Abstracts

Green's Impedance Function Approach for Propagation Characteristics of Generalized Striplines and Slotlines on Nonlayered Substrates

A newly proposed generalized full-wave space-domain integral equation technique incorporating dyadic Green's impedance function and a new set of basis functions are presented for the analysis of striplines and slotlines arbitrarily integrated on multiple non layered sustrates. The generalized full-wave integral equation technique is validated by conducting convergence study and several case studies. The theoretical dispersion characteristic of the transmission lines obtained here are in very good agreement with the published and measured data for the modified Microslab and the microstrip proximity effect near substrate edge. For the slotline type problem, where a new set of current basis function must be derived to be incorporated into Green's impendance function approach, the new approach presented here shows that the corresponding propagation characteristics thus obtained are also in excellent agreement with those reported in the available literature, which normally used the slot electric fields as the unknowns. To explain how general the present formulation is, it can be reduced to the well-known spectral domain formulation for any guided-wave structure containing only layered substrates.

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