

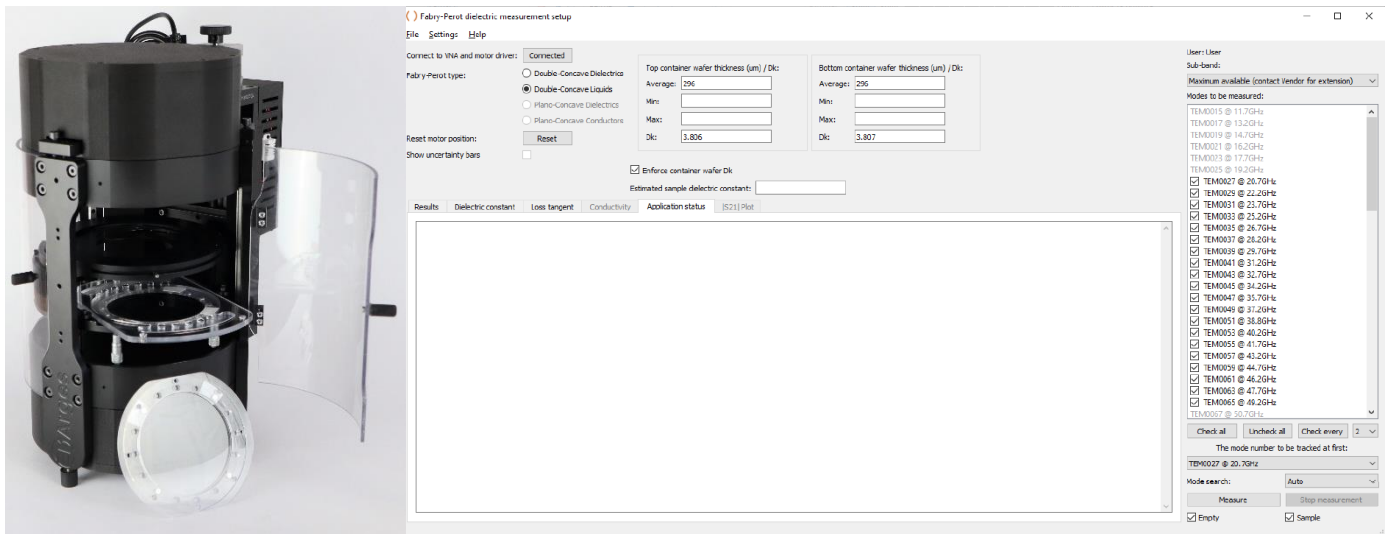
FABRY-PEROT OPEN RESONATOR FOR LOW-LOSS LIQUIDS (15-50 GHz)



QWED offers a **Fabry-Perot open resonator** (FPOR) for automated broadband and accurate resonant measurements of electromagnetic properties of low-loss liquids in the **15-50 GHz** frequency range.

The FPOR system is equipped with specialized **software** controlling the measurement process and extracting the dielectric constant (Dk) and dissipation factor (Df) of the liquid under test (LUT) from the measured changes of the resonance frequency and quality factor, respectively. The measurement setup consists of a PC connected to the FPOR and to measurement equipment (VNA).

The FPOR operates at consecutive $TEM_{0,0,q}$ Gaussian odd modes spaced every **1.5 GHz**. The LUT is inserted into the FPOR in a specialized liquid **container** made of fused silica wafers.

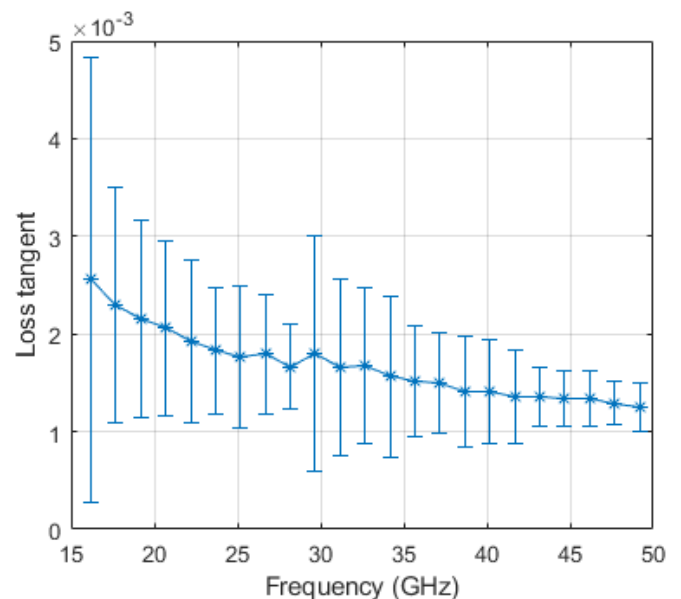
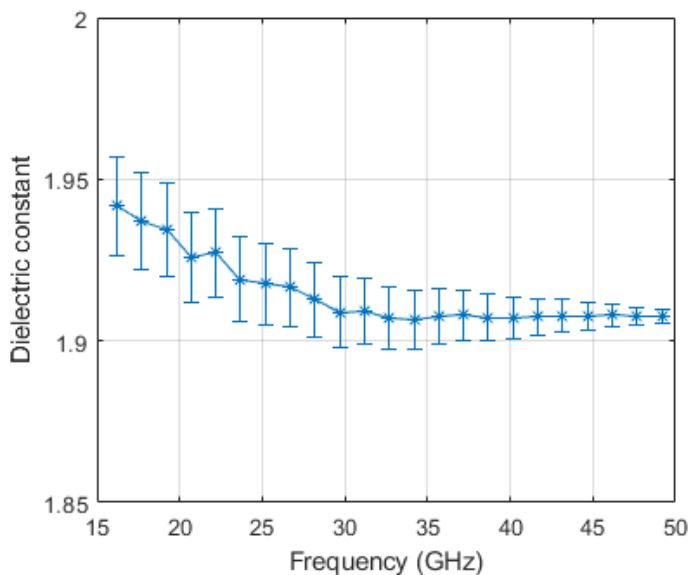


Fabry-Perot Open Resonator

Measurement software

The system allows measuring liquids with the following properties:

- **dielectric constant:** $Dk = 1 - 4$ (accuracy: $\delta Dk < 1\%$)
- **loss tangent:** $Df > 10^{-4}$ (maximum achievable accuracy: $\delta Df < 2\%$)
- **thickness:** $50\mu\text{m} - 450\mu\text{m}$ (depends on the spacer applied in a liquid container)
- **liquid volume:** $< 10 \text{ mL}$



3M™ Fluorinert™ Electronic Liquid FC-40