XCAT-IXA 1x

Accuver's
Innovative handheld Spectrum/Signal Analyzer

AF8010

300kHz to 7.5GHz

Innowireless Accuver

Introduction

XCAT-IXA is the field portable solution for validating all aspects of 3G/4G/5G cell site deployment, maintenance, and management. XCAT-IXA is Handheld 5G NR enabled Spectrum analyzer based on Cloud Server, which supports autonomous measurement. This solution offers an opportunity to reduce OPEX and CAPEX across the whole network lifecycle, from initial deployment to maintenance and upgrades, by saving up front equipment cost and labor expense. Also it offers very high efficiency by using autonomous measurement without human error and resolving failure by standard instruction collected from database.

Instrument Highlights

- Modulation Bandwidth: up to 100Mhz
- Dynamic Range: > 106 dB in 1Hz RBW
- DANL: Max -163dBm in 1Hz RBW
- Phase Noise: -136dBc/Hz @ 10MHz offset at 500MHz
- Resolution Bandwidth (RBW): 1Hz up to 10MHz
- Operation to +50ºC with AC Adaptor or Battery
- Autonomous Measurement Function
- Spectrum Analyzer based on Cloud Server
- Four Hour Battery discharging time

Capabilities and Functional Highlights

- WCDMA, 4G LTE(TDD/FDD), 5G NR – Analyzer
- Spectrogram
- Real Time Spectrum Analyzer
- Gated Sweep
- Demodulation
- Sweep Analyzer
- DL/UL Multi View
- OBW (Occupied Bandwidth)
- Adjacent Channel Power
- Channel Power
- Spectrum Emission Mask
- Spurious Emission
- Signal Strength and RSSI
- Autonomous Measurement Function
- PCI Scan (5G NR, LTE)

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1. Spectrum Analyzer

Measurement Functions

Channel Power	Measure the total power in a specified bandwidth
Occupied Bandwidth	Measure 99% to 1% power channel of a signal
Adjacent Channel Power	Measure channel power of the adjacent channel
Spectrum Emission Mask	Standards based limits for wireless emission
Spurious Emission	Standards based limits for wireless emission

Sweep Functions

Sweep	Auto Mode
Sweep Mode	Continue/Single/Sweep once
Gated Sweep	Gate Source: Internal / NR SSB / External 1pps / GPS Gate Sweep Time (Display Length): 5ms to 195ms Gate Delay: Up to 195ms Gate Length: 60μs to 195ms

Trace Functions

Traces	Up to 5 Traces
Trace Mode	Clear Write / Average / Max Hold / Min Hold
Trace Type	Update / View / Blank
Trace Detector	Peak & Negative / Peak / Negative / Sample / RMS
Ref Trace (Server Option)	Base Station Reference Trace Info Load

Marker Functions

Number of Marker	Up to 6 Markers
Marker Measurements	Power, Frequency
Marker Type	Normal / Delta / Fixed / Off
Marker Functions	Relative to Any Normal Fixed Marker / Marker Trace
Peak Functions	Peak / Peak >CF / Peak Continuous / Peak Previous / Next

Limit Functions

Limit for Measurement	Max Limit / Min Limit

2. 5G NR Measurements

5G NR Modulation Analyzer

View	Constellation / Multi Beam / Power Information / Channel Summary / Cell Information / Signal Quality / Error Vector / UL,DL Multiview(option) / PCI Scan(option)
Analyzer Type	SSB Only / SSB+ NR Test Model / NR Test Model Only
Function	/SSB Offset Auto, Manual Search / GSCN Search / Power Boost / 3GPP NR Test Model Select / NR FR1 Band Profile SCS (30kHz only) / Subframe (0~1) / Frame Structure / Time Interval
Measurements	Channel EVM, RB, Modulation, Power (P-SS, S-SS, PBCH, PBCH-DMRS, PDCCH, PDCCH-DMRS, PDSCH-DMRS, PDSCH RNTI (0~2)) Channel Band / Sync Correlation / Physical Cell ID / Group ID / Sector ID / SCS information / SSB Reference Time Offset / Frequency Offset / RSSI / SS-RSRP / SS-RSRQ / SS-SINR / RB Offset / K_SSB / SSB Offset / SSB Frequency

5G NR RF Occupied Bandwidth

Setup Parameter	3GPP FR1 Profile / OBW Power (% and x dB) / Limit
Measurement	Occupied BW / Total Power / x dB Band Width / x dB

5G NR RF Channel Power

Setup Parameter	3GPP FR1 Profile / IBW / Limit
Measurement	Channel Power / Power Spectral Density

5G NR Modulation Measurements

Frequency Range	300kHz to 7.5GHz
Residual EVM (rms)	1.5% typical @ 3.5GHz
Frequency Error	±0.05 ppm + Setting Frequency * REF Frequency Accuracy

3. 4G LTE FDD Measurements

LTE Analyzer

View	Channel Power / Occupied Bandwidth / ACLR / SEM / SE Constellation / Error Vector / Modulation Quality Summary

RF Occupied Bandwidth

Setup Parameter	Profile: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz / OBW Power (% and x dB) / Limit (OBW/Power)
Measurement	Occupied BW / Total Power / x dB Band Width / x dB

RF Channel Power

Setup Parameter	Profile: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz / IBW / Limit
Measurement	Channel Power / Power Spectral Density

Modulation Measurements

Frequency Range	300kHz to 7.5GHz
Residual EVM (rms)	1.5% typical @ 3.5GHz
Frequency Error	±0.05 ppm + Setting Frequency * REF Frequency Accuracy

Constellation

Setup Parameter	Profile: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz / Scale / Subframe / Channel View (PSS, SSS, PBCH, PCFICH, PDCCH, RS, PHICH, PDSCH) / Downlink Configuration (Power Boost/Limit) / Guide Line
Measurement	Constellation / Channel Information / Power Information Power Information / Signal Quality (Frequency Offset, EVM, Power, RB)

Error Vector

Setup Parameter	Profile: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz / Scale / Subframe /Symbol
Measurement	Error Vector Spectrum / Error Vector Time / EVM

Modulation Quality Summary

Measurement	Subframe Summary / Frame Summary
Subframe Summary	Frequency Error / Time Align / EVM (PSS, SSS, PBCH, PCFICH, PHICH, PDCCH, RS, PDSCH) RS0-RS1-RS2-RS3, RSRQ, OSTP
Frame Summary	Frequency Offset / Tx Ant. Time Alignment Error / Final EVM (PSS, SSS, PBCH, PCFICH, PDCCH, RS, PDSCH)

4. WCDMA Measurements

WCDMA Analyzer

View	Channel Power / Occupied Bandwidth / ACLR / SEM / SE Code Domain / Modulation Accuracy
Code Domain	Setup: Absolute or Relative / Slot Index
Code Domain Measurement	Total Power / CPICH / PSCH / SSCH / Total Active CH. / MAX Active CH. / AVG Active CH. /MAX Inactive CH. / AVG Inactive CH. / Number of Active CH.
Modulation Accuracy Measurement	IQ Measured Polar Vector Spectrogram / RHO / EVM / Pk CDE / Pk Active / Magnitude Error / Phase Error / Frequency Error / IQ Origin Offset

RF Occupied Bandwidth

Setup Parameter	OBW Power (% and x dB) / Limit
Measurement	Occupied BW / Total Power / x dB Band Width / x dB

RF Channel Power

Setup Parameter	IBW / Limit
Measurement	Channel Power / Power Spectral Density

Modulation Measurements

Frequency Range	300kHz to 7.5GHz
Residual EVM (rms)	1.5% typical @ 3.5GHz
Frequency Error	±0.05 ppm + Setting Frequency * REF Frequency Accuracy

5. Spectrum Specifications

Frequency

Frequency Range	300kHz to 7.5GHz
Resolution	1Hz
Span	30Hz to max frequency, Full Span, Zero Span
Frequency Reference	Internal, GPS, External Aging : ± 0.5 ppm (0.5 x 10-6)/Year Accuracy : ±0.05 ppm + aging (20 to 30°C) Accuracy with GPS (Lock) : < ±25 ppb (2.5 x 10-8) with GPS On 3 minutes after satellite lock
External Frequency Reference	10MHz, 0dBm to +10dBm

Bandwidth

Analysis Bandwidth	1.4MHz to 100MHz
Resolution Bandwidth (RBW)	1Hz to 10MHz
Video Bandwidth (VBW)	300Hz to 10MHz

SSB Phase Noise

Offset 100kHz from 500MHz	-115dBc/Hz (typ.)
Offset 10MHz from 500MHz	-136dBc/Hz (typ.)

Residential Spurs (0dB input attenuation)

	Preamp Off	Preamp On
300kHz~7.5GHz	-80 dBm, Maximum	-90 dBm, Maximum
Notice Spurs (> -80dBm)	10MHz, 1980MHz, 2220MHz, 2500MHz, 2640MHz, 3300MHz 3940MHz、4620MHz, 4920~4980MHz, 5140MHz @ preamp Off	

Amplitude

Dynamic Range	> 106 dB in 1Hz RBW @ 3.5GHz
Reference level Range	-200dBm to 300dBm
Measurement Range	DANL to +20dBm
Attenuation Range	0dB to 60dB (Step: 2dB)
Average continuous power	SA Port: +20dBm typical, ≥ 40 dB attenuation IH Port: -20dBm typical, ≥ 10 dB attenuation
Measurement Level Accuracy	± 1 dB typical (–60 dBm to +10 dBm) Excepted @ input level <-40dBm at 10MHz (Atten. 0 dB)

Amplitude Accuracy (10 dB attenuation, -50dBm ≤ input signal ≤ 0dBm, 100KHz RBW)

	20 °C to 30 °C (after 30 minute warm-up)		-10 °C to 50 °C (after 30 minute warm-up)	
	Maximum	Typical	Maximum	Typical
300kHz to 7.5 GHz	±1.3dB	±0.5dB typical	±1.5dB	±0.7dB typical

Displayed Average Noise Level (DANL)

	Preamp = off		Preamp = on	
	Maximum	Typical	Maximum	Typical
1MHz to 3GHz	-142dBm	-145dBm	-160dBm	-163dBm
3GHz to 6GHz	-141dBm	-144dBm	-158dBm	-161dBm
6GHz to 7.5GHz	-137dBm	-140dBm	-151dBm	-153dBm

Third-Order Intercept (TOI)

100MHz to 3GHz	+10dBm typical
3GHz to 4GHz	+12dBm typical
4GHz to 7.5GHz	+12dBm typical

Second Harmonic Distortion

10MHz to 700MHz	< -50dBc typical
700MHz to 7.5GHz	< -70dBc typical

VSWR

	Maximum	Typical
1MHz to 5GHz	1.5 : 1	1.3 : 1
5GHz to 6.5GHz	1.8 : 1	1.7 : 1
6.5GHz to 7.5GHz	2.8 : 1	2.5 : 1

6. General Specifications

Setup Parameters

Data and Time	Mobile device time
Languages	English/Korea (Mobile Device Language)
Preset	Preset, Mode Preset, Band Preset
System information	Device/Mobile information
Version update	Download Application/Firmware through cloud server
SSID setting	Device SSID setting. (Android Hotspot ID
User guide	Android Hotspot setting guide
System check	Self Test FPGA, RF board, GPS module, temperature sensor, calibration data, memory
Server	Cloud Server address set / log in.
Recording quality	Screen recording quality Low/Medium/High
Graph setting	Spectrum width/ Set transparency of Graph / LTE coverage scan graph x-axis scale(sec)
User setting	Save/Recall User Set (Mode/Measurement/Parameter..)
Screen	Full screen, screen lock/unlock, capture/recording

Connectors

RF In	N-Type, Max Input +20dBm
IH In	N-Type, Max Input -20dBm
GPS	Active Antenna Port
External Power	19VDC / 4.74A/90W JGG.0B.34.CLAD42Z(LEMO)
Ethernet Interface	RJ45 connector for Ethernet 10/100/1000 Mbps
Interface	USB 2.0 / +5V 1A
Reference In	1pps Ext(Trigger), Reference In (10MHz Clock)
Reference Out	Ref 10MHz output
Debug USB	USB 2.0 / +5V

Battery

Type	Li-ion battery pack
Cell	18650 cells x 6 (3S2P)
Voltage	11.25V
Capacity	6400mAh (48.0Wh) /
Size	W85.4*D77.6*H23mm
Operating Time	4 hours (Typical) / Spectrum analyzer standard
Charging Time	4 hours 30 minutes (Typical)

Please note that battery life may vary depending on usage environment (use scenario, battery condition, period of use, etc.) and product settings.

Environmental

Operating Temperature Range	DC power (except battery) / Connected to USB : -10 to +55˚C DC power (except battery) / Connected to WiFi : -10 to +50˚C DC power (battery charging): -10 to +40˚C Battery Discharge: -10 to +50˚C
Storage Temperature Range	-20˚C ~ 80˚C

Size and Weight (IXA 1x)

Size	Silicone case mounting : W248.0 x D72.0 x H250.0 mm Silicone case unmounting : W210.4 x D59.2 x H242.3 m
Weight	Silicone case mounting : ≤ 3.18Kg Silicone case unmounting : ≤ 2.5Kg including Battery

Warranty

Standard one-year warranty (1 year)

“Annual Maintenance Cost” (AMC) can be extended upon mutual agreement

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