EE 491 WEEKLY REPORT 20   *Date: 3/7/17-3/20/17*

Group number: 18

Project title: Radio Frequency Readout Device (RFRD)

Client &/Advisor: Dr. Qiao

Team Members/Role: Brandon Baxter/Team Leader, Vaughn Dorsey/Team Webmaster, Luke Myers/Team Communication Leader, Kurt Turner/Team Key Concept Holder, Aaron Haywood, Robert Buckley, Mehdy Faik, Kellen Yoder, Michael Miller

o **Weekly Summary**

The major accomplishment over the past couple of weeks was our mid-term presentation for Dr. Amariucai. This received great feedback as well as a number of good suggestions. Further work in cadence, on the PCB board parts, and software was also done.

o **Past week accomplishments**
- Brandon Baxter:
- Vaughn Dorsey: Continued work to make the application and the database work together and to fill UI elements with data.
- Luke Myers: Conducted further preparatory work for the design document and prepared for mid-term presentation.
- Kurt Turner: Prepped parts for PCB board
- Aaron Haywood: built and tested alternate amplifier design
- Robert Buckley: In Cadence: Fixed the counter issues, connected the sensor to the system, create logic to control charge/discharge of capacitors, created the output modulation. Determined power use with ideal components currently 12.7 µW average with ~30 µW for the majority of the time and ~88 mW power needed when switching states - about 20% of the slew rate of our transistors.
- Mehdy Faik:
- Kellen Yoder:
- Michael Miller:

o **Pending issues**
- Brandon Baxter: Need the PCB to get in for testing ASAP, concerns are arising for time constraints if the test pcb doesn't work
- Vaughn Dorsey: Having some strange error with the application. It doesn't like

something I'm doing now, though I'm not sure what.

- Luke Myers: Need to relook at the method of transmission. There may be too much noise for ASK modulation.
- Kurt Turner: Still waiting on PCB to arrive.
- Aaron Haywood: poster?
- Robert Buckley: Converting the Rectifier from the original program to a simulation in cadence may be tricky.
- Mehdy Faik:
- Kellen Yoder:
- Michael Miller:

o **Individual contributions**

NAME	Individual Contributions	Hours this week	HOURS cumulative
Brandon Baxter	Meeting with advisor Researched power consumption and various other design considerations Presentation/Prep	8	33
Vaughn Dorsey	Software Development	3	22.5
Luke Myers	Design Document and Presentation Preparation	5	35.5
Kurt Turner	PCB part prep, soldering chip to breakout board	7	49
Aaron Haywood	Reader Amplifier	5	31
Robert Buckley	Cadence Design	16	54
Mehdy Faik			

Kellen Yoder			
Michael Miller			

o Plan for coming week

- Brandon Baxter: Worked on…
- Vaughn Dorsey: Fix that strange error and then try to populate the bolt/lamp viewer screen with something useful.
- Luke Myers: Need to reconsider the form of modulation/demodulation and possibly seek to use some form of frequency modulation.
- Kurt Turner: Build PCB when it arrives. Modify existing board files to include remainder of circuitry.
- Aaron Haywood:
- Robert Buckley: Create capacitance test cells outside of the charge/discharge lines to be placed off chip. See what I can do about creating a rectifier in Cadence.
- Mehdy Faik:
- Kellen Yoder:
- Michael Miller:

o Summary of weekly advisor meeting

Meeting on 3/7/17: Dr. Qiao, Dr. Song, and six members present (Robert, Kellen, Aaron, Brandon, Kurt, Luke)

We went over the antenna mock-up prototypes that were put together by Kurt and Michael and used for initial testing of data transmission.

Robert then went over the potential alternate design including capacitors, the MSP 430 microcontroller, and modulator.

We discussed the cost of our current IC design.

Kurt went over a video with our first test of transmission, demonstrating that we were able to send data across our prototype antennas.