

Group Number: May1725

Project Title: Wireless Energy Measurement System

Advisor: Nathan Neihart

Team Members/Role:

- 1) Joseph Freeland (Co-Lead)
- 2) Milan Patel (Co-Lead)
- 3) Adam Cha (Communications Lead)
- 4) Adam Dau (Webmaster)
- 5) James Tran (Key Concept Holder)
- 6) Wei LinLin (Key Concept Holder)

o Weekly Summary

This week was a week of primarily testing the hardware prototype circuit. We built the difference amplifier circuit and got that to work and we characterized the resistor using SignalExpress. We also built the cascaded programmable amplifier circuits and tested them using an Arduino Microcontroller.

o Past week accomplishments (please describe as what was done, by whom, when)

- Adam Cha - Filled out weekly report. Researched about ADC ports needed to get data from hardware circuit to be sent out of microcontroller.
- Adam Dau - further researched the cc3200 board and connecting it to databases.
- Joseph Freeland - Simulated Prototype Hardware Circuit with Milan and James.
- Wei LinLin - Finish the database
- Milan Patel - Simulated Prototype Hardware Circuit
- James Tran - Build the difference amplifier (INA145) circuit and got it to work. Characterized the resistor using SignalExpress to determine variation. Build the cascaded programmable amplifier circuits using LTC6910 and test the

gain using digital output from Arduino microcontroller. Create auto-ranging gain excel file for testing purpose

o **Pending issues (if applicable)**

- Adam Cha - Need hardware team to finish components to move along on software side.
- Adam Dau - None at this time.
- Joseph Freeland - None at this time.
- Wei LinLin - import the database into the central hub
- Milan Patel - Low current measurements
- James Tran - Noise filtering at the ground node of the difference amplifier

o **Individual contributions**

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<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>Hours cumulative</u>
Adam Cha	Filled out weekly report. Researched about ADC ports needed to get data from hardware circuit to be sent out of microcontroller.	3	33
Adam Dau	further researched the cc3200 board and connecting it to databases.	2	21
Joseph F.	Simulated Prototype Hardware Circuit with Milan and James.	3	24
Wei LinLin	build the database	3	18
Milan Patel	Simulated Hardware Circuit	4	43
James Tran	<ul style="list-style-type: none"> - Built the difference amplifier (INA145) and tested it. - Created fixture for shunt resistor and characterized the resistor using SignalExpress to determine variation. - Build the cascaded programmable amplifier circuits using LTC6910 	20	57

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!!! ONLY EDIT BLUE COLUMN !!!

o Comments and extended discussion

We need to get the analog information sent out to the microcontroller to see what issues we may have sending the information over wifi to the URL.

o Plan for coming week (please describe as what, who, when)

Adam Cha

Task	Date	Expected outcome
Get database up and running.	11/18/16	Have working database for microcontroller to connect to.
Work on ADC for microcontroller.	11/18/16	Have data transferred from circuit to URL.

Adam Dau

Task	Date	Expected outcome
Get cc3200 connected to a working database	11/18/2016	Have communication between launchpad and database.

Joseph Freeland

Task	Date	Expected outcome

Wei LinLin

Task	Date	Expected outcome
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Import the database into the central hub	11-21	Have link to reference microcontroller's data to.

Milan Patel

Task	Date	Expected outcome
Refine Current Measurement	11/18/16	Finished Hardware Prototype

James Tran

Task	Date	Expected outcome
Further working on the ground disturbance noise removal	11/18/16	Reduce the amount of noise at the output of the difference amplifier
Work on the safety concern regarding the electrical isolation between shunt resistor and sensing circuit	11/18/16	Understand the potential hazards and determine solution to reduce them

o Summary of weekly advisor meeting

There was no advisor meeting this week because we still needed more time to completed the tasks from last week and had no further questions for our advisor. We will be meeting the following week though to start finalizing our prototype.