

# Device Modeling Report

COMPONENTS: CAPACITOR/Films

PART NUMBER: PA104-C

MANUFACTURER: Okaya Electric Industries Co.,Ltd.



**Bee Technologies Inc.**

## heory: Auto Balancing Bridge Method

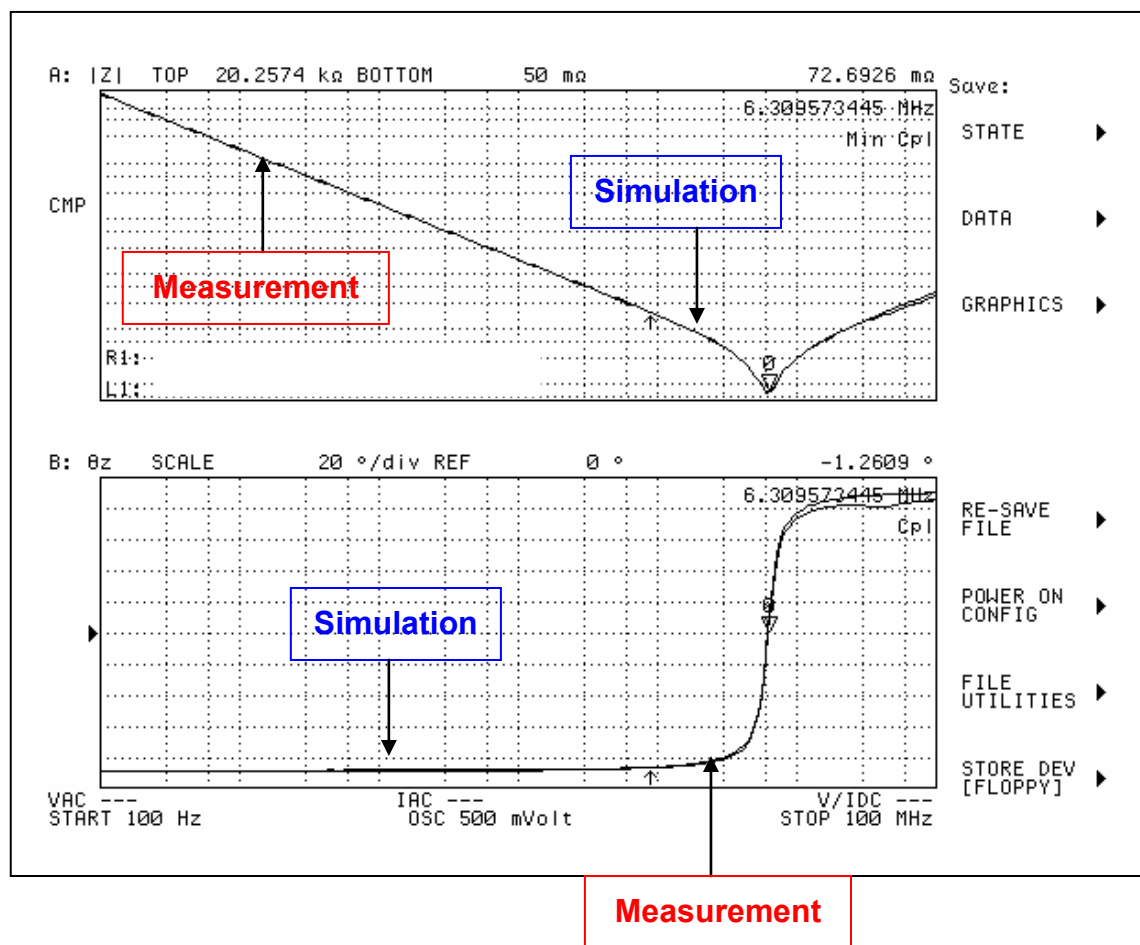
### Optimization of Simulation

Range of adjustment Frequency: 100Hz to 100M(Hz)

Frequency vs.  $|Z|$  and Frequency vs.  $\theta_z$  Characteristic

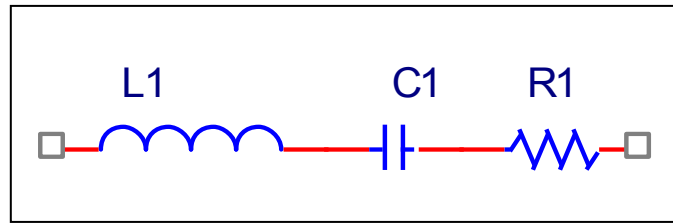
Attention)

*Please use SPICE MODEL within the range from 100Hz to 100M(Hz)*



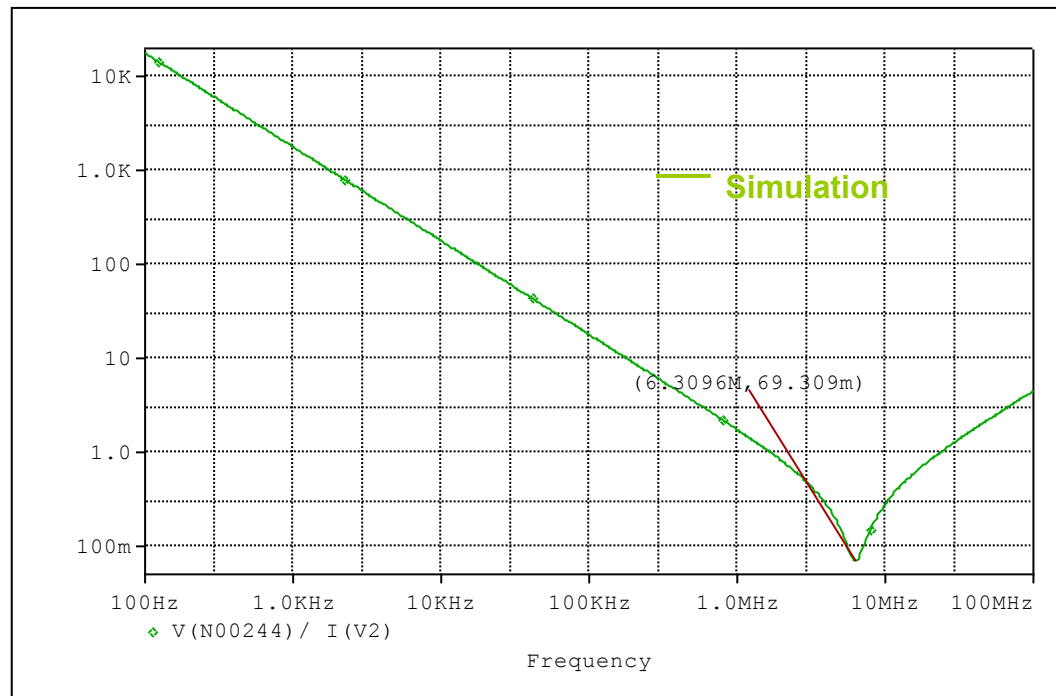
|    |  |
|----|--|
| L1 |  |
| C1 |  |
| R1 |  |

Equivalent circuit

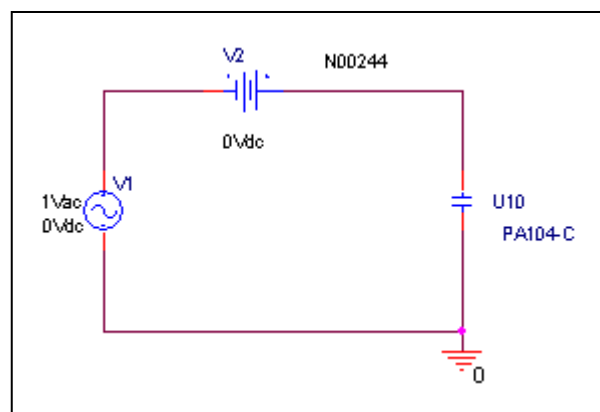


## Frequency vs. |Z| Characteristic

### Circuit Simulation result



### Evaluation Circuit



**Simulation result**

| <b>Frequency<br/>(Hz)</b> | <b>IZI (ohm)<br/>:Measurement</b> | <b>IZI (ohm)<br/>:Simulation</b> | <b>% Error</b> |
|---------------------------|-----------------------------------|----------------------------------|----------------|
| 100                       | 18.0237K                          | 17.988K                          | -0.1981        |
| 1K                        | 1.8128K                           | 1.7988K                          | -0.7723        |
| 10K                       | 180.534                           | 179.876                          | -0.3645        |
| 100K                      | 18.1726                           | 17.983                           | -1.0433        |
| 1M                        | 1.8347                            | 1.7546                           | -4.3658        |
| 10M                       | 283.126m                          | 284.957m                         | 0.6467         |
| 100M                      | 5.0146                            | 4.5379                           | -9.5062        |

|                  | <b>Measurement</b> | <b>Simulation</b> | <b>%Error</b> |
|------------------|--------------------|-------------------|---------------|
| <b>FSRF(Hz)</b>  | 6.3096M            | 6.3976M           | 1.3947        |
| <b>IZI (ohm)</b> | 69.309m            | 71.401m           | 3.0184        |