Abstracts

Operation of the Field Displacement Isolator in Rectangular Waveguide

R.L. Comstock and C.E. Fay. "Operation of the Field Displacement Isolator in Rectangular Waveguide." 1960 Transactions on Microwave Theory and Techniques 8.6 (Nov. 1960 [T-MTT]): 605-611.

A field displacement isolator in WR-159 rectangular waveguide consisting of a full height ferrite slab having a resistive film on one face is treated analytically. The resultant transcendental equation was programmed for a computer and values of the propagation constant found in the frequency range 5.90 to 6.45 kMc for various film resistivities. Two TE modes are found to exist whose relative behavior depends on the resistivity of the film. Reasonably close experimental verification of the results was obtained. for the total attenuation and for the predicted E-field distributions by E-field probe tests. Additional attenuation above that predicted by the theory for a single mode is observed as a result of an interference at the end of the ferrite. A partial height ferrite slab isolator was subjected to E-field probe tests. The field distributions were found to be similar to the full height case. Here, also, additional attenuation is obtained at some frequencies as a result of an interference.

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