

# TC-5535AP mmWave Pneumatic Shield Box



## Features

- Reliable high RF shielding from 0.5 GHz to 50 GHz
- Designed for long life
- Specifically designed for testing in millimeter wave band
- Pneumatic control of door open/close
- Absorbing materials for stable measurement results
- EMI filters on all data ports and power lines
- Remote operation by RS-232C
- RF switch option

## Specifications

### 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	RS-232C, Dual Remote Switch
Air Connection	
Main Connector	6 mm OD hose, one-touch fitting
Input Air Pressure	5 to 10 bar
Dimensions	
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

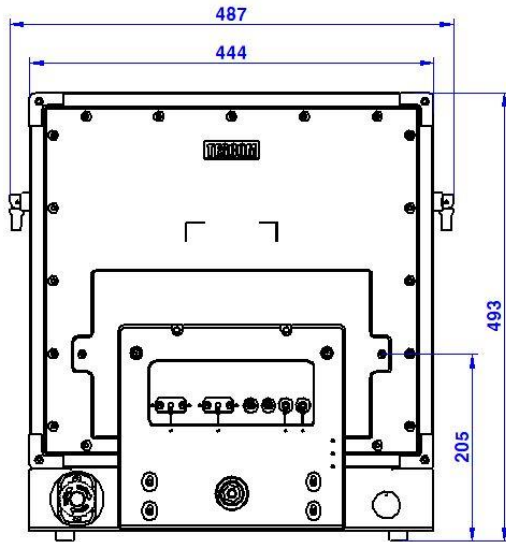
### Absorber Reflectivity

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

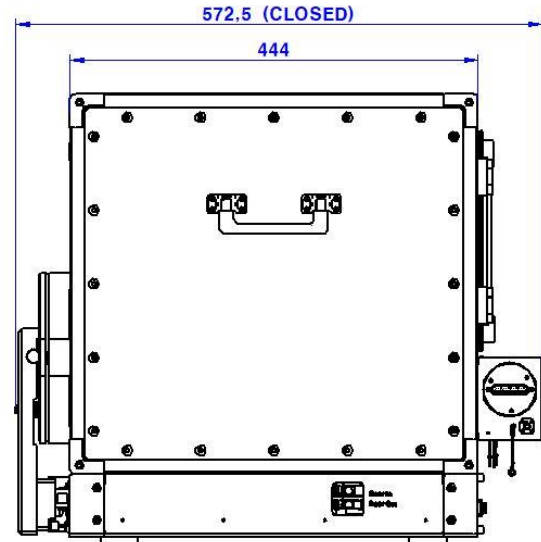
Frequency Range	Reflectivity [dB]
0.5 GHz to 2 GHz	15 dB (Typ.)
2 GHz to 67 GHz	20 dB (Typ.)

## Dimensions

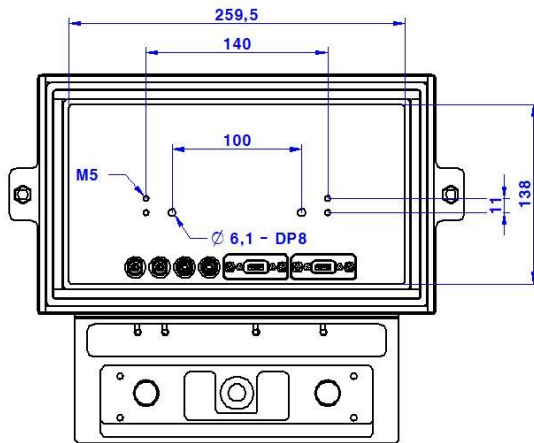
- TC-5535AP Outside Dimensions: (W) x (D) x (H) mm



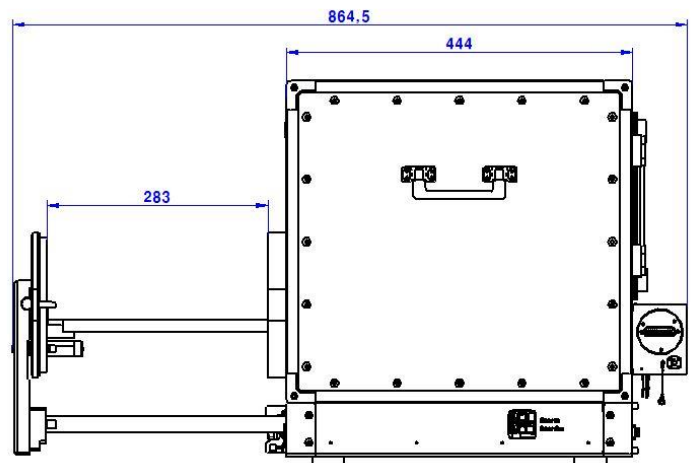
[Front View]



[Side View]

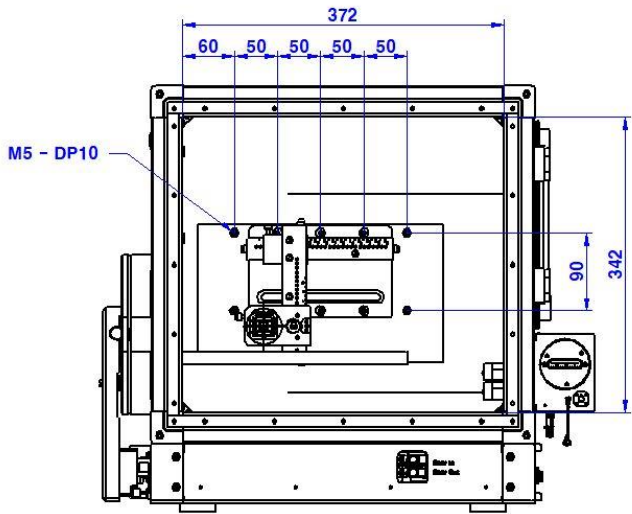


[Door View]

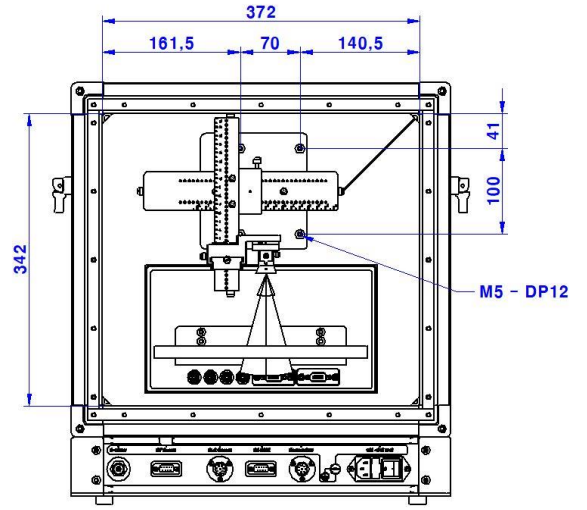


[Door Opened View]

- TC-5535AP Inside Dimensions: (W) x (D) x (H) mm

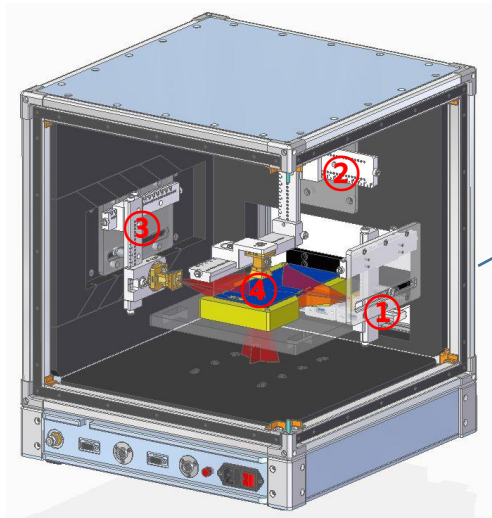


[Side Inner View]

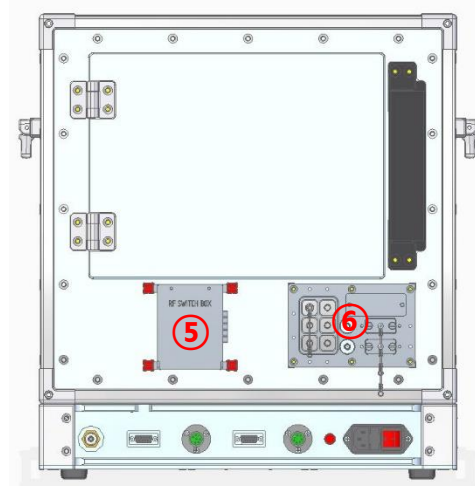


[Front Inner View]


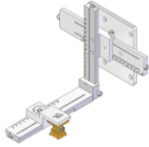
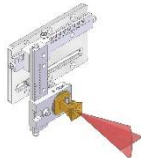


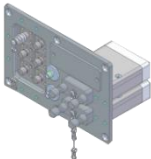
## TC-5535AP Configuration Example



<Rear Inner View>



<Rear View>

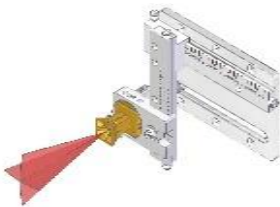
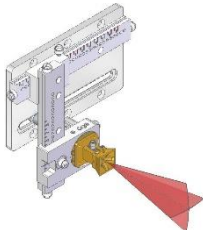
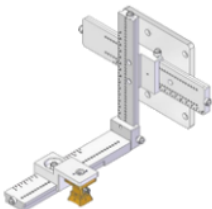
No.	Detailed View	Order Number & Description
①		<ul style="list-style-type: none"> <li>• Left Horn Antenna XYZ-Rail Fixture</li> <li>- F5535AP01A: XYZ-Rail Fixture</li> <li>- TC-93474B: Horn Antenna (24 GHz ~ 44 GHz)</li> <li>- 4006-0046: RF Cable, two(2), 2.4 mm(f) to 2.4 mm(f), 0.9 m</li> </ul>
②		<ul style="list-style-type: none"> <li>• Top Horn Antenna XYZ-Rail Fixture</li> <li>- F5535AP02A: XYZ-Rail Fixture</li> <li>- TC-93474B: Horn Antenna (24 GHz ~ 44 GHz)</li> <li>- 4006-0048: RF Cable, two(2), 2.4 mm(f) to 2.4 mm(f), 1.8 m</li> </ul>
③		<ul style="list-style-type: none"> <li>• Right Horn Antenna XYZ-Rail Fixture</li> <li>- F5535AP03A: XYZ-Rail Fixture</li> <li>- TC-93474B: Horn Antenna (24 GHz ~ 44 GHz)</li> <li>- 4006-0047: RF Cable, two(2), 2.4 mm(f) to 2.4 mm(f), 1.2 m</li> </ul>
④		<ul style="list-style-type: none"> <li>• DUT Guide Fixture</li> </ul>
⑤		<ul style="list-style-type: none"> <li>• RF Switch Box</li> <li>- M5535AP03A: 6:1 RF Switch : Radiall, SP6T, 0 ~ 50 GHz, No-Term, Latching, 28 VDC, 25 Pin D-sub</li> <li>- 4006-0049: RF Cable, seven(7), 2.4 mm(f) to 2.4 mm(f), 0.2 m</li> </ul>
⑥		<ul style="list-style-type: none"> <li>• Custom I/O Interface Panel</li> <li>- <b>M5535AP02A</b></li> <li>Six(6), 2.4 mm RF Connectors</li> <li>Two(2), SMA(f) to SMA(f) RF Connectors</li> <li>One(1), USB3.1 Gen1 Adaptor</li> <li>One(1), RJ45 Adaptor</li> <li>One(1), Through for Cable (50 mm x 20 mm)</li> </ul>

## Ordering Information

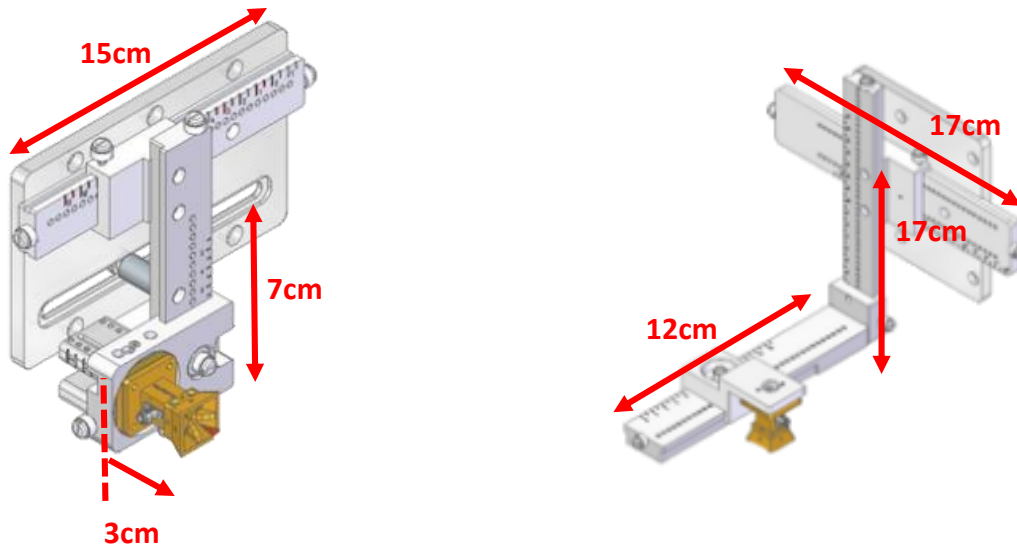
Order Number	Description
	<b>mmWave Pneumatic Shield Box (including accessories below)</b>
	Test Report
	Air Coupler, 1 pc
TC-5535AP	Power Cable, 220 V, 1 pc
	Remote Switch, 2 m, 1 pc
	USB to RS-232(Male) Converter, 2 m, 1pc
	8Pin PLC Cable, 2m, 1pc

## Optional Antenna Fixture

### ■ Horn Antenna Fixture


Antenna Fixture	Order Number	Configuration
	F5535AP01A C93474B 4006-0046	<ul style="list-style-type: none"> <li>● <b>Left Horn Antenna XYZ-Rail Fixture Set</b></li> <li>- <b>F5535AP01A: XYZ-Rail Fixture</b></li> <li>- <b>TC-93474B: QRH Horn Antenna</b> <ul style="list-style-type: none"> <li>* Frequency Range: 24 GHz ~ 44 GHz</li> <li>* Antenna Gain: 10.5 dBi @ 28 GHz, 9.5 dBi @ 43.5 GHz</li> <li>* RF Connector type: two(2), 2.4 mm Female</li> </ul> </li> <li>- <b>4006-0046: RF Cable</b> <ul style="list-style-type: none"> <li>* two(2), 2.4 mm(f) to 2.4 mm(f), 0.9 m</li> <li>* VSWR: 1.3 max, Loss: 3.9 dB max</li> </ul> </li> </ul>
	F5535AP03A C93473B 4006-0047	<ul style="list-style-type: none"> <li>● <b>Right Horn Antenna XYZ-Rail Fixture Set</b></li> <li>- <b>F5535AP03A: XYZ-Rail Fixture</b></li> <li>- <b>TC-93474B: QRH Horn Antenna</b> <ul style="list-style-type: none"> <li>* Frequency Range: 24 GHz ~ 44 GHz</li> <li>* Antenna Gain: 10.5 dBi @ 28 GHz, 9.5 dBi @ 43.5 GHz</li> <li>* RF Connector type: two(2), 2.4 mm Female</li> </ul> </li> <li>- <b>4006-0047: RF Cable</b> <ul style="list-style-type: none"> <li>* two(2), 2.4 mm(f) to 2.4 mm(f), 1.2 m</li> </ul> </li> <li>● * VSWR: 1.3 max, Loss: 4.9 dB max</li> </ul>
	F5535AP02A C93474B 4006-0048	<ul style="list-style-type: none"> <li>● <b>Top Horn Antenna XYZ-Rail Fixture Set</b></li> <li>- <b>F5535AP02A: XYZ-Rail Fixture</b></li> <li>- <b>TC-93474B: QRH Horn Antenna</b> <ul style="list-style-type: none"> <li>* Frequency Range: 24 GHz ~ 44 GHz</li> <li>* Antenna Gain: 10.5 dBi @ 28 GHz, 9.5 dBi @ 43.5 GHz</li> <li>* RF Connector type: two(2), 2.4 mm Female</li> </ul> </li> <li>- <b>4006-0048: RF Cable</b> <ul style="list-style-type: none"> <li>* two(2), 2.4 mm(f) to 2.4 mm(f), 1.8 m</li> <li>* * VSWR: 1.3 max, Loss: 7.0 dB max</li> </ul> </li> </ul>

■ Horn Antenna XYZ-Rail Fixture Motion

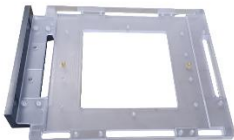


Optional RF Switch Box Panel

■ RF Switch Box Panel

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

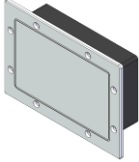
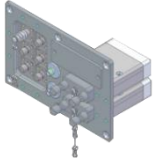
Optional DUT Fixture

Fixture	Order Number	Configuration
		<ul style="list-style-type: none"> <li>• Custom DUT Guide Fixture</li> </ul>








## Optional I/O Interface Panels

### ■ Pre-configured I/O Interface Panels

I/O Interface Panel	Order Number	Configuration
	M5535AP01A	<ul style="list-style-type: none"> <li>Blank panel (with absorber)</li> </ul>
	M5535AP02A	<ul style="list-style-type: none"> <li>Six(6), 2.4 mm RF Connectors</li> <li>Two(2), SMA(f) to SMA(f) RF Connectors</li> <li>One(1), USB3.0 Adaptor</li> <li>One(1), RJ45 Adaptor</li> <li>One(1), Through for Cable (50 mm x 20 mm)</li> </ul>

### ■ Custom RF Connector Panel

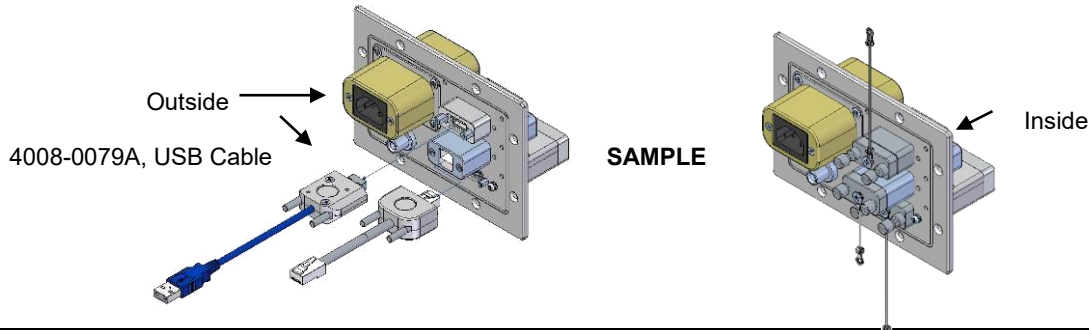
- Custom RF Connector Panel is available by selecting or combining the below RF Connectors.







RF Connector	Description / Order Number	Frequency Range / Impedance / V.S.W.R
	RF, 2.92 mm Thru Adapter / 3407-0024	From DC to 40 GHz, 50 Ω, 1.3 max
	RF, 2.4 mm Thru Adapter / 3407-0027	From DC to 50 GHz, 50 Ω, 1.3 max
	RF, 1.85 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, SMA-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 Tescom sales team or your local distributor.



I/O Interface	Description / Order Number	Typical Data Rate / Line Voltage	Typical Shielding <sup>(*)</sup>
	USB 2.0 Filter / 3409-0018A-3 <sup>(a)</sup>	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
	USB 3.1 Gen 1 Filter (Active) / 3409-0042A-2 <sup>(a)</sup>	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
	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 >60 dB from 6 to 67 GHz
	DC Power Adaptor / 3406-0004A	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
	DC Power Adaptor (Banana Jack Type) 3406-0005A-1 (Black) 3406-0006A-1 (White)	50 VAC, 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
	AC Power Adaptor / 3103-0009A	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

- <sup>(a)</sup> : 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 TESCOM 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

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