Abstracts

The Re-Entrant Cross Section and Wide-Band 3-db Hybrid Couplers

S.B. Cohn. "The Re-Entrant Cross Section and Wide-Band 3-db Hybrid Couplers." 1963 Transactions on Microwave Theory and Techniques 11.4 (Jul. 1963 [T-MTT]): 254-258.

A new type of parallel-coupled TEM-mode cross section is described and named the re-entrant cross section. An analysis of the even- and odd-mode characteristic impedances of the re-entrant cross section shows it to have advantages in the case of tight coupling when compared to previously used parallel-strip cross sections. Close tolerances are easily held, and considerable misalignment is permissible. Two single-section 3-db couplers were tested with coupling curves very close to theoretical, and with good directivity. Then a three-section coupler having a re-entrant center section was designed for the 400- to 2000-Mc band, yielding a coupling variation less than 0.4 db and a minimum directivity of 29 db. Next a three-section coupler was designed for the 1- to 5-Gc band. A series of modifications resulted in a final model having a coupling variation within 0.5 db, and a minimum directivity of about 22 db.

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