

Nakuja Project

Week 6 Progress Report

Edwin Mwiti

Junn Hope

Tasks this week

- ▶ [#] : Test Payload
- ▶ [#Issue 83] : Power Management

[#] : Test Payload

- ▶ We performed payload tests on Friday, 25th Feb.
- ▶ Signal strength was also severely affected as we got RSSI values as low as -88, which was below our estimated range of -50 to -70
- ▶ The test brought to light factors we had not looked into:
 - ▶ 1) Electromagnetic interference - The data received from the sensors gave negative result, a result of the interference. The drone rotors motion caused an electromagnetic field which affected the sensors operation-particularly the BMP 180.
 - ▶ 2) signal interference - the RF signals from the drone interfered with the RF signals within our Wi-Fi network.

[#] : Test Payload



A screenshot of a serial terminal window titled 'COM7'. The window displays a series of sensor readings, each consisting of an RSSI value and three acceleration values (Acc-x, Acc-y, Acc-z). The readings are as follows:

RSSI	Altitude	Acc-x	Acc-y	Acc-z
-86	-7316.12	2.85	-2.33	-9.43
-91	-4907.55	0.00	-28.76	16.55
-89	1477.21	2.54	-2.23	-9.45
-89	4036.24	0.00	-28.76	16.55
-89	1477.12	2.84	-2.38	-9.46
-90	-1230.91	3.91	-1.37	-8.04
-89	1476.26	2.94	-2.37	-9.66
-91	-308.37	2.89	-2.33	-9.48
-91	1476.55	2.89	-2.35	-9.61
-90	1475.31	2.86	-2.33	-9.35
-88				

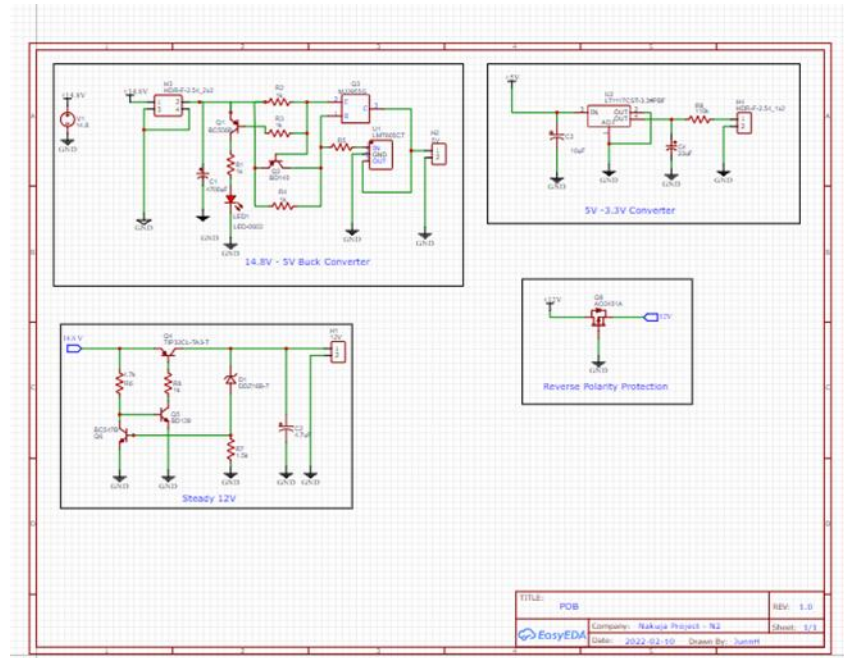
Following the last reading, the terminal shows an error message: 'Error code: -5'. Below this, there is a timestamp 'ets Jun 8 2016 00:22:57' and a block of system information including reset and boot details, configuration parameters (configsp, clk_drv, q_drv, d_drv, cs0_drv, hd_drv, wp_drv), mode, clock divider, and load addresses/lengths.

```
rst:0x1 (POWERON_RESET),boot:0x13 (SPI_FAST_FLASH_BOOT)
configsp: 0, SPIWP:0xee
clk_drv:0x00,q_drv:0x00,d_drv:0x00,cs0_drv:0x00,hd_drv:0x00,wp_drv:0x00
mode:DIO, clock div:1
load:0x3fff0018,len:4
load:0x3fff001c,len:1044
```

The terminal window has a 'Send' button in the top right corner and checkboxes for 'Autoscroll' and 'Show timestamp' at the bottom left. The baud rate is set to '115200 baud' and there is a 'Clear output' button at the bottom right.

[#Issue 83] : Power Management

- The design of the power distribution board is done and is currently under review



Tasks this week

- ▶ [#Issue 26] : Improve on Kalman filter performance
- ▶ [#Issue 103] : Build Wi-Fi Amplifier
- ▶ [#Issue 34] : Programming the Flight Computer
- ▶ [#Issue 18] : Launch pad design