Abstracts

Unified analysis of quasi-TEM and higher order modes in planar transmission lines

C. Rieckmann, A.S. Omar and A. Jostingmeier. "Unified analysis of quasi-TEM and higher order modes in planar transmission lines." 1997 MTT-S International Microwave Symposium Digest 3. (1997 Vol. III [MWSYM]): 1369-1372.

TEM modes are shown to be derivable from a scalar magnetic potential /spl psi/ if the supporting transmission line can be considered a slot coupled waveguide with more than one coupling slot. The magnetic potential must jump at the coupling slots in order to give rise to the axial electric current on the strips separating these slots. The advantage of this formulation is its compatibility to the numerically efficient generalized spectral domain (GSD) technique which has already been used for the calculation of TE and TM modes in slot-coupled waveguides. Substrates are taken into account by applying the eigenmode transformation technique. Numerical results are presented for TEM modes in multi-slot lines and for quasi-TEM and higher order modes in coplanar waveguides. Excellent agreement with the results obtained by other methods have been achieved with moderate cpu time and storage requirements.

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