Abstracts

Electromagnetic Diffraction by a Planar Array of Circular Disks (Nov. 1962 [T-MTT])

W.H. Eggimann and R.E. Collin. "Electromagnetic Diffraction by a Planar Array of Circular Disks (Nov. 1962 [T-MTT])." 1962 Transactions on Microwave Theory and Techniques 10.6 (Nov. 1962 [T-MTT]): 528-535.

The diffraction of a plane electromagnetic wave by a planar rectangular array of perfectly conducting circular disks is considered. The diffracted field is calculated from the induced electric and magnetic dipole moments and higher-order multipole moments. Static and dynamic interactions between the induced dipole moments are being considered, first by using a plane-wave approximation for the dipole fields (for cases where the separation of the disks is large compared with the wavelength) and then by calculating the actual fields at each disk. The formulas are applied to calculate the input susceptance of a disk-loaded rectangular waveguide. Satisfactory agreement with experimental results is obtained.

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