# EE / CprE / SE 491 –sdmay20-03
# NOAA GEOS-R Satellite Receiver
# Weekly Report 6

*11/17/2019 – 11/23/2019*
*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

- Antenna setup and I/Q Board - Jonathan Massner
    - Worked with Ted to assemble and setup antenna in the Coover courtyard
    - Transferred KiCad schematic of I/Q board to Altium
    - Setup up GIT control for Altium schematic
- Signal Processing STM32 to Pi4 - Jordan Tillotson
    - Fed arbitrary signals to STM32 ADC
    - Verified communication to Raspberry Pi
- ADC Development - Riley Stuart
    - Further work into ADC testing document.
    - Combine config files for µC with Jordan.
    - Finalize SPI communication after meeting.
- Ordered memory card for RPi4 and tried compiling code on Github- Nick Butts
    - Continued learning how to use Github to compile code
- Compiling Code On Github - Rudy Lim
    - Experimented with compiling code available in gitlab repository
- Antenna Build and Altium Assistance - Ted Mathews IV
    - Finished building the tripod stand.
    - Worked with Jonathan to build and assemble the antenna.
    - Worked with Jonathan to get altium and GIT setup for his board.
    - Continued work on LNB schematic and layout.

## Pending Issues

Antenna Work

- Extend reflector to retune antenna.
- Obtain longer coax cable for the antenna.
- Find a good way to aim the antenna faster.
    - The metal in the antenna interferes with the gyro in phones making aiming more difficult

## Individual Contributions

| Team Member | Contribution | Weekly Hrs | Total Hrs |
|---|---|---|---|
| Jonathan Massner | Antenna setup and I/Q Board in Altium | 9 | 50 |
| Nick Butts | Code organization and compiling | 5 | 55 |
| Ted Mathews IV | Assembly and function check on antenna, Git and Altium work, LNB desing work. | 10 | 77 |
| Jordan Tillotson | Signal processing from STM32 to Pi OS | 8 | 58 |
| Rudy Lim | Experimented with code compilation | 6 | 46 |
| Riley Stuart | Finalize testing for signal processing on µC to allow testing real signals to begin being dumped onto Pi. | 8 | 49 |

## Plans for Coming Week

- ADC/DSP - Jordan Tillotson
    - Pending raw data, feed actual signals to ADC and verify output to Pi4
    - Continue tweaking code to make communication more efficient
- ADC/DSP - Riley Stuart
    - Work with Jordan and Ted to see how we can test real signals once we finalize communication and ADC configs.
- RF - Jonathan and Ted
    - Standardize parts choices between LNB and ADRF to minimize the number of parts on the BOM.
    - Extend the reflector to retune the antenna.
    - Work on getting layouts done for REV 1 boards so they can be fabbed over Christmas break.
- Software - Nick and Rudy
    - Try running known commands once RPi4 is configured to generate header files so that the code can work together