

Project Title:

RF Power Amplifier for 3G Cell phone Applications

Supervisor:

Dr. Hesham Nabil Mohamed

Project Objective:

The main objective of this project is to design, simulate, optimize and implement a power amplifier in an RF transmitter front-end for 3G/4G cell phone applications.

Project Description:

Long Term Evolution (LTE) is a communication standard developed for 3rd / 4th generation cellular phones and beyond. Several bands of operation exist for LTE. In this project, a compact size power amplifier module is to be designed, optimized and matched to the RF Transmitter requirements for such communications standard.

Project Steps of Implementation:

1. Study of different cell phone generations
2. Getting Familiar with 3G/4G standard RF Transmitter specifications.
3. System Level Design: System analysis of the complete transmit chain is performed using optimum available components from different vendors, such as Maxim, Dallas, Hittite, Mini-Circuits, Analog Devices, Ma/com, Triquint and Anatec Electronics. This is done using using Agilent Advanced Design System (ADS); work may include device modeling.
4. PA Design and Implementation: Initial design calculations. Design, simulation and optimization using available CAD tools. Layout, Fabrication, and Assembly using microstrip technology. Verification and measurements.
5. System Assembly: A footprint for each component will be created and the Printed Circuit Board (PCB) layouts will be performed, optimized and fabricated. Assembly of the overall system will be done. Detailed measurements will be carried out.