LUMITRON Manufacturing Test Plan

Version 1.0
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Overview

Lumitron is an "Introduction to Electronics" board intended for use by young children. It's function is to teach kids how to assemble a simple, electronics kit, make connections, and learn how to use different switches to light up segments on a 7-segment LED display to form characters and numbers.

Features

- Single, large, 7-segment LED display
- Bank of DIP switches to turn On-Off each segment on the LED display.
- Latching On-Off and Momentary On-Off switches.
- Powered by single 9V battery.
- Acrylic base with threaded mounting posts and screws forms a simple enclosure for Lumitron.
- Optional 5 mm or 3 mm LED footprint in series with the decimal point (DP) on the LED display to equalize brightness. It is not populated, and the footprint is bypassed via a shorting copper track on the board. The shorting track has to be cut if the LED is installed (optional).

1.   Functions to be tested

1.1.   Check that each individual segment of the 7-segment display can be lit up when the corresponding switch is closed.
1.2.   Check that decimal point (DP) of the 7-segment display can be lit up when the corresponding switch is closed.

2.   Method of test

2.1.   Test Equipment
    2.1.1.   9V Battery
    2.1.2.   DIP switch, 8 way.

2.2.   Test Steps
    2.2.1.   Install 8 way DIP switch in the DIP socket
    2.2.2.   Make sure POWER switch is OFF.
    2.2.3.   Make sure all switches on 8 way DIP switch are OFF.
    2.2.4.   Install 9V battery.
    2.2.5.   Turn on POWER by pushing the button on the switch
    2.2.6.   Turn ON DIP switch "a" and verify that segment "a" on display lights up.
    2.2.7.   Repeat the procedure for all the remaining elements - b, c, d, e, f, g and dp.
    2.2.8.   If none or only some of the segments light up, check :

2.2.8.1.   Battery Voltage

2.2.8.2.   On-Off Switch function (using multimeter)

2.2.8.3.   DIP switch properly installed

2.2.8.4.   SIP resistor bank properly soldered

2.2.8.5.   7-segment LED display properly soldered

2.2.8.6.   7-segment display defect.