Senior Design Progress Report

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| **Student**: | Brian Dye | **Team**: | 20 ENIGMA |
| **Semester**: | Spring 2022 | **Position**: | Team Leader |
| **Week**: | **7** | **Hours**: | 25 |

# Progress Description

This week we successfully created a wireless link between two RFM69 radio modules. We define a wireless link using the following figure:

Diagram

Description automatically generated

We were able to send the string “Hello this is a test” from one STM32 to another over a wireless medium. Before we were able to setup the wireless link successfully, we ran into an issue on the receiving end of the link. I was able to **send** a packet successfully but, I couldn’t **receive** a packet successfully. My team and I tried multiple different strategies to test the integrity of our setup but were unsuccessful. The ECE-477 course staff recommended that we test our RFM69 radio modules using someone else’s implementation for interfacing with the RFM69 radio module. This way we can ensure and test the integrity of our RFM69 chips. This was extremely helpful, and it revealed our underlying issue. From my current understanding the RFM69 has sensitive setting registers that ensure proper modulation and demodulation for receiving and transmitting data. It appears that our attempt to set the RFM69 in the highest bit rate and power settings impeded the RFM69’s ability to receive signals properly. Once we reduced the performance settings, we can now send and receive effectively. This is a major milestone accomplishment for our project.

# Printed Circuit Board (PCB)

I worked with Hanyu to complete the printed circuit board design. I created the initial schematic and Hanyu is working on finalizing the footprint. KiCad did not have the libraries required for our HM-19 Bluetooth module. To solve this issue, we used online resources to create the libraries and footprints we need to create a schematic and footprint of our design.