

UC #2 Test Engineer



You are a Test Engineer in the project Light sensor who is writing the test cases for the Software Requirement. I will provide you the software requirement and your job is to let me know if the requirement is completely sufficient for you to write the test case that thoroughly tests the given requirement. Then, please use your response to write test case with steps.



Sure! Please provide the software requirement, and I'll evaluate its sufficiency for writing a thorough test case. Then, I'll write the test case with detailed steps based on that requirement.



SWRS 0100: SetRGB command
 IF the BUS command "SWRS 0125 - UART Command SetRGB is received" (refer this on the know how),
 the firmware shall calculate the intensity value from the provided RGB value and set the intensity value and RGB value for one specific RGB LED of the 20 connected RGB LEDs with temperature compensation.



Requirement Evaluation

The provided software requirement **SWRS 0100: SetRGB command** appears to be mostly clear but has some potential gaps that could impact the ability to write a complete and thorough test case:

1. **"Calculate the intensity value from the provided RGB value"**: The requirement does not specify the formula or method to calculate the intensity. This could lead to ambiguity when verifying the correctness of the intensity calculation.
2. **"Set the intensity value and RGB value for one specific RGB LED"**: It is unclear which RGB LED (out of the 20 connected LEDs) should be targeted. The requirement should clarify whether the LED is chosen randomly, sequentially, or based on some input parameter.
3. **"With temperature compensation"**: The requirement mentions temperature compensation but does not provide details on how temperature affects the RGB or intensity values, nor does it specify how this compensation is applied.

Sufficiency to Write Test Cases

While the requirement provides a general overview of what the software should do, it lacks specifics that are crucial for writing complete test cases. Here are the key areas that need clarification:

- **Intensity Calculation:** Clarification on the formula or method used to calculate intensity.
- **LED Targeting:** Clear definition of how the specific LED is chosen or if it should be specified in the command.
- **Temperature Compensation:** Details on how temperature compensation is applied and what parameters are considered.

Without these details, the test cases could miss critical aspects of functionality, leading to incomplete testing.

Test Case Example Based on Available Information

Given the current requirement, here's an example test case, but note that it may need refinement once more details are available.

Test Case: Validate SetRGB Command Execution

Test Case ID: TC_SetRGB_001

Objective: To verify that the firmware correctly calculates the intensity and sets the RGB and intensity values for a specific RGB LED, applying temperature compensation when the SetRGB command is received.

Preconditions:

- 20 RGB LEDs are connected and operational.
- The system is powered on and the UART communication is established.
- The temperature sensor is calibrated and functioning.

Test Steps:

1. **Step 1:** Send the UART command "SetRGB" with a specific RGB value (e.g., R=128, G=64, B=32).
 - **Input:** UART command with RGB values.
2. **Step 2:** Verify that the command is received and acknowledged by the firmware.
 - **Expected Result:** Command acknowledgment is logged.
3. **Step 3:** Check the firmware's calculation of the intensity value based on the provided RGB values.
 - **Expected Result:** Intensity is calculated correctly using the specified formula (requires further detail).
4. **Step 4:** Verify that the firmware applies the temperature compensation to the RGB and intensity values.
 - **Expected Result:** Temperature compensation is correctly applied (requires further detail on method).
5. **Step 5:** Confirm that the RGB and intensity values are set correctly for one specific RGB LED (e.g., LED 1).
 - **Expected Result:** LED 1 displays the correct RGB color with the correct intensity.

6. **Step 6:** Repeat steps 1-5 for different RGB values and different LEDs (if applicable based on how the LED is selected).

- **Expected Result:** Each test should yield the correct intensity and RGB settings on the selected LED.

7. **Step 7:** Monitor the temperature during testing to ensure that the compensation logic is responsive to temperature changes.

- **Expected Result:** Adjustments in RGB and intensity values correspond to temperature variations.

Post-Conditions:

- The system should maintain the correct RGB and intensity values for the selected LED.
- Temperature compensation should continue to be applied if the temperature changes.

Pass/Fail Criteria:

- The test passes if all expected results match the actual results.
- The test fails if any expected result does not match the actual result, indicating an issue with the command execution, intensity calculation, LED selection, or temperature compensation.

Recommendations

To improve the completeness and accuracy of the test cases, I recommend requesting more detailed information regarding:

1. The formula or algorithm for intensity calculation.
2. The criteria for selecting the specific RGB LED.
3. The method of temperature compensation and its impact on the RGB and intensity values.

With this additional information, the test cases can be more comprehensive and ensure thorough testing of the functionality.

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