Nakuja Project

Edwin Mwiti

Week 5 report

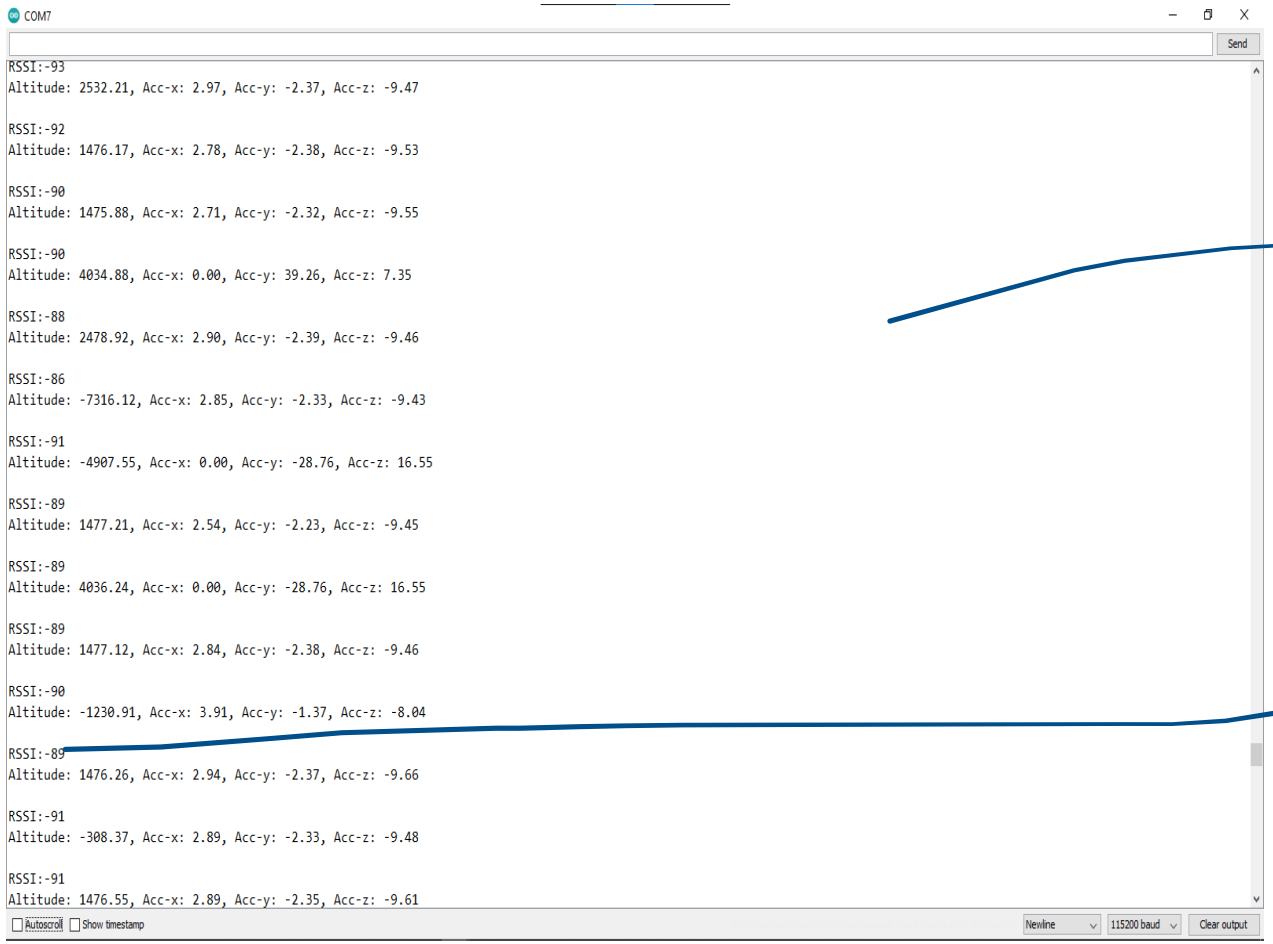
Tasks this week

- Avionics data transmission test
- Flight computer programming and documentation
- Research on Patch antennas

Avionics communication test with Drone

- We conducted tests on avionics data transmission with GEOid drone.
- There was interference
- Drone -> EMI interference
- BMP and MPU6050 sensor signals were disrupted
- Very low data rates during transmission while on ground
- Test did not give us the expected results

- We recommend using Non-EMI test kit like a water rocket to get the right data



Some data received on ground
But none during flight

Very low RSSI Wifi signal values
Better antenna power needed

Flight computer programming

- Ongoing programming of flight computer
- Restructuring code as a state machine
- Every interval is a state. E.g

State	Description	Waiting for event
0	Launch	Waiting for lift-off
1	Lift-off detected	Waiting for apogee

- This will help in scaling the software for future versions
- Observation: need to have a means of restarting the flight computer remotely

Flight software documentation

- With every stage of flight software, we have been coming up with solid documentation
- Will ensure future coding will not be misinformed
- Help in external parties understanding the code

Research on patch antenna

- We recommended using patch antenna on the rocket for improved communication
- Literature shows we need to construct a microstrip antenna on board the rocket
- We intend to wrap aluminum foil around the rocket in circular patches to increase transmission strength

Tasks this week

- Complete flight computer software
- Finish avionics bay design
- Flight software test
- GSM communication test
- Code documentation completion