Abstracts

Microwave Properties of Thin Films with Apertures

R.L. Ramey, H.S. Landes and E.A. Manus. "Microwave Properties of Thin Films with Apertures." 1970 Transactions on Microwave Theory and Techniques 18.4 (Apr. 1970 [T-MTT]): 196-204.

The theory of microwave transmission through thin-film screens of finite conductivity which contain circular, elliptical, and rectangular apertures and which are placed in the transverse plane of an X-band rectangular waveguide is developed. The theory is an extension of Bethe's work in which only screens with infinite conductivity were considered. Experimental verification of the theory is achieved by use of vacuum deposited thin-film screens, and the results are compared with the transmission properties of identical screens of thick foils of the same material. Significant differences are noted in the real and imaginary components of impedance presented by the thin-film and the foil screens with identical apertures. The finite conductivity of the screen is low enough to support an appreciable tangential component of electric field at the film surface.

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