

# EE 491 Weekly Report    **MAY15-23**    **Week 7 (10/13/14-10/19/14)**

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**Advisors:** Daji Qiao

**Client:** Halil Ceylan

**Members (roles):**    **Brandon Wachtel, Tyler Fish (Team Communicators)**

**Mitch Balke (Team Leader)**

**Brandon Maier, Johnnie Weaver (Web Masters)**

**Trieu Nguyen, Christofer Sheafe (Key Concept Holders)**

**Project Title: Wireless Embedded Roadway Health Monitoring**

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## Weekly Summary

Finalizing the component list for our first prototype. Working to try to solve issues using surface mount ICs. Mitch and Brandon Maier are still testing the microcontrollers for functionality and looking into alternative sensors with lower power consumption, better communication protocols, and sturdier packaging for contact with concrete. Bought materials to start designing antenna for power reception. Have located a charging IC and plan to test as soon as prototyping PCB is ordered and received along with other components.

## Meeting notes:

Ask Lee if we need a special connector for the whip antenna

Make a breakout board for the QFN package

Possibly not all peripherals were turned off, causing power to go up

    Focus on what clock speed we are running

Email parts list to Lee, cc Daji

    See if Lee can order, if not, have Daji verify the parts list for Lee

Go ahead and try the patch antenna for 915 MHz

    Just make sure antenna size is smaller than 5in x 5in

    900 MHz might be a little too high for charging

Look into Panasonic for batteries

Thinergy (battery technology), simplified charging (lower currents)

Send LC Transceiver circuit datasheet to Jeremy

    Possibly design a board that can just be implemented into the final design

Go buy parts and start making antennas

Work on low power mode and lower clock frequency for MCs

Looking into inductive coils for testing EM

## 9/19/14    **Group Meeting with Advisors**

**Duration:** 1 hour    **Members Present:** All

### **Purpose and Goals:**

The main goal of this meeting was to hand-off our parts list to our advisor Daji but he is out of the country so we will be sending it to him via email. Our secondary goals were to communicate with our advisors about where we currently are at in the design of the prototype and asking them for upcoming goals that they would like us to achieve. We also discussed possible solutions to prototyping with surface mount components and decided that the best route would be to design SM prototype boards in Ultiboard or to order them from sites such as Digikey or Mouser.

## Pending issues

We have no way of testing our circuit design until we get our prototyping boards

We can't design our PCB until we have tested our circuit

Cannot test wireless charging because we are still waiting on the transmitter

## Plans for next week

Create and order breakout board for transceiver

Communicate with Civil Engineering group to see if we can get a slab of concrete for testing

## Individual Contributions (this week)

Johnnie Weaver: Attended group meeting (0.75hr), attended advisor meeting (0.5hr), searching for inductors (2hr), updating website (0.5hr), read report on RF transmission (1hr), looked up charging system components (1hr), purchasing chip boards from Radio Shack (0.25hr)

Brandon Wachtel: Attended group meeting (0.75hr), attended advisor meeting (0.5hr), searched for inductors (0.75hr), worked on soldering SM IC (0.5hr), searching for SM prototyping boards (0.5hr), purchasing chip boards from Radio Shack (0.25hr), worked on weekly report (0.5hr)

Tyler Fish: Attended group meeting (0.75hr), attended advisor meeting (0.5hr), transceiver information lookup (0.5hr), antenna design and research (2hr), worked on MC power consumption (0.5hr), collected parts for patch antenna (1hr), worked on weekly report (0.5hr)

Mitch Balke: Attended group meeting (0.75hr), attended advisor meeting (0.5hr) tested MC with Code Composer and attempted to take power readings (1hr), learned Multisim/Ultiboard (1hr), testing low power modes and created library to interface with SHT71 sensor (2hr)

Brandon Maier: Attended group meeting (0.75hr), attended advisor meeting (0.5hr), tested MC with Code Composer and attempted to take power readings (1hr), started designing software module diagrams and program flowchart (4hr)

Trieu Nguyen: Attended advisor meeting (0.75hr), attended advisor meeting (0.5hr), researching inductive coupling charging design and off the shelf products (3hr), attempted to repair RF transmitter (0.5hr)

Christofer Sheafe: Attended group meeting (0.75hr), attended advisor meeting (0.5hr), patch antenna research (4hr), patch antenna design (4hr), collected parts for patch antenna (1hr)

## Total weekly contributions (this week) for the project

Johnnie Weaver: 6 Hours

Brandon Wachtel: 3.75 Hours

Tyler Fish: 5.75 Hours

Mitch Balke: 5.25 Hours

Brandon Maier: 6.25 Hours

Trieu Nguyen: 6.25 Hours

Christofer Sheafe: 10.25 Hours

## **Total contributions for the project**

Johnnie Weaver: 25.5 Hours

Brandon Wachtel: 24.75 Hours

Tyler Fish: 25.5 Hours

Mitch Balke: 28.5 Hours

Brandon Maier: 22.75 Hours

Trieu Nguyen: 22.75 Hours

Christofer Sheafe: 23.25 Hours