Abstracts

Theoretical and Experimental Study of a Novel H-Guide Transverse Slot Antenna (Short Papers)

M. Kisliuk and A. Axelrod. "Theoretical and Experimental Study of a Novel H-Guide Transverse Slot Antenna (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 428-433.

Transverse slots in the "upper" plate of a dielectric-loaded parallel plane waveguide (H-guide) operating in the dominant mode (zero cutoff frequency) are proposed as slot antennas. A new theoretical approach to the analysis of a single-slot antenna is presented, leading to explicit expressions for the antenna input impedance and radiation efficiency. The computed values of the VSWR and radiation efficiency are in good agreement with laboratory measurements. The radiation efficiency of a single slot exceeds 10 percent in the 8-11-GHz frequency band, reaching a 50-percent theoretically predicted maximum at the slot resonance frequency, when the guide is terminated by a matched load. Experimental checks prove that the leakage, or parasitic, radiation power level is less than -40 dB relative to the measured radiated power.

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