Abstracts

Discontinuities in a Rectangular Waveguide Partially Filled with Dielectric

C.M. Angulo. "Discontinuities in a Rectangular Waveguide Partially Filled with Dielectric." 1957 Transactions on Microwave Theory and Techniques 5.1 (Jan. 1957 [T-MTT]): 68-74.

The modal spectrum for a rectangular waveguide with a dielectric slab at the bottom of the guide is obtained following the Characteristic Green's Function method developed by Marcuvitz. Then a four-terminal network is found as equivalent to the junction of the partially filled waveguide and an empty rectangular waveguide. An integral equation is written for the electric field at the plane of the junction and variational expressions are derived for the parameters of the four-terminal network connecting the transmission line equivalent to the partially filled waveguide to the transmission line equivalent to the empty guide. A reasonable guess for the electric field at the discontinuity gives approximate values for the parameters of the four-terminal network. These values agree with experiment. The parameters of the network are plotted vs frequency and thickness of the slab.

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