

Consumer Business Unit Overview

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Topics

- Introduction
- Overview of Consumer Business Unit
- EMC, Wireless, and Interoperability – A Virtual Tour
- Q&A



Services & Industry Sectors Summary

Services

- UL Chemical Testing
- UL EMC
- UL Energy Efficiency
- UL Global Market Access
- UL Performance Testing
- UL Product Inspection & Factory Audits
- UL Regulatory
- UL Reliability
- UL Safety Testing & Certification
- UL Wireless & Interoperability

Industry Sectors

- UL Automotive
- UL Batteries
- UL Consumer Electronics
- UL Electricity Meters
- UL Hi-Tech Components
- UL IT Equipment
- UL PCB's
- UL Power Supplies
- UL Telecommunications



EMC

Testing Programs Include:

- 👍 Conducted & Radiated Emissions
- 👍 Conducted & Radiated Susceptibility
- 👍 Immunity to Electrostatic Discharge
- 👍 Immunity to Electrical Fast Transients
- 👍 Immunity to Surges
- 👍 Interference from AC Mains Harmonics & Flicker
- 👍 Vehicular Emissions and Immunity
- 👍 Energy Meter Performance Testing



Wireless Testing & Interoperability (Slide 1 of 2)








Regulatory Testing Programs Include:

- 👍 Cellular Devices
- 👍 Land and Maritime Mobile Radio
- 👍 Short Range Devices
- 👍 Wireless Digital Networks (e.g. WiFi, Bluetooth®)
- 👍 Specific Absorption Rate (SAR)
- 👍 Over-The-Air (OTA)
- 👍 Digital Microwave Systems
- 👍 Telemetry & Telecommand



Wireless Testing & Interoperability (Slide 2 of 2)

Interoperability Testing Programs Include:

-  WiFi Alliance
-  Bluetooth®
-  Global Certification Forum (cellular devices)
-  PTCRB (cellular devices)
-  Carrier Acceptance Testing (cellular devices)
-  Qualcomm QuickCharge 2.0
-  Near Field Communication (NFC)



Sectors and Products coverage:



Consumer Electronics



Smart Grid



Appliances



IT Products



Payments & Banking



Wireless and Telecom



Automotive



Industrial Products



Health and Medical



All Technologies Covered



Wireless LAN



Immobilizers & Keyless entry systems



Cellular – GSM / WCDMA / 3G / LTE



Microwave



Short Range Devices



WiFi/ WiGig



Bluetooth



WirelessHD and Wireless USB



ZigBee

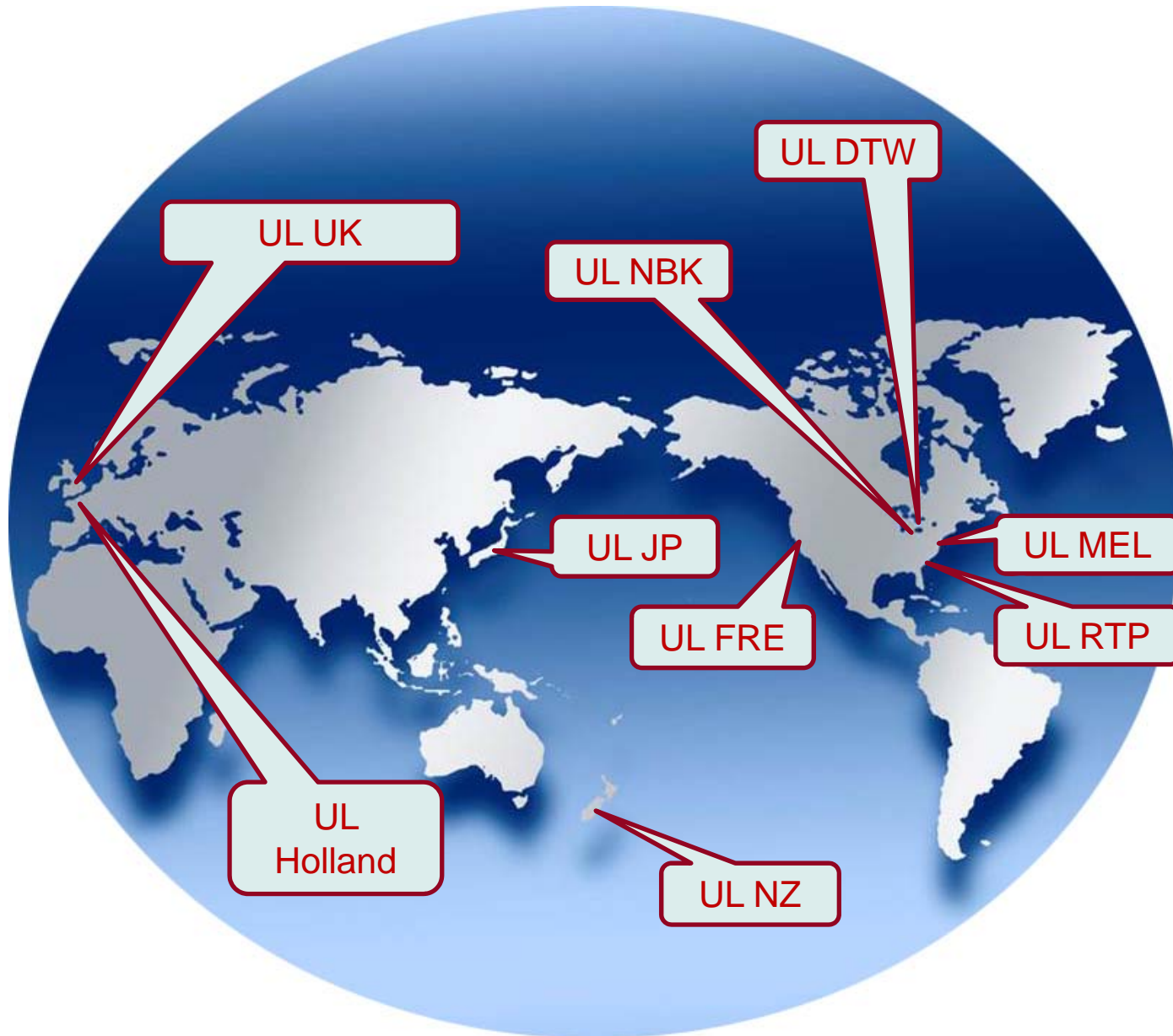


Payments technology (e.g. Terminal, Smart Cards, Contact less)



Security evaluations

RF/EMC Global Platform



Testing Locations – North America

RTP, NC



Northbrook, IL



Fremont, CA



Melville, NY



Novi, MI



Testing Locations - Europe

Basingstoke,
Hampshire, UK



Leiden, The Netherlands



Testing Locations - Asia



Ise, Japan



Yamakita, Japan



Yokowa, Japan



Shonan, Japan



Auckland, NZ





Services for Wireless

Business Segment



- **Wireless**
 - Wireless Regulatory Testing (FCC, EU)
 - Radio Performance
 - Including a wide range of products that operate using the key technologies of GSM, GPRS, EDGE, CDMA, UMTS, 2G, 3G, 4G/LTE
 - Radio products operating from 0Hz to 325GHz
 - Over-The-Air (OTA) - CTIA
 - Antenna Pattern Testing
 - Different Cellular Technologies (CDMA, UMTS, GSM, LTE)
 - WiFi
 - WiFi and Cellular when operated simultaneously
 - SAR (Specific Absorption Rate)
 - Covers GCF, FCC/ANSI, PTCRB, CE/ETSI requirements
 - HAC (Hearing Aid Compatibility)



Business Segment



- **Wireless**

- Global Wireless Certification Services

- #1 FCC/IC TCB Certifier - Over 2000 Certifications completed annually
- EU Notified Body
- Singapore IDA Certification Body
- Extensive experience in over 120 Countries
- Experienced staff in all 3 major markets (NA, EU, Asia)

- Wireless Certification and Standards Activities

- CTIA/C63 Standards Development Member
- Chairmanship of US FCC TCB Council
- GCF



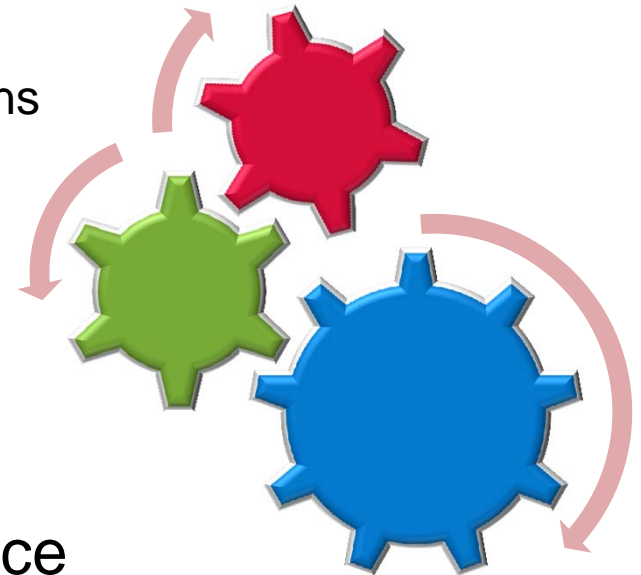
The background of the slide is a repeating pattern of the letters 'UL' inside a circle, arranged in a grid. The text 'Services for Interoperability' is centered on the slide in a bold, black, sans-serif font.

Services for Interoperability

Business Segment



- Interoperability
 - Bluetooth Qualification Lab
 - Qualification, Development, and Regulatory
 - WiFi Alliance
 - 802.11x
 - **WirelessHD and WiGig Approvals**
 - 60GHz Wireless HD Protocol
 - Only 3rd Party lab approved for Certifications
 - Active Member of ZigBee Alliance
 - PTCRB/GCF Approved Test Lab
 - Wireless Charging
 - Active Member Of QI
 - Lead lab for Power Matters Alliance
 - OmniPass Automated Test System





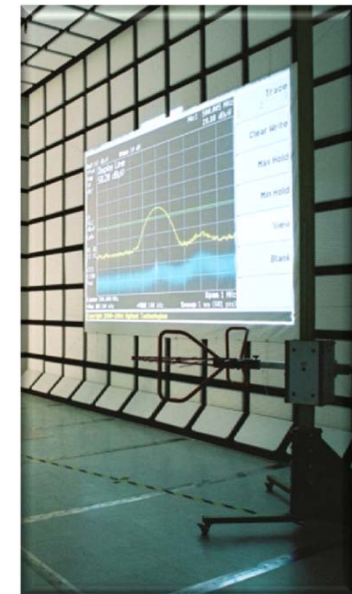
Services for EMC

Business Segment



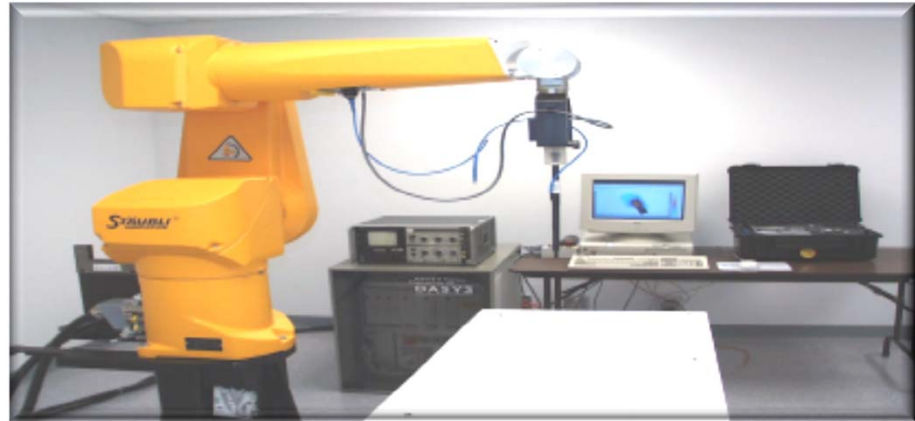
• EMC

- Global Facilities covering all Consumer/Industrial Industries
 - Telecom NEBS
 - Verizon ITL Test Facilities and Witness Locations
 - Automotive/Military Component EMC Compliance Testing
 - Approved Test Labs for Ford, GM, Chrysler, Toyota, Honda, and many more
 - Vehicle Certification Agency (VCA) Approved Test Sites
 - Electric Meter accuracy testing (SMART Meters)
 - Electric Vehicle Charging Stations
 - Medical Devices
- EMC Software/Hardware Design and Consultancy
- International Approvals and Certifications
- EMC/EMF In-situ and Site Survey Services
- Product Mitigation Services



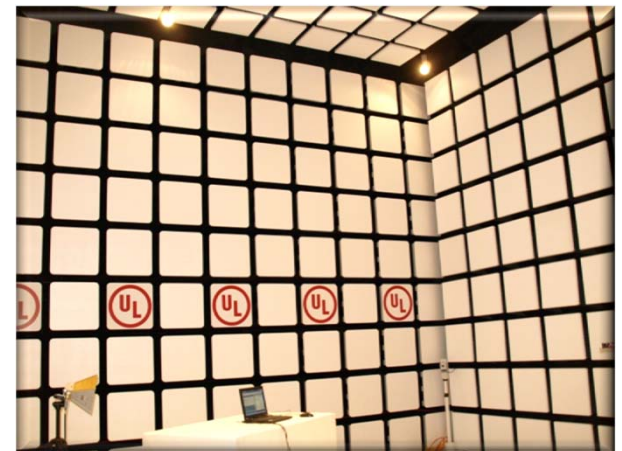
Test Facilities – SAR/HAC

Specific Absorption Rate / Hearing Aid Compatibility

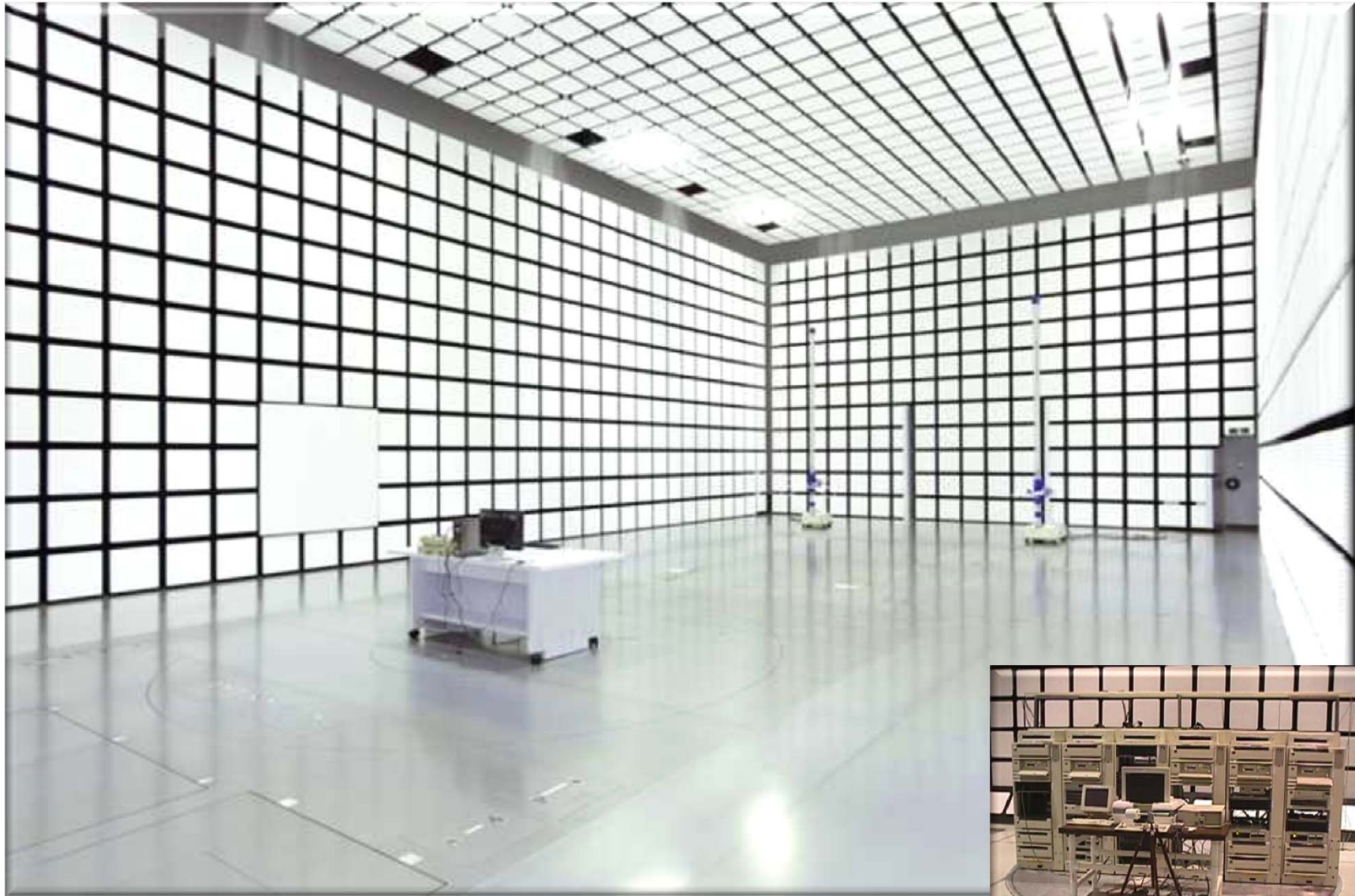


Test Facilities – OTA

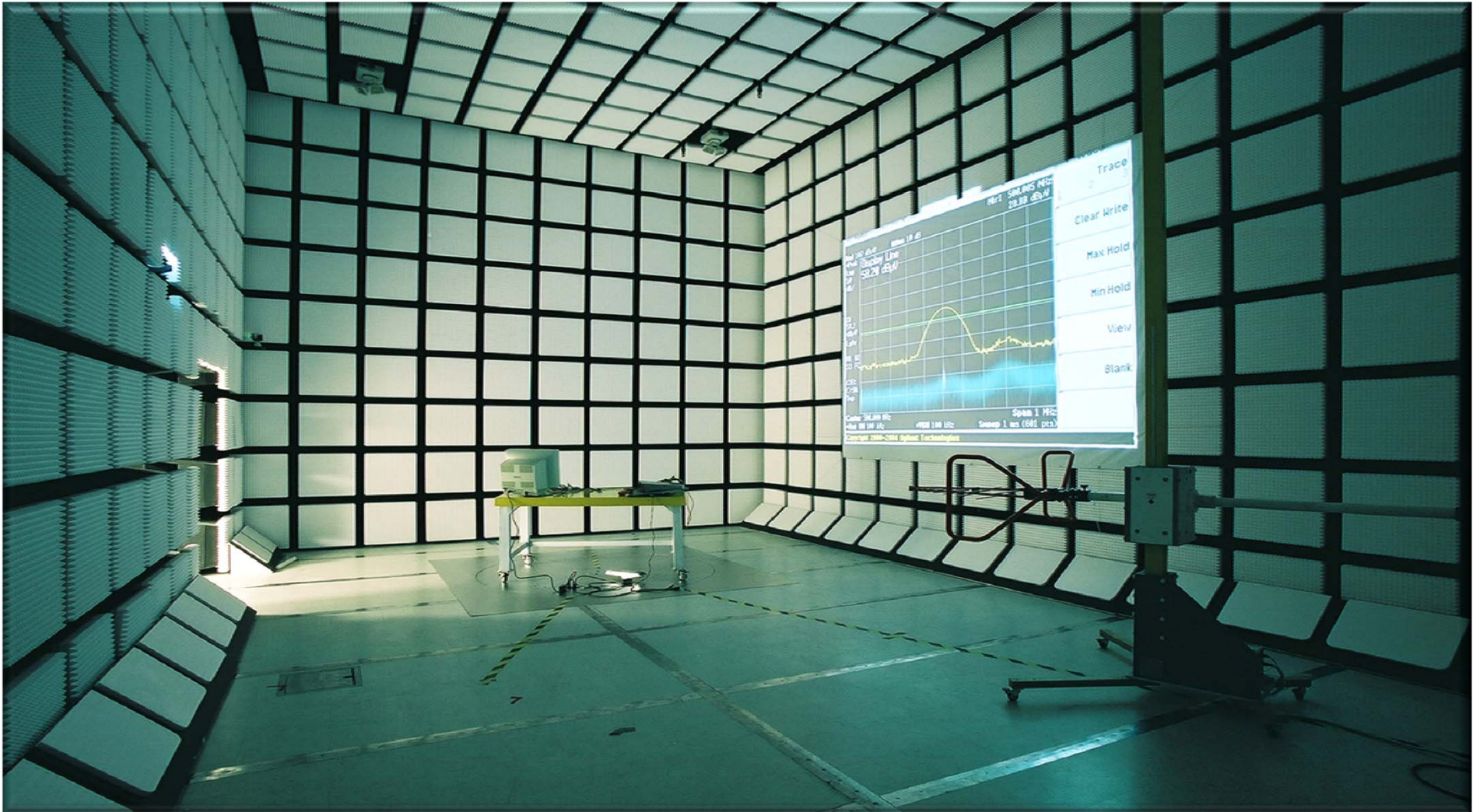
Over The Air Antenna Chamber



Test Facilities- 10-m Radiated Emissions Chambers



Test Facilities- 5-m Radiated Emissions Chambers



Test Facilities- Open Area Test Sites (OATS)



Test Facilities – RF Immunity



Test Facilities – Surge/EFT/Power Faults



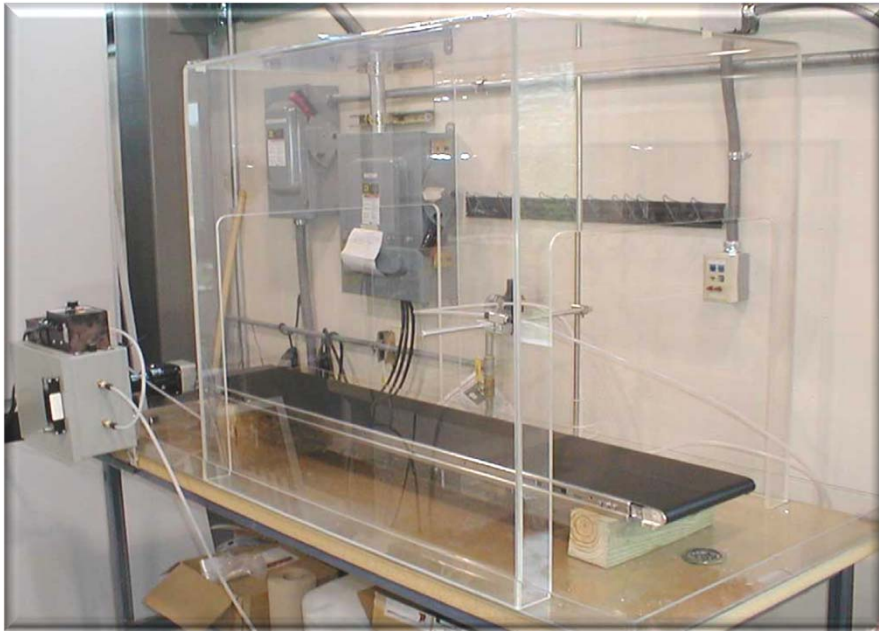
Test Facilities – Wi-Fi & Wi-GIG



Test Facilities – Environmental Temperature/Humidity/Altitude



Test Facilities – Environmental Air Borne / Gaseous Contamination



Test Facilities – Environmental Vibration and Seismic



Test Facilities – Environmental Fire



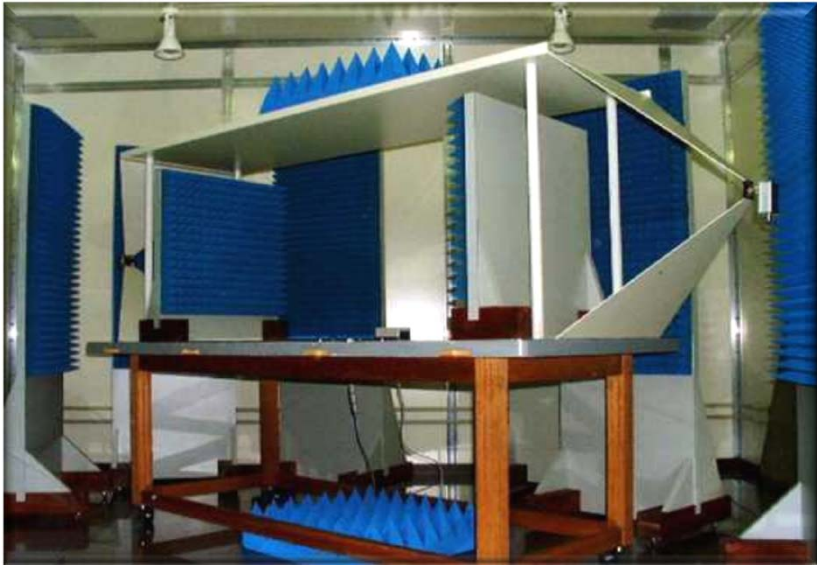
Test Facilities – Environmental Outdoor Conditioning



Test Facilities – Environmental Outdoor Conditioning

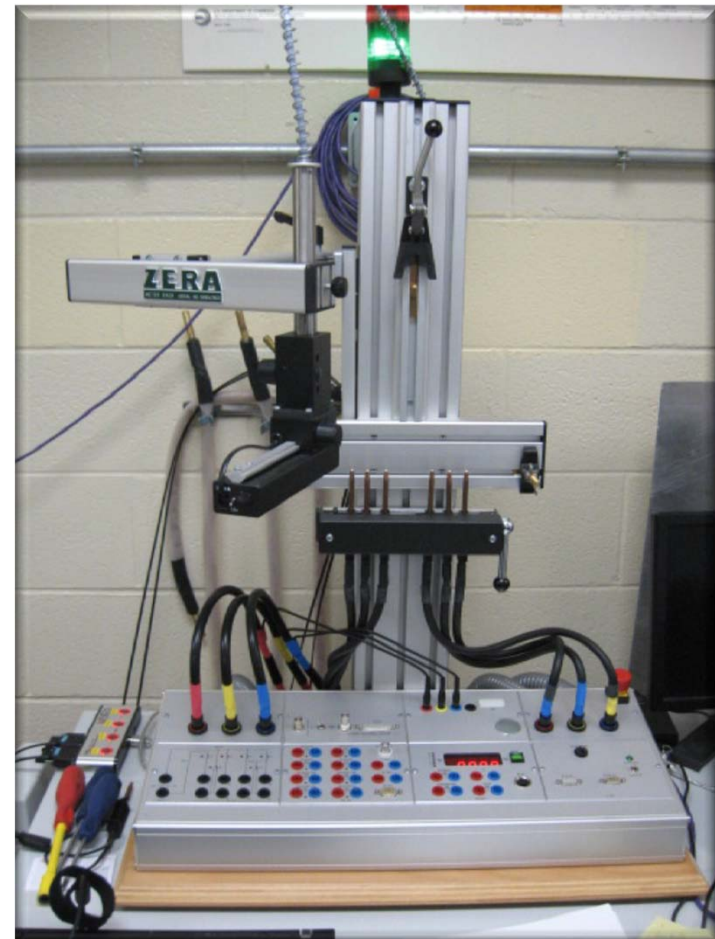


Test Facilities – Automotive Component EMC

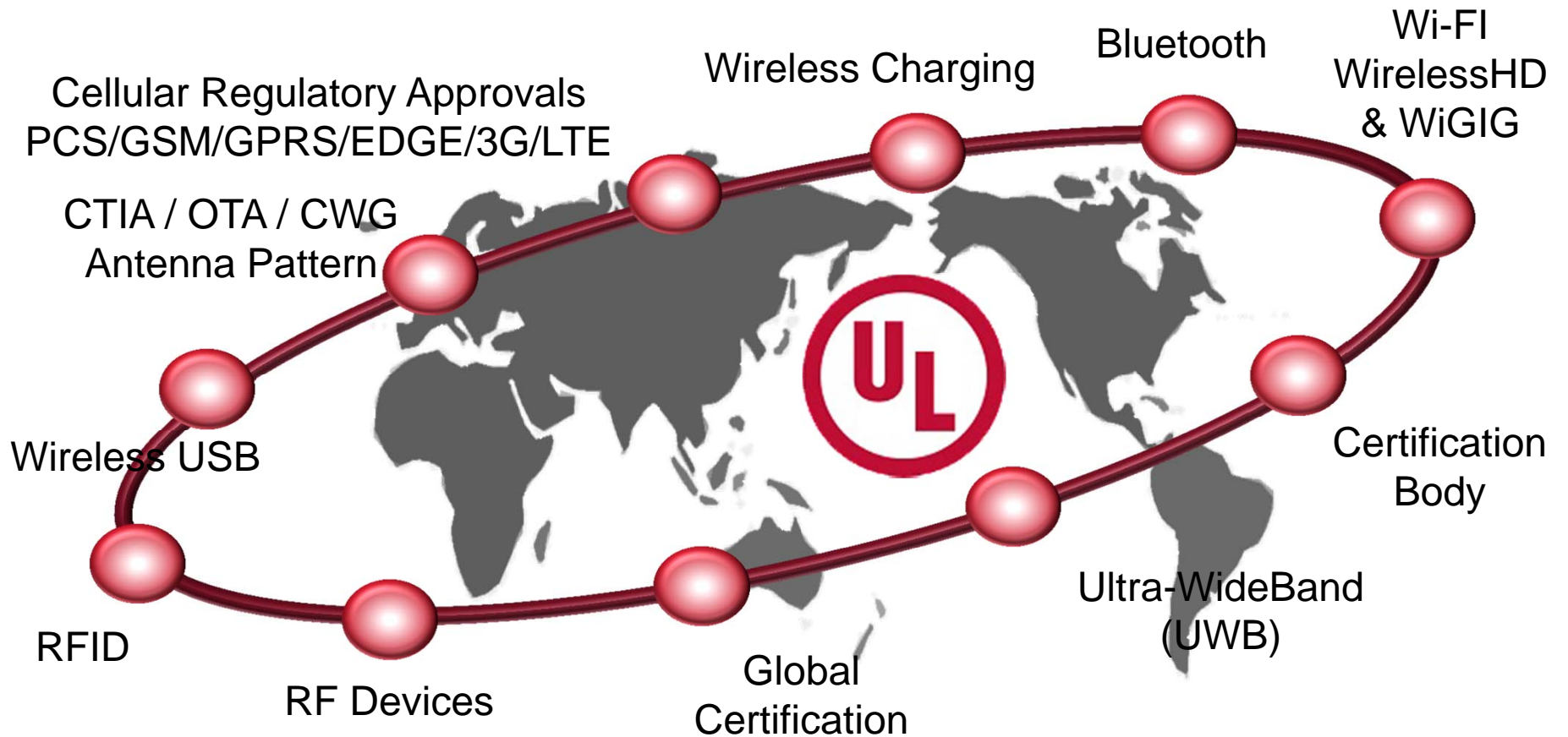


Test Facilities – Accuracy

Smart Meter Testing



Wireless Competency



THANK YOU.

