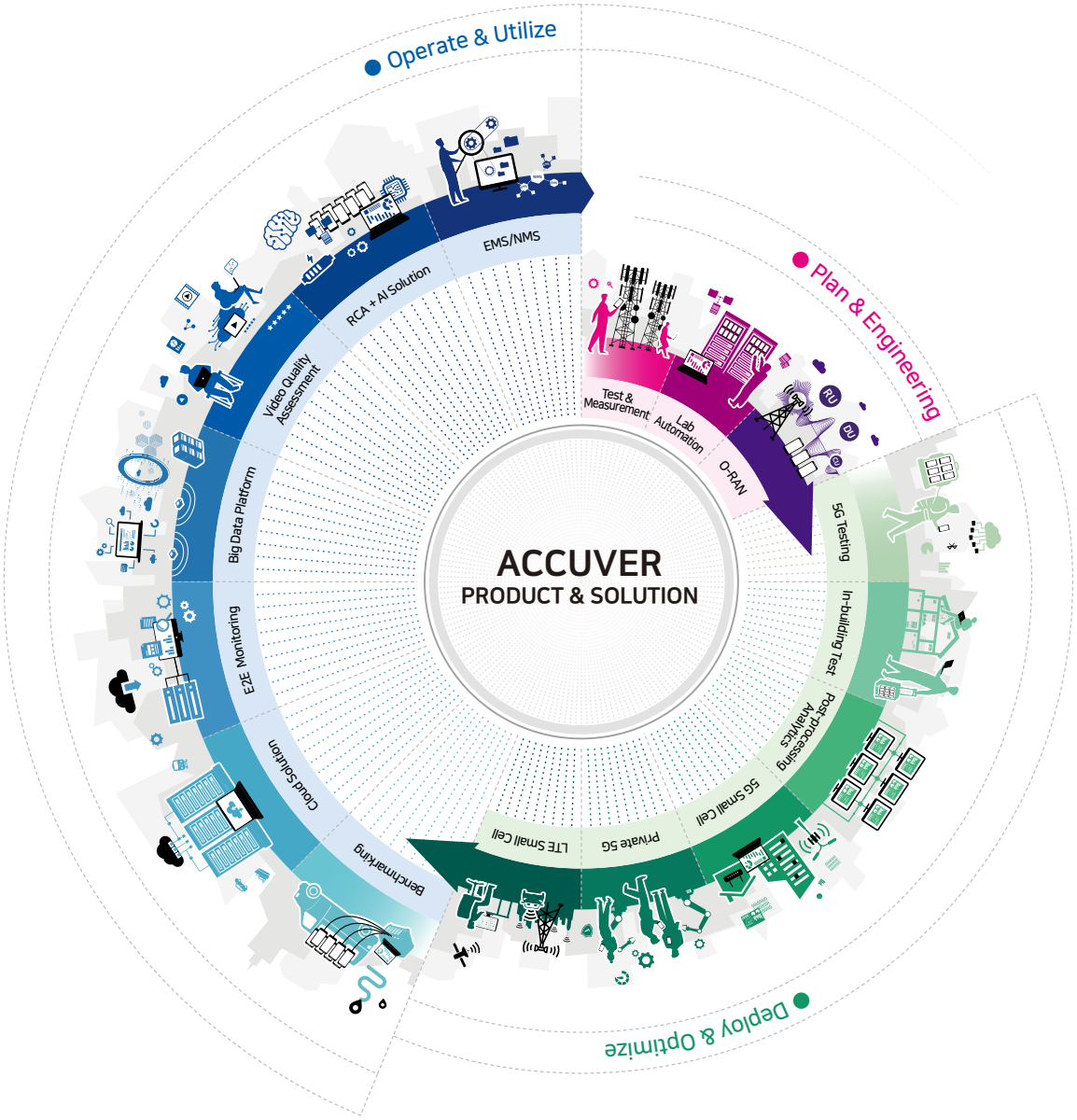
FIRST TO FRONTIERS

Accuver

Accuver Sustainable Journey

Accuver's products span the entire network lifecycle, from design to analysis, operation, and utilization.
With highly reliable solutions and a comprehensive global support, we aim to deliver an unparalleled experience to our customers. This innovation continues today.



Test & Measurement Solution

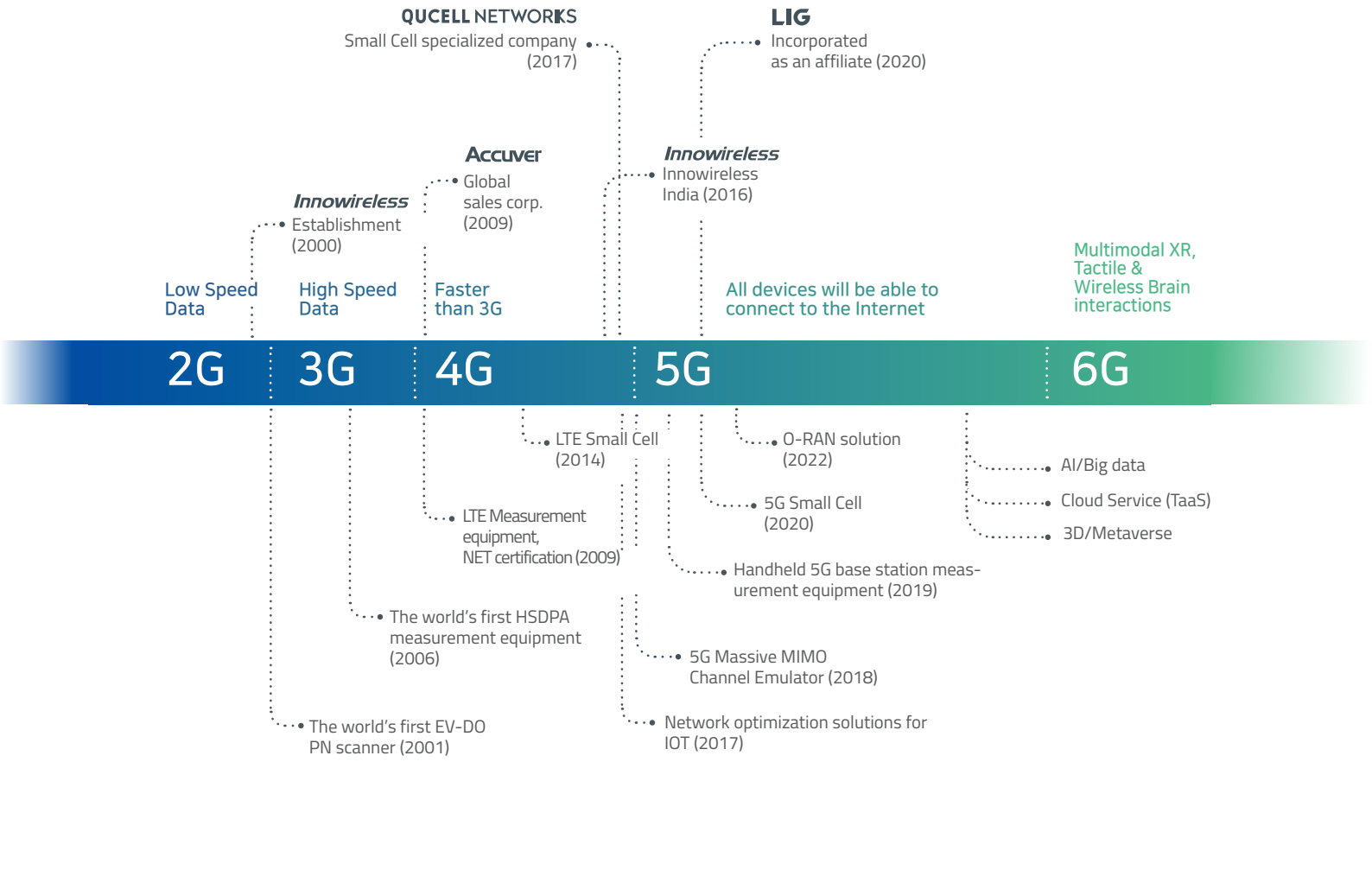
Network Verification & Optimization Solution

AI & Big Data Solution

Small Cell Solution

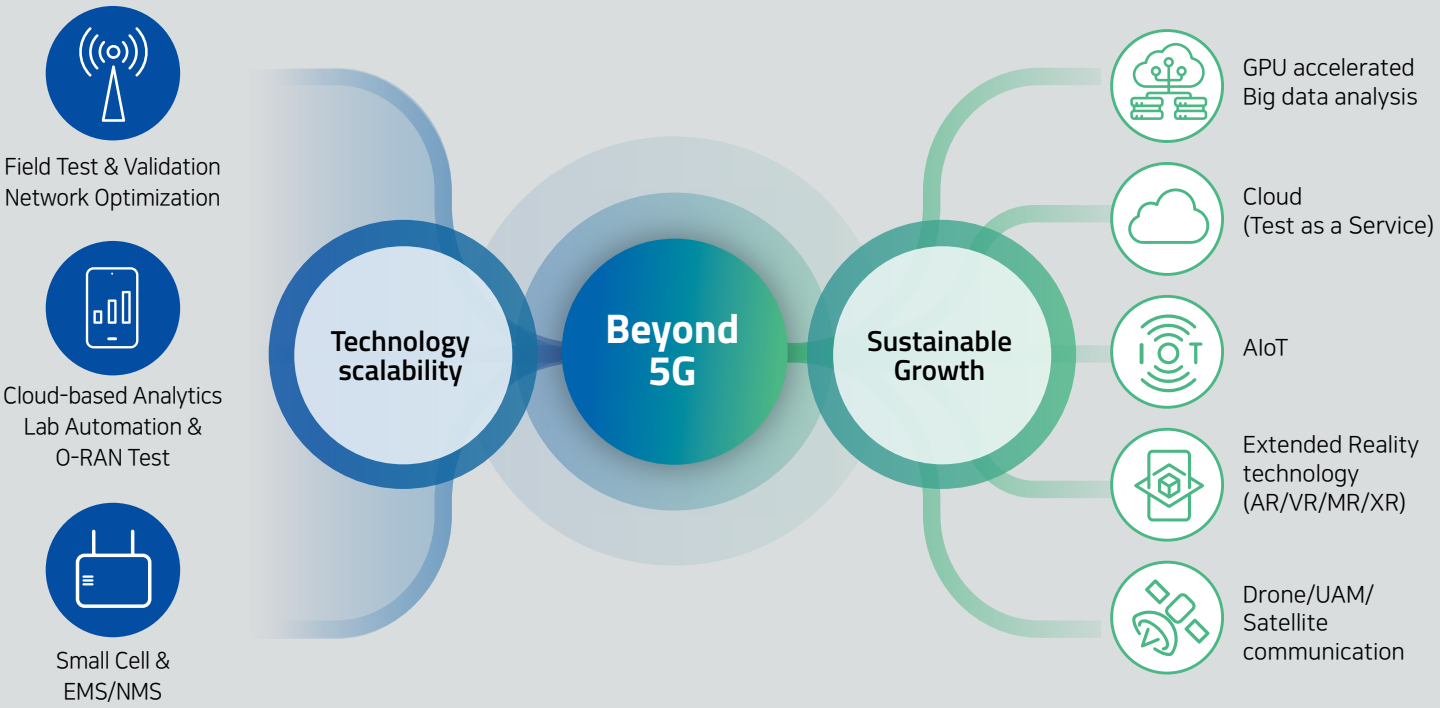
F.I.R.S.T.
Accuver
FRONTIER

From 2G to 5G, Accuver has been at the forefront of the wireless communications industry. Accuver solutions have led verification testing to commercialize each new generation of technologies by being early adopters with innovative solutions.



INNOVAITION

We are dedicated to offering dependable test verification equipment and cutting-edge analysis solutions by staying ahead of the curve when it comes to next-generation standards. Our commitment to excellence drives us to continuously explore and integrate the latest technologies into the realm of wireless communication through ongoing research and innovation. This leads to the development of cutting-edge products. Accuver's technological innovation toward **'Beyond 5G'** continues.



REVOLUTION

Accuver HQ, Innowireless, is experiencing significant growth with an average annual increase of over 19%.
We're proactively expanding into global markets, utilizing our Accuver Entities and the successful spin-off of Qucell Networks.
We are entering a new phase of growth and success.

Innowireless

- R&D, Manufacturing
- Domestic Sales, Marketing
- Technical support

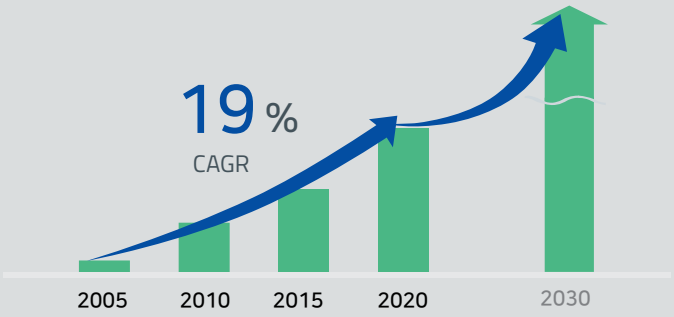
Accuver

- Six branches in the US, Japan, UK, China, Poland, Hong Kong SAR
- Global Sales, Marketing
- Global customer support

QUCELL NETWORKS

- Small Cell development and manufacturing
- Technical support

8	14	19 %	40 X
Locations	Reseller Partners	CAGR	Growth



INDUSTRIES

Communications

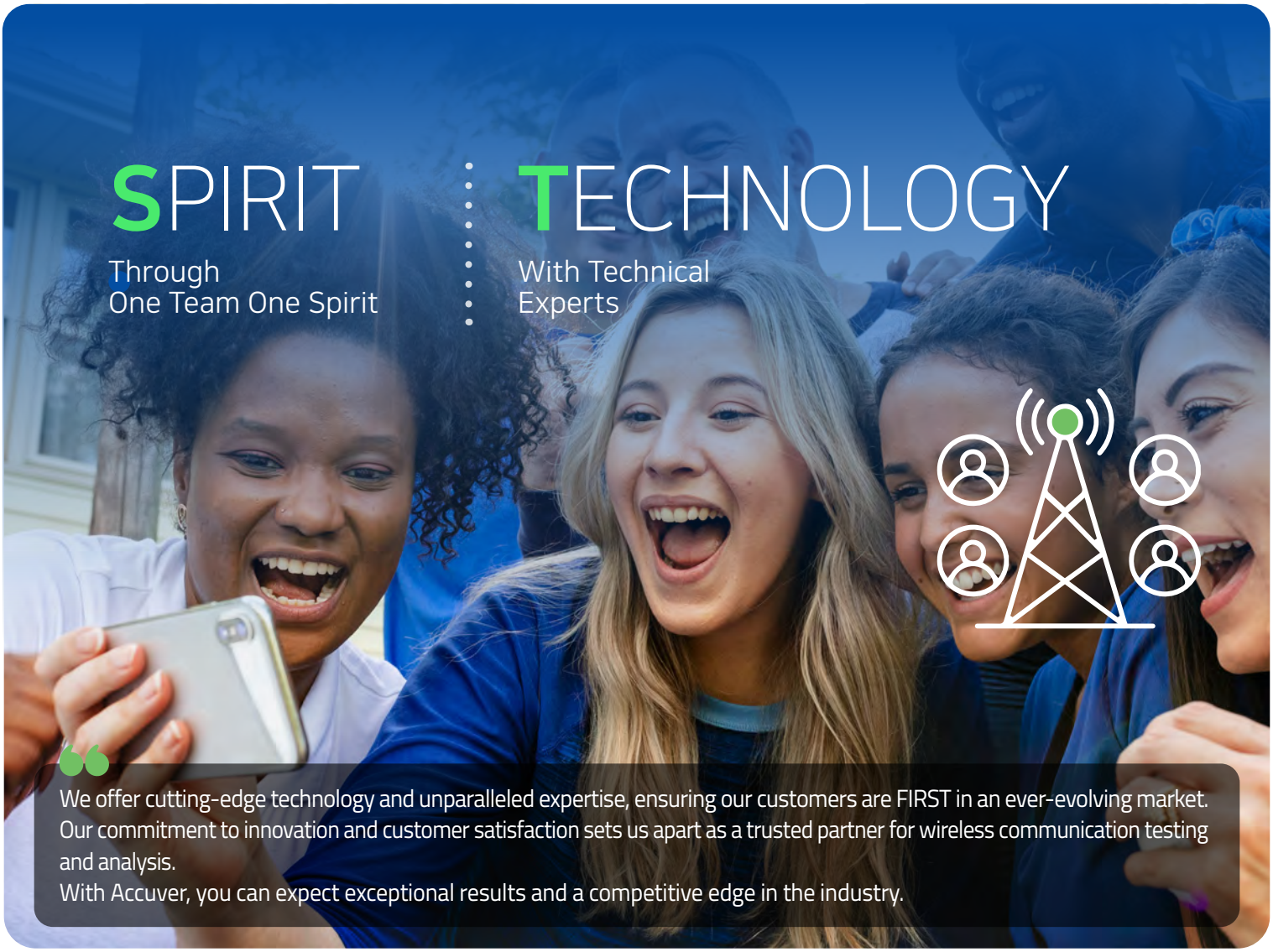
3D Platform

Automotive

Enterprise

Aerospace + Defense

Transportation



SPIRIT

Through
One Team One Spirit

TECHNOLOGY

With Technical
Experts

We offer cutting-edge technology and unparalleled expertise, ensuring our customers are FIRST in an ever-evolving market. Our commitment to innovation and customer satisfaction sets us apart as a trusted partner for wireless communication testing and analysis.
With Accuver, you can expect exceptional results and a competitive edge in the industry.

Growth into Innovative Company

Patents approved
280+

Disruptive Tech. & Best Partnership

Awards
40+

- 2022 Ministerial award for 5G+ industry development
- 2020 The 5G Grand Prize at Korea ICT Award
- 2019 Presidential award of the Science and Information Communication

Excellent Working Environment

ECO

Certification
10+

- 2023 Forbes Diamond Award
- 2021 Best Companies to Work in Texas
  Bronze in global sustainability management evaluation (EcoVadis)
- 2020 ISO45001, Certification of Safety and Health Management System

We bring you the FIRST

XCAT Series

- XCAT-IXA
- XCAT-MAIS
- XCAT-AIS
- XCAT-SmartShield
- XCAT-CAN
- XCAT-Optic Master
- XCAT-RTT

Test & Measurement Solution

Accuver provides advanced testing and analysis for wireless communication base stations and devices. State-of-the-art lab automation test environments make it easy to diagnose, operate, and analyze networks. Our T&M solutions are known for their high reliability, precision, and stability, making us a leader to enable our customers to be leaders in their industry.

Network Verification & Optimization Solution

Accuver improves the quality and operational efficiency of mobile networks by collecting and analyzing data from user equipment. Our solution incorporates automation technology throughout the entire process, from design to analysis, operation, and utilization, ultimately aiming for a Zero Touch Solution.

XCAL/XCAP Series

- XCAL
- XCAL-Mobile
- XCAL-Solo III
- XCAL-MO III
- XCAL-RO
- XCAL-Ranger
- XCAL-Manager
- XCAP
- XCAP-Vuze
- XCAP-Cloud
- XCAP-AMS

AI & Big Data Analytics Solution

Accuver offers real-time business insights using GPU acceleration technology and designs large-capacity, high-speed big data systems in access/core management networks. We also make analytics intelligent and automated with AI/ML technology and provide end-to-end testing for next-generation systems such as O-RAN, 5G+, and 6G.

AEGIS Series

- AEGIS
- AEGIS-O (O-RAN)
- AEGIS-PSee
- AEGIS-CLAIR
- XDB™
- VQML™
- ARCA

Qucell®

- 5G
- 5G+LTE
- 6G
- QEMS

Small Cell Solution

Accuver provides advanced and reliable Small Cell Solutions for 5G/LTE seamless service. Our solutions come in various forms and frequencies, including All-In-One (RU+DU+CU) and Split Option2 (RU+DU). We can offer multiple options to meet specific customer needs and ensure top-notch connectivity.

XCAL-Air

Drone-based Airspace Network Test Solution

XCAL-Air is a drone-based solution designed to assess the quality of airspace networks. This aims to ensure communication for Unmanned Aircraft Systems (UAS) and Urban Air Mobility (UAM) operational flight at altitudes of up to 600m. XCAL-Air is equipped with Accuver Network measurement devices including XCAL-Solo III and XCAT-IXA 2x C, along with a scanner. It can also be employed for assessing signals and detecting signal leaks within Private 5G zones. Furthermore, we offer a server-based drone control and measurement solution called XCAL-Manager Air. By mapping real-time measurement data onto a 3D map, you can analyze signal performance visually and intuitively.

XCAL-Air

Drone-based network measurement solution

* 3D location-based 5G Network KPIs collection
* Durable mounting and waterproofing for 1500 ft testing
* Real-time network measurement for high-speed UAM
  : signal strength, signal quality, throughput, latency, etc.
* Support for various types of network measurement devices
  : XCAL-Solo III, XCAT-IXA 2x C, Scanners

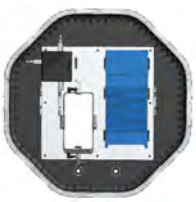
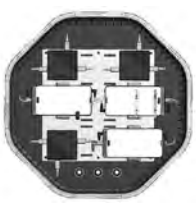
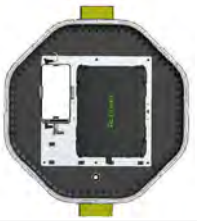
XCAL-Manager Air

Server-based measurement & control automation solution

* Central control system for managing and scheduling remote tests conducted by XCAL-Air
* Identify 5G coverage gaps and facilitate data-driven decisions for airspace 5G Network
* Assign drone missions and pre-configure routes based on test scenarios
* Comprehensive analysis of RF, messages, and protocols
* Real-time network performance monitoring on 3D Map

XCAL-Air

XCAL-Manager Air

XCAL-Air	Type 1	Type 2	Type 3
			
Incl.	XCAL-Solo III Smartphone Scanner	XCAL-Solo III 3ea Smartphone 3ea	XCAT-IXA 2x C Smartphone
Usage	Aerial network optimization Interference Monitoring Spectrum/Cell scanning	Aerial network optimization Network Benchmarking	Interference Monitoring Base station inspection
Technology	3G/LTE/5G	3G/LTE/5G	3G/LTE/5G
Weight	13 lbs	13 lbs	16.5 lbs
Max. measurement time (independent of drone operation)	Depend on Battery (e.g. FTP test: 4h / 10,000mAh Battery)	Depend on Battery (e.g. FTP test: 4h / 20,000mAh Battery)	3h 50m

ACCUVER

XCAL-Manager

Cloud based automated 5G network measurement solution

XCAL-Manager is a cloud-based automated measurement and analysis solution that offers fully systematic and continuous remote control, real-time monitoring, and analysis of measurement results. This optimization solution that allows measurements to be conducted without limitations of time and location, with a fully automated system facilitated through a centralized server, eliminating the need for on-site engineers. XCAL-Manager maximizes measurement efficiency while minimizing costs. Moreover, it supports various measurement and analysis tasks such as base station capacity measurement, beamforming performance measurement, and handover performance analysis, essential for 5G network performance evaluation.

Features

* Control XCAL Field solution remotely and monitor real-time status and RF information
* Check and Stabilize the base station performance through various types of Load tests
* Save time & cost for log analysis by classifying massive volume of log files according to test purpose

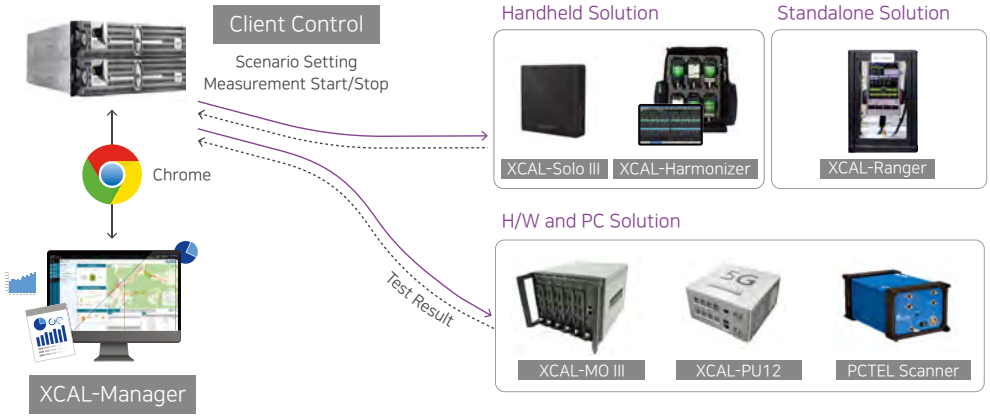
Functions

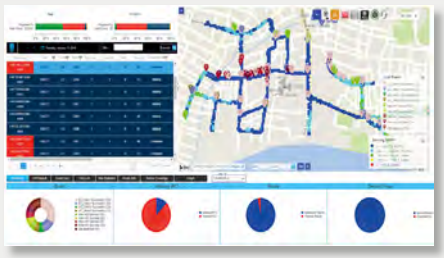
*** Centralized management**
- : Share test scenario and settings
- : Alarm function when error occurs

*** Monitoring**
- : Check the location and RF information of test UE on the map
- : Check field environment in real-time

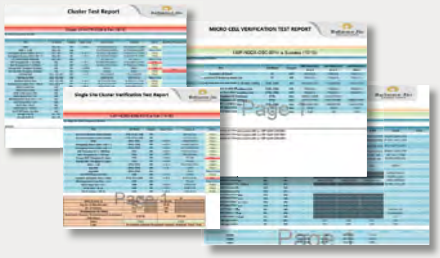
*** Autonomous measurement**
- : Perform automated measurement via measurement schedule setup
- : Manage measurement condition via automatic measurement termination option
- : Easy Field test with Drive route function

*** Statistics analysis**
- : Check measurement result in real-time
- : Provide automatic statistics via customer setup





Main



Various Report Types

Analysis

In-building Test

ACCUVER

XCAL-Mobile

Smartphone based portable In-building/Walk Testing Solution

Capturing RAN (Radio Access Network) performance has never been easier. XCAL-Mobile is a leading handheld air interface monitoring tool that facilitates QoS (Quality of Service) and QoE (Quality of Experience) testing across various technologies, including GSM, CDMA, EVDO, WiFi, LTE, LTE-A, NB-IoT, and 5G NR. It provides extensive application testing capabilities and delivers real-time network measurement and visualization on smart devices. With XCAL-Mobile, all features can be easily controlled using the regular handset keys, making it user-friendly for anyone. It supports all major smartphones and can also be extended to include Android devices.

Features

* Create and Edit Auto call scenario
* Monitor measured data through smartphone display in real-time
* Auto screen capture function for reporting the issue
* Support MOS test
* Remote control by XCAL-Manager (Log file management and remote control test)

Functions

* Collect RF information in real-time
* Autocall setting
* Log mask setting
* Call test result history
* Log upload
* In-building measurement
* Google map

Title	Description
Device Requirements	Android 8.0 (Android 8.0-11.0) or above
Wireless Telecommunication Technology	CDMA/EVDO, 2G (GSM/GPRS/EDGE), 3G (UMTS/HSPA), LTE (4G-FDD & TDD), LTE-A, 5GNR, NB-IoT, WIFI
Call Type	VoLTE, Voice, FTP, Web Browser, SMS, Email, Ping, YouTube, Netflix, Social media (facebook, Twitter, Instagram), Skype/WhatsApp, Dropbox, Google Play, etc.
5G NR KPI Monitoring	PCI, SSB Index, BRSRP, BRSRQ, SNR, DMRS SNR, Frequency Offset, Time Offset, SS-RSRP, Subcarrier Spacing, Pathloss, RB Num(Avg), MCS0 Index(Avg), MCS0 Mod. Rate(Q/16/64/256), PDSCH Throughput, MAC Throughput, PDCP Throughput, NR-ARFCN, DL Frequency, PDSCH BLER, UL RB Num(Avg), UL Allocated Slots, PUSCH BLER

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XCAL-Solo III

Unattended, Automated Testing Solution for Remote Site Monitoring

XCAL-Solo is a handheld air interface measurement solution for conducting QoS and QoE tests without any limitations. It allows you to attach portable hardware to your smartphone, enabling a wide range of application testing, including real-time audio MOS measurement, network measurement, and data monitoring. XCAL-Solo also supports the creation and editing of measurement scenarios, as well as various automated call tests such as voice, VoLTE, FTP, web, email, iPerf, ping, YouTube, multi-call, multi-RAB, multi-session, and UDP (*IoT). The user-friendly touch interface, accessible through the Android OS GUI, enhances the overall usability of XCAL-Solo.

Features

* Ultralight(100g) handy solution
* Monitor measured data through smartphone display in real-time
* Auto screen capture function for reporting the issue
* Remote control by XCAL-Manager (Log file management and remote control test)
* Rooting and Custom Kernel are not required

Functions

* Collect RF information in real-time
* Auto call setting
* Log mask setting
* Call test result history
* Log upload
* In-building measurement
* Google map

Item	Specification
Operating power	Qualcomm QC8250 (Kryo™ 585 CPU 4x Kryo Gold (2.85GHz) + 4x Kryo Silver (1.8 GHz) Octa-core)
Bluetooth	8GB, LPDDR5(POP)
Phone Interface	128GB UFS3.0 Onboard Storage
Battery	Android OS Version 10
Memory	DC +9V / MAX 18W
Operating Condition	Temperature : 0°C ~ 50°C, Vibration : 3G (x-y-z axis)
Size	80 x 80 x 20 (mm, W x H x D)
Weight	100g

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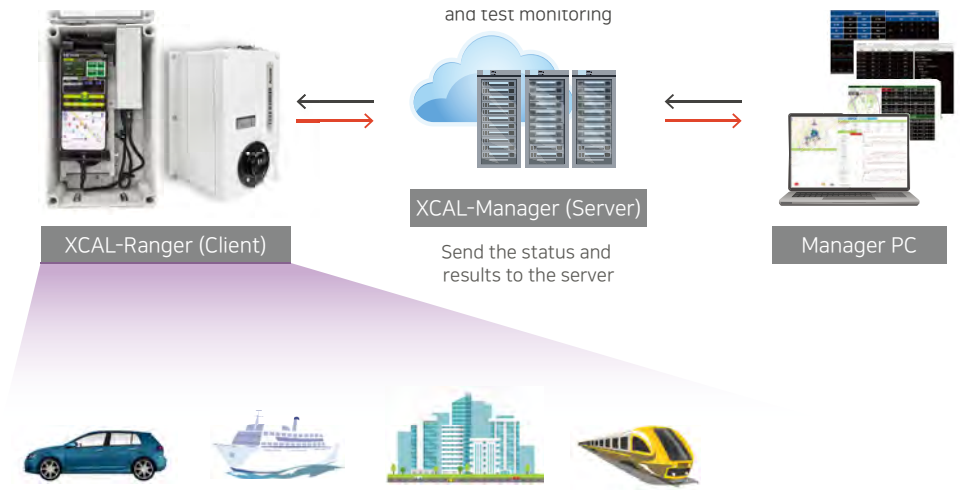
XCAL-Ranger

Unattended automated test solution for remote site

XCAL-Ranger is the perfect solution for unattended automatic measurement. It installs a smartphone into a robust XCAL-Ranger hardware, enabling flexible deployment for large-scale measurements at remote sites. Additionally, it seamlessly integrates with the XCAL-Manager platform, offering remote control and log file data storage on the server. XCAL-Ranger ensures accurate and efficient measurements without the need for constant human intervention.

Features

* 24/7 measurement
* Reduce manual test costs
* Continuous data collection
* Enhanced and wider coverage network testing



Functions

* **Auto recovery feature**
  : Automatically performs recovery for errors during measurement
* **Status report**
  : Reports current device status for remote monitoring
* **Automated call**
  : Supports various types of measurement including Voice, VoLTE, FTP, HTTP, Youtube, etc.
* **Schedule for measurement**
  : Provides various schedule feature to perform automated measurement according to the configured schedule
* **Automated Log file management**
  : Log files are uploaded to the server and deleted from the device automatically

Title	Specification
Power Input	5 VDC (Normal), 9V, 15V
Power Consumption	Max: 1.5W + a (Max 45W)
Power Input Connector	USB C-Type
Phone Interface	USB C-Type Cable
Enclosure Material	Aluminum / PC (Polycarbonate)
Size	240 x 56 x 150 (mm, W x H x D)
Weight	1.75kg (without wall bracket)

Accuver

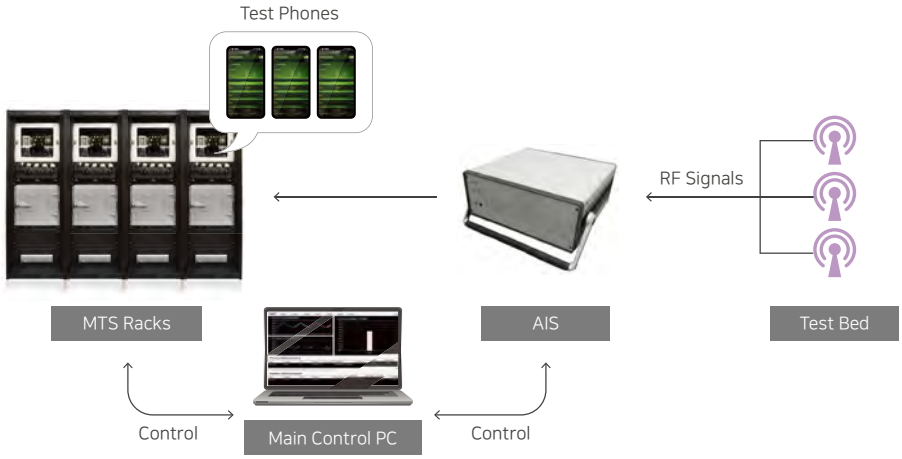
XCAL-MTS

Real UE based Load & Capacity Testing Solution up to 40 UEs

XCAL-MTS is specifically designed for load and capacity testing, supporting up to 40 simultaneous UEs connectivity. This powerful tool empowers users to troubleshoot, analyze, and benchmark wireless network environments. With its intuitive GUI, XCAL-MTS offers various types of connections specialized for system verification. This innovative solution provides a user-friendly interface with features like customizable graphs, message filtering, and visible and audible alarm indications. It enables users to monitor and identify problems in real-time, ensuring optimal network performance.

Features

* Support various wireless communication test including 5G NR
* Support up to 30 UE benchmarking test simultaneously
* Scalable by Rack mount
* Control multiple XCAL-MTS S/W via Test manager



Functions

* Load & Capacity test with multiple UE
* Field Test simulation in LAB environment by interworking with XCAT-MAIS
* Measure various application including Layer 1, 2, 3
* QoE (Quality of Experience) Measurement
* Support Autocall and MOS Test
* Display Voice/Data quality test result and RF information in real-time

Item	Specification (per shelf 1EA)
Power Input	AC(100V~240V, 49~61hz)
Power Consumption	Max. 1000W
CPU	Intel Core i7-7600U (Kabylake)
Memory	16GB
SSD	512GB
OS	Windows 10
OS Recovery	Supported
External Interface	I-Gbps Ethernet x 2 (per Section)
Phone Interface	USB 6-ports USB 3.1(Gen2) 3A, 5V (Max.)
Size	483 x 133 x 256 (W x H x D, mm)
Weight	14.5kg

Accuver

XCAT-MAIS

Massive MIMO air interface simulator

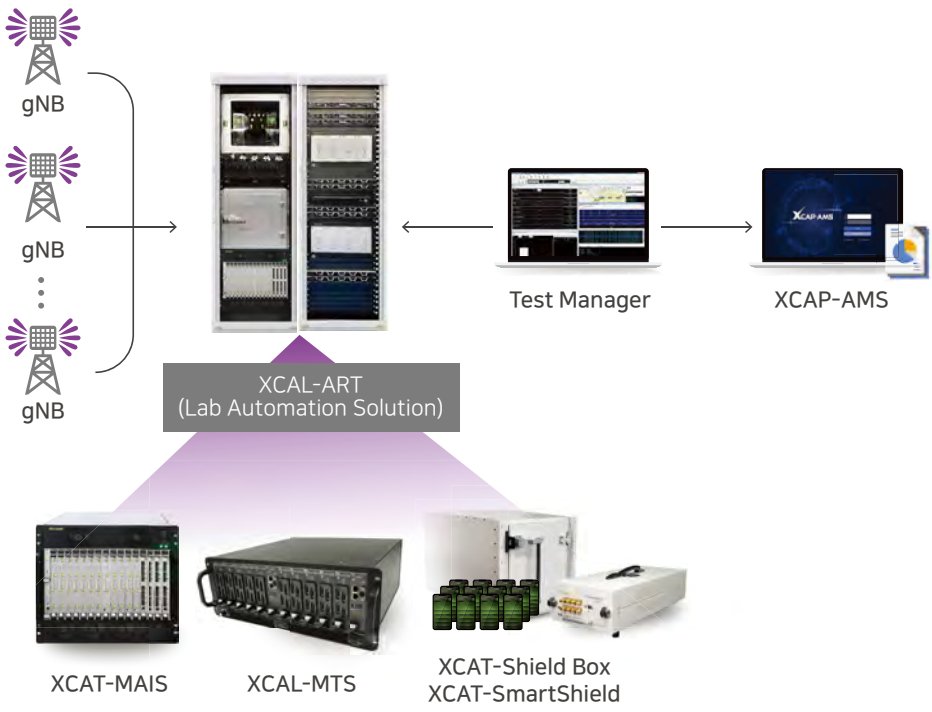
XCAT-MAIS is a leading air interface simulation solution that allows engineers to replicate realistic radio wave propagation in laboratory environments. Its system architecture is fully scalable and flexible, with individual phase and amplitude adjustment per path, replicating the wireless channel environment of UEs. XCAT-MAIS offers various real-world test scenarios such as fading, path loss, mobility, and M-MIMO simulations. The operator can simulate complex field tests in the lab using XCAT-MAIS.
XCAT-MAIS can be seamlessly integrated and utilized as a Lab Automation Solution (XCAL-ART) in conjunction with other Accuver solutions, including XCAL-MTS, XCAT-SmartShield, Test Manager, and XCAP-AMS.

Features

* Automated self-calibration for CR satisfaction (5G)
* User-adjustable amp/phase
* Monitor BS/UE inputs & outputs at each RF port
* User-defined scenarios and associated channels
* Automatic/manual call set up
* Selectable KPI logging and in-depth Analyzer
* Easy & simple system expansion by adding slot cards

Functions

* Support latest wireless technology
  : 5G, Massive-MIMO, Beamforming
* Simulate various test environment
  : Scattering, Reflection, Diffraction simulation by Multi-path fading channel
* Distributed lab environment
  : With MAIS, BS and UE don't have to be co-located, allowing international users to log in and access system resources at any time



Title	Spec.
Frequency	300 ~ 6,000MHz
Channel Bandwidth	100MHz
Insertion Loss	0dB
Path Loss control	0 ~ 89.5 dB, 0.5 dB step
System Delay	3.1 us
Calibration tolerances	|ΔAmplitude| < 0.35 dB, |ΔPhase| < 3 degree using external calibration hardware
RF Interface	Scalable by 4, up to 64 per chassis, TRX port
Max. power	+0 dBm (CW) per RF port (input/output)
Channel Models	ITU Ped. A/B, Veh. A/B, EPA, EVA, ETU, HST, 2D/3D SCM
Multi-path	8 per connection, each ranges from 0 to 25 us
Doppler Frequency	Up to 450 Hz (1350 Hz for HST)

Accuver

XCAT-SmartShield

Shield box solution with Over-The-Air technology applied for MIMO testing

XCAT-SmartShield offers an advanced shielding solution for precise RF testing of single UE. It ensures accurate maintenance of the UE's RF environment as specified by the Test Manager.With XCAT-SmartShield, you can achieve a 1-to-1 connection between base station (BS) and user equipment (UE) antennas in a lab area. It transmits a reference signal through probe antennas and measures RSRP in a field MIMO environment. With the increasing trend of UEs lacking externally accessible antenna connectors, XCAT-SmartShield simplifies the process by providing a virtual 1-to-1 wireless connection between the base station and the UE.

Features

* Accurate measurement without external interference with excellent shielding performance
* Minimize OTA (Over the Air) connection loss by applying near-field coupling method
* Reliable MIMO testing with reduced cross-talk between antenna ports
* Easy smartphone installation and minimal change in characteristics due to installation
* Built-in MOS test module

Functions

* Support Sub6 and mmWave (up to 40GHz)
* Smartphone Test without external antenna connector
* No interference from outside (Isolation > 60dB)
* Support long time 5G NR test

Item	SmartShield 1x G2	SmartShield 4x G2
Frequency Range	Up to 6 GHz	Up to 40GHz
RF ports	8 ports (SMA female)	12 Ports (2.92mm female)
Connection loss	< 20 dB	< 30 dB
Cross-talk	< -20 dB (Support the cross-cancelling)	TBD
Shielding Performance	> 60 dB	> 60 dB
Max Input Signal Level	+ 20 dBm	+ 20 dBm
Smart functions	Cross-talk cancelling (with MAIS)	Cross-talk cancelling (with MAIS)
	Maximum Received Signal Power	Maximum Received Signal Power
Dimensions	196 x 101 x 500.8 (W x H x D, mm)	220 x 137 x 526.2 (W x H x D, mm)
Acceptable UE Size @ max	180 x 95 x 11 (W x H x D, mm)	180 x 95 x 11 (W x H x D, mm)
Weight	9.3 kg	12.4 kg

Accuver

AEGIS-O

O-RAN End-to-End Interoperability Testing and Measurement Platform

AEGIS-O is a comprehensive End-to-End network testing and analysis solution specifically designed for 5G O-RAN systems. With a focus on key network nodes on fronthaul, midhaul, and backhaul, AEGIS-O enables network performance monitoring and protocol conformance analysis. By collecting and analyzing control plane and user plane data using prove module, AEGIS-O provides valuable insights into the network's performance.
Real-time packet tracer and user-friendly graphical charts provide intuitive understanding across all network interfaces. Additionally, AEGIS-O supports O-RAN Test Case of O-RAN Alliance and offers signal analysis capabilities through IQ Data decoding. With AEGIS-O, network operators and RU, DU, CU vendors can assess and optimize their 5G networks and equipment, ultimately improving the overall network performance.

Features

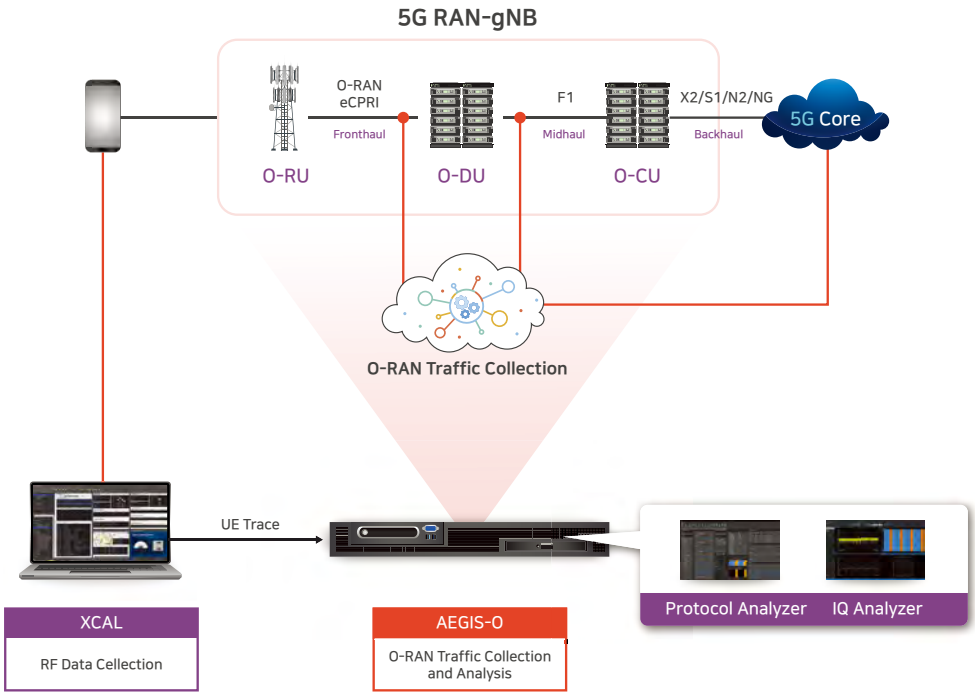
* Simultaneous analysis of UE, O-RAN Fronthaul/Midhaul/ Backhaul
* Signal and spectrum analysis through IQ data analysis
* Objective performance calculation and comparative analysis of various vendor products
* O-RAN Test Case support
* Message flow check in real-time or post-processing
* Beamforming/Scheduling analysis with UE's measured data

Functions

*** O-RAN Protocol Analyzer**
: Collaborative Analytics with UE and Front/Mid/Backhaul packets
: Control XCAL and IQ-Analyzer
: Integrated dashboard
: 5GC Packet analysis
: O-FH Performance KPIs analysis
: O-FH CUS-Plane Delay/Jitter/ PDV measurement
: UE Monitoring, O-FH Analysis

*** XCAL**
: UE trace analysis & Report
: Call script based automation

*** IQ-Analyzer**
: Spectrum
: Constellation
: RB Map
: Power vs Time

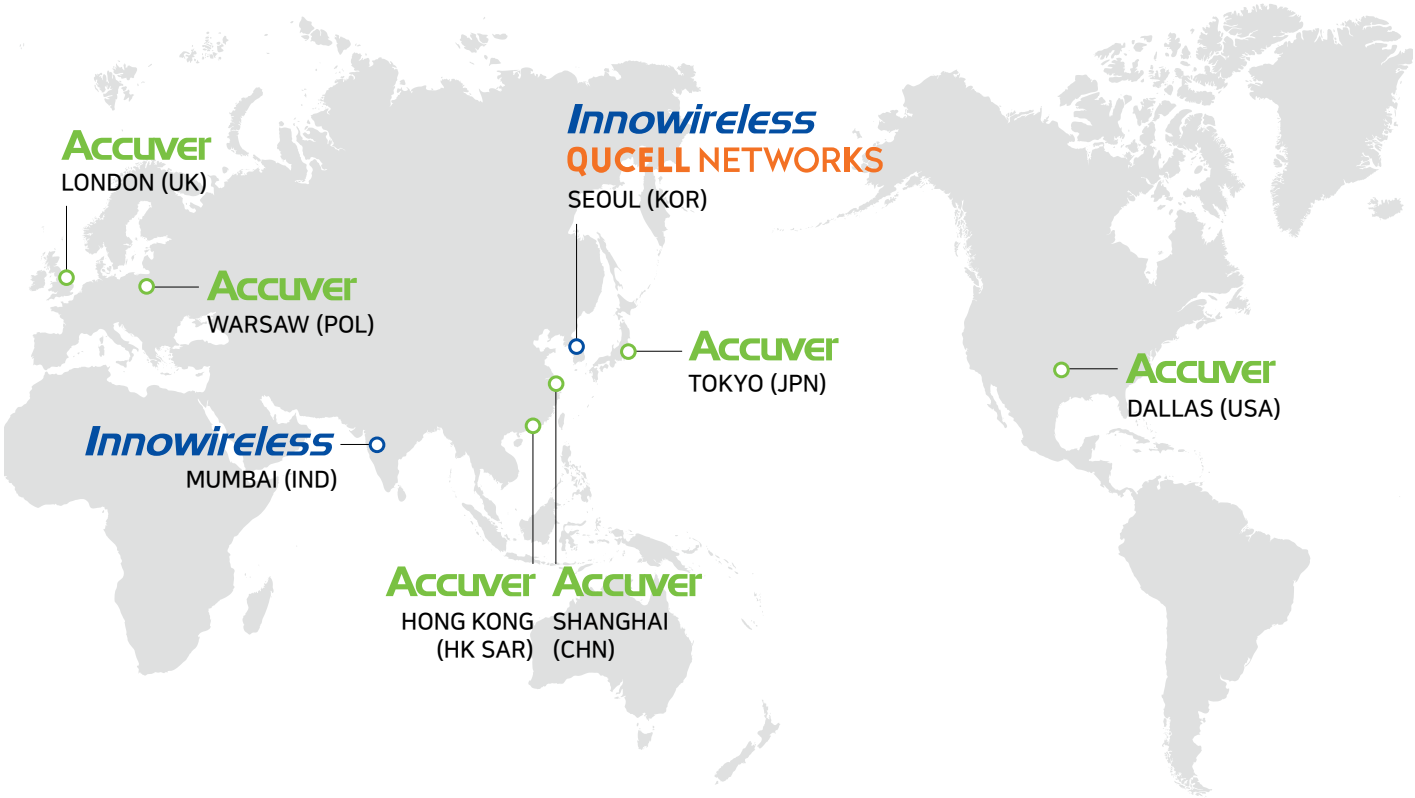


O-RAN Protocol Analyzer

IQ Analyzer

Be the **FIRST** with **Accuver**

220+ Customers from more than 50+ countries



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