transceiver test.
- Portable for field testing, evaluations, demonstrations, interop check, benchmarking, troubleshooting, link verification, etc.
- Maintenance and troubleshooting of legacy transmission equipment, interfaces and links.
- Robust construction and enhanced cooling for field applications.

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HIGHLIGHTS

Test Interfaces
- 2x QSFP-DD (PAM4)
- 2x QSFP56/QSFP28/QSFP+ (PAM4/NRZ)
- 2x SFP-DD/SFP56/SFP28 (PAM4/NRZ)
- 2x SFP+/SFP (NRZ)
- 2x RJ45
- 1x RJ48 and 3x SMA (legacy)
- 2x Clock Inputs and 2x Outputs
- Four independent test port groups

PAM4 Interfaces
- Native PAM4 support for 400G QSFP-DD, QSFP56, SFP-DD, SFP56, transceivers.
- 400GBASE-SR8, FR8, LR8, DR4, FR4, LR4, CR8, CR4, and 400ZR/ZR+.
- Supports IEEE 802.3bs and MSA compliant transceivers.
- 300W supply supporting power classes 1 through 8.
- Cage temperature monitoring.
- QSFP-DD high-temperature warning threshold, overheat protection and field-replaceable external QSFP-DD head cooling system.
- Per-lane post and pre-emphasis settings.
- Lane BERT with independent test patterns.

MDIO Read/Write
- Complete MDIO I2C access.
- Raw read/write capability for all MDIO registers.
- Formal display of commonly used fields.
- Module hardware control pin read/write access.

Optical Power Measurement
- Global and per lane output enable/disable.
- Received per lane and composite optical power level monitoring.

Transmit Clock Sources
- Internal 2.5 ppm VCXO and optional GPS 1PPS.
- Recovered: from the incoming signal.
- External: 1.544 MHz, 2.048 MHz, 10 MHz, BITS/1.544 Mbps, SETS/2.048 Mbps, and 1PPS via 50 Ohm SMA Connector.

Line Frequency Offset Generation
- Line frequency offset generation ±100 ppm in steps of 0.1 ppm.

Line Frequency Measurement Capability
- Displays measured transmit line frequency in kHz.
- Displays measured transmit line frequency offset from reference clock in current, min, max ppm.
- Measures all lanes.

Stress Test: Pre and Post-FEC Test Suite
- Simple one button pass/fail test for verifying all transceiver properties.
- Advanced user defined thresholds.
- Simple test report includes settings, Pass/Fail, and detailed results.
- Frequency pulling range stress test.
- Pre and Post FEC test.

Advanced Optical Transceiver Test Suite
- Pre-FEC BER validation on a per-lane basis, over operational voltage and frequency offset range to verify optical module integrity before FEC is applied to the PAM4 signal (400GE interfaces).
- Pre-Framed BER (Lane BERT) validation for non PAM4 interfaces.
- Voltage, temperature, and Pre-FEC BER are monitored and displayed for the duration of the test. A histogram function clearly displays all three measurements for easy correlation and tracking of any abnormal changes.
- Pre-FEC BER and Optical Power threshold settings for PASS/ FAIL indication.
- Pre-emphasis: Pre-taps, post-taps, and attenuation settings for PAM4 signal conditioning on the host side to help verify and stress transceiver tolerance and performance.
- Supply Voltage Tolerance Verification: Sweep range from 3.135V to 3.465V (3.300V +/- 5%) to verify compliance with optical transceiver MSA standard.
- Power Consumption Verification: Monitors the optical transceiver's power consumption (Watts), to verify conformance to its specified power class.
- Temperature Monitoring: QSFP-DD module and cage temperature monitoring with built-in shutdown protection of the optical module if the temperature increases beyond a certain high temperature.
- Frequency Tolerance Verification: Sweep range from -100 ppm to +100pm (in 0.1ppm/step), to verify compliance with the 400GE IEEE 802.3 +/- 20 ppm tolerance specification.
- I2C Baud Rate Sweep: QSFP-DD and OSFP sweep range 100K to 4000K. QSFP28 sweep range (20K to 1000K).