Abstracts

A Complete Solution of the Inductive Iris with TE/sub k0/ Incidence in Rectangular Waveguide

J.C. Palais. "A Complete Solution of the Inductive Iris with TE/sub k0/ Incidence in Rectangular Waveguide." 1967 Transactions on Microwave Theory and Techniques 15.3 (Mar. 1967 [T-MTT]): 156-160.

A TE/sub k0/ wave incident on an inductive metal iris in a rectangular waveguide excites a reflected and a transmitted wave in the TE/sub k0/ mode. The reflection and transmission coefficients describing these waves are computed. In addition to the incident mode, a number of other modes are excited by the discontinuity. The amount of coupling to these other modes, given by coupling coefficients, is determined using the variational technique. The method developed makes it possible to find the coupling to any desired mode without first finding the coupling to any other mode or group of modes. The analysis shows under what conditions certain modes can be suppressed or eliminated. The method should be applicable to other problems of interest where modes other than the incident one are excited. Since the reflection, transmission, and coupling coefficients are known, the total field at any point in the waveguide can be computed. As an example, the total field at the discontinuity when the TE/sub 10/ mode is incident is calculated. The result closely resembles the expected result (of zero electric field over the metal iris).

❑ Return to main document.