

Propagation in Dielectric Slab Loaded Rectangular Waveguide

P.H. Vartanian, W.P. Ayres and A.L. Helgesson. "Propagation in Dielectric Slab Loaded Rectangular Waveguide." 1958 Transactions on Microwave Theory and Techniques 6.2 (Apr. 1958 [T-MTT]): 215-222.

Propagation in dielectric loaded rectangular waveguide is investigated theoretically for varying slab thickness and dielectric constant. The slabs are placed across the center of the waveguide in the E plane. This geometry is found to offer bandwidths in excess of double that of rectangular waveguide for dielectrics having dielectric constants of approximately 18. Power handling capacities which are double or triple that of standard waveguide are achievable using the dielectric loaded waveguide. In addition to the theory, design curves of bandwidth, guide wavelength, cutoff wavelength, impedance, power handling capacity, wall losses, and dielectric losses are presented and compared to experiment where possible.

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