

XCAT-IXA 2x C

Accuver's
Innovative Handheld Spectrum/Signal Analyzer

AF8121

9kHz to 20GHz



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: > 110 dB in 1Hz RBW
- ♦ DANL : Max -163dBm in 1Hz RBW
- ♦ Phase Noise: -138dBc/Hz @ 10MHz offset at 500MHz
- ♦ Resolution Bandwidth (RBW): 1Hz up to 10MHz
- ♦ Operate up to +50°C with AC Adaptor or Battery
- ♦ Autonomous Measurement Function
- ♦ Spectrum Analyzer based on Cloud Server
- ♦ Three hours fifty minutes Battery discharging time

Capabilities and Functional Highlights

- ♦ WCDMA, 4G LTE, 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)

Table of Contents

INTRODUCTION.....	2
TABLE OF CONTENTS.....	3
1. SPECTRUM ANALYZER.....	4
2. 5G NR MEASUREMENTS.....	5
3. 4G LTE FDD MEASUREMENTS.....	6
4. WCDMA MEASUREMENTS.....	7
5. SPECTRUM SPECIFICATIONS.....	8
6. GENERAL SPECIFICATIONS.....	10
CONTACT.....	13

1. Spectrum Analyzer

Measurement Functions

Channel Power	Measure the total power in a specified bandwidth
Occupied Bandwidth	Measure the 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 Function	SSB Only / SSB+ NR Test Model / NR Test Model Only /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	9kHz to 20GHz
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 / Spurious emission / 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	9kHz to 20GHz
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) / Guideline
Measurement	Constellation / Channel 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, PHICH)

4. WCDMA Measurements

WCDMA Analyzer

View	Channel Power / Occupied Bandwidth / ACLR / SEM / Spurious emission 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	9kHz to 20GHz
Residual EVM (rms)	1.5% Typical @ 3.5GHz
Frequency Error	±0.05 ppm + Setting Frequency * REF Frequency Accuracy

5. Spectrum Specifications

Frequency

Frequency Range	9kHz to 20GHz
Resolution	1Hz
Span	30Hz to max frequency, Full Span, Zero Span
Frequency Reference	Internal, GPS, External Aging : ± 0.5 ppm (0.5×10^{-6})/Year Accuracy : ± 0.05 ppm + aging (20 to 30°C) Accuracy with GPS (Lock) : $< \pm 25$ ppb (2.5×10^{-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

Center Frequency 500MHz	Offset 100kHz: -102dBc/Hz (-105dBc Typical)
Center Frequency 500MHz	Offset 10MHz: -135dBc/Hz (-138dBc Typical)
Center Frequency 1GHz	Offset 100kHz: -98.2dBc/Hz (-101.2dBc Typical)

Amplitude

Dynamic Range	> 110 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	+20dBm Typical ≥ 40 dB attenuation
Measurement Level Accuracy	± 1 dB Typical (-60 dBm to +10 dBm)

Amplitude Accuracy (10 dB attenuation, $-50\text{dBm} \leq \text{input signal} \leq 0\text{dBm}$, 100kHz RBW)

9kHz to 20 GHz	20 °C to 30 °C (after 30 minutes warm-up)		-10 °C to 50 °C (after 30 minutes warm-up)	
	Maximum	Typical	Maximum	Typical
	$\pm 1.3\text{dB}$	$\pm 0.5\text{dB}$	$\pm 1.5\text{dB}$	$\pm 0.7\text{dB}$

Displayed Average Noise Level (DANL)

	Preamp off		Preamp on	
	Maximum	Typical	Maximum	Typical
10MHz to 20MHz	-142dBm	-144dBm		
$> 20\text{MHz}$ to 4GHz	-145dBm	-147dBm	-161dBm	-163dBm
$> 4\text{GHz}$ to 13GHz	-142dBm	-145dBm	-160dBm	-163dBm
$> 13\text{GHz}$ to 18GHz	-141dBm	-144dBm	-157dBm	-160dBm
$> 18\text{GHz}$ to 19GHz	-137dBm	-140dBm	-154dBm	-157dBm
$> 19\text{GHz}$ to 20GHz	-130dBm	-133dBm	-154dBm	-157dBm

Third-Order Intercept (TOI)

500MHz to 20GHz	+20dBm Typical
-----------------	----------------

Second Harmonic Distortion

10MHz to 700MHz	< -60dBc Typical
700MHz to 5.5GHz	< -75dBc Typical
5.5GHz to 6.5GHz	< -60dBc Typical
6.5GHz to 10GHz	< -65dBc Typical

VSWR

	Typical
9kHz to 17GHz	$\leq 1.59:1$
17GHz to 20GHz	$\leq 2.2:1$

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 OTA Update
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. (option)
Recording quality	Screen recording quality Low/Medium/High
User setting	Save/Recall User Set (Mode/Measurement/Parameter/etc.)
Screen	Full screen, screen lock/unlock, capture/recording
Graph setting	Spectrum width/ Set transparency of Graph

Connectors

RF In	SMA Type, Max Input +20dBm
GPS	Active Antenna Port
External Power	19VDC / 4.74A/90W JGG.0B.34.CLAD42Z(LEMO)
Interface	USB A Type / +5V 1A
Reference In	1pps Ext(Trigger), Reference In (10MHz Clock)
Reference Out	Ref 50MHz output
Debug USB	USB C-Type / +5V

Battery

Type	Li-ion battery pack
Cell	18650 cells x 9 (3S3P)
Voltage	10.8V
Capacity	9220mAh (99.6Wh)
Size	W149*D89*H19.7mm
Operating Time	3 hours 50 minutes (Typical) / Spectrum analyzer standard
Charging Time	4 hours (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 USB: -10 to +55°C DC power(except battery) & Connected Wi-Fi: -10 to +50°C
Charging Temperature Range	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 2x C)

Size	W190.0 x D267.6 x H65.5mm,
Weight	3.4 Kg (including Battery)

Warranty

Standard one-year warranty (1 year)

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

7. Standard Accessories

Backpack



AC/DC Adaptor,
19VDC, 90W,



Battery



GPS Antenna



RF Cable
N(F)S/T-9A40 -300MM-
SMA(M)S/T



USB-C Cable



8. Optional Accessories

Cables & Adapters

RF Cable
1m / 3m / 5m / 10m



RF Adapter
& Connector



Antennas

Horn Antenna



Omni Antenna



Omni Antenna
(vehicles)



V2X



GPS Antenna
(Stick Type)



GPS Antenna
(Cable Type)



Miscellaneous Accessories

Battery Charger
1Bay



Battery Charger
2Bay



Automotive DC/DC
Power Adapter



Tablet PC(5G/LTE Model)

Android OS



Contact

South Korea Innowireless Co., LTD.

190 Seohyeon-ro, Budang-gu, Seungnam-si, Gyeonggi-do, Korea

Email : salesteam@innowireless.co.kr

Tel : +82-31-788-1700

USA Accuver Americas

500 N Central Expressway, Suite 210, Plano, Texas

Email : support.usa@accuver.com

Tel : +1-469-241-6100

UK Accuver EMEA

Unit 20, Building 6, Croxley, Green Business Park, Hatters Lane, Watford, UK

Email : support.emea@accuver.com

Tel : +44-0203-457-4486

Poland Accuver EMEA Sp.

Accuver EMEA Sp. z o.o. ul. Domaniewska 37, 02-672 Warsaw, Poland

Email : support.emea@accuver.com

Tel : +48-22-370-2518

Japan Accuver Co., Ltd.

23F Kamiyacho Trust Tower, 4-1-1 Toranomom Minato-ku, Tokyo, Japan 105-6923

Email : Inquiry_aj@accuver.com

Tel : +81-3-6430-2580

Hong Kong Accuver Asia Pacific

Unit 7, 21/F., Laws Commercial Plaza, No.788 Cheung Sha Wan Road, Kwloon, Hong Kong SAR

Email : support.apac@accuver.com

Tel : +852-2603-8401

India

Office No. 1304/1305, Maithili Signet Plot No.39/4, Sector 30-A Vashi, Navi Mumbai, 400703 Maharashtra, India

Email : india.techsupport@innowireless.co.in

Tel : +91 224 601 7199