Abstracts

A Quasi-Optical Method for Measuring the Complex Permittivity of Materials

F.I. Shimabukuro, S. Lazar, M.R. Chernick and H.B. Dyson. "A Quasi-Optical Method for Measuring the Complex Permittivity of Materials." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 659-665.

A quasi-optical method for measuring the complex permittivity of materials is described. The determination is derived from measurements of the transmission of a perpendicularly polarized wave through a dielectric slab at different angles of incidence. This relatively simple method is quite sensitive. Accurate estimates of the relative permittivity and the loss tangent can be obtained by accurately measuring the frequency of the signal and by the use of large, precisely machined Fabry-Perot plates. Estimates of the standard errors in the determinations are obtained by using a bootstrap resampling technique. The measurements here are made at a frequency of 93.788 GHz at ambient temperature.

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