Abstracts

A 1.9GHz Single-Chip RF Front-End GaAs MMIC for Personal Communications

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A single-chip RF front-end GaAs MMIC for the 1.9GHz Japanese Personal Handy-phone System (PHS) is presented. RF circuits of a high power amplifier (HPA), a T/R switch (SW), two attenuators (ATTs), and a low-noise amplifier (LNA) are integrated, with digital circuits of a negative voltage generator (NVG) for HPA and SW gate bias, and a logic circuit to control RF circuits. The HPA has an output power of 21.5dBm and a high efficiency of 35% with sufficient linearity. The T/R SW combined with receive step-ATT (0/20dB) has loss of 1.2dB (include ATT ’s loss) . The LNA has a gain of 11dB with noise figure of 1.7dB, which is self-biased to sleep negative voltage generator during receive mode. The IC needs only single voltage (+3V) DC power supply, and has logic interface to control each modes for TDMA/TDD scheme.

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