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Abstract
In this thesis, we propose a series of the low-noise amplifiers (LNAs). First, the amplifiers are realized by the bipolar transistors (BJTs) and the GaAs high electron-mobility transistors (HEMTs). These LNAs include many bands, including 2.4 GHz for IEEE 802.11b/g wireless LAN, 5.79 GHz for IEEE 802.11a wireless LAN, and 12.5 GHz for the Ku-Band satellite communication.

In addition, the thesis develops the 35 GHz Ka-band LNA in a WIN 0.15μm pseudomorphic HEMT (PHEMT) process. This LNA is a narrow-band amplifier operated in the range 33.79-36.69 GHz. Moreover, the Ka-band LNA exhibits a gain of 28.12 dB, an input return loss (S11) of less than –16.1 dB, an output return loss of (S22) less than –25 dB, and a noise figure of 2.19 dB at 35 GHz.
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