- Detect "Bursty" Ingress and Impulse Noise Interference to Voice Services with Extremely High Spectrum Acquisition Speed

- Manage Service Quality Efficiently with 24/7 Monitoring and Configurable SNMP Alarms

- Align and Troubleshoot Return Path Quickly and Easily, and Cost-Effectively Consolidate Installation and Network Maintenance Support Equipment in the Headend Up to 85 MHz

- Scalable and Cost-Effective in Every Configuration

Never miss an ingress outbreak with the fastest return path scanning speed available today

The 9581 SST™ is the hub of the Guardian System II™ for return path maintenance; providing installation, return sweep, and ingress spectrum information to field technicians using Trilithic's 1G DSP maintenance meters. When used in Guardian System II, the 9581 SST shares spectrum information with the monitoring facility and the field units, speeding up problem identification and shortening repair times.

The 9581 SST monitors the return band, generates SNMP traps, and relays monitored data to NOCs and designated network engineers. Extremely flexible, each SST supports up to twelve distribution technicians and a virtually unlimited number of installers. It can provide live spectrum information and recent historical data to as many as 64 independent monitoring sites, each using its own SNMP trap criteria. Traps sent to each of these sites can be configured for different ingress severity alarm limits and persistence.

Ability to Capture all Types of Ingress
DSP technology gives the 9581 SST unmatched power for capturing all types of ingress, including the short bursts that degrade VoIP services. Up to 100 times faster than analog-based analyzers, the 9581 SST captures and analyzes the entire spectrum of all connected nodes in microseconds and re-scans them up to 120 times per second. Thanks to the 9581 SST's unmatched scanning speed and high re-scan rate, the NOC operator or field technician never misses an ingress outbreak capable of disrupting return services.

TraffiControl™ is a data processing mode unique to the 9581 SST that lets the operator analyze ingress hidden inside occupied frequency bands. TraffiControl automatically removes all legitimate TDMA signals from the displayed spectrum, leaving an easily analyzed spectrum composed solely of noise and ingress.

Wide Selection of Operating Modes
A wide selection of operating modes makes the 9581 SST a highly versatile return path troubleshooting aid. Through ViewPoint software, the operator can view node spectrum information at resolutions from 30 kHz to 3 MHz to facilitate troubleshooting. The operator can also select averaging and continuously running maximum and minimum functions to diagnose immediate problems and long-term performance issues.

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AVAILABLE 65 MHZ MODELS:

- 9581 SST R4 - Euro (120 to 240 VAC Power Supply) **P/N 2010903026**

- 9581 SST R4 - US (120 to 240 VAC Power Supply) **P/N 2010903226**

- 9581 SST R4 - Euro (-48 VDC Power Input) **P/N 2010903526**

- 9581 SST R4 - US (-48 VDC Power Input) **P/N 2010903626**

AVAILABLE 85 MHZ MODELS:

- 9581 SST R5 with 120 to 240 VAC Power Supply **P/N 2011422000**

- 9581 SST R5 with -48 VDC Power Input **P/N 2011422100**

9581 SST R5 STANDARD INTERFACES:

- Sixteen (16) RF Test Input Ports (F-Type)

- One (1) RF Forward Output Port (F-Type)

- RJ45 Management Port (10/100 Mbps)

9581 SST R4 STANDARD INTERFACES:

- Sixteen (16) RF Test Input Ports (F-Type)

- Two (2) RF Forward Output Ports (F-Type)

- RJ45 Management Port (10/100 Mbps)

UNIFIED RETURN PATH MANAGEMENT

Combining the 9581 SST in your headend and hub sites with the new ViewPoint Integrated Server in the back office, managers now have simplified access to intelligent management tools for monitoring upstream analog and digital services throughout their RF networks.
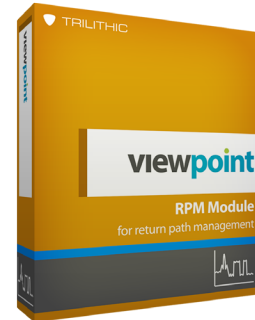
The ViewPoint RPM Module is a powerful and flexible system that is designed to support all aspects of return path management, including installation, distribution system alignment, ingress control, ingress monitoring, and real-time troubleshooting.

All elements of the return maintenance process are closely linked for maximum efficiency, flexibility and optimum cost-effectiveness. This simple and completely customizable integrated system of head-end and hubsite analysis and reporting tools provides a birds-eye view of the entire plant using one convenient dashboard. ViewPoint can also compare each location in the system, analyze the overall health of the entire organization and addresses concerns in near real-time for Total System Management.

The ViewPoint Data Management System with RPM Module unifies an entire system of 9581 SST return path analyzers within one platform. This unified approach to return path maintenance provides operators full access to all of their return data within a single easy-to-use web-based platform. This module also includes customizable dashboards that are designed specifically to highlight trends or problems affecting a node and can be useful in diagnosing reoccurring problems over any period of time.
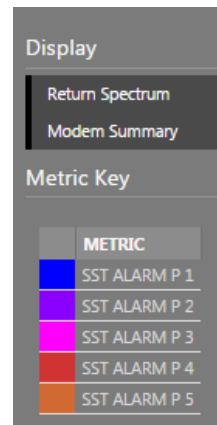
This platform's simplified user interface and consolidated reporting provides managers with an in-depth view into whether each area is performing up to your companies monitoring specifications. Additionally, this information allows managers to accurately asses the overall system health of your plant and pro actively address return path impairments before they start to cause service issues for your customers. Furthermore, this module is also designed so technicians can easily seek out and target problem areas within the outside plant. With its web browser based interface, the RPM Mode gives technicians in the field the ability to view live active nodes directly on their smart devices (iPad, iPhone, Android etc.).

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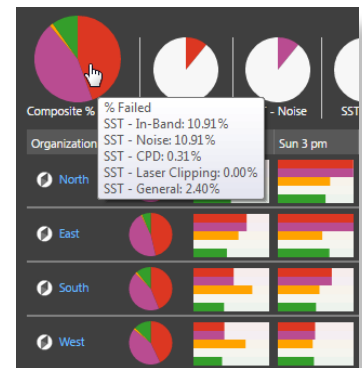
The RPM Module imports and displays the measurement profiles that are used in the 9581 SST and allows you to change the names of these profiles to mimic the profiles setup on the 9581 SST. When trying to target an area of concern, the customizable dashboard can display any of the eight available profiles. This allows for each individual user to set limits on any desired profiles in turn customizing the look and feel of the dashboard to show the user what areas or nodes that are above the desired threshold.

The RPM Module provides a simple and intuitive color coded dashboard that automatically displays each area's percent over the limit. This view also allows the user to customize their view with adjustments for which nodes to view, time span, and alarm thresholds which greatly enhances maintenance efforts by easy identification of problem areas.

The RPM Module allows for an unlimited number of live return spectrum user connections from technicians in the field and without any side effects to other users or delays in data acquisition. Additionally, all of the node measurement data can be captured and saved for historical trending to replay the MAX, AVG, and MIN traces over any set period of time. This allows all team members to target any period of time to view the worst case ingress for further analysis and troubleshooting.

Display

Return Spectrum
Modem Summary

Metric Key

| METRIC	
	SST ALARM P 1
	SST ALARM P 2
	SST ALARM P 3
	SST ALARM P 4
	SST ALARM P 5

STANDARD FEATURES

- Unified web browser based interface with extensive reporting tools for all return path nodes in the system

- Automated dashboard enables management to view the entire system at a glance

- Greatly enhances maintenance efforts by easy identification of problem areas

- Automatically displays each area's percent over the limit

- Live views of active return nodes and all of the data for each node monitored by the system is captured and saved for historical analysis and trending

- Unlimited amount of connections for field users to view return nodes with no side effects

- Accessible via any smart device with a browser and broadband internet connection

- Profile interaction allows for multi-profile views or targeted profiles for unique data sets
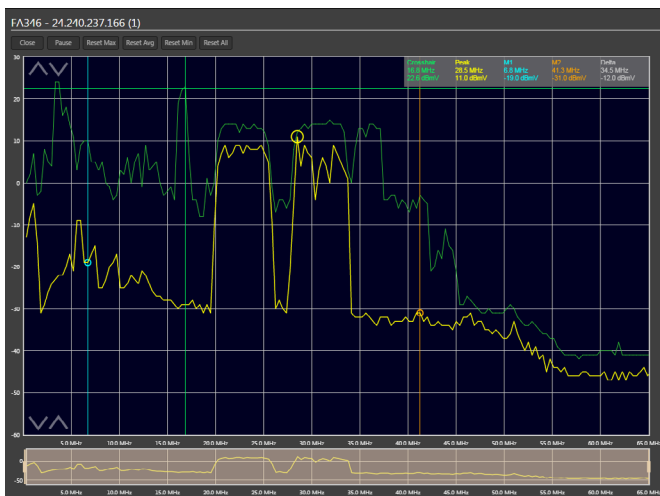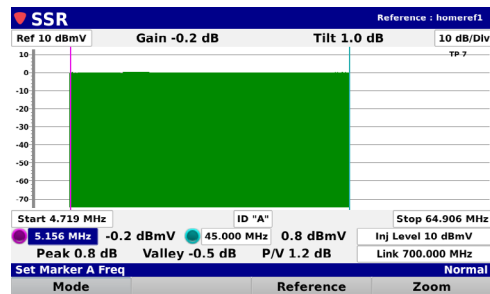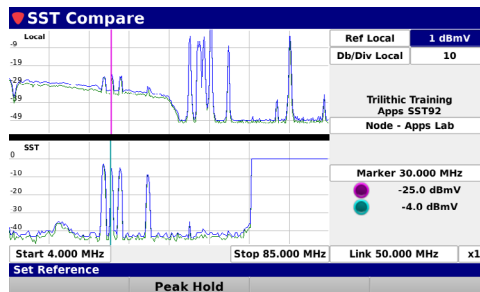
RETURN SWEEP AND RETURN SPECTRUM COMPARISONS

- The *SSR Sweep* feature on the 1G DSP maintenance meter enables the meter to function as a return path spectrum transmitter to catch bursty ingress and impulse noise interference to voice services with an extremely high spectrum acquisition speed.

- When this function is selected, the 1G DSP injects up to eight user-selectable test carriers into the upstream that the 9581 SST automatically measures in the headend.

- The 9581 SST then analyzes the test signals from the 1G DSP and the return spectrum separately to compute the gain and tilt of the return path before packaging the measurement results into a data stream for transmission back to the 1G DSP.

- When the 1G DSP receives its data, the response of the return path is displayed as a line graph with as numeric values for gain and tilt. The ingress and noise are also displayed as spectrum analyzer traces.

- The instrument compensates for differences in the amplitudes of the carriers by comparing two sweeps, a reference scan saved to the 1G DSP (typically at the node or first active component of the network) and a test point in the field.

- If the successive amplifiers are operating according to the designed unity gain principle, where each amplifier output test point will ideally have the same output level characteristics then the response will be very close to that of the stored reference. When there is damage, loose connections, or an adjustment is required, the display response will deviate from the ideal "flat" response.

- Additionally, the *SST Comparison* feature allows the 1G DSP to view a simultaneous display of both a sweep trace measured locally by the 1G DSP and the return spectrum as scanned from the headend by the 9581 SST.

- This function is especially useful for determining if the disrupting ingress detected by the 9581 SST is coming from the leg of the system to which the 1G DSP is currently connected.
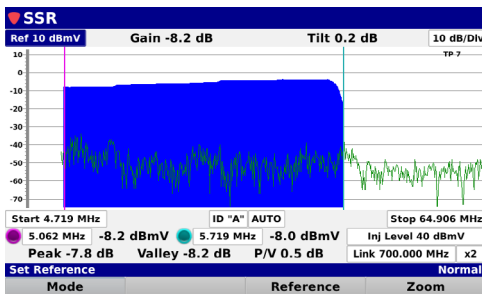
SSR SWEEP SCAN

SSR SWEEP REFERENCE

SST RETURN SPECTRUM COMPARISON

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OPERATION SPECIFICATIONS

Spectrum Data Resolution (RBW)

Network Applications	30 kHz, 100 kHz, 300 kHz, 375 kHz, 3 MHz
Field Applications	375 kHz
Transient Troubleshooter Mode	375 kHz at high scan rate
Display Range	50 dB dynamic range, 1 dB measurement resolution
Level Accuracy	±1 dB

Spectrum Processing Modes (Available simultaneously)

Peak Mode	Single spectrum comprised of the peak values of all of the spectrum scans collected during the previous interval
AVG Mode	Single spectrum averaging all of the spectrum scans collected during the previous interval
TraffiControl Mode	Processes return spectra to remove all TDMA traffic to enhance ingress detection Updates every interval

Spectrum Scan Rate

ENM Mode	Supports both network and field applications: scans all test points at rate of 40 scans per second
SFM Mode	Supports only transient monitoring and analysis functions: scans all test points at rate of 120 scans per second

Field Unit Support

Field Functions Supported	**Spectrum view: 4.125 to 85.5 MHz** Current node is automatically selected or user may select other nodes supported by the same SST. **Sweep: 4.125 to 85.5 MHz** Up to 6 field units independently supported per SST Ranging test for installation verification Typically supports 50 or more 860 DSP meters with VP-1 option, per SST
Functions Simultaneously Supported	Reverse sweep, working with the 860 DSP signal analyzer with SR-1 option Reverse installation testing, working with the 860 DSP signal analyzer with VP-1 option Reverse path ingress monitoring with SNMP alarms compatible with Viewer II or ViewPoint software
Measurement Refresh Speed	**Field equipment:** Every 0.8 seconds **Monitoring and alarming:** Every 0.8 seconds **Live-viewing functions:** Every 0.8 seconds

Field Communications

Data Carrier	**9581 SST R5:** 1 telemetry carrier for each 16 test ports **9581 SST R4:** 1 telemetry carrier for each 8 test ports
Data Carrier Frequency Set Ranges	**9581 SST R5:** 50 MHz to 1 GHz **9581 SST R4 (US):** 50 MHz to 53.75 MHz or 70 to 75.75 MHz **9581 SST R4 (Euro):** 80.50 MHz to 92 MHz or 104 to 115 MHz
Data Carrier Frequency Resolution	Center frequency is user-settable in 50 kHz steps
Data Carrier Occupied Bandwidth	700 kHz at -60 dBc

Network Support

Communications	10 Mbit/second Ethernet LAN connection 9581 SST functions as mini-server supporting up to 8 simultaneous users, each with a unique user name
Data Available per Test Point	Live spectrum scans, all detector modes Last ingress-affected spectrum Last test results versus 4 amplitude limit sets, user-settable persistence threshold Running, long-term maximum and minimum spectra (restartable by user) Peak, minimum, and average spectrum data compressions for last 30 minutes

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PHYSICAL & ENVIRONMENTAL SPECIFICATIONS

Physical Specifications

Construction	Metal Rack Mount Enclosure (2 RU)
Front Panel Display	Backlit LCD 1.5" x 2.75" (38mm x 70mm)
Front Panel Controls	Rubber keypad
Front Panel Controls	RF Output Level Adjustment Dial
Dimensions (H x W x D)	1.75 in x 19.00 x 12.00 in (4.45 x 48.62 x 30.48 cm)
Weight	9.25 lbs (4.20 kg)

Available Interface Types

RF Ports	Sixteen (16) Input F-Type Connectors, Non-Replaceable **9581 SST R5:** One (1) Forward Ouput F-Type Connector, Non-Replaceable **9581 SST R4:** Two (2) Forward Ouput F-Type Connectors, Non-Replaceable
Ethernet	RJ45 Management Port (10/100 Mbps)
Serial	RS-232 (Straight Thru)

Power Specifications

AC Power Input	90 to 264 VAC ~ 47 to 440 Hz, 0.75A Max
DC Power Input	-36.8 to -74.9 VDC, 3.0A Max

Environmental Specifications

Storage & Operating Temperature	-18˚ to +50˚ C (0˚ to 122˚ F)

AC POWERED UNITS INCLUDE:

Rack-mounted 9581 SST Return Path Analyzer

Built-In 120 to 240 VAC US power supply & US Power Cable

DC POWERED UNITS INCLUDE:

Rack-mounted 9581 SST Return Path Analyzer

Built-In -48 VDC Power Input

SOFTWARE:
SST Configure™ software
P/N 0930105000

ViewPoint Integrated Server with RPM Module for the 9581 SST
P/N 2011656008

LEGACY SOFTWARE:

Guardian System II Integrated Server with Viewer II Software
P/N 2011009100

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