Abstracts

Depth of Penetration of Fields from Rectangular Apertures Into Lossy Media (Short Papers)

E. Cheever, J.B. Leonard and K.R. Foster. "Depth of Penetration of Fields from Rectangular Apertures Into Lossy Media (Short Papers)." 1987 Transactions on Microwave Theory and Techniques 35.9 (Sep. 1987 [T-MTT]): 865-867.

A widely used device for biomedical applications of microwave energy is the dielectric-loaded waveguide operating in the TE/sub 10/ mode. We have calculated the (1/e) energy penetration depth from such antennas, modeled as rectangular apertures radiating into a lossy medium with dielectric properties resembling those of tissue. The results are presented in nondimensional form from which the characteristics of practical antennas can be estimated. Depending on the dielectric properties of the medium and the size of the aperture, the effective penetration depth can be limited by either the aperture size or the plane-wave penetration depth practical antennas fall between these two extremes. Experimental results confirm the calculations.

❑ Return to main document.