A 2 GHz Merged CMOS LNA and Mixer for WCDMA

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Abstract

A merged LNA and mixer with an on-chip VCO is fabricated in 0.35 mm CMOS for a 2.1 GHz WCDMA receiver. The front-end consumes 8mA from 2.7V and gives NF of 3.2dB, conversion gain of 24.2 dB, and input IP3 of –1.5dBm. The VCO consumes 3mA while achieving phase noise of –128.4 and –138.5 dBC/Hz at offsets of 5 and 15 MHz, respectively.