Abstracts

Systematic elaboration of trial function bases for the study of planar structures

This paper presents an integral method in combination with Green's functions and the boundary-element method to characterize a rectangular waveguide with electric or magnetic walls, loaded with a conductor of arbitrary cross section. The results provided by this method are in good agreement with available data in the literature. The modes of this type of waveguide are determined in the case of an arbitrarily shaped inner conductor with no consideration of size. The existence of the TEM mode has been verified. The modes calculated by this method are used as numerical basis functions in other applications. It is shown that they can be used to determine the resonant frequencies of a metallic patch or the input impedance of a planar antenna fed by a coaxial line. In this last case, the theoretical results are confronted with the experimental results.

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