The 5.8GHz RF Power Amplifier has very high linearity through a built-in linearizer, base on the linearizer technology, which is designed, post-simulated and fabricated base on Agilent Advanced Design System (ADS) software and Win-Semiconductor Corp's 0.15µm pHEMT technology. Through the post-layout simulation, the power amplifier can obtained an output power of 23.98 dBm, a power gain of 32.28 dB and a power added efficiency (PAE) of 29% at saturation region, the 3rd intermodulation distortion (IMD3) of -37.7 dBc at 0 dBm input power is attained. We finally obtain that the output power of 17.97 dBm and power gain of 27.97 dB at input power is -10 dBm, PAE of 11.65% at input power is 0 dBm and the IMD3 of -25.66 dBc at -20 dBm input power by measurement. So the overall power characteristic of the power amplifier demonstrates high power gain and high linearity. The reliability issues are further studied after the power amplifier circuit design and measurement, these issues are studied through voltage stress measurement, The transistor's hot electron effect and self heating effect, and these effects how to affect circuit's performance are researched by voltage stress measurement.

Major: Electrical Engineering

Educational Career:
Bachelor's of Electrical Engineering, BS, 2003, Shenzhen University
Master's of Electrical Engineering, MS, 2009, Beihang University

Committee in Charge:
Dr. Jiann S. Yuan, Chair, Electrical Engineering & Computer Science
Dr. Kalpathy B. Sundaram, Electrical Engineering & Computer Science
Dr. Xun Gong, Electrical Engineering & Computer Science

Approved for distribution by Dr. Jiann S. Yuan, Committee Chair, on October 21, 2010.

The public is welcome to attend.