

Abstracts

TE₁₀ Mode Scattering by a Rectangular Resistive Film of Arbitrary Dimensions Placed Along the Rectangular Waveguide Axis

I.M. Braver, P.S. Fridberg, K.L. Garb, S.V. Makarov and I.M. Yakover. "TE₁₀ Mode Scattering by a Rectangular Resistive Film of Arbitrary Dimensions Placed Along the Rectangular Waveguide Axis." 1991 Transactions on Microwave Theory and Techniques 39.3 (Mar. 1991 [T-MTT]): 438-443.

TE₁₀ mode scattering by a resistive film of arbitrary width (d) and length (l) placed in the longitudinal section of a rectangular waveguide parallel to its narrow faces is investigated. The vector integral equation for the discontinuity ($\sup_{\text{spl rarr}/h}$) of the tangential magnetic field on the film is formulated. The equation is solved by Galerkin method using basis functions, each of them taking into account the $\sup_{\text{spl rarr}/h}$ behavior near the film edge. For a film that is sufficiently short ($l \ll d$), approximate expressions for the scattering matrix elements are obtained. The scattering matrix for a wide range of values of the film width, length, surface impedance (W), and frequency is calculated. This is believed to be the first study establishing that the attenuation caused by a film having particular d and W values tends to be constant over the entire band of waveguide operating frequencies.

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