Abstracts

A Simple Technique for Calculating the Propagation Dispersion of Multiconductor Transmission Lines in Multilayer Dielectric Media

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A multiconductor transmission line in a multilayer dielectric medium is complicated and therefore is frequently analyzed by the simple quasi-TEM approach. Unlike the full wave eigenvalue approach, the quasi-TEM approach does not give the propagation dispersion characteristics of the line. This paper overcomes this problem by first obtaining the solution of each multiconductor mode from the quasi-TEM approach. Then these solutions are used as both basis and testing functions in a variational formulation of the full wave eigenvalue analysis. The result is high accuracy in the dispersive propagation constants of the multiconductor modes. By solving only for high frequency eigenvalues, not for the high frequency eigenvectors, the method is simpler and faster than the conventional full wave dispersion analyses.

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