Abstracts

Guided-Wave Experiments with Dielectric Waveguides Having Finite Periodic Corrugation

A planar dielectric waveguide having finite periodic rectangular corrugation is investigated analytically and experimentally, in case of surface waves propagating at an angle to the corrugation. In analytical considerations, a finitely corrugated guide is regarded as consisting of many step discontinuities connected by a length of uniform slab waveguide, and its propagation characteristics in the Bragg interaction region are derived from a cascaded connection of the transmission matrix expressing a step discontinuity. Although the present method takes only surface wave modes into account and neglects the wave with continuous spectrum, the calculated results show an excellent agreement with experimental ones which are performed for art H-guide in the microwave region.

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