

# FCC PART 18 MEASUREMENT AND TEST REPORT



For

## SUNPARK ELECTRONICS CORP.

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TORRANCE, CA90501

**FCC ID: N9644000104**

2003-08-01

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| <b>This Report Concerns:</b><br><input checked="" type="checkbox"/> Original Report | <b>Equipment Type:</b><br>Electronic Ballast   |
| <b>Test Engineer:</b>   | Peter Liu   |
| <b>Report Number:</b>   | R0307153   |
| <b>Test Date:</b>   | 2003-07-23   |
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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)

The *SUNPARK ELECTRONICS CORP.*'s 44000104 or the "EUT" as referred to in this report is an electronic ballast. The EUT measures 4.0" L x 3.0" W x 1.9"H.

*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 *SUNPARK ELECTRONICS CORP.* 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 in accordance with MP-5, FCC Methods of Measurements of Radio Noise Emissions from Industrial, Scientific, and Medical Equipment. All radiated and conducted emission measurements were performed at Bay Area Compliance Laboratory Corp. (BACL). 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 C63.4-1992.

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,

CISPR 22: 1997, 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 | Cal. Due Date |
|-------------------|----------------------|-----------------------|---------------|---------------|
| R/S               | Spectrum Analyzer    | FSEM                  | 849720/019    | 2003-08-05    |
| HP                | Receiver             | PH8546A               | A9704039      | 2003-08-05    |
| HP                | Amplifier            | 8447D                 | 2944A09795    | 2003-08-05    |
| ETS               | Log Periodic Antenna | 3146                  | 9603-4421     | 2003-09-05    |
| ETS               | Biconical Antenna    | 3110B                 | 3360          | 2003-08-05    |
| Solar Electronics | LISN                 | TYPE 8012-50-R-24-BNC | 21162         | 2003-09-05    |
| Solar Electronics | LISN                 | TYPE 8012-50-R-25-BNC | 21163         | 2003-10-05    |

\* **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      |
|---------------------------|--------------------|----------|---------------|-------------|
| SUNPARK ELECTRONICS CORP. | Electronic Ballast | 44000104 | None          | N9644000104 |

## **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.

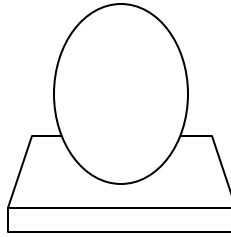
### **2.2 Schematics / Block Diagram**

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

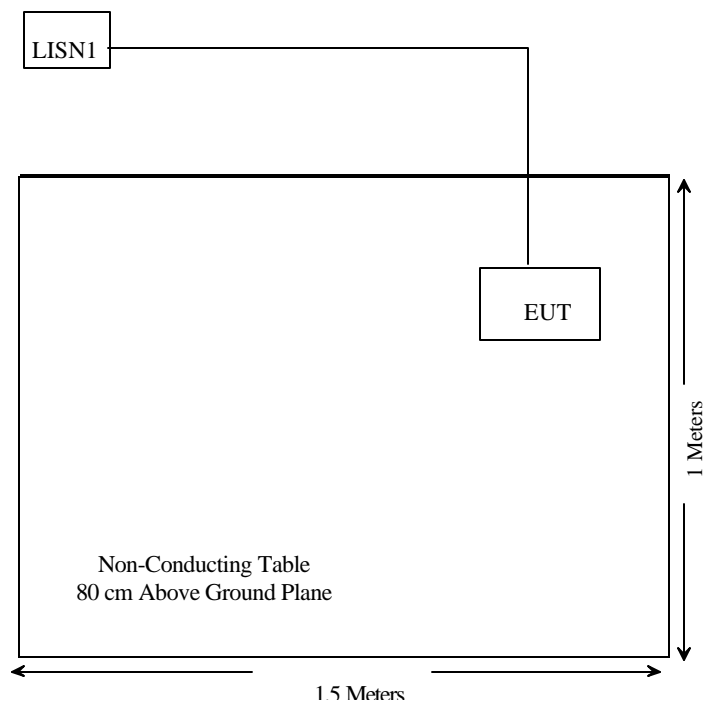
### **2.3 Equipment Modifications**

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



### 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 shield room, using the same setup per ANSI C63.4 - 1992 measurement procedure. The specification used was the FCC Part 18 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 Conducted margin for industry, scientific and medical device, and with the worst margin reading of:

**-0.5 dB $\mu$ V at 6.495 MHz at the Line mode**

### 3.6 Conducted Emissions Test Data

| LINE CONDUCTED EMISSIONS |            |             |              | FCC PART 18 |        |
|--------------------------|------------|-------------|--------------|-------------|--------|
| Frequency                | Amplitude  | Detector    | Phase        | Limit       | Margin |
| MHz                      | dB $\mu$ V | Qp/Ave/Peak | Line/Neutral | dB $\mu$ V  | dB     |
| 6.495                    | 47.5       | Peak        | Line         | 48          | -0.5   |
| 6.560                    | 46.7       | Peak        | Neutral      | 48          | -1.3   |
| 1.800                    | 46.3       | Peak        | Line         | 48          | -1.7   |
| 0.510                    | 46.2       | Peak        | Neutral      | 48          | -1.8   |
| 1.845                    | 44.8       | Peak        | Line         | 48          | -3.2   |
| 1.800                    | 44.7       | Peak        | Neutral      | 48          | -3.3   |

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

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



BAY AREA COMPLIANCE LABORATORY CORP  
FCC 18

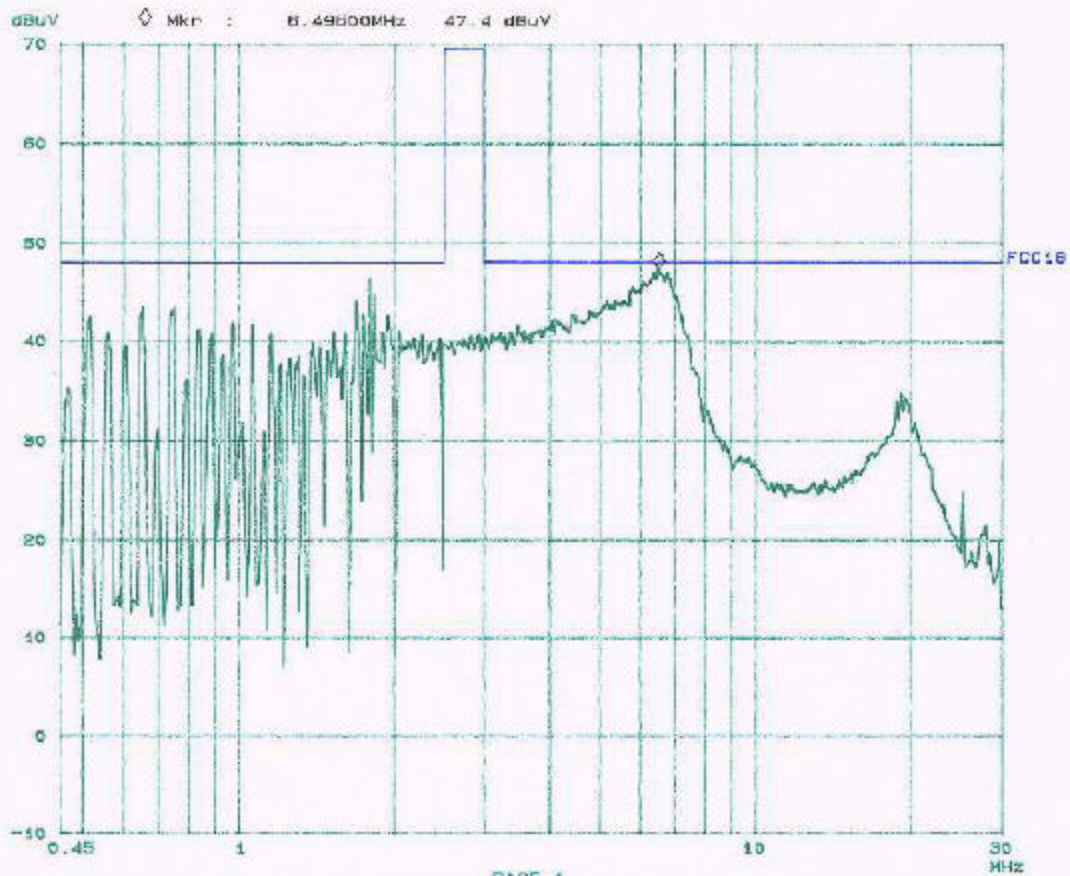
12. Aug 03 13:02

EUT: 44000104  
Manuf: Sunpark Electronics  
Op Cond: Normal  
Operator: Hang  
Comment: L

## Scan Settings (3 Ranges)

| Start | Stop | Step | IF BW | Detector | M-Time | Atten   | Presamp |
|-------|------|------|-------|----------|--------|---------|---------|
| 450k  | 1M   | 5k   | 9k    | PK       | 20ms   | 10dB LN | OFF     |
| 1M    | 3M   | 5k   | 9k    | PK       | 1ms    | 10dB LN | OFF     |
| 3M    | 30M  | 5k   | 9k    | PK       | 1ms    | 10dB LN | OFF     |

Final Measurement: x QP  
Meas Time: 1.3  
Subranges: 23  
Acc Margin: 6dB



BAY AREA COMPLIANCE LABORATORY CORP  
FCC 18

12. Aug 03 11:43

EUT: 44000104  
Manuf: Sunpark Electronics  
Op Cond: Normal  
Operator: Hang  
Comment: N

## Scan Settings [3 Ranges]

| Start | Stop | Step | IF BW | Detector | M-Time | Atten   | Preamp |
|-------|------|------|-------|----------|--------|---------|--------|
| 450k  | 1M   | 5k   | 9k    | PK       | 20ms   | 10dB LN | OFF    |
| 1M    | 3M   | 5k   | 9k    | PK       | 1ms    | 10dB LN | OFF    |
| 3M    | 30M  | 5k   | 9k    | PK       | 1ms    | 10dB LN | OFF    |

Final Measurement: X GP  
Meas Time: 1 s  
Subranges: 25  
Acc Margin: 5dB

