

Shenzhen Jiadianbao Electrical Products Co. Ltd.

Application
For
Certification
(FCC ID: MMIG986F)

RF Lighting Device

WO# 9913134

CKL/at

January 6, 2000

- The test results reported in this report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
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FCC ID : MMIG986F

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LIST OF EXHIBITS

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MEASUREMENT/TECHNICAL REPORT

Shenzhen Jiadianbao Electrical Products Co. Ltd. - MODEL: G986F
FCC ID: MMIG986F

January 6, 2000

This report concerns (check one): Original Grant Class II Change _____

Equipment Type: RF Lighting Device

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes No

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Report prepared by:

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Intertek Testing Services
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List of attached file

| Exhibit type | File Description | filename |
|-----------------------|--------------------------------|------------------------------|
| Cover Letter | Letter of Agency | letter.pdf |
| Test Report | Test Report | report.doc |
| Operation Description | Technical Description | descrip.pdf |
| Test Setup Photo | Radiated Emission | radiated.jpg |
| Test Setup Photo | Conducted Emission | conduct1.jpg to conduct3.jpg |
| Test Report | Conducted Emission Test Result | conduct.pdf |
| External Photo | External Photo | ophoto1.jpg |
| Internal Photo | Internal Photo | iphoto1.jpg to iphoto3.jpg |
| Block Diagram | Block Diagram | block.pdf |
| Schematics | Circuit Diagram | circuit.pdf |
| ID Label/Location | Label Artwork and Location | label.pdf |
| User Manual | User Manual | manual.pdf |

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EXHIBIT 1

GENERAL DESCRIPTION

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1.0 **General Description**

1.1 Product Description

The equipment under test (EUT) is a RF lighting consisting of an electronic ballast. The EUT is operated at 39kHz and powered by AC 120V, 60Hz.

The brief circuit description is saved with filename: descri.pdf

1.2 Related Submittal(s) Grants

This is a single application of certification of a consumer RF lighting device.

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1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in MP-5. All measurements were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. For each scan, the procedure for maximizing emissions in Appendices D and E were followed. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the emission data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been fully placed on file with the FCC.

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1.5 Equipment List

1) Radiated Emission Test for FCC Part 18

| Equipment | Registration No. | Manufacturer | Model No. | Serial No. | Calibration Due Date |
|-------------------|------------------|--------------|-----------|-------------|----------------------|
| EMI Test Receiver | EW-0016 | R&S | ESVS30 | 8693342/008 | January 1999 |
| Antenna Set | EW-0446 | EMCO | 3146 | 9905-5219 | November 2000 |
| | EW-0448 | EMCO | 3104C | 9904-4850 | November 2000 |
| EMI Test Receiver | EW-0017 | R&S | ESHS30 | 842053/002 | January 2000 |

2) Disturbance Voltage Tests for FCC Part 18

| Equipment | Registration No. | Manufacturer | Model No. | Serial No. | Calibration Due Date |
|-------------------|------------------|--------------|-----------|------------|----------------------|
| EMI Test Receiver | EW-0017 | R&S | ESHS30 | 842053/002 | January 2000 |
| Absorbing Clamp | EW-0019 | R&S | MDS21 | 828228/006 | February 2000 |
| LISN | EW-0090 | R&S | ESH3-Z5 | 840731/013 | February 2000 |

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EXHIBIT 2

SYSTEM TEST CONFIGURATION

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2.0 **System Test Configuration**

2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in MP-5.

The EUT was powered from AC 120V, 60Hz.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The unit was operated standalone and placed in the center of the turntable.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was mounted to a cardboard box, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

2.2 EUT Exercising Software

There was no special software to exercise the device. Once the button is turned on, it emits the RF noise.

2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

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2.4 Equipment Modification

Any modifications installed previous to testing by Shenzhen Jiadianbao Electrical Products Co. Ltd. will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Intertek Testing Services.

2.5 Support Equipment List and Description

This product was tested in a standalone configuration.

All the items listed under section 2.0 of this report are

Confirmed by:

C. K. Lam
Technical Manager
Intertek Testing Services
Agent for Shenzhen Jiadianbao Electrical Products Co. Ltd.



Signature

January 6, 2000
Date

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EXHIBIT 3

EMISSION RESULTS

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3.0 Emission Results

Data is included worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

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3.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG + PD + AV$$

where FS = Field Strength in $\text{dB}\mu\text{V}/\text{m}$

RA = Receiver Amplitude (including preamplifier) in $\text{dB}\mu\text{V}$

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

AG = Amplifier Gain in dB

PD = Pulse Desensitization in dB

AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG + PD + AV$$

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3.1 Field Strength Calculation (cont)

Example

Assume a receiver reading of 62.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 62.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$PD = 0 \text{ dB}$$

$$AV = -10 \text{ dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 \text{ dB}\mu\text{V/m}$$

$$\text{Level in mV/m} = \text{Common Antilogarithm} [(32 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

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3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission

49.899 MHz

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated 1.jpg to radiated 2. jpg.

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3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 16.3 dB

TEST PERSONNEL:



Signature

Danny T. L. Chui, Compliance Engineer
Typed/Printed Name

January 6, 2000
Date

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Company: Shenzhen Jiadianbao Electrical Products Co. Ltd.
Model: G986F

Date of Test: December 20, 1999

Table 1

Radiated Emissions

| Polarity | Frequency (MHz) | Reading (dB μ V) | Pre-Amp (dB) | Antenna Factor (dB) | Net at 3m (dB μ V/m) | Net at 30m (dB μ V/m) | Limit at 30m (dB μ V/m) | Margin (dB) |
|----------|-----------------|----------------------|--------------|---------------------|--------------------------|---------------------------|-----------------------------|-------------|
| H | 35.874 | 27.9 | 16 | 10 | 21.9 | 1.9 | 20 | -18.1 |
| H | 41.073 | 28.3 | 16 | 10 | 22.3 | 2.3 | 20 | -17.7 |
| H | 45.567 | 28.8 | 16 | 10 | 22.8 | 2.8 | 20 | -17.2 |
| H | 49.899 | 29.7 | 16 | 10 | 23.7 | 3.7 | 20 | -16.3 |
| H | 54.899 | 28.4 | 16 | 11 | 23.4 | 3.4 | 20 | -16.6 |
| H | 60.873 | 27.5 | 16 | 11 | 22.5 | 2.5 | 20 | -17.5 |
| H | 65.234 | 26.7 | 16 | 11 | 21.7 | 1.7 | 20 | -18.3 |

Notes: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.

Test Engineer: Danny T. L. Chui

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3.4 Line Conducted Configuration Photograph

Worst Case Line-Conducted Configuration

0.490 MHz

For electronic filing, the worst case line-conducted configuration photograph are saved with filename: conduct1.jpg to conduct3.jpg

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Company: Shenzhen Jiadianbao Electrical Products Co. Ltd.
Model: G986F

Date of Test: December 20, 1999

Conducted Emissions Section 18.307 Requirements

For electronic filing, the worst case conducted emission test result is saved with filename: conduct.pdf

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3.5 Line Conducted Emission Configuration Data

The data on the following page lists the significant emission frequencies, the limit, and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 9.2 dB

* All readings are peak unless stated otherwise.

TEST PERSONNEL:



Signature

Danny T. L. Chui, Compliance Engineer
Typed/Printed Name

January 6, 2000

Date

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EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

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4.0 Equipment Photographs

For electronic filing, the photographs are saved with filename: ophoto1.jpg and iphoto1.jpg to iphoto3.jpg

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EXHIBIT 5

PRODUCT LABELLING

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5.0 **Product Labelling**

For electronic filing, the FCC ID label artwork and the label location are saved with filename: label.pdf

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EXHIBIT 6

TECHNICAL SPECIFICATIONS

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6.0 Technical Specifications

For electronic filing, the block diagram and schematics are saved with filename: block.pdf and circuit.pdf respectively.

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EXHIBIT 7

INSTRUCTION MANUAL

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7.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf

This manual will be provided to the end-user with each unit sold/leased in the United States.