Abstracts

Resonant Frequencies of Higher Order Modes in Cylindrical Anisotropic Dielectric Resonators (Dec. 1991 [T-MTT])

M.E. Tobar and A.G. Mann. "Resonant Frequencies of Higher Order Modes in Cylindrical Anisotropic Dielectric Resonators (Dec. 1991 [T-MTT])." 1991 Transactions on Microwave Theory and Techniques 39.12 (Dec. 1991 [T-MTT] (1991 Symposium Issue)): 2077-2082.

An improved method is developed which allows the determination of mode frequencies to high accuracy in cylindrical anisotropic dielectric resonators. This is an extension of Garault and Guillon's method from isotropic to anisotropic dielectrics, applied to four different classes of field patterns. The theory is confirmed by room temperature measurements in two sapphire crystals of different aspect ratios, and in cryogenic sapphire resonators used in high stability fixed and tunable oscillators. The sensitivity of mode frequency to dimensional and permittivity perturbations is analyzed.

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