

Advances in NIST Dielectric Measurement Capability Using a Mode-Filtered Cylindrical Cavity

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A 60-mm diameter cylindrical cavity resonator has been constructed for performing high-accuracy permittivity measurements on low-loss materials at microwave frequencies. The cavity's design and evaluation are described. Estimated errors in seven parameters result in approximately 0.2% uncertainty in permittivity and 6% uncertainty in loss tangent for a fused silica measurement.

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