

Abstracts

A New Class of Low Loss Reactive Wall Waveguides

R.P. Larsen and A.A. Oliner. "A New Class of Low Loss Reactive Wall Waveguides." 1967 G-MTT International Microwave Symposium Program and Digest 67.1 (1967 [MWSYM]): 17-22.

A novel approach is presented in this paper for achieving waveguides with especially low loss. This new class of waveguides employs "reactive walls", and has possible application to long waveguide runs in millimeter wave or high power systems. These reactive walls are designed by initially choosing them to be periodic structures, in the transverse directions, which are operated in their stop band or below cut-off condition. Because the transverse decay is high, the periodic structure can be truncated, and a simple, closed, final form results. The type of periodic structure chosen for investigation was an array of parallel dielectric slabs. Various practical low-loss reactive wall waveguides are then derived from this generic theoretical configuration.

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