Testing plan

Group 8

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| # | Date | Subject | Contents | Tested by |
| 1 | January 12 | 48V Power supply  GFCI | Test the current flowing from 120V AC to 48V power supply and the current flowing from 48V power supply to the heater. Test the GFCI. | Tianrun |
| 2 | January 12 | Water pump  Capacitive Soil moisture sensor | Test the operate current and max flow rate.  Test the output current and voltage | Fuyang Yan |
| 3 | January 12 | Illumination subsystem | Test every port of illumination system is work, and the illuminance of LED can changed with received different environment data | Zhelin |
| 4 | January 12 | Lifting motor test | Set up PWM from between 600 and 800. Motor is powered by 12V DC power supply. The LED rises to 3cm away from the top and stops rising, and it stops falling at 15cm away from the plant | Hanchen |
| 5 | January 18 | Heater and cooling wiring | Use a switch to operate/stop the heating and cooling subsystem. Ensure the hardware part works properly. | Tianrun |
| 6 | January 18 | Distance sensor | Code and Test HCSR04 and make sure it can get distance data and display it to LCD | Zhelin |
| 7 | January 20 | Humidity measurement function and watering function | Using a soil moisture sensor to measure the  Soil humidity and control a water pump. | Fuyang Yan |
| 8 | January 21 | Illumination part test | Running code to real equipment. Using illumination sensor get outside light data then transfer data to microcontroller. Microcontroller use PWM control LED illuminance based on reading. | Zhelin |
| 9 | January 25 | 20\* 4 LCD screen | A soil moisture value is shown on an LCD screen. | Fuyang Yan |
| 10 | January 28 | Humidity subsystem | Test the whole humidity subsystem | Fuyang Yan |
| 11 | January 30 | Heater and cooling PWM function and code integration | Add the PWM function for heater and cooling functions. Write an algorithm on ADC to correct the output value. Integrate the subsystem code into the main system code | Zhelin  Tianrun |
| 12 | January 31 | Temperature subsystem current and power consumption tests | When heater is fully operate, the peak power consumption is 253kwh. Maximum current is 9.8A | Tianrun |
| 13 | February 2 | Cooling Fan | When given to 80% PWM, the fan consumes more power than 100% PWM. Doug says this is because the fan is a brush DC motor fan, which operates differently to PWM fan. He also suggest us to adjust the different PWM ratings avoid using 80% PWM, or replace it with a new fan with PWM ports. | Tianrun Fan |
| 14 | February 4 | Keyboard | Interaction with the local control of the greenhouse management system through a keyboard | Fuyang Yan |
| 15 | February 7 | Server and database test | Test website on the published website  Connect to database on the Raspberry Pi | Hanchen Wang |
| 16 | February 10 | Code integration | Code and Test HCSR04 and make sure it can get distance data and display it to LCD | Zhelin |
| 17 | February 14 | Position part test | Using two distance sensors get left and right distance data from led to top of greenhouse. Control the led to wanted altitude and make it balance. | Zhelin & Hanchen |
| 18 | February 21 | Temperature sub-system local control test | Test using keyboard to set the target temperature for the greenhouse. observe the heater and cooling fan running condition with different temperature settings | Tianrun |
| 19 | March 1 | Data transmission | Receiving the data from Raspberry Pi to STM32  Getting data from Raspberry Pi and control local hardware | Fuyang Yan |
| 20 | March 4 | Website Page | Show the current temperature, humidity, and illumination value from the STM32 on the website page | Hanchen Wang |
| 21 | March 4 | Watering function test | Insert two soil moisture sensors into the soil and test them work or not.  Test motor run forward and backward | Fuyang Yan |
| 22 | March 4 | System level test 1-temperature part | First test for temperature function after code and hardware integration  Result: Mosfet was burned  Solution: set PWM to a lower value | Tianrun |
| 23 | March 15 | Data receiving test | Receiving the data from Raspberry Pi to STM32  Getting data from Raspberry Pi and control local hardware | Fuyang Yan |
| 24 | March 15 | code integration and Debug | Assemble everybody’s code together and make it running on real equipment. Fix some code conflict bug, and optimize code. | Zhelin & Fuyang |
| 25 | March 16 | Refresh Page | Using the AJAX and JSON to get data from the database and using AJAX and JS to realize page refreshing at 0.5 second | Hanchen Wang |
| 26 | March 16 | Local control code build | Build code on illumination control, position control, and temperature control. Making user can use local control panel (keypad and LCD screen) to control the system running. | Zhelin |
| 27 | March 19 | System level test 2- temperature part | Test the system power consumption  Heater run 100% PWM, P=268 watts  Fan run 100% PWM, P=31 watts | Tianrun |
| 28 | March 26 | Final Test | Test all system functions using local control and remote control | All members |