EE CprE 491 – May 20 - 49
CySat Senior Design Team
Week 26 Report

February 13, 2020 – February 19, 2020
Faculty Advisors: Phillip Jones

Team Members:

Bryan Friestad —— *Team Lead / EPS Lead / OBC Lead*
Ryan Hansen —— *SDR Lead*
Chase Kirchner —— *Ground Station Lead*
Kyle Muehlenthaler —— *UHF Lead / Ground Station Secondary*
Talon Stromgren —— *Boost Board Lead / SDR Secondary*
Xiangzhu Yan —— *ADCS Lead*

Past Week(s) Accomplishments

- OBC: Completed the Beta software goals. Fixed the OBC bug which caused it to crash after a couple of minutes due to memory leak [Bryan].
- ADCS: Debugged and Tested telemetry request(read from ADCS). Implemented commissioning steps 1-3(Passive Detumble) in C.[Xiangzhu]
- SDR: SDR can receive CySat packets and respond to a listening device. SDR date and time can be set with a packet formatted specifically for this. [Ryan]
- EPS: Completed the Beta software goals. Did some simple read function testing of all commands, will dig into specific ones soon [Bryan].
- Ground Station: Added more UI improvements to make the user experience better. Successful testing of creating a date and time packet for the SDR and having the SDR receive and set its own time. [Ryan]
- UHF: Met with Matt about possible solutions for transceiver Kenwood communication. He will be looking into getting a data radio for us to use as he believes that could be an issue.
- Boost: Stencils ordered / came in

Pending Issues

- Still cannot get communication between UHF and ground station stable. UHF can Tx but not Rx. The ground station can do neither.
  - Got some odd experiences on Wednesday with the Kenwood radio and UHF transceiver. Determined the correct modulation, but reception was still spotty. We believe it is because we are using an audio radio instead of a data one.
- The endianness of data read by telemetry request is very strange.

Individual Contributions

Team Member	Contribution	Weekly	Total Hours	Attend Gen. Meeting?
Bryan Friestad	Finished up OBC code for parsing commands, filling in UHF comm for UART. Made sure Beta Software was integrated. Worked on testing EPS commands. Making sure the team has goals for Mock Launch demo progress. Helped work on solving UHF radio issues. Started some basic planning for the Mock Launch	15	149	Yes
Ryan Hansen	I did some work to port over the packet functions that I wrote for the Ground Station to the SDR. Implemented the handlers for a few commands. Custom packets can now be sent from the ground station assuming they are registered in the manifest file. A custom packet was sent to set the date and time of the SDR by including the data needed to do so in the payload of the packet and parsing it on the SDR.	15	136	No
Chase Kirchner	Getting up to speed on the changes that Ryan made since I last worked on the ground station. Explored possible checksum solutions to replace our current placeholder checksum function. User testing to try to find bugs that may have not been caught	6	103	No
Kyle Muehlenthaler	Revised and made plans for testing and confirming working I2C functions for UHF.	10	109	no
Talon Stromgren	Worked with Dylan trying to get the UHF to achieve round trip communication with the kenwood and other antennas.	10	118	No
Xiangzhu Yan	Debugged and Tested telemetry request(read from ADCS). Implemented commissioning steps 1-3(Passive Detumble) in C.	14	116	No

Plans for Coming Week

- Bryan Friestad: More thoroughly test problematic EPS read functions. Finish writing bitwise EPS read functions. Make sure solutions are progressing for the radio subsystem. Continue developing testing plans for Mock Launch.
- Ryan Hansen: Jump back and forth between Ground Station implementing new features and SDR getting startup script to function and receive command packets.
- Chase Kirchner: Decide on final checksum solution. Implement/test checksum generation/validation code into ground station. Document checksum implementation.

- Kyle Muehlenthaler: connect OBC or mock OBC to test I2C connections for UHF transceiver. I would like some help with set up for this if anyone would e free.
- Talon Stromgren: Solder and test boost board and carrier board.
- Xiangzhu Yan: Implement remaining commissioning steps(4-13) in C. Meet with Dr.Lee to find a test plan for commissioning steps.