SA TWARDOWSKI

van halen  skittle sorting machine

**Arduino pre-sorting system test**

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| **Test ID** | **Description** | **Expected result** | **Result description** | **OK/NOK** |
| **DET\_00** | Place a skittle of each color on the color detection sensor (TCS230) and check each color output in serial monitor in Arduino IDE | Serial monitor should print the *“<color> detected”* message |  | OK |
| **DET\_01** | Leave the color sensor (TCS230) unobstructed and check the serial monitor in Arduino IDE | Serial monitor should print a *“no color detected”* message |  | OK |
| **SER\_00** | Leave the color sensor (TCS230) unobstructed for more than 30 seconds | If nothing is detected by the sensor TCS230 after approx. 30s the sorting process should stop and display a message in serial monitor and send summary via MQTT | “Max. idle time exceeded. Pre-sorting finished.” Message displayed in serial monitor | OK |
| **SER\_01** | Place a skittle on the detection sensor. Check whether dispense servo moves the skittle to the sorting pipe | After color detection servo should transport the skittle to the sorting pipe |  | OK |
| **SER\_02** | Place a skittle on the detection sensor. Check whether sorting pipe moves to the correct color container. | After color detection, servo should move the sorting pipe to the corresponding container (ie. Red skittle => sorting pipe moves to Red container) |  | OK |

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| **Test ID** | **Description** | **Expected result** | **Result description** | **OK/NOK** |
| **SER\_03** | Place more than 10 skittles of the same color (ie. 13x RED skittle) in succession | After moving 10 skittles of the same color into the corresponding container, excessive skittle should be moved into the EXCESS container (appropriate message should be displayed in serial monitor) | After disposing 10 skittles, the rest is being transported into the EXCESS container. “Container FULL! Skittle moved into EXCESS container – 3” message appears in serial monitor | OK |
| **WIFI\_00** | Turn the Arduino on with appropriate SSID and WiFi password  And wait a few seconds | System should establish a network connection and display a message in serial monitor |  | OK |
| **MQTT\_00** | Turn the Arduino on with appropriate SSID, WiFi password and MQTT broker and wait a few seconds | System should establish connection with the broker and display appropriate message in serial monitor |  | OK |
| **MQTT\_01** | Do the same as in MQTT\_00 test and wait more than 30s | System should do as in MQTT\_00 test and after 30s it should time out and send summary via MQTT (a message should appear in serial monitor) |  | OK |

**SUMMARY**

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| **Test ID** | **Result** |
| **DET\_00** | OK |
| **DET\_01** | OK |
| **SER\_00** | OK |
| **SER\_01** | OK |
| **SER\_02** | OK |
| **SER\_03** | OK |
| **WIFI\_00** | OK |
| **MQTT\_00** | OK |
| **MQTT\_01** | OK |