Abstracts

Full-wave analysis of circular microstrip resonators in multilayered media containing uniaxial anisotropic dielectrics, magnetized ferrites, and chiral materials

V. Losada, R.R. Boix and M. Horno. "Full-wave analysis of circular microstrip resonators in multilayered media containing uniaxial anisotropic dielectrics, magnetized ferrites, and chiral materials." 2000 Transactions on Microwave Theory and Techniques 48.6 (Jun. 2000 [T-MTT] (Mini-Special Issue on the 1999 IEEE Radio and Wireless Conference (RAWCON))): 1057-1064.

In this paper, Galerkin's method in the Hankel transform domain is applied to the determination of the resonant frequencies, quality factors, and radiation patterns of circular microstrip patch resonators. The metallic patches are assumed to be embedded in a multilayered substrate, which may contain uniaxial anisotropic dielectrics, magnetized ferrites, and/or chiral materials. The numerical results obtained show that important errors can be made in the computation of the resonant frequencies of the resonators when substrate dielectric anisotropy, substrate magnetic anisotropy and/or substrate chirality are ignored. Also, it is shown that the resonant frequencies of circular microstrip resonators on magnetized ferrites can be tuned over a wide frequency range by varying the applied bias magnetic field. Finally, the computed results show that the resonance and radiation properties of a circular microstrip patch on a chiral material is very similar to those of a circular patch of the same size printed on a nonchiral material of lower permittivity.

❑ Return to main document.