

Appendix D: Design Completion Form – Team Ganges

| Component of system/Milestone | Supervisor | Time/Date | Comments (all/part/none working; protoboard/constructed) |
|--|------------|-----------|---|
| UAV takes off for a short time with stable flight | | | 10 seconds of stable flight @ 20cm |
| UAV sustains stable flight and lands in a small target area | | | Within a 40 x 40cm area |
| Complete system is integrated and can lift a cargo of ____ g | | | Mass without cargo ____ g, Dimensions without cargo ____ cm |
| Power management of complete UAV | | | ____ mA , at ____ V = ____ mW. Batteries should last for ____ hrs. |
| Read angles from gyro over I2C | | | 100 samples/s |
| Correct PWM outputs from Arduino over four channels | | | 10% max duty cycle, 50Hz, Check with scope |
| PID testing with servo and gyro input | | | Stable for -70 -> 70 deg |
| Transmit instruction packets from Il Matto to Arduino | | | @ 115200 baud 100 packets per second |
| Calibrate the ESCs so they power up consistently | | | Verify using scope |
| ESCs interfaced with Arduino to independently control motors | | | |
| Transmitting data from Il Matto using RFM12b-S2 | | | |
| Receive transmission on Il Matto from RFM12b-S2 | | | ~100 packets per second |
| Interface one Il Matto with 2 transceivers for bi-directional RF comms | | | |
| Achieve two-way communications between two Il Mattos | | | On board receive at 100 packets/s with transmission back at 1 packet/s |
| 4 10-Bit ADC Potentiometer readings from the controller to the Il Matto. | | | |
| UI from PC sends K values to the ground comms Il Matto | | | |
| PID k values transferred from the PC to the drone via the RF comms | | | PC -> (UART) -> Base Il Matto -> (SPI) -> Radio link -> (SPI) -> Drone Il Matto |

Milestones finalised by supervisor: Signed Date

Prototype hardware handed over to: Signed Date

Other items returned to Lab support hatch and checked by: Signed Date

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| Receive Log Data from Arduino on Il Matto | | | 1 log/s |
| Write data from Il Matto to SD Card/ Read Data from SD card in computer | | | |
| Collect gyro data and Battery level and write to SD card via Il Matto | | | |
| Read battery voltage into Il Matto | | | 11.1V -> 3.3V using Potential Divider, into 10-bit ADC channel |
| Actuate Servo using PWM signal | | | 50Hz with 1-2ms pulse |
| Servo controlled by ground control switches | | | Toggle between two positions |
| Verify operation of Power Distribution Board | | | 11.1V to each ESC, required power to all on-board microcontrollers |
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