Abstracts

Broad-Band Directional Couplers

E.A. Marcatili and D.H. Ring. "Broad-Band Directional Couplers." 1962 Transactions on Microwave Theory and Techniques 10.4 (Jul. 1962 [T-MTT]): 251-257.

It is shown how to connect two identical hybrids to obtain a directional coupler of arbitrary power division that operates over a broader band than that of the components. The broad-banding technique is possible with a certain kind of hybrid that includes Riblet couplers, multihole hybrids, coaxial hybrids and semioptical hybrids, but excludes T hybrids and ring hybrids. Riblet couplers have a geometry particularly adaptable to the broad-banding technique. Where the balance of one of these couplers is better than 1 db, the balance of the broad-band hybrid can be made better than 0.16 db. The broad-banding technique is particularly effective in the case of the 100 per cent transfer directional coupler type of circuit used for band separation filters and radar duplexers. In the semioptical waveguide band-splitting filters the bandwidth can be increased from about one to about four octaves (35-75 kMc to 35-580 kMc).

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