Abstracts

Guided Waves in Limit Cases of Microstrip (Correspondence)

R.E. Eaves, Jr. and D.M. Bolle. "Guided Waves in Limit Cases of Microstrip (Correspondence)." 1970 Transactions on Microwave Theory and Techniques 18.4 (Apr. 1970 [T-MTT]): 231-232.

The great difficulty in solving for the propagation constant and effective characteristic impedance for microstrip transmission lines is invariably avoided by assuming quasi-TEM propagation and solving Laplace's equation rather than the wave equation. Deschamps and Wu have qualitatively discussed aspects of the hybrid-mode problem. Zysman and Varon have presented a solution for the related but distinctly different problem of closed microstrip. In this communication we present the basis through which the quasi-TEM analysis may be justified for the limit cases of guided waves on microstrip in which the dielectric constant approaches that of free space or becomes very large. The guided wave problem is formulated exactly in terms of longitudinal electric and magnetic field components satisfying the wave equation and coupled through the boundary conditions at the dielectric interface.

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