Abstracts

A method-of-moments study of strip dipole antennas in rectangular waveguide

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A theoretical and experimental study of strip dipole antennas located on a supporting dielectric slab mounted transversely in rectangular waveguide is presented. Galerkin's method is used in the full-wave solution of an integral equation for each antenna's surface-current density using the Green's function for the slab-loaded waveguide. The paper is motivated by the need for multiport-network models to aid the development of multiple-device power-combining circuits in rectangular waveguide. The design data presented here for single antennas should prove useful for planar-mixer and oscillator circuits. The presence of slab modes is noted and the slab-mode resonant frequencies are predicted. Validation of the numerical models is provided by scattering experiments on shorted antennas, and excellent agreement is obtained in the range of 8.0-12.5 GHz.

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