Abstracts

A Strip-Line Directional Coupler Utilizing a Non-Homogeneous Dielectric Medium (Sep. 1969 [T-MTT])

J.E. Dalley. "A Strip-Line Directional Coupler Utilizing a Non-Homogeneous Dielectric Medium (Sep. 1969 [T-MTT])." 1969 Transactions on Microwave Theory and Techniques 17.9 (Sep. 1969 [T-MTT]): 706-712.

A 3 dB directional coupler which utilizes nonhomogeneous dielectric media to produce different phase velocities for the even and odd modes of propagation is described. The two output ports are conductively connected to each other as are the input and null ports with dc isolation between the input and both output ports. Well known thin-film techniques can be used to realize the coupler. General coupler equations and design parameters are given along with computer solutions and experimental verification. A minimum return loss of 22 dB was experimentally achieved over a 20 percent bandwidth and 27 dB minimum return loss with equal isolation over the same bandwidth is predicted with the application of simple compensation techniques. It is shown that the coupler maybe used to effect an impedance transformation between the input and output ports; however, the isolation is degraded.

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