

*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 did further preparatory work for our midterm presentation. The PCB layout was finished and the board and parts were ordered. Also further work was completed on the reader side with testing of an amplifier circuit.

### **o Past week accomplishments**

- Brandon Baxter: Researched options to use premade capacitive sensors vs making our own.
- Vaughn Dorsey: Began work to prepare for the presentation coming up.
- Luke Myers: Looked into modulation/demodulation mixers. Worked on reader amplifier circuit with Aaron. Did further work on presentation power point and info.
- Kurt Turner: finished PCB layout and ordered board and parts.
- Aaron Haywood: worked on the Amplifier circuit and tested.
- Robert Buckley: The clock has larger problems than I was hoping, and I now have to extend the clock to be 15 bits long instead of 5 so that our baud rate is within a range we can actually modulate. This is making the logic for charging and discharging the capacitors much more difficult.
- Mehdy Faik: More administrative haggling with getting some hardware antenna implemented.
- Kellen Yoder: prepared for the mid term presentation upcoming, also worked on PCB
- Michael Miller: Worked on PCB

### **o Pending issues**

- Brandon Baxter:

- Vaughn Dorsey: None
- Luke Myers: Need to order mixer part.
- Kurt Turner: Waiting on PCB, antenna.
- Aaron Haywood: Tweaking amplifier and testing demodulator
- Robert Buckley: Hopefully the clock problem can be solved with 15 or so digital buffers...
- Mehdy Faik: Get rectifier from Lee, put it together and test. Design new antenna in HFSS.
- Kellen Yoder:
- Michael Miller:

**O Individual contributions**

<b><u>NAME</u></b>	<b><u>Individual Contributions</u></b>	<b><u>Hours this week</u></b>	<b><u>HOURS cumulativ e</u></b>
Brandon Baxter	Capacitive sensor buying research, Meeting with Professor	6	21.5
Vaughn Dorsey	Meetings with Professor  Powerpoint Formatting	1	17
Luke Myers	Filter research, amplifier testing, and work on presentation.	6	23.5
Kurt Turner	IC prototype PCB	14	37
Aaron Haywood	tested Amplifier, 4 dB gain at 13.56 MHz	4	22
Robert Buckley	Continued trying to fix the clock. Extended clock to 15 bits.	3.5	29.5
Mehdy Faik	Administrative again - back and forth with Nystrom and Robert on antenna logistics	35.25	36
Kellen Yoder	worked on presentation  PCB	7	24

Michael Miller	Worked on PCB	2	20
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**O Plan for coming week**

- Brandon Baxter: Assist Luke with presentation as well as push forward on the reader module
- Vaughn Dorsey: Continue to work on the presentation and the reader software.
- Luke Myers: Work on further presentation preparations.
- Kurt Turner: Try to transmit data with Mehdy's antenna, and breadboard.
- Aaron Haywood: Get more from the Amplifier, work on presentation
- Robert Buckley:
- Mehdy Faik: Re-implement antenna in simulation using HFSS 2017 - getting the old project to work with new HFSS is just pulling teeth logistically and keeping mie from delivering value to the other subteams.
- Kellen Yoder: Finalize presentation and transmit data
- Michael Miller:

**O Summary of weekly advisor meeting**

Dr. Qiao & Dr. Song and nine members present

Need to do research into IC capacitance reading chip possibilities as a backup for if our PCB does not operate properly. MSP 430 could theoretically work on the tags along with the capacitance reading chips. Look into building such a chip as a possibility so that we at least have something to show- even if it does not work. We can explain why it would or would not be viable (cost, power, etc.)

Mehdy has received his parts for his rectifier and will be receiving his board similarly.

We discussed whether to go with through-hole or surface-mount parts. Going with surface-mount would not save us very much space, but would also be difficult since none of us have much experience soldering.

Mehdy plans on getting a physical antenna prepared for this week.

Robert is working on fixing the clock for his IC simulation.

IC prototype schematic is finished and Kurt is looking to order the PCB by the end of this week.

For next week, we will work on getting data sent using an antenna.