



R&D Labs | SVT/Quality Assurance Labs | Production & Manufacturing | Carriers & Operators

400G: Testing the Future of Communications

Look to VeEX® Test and Measurement Solutions

The exploding growth of high-speed and high-availability services, including 5G, and a multitude of devices constantly connected to the Internet, has prompted Telcos, MSOs, Datacenters and the communication industry in general, to move to the next stage in aggregation, switching and transport technologies to keep up with the demand.

As PAM4-based 400GE QSFP-DD technology goes into full commercial deployment, testing and verification needs change and move from the pure R&D labs, SVT, manufacturing, FAEs supporting demonstrations and field evaluations to field deployment. Not all 400G test and measurement applications are the same. From Field link verification and troubleshooting, CO, Datacenter, Manufacturing, to R&D environments, VeEX has the right tools to pinpoint your specific testing requirements and environmental needs. Whether it is a portable do-it-all handheld for the field, high mobility and availability in large datacenters, high port density rack-mount environment, or automation, VeEX solutions offers the right products and features to address applications from R&D to manufacturing, from Core to Field.

RXT-6400 400G Handheld



- First portable 400G test solution
- Native PAM4 QSFP-DD interface for Best-in-Class signal integrity (no adapters required)
- Ideal for NEMs' SVT and FAEs assisting field evaluations and demonstrations
- Mobility and efficiency in large datacenter
- RXT modular test platform offers solutions from 10M to 400G, Fiber Optics, C/DWDM

MPM-400G Rackmount



- 400G Ethernet per IEEE 802.3bs
- Advanced KP4 FEC stress testing and analysis
- Physical, PCS/FEC, and Ethernet layer verification
- CFP8 Port
- IC, transceiver, and board level testing
- Interoperability and product validation
- System level integration
- Multi-port traffic simulation and analysis
- Aggregation and load testing

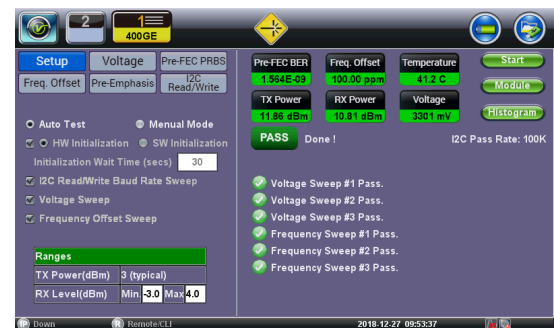
VeEX provides the global communications and data networking industry with comprehensive test and measurement products and services to fulfill verification needs, from layer 1 to 4, 10M to 400G, enabling lab to field transition. Key highlights include portability, scalability, flexibility, future proof, automation and high port density.

Automated 400GE Optical Transceiver Verification

The RXT-6400's Advanced Optical Transceiver test suite allows users to quickly test, qualify, and validate the performance of optical modules. New high speed optical modules for 400GE applications that operate with PAM4 modulation, can easily be tested with this new test suite before they are used in production environments such as data centers, core and transport networks.

Product Highlights

- **Voltage Sweep:** Pre-FEC BER testing at operational voltage range to verify optical module integrity. Voltage levels: $\pm 5\%$ (low, medium, high).
- **Pre-FEC BER:** BER testing on a per-lane basis to verify the integrity of all electrical and optical lanes before FEC is applied to the PAM4 signal. Aggregate and Per Lane bit error count and BER measurements qualify and benchmark optical module performance.
- **Frequency Offset Sweep:** Pre-FEC BER testing on up to five frequency offset values. Range can be varied between ± 100 ppm from nominal. In Auto test mode the minimum, nominal, and maximum values are tested.
- **Voltage/Temperature/BER monitoring:** Voltage, temperature, and Pre-FEC BER are monitored and displayed for the duration of the test suite. A histogram function clearly displays all three measurements for easy tracking of any abnormal changes throughout the test.
- **Thresholds:** Configurable threshold values for PASS/FAIL indication are available for transmit and receive optical power levels and pre-FEC BER
- **I2C Read/Write:** For expert users, I2C registers can be read and programmed with an intuitive read/write user interface. All register settings can be saved for future referencing. Per-Lane PAM4 Pre-Emphasis settings are configurable.
- **PAM4 Pre-Emphasis:** Per-lane Pre-taps, Post-taps, and attenuation settings allow for PAM4 signal conditioning on the host side to help verify and stress transceiver tolerance.



Test Solutions for High Speed Interfaces & Transport Networks Beyond 100G

VeEX offers a comprehensive T&M portfolio of products and applications to fulfill verification needs, from layer 1 to 4, 10M to 400G, and lab to field.

- Portability - First 400GE handheld test set, with Native PAM4 QSFP-DD support for best-in-class signal integrity. Enables lab-to-field transition, transceiver verification, benchmarking and link commissioning and troubleshooting.
- Scalability - Rack-mount applications for high-port count, manufacturing and automation applications.
- Flexibility - 400G, 100GE, 100GE, 50GE, 40GE, 25GE, FlexE, OTUCn, OTU4, OTU3, STL256.4 and more.
- Future proof - Modular test platforms supporting current and future interfaces, rates and technologies.
- Available CFP8, CFP4, CFP2, CFP, QSFP28, QSFP+, SFP56/28/+ interfaces.
- Also available CPRI 10, 25G eCPRI, and 32G Fibre Channel, as well as lower-rate Ethernet, OTN, and legacy SDH/SONET PDH/DSn
- Advanced optical transceiver testing features.