

EE CprE 491 – May 20 - 49

CySat Senior Design Team

Week 9 Report

October 19 – October 25

Faculty Advisors: Phillip Jones

Team Members:

Bryan Friestad — *Team Lead / EPS Lead / OBC Secondary*

Ryan Hansen — *SDR Lead / Payload Secondary*

Chase Kirchner — *Ground Station Lead / CI Testing Lead / UHF Antenna Secondary*

Kyle Muehlenthaler — *UHF Antenna Lead / Ground Station Secondary*

Talon Stromgren — *GitLab Master / Payload Lead / SDR Secondary*

Xiangzhu Yan — *ADCS Lead*

Past Week Accomplishments

- OBC: Starting development on Discovery boards. Built new project using STM32CubeMX. Was able to debug device successfully. Started looking into FreeRTOS thread and some HAL functionality.
- ADCS: Connecting OBC to ADCS by I2C(OBC as I2C master and ADCS Board as slave). Send telecommand or telemetry request by the I2C protocol, for example, set attitude Control Mode(Telecommand id:13), Reset Upload Block(Telecommand id:117).
- SDR: Successful UART connection and communication with SDR board. Slide presentation of communication:
<https://docs.google.com/presentation/d/19teGlemzY0k5731IMUk5MBYIEAqV1C4zNVHE4oYK5IY/edit?usp=sharing>.
- EPS: Found I2C manual. Slave address is 0x18. Manual includes instructions for how to write and read data. Command 41 returns software version in 2 Byte raw data format.
- Ground Station: Met with Zachary Luppen to discuss few ground station points and scheduled Friday meeting with Prof. Young/Zachary to further discuss. Planning to ping ISS through HRD.
- UHF Antenna: Email confirmation of my issues with interaction with the antenna. Know now that I should go through the radio instead and looking through Dr. Nelson's code as well as the commands I found in the raw documentation
- Boost Board: Met with Brian to discuss and choose a schematic, started building the design in KiCad
https://docs.google.com/presentation/d/1RdtlVuVpOr3x0n10UjE11t_pEn9x9mfSau7Rj6Kqmc8/edit?usp=sharing
- LNA Board:

Pending Issues

- Ground Station: Need Matt Nelson in order to use HRD

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours	Attend Gen. Meeting?
Bryan Friestad	Working on disco-board development. Did mini-lesson on I2C. documented set up of disco board development environment. Determined I2C message to send to EPS	6	15	yes
Ryan Hansen	Set up UART communication with SDR board	6	12	no
Chase Kirchner	Prof. Young/Zach Luppen meeting. Beginning to get up to speed on UHF. Plan to ping ISS through HRD	5	11	no
Kyle Muehlenthaler	New means of interfacing with the antenna	2	8	no
Talon Stromgren	Almost finished Boost Board schematic	6	14	no
Xiangzhu Yan	Working on ADCS I2C function call. Make a simple manual for ADCS I2C communication.	5	13	no

Plans for Coming Week

- OBC: Dive into FreeRTOS and HAL sdk code. Get hello world over UART / mess around with LCD screen.
- ADCS: Understand the code-base of OBC_SDK for communicating over UART and I2C based on the libraries and code they have provided(Already worked on it for 2 days, but can't make progress).
- SDR: Need direction for further development. Will attend General Meeting.
- EPS: Try to communicate software version over I2C with disco board.
- Ground Station: Finish up pinging ISS and learn more about HRD functionality
- UHF Antenna:
- Boost Board: Finalize schematic, test in KiCad??? Not sure after finishing the design.
- LNA Board: