

Considerations on the Frequency Dependence of Waveguide Modes in Premagnetized Ferrites Near Resonance

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Difficult problems occur in the design of nonreciprocal elements at millimeter wavelengths, if the dielectric and magnetic losses of ferrites are neglected. Especially near the gyromagnetic resonance the losses become large and the anisotropic behaviour of the ferrite results significant changes in the behaviour of the waveguide modes. This paper describes the solution for these waveguide modes in premagnetized ferrites and it takes into account the losses. The knowledge and better understanding of the field distribution can be used for the improvement of design procedures of high quality nonreciprocal elements. Several examples are presented and discussed to illustrate these facilities.

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