Abstracts

Effect of substrate dielectric anisotropy on the frequency behavior of microstrip circuits

E. Drake, R.R. Boix, M. Horno and T.K. Sarkar. "Effect of substrate dielectric anisotropy on the frequency behavior of microstrip circuits." 2000 Transactions on Microwave Theory and Techniques 48.8 (Aug. 2000 [T-MTT]): 1394-1403.

In this paper, we carry out a full-wave analysis of shielded two-port microstrip circuits, in which the metallizations are embedded in a multilayered substrate that may contain isotropic dielectrics and/or anisotropic dielectrics. The Galerkin's method in the spectral domain is applied for determining the current density on the metallizations of the circuits when their feeding lines are excited by means of delta-gap generators, and the matrix pencil technique is subsequently used for deembedding the scattering parameters from the computed current densities. Results are presented for the scattering parameters of some microstrip discontinuities and filters printed on both isotropic dielectric substrates and anisotropic dielectric substrates. These results show that when substrate dielectric anisotropy is ignored, errors arise when computing the scattering parameters of microstrip discontinuities and when predicting the operating frequency band of microstrip filters.

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