Abstracts

Enhancement mode PHEMT low noise amplifier with LNA linearity control (IP3) and mitigated bypass switch

S. Kumar, M. Vice, H. Morkner and L. Wayne. "Enhancement mode PHEMT low noise amplifier with LNA linearity control (IP3) and mitigated bypass switch." 2002 Radio Frequency Integrated Circuits (RFIC) Symposium 02. (2002 [RFIC]): 213-216.

A new LNA has been designed using single supply enhancement mode PHEMT process for WCDMA and other wireless application up to 6 GHz. The LNA has direct CMOS logic controllable integrated bypass-mitigated switch and LNA linearity (IP3) control switch. Two different kind of logic controls (0/3 V, 3/0 V) switch has been design for bypass-mitigated switch. In high linearity mode the LNA draws 8.5 mA current and has 15 dB gain, 1 dB noise figure, -6 dBm IP/sub 1dB,/, 7.3 dBm IIP3 with I/O return loss >11 dB. In low linearity mode the LNA draws 3.5 mA current and has 14 dB gain, 1.1 dB noise figure,, -6.5 dBm IP/sub 1dB,/, 2 dBm IIP3 with I/O return loss >11 dB. The LNA bypass-mitigated switch has <3.5 dB insertion loss and NF, I/O return loss >11 dB and draws negligible current with 3/0 V logic, /spl sim/200 /spl mu/A for 0/3 V logic. Due to well-behaved match of LNA in High Linearity/Low Linearity/Bypass modes, this LNA has minimum mismatch effect for duplexers; and filters in a receiver system.

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