VIAVI
OneExpert™ CATV

A full-featured handheld for technicians at any skill level

OneExpert CATV helps field technicians fix problems right—the first time. A technician-friendly interface and OneCheck™ automated tests ease complex tasks with a simple dashboard that shows clear pass/fail results. And its future-proof modularity ensures years of use supporting CATV networks.

Comprehensive Tools Increase Productivity

We built expertise into OneExpert so that technicians at any skill level can quickly optimize performance. With a modular platform that adapts easily to rapidly changing technologies, OneExpert CATV is:

- Simple — Auto channel identification eliminates channel plan build, maintenance, and deployment overhead and enables automated testing without the potential for channel plan related test failures

- Fast — OneCheck uses powerful processing and exceptional speed to make more complete testing practical: a tech can run a comprehensive test, including MER and BER on all channels, in about a minute

- Powerful — More intelligent, powerful algorithms running in the background while testing enables the meter to point out any problems and suggest next troubleshooting steps

Now with DOCSIS 3.1

Benefits

- Simplifies and speeds testing and troubleshooting
- Improves compliance and audit performance
- Reduces rework
- Turns any technician into an expert

Features

- Real-time channel identification eliminates the need for channel plans and plan-related errors
- 32x8 DOCSIS® 3.0, DOCSIS 3.1, WiFi, 1 Gigabit Ethernet capable, and TrueSpeed™ option
- Field-exchangeable DOCSIS/RF module
- A unique dual-diplexer design supports 42/85 or 65/204 MHz networks
- WiFi 2.4/5 GHz, Bluetooth, StrataSync™ enabled
- Simultaneous ingress and downstream testing
- Optional fiber scope and power meter
- Optional ISDB-T Module

Applications

- Troubleshooting QAM carriers/home networks
- Verifying WiFi in 2.4 GHz and 5 GHz networks
- Turning up business services
- Testing Gigabit DOCSIS services
- Installing PON/RFoG including inspection, power levels, and RF performance
- Optional IP video testing
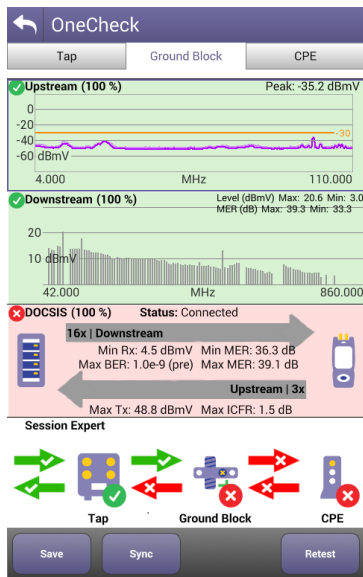
OneCheck dashboard simplifies identifying RF issues

Fast and easy connectivity, optional fiber scope and power meter

High-Powered Simplicity Turns Every Technician into an Expert

With OneExpert, expertise is built-in. We took decades of testing experience and incorporated that knowledge in a way that makes every technician an expert with the simple press of a button. OneExpert simplifies a technician's decision-making process by focusing on three primary tests:

- OneCheck comprehensive and automated testing of ingress, downstream and DOCSIS with Session Expert™ to help resolve problems

- DOCSISCheck™ real-time analysis and powerful troubleshooting of upstream and downstream DOCSIS carriers and data services

- ChannelCheck real-time analysis and powerful troubleshooting of downstream carriers

Additional OneExpert test capabilities ensure technicians master any QAM, OFDM, PON/RFOG, IP video, business-service, or home-network challenge. Its future-proof design adapts easily to rapidly changing technologies, assuring low total-cost-of-ownership.

AutoChannel™

To simplify the testing process and day-to-day maintenance, the AutoChannel feature automatically identifies and instantly builds correct channel plans for testing QAM, DOCSIS, and analog services. It eliminates the need for managers and supervisors to pre-build and configure the meter before a technician can use the instrument. It also eliminates the need for the technician to choose the correct channel plan for the part of the system that they are working on, saving time and reducing improper testing.

OneCheck™
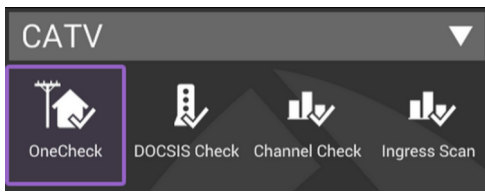
Home environments typically require testing ingress on the upstream, downstream carrier quality, and DOCSIS performance.

OneCheck is a fast and comprehensive test at three demarcation points: the tap, ground block, and CPE. Initiating the test is simple. The technician chooses the test location, enters the current job or work order, and starts the test.

Select test location

Connect the meter

Track by job/workorder
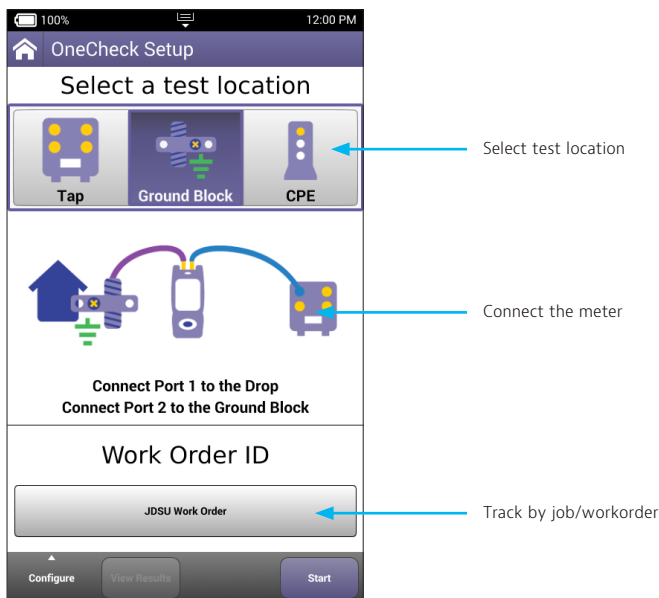
DuoPort™ with PosiScan™

Port 2 Not Connected
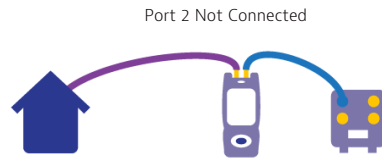
To help ensure that technicians properly connect their instruments and take valid ingress and downstream scans, OneExpert uses VIAVI exclusive DuoPort design with PosiScan. With DuoPort, one port scans ingress from the house while another port simultaneously tests downstream services. PosiScan increases compliance by making sure that a technician is properly connected to a unique home for each job before testing. This can dramatically reduce rework metrics by helping ensure that the technician scans the proper ingress.
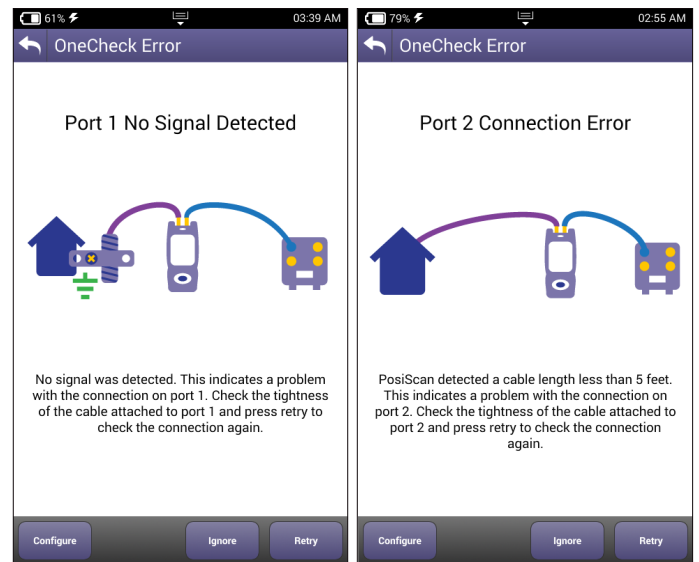
Technicians see improper connections before testing

A Simple Dashboard and Drill-Down Details

The dashboard displays all critical parameters including worst carrier MER, maximum transmit level, and in-channel frequency response (ICFR) of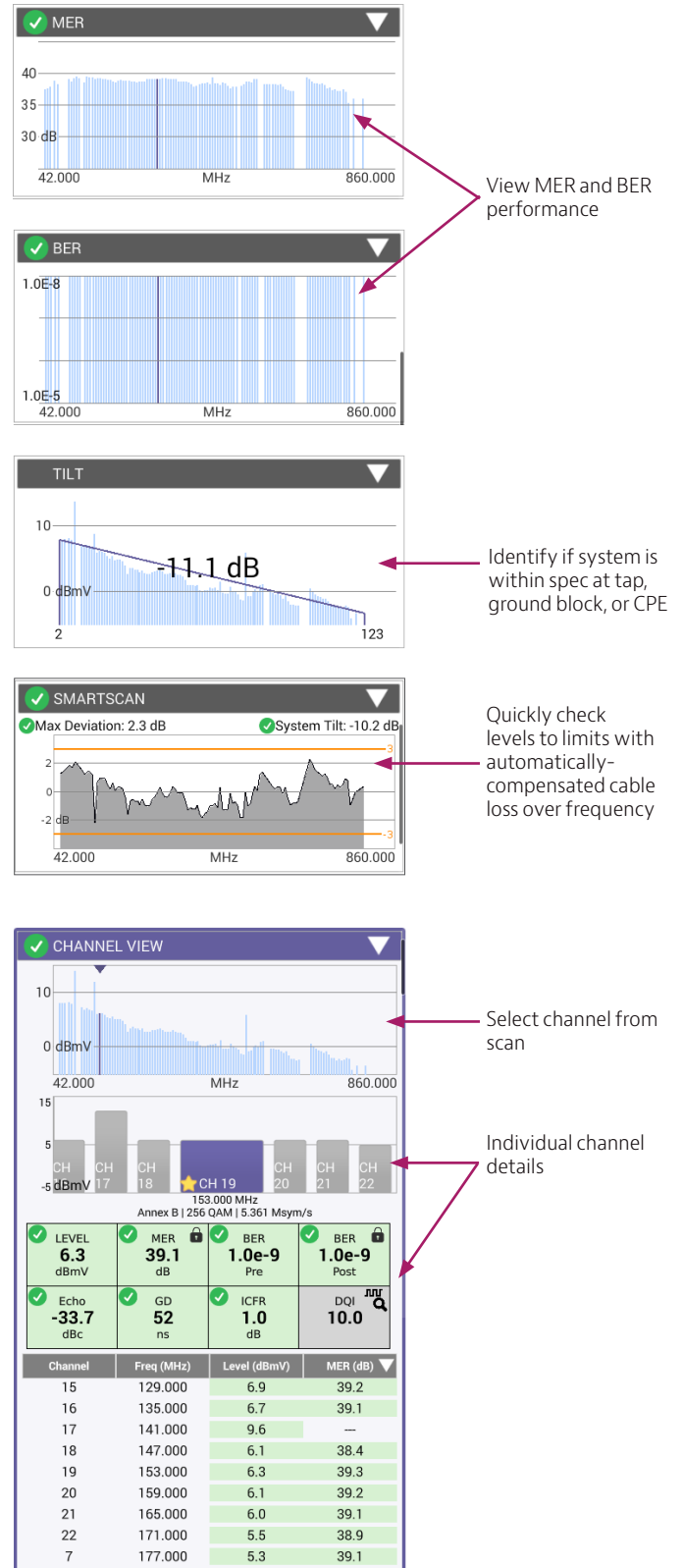 upstream carriers. Progress bars indicate status and immediately show if tests are passing or failing. For drill-down details, tapping a panel such as downstream or DOCSIS displays all carrier line-test details for quick problem identification.

Quickly toggle through summary results from each location

See critical measurements for downstream, DOCSIS, and ingress

View segmentation analysis with suggested actions
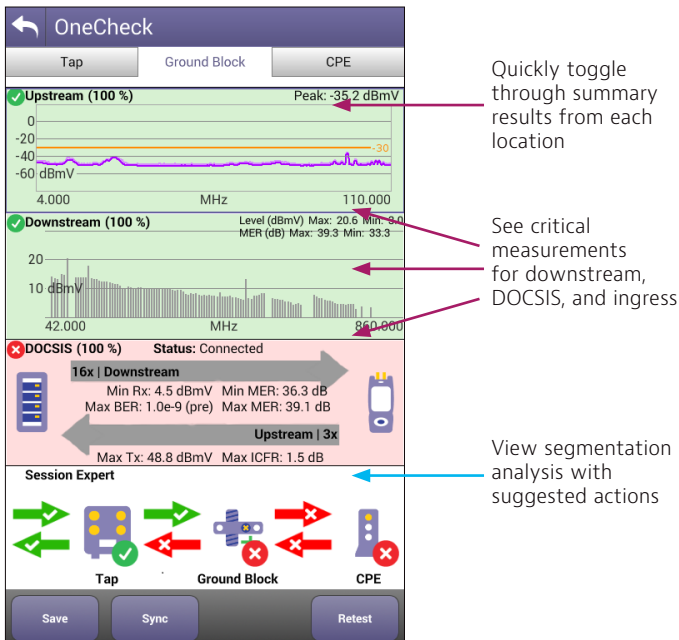
During any specific test, OneExpert simultaneously performs a powerful suite of additional tests in the background. By simply swiping through results, technicians can evaluate system wide performance including MER and BER across all channels, DOCSIS results (showing individual channel details), SmartScan results, and off-air ingress such as LTE carriers that are infiltrating the plant and causing problems.

Downstream Details

View MER and BER performance

Identify if system is within spec at tap, ground block, or CPE

Quickly check levels to limits with automatically-compensated cable loss over frequency

Select channel from scan

Individual channel details

DOCSIS Details
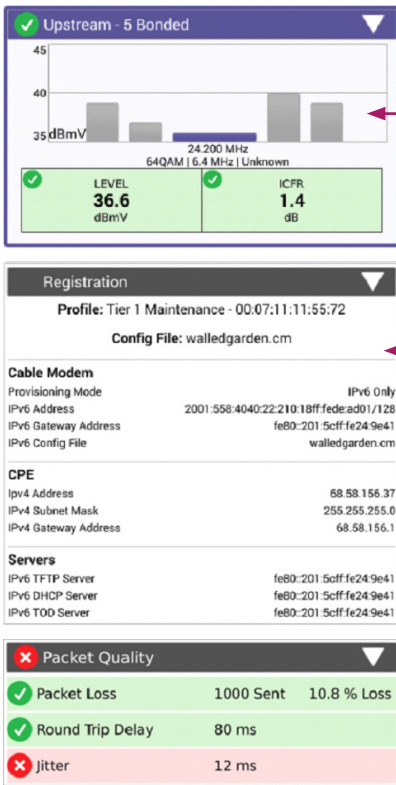
Easily view each upstream carrier including TX level and ICFR value

See internal modem details and identify server issues

Identify if packets are being lost over the RF portion of the data layer

Session Expert

Troubleshooting between demarcation points made easier
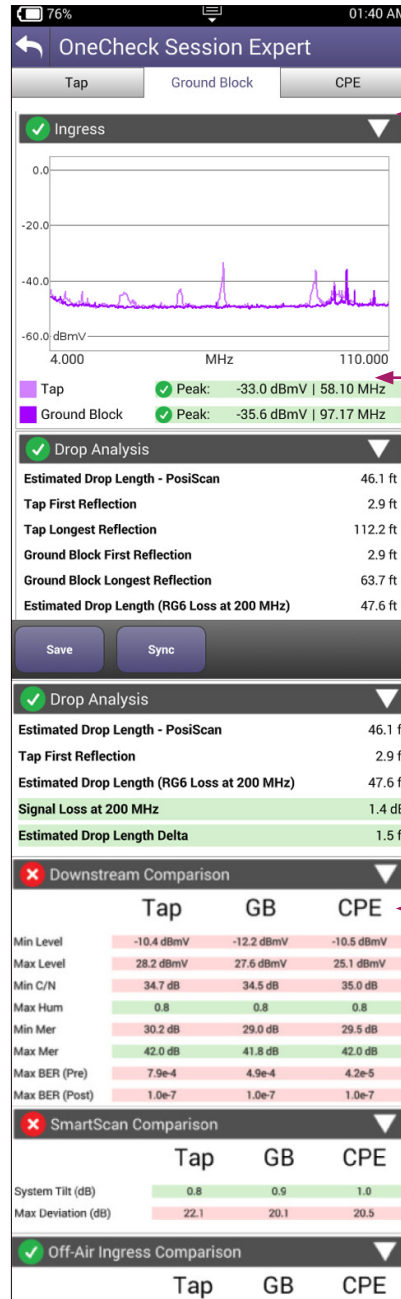
Session Expert is test location aware (tap, ground block, CPE) to help guide technicians to problems and ease troubleshooting between demarcation points. Built-in intelligence reduces learning time and helps resolve problems with less escalation or supervisor input.
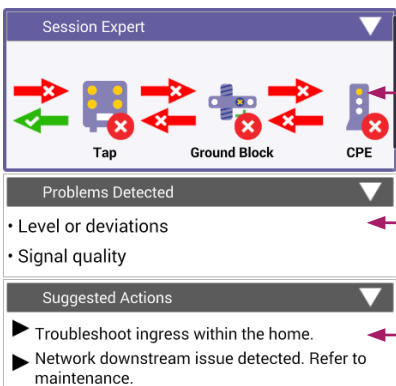
View upstream and downstream status between locations

Use background intelligence to analyze test data and identify core problems

See prioritized suggested next steps to find and fix problems based on best practices

Session Expert Details

Session Expert leverages additional expertise and processing power to provide the technician with tools to help divide and conquer problems between the TAP, GB, and CPE. Background measurements like Posi-Scan are used to verify drop integrity.

Compare scans between the TAP and GB to see where ingress occurs

Identify problems in the drop between the tap and ground block

Compare measurements side-by-side between TAP, GB, and CPE to speed up technician analysis time and reduce callbacks

DOCSISCheck

OneExpert simplifies DOCSIS service troubleshooting with automatic downstream DOCSIS channel identification and up to 32x8 bonded system operation. OneExpert harnesses parallel processing to provide multiple test results to the technician through a single interface. The user can simply swipe through the results to identify and eliminate physical layer and data layer problems.
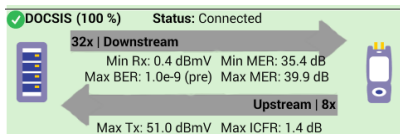
Identify upstream and downstream bonding with highlighted key metrics

- Downstream testing — by testing all the carriers within a bonding group simultaneously, technicians can quickly identify if problems lurk in the physical layer. And OneExpert works with up to 5 different DOCSIS profiles to test different provisioning.
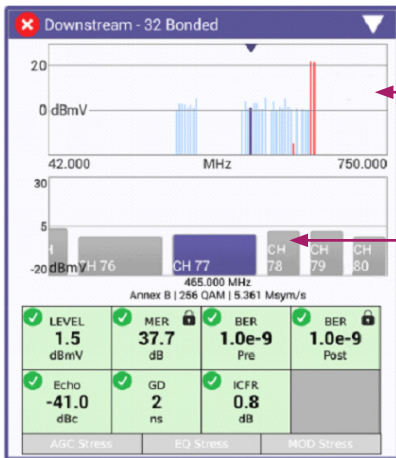
Touch a highlighted problem for quick access to troubled carriers

Swipe the screen to quickly access individual DOCSIS channel details

- Upstream testing — OneExpert is ready to test evolving return paths. It can automatically switch to an 85 MHz diplexer in expanded systems where operators can bond up to 8 upstream carriers.

View upstream ICFR for problem isolation and correlation with PNM tools

- Service testing — OneExpert tests throughput over DOCSIS up to 1 G.
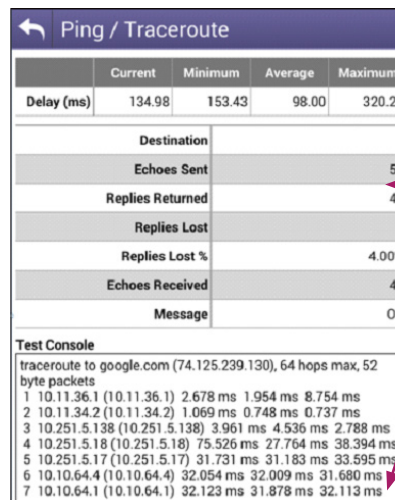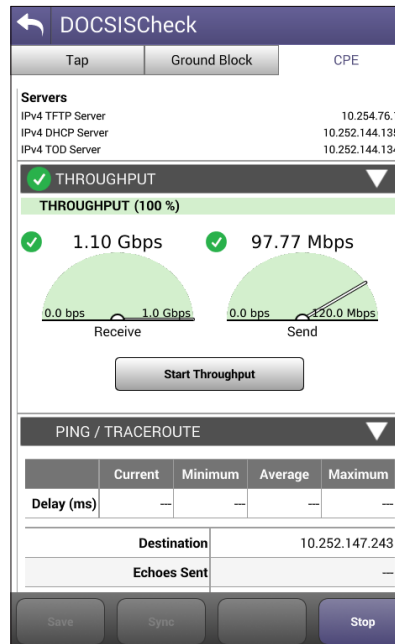
Isolate problems on the data layer with Ping/Traceroute

ChannelCheck screen:

62%   04:19 PM

ChannelCheck

| Tap | Ground Block | CPE |

0.0 / -20.0 / -40.0 dBmV   54.000   MHz   860.000

17.0 / -15.5 / -48.0 dBmV   CH 100   CH 101   CH OFDM ★1

659.500 MHz – 756.500 MHz
OFDM | 4096 carriers | PLC 708.000 MHz

PLC LEVEL	PLC MER	PLC CWE Corr	PLC CWE Uncorr
11.3 dBmV	43.9 dB	0.00e+00	0.00e+00
NCP CWE Corr	NCP CWE Uncorr	A CWE Corr	A CWE Uncorr
0.00e+00	0.00e+00	4.46e-01	0.00e+00
LEVEL (Avg) 10.3 dBmV	LEVEL (Max) 11.3 dBmV	LEVEL (Min) 9.9 dBmV	ICFR 2.0 dB
MER (Avg) 42.1 dB	MER (Std Dev) 1.4 dB	MER PCTL (2) 37.6 dB	Echo -41.5 dBc

| Save | Sync | Find Channel | Start |

MER OVER TIME

50.0 / 40.0 / 30.0 dBmV   547.000   MHz   659.000

PROFILE ANALYSIS

PROFILE	LOCKED	CWE (Corr)	CWE (Uncorr)
A	YES	3.36e-02	0.00e+00
B	YES	1.00e+01	0.00e+00
C	NO	---	---
NCP	YES	0.00e+00	0.00e+00
PLC	YES	0.00e+00	0.00e+00

IN-CHANNEL FREQUENCY RESPONSE

⚠ Delta: 6.9 dB

2.0 / 0.0 / -2.0 / -4.0 dB   805.000   MHz   899.000

SPECTRUM / IUC

-20.0 / -40.0 / -60.0 dBmV   542.000   MHz   654.000

Annotations (left column):

Identify downstream OFDM carrier in the lineup

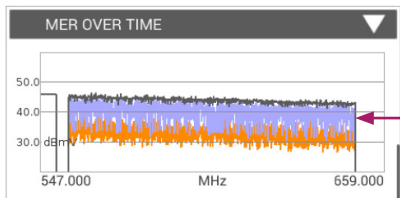Downstream scan measurement requires no learning curve, same as DOCSIS 3.0 scan, but shows OFDM signal

Overall OFDM carrier performance metrics including best and worst case; simple pass/fail indications

MER over entire OFDM channel provides insight into why higher-tier profiles are failing

Analysis of different profiles available and which profiles can be supported at test location
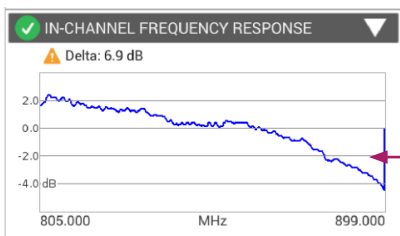
In-Channel Response identifies roll-off and excessive ripple
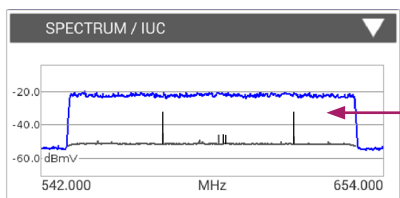
Spectrum and noise identify portions of carrier where degradation may occur

DOCSIS 3.1 Testing

With OneExpert, DOCSIS 3.1 testing is very intuitive. DOCSISCheck automatically identifies and locks on the 32 bonded QAM signals and the OFDM signal, so operation and results analysis is very similar to DOCSIS 3.0. Testing only the physical layer is inadequate to effectively analyze DOCSIS 3.1 performance. OneExpert uses a DOCSIS 3.1 chip set to test the service layer, enabling IP-related tests including throughput, codeword errors, and profile analysis.

ChannelCheck

When problems arise that require live, real-time troubleshooting, ChannelCheck provides a powerful suite of tests that help track down tough intermittent issues without requiring a technician to have years of field experience. ChannelCheck automatically performs an extensive set of measurements and analysis to help technicians quickly identify the root cause, if the problem is something they should fix, or if it requires escalation.

SPECTRUM / IUC

0.0 / -35.0 dBmV   545.000   MHz   601.000

Discover embedded ingress with ingress under the carrier trace

LEVEL OVER TIME

Live: 6.3 dBmV   Min: 6.2 dBmV   Max: 6.3 dBmV

10 / 9 / 7 / 5 dBmV   5 min   Live
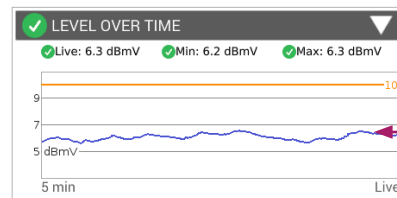
Monitor plant fluctuations with Level Over Time

IP Data — Web and Speed Testing

Internet subscribers demand reliable connectivity and new applications require higher data throughput and network-delay time performance. OneExpert quickly tests internet connectivity using a built-in web browser. It tests data rates provided by DOCSIS with HTTP throughput for TCP/IP applications. Mature tests like IP ping delay are essential for real–time applications such as online gaming.

ISDB-T Testing

An optional add-on module provides the OneExpert CATV with the ability to measure ISDB-T signals used in Japan for off-air video. The ONX incorporates basic power level measurements for ISDB-T within OneCheck and Channel Check. Detailed carrier analysis of ISDB-T signals in the ISDB-T Expert application measures the MER, BER, constellation, and detailed channel parameters of Layer A, B, and C.

Table 1. IP data tests

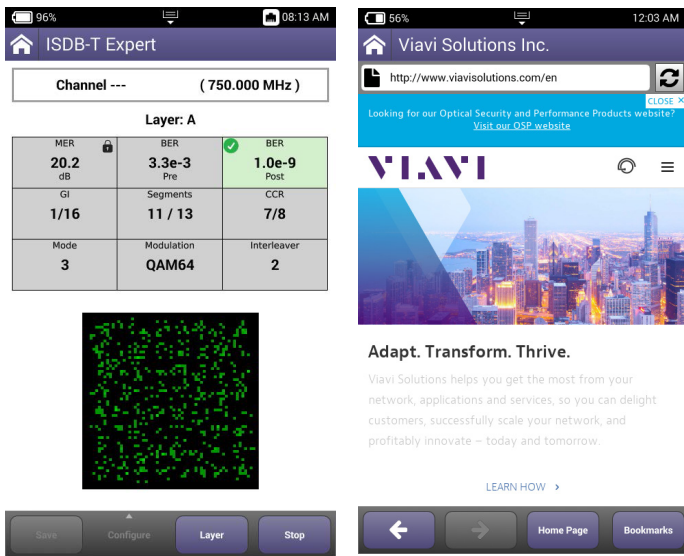| IP Data Test	What It Tests	Why It Is Needed
User authentication	IPoE, PPPoE, IPv4, and IPv6	Customer service turn-up
Web browser	Connection to any website	Differentiates between network problems and web-server downtimes and isolates customer PC or mobile devices as points of failure
IP ping	Delay time through the network	Network delay is crucial, especially with high-interaction applications such as gaming
FTP/HTTP throughput	Upload and download rates	DOCSIS profile parameters such as IP, delay, and network aggregation issues, determine user-experienced data speeds

OneExpert web browser

Mobile App

The OneExpert iOS app speeds testing, letting technicians leave the test set plugged in at one location and run tests remotely from their iPhone or iPad.

WiFi

Wireless devices and networks are increasingly common in households. With WiFi Scan, technicians have wireless 802.11 a/b/g/n (2.4 GHz and 5 GHz) testing capability to view signal strength, secure set identification (SSID), configured channel, security, MAC address, and 802.11 protocol at the test location of each wireless network in the area. It also indicates whether a network is secure or vulnerable to security threats.
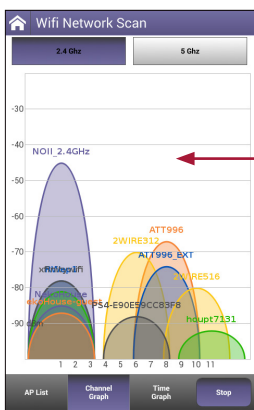
Identify overlapping channels and relative signal strength

Table 2. WiFi tests

WiFi Test	What It Tests	Why It Is Needed
WiFi scan	WiFi access point (AP) station scan	Discover potential interfering networks (which could cause slow data transfer speeds), and locate weak spots in the WiFi signal to help optimize router location
WiFi AP	Connect OneExpert CATV via Ethernet cable to a router or residential gateway to configure as a WiFi AP (Ethernet bridge to WiFi)	Verify Internet connectivity, configure CPE, and run tests from mobile devices

WiFi Advisor

With support for the WiFi Advisor accessory on the OneExpert, technicians can evaluate wireless network performance seamlessly for both 2.4 and 5 GHz networks. With support for 802.11 standards a/b/g/n and ac, the ONX and WiFi Advisor combination make WiFi problem solving easier.

Using a single WFED-300AC device, users can quickly visualize, optimize, and troubleshoot WiFi networks with BSSID, Channel, and Spectral views. BSSID view provides quick visibility into active wireless networks and identifies the least-crowded channel to use for an access point. Channel view finds the best channels for an access point byshowing utilization, noise, co-channel interferers, adjacent channel interferers, and an overall channel score for each channel. Spectral view shows damaging RF interference with a real-time spectral analyzer configurable by 802.11 band, channel, and channel width.

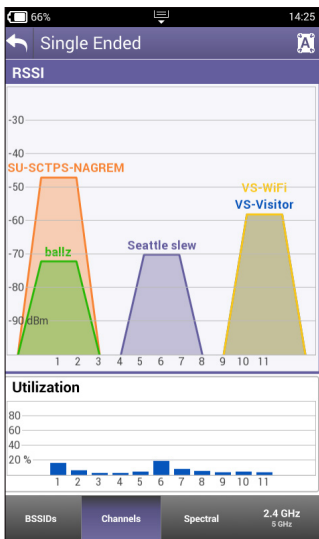| WiFi Test	What It Tests	Why It Is Needed
BSSID details	View information for a specific AP	Determine whether an AP is running in legacy mode or with outdated security settings
BSSID view	View all APs by channel	See the WiFi environment across 2.4 GHz and 5 GHz bands to visually determine crowded channels
Channel view	Displays channel utilization, noise, channel score, and best channels	Quickly determine the best channel for WiFi deployment and troubleshooting
Spectral analyzer	Real time 802.11 and non-802.11 spectrum	Locate interference sources such as Bluetooth devices and microwave ovens
Site Assessment Assistant	Works with WiFi Advisor to determine throughput of a WiFi system	TrueMargin™ is the measure of throughput in the actual environment

OneExpert CATV controls the Wifi Advisor for single-ended operation — troubleshoot common WiFi problems quickly
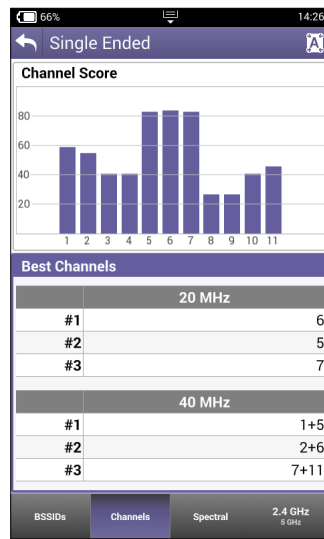

OneExpert CATV supports the Wifi Advisor for dual-ended operation — whole-home performance testing optimizes AP placement, ensures resilient WiFi network installation, identifies sources of WiFi degradation, and educates/sets proper end-user expectations on real WiFi performance

RSSI view per channel

The test application identifies the best channel for WiFi service

Smart Channel Wizard (left screen)

SSID	Green
BSSID/MAC	18:64:72:C5:43:E3
Channel	1
Band	2.4 GHz

| AP | Top Talkers | Adjacent |

cgx-guest	54g	-71dBm	1.0%
88:75:56:B3:55:31 b/g None			
Cisco Systems, Inc			Infra
Ch: 1			
Green	216n	-44dBm	1.8%
MaddoxHVAC	144n	-87dBm	0.0%
RF100-2	54g	-80dBm	0.5%
SRO	216n	-86dBm	0.1%
tjg-prod	144n	-72dBm	5.5%
VS-Visitor	216n	-82dBm	0.2%
VS-Visitor	216n	-86dBm	0.0%
VS-WiFi	216n	-72dBm	0.3%
Noise			4.7%
Total			11.7%

| Summary | Devices | Trend |

Smart Channel Wizard (right screen)

SSID	Green
BSSID/MAC	18:64:72:C5:43:E3
Channel	1
Band	2.4 GHz

AP Summary	
Channel Width	20 MHz ✓
RSSI	-44 dBm ✓
Channel Utilization	22.5% ✓
Noise	-92 dBm !
SNR	48 dB ✓
Max PHY Rate	216n ✓
802.11 Standard	b/g/n ✓
Security Type	WPA2 ✓

Co-Channel	Devices
APs	14 !
Stations	2 ✓
Legacy Equipment	2 !

Adjacent	Devices
APs	1 ✓
Stations	0 ✓
Legacy Equipment	0 ✓

| Summary | Devices | Trend |

Consolidate Your Test Investment

WiFi Advisor is fully integrated with the OneExpert broadband to the home test platform. This power combination allows you to test fiber, cable and the home WiFi network. The flexible VIAVI platform architecture helps customers maximize their overall investment in broadband to the home test tools. There are two ways you can consolidate your toolset and minimize both OpEx and CapEx:

• Control a single WiFi Advisor from OneExpert to do BSSID, Spectral, and Channel View testing—this lets you avoid purchasing a separate tablet device to host the WiFi Advisor application and reports because OneExpert hosts it

• Conduct two-ended testing with a single WiFi Advisor, a tablet, and OneExpert—this eliminates the need for two WFEDs

WiFi Advisor SmartChannel Wizard

Optimize and troubleshoot home WiFi networks with WiFi Advisor SmartChannel Wizard, a simplified user interface on the OneExpert CATV. The wizard summarizes the KPIs and the health of the selected BSSID and the channel in which it resides. The summary will help novice uses and guide them to a resolution for each metric that is not optimal with practical optimization guidance. The Wizard sees beyond access point occupancies into the client detail of the entire customer network and the clients or any co-channel-sharing networks. The test mode is accessible under "Single-Ended Troubleshooting."

Fiber

Broadband CATV networks and broadband triple-play services often rely on fiber networks. For point-to-point fiber installations such as FTTC or business connections, field technicians can use the OneExpert CATV together with the VIAVI MP-60 or MP-80 USB optical power meter (OPM) to ensure that fiber cable attenuation meets system requirement performance and is ready to survive network aging and environmental impacts. In combination with a VIAVI SmartPocket optical laser source (OLS), the OneExpert CATV equipped with an MP-60 or MP-80 OPM can automatically perform optical link loss measurement at different wavelengths—resulting in a faster and more comprehensive fiber test.

Using the P5000i optical fiber scope, technicians can test the #1 cause for troubleshooting in optical networks—contaminated fiber connectors. The P5000i provides pass/fail analysis based on user-selectable acceptance profiles.

Table 3. Fiber Tests

Fiber Test	What It Tests	Why It Is Needed
Optical fiber scope	Pass/fail against a predefined profile; includes dual magnification	Contaminated fiber connectors are the #1 cause for troubleshooting in optical networks
Optical power level	Optical power level with pass/fail and reference values	Optical loss must be within budget at ONU site

SmartID

Sweep the full 1.6 GHz frequency range for performance verification and troubleshooting in two-ended tests. The devices can be used to test a coax network and locate splitters or impairments. The results are intuitively displayed in a frequency response graph, qualification summary, and details for each path tested, including an ingress analysis result for each probe.

OneExpert integrates seamlessly with VIAVI optical power meters and fiber microscopes
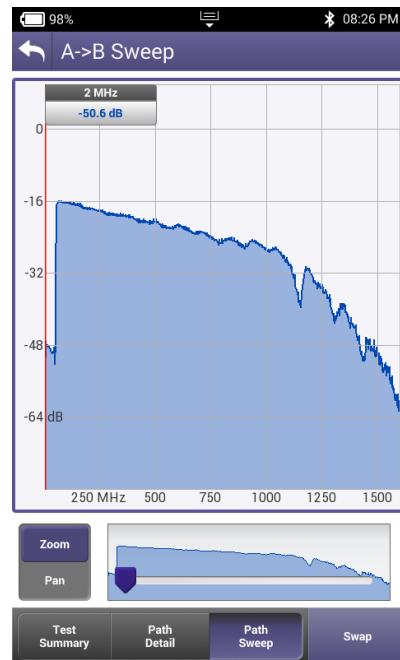
TrueSpeed

Broadband IP networks and their throughput speeds are non-deterministic and their behavior is unpredictable. OneExpert CATV with TrueSpeed provides a standardized RFC-6349 speed test to measure the throughput at the TCP application layer just as a user would experience it. Other methods, such as FTP upload/download, cannot accurately test ultra-fast broadband rates.
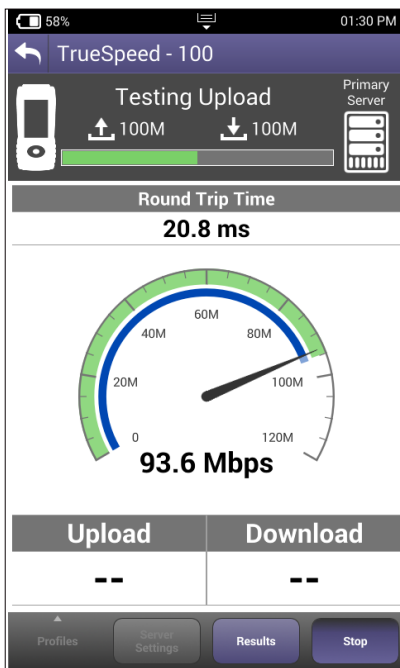
OneExpert CATV TrueSpeed throughput test

Table 4. TrueSpeed tests

TrueSpeed Test	What it Tests	Why is it Needed?
Actual rate (up/down)	Actual achieved TCP throughput	Measure throughput as customers experience it at the application layer
Ideal rate up/down)	Baseline for achievable TCP throughput without physical layer overhead	Provides a baseline for an ideal-expected-TCP throughput based on the physical layer rate
TCP efficiency	Ratio of Successful TCP transmitted without retransmission to the total TCP transmitted.	A large throughput isn't very useful for the customer if a lot of IP packets need to be retransmitted
Round trip time (RTT)	Baseline round-trip delay measurement	Calculate the bandwidth delay product (BDP) to identify impact of RTT to network throughput
Maximum segment size (MSS)	Test-optimized segment size to achieve maximum throughput speed	Per RFC-4821 to ensure that the TCP payload remains unfragmented and unnecessary IP overhead is avoided

VoIP

The OneExpert CATV is the ideal test tool to quickly place VoIP calls and verify QoS via mean opinion score (MOS) values. An Ethernet interface tests VoIP anywhere in the access network, replacing the VoIP phone. The OneExpert also includes an Auto Answer mode in which the unit automatically responds to an incoming call. VIAVI provides a wide range voice decoding controls such as G.711, G.722, G.723, G.726, and G.729.

VoIP test selection

VoIP call summary

VoIP Test	What It Tests	Why It Is Needed
Service setup/provisioning	Registration with gateway as a SIP VoIP client	User setup and server availability. VoIP clients and servers can have complex setups — preclude setup errors
Connectivity beyond signaling gateway	Placing test calls on and off network	Call connection from VoIP-to-VoIP and VoIP-to- public switched telephone network (PSTN)
Call quality	MOS, near- and far-end QoS with packet loss, jitter, delay, and R-Factor	Test how VoIP calls are transferred through the network and received at the customer premises
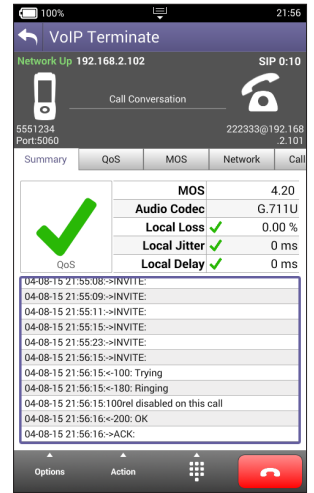
OneExpert tests VoIP throughout the IP network registration with gateway, test calls on and off the network, and measures near- and far-end IP QoS and MOS.

IP Video

OneExpert CATV can test multiple standard and high-definition television (SDTV/HDTV) streams regardless of compression format (MPEG-2, MPEG-4p10/H.264, VC-1, and others) and automatically detects the stream type with the Broadcast Auto feature. The OneExpert CATV IP Video application allows for termination of the IP video stream anywhere in the access network using the Ethernet interface.

Key performance indicators for real-time protocol (RTP) lets the OneExpert CATV precisely measure network QoS and QoE.

IP Video QoS testing

OneExpert CATV IP Video — QoS Expert

Table 5. IP video tests

IP Video Test	What It Tests	Why It Is Needed
IP video stream availability	Access to one or more SDTV or HDTV streams	Content might come from different sources; possible bandwidth limitations if more than one stream is active
Quality of service	Key IP video performance indicators such as jitter, loss, latency, error indicator; includes QoS Expert to compare performance between two streams	Easy-to-understand pass/fail metrics if IP video is of good quality
Packet loss analysis	Minimum distance, maximum period, RTP loss and errors	Detailed analysis on on Quality of Experience impact
Rates analysis	Video, audio, and data substream rates	Bandwidth consumption in relation to total available rates.
PID map	PID for video, audio, data	Availability of all stream components

Design Features

With the advent of cloud-based applications, touch-screen interfaces, and always-on, always-connected smartphones and tablets, instrument users have high expectations not only for usability, but also for seamless integration between their devices and the back office. OneExpert design takes all this into consideration to provide a test platform that helps technicians perform more efficiently and fix problems faster. It lets service providers invest in a long-term, open platform.

Upgradeable and Expandable

OneExpert accommodates continually evolving technologies. It includes a field-exchangeable module that offers a fast and simple way to manage, calibrate, and upgrade the RF/DOCSIS portion of the test unit. By simply removing six screws, the RF/DOCSIS portion can be sent for calibration, swapped out for a next-generation DOCSIS standard, or repaired/replaced for a lower total-cost-of-ownership.

Each DOCSIS/RF application module is individually calibrated without the mainframe. This lets operators swap, replace, or calibrate the important measurement section without sending back the entire unit.

Add-On Module Capable

In addition to the RF/DOCSIS application set, OneExpert works with add-on modules. This enables adding technologies in the future such as business-class Ethernet with Y.1564 and RFC.2544 with T1/PRI or OTDR modules. This flexibility addresses the needs of a diverse and ever-changing workforce.

Plant Maintenance Testing

The OneExpert CATV model ONX-630 is designed to meet test challenges for HFC network maintenance technicians, including expert check and analyzer modes, and sweep analysis.

Expert Check Modes – Channel and DOCSIS

Expert modes enable techs to select configured templates to accommodate different test point types with loss compensation and specific limit plans related to the test location. The expert modes allow storage of measurement results for comparison with live data for troubleshooting.

Ingress Expert

A return spectrum heat map enables troubleshooting ingress in upstream channel bands [with UCDs (upstream channel descriptors) identified (mask)] as spectrum components with higher persistence appear with color variations in the display. The Hyper Spectrum mode allows upstream capture of impulse noise events with overlapping FFT without time gaps to avoid missing intermittent noise.
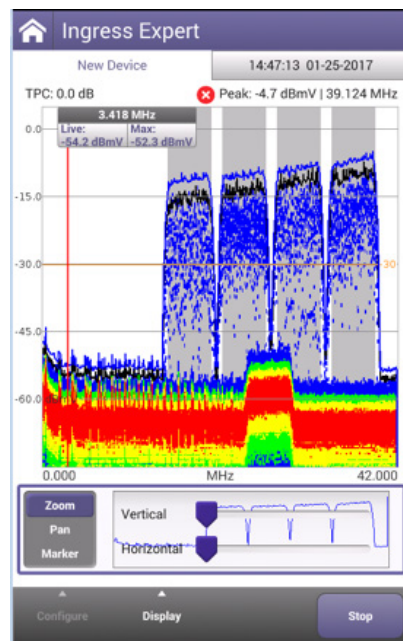
Ingress Expert reveals interference within active return carriers

Return Signal Generator with Loop-Back

A return signal generator with loop-back capability enables aligning/testing return path loss/gain/tilt with up to 8 CW or QAM carriers in the return band at user configurable frequencies and levels. The generated signal can be simultaneously measured on the OneExpert unit to test the characteristics of a local device.

Sweep Analysis

The OneExpert ONX-630 is backward compatible with SDA-5500 and SDA-5510 sweep transmitters, enabling smooth migration to OneExpert sweep and DOCSIS 3.1 performance analysis capability. The headend/hub rack-mounted SCU-1800 Sweep Control Unit provides downstream sweep to 1.2 GHz and upstream sweep to 204 MHz on up to 16 ports (supports OneExpert CATV ONX-630 sweep). The 16 input ports on the SCU-1800 offer improved performance with less combining, an improved noise floor, lower costs, and reduced rack space through consolidation of sweep receivers. The OneExpert CATV ONX-630 coupled with new SCU unit can provide sweep to 1.2GHz. DSAMs operating on the same network are still compatible up to 1GHz. The touch-screen sweep display is easily toggled from portrait to landscape mode. The technician can toggle from absolute level mode to referenced sweep mode, to the alignment mode for quick view of tilt carriers. OneExpert's flexible design allows sweeping on existing infrastructure or expanded return bands up to 204MHz (or anywhere in between). Ideal for sweep testing in distributed access architecture networks, the Sweepless Sweep mode references existing carriers to provide a normalized sweep response for alignment and troubleshooting.
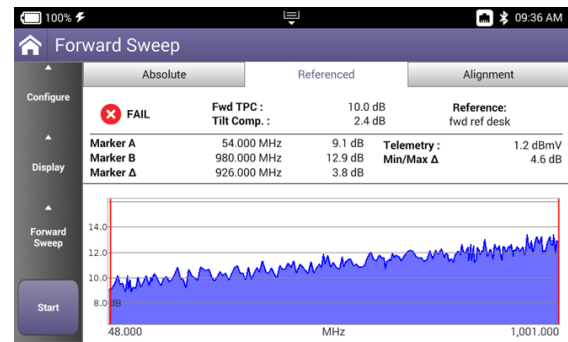
Forward sweep referenced, in landscape mode

QuickCheck Expert Mode

Plant maintenance and headend techs now have a quick way to measure and verify all channel levels utilizing a known channel lineup. The Full Scan measurement allows users to easily verify that all channels are present, as compared to a previously stored channel plan, including a two channel Tilt measurement for aligning active devices. Out of limit or missing channels are indicated in red, making it quick and easy to see if there are any power level issues on all channels tested.

The QuickCheck Expert mode provides a fast and continuously updating Full Scan in landscape mode that can be switched to full screen with a "double tap."
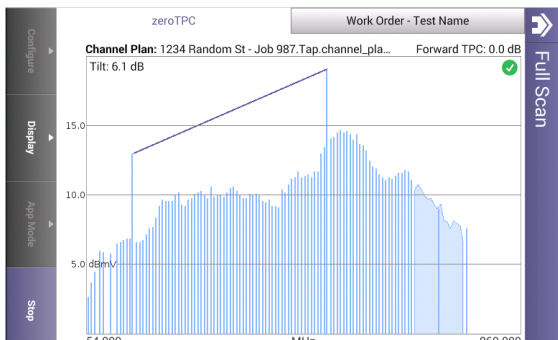
QuickCheck Full-Scan is displayed in landscape mode
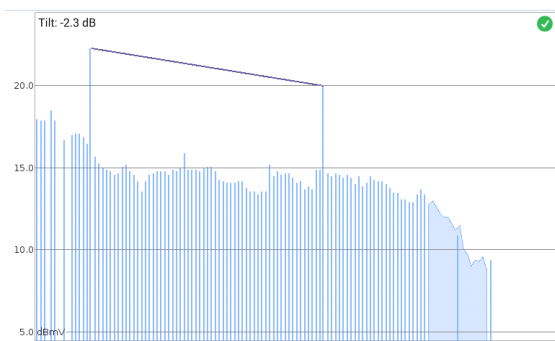
Full screen display

StrataSync

Keeping track of test equipment inventory is typically a challenge for field operation groups. Asset management includes types of instruments, firmware versions, options, and automated test configurations that match standardized methods and procedures. The challenge increases every time a change occurs. Without a means to efficiently collect and analyze test data, valuable information about network health is missed.

StrataSync is a cloud-based, hosted solution that manages assets, configurations, and test data for VIAVI instruments to ensure they are all equipped with the latest software and installed options. It manages inventory, test results, and performance data from anywhere with browser-based ease—improving both technician and instrument efficiency. Operators can then leverage data from the entire network for results analysis and to inform and train the workforce.

There are many options for syncing OneExpert CATV with StrataSync including Ethernet, DOCSIS, or with WiFi (consider the many WiFi hotspots) when a data connection is established. Syncing on a consistent schedule becomes more important as techs are required to upload data to show that all tests for a service activation were performed and show that all tests passed. This provides confidence to the service provider that the installation was performed successfully, and in contractor situations helps to avoid bill-backs due to customer complaints post-installation.

Workforce management is more objective with StrataSync. Supervisors can verify compliance with methods and procedures, and will know which techs need coaching or further instruction. Trend analysis allows identification of problems like: incorrect test configurations or limits causing unnecessary retests; geographic clusters of failures that point to outside plant problems; workgroup-wide issues that may indicate a training deficit.

StrataSync provides insight into installation quality and trends, while enabling methods and procedures compliance verification. This leads to higher customer satisfaction as techs get the job done right the first time, reducing repeat visits.

Table 6. StrataSync capabilities

StrataSync	What It Does	Why It Is Needed
Asset management	Manages and tracks test instruments by displaying assets, modules, versions, and locations. Maintains accurate instrument configuration and setup. Provides visibility into instrument usage.	Eliminate time wasted on instrument setup. Reduce repeats with correctly configured instruments. Improve results and reduce operating costs.
Data-result management	Collects and analyzes results with centralized collection and storage, secure visibility from anywhere, and consolidated test data/ metrics.	Access more data with centrally collected results for better use. Speed problem resolution by sharing data for faster troubleshooting. Drive compliance by tracking and comparing technician performance.
Updates the workforce	Informs and trains the workforce through alerts, release notes and manuals, and a comprehensive product-knowledge library.	Inform the workforce using a single source for instrument status, new capabilities, and educational content. Improve performance with quick access to training and troubleshooting information. Stay current with alerts for expiring warranties and overdue calibrations.

Specifications

Frequency			
Range	**Diplexer**	**Upstream**	**Downstream**
ONX-620, ONX-630 - Automatically Switching Diplexer	42/85	4 - 42 MHz and 4 - 85 MHz	54 - 1,004 MHz and 108 - 1,218 MHz
	65/204	4 - 65 MHz and 4 - 204 MHz	83 - 1,218 MHz and 258 MHz - 1,218 MHz
Accuracy	±10 ppm typical @25°C		

Downstream Analysis — Port 1	
AutoChannel plan builder	Auto detection of channel parameters (analog/digital, symbols, QAM)
Max input power	60 dBmV total integrated power
Operation on powered tap	Operate with up to 90 V AC/DC on input port
Power detection/ notification	Notify of AC/DC power presence on port 2 above 2 Volts
Return loss	>9 dB

Upstream Analysis — Port 2	
Ingress spectrum scan	0.5 – 204 MHz
Sensitivity	−45 dBmV
RBW	300 kHz
Min detectable level upstream	−55 dBmV
Dynamic range	ONX-630 – 60dB; ONX-620 – 50dB
Max total integrated power	55 dBmV, 4 – 10 MHz; 60 dBmV, 10 to 204 MHz
Accuracy	±2 dB typical at 25°C
Sampling rate	Hyper Spectrum™ FFT gapless technology - no missed samples, spans 0.5 -110 MHz, 110 to 160 MHz, and 160 to 204 MHz
Return loss	>9.5 dB
Operation on powered tap	Operate with up to 90 V AC/DC on input port
Power detection/ notification	Notify of AC/DC power presence on port 2 above 2 Volts

Upstream Signal Generator	
Number of signals generated simultaneously	From 1 to 8
Signal types	signals either all CW or all modulated
Modulation supported	QPSK, 16 QAM, and 64 QAM
Symbol rates supported	5.12, 2.56, 1.28, 0.64, 0.32, and 0.16 Msym/s

Specifications Continued

Analog Channel Measurement

Video and audio levels (dual)

Standards	NTSC , PAL, SECAM
Min detectable signal	−50 dBmV (single channel)
Level accuracy	±1.5 dB from −20 dBmV to +50 dBmV typical at 25°C; ±2.0 dB, −10°C to +50°C
RBW	300 kHz

Carrier to Noise

Channel types	NTSC , PAL, SECAM, non-scrambled
Range	30 to 51 dB (NTSC, 4 MHz measurement bandwidth)
Required input level	0 to +40 dBmV with 77 analog channels present, maximum ±15 dB tilt 50 to 1,000 MHz
Accuracy	±2.0 dB within specified measurement range ≤ 600 MHz

Downstream Digital Channel Analysis

Calibrated power levels	-20 dBmV to +50 dBmV
Level accuracy	±1.5 dB from -20 dBmV to +50 dBmV typical at 25°C; ±2.0 dB, -10°C to +50°C
Modulation(s)	64, 128, and 256 QAM, OFDM

Annex A: 5.057 to 6.952 MSPS
Annex B: 5.057 for 64 QAM and 5.361 MSPS for 256 QAM
Annex C: 5.274 MSPS for 64 QAM and 5.361 MSPS for 256 QAM

Regional demods	DVB-C

Full span MER

Ingress under carrier — full span ingress noise trace

Group delay and in-channel frequency response (ICFR)

Digital quality index (DQI) over time

Errored/severely errored seconds

Level, measured symbol rate, carrier frequency, modulation, interleaver depth

OFDM Signal Performance Metrics

OFDM Channels	24 - 192 MHz wide - up to 3 active OFDM channels
Level — max, min, average, standard deviation	relative to a 6 MHz carrier per CableLabs©
MER — max, min, average, standard deviation, percentile	12 to 50 dB
MER channel band graph	max, min, avg across entire OFDM carrier
Noise	max
Echo	dBc
ICFR	in-carrier frequency response (dB)
Spectrum/IUC	spectrum display, including carrier and ingress under carrier

OFDM Profile Analysis

Profiles A, B, C, D, NCP, and PLC
(more profiles as implemented)
Lock status, codeword errors
(corrected and uncorrected)

DOCSIS Testing

Supports DOCSIS 3.1 bonding up to 32 SC-QAM + 2 OFDM downstream channels, 8 SC-QAM + 2 OFDMA upstream channels

Compliant with CableLabs® specifications for DOCSIS 3.1

Compliant with CableLabs® specifications for DOCSIS 3.0 (32x8 bonding)

Specifications Continued

Displayed DOCSIS Results	
Top level	Number of bonded channels, min receive level, max BER (pre-FEC), min and max MER, max transmit level, max ICFR (in-channel frequency response)
Details	Downstream SC-QAM (over time charts: level, MER, BER, DQI), Upstream (charts: transmit over time, upstream ICFR, upstream EQ taps
Service tests	Registration, Throughput, Ping/Traceroute, Packet Quality; cable modem pass-through
OFDM	OFDM selected in scan, number of subcarriers, PLC lock status, frequency, level, and MER, CWE (corr, uncorr); OFDM channel(s) - Level variation (max, min, avg), MER variation (max, min, avg), ICFR, profile analysis (locked, CWE corr, CWE uncorr)

Downstream	
Frequency range	54/85/108/258 to 1,000/1,218 MHz (dependent on currently active diplexer frequency)

Upstream	
Frequency range	5 to 204 MHz (dependent on currently active diplexer frequency)
OFDMA channels	≥2, per DOCSIS specification
Transmit level range (max)	+61 to +48 dBmV depending on modulation format and number of bonded carriers, per DOCSIS specification
SC-QAM channels	up to 8 per DOCSIS specification

MER		
Specified range[1] (with input level -5 to +20 dBmV)	21 to 40 dB, 64 QAM; 28 to 40 dB, 256 QAM; 16 to 44 dB OFDM	
Max displayable range	50 dB	
Resolution	0.1 dB	
Accuracy	±2 dB typical at 25°C	
Minimum lock level	−15 dBmV	
BER — ChannelCheck and DOCSISCheck mode	Down to 1E-9 (pre and post FEC)	
BER — OneCheck mode	Down to 1E-8 (pre and post FEC) default; 1E-9 user selectable	
Interleaver depth	128, 8 max	
Display/Interface/Usability		
High-brightness color LCD (800 x 480)	5 inch diagonal	
Touch screen	Capacitive	
Hard key navigation capable		
Boot time	Approximately 20 sec	
Environmental		
For indoor/outdoor use	IP 54 light rain (0.5 in/hr; 1.27 cm/hr)	
Pollution	2°	
Drop	1 m (3.3 ft) onto concrete	
Temp range	Operating	−10 to 50°C (14 to 122°F)
	Storage temp	−20 to 60°C (-4 to 140°F)
Humidity	10 – 90% RH non-condensing	
RF immunity	8.5 V/m (for CATV measurements)	
Maximum altitude	4000 m (13,123 ft)	

1. MER range declines as input levels decrease. Expected MER range at MIN LOCK level of −15 dBmV

Specifications Continued

Input/Outputs	
RF (2)	F connectors replaceable
Port 1	Downstream 54/85/108/258 MHz depending on diplexer
Port 2	Upstream 4 – 204 MHz and TDR
USB host (2)	
Ethernet (2)	RJ45 10/100/1000T
Power	Polarized

Remote Access/Connectivity
VNC accessible via IP address HTTPS file access via IP address Mobile application via Bluetooth

Battery	
Field replaceable 96 W/hr 10.4 V, 10-cell LiIon	
Typical battery life	6 – 8 hr continuous, 15 – 20 hr typical usage
Battery charge time	4 Hrs (90%) 6 - 8 Hrs 100% (AC charger)

StrataSync Reporting Capability	
Session based (job/work order) file saving of results gathered at TAP, GB, and CPE	
Measurement screen capture save and recall	
StrataSync Core	Asset and data management
StrataSync Plus	Optional extended data management (6 years)

Warranty	
Mainframe & Module(s)	3-yr warranty (See http://www.viavisolutions.com/services-and-support/support/warranty-terms-and-conditions for warranty details)
Accessories and battery	One-year warranty

Weight	
ONX-620 & ONX-630	5.95 lb (2.7 kg)
Protective case and shoulder strap	0.95 lb

WiFi	
Test interface	802.11 a/b/g/n (2.4/5 GHz)
Tests	WiFi scan; WiFi access point (2.4 GHz only)
Scan results	SSID (secure set identification); Channel; Security setting; Power level; MAC address
Scan modes	AP list (access point); Channel graph; Time graph
Access point (IPX, TSX models only)	Configure OneExpert CATV as WiFi access point (Ethernet to WiFi bridge)

Specifications Continued

WiFi Advisor (sold separately)	
Test Device	WFED-300AC; Test Interface; 802.11 a/b/g/n/ac 3x3; Band support for 2.4 GHz and 5GHz
BSSID View	Real-time RSSI; Noise; SSID; BSSID/MAC; Channel utilization; Channel width; Security; Standard; SN;
Channel View	RSSI; Channel utilization; Noise; Channel score by channel; Best channels recommendation
Spectral View	Real-time spectral measurements; Max hold
Site Assessment Assistant	TrueMargin™ measurement

TrueSpeed Option	
Test Interface	Ethernet 10/100/1000, RJ45; Settings; Primary server; Fallback server; Profile with committed information rate (CIR) for upload and download
Measured and Calculated Results	Actual rate download/upload; Ideal rate download/upload; TCP efficiency; Round trip time (RTT); Maximum segment size (MSS)
Report Results	Committed information rate (CIR); Actual throughput; Target throughput; Saturation window; Target TCP throughput; Maximum segment size (MSS); Maximum transmit unit (MTU); Round trip time (RTT); Round trip time base; Maximum average throughput; Maximum peak throughput; Maximum window size; Window size per connection; Connections; Aggregate window; Actual throughput; Target throughput; Buffer delay; TCP efficiency; Total retransmits
Standards	VIAVI TrueSpeed VNF; RFC-6349

IP Video Option	
Test Interface	Ethernet 10/100/1000, RJ45
Modes	Terminate
Set-Top Box Emulation	IGMPv2 and v3 emulation client; RTSP emulation client
Service Selection	Broadcast auto; Broadcast MPEG2-TS/UDP; Broadcast MPEG2-TS/RTP/UDP; Broadcast RTP/UDP; Broadcast rolling stream; Broadcast TTS/UDP; Broadcast TTS/RTP/UDP; RTSP MPEG2-TS/(RTP)/UDP; RTSP MPEG2-TS/(RTP)/TCP; RTSP RTP/UDP; RTSP RTP/TCP
Video Settings	IPv4 IGMP version 2, 3; RTSP port; RTSP interoperability normal, Oracle, Siemens; IPv6 MLD version 2, 3
Video Source Address Selection	IP address and port number; IP address, port number, and VoD URL extension; RTSP port select; RTSP vendor select
Video Analysis Per Video Stream	Simultaneous stream support; 6 terminate; Number of active streams; Combined rate, current/max
QoS	Error indicator current/score; IGMP latency current/score; RTSP latency current/max/score; PCR jitter current/max/score/history; RTP packet jitter current/max/score/history; RTP lost current/max/score/history; Continuity error lost current/max/score/history; Overall current/max/score/history

Specifications Continued

IP Video Option (continued)	
Packet Loss Statistics	RTP loss distance errors current/max/total; RTP loss period errors current/max/total; Minimum RTP loss distance; Maximum RTP loss period; RTP packets lost count; RTP OOS count; RTP errors count; Continuity errors count; Ethernet RX errors, RX drops count
Video Stream Data Results (current/min/max/average)	Total, IP, Video, Audio, Data, Unknown
Transport Stream Statistics	Error indicator count; Continuity errors count; Sync errors count; PAT errors count; PMT errors count; PID timeouts count; Service name; Program name
QoS Expert	Compare two streams for error indicator, lost packets, jitter, latency
PID Analysis (each stream)	PID number; PID type (video, audio, data, unknown); PID description
Layer Correlation	Combined result view for Ethernet RX errors, RX dropped, video continuity error, video RTP lost, video loss distance total, video loss period total
Standards	RFC 2236, IGMP; RFC 2326, RTSP; ISO (IEC 13818), video transport stream and analysis; ETSI TR 10-290 V2.1, video measurements; TFC 1483, RFC-2684, ATM AAL5

VoIP Software Option	
Test Interface	Ethernet 10/100/1000, RJ45
Supported Signaling Protocols	SIP RFS 3621
Supported Codec Configurations (ITU-T)	G.711 u-law/A-law (PCM/64 kbps); G.722 64K; G.723.1 (ACELP/5.3, 6.3 kbps); G.726 (ADPCM/32 kbps); G.729a (GS-ACELP/8 kbps)
VoIP Settings	Auto-answer; Local alias; Outbound alias; Proxy gateway; Call control port; 100Rel support; SIP interoperability
VoIP MOS	Optimal measurement support
Fiber Test	
Optical Fiber Power Meter	
USB optical power meter	MP-60, MP-80, FI-60 Fiber Identifier
Min/max/average optical power level and wavelength	dBm, mW
Connector input	Universal 2.5 and 1.25 mm connectors
Power source	USB port
Selectable pass/fail threshold	
Signal QoS	
Reference value	

Specifications Continued

Optical Fiber Scope	
USB optical fiber scope	P5000i
Results for zone defects	Pass/fail
Results for zone scratches	Pass/fail
Low mag field-of-view (FOV)	Horizontal 740 μm, vertical 550 μm
High mag field-of-view (FOV)	Horizontal 370 μm, vertical 275 μm
Particle size detection	<1 μm
Power source	USB port
Setting for profile, tip, focus meter, button action	
Actions for live mode, test mode, high magnification	
Probe model, serial, firmware	

Home Network Test SmartID - Coaxial Cable Testing	
Test Interface	Coax using SmartID or SmartID Plus; Test Probes (near end): SmartID, SmartID Plus; Settings: Supports any cable coax type with configurable velocity of propagation (VOP) and cable compensation
Tests	Locate cable runs with active RFIDs (requires SmartID Plus). Single-ended coax map (SECM)
Tests Using SmartIDs as Remote Probes	Locate cable runs with SmartIDs; Dual-ended coax map (DECM)
Test Results	Noise, ingress and frequency sweep test summary with pass/fail results; Mapped overview of coax network; Detailed view of cable lengths, faults, splitters, filters, amplifiers; Graphically depicts frequency sweep data
Frequency Range	2 to 1,600 MHz

Standard Accessories
Protective case with hand strap and detachable shoulder strap
AC power supply with choice of country-specific adaptor plug
Quick start guide
StrataSync Core support

ISDB-T Module	Specifications
Frquency Range	130-767 MHz
Resolution	0.1 MHz
Channel Bandwidth	6 MHz
ISDB-T Measurements	
Modulation type TMCC Parameters	DQPSK, QPSK, 16 QAM 64QAM(Auto Detection) TMCC parameters: Mode, GI, Layers (Auto Detection)
Lock Range	45 to +110 dBuV (total integrated power)
MER Range	33dB
MER Accuracy	+/- 2dB typical @ 25C [1]
BER	Pre-RS BER range[2]: 1E-2~1E-9 Post-RS BER: Pass/fail
Constellation	
Channel Parameters identified	Modulation, GI, Segments, CCR, Mode, Interleaver
User Selection	Channel Center Frequency Layer A, B, or C

[1] MER Accuracy Range: 15~27dB Single Channel Input level: 60~100 dBμV Additional ±0.5 dB from -10 to 50°CTemp MER is not supported when DQPSK is on a non-partial reception layer

[2] BER performance optimized for 200-760 MHz, Typical performance in network 1E-8

Ordering Information

Description		Part Number
ONX-620 Packages		
	Dual Diplexer	
Basic	42/85 MHz	ONX-620D31-4285-1010-BAS
	65/204 MHz	ONX-620D31-6520-1212-BAS
IPX	42/85 MHz	ONX-620D31-4285-1010-IPX
	65/204 MHz	ONX-620D31-6520-1212-IPX
TSX	42/85 MHz	ONX-620D31-4285-1010-TSX
	65/204 MHz	ONX-620D31-6520-1212-TSX
ONX-630 Packages		
NTX	42/85 MHz	ONX-630D31-4285-1012-NTX
	65/204 MHz	ONX-630D31-6520-1212-NTX
SWX	42/85 MHz	ONX-630D31-4285-1012-SWX
	65/204 MHz	ONX-630D31-6520-1212-SWX
Options		
TrueSpeed		ONX-TRUESPEED
IP video		ONX-CATV-IPVIDEO
DOCSIS 3.1		ONX-CATV-SW-D31[3]
VoIP		ONX-VOIP
MOS (requires VoIP software option)		ONX-MOS
Forward sweep		ONX-CATV-SW-FWD-SWEEP[4]
Reverse sweep		ONX-CATV-SW-REV-SWEEP[4]
Reverse alignment		ONX-CATV-SW-REV-ALIGN[4]
Ingress expert		ONX-CATV-SW-INGRESS-EXP[5]
Return signal generator		ONX-CATV-SW-RSG[5]
Return signal generator w/ loop-back		ONX-CATV-SW-RSG-LOOP[5]
HomeTDR		ONX-CATV-SW-HOMETDR
HomeTDR Software Upgrade via StrataSync		UPG-ONX-CATV-SW-HOMETDR
Bronze and Silver Warranty Extensions		
Five-year warranty		BRONZE-5
One calibration		SILVER-3
Five-year warranty and two calibrations		SILVER-5

Description	Part Number
Optional Accessories	
Replacement Charger (no power cord)	AC-CHARGER
Car Charger	AC-CAR-CHARGER
Replacement Fitted Case	ONX-CATV-STD-ACCY-KIT
Strand Hook	1019-00-1366
Replacement 96 W/Hr Battery	ONX-CATV-BATT-96WHR
Replacement screen protector (5 pack)	ONX-SCREEN-PROTECTION
Large accessory bag, fitted case, 12V adapter, strand hook, Ethernet patch cord (1 m), extra hand strap	ONX-CATV-DLX-ACCY-KIT
MP-80 USB optical power meter	MP-80A
MP-60 USB optical power meter	MP-60A
FI-60 live fiber identifier	FI-60
P5000i USB fiber scope	FBP-P5000I
WiFi Advisor standard package	WFED-300AC
WiFi Advisor test device, carrying case, USB cable, AC power supply, and power cord	WFED300AC-1PC

3. 620 Only
4. NTX Only (standard on SWX)
5. Optional on ONX-620

Feature Matrix

Feature		Basic	IPX	TSX	NTX	SWX
		ONX-620			**ONX-630**	
		ONX Feature Bundle				
OneCheck	Dashboard with ingress scan, downstream summary, DOCSIS summary, and Session Expert summary	■	■	■	■	■
OneCheck details screens	Ingress scan — full graphic view	■	■	■	■	■
OneCheck downstream details	Full scan with channel details — level, MER, BER, C/N, Echo, GD, ICFR	■	■	■	■	■
	System view (max dB delta, max video delta)	■	■	■	■	■
	Favorites	■	■	■	■	■
	Tilt	■	■	■	■	■
	Smart scan			■	■	■
	MER graph — all channels			■	■	■
	BER graph — all channels			■	■	■
	Off-air ingress detection (downsteam ingress under carrier)	■	■	■	■	■
OneCheck DOCSIS details	Downstream DOCSIS channel scan with channel details — level, MER, BER, C/N, echo, GD, ICFR	■	■	■	■	■
	Upstream DOCSIS channel scan with channel details — TX level, modulation type, ICFR		■	■	■	■
	DOCSIS throughput		■	■	■	■
	DOCSIS packet quality		■	■	■	■
OneCheck — Session Expert details	Problems detected table	■	■	■	■	■
	Suggested actions table	■	■	■	■	■
	Ingress comparison between TAP and GB	■	■	■	■	■
	Drop analysis between TAP and GB	■	■	■	■	■
	Detailed downstream comparison between TAP, GB, and CPE	■	■	■	■	■
	Detailed SmartScan comparison between TAP, GB, and CPE			■	■	■
	Detailed Off-air ingress comparison between TAP, GB and CPE	■	■	■	■	■
	Detailed DOCSIS comparison between TAP, GB, and CPE	■	■	■	■	■
	Detailed DOCSIS service test comparison between TAP, GB, and CPE		■	■	■	■

Feature Matrix

		ONX-620			ONX-630	
		ONX Feature Bundle				
Feature		**Basic**	**IPX**	**TSX**	**NTX**	**SWX**
ChannelCheck	Full scan with channel details — level, MER, BER, C/N, Echo, GD, ICFR	■	■	■	■	■
	DS Spectrum w/ Ingress under the carrier (7-channels wide)	■	■	■	■	■
	System view (max dB delta, max video delta)	■	■	■	■	■
	Favorites graph (up to 16 Ch)	■	■	■	■	■
	Tilt	■	■	■	■	■
	DQI over time	■	■	■	■	■
	Level over time			■	■	■
	MER over time			■	■	■
	BER over time			■	■	■
	Downstream in-channel response graph			■	■	■
	SmartScan™			■	■	■
	Constellation	■	■	■	■	■
DOCSIS 3.1 testing	OFDM signal detection and identification in scan - automatic	Optional	Optional	Optional	■	■
	OFDM signal measurement	Optional	Optional	Optional	■	■
	OFDM signal MER throughout channel band over time	Optional	Optional	Optional	■	■
	OFDM signal level variation	Optional	Optional	Optional	■	■
	OFDM ingress under carrier analysis	Optional	Optional	Optional	■	■
	PLC detection, lock status, level, MER, CWE	Optional	Optional	Optional	■	■
	NCP lock status, CWE	Optional	Optional	Optional	■	■
	Profile analysis - lock status, CWE	Optional	Optional	Optional	■	■
	Bonding verification, SC-QAM and OFDM	Optional	Optional	Optional	■	■
	Throughput testing to 1 Gbps or greater - DOCSIS & Ethernet	Optional	Optional	Optional	■	■

Feature Matrix

Feature		ONX-620			ONX-630	
		ONX Feature Bundle				
Feature		**Basic**	**IPX**	**TSX**	**NTX**	**SWX**
DOCSISCheck	Downstream DOCSIS channel scan with channel details — level, MER, BER, C/N, echo, GD, ICFR	■	■	■	■	■
	DQI over time	■	■	■	■	■
	Level over time			■	■	■
	MER over time			■	■	■
	BER over time with ES/SES			■	■	■
	Downstream in-channel response graph			■	■	■
	Upstream DOCSIS channel scan with channel details — TX level, modulation type, ICFR	■	■	■	■	■
	Transmit over time	■	■	■	■	■
	DOCSIS upstream in-channel frequency response graph			■	■	■
	Speed Check – throughput		■	■	■	■
	Packet quality — packet loss, round trip delay, jitter		■	■	■	■
	Ping/trace route		■	■	■	■
	Pass through modem RJ-45 port		■	■	■	■
Ethernet testing	Ethernet		■	■	■	■
	Speed Check - throughput		■	■	■	■
	Ping/Trace route		■	■	■	■
	FTP/HTTP upload/download		■	■	■	■
	Web browser	■	■	■	■	■
	VoIP SIP		■	■	■	■
	VoIP MOS		Optional	Optional	Optional	Optional
	IP video		Optional	Optional	Optional	Optional
	TrueSpeed™		Optional	Optional	Optional	Optional
WiFi testing	WiFi - 2.4GHz and 5GHz	■	■	■	■	■
		■	■	■	■	■
			■	■	■	■
Expert modes	Test point templates, custom limit plans and live/stored measurement comparisons				■	■
	Channel Expert				■	■
	DOCSIS Expert				■	■
	Ingress Expert	Optional	Optional	Optional	■	■
	Quick Check Expert	Optional	Optional	Optional	■	■

Feature Matrix

		ONX-620			ONX-630	
		ONX Feature Bundle				
Feature		**Basic**	**IPX**	**TSX**	**NTX**	**SWX**
Return signal generator	Transmit up to 8 CW or QAM signals	Optional	Optional	Optional	■	■
Return signal generator with loopback	Transmit and receive up to 8 CW or QAM signals with simultaneous power level measurements	Optional	Optional	Optional	■	■
Sweep testing	Sweepless Sweep™				■	■
	Forward sweep				Optional	■
	Reverse sweep				Optional	■
	Reverse alignment				Optional	■
Mobile app integration		■	■	■	■	■
Bluetooth		■	■	■	■	■
SmartID support	SmartID and SmartID Plus	■	■	■	■	■
WiFi Advisor support	WFED-300AC; SmartChannel Wizard	■	■	■	■	■
Optical fiber scope support — P5000i		■	■	■	■	■
Optical power meter support — MP-60, MP-80, FI-60 Fiber identifier		■	■	■	■	■
HomeTDR		Optional	Optional	Optional	Optional	Optional

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