Abstracts

A Mixed Spectral-Domain Approach for Dispersion Analysis of Suspended Planar Transmission Lines with Pedestals

C.H. Chan, K.T. Ng and A.B. Kouki. "A Mixed Spectral-Domain Approach for Dispersion Analysis of Suspended Planar Transmission Lines with Pedestals." 1989 Transactions on Microwave Theory and Techniques 37.11 (Nov. 1989 [T-MTT]): 1716-1723.

A mixed spectral-domain analysis is used to derive dispersion characteristics of dominant modes in a class of planar transmission lines with a pedestal. Equivalent structures are constructed in which magnetic surface currents are identified as the unknowns at the aperture separating two different regions. Spectral dyadic Green's functions are derived for these structures using the spectral-domain immittance approach. The characteristic equations resulting from the application of the spectral Galerkin method involve mixing two different spectral domains, which exist on the two sides of the pedestal support. The present method allows one to retain the simplicity and numerical efficiency of the conventional spectral-domain immittance approach, which cannot be applied directly to the present structures. Numerical data are provided for the dispersion characteristics of dominant modes in a pedestal-supported stripline and finline.

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