SAGE Instruments **UCTT 8901** Release Notes

Tuesday July 10, 2012, Sage Instruments is excited to announce a major new release for its wireless base station test tool, model 8901 UCTT. This release serves to extend the UCTT's capabilities to include Ethernet backhaul testing, location based applications for interference source location and signal quality coverage, and enhance existing features.

Release Summary

New Options

- 8901-0030-01 GigE Backhaul Test Interface
- 8901-0032-01 RFC 2544 Ethernet Testing
- 8901-0140-01 Signal Location and Interference Hunting
- 8901-0310-01 Multi-Technology Signal (RSSI) Coverage Mapping

- Enhancements to Broadband FFT Spectrum Analyzer

    - Doubled On-Screen Frequency Span Refresh Speed
    - Increased Peak Continuous Trace Mode Speed for Short Duration Signal Detection
    - New Manual mode for Attenuation Settings
    - New Full Screen View
    - New Manual RBW Setting
    - Added 4 more Markers with Math Capabilities

Other Enhancements

- Added WCDMA Spectral Emissions Mask (SEM)
- Added LTE Spectral Emissions Mask (SEM)
- GPS Firmware Enhancement for new Location based Features
- Enhancements to Post-Test Analysis Tool (PTAT)

    - New upport for VSWR
    - New support for RSSI Coverage Chart and Location Reference
    - New Capability for zoom in/out between Markers
    - Added support for 6 imported markers [RL, VSWR, DTF, and SA]

Release Details

GigE Interface - Hardware Option: 8901-0030-01

Integrated Dual Port GigE interface (10/100/1000 BaseT)
Provides Native Copper Interface with Optional Accessory Module Adaptors
for different Optical Interfaces

RFC 2544 - Software Option: 8901-0032-01

Provides UI screens for RFC 2544 Testing

Allows field personnel to certify Ethernet backhaul performance for Latency,
Throughput, Frame Loss and Back-to-Back Metrics
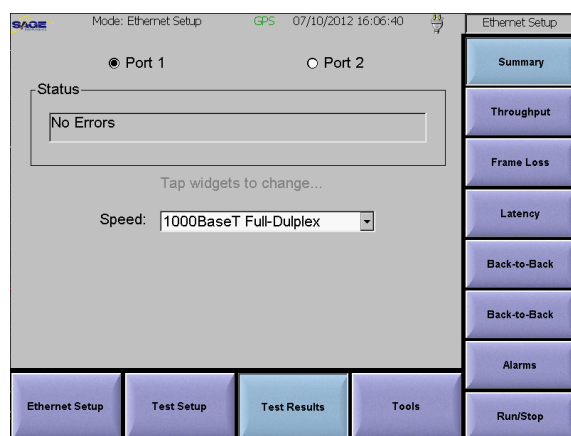
Signal Location and Interference Hunting - Software Option: 8901-0140-01

[Phase 1 Release]
Provides UI to track/view signals in the frequency domain with an optional
audible aid or visual triangulation using a map screen with GPS location.

This option's triangulation and mapping location feature requires the GPS
hardware option. In addition, there is a new map exporting utility program
application (UCTTMapper.exe) that allows users to export maps from a PC to
the UCTT via a USB flash drive.

Triangulation Guide:

1) **Export Map**(s) using the PC utility, "UCTTMapper.exe" application. Note,
the PC must be connected to the Internet. Also, the map area and
resolution chosen is exported as a fixed graphic. Thus, if users want to
search for signals in a greater area with fine resolution they may need to
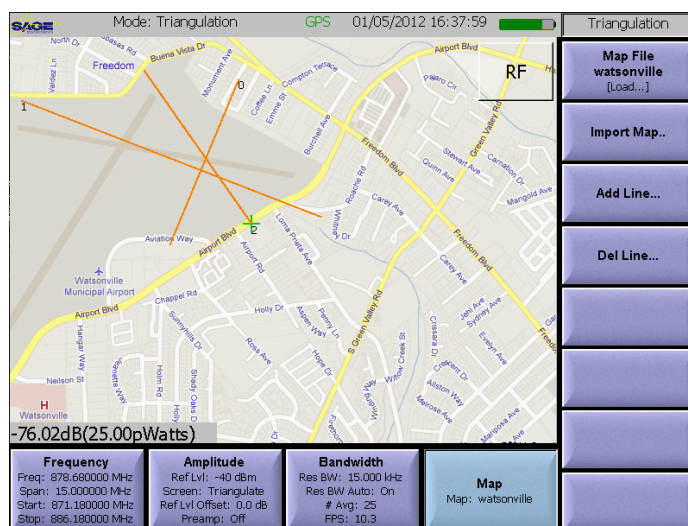
import more than one map.

2) **Import Map** using a USB flash drive. Copy/Move map files to a USB flash drive then connect to UCTT USB port

Press Mode>SigLoc.

Open map display by pressing the new "Map" soft button in the upper right corner of the display area.

Press "Import Map" soft button and select map from external

3) Load Map file by pressing "Map File" soft button

4) **GPS Preparation**: Prior to commencing signal location with Triangulation, prep GPS by taking the UCTT outside where it has a clear view of the sky for Satellite reception. If the unit has not been used within the the last 3 hours or was moved greater than 60 miles since last GPS lock, it will take 3-5 minutes to locate at least 4 satellites. Although, it is recommended that users allow 15-20 minutes so the GPS can complete its survey mode and locate all viewable satellites.

Press Mode>Syst>GPS and observe GPS screen.

Note: If the GPS antenna is connected you will see the GPS icon along the top of the display area. Yellow indicates healthy GPS connection but no "TimeLock" and Green indicates "Time Lock"

The UCTT's GPS is used for both location and as a precision time source for frequency accuracy. GPS Location updates will commence prior to "GPS Lock" but Signal Location Triangulation activities should not commence prior

to "Tracked Satellites" is > 4. For the best performance, it is recommended that users wait until "Expected Satellites" is > 5.

5) Using Signal Location

Use a directional antenna (Yagi) to pinpoint signal of interest using spectrum analyzer or RF screen in Signal Location.

Reduce Frequency Span to width of signal.

To locate the source of the signal, users have the option to locate using power level with an audible aid in the RF screen or using level and Triangulation with or without audible aid.

The audible aid is a beeping sound that increases its cadence as the signal level gets stronger.

Audible Aid Adjustment: Continuous Tone (100% duty cycle) is at Reference Level setting thus adjust Ref Level to the appropriate level to assess the signal of interest. If signal of interest is at -85 dBm make sure the reference level is greater than -85 dBm (i.e. -40 dBm). Adjust audible beep range by pressing the "Bandwidth" button then the "Audio Beep" button. The settable range is 10 to 120 dB, thus using reference level as the top of the range and range setting in dB as the bottom of the range, anything less will not register an audible beep (i.e.with ref lvl at -40 dBm and a range setting of 50 dB, bottom of range is -90 dBm). As the signal level increases, the audible beep cadence will also increase. The cadence rate change (beeps per sec per dB of change) will depend on the size of the set range. The larger the range, the less sensitive it will be to changes in level and vice versa.

For Triangulation, press the "Map" button in the upper right corner of the display area of the Signal Location RF screen. The GPS icon should be illuminated (green) prior to starting.

Using Triangulation as a visual aid to locate a signal source is helpful but it will require some skill. As a minimum, users should go to three weigh points and make level measurements of the signal. For best results, the weigh points should be selected such that they make a triangle around the suspected single source location. Accurate and stable level measurements are key to success. Users must take into account false measurements caused by reflections or signals tunneling through glass buildings.

[Caution] Users should not operate the UCTT while driving. Car crashes can cause injuries and fatalities thus Sage Instruments does not recommend nor condone individuals interact with the UCTT while driving.

Multi-Technology Signal (RSSI) Coverage Mapping - Software Option: 8901-0310-01

[Phase 1 Release]
Provides UI to assess quality of coverage using technology specific RSSI measurements.   Users can pre-define 4 RSSI thresholds (power levels: Excellent, Good, Fair, and Poor) and associate colors to assess quality of coverage. Logging of data is optional but can be saved in CSV format and re-plotted using the UCTT's post-test analysis utility software (PTAT – RSSI Chart) or saved using KML format and re-drawn geographically using GoogleEarth.

This option requires the GPS hardware option. In addition, there is a new map exporting utility program application (UCTTMapper.exe) that allows users to export maps from a PC to the UCTT via a USB flash drive.

Please refer to steps 1 thru 4 above under Signal Location for application setup.

This feature has been optimized with GPS firmware version 30.0 (as seen in the System screen). Older GPS firmware will have slower GPS location updates.

Selecting Technology and Channel Number:

Once in the Signal Coverage mode, users can select a specific technology or monitor a generic signal. From the "RF" Spectrum screen or "Map" screen, press "Frequency" soft key and select appropriate channel plan and channel number or set center frequency for generic signal.

Setting up thresholds:

From the "Map" screen, press "Cfg Symbols". The "Levels" set for each threshold represents the minimum level.

When using Coverage Test, touching a colored marker on the map displays captured Geo-location data for that location.
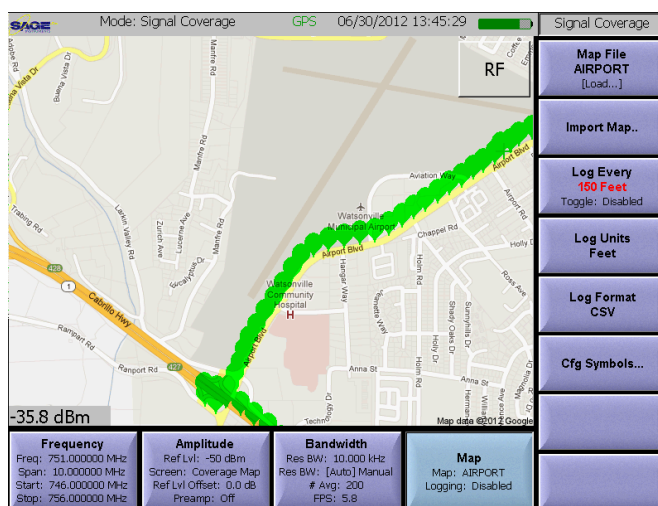
[Caution] Users should not operate the UCTT while driving. Car crashes can cause injuries and fatalities thus Sage Instruments does not recommend nor condone individuals interact with the UCTT while driving.

Enhancements to Broadband FFT Spectrum Analyzer

Increased spectrum refresh speeds by 80% or more. Refresh 250 MHz spans in less than 50 msec

- Increased Peak Continuous Trace mode speed to detect 1000 usec signals 100% of the time (POI)
- Added new manual mode for controlled attenuation settings.   When "Window Type" under "Bandwidth" settings is set to "Uniform" or "Blackman", adjusting reference level sets attenuator per the following rule:

  Ref Level = -20 dBm, Att = 0 dB
  Attenuation is added to maintain -20 dBm at RFin.
  Ref Level = +30 dBm, Att = 50 dB

  This mode is useful when troubleshooting very small signals near very large ones and you don't want auto attenuation to kick in.

- New expanded Full Screen View to help locate and track down interfering signals. To enable Full Screen View, go to Mode > Syst and change "Full Screen" setting to one of the available choices. To enter Full Screen View in the SA mode touch screen in upper right corner of viewing area (Header area above right column soft buttons is active). To return to normal view touch screen anywhere or if Full View setting is set to a timeout value it will return automatically after the prescribed time.
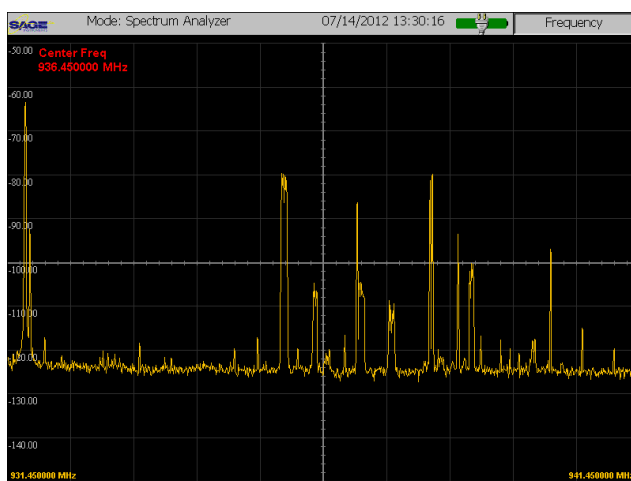
- New Manual RBW setting. Note: Default Auto RBW mode always displays 1000 sample points on-screen no matter what the Freq Span is set to (Auto RBW = Span/1000). Increasing RBW will reduce number of sample points on-screen but will increase refresh speed to help capture shorter duration signals.

- Added 4 more Markers with Math Capabilities. Up to 6 markers can be assigned to a single trace in SA, PM, RL, VSWR, and DTF screens. When changing modes/screens markers are preserved but must be re-enabled. Also, when "Saving" trace data for post-test analysis (PTAT), all markers are preserved.
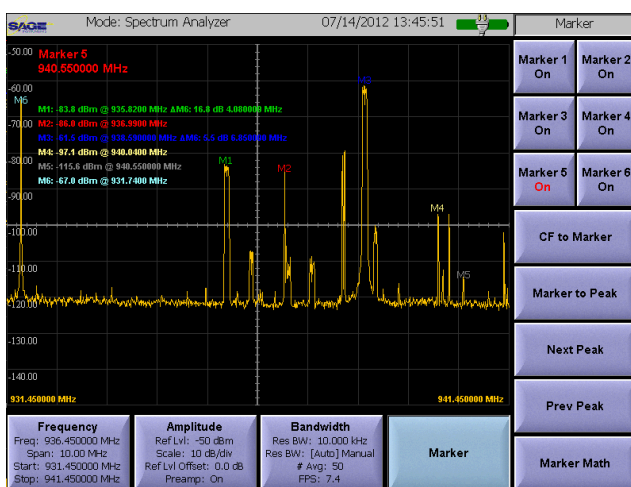
Other Enhancements

- New WCDMA Spectral Emissions Mask (SEM) Screen. Provides new SEM sub-screen under WCDMA mode. SEM UI supports all Base Station types per 3GPP Specification.

- New LTE Spectral Emissions Mask (SEM) Screen. Provides new SEM sub-screen under LTE-FDD and LTE-TDD mode. SEM UI supports all Base Station types per 3GPP Specification.
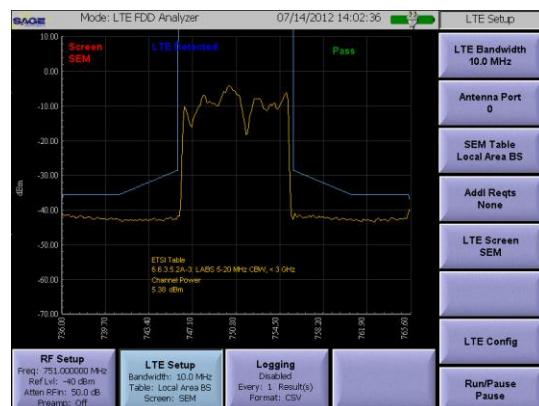
- GPS Firmware Enhancement for new Location Based Features. The UCTT's GPS firmware was modified to increase location update rate. GPS firmware update is free of charge. Older units may need to go to the nearest service center for update.

Enhancements to Post-Test Analysis Tool (PTAT)

- New Support for VSWR Trace. VSWR traces saved as data can be re-drawn in PTAT.

- New Capability to zoom in/out between two markers. Selecting two markers in PTAT enables zoom in/out button. Selecting one or more than two markers disables zoom button.

- New Support for RSSI Coverage Chart with Location Reference. Plots data logged in the UCTT's Signal Coverage mode. Plots Level vs No. of points with roll-over Geo-Tag information (GPS Location).

- Added Support for 6 imported markers. PTAT was modified to support UCTT Trace data with up to 6 markers. PTAT will still maintain ability to add additional markers.

To get download access for this release please contact Sage Sales (sales@sageinst.com) or Technical Support (technicalsupport@sageinst.com).

Best Regards,

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