



Testing Matrix

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| Ref # | Requirement | Test | Pass/Fail Criteria |
|-------|---|--|---|
| 1 | Devices communicate with base station. | Send messages between base station and all connected devices. | Devices send and receive all uncorrupted messages. |
| 2 | Base station communicates with MQTT server. | Send message to and from base station to MQTT server. | Base Station send and receive all uncorrupted messages after successful connection to broker. |
| 3 | Web app connects to MQTT server. | Send messages to and from to app and MQTT server. | Web app sends and receives all uncorrupted messages after successful connection to broker. |
| 4 | Device - Humidity Sensor | Change humidity by blowing on sensor with warm air from lungs. | Detect changes in humidity within $\pm 2\%$. |
| 5 | Device - Air Temperature Sensor | Change air temp sensor by holding in hand. | Detect changes in air temperature within $\pm 0.2^{\circ}\text{C}$. |
| 6 | Device - Water Temperature Sensor | Change water temp sensor by holding in hand. | Detect changes in water temperature $\pm 0.5^{\circ}\text{C}$. |
| 7 | Device - AC Outlet Control | Send message form app to turn on/off outlet. | Web app can turn off/on an AC outlet. |
| | | Responds to global alerts. | Responds as programed to global alerts. |
| 8 | Device - Leak Detection | Spill water on the leak sensor. | Leak detection triggers Alarm state and Buzzer within 10 seconds. |
| 9 | Device - PH Sensor | Place in calibration solution. | Sensor detects correct PH level. |
| 10 | Device - LED Lighting Control | Use app to change lighting brightness settings. | Lights dim/turn on and off. |

Cover Imagery Produced by OpenAI