

Application for FCC Certificate
On Behalf of
Tospo Electronics Co., Ltd.

Compact Fluorescent Lamp

Model No.: TP 120-25/20/13

FCC ID: PDYTPTG25

Prepared For : Tospo Electronics Co., Ltd.
No.2 West Xing-Sheng Road, Hengdian Industrial Area,
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Prepared By : Audix Technology (Shanghai) Co., Ltd.
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Report No. : ACI-F01108
Date of Test : Jan 06, 2002
Date of Report : Jan 09, 2002

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TEST REPORT FOR FCC CERTIFICATE

Applicant : Tospo Electronics Co., Ltd.
Manufacturer : Tospo Electronics Co., Ltd.
EUT Description : Compact Fluorescent Lamp
(A) Model No.:
TP 120-25/20/13
(B) Serial No.:
TE12113WAY-1
(C) Power Supply: 120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 18 CONSUMER DEVICES (2000)
AND MP-5/1986*

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 18 RF Lighting Device limits both conducted emissions and field strength.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be 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 (Shanghai) Co., Ltd.

This report must not be used by the applicant to claim product endorsement by NVLAP or any agency of the U.S. Government.

Date of Test : Jan 06, 2002

Prepared by :	<u>Stella Tang</u>	Test Engineer :	<u>Sammy Chen</u>
	STELLA TANG		SAMMY CHEN
	(Assistant)		(Engineer)
Reviewer :	<u>Byron Kwo</u>	Approved Signatory :	<u>Alex Chiu</u>
	BYRON KWO		ALEX CHIU
	(Supervisor)		(Assistant Manager)

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test

Description : Compact Fluorescent Lamp

Type of EUT : ☒ Production ☐ Pre-product ☐ Pro-type

Model Number : TP 120-25/20/13

Applicant : Tospo Electronics Co., Ltd.
No.2 West Xing-Sheng Road, Hengdian Industrial Area,
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Manufacturer : Tospo Electronics Co., Ltd.
No.2 West Xing-Sheng Road, Hengdian Industrial Area,
Dong Yang City, Zhejiang, P.R. China

Test Model	Apparent Power (V • A)	Real Power (W)
13W	24.1	12.4
20W	44.2	22.4
25W	50.2	25.7

1.2 Description of Test Facility

Site Description : Sept. 17, 1998 file on
(Semi-Anechoic Chamber) Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3F 34Bldg 680 Guiping Rd,
Caohejing Hi-Tech Park,
Shanghai, China 200233

NVLAP Lab Code : 200371-0

1.3 Measurement Uncertainty

Conducted Emission Uncertainty : $U = \pm 2.66\text{dB}$

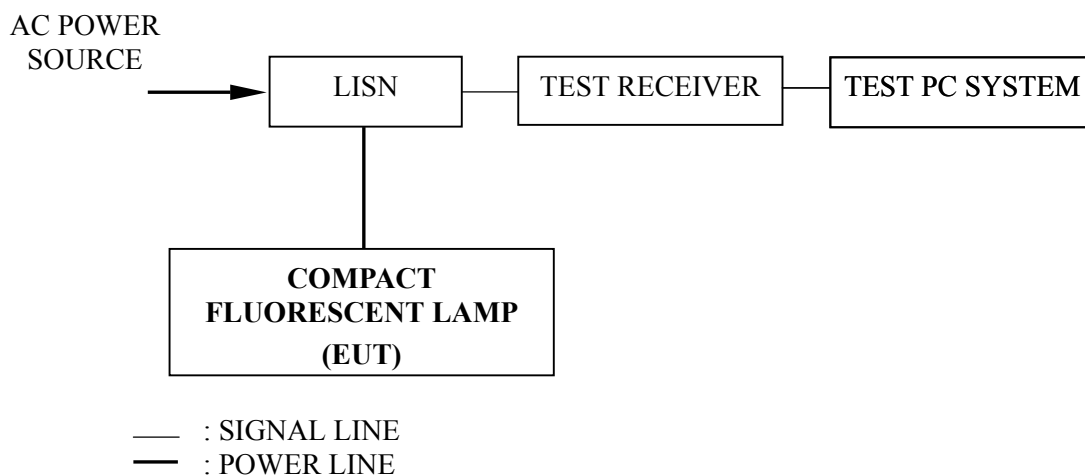
2 AC POWERLINE CONDUCTED EMISSION TEST

2.1 Test Equipment

The following test equipment are used during the powerline conducted emission test in a shielded room:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS10	844077/020	Apr 24, 2001	1 Year
2.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-5	May 08, 2001	1 Year

2.2 Block Diagram of Test Setup



2.3 Conducted Emission Limits

Frequency (MHz)	Maximum RF Line Voltage	
	(μ V)	dB(μ V)
0.45 ~ 2.51	250	48
2.51 ~ 3	3000	70
3 ~ 30	250	48
NOTE 1 – RF Line Voltage dB (μ V) = 20 log RF Line Voltage (μ V) NOTE 2 – The tighter limits shall apply at the boundary between two frequency ranges.		

2.4 Test Configuration

The EUT (listed in Sec. 1.1) was installed as shown on Sec. 2.2 to meet FCC requirement and operating in a manner which tends to maximize its emission level in a normal application.

2.5 Operating Condition of EUT

The EUT was connected to the power mains through a Line Impedance Stabilization Network (LISN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to MP-5/1986 during conducted emission test.

The IF bandwidth of Test Receiver ESHS10 was set at 10 kHz.

The frequency range from 450 kHz to 30 MHz was checked.

The test mode (25W/20W/13W) was done on conducted test and the test results of the highest emissions are listed in Sec. 2.7.

2.6 Test Procedures

2.6.1 Setup the EUT as shown in Sec. 2.2.

2.6.2 Turn on the power of all equipment.

2.6.3 The EUT will be operated normally.

2.7 Test Results

< PASS >

The frequency and amplitude of the highest AC powerline conducted emissions relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

EUT	:	Compact Fluorescent Lamp	Temperature :	24°C
Model No.	:	TP 120-25/20/13	Humidity :	53%
Test Mode	:	25W	Date of Test :	Jan 06, 2002

Test Line	Frequency (MHz)	Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)
VA	0.452	0.33	38.84	39.17	48.00	8.83
	0.677	0.29	34.21	34.50	48.00	13.50
	1.675	0.27	35.71	35.98	48.00	12.02
	1.983	0.27	35.77	36.04	48.00	11.96
	2.156	0.27	35.85	36.12	48.00	11.88
	2.250	0.27	34.87	35.14	48.00	12.86
VB	0.451	0.33	37.32	37.65	48.00	10.35
	0.585	0.30	37.74	38.04	48.00	9.96
	0.629	0.30	35.79	36.09	48.00	11.91
	0.950	0.27	34.50	34.77	48.00	13.23
	1.709	0.25	40.41	40.66	48.00	7.34
	1.764	0.25	34.91	35.16	48.00	12.84
NOTE 1 – Emission Level = Meter Reading + Factor NOTE 2 – Factor = Insertion Loss + Cable Loss NOTE 3 – All reading are Quasi-Peak Values. NOTE 4 – The worst emission is detected at 1.709 MHz with corrected signal level of 40.66dB(μV) (limit is 48.00 dB(μV)), when the VB of the EUT is connected to LISN.						

TEST ENGINEER: Sammy Chen
(SAMMY CHEN)

EUT : Compact Fluorescent Lamp Temperature : 24°C

Model No. : TP 120-25/20/13 Humidity : 53%

Test Mode : 20W Date of Test : Jan 06, 2002

Test Line	Frequency (MHz)	Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)
VA	0.485	0.32	47.42	47.74	48.00	0.26
	0.552	0.30	41.65	41.95	48.00	6.05
	0.624	0.30	43.02	43.32	48.00	4.68
	0.796	0.28	44.70	44.98	48.00	3.02
	0.901	0.28	41.93	42.21	48.00	5.79
	1.396	0.27	36.51	36.78	48.00	11.22
VB	0.484	0.32	45.90	46.22	48.00	1.78
	0.566	0.30	41.63	41.93	48.00	6.07
	0.621	0.30	43.90	44.20	48.00	3.80
	0.789	0.28	40.82	41.10	48.00	6.90
	0.900	0.28	43.29	43.57	48.00	4.43
	1.376	0.26	38.67	38.93	48.00	9.07
NOTE 1 – Emission Level = Meter Reading + Factor NOTE 2 – Factor = Insertion Loss + Cable Loss NOTE 3 – All reading are Quasi-Peak Values. NOTE 4 – The worst emission is detected at 0.485 MHz with corrected signal level of 47.74dB(μV) (limit is 48.00 dB(μV)), when the VA of the EUT is connected to LISN.						

TEST ENGINEER: Sammy Chen
(SAMMY CHEN)

EUT : Compact Fluorescent Lamp Temperature : 24°C

Model No. : TP 120-25/20/13 Humidity : 53%

Test Mode : 13W Date of Test : Jan 06, 2002

Test Line	Frequency (MHz)	Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)
VA	0.464	0.33	41.25	41.58	48.00	6.42
	0.617	0.30	40.57	40.87	48.00	7.13
	0.694	0.29	37.86	38.15	48.00	9.85
	0.849	0.28	38.20	38.48	48.00	9.52
	0.928	0.27	39.16	39.43	48.00	8.57
	1.232	0.27	37.27	37.54	48.00	10.46
VB	0.460	0.33	41.15	41.48	48.00	6.52
	0.613	0.30	38.59	38.89	48.00	9.11
	0.695	0.29	38.06	38.35	48.00	9.65
	0.851	0.28	37.60	37.88	48.00	10.12
	0.924	0.27	39.00	39.27	48.00	8.73
	1.230	0.26	38.03	38.29	48.00	9.71
NOTE 1 – Emission Level = Meter Reading + Factor NOTE 2 – Factor = Insertion Loss + Cable Loss NOTE 3 – All reading are Quasi-Peak Values. NOTE 4 – The worst emission is detected at 0.464 MHz with corrected signal level of 41.85dB(μV) (limit is 48.00 dB(μV)), when the VA of the EUT is connected to LISN.						

TEST ENGINEER: Sammy Chen
(SAMMY CHEN)

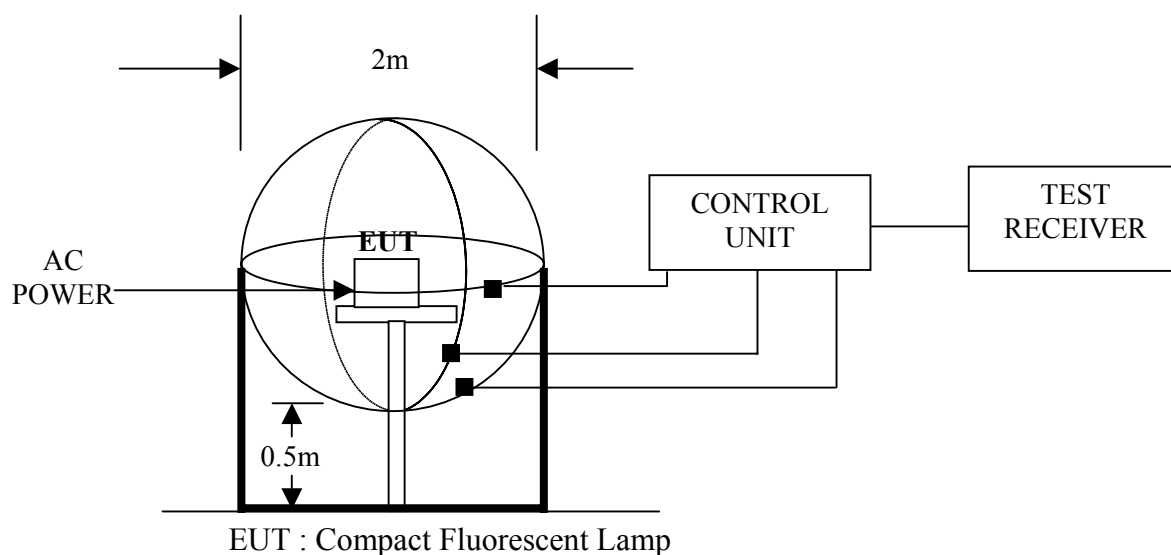
3 FIELDSTRENGTH TEST

3.1 Test Equipment

The following test equipment are used during the field strength test in a shielded room:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Loop Antenna	Laplace	RF300	5001	Oct 25, 2001	1/2 Year
2.	Test Receiver	Rohde & Schwarz	ESHS10	844077/020	Apr 24, 2001	1 Year

3.2 Block Diagram of Test Setup



3.3 Test Configuration

The configuration of the EUT is same as those used in conducted emission test. Refer to Sec. 2.4, except the test setup replaced by Sec. 3.2.

3.4 Operating Condition of EUT

Same as conducted emission test which is listed in Sec. 2.5, except the test setup replaced by Sec. 3.2.

3.5 Test Procedure

The EUT was placed on a wooden table, which is in the center of the loop antenna. The loop antenna is 0.5 meters above the ground. Each side had one sensor. The three sensors were through the control unit to connect the Test receiver, which receiving the emission and find out the maximum emission of each side of the loop antenna.

The IF bandwidth of R&S Test Receiver ESHS10 was set at 200 Hz from 9kHz to 150kHz and 10kHz from 150 kHz to 30 MHz.

The IF frequency range from 9 kHz to 30 MHz was checked.

The test mode (25W/20W/13W) was done on field strength test and all the test results are listed in Sec. 3.6.

3.6 Test Result

<PASS>

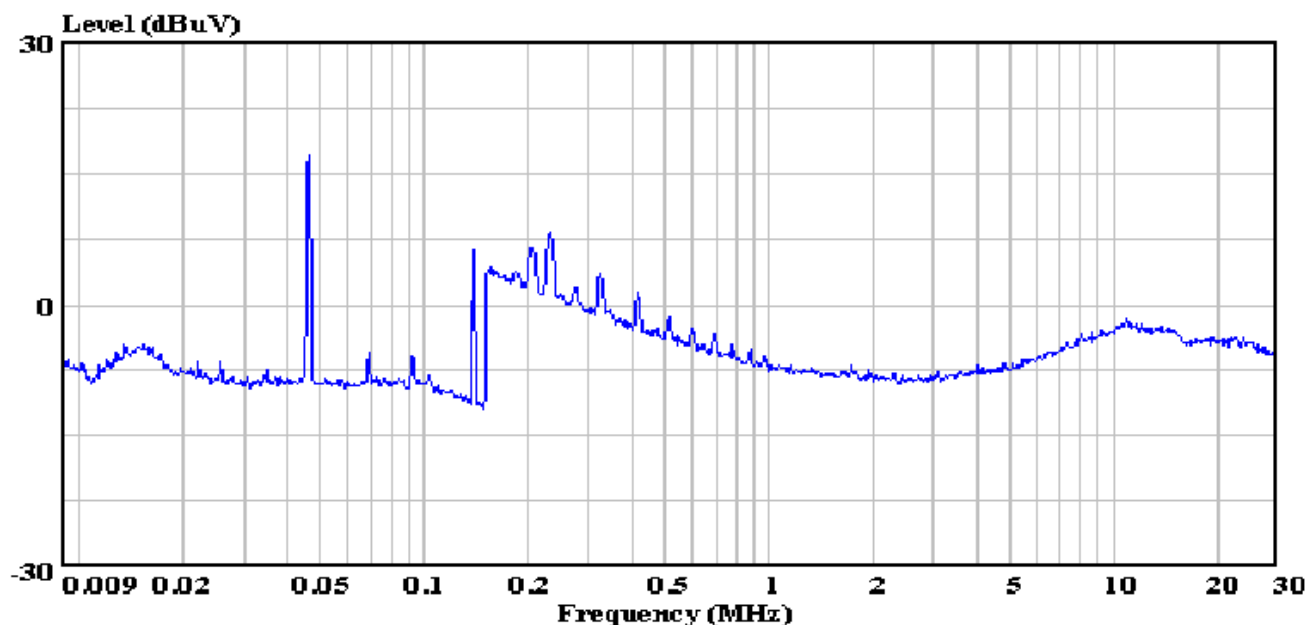
Refer to the following pages.



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audixaci@8848.net

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Site : audix-aci Conducted Emission
Condition :
Project No. : AOE-000148
Applicant : TOSPO Electronics Co., Ltd
EUT : Compact Fluorescent Lamp
M/N : TP120-25/20/13
S/N : TE12113WAY-1
Power Supply : 120V/60Hz
Ambient : 24°C 53%
Test Line : A
Test Mode : 25W
Test Engineer:

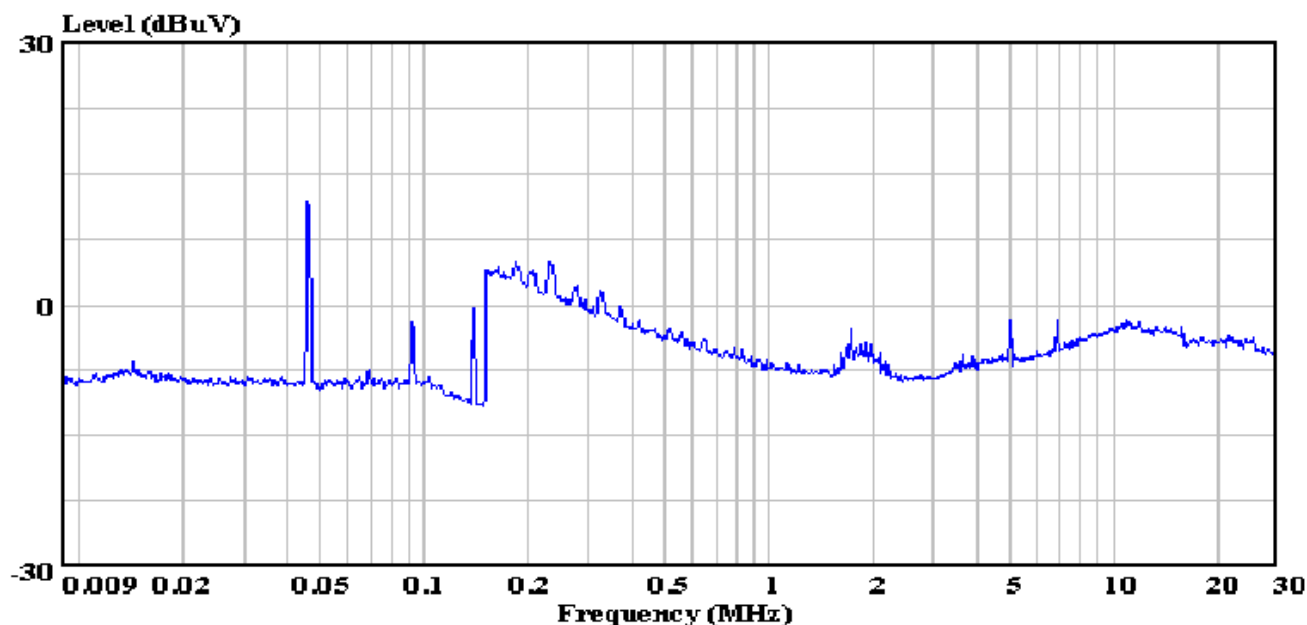
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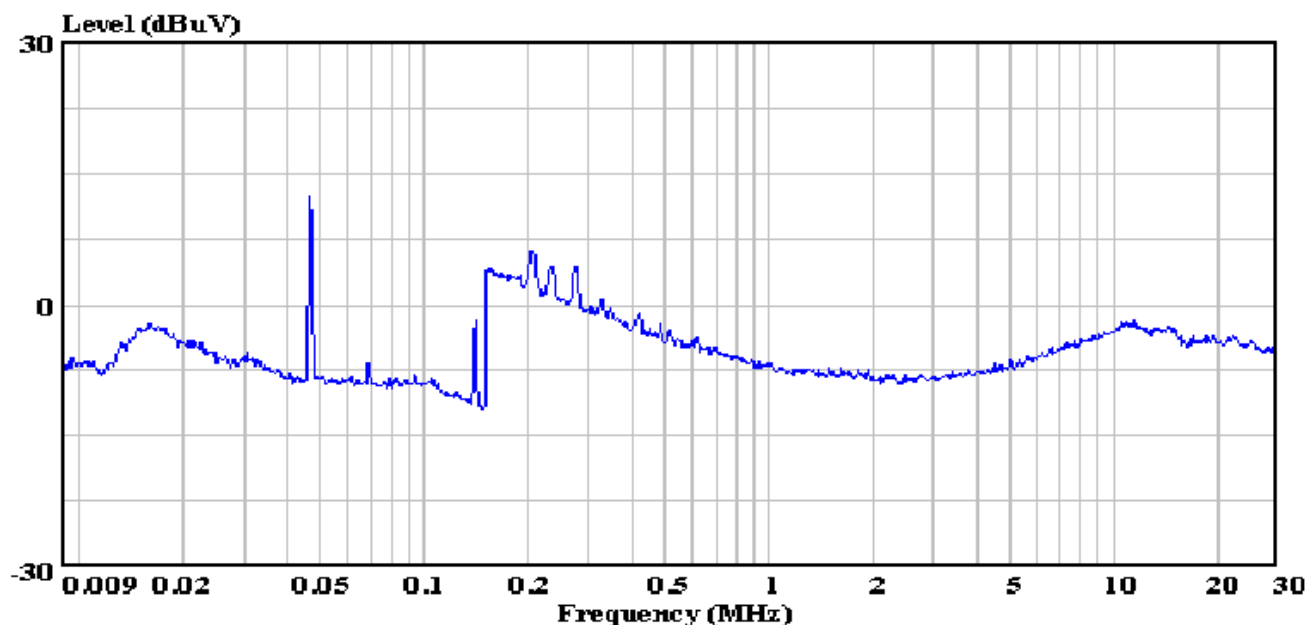
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Condition :
Project No. : AOE-000148
Applicant : TOSPO Electronics Co., Ltd
EUT : Compact Fluorescent Lamp
M/N : TP120-25/20/13
S/N : TE12113WAY-1
Power Supply : 120V/60Hz
Ambient : 24°C 53%
Test Line : B
Test Mode : 25W
Test Engineer: *Sunny Chen*



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Site : audix-aci Conducted Emission
Condition :
Project No. : AOE-000148
Applicant : TOSPO Electronics Co., Ltd
EUT : Compact Fluorescent Lamp
M/N : TP120-25/20/13
S/N : TE12113WAY-1
Power Supply : 120V/60Hz
Ambient : 24°C 53%
Test Line : C
Test Mode : 25W
Test Engineer:

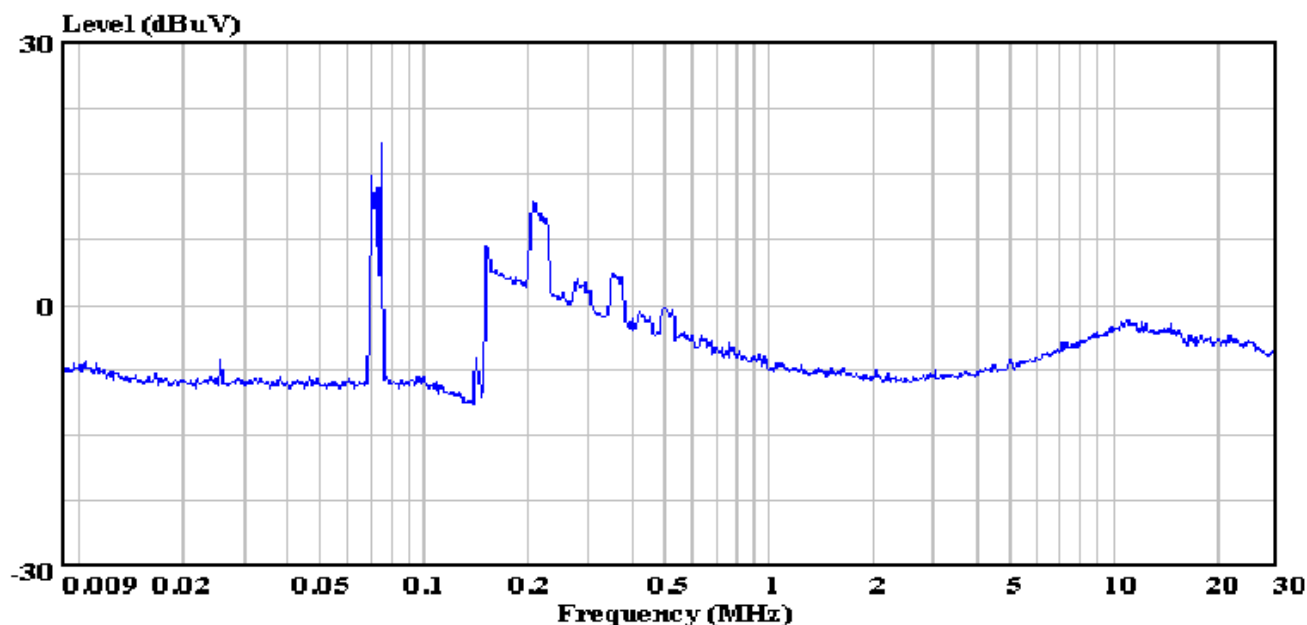
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Condition :
Project No. : AOE-000148
Applicant : TOSPO Electronics Co., Ltd
EUT : Compact Fluorescent Lamp
M/N : TP120-25/20/13
S/N : TE12113WAY-1
Power Supply : 120V/60Hz
Ambient : 24°C 53%
Test Line : A
Test Mode : 20W
Test Engineer:

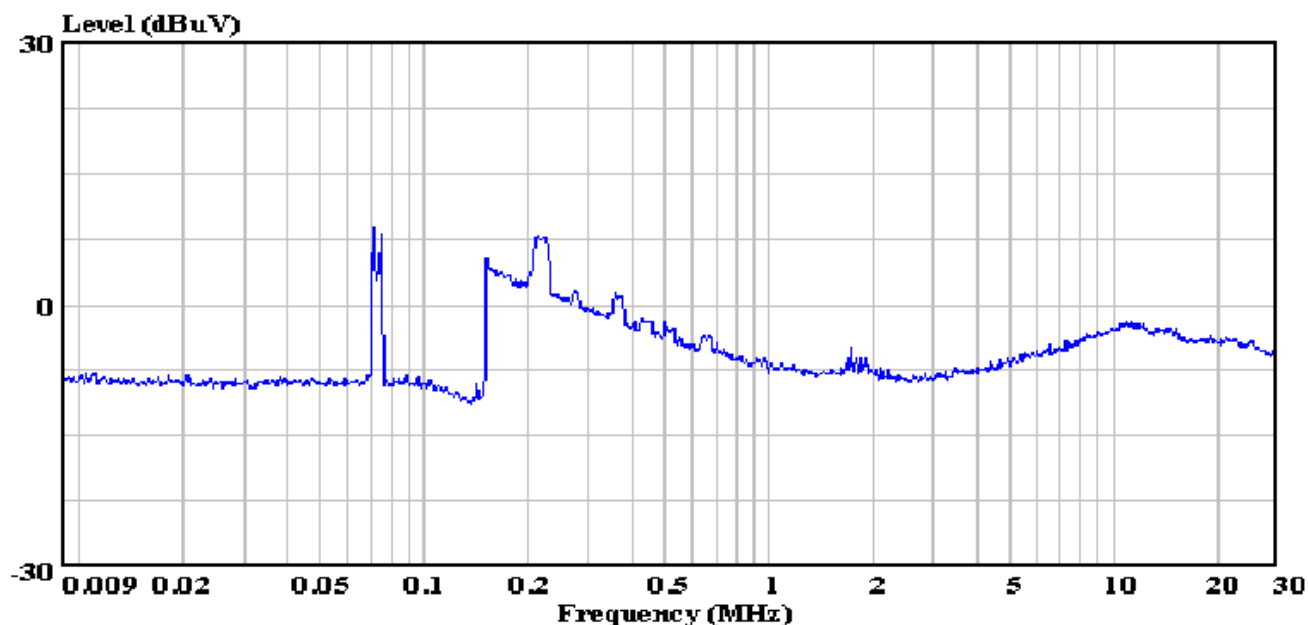
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Condition :
Project No. : AOE-000148
Applicant : TOSPO Electronics Co., Ltd
EUT : Compact Fluorescent Lamp
M/N : TP120-25/20/13
S/N : TE12113WAY-1
Power Supply : 120V/60Hz
Ambient : 24°C 53%
Test Line : B
Test Mode : 20W
Test Engineer:

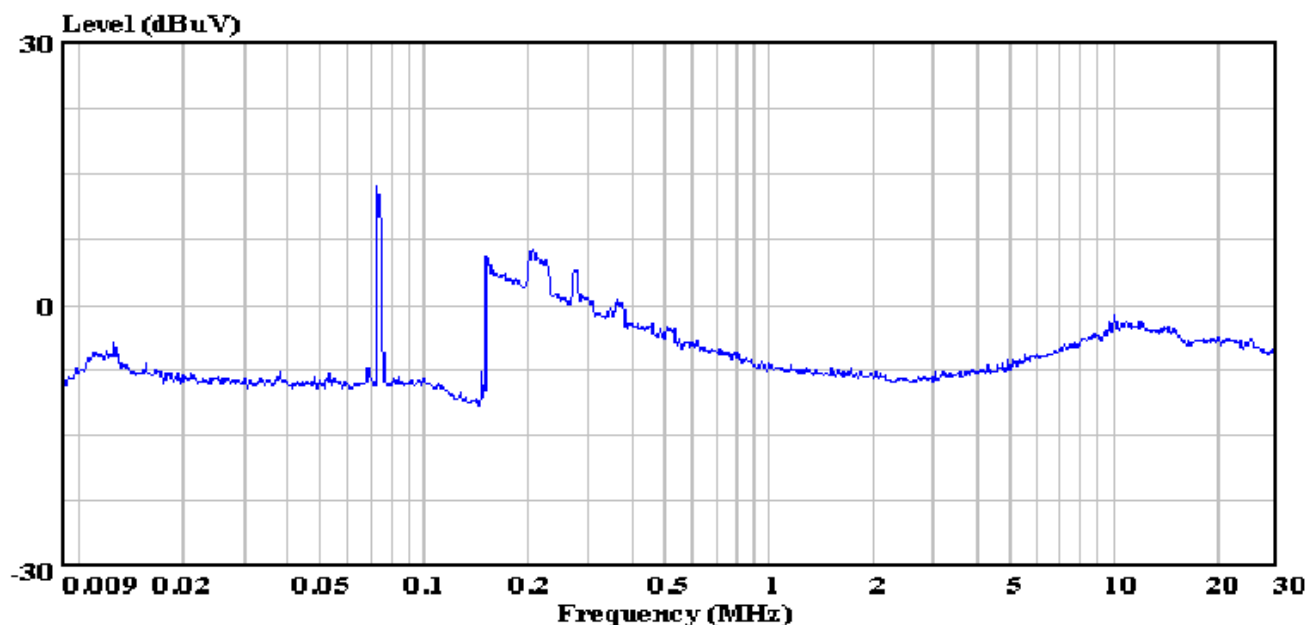
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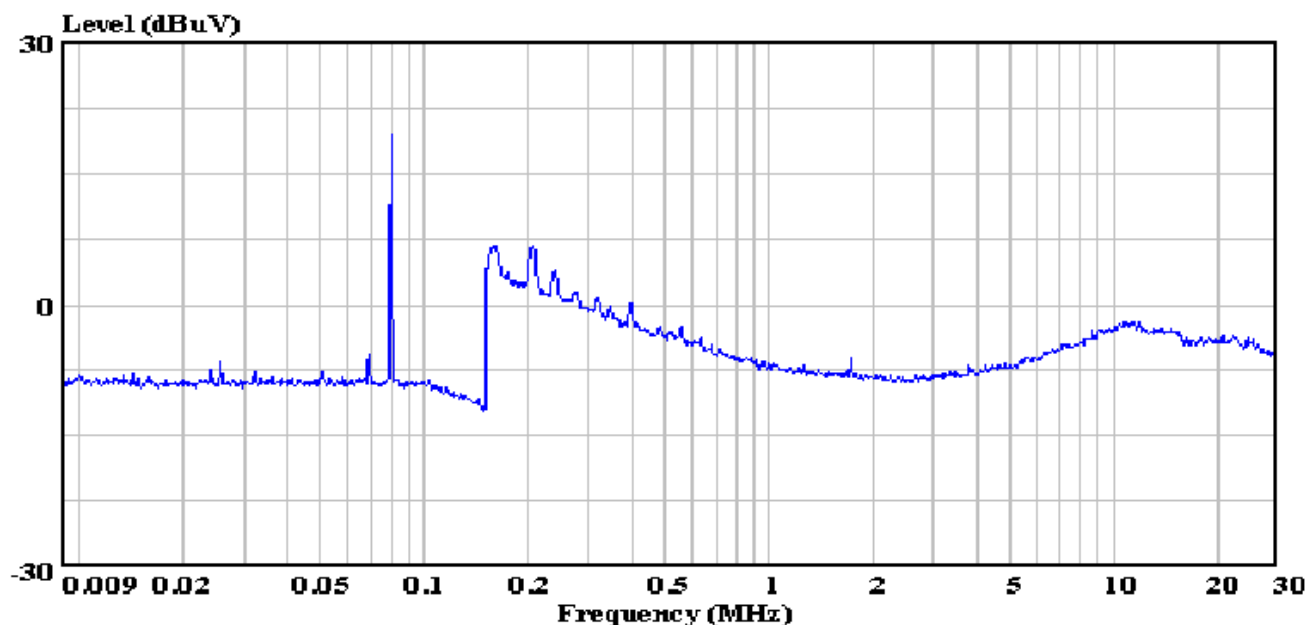
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Condition :
Project No. : AOE-000148
Applicant : TOSPO Electronics Co., Ltd
EUT : Compact Fluorescent Lamp
M/N : TP120-25/20/13
S/N : TE12113WAY-1
Power Supply : 120V/60Hz
Ambient : 24°C 53%
Test Line : C
Test Mode : 20W
Test Engineer: *Sunny Chen*



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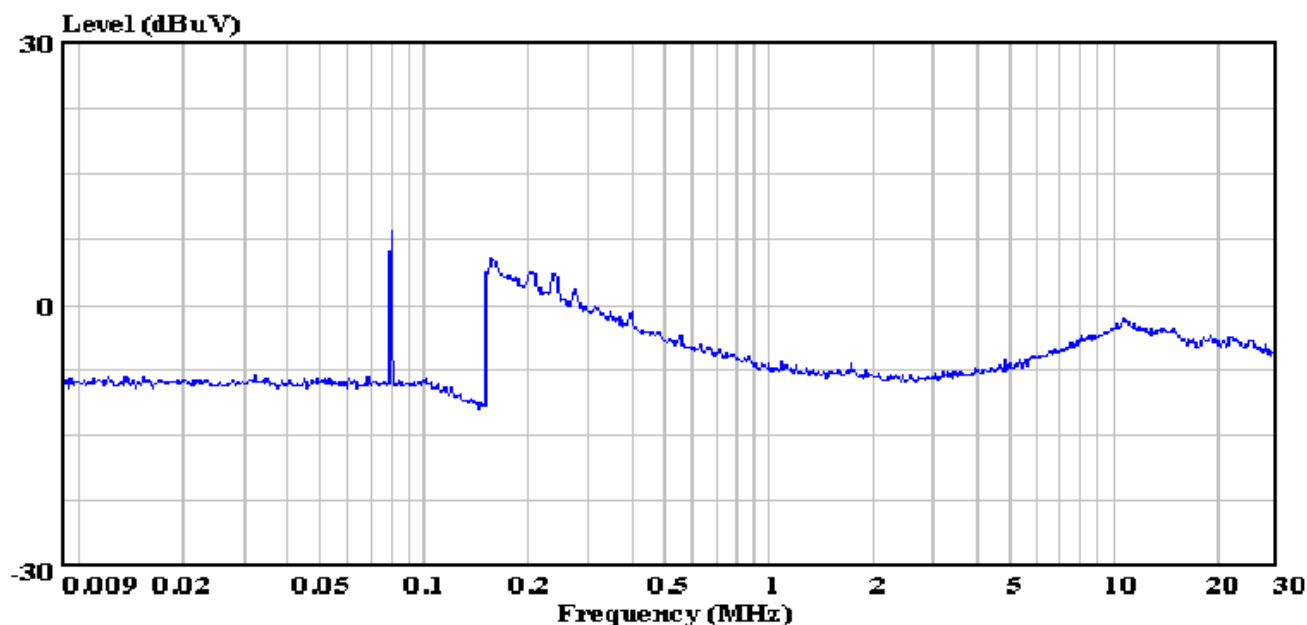
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Condition :
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Applicant : TOSPO Electronics Co., Ltd
EUT : Compact Fluorescent Lamp
M/N : TP120-25/20/13
S/N : TE12113WAY-1
Power Supply : 120V/60Hz
Ambient : 24°C 53%
Test Line : A
Test Mode : 13W
Test Engineer: *Sunny Chen*



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Site : audix-aci Conducted Emission
Condition :
Project No. : AOE-000148
Applicant : TOSPO Electronics Co., Ltd
EUT : Compact Fluorescent Lamp
M/N : TP120-25/20/13
S/N : TE12113WAY-1
Power Supply : 120V/60Hz
Ambient : 24°C 53%
Test Line : B
Test Mode : 13W
Test Engineer:

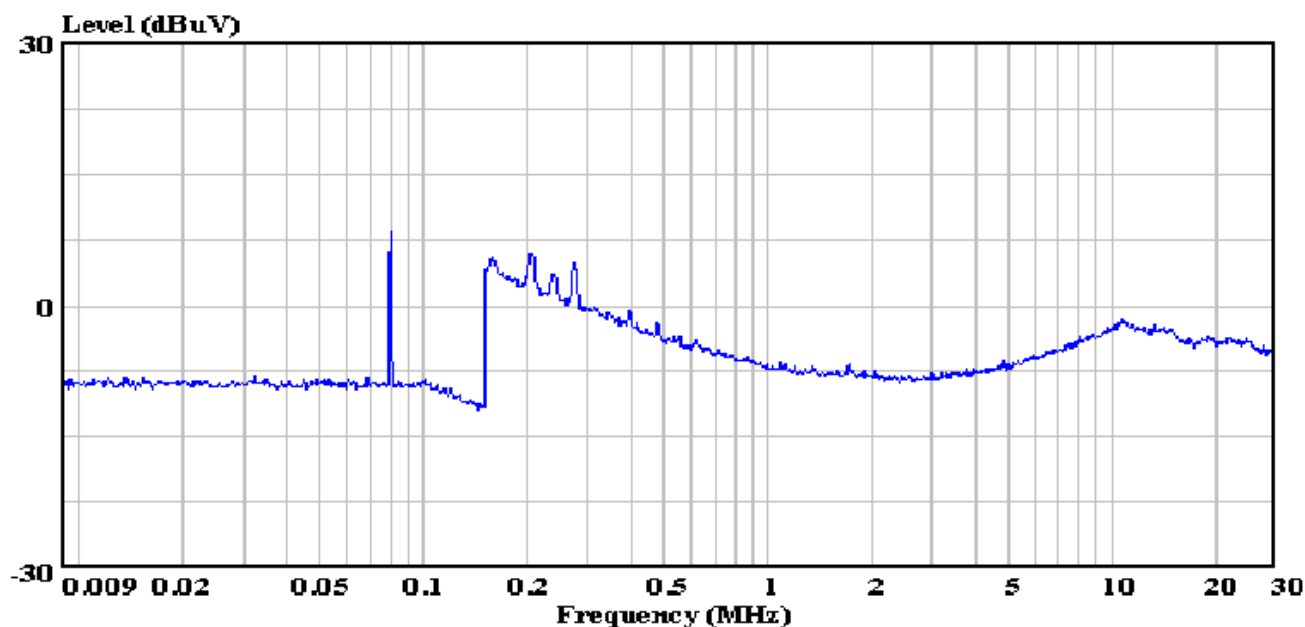
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Condition :
Project No. : AOE-000148
Applicant : TOSPO Electronics Co., Ltd
EUT : Compact Fluorescent Lamp
M/N : TP120-25/20/13
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Power Supply : 120V/60Hz
Ambient : 24'C 53%
Test Line : C
Test Mode : 13W
Test Engineer: *Sunny Chen*