ETS-Lindgren FACT 5™ Chambers offer the ability to perform radiated emissions testing at a 5 meter distance. While not required by any current standard, measurements made at a 5 meter distance have better correlation to those obtained at a 10 meter distance. While permitting 5 meter testing, these chambers preserve the ability to perform full compliance testing of applicable 3 meter standards.

The chamber’s small overall size (only slightly larger than a FACT 3™ chamber) results from the use of Rantec brand hybrid absorber and ferrite tile, which require less volumetric space than traditional absorbers. ETS-Lindgren FACT 5 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.

Performance
ETS-Lindgren FACT 5 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 5 chambers can be used to perform full compliance 5 meter testing for ANSI C63.4-2000 (FCC part 15 & 18), EN50147-2, CISPR 11/EN55011, CISPR 16/EN55016, CISPR 22/EN55022, VCCI V-3/97.04 (1997), and SAE J551 requirements.

At 3 and 5 meter range lengths, ETS-Lindgren guarantees a Normalized Site Attenuation (NSA) better than of ± 4.0 dB deviation from theoretical NSA within the quiet zone, over the frequency range of 30 MHz to 1 GHz.
The quiet zone at the 3 and 5 meter test distance is a cylinder up to 2.0 meter in diameter, following the volumetric test procedure of ANSI C63.4-2000.

The FerroSorb™ hybrid and FT series ferrite tile absorbers used in this chamber also guarantee NSA performance of better than ± 4.0 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.

**Radiated Immunity Testing**

ETS-Lindgren’s FACT 5 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 3 meter 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 meter to 2.3 m above the ground plane, following the test procedure of IEC 61000-4-3.

Anticipating tomorrow’s requirements, 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 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.

**Baseline Configurations for 2 m and 3 m Quiet Zones**

- **2 m Quiet Zone:** Design and fabricate RF-shielded enclosure, interior nominal shield-to-shield dimensions of 10.36 m x 6.09 m x 5.94 m (34’ L x 20’ W x 19.5’ H) includes 15.24 cm (6”) raised floor
- **3 m Quiet Zone:** Design and fabricate RF-shielded enclosure, interior nominal shield-to-shield dimensions of 11.58 m x 7.31 m x 6.09 m (38’ L x 24’ W x 20’ H) includes 30 cm (12”) raised floor
- One single-leaf, ETS-Lindgren Series 201, recessed contact mechanism (RCM), manually operated, RF-shielded door, 1.22 m x 2.13 m (4’ x 7’) clear opening
- One door maintenance kit
- Dielectric vapor barrier and masonite underlayment
- Raised, reflective ground plane, 15.24 cm (6”) or 30.84 cm (12”) high, depending on quiet zone size selected (2 m or 3 m)
- Four access hatches in raised floor, 30 cm x 30 cm (12” x 12”)
- Six high-hat light fixtures with integral waveguide air vents (electrical distribution not included) and two flood lights at the turntable area
- Six 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
- Three “N” type connectors
- One 3.81 mm (1.5”) pipe penetration with flange nuts and cap
- Two fiber optic ST-type feed-through kits
- One RF-shielded penetration for air line to MiniMast™ (compressed air source not included)
- One threaded brass ground stud 1.27 cm (.5”) diameter x 12.7 cm (5”) long
- Shield test per MIL-STD-285, one frequency test at 1 GHz
- Rantec brand PS-600 on the chamber ceiling and two side-walls
- Rantec brand PS-400 or PS-600 on the two end-walls
- Light reflective covers for PS-600 absorber on the walls
- Light reflective covers over bare ferrite tile
- 16 pieces Rantec brand FT-100c ferrite tile panels for an area of the floor for radiated immunity testing up to 1 GHz
- 16 pieces Rantec brand EHP-18PCL 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 testing to 18 GHz)
**Recommended Test Equipment**

**Antennas**
- Immunity Only
  - 3109 Biconical
  - 3148 Log Periodic
  - 3142B BiConiLog™ with optional endcaps
  - 3140 BiConiLog™
- Emissions Only
  - 3110B Biconical
  - 3124 BiCal™ Precision Calculable Biconical
  - 3142B BiConiLog™
  - 3148 Log Periodic
- Immunity and Emissions
  - 3104C Biconical (50 W max.)
  - 3142B BiConiLog™ with optional endcaps
  - 3148 Log Periodic

**Turntables**
- 2081-2.03, Heavy Duty, 2.0 m diameter*
- 2081-3.03, Heavy Duty, 3.0 m diameter*
- 2088-2.03, EuroPro, 2.0 m diameter

**Tripods and Towers**
- Immunity Only
  - 4-TR Tripod
  - 7-TR Tripod
  - 7-TR/POL Tripod
- Immunity and Emissions
  - 2070-1 Antenna Tower
  - 2070-2 Antenna Tower
  - 2071-2 Antenna Tower

**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)
- Low profile door sill for Series 201 door
- Fire detection and suppression system
- Electrical distribution
- Heating, ventilating, and air conditioning (HVAC) system
- Seismic structural design calculations and certification
- Radiated Immunity testing 1 GHz to 18 GHz
- NSA testing to 1 GHz to 40 GHz
- CCTV monitoring system
- Intercom system
- Fire detection and suppression system
- Low profile door sill for Series 201 door
- Other door options available
- Anti-static vinyl floor tile
- Extra filtering
- Company logo screen printed on white caps
- Immunity interlock switch
- Assistance in preparation of FCC filing paperwork (class B)

**Turntable for 2 m Quiet Zone:**
ETS-Lindgren Model 2088 electrically powered, 2 m turntable with cable and fiber optic feed-through

**Turntable for 3 m Quiet Zone:**
ETS-Lindgren Model 2087-3.03 electrically powered, 3 m turntable with cable and fiber optic feed-through

**ETS-Lindgren Model 2090 dual device controller**

**ETS-Lindgren Model 2075-2 MiniMast™** electrically powered air polarization boom tower with 10 m cable and fiber optic feed-through.

**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.**
### Specifications for 5 m Chamber with 2 m Quiet Zone

<table>
<thead>
<tr>
<th>MODEL #</th>
<th>ABSORBER TYPE</th>
<th>FREQ RANGE</th>
<th>APPLICABLE STANDARDS</th>
<th>INTERNAL WORKING AREA</th>
<th>SHIELD ROOM INNER DIM</th>
<th>OVERALL STRUCTURE DIM</th>
<th>IEC 61000-4-3 FIELD UNIFORMITY</th>
<th>ANSI C63.4 NORMALIZED SITE ATTENUATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 m Quiet Zone</td>
<td>PS-600 on two side-walls and ceiling</td>
<td>26 MHz to 40 GHz</td>
<td>ANSI C63.4-2000, U.S. FCC</td>
<td>(L) 9.6 m</td>
<td>10.4 m</td>
<td>11.10 m</td>
<td>26 MHz - 18 GHz</td>
<td>30 MHz - 40 GHz</td>
</tr>
<tr>
<td></td>
<td>PS-400 on two end-walls</td>
<td></td>
<td>EN50147-2 parts 15&amp;18</td>
<td>31.4 ft</td>
<td>34.0 ft</td>
<td>36.42 ft</td>
<td>1.5 m x 1.5 m</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>VCCI V-3/97.04 (1997)</td>
<td>(W) 4.9 m</td>
<td>6.1 m</td>
<td>6.68 m</td>
<td>0 +6 dB</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CISPR 11/EN55011</td>
<td>16.1 ft</td>
<td>20.0 ft</td>
<td>21.92 ft</td>
<td>75% 16 Points</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CISPR 16/EN55016</td>
<td>(H) 5.3 m</td>
<td>5.9 m</td>
<td>6.41 m</td>
<td>(Field Uniformity)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CISPR 22/EN55022</td>
<td>17.5 ft</td>
<td>19.5 ft</td>
<td>21.03 ft</td>
<td>above 18 GHz</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IEC 61000-4-3/EN61000-4-3</td>
<td>Includes</td>
<td>Includes</td>
<td>may be limited</td>
<td>by the antenna</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bell Core GR-1089</td>
<td>15.24 cm (6&quot;) raised floor</td>
<td>15.24 cm (6&quot;) raised floor</td>
<td>gain pattern</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Specifications for 5 m Chamber with 3 m Quiet Zone

<table>
<thead>
<tr>
<th>MODEL #</th>
<th>ABSORBER TYPE</th>
<th>FREQ RANGE</th>
<th>APPLICABLE STANDARDS</th>
<th>INTERNAL WORKING AREA</th>
<th>SHIELD ROOM INNER DIM</th>
<th>OVERALL STRUCTURE DIM</th>
<th>IEC 61000-4-3 FIELD UNIFORMITY</th>
<th>ANSI C63.4 NORMALIZED SITE ATTENUATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 m Quiet Zone</td>
<td>PS-600 on two side-walls and ceiling</td>
<td>26 MHz to 40 GHz</td>
<td>ANSI C63.4-2000, U.S. FCC</td>
<td>(L) 10.8 m</td>
<td>11.6 m</td>
<td>12.2 m</td>
<td>26 MHz - 18 GHz</td>
<td>30 MHz - 40 GHz</td>
</tr>
<tr>
<td></td>
<td>PS-400 on two end-walls</td>
<td></td>
<td>EN50147-2 parts 15&amp;18</td>
<td>35.4 ft</td>
<td>38.0 ft</td>
<td>40.42 ft</td>
<td>1.5 m x 1.5 m</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>VCCI V-3/97.04 (1997)</td>
<td>(W) 6.1 m</td>
<td>7.3 m</td>
<td>7.90 m</td>
<td>0 +6 dB</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CISPR 11/EN55011</td>
<td>20.1 ft</td>
<td>24.0 ft</td>
<td>25.92 ft</td>
<td>75% 16 Points</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CISPR 16/EN55016</td>
<td>(H) 5.5 m</td>
<td>6.1 m</td>
<td>6.56 m</td>
<td>(Field Uniformity)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CISPR 22/EN55022</td>
<td>18.0 ft</td>
<td>20.0 ft</td>
<td>21.53 ft</td>
<td>above 18 GHz</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IEC 61000-4-3/EN61000-4-3</td>
<td>Includes</td>
<td>Includes</td>
<td>may be limited</td>
<td>by the antenna</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bell Core GR-1089</td>
<td>30.5 cm (12&quot;) raised floor</td>
<td>30.5 cm (12&quot;) raised floor</td>
<td>gain pattern</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 In critical area around EUT.