



Concentric Technology Solutions Inc

Solutions for the Wireless Industry

TC-5535AP

mmWave Pneumatic Shield Box

Data Sheet

Concentric Technology Solutions, Inc.

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TC-5535AP mmWave Pneumatic Shield Box



Introduction

TC-5535AP is a pneumatic operation shield box optimized to perform 5G tests between 0.1 GHz to 67 GHz on small to medium-sized devices such as 5G chipsets, cellphones, tablets and laptops. It can be controlled via remote and is customizable with a variety of I/O options.

Features

- Designed for mmWave testing
- Reliable RF shielding from 0.5 GHz to 50 GHz
- Designed for 100,000 test cycles (verify with eng)
- Pneumatically-controlled door operation
- EMI filters on all data ports and power lines
- Remote operation by RS-232C
- RF switch option

Mechanical Specifications

Basic RF Connector	One (1) 2.4 mm (f) outside and 2.4 mm (f) inside
Basic Data Connectors	Two (2) USB 3.1 Gen1, One (1) Banana Jack, Two (2) SMA (f) to SMA (f)
Line Voltage	
Input Voltage	100 ~ 240 VAC
Frequency	50/60 Hz
Power Consumption	Less than 2 watt (Typical)
Remote Control	
Air Connection	
Main Connector	6 mm OD hose, one-touch fitting
Input Air Pressure	5 to 10 bar
Dimensions	Mechanical Specifications
Inside	372(W) x 372 (D) x 342 (H) mm
Outside	484 (W) x 572.5 (D) x 493 (H) mm Door Closed 572.5 (D) mm / Door Open 864.5 (D) mm
Door Size	259.5 (W) x 138 (H) mm
Door Stroke (Open/Close)	295mm
Weight	Approx. 43 kg
*Packing	
Size	860 (W) x 830 (D) x 680 (H) mm
Weight	Approx. 48 kg

*The size or weight of a package may vary depending on how the product is packed.

Typical RF Shielding

The shielding effectiveness below is measured with blank panels mounted; other I/O interface panel may result in different shielding effectiveness.

Frequency Range	Shielding Effectiveness [dB]
0.5 GHz to 50 GHz	> 70 dB

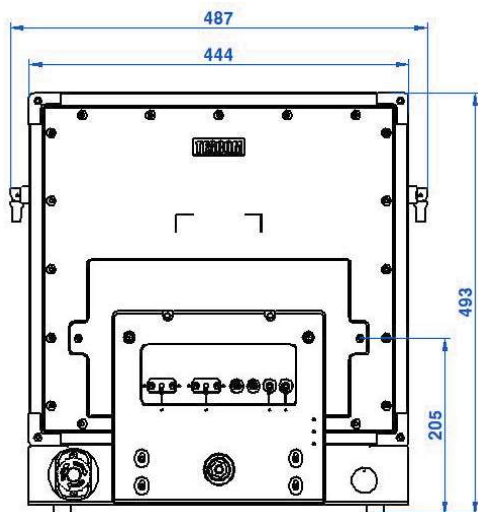
Absorber Reflectivity

Referring to a metal plate (0 dB @ 0.5 GHz to 67 GHz), signal reduction is measured with the RF absorber inserted.

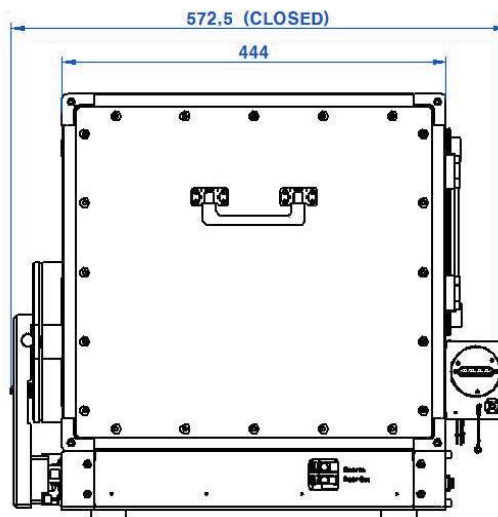
Frequency Range	Reflectivity [dB]
0.5 GHz to 2 GHz	15 dB (Typ.)
2 GHz to 67 GHz	20 dB (Typ.)

Dimensions

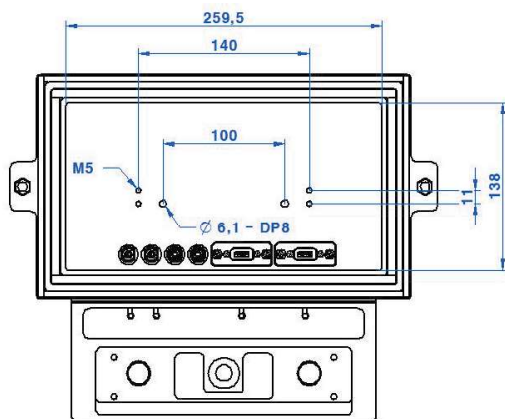
TC-5535AP Outside Dimensions



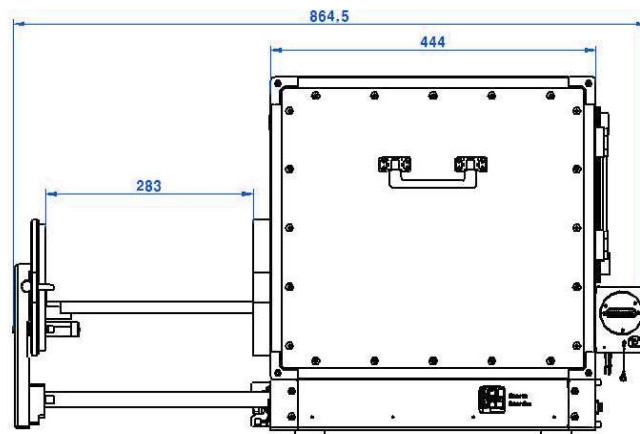
Front View



Side View

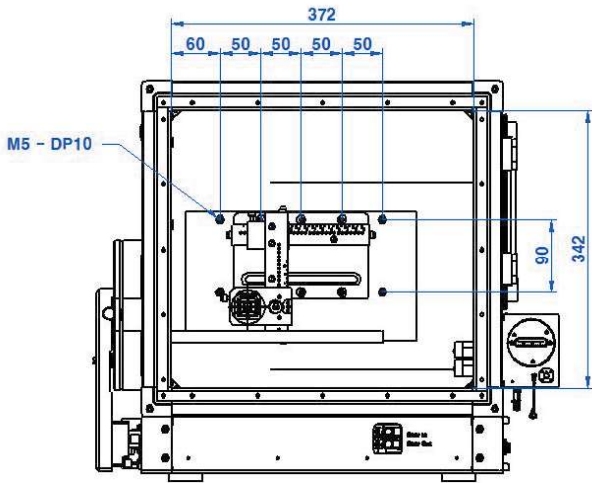


Door View

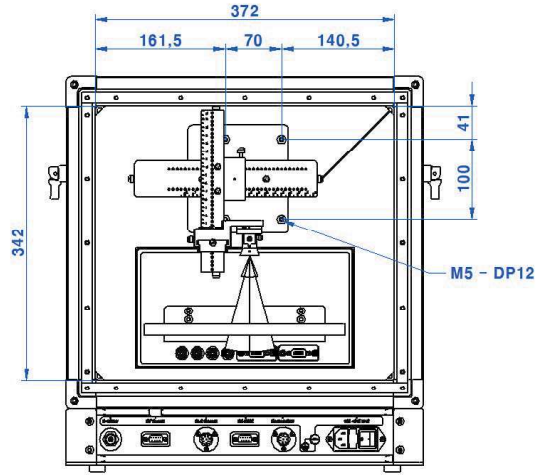


Door Opened View

TC-5535AP Inside Dimensions

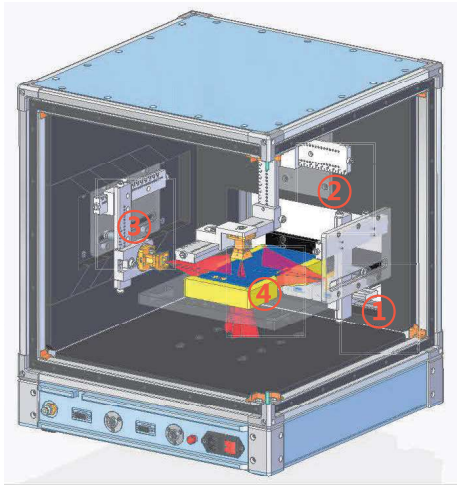


Side Inner View

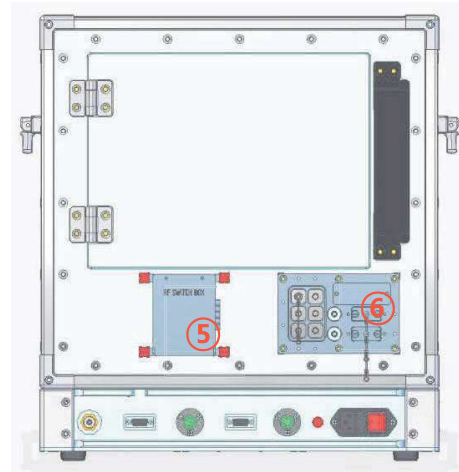


Front Inner View

TC-5535AP Configuration Example



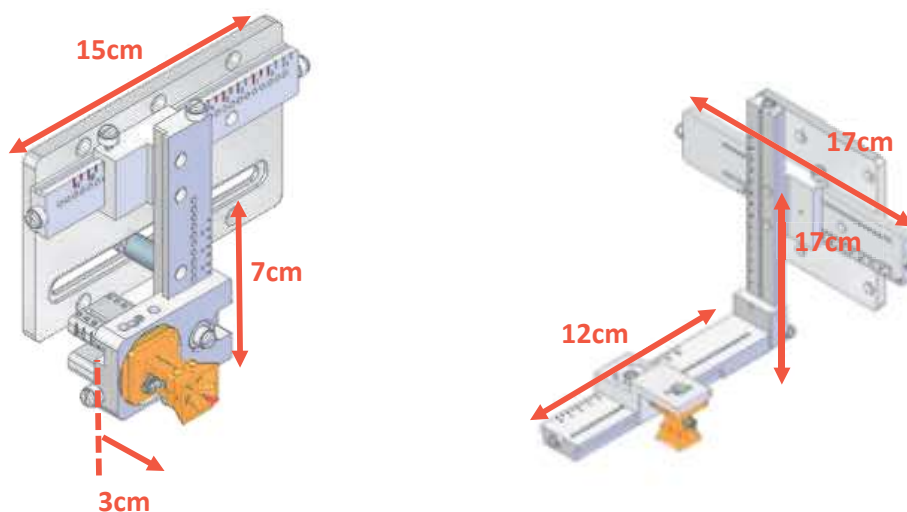
Rear Inner View




Rear View

No.	Detailed View	Order Number & Description
1		Left Horn Antenna XYZ-Rail Fixture - F5535AP01A: XYZ-Rail Fixture - TC-93474B: Horn Antenna(24 GHz ~ 44 GHz) 4006-0046: RF Cable, two (2), 2.4 mm (f) to 2.4 mm (f), 0.9 m
2		Top Horn Antenna XYZ-Rail Fixture - F5535AP02A: XYZ-Rail Fixture - TC-93474B: Horn Antenna(24 GHz ~ 44 GHz) - 4006-0048: RF Cable, two (2), 2.4 mm (f) to 2.4 mm (f), 1.8 m
3		Right Horn Antenna XYZ-Rail Fixture - F5535AP03A: XYZ-Rail Fixture - TC-93474B: Horn Antenna(24 GHz ~ 44 GHz) - 4006-0047: RF Cable, two (2), 2.4 mm (f) to 2.4 mm (f), 1.2 m
4		DUT Guide Fixture
5		RF Switch Box - M5535AP03A: 6:1 RF Switch : Radiall, SP6T, 0 ~ 50 GHz, No-Term, Latching, 28 VDC, 25 Pin D-sub - 4006-0049: RF Cable, seven (7), 2.4 mm (f) to 2.4 mm (f), 0.2 m
6		Custom I/O Interface Panel - M09002A Six (6), 2.4 mm RF Connectors Two (2), SMA (f) to SMA (f) RF Connectors One (1), USB3.1 Gen1 Adaptor One (1), RJ45 Adaptor One (1), Through for Cable (50 mm x 20 mm)

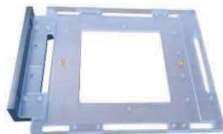
Horn Antenna XYZ-Rail Fixture Motion





Optional RF Switch Box Panel

RF Switch Box	Order Number	Configuration
	M5535AP03A	<p>Max 50 GHz 6:1 RF Switch Box</p> <p>RF Switch: Radiall, SP6T, DC~50GHz, No-Term, Latching, 28 VDC, 25Pin D-sub</p> <ul style="list-style-type: none"> - One (1), 2.4 mm (f) to 2.4 mm (f) connector - 4006-0049: RF Cables, Seven (7), 2.4 mm (f) to 2.4 mm (f), 0.2 m cable <p>VSWR: 1.3 max, Loss: 1.5 dB max</p>

Optional DUT Fixture






Fixture	Order Number	Configuration
		Custom DUT Guide Fixture

Optional I/O Interface Panels

I/O Interface Panel	Order Number	Configuration
	M5535AP01A	Blank Panel (with absorber)
	M09002A	Six (6), 2.4 mm RF Connectors Two (2), SMA (f) to SMA (f) RF Connectors One (1), USB3.0 Adaptor One (1), RJ45 Adaptor One (1), Through for Cable (50 mm x 20 mm)

Custom RF Connector Panel

Custom RF Connector Panel is available by selecting or combining the below RF Connectors.

RF Connector	Description / Order Number	Frequency Range / Impedance / V.S.W.R
	RF, 2.92mm Thru Adapter / 3407-0024	From DC to 40 GHz, 50 Ω , 1.3 max
	RF, 2.4mm Thru Adapter / 3407-0027	From DC to 50 GHz, 50 Ω , 1.3 max
	RF, 1.85 mm Thru Adapter / 3412-0001	From DC to 67 GHz, 50 Ω , 1.5 max
	RF, N-SMA Connector / 3408-0038	From DC to 18 GHz, 50 Ω , 1.3 max
	RF, N-SMA Connector / 3408-0039	From DC to 18 GHz, 50 Ω , 1.3 max

Custom I/O Interface Panel

Customized I/O Interface Panel is available by selecting below I/O interfaces and combine.

Please contact our sales support.

I/O Interface	Description / Order Number	Typical Data Rate / Line Voltage	*Typical Shielding
	USB 2.0 Filter / 3409-0018A-3	480 Mbps / 5 V, 500 mA / Max Current: 5 A	> 60 dB from 0.5 to 2 GHz > 70 dB from 2 to 3 GHz > 70 dB from 3 to 6 GHz > 70 dB from 6 to 67 GHz
	USB3.1Gen1Filter (Active) / 3409-0042A-2 ^(a)	5000 Mbps / 5 V, 600 mA / Max Current: 1.5 A	> 60 dB from 0.5 to 2 GHz > 70 dB from 2 to 3 GHz > 70 dB from 3 to 6 GHz > 70 dB from 6 to 67 GHz
	RJ-45 Filter / 3904-0296A	RJ45 Filter: 1 Gbit/s Copper Line Ethernet (1000 BASE-T)	> 60 dB from 0.5 to 2 GHz > 70 dB from 2 to 3 GHz > 70 dB from 3 to 6 GHz > 70 dB from 6 to 67 GHz
	DC Power Adaptor / 3406-0004A	50 VDC, 3 Amps max	> 60 dB from 0.5 to 2 GHz > 70 dB from 2 to 3 GHz > 70 dB from 3 to 6 GHz > 70 dB from 6 to 67 GHz
	DC Power Adaptor (Banana Jack Type) 3406-0005A-1(Black) 3406-0006A-1(White)	50 VAC, 10 Amps max	> 60 dB from 0.5 to 2 GHz > 70 dB from 2 to 3 GHz > 70 dB from 3 to 6 GHz > 70 dB from 6 to 67 GHz
	AC Power Adaptor / 3103-0009A	250 VAC, 7 Amps max	> 60 dB from 0.5 to 2 GHz > 70 dB from 2 to 3 GHz > 70 dB from 3 to 6 GHz > 70 dB from 6 to 67 GHz

^(a) Exclusive cables should be used (USB Cable, 4008-0079A, 2 M, USB 3.0 A(M) - USB 3.0 A(M), Housing: Aluminum)

*Typical Shielding is an estimated value with I/O interface applied.

The data above were measured by Internal standards, and they may be different depending on the measuring method and environment. Each shielding effectiveness is measured without any cable, so it will be likely affected when a cable is connected. Also, it may vary depending on the type of cable.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE