# TX300s Platform
**Multi-Service Test Solution**


NEW

- TX300s-100GX module supporting wider range of test interfaces
- High Precision Multi-band GNSS option

# VePAL TX300s
**Advanced Multi-Service Test Platform - From 64k to 100G**

**Flexible hardware configuration options to match any Core, Transport, Metro, Carrier Ethernet, Mobile Backhaul/Fronthaul, Storage Area Network and Fiber Optics Applications**

## Platform Highlights

This all-in-one rugged field test platform can be configured to meet all technologies required by field engineers to install, maintain and troubleshoot any communication technology and service. From Fiber Optics characterization to SAN, metro, core, and transport technologies, as well as IPv4/6, MPLS, ISDN, VoIP, IPTV, Precision Timing Protocol and synchronization services.

- All-in-one hardware platform reduces CAPEX.
- The VeExpress ecosystem allows users to buy, rent, lease-to-own and share test feature licenses to optimize OPEX.
- Optimized for field engineers or technicians installing and maintaining Transport, Carrier Ethernet, Storage Area Network, Fiber Optics, backhaul and fronthaul mobile networks.
- Full support for legacy PDH/DSn interfaces with standard connectors (no adapters required).
- Test card summary; monitor and manage up to four independent tests.
- Flexible software platform allows for multiple test applications running simultaneously.
- Multiple factory-installed all-inclusive hardware options, including single and dual-port with optional built-in OTDR.
- Test set connectivity via Ethernet management interface, WiFi, Bluetooth®, and free EZ-Remote™ cloud service applications and workflow optimization.
- User defined test profiles and thresholds.
- Fast and efficient test result transfer to USB memory stick.
- Asset management: Maintain instrument software, manage test configurations, process measurement results and generate customer test reports using VeExpress™ and VeSion® R-Server cloud services.
- Optional built-in high-precision multi-band GNSS and chip-scale atomic clock references.
- Interchangeable Li-ion battery pack extends field testing time.

## Supported Test Interfaces (per module)

| | TX300s-100GX | | TX300s-100GQ | | TX340sm |
|---|---|---|---|---|---|
| **Optical Interfaces** | **QSFP28 QSFP+** | **SFP28+ SFP+** | **QSFP28** | **QSFP+** | **SFP+** |
| 100GE | 1 | | 1 | | |
| 50GE | | | | | |
| 40GE | 1 | | | 1 | |
| 25GE | | 1 | | | |
| 10GE | | 1* | | | 2 |
| 1GE | | 1* | | | 2 |
| 100BASE-FX | | 1* | | | 2 |
| 1/2/4G FC | | 1 | | | 2 |
| 8/10G FC | | 1 | | | 2 |
| 16G FC | | 1 | | | 2 |
| 32G FC | | 1 | | | |
| OTU4 | 1 | | 1 | | |
| OTU3, STL256.4 | | | | 1 | |
| OTU2/2e/1e | | | | | 2 |
| STM64/16/4/1/0 | | | | | 2 |
| OC192/48/12/3/1 | | | | | 2 |
| CPRI 614.4M to 10G | | | | | 2 |
| OBSAI 768M to 6.1G | | | | | 2 |
| IEEE® C37.94 | | | | | 2 |

**Available in single 100GX module configuration*

## Electrical Interfaces

- SDH/SONET: STM1e, STM0e, STS3, STS1
- PDH/DSn: E4, E3, E2, E1, 64k Codirectional, T3, T1
- Dual Receivers
- External clock inputs

## Complete Field Test Solution

### OTN, SDH, SONET, PDH & DSn

- Advanced flexible OTN, SDH/SONET, PDH/DSn test payload. mapping and multiplexing, including EoOTN support 6.4936 in.
- Overhead Monitoring and Byte decoding.
- Automatic Protection Switching and Service Disruption.
- Round Trip Delay on all interfaces and payload mappings.
- Tandem Connection Monitoring.
- Jitter and Wander (E1, E3, DS1, DS3, STM-1o, OC-3).
- Non-intrusive Pulse Mask Analysis at E1, E3 and DS1, DS3.
- G.703 64k Codirectional and IEEE C37.94.

### Ethernet

- RFC2544 Throughput, latency, frame loss and back to back tests.
- V-SAM test suite compliant with ITU-T Y.1564 standard.
- Q in Q (VLAN stacking), MPLS, MPLS-TP, PBB support.
- IEEE 802.3ah, ITU-T Y.1731, IEEE 802.1ag, MPLS-TP OAM support.
- RFC6349 V-PERF TCP test suite hardware-based V-TEST Internet speed test up to 100G.

### SyncE & IEEE 1588v2

- Fully integrated solution for synchronized packet networks.
- Supports IEEE 1588v2/PTP and SyncE/ITU-T G.8261 standards.
- Master Clock and Slave clock emulation.
- IEEE 1588v2/PTP protocol monitoring and decoding.
- IEEE 1588v2/PTP PDV and Time Error analysis.
- ESMC SSM generation, monitoring, and decoding.
- Wander measurement.

### Fibre Channel

- Storage Area Networks (SAN) testing up to 32G.
- BERT and Throughput test.
- RFC2544: Throughput, latency, frame loss, back to back tests.
- Layer 1 and layer 2 loopbacks.

### CPRI/OBSAI DAS Testing

- Common Public Radio Interface standard (CPRI 9), supporting 12.165G rates from 614.4 Mbps to 12.165 Gbps.
- Open Base Station Architecture Initiative (OBSAI): Supports all rates from 768 Mbps to 6.144 Gbps.
- Unframed, Layer 1 Framed and Layer 2 BER testing with PRBS stress patterns.
- Latency measurements.

### Fiber Optics Tools

- High Dynamic Range OTDRs.
- V-Scan Optical Link Mapper function.
- Fiber Inspection Scope.
- OPM, OLS, VFL.
- Fiberizer® Cloud, PC and tablet.

### Timing & Synchronization

- Time Error measurements (1PPS phase error).
- Wander measurements with run-time MTIE/TDEV Analysis on external and recovered clocks.
- Frequency offset measurement.
- Supports multiple external references signals.
- Built-in GNSS receiver options.
- Built-in atomic clock reference option.

## Hardware Options

The TX300s platform can be customized by ordering one or two factory-installed test modules to match specific target applications (refer to the individual test module specs for further details).

### TX300s Factory-installed Hardware Options

| Test Modules | Slot 2 | Slot 1 |
|---|---|---|
| TX340sm (Dual port) | | ✓ |
| TX340sm (Quad port)[1,2] | ✓ | ✓ |
| TX320sm[3] | | ✓ |
| TX300s-100GQ[1,2] | ✓ | |
| TX300s-100GX[1,2] (New) | ✓ | |
| TX300s-OTDR[2] | ✓ | |

*[1]Auxiliary serial port (RJ11) with external 1PPS input not available*
*[2]Atomic Clock option not available*
*[3]Newer TX340sm module available*

### TX340sm Dual SFP+ Multi-Service Testing

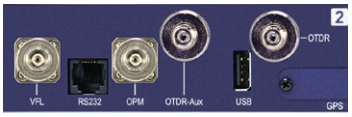
- Advanced multi-service test solution - 64k to 16 Gbps.
- OTN, SDH/SONET, PDH/DSn, Ethernet, SyncE, 1588v2 PTP, Fibre Channel, CPRI/OBSAI, IEEE C37.94, G.703 64k Codirectional technologies testing.
- Synchronization testing: Jitter, Wander and Phase/Timing measurements.
- Up to four test port groups and simultaneous test (two modules).

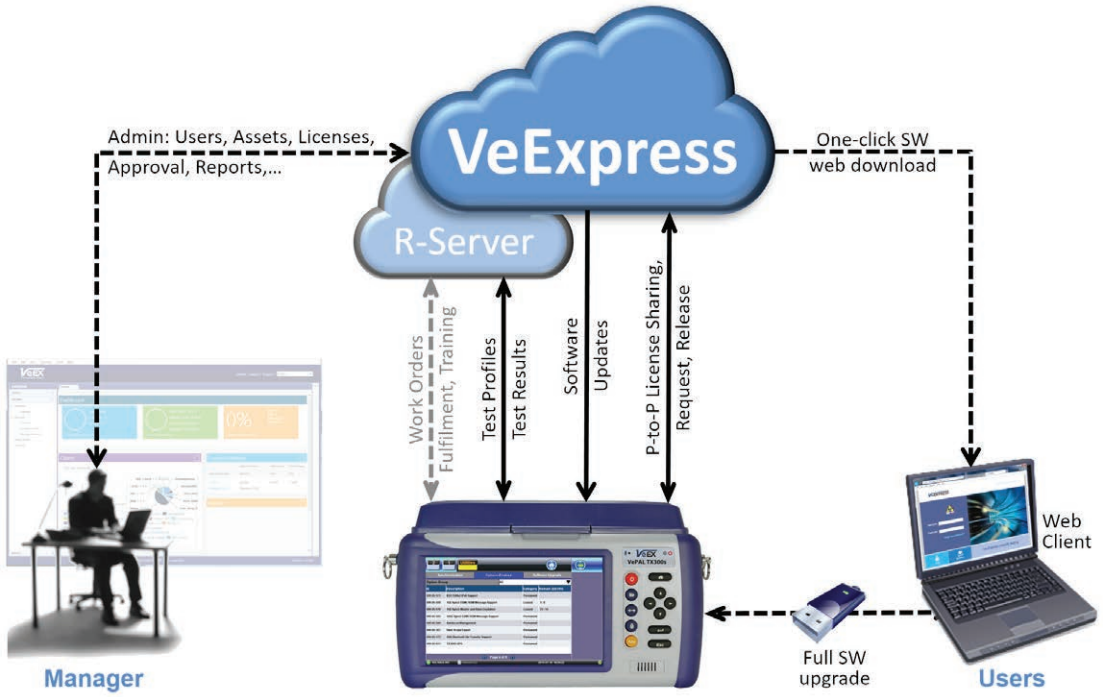
### TX300s-100GX QSFP28/QSFP+ and SFP28 Testing

- 100GE to 10BASE-T Ethernet test solution in one module.
- OTU4-Bulk and OTU4-ODU4-100GE.
- 1, 2, 4, 8, 10, 16 and 32G Fibre Channel.
- Now with dual test capability.
- Complete 64k to 100G solution, when combined with TX340s module.

### TX300s-OTDR Fiber Optics Testing

- High dynamic range OTDR for FTTx and PON applications.
- V-Scout™ Optical Link Mapper.
- OLS, OPM, OLTS, VFL.
- Fiberizer Cloud compatibility.






## VeExpress™

Minimize CAPEX and optimize OPEX by managing your test set fleet with VeExpress cloud service. VeEX's test sets are based on all-inclusive hardware platforms, offered at a low cost entry point, and can be configured for specific applications using software licenses. VeExpress manages test sets (hardware) and their test functions (licenses).

Stop purchasing test sets loaded with extra features or modules, just in case, or placing multiple orders with varying configurations for different user groups or applications. Reduce your CAPEX by buying what you really need and proactively manage your software and hardware assets.

Own, rent or lease-to-own the required test features, in the right quantities, to optimize your OPEX by sharing those specialized test features not required on a daily basis.

- Buy commonly used test functions required to get the day-to-day job done.
- Lease newly adopted technologies without the risk of paying for it up-front.
- Rent test features used on a contingency-basis for special cases or projects. Rent ticker only starts when the feature is first assigned and used.
- Share the software license pool among different users, including owned, leased and rented features.

VeExpress secure cloud-based environment provides the redundancy and speed of geographically-distributed servers around the world as well as scalability and up time. Test sets and web clients automatically connect to the closest/fastest server available.

- Improve first-dispatch success by making sure test sets are up-to-date, have all required test features to get each job done right the first time.
- Missing a test function? Supervisors can assign test features on the go, making them immediately available in the test set, using VeExpress. Less time wasted due to unexpected cases. Automatic approval mode is also available for users to share licenses directly.

### License Management

- Retrieve licenses for new test functions (purchased or rented).
- Share test features assignment with floating licenses.
- Test features are no longer tied to specific test sets, so software assets can be reallocated as needed.
- Track test sets and usage.
- Manage software versions to keep all test sets aligned to the latest approved software version. With time saving "Delta Push" software upgrade mechanism, no need for a full software upgrade each time.
- Simple to use VeExpress client interface is fully integrated into the test set to avoid getting in the way of users' daily tasks.
- Intuitive web-based VeExpress client interface for users and managers.

### Asset Management

- Buy, rent or lease new test functions.
- Share test features assignment with floating licenses.
- Test features are no longer tied to specific test sets, so software assets can be reallocated as needed.
- Track test sets and usage.
- Manage software versions to keep all test sets aligned to the latest approved software version. With time saving "Delta Push" software upgrade mechanism, no need for a full software upgrade each time.
- Simple to use VeExpress client interface integrated into the TX300s to avoid getting in the way of users' daily tasks.
- Intuitive web-based VeExpress management interface for users and managers.
- Request, release, and share licenses directly from the test set.
- Set time limits for shared licenses, so they go back to the pool and become available to others, even if the user forgets to return them.
- Auto-renew function to assure interrupted use of shared licenses.

## VeSion® R-Server Client Option

Part of VeEX's VeSion® centralized monitoring and management solutions, the R-Server Workflow and Asset Management system provides crucial tools to manage fleets of technicians, test equipment, standardized test profiles, thresholds, centralized test results collection, reporting, jobs/ticketing, and software update delivery to create coordinated and efficient disciplined workforce and test procedures. R-Server enhances the workflow to achieve the level of quality and repeatability required by telecommunications service providers, MSOs and their contractors. The flexible R-Server can be deployed in cloud, hosted, and corporate networks, on physical or virtualized servers.

Makes the job simpler for field technicians as they can download test profiles and upload test results. Supervisors can preset and upload test parameters which are provided to the test sets as profiles. Technicians can simply download profiles, run tests, and upload results to a centralized system that stores and secures the data. No need to worry about losing test results ever again.

### Centralized Workflow Optimization Repository

- Manage your VeEX test sets fleets, distributed across multiple locations, regions, groups (Org Chart) from a centralized location.
- Test result management, indexing, geotagging, and mapping.
- Features a dynamic dashboard that allows users to easily see the results of thousands of tests in graphical format.
- See PASS/FAIL rates and test set usage at a glance.
- Upload, download and share test profiles and test results.
- Advanced Save function appends work order (trouble ticket), comments and extra information to test reports.
- Manage approved software versions for test consistency.
- Inventory and repair tracking.
- Seamless integration with job ticketing and work order management systems.

### Tamper-proof Operation

- Lock profiles, enforce registration, date, and time on test sets.
- Consistent test environment: Assures all test sets are running approved software versions.
- Org Charts: Distribute and manage assets by regions, districts or groups, with multiple levels of visibility.
- Theft-deterrent function can activate "time bomb" to disable misplaced assets (test sets).

### Advanced Test Results Management

It allows users to augment test reports by appending work order information (e.g. Job ID, account) as well as GNSS-traceable geo-location coordinates, map, GNSS-based timestamping, and comments.

- Compatible with R-Server database, search, reporting and mapping.
- Accurate tamper-proof location coordinates and timestamp can also be obtained from cellular service, using the V-Connect phone app.
- Test results can be uploaded via LAN, WiFi or cellular data connection.

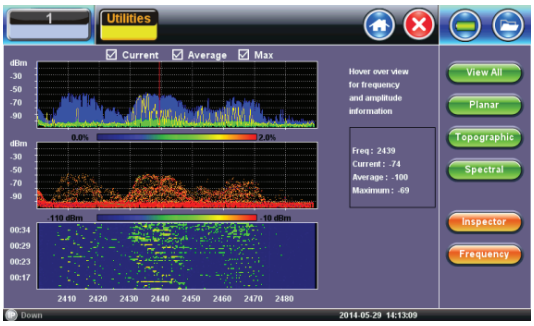
### V-Connect Mobile App

- Allows users to maintain test set's network connectivity, using an iOS or Android devices' Personal Hotspot feature. Additional features include Geotagging and timestamping test results.

## Network Troubleshooting Tools

### WiFi Spectrum Analyzer

The TX300s offers an optional powerful portable spectrum analyzer on a USB dongle that displays all RF activity in the WiFi bands. With dual 2.4 GHz and 5 GHz bands support, the analyzer covers all 802.11a/b/g/n/ac networks and is the ideal tool for enterprise environments with a mix of wireless technologies.




With multiple graphical format displays it helps to visualize and locate RF signals in the spectrums as well as locate and eliminate interference sources (cordless phones, microwave ovens, Bluetooth devices, etc.), discover and remedy competing access points.

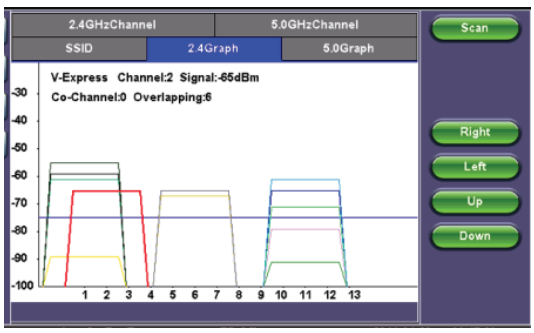
- Frequency Range: 2.400 to 2.495 GHz and 5.150 to 5.850 GHz.
- Amplitude Range: -100 to -6.5 dBm.
- Antenna: RP-SMA.
- Planar, topographic, spectral view.

** Requires WiFi Spectrum Analyzer USB dongle*

### WiFi inSSIDer

The WiFi InSSIDer provides the best tools for WiFi networks discovery and performance troubleshooting. With compatible USB WiFi adapter for 802.11 a/b/g/n/ac wireless in 2.4 GHz and 5 GHz bands the inSSIDer provides a clear picture of the environment. It helps identify poor channel placement, low signal strength and interferences in easy to understand graphs and tables.

- Requires compatible USB WiFi adapter for a/b/g/n/ac networks in 2.4 GHz and 5 GHz bands.
- Network scan results in Graphical or table format.
- Lists: Network names, BSSID, encryption type, channel allocation, signal strength, co-channels, and overlapping channels.

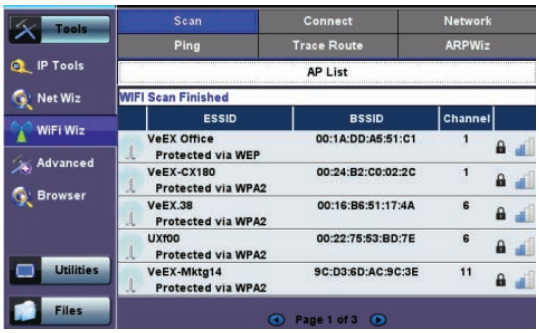


## WiFi Wiz

The WiFi Wiz function with USB WiFi adapter for 802.11 a/b/g/n/ac wireless in 2.4 GHz and 5 GHz bands makes troubleshooting WiFi connectivity issues a simple task.

Scan for available networks and view all access points detailed information along with SSID, signal strength and channel allocation. Connect to Access Points with WEP/WPA or WPA2 encryption and verify IP capabilities to ensure the wireless network is properly installed and configured. A full suite of IP testing features is supported (ping, trace, web browser, etc.).

- Requires compatible USB WiFi adapter for a/b/g/n/ac networks in 2.4 GHz and 5 GHz bands.
- Access Points scan with signal level and link quality measurement.
- WEP/WPA1/WPA2 encryption.
- IP Connectivity test (Ping, trace route, ARPWiz, Web browser).
- Provides WiFi LAN access to the test set (e.g. VeExpress, R-Server, Remote Control, ReVeal).




## Net Wiz

Network Discovery Tool

- Discovery: TX Frames, RX Frames, RX Errors, Advertised Speed, Advertised Duplex, Devices found, Networks found.
- Devices: Total number, Routers, Servers, Hosts.
- Device Details: Attribute, IP address, MAC address, Group Name, Machine Name, Ping OK.
- Networks: IP Subnets, Hosts, Domains, Hosts Names.

## IP Tools

Provides basic Ethernet and Internet connectivity to the platform as well as connectivity troubleshooting tools to Ethernet Management port (10/100BaseT).

- IP: IPv4 (Static, DHCP).
- Ping, Trace Route check.
- HTTP Web browsing internet connectivity check.

# Fiber Optic Tools

## Digital Fiber Inspection Scope

Dirty connectors can damage or degrade the performance of expensive optical modules, or produce inaccurate results. Inspecting and cleaning patch cords and pluggable optics connectors before mating them is always recommended.

This option allows digital video microscope probes* to be connected directly to the TX300s through a USB port. Featuring live video feed on the TX300s screen for visual analysis. It offers image capture, IEC 61300-3-3 Sect 5.4 Pass/Fail templates for SMF and MMF, save, export and generate report to USB flash drives.

Visual Inspection

- Visual file selector.
- Image comparison for before-after reports.

## Auto-Focus Detection and Analysis option

Test set automatically detects when image is in-focus, captures the image and analyzes it. This process is faster than complex mechanically-driven auto-focus systems as it uses human fast reaction and finesse.

- Analysis per IEC 61300-3-3.
- SMF and MMF templates (Core, Cladding, Adhesive and Contact areas).
- Dots or square to highlight contamination, debris and scratches.
- Report Generation.

**USB Fiber Scope sold separately. Check its datasheet for details.*

## OTDR Viewer

Built-in OTDR Viewer and Client application provides full post-analysis of SOR traces, as well as control of OPX-BOXe OTDR via direct USB connection, WiFi, or Bluetooth®.

- Traces and Events table view.
- Loss calculations.
- V-Scout Link Mapper option.
- Compatible with Fiberizer Cloud (upload and download).
- Controls external OPX-BOXe OTDR.

## OPX-BOXe OTDR Control

The VeEX OPX-BOXe is an ultra-compact OTDR that can be controlled by the test set using Bluetooth®, WiFi or USB connection. Once paired or connected to the micro OTDR, the test set displays a virtual OTDR user interface that is used to control the OPX-BOXe and perform measurements. Since fibers are common place in access, metro and transport networks, having a companion add-on OTDR reduces truck rolls since there is less dependence to call on specialized fiber construction crews to verify or troubleshoot fiber related problems.

## Built-in Precision Timing References

The test platform offers highly accurate and stable clock reference options to provide precise frequency, timing and time to its test modules and applications. These internal physical clock references can be used for frequency, phase, timing and wander measurements. Accurate UTC time of day (ToD) from GNSS can be used for time sensitive tests such as PTP timestamping, Time Error and one-way-delay measurements.

Its full timing-oriented atomic clock disciplining combines the long-term accuracy of the GNSS receiver options, the short-term stability of the Atomic Clock option, its battery operation and holdover capabilities, to provide accurate precision clock references even in places where GNSS is not available or can't be trusted (e.g. in-building or urban canyon applications). The test set precision atomic oscillator can also be disciplined by external traceable 1PPS reference from a PRTC (Cs or Rb).

Modular GNSS receiver design makes it easy and inexpensive to keep up with technology evolution and timing improvements. Just replace the GNSS card to have access to state-of-the-art high-precision multi-band multi-constellation technology, improving accuracy and stability. No need to replace the test set, expensive atomic oscillator or the entire timing module.

### High-Precision Multi-band GNSS Receiver Option (Z88-00-010P)

This state-of-the-art built-in Multi-band Multi-GNSS Receiver option is ideal for High-Precision timing applications and Atomic Clock disciplining. Supports up to eight concurrent bands, including GPS, GLONASS, Galileo and BeiDou. True multi-band support provides Ionospheric error compensation, multi-path rejection, jamming and spoofing mitigation, and improves performance in limited sky view scenarios during field measurements. That translates into precise location, UTC time and timing synchronization sources to the test platform, in the form of NMEA messages, ToD and internal GNSS 1PPS clock references.

It offers optimized accuracy and stability with location survey and precision timing mode, providing locked position mode to improve timing stability for stationary applications. This is the recommended module for atomic clock disciplining (PRTC), wander, phase error, time error, holdover, delay measurements, as well as location and timestamp tagging applications.

GNSS: GPS (L1C/A, L2C)
GLONASS (L1OF, L2OF)
Galileo (E1B/C, E5b)
BeiDou (B1I, B2I)
Bands: 1207.14, 1227.6, 1246, 1561.098, 1575.42, 1602 MHz
Tracks up to eight satellite bands simultaneously
Satellite table with C/No levels in dB-Hz
Up to 184 channels

Location Survey Lock (reduces position-based wander)
- Precision Timing mode operation (stationary)
- Accuracy Threshold (m)
- Observation Window (s)
- 3D Deviation: <0.5m (clear sky)

Accuracy
- Time: ≤5 ns @ 1-sigma (clear sky)
- 1PPS Jitter: ±4 ns
- Position: 2 m
- Programmable in-survey accuracy threshold and time window

Antenna Cable Delay Compensation (ns)
Antenna Open and Short Detection
Ionospheric error compensation, Multi-path rejection, Jamming & spoofing mitigation
NMEA message log/monitor
Sensitivity
- Cold start: -148 dBm
- Tracking: -166 dBm

Clock Output: 1PPS (internal)
Acquisition Time (first fix)
- Cold start: 26s
- Hot start: 1s

Antenna Power: 0 and 5 Vdc, 60 mA
Connector: SMA, 50 Ohms
Temperature: 0 to 45°C

Recommended Antenna
- High-precision multi-band active antenna supporting GPS (L1C/A, L2C), Galileo (E1B/C, E5B), GLONASS (L1OF, L2OF), and/or BeiDou (B1I, B2I)
- Bands: 1207.14, 1227.6, 1246, 1561.098, 1575.42 and/or 1602 MHz
- Type: Active with LNA, 3 to 5 Vdc, <50 mA
- Gain: ≥28 dB
- Noise: <1.5 dB

### GNSS Timing Receiver Option (Z88-00-009P)

This high-sensitivity timing GNSS module (built-in) provides precise location, UTC time and timing synchronization to the test platform, in the form of NMEA messages, ToD and internal GNSS 1PPS clock reference. It offers optimized accuracy with location survey and timing mode. Its timing mode provides a fixed-position mode to improve timing stability for stationary applications. This is the recommended module for atomic clock disciplining (PRTC), wander, phase error, time error, holdover, delay measurements, as well as location and timestamp tagging applications.

GNSS: GPS (L1 C/A)
GLONASS (L10F)
BeiDou (B1I)
Galileo (E1B/C)
Bands: 1561.098, 1575.42, and 1602 MHz
Tracks up to two satellite bands simultaneously
Satellite table with C/No levels in dB-Hz
Up to 72 channels
Location Survey Lock (reduces position-based wander)
- Precision Timing mode operation (stationary)
- Accuracy Threshold (m)
- Observation Window (s)
- 3D Deviation: <1.3m (clear sky)

Accuracy
- Time: ≤20 ns RMS (clear sky)
- Position: 2.5m
- Programmable in-survey accuracy threshold and time window

Antenna Cable Delay Compensation (ns)
NMEA message log/monitor
Sensitivity
- Cold start: -148 dBm
- Tracking: -167 dBm

Clock Output: 1PPS (internal)
Acquisition Time (first fix)
- Cold start: 26s
- Hot start: 1.5s

Antenna Power: 5 Vdc, 50 mA
Connector: SMA, 50 Ohms
Temperature: 0 to 45°C

Recommended Antenna
- Dual or Quad GNSS antenna supporting GPS L1 C/A, GLONASS L10F, BeiDou B1I, Galileo E1B/C
- Bands: 1561.098, 1575.42 and/or 1602 MHz
- Type: Active with LNA, 3 to 5 Vdc, <45 mA
- Gain: >26 dB
- Noise: <1.5 dB

### Atomic Clock Option

The optional built-in chip-scale Atomic Clock module provides highly stable reference sources to the test platform and its modules, in the form of internal 1PPS and 10 MHz signals. The Atomic Clock's integrated disciplining circuit tracks internal and external environmental variables and makes its frequency and timing outputs traceable to GNSS, UTC or external PRTC, and can provide temporary timing holdover or frequency reference for uninterrupted testing or indoor usage.

Technology
- Cesium (Cs) Vapor Cell
- Coherent Population Trapping (CPT) with VCSEL Laser Interrogation

Precision References Outputs (internal)
- Frequency: Atomic 10 MHz
- Phase/Time: Atomic 1PPS

Phase Accuracy
- Disciplined: 1 ns

Frequency Accuracy
- Free running: $\pm 5 \times 10^{-11}$ (at shipment)
- Disciplined: $\pm 5 \times 10^{-13}$
- Aging: $< 9 \times 10^{-10}$/month

Short Term Stability
- $3 \times 10^{-10}$ (TAU=1s)
- $1 \times 10^{-10}$ (TAU=10s)
- $3 \times 10^{-11}$ (TAU=100s)
- $1 \times 10^{-11}$ (TAU=1000s)

Fast warm-up time: <180s (independent of hot or cold weather)
Temperature range: 0 to 45°C
Modes of Operation
- Free run
- Disciplined
- Holdover
- Sleep Mode >16 hours

Disciplining
- Built-in GNSS or external PRTC (1PPS) references.
- Programmable discipline time constant up to 10000s.
- Programmable TE stability threshold.
- Real-time graphical phase alignment monitor allows users in the field (where no other references are available) to know the status of the disciplining process at any time.

Frequency Calibration Function
- Recommended interval: Once a year (depending on operation conditions).

Upgradeable Firmware
Low power consumption (<180 mW) enables long-term full-featured battery operation required for field applications (independent of hot or cold weather).

### Platform Sleep Mode

Standby mode allow users to carry the test set in its carrying case with a fully active Atomic Clock in holdover mode. It also helps control the oscillator's temperature while stored in uncontrolled environments.
- Keeps the disciplined Atomic Clock fully powered to hold frequency and timing.
- Holdover time counter while in standby.
- Up to 20 hours of standby power.

## Platform Features & Options

Dedicated navigation and function buttons for non-touch screen operation (e.g. operating the test set with gloves on)
- Rugged design with integrated connector cover/stand and dual-shot rubber for protection, extra grip, and ergonomics.
- Flexible shoulder straps configurations.
- Integrated stylus holder.

### ReVeal RXTS

This companion management PC software is included standard with each test set. The ReVeal provides an easy-to-use and intuitive interface that allows users to take full advantage of TX300s and RXT-1200 test sets by providing the following productivity tools:
- Convenient test profile management.
- Flexible test results management.
- Advanced report generation with html, pdf, or csv formats, combine test results, add logos and comments.
- Test profiles management: Online or offline Ethernet test profile creation, upload and download.

Compatible with Windows XP, 7, 8.1 and 10, 32 bits or 64 bits operating systems.

### Remote Access

The TX300s offers multiple ways to Remote Control it or access the information remotely (e.g. test results, test profiles, etc.). The test set can be reached via:
- ReVeal PC software.
- Web browser (Web Remote Control).
- EZ Remote cloud service.
- VNC® Client.
- SCPI Remote and Command Reference Tool PC software*.
- Scripting via SCPI commands.
- Connectivity: 10/100Base-T, WiFi 802.11 a/b/g/n/ac*.

** Not included*

## EZ Remote™

This secure service offers Remote Access and Remote Control functionalities, allowing users to quickly connect to VeEX test sets located anywhere in the world. It works without the need for complicated VPN settings, port forwarding, firewall holes, exposed public IP addresses or special permissions from IT/Security groups. This VeEX hosted cloud service takes care of all the complex tasks required and presents it to users as a simple application. Connect to meters online anytime, anywhere, using any computer, tablet, or smartphone, with standard web browsers for screen-sharing, remote control and access to test results.

Use EZ-Remote to work remotely, help and coach inexperienced field technicians in real time, run tests, download test reports, collaborate, provide technical support and training.

- Remote Control functionality gives users full control of remote test sets (screen mirroring and mouse control).
- Remote Access functionality allows users to manage test results: View, Download, Rename, Delete, Convert to PDF, etc.
- Multi-platform support.
- Web browser based.
- No software to install.
- Connect using LAN, WiFi or smart phone access point.
- No VPN required. All it needs is Internet access.
- Works through most firewall policies, no special ports to open.
- Basic EZ-Remote cloud service is included with the test set (no extra charge or recurrent fees).

## File Manager

Profiles: Save and recall test profiles.

Saves results to internal SD card View, Rename, Delete and Lock profile and result files.

Filter and sort by Name, Test Mode, Test Type, Port, Date and Result/Profile.

Report generation: Test results generation in PDF format.

Export test results and profiles via USB memory, Bluetooth, web browser, Data Card or ReVeal RXTS companion PC software.

File Backup and Retrieve to/from USB.

Screen capture: Screen shots in PNG format.

## General

| | |
|---|---|
| Data Storage | |
| Internal | 16 GB Flash storage (4 GB for user data) |
| External | USB Memory stick up to 64 GB (FAT32) |
| Remote | Upload via VeSion R-Server, FTP or Bluetooth |
| Management Interfaces | |
| Ethernet | 1x RJ45 10/100Base-T FDX |
| USB | 2x USB 2.0 Type-A |
| WiFi[1] | 802.11a, b, g, n, ac (via USB dongle) |
| Bluetooth[1] | USB transceiver |
| Precision Clock Sources | |
| GNSS Receiver[1] | SMA antenna input with 5V GPS/GLONASS/Galileo/Beidou |
| RS323C[2] | 1x RJ11 for External NMEA ToD and 1PPS |
| Atomic Clock[1,2,3] | 1PPS and 10 MHz, Precision Clock Source<br>Free-run (0.05ppb) or Disciplined |
| Display | 7” TFT color display, 800x480 Touch screen |
| Size | 290 x 140 x 66 mm (W x H x D)<br>11.4 x 5.5 x 2.6 in |
| Weight | 1.8 kg (4.0 lb)[4]<br>(with two TX340sm modules and battery) |
| Battery | Li-ion smart battery (Field-replaceable) |
| Standard | 5200 mAh @ 10.8 VDC (56Wh) |
| Extended[1] | 7800 mAh @ 10.8 VDC (84Wh) |
| Power Supply (AC Adaptor) | Input: 100-240 VAC, 50-60 Hz<br>Output: 15 VDC, 5.33 A |
| Vehicle Accessory Charger[1] | Input: 12-24 VDC<br>Output: 15 VDC, 4.80 A |
| Operating Temperature | 0˚C to 50˚C (32˚F to 104˚F) |
| Storage Temperature | -20˚C to 70˚C (-4˚F to 158˚F) |
| Humidity | 5% to 90% non-condensing |
| Ruggedness | Survives 1m drop to concrete on all sides |

*[1]Optional features.*

*[2]Not available in all hardware configurations.*

*[3]Test sets with atomic clock option should be stored in temperature-stable environments and/or be set to Sleep Mode.*

*[4]Depends on hardware configuration (modules and battery types)*

VeEX The Verification Experts

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