

UCTT

POWERFUL NEXT GENERATION BASE STATION TESTER

LTE
Wi Max



- **The Ultimate Interference Hunting Analyzer!**
Samples 25 MHz simultaneously; 1000's of times faster than conventional sweeping spectrum analyzers
- **Over 30 Test Sets in one!**
Combines state of the art 25 MHz FFT Spectrum Analyzer, Antenna & Cable, VNA, Multi-Channel Scanner, Demodulation, Power Meter, Interference Analyzer, VSG and Backhaul testing
- **Rugged, Water Resistant Case** withstands harsh environments per MIL-STD-810
- **Super Big & Bright 10.4" SVGA** with efficient LED backlight
Truly Sunlight Readable with Responsive Touch Screen
Best Battery Runtime with 3-7 hours of operation

• Intuitive "iPhone-like" interface, virtually no training required!

GSM HSPA

EEDGE
WCDMA

SPECTRUM ANALYZER

UCTT Features & Characteristics

- FFT Analysis Bandwidth: 25 MHz
- Range: 9 KHz to 3.8 GHz*
- Frequency Span: 10 KHz to 2GHz, Zero Span, 1000 Data Points
- Resolution Bandwidth: 100 Hz to 2.7 MHz, Auto
- Trace Update Rate: Max 25 Fr/sec, Typ 20 Fr/sec (Normal)
- Trace Modes: Peak/Min Hold, Peak Cont, Dual, Histogram
- Sample Averaging: 1 to 1000
- Windowing: Uniform, [Kaiser,] Hanning, Hamming, Gaus, Blackman
- Reference Level Range: -100 dBm to +60 dBm
- Measurement Range: DANL to +30 dBm
- Input Attenuation: 0 to 55 dB, Auto
- Preamp: +20 dB (Manual/Auto)
- Absolute Amplitude Accuracy: ± 0.25 Rf in > -60 dBm)

- Simultaneous Dynamic Range: 90 dB
- SSB Phase Noise: -85 dBc/Hz max at 20 kHz offset
- Spurious Responses: Residual (50 Ω Term): < -120 dBm
Signal Related (2-tones, -26 dBm, 100 KHz space, Preamp Off): > 70 dBc
- Displayed Average Noise Level (DANL): -144 dBm, Preamp On @ 100 Hz RBW(Equiv to -164 dBm/Hz)
- RF Input VSWR: 1.8:1 typical
- Adjustable Display Range: 1 to 15 dB/div in 1 dB steps.

INTERFERENCE ANALYZER

- Signal Location: RF & Map Views + Triangulation & Audible Aides
- Spectrum Analyzer: Max & Cont Burst, 100% POI 200 usec, 5000 Fr/s
- Spectrum Analyzer: Peak/Min Hold, Peak Cont, Dual Trace, & Histogram
- Spectrogram: Logs: 100 hrs, POI 100% Signals > 1 msec

*Non-contiguous range(s): 1.0-1.6 GHz, 2.7-3.4 GHz

CDMA EVDO
CDMA2000

CABLE AND ANTENNA ANALYZER

- Frequency Range: 9KHz to 3.8 GHz*
- Frequency Resolution: 10 KHz & 1 MHz
- Interference Immunity:
 - On-Channel: 18 dBm @ > 1.0 MHz from carrier
 - On-Frequency: + 10 dBm within 100 KHz of carrier
- Insertion Loss: One Port & Two Port VNA
- Insertion Loss Range: <80 dB Accuracy: $\pm .5$ dB, ≥ 80 dB Accuracy: ± 5 dB, Scale: 0-60 dB
- RFout +5 dBm
- Distance-to-Fault Range: 200 M
- Data Points: 1024 Accuracy: Typical ± 8 cm
- Measurement Speed: Max < 1 sec
- Return Loss: Range: 0 to 100 dB Resolution: 0.01 dB
- Accuracy: RL ≤ 25 dB, ± 1.0 dB
25 dB < RL ≤ 60 dB, ± 3 dB
RL ≥ 60 dB, ± 5 dB
- VSWR: Range: 1 to 3.5 Resolution: 0.01 dB

POWER METER

- Frequency Range: 698 MHz to 2.7 GHz*
- Display Range: -80 dBm to +80 dBm
- Measurement Range: -60 dBm to +30 dBm
Offset Range: 0 to +60 dB
- Accuracy: ± 0.25 dB (RFIn > -20 dBm)
- VSWR: < 1.8:1 typical
- Maximum Power: +30 dBm (1W) without external attenuator
- Attenuation Offset Range: -20 to +80 dB

ADJACENT CHANNEL POWER

- Frequency Range: 698 MHz to 2.7 GHz*
- Measurement Range: +30 dBm to -144 dBm
- Channel Power Accuracy: ± 1.0 dB
- Adjacent Channel Power Accuracy: ± 0.50 dBc
- Occupied Bandwidth Accuracy: ± 100 kHz

MULTI-CARRIER/TECHNOLOGY CHANNEL SCANNER

- Supports User-Defined Channel Lists: Max Ch: 10
- Measures True RSSI, RSRP, SNR
- Decodes LTE Cell_ID, SC, Ec/Io, BSIC
- Allows Unlimited Channel Configurations

GSM/EDGE ANALYZER

GSM/EDGE Modulation Quality

- RMS Phase Measurement Accuracy: ± 1 deg
- Peak Phase Measurement Accuracy: ± 1 deg
- Residual Error (GSMK): 1 deg
- Frequency Offset Accuracy: ± 1 Hz
- TSC: 0-7
- SBC: 0-2

*Non-contiguous range(s): 1.0-1.6 GHz, 2.7-3.4 GHz

- Burst Type Capture: Frequency Correction, Dummy, Normal, Synchronization, Access• (EVM) Measurement Accuracy: $\pm 1.5\%$
- Residual Error (8PSK): 2.5%
- Frequency Offset Accuracy: ± 1 Hz

GSM/EDGE Constellation

- IQ Diagram
- Burst Type Decode
- Frame Number Decode
- BSIC Number Decode

GSM/EDGE BURST ANALYZER

TimeSlot Mask per 3GPP-TS-05.05

GSM Mask

- Support for all Mask Templates per Annex B
- Reference Power Level: -90 dBm to +58 dBm

WCDMA/HSPA ANALYZER

Demodulator Summary

- Code Domain Diagram
- Scrambling Detection: Manual, [Auto]
- Active Code Channel Detection Threshold:
 - Manual, [Auto]
 - OVSF: 2, 4, 8, 16, 32, 64, 128, 256, 512
- Scrambling Code • Frequency Offset • Channel Power
- EVM • Rho • PSCH • SSCH • CPICH • P-CCPCH
- S-CCPCH • PICH • IQ Offset • Peak CD Error
- Noise Floor • EVM Accuracy

Scrambling Code Scanner

- Displays Up to 7 Scrambling Code Pilots
- Pilot Dominance • Ec/Io
- Total Channel Power

WCDMA Constellation

- IQ Multi-Stage Constellation Diagram

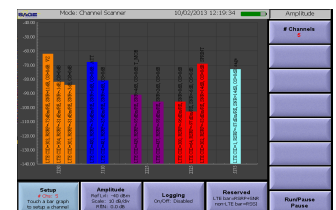
Spectral Emission Mask

CDMA One/CDMA 2000/EVDO Analyzer

- RF Spectrum (Rev 0,A,B & C)
- CDMA Signal Type Auto Detection
- Filtered Signal Trace
- Channel Power
- Frequency Error
- Occupied Bandwidth

CDMAOne/CDMA2000 Summary

- Walsh Codes: 62, 128
- Code Doman Diagram
- Total Power • Rho
- IQ Offset • Frequency Offset
- Code Channel Utilization (%) • Tau



continued

UCTT POWERFUL NEXT GENERATION BASE STATION TESTER

EVDO Summary

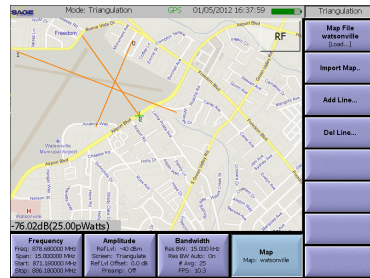
- Walsh Codes: 62, 128
- MAC Code Domain Diagram
- Data Channel IQ Power Diagram
- Data Activity • Modulation Type
- Pilot Power & Rho • MAC Power & Rho
- Data Power & Rho • Overall Power & Rho
- Frequency Offset • IQ Offset (dBc)
- Noise Floor dB • Pilot Ec/Io (dB)
- PN Offset • Tau

Multipath Analyzer

- Main Power • Multipath Power
- Displays 32 Chip

PN Scanner

- Pilot • Pilot Dominance
- Ec/Io • PN Delay (Chips offset)
- Total Channel Power



LTE ANALYZER [FDD & TDD]

- Channel Bandwidth: 1.4, 3, 5, 10, 15*, 20* MHz
- Cell ID, Sector ID, Group ID.
- RS, P-SS, S-SS Signal Level (dBm) and EVM
- PDSCH, PBCH, PCFICH, PDCCH, PHICH Signal Level & EVM
- Frequency Offset, Occupied Bandwidth, Carrier Feed Through
- Total Channel Power, Utilization Percentage
- MIB Data, Number of Active Tx Antenna
- Cell ID Scanner (Identifies up to 9 ID's)
- MIMO Scanner (Identifies Active Tx with EVM & Delay)
- Frame View (Provides RB's vs. Timslots)
- Power vs Time View (symbol periods)
- Power vs Subcarrier View
- Constellation Diagram View with PBCH BER
- Multi-Path Interference View
- Spectral Emissions Mask Test View
- Pass/Fail Criteria and Test View (Programmable Test Automation)

Measurement Screens: Summary, Symbol Power (Resource Block Selection), Sub-Carrier Spectrogram, IQ Modulation Diagram

WiMax Analyzer Channel Bandwidth: 1.25, 1.5, 1.75, 2.5, 3, 3.5, 5, 5.5, 6, 7, 8.75, 10, 12*, 14*, 15*, 17.5*, 20* MHz

- Base Station ID
- Channel Power (dBm)
- Burst Power (dBm)
- Preable Power (dBm)
- Occupied Bandwidth
- EVM (RMS, Peak)
- Frequency Error (Hz,ppm)
- Relative Constellation Error (RMS, Peak)

* Requires Option 0231

Measurement Screens: Summary, IQ Modulation Diagram, Spectrum (Time/Freq Domain)

Protocol Analyzers

GSM ABIS MONITOR

- Codec Type: GSM, AMR, ACELP
- TRAU FRAME Decode
- LAPD Decode

Backhaul Analyzers

T1/E1 Analyzer

Fractional T1/E1 and Sub-channels(DS0)

- Line Coding: AMI, B8ZS
- Framing Modes: D4 (Superframe), ESF (Extended Superframe)
- Connection Configurations: Terminate (100Ω) Bridge (100K Ω) Monitor (100Ω) Drop&Insert (100Ω)
- Receiver Sensitivity: Terminate +6 dB to -36 dB Bridge +6 dB to -36 dB Monitor 20 dB flat gain Drop&Insert +6 dB to -36 dB
- Transmit Level: 0 dB, -7.5 dB, and -15 dB
- Clock Sources: External Bits clock
- Internal: 1.544 Mb/s ±5 ppm / 2.048 Mb/s / ±5 ppm
- Pulse Shapes: Conform to ANSI T1.403 and ITU G.703
- Pattern Generation and Detection: PRBS: 2-9, 2-11, 2-15, 2-20, 2-23 Inverted and non-inverted QRSS, 1-in-8 (1-in-7), 2-in-8, 3-in-24, All ones, All zeros, T1-Daly, User defined (128 bits)
- Pulse Capture
- Circuit Status Reports: Carrier present, Frame ID and Sync., Pattern ID and Sync.
- Alarm Detection: AIS, RAI
- Error Detection: Frame Bits, Bit, BER, BPV, CRC, Error Sec
- Error Insertion: Bit, BPV, Framing Bits, RAI, AIS
- Error Events Log and Time Stamp
- Loopback Modes: Self loop, CSU, NIU, User defined, In-band or Data Link
- Level Measurements: Vp-p (±5%), can also display in dBdsx
- Data Log: Continuous, up to 48 hrs
- T1 Frequency Measurement: ±5 ppm
- DS0 Channel Access Testing: Tone Generator Frequency: 100 Hz to 3000 Hz
- Level: -30 to 0 dBm, with 1 dB steps
- VF Measurement: Frequency: 100 Hz to 3000 Hz, ±1 Hz Level: -40.0 to +3.0 dBm, ±0.2 dBm
- Audio Monitor: Manually select channel 1 to 24
- ITU G.826 Analysis & G.821 Error Reporting: Errored seconds, error free seconds, severely errored seconds, unavailable seconds, available seconds, degraded minutes

continued

Ethernet Analyzer

- Physical Layer 10/100/1000 Base T
- RFC 2544
- (Throughput, Latency & Packet Loss Rate)Cable Testing (TDR)

ARBITRARY RF SIGNAL GENERATOR

- Frequency Range: 9KHz to 3.8 GHz*
- Power Output: 0 dBm, ± 1dB
- Phase Noise: 85 dBc
- Waveforms: AMPS, TDMA, GSM, CDMA, WDCMA, LTE, WiMax

GENERAL SPECIFICATIONS

- Uplink/Downlink Channel Plans:
AMPS, CDMA, GSM, UMTS, LTE (EUTRA) BANDS
- Maximum Continuous Input: +30 dBm
- Maximum Continuous Input without Damage: +33 dBm
- Turning Resolution: 1 Hz
- Frequency Accuracy:

Internal Time Base Accuracy: ± 0.1 ppm after warm up

Internal Time Base Aging: ± 0.1 ppm/year GPS Lock:

±1.0 ppb (25° C), Hold-over < 50 ppb (72 hrs)

- Frequency and Time Reference:

InternalReference: GPS derived 1 pps

External: One Pulse Per Second, Even Second Clock

Multiples of 1 MHz to 20 MHz

Multiples of 1.2288 MHz to 19.6608 MHz 2.048 MHz

- Remote Control: Command Line & GUI Emulation

- Interfaces: RF Out Port: Type-N F (50Ω)

RF_{in} Port: Type-N F (50Ω)

- Ext Ref: BNC

- Even Sec/Ext Trig: BNC

- GPS Antenna: SMB

- On-board Memory: 4 GB

- Dual E1/T1: RJ-45

- Dual 10/100/1000: RJ-45 10/100 Base T

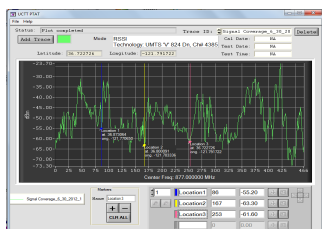
Ethernet: RJ-45

- Ext DC Input: MIL-57D Circular

- Audio: MIL-STD Circular (Acc)

Post-Test Analysis Tool (PTAT)

- Re-plot, add markers, and annotate traces on PC



USB Slave: Type-A

USB Host: Type-B

- Environmental: MIL-STD-810-F

Operating: -20 °C to 55 °C, humidity 85%

Storage: -51-C to 71° C

Altitude: 5000m (16,404 ft)

- Safety: EN 61010-1, portable equipment

- Electromagnetic Compatibility: CE

- Power: 1 or 2 Lithium Batteries

- Battery Life: One Battery 3 hr, Two Batteries 6-7 hrs

- Size: 300 x 216 x 114 mm (13.0 x 8.5 x 4.5 in.)

- Weight:

+ One Bat: 6.03 Kg (13.3 lbs)

+ Two Bat: 6.58 (14.5 lbs)

+ Bumpers: 0.59 Kg (1.3 lbs)

UCTT OPTIONS

Part Number	Description
8901-0115-01	Cable Analyzer (1 & 2 Port w/ VNA)
8901-0000-01	Base Unit
8901-0010-01	GPS Receiver (with Antenna)
8901-0020-01	E1/T1 Back Haul Testing (BERT)
8901-0030-01	GigE Analyzer and RF2544 Tester
8901-0040-01	Bias Tee Adapter
8901-0100-01	15 MHz FFT Spectrum Analyzer (-02 25 MHz)
8901-0110-01	Antenna Analyzer [RL,DTF,& VSWR]
8901-0120-01	Precision Power Meter
8901-0130-01	Channel Scanner (with Demodulation)
8901-0140-01	Interference Analyzer Suite
8901-0150-01	Adjacent Channel Power
8901-0210-01	GSM/Edge Analyzer
8901-0220-01	W-CDMA/HSPA Analyzer
8901-0230-01	LTE Analyzer (FDD & TDD)
8901-0231-01	LTE BW 15 & 20 MHz
8901-0240-01	CDMAOne/CDMA2000/EVDO Analyzer
8901-0250-01	WiMax Analyzer
8901-0251-01	WiMax BW 12,14,15,17.5 & 20 MHz
8901-0300-01	GSM MAP Protocol Monitor (T1/E1)
8901-0310-01	RF Coverage Mapping

*Non-contiguous range(s): 1.0-1.6 GHz, 2.7-3.4 GHz