Abstracts

The Propagation Characteristics of Signal Lines Embedded in a Multilayered Structure in the Presence of a Periodically Perforated Ground Plane

C.H. Chan and R. Mittra. "The Propagation Characteristics of Signal Lines Embedded in a Multilayered Structure in the Presence of a Periodically Perforated Ground Plane." 1988 Transactions on Microwave Theory and Techniques 36.6 (Jun. 1988 [T-MTT]): 968-975.

The propagation characteristics of waves along a periodic array of parallel signal lines in a multilayered structure in the presence of a periodically perforated ground plane are studied in this paper. The surface current density on the conductors is expressed in terms of a set of rooftop subdomain basis functions, and Galerkin's procedure is applied to derive a matrix eigenvalue equation for the propagation constant in a numerically efficient manner. The dispersion characteristics of these signal lines are studied for both the balanced and unbalanced excitations with the relative permittivities of the various layers as parameters. Numerical results are presented and compared with available data. Extension of the present method to treat conductors with finite sheet resistances is also included.

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