PX90

PON Service Installation Meter

Selective GPON & XGS-PON OPM
Internet QoE Validation
Wi-Fi Testing

Residential & Business PON Internet Access Services Test Set

Efficient, simple, precise and cost-effective step-by-step validation for GPON and XGS-PON installations. From selective optical power measurements (OPM) to Internet access speed test validation over LAN and Wi-Fi, it provides field technicians with the tools required to quickly validate service speeds and quality of experience (QoE) for residential subscribers.

Platform Highlights

- Optimized for field technicians installing, verifying, troubleshooting and maintaining PON-based Internet Access services
- Robust and ergonomic handheld design for field environments
- Large and bright high-resolution color display for easy viewing
- Fast boot-up time
- Intuitive graphical user interface (GUI)
- Easy to use and responsive capacitive touchscreen with gesture support
- Large internal data storage for test results
- Built-in Wi-Fi connectivity
- Built-in Near Field Communication (NFC) transceiver, compatible with NoApp® cloud service, for immediate test result transfer and sharing
- Cloud-based NoApp service (included) allows for data transfer via mobile phone or tablet. Secured and always up to date. No installation or updates required.
- Generate and save test results in HTML file format and export to PDF
- Built-in web access server for remote control access
- USB-C PD interface for charging, memory sticks and LAN adapters
- Rechargeable Li-Ion battery includes a low voltage alarm and an auto-off function, providing one full day of typical operation and testing

Key Features

- Simple and complete solution for residential PON services installation, activation and validation
- Terminated filtered Optical Power Meter for GPON and XGS-PON downstream signals
- Supports simultaneous GPON and XGS-PON optical power measurements
- ONT and OLT Pass/Fail thresholds with class selection
- Internet Access Speed Test, with Ookla® Speedtest® and iPerf support
- LAN 1000BASE-T speed tests
- Wi-Fi (802.11a/b/g/n/ac/ax) 2.4 GHz, 5 GHz and 6 GHz scan, coverage verification and speed test
- Intuitive graphical results presentation with easy to read performance metrics
- Supports customized test profiles, to address different types of services and test points
- Supports multiple user profiles for people sharing test sets

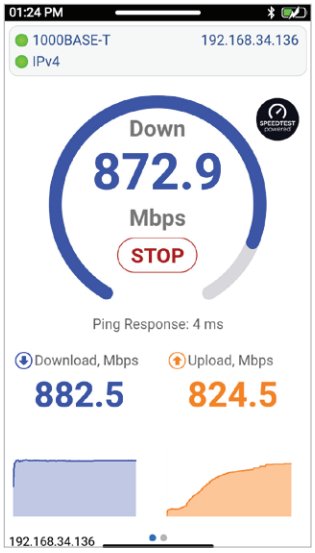
Internet Access QoE Validation

Test Interfaces

- 10/100/1000BASE-T (RJ45) up to 1 Gbit/s
- 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

Ookla® Speedtest®

This Internet speed test evaluates the TCP protocol performance of the access network by testing against Ookla's Speedtest® servers. Stresses the link and service up to the test interface's maximum line rate, providing key performance indicators (KPI) such as connection time to the server, data transfer time, and line rate throughput rates, all reported during the test.

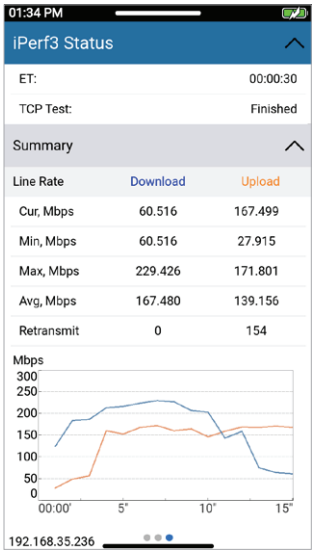


In Speedtest Powered® mode, the test follows Ookla's methodology and tests to the Speedtest® Server Network. In this mode, it scans nearby servers in the local market and tests against the server with the fastest response.

- Full line rate
- Connection time to server
- Total data transfer time
- Requires Ookla® Netgauge server

iPerf TCP/UDP Throughput Test

The iPerf is a network performance test used to measure the maximum available bandwidth between two devices over a network. It can test both TCP (Transmission Control Protocol) and UDP (User Datagram Protocol) connections, offering insights into network speed, stability, and flag potential issues.



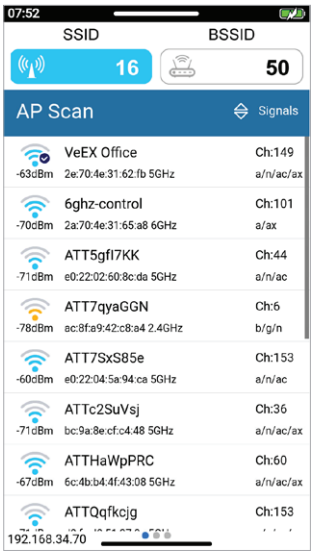
The TCP test focuses on measuring the maximum achievable bandwidth while ensuring reliable data transmission, providing metrics such as bandwidth and retransmissions.

On the other hand, the UDP test measures bandwidth without error correction, making it suitable for real-time applications like video streaming. It provides metrics including bandwidth, packet loss, and jitter.

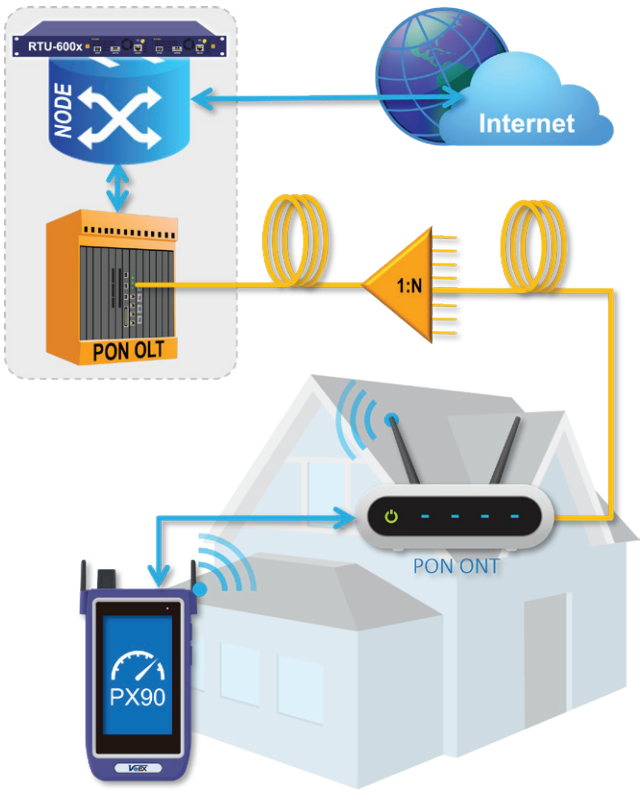
- TCP/UDP Throughput
- Stateful TCP/UDP Test at line rate
- Client and server modes
- Compatible with iPerf client/server
- Measurements: TCP/UDP Throughput rate (current, minimum, maximum, average), retransmissions for TCP, as well as packet loss and jitter for UDP

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)

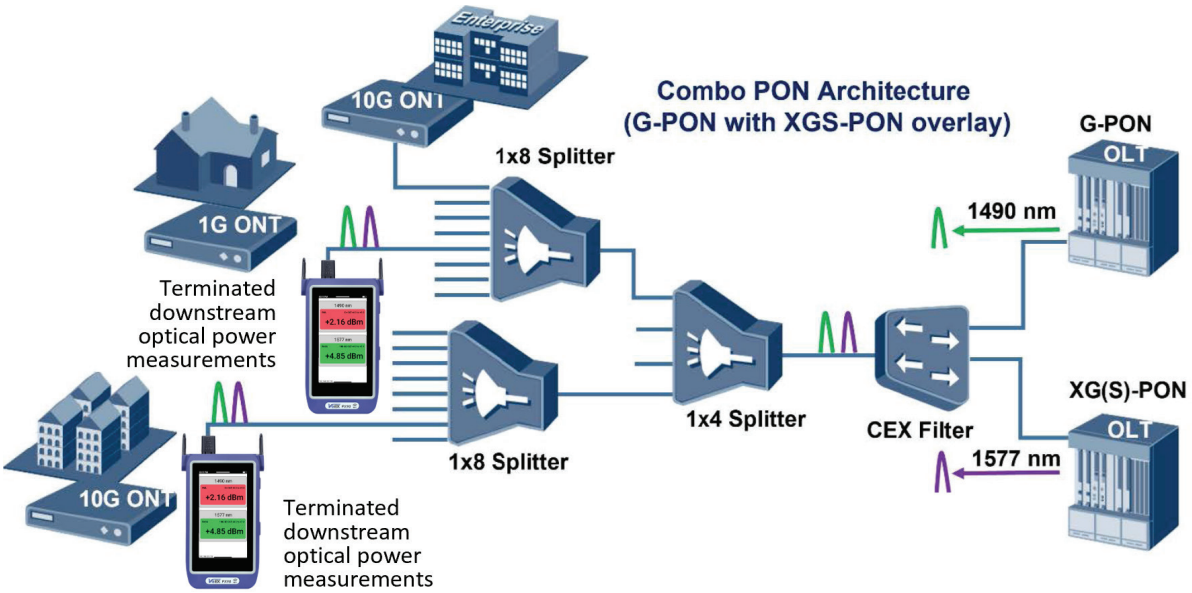


[1]*Optional factory-installed built-in hardware.*

PON Signal Levels

Coexistent PON Services and Overlay Networks

Check PON service wavelengths to ensure customers are connected correctly and verify downstream levels meet threshold criteria.



Key OPM Specifications

Wavelength-selective level measurements

- G-PON per ITU-T G.984.2
- XGS-PON per ITU-T G.9807.1

Calibrated PON wavelengths (Downstream)

- 1490 nm (G-PON)
- 1577 nm (XGS-PON)

Narrow, Selective Spectral Passband[2]

- Accurate measurements even in the presence of other wavelengths

ODN Class Profiles

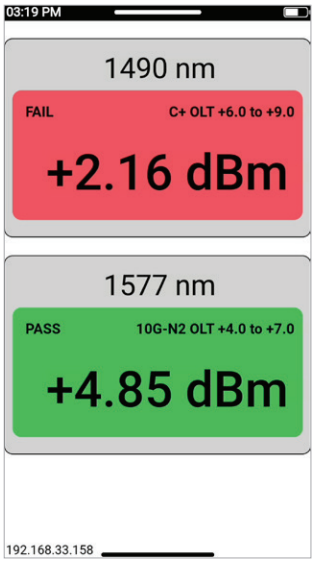
- Standard and user-defined Pass/Fail thresholds for ONT and OLT sites, and transmitter classes
- 1G: A, B, B+, C, C+, Ext C+, Ext D
- 10G: 10G-N1, 10G-N2, E1, E2
- Pass/Fail evaluation can be enabled or disabled

Optical Power Reading

- GPON, XGS-PON, and coexistent GPON + XGS-PON modes
- Color coded display for intuitive PASS/FAIL validation

Selective Optical Power Meter (PON-T OPM)

- Fixed SC/APC connector interface with protective dust cap.
- Downstream signal verification for G-PON and XGS-PON networks.
- Simultaneous filtered 1490 nm and 1577 nm signal level measurements.
- Pass/Fail indication per PON Class or User-defined thresholds.



PON-T Optical Power Meter Specifications	
Calibrated Wavelengths (nm)	1490/1577
Continuous Data Measurement Range (dBm) -1490 nm -1577 nm	 -45 to +13 -45 to +13
Spectral Passband (nm)[3] -1490 nm -1577 nm	 1480 to 1500 1572 to 1582
Isolation (dB) -1490 nm and 1577 nm	 40
Power Measurement Accuracy, (dB)[4,5]	±0.5
Return Loss (dB)	40
Linearity (dB)	±0.11
Display Resolution (dB)	0.1
Display Result View	dBm and Pass/Fail (standard user defined thresholds)
Connector Interface (with dust cap protection)	Fixed SC/APC

[2]Meets ITU-T and IEEE PON passband specifications
[3]FWHM (typical)
[4]Calibration conditions (-10 dBm)
[5]Typical value

Platform Features & Options

General Platform Functions

- File Manager
- Multiple user profiles
- Screen lock
- Screen capture
- Calculator

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, screenshots, etc.). The test set can be easily reached via:

- Standard web browser
- VNC® Client app
- EZ Remote™ cloud service
- Connectivity: Optional Wi-Fi 802.11 a/b/g/n/ac/ax (built-in), 10/100/1000BASE-T test port (built-in)

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 and QR code 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 app 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

No App Using QR Code

No App Using NFC

Optical Connector Protector (Hardware Option)

Optical Connector Protector

Replaceable Ferrule

Optical Protector Cover (optional)

1 Patent pending
2 Spare ferrules available in pack of 4 for APC or UPC

The innovative, patent pending field-replaceable optical ferrule system[1] adds an extra layer of protection to the internal end-face of calibrated optical test ports, preventing contamination and accidental damage.

Users can quickly replace the ferrule[2] without the need for any tool while maintaining the integrity of the instrument's factory calibration. This novel approach eliminates the downtime, logistical hurdles and high cost associated with sending test sets to a service center for repair and recalibration.

All components in the system are reusable, with the exception of the small replaceable ferrule, helping to reduce environmental waste.

Field-Replaceable Optical Ferrule System

Universal Adapter

The universal connector adapter allows users to change the optical connector type conveniently whenever needed. Available in FC, SC, ST and LC.

Locking Ring

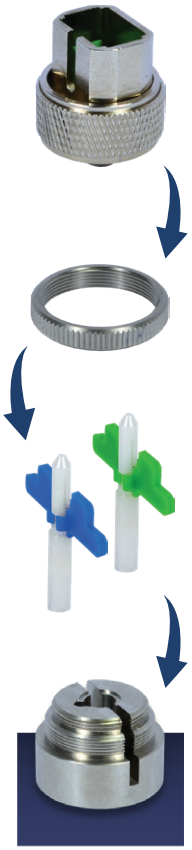
To secure the replaceable ferrule at its optimum location for the best performance.

Replaceable Ferrule with APC or UPC End-face

The self-aligned field-replaceable ferrule can be changed out in seconds. Users can select between APC or UPC end-face, ensuring compatibility with any test application requirement.

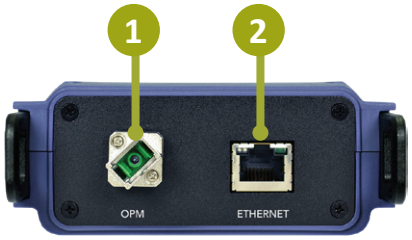
Optical Connector Protector Base

The panel mount protector base is made from high-grade stainless steel using a precision CNC process. This achieves proper alignment of the replaceable ferrule, minimizing insertion loss.



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
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[6]	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 (W x H x D)	107 x 202 x 44 mm 4.21 x 7.95 x 1.73 inches
Weight	605g/545g (1.33/1.02 lbs.) including battery
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



1. **Selective Optical Power Meter (PON OPM) SC/APC**
2. **1000BASE-T RJ45**
3. **Capacitive Touch Screen**
4. **Power Button**
5. **USB-C PD Port (charging and data)**
6. **NFC Transceiver**

[6]Requires smart AC/DC charger and cable, with USB-C power delivery (PD) capabilities.

VeEX Inc.
2827 Lakeview Court
Fremont, CA 94538 USA
Tel: +1.510.651.0500
Fax: +1.510.651.0505
www.veexinc.com
customercare@veexinc.com

D05-00-218P B00 2025/07