VIAVI Solutions

Brochure

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

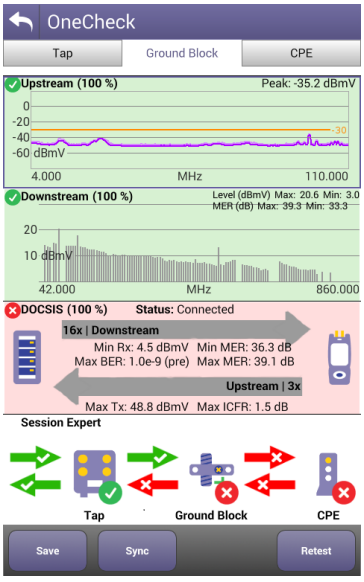
- Simplifies and speeds testing and troubleshooting
- Improves compliance and audit performance
- Reduces rework
- Turns any technician into an expert

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
- Optional home leakage 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:

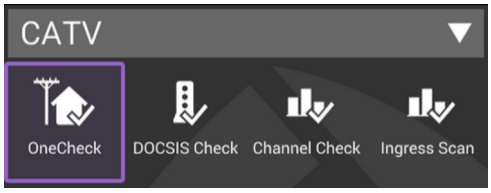
- OneCheck comprehensive and automated testing of ingress, downstream and DOCSIS with Session Expert™ to help resolve problems
- DOCSISCheck™ real-time analysis and powerful troubleshooting of upstream and downstream DOCSIS carriers and data services
- ChannelCheck real-time analysis and powerful troubleshooting 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™

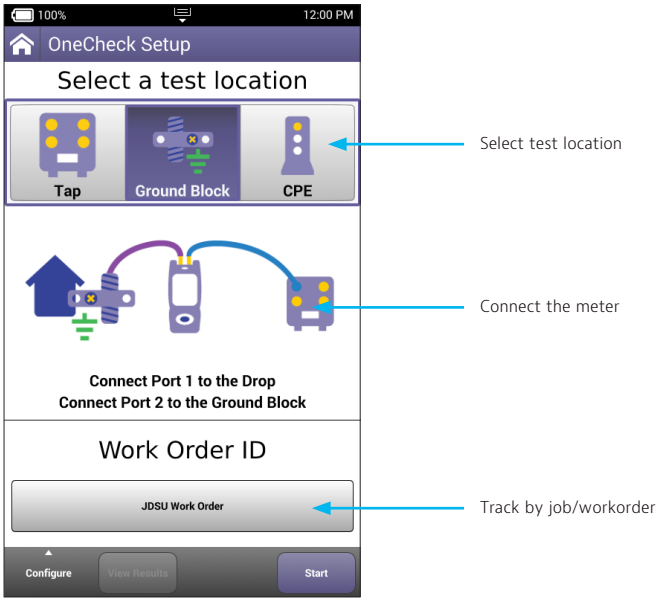
To simplify the testing process and day-to-day maintenance, the AutoChannel feature automatically identifies and instantly builds correct channel plans for testing QAM, DOCSIS, and analog services. It eliminates the need for managers and supervisors to pre-build and configure the meter before a technician 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™

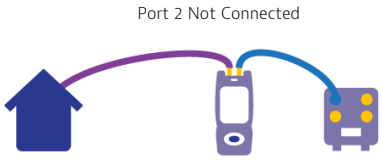


Home environments typically require testing ingress on the upstream, downstream carrier quality, and DOCSIS performance.

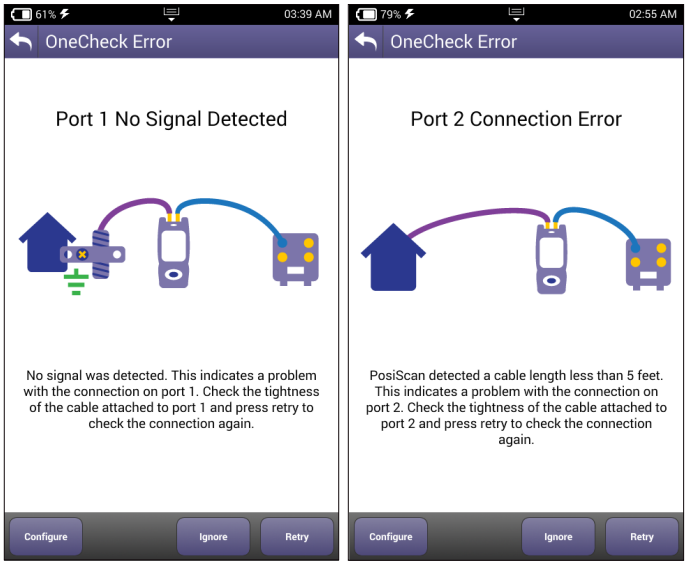
OneCheck is a fast and comprehensive test at three demarcation points: the tap, ground block, and CPE. Initiating the test is simple. The technician chooses the test location, enters the current job or work order, and starts the test.



DuoPort™ with PosiScan™



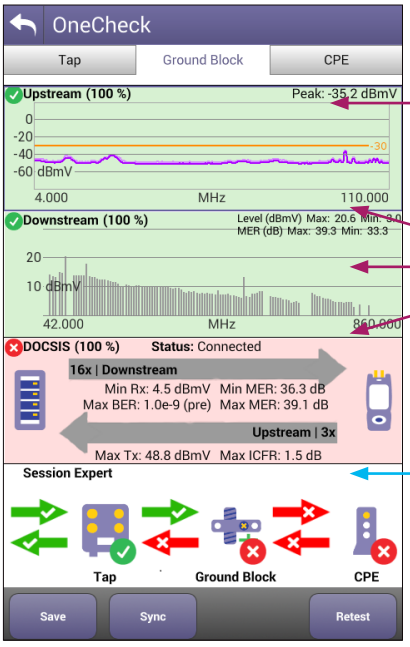
To help ensure that technicians properly connect their instruments and take valid ingress and downstream scans, OneExpert uses VIAVI exclusive DuoPort design with PosiScan. With DuoPort, one port scans ingress from the house while another port simultaneously tests downstream services. PosiScan increases 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.



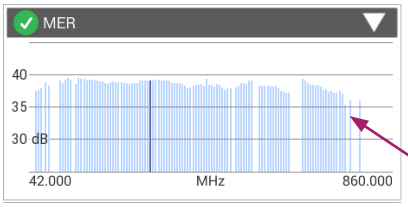
Quickly toggle through summary results from each location

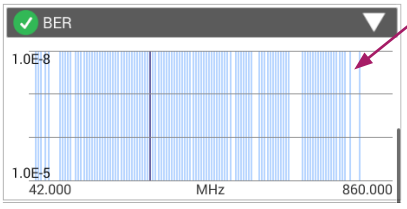
See critical measurements for downstream, DOCSIS, and ingress

View segmentation analysis with suggested actions

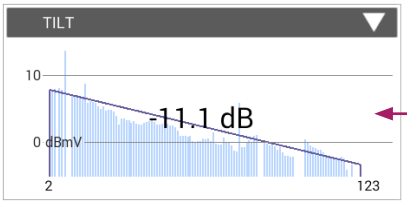
During any specific test, OneExpert simultaneously performs a powerful suite of additional tests in the background. By simply swiping through results, technicians can evaluate system wide performance including MER and BER across all channels, DOCSIS results (showing individual channel details), SmartScan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

Downstream Details

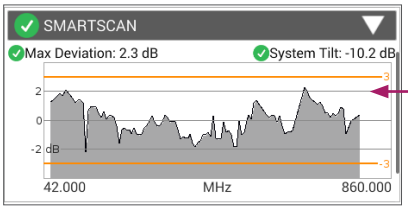




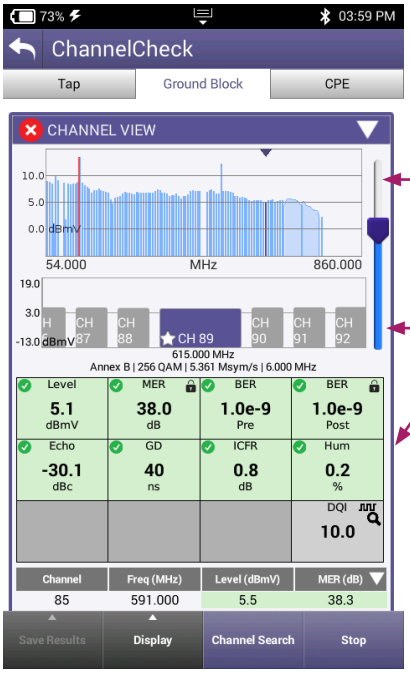
View MER and BER performance



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



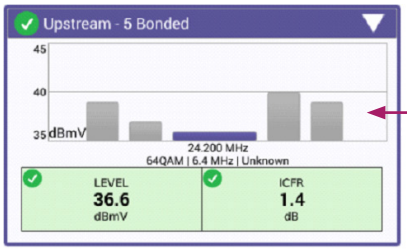
Quickly check levels to limits with automatically-compensated cable loss over frequency



Select channel from scan

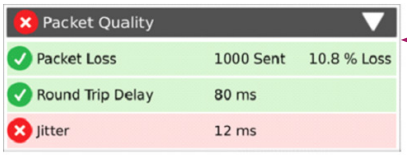
Individual channel details

DOCSIS Details



Easily view each upstream carrier including TX level and ICFR value

See internal modem details and identify server issues

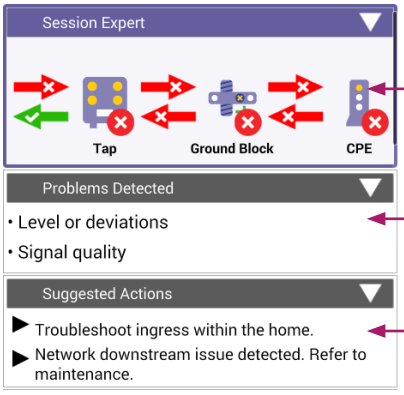


Identify if packets are being lost over the RF portion of the data layer

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.



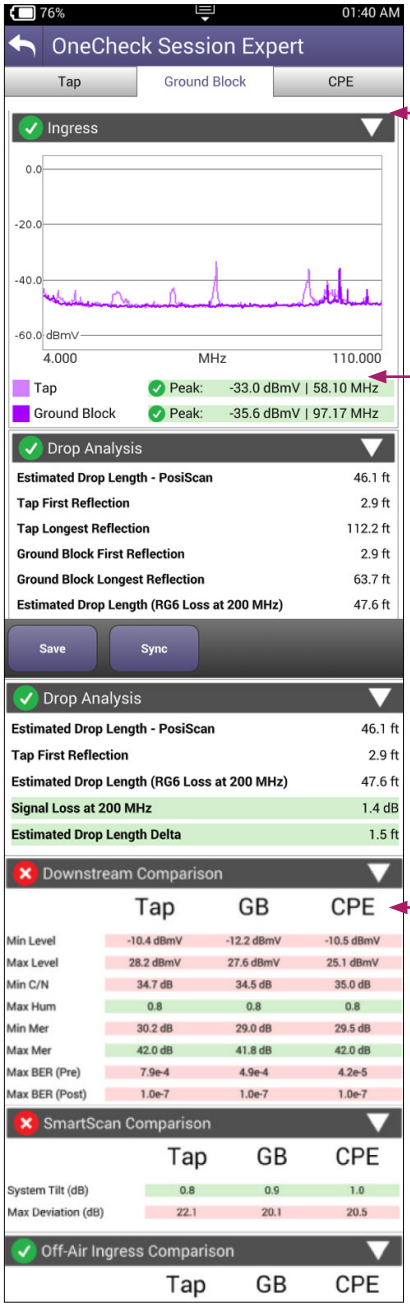
View upstream and downstream status between locations

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

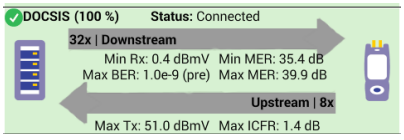
Compare measurements side-by-side between TAP, GB, and CPE to speed up technician analysis time and reduce callbacks

OneCheck Expert

Today's networks require certification on a regular basis. Requiring techs to test and record plant metrics from many different portions of the network. With OneCheck Expert the automated test sequence can be adapted to match the technician's needs, as a field/maintenance tech may have different test needs than a headend tech or an installation/service tech. OneCheck Expert simplifies the test/troubleshooting process by enabling as much repeatable testing and automation as desired along with highlighting pass/fail results.Highly configurable, the OneCheck Expert mode allows users to select all channels for testing as well as which metrics to test. DOCSIS test may also be configured to run completely with or without service tests. Additionally, if only the minimum two-way communication is needed, the test can be configured for modem ranging only.

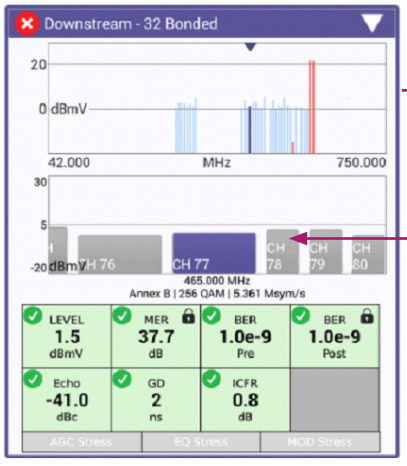
DOCSISCheck

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

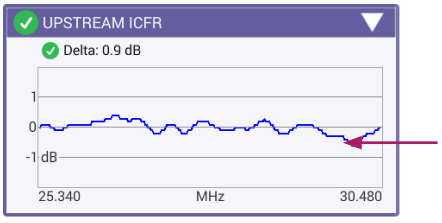
- Downstream testing — by testing all the carriers within a bonding group simultaneously, technicians can quickly identify if problems lurk in the physical layer. And OneExpert works with up to 5 different DOCSIS profiles to test different provisioning.



Touch a highlighted problem for quick access to troubled carriers

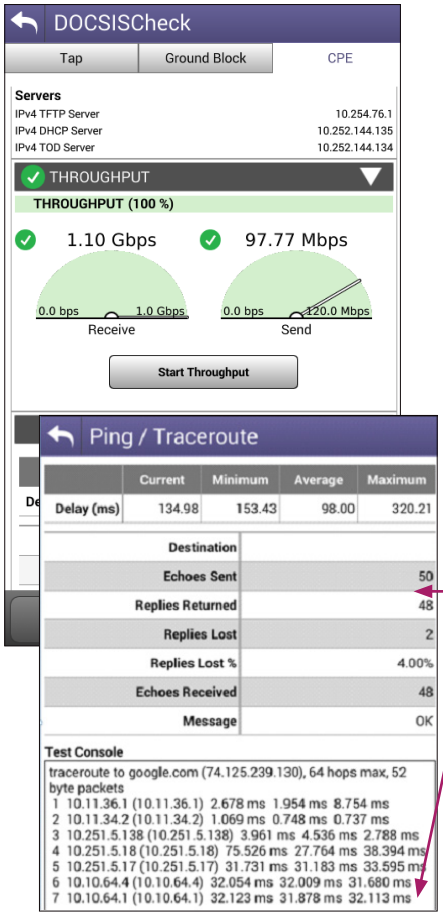
Swipe the screen to quickly access individual DOCSIS channel details

- 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.

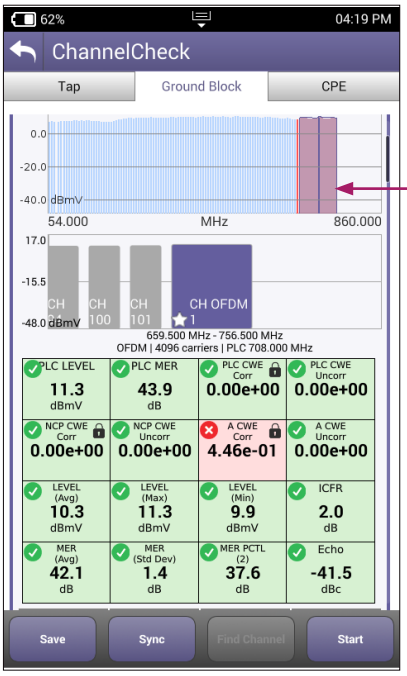


View upstream ICFR for problem isolation and correlation with PNM tools

- Service testing — OneExpert tests throughput over DOCSIS up to 1 G.



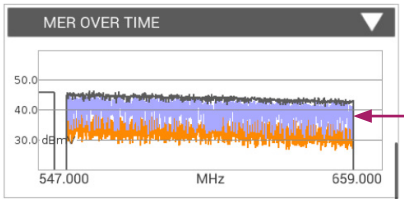
Isolate problems on the data layer with Ping/Traceroute



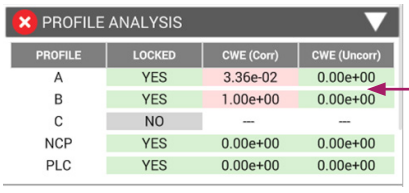
Identify downstream OFDM carrier in the lineup

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

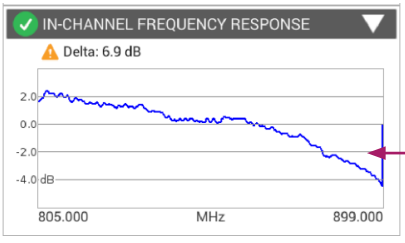
Overall OFDM carrier performance metrics including best and worst case; simple pass/fail indications



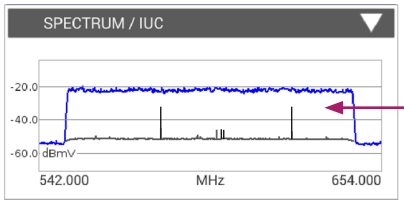
MER over entire OFDM channel provides insight into why higher-tier profiles are failing



Analysis of different profiles available and which profiles can be supported at test location



In-Channel Response identifies roll-off and excessive ripple



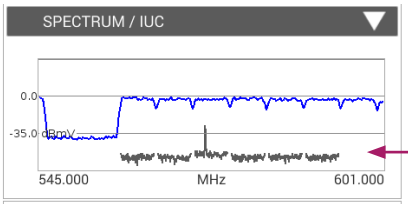
Spectrum and noise identify portions of carrier where degradation may occur

DOCSIS 3.1 Testing

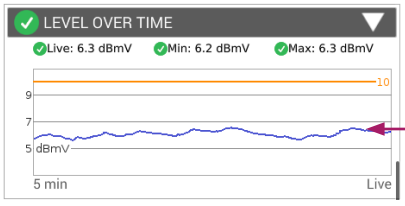
With OneExpert, DOCSIS 3.1 testing is very intuitive. DOCSISCheck automatically identifies and locks on the 32 bonded QAM signals and the OFDM signal, so operation and results analysis is very similar to DOCSIS 3.0. Testing only the physical layer is inadequate to effectively analyze DOCSIS 3.1 performance. 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.



Discover embedded ingress with ingress under the carrier trace



Monitor plant fluctuations with Level Over Time

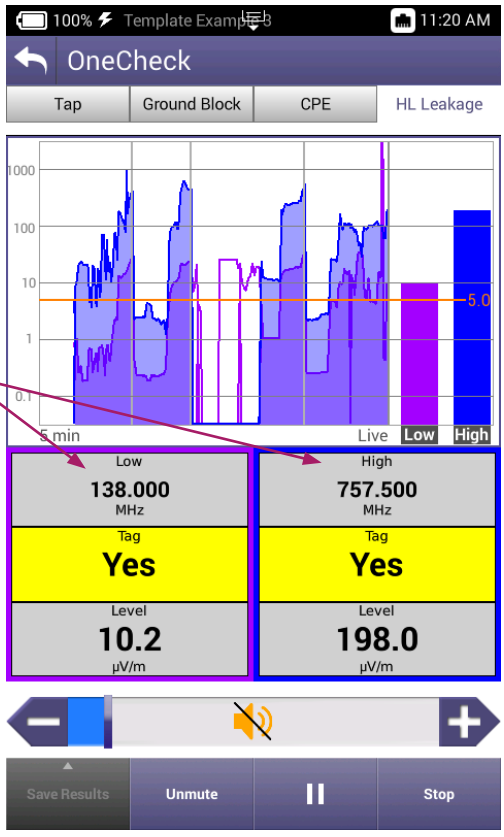
IP Data — Web and Speed Testing

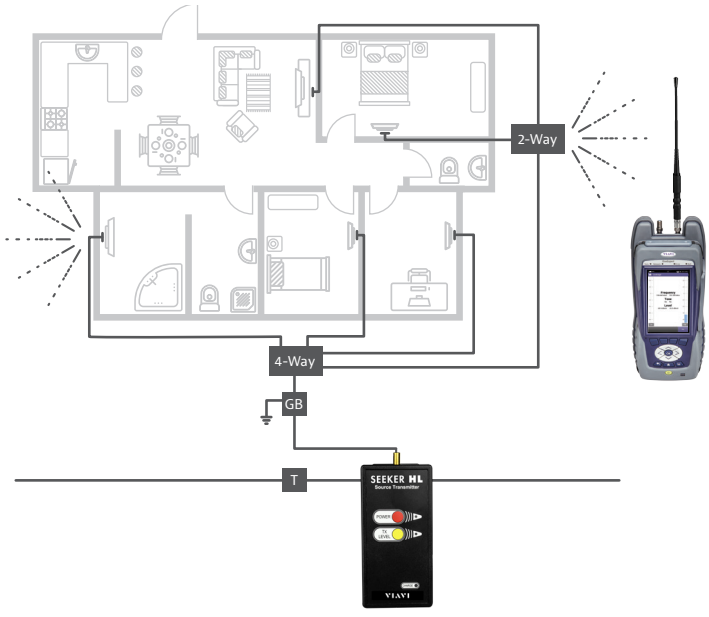
Internet subscribers demand reliable connectivity and new applications require higher data throughput and network-delay time performance. OneExpert quickly tests internet connectivity using a built-in web browser. It tests data rates provided by DOCSIS with HTTP throughput for TCP/IP applications. Mature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

Home Leakage Testing

Installation and service technicians perform "pressure tests" on home networks to accentuate any breaches in RF shielding integrity that can enable ambient RF in the home to get into the closed network (ingress). The OneExpert CATV can be fitted with an antenna and a software option that enables it to receive signals leaking during a pressure test. The tech connects a hand-held Seeker HL (Home Leakage) transmitter to the drop at the tap or to the ground block to inject high level signals in the aeronautical and LTE frequency ranges. The tech then walks throughout the house and when a signal is detected the meter emits a tone that varies in pitch with the received field strength. This test is very effective in locating home network trouble spots, so they can be eliminated while the tech is there for installation or service. This saves the tech time in troubleshooting as it eliminates a time-consuming trial and error method.

Measure leakage in aeronautical and LTE frequency bands simultaneously

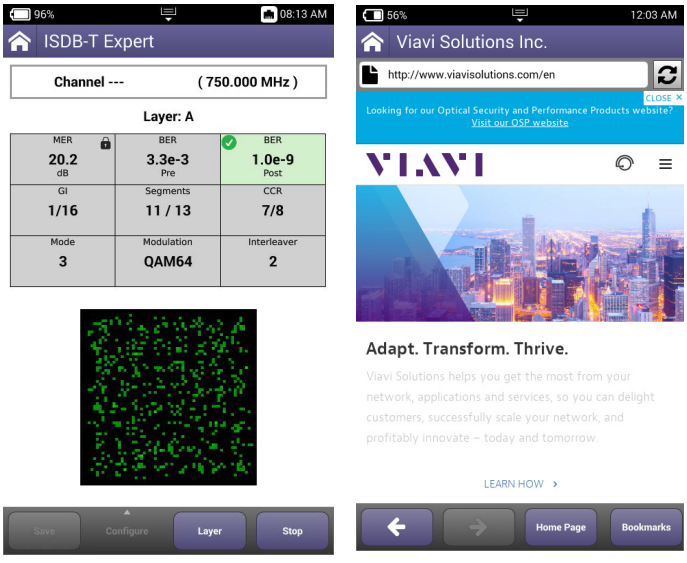




Because the home leakage test is so essential, it's important to keep track of the results in the same way as other essential home network tests. The OneCheck test can now be configured to include the Home Leakage test and track any leaks and their corresponding field strength at both low and high frequencies as the tech moves through the house. If configured, this test result becomes required for compliance testing and is uploaded along with the other OneCheck test results when the data is synced with StrataSync.

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. When the ISDB-T option is installed, OneCheck Expert and Channel Expert can be configured to include these signals and their associated results will be displayed with pass/fail indications.



OneExpert web browser

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

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.

Smart Access Anywhere

Now an option equipped ONX can be operated remotely whenever it has ethernet or WiFi internet connectivity. The connection is established from the ONX to the application running on a Windows, Android, or Apple device, and enables mutual visibility and control of the ONX.

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.

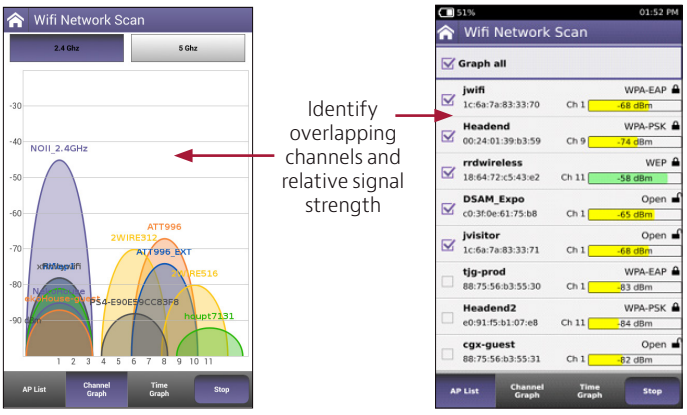


Table 2. WiFi tests

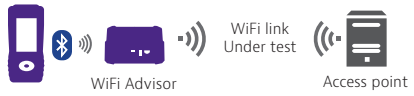
WiFi Test	What It Tests	Why It Is Needed
WiFi scan	WiFi access point (AP) station scan	Discover potential interfering networks (which could cause slow data transfer speeds), and locate weak spots in the WiFi signal to help optimize router location
WiFi AP	Connect OneExpert CATV via Ethernet cable to 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

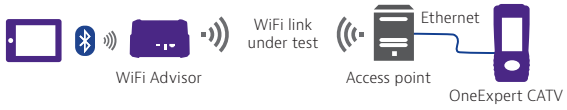
With support for the WiFi Advisor accessory on the OneExpert, technicians can evaluate wireless network performance seamlessly for both 2.4 and 5 GHz networks. With support for 802.11 standards a/b/g/n and ac, the ONX and WiFi Advisor combination make WiFi problem solving easier.

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.

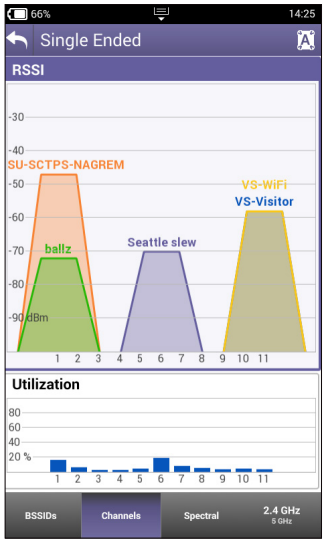
WiFi Test	What It Tests	Why It Is Needed
BSSID details	View information for a specific AP	Determine whether an AP is running in legacy mode or with outdated security settings
BSSID view	View all APs by channel	See the WiFi environment across 2.4 GHz and 5 GHz bands to visually determine crowded channels
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



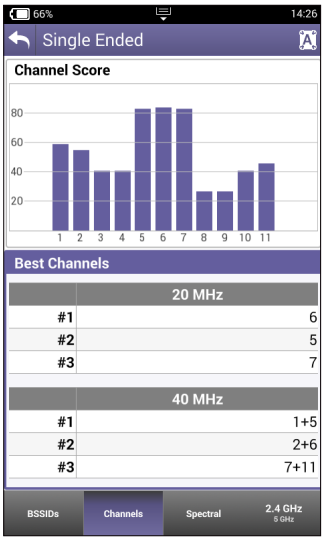
OneExpert CATV controls the WiFi Advisor for single-ended operation — troubleshoot common WiFi problems quickly



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



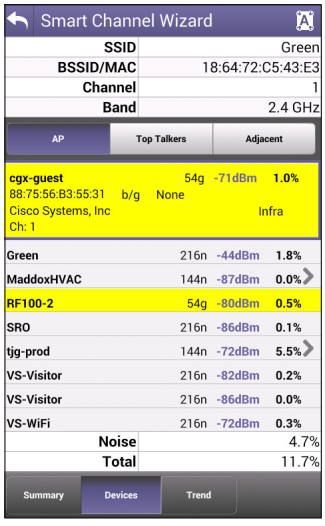
RSSI view per channel

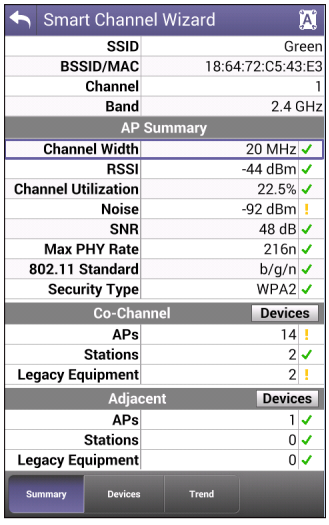


The test application identifies the best channel for WiFi service

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."





Coverage Expert

Installers and Service Techs need to ensure good signal coverage, quickly fix any dead spots, and close out the call. The new VIAVI WiFi Coverage Expert helps you locate trouble spots inside and outside the home.

- When noise interference blocks the signal, or the signal strength is weak, the wizard advises adding an extender to that location.
- If available air time is low due to competition from neighboring networks, then the Coverage Expert will detect congestion and advise a channel change is necessary.
- Occasionally poor coverage in a room is due to physical signal blockage from building materials, and a device might need to be wired-in. VIAVI WiFi Smart Channel Wizard provides KPI measurements enabling the tech to see and understand the issue.

Customers often have old, out of use devices such as old gaming platforms and abandoned APs clogging up available air time. These aging client devices with slow WiFi standards need to be detected and eliminated or turned off when not in use to optimize WiFi performance. The new locator feature will help you find legacy devices with a beeping alarm that becomes louder and faster as you approach the legacy device.

Consolidate Your Test Investment

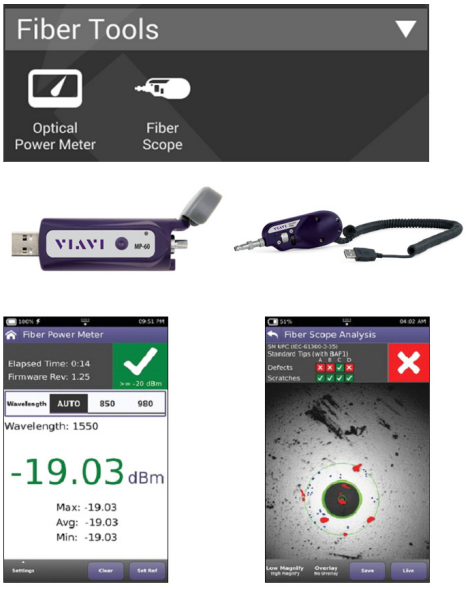
WiFi Advisor is fully integrated with the OneExpert broadband to the home test platform. This power combination allows you to test fiber, cable and the home WiFi network. The flexible VIAVI platform architecture helps customers maximize their overall investment in broadband to the home test tools. There 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

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.



OneExpert integrates seamlessly with
VIAVI optical power meters and fiber microscopes

Table 3. Fiber Tests

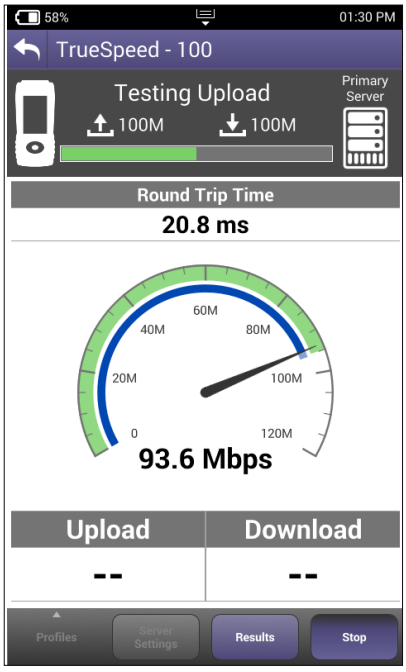
Fiber Test	What It Tests	Why It Is Needed
Optical fiber scope	Pass/fail against a predefined profile; includes dual magnification	Contaminated fiber connectors are the #1 cause for troubleshooting in optical networks
Optical power level	Optical power level with pass/fail and reference values	Optical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

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

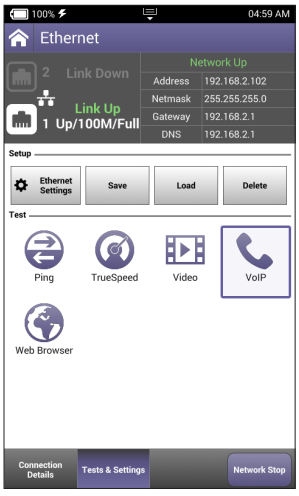
Table 4. TrueSpeed tests

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

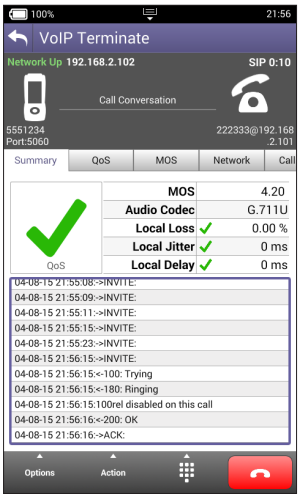
VoIP

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.

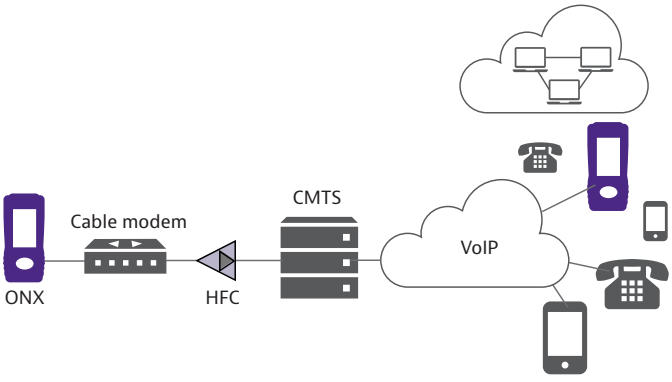
VoIP Test	What It Tests	Why It Is Needed
Service setup/ provisioning	Registration with gateway as a SIP VoIP client	User setup and server availability. VoIP clients and servers can have complex setups — preclude setup errors
Connectivity beyond signaling gateway	Placing test calls on and off network	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



VoIP test selection



VoIP call summary



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.

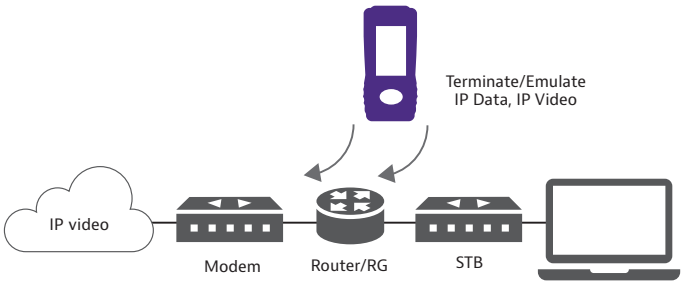
IP Video

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.

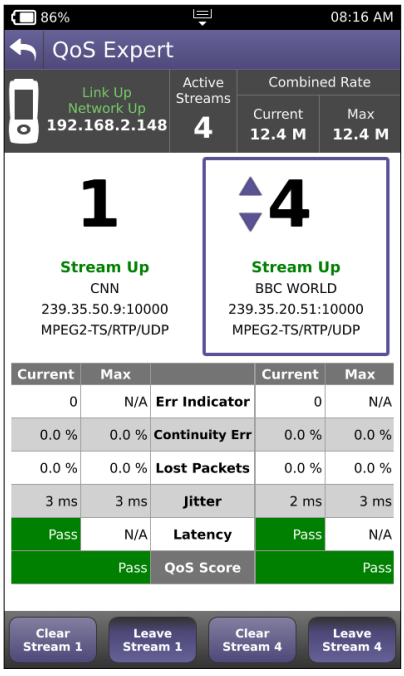
Key performance indicators for real-time protocol (RTP) lets the OneExpert CATV precisely measure network QoS and QoE.

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



IP Video QoS testing



OneExpert CATV IP Video — QoS Expert

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

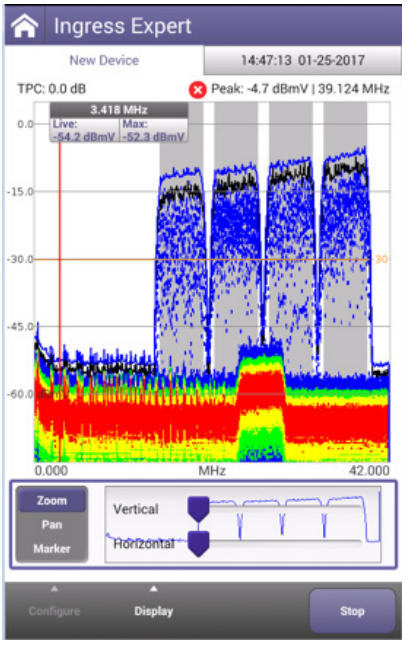
The OneExpert CATV model ONX-630 is designed to meet test challenges for HFC network maintenance technicians, including expert check and analyzer modes, and sweep analysis.

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.

Field View with Return Signal Generator

A clean return path is critical to high speed data performance in HFC networks. Return path noise and ingress issues are a primary concern in cable networks, and technicians spend much time testing and troubleshooting. Since noise from the field is cumulative back at the headend, having visibility of the headend's total noise while out in the field gives techs a better understanding whether their efforts are making a positive impact to the network. Ingress/noise can be constant, or intermittent, presenting a couple of challenges:

1. If ingress/noise is constant, and tech fixes an issue at a local test point, did that clean up the ingress/noise received in the headend, or is there still another issue at some other point in the network?
2. If ingress is intermittent, and spectrum is clean, the tech doesn't know whether there is no ingress at this point, or the ingress isn't happening right now.

Ingress Scan or Ingress Expert modes enable techs to test upstream spectrum, but this provides visibility only at their local test point. Sometimes resulting in a time-consuming, sometimes frustrating call to the headend to get an update on the node ingress/noise condition.

The Field View option for OneExpert CATV meters[1] enables techs to compare the local test point noise/ingress with what is being received in the headend. The meter displays headend upstream spectrum view as measured by XPERTrak PathTrak equipment, so techs see cumulative ingress coming from the field and reaching the headend. When performing ingress mitigation, the user in the field can quickly verify if actions being taken are helping or if additional effort is needed to reduce the ingress coming into the plant.

Working with the Field View's Return Signal Generator, the tech can transmit up to eight CW carriers simultaneously from the ONX and view them as received in headend/hub. Allowing techs to validate they are working the right node, check upstream path loss from the current location, and measure network losses at various frequencies. This simplifies testing and eliminates the need to contact headend personnel to get a level reading.

[1] Field View only available on ONX-630 model

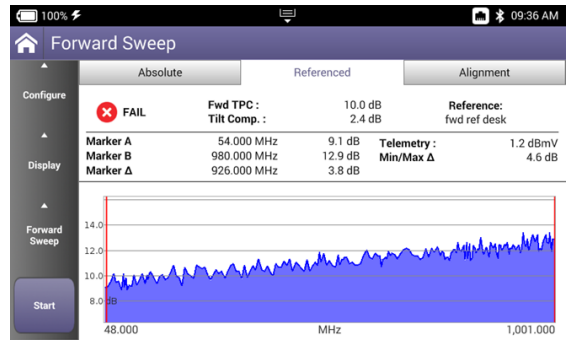
Sweep Analysis

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.

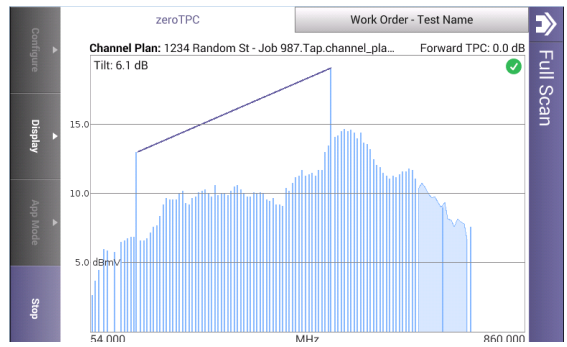
QuickCheck Expert Mode

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.

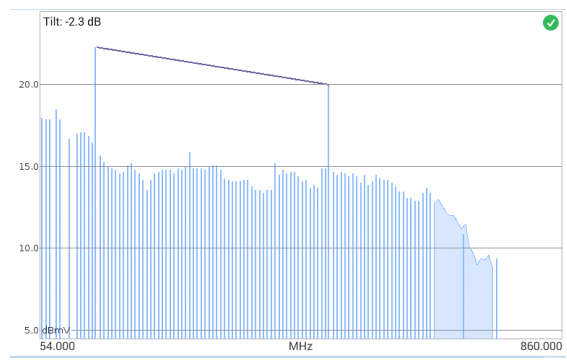
The QuickCheck Expert mode provides a fast and continuously updating Full Scan in landscape mode that can be switched to full screen with a "double tap."



Forward sweep referenced, in landscape mode



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.

StrataSync can be set up to automatically push configuration templates to new or reset OneExpert CATV meters. Any meter's configuration can be cloned to transfer to other meters via StrataSync. Channel plan exclusion zones can be configured to exclude the FM band or any other band that is not of interest, to avoid testing carriers that are not applicable.

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.

Workflow

Utilizing StrataSync Workflow capability, each tech's meter can be updated with a day's workorders, enabling a tech to choose the workorder that matches the current task, perform the prescribed tests, and close it out with data uploaded for management – with a smooth, simple process. In OneCheck, indicators next to each test location show if test has been performed and the status, and an overall status is shown in the work order ID section of the screen.

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.

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
VoIP		ONX-VOIP
MOS (requires VoIP software option)		ONX-MOS
Forward sweep		ONX-CATV-SW-FWD-SWEEP
Reverse sweep		ONX-CATV-SW-REV-SWEEP
Reverse alignment		ONX-CATV-SW-REV-ALIGN
Ingress expert		ONX-CATV-SW-INGRESS-EXP
Return signal generator		ONX-CATV-SW-RSG
Return signal generator w/ loop-back		ONX-CATV-SW-RSG-LOOP
HomeTDR		ONX-CATV-SW-HOMETDR
HomeTDR Software Upgrade via StrataSync		UPG-ONX-CATV-SW-HOMETDR
Seeker Home Leakage Test Kit		TRI-LKG-HL-METER-KIT
Home Leakage Software Option		ONX-CATV-SW-HL-LKG

Description	Part Number
Bronze and Silver Warranty Extensions	
Five-year warranty	BRONZE-5
One calibration	SILVER-3
Five-year warranty and two calibrations	SILVER-5
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

Feature Matrix

		ONX-620			ONX-630	
		ONX Feature Bundle				
Feature		**Basic**	**IPX**	**TSX**	**NTX**	**SWX**
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

		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 and Coverage Expert	■	■	■	■	■
Optical fiber scope support — P5000i		■	■	■	■	■
Optical power meter support — MP-60, MP-80, FI-60 Fiber identifier		■	■	■	■	■
HomeTDR		Optional	Optional	Optional	Optional	Optional
Home Leakage Test		Optional	Optional	Optional	Optional	Optional
OneCheck Expert	Configurable test process	Optional	Optional	Optional	■	■
Field View with RSG	PathTrak Upstream spectrum view on ONX, including transmitted test signals				Optional	Optional
Digital Hum	Hum on QAM signals	■	■	■	■	■

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