



NSC-200
Network & Service Companion
User Guide



Notice

Every effort was made to ensure that the information in this manual was accurate at the time of printing. However, information is subject to change without notice, and VIAVI reserves the right to provide an addendum to this manual with information not available at the time that this manual was created.

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Federal Communications Commission (FCC) notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by VIAVI could void the user's authority to operate the equipment.

CAUTION:

- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. The End user must follow the specific operating instructions for satisfying RF exposure compliance.
- This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Industry Canada requirements

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Device operation in the band 5150–5250 MHz is only for indoor use.

Dans la bande de fréquence 5150–5250 MHz, l'utilisation du produit doit être uniquement en intérieur.

Brazilian Anatel Regulation on Restricted Radiation Radio Communication Equipment (Resolution No. 680)

This equipment is not entitled to protection against harmful interference and may not cause interference with duly authorized systems.

Regulamento Anatel sobre equipamentos de Radiocomunicação de Radiação Restrita (Resolução nº 680)

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.

Moroccan Registration Approval

APPROVED BY THE ANRT MOROCCO

Approval number: **MR00029750ANRT2021**

Date of approval: **August 18, 2021**

Agrément d'enregistrement Marocain

AGREE PAR L'ANRT MAROC

Numéro d'agrément: **MR00029750ANRT2021**

Date d'agrément: **18 août 2021**

EU WEEE and battery directives

This product, and the batteries used to power the product, should not be disposed of as unsorted municipal waste and should be collected separately and disposed of according to your national regulations.

VIAVI has established a take-back process in compliance with the EU Waste Electrical and Electronic Equipment (WEEE) Directive, 2012/19/EU, and the EU Battery Directive, 2006/66/EC.

Instructions for returning waste equipment and batteries to VIAVI can be found in the WEEE section of the [VIAVI Standards and Policies web page](#).

If you have questions concerning disposal of your equipment or batteries, contact the VIAVI WEEE Program Management team at **WEEE.EMEA@ViaviSolutions.com**.

EU REACH

Article 33 of EU REACH regulation (EC) No 1907/2006 requires article suppliers to provide information if a listed Substance of Very High Concern (SVHC) is present in an article above a certain threshold.

For information on the presence of REACH SVHCs in VIAVI products, see the **Hazardous Substance Control** section of the [VIAVI Standards and Policies web page](#).

EU CE marking directives (LV, EMC, RoHS, RE)

This product conforms with all applicable CE marking directives. For details, please see the EU Declaration of Conformity documentation included in the shipping package and available on StrataSync.

China RoHS

China RoHS documentation is included in the shipping package and available on StrataSync.

California Proposition 65

California Proposition 65, officially known as the Safe Drinking Water and Toxic Enforcement Act of 1986, was enacted in November 1986 with the aim of protecting individuals in the state of California and the state's drinking water and environment from excessive exposure to chemicals known to the state to cause cancer, birth defects or other reproductive harm.

For the VIAVI position statement on the use of Proposition 65 chemicals in VIAVI products, see the **Hazardous Substance Control** section of the [VIAVI Standards and Policies web page](#).

Compliance with 2014/53/EU Radio Equipment Directive (RED)

In accordance with Article 10.8(a) and 10.8(b) of the RED, the instruments for sale in the EU operate in 2400–2483.5MHz and 5150–5725MHz frequency ranges at a maximum RF transmit power of +15dBm.

Please contact us for more information:

VIAVI Solutions
Network Service Enablement
6001 America Center Drive
San Jose, CA, 95002

Precautions



WARNING:

Pursuant to FCC 15.21 of the FCC rules, changes not expressly approved by VIAVI might cause harmful interference and void the FCC authorization to operate this product.



CAUTION:

Do not use the instrument in any manner not recommended by the manufacturer.



CAUTION:

A strong electromagnetic field may affect the measurement accuracy of the meter.



CAUTION:

Use only the battery charger supplied with the meter. Use of any other charger may damage the battery.



NOTE:

All spent batteries should be disposed of according to local laws and guidelines.



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About this Guide

Thank you for purchasing the NSC-200 Network & Service Companion. This guide provides setup and operating instructions to get you up and running as soon as possible.

Purpose and scope

The purpose of this guide is to help you successfully use the product features and capabilities. Additionally, this guide provides a complete description of the VIAVI warranty, services, and repair information.

Assumptions

This guide is intended for novice, intermediate, and experienced users who want to use the product effectively and efficiently. We are assuming that you have basic computer and mouse/track ball experience and are familiar with basic telecommunication concepts and terminology.

Technical assistance

If you require technical assistance, call 1-844-GO-VIAVI / 1.844.468.4284.

Outside US: +1-855-275-5378

Email: TAC@viavisolutions.com

For the latest TAC information, visit

<https://support.viavisolutions.com>

<http://www.viavisolutions.com/en/services-and-support/support/technical-assistance>

Safety and compliance information

Safety information is contained in a separate guide and is provided in printed format with the product.

For information about CE compliance, see the Declaration of Conformity. A copy of the declaration is included in the shipping package.

Conventions

This guide uses typographical and symbols conventions as described in the following tables.

Typographical conventions

Description	Example
User interface actions	On the Status bar, click Start .
Buttons or switches that you press on a unit	Press the ON switch.
Code and output messages	All results okay
Text you must type exactly as shown	Type: a:\set.exe in the dialog box
Variables	Type the new <i>hostname</i> .
Book references	Refer to <i>Newton's Telecom Dictionary</i>
A vertical bar means "or": only one option can appear in a single command.	platform [a b e]
Square brackets [] indicate an optional argument.	login [platform name]
Slanted brackets < > group required arguments.	<password>

Keyboard and menu conventions

Description	Example
A plus sign + indicates simultaneous keystrokes.	Press Ctrl+s
A comma indicates consecutive key strokes.	Press Alt+f,s
A slanted bracket indicates choosing a submenu from menu.	On the menu bar, click Start > Program Files .

Symbol conventions



This symbol indicates a note that includes important supplemental information or tips related to the main text.



This symbol represents a general hazard. It may be associated with either a DANGER, WARNING, CAUTION, or ALERT message. See the "[Safety definitions](#)" on [page 14](#) for more information.



This symbol represents an alert. It indicates that there is an action that must be performed in order to protect equipment and data or to avoid software damage and service interruption.



This symbol represents hazardous voltages. It may be associated with either a DANGER, WARNING, CAUTION, or ALERT message. See the "[Safety definitions](#)" on [page 14](#) for more information.



This symbol represents a risk of explosion. It may be associated with either a DANGER, WARNING, CAUTION or ALERT message. See the "[Safety definitions](#)" on [page 14](#) for more information.



This symbol represents a risk of a hot surface. It may be associated with either a DANGER, WARNING, CAUTION, or ALERT message. See the "[Safety definitions](#)" on [page 14](#) for more information.

Symbol conventions (continued)



This symbol represents a risk associated with fiber optic lasers. It may be associated with either a DANGER, WARNING, CAUTION or ALERT message. See the *Safety Definitions* below for more information.



This symbol, located on the equipment, battery, or the packaging indicates that the equipment or battery must not be disposed of in a land-fill site or as municipal waste, and should be disposed of according to your national regulations.

Safety definitions

Term	Description
DANGER	Indicates a potentially hazardous situation that, if not avoided, will result in death or serious injury. It may be associated with either a general hazard, high voltage, or other symbol.
WARNING	Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. It may be associated with either a general hazard, high voltage, or other symbol.
CAUTION	Indicates a potentially hazardous situation that, if not avoided, could result in minor or moderate injury and/or damage to equipment. It may be associated with either a general hazard, high voltage, or risk of explosion symbol. When applied to software actions, indicates a situation that, if not avoided, could result in loss of data or a disruption of software operation.
ALERT	Indicates that there is an action that must be performed in order to protect equipment and data or to avoid software damage and service interruption.

What ships with the NSC-200

When you unpack the unit, the following items are included as standard.

- NSC-100 Network & Service Companion unit
- Battery (installed in the unit)
- USB-C power adapter & battery charger
- Fitted carrying case
- Quick Start Guide (a multi-fold guide that fits easily in the carrying case)
- Safety information sheet

Preparation for use

This section explains how to start using the unit. When you unpack your instrument, do the following:

- Inspect the unit for damage. If the instrument is damaged, put it back in the box and contact VIAVI customer service (see "[Technical assistance](#)" on page 11).
- If undamaged, save the box and packing materials in case you need to ship the instrument in the future.

Before using the unit for the first time, do the following:

- Turn the unit on.
- If the **Power** indicator is red, charge the battery.



NOTE:

For additional information about Companion options and services, contact your local VIAVI representative or visit www.viavisolutions.com.



NOTE:

This hand-held instrument is not intended to be body worn, or operated while held against the body.

Quick Tour

This chapter provides an overview of the unit, status indicators, connectors, and using with the VIAVI Mobile Tech app, including the following:

- "About the Companion" on page 18
- "A guided tour of the Companion" on page 20
- "VIAVI Mobile Tech app" on page 24
- "Connecting to StrataSync" on page 24
- "Using the Mobile Tech app" on page 25

About the Companion

The VIAVI Network & Service Companion™ NSC-200 allows techs and contractors to validate both network & service layers before sharing their test results with customers & providers.

- Simplify the closeout test process and analysis for both inexperienced and expert techs with one-button, one-screen result tests, all run under 1 minute.
- Prevent customer complaints or find the root cause of issues by testing at every access point (GPON, XGSPON, Ethernet, WiFi) for a clear & fast demarcation – the way your customer experiences it.
- Optimize WiFi coverage & performance; educate end users with simple room-by-room analysis. Get network improvement recommendations when performance is below expectation.



Benefits

- Simply test everything anywhere – PON, Ethernet, WiFi
- Verify true customer experience and physical network layer on all PON¹, Ethernet, and WiFi test interfaces
- Confirm PON service delivery is good before troubleshooting the premises
- Share reports directly via email
- Drive compliance of both direct and contracted staff with centralized, cloud-based workflow and result management



2019 Broadband Technology Review –
4.0 Diamond Award Winner



2020 Lightwave Innovation Award –
4.5 Winner

¹PON IP Connectivity, Web Connectivity, and Throughput Performance Test, optional, custom ONT profile development required.

Features

- GPON, XGSPON, Ethernet, and WiFi tests, including throughput tests up to 10 Gbps
- Ethernet 1G, 2.5G, 5G, and 10G interfaces
- 3x3 WiFi antenna with 2.4 & 5GHz
- PON data analysis (PON-ID)
- PON power levels
- Job Manager



NOTE:

Running IP, ping, web connectivity, and speed tests require the full GPON software option.

For more information, contact your local VIAVI representative or visit www.viavisolutions.com.

A guided tour of the Companion

Front view



Bottom view



NOTE:

In the image above, the protective rubber door is in the open position for illustrative purposes. This door should remain closed when not using any of these ports.

Charging the battery

Connect the supplied AC adapter to the USB-C port on the unit to power the Companion or charge the battery. A full charge could take up to an hour or so.

Status indicators

The indicators on the unit show the battery and network connect status, as follows:

Power – Indicates the power or battery status

- **Blinking green** – Powering up or down
- **Solid green** – Unit is on
- **Solid yellow** – Battery remaining is less than 30%
- **Solid red** – Battery remaining is less than 10%
- **Flashing red** – Battery is very low and unit will shutdown soon

Pair – Indicates the Bluetooth radio status

- **Blinking** – Waiting for pairing
- **Solid** – Paired with the mobile device

Service – Indicates the status of the service tests

Network – Indicates the the status of the service tests

Link – Indicates the status of the service tests

Physical – Indicates the status of the physical layer

SFP – Indicates the SFP+ port is the active port for the current test

ETH – Indicates the ethernet port is the active port for the current test

WiFi – Indicates the WiFi interface is the active interface for the current test

CHG – Indicates the charge status. The indicator is off when the unit is not plugged in or charging.

- **Blinking orange** – Charging, battery is less than 90%
- **Solid orange** – Charging is almost complete
- **Solid green** – Charge complete
- **Flashing red** – Error in charging or powering the unit. Make sure you are using the VIAVI charger supplied with the unit and try again.

The meter may need to be serviced by a Certified Repair Center. Before sending in the unit for repair, contact VIAVI for an RMA.

Power and Pair buttons

The **Power** and **Pair** buttons are found near the top of the unit.

Pair – Press and hold to pair with a Bluetooth device

Power – Press and hold to turn the Companion on or off

Play – Used for safe testing without entering the home. See *"Delayed Start testing"* on page 87.



VIAVI Mobile Tech app

The Companion is designed to be paired with a mobile device or tablet (such as an iPhone, iPad, or similar Android device), and leverages the user interface of those devices along with the **VIAVI Mobile Tech App** to provide a smooth user experience.



You can view test results, set up the Companion, sync files, update the meter, and configure test parameters from the app.

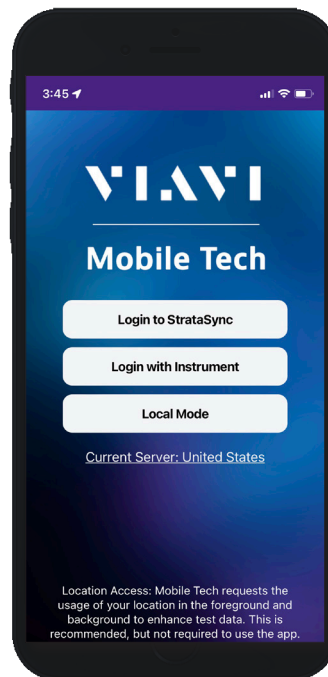
To get started, download the VIAVI Mobile Tech app from the App Store or Google Play.

Connecting to StrataSync

You can connect to StrataSync using your smartphone or tablet anytime, anywhere using the VIAVI Mobile Tech app.

Once your instrument is connected to the Mobile Tech app via Bluetooth, geo location information can be added to reports and files when syncing to StrataSync. If configuration files or work orders are set to be deployed from StrataSync to your meter, you can check those here, as well as browsing files from the unit itself.

Once you download the application, you can log in to StrataSync just as you do on the website. To operate the tests, follow the instructions on the application screens.

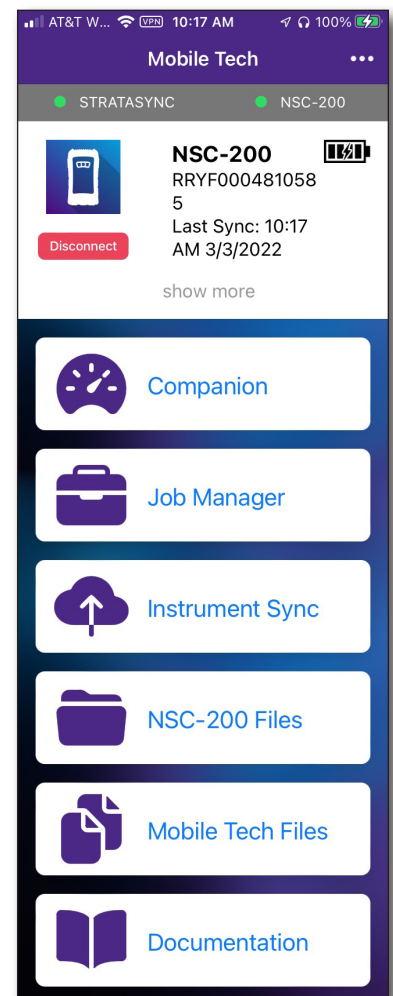
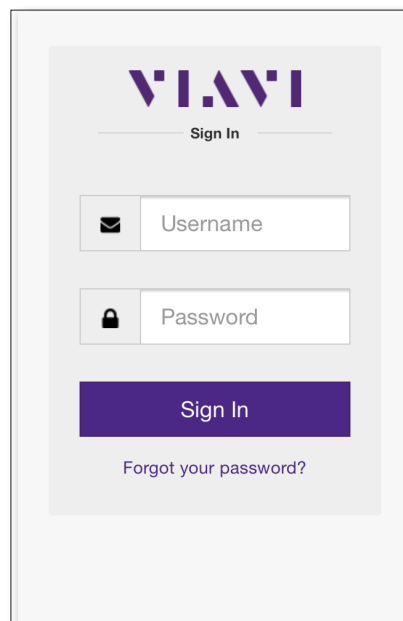
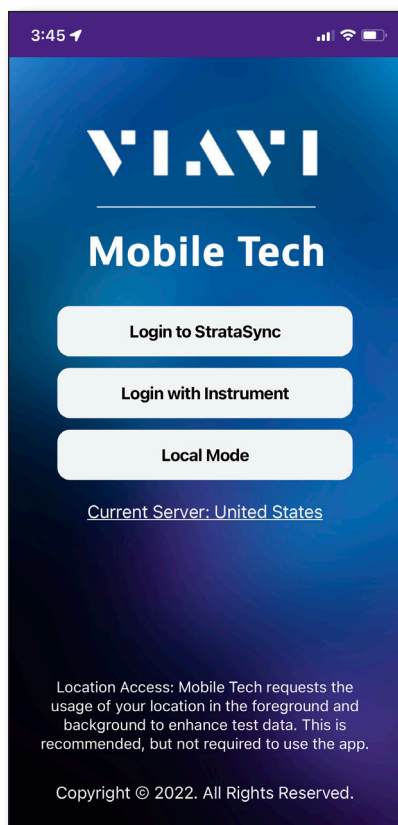


Using the Mobile Tech app

Logging in to StrataSync

To get started using the Mobile Tech app, you need to log in to StrataSync.

1. Launch the **Mobile Tech app** on your mobile device.
 2. Press the **Login to StrataSync** button. The Login screen will be displayed.
 3. Enter your Username and Password, then press the **Sign In** button. The Mobile Tech **Main menu** will be displayed.
- If your meter is compatible, you can also log in with your instrument or transfer files in local mode.
 - To change your current server, select **Current Server** at the bottom and choose **Europe** or **United States**.



Pairing the Companion to your mobile device

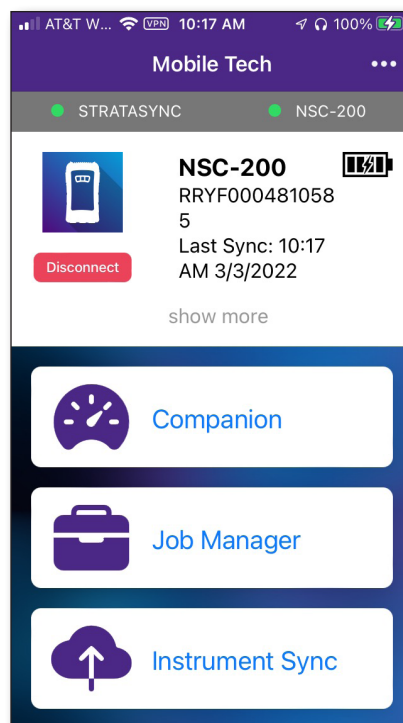
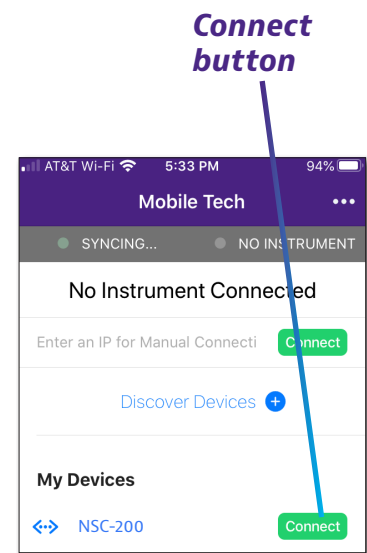
To control the user interface of the Companion, the mobile device must be paired with the unit over Bluetooth.

1. On the Companion, press and hold the **Pair** button for 3 seconds to enter pairing mode. The blue **Pair** indicator blinks.
2. On the mobile device, do the following:
 - Go to the **Settings** menu, then select **Bluetooth**.
 - Verify that the device is not paired with **any** NSC Companion unit.
3. From the Mobile Tech Main menu, under **My Devices**, find the Companion, shown as "NSC-200", and select **Connect**.

If you don't see the device, you may need to press **Discover Devices**.

4. When the Companion is connected, the **Pair** indicator will be solid.
5. On the mobile device, the Companion should be paired, and the Main menu will now show the Companion menu.

You can now control the instrument through the Mobile Tech App and run all tests on the Companion.

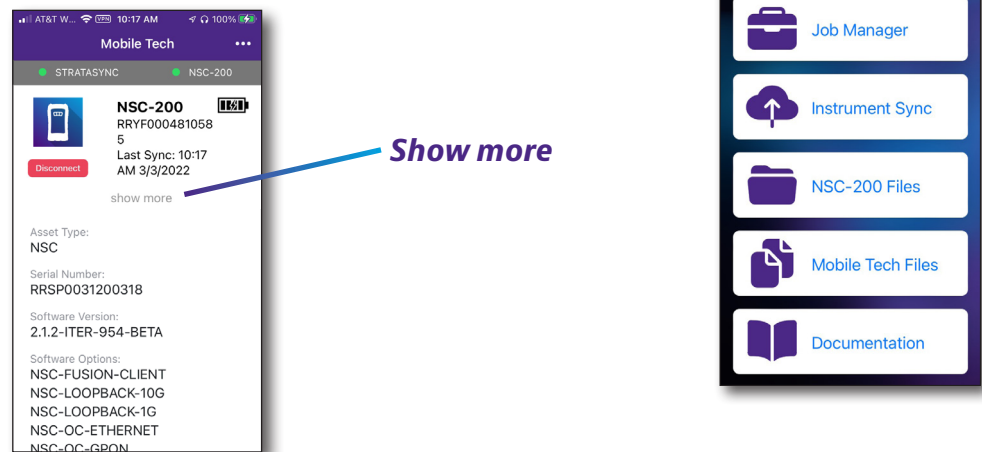


Mobile Tech Main menu

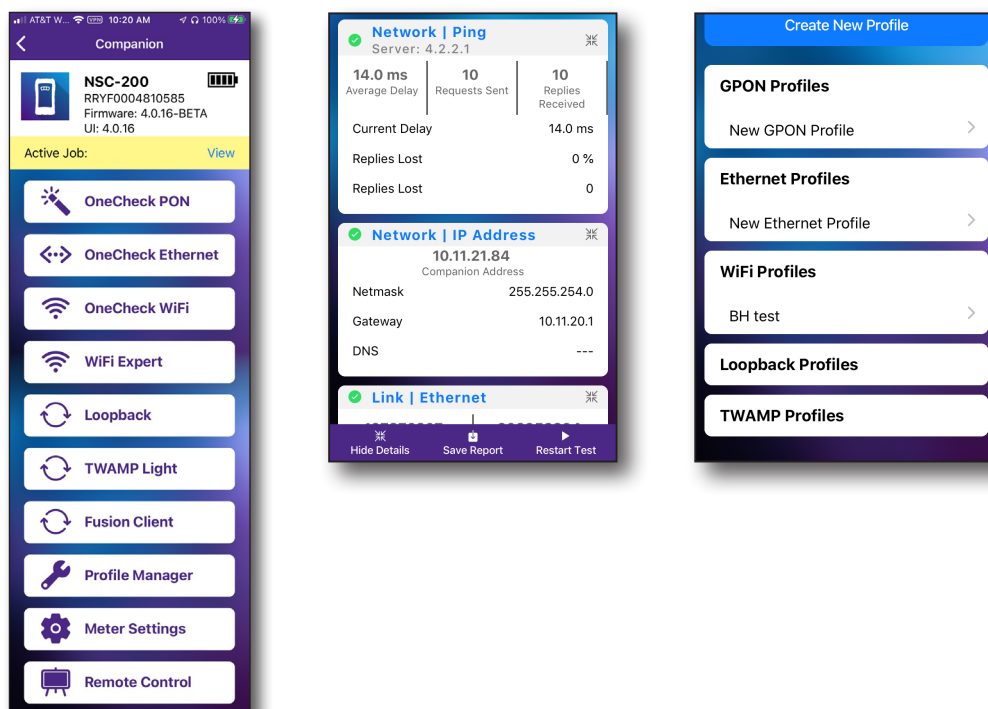
In the Main menu, you can see details of the instrument, run Companion tests, sync to StrataSync, manage files on the unit, and even view documentation.

You'll also see the date and time of the last time your meter synced to StrataSync.

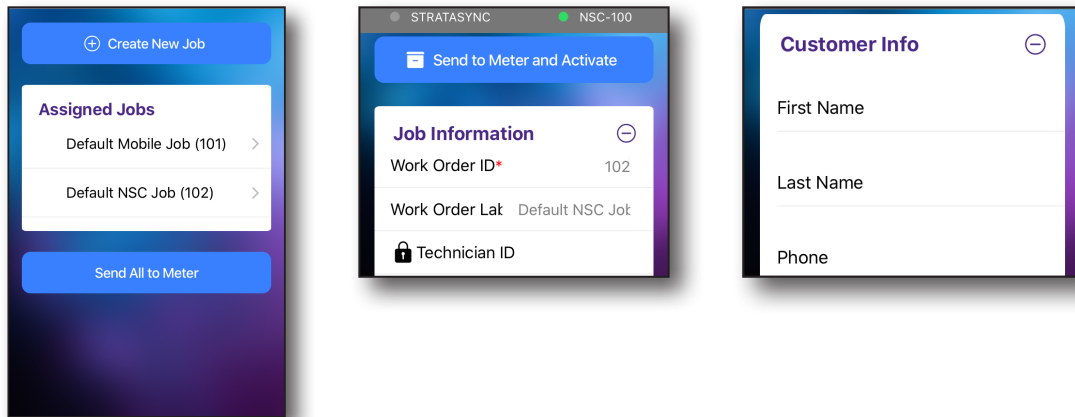
Near the top of the Main menu, you can select **Show more** to see details on your instrument, including all of the installed options.



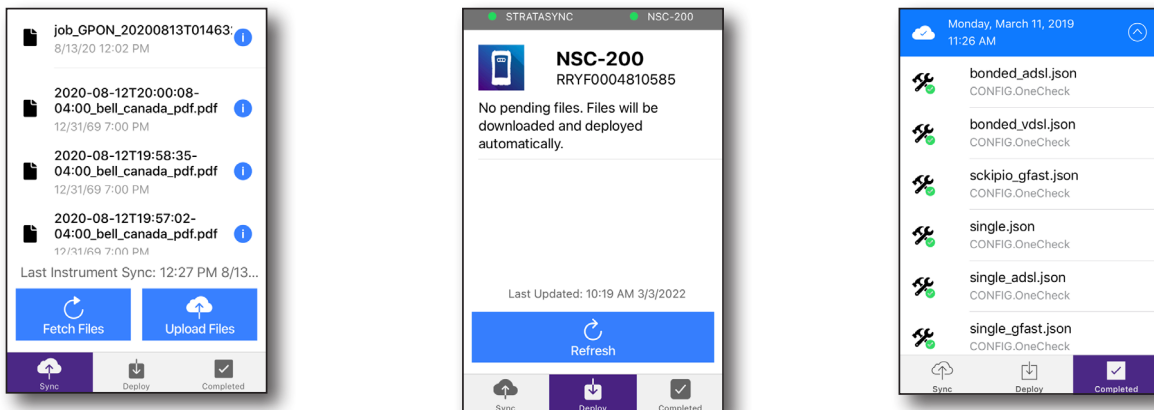
- **Companion** – Run tests and configure profiles for the Companion



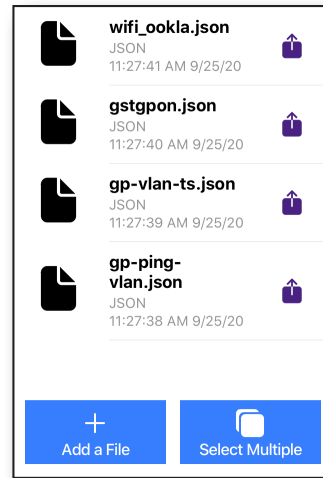
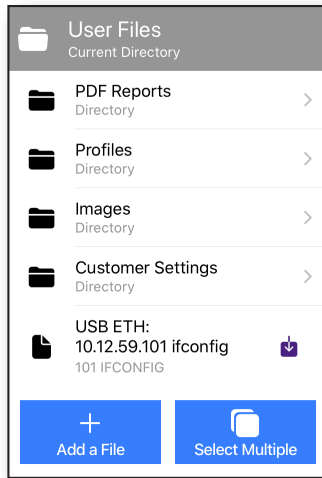
- **Job Manager** – Attach jobs to tests, including customer info and work orders, and track test results



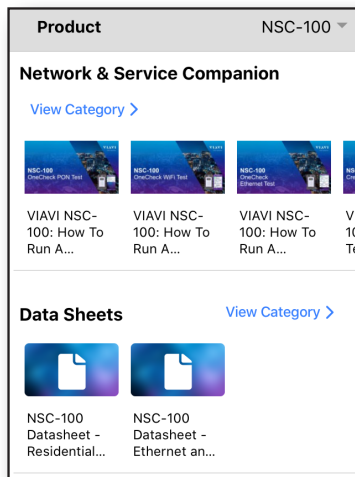
- **Instrument Sync** – Sync your instrument to StrataSync and deploy configuration files



- **NSC-200 Files and Mobile Tech Files** – Manage files on the unit that you can save to your phone or tablet. Use the **NSC-200 Files** menu to manage files stored on your meter, use the **Mobile Tech Files** menu to manage those stored on your mobile device.



- **Documentation** – View and download various documentation for your instrument, including applications notes, software release notes, and quick reference guides

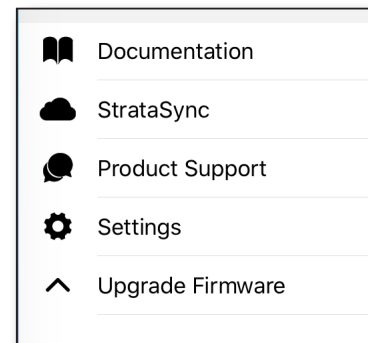
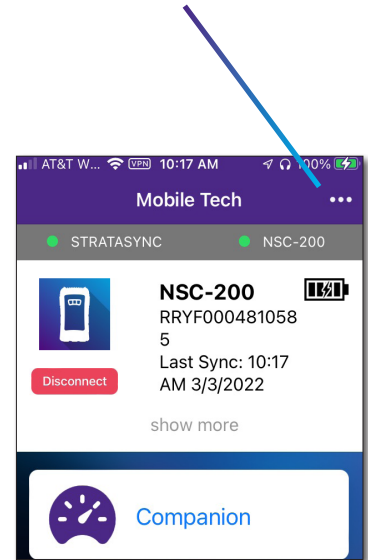


Mobile Tech Options menu

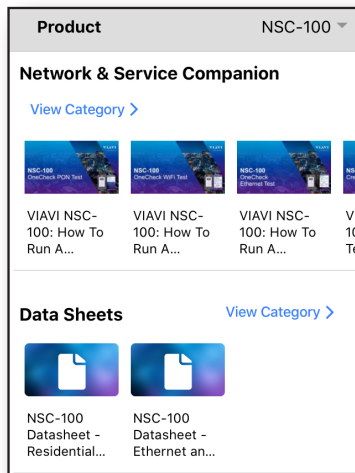
From the Main menu, you can also bring up the **Mobile Tech Options** menu, for more detailed information and settings, including viewing documentation, syncing to StrataSync, contacting product support for more information or to request a repair or calibration, configuring Mobile Tech settings, and upgrading the firmware.

From the Main menu, select the **Options** menu in the upper right. The Options menu appears.

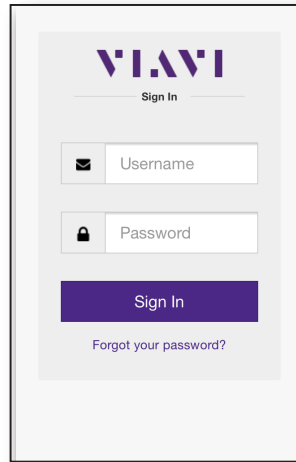
Options menu



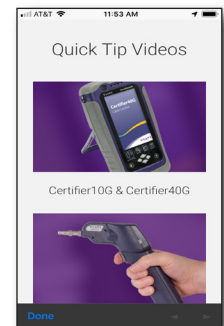
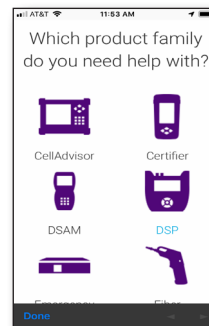
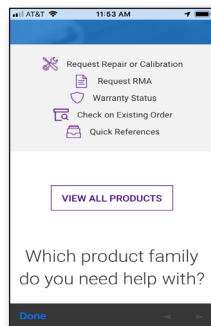
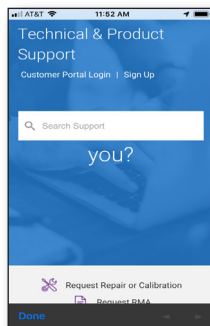
- **Documentation** – View and download various documentation for your instrument, including applications notes, software release notes, and quick reference guides



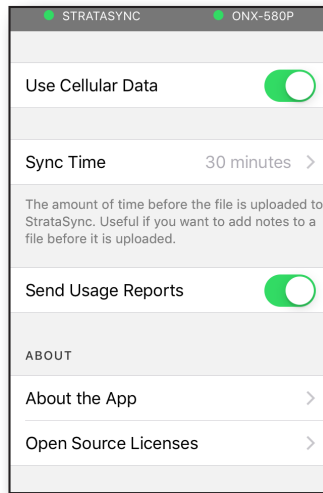
- **StrataSync** – Connect to StrataSync from your browser for advanced account settings and configuration



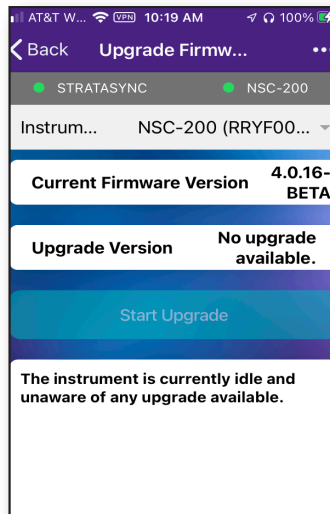
- **Product Support** – Contact the VIAVI Technical Assistance Center, request repair or calibration, or watch quick tip videos



- **Settings** – Configure advanced settings for the Mobile Tech app, including when the unit syncs and clearing local data

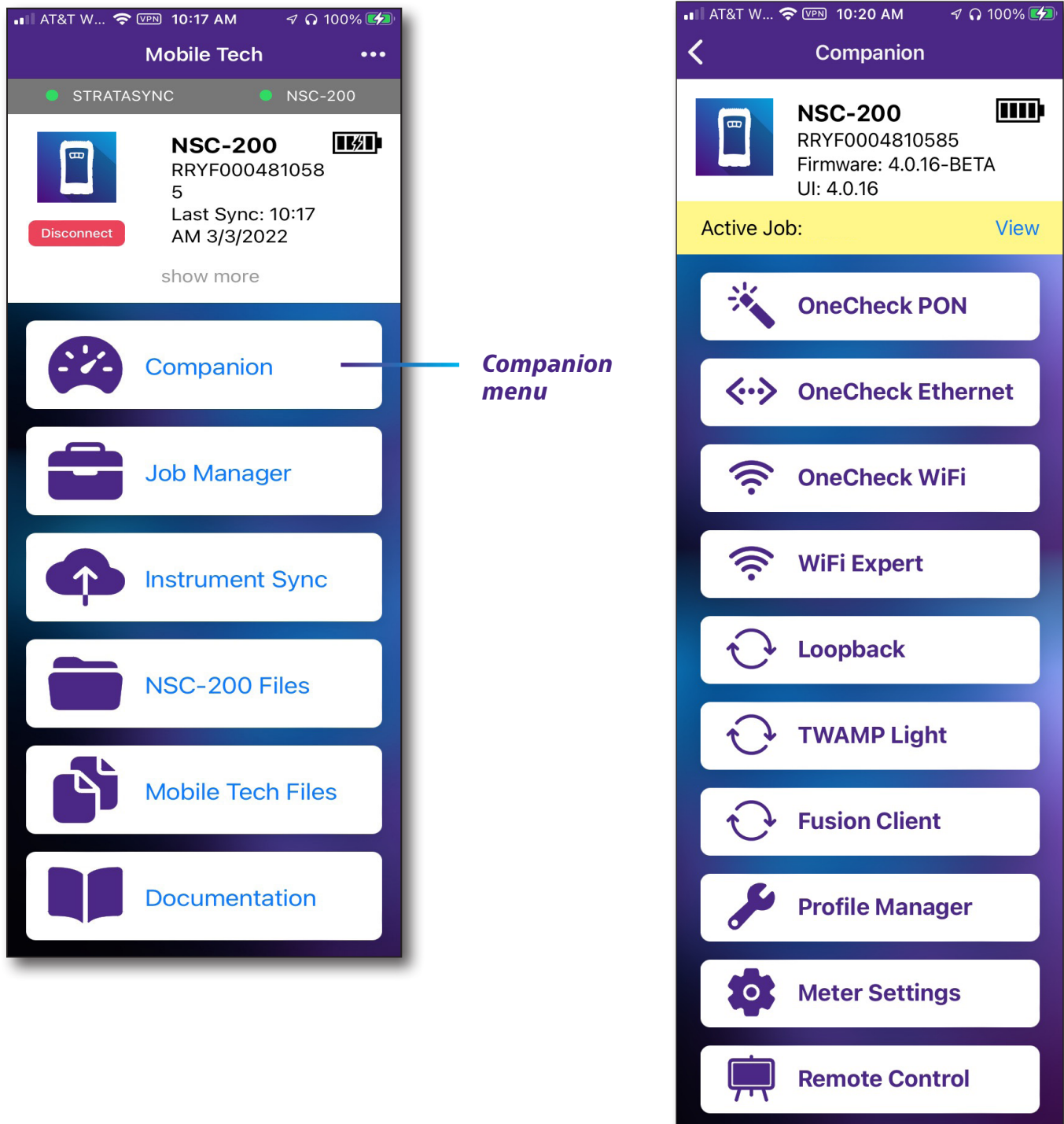


- **Upgrade Firmware** – Easily upgrade the firmware of your Companion from StrataSync

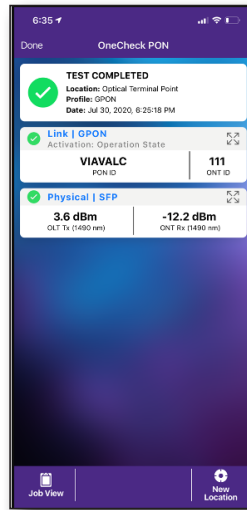


Companion menu

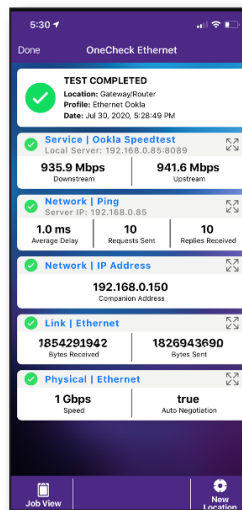
From the Main menu, press the **Companion** button to bring up the Companion menu. Here you can run tests and set up your testing profiles, as well as check the firmware version of the meter and the battery status.



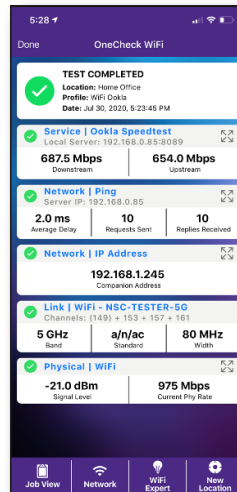
- **OneCheck PON** – Run simplified OneCheck PON tests



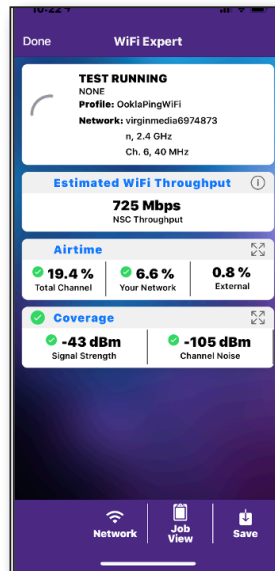
- **OneCheck Ethernet** – Run simplified OneCheck Ethernet tests



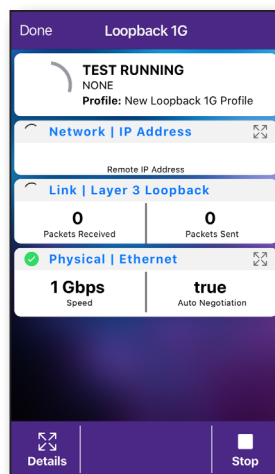
- **OneCheck WiFi** – Run simplified OneCheck WiFi tests



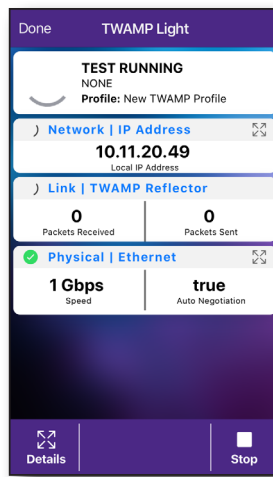
- **WiFi Expert** – Run advanced WiFi tests, including coverage, channel noise, airtime, and throughput



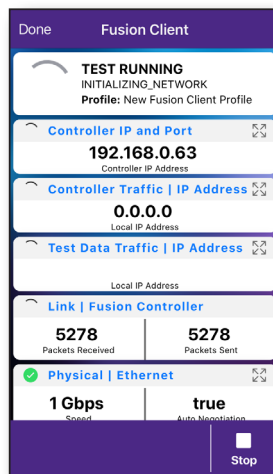
- **Loopback** – Run simplified Loopback 1G and 10 G tests



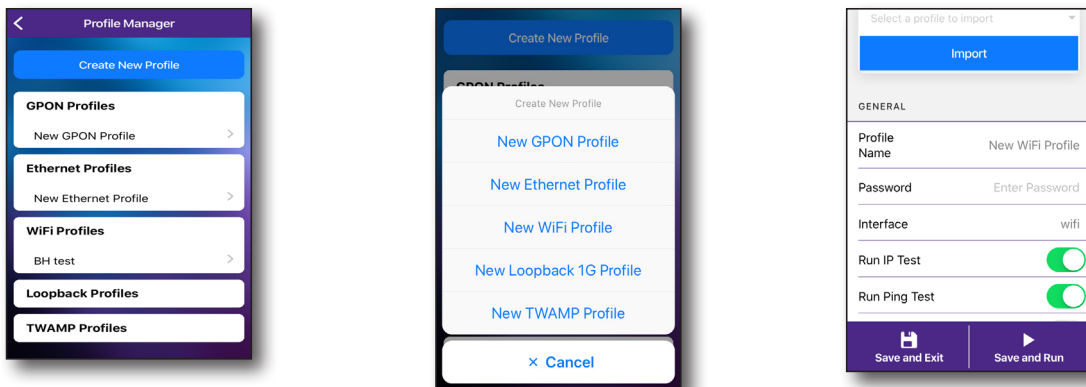
- **TWAMP Light** – Run simplified TWAMP (Two-Way Active Measurement Protocol) light tests



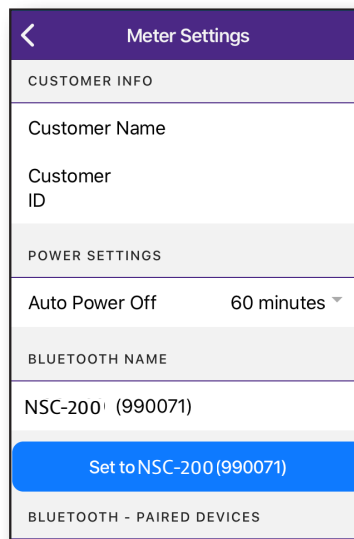
- **Fusion Client** – Run simplified Fusion Client tests



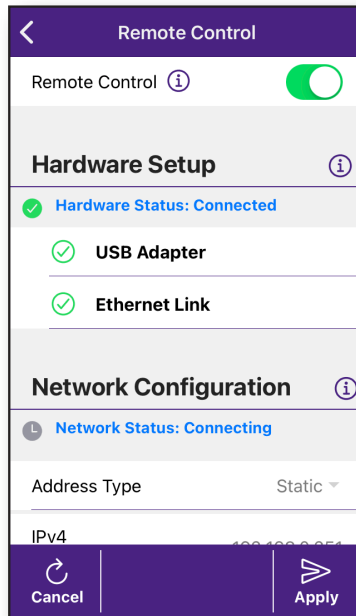
- **Profile Manager** – Set up and manage testing profiles



- **Meter Settings** – Configure advanced settings for the Companion, including customer info, power settings, and the bluetooth device name



- **Remote Control** – Run tests on the NSC remotely if the Mobile Tech app and the NSC are on the same network



Meter Setup

This chapter describes steps to set up your meter, including the following:

- "Mobile Tech settings" on page 40
- "Job Manager" on page 43
- "Profile Manager" on page 45
- "Connecting to the network" on page 53
- "Updating the firmware from USB" on page 55
- "Installing software options" on page 55
- "Updating the firmware from StrataSync" on page 56
- "Syncing to the StrataSync server" on page 58
- "Managing files" on page 61
- "Managing files with StrataSync" on page 65
- "Getting your customer's signature" on page 68
- "Remotely controlling the Companion" on page 66

Mobile Tech settings

There are system settings for both the Mobile Tech app and the Companion meter itself.

From the Main menu, select **Options > Settings** for Mobile Tech. For the Companion settings, select **Companion > Meter Settings**.

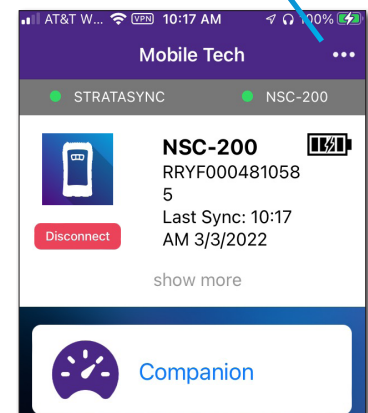
Mobile Tech

From the Mobile Tech **Settings** menu, you can do all of the following:

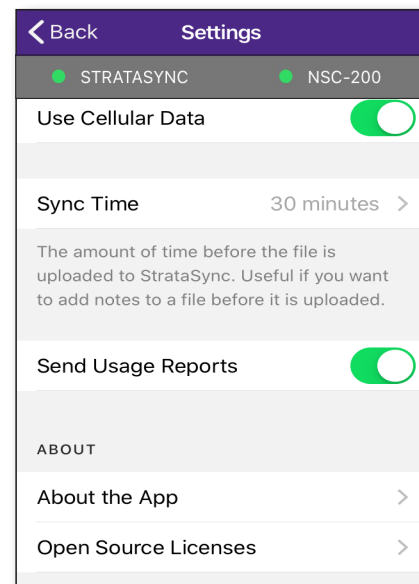
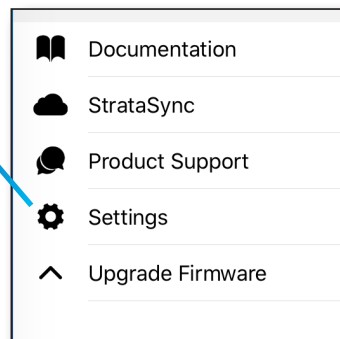
- Enable cellular use
- Adjust the sync time to StrataSync
- Send usage reports
- View location history
- Enable logging
- Perform a comprehensive sync to StrataSync
- Clear local storage

From Mobile Tech Main menu, select **Options** in the upper right, then press **Settings**. The Settings menu appears.

Options menu



Settings menu

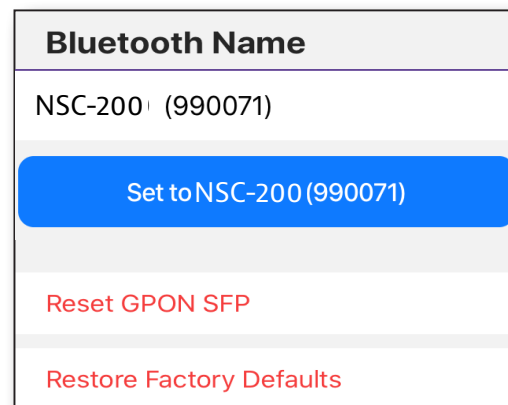
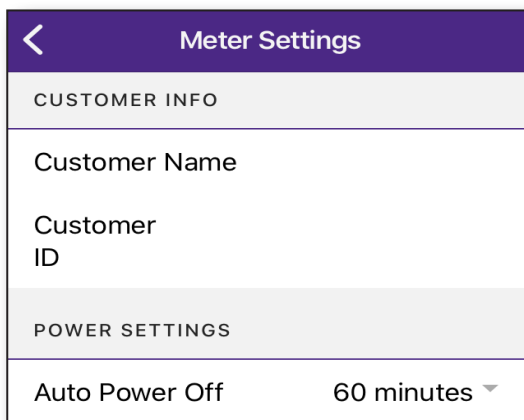
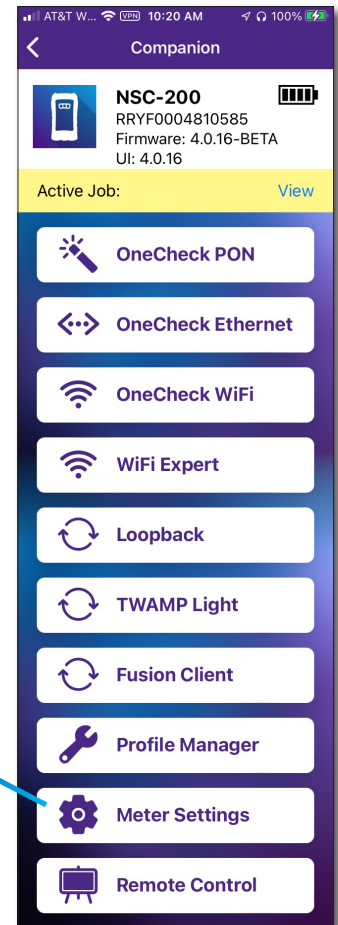


Companion

From the Companion **Meter Settings** menu, you can do all of the following:

- Add customer info, including name and ID
- Adjust auto power off settings for the meter
- Change the Bluetooth name of the meter
- Reset GPON SFP
- Restore factory default settings

From the Main menu, select the **Companion** menu, and then scroll down and press **Meter Settings**. The Meter Settings menu appears.



Specifying user information

The Customer Information menu allows you to enter specific information related to the technician using the Companion. This information is used when synchronizing with the StrataSync server.

Go to the **Meter Settings** menu and enter the Customer Name and ID.

IMPORTANT:



Your Customer Name and ID should be set at the factory.

If you don't see your company info here, enter your company's StrataSync Account ID in the Customer ID field. The Customer Name should then update automatically.

Restoring factory defaults

The following procedure describes how to reset the Companion to factory default settings.

NOTE:



Restoring factory defaults resets test application settings, profiles, and clears reports.

1. From the **Meter Settings** menu, select **Restore Factory Defaults**. A prompt appears indicating that all settings will be restored to factory defaults.
2. Press **OK** to restore the factory default settings.
3. Settings are restored to their factory default values. You must reboot your instrument for the factory defaults to take effect.

Job Manager

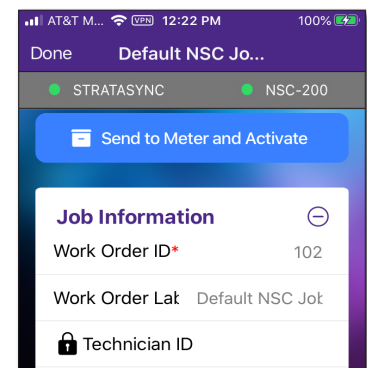
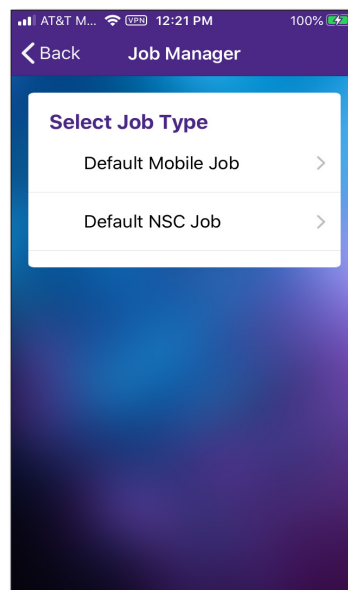
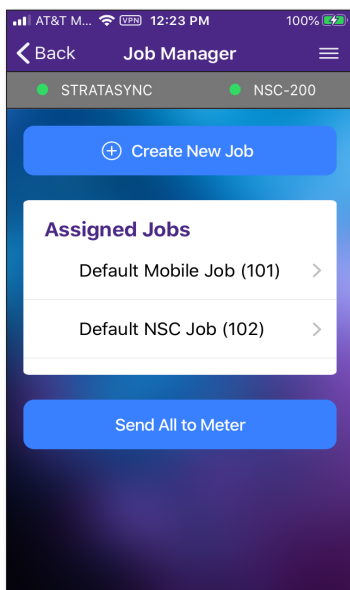
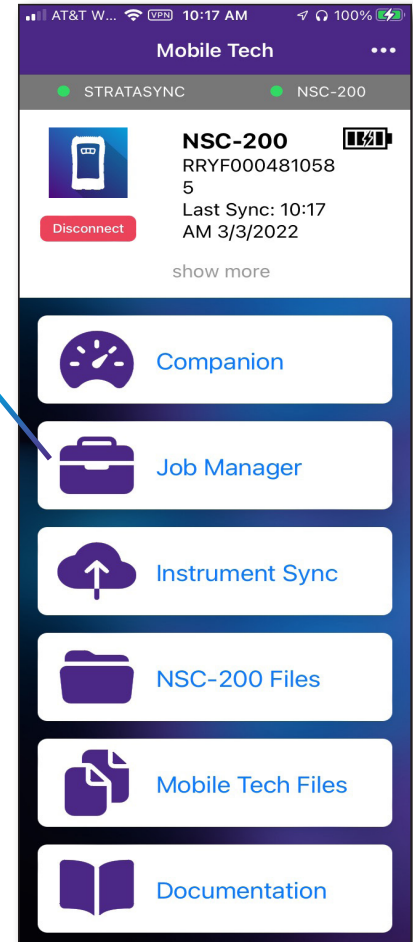
You can use the **Job Manager** to set up and manage your jobs, make them active, add work orders, capture a signature, and export to another app on your device, such as text or email, and track the test results for further troubleshooting.

The default job types are **Mobile** and **NSC**. The NSC type allows you to add customer information for the job, as well.

Creating a job

1. From the **Main** menu, select **Job Manager**. The Job Manager screen appears.
2. Select **Create New Job** at the top.
3. From the pop-up, select the type of job you want to create: **Default Mobile Job** or **Default NSC Job**. The Job Information screen appears.
4. Enter a unique work order ID. For NSC jobs, you can also enter customer information.
5. When finished, select **Save** at the bottom. The job will be added to the jobs list.

Job Manager

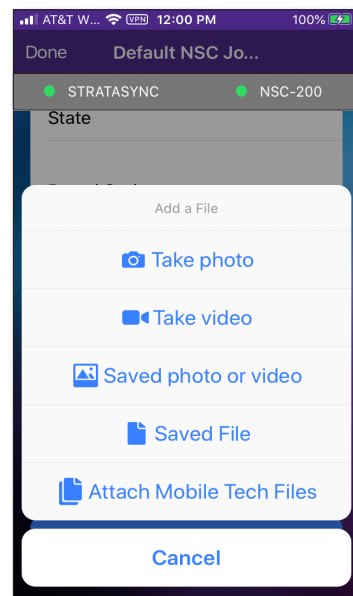
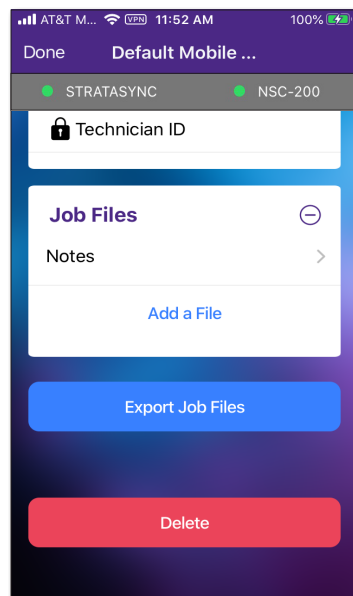


Managing jobs

Once you create a job, you can add additional details and files, capture a customer's signature, then send to the meter or export to another app on your device.

To return to the Main menu at any time, select **Back** in the upper left.

1. From the Job Manager screen, select the active or assigned job you want to add detail.
2. Add detail as necessary, including customer information.
 - To change the active job, select a job from the **Assigned Jobs** list and select **Send to Meter and Activate**.
 - To add a job file, select **Add a File** under **Job Files**, then choose **Take photo**, **Take video**, or **Saved Photo or video**, **Saved File**, or **Attach Mobile Tech Files**.
 - To export job files to another app, select **Export Job Files** and choose the app you want from the pop up.
 - To delete a job, select **Delete**.



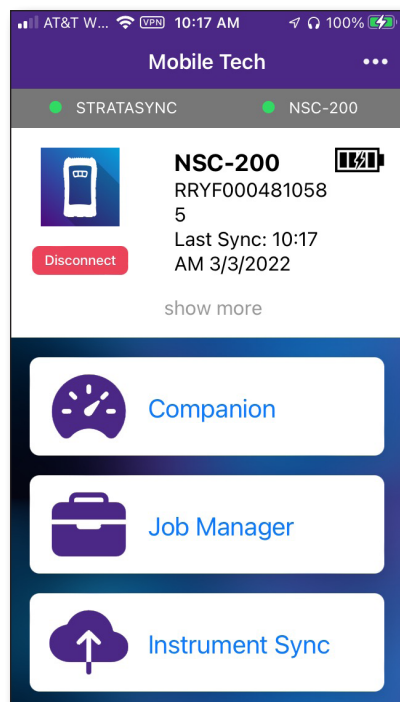
Profile Manager

You can use the **Profile Manager** to set up and manage testing profiles for your meter. Default profiles are included, but you can also customize your own.

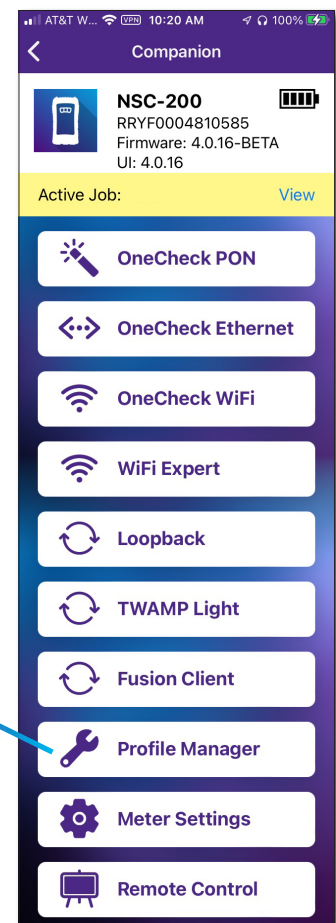
See the following sections that detail the setup for each type of testing profile.

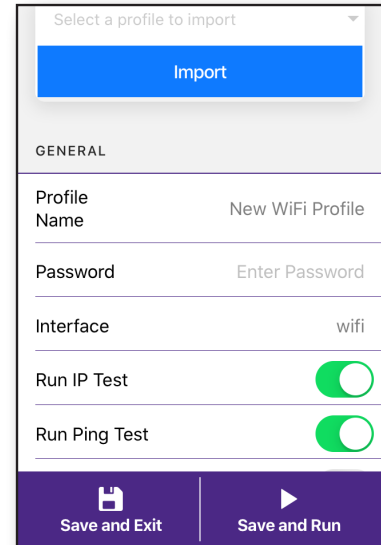
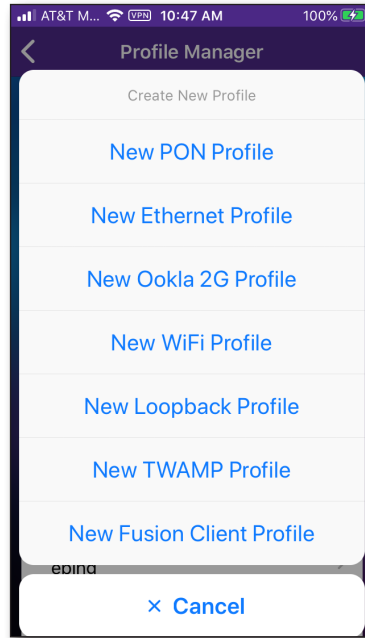
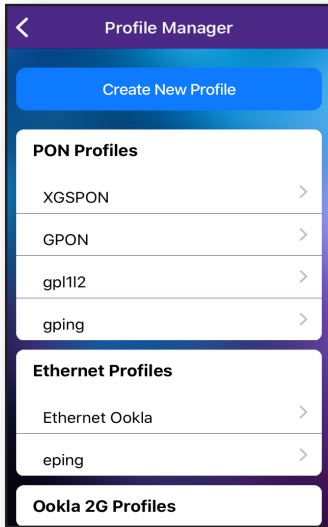
Creating a profile

1. From the **Main** menu, select **Companion**, and then **Profile Manager**. The Profile Manager screen appears.
2. Select **Create New Profile** at the top.
3. From the pop-up, select the type of profile you want to create: **PON**, **Ethernet**, **Ookla 2G**, **WiFi**, **Loopback**, **TWAMP**, or **Fusion Client** or choose from the default profiles. The Profile Editor screen appears.
4. From there, you can import an existing profile to edit or enter the connection details for the new one.
5. When finished, select **Save and Exit** at the bottom, or **Save and Run** to run the test immediately.



Profile Manager





Profile setup

Use these settings to enable what test you want to run for each profile and customize for your network. Not all of these apply to each type of test, of course.

General

- Profile Name
- Password
- PON ID Type
- Passive Mode
- Interface
- Run IP Test
- Run Ping Test
- Run Traceroute Test
- Run Ookla Speedtest
- Run Web Test
- Run Broadcom Speed Service
- Run TrueSpeed
- Run SpeedCheck
- Run Iperf Test
- Viavi UDP Speed Test

Loopback

- Customize MAC Address
- Custom MAC Address
- Interface Type
- Interface Rate
- Persist on Boot
- Interface Protocol
- VLAN Filter
- VLAN ID
- VLAN Priority

TWAMP Light Reflector

- Interface Type
- UPD Port
- Persist on Boot
- Address Type
- VLAN
- VLAN ID
- VLAN Priority

Test Data Traffic

- Customize MAC Address
- Custom MAC Address
- Interface Type
- Interface Protocol
- Address Type
- User Class
- VLAN

If you are using separate IP addresses for management and test traffic, at least one of these IP addresses has to be associated with a dedicated VLAN.

Typically a carrier would have a special management VLAN (e.g. VLAN 100) that would need to be associated with the NSC's management IP address.

Assigning just two IP addresses without any VLAN usage prevents the NSC from distinguishing between the different IPs.

- VLAN ID
- VLAN Priority

Controller Traffic

- Controller IP / Host
- Controller Port
- Persist on Boot
- Proxy
- Use Test Data Traffic Settings
- Interface Protocol
- Address Type
- User Class
- VLAN
- VLAN ID
- VLAN Priority

Interface Configuration

- Interface Type
- RSSI Threshold
- Autonegotiation
- Interface Rate
- Enable Flow Control
- ONT Rx Min Threshold (Class B+ ODN: -28 dBm)
- Optical Loss Max Threshold (dB)

Data Interface

- Interface Protocol
- Customize MAC Address
- Custom MAC Address
- Address Type – DHCP or Static
- IPv4 Address – Enter the instrument's IP address (which will be used when accessing the provider network).

- IPv4 Gateway – Enter the address for the gateway that is used to route packets that are not on the same subnet.
- IPv4 Netmask – Enter the netmask address to indicate whether the packets are to be routed to other networks or sub-networks.
- IPv4 DNS – Enter the address of the DNS server.
- User Class
- Vendor
- VLAN
- VLAN ID
- VLAN Priority

WiFi Expert Configuration

- Estimated Throughput (Mbps)
- Airtime Percent (%)
- Noise Floor (dBm)

Ping Configuration

- Run Ping Test
- Server
- Tx Count (1-100000000)
- Tx Size (24-2000)
- Tx Packet Interval (ms)
- Max Threshold (%)

Traceroute Configuration

- Run Traceroute Test
- Destination IP / DNS Name
- DNS Lookup
- Packet Type
- Max Hops
- Max Delay Threshold (ms)

Ookla Configuration

- Run Ookla Speedtest
- Auto Server
- Server URL
- Server Location
- Number of Connections
- Upload Threshold (Mbps)
- Download Threshold (Mbps)

Broadcom Speed Service Configuration

- Run Broadcom Speed Service
- Server IP
- Port
- Duration (ms)
- Packet Length
- Target Rate (kbps)
- Max Steps
- Loss (%)
- Upload Threshold (Mbps)
- Download Threshold (Mbps)

TrueSpeed Configuration

- Run TrueSpeed
- Gateway Enable
- Host
- User
- Password
- Test Duration Per Direction (s)
- Saturation Window (%)
- Saturation Connections (%)
- Upload CIR (Mbps)
- Download CIR (Mbps)

- Upload Threshold (Mbps)
- Download Threshold (Mbps)

SpeedCheck Configuration

- Run SpeedCheck
- Upload Duration (s)
- Upload URL
- Download Duration (s)
- Download URL
- Upload Threshold (Mbps)
- Download Threshold (Mbps)

Iperf Configuration

- Run Iperf Test
- Iperf Version
- Gateway Enable
- Server
- Port
- Test Duration (s)
- Transport Protocol
- Number of Streams
- Window Size (KB)
- Upload Threshold (Mbps)
- Download Threshold (Mbps)

VIAVI UDP Speed Test Configuration

- Run Viavi UDP Speed TestTrueSpeed
- Host
- User
- Password
- Upload CIR (Mbps)
- Download CIR (Mbps)
- Upload Threshold (Mbps)

- Download Threshold (Mbps)
- Expert Settings
 - Test Duration (s)
 - UDP Port
 - UDP Packet Size (bytes)
 - Packet Loss Ratio Threshold (%)
 - Jitter Threshold (ms)

Customer Network Adjustment

- Delay Network Test after Ethernet Link is Established (s)



NOTE:

Running IP, ping, web connectivity, and speed tests require the full GPON software option.

For more information, contact your local VIAVI representative or visit www.viavisolutions.com.

Connecting to the network

You can test from both a wired and wireless network, and from a wired connection, you can update the firmware, transfer files, or synchronize to the StrataSync server.

GPON and XGSPON connections

1. Make sure all fiber cables and fiber ports are clean. Dirty fiber connections will result in erroneous measurements.
2. Using a fiber cable, connect the instrument to the GPON network:
 - Connect one end of the fiber cable to the Companion's SFP connector located on the bottom of the unit using an SFP adapter, under the rubber door.
 - Connect the other end of the fiber cable to the GPON network.
3. Verify that network connectivity is enabled via the status indicators on the meter.
4. Use the **Profile Manager** and testing profiles in the previous section to configure your network.



CAUTION:

The GPON SFP interface on the Companion requires an SC/APC angled connection. Using a UPC connector will result in erroneous measurements and may cause damage.

Ethernet connections

1. Using an Ethernet cable, connect the instrument to the LAN:
 - Connect one end of the Ethernet cable to the Ethernet connector located on the bottom of the unit, under the rubber door.
 - Connect the other end of the Ethernet cable to the LAN.
2. Verify that network connectivity is enabled via the status indicators on the meter.
3. Use the **Profile Manager** and testing profiles in the previous section to configure your network.

WiFi connections

Use the **Profile Manager** and testing profiles in the previous section to configure your network.

When you run a test, you can select your test profile, connect to the network, and select a test location. See *"OneCheck WiFi" on page 73* for more information.

Depending on the network, you may also need to specify the following settings:

SSID – The SSID (Service Set Identifier) of the WiFi network.

Password – The password required to authenticate to the network. A password is not required if Key Management is set to None.

If you don't know your network password and your WiFi gateway has a WPS security button, you can press it and then select **Use WPS** in OneCheck WiFi instead of entering the password.

Interface Mode – Depending on the Interface Mode, you have one or more additional settings to specify. For details, see those areas earlier in this section.

About Access Points

If an access point does not broadcast its Service Set Identifier (SSID), you can manually create a profile for a WiFi network. Your instrument will save the profile, then automatically authenticate and establish a connection to the network if 1) network connectivity is enabled, 2) the network's access point is in range, and 3) the network is determined to provide the best available access point (based on signal strength and/or encryption supported).

The instrument can save up to 32 WiFi network profiles.



NOTE:

Your instrument will automatically save your WiFi network password for 24 hours after successfully connecting to a new WiFi network.

Updating the firmware from USB

You can update your Companion firmware via USB drive if VIAVI sends you a file.

1. Connect the Companion to the AC charger adapter to ensure an uninterrupted supply of power during the update.
2. Reboot the Companion.
3. If you received the firmware file by email (instead of a USB drive), save the file to a USB drive in the root directory.
4. Insert the USB drive into the Companion.

The update will begin, and the **Pair** indicator will blink pink and blue for a minute or so as it updates. The meter will power off when finished.

Installing software options

You can install software options via USB drive if VIAVI sends you a file or via StrataSync.

1. Before installing options, upgrade to the latest firmware, as shown in the previous section.
2. If you received the option file by email (instead of a USB drive), save the file to a USB drive in the root directory.
3. Reboot the Companion.
4. Insert the USB drive into the Companion. The unit detects the option file and installs it. The **Pair** indicator will blink pink and blue for a minute or so as it updates.
5. Disconnect and reconnect the Mobile Tech app to the Companion to see the new options installed.

Updating the firmware from StrataSync

Once you are logged into StrataSync, you can update the firmware of your unit via Ethernet.

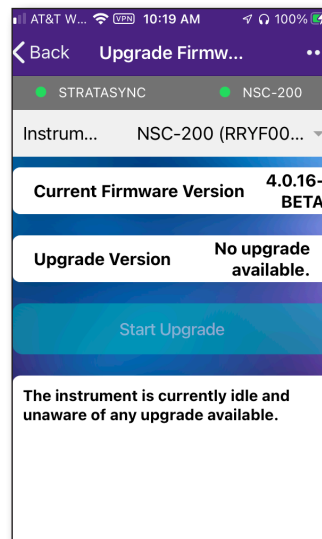
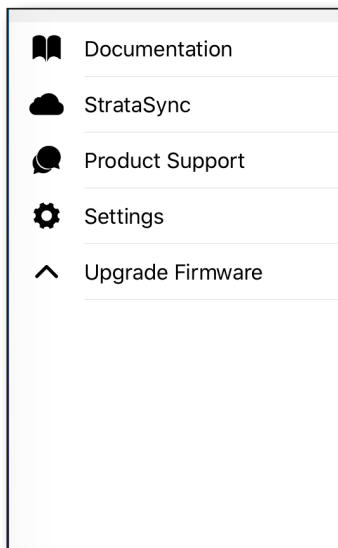
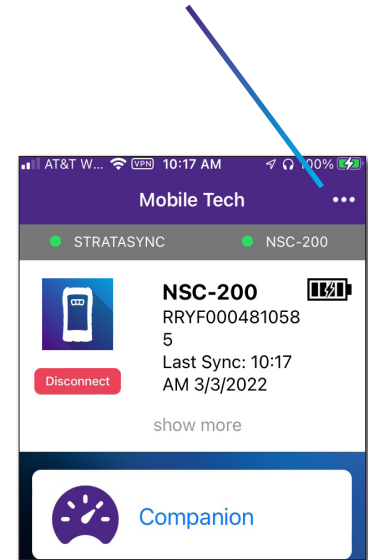
1. Connect the Companion to the AC charger adapter to ensure an uninterrupted supply of power during the update.
2. Reboot the Companion.
3. Connect the Companion to your network via wired Ethernet.
4. Go back to the Main screen and select the **Options** menu in the upper right. The Options menu appears.
5. Select **Upgrade Firmware**. The Upgrade Firmware screen appears, showing the current firmware version and if an update is available.

You can also get to the Upgrade Firmware screen from the Main menu and selecting **Show More**.

6. If an update is available, select **Start Upgrade** to update the unit.

The update will begin and the meter will power off when finished. Please wait as this could take 10-15 minutes, based on the size of the update file and connection speed.

Options menu



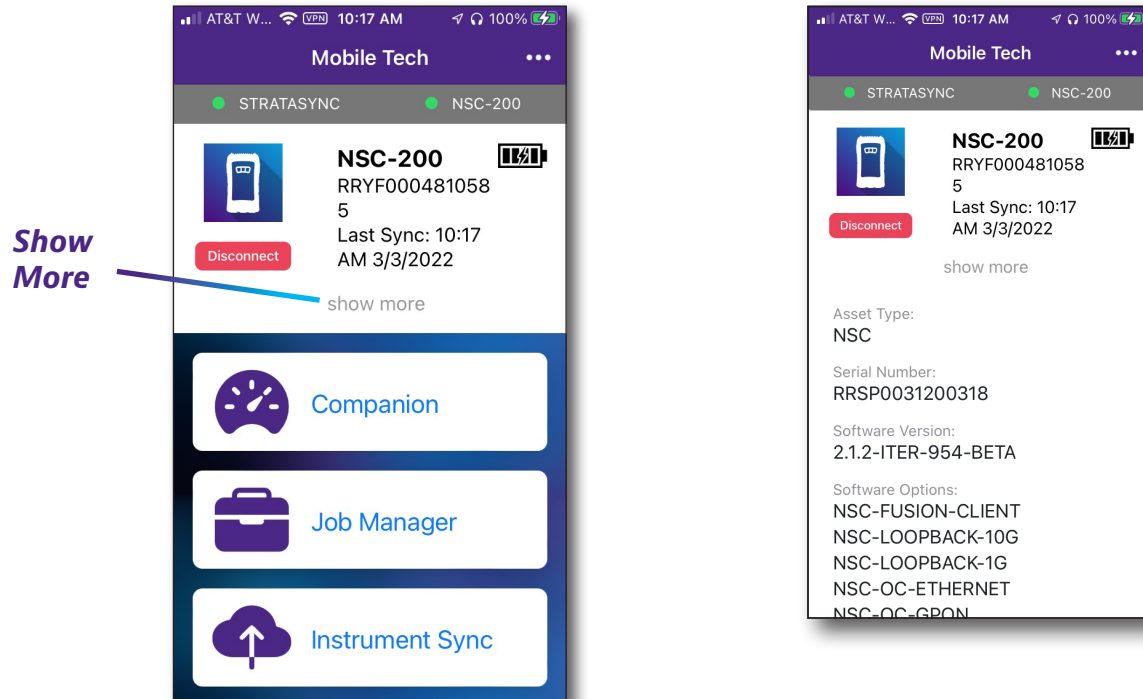
NOTE:

You need the appropriate permissions in StrataSync to update the firmware.

Viewing hardware/software versions and options

You can easily see more detail about your Companion, including the software version, serial number, Tech ID, and installed software options.

From the Main menu, select **Show More** near the top of the screen. Scroll down to see more details.

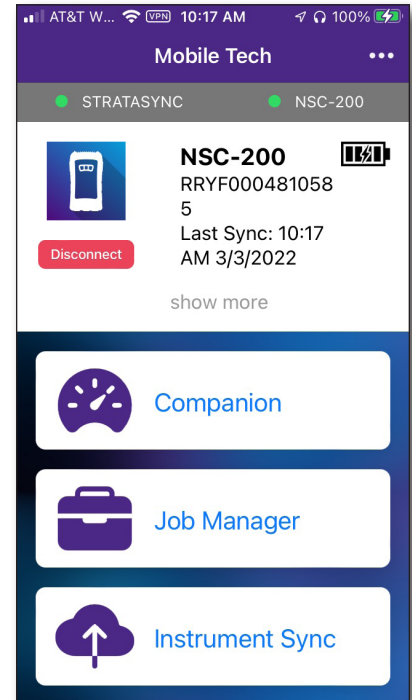


Syncing to the StrataSync server

StrataSync® is a hosted, cloud-based software application that provides VIAVI instrument asset, configuration, and test-data management. StrataSync manages inventory, test results, and performance data anywhere with browser-based ease and improves technician and instrument efficiency.

Features include the following:

- Tracking ownership of the Companion
- Pushing certain configuration settings to the unit
- Pushing work orders to the unit and keeping in sync with the server
- Receiving certain configuration setting from the unit
- Adding software options
- Updating the software on the unit
- Updating the software on the PON SFP
- Cloning a device (create a "golden" unit)
- Uploading and storing of test reports, screenshots, OneCheck profiles, and configurations



To obtain the latest configuration settings, software options and updates, and ownership registration information, the Companion can sync with a VIAVI server via the internet. The synchronization also stores any user files saved on the unit to the StrataSync server.

You should sync immediately upon receipt of the unit and on a regular (daily) basis thereafter to ensure that the unit is as up-to-date as possible and to allow all user information to be backed up. Before attempting to synchronize with StrataSync, please confirm your server settings with your manger or your company's IT organization.

ASSIGN SOFTWARE OPTIONS - NSC-100 - UID: RRS00071990071
Please select options to deploy and press next

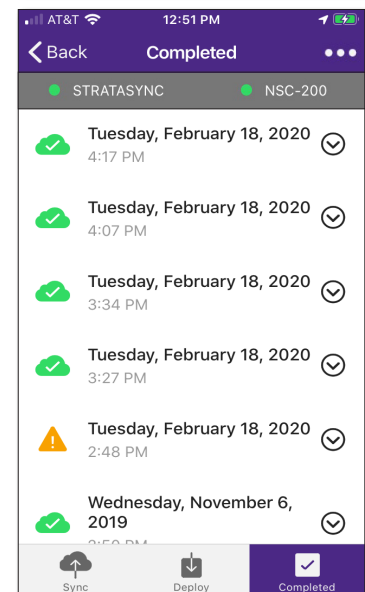
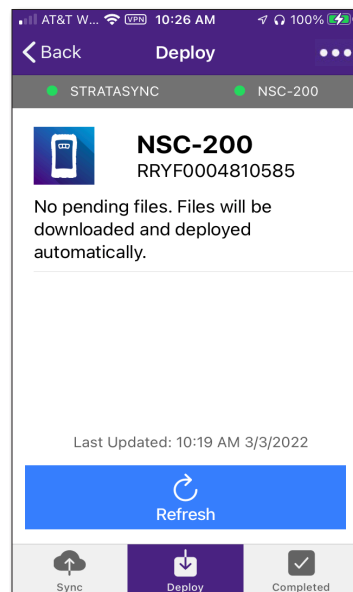
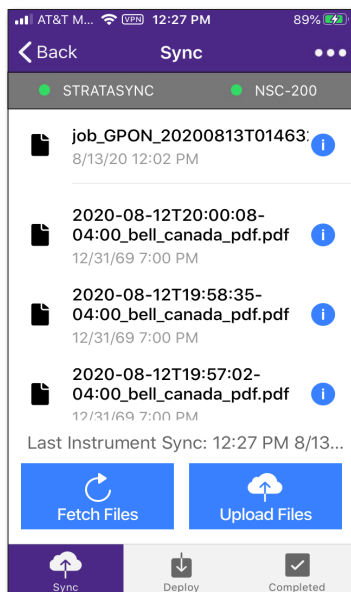
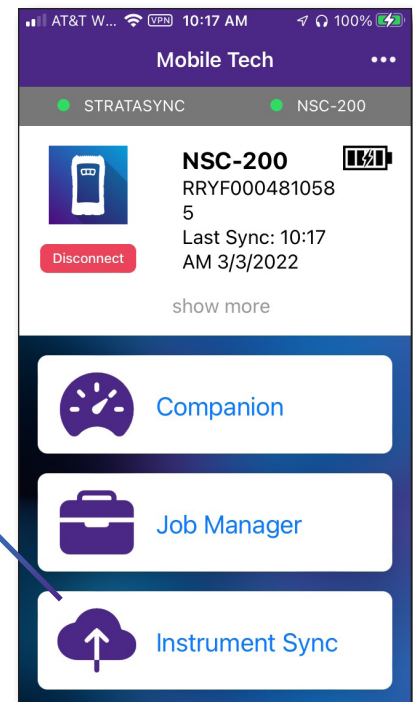
Option	Type	Description	Organization Name	Available	Assign	Option Expiration Date	Quantity	Status	Email Again
NSC-OC-ETHERNET	PERMANENT	OneCheck Ethernet	NSC Engine...	4949 of 5...	<input checked="" type="checkbox"/>		1	Pending Confirma...	
NSC-OC-GPON	PERMANENT	OneCheck GPON	NSC Engine...	4949 of 5...	<input checked="" type="checkbox"/>		1	Pending Confirma...	
NSC-OC-WIFI	PERMANENT	OneCheck WIFI	NSC Engine...	4948 of 5...	<input checked="" type="checkbox"/>		1	Pending Confirma...	
NSC-SPEEDCHECK-U1	PERMANENT	SpeedCheck	NSC Engine...	998 of 10...	<input checked="" type="checkbox"/>		1	Pending Confirma...	
NSC-TRUESPEED	PERMANENT	TrueSpeed Test	NSC Engine...	4950 of 5...	<input checked="" type="checkbox"/>		1	Pending Confirma...	
NSC-LOOPBACK-10G	PERMANENT			0 of 0	<input checked="" type="checkbox"/>			Deployed	
NSC-LOOPBACK-1G	PERMANENT			0 of 0	<input checked="" type="checkbox"/>			Deployed	
NSC-SPEEDCHECK	PERMANENT			0 of 0	<input checked="" type="checkbox"/>			Deployed	
NSC-SPEEDSERVICE	PERMANENT			0 of 0	<input checked="" type="checkbox"/>			Deployed	
NSC-SPEEDTEST	PERMANENT			0 of 0	<input checked="" type="checkbox"/>			Deployed	
NSC-TWAMP-REFLECTOR	PERMANENT			0 of 0	<input checked="" type="checkbox"/>			Deployed	

Next

Software options in StrataSync

Syncing with StrataSync

1. From the Main menu, select **Instrument Sync**. The StrataSync Sync menu appears.
2. Select **Sync**, **Deploy**, or **Completed** at the bottom of the screen.:
 - **Sync** – Shows any files ready to sync to StrataSync
 - To fetch files from the meter, press the **Fetch Files** button at the bottom.
 - To upload files to StrataSync, press the **Upload Files** button at the bottom.
 - **Deploy** – Shows any files from StrataSync that are ready to be deployed to the unit
 - **Completed** – Shows files that have been synced or deployed. Select the arrow to the right for more detail



- Upon synchronization with the StrataSync server, the unit will send to the server the following information:
 - The unit's serial number
 - The unit's hardware information (constituent assemblies and their revision levels)
 - The unit's MAC address
 - The unit's user settings – Name (user/technician) and ID
 - Software update milestones (includes status and warnings, if applicable)

If the configuration information contained on the server is newer than that on the unit, the server will be considered to be the most up-to-date.

- The server will then send any files to the unit being synchronized that it determines are newer than those on the unit.
 - The unit will then send any reports, configuration profiles, XML results, screen shots, etc. that have been saved on the unit since the last configuration.
 - The server then applies any applicable options to the unit.
 - Copy ("clone") the configuration settings for the base unit, as well as any company-specific configurations such as custom filters, web bookmarks, and FTP passwords. This can be used to create a "golden" unit.
 - Lastly, if any updates are available, you will be prompted that you can update
- When synchronization is complete, the Status will indicate "Sync Complete".

Managing files

The Companion's file management is separated into 2 menus, **NSC-200 Files** and **Mobile Tech Files**. Use the NSC-200 Files menu to manage files stored on your meter, while the Mobile Tech Files menu is used to manage those stored on your mobile device, deploy to the Companion, or upload to StrataSync.

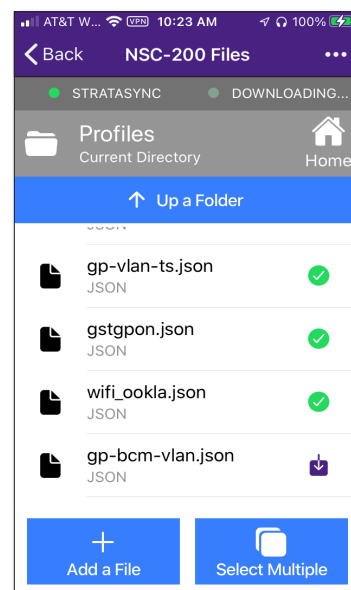
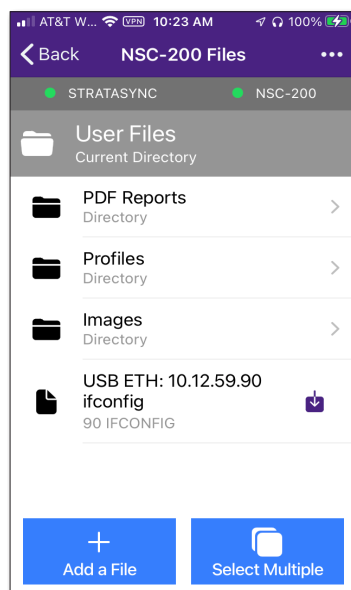
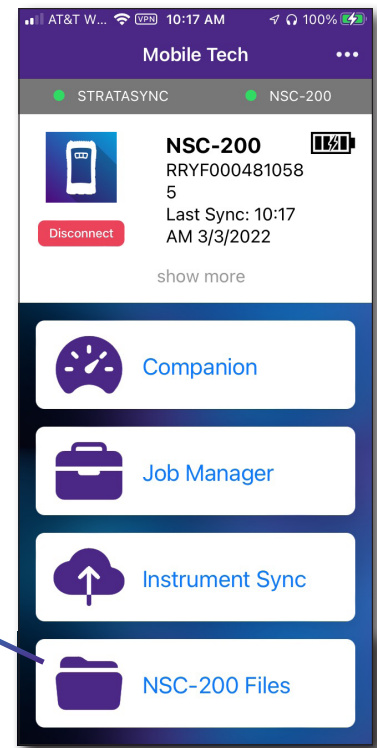
NSC-200 Files

Use the **NSC-200 Files** menu to manage the files on the Companion and download to your mobile device.

- From the Main menu, select **NSC-200 Files**. The NSC-200 Files screen appears, showing the User Files directory.

Here you will see the following directories:

- PDF Reports
- Profiles
- Images
- Customer Settings



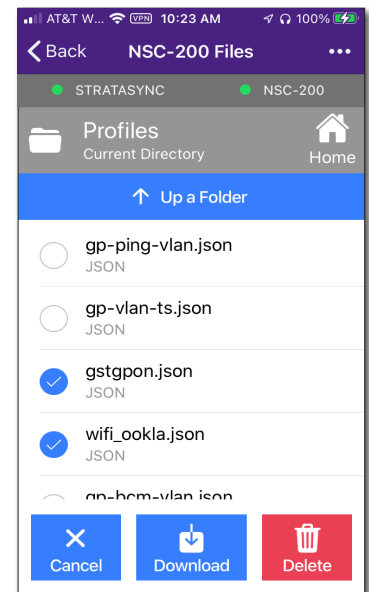
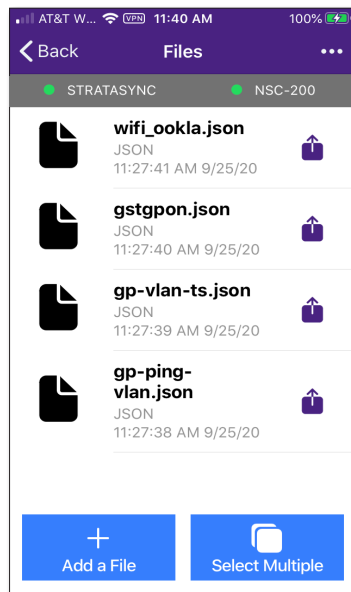
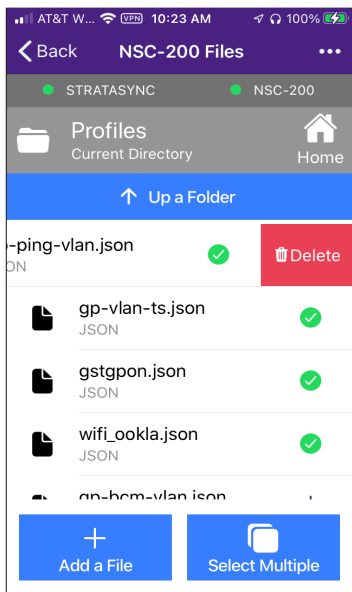
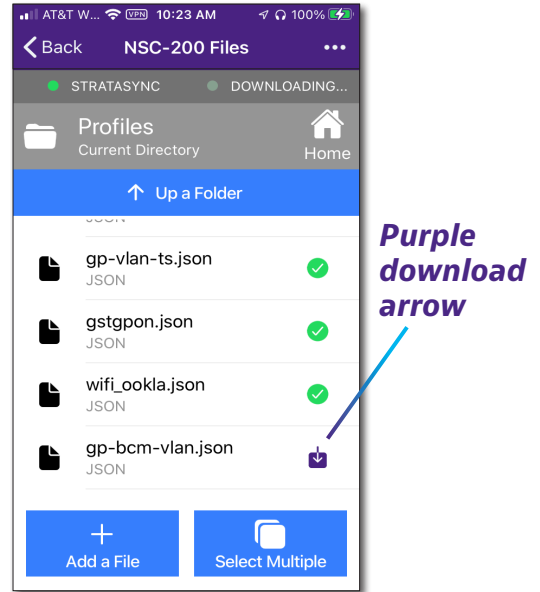
- Select the directory you want to open. The directory will open and show a list of files.

To return to the main menu at any time, select **Home** in the upper right. You can also go up a folder directory by selecting **Up a Folder**.

- To download a file to your mobile device, press the purple download arrow. Once it is downloaded, it will change to a green checkmark.

Files and reports will then be saved to the **Mobile Tech Files** menu. For more info, see the next section.

- To delete a file, select the file and swipe to the left. Then select **Delete**.
- To add a file to the meter, press the **Add a File** button at the bottom, then choose which file from the local files on your mobile device you want to send to the meter.
- To select multiple files, press the **Select Multiple** button at the bottom, and then select the files to download or delete. Then select **Download** or **Delete**.



Mobile Tech Files

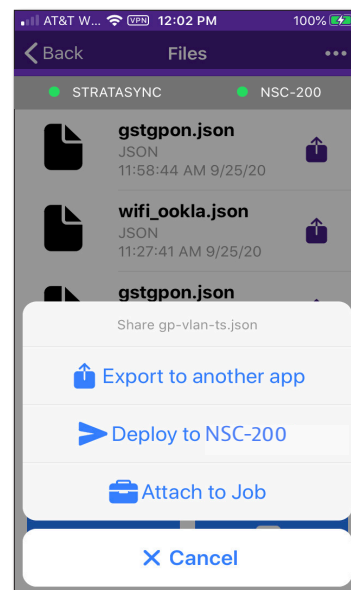
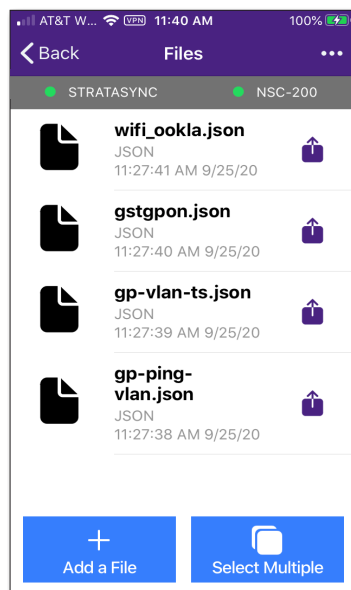
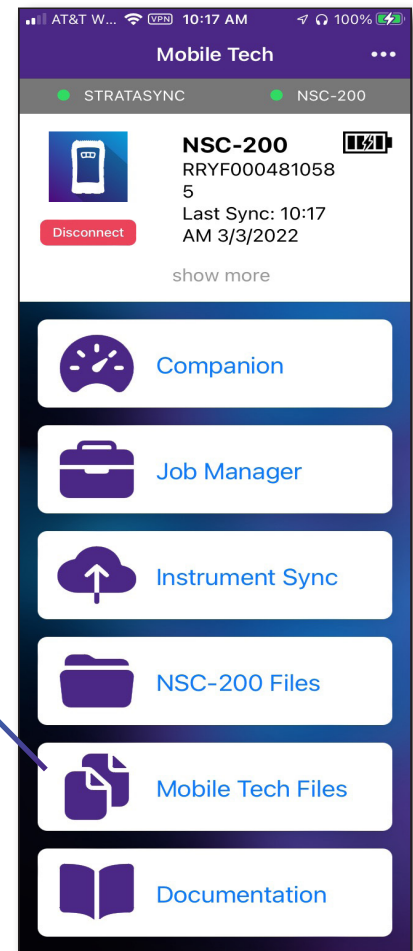
Use the **Mobile Tech Files** menu to manage the files on your mobile device, deploy to the Companion, or export to another app on your device, such as text or email.

When you download files and reports from the Companion, they will appear here.

To view PDF files, you may need to download a PDF reader app, such as Adobe PDF Reader.

1. From the Main menu, select **Mobile Tech Files**. The Files screen appears, showing the list of files on your mobile device.

Mobile Tech Files



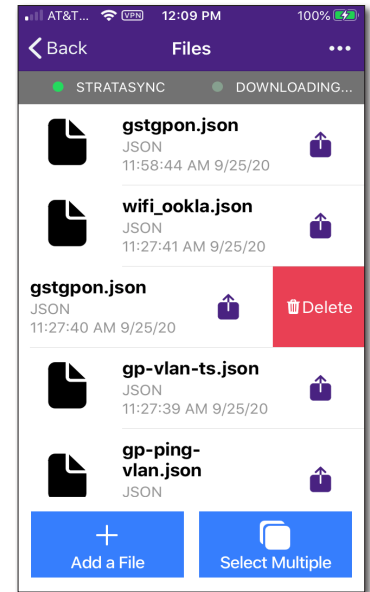
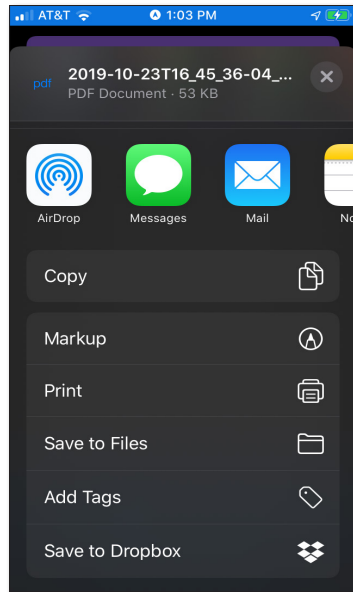
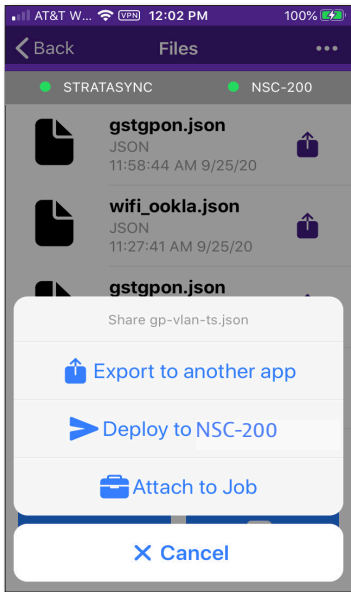
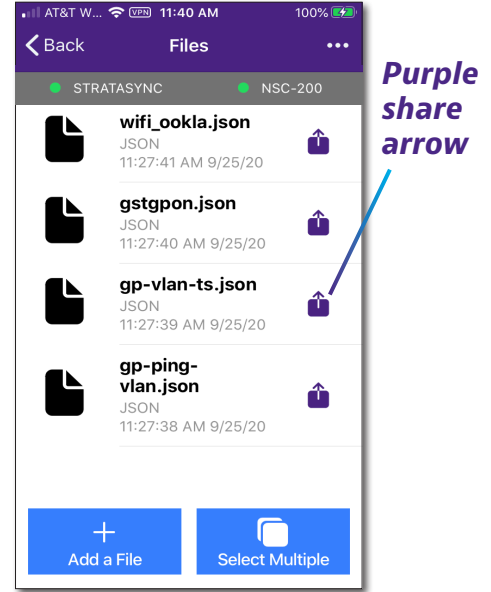
2. Select the purple share arrow to the right of the file you want to send. A pop-up will appear with the following options:
 - Export to another app
 - Deploy to NSC-100
 - Attach to Job

To return to the Main menu at any time, select **Back** in the upper left.

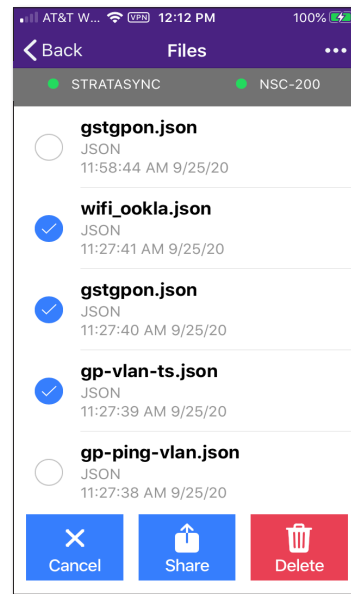
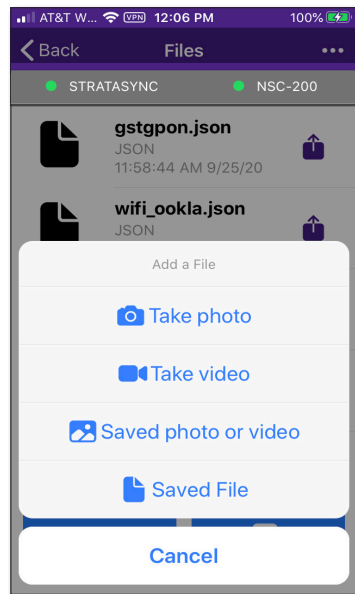
3. Choose the option you want. To export to another app, select the app you want from the pop-up. The file can also be deployed to the NSC-100 or attached to a job.

The files are automatically uploaded to StrataSync, as well.

- To delete a file, select the file and swipe to the left. Then select **Delete**.



- To add a photo or video to the meter, press the **Add a File** button at the bottom, then choose **Take photo**, **Take video**, **Saved Photo or video**, or **Saved File**.
- To select multiple files, press the **Select Multiple** button at the bottom, and then select the files to share or delete. Then select **Share** or **Delete**.



Managing files with StrataSync

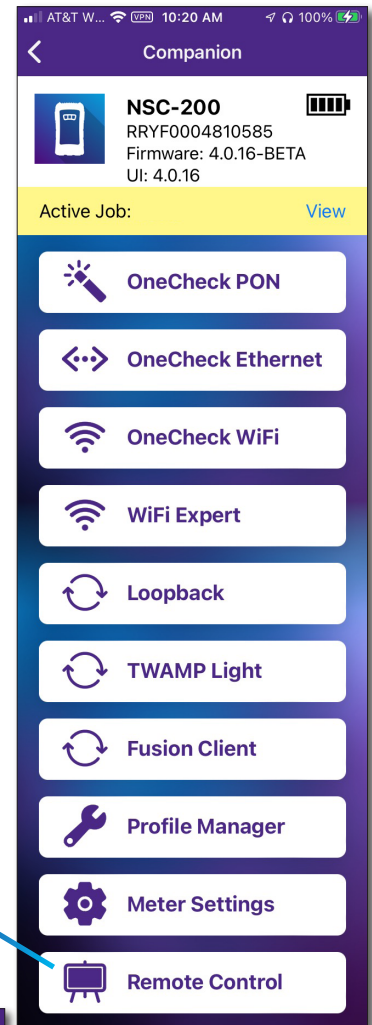
When the Companion syncs with StrataSync, various files are uploaded and stored in the StrataSync cloud, such as test reports, screenshots, work orders, and configurations. You can access these files via the StrataSync website. For more information see ["Syncing to the StrataSync server" on page 58](#).

Ethernet	
Geolocation	39.71, -86.07
Timestamp	2019-10-23 / 16:42
Service I Ookla Speedtest	
Delay (ms)	20.0
Upstream (Mbps)	99.9 X
Unknown (Mbps)	850.0
Downstream (Mbps)	91.0 X
Unknown (Mbps)	950.0
Host	ind.speedtest.sbcglobal.net.8080
Server Location	Indianapolis, IN
Service I TrueSpeed	
Server	
Upstream (Mbps)	0.0 X
Unknown (Mbps)	850.0
Downstream (Mbps)	0.0 X
Unknown (Mbps)	950.0
RTT (ms)	0.0
MSS	0.0
Service I SpeedCheck	
Upstream (Mbps)	71.8 X
Unknown (Mbps)	850.0
Downstream (Mbps)	0.0 X
Unknown (Mbps)	950.0
Service I Web Connectivity	
URL	https://s3.amazonaws.com/c... enfilbeta[swebconnectivity.html?ip=10.11.21
Network I Ping	
Server IP	4.2.2.1
Requests Sent	10
Replies Received	10
Replies Lost	0
Average Delay (ms)	14.0
Replies Lost (%)	0
Network I IP Address	
2 / 4	
bh001 NSC-100 / RRS0071990071 0.0.99-2049	

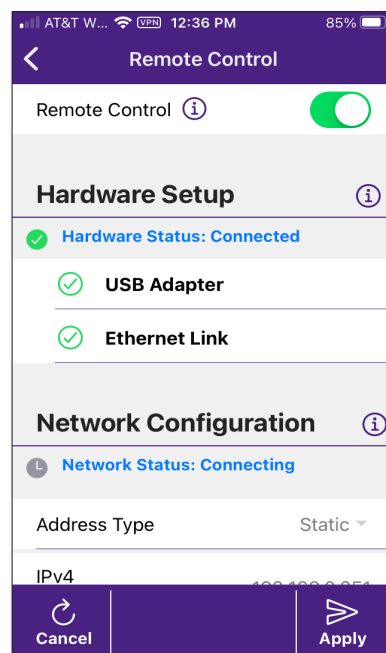
Remotely controlling the Companion

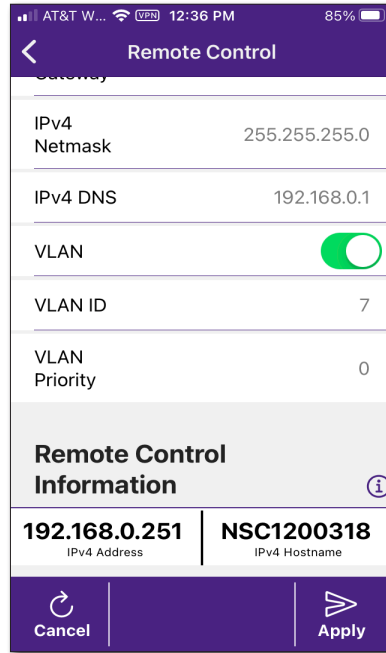
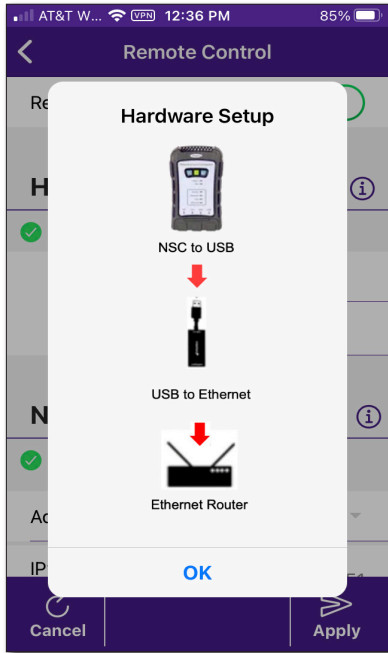
If the Mobile Tech app and the NSC are on the same network, you can run tests remotely.

1. From the **Main** menu, select **Companion**, and then **Remote Control**. The Remote Control screen appears.
2. Turn on **Remote Control** at the top.
3. Set up your hardware as necessary, including using the optional USB to Ethernet adapter to connect to your router.
4. Configure your network.
5. When finished, select **Apply** at the bottom to remotely connect to the NSC.



Remote Control





OneCheck Testing

This chapter describes the OneCheck tests available on the meter, including the following:

- "About OneCheck testing" on page 70
- "OneCheck PON" on page 71
- "OneCheck Ethernet" on page 72
- "OneCheck WiFi" on page 73
- "WiFi Expert" on page 75
- "Loopback" on page 80
- "TWAMP Light" on page 83
- "Fusion Client" on page 84
- "Creating a report" on page 85
- "Deleting a report" on page 86
- "Testing the data layer" on page 86
- "Delayed Start testing" on page 87

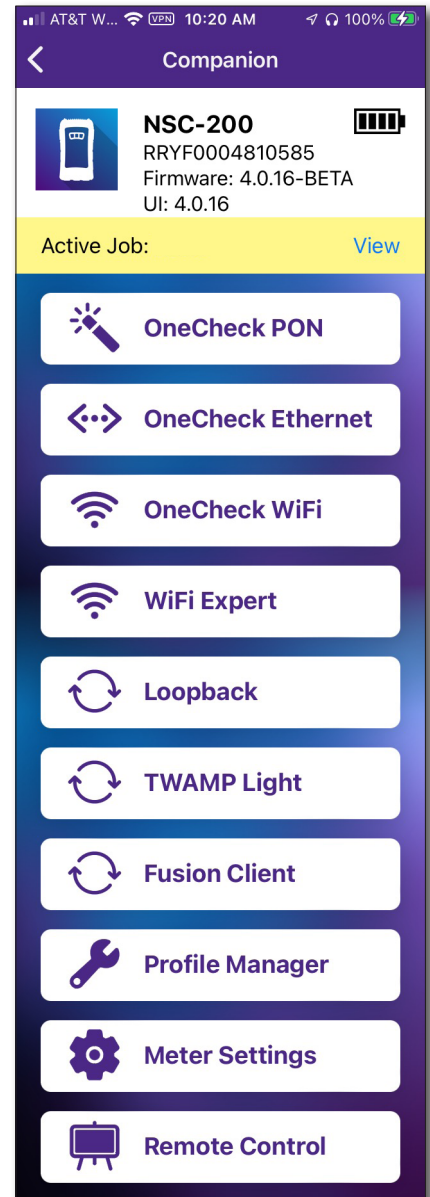
About OneCheck testing

With the Companion's OneCheck applications, you can connect to a customer's network to easily test connectivity and throughput.

You can also ping through the modem to a network switch or web address to test for connectivity and run Traceroute to record and observe the route of traffic through the network.

The available tests on your meter include:

- OneCheck PON
- OneCheck Ethernet
- OneCheck WiFi
- WiFi Expert
- Loopback
- TWAMP Light
- Fusion Client



NOTE:



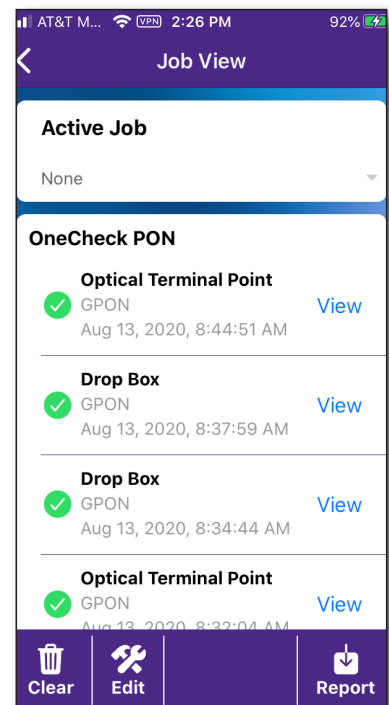
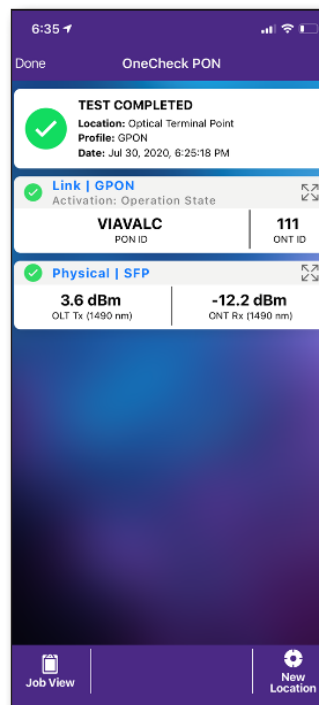
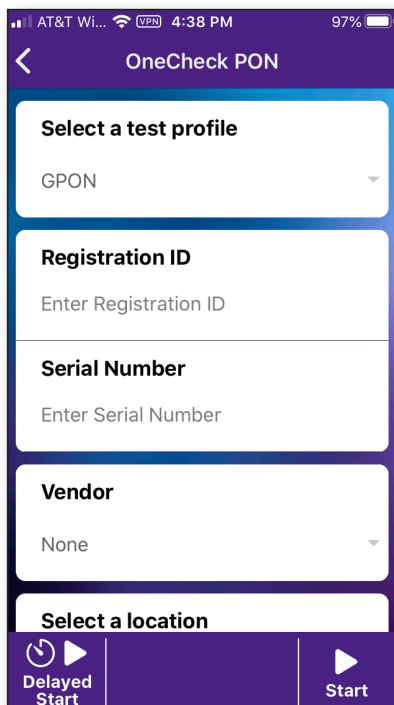
Running IP, ping, web connectivity, and speed tests require the full GPON software option.

For more information, contact your local VIAVI representative or visit www.viavisolutions.com.

OneCheck PON

You can run GPON and XGSPON tests up to 10 G from here.

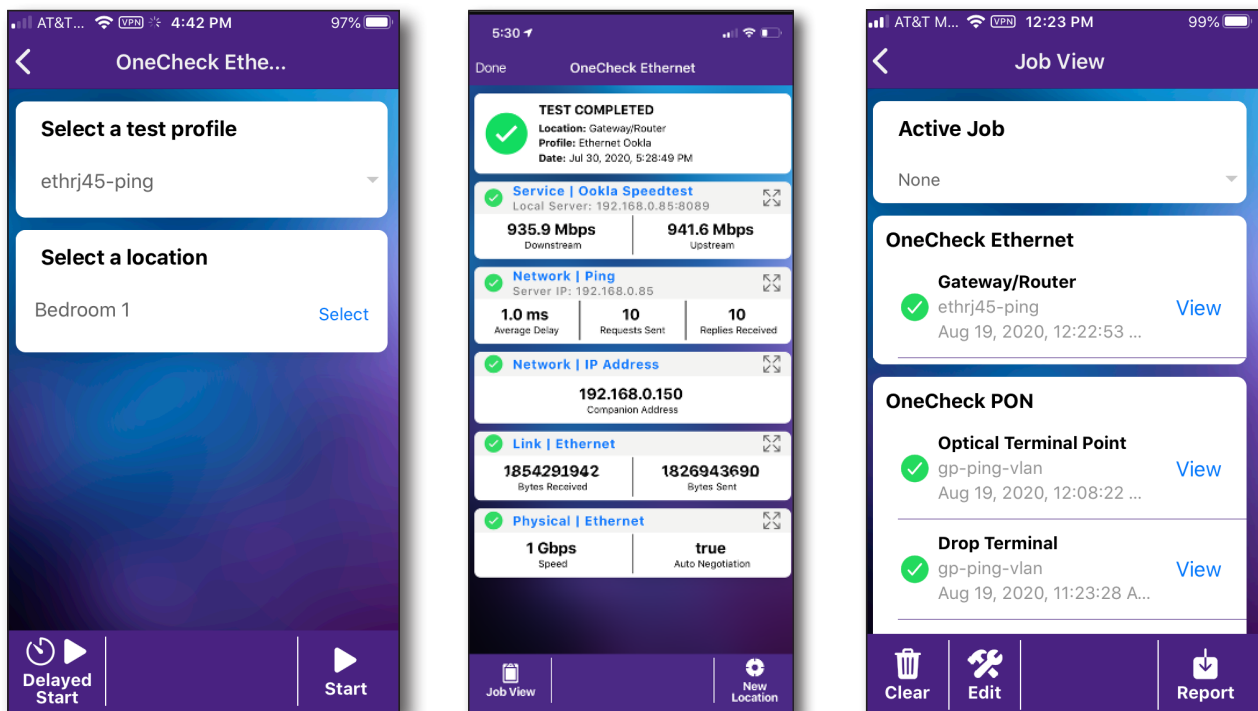
1. Connect the SFP port on the meter to your network. See ["GPON and XGSPON connections" on page 53](#).
2. From the Companion menu, select **OneCheck PON**. The OneCheck PON screen appears.
3. Select a profile for the test, or create a new one. See ["Profile Manager" on page 45](#) for more information.
4. Enter the following (all information must come from the ONT device being emulated): registration ID, serial number, and vendor, as necessary.
5. Select the location for the test.
6. Start the test by selecting the **Start** or **Delayed Start** buttons at the bottom of the screen. After a few minutes, the results are displayed.
 - To run a Delayed Start test from a safe distance outside the home, give the Companion to the customer, have them go to the location to test, and press the **Play** button on the Companion. See ["Delayed Start testing" on page 87](#).
 - For more details, select a section of the test.
 - When finished, you can run another test by selecting **New Location**.
 - To see all tests or save the reports, select **Job View**. See ["Creating a report" on page 85](#).



OneCheck Ethernet

You can run Ethernet tests up to 10 G from here.

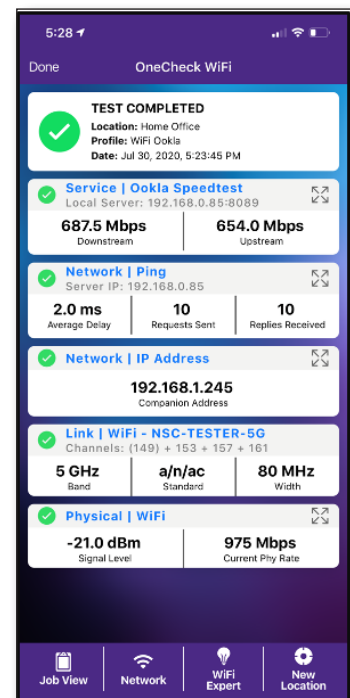
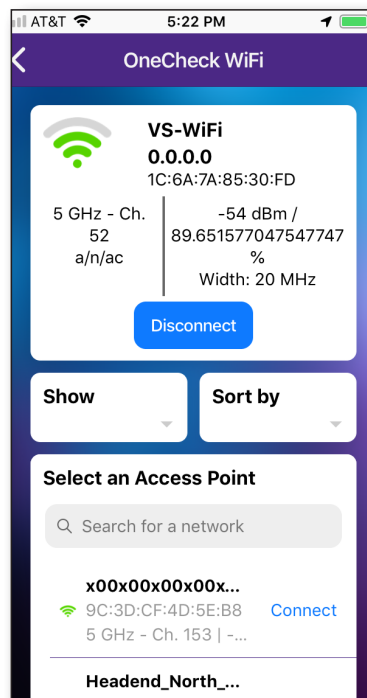
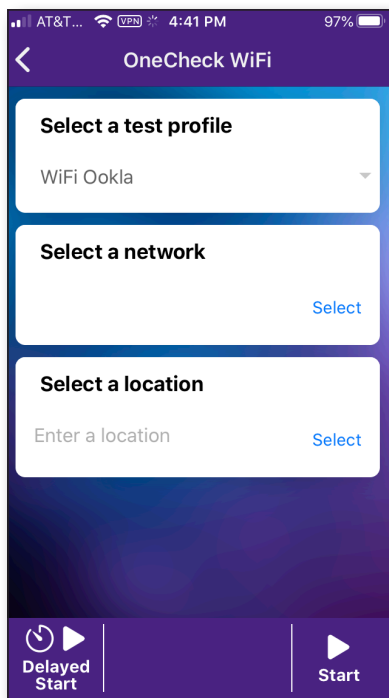
1. Connect the ethernet port on the meter to your network. See ["Ethernet connections" on page 53](#).
2. From the Companion menu, select **OneCheck Ethernet**. The OneCheck Ethernet screen appears.
3. Select a profile for the test, or create a new one. See ["Profile Manager" on page 45](#) for more information.
4. Select the location for the test.
5. Start the test by selecting the **Start** or **Delayed Start** buttons at the bottom of the screen.
 - To run a Delayed Start test from a safe distance outside the home, give the Companion to the customer, have them go to the location to test, and press the **Play** button on the Companion. See ["Delayed Start testing" on page 87](#).
 - For more details, select a section of the test.
 - When finished, you can run another test by selecting **New Location**.
 - To see all tests or save the reports, select **Job View**. See ["Creating a report" on page 85](#).



OneCheck WiFi

You can run WiFi tests up to 10 G from here.

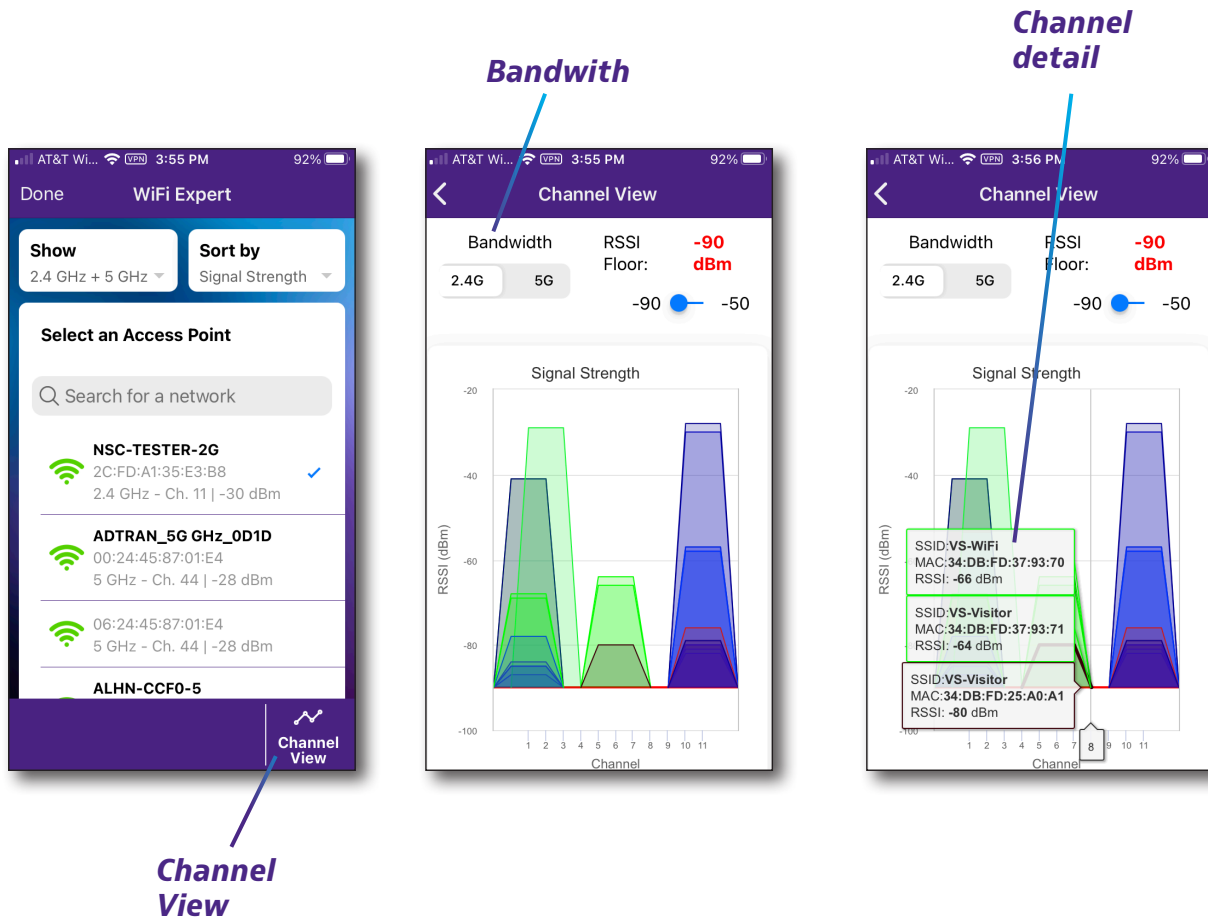
1. Connect the meter to your WiFi network. See ["WiFi connections" on page 54](#).
2. From the Companion menu, select **OneCheck WiFi**. The OneCheck WiFi screen appears.
3. Select a profile for the test, or create a new one. See ["Profile Manager" on page 45](#) for more information.
4. Select the WiFi network you want to test, and press **Connect**. Enter your user name and password, as necessary.
5. Select a pre-defined location for the test or create your own.
6. Start the test by selecting the **Start** or **Delayed Start** buttons at the bottom of the screen. After a few minutes, the results are displayed.
 - To run a Delayed Start test from a safe distance outside the home, give the Companion to the customer, have them go to the location to test, and press the **Play** button on the Companion. See ["Delayed Start testing" on page 87](#).
 - For more details, select a section of the test.
 - When finished, you can run another test by selecting **New Location**.
 - To see all tests or save the reports, select **Job View**. See ["Creating a report" on page 85](#).



Channel View

From the Select a Network screen, you can select the Channel View button at the bottom of the screen for more channel detail.

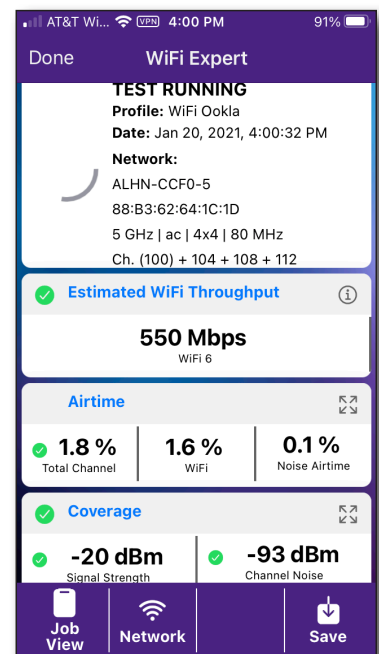
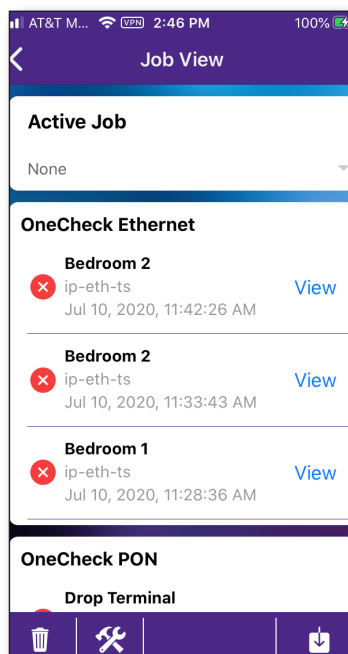
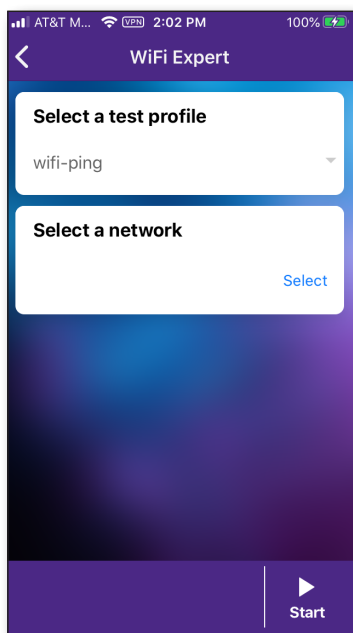
You can choose from 2.4 GHz or 5 GHz, and select a channel to bring up a pop-up with more detail, including MAC address and SSID.



WiFi Expert

You can run WiFi Expert tests up to WiFi 6 from here.

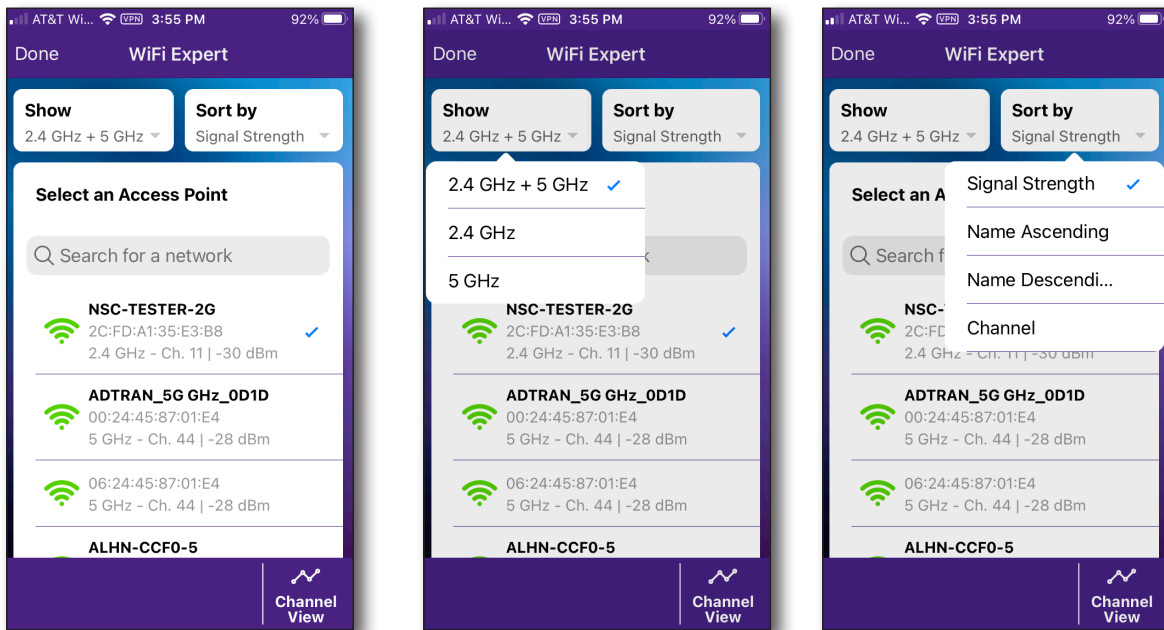
1. From the Companion menu, select **WiFi Expert**. The WiFi Expert screen appears.
2. Select a profile for the test, or create a new one. See *"Profile Manager" on page 45* for more information.
3. Select the WiFi network you want to test.
4. Start the test by selecting the **Start** button at the bottom of the screen. The Companion will then start to monitor that network. After a few minutes, the results are displayed.
 - For more details, select a section of the test.
 - When finished, you can run another test by selecting **Network**.
 - To see all tests or save the reports, select **Job View**. See *"Creating a report" on page 85*.



Access Points

From the Access Points screen, you can sort and view the APs in a few ways.

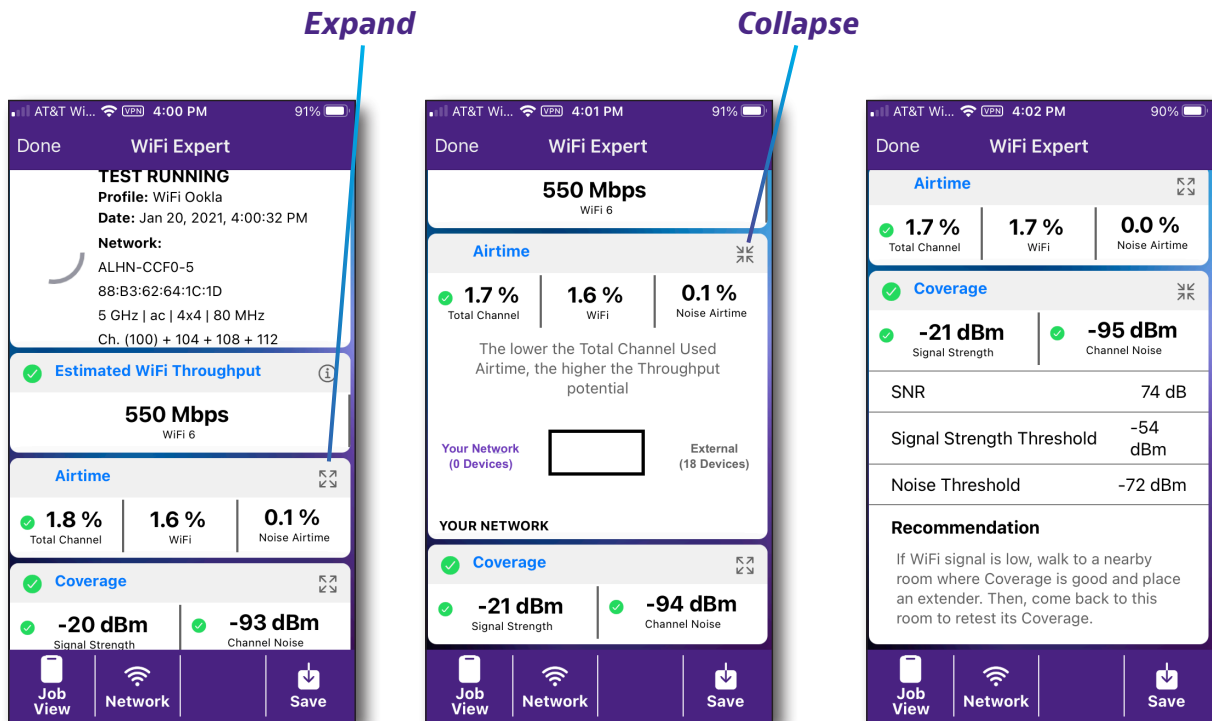
- **Sort by** – Press to sort by signal strength, ascending and descending names, and channel.
- **Show** – Show by bands, 2.4 GHz + 5 GHz, 2.4 GHz, or 5 GHz



Details

When running a test, select a specific section to expand for more details. An expand icon will appear when there are more details.

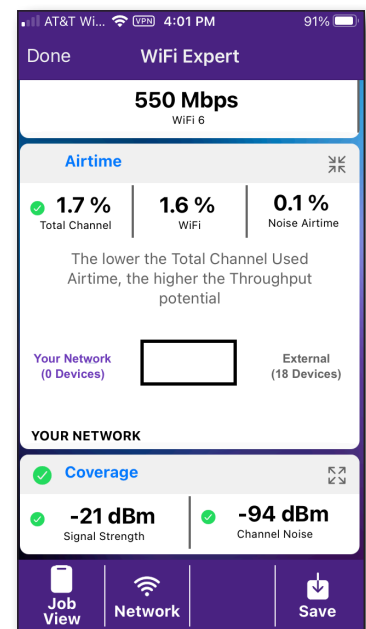
When finished, select the section again to collapse it.



Airtime

Select **Airtime** to get even more details on usage.

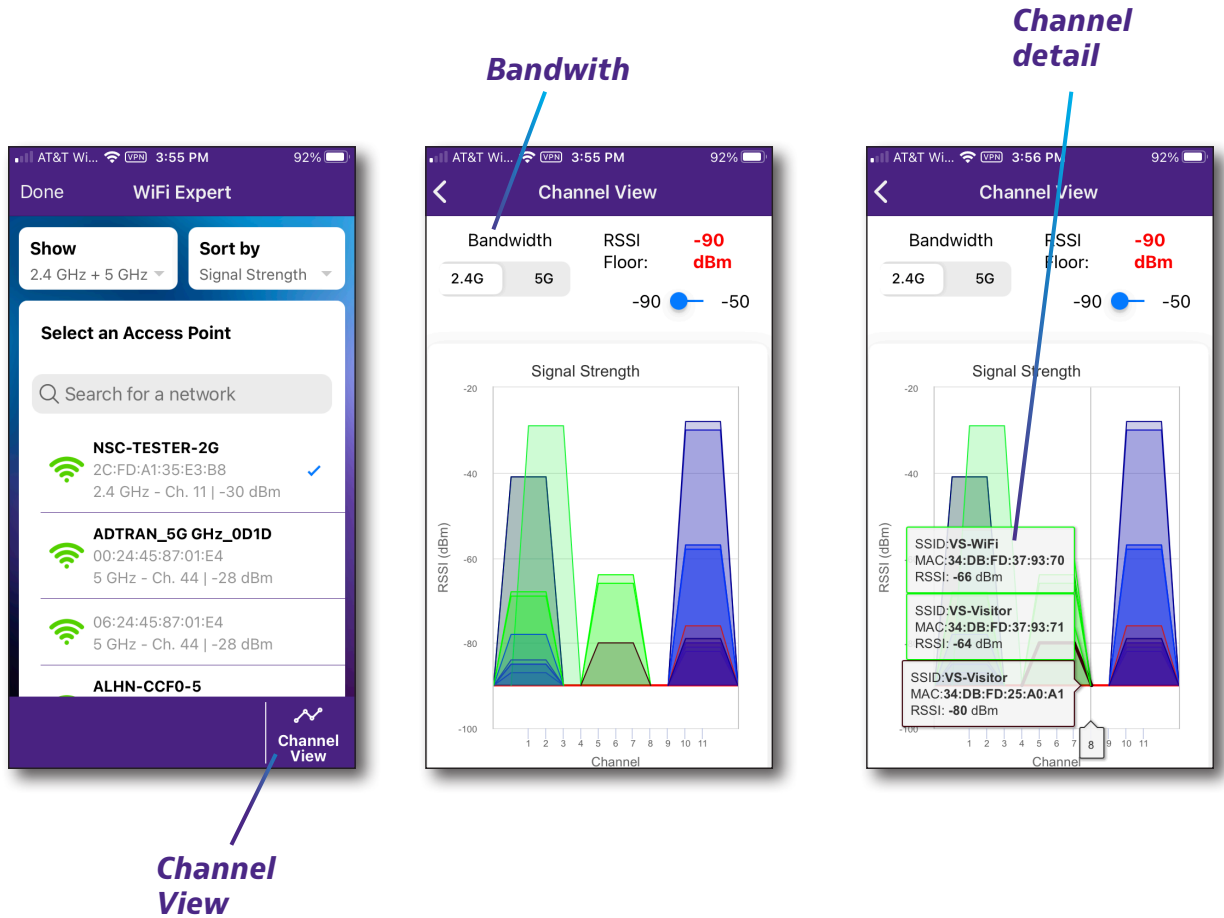
- Airtime numbers show the WiFi airtime (all WiFi devices working in the channel) and the noise airtime
- Airtime bar segments the your network-device airtime vs external-device airtime
- Your network lists all active devices on your network under test
- Estimated throughput now for typical WiFi 4/5/6 devices



Channel View

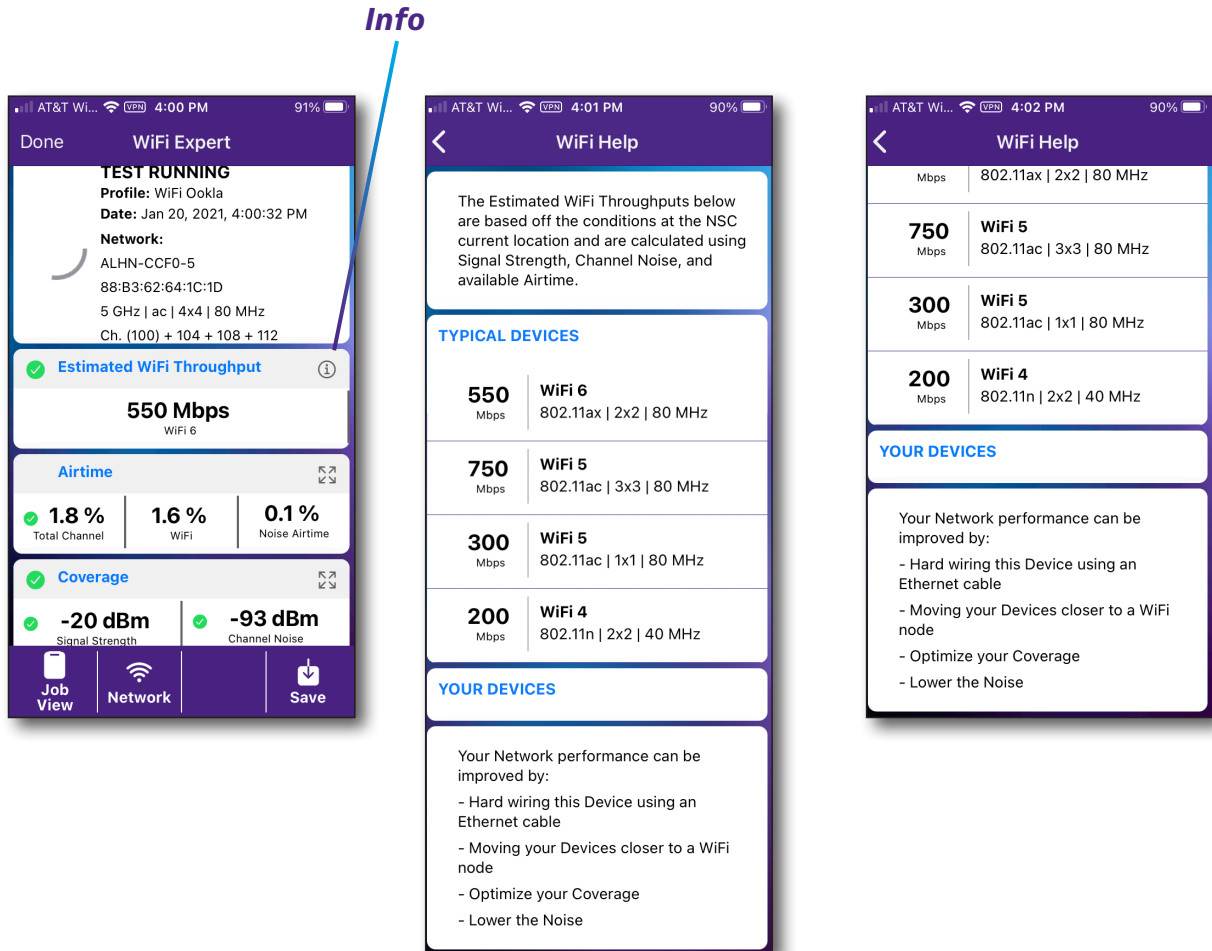
From the Select a Network screen, you can select the Channel View button at the bottom of the screen for more channel detail.

You can choose from 2.4 GHz or 5 GHz, and select a channel to bring up a pop-up with more detail, including MAC address and SSID.



WiFi Help

When running the test, you can select the Info icon for more detail help.



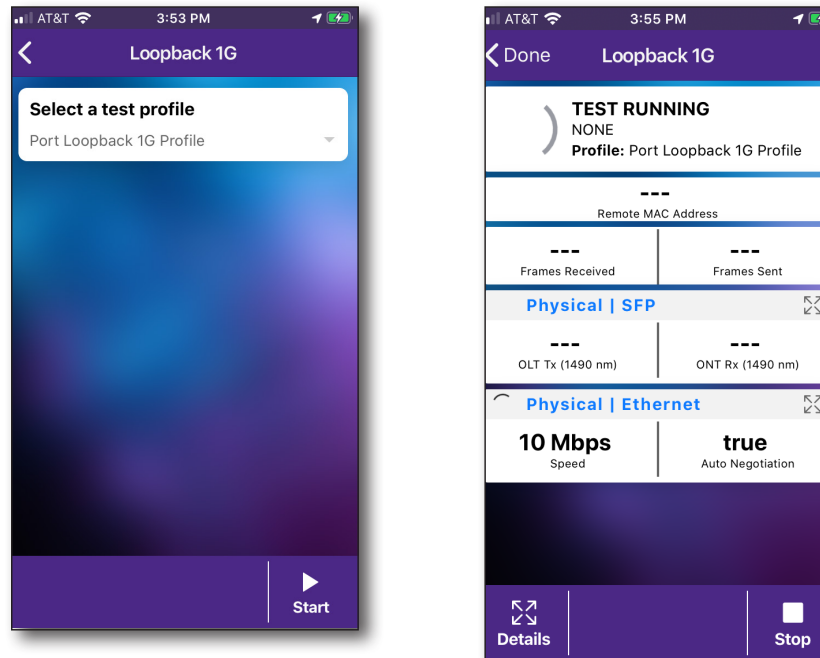
Loopback

You can run Port, L2, and L3 1G and 10 G loopback tests from here.

1. Connect the SFP or Ethernet ports on the meter to your network. See *"Connecting to the network" on page 53*.
2. From the Companion menu, select **Loopback**. The Loopback screen appears.
3. Select a profile for the test, or create a new one. See *"Profile Manager" on page 45* for more information.
4. Start the test by selecting the **Start** button at the bottom of the screen. After a few minutes, the results are displayed.
5. Once the physical layer is successful, the remote device should send a Loop Up.
6. If Loop Up is processed by the NSC
 - Remote Device MAC (L2) / IP (L3) will be displayed under Network Tab.
 - Remote Device can Start sending L2/L3 traffic which will be looped back by NSC.
 - Frames received and sent counters will be incremented as traffic is looped
7. At the end of the test, the Remote Device should Stop Traffic and send a Loop Down.
 - To see details of the test, select **Details**.
 - To save the report, select **Report** or **Save**. See *"Creating a report" on page 85*.

Port Loopback

This test loops back all traffic.



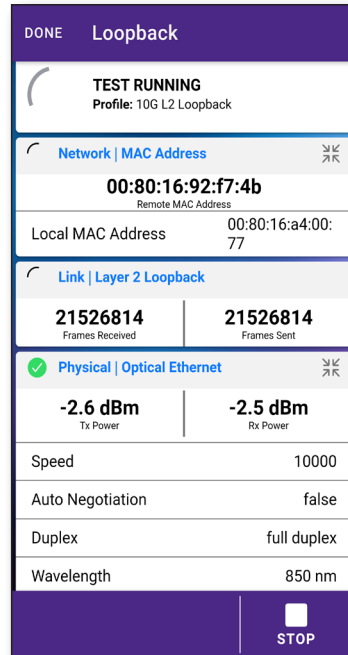
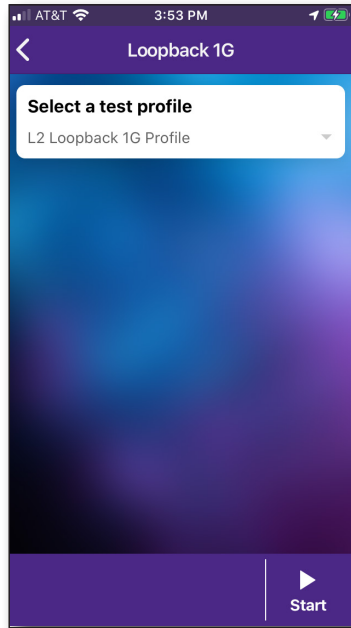
NOTE:



If you have **Persist on Boot** enabled in the testing profile, it may take a few minutes for the unit to reboot and continue testing again after a shutdown.

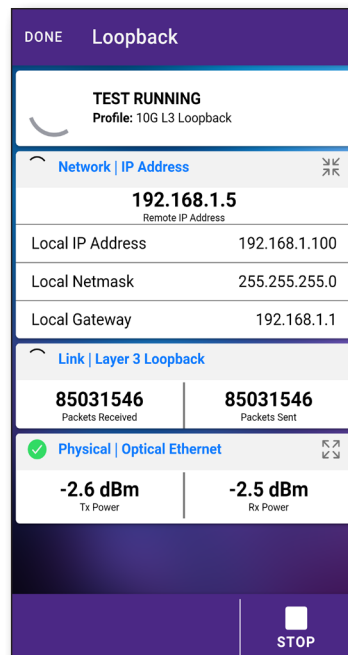
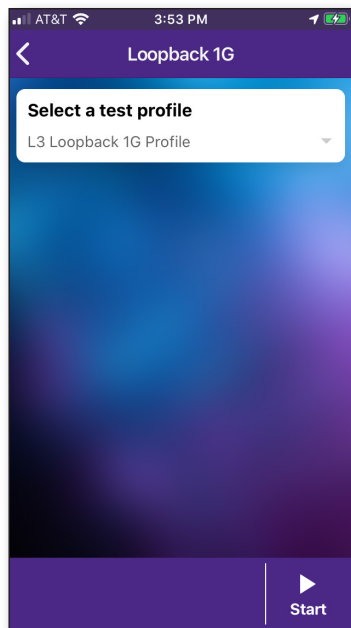
L2 Loopback

This test loops back L2 traffic from a specific MAC address.



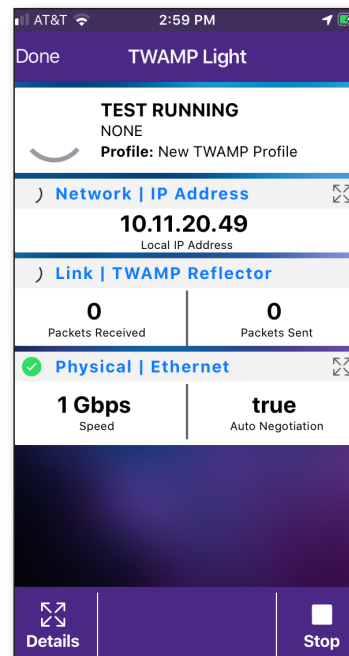
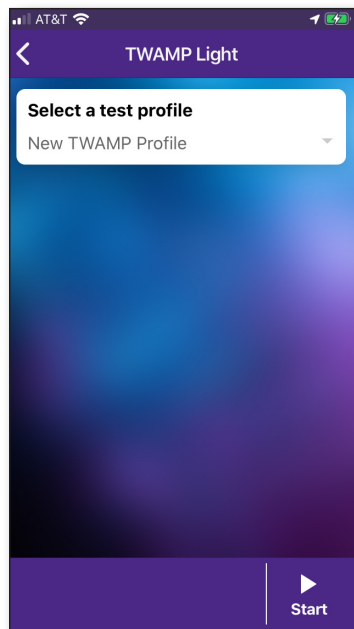
L3 Loopback

This test loops back L3 traffic from a specific IP address.



TWAMP Light

1. Connect the SFP or Ethernet ports on the meter to your network. See *"Connecting to the network" on page 53*.
2. From the Companion menu, select **TWAMP Light**. The TWAMP Light screen appears.
3. Select a profile for the test, or create a new one. See *"Profile Manager" on page 45* for more information.
4. Enter the following: registration ID, serial number, and vendor, as necessary.
5. Start the test by selecting the **Start** button at the bottom of the screen. After a few minutes, the results are displayed.
 - To see details of the test, select **Details**.
 - To save the report, select **Report** or **Save**. See *"Creating a report" on page 85*.



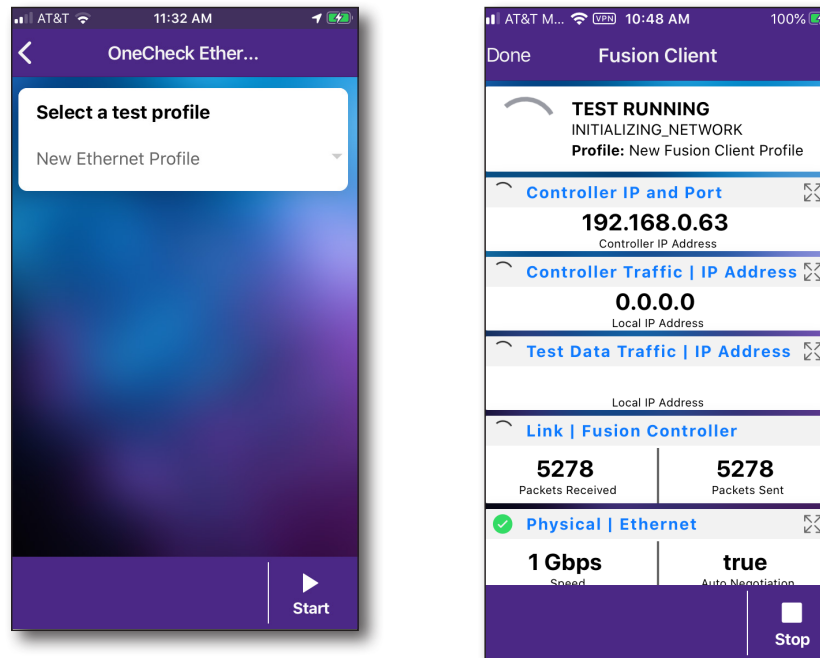
NOTE:



If you have **Persist on Boot** enabled in the testing profile, it may take a few minutes for the unit to reboot and continue testing again after a shutdown.

Fusion Client

1. Connect the ethernet port on the meter to your network. See *"Ethernet connections" on page 53*.
2. From the Companion menu, select **Fusion Client**. The Fusion Client screen appears.
3. Select a profile for the test, or create a new one. See *"Profile Manager" on page 45* for more information.
4. Start the test by selecting the **Start** button at the bottom of the screen. After a few minutes, the results are displayed.
 - To see details of the test, select **Details**.
 - To attach the test to a job, select **Job View**.
 - To save the report, select **Report** or **Save**. See *"Creating a report" on page 85*.



NOTE:



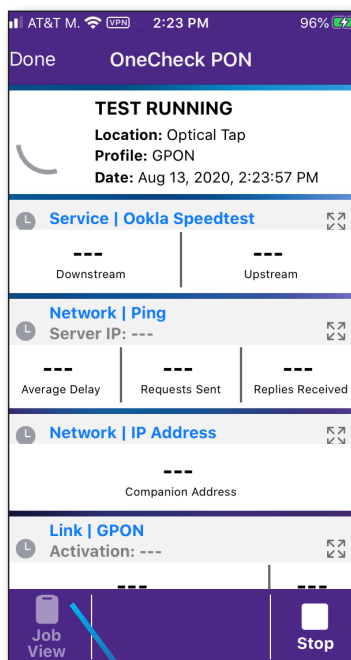
If you have **Persist on Boot** enabled in the testing profile, it may take a few minutes for the unit to reboot and continue testing again after a shutdown.

Creating a report

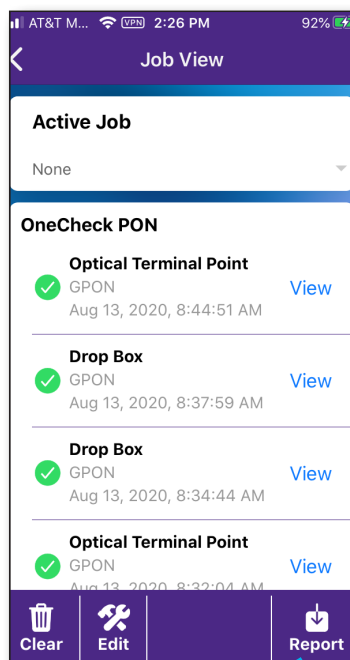
After running a test, you can save test results, configuration settings, and graphs as a report.

1. At the bottom of the test screen, select **Job View**.
2. Select the test you want to create a report for and then **Report** at the bottom of the screen.
3. Enter the work order, customer info, and any notes for the report and select **Generate Report**.

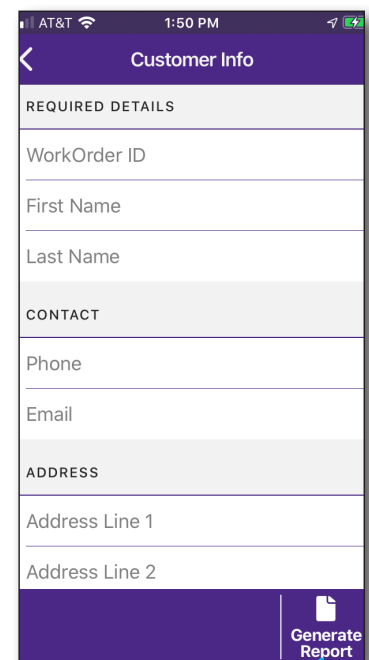
The report will be created and saved to the meter. You can then export to your mobile device and email to your customer. See *"Managing files" on page 61*.



Job View



Report



Generate Report

VIAXI		2020-02-12 19:07	
GPON			
Geolocation	51.09, -114.00		
Timestamp	2020-02-12 / 19:03		
Service Ookla Speedtest			
Delay (ms)	1.4		
Upstream (Mbps)	943.7 ✓		
Min Upload Throughput (Mbps)	930.0		
Downstream (Mbps)	935.4 ✓		
Min Download Throughput (Mbps)	930.0		
Host			
Server Location			
Network Ping			
Server IP	192.168.0.85		
Requests Sent	10		
Replies Received	10		
Replies Lost	0		
Average Delay (ms)	1.0		
Replies Lost (%) (%)	0		
Network IP Address			
Companion Address	192.168.0.127		
Netmask	255.255.255.0		
Gateway	192.168.0.41		
DNS	192.168.0.41		
WAN MAC Address	00:80:16:da:f1:dc		
Link GPON			
Activation	Operation State		
PON ID	VIAVALC		
ONT ID	59		
QDN Class	Class B+		
OLT Vendor	ALCL		
Serial Number	ALCLB2E3E3E		
Registration ID	0000000000		
Physical SFP			
OLT Tx (1490 nm) (dBm)	3.5 ✓		
ONT Rx (1490 nm) (dBm)	-17.7 ✓		
2 / 3			
GPON Ookla gt001 NSC-100 / RRS00123590035 1.0.15			

VIAXI		2020-02-16 09:13	
Ethernet			
Geolocation	51.22, -115.0		
Timestamp	2020-02-16 / 09:12		
Service Ookla Speedtest			
Delay (ms)	2.0		
Upstream (Mbps)	950.7 ✓		
Min Upload Throughput (Mbps)	100.0		
Downstream (Mbps)	936.1 ✓		
Min Download Throughput (Mbps)	100.0		
Host			
Server Location			
Network Ping			
Server IP	192.168.0.85		
Requests Sent	10		
Replies Received	10		
Replies Lost	0		
Average Delay (ms)	1.0		
Replies Lost (%) (%)	0		
Network IP Address			
Companion Address	192.168.0.104		
Netmask	255.255.255.0		
Gateway	192.168.0.41		
DNS	192.168.0.41		
WAN MAC Address	00:80:16:a4:56:78		
Link Ethernet			
Bytes Received	1588365332		
Packets Received	1117866		
Bytes Sent	1824213039		
Packets Sent	168270		
Physical Ethernet			
Speed (Gbps)	1		
Auto Negotiation	1		
Duplex	FULL_DUPLEX		
2 / 2			
Ethernet Ookla gt001 NSC-100 / RRS00123590035 1.0.15			

VIAXI		2020-02-18 11:28		
5 GHz - Bedroom 1 5 GHz - Bedroom 1 2.4 GHz - Home Office				
Geolocation	51.22, -115.0	51.09, -114.00	39.19, -77.26	
Timestamp	2020-02-16 / 09:10	2020-02-12 / 18:56	2019-12-20 / 09:56	
Service Ookla Speedtest				
Delay (ms)	47.4	4.4	2.8	
Upstream (Mbps)	120.4 ✓	407.8 ✓	82.0 x	
Min Upload Throughput (Mbps)	100.0	400.0	400.0	
Downstream (Mbps)	455.9 ✓	480.6 ✓	144.0 x	
Min Download Throughput (Mbps)	100.0	400.0	400.0	
Host				
Server Location				
Network Ping				
Server IP	192.168.0.85	192.168.0.85	192.168.0.85	
Requests Sent	10	10	10	
Replies Received	10	10	10	
Replies Lost	0	0	0	
Average Delay (ms)	51.0	47.0	57.0	
Replies Lost (%) (%)	0	0	0	
Network IP Address				
Companion Address	192.168.1.93	192.168.1.93	192.168.0.189	
Netmask	255.255.255.0	255.255.255.0	255.255.255.0	
Gateway	192.168.1.1	192.168.1.1	192.168.0.41	
DNS				
WAN MAC Address	84:25:3f:67:4b:01	84:25:3f:67:4b:01	84:25:3f:67:4b:01	
Link WiFi				
SSID	NSC-TESTER-5G	NSC-TESTER-5G	TP-Link C6E0	
MAC Address	2C:FD:A1:35:E3:BC	2C:FD:A1:35:E3:BC	50:C7:BF:FB:C6:DF	
Standard				
Band	a/n/ac	a/n/ac	b/g/n	
Width	5 GHz	5 GHz	2.4 GHz	
Channels	(149) + 153 + 157 + 161	149 + 153 + (157) + 161	1	
3 / 6				
WiFi Ookla gt001 NSC-100 / RRS00123590035 1.0.15				

Ethernet, GPON, and WiFi reports

For a more detailed discussion of the results produced by this test, see *Chapter 4: Data Testing on page 89*.

Deleting a report

You can delete reports from the **Instrument Files** or **Local Files** menus. See *"Managing files" on page 61*.

Testing the data layer

Using the data layer tests, you can test for connectivity and throughput. See *Chapter 4: Data Testing on page 89*.

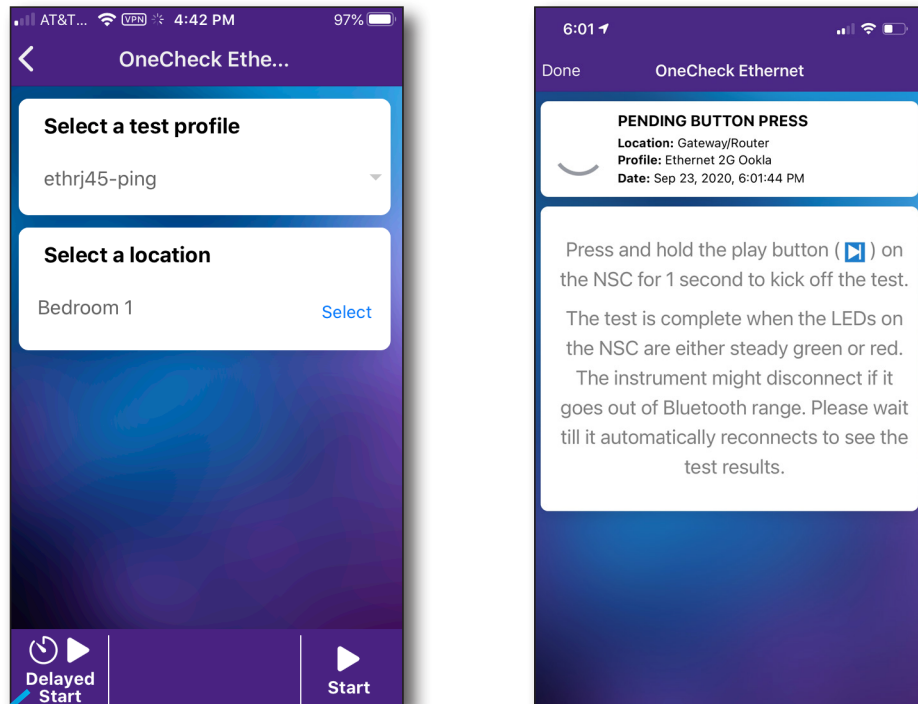
Delayed Start testing

The **Delayed Start** feature allows a pre-configured test to be started with the physical **Play** button on the NSC-200, even if the NSC is not connected to the mobile device via Bluetooth.

1. With the NSC connected to the mobile device, configure the test you want to run, and press **Delayed Start**. The NSC will pause until ready to test.
2. Press the **Play** button on the NSC to start the test. It is not necessary to be connected to the mobile device to start. See the screen below for more detail.

Progress of the test can be monitored by observing the LED indicators on the NSC.

Test results will be displayed on the mobile device when it is connected, or re-connected, to the NSC.



Delayed Start



Play button

Data Testing

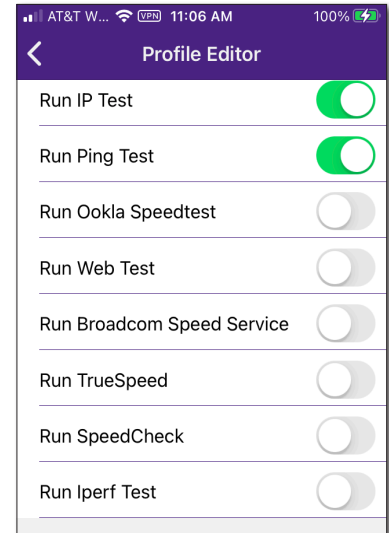
This chapter provides steps for using the Data testing features of the Companion. The data layer tests allow you to test for connectivity and throughput, including the following:

- "About data tests" on page 90
- "Ping and Traceroute testing" on page 91
- "Speedtest by Ookla data testing" on page 91
- "TrueSpeed testing" on page 93
- "SpeedCheck testing" on page 94
- "Iperf testing" on page 95
- "VIAVI UDP Speed testing" on page 95

About data tests

The following data tests are available for each connection method to verify connectivity and throughput:

- Ping and Traceroute
- Speedtest by Ookla
- Speed Service by Broadcom
- TrueSpeed
- SpeedCheck
- Iperf
- VIAVI UDP Speed



NOTE:



Running IP, ping, web connectivity, and speed tests require the full GPON software option.

For more information, contact your local VIAVI representative or visit www.viavisolutions.com.

NOTE:



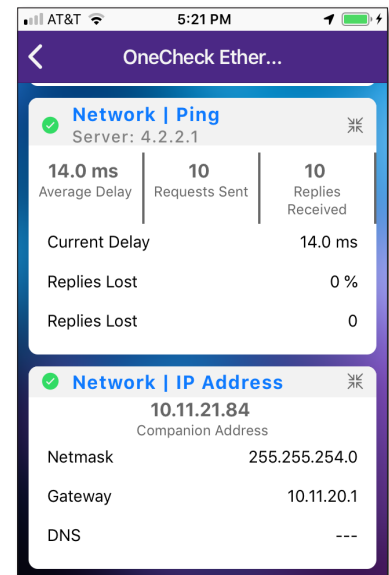
Several of the tests require additional setup before testing. See "[Profile Manager](#)" on page 45 for more information.

Ping and Traceroute testing

The Ping test sends a ping packet through the modem to an IP address or DNS name (could be a network switch or web address) to test for connectivity.

The Traceroute test sends a packet through the modem to an IP address or DNS name (could be a network switch or web address), then traces each hop from the source (your instrument) to its destination. When running the application, the response time and hops traversed by the packet appear on the Traceroute screen.

Once you have your profile setup through Profile Manager, you can run the test. Make sure the test is enabled in the profile, as well.



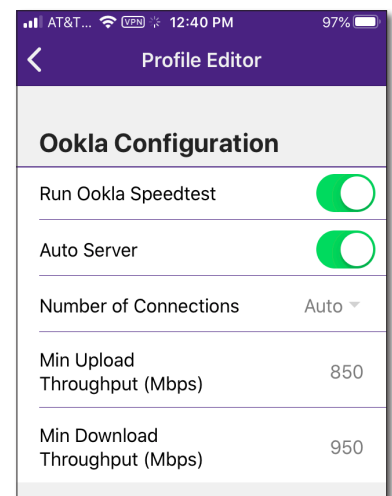
Speedtest by Ookla data testing

Speedtest is used to test servers all over the world. It determines the server name and checks downstream and upstream throughput via the test interfaces. Its download/upload rate is up to 2 Gbps for Ethernet. Speedtest uses any IP interface, including IPv4, that you established for testing. It does not require any additional configuring.

Before you begin

Once you have your profile setup through Profile Manager, you can run the test. Make sure the test is enabled in the profile, as well.

The Speedtest application will require you to accept the Terms of Use before allowing to proceed. The Terms of Use must be accepted every thirty to ninety days.



Latency measurement

The unit will ping the Speedtest server the number of times specified in the Speedtest configuration. The pings occur at whole millisecond intervals slightly greater than the server connection phase's latency measurement. For example, if the server connection phase's latency measurement for the server was 3.2 milliseconds, then the ping intervals will occur at 4 milliseconds. An average ping delay value and a ping delay jitter value (both in milliseconds) are provided for each ping. The final ping average result (in milliseconds) is then derived.

Upload measurement

The unit opens multiple connections to the Speedtest server. The upload transfer begins, followed by updates of percentage complete and average upload rate (in bytes/sec). Once the upload transfer has completed, the final upload rate measurement is then provided.

Download measurement

The unit opens multiple connections to the Speedtest server. The download transfer then begins followed by updates of percentage complete and average download rate (in bytes/sec). Once the download transfer has completed, the final download rate measurement is provided.

Measurements upload

The following final result values are again provided:

- Latency, upload, and download rates
- Total bytes uploaded
- Upload stage duration
- Total bytes downloaded
- Download stage duration

An HTTP connection then opens to the URL:

<http://www.speedtest.net/api/embed/api.php>, and the measurements are uploaded.

The Speedtest results are also available in all Save Report formats (XML, HTML, and PDF).

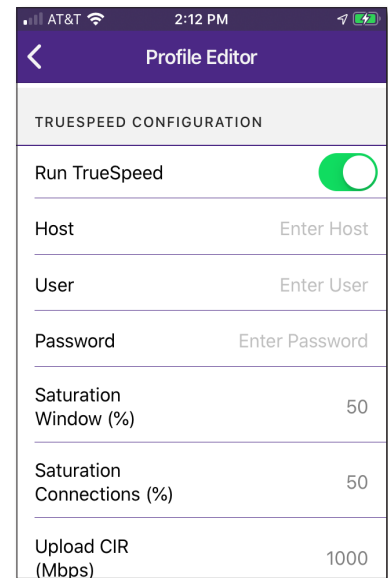
TrueSpeed testing

The optional TrueSpeed test provides a repeatable, standards-based test methodology to resolve complaints about poor network performance. Its Download/ Upload rate is up to 2 Gbps for Ethernet. With TrueSpeed, you can quickly evaluate the customer experience of their network and provide actionable information to resolve problems.

Based on the IETF RFC 6349 TCP throughput testing methodology, TrueSpeed provides metrics that can be used to tune TCP parameters for obtaining maximum throughput.

Before you begin

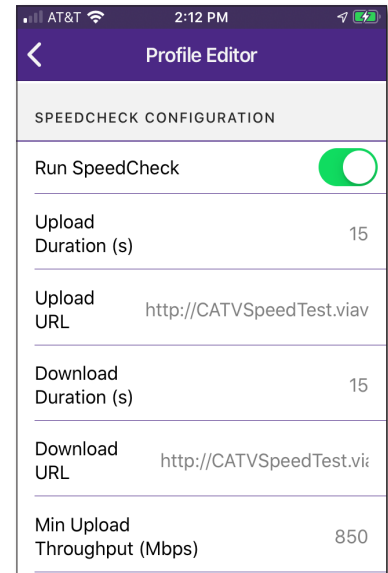
Once you have your profile setup through Profile Manager, you can run the test. Make sure the test is enabled in the profile, as well.



SpeedCheck testing

The SpeedCheck test is used to check downstream and upstream throughput via the test interfaces. Its Download/ Upload rate is up to 2 Gbps for Ethernet. SpeedCheck uses any IP interface, including IPv4 and IPv6, that you established for testing. Once there is data over WiFi, it will also work over WiFi.

The Companion uses HTTP to perform a SpeedCheck test and requires access to an HTTP server. This server is a generic HTTP server with minor configuration changes to support high speed throughput. The server needs to be placed in the network in a way that will allow it to deliver very high data rate traffic to the unit for downstream and upstream throughput testing. VIAVI recommends the Apache HTTP server (v 2.4) that is readily available from Apache and supports multiple operating systems.



SpeedCheck server setup

Follow the Apache server installation instructions. To enhance the server's ability to support high bandwidth SpeedCheck tests, the following changes should be made to the server configuration file.

- **File** – C:\Apache24\conf\httpd.conf
- **Modification**
- **EnableSendfile off {default}** – Change the EnableSendfile setting to OFF
- **SendBufferSize 1000000 buffer** – Add a line creating a 1000000 byte send

These changes to the configuration file are similar regardless of the operating system that Apache is being run on, but the location of the file may change.

Once the server is configured, a very large file needs to be placed on the server that the Companion will download during the SpeedCheck test. VIAVI recommends a throughput file of at least 2 GB. This file is typically located in the Apache htdocs directory.

Once the server configuration is complete, the IP address of the server and filename of the throughput file must be configured in the meter in the Profile Manager, as shown above.



NOTE:

Running 2G Ookla, TruSpeed, and SpeedCheck tests, require the 2G speed GPON software option and our 1/2.5/5/10GE SFP.

For more information, contact your local VIAVI representative or visit www.viavisolutions.com.

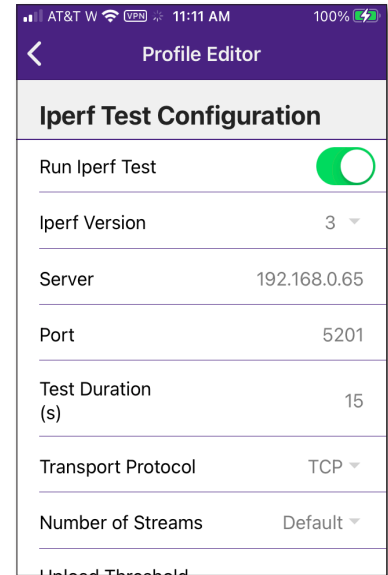
Iperf testing

The optional Iperf test is a commonly used network testing tool that can create TCP and UDP data streams and measure the throughput of a network that is carrying them.

It is particularly useful when experiencing network speed issues, as you can use Iperf to determine which server is unable to reach maximum throughput.

Before you begin

Once you have your profile setup through Profile Manager, you can run the test. Make sure the test is enabled in the profile, as well.



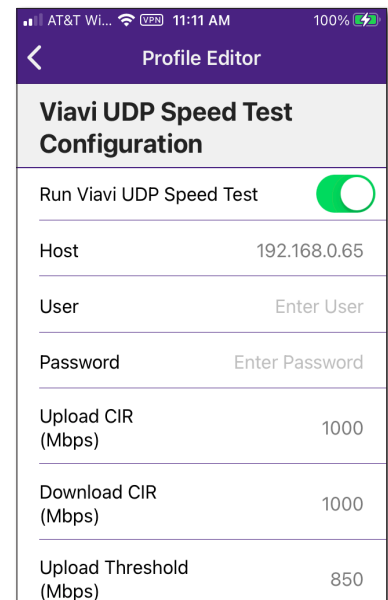
VIAVI UDP Speed testing

The optional VIAVI UDP Speed test provides a repeatable, standards-based test methodology to resolve complaints about poor network performance. Its Download/ Upload rate is up to 10 Gbps for Ethernet. With VIAVI UDP, you can quickly evaluate the customer experience of their network and provide actionable information to resolve problems.

Based on our throughput testing methodology, VIAVI UDP provides metrics that can be used to tune UDP parameters for obtaining maximum throughput.

Before you begin

Once you have your profile setup through Profile Manager, you can run the test. Make sure the test is enabled in the profile, as well.



Appendix

This appendix includes troubleshooting and supplemental information, including the following:

- "Cleaning the instrument" on page 98
- "Resolving problems" on page 98
- "Limited warranty" on page 99
- "Getting technical assistance" on page 99
- "Additional information" on page 99
- "FAQs" on page 100
- "Specifications" on page 102
- "Ordering information" on page 105

Cleaning the instrument

The instrument itself does not require any specialized cleaning. An occasional wipe with a damp cloth is sufficient.



NOTE:

When cleaning the instrument, use a damp cloth and water only. Cleaning with chemicals could cause damage to the plastic case, buttons, or removal of markings.

Resolving problems

If you are having trouble with the unit, the following sections describe common problems and solutions. You should verify whether your problem is listed here before contacting technical assistance.

General testing

- **Inconsistent test results** – Verify that your test leads are good and are connected properly for the test you are performing.

Data testing

- **The IP ping menu says pings are being sent, but the network statistics are not incrementing**

Verify the IP address and netmask.

Make sure you are not behind a firewall; they can block ping responses from reaching the host.

The IP ping function only *attempts* to send a ping every second. Depending on certain conditions, a physical ping packet may not be sent.

If IPoE standards require that the device has to ARP the address first. If this fails eventually you will see a ARP HOST UNREACHABLE message.

Check to see that the destination IP address and your configured IP parameters are correct.

Make sure that the Ethernet interface cabling is correct. If the Ethernet cable is not hooked up, or is hooked up incorrectly, a packet will not be sent. Thus the Ethernet statistics will not increment.

Limited warranty

For the latest warranty information, visit

<https://www.viavisolutions.com/literature/viavi-solutions-inc-general-terms-en.pdf>

<https://www.viavisolutions.com/en-us/literature/viavi-manufacturer-warranty-nse-products-en.pdf>

Getting technical assistance

If you require technical assistance, call 1-844-GO-VIAVI / 1.844.468.4284.

For the latest TAC information, visit

<https://support.viavisolutions.com>

<http://www.viavisolutions.com/en/services-and-support/support/technical-assistance>

Additional information

For more detailed information, contact us at TAC@viavisolutions.com for these additional documents.

NSC-200 Quick Start Guide

StrataSync User's Guide

FAQs

Profiles

What special characters can be used for the Profile names?

Only spaces or hyphens can be used.

Speed Tests

How is the Profile Manager used to configure the Ookla Speedtest?

- To work with any public Ookla server
 - Select "Auto Server" in the test Profile; will select a server that is selected automatically by Ookla.
- To work with any public Ookla server located in a Provider Network
 1. Unselect "Auto Server".
 2. Enter the specific Ookla server details (see example below).
 - Server URL = **stosat-balt-01.sys.comcast.net:8080**
 - Server Location = **Baltimore, MD**
 3. Alternatively
 - Leave the "Server URL" blank.
 - Enter the string of characters you want to filter the Ookla Server name details with in the "Server Location".

Why can SpeedCheck results be so high?

While SpeedCheck does use HTTP over TCP as the Application/Transport layer for test execution it reports the layer 2 rate.

- e.g. 987 Mbps (L2 speed) displayed instead of the 949 Mbps (L4 speed) on a 1G link

Initially on ONX-CATV/DSL, this was done intentionally to prevent a discrepancy between the rate that CPE devices are provisioned for and the rate that is measured by our throughput test, so a legacy from MSOs/CATV.

GPON and XGSPON

What laser class are the VIAVI PON SFPs?

- The laser of the VIAVI GPON SFP is Class 1
- The laser of the VIAVI XGSPON SFP+ is Class 1

What ODN class are the VIAVI PON SFPs?

- The ODN Class of the VIAVI GPON SFP is Class B+
- The ODN Class of the VIAVI XGSPON SFP is Class N1

Upgrades

How to upgrade your NSC via USB

See *"Updating the firmware from USB" on page 55.*

How to add SW options via USB

See *"Updating the software on the unit" on page 58.*

How to deploy a file received in an email to an NSC?

(e.g. Test Profile files, Option files, Customer Setting files)

4. Select file in email to "Share" into Mobile Tech.
5. Select Mobile Tech from the list of compatible applications.
6. Mobile Tech opens and places the file in the "Files" screen with the new file now in the list.
7. Press the "Share" button next to the file.
8. Select the instrument to send the file to.

Calibration

Does the NSC need calibration?

There's no calibration required for the NSC (same for the NSC mainframe and PON SFPs).

Specifications

GPON (Optional)	
ONU/ONT Emulation	VIAVI GPON SFP
Interface	SC/APC
Standard	G.984.2 GPON compliant
	G.988 OMCI compliant
Upstream (1310 nm) Tx Signal Power Range	0.5 dBm to 5.0 dBm
Downstream (1490 nm) Rx Signal Power Range	-28.0 dBm to -8.0 dBm
Test Results	PON Activation State, Power Level values from the SFP, PON ID, ODN Class – according to ITU-T G.984 and G.988 standards
XGSPON (Optional)	
ONU/ONT Emulation	VIAVI GPON SFP
Interface	SC/APC
Standard	G.9807.1 XGSPON compliant
	G.988 OMCI compliant
Upstream (1270 nm) Tx Signal Power Range	4.0 dBm to 9.0 dBm
Downstream (1577 nm) Rx Signal Power Range	-28.0 dBm to -9.0 dBm
Test Results	PON Activation State, Power Level values from the SFP, PON ID, ODN Class– according to ITU-T G.9807 and G.988 standards
Ethernet (Optional)	
Ethernet	RJ-45 (10M/100M/1G Ethernet)
	1G Ethernet SFP, 1/2.5/5/10G Ethernet SFP+, 10G Ethernet SFP+
Standard	IEEE 802.3
	1 Gbps, 2.5 Gbps, 5 Gbps, and 10 Gbps Ethernet
Test Results	Ethernet Frames, IP Connectivity, Traceroute, Web Connectivity, Speed Test up to 10 Gbps
TWAMP Reflector (Optional)	RJ-45, 1G Ethernet SFP
	TWAMP Light Reflector support
Port/L2/L3 Loopback (Optional)	RJ-45, 1G Ethernet SFP, 10G Ethernet SFP+
	Port Loopback and Source specific VIAVI Loopback support

Specifications (continued)

WiFi (Optional)		
Interfaces	2.4 GHz, 5 GHz	
Test Results	WiFi Expert (Passive Mode)	Up to 802.11 a/b/g/n/ac/ax (WiFi 6 8x8) <ul style="list-style-type: none"> Signal strength (RSSI), Channel, Standard, Width, Channel Noise, Total Airtime, Noise Airtime, Estimated Throughput, Recommendations
	OneCheck WiFi (Connected Mode)	Up to 802.11 a/b/g/n/ac/ax (WiFi 6 8x8 with NSC connected as WiFi 5 3x3) <ul style="list-style-type: none"> Signal strength (RSSI), Standard, Width, Max Router PHY Rate Up to 802.11 a/b/g/n/ac (WiFi 5 3x3) <ul style="list-style-type: none"> Adds IP/Web connectivity, Throughput Tests
WiFi Radio	802.11 a/b/g/n/ac 3x3	
Throughput / Performance Test (Optional)		
Interface	GPON, Ethernet, WiFi	
TCP Throughput Test	Ookla Speedtest VIAVI TrueSpeed (RFC-6349) VIAVI SpeedCheck iPerf	
Performance	10 Gbps for Ookla Speedtest, TrueSpeed, SpeedCheck, iPerf	
Test Results	Delay, Upstream and Downstream Bit Rates	
User Interface		
Communication Interface	Bluetooth v5.0	
Smart Device Support (recommendation)	Mobile Tech app	
	Android 8 or newer iOS 12 or newer	
VIAVI Instrument Support	ONX-580, ONX-CATV	

Specifications (continued)

General	
Size	116 x 190 x 52 mm (4.6 x 7.5 x 2.0 in)
Weight	0.8 kg (1.7 lb)
Operating Temperature Range	Non-Charging: -10° C to 50° C
	Battery Charging: 0° C to 40° C
Storage Temperature Range	-20° C to 60 °C
Operating Humidity Range	10% to 90% RH, non-condensing
Operating Altitude	4000 m max
DC Input Power	15V @ 3A, USB-C Power Delivery (PD)
Battery	32 W/hr Li-Ion rechargeable battery
	Field replaceable
Battery Life	1-day typical usage
Charge Port	USB-C
USB Host Port	USB-A (USB 3.0)

Ordering information

Standard Packages		
PON Package	NSC200-GPON-BASE	GPON
	NSC200-GPON-PLUS	GPON, Ethernet , Speedtest
	NSC200-GPON-PRO	GPON, Ethernet, WiFi , Speedtest
	NSC200-XGSPON-BASE	XGSPON
	NSC200-XGSPON-PLUS	XGSPON, Ethernet , Speedtest
	NSC200-XGSPON-PRO	XGSPON, Ethernet, WiFi, Speedtest
	NSC200-GPON-XGSPON-BASE	GPON, XGSPON
	NSC200-GPON-XGSPON-PLUS	GPON, XGSPON, Ethernet , Speedtest
	NSC200-GPON-XGSPON-PRO	GPON, XGSPON, Ethernet, WiFi, Speedtest
Home Package	NSC200-HOME-PLUS	Ethernet , Speedtest
	NSC200-HOME-PRO	Ethernet, WiFi , Speedtest
Enterprise	NSC200-ENTERPRISE-PLUS	Ethernet, TrueSpeed
	NSC200-ENTERPRISE-PRO	Ethernet, WiFi, TrueSpeed
Loopback	NSC200-LOOPBACK-BASE	Ethernet 1G
	NSC200-LOOPBACK-PLUS	Ethernet 10G
All	NSC200-PLATINUM-1G NSC200-PLATINUM-10G	All
Options		
Test Applications	NSC-OC-GPON	NSC OneCheck GPON
	NSC-OC-XGSPON	NSC OneCheck XGSPON
	NSC-OC-ETHERNET	NSC OneCheck Ethernet
	NSC-OC-WIFI	NSC OneCheck WiFi
	NSC-OC-WIFI-EXPERT	NSC OneCheck WiFi Expert
Speed Tests	NSC-TRUESPEED-1G	NSC TrueSpeed (RFC-6349) over 1GE port up to 1Gbps
	NSC-SPEEDTEST-1G	NSC Ookla Speedtest over 1GE port up to 1Gbps
	NSC-SPEEDCHECK-1G	NSC SpeedCheck over 1GE port up to 1Gbps
	NSC-IPERF-1G	NSC iPerf Test over 1GE port up to 1Gbps
	NSC-TRUESPEED-2G	NSC TrueSpeed (RFC-6349) over 2.5/5/10GE port up to 2Gbps
	NSC-SPEEDTEST-2G	NSC Ookla Speedtest over 1+1/2.5/5/10GE ports up to 2Gbps
	NSC-SPEEDCHECK-2G	NSC SpeedCheck over 2.5/5/10GE port up to 2Gbps
	NSC-IPERF-2G	NSC iPerf Test over 2.5/5/10GE port up to 2Gbps

Ordering information (continued)

Options (continued)		
Speed Tests	NSC-TRUESPEED-5G	NSC TrueSpeed (RFC-6349) over 2.5/5/10GE port up to 5Gbps
	NSC-SPEEDTEST-5G	NSC Ookla Speedtest over 2.5/5/10GE port up to 5Gbps
	NSC-SPEEDCHECK-5G	NSC SpeedCheck over 2.5/5/10GE port up to 5Gbps
	NSC-IPERF-5G	NSC iPerf Test over 2.5/5/10GE port up to 5Gbps
	NSC-TRUESPEED-10G	NSC TrueSpeed (RFC-6349) over 2.5/5/10GE port up to 10Gbps
	NSC-SPEEDTEST-10G	NSC Ookla Speedtest over 1+1/2.5/5/10GE ports up to 10Gbps
	NSC-SPEEDCHECK-10G	NSC SpeedCheck over 2.5/5/10GE port up to 10Gbps
	NSC-IPERF-10G	NSC iPerf Test over 2.5/5/10GE port up to 10Gbps
Enterprise	NSC-LOOPBACK-1G	NSC L2/L3 1G Loopback
	NSC-LOOPBACK-10G	NSC L2/L3 10G Loopback
	NSC-FUSION-CLIENT	NSC Fusion Client
	NSC-TWAMP-REFLECTOR	NSC TWAMP Reflector
	NSC-OPTICAL-ETHERNET	NSC Optical Ethernet
SFP	NSC-SFP-ELEC-1G	NSC 1G Electrical Ethernet SFP
	NSC-SFP-ELEC-10G	NSC 10G Electrical Ethernet SFP+
	NSC-SFP-ELEC-AUTO-10G	NSC 1G, 2.5G, 5G, and 10G Autoneg Electrical Ethernet SFP+
	NSC-SFP-ELEC-1-2.5-5-10G	NSC 1G, 2.5G, 5G, and 10G Electrical Ethernet SFP+
	NSC-SFP-850-1G-10G	NSC 1G and 10G Optical Ethernet SFP+ 850 nm SR
	NSC-SFP-1310-1G-10G	NSC 1G and 10G Optical Ethernet SFP+ 1310 nm LR
	NSC-SFP-1550-1G-10G	NSC 1G and 10G Optical Ethernet SFP+ 1550 nm ER
	NSC-SFP-GPON	NSC GPON SFP (ONT Emulation)
	NSC-SFP-XGSPON	NSC XGSPON SFP+ (ONT Emulation)
Optional Accessory		
	NSC-CAR-CHARGER	NSC Car Charger with Cable
Replacement Parts		
	NSC-BATTERY	NSC Battery
	NSC-CHARGER	NSC Charger with Cable
	NSC-STRAP	NSC Hand Strap
	NSC-CASE	NSC Carrying Case



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