Ground Station

End-of-Semester Meeting, Fall 2023

18/12/2023   Carl Henriksson, Emil Wesolowski. KTH, Stockholm, Sweden

Evaluation of semester goals:

✓ Learn and get accustomed to GS subsystems.

✓ Preparation of Comms Deployment Test with integrated satellite.

✗ Testing of the backup GS.

✗ GS tracking system test with deployed satellites.

✓ General maintenance.

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Learn and get accustomed to GS subsystems:

- Complete restart of the entire GS.

- Antenna rotator controller and calibration.

- Using the ISIS transceiver.

- Working with Elveti.

- Introduced to the flatsat.

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What is the Comms & Deployment test?

A simulation of the first stages of flight.

- Deployment of antenna systems (AntS) and solar panel systems.

- Establishing communication with the ground station.

- Synchronisation of satellite real time clock (RTC).

- Testing of stored and real-time telecommands.

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Preparation of Comms Deployment test:

- Written documentation for rehearsal test.

- Introduction to the flatsat and Elveti.

  - Building OBCSW.

  - Checking HK.

  - Sending TCs.

  - Receiving TMs.

- Introduction to the mission plan uploader (MPU).

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Additional points:

- Valentina TLE-fetch bug fixed (by Emil Söderman) but yet to be tested.

- Server power usage has been measured for better UPS capacity estimation.

- Inconsistencies in GS operations document fixed.

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Overview of upcoming work:

- Perform the rehearsal Comms Deployment tests.

- Write documentation for the final Comms Deployment tests.

- Long term satellite tracking using Valentina.

  - Tracking of NOAA-19 weather satellite.

  - Transmits at VHF-band.

  - APT frame transmission → decoded in gnuradio.

  - Each frame holds a real-time image of earth.

- Begin setup of the backup ground station.

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