

APPLICATION FOR CERTIFICATION  
On Behalf of  
Viva Home Improvement Co., Ltd.  
Electronic Dimmable Ballast

Model: 84155-D

Prepared for : Viva Home Improvement Co., Ltd.  
No.888, Zhangcao Rd, Caojing,  
Jinshan, Shanghai.

Prepared By : Audix Technology (Shenzhen) Co., Ltd.  
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Report Number • ACS-20F006  
Date of Test • Jan. 03 / 17, 2000  
Date of Report • Jan. 19, 2000

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## TEST REPORT DECLARATION

### Test Procedure Used:

FCC RULES AND REGULATIONS PART 18 SUBPART C RF LIGHTING DEVICES  
CONSUMER PRODUCT (1998) AND MP-5/1986

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC 18 Part RF Lighting Device limits both radiated and conducted emissions.

The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed of full responsibility for the accuracy and completeness of these tests. Also, this report shows that the EUT is technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Date of Test : Jan. 03 / 17, 2000

Prepared by : Fanny Yang 2/16, 2000  
(FANNY YANG / ASSISTANT)

Reviewer : Martin Lu 16/2  
(MARTIN LU / SUPERVISOR)

For and on behalf of  
AUDIX TECHNOLOGY (SHENZHEN) CO.,LTD.

Approved & Authorized Signer :

*Smart*  
-----  
(SMART CARD MANAGER)

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

|              |   |  |
|--------------|---|--|
| Description  | • | Electronic Dimmable Ballast  |
| Power Cord   | • | Unshielded Detachable 1.5m   |
| Model Number | • | 84155-D  |
| Power Cord   | • | Unshielded Detachable 1.5m   |
| Applicant    | • | Viva Home Improvement Co., Ltd.<br>No.888, Zhangcao Rd, Caojing,<br>Jinshan, Shanghai. |
| Manufacturer | • | Elec-Mart Co., Ltd.<br>4th, Ind. Zone, Paisha, Humen,<br>Dongguan.                     |
| Date of Test | • | Jan. 03 / 17, 2000   |

## 1.2. Test Facility

### Site Description

|                       |   |  |
|-----------------------|---|--|
| 3m Anechoic Chamber : | Certificated by FCC, USA<br>Aug. 18, 1997                                 |  |
| 3m & 10m Open Site :  | Certificated by FCC, USA<br>Feb. 13, 1998                                 |  |
| EMC Lab.              | Certificated by VCCI, Japan<br>Oct. 29, 1998                              |  |
|                       | Certificated by DATech, German<br>Feb. 02, 1999                           |  |
|                       | Certificated by NVLAP, USA<br>until Mar. 03, 2000<br>NVLAP Code: 200372-0 |  |
|                       | Certificated by DNV, Norway<br>May 26, 1999                               |  |
| Name of Firm          | :   | Audix Technology (Shenzhen) Co., Ltd.  |
| Site Location         | :   | No. 6, Ke Feng Rd., 52 Block,<br>Shenzhen Science & Industrial Park,<br>Nantou, Shenzhen, Guangdong, China |

## 1.3. Test Uncertainty

Conducted Emission Uncertainty = ±2.66dB

Radiated Emission Uncertainty = ±4.26dB

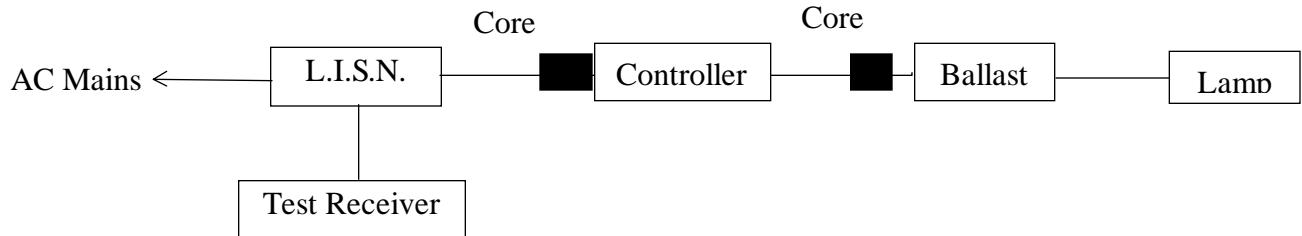
## 2. POWER LINE CONDUCTED EMISSION TEST

### 2.1. Test Equipment

The following test equipments are used during the power line conducted Emission test:

| Item | Type           | Manufacturer    | Model No. | Serial No. | Last Cal.   | Cal. Interval |
|------|----------------|-----------------|-----------|------------|-------------|---------------|
| 1.   | Test Receiver  | Rohde & Schwarz | ESHS20    | 836600/006 | Jun. 06, 99 | 1 Year        |
| 2.   | L.I.S.N.       | Kyoritsu        | KNW-407   | 8-541-4    | Jun. 06, 99 | 1 Year        |
| 3.   | Terminator     | EMCO            | 50•       | No. 1      | Jun. 06, 99 | 1 Year        |
| 4.   | Terminator     | EMCO            | 50•       | No. 2      | Jun. 06, 99 | 1 Year        |
| 5.   | RF Cable       | FUJIKURA        | RG-55/U   | LISN Cable | Aug. 30, 99 | 1/2 Year      |
| 6.   | Coaxial Switch | Anritsu         | MP59B     | M73989     | Dec. 05, 99 | 1/2 Year      |

### 2.2. Block Diagram of Test Setup



(EUT: Electronic Dimmable Ballast)

### 2.3. Power Line Conducted Emission Limit

| Frequency<br>MHz | Limit<br>dB(μV) |
|------------------|-----------------|
| 0.45 ~ 30        | 48              |

### 2.4. EUT Configuration on Test

The following equipments are installed on RF LINE VOLTAGE test to meet the FCC 18 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

#### 2.4.1. Electronic Dimmable Ballast•EUT)

|               |                       |
|---------------|-----------------------|
| Model Number  | • 84155-D             |
| Serial Number | • F2000010402         |
| Manufacturer  | • Elec-Mart Co., Ltd. |

## 2.5. Operating Condition of EUT

- 2.5.1. Setup the EUT as shown in Section 2.2.
- 2.5.2. Turn on the power of all equipments.
- 2.5.3. Let the EUT works in test mode (ON) and measure it.

## 2.6. Test Procedure

The EUT is put on table which is 0.8m above the ground and away from other metallic surface at least 0.4m. The EUT is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm coupling impedance for the tested equipments. Both sides of AC line(Line & Neutral) are checked for maximum conducted interference. In order to find the maximum emission Levels, the relative positions of equipments and all of the interface cables must be changed according to MP-5/1986 on conducted Emission test.

The bandwidth of the test receiver (R & S Test Receiver ESHS20) is set at 10KHz.

The frequency range from 450KHz to 30MHz is checked.

All the test results are listed in Section 2.7. and all the scanning waveforms are attached within Appendix I.

## 2.7. Power Line Conducted Emission Test Results

**PASS.**

The frequency range from 450KHz to 30 MHz is investigated.

All emissions not reported below are too low against the prescribed limits.

|                 |                             |               |      |
|-----------------|-----------------------------|---------------|------|
| Date of Test •  | Jan. 17, 2000               | Temperature • | 25 • |
| EUT •           | Electronic Dimmable Ballast | Humidity •    | 57 • |
| Model No. •     | 84155-D                     | Test Mode •   | ON   |
| Test Engineer • | Rees Zeng                   |               |      |

| Frequency<br>MHz | Reading            |                    | Limit<br>dB(μV) |
|------------------|--------------------|--------------------|-----------------|
|                  | Phase VA<br>dB(μV) | Phase VB<br>dB(μV) |                 |
| 0.450            | *                  | 40.8               | 48.0            |
| 0.452            | 40.2               | *                  | 48.0            |
| 0.695            | *                  | 38.2               | 48.0            |
| <b>0.723</b>     | <b>42.0</b>        | *                  | <b>48.0</b>     |
| 0.800            | 39.4               | *                  | 48.0            |
| 0.830            | *                  | 38.8               | 48.0            |
| 0.950            | *                  | 39.2               | 48.0            |

**Remark •**

1. All readings are Quasi-Peak values.
2. The worst emission is detected at 0.723 MHz with corrected signal level of 42.0 dB(μV) (limit is 48 dB(μV)) when the VA side of the EUT is connected to L.I.S.N.

*Martin Lin 16/2*

Reviewer: \_\_\_\_\_

### 3. RADIATED EMISSION TEST

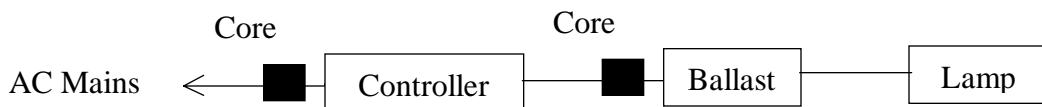
#### 3.1. Test Equipment

The following test equipments are used during the radiated emission test:

| Item | Equipment         | Manufacturer    | Model No. | Serial No.      | Last Cal.   | Cal. Interval |
|------|-------------------|-----------------|-----------|-----------------|-------------|---------------|
| 1.   | EMI Test Receiver | HP              | 85422E    | 3625A00181      | Jun. 06, 99 | 1 Year        |
| 2.   | Test Receiver     | Rohde & Schwarz | ESVS20    | 830350/005      | Jun. 06, 99 | 1 Year        |
| 3.   | Amplifier         | HP              | 8447D     | 2944A07794      | Dec. 05, 99 | 1/2 Year      |
| 4.   | Bilog Antenna     | Chase           | CBL6112A  | 2176            | Sep. 26, 99 | 1 Year        |
| 5.   | Computer          | N/A             | N/A       | N/A             | N/A         | N/A           |
| 6.   | Printer           | NEC             | P3800     | 568101448       | N/A         | N/A           |
| 7.   | RF Cable          | MIYAZAKI        | 5D-2W     | 3# Chamber No.1 | Aug.11, 99  | 1/2 Year      |
| 8.   | RF Cable          | MIYAZAKI        | 5D-2W     | 3# Chamber No.2 | Aug.11, 99  | 1/2 Year      |
| 9.   | RF Cable          | FUJIKURA        | RG-55/U   | 3# Chamber No.3 | Aug.11, 99  | 1/2 Year      |
| 10.  | RF Cable          | FUJIKURA        | RG-55/U   | 3# Chamber No.4 | Aug.11, 99  | 1/2 Year      |
| 11.  | Coaxial Switch    | Anritsu         | MP59B     | M74389          | Dec. 05, 99 | 1/2 Year      |

#### 3.2. Block Diagram of Test Setup

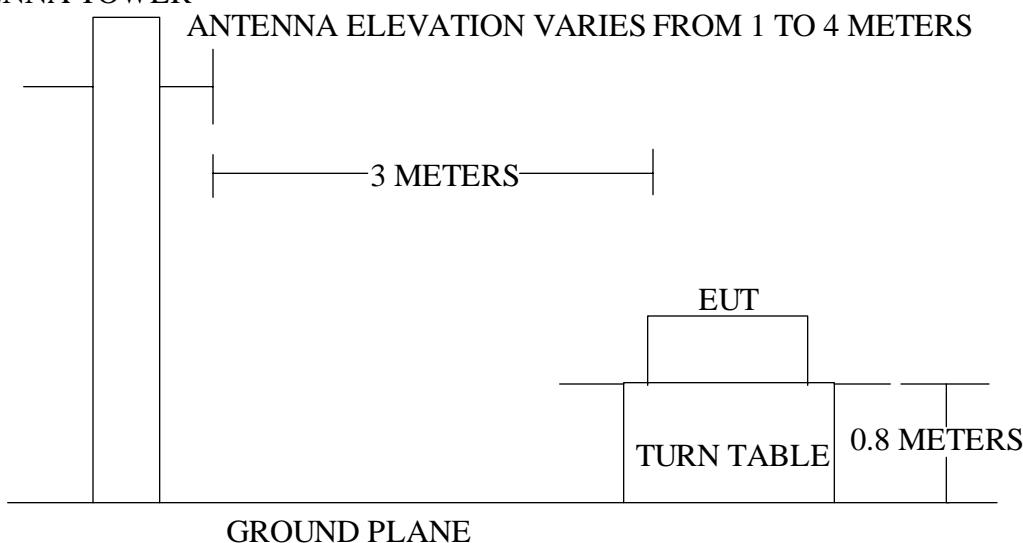
##### 3.2.1. Block Diagram of EUT



(EUT: Electronic Dimmable Ballast)

##### 3.2.2. Anechoic Chamber Test Setup Diagram

###### ANTENNA TOWER



### 3.3. Radiation Limit

| FREQUENCY<br>MHz | DISTANCE<br>Meters | FIELD STRENGTHS LIMITS<br>dB( $\mu$ V)/m |
|------------------|--------------------|--|
| 30 ~ 88          | 3                  | 40.0                                     |
| 88 ~ 216         | 3                  | 43.5                                     |
| 216 ~ 1000       | 3                  | 46.0                                     |

Remark • (1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

### 3.4. EUT Configuration on Test

The configuration of EUT is same as those used in conducted Emission test. Please refer to Section 2.4.

### 3.5. Operating Condition of EUT

Same as conducted Emission test which is listed in Section 2.5.

### 3.6. Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The Resolution bandwidth setting on the test receiver (R&S Test Receiver ESVS20) is set at 120KHz.

The frequency range from 30MHz to 1000MHz is checked.

The test mode (ON) is tested in Anechoic Chamber and all the scanning waveform are attached within Appendix II.

### 3.7. Radiated Emission Test Results.

**PASS.**

The frequency range from 30MHz to 1000MHz is investigated.  
Please see the following pages.

#### 3.7.1. Horizontal Value Test Results.

As the Horizontal peak-value is too low against the limit, So the Quasi-peak value had been omitted.

#### 3.7.2. Vertical Value Test Results

Date of Test : Jan 03, 2000 Temperature : 25•

EUT : Electronic Dimmable Ballast Humidity : 57•

Model No. : 84155-D Test Mode : ON

Test Site : Anechoic Chamber Test Engineer : Rees Zeng

| Frequency<br>MHz | Antenna<br>Factor<br>dB/m | Cable<br>Loss<br>dB | Meter Reading<br>dB $\mu$ V | Emission Level<br>dB $\mu$ V/m | Over<br>Limits<br>dB $\mu$ V/m | Limits<br>dB $\mu$ V/m |
|------------------|---------------------------|---------------------|-----------------------------|--------------------------------|--------------------------------|------------------------|
| 68.633           | 13.14                     | 2.17                | 15.70                       | 31.02                          | -8.98                          | 40.00                  |
| 173.470          | 14.40                     | 3.55                | 8.70                        | 26.65                          | -16.85                         | 43.50                  |

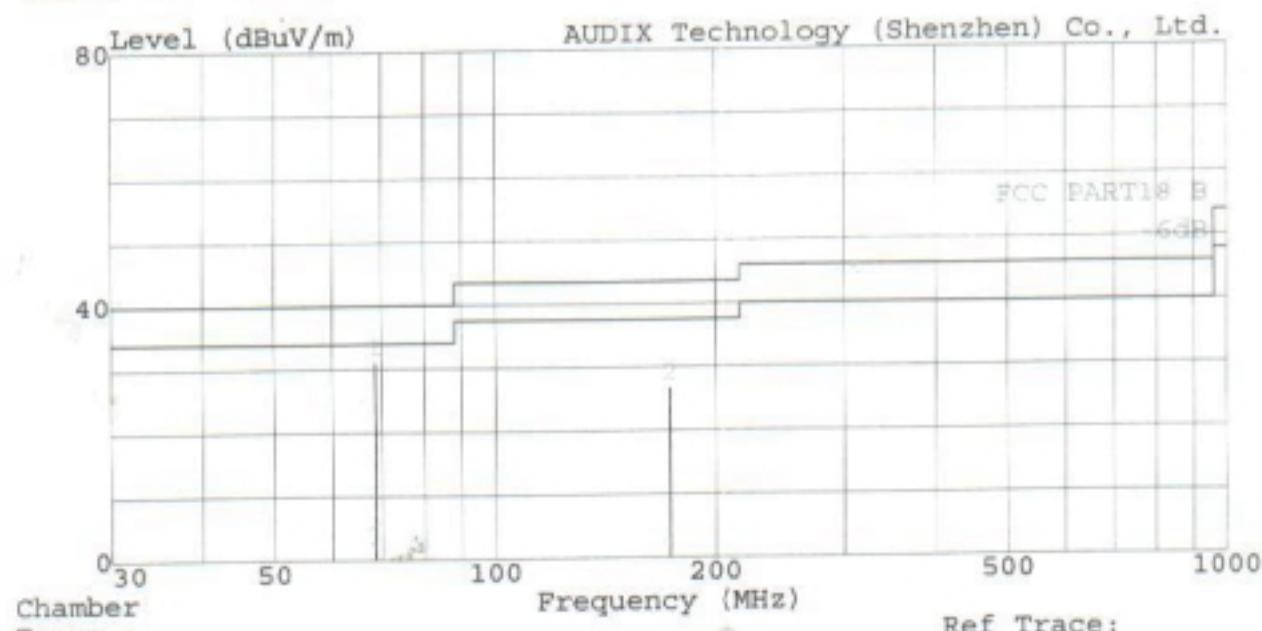
Remark: 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading

*Martin Lin 16/2*

Reviewer: \_\_\_\_\_

Data#: 131 File#: VIVA.EMI

Date: 1-3, 2000 Time: 09:13:33



Chamber

Ref Trace:

Trace :  
 Limit : FCC PART18 B 3m  
 Probe : 2176FACTOR VERTICAL  
 Margin: -6.0dB  
 EUT : Electronic Dimmable Ballast  
 Power : 120V/60Hz  
 Memo : M/N:84155-D  
 :  
 :

Page: 1

|   | Freq    | Level | Over Limit | Limit Line | Read Level | Probe Factor | Cable Loss | Preamp Factor | Remark |
|---|---------|-------|------------|------------|------------|--------------|------------|---------------|--------|
|   | MHz     | dB    | dB         | dB         | dB         | dB           | dB         | dB            |        |
| 1 | 68.633  | 31.02 | -8.98      | 40.00      | 15.70      | 13.14        | 2.17       | 0.00          |        |
| 2 | 173.470 | 26.65 | -16.85     | 43.50      | 8.70       | 14.40        | 3.55       | 0.00          |        |

## 4. PHOTOGRAPH

### 4.1. Photos of Power Line Conducted Emission Test



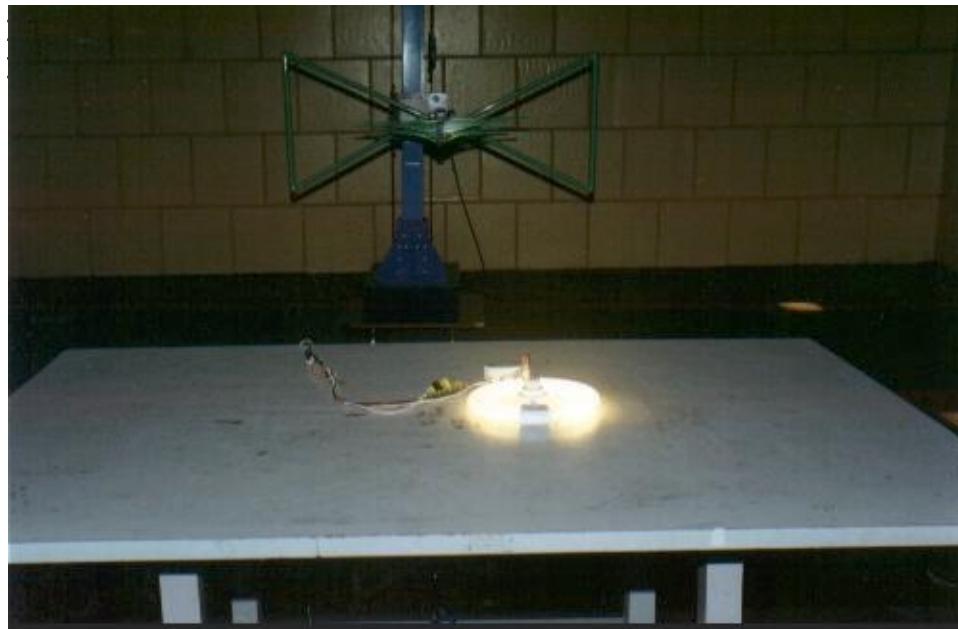
FRONT VIEW OF CONDUCTED EMISSION TEST



BACK VIEW OF CONDUCTED EMISSION TEST

## 4.2. Photos of Radiated Emission Test

### 4.2.1. Photos of Radiated Emission Test in Chamber

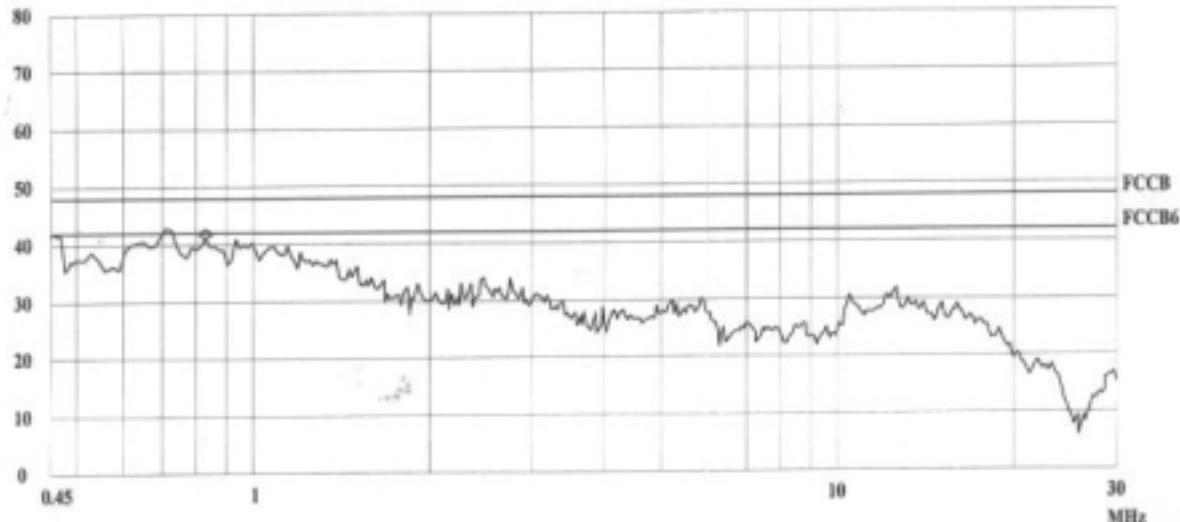


# APPENDIX I

## Conduction Emission Test FCC Part18

EUT: Electronic Dimmable Ballast M/N:84155-D  
Manuf: Viva  
Op Cond: ON  
Operator: Rees  
Test Spec: V<sub>a</sub> 120V/60Hz  
Comment: Temp:25°C  
Humi:60%

dBuV Mkr : 830.00 kHz 41.1 dBuV

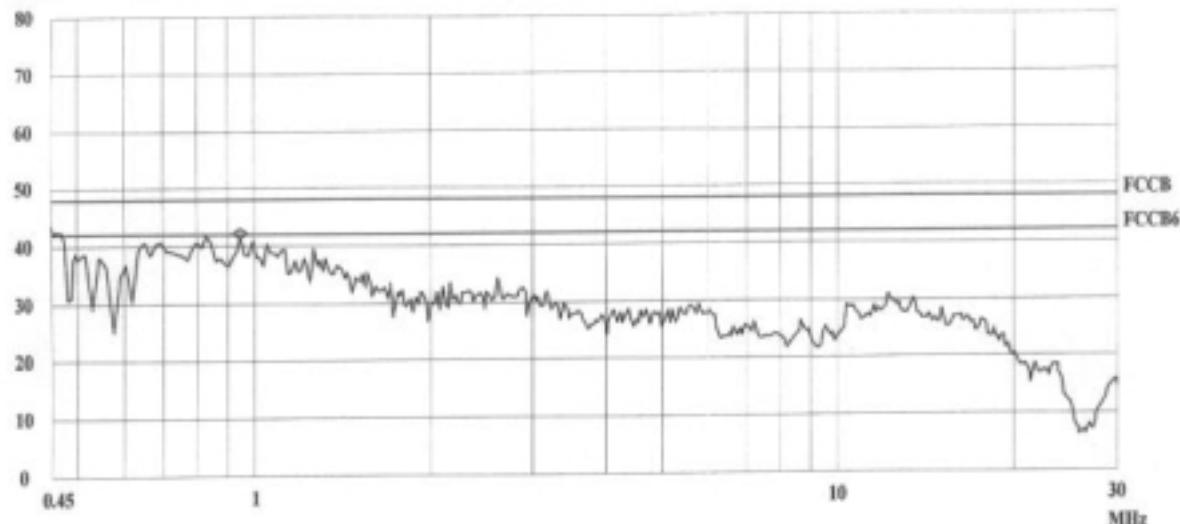


## Conduction Emission Test FCC Part18

17. Jan 00 11:51

EUT: Electronic Dimmable Ballast M/N:84155-D  
Manuf: Viva  
Op Cond: ON  
Operator: Rees  
Test Spec: V<sub>a</sub> 120V/60Hz  
Comment: Temp:25°C  
Humi:60%

dBuV Mkr : 950.00 kHz 41.4 dBuV



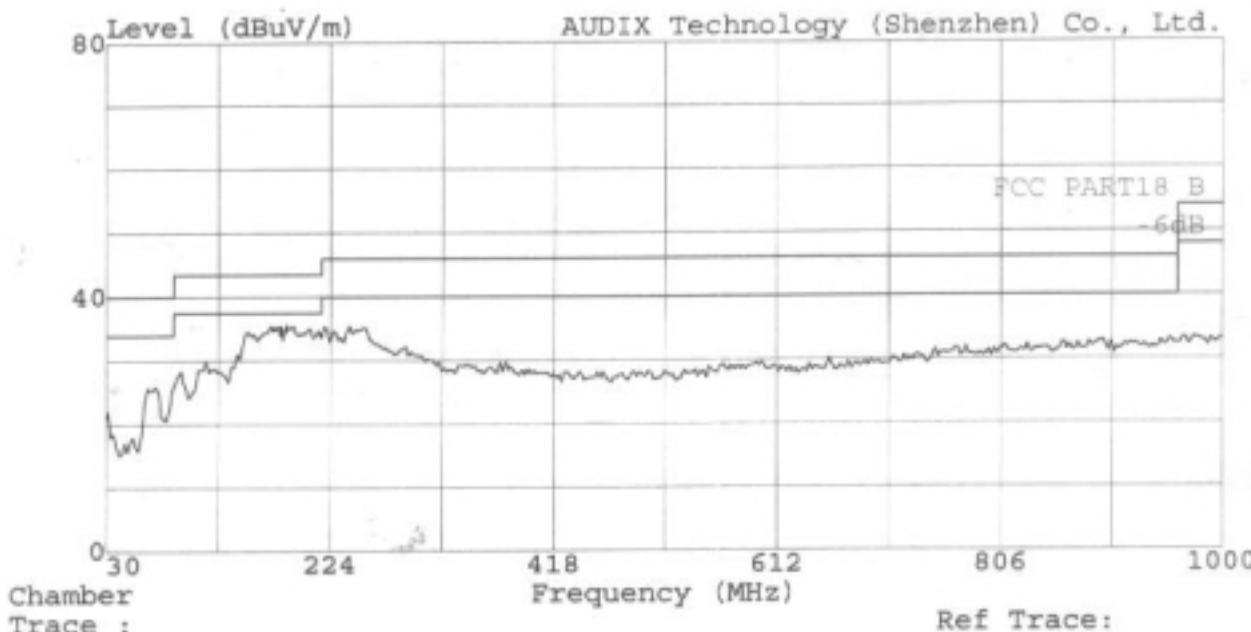
## APPENDIX II

AUDIX

52 Block  
Shenzhen Science & Industry Park  
Nantou, Shenzhen, Guangdong, China  
AUDIX Technology (Shenzhen) Co., Ltd. Tel: 0755-6639495..7 Fax: 0755-6632877

Data#: 132 File#: VIVA.EMI

Date: 1-3, 2000 Time: 09:15:51



Trace : Ref Trace:  
Limit : FCC PART18 B 3m  
Probe : 2176FACTOR HORIZONTAL  
Margin: -6.0dB  
EUT : Electronic Dimmable Ballast  
Power : 120V/60Hz  
Memo : M/N:84155-D  
: ON

**AUDIX**

FCC ID: OGB84155D

52 Block  
Shenzhen Science & Industry Park  
Nantou, Shenzhen, Guangdong, China  
AUDIX Technology (Shenzhen) Co., Ltd. Tel: 0755-6639495..7 Fax: 0755-6632877

Data#: 130 File#: VIVA.EMI

Date: 1-3, 2000 Time: 09:11:46

