Abstracts

Application of the Generalized Spectral-Domain Technique to the Analysis of Rectangular Waveguides with Rectangular and Circular Metal Inserts

A.S. Omar and K.F. Schunemann. "Application of the Generalized Spectral-Domain Technique to the Analysis of Rectangular Waveguides with Rectangular and Circular Metal Inserts." 1991 Transactions on Microwave Theory and Techniques 39.6 (Jun. 1991 [T-MTT]): 944-952.

The generalized spectral-domain (GSD) technique, which was developed and tested for some special cases in [1], is applied to the analysis of rectangular waveguides with rectangular and circular metal inserts. These include conventional ridge waveguides, circular-ridge waveguides, and rectangular coaxial lines with either rectangular or circular inner conductors. The numerical results show that the edge behavior of the electromagnetic field described in [2] is incomplete. A constant term must be added to the expansion of the magnetic field component which is parallel to the edge. Excellent agreement with other publications is achieved, with a drastic reduction of CPU time for the conventional ridge waveguide. The accuracy of the results is demonstrated by two- and three-dimensional plots of the field distributions.

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