Abstracts

Asymmetric Coupled-Transmission-Line Magic-T

D.I. Kraker. "Asymmetric Coupled-Transmission-Line Magic-T." 1964 Transactions on Microwave Theory and Techniques 12.6 (Nov. 1964 [T-MTT]): 595-599.

A Magic-T was designed using a 3-db asymmetric coupled-transmission-line directional coupler and a schiffman phase shift network. Expressions for the coupling and phase difference of the outputs of the basic coupler were obtained. Two phase shift networks for compensating the phase variation in the coupled outputs were investigated. The Schiffman phase shift network was shown to provide the best compensation over a given bandwidth. One unit designed in strip transmission line to operate from 2 to 4 Gc showed good agreement with the theory. The maximum difference in output power was 0.4 db, and the phase deviation was less than 4°. The isolation between the input ports was greater than 25 db, while the isolation between output ports was greater than 21db throughout the entire band. Levy's design equations for a two-section asymmetric coupler with optimum coupling distribution are given for completeness.

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