Abstracts

Full-wave analysis of a new microstrip-to-waveguide interconnect configuration

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This paper presents a new interconnect configuration between microstripline and rectangular waveguide that yields a transition from one microstripline port to two waveguide ports. Most current transitions employ only one waveguide port. Electromagnetic coupling takes place through a slot in the narrow wall of the rectangular waveguide that coincides with a slot in the ground plane of the dielectric slab. Introduction of an E-plane waveguide fin yields additional control over the insertion loss level. The numerical method employed in the analysis, which makes use of Green's function expressions in a moment-method solution, is also described and numerical details are presented. Measured results verify the accuracy of the numerical model and illustrate that it is possible to obtain insertion loss levels of 0.25 dB with this configuration. Design data and a sensitivity analysis presented here further characterize the interconnect.

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