Abstracts

Scattering Matrix of Cylindrical Posts Centered on the Walls of Rectangular Waveguides

O.M.C.P. Filho and L.C. da Silva. "Scattering Matrix of Cylindrical Posts Centered on the Walls of Rectangular Waveguides." 1994 Transactions on Microwave Theory and Techniques 42.7 (Jul. 1994, Part I [T-MTT]): 1198-1206.

A model, based on the moment method, is developed for the determination of the scattering matrix of cylindrical metal posts of variable height centered on two or four walls of a rectangular waveguide. The case of two posts, on the horizontal or on the vertical walls of the waveguide, is treated initially. The equivalence principle, dyadic Green's functions and the moment method are applied to the construction of a rigorous solution of the problem. Posts on the four walls of the waveguide are considered subsequently. In this case an approximation is introduced, by neglecting the influence of the fields scattered by the horizontal posts on the currents induced on the vertical ones, which is justified due to the small magnitude of such fields. It results a rapid, stable and accurate algorithm of calculus, the accuracy being corroborated by experimental data.

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