

## Features

- **26 MHz - 18 GHz Frequency Range**
- **Full Compliance Testing for Radiated Emissions:**
  - ANSI C63.4
  - FCC Parts 15 and 18
  - EN 50147-2
  - CISPR 11 / EN550011
  - CISPR 16 / EN550016
  - CISPR 22 / EN550022
  - VCCI V-3 / 2003.04
  - SAE J551
  - SAE J1113 (Requires Chamber Modification to Accommodate Full Vehicle)
- **Full Compliance Testing for Radiated Immunity:**
  - IEC 61000-4-3 / EN61000-4-3
  - SAE J551
  - SAE J1113
- **Eligible for FCC 3 Meter Class B Facility Filing**
- **Available Performance Options:** (May Require Chamber Modifications)
  - Standard ± 4.0 dB per ANSI C63.4
  - Standard Plus ± 3.5 dB per ANSI C63.4
  - Premium ± 3.0 dB per ANSI C63.4
- **Available as a Turnkey Package:**
  - Chamber, Tower, Turntable, Antennas, Instrumentation and Software



ETS-Lindgren FACT 3™ EMC Semi-Anechoic Chamber

ETS-Lindgren FACT 3™ Chambers offer semi-anechoic radiated emissions (RE) and fully anechoic radiated immunity (RI) compliance test capability for most international EMC compliance regulations.

The chamber's small overall size results from the use of hybrid absorber and ferrite tile, which require less volumetric space than traditional absorbers. FACT 3 chambers will fit in many existing structures, yet are large enough to perform 4 meter antenna scans above the ground plane. When installed with ETS-Lindgren's LoPro™ or EuroPro™ turntables, pit excavations for motor assemblies are eliminated.

ETS-Lindgren FACT 3 chambers are the ideal choice when facility space is limited, but 3 m range testing is required.

## Performance

ETS-Lindgren FACT 3 chambers achieve their broadband performance using a unique arrangement of hybrid and ferrite tile absorber. The design was modeled using the proprietary numerical electromagnetic software responsible for creating chambers that set new standards for anechoic performance.

## Radiated Emissions Testing

ETS-Lindgren's FACT 3 chambers are designed to provide customers with more standardized solutions for different quiet zone diameters and performance options. This will provide users more flexibility to choose which solution works best for their individual needs. The available quiet zone sizes are available up to 2.0 meters in diameter.

ETS-Lindgren's Fact 3 chambers can be used to perform full compliance testing for ANSI C63.4, FCC Parts 15 and 18, EN 50147-2, CISPR 11 / EN 55011, CISPR 16 / EN55016, CISPR 22 / EN55022, VCCI V-3/2003.04, SAE J551 and SAE J1113.

ETS-Lindgren guarantees that the performance of Normalized Site Attenuation testing according to ANSI C63.4, is  $\pm 4.0$  dB for STANDARD chamber,  $\pm 3.5$  dB for STANDARD PLUS chamber and  $\pm 3.0$  dB for PREMIUM chamber over the frequency range of 30 MHz to 1 GHz. The guaranteed performance for frequency range of 1 GHz to 18 GHz is  $\pm 3.0$  dB, regardless which performance option is selected below 1 GHz.

### Radiated Immunity Testing

ETS-Lindgren's FACT 3 chambers can also be used to perform full compliance testing for IEC 61000-4-3/EN61000-4-3, SAE J-551 requirements.

At FACT 3 range lengths, field uniformity of 0 - 6 dB is achieved in the test aperture over the frequency range of 26 MHz to 18 GHz. The test aperture is a vertical plane 1.5 m x 1.5 m at an elevation of 0.8 m to 2.3 m above the ground plane, following the field uniformity test procedure of IEC 61000-4-3.

Additionally, FerroSorb can safely withstand continuous field intensity of up to 200 V/m and intermittent field intensity of up to 500 V/m. This safely exceeds the field intensity requirements of most commercial RI tests.

### Turnkey Systems

ETS-Lindgren is an integrated manufacturer producing such well-known brands as Rantec absorber, RayProof Series 81 and Euroshield shielding and RF doors, Holaday Probes, EMCO antennas, towers, turntables, and test accessories. All of our products are designed to work together for maximum efficiency and performance.

In addition to providing performance, our "Total Solution, Single Source"<sup>™</sup> approach simplifies complex decisions and gives you peace of mind with a single source of responsibility.

### Baseline Configuration

- Design and fabricate RF-shielded enclosure
- Installation of the enclosure and absorber
- One single-leaf, manually operated, RF-shielded personnel door
- One door maintenance kit
- Dielectric vapor barrier and masonite underlayment
- Raised, reflective ground plane, nominally 15.24 cm (6") high
- Access hatches in raised floor, nominally 30.48 cm (12") x 30.48 cm (12")
- Waveguide vents, nominally 30.48 cm (12") x 30.48 cm (12")
- 50/60 Hz power-line filters for lights and EUT
- Connector panels, nominally 15.24 cm (6") x 60.96 cm (24") clear opening
- Pipe penetration with flange nuts and cap
- Fiber optic ST-type feed-through kits for 2175 and 2188
- RF-shielded penetration for air line to MiniMast<sup>™</sup>; compressed air is responsibility of customer
- Threaded brass ground stud
- Corner-mounted light fixtures with floodlights (electrical distribution not included) in all markets
- Shielding effectiveness test

- FerroSorb hybrid absorber
- Light reflective finish on the walls
- Floor absorber on movable carts for an area of the floor for immunity testing
- ETS-Lindgren Model 2188 electrically powered turntable with cable and fiber optic feed-through
- ETS-Lindgren Model 2090 dual device controller
- ETS-Lindgren Model 2175-2 MiniMast<sup>™</sup> electrically powered air polarization boom tower with fiber optic cable and fiber optic feed-through
- Warranty as per ETS-Lindgren's standard warranty for anechoic chambers and associated equipment

### Chamber Acceptance Testing Options

- Field uniformity calibration per IEC 61000-4-3 From 80 MHz to 1 GHz
- Field uniformity calibration per IEC 61000-4-3 From 80 MHz to 2 GHz
- Field uniformity calibration per IEC 61000-4-3 From 1 GHz to 18 GHz
- Field uniformity calibration per IEC 61000-4-3 From 2 GHz to 18 GHz
- NSA Performance Test per ANSIC 63.4/EN 50147-2 From 30 MHz to 1 GHz
- NSA Performance Test per ANSIC 63.4/EN 50147-2 From 1 GHz to 18 GHz
- Free Space Transmission Loss measurement

From 1 GHz to 18 GHz

## Options

- Shielded control room, nominally 4.87 m x 3.05 m x 2.44 m (16 ft x 10 ft x 8 ft)
- Compact-sized shielded control room, nominally 3.66 m x 3.05 m x 2.44 m (12 ft x 10 ft x 8 ft)
- Shielded amplifier room, nominally 2.44 m x 2.44 m x 2.44 m (8 ft x 8 ft x 8 ft)
- 30.48 cm (12") and 45.75 cm (18") raised floors
- Low profile door sill
- Sliding door
- CCTV monitoring system
- Intercom system
- Fire detection and suppression system

- Other door options available
- Anti-static vinyl floor tile
- Additional RF filtering
- Company logo screen printed onto white caps
- Immunity interlock switch
- Electrical distribution
- Heating, ventilation, and air conditioning (HVAC) system
- Seismic structural design calculations and certification
- NSA measurement up to 18 GHz
- Field uniformity measurement up to 18 GHz

## Recommended Test Equipment

### Antennas

#### Immunity Only

- 3109 Biconical
- 3140B BiConiLog™
- 3142C BiConiLog™ with optional endcaps
- 3148 Log Periodic

#### Emissions Only

- 3110B Biconical
- 3142C BiConiLog™
- 3148 Log Periodic

#### Immunity and Emissions

- 3104C Biconical (50 W max.)
- 3142C BiConiLog™ with optional endcaps
- 3148 Log Periodic
- 3117 Double-Ridged Waveguide Horn
- 3149 BiConiLog

### Turntables

- 2188-2.03, Heavy Duty, 2.0 m diameter\*
- 2188-3.03, Heavy Duty, 3.0 m diameter\*

\* Model 2188 turntables require 18" raised floor

### Tripods and Towers

#### Immunity Only

- 4-TR Tripod
- 7-TR Tripod
- 7-TR/POL Tripod

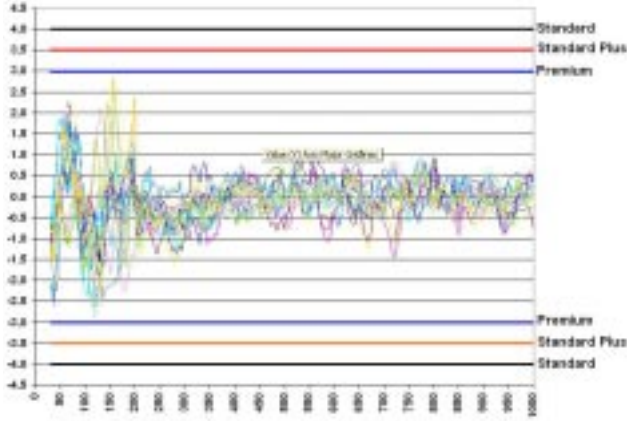
## Specifications

MODEL #	INTERNAL SHIELD <sup>1</sup> (L x W x H)	QUIET ZONE <sup>2</sup>	NSA 30 - 1000 MHz	NSA / TL 1 - 18 GHz	SCAN HEIGHT (m)	FIELD UNIFORMITY 80 - 2000 MHz	FIELD UNIFORMITY 2 - 18 GHz
FACT 3-1.2 Standard	7.62 m x 5.18 m x 5.64 m (25.0' x 17.0' x 19.5')	1.2 m	± 4.0 dB	± 3.0 dB	1 - 4 m	0 - +6.0 dB 75%	0 - +6.0 dB 75%
FACT 3-1.5 Standard Plus	8.03 m x 5.47 m x 5.46 m (26.5' x 18.0' x 18.0')	1.5 m	± 3.5 dB	± 3.0 dB	1 - 4 m	0 - +6.0 dB 75%	0 - +6.0 dB 75%
FACT 3-2.0 Standard Plus	8.53 m x 5.49 m x 5.64 m (28.0' x 18.0' x 18.5')	2.0 m	± 3.5 dB	± 3.0 dB	1 - 4 m	0 - +6.0 dB 75%	0 - +6.0 dB 75%
FACT 3-2.0 Premium	8.53 m x 6.10 m x 5.94 m (28.0' x 20.0' x 19.5')	2.0 m	± 3.0 dB	± 3.0 dB	1 - 4 m	0 - +6.0 dB 75%	0 - +6.0 dB 75%

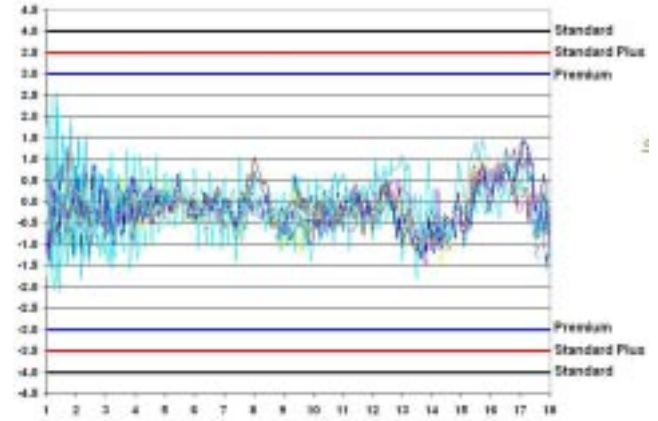
<sup>1</sup> Dimensions shown are typical. NOTE: External dimensions will vary with shielding type and structural support requirements.

<sup>2</sup> Contact ETS-Lindgren for other quiet zone sizes in the three chamber performance options.

Measured NSA Deviation 30 MHz to 1000 MHz



Measured NSA Deviation 1 GHz to 18 GHz



Measured Field Uniformity from 80 MHz to 1000 MHz



Measured Field Uniformity from 80 MHz to 1000 MHz

