Abstracts

A Millimeter-Wave Band MMIC Dual-Quadrature Up-Converter Using Multilayer Directional Couplers

A. Minakawa, T. Imaoka and N. Imai. "A Millimeter-Wave Band MMIC Dual-Quadrature Up-Converter Using Multilayer Directional Couplers." 1997 Transactions on Microwave Theory and Techniques 45.1 (Jan. 1997 [T-MTT]): 78-82.

This paper describes a newly developed monolithic-microwave integrated circuit (MMIC) dual-quadrature up-converter with very high local oscillator (LO) signal leakage suppression and good LO and RF return loss for use in the millimeter-wave band. The dual-quadrature LO suppression technique is also described, and the requirements for an imbalance in the quadrature couplers to obtain large LO suppression are clarified. The up-converter consists of two unit mixers and two high-performance multilayer directional couplers. These high-performance directional couplers enable large LO suppression. In an LO frequency range from 42.5 to 47.5 GHz, the MMIC up-converter achieved a conversion loss of less than 17=1 dB, and the LO was suppressed 22=4 dB lower than the desired RF output signal, which is the greatest value among those reported.

❑ Return to main document.