Abstracts

Power-Handling Capabilities of Circular Dielectric Waveguide at Millimeter Wavelengths

D.G. Jablonski. "Power-Handling Capabilities of Circular Dielectric Waveguide at Millimeter Wavelengths." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 85-89.

The power-handling capabilities of a circular dielectric waveguide propagating the single HE/sub 11/ mode are discussed. Simple calculations illustrate the limits imposed by dielectric heating and dielectric breakdown. Examples are presented for polystyrene and polytetrafluoroethylene (PTFE) guides at 70 GHz. The results suggest that maximum power levels for circular dielectric waveguide in the millimeter-wave specturm will be of the orders of 10 to 100 W and that dielectric heating is the limiting phenomenon.

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