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>

Hardware team: we eliminated using Hall-effect sensor for current measurement because of noise at low current measurement. We make a plan to design using current shunt resistor (0.001 ohms). Software team has written software to the CC3200 enable the TI MSP430 to connect to the network. By doing this, this will allow the data from the hardware team to be converted from analog to digital and then be sent out via wifi to a database to be stored. We found how to connect to the network from a TI manual explaining how to connect.

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

- Adam Cha - Downloaded CCS3200 SDK, Code Composer Studio, and TI-RTOS for SimpleLink and CC3200 Support Package. Followed instructions for setting up Port and Baud Rate in the instruction manual. Work with Joey on how the connection to the wifi is created using the instruction manual.
- Adam Dau - Downloaded CCS3200 SDK. Followed instructions for setting up network.
- Joseph Freeland - Worked with the CC3200 board to create a wifi connection.
- Wei LinLin - Learn something about Database

- Milan Patel - Redesign analog measurement
- James Tran - Build schematic for current and voltage current measurement in Multisim using INA145AU and LTC6910

o **Pending issues (if applicable)**
- Adam Cha - Try to connect to an IP address.
- Adam Dau - None at this time
- Joseph Freeland - Need to figure out database software
- Wei LinLin - Build a basic Database
- Milan Patel - Redefine analog measurement
- James Tran - Waiting for INA145AU and LTC6910 to arrive.

o **Individual contributions**

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NAME	Individual Contributions	Hours this week	Hours cumulative
Adam Cha	Downloaded CCS3200 SDK, Code Composer Studio, and TI-RTOS for SimpleLink and CC3200 Support Package. Followed instructions for setting up Port and Baud Rate in the instruction manual. Work with Joey on how the connection to the wifi is created using the instruction manual.	5	23
Adam Dau	Downloaded CCS3200 SDK. Followed instructions for setting up network.	4	16
Joseph F.	Worked with the CC3200 board to create a wifi connection.	4	18
Wei LinLin	Learn database	3	12
Milan Patel	Study analog measurement	5	29
James Tran	- Talked with TI engineer about Hall-effect sensor and found that it is not good for low current measurement	8	29

	- Simulated the entire voltage and current sensor in Multisim. Verified output waveforms with theoretical calculations.		

o **Comments and extended discussion**
- We found even with the best version of Hall-effect sensor. This sensor is not good at measuring small current. In addition, the Hall-effect sensor is sensitive to magnetic field, so it might be affected by wireless components. We switched to current sensing using shunt resistor. This method is more accurate but more power consumption since we add about 4 amplifiers in the design.

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

Adam Cha

Task	Date	Expected outcome
Help work on setting up the database	11/4/16	Have a working database for the MSP430 to connect to.

Adam Dau

Task	Date	Expected outcome
Help setting up database, and connect to server.	11/4/16	Have a working database by next week.

Joseph Freeland

Task	Date	Expected outcome
Build database for MSP430 to connect to	11/5/16	Have a working database to be able to have the microcontroller connect to.

Wei LinLin

Task	Date	Expected outcome
build a basic database	11-2-2016	

Milan Patel

Task	Date	Expected outcome
Refine analog measurement	11-2-16	Analog measurement that had a sensitivity

James Tran

Task	Date	Expected outcome
Assemble voltage and current circuit and test the accuracy and performance	11-4-16	See if the measurements are close to the simulation results
Set up communication between sensors and CC3200MOD	11-5-16	Basic communications will be established

- o **Summary of weekly advisor meeting**

  1. Have server setup for microcontroller to send information to.
     a. Get just a dummy server for now.
  2. See if you can connect to a network via Wifi with the microcontroller.
     a. Send data out and see if you can get data back.
     b. If it's not moving, move closer to the access point because of the antenna.
     c. Be aware that when using the debug tool, the counter might still run because debugger doesn't always stop peripherals.
     d. Code composer does have a good amount of sample code to look at.
     e. Download launch pad for W200.