

# World Leading High-Accurate Dk/Df Measurement System for Thin Film, 20GHz - 140GHz

System No. DPS03

Keysight Technologies and KEYCOM Corp.

**Supports specimens as thin as 5 $\mu$ m in wide frequency range of 20GHz~140GHz**

## 《JIS Standard》

KEYCOM's Fabry-Perot  $\epsilon_r$  and  $\tan \delta$  measurement system of open resonator method, which attains measurement accuracy as 0.0001 level of  $\tan \delta$ . Because of high accuracy, it is possible to measure ultra-thin sheet and specimens of low  $\tan \delta$  materials such as PTFE.

This measurement system is popular among many manufacturers not only for the purpose of reliable reports for submission as it is JIS standardized, but also for the purpose of R&D as it can check very slight difference of characteristics.

## Standardization

JIS R 1660-2 (Japanese Industrial Standards)

\* Fully compatible with JIS R1660-2-2004 specification by using the software for sheet. And for ultra thin sheet, it is complied with "Millimeter wave measurement of complex permittivity by perturbation method using open resonator" IEEE Trans. Instrument and Measurement VOL.57. No.12, Dec.2008 pp2868-2873".

## Publications

H.Suzuki, T.Kamijo

"Millimeter wave measurement of complex permittivity by perturbation method using open resonator"

IEEE Trans. Instrumentation and Measurement VOL.57. No.12, Dec.2008 pp2868-2873

## Specimen examples

- Printed Circuit board
- Thin film
- Radome
- Ceramics
- PTEFE film
- PE film
- Sapphire plate
- Alumina plate etc.

## Specifications

Frequency : 20 ~ 140GHz

Permittivity : 1.05 ~ 30

(Accuracy : +- 3%)

$\tan \delta$  : 0.0001~0.05

(Accuracy :  $\pm 7\%$  or 0.0002)

(depending on VNA)

Specimen size :

80mm x 80mm@76.5GHz

Specimen thickness :

5 $\mu$ m ~ 0.2mm (depends on frequency and permittivity) or integral multiplication of half the effective wave length (with software option)

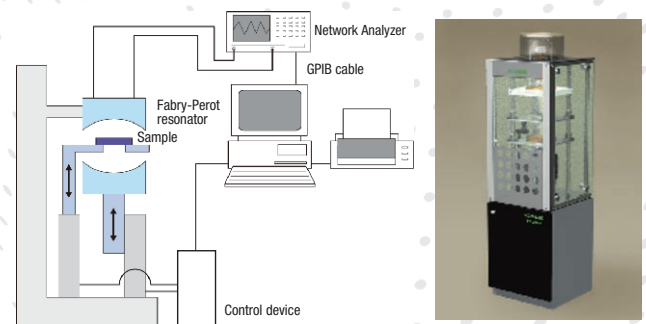
## Data Samples

PTFE @40GHz

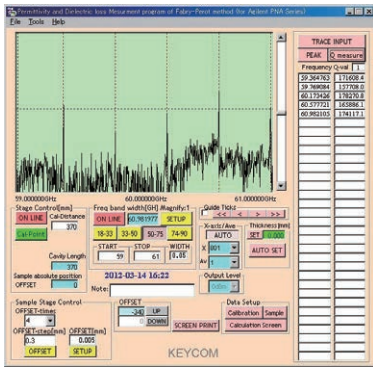
(measured by PNA E8361A)

$\epsilon_r$  : 2.047

$\tan \delta$  : 0.00022



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Resonance View

Calculation Table

**KEYCOM**  
Characteristic Technologies

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## Ordering Information

Keysight Technologies



Vector network analyzer  
PNA series (N52xx)  
ENA series (E50xx)



Keysight Streamline Series  
USB Vector Network Analyzers  
(P937xA, P500xA)



E-band  
network analyzer system  
N5252A

KEYCOM Corp.

Model No. DPS03

1. Precision automatic mobile stage (common to all frequencies)	MDM-03DX
2. Fabry-Perot resonator	20-33GHz ..... FPR-33B 26.5-40GHz ..... FPR-40 33-50GHz ..... FPR-50 39-60GHz ..... FPR-60 50-75GHz ..... FPR-75 59-90GHz ..... FPR-90 90-110GHz ..... FPR-110 110-140GHz ..... RPR-140
3. Software (common to all frequencies)	For sheet ..... P118050123-04 For ultra-thin sheet ... P118050123-05
4. Windows PC, Printer	Available upon request
5. GPIB cable	GP-01

Product specifications and descriptions in this document subject to change without notice.

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)

