ETS-Lindgren Software Bulletin

Date: March 31, 2020

Issue Highlights for Q1:2020

- EMQuest and the state of 5G testing
- TILE!7 Latest and Greatest
- TILE Users Group – Get Involved
- New support portal is available

EMQuest and 5G

5G is all the rage, and EMQuest test packages are available to enable 5GNR performance tests. 2020 is the year the 5G radio will find its way in to many popular smart phone models, so testing demand should jump considerably.

The widely spaced 5GNR frequency bands are driving a two chamber solution for most wireless test labs. Current wireless test chambers operate between 700 MHz and 6 GHz and can be upgraded for 5G with pre-packaged hardware and software components that expand bandwidth, switching and instrument drivers. The mmWave FR2 band between 24 and 50 GHz is driving a second chamber for most test labs. The favored approach is the compact antenna test range (CATR) since range length and path loss are at odds for larger chambers. ETS-Lindgren offers the widest selection of CATR quiet zone sizes in the industry. CATR model information can be found on our website using this link http://www.ets-lindgren.com/solutions/5g%20At%20ETS-Lindgren

EMQuest is ready for 5G on both FR1 and FR2 band systems. Instrumentation is a critical path since 5GNR is driving the development of new network emulators. The big three are Keysight, Rohde & Schwarz, and Anritsu and all three have new instruments for 5GNR. ETS-Lindgren will continue our support for all instrument brands, but we are constantly asked for a status on each instrument. As of this writing, Anritsu's MT8000A leads the test capability race. Stable and consistent TIS and TRP data can be obtained in either stand alone or non-stand alone network modes. The Anritsu instrument is the only unit that supports FR1 and FR2 band tests. Several carrier aggregation combinations are supported, as is EN-DC mode. Keysight's UXM-5G has similar capabilities with the exception of FR2 band support. mmWave converters are rumored and have a place on the website, but ETS has not seen or used them. The CMX from Rohde&Schwarz is a bit behind the Keysight instrument, also only supporting FR1, and lacking some key functionality. Some functions available from the front panel lack commands that EMQuest can send to make the action happen remotely. Since the instrument race changes weekly, be sure to ask for updated information as you plan your 5G offering. Demonstration systems are available in our Texas facility for FR1 and FR2 that showcase EMQuest and can show the latest accomplishments with each instrument. Visitors are always welcome, so if seeing is believing, plan a trip to Texas with your sales person. Also watch for videos highlighting various 5G capabilities, these are coming soon.

On the specification and standardization front, carriers and device makers anxiously await the release of 3GPP TS 38.101 release 16. This will specify "real 5G" and drive use cases other than smart phone based enhanced mobile broad band (eMBB). Once TS 38.101 v16 is released, devices can be designed to

address smart-X, or making any device “smart” by equipping it with a wireless connection when warranted. Smart factories, home automation, connected vehicles, augmented or virtual reality….all the concepts to add the next billion 5G connections will be specified by release 16. No true “killer application” is rising up yet, so the market opportunity is wide open. Also note the amount of LTE and GNSS work still on-going and reflected in the below release notes from the latest version of EMQuest.

The current version of EMQuest is V1.12 build 26320 and the following features, drivers and problems were addressed in this build:

1. Spirent LTE A-GPS/A-GNSS Test System - Added ability to set TIS success count
2. New driver for GSS7000 Signal Generator
3. Stand-alone GPS - Added error check for latitude and longitude values received from DUT
4. Remote Modem Â– Added option to start iPerf in server mode, Updated help
5. Fixed crash in A-GNSS Sensitivity Pattern measurement test during post processing
6. Fixed problem with modulation index in Spirent LTE A-GPS/A-GNSS Test System
7. Fixed crash in ETS GNSS Test System when equipment not found
8. Added the capability to dump spectrum analyzer filter traces before they are filtered to a debug file during power measurement tests. It can be activated from the Debug Menu. You can then read these traces back in from the dump file and run them through EMQuest again with a simulated analyzer. This capability allows us to debug EMQuest for data that has been obtained remotely or from an different computer than your development machine.
9. Addressed various issues found in code review to improve stability of EMQuest
10. Made Asynchronous VISA more reactive to abort.
11. Handling MeasureRSSPower functionality for RSS tests in Manual Driver
12. Added support for "Copper Mountain Planar C2220" network analyzer.
13. Added LH/RH axis labeling for CP switch.
14. Added dwell parm before input measurements for CE input cal
15. Support for SA gated trigger
16. Made Exports parameter node writable in a raw datafile (like Corrections).
17. Fixed multi-fill IP menu for CE
18. Added MODE B support to TX data rate control option for 8862
19. Added "Relative to Isotropic" choice for Unit_OverIsotropic unit type. Previously no label.
20. Wasn't handling NULL in pattern when "Best Fit" option selected. Fixed
21. Added option in Tools dialog to skip post-processing step at test.
22. Only verifying state of time gate if user turns it on for exercise dialog - ensures analyzer doesn't hang waiting for response.
23. Allowing ZNL *IDN string to go through in ZVB driver - not officially released.
24. Exposed the quick TIS search algorithm in the Two Axis Dual Position Test.
25. Improved Anritsu MT8000A NR driver
26. For CMW500 LTE, added Expected Power Margin and returning default value for bad power measurement.
27. For CMW500 CAT-M1, fixed GUI issue when switching between eMTC Auto Mode and eMTC RMC
28. For CMW500 WLAN, added MIMO support for CMW500 WLAN 3.7.50 with SUU, SUA hardware option
29. Improved LTE/NR function on UXM 5G Communication Tester.

TILE! Version 7

TILE! Version 7 continues its progression with version 7.5.2.2 issued in January 2020. TILE! 7.5 was released in October 2019 and added significant immunity and reverb enhancements compared to version 7.4. The constant development of drivers also continues to allow ultimate flexibility in sourcing equipment that best matches the needs of your lab. Unlike many competitors, ETS-Lindgren puts extensive work towards drivers for many brands and models rather than restricting your choice to one brand. The additional work is considerable, but your feedback says it is appreciated.

A new field probe was recently launched and the driver for it was added to v7.5.2.2. The probe is called the EMSense™10 and boasts field strength measurements from 10 kHz to 10 GHz with a dynamic range of 1 to 750 V/m. This probe is a laser powered 6 axis unit with internal amplitude compensation, meaning that no external calibration factors need to be applied. The key feature, beyond frequency and amplitude range is a concerted effort for maximum isotropicity. Technical information on why this matters will be available soon, so watch for it on our website.

We want to remind everyone that TILE v6 and v7 work best in the Windows 10 environment, which is even more important now that Windows 7 will no longer receive updates. All current ETS-Lindgren software products are Windows 10 compatible.

Timely information on TILE! is found in the TILE! Users Group, or TUG for short. The group taps the experience of TILE! users throughout the world and connects you with people testing similar devices, trying similar enhancements or troubleshooting similar issues. A group meeting takes place at the IEEE EMC Symposium in the US each year and you are invited and encouraged to join the group and lend your expertise and experience to your peers.

The 1/22/2020 build of TILE! version 7.5.2.2 incorporated the following:

1. Reverb Test and Reverb Cal actions:
   Add Primary radio buttons on Instruments 1 tab, or Primary Positioner setting in the Properties View. When Positioner 2 is set as the Primary Positioner, this effectively switches the positioner loops if both positioners are enabled, or if only one positioner is active switches the positioner used from Positioner 1 to Positioner 2. This is useful if the user wants to have their only positioner run as the Vertical positioner, then they can use Positioner 2 and have the setting labels reflect this accurately.
2. Reverb Cal action:
   a. Expose Results Logging feature with settings on Data tab and in Properties View.
      1. File Path, Auto Increment Filename, and Logging enable are now settable. Default setting for File Path is $ProfileDir\$ActionName.csv which produces same filename as previous version. Other useful macros are $ProfileName, $TileDir, $TileProfileDir, $\\ (up one directory).
      2. Pausing action closes file so that another application (e.g. Excel, Notepad) can view the current results.
   b. Suppress error dialogs that typically occur when pressing Stop button.
   c. Fix issue where Power Meter 2 Delay setting was not being implemented. This could make some existing profiles run slower, but those profiles could be adjusted to compensate (set Delay to 0 to get old behavior).
3. Fix issue calling scripts with Ignore/Replace Command feature.
   If the script did not return a value, there was an extra Write call with the string = "0".

4. an_mg369x.ins driver: Convert to Settings driver. One setting for Internal Pulse Clock Rate: 10 MHz or 40 MHz.
5. Immunity Test action:
   a. Cleanup Monitor Limit Comparison values when loading; some profiles have been observed to have this value corrupted.
   b. Make Monitors processing more efficient.
   c. Fix issue where spaces could not be entered into Comments field. This problem originated when Spacebar toggle between Pause/Run was added (TILE 7.5.1.2).
6. rs_nrx.ins: New R&S NRX Power Meter Driver. Based on the NRP driver and adds the following functions:
   a. Add Pulse Analysis Measurement type to better support faster and more accurate pulse signal measurements.
   b. Replace the NPP/NRP2 compatible commands with NRX recommended commands, and add some new NRX specific SCPI commands.
7. ETS_EMSense10.ins and Dare_RadiSense10.ins drivers: Fix issue sending frequencies > 2147483647 Hz (was mis-formatting and sending out as a negative value, causing ERROR 3 on the module).
8. Graph updates:
   a. Change Customer action label to Client.
   b. In Properties View, change Additional Information\Customer group name to Client.
   c. Fix bug on graph where additional info text could be incorrectly drawn if no action was specified.
   d. On Additional Information tab, allow Operator action selection to include both LabInfo and Operator actions (previously only allowed LabInfo).
9. ag_mxa_rx.ins driver:
   a. Avoid multiple retries if error occurs in ReadPt.
   b. Avoid possible interruption of Abort button during IO queries.
10. Added a tile_exit() function to scripting so you can exit TILE under script control.

The TILE! support portal was moved to a new host site and completely revamped. It is still the core repository for all things TILE! and EMQuest. The support page link is https://support.ets-lindgren.com and EMQuest and TILE! have separate areas. EMQuest getting started packets are great sources of key information found on the portal. TILE! V5, V6 and V7 builds are in the TILE! section, as well as profiles and all sorts of documentation.

For those times when you just need to speak to someone, Technical Support can be reached at +1.512.531.2609 or by email.
Technical Support Email:
Contact Service Desk
Tile! Support Email:
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