

EMC Components

Anechoic Chambers Compact

CAC-S Series

As per conditions specified in IEC-801-3, 2nd Edition (Dec. of 1990) to ensure the reliability and reproducibility of EMI test results, it has been proposed that the electromagnetic field deviation at points within a vertical plane passing through the equipment being tested should be kept $\leq 6\text{dB}$.

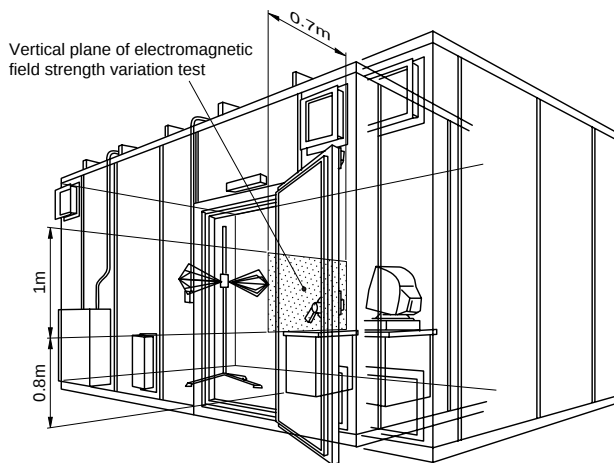
In response to this proposed specification, TDK has developed the CAC-S compact radio wave anechoic chamber which features wall and floor surfaces equipped with a new type of double-layer absorber that absorbs radio waves across a wide frequency range. Has achieved the IEC's proposed 6dB value over the 26 to 1000MHz frequency range without ambient electromagnetic environment correction.

Troublesome wave reflections from the floor surface are greatly suppressed within the CAS-S across a wide frequency range so that the maximum electromagnetic field intensity of emission from equipment under test can be quickly measured while keeping antenna locations fixed.

FEATURES

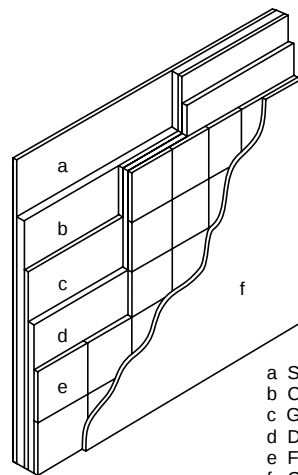
- Attains an outstanding degree of electromagnetic shielding ($>100\text{dB}$ at 30 to 300MHz and $>110\text{dB}$ at 1000MHz) so that testing can be carried out at the level of the most stringent IEC regulation (10V/m) or (of course) at higher levels.
- Following data conversion for the standard measurement locations, the $\pm 3\text{dB}$ level of the attenuation site-to-site deviation chart is almost completely clear.
- Using fixed antennas, deviations in the actual measurements from those measurement values at standard locations are extremely stable across a wide frequency range. By the use of conversion charts of such measurement deviations, radio noise determinations are carried out according to noise regulations as per the standards of each country.

SCHEMATIC



CONSTRUCTION DETAILS AND DIMENSIONS

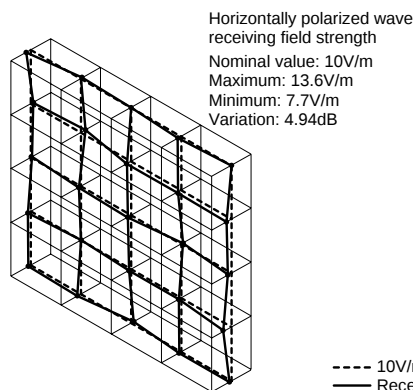
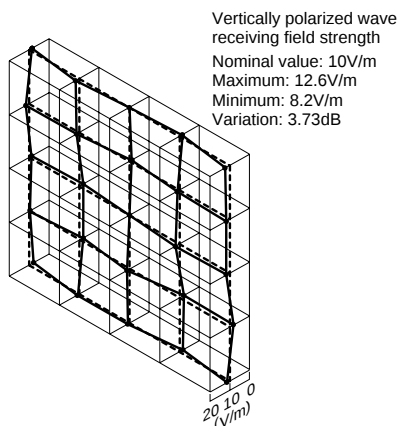
Construction: Composite shield panel, prefabrication style
 Dimensions between shielded surfaces: L7×W3×H3m
 Minimum usable internal dimensions: L6.9×W2.9×H2.9m
 Maximum external dimensions: L7.3×W3.3×H3.5m
 Floor load: $2.65 \times 10^3 \text{ Pa}$



- a Steel plate
- b Core board
- c Galvanized steel plate
- d Dielectric
- e Ferrite
- f Oil-based paint coating
- d+e Double-layered radio wave absorber

ELECTRIC FIELD DISTRIBUTION CHARACTERISTICS IN THE VERTICAL PLANE OF THE FRONT SURFACE OF THE SAMPLE EQUIPMENT

Measuring frequency: 900MHz Measuring distance: 3m



--- 10V/m level
 — Receiving field strength

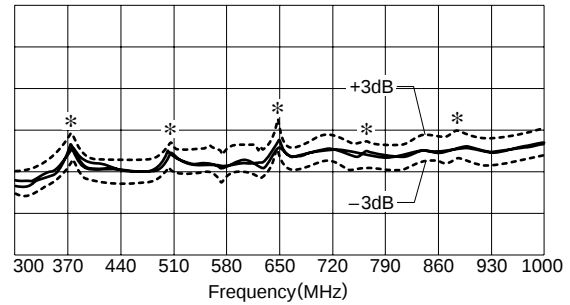
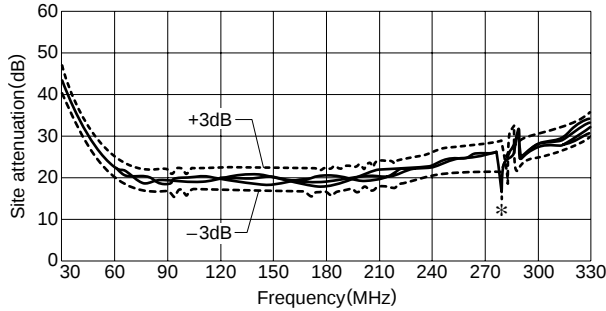
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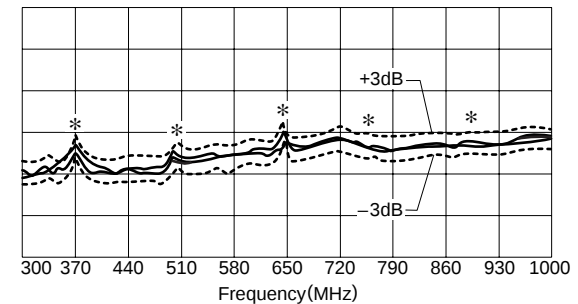
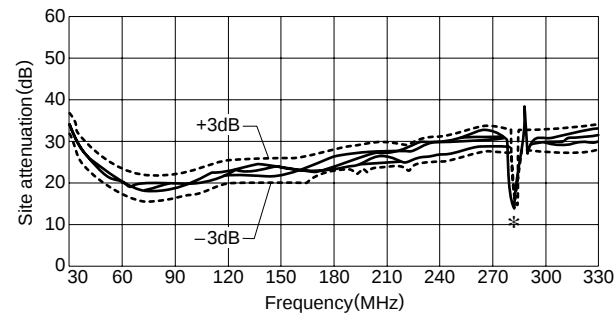
CAC-S Series

SITE ATTENUATION CHARACTERISTICS

HORIZONTAL(CALIBRATED)



VERTICAL(CALIBRATED)

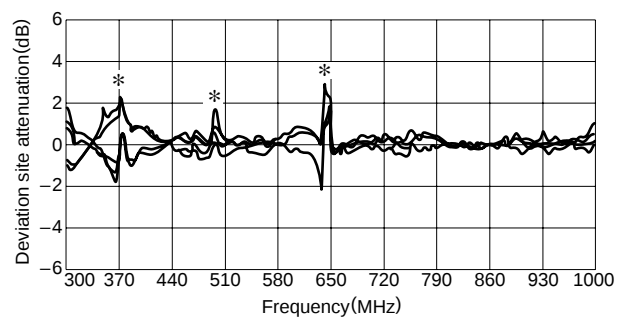
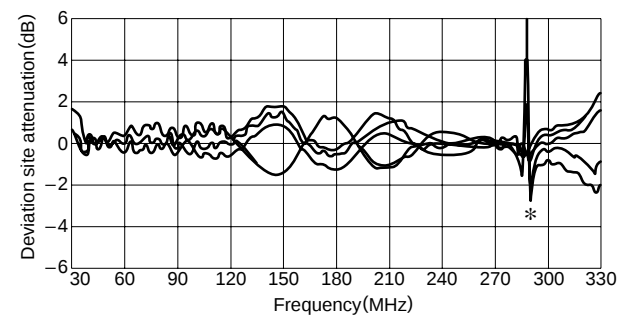


The broken lines represent the ± 3 dB limits with regard to the measurements taken at the open field test site of the TDK Chikumagawa Technical Center (FCC field).

The peaks(*) in the curves are due to antenna characteristics, not anechoic chamber characteristics.

DEVIATION VALUES AGAINST STANDARD MEASUREMENT SITE ATTENUATION

HORIZONTAL (CALIBRATED)

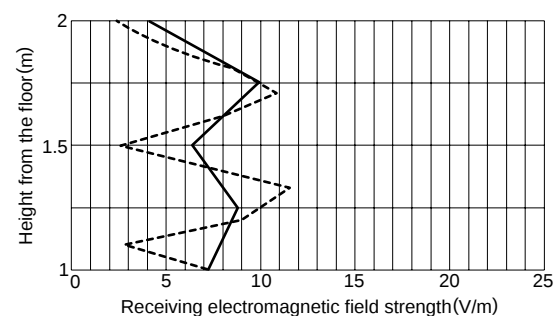


ELECTRIC FIELD DISTRIBUTION CHARACTERISTICS

AN EXAMPLE OF GENERAL COMPACT RADIO WAVE ANECHOIC CHAMBER

Receiving electromagnetic field strength variation on a vertical line along the middle of the front of the device to be tested.

Measurement frequency: 900MHz Horizontally polarized wave



- Example of variation for a compact radio wave anechoic chamber with a metal floor.
- Example of variation for a compact radio wave anechoic chamber equipped with ordinary absorption materials on the floor.

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ELECTRICAL CHARACTERISTICS AND SUMMARY OF STANDARD EQUIPMENT

Please refer to technical information files for details concerning electrical characteristics and a summary of standard equipment.

SITE ATTENUATION (EMI MEASUREMENT AMBIENT CHARACTERISTICS)

Measurement frequency range: 30 to 10000MHz

Characteristic values: site attenuation characteristic value for standard open site.* Less than 3dB deviation after correction.

Frequency sweep method / Distance between transmitting and receiving antennas: 3m / 30 to 300MHz : bi-conical antenna / 30 to 300MHz : log-periodic antenna

Transmitting antenna height: 1m (centered upon turntable 0.5m to the right, left, front, and rear) / Receiving antenna height: 1.5m, fixed /

* Uses the site attenuation values cited in the FCC filing for TDK's Chikumagawa Technical Center site.

RECEIVED ELECTROMAGNETIC FIELD INTENSITY DEVIATION VALUE

(ELECTROMAGNETIC FIELD IMMUNITY MEASUREMENT AMBIENT CHARACTERISTICS)

Measurement frequency range: 26 to 1000MHz (as specified in IEC-801-3, 2nd Edition, Dec. of 1990 pub.)

Receiving antenna electromagnetic field intensity deviation value: within 6dB for the measurement region described below

Measurement region: 3m from transmitting antennas and

Transmitting antenna - receiving antenna probe distance: 3m / 30 to 300MHz: bi-conical antenna / 300 to 1000MHz: log-periodic antenna /

Transmitting antenna height: 1.25m, fixed

ELECTROMAGNETIC FIELD SHIELDING

150kHz $\leq f < 30$ MHz : ≥ 70 dB (magnetic field), ≥ 100 dB (electric field) / 30MHz $\leq f < 300$ MHz : ≥ 100 dB / 300MHz $\leq f \leq 1000$ MHz : ≥ 110 dB

POWER LINE SHIELDING

10kHz $\leq f < 50$ kHz : ≥ 60 / 50kHz $\leq f < 150$ kHz : ≥ 80 dB / 150kHz $\leq f \leq 1000$ MHz : ≥ 100 dB

Electromagnetic field shield characteristics are determined for strong electromagnetic emission testing, 10 V/m (IEC Pub. 801-3, class C).

STANDARD EQUIPMENT

Electromagnetic field shield equipment	1 shield door (1.2m effective width $\times$ 2m effective height) /
	1 air supply and exhaust vent (with attached honeycomb electromagnetic filter)
	1 signal line panel (including connectors) / 1 filter box (includes power line filter)
Electrical equipment	4 chamber interior lights (100W white incandescent) / 1 chamber interior emergency light (40W battery powered) /
	1 chamber usage indicator (used outside chamber, FL 10W)
	2 general electrical power outlets (50Hz, 15A, 3-prong, 2sockets) /
	2 power outlets for equipment under test (one 50Hz, 100V, 15A, 3-prong, 2sockets / one 50Hz, 200V, 15A, 3-prong, 2sockets)
Safety / Communication equipment	1 insulation transformer (primary: 50Hz, 200V, 15kVA; secondary: 5 lines for 100V-system, 2 lines for 200V-system)
	2 Fire Alarms (heat sensing) / 1 pair of intercoms (2wire type) / 8 coaxial connectors for signal line panel use

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