Abstracts

Reflection and Transmission Coefficients of Rectangular Dielectric Waveguide Discontinuity with an Air Gap (Short Papers)

Y. Tomabechi and K. Matsumura. "Reflection and Transmission Coefficients of Rectangular Dielectric Waveguide Discontinuity with an Air Gap (Short Papers)." 1990 Transactions on Microwave Theory and Techniques 38.6 (Jun. 1990 [T-MTT]): 797-799.

Reflection, transmission, and radiation characteristics of rectangular dielectric waveguide discontinuities with an air gap are analyzed. A case where the guide axes are displaced in transverse directions is also treated. The characteristic of this discontinuity has never been analyzed by a conventional slab model. In this analysis, a two-dimensional Fourier transformation and orthogonal relations between guided and radiation modes are utilized. Numerical calculations and experimental results in X-band are compared, and good agreement is found. To discuss our numerical results, the principle of energy conservation is introduced. It becomes evident that the discrepancy between our results and this principle is less than 0.0003.

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