

## Theoretical and Experimental Analysis of Ferrite Circular Resonators in Nonradiative Dielectric Structures

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S. Alei, C. Di Nallo, M. Fascetti, F. Frezza, A. Galli and G. Gerosa. "Theoretical and Experimental Analysis of Ferrite Circular Resonators in Nonradiative Dielectric Structures." 1996 MTT-S International Microwave Symposium Digest 96.3 (1996 Vol. III [MWSYM]): 1655-1658.

A complete characterization of cylindrical resonators made of ferrite is presented concerning nonradiative dielectric (NRD) components, for promising applications to tunable filters, circulators, etc., at microwaves and millimeter waves. For such class of anisotropic resonators, the frequency spectrum and the relevant field configurations are accurately derived for any resonance mode excitable in NRD topology, as a function of the geometric and electromagnetic parameters. In particular, the tuning and nonreciprocal selective properties are investigated as the bias magnetization is varied. The dissipation effects are also quantified rigorously, by calculating with closed-form approaches both the complex resonant frequencies and the quality factors due to losses in the ferrite material and in the metal plates. All these theoretical results have been discussed and validated also experimentally by means of various measurements on NRD prototypes.

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