Abstracts

Plane Waves on a Periodic Structure of Circular Disks and Their Application to Surface-Wave Antennas

J. Shefer. "Plane Waves on a Periodic Structure of Circular Disks and Their Application to Surface-Wave Antennas." 1962 Transactions on Microwave Theory and Techniques 10.6 (Nov. 1962 [T-MTT]): 585-592.

The structure supporting the surface-wave consists of a row of concentric circular disks embedded in a lossless dielectric medium. Exact solutions for the "dipole mode" (corresponding to the HE/sub 11/ surface-wave mode on a dielectric rod) are set up and an approximation is derived for calculating the propagation constants. It is shown experimentally that a pure "dipole mode" can be excited by simple means, and that propagation constants may be controlled over a wide range by varying the geometrical parameters of the periodic structure. The possible uses as a surface-wave antenna are discussed, and approximate radiation patterns are calculated from the field distribution in the terminal plane.

❑ Return to main document.