

Shu R., Hamidian A., Malignaggi A., Ali M.K., and Boeck G., "A 40 GHz CMOS VCO with Resonated Negative-Conductance Cell," Radio-Frequency Integration Technology (RFIT), 2012 IEEE International Symposium on, pp. 77-79, Nov. 2012.

Abstract: The design of a 40 GHz voltage-controlled oscillator (VCO) in 90 nm CMOS technology has been presented in this paper. An optimized topology of resonated negative-conductance cell was utilized to relax the serious trade-off in the design of millimeter-wave VCO. From On-wafer measurement results, the fabricated 40 GHz VCO achieves 8.9 % frequency tuning range and -96.7 dBc/Hz phase noise at 1 MHz offset, while consuming only 1.65 mW dc power. An excellent balance of all critical performance parameters has been realized, resulting in a FOM_T (figure-of-merit) of -185.4 dBc/Hz.