Abstracts

Circular Electric Mode Directional Coupler

B. Oguchi. "Circular Electric Mode Directional Coupler." 1960 Transactions on Microwave Theory and Techniques 8.6 (Nov. 1960 [T-MTT]): 660-666.

This paper describes a circular electric mode directional coupler, composed of two coaxial bifurcations in circular waveguide. The coupling coefficient of the directional coupler depends on the separation between the two bifurcations, and a hybrid junction for the circular electric mode may be obtained at the proper separation. The analysis is carried out in terms of scattering matrix elements characterizing each coaxial bifurcation. The scattering matrix elements were experimentally determined via the Weissfloch tangent method at 5000-Mc band. For convenience, experiments were carried out in sectoral waveguide instead of circular waveguide. Measured characteristics at 9000-Mc band are in good agreement with values determined by circuit calculations employing parameters of the coaxial bifurcation measured at 5000-Mc band. For the case of a hybrid junction, wide-band matching has been accomplished and verified experimentally. Applications of this directional coupler are outlined.

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