

## Example Test Case

Test Author: Team 15					
	Test Case Name:	Testing Distance Sensor system works	Test ID #:	DIST-LED-01	
	Description:	This test checks that the system reads the ultrasonic distance correctly and lights the correct LED based on the measured distance.	Type:	<input type="checkbox"/> white box <input checked="" type="checkbox"/> black box <input type="checkbox"/> _____	
Tester Information					
	Name of Tester:	Dawood	Date:	12/06/2025	
	HW/SW Version:	1.0	Time:	12:30	
	Setup:	Connect ESP32, ultrasonic sensor, OLED, and LEDs. Place objects at fixed distances: 50 cm, 120 cm, and 180 cm. Power system with USB.			
S T E P	Action	Expected Result	P A S S	F A I L	N /
1	Power the system ON	OLED initializes and shows distance	✓		
2	Place object at 20 cm	OLED shows ~50 cm, RED LED turns ON	✓		
3	Move object away to 60 cm	OLED updates to ~120 cm, YELLOW LED turns ON	✓		
4	Move object to 110 cm	OLED shows ~180 cm, BLUE LED turns ON	✓		
5	Remove Object	OLED shows "___", all LEDs OFF	✓		
6	Place object quickly back at 60 cm	OLED updates instantly, RED LED turns ON	✓		
7	Shake object to cause fast changes	OLED updates smoothly with no freezing	✓		
8	Leave system running for 1 minute	No crash or freeze occurs	✓		
9	Reset system using EN button	System restarts cleanly and works normally	✓		
<b>Overall test result:</b>			✓		

## Example Matrix Test (for varying parameters)

Test Author: Team 15						
	Test Case Name:	Ultrasonic Distance Accuracy Matrix Test	Test ID #:	DIST-MAT-01		
	Description:	This matrix test verifies that the ultrasonic sensor reports correct distance values for multiple known distances.	Type:	<input type="checkbox"/> white box <input checked="" type="checkbox"/> black box <input type="checkbox"/> _____		
Tester Information						
	Name of Tester:	Dawood	Date:	12/06/2025		
	HW/SW Version:	1.0	Time:	1:30		
	Setup:	Place objects at measured distances: 50, 100, 120, 150, 180 cm and no object. Use a ruler or tape measure..				
T E S T	INPUTS	EXPECTED OUTPUTS	P A S S	F A I L	N / A	Comments
1	50cm	48–52 cm (Red)				
2	100 cm	98–102 cm (Either Red or Yellow)				
3	120 cm	118-122 cm (Yellow)				
4	150 cm	148-152 cm ( Either Yellow or BLue )				
5	180 cm	178-182 cm ( Blue )				
6	No object	— (No LEDs light up)				

	<b>Overall test result:</b>					
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