Abstracts

Application of the Point-Matching Method in Determining the Reflection and Transmission Coefficients in Linearly Tapered Waveguides (Correspondence)

T.D. Shockley, C.R. Haden and C.E. Lewis. "Application of the Point-Matching Method in Determining the Reflection and Transmission Coefficients in Linearly Tapered Waveguides (Correspondence)." 1968 Transactions on Microwave Theory and Techniques 16.8 (Aug. 1968 [T-MTT]): 562-564.

Several authors have presented papers concerning the application of both the point-matching method (collocation method) and the conformal-mapping method to the solution of eigenvalue problems for waveguides. In general, a solution by the conformal mapping method satisfies the boundary conditions in an exact sense while providing an approximate solution to the partial differential equation defining the problem. On the other hand, the point-matching method provides an exact solution to the partial differential equation, but satisfies the boundary conditions at a finite number of points. Ultimately the utilization of either method is determined by its applicability to a particular problem, while the accuracy of the theoretically predicted results can best be assessed in terms of a comparison with experimental data. The purpose of this correspondence is to illustrate the usefulness of the point-matching method in obtaining the E field transmission and reflection coefficients for a linearly tapered waveguide for the fundamental and higher order modes. Theoretically predicted results are then compared with existing experimental values to show the validity of the solutions.

❑ Return to main document.