Abstracts

Mode-matching analysis of general waveguide multiport junctions

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The rectangular waveguide multi-port junction with port waveguides of different cross-section type is investigated by a 3D mode-matching method based on the Green's function. For the coupling integrals, two formulations are evaluated: the first is frequency independent and involves three-fold summations, the second contains frequency dependent terms for orthogonal apertures but leads to a fast two-fold summation. A hybrid-T and a turnstile junction are chosen as an application example. The theory is verified by measurements at a WR62 six-port junction and at a short-circuited turnstile junction.

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