

Cryogenic Infrared Filters (SMA type)



Cryogenic Infrared Filters (SMA type)

WithWave's Cryogenic Infrared Filters (IRF-K01, 02), designed with advanced cryogenic technology, delivers low insertion loss in the passband and exceptional blocking characteristics in the optical range, making it ideal for applications such as quantum computing, Superconducting electronics. This filter is rigorously tested and verified using WithWave's 4 K cryogenic measurement system, ensuring reliable performance under extreme low-temperature conditions.



IRF-K01-S, -6C (Low cut-off single, 6-channel)



IRF-K02-S, -6C (High cut-off single, 6-channel)

· Features

- Impedance: 50 Ω
- Capable of operation : 10 mK
- Connector types: Male/Female SMA (Bulkhead)
- Body and Plating Material : Gold Plated OFHC Copper

· Application

- Cryogenic quantum computing
- Superconducting electronics

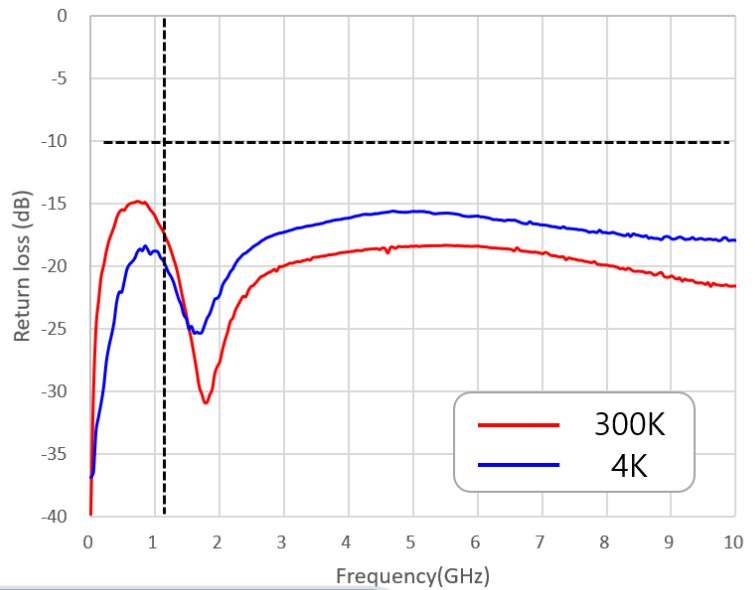
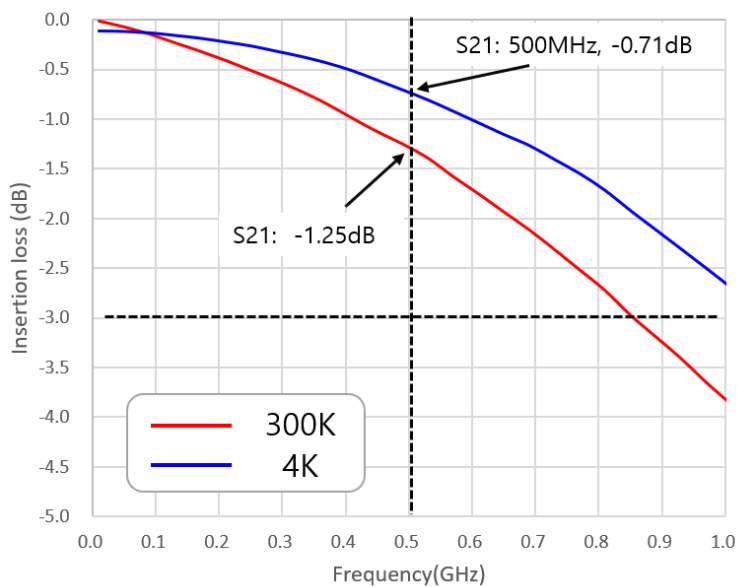
· Specification

Scope	Items		Specification
Low cut-off	Cut-off frequency		1 GHz
	Insertion Loss @ 4K	Pass band	1dB max @ 500MHz
		Stop band	45dB min @ 10GHz
	Return Loss @ 4K	Pass band	15dB min @ 500MHz
		Stop band	10dB min @ 10GHz
	Dimensions (single unit)		29 mm (L), 9 mm (Dia)
Weight		9.2 g (Single), 141 g (6 channel)	
High cut-off	Cut-off frequency		10 GHz
	Insertion Loss @ 4K	Pass band	5dB max @ 10GHz
		Stop band	15dB min @ 30GHz
	Return Loss @ 4K	Pass band	15dB min @ 10GHz
		Stop band	10dB min @ 30GHz
	Dimensions (single unit)		47.5 mm (L), 9 mm (Dia.)
Weight		13.7 g (Single), 250 g (6 channel)	
Common	RF Connector 1		SMA Female (Bulkhead)
	RF Connector 2		SMA Female
	Housing		OFHC with Au plating (Ni-less)
	Operating Temperature		10 mK ~ 300 K

* This is a preliminary specification and is subject to change by WithWave depending on the development process

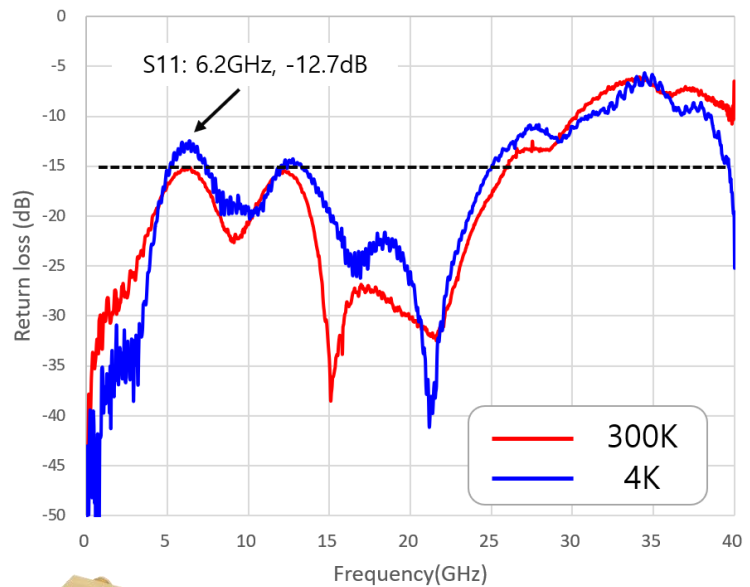
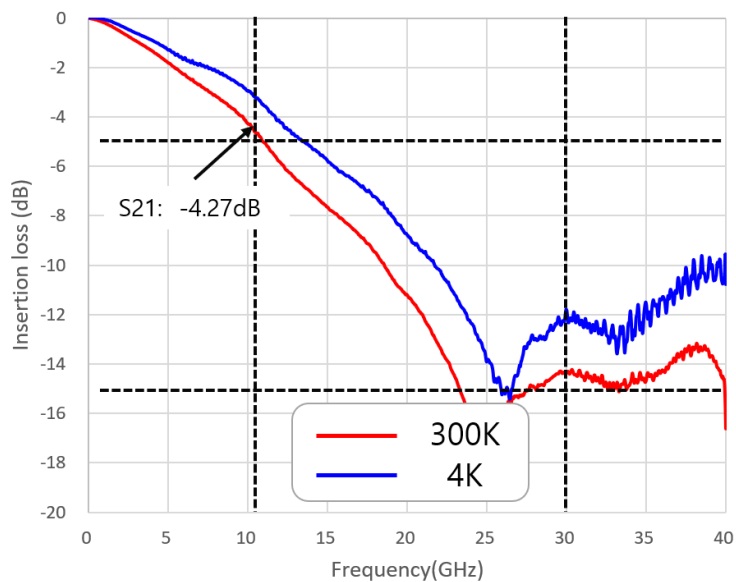
Measured S-parameters of Low cut-off IR filter (296K, 4K)

1. Test equipment: Anritsu MS4647B

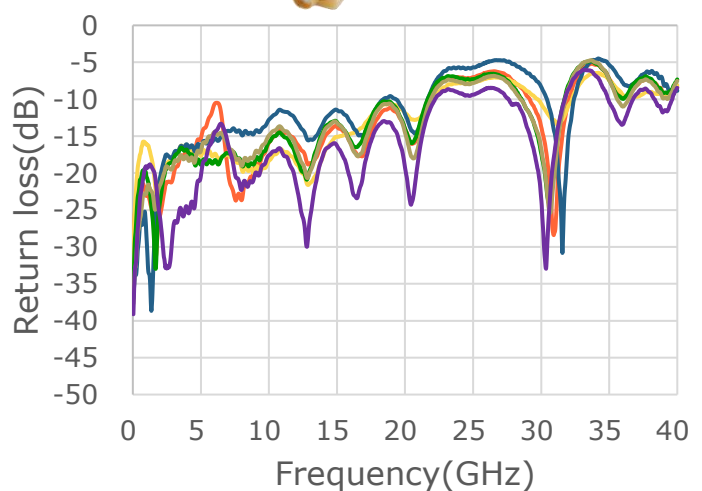
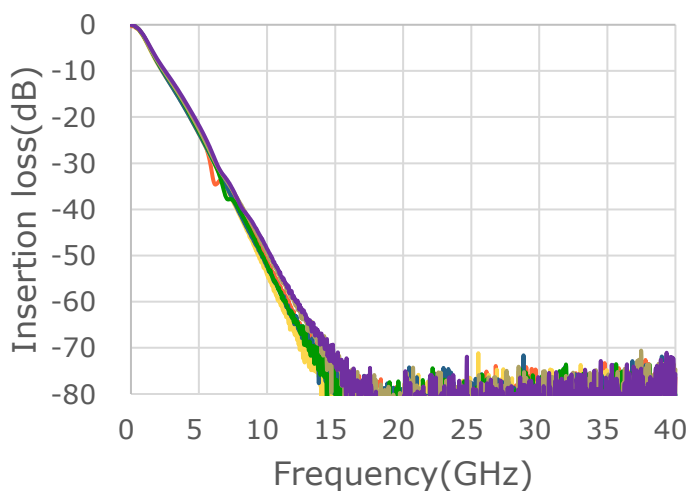


Measured S-parameters of High cut-off IR filter (296K, 4K)

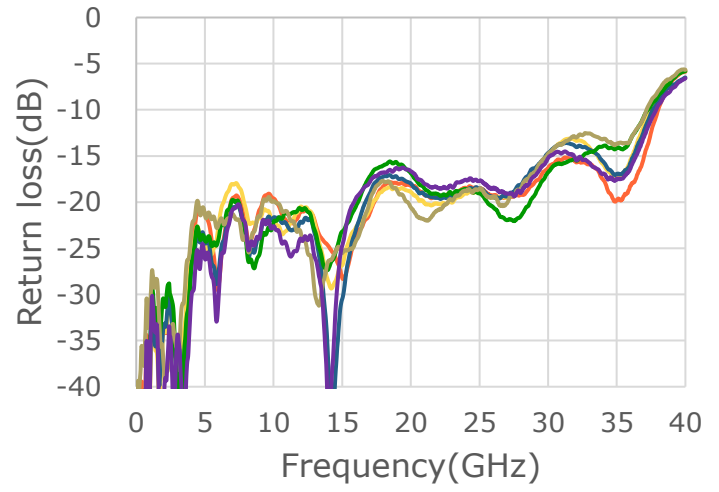
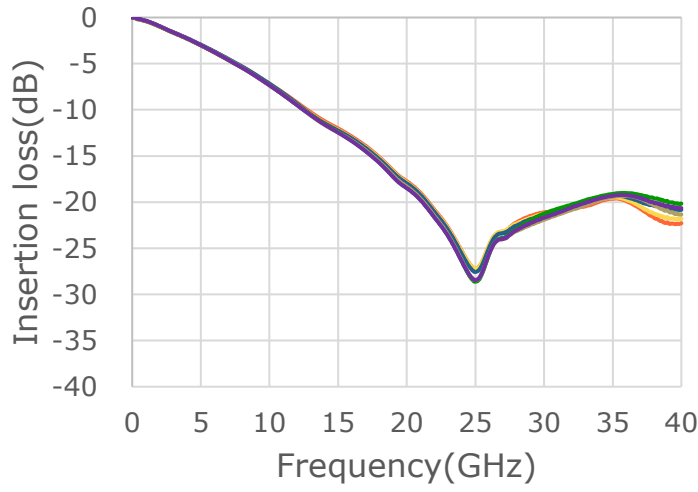
1. Test equipment: Anritsu MS4647B



Low cut-off type (6 Channel)

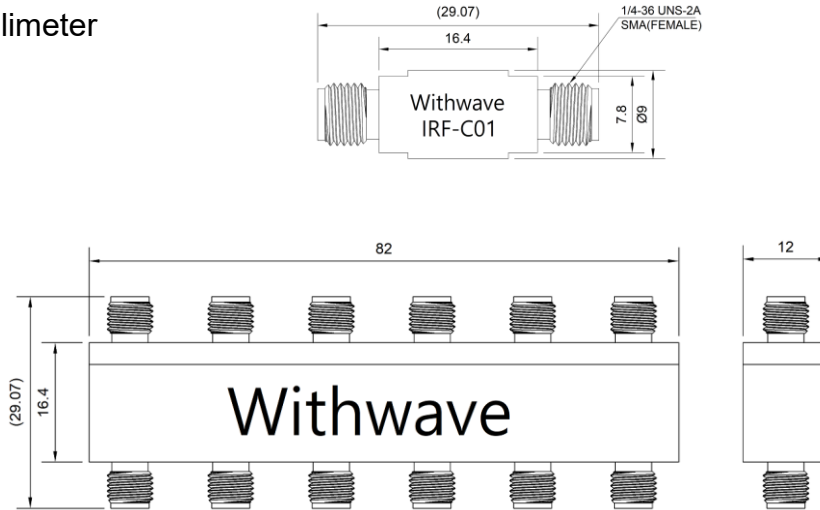


High cut-off type (6 channel)



Drawing - Low cut-off IR Filter

Units : millimeter



Drawing - High cut-off IR Filter

Units : millimeter

