Abstracts

Ridge-Shaped Narrow Wall Directional Coupler Using TE/sub 10/, TE/sub 20/, and TE/sub 30/ Modes

T. Tanaka. "Ridge-Shaped Narrow Wall Directional Coupler Using TE/sub 10/, TE/sub 20/, and TE/sub 30/ Modes." 1980 Transactions on Microwave Theory and Techniques 28.3 (Mar. 1980 [T-MTT]): 239-245.

A new type of compact narrow wall directional coupler, whose coupling region is a ridge waveguide having dimensions such that TE/sub 10/, TE/sub 20/, and TE/sub 30/ modes can exist, is proposed and analyzed. Coupling ratio and nonreflecting condition are determined by the degree of interference between TE/sub 20/ and TE/sub 30/ modes, and between TE/sub 10/ and TE/sub 30/ modes, respectively. The coupler can be used as a variable power divider by varying the coupling slot height. For 3-dB coupling over the 16.0 to 19.0-GHz frequency range, power equality within ±0.5 dB, more than 30-dB isolation and more than 30-dB return loss can be obtained. Experimental coupling results have shown good agreement with the theory.

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