Abstracts

Theory of Dielectric-Loaded and Tapered-Field Ferrite Devices

R.F. Soohoo. "Theory of Dielectric-Loaded and Tapered-Field Ferrite Devices." 1961 Transactions on Microwave Theory and Techniques 9.3 (May 1961 [T-MTT]): 220-224.

Loading a ferrite resonance isolator or differential phase shifter with a dielectric or biasing the ferrite with an inhomogeneous dc magnetic field are very useful ways of improving the performance of these ferrite devices. Whereas these methods are very commonly used in transverse-field ferrite devices, no extensive analytical treatment of the subject has appeared in the literature. It is the purpose of this paper to present a theoretical analysis of the problem, chiefly by means of combined boundary-value and perturbation-theory approach. It will be shown that dielectric-loading and tapered-field techniques increase the bandwidth of isolators and phase shifters, the isolation-to-insertion loss ratio of the former, and the phase shift of the latter.

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