Week 3 Team Report

Presented by George Bange

Completed Tasks

[#Issue 142]: Reverse protection circuit on PDB

[#Issue 132]: Impedance matching circuit on LoRa module

[#Issue 129]: Impedance matching circuit on ESP

[#Issue 130]: Review of RF power amplifier

[#Issue 34]: Finding a cheaper and reliable pressure sensor

[#Issue 143]: Test-Flight PCB

[#Issue 144]: Power Budget

[#Issue 3]: Research on ground station dashboard

[#Issue 50]: Design architecture for ground station

Completed Tasks

[#Issue 2]: Research on ground station

[#Issue 31]: Research on apogee detection logic

[#Issue 40]: Test 2 reads over i2c

[#Issue 42]: Test speed and bandwidth of i2c and SPI

[#Issue 41]: Test 2 writes over SPI

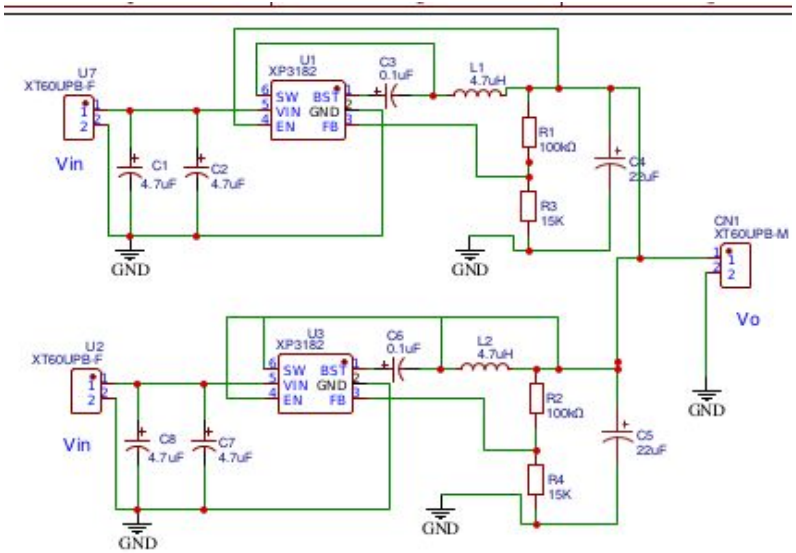
[#Issue 131]: Review SD card circuit

[#Issue 144]: Power budget

[#Issue 118]: Design architecture for ground station and test stand

[#Issue 1]: Research on data transmission

REVISION OF PDB



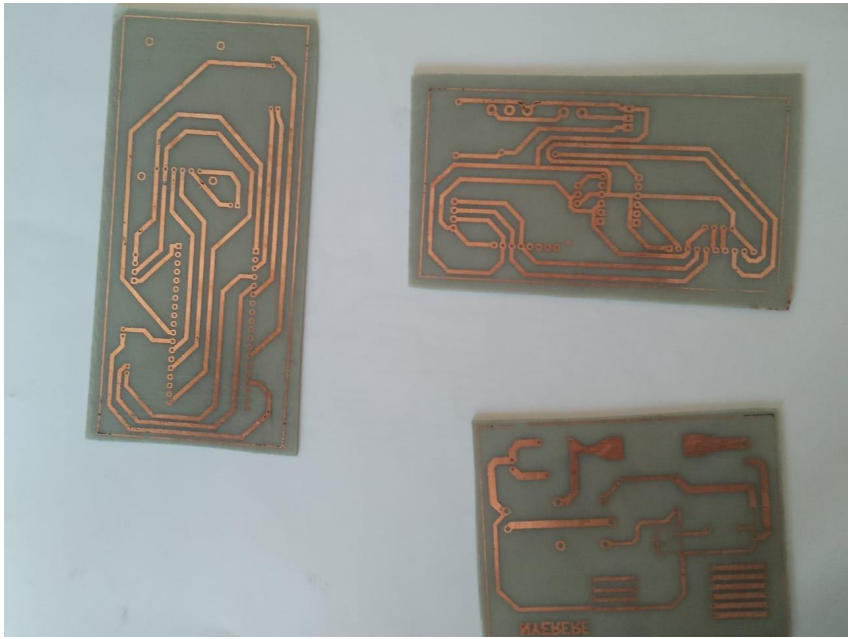
PDB supplies telemetry, avionics and flight control

Goal was to achieve 4A total supply current

Introduced new ICs (XP3182) with promise current 2A each

Previous IC gave current barely 1A

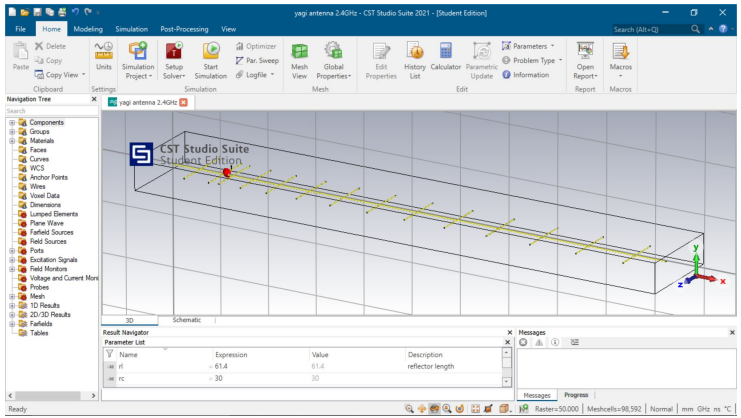
PREPARATION OF TEST-FLIGHT BOARDS

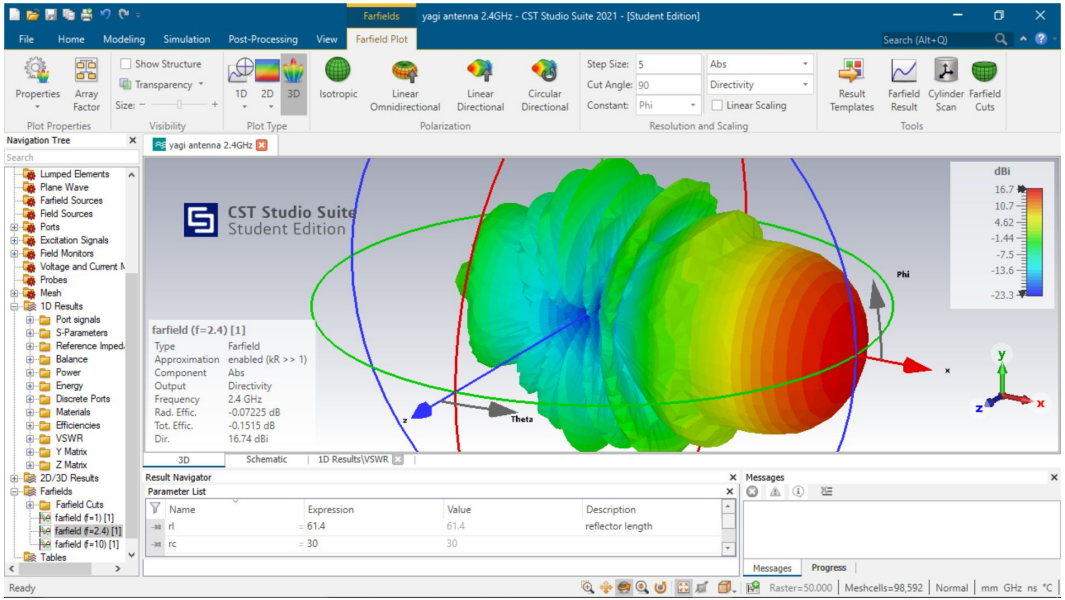


Drilling will happen today

Improvement of Yaggi-Udda Array

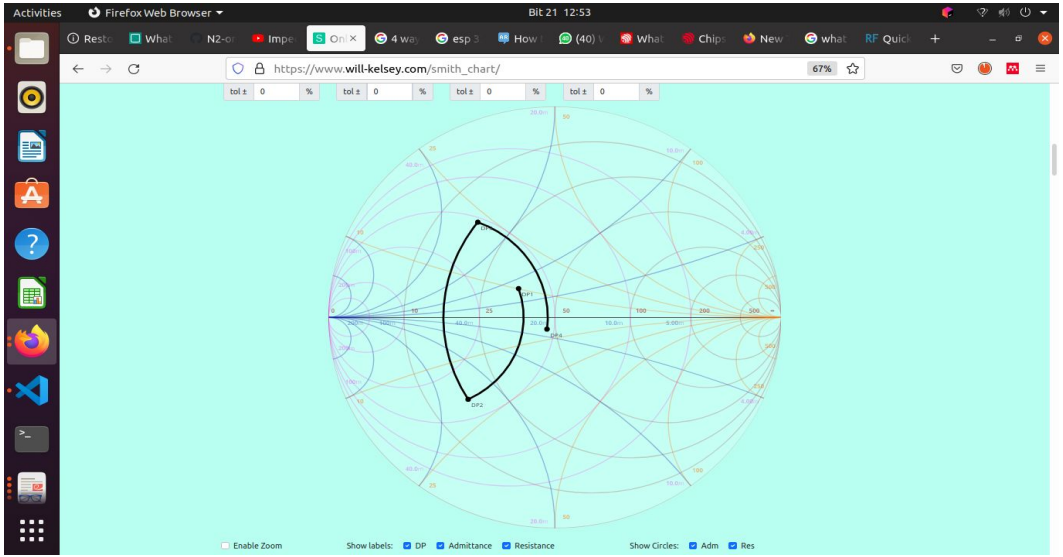
Introduction of a boom yielded better simulation results



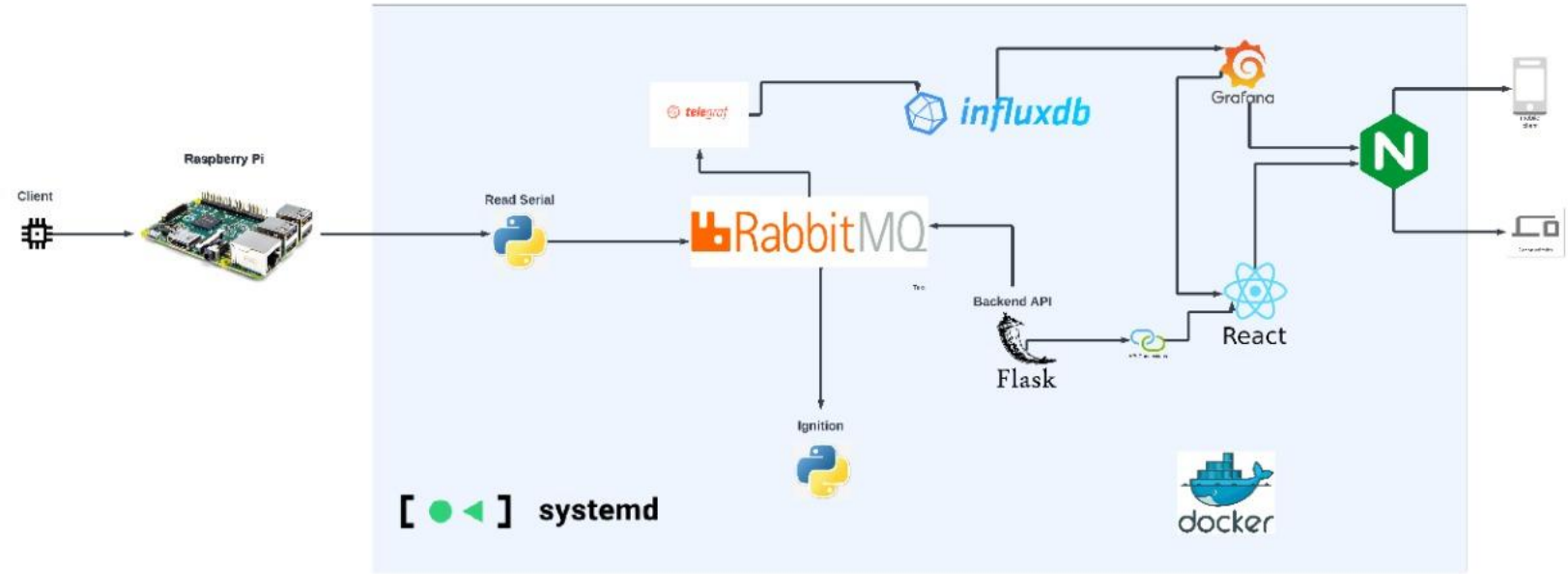


Matching Circuit for ESP chips

A matched circuit to improve RF performance. Input impedance (35 + j10 Ohms) matched to 50 Ohms

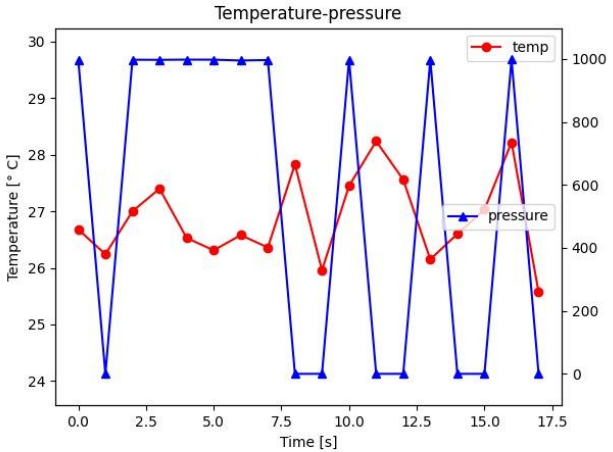


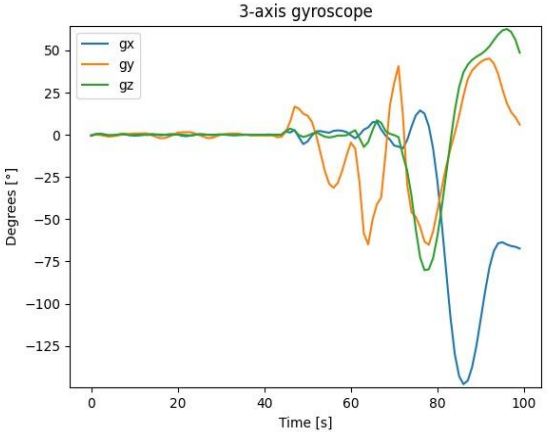
Ground Station Flow Diagram

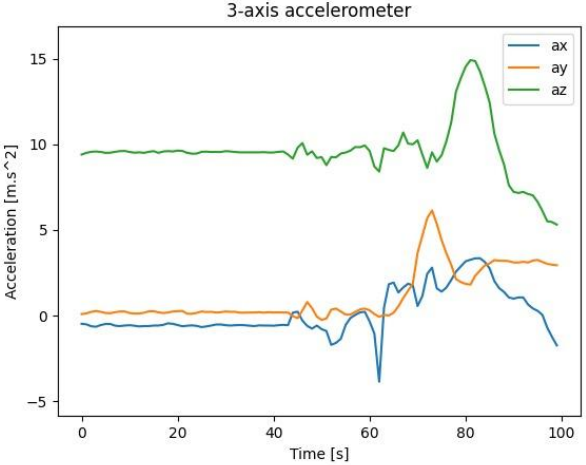


Ground Station Frontend

Graphs for sensor output data (MPU and BMP) to be put on base station website

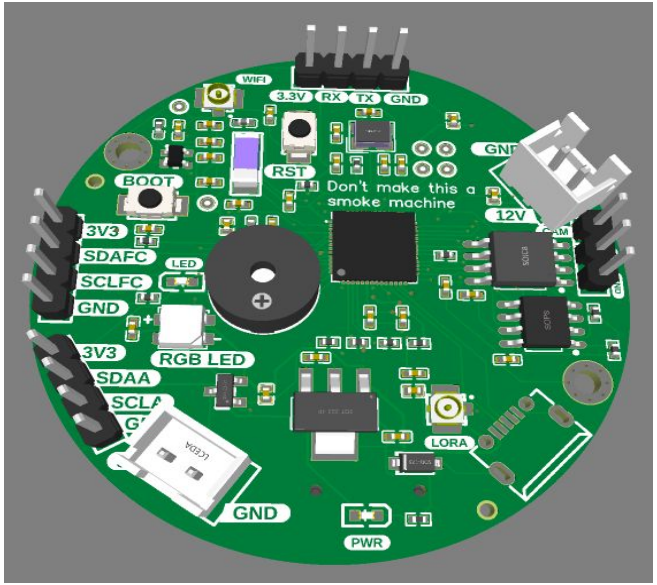


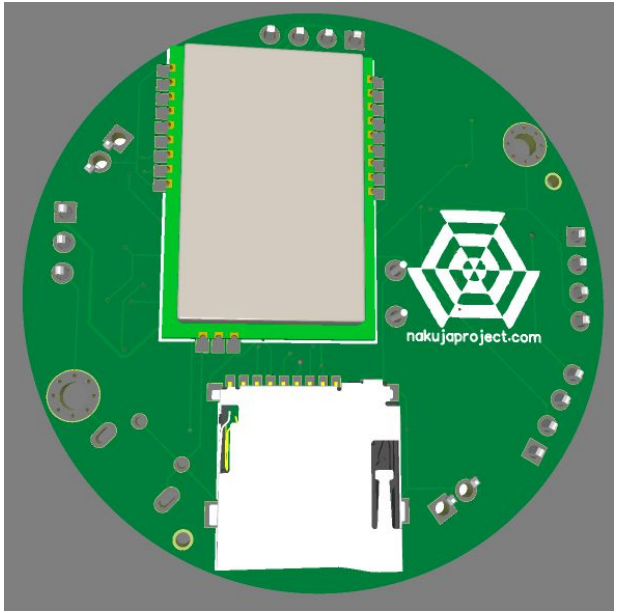




Routing of Telemetry PCB

Updates made to PCB and re-routing was done





Review of BMP sensor

A new BMP(DPS310) was picked

It is cheaper than the old one with relatively good features

Most bmp were out of stock

Next task is to review the MPU sensor

Flight Control and avionics to share BMP and MPU sensors

TODO Tasks

- [#Issue 145]: Order Telemetry Boards
- [#Issue 146]: Write Test Flight Code
- [#Issue 147]: Finish on Test stand backend services
- [#Issue 148]: Print Yaggi Udda Frame
- [#Issue 149]: Test avionics Systems on Test Flight
- [#Issue 150]: Test Flight

Tasks This Week

1. Building, testing and tuning antennas at Pausti
2. Putting together test-flight board
3. Testing of PDB to verify currents
4. Capturing ESP32 camera video and storing on SD card
5. Integration of standalone fpv camera with ESP
6. Altitude and displacement graphs to be included in frontend

Challenges Faced

- Where to obtain RF power splitter/combiner
- Missing components - HDMI, HDMI to mini HDMI and capture card. To be ordered