MTX150x

Ethernet Services Installation Test Set

Ethernet
Fibre Channel

VeEX

The MTX150x is a fully-integrated and self-contained Ethernet services test solution for Layer 1-to-4+ applications and Fibre Channel (SAN). This rugged and ultra-portable field hand-held test set can be configured with interfaces and technologies required by field technicians to install, verify, maintain and troubleshoot Metro Ethernet links, Business services, Internet Access and other packet-base services up to 10 Gbps.

Platform Highlights

- The smallest full-featured Ethernet test solution on the market
- Dual port operation up to 10 Gbps
- Optimized for field technicians installing, verifying, troubleshooting and maintaining Carrier Ethernet, Metro, Access, Business Services, and Storage Area Networks, as well as fiber, backhaul, microwave links.
- Robust, handheld chassis packed with powerful and flexible features for demanding environments and test conditions
- Flexible hardware configuration to meet each application's requirements and reduce CAPEX
- Field upgradeable licenses to optimize OPEX
- Test set connectivity via micro-B USB and optional built-in WiFi and Bluetooth® wireless interfaces; USB-A and 10/100BASE-T are also available via OTG cables
- VeSion R-Server asset, workflow and results management
- Remote access and control via Web Browser, VNC® client and ReVeal PC software. Compatible with VeEX EZ Remote collaboration services.
- User defined test profiles and thresholds enable fast, efficient and consistent turn-up of services
- Fast and efficient test result transfer to USB memory stick
- Li-ion battery pack for extended field testing autonomy

Key Features

- Complete Ethernet (LAN/WAN) and Fibre Channel (SAN) Testing
- Dual SFP+ optical interfaces for 100/1000BASE-X, 10GBASE-X and 1/2/4 GFC
- Dual RJ45 for 10/100/1000BASE-T

Ethernet

- Dual-port testing capabilities
- Throughput, BERT, IPv4/IPv6, Loopbacks, NetWiz, Ping, trace route, Scan, L2CP Transparency, Errors, Alarms, Events, Delay, Test Profile Auto Scripting/Sequencer
- RFC2544 Throughput, latency, frame loss and back to back tests
- V-SAM test suite compliant with ITU-T Y.1564 standard
- Q-in-Q (VLAN stacking), MPLS, MPLS-TP, PBB, and PPPoE support
- Up to 10 independent streams, 3 VLAN, 3 MPLS, TCP/UDP
- Layer 4+ test suite: V-TEST (speed test), V-FTP, RFC6349 V-PERF upload & download tests

Fibre Channel

- Dual-port Storage Area Networks (SAN) testing
- Throughput, BERT, Loopback, SDT, Errors, Alarms, Events, Delay
- RFC2544: Throughput, latency, frame loss, back to back tests

Metro & Transport Expert

Ethernet Specifications

Electrical Interfaces

Dual 10/100/1000BASE-T with RJ45 connectors
Ethernet Classification: Per IEEE 802.3

Optical Interfaces

Dual 100/1000BASE-X and 10GBASE-X SFP+ optical ports with LC connectors
Pluggable transceivers conforming to Multi Source Agreement (MSA) specifications
Optical Power Measurement: ±2 dB accuracy, 1 dB resolution
Safety: Class 1, per FDA/CDRH, EN (IEC) 60825 eye safety regulations
ROHS compliant and Lead Free per Directive 2002/95/EC

**Data rates, performance, and supported transmission protocols are only guaranteed for SFP supplied by VeEX Inc. If selecting or using other vendors, users should excercise caution

Modes of Operation

Terminate
Loopback

Traffic Generation

Layer 1 Framed, Layer 2, Layer 3, Layer 4
Test Frame Header
- IEEE 802.3 and Ethernet II (DIX) frames
- Configurable Source and Destination MAC and Ethernet Type
- VLAN stacking up to 3 Q-in-Q tags w/configurable priority & type
- Fully configurable IPv4 or IPv6 header
- MPLS up to 3 labels with configurable Label/S/CoS and TTL fields
- MPLS-TP label with configurable LSP, PW and CW fields
- UDP/TCP header with configurable Source & Destination ports
- Provider Backbone Bridge (PBB) support with configurable Backbone MAC Source and Destination, I-SID, PBB-VLAN ID and priority
- Ethernet over Ethernet (EoE) support with configurable Backbone MAC Source and Destination, EoE VLAN ID, Type, TTL, and EID
- Point-to-Point Protocol over Ethernet (PPPoE) support with configurable PPPoE code and Session ID
- Fixed or uniform Random distribution frame size from 64 to 10000 bytes (Layer 4 tests Fixed frame size up to 1518 only)
- Traffic Pattern: Constant, Ramp, Multi Bursts, Single Burst
- Error Injection: Single and Count; Bit, CRC, Pause, IP Checksum, TCP/UDP Checksum

Bit Error Rate Test (BERT)

Layer 2, 3, and Layer 4 BER testing are supported. The BER test can be configured to use regular PRBS test patterns, or user defined test patterns to simulate various conditions.

Test Patterns
- PRBS: 2^{31}-1, 2^{23}-1, 2^{15}-1, 2^{11}-1, normal and inverted patterns, All 0s, All 1s and User Defined (Layer 2,3,4)
Error Measurements: Bit/BER, FCS/CRC, Jabber/Runt frames, IP Checksum, TCP/UDP Checksum
Alarm Detection
- LOS, LOSync, PAT Loss, Service disruption (current, total, last, min/max, # of occurrences)

Frame/Packet Statistics
- Multicast, broadcast, unicast, pause frames, frame size distribution
- Rates (min, max, average and current): frame rate, bandwidth utilization, frame rate, line rate, data rate
- Frame arrival time (min, max, average and current), Frame Delay Variation

Multiple Streams Throughput Testing

Up to ten traffic streams can be independently configured with CoS (VLAN priority) and QoS (TOS/DSCP) prioritization. This traffic feature simulates multiple service conditions (e.g. Triple Play), and facilitates end-to-end QoS performance verification. The multiple stream throughput tests may be performed with

a second test unit at the far end in Smart Loop mode or Peer-to-Peer mode.
Independent traffic streams generation and analysis, with configurable filters on 1GE interface
- Single 1GE: 8 streams
- Dual 1GE: 8 streams each
- Single 10GE: 10 streams
- Dual 10GE: 8 streams each
Each stream can be set with independent frame size, bandwidth, traffic profile, and QoS levels
MAC flooding feature: generates test frames with up to 4096 incrementing Source and/or Destination MAC addresses
VLAN flooding feature: generates test frames with up to 4096 incrementing VLAN IDs
Test Patterns: PRBS: 2^{31}-1, 2^{23}-1, 2^{15}-1, 2^{11}-1, normal and inverted patterns, All 0s, All 1s and User Defined
Error Measurements: Bit/BER (Single Stream only), FCS/CRC, Jabber/Runt frames, IP Checksum, TCP/UDP Checksum, Frame Loss (count and %), Out of Sequence
Alarm Detection
- LOS, LOSync, Service disruption (current, total, last, min/max, # of occurrences)
Frame/Packet Statistics
- Multicast, broadcast, unicast, pause frames, frame size distribution
- Rates (min, max, average and current): frame rate, bandwidth utilization, frame rate, line rate, data rate
- Frame arrival time (min, max, average and current), Frame Delay Variation
- Round Trip delay (min, max, average and current) and Histogram distribution with configurable sampling period and threshold
Service Disruption Time (SDT)
- Per stream inter-packet gap based measurement
- Configurable SDT measurement trigger and SDT violation threshold

RFC2544 Compliance Testing

Performs the RFC2544 automated test suite at all recommended frame sizes as well as user configurable frame sizes and up to full line rate. The test suite can be performed with the far end test partner in loopback mode or peer-to-peer mode - the latter allowing for symmetrical/asymmetrical testing. Thresholds may be configured for accurate SLA assurance and verification. The automated tests supported are throughput, latency, frame loss, and back-to-back frames.

In Advanced SLA Mode this feature combines the powerful multiservice throughput test capabilities with the RFC2544 industry test suite for SLA verification. Using this test function, service providers are able to verify SLAs while end-to-end QoS is assessed properly. By configuring one primary test stream and up to seven background streams each with independent frame size, bandwidth, and more importantly QoS levels, simulating different service applications is now realized. The Advanced RFC2544 SLA mode provides detailed visibility of the test parameters for each of the traffic streams being measured, providing an efficient in-depth qualification in a fast and automated way.
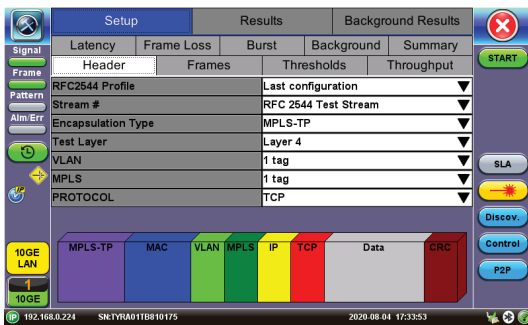
Automated tests compliant with RFC2544 with configurable threshold values and maximum transmit bandwidth settings

Throughput, Latency, Frame Loss, and Back-to-Back (burst) tests

Frame sizes: 64, 128, 256, 512, 1024, 1280, 1518 bytes and 2 user configurable frames

Tests can be done to a remote loopback or in Peer to Peer mode to a remote test set configured as a responder

Peer to peer mode allows asymmetric bandwidth RFC2544 test

RFC2544 Advanced SLA Mode

RFC2544 compliant test on primary test stream with up to 7 independent background traffic streams

Each background stream can be set with independent frame size, bandwidth, traffic profile, and QoS levels

ITU-T Y.1564 V-SAM Test

VeEX's V-SAM test suite is fully compliant with ITU-T Y.1564 and offers an efficient method to qualify and troubleshoot Ethernet Services. V-SAM addresses some of RCF2544 limitations by testing multiple services at once and providing simultaneous measurements of key SLA parameters.

With the Service Configuration test, services running on the same line are tested one by one to verify the correct service profile provisioning. With the Service Performance test, the services running on the same line are tested simultaneously over an extended period of time, to verify network robustness.

This test suite was designed with the end user in mind and allows for quick provisioning, execution and analysis of the test results, even without prior detailed knowledge of the standard.

V-SAM test suite compliant with ITU-T Y.1564 standard

Support for Multi-stream traffic generation, Service Configuration and Service Performance tests

Independently configurable for each stream

- Frame size: Fixed or EMIX pattern
- Bandwidth profile parameters: CIR, EIR, CBS, EBS Traffic Policing
- Service acceptance criteria: FLR, FTD, IFDV, AVAIL
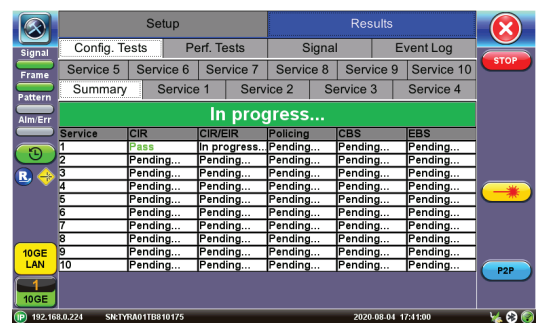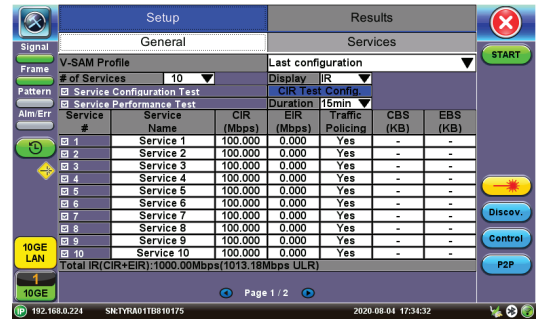
Simple summary Pass/Fail results tables and drill down capability with detailed measurements (Frame Loss, Frame Transfer Delay, Frame Delay Variation, Availability) for each service.

Smart Loopback Mode

Four modes are available for looping back test traffic. At Layer 1, all incoming traffic is looped back unaltered. At Layer 2, all incoming unicast traffic is looped back with the MAC source and destination addresses swapped. At Layer 3, all incoming unicast traffic is looped back with the MAC and IP source and destination addresses swapped, and at Layer 4, all incoming unicast traffic is looped back with the MAC, IP, and UDP/TCP ports swapped.

Configurable traffic filters are supported on all MAC, IP, and VLAN fields to allow full control over looped traffic. Traffic is monitored while being looped and key traffic metrics such as frame type, rate, and error/alarms are displayed on screen. These can be compared to results at the far end to pinpoint issues more easily.

Layer 1: Incoming traffic looped back unchanged

Layer 2: Incoming traffic looped back with MAC source and destination addresses swapped

Layer 3: Incoming traffic looped back with MAC and IP source and destination addresses swapped

Layer 4: Incoming traffic looped with MAC, IP, and UDP/TCP ports swapped

Configurable traffic filters on MAC and IP source and destination addresses, VLAN ID and Priority, IP Precedence and TOS, UDP source and destination ports

All key measurements on received traffic provided on loopback unit

Intelligent Device Discovery & Remote Control

Easily discover and select another VeEX Ethernet tester or loopback device on the network under test. The local device will control the operation of the far end device, in either loopback or peer-to-peer mode (symmetrical or asymmetrical traffic generation mode). This feature greatly simplifies field testing since there is no need for a second technician to be at the far end configuring the test partner device.
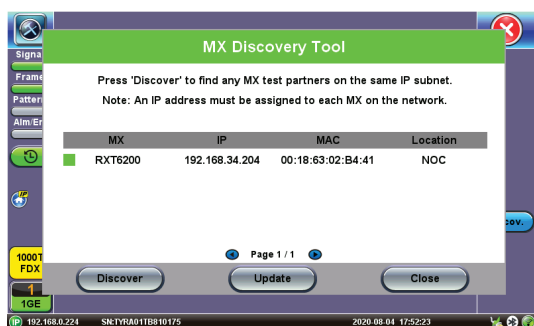

Discovery function to all VeEX devices within subnet or manual control of VeEX test sets in routed network

Remote Control of Loopback capability

Peer to Peer Controller/Responder configuration for RFC2544 test with asymmetric bandwidth test capability for end-to end RFC2544 test.

VLAN Scan and Monitor

VLAN Scan allows scanning up to 4096 VLAN IDs for switch configuration verification. Verify which VLAN IDs are the top bandwidth users and monitor up to eight live traffic streams (in terminate mode).

Scans incoming traffic and discovers all VLAN flows including Q-in-Q tagging

Key statistics on traffic rates, alarms and errors are reported for monitored streams (up to 8)
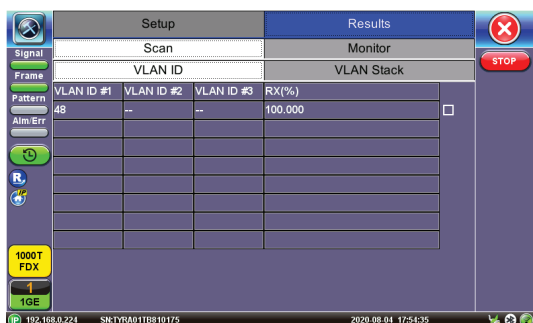
Layer 2 Control Protocol Transparency Test

To verify handling of Layer 2 Control Protocol (L2CP) frames across Carrier Ethernet networks, the Layer 2 Control Protocol Transparency Test feature transmits a set of L2CP frames and verifies that they are forwarded through the network. This feature supports common L2CP frame types (as per MEF 45 standard) as well as Cisco L2CP frame formats.

- Selectable Layer 2 Control protocol frames and configurable frames
- Supported L2CP frame types per MEF 45 standard
- Cisco L2CP frame formats
- Selectable frame rate and count
- TX and RX frames statistics
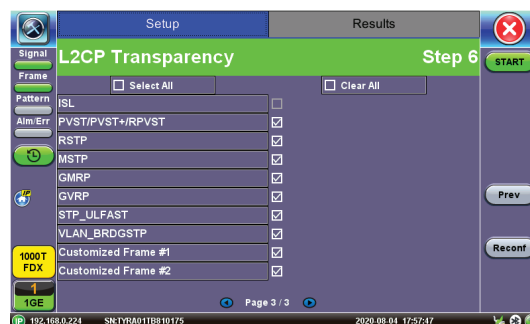
Q-in-Q (VLAN stacking)

VLAN stacking, also known as Q-in-Q, makes a provision for carrier/service provider assigned VLANs (SP-VLAN), but also retains customer traffic's VLAN (CE-VLAN). Up to three layers of VLAN tagging supported with configurable VLAN ID, Priority, and VLAN type.

Multiprotocol Label Switching (MPLS)

MPLS technology allows for a more efficient routing of Ethernet/IP packets via the use of MPLS routers in the network. MPLS labels reside between the MAC (Layer 2) and IP layers (Layer 3). Up to three MPLS tags can be configured in the traffic stream with customizable Label, CoS, and TTL fields.

Provider Backbone Bridging (PBB)

Also known as MAC-in-MAC, PBB (802.1ah) provides a trunking mechanism that adds resiliency and configurable performance levels in the provider backbone network. PBB encapsulation is available for all Ethernet tests with all PBB fields configurable.

Point-to-Point Protocol over Ethernet (PPPoE)

PPPoE provides encapsulation of Ethernet frames with a PPP header commonly used for DSL Access or GPON.

## Multiprotocol Label Switching Transport Profile (MPLS-TP)

MPLS-TP, a Layer 2 packet-based transport mechanism, is gaining momentum as a transport of choice for access and aggregation networks requiring a technology that combines the operational simplicity of packet switched networks with the operations, administration and maintenance (OAM) tools and fault resiliency capabilities of circuit switched networks. Fully configurable MPLS-TP header fields including LSP and Pseudowire.

IPv6

IPv6 compliant test traffic generation and analysis for all test applications (Y.1564 V-SAM, RFC2544, BERT and Multi-stream Throughput)

IPv6 Loopback capability

IPv6 Static or Stateless Auto Configuration, Ping and Trace Route functions
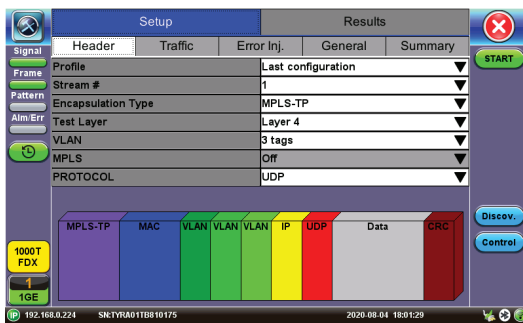
Layer 4-7 Features

RFC6349 V-PERF TCP Test

A common source of customer complaints come from file transfer speeds not matching the throughput rates guaranteed in the SLA. While many factors affect TCP applications performance, including customer's operating system hardware performance and settings (TCP window size), carriers need to prove SLA with a test tool that can show TCP performance independent of Operating System or Server limitations and present repeatable reliable results.

The test set V-PERF feature uses RFC6349 test methodology and metrics for qualifying network TCP performance. It offers a full line rate stateful TCP test with configurable window sizes, client and server modes as well as compatibility with iPerf servers.

TCP Throughput Compliant with RFC6349
Stateful TCP Test at line rate
TCP Client and Server modes
Compatible with iPerf Client/Server
MTU search per RFC4821
Round Trip Time Measurement
Configurable TCP Window sizes
Multi-Window size tests
Measurements: TCP Throughput rate (min, max, average), Transfer file size and duration, Transfer time ratio, TCP Efficiency %, Buffer Delay %

Quallity of Service (QoS) & Quality of Experience (QoE) Tests

FTP Throughput (V-FTP) and V-TEST features provide additional Layer 4-7 testing. The V-FTP Throughput feature allows the user to test up to full line rate FTP protocol performance to any FTP Server by uploading and downloading files. The V-TEST feature qualifies network TCP/HTTP protocol performance by testing against a V-TEST HTTP server. Both features can test up to the full line rate depending on the server specifications and limitations. Connection time to the server, data transfer time, line rate throughput rates, and protocol (FTP and HTTP) throughput rates key metrics are reported during the tests.

The V-TEST application is flexible enough to operate in different modes depending on user preference; VeEX Managed mode, Speedtest Powered™ mode based on Ookla® technology, and

User Managed mode.

In VeEX Managed mode, the customer's servers are added to a customer server list that is maintained and managed by VeEX for the end-user's ease of use and convenience. The full list of server IP addresses or URLs are provided to VeEX. Once added, all the user has to do is select the server from their company list and initiate the test to the selected server.

In Speedtest Powered mode, the test follows Ookla's methodology and tests to the Speedtest® Server Network. In this mode, the test is compatible with Ookla's protocol/methodology; it will scan nearby servers in the local market and test to the server with the fastest (lowest latency) response.

In User Managed mode, the user is allowed to enter the server IP/URL and save it to a server list that they can maintain and manage on their own.

V-TEST HTTP Test

HTTP Throughput
Full line rate
HTTP client mode
Connection time to server
Total Data Transfer time
HTTP Throughput rates
Requires V-TEST Server or Ookla® Netgauge

FTP Throughput Test

FTP Throughput
Full line rate
FTP client mode
Connection time to server
Total Data Transfer time
FTP Throughput rates
Compatible with Linux and Windows FTP servers

Auto Scripting

The Auto Scripting feature is the perfect tool for the lab environment where multiple short-term or long-term test configurations are required to stress the network equipment and/or network under test, in order to measure and qualify the performance capabilities. The feature is also important in field operations, not only to speed-up service turn-up times, but also to facilitate the entire workforce the same test profiles and test procedures for day-to-day operations.

The Auto Scripting application is an automated sequence of tests that can be carried out by selecting previously configured Throughput or BERT profiles. The profiles can be created with ReVeal and then loaded to the unit or created directly on the unit in the Throughput and BERT applications. Users can select up to ten profiles, each profile configured with its own duration. The duration can be in seconds, minutes, hours, or days. The test sequence will begin with the first profile configured with its corresponding duration, followed by each profile after that. At the end of each profile tested a results file will be stored automatically before the test sequence continues to the next profile. Users have the option to continue or stop the auto scripting test if errors or alarms are detected.

Network Troubleshooting Tools

Complementary to the transport layer tests provided with the RFC2544 and V-SAM Y.1564 test suites, the tester provides advanced application layer test capabilities with the following functions: Ping test, Trace route, and network discovery.

IP Tools

Provides basic Ethernet and Internet connectivity to the test set as well as connectivity troubleshooting tools to Ethernet test ports (10/100/1000BaseT, 100FX/1000BaseX) and Management port (10/100BaseT)

IP: IPv4 (Static, DHCP) and IPv6 (Static, Auto) and PPPoE VLAN support, Ping, Trace Route check

Net Wiz

Network Discovery Tool
- Discovery: TX Frames, RX Frames, RX Errors, Advertised Speed, Advertised Duplex, Devices found, Networks found
- Devices: Total number, Routers, Servers, Hosts
- Device Details: Attribute, IP address, MAC address, Group Name, Machine Name, Ping OK
- Networks: IP Subnets, Hosts, Domains, Hosts Names

WiFi Wiz

The WiFi Wiz function with USB WiFi adapter for 802.11 a/b/g/n wireless makes troubleshooting WiFi connectivity issues a simple task.

Scan for available networks and view all access points detailed information along with SSID, signal strength and channel allocation. Connect to Access Points with WEP/WPA or WPA2 encryption and verify IP capabilities to ensure the wireless network is properly installed and configured. A full suite of IP testing features is supported (ping, trace, web browser, etc.).
- Requires WiFi option
- Access Points scan with signal level and link quality measurement
- WEP/WPA1/WPA2 encryption
- IP Connectivity test (Ping, trace route, ARPWiz, Web browser)
- Provides WiFi LAN access to the test set (e.g. VeExpress, R-Server, Remote Control, ReVeal)

VoIP Call Expert

Emulates an IP phone to place and receive calls using SIP or H.323 protocols. Real-time evaluation of voice quality with a complete set of measurements is available at the end of the call, including packet statistics, jitter statistics, and MOS and R-factor call quality scores. Support VoIP trunk test with bulk call generation of up to 24 simultaneous calls.

Codecs: G.711 μ-law, G.711 A-law
VoIP Call Expert
- VoIP call setup: Supports SIP and H.323 protocols
- Multi-call support: Up to 24 concurrent calls
- Configurable jitter buffer (fixed or dynamic)
- Incoming call Auto Answer
- STUN support
- Talk/Listen with built in microphone and speaker
- DTMF test (RFC4733)
- Signaling trace with protocol decode

Fibre Channel

Key Features

- Dual-port capabilities
- Full line rate traffic generation and analysis
- Primitive Sequence Protocol support
- Flow control support with Buffer-to-Buffer credits
- FC-1 and FC-2 BERT and Throughput
- RFC2544: Throughput, Latency, Frame Loss, and Back-to-Back frames tests
- FC-2 Smart Loop mode
- Service Disruption Measurement
- FC-2 Frame Header configuration
- Test traffic shaping: constant, ramp, and burst
- Frame Length configuration up to 2148 bytes

Throughput and Bit Error Rate Test (BERT)

The Fibre Channel protocol specifies a maximum allowable Bit Error Rate (BER) of $\leq 1 \times 10^{-12}$ that must be achieved. The test set allows the user to stress FC-1 and FC-2 network layers to ensure accurate benchmarking.

For FC-1, frequency fluctuations, transceiver noise and phase jumps are tested using CRPAT, CSPAT, and CJPAT patterns. Data dependency and behavior of network components are checked with PRBS patterns, sequence number tracking, and time stamping to calculate frame loss, round trip delay, and other performance metrics.

RFC2544 Benchmarking

Based on the Ethernet test methodology, the RFC2544 routine has been adapted to Fiber Channel circuits where flow-control and buffer verification is important. The feature checks throughput and round trip delay at various buffer sizes to verify optimal buffer size and best possible link performance.

Fibre Channel Interfaces

Dual SFP+ for 1/2/4G Fibre Channel optical ports: LC connectors

Fibre Channel Rates

1.0625 Gbps, 2.125 Gbps, 4.25 Gbps

Modes of Operation

Terminate, Loopback

Fibre Channel Topology

Point-to-Point

Primitive Sequence Protocols

Link initialization, link rest, link failure

Flow Control

Buffer-to-Buffer Credit Configuration: 1-65535

Traffic Generation

FC-1 (with SOF and EOF frame delimiters) and FC-2 Frames
Class 3 Service frames
Scrambling/Descrambling (8.5 Gbps only)
Configurable Header fields
Configurable EOF (EOF_t, EOF_n), and SOF (SOF_i3, SOF_n3, SOF_f)
Traffic Shaping: constant, ramp, burst
Frame Length Configuration: 2148 bytes maximum

RFC2544 Compliance Testing

Automated tests compliant with RFC2544 with configurable threshold values for Throughput and Round Trip Delay (Latency) and maximum transmit bandwidth settings
Throughput, Latency, Frame Loss, and Back-to-Back (burst) tests
Frame sizes: 64, 128, 256, 512, 1024, 1280, and 2000 bytes including 2 user configurable frames

Bit Error Rate Testing

NCITS-TR-25-1999 Patterns (FC-1): CRPAT, CSPAT, CJPAT
PRBS Patterns (FC-2): $2^{31}-1$, $2^{23}-1$, $2^{15}-1$, $2^{11}-1$, normal and inverted selections, and user defined patterns
Error Injection: Bit and CRC

Loopback Mode

FC-1
FC-2 (Layer 2): swaps the destination and source IDs (D-ID and S_ID)

Key Measurements

Optical power levels: transmit and receive optical levels in dBm
Error Measurements: Bit error count, BER, symbol, FCS/CRC, oversize, undersize, frame loss (count and %), out of sequence frame count
Alarm Detection: LOS, pattern loss, service disruption
Traffic Statistics: bandwidth utilization, data rate, frame count, byte count, frame size distribution, buffer-to-buffer credit count, RR_RDY count, frame loss count and round trip delay
Rates: line rate, framed rate, data rate, frames per second rate
Delay (min, max, avg, current): round trip delay, frame arrival delay

Fiber Optic Tools

Digital Fiber Inspection Scope

Dirty connectors can damage or degrade the performance of expensive optical modules, or produce inaccurate results. Inspecting and cleaning patch cords and pluggable optics connectors before mating them is always recommended.

This option allows digital video microscope probes to be connected directly to the test set through a USB port. Featuring live video feed on the screen for visual analysis. It offers image capture, compare (before and after), IEC 61300-3-3 Sect 5.4 Pass/Fail templates for SMF and MMF, save, export and generate report to USB flash drives.

- Auto-focus detection and analysis option
- Analysis per IEC 61300-3-3
- SMF and MMF templates (Core, Cladding, Adhesive and Contact areas)
- Dots or square to highlight contamination, debris and scratches
- Report generation

USB Fiber Scope sold separately. Check its datasheet for details.

OTDR Viewer

Built-in OTDR Viewer and Client application provides full post-analysis of SOR traces, as well as control of OPX-BOX OTDR via direct USB connection or Bluetooth®

- Traces and Events table view
- Loss calculations
- V-Scout Link Mapper option
- Compatible with Fiberizer Cloud (upload and download)
- Controls external OPX-BOXe OTDR

OPX-BOXe OTDR Control

The VeEX OPX-BOXe is an ultra-compact OTDR that can be controlled by the test set using Bluetooth® or USB connection. Once paired or connected to the micro OTDR, the test set displays a virtual OTDR user interface that is used to control the OPX-BOXe and perform measurements. Since fibers are common place in access, metro and transport networks, having a companion add-on OTDR reduces truck rolls since there is less dependence to call on specialized fiber construction crews to verify or troubleshoot fiber related problems.

Platform Features & Options

ReVeal RXTS

This companion management PC software is included standard with each test set. The ReVeal provides an easy-to-use and intuitive interface that allows users to take full advantage of TX300s, RXT-1200, MTTplus, and V150 test sets by providing the following productivity tools:

- Convenient test profile management
- Flexible test results management
- Advanced report generation with html, pdf, or csv formats, combine test results, add logos and comments
- Test profiles management: Online or offline Ethernet test profile creation, upload and download

Compatible with Windows XP, 7, 8.1 and 10, 32 bits or 64 bits operating systems.

Remote Access

The test set offers multiple ways to Remote Control it or access the information remotely (e.g. test results, test profiles, etc.). The test set can be reached via:

- ReVeal PC software
- Web browser (Web Remote Control)
- EZ Remote
- VNC® Client
- Connectivity: Optional 10/100Base-T, WiFi 802.11 a/b/g/n/ac

EZ Remote

The EZ Remote functionality allows users to quickly connect to VeEX test sets all over the world, without the need for VPN, port forwarding or public IP addresses. This VeEX hosted cloud service takes care of all the complex tasks required, and presents users with a simple application. Connect online anytime, anywhere, with any computer, tablet, or smartphone, using standard web browsers for screen-sharing, remote control and access to test results. Use it for remote control, collaboration, technical support or training purposes.

- Remote Control functionality gives users full control of remote test sets (screen mirroring and control)
- Remote Access functionality allows users to View, Download, Rename, Delete, Convert to PDF the test results
- No VPN required
- Works through firewalls, no ports to open
- Web browser based
- Multi-platform support
- No software to install
- Service included with test set (no extra charge)

VeSion® R-Server™ Client

Part of VeEX's VeSion™ centralized monitoring and management solutions, the R-Server Workflow and Asset Management system provides crucial tools to manage fleets of technicians, test equipment, standardized test profiles, thresholds, centralized test results collection, reporting, jobs/ticketing, and software update delivery to create coordinated and efficient disciplined workforce and test procedures. R-Server enhances the workflow to achieve the level of quality and repeatability required by telecommunications service providers, MSOs and their contractors. The flexible R-Server

can be deployed in cloud, hosted, and corporate networks, on physical or virtualized servers.

Makes the job simpler for field technicians as they can download test profiles and upload test results. Supervisors can preset and upload test parameters which are provided to the test sets as profiles. Technicians can simply download profiles, run tests, and upload results to a centralized system that stores and secures the data.

File Manager

Profiles: Save and recall test profiles

Saves results to internal SD card View, Rename, Delete and Lock profile and result files

Filter and sort by Name, Test Mode, Test Type, Port, Date and Result/Profile

Report generation: Test results generation in PDF format

Export test results and profiles via USB memory, Bluetooth, web browser, Data Card or ReVeal RXTS companion PC software

File Backup and Retrieve to/from USB

Screen capture: Screen shots in PNG format

General Specifications

Display	5" WVGA 800x480 TFT color LCD touch-screen
Storage	Internal 16 GB flash
Connectivity	Built-in: WiFi 802.11b/g/n (optional), Bluetooth® (optional)
	micro-B USB 2.0 OTG
	USB A 2.0 via OTG cable
	10/100Base-T via OTG adapter (optional)
Languages	Multiple languages supported
Size (H x W x D)	150 x 150 x 80 mm (5.9 x 5.9 x 3.15")
Weight	1.0 kg (2.2 lb)
Battery	56 Wh smart Li-Ion battery
Battery Autonomy	Application dependent (>12h idle)
AC Adaptor	Input: 100-240 VAC, 50/60 Hz, 1.5A
	Output: 15 VDC, 4A
Operating Temperature	0˚C to 45˚C (32˚F to 113˚F)
Storage Temperature	-10˚C to 60˚C (-14˚F to 140˚F)
Humidity	0% to 95% non-condensing
Certifications	CE & ROHS compliant

Dual SFP+

Port 2
Link
Act.

Act.
Link
Port 1
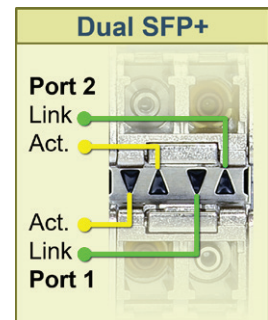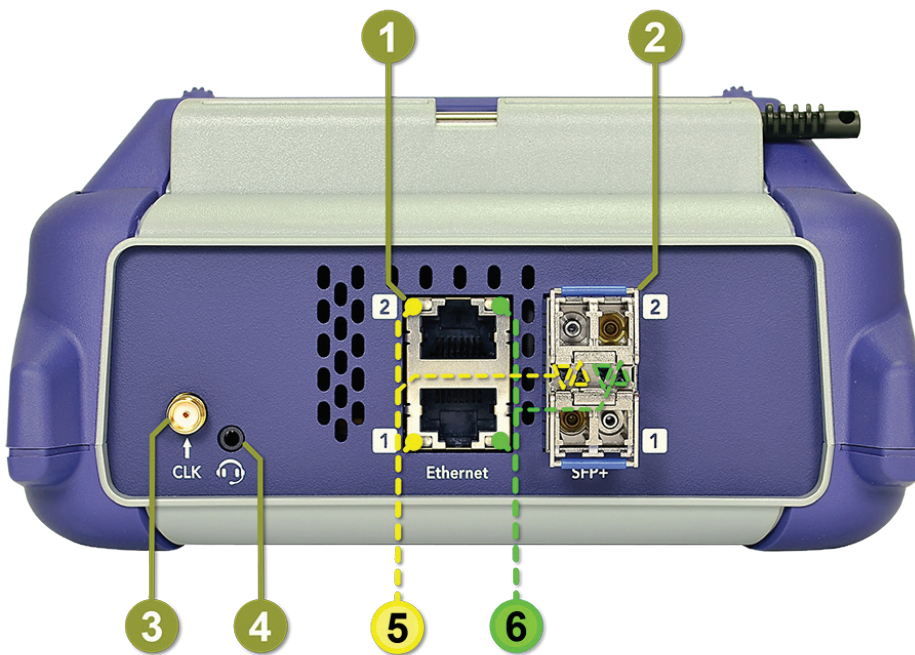
1. Dual RJ45: 10/100/1000BASE-T
2. Dual SFP+: 10GBASE-X, 1000BASE-FX, 100BASE-X 4/2/1GFC
3. SMA: External Reference Clock Input (SyncE)
4. TRS 2.5 mm: Headset jack (VoIP)
5. LEDs: Activity
6. LEDs: Link

The Verification Experts