Abstracts

Full-wave analysis of a wide class of microstrip resonators fabricated on magnetized ferrites with arbitrarily oriented bias magnetic field

G. Leon, R.R. Boix and F. Medina. "Full-wave analysis of a wide class of microstrip resonators fabricated on magnetized ferrites with arbitrarily oriented bias magnetic field." 2002 Transactions on Microwave Theory and Techniques 50.6 (Jun. 2002 [T-MTT]): 1510-1519.

A numerical code has. been developed for the full-wave determination of the resonant frequencies and quality factors of microstrip patches with right-angle corners of arbitrary shape in the case in which the substrate of the patches is a magnetized ferrite with arbitrarily oriented bias magnetic field. The code is based on the solution of an electric-field integral equation by means of Galerkin's method in the spectral domain. The evaluation of the infinite integrals arising from the application of the numerical method is efficiently carried out by means of a technique based on the interpolation of the spectral dyadic Green's function. The numerical results obtained indicate that microstrip patches fabricated on ferrite substrates present cutoff frequency regions in which resonances cannot occur owing to the excitation of magnetostatic modes. The limits of these cutoff regions are shown to be dependent on the orientation and the magnitude of the bias magnetic field, on the shape of the patches, and even on the nature of every particular resonant mode. The numerical results also show that the resonant frequencies of microstrip patches. on magnetized ferrites can always be tuned over a wide frequency range provided the orientation of the bias magnetic field is suitably chosen.

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