

EE523 Class Project

The intent of the class project is to provide each student with the opportunity to design a microwave circuit device, analyze and simulate it, and research other similar devices. The project will entail three components. 1) proposal (4/28/09), 2) a written report (Friday, 5/8/09), and 3) a short presentation (in class) (Wednesday, 5/6/09, 8:00 am).

The topic for the project can be of your own choosing. However, it must be agreeable with the instructor. This agreement will be made through the proposal process. Some suggested topics that you can choose from include:

- 1) Design of a step impedance and stub low-pass filters using microstrip, analyzed and optimized using *ADS* and *Momentum*, fabricated and measured.
- 2) Design of a passive bandpass filter using microstrip, analyzed and optimized using *ADS* and *Momentum*, fabricated and measured.
- 3) Design of an active microwave amplifier and its matching network (balanced or conjugate matched) using microstrip, analyzed and optimized using *ADS*, fabricated and measured in the lab.
- 4) Design of a multi-sectioned directional coupler using microstrip, analyzed and optimized using *ADS*, fabricated and measured in the lab.
- 5) Design of a printed microwave antenna and its matching network using microstrip, analyzed and optimized using *ADS* and *momentum*, fabricated and measured in the lab.
- 6) Design of an N-way power divider using microstrip or CPW, analyzed and optimized using *HPADS* and possibly *Momentum*, fabricate and measure in the lab.

Proposal:

The proposal will consist of your proposed topic and should include the device you will be designing and analyzing, the type of waveguide you will use (unless otherwise specified, the substrate should be the 30 mil Arlon 320), and the frequency band of interest (1-6 GHz for microstrip). The proposal should be less than one page in length, and is meant to serve as an initial starting point for your project.

Written Report:

The written report will include a description of your design, a review of your analysis and a summary of results. It should also include some content on published information relating to devices similar or comparable to your design. The report should be on the order of 10-15 pages in length (including figures), and should be typed from a word processor. A guideline for the report format is attached. For further guidance, a sample report can be found on the web. The first complete draft of the report is due by Tuesday 5/5/09 at 12 noon. The corrected reports can be picked up after the presentations on 5/6/09. Corrections should be incorporated into the report before the final submission. The intent of this is to provide direct feedback on writing style, grammar, formatting and presentation of technical content.