NAKUJA PROJECT
N3
RECOVERY TEAM.
8th FEBRUARY 2023.

Last week’s Objectives.

- Wi-Fi Range Test #25(Avionics)
- Ejection Charge tests #16(Recovery)
- Wrap around patch antenna Research and Design #20(Recovery)
- MQTT connection between Ground and Flight Computers via Mosquitto broker.(Communication)

1. Wi-Fi range Tests.

- These were tests to be done using the previous Ground Antenna in order to know the maximum range of connectivity.
- Unfortunately, this was not done since the team did not have access to Dr. Aoki’s office where the antenna was stored and thus hampering progress on this issue.

2.MQTT Connection between Flight Computer and Ground Computer.

- We managed to generate the MQTT code for connecting both computers.
- We also managed to send sensor data via the Mosquitto broker from the flight Computer to A local server.
- Below is the link to the Github repo with the code
- https://github.com/nakujaproject/FlightSoftware-N3/tree/telemetry/TelemetryN3

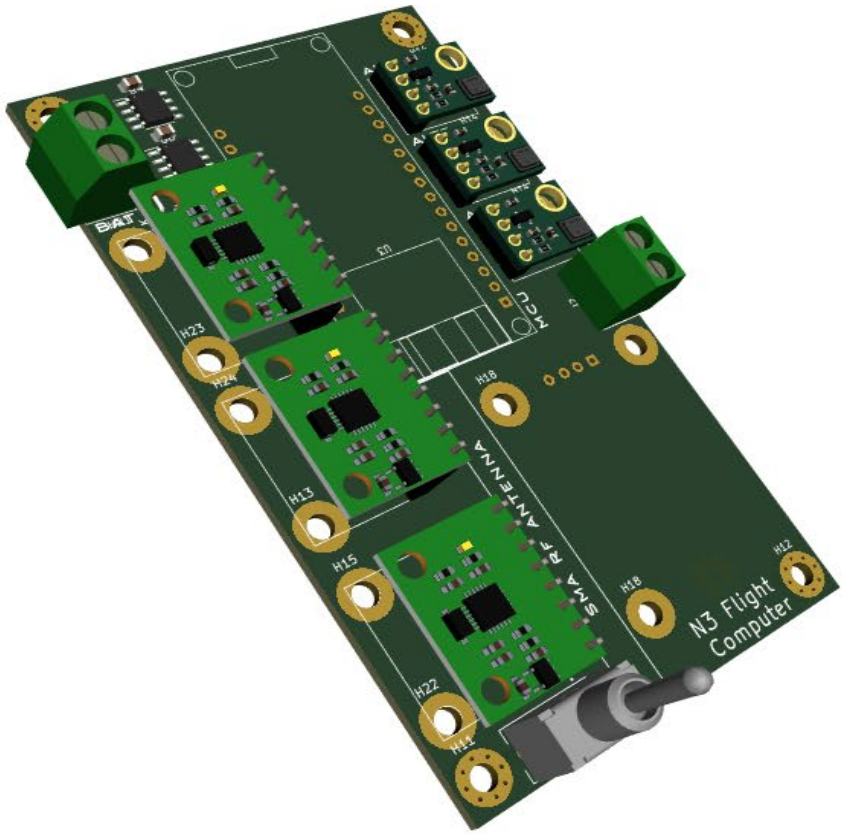
3. Wrap Around Patch Antenna Research and Design.

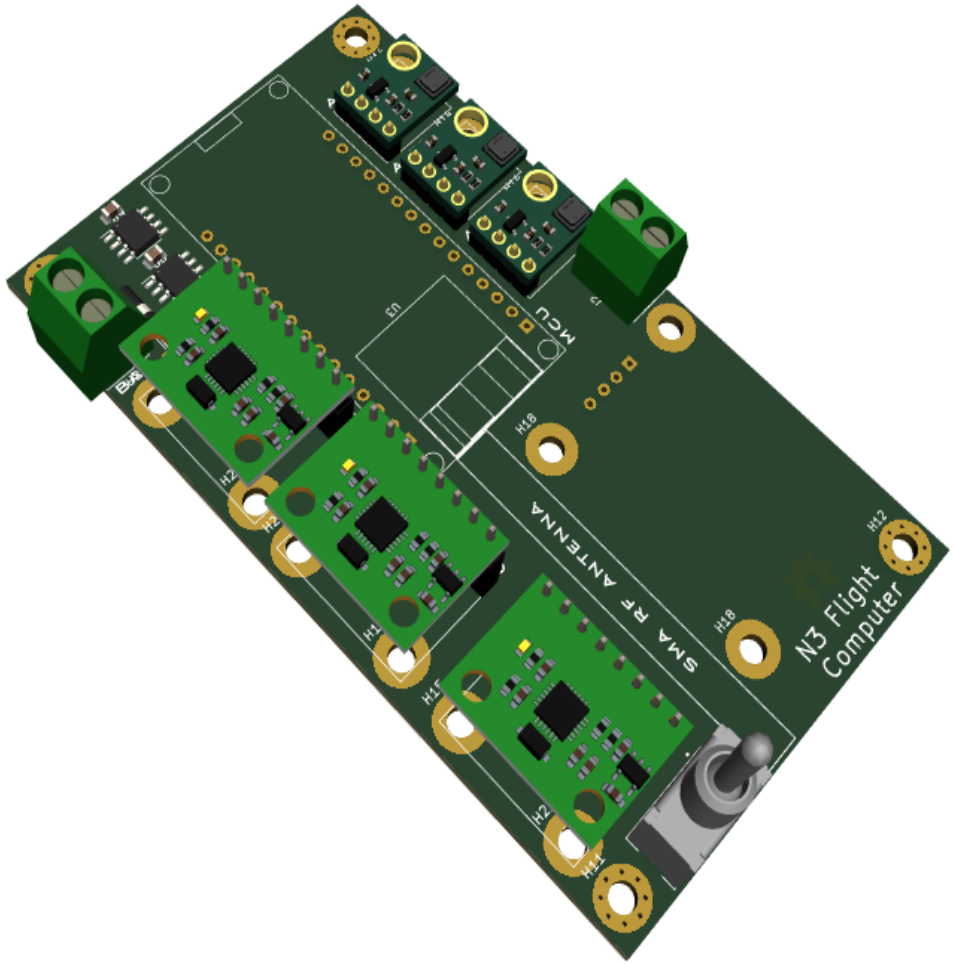
- The design f the wrap around patch antenna was to be done immediately after the Wi-Fi range tests were carried out.
- However, this was not the case as the team could not access the ground antenna.
- With the access to the ground antenna, the team will be able to complete this subtask and others as well.

4.Flight Computer Design View.

- We discussed redundancy scheme to be used for maximum reliability. We will have 3 Gyroscopes and 3 Altimeters, Then use the Median Value Select Algorithm to always make sure we have the right data being processed. Median value select is an algorithm that always picks the middle of three values that are within the needed range, e.g +- 1. In case one sensor fails, the rest can still function as required.

4. Flight computer design.

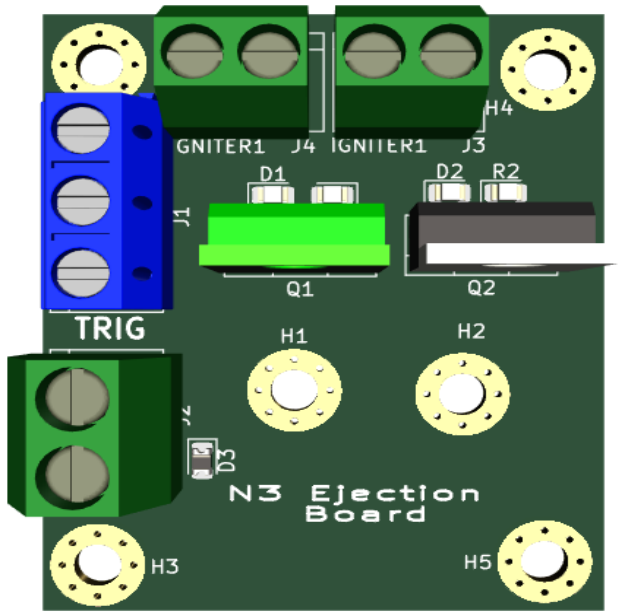


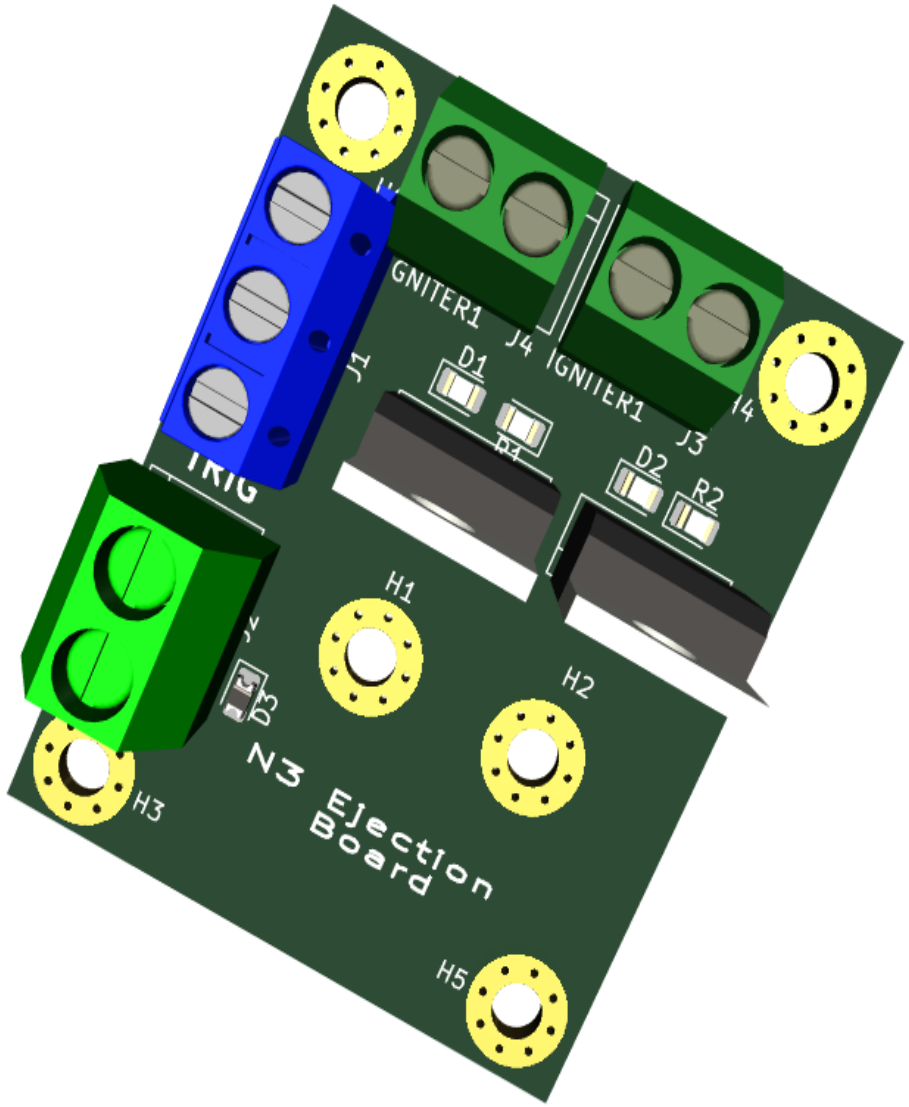

MCU
SMA RF ANTENNA
N3 Flight
Computer

5.Ejection Computer.

- To ensure ejection does not fail, we have added 2 MOSFETs, which will be used to trigger the piston once the ejection altitude is reached. This is so that if one channel fails, the other will eject.
- Of importance is, at least one will send the ejection signal.

5. Ejection Computer Design.




IGNITER1
J4
IGNITER1
J3
D1
D2
R2
TRIG
H1
H2
H3
H5
D3
N3 Ejection Board

Next week’s objectives.

- Rocket Tracking using GPS. #6(Avionics)
- Manual Override System Design. #15(Recovery)
- Wi-Fi range tests #25(Communication)
- Wrap around patch antenna research and design #20(Recovery)

終わり

END