Abstracts

Longitudinal Section Mode Analysis of Dielectrically Loaded Rectangular Waveguides with Application to Phase Shifter Design

G.N. Tsandoulas, D.H. Temme and F.G. Willwerth. "Longitudinal Section Mode Analysis of Dielectrically Loaded Rectangular Waveguides with Application to Phase Shifter Design." 1970 Transactions on Microwave Theory and Techniques 18.2 (Feb. 1970 [T-MTT]): 88-95.

The structure consisting of an E-plane dielectric slab partially filling a rectangular waveguide is examined with attention on those higher order mode propagation characteristics that are relevant to the design of nonreciprocal remanence ferrite phase shifters. The validity of the model is established by introducing experimental comparison in the form of VSWR measurements for both pure dielectric loading and an actual composite ferrite phase shifter. Emphasis is placed on the consideration of possible mechanisms for the elimination of LSE/sub 11/, LSM/sub 11/, and LSE/sub 12/ modes, since certainly the first, most probably the second, and quite possibly the third will propagate in a practical device. Experimental verification of theoretical predictions is established and phaser design guidelines are drawn. Some additional topics, such as slabcorner chamfering and the effect of the switching wire, are included for completeness.

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