A 1Volt Switched Transconductor Mixer in 0.18µm CMOS

Eric A. M. Klumperink, Simon M. Louwsma, Gerard J. M. Wienk, Bram Nauta

MESA+ research institute, IC-Design group, University of Twente, Enschede, The Netherlands

Abstract

A new CMOS mixer topology can operate at low supply voltages by using switches connected only to the supplies. Mixing is achieved exploiting two cross-coupled transconductors, which are alternatingly activated by the switches. A down conversion mixer prototype with 12 dB conversion gain was designed and realized in standard 0.18µm CMOS. It achieves satisfactory mixer performance up to 4GHz, at a supply voltage of 1 Volt. Moreover, the mixer topology features a fundamental high frequency noise figure benefit.