Abstracts

Radiation Losses Due to Variations of Radius on Dielectric or Optical Fibers

A.W. Snyder. "Radiation Losses Due to Variations of Radius on Dielectric or Optical Fibers." 1970 Transactions on Microwave Theory and Techniques 18.9 (Sep. 1970 [T-MTT]): 608-615.

The total loss of the HE/sub 11/ mode to the radiation field of a finite dielectric rod with small amplitude surface irregularities is considered, and a simple approximate analytic expression for radiation due to sinusoidal roughness is presented. It is shown that radiation occurs only when the frequency of surface roughness Omega is in the range beta-k/sub 2/<Omega<beta+k/sub 2/ where beta is the modal propagation constant and k/sub 2/ is the wavenumber of the surrounding medium. An analysis of isolated irregularities and a linear taper with a small change in radius are also presented.

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