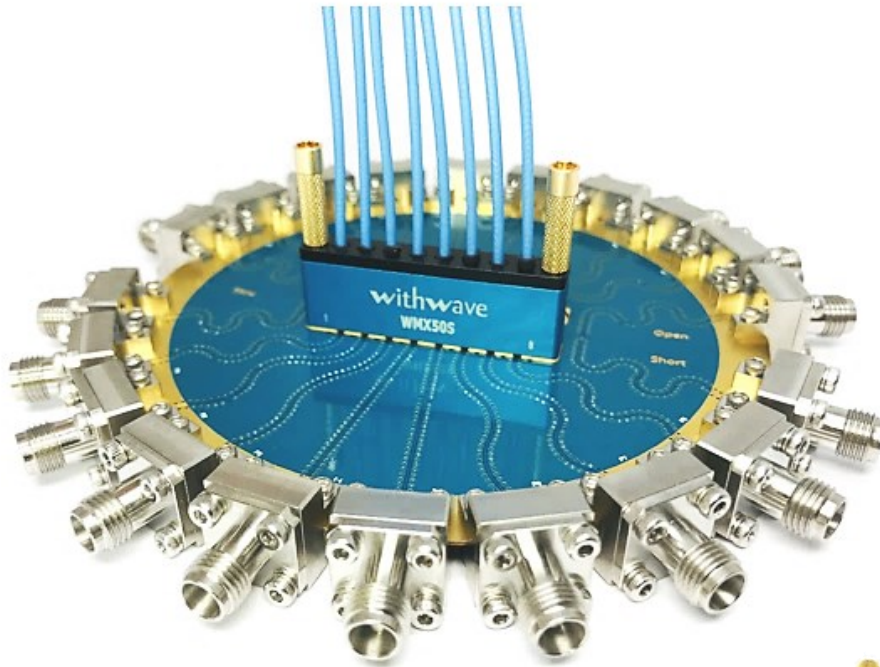


Withwave's High Speed & High-density Multicoax Cable Assemblies (WMX Series) provides a wide range of multiple coax connectors and flexible cable assemblies with a choice of 20,40,50,67,110 GHz configurations based on precision array design and superior high frequency cabling solutions.

WMX Series are excellent signal integrity solutions for bench-top testing and automated test equipment to meet increasing demands of semiconductor test equipment and optical testing industries.

These products consist of high performance flexible assemblies which can be bundled in housings (8 and 16 channels) and the interface to board is compression type which provides lower total cost of testing by avoiding costly soldering components.



### ■ Features

- Frequency Range : DC to 20, 40, 50, 67 & 110 GHz
- Excellent Insertion and Return loss performance
- Socket & Direct Contact type
- No. of Channel : 1x8, 2x8 Channel
- Pitch : 2.54 mm & 4.00 mm

### ■ Applications

- Semiconductor & Optical test equipment
- High speed testing module
- Super Computing
- 5G Communication systems



### ■ Specification

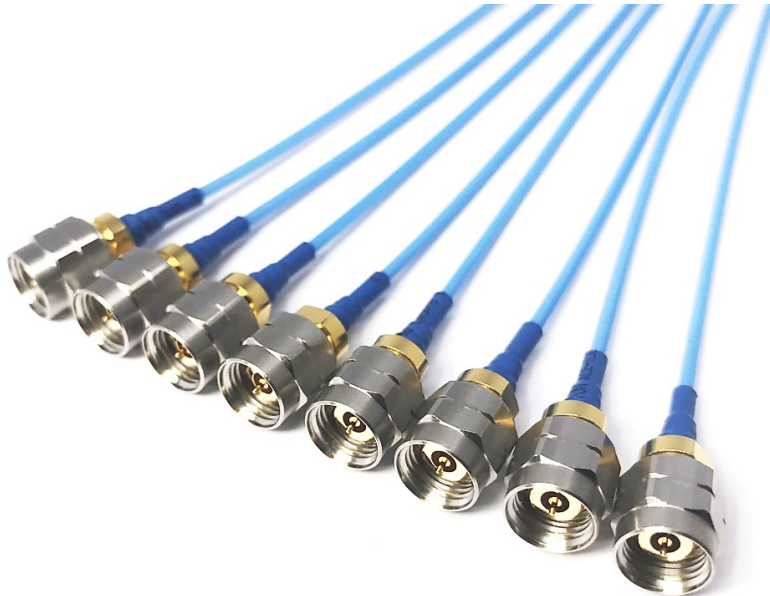
Specification	WMX20	WMX40	WMX50	WMX67	WMX110
<b>SERDES Characterization</b>	<b>PAM4 28 Gbps</b>	<b>PAM4 56 Gbps</b>	<b>PAM4 56 Gbps</b>	<b>PAM4 112 Gbps</b>	<b>PAM4 224 Gbps</b>
Freq. Range(Max)	20GHz	40GHz	50GHz	67GHz	110GHz
Connector type	SMA	2.92mm	2.4mm	1.85mm	1.0mm
PCB Mount type	<ul style="list-style-type: none"> <li>Vertical (Straight) : Direct / Socket</li> <li>Board Edge (Right Angle) : Socket</li> </ul>				<ul style="list-style-type: none"> <li>Vertical : Direct</li> </ul>
PCB Transition	<ul style="list-style-type: none"> <li>Microstrip</li> </ul>				<ul style="list-style-type: none"> <li>Microstrip</li> <li>Strip</li> </ul>
VSWR (Board Edge)	<ul style="list-style-type: none"> <li>Vertical (Straight) : 1.5:1</li> <li>Board Edge (Right Angle) : 1.6:1</li> </ul>				1.8:1
No. of Positions	<ul style="list-style-type: none"> <li>Vertical (Straight) : 8 (1x8), 16 (2x8)</li> <li>Board Edge (Right Angle) : 8 (1x8)</li> </ul>				
Pitch	<ul style="list-style-type: none"> <li>Vertical (Straight) : 2.54mm, 4.0mm</li> <li>Board Edge (Right Angle) : 2.54mm</li> </ul>				2.54mm
Min. Cable Length	150 mm (*Contact us for other lengths)				
Temperature	-55 ~ +125 °C				

**\* Test Condition**

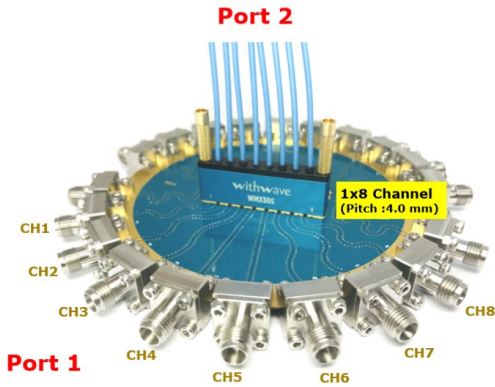
- Cable length : 150 mm(O.D : 0.047 inch), Pitch : 4.0 mm

- PCB : Multilayer (RO4003C 8 mil + FR4 16 mil), RF Trace Length : 44.14 mm(Microstrip , CBCPW Structure)

\*\* Please see cable specification for detail information (Page 17~18)



### ■ Test Results (WMX40)

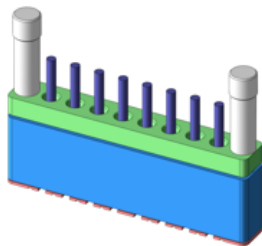


#### Test Condition

- **WMX40 (Socket & Direct Contact) ; 1x8 Channel**
  - Cable length : 150 mm(O.D : 0.047 inch)
  - Pitch : 4.0 mm
  - Connector : 2.92 mm (Female)
- **Test Board**
  - PCB : Multilayer (RO4003C 8 mil + FR4 16 mil)
  - RF Trace length : 44.14 mm (**Microstrip, CBCPW Structure**)
  - Connector: End Launch 2.92 mm(Female)

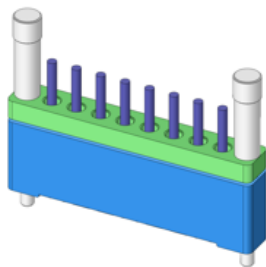
#### Socket Type

- Freq.: 10 MHz to 40 GHz

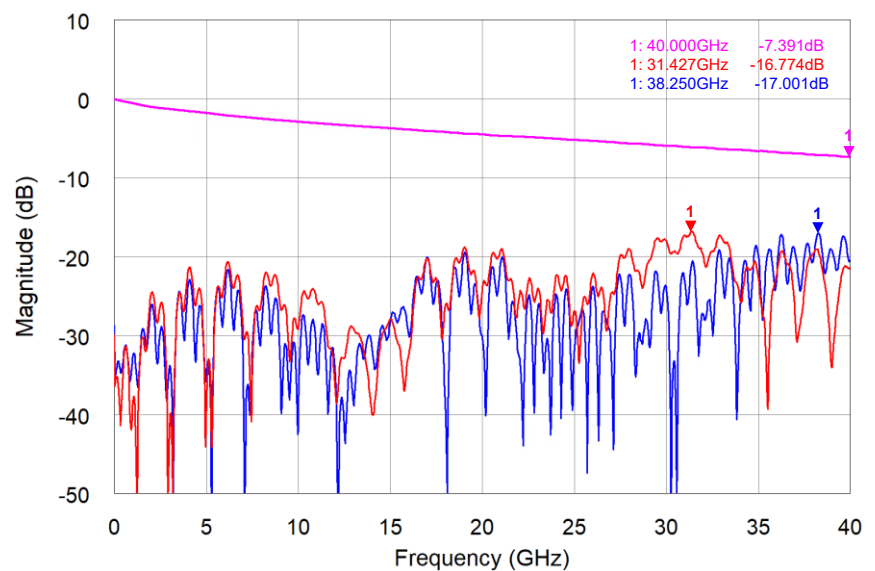
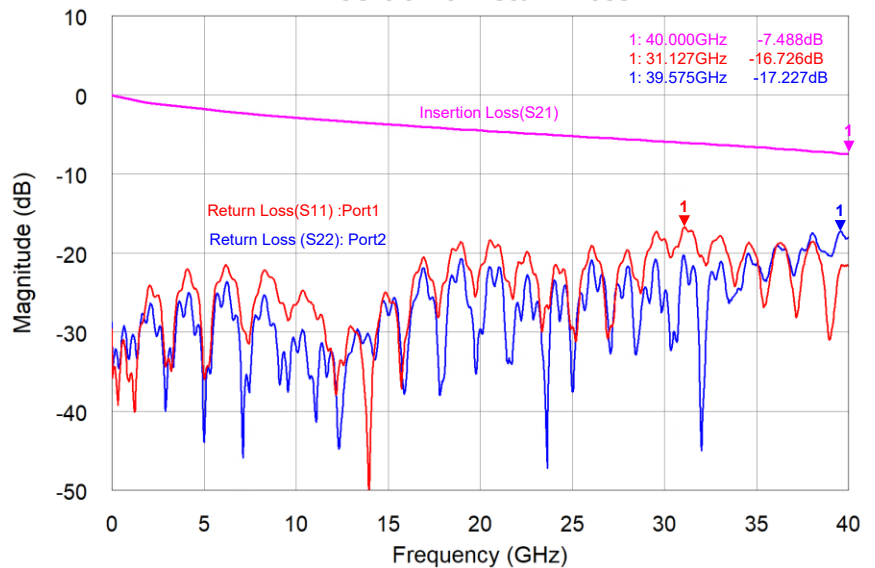


#### Direct Contact Type

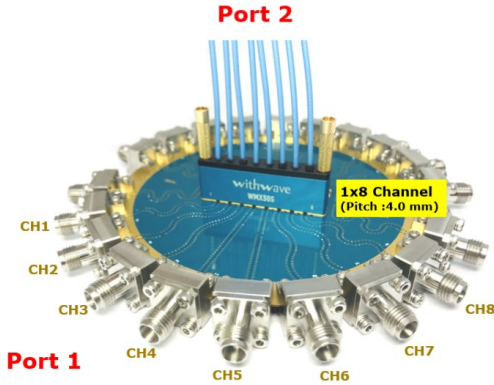
- Freq.: 10 MHz to 40 GHz



#### Insertion & Return Loss



### Test Results (WMX50)

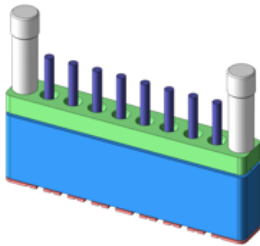


#### Test Condition

- **WMX50 (Socket & Direct Contact) ; 1x8 Channel**
  - Cable length : 150 mm(O.D : 0.047 inch)
  - Pitch : 4.0 mm
  - Connector : 2.4 mm (Female)
- **Test Board**
  - PCB : Multilayer (RO4003C 8 mil + FR4 16 mil)
  - RF Trace length : 44.14 mm(**Microstrip, CBCPW Structure**)
  - Connector: End Launch 2.4 mm(Female)

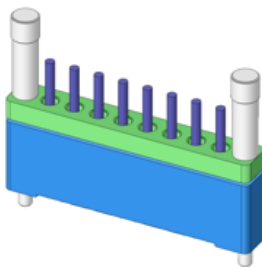
#### Socket Type

- Freq.: 10 MHz to 50 GHz

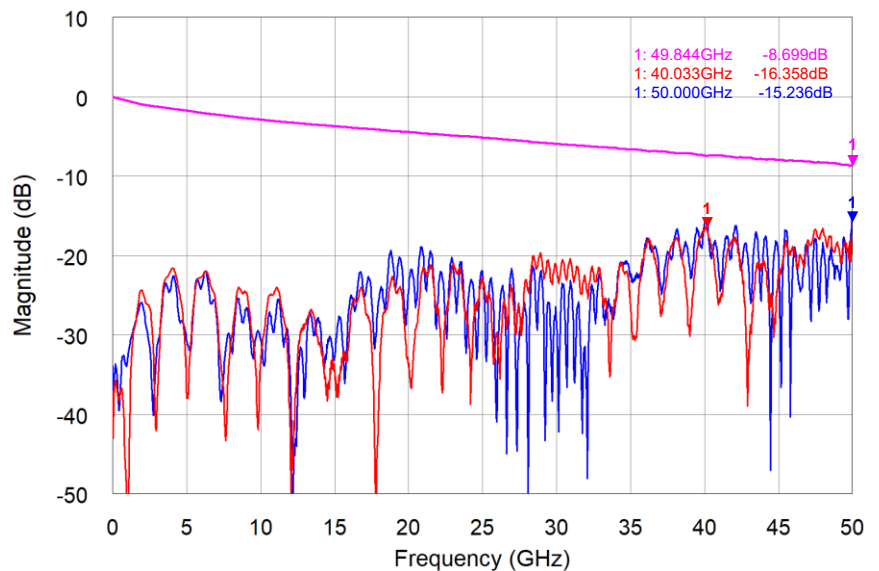
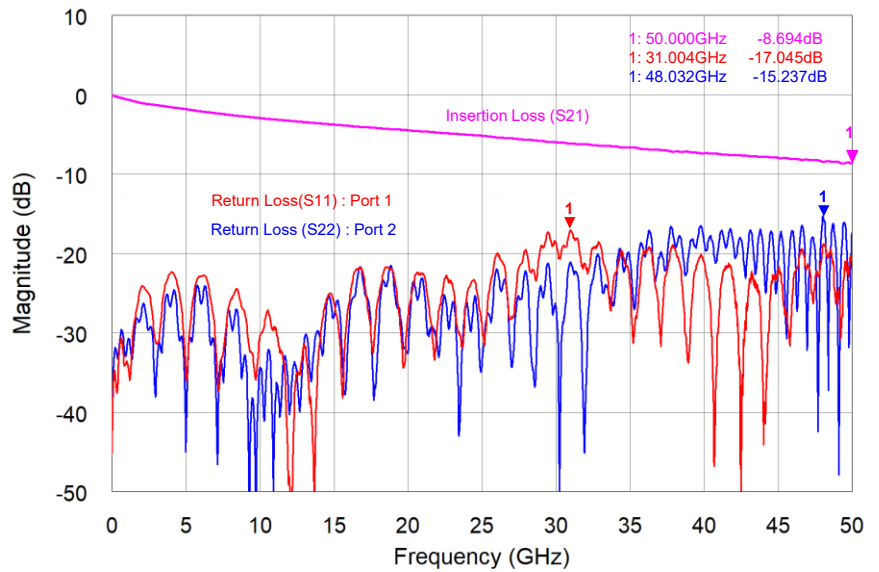


#### Direct Contact Type

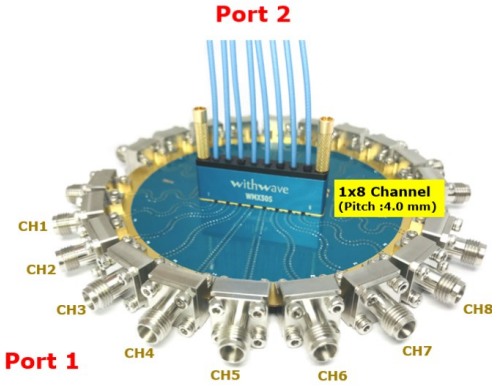
- Freq.: 10 MHz to 50 GHz



#### Insertion & Return Loss



### Test Results (WMX67)

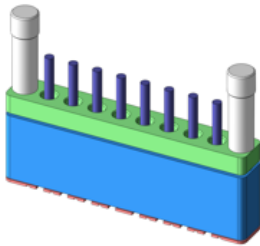


#### Test Condition

- **WMX67 (Socket & Direct Contact) ; 1x8 Channel**
  - Cable length : 150 mm(O.D : 0.047 inch)
  - Pitch : 2.54 mm
  - Connector : 1.85 mm (Female)
- **Test Board**
  - PCB : Multilayer (RO4003C 8 mil + FR4 16 mil)
  - RF Trace length : 44.14 mm (**Microstrip, CBCPW Structure**)
  - Connector: End Launch 1.85 mm(Female)

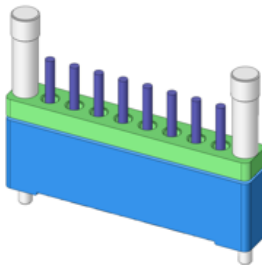
#### Socket Type

- Freq.: 10 MHz to 67 GHz

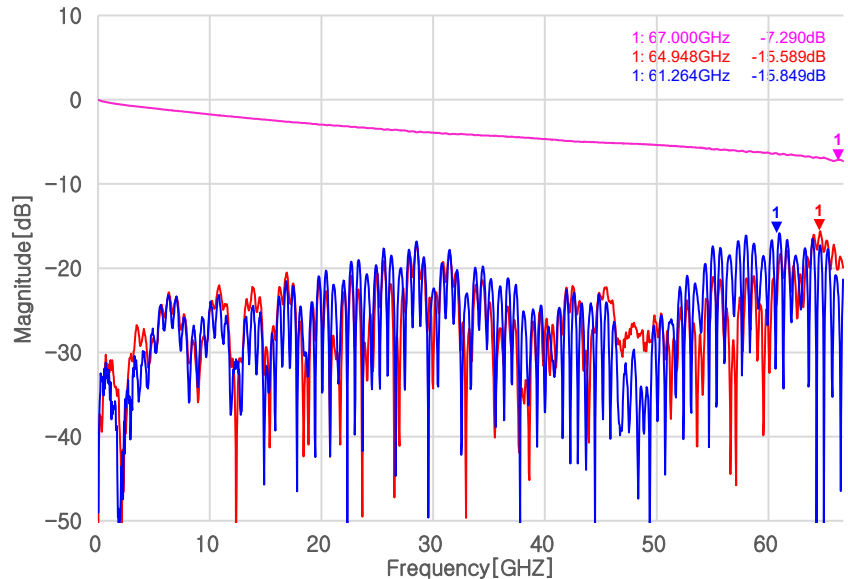
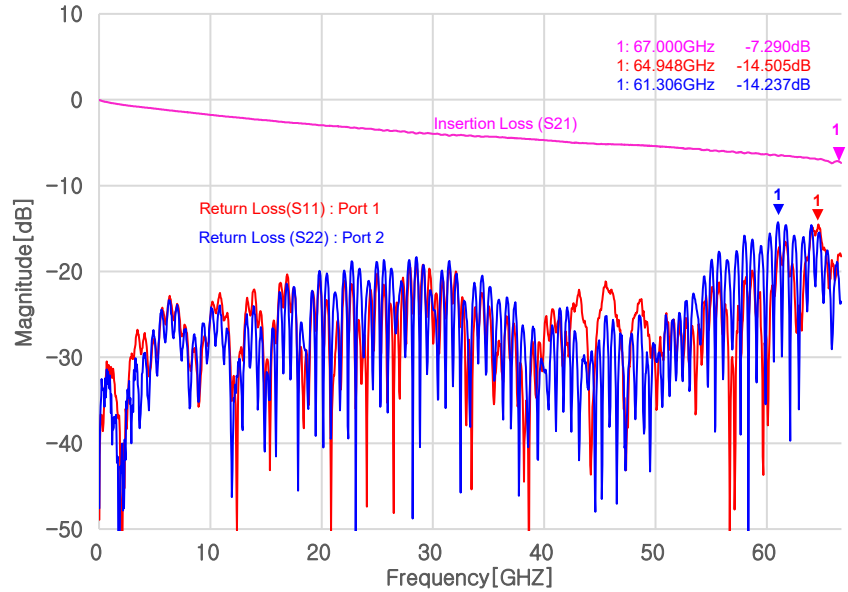


#### Direct Contact Type

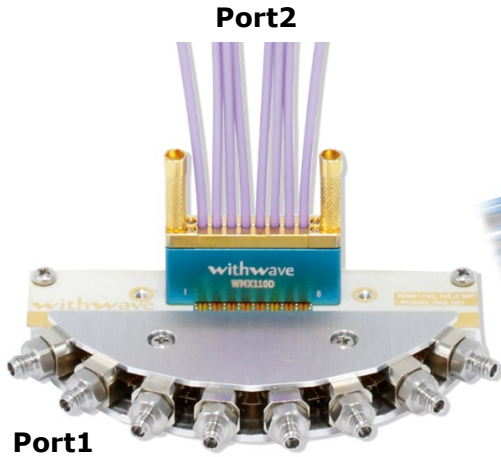
- Freq.: 10 MHz to 67 GHz



#### Insertion & Return Loss



### ■ Test Results (WMX110)

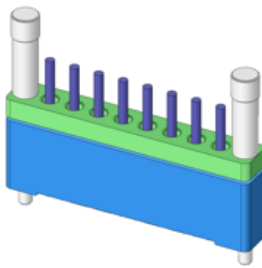


#### Test Condition

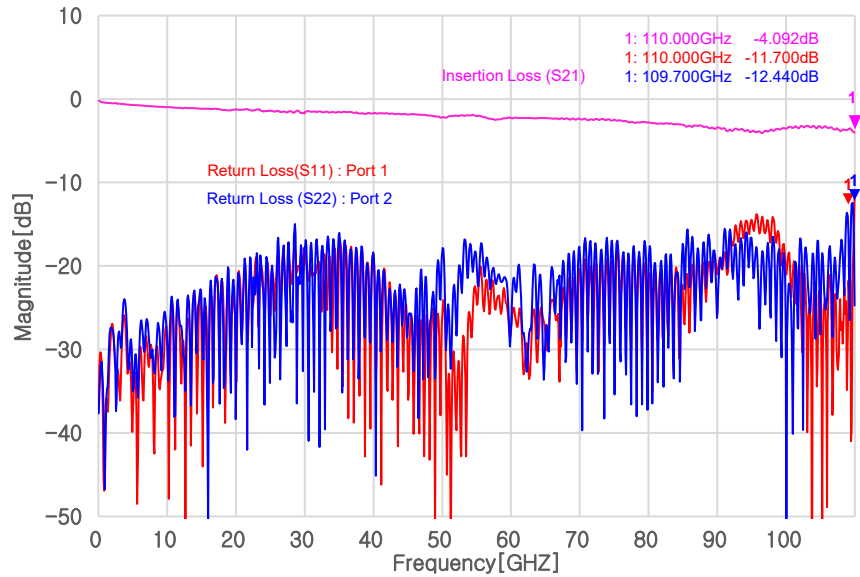
- **WMX110 (Direct Contact) : 1x8 Channel**
  - Cable length : 150 mm
  - Pitch : 2.54 mm
  - Connector : 1.0 mm (Male)
- **Test Board**
  - PCB : 2Layers (RO3003C 5 mil)
  - RF Trace length : 31.21 mm (**Microstrip, CBCPW Structure**)
  - Connector: End Launch 1.0 mm(Female)

#### Direct Type

- Freq.: 10 MHz to 110 GHz

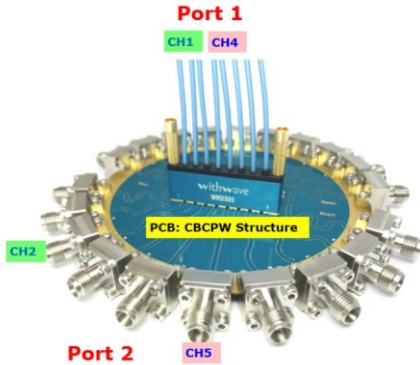


#### Insertion & Return Loss



- De-embedded result using 2xthru test fixture (3.8mm PCB trace loss included)

### ■ Test Results (WMX50)

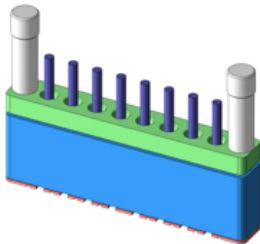


#### Test Condition

- **WMX50 (Socket & Direct Contact) ; 1x8 Channel**
  - Cable length : 150 mm(O.D : 0.047 inch)
  - Pitch : 4.0 mm
  - Connector : 2.4 mm (Female)
- **Test Board**
  - PCB : Multilayer (RO4003C 8 mil + FR4 16 mil)
  - RF Trace length : 44.14 mm (**Microstrip, CBCPW Structure**)
  - Connector: End Launch 2.4 mm(Female)

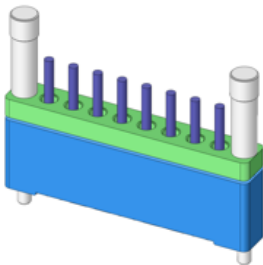
#### Socket Type

- Freq.: 10 MHz to 50 GHz

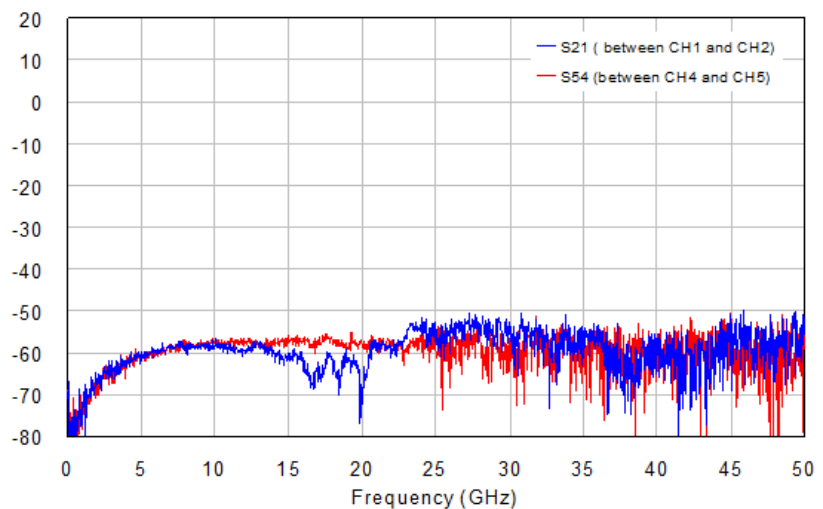
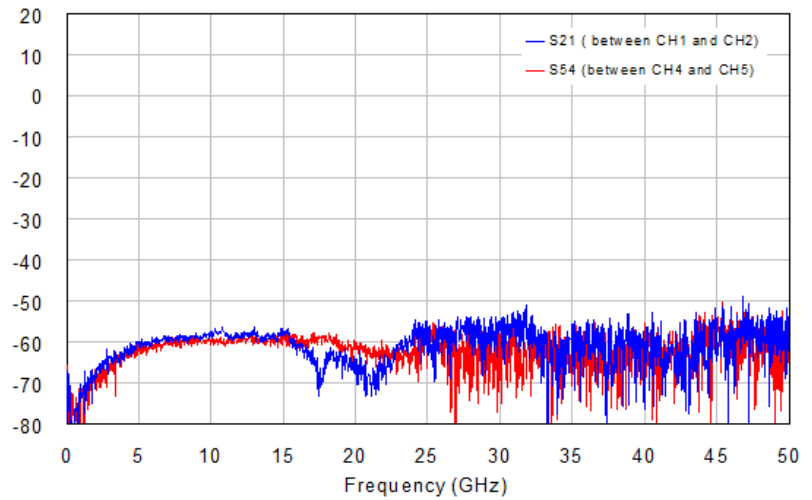


#### Direct Contact Type

- Freq.: 10 MHz to 50 GHz

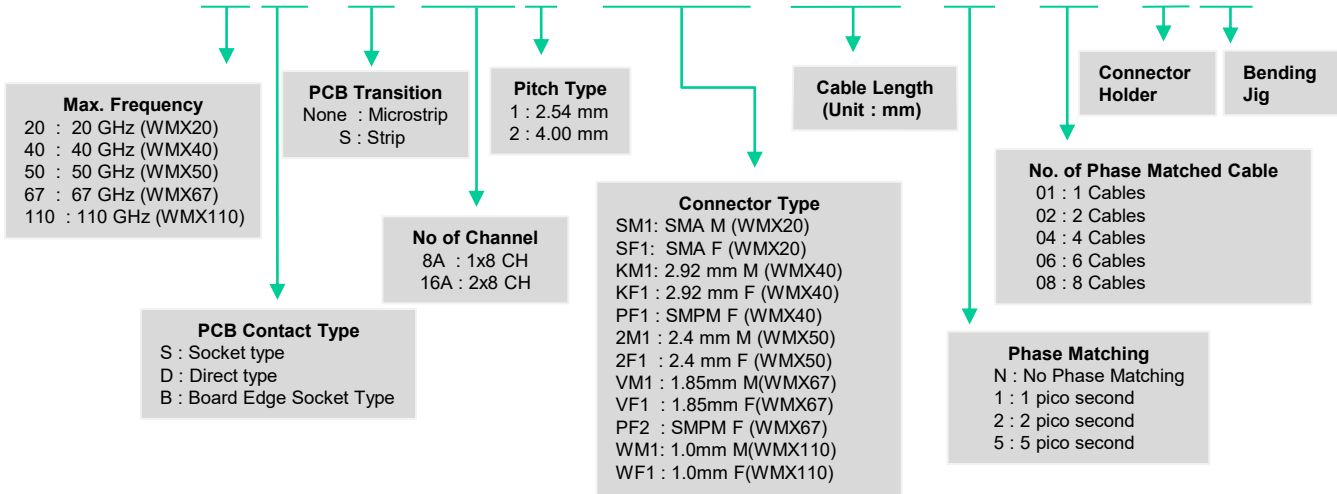


#### Cross-talk



### ■ Selection Guide (WMX Series)

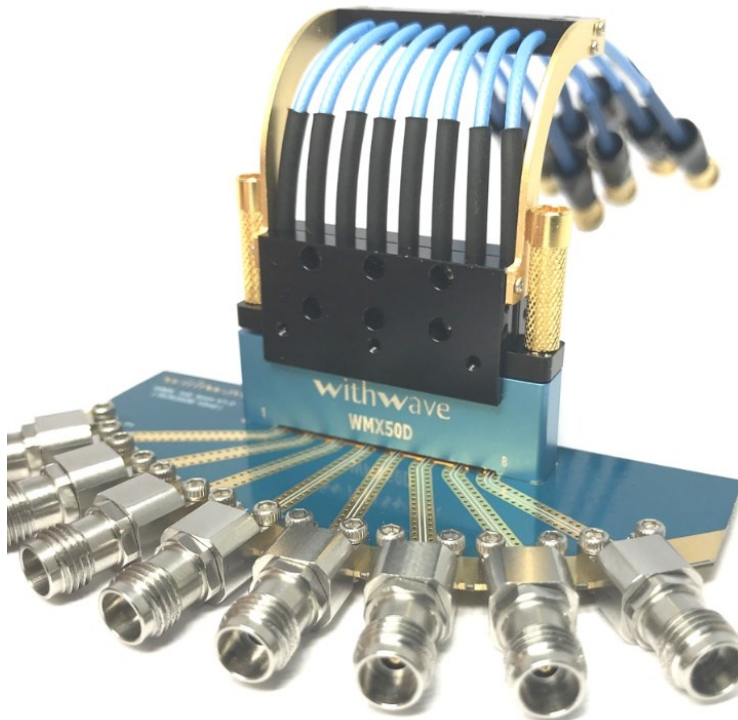
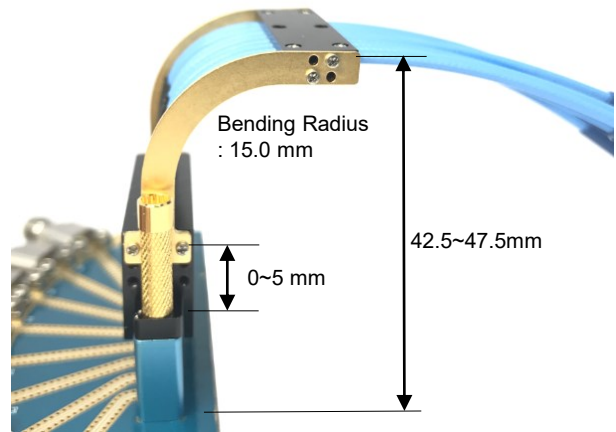
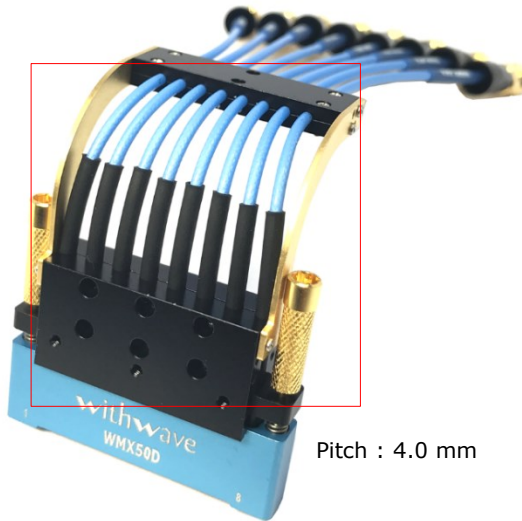
# WMX40B(S)-8A1-KM1-300-2-02-HB



**Connector Holder**



■ Selection Guide (Option : Bending JIG) for 90 degrees cable bend



■ Selection Guide (Socket)

## WMX-8A-01



No of Channel  
8A : 1x8 Channel  
16A : 2x8 Channel

Pitch Type  
01 : 2.54 mm  
02 : 4.00 mm

## WMX-8A-01-B



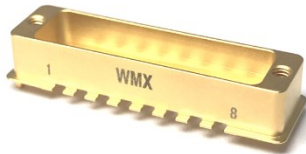
No of Channel  
8A : 1x8 Channel

Pitch Type  
01 : 2.54 mm

Socket Type  
B : Board Edge

### Socket Type (Pitch : 2.54 mm)

1x8 Channel (Part #: WMX-8A-01)



2x8 Channel (Part #: WMX-16A-01)

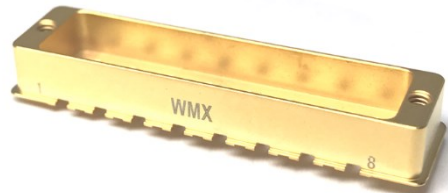


### Socket Type (Pitch : 4.00 mm)

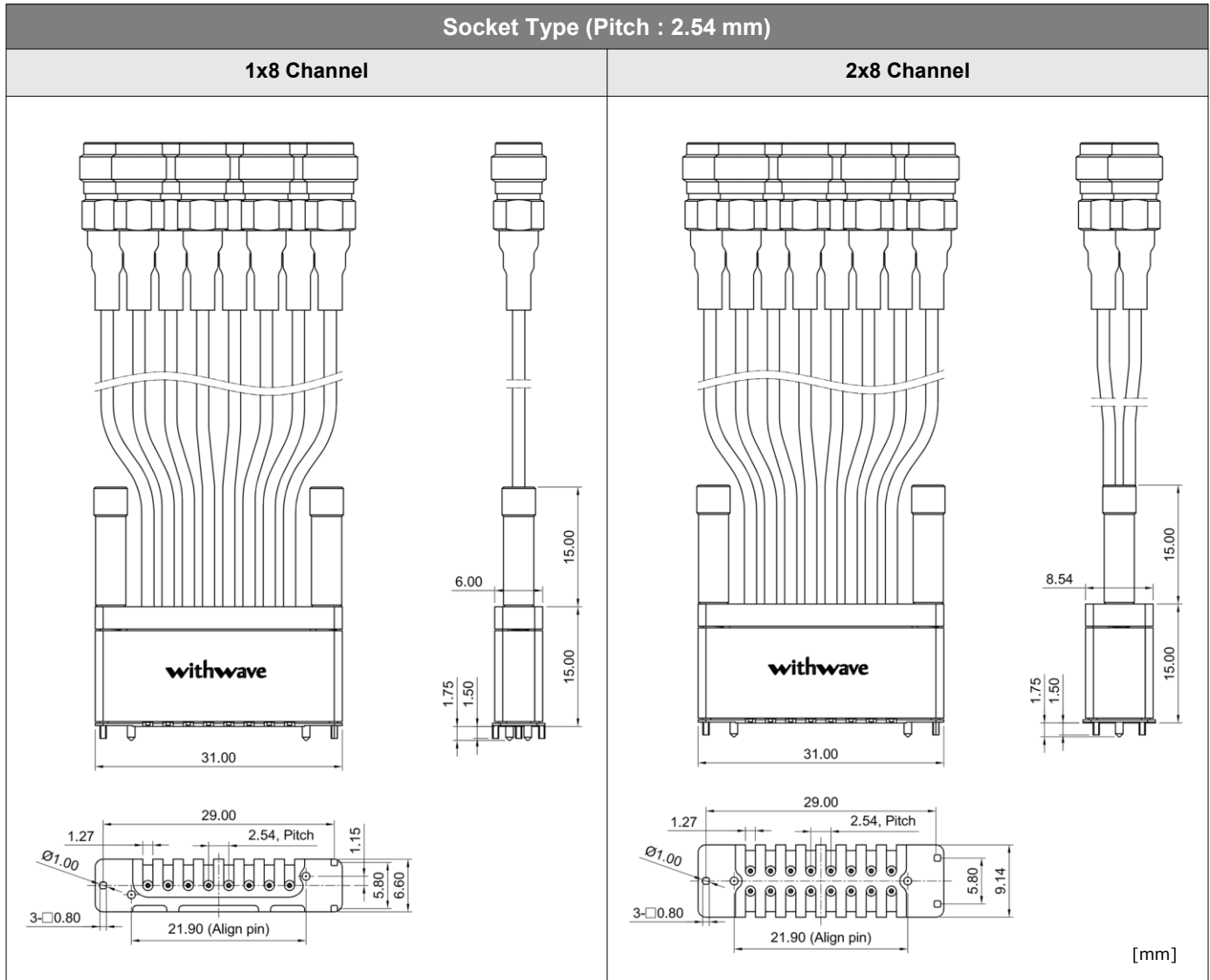
1x8 Channel (Part #: WMX-8A-02)



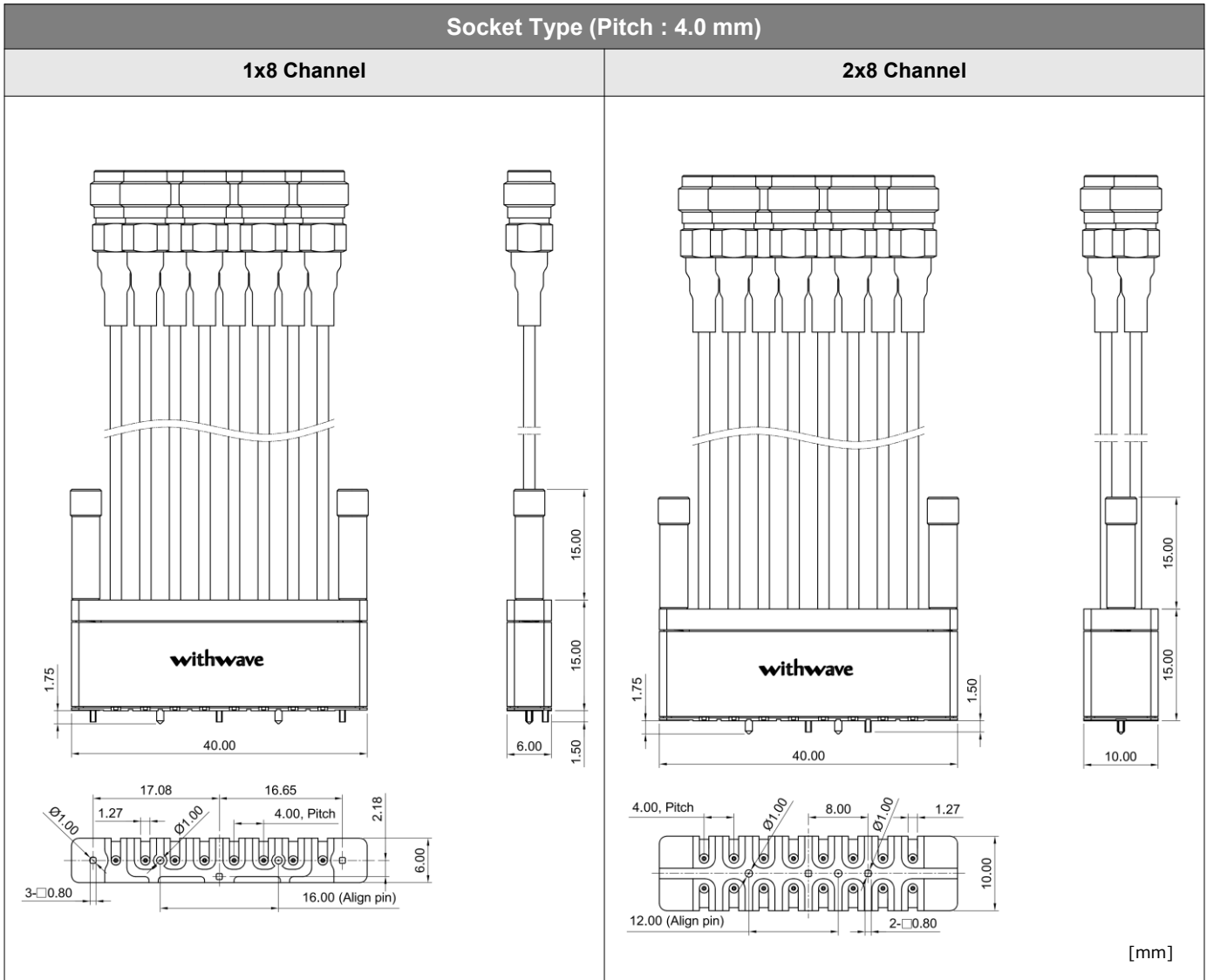
2x8 Channel (Part #: WMX-16A-02)



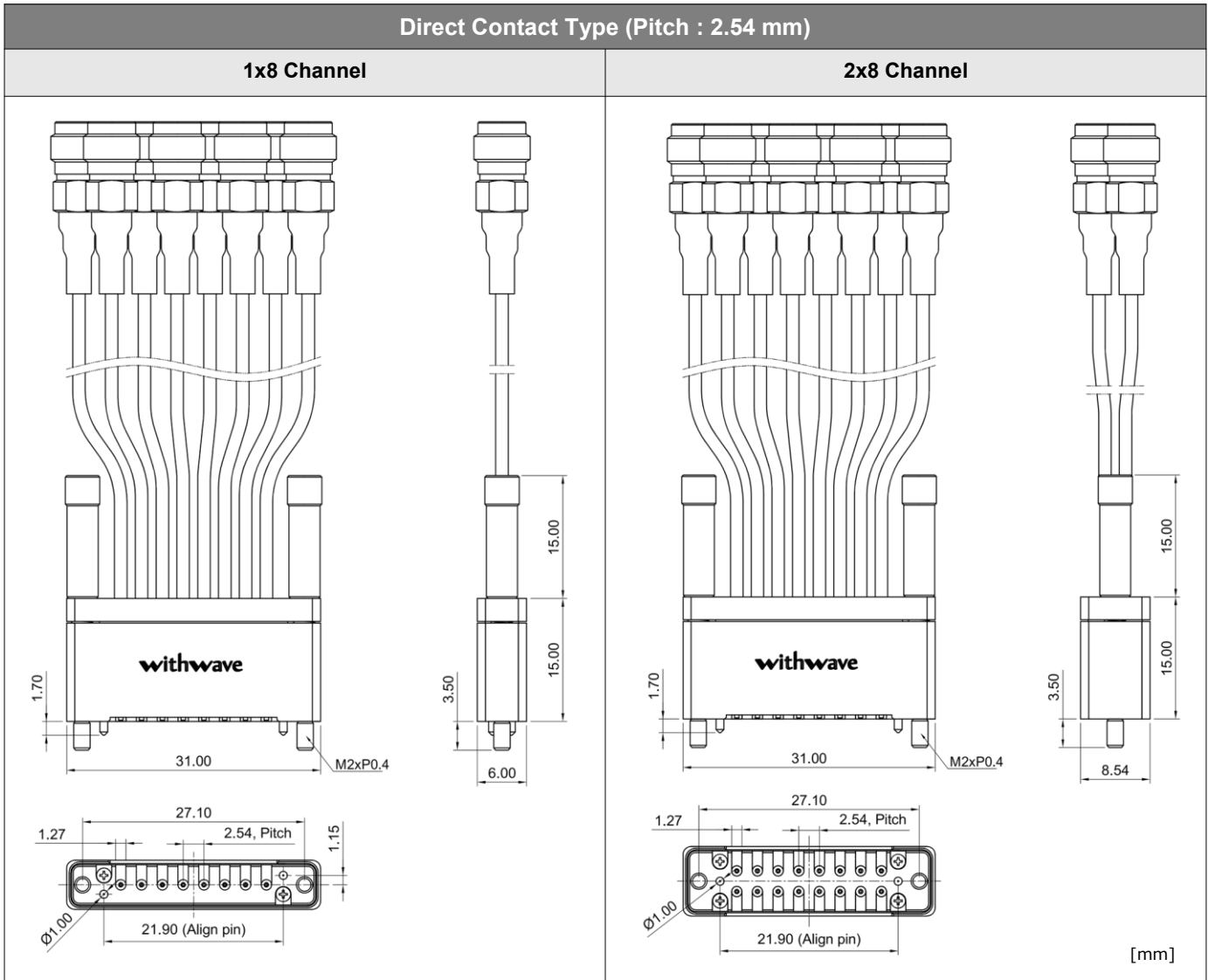
■ Drawing (WMX Series)



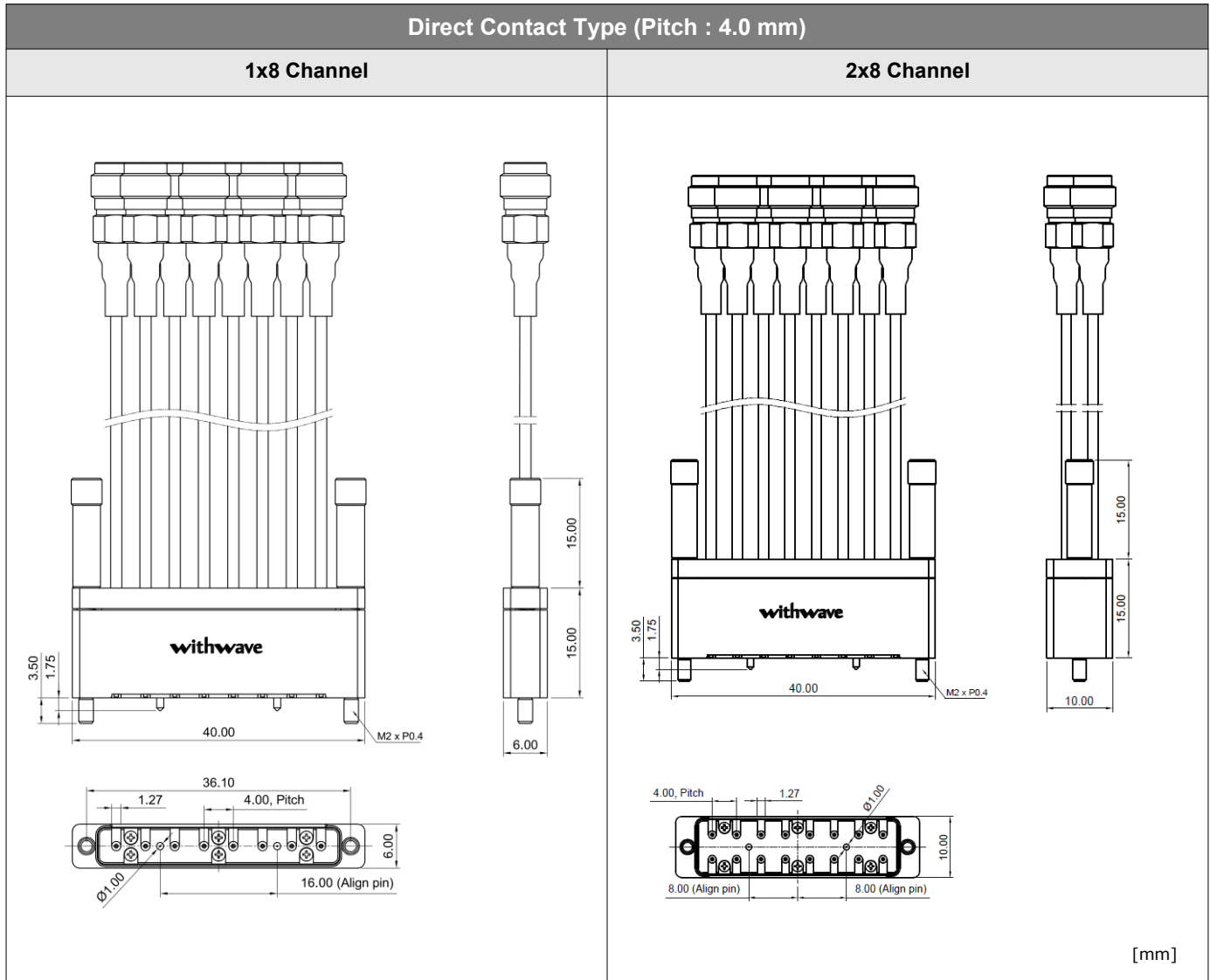
■ Drawing (WMX Series)



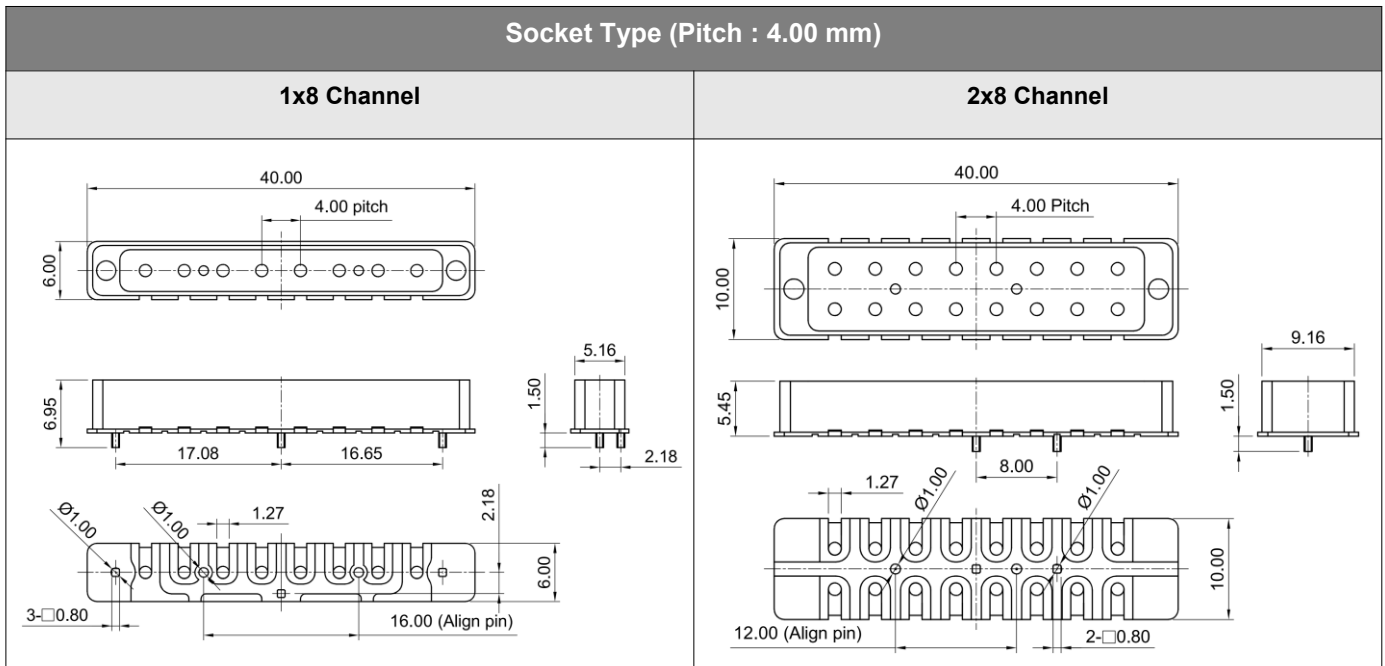
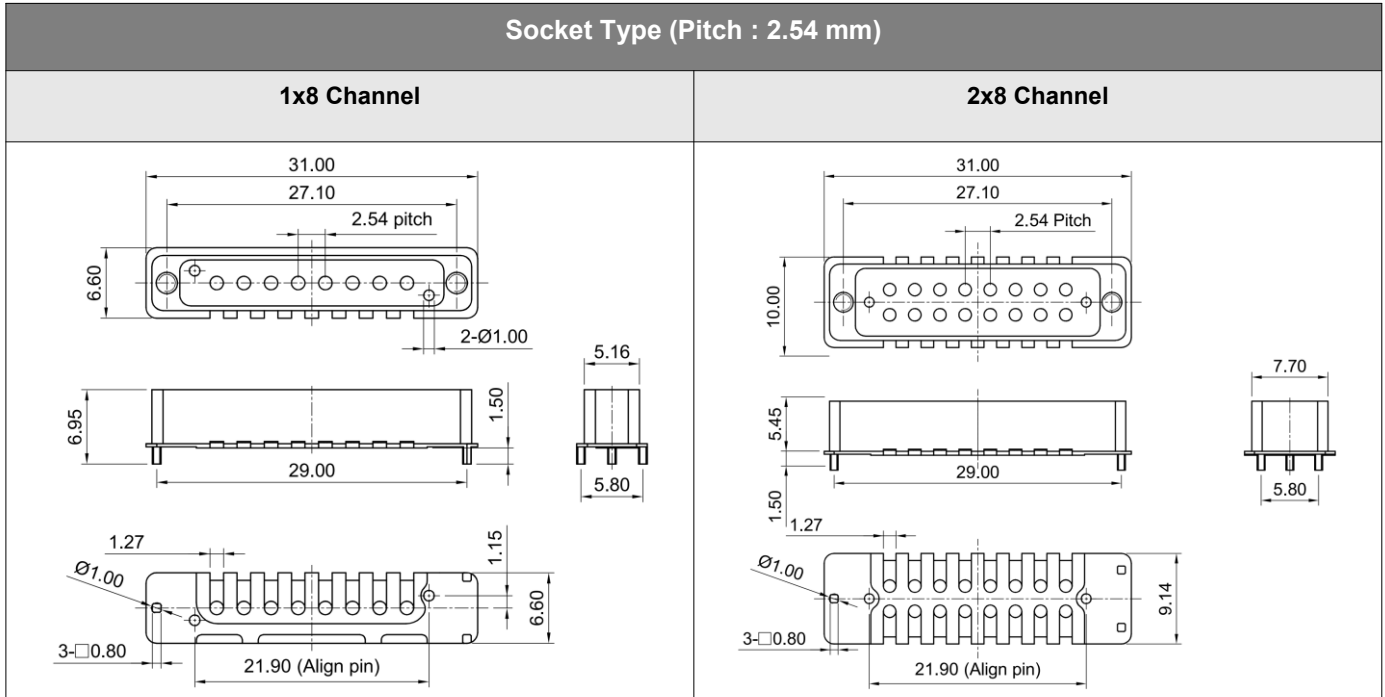
■ Drawing (WMX Series)



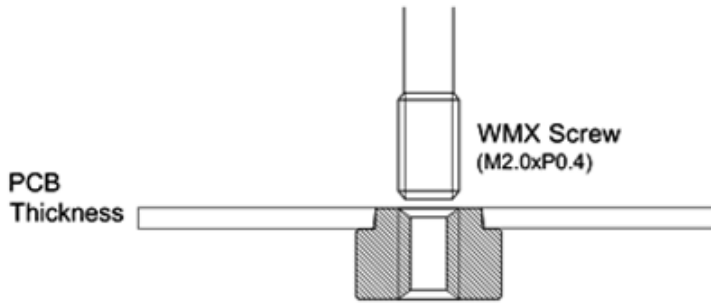
■ Drawing (WMX Series)



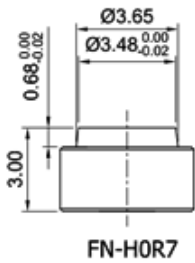
■ Drawing (Socket)



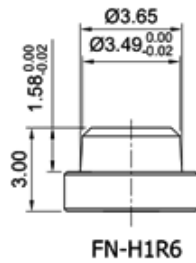
■ Drawing (Fixing Nuts)



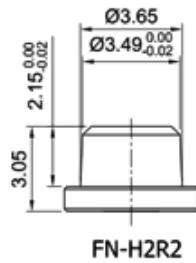
PCB Thickness : 0.7~1.6T



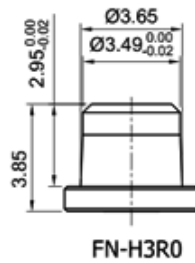
1.6~2.2T



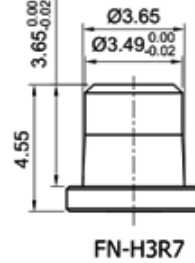
2.2~3.0T



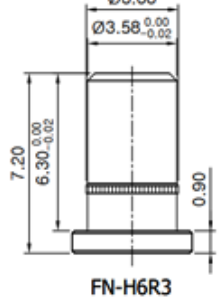
3.0~3.7T



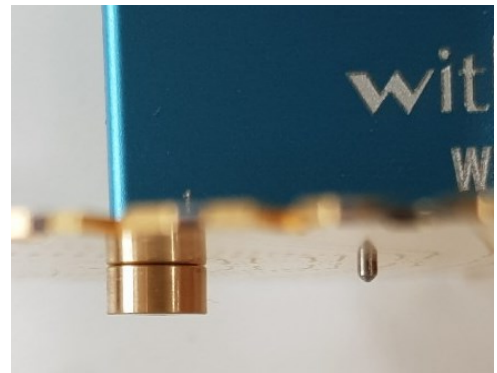
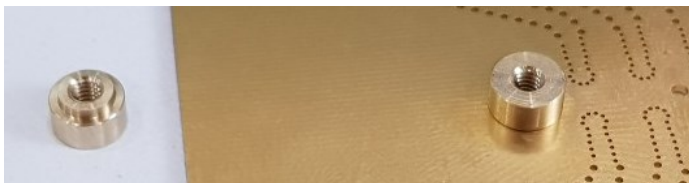
3.7~4.4T



6.3~7.0T



[ Nuts for mounting WMX on PCB ]



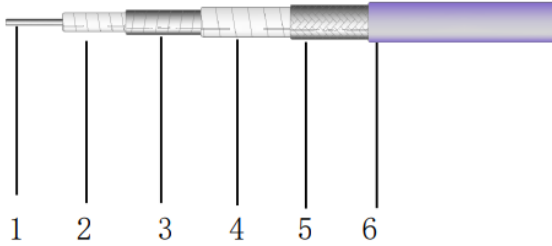


### ■ Cable Specification (FX047)



Scope	FX047			Specification
Electrical Properties	Operating Frequency Range (GHz)			67
	Impedance (Ohm)			50 ± 2
	Velocity of Propagation (%)			70
	Shielding effectiveness (dB)			>90
	Voltage Withstand(V, DC)			350
Material & Construction	Structure	Size (mm)	Material	
	1 Center Conductor	0.29	Solid Bare Copper	
	2 Dielectric	0.92	Solid PTFE	
	3 1 <sup>st</sup> Outer Shield	1.08	Flat Silver Plated Copper	
	4 2 <sup>nd</sup> Outer Shield	1.28	Alloy	
5 Jacket	1.53	FEP (Color : Skyblue)		
Mechanical And Environmental Performance	Weight (g/m)			7.2
	Operating Temperature Range (°C)			-55~+125
	Bend Radius : Installation (mm)			7.67
	Bend Radius : Repeated (mm)			14.20
Attenuation values	Freq MHz	dB /M	Average power kW	
	300	0.67	0.046	
	500	0.87	0.036	
	1000	1.24	0.025	
	3000	2.16	0.014	
	6000	3.08	0.010	
	10000	4.01	0.008	
	12400	4.48	0.007	
	16000	5.12	0.006	
	18000	5.44	0.006	
26500	6.66	0.005		
40000	8.29	0.004		

### ■ Cable Specification (W601)



Scope	W601			Specification
Electrical Properties	Operating Frequency Range (GHz)			110
	Impedance (Ohm)			50 ± 2
	Velocity of Propagation (%)			76
	Shielding effectiveness (dB)			>90
	Voltage Withstand(V, DC)			200
Material & Construction	Structure	Size (mm)	Material	
	1 Center Conductor	0.29	Silver Plated Copper	
	2 Dielectric	0.84	LD PTFE	
	3 1 <sup>st</sup> Outer Shield	1.00	Silver Plated Copper	
	4 Inner Tape	1.12	LD PTFE	
	5 2 <sup>nd</sup> Outer Shield	1.35	Silver Plated Copper	
6 Jacket	1.80	Violet FEP		
Mechanical And Environmental Performance	Weight (g/m)			8
	Operating Temperature Range (°C)			-55~+125
	Bend Radius : Installation (mm)			7
	Bend Radius : Repeated (mm)			18
Attenuation values	Freq MHz	dB /M	Average power kW	
	300	0.70	0.061	
	1000	1.29	0.033	
	2000	1.83	0.024	
	4000	2.59	0.017	
	6000	3.18	0.014	
	8000	3.68	0.012	
	10000	4.12	0.010	
	12000	4.52	0.010	
	16000	5.22	0.008	
	26500	6.76	0.006	
40000	8.35	0.005		
50000	9.37	0.005		

## ■ Revision History

Revision	Date	Changes
Ver 1.0	2019-06-24	Released WMX Series
Ver 1.1	2020-01-22	Released WMX Series
Ver 1.2	2020-03-01	Add Socket type and Bending Jig
Ver 1.3	2020-05-19	Add Fixing Nuts
Ver 1.4	2020-09-10	Revised selection guide
Ver 1.5	2021-09-29	Updated drawings
Ver 2.0	2021-11-29	Add spec.
Ver 2.2	2024-02-21	Add 110GHz model

