MEASUREMENT/TECHNICAL REPORT

Go-Gro Industries Limited - MODEL: Go-Gro 23047
FCC ID: MMI23047

June 29, 1998

This report concerns (check one:) Original Grant__X__ Class II Change_____

Equipment Type: Consumer RF Lighting (example: computer, printer, modem, etc.)

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes___ No_X_

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:

C. K. Lam
Intertek Testing Services
2/F., Garment Center,
576, Castle Peak Road,
HONG KONG
Phone: 852-2746-8211
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EXHIBIT 1

GENERAL DESCRIPTION

1.0 General Description

1.1 Product Description

The Equipment Under Test (EUT) is a electronic ballast which has been installed inside a ceiling lamp. The EUT is powered by the AC mains and operated at 0.047 MHz. Once the EUT is powered up, the lamp is turned on and emitts the RF noise.

The brief circuit description is attached in the following page.

1.2 Related Submittal(s) Grants

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

GO-GRO INDUSTRIES LTD.
6/F., KENNING INDUSTRIAL BUILDING, 19 WANG HOI ROAD, KOWLOON BAY, HONG KONG.
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家電寶實業有限公司 香港九龍灣宏開道 19 號健力工業大廈 6 字樓

Technical Description of
Energy Star Ceiling Lamp, Model No. 23047

This Energy Star Ceiling Lamp, Model No. 23047 is consisting of:

-- A line filter for reducing conductive emmisions from the whole set to the power supply net.

-- An electronic adaptor for converting the 120V/60Hz to 70V/47KHz output.

-- A ballast for choking the current intensity of the fluo lamp.

-- A fluo lamp.

Please refer to the block diagram and the circuit diagram when read detailed description as follows:

Input electricity is firstly passing a separate line filter for reducing conductive emmisions from the whole equipment to be fed back to the power supply source. Then, the input electricity to be conducted into the adaptor enclosure by two lead wires. then, pass through a choke-condenser filter which consisting of a 50 mH choke and two 0.22 muF capacitor for additionally preventing excessive radio frequency radiation to be fed back to the AC source.

Now, the 120V AC electricity is led into a bridge rectifier which consists of 4 diodes (1N4007).

For complying to Energy Star criteria, a circuitry is provided for raising the Power Factor.

Therefore, 120V DC is supplied to the frenquency converter which using a multiharmonic oscillator (formed by 2 transistors--MJE13005) to convert 120V DC into 47K Hz AC.

Then, the ultrasonic frequency 47 KHz AC is led into the choke (650 muH) which in series of the fluorescent tube.

A capacitor (104/400V) used for in series of the load and also acts as a feed back capacitor for let radio frequency energy emitting from the filament to be reused by the fluorescent tube.

FCC ID: MMI23047

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 Section 5 and 6 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.

1.5 Equipment List

1) Radiated Emission test for FCC Part 18

Equipment	Registration No.	Manufacturer	Model No.	Serial No.	Calibration Due Date
Loop Antenna	EI034	EMCO	6502	9206-2706	August 1998
EMI Test Receiver	EI-135	R&S	ESVS30	842807/001	November 1998
Biconical Antenna	EI-088	CDI	B100 B200 B300	3098 3112 3118	December 1998
EMI Test Receiver	EI-025	R&S	ESHS30	827128/009	December 1998

2) Disturbance Voltage Tests for FCC Part 18

Equipment	Registration No.	Manufacturer	Model No.	Serial No.	Calibration Due Date
EMI Test Receiver	EI-135	R&S	ESVS30	842807/001	November 1998
Absorbing Clamp	EI-128	R&S	MDS21	840031/001	November 1998
LISN	EI-130	R&S	ESH3-Z5	840731/013	February 1999

EXHIBIT 2

SYSTEM TEST CONFIGURATION

2.0 System Test Configuration

2.1 Justification

The EUT was configured for testing in a typical, and in the confines as outlined in MP-5. The EUT was powered from AC mains.

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.

2.2 EUT Exercising Software

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

2.3 Special Accessories

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

2.4 Equipment Modification

Any modifications installed previous to testing by Go-Gro Industries Limited 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
Assistant Manager
Intertek Testing Services
Agent for Go-Gro Industries Limited

Signature

June 29, 1998

Date

EXHIBIT 3

EMISSION RESULTS

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.

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 dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
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

3.1 Field Strength Calculation (cont)

Example
Assume a receiver reading of 62.0 dBμV 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 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB

AV = -10 dB

FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 dBμV/m

Level in mV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m

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 4.7 dB

TEST PERSONNEL:

Signature

Kenneth H. M. Lam, Compliance Engineer
Typed/Printed Name

June 25, 1998.

Date

Company: Go-Gro Industries Limited
Model: Go-Gro 23047

Date of Test: June 20, 1998

Table 1

Radiated Emissions

Polarity	Frequency (MHz)	Reading (dBμV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Average Factor (-dB)	Net at 30m (dBμV/m)	Limit at 30m (dBμV/m)	Margin (dB)
V	42.681	38.8	16	10	20	12.8	20	-7.2
V	49.950	40.3	16	11	20	15.3	20	-4.7
H	87.178	38.9	16	9	20	11.9	20	-8.1

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.

4. Horn antenna and average detector are used for the emission over 1000MHz.

Test Engineer: Kenneth H. M. Lam

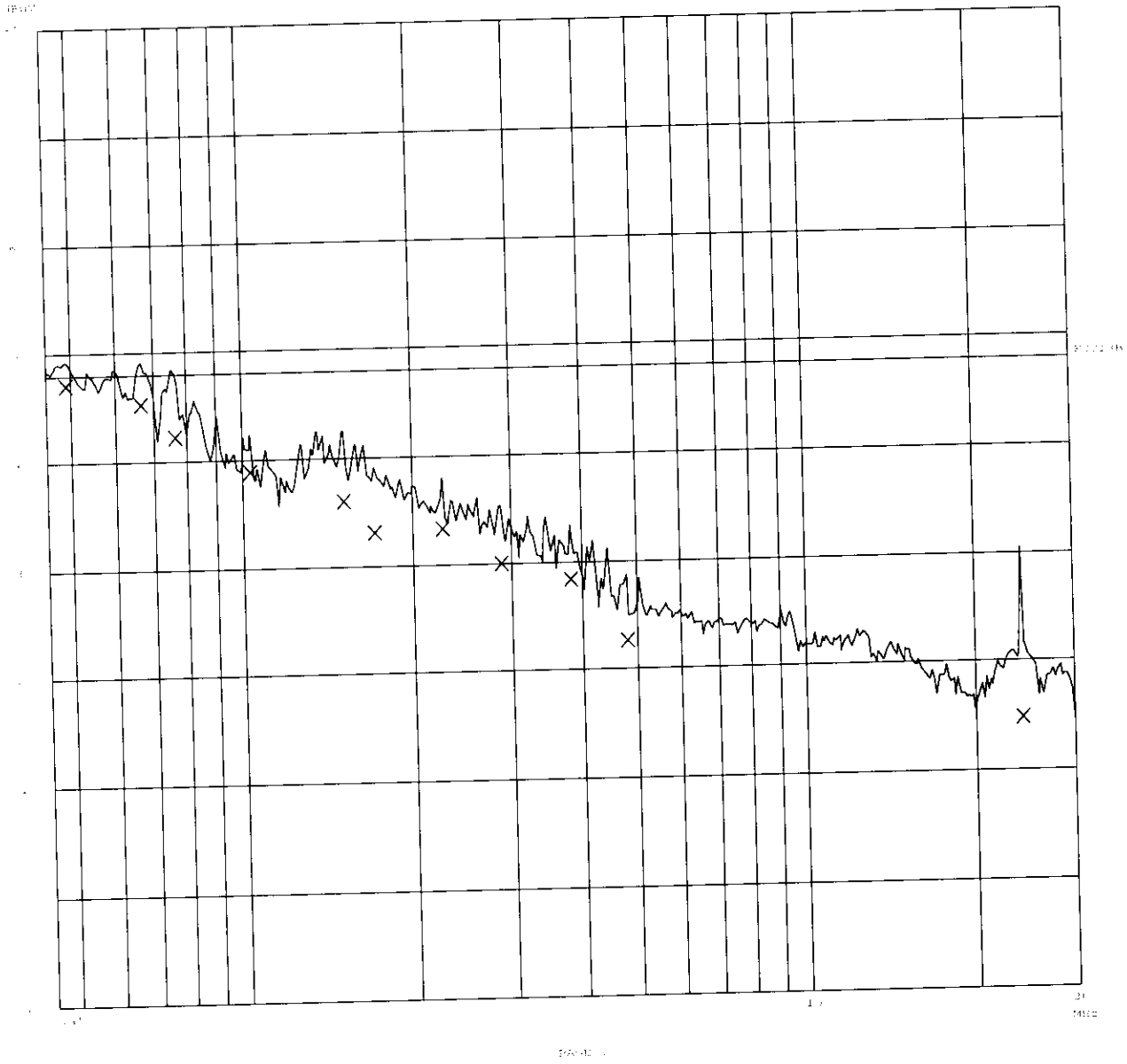
Company: Go-Gro Industries Limited
Model: Go-Gro 23047

Date of Test: June 20, 1998

Graph 1

Conducted Emissions
Section 18.307 Requirements

Report No.: SD32288



Ctrl. No.: N/A

Company: Go-Gro Industries Limited
Model: Go-Gro 23047

Date of Test: June 20, 1998

Table 2

Conducted Emissions
Section 18.307 Requirements

Report No.: 9803288

Tested By:Hong, Report No.:9803288
Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	30M	5k	10k	PK	20ms	AUTO	LN OFF	60dB

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.49000	47.0	48.0
0.66500	45.2	48.0
0.76500	42.2	48.0
1.03500	38.8	48.0
1.51000	36.0	48.0
1.71500	33.1	48.0
2.26000	33.2	48.0
2.87000	30.0	48.0
3.82500	28.3	48.0
4.81000	22.7	48.0
24.20000	14.7	48.0

* limit exceeded

Ctrl. No.: N/A

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 1.0 dB

* All readings are peak unless stated otherwise.

TEST PERSONNEL:

K. H. Lam

Signature

Kenneth H. M. Lam, Compliance Engineer

Typed/Printed Name

June 25, 1998

Date

EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

4.0 Equipment Photographs

Photographs of the tested EUT are attached.