sdmay20-39: High Speed Magnetic Field Generator
Week 12 Report
April 3 – April 16

Team Members

Jason Cheng — *Technology Lead*
Ben Colson — *Test Lead*
Zach Higgs — *Project Lead*
Harel Cohen — *Hardware Lead*
Craig Philipp — *Communications Lead*

Weekly Summary

Now that we have somewhat adapted to virtual classes and redefined our goals, we met with our advisors to figure out exactly what we can do with the project, and where to go from here. We adjusted our deliverables to reflect our current state (as well as reflect the understanding that this project will probably continue into next year's senior design groups). This led to the proposal of the cardboard layout and PCB improvements so that we have something refined to show for our IRP, as well as something to pass onto the next group.

Past Week Accomplishments

The big things we did this week mainly revolved around figuring out what to do for our IRP and where to go from here. We met with Wei-Shen, our advisor, to change around our deliverables into something that we can accomplish by the end of our semester. We proposed doing some sort of mockup in lieu of an actual PCB, since it seems that we do not have a way to get a physical prototype assembled by the end of the semester. A cardboard prototype was suggested as an easy and cost-effective way we can get something that we can lay out give the current circumstances. Putting that aside, it was also decided that something we can easily research, and deliver is to find ways to reduce oscillations in the signal. We were looking up filters and capacitor banks to reduce the oscillations in the resulting signal; and this lets us figure out exactly what future projects can do to solve the issues.

It is also now time to finish our documentation and start creating our presentations and posters for our IRP. We have begun laying out our poster so that we can adapt what we currently have to some sort of presentation. This also helps us figure out our final deliverables. As part of our adjusted deliverables, we also agreed to present our current and projected achievements which we have to incorporate into our IRP. This is so that we can document exactly where we were in our process, and as a result, what would have been accomplished had we had a little more time (and Chinese parts). This will help aid the creation of a project next semester to improve upon ours, instead of just reassigning the work that we had this year. To finish out, we also have to finish our presentation, finalize our documentation, and wrap up our simulations. Our simulations are now all we have left, so we need to find a good way to work it into our presentation.

Pending Issues

- How do we present a PSpice/ADS model
- Do we want our PCB to reflect our current progress or our planned improvements that may not entirely work
- Figure out how to do a presentation online without talking over each other

Individual Contributions

Team Member	Contribution	Bi-Weekly Hours	Total Hours
Jason Cheng	Finished documentation and organizing all of our digital parts for use in PCBs and future updates. Assisted in writing draft for a future senior design project to finish development and improve upon our design. Created presentation for IRP and tried to fix most of the feedback presented during the peer reviewed discussion.	10	161
Ben Colson	Developed responses to the feedback obtained from other senior design teams. Worked on our adjusted deliverables document. Attempted in continuation of research on perfecting our current design and meeting deliverables. Continued poster design for the projects final stages.	10	148
Zach Higgs	During this period we have been working on our updated deliverables and how we want to change our end product to cope with not being able to accuses our hardware. In the mean time I have been working on how to reduce the oscillations on our most resent PCB update of using a MOSFET driver. Also, I have been looking into updating and changing our PCB to help with the oscillations, and adding new parts to help our design. We will also be starting work on a manual like document for future projects so they know all of our processes.	8	160
Harel Cohen	This week I helped with updating our design goals. It was important to redesign these goals because now we work from home and we are unable to meet with each other as we used to. This means we can't work on our project hand-on anymore, so we made new goals so we can still do something for this project that shows progress and Is presentable.	8	154
Craig Philipp	These past couple weeks I assisted in creating new and realistic deliverables and collaborating with our advisor to make sure it was all ok with him. I worked on our poster	10	161

	that is due at the end of the semester, and began work on the final presentation. I worked to consolidate all of our current information that we got while we were still able to do physical testing so that it would be easier to access when creating our presentation and poster. I also began doing a bit of research into how we potentially reduce oscillations on our rise signal. I also read over peoples questions and comments on canvas about our project and looked to see if there were any large changes that needed to be made.		

Plans for Upcoming Reporting Period

- Find a good way to document and present ADS and PSpice models
- Finish poster and finish designs
- Create carboard model and layouts
- Finish and publish PCB layouts
- Finish presentation and delegate responsibility
- Practice presentation and organize Zoom/WebEx presentation