

EE/CprE/SE/CYBE 492 BIWEEKLY REPORT 01

8/22/2022 - 9/16/2022

Group: 07

Project: Wireless Energy Harvesting

Client: Dr. Jiming Song

Team: Benjamin Brown, Christopher Marting, Greg Schmitt, Jacob Walczak, Sam Runkel, Tanner Garity

Biweekly Summary:

Our team met up twice to discuss what we have accomplished this summer, determine our schedules and figure out what we need to do this summer. We ordered the last parts that we need for our antenna construction and brainstormed ideas on how to get more power by using a larger resistive load.

Bi-Weekly Accomplishments:

Benjamin Brown - In the previous semester we didn't have a reliable signal source to test our project with, so during the first week back I researched ways to produce our own wifi signal at 2.4ghz and is able to output at least 1 watt of power. I found that there are such devices that can produce this signal for use but they are not reasonable with in our projects budget. So after contacting our advisor he suggested that we try working with our own routers and possibly contacting a professor here at isu that works closely with wifi harvesting.

Christopher Marting - Worked on the antenna simulation, further improving the matching and in turn making the gain of the antenna better in hopes of when we get to building the antenna we will be able to draw more power overall. I also figured out my schedule to coordinate meeting with the group.

Sam Runkel - Talked to ETG about part availability for various pieces we need for our antenna construction and ordered parts. I also read through the datasheet and documentation for our energy harvesting board and determined that for us to get the maximum amount of voltage that we need to power and LED we are going to need a larger load. Ideally it will need to be around 10kOhms - 1MOhms.

Jacob Walczak - Figured out personal schedule to better coordinate meeting times with the group.

Tanner Garity- Researched RF generation circuits to generate a VI signal in order to power the 2.4 GHz signal energy harvester. Attempted to investigate the reason why the harvesting circuit fails in simulation without avail.

Greg Schmitt - Conducted research into potential RF coaxial cables that are compatible with the SMA connection on our energy harvesting board, as well as operating within spec of our 2.4 and 5 GHz operational frequency. An appropriate part number (digikey PN: J10302-ND) was found and has been submitted to ETG for order.

Plans for upcoming week:

- Have our first meeting with our advisor Dr. Song
- Complete the Presentation Document for Thursday
- Await parts order to come in so we can construct the antenna
- Pull Electrical schematic and create layout for the energy harvesting circuit.

Individual contributions:

Name	Individual Contributions	Hours this week	Hours cumulative
Benjamin	<ul style="list-style-type: none"> ● Advisor meeting - 0.5 hr ● Research into producing 2.4ghz wifi signal with output of atleast 1 watt for testing purposes - 2 hrs 	2.5	28
Jacob Walczak	<ul style="list-style-type: none"> ● Team Meeting - 2 hr 	2	27.5
Greg Schmitt	<ul style="list-style-type: none"> ● Team meeting - 2 hr ● Researched and decided upon RF wire specifications for order - 1 hr 	3	27.5
Christopher Marting	<ul style="list-style-type: none"> ● Improvements to the antenna simulation done over the summer. - 10 hrs 	10	40
Sam Runkel	<ul style="list-style-type: none"> ● Team meeting - 2 hrs ● Researched parts, discussed with ETG and order parts - 1 hrs ● Reviewed data sheet to determine a solution to a failure to produce any amount of usable power - 1 hrs 	4	31.5
Tanner Garity	<ul style="list-style-type: none"> ● Researched RF generation circuits in order to power the energy harvester - 2 hrs ● Tried to investigate the reason 	4	29

Name	Individual Contributions	Hours this week	Hours cumulative
	why the harvesting circuit fails in sim without avail- 2 hrs		