

## **EE/CprE/SE 491 WEEKLY REPORT 1**

**9/12 – 9/19**

**Group number:**

**sdmay25-16**

**Project title: Multi-Channel High-Gain Low Noise Amplifier for High-Frequency Ultrasound Signal Acquisition**

**Client &/Advisor: Manojit Pramanik**

### **Team Members/Role:**

**Jon Wetenkamp**

**Yash Gaonkar**

**Ethan Hulinsky**

**Ryan Ellerbach**

(All the above information should be there in each weekly report. The format/color scheme etc need not be the same. However, please remove everything that is in a bracket from your final submission. These are just part of the template and need not be a part of the report.)

### **Weekly Summary**

This week we worked on setting up our simulation environment and running initial simulations. We originally planned on using MultiSim to simulate our circuit, but we were unable to find a spice model for the amplifier. We decided to switch to ADS for simulation so that we can use the S-Parameters given on the product page to simulate the amplifier.

### **Past week accomplishments**

- Created schematic for circuit in MultiSim
- Transferred simulation to ADS (Advanced Design Systems)
- Ran initial simulations for a single-stage amplifier in ADS
- Tested circuit with a variety of input capacitor values to modify bandwidth

**Pending issues** *(If applicable: Were there any unexpected complications? Please elaborate.)*

- The amplifier appears to have a gain of less than 1 when running a transient simulation, only seems to work with AC analysis
- Our amplifier is supposed to work at 5V, only goes down to 6V on the datasheet

## Individual contributions

<u>NAME</u>	<u>Individual Contributions</u> <i>(Quick list of contributions. This should be short.)</i>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Jon Wetenkamp	Created schematic in MultiSim	3	6
Yash Gaonkar	Worked on setting up MultiSim	3	6
Ethan Hulinsky	Researched options for simulating MAR-6SM+ amplifier, preliminary simulation in ADS	5	8
Ryan Ellerbach	Research for competing products	3	6

## Comments and extended discussion *(Optional)*

*Feel free to discuss non-technical issues related to your project.*

## Plans for the upcoming week

- Solve issue with transient analysis in ADS
- We found a spice file for an amplifier that is interchangeable with the MAR-6SM+, we use this in MultiSim to compare with our ADS results

## Summary of weekly advisor meeting *(If applicable/optional)*

- Touched base about progress in the project, we discussed our progress on the simulation and discussed some issues we were facing

## Grading criteria

Each weekly report is worth 10 points. Scores will be awarded as follows:

- **8 – 10:** Progress for your project seems to be suitable. Documentation and hours reported by team members are adequate.
- **6 – 8:** There is scope of improvement both in your report and your project progress. Can consult with instructor/TA after class for further inputs.
- **< 6:** Please talk to instructors/TA after class hours about any difficulties that you/your team is facing.

Each weekly report should be unique in that they have a unique set of supporting details for your contributions. So please do not just copy your reports from the previous week. In addition, please avoid any personal pronouns (he, she, I, you). Try to keep your reports as neat as possible.