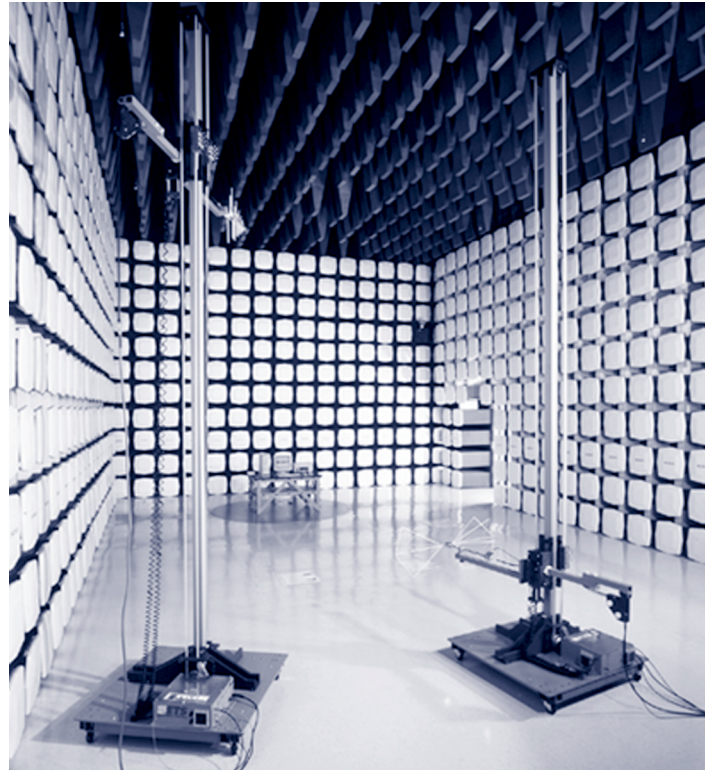


## Features

- **26 MHz - 18 GHz Frequency Range**
- **Full Compliance Testing for Radiated Emissions:**
  - ANSI C63.4-2000 Parts 15 & 18
  - EN 50147-2
  - CISPR 11/ EN55011
  - CISPR 16/ EN55016
  - CISPR 22/ EN55022
  - Bellcore GR-1089
  - SAE J551
- **Full Compliance Testing for Radiated Immunity:**
  - IEC 61000-4-3/EN61000-4-3
  - ENV 50140
  - SAE J-1113
- **Eligible for FCC 3 Meter Class A & B (3 m and 10 m test methods) Facility Filing**
- **Choice of 3 m, 4 m or 6 m Quiet Zone**
- **Available as a Turnkey Package: Chamber, Tower, Turntable, Antennas, Instrumentation and Software**



ETS-Lindgren FACT 10™ EMC semi-anechoic chamber

**ETS-Lindgren FACT 10™ 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 brand hybrid absorber and ferrite tile, which require less volumetric space than traditional absorbers. ETS-Lindgren FACT 10 chambers are large enough to perform 6 meter antenna scans above the ground plane. These chambers can also accommodate large diameter turntables for testing substantial EUTs.

ETS-Lindgren FACT 10 chambers are the perfect choice when full compliance 10 m range testing is required.

## Performance

FACT 10 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 10 chambers can be used to perform full compliance testing for ANSI C63.4-2000 (FCC part 15 & 18), EN 50147-2, CISPR 11/EN55011, CISPR 16/EN55016, CISPR 22/ EN55022, Bellcore GR-1089, and SAE J551 (component and full vehicle) testing requirements.

At 10 m test distance, ETS-Lindgren guarantees a Normalized Site Attenuation (NSA) deviation better than  $\pm 3.5$  dB from theoretical NSA within a cylindrical quiet zone of 3 m, 4 m, and 6 m diameters over the frequency range of 30 MHz to 1 GHz. The quiet zone at 3 m and 5 m test distance is a cylinder up to 2.0 meters in diameter, following the volumetric test procedure of ANSI C63.4-2000.

Anticipating tomorrow's requirements, the FerroSorb™ hybrid and FT series ferrite tile absorbers used guarantee NSA performance of better than  $\pm 4$  dB deviation from theoretical NSA using the test method defined in ANSI C63.4-2000 at the extended frequency range of 1 to 40 GHz.

**USA:**  
Tel +1.512.531.6400  
Fax +1.512.531.6500

**FINLAND:**  
Tel +358.2.838.3300  
Fax +358.2.865.1233

**UK:**  
Tel +44(0)1438-730700  
Fax +44(0)1438-730750

**SINGAPORE:**  
Tel +65.65.36.7078  
Fax +65.65.36.7093

**ONLINE:**  
info@ets-lindgren.com  
www.ets-lindgren.com

### Radiated Immunity Testing

ETS-Lindgren's FACT 10 chambers can also be used to perform full compliance testing for IEC 61000-4-3/EN61000-4-3, ENV 50140 and SAE J-1113 requirements.

At FACT-10™ range lengths, field uniformity of 0, + 6 dB is achieved in the test aperture over the frequency range of 26 MHz to 1 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.

An optional absorber treatment package is available which permits radiated immunity testing at frequencies up to 18 GHz with 0, +/- 6 dB field uniformity, following the test procedure of IEC 61000-4-3.

Additionally, Rantec brand FerroSorb™ can safely withstand continuous field intensity up to 200 V/m and intermittent field intensity 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, Series 81 and Euroshield shielding and RF doors, 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"™ approach simplifies complex decisions and gives you peace of mind with a single source of responsibility.

### Baseline Configuration for 3 m, 4 m, and 6 m Quiet Zones

- **3 m Quiet Zone**  
Design and fabricate RF-shielded enclosure, interior nominal shield-to-shield dimensions of 18.78 m L x 11.56 m W x 8.93 m H (61.6' x 37.8' x 29.3') includes 45.72 cm (18") raised floor
- **4 m Quiet Zone**  
Design and fabricate RF-shielded enclosure, interior nominal shield-to-shield dimensions of 19.42 m L x 12.17 m W x 8.93 m H (63.6' x 39.8' x 27.8') includes 45.72 cm (18") raised floor
- **6 m Quiet Zone**  
Design and fabricate RF-shielded enclosure, interior nominal shield-to-shield dimensions of 21.82 m L x 13.28 m W x 9.10 m H (71.5' x 43.5' x 29.8') includes 60.96 (24") raised floor
- One Euroshield brand RFSD-F-100 automatic, sliding RF-shielded equipment door, 20.32 cm<sup>2</sup> (8' x 8')
- One single-leaf, ETS-Lindgren Series 201 recessed contact mechanism (RCM), manually operated, RF-shielded personnel door, .91 m x 2.13 m (3' x 7') clear opening
- Two door maintenance kits
- **Ground Plane for 3 m and 4 m Quiet Zone**  
Raised, reflective ground plane 45.72 cm (18")
- **Ground Plane for 6 m Quiet Zone**  
Raised, reflective ground plane 60.96 cm (24")
- Dielectric vapor barrier and masonite underlayment
- Four access hatches in raised floor, 30.48 cm (12") x 30.48 cm (12")
- Four waveguide vents, 30.48 cm (12") x 61.0 cm (24")
- Three fiber optic ST-type feed-through kits
- Two 2 x 30 amp, 60 Hz power-line filters for lights and EUT (wiring not included)
- Two connector panels, 15.24 cm (6") x 60.96 cm (24") clear opening
- Four single-line, 100 amp, 60 Hz Power-line RF filters for turntable
- Four "N" type connectors
- One 3.81 cm (1.5") pipe penetration with flange nuts and cap
- One threaded brass ground stud 1.27 cm (.5") diameter x 12.7 cm (5") long
- Two RF-shielded penetration for air line to MiniMast™; compressed air is responsibility of customer
- Twelve high-hat light fixtures with integral waveguide air vents; electrical distribution not included
- Shield test per MIL-STD-285, one frequency test at 1 GHz
- Rantec brand PS-1250 hybrid absorber for all four walls up to the 9th row
- Rantec brand PS-1250 hybrid absorber for full coverage of the ceiling
- Rantec brand FT-100 from the 9th row to ceiling for four walls, with light reflective endcaps
- Rantec brand FT-1500 on the doors
- 16 pieces of Rantec brand FT-100c ferrite tile panels on an area of the floor for radiated immunity testing up to 1 GHz
- 16 pieces Rantec brand EHP-18 CL pyramidal absorber on an area of the floor for radiated immunity testing from 1 GHz to 18 GHz
- Installation of the enclosure and absorber
- Field uniformity calibration per IEC 61000-4-3 from 26 MHz to 1 GHz (optional test from 1 to 18 GHz)
- Normalized site attenuation test per ANSI C63.4-2000 from 30 MHz to 1 GHz; optional test from 1 to 18 GHz and to 40 GHz

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info@ets-lindgren.com  
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- **Turntable for 3 m Quiet Zone:**  
ETS-Lindgren Model 2081-3.03 electrically powered, 3 m turntable with cable and fiber optic feed-through
- **Turntable for 4 m Quiet Zone:**  
ETS-Lindgren Model 2081-4.03 electrically powered, 4 m turntable with cable and fiber optic feed-through
- **Turntable for 6 m Quiet Zone:**  
ETS-Lindgren Model 2081-6.03 electrically powered, 3 m turntable with 20 m cable and fiber optic feed-through
- Two ETS-Lindgren Model 2075-2 MiniMast™ electrically powered air polarization boom tower with 20 m cable and fiber optic feed-through
- Two ETS-Lindgren Model 2090 Positioning Controllers
- One design review at customer's location
- Guaranteed performance and a five-year limited warranty; one-year warranty on doors, filters and moving parts; two-year warranty on optional ETS-Lindgren equipment

## Options

- Shielded control room, 4.87 m x 3.05 m x 2.44 m (16 ft x 10 ft x 8 ft)
- Compact-sized shielded control room, 3.66 m x 3.05 m x 2.44 m (12 ft x 10 ft x 8 ft)
- Shielded amplifier room, 2.44 m x 2.44 m x 2.44 m (8 ft x 8 ft x 8 ft)
- CCTV monitoring system
- Intercom system
- Fire detection and suppression system
- 3.18 mm (1/8") anti-static vinyl floor tile
- Extra filtering
- Company logo screen printed onto white end caps
- Immunity interlock switch
- Electrical distribution
- Heating, ventilation, and air conditioning (HVAC) system
- Seismic structural design calculations and certification
- Normalized Site Attenuation measurement up to 18 GHz and 40 GHz
- Field uniformity measurement up to 18 GHz
- Assistance in preparation of FCC filing paperwork (Class B)

## Recommended Test Equipment

### Antennas

**Immunity Only**  
3109 Biconical  
3140 BiConiLog™  
3148 Log Periodic

**Emissions Only**  
3110B Biconical  
3148 Log Periodic

**Immunity and Emissions**  
3104C Biconical (50 W max.)  
3142B BiConiLog with optional end caps  
3148 Log Periodic

### Turntables

2081-3.03, Heavy Duty, 3.0 m diameter  
2081-4.03, Heavy Duty, 4.0 m diameter  
2081-6.03, Heavy Duty, 6.0 m diameter

### Tripods and Towers

**Immunity Only**  
4-TR Tripod  
7-TR Tripod  
7-TR/POL Tripod

**Immunity and Emissions**  
2075-2 MiniMast Antenna Tower  
2070-1 Antenna Tower  
2070-2 Antenna Tower  
2071-2 Antenna Tower

## Specifications

| MODEL # | ABSORBER TYPE  | FREQ RANGE       | APPLICABLE STANDARDS   | IEC 61000-4-3 FIELD UNIFORMITY   | ANSI C63.4-2000 NORMALIZED SITE ATTENUATION |
|---------|--|------------------|--|--|---|
| FACT10  | <ul style="list-style-type: none"> <li>● PS-1250 on walls up to 9<sup>th</sup> row and ceiling</li> <li>● FT-100 from 9<sup>th</sup> row to ceiling</li> <li>● FT-1500 on doors</li> <li>● FT-100c ferrite tile on area of floor for radiated immunity testing to 1 GHz</li> <li>● EHP-18 CL absorber on floor for radiated immunity testing from 1 GHz to 18 GHz</li> </ul> | 26 MHz to 18 GHz | ANSI C63.4-2000 Parts 15 & 18, EN50147-2<br>CISPR 11/EN55011<br>CISPR 16/EN55016<br>CISPR 22/EN55022<br>Bellcore GR-1089<br>SAE J551<br>IEC 61000-4-3/EN61000-4-3<br>ENV 50140<br>SAE J-1113 | 26 MHz - 18 GHz<br>1.5 m x 1.5 m<br>0 +6 dB<br>75% 16 Points<br>(Higher Frequency Field Uniformity may be limited by the antenna gain pattern) | 30 MHz - 40 GHz                             |

## Nominal Interior Dimensions

### After Absorber Installation

| QUIET ZONE <sup>1</sup> | LENGTH            | WIDTH             | HEIGHT <sup>2</sup> | RAISED FLOOR <sup>2</sup> |
|-------------------------|-------------------|-------------------|---------------------|---------------------------|
| 3 m                     | 16.3 m<br>53.4 ft | 9.0 m<br>29.6 ft  | 7.2 m<br>23.7 ft    | .45 m<br>1.5 ft           |
| 4 m                     | 16.9 m<br>55.4 ft | 9.6 m<br>31.6 ft  | 7.2 m<br>23.7 ft    | .45 m<br>1.5 ft           |
| 6 m                     | 19.3 m<br>63.3 ft | 10.8 m<br>35.3 ft | 7.2 m<br>23.7 ft    | 0.6 m<br>2.0 ft           |

<sup>1</sup> At 10 m range length

<sup>2</sup> Raised floor height has to be added to the above height to obtain shield-to-shield enclosure dimension

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