Abstracts

A completely integrated 1.9-GHz receiver front-end with monolithic image-reject filter and VCO

J.W.M. Rogers, J.A. Macedo and C. Plett. "A completely integrated 1.9-GHz receiver front-end with monolithic image-reject filter and VCO." 2002 Transactions on Microwave Theory and Techniques 50.1 (Jan. 2002, Part I [T-MTT] (Mini-Special Issue on 1999 International Microwave and Optoelectronics Conference (IMOC'99))): 210-215.

A 1.9-GHz monolithic superheterodyne receiver front-end with 300-MHz IF on-chip tunable image-reject filter and voltage-controlled oscillator (VCO) is presented. Two versions of the receiver were fabricated on a 0.5-/spl mu/m bipolar process and compared to a previously fabricated version with an off-chip VCO. The two versions are identical, except for the fact that the 2.2-GHz VCO was realized with and without ground-shielded inductors. The receiver that used ground-shielded inductors had a conversion gain of 25.6 dB, a noise figure of 4.5 dB, a third-order input intercept point (IIP3) of -19 dBm, an image rejection of 65 dB, and a phase noise of -103 dBc/Hz at 100-kHz offset. The receiver drew 32.5 mA from a 3-V supply and had a die area of 2.1 mm/spl times/1.7 mm. The local-oscillator-IF isolation improved compared to the previously fabricated front-end with an off-chip VCO.

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