

**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 trigger level for motion detector (distance, sensitivity, angle)
* Program activation from trigger
* Servo 1 activation
* Servo 2 activation
* Verify continuity of all parts on board

**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