

TEMPERATURE MEASUREMENT BY MICROWAVE CAVITY

*Measurement of temperature variations
by variations in resonance frequency.*

Technological benefits

Efficient

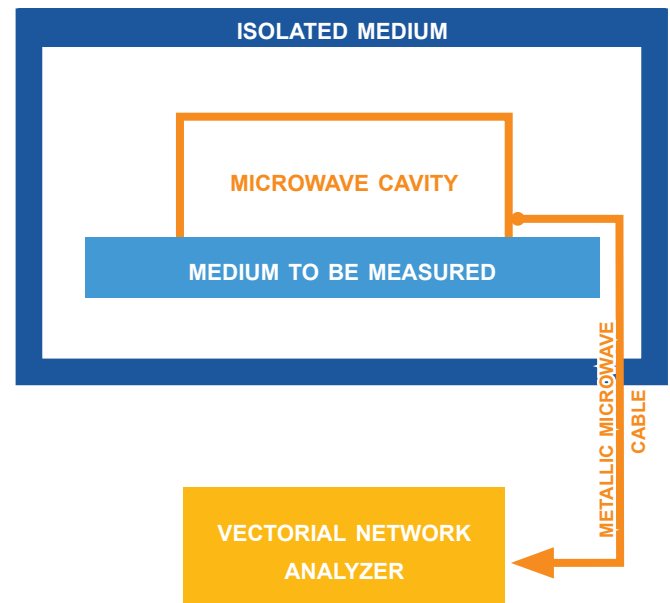
Measurement of ultra-precise temperature variations.
Simple and robust system.
No perturbations of the environment by the electric current.
Better resistance to high mechanical and thermal stresses than a conventional temperature sensor.
No risk of pollution of the environment by the degassing of the ducts of the electric cables.

Innovative

Measurement of temperature variations by recording the variation of the resonance frequency.

Invention overview

The field of the invention is the ultra-precise temperature measurement. The solution is based on a microwave cavity connected to VNA through a metallic microwave cable. Microwave cavities are temperature sensitive. It has been demonstrated by tests that the resonance frequency of the cavities is proportional linearly to the temperature.
By placing a microwave cavity in the environment and connecting it to a vectorial network analyzer by a metallic microwave cable, the temperature can be measured with very high accuracy by recording the variation of the resonance frequency.



The solution of the invention is based on a microwave cavity connected to VNA through a metallic microwave cable.

Commercial benefits

Reliability and robustness.
Does not disrupt the environment.
Measurement of temperature variation at mK.

Potential applications

Measurements not possible with conventional probes.

Simultaneous calibration of temperature sensors

TRL : 9

Patented invention, available under license