



RXT-1200

Modular Test Platform

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1.0 About This User Manual

This user manual is suitable for novice, intermediate, and experienced users and is intended to help you successfully use the features and capabilities of the test platform. It is assumed that you have basic computer experience and skills, and are familiar with IP and telecommunication concepts, terminology, and safety.

Every effort was made to ensure that the information contained in this manual is accurate. However, information is subject to change without notice. We accept no responsibility for any errors or omissions. In case of discrepancy, the web version takes precedence over any printed literature.

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For more technical resources, visit the VeEX Inc. web site at www.veexinc.com. For assistance or questions related to the use of this product, call or e-mail our customer care department for customer support. Before contacting our customer care department, have the product serial number and software version ready. Please go to the Basic Operations section for details on locating the unit serial number in the menus or locate the serial number on the back of the chassis. Please provide this number when contacting VeEX customer service.

Customer Care:

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Website: www.veexinc.com

2.0 Safety Information



Safety precautions should be observed during all phases of operation of this instrument. The instrument has been designed to ensure safe operation however please observe all safety markings and instructions. Do not operate the instrument in the presence of flammable gases or fumes or any other combustible environment. VeEX Inc. assumes no liability for the customer's failure to comply with safety precautions and requirements.

Optical Connectors

The test platform displays a laser warning icon when the laser source is active to alert the user about a potentially dangerous situation. It is recommended to:

1. Deactivate the laser before connecting or disconnecting optical cables or patchcords.
2. Never look directly into an optical patchcord or an optical interface (e.g. CFP, CFP2, CFP4, QSFP+, SFP+, SFP, OTDR, LS, VFL) while the laser is enabled. Even though optical transceivers are typically fitted with Class 1 lasers, which are considered eye safe, optical radiation for an extended period can cause irreparable damage to the eyes.
3. Never use a fiber microscope to check the optical connectors when the laser source is active.

Electrical Connectors

Telephone lines may carry dangerous voltages. Always connect the electrical test ports to known test interfaces which carry low level signals.

Safe Module Handling

While replacing test modules, all work on the open panel must be performed only by suitably qualified personnel who are familiar with the dangers both to people and to the instrument itself.

- Modules are not hot swappable. The platform must be turned off and unplugged from VAC mains when removing or inserting test modules.
- For safety and EMC (Electromagnetic Compatibility), empty module slots must be properly covered with blank panel covers.
- Prevent foreign objects from entering the RXT, before, during and after module exchange or re-configuration process. They could create short circuits or damage internal fans.
- Always store test modules by themselves in individual ESD protected packaging (with no loose elements, like screws or tools).

Lithium-ion Battery Precautions

Lithium-ion (Li-ion) battery packs are compact and offer high capacity and autonomy, which make them ideal for demanding applications, like providing long lasting power to portable test equipment. For safety reasons, due to their high energy concentration, these battery packs and products containing them must be used, charged, handled, and stored properly, according to the manufacturer's recommendations.

Li-ion battery packs contain individual Li-ion cells as well as battery monitoring and protection circuitry, sealed in their plastic container that must not be disassembled or serviced.

The test set unit's battery pack is also fitted with a safety connector to prevent accidental short circuits and reverse polarity.

- Always charge the unit's battery pack inside the test platform battery bay using the AC/DC adapter supplied by VeEX.
- Do not charge or use the battery pack if any mechanical damage is suspected (shock, impact, puncture, crack, etc).
- Do not continue charging the battery if it does not recharge within the expected charging time

- Storage: For long term storage, the battery pack should be stored at 20°C/68°F (room temperature), charged to about 30 to 50% of its capacity. Spare battery packs should be charged and used at least once a year to prevent over-discharge (rotate them regularly).
- It is recommended to charge and use battery packs at least every three months. Battery packs must not go without recharging (reconditioning) for more than six months.
- After extended storage, battery packs may reach a deep discharge state or enter into sleep mode. For safety reasons, Li-ion batteries in deep discharge state may limit the initial charging current (pre-recharge) before starting their regular fast charging cycle. The pre-charging state may take several hours.
- Air transportation of Li-ion batteries is regulated by United Nations' International Air Transportation Association (IATA) Dangerous Goods Regulations and by country-specific regulations. Please check local regulations and with common carriers before shipping Li-ion battery packs or products containing relatively large Li-ion battery packs.

Electrical Connectors

Telephone lines may carry dangerous voltages. Always connect the electrical test ports to known test interfaces which carry low level signals.

ESD: Electrostatic Discharge Sensitive Equipment

Test modules could be affected by electrostatic discharge. To minimize the risk of damage when replacing or handling test modules, make sure to follow proper ESD procedures and dissipate any electrostatic charge from your body and tools and use proper grounding gear.



- Perform all work at a workplace that is protected against electrostatic build-up and discharging.
- Never touch any exposed contacts, printed circuit boards or electronic components.
- Always store test modules in ESD protected packaging.
- Wear ESD protection and grounding gear when:
 - Inserting, extracting, or handling test modules.
 - Inserting or removing SFPs, XFPs, QSFPs, or CFPs from the platform.
 - Connecting or disconnecting cables from modules or platform.

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3.0 Introduction to RXT-1200 Platform

RXT represents the next-generation in integrated toolkits for field technicians, combining advanced multi-service testing capabilities, built around a single high-performance chassis, in a compact format.

RXT-1200 is a flexible Modular Platform for nodes and field applications. RXT-1200 offers a modern test platform architecture, with a broad range of available test modules covering Access (copper and fiber), Metro, Transport and Core technologies.

It has a application-oriented GUI design, which is similar across different test modules and other VeEX products.

It uses field-replaceable self-contained modules, to offer a broad variety of modern and legacy test capabilities.

Key features:

- Modern test platform, with a broad range of available test modules covering Access (copper and fiber), Metro, Transport and Core technologies, including DWDM
- Application-oriented GUI
- GUI familiarity across different test modules and other VeEX products reduces the learning curve
- View test results and create detailed reports by region, area, system, and technician
- Enables all jobs to be completed correctly the first time
- Multi-technology: Datacom, Fiber Optics, WDM, DS_n/PDH, SONET/SDH, OTN, Ethernet, Fibre Channel, CPRI/OBSAI; from 64k to 400Gbps
- Expand test functions with a growing list of test modules
- Future-proof cost-effective platform
- Test set connectivity via Ethernet Management interface, WiFi, Bluetooth®, or Data Card for back office applications and workflow optimization
- User defined test profiles and thresholds
- Fast and efficient test result transfer to USB memory stick
- Ultra-high capacity field-exchangeable Li-ion battery pack extends testing time
- Management Port (Ethernet LAN and remote access)
- Two USB 2.0 ports
 - Memory sticks, Wi-Fi, Bluetooth, Fiber Scope, Optical Power Meter, Wi-Fi Spectrum Analyzer, 3G/4G Data Card, External OTDR, etc.
- Built-in GPS Receiver and Atomic Clock hardware (optional)
- VeExpress Client
 - Keeps Platform and Native Modules SW versions and licenses up-to-date
- R-Server Client option (Advanced Results Management)
 - Upload Test Results and Test Profiles to a centralized server
- Built-in speaker, microphone and headphone jack
- QuickSwap™ Module Exchange (no tools required)
- High-capacity Li-ion Battery Pack

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3.1 RXT-1200 Overview



3.2 Front Panel

3.2.1 LEDs

Power LED: A single LED indicates the power state of the unit.

- The LED is off when the unit is powered off.
- The LED is green when the unit is powered on.
- The LED is orange when the unit is connected to the AC Mains and powered off (charging).

Soft LEDs: Each tests module offers detailed soft LEDs and indicators in its test application.

3.2.2 Key Pad



- **Power:** Press for 2 seconds to turn the test set ON or OFF (prevents accidental ON/OFF).
- **Cursor Keys:** Application dependent; May offer alternative GUI Navigation to touch screen (e.g. while wearing gloves in cold weather)
- **Enter:** Application dependent
- **Escape:** Application dependent
- **Alt Alternate function** - Links the buttons to the GUI soft Function Keys (MTT Emulation Mode only)
- **Clear History:** Resets blinking LED reminders of past Errors or Alarms. Test results are not affected. The F2 key on standard keyboards can be used when controlled via VNC.
- **Volume and Brightness Control:** Brings up the Sound and screen Brightness controls; Use cursor buttons to adjust the levels.
- **Test Application Selector:** Quickly switches back-and-forth between the active Test Application and RXT platform Utilities functions; Active test is not affected
- **Lock/Unlock Touch Screen:** Can also be programmed to capture Screen Shots (>Utilities >Settings >Global >Save Settings). Use the F3 in standard keyboards.
- **Home:** Quickly bring users back to the Main Menu
- **Save Test Results:** Saves the current Test Results with customized or auto naming (yyyymmdd-hhmmss format). The F1 key on standard keyboards can be used when controlled via VNC.

3.2.3 Touch Screen


The LCD supports touch screen operation. To operate the touch screen to navigate the menus and tabs, use the stylus located on the right side of the unit. Please observe the following precautions:

- Never use excessive pressure on the touch screen as this may damage its functionality.
- Never use sharp objects such as a pen, screwdriver, etc., as this may damage the surface.
- Clean the surface of the touch screen using a soft cloth and mild detergent only. Do not use alcohol.

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3.3 Battery

The test set platform is equipped with a smart Li-ion rechargeable battery pack, which is located on the rear of the unit. The battery will be partially charged upon delivery, so it is recommended to fully charge the battery before use. Please charge the battery at room temperature to preserve its life and to obtain maximum charge. The battery is charged during operation, provided the unit is connected to the AC Mains using the supplied AC adapter. Removing the battery while the unit is powered on is not recommended - this may result in damage. Remove the rubber cover on the right side to connect the AC Main adapter to the unit.

 *Make sure that the key is aligned while plugging in the AC adapter to the unit. If it is not aligned, the plug will not connect to the unit and using force will damage the connector.*

Battery Charging time

The total charging time depends on the remaining battery capacity percentage and the actual current load in the RXT. An idle RXT would recharge faster than an active one.

Attention!



- For safety reasons, the battery charging time is always limited to a maximum of three hours
- If the RXT is being used while charging and a full charge (100% capacity) cannot be achieved within three hours, the charging will automatically stop.
- To resume charging, unplug the AC/DC adapter and let the RXT work on battery power for a minute or two and plug the AC/DC back in. This will reset the charging circuitry.

Warning!



- DO NOT disconnect the AC/DC power supply when the RXT is running under heavy load conditions (greater than the battery's current ratings), such as certain multi-module multi-test applications.
- If the current required is too high, but still within the battery's limits, a warning message would be displayed when the AC/DC adapter is unplugged, while all the tests are properly closed and RXT shuts down.
- Under overload conditions, the battery may not be able to supply enough current to keep the test scenario running and its safety mechanisms may shut the battery down without warning and test results may be lost.

Battery Safety precautions

For more information on safety precautions for batteries, see [Lithium-ion Battery Precautions](#).

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Battery Power Capacity

Total Battery Power: 83.7 Watt Hours

- RXT Platform test platform: 20 Watts

AC/DC Power Supply


When using the AC/DC power supply adapter, the total power capacity provided is 88 Watts.

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3.3.1 Battery Overdraw Protection

When battery capacity declines to 10%, an audible alarm and pop-up warning displays a notification to plug in the A/C adapter or shut down the unit. If this warning is ignored and the battery capacity is allowed to decline to under 5%, the unit will initiate a shutdown to protect the battery from damage and for safety.

If an event, such as the AC/DC adapter being unplugged, a power interruption occurs or some other event triggers the power load to exceed the 95W battery limit, the unit will initiate an emergency shutdown to protect the battery from damage and for safety.

 *During an emergency shutdown all modules power is switched off. No test files (results or configurations) are saved.*

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3.4 Hardware Configurations

The following are examples of some test modules available for the RXT platform. Please refer to their individual datasheets and manuals for further details. For an up-to-date list of modules available, please visit www.veexinc.com/en-us/Products/RXTSeries.

RXT-3000

- All-in-One test module reduces CAPEX
- Optimized for engineers or technicians installing and maintaining OTN, SDH/SONET, and Carrier Ethernet networks transporting legacy and next generation Mobile Backhaul networks
- Flexible software platform allows for multiple test applications running simultaneously
- User defined test profiles and thresholds



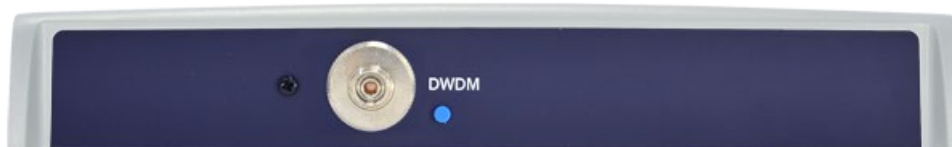
RXT-4100/4100+

- Multimode and Singlemode Wavelength options - 850, 1300, 1310, 1490, 1550, 1625 & 1650 nm
- Filtered 1625 or 1650 nm OTDR port for in-service measurements
- OTDR ports feature live fiber detection
- High dynamic range for long haul fibers and testing through high-count PON splitters
- Sampling points up to 500,000 (RXT-4100+)
- FTTx/PON optimized test parameters for best in class dead zones
- Event dead zone < 1m, Attenuation dead zone < 4m
- Telcordia GR-196 and SR-4731.sor file formats
- Optional V-Scout/V-Profile mode – Intelligent Link Mapping using intuitive icons derived from multiple test acquisitions
- Optional Built-in Visual Fault Locator
- Optional Optical Power Meter with WavelD detection
- Optional Light Sources with WavelD and Loop mode
- Optional Fiber Inspection Scope (USB)
- Upload OTDR traces, OLTS results and Fiberscope images directly to Fiberizer Cloud
- Built-in G.657 launch fiber
- Universal 2.5 mm optical interfaces with inter-changeable optical adaptors (SC/FC/ST/LC)



RXT-4111

- Test DWDM Mux/Demux at ITU-T G.694.1 wavelengths
- C-band tuning (standard 89 channels at 50 GHz spacing)
- Optional extended band tuning to Channel 62 with 50 GHz spacing
- Integrated wavelength locker stable to within ± 2.5 GHz
- High dynamic range for long haul fibers and testing through DWDM multiplexers/OADMs/de-multiplexers
- Sampling points up to 128,000
- Advanced TEC laser stabilization for hot and cold weather operating conditions
- Optimized test parameters for best in class dead zones
- Event dead zone < 1m, Attenuation dead zone < 4m
- Telcordia GR-196 and SR-4731.sor file formats
- Optional V-Scout mode – Intelligent Link Mapping using intuitive icons derived from multiple test acquisitions
- Optional DWDM Light Source via OTDR port
- Push/Pull OTDR traces and Fiberscope images directly to Fiberizer Cloud via wired or wireless internet connection
- Built-in launch fiber to characterize OTDR connections and short fiber spans
- Universal 2.5 mm optical interfaces with inter-changeable optical adaptors (SC/FC/ST/LC)



RXT-4112

- Characterize CWDM networks at ITU-T G.694.2 wavelengths
- End-to-end continuity testing using stabilized CWDM light source (via OTDR port)
- OTDR port features live fiber detection
- High dynamic range (up to 42 dB) for long haul fibers and testing through CWDM multiplexers/OADMs/de-multiplexers
- Sampling points up to 256,000
- Optimized test parameters for best in class dead zones
- Event dead zone < 1m, Attenuation dead zone < 4m
- Telcordia GR-196 and SR-4731.sor file formats
- Optional V-Scout mode – Intelligent Link Mapping using intuitive icons derived from multiple test acquisitions
- Optional Built-in Visual Fault Locator
- Optional Optical Power Meter
- Optional CWDM Light Source via OTDR port
- Upload OTDR traces and Fiberscope images directly to Fiberizer Cloud via wired or wireless internet connection
- Universal 2.5 mm optical interfaces with inter-changeable optical adaptors (SC/FC/ST/LC)



RXT-4113

- CWDM wavelengths per ITU-T G.694.2 (18 Channels)
- DWDM wavelengths per ITU-T G.694.1 (C-band, 1527.99 to 1563.86 nm, Channel #s 17-62) in 50, 100 or 200 GHz steps
- Sampling resolution up to 5000,000 points
- Event dead zone <1m, Attenuation dead zone < 4m
- Built in DWDM wavelength locker with ± 2.5 GHz stability
- High dynamic range for long haul fibers and testing through xWDM Mux/demux
- TEC laser stabilization for hot and cold weather conditions
- Telcordia GR-196 and SR-4731.sor file formats
- Optional V-Scout mode – Intelligent Link Mapping using intuitive icons derived from multiple test acquisitions
- Optional CWDM/DWDM Light Source via OTDR port
- Optional broadband Optical Power Meter
- Built-in launch fiber to characterize OTDR connections and short fiber spans
- Universal 2.5 mm optical interface with inter-changeable optical adaptors (SC/FC/LC)



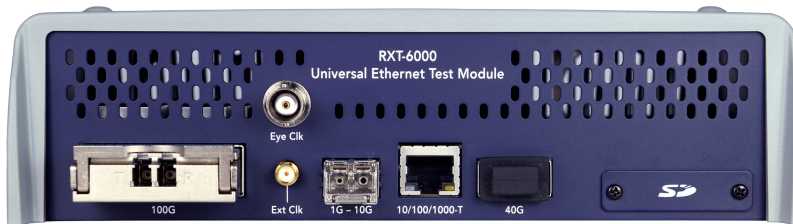
RXT4500/4510

- Wavelength range from 1260 to 1650 nm
- DWDM channel spacing down to 25 GHz, module dependent
- Resolution 0.1 nm C-band
- In-band OSNR measurement
- Fast continuous scanning at ≤ 5 sec
- Simultaneous measurements of up to 200 channels, module dependent
- Channel power measurement
- Channel threshold detection
- Span power measurement
- Continuous sweep with min/max hold
- Channel frequency and wavelength delta vs. ITU grid
- High wavelength accuracy: ± 50 pm
- High dynamic range: ≥ 65 dB
- OSNR measurement: up to 40 dB
- Low Polarization Dependent Loss (PDL): < 0.3 dB
- Universal optical interface with industry standard adaptors
- Supports 10/40/100 Gbps transmission modulation types
- DFB laser qualification
- DWDM channel monitoring per ITU G.694.1 grid for 25/33/37.5/100/200 GHz, module dependent
- CWDM channel monitoring per ITU G.694.2 grid
- OSNR measurement compliant with IEC 61280-2-9



RXT6000

- CFP2 interface for 100GE and OTU4 applications
- QSFP+ for 40GE, OTU3 and STL256.4
- SFP+ for 100Base-FX, 1000Base-X, 10GBase-X, OTU2/2e/1e, STM-64/OC192, and Fibre Channel 1/2/4/8/10G applications
- RJ45 for 10/100/1000Base-T applications
- External clock interface
- 150ppm clock offset generation
- Eye diagram reference clock output
- Soft LED indicators



RXT-6000e

- CFP2 (LR4 & SR10) and QSFP28 interfaces for 100GE, OTU4 and 50GE applications
- Supports IEEE 802.3bj Clause 91 RS-FEC as required for SR4 and SR10
- CFP4 support via CFP2-to-CFP4 adapter
- QSFP+ for 40GE, OTU3
- SFP28 interface for 25GE, 32/16G FC, 24G CPRI 10 and 25G eCPRI Layer 4 with RS-FEC
- SFP+ for 100Base-FX, 1000Base-X, 10GBase-X, OTU2/2e/1e/1, STM-64/16/4/1/0, OC192/48/12/3/1, and Fibre Channel 16/10/8/4/2/1G and CPRI up to 12G
- RJ45 for 10/100/1000Base-T applications
- Optional PDH/DSn with standard connectors



RXT-6200

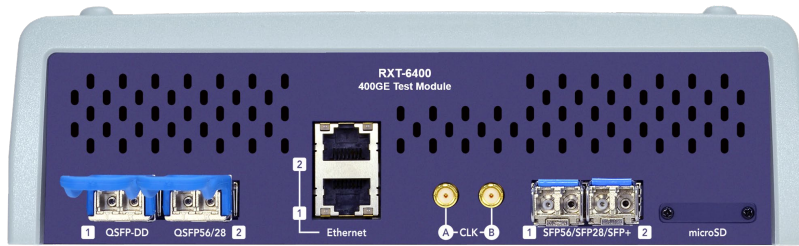
- Independent Dual-Port testing, up to 2x 112G
- CFP4 (LR4 & SR4) and QSFP28 interfaces for 100GE, OTU4 and 50GE applications
- Supports IEEE 802.3bj Clause 91 RS-FEC as required for SR4
- QSFP+ for 40GE, OTU3
- SFP28 interface for 25GE, 32/16G FC, 24G CPRI 10 and 25G eCPRI Layer 4 with RS-FEC
- SFP+ for 100Base-FX, 1000Base-X, 10GBase-X, OTU2/2e/1e/1, STM-64/16/4/1/0, OC192/48/12/3/1, and Fibre Channel 16/10/8/4/2/1G and CPRI up to 12G
- RJ45 for 10/100/1000Base-T applications



RXT-6400

- Native QSFP-DD PAM4 hardware for best-in-class signal integrity (no adapters required)
- 400G Ethernet testing per IEEE 802.3bs specification with KP4 Forward Error Correction (FEC)
- Provides all the necessary features to test QSFP-DD transceivers, networking equipment and 400GE links
- Advanced and flexible state-of-the-art FPGA-based design, with native PAM4 transceivers, provides future-proof hardware support for 400GE evolution, emerging standards, test functions, requirements and applications

- Wide range of supported 400GE interfaces, including 400GBASE-SR8, FR8, LR8, DR4, and FR4
- MDIO/I2C registers Read and Write
- Per-lane PAM4 pre-emphasis settings
- KP4 FEC codeword symbol errors distribution and Skew
- Ethernet Throughput performance test
- Hardware ready to support QSFP56, QSFP28, QSFP+, SFP56, SFP28, SFP+, SFP, RJ45 interfaces for lower rate applications
- Battery backup for efficient operation and mobility within large equipment rooms and datacenters (no need for constant rebooting)

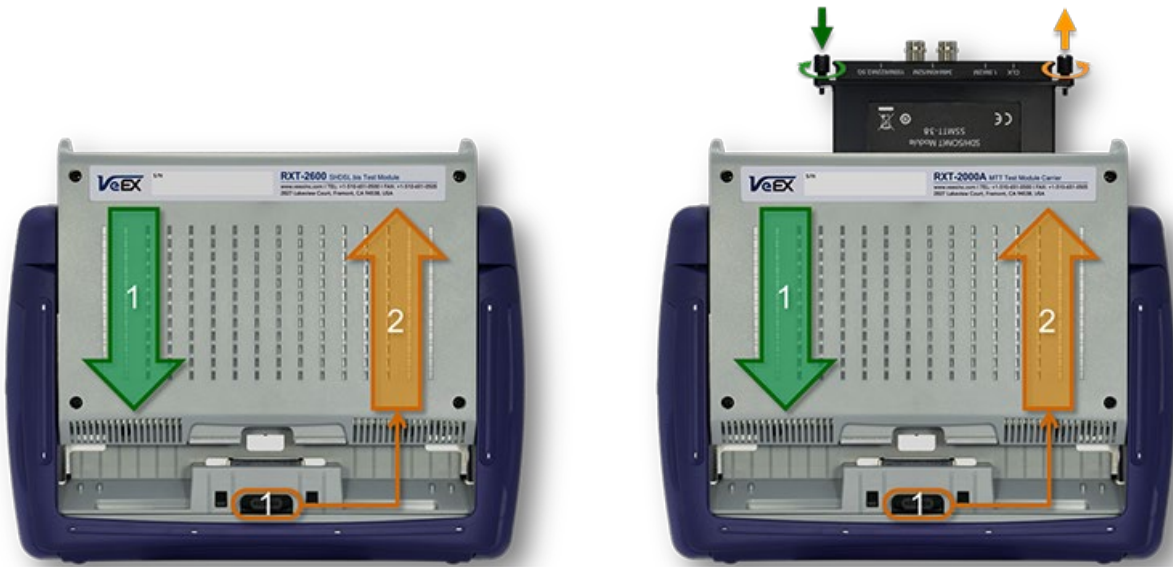


- **RXT-1200 Test Platform (a.k.a. Chassis)**
 - Provides all user interfaces, as well as common tools, connectivity and feature set
- **RXT-2000A MTT Carrier Module**
 - Used to adapt older and new MTT-series modules to the new RXT-1200 test platform
 - The combination of an RXT-2000A with an MTT-XX inside is referred as RXT-2XX0
- **RXT-XXXX Test Modules (Native)**
 - New self-contained test modules specifically designed for the RXT-1200 platform (no adapter required). Offer new V300 style GUI
 - It includes Sunrise Telecom's original RXT-2600 SHDSL.bis test module, which is the only legacy module supported by RXT-1200
 - Other RxT-1000 modules are not compatible with the new RXT-1200.

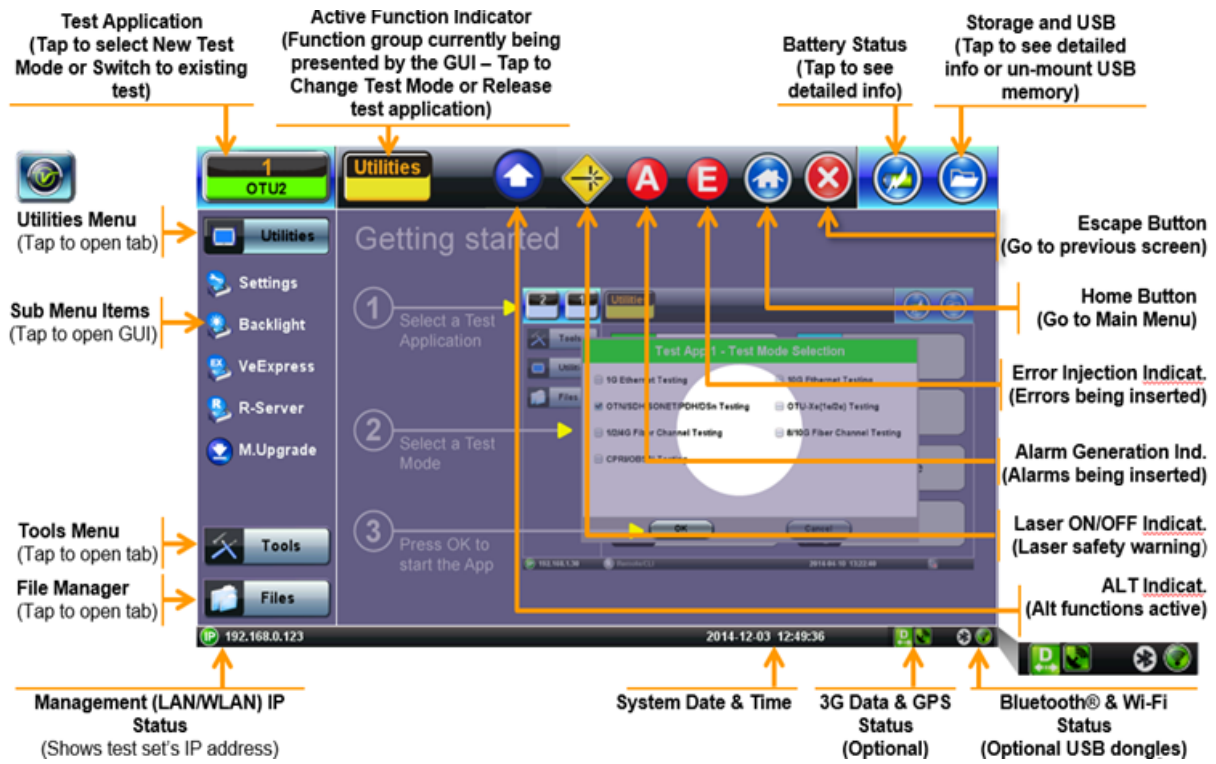
3.4.1 Inserting/ Removing Test Modules

Turn the test set OFF before Inserting or Removing RXT and/or MTT modules from a chassis

- **Insert:** Align the module with the rails and slide it in until it locks (clicks)
- **Remove:** Press+hold the Release button and use the other hand to extract the module
- **MTT Modules (in RXT Carrier)**
 - Insert: Align the module with rails, push it in and tighten the thumb-screws
 - Remove: Loosen (do not remove) the thumb-screws and pull the module out



3.5 Home Screen



3.6 Quick Access Menu

This multi-tasking section provides convenient and immediate access to system features, connectivity, accessories, results, etc., always at your fingertip. Those features are always available, independently of whether tests are running or not.

Utilities Section

Utilities & Settings Menu
Offers different settings and tools to configure the TX300S platform features and keep it up to date

Tools Menu
Platform network (management) configuration and troubleshooting tools, as well as USB/Bluetooth test dongles and web browser

File Manager
Manage saved test result, test profiles, protocol capture and screen shot. Transfer to/from USB, create PDF, transfer via Bluetooth*

Test Signal Status (Soft LEDs)
Keeps track of the real-time status of test port's signal health.
Green = Good
Red = Anomaly (present)
Flashing Red = History (not present)
History button clears the flashing
The yellow box shows port rates

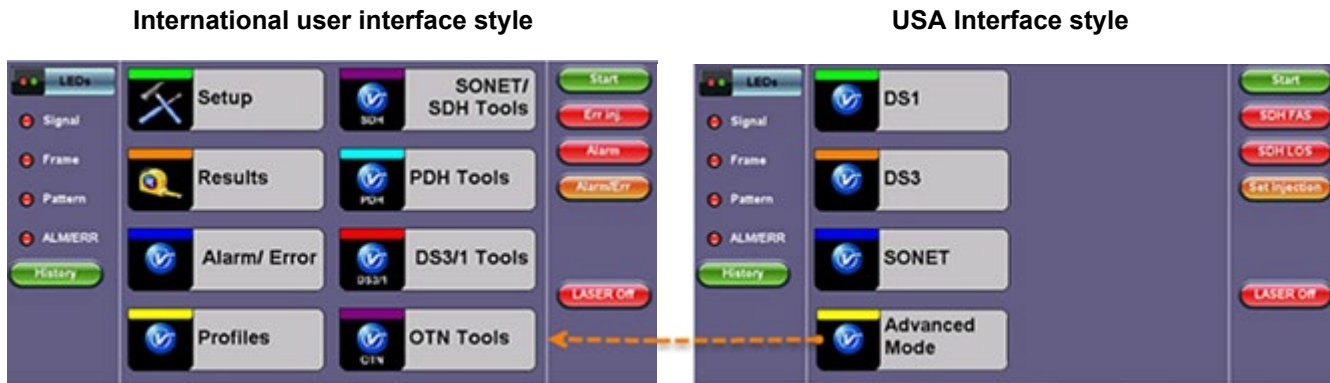
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4.0 Getting Started

4.1 Initial Settings

4.1.1 Change language and user interface style

Before using the platform, set the language and user interface style as needed. By default, the user interface style is set to USA if the unit is shipped to North America and to International if the unit is shipped to outside North America.



To change the GUI language and user interface style

1. Tap **Utilities**, and then tap **Settings**.
2. Tap the **Global** option.
3. Select the language from the **Language** drop-down list box.
4. Select the user interface style from the **User Interface** drop-down list box.
 - **International**: Provides layer-based SDH/PDH configuration menus with access to detailed settings
 - **USA**: Provides simplified application-based SONET/DSn menu with more automation. The **Advanced Mode** option displays the configuration menu for additional settings.

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4.1.2 Change the time zone and current time

To manually change the Date & Time

1. Tap **Utilities**, and then tap **Settings**.
2. Tap the **Date & Time** option.
3. Select the date and current time from the drop-down list boxes.
4. Tap **Apply**.

To synchronize the time to the GPS

The GPS receiver hardware option must be installed. For more information on the atomic clock and relative phase monitoring, see [5.1.11 High Precision Clock Source](#)

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4.1.3 Change other settings

For more information on changing other global settings, such as units of measurement, profile and results save preferences, password, etc., see [Utilities](#).

[Go back to TOC](#)

4.2 Launching Test Applications

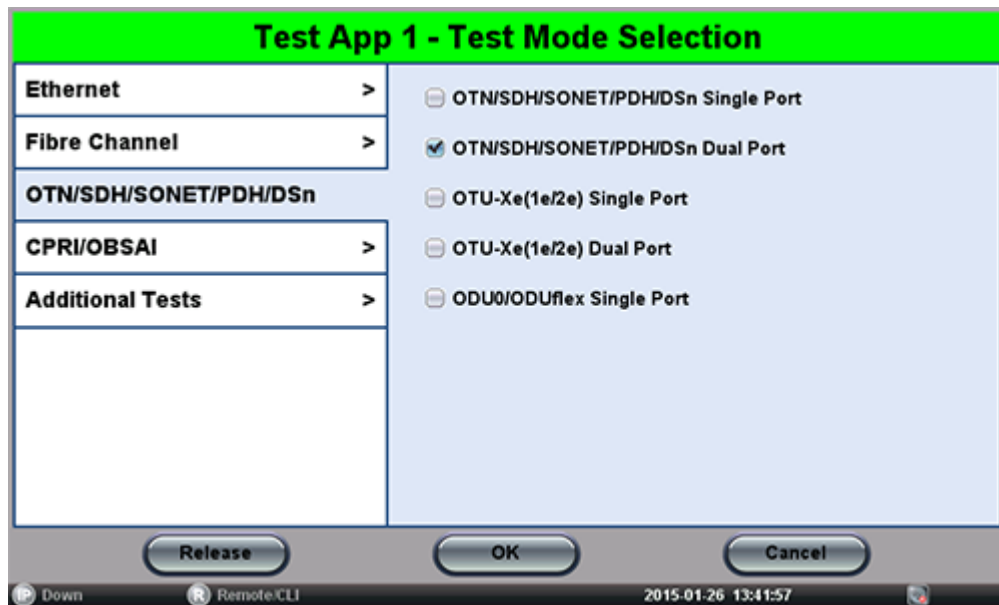
A Quick Guide is always presented in the Home screen after boot up.

 This procedure can be started at any time, from any screen or menu.



1. Select an empty Test App button.

- Up to two independent tests can run simultaneously (test set or test module dependent)
- Some test applications may require two port groups (e.g. router wrap-around test) and may not be supported by all test modules or test sets configurations



2. Select the desired Test Mode Based on the application to be tested.

3. Tap on the **OK** button to confirm.

The test port group is assigned to the selected test application and the required software/firmware is loaded.

4.3 Understanding Test Application GUI



A.  **Utilities Button:** Tap this button access RXT Utility functions Or press the orange App rubber button to toggle.

B. Active Test Application GUI



- Shows the Test Port Group being used and the Test App ID (Rate / Technology)

- Tap this button to release the Test App or change its Test Mode.

C. Test Application Menu

- Lists all test Functions, Applications and Tools available for the selected test mode
- Setup = Port and Test Signal configuration

D. LEDs - Test Signal Status

E. History - Clears past events reminder (blinking)

F. Current test interface line rates

G. Action buttons section

- This vertical section displays direct access functions applicable to each specific Test Mode, such as Start/Stop test, Laser control, Error and Alarm injection, Start protocol capture, etc.
- Most of these buttons offer immediate action. A few open a configuration menu.

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5.0 Utilities

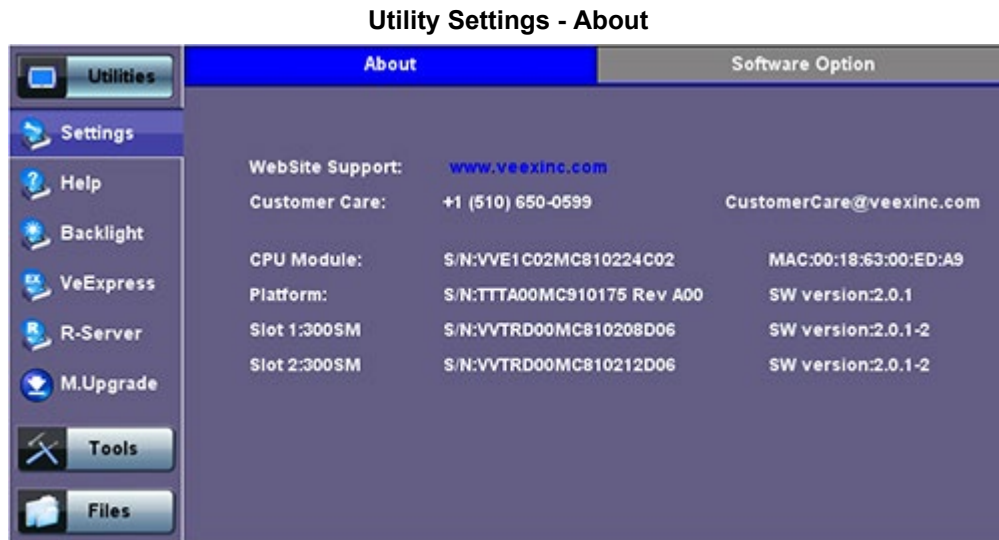
5.1 Platform Settings

This section provides settings for the global parameters of the test set or platform (system settings).



5.1.1 About

This section provides information about the software version, serial number, and MAC address of the management port of the unit, as well as a list of software licenses (optional test features) currently loaded in the test set.



Utility Settings - About - Software Option

Option	Category	Status
TX300S E4 Testing	Included	
TX300S E1 (2Mbps) Pulse Mask Analysis	Permanent	
TX300S E3 (34Mbps) Pulse Mask Analysis	Permanent	
TX300S STM-0/1 Testing	Included	
TX300S STM-4 Testing	Included	
TX300S STM-16 Testing	Included	
TX300S STM-64 Testing	Permanent	
DS1E1 ISDN PRI Testing (ANSI,ETS0)	Permanent	
DS1E1 VF Measurements	Permanent	
DS1E1 Jitter Measurement, Generation, Max, Transfer	Permanent	

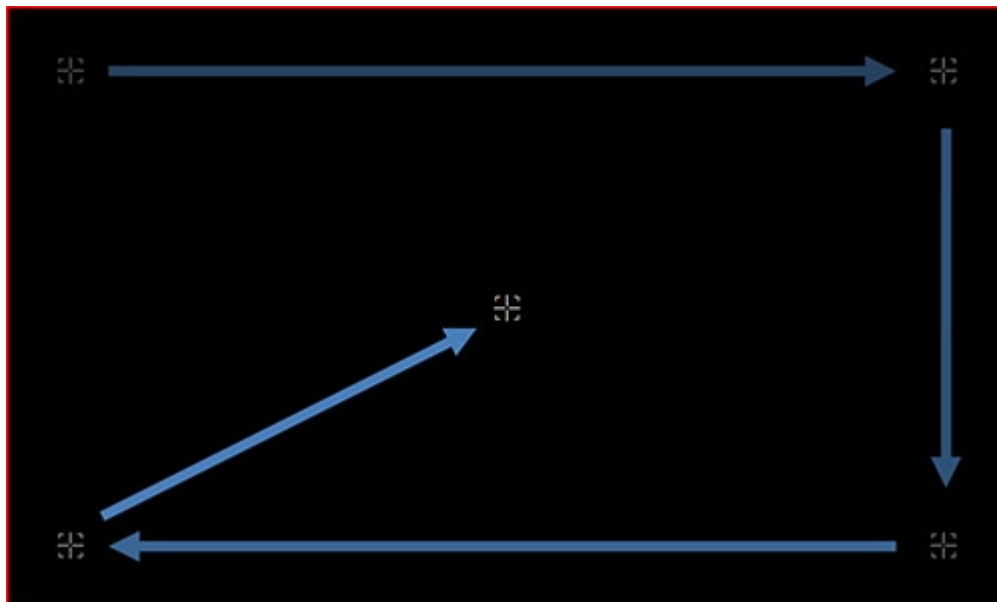
Utility Settings - About - Software Option

Option	Category	Status
TX300S OC-12 Testing	Included	
TX300S OC-48 Testing	Included	
TX300S OC-192 Testing	Permanent	
TX300S 1G/2G Fibre Channel	Included	
TX300S 1G/2G/4G Fibre Channel	Included	
TX300S 1G/2G/4G/10G Fibre Channel	Permanent	
TX300S 8G Fiber Channel	Leased	Expired
TX300S OTU1	Permanent	
TX300S OTU2	Permanent	
TX300S OTU1e/2e	Permanent	

5.1.2 Screen Calibration

Go to this section to calibrate the touch screen.

Utility Settings - Screen Calibration



Follow the instructions and tap on the targets displayed at all four corners. A message displays when calibration is complete. If the

touch screen is miscalibrated by mistake, please use the cursor and enter keys to start the calibration feature and repeat the procedure.

5.1.3 Bluetooth

VeEX products support a micro USB Bluetooth adaptor offering wireless connectivity up to 10 meters (30 feet). Ultra compact and portable, the adaptor provides an untethered connection between the tester and other Bluetooth compatible devices such as a Notebook PC or cell phone, so the user can transfer test result files quickly and easily without having to hassle with memory sticks or Ethernet connections.


An overview of the application is shown below.



Bluetooth Adaptors - Compatibility

Not all Bluetooth adaptors on the market are supported by the V300 product series. Please use adaptors that have been tested and supplied by VeEX only to ensure compatibility and correct operation.

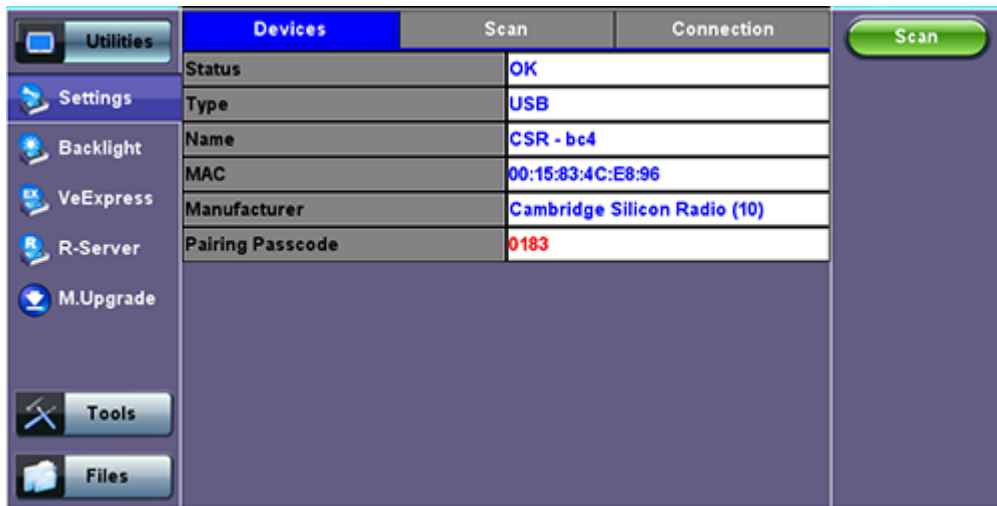
Bluetooth Setup

Insert the Bluetooth adaptor into the USB port on the side of unit. If you are using more than one USB device, use an external USB hub to connect additional devices. Once detected, a **Bluetooth** icon  is displayed on screen.

Devices

The test platform will automatically detect the Bluetooth adaptor once plugged into the USB port. Details of the Bluetooth adaptor will be displayed including the MAC address of the device and the last 4 digits of the serial number of the V300 test set. The last 4 digits of the V300 series test set will be the pairing code between the unit and the external device. Press the **Connection** tab to view the passcode.

Bluetooth - Devices Tab



Bluetooth - Devices Tab



Bluetooth - Connection - Passcode



Setup

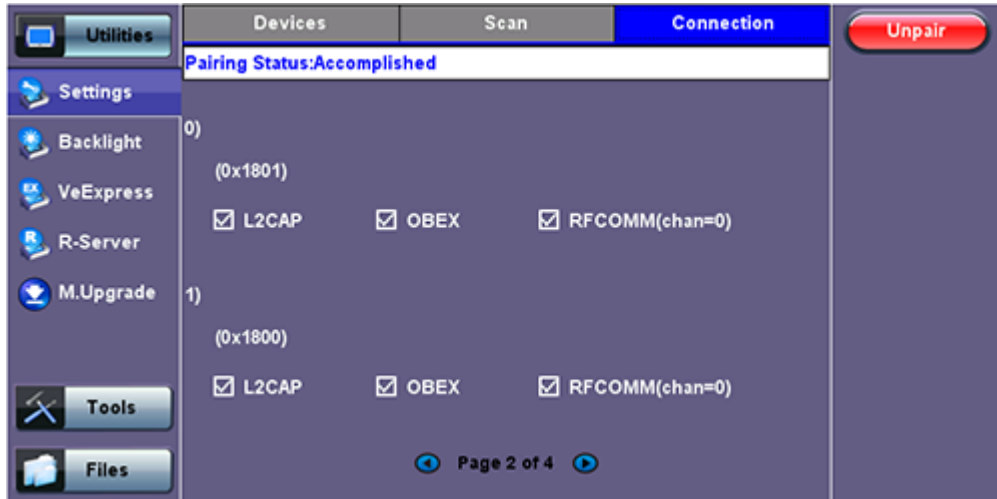
- Press **Scan** to check for available bluetooth devices. Once scanning is complete, a list of discovered Bluetooth devices will be listed. Please ensure the peripheral device is set to **Discoverable** during Scanning and Pairing operation.
- Press **Pair BT** to begin the pairing process. During the pairing operation, you will be prompted to enter a code on the peripheral device (PC or Mobile Phone) in order to pair successfully. Enter the last 4 digits of the V300 serial number as shown in the **Connection** tab.
- Once paired, click the **Services** button at the bottom of the screen to check the service attributes. To upload test results via

Bluetooth and Mobile phone to a UMTS or 3G network, full data upload service will be required.

Bluetooth - Connection Established



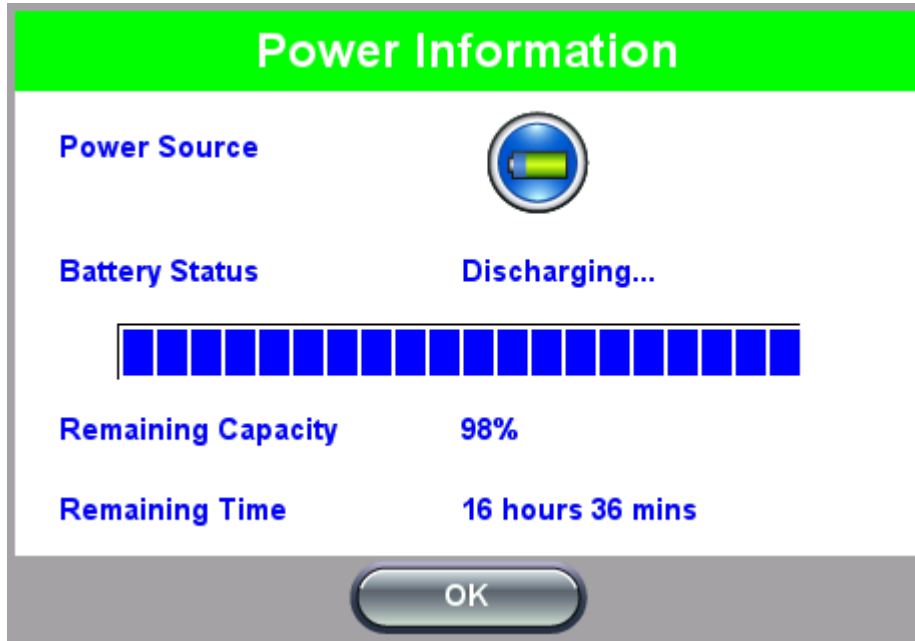
Bluetooth - Connection Page 2



5.1.4 Power

This section provides information about current power source and information about the battery gauge. Tap on the **battery** icon, on the top bar, to bring battery charge and estimated autonomy information.

Utility Settings - Battery Power



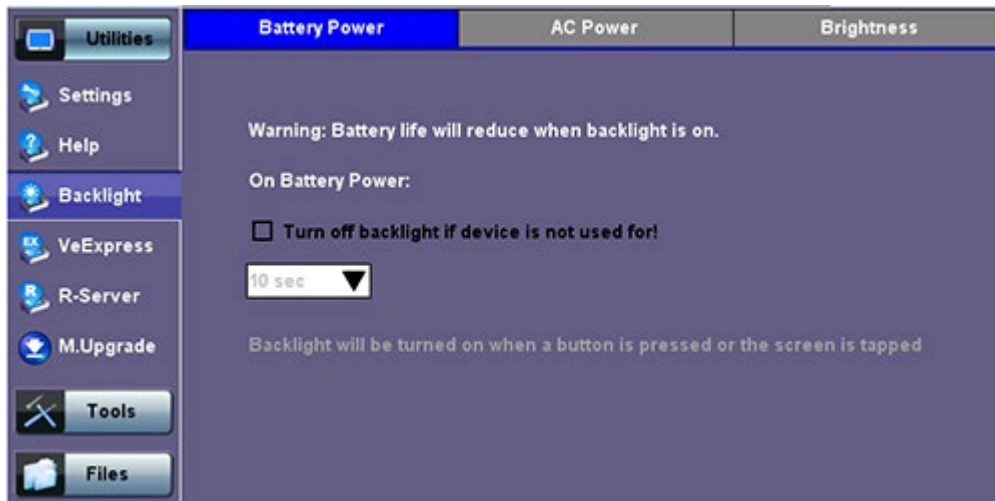
5.1.5 Backlight

This section provides backlight control of the unit.

Power: There are two settings -- one for Battery power and another for AC power.

- The user has the option to select a timer to turn off the backlight if the unit is not in use. This function helps improve the battery autonomy and preserve LCD life.
- To enable the timer, check "Turn off backlight if device is not used for" and with the drop-down menu, adjust the duration of the idle time before the backlight is turned off.
- Once the timer is active and the backlight turned off, any action on the test set (touch screen, keypad) will turn on the backlight again.

Backlight - Battery Power

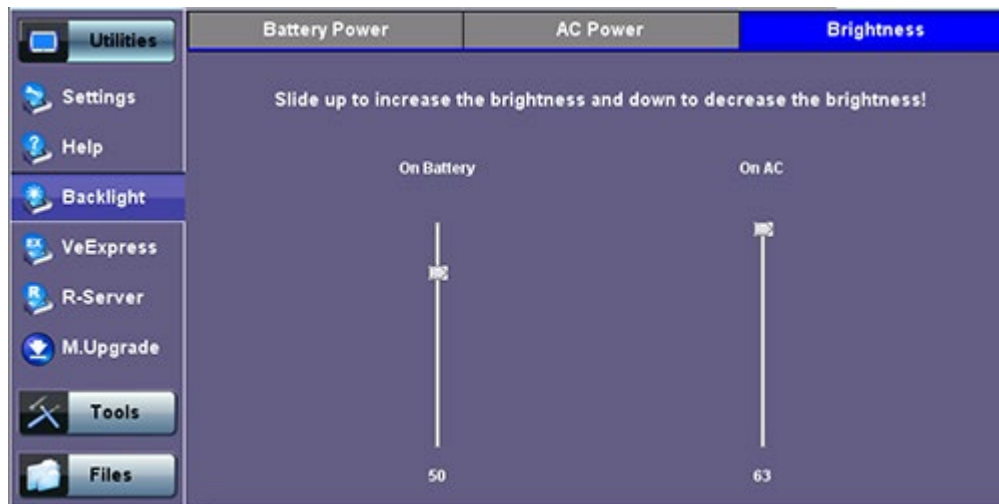


Backlight - AC Power



Brightness: The user can select the brightness level for Battery and AC operation modes.

Backlight - Brightness



5.1.6 Global Settings

General Setting

- **Language:** An alternative language for the user interface
- **Units:** Measurement system (English - feet or Metric - meter)
- **Audible Alarm:** When enabled, the test set's buzzer will sound (beep) when alarms and errors are being detected
- **Show Password:** Hides/unhides username and password information associated with FTP and related IP functions
- **User Interface:** The USA user interface version presents SONET/DSn application-oriented menus, while the International setting is more open to all settings.
- **Wi-Fi Auto Connect:** If enabled, the Wi-Fi dongle will remember the last access point and password and will try to autoconnect if activated.

Utility Settings - General Setting

	General Setting	Storage Setting	Save Setting
Utilities	Language	English	▼
Settings	Unit	Metric	▼
Backlight	Audible Alarm	On	▼
VeExpress	Show Password	Yes	▼
R-Server	User Interface	International	▼
M.Upgrade	Wifi Auto Connect	On	▼
Tools			
Files			

Storage Setting

- **File Name Prefix:** Tap on the box to enter the file name prefix using the pop up alphanumeric keypad
- **Profile Deleting:** Auto Delete or Prompt User
- **Profile Saving:** Auto Overwrite or Prompt User
- **Result Saving:** Manual or Prompt User
- **Advanced Saving:** On/Off. Allow users to add extra information to the results file to be uploaded to a centralized R300 Server. Requires Advanced Management Option.

Utility Settings - Storage Setting

	General Setting	Storage Setting	Save Setting
Utilities	File Name Prefix	JohnD-	
Settings	Profile Deleting	Prompt User	▼
Backlight	Profile Saving	Prompt User	▼
VeExpress	Result Saving	Prompt User	▼
R-Server	Advance Saving	On	▼
M.Upgrade			
Tools			
Files			

Save Screen Settings

Save Screen tab: Helps control the behavior of the Lock key on the keypad. The Lock key can be set to do the following:

- **Lock/unlock** the unit's screen to prevent accidental interruption during a long term test.
- **Save Screen Shots:** The following configurations can also be done:
 - The compression level of the screen picture
 - Maximum number of screenshots that can be saved.

Each time user presses the lock key from the key pad a screen shot will be saved in memory. The screen shots can be recovered under **Files>Saved**.

Utility Settings - Lock/Save Screen

	General Setting	Storage Setting	Save Setting
Utilities	Lock/Save Screen		Save Screen ▼
Settings	Screenshot Compression Level		No Compression ▼
Backlight	Maximum Number of Screenshots	200	
VeExpress			
R-Server			
M.Upgrade			
Tools			
Files			

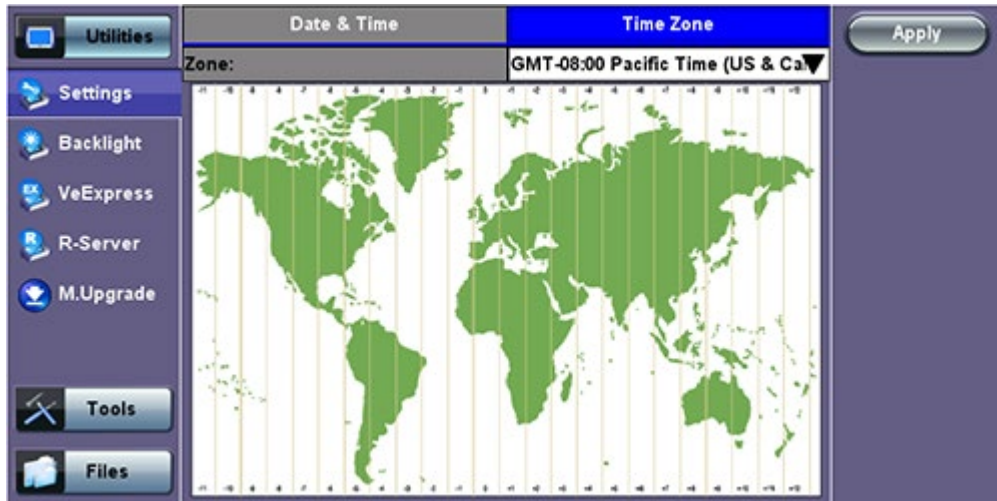
5.1.7 Date and Time

This screen allows the user to set the date and time according to time zone or user requirement. Daylight savings are automatically enabled in the utility.

Date Setup

	Date & Time	Time Zone	Apply
Utilities	Date:		Apply
Settings	Month	March ▼	
Backlight	Date	24	
VeExpress	Year	2015	
R-Server	Time:		
M.Upgrade	Hour	15	
	Minute	20	
	Second	27	
Tools			
Files			

Time Zone Setup



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5.1.8 Remote Access

There are different ways to control or access the test set and the information it contains, from a local (LAN) or remote (WAN) connected PC:

- ReVeal PC software
- VNC Client
- Web Browser
- VeEX SCPI Remote & Command Reference Tool (PC software, requires separate licensing)
- Using command line interface (CLI) scripts via SSH connection

ReVeal RXTS PC software

This VeEX application allows users to connect to the test set, using the platform's IP address. ReVeal intuitive user interface offers the following functions:

- Test Profiles Management: Create, Edit, upload and download complex Ethernet and Fibre Channel test profiles (BERT, Throughput, RFC2544, Y1564 SAM, Scan, IP, Ping/Trace, Packet Capture, etc)
- Test Results Management: Download results from the test set, manage local test results (PC HDD), generate detailed test reports, export to CSV or PDF, and print.
- View software options, licenses, serial numbers, perform remote software updates

ReVeal is a Windows® application that can be downloaded free of charge from www.veexinc.com.

Users are able to connect remotely from a desktop PC via ReVeal tool software or through Remote Access on the test set. To proceed with remote access, make sure that remote control software is installed on the PC device. The user is able to configure the Profile, VNC Server Service, Web Service, VNC and Web passwords on the Remote Access page. Input the test set IP address and specified user password when prompted by the software to initiate Remote Access.

Remote access with VNC Server/Viewer:

The test set VNC service can be managed in **>Utilities >Settings >More >Remote Access** menu, to enable or disable the VNC server and assign remote access passwords.

- **Super User Password:** Allows remote VNC clients to view and control the user interface via mouse
- **Regular User Password:** Allows remote VNC users (guests) to view what's currently on the test set screen, but no interactions with the GUI are allowed.

Although the test set VNC services allows multiple users to be connected simultaneously, it is a screen mirroring service, so all users would be seeing and interacting with the same GUI. Such feature can certainly be used for training purposes, but it is not recommended for multi-user or multi-test environments.

VNC clients, such as RealVNC®, are readily available for download for different platforms and form factors, including Windows®, Mac OS®, Linux, iOS, Android.

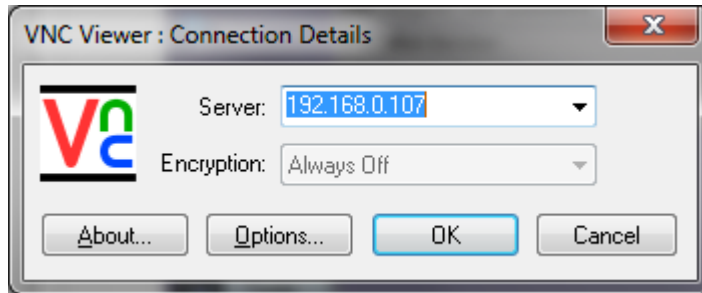
- **VNC Service:** Enable or disable the remote access to remote VNC clients running on PCs, Macs, tablets or smart phones.
- **VNC Super User Password:** Defines the password for users allowed to control the test set via standard VNC clients
- **VNC Regular User Password:** Defines the password given to users who are only allowed to view the test set current screen via standard VNC clients, but not make any changes to test or test set.

After configuring these settings in the Remote Access menu, run VNC on the PC. A message box will prompt the user to enter a Server number, which is the test set IP address. Enter the VNC Super/Regular password when prompted by the message box for a password.

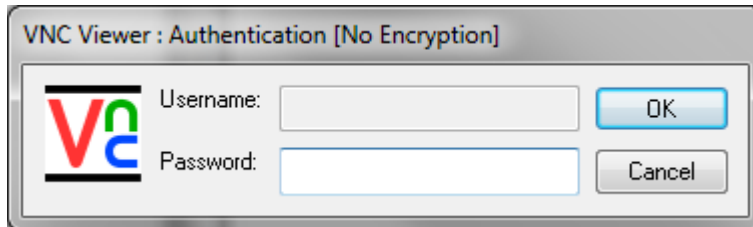
Remote Access



VNC Viewer - Enter Server Address



VNC Viewer - Password Prompt



Remote access via web browser:

Java-enabled web browsers, such as Internet Explorer™, Chrome™, FireFox™ or Safari™ can be used to manage the test set, access information and remotely control it. This useful feature doesn't require the installation of any remote clients, other than the standard web browser. Just enter the test set's IP address in the browser address/search field and the web GUI will launch.

The following features are supported:

Profiles

Use this function View, Download, Delete, Filter and convert saved Test Profiles to PDF

Manuals

Access soft copies of the RXT platform and modules manuals for quick reference

Results

Use this function View, Download, Delete, Filter and convert saved Test Results to PDF

Screen Shots

View, Download (PNG format), Copy, Delete and convert to PDF any screens captured using the RXT Lock button.

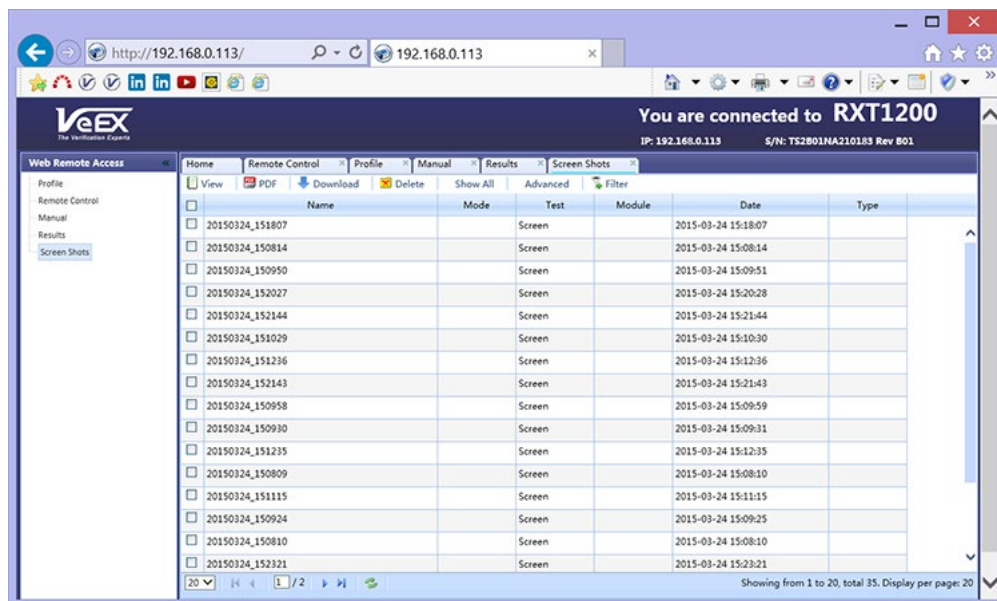
Remote Control (Screen Mirroring)

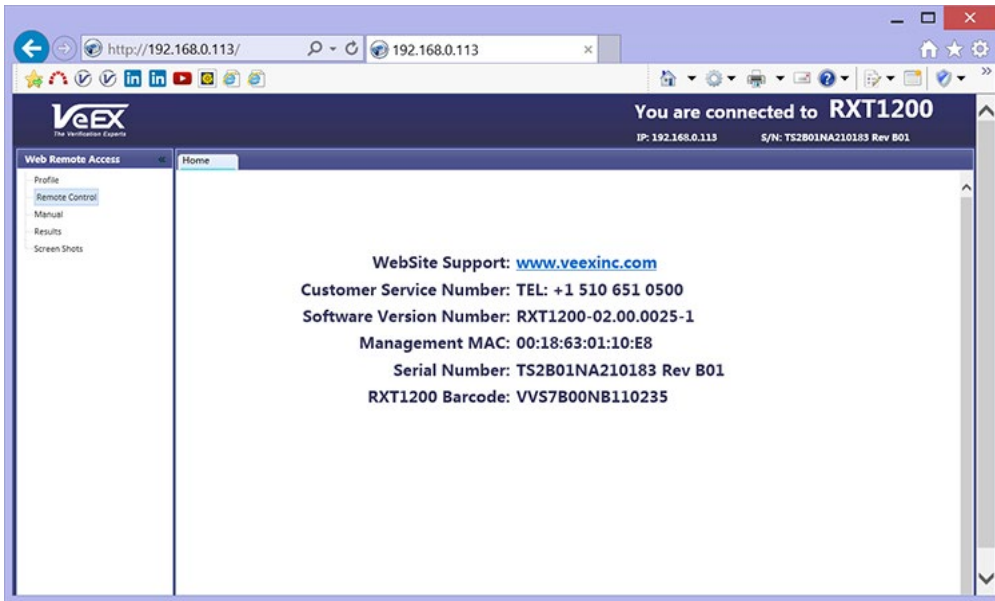
It is similar to using VNC, but in this case no VNC client installation is required. It uses standard Java-based web browser as a client. It mirror the screen, mouse inputs and the rubber buttons available in the front panel of the test set.

- **VNC Web Service:** Enable or disable the remote access through remote web-browser clients running on PCs, Macs or certain tablets. The web browser must support Java (tm)
- **Web Super User Password:** Defines the password for users allowed to control the test set via standard web browser clients
- **Web Regular User Password:** Defines the password given to users who are only allowed to view the test set current screen via standard web browser clients, but not make any changes to test or test set.

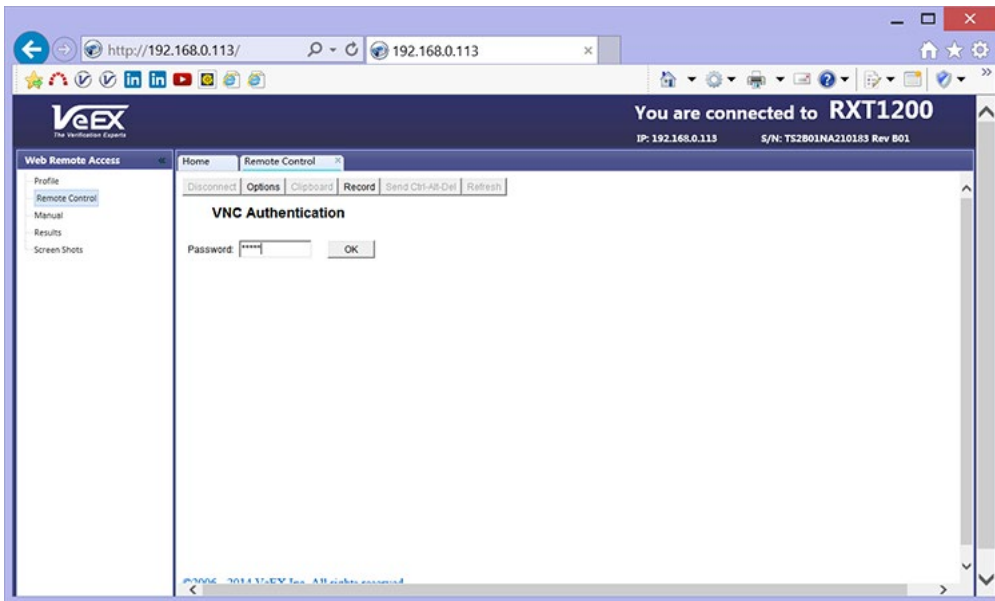
Type in the test set IP address in the web browser. Click on vnc-home.html and type in the Super/Regular password when prompted for a password. Use the buttons and icons on the right to navigate the test set remotely.

Test Set IP Address in Web Browser

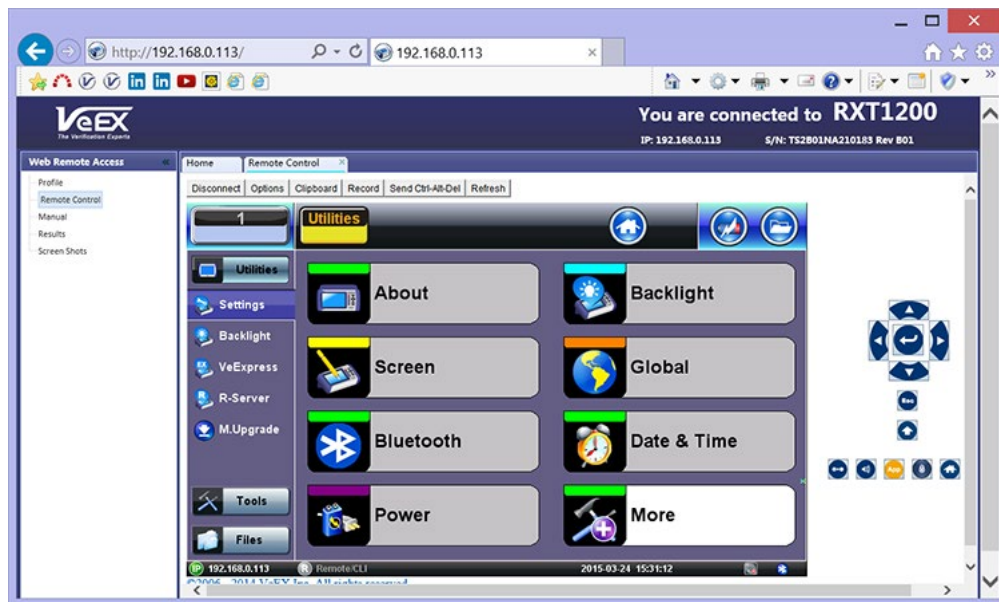




Web Browser - Password Prompt



Web Browser - Remote Access Menu



5.1.9 EZ Remote

The EZ Remote functionality allows users to quickly and securely connect to VeEX test sets all over the world, without the need for VPN, port forwarding or public IP addresses. This VeEX hosted service and user interface take care of all the complex tasks required, and present users with a simple application. Connect online anytime anywhere with any computer, tablet or smartphone, using standard web browser clients for screen-sharing, remote control and access to test results. Use it for remote control, collaboration, technical support or training purposes.




The basic EZ Remote service is offered by VeEX free of charge. It provides public registration servers to help users and test sets establish remote sessions, without having to get IT departments involved. All you need is internet access for the test set and a remote user. Feature location and functionality may vary from product to product.

VeEX's EZ Remote provides:

- **Remote Control** functionality to give users full control of remote test sets (screen mirroring and control).
- **Remote Access** functionality allows users to View, Download, Rename, Delete, Export and Convert results (PDF).

Feature location and available functions may vary from product to product.

 *EZ Remote is considered a convenient on-demand service, for quick/temporary collaboration tasks. It should not be used for long-term applications (VeEX offers other remote tools for long-term applications.)*

Initiate an EZ Remote Session from the Test Set

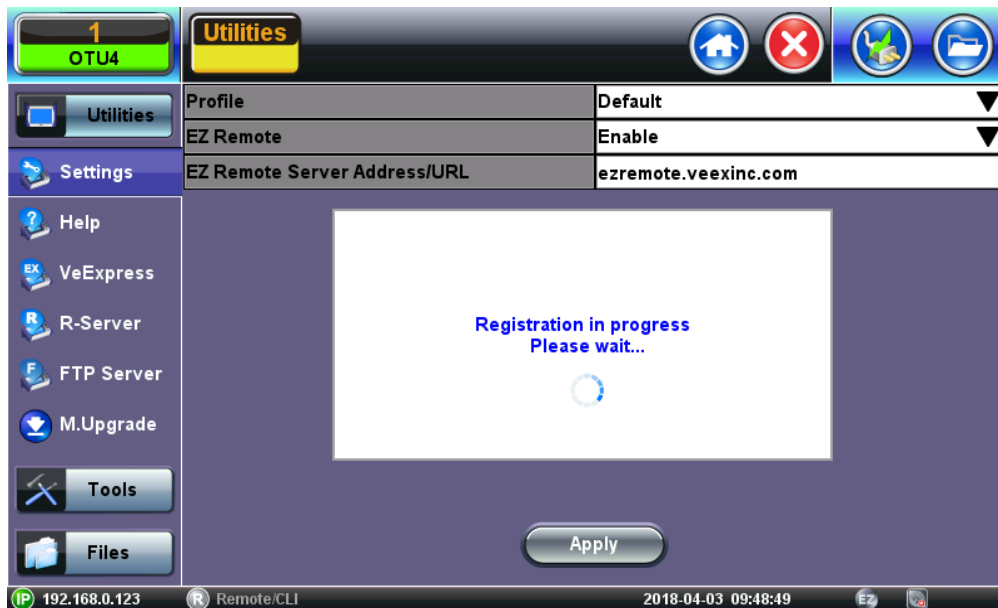
 Not all VeEX test sets may offer EZ Remote functionality. Make sure to upgrade to the latest versions available.

1. Use the **>Utilities >Tools >IP Tools** to connect the test set to a LAN using the RJ45 Ethernet management port, located on the side of the unit (recommended), or use **WiFi Wiz** to connect to a WLAN (using built-in Wi-Fi or a compatible external USB dongle). Make sure the test set gets a local IP address and that the LAN/WLAN provides access to the public internet (web).

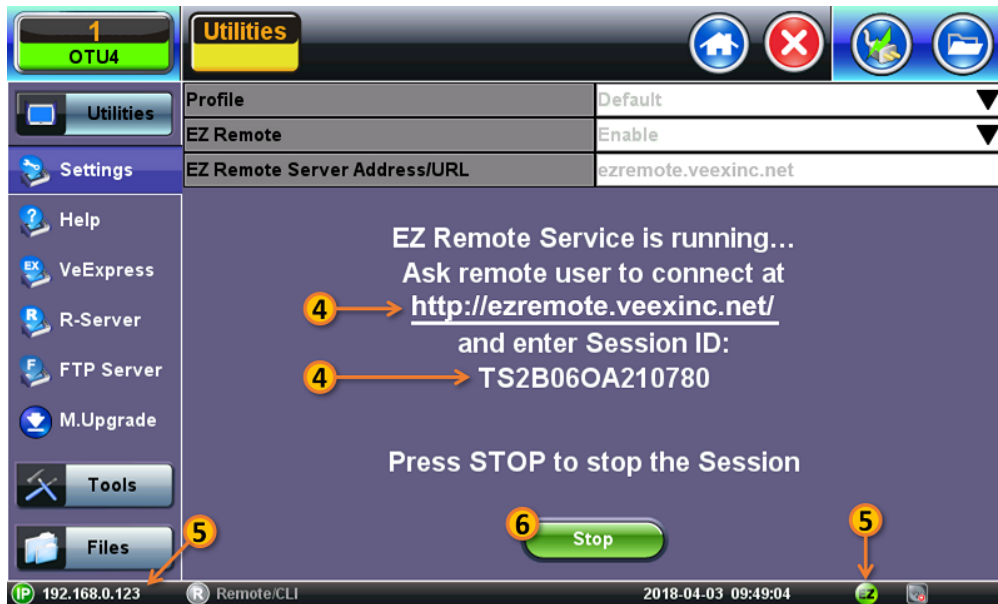
2. Go to **>Utilities >Settings >More >EZ Remote**



3. On the EZ Remote screen, set **EZ Remote** to **Enabled**, confirm the **URL** is **ezremote.veexinc.net** (without www.), and tap on **Apply** to connect and establish a session with the EZ Remote server.



4. Provide the resulting **URL** and **Session ID** to the intended remote user.



5. You may continue to use the test set until a remote user logs in, then both will share control over the unit. Make sure the test set remains connected to the LAN/WLAN/Internet and that the **EZ** remote session indicator at the bottom of the screen stays green.
6. When finished, use the **Stop** button to terminate the EZ Remote session and disconnect from the server.

Connect to the Remote Test Set from a Computer

Establish a Remote Access Connection

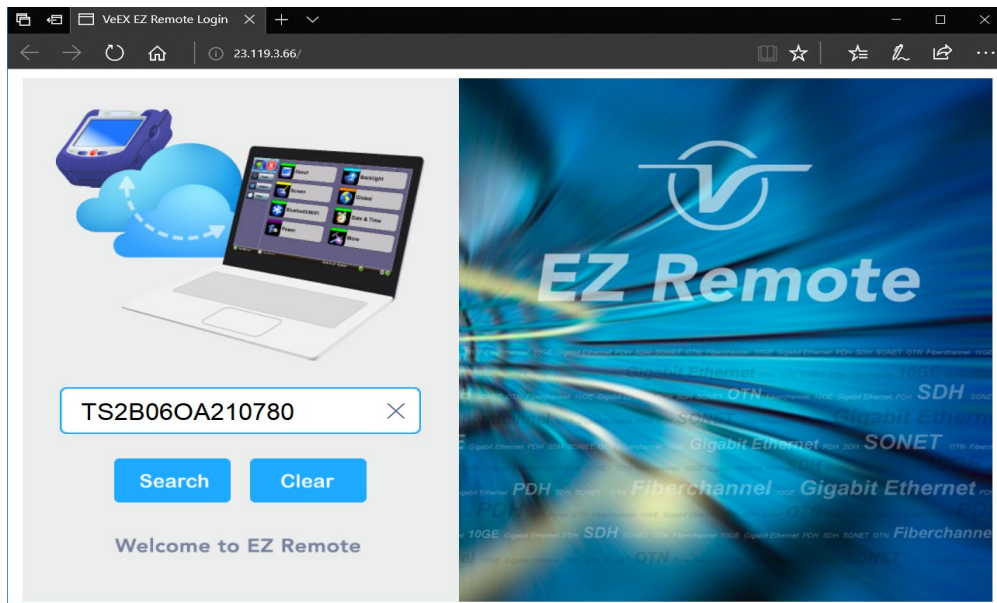
EZ Remote provides two types of services:

- **Remote Control** (screen and mouse/touch mirroring) to operate a test set from a different location.
- **Remote Platform Access** to access information stored in the remote test set, such as Test Results, Profiles, User Manual, Screen Captures (screen shots), information about the test set (Home) and its local IP address.

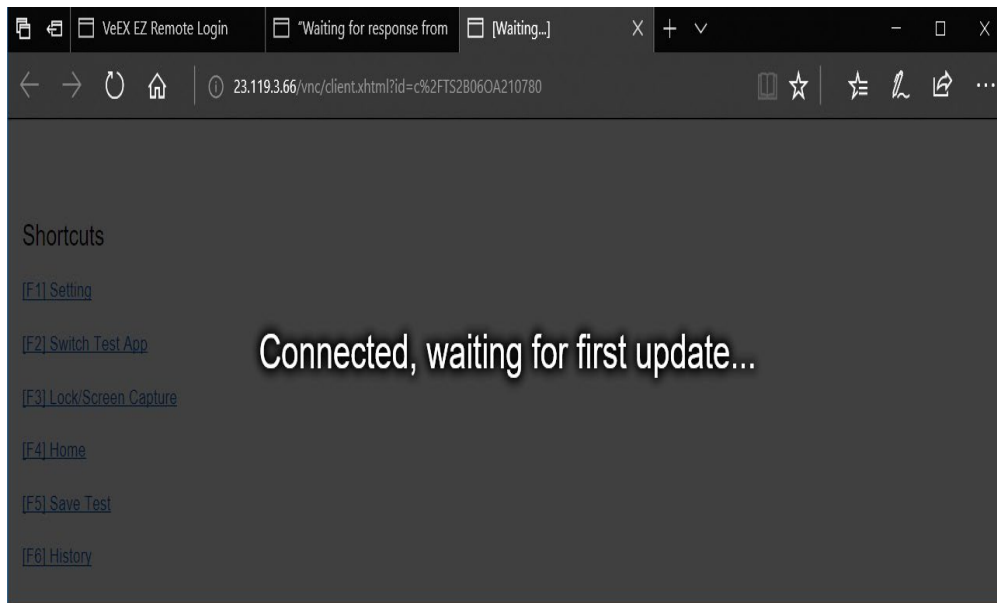


Although multiple users could simultaneously log-in to the same test set, they would be sharing the same mirrored GUI image and mouse control. This is not recommended since it is equivalent to having multiple users trying to operate one test set at the same time (also known as "mouse fight"). Nonetheless, it may be effective for training purposes with one or two extra users.

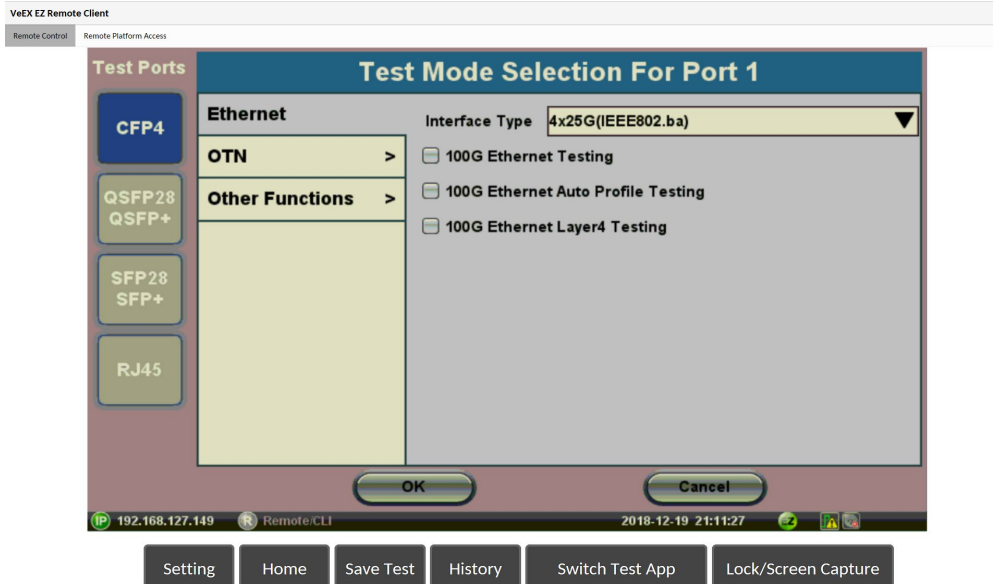
1. From a PC, Mac, Tablet or Smartphone launch an industry-standard Web Browser application and enter the URL <http://ezremote.veexinc.net>. (without the www.). Enable pop-ups for your browser and be sure to authorize access to the site, if confirmation is requested by the browser or OS.
2. Enter the **>Session ID** provided, making sure not to confuse zeroes (0) with Os. Click on **Search** to find the target test set and establish a peer-to-peer connection.



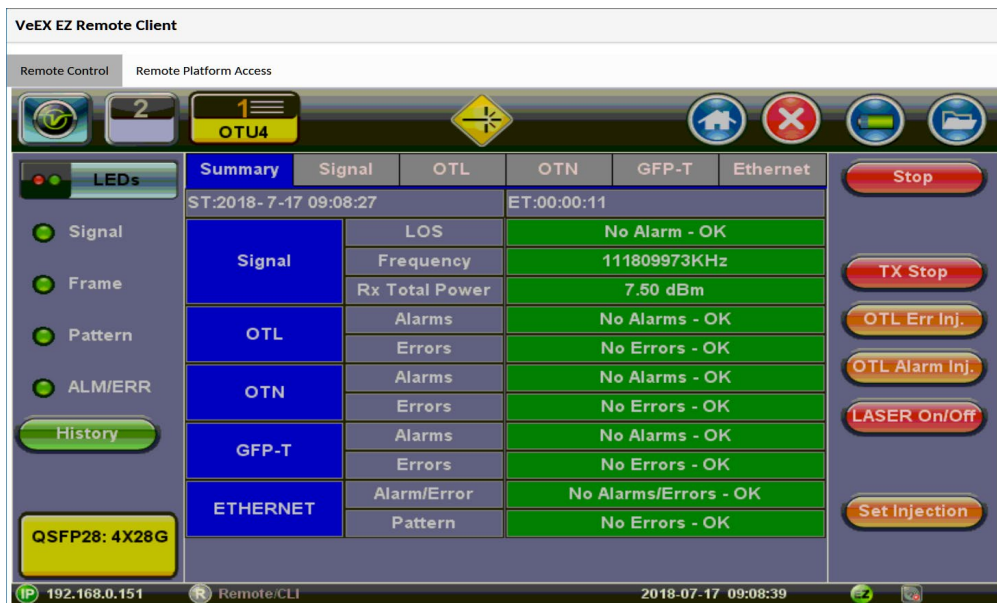
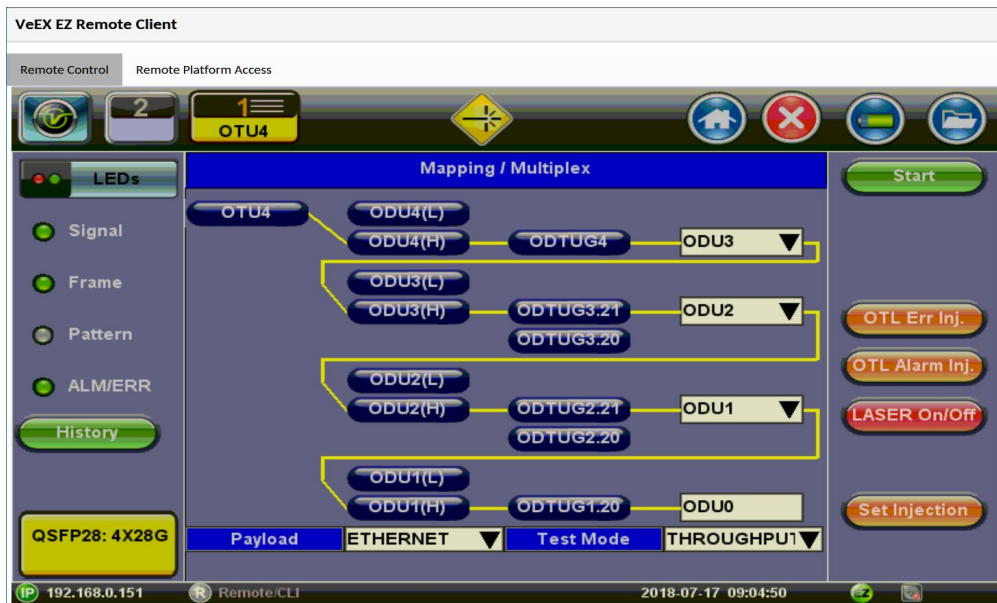
3. Once verified and connected, wait for the remote user interface to refresh. This may take a few seconds.



4. Depending on the type of test set used, shortcut buttons may be provided below the mirrored screen, allowing access to functions provided by physical buttons on the instrument, such as **Settings**, **Home**, **Save Test** results. Click or tap on the shortcut to activate it.

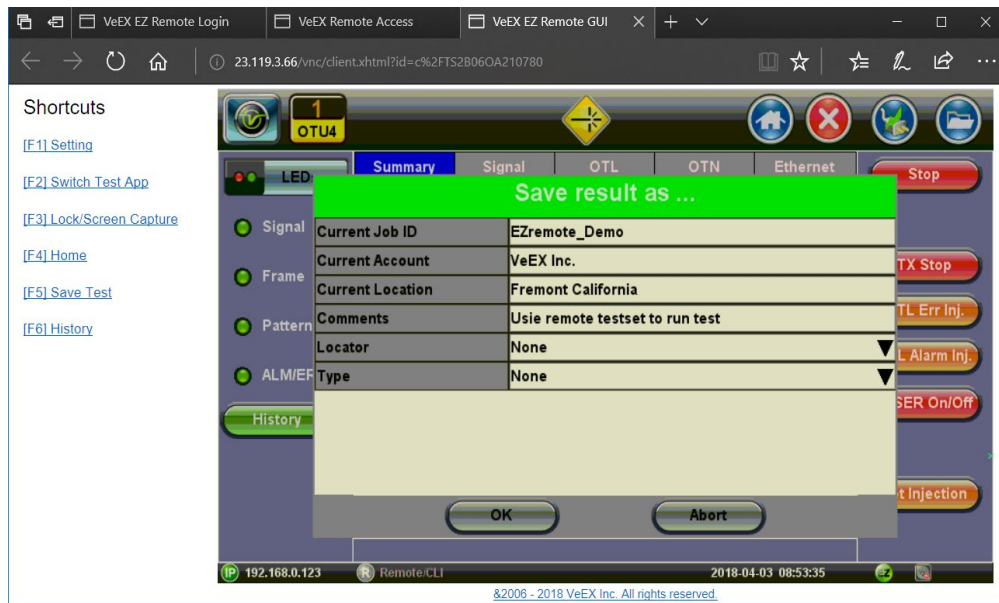
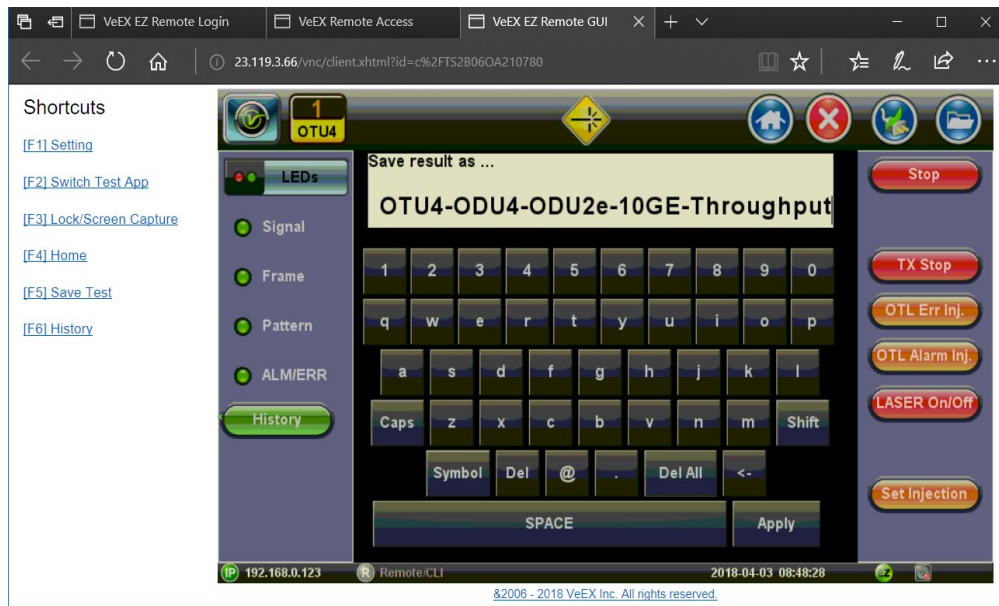


- Once the remote GUI appears, you can use the **Remote Control** tab to operate the test set in the same way you would control a local unit from its touch screen.



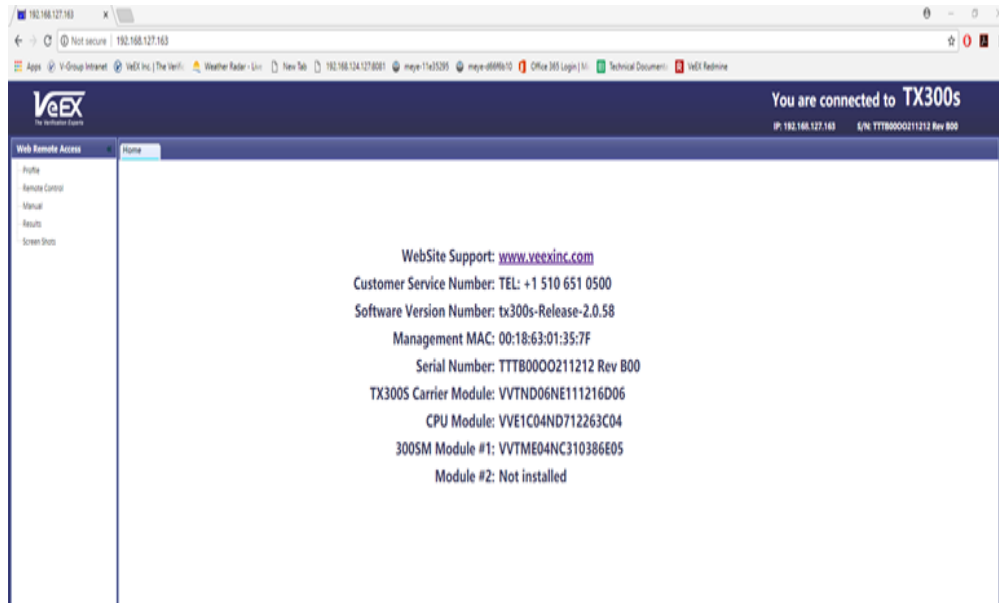
Save Test Results

To save the results of a test, from the remote computer, press the **Save** button below the screen image. Then use the pop-up keypad and/or the PC keyboard to enter the file name and add any extra details (if Advanced Save is enabled).



Access Remote Test Result Files

The **Remote Platform Access** tab provides links to access test results, test profiles, screen shots, the user manual and other information stored in the test set.



A tab will open up for each selection made, allowing for quick access to each function.

Profiles

Test Profiles are configurations saved by the user that can be retrieved and reapplied to the test set. For example, commonly used configurations and test limits/threshold can be saved as test profiles, for different types of services.

Remote Control

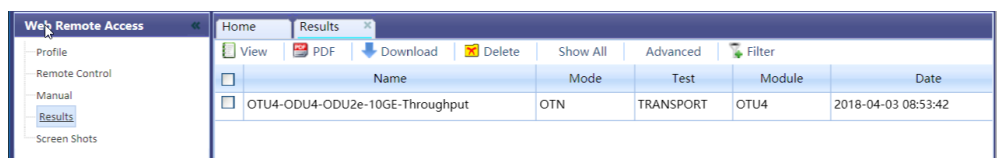
Remote Control has been replaced by EZ Remote tab.

Manual

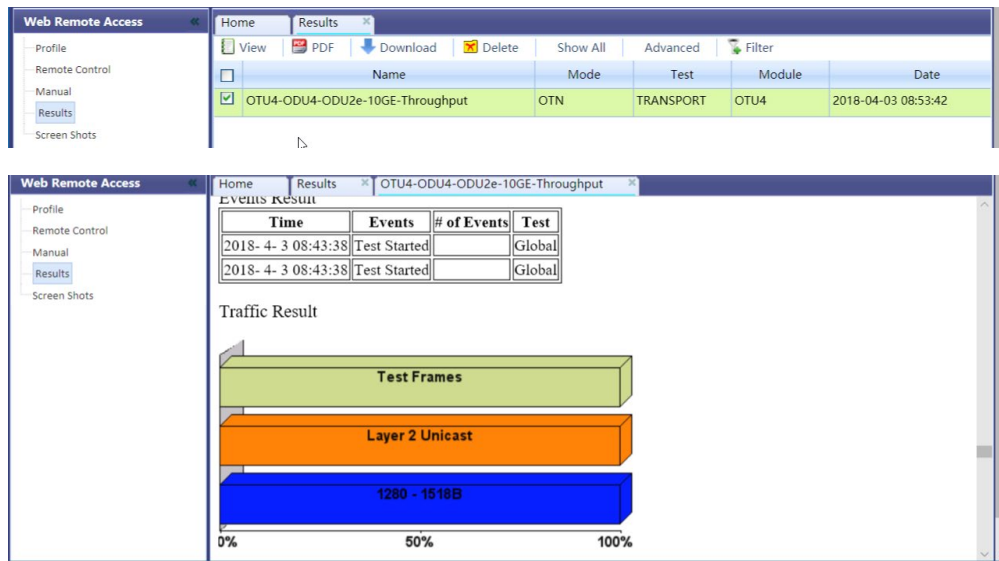
The feature provides access to the user manual that is built into the test set. In this application, the use of a local copy of the PDF file is recommended as the PDF client in the local computer is most likely faster than accessing the remote one and may offer better tools and functions, including search capabilities. User manuals can be downloaded from the products' page at www.veexinc.com.

Results

Results list all the test results files currently stored in the remote test set. Users can **View**, **Rename** and **Delete** files stored in the remote test set, as well as **Download** selected files to the local computer or convert them to **PDF** and download.



To open a test results file, select it from the list and tap on **View**.



Files can be downloaded by clicking on **Download** (original file format) or **PDF**.



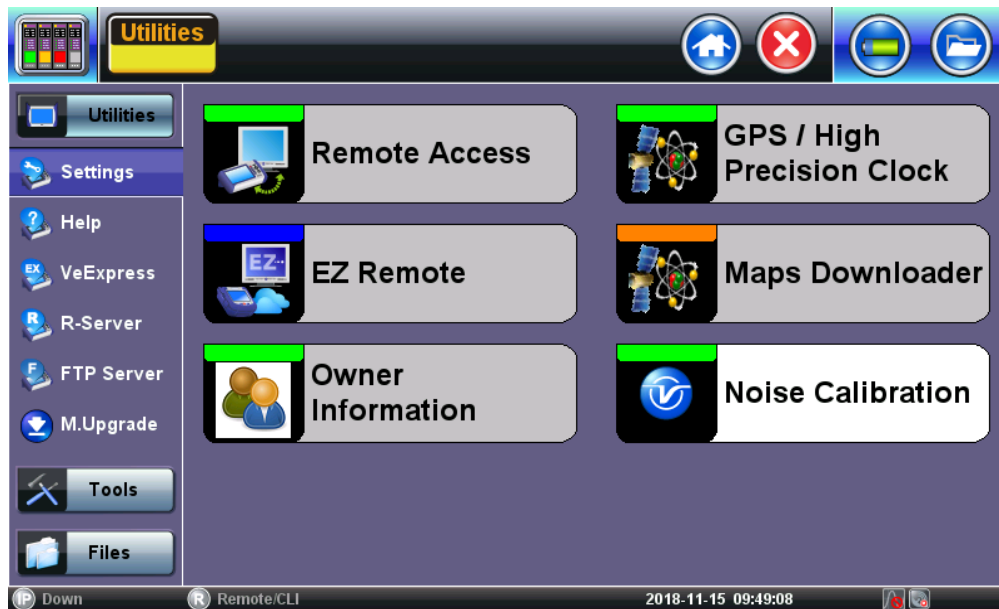
Screen Shots

Pictures (PNG) taken of the screen can be accessed from this link and sub-tab. Pictures can be viewed or downloaded to the local computer.

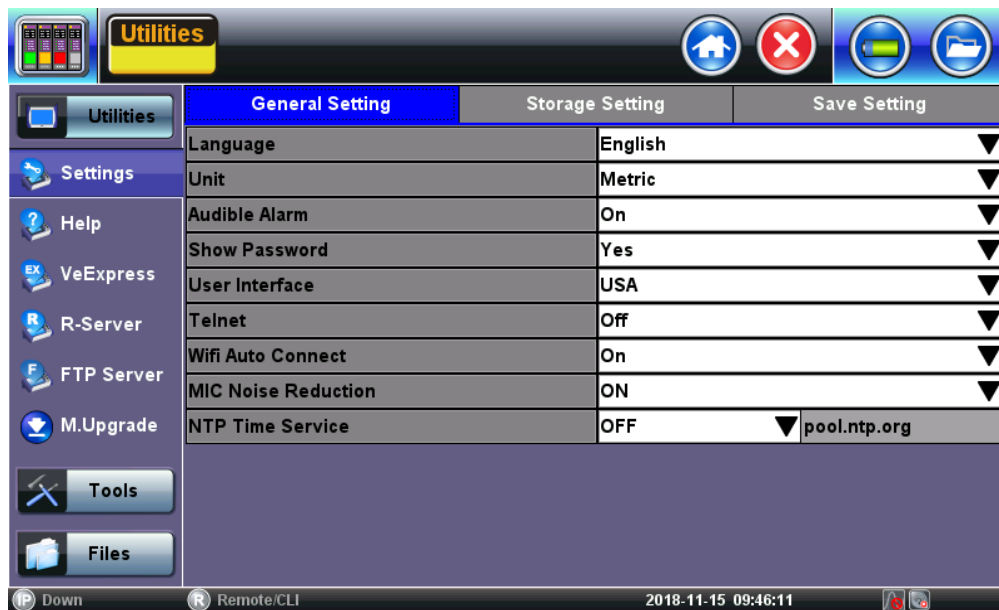
Screen captures can be made using the Lock button (🔒) on the test set or from the remote computer, using the links provided or the respective F-key on the computer's keyboard. The screen capture function can be enabled in **>Utilities >Settings >Global >Save Settings**.

5.1.10 VF Noise Calibration (Microphone)

The test platform offers ambient audio Noise Reduction for its built-in microphone, to improve voice quality in Voice Frequency (VF) applications like ISDN and VoIP calls. When the microphone noise reduction function is enabled, in **>Utilities >Settings >Global >General Settings >Mic Noise Reduction = ON**,



Users can calibrate it to remove typical environmental noise and improve voice quality. The test set must be recalibrated before use and when moved to a different environment (e.g. from the equipment room to an office). The Noise Calibration function can be found in **>Utilities >Settings >More >Noise Calibration**.



- Stay silent while the calibration is in progress.
- If a headset is used for ISDN or VoIP calls, it must be plugged in during the calibration process.

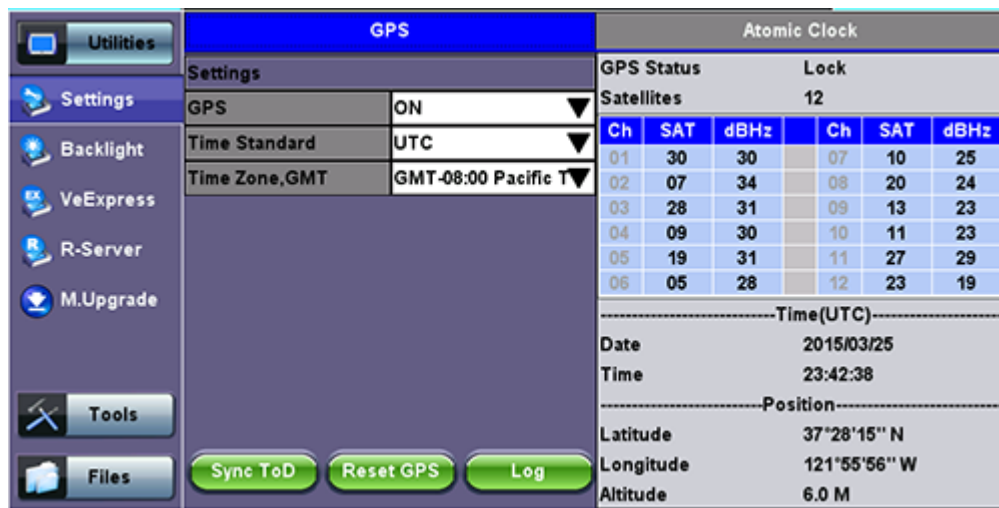
[Go back to TOC](#)

5.1.12 High Precision Clock Sources

GPS Receiver (HW Option)

The optional high-sensitivity GPS module (built-in) provides accurate Phase alignment and Coordinated Universal Time (UTC) synchronization to the test set, in the form of internal pulse-per-second (1PPS) clock synchronized to the standard second and time stamps. This is used to assure that two or more geographically-distributed test sets have the exact same time and can calculate

delays. One example is the One-Way-Delay (Latency) tests used to identify asymmetry between each direction of a link.



The GPS Time of Day (ToD) can also be used to precisely set the local date and time in the test set, using the Sync ToD function, which will apply the local time zone correction before applying it to the test set system real time clock. This time stamp is used for reports and events, but not for time-sensitive testing.

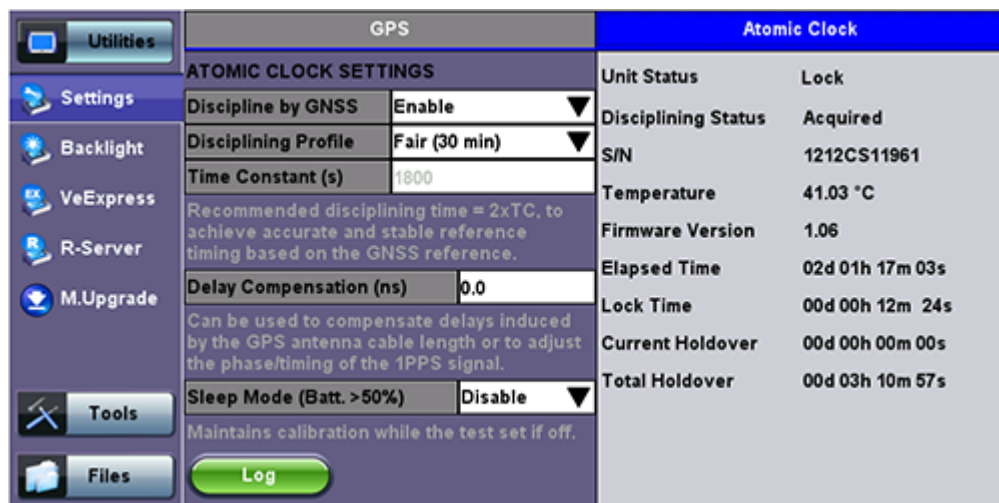
GPS ToD is also used in One-Way-Delay (OWD) measurements and time is applied directly to each test set before the test starts, so they all have accurate time.

The GPS receiver can be turned **OFF** if not used, to save battery power.

A satellite table, showing satellites in view, satellites being used and signal to noise ratio, is provided for information only, so the correct antenna installation can be verified. Geographical coordinates are also provide for information only and it could be used in the future to geo-tag some position-sensitive results. The GPS antenna must have direct view to the sky. At least four satellites with SNR of 34 dBHz or better are recommended for accurate testing.

Atomic Clock (HW Option – Factory installed)

The optional built-in chip-scale Atomic Clock module provides a highly stable clock source to the test set, in the form of a highly accurate and stable internal 10 MHz frequency reference. This reference can be used to drive PDH/DSn, SDH/SONET/OTN or SyncE Master transmitters or be used as a reference for Frequency and Wander measurements. Its main function is to serve as a precision reference to measure wander (clock stability), even in places where there is no reference clock signals available that can be traced back to a Primary Reference Clock (PRC).



GPS-Disciplined Clock

When GPS and Atomic Clock options are installed and enabled, the Atomic Clock uses the GPS signal to calibrate its frequency (10 MHz) and timing references (1PPS), to improve their accuracy and stability. The Atomic Clock 1PPS phase is disciplined to the UTC to align it with the standard second. The raising edge of the 1PPS pulse indicates the beginning of a new second all over the world.

Disciplining can be disabled or enabled. When disabled, the atomic clock runs at its natural frequency (free-running), providing a very stable frequency source. When disciplining is Enabled, the atomic clock will use the GPS accuracy to correct its frequency and

align its phase.

The Disciplining Profile sets a time window the atomic clock's dynamic control loop, to filter any short term frequency and phase variations coming from the GPS receiver, this is called Time Constant. The longer the time constant, the more accurate and stable the atomic clock output can be. The Disciplining Profile field provide suggested options for the minimum disciplining times and sets the equivalent Time Constant. The selection varies with applications and location, so some experimentation may be required by users to select their own default value. For quick field Wander or Phase measurements a disciplining time of ≥ 60 minutes (TC ≥ 1800 seconds) is recommended. Users can also enter a customized time constant in seconds.

Holdover

In case of GPS signal loss (e.g. indoor testing) the high stability of the Atomic Clock can maintain synchronization for a few hours allowing users to perform Wander and Absolute Phase Error in conditions that were not possible before. This is called holdover mode.

Delay Compensation can be used to perform minor adjustments to the 1PPS phase, to align it to a specific reference or to compensate for short cable delays.

When enabled, the low power Sleep Mode keeps the atomic clock powered up when the test set is turned off. This way it maintains its last calibration by drawing little current from the batteries. In this state, the test set will only cut the power to the atomic clock if the battery charge reaches a level less than 50% of charge, to conserve battery. The Elapsed Time counts the time since its first initialization, including the time the test set has been off. If disabled, the atomic clock is shut down with the test set and will require full initialization the next time it is powered up.

Warm Up Times

All precision reference sources require a “warm up” time to achieve high accuracy and stability. The warm up term is being used loosely because it is not just about attaining the right temperature. It also includes disciplining of a local oscillator, negotiating and stabilizing a clock through protocol messages, etc. Each of the tasks involved takes time to stabilize before it can be used for testing.

Operational Temperature

It is still a major player in the warm-up waiting time and it all depends on the ambient temperature and the initial temperature of the test set. For example, a test set left in the trunk of a car in a winter night will take longer to reach operational temperature.

Atomic Clock Warm Up

If fitted with a chip-scale atomic clock, they are housed in a miniature oven to maintain its internal temperature constant in spite variations in ambient temperatures and it can take up to five minutes to warm up and should not be used until its status shows “Locked”. The atomic clock temperature and status can be monitored at \Utilities \Settings \More \High Precision Clock Source \Atomic Clock. The chip-scale atomic clock is oven-controlled and temperature-compensated to minimize the effects of ambient temperature variations.

Beside temperature, users must be aware of other factors that require time to settle, before accurate measurements can be made.

GPS Lock

The time to get an stable clock output varies depending on the conditions, antenna type and installation, sky visibility and whether or not the test set has changed position. Using the test set for the first time on a new site (different geographical position) would increment the time to its first satellite lock. Users can follow the different stages (Searching, Sync 1PPS, and Lock) by checking the GPS status GUI at >Utilities >Settings >More >High Precision Clock Source >GPS.

Disciplining Time

Disciplining the atomic clock means using the accurate GPS timing signal to correct or align the atomic clock output signals. GPS are known for their high accuracy as they are traceable to the universal time standard (UTC). Atomic Clocks are known for their great stability. So, the combination of GPS + Atomic Clock = Highly Accurate and Stable clock source. Achieving such levels of precision takes time. The total time to stable output depends on the precision required. The disciplining time can be programmed in the Atomic Clock settings and users must add it to the total “warm-up” time, before starting measurements.

Precision Timing Protocol

PTP, like IEEE 1588v2, require some time for the two ends (master and slave) to agree on the current time. This protocol “warm-up” time is dependent on the link conditions (traffic, latency, delay variations, PTP settings, etc.). Tests shall not be started until the protocol has stabilized and the recovered clock has achieved its maximum accuracy and stability. This is sometimes referred as “Convergence” or “Sync PDV” convergence. Users can use the long tail of the 1588v2 Sync PDV graph as an indication the PTP has reached synchronous state.

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5.2 Help

Help provides an online help related to the operation of the test set and the measurements performed. The user can access the table of contents, and hyperlinks. Use the scroll bars to navigate help content.



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5.3 VeExpress

VeExpress is a cloud-based asset management system. VeEX VeExpress cloud services is included with every test set. It allows the following services / functions:

- Delivers Software/Firmware Updates and Upgrades directly to the test set.
- Makes any new Purchased or Rented licenses (new functions) assigned to the test set immediately available for testing.
- Allow Managers to Share (float) purchased or rented test options among deployed test sets (fleet). Licenses can be temporarily assigned to the test set that needs it, for specific jobs, and later recalled to pass it on to the next test set.
- Allows users to rent optional test features (licenses) for the required amount of days. Adds the flexibility required for special jobs or those new technologies or services that are not yet commonly deployed. Rented options are automatically released when lease time elapses (no need to connect to the server).

5.3.1 Built-in VeExpress Client

- Lets users connect to VeExpress Cloud directly from the test set, from the field, using any available internet connection (e.g. LAN, Wi-Fi, Modem, CPE, Smartphone hot-spot, Cellular Data Card, etc.)
- View test features currently assigned to the test set and licenses available in the pool
- Activates new licenses and let users perform software (firmware) updates

Connecting VeExpress:

Synchronization	Options-Enabled	Options-Available	Software Upgrade
Profile	ACME Telecom Inc ▼		
Server Address/URL	www.v-express.com		
Tech ID	1004		
Tech Name	JohnDoe		
Company	DEMOPOOL_USA		

Check

1. Connect the RXT-1200 to the Internet
 - Use LAN, WLAN or Cellular Data Card
2. Go to **>Utilities >VeExpress**: The URL is: www.v-express.com
3. Tap on the **Check** button
 - Any tests must be stopped and released
 - Confirm the Release of any active Test Application
 - It gets the latest information related to the test set, directly from VeExpress Cloud
 - Enables any new licenses assigned
 - Releases any recalled shared licenses
4. Wait for the Confirmation message: *"Registered and Authorized"*
 - All Licenses have been updated and any new features should be ready to use

Options Enabled (in the Test Set)

Synchronization		Options-Enabled	Options-Available	Software Upgrade
Option Group			All	▼
ID	Description	Category	Remain (DD:HH)	
499-05-563	TX300S 8G Fiber Channel	Permanent		
499-05-050	DS1 (1.5Mbps) Pulse Mask Analysis	Permanent		
499-05-051	DS3 (45Mbps) Pulse Mask Analysis	Permanent		
499-05-549	TX300S OC-192 Testing	Permanent		
499-05-552	TX300S 10/100/1000Base-T	Permanent		
499-05-553	TX300S 100Base-FX/1000Base-X	Permanent		
499-05-554	TX300S 10GE LAN/WAN	Permanent		
499-05-558	TX300S VoIP Call Expert	Permanent		
499-05-199	Service Level Ethernet OAM, IEEE 802.1ag and ITU-T Y.1731	Permanent		

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- Up-to-date list of licenses assigned
- Permanent = Purchased, owned (users can still share permanent licenses by releasing the option from one test set and assign it to another)
- Leased = Rented, temporary
 - Displays remaining time (Days and Hours)
 - Countdown starts upon first assignment
- Both permanent & leased can be shared

Options Available (in the Cloud)

- Lists all options, permanent or leased, currently available in the company's or group's VeExpress account
- Users can check availability before requesting assignment of new function(s) to their VeExpress Managers

Software Upgrade

- Checks if newer version is available

5.3.2 Software Upgrade Procedure – Full Version

1. Open the Software Upgrade tab.
 - Larger Full Upgrade package is shown if the test set has not been updated for a while, when major new features are introduced or an OS update is required
2. Attach the DC charger to the test set.
3. Insert a FAT32 USB Memory Stick into the left-side USB port (>300MB free).
4. Confirm IP connection (IP address).
5. Check the new software version box .
6. Tap on the Download button.
 1. Wait until the download process finishes. Install package is in the memory stick.
 2. Power the test set **OFF**.
 3. Leave the USB memory stick attached.
7. Initiate Software Upgrade process.
 1. Simultaneously press the App, and Power buttons, until it beeps.
 2. Let the upgrade process finish (it could take a few minutes).
 3. The test set reboots itself at the end.
8. The test set is now up-to-date.

5.3.3 Software Upgrade Procedure – Delta Version

1. Open the Software Upgrade tab.
 - Smaller Delta Update package is often made available between consecutive versions (e.g. from 1.2.5 to 1.2.6) for easier and faster field firmware update
2. Attach the DC charger to the test set.
3. Confirm IP connection (IP address).
4. Check the new software version box.
5. Tap the Download button.
 1. Wait until the download process finishes.

2. The install package is in internal memory.
3. Turn the test set **OFF**.
6. Power the test set **ON**.
7. The test set software is now up-to-date.

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5.4 R300 Server (Advanced Management)

The R-Server is a centralized server repository for test results. Technicians in the field can register their test set on the R-Server and upload test results directly to the server.

To enter the R-Server result upload function, there must be an IP connection established, otherwise a reminder message will pop up.

Register

The screenshot shows a web interface for registering a test set. It features a table with the following fields and values:

Register	Upload
Profile	Default
Server Address/URL	192.168.8.33
Tech ID	123
Tech Name	bob
Company	
Supervisor ID	

On the right side of the form, there are three green buttons: Register, UnRegister, and Check.

1. Enter the **IP** address of the server.

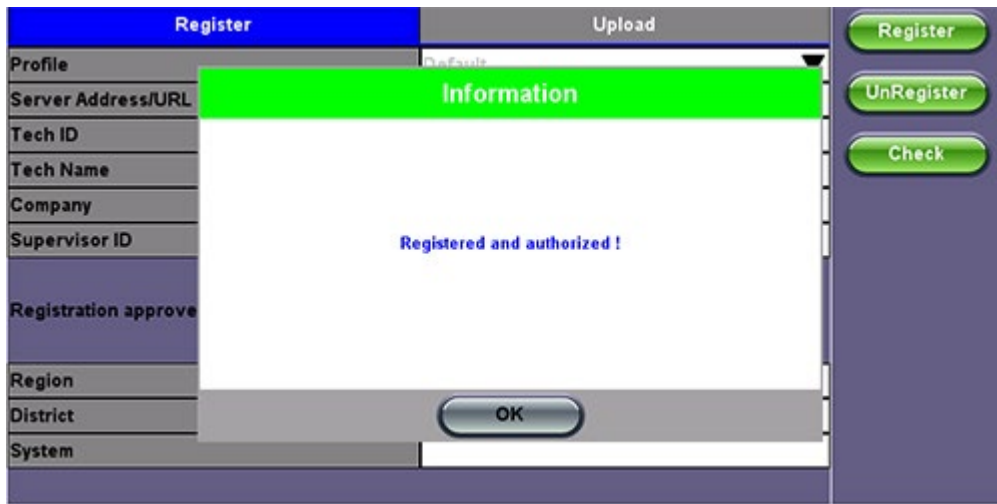
A test set must register to an R-Server before it can upload results to the server.

This screenshot shows the same Register form as above, but with an information dialog box overlaid. The dialog box has a green header that says "Information" and a white body with the text "Registration complete. Waiting for authorization!". At the bottom of the dialog box is an "OK" button.

2. Press the **Register** Key to register your test set on the R-Server.

 *that if your test set has already been registered, you don't need to perform this step.*

The Registration has to be approved by the R-Server manager in order to allow access.



3. When the test set registration is complete and approved by the R-Server manager you can select **Check function** key to verify that your test set is authorized.

Once your test set is authorized, you can proceed to Upload.

Upload

Register		Upload		
<input type="checkbox"/>	Name	Size	Type	Date
<input type="checkbox"/>	20150326_130447	46.91 K	Screen	2015-03-26 13:04:48
<input type="checkbox"/>	20150326_130448	46.91 K	Screen	2015-03-26 13:04:48
<input type="checkbox"/>	20150326_140348	58.02 K	Screen	2015-03-26 14:03:49
<input type="checkbox"/>	20150319_113854	13.49 K	CPRI/OSAI	2015-03-19 11:38:56
<input type="checkbox"/>	20150326_120746	102.55 K	RFC2544	2015-03-26 12:07:52
<input type="checkbox"/>	20150326_121402	102.76 K	RFC2544	2015-03-26 12:14:18

At the bottom of the interface, there is a navigation bar with 'Page 2 of 2' and left/right arrow icons. On the right side, there are two buttons: 'Upload' and 'Upload&Del'.

To upload result files to the R-Server, tap the **Upload** tab and select the desired files. Tap on **Upload** or **Upload&Del**.

Upload: Transfer the selected result file(s) and keep the file(s) in the test set

Upload&Del: Delete the file(s) from the test set after uploading

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5.5 Software Upgrade

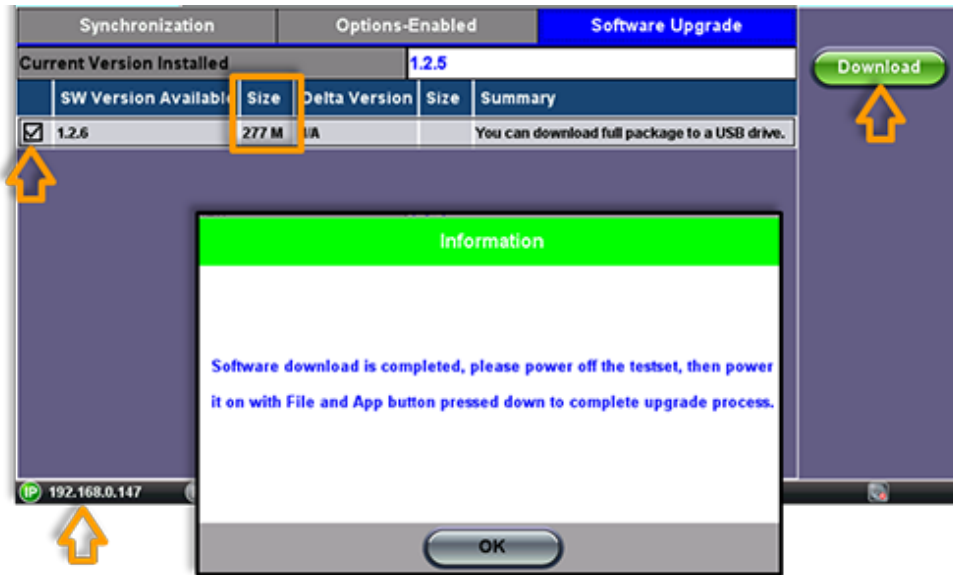
The RXT-1200 Platform includes the bootloader, OS and system-wide (common) features. Its software update package can be identified as RXT-1200-veex.tar.gz.

The RXT-1200 Platform uses the traditional V300 upgrade procedure to update the System. The software upgrade packages can be downloaded from www.veexinc.com, or using the test set's built-in VeExpress client.

5.5.1 Platform Software Upgrade Procedure

1. Obtain the RXT-1200-veex.tar.gz system upgrade package.
 - o Download it from www.veexinc.com, www.v-express.com, a link provided or by using the built-in VeExpress client.
 - o Unzip the file and copy to the root of a FAT32 USB memory stick if necessary.
2. Insert the memory stick to the USB port located on the left-side of the unit.
3. Initiate Software Upgrade process.
 - o Simultaneously press the Alternate Function, the Enter, and Power buttons, until it beeps.
 - o Let the upgrade process finish.
 - o It could take a few minutes.
 - o The test set reboots itself at the end.

Software Download



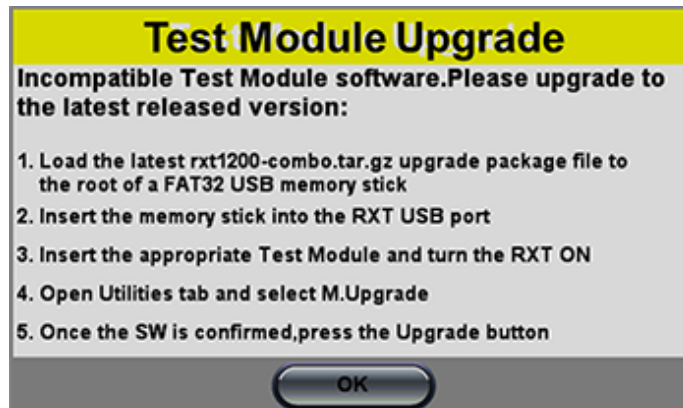
Buttons to be pushed simultaneously



4. The test set is now up-to-date.



- After the System upgrade, the following pop-up message may appear if a module upgrade is required. Follow the module update procedure.



- The built-in VeExpress client downloads the uncompressed RXT-1200-veex.tar.gz upgrade package directly to the root of the memory stick attached to the test set, so the System software upgrade process can be started right away.

5.5.2 Module Software Upgrade Procedure



1. Obtain the required RXT-1200-300sm.tar.gz, RXT-1200-320sm.tar.gz and/or RXT-1200-OTDR.tar.gz, upgrade files.
 - Download them from www.veexinc.com, www.v-express.com, a link provided or by using the built-in VeExpress client.
 - Unzip the files and copy to the root of a FAT32 USB memory stick if necessary.
2. Insert the memory stick to the USB port located on the left-side of the unit.
3. Initiate Software Upgrade process.
 - Open the Utilities section Go to **>Utilities >M.Upgrade.**
 - Select new version and press **Upgrade.**
 - The test set turns itself **OFF** at the end.
4. The test applications are up-to-date.



- The built-in VeExpress client downloads the uncompressed RXT-1200-xxxx.tar.gz upgrade packages directly to the root of the memory stick attached to the test set, so the M.Upgrade process can be started right away
- The process may need to be repeated if two different blade types are loaded.

5.5.3 RXT-2000A Software Upgrade Procedure

- Download and unzip the file from the link you received via email, or go to www.veexinc.com using a PC Browser.
 - Copy the RxT2000A.tar.gz install package to the root of a FAT32 USB Memory.
 - Insert Memory Stick into a USB port.
- Insert the empty MTT Carrier module.
 - Remove any MTT module from it.
- Attach the DC charger to the test set and turn the test set **ON.**
- Go to **>Utilities > M.Upgrade.**
 - Verify that the new version is detected.
 - Tap on the **Upgrade** button.
 - Any running test will be terminated.
- The test set will shut down once the update process has finished.
 - Turn the test set **ON** and the RXT-2000A Carrier module is now up-to-date.



- Older RXT-2000A module (dark gray), manufactured by Sunrise Telecom®, can be upgraded to version 2.x, to make it fully compatible with VeEX RXT-1200. But backward compatibility with RXT-1000 can't be guaranteed.
- Perform this procedure only if you plan to continue using the RXT-2000A with the new RXT-1200.

5.5.4 RXT-2XX0 (RXT-Carrier + MTT-XX Module)

The MTT Module software upgrade process is similar to the RXT-2000A process.

- Connect the DC Charger.

Insert the Carrier Module with the MTT module inside the slot.

- Insert the FAT32 USB memory stick containing the software package into one of the USB ports.
- Turn the RXT-1200 **ON**.
- Go to **>Utilities >M.Upgrade**.
- Once the upgrade image is recognized, confirm the versions and tap on the **Upgrade** button.
- The firmware update starts.
- It will turn itself off when finished.

MTT Auto-Update:

If an older MTT module is inserted into an updated RXT-Carrier, the RXT may start the MTT firmware upgrade process.

A message will be presented on the screen indicating the version discrepancy.

Press **Yes** to update the MTT module's firmware.

This process doesn't require the USB memory stick.

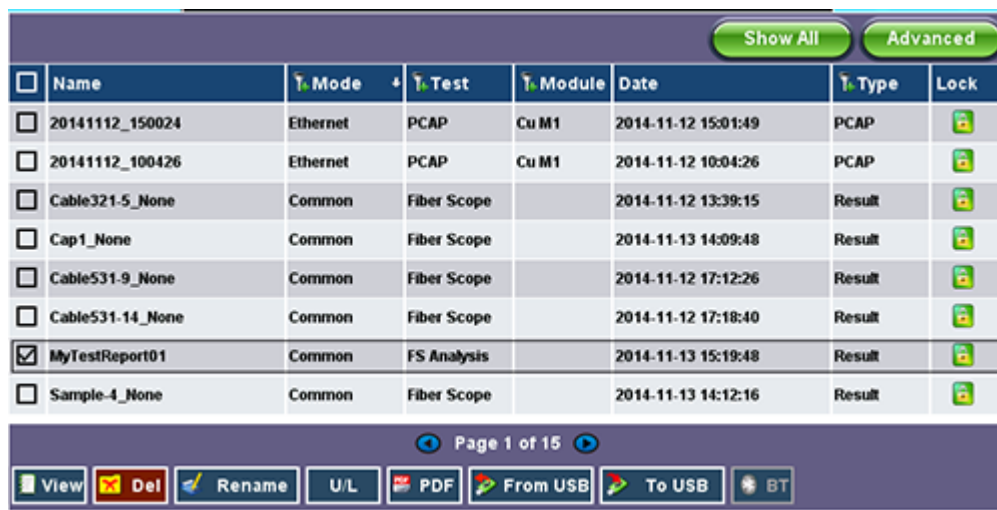


MTT modules updated to work with the new RXT-1200 may no longer be fully compatible with older SunSet MTT chassis or RxT-1000 platforms.

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6.0 File Management

V300 Style File Manager

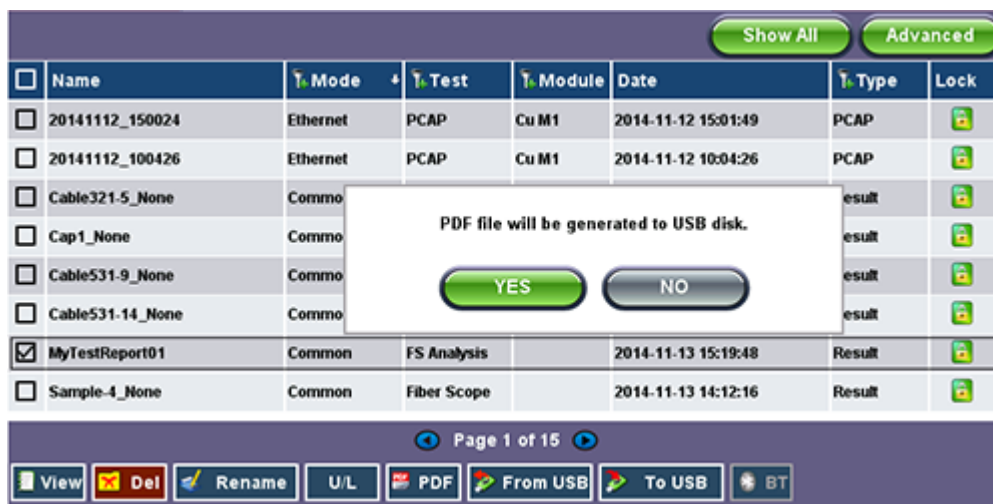


The screenshot shows the V300 Style File Manager interface. At the top right, there are two buttons: "Show All" and "Advanced". Below these is a table with the following columns: Name, Mode, Test, Module, Date, Type, and Lock. The table contains several rows of file information. At the bottom of the table, there is a pagination control showing "Page 1 of 15". Below the table is a toolbar with buttons for View, Del, Rename, U/L, PDF, From USB, To USB, and BT.

<input type="checkbox"/>	Name	Mode	Test	Module	Date	Type	Lock
<input type="checkbox"/>	20141112_150024	Ethernet	PCAP	Cu M1	2014-11-12 15:01:49	PCAP	
<input type="checkbox"/>	20141112_100426	Ethernet	PCAP	Cu M1	2014-11-12 10:04:26	PCAP	
<input type="checkbox"/>	Cable321-5_None	Common	Fiber Scope		2014-11-12 13:39:15	Result	
<input type="checkbox"/>	Cap1_None	Common	Fiber Scope		2014-11-13 14:09:48	Result	
<input type="checkbox"/>	Cable531-9_None	Common	Fiber Scope		2014-11-12 17:12:26	Result	
<input type="checkbox"/>	Cable531-14_None	Common	Fiber Scope		2014-11-12 17:18:40	Result	
<input checked="" type="checkbox"/>	MyTestReport01	Common	FS Analysis		2014-11-13 15:19:48	Result	
<input type="checkbox"/>	Sample-4_None	Common	Fiber Scope		2014-11-13 14:12:16	Result	

6.1 File Manager: Working with Saved Results, Profiles, Images

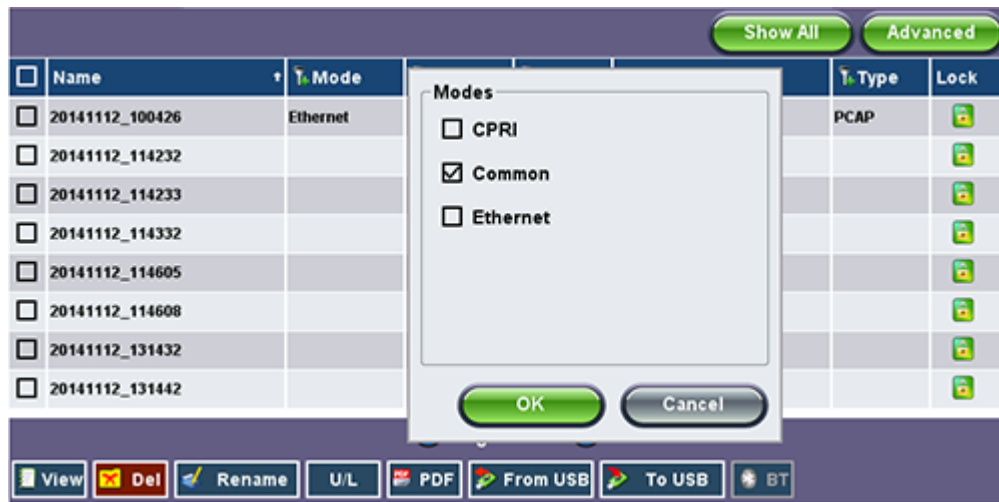
- From Utilities go to >Files >Saved.
 - Displays all results stored in the test set
- Use the check box to select the desired files.
- Tap on any column header to sort by that specific parameter.
 - Tap again to change the sorting order
- The U/L button lock and unlock files to prevent accidental deletion.
- PDF button converts all selected files to PDF format
 - Requires FAT32 USB Memory stick



The screenshot shows the V300 Style File Manager interface with a dialog box overlaid on the table. The dialog box contains the text "PDF file will be generated to USB disk." and two buttons: "YES" and "NO". The table below the dialog box is the same as in the previous screenshot, but with the "MyTestReport01" row selected.

<input type="checkbox"/>	Name	Mode	Test	Module	Date	Type	Lock
<input type="checkbox"/>	20141112_150024	Ethernet	PCAP	Cu M1	2014-11-12 15:01:49	PCAP	
<input type="checkbox"/>	20141112_100426	Ethernet	PCAP	Cu M1	2014-11-12 10:04:26	PCAP	
<input type="checkbox"/>	Cable321-5_None	Common	Fiber Scope		2014-11-12 13:39:15	Result	
<input type="checkbox"/>	Cap1_None	Common	Fiber Scope		2014-11-13 14:09:48	Result	
<input type="checkbox"/>	Cable531-9_None	Common	Fiber Scope		2014-11-12 17:12:26	Result	
<input type="checkbox"/>	Cable531-14_None	Common	Fiber Scope		2014-11-12 17:18:40	Result	
<input checked="" type="checkbox"/>	MyTestReport01	Common	FS Analysis		2014-11-13 15:19:48	Result	
<input type="checkbox"/>	Sample-4_None	Common	Fiber Scope		2014-11-13 14:12:16	Result	

- Backup and Restore (USB Memory stick):
 - To USB copies all selected files to stick
 - From USB restores all files from the stick
- BT (Bluetooth®) File Transfer
 - Requires compatible USB dongle
- File Filters

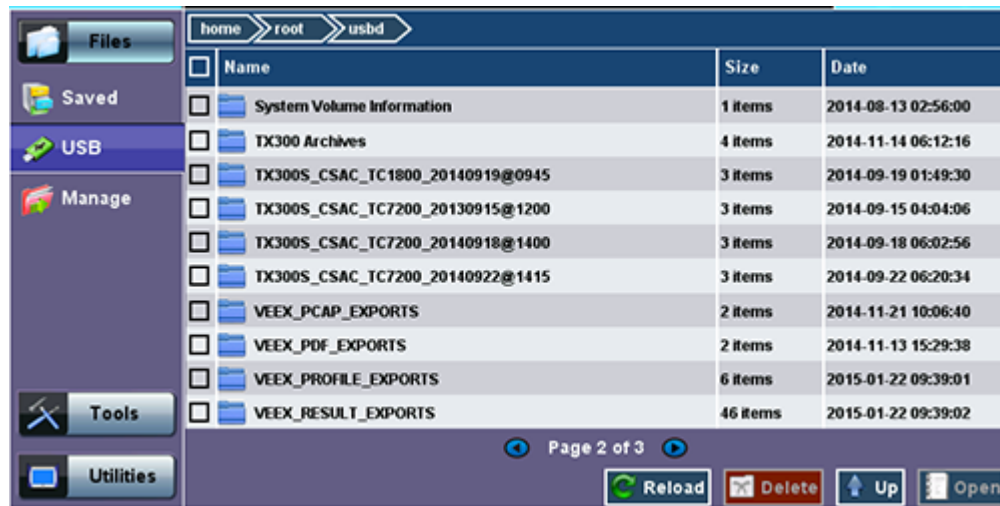


- Makes it easier to isolate desired types of results from all other test results stored in the test set
 - Reduces the number of pages displayed
- Activate Filters
 - Use the stylus to tap on the **Y+** icon
 - Check mark the desired attributes
 - Filters parameters can be combined
- Reset Filters
 - Press the **Show All** button.
- Sorting
 - Tap on a header to sort by that field's type, in ascending or descending order.
 - Makes finding desired test Results or Reports even easier

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6.2 USB Memory Browser

USB Tool



The USB tool can be found in the **Utilities** section, under **>Files >USB**.

It provides users with basic memory stick management tools, to browse and interact with its contents without the need of a PC:

- **Reload:** Refreshes the USB stick info
- **Delete:** Erases the selected files or folders
- **Up:** Exits the current folder and moves up to a higher folder in the file tree hierarchy. The current folder structure is shown in the top bar
- **Open:** Opens certain file types

The USB tool supports one USB memory stick. It shows the first memory stick that is recognized, from any of the two ports.

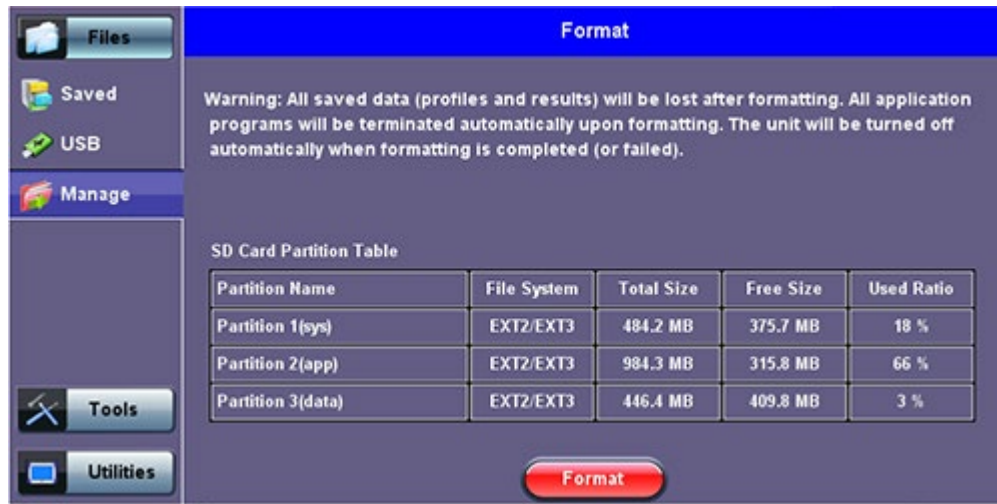
The following file types are supported:

- **HTML:** Launches the browser to display its content
- **TXT:** Launches a basic text viewer to display its content
- **PCAP:** Launches the built-in Wireshark® protocol analyzer
- **MTIE:** Launches the optional built-in Wander Analysis tool

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6.3 Manage SD Card

Internal SD Card Format



The **Files >Manage** tool under utilities provides SD card's partition capacity information.

All the user information, such as test results, profiles, screenshots, protocol capture, etc., are stored in the Data partition (3). Use the **>Files >Saved >To USB** backup utility or Delete function if the Data partition is nearly full.

The Format function is exclusively a maintenance tool. Use **ONLY** when instructed by a VeEX Customer Care representative. It erases all the information stored in the test set.



- *The internal 2GB SD Card contains the System OS, all the Test Applications (Apps) and user's data*
- *Only the Data partition is accessible to users, through the test set's functions*
- *Do not remove or reformat the SD Card outside of the test set*

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7.0 Tools

7.1 IP Tools

The 10/100BaseT management port is located on the right hand side of the unit. This port can be used to connect to the unit for management purposes (results retrieval, software upgrade, remote connectivity, etc.).

You can access the management port configuration on the **Tools > IP Tools** menu.

7.1.1 setup

By default the IP configuration is set to DHCP and the unit will automatically attempt to connect.

For IP configuration, the following fields are required. Additional fields vary depending on Static or DHCP connection.

- **Port:** Select Management Port from the drop-down menu
- **Profile:** Default, Delete, Save, Save as..., Default, or Last configuration
- **IP Address:** Select from Static or DHCP
 - **Static:** If Static is selected, the user will manually enter the IP address parameters (local IP, Gateway IP and DNS server IP)
 - **DHCP:** If DHCP is selected, the unit will obtain IP address parameters from the DHCP server
- **Gateway and DNS:** Enable or Disable
 - **Enabled:** If enabled, enter the IPv4 address of the Gateway and DNS server in Static mode, or use the IP address provided by the DHCP server in DHCP mode
 - **Disabled:** If disabled, no Gateway or DNS server will be used for the tests

Enter all parameters then press **Connect** to start the test.

DHCP Setup

Tools	Setup	Status	Ping	Trace Route
IP Tools	Network			
Net Wiz	Port	Management Port		Disconnect
WiFi Wiz	Profile	Last configuration		
Advanced	IP Address	DHCP		
Browser	Gateway and DNS	Enable		
Utilities				
Files				

For **Static** type connection, these additional fields are required:

Static: The user is required to enter a Local IP, Gateway address (if Gateway and DNS are set to Enable), and Subnet. All Static fields can be filled by tapping on the section to access an alphanumeric keypad.

- **Local IP:** IPv4 address of the test set
- **Subnet:** Enter the subnet mask
- **Gateway and DNS:** Enable or Disable. If set to enable, Gateway and DNS fields become available
 - **Gateway:** Off or On. IPv4 address of the network gateway
 - **DNS:** Off, Primary, or Primary & Secondary. If set to Primary or Primary & Secondary, a DNS IP is required in order to use the URL as a destination

Enter all parameters then press **Connect** to start the test.

Static Setup

Tools		Setup	Status	Ping	Trace Route
Network					
Port	Management Port				Connect
Profile	Last configuration				
IP Address	Static				
Local IP	192.168.0.126				
Subnet	255.255.255.0				
Gateway and DNS	Enable				
Gateway	ON	192.168.0.1			
DNS	Primary	68.94.156.1			

7.1.2 IP Connection Status

- Ensure the Status is PASS before continuing with any IP tests.
- If the connection fails, go back to the setup screen to verify that the parameters are entered correctly. Verify that the Ethernet cable is properly connected on the management port.
- **DHCP:** PASS indicates that an IP address has successfully been assigned.
- **IP:** PASS indicates that the IP address assigned has been verified to be unique in the network.
- **Gateway:** PASS indicates that the gateway IP address is valid.
- **DNS:** PASS indicates that the DNS IP address is valid.

IP Connection Status

Tools		Setup	Status	Ping	Trace Route
Local IP	192.168.0.126				Disconnect
Subnet Mask	255.255.255.0				
Gateway	192.168.0.1				
DNS IP	68.94.156.1	Second IP	68.94.157.1		
IP:	PASS				
Gateway	PASS				
DHCP:	PASS				
DNS:	DNS1(PASS) DNS2(PASS)				

7.1.3 Ping

The Ping Result provides the number of Sent, Received, Unreach, Missing, and the Round Trip delay.


Ping Testing

Ping is a popular computer network tool used to test whether a particular host is reachable across an IP network. A ping is performed by sending an echo request or ICMP (Internet Control Message Protocol) to the echo response replies.

Ping Setup

- **Profile:** Delete, Save, Save as..., or Default.
- **Destination:** Enter the destination IP address or URL to ping.

Number of Pings: Press the field and use the alphanumeric keypad to enter the number of ping attempts that will be performed to reach the network device.

-  If Continuous Ping is selected, the user is not required to enter the number of pings. The test set will continuously ping the target host until the user presses **Stop**.
- **Length:** Use the alphanumeric keypad to enter the length of the ICMP echo request packet transmitted.
- **Ping/Sec:** Use the alphanumeric keypad to enter the Ping repetition rate (Ping/second) up to 10 pings per second.
- **Time Out:** Time-to-Live (TTL) in milliseconds. Use the alphanumeric keypad to enter the maximum time allowed (in ms, up to 99999ms) between an ICMP ping and echo response.

Once the parameters are configured, press **Start** to begin the test.

Ping Setup

Setup		Result	
Profile	Default		
Destination	www.veexinc.com		
Number of Pings	<input type="checkbox"/> Continuous Ping		
	5		
Length	64	Pings/Sec	1
Time Out (ms)	1000		

Ping Results

Pressing Ping will take you to the Result tab and start the Ping test.

- **Destination:** Indicates the destination IP address
- **Ping status:** In Progress, PASS, or FAIL
- **Sent, Received, Unreach, Missing:** Number of pings sent, received, unreachable or missing. A Ping is counted missing if no response is received before timeout. A Ping is counted unreachable if an echo response is received with host unreachable set.
- PING also estimates the round-trip time in milliseconds
 - **Current:** The current time for a Ping request to be answered
 - **Average:** The average time recorded for a Ping request to be answered
 - **Max:** The maximum time recorded for a Ping request to be answered
 - **Min:** The minimum time recorded for a Ping request to be answered

Ping Result

Setup		Result	
Ping:Finished			
Destination	210.66.102.20		
Send	5		
Received	5		
Unreachable	0		
Missing	0		
Round Trip (ms)			
Current	137	Average	137
MIN	137	MAX	139

7.1.4 Trace Route

Trace Route is a common method used to find the route to the destination IP address or URL. It is often used to identify routing problems and unreachable destinations. All the remote IP addresses and their response times are displayed indicating possible network congestion points.

Trace Route setup tab:

The following setup selections are available:

- **Profile:** Delete, Save, Save as..., Default. Select Default to recall a trace route file or create a new test
- **Destination:** Enter the IP address or URL of the network device to be detected
- **Time Out:** Enter the maximum time allowed between an ICMP echo and response at each hop
- **Max Hop:** Enter the maximum number of network devices the packet is allowed to transit

Once the parameters are configured, press **Start** to begin the test.

Trace Route Setup

Setup	Status	Ping	Trace Route
Setup		Results	
Profile	Default		
Destination	www.veexinc.com		
Time Out (ms)	5		
Max Hop	10		

Results:

- **Hop:** Order of the routers on the route
- **TTL:** Time to reach each router on the route
- **Address:** Address of each router on the route

💡 If there is no response from a particular hop, an asterisk will be displayed.

Trace Route Result

Setup		Status	Ping	Trace Route
Setup		Results		
Traceroute:Finished				Disconnect
Hop	TTL(ms)	Address		
1	0	192.168.0.1		
2	0	207.141.64.129		
3	6	12.251.100.245		
4	8	12.122.114.22		
5	8	12.122.1.117		

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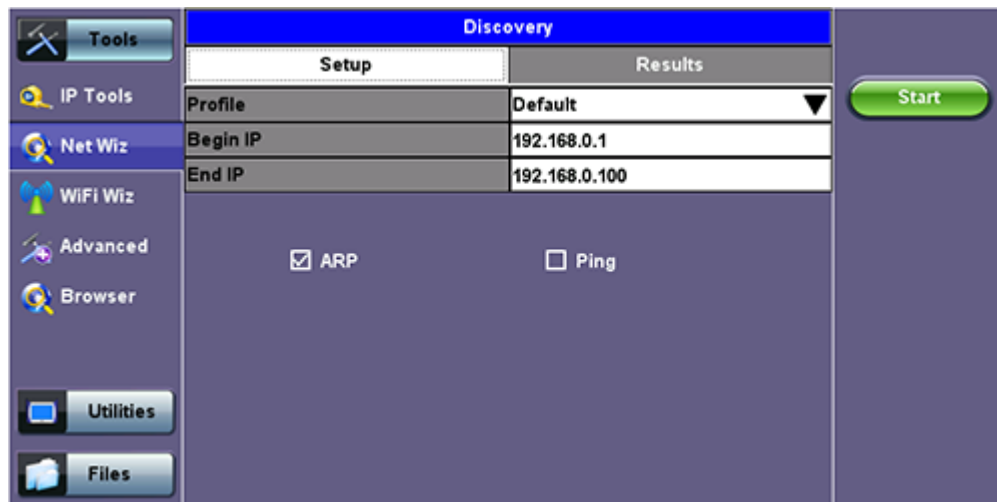
7.2 Net Wiz

Net Wiz verifies the status of each IP address in the user selected range, by using ARP (Address Resolution Protocol) and ICMP test.

7.2.1 Net Wiz Setup

- **Profile:** Drop-down selections are Default, Delete, Save, Save As...
- **Begin IP:** Set the start address for the desired IP range using the numeric keypad
- **End IP:** Set the end address for the desired IP range using the numeric keypad
- Select the test by placing a check mark in the corresponding box of any of the following: ARP, Ping

Net Wiz Setup

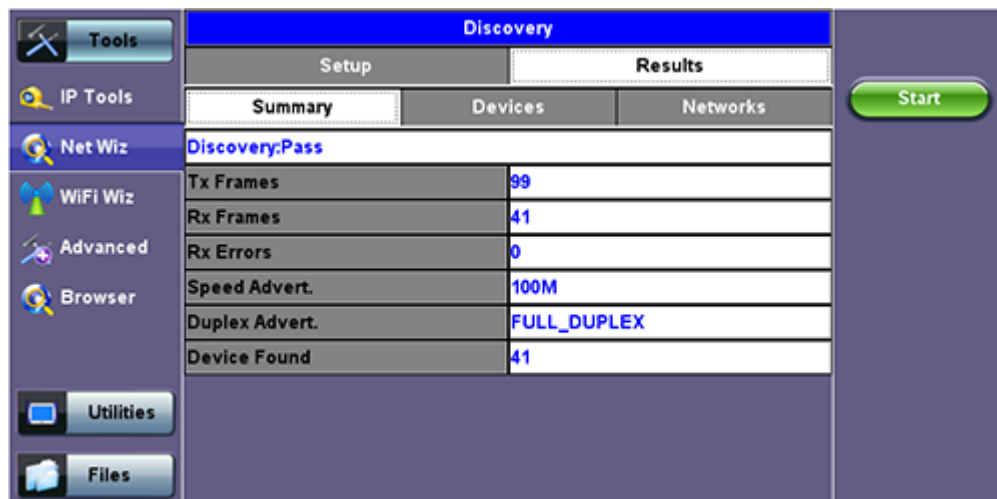


7.2.2 Net Wiz Results

Summary indicates the test status and reports:

- **TX/RX Frames:** Total number of TX (transmitted) and RX (received) frames
- **RX Errors:** Received frames in error
- **Speed Advert:** Speed advertised
- **Duplex Advert:** Duplex mode advertised
- Total number of Devices and Networks found

Net Wiz Results Summary



The **Devices** tab reports global and detailed device information.

Global reports:

- Total number of devices found
- Number of devices (Routers, Servers, Hosts)

Net Wiz Results - Devices - Global

Discovery	
Setup	Results
Summary	Devices Networks
Global	Detail
Total Devices	41
Server	41
Host	41

Detail displays the Attribute, MAC and IP Addresses, and Ping test results of each device discovered.

Net Wiz Results - Devices - Detail

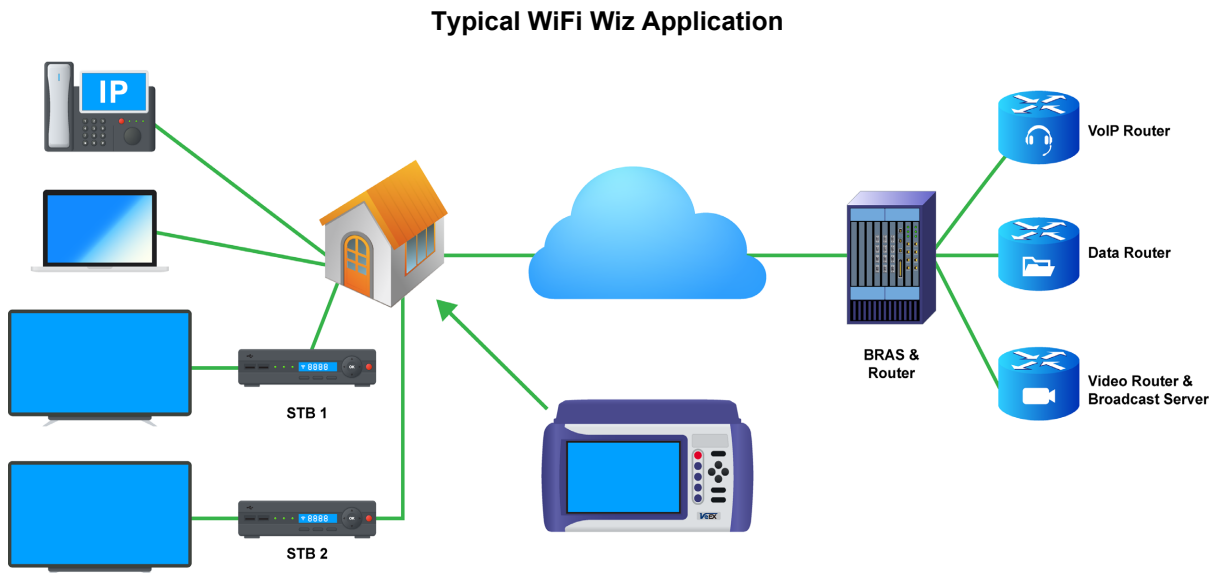
Discovery		
Setup	Results	
Summary	Devices Networks	
Global	Detail	
IP	MAC	Ping
192.168.0.1	10:56:ca:07:3d:f8	OK
192.168.0.2	00:15:17:f6:9c:7d	OK
192.168.0.3	00:02:3b:00:16:69	OK
192.168.0.4	00:14:38:92:7b:10	OK
192.168.0.5	00:21:9b:fb:3f:34	OK
192.168.0.6	c4:04:15:0c:79:83	OK
192.168.0.7	00:23:7d:33:77:84	OK

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7.3 WiFi Wiz


This function allows you to test wireless WiFi 802.11a,b,g,n,ac networks (based on capabilities supported by Wifi USB adaptor provided by VeEX). A typical application is shown below.













The WiFi Wiz function supports:

- 802.11 a/b/g/n/ac standards (refer to WiFi USB adaptor provided by VeEX)
- WEP, WPA, WPA2 Encryption
- Scanning
- SSID broadcasting and report
- Signal Strength
- IP Connection and Ping Test

7.3.1 WiFi Procedure

- Plug the WiFi adaptor into the USB port. Allow at least 30-45 seconds for the unit to detect the wireless adaptor and for the software driver to load.
-  Products support USB wireless adaptors supplied by VeEX only and have the necessary software driver built into the test set.
- Tap on the **Scan** tab once the test set has detected the wireless USB adaptor.

WiFi Wiz - AP List


Ping	Trace Route	ARPWiz				
Scan	Connect	Network				
AP List						
WiFi Scan Finished						
	ESSID	BSSID	Protocol	Rates	Channel	
	CG3000DV200 Protected via WPA2	10:0D:7F:D4:18:27	802.11bgn	144Mb/s	1	
	VeEX-Sales Protected via WPA2	CA:3D:C7:A4:7D:EE	802.11bgn	300Mb/s	3	
	VeEX@Cable-Tec Protected via WPA2	84:1B:5E:69:F1:1A	802.11bgn	144Mb/s	4	
	UXf00 Protected via WPA2	00:22:75:53:BD:7E	802.11bg	54Mb/s	6	
	TradeLeaves Protected via WPA2	00:1D:70:5B:32:92	802.11bg	54Mb/s	1	
Page 1 of 2						

AP List

The following information is displayed for each AP:

- SSID name of the AP
- BSSID (MAC address) of the AP
- 802.11 protocol version supported by the AP
- Max data rate supported by the AP
- AP's radio channel number
- Lock symbol indicates if security is set on the AP (WEP, WPA or WPA2).
When the AP is unsecured, no lock symbol is displayed
- Signal strength of the AP


Select one of the Access Points (AP) to start a connection. If the AP is locked, a network key is required to complete the connection. The key can either be 10 characters or 26 characters.

 *If the user enters the wrong network key, the test set will still connect to the Access Point, but will not be able to connect to the web or perform the Ping test.*

Once selected, an **Edit Settings** function key appears on the right hand side bar.

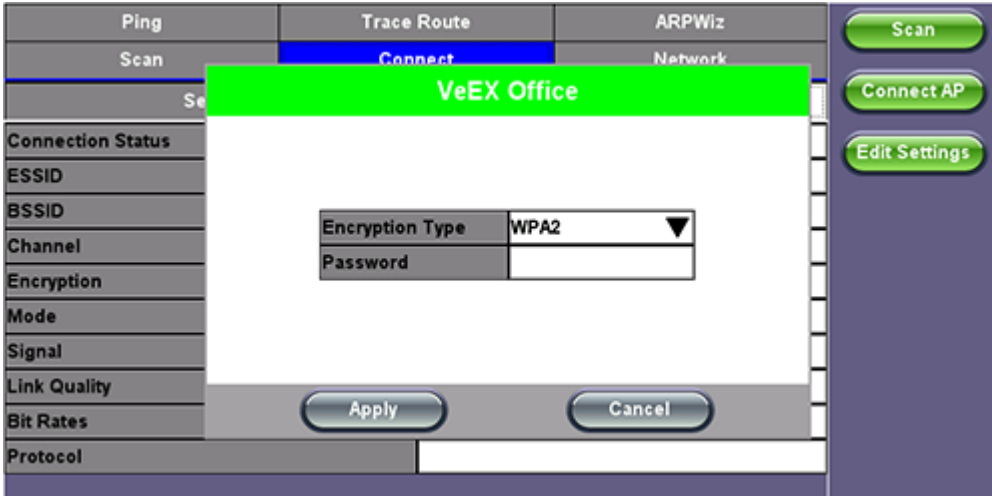
Tap on **Edit Settings** or **Connect AP** to change the Encryption Type and enter the WiFi Key.

- **Encryption Type:** Supported encryption types include WEP, WPA, and WPA2.
- **Key:** Security phrase or password necessary to access SSID and network. Tap the **Key** field to enter the AP password on the pop-up keypad.
 - ASCII formatting supported
 - The password/phrase can be hidden (**Global Settings > Show Password > Yes/No**)

 *Passwords are case sensitive.*

Press **Apply** after selecting the Encryption Type and entering the Key. If the encryption menu was accessed via **Edit Settings**, press **Connect AP** to connect to the AP. If the encryption menu was accessed via **Connect AP**, the test set will connect to the AP automatically after pressing Apply.

WiFi Wiz - AP Encryption Settings



Ping	Trace Route	ARPWiz
Scan	Connect	Network
VeEX Office		
Connection Status	Encryption Type	WPA2
ESSID	Password	
BSSID		
Channel		
Encryption		
Mode		
Signal		
Link Quality		
Bit Rates	Apply	Cancel
Protocol		

Connect

The **Setup** Tab displays the Profile, ESSID, Encryption Type and Password.

WiFi Wiz Connection Setup

Ping	Trace Route	ARPWiz
Scan	Connect	Network
Setup		Status
Profile	Default	
ESSID	VeEX Office	
Encryption Type	WPA2	
Password	*****	
Show Password	<input type="checkbox"/>	

Scan

Disc. AP

Connect Net

Edit Settings

Status

The Status Tab displays the following information on the connection:

- **Connection Status**
- **ESSID:** Name connected to
- **BSSID:** MAC address of wireless router/device connected to
- **Channel:** WiFi Channel # connected to
- **Encryption:** Encryption type
- **Mode**
- **Signal:**
 - Radio signal level (dBm)
 - Link quality score
 - Max data rate
 - 802.11 protocols supported

WiFi Wiz Connection Status

Ping	Trace Route	ARPWiz
Scan	Connect	Network
Setup		Status
Connection Status	Completed	
ESSID	VeEX Office	
BSSID	C4:04:15:0C:79:83	
Channel	6	
Encryption	WPA2	
Mode	Master	
Signal	-35dBm	
Link Quality	34	
Bit Rates	144Mb/s	
Protocol	802.11bgn	

Scan

Disc. AP

Connect Net

Edit Settings

After a successful connection to the Access Point press Connect IP to obtain an IP address and access the additional IP tests like Ping, Trace Route etc.

WiFi Wiz Connect IP

Ping	Trace Route	ARPWiz
Scan	Connect	Network
Setup		Status
Request Status: Successful		
Local IP	192.168.88.161	
Gateway	192.168.88.1	
Serverip	192.168.88.1	
Lease (sec)	39315	
DNS1	192.168.88.1	
DNS2	N/A	

Scan

Disc. AP

Disc. Net

Edit Settings

7.4 ARP Wiz

ARP Wiz uses the Address Resolution Protocol (ARP) to verify the status of each IP address in a user-selectable IP range. ARP is the standard method for finding a host's hardware address when only its network layer address is known. In other words, ARP is used primarily to translate IP addresses to Ethernet MAC addresses. ARP is defined in [RFC826](#).

Setup

Configure the following parameters:

- **Profile:** Drop-down selections are Default, Delete, Save, or Save As...
- **Start IP:** Starting IP Address
- **End IP:** Ending IP Address
- **Time Out(s):** Range from 1-99 seconds. Input using the numeric keypad
- Press **Start**.
- The test will continue to run until the user presses **Stop**. A finished status indication will display when the test finishes.


ARP Wiz Setup

Setup	Status	Ping
Trace Route	Web/FTP	ARPWiz
Trace Route	Web/FTP	VoIP
Setup	Result	
Profile	Default	
Start IP	192.168.0.1	
End IP	192.168.0.170	
Time Out (s)	3	


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Result

The MAC addresses associated with active IP addresses in the range are displayed. If no MAC address is associated with the IP address, a **FAILED** status is displayed.

 *ARP Wiz uses the ARP protocol and can only work within the same subnet as the IP address provided to the test set in IP Status*

ARP Wiz Result



The screenshot displays the ARP Wiz Result interface. At the top, it shows the management port link status: "Management Port Link UP 100T F - 192.168.0.112". The navigation path is ">Home>Tools>IP Tools". The interface is divided into several sections:

- Tools:** Includes Setup, Status, Ping, Trace Route, Web/FTP, ARPWiz (selected), and VoIP.
- IP Tools:** Includes Setup and Result.
- Net Wiz:** Includes Net Wiz, WiFi Wiz, and Advanced.
- LED'S:** A section with three colored dots (red, yellow, green).
- Utilities:** A section with a folder icon.
- Files:** A section with a document icon.

The main display area shows "ARP: In Progress...". Below this is a table with the following data:

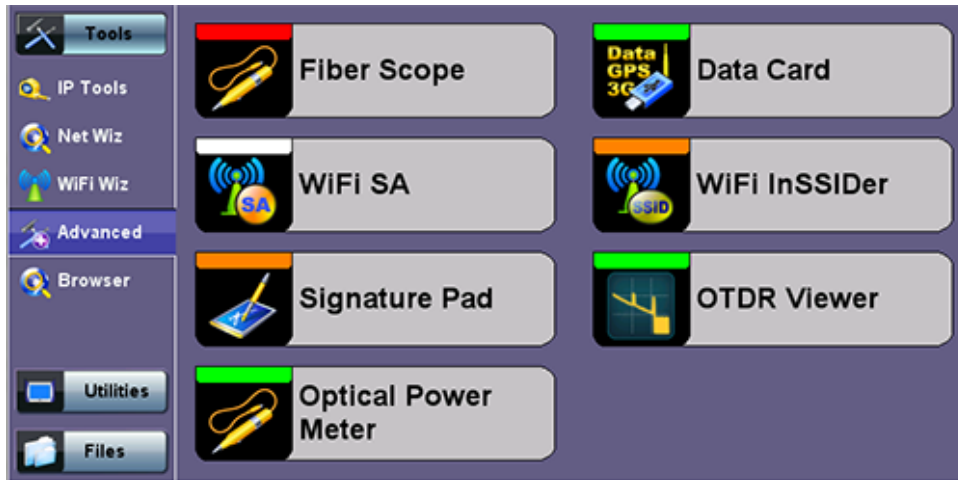
Destination Address	Response Time (ms)	MAC Address
192.168.0.1	0.441	00:11:6E:02:12:2C
192.168.0.2	0.410	00:15:17:F6:9C:7D
192.168.0.3	0.965	00:1A:DD:A5:51:C0
192.168.0.4	0.757	00:14:38:92:7B:10
192.168.0.5		*

On the right side, there are buttons for "Disconnect", "Stop", "CAP On", and "CAP Detail". At the bottom, it shows "Page 1 of 2" and "Test Mode". The status bar at the very bottom indicates "TX: OTU-2", "RX: OTU-2", the date "31-08-2011", the time "17:01:17", and "Test Mode".

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7.5 Advanced Tools

Advanced Tools



7.5.1 Fiber Scope

The Fiber Scope Inspector is an ideal tool for checking fiber optic connectors for dirt and end face quality. The handheld probe design enables easy inspection of patch cords and difficult to reach bulkhead or patch panel connectors. Clear images are displayed on the V300 products for immediate analysis and can be saved for record keeping.

Fiber Scope



Key features include:

- Optical connector end face inspection
- Easy to change adaptor tips
- Multi mode and single mode fiber patch cords
- Sharp images displayed on VeEX V300 products
- Visual comparison mode of saved image

The ISO/IEC 14763-3 standard for Testing Optical Fiber Cabling specifies visual standards for connector end face inspection with a fiber microscope. The ISO-related standards and general industry practices recommend the following:

- Markings on the core or damage to the cladding close to the core are unacceptable
- Slight scratches and small pits on the cladding away from the core are, however, acceptable
- Cracks are not permitted in neither core nor cladding

Equipped with 400x magnification, the VeEX Fiber Scope Inspector is well suited for general installation and maintenance checks on both single mode and multi mode fiber types. Contamination or damage that cannot be viewed at this magnification is unlikely to impact practical connector performance; thus, it is an ideal tool for patch cord inspection, optical laboratory or field test applications.

Lightweight construction and the ergonomic positioning of the rotary focus dial enables one-handed operation and fast viewing, leaving one's hand free to move the connector under test as needed. Interchangeable screw-on adaptors are available for most modern optical connectors, while the probe design blocks any hazardous infrared light from reaching the operator, resulting in completely eye-safe operation.

7.5.1.1 Automatic Focus Detection and Analysis

In the past, fiber connector end-face inspection not only required a good Fiber Microscope (Fiber Scope), but certain amount of knowledge and hand-eye dexterity from the user. Results were prone to inconsistencies, subject to interpretation and PCs were required for post analysis against the criteria set forth by the IEC 61300-3-35 Sect 5.4 standard.

VeEX has made the task easier, faster and foolproof, with the introduction of its patent-pending revolutionary Automatic Focus Detection technology. Turning ordinary digital fiber scopes, like DI-1000, into accurate semi-automated inspection systems. All with the help of TX300S, FX300, RXT-1200 or SunLite OTDR test sets.

Instead of adding the extra complexity, fragility, cost, size and weight of other electromechanical focusing systems currently available in the market, VeEX's auto focus detection technology still relies on the incredible fast response and finesse of human hands, but leave the focus assessment, image capturing and analysis to the test set. Users could even try with their eyes closed and still achieve a perfectly focused image of the connector end-face in a few seconds. Moreover, users would still remain in control during non-trivial scenarios requiring the irreplaceable human dexterity and ingenuity.

7.5.1.2 Main Advantages of Automatic Focus Detection

- Investment protection (no need to replace existing scopes, like DI-1000, with a more expensive ones)
- It's a simple software option upgrade to the test set
- Much faster focus, acquisition and analysis, compared to slow electro-mechanical auto-focusing scopes
- Robustness: Less moving parts and no internal motors makes a better choice for field applications
- No training necessary, yet get it right every time
- Smaller scope size
- Report generation (html and PDF)
- The test set detects when the image has reached optimal focus level, automatically freezes the picture, captures the image and runs the IEC 61300-3-35 analysis
- No need to move hands or press any buttons (movement and vibration are common causes of focus loss)
- No PC required for image acquisition or Pass/Fail analysis

7.5.1.3 The Importance of Fiber Connector Inspection

Dirty or scratched connectors introduce loss, increase ORL and/or damage other connectors (Loss becomes more critical at higher data rates). End-face contamination is a leading cause of fiber link failures in data centers, corporate networks, MSOs and Telecom environments.

Fiber Inspection Scopes provide a magnified image of the fiber optics connector's End Face, focusing on the contact areas (prone to loss or damage by mating). Images, visual inspection and automated tools are often used to grade the health and cleanliness of connectors, after polishing or cleaning and before being used.

7.5.1.4 Fiber Connectors and Test Gear Vulnerabilities

Opposed to the permanent or semi-permanent connections often found in network environments, "promiscuous" Test Equipment and their patch cords connect to multiple devices on a daily basis, increasing the chances to damage or get damaged. Extra care must be taken, not only to avoid potentially expensive damage, but to make sure that any tests and their results remain valid. Bad fiber or dirty/damaged connectors can result in false anomalies, defects or errors, even expensive repairs.

7.5.1.5 About the DI-1000 Fiber Inspection Scope

- Digital Fiber Inspection Probe
- Native USB 2.0 (no adapters required, no image degradation)
- Compatible with existing UX400, TX300S, FX300, RXT-1200 and SunLite OTDR
- Precise and stable single-finger focus knob for one hand operation
- Blue light source for better contrast
- 400X magnification
- Interchangeable tips – Most commonly used tips are available (FC, SC, LC, ST, MTP, E2000, including PC, APC, 60° angled tips, among others)
- Compatible with VeEX test sets offering built-in Auto Focus-Detection & Analysis
- Ergonomic design

7.5.1.6 Fiber Connector Inspection Setup

The Setup tab allows basic settings:

File Prefix: String of alphanumeric characters to be appended at the beginning of the file name, every time the results are saved. For

example Fiber0239-

Starting #: Every time a result is saved, this suffix number will automatically increment. Users can manually enter the initial value here.

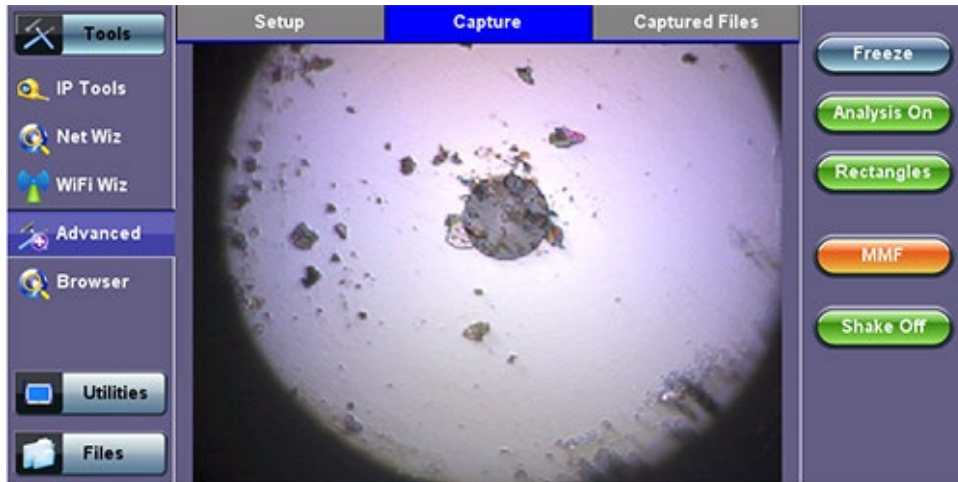
Auto Freeze: This is amount of time the optional Auto Focus Detection feature will look for a stable in-focus image before automatically freezing the image and starting an analysis. Select Never, if manual capture or real-time analysis is desired. Auto freeze comes handy when both hands are tied (e.g. one holding the connector and the other holding the probe, or working on a pole)

Scope Mode: Use Local for USB fiber inspection scopes that directly attached to the test set. Use Remote if the probe is attached to a wireless transmitter using Wi-Fi connection.

7.5.1.7 Capture Tab (View)

The Capture tab is the main user interface for the connectors' face inspection and analysis. It presents a real-time view of the connector's end face allowing users to align and focus.

Fiber Scope - Capture tab



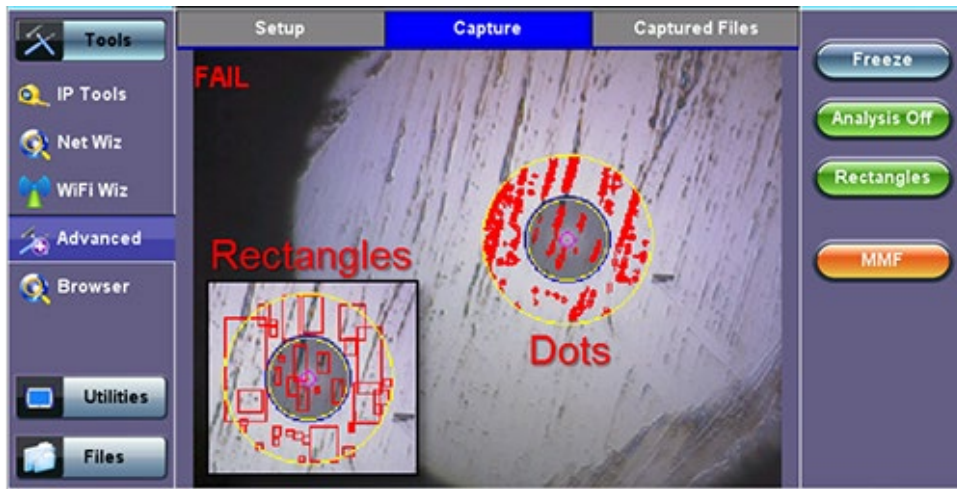
Important! The soft buttons in the action bar (right side of the screen) do not indicate the current state or setting, they indicate the action that would take place if pressed. For example, if user taps on the “Analysis OFF” button, the analysis function is turned OFF and the button toggles to show “Analysis ON”. These soft buttons should be interpreted as “Go to...”

Freeze: Allows users to manually freeze the image in the desired view. If the optional Auto Focus Detection feature is enabled, the test set will automatically freeze the image when the image comes into focus. Once the image is frozen, users can tap on the image to save it.

Analysis ON/OFF: Turns the optional auto-analysis feature ON and OFF. If turned ON, the test set automatically analyzed the image in real time. If the markers get in the way of seeing the picture details, users can turn this feature OFF and perform manual analysis.

Dots/Rectangles: They are two ways of highlighting the different impurities found in the face of the connector. The dots tightly contour each individual anomaly, capturing its area. In some cases users may want to see impurities or scratches that are otherwise covered by the dots, so rectangles are used in this case to highlight the anomaly and still keep them visible. The selection between dots or rectangles does not affect the area calculation or the Pass/Fail results; they are just operator's choice.

Save: The Save button appears after freezing an image. It performs the same action as tapping on the screen to save the current image. Use the >Utilities >Files function to View the report, export to PDF format and copy to USB.



MMF/SMF: Selects the type of connector/fiber to be analyzed and loads the correct Pass/Fail mask. Please note that the label in the button DOES NOT indicate the current mask type. It indicates that the mask would be changed to if activated.

Shake ON/OFF: Turning the Shake ON may help in situations when the image is not very stable, such as inspecting a female connector or bulkhead.



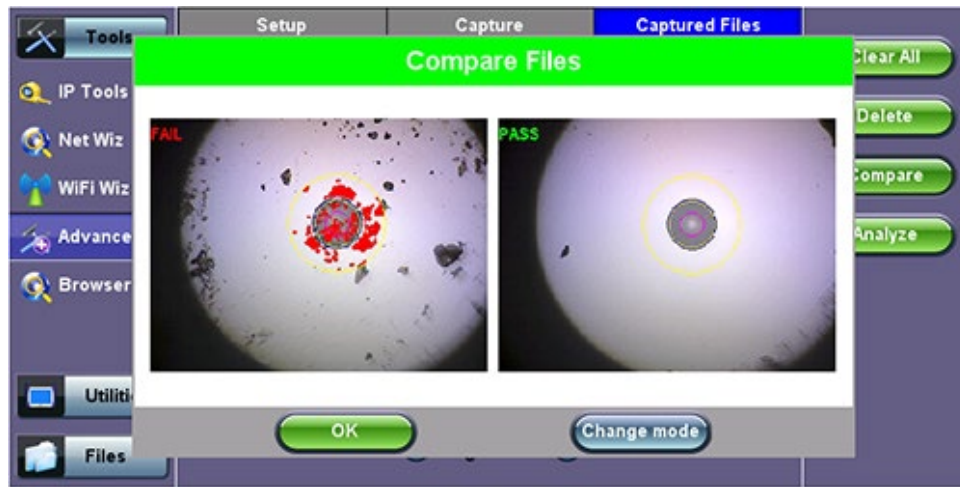
7.5.1.8 Captured Files Tab

This section of the user interface lists all the connectors' end face images that have been captured with the fiber inspection microscope. Users can add "Before" and "After" identifiers or remainders when comparing images before or after cleaning or polishing.

Clear All: Deletes all the image files in the Captured Files list

Delete: Deletes any check-box selected files from the Captured File list

Compare: Compares two images, for example, ones taken before and after cleaning. Use the check-boxes to select any two image files and then tap on the Compare soft button. Use the Change Mode button on the comparison window to enable and disable the analysis overlay.



Analyze: This soft button opens a more detailed analysis and report generation. Use the check boxes to select the images to be analyzed



- **Image File:** Shows the name of the picture currently being displayed. Use the Open button to navigate, select and load any other file.
- **Show/Hide Overlay:** Enables or disables the mask, anomalies identification and analysis.
- **Finer From/To:** User customizable labels to identify the fiber under test
- **Save Report:** Generates a full report including a table with measurements and images. Use the >Utilities >Files function to View the report, export to PDF format and copy to USB.

Analysis Report:

Setup

Parameter	Test Data
Fiber From	FremontHQ
Fiber To	ACME Telecom Inc. Hub
Comments	Outbound 100GE

Analysis Result

Zones	Scrathes			Defects		
	Criteria(um)	Thresholds	Count	Criteria(um)	Thresholds	Count
A:Core 0-65 um	[3;inf)	0	0	[0;5) [5;inf)	4 0	0 0
B:Cladding 65-120 um	[5;inf)	0	0	[2;5) [5;inf)	5 0	0 0
C:Adhesive 120-130 um	-	-	-	-	-	-
D:Contact 130-250 um	-	-	-	[10;inf)	0	0

Result

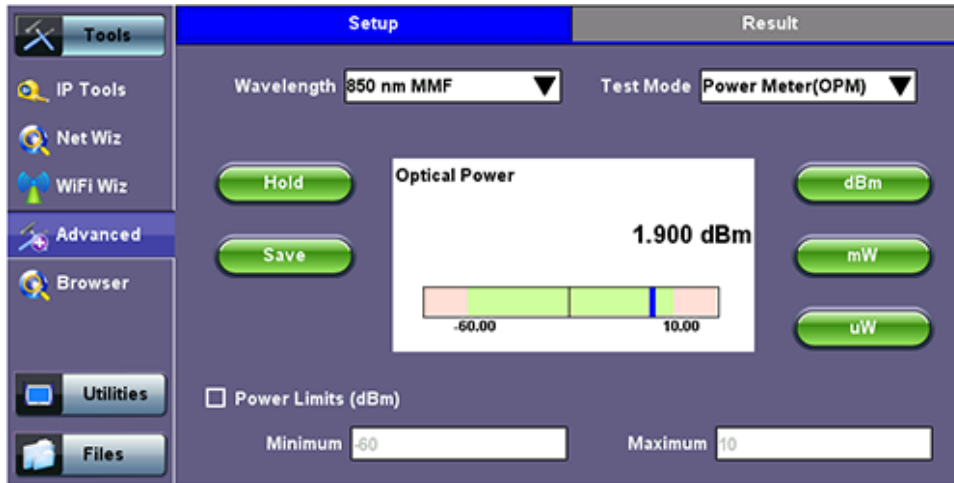
- **Results Table:** Shows the defects and scratches count by sizes and position, used for the evaluation of the Pass/Fail criteria, according to the IEC 61300-3-35 standard.

Image/Report	Scrathes			Defects		
	Criteria(μm)	Thresholds	Count	Criteria(μm)	Thresholds	Count
A:Core 0-65 μm	[3;∞)	0	0	[0;5) [5;∞)	4 0	0 6
B:Cladding 65-120 μm	[5;∞)	0	0	[2;5) [5;∞)	5 0	0 6
C:Adhesive 120-130 μm	-	-	-	-	-	-
D:Contact 130-250 μm	-	-	-	[10;∞)	0	17

7.5.2 Optical Power Meter (OPM)

This function works in conjunction with Optical Power Meter dongles (USB), such the optional UPM-100.

Insert the OPM dongle to on of the test set's USB port before launching this application.



Optical Power and Loss Measurements

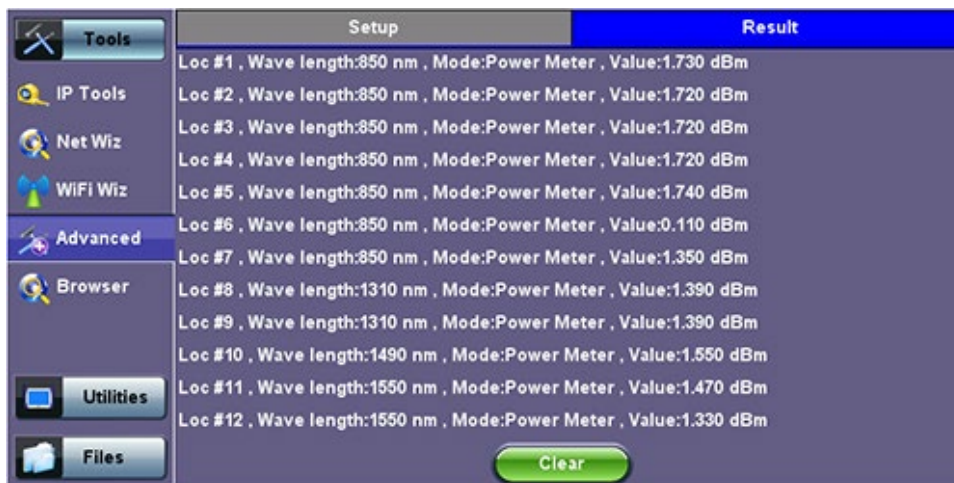
Wavelength: This pull-down menu provides a list of calibrated wavelengths to match the signal being measured.

Test Mode: Allows users to select between Power or Loss measurements.

- In Power Meter mode the test set presents the direct power readings, which are displayed in dBm, mW or uW units. Users can perform the conversions by using the button on the right side of the reading
- In Loss Meter mode the test set reports the difference in power readings between the Laser Source (LS) output being used and what is currently present at the connector after being attenuated by the fiber. The results are presented in dB. Loss meter requires to be referenced (calibrated) to the Laser Source output. You must connect the LS to the OPM dongle using a short patch cord and tap on the Reference button to record the 0dB point. Then that LS can be connected to the far-end of the fiber to measure the loss.

Hold: Freezes the last power or loss reading on the screen

Save: Records instantaneous power or loss readings in the Result's tab. This is useful when measuring multiple fibers or testing one fiber with multiple wavelengths. Up to 12 measurements can be logged in the Results tab. You must use the 1 button to save these results.

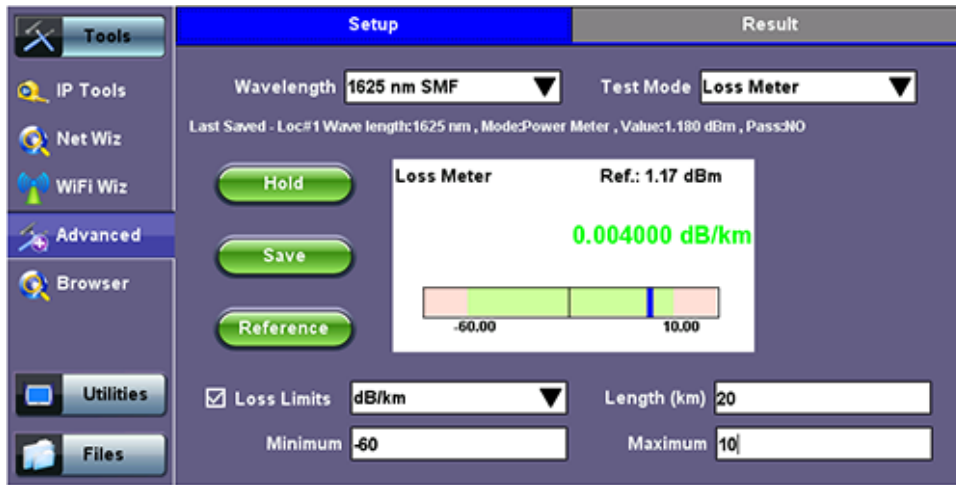


7.5.2.1 Setting Pass/Fail Limits

Whether measuring optical power or loss, there are always power input limits (saturation and Loss) or attenuation allowances that determine whether the fiber cable meets the requirements for the desired application or network elements.

Power Limits (dBm): When check-box is ticked, users can enter the Minimum and Maximum power levels allowed for the application (e.g. in line with the transceiver's dynamic range). If the power reading falls beyond those limits, the power measurement reading will turn red.

Loss Limits: Similar to power limits, user can set Minimum and Maximum amounts of optical power loss that are acceptable for the application or specified for the cable or installation. User can simply specify the total amount of attenuation in dB. Alternatively, user can select the dB/km or dB/mi if the results are being compared against cable specifications. In this case, enter the length of the cable under test for the test set to make the conversion.



7.5.3 WiFi Spectrum Analyzer

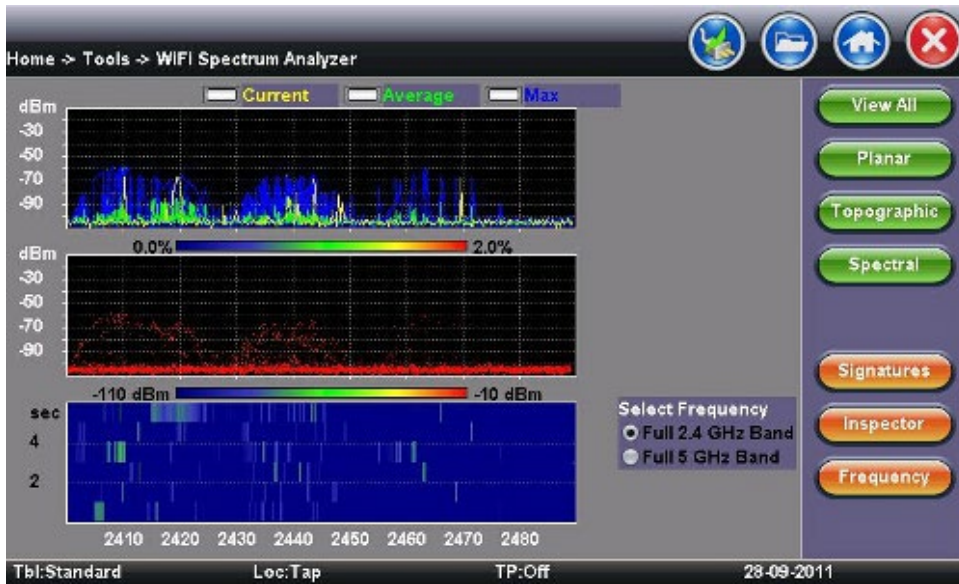
WiFi SA is a portable spectrum analyzer on a USB dongle that displays all RF activity in the WiFi bands (e.g., wireless networks, cordless phones, microwave ovens, Bluetooth devices, etc.). It offers the following capabilities:

- Helps determine the best available WLAN channels quickly for optimal performance
- Helps to visualize and locate RF signals in the 2.4GHz and 5GHz spectrums
- Discover and remedy competing access points
- Optimize WLAN networks by locating and eliminating interference sources

WiFi SA Specifications

Parameter	2.4 GHz	5 GHz
Frequency range	2.4 to 2.495 GHz	5.15 to 5.85 GHz
Frequency resolution	26 kHz to 3 MHz	24 kHz to 3 MHz
Filter bandwidth	58 to 650 kHz	54 to 600 kHz
Antenna type	RP-SMA	
Amplitude range	-100 dBm to -6.5 dBm	
Amplitude resolution	0.5 dBm	

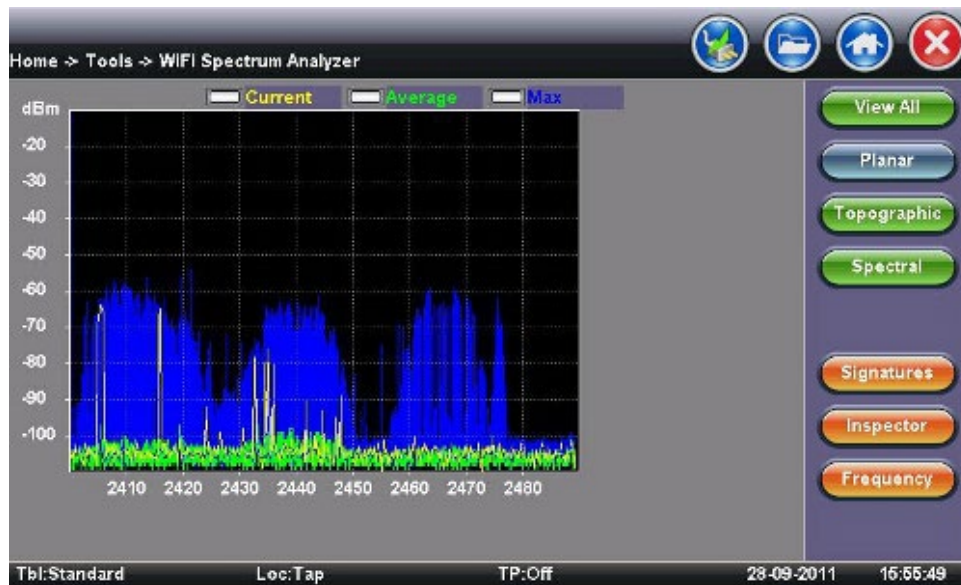
- Supports 802.11a/b/g/n networks
- Supports both 2.4 GHz and 5 GHz bands
- Equipped with RP-SMA antenna jack
 - Allows user to replace standard external Omnidirectional antenna with a higher gain or directional antenna as needed
- The WiFi Analyzer is a compact and portable USB dongle that plugs into the USB 2.0 port of the V300 series
- The WiFi SA test application menu is located in the Tools/Advanced Tools menu



Display Summary

- **Planar view:** Reports current, average, and maximum signal amplitude for each wireless frequency
- **Topographic view:** Emphasizes which frequencies are the busiest across the entire spectrum
- **Spectral view:** Historical view of wireless spectrum use at a point in time

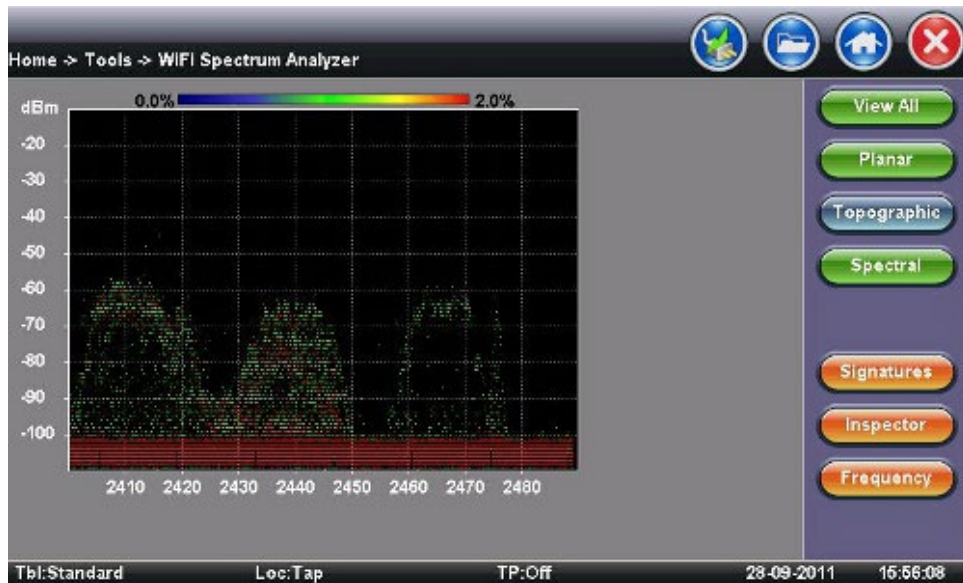
WiFi SA - Planar View



Planar View

- Traditional Spectrum Analyzer view with Max, Average, and Current results
- Displays RF activity in real time and tracks average and max values over a given period

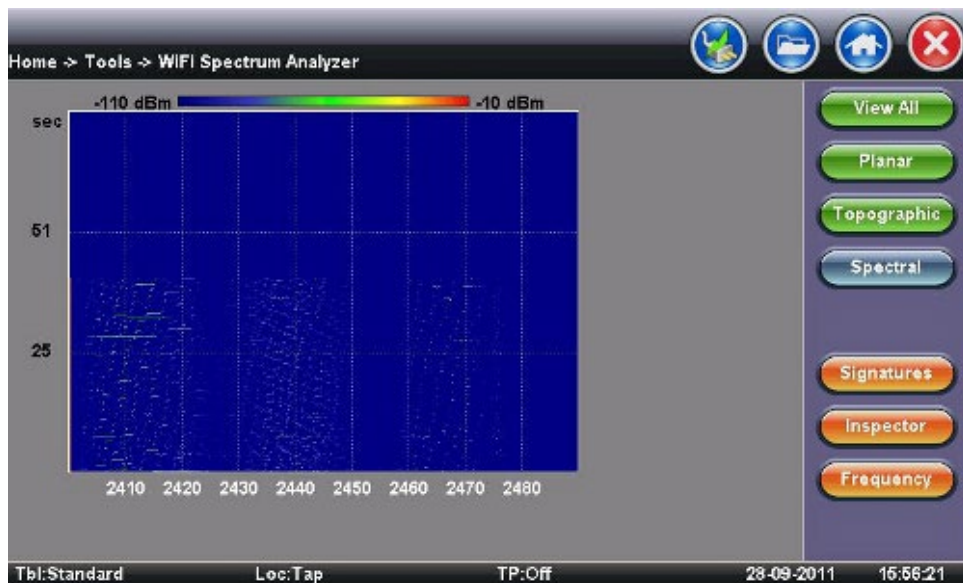
WiFi SA - Topographic View



Topographic View

- Similar to a density map - plots frequency versus amplitude
- Uses a special color scheme to assign colors to frequency amplitude points and to identify how often a particular coordinate is recorded
- Great resource for identifying devices with very low duty cycles
- Leaving it running will give a good indication of the typical local network conditions

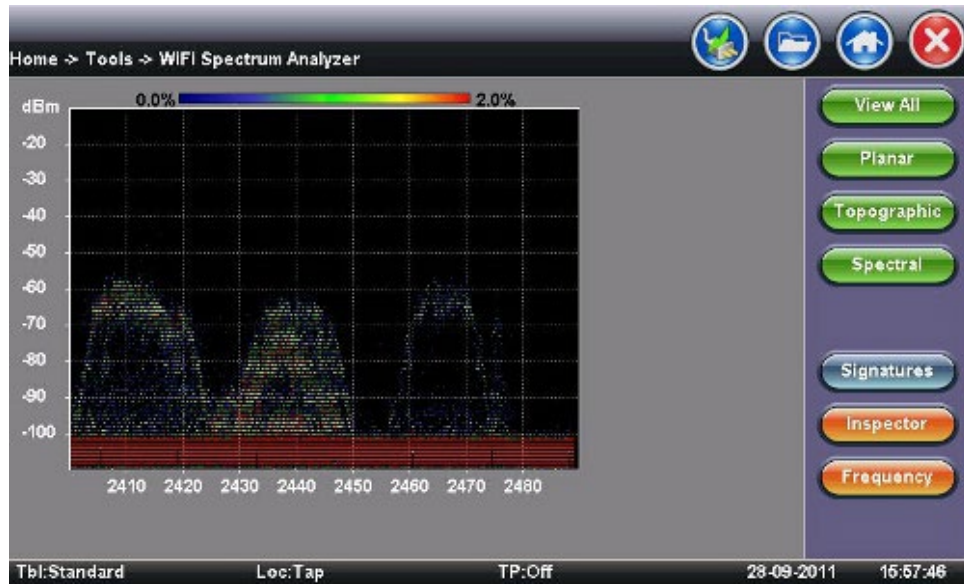
WiFi SA - Spectral View



Spectral View

- Waterfall type view across the whole band - graphs amplitude levels over time
- Uses color to pick out the relative signal strength at each point in time
- Great tool for troubleshooting intermittent problems, since it highlights devices that are perhaps emitting only short bursts of noise
 - For example - discover microwave oven in the kitchen interfering with WLAN

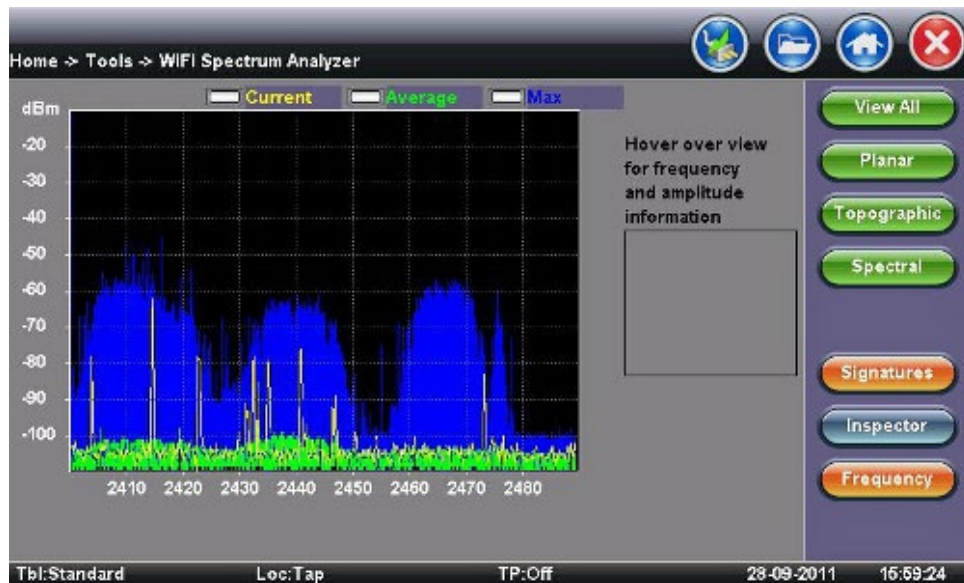
WiFi SA - Signatures



Signatures

- The Signatures button presets are available to identify unknown sources of RF activity (e.g., microwave oven)
- Select a device in the sidebar and click the pattern in the Topographic view to identify a device

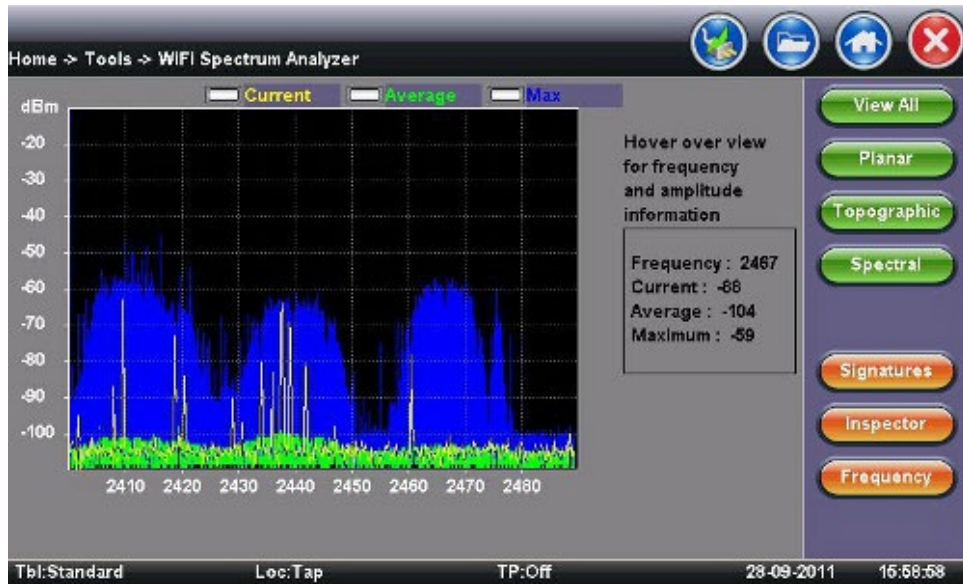
WiFi SA - Inspector



Inspector

- The Inspector button setup allows the user to measure the frequency of the RF activity or interference of interest
- When selected, a prompt and result box appears

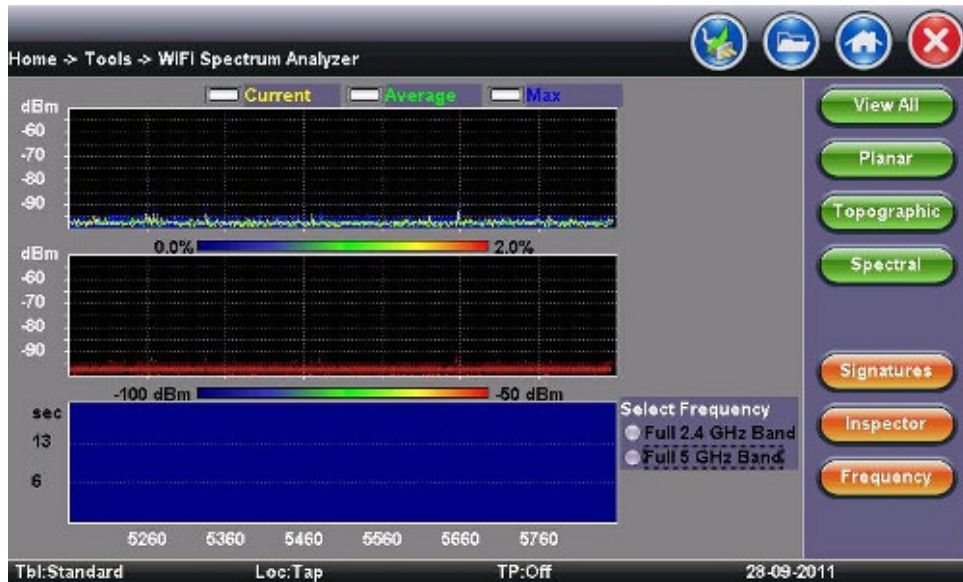
WiFi SA - Inspector - Result



Inspector Button - Result

- Identifies frequency and amplitude
- Current, Average, and Maximum amplitude values provide an indication of level fluctuation over measurement period

WiFi SA - Frequency



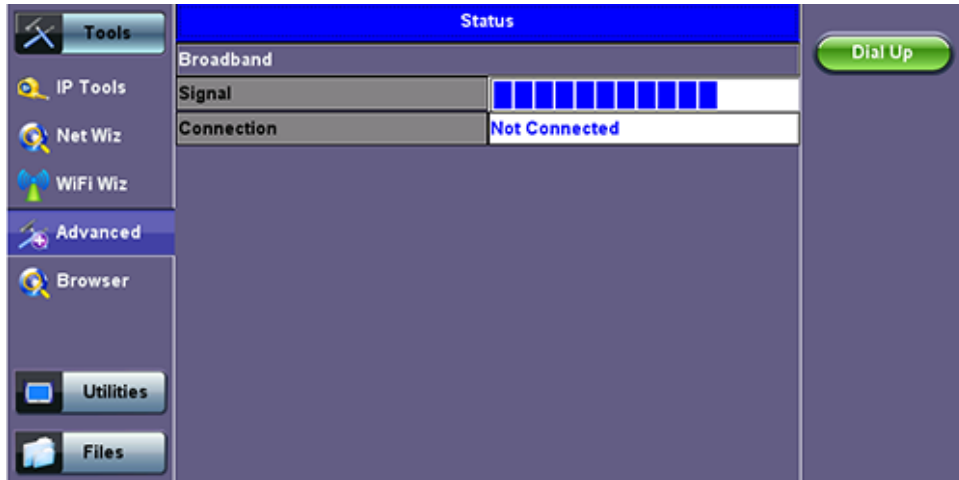
Frequency


- This button allows the user to select frequency band for testing

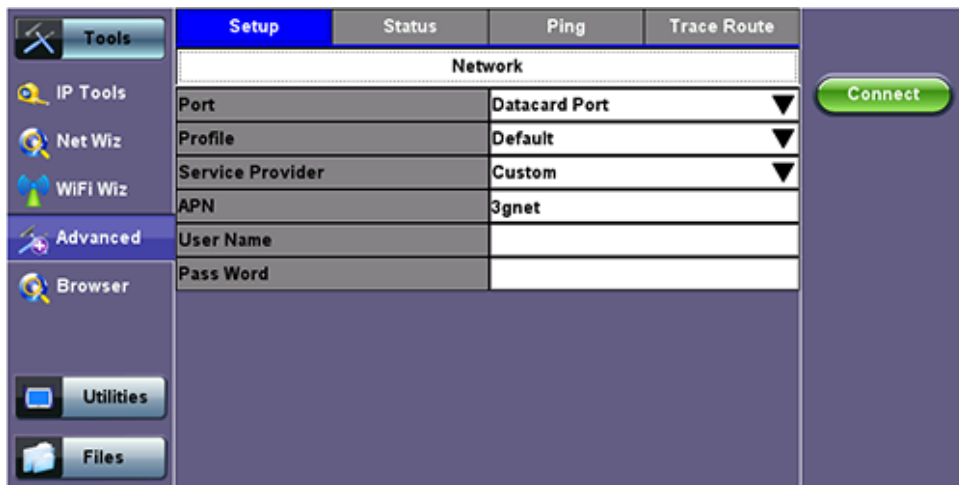
7.5.4 Data Card

To establish an IP connection using a data card, please make sure that the data card is connected on the USB port. Note that only datacards provided by VeEX are supported and have the driver necessary for connection. The **Data Card** icon, as shown below, will appear at the bottom of the screen.


Data Card - Setup

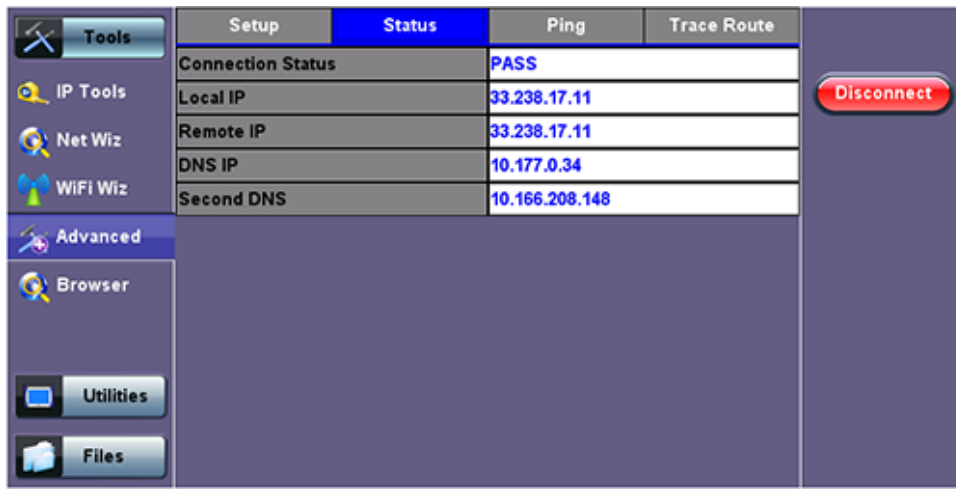


1. Press the **Dial Up** key
2. In the IP Tools Setup menu, the Port will be displayed as "Datacard Port." The D for Data icon in the bar on the lower end of the screen will have a red cross to show that datacard is not connected - . Select the **configuration parameters**, then press **Connect**.



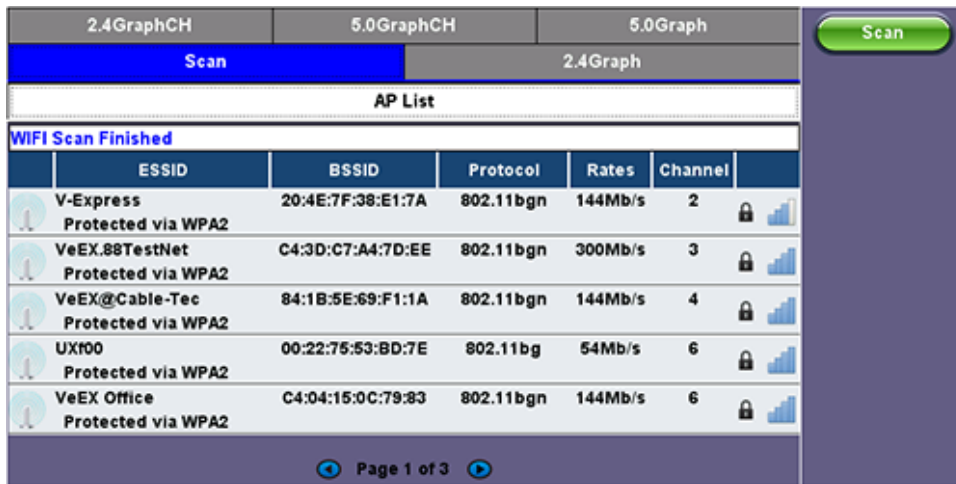
Once a connection has been established:

- The **D** for Data in the icon turns green .
- The connection details are displayed in the IP Tools Status tab (shown below)
- It will automatically reconnect if the test set is powered off/on and you are in a good reception area
- It will automatically reconnect if you enter a bad cell area and return to a good one



7.5.5 Wifi inSSIDer

WiFi inSSIDer Home



1. Plug the WiFi adaptor into the USB port. Allow at least 30-45 seconds for the unit to detect the wireless adaptor and for the software driver to load.

Products support USB wireless adaptors supplied by VeEX only and have the necessary software driver built into the test set.

The WiFi InSSIDer supports 2.4GHz and 5.0GHz Bands. The home screen has tabs to display test results for both frequency bands and also for graphical presentation of results for both.

2. Tap the **Scan** button on the right side of the screen.

After the scan is completed, the unit displays the list of access points (AP) detected in the 2.4 GHz and 5GHz bands.

The following information is displayed for each AP:

- SSID name of the AP
- BSSID (MAC address) of the AP
- 802.11 protocol version supported by the AP
- Max data rate supported by the AP
- AP's radio channel number
- Lock symbol indicates if security is set on the AP (WEP, WPA or WPA2).
When the AP is unsecured, no lock symbol is displayed
- Signal strength of the AP

Access Points in the 5.0GHZ spectrum can only be displayed if the VeEX USB Wifi adapter supports 802.11a/n or 802.11 a/n/ac. Refer to the USB Wifi adapter specifications.

3. Use the 2.4GHz GraphCH and 5.0GraphCH tabs to view the number of Access Points detected for each channel in the 2.4GHz and

5GH bands and the strength of the strongest AP's signal for each channel.

2.4GHZ Channel

Scan		2.4Graph	
2.4GraphCH		5.0GraphCH	5.0Graph
Channel	AP	Best Signal	Best Signal Bar
1	2	100%	100%
6	2	100%	100%
3	2	79%	79%
4	1	78%	78%
2	1	74%	74%
11	3	47%	47%
7	0	0%	0%
8	0	0%	0%
9	0	0%	0%

Page 1 of 2

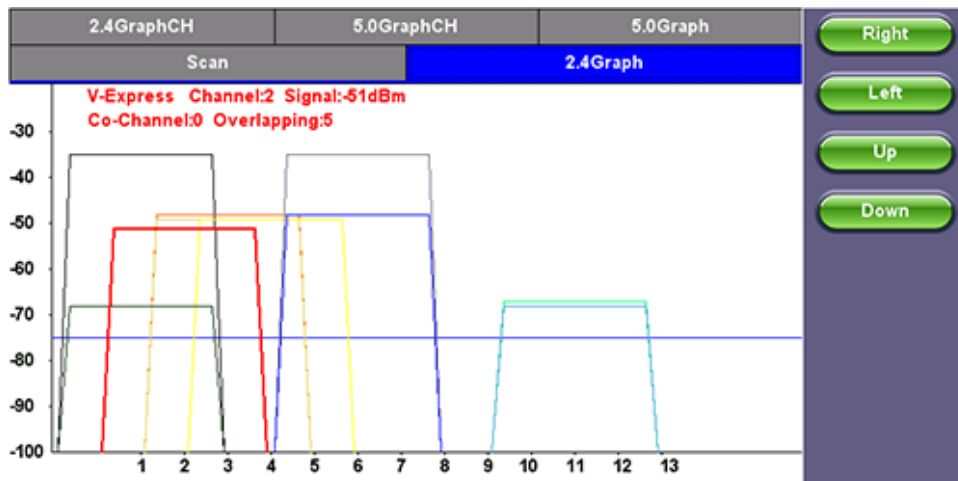
5GHZ Channel

Scan		2.4Graph	
2.4GraphCH		5.0GraphCH	5.0Graph
Channel	AP	Best Signal	Best Signal Bar
153	1	-35dBm	100%
40	0	null	0%
44	0	null	0%
48	0	null	0%
149	0	null	0%
36	0	null	0%
157	0	null	0%
161	0	null	0%
165	0	null	0%

Page 1 of 1

4. Tap the **Graph** tab of the respective Channel to view the results in a graphical presentation.

Graph



Use the **Right/Left/Up/Down** function keys or the **arrow** keys on the unit's keypad to navigate the graph and get additional information for the access points. Detailed information for each Access Point includes:

- SSID: name of the AP

AP's radio Channel number

- Signal strength (dBm)
- Number of co-channel: Number of APs using the same radio channel
- Number of Overlapping APs: Number of APs using channels whose frequency band overlaps with the AP.

7.5.6 OTDR Viewer

This functionality allows the test platform to open and analyze standard OTDR .SOR files created by the TX300S-OTDR, RXT-4100 OTDR, FX300 OTDR or SunLite OTDR test sets. It can also be used to control the wireless OPX BOX OTDR via Bluetooth or USB connection, offering full-featured OTDR functionality.

For more information about OTDR functions, see the *OTDR Series: V300/RXT/FX100/MTTplus* User Manual on www.veexinc.com.

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7.5.7 GNSS Sky View


GNSS Receiver Settings and Operation

This section explains the GNSS Receiver configuration and basic settings required to quickly verify proper module installation and operation. Refer to the tables at the end of this document for application-oriented settings.

1. Install the portable antenna facing up, on a stable surface or mounting, with a wide unobstructed view to the sky or use a professionally-installed in-building roof-top antenna feed.
2. Connect the active GPS or antenna to the GNSS Receiver module's SMA connector. If a BNC-to-SMA or TNC-to-SMA adapters is required, use flexible adapter cables (not rigid adapters) to prevent any mechanical stress.
3. Go to **>Utilities >Settings >More >High Precision Clock >GNSS**.

GNSS Receiver On

Ch	SAT	dBHz	Ch	SAT	dBHz
01	03	00	07	23	37
02	05	20	08	27	26
03	07	43	09	28	30
04	08	32	10	30	38
05	09	37	11	46	37
06	16	25	12	48	37

4. Turn the **GNSS Receiver = ON**.
5. Set the **Satellite System = GPS**
6. Set **In-survey time (s) = 600**, which is the time window used by the GNSS Receiver to assess stable location, using the specified accuracy (below). Having an accurate tri-dimensional location is required to calculate accurate time.
7. Set **In-survey accuracy (m) = 5**, which is a target of <5m for the Mean V accuracy reading. Smaller values tighten the location accuracy requirements, but the site survey process may take longer. It is possible to get better than 1.5m location accuracy when using professionally-installed roof-top antennas.
8. Enter any antenna cable delay that needs to be compensated for (velocity of propagation is cable dependent, their values are around 5ns/m or 1.2ns/ft). Enter **20ns** if using the 5m portable antenna.
9. Select the **Time Zone Offset** (it is used to calculate the local time of day).
10. Wait for GPS Status on top to show Lock and the  icon at the bottom of the screen turns green. It indicates that it is successfully tracking enough GPS and GLONASS satellites.
11. Wait for about 15 to 30 minutes for the **Mean V** value to be below **5.00m** and until the **In Survey** status also shows **Locked**. This indicates that the GPS position has reached the required accuracy (site survey finished) and that it has switched into Timing Mode.
12. At this point, the GPS Module should be providing accurate Time and Timing (1PPS).
13. Tap the **Sync ToD** button to synchronize the test set's (system) real-time clock.

Atomic Clock Settings and Operation

This section explains the different disciplining parameters for the optional chip-scale Atomic Clock and provides the settings required to quickly verify its proper operation. For application-oriented configurations, please refer to the suggested configurations table at the end of this document.

Free Running Stage (Frequency only)

By default, the built-in Atomic Clock oscillator starts in free-running mode, providing a calibrated Atomic 10MHz frequency reference. (Its exact frequency could vary over time due to ageing, temperature, storage and other factors.) It also produces an arbitrary (non-traceable) 1PPS timing signal that is not aligned to the standard UTC second. Disciplining must be used in order to make the necessary frequency and timing corrections.

Oscillator Disciplining Process (Frequency & Phase)

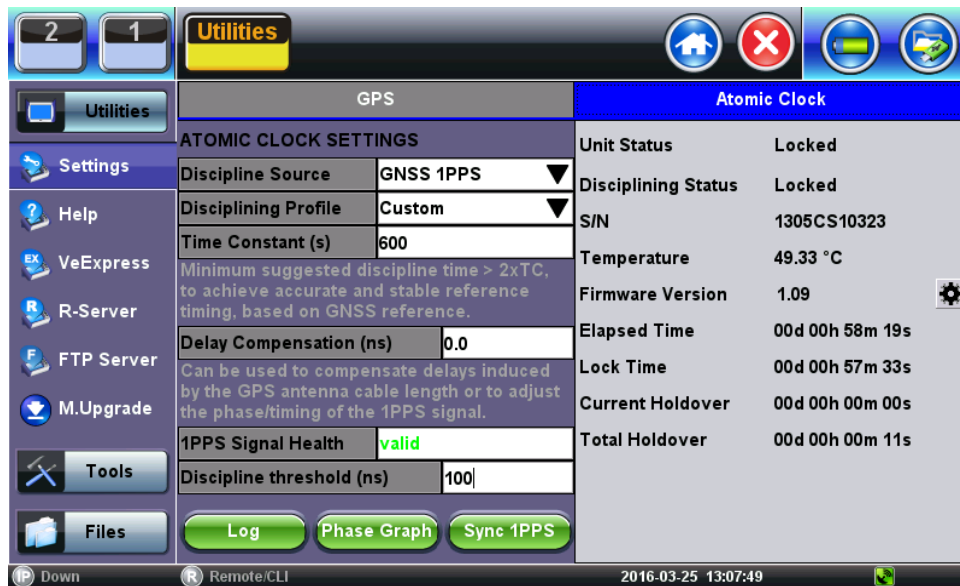
The disciplining process acts as a continuous “soft calibration” that corrects any frequency deviation in the oscillator and aligns the timing pulse (1PPS) to the standard UTC second. The chip-scale atomic oscillator can be disciplined by:

1. The built-in precision GNSS Receiver (GNSS 1PPS).
2. An external traceable 1PPS signal from a primary reference time clock (PRTC) or time standard (Cs or Rb).

Clock Disciplining - Using the built-in GNSS 1PPS

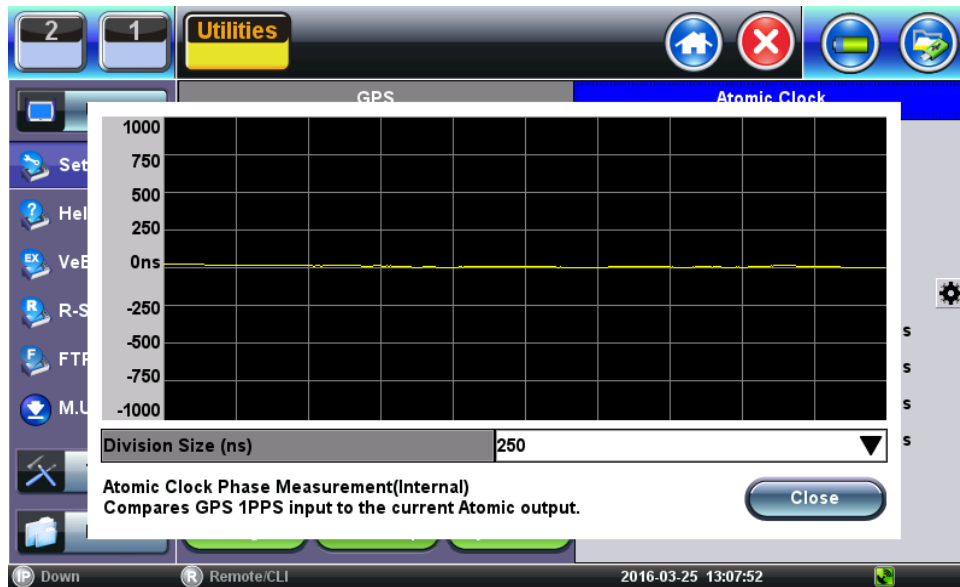
1. With the GNSS module already locked, go to **>Utilities >Settings >More >High Precision Clock >Atomic Clock**.
2. Set **Discipline Source = GNSS 1PPS**, to use the traceable (UTC aligned) 1PPS timing signal from the GNSS receiver.

Discipline Source



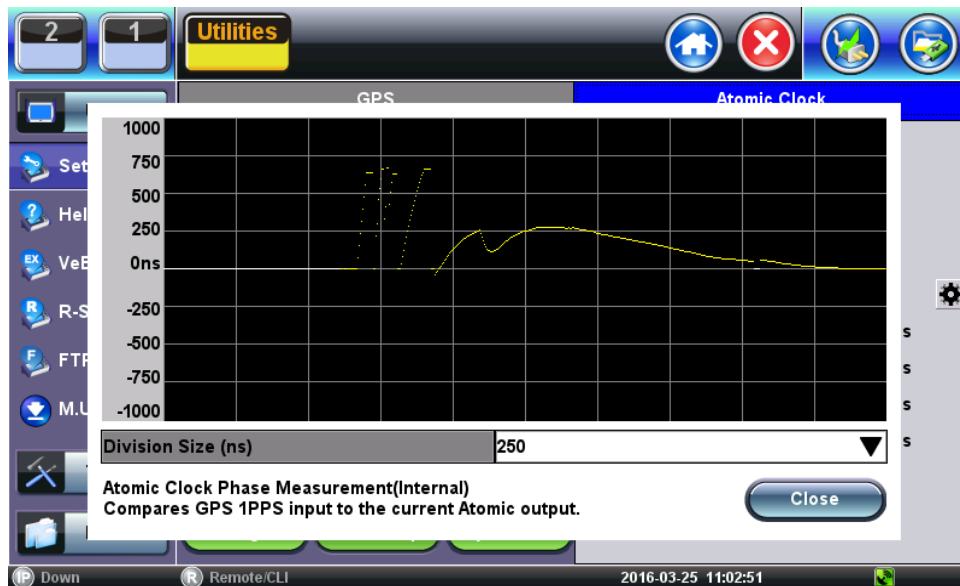
3. Verify that **1PPS Signal Health = Valid**, to confirm that the one-pulse-per-second signal is being detected.
4. Set **Discipline Profile = Custom**.
5. Set Time **Constant (s) = 60** (this small window is only used to expedite the initial phase alignment process).
6. Set **Discipline Threshold (ns) = 100** (a more stringent 50ns could also be tried, if applicable. Use the Phase Graph to determine the stability range).
7. Verify that **Disciplining Status = Acquiring**. This indicates that the disciplining process is in progress.
8. Tap on the **Phase Graph** to monitor the relative phase error until it becomes a horizontal line close to 0ns. The time required for this may vary (it should take less than 15 minutes)
9. Close the Phase Graph and set the **Time Constant (s) = 900**. You can also experiment with larger time constants (e.g. 1800s, 3600s, 5400s). The larger the constant the more stringent the disciplining process becomes and the longer it takes to achieve disciplining lock. To declare lock, the Atomic Clock verifies that the relative phase stays within the defined Disciplining Threshold for about 2x Time Constant (to confirm its stability). You can use the Phase Graph to monitor the actual phase variations on your current GNSS environment for the past 600s.

Discipline Source Phase Measurement



1. Open the **Phase Graph** again to monitor the time error. Once it stabilizes again around 0ns, wait for about 60 minutes. The line should stay flat and very close to 0ns. If not stable, please check the GPS satellites and antenna installation.

Discipline Source Phase Measurement



2. Close the Phase Graph and verify that the **Disciplining Status** gets into **Locked** mode.

At this point the test set's internal "Atomic 10MHz" frequency and "Atomic 1PPS" timing reference signals can be considered accurate and stable.

The Phase Graph (above) can be used to monitor the short-term stability of the raw GPS clock, which can be used to determine the Discipline Threshold for a particular site or scenario. Zoom in to the 50ns grid and estimate how disperse the 1PPS samples are (in ns), then use a larger value as a threshold. A vertical variation of <30ns is OK.

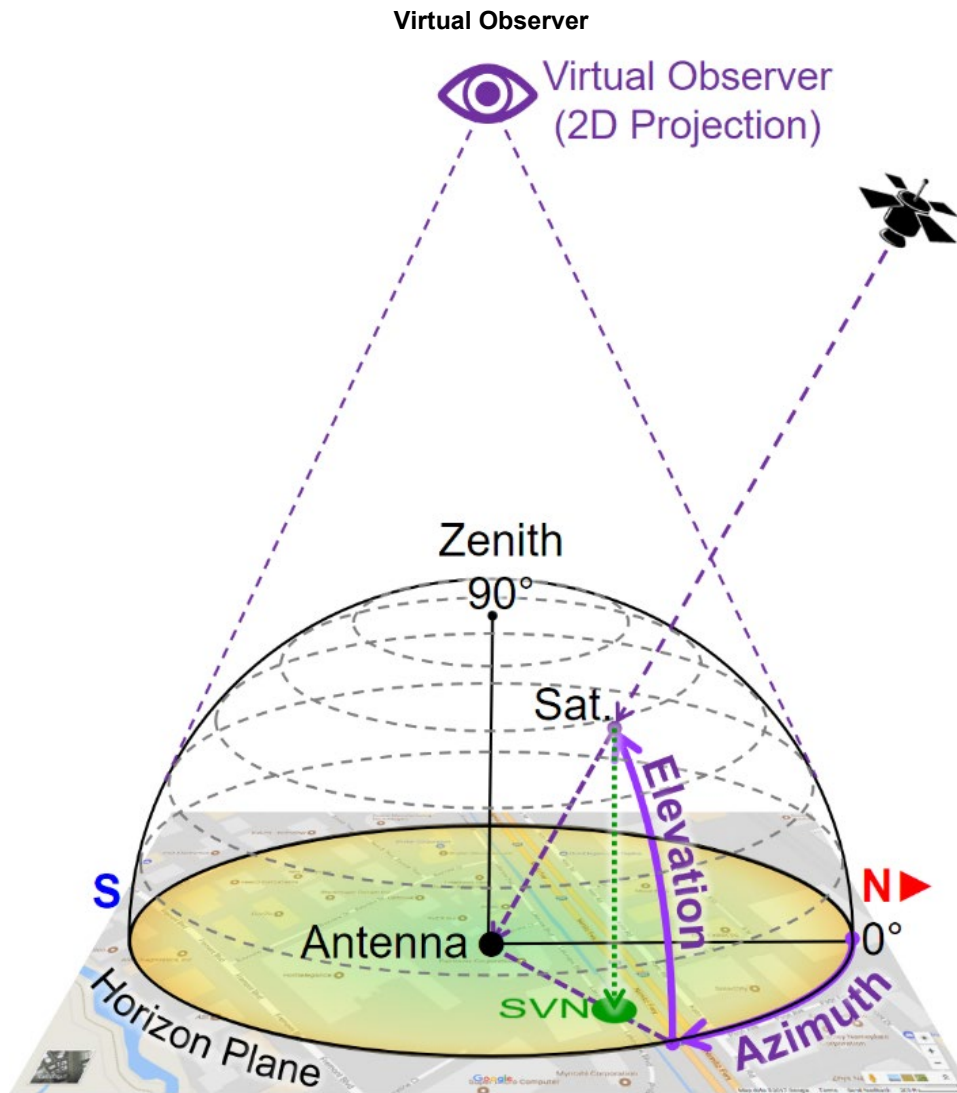
Verifying the Antenna Field of View

Not many of us would be tempted to get on the roof or climb to the top of a tower to perform a 360° visual inspection to identify any potential satellite signal obstructions. But even if you do, you won't be able to "see" interference, multi-path or other RF effects.

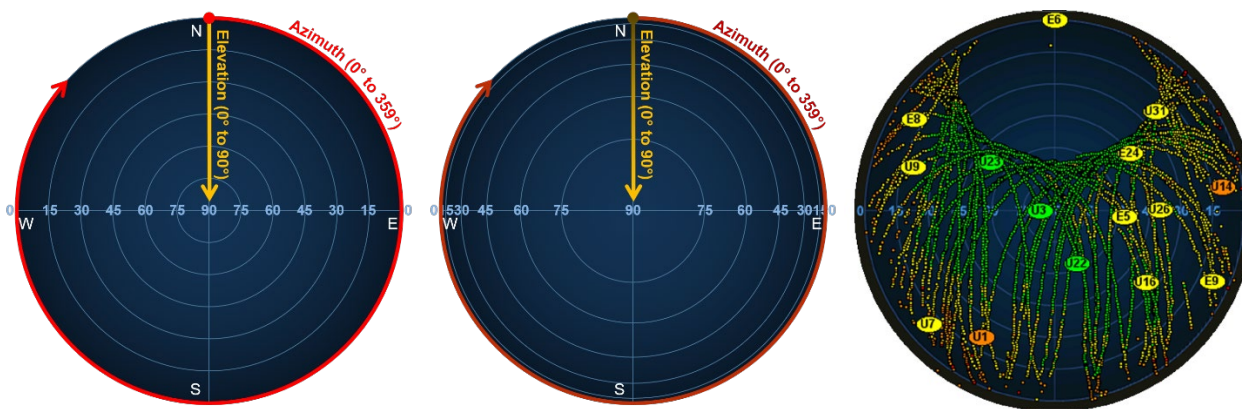
As all "visible" GNSS satellites move around their orbits, the directional vectors pointing at them form dome above the antenna. Their received signal qualities change over time, depending on their elevation angles, obstructions, reflections and other factors.

To track this, you need a tool that records the C/No of every satellite as they pass by the antenna's aperture (field of view), to create a flat (2D) projection of a 360° color-coded dome-shaped "heat" map representing the field of view of the antenna and the signal quality from

every direction. These azimuthal graphs allow you to identify areas (directions) with degraded signal quality.



Building such maps usually takes >24 hours, to allow each satellite to complete one cycle over the antenna (not to be confused with their ~12-hour orbital cycles).



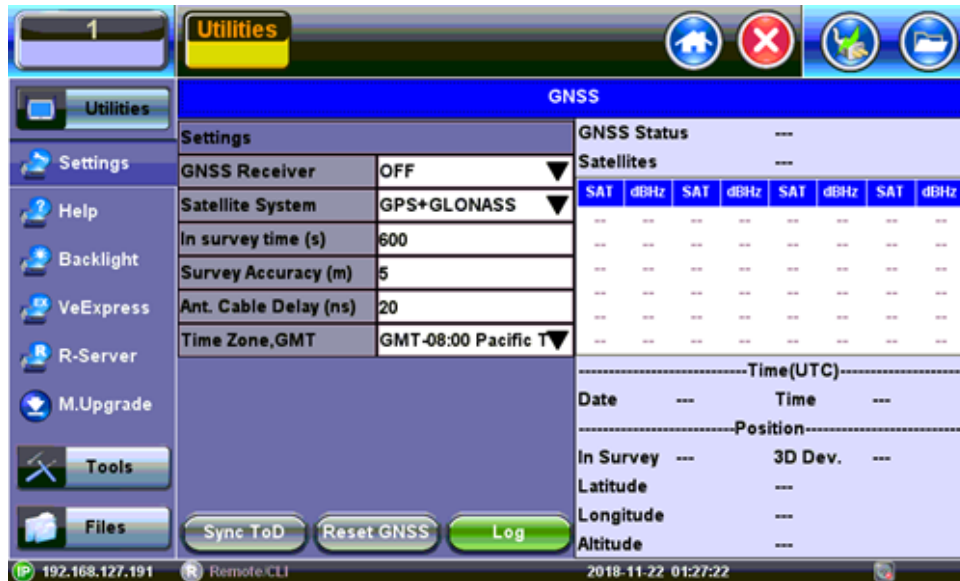
Examples of 2D Linear and Cosine projection (polar) grids, as well as actual satellite trails recorded

This type of tool can also be used to evaluate and benchmark different antennas in real life and under the same conditions. The areas in yellow indicate the directions with degraded satellite signals are, such as RF “shadows” cast bet trees and buildings. They can also indicate interference. As the signal degrade even more they turn orange and red. The example below shows the correlation between the sky view map and a map of the area around the antenna.

7.5.8 GNSS Sky View

1. Go to >Utilities >Settings >More >High Precision Clock.
2. Turn the **GNSS Receiver = OFF** and close the screen.

GNSS Receiver Off



3. Go to >Tools>Advanced>More>GNSS.
4. Select the **Time Zone** from the **Time Zone Offset**: drop-down list box.
5. Enter a **Test Name** from the **File Name**: drop-down list box.
6. Select the **Duration** of the test from the **Duration**: drop-down list box.

GNSS Setup



7. Tap on the **Arrow** to open the menu and tap on **Start**.

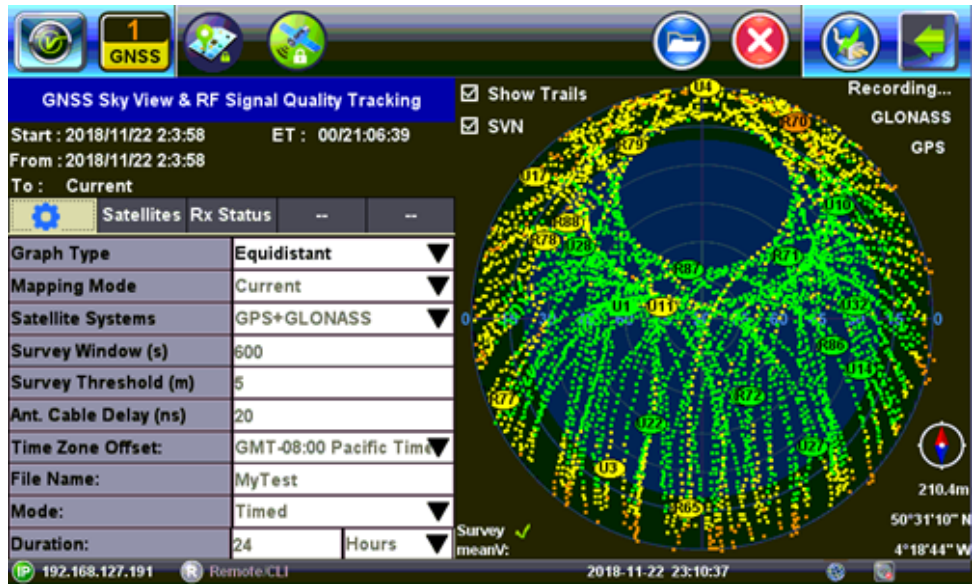
GNSS Start Menu



GNSS Start

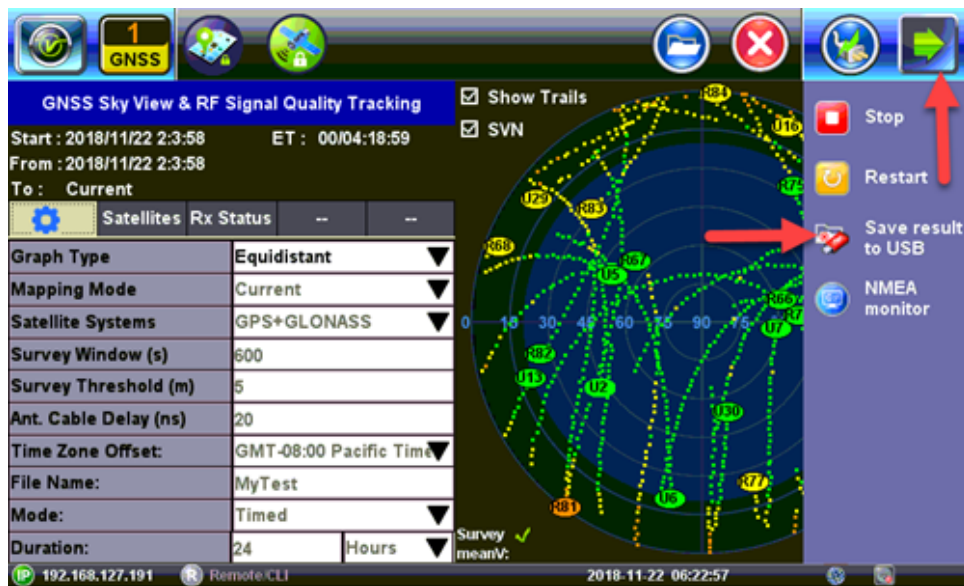


GNSS Results



8. To save **Results to USB** tap on the **Arrow** and then tap on **Save Results To USB**.

GNSS Save Results



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7.6 Web Browser

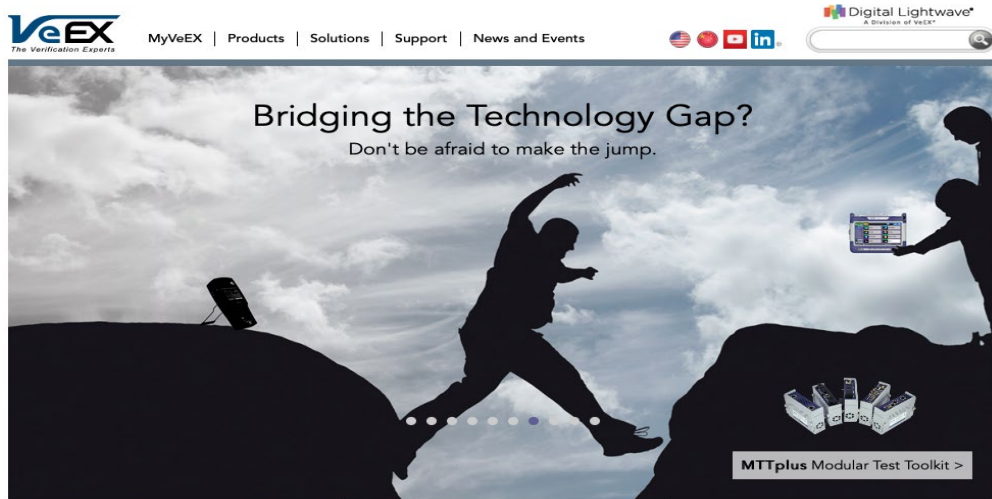
A web browser is available in the **>Utilities >Tools > Browser** menu and can be used as a convenience (browse the web) or to quickly verify Internet connectivity.

The built-in web browser uses the management port IP connection.

An active IP connection can be established either through Ethernet, WiFi or datacard ports.

The web browser defaults to VeEX's website. Use the web browser's navigation bar to enter the name of the website you wish to reach.

Web Browser



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8.0 Warranty and Software

Warranty Period: The warranty period for hardware, software and firmware is from the date of shipment to the customer. The warranty period for battery pack, LCD, LCD touch panel, LCD protective cover, and accessories (including but not limited to patch cords, AC adaptor, SFP, USB adaptors, carrying case, carrying pouch) is limited to one (1) year.

Hardware Coverage: VeEX Inc. warrants hardware products against defects in materials and workmanship. During the warranty period, VeEX will, at its sole discretion, either

- Repair the products
- Replace hardware which proves to be defective

provided that the products that the customer elects to replace is returned to VeEX Inc. by the customer along with proof of purchase within thirty (30) days of the request by the customer, freight prepaid.

Software Coverage: VeEX Inc. warrants software and firmware materials against defects in materials and workmanship. During the warranty period, VeEX will, at its sole discretion, either

- Repair the products
- Replace the software and/or firmware which prove to be defective

provided that the products that the customer elects to replace is returned to VeEX Inc. by the customer along with proof of purchase within thirty (30) days of the request by the customer, freight prepaid.

Additionally, during the warranty period, VeEX Inc. will provide, without charge to the customer, all fixes, patches and enhancements to the purchased software, firmware and software options. VeEX Inc. does not warrant that all software or firmware defects will be corrected. New enhancements attached to a software option require the option to be purchased (at the time of order or the time of upgrade) in order to benefit from such enhancements.

Limitations: The warranty is only for the benefit of the customer and not for the benefit of any subsequent purchaser or licensee of any merchandise (hardware, software, firmware and/or accessories).

Revoking the warranty: VeEX Inc. does not guarantee or warrant that the operation of the hardware, software or firmware will be uninterrupted or error-free. The warranty will not apply in any of the following cases:

- Improper or inadequate maintenance by the customer
- Damage due to software installed by the customer on the unit without prior authorization (written) from VeEX Inc.
- Unauthorized alteration or misuse
- Damage occurred from operating the unit from outside of the environmental specifications for the product
- Improper installation by the customer

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9.0 Certifications and Declarations



Declaration of Conformity

What is CE?

The CE marking is a mandatory European marking for certain product groups to indicate conformity with the essential health and safety requirements set out in European Directives. To permit the use of a CE mark on a product, proof that the item meets the relevant requirements must be documented. Use of this logo implies that the unit conforms to requirements of European Union and European Free Trade Association (EFTA). EN61010-1

For a copy of the CE Declaration of Conformity relating to VeEX products, please contact VeEX customer service.



ROHS Statement

What is RoHS?

RoHS is the acronym for Restriction of Hazardous Substances. Also known as Directive 2002/95/EC, it originated in the European Union and restricts the use of specific hazardous materials found in electrical and electronic products. All applicable products imported into the EU market after **July 1, 2006** must pass RoHS compliance.

For more information about RoHS as it relates to VeEX Inc, go to the VeEX web site at www.veexinc.com/RoHS.

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10.0 About VeEX

VeEX Inc., an innovative, customer-focused communications test and measurement company, develops next generation test and monitoring solutions for telecommunication networks and services. With a blend of advanced technologies and vast technical expertise, VeEX's products diligently address all stages of network deployment, maintenance, field service turn-up, and integrate service verification features across DSL, Fiber Optics, CATV/DOCSIS, Mobile backhaul and fronthaul (CPRI/OBSAI), next generation Transport Network, Fibre Channel, Carrier & Metro Ethernet technologies, WLAN and Synchronization.

Visit us online at www.veexinc.com for latest updates and additional documentation.

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