

QDrone 2 – Hardware Test

Height

What to expect in the Height Tests?

QDrone 2 has a VL53L1X downward facing time-of-flight sensor that will be able to measure the height of the drone. This document will guide you through running the tests and confirm the results.

Time-Of-Flight Sensor

QDrone 2 has a time-of-flight sensor on the underside of the drone (figure 1), this is able to measure the distance to the nearest object, which in most cases will be the floor.

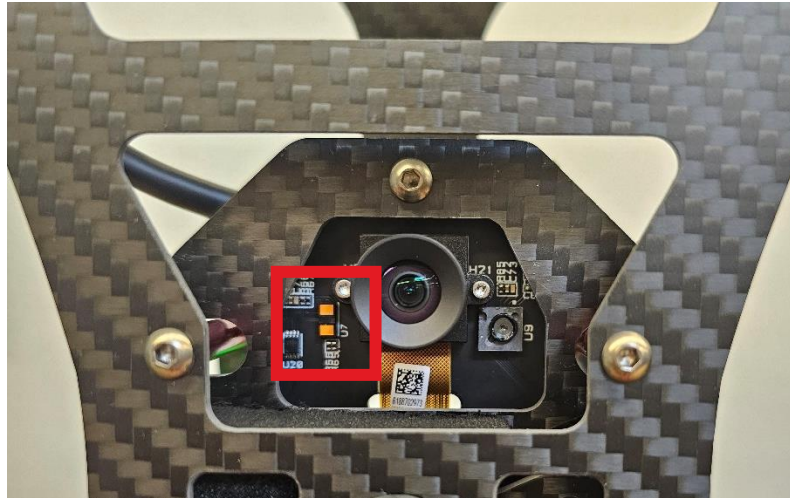


Figure 1. Location of time-of-flight sensor

Height Test – MATLAB/Simulink

Open the QD2_height_2021a.slx file from the same folder containing this file.

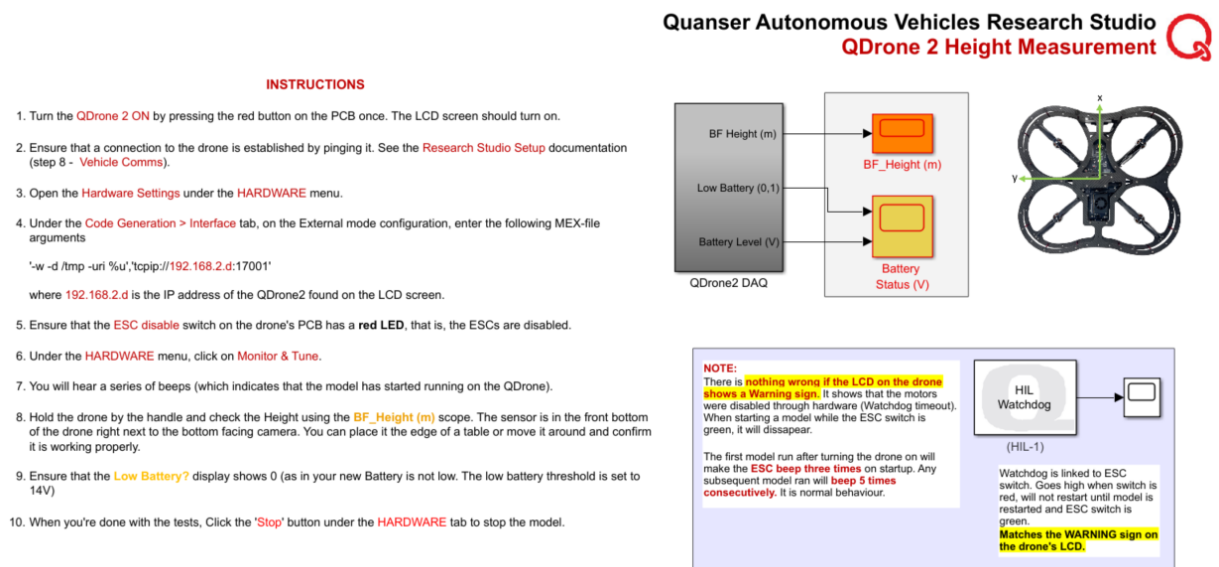


Figure 2. Height Measurement model

Place the drone at the edge of a table so that the sensor can see the floor and not only the table it is placed on. Follow the instructions on the left of the the Simulink model (figure 2). Look at the output of the BF_Height measurement scope.

It should look like the output in figure 3. You can confirm or validate the output by using a measuring tape (observe figure 3 and how both measurements show a height of approximately 80 cm from the ground). If the measurement is not correct, make sure there are no reflective surfaces around the floor that could affect the reading or that the sensor is not covered by anything.

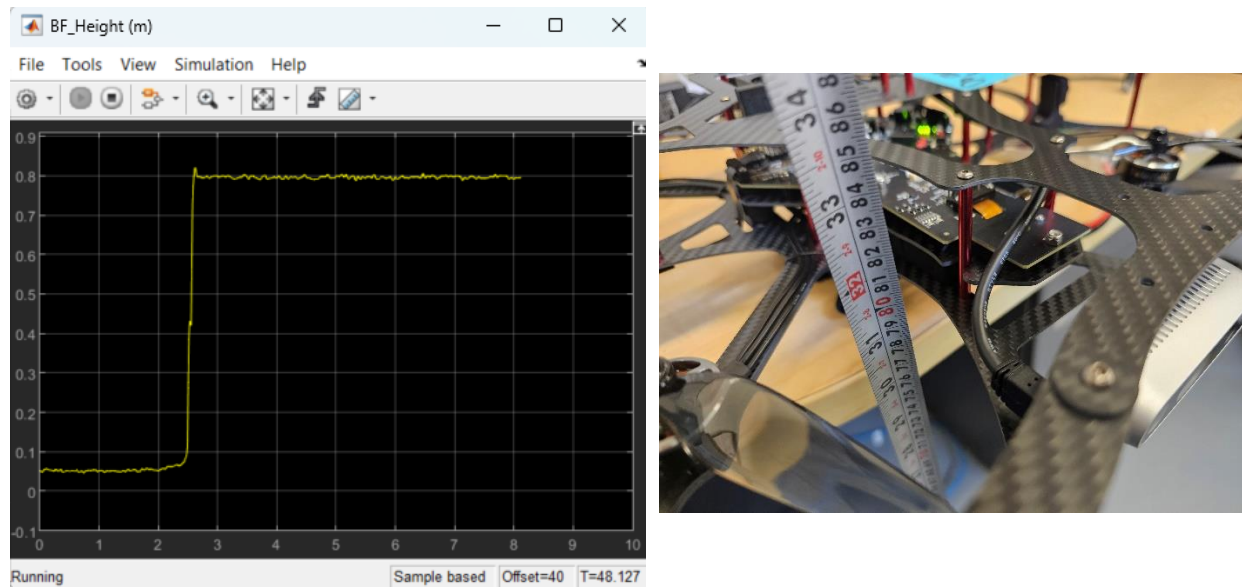


Figure 3. Height scope and height validation