ETS-LINDGREN
An ESCO Technologies Company

Electrical & Electronic Test Lab

SGS

SGS Opens New Testing Center of Excellence

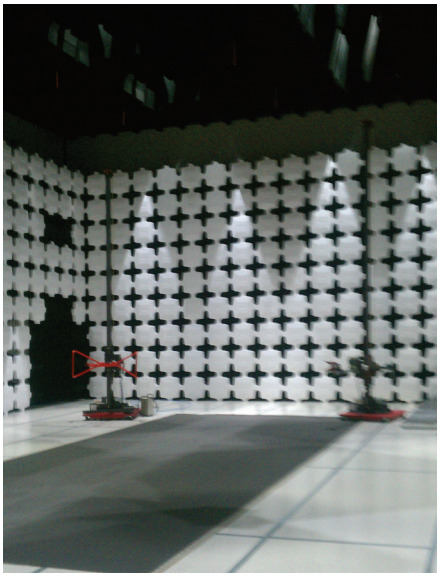
When SGS Consumer Testing Services, a leading global provider of verification, testing and certification services, wanted to expand in the U.S. with a new lab dedicated exclusively to testing and certifying electrical and electronic (E&E) products, they turned to ETS-Lindgren, an industry leader in the design and installation of electromagnetic compatibility (EMC) test chambers.

ETS-Lindgren provided a 10 meter test chamber large enough to fit an automobile, as well as a 3 meter chamber and an RF shielded enclosure. The company, as an end-to-end integrated supplier, provided the shielding, absorber, positioning equipment, components, automated test software, and calibration services for the three turnkey test chambers.

"To meet the varied test service objectives, we had numerous conversations over several months with the SGS engineers discussing their requirements," said Kevin Baldwin, ETS-Lindgren's Regional Sales Director for Americas East.

"We were able to share our expertise by providing engineering design, drawings, calculations, performance information, schedules and cost estimates before contract award. This empowered SGS to evaluate valid options for the optimal suite of test chambers to meet the desired service objectives."

The new lab, located near Atlanta, Georgia, is now open to evaluate



the electromagnetic compatibility, battery and energy efficiency, as well as safety compliance of products in dozens of categories ranging from medical devices and home electronics to office equipment, lighting products and laboratory equipment.

The Atlanta SGS lab brings EMC, Specific Absorption Rate (SAR), battery safety and Energy Star testing under one roof to simplify sourcing, eliminating the need to send products to numerous sites for different E&E testing services, and increasing time to market – all while meeting U.S. and international regulatory requirements.

Additionally, customers needing certification marks and approvals for other countries will be able to utilize the lab to access global markets.

EMC Test Chamber Technical Specifications

- A 10 meter, high-performance RF shielded semi-anechoic FACT™ 10-4.0 custom low profile chamber with nominal interior dimensions of 20 m (65 ft 6 in) long x 12 m (39 ft 9 in) wide x 8 m (25 ft 5 in) high and 4 meter quiet zone. Designed for testing in accordance with ANSI C63.4, CISPR 16-1-4 and IEC 61000-4-3 standards.
- A 3 meter, high-performance RF shielded semi-anechoic FACT™ 3/25-2.0 standard plus chamber with nominal interior dimensions of 9.75 m (32 ft) long x 6.7 m (22 ft) wide x 5.8 m (19 ft) high and 2 meter quiet zone. Designed for testing in accordance with ANSI C63.4, CISPR 16-1-4 and IEC 61000-4-3 standards.
- An RF shielded enclosure with nominal outside dimensions of 4.2 m (14 ft) long x 3.2 m (10 ft 5 in) wide x 2.6 m (8 ft 5 in) high. Designed for SAR/HAC testing according to IEC 62209 and IEEE 1528 standards.
- Control room provided as a single chamber with nominal interior dimensions of 3.6 m (12 ft) long x 3 m (10 ft) wide x 2.4 m (8 ft) high.
- Constructed of ETS-Lindgren's popular Series 81™ modular RF-shielded panels with 100 dB performance at 200 kHz (magnetic field), 200 kHz to 50 MHz (electric field), 50 MHz to 1 GHz (plane wave) and 10 GHz (microwave). This performance is tested and guaranteed prior to the

installation of system components and absorber.

- Single Knife Edge (SKE) low profile RF shielded doors with limit switch to accommodate immunity interlock.
- Four meter (13 ft 12 in) diameter heavy duty turntable rated for a 6,000 kg (13,200 lbs.) distributed load rating for the 10 meter chamber; a 2 meter (6 ft 6 in) diameter medium duty turntable rated for a 1,000 kg (2,205 lbs) distributed load rating for the 3 meter chamber.
- Raised 457 mm (18 in) nominal reflective ground plane with four 305 mm (12 in) square access hatches provided on the 3 and 10 meter chambers.
- Dielectric floor underlay at 0.3 m (1/8") thick with 6 mil polyethylene vapor barrier and 0.3 m (1/8") vinyl floor tile for the RF shielded enclosure.
- Model 4340-02 CCTV system, complete with PC, display and two cameras.
- Model 2070B-2 antenna tower features a single-piece mast made of high density fiberglass-reinforced polymer square tubing to improve stability during ascent and descent of the antenna.
- Model 2071B bore-sight system with fiber optic signal lines between controller and antenna mast. A centerline air polarization enhances measurement accuracy and test speed. The patented system enables direct antenna aim onto the EUT during scanning.
- Accessories include antennas, power line filters, light fixtures, wave guide air vents, connector panels, and TILE!™ 4.0 fully automated EMC test software

Anechoic Absorber Treatment

Anechoic treatment of the 3 and 10 meter chambers 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 has been documented between predicted performance and actual measured NSA data.

Key absorber features include:

- FerroSorb™ technology: a combination of high-performance FT-1500 ferrite tile panels with FAA-1250 / FAA-600H polyurethane EMC absorber on the walls and ceiling. Floor carts feature FS-400 absorber. Removable floor absorber features EHP-12PCL absorber.
- RF power handling of 200 V/m capability (0.1 Watt/in² power density) continuous wave.
- Fire retardancy is provided in accordance with industry standards NRL Report 8093 (Tests 1, 2 and 3), UL 94 HBF, and others.

Chamber Performance Specifications

The FACT™ 3/25-2.0 and FACT™ 10-4.0 chambers achieved NSA performance of +/- 3.5 dB in the 3 meter and +/- 3.4 dB in the 10 meter chamber. The chambers comply with the following global EMC regulatory standards at the 3 meter and 10 meter distance:

- FCC, Part 15, Normalized Site Attenuation (NSA) test per ANSI C63.4 from 30 MHz to 1 GHz.
- CISPR 16-1-4 Site VSWR (SVSWR) testing from 1 to 18 GHz at 3 meter range.
- Field uniformity calibration per IEC 61000-4-3 from 80 MHz to 6 GHz.

The RF shielded enclosure was tested in accordance with MIL-STD-285/IEEE-299 for 100 dB at 1 GHz plane wave field.

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. The company is a wholly owned subsidiary of ESCO Technologies, a leading supplier of engineered products for growing industrial and commercial markets. ESCO is a New York Stock Exchange listed company (symbol ESE) with headquarters in St. Louis, Missouri. Additional information about ETS-Lindgren is available at www.ets-lindgren.com. Additional information about ESCO and its subsidiaries is available at www.escotechnologies.com.