

EE CprE 491 – May 20 - 49

CySat Senior Design Team

Week 23 Report

January 23, 2020 – January 29, 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 — *GitLab Master / Boost Board Lead / SDR Secondary*

Xiangzhu Yan — *ADCS Lead*

Past Week(s) Accomplishments

- OBC: None.
- ADCS: Finished ADCS health check, learned how to power up CubeADCS and how to use CubeSupport. Made a plan for C code testing.
- SDR: Worked on converting my code written on the SDR to run at startup. Having partial success. Record measurement command is functioning properly at bootup but read and transfer of the files is currently having issues. Need more time to troubleshoot. [Ryan]
- EPS: Got the EPS to communicate more with the EnduroSat software. Connection is spotty and commands don't always seem to go through [Bryan]. Figured out how to the RBF pin functions on the EPS board by testing with one of the Molex connectors [Bryan and Ryan]. It seems that the EPS functions better when it starts off via RBF short circuit but then the circuit is broken.
- Ground Station: Establishing communication protocol between OBC. Resolving connect/disconnect issue between python GUI application. Continued testing with GUI
- UHF: One way communication in python programs works. Inconsistent 2 way communication [Kyle, Bryan, Ryan and Talon].
- Boost:

Pending Issues

- Uncertain how the Kill switches work on the EPS board at this time.
- Still don't understand the purpose of the wires coming out of the sides of the EPS. A previous M2I member claims they are only for the roller/kill switches, but I've seen nothing that indicates such.
- EPS battery packs are not correctly connected and/or the Vbatt bus is incorrect.
- Unable to get in contact with Matt to set up a meeting or get an attenuator on the transceiver for testing.
- Need to reconnect a portion of the boost board and get it sent in for printing again

Individual Contributions

Team Member	Contribution	Weekly	Total Hours	Attend Gen. Meeting?
Bryan Friestad	Worked with team on the demo, trying to figure out how to communicate with the hand radios via Python code. Worked on getting the EPS to function properly.	10	108	Yes
Ryan Hansen	Worked on experimenting with python radio communication. Created a python script to simulate an automated ground station to communicate with simulated OBC. Worked with SDR bootup python script configurations.		98	yes
Chase Kirchner	Worked with Talon to resolve connect and disconnect commands. Working to establish ground station communication protocol	10	85	
Kyle Muehlenthaler	Worked with the kenwoods looking for how to work through the inconsistencies and possible solutions around it.	10	87	Yes
Talon Stromgren	Worked with team on demo, fixed ground station gui with connect and disconnect commands. In process of soldering boost board before finding out we had a wrong connection	10	85	No
Xiangzhu Yan	ADCS health check. Telecommand testing plan.	10	77	No

Plans for Coming Week

- Bryan Friestad: Review team questions in preparation for telecom with EnduroSat. Following the meeting, hopefully get EPS functional. If not, determine method for getting the OBC to run and provide power to other subsystems, namely the ADCS for initial testing. Prep the team for our beta version software deadline in 2 weeks.
- Ryan Hansen: Fix bootup file transfer code. Integrate radiometer python functions into my SDR code to save actual data instead of simulated data.
- Chase Kirchner: Implement ground station functionality (ping/battery level) and testing
- Kyle Muehlenthaler: Work with Transceiver and see if the inconsistencies of the kenwood are still there or if the issue resides in our python buffers. If I can't get the meeting with Matt set up make simplest form of communication for python code and find where the kenwood communication is failing.
- Talon Stromgren: Fix boost board and get new board ordered
- Xiangzhu Yan: Set up a meeting with Dr. Lee to consult for the next step after the code is tested.