Abstracts

Comprehensive analysis of strip- and slot-line guided forward, backward, and complex magnetostatic waves

R. Rafii-El-Idrissi, R. Marques and F. Medina. "Comprehensive analysis of strip- and slot-line guided forward, backward, and complex magnetostatic waves." 2001 Transactions on Microwave Theory and Techniques 49.9 (Sep. 2001 [T-MTT] (Mini-Special Issue on the 2001 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 1599-1606.

This paper presents a comprehensive and accurate analysis of the guidance of volume and surface magnetostatic waves by strips or slots in the presence of a ferrite slab magnetized to saturation by an external uniform magnetic field. The strip/slot can be directly printed on the ferrite surface or separated from it by means of a dielectric layer of arbitrary thickness. The problem is posed in terms of a suitable integral equation accounting for the magnetostatic limit. This equation is solved by using a spectral-domain formulation. The proposed method allows for the consideration of arbitrary magnetization angles and the presence of upper and/or lower ground planes. Strip-guided forward, backward, and complex surface magnetostatic waves have been obtained and analyzed in terms of the appropriate waveguide parameters. Slot-guided backward volume magnetostatic waves have been also computed and studied. Theoretical results have been checked against theoretical (magnetostatic and full wave) and experimental data available in the literature with reasonable agreement.

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