Abstracts

Wide-Band Reduced-Size Uniplanar Magic-T, Hybrid-Ring, and de Ronde's CPW-Slot Couplers

L. Fan, C.-H. Ho, S. Kanamaluru and K. Chang. "Wide-Band Reduced-Size Uniplanar Magic-T, Hybrid-Ring, and de Ronde's CPW-Slot Couplers." 1995 Transactions on Microwave Theory and Techniques 43.12 (Dec. 1995, Part II [T-MTT] (1995 Symposium Issue)): 2748-2757.

New reduced-size uniplanar magic-T and hybrid-ring coupler suitable for MIC's and MMIC's have been developed using a CPW-slotline ring that is 20% smaller than comparable designs. These circuits provide good amplitude and phase characteristics over a broad bandwidth. Experimental results show that the hybrid-ring coupler has a 1.3 octave bandwidth centered at 4 GHz and the magic-T has a bandwidth of 1.6 octave from 2-6 GHz. Both have a maximum power dividing imbalance of 0.4 dB and a 2.5° maximum phase imbalance. Also a new uniplanar de Ronde's CPW-slot directional coupler was developed with good performance. The even-odd mode analysis of four-port networks with double symmetry was used to analyze this coupler. A de Ronde's coupler with 5 dB coupling was designed and demonstrated over the frequency range of 2.4-3.4 GHz. The measurement results agree with the theoretical design.

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