# Abstracts

## Accurate Characterization of Coupling Junctions in Waveguide-Fed Planar Slot Arrays

*S.R. Rengarajan and G.M. Shaw. "Accurate Characterization of Coupling Junctions in Waveguide-Fed Planar Slot Arrays." 1994 Transactions on Microwave Theory and Techniques 42.12 (Dec. 1994, Part I [T-MTT]): 2239-2248.*

This paper presents a rigorous analysis of coupling junctions employed in waveguide-fed planar slot arrays consisting of a main waveguide and a family of crossed branch waveguides wherein radiating slots are cut. Each coupling junction typically consists of a centered-inclined coupling slot in the common broad wall of two orthogonal waveguides and a pair of straddling longitudinal radiating slots located a quarter guide wavelength away in the branch waveguide. In the prior literature, only the dominant mode coupling between the coupling and radiating slots has been considered. In this analysis, coupling through all higher order modes in the junction region, including the singularity in the coupling problem, have been accounted for. Waveguide Green's functions in k/sub z/-spectral form have been found to be convenient for this analysis. Numerical results on higher-order mode coupling effects in coupling junctions are presented over a wide range of waveguide and slot parameters. The theoretical model discussed in this paper has been validated with experiments. Results presented here should find applications in the analysis and synthesis of planar slot arrays.

❑ Return to main document.