Abstracts

On the Propagation of Leaky Waves in a Longitudinally Slotted Rectangular Waveguide

J.M. Tranquilla and J.E. Lewis. "On the Propagation of Leaky Waves in a Longitudinally Slotted Rectangular Waveguide." 1980 Transactions on Microwave Theory and Techniques 28.7 (Jul. 1980 [T-MTT]): 714-718.

The field theory approach is used to study leaky-wave propagation in a rectangular waveguide with long nonresonant slots in the narrow walls. Radiation from the slots is confined by parallel plates which act as transmission lines guiding the energy away from the slots. The complex dispersion equations for TE waves are examined and solved using an iterative numerical technique. Propagation characteristics both in the axial and transverse directions are presented, along with the electric field distribution and power flow. Restrictions on the analysis and on the power-handling capacity imposed by slot width also are described. Measurements of the phase characteristics of the dominant mode are in good agreement with theoretical values.

❑ Return to main document.