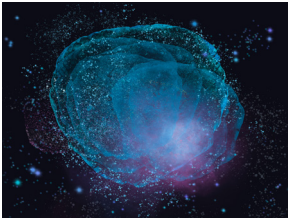


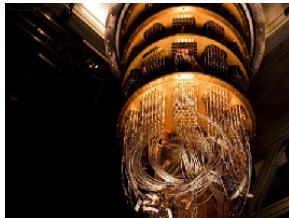
## Connecting quantum, space communication systems

Radiocomm offers a comprehensive line of cryogenic cables and compact cable assemblies that can help meet the requirements for several applications including quantum computing, medical imaging, energy transmission, and scientific and research laboratories.

### Application Cases



Particle Physics



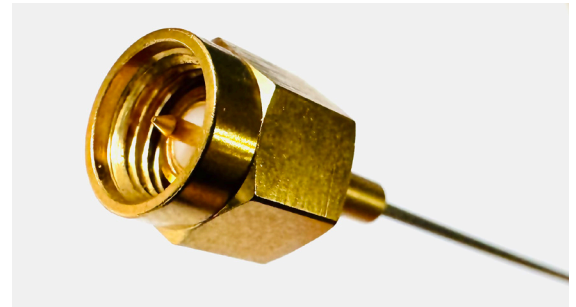
Quantum Computing



Research Labs



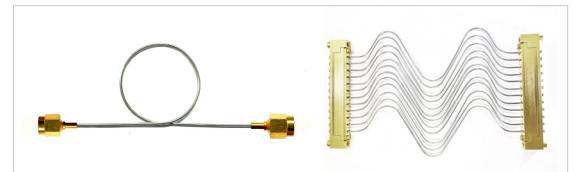
Medical Imaging



### Why Radiocomm?

- Excellent ultra-low temperature performance
- Customized cable assembly, interconnects & connector solutions
- Short lead time
- Cost effective solutions
- Customized cable stripping and bending machine

### Cryogenic Cable Assemblies



**Figure 1:** Radiocomm cryogenic cables are offered in aluminum alloy, cupronickel alloy, and niobium titanium alloy and can be customized into cable assemblies to fit specific engineering requirements.

#### RD-50-0.6AL Rigid Aluminium Alloy Tube Cable

Made of aluminum alloy material. Lightweight with good air tightness. Maintains excellent mechanical performance at low temperature.

##### Key Attributes

- Low density
- Non-magnetic
- Alloy phase stability at low temperature
- Less specific resistance in magnetic field
- Good air tightness
- Fast attenuation of induced radiation energy
- Cost effective solution

#### RD-50-0.6CN Rigid Cupronickel Alloy Tube Cable

Made of cupronickel alloy with higher performance properties. No low temperature brittleness.

##### Key Attributes

- No low temperature brittleness
- Good weldability
- Low resistivity
- Strong oxidation resistance
- Chemical resistance
- Non-magnetic
- High cost performance
- Good manufacturability

#### RD-50-0.6NT Rigid Niob-Titan Alloy Tube Cable

Made of niobium titanium alloy. Maintains excellent mechanical properties at ultra-low temperature. Superconducting properties.

##### Key Attributes

- Very low thermal conductivity
- Available in strong magnetic fields up to 11T (Tesla)
- NbTi (Nb: 50%) has low heat capacity, which is 3 at 4K × 10–4 W/cm
- Used in strong magnetic field environment

# PERFORMANCE

## Cryogenic Cable Systems

### Rigid Cupronickel Alloy Tube Cable

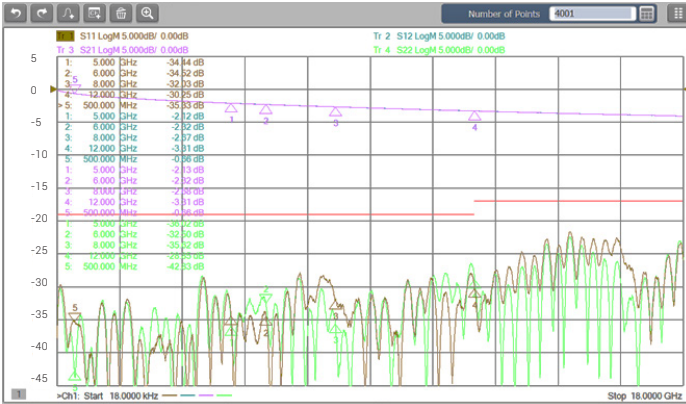


Figure 2: VNA Sweep test under 300K (26.85 °C)

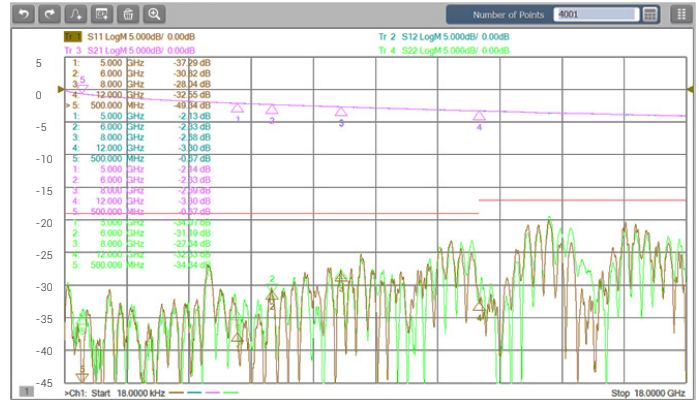


Figure 3: VNA Sweep test under 77K (-195.15 °C)

### Rigid Niob-Titan Alloy Tube Cable

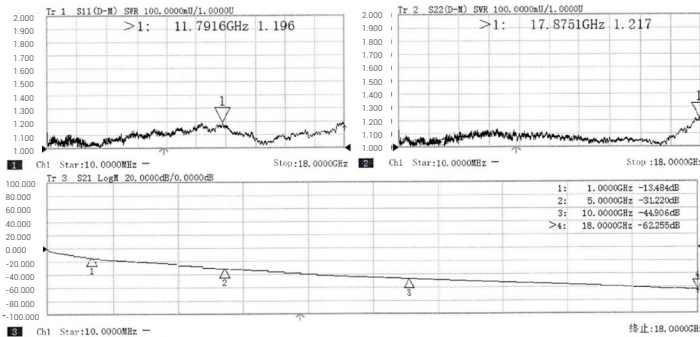


Figure 4: VNA Sweep test under 300K (26.85 °C)

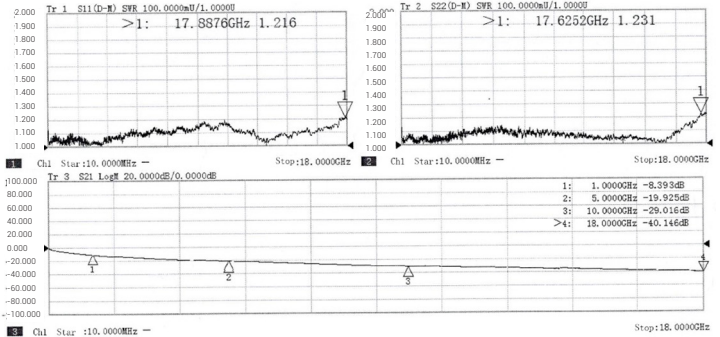


Figure 5: VNA Sweep test under 4K (-269 °C)

### Application Use Case: Quantum Computer

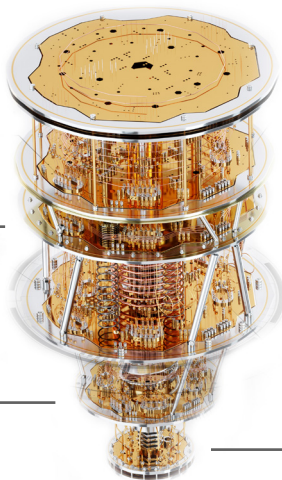
Quasi 4k-flange  
300K (26.85 °C)

40K (-233.15 °C)

4K (-269 °C)

<1K (-272.15 °C)

1-mK (-273.15 °C)



RD-50-0.6AL  
Rigid Aluminium Alloy Tube Cable

RD-50-0.6CN  
Rigid Cupronickel Alloy Tube Cable

RD-50-0.6NT  
Rigid Niob-Titan Alloy Tube Cable

RD-50-0.6CN  
Rigid Cupronickel Alloy Tube Cable

RD-50-0.6NT  
Rigid Niob-Titan Alloy Tube Cable

RD-50-0.6NT  
Rigid Niob-Titan Alloy Tube Cable

