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# FOCUSIMPLE

110GHz solution  
2021



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Since 1980s, with new material and new technology - especially ultrafast technology developing, and the popularization of broadband stable pulse terahertz generator, terahertz technology had swift progress. Terahertz technology showed unique advantage in various critical fields, such as semiconductor material, high-temp superconductive material, OCT, chemical and biological testing, IT, astronomy, atmospheric and environmental monitoring, communication radar, and anti-terrorist etc. It's huge application prospect emerged gradually.

The transmission of terahertz wave has been an important part of terahertz communication system research. It has been a challenge due to many reasons, such as high requirement on designing precision, high cost on testing instruments, high request for staff's ability etc. Focusimple Electronics has been devoted on high-end product R & D and manufacturing. Till now, we can support customers with reliable link for Terahertz directional transmission via flexible, semi-rigid coaxial cable assembly and high precision adapters.

## 110GHz Product Series

### TA110

DC-110GHz

- Red+black armor, withstand extrusion, twisting and bending, extraordinary durability
- High cost performance



### TF110

DC-110GHz

- Bare wire
- Light weight, More flexible, Low loss



### TS110

DC-110GHz

- Semi-Rigid Cable Assembly
- Light weight, Low loss



### 110GHz Adaptor

DC-110GHz

- A variety of adapters
- For precise adaptor, please consult Focusimple sales team



## Applications

- Lab test & measurement
- IC R & D and testing
- Semiconductor material research
- ICT system connection
- Security check system connection

## Features

- Soft and durable, support repeated bending
- Armored assembly optional, compressing and torsion resistant
- High precision connectors available, providing high test precision
- Unique structure, ensure test stable and consistent

## 110GHz Cable Specifications

### Electrical Specifications

110GHz Cable Type	TA110	TF110	TS110
Operating Frequency (GHz)	110		
Typical VSWR	1.30@DC~67GHz; 1.40@110GHz		
Maximum VSWR	1.35@DC~67GHz; 1.45@110GHz		
Impedance (Ω)	50		
Typical Mechanical Amplitude (dB)	±0.1@DC~67GHz; ±0.2@110GHz		
Typical Mechanical Phase (°)	±10@DC~67GHz; ±12@110GHz		
Shielding Effectiveness (dB)	>90		
Velocity of Propagation	70%		
Insertion Loss (dB)	15.81		14.48

### Mechanical Specifications

	TA110	TF110	TS110
Diameter (mm)	4.00	1.80	1.19
Minimum Bending Radius:Installation (mm)	20	12	5
Minimum Bending Radius:Repeated (mm)	40	20	-
Weight (g/m)	38	9	6

### Environmental Specifications

Temperature Range (°C)	-55~+85
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## Connector Selection

110GHz Cable Type			TA110	TF110	TS110
Connector Code	Connector Type	Operating Frequency	4.00mm	1.80mm	1.19mm
10F	1.0mm Female	110GHz	●	●	●
10M	1.0mm Male	110GHz	●	●	●

## Tips

- Maintain and dispose the connector interface correctly. Use a magnifying glass or CCD equipment to check the connector interface to avoid using it when the connector section is dirty;
- Do not over-tighten the nut during fixing to avoid damage to the connector thread and internal contacts. It is recommended to use a torque wrench to tighten it after manual tightening;
- It is recommended that professional operators perform the operation, test and maintain in accordance with the recommended standards in the specification, and follow the rules of use.

## TA110 Series Cable Assemblies-Fast Delivery of Standard Products

Product Code	Products Designation	Cable Type	Connector A	Connector B	Length	Frequency	VSWR	Insertion Loss
T-CA21-10178	TA110-10M10M-00.15M	TA110	1.0mm Male	1.0mm Male	0.15m	110GHz	1.45	3.78dB
T-CA21-10179	TA110-10M10M-00.25M	TA110	1.0mm Male	1.0mm Male	0.25m	110GHz	1.45	5.59dB
T-CA21-10180	TA110-10M10M-00.30M	TA110	1.0mm Male	1.0mm Male	0.30m	110GHz	1.45	6.50dB
T-CA21-10181	TA110-10M10F-00.15M	TA110	1.0mm Male	1.0mm Female	0.15m	110GHz	1.45	3.78dB
T-CA21-10182	TA110-10M10F-00.25M	TA110	1.0mm Male	1.0mm Female	0.25m	110GHz	1.45	5.59dB
T-CA21-10183	TA110-10M10F-00.30M	TA110	1.0mm Male	1.0mm Female	0.30m	110GHz	1.45	6.50dB
T-CA21-10184	TA110-10F10F-00.15M	TA110	1.0mm Female	1.0mm Female	0.15m	110GHz	1.45	3.78dB
T-CA21-10185	TA110-10F10F-00.25M	TA110	1.0mm Female	1.0mm Female	0.25m	110GHz	1.45	5.59dB
T-CA21-10186	TA110-10F10F-00.30M	TA110	1.0mm Female	1.0mm Female	0.30m	110GHz	1.45	6.50dB

Note: The recommended length should not exceed 0.6m. if you need other length, please consult Focusimple sales team.

Calculation formula of insertion loss:  $\text{Insertion loss (dB)} = \frac{K1 \cdot \sqrt{1000F} + K2 \cdot 1000F}{100} \cdot L + 0.1 \cdot \sqrt{F}$ , K1=4.2166070, K2=0.0016590. The unit of "F" is GHz. The unit of "L" is meter.

## TF110 Series Cable Assemblies-Fast Delivery of Standard Products

Product Code	Products Designation	Cable Type	Connector A	Connector B	Length	Frequency	VSWR	Insertion Loss
T-CA21-10187	TF110-10M10M-00.15M	TF110	1.0mm Male	1.0mm Male	0.15m	110GHz	1.45	3.78dB
T-CA21-10188	TF110-10M10M-00.25M	TF110	1.0mm Male	1.0mm Male	0.25m	110GHz	1.45	5.59dB
T-CA21-10189	TF110-10M10M-00.30M	TF110	1.0mm Male	1.0mm Male	0.30m	110GHz	1.45	6.50dB
T-CA21-10190	TF110-10M10F-00.15M	TF110	1.0mm Male	1.0mm Female	0.15m	110GHz	1.45	3.78dB
T-CA21-10191	TF110-10M10F-00.25M	TF110	1.0mm Male	1.0mm Female	0.25m	110GHz	1.45	5.59dB
T-CA21-10192	TF110-10M10F-00.30M	TF110	1.0mm Male	1.0mm Female	0.30m	110GHz	1.45	6.50dB
T-CA21-10193	TF110-10F10F-00.15M	TF110	1.0mm Female	1.0mm Female	0.15m	110GHz	1.45	3.78dB
T-CA21-10194	TF110-10F10F-00.25M	TF110	1.0mm Female	1.0mm Female	0.25m	110GHz	1.45	5.59dB
T-CA21-10195	TF110-10F10F-00.30M	TF110	1.0mm Female	1.0mm Female	0.30m	110GHz	1.45	6.50dB

Note: The recommended length should not exceed 0.6m. if you need other length, please consult Focusimple sales team.

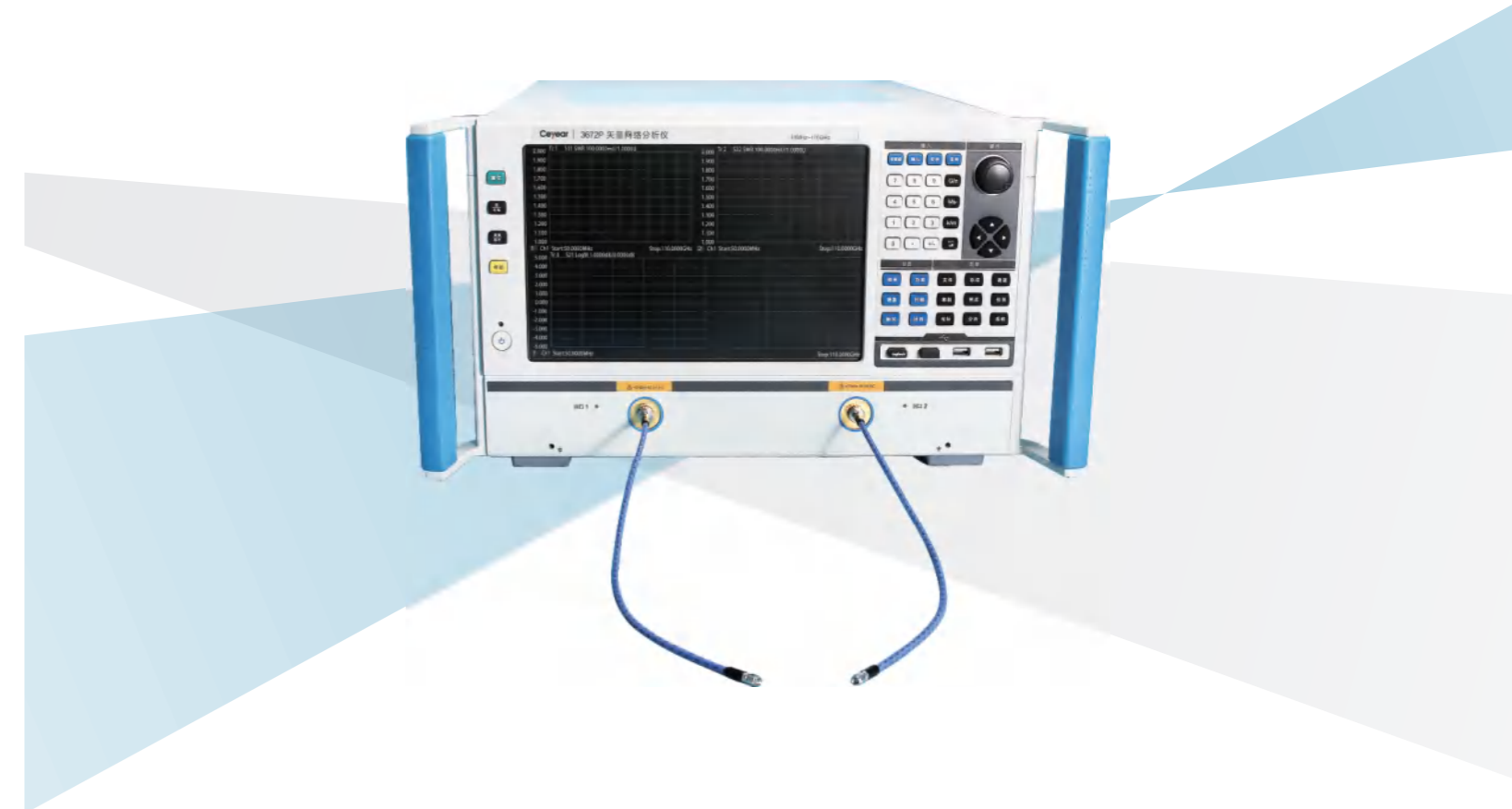
Calculation formula of insertion loss:  $\text{Insertion loss (dB)} = \frac{K1 \cdot \sqrt{1000F} + K2 \cdot 1000F}{100} \cdot L + 0.1 \cdot \sqrt{F}$ , K1=4.2166070, K2=0.0016590. The unit of "F" is GHz. The unit of "L" is meter.

## TS110 Series Cable Assemblies-Fast Delivery of Standard Products

Product Code	Products Designation	Cable Type	Connector A	Connector B	Length	Frequency	VSWR	Insertion Loss
T-CA21-10196	TS110-10M10M-00.15M	TS110	1.0mm Male	1.0mm Male	0.15m	110GHz	1.45	3.22dB
T-CA21-10197	TS110-10M10M-00.25M	TS110	1.0mm Male	1.0mm Male	0.25m	110GHz	1.45	4.67dB
T-CA21-10198	TS110-10M10M-00.30M	TS110	1.0mm Male	1.0mm Male	0.30m	110GHz	1.45	5.39dB
T-CA21-10199	TS110-10M10F-00.15M	TS110	1.0mm Male	1.0mm Female	0.15m	110GHz	1.45	3.22dB
T-CA21-10200	TS110-10M10F-00.25M	TS110	1.0mm Male	1.0mm Female	0.25m	110GHz	1.45	4.67dB
T-CA21-10201	TS110-10M10F-00.30M	TS110	1.0mm Male	1.0mm Female	0.30m	110GHz	1.45	5.39dB
T-CA21-10202	TS110-10F10F-00.15M	TS110	1.0mm Female	1.0mm Female	0.15m	110GHz	1.45	3.22dB
T-CA21-10203	TS110-10F10F-00.25M	TS110	1.0mm Female	1.0mm Female	0.25m	110GHz	1.45	4.67dB
T-CA21-10204	TS110-10F10F-00.30M	TS110	1.0mm Female	1.0mm Female	0.30m	110GHz	1.45	5.39dB

Note: The recommended length should not exceed 0.6m. if you need other length, please consult Focusimple sales team.

Calculation formula of insertion loss:  $\text{Insertion loss (dB)} = \frac{K1 \cdot \sqrt{1000F} + K2 \cdot 1000F}{100} \cdot L + 0.1 \cdot \sqrt{F}$ , K1=3.4619120, K2=0.0027250. The unit of "F" is GHz. The unit of "L" is meter.



## 110GHz Adaptor Selection Information

Material/Surface Treatment

Shell: Stainless Steel Passivation

Center contact: Beryllium Bronze Gold Plating

Insulator: Engineering Plastics

Code	10M-10M-002	
Designation	1.0mm Male to 1.0mm Male	
Frequency	DC-110GHz	
VSWR	1.35:1	
Useful Life	1000 times	

Code	10M-10F-002	
Designation	1.0mm Male to 1.0mm Female	
Frequency	DC-110GHz	
VSWR	1.35:1	
Useful Life	1000 times	

Code	10F-10F-002	
Designation	1.0mm Female to 1.0mm Female	
Frequency	DC-110GHz	
VSWR	1.35:1	
Useful Life	1000 times	

Code	10M-18M-001	
Designation	1.0mm Male to 1.85mm Male	
Frequency	DC-67GHz	
VSWR	1.30:1	
Useful Life	1000 times	

Code	10F-18M-001	
Designation	1.0mm Female to 1.85mm Male	
Frequency	DC-67GHz	
VSWR	1.30:1	
Useful Life	1000 times	

Code	10M-18F-001	
Designation	1.0mm Male to 1.85mm Female	
Frequency	DC-67GHz	
VSWR	1.30:1	
Useful Life	1000 times	

Code	10F-18F-001	
Designation	1.0mm Female to 1.85mm Female	
Frequency	DC-67GHz	
VSWR	1.30:1	
Useful Life	1000 times	