Abstracts

Reflection Coefficient of E-Plane Tapered Waveguides

K. Matsumaru. "Reflection Coefficient of E-Plane Tapered Waveguides." 1958 Transactions on Microwave Theory and Techniques 6.2 (Apr. 1958 [T-MTT]): 143-149.

This paper treats the reflection of linearly and sinusoidally tapered waveguides. In the first part, reflection coefficients of linearly tapered waveguides for dominant modes are calculated. Graphs of the vswr of tapers for different impedance ratios are plotted showing that the vswr does not go to unity at multiples of a half wavelength. In the second part, reflection coefficients of sinusoidally tapered waveguides are calculated. Experimental data verify the theory for both kinds of tapers of various lengths at 4 kmc band. Linear tapers perform almost as well as exponential tapers, and better than shorter hyperbolic tapers. The reflection coefficients of sinusoidal tapers can be about half as small as that of the linear tapers, and these tapers compare favorably with the Dolph-Tchebycheff and the Willis taper of improved design.

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