Abstracts

Galerkin Solution for the Thin Circular Iris in a TE/sub 11/-Mode Circular Waveguide

An integral equation for the transverse electric field in the aperture of a concentric circular iris in a transverse plane of a circular waveguide is approximately solved by Galerkin's method. The aperture field is represented by a finite sum of normal TE and TM circular waveguide modes that fit the circular aperture. The numerical convergence of the Galerkin solution is demonstrated via resultant aperture field distributions and equivalent shunt susceptance for the case of dominant TE/sub 11/-mode excitation. The resultant aperture electric field distribution closely resembles that of the TE/sub 11/ aperture mode alone, except for edge condition behavior at the edge of the iris. A resonant or capacitive iris is possible over a restricted range of frequencies.

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