

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

Over the past week we got a prototype antenna put together for testing with our prototype IC. We also began work on a prototype modulator using a BJT, but have yet to produce a successfully modulated signal (perhaps due to the very large amount of noise). In addition to this, further work was done on development of the software's GUI. We also prepared for our presentation which we will be delivering this Thursday.

o Past week accomplishments

- Brandon Baxter: Reviewed the presentation and made minor adjustments
- Vaughn Dorsey: Added information about the reader software to the powerpoint. Continued development of the software's GUI and functionality.
- Luke Myers: Did further work on preparing for the presentation. Met with the advisor. Order mixer chips for modulation/demodulation, and began work on a prototype modulator.
- Kurt Turner: Built two antennae, tested modulation.
- Aaron Haywood: made new slides for presentation
- Robert Buckley: Added a large amount of information to powerpoint. Discovered many problems that the counter is not having.
- Mehdy Faik: Got to be able to access the HFSS project from last semester, with all the antenna dimensions and information. Investigated mechanical drawing softwares for sketching up the antenna in a way that a machine shop could use (for getting us a hardware implementation of the antenna).
- Kellen Yoder: Worked on building an antenna for testing, worked on powerpoint
- Michael Miller: Reviewed the presentation, played with the antenna

o Pending issues

- Brandon Baxter: nOne
- Vaughn Dorsey: None
- Luke Myers: Our breadboard prototype has a lot of noise, and it does not seem as if the modulator circuit we have right now is doing much.
- Kurt Turner: Waiting on PCB
- Aaron Haywood: Prepare for presentation, improve amplifier and demodulator.
- Robert Buckley: I cannot figure out why the counter just will not work...
- Mehdy Faik: I feel unfamiliar with the machining process. I don't know what to send to the machinist here. I emailed him just yesterday.
- Kellen Yoder:
- Michael Miller: The antenna has a lot of noise

o Individual contributions

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Brandon Baxter	Meeting with Professor Review of poster details	3.5	25
Vaughn Dorsey	Software Development Powerpoint Additions Meeting with Professor	1.5	18.5
Luke Myers	Ordered mixer circuits, did some initial trials on a modulator prototype, and did prep work on our presentation	7	30.5
Kurt Turner	Built antenna Test modulator	5	42
Aaron Haywood	presentation amplifier	4	26
Robert Buckley	Worked on fixing clock, powerpoint	8.5	38

Mehdy Faik	Access HFSS project from last semester, lot of time experimenting with drafting softwares	6	42
Kellen Yoder	Antenna build, meeting, powerpoint	7	31
Michael Miller	Antenna, presentation, meetings	6	30

o Plan for coming week

- Brandon Baxter: Presentation
- Vaughn Dorsey: Continue building the software and get it up to the point of sending data to and from the server fully. Then work on the GUI elements more. Also, give the presentation.
- Luke Myers: Give the presentation
- Kurt Turner: Test clock input filtering, build PCB when board arrives.
- Aaron Haywood: Give presentation and keep on with the reader
- Robert Buckley:
- Mehdy Faik: After all the mishap I had with free drafting softwares I think I'll prioritize a face to face meeting with the machinist instead. I foresee using Inventor on campus. Also, boards and parts are here for the rectifier.
- Kellen Yoder: Present, poster started
- Michael Miller:

o Summary of weekly advisor meeting

2/28/17 Dr. Qiao and nine members present

We discussed the progress that we completed during the last week. PCB parts have been ordered. Mixer parts have been order for modulator and demodulator. Waiting on Mehdy for an antenna for testing purposes with prototype data transmission. Aaron and Luke did testing work on the reader amplifier circuit post-demodulation.

We then discussed Brandon's research on capacitance sensor circuit possibilities. We discussed the number of sensors absolutely necessary (just use one). If we use microcontroller + chip, will we be able to power it using wireless charging? MSP 430 has 6 input/output lines. Discussed possibility of getting a different brand of MSP 430- 50% more expensive will have 8 i/o. Could communicate easier and possibly use up to two capacitive sensors. Need to document all technological issues and why this solution may

not be a good one. What are the benefits, what are the problems associated with it?

Mehdy said the board and materials should be here, so he is going to check with Lee after the meeting.
Mehdy has provided Robert with an antenna schematic for us to build and get data transmitting.