Abstracts

A Dielectric Resonator Method of Measuring Inductive Capacities in the Millimeter Range

B.W. Hakki and P.D. Coleman. "A Dielectric Resonator Method of Measuring Inductive Capacities in the Millimeter Range." 1960 Transactions on Microwave Theory and Techniques 8.4 (Jul. 1960 [T-MTT]): 402-410.

A novel technique for the measurement of dielectric and magnetic properties of a homogeneous isotropic medium in the range of approximately 3 to 100 kmc is described. An accuracy of /l.chemc/ 1 per cent is possible in the determination of permittivity or permeability in those cases where the loss tangent is sulliciently small. The measuring structure is a resonator made up of a right circular cyndrical dielectric rod placed between two parallel conducting plates. For measurement of permittivity two or more resonant TE/sub onl/ mode frequencies are determined whereas for the measurement of permeability two or more resonant TM/sub onl/ mode frequencies are determined. The dielectric or magnetic properties are computed from the resonance frequencies, structure dimensions, and unloaded Q. Since the loss tangent is inversely proportional to the unloaded Q of the structure, the precision to which Q is measured determines the accuracy of the loss tangent.

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