EE CprE 491 – May 20 - 49
CySat Senior Design Team
Week 25 Report

February 6, 2020 – February 12, 2020
Faculty Advisors: Phillip Jones

Team Members:

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

Past Week(s) Accomplishments

- OBC: Implemented simple checksum generation and verification for CSPP. Developed simple control flow to handle different types of incoming commands. Implemented responses for 3 commands used in Beta software, barring placeholders for UHF communication [Bryan].
- ADCS:Met with Arun to decide the next step for ADCS: Need to implement the control flow in the ADCS_High_Level_Task_List, also, ADCS_Comminisioning_Mannual is a good reference to do that. Fixed a stupid bug that caused 80% of the TC/TLM to not compile.
- SDR:
- EPS: No direct work was done on EPS [Bryan].
- Ground Station: Added command support for EPS Battery, Ping, and Shutoff Beacon. Implementing uart write/read (needs further testing/refinement). Finished up packet format
- UHF: Tested new UHF transceiver software from EnduroSat. We can adjust frequency and set beacons, etc. Viewed output on SWR meter, and picked it up on a handheld radio. Tried to get Kenwood box to work in KISS mode. +written i2c code.
- Boost:

Pending Issues

- How to package AX.25 packets on the OBC
- Large Kenwood radio and TNC box would not work properly for KISS protocol, so we could not serially receive commands or send commands to the transceiver. Need direct assistance from Matthew Nelson.
- There are some bugs in the C code causing the OBC can't send telemetry requests to ADCS, due to the lack of oscilloscope and USB cable, I'm not able to find and fix the bug before the meeting.

Individual Contributions

Team Member	Contribution	Weekly	Total Hours	Attend Gen. Meeting?
Bryan Friestad	Worked on OBC code to receive and respond to incoming packets. Worked to make sure the team was on track for Beta version software. Helped Xiangzhu solve some problems with the ADCS code. Worked with Dylan on trying to get the UHF working.	12	134	yes
Ryan Hansen			108	
Chase Kirchner	Worked on ground station uart write/read. Threaded serial receive function within GUI. Minor fixes within the code after testing. Worked on ground station command support for EPS battery, Ping, and shutoff beacon.	11	97	No
Kyle Muehlenthaler	Worked on i2c and helped troubleshoot transceiver problems.	7	99	no
Talon Stromgren	Worked with Dylan to get UHF transceiver to beacon. Made sure it was outputing correct power.	12	108	No
Xiangzhu Yan	Met with Arun. Fixed bugs in ADCS code	10	102	No

Plans for Coming Week

- Bryan Friestad: Test software beta version, planning to substitute OBC->UHF->TNC with serial connection to laptop running Ground Station software. Determine issues with UHF transceiver and KISS mode TNC device.
- Ryan Hansen:
- Chase Kirchner: Refine ground station code and thoroughly test current functionality. Continued implementation of various commands. Writing data to text file for logging purposes within the GUI application
- Kyle Muehlenthaler: test the written i2c code on the transceiver to ensure they work as anticipated.
- Talon Stromgren: Solder Boost Board, maybe carrier board. Also continue to work on UHF implementing communication through antenna.
- Xiangzhu Yan: Find and fix the bug that causes TLM doesn't work. Start to implement detumble control flow in OBC_SDK.