



**Concentric Technology Solutions Inc**

Testing Solutions for the Wireless Industry

## **TC-5530BP mmWave Pneumatic Shield Box**



### **Features**

- Reliable high RF shielding from 0.1 GHz to 67 GHz
- Designed for long life
- Specifically designed for testing in millimeter wave band
- Pneumatic control of door open/close
- Lined Walls with RF Absorbing materials for stable measurement results
- EMI filters on all data ports and power line
- Remote operation by RS-232C
- RF switch option

**Concentric Technology Solutions, Inc.**

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[www.rfshieldbox.com](http://www.rfshieldbox.com)

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## Specifications

### Mechanical Specifications

Basic RF Connector	One(1) 1.85 mm(f) outside and 1.85 mm(f) inside
Basic Data Connector	USB 2.0
Line Voltage	
Input Voltage	100 ~ 240 VAC
Frequency	50/60 Hz
Power Consumption	Less than 2watt (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	425(W) x 374(D) x 424(H) mm
Outside	537(W) x 625(D) x 583(H) mm
	Door Closed 625(D) mm / Door Open 902(D) mm
Door Size	176(W) x 130(H) mm
Door Stroke(Open/Close)	278mm
Weight	Approx. 43 kg
*Packing	
Size	620(W) x 710(D) x 683(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]
0.1 GHz to 30 GHz	> 70 dB
30 GHz to 67 GHz	> 60 dB

### Absorber Reflectivity

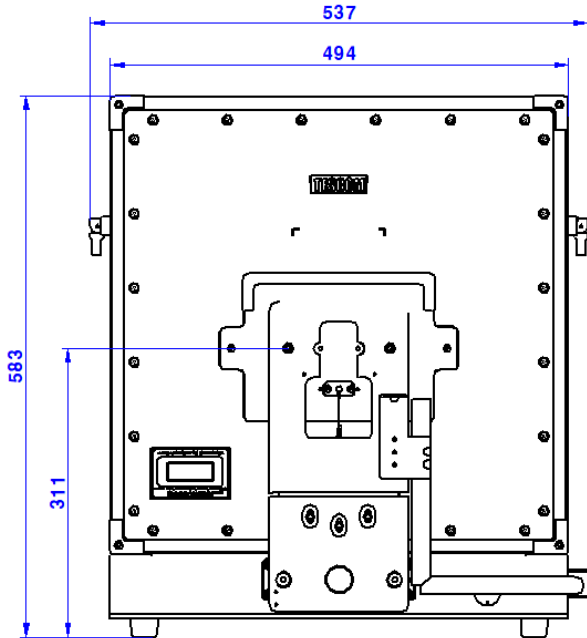
Referring to a metal plate (0 dB @ 0.5 GHz to 67 GHz), signal reduction is measured with the RF absorber inserted.

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

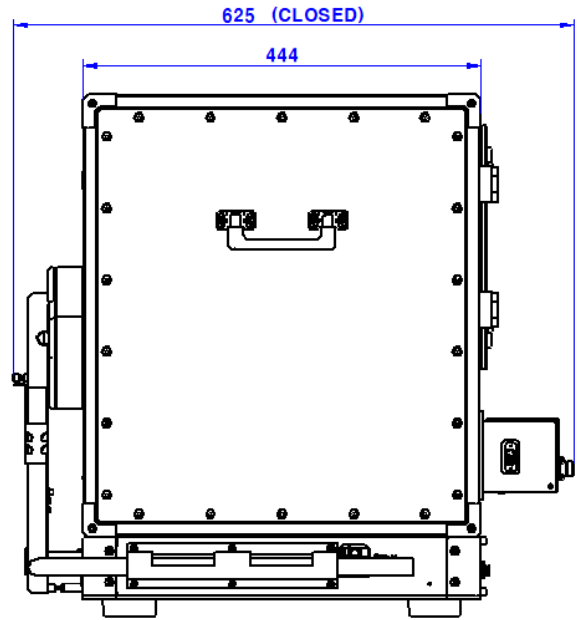


### Dimensions

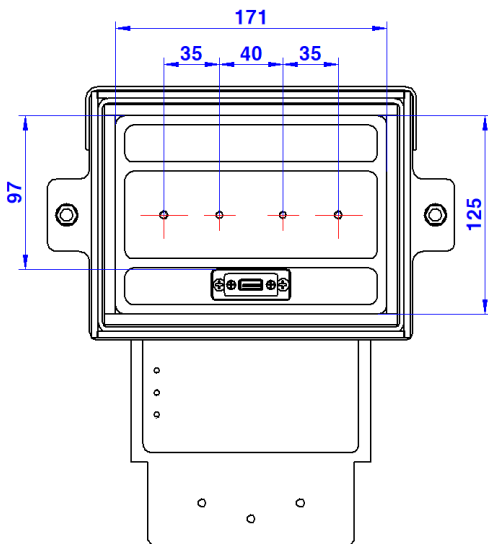
- TC-5530BP Outer Dimensions (WxDxH): 537(W) x 625(D) x 583(H) mm



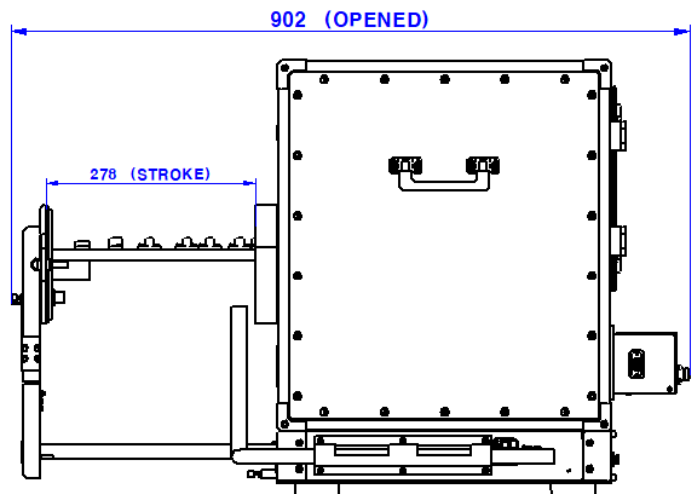
Front View



Side View (Closed)



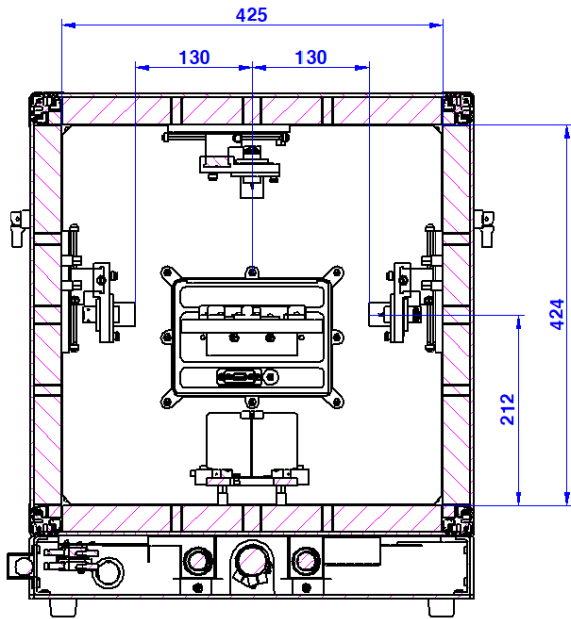
Door View



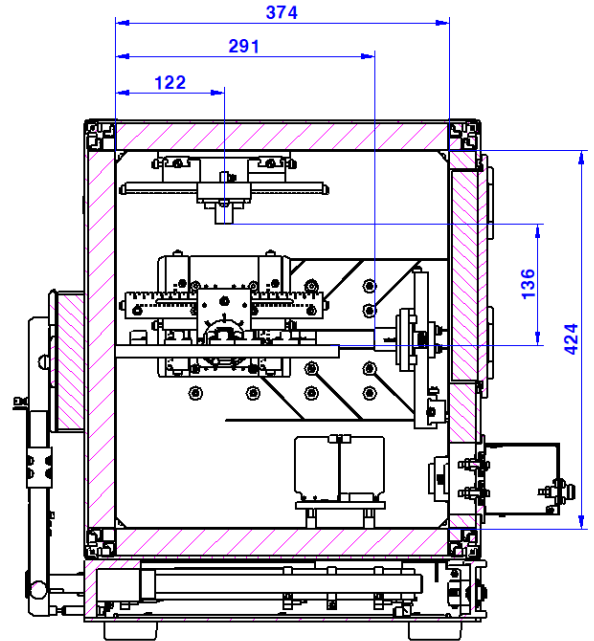
Side View (Open)



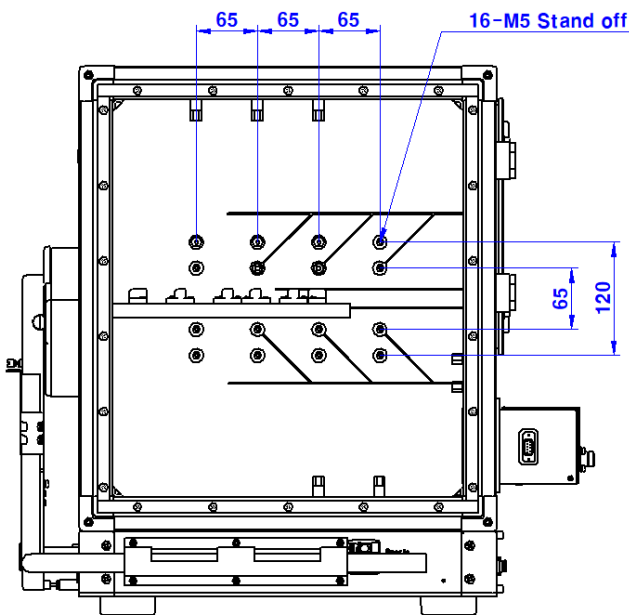
- TC-5530BP Inner Dimensions (WxDxH): 425(W) x 374(D) x 424(H)



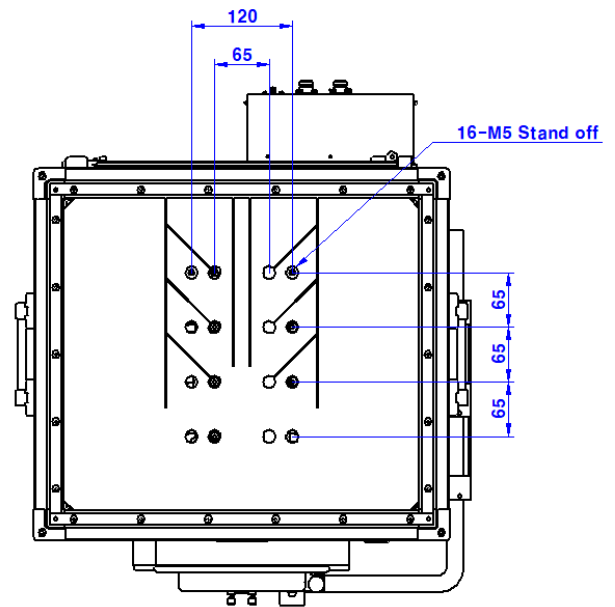
Front Inner View



Side Inner View



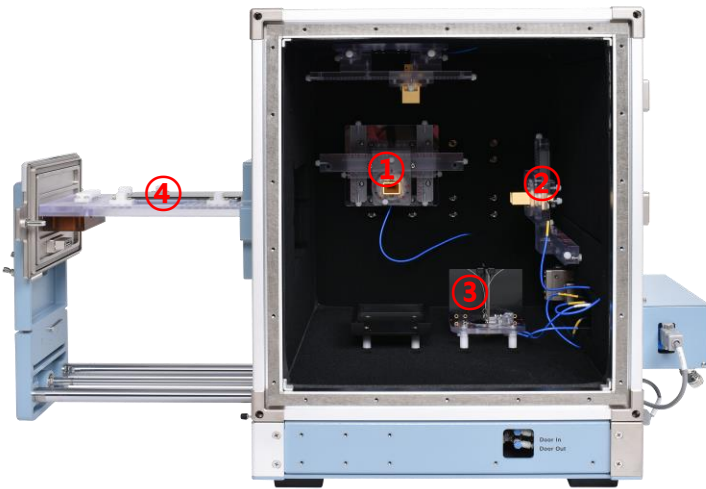
Side Inner View (Antenna Removed)



Bottom Inner View (Antenna Removed)



# TC-5530BP Configuration Example



<Side Inner View>



<Rear View>

No.	Detailed View	Order Number & Description
①		<ul style="list-style-type: none"> <li>Horn Antenna XY-Rail Fixture (Quantity and mounting position selectable)               <ul style="list-style-type: none"> <li>- N55307B: XY-Rail Fixture</li> <li>- TC-93472A: Horn Antenna (24 GHz ~ 40 GHz)</li> </ul> </li> </ul>
②		<ul style="list-style-type: none"> <li>Rear Horn Antenna XY-Rail Fixture               <ul style="list-style-type: none"> <li>- N55307C: Rear XY-Rail Fixture</li> <li>- TC-93472A: Horn Antenna (24 GHz ~ 40 GHz)</li> </ul> </li> </ul>
③		<ul style="list-style-type: none"> <li>DPV Antenna Fixture (Quantity and mounting position selectable)               <ul style="list-style-type: none"> <li>- F55303B: DPV Antenna Fixture (0.6 GHz ~ 7.2 GHz)</li> </ul> </li> </ul>
④		<ul style="list-style-type: none"> <li>DUT Guide Fixture               <ul style="list-style-type: none"> <li>- F5530AP-10: Standard DUT Cradle Fixture</li> </ul> </li> </ul>
⑤		<ul style="list-style-type: none"> <li>RF Switch Box               <ul style="list-style-type: none"> <li>- M5530BP03A : 4:1 RF Switch</li> <li>- M5530BP03B : 6:1 RF Switch</li> </ul> </li> </ul>
⑥		<ul style="list-style-type: none"> <li>Custom I/O Interface Panel               <ul style="list-style-type: none"> <li>- M5530BP05A (RF, 1.85 Thru Adapter / 3412-0001, Default)</li> <li>- DC, RJ45, USB 2.0, USB 3.0, AC</li> </ul> </li> </ul>

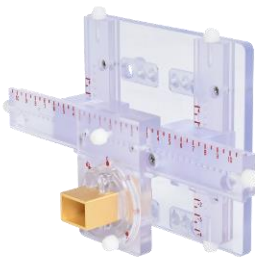



## Ordering Information

Order Number	Description
TC-5530BP	<b>mmWave Pneumatic Shield Box (including accessories below)</b>
	Test Report
	Air Coupler, 1 pc
	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

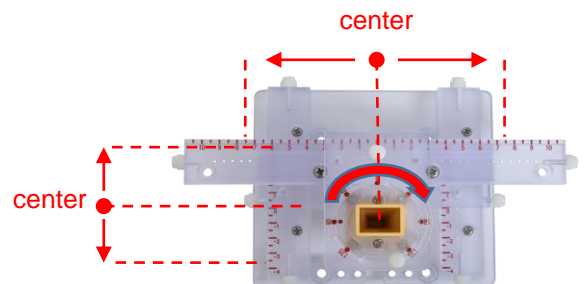
## Optional Antenna Fixture

### ■ Horn Antenna Fixture

Antenna Fixture	Order Number	Configuration
	N55307B	<ul style="list-style-type: none"> <li>● <b>Horn Antenna XY-Rail Fixture Set</b> <ul style="list-style-type: none"> <li>- <b>N55307B XY-Rail Fixture</b> <ul style="list-style-type: none"> <li>* Antenna rotation range: 135° (45° increments)</li> </ul> </li> <li>- <b>TC-93472A Horn Antenna</b> <ul style="list-style-type: none"> <li>* Frequency Range: 24 GHz ~ 40 GHz</li> <li>* Antenna Gain: 14.5 dBi @ 28GHz, 16.5 dBi @ 38 GHz</li> <li>* RF Connector type: 2.92 mm (K-Type) Female</li> </ul> </li> </ul> </li> </ul>
	C93472A	
	N55307C	<ul style="list-style-type: none"> <li>● <b>Rear Horn Antenna XY-Rail Fixture Set</b> <ul style="list-style-type: none"> <li>- <b>N55307C XY-Rail Fixture</b> <ul style="list-style-type: none"> <li>* Antenna rotation range: 135° (45° increments)</li> </ul> </li> <li>- <b>TC-93472A Horn Antenna</b> <ul style="list-style-type: none"> <li>* Frequency Range: 24 GHz ~ 40 GHz</li> <li>* Antenna Gain: 14.5 dBi @ 28GHz, 16.5 dBi @ 38 GHz</li> <li>* RF Connector type: 2.92 mm (K-Type) Female</li> </ul> </li> </ul> </li> </ul>
	C93472A	

### ■ Horn Antenna XY-Rail Fixture Motion

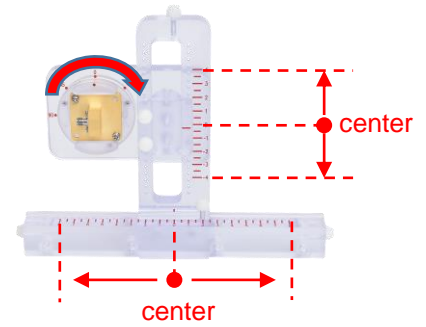
- X-axis Range: ±75 mm from the center
- Y-axis Moving Range: ±40 mm from the center
- Antenna Rotation Range: 0° ~ 135°(increment : 45 °)




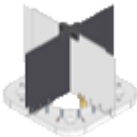
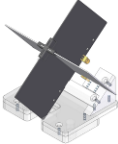


Rear Horn Antenna XY-Rail Fixture Motion


- X-axis Range: ±80 mm from the center
- Y-axis Moving Range: ±40 mm from the center
- Antenna Rotation Range: 0° ~ 135°(increment : 45 °)



DPV Antenna Fixture

Antenna Fixture	Order Number	Configuration
	F55303A	<ul style="list-style-type: none"> <li>• DPV Antenna Fixture</li> <li>- Frequency Range: 0.7 GHz ~ 6.0 GHz</li> <li>- DPV Antenna:TC-93076A</li> <li>- RF Connector type: SMA Female</li> </ul>
DPV Antenna Fixture		
	F55303B	<ul style="list-style-type: none"> <li>• DPV Antenna Fixture</li> <li>- Frequency Range: 0.6 GHz ~ 7.2 GHz</li> <li>- DPV Antenna:TC-93083A</li> <li>- RF Connector type: SMA Female</li> </ul>
DPV Antenna Fixture		
	DPVA Angle Fixture	<ul style="list-style-type: none"> <li>• DPV Antenna Fixture (Angle Type)</li> <li>- Frequency Range: 0.6 GHz ~ 7.2 GHz</li> <li>- DPV Antenna:TC-93076A or TC-93083A</li> <li>- RF Connector type: SMA Female</li> </ul>
DPV Antenna Fixture		

Optional DUT Fixture

Fixture	Order Number	Configuration
	F5530AP-10	<ul style="list-style-type: none"> <li>• DUT Guide Fixture</li> <li>- Grid Fixture Type</li> </ul>
DUT Guide Fixture		



### Optional I/O Interface Panel

#### ■ RF Switch Box Panel

RF Switch Box	Order Number	Configuration
	M5530BP01A	Blank Panel (Absorber)
	M5530BP03A	Max 40GHz 4:1 RF Switch Box <ul style="list-style-type: none"> <li>• RF Switch: Radiall, SP4T, DC~40GHz, No-Term, Latching, 28 VDC, 9Pin D-sub</li> <li>• Four(5), 2.92mm Thru Adapter</li> <li>• Two(2), SMA(f) to SMA(f) Connector</li> <li>• Two(2), N(f) to SMA(f) Connector</li> </ul>
	M5530BP03B	Max 40GHz 6:1 RF Switch Box <ul style="list-style-type: none"> <li>• RF Switch: Radiall, SP6T, DC~40GHz, No-Term, Latching, 28 VDC, 9Pin D-sub</li> <li>• Seven(7), 2.92mm Thru Adapter</li> <li>• Two(2), SMA(f) to SMA(f) Connector</li> <li>• Two(2), N(f) to SMA(f) Connector</li> </ul>

#### ■ Pre-Configured I/O Interface Panel



I/O Interface Panel	Order Number	Configuration
	M5530BP02A	Data Interface Panel <ul style="list-style-type: none"> <li>• one(1), 1.85 mm Thru Adapter</li> </ul>
	M5530BP05A	Data Interface Panel <ul style="list-style-type: none"> <li>• one(1), USB 2.0 outside and inside</li> <li>• one(1), USB 3.0 outside and inside</li> <li>• one(1), RJ-45 outside and inside</li> <li>• one(1), DC Power Jack outside and inside</li> <li>• one(1), AC Power Adaptor</li> </ul>





■ **Custom RF Connector Panel**

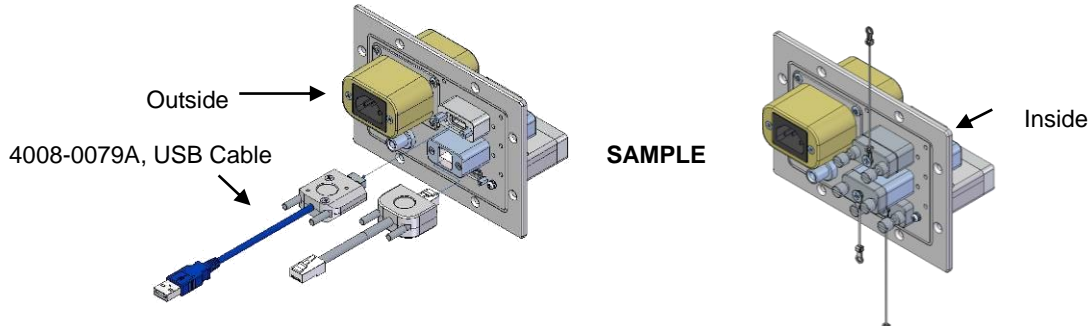
- Custom RF Connector Panel is available by selecting or combining the below RF Connectors.





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 6 GHz / 50 Ω / 1.15 max
	RF, SMA-SMA Connector / 3408-0039	From DC to 8 GHz / 50 Ω / 1.15 max



■ Custom I/O Interface Panel

- Customized I/O Interface Panel is available by selecting from the list of I/O interfaces below. Please contact CTS sales team.



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 installed.
- The data above were measured by our standards, and they may vary depending on the measuring method and environment.
- Each shielding effectiveness is measured without any cable, so shielding effectiveness may vary when cables are connected and depending on the quality and type or cable.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE