URN etd-0407109-183722-1790
Author Chia-Hsiang Hsieh
Author's Email Address No Public.
Statistics This thesis had been viewed 52 times. Download 34 times.
Department
Year 2003
Semester 2
Degree Master
Type of Document Master's Thesis
Language English
Title 5.2GHz Power Amplifier with Diode Linearizer
Date of Defense 0000-00-00
Page Count 0
Keyword
linearizer
power amplifier
PA
5.2 GHz
802.11a

Abstract
Recently, SiGe HBTs are widely used in power amplifiers for communication system. SiGe bipolar transistors have for a wide variety of analog, mixed signal, and RF applications. SiGe devices have the famous advantage of high frequency characteristics over Si devices and higher potential of functional integration over GaAs devices.

In this thesis we design a two-stage power amplifier with diode linearizer. We use the SiGe HBT to fabricate high frequency devices and support suitable characters in our operation frequency. Power amplifier provides output power for RF transmitter. We use load-pull measure to find the optimize output resistor and value of output matching network with ADS simulation tool. In our design flow, we take output return loss and output power into consideration at the same time. Finally, we realize our design by SiGe HBT TSMC 0.35 m fabrication.

The integrated diode linearizer in HBT PA can effectively improve the gain compression and phase distortion performances by compensating the effects suffered from the base dc bias level (Vb) which decreases as the input power increases. It is shown that effectively improvement in linearity is achieved from gain compression and PAE simulation results. All matching networks are implemented on-chip to fabricate the power amplifier design. At a frequency of 5.2 GHz Wireless Local Area Net-work (WLAN) applications, the properties of the power amplifier are listed as follow: P1dB compression output power of 22.9 dBm, power-added efficiency (PAE) of 29.4 % and power gain GP = 24.5 dB.
Advisory Committee Wen-Shan Chen - advisor

Files etd-0407109-183722-1790-001.pdf

indicate access worldwide
Date of Submission 2004-07-12