G-TEM Cells acc. to IEC/EN 61000-4-20

Septum-height: 250mm to 2000mm / 0.1MHz to 20GHz

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Description

The GTEM cell is a TEM waveguide with the upper frequency limit extended to the GHz range. It is a low-cost alternative measurement facility for both radiated emission and immunity measurements. It is included in the published standard IEC 61000-4-20 "Emission and Immunity Testing in Transverse Electromagnetic (TEM) Waveguides". Compared to other measuring methods like EMC test in anechoic chambers or OATS (Open Area Test Sites), GTEM Cells offer some significant advantages for the testing of small and medium sized EUT´s (Equipment Under Test) up to a frequency range of 20GHz. Quick turnarounds of the EUT as well as numerous testing variations are easy and fast to handle. Switching from emission to immunity testing requires only simple adjustments, from receiver input to amplifier output. You are irrespective of long waiting times associated with off-site test labs or weather and ambient delays that can occur at OATS facilities. Whether you are at the design qualification, pre-compliance, compliance, or production sampling stage, the GTEM is the right choice for you.

Calculation of the required forward power for radiated immunity tests:

$P = (E \times h)^2 / R$ x flatness factor (2) x modulation factor (3.24 for 80%AM)
E= required field strength; h=septum height in meter; R= input impedance 50Ω

Example:

Field strength 10V/m, 80%AM with GTEM 1000:
$P = (10 \times 1.0m)^2 / 50 \times 2 \times 3.24 = 12.96W$

Technical specifications	250	500	750	1000
Electrical Data				
Input connector	N	N	N	N
Nominal impedance	50	50	50	50
Frequency range, MHz	0,1MHz-20 GHz	0,1MHz-20 GHz	0,1MHz-20 GHz	0,1MHz-20 GHz
Typical VSWR within frequency range (up to 5GHz)	1:1.2	1:1.2	1:1.2	1:1.2
Typical VSWR at critical frequency (up to 5GHz)	1:1.6	1:1.6	1:1.6	1:1.6
Max input power, W	250/500	500/1000	600/1200	800/1600
Screening attenuation Typ.: >10KHz<10MHz	>50 / >100	>50 / >100	>50 / >100	>50 / >100
Electrical Equipment / Options				
Doubled input power	○	○	○	○
Sockets for EUT	1	2	2	2
Indoor lighting	○	○	○	○
Channels for fibre optic leads	1	1	1	1
RF feed-thru connectors N Type	1	2	2	2
RF feed-thru connectors SMA Type	2	○	○	○
10A / 2 wires (single phase)	●	●	●	●
Electrical safety interlok	○	○	○	○
Mains connectors	Fix/CEE	Fix/CEE	Fix/CEE	Fix/CEE
Ground connection M6	●	●	●	●
AC filter 16A/4 wires	○	○	○	○
AC filter 25A/4 wires	○	○	○	○
AC filter 32A/4 wires	○	○	○	○
AC filter 64A/4 wires	○	○	○	○
25-pole signal filter (Max.No.)	○	○	○	○
Video camera system	○	○	○	○
Mechanical Equipment / Options				
Secondary small door next to input	-	-	○	○
Window in door (WxH), 20cm Ø	-	○	○	○
Window next to door 20cm Ø	○	○	○	○
Gas / Water feed through plates	○	○	○	○
Honeycomb panel	○	○	○	○
Fans N.2 12x12cm	○	○	○	○
Light 50W	○	○	○	○
Mechanical Dimensions / Max. EUT size				
Outer (LxWxH), cm	115x64x44	300x165x110	400x220x147	500x276x184
Door (WxH), cm	30x23	42x42	61x61	79x79
Wheeled undercarriage	-	○	●	●
Weight kg approx.	80	200	400	650
Max. test volume (LxWxH), cm	20x20x15	40x40x30	60x60x50	75x75x70
Defined test vol. ±3dB	15x15x10	30x30x15	45x45x25	60x60x30
Septum height	250mm	500mm	750mm	1000mm

● Standard ○ Costed option - Not provided

G-TEM Cells acc. to IEC/EN 61000-4-20

Technical specifications	1250	1500	1750	2000
Electrical Data				
Input connector	7/16"	7/16"	7/16"	7/16"
Nominal impedance	50	50	50	50
Frequency range, MHz	0,1MHz-20 GHz	0,1MHz-20 GHz	0,1MHz-20 GHz	0,1MHz-20 GHz
Typical VSWR within frequency range (up to 5GHz)	1:1.2	1:1.2	1:1.2	1:1.2
Typical VSWR at critical frequency (up to 5GHz)	1:1.6	1:1.6	1:1.6	1:1.6
Max input power, W	800/1600	800/1600	800/1600	800/1600
Screening attenuation Typ.: >10KHz<10MHz	>50 / >100	>50 / >100	>50 / >100	>50 / >100
Electrical Equipment / Options				
Doubled input power	○	○	○	○
Sockets for EUT	2	2	2	2
Indoor lighting	○	○	○	○
Channels for fibre optic leads	1	1	1	1
RF feed-thru connectors N Type	2	2	2	2
RF feed-thru connectors SMA Type	○	○	○	○
10A / 2 wires (single phase)	○	○	○	○
Electrical safety interlok	○	○	○	○
Mains connectors	Fix/CEE	Fix/CEE	Fix/CEE	Fix/CEE
Ground connection M8	●	●	●	●
AC filter 16A/4 wires	○	○	○	○
AC filter 25A/4 wires	●	●	●	●
AC filter 32A/4 wires	○	○	○	○
AC filter 64A/4 wires	○	○	○	○
25-pole signal filter (Max.No.)	○	○	○	○
Video camera system	○	○	○	○
Mechanical Equipment / Options				
Secondary small door next to input	-	-	○	○
Window in door (WxH), 15 x 20cm	-	○	○	○
Window next to door (0,30 x 0,10cm)	○	○	○	○
Gas / Water feed through plates	○	○	○	○
Honeycomb panel	○	○	○	○
Fans N.2 12x12cm	○	○	○	○
Light 50W	○	○	○	○
Mechanical Dimensions / Max. EUT size				
Outer (LxWxH), cm	600x330x220	700x385x257	800x440x293	900x495x330
Door (WxH), cm	100x100	120x120	140x140	160x160
Wheeled undercarriage	●	●	●	●
Weight kg approx.	850	1000	1300	1650
Max. test volume (LxWxH), cm	95x95x85	120x120x100	140x140x120	160x160x140
Defined test vol. ±3dB	75x75x42	85x85x50	100x100x50	115x115x60
Septum height	1250mm	1500mm	1750mm	2000mm

● Standard ○ Costed option - Not provided

G-TEM Optional Accessories

Type	I/O ports	GTEMs MODEL	
		250-500	750-1000-1250-1500
GTEM-B01	EIA 7/8'' Input Connector (max. 6GHz)	○	○
GTEM-B02	EIA 7/16'' Input Connector (max. 6GHz)	○	○
GTEM-B03	700 W Max. Input power, (up to 3GHz) (The max. input power is limited by the spec. of the max input power of the selected GTEM)	○	○
GTEM-B04	Upgrade Input Power 1400W, (up to 3GHz) (The max. input power is limited by the spec. of the max input power of the selected GTEM)	○	○
GTEM-B05	Fibre optical feed-thru (3 Pairs)	○	○
GTEM-B06	N-Feedthru	○	○
GTEM-B07	SMA-feedthru	○	○
Electrical Equipment / Options			
GTEM-B08	Additional socket for EUT	○	○
GTEM-B09	Internal illumination (Halogene, 50 W)	○	○
GTEM-B10	Tube, diameter 5cm, can be closed by screwable cover	○	○
GTEM-B11	EMI-Filter Upgrade 2x10A to 4x32A, 440V/ 250V AC/ DC		○
GTEM-B12	Filter 4 x 32A, 440V/ 250V AC/ DC		○
GTEM-B13	Interlock relay at the door	○	○
GTEM-B14	DSub Signal Line Filter (25 pin)	○	○
GTEM-B24	1 pc. Sub-D 9 pin filtered, 1 pc. Sub-D 9 pin unfiltered	○	○
GTEM-B25	9 pin DSUB Filter	○	○
Mechanical Equipment / Options			
GTEM-B15	Second door close to input	○	○
GTEM-B16	Window in door (Ø 200mm)	○	○
GTEM-B17	Gas/ Waterfeedthru	○	○
GTEM-B18	Honeycomb		○
GTEM-B19	Fans (2 pieces) on technical panel		○
GTEM-B20	Door for tests acc. to SAE J1752/3		○
GTEM-B21	Wheeled undercarriage	○	●
GTEM-B22	Plastic table, round, d=35cm, max. load: 50kg	○	○
GTEM-B23	Vertical positioning, turn of door position, plastic table over pyramids	○	
GTEM-B26	Integrated circuit testing	○	○
GTEM-B27	Installation panel (not equipped)	○	○
GTEM-B28	Fan kit incl. channel for heat sink	○	○

● Standard ○ Costed option - Not provided

G-TEM test set-up for radiated immunity tests and emission measurements:

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