

EE/CprE/SE 492 BIWEEKLY REPORT 05

3/4/18 – 3/17/18

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 two weeks accomplishments

Team Member 1: Bailey Akers

Demoed breadboard circuit with microcontroller. Soldered together PCBs and did initial circuit testing.

Team Member 2: Colin Sunderman

Demoed breadboard circuit with microcontroller. Assisted with initial circuit testing.

Team Member 3: Pengyu Qu

Worked on importing the package characteristics into ADS.

Team Member 4: Lyle Bishop

Worked on importing the package characteristics into ADS.

Team Member 5: Nathan Mulbrook

Demoed breadboard circuit with microcontroller. Worked on optimizing the microcontroller code.

o Biweekly Summary

3/5/18 - The team had the weekly advisor meeting in the 230 lab and did a demonstration of the microcontroller and capacitance measuring circuit on breadboard. Nathan, Colin, and Bailey demoed that the microcontroller takes the output from the capacitance measuring circuit, converts it into a period value and outputs it to a computer. Lyle and Pengyu showed their progress in the rectifier simulations.

3/6/18 - The team met with Dr. Qiao and discussed further plans for the week.

3/8/18 - Bailey soldered two of the PCBs for the microcontroller and the capacitance measuring circuit. He also did initial testing on the PCBs.

Last Two Weeks:

NAME	Individual Contributions Summary	Hours 1 st week	Hours 2 nd week (Spring Break)	Hours Cumulative
Bailey Akers	Demoed breadboard circuit with microcontroller. Soldered together PCBs and did initial circuit testing.	8	0	42
Colin Sunderman	Demoed breadboard circuit with microcontroller. Assisted with initial circuit testing.	5	0	43
Pengyu Qu	Worked on importing the package characteristics into ADS	6	0	42
Lyle Bishop	Worked on importing the package characteristics into ADS	5	0	29
Nathan Mulbrook	Demoed breadboard circuit with microcontroller. Worked on optimizing the microcontroller code.	5	0	44

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

o Plan for coming week

Goals for next couple weeks:

The circuit demonstration was successful and the next steps are going to be doing testing on the PCB. The capacitance measuring team and the microcontroller team will need to work together to test the system and optimize the microcontroller code. The rectifier simulations will be complete once the package characteristics are included. Once this is done the rectifier team is planning on finishing a PCB for their antenna and rectifier. The team also needs to begin looking at methods of regulating the output of the rectifier.

o Team Difficulties

One difficulty that was faced in the past couple weeks was attempting to import package characteristics into ADS for the components of the rectifier. ADS is difficult to use and has a steep learning curve, but once these are added to the simulation the simulations should be complete. Another difficulty in the past two weeks was working with the microcontroller code to optimize low power while also allowing for the it to run as required. Now that we have a PCB we can begin to do more testing to see how we can expect the microcontroller to run.