Abstracts

The Susceptance of an Annular Metallic Strip in a Circular Waveguide with Incident TE/sub 01/ Mode

T. Sugiura and H. Suga. "The Susceptance of an Annular Metallic Strip in a Circular Waveguide with Incident TE/sub 01/ Mode." 1979 Transactions on Microwave Theory and Techniques 27.2 (Feb. 1979 [T-MTT]): 160-167.

The principal aims of this paper are twofold: 1) to solve the problem of the scattering of a thin, perfectly conducting aonular strip suspended in a multimodal circular waveguide in which any number of TE/sub 0n/ modes can propagate, and with the aid of this result, 2) to give the susceptance of the thin annular strip in monomodal circular guide with an incident TE/sub 01/ mode. These are treated with a variational approach. Applying the appropriate Green's functions to the continuity equations for the transverse electric field yields a variational expansion for the scattering matrix elements. This is treated with a Rayleigh-Ritz procedure and matrix methods. Curves of normalized susceptance as a function of the free-space wavelength and the size of the annular metallic strip are shown. These results are in good agreement with experimental data. Tables of the scattering coefficients for a typical wavelength versus strip size are also included.

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