



About EMITE

July 2024

more than just chambers

CONFIDENTIALITY ADVERTISEMENT

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- Small Chambers
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- Services

01 About us

EMITE is a **Wireless Test System Integrator** with worldwide presence in all major continents and standardization bodies



About us

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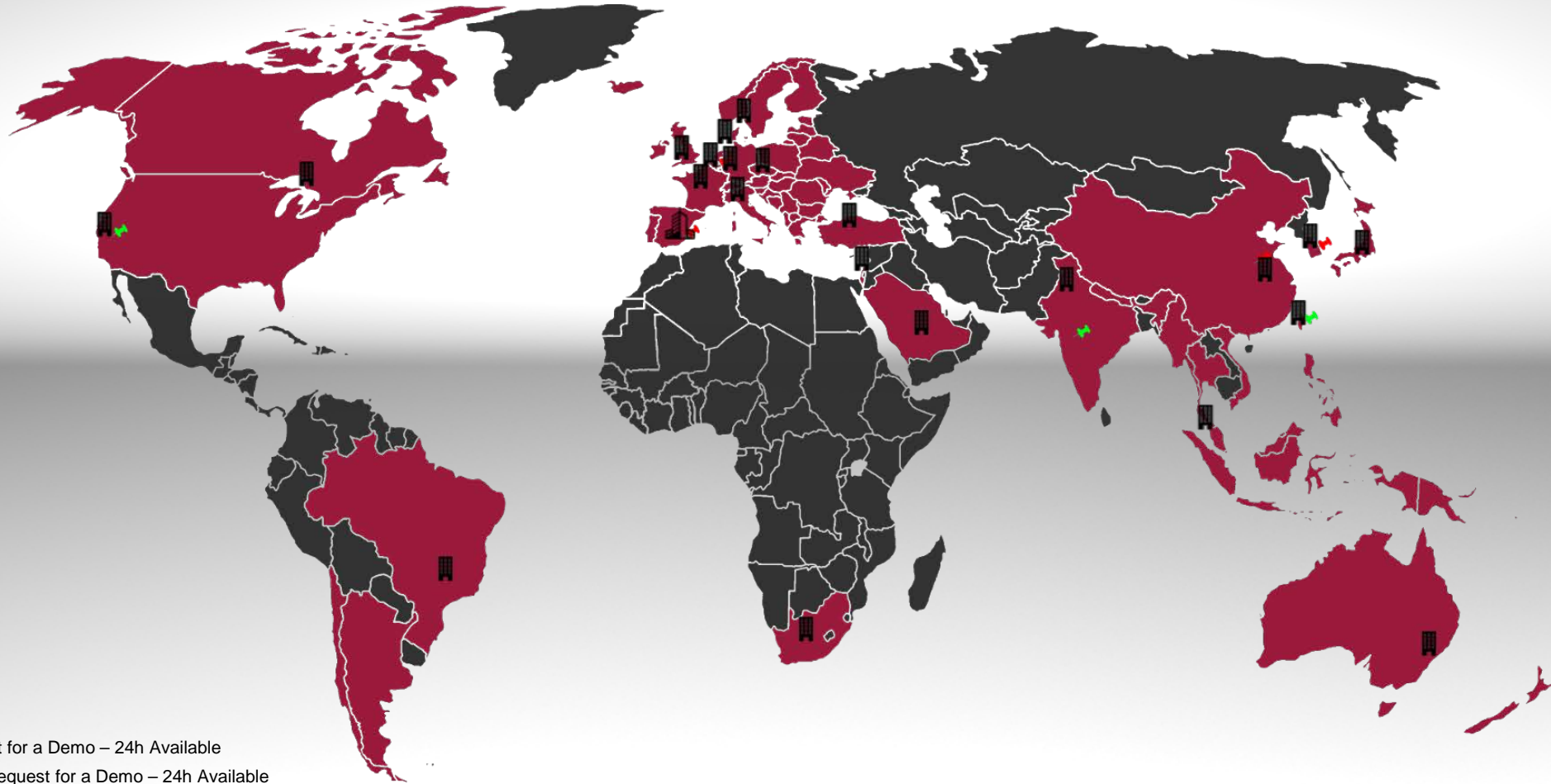
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
History

- **Know How & Origin.** Taken part in more than 150 projects and involved in more than 600 prototypes. Vodafone & Telefonica Awards.
- **Spin-out University.** > 6 Patents, >30 IEEE Publications, 3 Int. Books, 3GPP & CTIA member, MWC, MWE, CTIA and EUCAP Exhibitor.
- **Global Solution E-Series RC.** Integrated with Anite, Keysight, R&S, Anritsu, Spirent. Selected RC candidate Test Platform by 3GPP/CTIA.
- **5G Test System Integrator.-** Clients in >4 Continents, 35 Countries. Leading RC/AC OTA Test-System in LTE-A, 5G, Wi-Fi, W-IoT, SRC. 1 Solution – 2 Chambers.
- **Global OTA Test Solutions Leader.** Brand expansion to 5G, Automotive, Homes, Telecommunications, IoT and EMC markets.

About us

Network & Facilities



-  Own Test Lab – Request for a Demo – 24h Available
-  Third party Test Lab – Request for a Demo – 24h Available
-  Sales, Support & Maintenance Level 1 – 12 Regions covering more than 106 Countries
-  EMITE HeadQuarters

Our Achievements with Partners

2009 - First **LTE MIMO TPUT** measurements for 3GPP

2010 - **Smallest deviation** from all OTA test vendors

2012 - First Worldwide **Sample Selection** Tests for drive-test emulation

2014 - First Worldwide **LTE CA + MIMO OTA** lab tests

2015 - First Worldwide **LTE CA 2DL CC + MIMO + UMa** OTA lab tests

2015 – First Worldwide **LTE 4DL CC CA + MIMO + OTA + UMa** OTA lab tests

2016 - World's First signaling OTA Tests with **2xUXM, 2xMT8821C** and **CMWFlexx4**

2017 - World's First signaling OTA Test System to Support **IEEE802.11ac** Standard

2017 - World's First 4G **Virtual Drive Testing Over The Air** (VDT OTA) made in a Lab

2017 - Worldwide-first **4DL CC x 4x4 MIMO** OTA Test System for **Cat16** Gigabit LTE UEs

2018 - First **5G OTA** installation

2018 – Worldwide-first **5G SA mMIMO** OTA lab tests

2019 – Worldwide-first **5G NSA FR1+FR2** OTA lab tests

2019 – Worldwide-first **802.11ax** OTA lab tests

2020 – Worldwide-first NR **FR1+FR2** OTA lab tests in leading US carrier

2020 – Worldwide-first **WiFi6E** OTA lab tests

2021 – Worldwide-first NR **1-220 GHz gNB** OTA test system

2022 – Worldwide-first NR **FR2 8CC IP TPUT** higher than **3Gbps** testing

2023 – **WiFi7** OTA testing



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EMITE OTA Test Systems



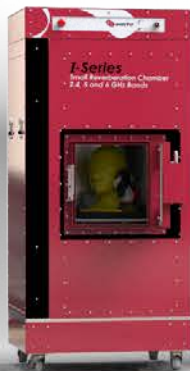
PT Series
DUT 15cm



- ✓ **RC – Reverberation Chamber**
- ✓ 600 MHz to 7.125 GHz
- ✓ DUT Max: 15cm – 5kg
- ✓ SISO OTA
- ✓ Up to 8 UEs in parallel
- ✓ Non-Signaling OTA
- ✓ TxPow, RSSI
- ✓ Modulation tests
- ✓ Production OTA testing



I Series
DUT 30cm



- ✓ **RC - Reverberation Chamber**
- ✓ 2.4-2.5, 5.0-7.125 GHz
- ✓ DUT Max: 30cm – 5kg
- ✓ Up to 8x8 MIMO
- ✓ UE/AP as DUT
- ✓ Signaling/Non-signaling OTA
- ✓ Time-Domain IP-TPUT OTA
- ✓ TRP / TIS
- ✓ Roaming and Interoperability



E Series
DUT 60cm



- ✓ **RC - Reverberation Chamber**
- ✓ 600 MHz to 60 GHz
- ✓ DUT Max: 60cm – 50kg
- ✓ Up to 16x16 MIMO
- ✓ UE/AP/gNB/antenna as DUT/AuT
- ✓ Signaling/Non-Signaling OTA
- ✓ Up to 4x4 x 10DL CC
- ✓ Time-domain OTA
- ✓ TRP / TIS / TPUT / MTS / CQI M2TxDT
- ✓ Development and Performance



H Series
DUT 60cm



- ✓ **AC - Anechoic Chamber**
- ✓ 600 MHz to 110 GHz
- ✓ DUT Max: 60cm – 25kg
- ✓ DFF, IFF, NFTF test methods
- ✓ Up to 4x4 MIMO x 8DL CC
- ✓ UE/AP/gNB/antenna as DUT/AuT
- ✓ Signaling/Non-Signaling OTA
- ✓ 3GPP TR 37.842 / 38.810
- ✓ 2D/3D Radiation patterns
- ✓ Beamforming, TRP, EIRP, EIS, TIS
- ✓ 5G FR1/FR2/FR1+FR2
- ✓ Conformance



F Series
DUT 200cm



- ✓ **RC/AC - Hybrid Chamber**
- ✓ 100 MHz to 220 GHz
- ✓ DUT Max: 200cm – 500kg
- ✓ DFF, IFF, NFTF test methods
- ✓ Up to 32x32 MIMO x 10DL CC
- ✓ UE/AP/gNB/antenna as DUT/AuT
- ✓ Signaling/Non-Signaling OTA
- ✓ 3GPP TR 38.521 / 37.842 / 38.810 / 38.104 / 38.141
- ✓ 2D/3D Radiation patterns
- ✓ Beamforming, Latency, TPUT
- ✓ 5G FR1/FR2/FR1+FR2, RCS
- ✓ EMC, RCS, CTIA Large Form Factor
- ✓ Performance and Conformance

- ✓ Active device UE/eNB/gNB Testing
- ✓ Time-Domain IP-level testing
- ✓ Antenna testing
- ✓ Low-PIM testing
- ✓ Spurious Emissions testing
- ✓ RCS testing

OTA Solutions

Passive MIMO testing

- ✓ **MIMO:** Up to 16 x 16 MIMO Antenna measurements
- ✓ **FoMs:** Correlation, Efficiency, Diversity Gain, MIMO Capacity, Coupling, Beamforming Capacity
- ✓ **Patterns:** 2D and 3D Radiation Pattern Full Sphere (FF, SNF, NF2FF)
- ✓ **Methods:** RC, DFF, NF2FF, IFF(CATR)
- ✓ **Standard Test Cases:** IEEE / 3GPP RC/AC

Time-Domain MIMO testing

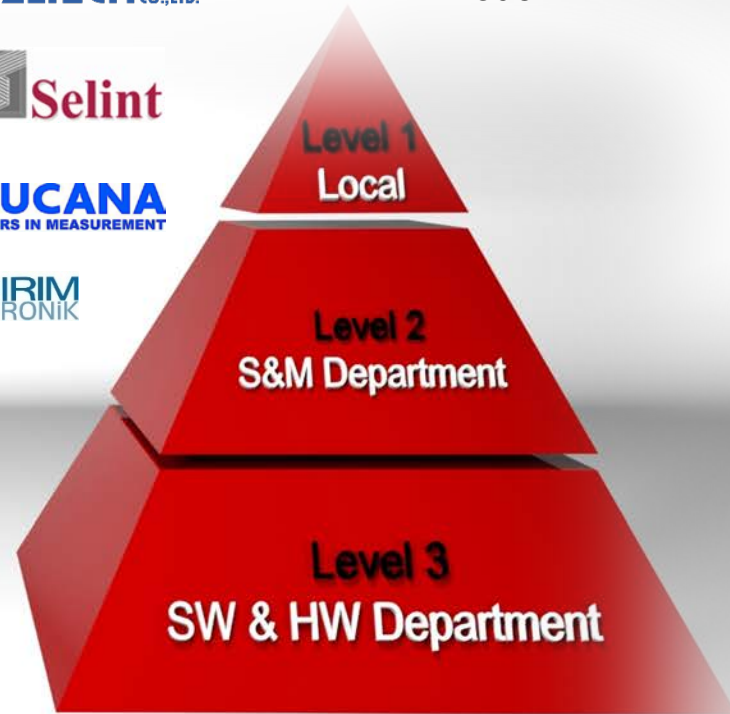
- ✓ **Systems:** RC, AC FF
- ✓ **FoMs:** FTP/TCP/UDP DL/UL TPUT, RMS-DS, PDP, CBW, STD, PL, JITTER
- ✓ VDT-OTA
- ✓ RRU + BBU OTA
- ✓ NR Thermal testing
- ✓ **QDART** Integration

Active MIMO OTA testing

- ✓ **Cellular:** 2G, 3G, 4G, 4G+ (LTE-A), 5G NSA, 5G SA, 5G DC, 5G RedCap
 - ✓ Up to 16x16 MIMO
 - ✓ Up to 10DLCC
- ✓ **WLAN:** Wi-Fi 802.11a/b/g/n/ac/ax/axe/ay/ad/be (WiFi 7), Packet Capture, HTTP Adaptive Video Streaming (HAS).
- ✓ **EMC:** IEC 61000-4-21, RTCA DO-160, MIL-STD-461G
- ✓ **Short-Range:** BT, BLE, Z-Wave, ZigBee
- ✓ **W-IoT:** Cat-M1, NB-IoT
- ✓ **MTC:** LoRA, Sigfox
- ✓ **FoMs:** TRP, TIS, TPUT (DL, UL), MTS, M2TxDT, Mute(%), RI, CQI, RSRP, MIMO TRP/TIS, UE Temperature, Battery level, 5G KPIs
- ✓ **Signaling/Non-Signaling OTA Operation Modes**



International Standard Model



- **CONSULTANCY**
 - Integration Services
 - Testing Services
 - Tailored Suit Solutions
 - RF PM
- **SUPPORT & MAINTENANCE**
 - Preventive
 - Corrective
 - Remote Diagnosis
 - Follow the Sun

Services

- ✓ Web-based Information & Help Desk
- ✓ Local Support – Level 1
- ✓ Hotline Support (8h response)
- ✓ Live remote connections
- ✓ Trainings

Support & Maintenance



"Thanks for taking care in that special way" R&D Senior Manager, 1st Leading SW Manufacture Company.



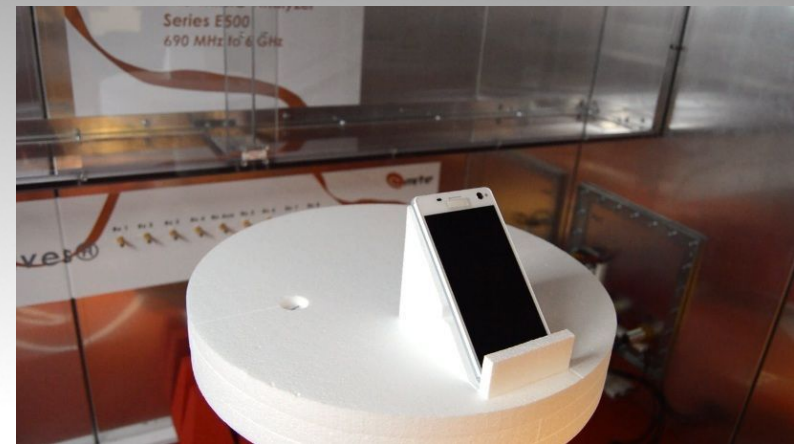
Services

- ✓ Preventive Maintenance Programme.
- ✓ One-button software upgrades every 6 months.
- ✓ Remote diagnosis every 6 months.
- ✓ In-situ hardware diagnosis and re-calibration every 12 months.

“With the same compromise than the first day ”

R&D Senior Manager, 2nd Leading Mobile Manufacture.

Support & Maintenance



Services

- ✓ Customer-Test Vendor joint development
- ✓ New FoM proposals
- ✓ Intense Testing (pre-commercial)
- ✓ Identification of Marketing key elements
- ✓ Reverse Engineering

"The effort by EMITE has prevented several million phones going wrong into market. We really appreciate it" SVP, 2nd Leading Mobile Manufacturer

Joint Development & Reverse Engineering



Successful Examples of Customer Support Cases



✓ 1) Real customer case at **Moriguchi (Japan):**



✓ 2) Real customer case at **Riyadh (Saudi Arabia):**

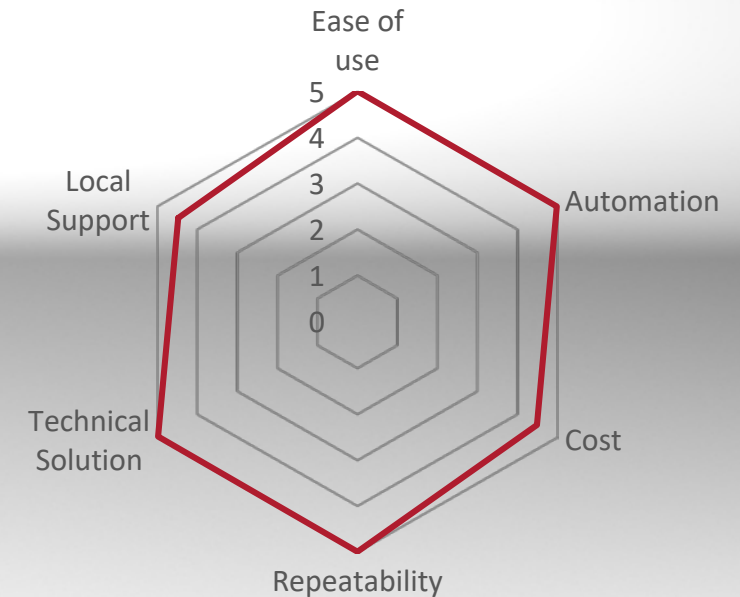


✓ 3) Real customer case at **Redmond, Washington (USA):**



Services

Parameter	Rating (5 best, 1 worst)	Comments
Ease of use	5	Intuitive single UI to calibrate, control, run all connected instruments, and collect data from all devices, plot and report results.
Automation	5	Fully automated solution with capability to choose and run multiple batch tests in batch mode. Provides a consolidated report at the end.
Cost	4.5	Comparable to other solutions. Provides the highest value between cost vs. capability.
Repeatability	5	Highest repeatability among competing solutions.
Technical Solution	5	Fully featured, superior technical solution with capability to scale to future needs.
Local Support	4.5	Good local support, with local distributors.





Thank you for your attention.