Abstracts

Optimization of Aperture Transitions for Multi-Port Microstrip Circuits

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The printed aperture of arbitrary shape is introduced into multi-port microstrip circuits as a vertical transition within a multi-layered structure. Its use proves to be practical in the design as well as manufacturing process of multi-layered circuits. With the help of the mixed-potential integral equation based moment method, it becomes possible to analyze and optimize the performance of this arbitrary shape aperture transition for multi-port circuit applications. Bandwidth enhancement is obtained by changing the shape of the slot for a two-port back-to-back microstrip transition. Minimized size and mutual coupling have been thoroughly studied for optimized circuit performance. Using this transition, a 3-port power divider with -3 dB amplitude and 180 degree phase difference and a 4-port 3 dB directional coupler have been designed.

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