

Abstracts

Broad-Band Quarter-Wave Plates

W.P. Ayres. "Broad-Band Quarter-Wave Plates." 1957 Transactions on Microwave Theory and Techniques 5.4 (Oct. 1957 [T-MTT]): 258-261.

Analytical expressions are given for the propagation constant for the two orthogonal dominant modes in a square waveguide loaded with a centered slab of dielectric. These are combined to find the differential phase shift in a loaded section. Solutions of these equations are given for polystyrene which enables one to design broad-band quarter wave plates. The problem of transforming from unloaded to loaded guide is discussed and two solutions are given and another suggested. Experimental results are given and it is found that the work in square guide carries over to circular guide almost intact. It is shown that quarter-wave plates may easily be designed to cover a normal waveguide bandwidth.

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