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 <u>**Weekly Summary**</u>

Met with our advisor after break. Got the software to compile without any errors. We also got a DC signal to pass through the ADC correctly.

o <u>**Past week accomplishments (please describe as what was done, by whom, when)**</u>

- Adam Cha - Worked on ADC to get code to compile without any errors. Also tested the ADC on a software level and it worked. As well as, sent a DC signal through the ADC and the signal outputted a correct digital signal.
- Adam Dau - Begin working on implementing a user interface which will show clients data recovered from our power measuring device.
- Joseph Freeland -
- Wei LinLin - Search information to prepare the web applications
- Milan Patel - Began Power Supply simulation and acquired samples for real world simulation.
- James Tran -

o <u>**Pending issues (if applicable)**</u>

- Adam Cha - Need to get a linear line plot of the analog to digital conversion.
- Adam Dau -

- Joseph Freeland -
- Wei LinLin - Work on the web application
- Milan Patel - Obtaining high efficiency power supply
- James Tran -

o **Individual contributions**

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NAME	Individual Contributions	Hours this week	Hours cumulative
Adam Cha	Worked on ADC to get code to compile without any errors. Also tested the ADC on a software level and it worked. As well as, sent a DC signal through the ADC and the signal outputted a correct digital signal.	6	38
Adam Dau	Worked or researching and developing a user interface.	4	22
Joseph F.			27
Wei LinLin	work on web application	2	19
Milan Patel	Researched Power Supply Components	4	45
James Tran			67

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o **Comments and extended discussion**

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

Adam Cha

Task	Date	Expected outcome
Get analog signal passed through ADC from actual hardware circuit.	2/1/17	Next step in the system integration.

Create linear plot for converting analog to digital.	2/1/17	Needed to get accurate power readings from microcontroller.

Adam Dau

Task	Date	Expected outcome
Decide on a web app framework which we can use to build our UI	2/1/17	Need to get a framework that will fulfill our needs for this project.

Joseph Freeland

Task	Date	Expected outcome

Wei LinLin

Task	Date	Expected outcome
work on web application	2/7/2017	

Milan Patel

Task	Date	Expected outcome
Research currently implemented power supplies in similar products	2/3/17	Inspiration for our device's power supply

James Tran

Task	Date	Expected outcome

o **Summary of weekly advisor meeting**

Tasks (Due 1-2 Weeks):
1. Schematic with all values of all components
    a. See Power Supply Schematic
    b. Simulations of all possible power inputs
    c. Make sure to use a load (resistor)
2. Work on the user application
    a. Have a rough plane on what we want to do
3. Test power of the ADC
4. Find a device specific ID for differentiating different devices on the same network

Things To Keep In Mind:
- Integral linearity and differential linearity.
- To measure linearity, have to sweep whole code range.
- Use a very slow, time varying ramp signal.
- Make sure to sweep from 0 to Vref, then Vref to 0 - to check for hysteresis.
- Use internal band gap to be fed back into the ADC to calibrate voltages for multiple boards.
- Check datasheet tolerance for that reference voltage.
- Find minimum and maximum power values from ADC and then find the quality (the precision of it). To know how much change is needed to for the ADC to notice it.
- How to find a device specific ID for differentiating different devices on the same network.