

# Datasheet

## Conductivity Fabry-Perot Resonators



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**General:**

EM labs' Conductivity Fabry-Perot Resonators with a Keysight Technologies' network analyzer provide the capability of measuring the conductivity of copper foils, either bare foils or foils with dielectric. With FP-CND-MA software, you can efficiently capture accurate conductivity values of your samples with ease of use.

**Models:**

Two models of Conductivity Fabry-Perot Resonators are available, covering the frequency range from 23GHz to 170GHz. Conductivity is measured approximately at every 2.5GHz.

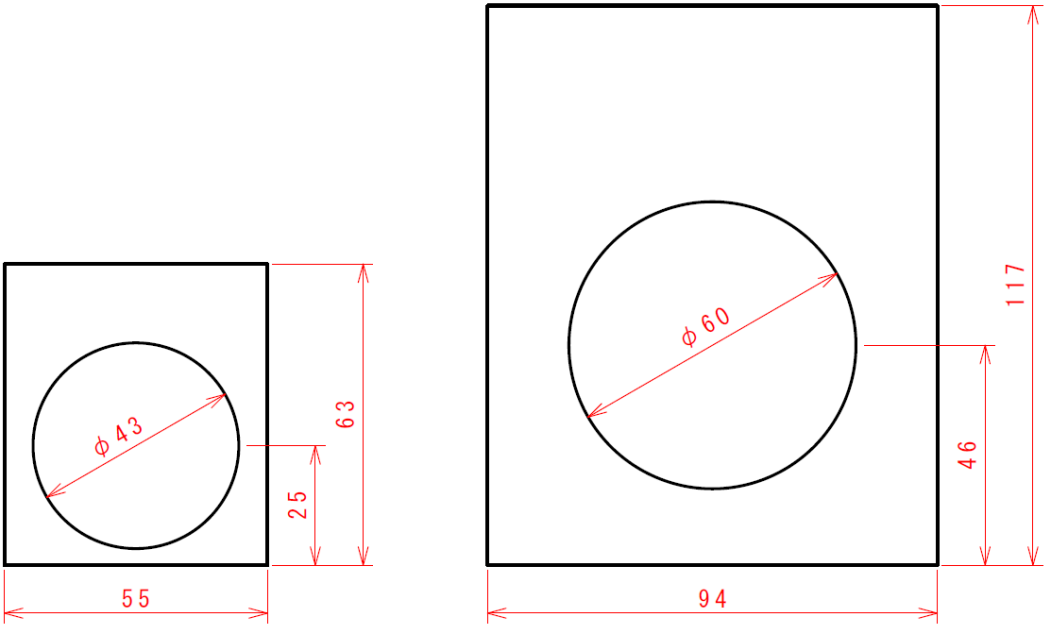
| Moder number | description                                      | Frequency  | unloaded Q | Connector      |
|--------------|--------------------------------------------------|------------|------------|----------------|
| N1504A-110   | FP-CND-BB                                        | 23-110GHz  | > 60,000   | 1mm(f)         |
| N1504A-W06   | FP-CND-D                                         | 110-170GHz | > 130,000  | WR6 Wave Guide |
| N1504A-SW2   | Software for Conductivity Fabry-Perot Resonators |            |            |                |
| N1504-80010  | Glass sample carrier for N1504A-110              |            |            |                |
| N1504-80011  | Glass sample carrier for N1504A-W06              |            |            |                |
| N1504-80012  | Copper reference for N1504A                      |            |            |                |

**Sample shape and size:**

Recommended sample sizes are listed in the table below;

| Frequency | Easy-to-use size |
|-----------|------------------|
| FP-CND-BB | 70mm x 70mm      |
| FP-CND-D  | 50mm x 50mm      |

A sample is held between two sample plates with the following shape. A sample is considered sufficiently large if it covers the center hole, even if it is smaller than the size specified in the table above. However, a sample should not exceed the dimensions of rectangular sample holder.



**Sample thickness:**

The upper limit of the sample thickness is 2mm.

**Reference sample:**

A reference Aluminum Foil with pre-measured permittivity values is provided for verification and maintenance purposes.

Reference Aluminum has  $\sigma_r$  of approximately 0.6.

**Measurement accuracy (normal indoor environment):**

- $\sigma_r$  error < 0.02

Measurement accuracy is defined only as the deviation from the specified values of the reference Aluminum foil.

Note: Absolute accuracy cannot be specified due to the absence of an absolute standard.

**Repeatability:**

- $\sigma_r$  standard deviation < 0.01

Repeatability is defined as the standard deviation of ten measurements of the reference Aluminum sheet, with the sheet being removed and reinserted into the resonator before each measurement.

**Operating temperature:**

- 10 to 40°C (no condensation)

**Size/Weight:**

- FP-CND-BB: 160mmW x 173mmD x 191mmH / 10.9kg
- FP-CND-D: 157mmW x 150mmD x 94mmH / 1.7kg
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