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Abstract
This thesis designs and implements 5.7GHz and 2.4 GHz power amplifier by monolithic microwave integrated circuit (MMIC) technology. In this thesis, we discuss about basic theories in microwave circuit design and circuit design techniques. The circuit design in this thesis is divided into two parts.

The first part is on the design of a 5.7GHz two-stage SiGe HBT MMIC power amplifier for IEEE 802.11a wireless LAN application using TSMC 0.35um SiGe BICMOS technology. With matching networks, the input and output impedance of this amplifier is designed to be 50 ohm. Simulated at a frequency of 5.7 GHz, the common-emitter (CE) class AB amplifier exhibits an 1-dB compression output power of 22.5dBm, power-added efficiency (PAE) of 21.7% and power gain GP= 23.7 dB at VC = 3.1V (IC=155mA), Vb = 1.1V.

The second part is on the design of a 2.4GHz ISM-band CMOS linearized power amplifier. Using the of diode linearizer to improve linearity of power amplifier. The design goal of the power amplifier is to have 20dB gain and 20dBm 1-dB compression point at 1.7V DC bias. The measurement is performed on a FR-4 test fixture.
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