Abstracts

An Eigenadmittance Condition Applicable to Symmetrical Four-Port Circulators and Hybrids

G.P. Riblet. "An Eigenadmittance Condition Applicable to Symmetrical Four-Port Circulators and Hybrids." 1978 Transactions on Microwave Theory and Techniques 26.4 (Apr. 1978 [T-MTT]): 275-279.

Recently, an expression for the equivalent admittance of symmetrical three-port circulators has been derived on the basis of symmetry considerations. In this paper, the same technique is extended to the symmetrical four-port circulator. It is shown that a simple relationship must be satisfied by the eigenadmittances jY/sub 0/, jY/sub -1/, jY/sub 1/, and jY/sub 2/ if perfect circulation is to be obtainable by matching alone. This relationship also applies to recriprocal four-port devices with 2-fold symmetry about two perpendicular axes which are required to be 90° hybrids upon matching, provided that the eigenadmittances jY/sub 1/, jY/sub 2/, jY/sub 3/, and jY/sub 4/ are used. An interesting application of this relation to the construction of a compact stripline hybrid is given.

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