CASE STUDY NEW THREE METER EMC CHAMBER EXPANDS EMC'S TEST CAPABILITIES – BEIJING, CHINA

The Telecommunication Metrology Center (TMC) in Beijing is an independent test lab for telecommunication equipment certification. It is the prominent authority for providing equipment compliant certification services to the telecommunication industry in China. Now, TMC has expanded its test capabilities beyond telecommunications to include EMC testing of a wide variety of electronic equipment. With the existing anechoic chambers provided by ETS-Lindgren, TMC is now positioned to provide product certification services in both telecom equipment and general ITE in accordance with CISPR, IEC, EN, ETSI, and US FCC standards.

TMC's mission includes playing a leading role in developing compliant test standards for telecommunications and electronic equipment in China. TMC is a member of many international EMC standards organizations, including ITU, CISPR, IEC, ETSI, and GCF. TMC's staff includes talented engineers whose expertise is well respected in both China and internationally. Its test lab enjoys an excellent reputation worldwide for the high quality of its services. When TMC was ready to expand its test and measurement capabilities to include the EMC testing of electronic products, ETS-Lindgren provided the solution. ETS-Lindgren, a US-based company with a manufacturing facility in China, designed, manufactured, and installed a Free-space Anechoic Chamber Test-site (FACT)™ 3-1.5 fully anechoic EMC Chamber. The new three meter chamber has made the testing of electronic products faster, more convenient, and more reliable.

Now, TMC can easily meet the growing demand for EMC testing and certification of electronic equipment in China.

EMC Test Chamber Technical Specifications

- A compact, high-performance RF shielded fully anechoic FACT 3 -1.5 premium chamber with nominal interior dimensions of 28 ft (8.6 m) long x 20 ft (6.1 m) wide x 13 ft (3.85 m) high and a 1.5 meter diameter quiet zone.
- Constructed of ETS-Lindgren's popular Series 101 Pan Type modular RF shielded panels with >100 dB shielding effectiveness in the required frequency range. This performance was tested and guaranteed prior to the installation of system components and absorber.
- Two each single-leaf 4 ft (1.2 m) wide x 6 ft (2 m) high manually operated RF shielded personnel doors feature a semi automatic pneumatic operating system for RF tight door locking/unlocking.
- Heavy duty, EMCO model 2188-1.5, 1.5 meter diameter low profile turntable with a 1,500 kg (3,307 lbs) distributed load rating.
- Raised 500 mm (18 in.) nominal reflective ground plane.
- Model 4340 digital CCTV system, complete with PC and display.
- Accessories include power line filters, light fixtures, honeycomb wave guide air vents, fire alarm system and connector panels – all specially designed to maintain the RF shielding integrity of the host chamber.

Anechoic Absorber Treatment

Anechoic treatment of the chamber includes 100% coverage of all wall and ceiling surfaces in addition to removable absorber conveniently provided on floor carts as required for immunity testing. ETS-Lindgren's unique engineering and manufacturing process ensures excellent agreement between computed

and measured performance. This excellent agreement between predicted performance and actual measured free-space NSA data has been documented. A significant feature of TMC's fully anechoic chamber is there is no need to perform any chamber absorber treatment conversion between radiated emission and radiated immunity testing since the chamber was initially provided as a fully anechoic chamber.

Key absorber features include:

- Compact-sized shielded enclosure with fully anechoic testing capability.
- FerroSorb™ technology: a hybrid ferrite tile and foam FS-600H hollow polyurethane EMC absorber on the walls and ceiling to provide excellent performance at both low- and high-frequency ranges.
- RF power handling of >200 V/m HIRF capability continuous field intensity and 500 V/m pulse field intensity.
- Material composition is high performance combustion limiting polystyrene made from low density styrene foam coated with a thin sheet of semi-rigid polyvinyl chloride foam.
- Fire retardancy is provided in accordance with industry standards such as NRL Report 8093 (Tests 1, 2 and 3), UL 94 HBF, and others.

Chamber Performance Specifications

The FACT 3 chamber achieved measured free-space NSA performance of +/- 3.5 dB and complies with the test site and instrumentation system requirements of the following global EMC regulatory standards:

- CISPR 22, 24 per test method in 16-1-4 Edition 3.0 from 30 MHz to 26.5 GHz.
- Radiated Spurious Emission per ETSI-300 and ETSI-301 series standards.
- IEC 61000-4-3 radiated immunity testing at 3m distance from 26 to 4200 MHz.
- Telecom equipment audio break through testing per ETSI 301-489-7.

About ETS-Lindgren

ETS-Lindgren is an international manufacturer of components and systems that measure, shield, and control electromagnetic and acoustic energy. The company's products are used for electromagnetic compatibility (EMC), microwave and wireless testing, electromagnetic field (EMF) measurement, radio frequency (RF) personal safety monitoring, magnetic resonance imaging (MRI), and control of acoustic environments. Headquartered in Cedar Park, Texas, ETS-Lindgren has manufacturing facilities in North America, Europe, and Asia. Additional information about ETS-Lindgren is available at www.ets-lindgren.com. Additional information about ETS-Lindgren's parent company ESCO and its subsidiaries is available at www.escotechnologies.com.

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