Abstracts

Rigorous Analysis of the Scattering of Surface Waves in an Abruptly Ended Slab Dielectric Waveguide

P. Gelin, M. Petenzi and J. Citerne. "Rigorous Analysis of the Scattering of Surface Waves in an Abruptly Ended Slab Dielectric Waveguide." 1981 Transactions on Microwave Theory and Techniques 29.2 (Feb. 1981 [T-MTT]): 107-114.

The reflection and the scattering properties of even TE and TM surface waves incident in an abruptly ended dielectric slab waveguide are analyzed. The discontinuity is regarded as a junction between two open waveguides namely the dielectric slab waveguide and the free space waveguide. The boundary conditions acting together with the orthogonality provide singular coupled integral equations on the discrete and the continuous wave amplitudes at the discontinuity. These singular coupled intergral equations with Cauchy kernels and infinite limits of integration are solved by iteration via the Neuman series. Numerical results are presented for the reflectivity of the even TE/sub 0/ and TM/sub 0/ fundamental modes, together with their mode conversion on even TE/sub 2/ and TM/sub 2/ in a slab where two guided modes can propagate. Reflectivity and mode conversion of higher order excitations are also investigated

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