

## **SAGE Instruments UCTT 8901 Release Notes**

Friday June 20, 2014, Sage Instruments is excited to announce a major new release for its wireless base station test tool, model 8901 UCTT.

### **Release Summary**

This release serves to extend the UCTT's capabilities to include:

- Added Three New Application Buttons to Home Screen (Mode Button) for New Features
- Added Powerful Blind Scan Application (Purchased Option) to help with Site Surveys and Signal Identification
- Ease of Use Layout Changes to Spectrum Analyzer
- Added New Feature that Allows Users to Create Custom Carrier Channel Lists to Help Streamline Common Spectral Analysis Tasks
- Added Usability Enhancements to Zero-Span (Time Domain) Mode and Setup
- Usability enhancements made to VNA Mode
- Optimized Antenna Testing Algorithm and Updated Screens
- Enhanced LTE Demodulation Capabilities for Link Layer Quality Metrics
- Enhanced Channel Scanner Capabilities to Assess Deployment/Coverage Quality
- Enhanced GSM/GPRS/EDGES Capabilities to Assist with Signal Discovery and Identification
- New version of Remote control software
- New version of Post-test Analysis Software (PTAT)
- Added New 300 MHz to 3 GHz, Broadband Directional Antenna Accessory to Support Advanced Interference Hunting, and new broadband Omni antenna
- The User Saved File System now sort by date: Now sorts from newest to oldest. When saving screen captures (png format), users now have an option to save directly to external drive.
- Added beta support for new Auto-Test feature (purchased option) to support pre-defined test templates
- Added adjustable RBW setting to Spectrogram and increased refresh speed.
- Added fixed 25 second Auto-refresh to Peak-Hold & Max-Burst Trace types in SpecAn

## Release Details

Changes to Application Button Home Screen (Mode Button)

1. Re-organized App buttons to group them more intuitively and ergonomically . [See Figure 1]
2. Add new Buttons for new Blind Scan , and Auto-Test features and future LMR and WiFi support.



**Figure 1** Shows changes made to the Mode Button – Application Screen

Added New Scanning Receiver Application, Blind Scan [See Figures 2-6]

1. Blind Scan is a purchased feature that enables the UCTT to automatically scan a selected frequency range for specified technology carrier signals or all UCTT supported technologies. In this mode, the UCTT will automatically identify carrier, technology type, frequency, and layer one demodulation parameters to help identify which base station the carrier belongs to.
2. Blind Scan results can be logged or used to define Custom Channel Plans (Lists). The Custom Channel Plans can be stored and shared (exported) and recalled in other UCTT applications that use Channel Plans for frequency selection (Spectrum Analyzer, Detailed Demodulation Applications, etc...) Future releases will provide GPS GeoTagging as well.



**Figure 2** Shows Main Screen for Blind Scan Setup

Blind Scan Applications

- DAS Deployment Before and After Carrier Availability Assessments
- Base Station Deployment (Small Cell) Site Surveying
- Assist with Signal Identification for Spectral Clearing and Interference Activities



**Figure 3** Shows Blind Scan Technology Selection Screen

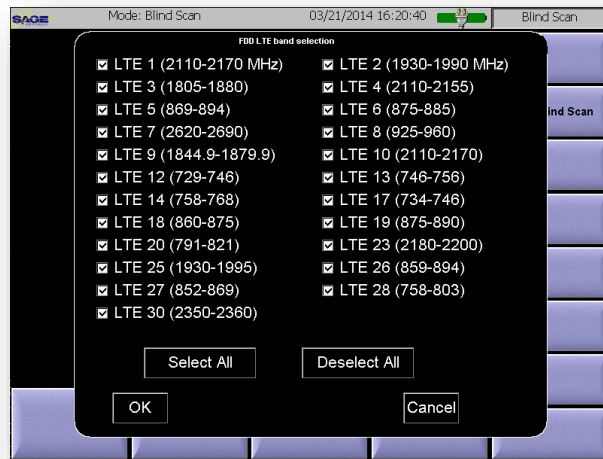


Figure 4 Shows Blind Scan Search Band Selection Screen (post LTE Selection for Technology)



Figure 5 Shows Blind Scan User Selectable Frequency Scan Range

Multi-tech scanning, currently WCDMA: 15 bands, 700.00 - 1000.00

Chs Scanned 711 (711)      Current Freq(MHz) 957.60

Number	Freq(MHz)	Band Name	ChNum	dBm or dBm/RE	CID(G/S), SC, BSIC
1	739.00	LTE 12 DN	5110	-74.5	480 (160, 0)
2	751.00	LTE 13 DN	5230	-66.5	303 (101, 0)
3	869.20	GSM 850 Dn	128	-85.2	
4	869.60	GSM 850 Dn	130	-73.7	
5	879.40	GSM 850 Dn	179	-75.1	
6	890.80	GSM 850 Dn	236	-52.1	18
7	872.00	UMTS 5 Dn	4360	-60.9	189
8	877.00	UMTS 5 Dn	4385	-60.6	51

Repeat      Save to      Add to      Close

**Figure 6** Shows Blind Scan Results Screen for Scanning of Range 700 MHz to 1 GHz for LTE, GSM, and UMTS (WCDMA).

#### Ease of Use Layout Changes to Spectrum Analyzer [See Figure 7]

1. Under Frequency parameters, removed Start Frequency soft button and modified Stop button for both start and stop settings.
2. Under Frequency Parameters, used vacated soft button for Resolution Bandwidth (ResBW) setting
3. Rename "Bandwidth" button to "Averaging" and added Trace and Window Type Status fields (Frequency-Amplitude-Average is a traditional layout for a FFT SpecAn



Figure 7 Highlights changes made to the Spectrum Analyzer (SA) Screen



Figure 8 Shows New Channel Plan Dialog Menu

Added Custom Carrier Channel Lists to Help Streamline Common Spectral Analysis Tasks

1. Re-organized Channel Plan dialog to make selection of technology more intuitive [See Figure 8]
2. New User Channel Plan category allows users to select from user defined channel plans
3. Users can manually create new channel plans by selecting Edit in the new Channel Plan dialog. [See Figure 9]

- Users can Export channels plans via an external USB thumb drive, save to internal memory, or merge with existing stored user channel plan(s). The Channel Plan Edit dialog also allows users to import channel plans from an external USB thumb drive allowing users to share channels plans between units.

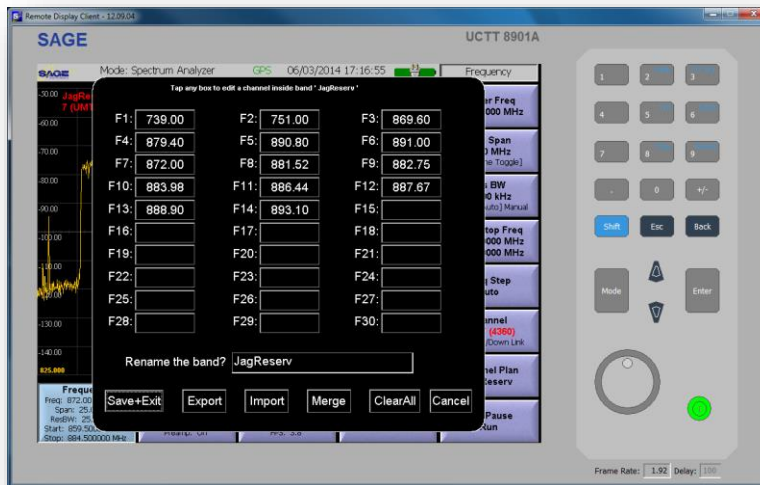


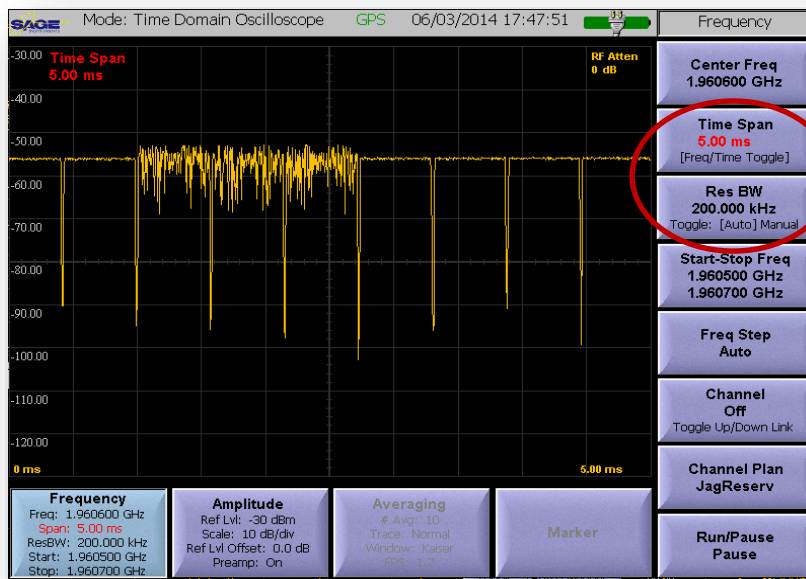
Figure 9 Shows New Custom Channel Plan Edit Menu  
 Note: Picture shown here is using UCTT Remote Control Application



Figure 10 Shows Channel Plan Carrier Frequency Entry Dialog

Added Usability Enhancements to Zero-Span (Time Domain) Mode and Setup [See Figure 11]

1. Under Frequency, a new soft key parameter for Time Span setting has been added to allow users to set time duration of scope display.
2. Under Frequency, a new soft key parameter for Resolution Bandwidth has been added to allow users to set filter width (i.e. 200 KHz for GSM Channel)



**Figure 11** Highlights changes made to the Spectrum Analyzer (SA) Zero-Span Screen Note: Display shows a mix of GSM & EDGE Timeslots

Usability enhancements made to VNA Mode [Figure 12]

1. New under Amplitude parameters, soft buttons for Reference Level [-100 to +30 dB] and scale setting [1-20 dB]
2. New under Amplitude parameters, soft button for Reference Delay [0 to 3000 nsec] and Delay Scale setting [1 to 200 nsec]
3. New Span-Avg soft button with Run mode status and Limit Value
4. VNA Transmitter and sweeping Algorithms enhanced to provide more sensitivity and accuracy down to -80 dB (typical +/- 1 dB).



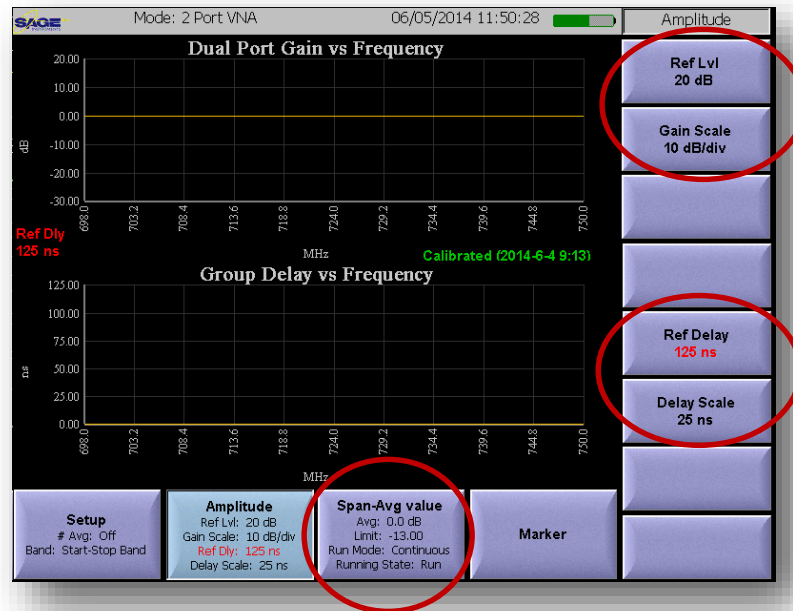


Figure 12 Shows changes made to the VNA Screen

Optimized Antenna Testing Algorithms and Updated Screens

1. Improved multi-tone tracking generator algorithm to improve speed, raise sensitivity (~ 10 dB) and increase on-channel immunity (~ 5 dB, now 22 dB ).
2. New Span-Avg soft button with Run mode status and Limit Value [Figure 13]

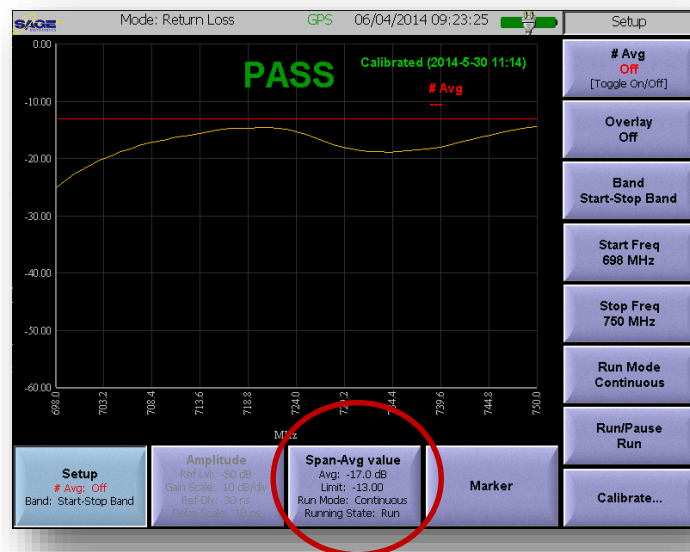
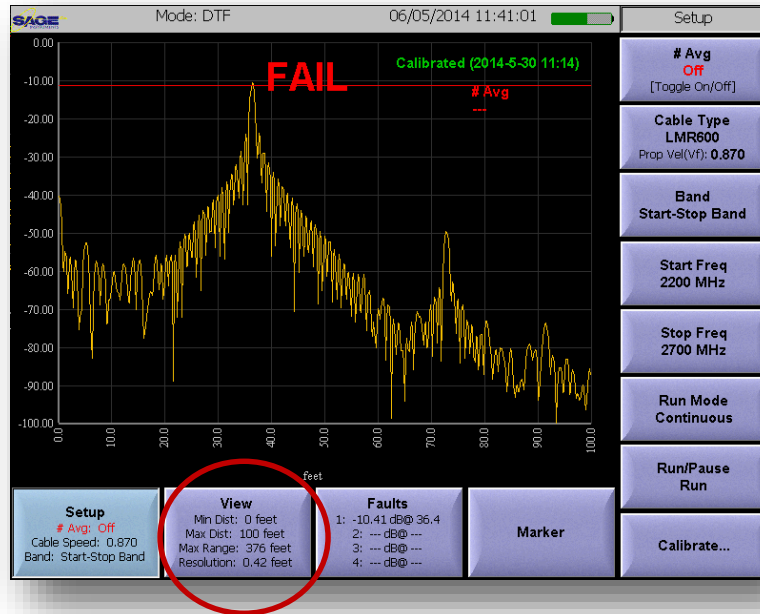


Figure 13 Highlights changes made to the RL and VSWR Screen

3. Improved calibration wizard making it faster and solving known user abort issues
4. DTF Screen now displays DTF Measurement Resolution under View soft button. Resolution provides location accuracy (+/- range) [See Figure 14]



**Figure 14** Highlights changes made to RL and VSWR Screen

### Enhanced LTE Capabilities for Link Layer Quality Metrics

Under LTE FDD/TDD Mode, under submenu Frame Summary, the UCTT now provides link layer metrics to help troubleshoot malfunctioning LTE eNodes and help characterize LTE Cell boundaries to assist with small cell placement. [See Figure 15]

1. PBCH MIB Decode – Providing HEX Format, and decodes for Number of Tx Antennas, Channel Size, Ng, and SFN.
2. PHICH Ack/Nack Decode CRC Error Count (Bit Error Rate)

### LTE Link Layer Applications

- Small Cell Deployment Activities
- In-building and small cell deployment for downlink coverage characterization
- Find cell boundaries by monitoring the PHICH for bit errors

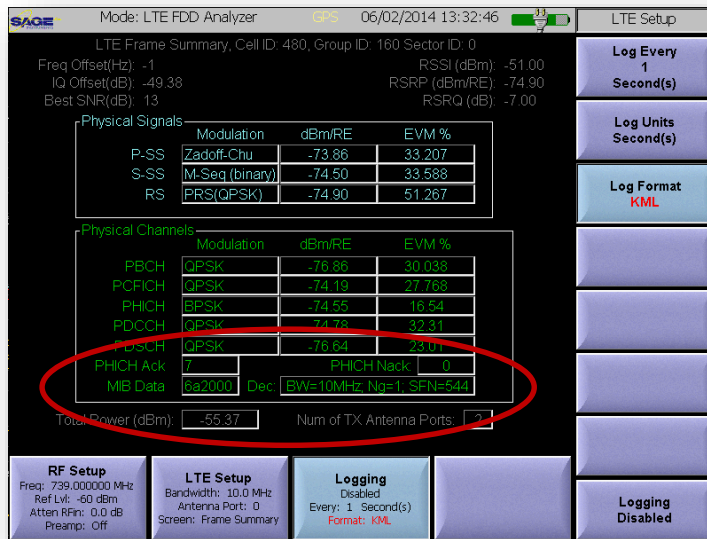


Figure 15 Shows changes made to LTE Summary Screen

Added Layer 1 Demod Results to Channel Scanner [See Figure 16]

1. Added new soft button for Results – Touch the new Results button then touch a channel to get layer 1 demodulation results - Applies to all technologies
2. All demod Results can be logged along with Geotagging for multiple channels and technologies

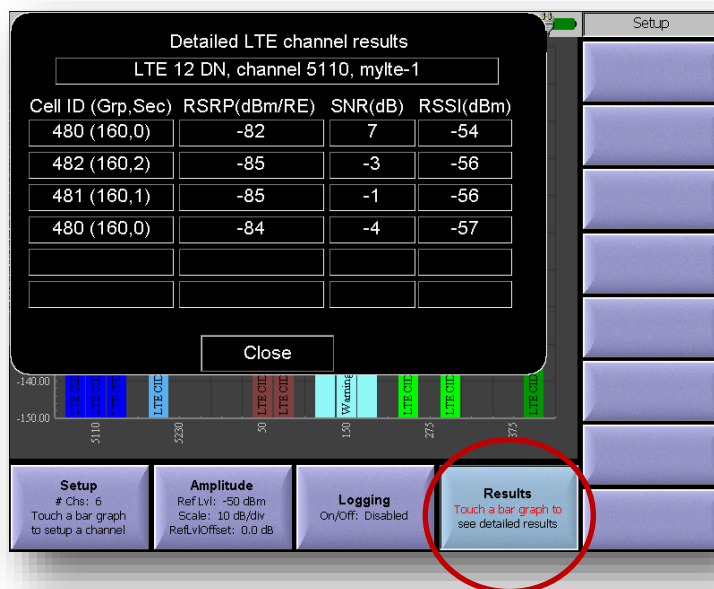
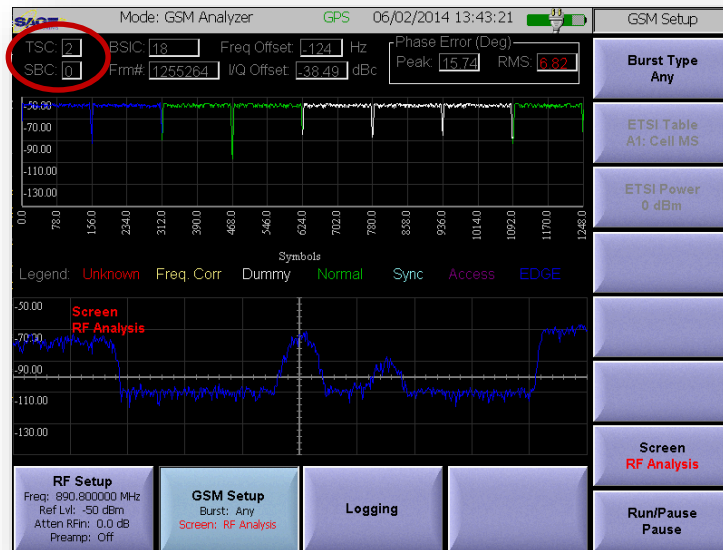


Figure 16 Shows Channel Scanner's New Layer 1 Demodulation Results

### Enhanced GSM/GPRS/EDGES Capabilities to Assist with Signal Discovery and Identification

1. Updated Near Real-time showing all 8 Timeslots with Superimposed Burst Type Identification (EDGE, Normal, Sync, etc...) [See Figure 17]
2. Updated Detection Algorithm to increase OTA sensitivity
3. Added BSIC to RF Analysis Screen



**Figure 17 Shows Updated GSM RF Analysis Screen** Note: This screenshot shows a single carrier that is mixed use for normal GSM and EDGE.

### Support Tools, Utilities and Accessories

- New version of Remote control software is available with this release –
- Post-test Analysis Software (PTAT) is now available in both 32 and 64Bit versions
- Added New 300 MHz to 3 GHz, Broadband Directional Antenna Accessory to Support Advanced Interference Hunting
- Added New magmount broadband Omni antenna 698 – 2.7 GHz which is ideal for OTA testing and the UCTT's new Blind Scan Feature.