

EE/CprE/SE 491 WEEKLY REPORT 10

11/13/17 – 11/17/17

Group number: 11

Project title: RFRD Phase II

Client &/Advisor: Dr. Daji Qiao and Dr. Nathan Neihart

Team Members/Role:

Bailey Akers - Facilitator/RFRD Tag Design/Fabrication Engineer

Colin Sunderman - RFRD Tag Design/Fabrication Engineer

Lyle Bishop - Principal Antenna Engineer

Pengyu Qu – Antenna/Power Harvesting Engineer

Nathan Mulbrook - RFRD Wireless Communications Engineer

o Past week accomplishments

Team Member 1: Bailey Akers

Simulated relaxation oscillator circuit and attempted to solve issues by changing op amps and resistors

Team Member 2: Colin Sunderman

Simulated relaxation oscillator circuit and attempted to solve issues by changing op amps and resistors. Generated weekly report.

Team Member 3: Pengyu Qu

Simulated antenna in Momentum.

Team Member 4: Lyle Bishop

Simulated antenna in Momentum.

Team Member 5: Nathan Mulbrook

Continued research into software-controlled radio and using it for testing RFRD.

o Weekly Summary

11/15 - Colin Sunderman and Bailey Akers came up with a simpler design for the relaxation oscillator. They simulated the new design and verified that it provided the expected period length.

11/15 - Pengyu Qu and Lyle Bishop met to finish simulating the inverted-F antenna in Momentum.

Nathan Mulbrook throughout the week researched using a software defined radio program for the testing stages of this project.

11/17 - Met with advisors Dr. Daji Qiao and Dr. Nathan Neihart.

- Colin Sunderman presented on the simpler relaxation oscillator design and simulations
 - Qiao had him order comparators so they could begin prototyping
 - Neihart gave suggestions for prototyping the circuit on a breadboard
- Pengyu Qu and Lyle Bishop presented on the antenna that they simulated in Momentum
 - Neihart made suggestions on how to correct some errors with the antenna and to complete the design
- Nathan Mulbrook presented on his research into software-controlled radio and microcontrollers

This Week:

NAME	Individual Contributions Summary	Hours This Week	Hours Cumulative
Bailey Akers	Designed new relaxation oscillator. Simulated new design.	4	55
Colin Sunderman	Designed new relaxation oscillator. Simulated new design. Order comparators. Generated weekly report.	5	51
Pengyu Qu	Worked on antenna design in Momentum.	6	49
Lyle Bishop	Worked on antenna design in Momentum.	6	50
Nathan Mulbrook	Research software defined radio program for testing.	7	48

***Details of weekly contributions are noted in above Weekly Summary section.**

o Plan for coming week

Goals for next week’s advisor meeting (11/10): Details also listed in Weekly Summary section.

Capacitive Sensing Circuit Design: Colin Sunderman and Bailey Akers

- Have a working prototype circuit that measures capacitance

Antenna Design: Pengyu Qu and Lyle Bishop

- Finish simulating an antenna using Momentum software.

Communications, Tx/Rx Module: Nathan Mulbrook

- Further research into implementation software defined radio program.

o Team Difficulties

The main difficulty was getting the Momentum antenna design finished. The antenna design team will take the information from the meeting and finish it for next week.

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.