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

Electronic Ballast

Model No.: TP120-1/32 IS TP120-2/32 IS
TP120-3/32 IS TP120-4/32 IS

FCC ID: PDYTP1432

Prepared For : Tospo Electronic Co., Ltd.
No.2 West Xing-Sheng Road,
Hengdian Industrial Area Dong Yang City,
Zhejiang, P.R. China

Prepared By : Audix Technology (Shanghai) Co., Ltd.
3 F 34 Bldg 680 Guiping Rd,
Caohejing Hi-Tech Park,
Shanghai, China 200233

Tel: +8621-64955500
Fax: +8621-64955491

Report No. : ACI-F01080
Date of Test : Aug 10-27, 2001
Date of Report : Nov 12, 2001

TABLE OF CONTENTS

Page

1 GENERAL INFORMATION 4
1.1 Description of Equipment Under Test 4
1.2 Description of Test Facility 5
1.3 Measurement Uncertainty 5
2 AC POWERLINE CONDUCTED EMISSION TEST 6
2.1 Test Equipment 6
2.2 Block Diagram of Test Setup 6
2.3 Conducted Emission Limits 6
2.4 Test Configuration 7
2.5 Operating Condition of EUT 7
2.6 Test Procedures 7
2.7 Test Results 8
3 FIELD STRENGTH TEST 12
3.1 Test Equipment 12
3.2 Block Diagram of Test Setup 12
3.3 Test Configuration 12
3.4 Operating Condition of EUT 12
3.5 Test Procedure 13
3.6 Test Result 13

TEST REPORT FOR FCC CERTIFICATE

Applicant : Tospo Electronic Co., Ltd.

Manufacturer : Tospo Electronic Co., Ltd.

EUT Description : Electronic Ballast

(A) Model No.:

TP120-1/32 IS TP120-2/32 IS
TP120-3/32 IS TP120-4/32 IS

(B) Serial No.:

AC2015703-10 AC2015703-9
AC2015703-11 AC2015703-12

(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 : Aug 10 ~ 27, 2001

Prepared by : Stella Tang
STELLA TANG
(Assistant)

Test Engineer : Ada Zou
ADA ZOU
(Engineer)

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

Reviewer : Byron Kwo
BYRON KWO
(Supervisor)

Approved Signatory : Alex Chiu
ALEX CHIU
(Assistant Manager)

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test

Description : Electronic Ballast

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

Model Number : TP120-1/32 IS TP120-2/32 IS
TP120-3/32 IS TP120-4/32 IS

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

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

M/N	Input Power (VA)	Output Power (W)
TP120-1/32 IS	33.40	32.70
TP120-2/32 IS	58.70	58.00
TP120-3/32 IS	90.20	88.90
TP120-4/32 IS	106.10	104.70

1.2 Description of Test Facility

Site Description (Semi-Anechoic Chamber)	:	Sept. 17, 1998 file on Federal Communications Commission FCC Engineering Laboratory 7435 Oakland Mills Road Columbia, MD 21046, USA
Name of Firm	:	Audix Technology (Shanghai) Co., Ltd.
Site Location	:	3 F 34 Bldg 680 Guiping Rd, Caohejing Hi-Tech Park, Shanghai, China 200233
NVLAP Lab Code	:	200371-0

1.3 Measurement Uncertainty

Conducted Emission Uncertainty : U = ± 2.66dB

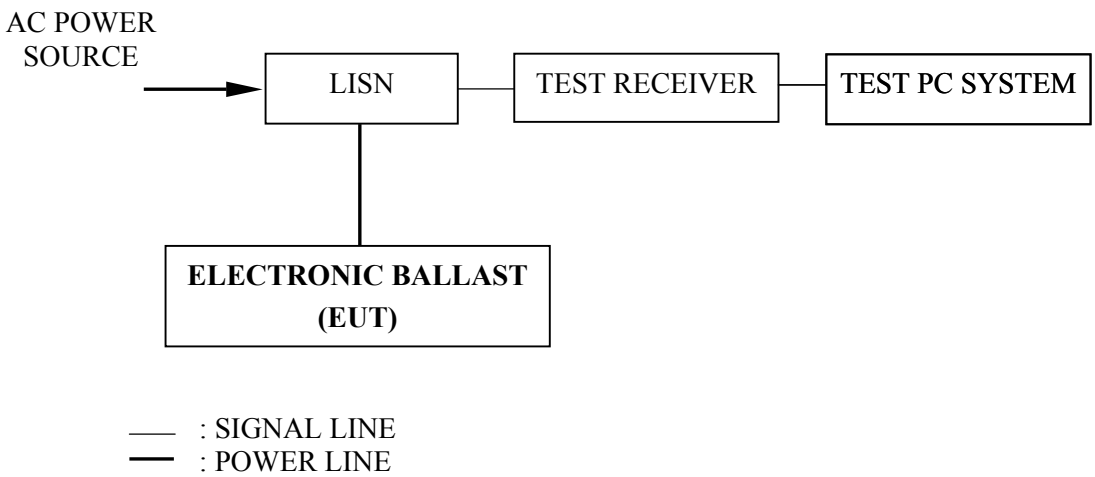
2 AC POWERLINE CONDUCTED EMISSION TEST

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	
	(μV)	dB(μV)
0.45 ~ 2.51	250	48
2.51 ~ 3	3000	70
3 ~ 30	250	48

NOTE 1 – RF Line Voltage dB (μV) = 20 log RF Line Voltage (μV)
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 (ON) 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	:	Electronic Ballast	Temperature :	23℃
Model No.	:	TP120-1/32 IS	Humidity :	53%
Test Mode	:	ON	Date of Test :	Aug 10, 2001

Test Line	Frequency (MHz)	Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)
VA	0.497	0.06	39.60	39.66	48.00	8.34
	0.607	0.04	37.00	37.04	48.00	10.96
	0.718	0.03	37.70	37.73	48.00	10.27
	0.827	**0.04**	**40.30**	**40.34**	**48.00**	**7.66**
	1.160	0.05	38.10	38.15	48.00	9.85
	27.520	0.71	31.80	32.51	48.00	15.49
VB	0.476	0.09	39.30	39.39	48.00	8.61
	0.607	0.08	36.60	36.68	48.00	11.32
	0.716	0.08	37.60	37.68	48.00	10.32
	0.827	0.08	39.70	39.78	48.00	8.22
	1.157	0.08	37.90	37.98	48.00	10.02
	26.670	0.61	28.80	29.41	48.00	18.59

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 0.827 MHz with corrected signal level of 40.34 dB(μV) (limit is 48.00 dB(μV)), when the VA of the EUT is connected to LISN.

TEST ENGINEER: (ADA ZOU)

EUT :	Electronic Ballast	Temperature :	23℃
Model No. :	TP120-2/32 IS	Humidity :	53%
Test Mode :	ON	Date of Test :	Aug 13, 2001

Test Line	Frequency (MHz)	Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)
VA	**0.480**	**0.06**	**40.66**	**40.72**	**48.00**	**7.28**
	0.568	0.05	38.15	38.20	48.00	9.80
	0.650	0.04	38.00	38.04	48.00	9.96
	0.743	0.03	35.77	35.80	48.00	12.20
	7.301	0.10	31.99	32.09	48.00	15.91
	22.197	0.62	35.60	36.22	48.00	11.78
VB	0.479	0.09	36.12	36.21	48.00	11.79
	0.565	0.09	33.77	33.86	48.00	14.14
	0.650	0.08	34.78	34.86	48.00	13.14
	0.737	0.08	32.69	32.77	48.00	15.23
	7.033	0.10	32.59	32.69	48.00	15.31
	21.999	0.51	35.01	35.52	48.00	12.48

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 0.480 MHz with corrected signal level of 40.72 dB(μV) (limit is 48.00 dB(μV)), when the VA of the EUT is connected to LISN.

TEST ENGINEER: (ADA ZOU)

EUT :	Electronic Ballast	Temperature :	23℃
Model No. :	TP120-3/32 IS	Humidity :	53%
Test Mode :	ON	Date of Test :	Aug 14, 2001

Test Line	Frequency (MHz)	Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)
VA	0.481	0.06	38.78	38.84	48.00	9.16
	0.527	0.06	36.83	36.89	48.00	11.11
	0.572	0.05	36.65	36.70	48.00	11.30
	0.620	0.04	37.63	37.67	48.00	10.33
	8.128	0.13	37.44	37.57	48.00	10.43
	21.409	0.62	33.32	33.94	48.00	14.06
VB	**0.483**	**0.09**	**41.65**	**41.74**	**48.00**	**6.26**
	0.526	0.09	39.31	39.40	48.00	8.60
	0.618	0.08	39.79	39.87	48.00	8.13
	0.663	0.08	37.96	38.04	48.00	9.96
	8.131	0.13	37.10	37.23	48.00	10.77
	21.256	0.19	32.50	32.99	48.00	15.01

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 0.483MHz with corrected signal level of 41.74 dB(μV) (limit is 48.00 dB(μV)), when the VB of the EUT is connected to LISN.

TEST ENGINEER: (ADA ZOU)

EUT :	Electronic Ballast	Temperature :	23℃
Model No. :	TP120-4/32 IS	Humidity :	53%
Test Mode :	ON	Date of Test :	Aug 27, 2001

Test Line	Frequency (MHz)	Factor (dB)	Meter Reading dB(μV)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)
VA	**0.480**	**0.09**	**44.89**	**44.98**	**48.00**	**3.02**
	0.522	0.09	43.88	43.97	48.00	4.03
	0.563	0.09	42.42	42.51	48.00	5.49
	0.602	0.08	41.48	41.56	48.00	6.44
	7.649	0.12	36.06	36.18	48.00	11.82
	20.825	0.48	36.71	37.19	48.00	10.81
VB	0.481	0.09	44.69	44.78	48.00	3.22
	0.523	0.09	43.64	43.73	48.00	4.27
	0.563	0.09	41.28	41.37	48.00	6.63
	0.606	0.08	39.83	39.91	48.00	8.09
	8.102	0.12	36.19	36.31	48.00	11.69
	22.370	0.52	33.41	33.93	48.00	14.07

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 0.480MHz with corrected signal level of 44.98 dB(μV) (limit is 48.00 dB(μV)), when the VA of the EUT is connected to LISN.

TEST ENGINEER: (ADA ZOU)

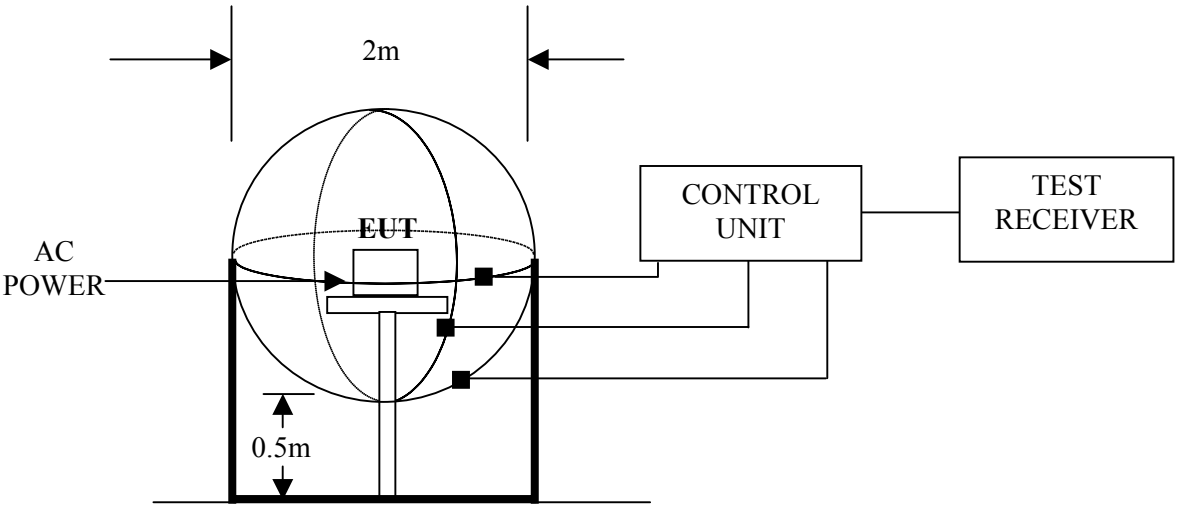
3 FIELD STRENGTH TEST

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	May 05, 2001	1/2 Year
2.	Test Receiver	Rohde & Schwarz	ESHS10	844077/020	Apr 24, 2001	1 Year

3.2 Block Diagram of Test Setup



EUT : Electronic Ballast

3.3 Test Configuration

The configuration of the EUT is same as those used in conducted emission test.

Refer to Sec. 2.4.

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 frequency range from 9 kHz to 30 MHz was checked.

The “ON” mode was done on field strength test and all the test results are listed in Sec. 3.6.

3.6 Test Result

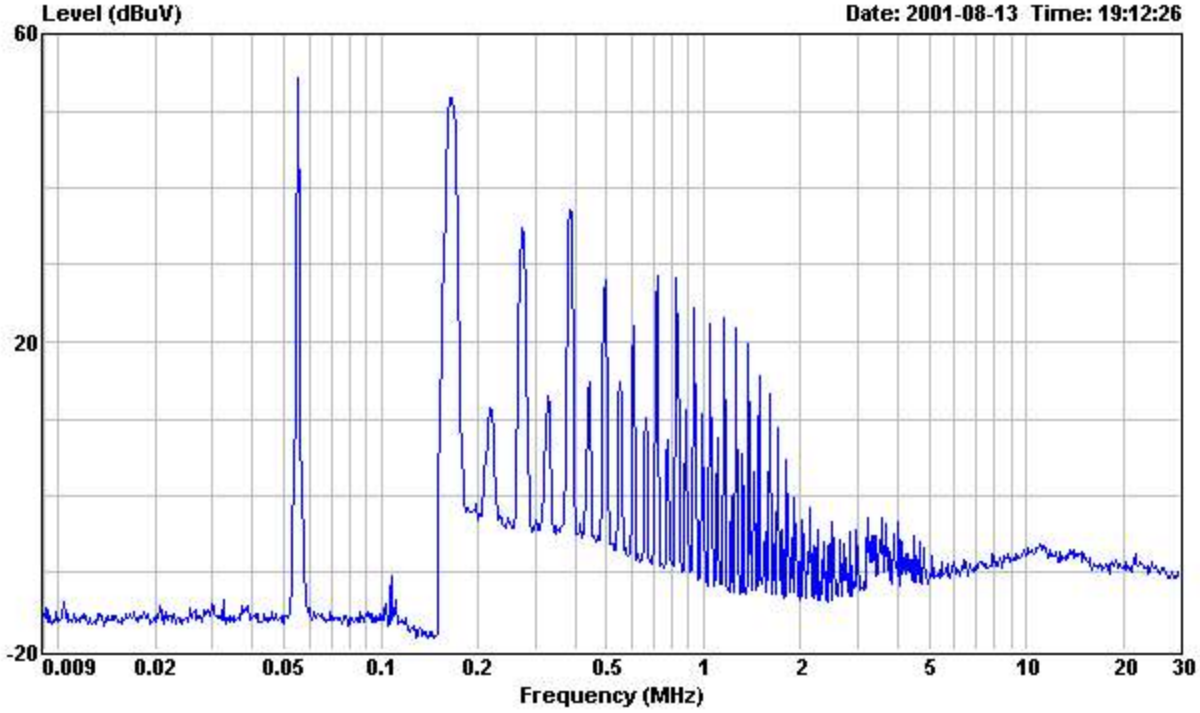
<PASS>

Refer to the following pages.

Audix Technology (Shanghai) Co., Ltd.
敦吉電子(上海)有限公司

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai, China 200233
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@8848.net

Data#: 10 File#: D:\Lorenzo\TOSPOBALLAST.EMI

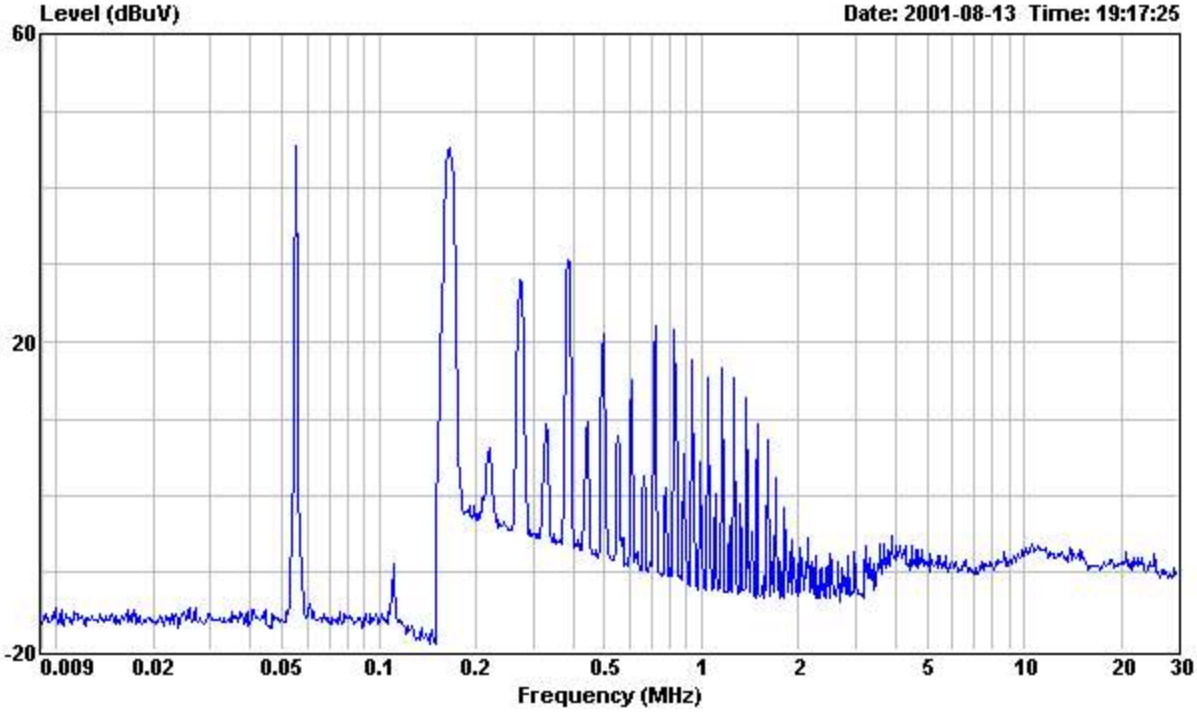


Site	: audix-aci
Condition	:
Project No.	: AQE-00089
Applicant	: Tospo Electronics Co.,Ltd
EUT	: EB
M/N	: TP120-1/32 IS
S/N	: AC2015703-10
Power supply	: 120V,60Hz
Ambient	: 23'C 53%
Test line	: A
Test mode	: ON
Test Engineer	: Ada
Memo	:

Audix Technology (Shanghai) Co., Ltd.
敦吉電子(上海)有限公司

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai, China 200233
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@8848.net

Data#: 13 File#: D:\Lorenzo\TOSPOBALLAST.EMI

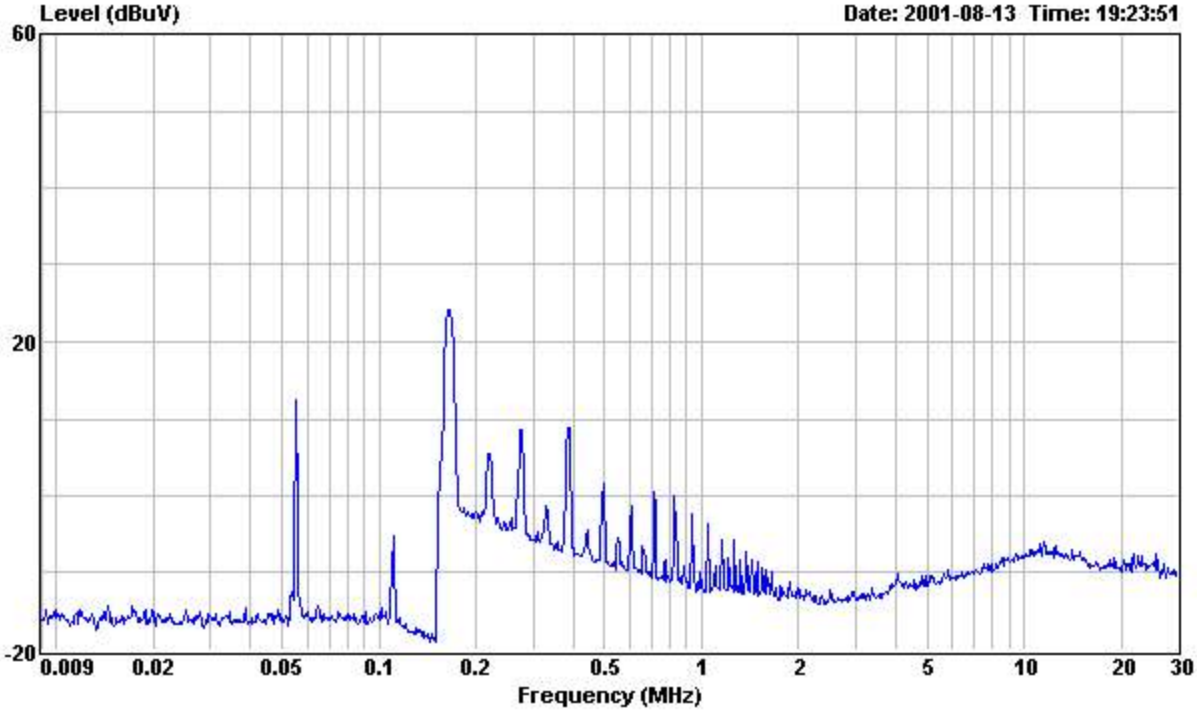


Site	: audix-aci
Condition	:
Project No.	: AQE-00089
Applicant	: Tospo Electronics Co.,Ltd
EUT	: EB
M/N	: TP120-1/32 IS
S/N	: AC2015703-10
Power supply	: 120V,60Hz
Ambient	: 23'C 53%
Test line	: B
Test mode	: ON
Test Engineer	: Ada
Memo	:

Audix Technology (Shanghai) Co., Ltd.
敦吉電子(上海)有限公司

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai, China 200233
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@8848.net

Data#: 16 File#: D:\Lorenzo\TOSPOBALLAST.EMI

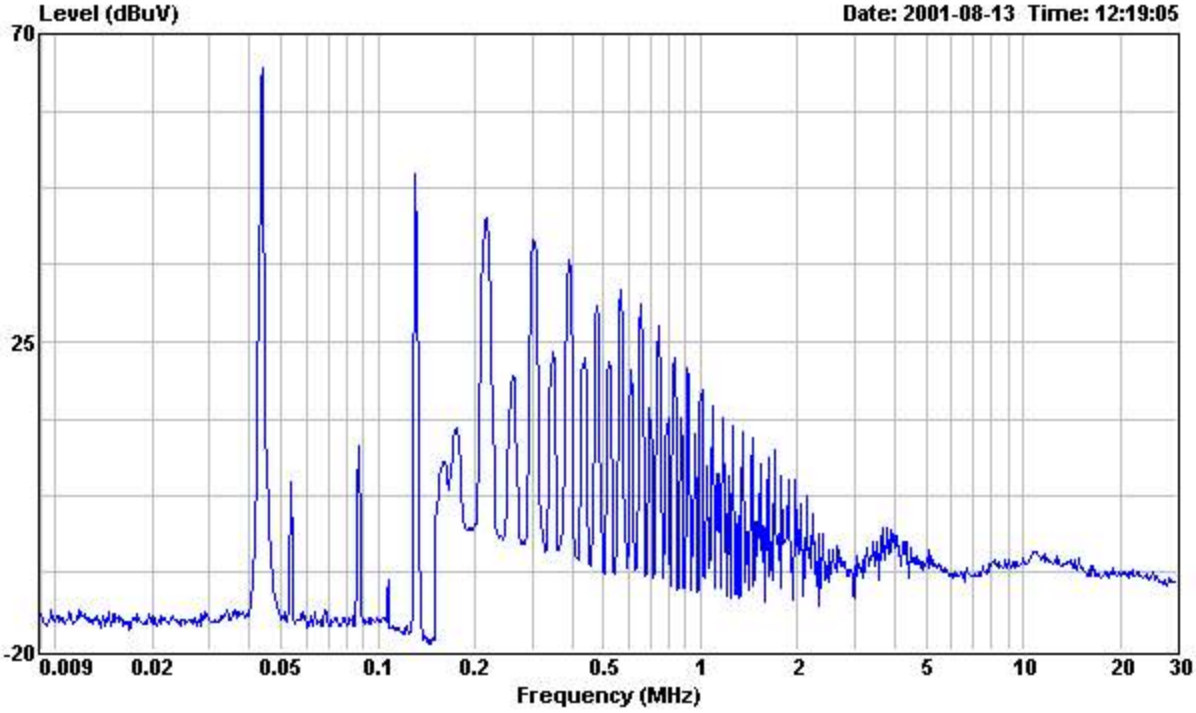


Site	: audix-aci
Condition	:
Project No.	: AQE-00089
Applicant	: Tospo Electronics Co.,Ltd
EUT	: EB
M/N	: TP120-1/32 IS
S/N	: AC2015703-10
Power supply	: 120V,60Hz
Ambient	: 23'C 53%
Test line	: C
Test mode	: ON
Test Engineer	: Ada
Memo	:

Audix Technology (Shanghai) Co., Ltd.
敦吉電子(上海)有限公司

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai, China 200233
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@8848.net

Data#: 29 File#: D:\Lorenzo\TOSPOBALLAST.EMI

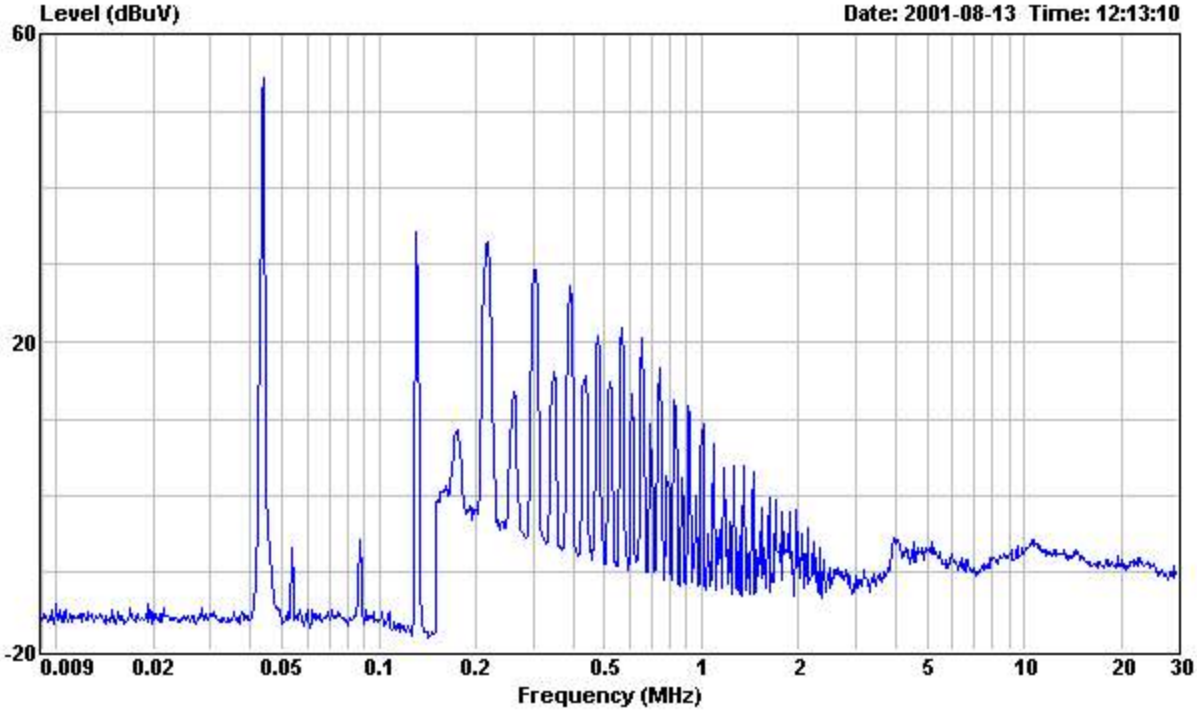


Site	: audix-aci
Condition	:
Project No.	: AQE-00089
Applicant	: Tospo Electronics Co.,Ltd
EUT	: EB
M/N	: TP120-2/32 IS
S/N	: AC2015703-9
Power supply	: 120V,60Hz
Ambient	: 23'C 53%
Test line	: A
Test mode	: ON
Test Engineer	: Ada
Memo	:

Audix Technology (Shanghai) Co., Ltd.
敦吉電子(上海)有限公司

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai, China 200233
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@8848.net

Data#: 26 File#: D:\Lorenzo\TOSPOBALLAST.EMI

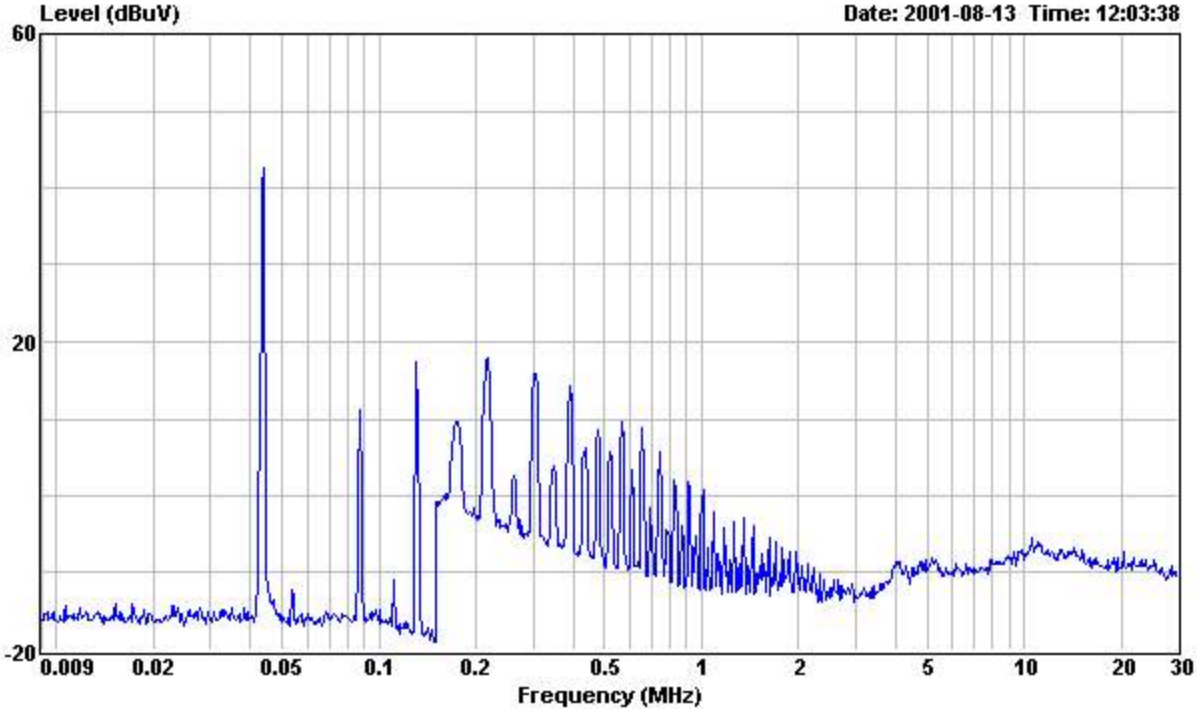


Site	: audix-aci
Condition	:
Project No.	: AQE-00089
Applicant	: Tospo Electronics Co.,Ltd
EUT	: EB
M/N	: TP120-2/32 IS
S/N	: AC2015703-9
Power supply	: 120V,60Hz
Ambient	: 23'C 53%
Test line	: B
Test mode	: ON
Test Engineer	: Ada
Memo	:

Audix Technology (Shanghai) Co., Ltd.
敦吉電子(上海)有限公司

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai, China 200233
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@8848.net

Data#: 23 File#: D:\Lorenzo\TOSPOBALLAST.EMI

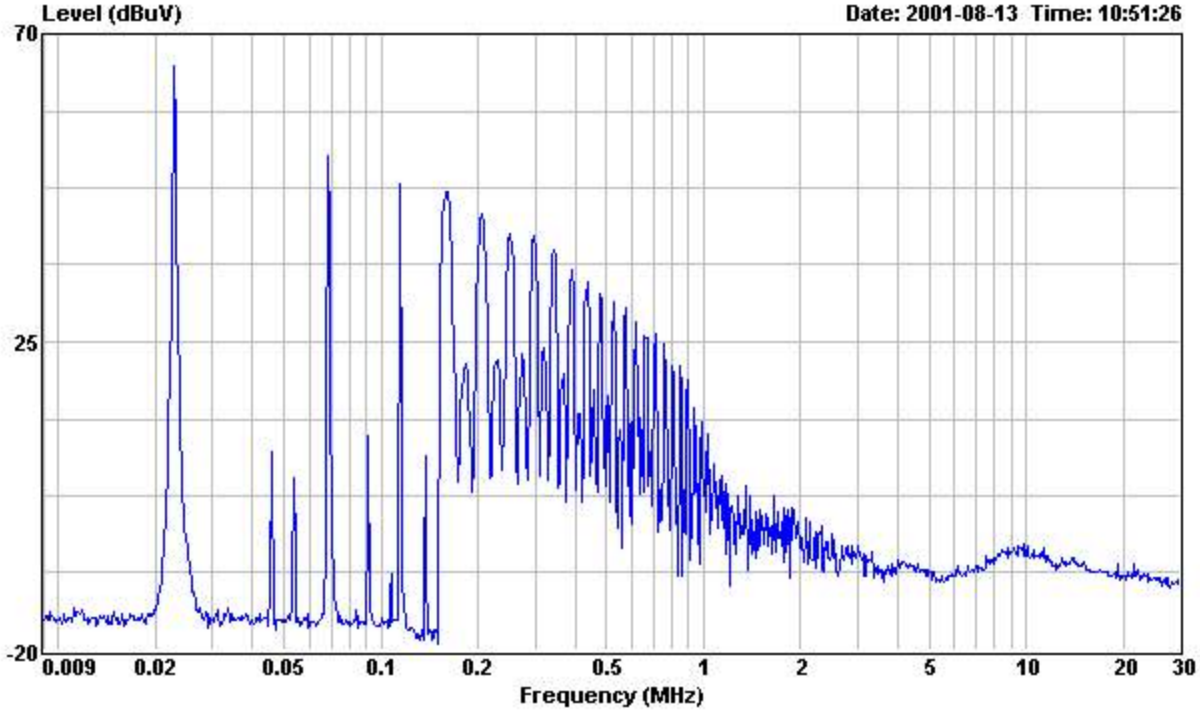


Site	: audix-aci
Condition	:
Project No.	: AQE-00089
Applicant	: Tospo Electronics Co.,Ltd
EUT	: EB
M/N	: TP120-2/32 IS
S/N	: AC2015703-9
Power supply	: 120V,60Hz
Ambient	: 23'C 53%
Test line	: C
Test mode	: ON
Test Engineer	: Ada
Memo	:

Audix Technology (Shanghai) Co., Ltd.
敦吉電子(上海)有限公司

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai, China 200233
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@8848.net

Data#: 36 File#: D:\Lorenzo\TOSPOBALLAST.EMI

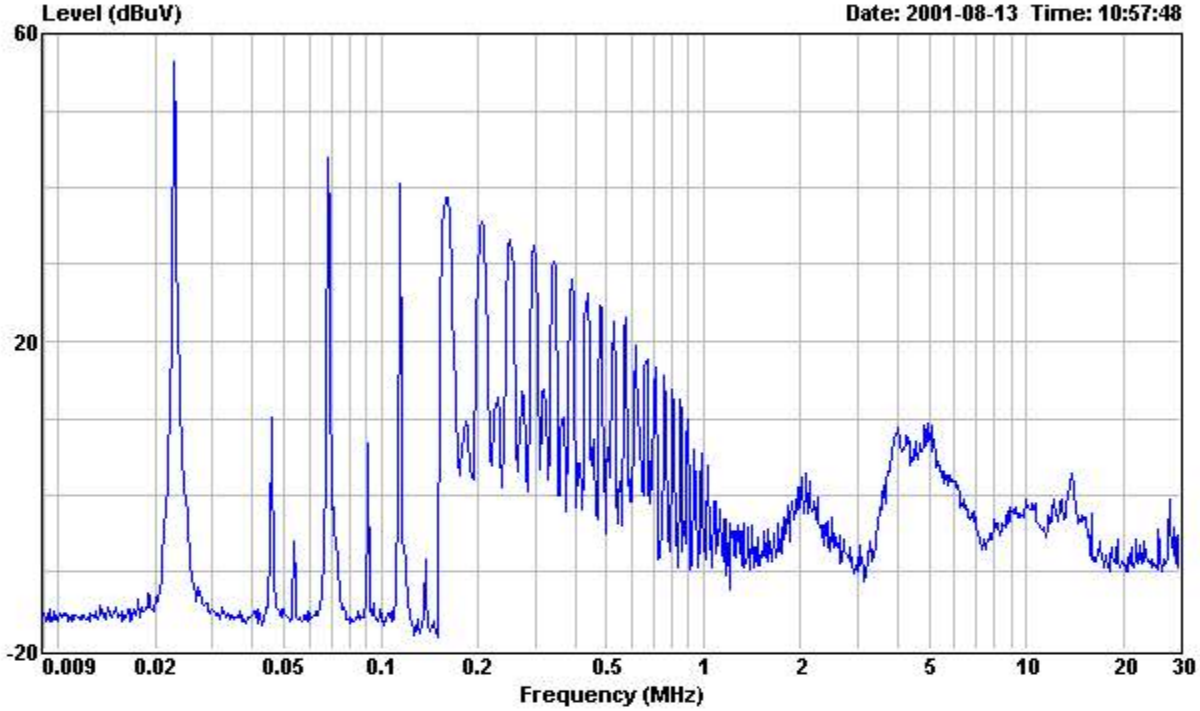


Site	: audix-aci
Condition	:
Project No.	: AQE-00089
Applicant	: Tospo Electronics Co.,Ltd
EUT	: EB
M/N	: TP120-3/32 IS
S/N	: AC2015703-11
Power supply	: 120V,60Hz
Ambient	: 23'C 53%
Test line	: A
Test mode	: ON
Test Engineer	: Ada
Memo	:

Audix Technology (Shanghai) Co., Ltd.
敦吉電子(上海)有限公司

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai, China 200233
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@8848.net

Data#: 39 File#: D:\Lorenzo\TOSPOBALLAST.EMI

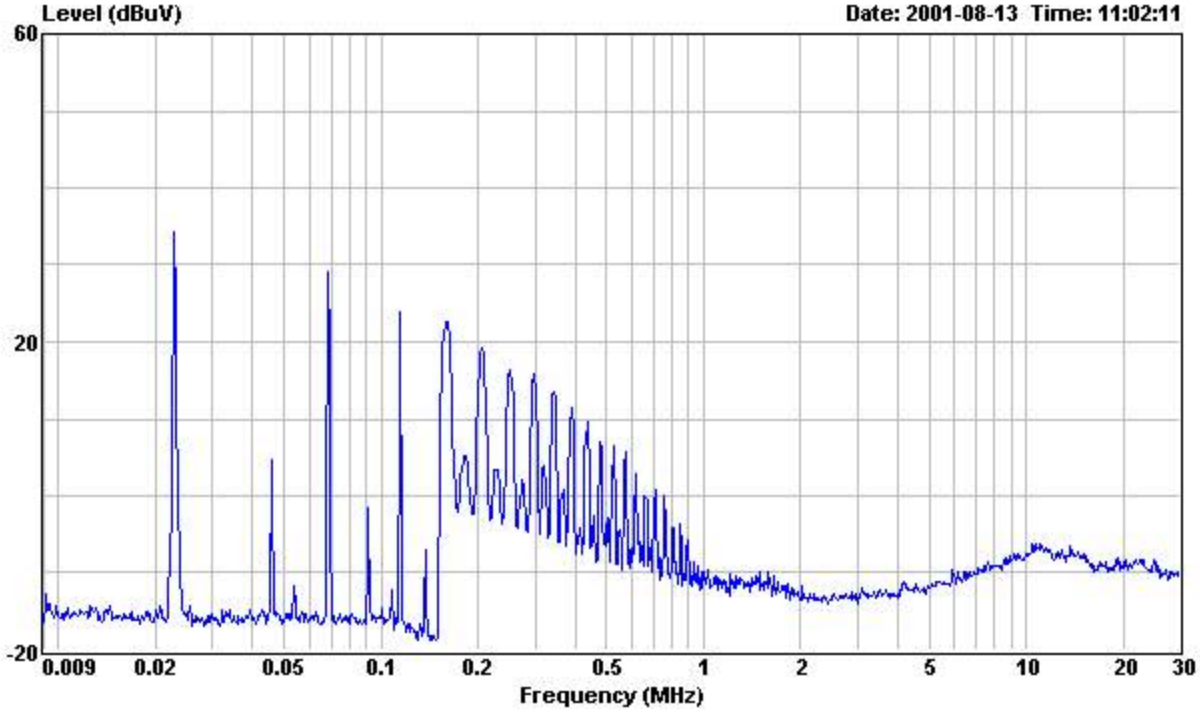


Site	: audix-aci
Condition	:
Project No.	: AQE-00089
Applicant	: Tospo Electronics Co.,Ltd
EUT	: EB
M/N	: TP120-3/32 IS
S/N	: AC2015703-11
Power supply	: 120V,60Hz
Ambient	: 23'C 53%
Test line	: B
Test mode	: ON
Test Engineer	: Ada
Memo	:

Audix Technology (Shanghai) Co., Ltd.
敦吉電子(上海)有限公司

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai, China 200233
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@8848.net

Data#: 42 File#: D:\Lorenzo\TOSPOBALLAST.EMI

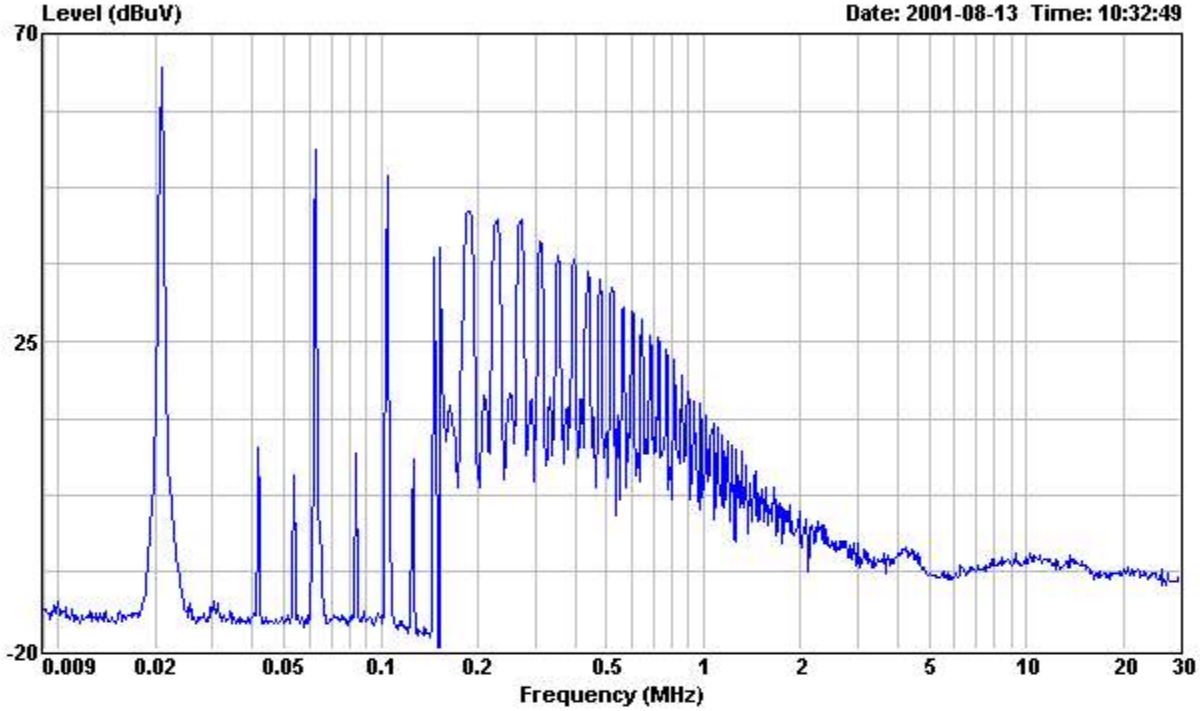


Site	: audix-aci
Condition	:
Project No.	: AQE-00089
Applicant	: Tospo Electronics Co.,Ltd
EUT	: EB
M/N	: TP120-3/32 IS
S/N	: AC2015703-11
Power supply	: 120V,60Hz
Ambient	: 23'C 53%
Test line	: C
Test mode	: ON
Test Engineer	: Ada
Memo	:

Audix Technology (Shanghai) Co., Ltd.
敦吉電子(上海)有限公司

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai, China 200233
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@8848.net

Data#: 51 File#: D:\Lorenzo\TOSPOBALLAST.EMI

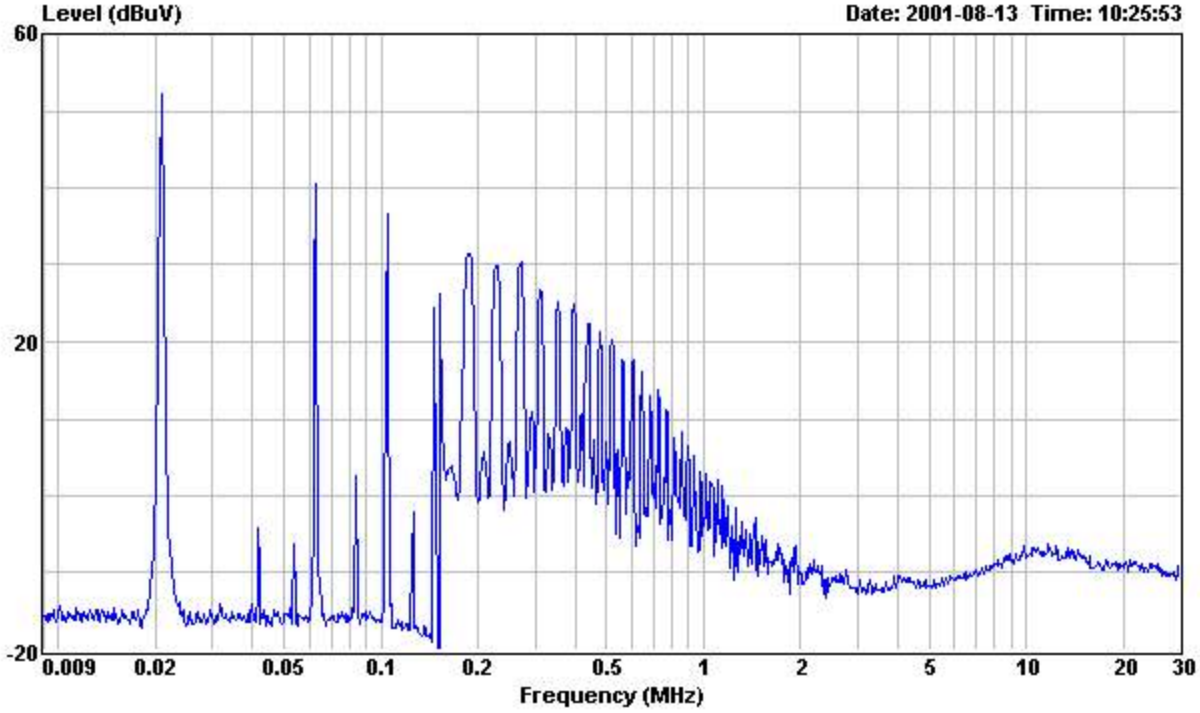


Site	: audix-aci
Condition	:
Project No.	: AQE-00089
Applicant	: Tospo Electronics Co.,Ltd
EUT	: EB
M/N	: TP120-4/32 IS
S/N	: AC2015703-12
Power supply	: 120V,60Hz
Ambient	: 23'C 53%
Test line	: A
Test mode	: ON
Test Engineer	: Ada
Memo	:

Audix Technology (Shanghai) Co., Ltd.
敦吉電子(上海)有限公司

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai, China 200233
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@8848.net

Data#: 48 File#: D:\Lorenzo\TOSPOBALLAST.EMI

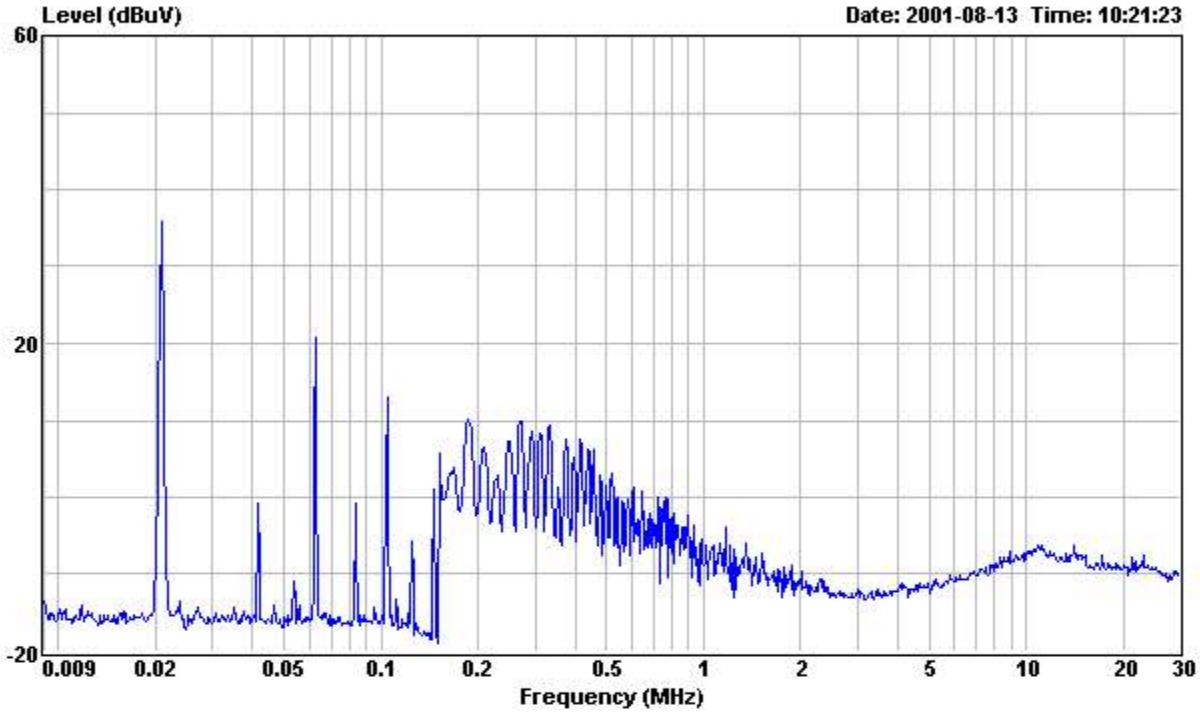


Site	: audix-aci
Condition	:
Project No.	: AQE-00089
Applicant	: Tospo Electronics Co.,Ltd
EUT	: EB
M/N	: TP120-4/32 IS
S/N	: AC2015703-12
Power supply	: 120V,60Hz
Ambient	: 23'C 53%
Test line	: B
Test mode	: ON
Test Engineer	: Ada
Memo	:

Audix Technology (Shanghai) Co., Ltd.
敦吉電子(上海)有限公司

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai, China 200233
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@8848.net

Data#: 45 File#: D:\Lorenzo\TOSPOBALLAST.EMI



Site	: audix-aci
Condition	:
Project No.	: AQE-00089
Applicant	: Tospo Electronics Co.,Ltd
EUT	: EB
M/N	: TP120-4/32 IS
S/N	: AC2015703-12
Power supply	: 120V,60Hz
Ambient	: 23'C 53%
Test line	: C
Test mode	: ON
Test Engineer	: Ada
Memo	: