Abstracts

Mutual Interference Between the Guided Wave and the Leaky Wave Regions and its Effects on the Performance of Dielectric Grating Filters

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In an open periodic structure with finite length, a new interaction between the guided-wave and the leaky-wave regions in the omega - beta diagram does occur. The effect of such an interaction on the characteristics is investigated rigorously by using our network approach already proposed. Numerical calculations show that the finite length of periodic structures significantly affects the stopband characteristics of the first Bragg reflection region, especially in producing a complicated behavior of the return loss due to radiation. This paper also shows that such a return loss behavior can be easily estimated from the radiation characteristics of only the first step discontinuity of the periodic structure.

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