Suzhou Talent Microwave,Inc
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# Cryogenic Coax Directional Coupler

## 2-18GHz/10dB Coupling/SMA

## Model: TC-20180-10S-Cryo

TC-20180-10S-Cryo is a cryogenic coax directional coupler is a microwave device used to sample high-frequency signals in cryogenic environments. It is a four-port passive device that can couple a portion of the power from the main transmission line to the auxiliary line in a directional manner.

## Features:

- Output Frequency: 2-18GHz
- Max Power: 2W
- Capable of operation at 10 mK
- Stackable mechanical design
- Machined OFHC block
- 50 Ohm Matched Input / Output

## Applications:

- Cryogenic systems
- Quantum computer
- Dilution refrigerator

## Electrical Characteristics:

| Parameter | Min | Typ | Max | Units |
|---|---|---|---|---|
| Frequency Range | 2 | | 18 | GHz |
| Return Loss | | | -13 | dB |
| Insertion Loss (Excl Coupling) | | | 1.0 | dB |
| Coupling | | 10±1 | | dB |
| Directivity | 12 | | | dB |
| Power Handling | | | 2 | W |
| Impedance | | 50 | | Ohms |

Note: The isolation port is equipped with the Talent microwave standard low-temperature load:TT2-18-SM-Cryo.

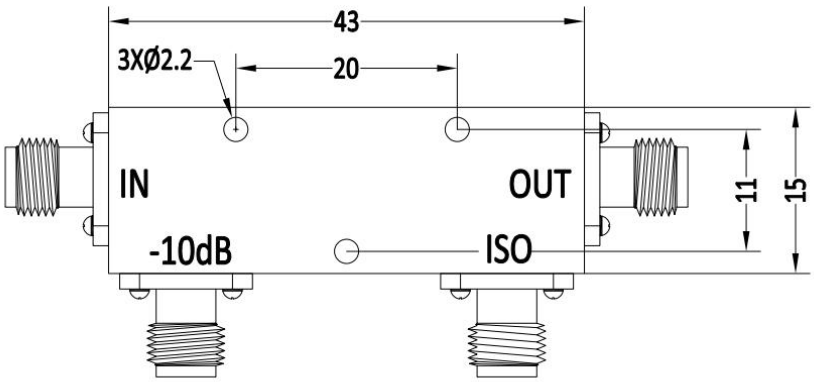
## Mechanical Specifications:

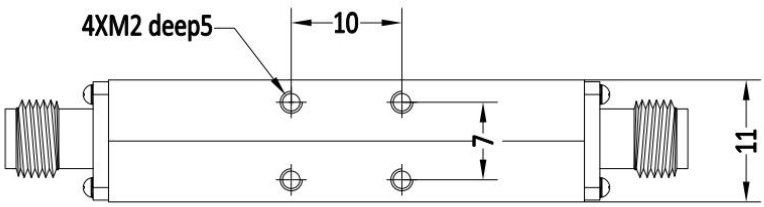
| Parameter | Value | Units |
|---|---|---|
| RF Connector | SMA Female | |
| Csae Material | OFHC Copper | |
| Finish | Gold plated | |
| Size | 45*15*11 | mm |

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## Outline Drawing:

Unit:mm; Tolerance:±0.1mm




ESD Protection: Strictly adhere to ESD precautions to prevent electrostatic damage.

## Environmental Conditions:

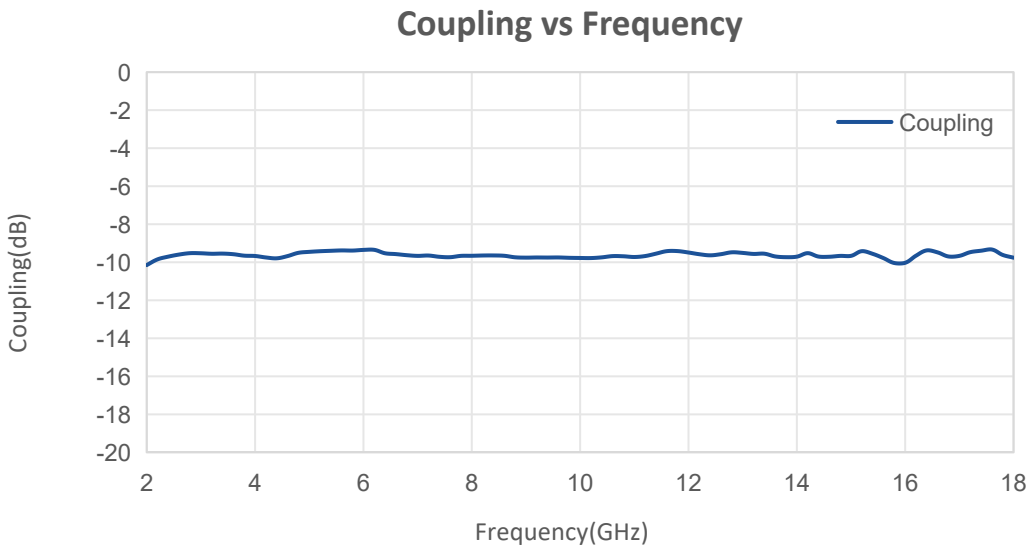
| Parameter | Min | Typ | Max | Units |
|---|---|---|---|---|
| Operating Temperature | 10mK | | +85℃ | |
| Non-operating Temperature | -45 | | +85 | ℃ |
| Relative humidity | 100% RH at 35c, 95%RH at 40℃ | | | % |
| Altitude | 50,000 | | | feet |
| Shock / Vibration(MIL-STD-810F) | 25g rms (15 degree 2KHz) endurance, 1 hour per axis | | | |
| Shock(non operating) | 20G for 11msc half sin wave,3 axis both directions | | | |

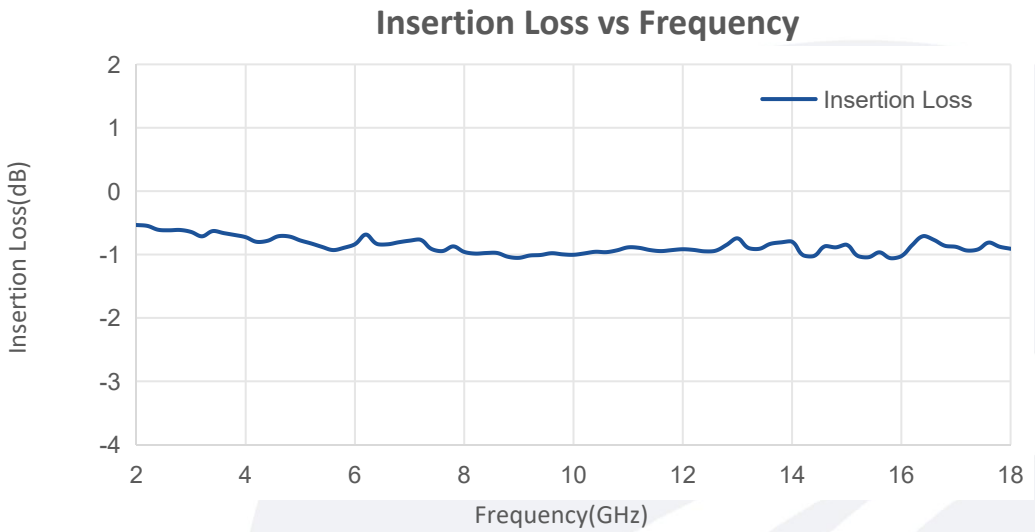
## Ordering Information:

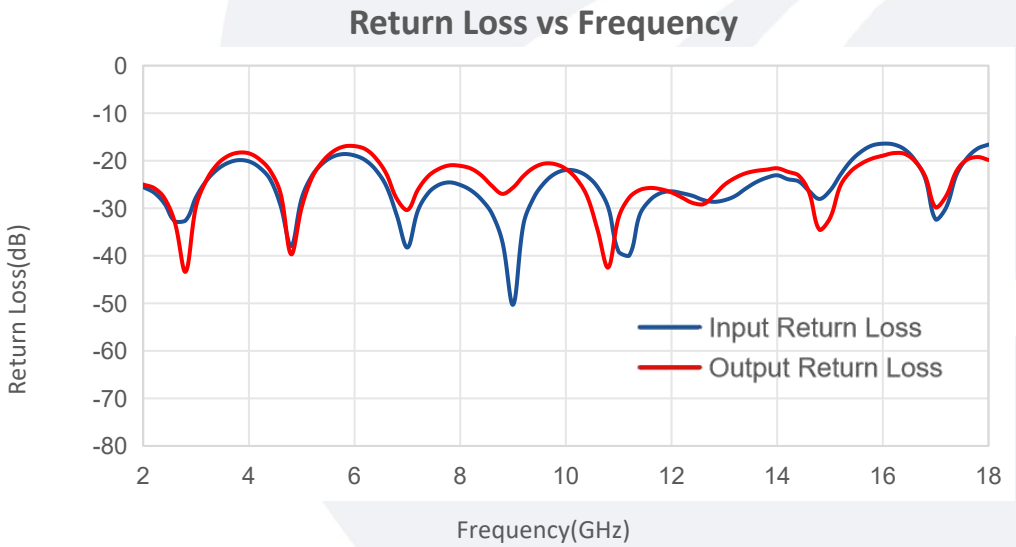
| Base Number | Description | Revision |
|---|---|---|
| TC-20180-10S-Cryo | Cryogenic Coax Directional Coupler<br>2-18 GHz, Coulping:10dB, SMA Female | Rev.1.1 |

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## Typical Performance Data(TEM=298K):



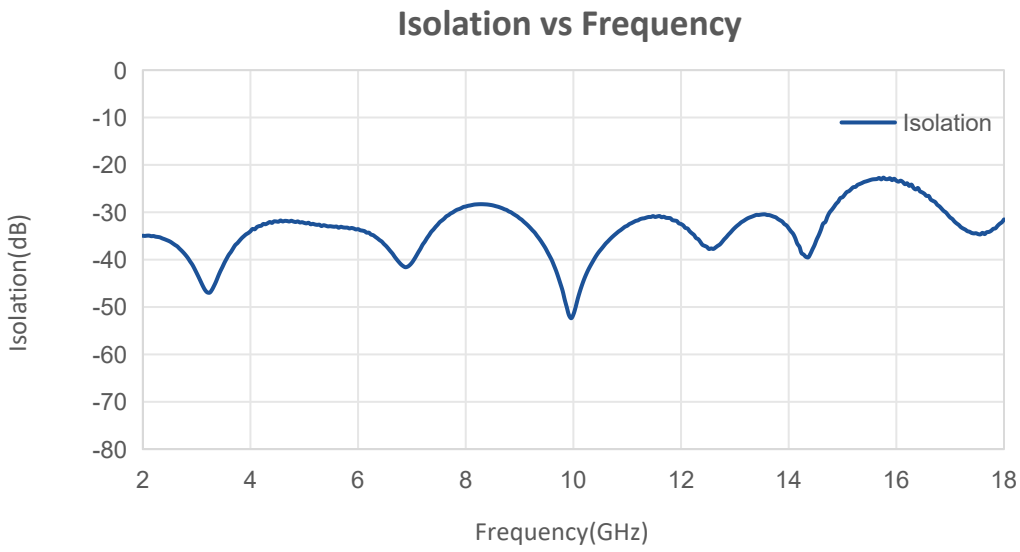



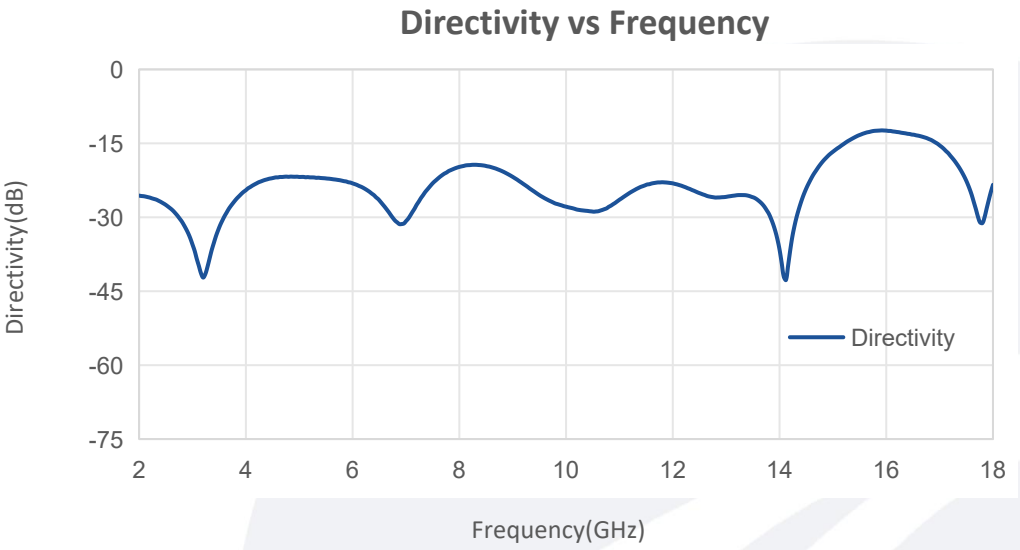




Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.

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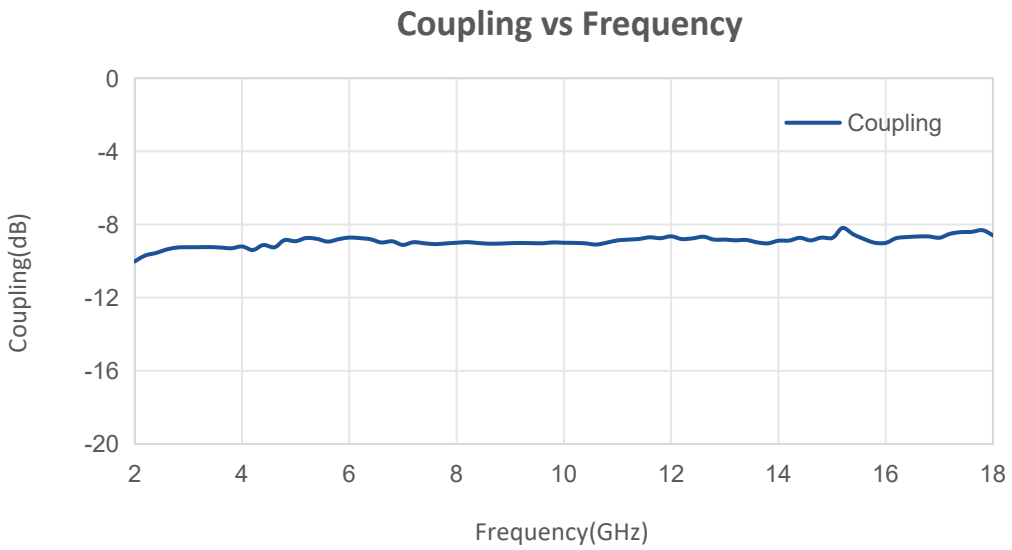


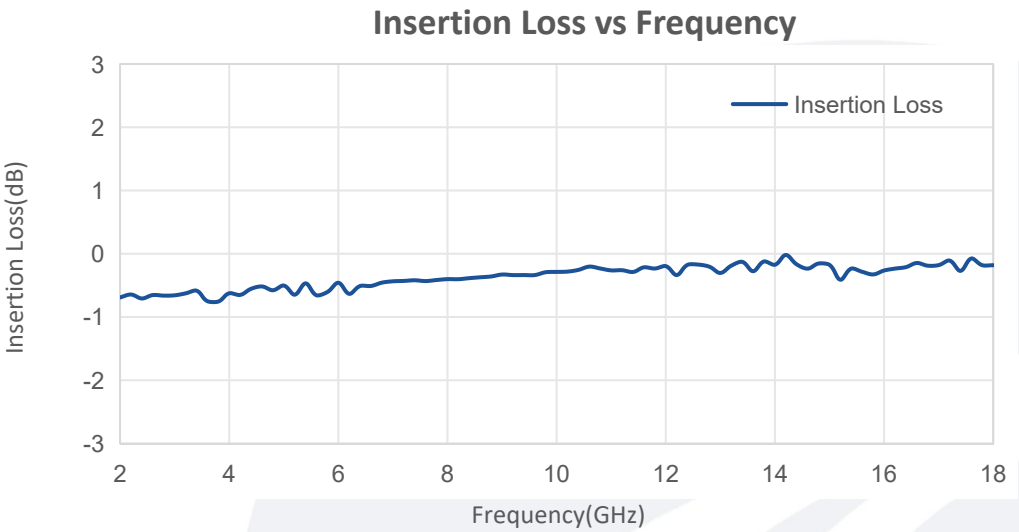



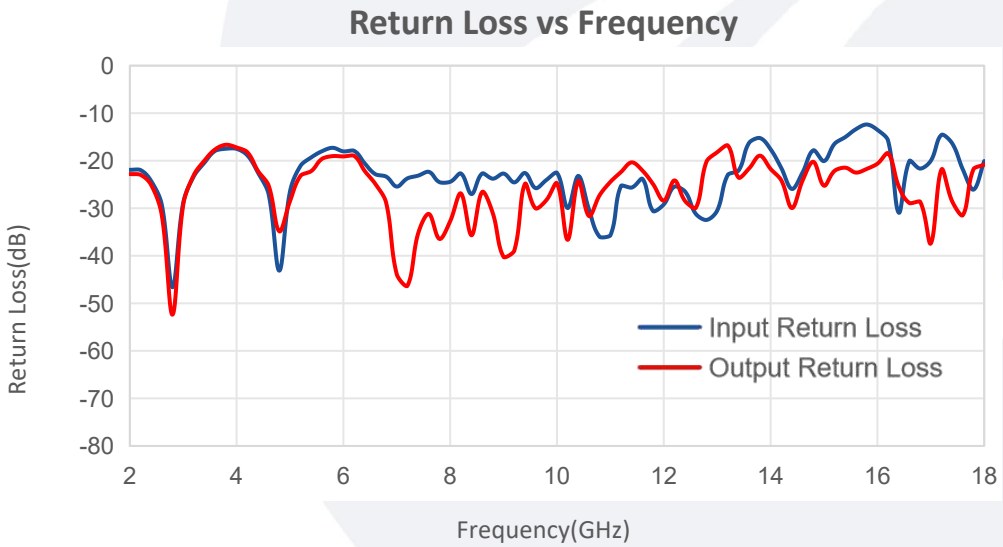

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## Typical Performance Data(TEM=77K):



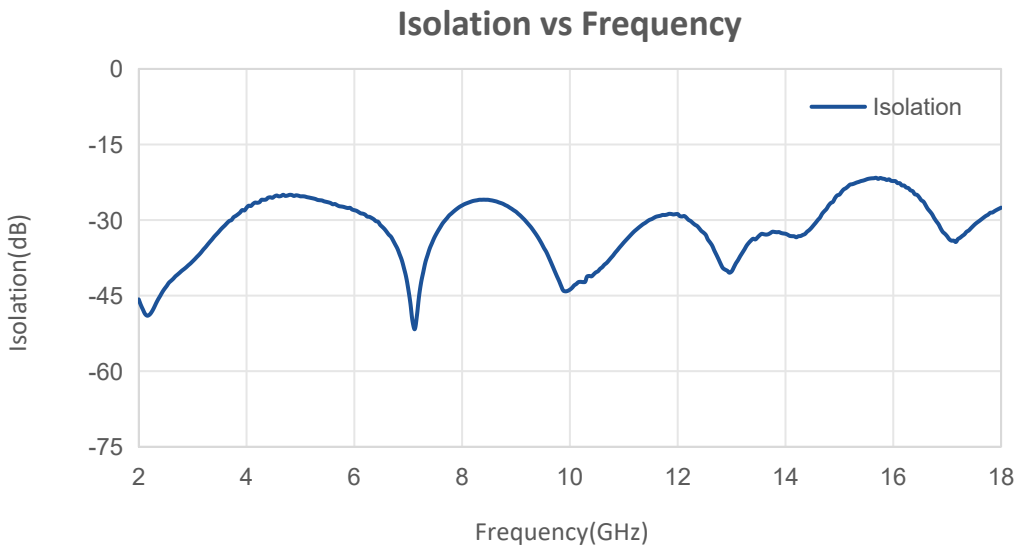



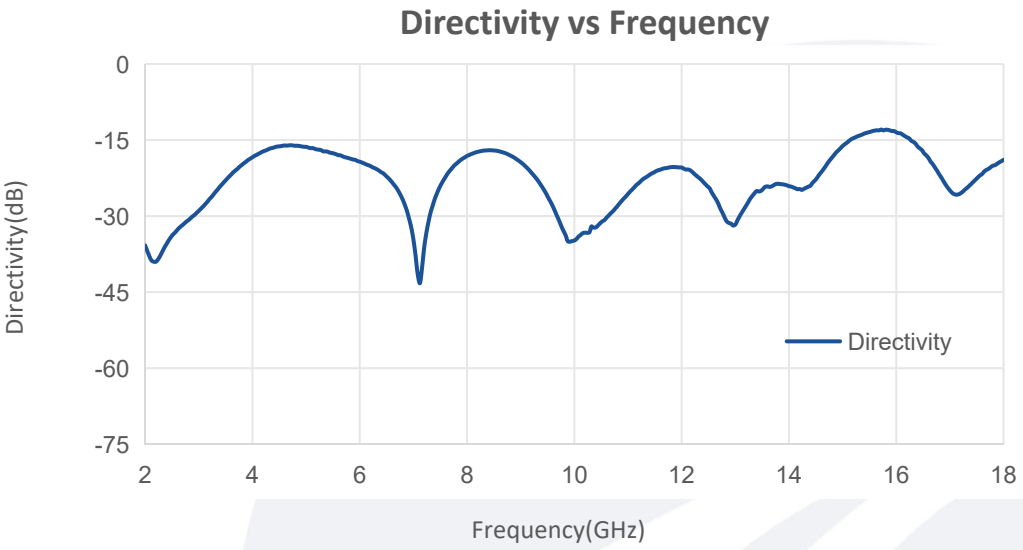




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