Abstracts

Split frequencies in planar axisymmetric gyroelectric resonators

S.I. Sheikh, A.A.P. Gibson and B.M. Dillon. "Split frequencies in planar axisymmetric gyroelectric resonators." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 62-69.

Axisymmetric gyroelectric disk, ring, and composite resonator structures have been characterized for both InSb and GaAs semiconductors at 77 K. The calculations assume that these materials can be represented by the tensor permittivity derived from the Drude model of cyclotron motion in a plasma. Resonance and loss regions are identified and the sensitivity of normal mode splitting and onset frequencies to material and geometrical variables are graphed and tabulated. The information is presented in terms of signal frequency and the bias field to permit a direct comparison with results from ferrimagnetic structures. Semiconductor calculations show two extraordinary wave resonances and predict excellent symmetrical wide-band normal mode splitting. Field plots for the semiconductor disk and ring are included to explain coupled mode behaviour between modes in different bias regions.

❑ Return to main document.