Produkte
Products

Prüfbericht - Nr.: *Test Report No.:*	**15038675 001**	**Seite 1 von 22** *Page 1 of 22*
Auftraggeber: *Client:*	**Lineage Power (Shanghai) Co., Ltd.** 1-2F, Building #58, No. 461 Hongcao Road, Caohejing Hi-Tech Park Shanghai 200233, P.R. China	
Gegenstand der Prüfung: *Test item:*	**Electronic Ballast for Fluorescent Lamp**	
Bezeichnung: *Identification:*	**SP765-Y01A AJA-LINEAGE-WJY-QB7C**	**Serien-Nr.:** *Serial No.:* **N/A**
Wareneingangs-Nr.: *Receipt No.:*	**153144828**	**Eingangsdatum:** *Date of receipt:* **21.05.2010**
Prüfort: *Testing location:*	**Refer to section 1.1**	
Prüfgrundlage: *Test specification:*	**FCC Part 18:2008**	
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test item passed the test specification(s).*	
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland (Shanghai) Co., Ltd.**	

geprüft/ *tested by:*			**kontrolliert/** *reviewed by:*		
10.08.2010	Gu Weikang/PE	Gu Weikang	10.08.2010	Zhou Jiayi/TE	Zhou Jiayi
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges/ *Other Aspects:*

FCC ID: X82-BLST-SP765

Abkürzungen:				*Abbreviations:*			
	P(ass)	=	*entspricht Prüfgrundlage*		*P(ass)*	=	*passed*
	F(ail)	=	*entspricht nicht Prüfgrundlage*		*F(ail)*	=	*failed*
	N/A	=	*nicht anwendbar*		*N/A*	=	*not applicable*
	N/T	=	*nicht getestet*		*N/T*	=	*not tested*

TEST SUMMARY

4.1.1 CONDUCTED EMISSION ON AC POWER PORT
Result:
Passed
4.1.2 RADIATED EMISSION UP TO 30MHZ
Result:
Passed
4.2.1 RADIATED EMISSION ABOVE 30MHZ
Result:
Passed

Contents

1 Test Sites

1.1 Test Facilities

Laboratory: TÜV Rheinland (Shanghai) Co., Ltd.
Address: 10-15/F, Huatsing Building, No. 88, Lane 777, West Guangzhong Road, Zhabei District, Shanghai 200072, P.R. China
(FCC registration No.: 657274)

The used test equipment is in accordance with CISPR 16-1 series standards for measurement of radio interference.

1.2 List of Test and Measurement Instruments

Table 1: List of test and measurement equipment

No.	Equipment	Model	Serial no.	Cal. due date
1.	3m modified semi-anechoic chamber	SAC	N/A	25.04.2011
2.	HF loop antenna	HLA6120	22137	18.01.2011
3.	Broadband antenna	BTA-H	040005H	10.03.2012
4.	EMI test receiver	ESCI	100280	26.11.2010
5.	EMI test receiver	ESIB26	100227	10.06.2011
6.	Artificial mains network	NNB 42	04/10048	24.02.2011
7.	Frequency variable power source	APW-150N	930376	04.11.2010

2 General Product Information

2.1 Product Function and Intended Use

The EUT (equipment under test) is electronic ballast for fluorescent lamp for lighting and similar use. For the further information, refer to the user's manual.

2.2 Ratings and System Details

System input voltage	:	AC 100-277V
Frequency	:	47-63Hz
Rated wattage for lamp	:	50W
Rated current	:	0.2-0.6A
Protection class	:	I

2.3 Independent Operation Modes

The basic operation modes are: "On", "Off".

2.4 Noise Generating and Noise Suppressing Parts

Refer to circuit diagram for further information.

2.5 Submitted Documents

Circuit diagram and label.

3 Test Set-up and Operation Modes

3.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible emission level. The test conditions were adapted accordingly in reference to the instructions for use.

Refer to the related paragraph of this report.

3.2 Physical Configuration for Testing

Refer to the related paragraph of this report.

3.3 Test Operation and Test Software

Refer to the related paragraph of this report.

3.4 Special Accessories and Auxiliary Equipment

Following lamps were used during all the tests,
Manufacturer: Shanghai Aoshang Lighting Technology Co., Ltd.;
Type: AJA-LINEAGE-WJY-QB7C50W.

3.5 Countermeasures to achieve EMC Compliance

The tested sample contained noise suppression capacitor, inductor and common mode choke as described in the circuit diagram. No special measure is employed to achieve the requirement.

4 Test Results E M I S S I O N

4.1 Emission in the Frequency Range up to 30 MHz

4.1.1 Conducted Emission on AC power port

Result:	**Passed**

Date of testing	:	19.07.2010
Test procedure	:	MP-5 specified by FCC Part 18:2008
Frequency range	:	450kHz - 30MHz
Kind of test site	:	Shielded room
Limit	:	15.307(c) of FCC Part 18:2008: 48dBµV (0.45-2.51MHz); 69.5dBµV (2.51-3MHz); 48dBµV (3-30MHz)
Ambient condition	:	Temperature: 22°C; Relative humidity: 42%

Test Setup

Supply voltage	:	AC 120V, 60Hz & AC 277V, 60Hz
Operational mode	:	Continuous operation with lighting
Earthing	:	Through power cord (as class I equipment)

The measurement setup was made in a shielded room. The tested object was operated under its rated voltage and rated frequency. Prior to the measurements the test object operated about 15 minutes (warm-up) in order to stabilize its operating conditions and to ensure reliable measurement values.

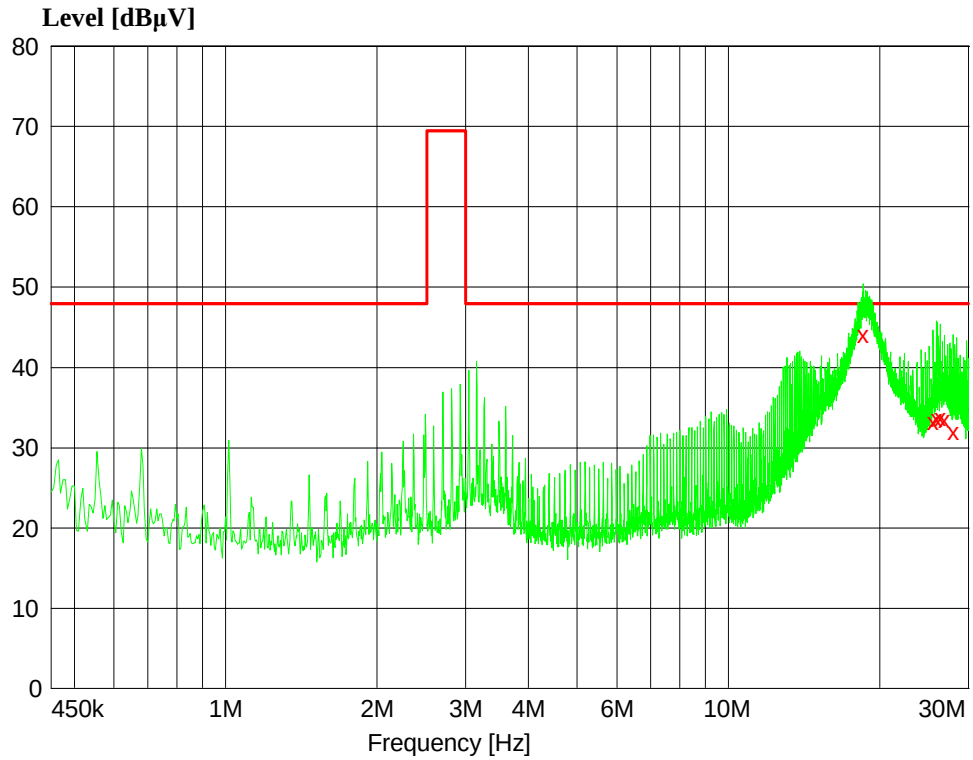
Furthermore an internal calibration with the test receiver was conducted prior to each measurement.

The tested object was set-up on a 0.4m wooden table. The EUT was set 0.8m away from the AMN. The cord longer than necessary to be connected to the AMN was folded forth and back parallel so as to form a bundle with a length between 0.3m and 0.4m.

The disturbance voltage was determined by measuring the line and neutral conductor by turns.

The following figures and tables were those measured by an automatic measuring system. Quasi-peak values were measured and listed where they had a maximum in previous scanning survey. In the figures, "×" means Quasi-peak value which was measured in final measurement.

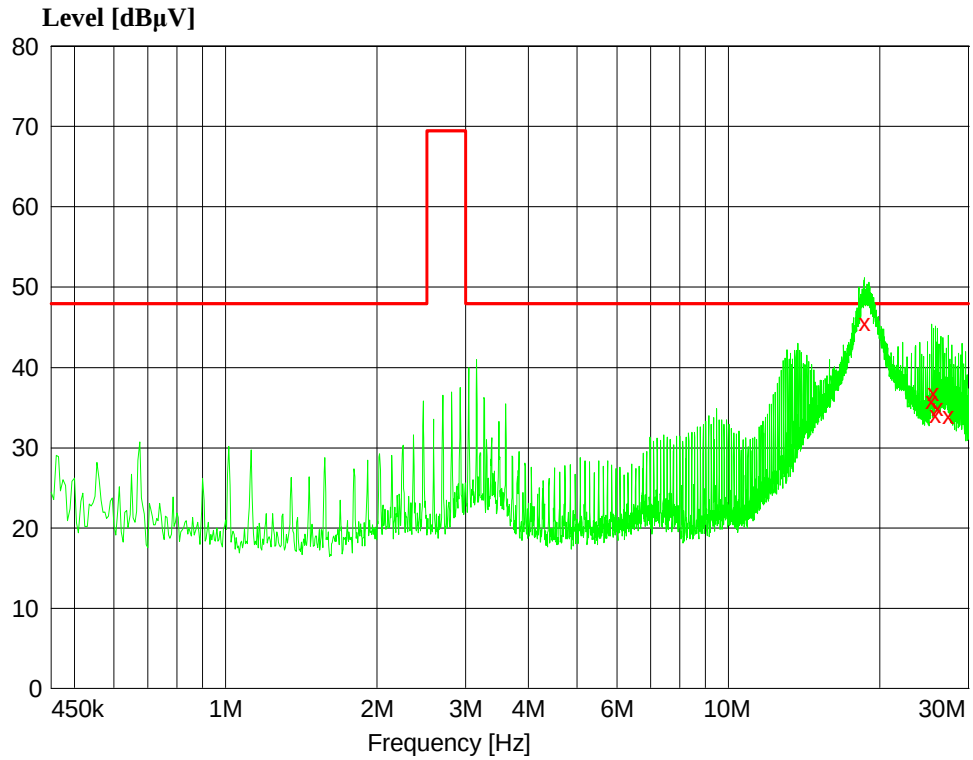
Figure 1: Spectral diagram, Conducted Emission, L (AC 120V)



Final quasi-peak measurement results:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line
18.530000	44.10	21.0	48.0	3.8	L1
25.480000	33.20	20.9	48.0	14.8	L1
25.935000	33.60	20.9	48.0	14.4	L1
26.390000	33.70	20.9	48.0	14.3	L1
26.835000	33.50	21.0	48.0	14.5	L1
27.960000	32.00	21.0	48.0	15.9	L1

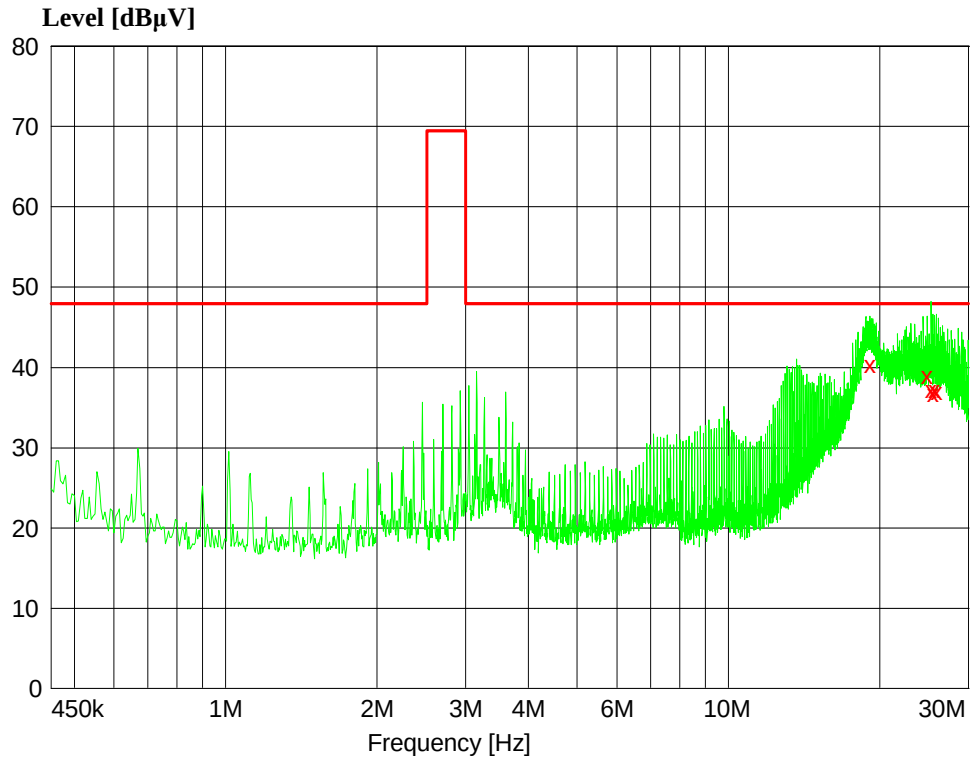
Figure 2: Spectral diagram, Conducted Emission, N (AC 120V)



Final quasi-peak measurement results:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line
18.615000	45.60	21.6	48.0	2.4	N
25.330000	35.90	20.9	48.0	12.1	N
25.550000	36.90	20.9	48.0	11.1	N
25.780000	34.10	20.9	48.0	13.8	N
26.000000	35.00	20.9	48.0	13.0	N
27.345000	34.00	21.1	48.0	13.9	N

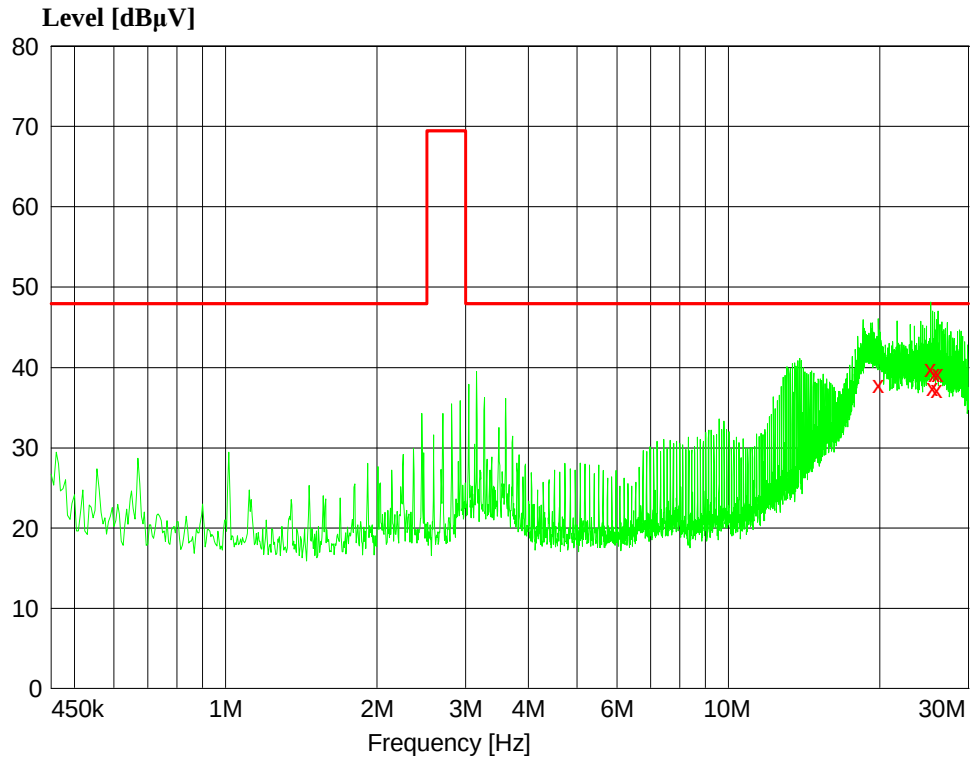
Figure 3: Spectral diagram, Conducted Emission, L (AC 277V)



Final quasi-peak measurement results:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line
19.090000	40.40	21.1	48.0	7.6	L1
24.805000	39.00	20.8	48.0	9.0	L1
25.255000	37.30	20.8	48.0	10.7	L1
25.480000	36.80	20.9	48.0	11.2	L1
25.700000	37.30	20.9	48.0	10.6	L1
25.925000	37.00	20.9	48.0	11.0	L1

Figure 4: Spectral diagram, Conducted Emission, N (AC 277V)



Final quasi-peak measurement results:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line
19.860000	37.90	21.6	48.0	10.0	N
25.210000	39.80	20.9	48.0	8.2	N
25.435000	37.50	20.9	48.0	10.4	N
25.655000	39.20	20.9	48.0	8.8	N
25.880000	37.30	20.9	48.0	10.7	N
26.100000	39.20	20.9	48.0	8.7	N

4.1.2 Radiated Emission up to 30MHz

Result:	**Passed**

Date of testing	:	10.08.2010
Test procedure	:	MP-5 specified by FCC Part 18:2008
Frequency range	:	9kHz - 30MHz
Kind of test site	:	Semi anechoic chamber
Measurement distance	:	3m
Limit	:	No limit
Detector	:	Quasi-peak
Measurement BW	:	200Hz (9-150kHz) 9kHz (150kHz-30MHz)
Supply voltage	:	AC 120V, 60Hz & AC 277V, 60Hz
Ambient condition	:	Temperature: 22°C; Relative humidity: 60%

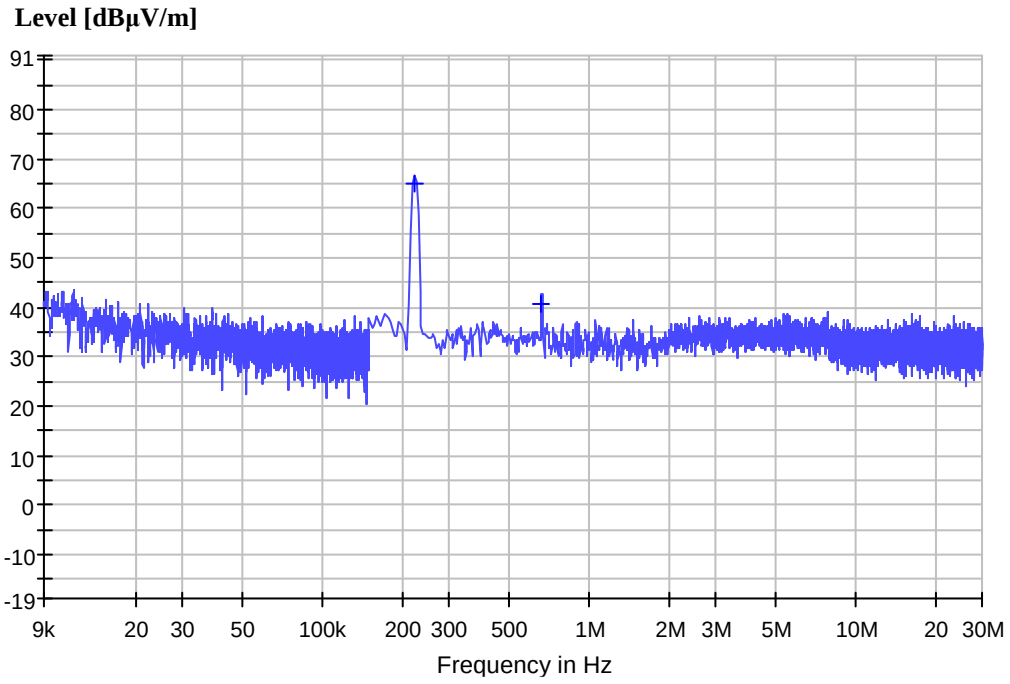
The radiated emission measurement was made at 3m. The EUT was placed on a wooden table 1m above the ground plane. The loop antenna height was set at 2m. The spectrum was examined from 9kHz - 30MHz. At each frequency, the EUT was rotated 360° in order to determine the emission's maximum level. Measurements were taken using 3 antenna polarizations.

The following figures and tables were those measured by an automatic measurement system. A preview test was firstly performed with Peak detector. The final test was performed with Quasi-peak detector at those critical frequencies during the preview test.

The field strength level was established by adding the meter reading of the EMI test receiver to the factors associated with antenna correction factor & cable loss.

The equation is expressed as follows:
FS = R + AF + CF
Where FS = Field strength level in dBµV/m;
R = Reading of EMI test receiver in dBµV;
AF = Antenna factor in dB/m;
CF = Cable attenuation factor in dB.

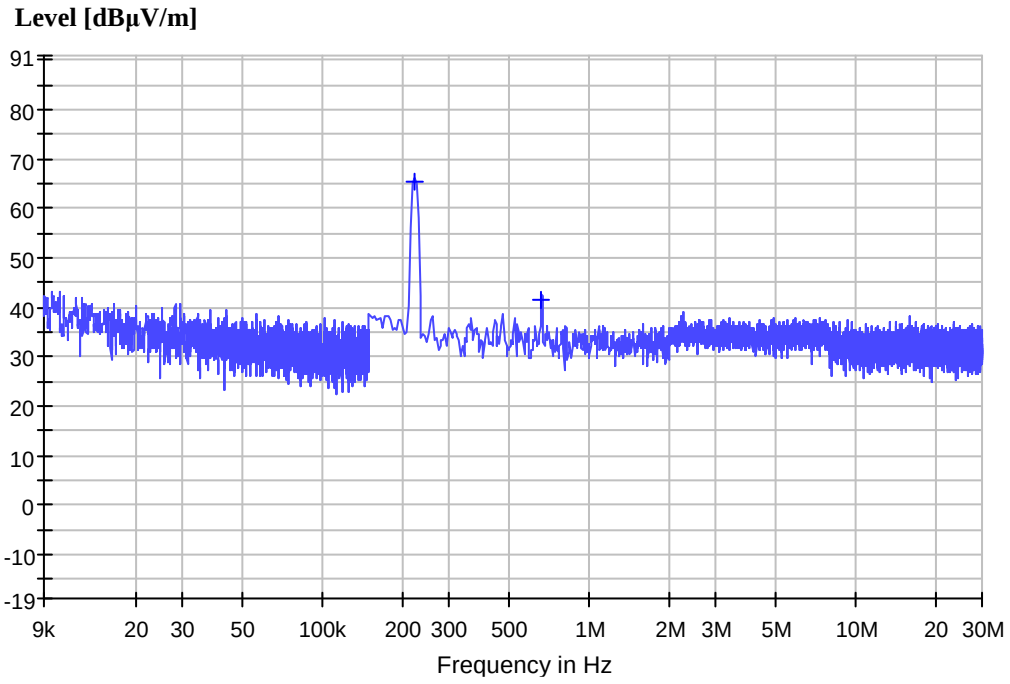
Figure 5: Spectral diagram, Radiated Emission, 9kHz - 30MHz (AC 120V)



Final quasi-peak measurement results:

Frequency (MHz)	Quasi-Peak (dBµV/m)	Corr. (dB)	Limit (dBµV/m)	Margin (dB)	Antenna height (cm)	Angle (degr)
0.220894	65.2	20.7	N/A	N/A	200.0	0.0
0.664913	40.8	20.8	N/A	N/A	200.0	0.0

Figure 6: Spectral diagram, Radiated Emission, 9kHz - 30MHz (AC 277V)



Final quasi-peak measurement results:

Frequency (MHz)	Quasi-Peak (dBµV/m)	Corr. (dB)	Limit (dBµV/m)	Margin (dB)	Antenna height (cm)	Angle (degr)
0.220894	65.4	20.7	N/A	N/A	200.0	0.0
0.664913	41.4	20.8	N/A	N/A	200.0	0.0

4.2 Emission in the Frequency Range above 30 MHz

4.2.1 Radiated Emission above 30MHz

Result:	**Passed**

Date of testing	:	10.08.2010
Test procedure	:	MP-5 specified by FCC Part 18:2008
Frequency range	:	30 - 1000MHz
Detector	:	Quasi-peak
Bandwidth	:	120kHz
Kind of test site	:	Semi-anechoic chamber
Limit	:	18.305(c) of FCC Part 18:2008 at 30m, consumer equipment: 10µV/m (30-88MHz); 15µV/m (88-216MHz); 20µV/m (216-1000MHz)
Measuring distance	:	3m
Supply voltage	:	AC 120V, 60Hz & AC 277V, 60Hz
Ambient condition	:	Temperature: 22°C; Relative humidity: 60%

Measuring configuration and description

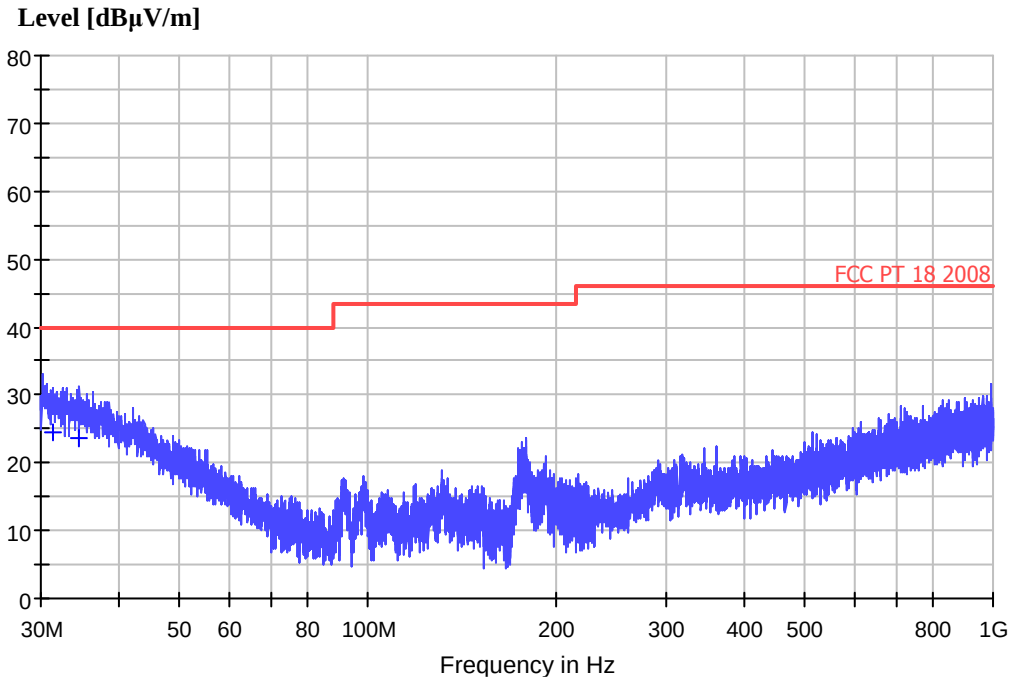
The radiated disturbance test was carried out in a semi-anechoic chamber. The test distance from the receiving antenna to the EUT is 3m. The normalized site attenuation of the semi-anechoic chamber is regularly calibrated to ensure the radiated disturbance test results are valid. During the test, the EUT was placed on a wooden table, which is 1m high. The wooden table was rotated 360° around, and the antenna was varied from 1m to 4m to find the maximum disturbance. The test was performed with the antenna both in its horizontal and vertical polarizations.

The following figures and tables were those measured by an automatic measurement system. A preview test was firstly performed with Peak detector. The final test was performed with Quasi-peak detector at those critical frequencies during the preview test.

The field strength level was established by adding the meter reading of the EMI test receiver to the factors associated with antenna correction factor & cable loss.

The equation is expressed as follows:
FS = R + AF + CF
Where FS = Field strength level in dBµV/m;
R = Reading of EMI test receiver in dBµV;
AF = Antenna factor in dB/m;
CF = Cable attenuation factor in dB.

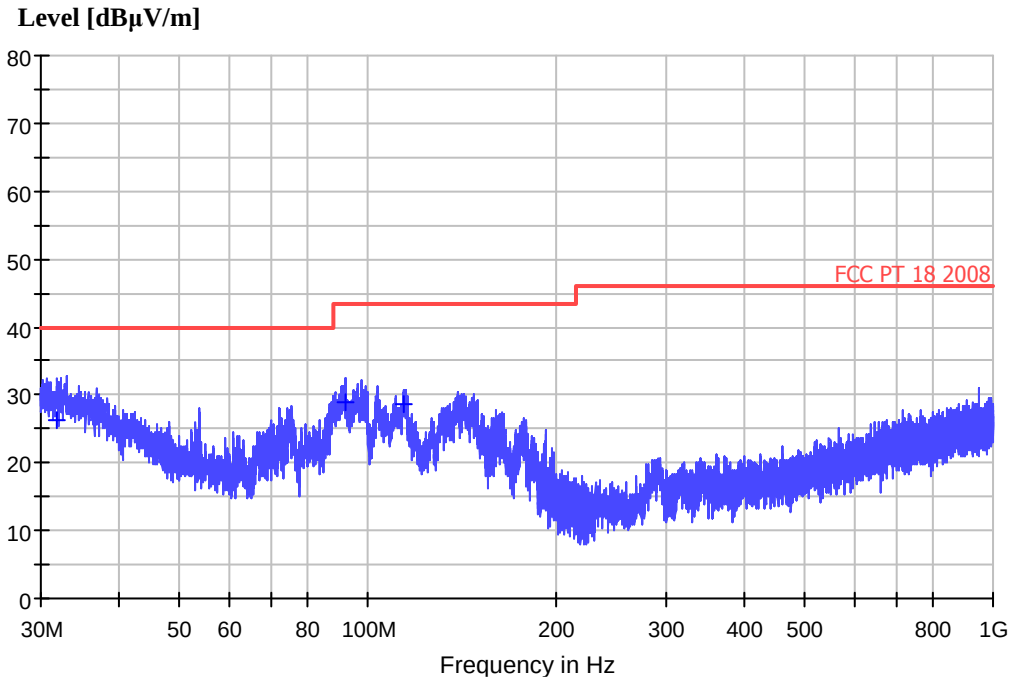
Figure 7: Spectral diagram, Radiated Emission, 30-1000MHz, Horizontal (AC 120V)



Final quasi-peak measurement results:

Frequency (MHz)	Quasi-Peak (dBµV/m)	Corr. (dB)	Limit (dBµV/m)	Margin (dB)	Antenna height (cm)	Angle (degr)	Polarization
31.275000	24.4	28.9	40.0	15.6	100.0	0.0	H
34.625000	23.6	27.7	40.0	16.4	100.0	0.0	H

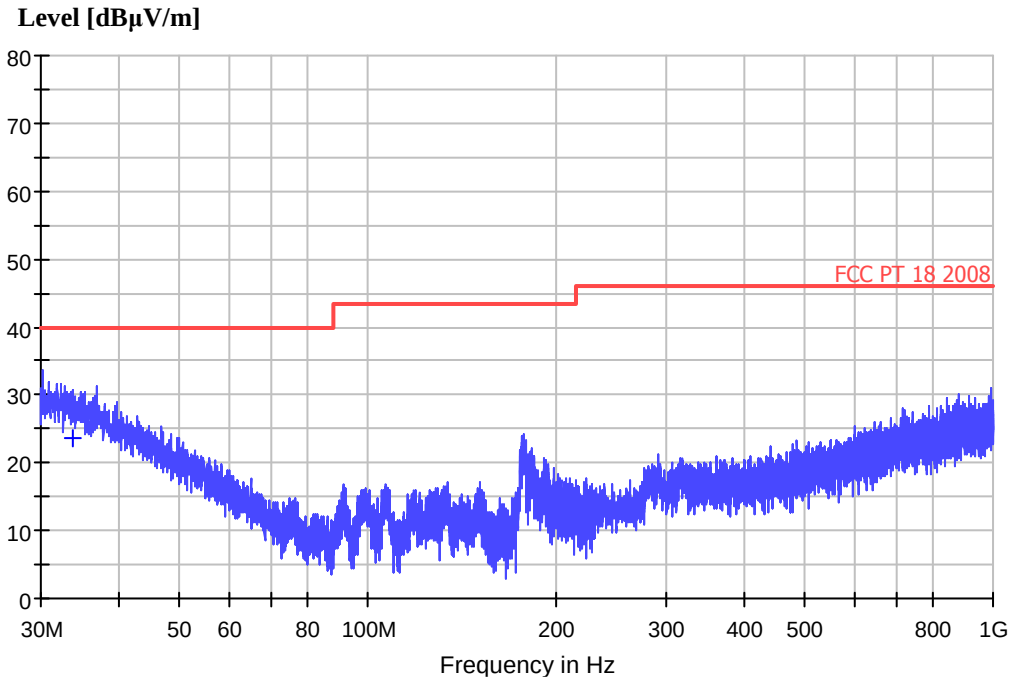
Figure 8: Spectral diagram, Radiated Emission, 30-1000MHz, Vertical (AC 120V)



Final quasi-peak measurement results:

Frequency (MHz)	Quasi-Peak (dBµV/m)	Corr. (dB)	Limit (dBµV/m)	Margin (dB)	Antenna height (cm)	Angle (degr)	Polarization
31.925000	26.3	28.8	40.0	14.7	100.0	0.0	V
92.225000	29.0	7.8	43.5	14.5	120.0	0.0	V
114.275000	28.7	9.5	43.5	14.8	100.0	0.0	V

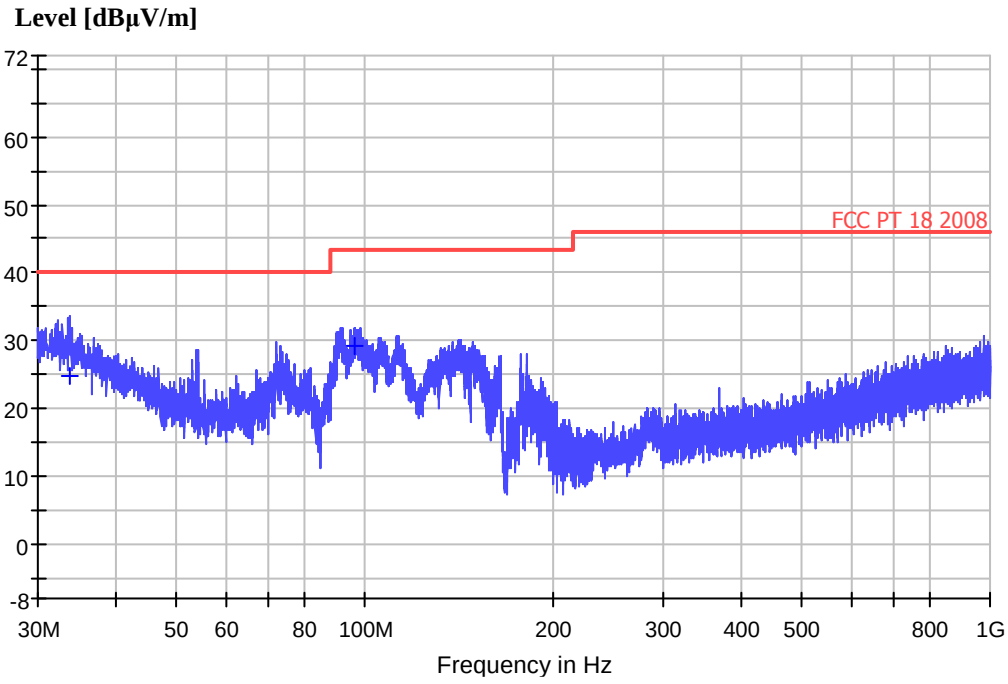
Figure 9: Spectral diagram, Radiated Emission, 30-1000MHz, Horizontal (AC 277V)



Final quasi-peak measurement results:

Frequency (MHz)	Quasi-Peak (dBµV/m)	Corr. (dB)	Limit (dBµV/m)	Margin (dB)	Antenna height (cm)	Angle (degr)	Polarization
33.700000	23.6	28.1	40.0	6.4	100.0	0.0	H

Figure 10: Spectral diagram, Radiated Emission, 30-1000MHz, Vertical (AC 277V)

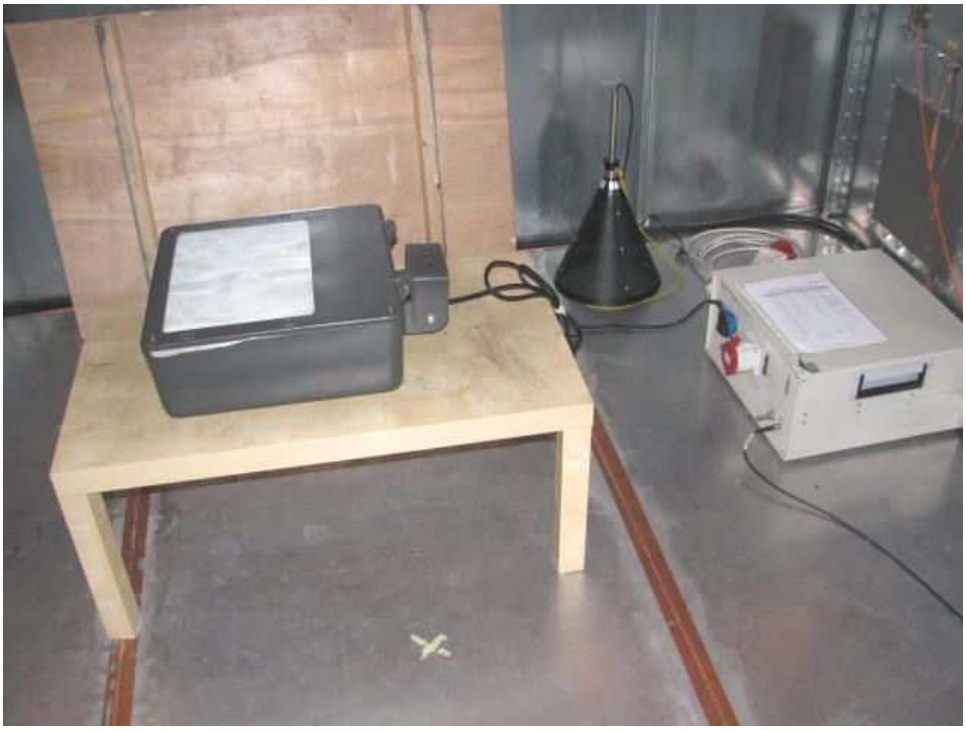


Final quasi-peak measurement results:

Frequency (MHz)	Quasi-Peak (dBµV/m)	Corr. (dB)	Limit (dBµV/m)	Margin (dB)	Antenna height (cm)	Angle (degr)	Polarization
33.775000	24.7	28.0	40.0	15.3	100.0	0.0	V
96.350000	29.3	7.9	43.5	14.2	100.0	0.0	V

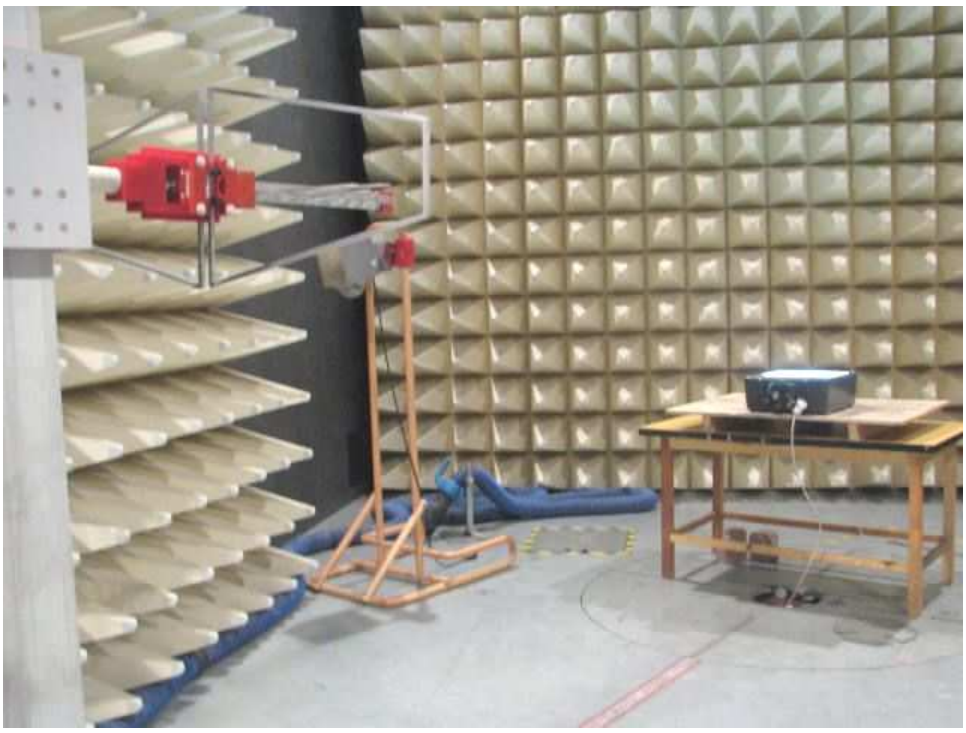
5 Photographs of the Test Set-Up

Photograph 1: Set-up for conducted emission



Photograph 2: Set-up for radiated emission

9kHz-30MHz



30-1000MHz

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