

March 2020



VIAVI Solutions

OneExpert CATV 630

Extended Quick Start Guide v 5.4

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Support Links

Viavi Customer Care:

For questions about warranty information, repair and calibration, Return Material Authorization (RMA) request, services quotation, order status.

T: 1-844 GO VIAVI (+1-844-468-4284)

E: NAM.CustomerCare@viavisolutions.com

<https://www.viavisolutions.com/en-us/services-and-support/support-center/customer-care>

Customer Care Portal Login

<https://www.viavisolutions.com/en-us/services-and-support/support-center/customer-care/customer-portal-login>

RMA Request Form:

<http://www.viavisolutions.com/en-us/services-and-support/return-material-authorization-rma-request>

Viavi Technical Support:

Will assist you in using/configuring products or address issues regarding product performance.

T: +1-844 GO VIAVI (+1-844-468-4284)

E: catvsupport@viavisolutions.com

For access to online technical and product support:

<http://support.viavisolutions.com>

Quick Tip Videos:

<https://www.viavisolutions.com/en-us/support/quick-references/quick-tip-videos>

Product Focused YouTube Channel:

[ViaviSolutions CIVT](#)

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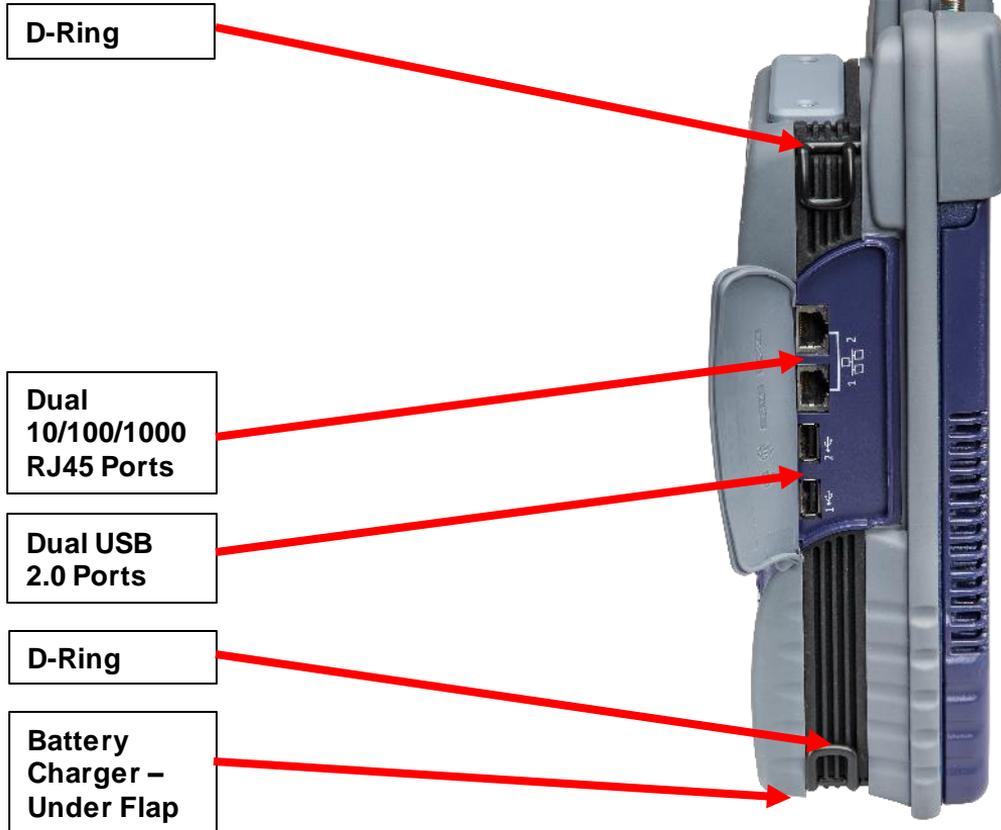
<https://www.viavisolutions.com/en-us/support/quick-references/quick-tip-videos>

Product Focused YouTube Channel:

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OneExpert CATV Overview

OneExpert CATV Interfaces



OneExpert CATV Controls



AC CHARGER PORT

- **SOLID GREEN** indicates that charging is complete.
- **SLOW FLASHING RED** indicates that the battery charge is critically low, and less than 10%
- **FAST FLASHING RED** indicates that the charging was suspended due to a fault and user intervention is necessary (for example, an incorrect charger is attached)
- **SOLID RED** indicates that the charging was suspended due to overheating
- **SOLID AMBER** indicates that the battery is charging



NETWORK INDICATOR and BATTERY LEDs

LCD Screen

SHORTCUT/SOFT KEYS

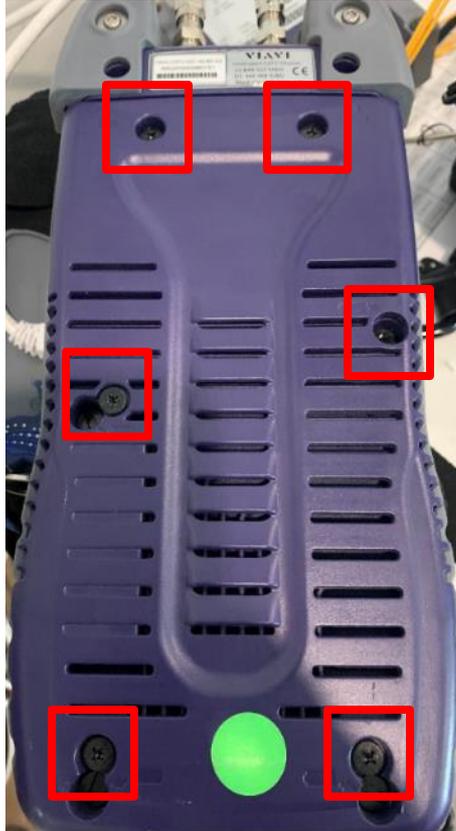
DIRECTIONAL Pad

BACK, HOME and UTILITY Buttons

POWER O/I Button

Battery Replacement

Removing and Replacing Battery



Remove OneExpert CATV cloth case and locate the 6 flat-head screws marked with the battery icon

Loosen each screw with a standard slotted screwdriver until they disengage from the MAINFRAME portion of the unit

Note that these 6 screws are designed to remain captive with the MODULE.

Removing the Module will expose a backplane connector that extends from the Mainframe. There is risk of damaging this backplane connector if the unit is pulled apart without exercising the proper caution.

A single screw hold the battery compartment lid in place



Removing and Replacing Battery



RF Barrel and Collar Replacement

OneExpert CATV RF Ports F-81 Adapter Barrel Style Connector



The ONX-CATV has two RF ports with field replaceable barrel style connectors. The ONX ships with two F- 81 splice style adapters rated to 3 GHz. These F-81 adapters are 1.2 in (307mm) long with a 0.5 in (132mm) distance between either end and the tightening nut. They are shipped installed into the RF ports to the recommended torque specification of 20 in-lbs. (1.6 ft-lbs.).

After some use these F-81 adapters may need to be replaced. When replacing these adapters, an F-81 adapter with similar dimensions and specifications is recommended.

Reason for RF Port Aluminum Collars and F-81 Considerations

Since early 2017 all ONX models are built with aluminum collars around the RF port F-81 barrel-connectors. These collars were added to provide additional mechanical protection from lateral forces which could break the F connector and/or the RF port on the ONX. These collars work by reinforcing the base of the connector and help distribute forces over a bigger area. The height of the collar accommodates the F-81 barrel-connector that was originally shipped with the ONX, but has some margin to accommodate other, similarly sized and rated, F-81 barrel-connectors.

It is important to ensure that ONX RF port F-81 barrel-connector replacements have enough length to pass through the aluminum collar and screw in far enough to close any gaps. Seating the connector properly into the ONX RF port prevents off-air signals from leaking around the F-81 barrel-connector. Also, the F-81 barrel-connector used should not be so long that when tightened it leaves a loose collar. The reinforcing strength provided by the collar requires the collar to be firmly held in place by the F-81 barrel-connector inserted into the ONX's RF ports. A loose collar will not properly strengthen the F-81 barrel-connector, making it more susceptible to breaking when stressed.



ONX-CATV's RF port aluminum collars



RF ports with collars between the F-81 barrel-connectors and ONX body

Replacing the F Connector



F-81 barrel-connectors come in many different forms based on their intended application. The ONX uses an F-81 splice style F connector, like the one shown here on the far-left. It is recommended that replacement F connectors be of similar length to minimize any negative impacts.



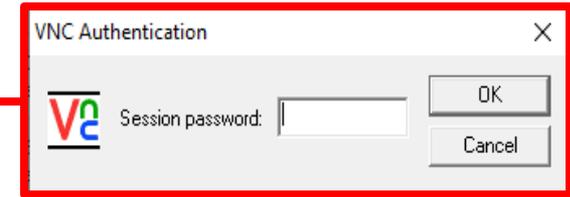
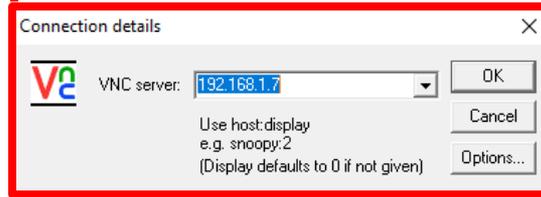
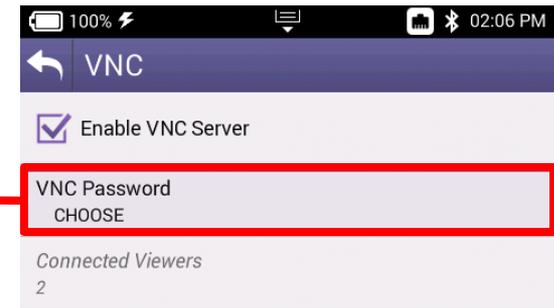
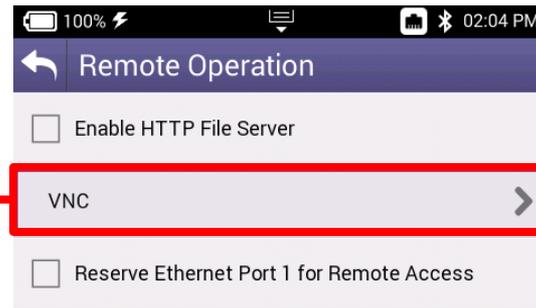
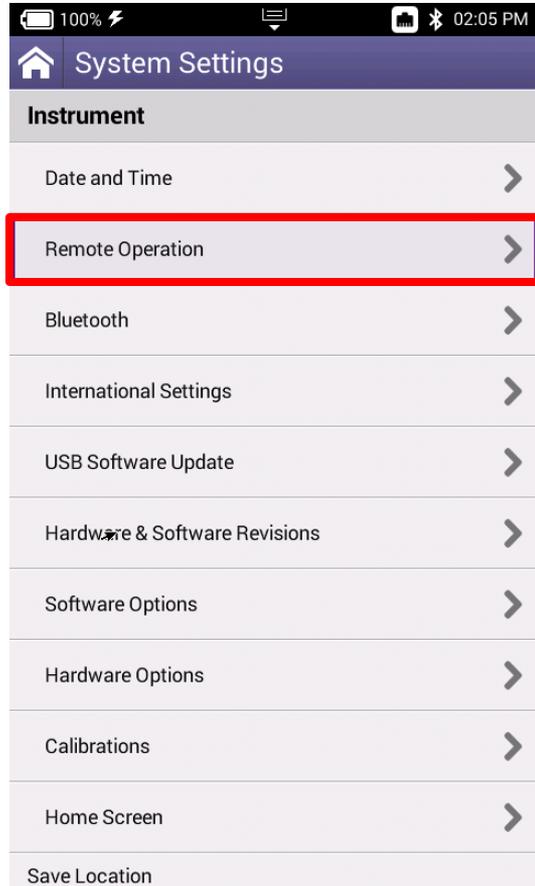
Start by removing the current F-81 adapter and collar (if present). If needed use a 7/16 wrench, turn the F connector counterclockwise until the adapter is completely out of the ONX RF port. Retain the collars if not replacing them with new ones.

Place the new F-81 adapter through the collar and screw the adapter into the ONX RF Port by turning clockwise. Make sure the collar is between the ONX and the F connector nut, as shown in the picture below. Tightening the F-81 adapter into the RF port to the torque specification of 20 in-lbs. (1.6 ft-lbs.) is recommended, which is about hand tight plus another quarter turn.

WARNING: Do NOT overtighten the F-81 adapter into the ONX's RF port, this can lead to permanently broken RF ports. Also, it is not recommended to use power tools when removing or replacing the F-81 adapters.

Remote Access

Remote Access

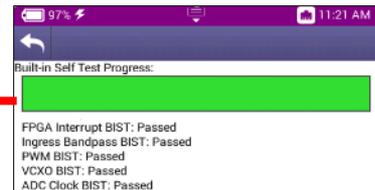
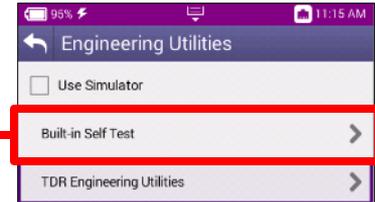
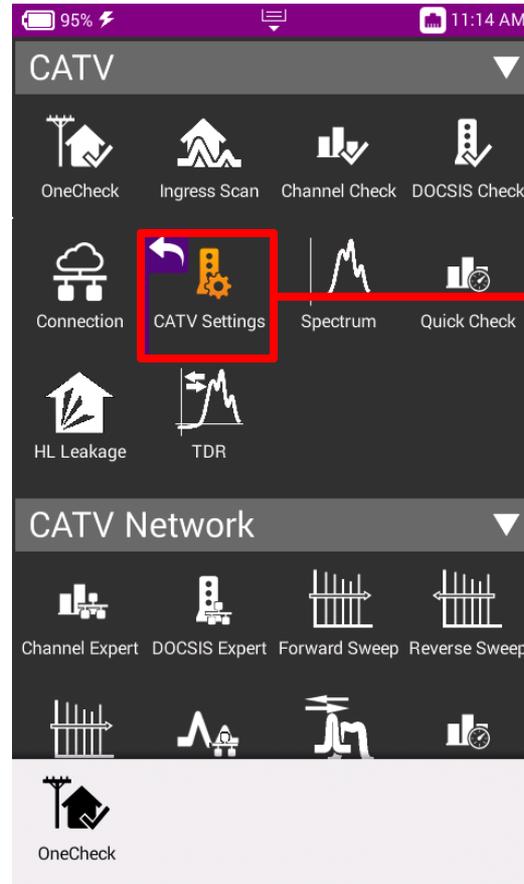


Engineering Mode

Engineering Mode



Hold UTILITY KEY simultaneously during POWER button press. Continue to hold UTILITY KEY until LEDs flash ORANGE, then release UTILITY KEY



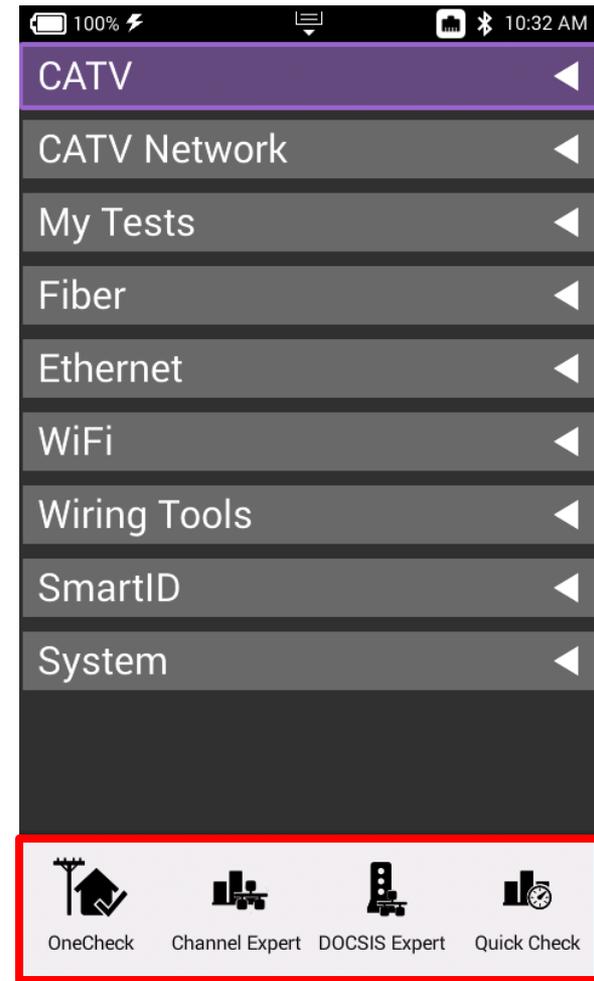
Home Screen

Home Screen



HOME is the default screen when OneExpert CATV is powered on

- It can be reached by selecting the **HOME** screen button above the On/Off Button
- Back Button from any test also returns the user to the **HOME** screen

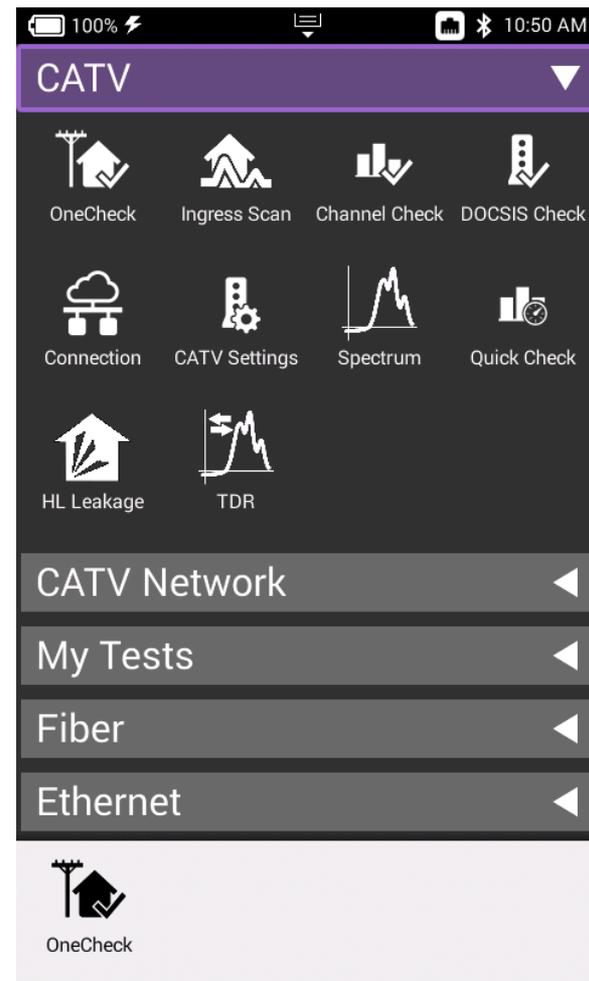
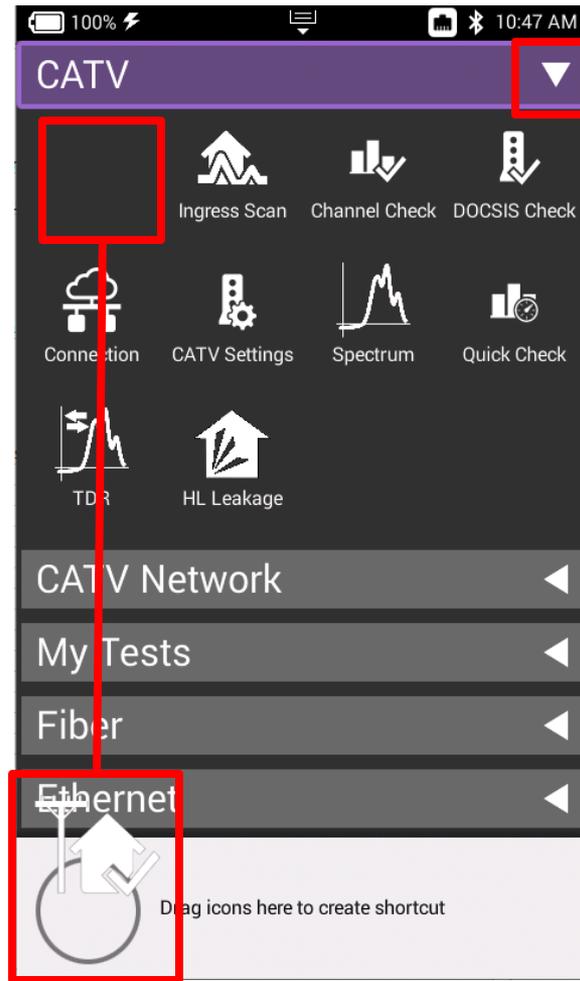


Home Screen

SHORTCUTS can be created by touching and holding a desired function icon and then dragging it to the bottom of the screen

TEST FUNCTION ICONS can also be rearranged like a mobile device

Each **MENU** option is labeled and can be opened or collapsed by the triangle buttons to the right



Utility Menu

Utility Menu



SAVE REPORT – Saves the results to a report. Formats available: XML, PDF, or HTML

VIEW REPORTS – Views a saved report

SCREENSHOT – Takes a screen capture of the current screen

NETWORK – Enables or disables the Ethernet network functions

BLUETOOTH – Enables or disables Bluetooth

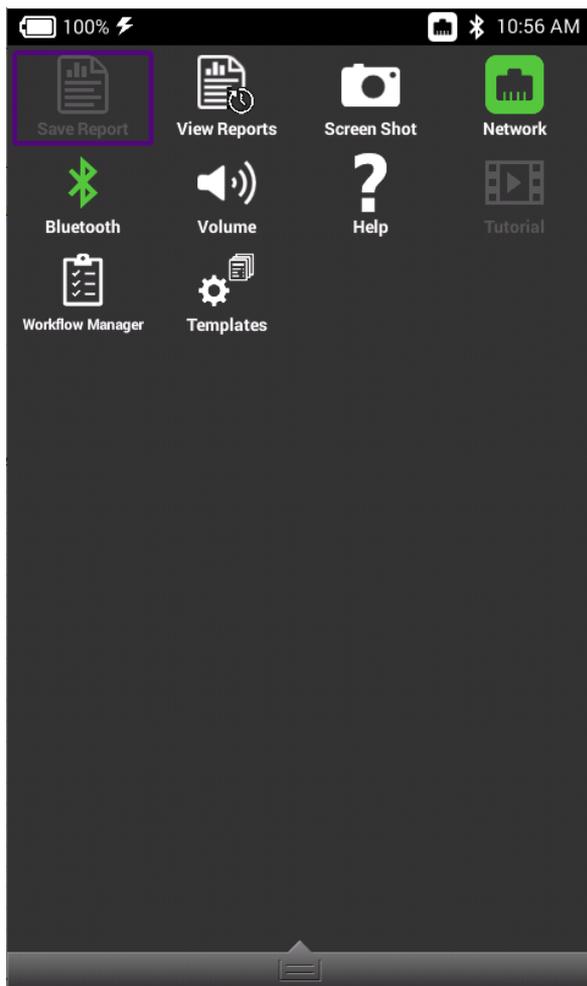
VOLUME – Control the device volume

HELP – Provides TAC phone numbers

TUTORIAL – Future enhancement to delivery video tutorials to the OneExpert CATV

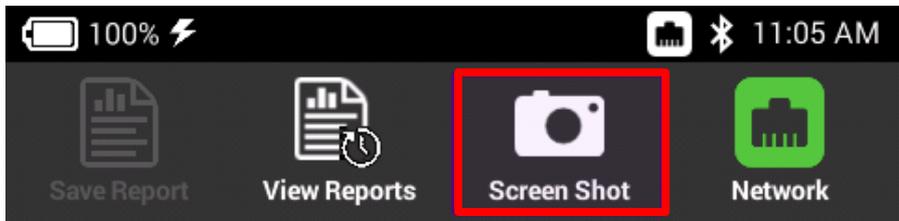
WORKFLOW MANAGER - Future enhancement

TEMPLATES – Use to switch between multiple templates and configurations

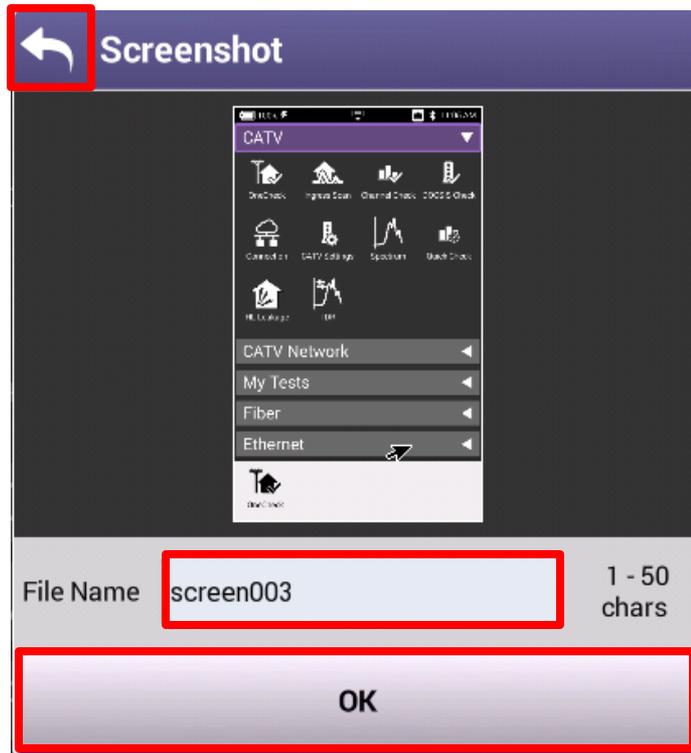


Utility Menu – Screenshot Creation

Select SCREENSHOT from the UTILITY menu, a prompt to save the screenshot will appear



A long push on UTILITY menu key will also automatically start a screen capture



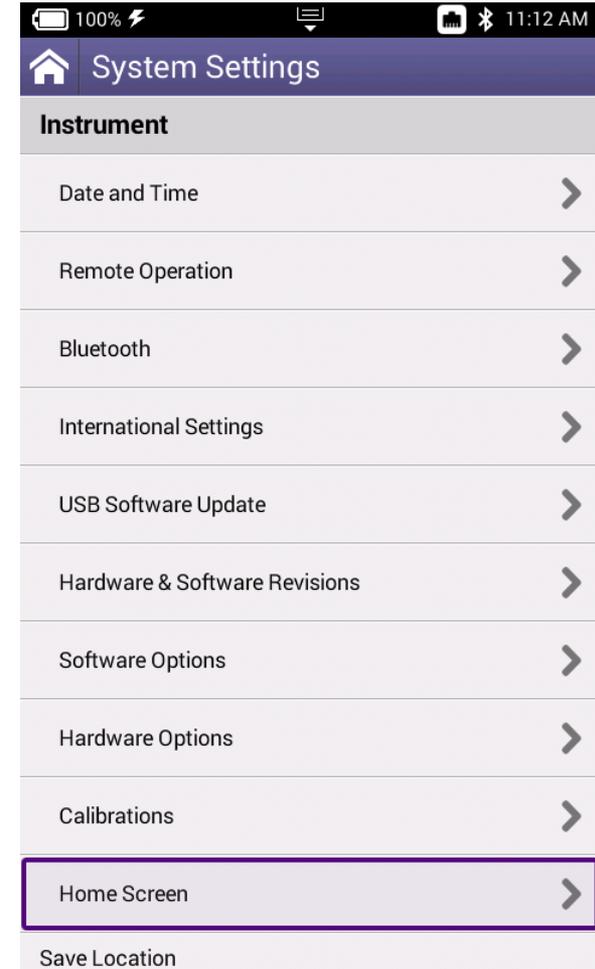
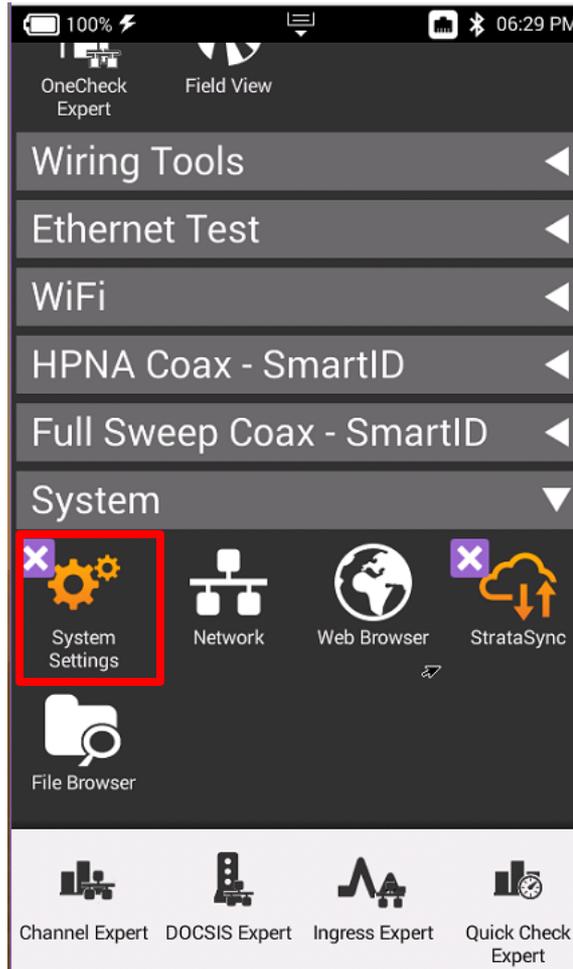
System Settings

System Settings

Navigate from the HOME Screen down to the bottom, using the D PAD or swiping with a finger

Select SYSTEM SETTINGS

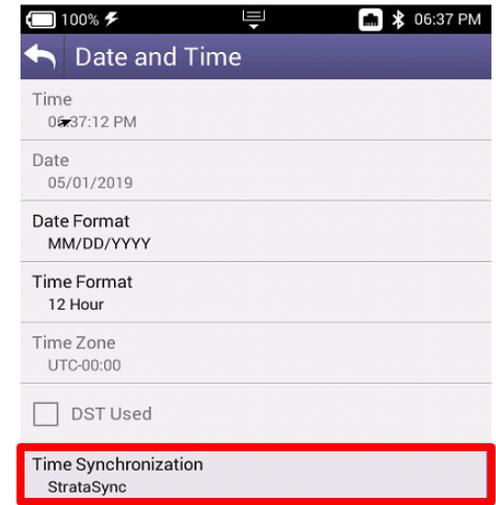
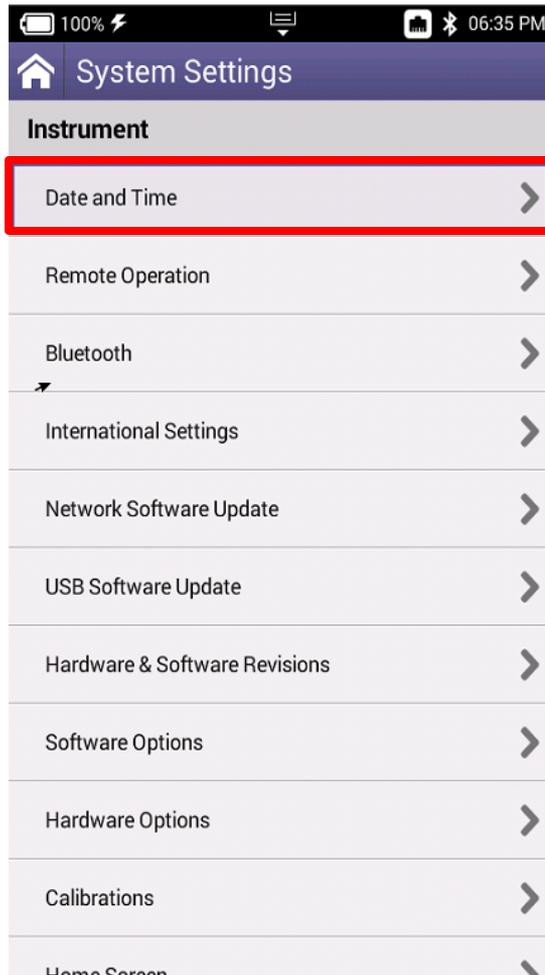
From SYSTEM SETTINGS, the user can set up the meter a variety of ways



Date and Time

Select DATE AND TIME and make sure that TIME SYNCHRONIZATION is set to STRATASync

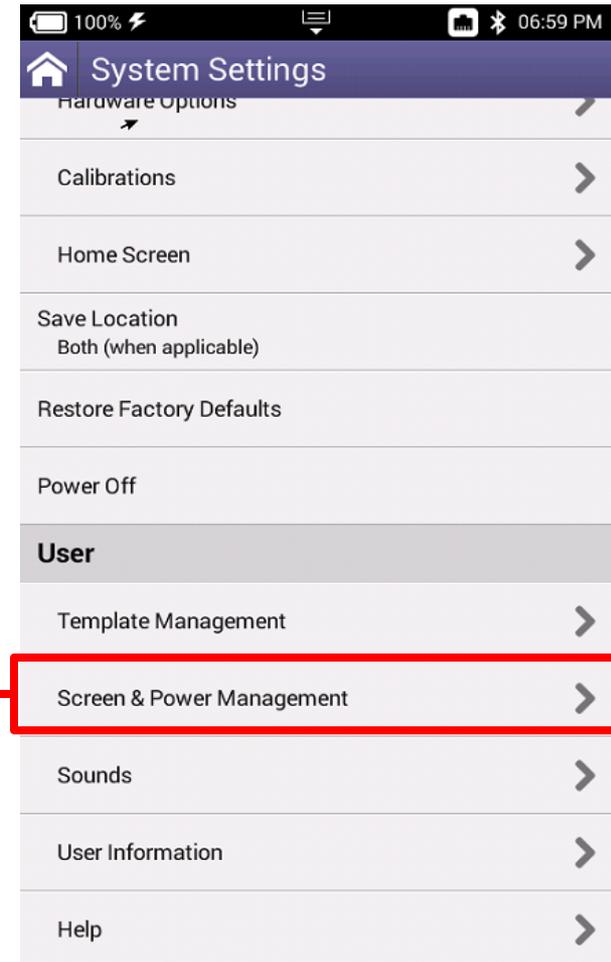
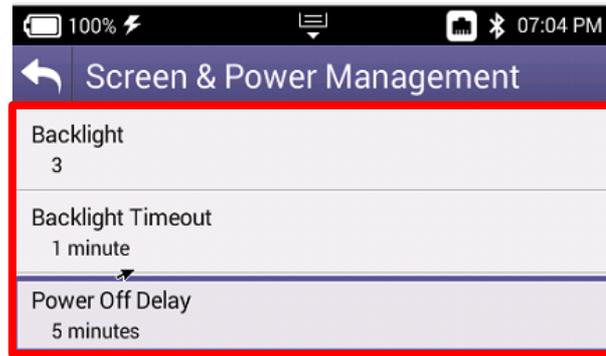
This is important because test data will be time stamped



Screen and Power Management

Select SCREEN AND POWER MANAGEMENT to better conserve the ONX battery life

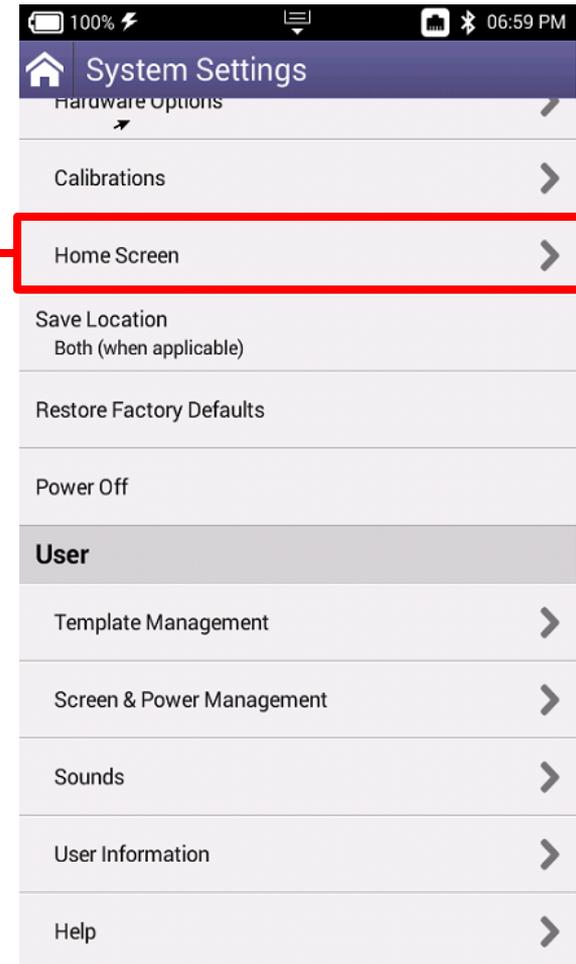
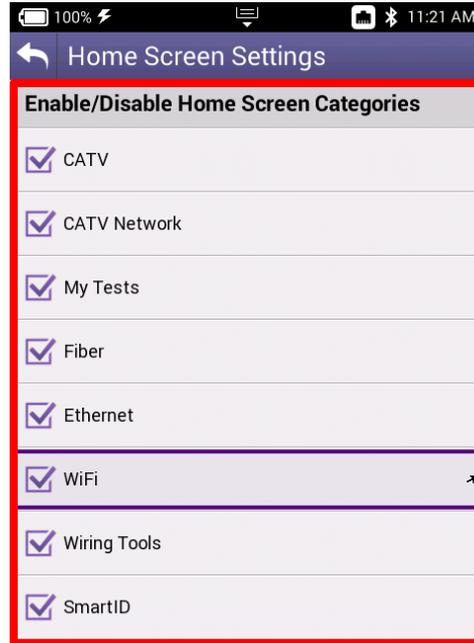
Recommended values are shown to the right. However, if POWER OFF DELAY needs to be set higher in order to accommodate technician's pace, select appropriate time



Customizing the Home Screen

Select HOME SCREEN to customize which measurement bundles are available on the HOME screen of the OneExpert CATV

Technicians are invited to customize as needed



Hardware and Software Revisions

Select **HARDWARE & SOFTWARE REVISIONS** to verify the most up to date **FIRMWARE** is installed

Additionally, **OneExpert** CATV Serial Number (listed as **Unit ID**) and **CM MAC Addresses** (used in provisioning of the onboard Cable Modem)

CM MAC 1 00:07:11:14:1B:CF
CM MAC 2 00:07:11:14:1B:D0
CM MAC 3 00:07:11:14:1B:D1
CM MAC 4 00:07:11:14:1B:D2
CM MAC 5 00:07:11:14:1B:D3
CPE MAC 00:07:11:10:B6:0F

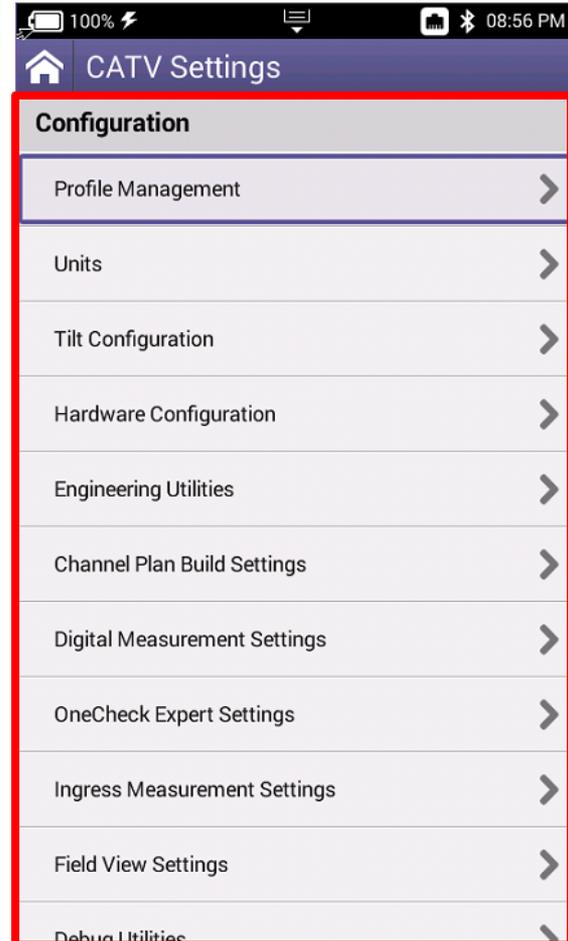
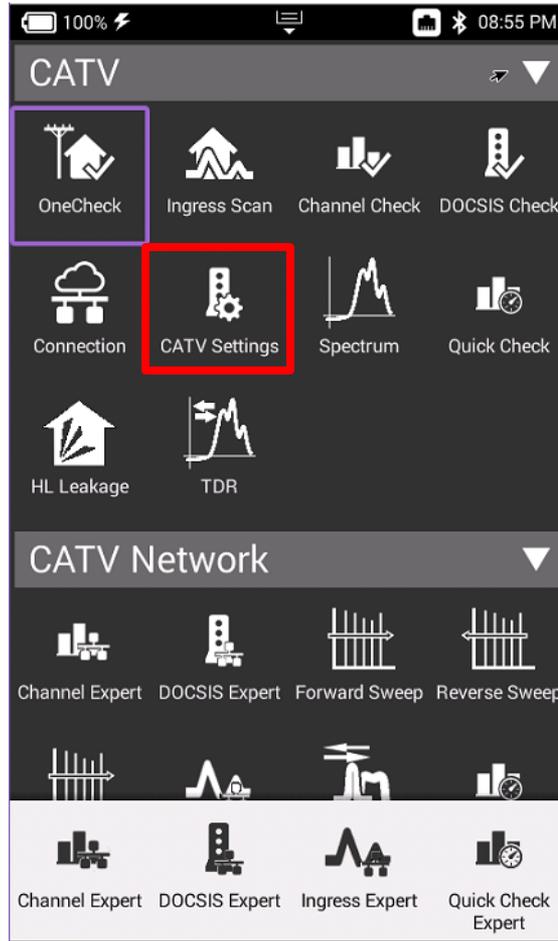
100% 11:24 AM	
Hardware & Software Revisions	
Meter Model: ONX-620	
SW Bundle ONXCBL.3.20.10	
Base	4.30.10
Cable	3.20.10
DOCSIS Cable Modem 3390	1.6.607
OneExpert Cable	
Unit ID	RRQA0023450012
Assembly ID	22089324
MAC Address - Ethernet	00:07:11:10:09:EA
MAC Address - System	00:07:11:10:09:EB
MAC Address - Test 1	00:07:11:10:09:EC
MAC Address - Test 2	00:07:11:10:09:ED

CATV Settings

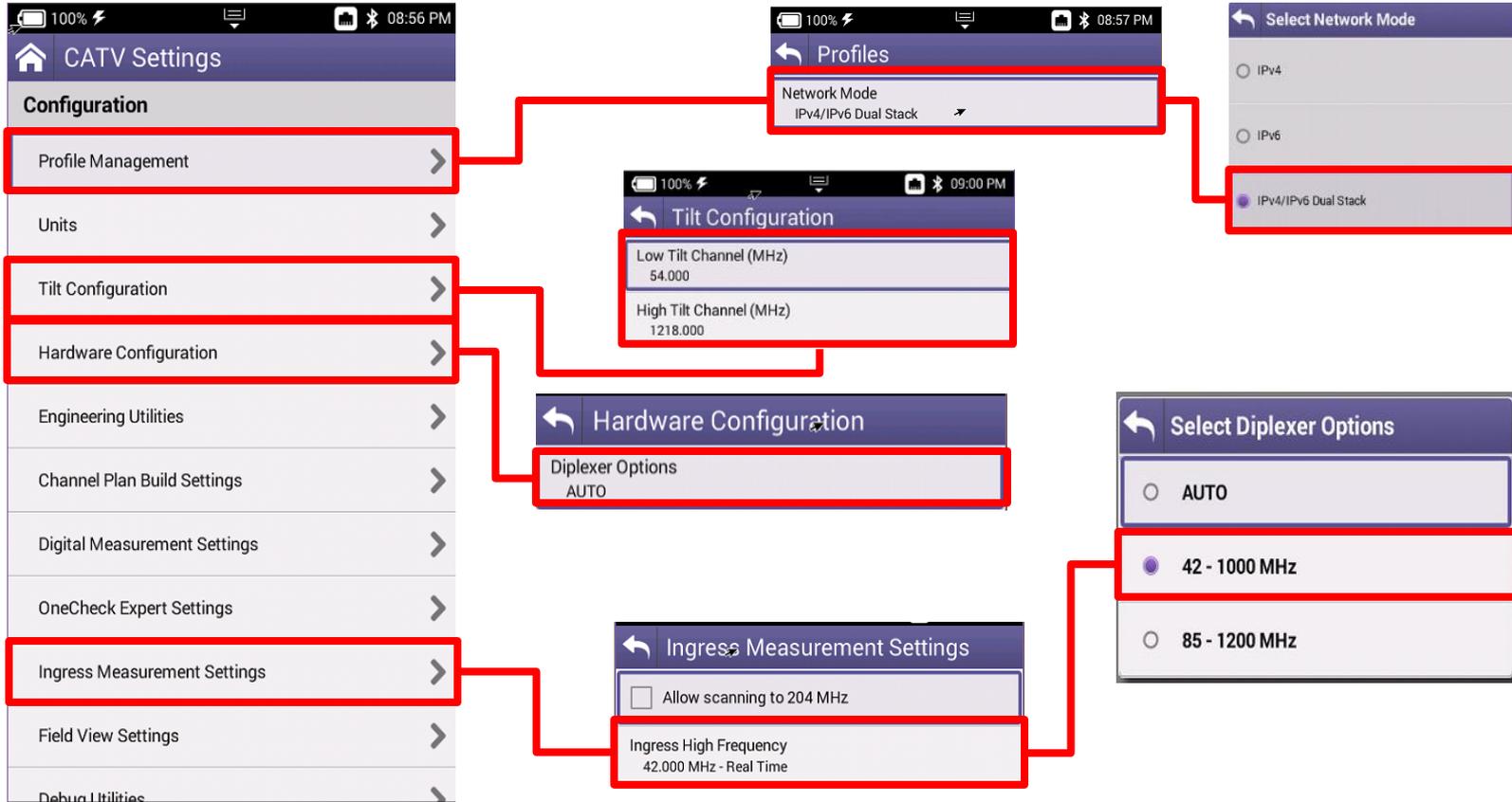
CATV Settings

Navigate from the HOME screen to
CATV SETTINGS

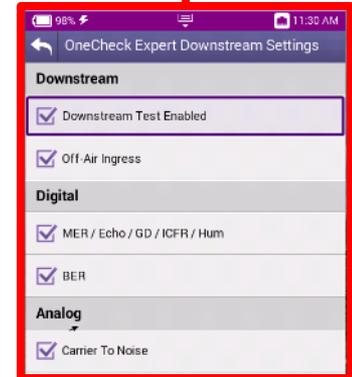
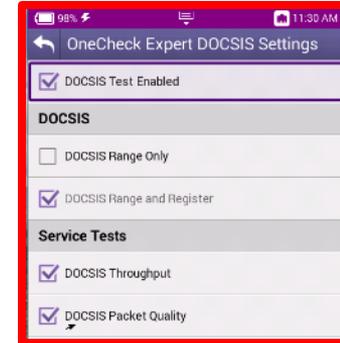
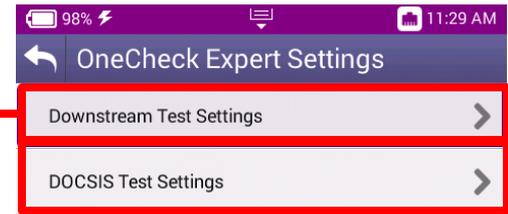
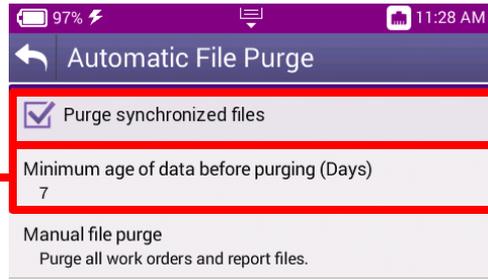
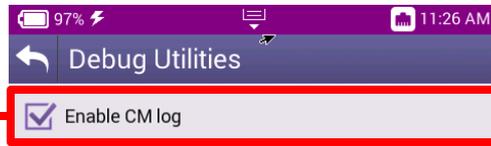
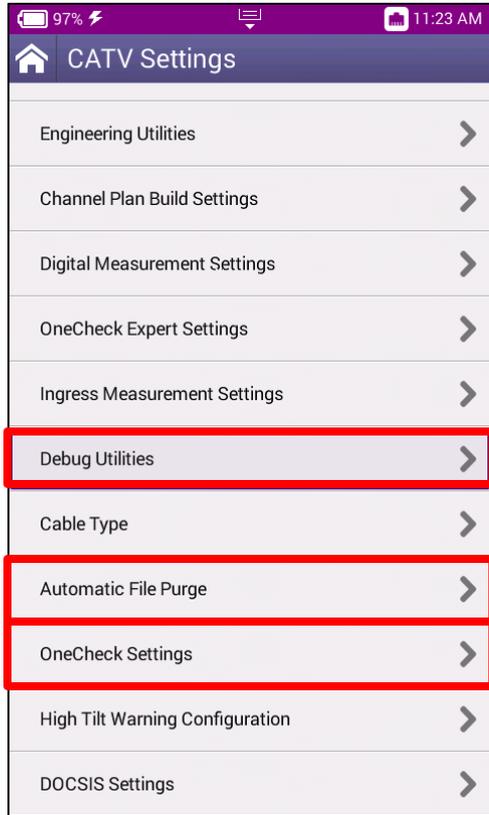
- IPv4 or IPv6
- Tilt
- Sweep
- Diplex
- Digital Measurement
- Channel Plan Build Settings



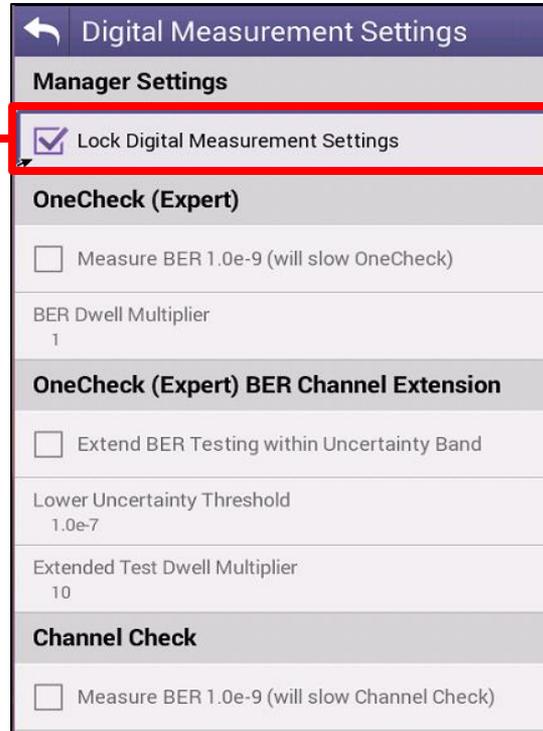
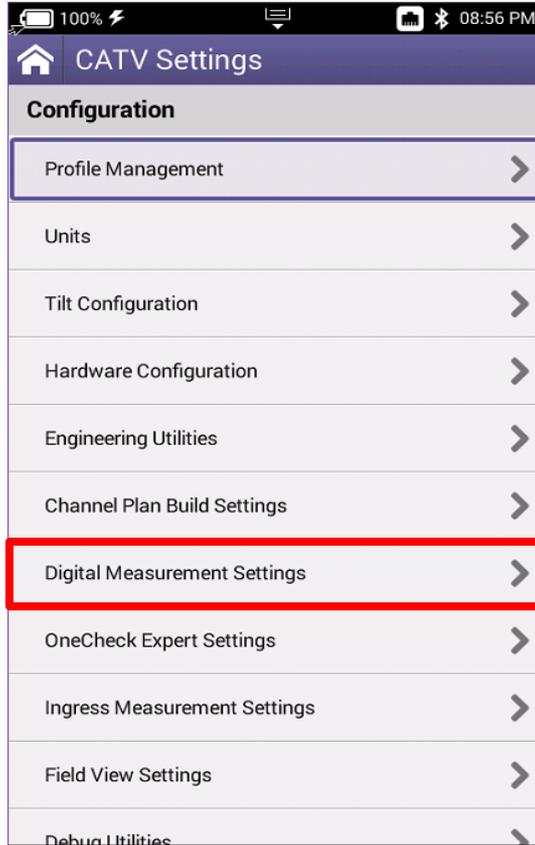
Advanced CATV Settings



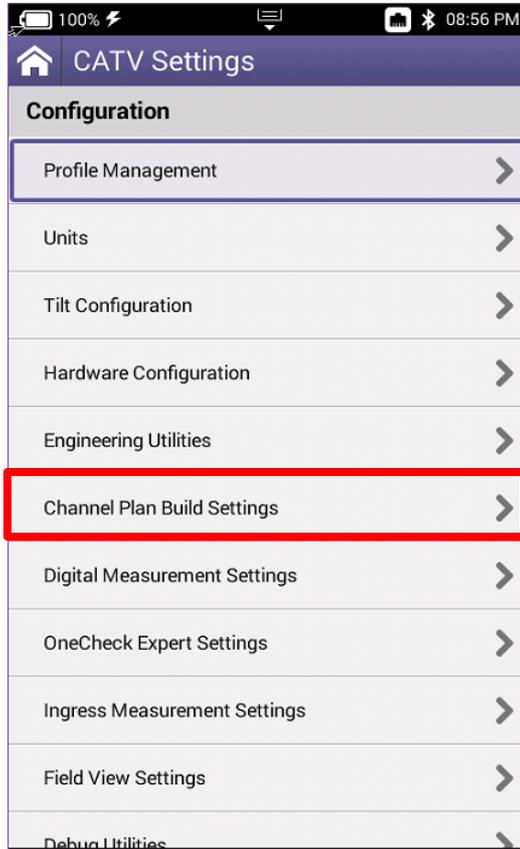
Advanced CATV Setting



Advanced CATV Settings



Advanced CATV Settings



Software and Firmware Updates

Software and Firmware Upgrades

- Software (SW) and Firmware (FW) releases are the best way to ensure your VIAVI OneExpert is functioning at its best
- VIAVI delivers SW and FW easily via **StrataSync** and **USB Stick**
- All OneExpert units should be upgraded to the latest production software release – available through StrataSync (or your Viavi representative)
- New SW Version offer substantial operational improvements and enhancements over earlier software releases including the version that shipped with the units initially
- The software will be deployed to the units by the StrataSync Administrator, but each unit needs to be configured to connect with StrataSync
- Follow these steps to ensure your meter is configured correctly and you can connect to StrataSync to receive the latest updates.

USB Software Upgrade

UPDATE FIRMWARE - Choose an update package

When downloading a firmware package, please unzip and follow instructions in the "readme" file

Enforce Firmware Version

Package Name	Version	Release Date	Status	Language	Comments	Release Notes	Download Firmware
2.1.10	2.1.10	3/22/18	GA		ONXCBL.002.001.010.oxu ...		
2.1.9	2.1.9	3/3/18	GA		ONXCBL.002.001.009.oxu ...		

Next

Cancel

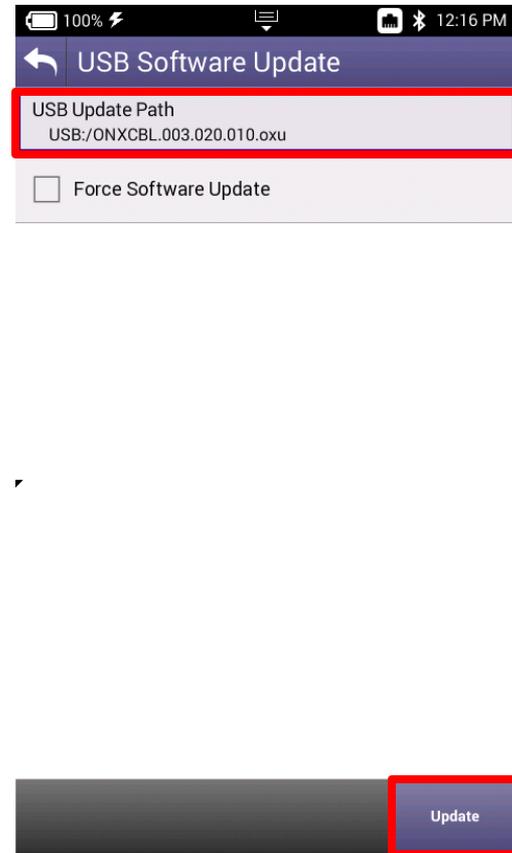
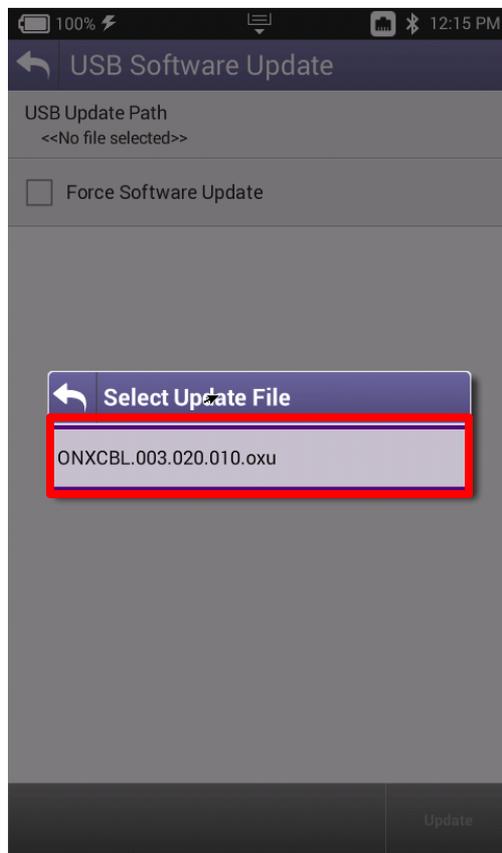
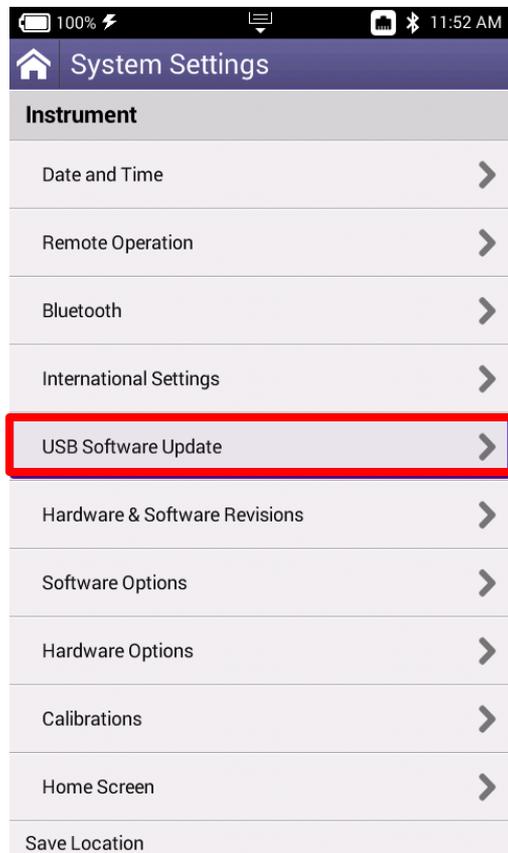
- Click here to download the newest firmware

- Copy the downloaded file ONXCBL.xxx.xxx.xxx.oxu to the root directory of a USB thumb drive.

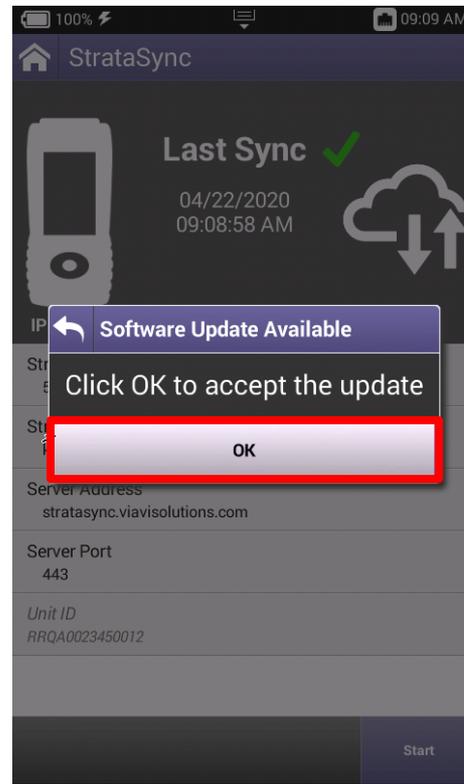
- Press Cancel once the download has completed and you have placed the file on the USB thumb drive.

Note: Firmware must be downloaded from StrataSync first

USB Software Upgrade



Ethernet Software Upgrade via StrataSync



Firmware Recovery Procedure

Place the update image on a USB drive in the root directory (not in any folder on the USB drive). Ensure that it is the only ONX update image on the drive.

Download the latest ONX firmware via StrataSync to get the latest link from Viavi TAC

Power off the unit.(If the unit is frozen, press and hold the power key until the ONX powers off ~10-15 seconds)

Attach power charger to the ONX.

Plug the USB drive with the “.oxu” firmware file into one of the ONX USB ports.

Hold down the left softkey+ right softkey+ up arrow. (softkeys are the 4 buttons just below the display)

Press and release power key as normal while continuing to hold down on the left softkey+ right softkey+ up arrow until you see the

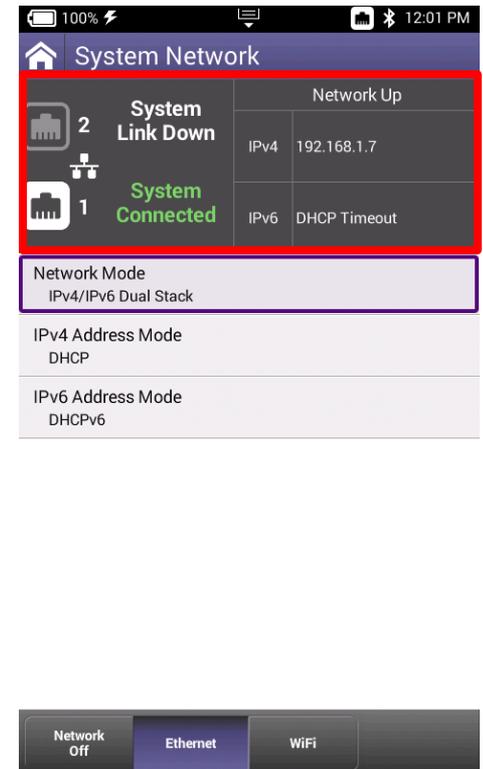
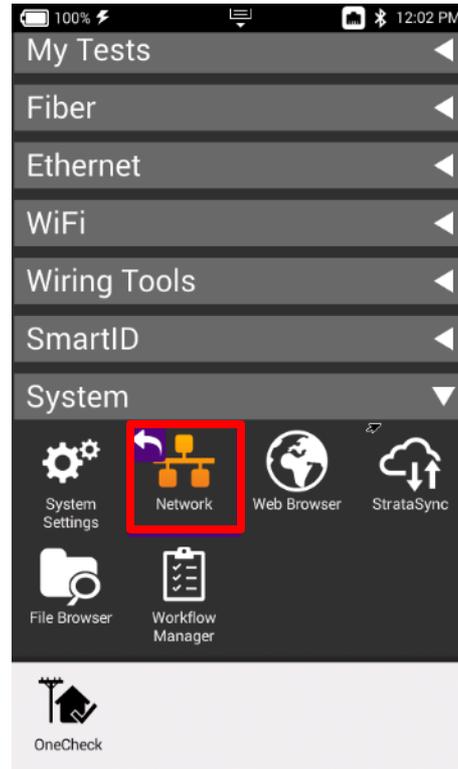


StrataSync Synchronization

StrataSync Synchronization - ETHERNET

Note - You can synchronize to StrataSync via RF or WiFi, but this is ONLY for sending test files, receiving configuration information like limit plans, etc. - not for SW/FW upgrades

Connect an Ethernet cable from an active internet connection (Cable Modem or router/gateway) to Port 1 on the ONX



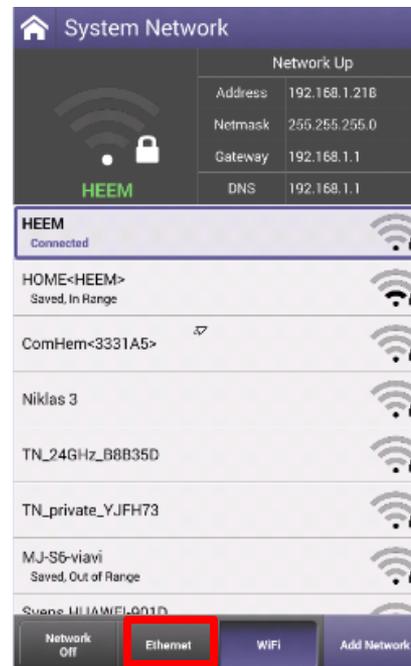
StrataSync Synchronization - WIFI

Note - **Sync via WiFi** is now supported. Use Network Settings app to configure and join a WiFi network prior to performing sync. You can synchronize to StrataSync via WiFi, but this is **ONLY** for sending test files, receiving configuration information like limit plans, etc.

Connect with WiFi from an active internet connection
(Cable Modem or router/gateway)

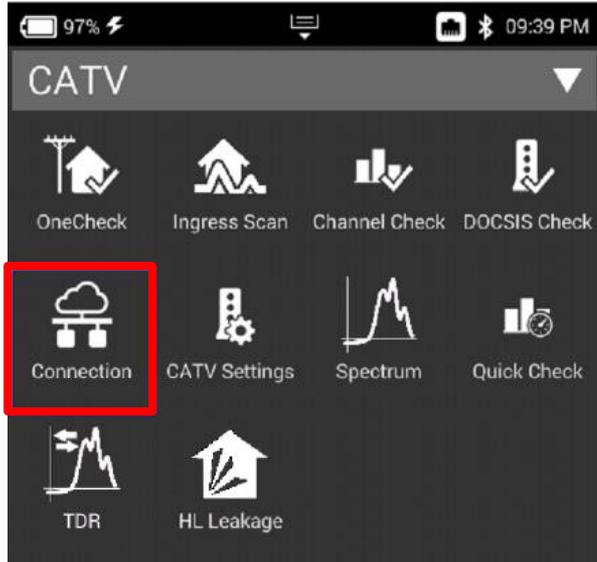


From the ONX home screen navigate to **SYSTEM NETWORK / WIFI** - Verify the ONX has a valid IP address

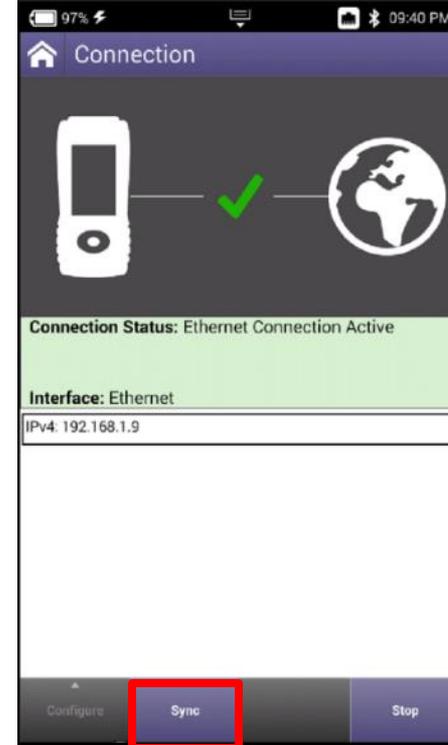


StrataSync Synchronization - RF

Make sure that CM MAC 1 is provisioned in the billing system
Select the CONNECTION APP from CATV



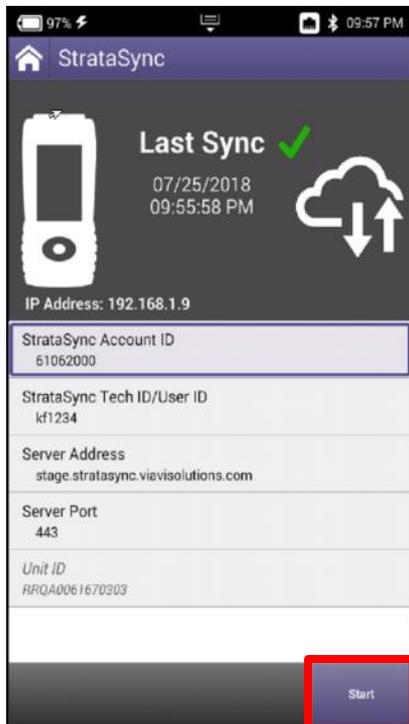
Once CONNECTION STATUS reports a GREEN Check mark and
INTERFACE: RF; IP ADDRESS is shown



StrataSync Synchronization – ETHERNET, WIFI and RF



After IP Address verification, navigate to the **SYSTEM** Menu and select **STRATASYNC**



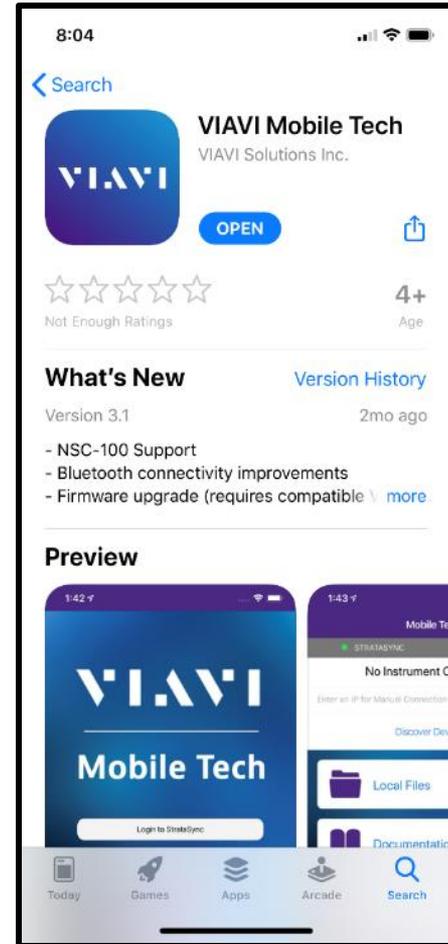
STRATASYNC ACCOUNT ID = xxxxxxxx
SERVER ADDRESS = stratasync.jdsu.com
(stratasync.viavisolutions.com also works)
SERVER PORT = 443

Mobile Tech App

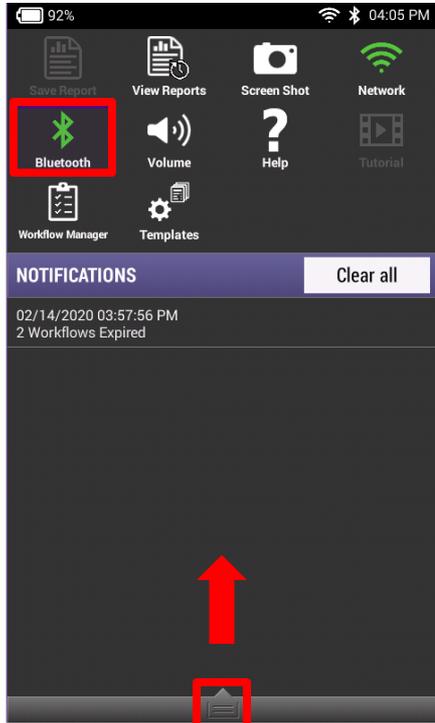
MOBILE TECH APP

Search for VIAVI and download VIAVI MOBILE TECH v3.1 app

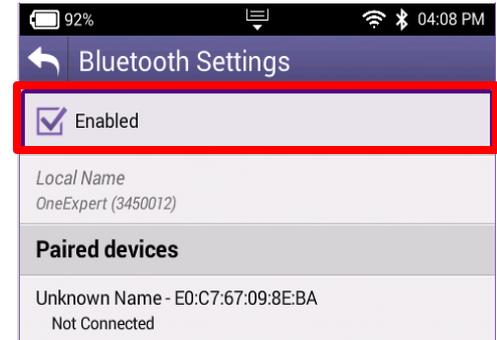
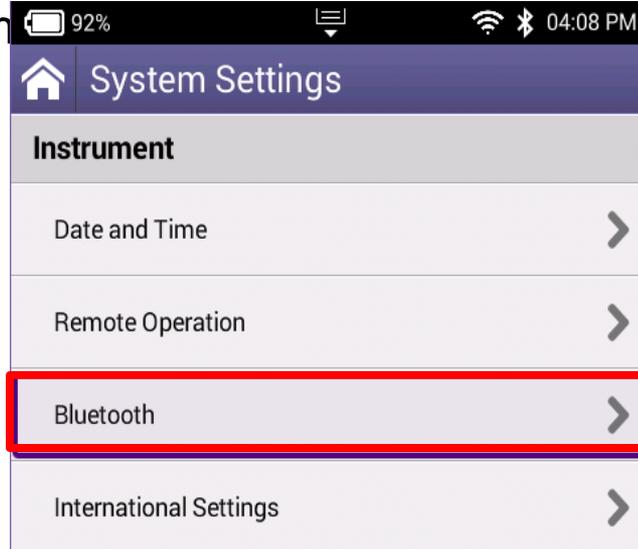
* Screenshots shown on iPhone, but MOBILE TECH APP on ANDROID is consistent



MOBILE TECH APP – Set Up



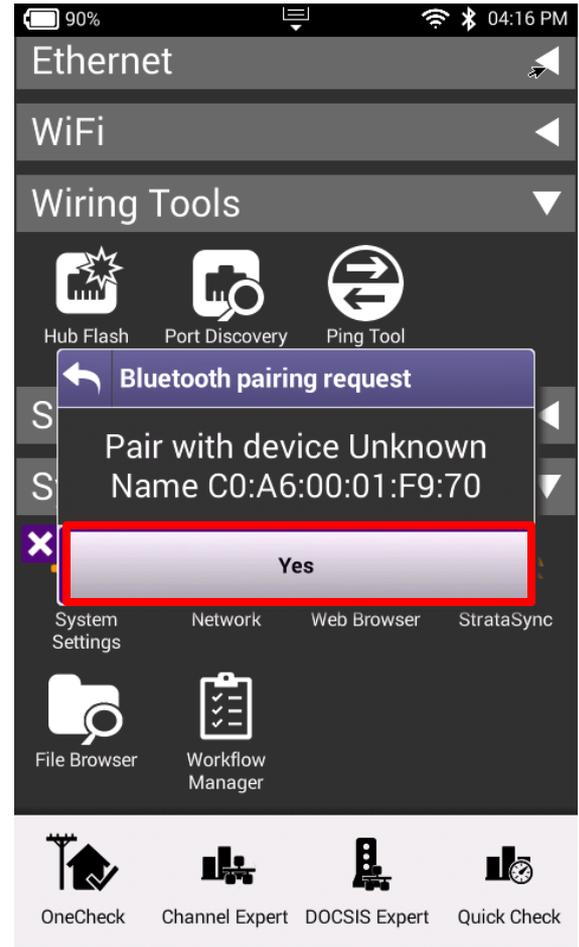
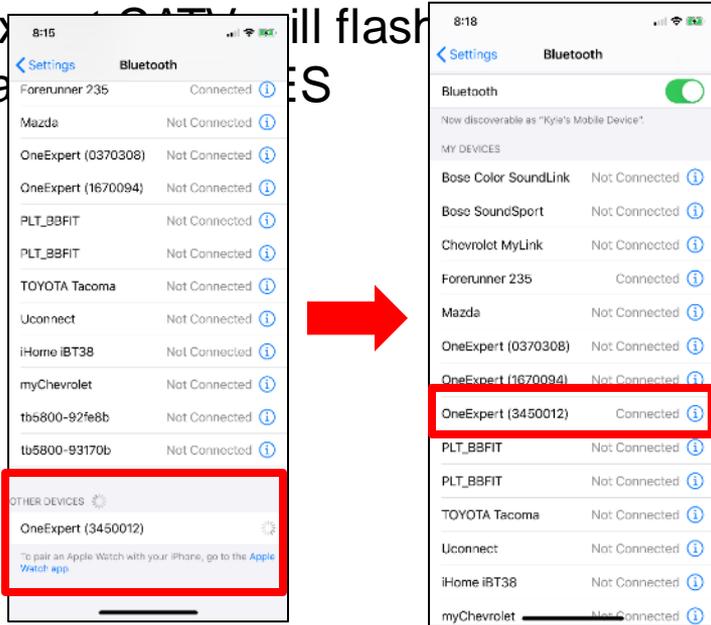
On ONX620 or 630, enable BLUETOOTH by going to SYSTEM SETTINGS->BLUETOOTH SETTINGS or by dragging down the TRAY and selecting BLUETOOTH and GREEN



MOBILE TECH APP – Set Up

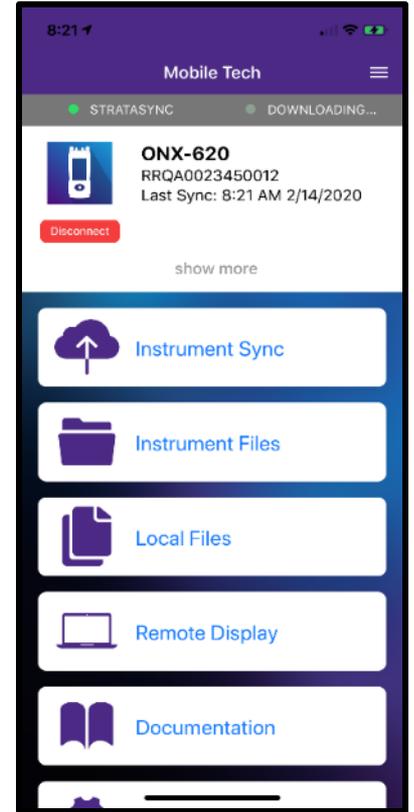
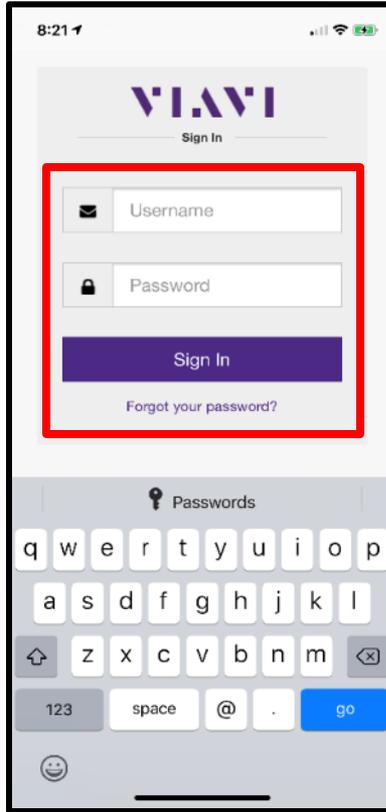
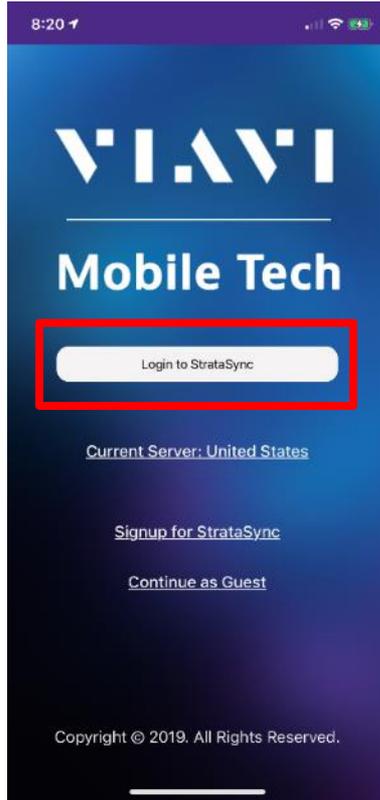
Select the appropriate OneExpert CATV serial number from the list of BLUETOOTH CONNECTIONS and pair

OneExpert CATV will flash a request message

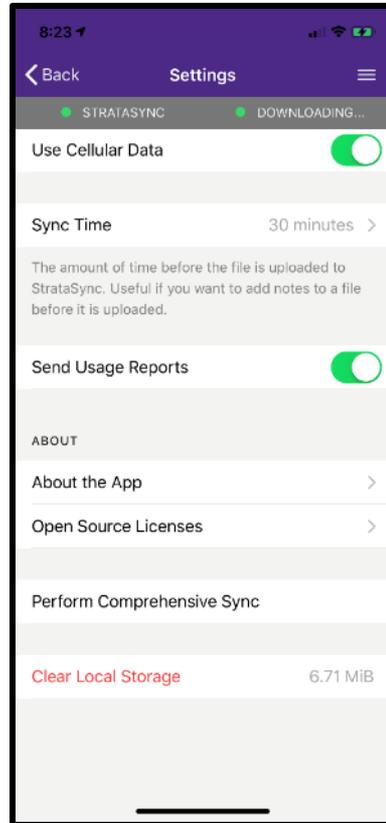
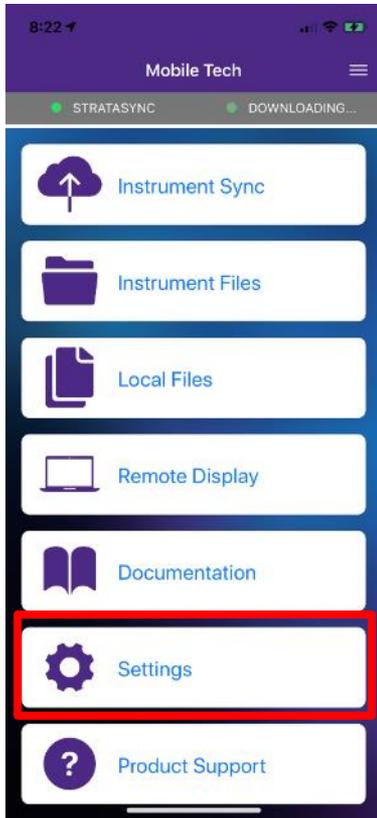


MOBILE TECH APP – Set Up

Login using USERNAME and PASSWORD
If user doesn't have login credentials – please reach out to local STRATASYNC ADMINISTRATOR



MOBILE TECH APP - Synchronization



Select the SETTINGS button and configure MOBILE TECHAPP

- Choose how often user desires a SYNC
- Whether the SYNC will require WIFI or may use the LTE connection
- Whether or not to send usage reports
- Comprehensive SYNC (useful for uploading failure logs)
- Clear local Storage on user phone

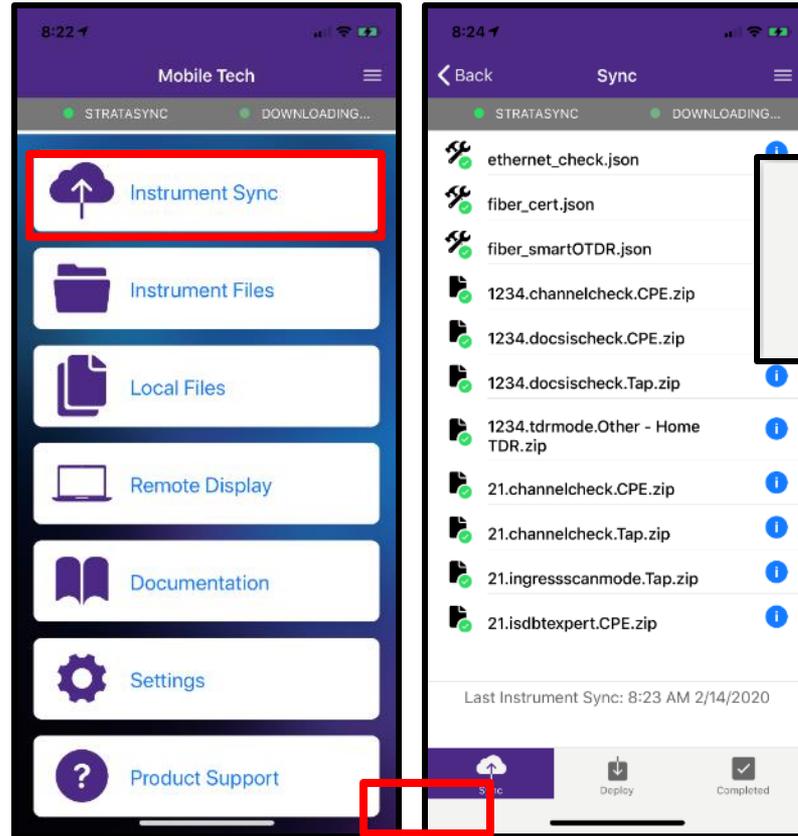
MOBILE TECH APP - Synchronization

By Selecting INSTRUMENT SYNC from the main menu, the USER can see all test data that has currently been saved to the ONX and is ready for sync

- **Note that only SAVED TEST DATA will migrate to MOBILE TECHAPP for synchronization to STRATASYNC**

By selecting SYNC – the process will begin immediately

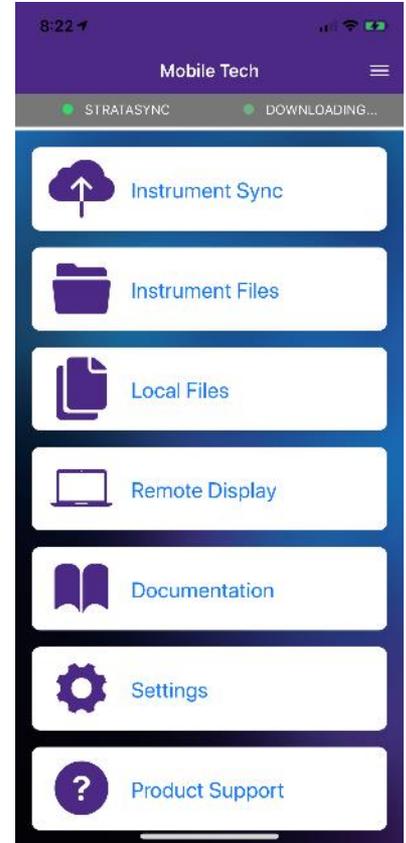
- The user can also rely on the timed sync setting – which allows the MOBILE TECHAPP the ability to sync passively in the background are regular intervals



MOBILE TECH APP

- Beyond streamlined sync to STRATASYNC, the MOBILE TECH APP also provides the following functionality:
- View and manager files on the instrument
- View and manage local files, including craftsmanship photos
- Remote Display and Operation
- IN-APP Support Documentation
- LINK to VIAVI Technical Support

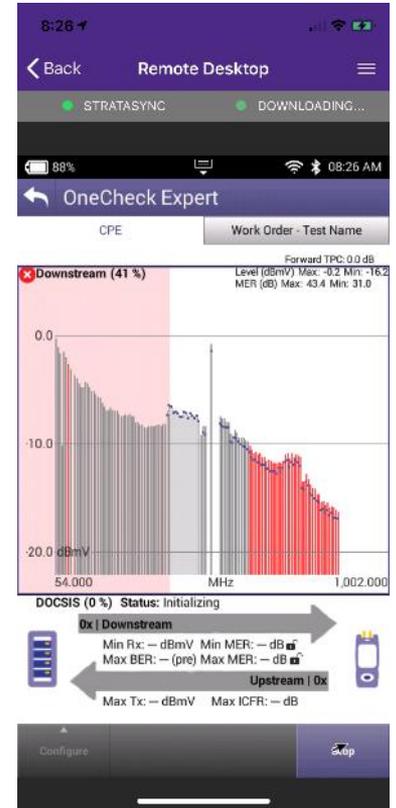
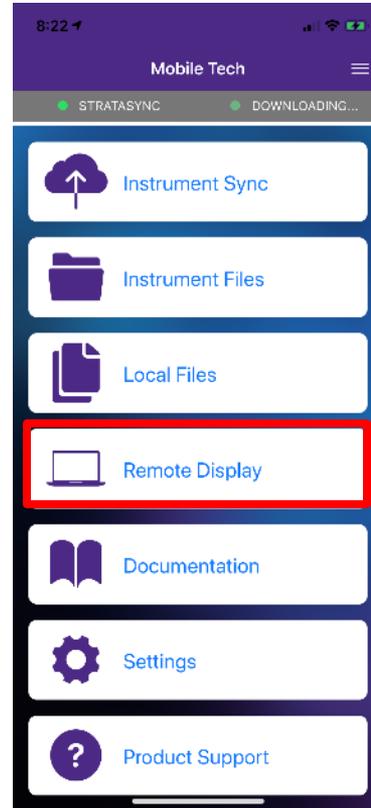
- Note – MOBILE TECH APP is interoperable with TB2000, TB4000, TB5800, One EXPERT CATV and a host of other VIAVI Solutions instruments



MOBILE TECH APP - Remote Display

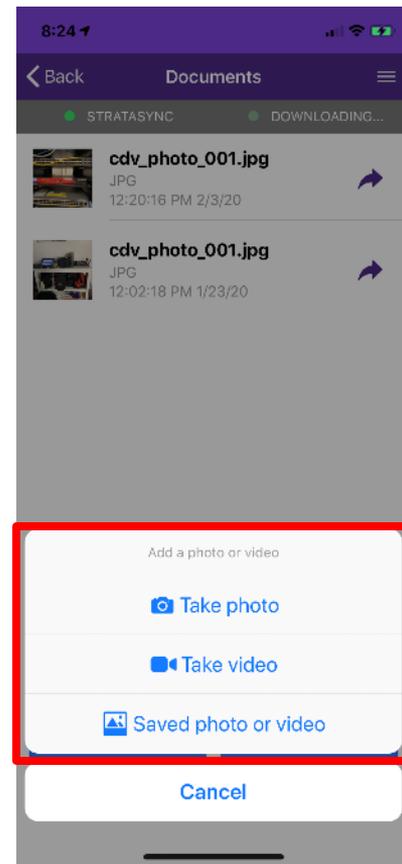
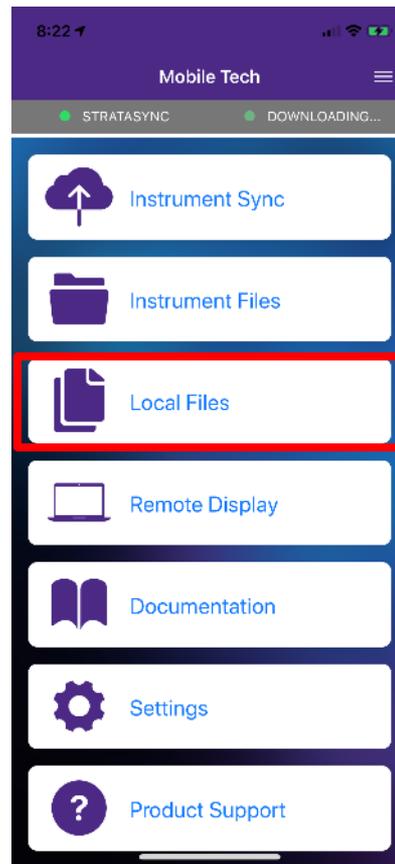
REMOTE DISPLAY allows the user to control the ONX, via BLUETOOTH, and conduct normal meter functions

*Requires SmartAccess Anywhere option

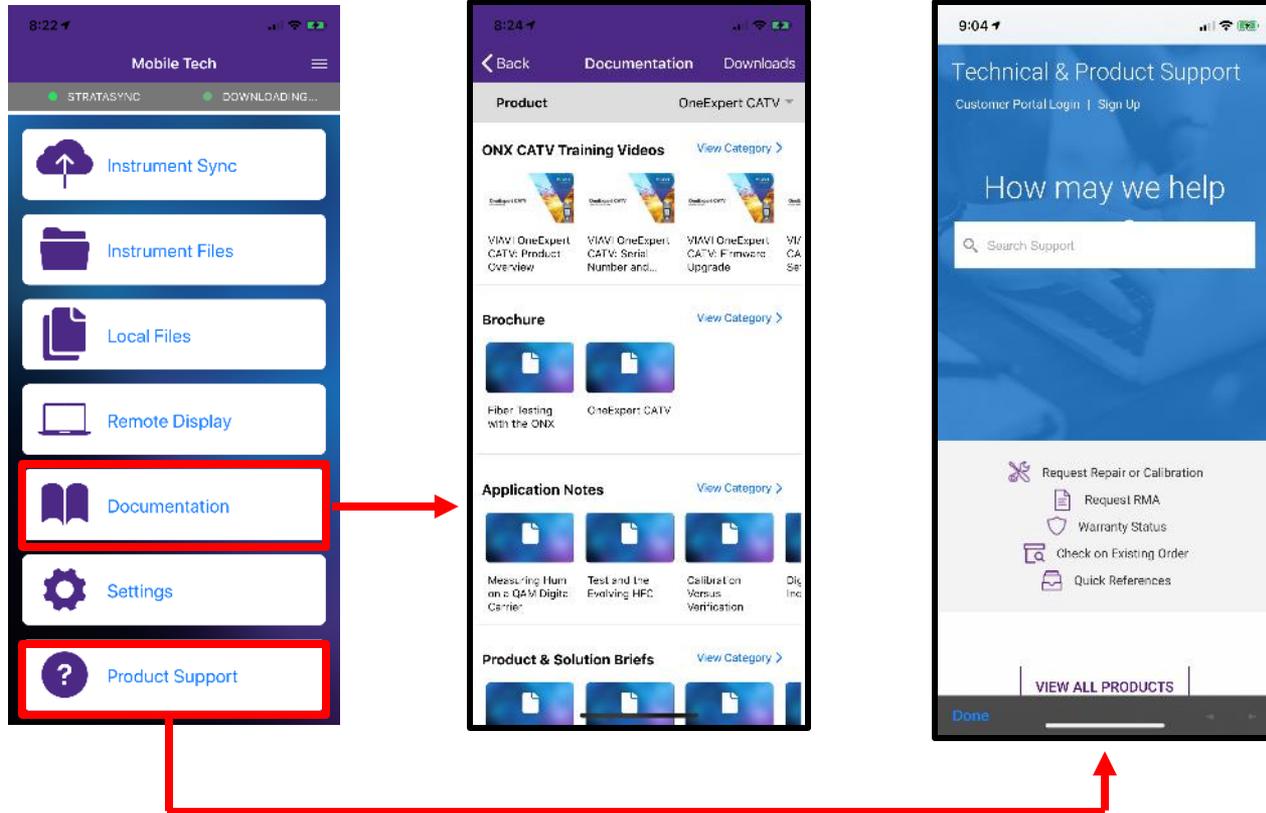


MOBILE TECH APP - LOCAL FILES

Allows users the ability to take photos or use photos from their mobile device and upload to StrataSync



MOBILE TECH APP - Product Support and Documentation



Ethernet Testing

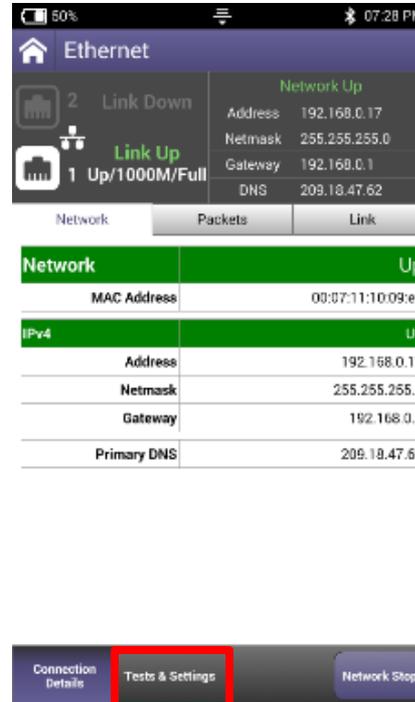
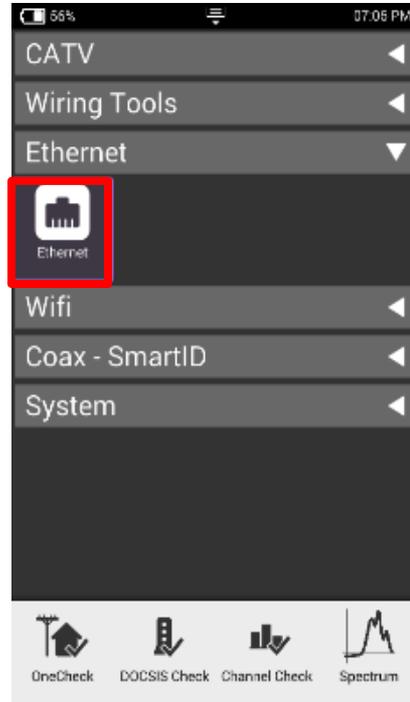


Ethernet – Tests and Settings



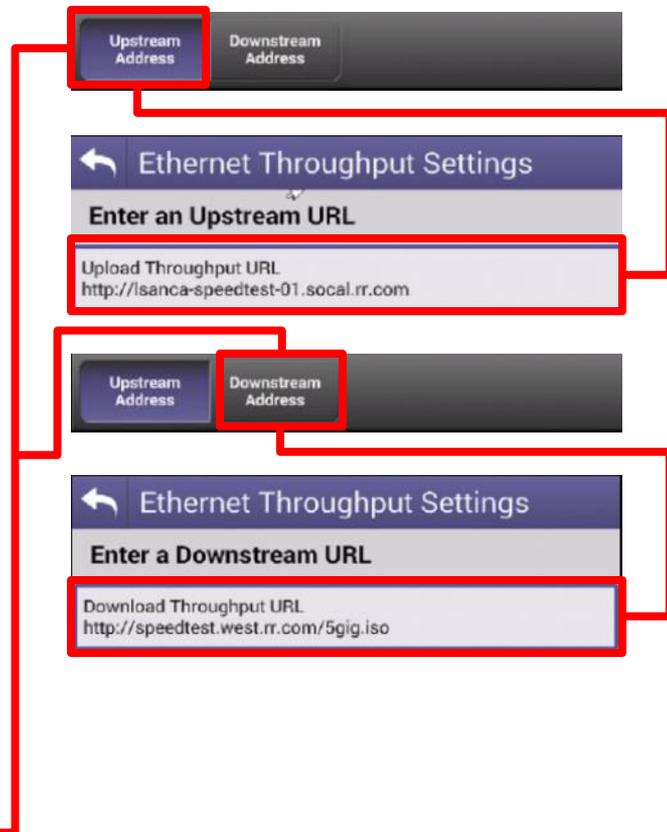
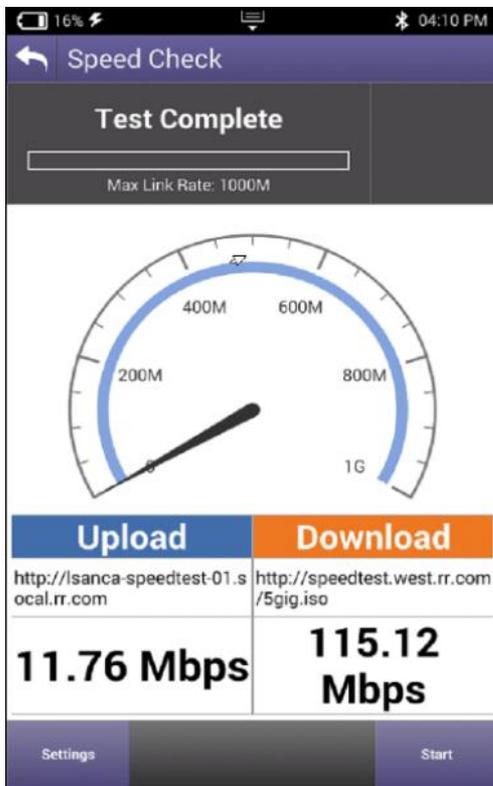
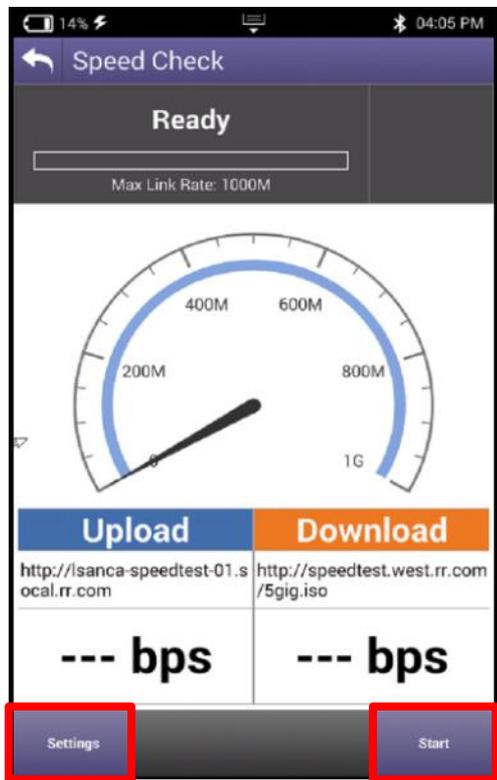
From HOME screen, select
ETHERNET

Once NETWORK UP is indicated
with green, select TEST AND
SETTINGS



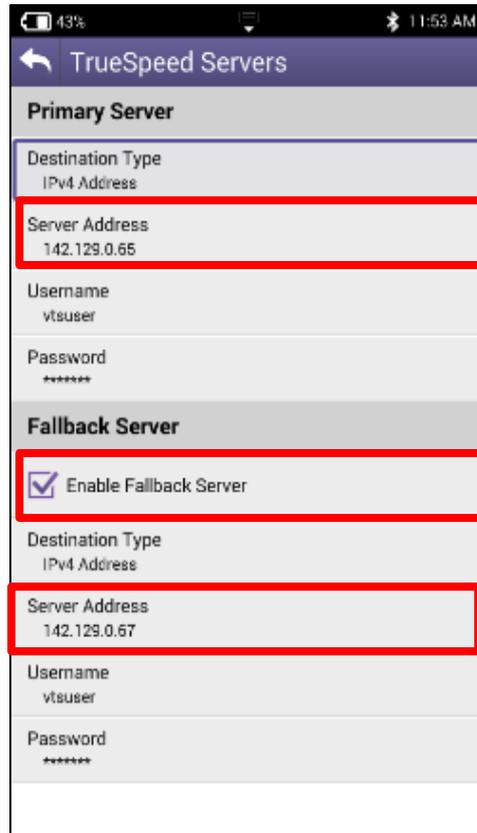
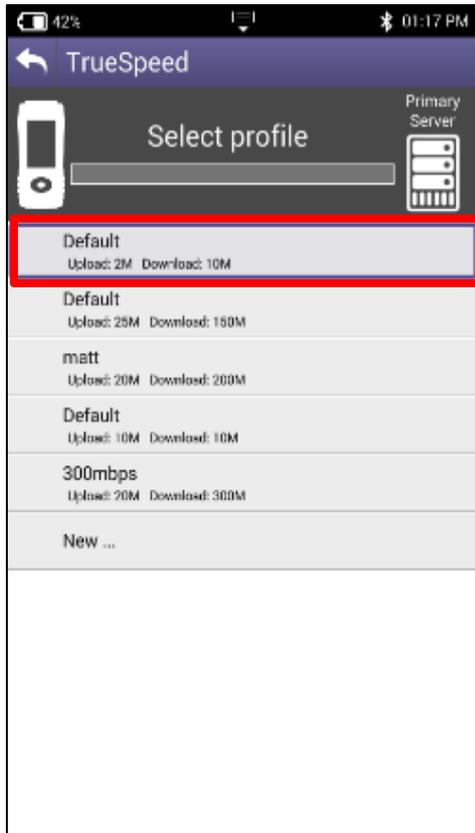
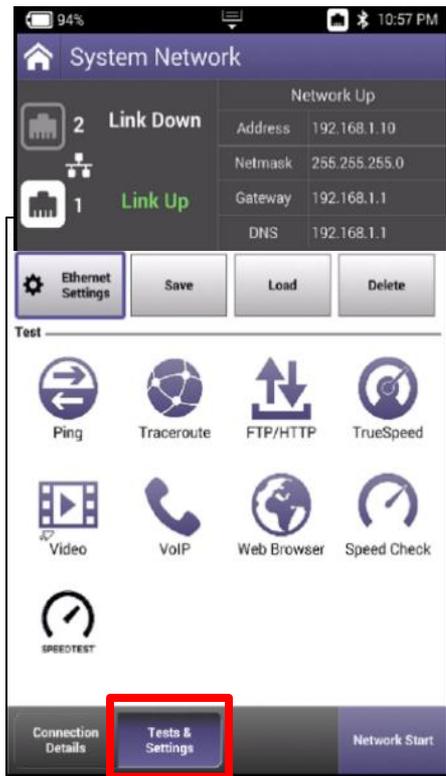
Ethernet – Speed Check

- CATV Ethernet's throughput IP Address/URL is configured in the mode under Settings.
- Default value are for both Downstream/Upstream the same:
<http://CATVSpeedTest.viavisolutions.com/bigfile.zip>
- If the upstream URL changes, the file name need to be the same: bigfile.zip



ETHERNET - TrueSpeed Setup

Select Profile or create a new one
The test will start automatically after Profile is selected
Stop Test and choose Server Settings on the bottom and enter the Server IP address and then resume. (Only applicable for first test setup)
Fallback Server is for second TrueSpeed VNF and can help alleviate queue



ETHERNET - TrueSpeed Results

After test completes, Results are displayed as either the Speedometer or a simple list



TrueSpeed - 300mbps

Idle

Primary Server

20M 300M

	Upload	Download
Actual Rate	11.8M	118.3M
Ideal Rate	19.0M	284.8M
TCP Efficiency	100.00 %	100.00 %
Server	142.129.0.65:8180	
RTT	14.8 ms	
MSS	1460	

Profiles Server Settings Results Start

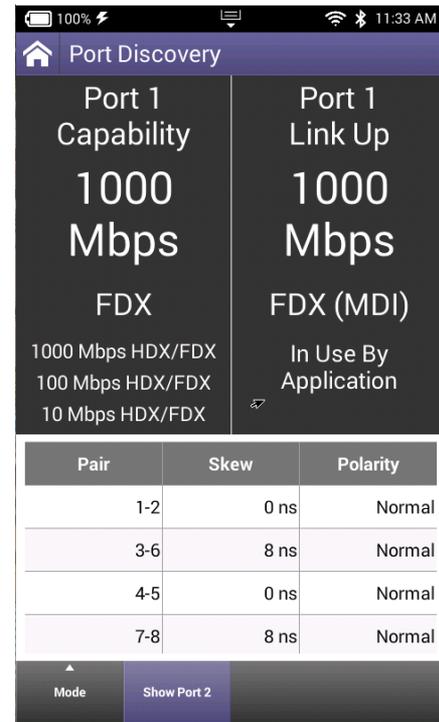
Wiring Tools

WIRING TOOLS - Port Discovery

PORT DISCOVERY will allow the technician to verify capabilities of the ELECTRICAL ETHERNET port under test

Useful in determining if a customer's switch or router can handle higher speed

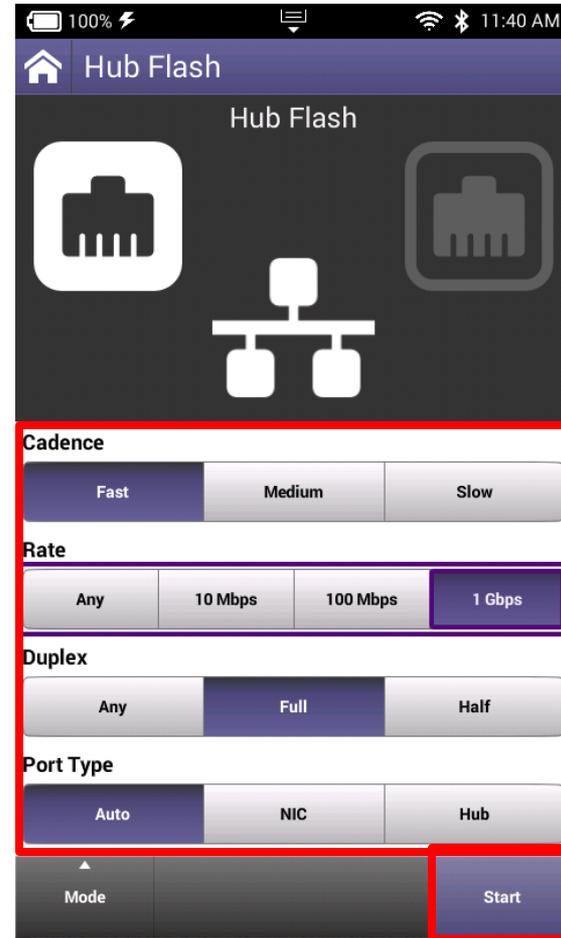
Port Discovery is test



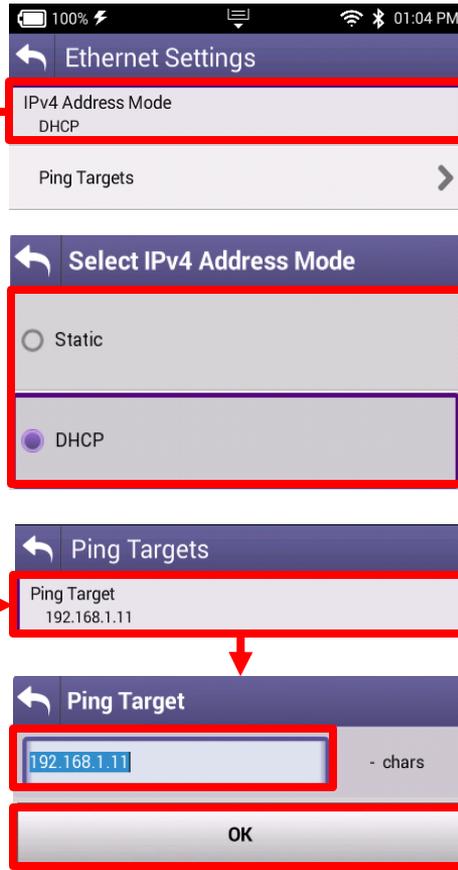
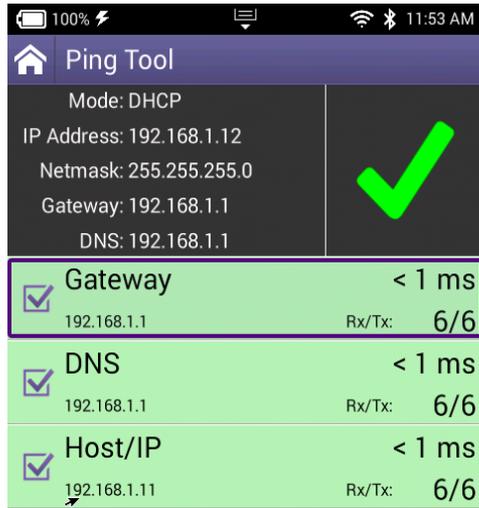
Pair	Skew	Polarity
1-2	0 ns	Normal
3-6	8 ns	Normal
4-5	0 ns	Normal
7-8	8 ns	Normal

WIRING TOOLS - Hub Flash

HUB FLASH will allow the technician to “tone” out the ethernet on a far side router or switch using the cadence or speed of the port lights for identification

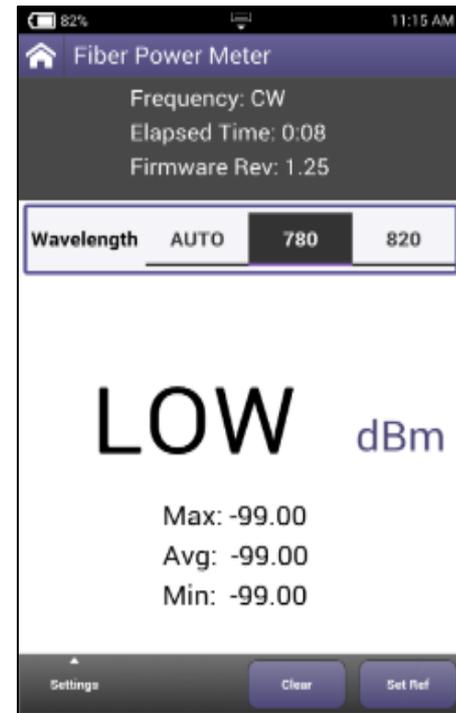


WIRING TOOLS - Ping Tool

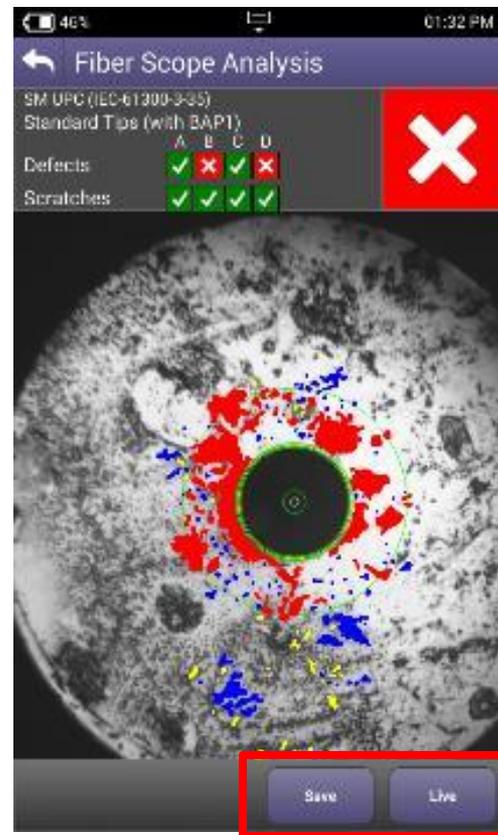
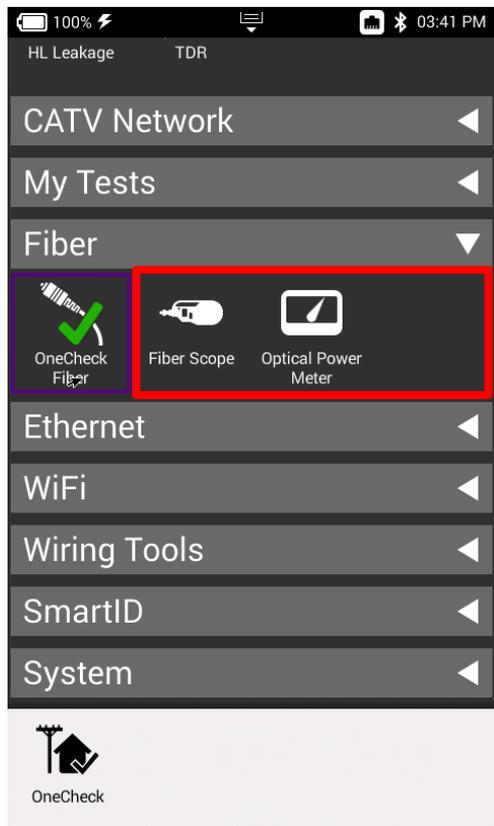


Fiber Optics

P5000i Fiber Microscope and MP-60/80 Optical Power Meter

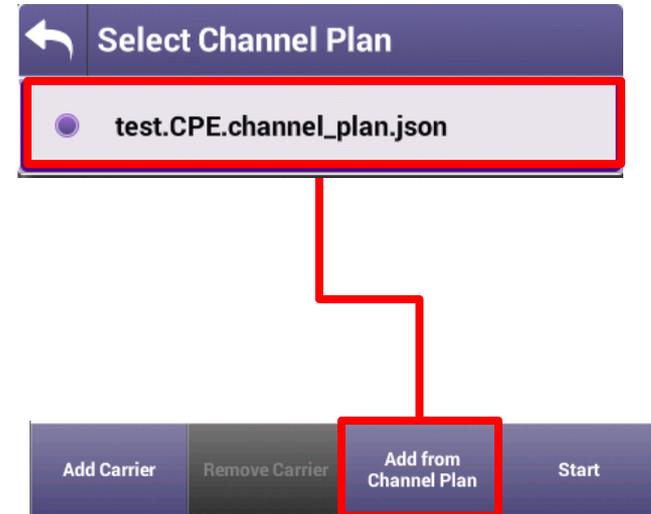
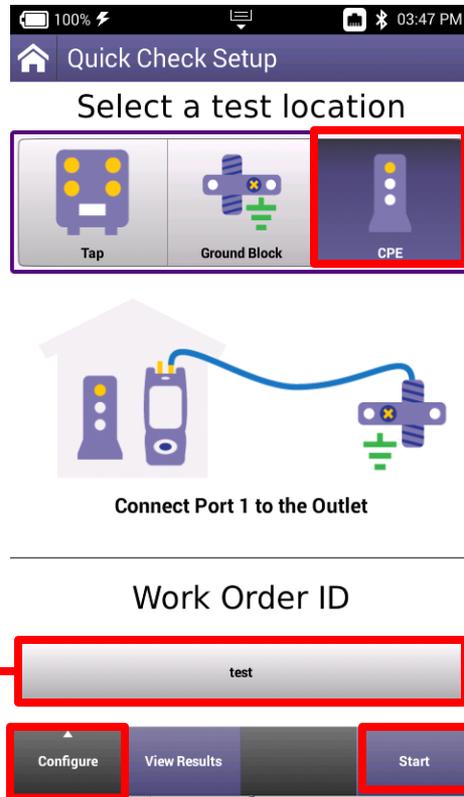
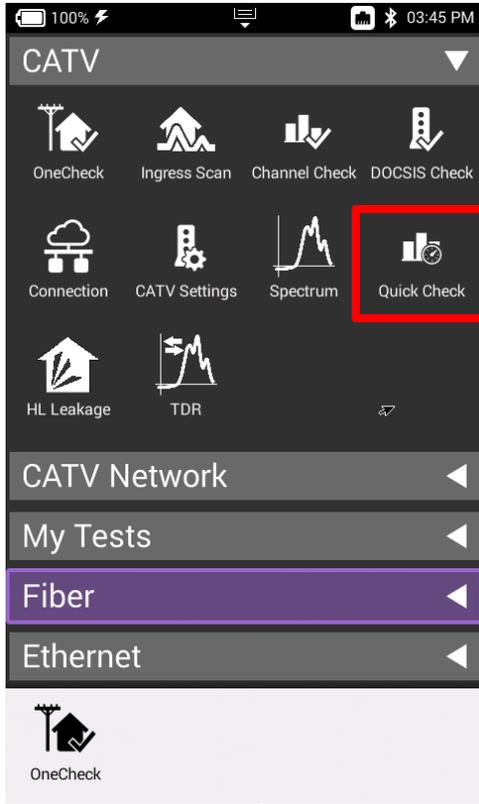


P5000i Probe Microscope



Quick Check

Quick Check



Quick Check

100% 03:55 PM

Add Carrier From Channel Plan

Channel Plan
test.CPE.channel_plan.json

Channels:

- CH 82 (579.000 MHz)
Digital - 256QAM - 6.000 MHz - 5.361 Msym/s
- CH 83 (579.000 MHz)
Digital - 256QAM - 6.000 MHz - 5.361 Msym/s
- CH 84 (585.000 MHz)
Digital - 256QAM - 6.000 MHz - 5.361 Msym/s
- CH 85 (591.000 MHz)
Digital - 256QAM - 6.000 MHz - 5.361 Msym/s
- CH 86 (597.000 MHz)
Digital - 256QAM - 6.000 MHz - 5.361 Msym/s
- CH 87 (603.000 MHz)
Digital - 256QAM - 6.000 MHz - 5.361 Msym/s
- CH 88 (609.000 MHz)
Digital - 256QAM - 6.000 MHz - 5.361 Msym/s
- CH 89 (615.000 MHz)
Digital - 256QAM - 6.000 MHz - 5.361 Msym/s
- CH 90 (621.000 MHz)
Digital - 256QAM - 6.000 MHz - 5.361 Msym/s

Apply

100% 05:57 PM

Quick Check

Tap Ground Block CPE

31 861.000 MHz | -10.5 dBmV
-2 481.000 MHz | -7.9 dB

2.0
0.0
-2.0 dBmV

Tot: -3.9 dB

Freq (MHz)	Level (dBmV)
57.000	1.3
380.000	-2.6
861.000	-10.5

Save Display Stop

1.0 dB

2.0 dB

5.0 dB

10.0 dB

20.0 dB

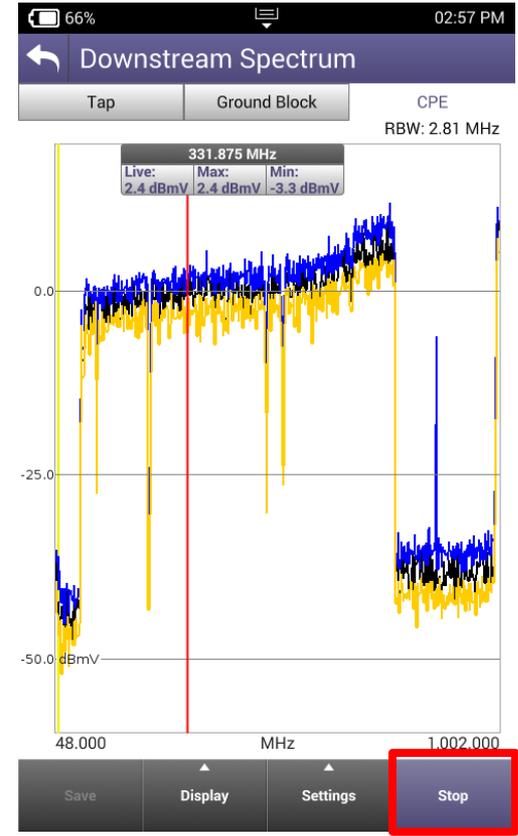
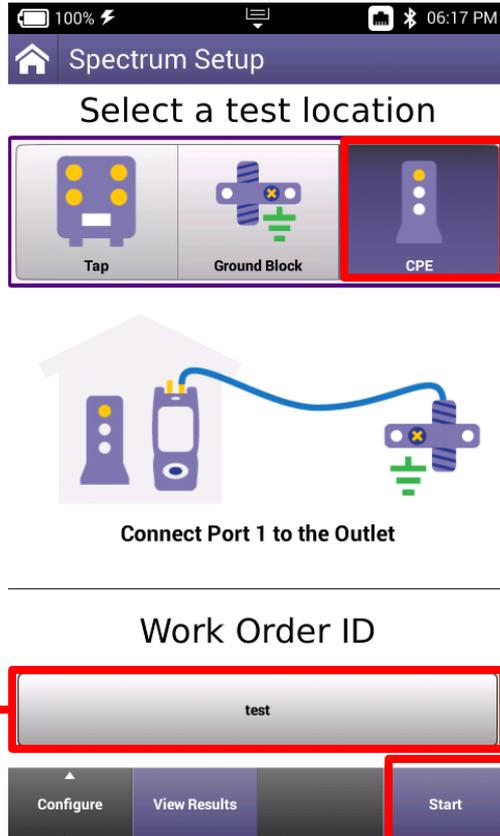
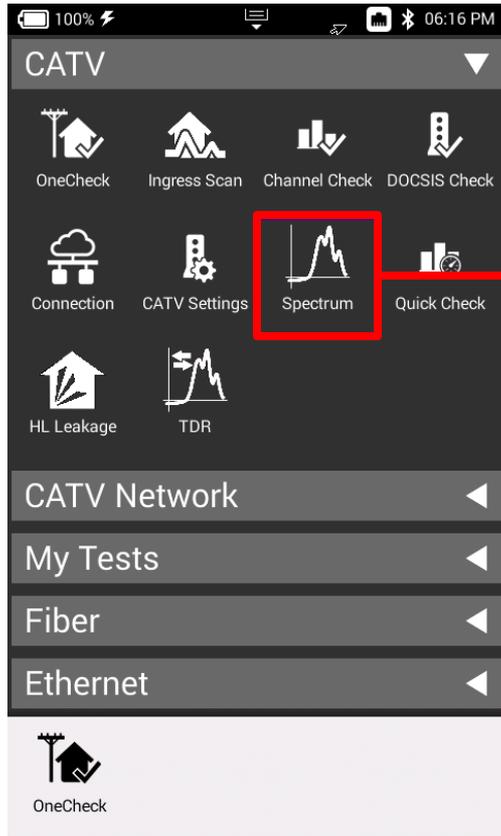
Reference Now

Auto Reference

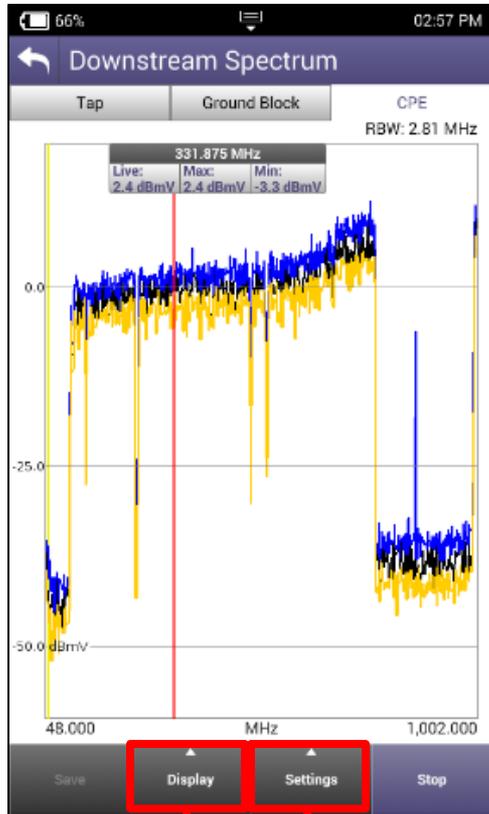
Delta Marker

Spectrum

Spectrum



Spectrum



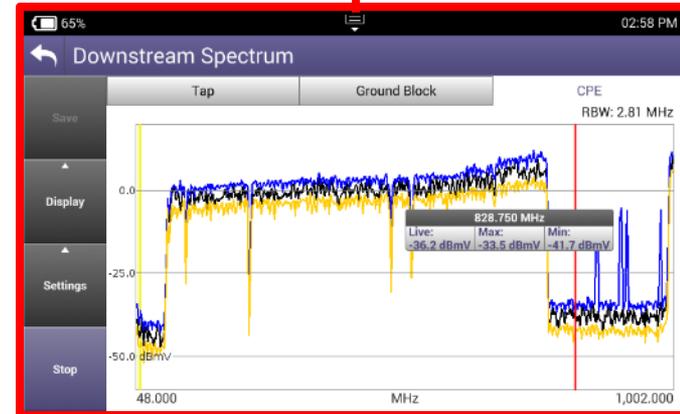
- Auto RBW
- RBW
2.81 MHz
- Auto AGC
- Re-AGC
- Reset Graph
- Set Diplexer

Rotate Screen
Portrait

dB/div

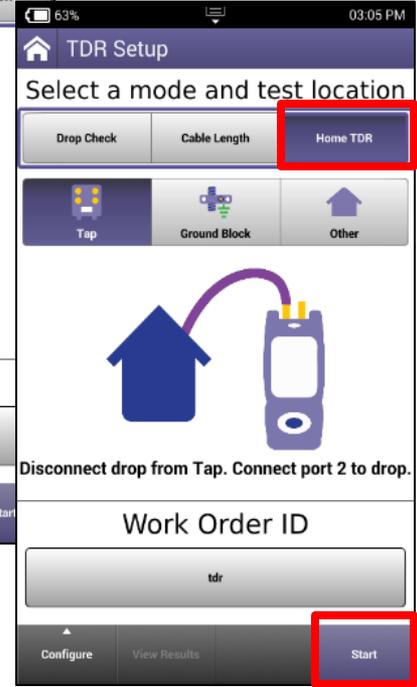
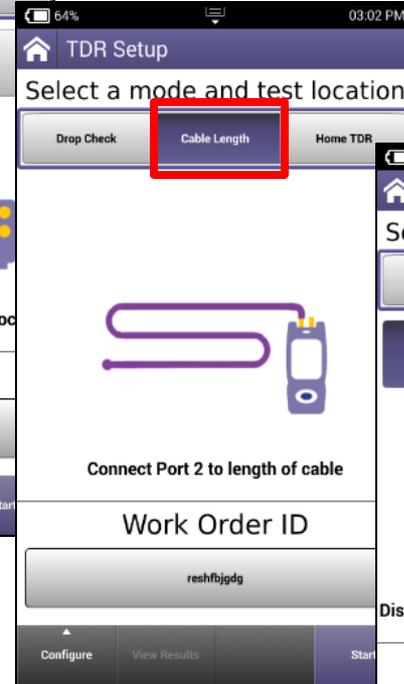
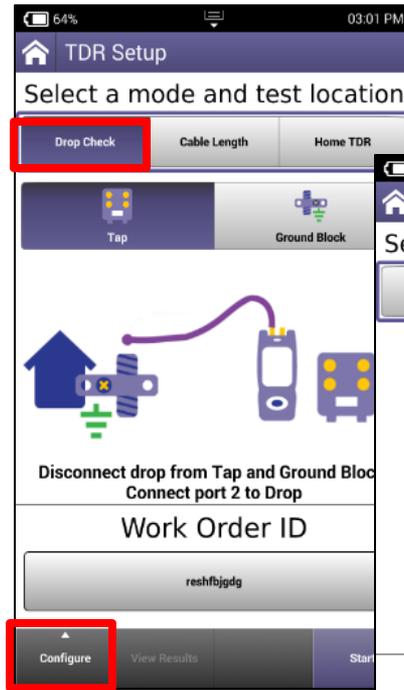
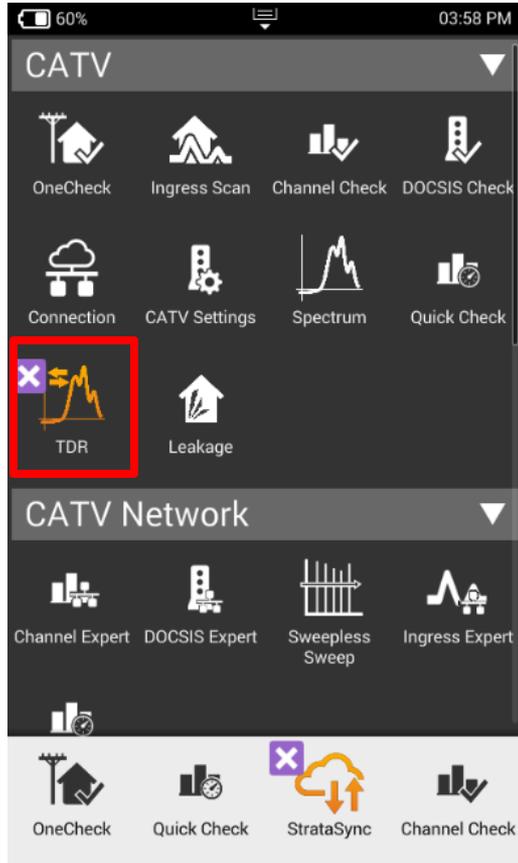
Span Start and Stop Frequency
Start: 48.000 MHz Stop: 1,002.000 MHz

- Live trace
- Max trace
- Min trace

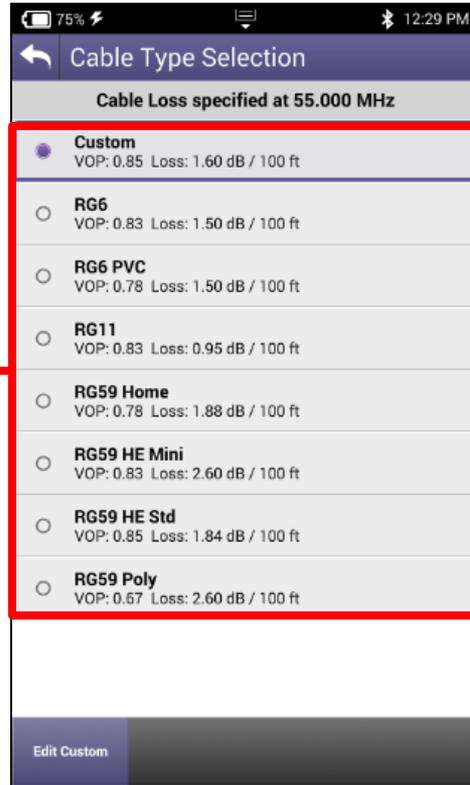
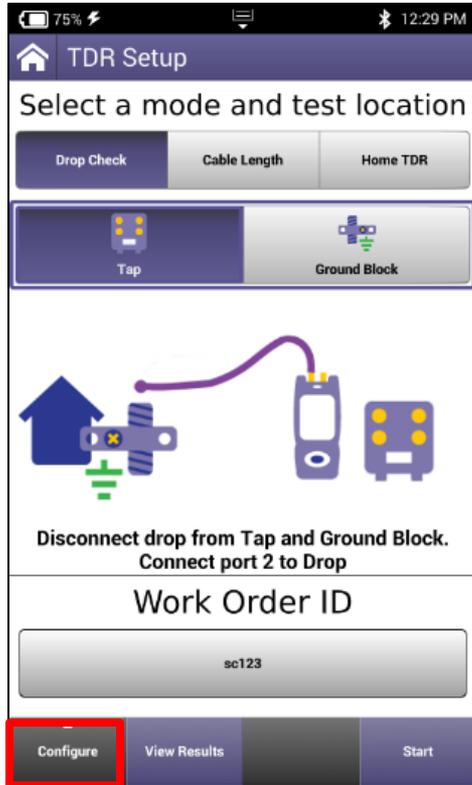


TDR

TDR



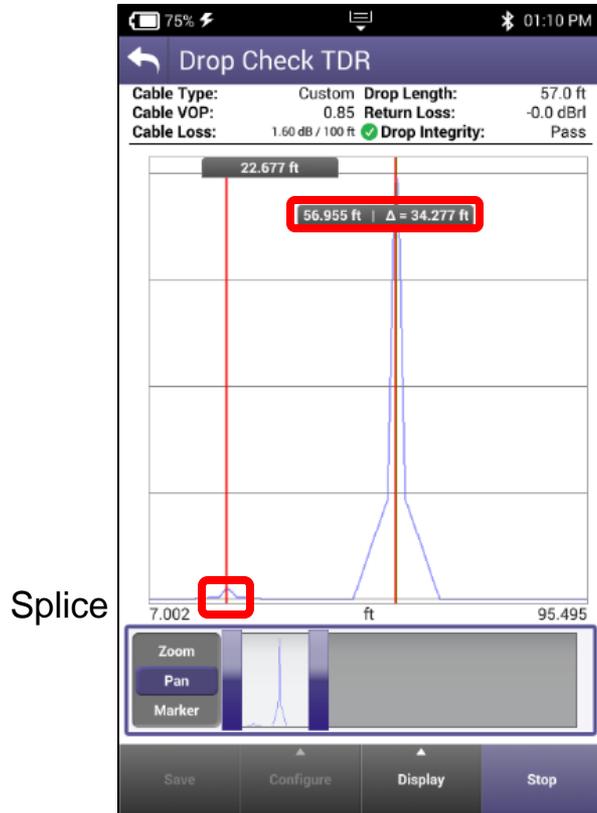
HOME TDR



A TDR measures reflections based on time. Therefore the correct Velocity of Propagation for the cable to be tested must be chosen first.

VoP is essential for accurate distance measurements

TDR – DROP CHECK and CABLE LENGTH



DROP CHECK and CABLE LENGTH tabs are identical tests. The DROP CHECK simply reminds the user to disconnect the other end of the drop.

Displayed is a 57' cable with a splice.

The splice is a small reflection at 22' while the open end of the cable is a larger reflection at 57'.

TDR - HOME TDR

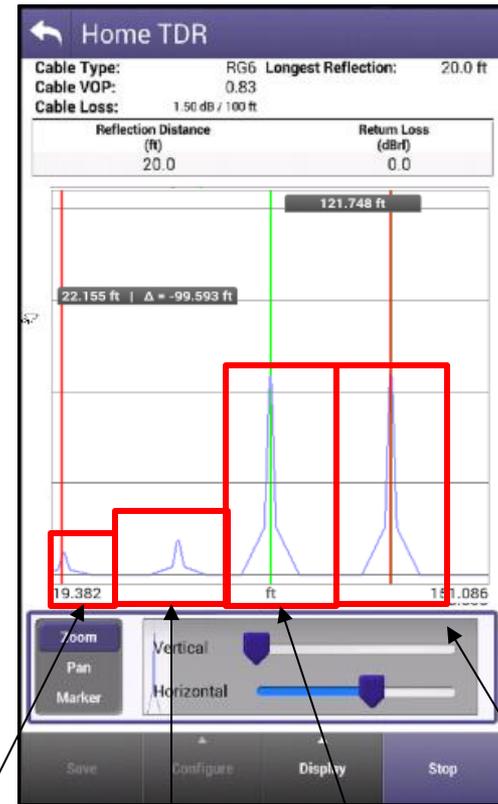
HOME TDR test is designed to display splices, splits and cable lengths.

Example to the left still shows the splice at 22' with a splitter at 57' and 2 cables connected to the splitter with open ends.

HOME TDR displays all 4 events.

Markers can be added for relative distances under from the display button.

Horizontal Zoom and Pan functions are at the bottom of the display



Splice

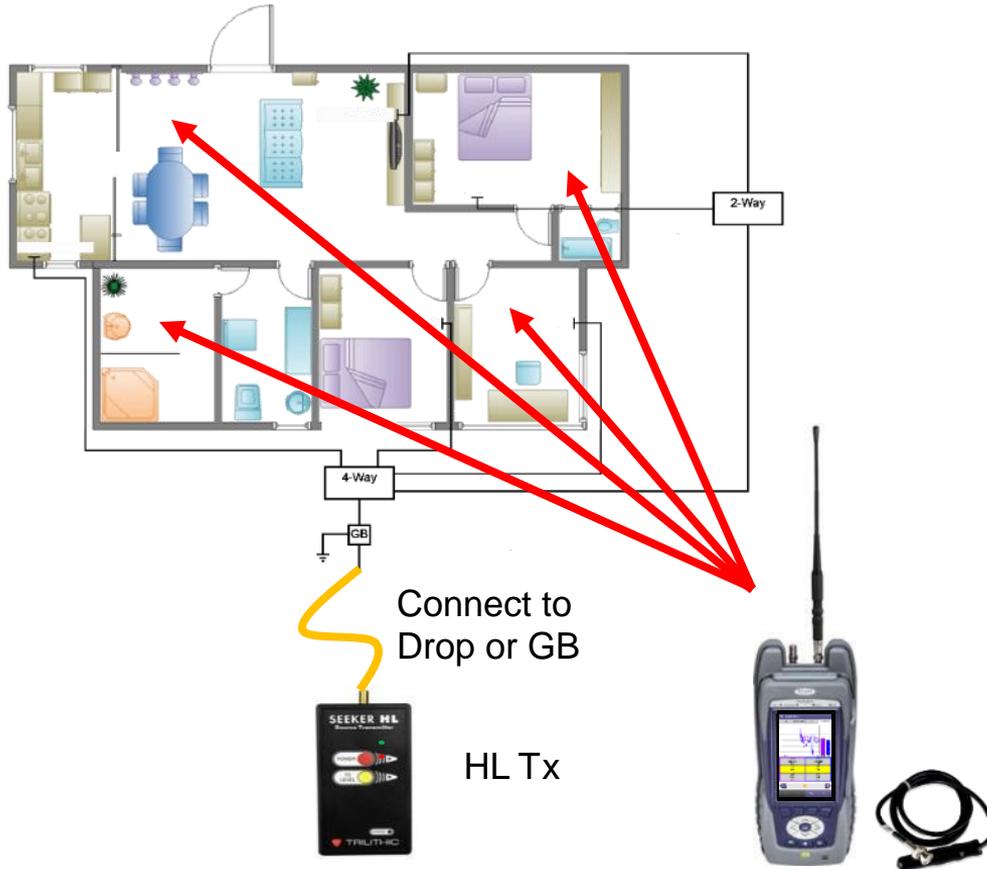
Splitter

Open

Open

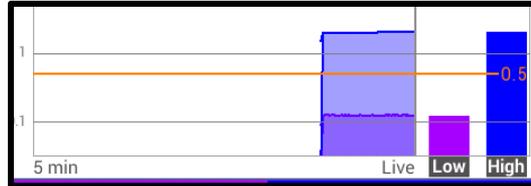
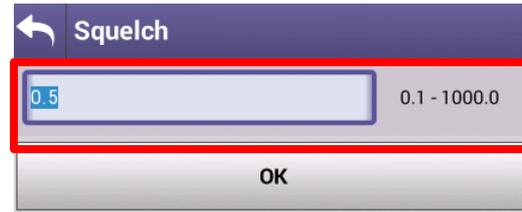
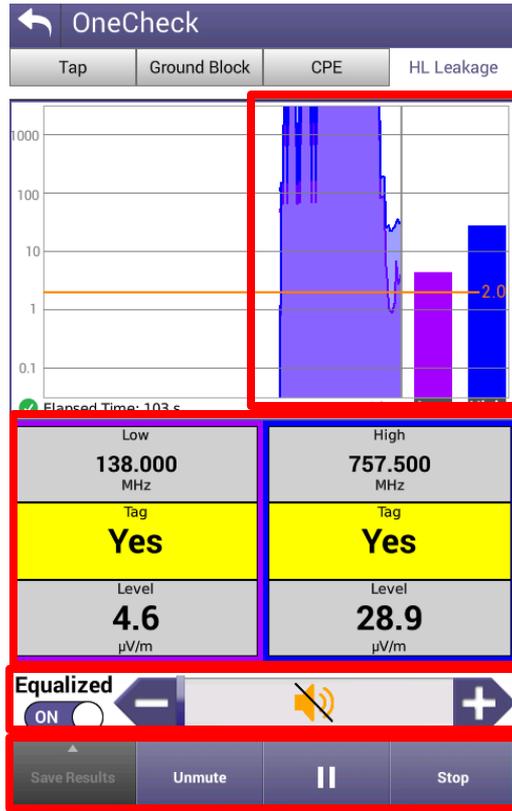
HL Leakage with Transmitter

HL Leakage with Transmitter



- Connect HL TRANSMITTER to GB or DROP and turn unit on.
- Proceed to attach ANTENNA to OneExpert CATV Port 1 and walk around the home or business
- Required Equipment Includes:
 - ONX-620 or ONX-630 with DOCSIS 3.1 hardware
 - HL Leakage software option must be present on the OneExpert CATV
 - HL Leakage Transmitter (60dBmv output [RED LIGHT] and 40dBmv output [GREEN LIGHT])
 - HL Leakage Antennas
 - 4a) Dual band rubber duck antenna
 - 4b) Near-Field Probe antenna
 - Used for detecting leaks when attached to OneExpert CATV
 - Tuned for 138MHz and 757.5MHz

HL Leakage with Transmitter



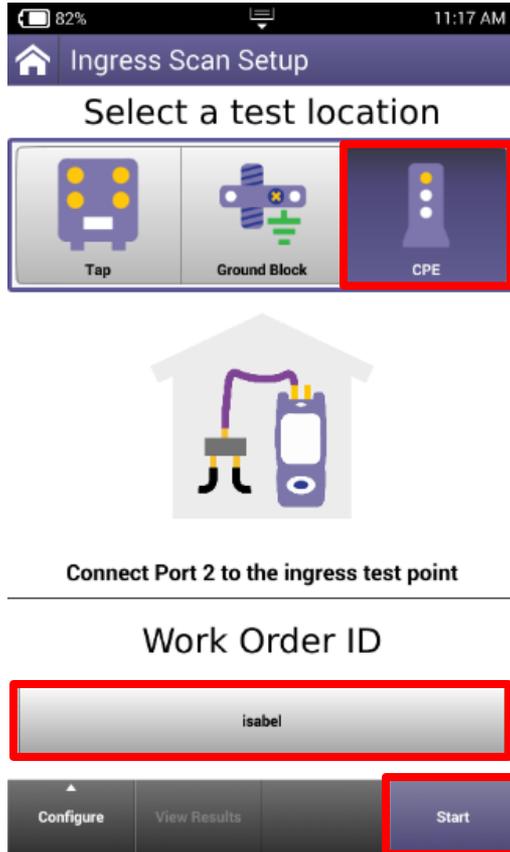
Leaks will be shown over time on the HL LEAKAGE display, while also emitting a siren that will signal proximity to leak

MUTE or UNMUTE and VOLUME controls as well as PAUSE and STOP/RETEST will be displayed across the bottom

Since HL Leakage is LIVE, select STOP before adjusting the SQUELCH limit

Ingress Scan

Ingress Scan



82% 11:17 AM

Ingress Scan Setup

Select a test location

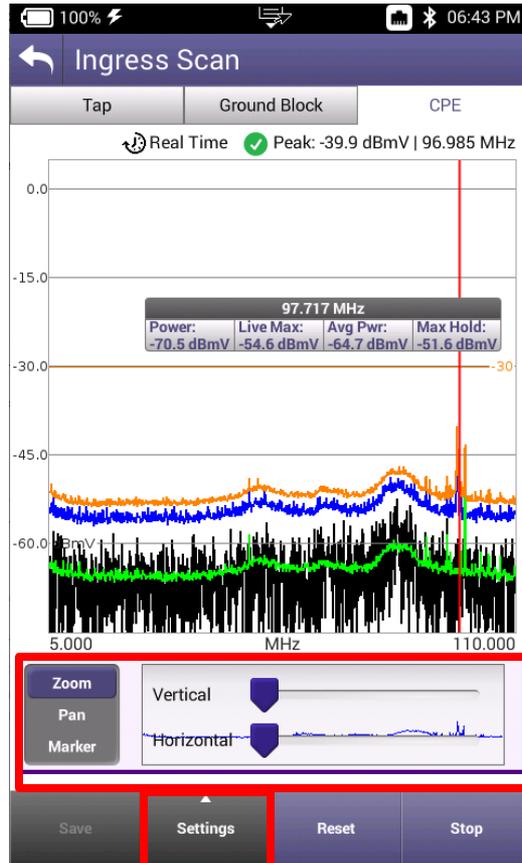
Tap Ground Block CPE

Connect Port 2 to the ingress test point

Work Order ID

isabel

Configure View Results Start



100% 06:43 PM

Ingress Scan

Tap Ground Block CPE

Real Time Peak: -39.9 dBmV | 96.985 MHz

Power:	Live Max:	Avg Pwr:	Max Hold:
-70.5 dBmV	-54.6 dBmV	-64.7 dBmV	-51.6 dBmV

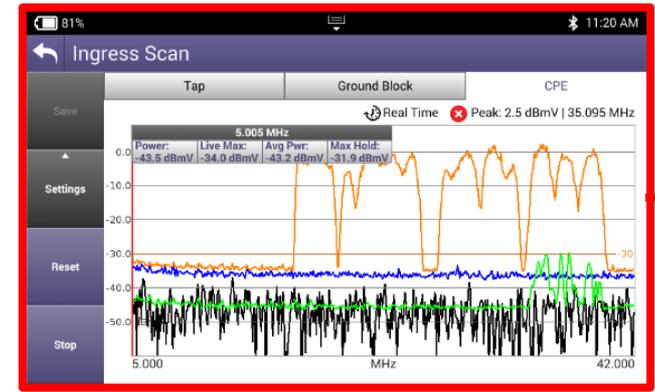
97.717 MHz

5.000 MHz 110.000 MHz

Zoom Pan Marker

Vertical Horizontal

Save Settings Reset Stop



81% 11:20 AM

Ingress Scan

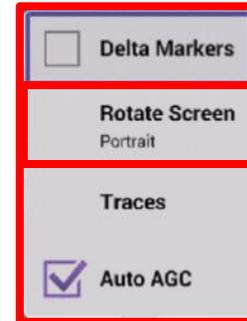
Tap Ground Block CPE

Real Time Peak: 2.5 dBmV | 35.095 MHz

Power:	Live Max:	Avg Pwr:	Max Hold:
-43.5 dBmV	-34.0 dBmV	-43.2 dBmV	-31.9 dBmV

5.000 MHz 42.000 MHz

Save Settings Reset Stop



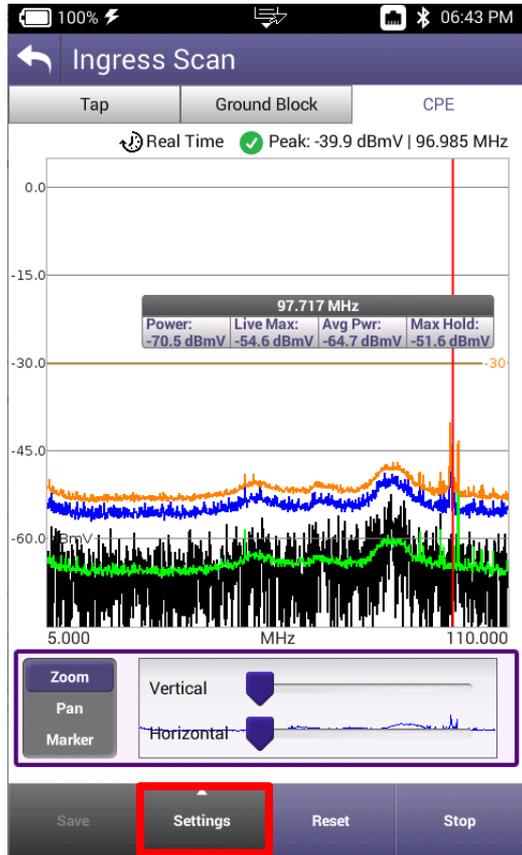
Delta Markers

Rotate Screen
Portrait

Traces

Auto AGC

Ingress Scan



Delta Markers

Rotate Screen
Portrait

Traces

Auto AGC

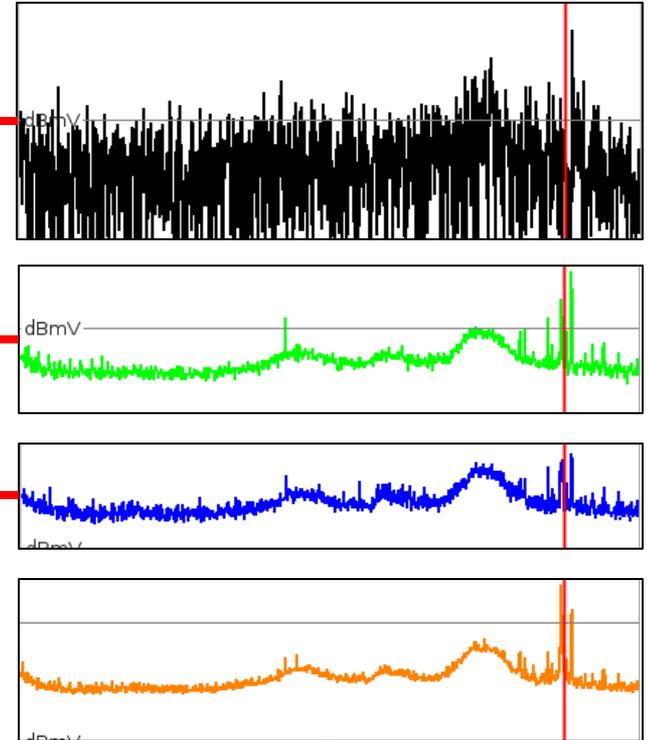
Display Selection

Power

Average Power

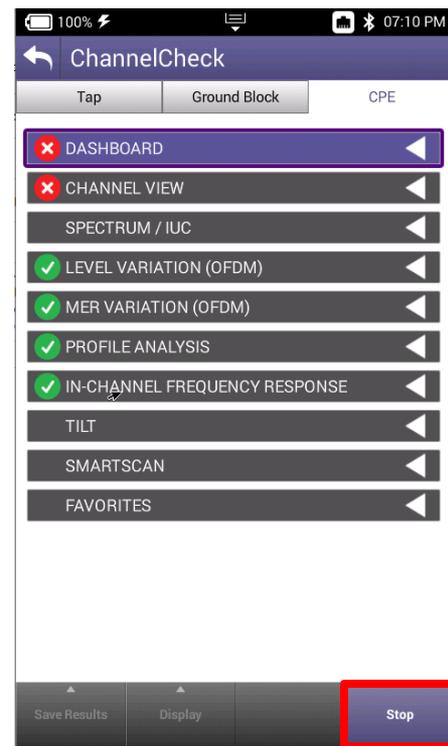
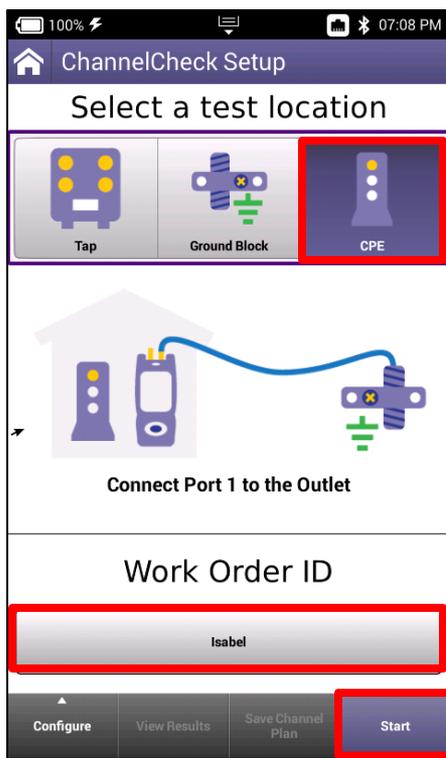
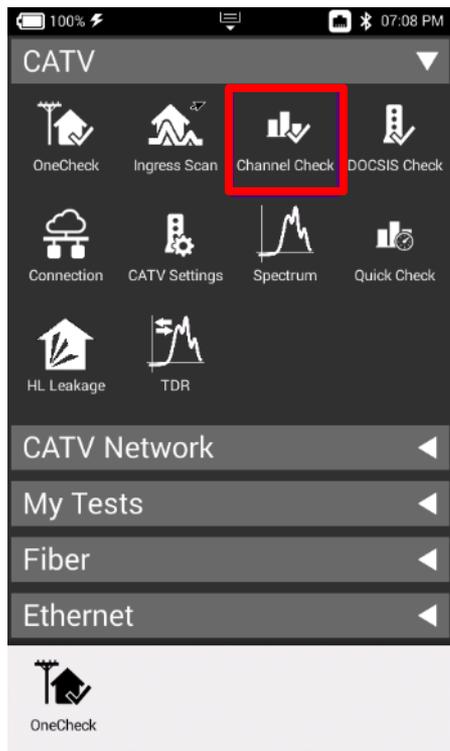
Live Max

Max Hold



Channel Check

Channel Check



Channel Check

Channel	Freq (MHz)	Level (dBmV)	MER (dB)
37	303.000	-4.6	42.5
38	309.000	-4.7	42.5
39	315.000	-4.6	42.6
40	321.000	-4.6	42.5
OFDM 1	380.000	-3.2	--
70	499.250	3.4	--
74	525.000	-2.9	45.8
75	531.000	-3.1	45.8
76	537.000	-3.2	45.6

DASHBOARD

Downstream (96 %) Level (dBmV) Max: 3.5 Min: -10.2
MER (dB) Max: 45.9 Min: 30.8

CHANNEL VIEW

0.0
-5.0
-10.0 dBmV

54.000 MHz 1,002.000

9.0
-3.5
-16.0 dBmV

CH 39 CH 40 CH OFDM 1 CH 70 CH 74 CH 75

372.000 MHz - 468.000 MHz | OFDM | BW 96.000 MHz
PLC 380.000 MHz | 1880 carriers | 50 kHz | CP 5.0 | RP 1.25

PLC Level -2.2 dBmV	PLC MER 41.8 dB	PLC CWE Corr 0.0	PLC CWE Uncorr 0.0
NCP CWE Corr 0.0	NCP CWE Uncorr 0.0	A CWE Corr 0.0	A CWE Uncorr 0.0
Level (Avg) -3.2 dBmV	Level (Max) -2.4 dBmV	Level (Min) -3.7 dBmV	ICFR 0.8 dB
MER (Avg) 41.0 dB	MER (Std Dev) 0.6 dB	MER PCTL (2) 39.9 dB	Echo -39.7 dBc

Channel	Freq (MHz)	Level (dBmV)	MER (dB)
37	303.000	-4.6	42.5
38	309.000	-4.7	42.5
39	315.000	-4.6	42.6
40	321.000	-4.6	42.5
OFDM 1	380.000	-3.2	--
70	499.250	3.4	--
74	525.000	-2.9	45.8
75	531.000	-3.1	45.8
76	537.000	-3.2	45.6

Channel Check

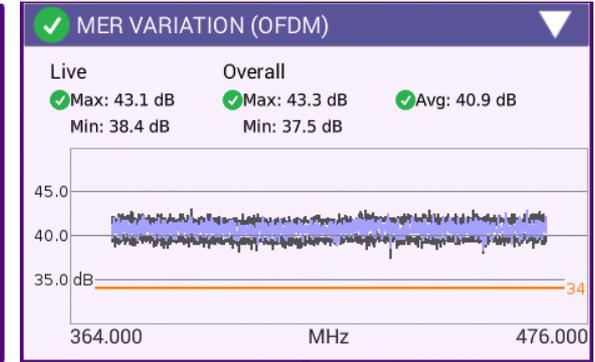
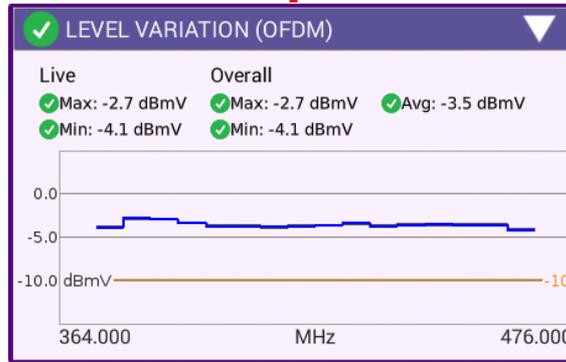
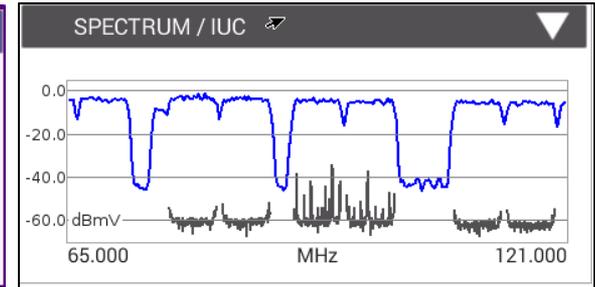
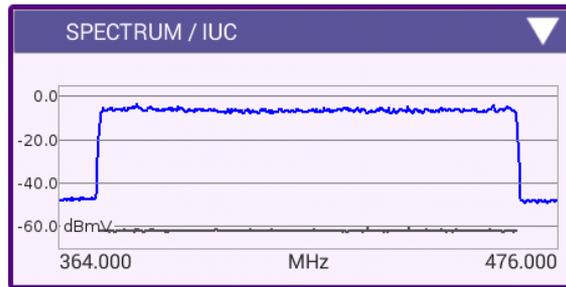
100% 07:10 PM

ChannelCheck

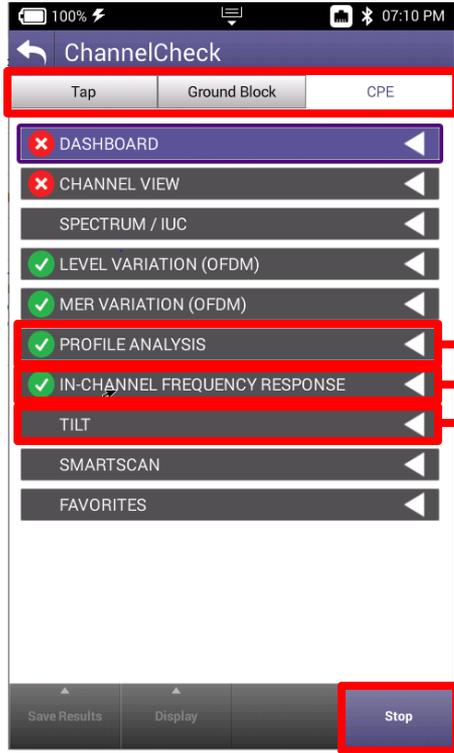
Tap Ground Block CPE

- DASHBOARD
- CHANNEL VIEW
- SPECTRUM / IUC
- LEVEL VARIATION (OFDM)
- MER VARIATION (OFDM)
- PROFILE ANALYSIS
- IN-CHANNEL FREQUENCY RESPONSE
- TILT
- SMARTSCAN
- FAVORITES

Save Results Display Stop

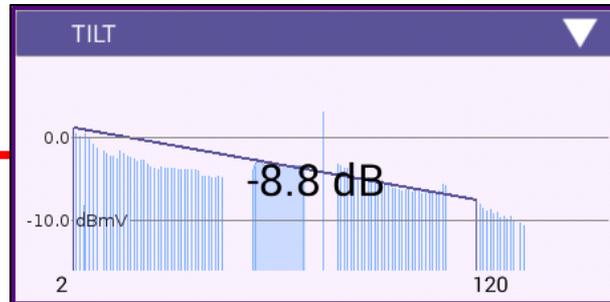
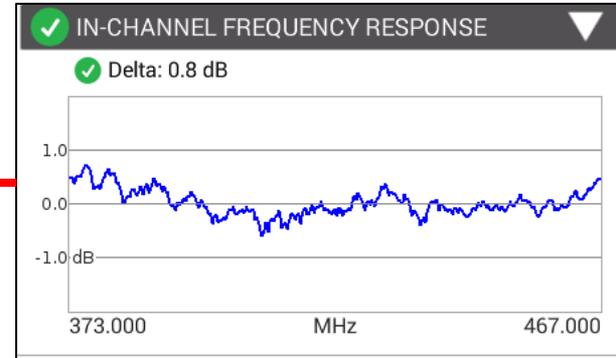


Channel Check



✓ PROFILE ANALYSIS

PROFILE	LOCKED	CWE (Corr)	CWE (Uncorr)	Max Mod
PLC	YES	0.0	0.0	16QAM
NCP	YES	0.0	0.0	16QAM
A	YES	0.0	0.0	256QAM
B	YES	0.0	0.0	1024QAM
C	YES	1.0e+0	0.0	4096QAM



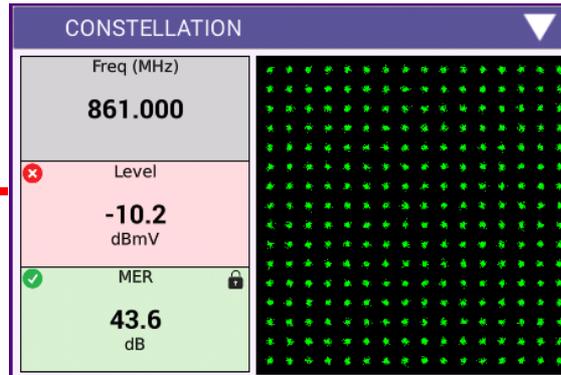
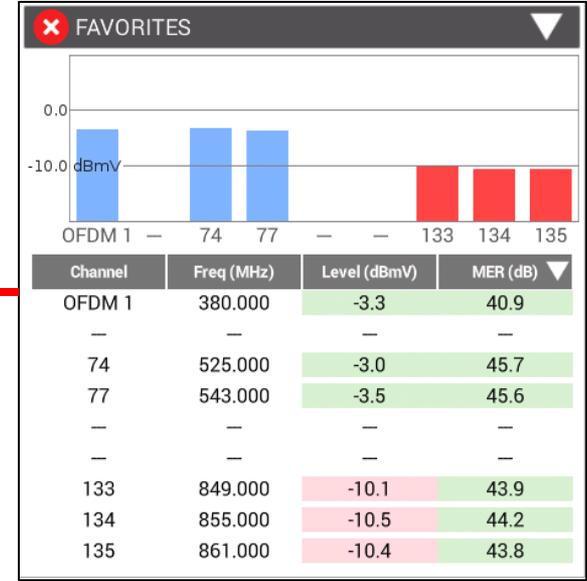
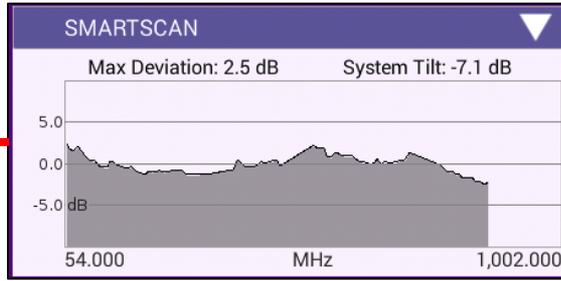
Channel Check

ChannelCheck

Tap Ground Block CPE

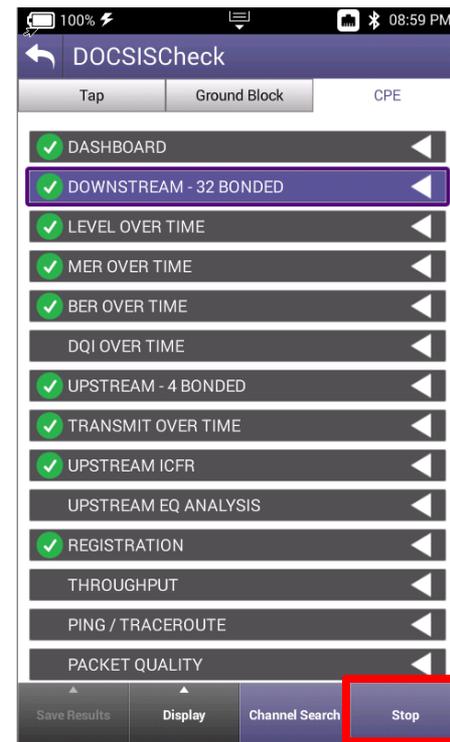
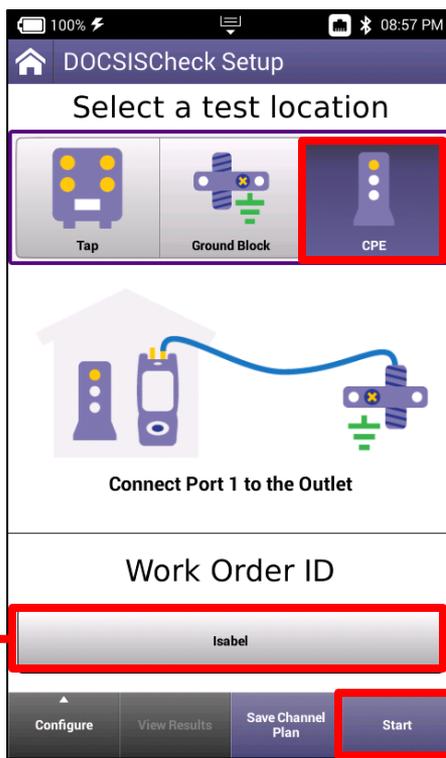
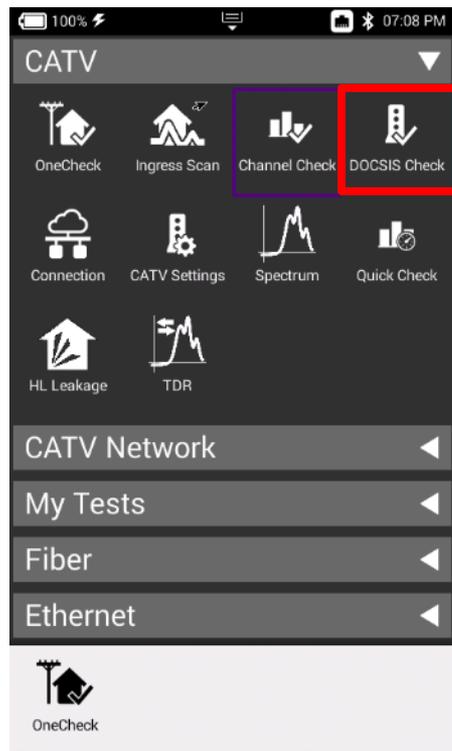
- DASHBOARD
- CHANNEL VIEW
- SPECTRUM / IUC
- LEVEL VARIATION (OFDM)
- MER VARIATION (OFDM)
- PROFILE ANALYSIS
- IN-CHANNEL FREQUENCY RESPONSE
- TILT
- SMARTSCAN
- FAVORITES
- CONSTELLATION

Save Results Display Stop



DOCSIS Check

DOCSIS Check



DOCSIS Check

DOCSISCheck

Tap Ground Block CPE

- ✓ DASHBOARD
- ✓ DOWNSTREAM - 32 BONDED
- ✓ LEVEL OVER TIME
- ✓ MER OVER TIME
- ✓ BER OVER TIME
- DQI OVER TIME
- ✓ UPSTREAM - 4 BONDED
- ✓ TRANSMIT OVER TIME
- ✓ UPSTREAM ICFR
- UPSTREAM EQ ANALYSIS
- ✓ REGISTRATION
- THROUGHPUT
- PING / TRACEROUTE
- PACKET QUALITY

Save Results Display Stop

Channel	Freq (MHz)	Level (dBmV)	MER (dB)
103	669.000	-6.1	44.3
104	675.000	-6.3	44.6
105	681.000	-6.2	44.6
106	687.000	-6.3	44.2
107	693.000	-6.0	44.6
108	699.000	-6.2	44.6
109	705.000	-6.0	44.5

✓ DASHBOARD

✓ DOCSIS (100%) Status: Connected

32x (1x OFDM) | Downstream

Min Rx: -6.3 dBmV Min MER: 38.1 dB
Max BER: 1.0e-9 (pre) Max MER: 45.9 dB

Upstream | 4x

Max Tx: 44.8 dBmV Max ICFR: 1.4 dB

✓ DOWNSTREAM - 32 BONDED

54.000 750.000
MHz

693.000 MHz
Annex B | 256 QAM | 5.361 Msym/s | 6.000 MHz

Level	MER	BER	BER
-6.0 dBmV	44.6 dB	1.0e-9 Pre	1.0e-9 Post
-35.5 dBc	36 ns	0.7 dB	10.0

Channel Freq (MHz) Level (dBmV) MER (dB)

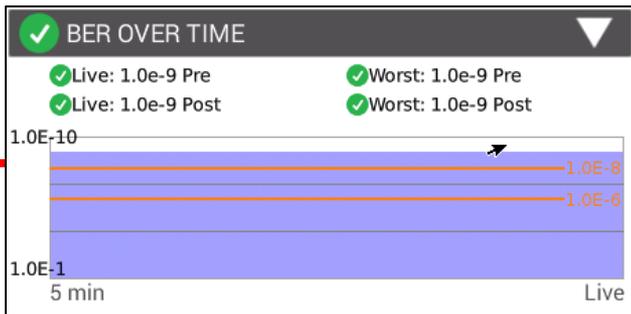
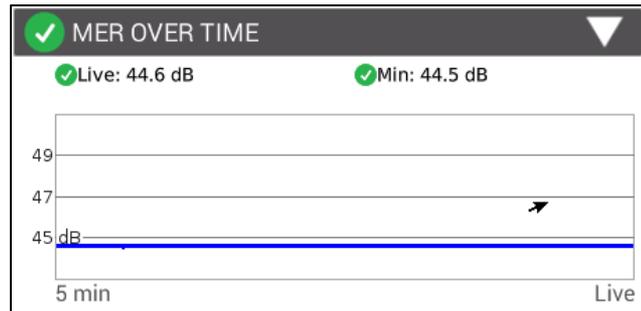
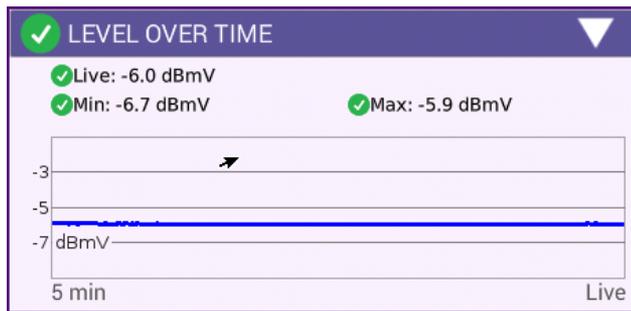
DOCSIS Check

DOCSISCheck

Tap Ground Block CPE

- ✓ DASHBOARD
- ✓ DOWNSTREAM - 32 BONDED
- ✓ LEVEL OVER TIME
- ✓ MER OVER TIME
- ✓ BER OVER TIME
- DQI OVER TIME
- ✓ UPSTREAM - 4 BONDED
- ✓ TRANSMIT OVER TIME
- ✓ UPSTREAM ICFR
- UPSTREAM EQ ANALYSIS
- ✓ REGISTRATION
- THROUGHPUT
- PING / TRACEROUTE
- PACKET QUALITY

Save Results Display Stop



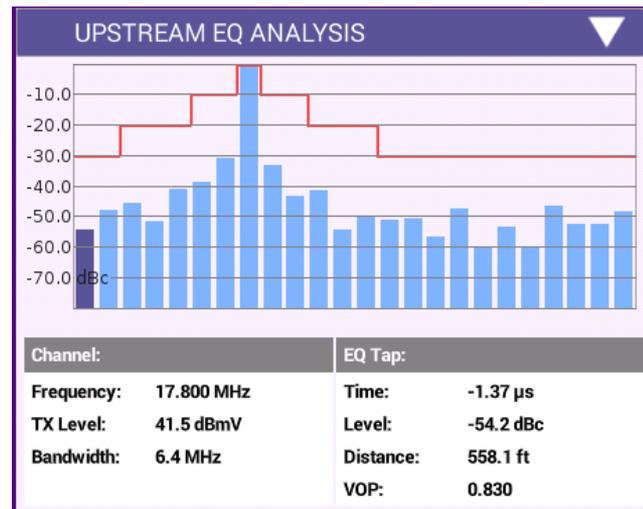
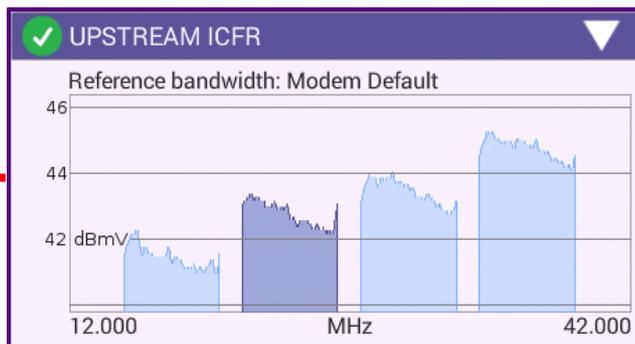
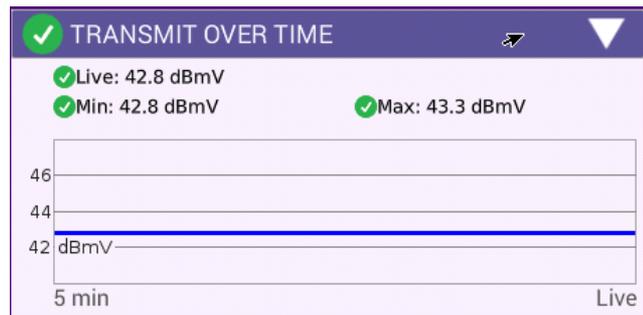
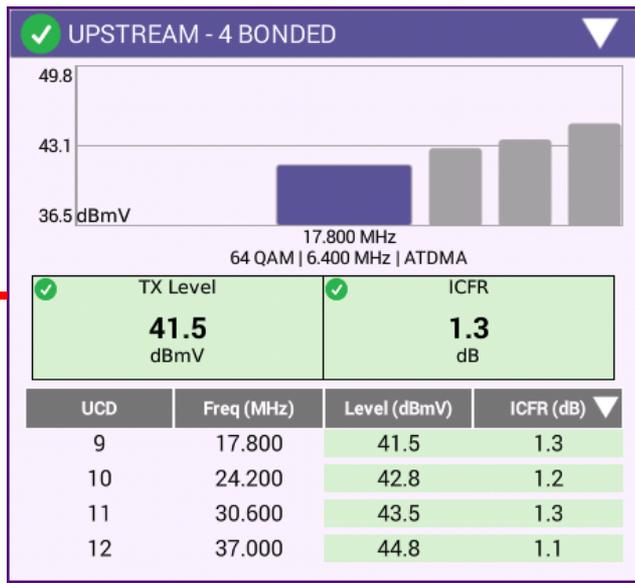
DOCSIS Check

DOCSISCheck

Tap Ground Block CPE

- ✓ DASHBOARD
- ✓ DOWNSTREAM - 32 BONDED
- ✓ LEVEL OVER TIME
- ✓ MER OVER TIME
- ✓ BER OVER TIME
- ✓ DQI OVER TIME
- ✓ UPSTREAM - 4 BONDED
- ✓ TRANSMIT OVER TIME
- ✓ UPSTREAM ICFR
- UPSTREAM EQ ANALYSIS
- ✓ REGISTRATION
- THROUGHPUT
- PING / TRACEROUTE
- PACKET QUALITY

Save Results Display Stop



DOCSIS Check

The main menu of the DOCSISCheck app. At the top, there are three tabs: 'Tap', 'Ground Block', and 'CPE'. Below these are several menu items, each with a green checkmark icon and a right-pointing arrow. The items are: DASHBOARD, DOWNSTREAM - 32 BONDED, LEVEL OVER TIME, MER OVER TIME, BER OVER TIME, DQI OVER TIME, UPSTREAM - 4 BONDED, TRANSMIT OVER TIME, UPSTREAM ICFR, UPSTREAM EQ ANALYSIS, REGISTRATION, THROUGHPUT, PING / TRACEROUTE, and PACKET QUALITY. At the bottom, there are three buttons: 'Save Results', 'Display', and 'Stop'.

The REGISTRATION screen displays the following information:

- REGISTRATION** (checked)
- Service Plar: -00:07:11:14:1B:CF
- Config File: 7BEWGiYABxYUG88KisDi@CILA4mV4eXC2hq4Y+bmTGm_ZJKTLYf9
- Cable Modem**
 - Provisioning Mode: IPV4 ONLY
 - IPv4 Address: 10.34.192.226
 - IPv4 Gateway Address: 10.34.192.1
 - IPv4 Subnet Mask: 255.255.224.0
 - IPv4 Config File: 7BEWGiYABxYUG88KisDi@CILA4mV4eXC2hq4Y+bmTGm_ZJKTLYf9
- CPE**
 - IPv4 Address: 76.175.15.154
 - IPv4 Subnet Mask: 255.255.240.0
 - IPv4 Gateway Address: 76.175.0.1
- Servers**
 - IPv4 TFTP Server: 98.150.3.106
 - IPv4 DHCP Server: 142.254.177.41
 - IPv4 TOD Server: 98.150.3.106

The THROUGHPUT screen displays the following information:

- THROUGHPUT (100%)** (checked)
- Downstream URL: http://spt01mtpkca.mtpk.ca.charter.com/mtpkr2D2wh3reRuN0w.iso
- Upstream URL: http://spt01mtpkca.mtpk.ca.charter.com/mtpkr2D2wh3reRuN0w.iso
- 1.19 Gbps (checked) Receive
- RTT: 19 ms
- 42.30 Mbps (checked) Send
- RTT: 19 ms
- Two speedometer gauges for Receive and Send.
- Buttons: Configure, Start Throughput

The PING / TRACEROUTE screen displays a table with the following data:

	Current	Minimum	Average	Maximum
Delay (ms)	-	-	-	-
Destination				
Echoes Sent				-
Replies Returned				-
Replies Lost				-
Replies Lost %				-
Error				-

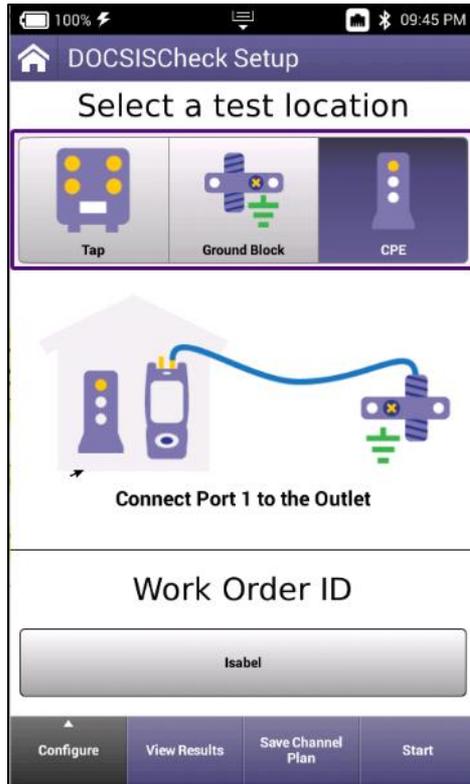
Buttons: Open Ping

The PACKET QUALITY screen displays the following information:

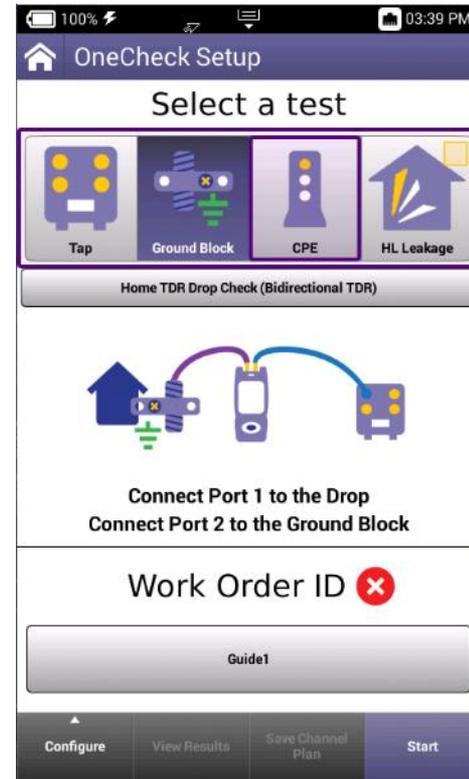
- PACKET QUALITY** (checked)
- Packet Loss: 299 Sent, 0.0 % Loss (checked)
- Max Round Trip Delay: 26 ms (checked)
- Max Jitter: 19 ms (warning icon)
- Buttons: Stop Packet Quality, Start Pass Through Cable Modem

One Check

One Check

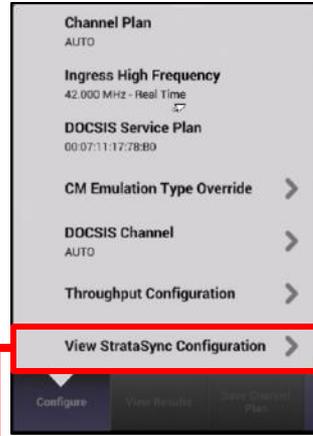
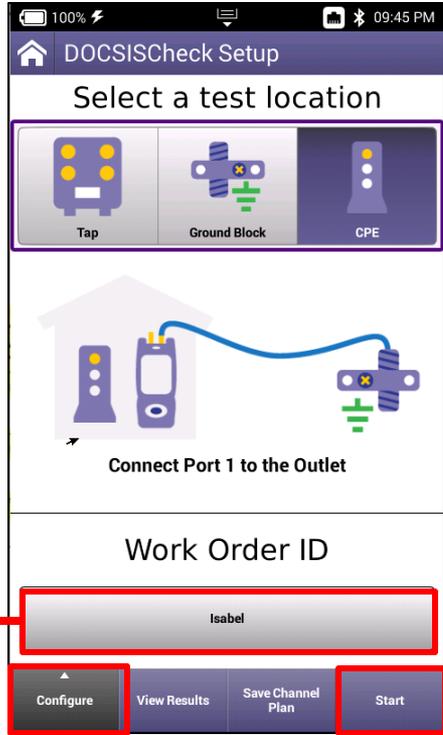


One Check without HL Leakage Requirement (Default)

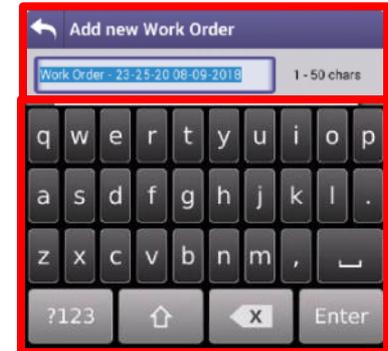
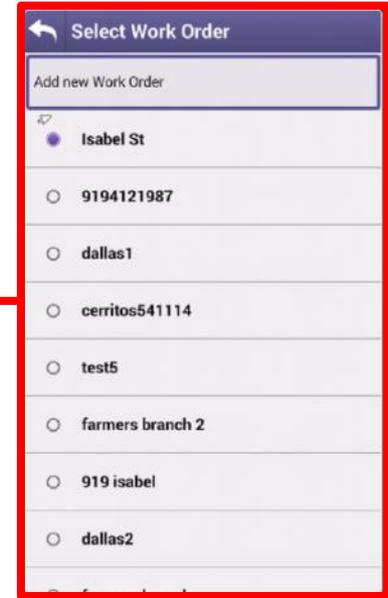


One Check with HL Leakage Requirement

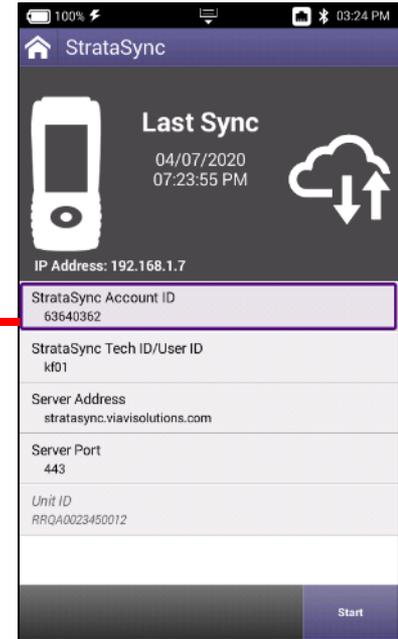
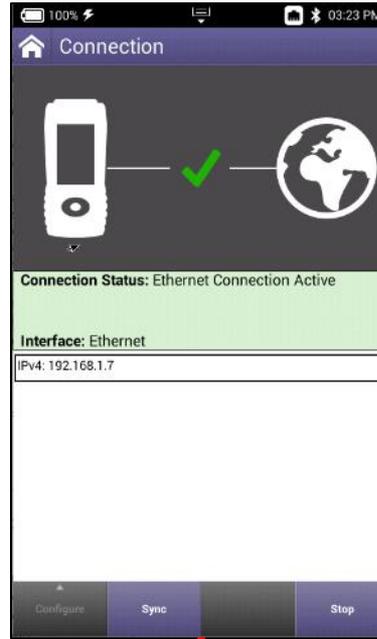
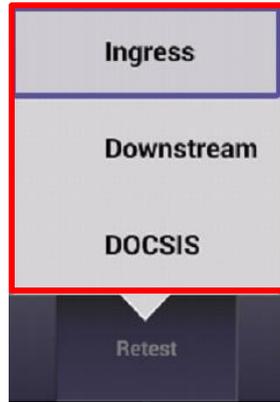
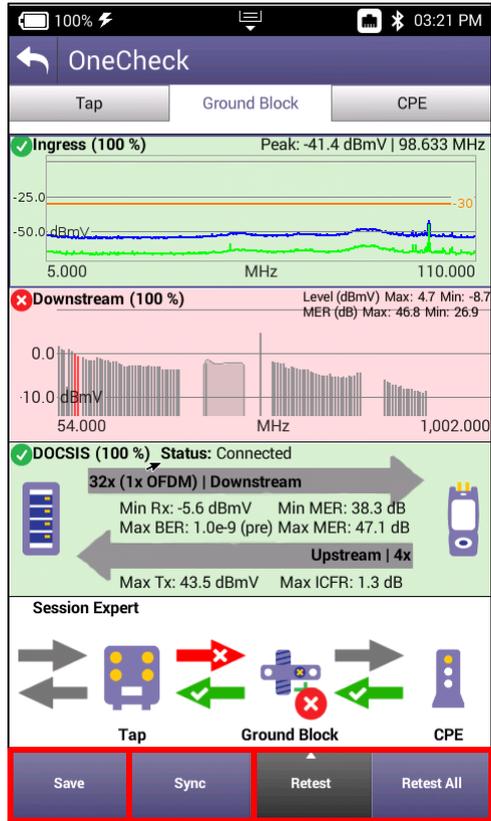
One Check



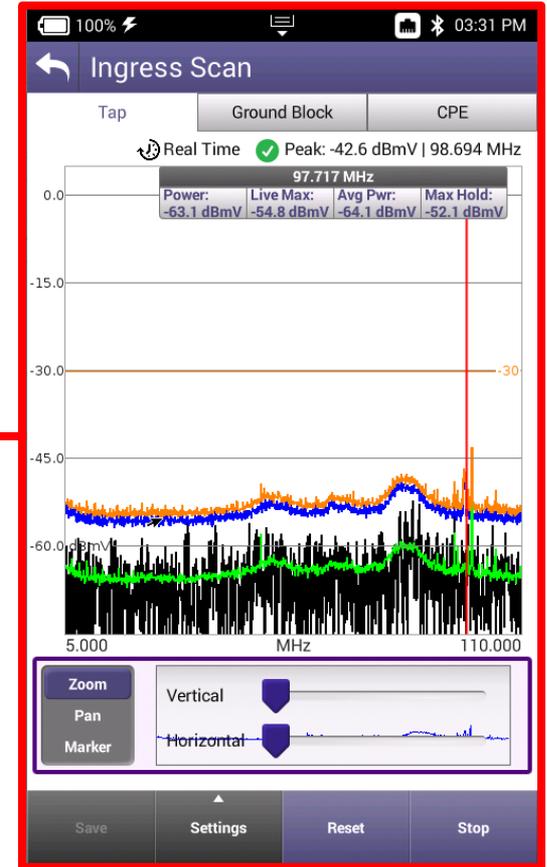
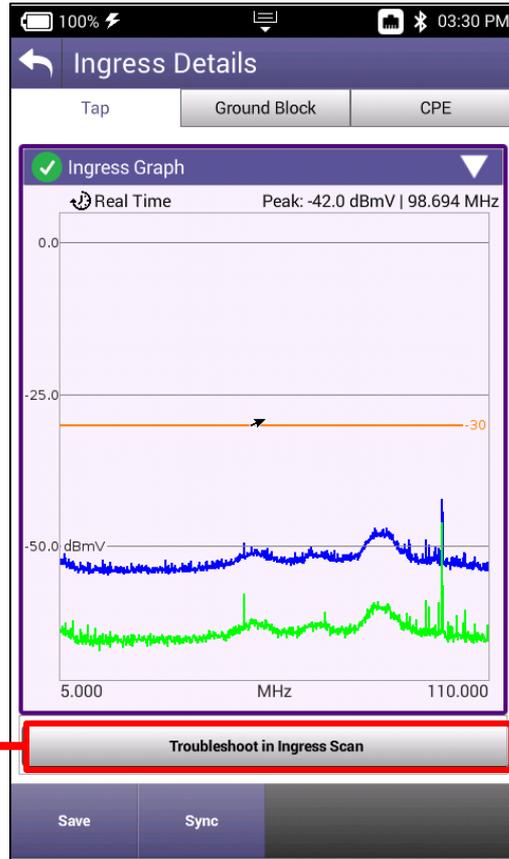
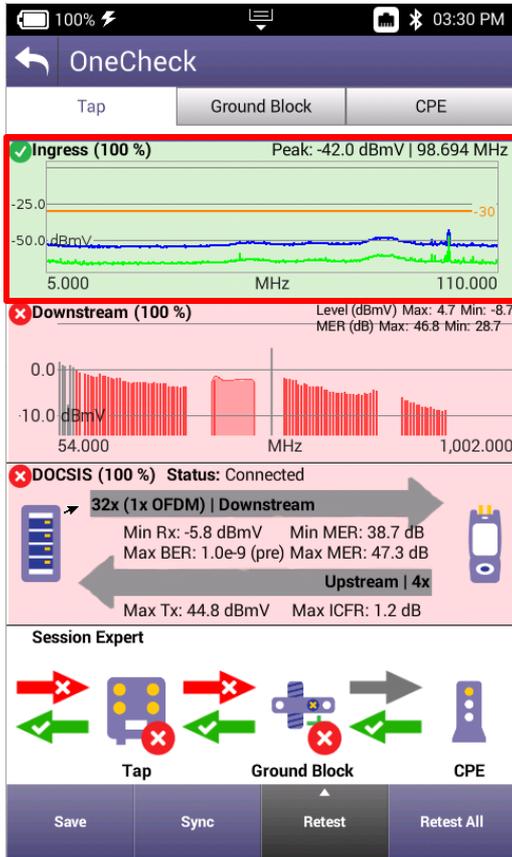
User can verify that configurations are correct and up to date by selecting VIEW STRASYNK CONFIGURATION



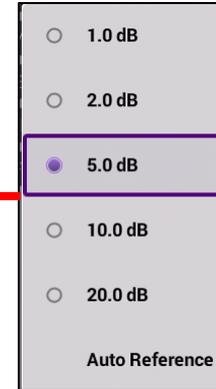
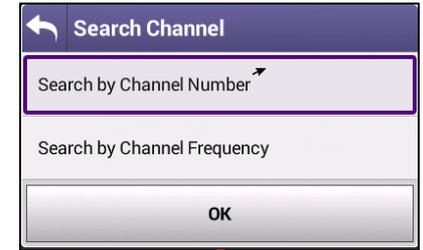
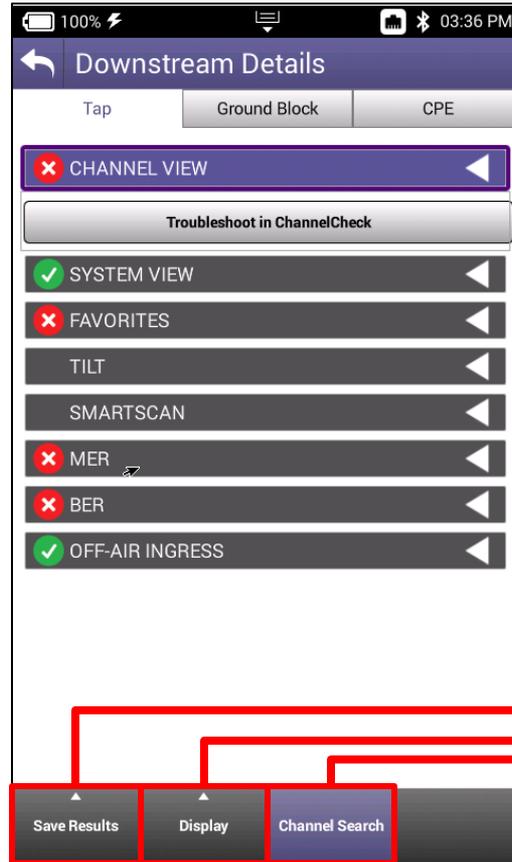
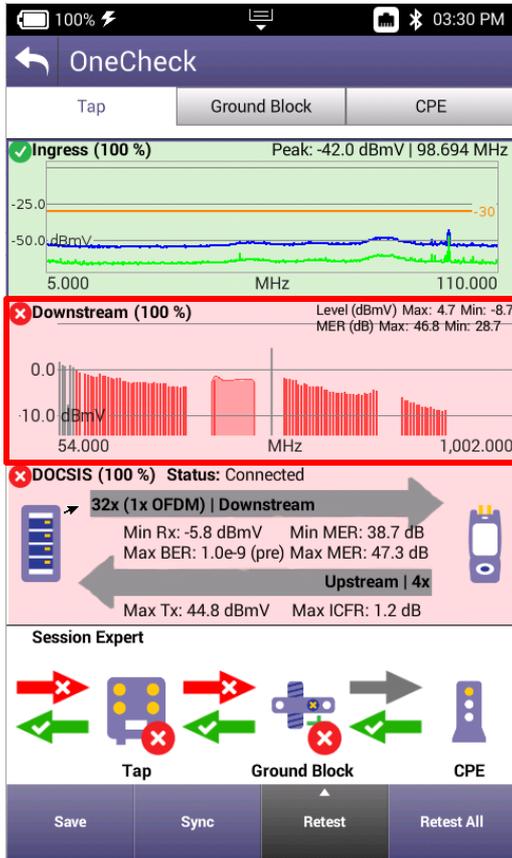
One Check



One Check - Ingress



One Check - Downstream



One Check - Downstream

Downstream Details

Tap Ground Block CPE

CHANNEL VIEW

Troubleshoot in ChannelCheck

SYSTEM VIEW

FAVORITES

TILT

SMARTSCAN

MER

BER

OFF-AIR INGRESS

Save Results Display Channel Search

SYSTEM VIEW

Max	Max
13.4 dB	--- dB
dB Delta	Video Delta

FAVORITES

Channel	Freq (MHz)	Level (dBmV)	MER (dB)
OFDM 1	—	—	—
74	525.000	-1.7	46.7
77	543.000	-2.1	46.5
—	—	—	—
133	849.000	-8.5	42.8
134	855.000	-8.7	43.3
135	861.000	-8.5	43.2

CHANNEL VIEW

54.000 MHz 1,002.000

861.000 MHz

Annex B | 256 QAM | 5.361 Msym/s | 6.000 MHz

Level	MER	BER Pre	BER Post
-8.5 dBmV	43.2 dB	1.0e-8	1.0e-8
Echo	GD	ICFR	Hum
-32.1 dBc	56 ns	0.8 dB	0.1 %

Channel	Freq (MHz)	Level (dBmV)	MER (dB)
131	837.000	-8.4	43.5
132	843.000	-8.5	43.8
133	849.000	-8.5	42.8
134	855.000	-8.7	43.3
135	861.000	-8.5	43.2

One Check - Downstream

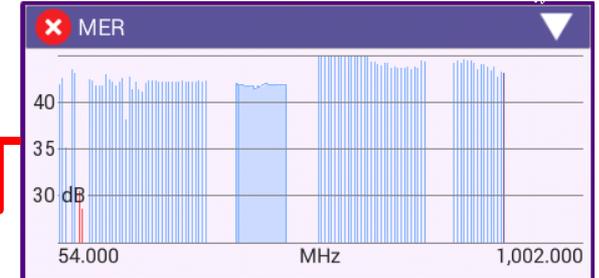
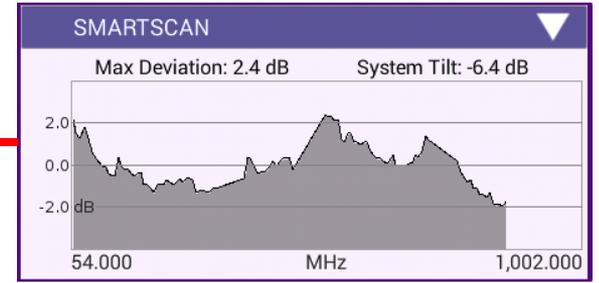
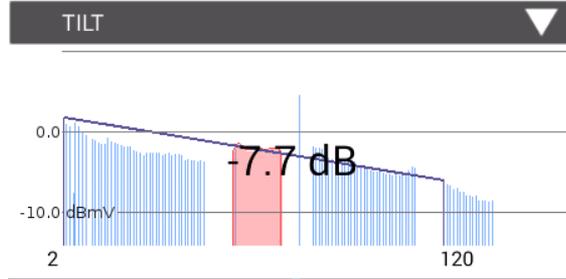
100% 03:36 PM

Downstream Details

Tap Ground Block CPE

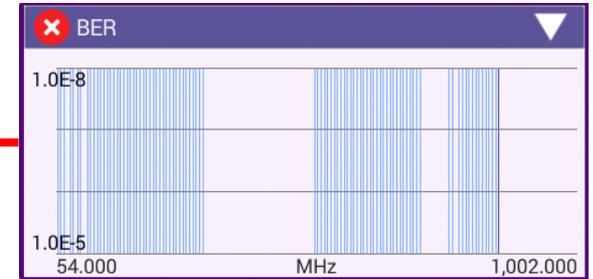
- CHANNEL VIEW
- SYSTEM VIEW
- FAVORITES
- TILT
- SMARTSCAN
- MER
- BER
- OFF-AIR INGRESS

Save Results Display Channel Search

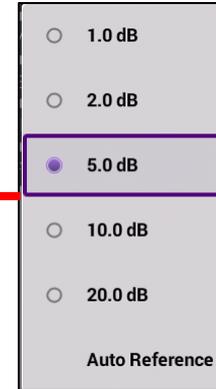
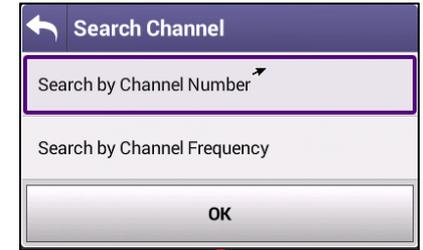
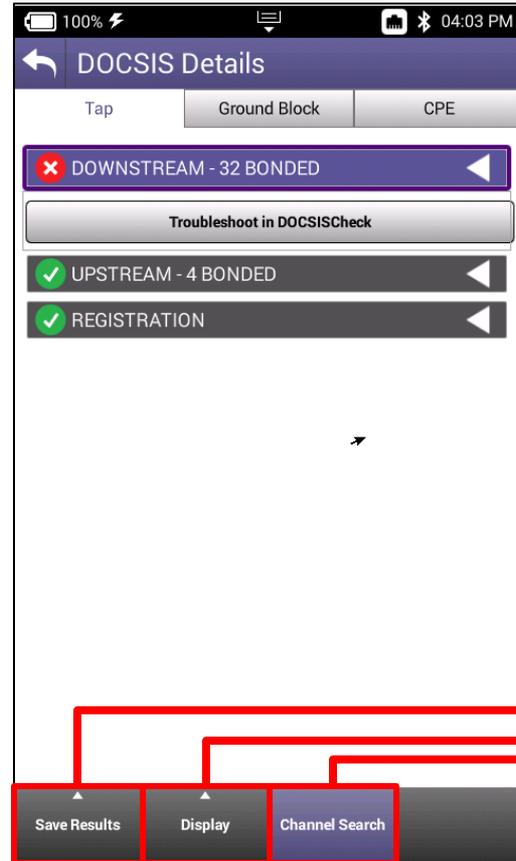
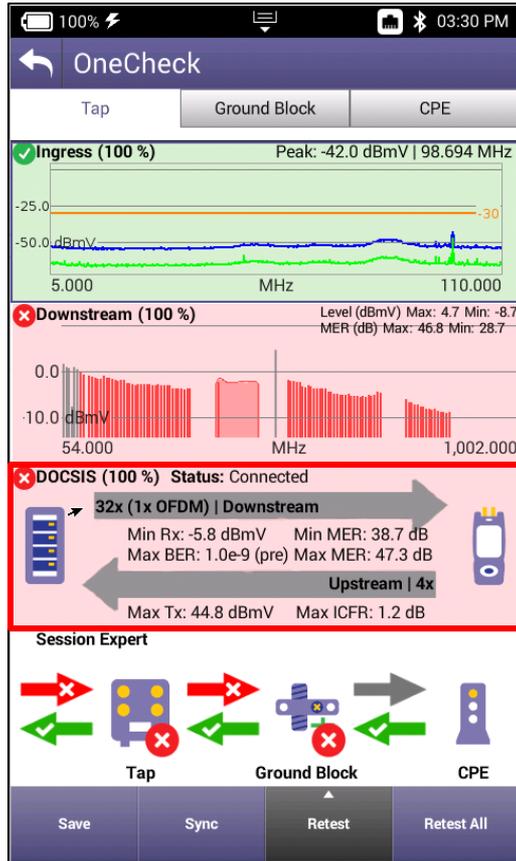


OFF-AIR INGRESS

Name	Peak (MHz)	Peak (dBmV)
Default Ingress Span	731.988	-47.4



One Check - Upstream



One Check - Upstream

100% 04:03 PM

DOCSIS Details

Tap Ground Block CPE

DOWNSTREAM - 32 BONDED

Troubleshoot in DOCSISCheck

UPSTREAM - 4 BONDED

REGISTRATION

THROUGHPUT

PACKET QUALITY

Save Results Display Channel Search

DOWNSTREAM - 32 BONDED

54.000 750.000 MHz

681.000 MHz

Annex B | 256 QAM | 5.361 Msym/s | 6.000 MHz

Level	MER	BER	BER
-5.7 dBmV	45.4 dB	1.0e-9 Pre	1.0e-9 Post
Echo	GD	ICFR	
-36.4 dBc	58 ns	0.6 dB	

Channel	Freq (MHz)	Level (dBmV)	MER (dB)
101	657.000	-5.5	44.3
102	663.000	-5.5	44.2
103	669.000	-5.6	44.3
104	675.000	-5.8	44.4
105	681.000	-5.7	45.4
106	687.000	-5.8	44.4
107	693.000	-5.3	44.1
108	699.000	-5.5	44.3
109	705.000	-5.2	44.1

UPSTREAM - 4 BONDED

35.5 dBmV 49.8 dBmV

17.800 MHz

64 QAM | 6.400 MHz | Unknown

TX Level	ICFR
40.5 dBmV	1.0 dB

UCD	Freq (MHz)	Level (dBmV)	ICFR (dB)
9	17.800	40.5	1.0
10	24.200	42.0	1.2
11	30.600	43.3	1.2
12	37.000	44.8	1.2

REGISTRATION

Service Plan: Charter Field Ops vKF - 00:07:11:14:1B:CF

Config File: ?
BEWGlyYABx EUG88KIsDi@CILA4InPmjuhwL fUIE0BYVOzjkmFD_

Cable Modem

Provisioning Mode: IPv4 ONLY

IPv4 Address: 10.34.192.226

IPv4 Gateway Address: 10.34.192.1

IPv4 Subnet Mask: 255.255.224.0

IPv4 Config: BEWGlyYABx EUG88KIsDi@CILA4InPmjuhwL fUIE0BYVOzjkmFD_

CPE

IPv4 Address: 76.175.15.154

IPv4 Subnet Mask: 255.255.240.0

IPv4 Gateway Address: 76.175.0.1

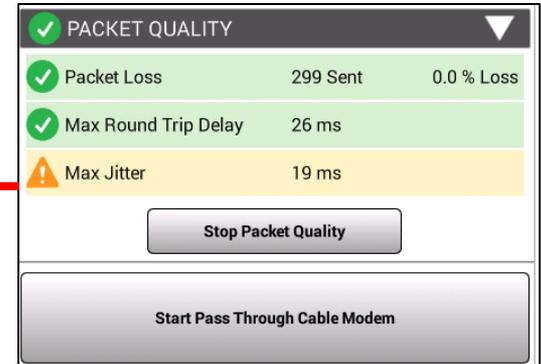
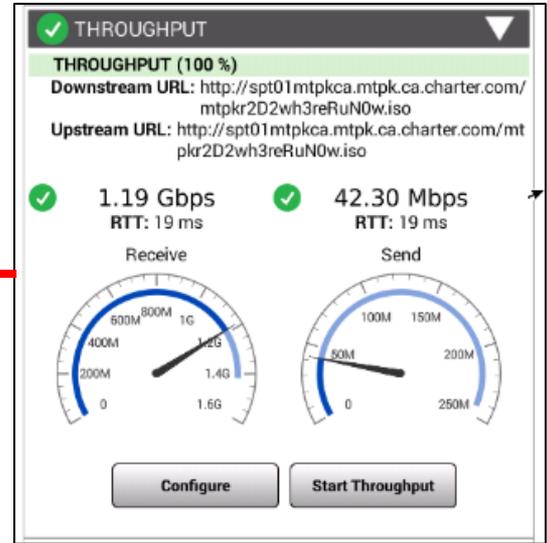
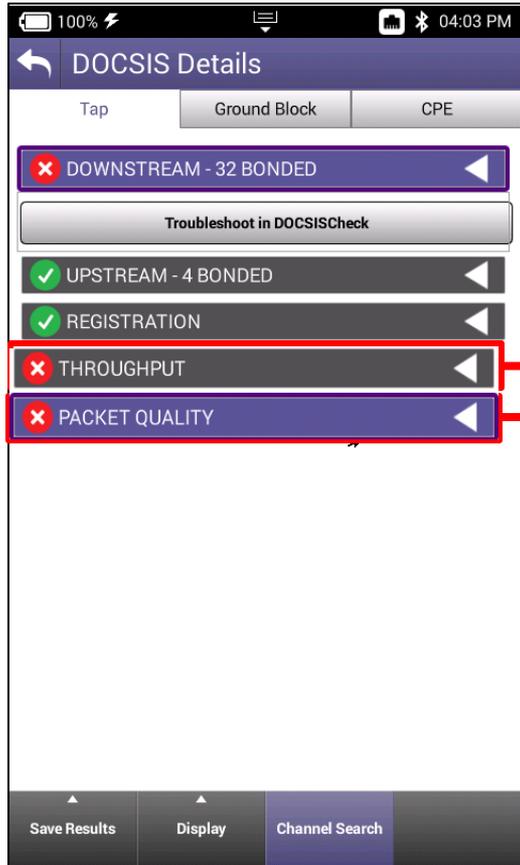
Servers

IPv4 TFTP Server: 98.150.3.105

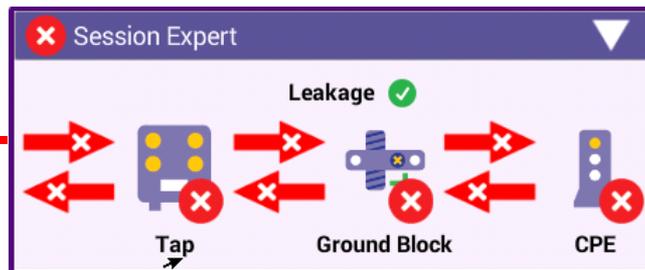
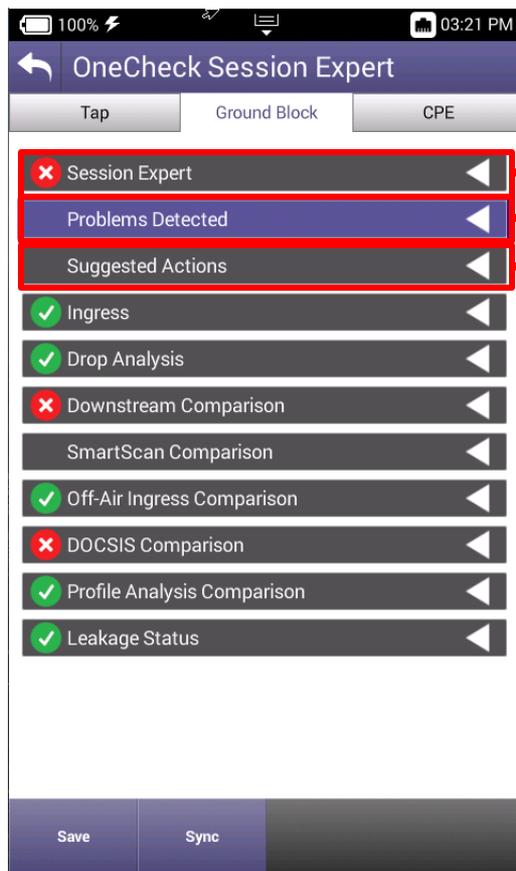
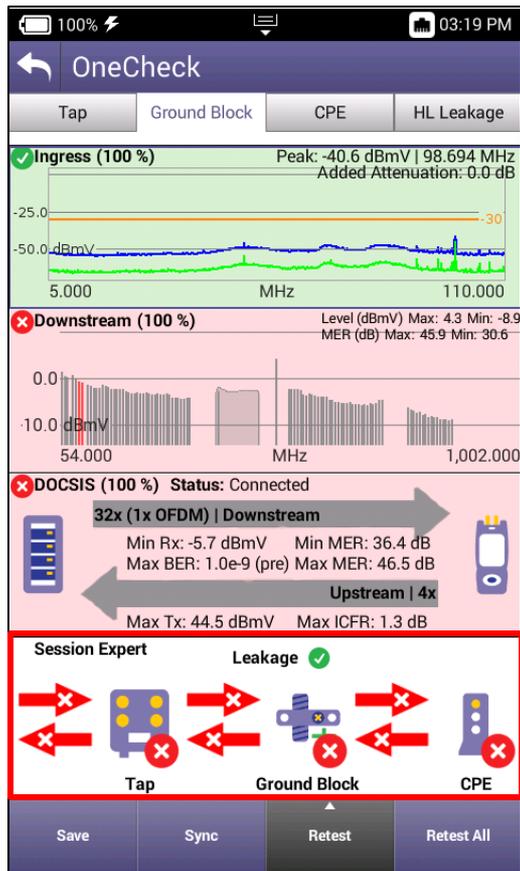
IPv4 DHCP Server: 142.254.177.41

IPv4 TOD Server: 98.150.3.105

One Check - Upstream



One Check – Session Expert



- ### Problems Detected
- Signal quality
 - Downstream throughput problem
 - Packet jitter problem
 - Upstream throughput problem
 - Non-unique home detected

- ### Suggested Actions
- ▼ Network downstream issue detected. Refer to maintenance
- A network downstream issue has been detected. Retest at tap and refer to maintenance if problem persists.

One Check – Session Expert

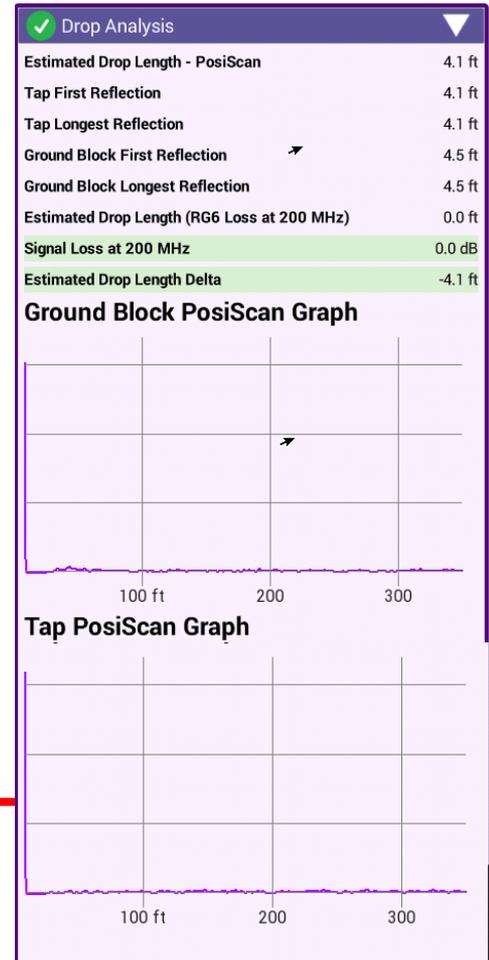
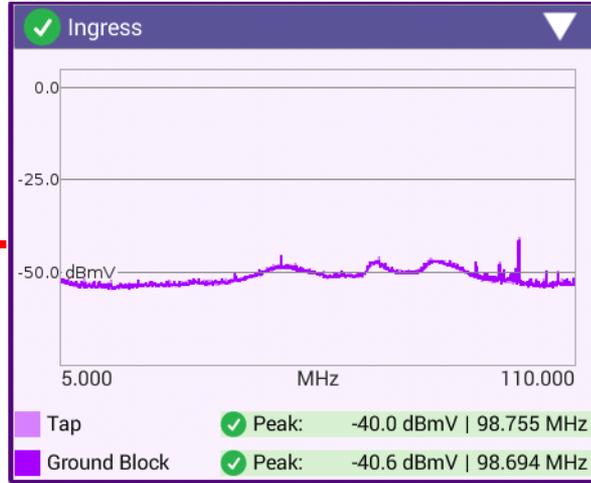
100% 03:21 PM

OneCheck Session Expert

Tap Ground Block CPE

- Session Expert
- Problems Detected
- Suggested Actions
- Ingress**
- Drop Analysis**
- Downstream Comparison
- SmartScan Comparison
- Off-Air Ingress Comparison
- DOCSIS Comparison
- Profile Analysis Comparison
- Leakage Status

Save Sync



One Check – Session Expert

100% 03:21 PM

OneCheck Session Expert

Tap Ground Block CPE

- Session Expert
- Problems Detected
- Suggested Actions
- Ingress
- Drop Analysis
- Downstream Comparison**
- SmartScan Comparison
- Off-Air Ingress Comparison
- DOCSIS Comparison
- Profile Analysis Comparison
- Leakage Status

Save Sync

Downstream Comparison

	Tap	GB	CPE
Downstream			
Min Analog Level (dBmV)	4.3	4.3	4.3
Max Analog Level (dBmV)	4.3	4.3	4.3
Min Digital Level (dBmV)	-8.9	-8.9	-8.9
Max Digital Level (dBmV)	1.5	1.5	1.4
Min MER(dB)	31.0	30.6	30.0
Max MER (dB)	46.0	45.9	45.6
Max BER (Pre)	1.0e-8	1.0e-8	1.0e-8
Max BER (Post)	1.0e-8	1.0e-8	1.0e-8
Max Echo (dBc)	0.0	0.0	0.0
Max Group Delay (ns)	1.8	1.8	1.7
Max ICFR (dB)	4.5	4.5	4.5
Min Hum (%)	0.1	0.1	0.1
Max Hum (%)	0.3	0.4	0.4
OFDM			
Min Level (dBmV)	-3.1	-3.1	-3.0
Max Level (dBmV)	-1.8	-1.7	-1.8
Min MER PCTL (dB)	37.3	37.2	37.3
Max Stddev MER (dB)	0.6	0.6	0.6
Max ICFR (dB)	0.8	0.8	0.8
Max Echo (dBc)	-43.9	-42.9	-43.3

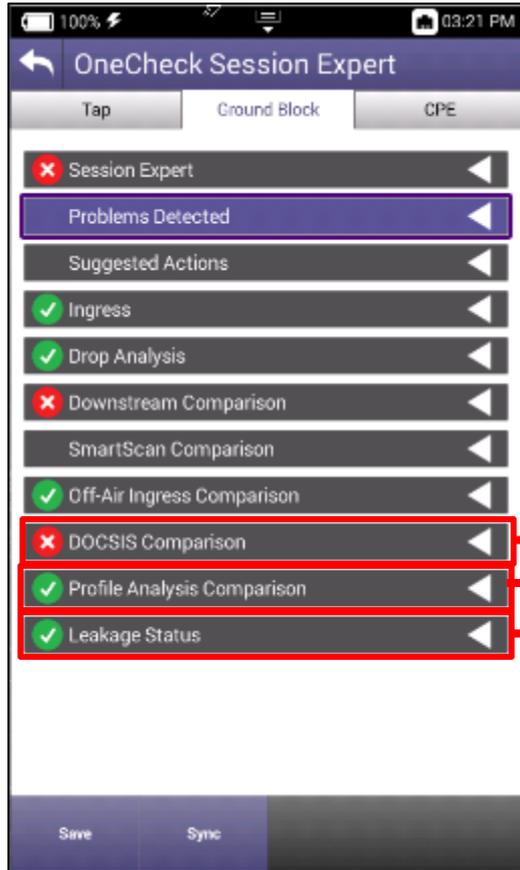
SmartScan Comparison

	Tap	GB	CPE
System Tilt (dB)	-5.8	-6.1	-5.9
Max Deviation (dB)	2.5	2.5	2.5

Off-Air Ingress Comparison

	Tap	GB	CPE
Default Ingress Span (dBmV)	-44.8	-46.4	-43.6

One Check – Session Expert



Profile Analysis Comparison

	Tap	GB	CPE
Profile A	Pass	Pass	Pass
Profile B	—	—	—
Profile C	—	—	—
Profile NCP	Pass	Pass	Pass
Profile PLC	Pass	Pass	Pass

Leakage Status

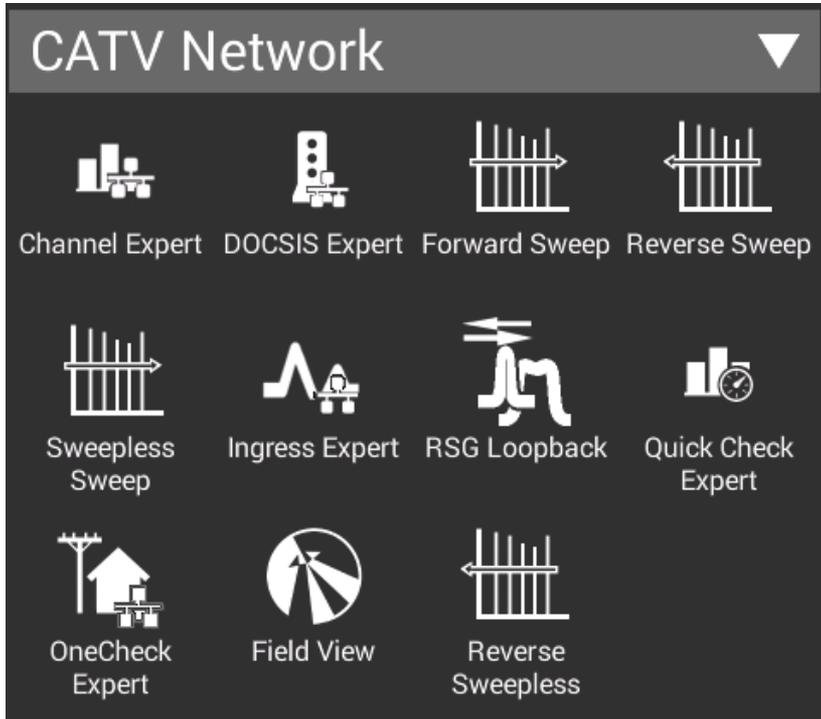
Duration	26 s	100%
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DOCSIS Comparison

	Tap	GB	CPE
Status	Connected	Connected	Connected
Downstream			
Number Bonded	32	32	32
Min Level (dBmV)	-5.7	-5.7	-5.7
Max Level (dBmV)	-2.0	-2.0	-2.0
Min MER (dB)	44.7	44.5	44.5
Max MER (dB)	46.9	46.5	46.5
OFDM			
Min Level (dBmV)	-3.1	-3.0	-3.0
Max Level (dBmV)	-1.8	-1.8	-1.8
Min MER PCTL (dB)	37.2	37.3	37.1
Max Stddev MER (dB)	0.6	0.6	0.6
Max ICFR (dB)	0.9	0.8	0.8
Max Echo (dBc)	-43.2	-43.2	-43.2
Upstream			
Number Bonded	4	4	4
Max Tx Level (dBmV)	44.0	44.5	44.0
Max ICFR (dB)	1.3	1.3	1.4
Services			
DS Throughput (Mbps)	0.0	0.0	0.0
US Throughput (Mbps)	0.0	0.0	0.0
Packet Loss (%)	0.0%	0.0%	0.0%
Max Round Trip Delay (ms)	18	17	17
Max Jitter (ms)	10	10	10

CATV Network Configurations

CATV Network



- CATV NETWORK offers 8 test functions
 - Channel Expert
 - DOCSIS Expert
 - Forward Sweep (Active)
 - Reverse Sweep (Active)
 - Sweepless Sweep (Downstream)
 - Ingress Expert
 - Return Signal Generator w/ Loopback
 - Quick Check Expert
 - OneCheck Expert
 - Field View (with Return Signal Generator)
 - Reverse Sweepless (Upstream)

Quick Check Expert

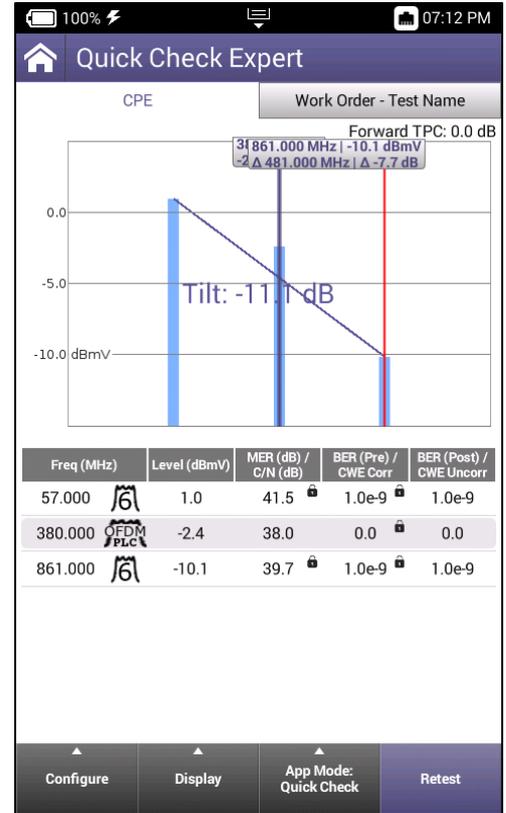
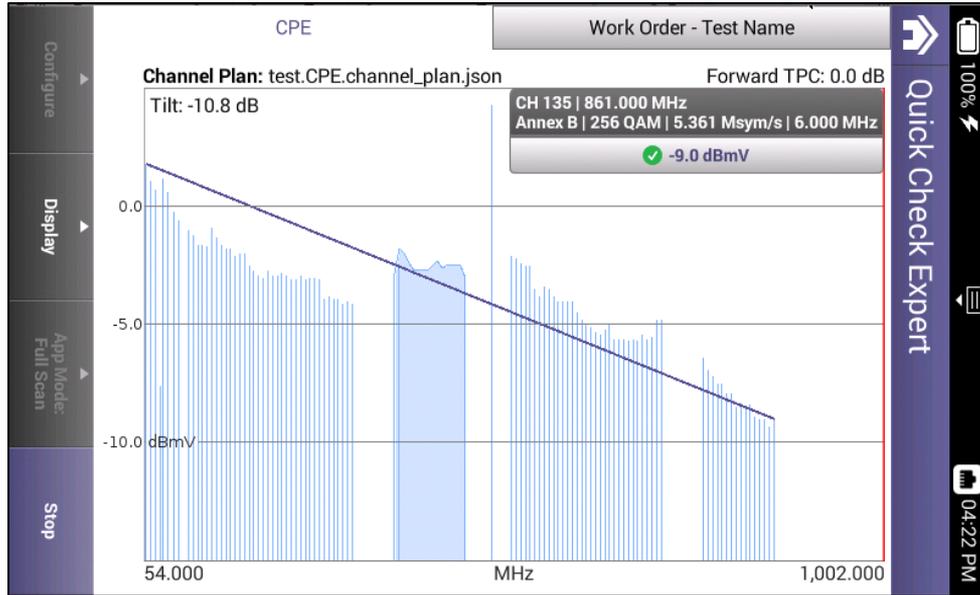
Quick Check Expert

QuickCheck Expert can be run in two modes

- Quick Check
- Full Scan

To populate the FULL SCAN, user must first save a channel plan in ChannelCheck before loading it in QuickCheck Expert

To populate the QuickCheck mode with channels, user must add them manually

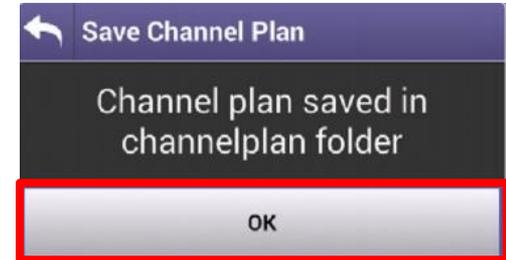
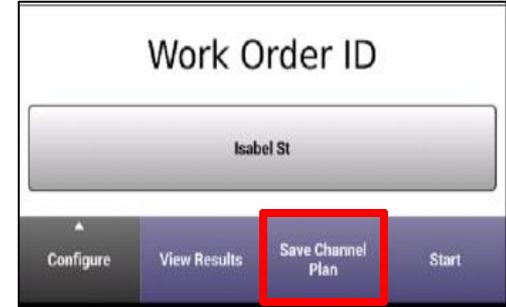
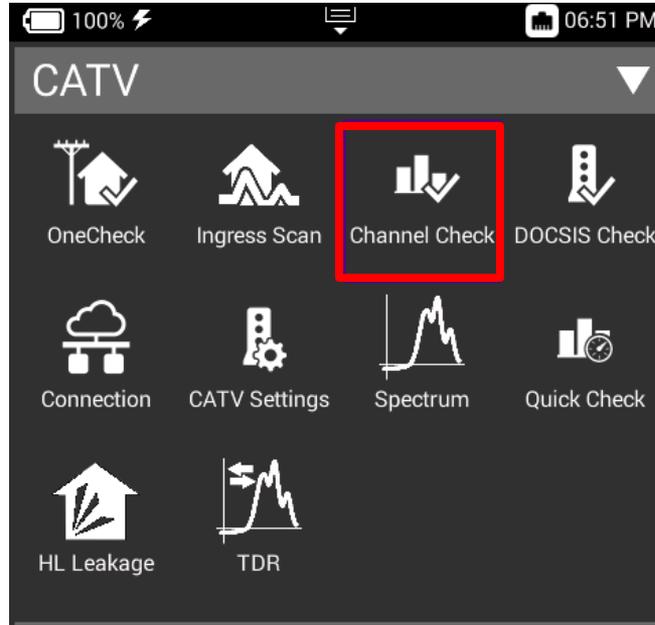


Quick Check Expert – Saving Channel Plans

To save a Channel Plan, run the CHANNELCHECK test under CATV

After test completes, use the BACK button to return to CHANNELCHECK SETUP

Select SAVE CHANNEL PLAN. A message will display indicating the Channel Plan has been saved. The Channel plan will be named after the WORK ORDER ID



Quick Check Expert – Loading Channel Plans

Return to QUICKCHECK
EXPERT under CATV
NETWORK

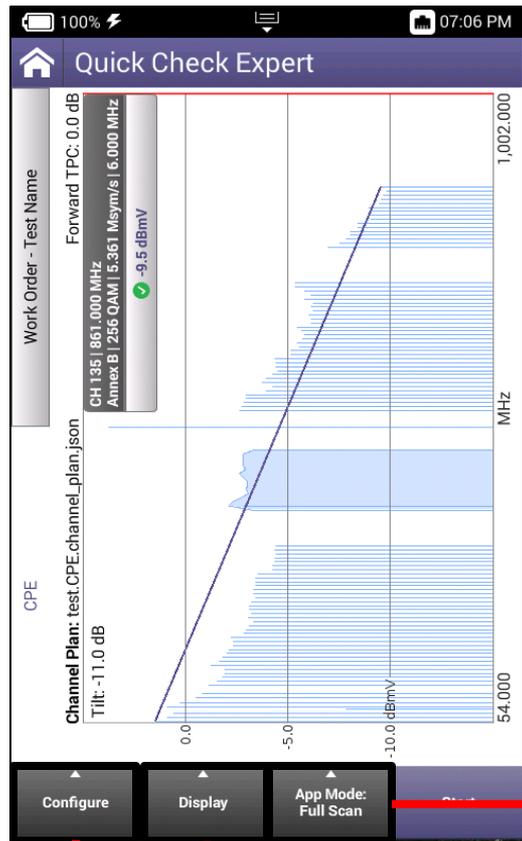
Test will automatically run,
STOP test and change APP
MODE to FULL SCAN

Select CONFIGURE and select
CHANNEL PLAN

Select the appropriate saved
CHANNEL PLAN

The image shows a mobile application interface for CATV Network. The top status bar shows 100% battery and 06:55 PM. The app title is 'CATV'. Below the title is a dropdown menu for 'CATV Network'. The main screen displays a grid of test options: Channel Expert, DOCSIS Expert, Forward Sweep, Reverse Sweep, Sweepless Sweep, Ingress Expert, RSG Loopback, and Quick Check Expert. The 'Quick Check Expert' option is highlighted with a red box. To the right, a 'Configure' button is also highlighted with a red box. Below the main screen, a 'Select Channel Plan' dialog is shown with a red border, listing 'test.CPE.channel_plan.json' as the selected option. To the right of the main screen, a configuration panel is visible with a red border, showing settings for 'Select Test Point Template' (CPE), 'Channel Plan' (test.CPE.channel_plan.json), 'Set Diplexer' (42 - 1000 MHz), 'Select Limit Plan' (CPE), 'Save Test', 'View Tests', and 'View StrataSync Configuration'.

Quick Check Expert – Full Scan Mode



Quick Check

Full Scan

Full Screen

Marker

dB/div

5.0 dB

Reference Now

Select Test Point Template

CPE

Channel Plan ↗

test.CPE.channel_plan.json

Set Diplexer

42 - 1000 MHz

Select Limit Plan

CPE

Save Test

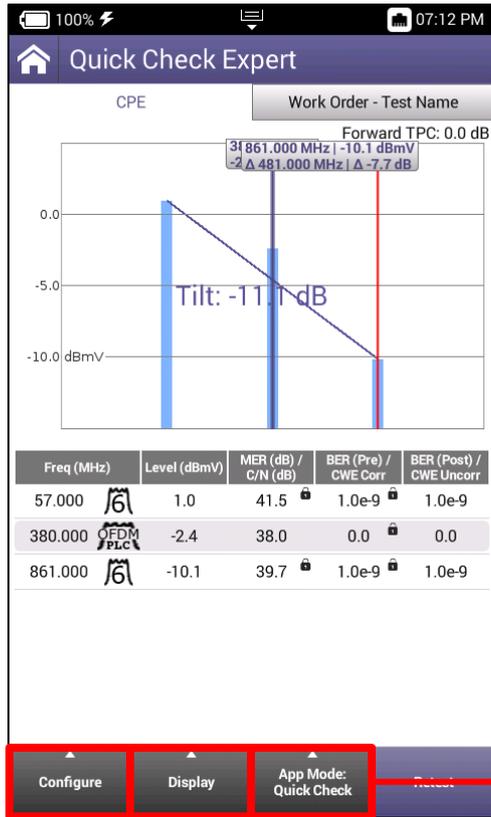
Save current test to a Work Order

View Tests

View previous tests

View StrataSync Configuration >

Quick Check Expert – Quick Check Mode



Quick Check
 Full Scan

1.0 dB
 2.0 dB
 5.0 dB
 10.0 dB
 20.0 dB

Reference Now

Auto Reference
 Δ Marker

Select Test Point Template
CPE

Carrier Configuration >

Channel Plan
test.CPE.channel_plan.json

Set Diplexer
42 - 1000 MHz

MER
 BER / OFDM CWE

Carrier To Noise

Save Test
Save current test to a Work Order

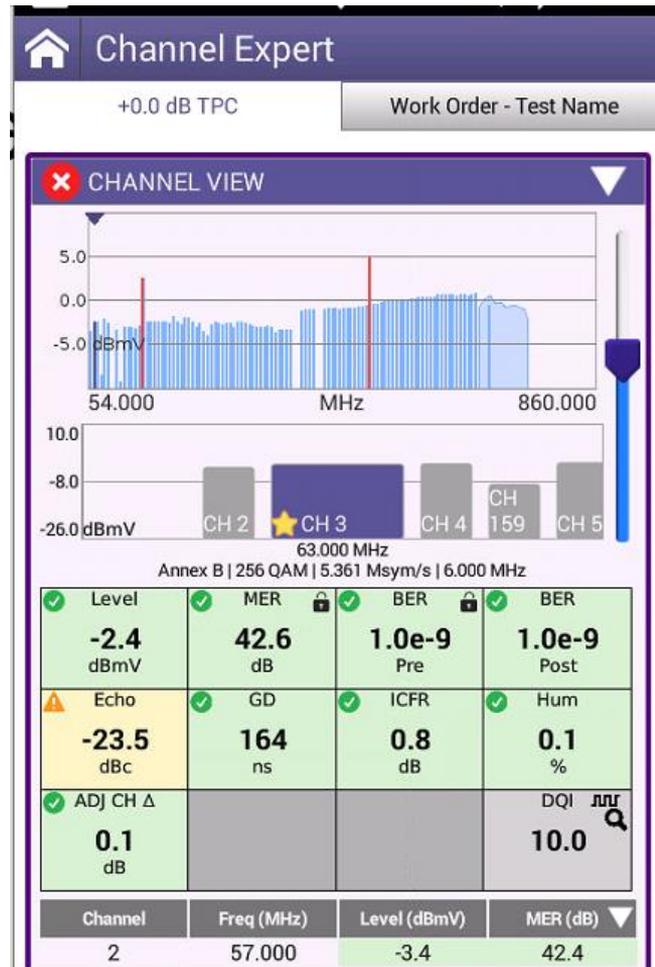
View Tests
View previous tests

View StrataSync Configuration >

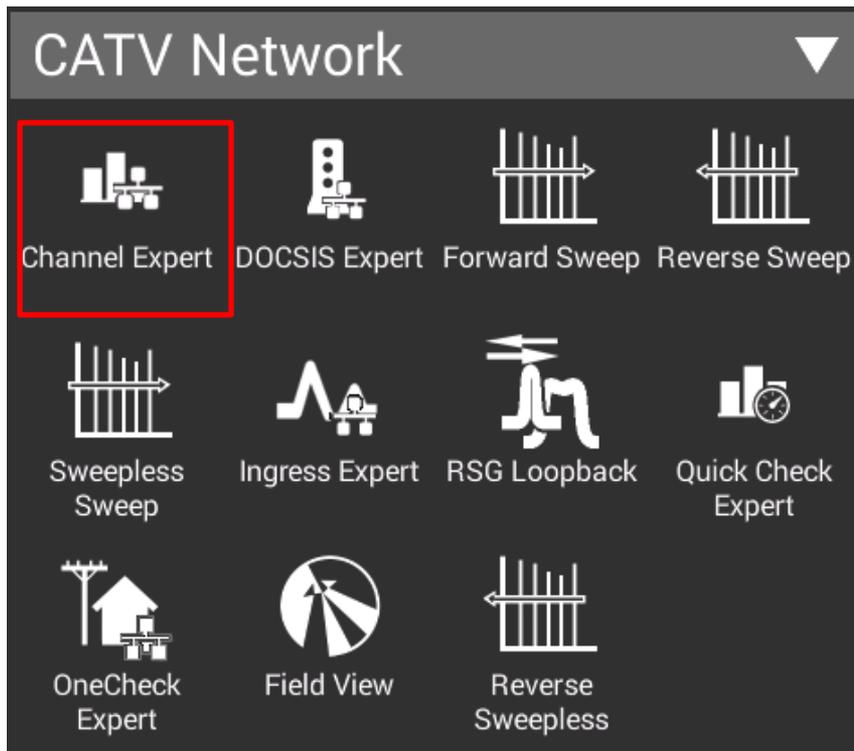
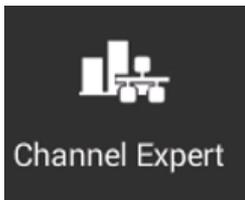
Channel Expert

Channel Expert Measurements

- Channel Scan no need for Channel plan
- Measures Video, QAM, OFDM
- Typical QAM Measurements include Level, MER, Pre and Post BER
- Measures Echo, GD, ICFR (This is an Adaptive Equalizer Test)
- Hum (Less than 1000 kHz)
- DQI (Digital Quality Index)
- Ingress Under Carrier
- ADJ Channel Delta

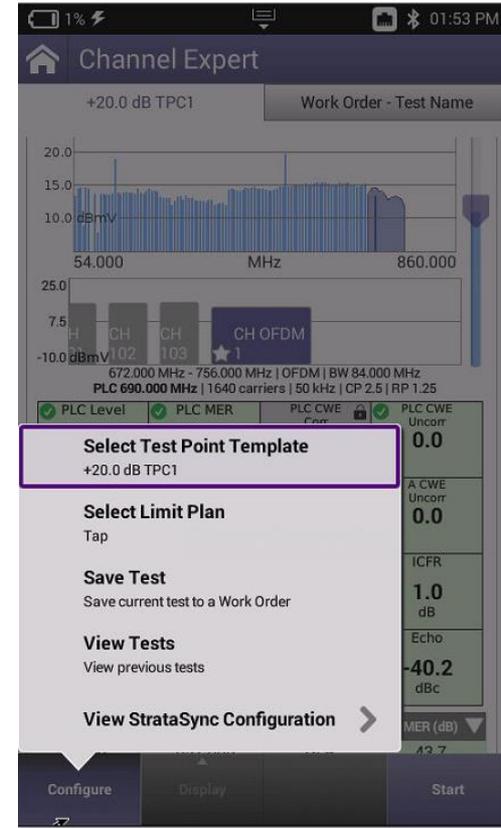
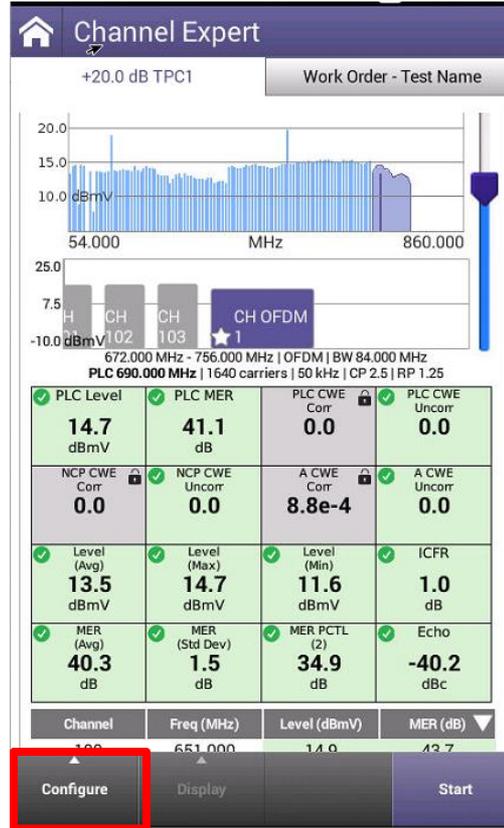
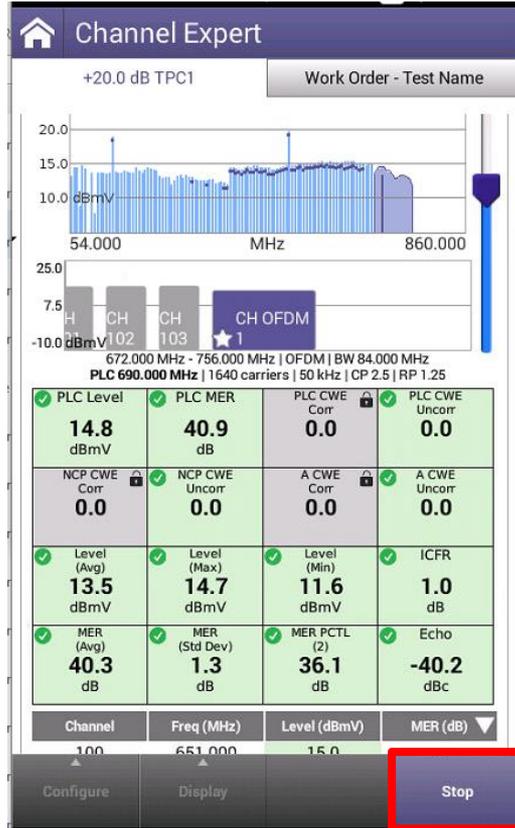


Channel Expert



Channel Expert Configure

- All EXPERT test functions will feature a CONFIGURE button when the STOP function is pressed
- All new test functions are LIVE tests so to access CONFIGURE, test must be stopped first



Channel Expert Configure Test point

Channel Expert
+0.0 dB TPC Work Order - Test Name

CHANNEL VIEW

54.000 MHz 860.000 MHz

63.000 MHz
Annex B | 256 QAM | 5.361 Msym/s | 6.000 MHz

Level	MER	BER	BER
-2.5 dBmV	42.6 dB	1.0e-9 Pre	1.0e-9 Post
-23.5 dBc	168 ns	0.8 dB	0.2 %
ADJ CH Δ			DQI 10.0

Channel	Freq (MHz)	Level (dBmV)	MER (dB)
2	57.000	-3.5	42.3

Configure Display Channel Search Start

Select Test Point Template
+0.0 dB TPC

Select Limit Plan
Tap

Save Test
Save current test to a Work Order

View Tests
View previous tests

View StrataSync Configuration

Select Test Point Template

- +0.0 dB TPC
- +20.0 dB TPC

View Delete Copy Done

New Custom Template

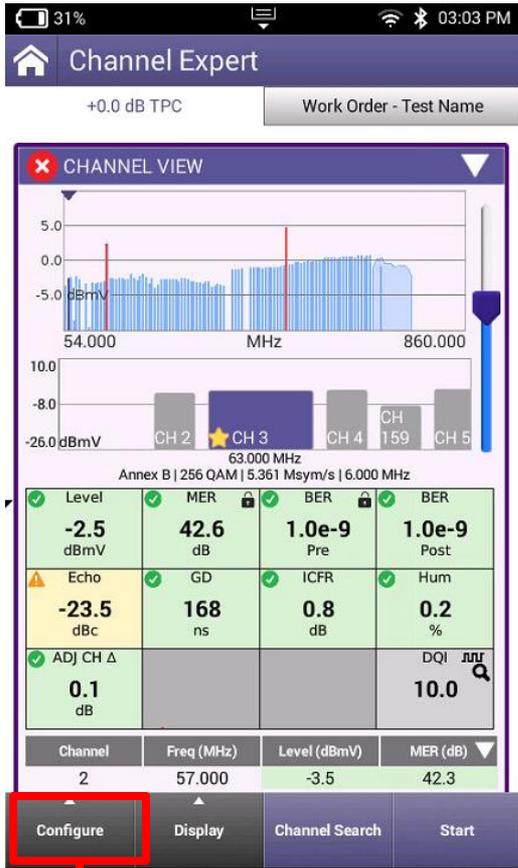
+20 dB TPC1 1 - 40 chars

Save

Select Test Point Template

- +0.0 dB TPC
- +20.0 dB TPC
- +20 dB TPC1

Channel Expert Configure



Select Test Point Template
+0.0 dB TPC

Select Limit Plan
Tap

Save Test
Save current test to a Work Order

View Tests
View previous tests

View StrataSync Configuration

Select Limit Plan

Tap

Ground Block

CPE

View Test Results

Tests for Current Work Order:

H12345

StrataSync Configuration

Test Point Templates File Name
default-testpoint-templates

Limit Plan File Name
Thome1

Limit Plan Exclusion Zone File Name
default-exclusionzones

Channel Expert Configure Save Test

31% 03:03 PM

Channel Expert

+0.0 dBm TPC Work Order - Test Name

CHANNEL VIEW

Level	MER	BER	BER
-2.5 dBmV	42.6 dB	1.0e-9 Pre	1.0e-9 Post
-23.5 dBc	168 ns	0.8 dB	0.2 %
0.1 dB			DQI 10.0

Channel: 2, Freq (MHz): 57.000, Level (dBmV): -3.5, MER (dB): 42.3

Configure Display Channel Search Start

1% 01:53 PM

Channel Expert

+20.0 dB TPC1 Work Order - Test Name

Select Test Point Template
+20.0 dB TPC1

Select Limit Plan
Tap

Save Test
Save current test to a Work Order

View Tests
View previous tests

View StrataSync Configuration

Configure Display Start

100% 04:13 PM

Save Test

Save Test to Work Order

Test Name
Isabel 20191

Work Order ID
Guide1

Set Name to Current Date

Save

Test Name

Isabel 20191 1 - 50 chars

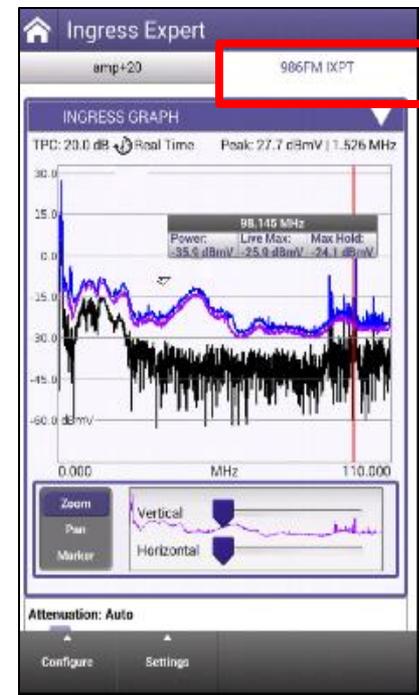
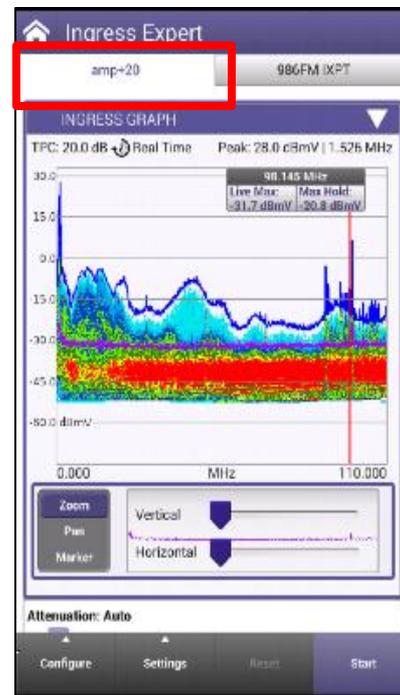
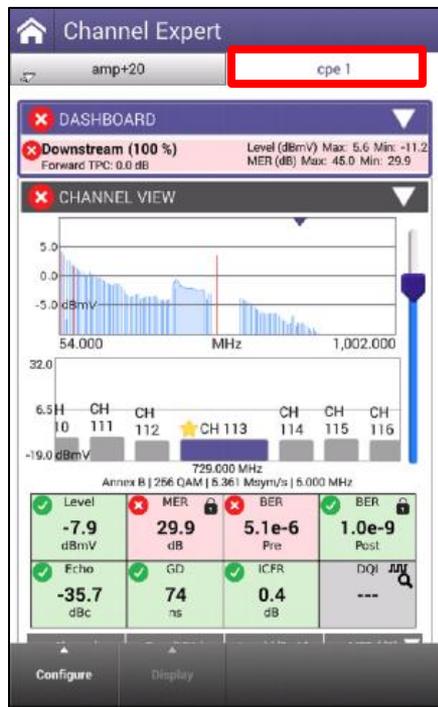
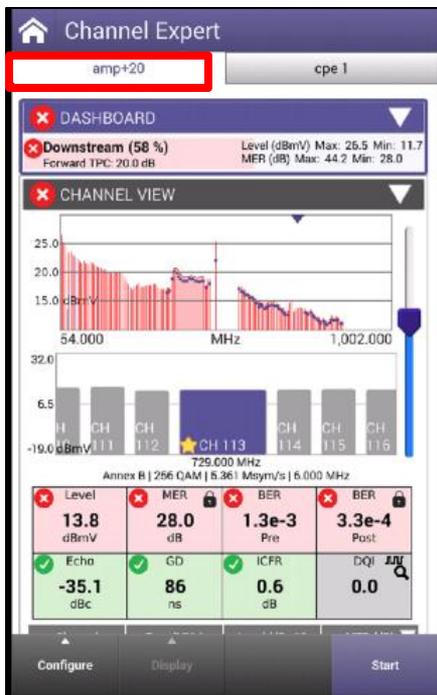
OK

Select Work Order

New Work Order ...

- Guide1
- T3
- T2
- T1
- test2
- Chaplin
- Charlie
- Isabel

Configure – View Test – Delta Tab



Channel Expert Configure

31% 03:03 PM

Channel Expert

+0.0 dB TPC Work Order - Test Name

CHANNEL VIEW

54.000 MHz 860.000

63.000 MHz

Annex B | 256 QAM | 5.361 Msym/s | 6.000 MHz

Level	MER	BER	BER
-2.5 dBmV	42.6 dB	1.0e-9 Pre	1.0e-9 Post
Echo -23.5 dBc	GD 168 ns	ICFR 0.8 dB	Hum 0.2 %
ADJ CH Δ 0.1 dB			DQI 10.0

Channel	Freq (MHz)	Level (dBmV)	MER (dB)
2	57.000	-3.5	42.3

Configure Display Channel Search Start

Select Test Point Template

+0.0 dB TPC

Select Limit Plan

Tap

Save Test

Save current test to a Work Order

View Tests

View previous tests

View StrataSync Configuration

1.0 dB

2.0 dB

5.0 dB

10.0 dB

20.0 dB

Auto Reference

Select Limit Plan

Tap

Ground Block

CPE

Save Test

Save Test to Work Order

Test Name

Work Order ID

Work Order - 16-49-00 08-05-2020

View Test Results

Tests for Current Work Order:

H12345

StrataSync Configuration

Test Point Templates File Name

default-testpoint-templates

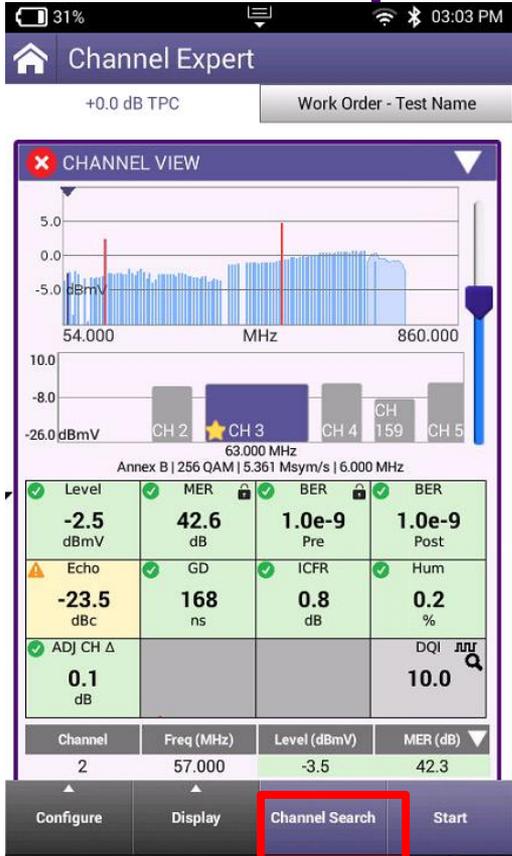
Limit Plan File Name

Thome1

Limit Plan Exclusion Zone File Name

default-exclusionzones

Channel Expert Configure



Search Channel

Search by Channel Number

Search by Channel Frequency

OK

Enter Channel Number

2

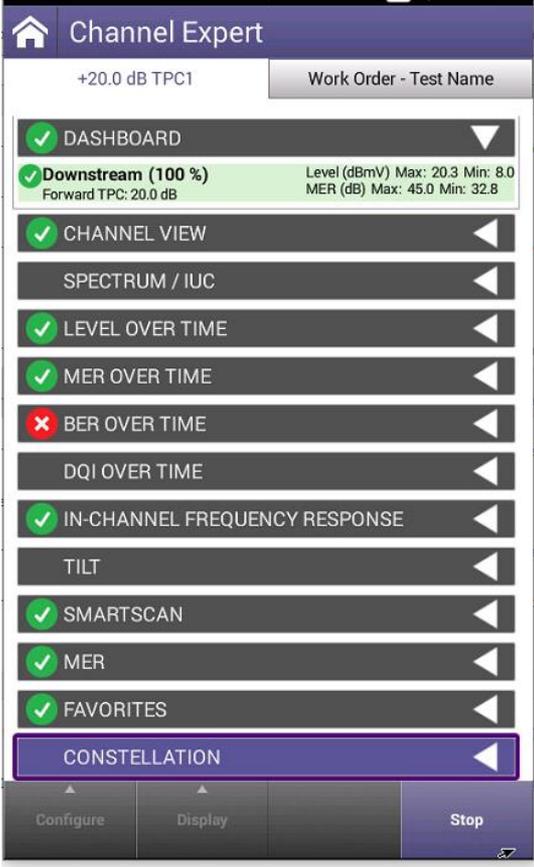
Find Channel

Enter Channel Frequency

57

Find Channel

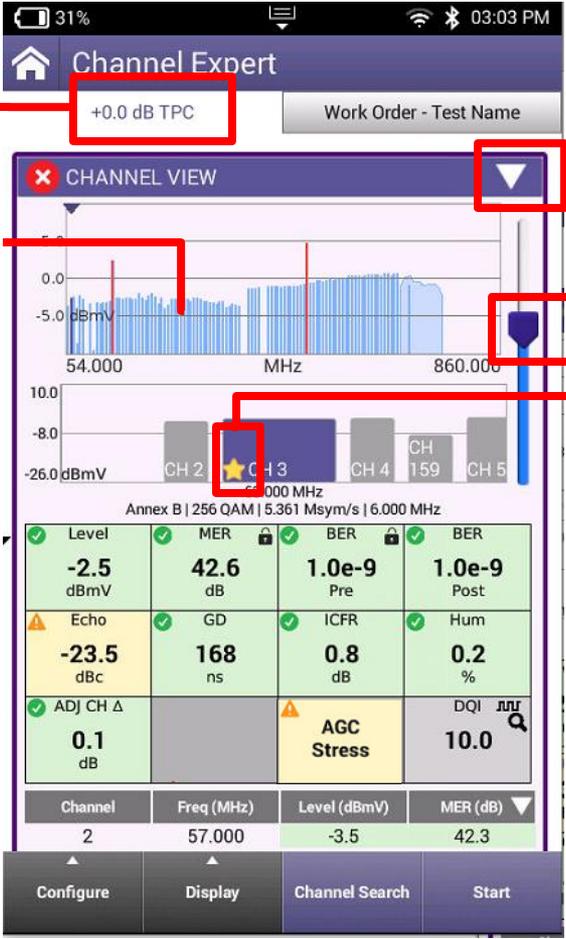
Channel Expert QAM



Test Point Compensation

+0.0 dB TPC

Select Channel



Open/close window

Reference

Press star to turn to gold color for marking as favorite channel

Slide left or right to change channel

Channel Expert QAM

Channel Expert

+20.0 dB TPC1 Work Order - Test Name

- Dashboard
- Downstream (100 %) Level (dBmV) Max: 20.3 Min: 8.0 Forward TPC: 20.0 dB MER (dB) Max: 45.0 Min: 32.8
- CHANNEL VIEW
- SPECTRUM / IUC
- LEVEL OVER TIME
- MER OVER TIME
- BER OVER TIME
- DQI OVER TIME
- IN-CHANNEL FREQUENCY RESPONSE
- TILT
- SMARTSCAN
- MER
- FAVORITES
- CONSTELLATION

Configure Display Stop

Channel Expert

+0.0 dB TPC Work Order - Test Name

CHANNEL VIEW

54.000 860.000 MHz

63.000 MHz

Annex B | 256 QAM | 5.361 Msym/s | 6.000 MHz

Level	MER	BER Pre	BER Post
-2.5 dBmV	42.6 dB	1.0e-9	1.0e-9
Echo	GD	ICFR	Hum
-23.5 dBc	168 ns	0.8 dB	0.2 %
ADJ CH Δ		AGC Stress	DQI
0.1 dB			10.0

Channel	Freq (MHz)	Level (dBmV)	MER (dB)
2	57.000	-3.5	42.3

Configure Display Channel Search Start

Selected Channel

Level

-2.5 dBmV

Channel RF power Level

MER

42.6 dB

Modulation Error Ratio
Like Carrier to Noise Ratio
Composite Second Order and
Composite Third Order

BER Pre

1.0e-9

Bit error rate that are
detected

BER Post

1.0e-9

Bit error rated that pass
through

Adaptive Equalizer Measurements

Echo

-23.5 dBc

Highest tap stress level of
reflection

GD

168 ns

Highest delay of a group
of signals

ICFR

0.8 dB

In Channel Peak to Valley
measurement of a QAM
carrier

Colors represent the Limit set value

Pass

Warning

Fail

No limit

Channel Expert QAM

Channel Expert

+20.0 dB TPC1 Work Order - Test Name

- ✓ DASHBOARD
- ✓ Downstream (100 %) Level (dBmV) Max: 20.3 Min: 8.0
Forward TPC: 20.0 dB MER (dB) Max: 45.0 Min: 32.8
- ✓ CHANNEL VIEW
- SPECTRUM / IUC
- ✓ LEVEL OVER TIME
- ✓ MER OVER TIME
- ✗ BER OVER TIME
- DQI OVER TIME
- ✓ IN-CHANNEL FREQUENCY RESPONSE
- TILT
- ✓ SMARTSCAN
- ✓ MER
- ✓ FAVORITES
- CONSTITUTION

Configure Display Stop

Channel Expert

+0.0 dB TPC Work Order - Test Name

CHANNEL VIEW

54.000 860.000
MHz

63.000 MHz
Annex B | 256 QAM | 5.361 Msym/s | 6.000 MHz

✓ Level	✓ MER	✓ BER	✓ BER
-2.5 dBmV	42.6 dB	1.0e-9 Pre	1.0e-9 Post
⚠ Echo	✓ GD	✓ ICFR	✓ Hum
-23.5 dBc	168 ns	0.8 dB	0.2 %
✓ ADJ CH Δ		⚠ AGC Stress	DQI 10.0
0.1 dB			

Channel	Freq (MHz)	Level (dBmV)	MER (dB)
2	57.000	-3.5	42.3

Configure Display Channel Search Start

Selected Channel

✓ Hum
0.2
%

Hum is a signal impairment which causes the amplitude of a modulated carrier to vary

✓ ADJ CH Δ
0.1
dB

Adjacent Channel video is the delta of the RF carrier that is next to it.

DQI 10.0

Digital Quality Index is the value assigned to show how good the RF signal is performing

⚠ AGC Stress

Automatic Gain Control level of the channel is not consistent and is varying in amplitude in milliseconds

Colors represent the Limit set value

Pass Warning Fail No limit

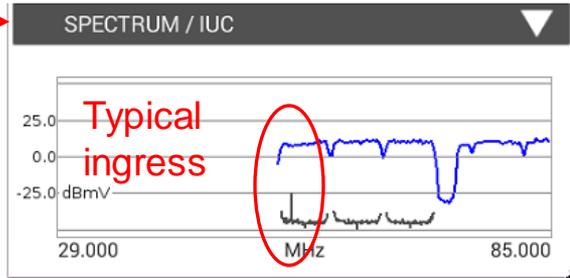
Channel Expert QAM

Channel Expert

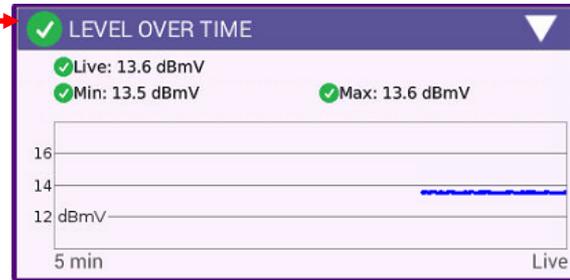
+20.0 dB TPC1 Work Order - Test Name

- ✓ DASHBOARD
- ✓ Downstream (100 %) Level (dBmV) Max: 20.3 Min: 8.0
Forward TPC: 20.0 dB MER (dB) Max: 45.0 Min: 32.8
- ✓ CHANNEL VIEW
- SPECTRUM / IUC
- ✓ LEVEL OVER TIME
- ✓ MER OVER TIME
- ✗ BER OVER TIME
- DQI OVER TIME
- ✓ IN-CHANNEL FREQUENCY RESPONSE
- TILT
- ✓ SMARTSCAN
- ✓ MER
- ✓ FAVORITES
- CONSTITUTION

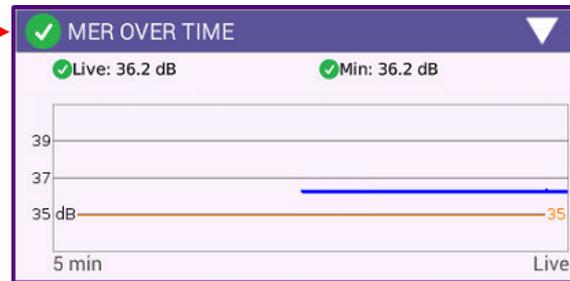
Configure Display Stop



Spectrum/ICU
9 Channel Spectrum view of
Ingress under the carrier

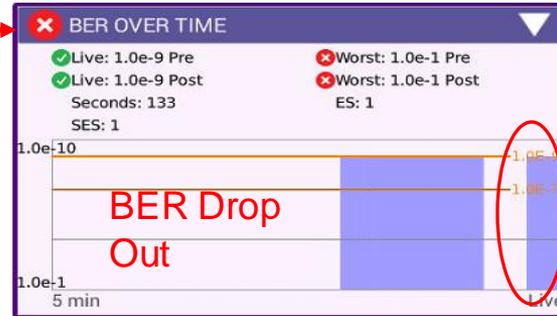
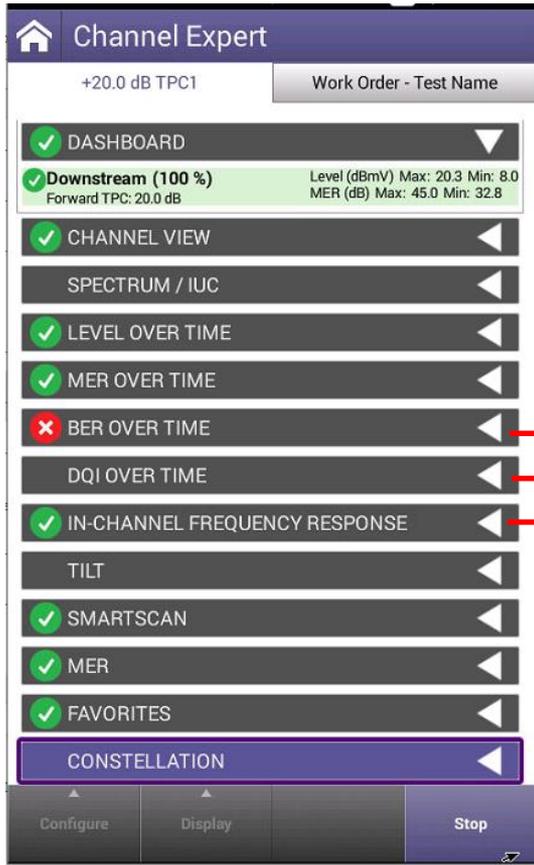


Measures the Level of
selected channel in a 5-minute
window

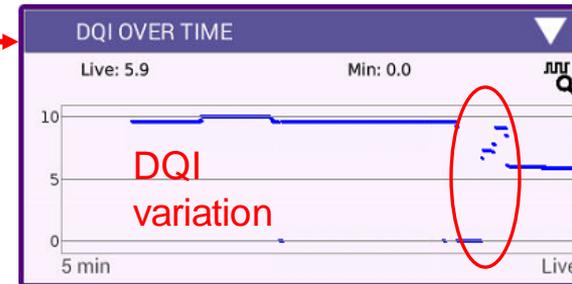


Measures the MER of
selected channel in a 5-
minute window

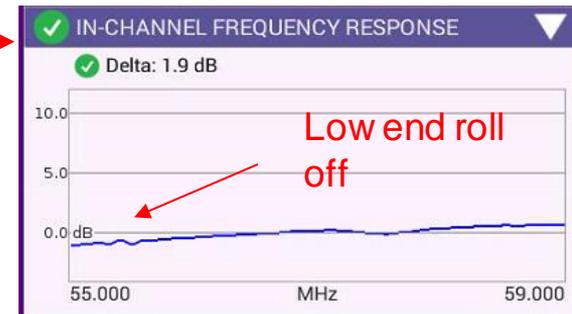
Channel Expert QAM



Measures the BER of selected channel in a 5-minute window



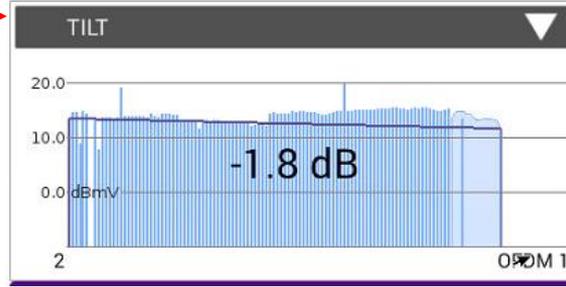
Measures the DQI of selected channel in a 5-minute window



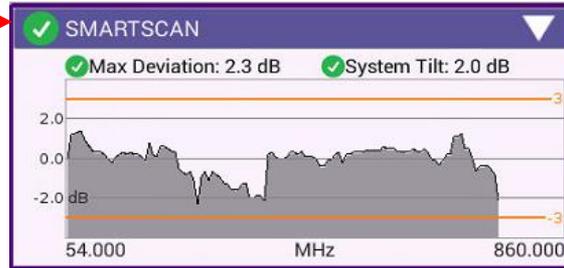
Measures the In-channel frequency response level of a QAM carrier

Channel Expert QAM

The screenshot shows the 'Channel Expert' interface. The top bar displays '+20.0 dB TPC1' and 'Work Order - Test Name'. The sidebar menu includes: DASHBOARD (checked), Downstream (100 %) (checked, with Level (dBmV) Max: 20.3 Min: 8.0 and Forward TPC: 20.0 dB), CHANNEL VIEW (checked), SPECTRUM / IUC, LEVEL OVER TIME (checked), MER OVER TIME (checked), BER OVER TIME (unchecked), DQI OVER TIME, IN-CANNEL FREQUENCY RESPONSE (checked), TILT (checked), SMARTSCAN (checked), MER (checked), FAVORITES (checked), and CONSTELLATION. At the bottom are 'Configure', 'Display', and 'Stop' buttons.



Tilt Measures the Difference in RF level or Delta between the lowest and highest channels



Smart scan removes the over all tilt to show typical deviation in a graph



MER shows the value of all the QAM channels in the system in a bar graph

Channel Expert QAM

Channel Expert

+20.0 dB TPC1 Work Order - Test Name

- ✓ DASHBOARD
- ✓ Downstream (100 %) Level (dBmV) Max: 20.3 Min: 8.0
Forward TPC: 20.0 dB MER (dB) Max: 45.0 Min: 32.8
- ✓ CHANNEL VIEW
- SPECTRUM / IUC
- ✓ LEVEL OVER TIME
- ✓ MER OVER TIME
- ✗ BER OVER TIME
- DQI OVER TIME
- ✓ IN-CHANNEL FREQUENCY RESPONSE
- TILT
- ✓ SMARTSCAN
- ✓ MER
- ✓ FAVORITES
- CONSTELLATION

Configure Display Stop

FAVORITES

20.0
10.0
0.0
dBmV

Channel	Freq (MHz)	Level (dBmV)	MER (dB)
2	57.000	13.4	34.9
3	63.000	14.6	42.5
5	79.000	14.8	42.7
6	85.000	14.5	42.5
96	99.000	13.8	42.5
97	104.250	7.8	—
98	111.000	13.8	43.1
99	117.000	13.8	42.9
14	123.000	13.7	42.9
34	285.000	12.9	42.2
73	519.000	15.1	43.7
74	525.000	15.0	44.2

Up to 15 favorite channel can be selected by pressing the white star in the channel view and turning it gold

CONSTELLATION

Freq (MHz)
57.000

Level
13.4
dBmV

MER
34.9
dB

See the Constellation of the selected channel

Channel Expert OFDM

Channel Expert

+20.0 dB TPC1 Work Order - Test Name

- DASHBOARD
- Downstream (100 %) Level (dBmV) Max: 15.3 Min: -3.7
Forward TPC: 20.0 dB MER (dB) Max: 45.7 Min: 26.5
- CHANNEL VIEW
- SPECTRUM / IUC
- LEVEL VARIATION (OFDM)
- MER VARIATION (OFDM)
- PROFILE ANALYSIS
- IN-CHANNEL FREQUENCY RESPONSE
- TILT
- SMARTSCAN
- MER
- FAVORITES

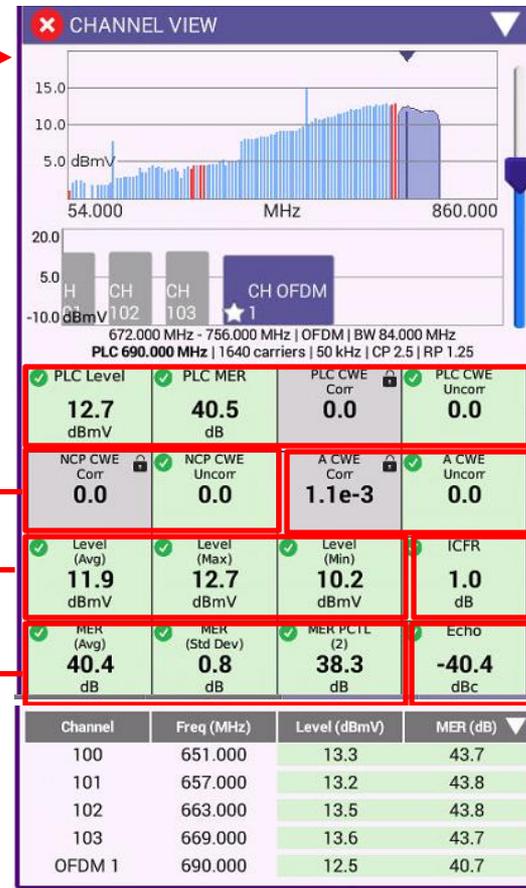
Configure Display Channel Search Stop

NCP Next Codeword Pointer
Tells the modem which codeword and present and in which profile

Level measurements of all the carriers based on 6 MHz

Average MER of all the QAM carriers.

MER Std Deviation
MER a 2%



PLC PHY Link Channel
Contains critical OFDM signal information

Codeword errors of profile A

ICFR- In Channel Frequency Response

Adaptive equalizer worst case stress tap

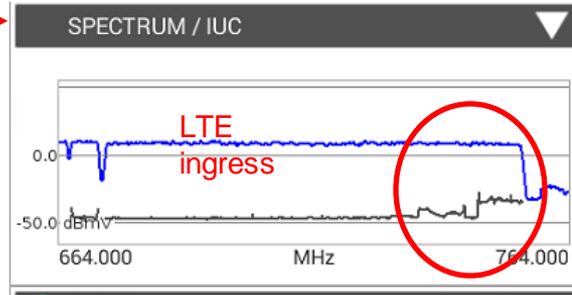
Level and MER of 4 adjacent SC-QAM and OFDM

Channel Expert OFDM

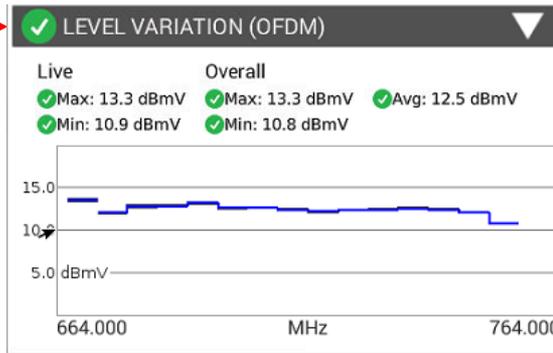
Channel Expert
+20.0 dB TPC1 Work Order - Test Name

- DASHBOARD
- Downstream (100 %) Level (dBmV) Max: 15.3 Min: -3.7
Forward TPC: 20.0 dB MER (dB) Max: 45.7 Min: 26.5
- CHANNEL VIEW**
- SPECTRUM / IUC
- LEVEL VARIATION (OFDM)
- MER VARIATION (OFDM)
- PROFILE ANALYSIS
- IN-CHANNEL FREQUENCY RESPONSE
- TILT
- SMARTSCAN
- MER
- FAVORITES

Configure Display Channel Search Stop



IUC Ingress under carrier



Level of OFDM carries measures at 6 MHz spacing

Channel Expert OFDM

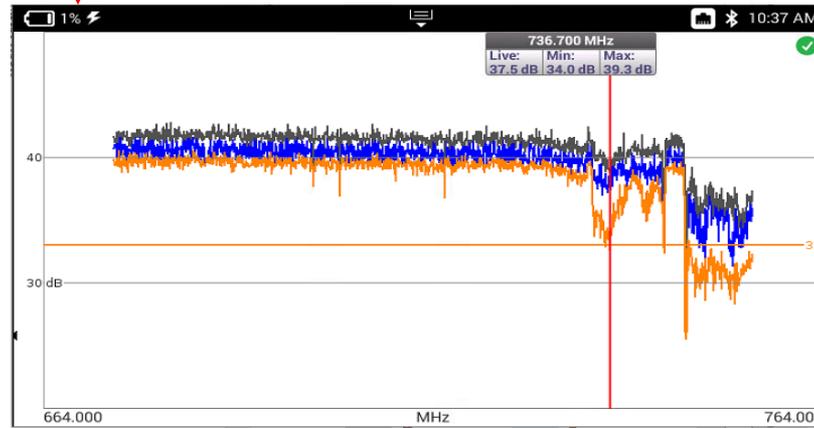
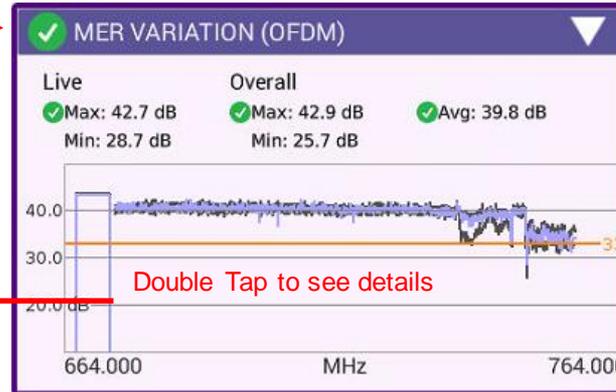
Channel Expert

+20.0 dB TPC1 Work Order - Test Name

- DASHBOARD
- Downstream (100 %) Level (dBmV) Max: 15.3 Min: -3.7
Forward TPC: 20.0 dB MER (dB) Max: 45.7 Min: 26.5
- CHANNEL VIEW
- SPECTRUM / IUC
- LEVEL VARIATION (OFDM)
- MER VARIATION (OFDM)
- PROFILE ANALYSIS
- IN-CHANNEL FREQUENCY RESPONSE
- TILT
- SMARTSCAN
- MER
- FAVORITES

Configure Display Channel Search Stop

MER graph of OFDM



Can use marker to see exact frequencies of carriers and MER values

Channel Expert OFDM

Channel Expert

+20.0 dB TPC1 Work Order - Test Name

✗ DASHBOARD

✗ Downstream (100 %) Level (dBmV) Max: 15.3 Min: -3.7
Forward TPC: 20.0 dB MER (dB) Max: 45.7 Min: 26.5

✗ CHANNEL VIEW

SPECTRUM / IUC

✓ LEVEL VARIATION (OFDM)

✓ MER VARIATION (OFDM)

✓ PROFILE ANALYSIS

✓ IN-CHANNEL FREQUENCY RESPONSE

TILT

✓ SMARTSCAN

✗ MER

✗ FAVORITES

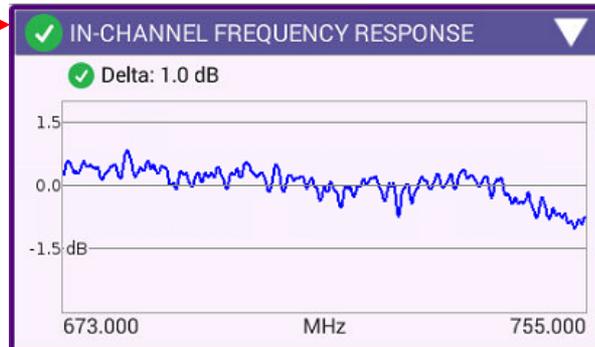
Configure Display Channel Search Stop

✓ PROFILE ANALYSIS

PROFILE	LOCKED	CWE (Corr)	CWE (Uncorr)	Max Mod
PLC	YES	0.0	0.0	16QAM
NCP	YES	0.0	0.0	16QAM
A	YES	3.9e-1	0.0	256QAM
B	YES	1.7e-1	0.0	1024QAM
C	YES	9.8e-1	0.0	2048QAM
D	YES	9.9e-1	3.4e-5	2048QAM

Profile View of Cable modem.

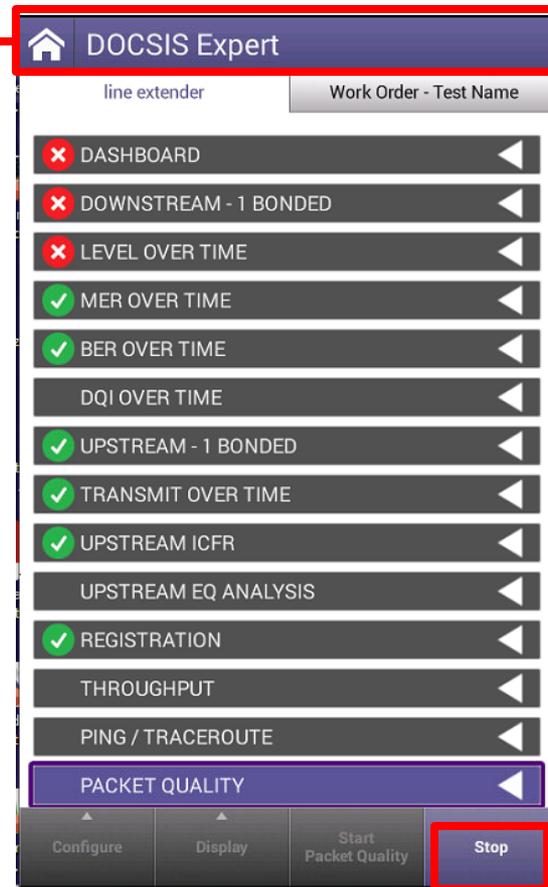
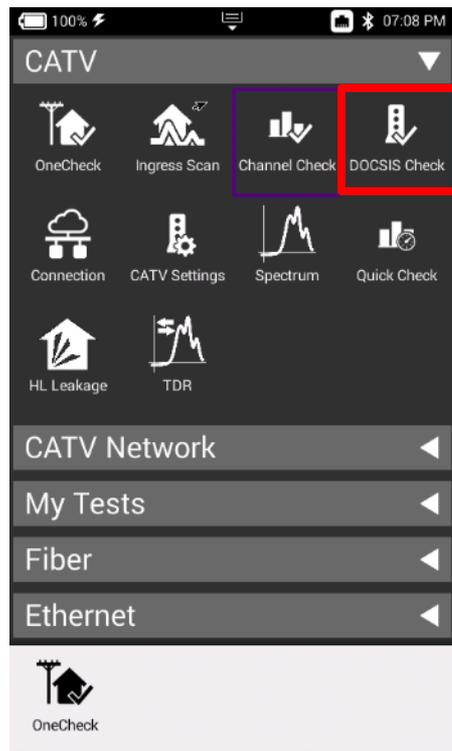
Helps determine how well the network is performing at this location



In channel Frequency Response across a OFDM band can help determine if a reflection or roll off is occurring

DOCSIS Expert

DOCSIS Check



DOCSIS Check

DOCSIS Expert

+0.0 dB TPC Work Order - Test Name

- ✓ DOWNSTREAM - 32 BONDED
- ✓ LEVEL OVER TIME
- ✓ MER OVER TIME
- ✓ BER OVER TIME
- DQI OVER TIME
- ✓ UPSTREAM - 5 BONDED
- ✓ TRANSMIT OVER TIME
- ✓ UPSTREAM ICFR
- UPSTREAM EQ ANALYSIS
- ✓ REGISTRATION
- THROUGHPUT
- PING / TRACEROUTE
- PACKET QUALITY

Configure Display Channel Search Stop

Channel	Freq (MHz)	Level (dBmV)	MER (dB)
67	483.000	12.1	42.4
68	489.000	12.5	42.2
69	495.000	12.6	41.9
71	507.000	12.9	42.7
72	513.000	12.9	42.7
73	519.000	13.2	42.2
74	525.000	13.2	42.5
75	531.000	13.1	42.7
76	537.000	13.2	42.0

DOCSIS Expert

✓ DASHBOARD

✓ DOCSIS (100 %) Status: Connected

32x (1x OFDM) | Downstream

Forward TPC: 0.0 dB
Min Rx: 12.1 dBmV Min MER: 35.9 dB
Max BER: 1.0e-9 (pre) Max MER: 43.8 dB

Upstream | 5x

Max Tx: 46.8 dBmV Max ICFR: 1.4 dB

+0.0 dB TPC Work Order - Test Name

✓ DOWNSTREAM - 32 BONDED

15.0
10.0
5.0
dBmV

54.000 MHz 860.000

21.0
14.0
7.0
dBmV

513.000 MHz

Annex B | 256 QAM | 5.361 Msym/s | 6.000 MHz

Level	MER	BER	BER
13.0 dBmV	42.7 dB	1.0e-9 Pre	1.0e-9 Post
Echo -42.4 dBc	GD 24 ns	ICFR 0.3 dB	DQI 10.0

Channel Freq (MHz) Level (dBmV) MER (dB)

Stop

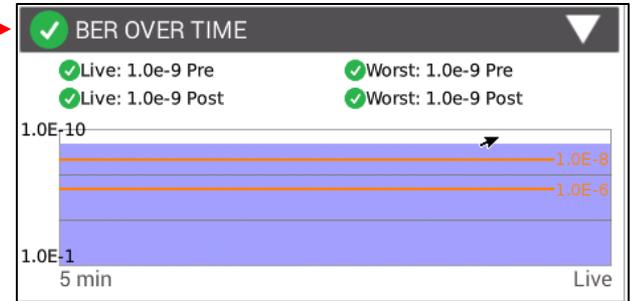
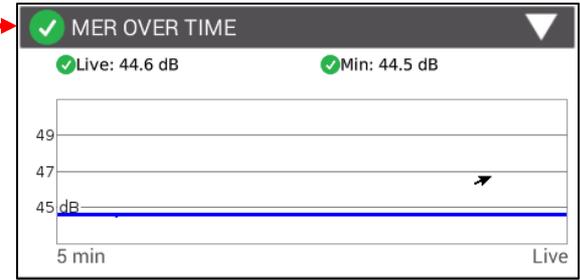
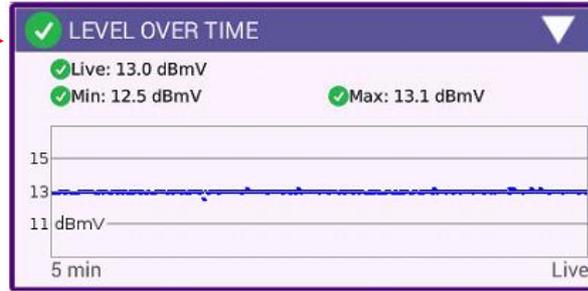
DOCSIS Expert

DOCSIS Expert

+0.0 dB TPC Work Order - Test Name

- ✓ DOWNSTREAM - 32 BONDED
- ✓ LEVEL OVER TIME
- ✓ MER OVER TIME
- ✓ BER OVER TIME
- ✓ DQI OVER TIME
- ✓ UPSTREAM - 5 BONDED
- ✓ TRANSMIT OVER TIME
- ✓ UPSTREAM ICFR
- UPSTREAM EQ ANALYSIS
- ✓ REGISTRATION
- THROUGHPUT
- PING / TRACEROUTE
- PACKET QUALITY

Configure Display Channel Search **Stop**



DOCSIS Expert

DOCSIS Expert

+0.0 dB TPC Work Order - Test Name

- DOWNSTREAM - 32 BONDED
- LEVEL OVER TIME
- MER OVER TIME
- BER OVER TIME
- DQI OVER TIME
- UPSTREAM - 5 BONDED
- TRANSMIT OVER TIME
- UPSTREAM ICFR
- UPSTREAM FO ANALYSIS
- REGISTRATION
- THROUGHPUT
- PING / TRACEROUTE
- PACKET QUALITY

Configure Display Channel Search Stop

UPSTREAM - 5 BONDED

Reference bandwidth: Modem Default

UCD 4 | 16.400 MHz
64 QAM | 6.400 MHz | ATDMA

UCD	Freq (MHz)	Level (dBmV)	ICFR (dB)
4	16.400	46.5	0.8
3	22.800	46.8	0.8
2	29.200	46.3	0.6
1	35.600	45.8	0.7
9	39.600	46.5	1.4

TRANSMIT OVER TIME

Live: 46.5 dBmV
Min: 46.5 dBmV Max: 46.5 dBmV

5 min Live

UPSTREAM EQ ANALYSIS

Channel:	EQ Tap:
Frequency: 16.400 MHz	Time: 0.20 μ s
TX Level: 46.5 dBmV	Level: -29.8 dBc
Bandwidth: 6.4 MHz	Distance: 79.7 ft
	VOP: 0.830

DOCSIS Expert

DOCSIS Expert

+0.0 dB TPC Work Order - Test Name

- DOWNSTREAM - 32 BONDED
- LEVEL OVER TIME
- MER OVER TIME
- BER OVER TIME
- DQI OVER TIME
- UPSTREAM - 5 BONDED
- TRANSMIT OVER TIME
- UPSTREAM ICFR
- UPSTREAM EQ ANALYSIS
- REGISTRATION**
- THROUGHPUT
- PING / TRACEROUTE
- PACKET QUALITY

Configure Display Channel Search **Stop**

REGISTRATION

Service Plan: 00:07:11:1F:8C:12

Config File: d11_walledgarden_v6.cm

Cable Modem

Provisioning Mode: IPV6 ONLY

IPv6 Address: 2001:558:40a2:42:207:11ff:fe1f8c121728

IPv6 Gateway Address: fe80:201:5cff:feb2:3046

IPv6 Config File: d11_walledgarden_v6.cm

CPE

IPv4 Address: 98.226.73.212

IPv4 Subnet Mask: 255.255.248.0

IPv4 Gateway Address: 98.226.72.1

Servers

IPv6 TFTP Server: fe80:201:5cff:feb2:3046

IPv6 DHCP Server: fe80:201:5cff:feb2:3046

IPv6 TOD Server: fe80:201:5cff:feb2:3046

THROUGHPUT

THROUGHPUT (100 %)

Downstream URL: http://spt01mtpkca.mtpk.ca.charter.com/mtpkr2D2wh3reRuN0w.iso

Upstream URL: http://spt01mtpkca.mtpk.ca.charter.com/mtpkr2D2wh3reRuN0w.iso

1.19 Gbps 42.30 Mbps

RTT: 19 ms RTT: 19 ms

Receive Send

Configure Start Throughput

PING / TRACEROUTE

	Current	Minimum	Average	Maximum
Delay (ms)	0	0	0	0
Destination	98.226.72.1			
Echoes Sent	10			
Replies Returned	0			
Replies Lost	10			
Replies Lost %	100.00%			
Error				

PACKET QUALITY

Packet Loss: 299 Sent 0.0 % Loss

Max Round Trip Delay: 26 ms

Max Jitter: 19 ms

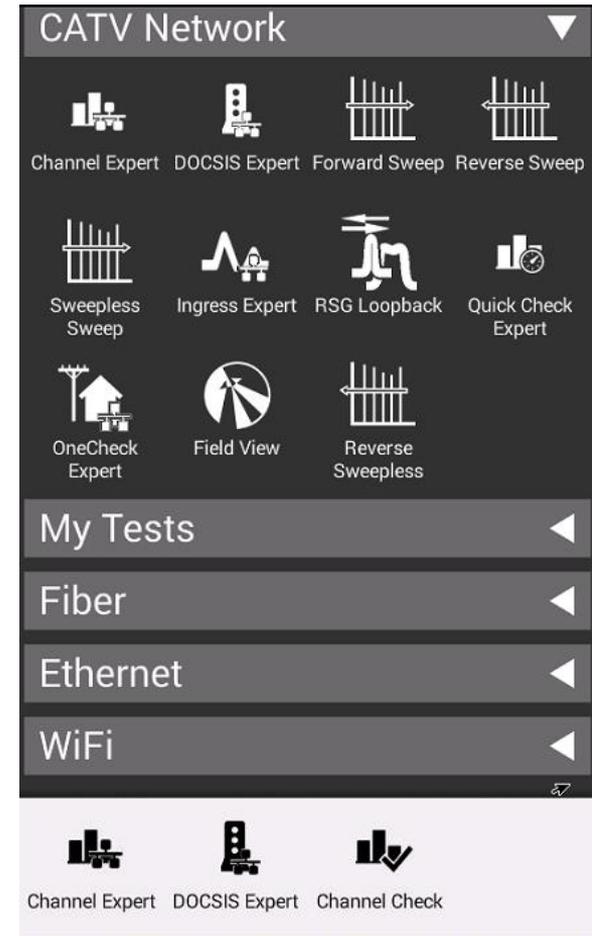
Stop Packet Quality

Start Pass Through Cable Modem

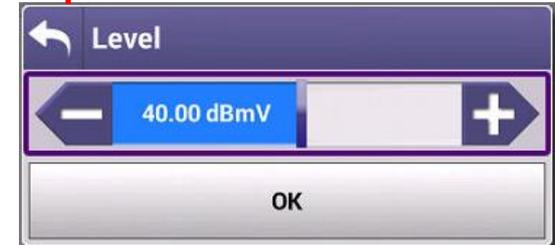
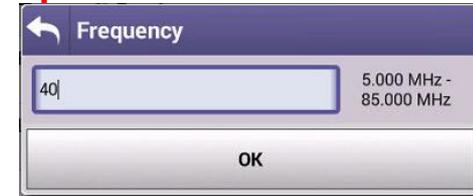
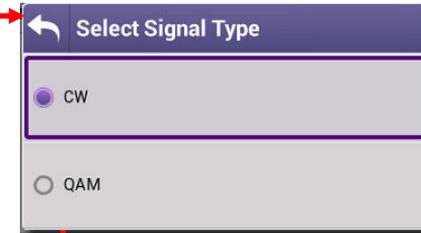
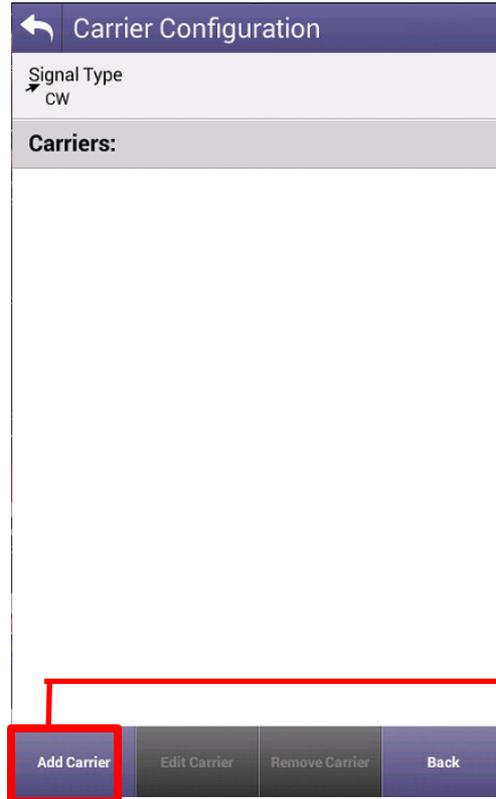
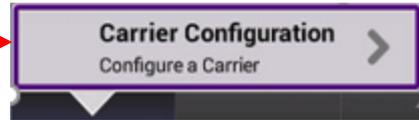
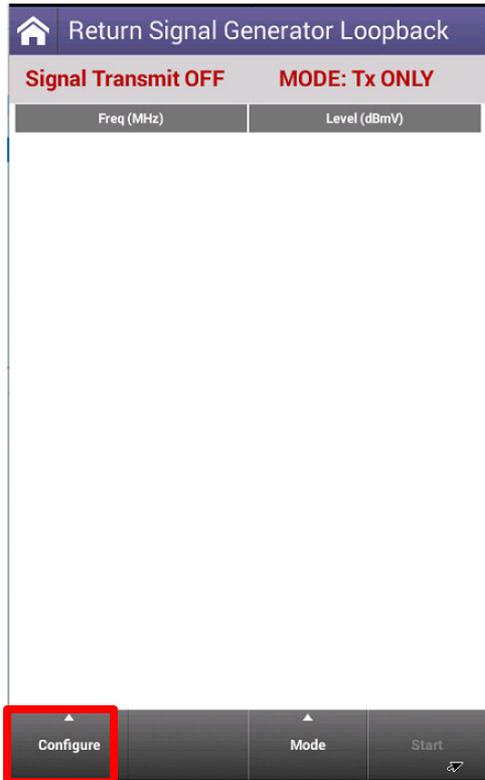
Return Signal Generator (RSG) w/ Loopback

Getting Started with RSG Loopback

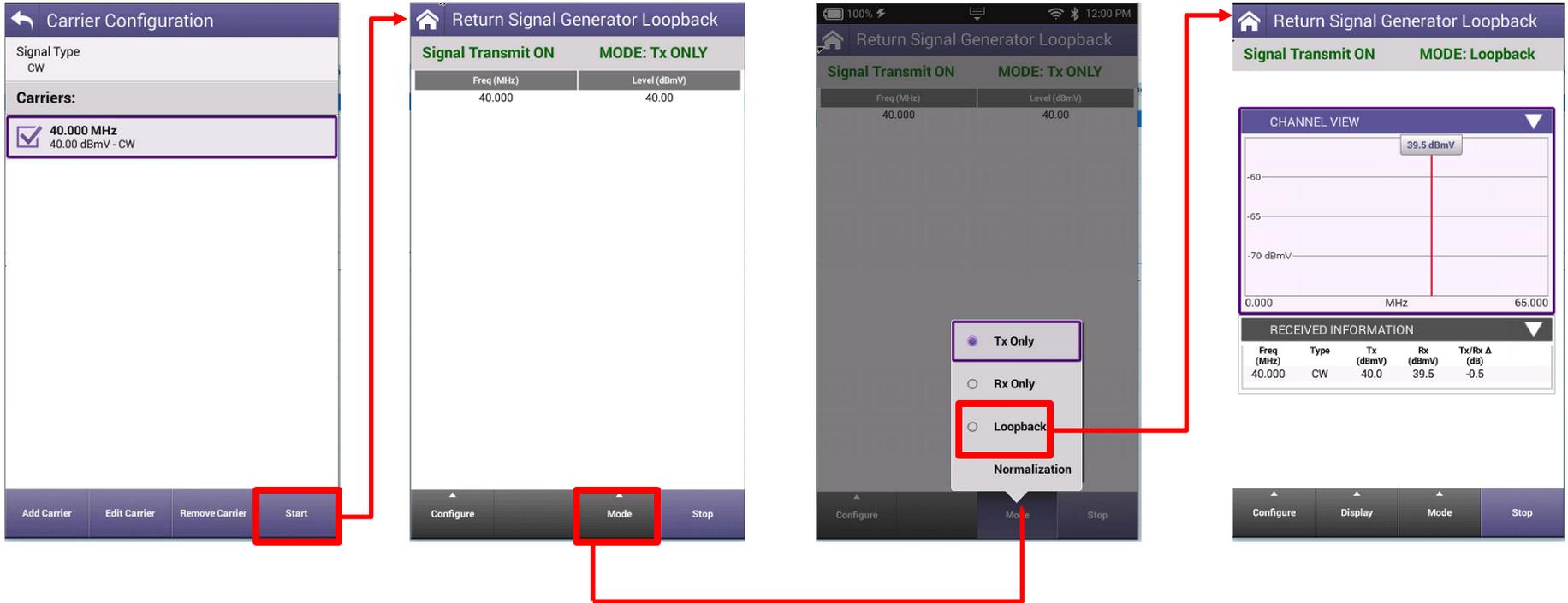
- RFG Loopback mode will appear in the CATV Network section on the ONX home screen
- To enter the mode press, or select, the RFG Loopback icon



RSG Loopback



RSG Loopback

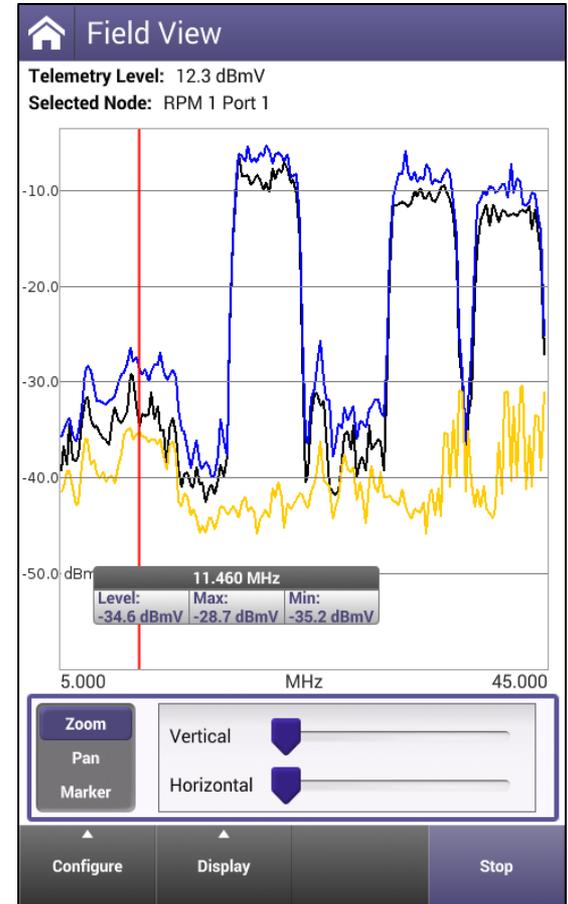


Field View with RSG



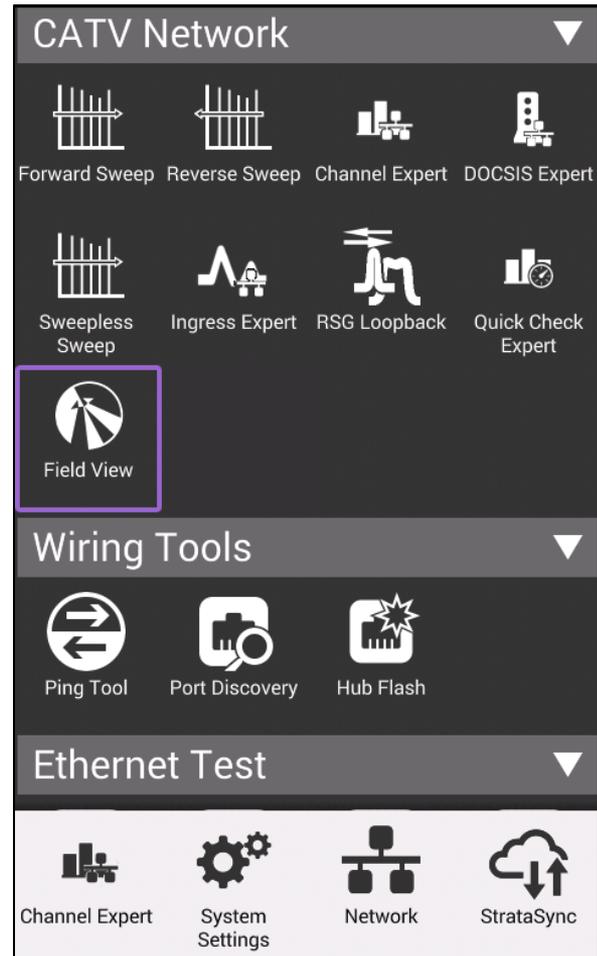
Ingress/Noise Mitigation Test Process

- Ingress/noise in the upstream path is very common and impacts subscriber services
- Ingress/noise can be constant, or intermittent
 - 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?
 - If ingress is intermittent, and spectrum is clean, tech doesn't know whether there is no ingress at this particular point, or the ingress isn't happening at this time
- Meter spectrum mode enables tech to test upstream spectrum only at their local test point



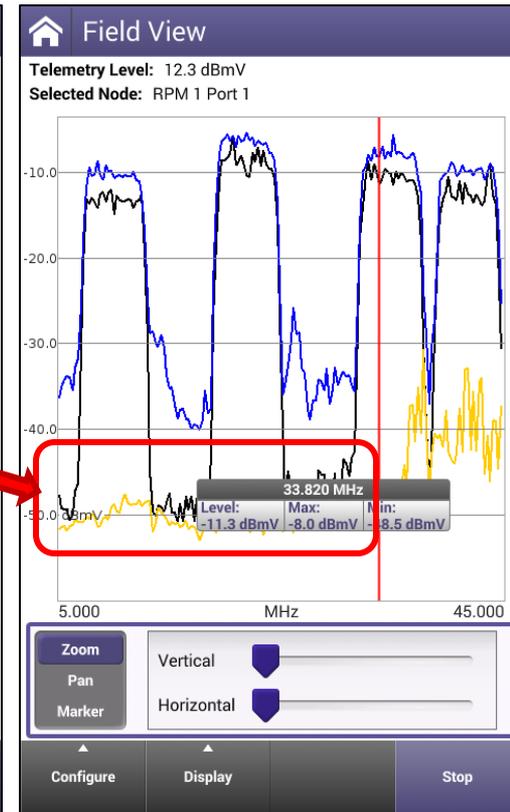
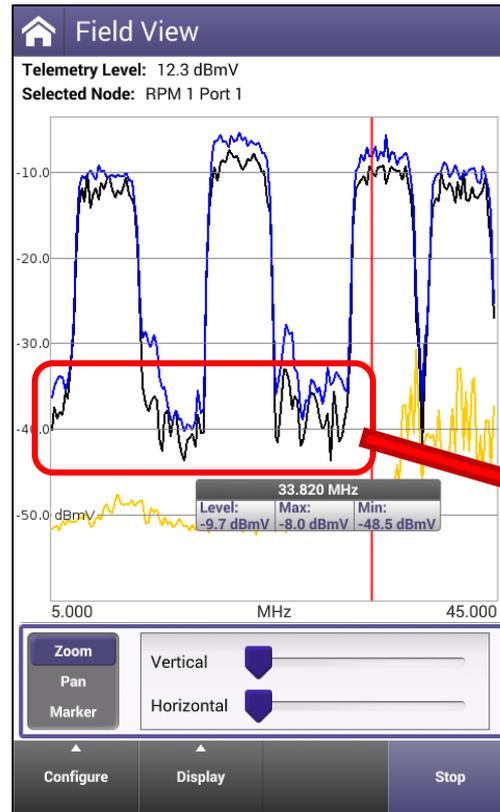
Getting Started with Field View

- If enabled on the ONX, Field View mode will appear in the CATV Network section on the ONX home screen
- To enter the mode press, or select, the Field View icon



Using Field View

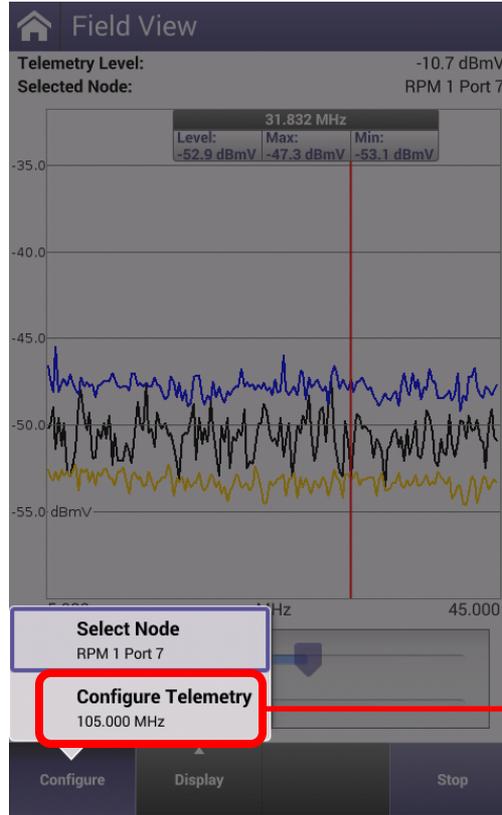
- Field View is the remote view of the headend return path on an instrument located in the field
- Isolates the noise source
- Using the remote display of the headend the tech can quickly confirm if actions taken are improving the network or if additional work is needed
- When an interfering ingress source is removed, the noise present at the headend will drop out revealing a lower noise floor at the headend
- A lower system noise floor eases demodulation of upstream carriers for the CMTS and leads to a better quality of experience for subscribers



Left: Noise visible between the active upstream carriers
Right: Noise source cleaned up reveals a much lower system noise floor

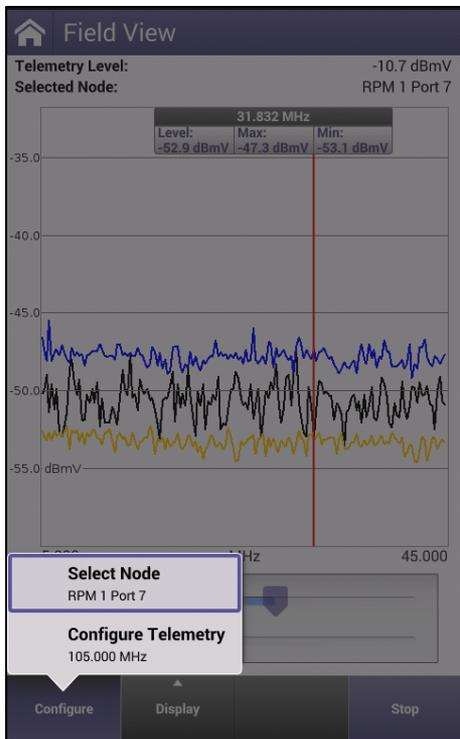
Setting Field View Telemetry Receive Frequency

- An HSM connected to PathTrak at the headend is required for Field View
- The HSM sends a telemetry signal downstream for field devices, like the ONX or DSAM, providing visibility of the return spectrum remotely
- The telemetry receive frequency is entered on the ONX by pressing the Configure button then selecting “Configure Telemetry”
- This will bring up an entry box where the telemetry frequency can be entered



Field View Node Selection and Information

- Users can select the desired node from the list of actively broadcasting nodes from the PathTrak system
- Users can also get details of the specific broadcasting nodes



All Nodes

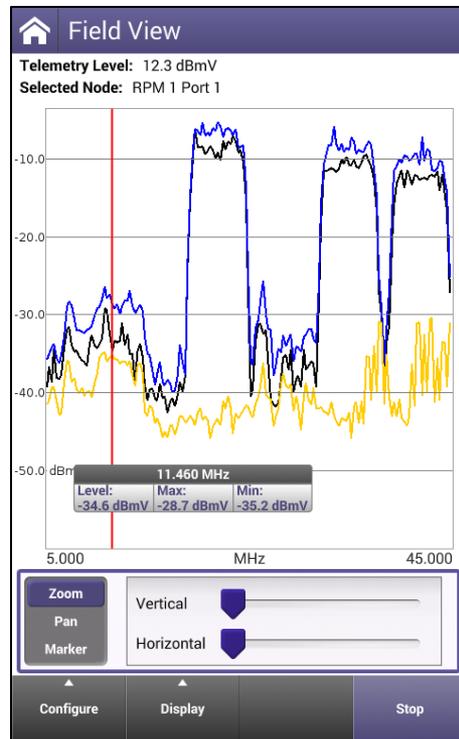
RPM 1 Port 2	Inactive
RPM 1 Port 3_renamed	Active
RPM 1 Port 4	Inactive
RPM 1 Port 5	Active
RPM 1 Port 6	Inactive
<input checked="" type="checkbox"/> RPM 1 Port 7	Active
RPM 1 Port 8	Inactive
RPM 2 Port 1	Inactive
RPM 2 Port 2	Inactive
RPM 2 Port 3	Inactive
RPM 2 Port 4	Inactive
RPM 2 Port 5	Inactive

Node Info Show Active Nodes Select Node

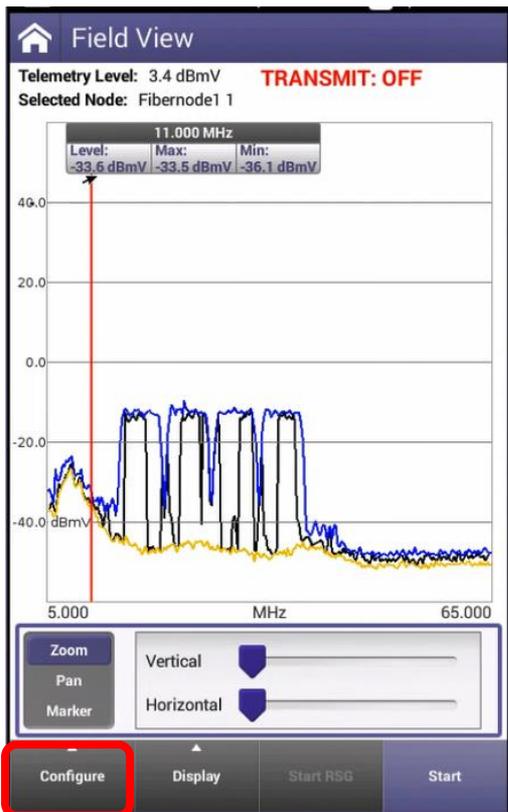
Node Information

Broadcasting

Name	RPM 1 Port 7
UID	332
Center Frequency	25.000 MHz
Span	40.000 MHz
Dwell	100 μ s
Points	161
VBW	100 KHz
RBW	300 KHz



FieldView RSG Transmit Carriers



Navigation menu options:

- Select Node
- Configure Telemetry
103.000 MHz
- Carrier Configuration**
Configure transmit carriers
- Normalize
Perform Normalization

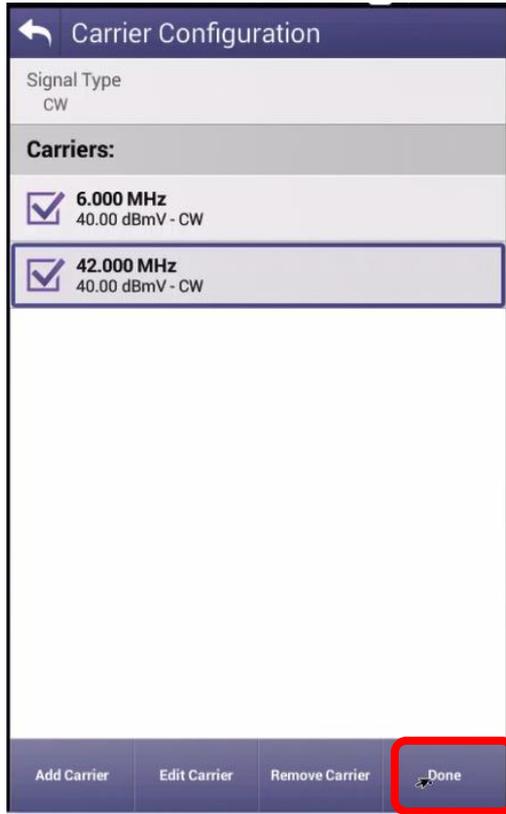
Carrier Configuration screen details:

- Signal Type: CW
- Carriers:
 - 5.000 MHz
15.00 dBmV - CW
- Buttons: Add Carrier, Edit Carrier, Remove Carrier, Done.

Add Carrier dialog box details:

- Frequency: 42.000 MHz
- Level: 40.00 dBmV
- Button: OK

Field View RSG Transmit Carriers



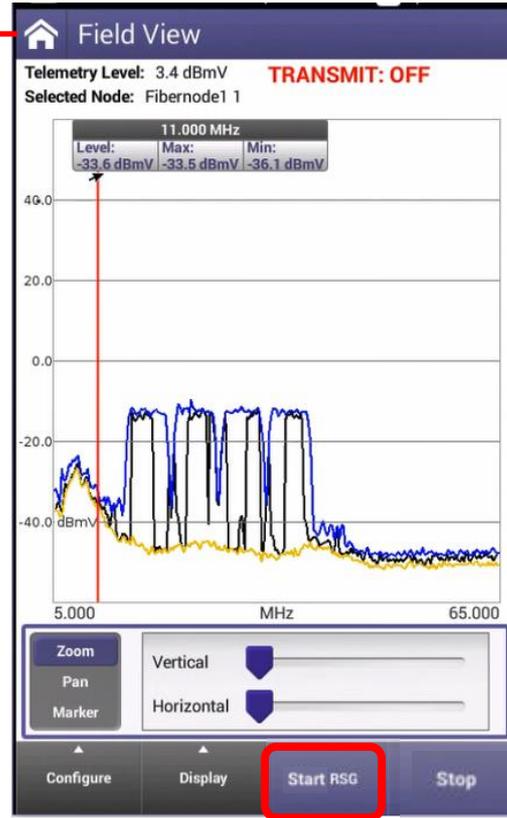
Carrier Configuration

Signal Type
CW

Carriers:

- 6.000 MHz
40.00 dBmV - CW
- 42.000 MHz
40.00 dBmV - CW

Done



Field View

Telemetry Level: 3.4 dBmV **TRANSMIT: OFF**

Selected Node: Fibernode1 1

11.000 MHz		
Level:	Max:	Min:
-33.6 dBmV	-33.5 dBmV	-36.1 dBmV

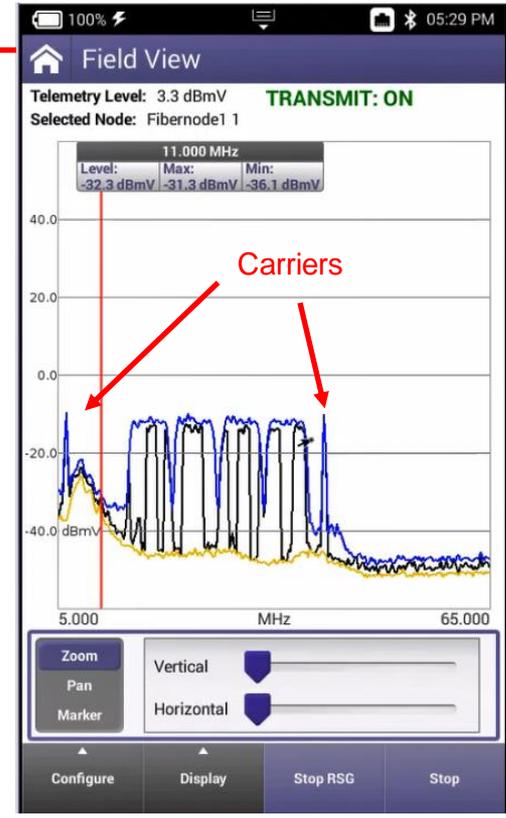
40.0
20.0
0.0
-20.0
-40.0 dBmV

5.000 MHz 65.000

Zoom
Pan
Marker

Vertical
Horizontal

Configure Display **Start RSG** Stop



Field View

Telemetry Level: 3.3 dBmV **TRANSMIT: ON**

Selected Node: Fibernode1 1

11.000 MHz		
Level:	Max:	Min:
-32.3 dBmV	-31.3 dBmV	-36.1 dBmV

40.0
20.0
0.0
-20.0
-40.0 dBmV

5.000 MHz 65.000

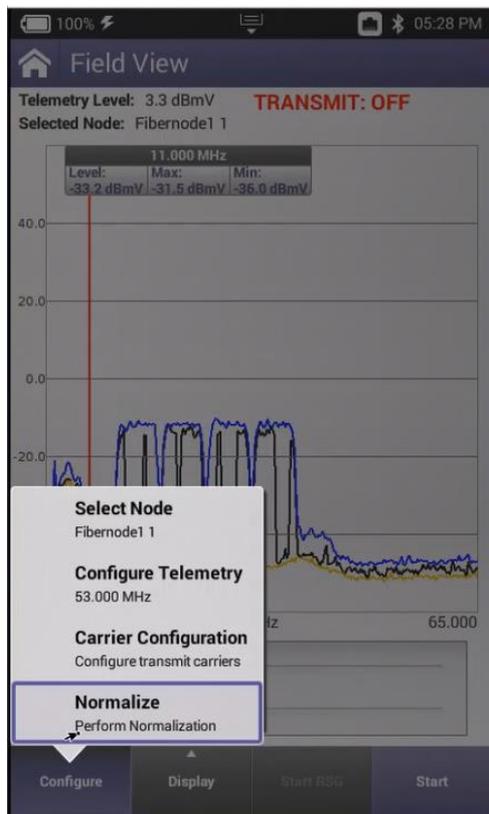
Zoom
Pan
Marker

Vertical
Horizontal

Configure Display Stop RSG Stop

Carriers

Field View Normalization



The 'Normalization' screen displays the following information:

Status:
Last Normalization Time:
January 02, 2019 02:37:24 PM

An illustration of a purple handheld device with a loop antenna is shown. Below it, the text reads:

Normalization is required for accurate results.
Connect a short cable between port 1 and port 2 of the meter and press Start.

A 'Start' button is located at the bottom right of the screen.

The 'Normalization' screen displays the following information:

Status: Completed Successfully
Last Normalization Time:
September 25, 2020 02:13:28 PM

A green checkmark icon is shown to the left of the status text. Below it, the same illustration of the purple handheld device is shown. The text reads:

Normalization is required for accurate results.
Connect a short cable between port 1 and port 2 of the meter and press Start.

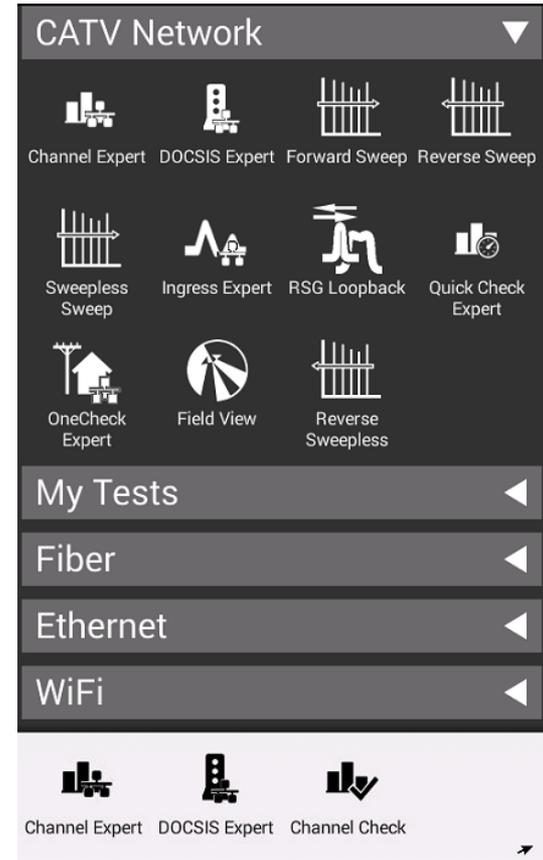
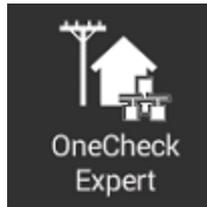
A 'Start' button is located at the bottom right of the screen.

OneCheck Expert

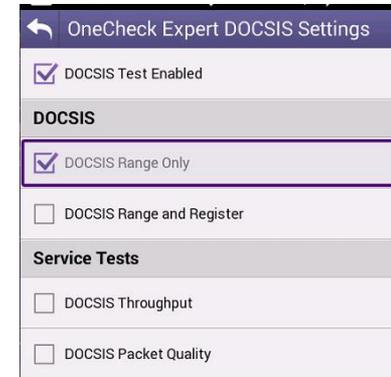
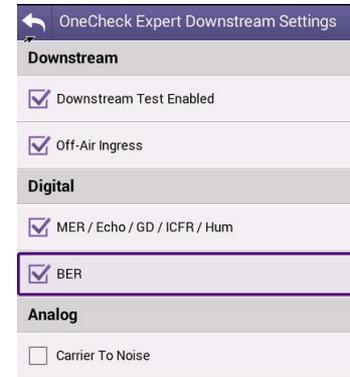
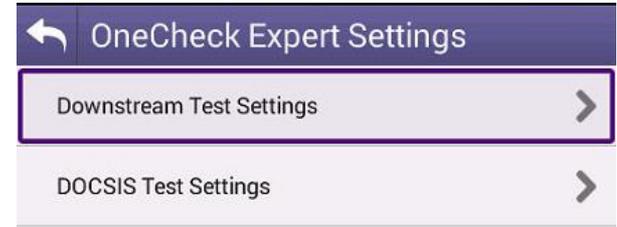
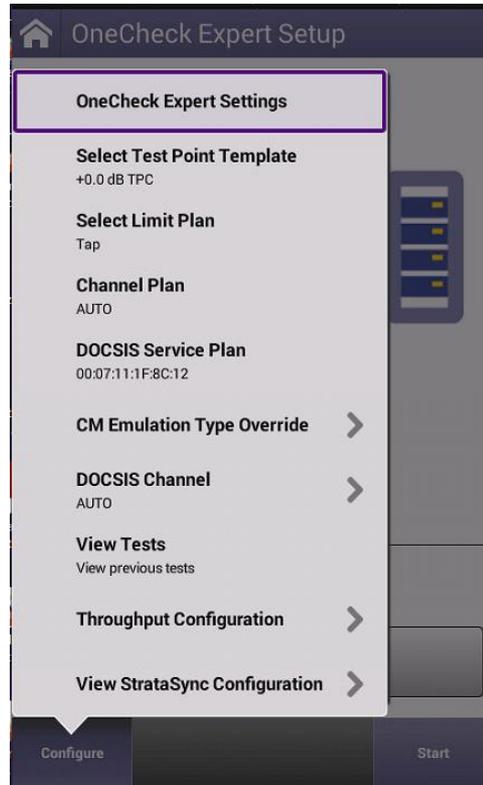
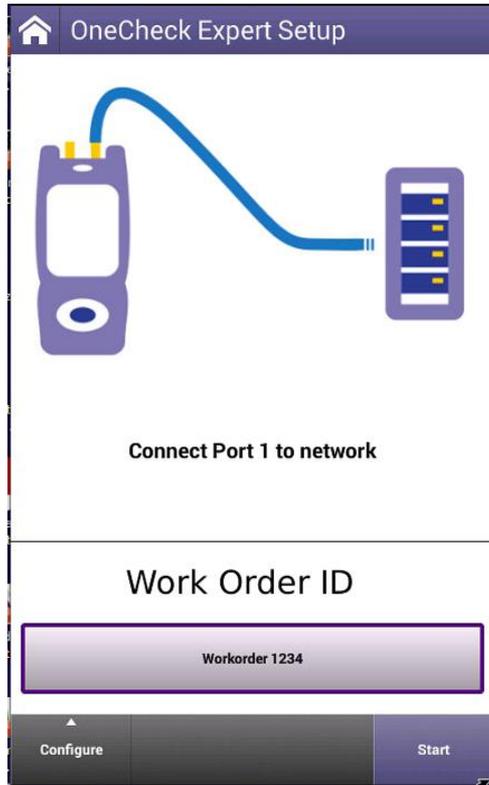
Getting Started with OneCheck Expert

OneCheck Expert mode will appear in the CATV Network section on the ONX home screen

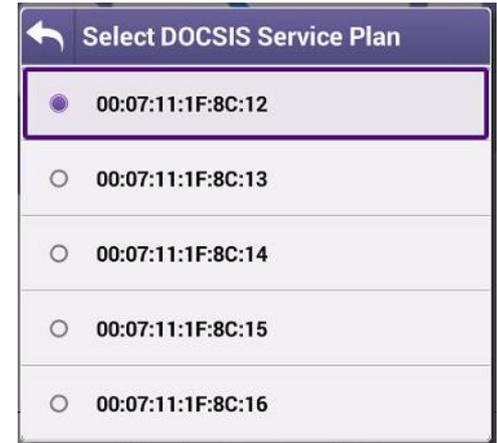
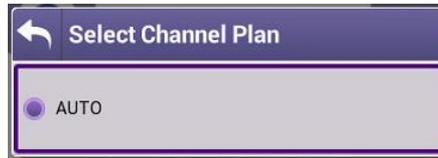
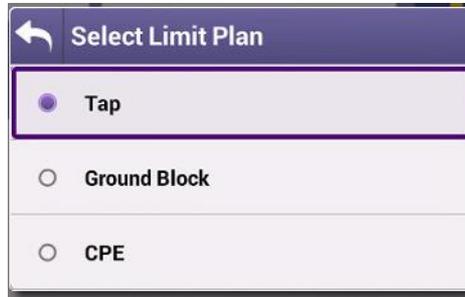
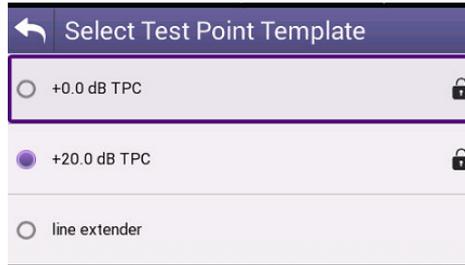
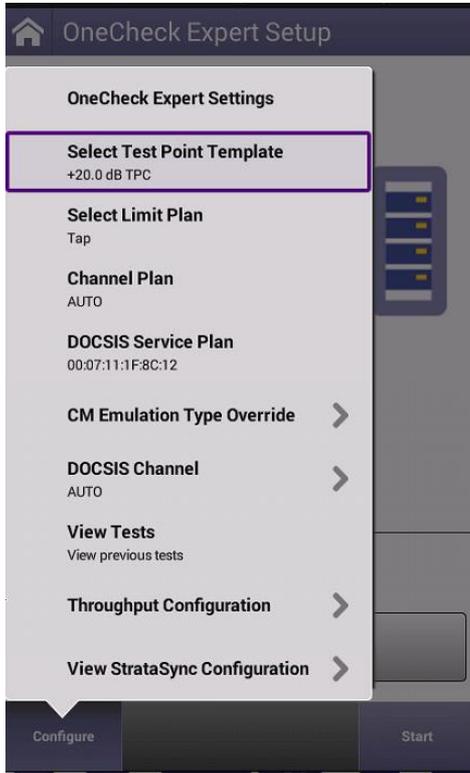
To enter the mode press, or select, the Field View icon



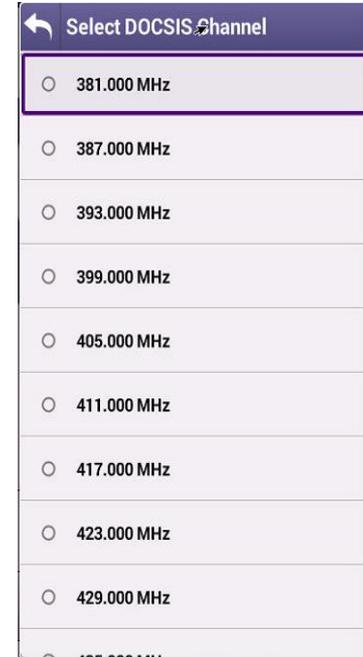
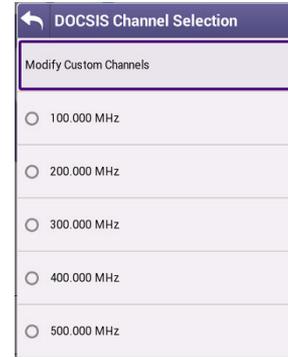
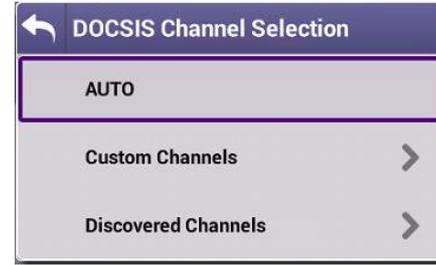
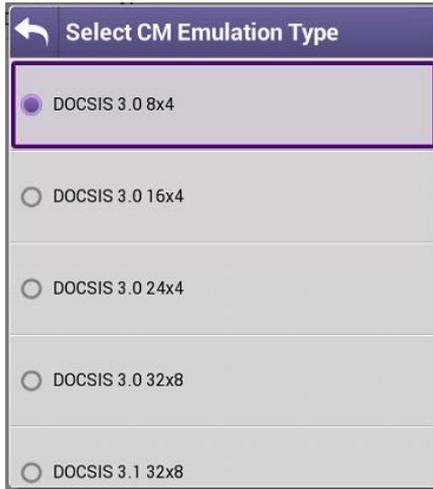
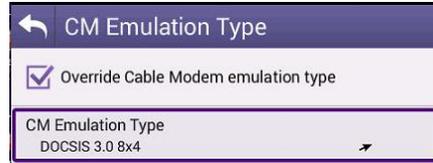
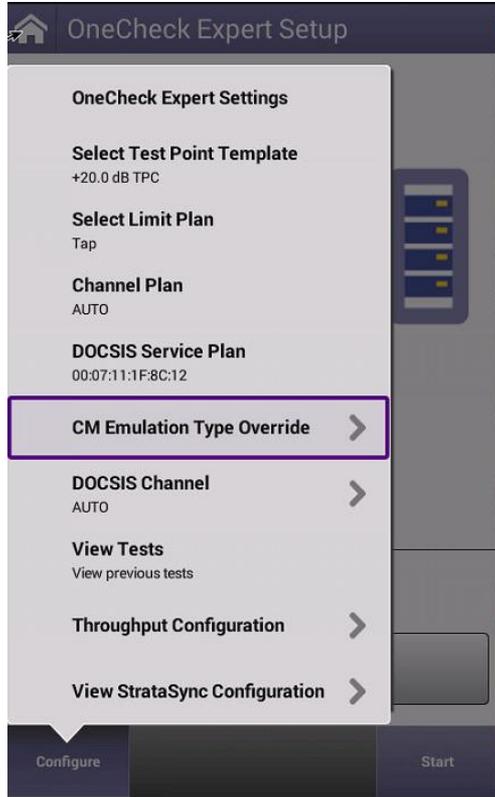
OneCheck Expert



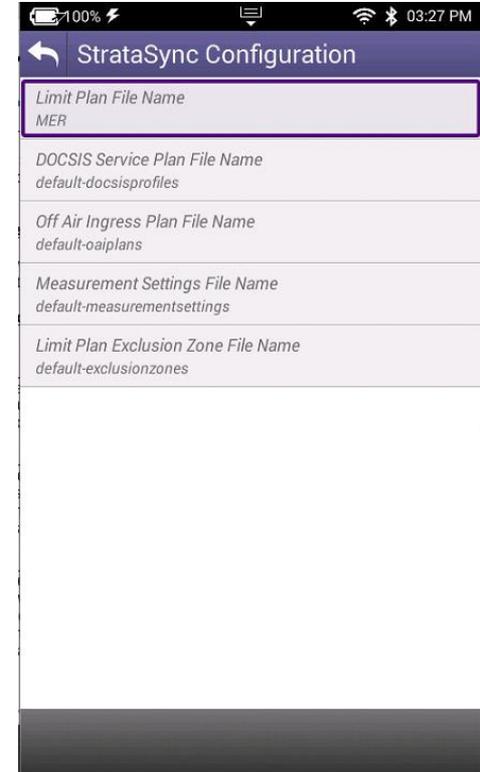
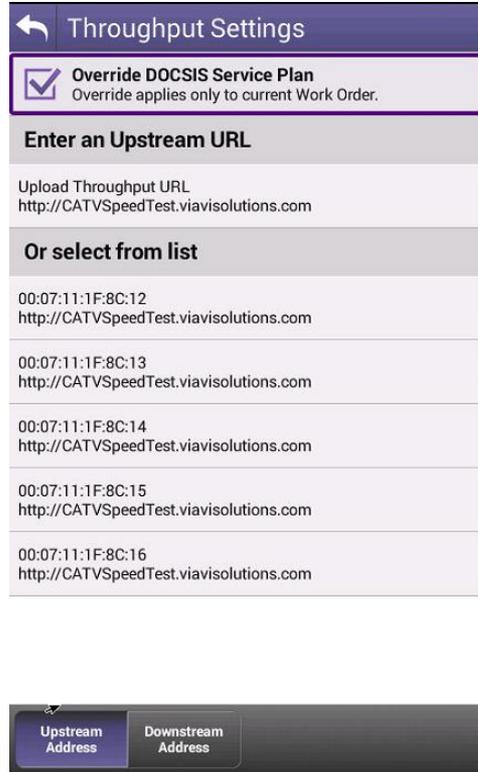
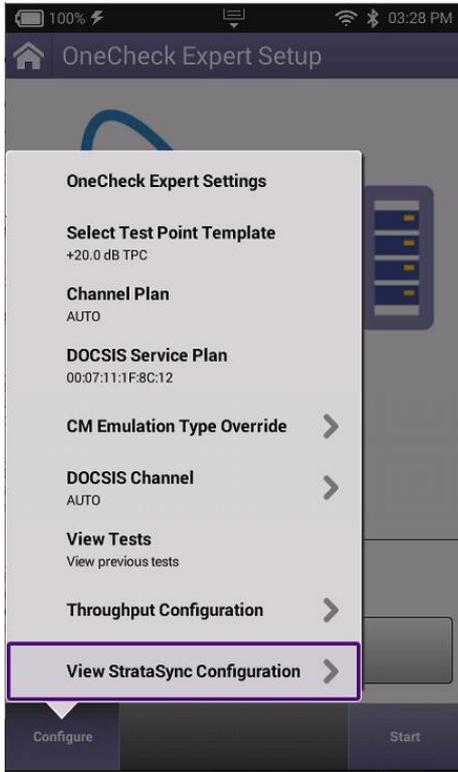
OneCheck Expert



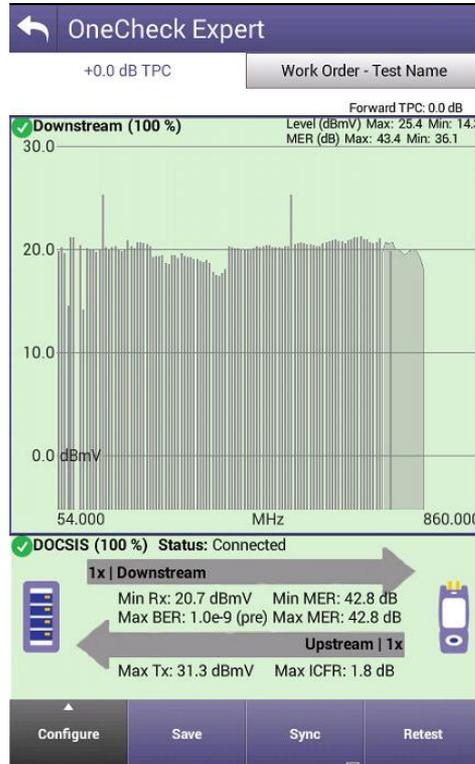
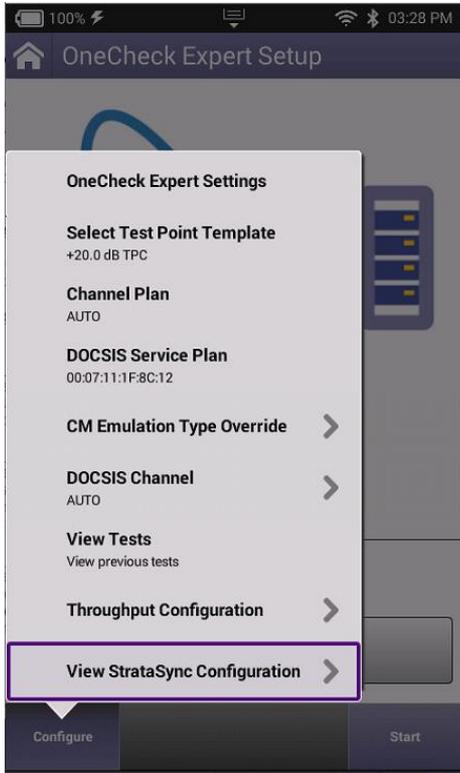
OneCheck Expert



OneCheck Expert



OneCheck Expert



Save Test

Save Test to Work Order

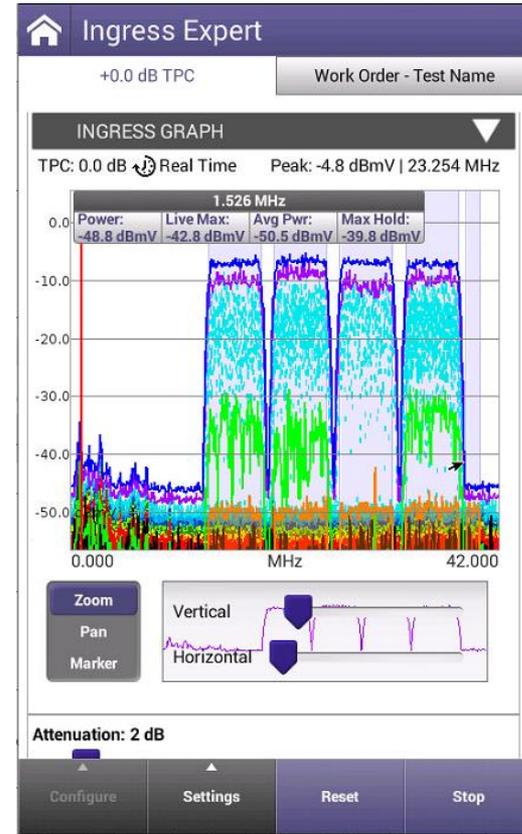
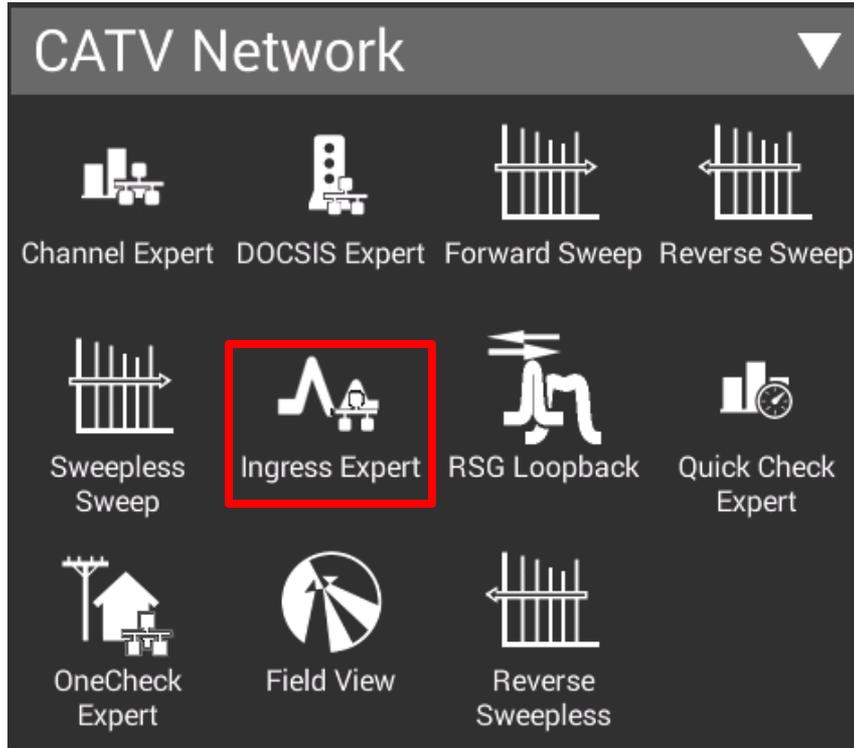
Test Name
save1

Work Order ID
Workorder 1234

Set Name to Current Date Save

Ingress Expert

Ingress Expert



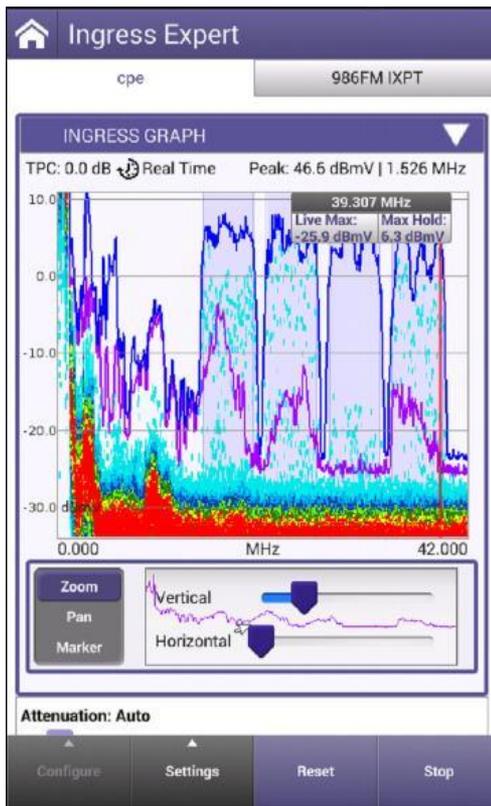
INGRESS EXPERT

INGRESS EXPERT is based on powerful OneExpert CATV HyperSpectrum technology (Real Time Spectrum Analyzer)

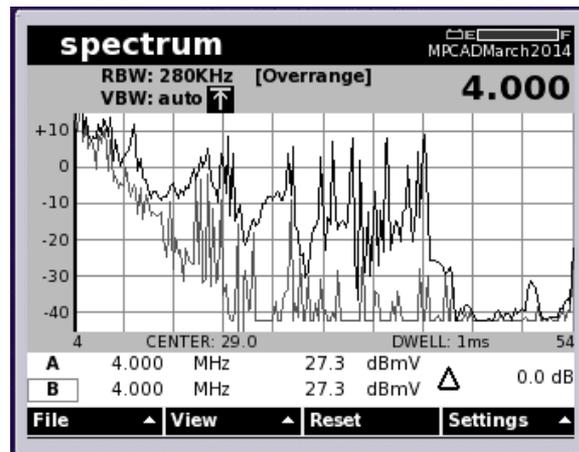
Innovative overlapping FFT (Fast Faurier transform) measures all transient interfering signals

INGRESS EXPERT is different from Swept Spectrum Analyzers (DSAM and Pathtrak) – its more accurate and has thousands of samples a second

Overlapping options provide additional detail

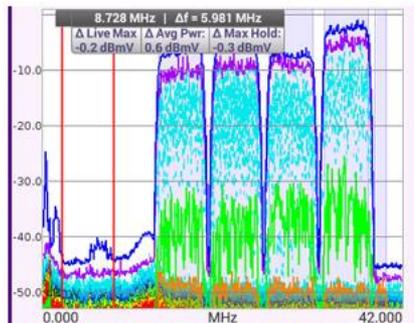
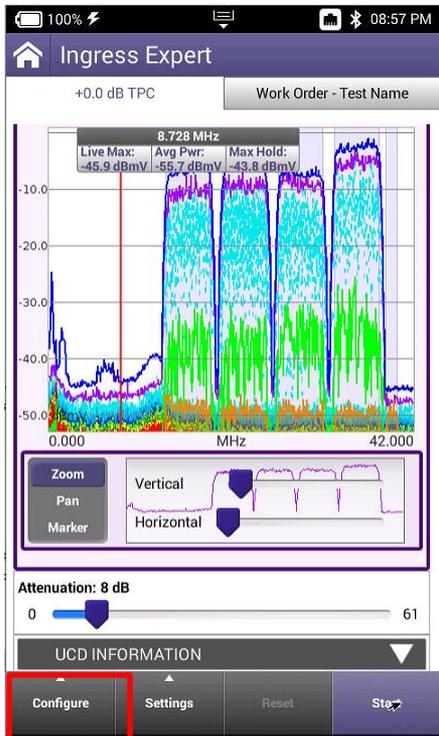


ONX630

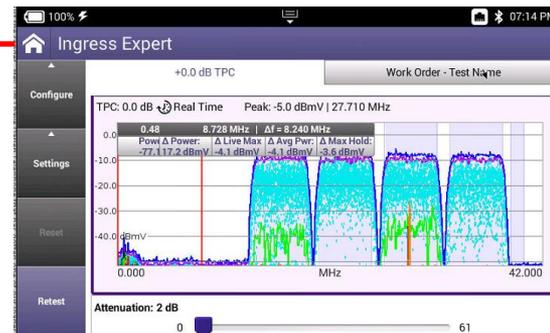
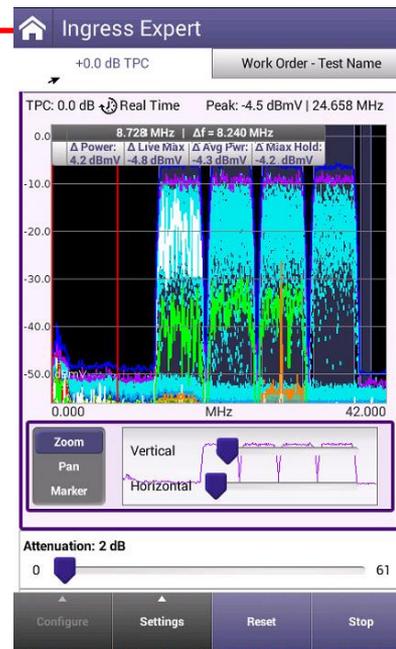


DSAM6300

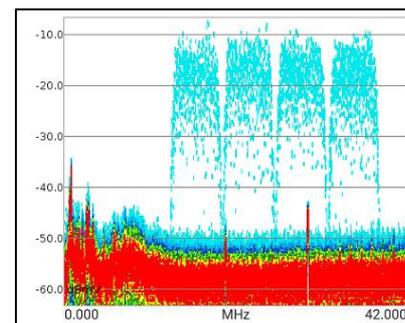
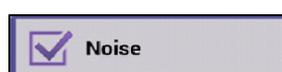
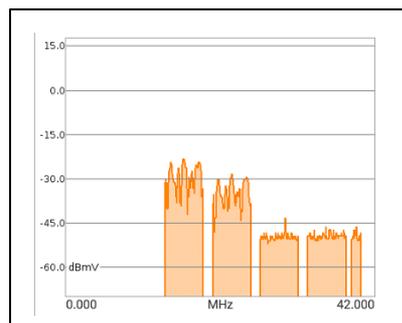
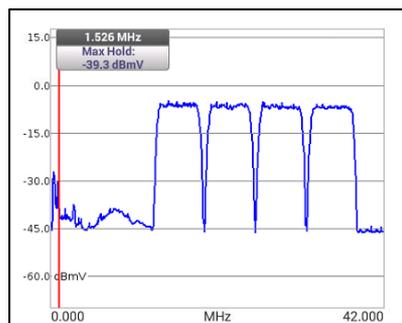
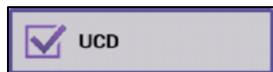
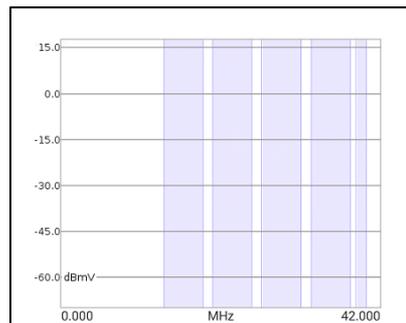
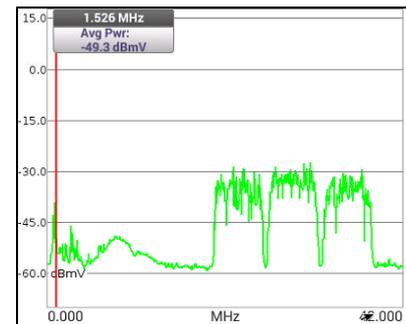
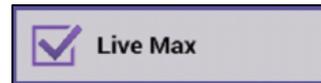
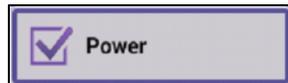
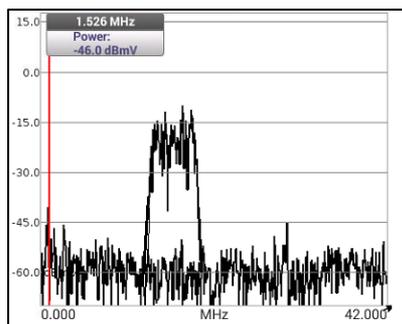
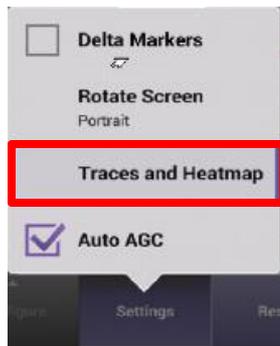
INGRESS EXPERT - CONFIGURE



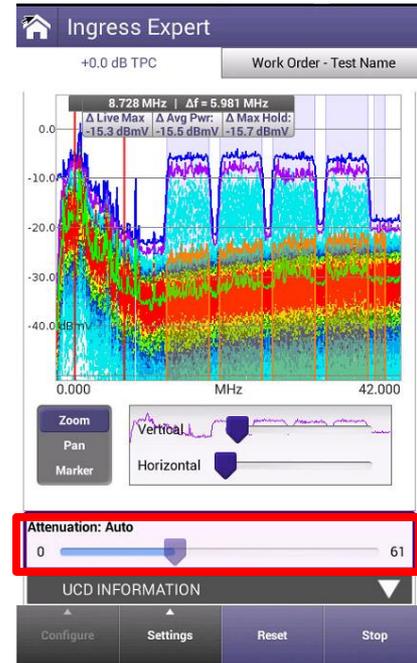
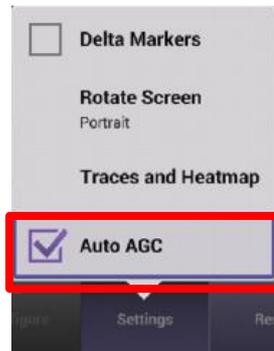
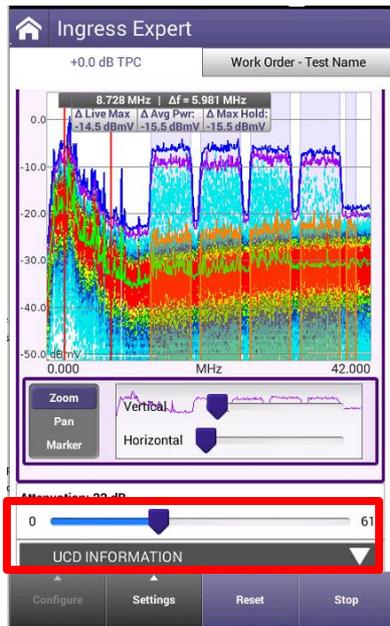
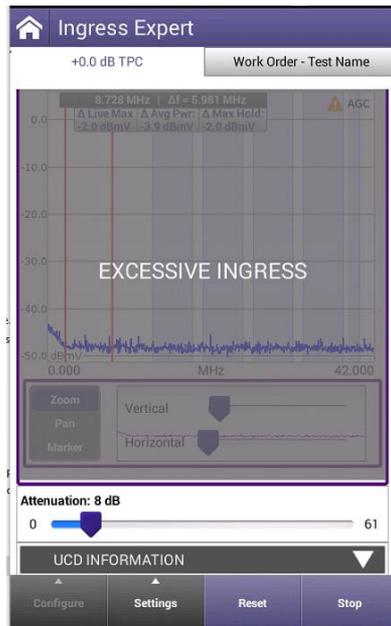
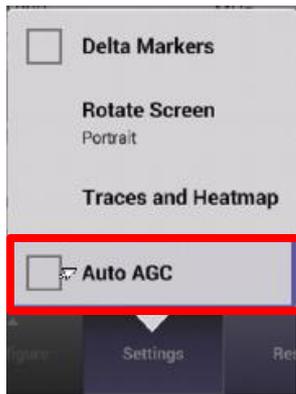
- Delta Markers
- Dark Mode
- Rotate Screen
Portrait
- Traces and Heatmap
- Auto AGC



INGRESS EXPERT – HEATMAP OVERLAYS



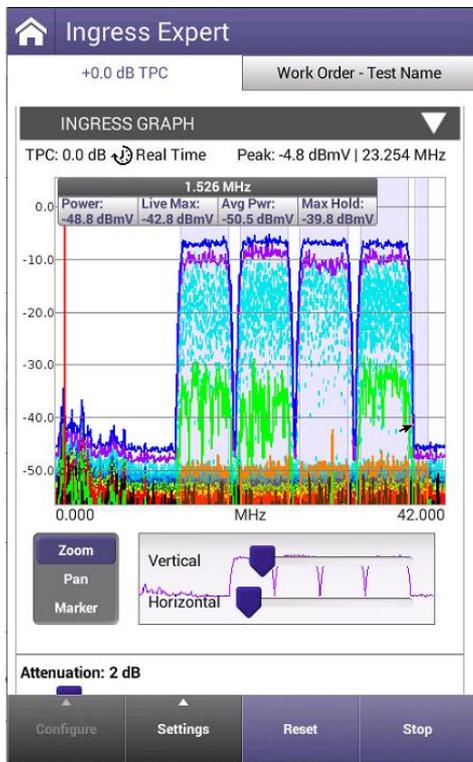
INGRESS EXPERT – AUTO-ACG



- DISABLING AUTO AGC requires the user manually attenuates the signal to prevent OVERRANGE
- NOTE: The spectrum Specification is 120 MHZ

- AUTO AGC will attempt keep spectrum view references, up to 60dB dynamic range
- NOTE: The Attenuation scale is disabled when AGC is checked

INGRESS EXPERT - CONFIGURE



Select Test Point Template
+0.0 dB TPC

Select High Frequency
42.000 MHz - Real Time

Select Heatmap Persistence
Low

Save Test
Save current test to a Work Order

View Tests
View previous tests

View StrataSync Configuration >

View Test Results

Tests for Current Work Order:

Tap noise

+0.0 dB TPC

+20.0 dB TPC

line extender

Select Span High Frequency

42.000 MHz
Real Time

65.000 MHz
Real Time

85.000 MHz
Real Time

110.000 MHz
Real Time

Select Heatmap Persistence

Low

Medium

High

Save Test

Save Test to Work Order

Test Name
Tap noise

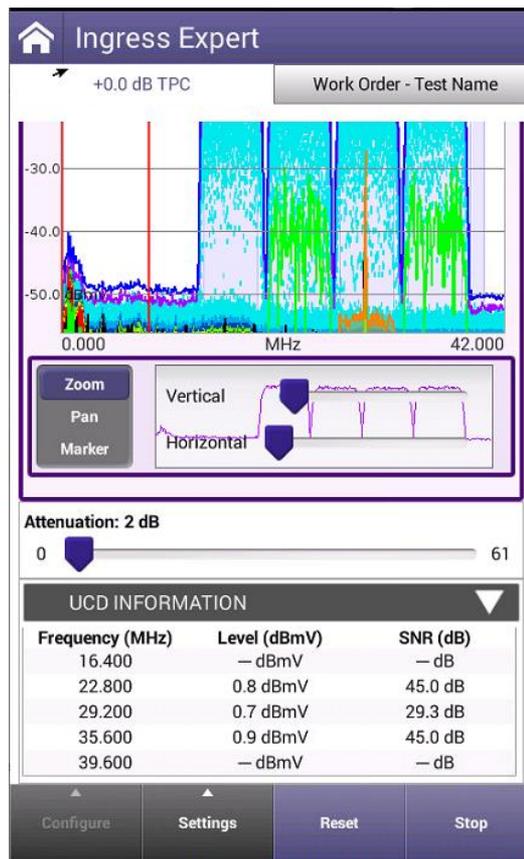
Work Order ID
Workorder 1234

StrataSync Configuration

Test Point Templates File Name
default-testpoint-templates

INGRESS EXPERT – SNR and NOISE

- The NOISE setting will allow users to see the noise floor under the upstream carriers
- If the user performs a DOCSIS EXPERT test before INGRESS EXPERT, UCDs will match that of the network and give clear indication of the carriers width and location
- Additionally, UCDs will be demodulated with FREQUENCY, LEVEL and SNR calculated and displayed





**Sweep & Plant Maintenance System
ONX-630 & SCU-1800**

SCU-1800

Advanced System Sweep

- **Fast** — Sweep, align, and troubleshoot faster than ever
- **Stealth Sweep™** with integrated Tilt/Align quickly validates amps and HFC networks faster than any other test
- Complete a downstream scan including MER/ BER in about 60 seconds
- **AutoChannel™** instantly identifies the channel lineup and eliminates guesswork
- **Powerful** — Designed to find difficult problems
- Combined DOCSIS 3.1 and sweep testing validates the complete HFC network
- **Ingress Expert** with Hyper Spectrum™ catches difficult return noise problems
- **Expert modes** with advanced parallel processing find hidden problems and root causes
- **Flexible** — Ready for your changing network needs
- The ONX-630's **dual diplexer** 42/85 or 65/204 with 1.2GHz supports next generation networks
- The ONX-630 is compatible with DSAM-6300 and SDA-55XX providing seamless transition
- Common sweep reporting for ONX-630 and DSAM ensures consistency via **StrataSync™**

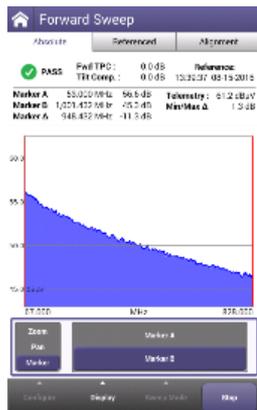
Next Generation Sweep Gear

OneExpert CATV ONX-630

- Field upgradable: Sweep + DOCSIS 3.1 module
- Reverse Sweep capable to 204MHz → compatible with SDA-5500/5510
- Extended Forward Sweep range to 1.2GHz with new SCU-1800



ONX-630



Sweep Control Unit SCU-1800

- 1RU unit with Ethernet interface (web browser/remote)
- Compatible with DSAM-6300
- Forward TX to 1.2GHz with ONX
 - HW capable up to 1.8GHz
 - 50dB Spurious Free Range
 - Narrow Sweep Pulses – fit between carriers
- Sixteen switchable return sweep ports (sw optional)
- Flexible mode of operation
 - Forward Tx only (5500)
 - Forward + Single User Reverse (5500)
 - Multi-User Reverse (5510)

SCU-1800 Appearance



SCU-1800 Sweep Transmitter/Receiver

- The headend/hub rack-mounted SCU-1800 Sweep Control Unit provides non-interfering downstream sweep to 1.218 GHz and upstream sweep to 204 MHz on up to 16 ports.
- The sweep is remotely configurable via Ethernet and browser, and a sweep plan can be built from imported information from the **OneExpert ONX**
- Additionally, there is an auto-fill capability in which the sweep points are automatically injected in unoccupied spectrum areas.

SCU-1800 Field Unit Compatibility

SDA / DSAM sweep type

Forward Sweep

- 50 to 1000 MHz

Reverse Sweep

- 5 to 85 MHz
- Single User Reverse
- Multi User Optional

▪ ONX sweep type

Forward sweep

- 54 to 1218 MHz
- -20 to +20 dBmV input range

Reverse Sweep

- 5 to 204 MHz frequency Range
- -20 to +20 dBmV input level range

SCU - Forward Sweep

- Uses downstream plant and inserted carriers
- Up to 500 sweep points
- Future proof with 1800 MHz capable hardware
- SDA Protocol

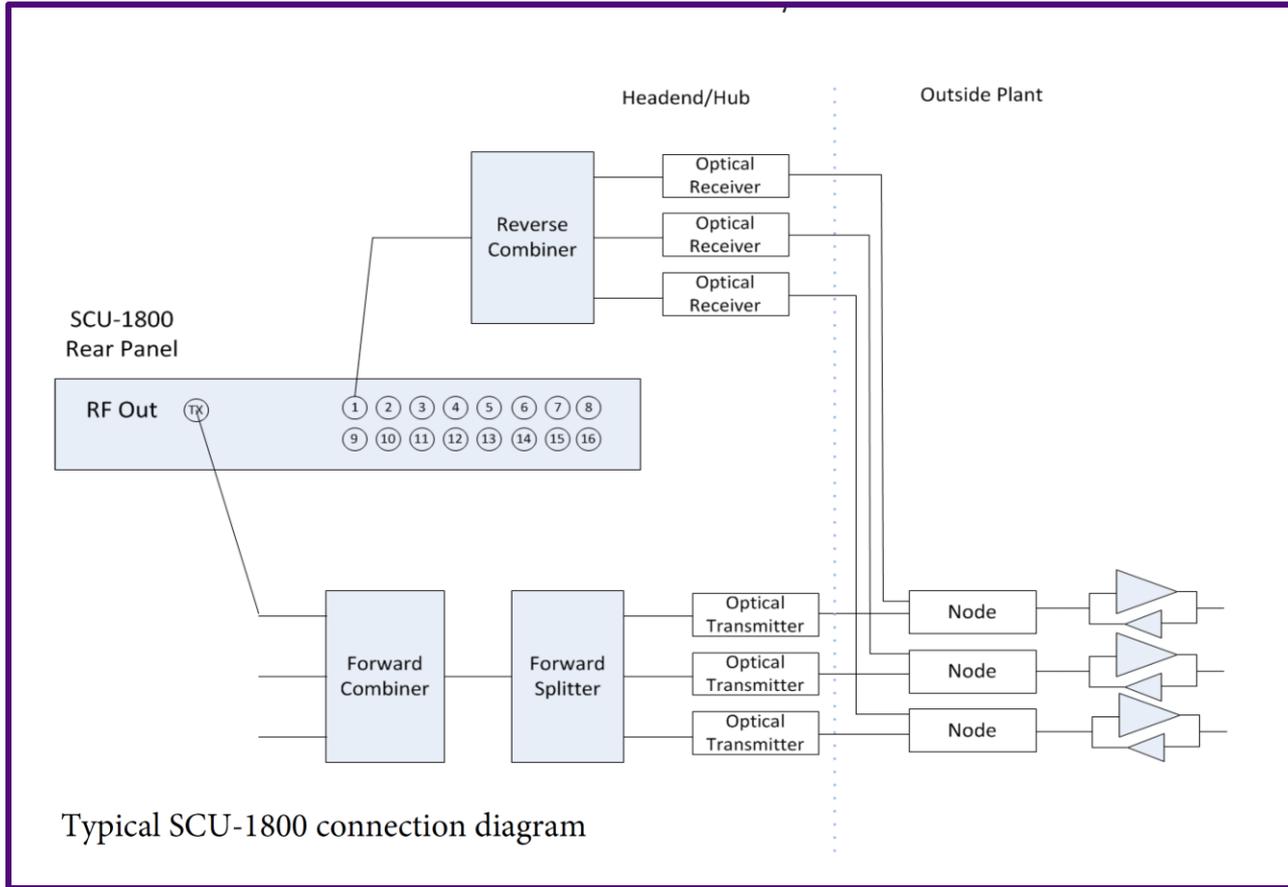
SCU - Reverse Sweep Inputs

- 16 isolated inputs
- Manual select standard
- Optional Auto input select

Frequency Range

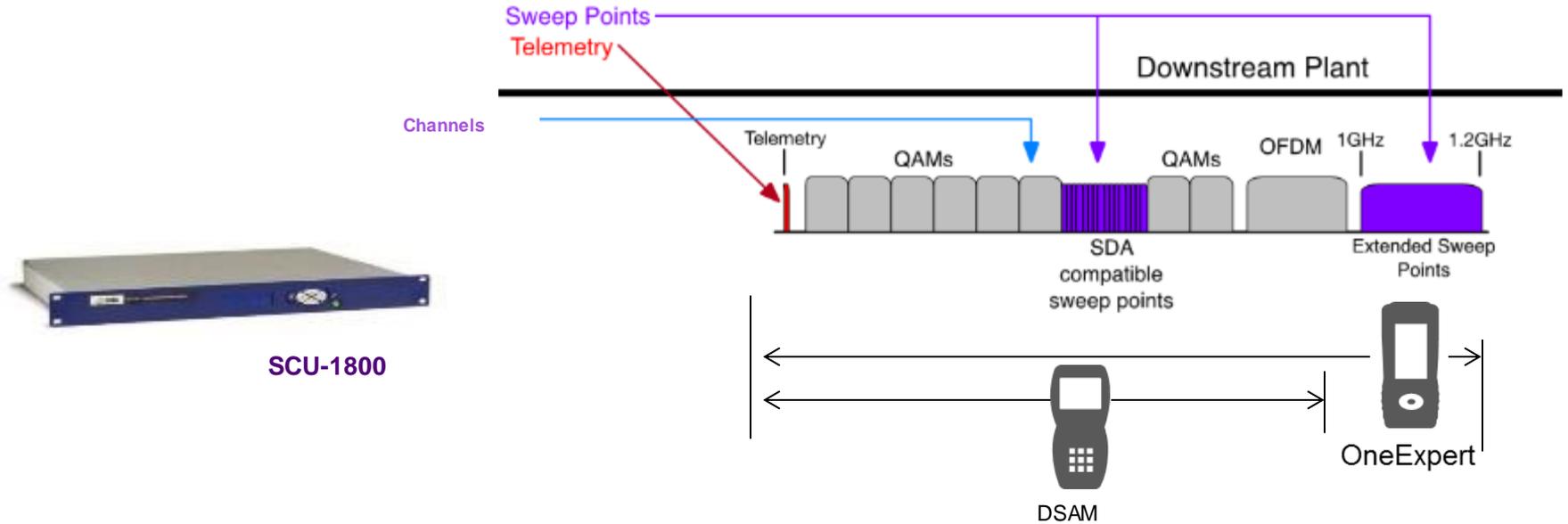
- 5 to 204 MHz
- SDA Protocol

Typical SCU-1800 Connection diagram



Typical SCU-1800 connection diagram

Sweep Beyond 1GHz



- ONX coupled with new Sweep Control unit can provide sweep to 1.2GHz and beyond
- DSAM units on same system are still compatible up to 1GHz.

(New) Reverse Sweep to 204 MHz

SCU-1800



Sweep Plan Telemetry

QAMs QAMs

Upstream Sweep Telemetry

Upstream Sweep Points

ONX injected sweep points
1 MHz 204 MHz

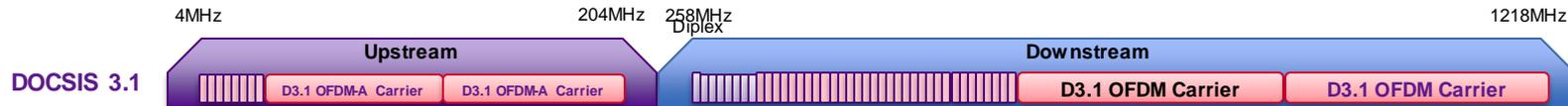
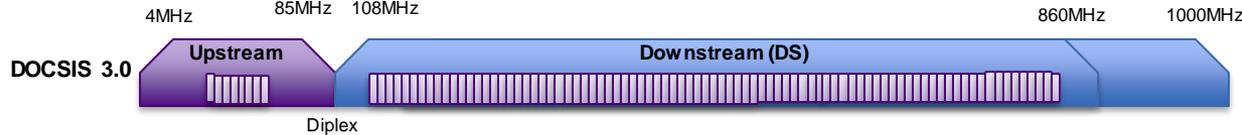
42/65/85 MHz

DSAM

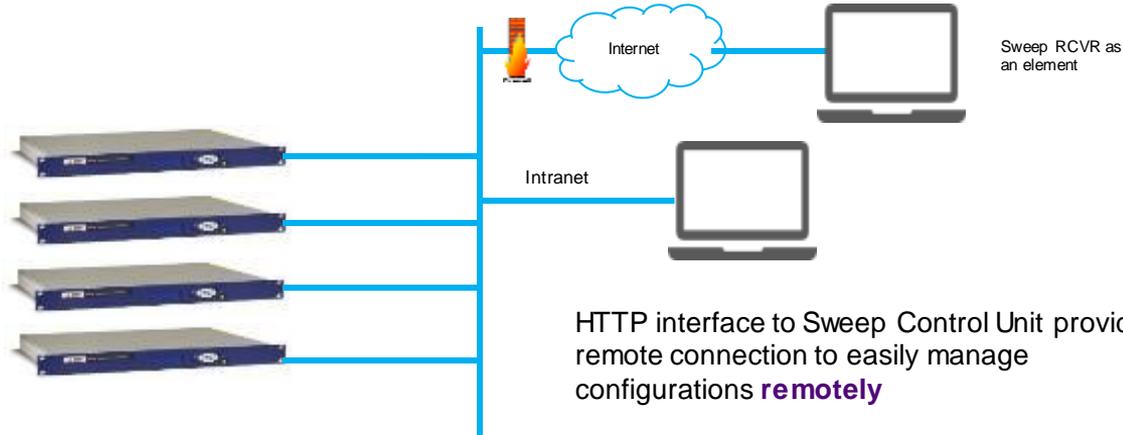
OneExpert

OneExpert's flexible architecture allows sweeping on existing infrastructure or expanded infrastructure up to 204MHz (or anywhere in between)

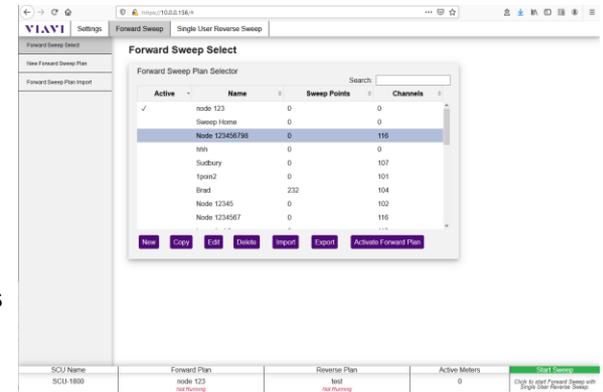
42MHz 54MHz
65MHz 85MHz
85MHz 108MHz



Configure Sweep Remotely



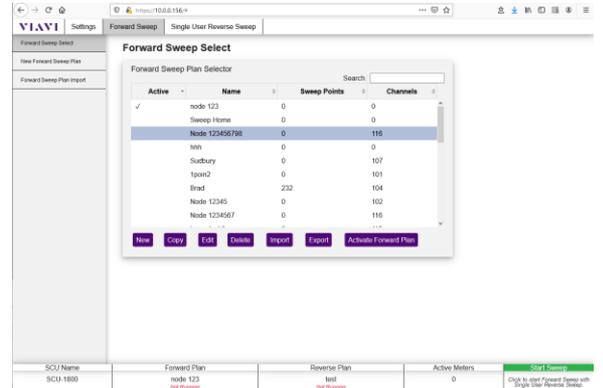
HTTP interface to Sweep Control Unit provides remote connection to easily manage configurations **remotely**



Configure Sweep Locally from a laptop

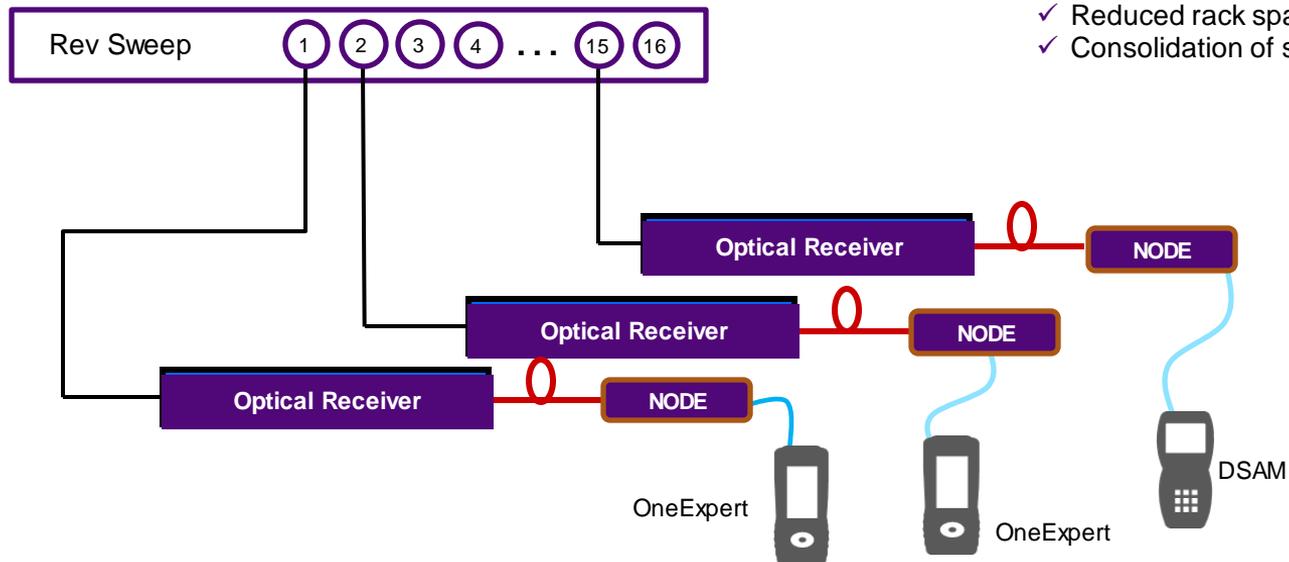


HTTP interface to Sweep Control Unit provides easy access to configurations **locally**



Multiple reverse sweep input ports

Reduces costs and improves performance



- ✓ Integrated 16 port capability (SW optional)
- ✓ Provides improved performance
 - ✓ Less combining
 - ✓ Improved noise floor
- ✓ Saves costs
 - ✓ Reduced rack space
 - ✓ Consolidation of sweep receivers

Sweep Specifications

- **Telemetry**

- Frequency Range: 42 to 1,218 MHz
- Frequency Resolution: 10 kHz
- Modulation FSK : ± 100 kHz deviation; 65 kbps
- Output Level: +20 to +50 dBmV, 1 dB resolution, 0.5dB accuracy typical, 1 dB accuracy over temp
- Spectral Purity: 50 dBc harmonics and spurious; recommend 1 MHz space from SC QAM edge

- **Sweep Pulse**

- Frequency Range: 42 to 1,218 MHz
- Bandwidth: <5 kHz @ 3dB BW; <50 kHz @ 50dB BW
- Frequency Resolution: 10 kHz
- Level : +20 to +50 dBmV, 1 dB resolution, 0.5dB accuracy typical, 1 dB accuracy over temp
- Spectral Purity: 50 dBc harmonics and spurious; recommend 1 MHz space from SC QAM edge

- **Forward Sweep**

- Telemetry frequency: Diplexer dependent 50-1,218MHz
- Forward sweep outputs: Up to 500 sweep points
- Supported Sweep Plan Active Carrier types (for reference and measurement by the field instrument) Analog (NTSC, PALB, PAL GH, PAL I, PAL DK,) Digital (6 or 8MHz), OFDM (24-192MHz),

- **Reverse Sweep**

- Frequency Range: 5 to 204 MHz
- Recommended input level: 0 dBmV
- Input range and accuracy: ± 20 dBmV allowable input range; ± 0.75 dB typical; ± 2 dB over temp
- Minimum Signal-to-Noise Ratio: 20 dB signal-to-noise ratio required on received reverse telemetry from field meters
- Reverse Sweep points injection: +20 to+50 dBmV
- Reverse Telemetry Level: +20 to+50 dBmV

SCU-1800 Settings

Test Point Compensation

Reverse Sweep Test Point Compensation

Port	TPC(dB)
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0

Apply TPC to Reverse Telemetry Level

Submit Query

Sweep Settings

Forward Telemetry Frequency (MHz) 51

Forward Telemetry Level (dBmV) 20

Forward Sweep Level (dBmV) 20

Reverse Telemetry Frequency (MHz) 10

Automatically start sweep at power on

Submit Query

Firmware

Firmware Package Version
5.0.391

Firmware Details

Firmware Upgrade

Browse... No file selected.

Upgrade Firmware

General Settings

Signal Level Units dBmV

Device Name SCU-1800

HTTPS Enabled

Demo Mode Forward Sweep

Submit Query

SCU-1800 Settings

Options

Current Options

Catalog Number	Option Name	Option Type	Expiration
SCU-1800-SW-FWD	SCU-1800 Forward Sweep	perm	
SCU-1800-SW-REV-SWP	SCU-1800 Reverse Sweep Single User	perm	
SCU-1800-SW-REV-16PORT	SCU-1800 Enable 16 port Reverse Sweep	perm	
SCU-1800-SW-REV-SWP-MU	SCU-1800 Reverse Sweep Multi User	perm	

Deploy Option File

No file selected.

Settings

Forward Sweep | Single User Reverse Sweep

Sweep Settings

General Settings

Test Point Compensation

Firmware

Options

Login Settings

About

Forward Telemetry Frequency (MHz) 51

Forward Telemetry Level (dBmV) 20

Forward Sweep Level (dBmV) 20

Reverse Telemetry Frequency (MHz) 10

Automatically start sweep at power on

Submit Query

About

Model Number
SCU-1800

Serial Number
0143469

SCU Receiver Calibration Date
4/3/2020

SCU Transmitter Calibration Date
2020-04-03 17:45:02

Login Settings

New Username

New Password

Confirm Password

Submit Query

Edit Channel Plan

VIavi Settings Forward Sweep Single User Reverse Sweep

Forward Sweep Select

New Forward Sweep Plan

Forward Sweep Plan Import

Forward Sweep Select

Forward Sweep Plan Selector

Search:

Active	Name	Sweep Points	Channels
✓	node 123	0	0
	Sweep Home	0	0
	Node 123456798	0	116
	hhh	0	0
	Sudbury	0	107
	1poin2	0	101
	Brad	232	104
	Node 12345	0	102
	Node 1234567	0	116

Forward Sweep Edit

Plan Name: Node 123456798 Back

Sweep Points List

Search:

Type	Frequency (MHz)	Span (MHz)	Level (dBmV)	Info
Channel	57.000	6	9.99	DIGITAL
Channel	63.000	6	10.80	DIGITAL
Channel	69.000	6	11.13	DIGITAL
Channel	75.250	1.536	6.93	DIGITAL
Channel	79.000	6	13.96	DIGITAL
Channel	85.000	7	13.90	DIGITAL
Channel	99.000	6	14.20	DIGITAL
Channel	104.250	1.536	7.93	DIGITAL
Channel	111.000	6	13.84	DIGITAL

Point Count: 116 Delete Selection

Use level from channel plan build

Define Active Carriers in system which will be used as sweep points

Note: These carriers are not generated by the SCU but will be measured by the field instrument

Add Individual Active Channels to be used as sweep points

Note: These are active carriers that are to be used as measured sweep points by the field instrument but were not included in the channel plan import

Channel Type: Center Frequency (MHz): Channel Bandwidth: Level (dBmV):

Define carriers to be injected by the SCU-1800

Note: These are pulsed sweep points generated by the SCU-1800 in unoccupied spectrum

Add Multiple Sweep Injection Points

Note: This function inserts a sweep point at the start frequency given and will inject a sweep point every XX MHz defined by the Sweep Carrier Spacing up to and including the Stop Frequency if the Stop Frequency lands on the spacing boundary. This function utilizes a 500kHz guard band spacing and will only insert sweep points where there is at least 500kHz available from any previously defined carrier or sweep point.

Valid Frequency Range: 42 - 1210 MHz Valid Carrier Spacing Range: 1 - 8 MHz

Start Frequency (MHz): Stop Frequency (MHz): Sweep Carrier Spacing (MHz):

Add Individual Sweep Injection Points

Note: These are pulsed sweep points injected by the SCU-1800. Recommended to have 500kHz available spacing for each point.

Center Frequency (MHz):

New Channel Plan from ONX

VIavi | Settings | Forward Sweep | Single User Reverse Sweep

Forward Sweep Select

New Forward Sweep Plan

Forward Sweep Plan Import

Forward Sweep Select

Forward Sweep Plan Selector

Search:

Active	Name	Sweep Points	Channels
✓	node 123	0	0
	Sweep Home	0	0
	Node 123456798	0	116
	hhh	0	0
	Sudbury	0	107
	1poin2	0	101
	Brad	232	104
	Node 12345	0	102
	Node 1234567	0	116

New **Copy** **Edit** **Delete** **Import** **Export** **Activate Forward Plan**

New Forward Sweep Plan

Step 1: Plan Name

Plan Name:

File Upload

< > > This PC > Desktop

Search Desktop

Organize New folder

- Saved Games
- Searches
- Tims Presos
- Trips
- Videos

Name

- Node 8888.Ground Block.channel_plan.json
- Node 5555.Ground Block.channel_plan.json
- node 4444.Tap.channel_plan.json

File name: All Files (*.*)

New Forward Sweep Plan

Step 2: Import Channel Plan

Node 8888.Ground Block.channel_plan.json

New Channel Plan

Forward Sweep Select

New Forward Sweep Plan

Forward Sweep Plan Import

Forward Sweep Select

Forward Sweep Plan Selector

Search:

Active	Name	Sweep Points	Channels
<input checked="" type="checkbox"/>	node 123	0	0
	Sweep Home	0	0
	Node 123456798	0	116
	hhh	0	0
	Sudbury	0	107
	1pin2	0	101
	Brad	232	104
	Node 12345	0	102
	Node 1234567	0	116

New Forward Sweep Plan

Step 3: Add any additional sweep points.

Plan Name:

Sweep Points List

Search:

Type	Frequency (MHz)	Span (MHz)	Level (dBmV)	Info
Channel	57.000	6	9.99	DIGITAL
Channel	63.000	6	10.80	DIGITAL
Channel	69.000	6	11.13	DIGITAL
Channel	75.250	1.536	6.93	DIGITAL
Channel	79.000	6	13.96	DIGITAL
Channel	85.000	7	13.90	DIGITAL
Channel	99.000	6	14.20	DIGITAL
Channel	104.250	1.536	7.93	DIGITAL
Channel	111.000	6	13.84	DIGITAL

Point Count: 116

Use level from channel plan build

Define Active Carriers in system which will be used as sweep points

Note: These carriers are not generated by the SCU but will be measured by the field instrument

Add Individual Active Channels to be used as sweep points

Note: These are active carriers that are to be used as measured sweep points by the field instrument but were not included in the channel plan import

Channel Type:
 Center Frequency (MHz):
 Channel Bandwidth:
 Level (dBmV):

Define carriers to be injected by the SCU-1800

Note: These are pulsed sweep points generated by the SCU-1800 in unoccupied spectrum

Add Multiple Sweep Injection Points

Note: This function inserts a sweep point at the start frequency given and will inject a sweep point every XX MHz defined by the Sweep Carrier Spacing up to and including the Stop Frequency if the Stop Frequency lands on the spacing boundary. This function utilizes a 500kHz guard band spacing and will only insert sweep points where there is at least 500kHz available from any previously defined carrier or sweep point.

Valid Frequency Range: 42 - 1218 MHz
 Valid Carrier Spacing Range: 1 - 8 MHz

Start Frequency (MHz):
 Stop Frequency (MHz):
 Sweep Carrier Spacing (MHz):

Add Individual Sweep Injection Points

Note: These are pulsed sweep points injected by the SCU-1800. Recommended to have 500kHz available spacing for each point.

Center Frequency (MHz):

Export and Import Channel Plan

VIavi Settings Forward Sweep Single User Reverse Sweep

Forward Sweep Select

New Forward Sweep Plan

Forward Sweep Plan Import

Forward Sweep Select

Forward Sweep Plan Selector

Search:

Active	Name	Sweep Points	Channels
✓	node 123	0	0
	Sweep Home	0	0
	Node 123456798	0	116
	hhh	0	0
	Sudbury	0	107
	1point	0	101
	Brad	232	104
	Node 12345	0	102
	Node 1234567	0	116

New Copy Edit Delete Import Export Activate Forward Plan

Save As

This PC > Documents

Search Documents

Organize New folder

Name	Date modified	Type
reflector.txt	5/14/2018 10:47 PM	Text D
SDA Sweep Doc	10/30/2020 5:18 PM	File fol

This PC

File name: SweepPlan-3.json

Save as type: Text Documents (*.txt)

Encoding: UTF-8

Save Cancel

Forward Sweep Plan Import

Browse... SweepPlan-3.json

Import Forward Plan

Browse... SweepPlan-3.json

Import Forward Plan

Reverse Channel Plan

VIavi Settings Forward Sweep Single User Reverse Sweep

Reverse Sweep Select

New Reverse Sweep Plan

Reverse Sweep Plan Import

Reverse Sweep Active Meters

Reverse Sweep Select

Reverse Sweep Plan Selector

Search:

Active	Name	Sweep Points
✓	test	43
	Sudbury Rtn Mid-Split	177

Enable Reverse Sweep

New Reverse Sweep Plan

Step 1: Enter a name for the new reverse plan.

Plan Name:

Define carriers to be injected by the field meter

Note: These are pulsed sweep points generated by the field meter in unoccupied spectrum

Warning: SDA-5000 units may function incorrectly when the plan contains points below 5 MHz.

Add Multiple Sweep Injection Points

Note: This function inserts a sweep point at the start frequency given and will inject sweep points at the interval given.

Valid Frequency Range:

4 - 204 MHz

Start(MHz): Stop(MHz): Step Size(MHz):

New Reverse Sweep Plan

Step 2: Add any additional reverse sweep points.

Plan Name:

Sweep Points List

Search:

Type	Frequency (MHz)
Sweep Point	4.000
Sweep Point	5.000
Sweep Point	6.000
Sweep Point	7.000
Sweep Point	8.000
Sweep Point	9.000
Sweep Point	10.000
Sweep Point	11.000
Sweep Point	12.000
Sweep Point	13.000

Point Count: 42

Add Individual Sweep Injection Points

Note: These are pulsed sweep points injected by the field meter. Recommended to have 500kHz available spacing for each point.

Center(MHz):

Export and Import Reverse Channel Plan

VIavi Settings Forward Sweep Single User Reverse Sweep

Reverse Sweep Select

Reverse Sweep Plan Import

Reverse Sweep Active Meters

Reverse Sweep Select

Reverse Sweep Plan Selector

Search:

Active	Name	Sweep Points
✓	test	43
	Sudbury Rtn Mid-Split	177

Enable Reverse Sweep

Save As

← → ↑ > This PC > Documents

Search Documents

Organize New folder

Name	Date modified	Type
reflector.txt	5/14/2018 10:47 PM	Text D...
SDA Sweep Doc	10/30/2020 5:18 PM	File fol...

File name: SweepPlan-7.json

Save as type: Text Documents (*.txt)

Encoding: UTF-8

Reverse Sweep Plan Import

SweepPlan-7.json

Forward Sweep



Sweep Config
 Modify Sweep Configuration

Configure Test Point
 +20.0 dB TPC1

Alignment Carrier Configuration
 Add/Remove Carriers for Alignment

Choose Reference
 Set reference sweep data

Save Test/Reference
 Save current test to a Work Order

View Tests
 View previous tests

Configure Sweep

Changes will restart test

SDA 5500 Telemetry Frequency
 51.000 MHz

SDA 5510 Telemetry Frequency
 52.000 MHz

Reverse Sweep User Mode
 Single User

Enable Sweep Limit

Digital carrier bandwidth
 6.000 MHz

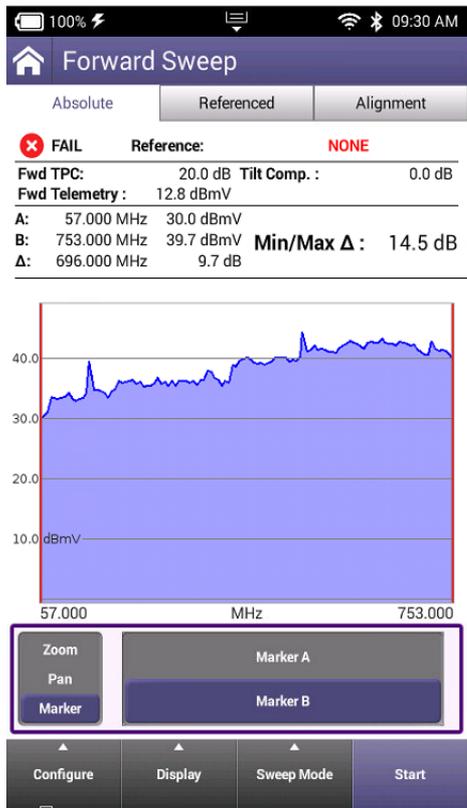
Sweep Limit
 4.0 dB

Select Reverse Sweep User Mode

Single User

Multi User

Forward Sweep Test Point



Sweep Config
Modify Sweep Configuration

Configure Test Point
+20.0 dB TPC1

Alignment Carrier Configuration
Add/Remove Carriers for Alignment

Choose Reference
Set reference sweep data

Save Test/Reference
Save current test to a Work Order

View Tests
View previous tests

Select Test Point Template

+0.0 dB TPC

+20.0 dB TPC

View | Delete | Copy | Done

New Custom Template

+20.0 dB TPC 1 1 - 40 chars

Save

Configure Test Point Template

+20.0 dB TPC 1

Forward Test Point Compensation
20.0 dB

Reverse Test Point Compensation
20 dB

Reverse Sweep Injection
8.0 dBmV

Reverse Telemetry Level
20.0 dBmV

Forward Tilt Compensation
0.0 dB

Forward Low Tilt Frequency
5.000 MHz

Forward High Tilt Frequency
800.000 MHz

Reverse Port Mode
Single Port

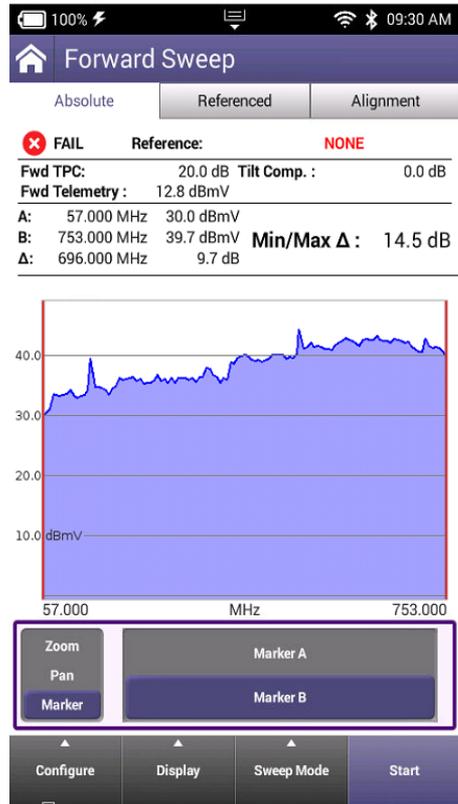
High Power Environment

Select Reverse Port Mode

Single Port

Dual Port

Forward Sweep Alignment



Sweep Config
Modify Sweep Configuration

Configure Test Point
+20.0 dB TPC 1

Alignment Carrier Configuration
Add/Remove Carriers for Alignment

Choose Reference
Set reference sweep data

Save Test/Reference
Save current test to a Work Order

View Tests
View previous tests

This screenshot shows the 'Sweep Config' menu with several options. The 'Alignment Carrier Configuration' option is highlighted with a red box, and a red arrow points from it to the next screen.

Alignment Carrier Configuration

Forward Sweep | Reverse Sweep

57.000 MHz

747.000 MHz

Add Carrier | Remove Carrier | Load Defaults

This screenshot shows the 'Alignment Carrier Configuration' screen. It has two tabs: 'Forward Sweep' (selected) and 'Reverse Sweep'. There are two input fields for carrier frequencies: '57.000 MHz' and '747.000 MHz'. At the bottom, there are three buttons: 'Add Carrier', 'Remove Carrier', and 'Load Defaults'. A red arrow points from the 'Add Carrier' button to the next screen.

Add Carrier

Carrier Frequency (MHz)
747.000

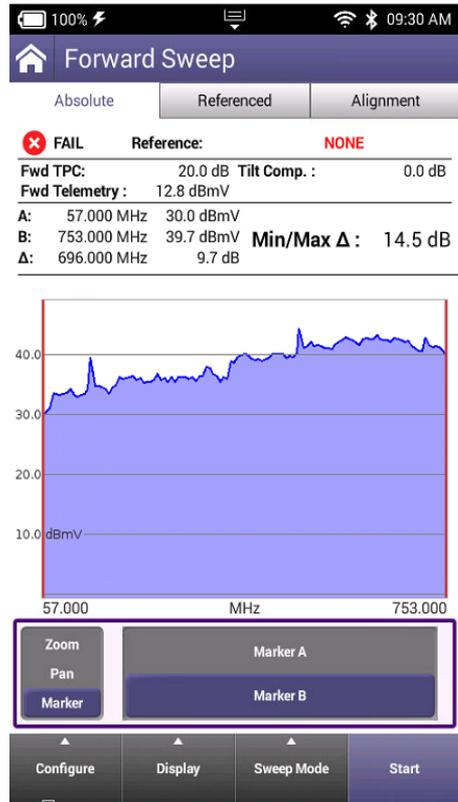
Frequency (MHz)

747.000 48.000 - 1002.000

OK

This block contains two screenshots. The top one is the 'Add Carrier' screen with a text input field containing '747.000'. A red arrow points down to the 'Frequency (MHz)' screen, which has a numeric keypad and a range of '48.000 - 1002.000'. A red arrow points from the 'OK' button to the next screen.

Forward Sweep Point Clear Reference



Sweep Config
Modify Sweep Configuration

Configure Test Point
+20.0 dB TPC 1

Alignment Carrier Configuration
Add/Remove Carriers for Alignment

Choose Reference
Set reference sweep data

Save Test/Reference
Save current test to a Work Order

View Tests
View previous tests

Forward Sweep Reference

Work Order | Recent References

Forward Reference: **NONE**

From Work Order:

Tests for Current Work Order:

Work Order ID

Node 8888

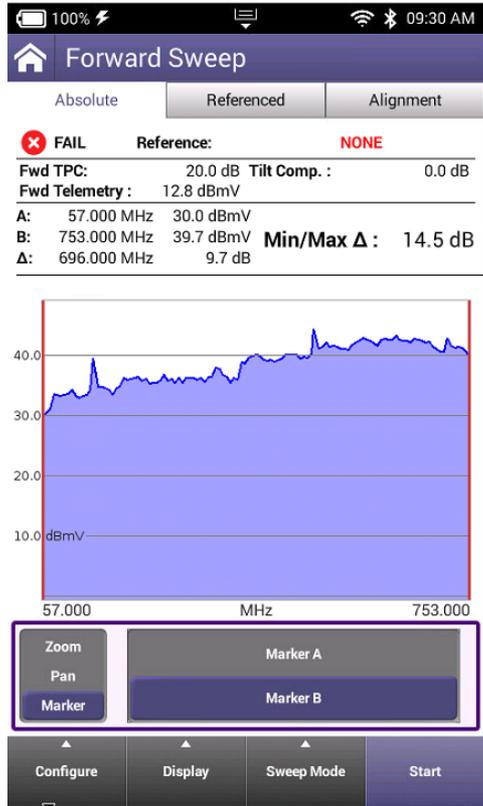
Clear Reference | Set Reference

Select Work Order

New Work Order ...

- Node 8888
- Node 5555
- node 4444
- Node 123
- Work Order - 10-22-39 10-25-2020

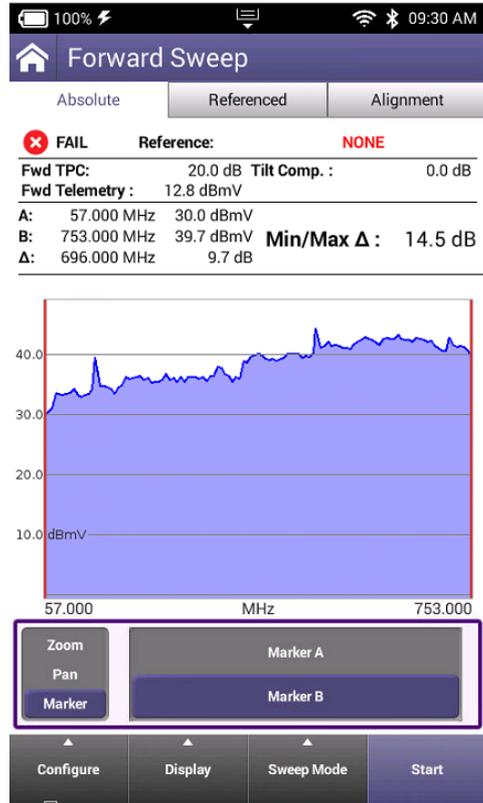
Forward Sweep Point Save Reference



This is a screenshot of the 'Sweep Config' menu. The menu items are: 'Sweep Config' (Modify Sweep Configuration), 'Configure Test Point' (+20.0 dB TPC 1), 'Alignment Carrier Configuration' (Add/Remove Carriers for Alignment), 'Choose Reference' (Set reference sweep data), 'Save Test/Reference' (Save current test to a Work Order), and 'View Tests' (View previous tests). The 'Save Test/Reference' option is highlighted with a purple border.

This is a screenshot of the 'Save Forward Sweep Test' dialog box. It has a back arrow and the title 'Save Forward Sweep Test'. The main section is titled 'Save Test to Work Order' and contains the following information: 'Test Name: Node 123 Port 2' and 'Work Order ID: Node 8888'. Below this is a checkbox labeled 'Set as Reference' which is checked. At the bottom, there are three buttons: 'Set Name to Current Date', 'Save', and a partially visible 'Save' button.

Forward Sweep Review Test



Sweep Config
Modify Sweep Configuration

Configure Test Point
+20.0 dB TPC 1

Alignment Carrier Configuration
Add/Remove Carriers for Alignment

Choose Reference
Set reference sweep data

Save Test/Reference
Save current test to a Work Order

View Tests
View previous tests

Forward Sweep Tests

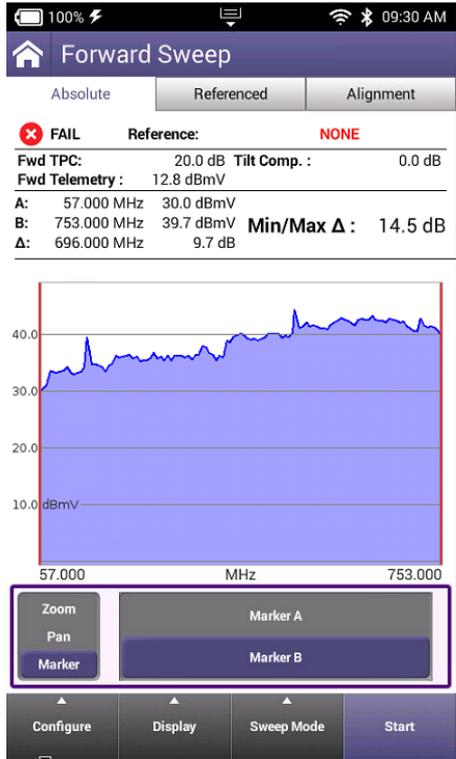
Tests for Current Work Order:

Node 123 Port 2

Work Order ID
Node 8888

View Results

Forward Sweep Test Markers



Auto Reference
dB/div
10.0 dB

Marker Frequencies
A: 57.00 MHz B: 753.00 MHz

Rotate Screen
Portrait

Marker Frequencies

Marker A
57.000 MHz

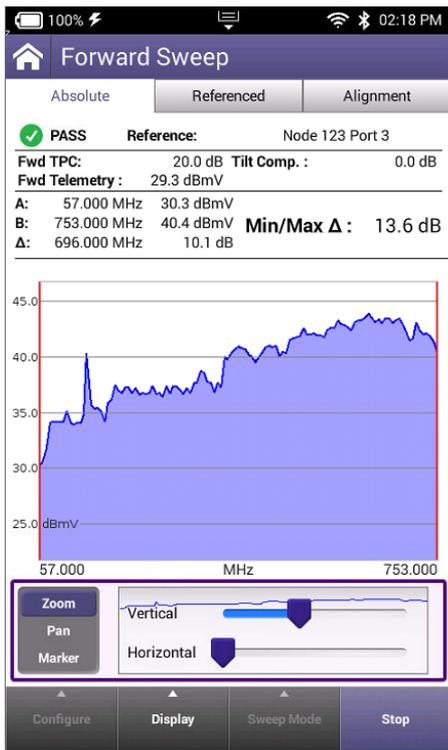
Marker B
753.000 MHz

OK

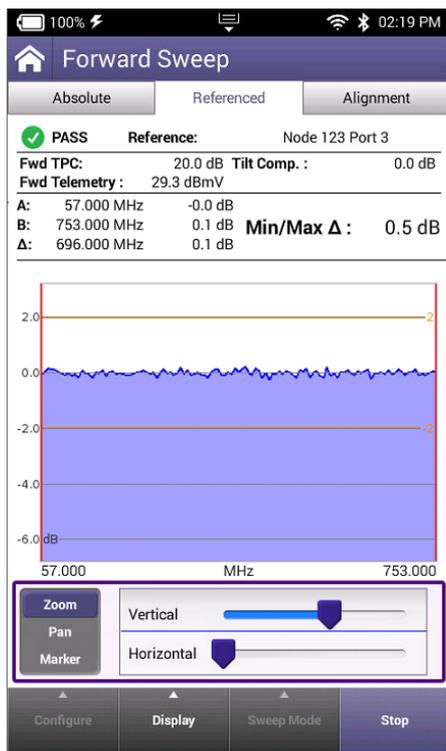


Forward Sweep Screens

Absolute "Raw"



Referenced



Alignment



Return Sweep

Reverse Sweep Configure

Reverse Sweep

Absolute Referenced Alignment

PASS Reference: Node 123 Port 3

Rev Telem RX:	1.4 dBmV	Rev TPC:	20.0 dB
Rev Telem TX:	17.0 dBmV	Fwd Telemetry:	30.1 dBmV
Rev Telem Δ:	-15.6 dB		

Marker A	0.5 dBmV	Headend	1.9 dBmV	Marker B
4.000	17.0 dBmV	Meter	17.0 dBmV	41.500
MHz	-16.5 dB	Delta	-15.1 dB	MHz

Zoom
Pan
Marker

Vertical
Horizontal

Configure Display Sweep Mode Start

Forward Sweep

Reverse Sweep

Reverse Sweepless Sweep

Configure Sweep

Changes will restart test

SDA 5500 Telemetry Frequency
51.000 MHz

SDA 5510 Telemetry Frequency
52.000 MHz

Reverse Sweep User Mode
Single User

Enable Sweep Limit

Digital carrier bandwidth
6.000 MHz

Sweep Limit
4.0 dB

Select Reverse Sweep User Mode

Single User

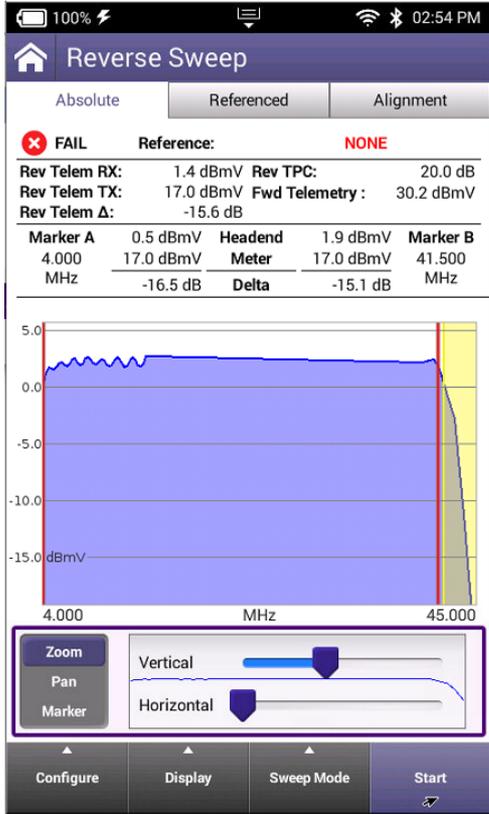
Multi User

Select Digital carrier bandwidth

6.000 MHz

8.000 MHz

Reverse Sweep Configure Test Point



Sweep Config
Modify Sweep Configuration

Configure Test Point
+20.0 dB TPC1

Alignment Carrier Configuration
Add/Remove Carriers for Alignment

Choose Reference
Set reference sweep data

Save Test/Reference
Save current test to a Work Order

View Tests
View previous tests

Select Test Point Template

+0.0 dB TPC

+20.0 dB TPC

View | Delete | Copy | Done

New Custom Template

+20.0 dB TPC 1 1 - 40 chars

Save

Configure Test Point Template

+20.0 dB TPC 1

Forward Test Point Compensation
20.0 dB

Reverse Test Point Compensation
20 dB

Reverse Sweep Injection
8.0 dBmV

Reverse Telemetry Level
20.0 dBmV

Forward Tilt Compensation
0.0 dB

Forward Low Tilt Frequency
5.000 MHz

Forward High Tilt Frequency
800.000 MHz

Reverse Port Mode
Single Port

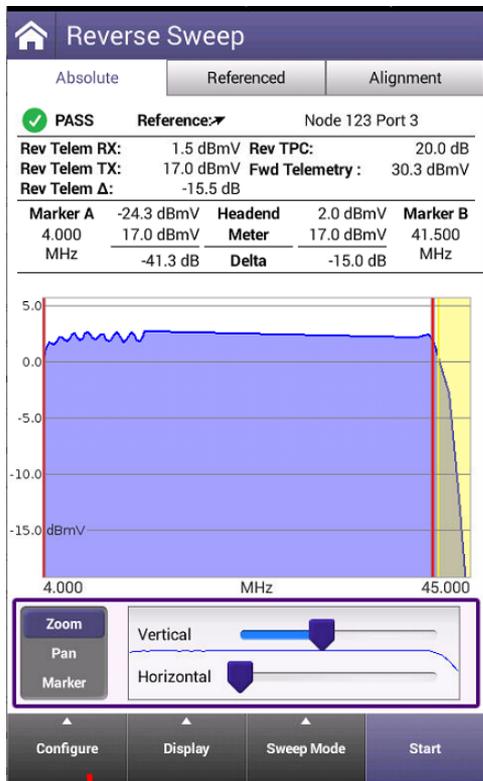
High Power Environment

Select Reverse Port Mode

Single Port

Dual Port

Reverse Sweep Configure Test Point Injection



Sweep Config
Modify Sweep Configuration

Configure Test Point
+20.0 dB TPC1

Alignment Carrier Configuration
Add/Remove Carriers for Alignment

Choose Reference
Set reference sweep data

Save Test/Reference
Save current test to a Work Order

View Tests
View previous tests

Select Test Point Template

- +0.0 dB TPC
- +20.0 dB TPC
- +20.0 dB TPC 1

View / Edit Delete Copy Done

New Custom Template

+20.0 dB TPC 1 1 - 40 chars

Save

Configure Test Point Template

Forward Test Point Compensation
20.0 dB

Reverse Test Point Compensation
20 dB

Reverse Sweep Injection
17.0 dBmV

Reverse Telemetry Level
17.0 dBmV

Forward Tilt Compensation
0.0 dB

Forward Low Tilt Frequency
54.000 MHz

Forward High Tilt Frequency
860.000 MHz

Reverse Port Mode
Single Port

High Power Environment

The sum of Reverse Test Point Compensation and Reverse Sweep Injection must be less than or equal to 53.0 dBmV for valid results.

Reverse Sweep Injection

17.0 dBmV

OK

Reverse Telemetry Level

17.0 dBmV

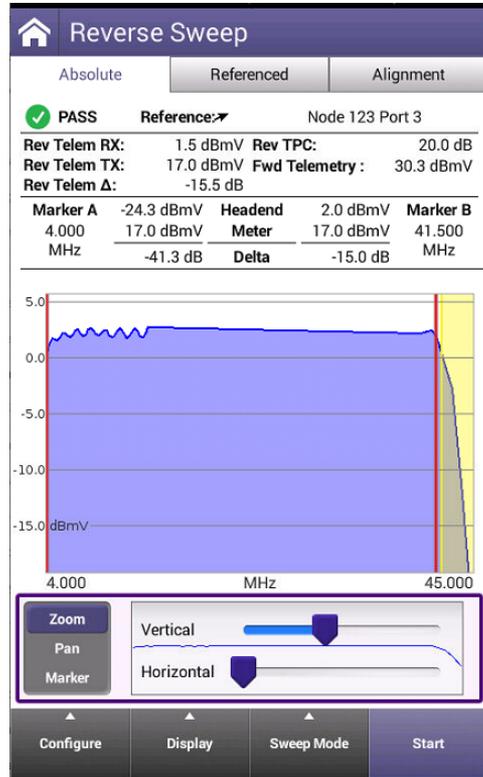
OK

Select Reverse Port Mode

Single Port

Dual Port

Reverse Sweep Alignment



Sweep Config
Modify Sweep Configuration

Configure Test Point
+20.0 dB TPC 1

Alignment Carrier Configuration
Add/Remove Carriers for Alignment

Choose Reference
Set reference sweep data

Save Test/Reference
Save current test to a Work Order

View Tests
View previous tests

Alignment Carrier Configuration

Forward Sweep | Reverse Sweep

5.000 MHz

14.000 MHz

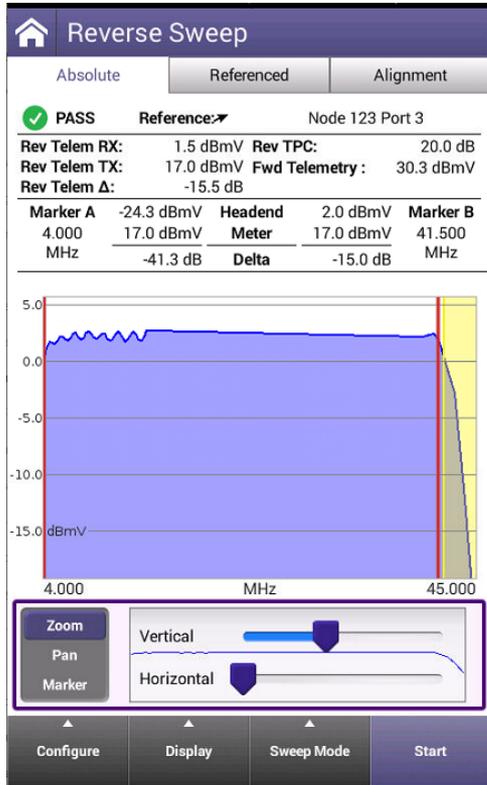
41.500 MHz

Add Carrier Remove Carrier Load Defaults

Add Carrier
Carrier Frequency (MHz)
41.500

Frequency (MHz)
41.500 4.000 - 204.000
OK

Reverse Sweep Clear Or Choose Reference



Sweep Config
Modify Sweep Configuration

Configure Test Point
+20.0 dB TPC 1

Alignment Carrier Configuration
Add/Remove Carriers for Alignment

Choose Reference
Set reference sweep data

Save Test/Reference
Save current test to a Work Order

View Tests
View previous tests

Reverse Sweep Reference

Work Order | Recent References

Reverse Reference: Node 123 Port 3
From Work Order: 5678

Tests for Current Work Order:

Node 123 Port 3

Work Order ID: 5678

Clear Reference | Set Reference

Reverse Sweep Reference

Work Order | Recent References

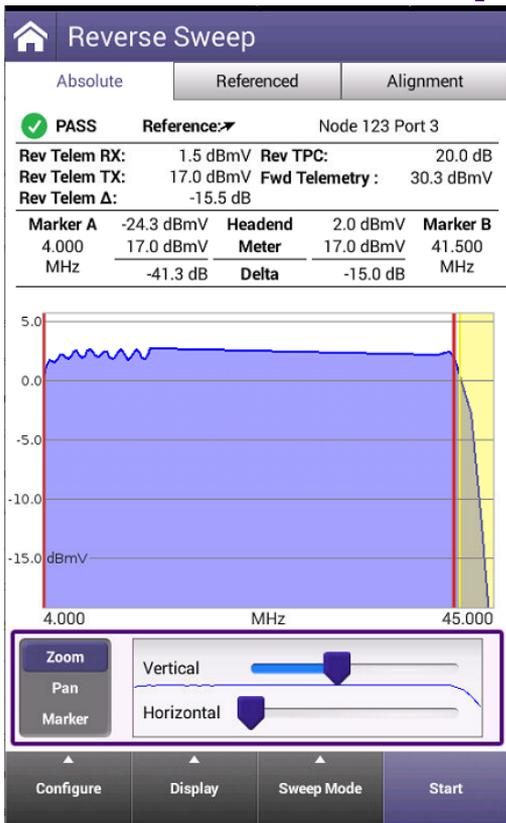
Reverse Reference: Node 123 Port 3
From Work Order: 5678

Recently Used References:

- Node 123 Port 3, 5678
- Node 123 Port 2, Node 123
- node 123, port3, home8542
- node 123, port3, node 12345
- node 123, port1r, node 12345
- node 123, rev, node 123
- node333p1, node333
- node23noderet, node23

Clear Reference | Set Reference

Reverse Sweep Save Reference



Sweep Config
Modify Sweep Configuration

Configure Test Point
+20.0 dB TPC 1

Alignment Carrier Configuration
Add/Remove Carriers for Alignment

Choose Reference
Set reference sweep data

Save Test/Reference
Save current test to a Work Order

View Tests
View previous tests

Save Reverse Sweep Test

Save Test to Work Order

Test Name
Node 123 Port 3

Work Order ID
5678

Set as Reference

Reverse Sweep Tests

Tests for Current Work Order:

Node 123 Port 3

Reverse Sweep Display Settings

Reverse Sweep

Absolute Referenced Alignment

PASS Reference: Node 123 Port 3

Rev Telem RX: 1.5 dBmV Rev TPC: 20.0 dB
 Rev Telem TX: 17.0 dBmV Fwd Telemetry: 30.3 dBmV
 Rev Telem Δ: -15.5 dB

A: 4.000 MHz 0.0 dB
 B: 41.500 MHz 0.1 dB **Min/Max Δ: 0.1 dB**
 Δ: 37.500 MHz 0.1 dB

4.000 MHz 45.000

Zoom Vertical
 Pan Horizontal
 Marker

Configure Display Sweep Mode Start

Auto Reference

dB/div
2.0 dB

Marker Frequencies
A: 4.00 MHz B: 41.50 MHz

Rotate Screen
Portrait

dB/div

1.0 dB

2.0 dB

5.0 dB

10.0 dB

20.0 dB

Marker Frequencies

Marker A
4.000 MHz

Marker B
41.500 MHz

OK

Reverse Sweep

Absolute Referenced Alignment

PASS Reference: Node 123 Port 3

Rev Telem RX: 1.5 dBmV Rev TPC: 20.0 dB
 Rev Telem TX: 17.0 dBmV Fwd Telemetry: 30.3 dBmV
 Rev Telem Δ: -15.5 dB

A: 4.000 MHz 0.0 dB
 B: 41.500 MHz 0.1 dB **Min/Max Δ: 0.1 dB**
 Δ: 37.500 MHz 0.1 dB

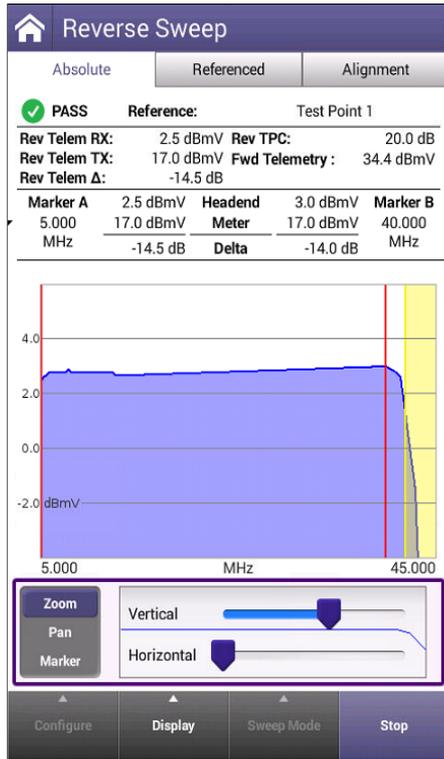
2.0
0.0
-2.0
-4.0
-6.0 dB

4.000 MHz 45.000

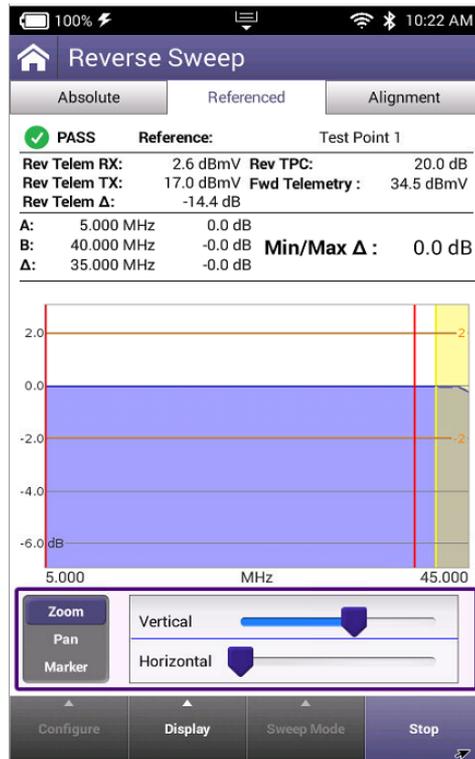
Configure Display Sweep Mode Stop

Reverse Sweep Screens

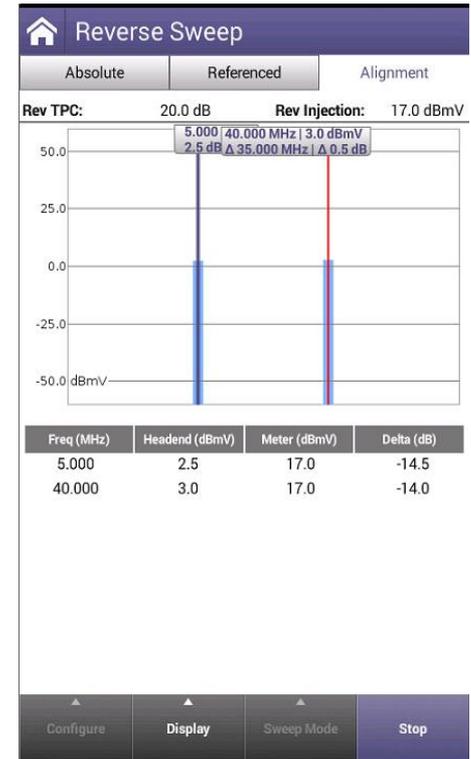
Absolute "Raw"



Referenced

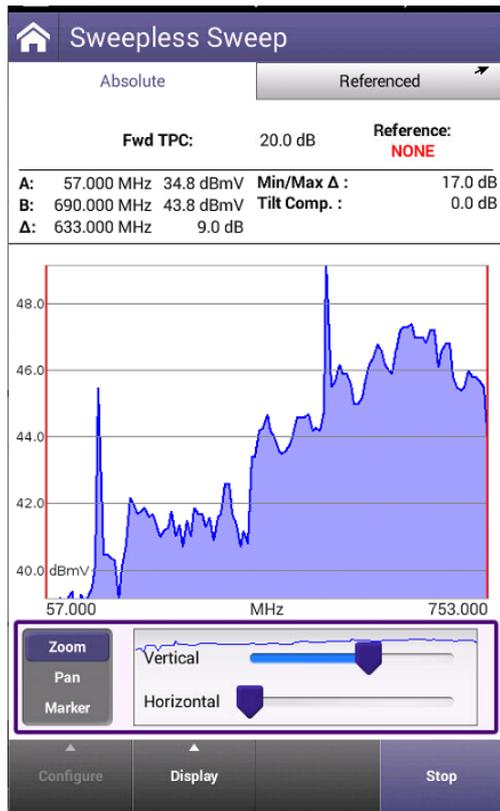


Alignment



Sweepless Sweep

Sweepless Sweep Configure



Sweep Config
Modify Sweep Configuration

Configure Test Point
+20.0 dB TPC 1

Choose Reference
Set reference sweep data

Save Test/Reference
Save current test to a Work Order

View Tests
View previous tests

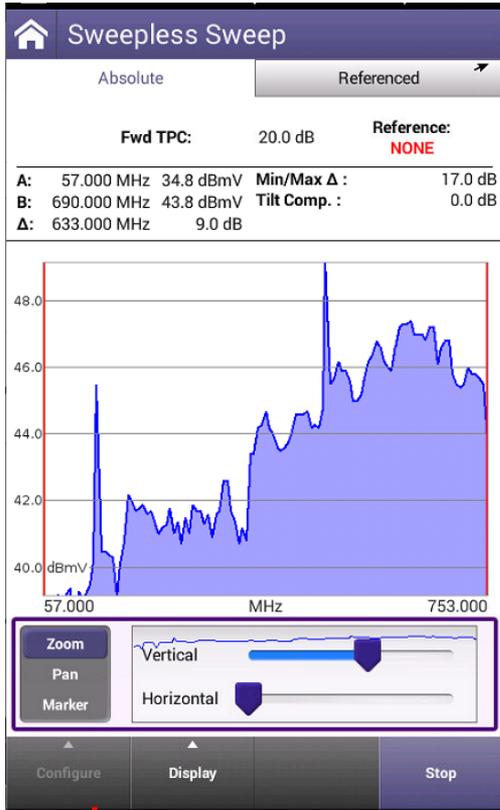
Configure Sweep

Changes will restart test

Enable Sweep Limit

Sweep Limit
4.0 dB

Sweepless Sweep Configure



Sweep Config
Modify Sweep Configuration

Configure Test Point
+20.0 dB TPC 1

Choose Reference
Set reference sweep data

Save Test/Reference
Save current test to a Work Order

View Tests
View previous tests

Configure Test Point Template

+20.0 dB TPC 1

Forward Test Point Compensation
20.0 dB

Forward Tilt Compensation
0.0 dB

Forward Low Tilt Frequency
54.000 MHz

Forward High Tilt Frequency
860.000 MHz

Select Test Point Template

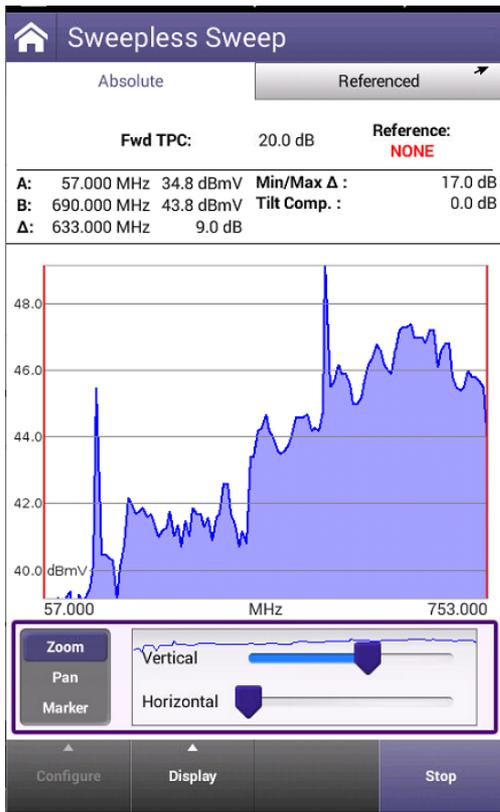
+0.0 dB TPC

+20.0 dB TPC

+20.0 dB TPC 1

View / Edit | Delete | Copy | Done

Sweepless Sweep Clear Reference



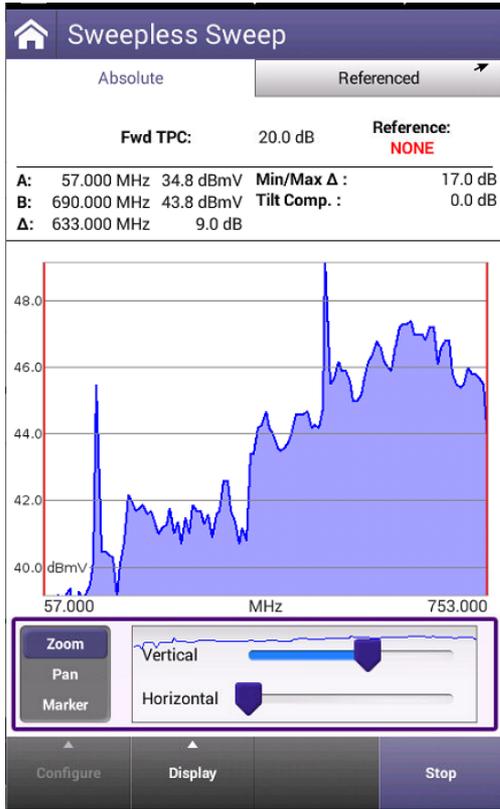
The 'Sweep Config' menu is shown, containing the following options:

- Sweep Config
Modify Sweep Configuration
- Configure Test Point
+20.0 dB TPC 1
- Choose Reference**
Set reference sweep data
- Save Test/Reference
Save current test to a Work Order
- View Tests
View previous tests

The 'Sweepless Sweep Reference' menu is shown, containing the following options:

- Sweepless Sweep Reference
- Work Order
- Recent References
- Reverse Reference
From Work Order: NONE
- Tests for Current Work Order:
- Work Order ID
44
- Clear Reference**
- Set Reference

Sweepless Sweep Save File or Reference



The 'Sweep Config' menu is shown, containing the following options:

- Sweep Config**: Modify Sweep Configuration
- Configure Test Point**: +20.0 dB TPC 1
- Choose Reference**: Set reference sweep data
- Save Test/Reference**: Save current test to a Work Order
- View Tests**: View previous tests

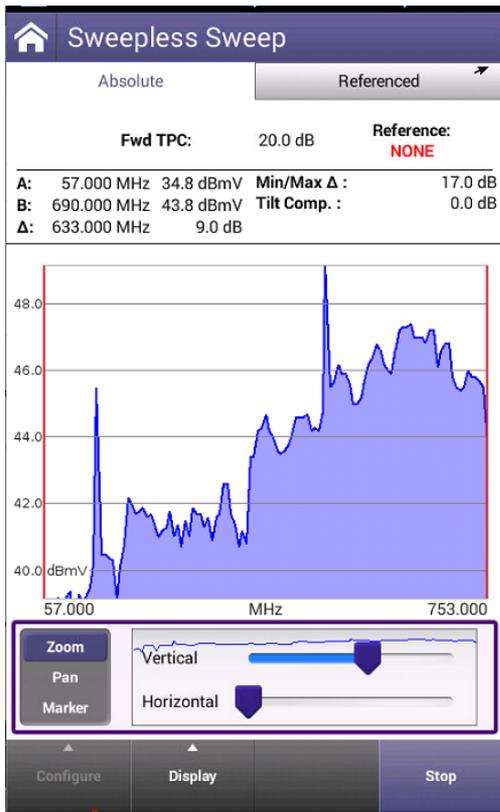
Red arrows indicate the flow from the 'Configure' button in the main interface to this menu, and from the 'Save Test/Reference' option to the 'Save Sweepless Sweep Test' screen.

The 'Save Sweepless Sweep Test' dialog is shown, containing the following information:

- Save Test to Work Order**
- Test Name: node333refforward
- Work Order ID: 44
- Set as Reference

At the bottom, there are buttons for 'Set Name to Current Date' and 'Save'. A red arrow points from the 'Save' button back to the main interface.

Sweepless Sweep Configure



Sweep Config
Modify Sweep Configuration

Configure Test Point
+20.0 dB TPC 1

Choose Reference
Set reference sweep data

Save Test/Reference
Save current test to a Work Order

View Tests
View previous tests

Sweepless Sweep Tests

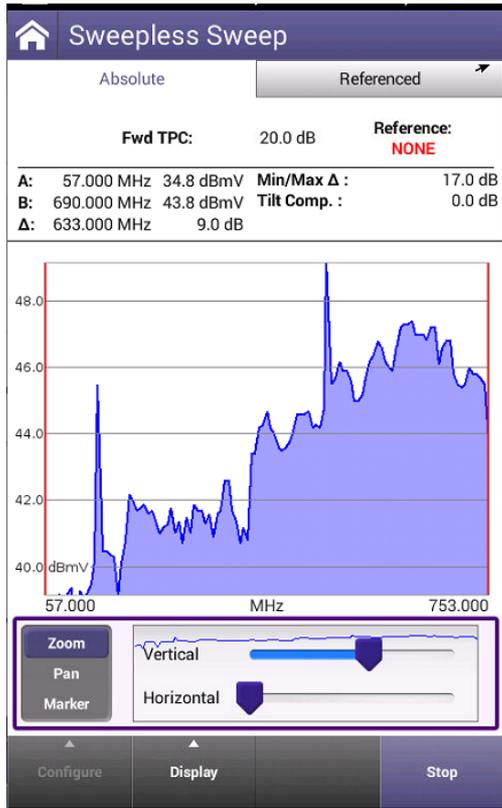
Tests for Current Work Order:

Work Order ID

44

View Results

Sweepless Sweep Configure



Auto Reference

dB/div
2.0 dB

Marker Frequencies
A: 57.00 MHz B: 757.25 MHz

Rotate Screen
Portrait

← dB/div

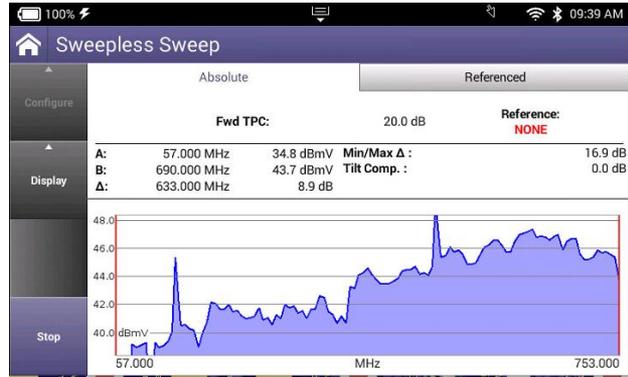
1.0 dB

2.0 dB

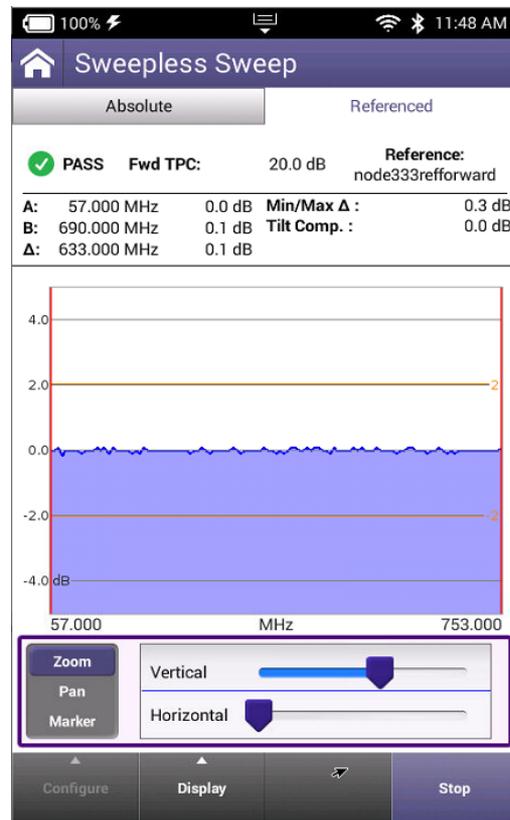
5.0 dB

10.0 dB

20.0 dB

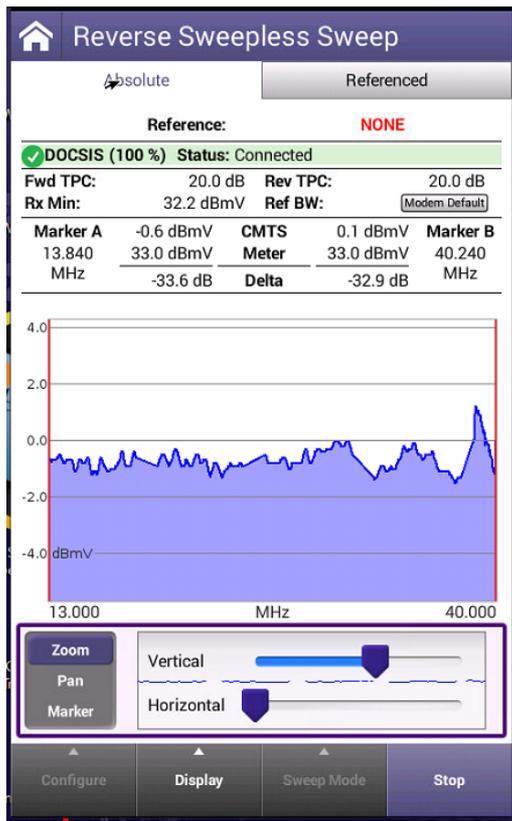


Sweepless Sweep Absolute and Referenced



Sweepless Return Sweep

Reverse Sweepless Sweep Configure and Test Point



Sweep Config
Modify Sweep Configuration

Configure Test Point
+20.0 dB TPC 1

DOCSIS Service Plan
00:07:11:1F:8C:12

Choose Reference
Set reference sweep data

Save Test/Reference
Save current test to a Work Order

View Tests
View previous tests

Select Test Point Template

- +0.0 dB TPC
- +20.0 dB TPC
- +20.0 dB TPC 1**

View, Delete, Copy, Done

Configure Sweep

Changes will restart test

Enable Sweep Limit

Sweep Limit
4.0 dB

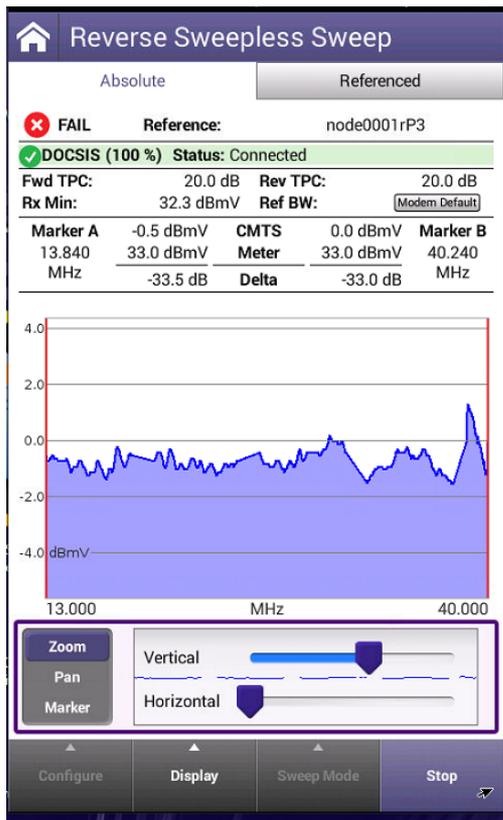
Configure Test Point Template

+20.0 dB TPC 1

Forward Test Point Compensation
20.0 dB

Reverse Test Point Compensation
20 dB

Reverse Sweepless Service plan Select



- Sweep Config
Modify Sweep Configuration
- Configure Test Point
+20.0 dB TPC 1
- DOCSIS Service Plan**
00:07:11:1F:8C:12
- Choose Reference
Set reference sweep data
- Save Test/Reference
Save current test to a Work Order
- View Tests
View previous tests

Reverse Sweepless Sweep Reference

Reverse Sweepless Sweep

Absolute | Referenced

PASS Reference: Node 123 Port 3

DOCSIS (100%) Status: Connected

Fwd TPC: 20.0 dB Rev TPC: 20.0 dB
Rx Min: 32.1 dBmV

A: 13.840 MHz 0.1 dB Min/Max Δ: 0.6 dB
B: 40.240 MHz 0.1 dB
Δ: 26.400 MHz 0.0 dB

Graph showing dB vs MHz (13.000 to 40.000). The graph displays a blue signal line fluctuating around 0.0 dB, bounded by two horizontal orange lines at approximately 2.0 dB and -2.0 dB.

Zoom | Pan | Marker

Vertical [Slider] Horizontal [Slider]

Configure | Display | Sweep Mode | Stop

Sweep Config
Modify Sweep Configuration

Configure Test Point
+20.0 dB TPC 1

DOCSIS Service Plan
00:07:11:1F:8C:12

Choose Reference
Set reference sweep data

Save Test/Reference
Save current test to a Work Order

View Tests
View previous tests

Reverse Sweep Reference

Work Order | Recent References

Reverse Reference: NONE

From Work Order:

Tests for Current Work Order:

Work Order ID: 3434

Clear Reference | Set Reference

Save Reverse Sweep Test

Save Test to Work Order

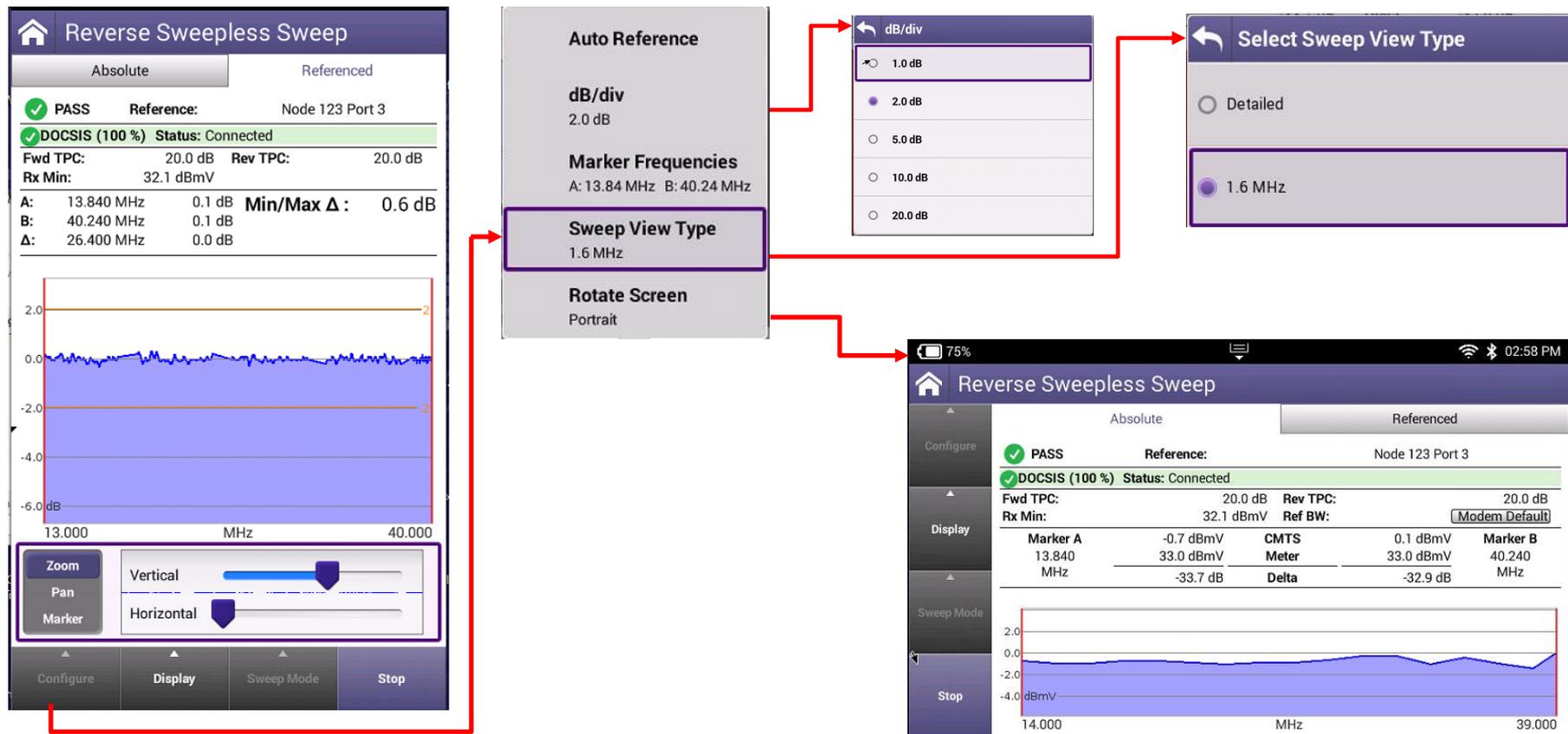
Test Name: Node 123 Port 3

Work Order ID: 3434

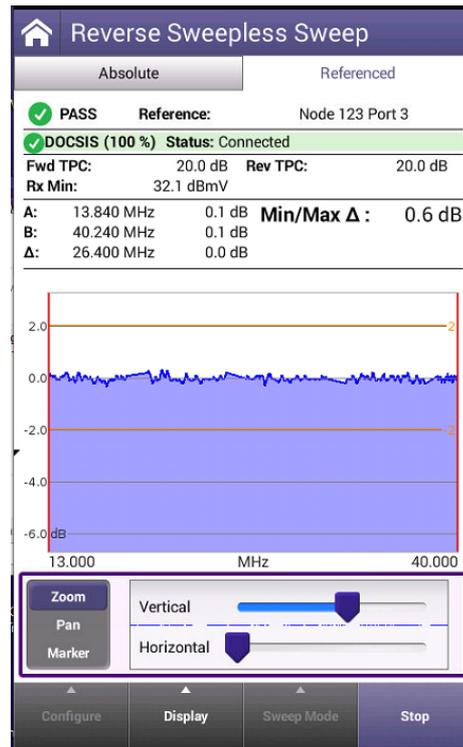
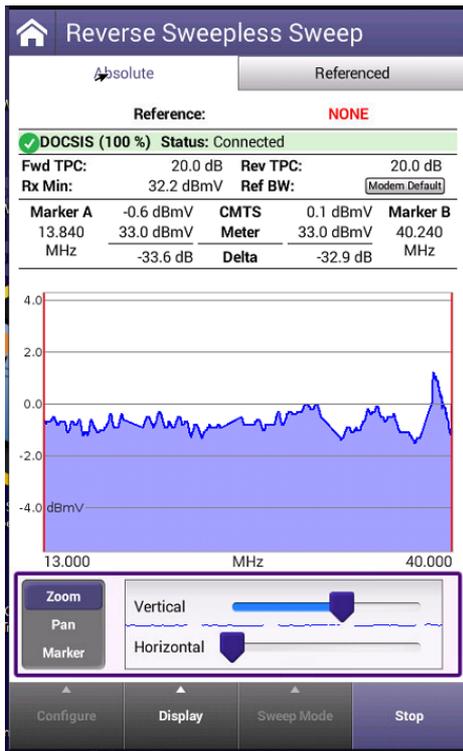
Set as Reference

Set Name to Current Date | Save

Reverse Sweepless Sweep Type



Reverse Sweepless Sweep Absolute and Referenced



Typical Reverse Sweep Errors

Telemetry not found

Sweep Error

Telemetry Not Found



Sweep was not able to obtain telemetry.
Check if telemetry frequency is configured correctly
If signal levels are high, configure your test point for High Power Environment

Stop Retry

Forward Sweep | Single User Reverse Sweep

Sweep Settings

Forward Telemetry Frequency (MHz)

Forward Telemetry Level (dBmV)

Forward Sweep Level (dBmV)

Reverse Telemetry Frequency (MHz)

Automatically start sweep at power on

[Submit Query](#)

Multi User Reverse Sweep

Sweep Settings

Forward Telemetry Frequency (MHz)

Forward Telemetry Level (dBmV)

Reverse Telemetry Frequency (MHz)

Automatically start sweep at power on

[Submit Query](#)

Configure Sweep

Changes will restart test

SDA 5500 Telemetry Frequency
52.000 MHz

SDA 5510 Telemetry Frequency
53.000 MHz

Reverse Sweep User Mode
Single User

Enable Sweep Limit

Digital carrier bandwidth
6.000 MHz

Sweep Limit
3.0 dB

Configure Sweep

Changes will restart test

SDA 5500 Telemetry Frequency
52.000 MHz

SDA 5510 Telemetry Frequency
53.000 MHz

Reverse Sweep User Mode
Multi User

Enable Sweep Limit

Digital carrier bandwidth
6.000 MHz

Sweep Limit
3.0 dB

Invalid Telemetry

Invalid Telemetry

•3 possibilities

•#1. Using the multiple user frequency when sweeping the forward sweep single sweep or when sweeping forward. using multiple users frequency

Verify correct telemetry.

•#2. The input level is of telemetry exceed +25 dBmV into ONX

•#3. RF channel power into the ONX exceeds 20 dBmV.

Check the High Power Environment in the Test Point template

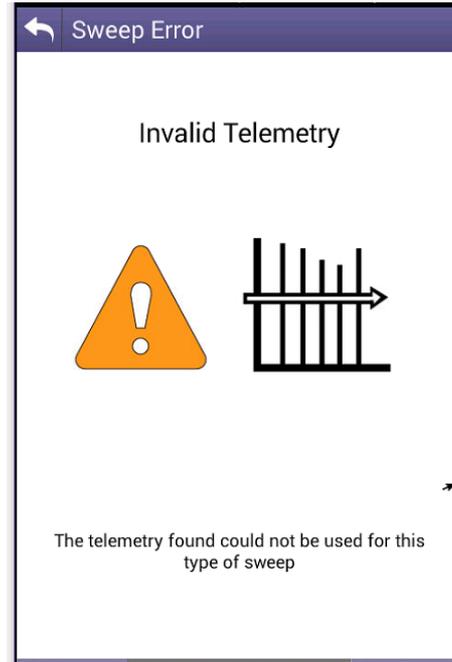


Figure 4: High Power setting

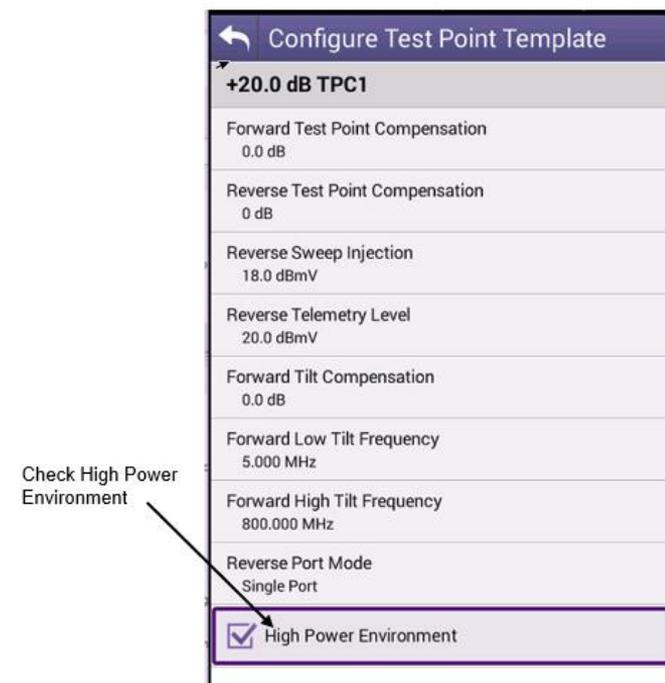
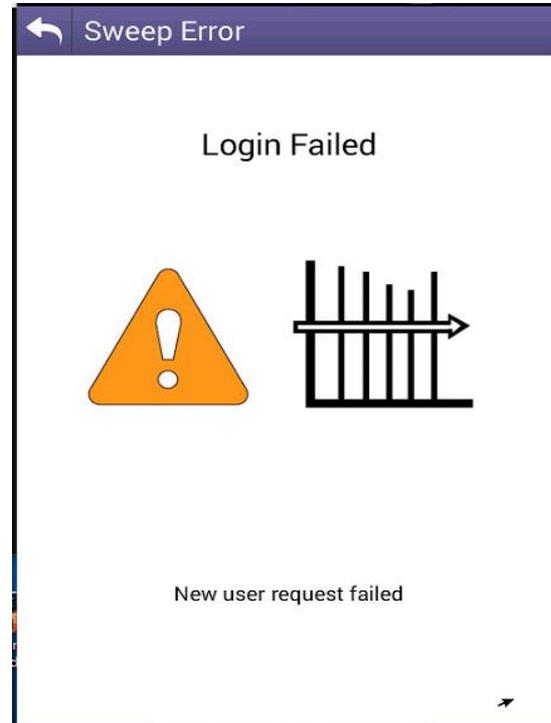


Figure 5: High Power setting

Login Failure

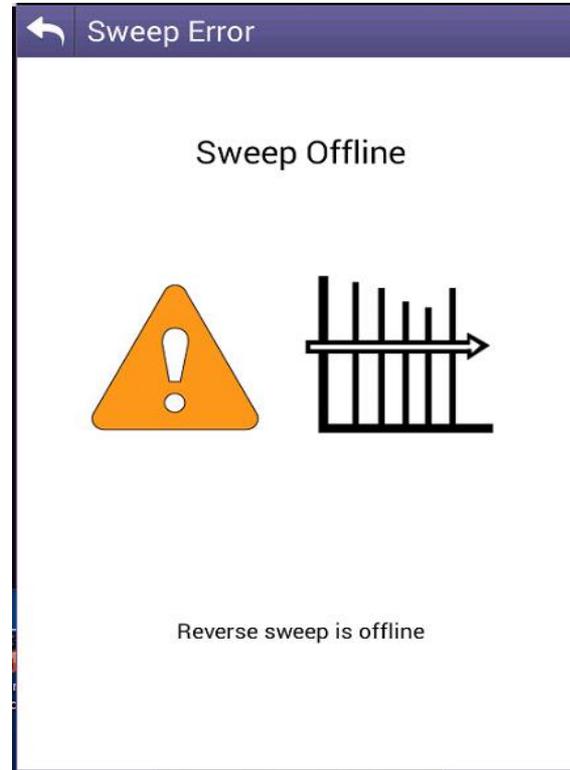
Return Sweep Error

- Login Failure
- Typically cause by the return Telemetry level is to low for the SCU-1800 to decode or not present at the SCU-1800
- Return Telemetry > 30 dB to the input of the SCU-1800
- Too much return RF power into the SCU-1800



Sweep Offline

- Sweep Offline
- Verify Reverse Sweep is check on SDA 5500 return sweep is on
- Too much return RF power. Verify out put on ONX is not too high.
- **Please Review SCU-1800 Getting Started Guide**





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