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

Model: 84155

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

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Rd., 52 Block,
Shenzhen Science & Industrial Park,
Nantou, Shenzhen, Guangdong, China

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Report Number • ACS-20F001
Date of Test • Dec. 30, 1999 / Jan. 04, 2000
Date of Report • Jan. 11, 2000

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TEST REPORT DECLARATION

Applicant	•	Viva Home Improvement Co., Ltd.
Manufacturer	•	Elec-Mart Co., Ltd
EUT Description	•	Electronic Ballast
		(A) MODEL NO. : 84155
		(B) SERIAL NO. : F2000010401
		(C) POWER SUPPLY : AC 120V / 60Hz

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 : Dec. 30, 1999 / Jan.04, 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 TSAI / MANAGER)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	•	Electronic Ballast
Model Number	•	84155
Power Cord	•	Unshielded Detachable 1.5m
Applicant	•	Viva Home Improvement Co., Ltd. No.888, Zhangcao Rd, Caojing, Jinshan, Shanghai.
Manufacturer	•	Elec-Mart Co., Ltd. 4th, Ind. Zone, Paisha, Humen, Dongguan.
Date of Test	•	Dec. 30, 1999 / Jan. 04, 2000

1.2. Test Facility

Site Description

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

1.3. Test Uncertainty

Conducted Emission Uncertainty	=	±2.66dB
Radiated Emission Uncertainty	=	±4.26dB

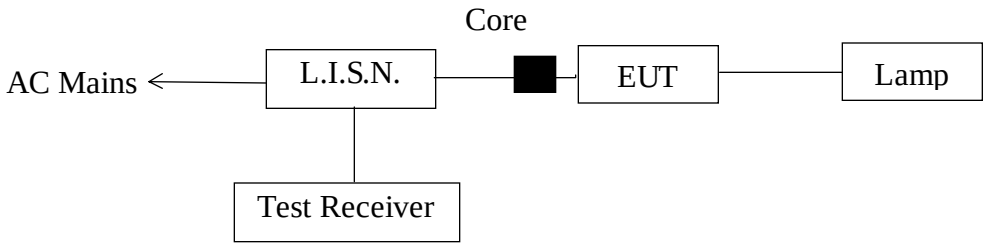
2. POWER LINE CONDUCTED EMISSION TEST

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 Ballast)

2.3. Power Line Conducted Emission Limit

Frequency MHz	Limit 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 Ballast•EUT)

Model Number • 84155
Serial Number • F2000010401
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

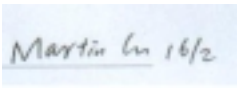
PASS.

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. 04, 2000	Temperature•	25•
EUT•	Electronic Ballast	Humidity•	60•
Model No.•	84155	Test Mode•	ON
Test Engineer•	Rees Zeng		

Frequency MHz	Reading		Limit dB(μV)
	Phase VA dB(μV)	Phase VB dB(μV)	
0.474	*	32.4	48.0
0.476	**36.6**	*	**48.0**
0.515	35.7	*	48.0
0.663	*	35.2	48.0
0.737	36.4	33.3	48.0

Remark• 1. All readings are Quasi-Peak values.
2. The worst emission is detected at 0.476 MHz with corrected signal level of 36.6 dB(μV) (limit is 48 dB(μV)) when the VA side of the EUT is connected to L.I.S.N.

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

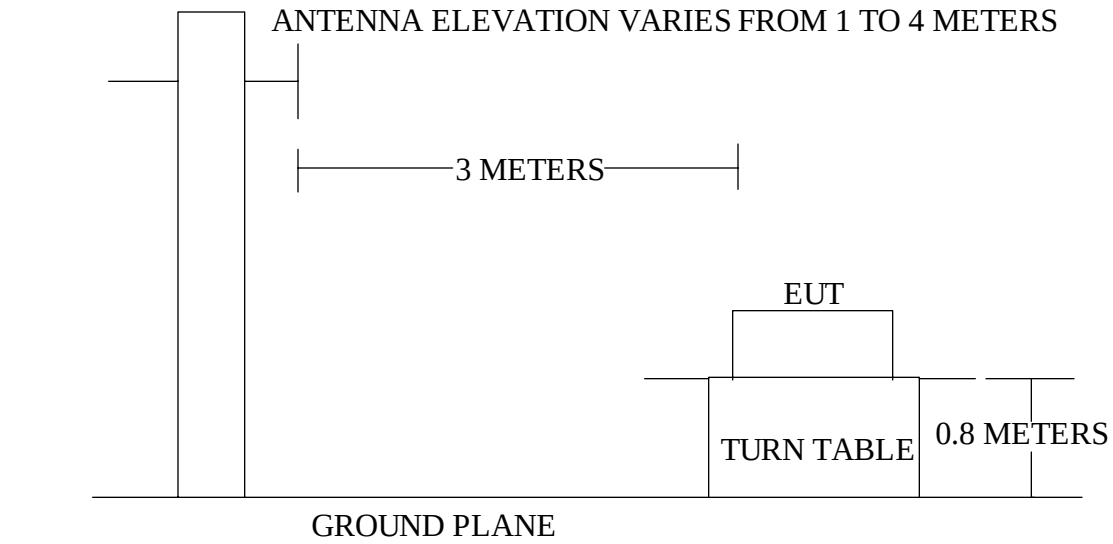
3.2. Block Diagram of Test Setup

3.2.1. Block Diagram of EUT



(EUT: Electronic Ballast)

3.2.2. Anechoic Chamber Test Setup Diagram



3.3. Radiation Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS dB(μV)/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 a 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) are 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 :	Dec 30, 1999	Temperature :	25•		
EUT :	Electronic Ballast	Humidity :	60•		
Model No. :	84155	Test Mode :	**ON**		
Test Site :	Anechoic Chamber	Test Engineer :	Rees Zeng		

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dBµV	Emission Level Vertical dBµV/m	Over Limits dBµV/m	Limits dBµV/m
37.928	16.62	1.29	18.30	36.21	-3.79	40.00
77.348	13.00	2.35	12.30	27.65	-12.35	40.00

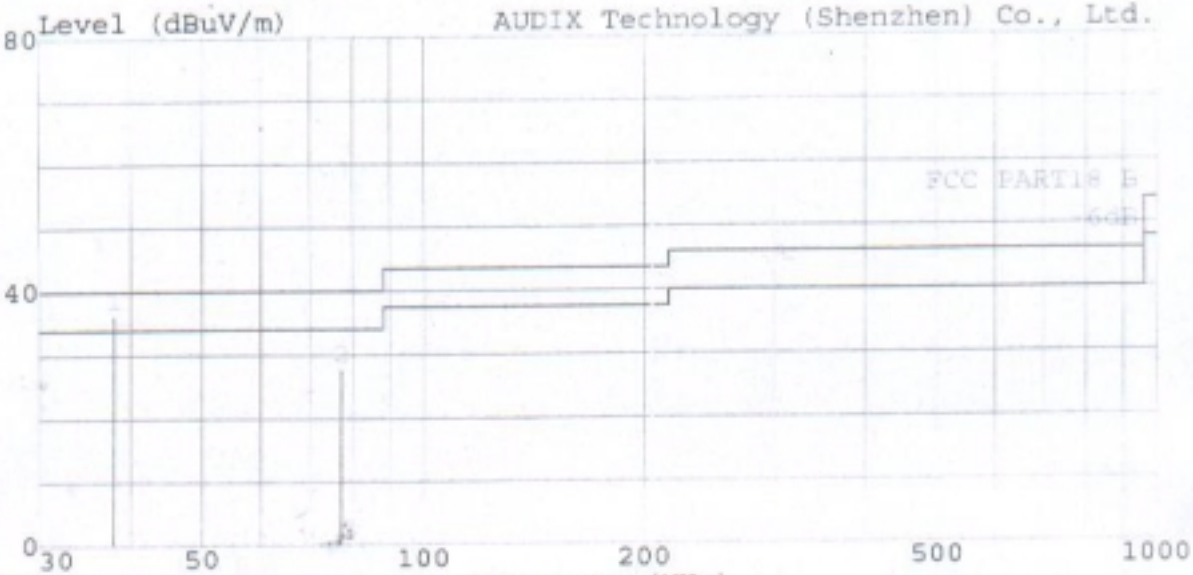
Remark: 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading

Reviewer: Martin Lu 16/2

AUDIX

52 Block
Shenzhen Science & Industry Park
Nantou, Shenzhen, Guangdong, China
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Data#: File#: VIVA.EMI Date: 12-30,1999 Time: 12:11:11



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

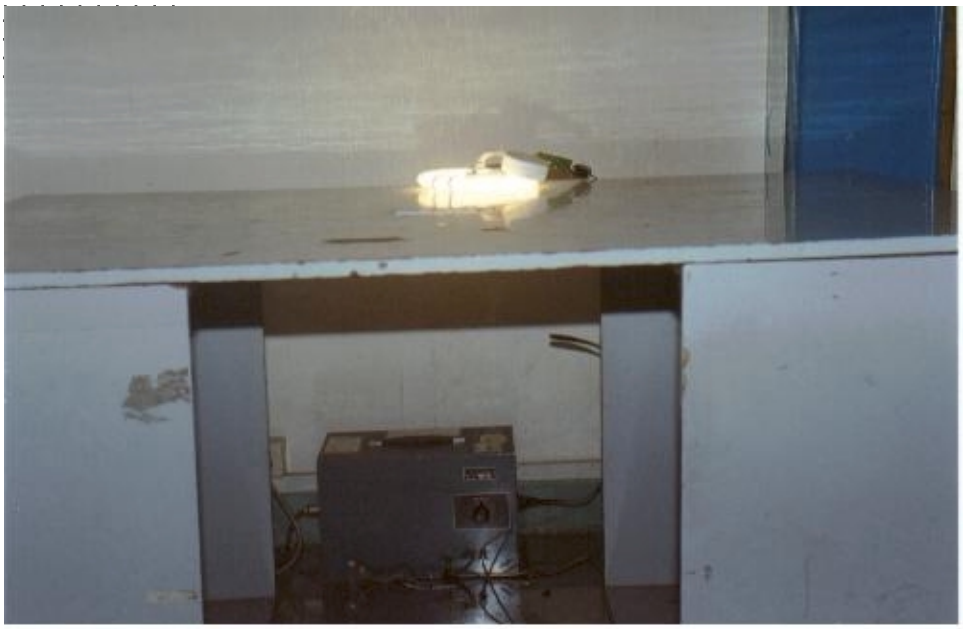
Ref Trace:

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	!	37.928	36.21	-3.79	40.00	18.30	16.62	1.29	0.00	
2		77.348	27.65	-12.35	40.00	12.30	13.00	2.35	0.00	

4. PHOTOGRAPH

4.1. Photos of Power Line Conducted Emission Test



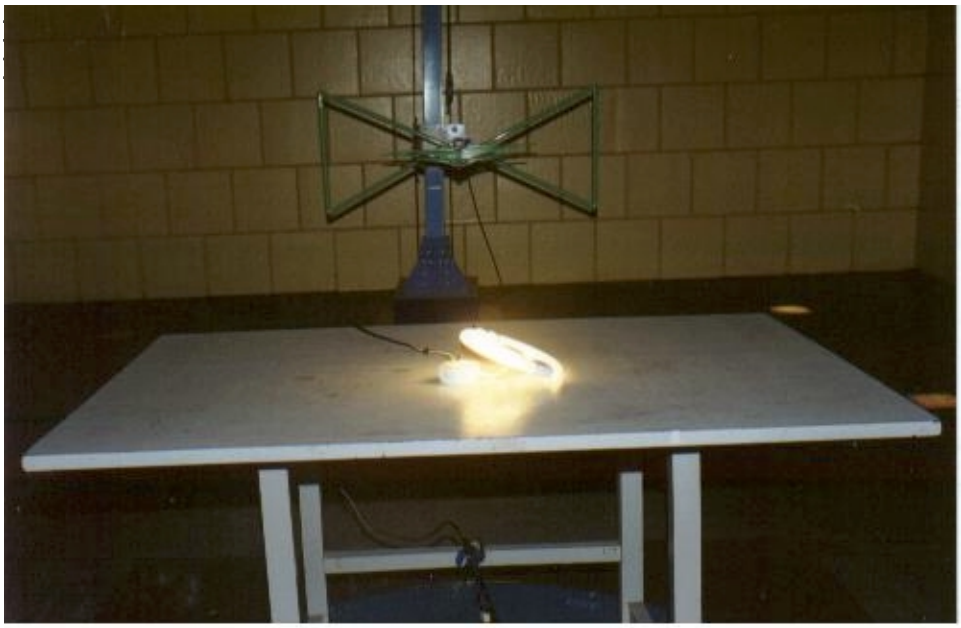
FRONT VIEW OF CONDUCTED EMISSION TEST



BACK VIEW OF CONDUCTED EMISSION TEST

4.2. Photos of Radiated Emission Test

4.2.1. Photos of Radiated Emission Test in Chamber



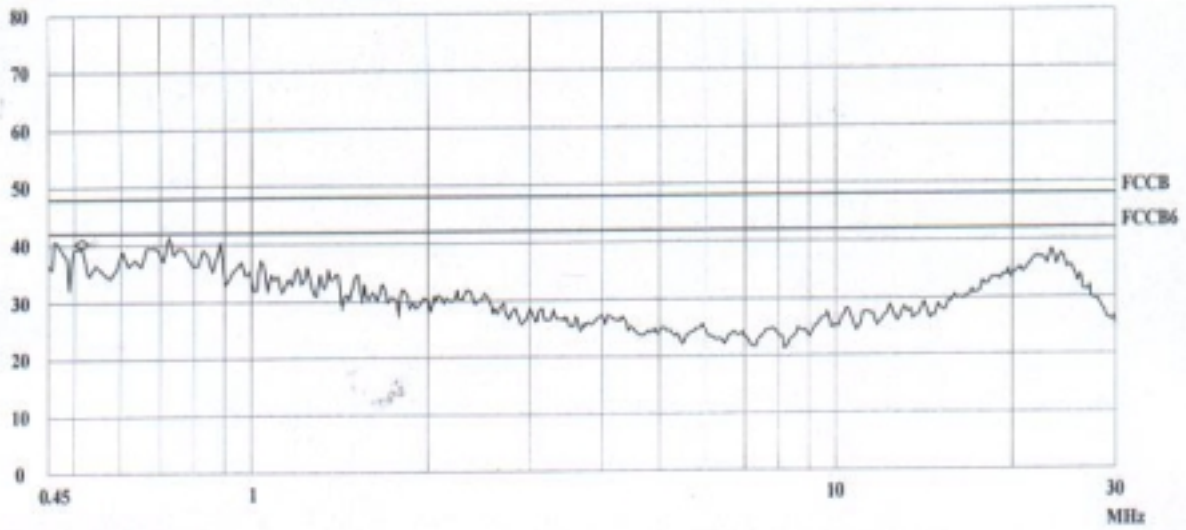
APPENDIX I

Conduction Test
FCC Part18

04. Jan 00 18:18

EUT: Electronic Ballast M/N:84155
Manuf: Viva
Op Cond: On
Operator: Rees
Test Spec: Va 120V/60Hz
Comment: Temp:25°C
Humi:60%

dBuV Mkr : 515.00 kHz 39.5 dBuV

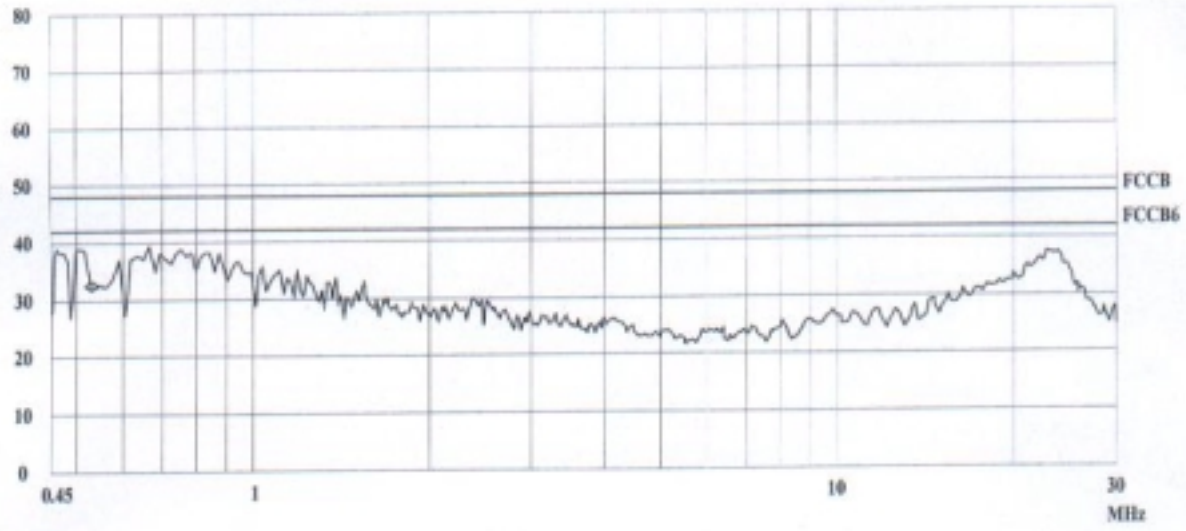


Conduction Test
FCC Part18

04. Jan 00 18:16

EUT: Electronic Ballast M/N:84155
Manuf: Viva
Op Cond: On
Operator: Rees
Test Spec: Vb 120V/60Hz
Comment: Temp:25°C
Humi:60%

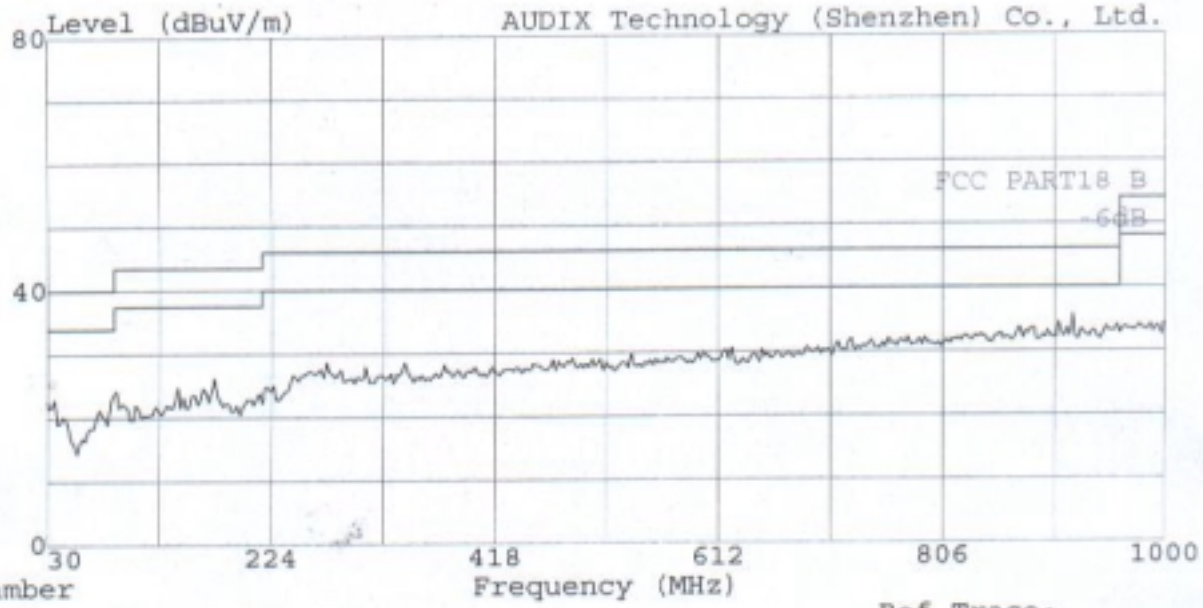
dBuV Mkr : 530.00 kHz 31.6 dBuV



APPENDIX II

AUDIX
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Nantou, Shenzhen, Guangdong, China
AUDIX Technology (Shenzhen) Co., Ltd. Tel:0755-6639495..7 Fax:0755-6632877

Data#: 129 File#: VIVA.EMI Date: 12-30,1999 Time: 12:14:50

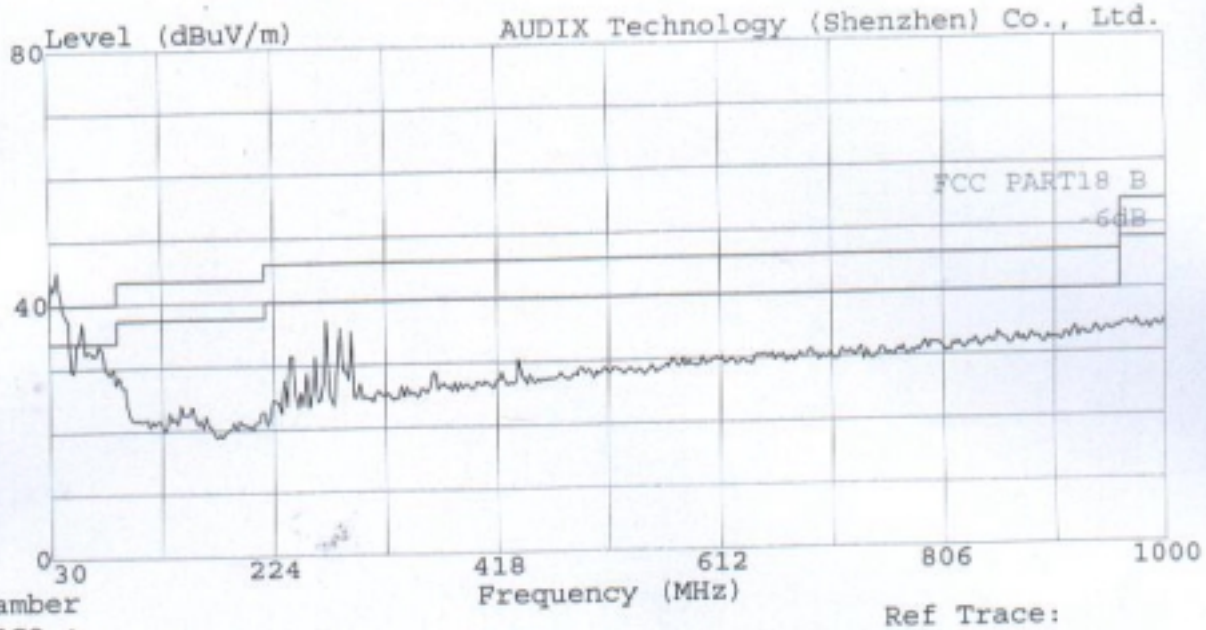


Chamber
Trace :
Limit : FCC PART18 B 3m
Probe : 2176FACTOR HORIZONTAL
Margin: -6.0dB
EUT : Electronic Ballast M/N:84155
Power : 120V/60Hz
Memo : On

Ref Trace:

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

Data#: 127 File#: VIVA.EMI Date: 12-30,1999 Time: 12:10:02



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

Ref Trace: