EE / CprE / SE 491 –sdmay20-03
NOAA GEOS-R Satellite Receiver
Bi-Weekly Status Report 3

2/14/2020 – 2/27/2020
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

- Signal reception - Jonathan Massner
    - Aimed antenna to receive signal; no signal received
    - Used Pi to attempt to read signal; viterbi indicated no signal
    - Performed troubleshooting and adjustments on antenna
- ADC Design - Jordan Tillotson
    - Began schematic for ADC PCB
    - Researched OpAmps compatible with ADC
    - Discussed with teammates about correct integration of subsystem components
- ADC research- Riley Stuart
    - Researched compatible ADCs
    - Began research on integration between ADC and Pi
    - Began working on test plan for writing file on Pi
- Getting frame synchronization working correctly - Nick Butts
    - Starting to construct array with frames
- Completed Reed Solomon Error Correction - Rudy Lim
    - Finished Reed Solomon Error Correction algorithm
    - Need to start testing it with data from the Viterbi
- LNB Sim and Layout - Ted Mathews IV
    - Continued simulations of LNB components
    - Continued working on LNB layout
    - Made progress in ADRF driver and began writing test script

Pending Issues

- Antenna
    - Still haven't received clear signal; currently troubleshooting
- ADC
    - Unfamiliarity with how the complete ADC subsystem should function - continuing research and looking at single ended ADC

Individual Contributions

Team Member	Contribution	Weekly Hrs	Total Hrs
Jonathan Massner	Antenna placement and signal reception	8	71
Nick Butts	Frame synchronization code development	10	85
Ted Mathews IV	LNB sim & layout, I2C driver development	10	129
Jordan Tillotson	ADC board design/ implementation of discrete ADC	5	63
Rudy Lim	Completed Reed Solomon Error Correction	6	62
Riley Stuart	ADC research - component and data transfer	4	58

Plans for Coming Week

- ADC/DSP - Jordan Tillotson
    - Design and test a Sallen key filter to filter 1.2MHz signal coming from the ADRF
    - Continue working schematic from filter to ADC output (filter, buffering, single ended ADC, etc.)
    - Finalize code to take data from ADC and write corresponding binary file.
    - Test writing file to Pi
- RF - Jonathan and Ted
    - Place antenna outside of courtyard and use real compass to aim
    - Receive and decode HRIT signal with goesrecv library
    - Finish LNB simulations and verify component selection.
    - Complete LNB layout and have a design review
    - Finish ADRF I2C driver and test the board
- Software - Nick and Rudy
    - Complete Viterbi code and test it with data