EM602-10 IC-Stripline TEM Cell

1. Description

ESDEMC's EM602-10 is a 10 GHz Mini TEM Cell generates very strong electromagnetic field for testing small devices such as sensors, IC's, wireless communication modules, etc. An external test signal applied through the input port of the TEM cell generates a consistent and predictable TEM test field inside the cell. The radiation field from a device transmitting in the cell can also be detected through the port using a test receiver.

The unique compact design is optimized for very strong electromagnetic field injection test beyond the standard TEM Cell in both field strength and frequency range. The E-H field inside the test volume is proportional to the input voltage and inversely proportional to the cell height. If a radiating object is inserted inside the cell, the radiated wave toward the input port is guided by the transmission line and picked up at the input with a receiver such as a spectrum analyzer. With this method, the RFI from a radiating device can be measured quantitatively. Since this apparatus is very broadband, it has many applications in EMI, EMS, receiver sensitivity test, etc. The EM602 TEM Cell requires 40W input power to achieve > 20 kV/m RMS E-field or > 80 A/m RMS H-field. It is recommended that the test PCB have metal-plated edges for better shielding.

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2. Features

- Up to 10 GHz bandwidth (beyond normal TEM Cell bandwidth of 3 GHz)
- Can inject up to 20 kV/m E-field for sensor EM Field Susceptibility

3. Applications

- Electromagnetic immunity testing for integrated circuits
- Electromagnetic radiation testing for integrated circuits
- ESD/Surge field susceptibility testing for integrated circuits
- Designed to meet the requirements of the following standards:
  - SAE 1752-3
  - IEC 61967-2
  - IEC 61967-8
  - IEC 62132-2
  - IEC 62132-8

4. Specifications

Specification	Parameters
Frequency range	DC to 10 GHz (First spike by undesired higher order mode > 10 GHz)
TEM Cell Impedance	50 Ω ± 5% nominal
VSWR	DC- 3 GHz < 1.2 3 – 10 GHz < 1.5
Insertion Loss (S21)	DC – 10 GHz < 1 dB
Return Loss (S11 & S22)	DC – 3 GHz > 20 dB 3 – 10 GHz >14 dB
Effective Septum to Wall Height	1.6 mm
E-Field Strength at Center of Cell	>= 20 kV/m @ 40 W
H-Field Strength at Center of Cell	>= 80 A/m @ 40 W
RF Connectors	SMA-Type
Maximum Input Power	70 Watts
Maximum Input Voltage	1 kV (TLP pulse)
Test PCB Dimension	26 x 26 mm
Recommended DUT Dimensions	10 (W) x 10 (W) x 0.5 (H) mm
TEM Cell Dimensions	120 (W) x 52 (D) x 20 (H) mm
Weight	Approx. 0.2 kg

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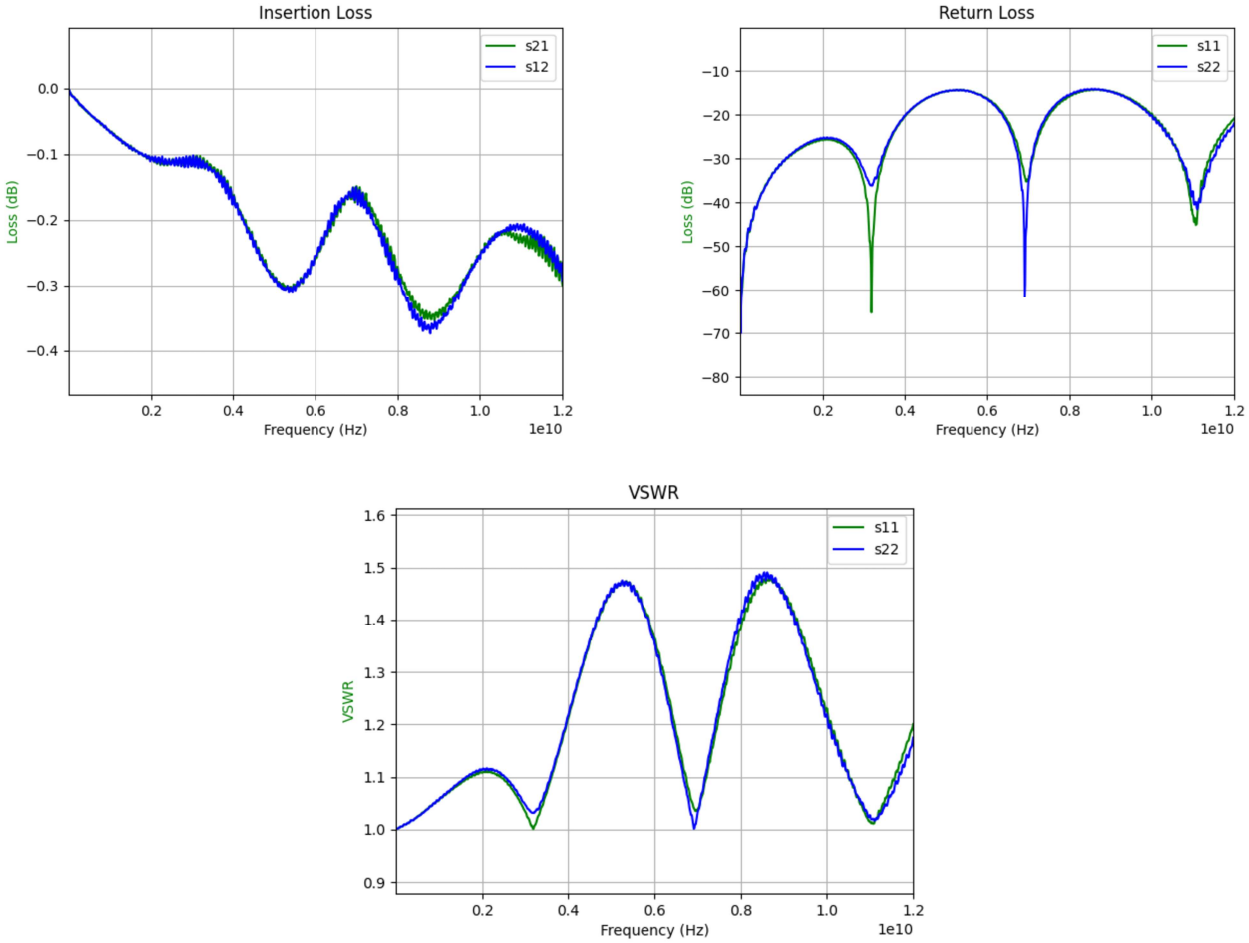
5. Measured Frequency Response [Typical]



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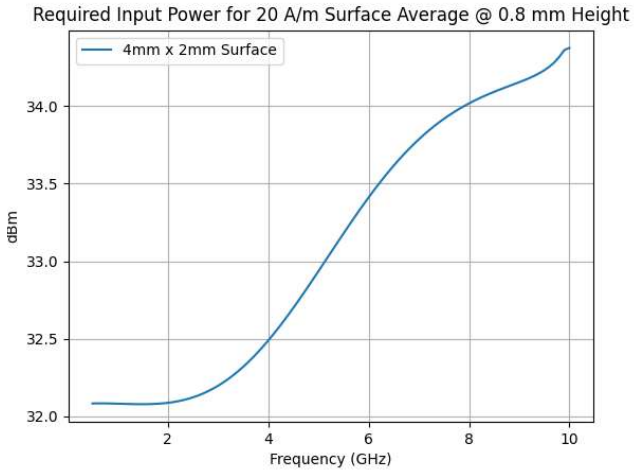
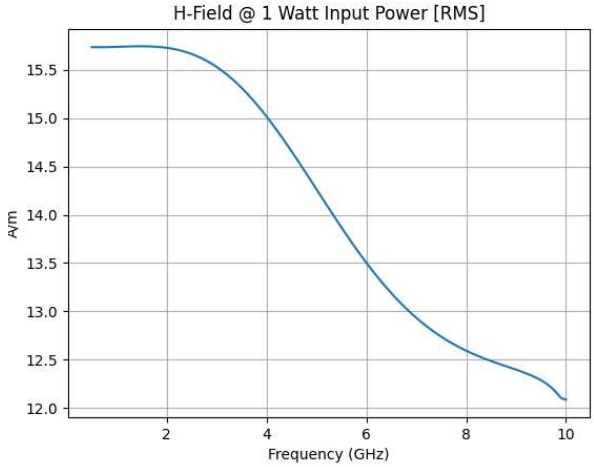
6. Simulation Results

Simulation Results were obtained using a reference forward power of 1 Watt. Results were gathered at the axial midpoint of the septum, vertically centered between the septum and the upper wall of the TEM Cell.

Required Input Power for 20 A/m Surface Average	
Frequency (GHz)	**Input Power (dBm)**
0.5	32.1
1	32.1
2	32.1
3	32.2
4	32.5
5	32.9
6	33.4
7	33.8
8	34.0
9	34.2
10	34.4



H-Field Simulation Results		
Frequency (GHz)	**Amplitude (A/m)**	**RMS (A/m)**
0.5	22.3	15.7
1	22.3	15.7
2	22.2	15.7
3	22.0	15.5
4	21.2	15.0
5	20.2	14.3
6	19.1	13.5
7	18.3	12.9
8	17.8	12.6
9	17.5	12.4
10	17.1	12.1



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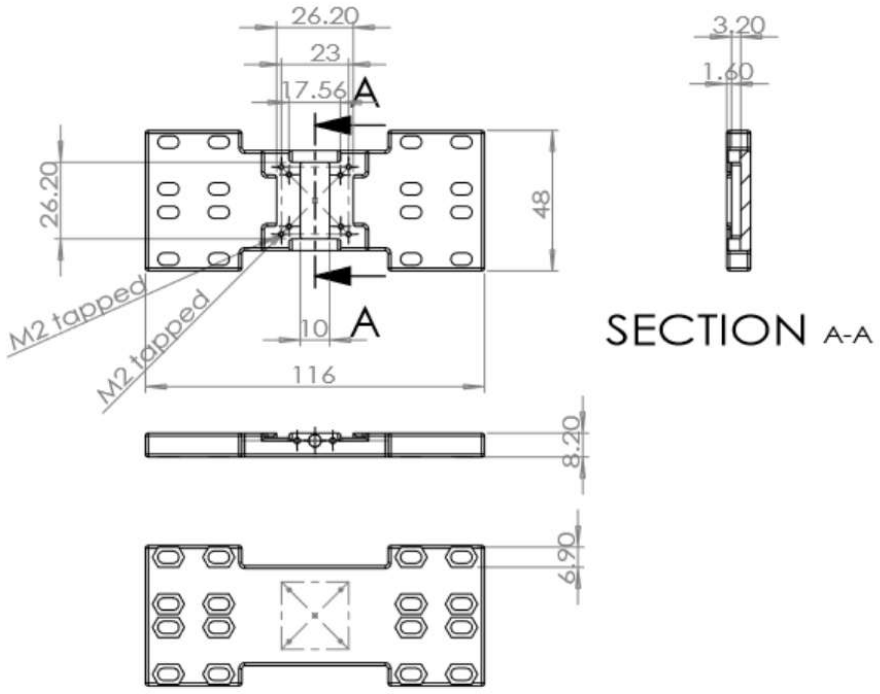
7. Dimensions

EM602 Mini TEM Cell Dimensions



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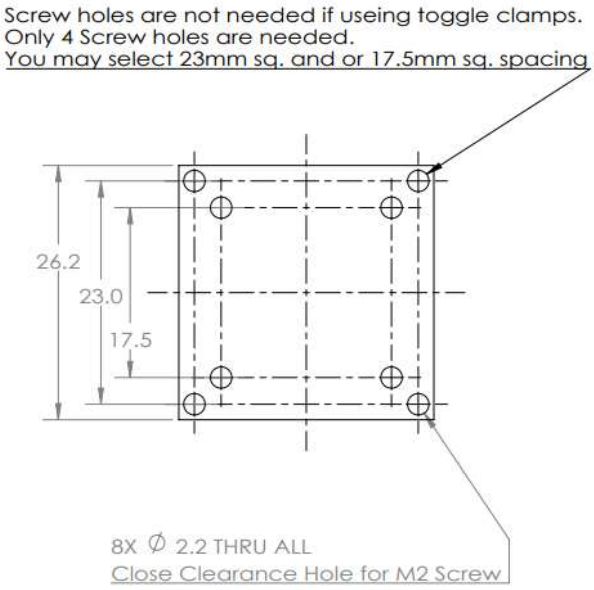
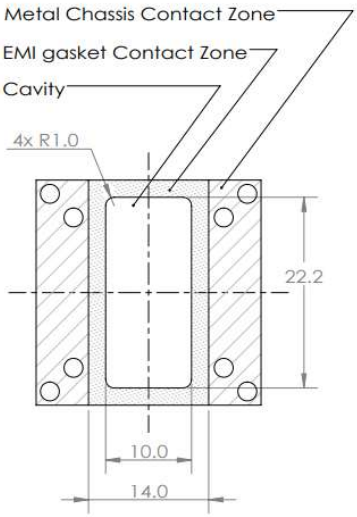


Top Side



Bottom, DUT Side

8. Ordering Information

Line	Part # or Option #	Description	Status
1	EM602-10	IC Stripline TEM Cell, DC-10 GHz	Active

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