EMC TEST Technologies
Via Marecchiese, 273 – 47922 Rimini (RN)
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GTEM EMC 1000 - INOX

Frequency Range:	100KHz to 20GHz
Max. Power-Input:	1000 W
Input Connector Type:	N (Female)
Nominal Impedance:	50 Ω
Typical VSWR:	1:1.2
Power Line Filter:	2x 230V AC/DC 16A
RF Coax Feed-Thru(s):	1x SMA + 1x N (Females)
Other Feed-Thru(s):	1x 3 Fiber optical cable

Installed options:
INOX; PLF-16S; FOPT-1; FT-N; FT-SMA; WHEEL 1000

Reference Standards:
EN 61000-4-3 - EN 61000-4-20

Dimensions:	495(L) x 280(W) x 220(H)
Septum Height:	1150 mm
Door Size:	80(W) x 80(H) cm
Uniform Area Size ±3dB:	41(L) x 41(W) x 37(H) cm
EUT Max Size:	82(L) x 82(W) x 74(H) cm
Weight:	900 Kg

Introduction

The GTEM cell is a TEM waveguide with the upper frequency limit extended to the GHz range.
It is under consideration as an alternative measurement facility for both radiated emission and immunity measurements. It is included in the recently published standard IEC 61000-4-20 "Emission and Immunity Testing in Transverse Electromagnetic (TEM) Waveguides".

Theory of operation

GTEM-cells (Giga-hertz Transversal Electro-Magnetic cells) are waveguide structures intended for electromagnetic compatibility measurements, as well as biomedical applications. The electromagnetic field distribution inside the cell is in TEM mode. With TEM mode propagation, there is no component of electric and magnetic field in the direction of propagation of electromagnetic wave. Therefore the field components are strictly perpendicular. Assuming the field distribution ideal TEM below the cut-off frequency of the cell (before the introduction of higher order modes), the electromagnetic field distribution can be considered static.

Key Features

- Engineered and completely manufactured in Italy.
- Ruggedized fully INOX steel construction
- Unique compact design.
- Optimized for EMI and EMC.
- Strong fields achieved with low input power
- Broadband up to 20Ghz
- High effective shielding
- Fully customizable feed thrus and filters
- Excellent quality at Low cost

* Specifications are subject to change without prior notice

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Applications

- EMI and EMS devices
- Radiation and susceptibility test
- Specifically designed for telecom application
- Biomedical and dosimetrical applications
- Isotropic sensors calibration
- Receiver sensitivity test

Available options

INOX	INOX rugged construction
EIA 7/8	EIA 7/8'' Input Connector (max. 3GHz)
EIA 7/16	EIA 7/16'' Input Connector (max. 3GHz)
ESI-250	Electrical safety interlock
FOPT-1	Channel for fibre optic leads (1 fiber pair)
FOPT-3	Channel for fibre optic leads (3 fiber pairs)
FPT-DB9	Filtered 9-poles pass-thru RS-232(DB9)
FPT-DB25	Filtered 25-poles pass-thru RS-232(DB25)
FPT-DC10	Filtered 10A 1000V DC banana socket pass-thru
FT-BNC	RF feed-thru BNC-BNC Female panel mount type connector
FT-N	RF feed-thru N-N Female panel mount type connector
FT-BNC/SMA	RF feed-thru BNC-SMA Female panel mount type connector
FT-RJ45	Shielded RJ45 (RJ11) feed-thru female-female connector
FT-SMA	RF feed-thru SMA-SMA Female panel mount type connector
HCOMB-10	Honey comb 10x10 cm air intake/outtake
HPTER-1000	Hi Power terminations 500W continuous power up to 3GHz
ILED	Indoor LED lighting 50W shielded lamp
IP-CAM	Shielded RJ45 IP camera system
PDTP	Technical panel pre-drilled for options with EMC gaskets and inox bolts
PLF-20S	Single Phase AC Power Line Filter 2x 20A Phase+N+Ground
PLF-40S	Single Phase AC Power Line Filter 2x 40A Phase+N+Ground
PLF-60S	Single Phase AC Power Line Filter 2x 60A Phase+N+Ground
PLF-20T	Tri Phase AC Power Line Filter 4x 20A 3Ph+N+Ground
PLF-32T	Tri Phase AC Power Line Filter 4x 32A 3Ph+N+Ground
PLF-64T	Tri Phase AC Power Line Filter 4x 64A 3Ph+N+Ground
DCF-120	Single pole Filtered AC/DC Feedthru 120A 1700VDC/250VAC
PWS	Additional Power Socket for EUT
SAE	Door for tests acc. to SAE J1752/3 – Integrated Cir
SHW-L	Shielded Window in door
WLIP-CAM	Shielded IP camera system
WHEEL-1000	Wheeled undercarriage with brakes

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Detailed views

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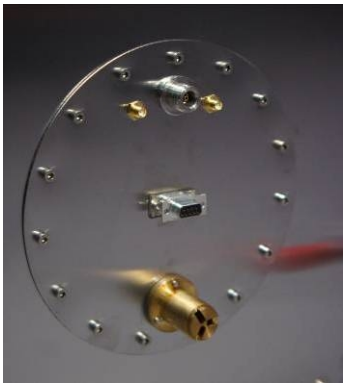
Technical Panel

The GTEM is provided with a technical panel equipped with various types of connections properly shielded that allow access to the interior test volume without allowing contamination of the internal field.

Technical panels are fully configurable to meet any input output specific requirement.

Two extra empty panels are available for future expansions.

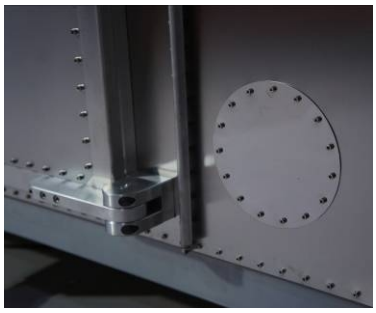


Technical Panel

FOFT - Fiber Optic Feed Thru

FT-DB9 - Filtered DB9 Feed Thru

N + SMA - Feed Thrus



Empty technical Panels for future expansions

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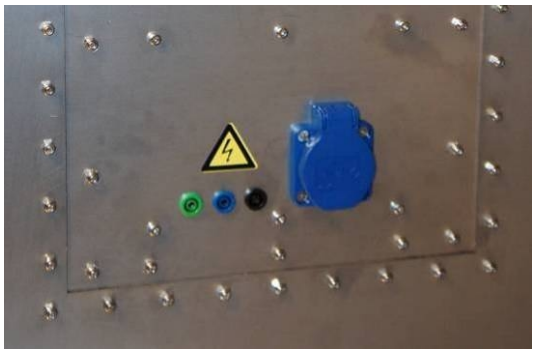
Power Filter

To ensure the suppression of disturbances coming from the power supply line, an AC/DC filter is installed in the filter. The filter works also in the other way round avoiding that any disturbance produced by the DUT goes back to the land line. Custom power line filters are available for any specific need.

Power filter box may incorporate internal illumination lamp and power on switch.



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Internal illumination

Internal illumination is produced by a replaceable 6.5W GU10 spotlight equivalent to traditional 50W lamps installed in the power filter.

A tiny inox steel meshed foil installed in front of the lamp guarantees shielding. Avoid touching it or bumping into it. It is very fragile. In case of damage the filter box must be sent to service.

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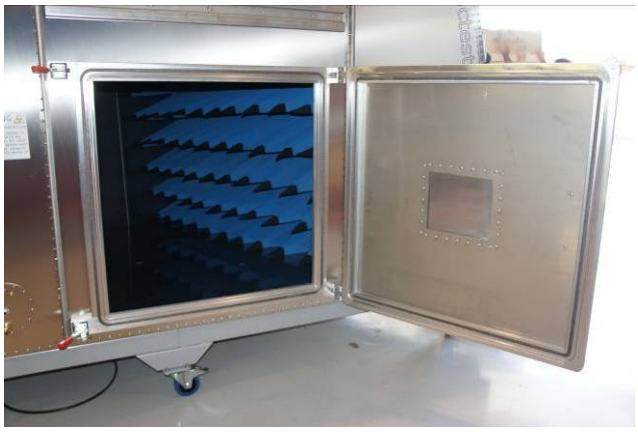
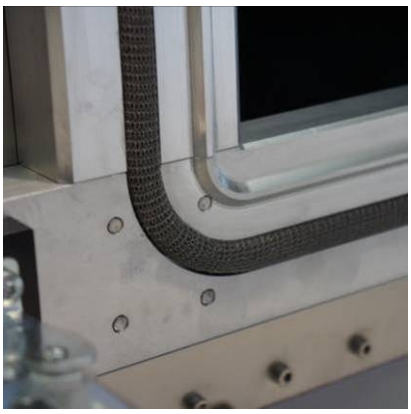
Shielded door

The door installed on the GTEM is shielded by means of two rows of metal mesh gaskets.

Closing the door, the pressure crushes the edge of the hinges on the metal seal so as to avoid contamination of the internal field.



Toggle clamps



Door gaskets

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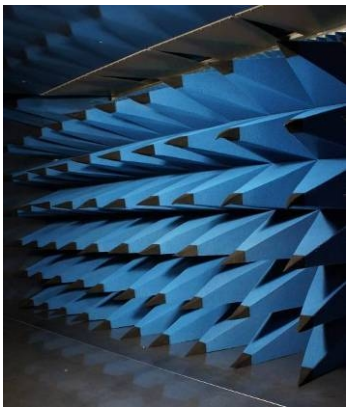
Shielded window on door

The door is equipped with a shielded window made of polycarbonate glass incorporating a very thin meshed metal foil that proves the required shielding.

RF Absorbers

The panel opposite to the tip, also known as the back of the GTEM is covered with a pyramidal shaped spongy material loaded with graphite able to absorb the RF field which invests it. Such material is realized in panels of 3x3 tiled pyramids. Each panel is applied to the base with Velcro straps In case of damage the damaged panel can be easily removed and replaced with a new one. Such operation must be performed by specialized personnel of EMC TEST service center.



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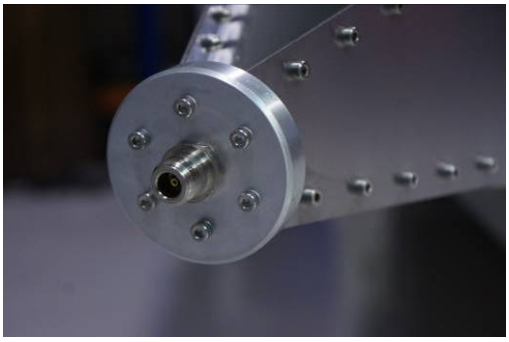
Apex

The N Female connector at the apex is the connection interface of the GTEM cell to a receiver or spectrum analyzer for emission testing as well as it is used to connect a generator together with a power amplifier for immunity testing.



Handles for handling

The GTEM is provided with four handles for handling. Two of them are close to the apex and the other two are located at the sides in the back.
To move the GTEM at least two people are needed. One in the back and one in the front.
Before trying to move the cell make sure that the brakes of the wheels are removed.

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Assembly and Delivery

Because of its large size and weight, EMC GTEM 1000 is shipped disassembled in a proper shock-resistant packaging and assembled on-site by professional personnel.