Abstracts

Multiple Dielectric Posts in a Rectangular Waveguide

This paper presents a complete analysis for a system of linear, homogeneous, and isotropic dielectric posts in a rectangular waveguide. These posts are assumed uniform along the narrow side of the waveguide, but are otherwise of arbitrary cross section and thickness. The scattering and impedance matrices describing the effect of the posts on the dominant waveguide mode are derived. The latter is then realized as a two-port T-network. A moment procedure is devised and applied to a set of test problems with a wide variety of post configurations to compute the scattering parameters and equivalent network elements. The accuracy and convergence aspects of the numerical solution are also investigated. The branch and network resonances are determined for some post configurations.

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