



Concentric Technology Solutions Inc

Testing Solutions for the Wireless Industry

# TC-5530B mmWave Shield Box



## Features

- Reliable High RF Shielding from 0.1 GHz to 67 GHz
- Specifically Designed for Testing in Millimeter Wave Band
- Easy to Open & Close
- RF Absorbing materials for stable repeatable measurement results
- EMI Filters on all Data Ports and Power Line
- RF Switch Option Available



# Specifications

## RF Specifications

<b>Frequency Range</b>	0.1 GHz to 67 GHz
<b>Shielding Effectiveness* (Typical.)</b>	
0.1 GHz to 30 GHz	> 70 dB (meas.)
30 GHz to 50 GHz	> 60 dB (meas.)
50 GHz to 67 GHz	> 60 dB

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

## Mechanical Specifications

<b>Basic RF Connector</b>	None
<b>Dimensions</b>	
Inside	424(W) x 375(D) x 424(H) mm
Outside	537(W) x 563(D) x 518(H) mm, Door closed.
Door	334(W) x 400(H) mm
<b>Weight</b>	Approx. 32 kg
<b>*Packing</b>	
Size	620(W) x 710(D) x 683(H) mm
Weight	Approx. 37 kg

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

## Absorber Reflectivity

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

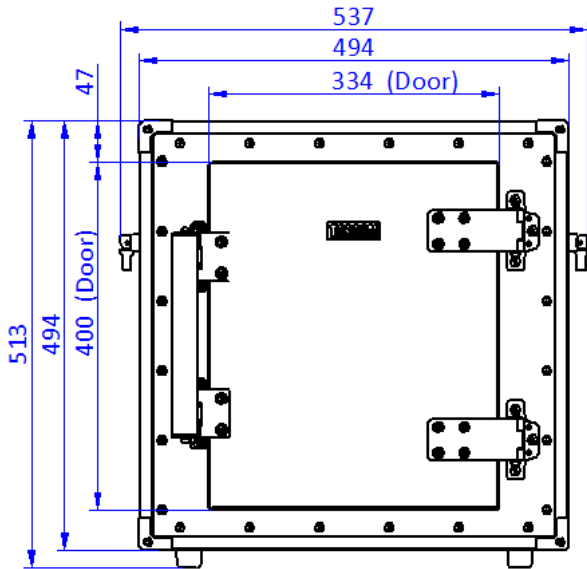
Frequency Range	Reflectivity [dB]
0.5 GHz to 2 GHz	15 dB (Typ.)
2 GHz to 67 GHz	20 dB (Typ.)



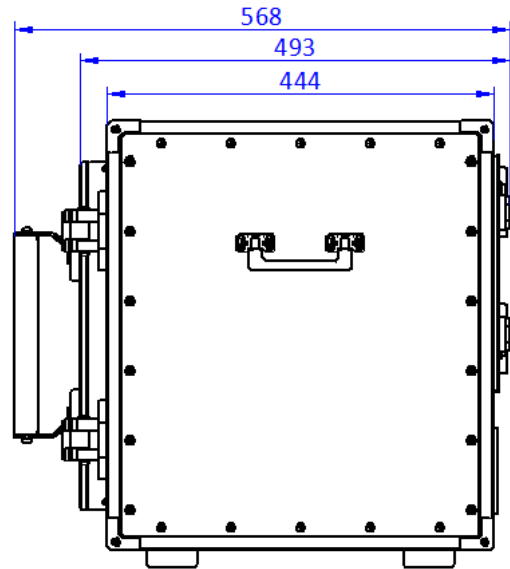
# Dimensions

- TC-5530B Outer Dimensions (W×D×H) : 537(W) × 563(D) × 518(H) mm

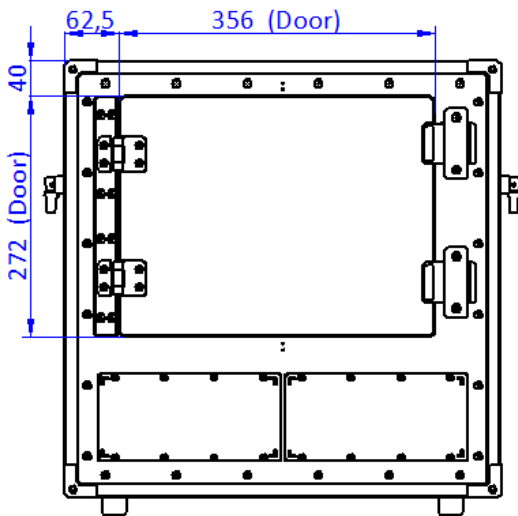
(Internal dimensions may vary by lot.)



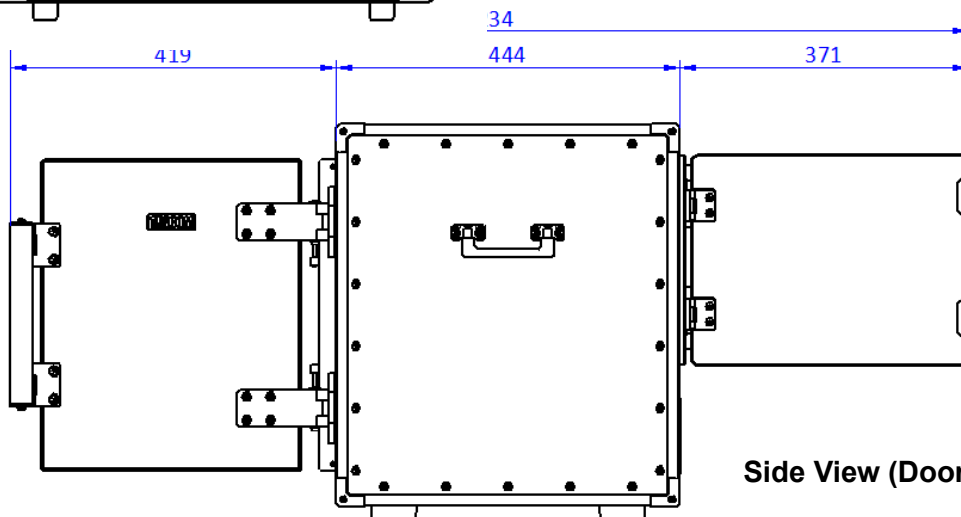
Front View



Side View



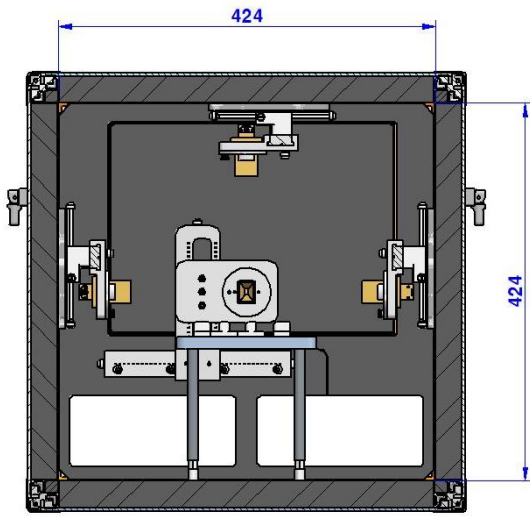
Rear View



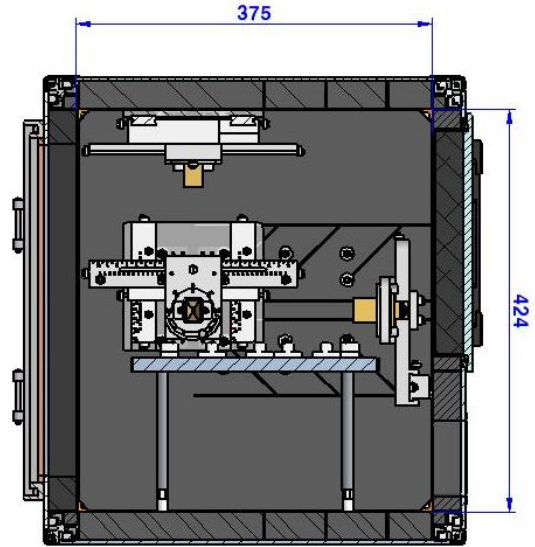
Side View (Door Open)



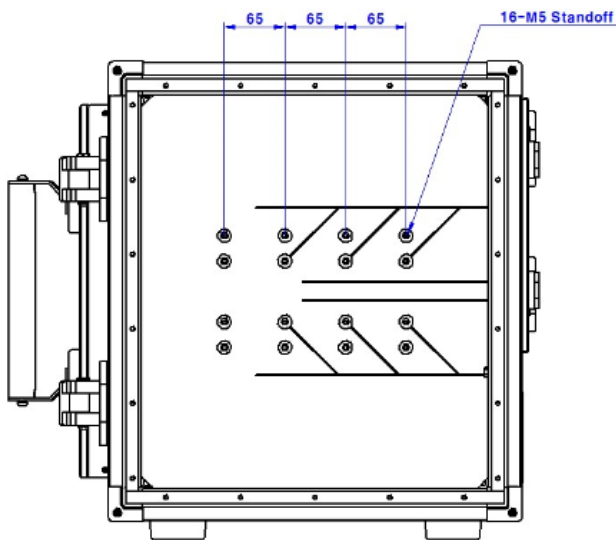
- TC-5530B Inner Dimensions (W×D×H) : 424(W) × 375(D) × 424(H) mm



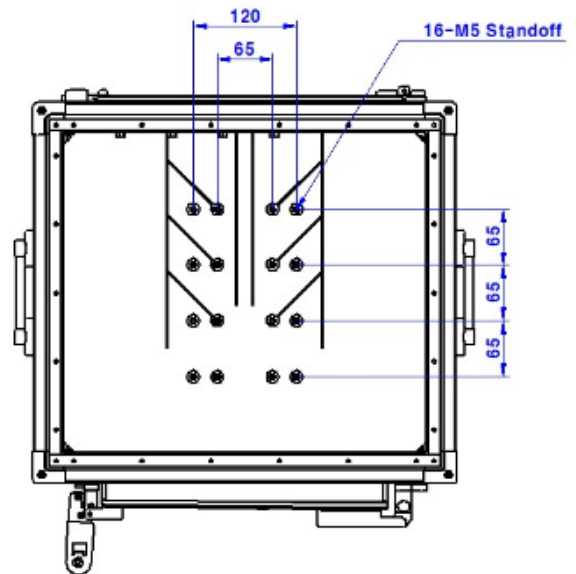
Front Inner View



Side Inner View



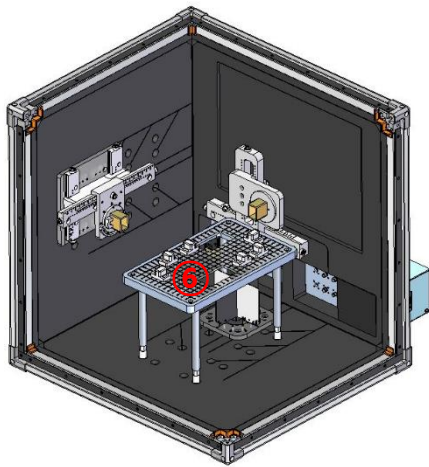
Side Inner View (Antenna Removed)



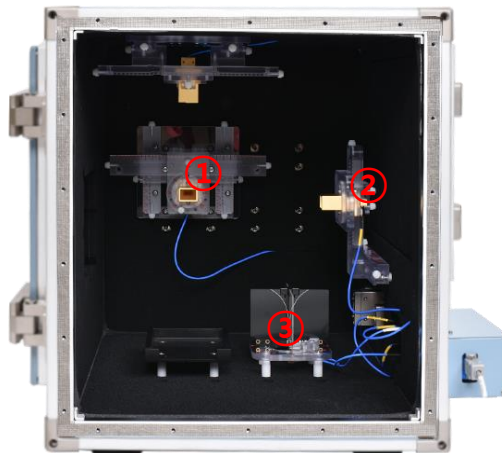
Bottom Inner View (Antenna Removed)



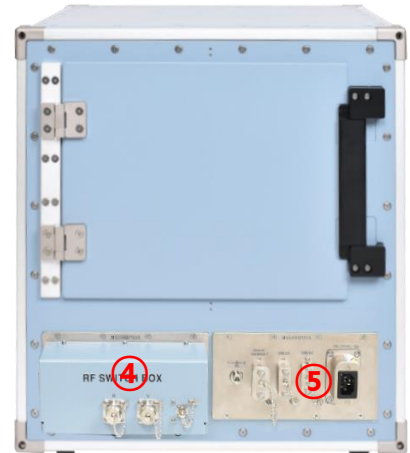
# TC-5530B Configuration Example



<ISO View>



<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>- XY-Rail Fixture: N55307B</li> <li>- Horn Antenna: TC-93472A (24 GHz ~ 40 GHz) TC-93472B (24 GHz ~ 44 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>- Rear XY-Rail Fixture: N55307C</li> <li>- Horn Antenna: TC-93472A (24 GHz ~ 40 GHz) TC-93472B (24 GHz ~ 44 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>- DPV Antenna Fixture C5530AP-2031A</li> <li>- DPV Antenna: C93076A (700 MHz ~ 7.5 GHz)</li> </ul> </li> </ul>
④		<ul style="list-style-type: none"> <li>RF Switch Box               <ul style="list-style-type: none"> <li>- 6:1 RF Switch</li> </ul> </li> </ul>
⑤		<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>
⑥		<ul style="list-style-type: none"> <li>Custom Grid Fixture</li> </ul>

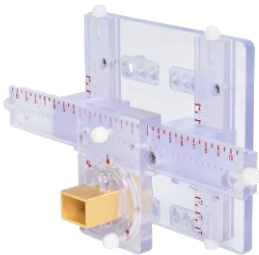



## Ordering Information

Order Number	Description
	<b>mmWave Shield Box (including accessories below)</b>
TC-5530B	Test Report

## Optional Antenna Fixture

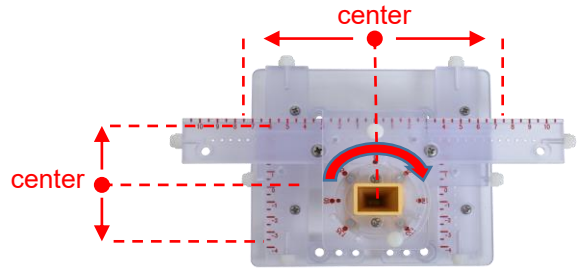
### ■ Horn Antenna Fixture

Antenna Fixture	Order Number	Configuration
	Fixture Horn Antenna RF Cable	<ul style="list-style-type: none"> <li>● <b>Horn Antenna XY-Rail Fixture Set</b> <ul style="list-style-type: none"> <li>- <b>XY-Rail Fixture: N55307B</b> <ul style="list-style-type: none"> <li>* Antenna rotation range: 135° (45° increments)</li> </ul> </li> <li>- <b>Horn Antenna</b> <ul style="list-style-type: none"> <li>* TC-93472A(24 ~ 40 GHz) or TC-93472B(24 ~ 44 GHz)</li> <li>* Antenna Gain: 14.5 dBi @ 28GHz, 16.5 dBi @ 38 GHz</li> <li>* RF Connector type               <ul style="list-style-type: none"> <li>TC-93472A: one(1), 2.92 mm Female</li> <li>TC-93472B: one(1), 2.4 mm Female</li> </ul> </li> </ul> </li> <li>- <b>RF Cable</b> <ul style="list-style-type: none"> <li>* 2.92 mm Type (~40 GHz)               <ul style="list-style-type: none"> <li>4006-0043: 2.92 mm(M) to 2.92 mm(M), 135 cm</li> <li>4006-0033: 2.92 mm(M) to 2.92 mm(M), 80 cm</li> </ul> </li> <li>* 2.4 mm Type (~44 GHz)               <ul style="list-style-type: none"> <li>4006-0048: 2.4 mm(M) to 2.4 mm(M), 180 cm</li> <li>4006-0046: 2.4 mm(M) to 2.4 mm(M), 90 cm</li> </ul> </li> </ul> </li> </ul> </li> </ul>
	Fixture Horn Antenna RF Cable	<ul style="list-style-type: none"> <li>● <b>Rear Horn Antenna XY-Rail Fixture Set</b> <ul style="list-style-type: none"> <li>- <b>XY-Rail Fixture: N55307C</b> <ul style="list-style-type: none"> <li>* Antenna rotation range: 135° (45° increments)</li> </ul> </li> <li>- <b>Horn Antenna</b> <ul style="list-style-type: none"> <li>* TC-93472A(24 ~ 40 GHz) or TC-93472B(24 ~ 44 GHz)</li> <li>* Antenna Gain: 14.5 dBi @ 28GHz, 16.5 dBi @ 38 GHz</li> <li>* RF Connector type               <ul style="list-style-type: none"> <li>TC-93472A: one(1), 2.92 mm Female</li> <li>TC-93472B: one(1), 2.4 mm Female</li> </ul> </li> </ul> </li> <li>- <b>RF Cable</b> <ul style="list-style-type: none"> <li>* 2.92 mm Type (~40 GHz)               <ul style="list-style-type: none"> <li>4006-0034: 2.92mm(M) to 2.92mm(M), 50 cm</li> </ul> </li> <li>* 2.4 mm Type (~44 GHz)               <ul style="list-style-type: none"> <li>4006-0046: 2.4 mm(M) to 2.4 mm(M), 90 cm</li> </ul> </li> </ul> </li> </ul> </li> </ul>



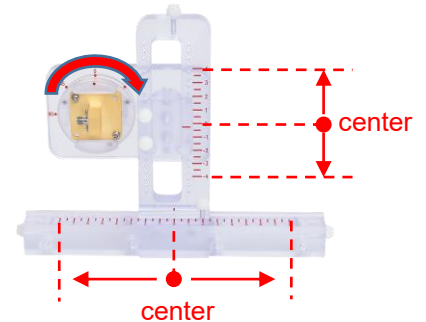
**Horn Antenna XY-Rail Fixture Motion**

- X-axis Range:  $\pm 75$  mm from the center
- Y-axis Moving Range:  $\pm 40$  mm from the center
- Antenna Rotation Range:  $0^\circ \sim 135^\circ$  (increment :  $45^\circ$ )



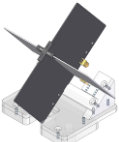


**Rear Horn Antenna XY-Rail Fixture Motion**


- X-axis Range:  $\pm 80$  mm from the center
- Y-axis Moving Range:  $\pm 40$  mm from the center
- Antenna Rotation Range:  $0^\circ \sim 135^\circ$  (increment :  $45^\circ$ )



**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 ~ 7.5 GHz</li> <li>- DPV Antenna: TC-93076A</li> <li>- RF Connector type: SMA Female</li> </ul>
	F55303B	<ul style="list-style-type: none"> <li>• DPV Antenna Fixture</li> <li>- Frequency Range: 0.6 GHz ~ 8 GHz</li> <li>- DPV Antenna: TC-93083A</li> <li>- RF Connector type: SMA Female</li> </ul>
	DPVA Angle Fixture	<ul style="list-style-type: none"> <li>• DPV Antenna Fixture (Angle Type)</li> <li>- DPV Antenna: TC-93076A or TC-93083A</li> <li>- RF Connector type: SMA Female</li> </ul>

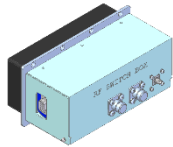
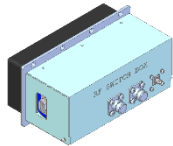
**Optional DUT Fixture**

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

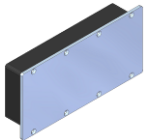
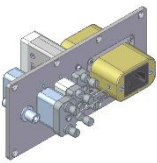


Optional I/O Interface Panel

RF Switch Box Panel

RF Switch Box	Order Number	Configuration
	40 GHz RF Switch Box	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), 2.92 mm Thru Adapter</li> <li>Seven(7), 2.92 mm(M) to 2.92 mm(M) Cable</li> <li>Two(2), SMA(f) to SMA(f) Connector</li> <li>Two(2), N(f) to SMA(f) Connector</li> <li>Two(2), SMA(M) to SMA(M) Cable</li> </ul>
	50 GHz RF Switch Box	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, 9Pin D-sub</li> <li>Seven(7), 2.4 mm Thru Adapter</li> <li>Seven(7), 2.4 mm(M) to 2.4 mm(M) Cable</li> <li>Two(2), SMA(f) to SMA(f) Connector</li> <li>Two(2), N(f) to SMA(f) Connector</li> <li>Two(2), SMA(M) to SMA(M) Cable</li> </ul>

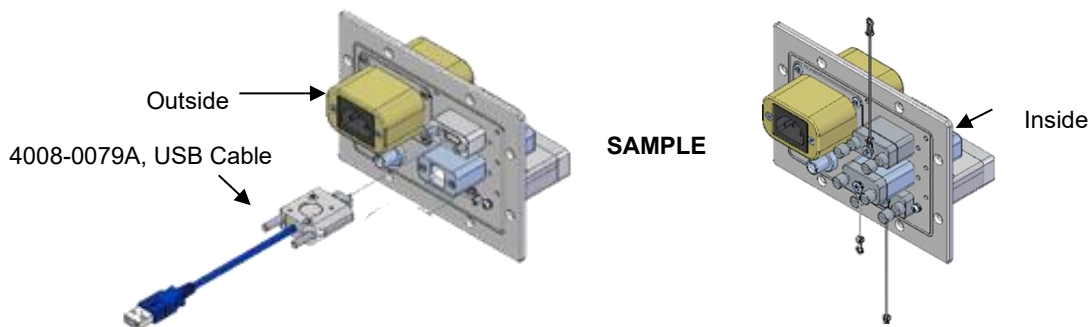
Pre-Configured I/O Interface Panels

I/O Interface Panel	Order Number	Configuration
	M5530BP01A	Blank Panel (Absorber)
	M5530BP05A	<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>

Data Interface Panel

Custom I/O Interface Panels

- Customized I/O Interface Panel is available by selecting I/O interfaces below and combining. Please contact CTS sales team for more information.
















RF Connectors

- Custom RF Connector Panels are available by selecting or combining the RF Connectors below.

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

RF Filtered Data Connectors & RF Filtered Power I/O

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



I/O Interface	Description / Order Number	Typical Data Rate / Line Voltage	Typical Shielding <sup>(*)</sup>
	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 was 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 likely affect the isolation rate when a cable is connected. Also, it may vary depending on the type and quality of cable used

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE