MTX90

Multi-Gigabit Internet Services, Ethernet Speed & Wi-Fi Test Solution

The MTX90 is an optimized Quality of Experience (QoE) test solution (Layer 4+ applications) for multi-Gigabit services from 10 Mbps to 10 Gbps, with native support for 2.5G, 5G, and 10GBASE-T on copper RJ45 and fiber SFP+ interfaces. It supports PON ONT emulation via SFP+, provides QoE validation using Speedtest and V-PERF, and enables Wi-Fi performance verification. It equips field technicians with the tools to quickly validate service speeds for residential and business subscribers.

Product Highlights

- Optimized for field technicians installing, verifying, troubleshooting and maintaining high-speed Residential and Business services
- Simple and intuitive user interface (GUI)
- Flow® for efficient testing and report compilation process
- NoApp® QR code capability for faster result transfer
- Built-in Near Field Communication (NFC) transceiver, compatible with NoApp® cloud service, for immediate test results transfer and sharing
- Generate and save test results locally in HTML file format and export to PDF
- Streamline report management and data transfer with R-Server integration for workflows and results sharing
- Large internal data storage for test results
- User defined test profiles and thresholds enable fast, efficient and consistent turn-up of services
- USB-C PD interface for charging, memory sticks and LAN adapters
- Remote access/control via web browser and VNC® client; compatible with VeEX EZ Remote collaboration services
- Field upgradeable using USB stick
- Fast boot up time (14 seconds)
- Rechargeable Li-Ion battery includes a low voltage alarm and auto-off function, providing one full day of typical operation and testing
- High resolution 5-inch color capacitive touch screen with gesture support
- Rugged, compact and ergonomic handheld design for demanding field environments

Key Features

- SFP+ test interface for 1000BASE-X and 10GBASE-R
- Built-in RJ45 port with PHY for 10/100/1000BASE-T, 2.5GBASE-T, 5GBASE-T, 10GBASE-T (no adapters required)
- Automatic IP acquisition via DHCP
- PoE detection

Ethernet

- IPv4/IPv6 and PPPoE, DHCP and static IP
- Ping
- Complete Layer 4+ test suite: V-TEST (Ookla® Speedtest®, VeEX Managed and Manual Modes), V-PERF (RFC6349)
- PON ONT emulation via SFP+ test interface
- PPPoE support

Wi-Fi Testing

- IPv4/IPv6, DHCP, and static IP
- Complete Layer 4+ test suite: V-TEST (Ookla® Speedtest®), V-PERF (RFC6349)
- Wi-Fi (802.11 a/b/g/n/ac/ax) 2.4 GHz, 5 GHz and 6 GHz scan, coverage verification and speed test up to 2 Gbit/s

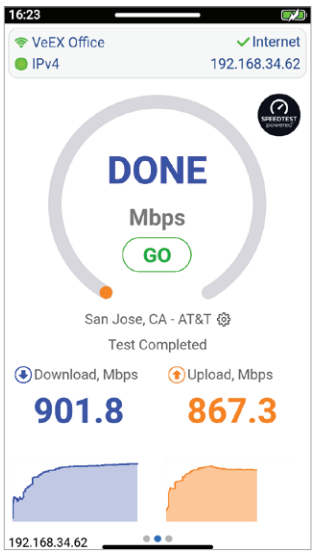
Internet Access QoE Validation

Test Interfaces

- RJ45: 10/100/1000BASE-T, 2.5/5/10GBASE-T
- SFP+: 1GE, 10GE, PON ONT Emulation with GPON/XGSPON SFP
- Wi-Fi 802.11 a/b/g/n/ac/ax with 2.4 GHz, 5 GHz and 6 GHz[1], up to 2 Gbit/s

V-TEST Internet Speed Test

This multi-gigabit high-speed test feature provides 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.

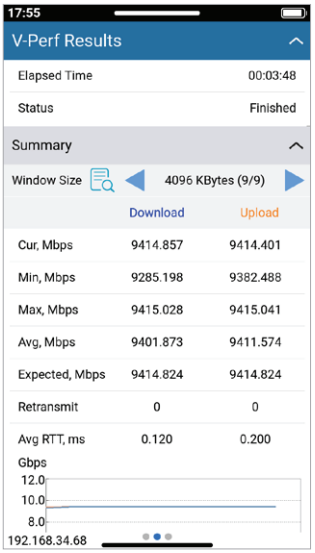
Hardware-based HTTP Throughput rate test (Internet speed test) helps verify quality of service (QoS) and assure quality of experience (QoE)

- 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

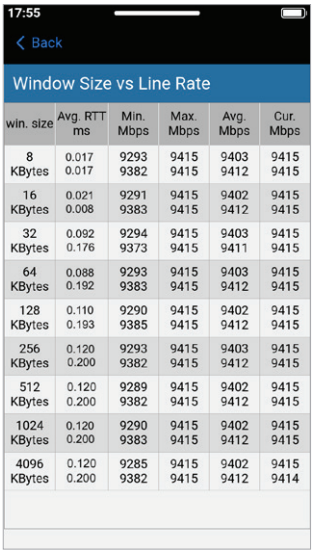
[1]*Optional factory-installed built-in hardware*

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.



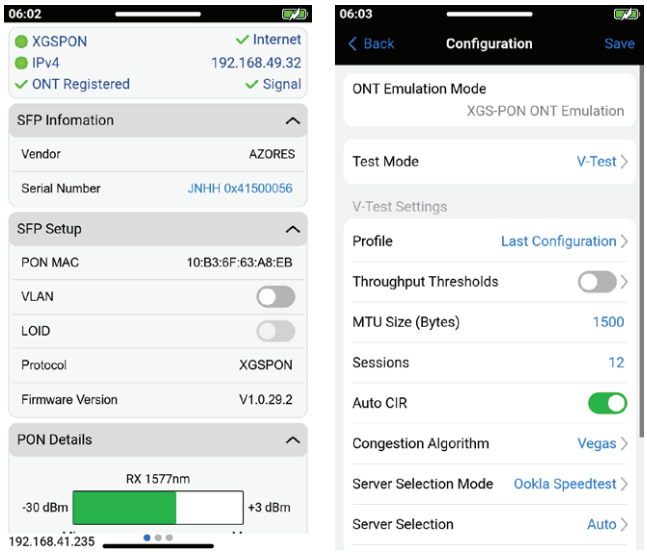
win. size	Avg. RTT ms	Min. Mbps	Max. Mbps	Avg. Mbps	Cur. Mbps
8 KBytes	0.017 0.017	9293 9382	9415 9415	9403 9412	9415 9415
16 KBytes	0.021 0.008	9291 9383	9415 9415	9402 9412	9415 9415
32 KBytes	0.092 0.176	9294 9373	9415 9415	9403 9411	9415 9415
64 KBytes	0.088 0.192	9293 9383	9415 9415	9403 9412	9415 9415
128 KBytes	0.110 0.193	9290 9385	9415 9415	9402 9412	9415 9415
256 KBytes	0.120 0.200	9293 9382	9415 9415	9403 9412	9415 9415
512 KBytes	0.120 0.200	9289 9382	9415 9415	9402 9412	9415 9415
1024 KBytes	0.120 0.200	9290 9383	9415 9415	9402 9412	9415 9415
4096 KBytes	0.120 0.200	9285 9382	9415 9415	9402 9412	9415 9414

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

PON ONT Emulation[1]

The MTX90 supports PON ONT emulation, allowing technicians to emulate the behavior of an actual ONT without needing on-site customer equipment. This enables verification of OLT provisioning, power levels, PON ID, and service readiness prior to customer service requests. By emulating ONT functions such as authentication and response to network commands, technicians can confirm connectivity, run speed tests, and streamline activation workflows, making the tools ideal for both deployment and training environments.



PON Connectivity Validation

- Verify correct OLT provisioning
- Troubleshooting

Internet Service Access Validation

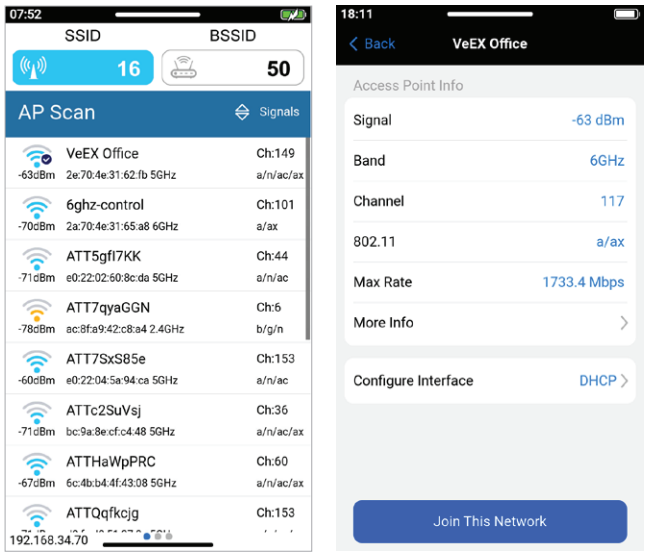
- V-TEST speed test
- VPERF (part of RFC6349)

[1]Requires optional PON ONT SFP+ transceiver

Wi-Fi Channel Scan

Scans for available networks and view all access points' (AP) detailed information along with SSID, signal strength, channel allocation, supported Wi-Fi types, Max PHY Rates. It can also connect to Access Points with WEP/WPA, WPA2 and WPA3 encryption and run Ookla Speedtest or iPerf to verify the wireless network's speed test performance and confirm that it is properly installed and configured.

- Access Points scan with signal level and additional AP details
- Supports WEP/WPA1/WPA2/WPA3 encryptions
- Provides Wi-Fi WLAN management access to the test set (e.g. R-Server, Web Remote Access, EZ-Remote Control)



Platform Features & Options

VeSion® R-Server Client

VeEX's R-Server enhances and streamlines job workflows to achieve the highest level of quality and repeatability required by telecom service providers, MSOs and their contractors. The centralized Workflow and Asset Management architecture provides important tools to manage teams of technicians, test equipment, standardized test profiles, test results collection, reporting functions, including jobs/ticketing resulting in a more disciplined and improved test process.

Key Features

- Cloud-based: One system platform
- Seamless integration: Single system for job ticketing and work order management
- Visibility: Comprehensive overview of field test equipment assets and field technician activity
- Tamper-proof: Lock profiles, registration, date/time on tester for a consistent test environment

Web Remote & Web Access

The test set offers multiple ways for remote control and provides remote access to its information from a PC, tablet, or smartphone (e.g. test results, test profiles, etc.). The test set can be reached via:

- Standard web browser
- VNC® Client
- EZ Remote™ cloud service
- Optional Wi-Fi 802.11 a/b/g/n/ac/ax (requires a USB Wi-Fi adapter), 100/1000BASE-T (requires a USB-C to Ethernet adapter)

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 – Provides full control of remote test sets (screen mirroring and touch/mouse control)
- Remote Access – Allows users to View, Download, Rename, Delete, Convert to PDF the test results
- No VPN setup required
- Works through firewalls, no ports to open
- Web browser based
- Multi-platform (OS) support
- No software to install
- Service included with test set

NoApp® Test Results Transfer

NoApp uses NFC (US patent 12321807) and QR Code (US patent 12190199) technologies to quickly transfer test results from devices to smartphones or tablets for cloud processing, streamlining workflows, and reporting. It's a web- based solution that works on any screen size, requires no separate application installation or updates, and is always up to date, eliminating the need for constant IT approvals. It's compatible with any modern smartphone or tablet that supports NFC and QR Code reader.

- Geotagging test results
- Generate PDF reports
- Upload results to R-Server
- Compile different test results into a single job report
- Add pictures and files
- Effective job closing, maintenance, and birth certificates
- Share test results via SMS and/or email
- Export to JSON format
- Access quick guides and resources
- Secure
- No registration required

NoApp Using QR Code

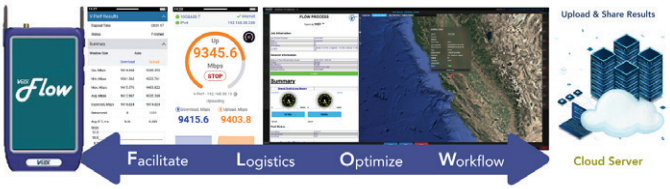
NoApp Using NFC

FLOW® Workflow

The FLOW application streamlines complex workflows, enhances task optimization, and expedites result-sharing in the field.

Technicians execute a batch of tests based on predefined system configurations and signal thresholds, eliminating setup errors and ensuring tests are performed consistently.

Detailed test reports are uploaded to a cloud-based server, allowing valuable results to be shared and ensuring compliance to company requirements.



Ordering Information

P/N	Description
Multi-Gig Service Test Set	
Z04-09-001P	MTX90 - Multi-Gig Service Test Set with Single Port RJ45 supports for 1G/2.5G/5G/10GBase-T, and Single Port SFP+ 1G/10G. V-PERF included for all rates. Wi-Fi Throughput Testing (optional) SFP slot for ONT Emulation (optional)
Hardware Options	
Z66-00-183G	Wi-Fi and Bluetooth for Communication/Management
Z66-00-184G	Wi-Fi Testing and Wi-Fi and Bluetooth for Communication/Management
Ethernet Options	
499-05-949	ONT Emulation – must use with SFP xPON ONT, 301-01-026G/027G/028G
499-05-997	Ookla Speed Test, applied to all V-Test rates purchased
Pluggable Optics	
301-01-026G	SFP - GPON (requires 499-05-949 ONT Emulation)
301-01-027G	SFP - 10G EPON ONT (requires 499-05-949 ONT Emulation)
301-01-028G	SFP - XG(S)-PON ONT (requires 499-05-949 ONT Emulation)

General Specifications

Display (LCD)	5” TFT color screen, 720x1280px Capacitive multi-touch
Data Storage	
Internal Flash	18 GB (built-in)
External	USB-C memory stick (not included)
Remote	Upload via VeSion® R-Server (optional)
Connectivity/Management	
Wi-Fi	Built-in 802.11 a/b/g/n/ac/ax (optional) 2.4 GHz, 5 GHz, and 6 GHz
Ethernet	USB-C to 100/1000BASE-T adapter (optional)
NFC	Built-in NFC transceiver
USB	USB Type-C: External USB Accessories DC Charging (PD)
Battery	
Capacity	24 Wh, 3.3 VDC, 7200 mAh
Type	Rechargeable Lithium-Ion
Autonomy	More than one day worth of typical use and testing
AC/DC Adapter	45W, 15 VDC, 3.0A max
AC Input	100-240 VAC 50/60 Hz, 1.3A max
DC Output	15 VDC, USB-C Power Delivery (PD)
Dimensions	107 x 202 x 44 mm
(W x H x D)	4.21 x 7.95 x 1.73 in.
Weight	593 g (1.31 lb)
Environmental	
Operating Temperature	-5˚C to 50˚C (23˚F to 122˚F)
Storage Temperature	-40˚C to 60˚C (-40˚F to 140˚F)
Humidity	5% to 85%, non-condensing
Compliance	CE, WEEE, ROHS

VeEX
The Verification Experts

CE

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