EMC Components  Anechoic Chambers

RADIO WAVE ANECHOIC CHAMBERS FOR EMS TESTING AND EMC COMPLIANCE

- Created as a series of anechoic chambers that feature compact, highly efficient wave absorption functions, which utilize the world’s finest wave absorbing ferrite materials and extremely durable styrene foam. This series is perfectly equipped for use in EMI measurement and immunity testing of all types of machinery and equipment.
- Feature specifications for standardization that meet completely with the world’s EMC-related standards stipulated by EN, FCC, VCCI, CISPR, ISO and so on and have perfectly designed space-saving measurement features.
- We have established parts design and usage that secure easy of use and effectiveness as well as designs that work perfectly with equipment to be tested and thorough supervision-of-construction work systems.
- We offer a wide-range of actual construction achievements that have been performed at their maximum level to meet with the demanding and diversified needs of public institutions such as UL and other leading companies. TDK EMC technical service is continuing to be developed in charge of accumulating know-how for utilization in radio wave anechoic chambers.

RADIO WAVE ANECHOIC CHAMBERS USED FOR ANTENNA DESIGN AND EVALUATION

- Make use of highly durable wave absorbers that utilize of carbon mixed polyethylene foam. Brings about the realization of an unsurpassed electromagnetic environment.
- Through the employment of originally developed absorbers which maximize outstanding absorption characteristics, it is possible to meet a wide range of measurement needs spanning from FM bands to microwaves and extremely high frequency waves (76MHz to 100GHz) such as those used in canted incidents, wide-bands corresponding to extremely high-frequency waves, low-frequency to high-frequency wide-band-supported complex types (ferrite tile and styrene foam) and so on.
- Features a vast collection of achievements in dealing in a variety of ways with the highly specific and reliable (characteristic stability/longevity) needs of government offices and laboratories of the Defense Agency and the Ministry of Posts and Telecommunications and many others.
- Able to meet realize a lowering of costs and the most appropriate designs in dealing with the diversified needs of every sector of daily life including evaluating mobile communication equipment and automobile glass antennas.
- The development and provision of wave absorption panels for eliminating TV ghost images and evaluation systems.
- The development of absorbers and evaluation systems for preventing false antenna images employed by the Defense Agency and the communication industry.

MULTI-FUNCTIONAL TYPES OF RADIO WAVE ANECHOIC CHAMBERS

We have received high praise and earned vast achievements with our all-encompassing approach to the design and construction of unique radio wave anechoic chambers such as radio wave anechoic chambers for the joint use of EMC countermeasure/evaluation and antenna design/evaluation and anechoic chambers for the joint use of sound wave testing and radio wave testing.

RADIO WAVE ABSORBERS

- IP-090BLA (Anechoic chambers for EMS testing and EMC compliance)
- IP-045C (Anechoic chambers for EMS testing and EMC compliance)
- IS-030 (Anechoic chambers for antenna design and evaluation)
- IS-S080 (Floor type electromagnetic field immunity measurement)

• All specifications are subject to change without notice.
• It may not be allowed to export these absorbers due to Export Control regulations.
TDK RADIO WAVE ANECHOIC CHAMBER LINE-UP

Principle usage
For EMC countermeasure and evaluation
- Household appliances, OAs and general use
- Heavy machineries
- Automobiles (Floor equivalent to the ground)

Communication field
For antenna evaluation and design
- Mobile equipment
  - For telecommunication equipment
- For radar usage
  - General use
  - High power
- For automobiles

For joint EMC and antenna evaluation
- 10m-method standards
  - Large-scale
  - 26MHz to 40GHz
- 3m-method standards
  - Middle-scale: 15m
  - 150MHz to 100GHz

For testing sound waves and radio waves
- 10m-method standards
  - 26MHz to 40GHz
- 3m-method standards
  - 26MHz to 40GHz
- Maintenance

Maintenance service
- Substitute application for public institutions (FCC, VCCI, etc.)
- EMS testing
  - Compliance systems

Applicable parts
- Frequency band
- Radio wave absorber

- 10m-method standards
  - General use
  - 26MHz to 40GHz
  - IP-090BLA
  - IP-130BL

- 10m-method standards
  - For heavy machinery

- 6m-method
  - General use
  - 26MHz to 40GHz
  - IP-090BLA
  - IP-045C

- 3m-method standards
  - High efficiency type
  - 26MHz to 40GHz
  - IB-015 double-layer
  - IP-045C Partial paste
  - IS series
  - Length: 5cm to 100cm

- 3m-method
  - Standard type
  - 26MHz to 1GHz
  - IB-015 double-layer
  - IP-045C Partial paste
  - IS series
  - Length: 5cm to 100cm

- 3m-method
  - Low-priced type
  - 26MHz to 1GHz
  - IB-015 double-layer
  - IP-045C Partial paste
  - IS series
  - Length: 5cm to 100cm

- Compact type
  - Simple type
  - 26MHz to 1GHz (18GHz)

- Large-scale: 25m
- Middle-scale: 15m
- Compact: 10m
- Anechoic box for inspections

- 10m-method
  - Large-scale
  - 26MHz to 40GHz
  - IP-130BX

- 3m-method
  - 3m-method
  - Standard type
  - 26MHz to 1GHz
  - IS series
  - Length: 5cm to 100cm
  - IP-175B
  - IP-130BX
  - IP-100BX
  - ICT-030,012 High power

- Adapter included
  - IP material series
  - IP-090BLA

* Since the correlation between 10m-method radio wave anechoic chambers and 6m-method radio wave anechoic chambers (general use) when compared with 3m-method products has been improved, it is possible to control margins when performing measurements.

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### 10/3m-Method

<table>
<thead>
<tr>
<th>Type</th>
<th>10m Standard</th>
<th>10m High performance</th>
<th>3m Standard</th>
<th>3m High performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turntable diameter</td>
<td>ø3m</td>
<td>ø5m</td>
<td>ø1.5m</td>
<td>ø1.5m</td>
</tr>
<tr>
<td>Product name of wave absorber</td>
<td>IP-090BLA</td>
<td>IP-130BL</td>
<td>IP-045C(Main reflection surface)</td>
<td>IP-090BLA</td>
</tr>
<tr>
<td>Frequency band</td>
<td>30MHz to 18GHz</td>
<td>30MHz to 18GHz</td>
<td>30MHz to 18GHz</td>
<td>30MHz to 18GHz</td>
</tr>
<tr>
<td>Site attenuation characteristics</td>
<td>±3dB</td>
<td>±2.5dB</td>
<td>±3.5dB</td>
<td>±3dB</td>
</tr>
<tr>
<td>Shield surface dimensions</td>
<td>18×14×8.6m</td>
<td>23×15×9m</td>
<td>9×6×5.7m</td>
<td>9×7.5×6.2m</td>
</tr>
<tr>
<td>Interior effective dimensions</td>
<td>14.8×10.8×7.6m</td>
<td>19.2×11.2×7.3m</td>
<td>8.5×5.5×2m</td>
<td>7×5.5×5.2m</td>
</tr>
</tbody>
</table>

### Compact Type

<table>
<thead>
<tr>
<th>Type</th>
<th>CAC-S1(Standard)</th>
<th>CAC-S2(Standard)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name of wave absorber</td>
<td>Ceiling, wall: X-131(double-layer)</td>
<td>IB-015(t:6.5mm, double-layer)</td>
</tr>
<tr>
<td></td>
<td>Floor: X-131(double-layer)</td>
<td>Metallic surface+X-131(double-layer panel)</td>
</tr>
<tr>
<td>Site attenuation characteristics</td>
<td>±3dB(Including correction values)</td>
<td>±6dB/Open site comparisons</td>
</tr>
<tr>
<td></td>
<td>[30MHz to 1GHz, horizontal-vertical]</td>
<td>[30 to 100MHz, horizontal]</td>
</tr>
<tr>
<td>Electric field characteristics</td>
<td>80MHz(26MHz) to 1GHz to 1GHz</td>
<td>0 to 6dB to 6dB</td>
</tr>
<tr>
<td>Shield surface dimensions</td>
<td>7×3×3m</td>
<td>7×3×3m</td>
</tr>
</tbody>
</table>

### Type CAC-S3

| Product name of wave absorber | Ceiling, wall: IB-015(t:6.5mm, double-layer) +IP-045C(Main reflection surface) |
| Floor: Metallic surface+X-131(double-layer panel) |
| Site attenuation characteristics | ±6dB/Open site comparisons |
| [30 to 100MHz, horizontal] |
| [100MHz to 18GHz, horizontal-vertical] |
| Electric field characteristics | 80MHz(26MHz) to 1GHz to 1GHz | 0 to 6dB to 6dB |
| Shield surface dimensions | 7×3×3m | 7×3×3m |

### Type CAC-S6

| Product name of wave absorber | Ceiling, wall: IB-015(t:6.5mm, double-layer) |
| Floor: Metallic surface+X-131(double-layer panel) |
| Site attenuation characteristics | ±4dB/Open site comparisons |
| [30MHz to 18GHz, horizontal-vertical] |
| Electric field characteristics | 80MHz(26MHz) to 1GHz to 1GHz | 0 to 6dB to 6dB |
| Shield surface dimensions | 7×4×3m | 7×4×3m |
**Two-layer wideband wave absorbers**

**Principle types of application**
- 3m-method low cost types/compact portable types

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**Unit type composite wave absorber IP-090BLA**

**Principle types of application**
- 3m-method, 10m-method, radar evaluation, all types of antenna evaluation, mid and large scale mobile radios

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### Principle types of application
- 3m-method low cost types/compact portable types

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### Unit types of application
- 3m-method, 10m-method, radar evaluation, all types of antenna evaluation, mid and large scale mobile radios

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### Two-layer wideband wave absorber panel
- a. Color steel plates
- b. Basic material
- c. Coated steel plates (shield)
- d. Dielectric boards
- e. Ferrite tile wave absorbers
- f. Spraying resin coating finish

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### Unit type composite wave absorber IP-090BLA
- a. Shielding panel (welding method)
- b. Ferrite tile wave absorber
- c. Styrene foam substrate wave absorber/base section (600x600mm)
- d. Styrene foam substrate wave absorber/taper part
- e. White styrene foam end cap (515x515mm)

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### Base section + taper part + end cap overall height: 950mm

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This is a newly developed unit configuration composite wave absorber that has had its electromagnetic wave absorption characteristics fortified over a wide band range and has been made even more compact/ lightweight and low in cost. In addition to 3m-method and 10m-method radio wave anechoic chambers, we have realized construction capacities for large wave anechoic chambers used for special applications and all other types of wave anechoic chambers that are much more compact than of those in the past.

Further, we have established superior wave absorption characteristics, wide ranging weight reduction and space saving/cost reduction abilities for storage and shipping procedures with the utilization of original dielectric loss absorption designs that combine base sections with plate taper parts. Moreover, we have made it possible to reduce the time period of construction (10m-method) by 38% over conventional types by improving design accuracy for construction sites and by elevating construction efficiency rates.

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SITE ATTENUATION CHARACTERISTICS OF 10m-METHOD ANECHOIC CHAMBER

Type 10m Semi Anechoic Chamber  
Absorber : IP-130BL  
Log Periodic : Schwarzbeck UHL9107

Polarization : Horizontal  
Tx Antenna Height : 1m  
Antenna Distance : 10m  
Quiet Zone : 2.5m Radius

Examples of capability specifications

30MHz to 1GHz  
Within ±2.5dB of the standardization theoretical site attenuation (NSA) characteristics stated in the ANSI C63.4

Within ±2.5dB of the standardization theoretical site attenuation (NSA) characteristics stated in the VCCI V-3/97.04

1 to 40GHz  
Within ±2.5dB of attenuation standard values of the FCC filing open site

Reproducibility  
Within ±0.5dB of reproducibility during measurement of site attenuation with the same conditions

Center Front Back Right Left

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Deviation (dB)</th>
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<tbody>
<tr>
<td>30</td>
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<tr>
<td>50</td>
<td>-2</td>
</tr>
<tr>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>300</td>
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<tr>
<td>500</td>
<td>4</td>
</tr>
<tr>
<td>1000</td>
<td>6</td>
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<th>Site Attenuation (dB)</th>
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