Abstracts

Dielectrically Loaded Corrugated Waveguide: Variational Analysis of a Nonstandard Eigenproblem

I.V. Lindell and A.H. Sihvola. "Dielectrically Loaded Corrugated Waveguide: Variational Analysis of a Nonstandard Eigenproblem." 1983 Transactions on Microwave Theory and Techniques 31.7 (Jul. 1983 [T-MTT]): 520-526.

Motivated by simple fabricability, the dielectrically loaded corrugated waveguide is analyzed applying the theory of nonstandard eigenvalues and variational principles recently presented by one of the authors. The eigenvalue parameter of this problem is the boundary susceptance of the corrugated surface, which choice is seen to lead to a simple functional. The functional is tested for the air-filled corrugated guide, and good accuracy for simple test functions is observed. Dispersion relation for the loaded corrugated guide is calculated together with the field pattern for quasi-balanced operation and estimates for the dielectric loss. The method presented here also appears to be applicable in other waveguide problems where inhomogeneous material is involved.

❑ Return to main document.