Abstracts

Propagation in a Rectangular Waveguide Periodically Loaded with Resonant Irises (Aug. 1980 [T-MTT])

In this contribution we treat the problem of an infinite rectangular waveguide periodically loaded by means of infinitely thin resonant irises. The method of solution breaks down the problem into two separate steps: 1) the multiport network characterizstion of the resonant iris; 2) the network analysis of the equivalent periodic network. The results for the resonant iris can be used for various applications, such as the design of waveguide filters and matching networks. In the limiting cases of purely capacitive or inductive irises, the results agree exactly with existing experimental and numerical values. The size of the eigenvalue equation to be solved for the periodic structure equals half the number of ports of the network chracterization of the iris and is generally small (typically five to seven). The eigenvalues have good convergence properties with resect to the size of the matrix.

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