Brochure

Cable Subscriber Installation and Test Guide

In today's competitive environment for broadband services, it is of utmost importance to make sure customers are having a high-quality experience. Technology is always on the move, and there are some major changes in progress as networks are evolving to provide more attractive and reliable services. DOCSIS 3.1 is being deployed in legacy HFC networks. Fiber is commonly used in greenfield construction. Customers are either purchasing managed WiFi services from the provider, or are installing their own routers to enable access for internet connected devices in the home. Each of these technologies must be tested to ensure that performance reliably meets expectations. The following is a short list of some key cable installation and service test use cases.
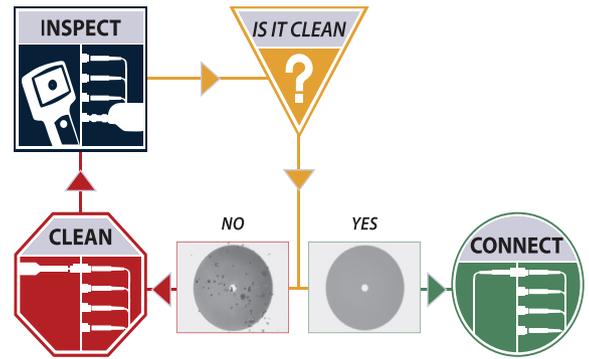
Use Case 1. DOCSIS Installation and Service

Problem: A wide range of issues can impact the service quality at the installation, and comprehensive testing is imperative to ensure that any complications are addressed while the technician is on site for installation. Issues include, but are not limited to, new installation craftsmanship, condition or limitations of existing network and components, damage caused in modifications to the home network or in unassociated DIY projects, modem provisioning problems, or other issues in the network that must be referred to maintenance. Testing must be performed at the tap, ground block and CPE locations, and include both RF and service performance verification.

Solution: VIAVI offers a variety of the most capable, rugged meters for installation and service testing. The DSP Trilithic Series meters cover the most basic signal level measurement (180 DSP) to DOCSIS 3.1 service testing (DSP 360). The OneExpert series meters (ONX-220 and ONX-620) are the most advanced meters on the market for complete home network installation and service testing, with speed, simplicity and power. Channel Check and OneCheck test modes provide quick, comprehensive tests in about two minutes, and Session Expert (ONX-620 only) reveals any problems that need attention. A partial list of tests includes RF levels, MER, BER, as well as DOCSIS physical and service performance. RF "pressure tests" of the home network are now used to verify the shielding integrity and keep leakage from impacting devices in the home, and keep on-air signals from entering the network. The Home Leakage Test Kit enables techs to quickly find any coaxial network issues without the time-consuming trial and error process.

In many cases the home coaxial network needs attention, as it may be very old with components that have outlived their lifespan or are unable to perform adequately with today's technology. In some cases, subscribers have made "enhancements" to the network that don't meet the standards required for new services. In these cases, the network performance can be tested with a SmartID Plus that transmits a sweep to a SmartID, where the response is measured and reflections are analyzed to determine exactly where the problem devices or damaged components are. This saves a lot of troubleshooting time, and often prevents multiple service calls as intermittent issues are uncovered and repaired. ActiveIDs can be used with the SmartID Plus to test continuity to any/all service outlets, as well as a powerful replacement for a toner to identify specific cable runs.

Use Case 2. Fiber Installation

Problem: Fiber to the home brings challenges as workgroups consolidate and must verify and troubleshoot both fiber AND coax networks. To avoid the most common source of trouble with fiber connections, the fiber face must be cleaned and inspected with a scope to ensure that it is clean before connections are made. Fiber installations must be tested to ensure that proper levels are arriving at the demarcation point. Techs need to measure and validate characteristics of optical elements in a fiber link with pre-defined pass/fail thresholds per the IEC/TIA standards.
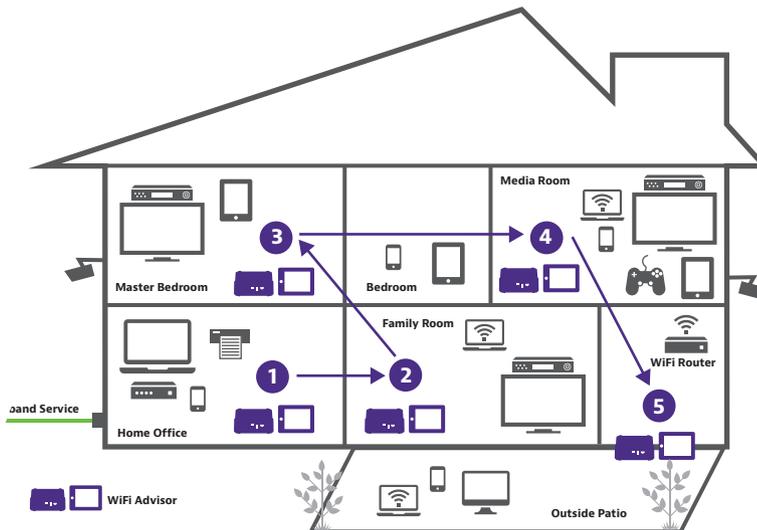

Solution: The P5000i Fiber Scope can be used with the OneExpert meter to check the fiber face to make sure it's clean. The MP-60A/80A USB Power Meter can be used with a OneExpert CATV meter to measure optical power levels. The SmartOTDR SL can be controlled with an ONX and provides a clear diagnosis of faulty optical elements (splice, connectors, etc...) or locate fiber cuts and breaks. All of these fiber tests can be included in a OneCheck test (OneCheck Fiber) to consolidate results and help ensure testing consistency and process compliance. For PON/FTTH installations, the Network and Service Companion (NSC-100) can be used to verify optical level, PON ID, and prove the PON network's service delivery by testing throughput directly from the drop fiber fiber and then validating service delivery within the premises via Ethernet or WiFi (or both) networks.

Use Case 3. WiFi Service Installation and Optimization

Problem: A high proportion of service calls for cable operators are related to WiFi. These problems may be related to subscriber installation of consumer WiFi routers, perhaps in less than optimal locations, with interference or setup issues.

Solution: Techs must have a way to test and optimize WiFi service, including location, channel selection, and identification of interfering noise or signals. The WiFi Advisor from VIAVI simplifies this process, using probes (WIFEDs) which can be accessed for measurements using the OneExpert (ONX-620, for example), or using an iPad.

Use Case 4. Workforce and Inventory Management

Problem: Techs are under a lot of pressure to get jobs done quickly, and may be tempted to take shortcuts. Proper testing is essential to make sure the customer has a quality experience, and it's important to keep techs accountable by requiring an upload of test results for every installation and service call. This ensures that the installation is performed correctly and tested. For contractors, it can mean quicker payment for services rendered.

In the cable provider work environment, both in-house management and service contractors must keep track of their test equipment inventory, to ensure that each tech is empowered to do quality work, and to keep track of equipment status (need for calibration, firmware version, options installed).

Solution: OneExpert meters include StrataSync Core, which is a hosted, cloud-based solution that provides asset, configuration, and test data management for VIAVI instruments and ensures all instruments have the latest software and options installed. With the workflow option in StrataSync, 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. Get confirmation that techs and contractors have performed the work with geo-tagged test reports uploaded via the Mobile Tech App.

The test process is smoother and easier for techs with workflow enhanced with smooth work order integration and closeout. The StrataSync workflow option enables simpler compatibility with service operator and contractor work order systems. This means that test flow, pass/fail thresholds, and work orders can be relayed to the ONX, enabling the tech to select an assigned work order and perform tests to prescribed thresholds as guided through the flow. The work order related test data can then be included in a report and uploaded for management.

Use Case 1. DOCSIS Installation and Service

VIAVI Product	Product Link	Photo
ONX-620	http://www.viavisolutions.com/en-us/products/oneexpert-catv	
ONX-220	www.viavisolutions.com/onx-220	
DSP Trilithic Series	https://www.viavisolutions.com/en-us/products/trilithic-dsp-series-meters	
Home Leakage Test Kit	https://www.viavisolutions.com/en-us/products/home-leakage-test-kit	
SIDPLUS-SID-ACTIVEID-KIT	https://www.viavisolutions.com/en-us/products/smart-id-plus-and-smart-id	

Use Case 2. Fiber Installation

VIAVI Product	Product Link	Photo
MP-60A/80A	http://www.viavisolutions.com/en-us/products/mp-60-80-miniature-usb-20-power-meters-fiberchek-pro-integration	
P5000i	http://www.viavisolutions.com/en-us/products/p5000i-fiber-microscope	
SmartOTDR SL	https://www.viavisolutions.com/en-us/litera-ture/smartotdr-sl-data-sheets-en.pdf	
NSC-100	www.viavisolutions.com/nsc100	

Use Case 3. WiFi Installation and Optimization

VIAVI Product	Product Link	Photo
WFED300AC-1PC	http://www.viavisolutions.com/en-us/products/wifi-advisor	

Use Case 4. Workforce and Inventory Management

VIAVI Product	Product Link	Photo
StrataSync	http://www.viavisolutions.com/en-us/products/stratasync	StrataSync™

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VIAVI Solutions

Contact Us   **+1 844 GO VIAVI**
(+1 844 468 4284)

To reach the VIAVI office nearest you,
visit viavisolutions.com/contacts.