Abstracts

Comparison of Theoretical and Experimental Values of Phase Constant for Dipole Mode Surface Wave Propagation in Open Gyromagnetic Ferrite Rod

F.R. Seyfried and J.S. Lee. "Comparison of Theoretical and Experimental Values of Phase Constant for Dipole Mode Surface Wave Propagation in Open Gyromagnetic Ferrite Rod." 1969 G-MTT International Microwave Symposium Digest of Technical Papers 69.1 (1969 [MWSYM]): 459-466.

The formulation of Maxwell's equations as an eigenvalue problem in operator notation enables application of operator methods, Schroedinger scalar perturbation theory, and mode orthogonality conditions to the solution of propagation problems in uniform waveguides. Gabriel and Brodwin initiated this approach for obtaining approximate solutions for waveguiding problems involving inhomogeneous, anisotropic, dissipative media in conventional waveguide in which the presence of the media was considered a perturbation of the conditions present in the empty waveguide. Lee extended this theory to open gyrotropic dielectric waveguide by considering the gyrotropy of the rod to be a perturbation of the conditions present in an open isotropic dielectric waveguide. In particular, Lee obtained a perturbation solution for waveguiding of the HE/sub 11/ (dipole) surface wave mode in a longitudinally magnetized open gyromagnetic ferrite rod by considering the anisotropy of the ferrite induced with the application of the small dc magnetic field.

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