

Long-awaited mmWave Low-loss Dielectric material test solution

Keysight Technologies & Kanto Electronic App&Dev

Split Cylinder resonator method is available up to 80GHz NOW!

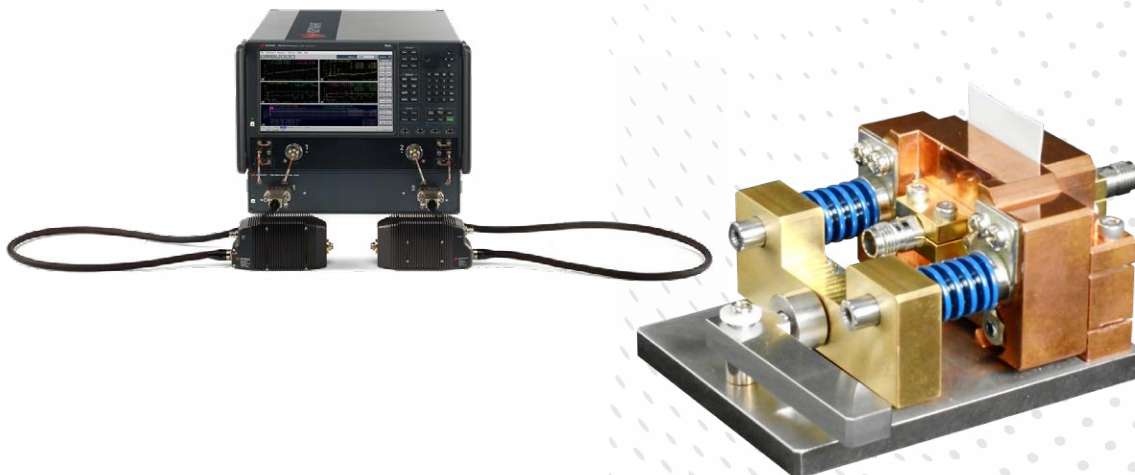
The millimeter wave material market is changing drastically by 5G and automotive radar. A reliable measurement solution for leading edge materials is needed to succeed in the market.

The 80 GHz split-cylinder resonator responds to this market demand and provides easy-to-use and accurate dielectric material measurements. Our split cylinder has already established in the market as a low loss material test solution up to 50 GHz. By optimizing its design for the latest machining technology, the upper frequency limit has been greatly extended to 80 GHz. As a result, it has become possible to easily perform measurement with good reproducibility in a wide frequency range from 10 GHz to 80 GHz using a flat plate sample.

By combining excellent hardware with the software developed by the national institute of Advanced Industrial Science and Technology (AIST) in Japan, reliable measurements are assured.

- Ideal for evaluation of low loss dielectric materials with $\tan \delta$ 0.01 or less
- Easy and reproducible permittivity measurements realized in millimeter wave with unique fixture design
- Reliable measurement by the AIST* software

* The national institute of Advanced Industrial Science and Technology in Japan

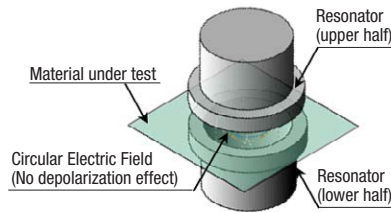


Long-awaited mmWave Low-loss Dielectric material test solution

Technology Highlights

Technology for high frequency: Split Cylinder

The method of splitting the resonator at the center and measuring a sample in between is known as a split-cylinder resonator method. In this method, since the electric flux circulates in the sample, it is not affected by the depolarization field generated at the end of the electric flux in the material. Split cylinder is suitable for measurement at high frequencies because the influence of depolarization field is more significant at high frequencies, where a sample is smaller.



Unique Mechanical design enables highly repeatable measurements

Both a quality resonator and a stable mechanism to fix a test sample are necessary for repeatable measurements. Our unique mechanical design, which employs coil spring pressure to fix a sample, results in very stable measurements independent of operators. The following is repeatability test example: measuring a PTFE (80μm) sample 10 times by removing and fixing the sample every time.

Frequency	28 GHz		40 GHz		80 GHz	
	ϵ'	$\tan\delta$	ϵ'	$\tan\delta$	ϵ'	$\tan\delta$
Average	2.01477	0.000145	2.00604	0.000202	1.99443	0.000527
Repeatability (σ)	0.00064	0.000042	0.00105	0.000039	0.00263	0.000100

Solution configuration example with Keysight products

Keysight PNA mm-Wave System	N5291A (120 GHz)
Permittivity measurement software for Split Cylinder	
Split Cylinder 80 GHz	CR-780
1 mm test cables	

* System number : Keysight PS-X10-100

Split Cylinder family

Split Cylinder 10 GHz	CR-710
Split Cylinder 20 GHz	CR-720
Split Cylinder 24 GHz	CR-724
Split Cylinder 28 GHz	CR-728
Split Cylinder 35 GHz	CR-735
Split Cylinder 40 GHz	CR-740
Split Cylinder 50 GHz	CR-750
Split Cylinder 60 GHz	CR-760
Split Cylinder 80 GHz	CR-780

Contact

KEAD
KANTO ELECTRONIC APPLICATION AND DEVELOPMENT
 SINCE 1962

Kanto Electronic Application and Development Inc.

5019-7 Yaho, Kunitachi-shi, Tokyo
 186-0011 Japan
 TEL +81-42-576-2921
 FAX +81-42-573-6890
 mail info@kead.co.jp
 Web Site www.kead.co.jp

Keysight & Solutions Partners
 Extending our solutions to meet your needs

Learn more at: 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

KEYSIGHT
 TECHNOLOGIES