4 Testing

Testing is an extremely important component of most projects, whether it involves a circuit, a process, power system, or software.

The testing plan should connect the requirements and the design to the adopting test strategy and instruments. In this overarching introduction, given an overview of the testing strategy. Emphasize any unique challenges to testing for your system/design.

4.1 UNIT TESTING

What units are being tested? How? Tools?

Quadcopter software:

- Any units inside of the quadcopter coding can be tested, this will include a variety of functions. An example would be a flying algorithm. This can be tested by making a testbench for the function and running it.

Testing station:

- The unit testing for this part of the project would pertain to making sure we are getting correct data from the sensors. This can be done by measuring the values vs expected values of what the sensor is measuring.

GUI Base station:

- The unit testing for the GUI will be for it to display the proper information, this may include some calculations which would also be a part of the unit test. These would be tested by writing a testbench and making sure the values match the expected

4.2 INTERFACE TESTING

What are the interfaces in your design? Discuss how the composition of two or more units (interfaces) are being tested. Tools?

N/A (Does not apply)

4.3 INTEGRATION TESTING

What are the critical integration paths in your design? Justification for criticality may come from your requirements. How will they be tested? Tools?

The integration in our design will be between the GUI ground control and the test stand and between the quad copter and the GUI ground control . We can test the interfacing with the GUI ground control and test stand by sending data from the test stand to the GUI and making sure it gets what was actually sent. We can test the communication between the quad copter and the GUI by sending a command with the GUI and checking if the quadcopter responds accordingly.

4.4 System Testing

Describe system level testing strategy. What set of unit tests, interface tests, and integration tests suffice for system level testing? This should be closely tied to the requirements. Tools?

The System we are testing in our design is from the base station to the GUI then to the quadcopter. This can be tested by first sending a command from the GUI to the quadcopter where then the Test station sensors will record data from the movements of the quadcopter then send that data to the GUI.

4.5 Regression Testing

How are you ensuring that any new additions do not break the old functionality? What implemented critical features do you need to ensure do not break? Is it driven by requirements? Tools?

When creating new additions we are using version control in conjunction with testing to ensure that all bugs and issues are resolved before the master branch is updated.

4.6 Acceptance Testing

How will you demonstrate that the design requirements, both functional and non-functional are being met? How would you involve your client in the acceptance testing?

We can demonstrate our design meets the requirements to our client by giving an in person demonstration of our complete project. We would involve our client, as well as the TAs, in this by guiding them through how our solution works first by individually showing them each part then how they all work together.

4.7 Security Testing (if applicable)

N/A

4.8 Results

What are the results of your testing? How do they ensure compliance with the requirements? Include figures and tables to explain your testing process better. A summary narrative concluding that your design is as intended is useful.

The results of our testing will show that each part of the design works as stated in the requirements. They shall show compliance with the requirements if the client is satisfied with our design. If our design meets all of the requirements as intended then it will be useful.