360 DSP

Next Generation Certification Meter

Wi-Fi Option

Operation Manual

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. See Page 2 for complete details.

Industry Canada Industrie Canada **This Class B digital apparatus complies with Canadian ICES-003. See Page 2 for complete details.**

think ahead.

TRILITHIC

FCC Part 15 Compliance

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the device and receiver
- Connect the device into an output on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

WARNING

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

WARNING

The antenna used for this instrument is installed at the Trilithic factory or by Trilithic approved repair facilities. During operation of the device, a distance of 20 cm or more should be maintained between the antenna in this device and person. To ensure compliance, do not operate at closer distances than this. The antenna on the 360 DSP is located inside the device at the top of the unit attached to the back plastic case. Do not use any antenna other than the installed antenna.

Industry Canada Compliance

Industry Canada Industrie Canada

This device complies with Industy Canada license-exempt RSS standard(s). 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.

Table of Contents

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Chapter 1

General Information

Helpful Website

The following website contains general information which may be of interest to you:

http://www.trilithic.com

Trilithic's website contains product specifications and information, tips, release information, marketing information, Frequently Asked Questions (FAQs), bulletins and other technical information. You can also check this website for product updates.

Where to Get Technical Support

Trilithic technical support is available Monday through Friday from 8:00AM to 5:00PM EST. Callers in North America can dial 317-895-3600 or 800-344-2412 (toll free). International callers should dial 317-895-3600 or fax questions to 317-895-3613. You can also e-mail technical support at *support@trilithic.com*.

For quicker support response when calling or sending e-mail, please provide the following information:

- Your name and your company name
- The technical point of contact (name, phone number, e-mail)
- The firmware version number
- A detailed description of the problem you are having, including any error or information messages

How this Manual is Organized

Thank you for choosing the 360 DSP. This manual is provided with the 360 DSP to help the user become better acquainted with the device and to become productive faster. This manual is divided into the following sections:

- **Chapter 1: General Information** - provides an overview of the instrument and its basic features. Before using the instrument, it is recommended that the user read this section for an overview of features, basic commands and other important details.
- **Chapter 2: Wi-Fi Setup** - provides instructions on the setup of the Wi-Fi option.
- **Chapter 3: Wi-Fi Operation** - provides instructions on the usage of the Wi-Fi option.
- **Chapter 4: Specifications** - provides instrument specifications.

Conventions Used in this Manual

This manual has several standard conventions for presenting information.

- Connections, menus, menu options, and user-entered text and commands appear in **bold**.
- Section names, web and email addresses appear in *italics*.

A NOTE is information that will be of assistance to you related to the current step or procedure.

A CAUTION alerts you to any condition that could cause a mechanical failure or potential loss of data.

A WARNING alerts you to any condition that could cause personal injury.

Precautions

A strong electromagnetic field may affect the measurement accuracy of the 360 DSP.

Use only the battery charger supplied with the 360 DSP.

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

The antenna used for this instrument is installed at the Trilithic factory or by Trilithic approved repair facilities. During operation of the device, a distance of 20 cm or more should be maintained between the antenna in this device and person. To ensure compliance, do not operate at closer distances than this. The antenna on the 360 DSP is located inside the device at the top of the unit attached to the back plastic case. Do not use any antenna other than the installed antenna.

What is the 360?

Overview

- Advanced Home Certification Capabilities Simplify Installation and Troubleshooting
- Intuitive Color Touch Screen with Simple Pass/Fail Indicators Reduce Installer Entry Errors and Improves Decision Making
- Next-Generation Auto Test Apps Streamline Certification
- Convenient Multiple Standard Tests in a Single Auto Test App helps to Standardize Tech Processes & Procedures
- Powerful Troubleshooting Tools Improve the Overall Health of the System

The Standardization Solution

Trilithic's 360 DSP™ is the first meter designed specifically for Home Certifications. Built from the ground up, this fulfillment meter is ideal for standardizing processes and procedures for installation and troubleshooting — and includes a price point that makes it feasible for system operators to outfit their entire fleet.

Tailored for the challenges faced by installers, contractors and service techs, this go-to next-gen meter helps simplify decision making and streamline standard processes and procedures. This improves tech efficiencies and the overall health of the entire system.

Next Gen Features

The 360 DSP features an intuitive color touch screen interface, simple pass/fail indicators, and simple apps to streamline certification and make the installer's job easier.

Everything about this next-gen meter was built with the technician in mind, from the longest battery life and quickest charge time of any installation meter to its unique built-in LED flashlight for those dark cramped spaces.

Including next-generation smart device technology the 360 DSP is virtually the easiest, most feature-rich, bestperforming installation meter available today.

Comprehensive Testing

The 360 DSP makes Home Certification a breeze for technicians at all levels including installation, service, and contractor. Techs will appreciate the advantages of a quick and efficient device at their disposal that features a flexible and easy-to-operate interface that is inspired by modern smart devices.

This next gen fulfillment tool comes equipped with powerful troubleshooting tools to perform triple play tests, set Home Certifications standards and measure both Analog and Digital signals. With its built-in CableLabs Certified DOCSIS 3.0 (8x4) Modem, Ethernet and Wi-Fi communications capabilities, all testing results can be easily forwarded to ViewPoint in the back office in near real-time.

Total Home Certification Management

Combining 360 DSPs in the field with the new ViewPoint WFM Module in the back office, managers now have simplified access to intelligent management tools for monitoring, assessing and improving the efficiency of their total home certification operation.

By unifying an entire MSO's field operations in one convenient dashboard, managers can easily verify installation compliance and quality throughout the entire plant, either by home, system, region, division or any other attribute from billing systems.

This simple and completely customizable integrated system of field analysis and reporting tools allows managers to watch over their entire field operations in one convenient dashboard and compare each location in the system, analyze the overall health of their entire organization and address concerns in near real-time. (See the ViewPoint WFM Module datasheet for more information).

Auto Test Apps

The 360 DSP features next generation auto test applications that practically walk the technician through a job. By performing standardized measurement tests at various required locations on the job site using user set test plans, channel plans and limit sets, the meter very clearly indicates (using color and symbols) what areas still need attention, before the technician leaves the job site.

Multi-user support allows technicians that work in various territories to easily switch channel plans and standardized auto test apps and test limits or login as a completely different user.

The built-in web browser allows techs to upload job data in near real-time as well as transmit and receive channel plans, auto tests, work orders and firmware. Leaving less room for entry error, this new simple user interface can translate into less training and more efficient time in the field for techs. The 360 DSP also offers a higher comfort factor for novice technicians, reducing decision making in the field, which can ultimately result in more productive work days and more satisfied customers.

Justify ROI

Field operations managers can now easily verify that all of their technicians are performing the proper tests and are doing so at the right place and time—in near-real time. The potential benefits include identifying techs who need additional training, improving team performance, reducing truck rolls and cutting operating costs could obviously be significant.

At a higher level ViewPoint can deliver simple, standardized, system-wide reports and dashboards that can help a director or VP of technical operations view the entire operation at a glance to gain information that can be used to reduce service and repeat trouble calls.

Essentially, this integrated system approach allows cable operators to see much more of their home certification operations and use the information in practical ways. The insights can enable them to identify both localized problems and highlevel system issues to make decisions based on a clearer understanding of their overall operations and the associated ROI.

Combining 360 DSPs in the field with the new ViewPoint WFM Module in the back office, managers can view the health of their entire system— in near real-time, for total Home Certification management.

Testing Features

- Upstream Return Spectrum Analysis (4 to 110 MHz)
- Level Mode
- C/N Measurement
- QAM mode (MER/BER/Constellation)
- Complete Channel Plan
- Scan with Tilt Measurement
- DOCSIS 3.0 modem 8x4 (100/304 MBPS)
- RJ-45 (10/100MBPS)
- Wi-Fi “b/g” 2.4 GHz (Optional)
- Cable Modem Statistics
- Built-in CM to RJ-45 Mode
- Network Test Suite, includes Thru-put, VoIP, Ping, and Trace Route
- CM Source (optional)
- Built-in Frequency Domain Reflectometer (optional)
- Built-in MoCA® Test Set (optional)
- Linear Distortions Test Suite (optional)

Additional Functions

- Multi-user support
- Multi-language support
- Create work orders right on the meter
- Built-in web browser, real-time data transmission
- Interactive home certification process

Equipment Supplied with the 360 DSP

The 360 DSP comes with the following:

- 360 DSP Next Generation Certification Meter
- Built-in battery
- Protective Carrying Case with Shoulder Strap
- AC to DC Power Adapter & Battery Charger
- AC US Power Cable
- Operation manual on CD

A Guided Tour of the 360 DSP

Front View

Rear View

RF Input Connector

Optional Wi-Fi Antenna (Internal - 2 dB Gain)

Identification Label (FCC ID & Notice)

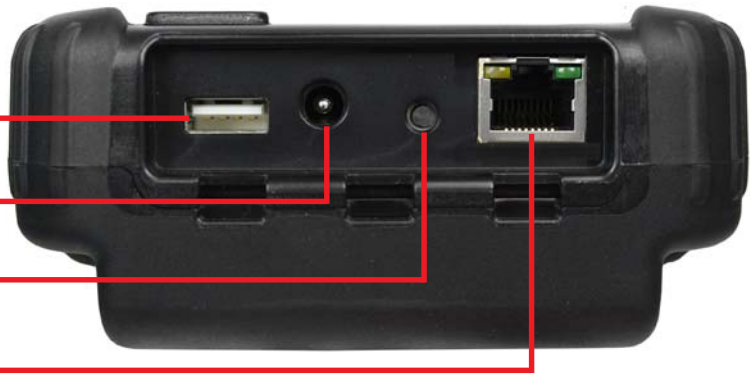
Top View

RF Input Connector

LED Flashlight

Optional Wi-Fi Antenna (Internal - 2 dB Gain)

Bottom View



USB Port (Type A)

DC Charge Port

System Reset Button

Ethernet Port

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Chapter 2
Wi-Fi Setup

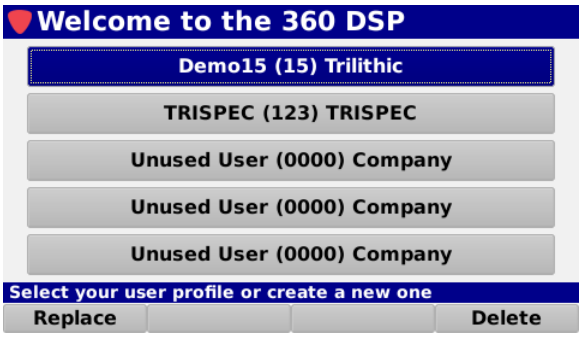
This chapter:

- Describes the setup of the Wi-Fi Option

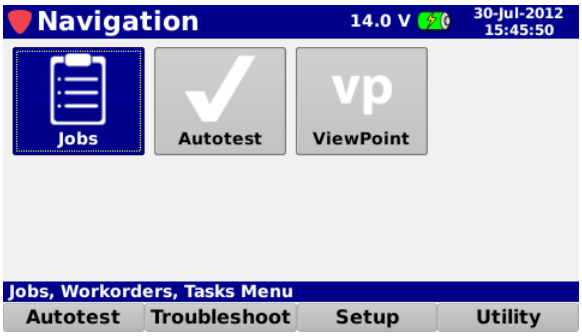
Wi-Fi Setup Procedure

Perform the following steps to setup the optional Wi-Fi:

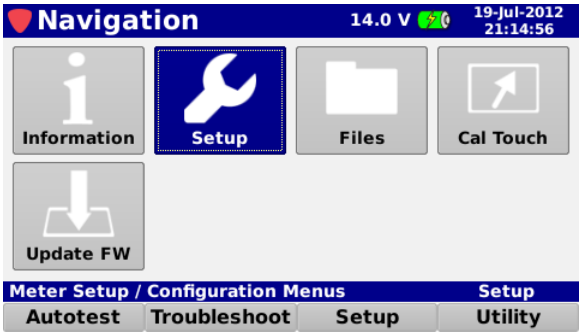
1. Power on the 360 DSP by pressing the **Power** button.
2. The **Welcome** screen will appear as shown in the image to the right.
3. Use the touchscreen to select the user profile that you would like to use.



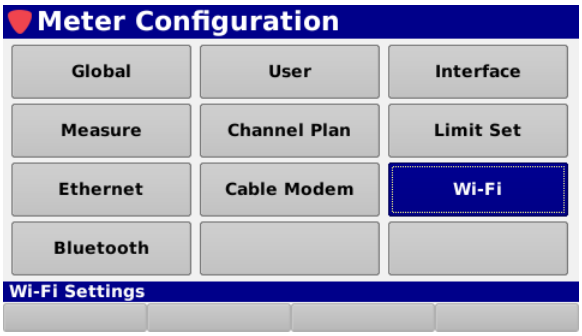
4. By default, the **Autotest** navigation menu will appear as shown in the image to the right.
5. Use the touchscreen to select the **Setup** softkey at the bottom of the screen.



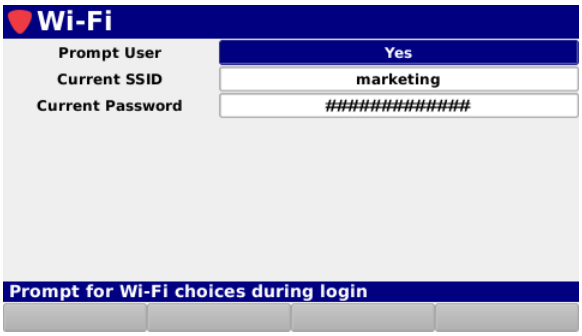
6. The **Setup** navigation menu will apper, use the touchscreen to select the **Setup** icon as shown in the image to the right.



8. The **Meter Configuration** screen will appear, use the touchscreen to select the **Wi-Fi** button as shown in the image to the right.



9. The **Wi-Fi** menu will appear, the following items can be adjusted within this menu:



   Prompt User - Use the keypad to select from either of the following options:

   - When set to **NO**, this will cause the Network Manager to automatically login using the current SSID/ Password and prevents the user from adjusting the Wi-Fi settings.
   - When set to **YES**, this will cause the Network Manager to disable automatic login and allows the user to select an alternate SSID or Password.

   Current SSID - This field allows you to set a default SSID to use when Prompt User is set to **NO**. Use the touchscreen and virtual keyboard to enter a new value.

   Current Password - This field allows you to set a default Password to use when Prompt User is set to **NO**. Use the touchscreen and virtual keyboard to enter a new value.

10. After making any changes, select the **Back** button to save your changes and exit to the **Meter Configuration** screen.

Chapter 3
Wi-Fi Operation

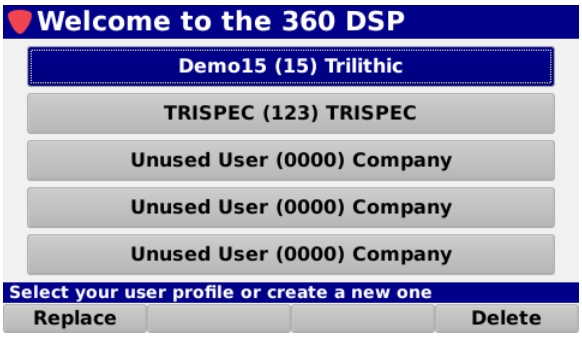
This chapter:

- Describes the how to use of the Wi-Fi Option

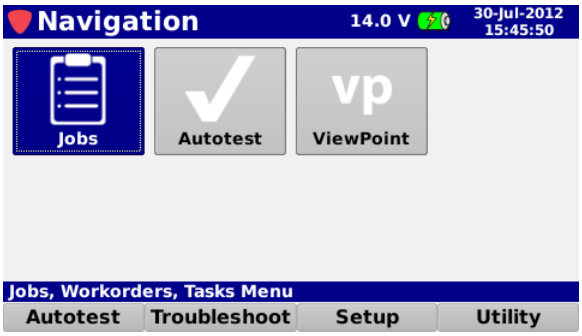
Enable Wi-Fi

Perform the following steps to use the optional Wi-Fi:

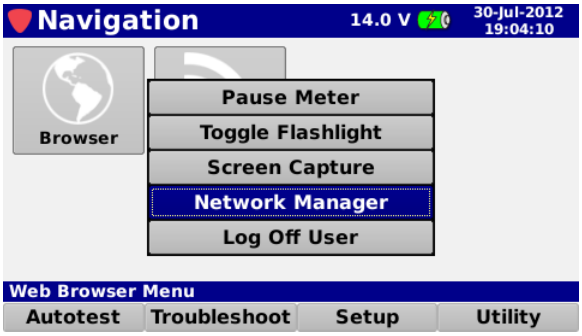
1. Power on the 360 DSP by pressing the **Power** button.
2. The **Welcome** screen will appear as shown in the image to the right.
3. Use the touchscreen to select the user profile that you would like to use.



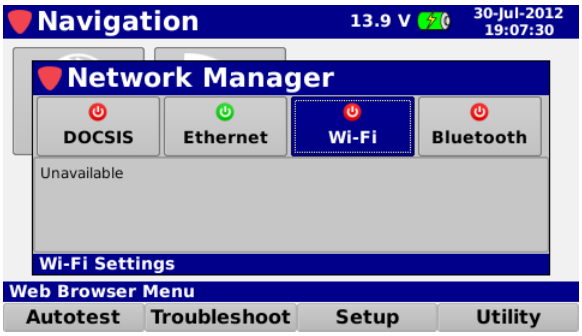
4. By default, the **Autotest** navigation menu will appear as shown in the image to the right.



5. Press the **Function** button to display the Function window and then use the touchscreen to select the **Network Manager** button as shown in the image to the right

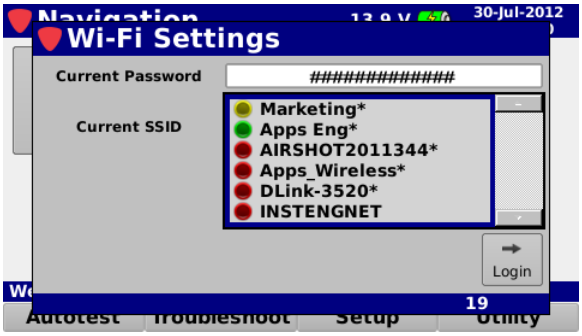


6. The **Network Manager** window will appear, use the touchscreen to select the **Wi-Fi** button as shown in the image to the right.



7. If **Prompt User** is set to **NO**, the Wi-Fi will automatically try to connect to the default SSID if it is within range.

8. If **Prompt User** is set to **YES**, the Wi-Fi Settings window will appear as shown in the image to the right.

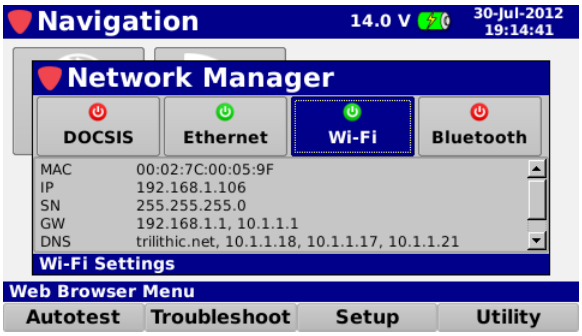


Current Password - This field allows you to set the current Password to use for the selected SSID. Use the touchscreen and virtual keyboard to enter a new value.

Current SSID - This field allows you to select from a list of SSIDs that are in range. Use the arrow keys to select a SSID from the list.

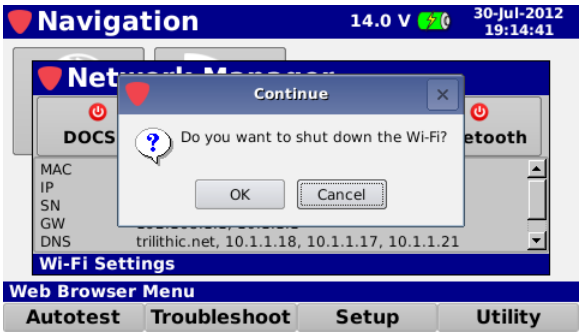
Current SSID - After the Password & SSID have been selected, select this button to Login and enable the Wi-Fi.

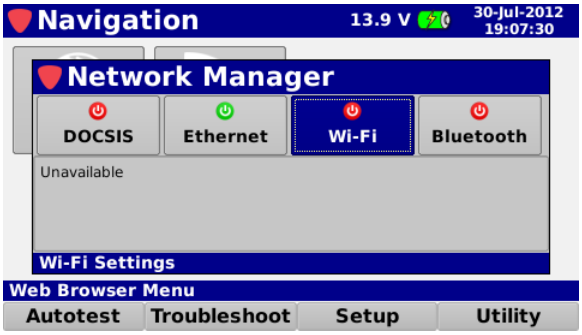
10. After successful connection to Wi-Fi, the current network statistics will be displayed as shown in the image to the right.



Disable Wi-Fi

1. When the Wi-Fi is enabled, select the **Wi-Fi** button again from the **Network Manager** window to disable the Wi-Fi.
2. The **Continue** window will be displayed as shown in the image to the right. Use the touchscreen to select **Yes** to disable to Wi-Fi or select **Cancel** to exit without disabling the Wi-Fi.
2. When the Wi-Fi is disabled, the **Network Manager** window will display “Unavailable” as shown in the image to the right.

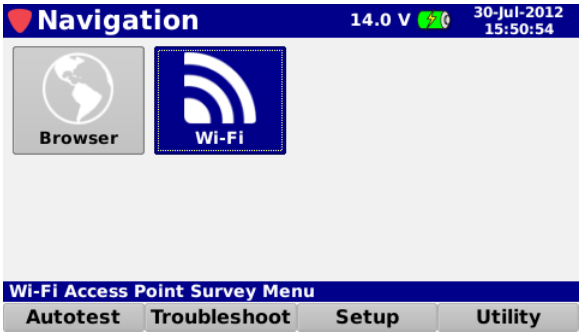




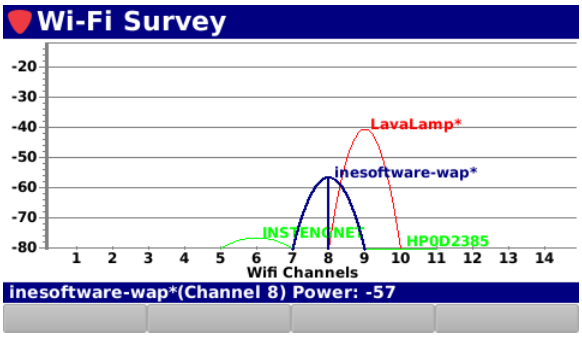
Wi-Fi Survey Mode

Perform the following steps to access the Wi-Fi Survey mode.

1. Use the touchscreen to select the **Utility** softkey at the bottom of the screen.
2. The **Utility** navigation menu will apper, use the touchscreen to select the **Wi-Fi** icon as shown in the image to the right.



3. The **Wi-Fi Survey** screen will be displayed as shown in the image to the right. Use the **Arrow** buttons to highlight each of the networks displayed.



Chapter 4
Specifications

Forward Frequency Tuning Range	50 - 1003 MHz
Reverse Frequency Tuning Range	4 - 110 MHz
Amplitude Measurement Range	
Analog:	40 dBmV to +50 dBmV
Digital:	-40 dBmV to +50 dBmV
Return	< -40 dBmV (Ground Block Test)
IF Bandwidth	6 MHZ standard, 8 MHz optional
Deep Interleave Compatibility	Yes
Carrier-to-Noise	As per FCC Part 76.605. Carrier and Noise both measured in same analog channel => 50 dB
Downstream MER	34 dB for => -6 dBmV RF level, typical: 40 dB for => +6 dBmV RF level
Downstream BER	True BER (derived from code words not from MER) Range: 1 E-7 to 1 E-9 for signal => -6 dBmV ITU J.83 annex A, B, C
Communications	DOCSIS 3.0 Modem (8x4) Bluetooth (optional USB plug in) USB A Ethernet (10/100) Wi-Fi 802.11 b/g (optional)
Display	Color LCD touch screen; 480 x 272 pixels (approx 4” x 2.25”)
Annunciators	Audible annunciator for key strokes
Flashlight	High intensity LED (0.25W)
Battery	Twin 2600 mAh @ 7.2V LiOn packs
Charge Time	3 hours
Operating Time	8 hours continuous
Mechanical	Unit housed in rubber overmolded plastic enclosure
Operational	Unit controlled via 12 rubber keys and LCD touch screen and/or via a wireless connection to a mobile device such as a laptop, tablet, iPad® or iPhone®, or Android® handset

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