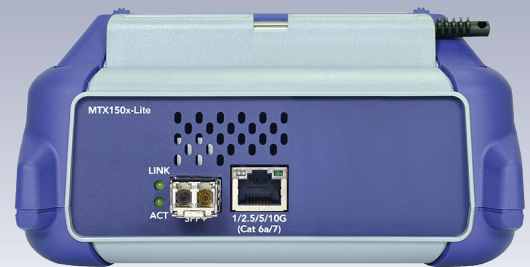


MTX150x Lite

Multi-Gigabit Internet Services & Ethernet Speed Test Solution



The MTX150x Lite is an optimized Quality of Experience (QoE) test solution (Layer 4+ applications) for multi-Gigabit services from 10 Mbps to 10 Gbps, on copper and fiber interfaces. This rugged and ultra-portable hand-held test set helps field technicians install, verify, maintain and troubleshoot high-speed Residential and Business services, Internet Access and other packet-based services up to 10 Gbps. Native support for 2.5G/5G/10GBASE-T reduces cost of ownership.

Platform Highlights

- The smallest and most powerful test set with native RJ45 1G/2.5G/5G/10GBASE-T and 1G/10GBASE-X QoE test solution on the market
- Operation up to 10 Gbps optical and electrical
- Optimized for field technicians installing, verifying, troubleshooting and maintaining Carrier Ethernet, Business and Gigabit Residential Internet Services
- Field upgradeable licenses to optimize OPEX
- VeSion® R-Server asset, workflow and results management
- Compatible with VeEX EZ Remote™ collaboration services.
- Remote access and control via Web Browser, VNC® client and ReVeal PC software.
- Comprehensive local 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
- 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
- Small self-contained handheld test set (no need for external devices or apps)

Key Features

- V-TEST Throughput Test Supports VeEX Mode and Speedtest Powered® Mode based on Ookla® technology
- V-PERF, support of RFC6349
- SFP+ test interface for 100/1000BASE-X and 10GBASE-R
- Built-in RJ45 test with PHY for 100/1000BASE-T, 2.5GBASE-T, 5GBASE-T, 10/100/1000BASE-T (no adapters required)
- Automatic IP acquisition via DHCP
- Fast boot-up time, ready to test in less than 60 seconds
- PoE detection
- CAT X Cable Checker (Cat 6a/7)

Ethernet

- IPv4/IPv6 and PPPoE, DHCP and static IP
- Ping, trace route, IP PCAP, Traffic PCAP
- Complete Layer 4+ test suite: V-TEST (Ookla® Speedtest®), V-FTP, V-PERF (RFC6349) upload & download tests
- Plug-and-play, automated and optimized test workflow for ease of use and time saving
- Protocol Capture & Decode with built-in Wireshark, for advanced troubleshooting

Ethernet Specifications

Electrical Interfaces

RJ45 (Cat 6a compliant)

- 10/100/1000BASE-T
- 2.5GBASE-T
- 5GBASE-T
- 10GBASE-T

Ethernet Classification: Per IEEE 802.3

Optical Interfaces

SFP+ (LC connectors)

- 100/1000BASE-X
- 10GBASE-R

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

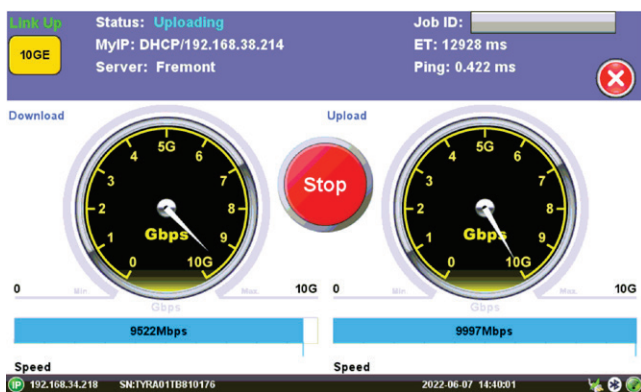
ROHS compliant and Lead Free per Directive 2002/95/EC

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

Layer 4+ Service Tests

V-TEST Internet Speed Test

This multi-gigabit high-speed test features provide additional Layer 4-7 verification and troubleshooting. The V-TEST feature qualifies network TCP/HTTP protocol performance by testing against a V-TEST or Ookla® Speedtest® HTTP server. It can test up to the full line rate depending on the server's specifications and limitations. Connection time to the server, data transfer time, line rate throughput rates, and protocol 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:

- 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.

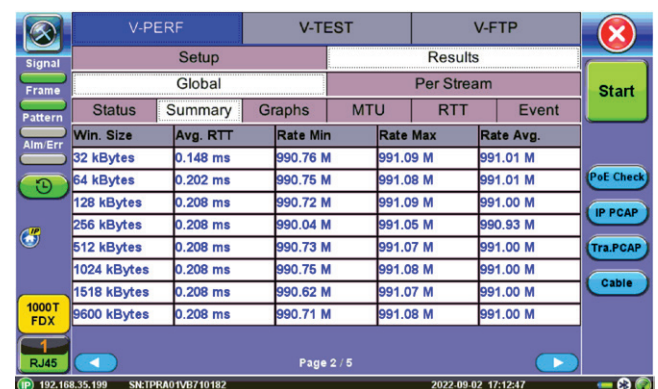
Hardware-based HTTP Throughput rate test (Internet speed test) helps verify quality of service (QoS) and assure quality of experience (QoE)

- Full HTTP line rate
- HTTP client mode
- Connection time to server
- Total Data Transfer time
- Requires V-TEST Server Speedtest Compatible Mode
- Compatible with Ookla's network of Netgauge servers
- Speedtest Powered

V-PERF TCP/UDP Test (RFC6349)

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), service providers need to prove SLA with hardware-based test tools that can show maximum TCP performance, independent of Operating System or Server limitations, and present repeatable reliable results.

The V-PERF test feature uses RFC6349 test methodology and metrics for qualifying TCP or UDP network performance. It offers a full line rate stateful TCP test with configurable window sizes, client and server modes as well as compatibility with third-party iPerf/iPerf3 servers. For best performance, multiple field test set can test against centralized hardware-based RTU-300 test heads, for guaranteed availability and repeatability.



V-PERF is a hardware-based benchmarking test for network performance at different TCP window sizes, to verify stateful TCP/UDP throughput at full line rate, understand KPIs that may be causing network congestion and speed degradation, optimize window sizes, and assure the link meets the required quality of service (QoS).

- TCP/UDP Throughput Compliant with RFC6349
- Stateful TCP/UDP Test at full line rate
- TCP/UDP Client and Server modes
- Compatible with iPerf and iPerf3 Client/Server
- Up to 64 parallel streams
- MTU search per RFC4821
- Round Trip Time Measurement
- Configurable TCP Window sizes, with Manual and Auto window sizing
- Multi-Window size tests
- Measurements: TCP Throughput rate (min, max, average), Transfer file size and duration, Transfer time ratio, TCP Efficiency %, Buffer Delay %
- Test duration: By time or file size

V-FTP Throughput Test

FTP Throughput provide additional Layer 4-7 testing. V-FTP allows users to test the link and service’s FTP protocol performance, to any FTP Server, up to full line rate, by uploading and downloading large test files. This feature can test up to the full line rate depending on the server’s specifications and limitations. Connection time to the server, data transfer time, line rate throughput rates, and protocol throughput rates key metrics are reported during the tests.

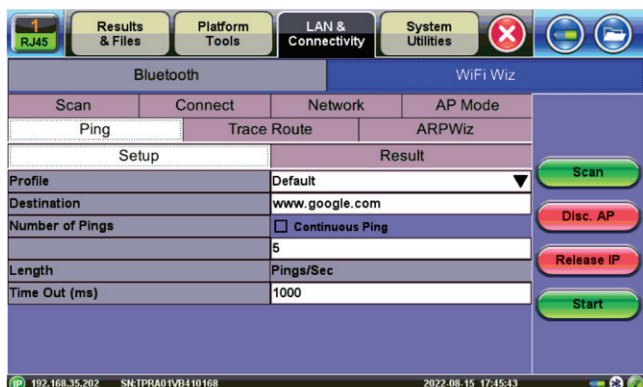
- FTP Throughput rates
- Full line rate
- FTP client mode
- Connection time to server
- Total Data Transfer time
- FTP Throughput rates
- Compatible with Linux and Windows FTP servers

Network Troubleshooting Tools

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 (100/1000BASE-T, 2.5GBASE-T, 5GBASE-T, 10GBASE-T, 100FX/1000BASE-X, 10GBASE-R) and Management port (10/100BaseT)



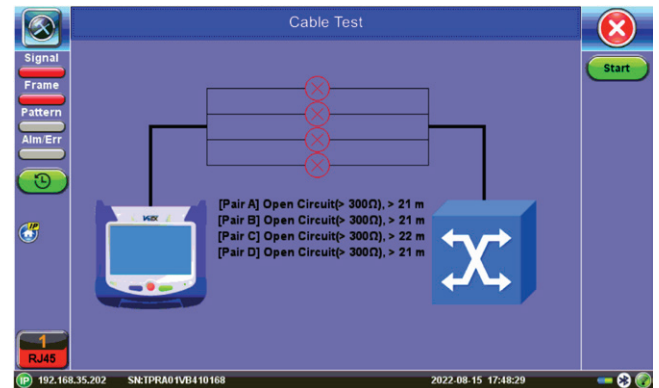
IP: IPv4 (Static, DHCP) and IPv6 (Static, Auto) and PPPoE VLAN support, Ping, Trace Route check

PoE Detection

The Power over Ethernet test function supports emulation of Powered Device and allows technicians to identify the pairs used.

CAT X Cable Checker

The CAT X Cable Checker tests the Ethernet cable (Cat 6a/7) distance (Ethernet RJ45 Test port only, not available on Ethernet RJ45 Management port, should be open).



IP PCAP and Traffic PCAP

IP PCAP is the Packet Capture of the IP Communication Link. Traffic PCAP is the Packet Capture of the Traffic

- Stopping PCAP automatically names and saves results in pcap format
- Saved file located in Files > Saved section

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)

Fiber Optic Tools

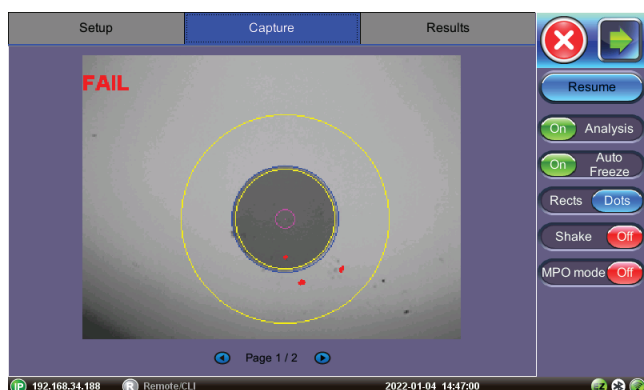
Digital Fiber Inspection Scope

End-face contamination is the leading cause of fiber link failures. Dirty/damaged connectors can increase loss and return loss resulting in poor service quality. Contamination can transfer and damage other connectors through mating. 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 or WiFi. Featuring live video feed on the screen for visual analysis. It offers clear 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

* *Fiberscope sold separately. See datasheet for details.*



OTDR Viewer

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

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

Since fibers are commonly placed in access, metro, and transport networks, having a companion add-on OTDR to inspect drop fiber reduces dependence on specialized fiber construction crews troubleshooting fiber related problems.

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.

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.

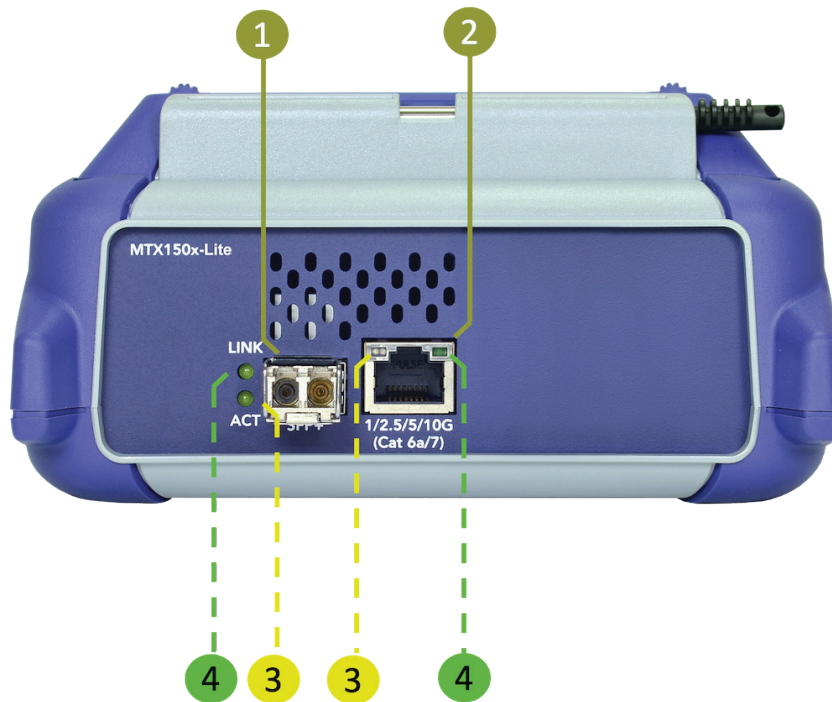
- Remote Control functionality gives users full control of remote test sets (screen mirroring and control)
- Remote Access functionality allows users to View, Download, Rename, Delete, Convert to PDF the test results
- No VPN required
- Works through firewalls, no ports to open
- Web browser based
-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

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

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



- ① SFP+: 10GBASE-R, 1000BASE-FX, 100BASE-X RJ45: 100/1000BASE-T, 2.5/5/10GBASE-T
- ② RJ45: 100/1000BASE-T, 2.5/5/10GBASE-T
- ③ LEDs: Activity
- ④ LEDs: Link