EE / CprE / SE 492 – sdmay24-25

Distributed Sniffer Nodes for Batteryless Sensor Nodes

Week 9-10 Report

Mar 9 – Mar 30

Client: Professor Duwe

Faculty Advisor: Professor Duwe

Team Members:

Thomas Gaul- Team Lead, Software Lead

Spencer Sutton- Software Member

Tori Kittleson- Hardware Lead

Ian Hollingworth- Software Member

Mathew Crabb- Hardware Member

Past Weeks Accomplishments

Ian- Completed code for SPI communication between two cc1352 chips.

Matt – Completed PCB schematic, made major contribution to PCB layout, reviewed PCB layout, peer review, helped hardware get to the milestone of ordering the first revision of the PCB

Spencer- Assisted with completing code for SPI communication between two cc1352. Brainstormed plan for implementatino of SPI integration into radio communicaition using semaphores and callbacks.

Thomas- Reimplemented the sniffer network with multiple tasks and semaphores protecting shared variables and resources. Tested and documented this design implementation with multiple depth network passing data.

Tori- Completed layout for the Sniffer PCB and ordered BOM and PCB.

Pending Issues

None

Individual Contributions

Team Member	Contribution	Since last report (4 weeks + Spring break)	Total Hours(starting tracking week 3)

Thomas Gaul	Team meetings, writing and testing sniffer network code, and documentations	34.5	60
Tori Kittleson	Completed sniffer layout, RF trace calculations, BOM order, team meetings	35	57.25
Mathew Crabb	Finished Sniffer PCB Schematic, Design Reviews, Updated designs based on feedback, Developed RF test plan, Completed much of Sniffer Layout, Peer review	35	66
Ian Hollingworth		37	49
Spencer Sutton	Finished SPI devlopment Brainstormed next steps of SPI integration	20	37

Plans for Coming Week

Hardware: For this coming week, we are waiting on hardware and components to arrive so we will work on documenting the design, and work on a test plan. The test plan involves a VNA and other hard to access tools so we will work on allocating those tools for when we are prepared to characterize hardware.

Software: We will be cleaning up the SPI and Sniffer network implementation to be more robust with high traffic. Then we will integrate SPI into radio callbacks on both sides of system (sub 1Ghz and 2.4Ghz) to create one complete Sniffer Node. Attempt to integrate 3 Sniffer pairs into a 3x1 network and begin debugging on this system.

Mid-term Feedback updates

The feedback we received from sdmay24-14 covered a positive about how we have approached the complicated problems despite the challenges we have ran into. Similarly we have got positive feedback as to our approach of building up a testing option at the same time as the development of our project. Most of the suggestions we got from the team comes down to documentation both in our presentations and in design document. They noted the struggles we have ran into with lack of documentation and weird quirks of the project and suggested we document those for future users. Additionally, they suggested we do a more in depth explanation of thing like acronyms in the presentation as they got lost at times. Additionally, they recommended giving more roles to our team members.

The strongest feedback we received was about doing stronger documentation for future work and for the presentation. Knowing what explanations needed expanding helped a lot for our future presentation.