Abstracts

Design of Lange-couplers and single-sideband mixers using micromachining techniques

Chen-Yu Chi and G.M. Rebeiz. "Design of Lange-couplers and single-sideband mixers using micromachining techniques." 1997 Transactions on Microwave Theory and Techniques 45.2 (Feb. 1997 [T-MTT]): 291-294.

This paper reports on the design and performance of micromachined Lange-couplers and single-sideband mixers (SSB) on thin dielectric membranes at Ku-band. The micromachined Lange-coupler results in a 3.6/spl plusmn/0.8 dB coupling bandwidth from 6.5 to 20 GHz. The Lange-coupler and an interdigital filter are used in a 17-GHz SSB. The SSB mixer requires 1-2 mW of local oscillator (LO) power without dc bias and achieves a 30 dB upper-sideband (USB) image rejection for an IF frequency of 1 GHz and above. The micromachined membrane technology can be easily scaled to millimeter-wave monolithic microwave integrated circuits (MMIC's) to meet the low-cost requirements in automotive or portable communication systems.

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