Siemens Matsushita Components

MEDIUM Compact Diagnostic Chamber™

Purpose

The MEDIUM Compact Diagnostic Chamber™ (M-CDC™) is a newly developed EMC test facility with the focus on susceptibility testing.

The M-CDC combines conformity with an enhanced frequency range up to 3 GHz.

Consisting of modules, the installed chamber can be dismantled and reerected elsewhere. Upgrading to a 3 m chamber is also possible.

Performance of M-CDC™ at a glance:

Susceptibility to radiated interference

- Compliant to IEC 1000-4-3: 1995 and EN 61000-4-3: 1996.
  Uniform plane: 1.5 × 1.5 m (l × h) at 3 m distance.
  Frequency range: 26 MHz to 2 GHz

Radiated interference

- Precompliant from 30 MHz to 2 GHz at 3 m distance.

Conducted measurements

- Conducted emission and immunity measurements can be carried out.

Optionally an 18 GHz upgrade package is available.

Immunity

The M-CDC features superior performance for radiated immunity testing. The highest accuracy is achieved according to IEC 1000-4-3: 1995 and EN 61000-4-3: 1996 in a 1.5 × 1.5 m uniform plane at 3 m test distance.

The M-CDC is compliant with the above standards. In addition, it performs perfectly up to 3 GHz.

Emission

Radiated emission tests for development and quality control at a 3 m distance can be perfectly covered by the M-CDC. With its fully anechoic layout the time-critical height scan of the receive antenna is no longer needed.

Typical calibration data of the transmission loss measurement over frequency range can be seen in **Fig. 3** on next page.

Radiated immunity

The accuracy achieved to IEC 1000-4-3:1995 and EN 61000-4-3: 1996 in a 1.5 × 1.5 m at a 3 m test distance complies with these standards.
As required, 75 % of the 16 points are within the 0 ... + 6 dB accuracy range.

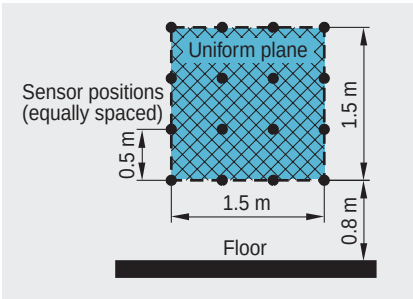


Fig. 1: Uniform plane 1.5 × 1.5 m to IEC 1000-4-3: 1995 and EN 61000-4-3: 1996

Typical calibration data of the uniformity over frequency range can be seen in **Fig. 2**.

Not included is the test system, e.g. amplifier, antenna, generator and computer.

Technical description:

- Chamber dimensions: 7.3 × 3.1 × 3.0 m (l × w × h) approx.
- Usable space inside: 6.7 × 2.8 × 2.7 m (l × w × h) approx. This is reduced to 6.4 × 2.2 × 2.4 m (l × w × h) approx. between the partially hybrid absorbers.
- Fully galvanized modular shielding system of 2 mm steel.
  Electromagnetic performance of shielding compliant with EN 50147-1 and NSA 65-6:

Frequency	Performance	Field component
10 kHz	60 dB	H
100 kHz	80 dB	H
1 MHz	100 dB	H
10 MHz	100 dB	E
100 MHz	100 dB	E
1 GHz	100 dB	PW
3 GHz	≥ 90 dB	PW

- Modular ferrite tile lining on all six faces inside the enclosure completely including partially compact hybrid absorbers.
- One full-size personnel door of 900 × 2050 mm clear opening with mechanical actuation aid. The door is equipped with a switch to be connected to the interlock system for amplifier auto power off.

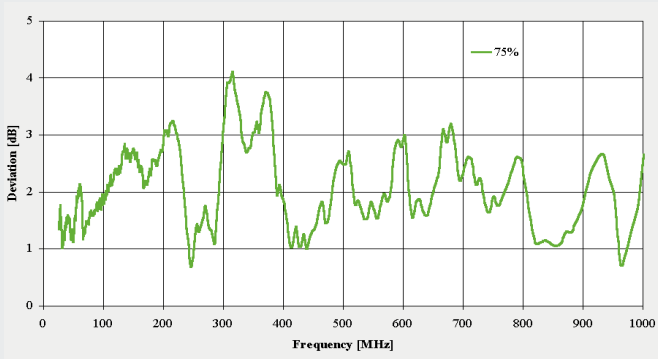


Fig. 2: Typical homogeneity of the M-CDC, 3 m measurement distance, 26 MHz - 1 GHz, uniform plane 1.5 x 1.5 m

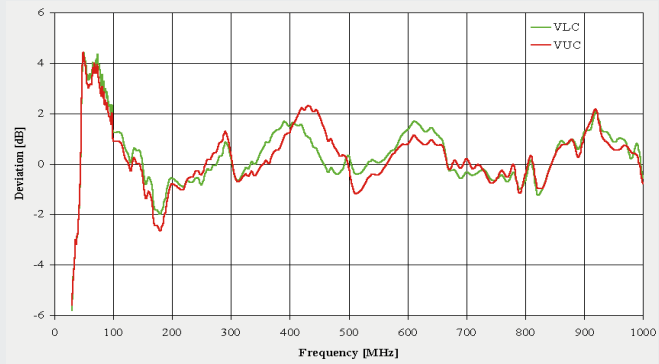
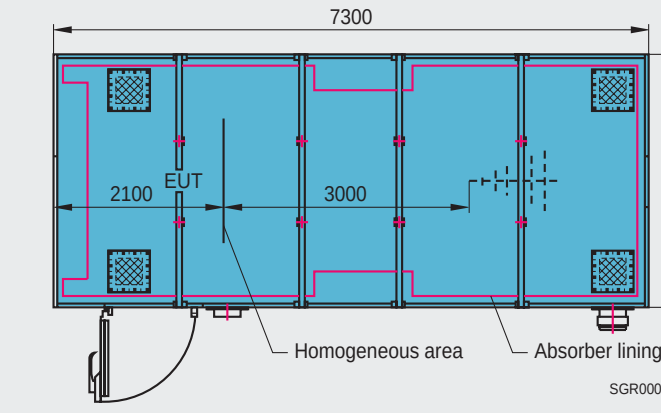


Fig. 3: Typical deviation from free space attenuation of the M-CDC, 3 m measurement distance



- Six honeycomb inserts for ventilation.
- Four illumination spots of 300 W.
- Electrical distribution with breakers, three single-phase outlets, one three-phase outlet, one switch for illumination.
- One three-phase power supply filter, 4 × 16 A, for EUT and general power supply.
- One detachable access panel (AP) equipped with:

AP I
2 N connectors 50 Ω
2 BNC connectors 50 Ω
5 FSMA connectors
4 fastenings for data line filters

- Fully walkable floor for EUT load up to 200 kg/m^2 covered with felt material.
- Integrated in the floor are two cable ducts which feed the necessary cables from the access panels to the cable outlets (CO).
- Two cable outlets are integrated in the floor:

Cable outlet I
1 outlet 230 V, single-phase, 10 A
Cable outlet II
3 outlets 230 V, single-phase, 10 A 1 outlet 230/400 V, three-phase, 16 A

- The facility is fully self-supporting.
- The total weight is approx. 7000 kg.

The following options are available

- Upgrade package to enhance the performance up to 18 GHz. The package consists of high-performance hybrid absorbers which are assembled on top of the existing ferrite tiles. The frequency range for radiated emission and immunity testing is improved up to 18 GHz. This kit reduces the clear internal space to 6.4 × 2.2 × 2.4 m (l × w × h) approx.

  Performance of shielding:
  Frequency: 18 GHz
  Performance: 100 dB
  Field component: PW

- Turntable, free-standing, 80 cm high, max. load 100 kg, electrically driven including installation kit and IEEE controller.
- Turntable with wooden plate, dia. 1.2 m, max. load 200 kg, floor-mounted version, electrically driven including installation kit and IEEE controller.
- Antenna tripod with remote-controlled polarization tiltable from 0° to 90°. Height of antenna fixture: 1500 mm, overall height: 2400 mm including installation kit and IEEE controller interface.
- Camera system for max. 30 V/m from 30 MHz to 18 GHz incl. installation kit and color chrome monitor. Fiber-optic transmission.
- Other options and variants are available upon request.

Maintenance

- The S+M EMC test chambers are well developed products and need only very few maintenance. In normal use it is sufficient to clean the contact area of the door every three months. The contact springs of the door have to be replaced after approx. 30,000 operations.

Service

- We have established a worldwide service network to provide the best possible after-sales service. For further information please contact S+M Components.

Quality

- Certified Quality-Management system since 15.10.1993

ISO 9001

Reg No. 404.6/QM/10.93 (AA)

Your partner in Asia/Pacific

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Ordering information

Item	Ordering code
M-CDC 26 MHz – 3 GHz	B83117-S1-M3xx
Options	
Upgrade package to 18 GHz	B83211-S1-A18
Device I: Turntable, free-standing	B83209-B1120-S301
Device II: Turntable, floor-mounted	B83209-B1120-S201
Device III: Antenna tripod, remotely controlled	B83209-D1155-S302
Controller for one device	B83209-E1-S2
Controller for two devices	B83209-E1-S1
Camera system 30 V/m	B83207-V1-S004
Tripod for camera system	B83207-V6-S009