Team 14 SuperDuper
ECE 411 - HW 6
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TEST PLAN

This procedure will test each module, input and output of the laser cat toy under multiple conditions and power supply options.

Test for Function and Defects.

Unit Module Tests:
- Test continuity of completed board
- Test trigger level for motion detector (distance, sensitivity, angle)
- Program activation from trigger
- Servo 1 activation
- Servo 2 activation

Integration:
- Servos move in random pattern when active
- Laser stays on for duration of activation
- After 30 seconds program checks for trigger
- If no trigger program ends

Parametric Test:
- Test for power consumption (operating and standby)
- Turns off if no motion and stays off
- Minimum power draw when off
- Avoid servo limits when running program

Black-Box Tests:
- Servos: Apply voltage and PW and measure servo position
- Laser: Check power on for range of voltage inputs
- Motion Detector: Test for trigger level output
- Power supply: Test for 5V supply when powered by 9V and micro USB

Functional Checks:
- Power switch and indicator
- Supply voltage and current level
- Servo activation
- Laser activation
- Turn off after 30 seconds if no trigger
- Continue operation if trigger present
- Operate for minimum of 5 hours continuous on 9V
- Operate for minimum of 5 days standby with 10 minutes active 6 hours per day on 9V

- Laser does not contact dome at any combination of servo positions

Specs:

Laser:

- Less than 35mA
- 2.6-5V

Motion Sensor:

- Less than 50uA
- 4.5-20V
- Level output: high 3.3V low 0V
- Delay time 5-200 seconds (trim pot)
- Block time 2.5 seconds default
- Activation zone: 100deg from center 3-7m distance
- Sends 1111 periodically to indicate sensor is active.

Servo:

- 3-6V
- Rotation range 180deg
- Pulse width 500-2400us