Abstracts

A WH/GSMT-Based Full-Wave Analysis for Planar Transmission Lines Embedded in Multilayered Dielectric Substrates

A new full-wave analysis method, referred to as the WH/GSMT, is developed to solve multilayered planar transmission line problems. First, the scattering of an obliquely incident parallel plate mode (PPM) by a PEC half plane embedded in a multilayered isotropic dielectric substrate within a PEC parallel plate region is analyzed via the Wiener-Hopf (WH) technique. The solution is then incorporated into the generalized scattering matrix technique (GSMT) to find the (complex) propagation constant and characteristic impedance of the planar transmission lines. The lateral power leakage is taken into account rigorously in the WH/GSMT. Numerical results including the microstrip line, conductor-backed slotline, coupled microstrip lines, and antipodal finlines are presented along with a discussion of the advantages/disadvantages of this method.

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