



**Concentric Technology Solutions Inc**

Solutions for the Wireless Industry

**TC-5540BP**

**mmWave Pneumatic Shield Box**

**Data Sheet**

---

**Concentric Technology Solutions, Inc.**

TEL: 817-503-8862 FAX: 817-503-8866 Email: [CTS-Sales@ctscorp-usa.com](mailto:CTS-Sales@ctscorp-usa.com) [www.rfshieldbox.com](http://www.rfshieldbox.com) [www.ctscorp-usa.com](http://www.ctscorp-usa.com)



## Introduction

TC-5540BP is our pneumatic operation shield box optimized to perform 5G tests between 0.1 GHz to 67 GHz on medium to larger-sized devices such as 5G chipsets, 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 high RF shielding from 0.5 GHz to 67 GHz
- Pneumatically-controlled door operation
- Absorbing materials for stable measurement results
- EMI filters on all data ports and power lines
- Remote operation by RS-232C/LAN

## Mechanical Specifications

Standard RF Connector	None
<b>Line Voltage</b>	
Input Voltage	100 - 240 VAC
Frequency	50/60 Hz
Power Consumption	Less than 2 watt (Typical)
Remote Control	RS-232C, Dual Remote Switch
<b>Air Connections</b>	
Main Connector	6 mm OD hose, one-touch push-on fitting
Input Air Pressure	5 to 10 bar
<b>Dimensions</b>	
Inside	405 (W) x 405 (D) x 688 (H) mm
Outside	534 (W) x 604 (D) x 982 (H) mm, Door Closed
Door Size	237 (W) x 173 (H) mm
Door Stroke (Open/Close)	278 mm
Weight	Approx. 62 kg
<b>*Packing</b>	
Size	750 (W) x 630 (D) x 1100 (H) mm
Weight	Approx. 73 kg

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

## RF Specifications

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

Frequency Range	0.1 GHz to 67 GHz
<b>*Shielding Effectiveness</b>	
0.5 GHz to 30 GHz	> 60 dB (meas.)
30 GHz to 50 GHz	> 60 dB (meas.)
50 GHz to 67 GHz	> 60 dB (typ.)

## Absorber Reflectivity

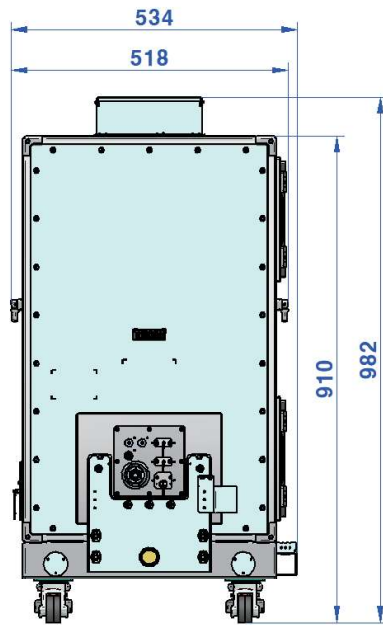
Referring to a metal plate (0 dB @ 0.5 GHz to 12 GHz), signal reduction is measured with the RF absorber inserted.

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

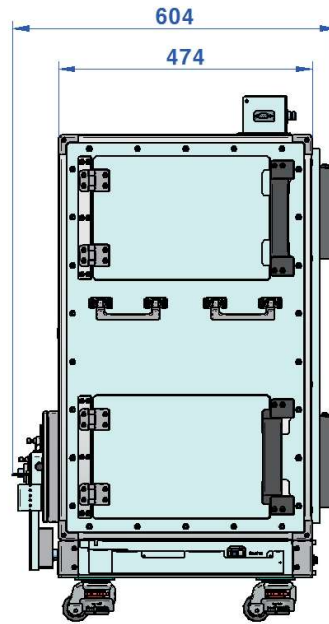
## Outer Dimensions

TC-5540BP Outer Dimensions (WxDxH): 534 (W) x 604 (D) x 982 (H) mm, lid closed.

(Internal dimensions may vary by lot.)



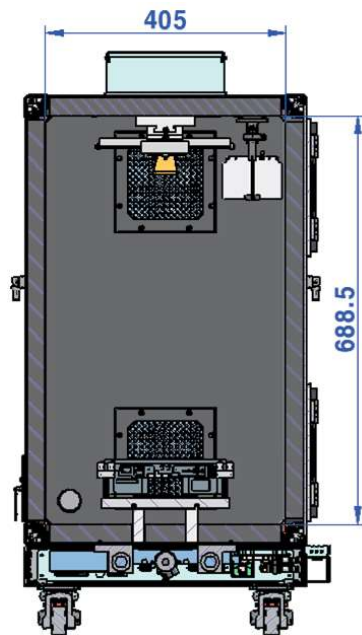
Front View (Closed)



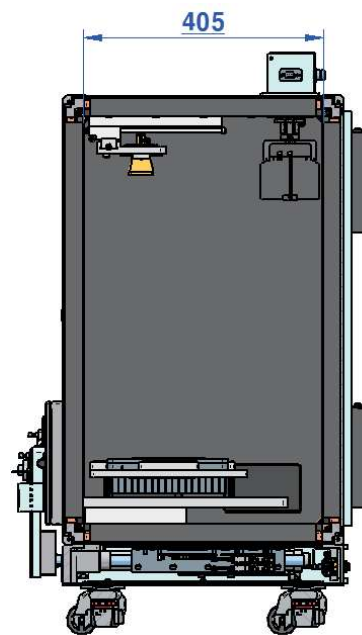
Side View (Closed)

## Inner Dimensions

TC-5540BP Inner Dimensions: 405 (W) x 405 (D) x 688 (H) mm



Front Inner View

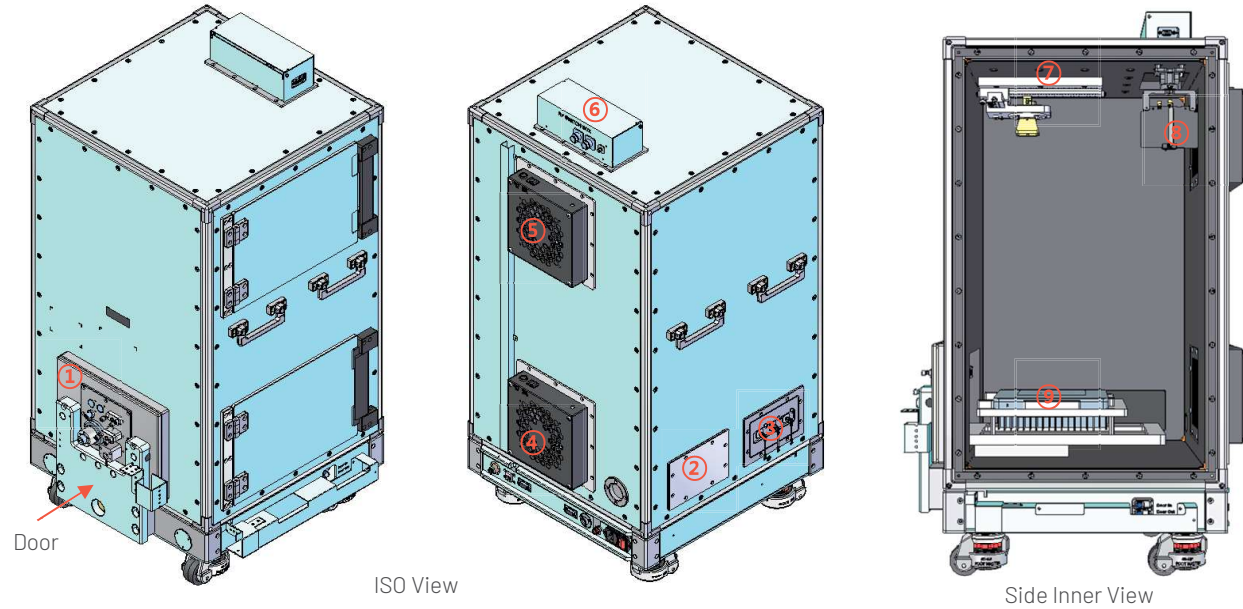


Side Inner View

**Concentric Technology Solutions, Inc.**

TEL: 817-503-8862 FAX: 817-503-8866 Email: [CTS-Sales@ctscorp-usa.com](mailto:CTS-Sales@ctscorp-usa.com) [www.rfshieldbox.com](http://www.rfshieldbox.com) [www.ctscorp-usa.com](http://www.ctscorp-usa.com)

## TC-5540BP Configuration Example



No.	Product	Description
①		<b>Front Door I/O Interface Module</b> <ul style="list-style-type: none"> <li>M16002A Module: 2.92 mm x 2ea, DC x 1ea, SMA x 2ea, USB2.0 x 1ea, USB3.0 x 1ea, RJ45 x 1ea, Waveguide x 1ea</li> </ul>
②, ③		<b>I/O Interface Module ( Left Side Panel )</b> <ul style="list-style-type: none"> <li>M07001A: Blank panel (with absorber)</li> </ul>
④, ⑤		<b>Rear Cooling Panel</b> <ul style="list-style-type: none"> <li>M11002C: Inlet,</li> <li>M11002D: Outlet</li> </ul>
⑥		<b>RF Switch Box Module</b> <ul style="list-style-type: none"> <li>M03014A: 6:1 RF Switch (2910-0004)</li> </ul>
⑦		<b>Top Antenna Fixture Set</b> <ul style="list-style-type: none"> <li>N554003A: XY Rail Fixture</li> <li>TC-93470A Horn Antenna</li> </ul>
⑧		<b>DPV Antenna Fixture Set</b> <ul style="list-style-type: none"> <li>N5092003A: DPV Antenna Fixture</li> <li>TC-93076a DPV Antenna</li> </ul>
⑨		<b>DUT Cradle</b>

## Ordering Information

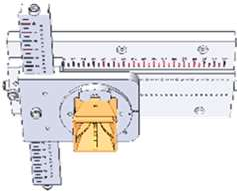
Order Number	Product
TC-5540BP	mmWave Pneumatic Shield Box

## Standard Accessories

Product	Description
4003-0073	USB to RS-232C(male) Cable, 2 m, 1 pc
4601-0018A	Box Remote Switch Cable, 2 m, 1 pc
9703-0020	Hand Valve, 1 pc
4010-0002	Power Cable, 220 V
Test Report	


## Optional Antenna Fixture

### ■ Optional Horn Antenna Fixtures

Product	Code	Configuration
	N55403A	XY-Rail Fixture for TC-93474A or TC-93474B • Mounting Position: Top
	TC-93470A or TC-93470B	Quad Ridged Horn Antenna Options <sup>(*)a)</sup> • Polarization: Dual Pol. • TC-93470A Frequency range: 18 ~ 40 GHz Antenna Gain: 14.0 dBi @ 28 GHz, 15.5 dBi @ 36 GHz RF Connector type: two (2), 2.92 mm Female • TC-93470B Frequency range: 18 ~ 44 GHz Antenna Gain: 14.0 dBi @ 28GHz, 16.0 dBi @ 43.5 GHz RF Connector type: two (2), 2.4 mm Female
	RF Cables	RF Cable Options (~40 GHz) • 4006-0033: 2.92 mm (M) to 2.92 mm (M), 80 cm • 4006-0034: 2.92mm (M) to 2.92mm (M), 50 cm  RF Cable Options (~50 GHz) • 4006-0046: 2.4 mm (M) to 2.4 mm (M), 90 cm



## Optional RF Switch Box Panel

Product	Code	Configuration
	M03014A	1:6 SP6T RF Switch Box Assembly Number of RF Switch: 1 or 2 <ul style="list-style-type: none"> <li>• SP6T, DC-50GHz, No-Term, Latching, 28 VDC, 9Pin D-sub</li> <li>• Excellent performance upto 50 GHz</li> </ul>

## I/O Filters




### ■ RF Filtered Data I/O & Power I/O

I/O Filters	Code	Description	*Typical Shielding
	<b>3409-0009-1</b> DB25, 1000pF pi Filter	3 Mbps / 100 VDC 5 Amps max	>70 dB from 0.5 to 2 GHz >80 dB from 2 to 3 GHz >70 dB from 3 to 6 GHz
	<b>3409-0014-1</b> DB25, 100pF pi Filter	10 Mbps / 100 VDC 5 Amps max	>50 dB from 0.5 to 2 GHz >60 dB from 2 to 3 GHz >60 dB from 3 to 6 GHz
	<b>3409-0008-1</b> DB9, 1000pF pi Filter	3 Mbps / 100 VDC 5 Amps max	>70 dB from 0.5 to 2 GHz >80 dB from 2 to 3 GHz >70 dB from 3 to 6 GHz
	<b>3409-0010-1</b> DB9, 100pF pi Filter	10 Mbps / 100 VDC 5 Amps max	>50 dB from 0.5 to 2 GHz >60 dB from 2 to 3 GHz >60 dB from 3 to 6 GHz
	<b>3409-0018A-3<sup>(*)</sup></b> USB 2.0 Filter	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
	<b>3409-0042A-2<sup>(*)</sup></b> USB 3.2 Gen 1, Type A Filter (Active)	5000 Mbps/ 5 V, 600 mA Max Current: 1.5 A	>80 dB from 0.5 to 2 GHz >80 dB from 2 to 3 GHz >75 dB from 3 to 6 GHz >55 dB from 6 to 67 GHz
	<b>3409-0046A</b> USB 3.2 Gen 2, Type C Filter (Active)	10 Gbps / 4 - 22V Max Current: 5 A	>70 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
	<b>3904-0296A</b> RJ-45 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 >60 dB from 6 to 67 GHz

### Concentric Technology Solutions, Inc.

TEL: 817-503-8862 FAX: 817-503-8866 Email: CTS-Sales@ctscorp-usa.com www.rfshieldbox.com www.ctscorp-usa.com



I/O Filters	Code	Description	*Typical Shielding
	<b>3406-0004A</b> DC Power Adaptor	50 VDC 3 Amps max	>70 dB from 0.5 to 2 GHz >80 dB from 2 to 3 GHz >80 dB from 3 to 6 GHz >70 dB from 6 to 67 GHz
	<b>3406-0005A</b> (Black) <b>3406-0006A</b> (White) DC Power Adaptor (Banana Jack Type)	50 VDC 10 Amps max	>70 dB from 0.5 to 2 GHz >80 dB from 2 to 3 GHz >80 dB from 3 to 6 GHz >70 dB from 6 to 67 GHz
	<b>3103-0009A</b> AC Power Adaptor	250 VAC 7 Amps max	>70 dB from 0.5 to 2 GHz >80 dB from 2 to 3 GHz >80 dB from 3 to 6 GHz >70 dB from 6 to 67 GHz

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






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

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.

## ■ RF Connectors

I/O Filters	Code	Description	*Typical Shielding
	<b>3407-0029</b> RF, 2.92 mm Thru Adapter	From DC to 40 GHz 50 Ω / 1.3 max	N/A
	<b>3407-0030</b> RF, 2.4 mm Thru Adapter	From DC to 50 GHz 50 Ω / 1.3 max	N/A
	<b>3407-0031</b> RF, 1.85 mm Thru Adapter	From DC to 67 GHz 50 Ω / 1.5 max	N/A
	<b>3408-0100</b> RF, N-SMA Connector	From DC to 18 GHz 50 Ω / 1.3 max	N/A
	<b>3408-0101</b> RF, SMA-SMA Connector	From DC to 18 GHz 50 Ω / 1.3 max	N/A

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE

**Concentric Technology Solutions, Inc.**

TEL: 817-503-8862 FAX: 817-503-8866 Email: CTS-Sales@ctscorp-usa.com www.rfshieldbox.com www.ctscorp-usa.com