

A 1-V CMOS/SOI Bluetooth RF Transceiver for Compact Mobile Applications

Mamoru Ugajin, Akihiro Yamagishi, Junichi Kodate,
Mitsuru Harada, and Tsuneo Tsukahara

NTT Microsystem Integration Laboratories, Atsugi-shi, Kanagawa, Japan

A Bluetooth RF transceiver in 0.2- μm CMOS/SOI achieves 1-V operation. The transceiver integrates a T/R switch, an image-reject mixer, a quadrature demodulator, gm-C filters, an LC-tank voltage-controlled oscillator, a PLL, and a power amplifier. The phase shifter in the quadrature demodulator is tuned dynamically to deal with carrier-frequency drift. A gm cell in the filters uses depletion-mode PMOS transistors and has a folded structure. The transceiver shows -77-dBm sensitivity at 0.1-% BER.