EE 491 WEEKLY REPORT 13　　　　*Date: 1/17/17-1/23/17*

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**

This week we had our first meeting with our advisor, Dr. Qiao, in which we discussed the current state of our project and goals for the semester. During the week, Mehdy continued his work on the development of the rectifier antenna and the IC team continued further work with our prototype.

o **Past week accomplishments**

- Brandon Baxter: Attended meeting with group to discuss group changes for the project as the project gets headed toward the testing phase
- Vaughn Dorsey: Attended meeting with advisor to learn about what is happening within the project. Worked with IC team to determine the bit width we'd need for IDs and how the reader system should work.
- Luke Myers: Met with advisor to discuss the current state of our projects and our goals for the semester. Discussed data requirements with Vaughn for his user interface development. Looked into potential EEPROM options for ID memory storage.
- Kurt Turner: Sensor prototype is working
- Aaron Haywood: modeled working oscillator/amplifier circuit
- Robert Buckley: Created VHDL files simulating the majority of our expected design for the IC. Assisted with debugging our physical test design.
- Mehdy Faik: Source pull sim for rectifier, optimized power transfer efficiency.
- Kellen Yoder: Meeting with advisor. Figuring out best plan of action for the rest of the semester.
- Michael Miller:

o **Pending issues**

- Brandon Baxter: Worked on…
- Vaughn Dorsey: Need to figure out how the database portion of this will work. Also, need to determine what all this software will need to do besides scan the tags.
- Luke Myers: Need to look into possibilities for the static ID for our tag.
- Kurt Turner: Working on other IC devices in prototype.
- Aaron Haywood: oscillator needs testing
- Robert Buckley: Current version of Cadence has an issue importing the stream.out created from Encounter.
- Mehdy Faik: Exact layout requirements, access to test equipment, hardware implementation, IT issue with accessing HFSS
- Kellen Yoder:
- Michael Miller:

o **Individual contributions**

NAME	Individual Contributions	Hours this week	HOURS cumulative
Brandon Baxter	Meeting with group	2	2
Vaughn Dorsey	Meetings with group and advisor Continued UI Design	3	4
Luke Myers	Met with advisor to discuss the current state of our projects and our goals for the semester. Discussed data requirements with Vaughn for his user interface development. Looked into potential EEPROM options for ID memory storage.	3	5.5
Kurt Turner	Worked on getting the IC prototype operational.	2.5	5.5
Aaron Haywood	Reader oscillator	3	5
Robert Buckley	Began work to create IC in Cadence by making VHDL files. Assisted with debugging current	5	8

	design.		
Mehdy Faik	Source pull sim for rectifier, optimizing of RF-DC conversion efficiency	12	14
Kellen Yoder	Advisor Meeting	1	1
Michael Miller			

o **Plan for coming week**
  - Brandon Baxter: Help design and finalize ordered parts in 2 weeks for the reader
  - Vaughn Dorsey:
  - Luke Myers: Look further into ID and perhaps organize a schedule for the semester with details on how we plan to complete our goals and what documents we need to write within the time parameters.
  - Kurt Turner: Work on other IC devices in prototype, starting with shift registers.
  - Aaron Haywood: debug oscillator
  - Robert Buckley:
  - Mehdy Faik: Implement in hardware, test as a single module, consult professors as necessary
  - Kellen Yoder: Help with IC oscillator as well as figure out what other actions need to get done.
  - Michael Miller:

o **Summary of weekly advisor meeting**
We discussed the difficulties with testing our prototype. While our simulation worked, it is harder to figure out how to properly work with the chips available to us. Also, the wires on our prototype have a lot of resistance. We are currently working on getting our clock to work.

We also discussed goals for the semester and the possibility of getting an actual IC developed. We are going to focus on achieving a proof of concept rather than developing the final product. Simply because of the difficulties with having to test with large-scale discrete components on a breadboard and the fact that that doesn't directly correspond with what we would need on the micro-scale IC.

Mehdy has been working on rectifier simulation. Thinks he will be able to have a working rectifier

simulation by the end of the month.

The reader team is looking at possibly getting a voltage-controlled oscillator but is going to look at using an operational amplifier instead since that would be cheaper, but they are not yet sure if that will provide the power they need.

We discussed the feedback we received from the panel at our presentation at the end of last semester. One of the most important questions we received was about obtaining the 5 meter range requirement and how our priority for this semester is getting our project working first at some range greater than 0.