Abstracts

Cutoff Frequencies of Eccentric Waveguides

H.Y. Yee and N.F. Audeh. "Cutoff Frequencies of Eccentric Waveguides." 1966 Transactions on Microwave Theory and Techniques 14.10 (Oct. 1966 [T-MTT]): 487-493.

This paper discusses the uniform cylindrical waveguide formed by placing one conductor inside a conducting tube. Because of the complexity of the guide's cross section, the numerical technique of the point-matching method is adopted to solve the boundary-value problem. The formulations are carried out for the case when each of the conductors has an arbitrary cross section and also for the case when one of the conductors has a circular cross section. The coaxial waveguide modes, in which the field components have angular variations, split into odd and even modes when the center conductor begins to shift axis to form the uniform eccentric waveguide. However, only even modes in the eccentric guide correspond to the coaxial modes with no angular variations. The dependence of the cutoff frequency on the eccentricity of the guide is determined numerically for even and odd TE and TM modes. Experimental results verify the theoretical calculations for TE modes.

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