TX130M+ Firmware/Software Updates

Software version 2.6.2-0 — Jul 22, 2015

Release Scope:

Minor Release - General availability.

Requires ReVeal MTX 1.6.5 or newer

New Transport features and improvements:

1. New G.703 64k Codirectional interface testing option
2. Fixed an issue with running ISDN Data Call BER test after placing a voice call.
3. Improved ISDN voice encoding and decoding latency

New Packet features and improvements:

4. Throughput and BERT profile scripting (runs test profiles in a sequence)

General improvements:

5. Added support for 802.11ac Wi-Fi. Requires Z99-99-027G USB Wi-Fi 802.11ac/a/b/g/n 2.4/5GHz adaptor
6. Added a "Save Prompt" setting to the test >Setup >Measurement >Genera settings. When turned ON, the test set will pop a message asking users whether they want to save the results or not and allow to enter a customized file name. By default Save Prompt is set OFF. Users also have the choice of enabling the Auto Save mode with auto-naming.
7. Addressed an issue with Wi-Fi Ping test

Known issues or limitations:

a. No new significant issue to report

Software version 2.5.10-0 — Mar 16, 2015

Release Scope:

Maintenance Release - General availability.

Requires ReVeal MTX 1.6.0 or newer.

New Transport features and improvements:

1. More ISDN enhancements and fixes

New Packet features and improvements:

2. Nothing significant to report

General improvements:

3. Nothing significant to report

Known issues or limitations:

a. No new significant issue to report

Software version 2.5.9-0 — Feb 5, 2015

Release Scope:

Maintenance Release - General availability.

Requires ReVeal MTX 1.6.0 or newer.

New Transport features and improvements:

1. Added bi-directional DTMF digit capture to the ISDN PRI Monitor test mode
2. General improvements to ISDN PRI features new such as Time Slot map for ISDN voice call (this function can be

enabled in the Setup menu, page 3), send serial number to server in PRI PESQ test, fixed an intermittent no TX (BNC) signal bug, and other ISDN fixes and improvements

New Packet features and improvements:

3. Nothing significant to report

General improvements:

4. Nothing significant to report

Known issues or limitations:

a. No new significant issue to report

Software version 2.5.8-0 Dec 30, 2014

Release Scope:

Maintenance Release - General availability.

Requires ReVeal MTX 1.6.0 or newer.

New Transport features and improvements:

1. Nothing significant to report.

New Packet features and improvements:

2. Fixed "Incompatible PDH Mode!" error message shown by the IEEE 1588v2 test app that may have affected certain models, when loaded with bantam interfaces for DS1 testing.

General improvements:

3. Nothing significant to report

Known issues or limitations:

a. No new significant issue to report

Software version 2.5.7-0 Sep 13, 2014

Release Scope:

General availability.

Requires ReVeal MTX 1.6.0 or newer.

New Transport features and improvements:

1. Nothing significant to report,

New Packet features and improvements:

2. Added the ability to measure the Phase Error directly on the internally recovered 1PPS signal from the IEEE 1588v2 Slave emulation with one test set. Similar test used to require two test sets, one to recover and output the 1PPS clock and another to measure the Absolute Phase Error on the physical signal [1889]
3. New Ethernet Service Disruption Time (SDT) in Throughput/Per-Stream measurements
4. Added the ability to store OAM results (TX/RX CCM counters) when the Throughput measurement is not running.
5. Enhanced the smart loopback functionality to support incoming Layer 2 traffic with EtherType (0x0800).
6. 1588v2 PDV graphs are now correctly displayed when the initial master/slave delay exceeds 10ms.
7. IPTV PCR jitter is now displaying the correct measurement
8. Fixes an issue with the IPTV option not being listed in the About section

General improvements:

9. New and enhanced Wander and Phase Measurement log file format to allow wider range of synchronization applications, new types of signals and cross-platform compatibility

10. Fixes Wi-Fi DHCP bug [1894]

Known issues or limitations:

a. No new significant issue to report

Software version 2.5.2-0 Jun 10, 2014

Release Scope:

General availability.

Requires ReVeal MTX 1.6.0 or newer.

New Transport features and improvements:

1. Nothing significant to report,

New Packet features and improvements:

2. Added Service Level OAM TX/RX CCM Counters.
3. Added the ability to disable the VLAN tag in Service Level OAM.
4. Improved the RFC2544 PDF Report: added graphs and an overall PASS/FAIL status at the beginning of the report

General improvements:

5. Nothing significant to report.

Known issues or limitations:

~~a. Wi-Fi DHCP connectivity may fail on some routers when Edimax 802.11a/b/g/n dual band USB adapter is used [1894]~~

Software version 2.4.12-0 Apr 30, 2014

Release Scope:

General availability.

Requires ReVeal MTX 1.5.9 or newer.

New Transport features and improvements:

1. Fixed DS1 Loop reset issue

New Packet features and improvements:

2. Added XLoop control mode for compatibility - Sends remote Loop Up/Down with layer 2/3 and Layer 2 with VLAN tag to third-party test sets.TX130M+ also responds to Layer 2/3 loop requests from those remote test sets.
3. Added IEEE 1588v2 Master Clock Class configuration parameter.
4. V-SAM test CBS and EBS parameters configuration has been extended to 1000 kB.
5. V-SAM test now includes a Policing tolerance parameter. This parameter is used to compensate for the effects of large CBS/EBS values in the policing test pass criteria.
6. Addressed an issue with EIR value interfering with CBS/EBS tests, even when EIR was disabled.
7. Issues with Peer to Peer Asymmetric Throughput test have been addressed.

General improvements:

8. Added PDF generation – A PDF is now automatically created and stored when test reports are transferred to a USB memory stick. PDF generation is supported for E1/T1, PRI, Ethernet BERT, Throughput, RFC2544, V-SAM, IEEE1588/SyncE tests. Graphs are not included in the PDF report.
9. Added support for Huawei E180 WCDMA HSDPA cellular data card. Works with 900/2100MHz HSPA/UMTS and 850/900/1800/1900MHz EDGE/GPRS/GSM (Requires Z77-00-015G USB cellular modem and 499-05-157 USB Data Card Support option. SIM not included).
10. Added support for dual-band Wi-Fi dongle (2.4 & 5 GHz) and improved Wi-Fi compatibility with legacy WEP access

points.

Known issues or limitations:

a. ~~Currently ReVeal "Download Wander Results" function can't transfer Absolute Phase Error files from the (remote) test set USB memory stick to the (local) PC – This feature will be added to the next ReVeal release.~~ Resolved with ReVeal 1.6.0

Software version 2.4.2-0 Jan 08, 2014

Release Scope:

General availability.

Requires ReVeal MTX 1.5.9 or newer.

New Transport features and improvements:

1. New E1 CAS Monitoring feature allows for simultaneous display of the ABCD supervisory bits for all channels, in single and dual (bi-directional) modes [1539]
2. Additional Pulse Mask Analysis noise immunity improvements for better performance and reliability [1513]
3. Improved 2.048 MHz External Reference Clock sensitivity for SyncE, 1588v2 and Wander measurements in general.
4. Improved E3 and DS3 Round Trip Delay impairment immunity for more accurate and consistent results [1587,1651]
5. Resolved an RX Sa bit alignment issue in PCM31 mode [1587]

New Packet features and improvements:

6. Improved 1588v2 compatibility with some third-party PTP management and monitoring systems. The TX130M+ can now properly handle inquire messages. Remote reconfiguration is not allowed.
7. Added support for Layer2 1588 with VLAN tag
8. New threshold configuration option has been added for RFC2544. The Pass/Fail threshold for the throughput test can now be configured as a % of Max Throughput rate or as a % of Line rate.
9. The RFC2544 throughput test now supports a frame loss limit parameter. This parameter defines the frame loss tolerance in the throughput rate binary search algorithm
10. Added support for cellular DataCard IP connectivity (requires optional USB data card)
11. Added WiFi InSSIDer feature that provides mapping of Wi-Fi Access points strength and channel allocation in graphical format.
12. VoIP Expert Client/Server function enhancements to the VoIP MOS measurements. Requires VX1000 server Software to be upgraded to version 1.3.5-0 or newer for interoperability.
13. Added support for VoIP PESQ test and ISDN PRI PESQ test

General improvements:

14. Nothing significant to report.

Known issues or limitations:

a. Asymmetric Throughput test is not supported in this release

b. V-SAM: if the service under test is not configured for EIR (Excess Information Rate), this value should be set to 0 even if the parameter is disabled, otherwise it may interfere with Policing, CBS and EBS tests.

~~c. Running long term 1588v2 test and Throughput test simultaneously may cause the unit to become unresponsive. Rebooting the unit will solve the problem.~~

Software version 2.1.3-0 Jul 12, 2013

Release Scope:

General availability

New Transport features and improvements:

1. Improved ISDN PRI default values and auto configuration to fit the most common day-to-day tasks and test calls

New Packet features and improvements:

2. Nothing significant to report

General improvements:

3. Updated the built-in help manual to reflect TX130M+ features and include newer features.

Known issues or limitations:

a. No new significant issues to report.

Software version 2.1.2-0 Jun 12, 2013

Release Scope:

General availability

New Transport features and improvements:

1. New streamlined and application-oriented DSn GUI (US only) reduces “screen hopping” and improves user friendliness. Its intuitive layout and more natural flow minimizes training requirements for first-time and occasional users, unfamiliar with the TX130M+ Test Set. Adds auto monitor and enhances DS1 Loop controls [1204]
2. New DS1 Equalization function (in DS1 Setup) improves performance under various LBO levels, from -7.5 down to -22.5 dB [1401]
3. Improved sinusoidal signal tracking for Clock Wander Analysis. The test set can now consistently support 2.048 MHz test signals down to 1.00 Vpp [1451]
4. Fixed an issue with Clock Wander Analysis showing 1PPS as the only Test Signal supported, after using SyncE [1445]

New Packet features and improvements:

5. Improved 1588v2 phase alignment, tracking and clock recovery provides more stable and accurate recovered 1PPS clock signals, even after serious impairment events [1431, 1432]
6. Fixed minor issue with the IP status icon, which changed color when tapped with the stylus [1449]

General improvements:

7. Nothing significant to report

Known issues or limitations:

a. No new significant issues to report.

Software version 1.11.0-0 March 25, 2013

Release Scope:

General availability

New Transport features and improvements:

1. Added the 1PPS Phase Analysis tool for NodeB clock and timing testing, as part of the Clock Analysis test suite. It measures the absolute phase differences between a reference clock (e.g. GPS) and the 1PPS recovered by the PTP edge clock at the base station or small cell. It is used to verify that the timing accuracy complies with the ±1.5µs phase error (time error) acceptance limit for LTE deployment [1379]
2. Added Volume Control to ISDN calls

New Packet features and improvements:

3. Added wander test mode to correctly list the Test Signal label in wander report which was showing the translated clock label instead of 1588v2 [1400]
4. Improved 1PPS clock recovery and phase alignment in 1588v2 test mode and added configurable phase offset to

adjust the 1PPS pulse position.

5. Improved VoIP over Wi-Fi as well as other performance improvements in VoIP Expert and Call Expert.
6. Fixed some issues with 1588v2 Wander Measurement, like not showing results when 10MHz reference clock was used and improved the internal 1PPS selection when 1PPS reference was used [1380]

General improvements:

7. Nothing significant to report

Known issues or limitations:

a. ~~Management (LAN) port may display Link Down even though the Ethernet link is up [1412]~~.

Software version 1.9.2-0 Nov 7, 2012

Release Scope:

General availability

Requires ReVeal MTX 1.4.5 or newer

New Transport features and improvements:

1. New 1PPS wander measurement added to the optional Clock Wander Analysis feature (in PDH mode – Additional Tests). This advanced clock verification test now measures TIE on a 1PPS test signal against a 1PPS clock reference (with 7ns resolution) and supports the optional Save TIE to USB memory for further MTIE/TDEV analysis [1110].
2. New Timed mode for Wander Measurements and Clock Wander Analysis options. Users can set the wander test duration and the measurement will automatically stop when the time has elapsed [1109]
3. New real-time TIE graph to the Clock Wander Analysis feature (in PDH mode – Additional Tests). Displays the TIE behavior for the last 200 seconds, allowing users to identify trends and confirm clock accuracy and stability.
4. New Sa bits E1 Synchronization Status decoding (Synchronization Quality Level) added to the E1 Frame Words function, according to ITU-T G.704 2.3.4. Users can select any received Sa byte to be decoded and program any TX Sa with specific synchronization status codes. SSM uses the four most significant bits [1291]
5. New DS1 Multi-BERT™ automated sequential BER test with multiple test patterns. It allows users to program up to 8 test patterns to run in a timed sequence for bring-into-service tests or troubleshooting DS1 links. Available in the Bantam (US) version of the TX130M+ [929]

New Packet features and improvements:

6. New 1PPS Reference Clock Output selection for SyncE and 1588v2 clock translation functions (slave modes). This recovered 5us pulse is to be used for external wander tests or provide timing to other devices. Its position (offset) can be adjusted over a wide range (with 10ns resolution) to compensate for delays or to align it to local references [981]
7. Added customizable user-defined signature fields in the data pattern for Throughput testing. The signature includes packet sequence numbering for packet loss measurement compatibility. Use the default VeEX signature field for interoperability with other VeEX test sets.
8. Management (LAN) port is now set to Auto MDI/MDIX by default, for automatic crossover cable detection.
9. Improved software stability during copper/fiber mode switching.
10. Improved Restart function in Throughput test. It now uses the configured data rates properly

General improvements:

11. Added Bluetooth support. Configuration can be found in the Settings menu. Requires USB dongle [1290]

Known issues or limitations:

a. No new significant issues to report.

Software version 1.7.11-0 Sept 11, 2012

Release Scope:

General availability

Requires ReVeal MTX 1.4.5 or newer

New Transport features and improvements:

1. New Timed Clock Wander Analysis measurement mode allows user to program the measurement duration. The TIE recording automatically stops once the set time has elapsed [1109]
2. Added Clock Slip counter to the measurement results [1066]
3. Improved Wander test auto-stop when reference clock or test signals are not adequate, including a message to the user [1214]
4. Fixed sudden change in TIE value that may have appeared under certain conditions, during long-term wander measurements [1202]

New Packet features and improvements:

5. Added 1588v2 per-second message counters to provide information of its current state [979]
6. Added 1588v2 measurement Restart function to clear the counters and graphs.
7. Added vertical auto-scaling to the 1588v2 PDV graphs.
8. Improved 1588v2 configuration parameters retention after reboot. The unit now recalls all settings [988]
9. Improved SyncE master emulation in internal clock mode. The master can now properly generate 10MHz, 25MHz or 125MHz reference clock signals [1171]
10. Changed alarm generation default settings to a short burst in order to avoid confusion to new users [1125]
11. Fixed soft-reboot after opening 1000BaseX PDV graph in 1588v2 saved test results [1211]
12. Fixed soft-reboot after cancelling 1588v2 or SyncE Wander tests by closing the file name keypad [1210]
13. Fixed the occasional problem of Ethernet traffic transmitter displaying 0%, requiring reboot [934]

General improvements:

14. ReVeal MTX 1.4.5 now offers remote access to a USB memory stick plugged into a remote TX130M+ and provides wander file transfer to the local PC.
15. ReVeal MTX 1.4.5 now offers Profile upload and download functions, for easier sharing and distribution of test profiles among multiple test sets [1237]

Known issues or limitations:

a. The newly added 1588v2 per-second message counters have not yet been added to the stored test results [1226]
b. When Pause frames are injected (using the Err Injection function) the remote unit detects a burst of CRC errors [438]
c. The TX130M+ shows up as an MX100+ in the list of discovered devices when using the discovery function [635]
d. The throughput test in peer-to-peer mode is not yet functional for Layer 4 tests. Nonetheless, Layer 3 and Layer 2 peer-to-peer tests are fully functional [636]
e. Round trip delay can't be measured in peer-to-peer mode. If the RTD test is started in this mode the delay values displayed in the throughput test results would erroneous. [636]
f. The QoS parameters in the Throughput test display 0 value in the saved test results [713]
g. Time scale of the PDV graphs may not refresh properly after 10 minutes and the +t and –t buttons are pressed to scroll back to the beginning [1027]
h. The event and general messages counters are missing from the 1588v2 stored test results [1232]

Software version 1.7.4-0 May 14, 2012

Release Scope:

General availability

Requires ReVeal MTX 1.4.1

New Transport features and improvements:

1. Nothing significant to report.

New Packet features and improvements:

2. Improved PDH mode configuration compatibility checking and handling for SyncE and 1588v2. It also modified the "Incompatible PDH mode" message to include more information about the required settings. [1097]

General improvements:

3. Improved robustness to eliminate occasional crashes linked to screens with ON/OFF fields [1099]

Known issues or limitations:

a. Although Gateway IP address is not necessary for static IP tests, since version 1.6.8-0, the test set still requires users to enter a valid IP address. If known, users should enter the Gateway's IP address; otherwise any arbitrary address could be used.

Important Notes:

i. SyncE & 1588v2 clock interface selections (balance or unbalanced) are dependent upon the PDH port configuration. Please stop SyncE or 1588v2 and change the PDH settings according to the clock interface required. No PDH test can be run while the test set is in SyncE or 1588v2 mode.

ii. The 1588v2 PTP test feature is intended to characterize packet switched networks and their suitability for delivering sync packet. The use of Packet Delay Variation (PDV) is a good indicator for this purpose. This functional verification tool can also be used to check compatibility/interoperability for reference and troubleshooting. Different dedicated slave clock sources (translators) may behave differently due to their proprietary improvements and/or technology.

iii. TX130M+'s output clock accuracy and stability is not intended to replace (or be compared to) highly-accurate purpose-built oven-controlled, Rb or Cs clock sources. Also, its internal wander measurement (performed on recovered clock) is provided as a mean of tracking the raw (unfiltered) stability and accuracy achieved by the protocol itself and by no means indicates the expected output performance of third-party clients and clock translators.

Software version 1.7.1-0 May 8, 2012

Release Scope:

General availability

ReVeal MTX 1.3.8 or later is recommended

New Transport features and improvements:

1. Improved Clock Wander Analysis option. In addition to the original 1PPS vs. 1PPS reference clock frequency comparison, this optional feature now offers Wander (TIE) measurements between two reference clock sources, supporting 1.544 MHz, 2.048 MHz, 1.544 Mbit/s, and 2.048 Mbit/s test signals and 1.544 MHz, 2.048 MHz, 10 MHz, 25 MHz, 125 MHz, 1.544 Mbit/s, 2.048 Mbit/s, and 1PPS reference clock sources, making the TX130M+ the most powerful synchronization field test set in the market. Clock Wander Analysis can export real-time TIE data to USB (optional) for further MTIE and TDEV post-analysis with VeEX Wander Analysis PC software. Requires E3/DS3 hardware [1055]

New Packet features and improvements:

2. Added user-configurable 1588v2 Delay request setting. The unit now supports up to 32 Delay_Req per second. On previous versions this was set to 1 per second.

3. Added filtering mechanism to 1588v2 slave configuration. If the master and slave devices are separated by network elements without 1588v2 synchronization support (switches, bridges, and routers), they would introduce jitter in the propagation delay of the synchronization messages, which directly affect the synchronization accuracy. Therefore the protocol needs filtering of the synchronization data to prevent the slave device clock from reacting to these disturbances. In this release the new filter length (i.e. number of timing packets averaged) is configurable from 2 to 12.

   Filter setup recommendations:

   - If no packet jitter is present, the filter should be disabled
   - The use of a sync rate of at least 32 packets/sec and a delay_req rate of 32 packets/sec is recommended for optimal convergence.
   - If network jitter is observed, it's recommended to increase the filter length until stable wander is achieved.
   - Note that increasing the filter length will increase the convergence time.
4. Improved IPv6 handling in routed environments.

General improvements:

5. Fixed 1PPS Aux RX clock stability issues [1077]
6. Improved Remote Control response time and stability [1034]

Known issues or limitations:

~~a. Occasionally the 1588v2 wander test may freeze, requiring a reboot. As a work around make sure to STOP the wander test before exiting that screen.~~

~~b. In 1588v2 master emulation mode, the master always sends multicast traffic in addition to the unicast traffic.~~

~~c. Some 1588v2 configuration parameters may not be maintained after a power cycle. These master and slave configuration parameters may need to be reconfigured after rebooting the test set.~~

Software version 1.6.7-0 Feb 29, 2012

Release Scope:

General availability

Requires ReVeal MTX 1.3.7, 1.3.8, or 1.3.9

New Transport features and improvements:

1. Introduced a unique Clock Analysis function for synchronization networks deployment and verification (optional.) This advanced feature compares and precisely measures phase differences between two 1PPS clock signals (e.g. the outputs of two GPS references), present in the AUX-RX and RX-1 (BNC) ports, with 7ns resolution. Requires E3/DS3 hardware option [919]
2. Added real-time logging of TIE data directly to USB memory, for all PDH interfaces supporting wander test features. TIE data can be analyzed with VeEX Wander Analysis PC software to obtain MTIE, TDEV, and compare them to standard Pass/Fail masks [937]
3. Improved clock recovery design to allow for more precise clock synchronization. It greatly improves the performance and stability of PTP, SyncE, and clock-related measurements [941]
4. Improved Jitter and Wander measurement stability [954, 959]

New Packet features and improvements:

5. Link and Service OAM testing are now available (802.3ah Link Layer OAM, 802.1ag Connectivity Fault Management, and Y.1731 OAM Functions and Mechanisms for Ethernet Based Networks)
6. Corrects 1588v2 software options and dependencies (179-IEEE1588v2 IPv4 Slave, 180-IEEE1588v2 IPv4 Master, 182-IEEE1588v2 IPv6, 183-IEEE1588v2 Protocol Decode, 184-IEEE1588v2 Measurements)
7. Addressed SyncE SSM limitations, where no messages were transmitted if a VLAN was enabled.
8. Enhanced stability for IEEE 1588 Slave Clock recovered output. On previous pre-release versions, MTIE/TDEV analyses

on recovered clock output were higher than expected.

9. Fixed a 1588 Clock and Wander measurement bug: when the user would switch from the PDV graph results to the Clock Measurements or Wander Measurements menus, the recovered clock output would spike. This is no longer the case; the output clock is no longer affected by switching menus.
10. Fixed a bug in the 1588 Slave Wander measurements; sometimes the Wander MTIE measurements would increase continuously

General improvements:

11. This SW version is no longer limited by the DS3/E3 options and it is now available for DS1/E1 configurations.

Known issues or limitations:

a. The IPv6 label and Loopback icon, on the top of the screen, get covered by the 1588v2/SyncE slave and master labels. This does not affect the functionality of the unit [1026].
b. V-SAM test stops when exiting the V-SAM menu. This prevents the test set from running 1588v2 or SyncE tests simultaneously [1025].
c. NetWiz Cable Test reports “straight” instead of “open” if no Ethernet cable is connected to the test set.
~~d. ReVeal MTX’s Remote Control may become slow to react and timeout/reconnect from time to time [1034]~~

Software version 1.5.1-0 Dec 2, 2011

Release Scope:

Limited availability; for units fitted with E3/DS3 hardware option. Do not use with E1/DS1-only test sets.

Requires ReVeal MTX 1.3.4

New Transport features and improvements:

1. Enhanced ISDN PRI functionality, with the addition of Monitor Mode and DS1 Non-facility Associated Signaling (NFAS) with or without backup D-channel
2. Improved Jitter Measurement GUI with visual Pass/Fail indication, based on G.823 limits
3. Added Level (p-p) readings in dB and dBm for all PDH interfaces

New Packet features and improvements:

4. Introduces V-SAM™, ITU-T Y.1564 Service Activation Methodology testing
5. Introduces Packet Capture and Decode for 1588v2 and SyncE ESMC/SSM option
6. Adds complete IEEE1588v2 error counters
7. Wander option: Direct real-time TIE logging to USB memory for further post-processing with VeEX’s MTIE/TDEV Wander Analysis PC software (for Windows®.) TIE sampling rates of 1/s, 5/s, 10/s and 30/s. Currently available for SyncE and 1588v2.
8. Addition of WiFi Wiz and NetWiz software options
9. Enhanced IP Tools with IP Ping and IP Trace/route packet capture/decode/save
10. Resolves the 100Base-T 1588v2 Master emulation mode GUI freeze issue

Known issues or limitations:

~~a. OAM link and services testing (802.1ag and Y.1731) is not yet available in this version~~

~~b. Requires E3/DS3 hardware options~~

~~c. Do not use this version with DS1/E1 jitter or wander functions [954]~~

Software version 1.1.7-0 Sept 9, 2011

Release Scope:

General availability

New features and improvements:

1. Ability to import Time of Day (ToD) from Trimble GPS. Needs the USB-to-RS232C cable (provided by VeEX) to connect to Trimble's serial port. The menu is under "Time & Date" setting in common utility area.
2. New wander feature allows the unit to save large amount of TIE data to a USB flash drive for further post-analysis with PC software
3. APS timing measurement improvements. All results are displayed within the Gate Time limits (i.e., $0 \leq t \leq$ Gate Time)
4. Improvements in the DS1 ESF 1in8, 2in8, and 3in24 pattern alignment. The position of the first "1" is always aligned to the framing, on the second position, to avoid generating Yellow Alarms
5. The unit now resets the histogram graph as soon as a new test is started to avoid any confusion being caused by temporary data left over from previous test.
6. Correct Error injection icon is now displayed.

Known issues or limitations:

a. ~~When in 1588 Master emulation mode with the 100Base-T interface, the touch screen may freeze (if you tap on it, it will not respond). This normally happens after 1 hour of continuous use. The unit works correctly in 1588 Slave emulation mode.~~ → ~~If you need to perform a Mater <> Slave test with two TX130M+s, it is recommended to use 1000Base-T or 1000Base-X would be better~~,

References TX130M+

Upgrading the TX130M+ software

The latest TX130M+ software upgrade package can be downloaded from www.eveexinc.com. Go to >Products and Solutions >TX-Series >TX130M+ >Software

Once you have uncompressed the ZIP and obtained the upgrade file (tx130mp-veex-arm.tar), the software upgrade (also known as firmware upgrade) can be performed in two ways:

1. From the PC, connect to the TX130+ using **ReVeal MTX** application and use the **Upgrade** function in the **Home** menu, or
2. Via USB Drive, by copying the uncompressed file to the root and then plugging it to the test set. Turn the power OFF. Press the 🗁 and **(?)** buttons simultaneously, while powering the unit ON. The three buttons can be released once the confirmation beep is heard.

The test set must be connected to AC/DC charger at all times during the whole upgrade process. DO NOT turn it off at any time; the upgrade process will take a few minutes and the test set will turn itself off at the end.

To verify the current software version number installed in the unit, open the **Utilities** section, select **Settings**, and open **About**.