# 360 DSP

- 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 Autotest Apps Streamline Certification

- Convenient Multiple Standard Tests in a Single Autotest App help to Standardize Tech Processes & Procedures

- Powerful Troubleshooting Tools Improve the Overall Health of the System

**The precision of a field analyzer with the power of a smart device.**

### The Standardization Solution

Trilithic's 360 DSP™ is the first meter designed specifically to simplify Home Certifications. Built from the ground up, tailored specifically for the needs of fulfillment, this 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 comes equipped with all of the powerful troubleshooting tools for the advanced tech, yet helps simplify decision making and streamline standard processes and procedures for the more novice tech. This improves tech efficiencies, the overall health of the entire system and allows techs to grow with the meter.

### 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 and glow in the dark keypad for those dark cramped spaces.

Including next-generation smart device technology the 360 DSP is virtually the easiest, most feature-rich, best-performing 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 and simplified Autotest Apps 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.

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# 360 DSP

## Next Generation Certification Meter

**STANDARD TESTING FEATURES:**

- Upstream Return Spectrum Analysis (4 to 110 MHz)
- Level Mode
- C/N Measurement
- QAM mode (MER/BER/Constellation/EQ)
- 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
- Cable Modem Statistics
- Built-in CM to RJ-45 Mode
- Network Test Suite, includes Thru-put, VoIP, Ping, and Trace Route

**OPTIONAL FEATURES COMING SOON:**

- Linear Distortions Test Suite
- Frequency Domain Reflectometer

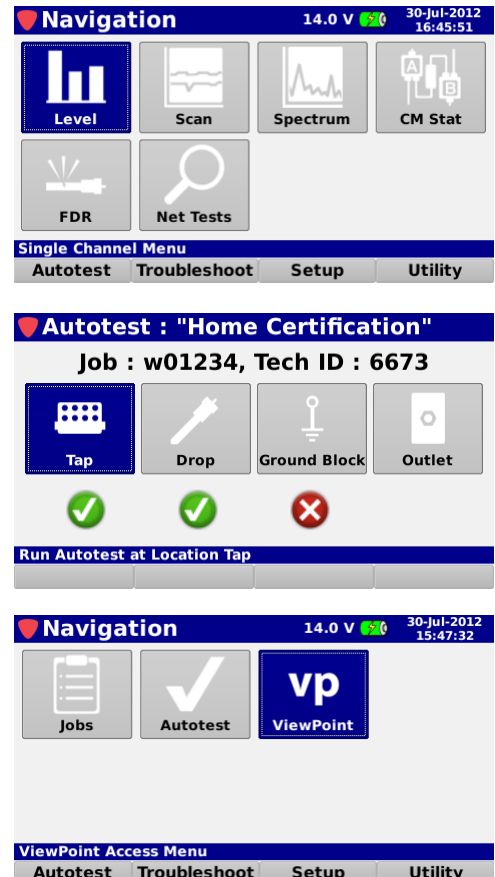## The 360 DSP supports a variety of functions, including:

- 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

### Simple Yet Powerful

Providing the widest range of functions for an installer available today (as standard options), the 360 DSP includes virtually all the testing options an installer or service technician needs to verify service quality and easily identify and fix problems in the field. Standard tests for analog or digital video and triple play include Level mode, C/N measurement, MER/BER and Constellation, Scan and Tilt, Wi-Fi, cable modem stats and a network test suite that includes Thru-Put, VoIP, PING and Trace Route. Optional features include a Frequency Domain Reflectometer and the Linear Distortions Test Suite.

Combining simplified Autotest Apps and powerful troubleshooting tools the 360 DSP allows technicians both novice and advanced can grow with their meters and use the features they need. Utilizing DSP technology, the 360 DSP also allows for easy expansion with optional advanced features offered typically as simple license activation codes, no hardware upgrades or return to the factory for upgrade.

Trilithic also makes it even easier to obtain consistent, repeatable results by integrating with back-office solution ViewPoint, giving supervisors that birds-eye view of the field for total Home Certification management.
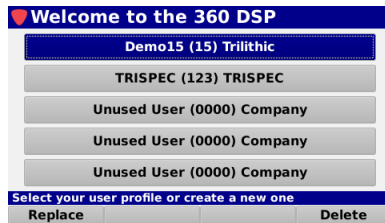






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# 360 DSP
## Next Generation Certification Meter

## STANDARD FEATURES
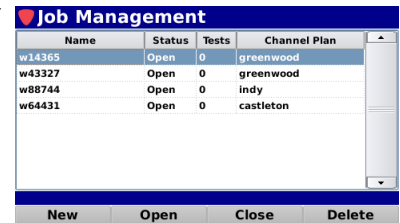The 360 DSP includes all of the following features standard.

### Multiple User Profiles

- Allows up to 5 technicians to share a 360 DSP

- Each technician has his or her own profile, which loads in completely different sets of channel plans, autotest, etc.
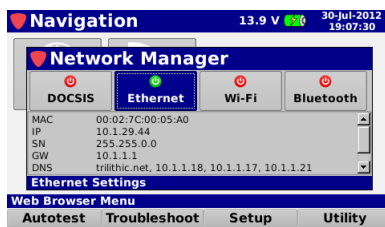
**Welcome to the 360 DSP**
- Demo15 (15) Trilithic
- TRISPEC (123) TRISPEC
- Unused User (0000) Company
- Unused User (0000) Company
- Unused User (0000) Company

Select your user profile or create a new one
Replace          Delete

### Job Management

- Create and close out your jobs from this screen

- Shows what channel plan and how many tests have been run on a particular job

**Job Management**

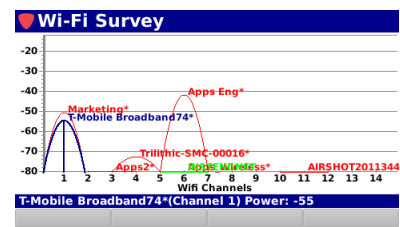| Name | Status | Tests | Channel Plan |
|---|---|---|---|
| w14365 | Open | 0 | greenwood |
| w43327 | Open | 0 | greenwood |
| w88744 | Open | 0 | indy |
| w64431 | Open | 0 | castleton |

New          Open          Close          Delete

### Simple Network Management

- Choose between DOCSIS 3.0 (8x4) modem, Ethernet, Wi-Fi or Bluetooth connection methods

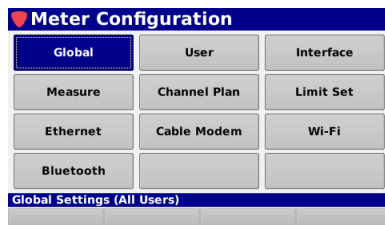- Provides connection details such as MAC, IP, gateway and DNS

**Navigation**          13.9 V          30-Jul-2012 19:07:30

**Network Manager**
DOCSIS | Ethernet | Wi-Fi | Bluetooth

| | |
|---|---|
| MAC | 00:02:7C:00:05:A0 |
| IP | 10.1.29.44 |
| SN | 255.255.0.0 |
| GW | 10.1.1.1 |
| DNS | trilithic.net, 10.1.1.18, 10.1.1.17, 10.1.1.21 |

Ethernet Settings
Web Browser Menu
Autotest     Troubleshoot     Setup     Utility

### Built-In Wi-Fi with Survey Test Mode

- Actively view live signal strengths of Wi-Fi networks in the area

- Provides Wi-Fi details such as SSID, Channel and power level

**Wi-Fi Survey**

Marketing*
T-Mobile Broadband74*
Apps Eng*
Trilithic-SMC-00016*
Apps2*          Apps Wireless*          AIRSHOT2011344

Wifi Channels: 1 2 3 4 5 6 7 8 9 10 11 12 13 14
(-20 to -80)

T-Mobile Broadband74*(Channel 1) Power: -55

### Easy Setup & Configuration

- The meter configuration settings apply to all users of the device and includes all setup parameters for the 360 DSP

- Setting adjustments can be locked out using the ViewPoint software

**Meter Configuration**

| Global | User | Interface |
|---|---|---|
| Measure | Channel Plan | Limit Set |
| Ethernet | Cable Modem | Wi-Fi |
| Bluetooth | | |

Global Settings (All Users)

### Web Browser

- Allows the user to navigate to Internet web pages

- Includes six presets for quick access to most used sites

**Web Browser**

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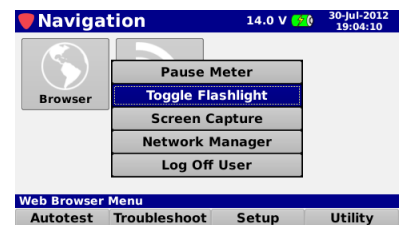| | |
|---|---|
| Web Test | Web Test |
| Yahoo | Yahoo |
| Google | Google |

Back          Menu          Home          Refresh

### Cable Modem Staistics

- Shows up to 8 downstream channels and 4 upstream channels

- Provides performance metrics for all downstream and upstream channels

**Cable Modem Statistics**

**Downstream**          **Pass**

| Pri | Frequency (MHz) | Rx Level | SNR | PreBER | PostBER | |
|---|---|---|---|---|---|---|
| ✔ | 819.000 (256 QAM) | 16.74 dBmV | 39.9 dB | 1.00E-08 | 1.00E-08 | ✓ |
| ✔ | 807.000 (256 QAM) | 17.30 dBmV | 39.0 dB | 1.00E-08 | 1.00E-08 | ✓ |
| ✔ | 813.000 (256 QAM) | 16.79 dBmV | 39.4 dB | 1.00E-08 | 1.00E-08 | ✓ |
| ✔ | 801.000 (256 QAM) | 18.13 dBmV | 39.4 dB | 1.00E-08 | 1.00E-08 | ✓ |

Press Up for Upstream Information
Limit Set

### LED Flashlight

- High intensity LED for working in dark spaces

- Control is provided through the Fuction menu for quick access from any screen

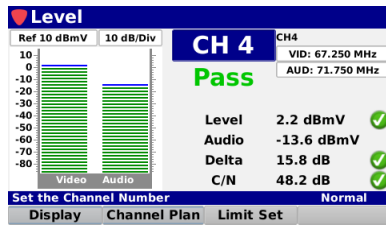**Navigation**          14.0 V          30-Jul-2012 19:04:10

Browser
- Pause Meter
- Toggle Flashlight
- Screen Capture
- Network Manager
- Log Off User

Web Browser Menu
Autotest     Troubleshoot     Setup     Utility

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## INCLUDED MEASUREMENT FUNCTIONS

The 360 DSP includes all of the following measurement functions standard.
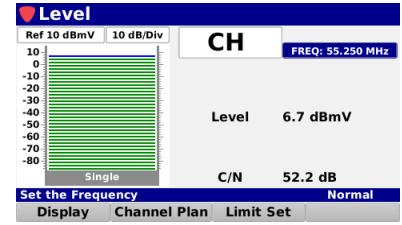
### Analog Level Measurement

- Shows the analog channel and its associated measurements
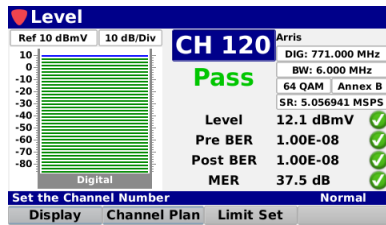- Provides Pass/Fail results for limit sets

### Single Channel Level Measurement

- Shows the level of the analog carrier
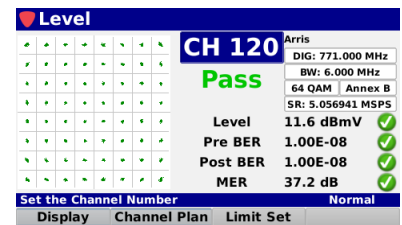- Displays the Carrier to Noise ratio of the analog carrier

### Digital Level Measurement

- Shows the level, MER and BER of a QAM channel
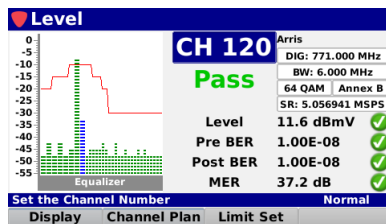- Users can change the display to view BER over time, Equalizer Tap and Constellation

### QAM Constellation

- Shows the constellation diagram of the specified QAM channel
- Shows the level, MER and BER and provides Pass/Fail results for limit sets
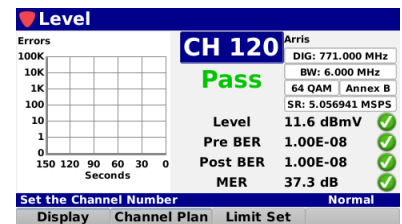
### Equallizer Tap Display

- Displays the equalizer stress and whether the DOCSIS specification is being broken
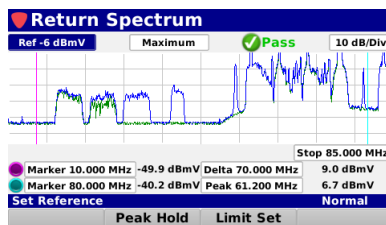- Allows the user to place a marker on a tap to display the distance to the tap

### Bit-Error Rate Display

- Shows the BER on a graph with a 150 second measurement period
- Shows solid green lines for pre-errors and solid red lines for post-errors
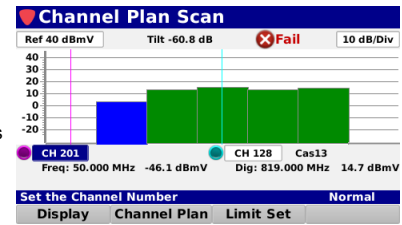
### Return Spectrum Measurement

- Provides the ability to view raw return spectrum traces from 4 to 110 MHz
- Fast DSP spectrum snapshots give the user extreme speed to capture fast transients on the upstream

### Scan & Tilt Measurement

- Full channel plan scan displays the frequency response of the entire channel lineup
- Provides Pass/Fail results for limit sets
- Color coded channels, green for digital and blue for analog

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PC Browser

Smart Phone

WFM Module

Tablet

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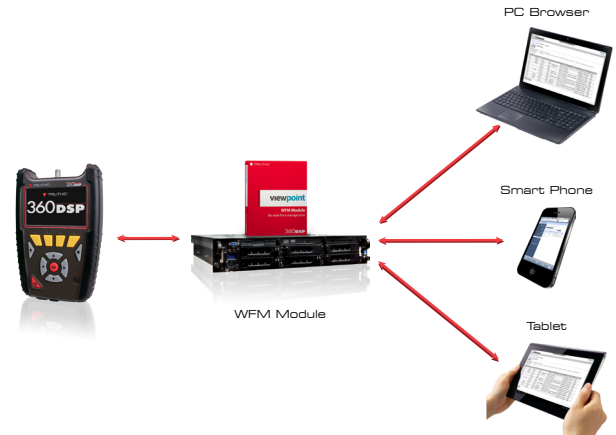
This simple and completely customizable integrated system of field analysis and reporting tools allows managers to watch over their entire field operations in one convenient dashboard that compares each location in the system, analyzes the overall health of their entire organization and addresses concerns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

**Autotest Apps**

The 360 DSP features next generation autotest 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 autotest 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, autotests, 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. Although the 360 DSP comes equipped with all of the required troubleshooting tools for the advanced technician, it 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 high-level 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.

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# 360 DSP

## SPECIFICATIONS

### General Specifications

| | |
|---|---|
| **Control** | Glow in the dark keypad 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 |
| **Display** | Color LCD touch screen; 480 x 272 pixels (approx 4" x 2.25") |
| **Annunciators** | Audible annunciator for key strokes |
| **Communications** | DOCSIS 3.0 Modem (8x4), Bluetooth (optional USB plug in), USB A, Ethernet (10/100), and Wi-Fi 802.11 b/g (optional) |

### Measurement Specifications

| | |
|---|---|
| **Forward Frequency Tuning Range** | 50 - 1003 MHz |
| **Reverse Frequency Tuning Range** | 4 - 110 MHz |
| **Amplitude Measurement Range** | **Analog:** 40 dBmV to +50 dBmV<br>**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,<br>typical: 40 dB for => +6 dBmV RF level |
| **Downstream BER** | True BER (derived from code words not from MER)<br>**Range:** 1 E-7 to 1 E-9 for signal => -6 dBmV<br>ITU J.83 annex A, B, C |

### Mechanical Specifications

| | |
|---|---|
| **Construction** | Rubber overmolded plastic housing |
| **Antenna** | Internal Wi-Fi antenna, 2 dB gain |
| **Flashlight** | High intensity LED (0.25W) |
| **Operating Time** | 8 to 10 hours, dependant on use |
| **Charge Time** | 3 hours |
| **Battery** | Twin 2600 mAh @ 7.2V Li-Ion internal, factory replaceable |
| **Power Adapter** | **Input:** 100 to 240 VAC ~ 47 to 63 Hz, 1.1A Max<br>**Output:** 15 VDC, 3.3A |
| **Operating Temperature Range** | -18˚ to +50˚ C (0˚ to 122˚ F) |
| **Dimensions (H x W x D)** | **w/o Case:** 8.0 x 5.5 x 2.0 in (20.32 x 13.97 x 5.08 cm)<br>**w/ Case:** 9.0 x 6.5 x 3.0 in (22.86 x 16.51 x 7.62 cm) |
| **Weight** | 2 lbs (907 grams) |

## INCLUDES THE FOLLOWING:

360 DSP Meter

Protective carrying case

Shoulder strap

AC to DC Power Adapter & Battery Charger

Touchscreen Stylus

## SOFTWARE:

ViewPoint Express Configuration Software for the 360 DSP
**P/N 0930208000**

ViewPoint Integrated Server with WFM Module for the 360 DSP
**P/N 2011657000**

ACTS™ software
**P/N 0930144000**

## RELATED PRODUCTS:

Precision test cable (I/O-15)
**P/N 2071527048**

I-Stop probe
**P/N 2010838001**

TLB-60 filter
**P/N 20110666000**

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