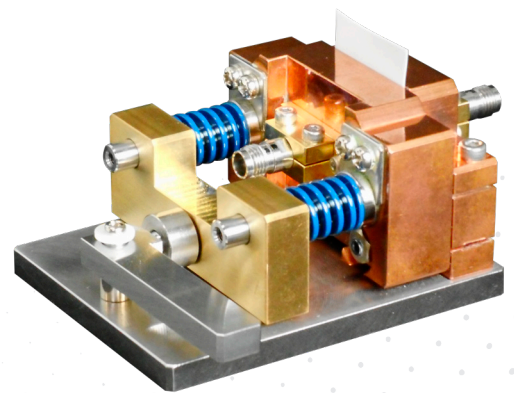


# Long-awaited mmWave Low-loss Dielectric material test solution

Keysight Technologies & EM Labs

## Easy to use and highly repeatable measurements up to 80 GHz

- Very high Q resonators enable low loss material test for 5G and other demanding mm wave applications.
- Easy operation for excellent repeatability and test efficiency regardless of operator skills.
- Complies with IPC test method TM-650 2.5.5.13



### Product Line-up with key characteristics

Keysight Model No.	Description	Res Mode	Q factor	Connectors
N1501AKEAD-710	Split Cylinder Resonator 10 GHz	TE011*	>20,000	2.92 mm (f)
N1501AKEAD-720	Split Cylinder Resonator 20 GHz			
N1501AKEAD-724	Split Cylinder Resonator 24 GHz		>14,000	2.92 mm (f)
N1501AKEAD-728	Split Cylinder Resonator 28 GHz			
N1501AKEAD-735	Split Cylinder Resonator 35 GHz		>10,000	2.92 mm (f)
N1501AKEAD-740	Split Cylinder Resonator 40 GHz		>7,000	2.4 mm (f)
N1501AKEAD-750	Split Cylinder Resonator 50 GHz		>6,000	1.85 mm (f)
N1501AKEAD-760	Split Cylinder Resonator 60 GHz			1 mm (f)
N1501AKEAD-780	Split Cylinder Resonator 80 GHz			

\* The electric field is parallel to the test sample.

### Other characteristics

Keysight Model No.	Resonant frequency	Operating temperature	Dimensions	weight
N1501AKEAD-710	Nominal value	0 to 40°C	100x105x70	2.4
Others	-0.5% ±0.2%		62x80x40	0.9

### Configuration

N1501AKEAD-ST1 starter kit is required. The kit consists of the test software and COP test sample. Two RF cables for network analyzer connection and a control PC are also required.

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## Test Software

Permittivity measurement software is available for efficient measurement. It controls the Keysight Technologies network analyzer and automatically acquires the necessary parameters, then outputs the complex relative permittivity. The test software is included in the N1501AKEAD-ST1 starter kit.

### System requirements

- Windows OS (Windows 7 or later)
- .NET Framework 4.5 or later
- Keysight IO Libraries

### Usable analyzers

- Keysight ENA/ENA-L Series Network Analyzers
- Keysight PNA/PNA-L Series Network Analyzers
- Keysight Streamline Series USB Network Analyzers

## Test Sample Requirements

A thin flat plate sample is required for Split Cylinder measurements.

### Size

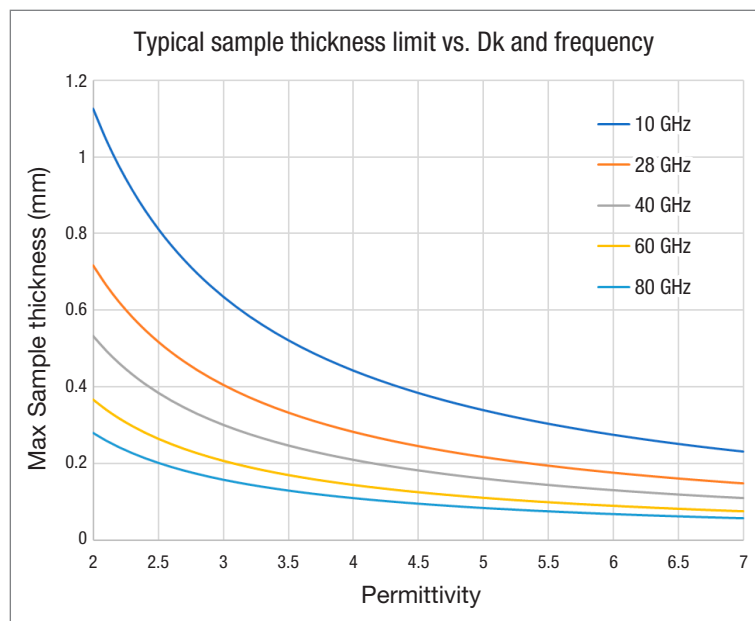
Recommendation for accurate measurement and easy handling:  
10 GHz: 62 mm x 75 mm, Others: 34 x 45 mm

### Thickness

We recommend thickness of about 100 $\mu$ m.

Typical maximum thickness is shown in the chart below.

In case of relatively high loss materials,  $\tan \delta > 0.01$  for example, a sample may need to be significantly thinner than the limit in the chart.



Learn more at: [www.keysight.com](http://www.keysight.com)

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at:  
[www.keysight.com/find/contactus](http://www.keysight.com/find/contactus)

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