Abstracts

Rigorous, Multimode Equivalent Network Representation of Inductive Discontinuities

Discontinuities such as inductive windows and obstacles are very frequently used in rectangular waveguide components, and a number of equivalent network representations can be found for them in the technical literature. Most of the equivalent networks available, however, are valid only under single-mode conditions or are obtained using approximate procedures. In this paper we derive rigorous, multimode equivalent network representations for zero-thickness inductive windows and inductive obstacles in rectangular waveguide. The network representations developed are valid for arbitrary aperture/obstacle dimensions and offset, and can accommodate a different medium on each side of the discontinuity. Numerical results are also presented indicating that the network representations developed are rapidly convergent so that they can be easily used to carry out computations involving an arbitrary number of propagating higher order modes.

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