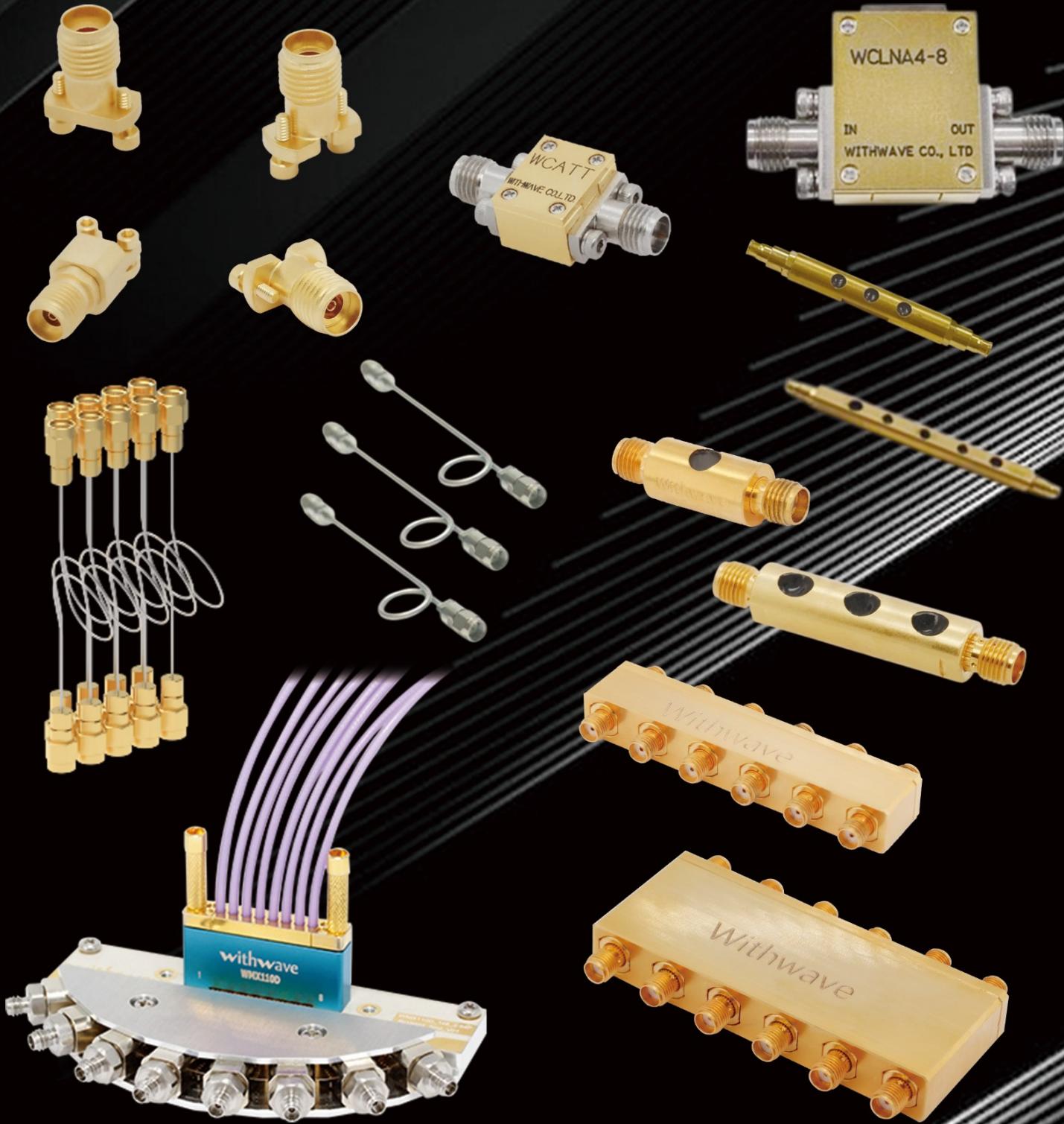


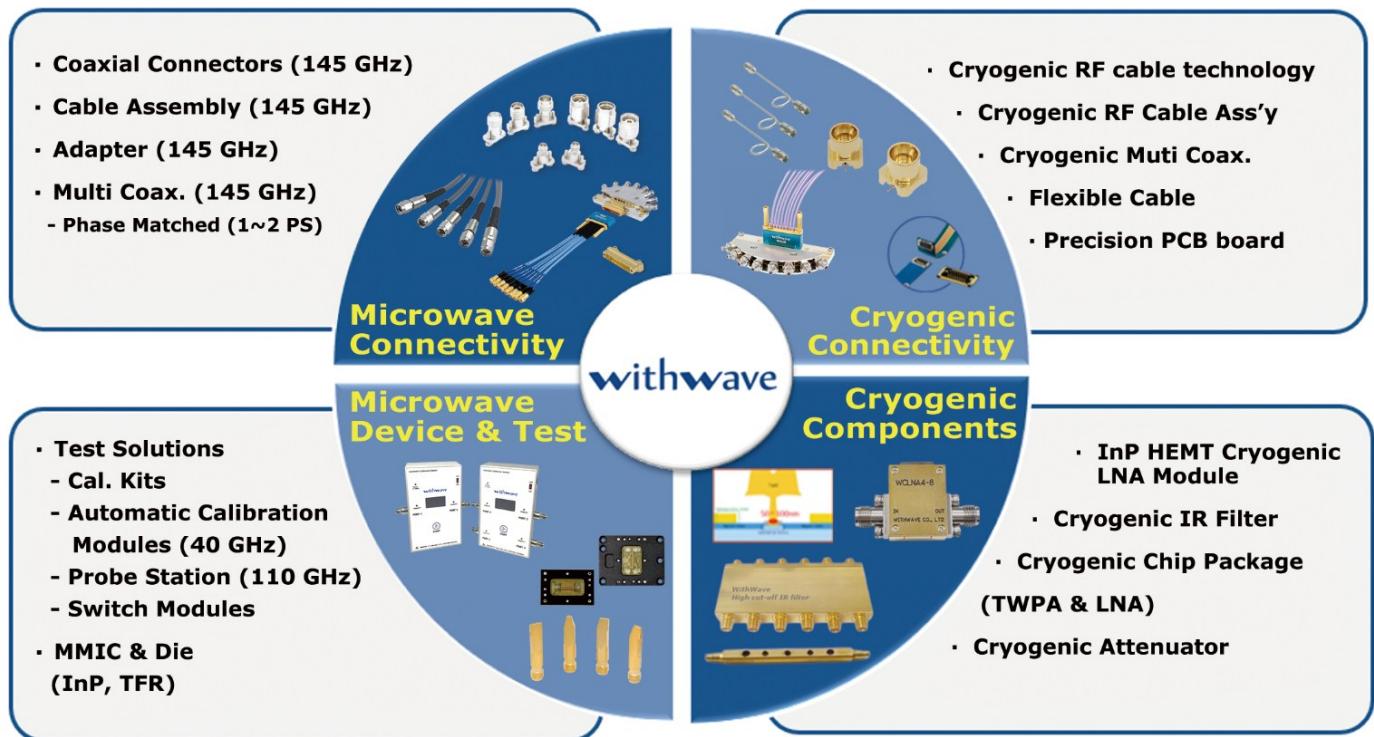
Next Generation Cryogenic Components for Quantum Computing



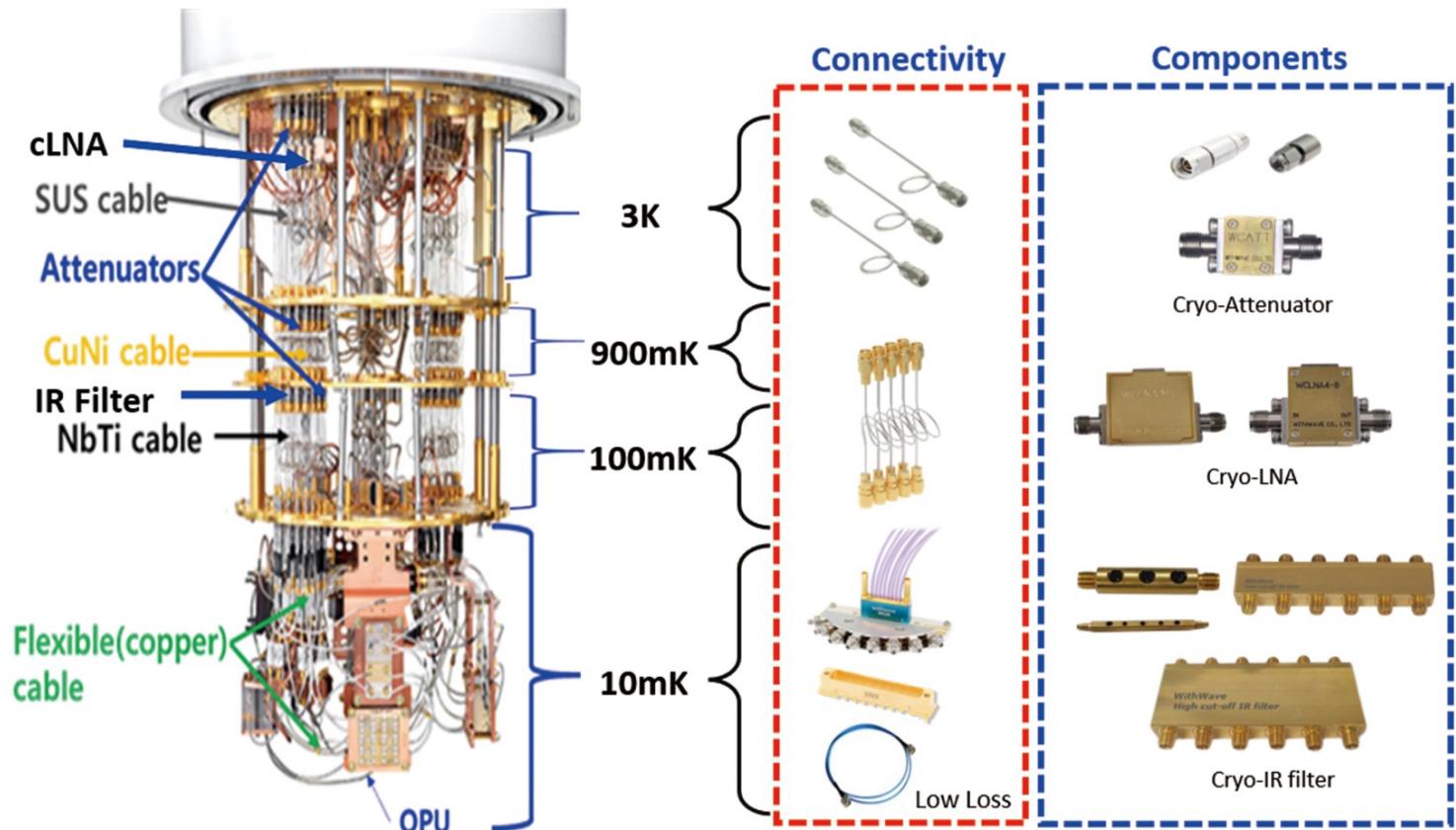
withwave
Next Generation Connectivity

Core Technology

Core Technologies of WithWave for Quantum Computer and Microwave Systems



Product Family for Quantum Computer



Cryogenic Quantum Components

• Cryogenic Attenuator

2.92 mm type



ATC-K01-xx
(xx : Attenuation)

SMPS type



ATC-S01-xx
(xx : Attenuation)

8 CH



ATC-S01-8C-XX
(xx : Attenuation)

- Frequency : DC to 20 GHz
- Minimal change in attenuation (temperature and frequency)
- Excellent RF matching : 50 Ohm
- NiCr deposited on Quartz substrate
- OFHC body, Au plated without Ni (non-magnetic)

Application

- Cryogenic quantum computing
- Superconducting electronics

• Cryogenic Infrared Filters

SMA type



IRF-K01-S
(Low cut-off)



IRF-K02-S
(High cut-off)

6 CH



IRF-K01-6C
(Low cut-off)



IRF-K02-6C
(High cut-off)

SMPS type

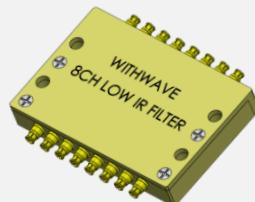


IRF-S01-S
(Low cut-off)

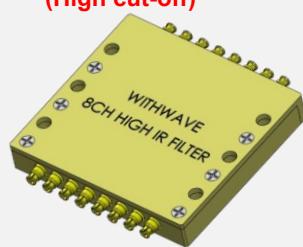


IRF-S02-S
(High cut-off)

8 CH



IRF-S01-8C
(Low cut-off)



IRF-S02-8C
(High cut-off)

- Impedance: 50 Ohm
- Capable of operation : 10 mK
- Connector types: SMA(Female), SMPS(Female)
- Body and Plating Material : Gold Plated OFHC Copper

Application

- Cryogenic quantum computing
- Superconducting electronics

Cryogenic Quantum Components

• Cryogenic Low noise Amplifier

$T_n = 3\sim 4K @ 4K$

**4K
Cryogenic Test**



Application

- Optimized for 4~8 GHz frequency range.
- Ultra-low noise temperatures of 3~4K at 4K
- Built with InP HEMT technology for superior cryogenic and RF characteristics.

- Cryogenic quantum computing
- Radio astronomy
- Superconducting electronics
- RF signal amplification at low temperature

• Low Noise Power Supply



OLED Screen



Front

Rear



Application

- Ultra low noise output with high stability
- Optimized for cryogenic HEMT LNA modules
- Integrated automatic gate bias control
- Fine-tunable drain voltage and current

- Cryogenic quantum computing
- Radio astronomy
- Superconducting electronics
- RF signal amplification at low temperature