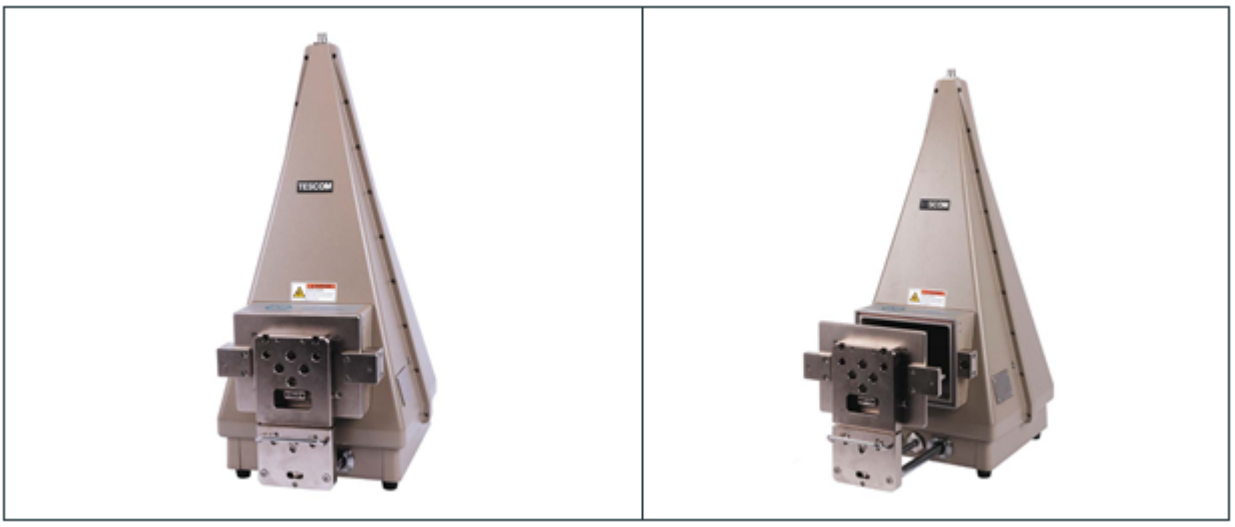
Concentric Technology Solutions Inc

Testing Solutions for the Wireless Industry

TC-5063C Pneumatic 6 GHz TEM Cell



Features

- Radiation and susceptibility test
- Broadband TEM Cell up to 6 GHz
- Small size, Small footprint for desktop application
- High effective shielding
- Specifically designed for all types of mobile phones
- Pneumatic Open / Close Construction
- RS-232C Open / Close control

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Concentric Technology Solutions, Inc.
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Product Description

TC-5063C, Pneumatic 6 GHz TEM Cell generates the Electro-Magnetic field for testing small RF devices such as wireless communication receiver, Mobile phone, etc. An external test signal applied through th e input port of the TC-5063C generates a consistent and predictable TEM test field inside the cell. The r adiation field from a device transmitting in the Cell can also be detected through the port using a test r eceiver.

The unique compact and economical design is optimized for medium accuracy measurements beyond t he standard TEM Cell frequency range.

Theory of operation

TC-5063C 6 GHz TEM cell is made to work beyond the typical TEM Cell operating frequency range limit ed by cell resonance. A typical TEM Cell is a 2-port symmetrical device; RF voltage is applied to one port while the other port is terminated in 50 ohm while maintaining 50 ohm characteristic impedance along the cell. Due to expansion and contraction parts of the cell, the wave propagation beyond certain frequ ency is no more propagated by TEM mode alone and creates resonance. To eliminate the resonance pr oblem, the half of the cell is replaced by the wave absorbing material. One commercial implementation is G-TEM cell. The size of the G-TEM design is too large for typical small device applications due to the t ype of absorber used. TESCOM borrowed the concept of G-TEM, but changed the termination implem entation scheme, and designed a very compact broad band TEM Cell that can be used on a desktop.

The operation principle of TC-5063C is essentially the same as TEM Cell. The E-H field inside the test vol ume is proportional to the input voltage and inversely proportional to the cell height. If a radiating obje ct is inserted inside the cell, the radiated wave toward 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 ra diating Device can be measured quantitatively. Since this apparatus is very broadband, it has many appl ications in the area of EMI, EMS, receiver sensitivity test, etc.

Applications

- Receiver sensitivity testing, Transmitter radiated power testing
- EMI and EMS tests for small 6 GHz devices

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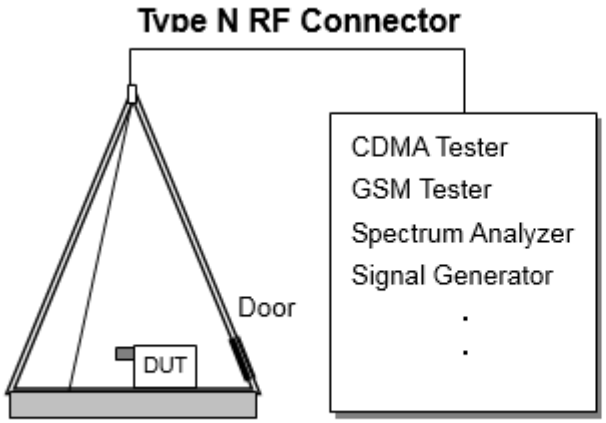
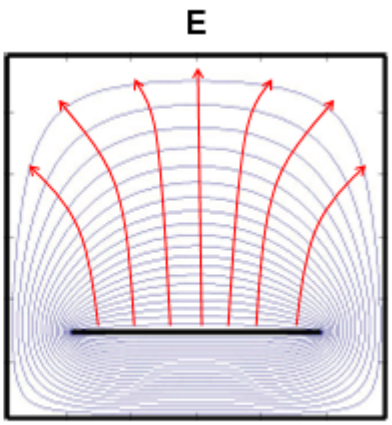


Test Configuration



Field Pattern (Top View)

Specifications

General Specification

VSWR	
100 MHz ~ 6 GHz	< 1.7
Path Loss	
	25 dB Typical @1.8 GHz dipole
Effective Cell Height	
	220 mm
Field Strength at Center of Cell	
	13 dB μV/meter at 1 μV input
RF Connectors without module	
	1 N(f) topside, 1 SMA(f) outside and SMA(f) inside
Remote control	
	RS-232C, 3 wire, DB9(p)
Line voltage	
	100 - 240 VAC, 50/60 Hz, 15 watt max
Air connection	
Main air connector	6 mm OD hose, one-touch push-on fitting
Input air pressure	5 to 10 bar
Dimension	
Inside	240(W) x 205(D) mm
Outside	344(W) x 420(D) x 725(H) mm, door closed. 614(D) mm, door open.
Door Size	176(W) x 130(H) mm

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Weight	
	approx. 27 kg
*Packing	
Size	450(W) x 540(D) x 840(H) mm
Weight	approx. 32.7 kg
*The size or weight of a package may vary on how to pack a package.	

Typical RF Shielding

- The shield effectiveness below is measured when the blank panel is mounted; other I/O interface p anel results a different shielding effectiveness of the TEM Cell.

Frequency	Shielding effectiveness (dB)
100 to 2000 MHz	> 80 dB
2000 to 3000 MHz	> 70 dB
3000 to 6000 MHz	> 60 dB

Ordering Information

Order Number	Description
TC-5063C	Pneumatic 6 GHz TEM Cell (including accessories bellow)
	Test Report RF Cable, SS-402, N(m) to N(m) 2 m (< 6 GHz), 1 pc DATA Cable, RS232C, DB 9(s)-DB 9(s) 2 m, 1 pc Power Cable, 1 pc Hand Valve, 1 pc Remote Switch, 1 pc

Optional Accessories

Order Number	Description
4011-0001	RF Cable, SS-402, N(m) to N(m) 1 m (< 6 GHz)
4011-0019	RF Cable, SS-402, N(m) to N(m) 2 m (< 6 GHz)
4011-0020	RF Cable, SS-402, N(m) to SMA(m) 2 m (< 6 GHz)
4003-0001	DATA Cable, RS232C, DB 9(s)-DB 9(s) 2 m
4008-0017	USB Cable, USB A(p) to USB A(p) 1 m
4008-0018	USB Cable, USB A(p) to USB A(s) 50 cm

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