Abstracts

A 1 GHz-band low distortion up-converter with a linear in dB control VGA for digital TV tuner

Yong-Sik Youn, Cheon-Soo Kim, Nam-Soo Kim and Hyun-Kyu Yu. "A 1 GHz-band low distortion up-converter with a linear in dB control VGA for digital TV tuner." 2001 Radio Frequency Integrated Circuits (RFIC) Symposium 01. (2001 [RFIC]): 257-260.

A new exponential controlled variable gain amplifier (VGA) and an up-mixer have been integrated in a single chip using 0.35 /spl mu/m CMOS process. The gain of the VGA is controlled analog-linear in dB by using proposed a multi-stage multi-control R-r ladder structure to cover the wide gain control range. Up-converter shows a low distorted IF output signal over the wide RF input signal range of 50 MHz/spl sim/810 MHz for digital TV tuner. Measurements show that the gain control range of VGA is -48/spl sim/0 dB and the IIP3 of the overall up-converter is 27/spl sim/1 dBm, respectively. In addition, -3 dB frequency is measured to 1 GHz. The chip consumes 10 mA with a single 3.3 V power supply.

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