Abstracts

Analysis of Nonreciprocal Coupled Image Lines (Comments and Reply) (Jan. 1989 [T-MTT])

J. Mazur, M. Mrozowski, D.B. Sillars and L.E. Davis. "Analysis of Nonreciprocal Coupled Image Lines (Comments and Reply) (Jan. 1989 [T-MTT])." 1989 Transactions on Microwave Theory and Techniques 37.1 (Jan. 1989 [T-MTT]): 262-262.

In the above paper an analysis based on the effective dielectric constant approach is used to investigate the coupled dielectric image lines separated by a ferrite slab magnetized in the propagation direction. According to this analysis the structure exhibits nonreciprocal dispersion properties. However, gyromagnetic waveguiding structures magnetized in the propagation direction should be reciprocal in accordance with the generalized reciprocity theorem. The only nonreciprocal effect allowed in this type of guide is the Faraday rotation. The results given by Sillars and Davis violate the reciprocity theorem because the analysis is based on an erroneous interpretation of the solution of the wave equation in the ferrite medium.

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