Solution Brochure

# Versatile material test solution 5GHz - 110GHz

## Keysight Technologies & Kanto Electronic App&Dev

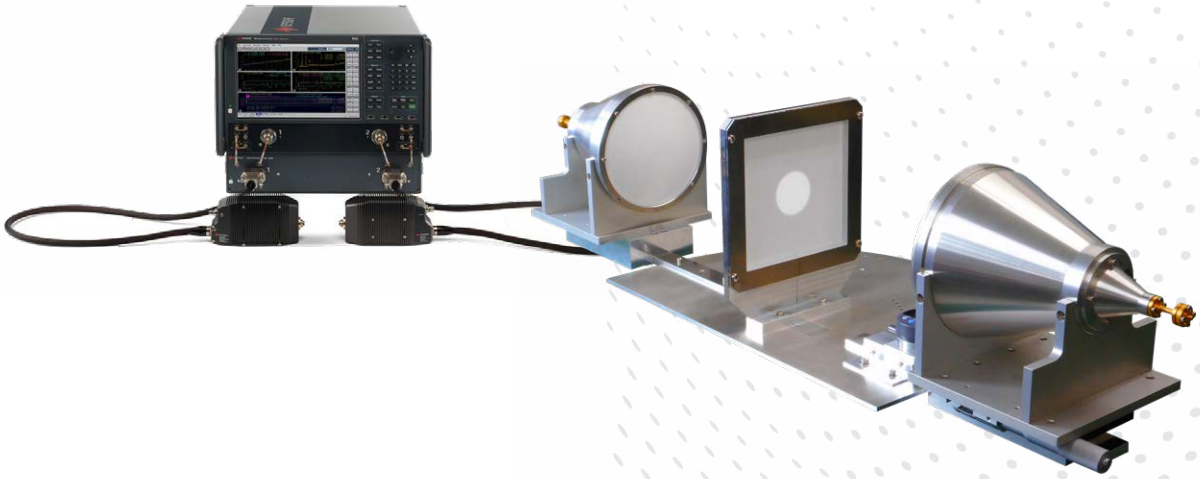
### Easy to use free space solution for permittivity, permeability, and oblique reflection

The free space method, which can be used for a wide range of measurement applications such as permittivity, permeability, oblique incidence reflection, is indispensable to material evaluation in microwave. This free space solution is epoch making in that accurate evaluation is possible without anechoic chamber and/or radio wave absorber, which is achieved by the dielectric antennas with extremely small side lobes (-30 dB, typical).

In addition, we have simplified the mechanics significantly for easy operation while maintaining stable measurements. Since the precision of the antenna positioner is not compromised at all, accurate TRL calibration essential for permittivity and permeability measurements is possible.

Combined with the N1500A Keysight material measurement suite, efficient and reliable material measurement can be performed.

- Accurate measurement without anechoic chamber and/or absorber
- Easy to use lightweight mechanical design
- Antenna positioner with 1 µm precision enables accurate TRL calibration



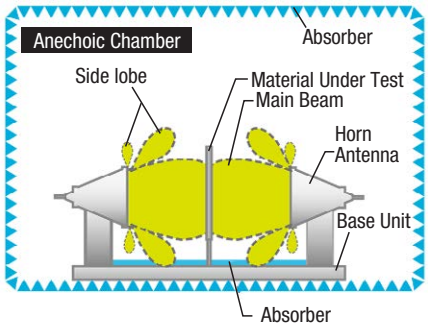
KEYSIGHT TECHNOLOGIES

## Technology Highlights

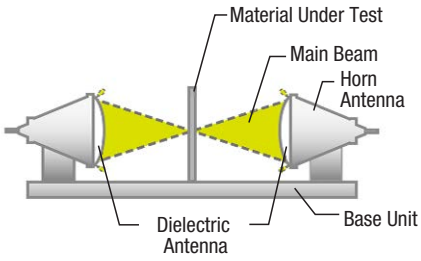
### Advantages of high performance antennas

Using proprietary dielectric antennas, the diameter of the measurement signal is reduced to about 3 wavelengths on the sample surface and side lobes is suppressed to -30 dB or less. Since unnecessary reflection of electromagnetic waves causing measurement error hardly occurs, you can focus on material measurement without worrying about the electromagnetic environment. Moreover, since the signal is narrowed, a small sample can be used. Unlike traditional solutions, it does not require anechoic chamber and radio wave absorber, which leads to significant reduction of cost and engineering efforts.

Traditional Technology



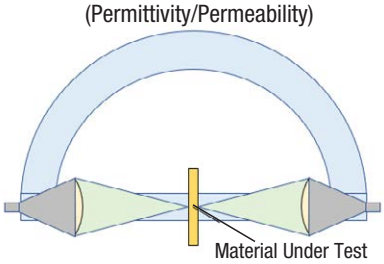

New Technology



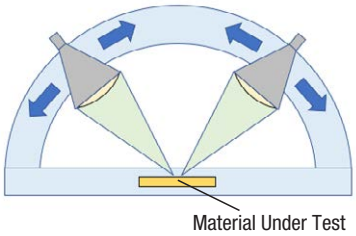

### One for transmission and oblique reflection

Excellent antennas benefit not only permittivity/permeability (transmission) measurements but also oblique incidence reflection test. Materials can be evaluated with oblique incidence by just adding the antenna moving mechanism, while using the same basic configuration. Since unnecessary reflection is kept minimal, highly reproducible measurements are possible without treatment such as absorbers.

Transmission Measurement
(Permittivity/Permeability)




Oblique Reflection Measurement




### Solution configuration example with Keysight products

*Control PC is required in addition.

| | |
|---|---|
| Keysight PNA mm-Wave System | N5291A (120 GHz) |
| Materials Measurement Suite | N1500A |
| Free Space 18 -110 GHz | FS-110 |
| 1 mm test cable | |

### Cavity resonator family

| | |
|---|---|
| Free Space 5 - 18 GHz | FS-18 |

| | |
|---|---|
| Free Space 18 - 110 GHz | FS-110 |

Contact

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