Abstracts

N-Way TEM-Mode Broad-Band Power Dividers

H.Y. Yee, F.-C. Chang and N.F. Audeh. "N-Way TEM-Mode Broad-Band Power Dividers." 1970 Transactions on Microwave Theory and Techniques 18.10 (Oct. 1970 [T-MTT]): 682-688.

An integrative graphical method of designing a broadband TEM-mode power divider of N output ports is presented. Each branch of the divider's circuit consists of cascaded transmission-line segments, and the corresponding segments of each branch are connected by resistors to a common junction. These resistors absorb the reflected signals due to mismatch at any of the output ports; they are therefore isolated from one another. The symmetry of this circuit permits the use of the method of even- and odd-mode excitations at the output ports. It was found that the even-mode circuit is the same as for a stepped-impedance transformer, which is well known. The odd-mode circuit lends itself to the determination of the isolation resistors using the iterative graphical procedure on a Smith chart. Numerical values of the isolation conductance for dividers of bandwidths up to 10:1, the maximum input VSWR, and the minimum isolation among the output ports are given.

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