Abstracts

Resonant modes of circular microstrip patches over ground planes with circular apertures in multilayered substrates containing anisotropic and ferrite materials

V. Losada, R.R. Boix and M. Horno. "Resonant modes of circular microstrip patches over ground planes with circular apertures in multilayered substrates containing anisotropic and ferrite materials." 2000 Transactions on Microwave Theory and Techniques 48.10 (Oct. 2000 [T-MTT]): 1756-1762.

In this paper, the authors analyze how the resonant modes of circular microstrip patch resonators are affected by the presence of circular apertures in the ground plane located under the patches. A rigorous full-wave analysis in the Hankel transform domain (HTD) is carried out in order to obtain the resonant frequencies, quality factors, and radiation patterns of the circular microstrip patch resonators over ground planes with circular apertures. With the use of suitable Green's functions in the HTD, the analysis is performed for the case where the circular patches, as well as the ground planes containing the apertures are embedded in a multilayered substrate consisting of isotropic dielectrics, uniaxial anisotropic dielectrics, and/or magnetized ferrites. The numerical results obtained are compared with experimental results, and good agreement is found. The results show that the circular apertures significantly affect the resonant frequencies of circular microstrip patches.

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