Abstracts

Electromagnetic Wave Propagating in Uniform Waveguides Containing Inhomogeneous Dielectric

W.-G. Lin. "Electromagnetic Wave Propagating in Uniform Waveguides Containing Inhomogeneous Dielectric." 1980 Transactions on Microwave Theory and Techniques 28.4 (Apr. 1980 [T-MTT]): 339-348.

Uniform waveguides filled with inhomogeneous dielectric whose permittivity varies along one dimension are studied. Emphasis is given to the modes of propagation and to the calculation of the propagation constants. Exact solutions are given for some special cases. In some of these only asymptotic or polynomial solutions have been available previously. No restriction is placed on the waveguide dimensions so that results developed here apply to the transmission of optical frequency waves as well as to microwaves and millimeter waves. In the waveguide problems of this paper, results obtained cannot be directly found in the existing literature and have been worked out from fundamental theory of differential equations. The theory of the confluent hypergeometric function has been of great help in our treatment of these problems.

❑ Return to main document.