

# FCC PART 18 MEASUREMENT AND TEST REPORT

For

## **Buffalo Lite**

P.O. Box 696  
Buena Park, CA 90621

**FCC ID: QNBSPI**

September 23, 2002

|                                                                                                                                                              |                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| <b>This Report Concerns:</b><br><input checked="" type="checkbox"/> Original Report                                                                          | <b>Equipment Type:</b><br>Indoor Light |
| <b>Test Engineer:</b> Jerry Wang                                                                                                                             |                                        |
| <b>Report Number:</b> R0208301                                                                                                                               |                                        |
| <b>Test Date:</b> September 10, 2002                                                                                                                         |                                        |
| <b>Reviewed By:</b> Jeff Lee                                                                                                                                 |                                        |
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**Note:** The test report is specially limited to the use of the above client company and the product model. It may not be duplicated without prior written consent of Bay Area Compliance Laboratory Corporation. This report **must not** be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

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## 1 - GENERAL INFORMATION

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### 1.1 Product Description for Equipment Under Test (EUT)

*Buffalo Lite.*'s model 1014, 1015, 1020, 1025 or the "EUT" as referred to in this report is an indoor light which measures 5.0"L x 1.75"W x 1.75" H (1014), 5.0"L x 2.0"W x 2.0" H (1015), 5.5"L x 2.0"W x 2.0" H (1020) and 5.5"L x 2.0"W x 2.0" H (1025).

*Note: The test data was only good for the test sample. It may have deviation for other test sample.*

### 1.2 Objective

The following test report is prepared on behalf of *Buffalo Lite* in accordance with Part 2, Subpart J, and Part 18, Subparts A, B, and C of the Federal Communication Commissions rules and regulations.

The objective of the manufacturer is to demonstrate compliance with FCC Part 18 limit requirements for Industrial, Scientific, and Medical Equipment.

### 1.3 Related Submittal(s)/Grant(s)

No Related Submittals.

### 1.4 Test Methodology

All measurements contained in this report were conducted with MP-5, FCC Methods of Measurement of Radio-Noise Emissions from Industrial, Scientific and Medical Equipment. All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 Meters.

### 1.5 Test Facility

The Open Area Test site used by Bay Area Compliance Laboratory Corporation to collect radiated and conducted emission measurement data is located in the back parking lot of the building at the back parking lot of the building at 230 Commercial Street, Sunnyvale, California, USA.

Test site at Bay Area Compliance Laboratory Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2000.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1300F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratory Corporation is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (NVLAP). The scope of the accreditation covers the FCC Method - 47 CFR Part 15 - Digital Devices, IEC/CISPR 22: 1998, and AS/NZS 3548: Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment test methods under NVLAP Lab Code 200167-0.

### 1.6 Test Equipment List and Details

| Manufacturer | Description          | Model            | Serial Number                                | Last Cal. Date | Cal. Due Date |
|--------------|----------------------|------------------|----------------------------------------------|----------------|---------------|
| HP           | Spectrum Analyzer    | 8568B            | Panel<br>2408A00105<br>Display<br>2403A06544 | 5/1/2002       | 5/1/2003      |
| HP           | Spectrum Analyzer    | 8593A            | 29190A00242                                  | 5/1/2002       | 5/1/2003      |
| HP           | Amplifier            | 8447E            | 1937A01054                                   | 5/1/2002       | 5/1/2003      |
| HP           | Quasi-Peak Adapter   | 85650A           | 2521A00718                                   | 5/1/2002       | 5/1/2003      |
| HP           | Signal generator     | 8640B            | 1727A06741                                   | 5/1/2002       | 5/1/2003      |
| HP           | Signal generator     | 8685A            | 2214A03081                                   | 5/1/2002       | 5/1/2003      |
| Com-Power    | Biconical Antenna    | AB-100           | 14012                                        | 5/1/2002       | 5/1/2003      |
| SOLAR        | LISN                 | 9252-50-R-24-BNC | 984412                                       | 5/1/2002       | 5/1/2003      |
| SOLAR        | LISN                 | 9252-50-R-20-BNC | 984413                                       | 5/1/2002       | 5/1/2003      |
| Com-Power    | Log Periodic Antenna | AL-100           | 16091                                        | 5/1/2002       | 5/1/2003      |
| Com-Power    | Log Periodic Antenna | AB-900           | 15049                                        | 5/1/2002       | 5/1/2003      |

**\* Statement of Traceability:** Bay Area Compliance Laboratory Corp certifies that all calibration has been performed using suitable standards traceable to the NATIONAL INSTITUTE of STANDARDS and TECHNOLOGY (NIST).

### 1.7 Equipment Under Test (EUT)

| Manufacturer | Description  | Model                  | Serial Number | FCC ID |
|--------------|--------------|------------------------|---------------|--------|
| Buffalo Lite | Indoor Light | 1014, 1015, 1020, 1025 | None          | QNBSPI |

## **2 - SYSTEM TEST CONFIGURATION**

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### **2.1 Justification**

The EUT was tested under normal mode as used by a common (typical) user.

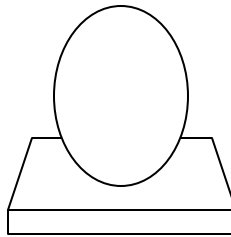
### **2.2 Schematics / Block Diagram**

Appendix A contains a copy of the EUT's schematics diagram as reference.

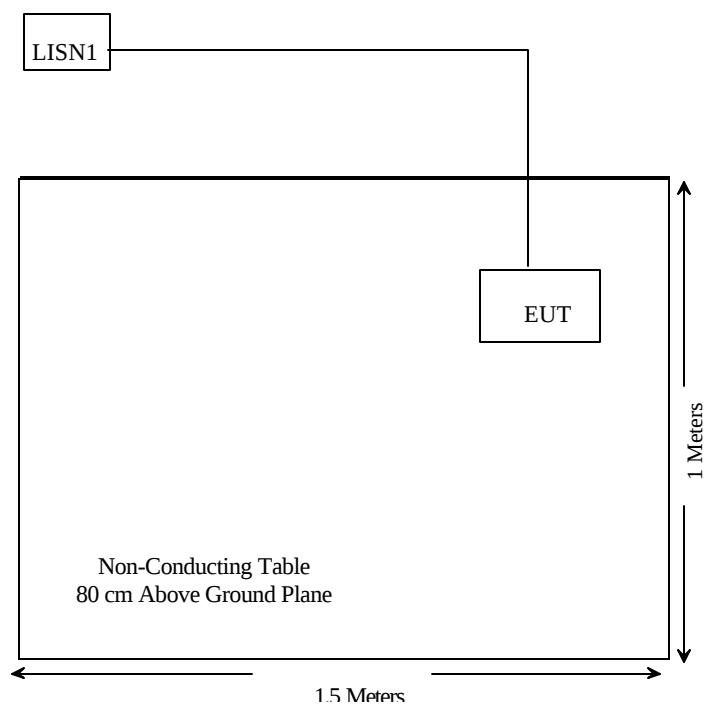
### **2.3 Equipment Modifications**

No modifications were made by BACL Corporation to ensure the EUT to comply with the application limits and requirements.

## 2.4 Configuration of Test System



## 2.5 Test Setup Block Diagram



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## 3 - CONDUCTED EMISSIONS TEST DATA

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### 3.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at BACL is  $\pm 2.4$  dB.

### 3.2 EUT Setup

The measurement was performed at the **Open Area Test Site**, using the same setup per MP-5 measurement procedure. The specification used was the FCC 18.307 (c) Class B limits.

The EUT was placed on the center of the back edge on the test table.

The power cord extension of the EUT was connected with 110 Vac/60 Hz power source.

### 3.3 Spectrum Analyzer Setup

The spectrum analyzer was set with the following configuration during the conduction test:

|                                   |         |
|-----------------------------------|---------|
| Start Frequency .....             | 450 kHz |
| Stop Frequency .....              | 30 MHz  |
| Sweep Speed.....                  | Auto    |
| IF Bandwidth.....                 | 10 kHz  |
| Video Bandwidth .....             | 10 kHz  |
| Quasi-Peak Adapter Bandwidth..... | 9 kHz   |
| Quasi-Peak Adapter Mode.....      | Normal  |

### 3.4 Test Procedure

During the conducted emission test, the power cord of the power cord extension was connected to the auxiliary outlet of the first LISN.

Maximizing procedure was performed on the six (6) highest emissions to ensure that the EUT is compliant with all installation combination.

All data was recorded in the peak detection mode. Quasi-peak readings were only performed when an emission was found to be marginal (within -4 dB $\mu$ V of specification limits). Quasi-peak readings are distinguished with a "Qp".

The EUT was tested under the normal modes during the final qualification test to represent the worst case results.

### 3.5 Summary of Test Results

According to the data in section 3.6, the EUT complied with the FCC 18.307 (c) Class B Conducted margin for industry, scientific and medical device, and with the worst margin reading of:

-2.6 dBμV at **0.48** MHz at the **Neutral** mode, 0.45-30MHz, M/N: 1014.

-13.9 dBμV at **2.96** MHz at the **Neutral** mode, 0.45-30MHz, M/N: 1015.

-11.8 dBμV at **3.20** MHz at the **Neutral** mode, 0.45-30MHz, M/N: 1020.

-9.8 dBμV at **2.86** MHz at the **Neutral** mode, 0.45-30MHz, M/N: 1025.

### 3.6 Conducted Emissions Test Data

#### 3.6.1 Test Data for 1014, 0.45-30MHz

| LINE CONDUCTED EMISSIONS |                   |                         |                       | FCC CLASS B   |              |
|--------------------------|-------------------|-------------------------|-----------------------|---------------|--------------|
| Frequency<br>MHz         | Amplitude<br>dBμV | Detector<br>Qp/Ave/Peak | Phase<br>Line/Neutral | Limit<br>dBμV | Margin<br>dB |
| 0.48                     | 45.4              | QP                      | Neutral               | 48            | -2.6         |
| 0.48                     | 45.3              | QP                      | Line                  | 48            | -2.7         |
| 1.96                     | 27.7              | QP                      | Neutral               | 48            | -20.3        |
| 26.29                    | 23.6              | QP                      | Line                  | 48            | -24.4        |
| 15.37                    | 10.2              | QP                      | Line                  | 48            | -37.8        |
| 15.37                    | 8.7               | QP                      | Neutral               | 48            | -39.3        |

#### 3.6.2 Test Data for 1015, 0.45-30MHz

| LINE CONDUCTED EMISSIONS |                   |                         |                       | FCC CLASS B   |              |
|--------------------------|-------------------|-------------------------|-----------------------|---------------|--------------|
| Frequency<br>MHz         | Amplitude<br>dBμV | Detector<br>Qp/Ave/Peak | Phase<br>Line/Neutral | Limit<br>dBμV | Margin<br>dB |
| 2.96                     | 34.1              | QP                      | Neutral               | 70            | -13.9        |
| 2.96                     | 32.8              | QP                      | Line                  | 70            | -15.2        |
| 1.34                     | 31.6              | QP                      | Line                  | 48            | -16.4        |
| 1.19                     | 31.2              | QP                      | Neutral               | 48            | -16.8        |
| 5.52                     | 24.1              | QP                      | Neutral               | 48            | -23.9        |
| 9.17                     | 18.6              | QP                      | Line                  | 48            | -29.4        |

#### 3.6.3 Test Data for 1020, 0.45-30MHz

| LINE CONDUCTED EMISSIONS |                   |                         |                       | FCC CLASS B   |              |
|--------------------------|-------------------|-------------------------|-----------------------|---------------|--------------|
| Frequency<br>MHz         | Amplitude<br>dBμV | Detector<br>Qp/Ave/Peak | Phase<br>Line/Neutral | Limit<br>dBμV | Margin<br>dB |
| 3.20                     | 36.2              | QP                      | Neutral               | 48            | -11.8        |
| 3.20                     | 35.8              | QP                      | Line                  | 48            | -12.2        |
| 9.43                     | 25.7              | QP                      | Line                  | 48            | -22.3        |
| 8.13                     | 25.7              | QP                      | Neutral               | 48            | -22.3        |
| 10.67                    | 22.4              | QP                      | Neutral               | 48            | -25.6        |
| 15.34                    | 11.3              | QP                      | Line                  | 48            | -36.7        |

**3.6.4 Test Data for 1025, 0.45-30MHz**

| LINE CONDUCTED EMISSIONS |           |             |              | FCC CLASS B |        |
|--------------------------|-----------|-------------|--------------|-------------|--------|
| Frequency                | Amplitude | Detector    | Phase        | Limit       | Margin |
| MHz                      | dBμV      | Qp/Ave/Peak | Line/Neutral | dBμV        | dB     |
| 2.86                     | 38.2      | QP          | Neutral      | 70          | -9.8   |
| 2.87                     | 36.8      | QP          | Line         | 70          | -11.2  |
| 0.78                     | 34.2      | QP          | Line         | 48          | -13.8  |
| 1.87                     | 33.2      | QP          | Neutral      | 48          | -14.8  |
| 9.01                     | 17.3      | QP          | Neutral      | 48          | -30.7  |
| 8.97                     | 16.7      | QP          | Line         | 48          | -31.3  |

**3.7 Plot(s) of Conducted Emissions Test Data**

The plot of conducted emission tested was presented hereinafter as reference.









## 4 – FCC PRODUCT LABELING AND WARNING STATEMENT

### 4.1 Proposed FCC Label Format

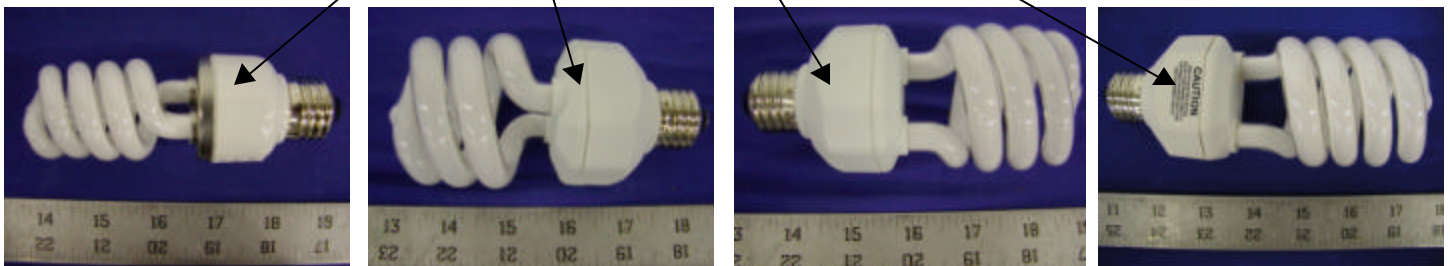
**FCC ID: QNBSPI**

Specifications: Text is black or white in color and is left justified. Labels are silk-screened and shall be “permanently affixed” at a conspicuous location on the EUT.

### 4.2 Proposed Label Location on EUT

Rear View of EUT

Proposed FCC Label Location



### 4.3 FCC Warning Statement

This device complies with Part 18 of FCC rules.

Information on the following matters shall be provided to the user in the instruction manual or on the packaging if an instruction manual is not provided for any type of any ISM equipment:

- a. The interference potential of the device or system
- b. Maintenance of the system
- c. Simple measures that can be taken by the user to correct interference.

## 5 - Conducted and Radiated Setup Photographs

### 5.1 Conducted Emission Photograph – Front View (1014)



### 5.2 Conducted Emission Photograph – Rear View (1014)



### 5.3 Conducted Emission Photograph – Front View (1015)



### 5.4 Conducted Emission Photograph – Rear View (1015)



### 5.5 Conducted Emission Photograph – Front View (1020)



### 5.6 Conducted Emission Photograph – Rear View (1020)



### 5.7 Conducted Emission Photograph – Front View (1025)



### 5.8 Conducted Emission Photograph – Rear View (1025)

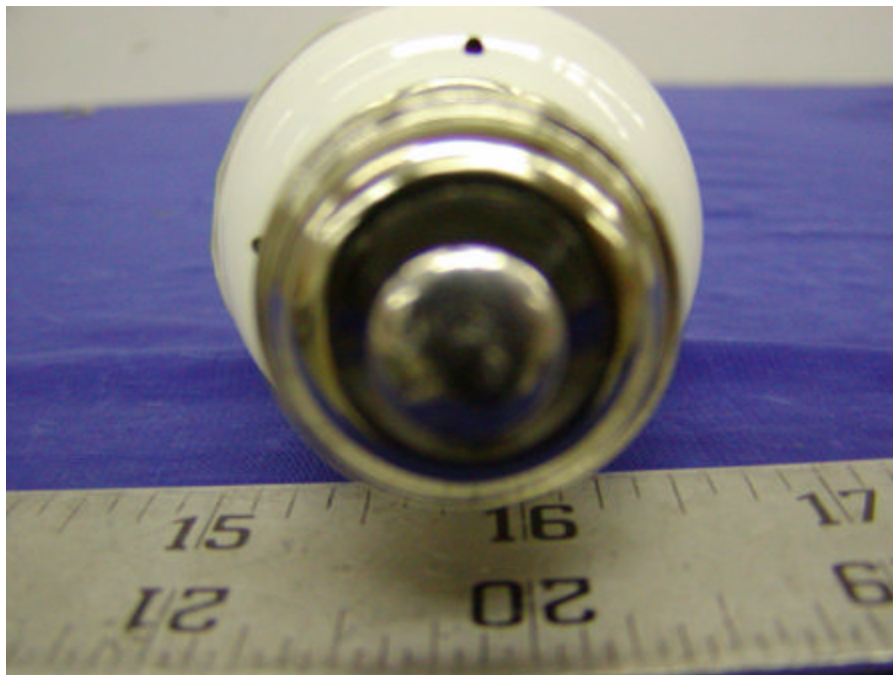


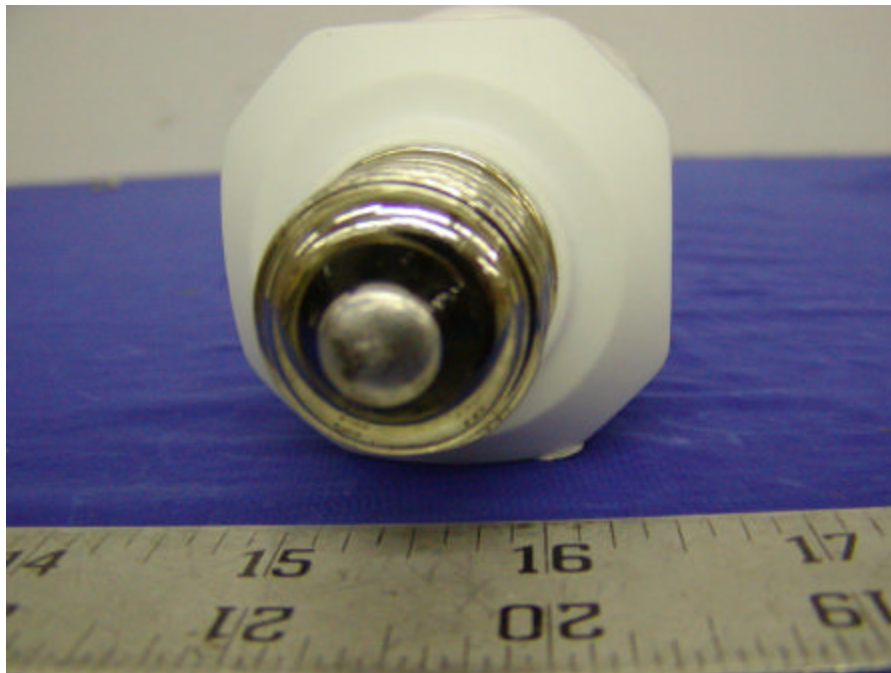
## 6 - PHOTOGRAPHS

### 6.1 EUT – Front View (1014)



### 6.2 EUT – Bottom View (1014)



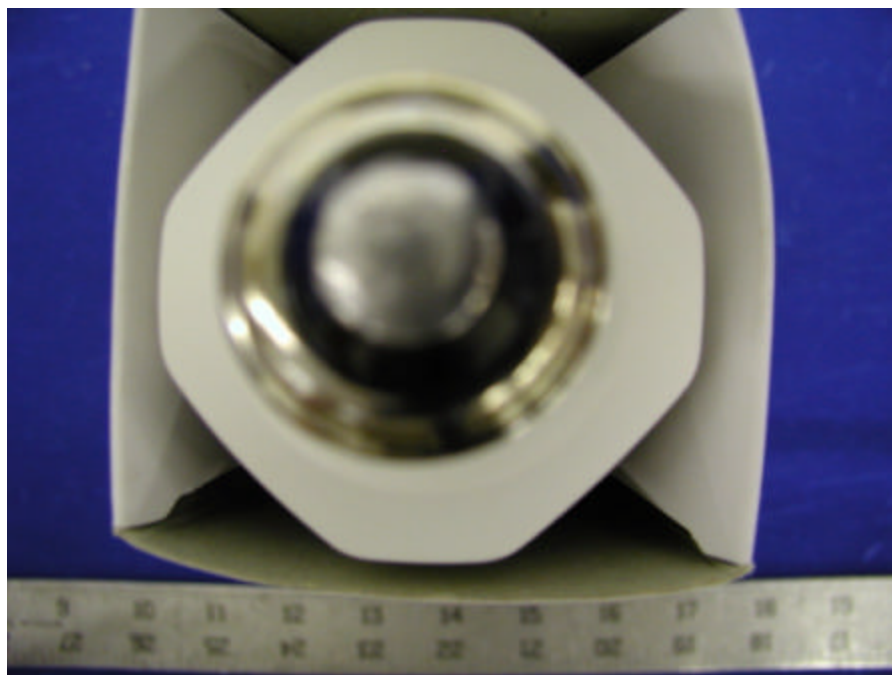
**6.3 EUT – Front View (1015)****6.4 EUT – Bottom View (1015)**

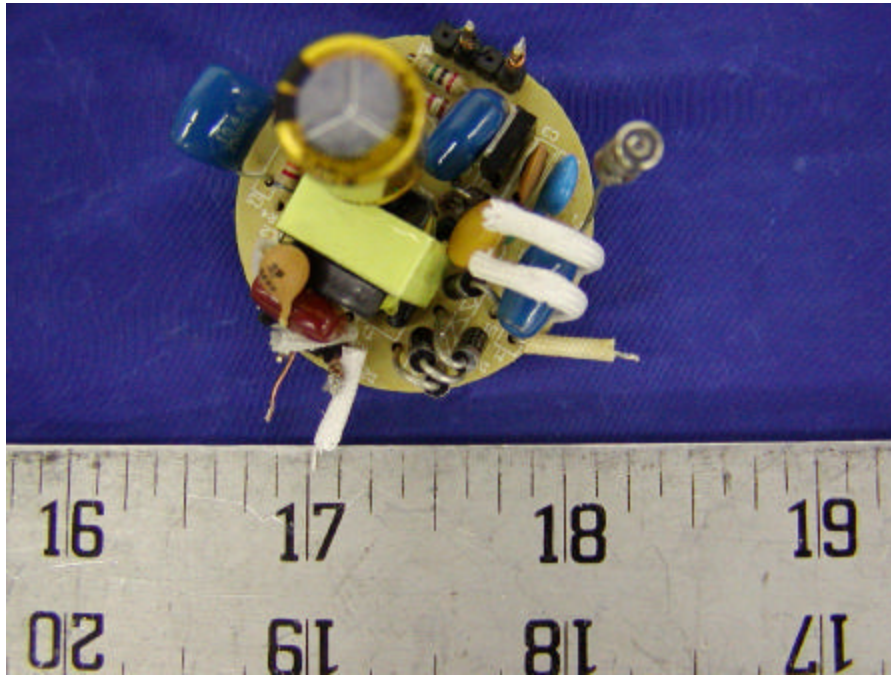
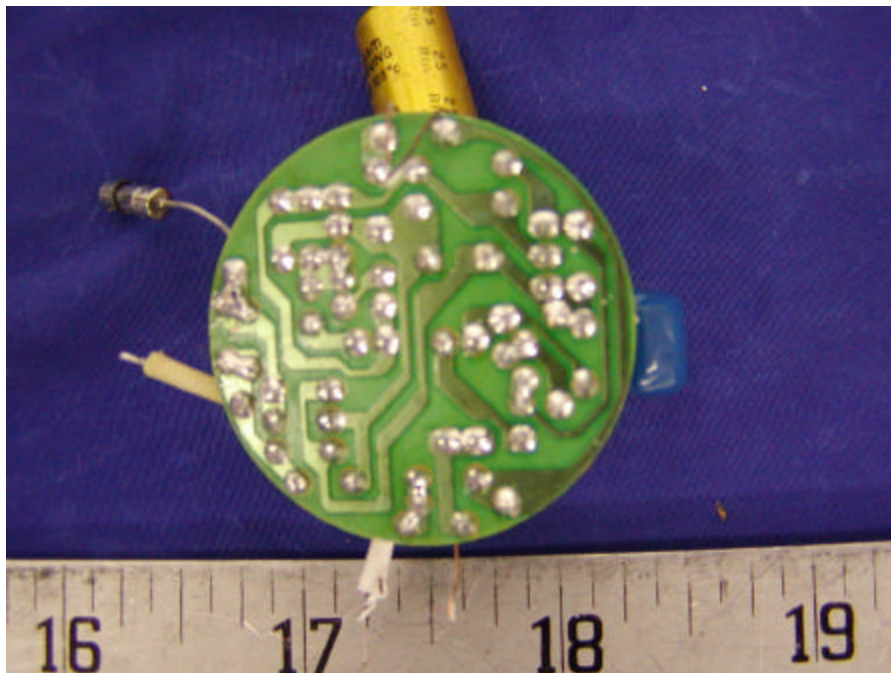
### 6.5 EUT – Top View (1020)

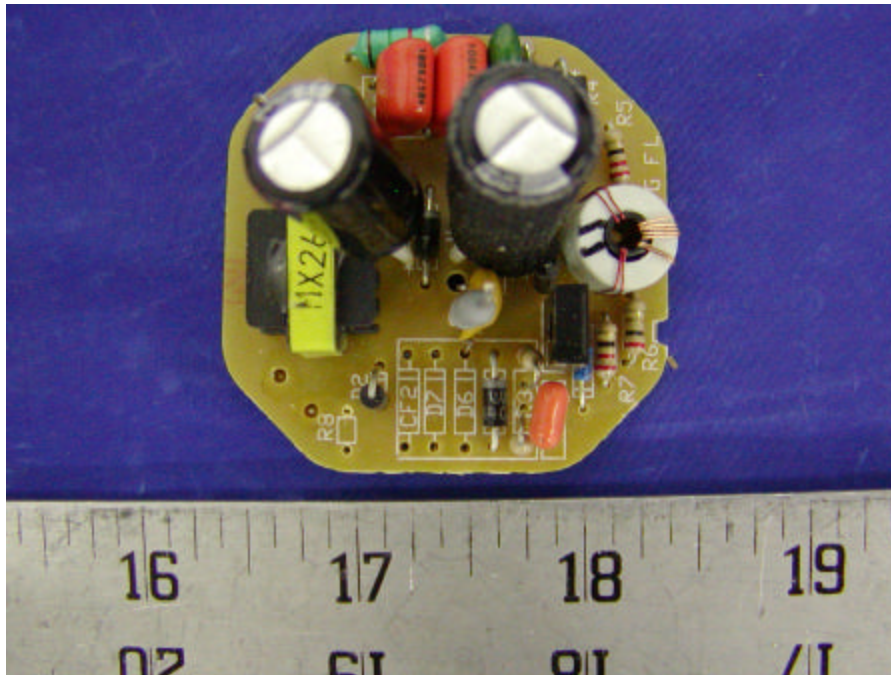
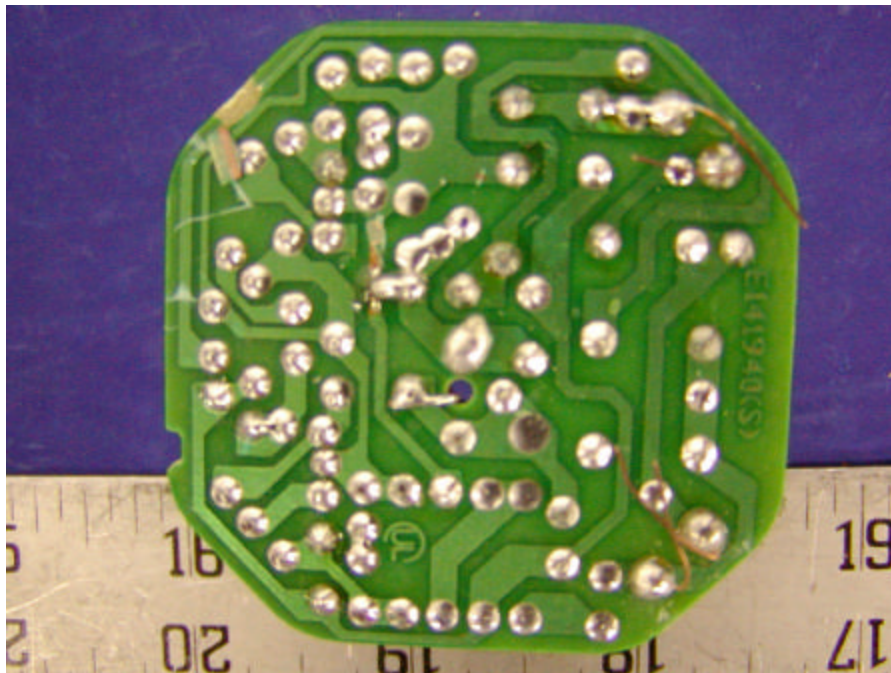


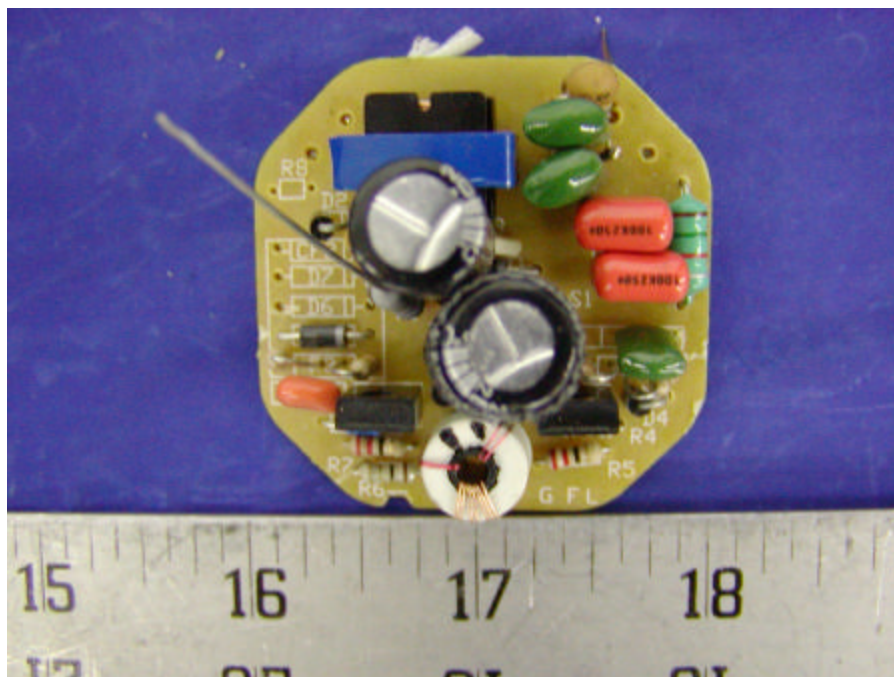
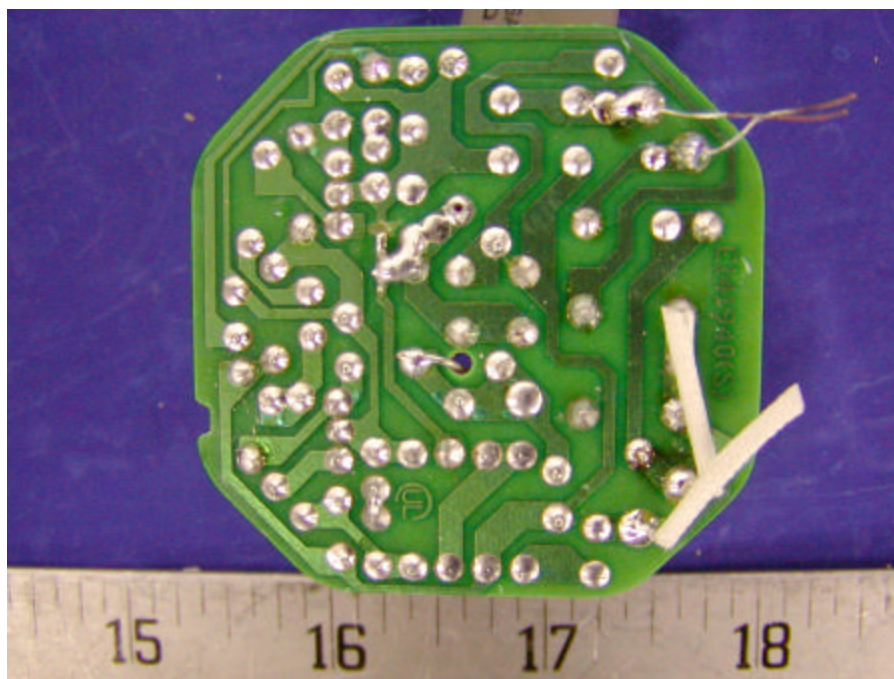
### 6.6 EUT – Bottom View (1020)

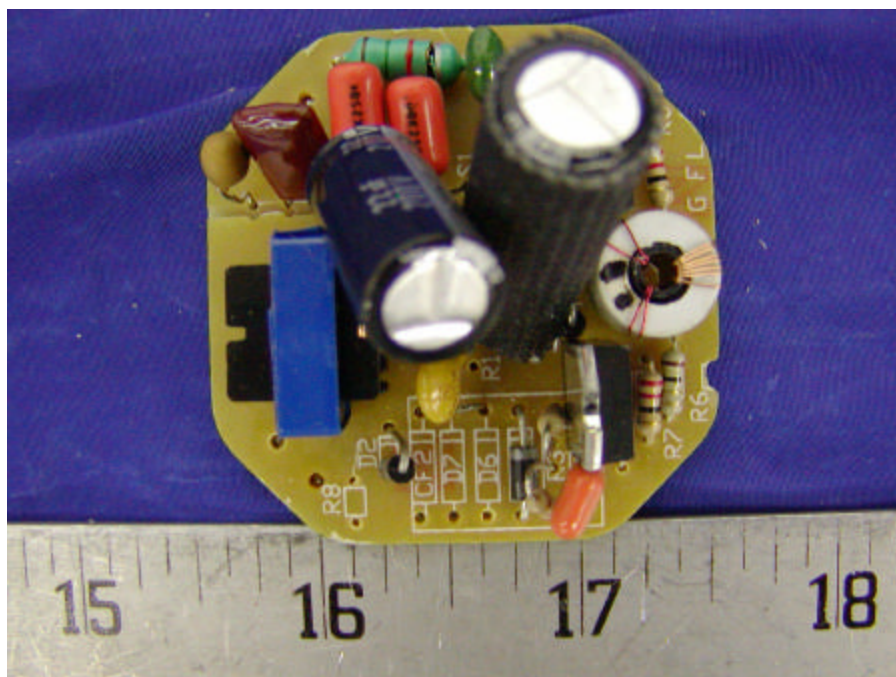
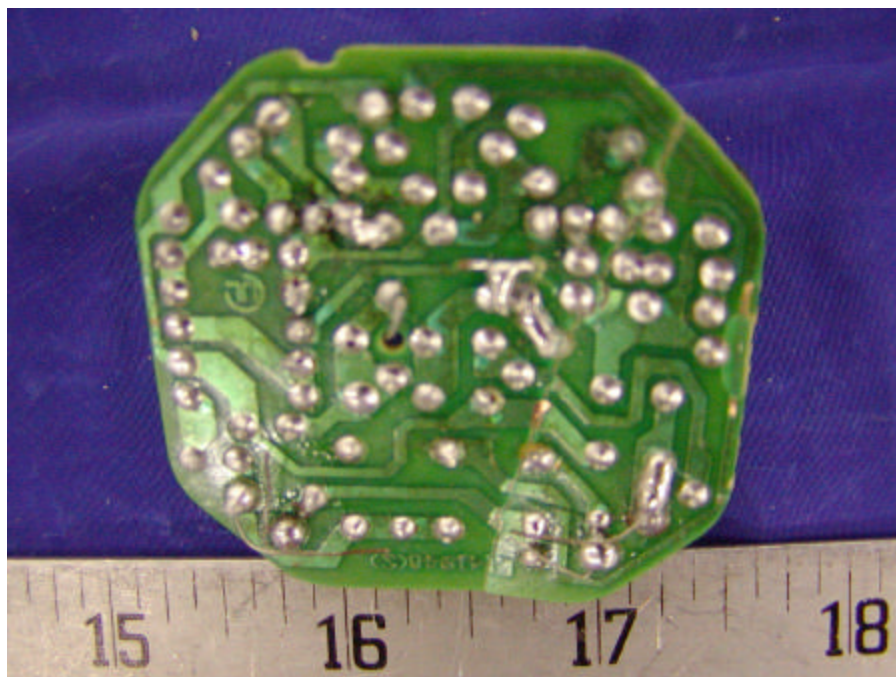


**6.7 EUT – Top View (1025)****6.8 EUT – Bottom View (1025)**

**6.9 EUT – Component View (1014)****6.10 EUT – Solder View (1014)**

**6.11 EUT – Component View (1015)****6.12 EUT – Solder View (1015)**

**6.13 EUT – Component View (1020)****6.14 EUT – Solder View (1020)**

**6.15 EUT – Component View (1025)****6.16 EUT – Solder View (1025)**

## **APPENDIX A - BLOCK DIAGRAM/SCHEMATICS/PARTS LIST**

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## **APPENDIX B - USER MANUAL**

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