EE / CprE / SE 491 –sdmay20-03
NOAA GEOS-R Satellite Receiver
Weekly Report 5

11/10/2019 – 11/16/2019
Client: N/A
Faculty Advisor: Nathan Neihart

Team Members:

Nick Butts — *Software Group*
Rudy Lim — *Software Group*
Jonathan Massner — *Systems and RF Group*
Ted Mathews IV — *RF Group*
Riley Stuart — *ADC Group*
Jordan Tillotson — *ADC Group*

Past Week Accomplishments

- I/Q Demodulation Board - Jonathan Massner
    - Obtained Altium License to work with Altium
    - Familiarized myself with Altium to prepare to make I/Q Demod breakout board
- STM32 initialization and Pi communication - Jordan Tillotson
    - Used cube software to initialize STM32, tweaked necessary pins
    - Collected similar code for use in communication to Raspberry Pi
    - Began generating code for ADC to Pi
- Microcontroller and ADC configuration - Riley Stuart
    - Used STMCubeMX to initialize and test SPI communication from µC.
    - Collected oscilloscope images of SPI output for verification
    - Researched further into ADC requirements.
    - Testing document.
- Started organizing code from Open Satellite Project - Nick Butts
    - Did research about how to use Github
- Code Pushing and detailed data packet analysis - Rudy Lim
    - Pushed code from the OpenSatProject into gitlab
    - Developed general idea of commands needed to upload code into gitlab
    - Gained better understanding of data packet structure
- LNB parts selection and Simulations- Ted Mathews IV
    - Worked on standardizing the parts for the LNB board.
    - Worked with Joanthan to get Altium setup for his board.
    - Re-matched the mixer and LNA using AD.

Pending Issues

- Need to order a longer cable for the antenna.

Individual Contributions

Team Member	Contribution	Weekly Hrs	Total Hrs
Jonathan Massner	I/Q Demodulator Breakout Board	8	41
Nick Butts	Learned more about using Github to compile code	8	50
Ted Mathews IV	Worked through primary LNB component selection. Got the 2x4 for the tripod mount measured and cut.	12	67
Jordan Tillotson	Collected sample code for STM32 to Pi4 comm.	8	50
Rudy Lim	Pushed code into gitlab and data packet analysis	12	40
Riley Stuart	ADC and µC testing	6	41

Plans for Coming Week

- ADC/DSP - Jordan Tillotson
    - Install Raspbian OS on Pi4
    - Begin feeding arbitrary signals to ADC to check STM32 to Pi4 comm.
- ADC/DSP - Riley Stuart
    - Example task
- RF - Jonathan and Ted
    - Build tripod mount.
    - Attach tripod to mount, build the antenna, mount the antenna, verify it works.
    - Work on board layouts for the LNB and ADRF.
- Software - Nick and Rudy
    - Pushed code into gitlab
    - Gain better understanding of data packet structure
    - Get RPi4 set up