Abstracts

A Novel Low-Loss Dielectric Waveguide for Millimeter and Submillimeter Wavelengths

K. Yamamoto. "A Novel Low-Loss Dielectric Waveguide for Millimeter and Submillimeter Wavelengths." 1980 Transactions on Microwave Theory and Techniques 28.6 (Jun. 1980 [T-MTT]): 580-585.

This paper describes a novel dielectric (gas confined) wave guide which consists of a thin dielectric tube separating an internal high-dielectric-constant gas from an external low-dielectric-constant gas. The attenuation constant, fractional power flow, and radiation Ioss of this waveguide are calculated and compared with those of a conventional O-guide (a dieletric tube waveguide). The advantage of the gas-confined guide is that the attenuation constant is decreased involving no bending loss increase due to tight field confinement within the low-loss internal gas. Experimental investigations are carried out to verify the low-loss property of the gas-confined guide. An attenuation constant less than 0.4 dB/m is obtained over the 80-200-GHz range.

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