1. Quadplane in hovering mode

Manual mode, target altitude at 150cm, throttle stick at zero,

* 1. Telemetry

**Build with TestGains flag activated**

Using throttle stick, check that telemetry throttle output reacts correctly in real time

* 1. Motor control

**Build with TestGains flag activated**

Switch to manual mode. Set throttle stick at around ¼. Then using the roll and pitch stick, check the motor response :

* Roll order to the right : right motors should slow down, left motors should accelerate
* Forward pitch order : front engines should slow down, rear engines should accelerate
  1. Altitude control

**Build with TestGains and TestAltitude flags activated**

* + 1. Check control of target altitude

Using telemetry, check that the Tx right potentiometer correctly commands the target altitude. Check that the expected minimum and maximum target altitudes are obtained

* + 1. Switch to stabilized mode. Apply the take-off procedure until stabilized altitude control is engaged. Then verify that :

1. When plane altitude is equal to target altitude, the throttle should be

throttle\_offset throttle\_offset = 2\*SERVORANGE\*AircraftMass / (100 \* MaxThrust)

For AircraftMass = 1250g ; MaxThrust = 40N ; throttle = 625

1. Modify the target altitude to obtain target\_altitude – plane\_altitude = 50cm. Then check that throttle = throttle\_offset + 2 \* AircraftMass / (100 \* MaxThrust) \* zkp \* vzkp \* acczkp \* 50

For zkp = 9 ; vzkp = 4.8 ; acczkp = 0.6, then throttle = throttle\_offset + 810 = 1635

* + 1. Altitude sensor failure

Check that sonar altitude is close to lidar altitude.

Mask the lidar with your hand. Check that the altitude is now determined by the sonar and that the altitude and the throttle behave smoothly during the transition.

* 1. Failsafe

**Build without Test\* flags**

Either manual, stabilized or GPS mode is engaged, the failsafe mode should be activated in the following cases :

|  |  |  |
| --- | --- | --- |
|  | Low battery | Radio off |
| Test 1 | 1 | 0 |
| Test 2 | 0 | 1 |
| Test3 | 1 | 1 |

* 1. GPS mode