Abstracts

Open Resonator for Precision Dielectric Measurements in the 100 GHz Band (Short Papers)

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Dielectric properties of fused silica, MgO, AIN, and BN were measured using an open resonator at frequencies around 100 GHz. The resonator is of the semiconfocal type and consists of a concave and a plane mirror, and the frequency variation method is used. To increase the reliability of measurement data, the operating frequency and thickness of the samples were chosen so as to make the parameter Delta = 1 for every sample. The radius of curvature of the concave mirror is deduced with sufficient accuracy from the resonant frequencies of the TEM/sub 0.0/ and TEM/sub 1.0/ modes, which results in a precise determination of resonator length, The standard deviation of measurements was less than 0.1% in permittivity and about 10% in loss tangent.

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