

# EE CprE 491 – May 20 - 49

## CySat Senior Design Team

### Week 29 Report

March 5, 2020 – March 11, 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: Started putting together a framework for the CySat settings and basic health checks [Bryan].
- ADCS: Met with Dr.Lee to show him my progress, asked questions about ADCS stuff, got advice on the next step. Modified the code of the ADCS commissioning process. [Xiangzhu Yan]
- SDR:
- EPS: Did some more read function testing, found some documentation errors. Implemented EPS I2C write functions, found even more documentation errors.
- Ground Station: Made the ground station capable of detecting a beacon and sending a beacon shutoff request in response. This was also tested and made more flexible [Ryan and Bryan]. Checksum implementation/resolution [Chase and Ryan]
- UHF: work on i2c functions and looked into antenna deployment options.(molex connector ordered, and looked into expected input) [Kyle]
- Analog Components:

#### Pending Issues

- Still no round trip data radio communication
- Still don't understand what I'm seeing on the solar arrays
- Boost board was soldered incorrectly
- Still need a wireless stick for cleanroom computer
- ~~I am very lost on writing the EPS I2C write functions without documentation or trial and error.~~ I seem to have brute forced my way into figuring out some of the commands. Explanation in powerpoint.

## Individual Time Contributions

Team Member	In lab hours	Outside lab hours	Total Weekly Hours	Last Week Hours	Total Project Hours	Attend Gen. Meeting?
Bryan Friestad	17.5	5	22.5	15	204	yes
Ryan Hansen	14	3	17	10	178	No
Chase Kirchner	2	6	8	7	126	
Kyle Muehlenthaler	7	7	14	12	149	No
Talon Stromgren	9		9	8	143	
Xiangzhu Yan	2	12	14	11	149	no

## Description of Work contributed

Team Member	Contribution
Bryan Friestad	Helped Kyle with testing the UHF transceiver i2c functions. Working on EPS read and write functions. Worked with Ryan to triumph over the issues with the EPS write commands. Wrote OBC code to parse new commands for mock launch. Tried testing UHF beacon configuration commands.
Ryan Hansen	Helped Bryan with EPS I2C communication. Integrated checksum code into ground station application and added some automated beacon detection capabilities. Still a little troublesome to detect because of radios.
Chase Kirchner	Wrapped up checksum implementation (contacted Ryan for bug). Work on ground station manual. Research into externally logging to text file/database.
Kyle Muehlenthaler	Worked on UHF transceiver i2c functions. Looked into i2c for antenna and what will be needed for OBC and antenna communication.
Talon Stromgren	double checked/ fixed pc104 stack pins, looked at ossicle new boost board designs
Xiangzhu Yan	Met with Dr.Lee. Worked on the code of the ADCS commissioning process.

## Plans for Coming Week

- Bryan Friestad: Sort out issues related to mock launch (beacon text, period, enable). Testing all EPS write functions. Determine issues with radio. Speak with EnduroSat and distill information.
- Ryan Hansen: work with more I2C code between Bryan and Kyle for EPS and UHF antenna.
- Chase Kirchner: Continue ground station manual documentation. Begin implementation of externally logging data from ground station.
- Kyle Muehlenthaler: test functions left with mock launch procedures.
- Talon Stromgren: new boost board design
- Xiangzhu Yan: Keep working on the code of the ADCS commissioning process refer to the advice from Dr.Lee.