Abstracts

Propagation Constant Below Cutoff Frequency in a Circular Waveguide with Conducting Medium

Exact and approximate propagation characteristics of normal modes in the cutoff region of a circular waveguide surrounded by a medium of finite conductivity are discussed. An exact solution is obtained by numerical analysis, and an approximate one is derived by expanding the characteristic equation considering the finite conductivity of the cylinder wall. The computed values are compared with experimental ones. It is shown that the attenuation of TM/sub 01/ mode at frequencies that are much lower than the cutoff frequency is constant, i.e., independent of frequency and the material constants of the external medium, and this mode is the most suitable one for realizing a precision circular piston attenuator.

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