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| Test Writer | | Kyle Harlow | | | | | |
| Test Case Name | | Normal Operations | | | | Test ID# | C-AT-2 |
| Description | | Verify Control Board can accept reference data from RoboSub Main computer, and adjust motor outputs accordingly under normal operations | | | | Type | Black Box |
| Test Information | | | | | | | |
| Name of Tester | |  | | | | Date |  |
| Hardware Version | |  | | | | Time |  |
| Setup | | Slot Controls Board into backplane control slot. Slot merge board (\*\*with kill switch inactive) into merge slot on the backplane and connect charged 14.8V LiPo batterie into merge board at any battery connector. Slot power board into power slot on the backplane. Plug USB connector from CPU into control board USB socket. Using the ST-LINK Utility, load code as in test C-AT-1 onto Board via JTAG. On the main computer plug in IMU, begin odometry ROS nodes. Set IMU on level surface for 0 reference. \*\*Set Kill switch to active. Set imu on guide line paper. | | | | | |
| Step | Action | Expected Results | Pass | Fail | N/A | Comments | |
| 1 | Reset Board using reset button | PWM pulse width values are 1.5 +- 0.02ms for all 8 motors  \*\*All 8 motors give audible startup sound |  |  |  |  | |
| 2 | Begin control outputs from main computer | PWM pulse width remains unchanged from step 2.  \*\*Motors do not turn. |  |  |  |  | |
| 3 | Tilt IMU to left simulate roll | PWM pulse width of 4 stability motors reacts to change by increasing or decreasing  \*\*Motor thrust on left motors increase, and right motors decrease/reverse |  |  |  |  | |
| 4 | Reset IMU to 0 reference point. | PWM pulse width of motor values is 1.5 +- 0.02ms for 4 stability motors  \*\*All Motors thrusts are 0. |  |  |  |  | |
| 5 | Repeat steps 4-5 tilting forward to simulate pitch | PWM pulse width fours stability motors reacts and returns to 1.5+- 0.02ms  \*\*Motor thrust on front motors increase, and back motors decrease/reverse then return to 0 |  |  |  |  | |
| 6 | Repeat steps 4-5 rotating the IMU to simulate yaw | PWM pulse width of yaw motors reacts and returns to 1.5+- 0.02ms  \*\*Motor thrust of front strafe motor increases and back motor decreases then return to 0. |  |  |  |  | |
| \*\*7 | Set forward velocity reference positive | PWM pulse width of Video Ray motors increases  \*\*Motor thrust of Video Ray motors increases |  |  |  |  | |
| \*\*8 | Set forward velocity reference 0 | PWM pulse width of Video Ray motors resets to 1.5+-0.02ms  \*\*Motor thrust of Video Ray motors resets to 0 |  |  |  |  | |
| \*\*9 | Repeat steps 8-9 with strafe motors | PWM pulse width of strafe motors increases (\*\*\*decreases) and resets to 1.5+-0.02ms  \*\*Motor thrust of Video Ray motors increases and resets to 0 |  |  |  |  | |
| \*\*10 | Repeat steps 8-9 with depth motors | PWM pulse width of depth motors increases and resets to 1.5+-0.02ms  \*\*Motor thrust of depth motors increases and rests to 0 |  |  |  |  | |
| Overall Results | | |  |  |  |  | |

\*As of test writing Robosub Software will accept data from an imu, and output odometry data, and reference data. Test is limited to simulated motion/references.

\*\* Optional, Tests marked with double asterisk are dependent on level or RoboSub completion, must be completed in an aquatic environment.

\*\*\*Depends on orientation of motors from RoboSub