Abstracts

Cutoff Conditions in Three-Layer Cylindrical Dielectric Waveguides

A. Safaai-Jazi and G.L. Yip. "Cutoff Conditions in Three-Layer Cylindrical Dielectric Waveguides." 1978 Transactions on Microwave Theory and Techniques 26.11 (Nov. 1978 [T-MTT]): 898-903.

Exact cutoff expressions for hybrid and circularly symmetric modes in three-layer cylindrical dielectric waveguides are derived. It analytically established that whenever the refractive index of the enter medium (n/sup2/) is higher than either the refractive index of the core (n/sub1/) or of the inner cladding (n/sub2/), i.e., n/sub1/ >n/sub3/ >n/sub2/ or n/sub2/>n/sub3/ >n/sub1/, the dominant HE/sub11/ mode can have a nonzero cutoff frequency. Inequalities relating the permittivities to the ratio of the cladding radius to the core radius, as conditions for the nonzero cutoff of the HE/sub11/ mode, are determined. The cutoff conditions presented in this paper are also applicable to similar structures used io millimeter-wave communications.

❑ Return to main document.