Abstracts

A New Solution for TE Plane-Wave Scattering from a Symmetric Double-Strip Grating Composed of Equal Strips

D. Filipovic. "A New Solution for TE Plane-Wave Scattering from a Symmetric Double-Strip Grating Composed of Equal Strips." 1996 Transactions on Microwave Theory and Techniques 44.11 (Nov. 1996 [T-MTT]): 1990-1996.

The paper presents a new rigorous solution for the problem of TE plane-wave scattering from a periodic planar symmetric double-strip grating, i.e., the grating which has two equal strips per unit cell. The grating is placed at a dielectric interface and is assumed to be perfectly conductive and infinite in length and width. The formulation is based on a multimode equivalent network representation and the relevant integral equation defined on two separate intervals is rigorously solved by reducing to two simpler equations with known solutions. From this a new simple analytic expression is obtained for the coupling matrix elements which involves no integration. Some computations based on this new expression are carried out and the results are compared to those obtained by the Riemann-Hilbert method and also to some of the previously obtained single-strip results in the limiting case.

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