Abstracts

The Scattering of a TM Surface Wave by a Perfectly Conducting Strip

E.S. Gillespie and J.J. Gustincic. "The Scattering of a TM Surface Wave by a Perfectly Conducting Strip." 1965 Transactions on Microwave Theory and Techniques 13.5 (Sep. 1965 [T-MTT]): 630-640.

The scattering of a TM surface wave by a metallic strip above a dielectric-clad ground plane is investigated both theoretically and experimentally. An expression for the Green's function which can be evaluated numerically is developed for the usual case for which the energy of the incident surface wave is "lightly trapped" by the dielectric. Using this expression, a variational formula for the reflection coefficient of the strip is developed, and the Rayleigh-Ritz technique is applied to yield approximate values for the reflection coefficient and surface currents of the strip. Numerical results are presented and compared with experimental values measured on a polystyrene-coated aluminum table. Strips measuring up to one wavelength in width positioned up to one wavelength above the dielectric are considered, and agreement between theory and experiment is found to be good. A thorough description of the experimental techniques is presented.

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