



CE/EMC TEST REPORT

for

Luster International Trading Ltd

ENERGY SAVING DEVICE

Model Number: LTT3638

Prepared for : Luster International Trading Ltd
Address : 16Fl,China Citic Bank Build,36#Zhenming Road,Ningbo China

Prepared by : NS Technology Co., Ltd.
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Report No. : NSE-E10054770
Date of Test : May 5~7, 2010
Date of Report : May 11, 2010






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NS Technology Co., Ltd.

Applicant:	Luster International Trading Ltd		
Address:	16Fl,China Citic Bank Build,36#Zhenming Road,Ningbo China		
Manufacturer:	Luster International Trading Ltd		
Address:	16Fl,China Citic Bank Build,36#Zhenming Road,Ningbo China		
E.U.T:	ENERGY SAVING DEVICE		
Model Number:	LTT3638		
Trade Name:	-----	Serial No.:	-----
Date of Receipt:	Apr. 29, 2010	Date of Test:	May 5~7, 2010
Test Specification:	EN 61000-6-3:2007 EN 61000-3-2:2006 EN 61000-3-3:2008 EN 61000-6-1:2007		
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied.		
		Issue Date: May 11, 2010	
Tested by:	Reviewed by:	Approved by:	
			
Leo / Engineer	Iceman Hu / Supervisor	Chris Du / Manager	
Other Aspects:	None.		
<i>Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested</i>			
<i>This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of NS Technology Co., Ltd.</i>			



1. GENERAL PRODUCT INFORMATION

1.1. Product Function

Refer to Technical Construction Form and User Manual.

1.2. Description of Device (EUT)

Description : ENERGY SAVING DEVICE
Model No. : LTT3638
System Input Voltage : AC 90-250V 50-60Hz

1.3. Independent Operation Modes

The basic operation modes are:

1.3.1. On



2. TEST SITES

2.1. Test Facilities

EMC Lab	:	Accredited by TUV Rheinland, Germany Date of registration: July 28, 2003 Accredited by CNAS, China Registration No.: L1744 Date of registration: November 25, 2004 Accredited by Intertek ETL SEMKO Registration No.: TMP-013 Date of registration: June 11, 2005 Accredited by TUV/PS, Hong Kong Date of registration: December 1, 2005 Accredited by ATCB, USA Date of registration: August 3, 2006 Accredited by VCCI, Japan Member No.:2115 Registration No.: R-2527, R-3012 & C-2770 Date of registration: March 23, 2007 Accredited by FCC, USA Registration No.: 502831 Date of registration: February 9, 2009 Accredited by Industry Canada Registration No.: 5936A Date of registration: March 4, 2009 Accredited by American Association for Laboratory Accreditation (A2LA), USA Certificate No.: 2951.01 Date of registration: March 31, 2010
Name of Firm	:	NS Technology Co., Ltd.
Site Location	:	Chenwu Industrial Zone, Houjie Town, Dongguan City, Guangdong, China



2.2. List of Test and Measurement Instruments

2.2.1. For conducted emission at the mains terminals test (844 Room)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCS30	100199	May 31,09	May 31,10
Artificial Mains Network	Rohde&Schwarz	ESH2-Z5	100071	May 31,09	May 31,10
Artificial Mains Network (AUX)	Kyoritsu	KNW-407	8-1579-1	Jan.19,09	Jan.19,11
RF Cable	FUJIKURA	3D-2W	844 Cable	May 2,10	May 2,11

2.2.2. For radiated emission test (30MHz-1GHz, 966 Chamber)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESPI	100302	May 31,09	May 31,10
Bilog Antenna	Teseq	CBL 6111D	25757	Oct.27,09	Oct.27,10
Spectrum Analyzer	HP	8593E	3448U00806	May 31,09	May 31,10
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	May 2,10	May 2,11
Signal Amplifier	Agilent	8447D	2944A10488	May 2,10	May 2,11
RF Cable	IMRO	IMRO-400	966 Cable 1#	May 2,10	May 2,11

2.2.3. For harmonic current emissions and voltage fluctuations/flicker test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
5kVA AC Power Source	California Instruments	5001ix-400	55194	May 31,09	May 31,10
Harmonic/Flicker Test System	California Instruments	PACS-1	72134	May 31,09	May 31,10

2.2.4. For electrostatic discharge immunity test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
ESD Generator	TESEQ	NSG 437	279	Oct.24,09	Oct.24,10

2.2.5. For radio frequency electromagnetic field immunity (R/S) test (SMQ)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Amplifier	AR	150W1000	300999	Jan.23,10	Jan.23,11
Amplifier	AR	150A220M6	305965	Jan.23,10	Jan.23,11
Amplifier	AR	25S1G4AM1	305993	Jan.23,10	Jan.23,11
Signal Generator	Rohde & Schwarz	SMT03	100059	Jan.23,10	Jan.23,11
Broadband Antenna	SCHAFFNER	CBL6111C	2576	Jan.23,10	Jan.23,11
Horn Antenna	AR	AT4002A	N/A	N/A	N/A
Audio Analyzer	Rohde & Schwarz	UPL	100023	Jan.23,10	Jan.23,11

2.2.6. For electrical fast transient/burst immunity test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EFT Tester	HAEFELY	PEFT4010	150546	May 31,09	May 31,10
EFT Coupling Clamp	HAEFELY	IP4A	150407	May 31,09	May 31,10

2.2.7. For surge immunity test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Surge Controller	HAEFELY	PSURGE8000	150366	May 31,09	May 31,10
Surge Impulse Module	HAEFELY	PIM100	150007	May 31,09	May 31,10
Surge Coupling Module	HAEFELY	PCD100	149870	May 31,09	May 31,10

2.2.8. For injected currents susceptibility test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Signal Generator	HP	8648A	3426A01263	May 31,09	May 31,10
CDN	Luthi	L-801M2/M3	2015	Jan.10,10	Jul.10,11
CDN(AUX)	TESEQ	CDN M016	27452	Oct.25,09	Oct.25,11
6dB 50Watt Attenuator	HUBER+SUHNER	5906.17.0005	303688	Jan.10,10	Jul.10,11
Signal Amplifier	HAEFELY	PAMP250	149594	NA	NA
Electromagnetic Injection Clamp	Luthi	EM101	35640	Jan.19,09	Jan.19,11
C/S Test System	HAEFELY	WinPAMP	NSEMC002	May 2,10	May 2,11

2.2.9. For power frequency magnetic field immunity test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Magnetic Field Tester	HAEFELY	MAG100.1	150579	Jan.10,10	Jul.10,11

2.2.10. For voltage dips and short interruptions immunity test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
DIPS Tester	HAEFELY	PLINE 1610	150370	May 31,09	May 31,10

3. TEST SET-UP AND OPERATION MODES

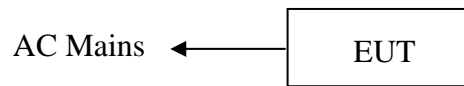
3.1. Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

Immunity: The equipment under test (EUT) was configured to the representative operating mode and conditions.

3.2. Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators



(EUT: ENERGY SAVING DEVICE)

3.3. Test Operation Mode and Test Software

Refer to Test Setup in clause 4 & 5.

3.4. Special Accessories and Auxiliary Equipment

None.

3.5. Countermeasures to Achieve EMC Compliance

None.

4. EMISSION TEST RESULTS

4.1. Conducted Emission at the Mains Terminals Test

RESULT	: Pass
Test Procedure	: EN 61000-6-3:2007
Frequency Range	: 0.15 to 30 MHz
Test Site	: Shielded Room
Limits	: EN 61000-6-3:2007

Test Setup

Date of Test	: May 5, 2010
M/N	: LTT3638
Input Voltage	: AC 230V/50Hz
Operation Mode	: On

The EUT was put on a wooden table which was 0.8 m high above the ground and connected to the AC mains through the Artificial Mains Network (AMN). Where the mains cable supplied by the manufacture was longer than 1 m, the excess was folded back and forth parallel to the cable at the centre so as to form a bundle no longer than 0.4 m.

The EUT was kept 0.4 m from any other earthed conducting surface. Both sides of AC line were checked to find out the maximum conducted emission levels according to the test procedure during the conducted emission test.

The frequency range from 150 kHz to 30 MHz was investigated.

The bandwidth of the test receiver (R&S ESCS30) was set at 9 kHz.

The test data of the worst case condition(s) was reported on the following page. All the scanning waveforms were attached within Appendix I.

Test Data

EUT: ENERGY SAVING DEVICE Temperature: 25.3°C
M/N: LTT3638 Humidity: 55%
Test Mode: On Atmospheric Pressure: 101.50kPa
Test Engineer: Leo

Conducted Emission at the Mains Terminals Test					
Frequency (MHz)	Reading (dB μ V)			Limit (dB μ V)	
	Quasi-Peak	Average	Ports	Quasi-Peak	Average
0.15	30.5	18.5	Neutral	65.7	55.7
0.31	25.8	22.8	Neutral	60.1	50.1
0.61	21.4	16.4	Neutral	56.0	46.0
0.92	26.6	24.6	Neutral	56.0	46.0
1.54	21.1	14.1	Neutral	56.0	46.0
7.65	23.1	16.1	Neutral	60.0	50.0
0.15	29.5	17.5	Line	65.7	55.7
0.31	25.8	21.8	Line	60.1	50.1
0.61	21.4	15.4	Line	56.0	46.0
0.92	24.6	23.6	Line	56.0	46.0
1.54	21.1	13.1	Line	56.0	46.0
7.65	22.1	15.1	Line	60.0	50.0

Note: Measurement Uncertainty: ± 2.54 dB at a level of confidence of 95%.

4.2. Radiated Emission Test

RESULT	: Pass
Test Procedure	: EN 61000-6-3:2007
Frequency Range	: 30 to 1000 MHz
Test Site	: 966 Chamber
Limits	: EN 61000-6-3:2007

Test Setup

Date of Test	: May 6, 2010
M/N	: LTT3638
Input Voltage	: AC 230V/50Hz
Operation Mode	: On

The EUT was placed on a turn table which was 0.8 m above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 10 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations.

The EUT was tested in the Chamber Site. It was pre-scanned with a Peak detector from the spectrum, and all the final readings from the test receiver were measured with the Quasi-Peak detector.

The bandwidth setting on the test receiver (R&S ESCS30) was 120 kHz.

The test data of the worst case condition(s) was reported on the following pages. All the scanning waveforms were attached within Appendix II.

Test Data

EUT:	ENERGY SAVING DEVICE	Temperature:	25.3°C
M/N:	LTT3638	Humidity:	55%
Test Mode:	On	Atmospheric Pressure:	101.51kPa
Test Engineer:	Leo		

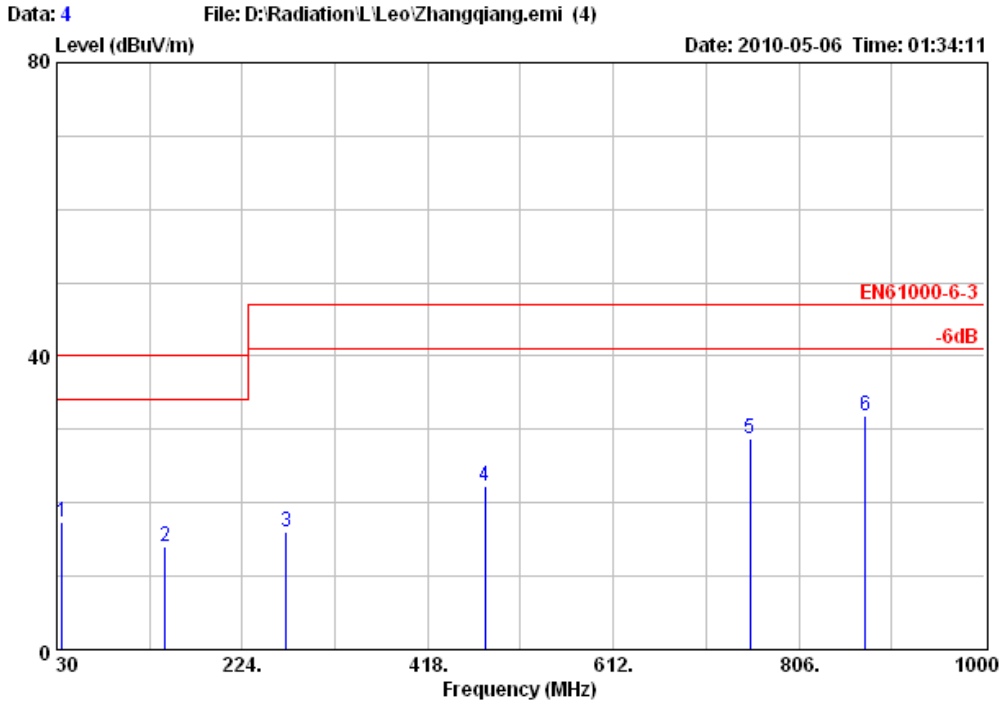
Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dB μ V	Emission Level Horizontal dB μ V/m	Margin dB	Limits dB μ V/m
35.82	15.88	0.59	1.01	17.48	22.52	40.00
143.49	11.98	1.24	0.76	13.98	26.02	40.00
269.59	13.20	1.82	0.94	15.96	31.04	47.00
478.14	18.45	2.64	1.26	22.35	24.65	47.00
754.59	23.26	3.57	1.98	28.81	18.19	47.00
875.84	23.94	3.93	4.01	31.88	15.12	47.00

Remark: The worst emission was detected at **875.84MHz** with corrected signal level of **31.88dB μ V/m** (Limit was **47.00dB μ V/m**) when the antenna was at **Horizontal** polarization and at **3.7m** high, the turn table was at **100°** .

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dB μ V	Emission Level Vertical dB μ V/m	Margin dB	Limits dB μ V/m
38.73	14.62	0.61	3.00	18.23	21.77	40.00
51.34	7.74	0.71	8.57	17.02	22.98	40.00
218.18	9.72	1.61	7.22	18.55	21.45	40.00
429.64	17.80	2.45	0.67	20.92	26.08	47.00
589.69	20.30	3.03	2.35	25.68	21.32	47.00
875.84	23.94	3.93	3.13	31.00	16.00	47.00

Remark: The worst emission was detected at **875.84MHz** with corrected signal level of **31.00dB μ V/m** (Limit was **47.00dB μ V/m**) when the antenna was at **Vertical** polarization and at **1.1m** high, the turn table was at **120°** .

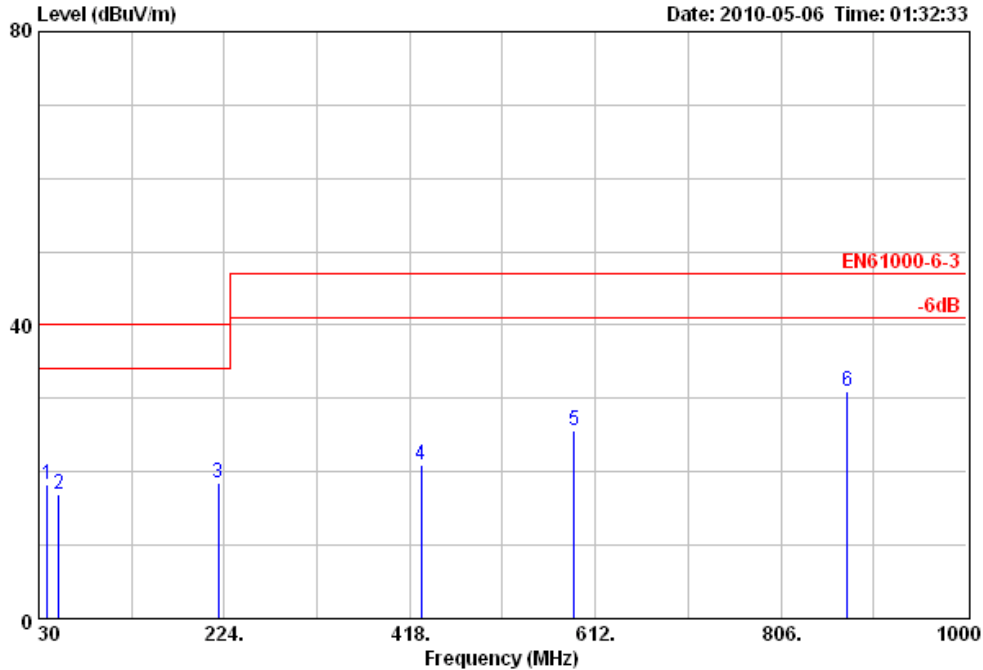
- Notes: 1. All the readings were Quasi-Peak values.
 2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
 3. 0° was the front of the EUT and table facing the antenna. The degree was calculated from 0° clockwise facing the antenna.
 4. **Measurement Uncertainty: ± 3.62 dB at a level of confidence of 95%.**



Test Site : 966 Chamber
 Limit : EN61000-6-3
 Dis. / Ant. : 3m 25757-3M Ant. Pol.: HORIZONTAL
 EUT : ENERGY SAVING DEVICE
 Power : AC 230V/50Hz
 M/N : MRP-01
 Test Engineer : Leo
 Comment : Temp:25.3'C Humi:55% Press:101.51kPa
 Test Mode : On
 Ant high:3.1m;Table angle:100'

	Emission				Ant. Cable		
	Freq.	Level	Limits	Margin	Reading	Factor	Loss
	(MHz)	(dBUV/m)	(dBUV/m)	(dB)	(dBUV)	(dB/m)	(dB)
1	35.82	17.48	40.00	22.52	1.01	15.88	0.59
2	143.49	13.98	40.00	26.02	0.76	11.98	1.24
3	269.59	15.96	47.00	31.04	0.94	13.20	1.82
4	478.14	22.35	47.00	24.65	1.26	18.45	2.64
5	754.59	28.81	47.00	18.19	1.98	23.26	3.57
6	875.84	31.88	47.00	15.12	4.01	23.94	3.93

Data: 3 File: D:\Radiation\L\Leo\Zhangqiang.emi (4) Date: 2010-05-06 Time: 01:32:33



Test Site : 966 Chamber
 Limit : EN61000-6-3
 Dis. / Ant. : 3m 25757-3M Ant. Pol.: VERTICAL
 EUT : ENERGY SAVING DEVICE
 Power : AC 230V/50Hz
 M/N : MRP-01
 Test Engineer : Leo
 Comment : Temp:25.3'C Humi:55% Press:101.51kPa
 Test Mode : On
 Ant high:1.1m;Table angle:120'

	Emission				Ant. Cable		
	Freq.	Level	Limits	Margin	Reading	Factor	Loss
	(MHz)	(dBUV/m)	(dBUV/m)	(dB)	(dBUV)	(dB/m)	(dB)
1	38.73	18.23	40.00	21.77	3.00	14.62	0.61
2	51.34	17.02	40.00	22.98	8.57	7.74	0.71
3	218.18	18.55	40.00	21.45	7.22	9.72	1.61
4	429.64	20.92	47.00	26.08	0.67	17.80	2.45
5	589.69	25.68	47.00	21.32	2.35	20.30	3.03
6	875.84	31.00	47.00	16.00	3.13	23.94	3.93

4.3. Harmonic Current Emissions on AC Mains Test

RESULT : **Pass**
Test Procedure : EN 61000-3-2:2006
Limits : EN 61000-3-2:2006

There is no need for Harmonic current test to be performed on this product (rated power is less than 75 W) in accordance with EN 61000-3-2:2006.

For further details, please refer to Clause 7 of EN 61000-3-2:2006 which states:

“For the following categories of equipment, limits are not specified in this standard:

- equipment with a rated power of 75 W or less, other than lighting equipment.”

4.4. Voltage Fluctuations and Flicker on AC Mains Test

RESULT : **Pass**
 Test Procedure : EN 61000-3-3:2008
 Limits : EN 61000-3-3:2008

Test Setup

Date of Test : May 7, 2010
 M/N : LTT3638
 Input Voltage : AC 230V/50Hz
 Operation Mode : On

The test data of the worst case condition(s) was reported on the page below.

Test Data

EUT:	<u>ENERGY SAVING DEVICE</u>	Temperature:	<u>25.5°C</u>
M/N:	<u>MRP-01</u>	Humidity:	<u>55%</u>
Test Mode:	<u>On</u>	Atmospheric Pressure:	<u>101.50kPa</u>
Test Engineer:	<u>Leo</u>		

Voltage Fluctuation	Limit	Value
Relative Voltage Change Characteristic d(t) (dc > 3%)	500ms	0ms
Maximum Relative Voltage Change dmax	4%	0.00
	6%	/
	7%	/
Relative Steady-state Voltage Change dc	3.3%	0.00

Flicker	Limit	Value
Short-term Flicker Indicator Pst	1.000	0.064
Long-term Flicker Indicator Plt	0.650	/

5. IMMUNITY TEST RESULTS

5.1. Description of Performance Criteria:

Performance criteria A

The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criteria B

The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criteria C

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

5.2. Electrostatic Discharge Immunity Test

RESULT : **Pass**

Test Procedure : EN 61000-6-1:2007

Basic Standard : EN 61000-4-2:1995+A1:1998+A2:2001

Test Specification : ± 4 kV (Contact discharge)
 ± 8 kV (Air discharge)

Number of Discharges : 10 (Air discharge for single polarity discharge)
10 (Contact discharge for single polarity discharge)

Repetition Rate : One discharge per second

Performance Criterion : B

Test Setup

Date of Test : May 7, 2010

M/N : LTT3638

Input Voltage : AC 230V/50Hz

Operation Mode : On

Temperature : 25.5°C

Humidity : 55%

Atmospheric Pressure : 101.51kPa

Table 1: Electrostatic Discharge Immunity Test Result

Discharge Location		Type of Discharge	Result
Button	4 points	Air	Pass
Slot	5 points	Air	Pass
HCP	4 points	Contact	Pass
VCP	4 points	Contact	Pass

*Remark: 1. No obvious change of function was found after the test.
2. Discharge should be considered on Contact, Air, Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).*

5.3. Radio Frequency Electromagnetic Field Immunity Test

RESULT : **Pass**
 Test Procedure : EN 61000-6-1:2007
 Basic Standard : EN 61000-4-3:2006+A1:2008
 Test Signal : 1 kHz sine wave, AM 80% modulated
 Performance Criterion : A
 Test Site : SMQ

Test Setup

Date of Test : May 7, 2010
 M/N : LTT3638
 Input Voltage : AC 230V/50Hz
 Operation Mode : On
 Temperature : 25.5°C
 Humidity : 55%
 Atmospheric Pressure : 101.51kPa

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The EUT was set 3 m away from the transmitting antenna which was mounted on an antenna tower. Both horizontal and vertical polarizations of the antenna were set on the test. Each of the four sides of the EUT was faced the transmitting antenna and measured individually.

The test was carried out in the Anechoic Chamber which was that of a size adequate to maintain a uniform field of sufficient dimensions with respect to the EUT. Additional absorbers were used to damp reflections in chambers which were not fully lined.

Table 2: Radio Frequency Electromagnetic Field Immunity Test Result

Position	Frequency Range	Test Level	Modulated Signal	Freq. Step	Dwell Time	Result
Front	80 to 1000 MHz, 1.4 to 2.0 GHz	3 V/m	AM 80%, 1kHz sine wave	1%	3 s	Pass
Right						
Rear						
Left						
Front	2.0 to 2.7 GHz	1 V/m	AM 80%, 1kHz sine wave	1%	3 s	Pass
Right						
Rear						
Left						

Remark: The EUT was operated as intended during and after the test.

5.4. Electrical Fast Transient/Burst Immunity Test

RESULT	: Pass
Test Procedure	: EN 61000-6-1:2007
Basic Standard	: EN 61000-4-4:2004
Waveshape of the Pulse	: Tr/Td = 5/50 ns
Repetition Frequency	: 5 kHz
Burst Duration	: 15 ms
Burst Period	: 300 ms
Test Duration	: 120 s
Performance Criterion	: B

Test Setup

Date of Test	: May 7, 2010
M/N	: LTT3638
Input Voltage	: AC 230V/50Hz
Operation Mode	: On
Temperature	: 25.3°C
Humidity	: 55%
Atmospheric Pressure	: 101.50kPa

The test generator and the coupling/decoupling network were placed directly on, and bonded to, the ground reference plane. The ground reference plane projected beyond the EUT or/and the coupling clamp by at least 0.1 m on all sides. And the minimum area was 1 m x 1 m. The minimum distance between the EUT and all other conductive structures, except the ground plane was more than 0.5 m.

EUT and its simulators were placed on the insulation support 0.1 m above the ground reference plane. The length of the cables between the coupling device and the EUT was 0.5 m. If it was more than 0.5 m, the excess length of this cable was folded to avoid a flat coil and situated at a distance of 0.1 m above the ground reference plane.

Table 3: Electrical Fast Transient/Burst Immunity Test Result

Coupling Ports		Coupling Voltage	Inject Method	Result
AC Power Ports	L	± 1 kV	Direct	Pass
	N	± 1 kV		Pass
	L-N	± 1 kV		Pass

Remark: No obvious change of function was found after the test.

5.5. Surge Immunity Test

RESULT	: Pass
Test Procedure	: EN 61000-6-1:2007
Basic Standard	: EN 61000-4-5:2006
Waveform Parameters	: Open-circuit voltage: 1.2/50 μ s Short-circuit current: 8/20 μ s
Repetition Rate	: 60 s
Performance Criterion	: B

Test Setup

Date of Test	: May 7, 2010
M/N	: LTT3638
Input Voltage	: AC 230V/50Hz
Operation Mode	: On
Temperature	: 25.5°C
Humidity	: 55%
Atmospheric Pressure	: 101.51kPa

The effective output impedance of the generator was 2 Ω for L-N test, and 12 Ω for L-PE and N-PE test.

For d.c. power ports and interconnection lines, the surge pulses were 5 positive and 5 negative. For a.c. power ports, the surge pulses were 5 positive and 5 negative each at 0°, 90°, 180° and at 270°. The time between successive pulses was 1 minute.

For double-insulated products without PE or external earth connections, the test was done in a similar way as for grounded products but without additional external grounded connections. If there were no other possible connections to earth, line-to-ground tests were omitted. The power cord or/and interconnection line between the EUT and the coupling/decoupling network was less than 2 m in length.

Table 4: Surge Immunity Test Result

Coupling Ports		Coupling Voltage	Coupling Phase / Result			
			0°	90°	180°	270°
AC power ports	L-N	± 1 kV	Pass	Pass	Pass	Pass

Remark: No obvious change of function was found after the test.

5.6. Injected Currents Susceptibility Test

RESULT	: Pass
Test Procedure	: EN 61000-6-1:2007
Basic Standard	: EN 61000-4-6:2007
Test Voltage	: 3 V (r.m.s) unmodulated
Test Signal	: 1kHz sine wave, AM 80% modulated
Frequency Range	: 150 kHz to 80 MHz
Performance Criterion	: A

Test Setup

Date of Test	: May 7, 2010
M/N	: LTT3638
Input Voltage	: AC 230V/50Hz
Operation Mode	: On
Temperature	: 25.5°C
Humidity	: 55%
Atmospheric Pressure	: 101.51kPa

The EUT was placed on an insulating support of 0.1m height above the ground reference plane. All cables exiting the EUT were supported at a height of 30 mm above the ground reference plane. CDN (coupling and decoupling device) was placed on the ground reference plane about 0.3 m from the EUT. The cables between the CDN and EUT were as short as possible (0.1 m to 0.3 m) and were not to be bundled or wrapped. Their height above the ground reference plane was 30 mm.

The frequency range was swept from 150 kHz to 80 MHz, using the signal levels established during the setting process, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.

The frequency was swept incrementally, the step size was 1% of the preceding frequency value. The dwell time of the amplitude modulated carrier at each frequency was 1.5 s.

Table 5: Injected Currents Susceptibility Test Result

Coupling ports	Voltage (r.m.s)	Modulation Signal	Freq. Step	Dwell Time	Coupling Method	Result
AC Power Ports	3 V	AM 80%, 1kHz sine wave	1%	1.5 s	CDN	Pass
DC Power Ports	/		/	/	EM Clamp	/
Signal/Control	/		/	/	EM Clamp	/

Remark: The EUT was operated as intended during and after the test.

5.7. Power Frequency Magnetic Field Immunity Test

RESULT : **Pass**
Test Procedure : EN 61000-6-1:2007
Basic Standard : EN 61000-4-8:1993+A1:2001
Test Specification : 3 A/m
Performance Criterion : A

Test Setup

Date of Test : May 7, 2010
M/N : LTT3638
Input Voltage : AC 230V/50Hz
Operation Mode : On
Temperature : 25.5°C
Humidity : 55%
Atmospheric Pressure : 101.51kPa

The EUT was subjected to the test magnetic field by using the standard inductive coil 1 m x 1 m. The plane of the inductive coil then was rotated by 90° in order to expose the EUT to the test field with different orientations.

The magnetic field strength was expressed in A/m; 1 A/m corresponded to a free space magnetic flux density of 1.26 µT.

The electromagnetic conditions of the laboratory were such as to guarantee the correct operation of the EUT in order to influence the test results. And the power frequency magnetic field value of the laboratory was at least 20 dB lower than the selected test level.

Table 6: Power Frequency Magnetic Field Immunity Test Result

Test Level	Testing Duration	Coil Orientation	Criterion	Result
3 A/m	5 min	X	A	Pass
3 A/m	5 min	Y	A	Pass
3 A/m	5 min	Z	A	Pass

Remark: The EUT was operated as intended during and after the test.

5.8. Voltage Dips and Short Interruptions Immunity Test

RESULT : **Pass**

Test Procedure : EN 61000-6-1:2007

Basic Standard : EN 61000-4-11:2004

Test Specification : 0% U_T / 0.5 P, Criterion: B
 0% U_T / 1 P, Criterion: B
 70% U_T / 25 P, Criterion: C
 0% U_T / 250 P, Criterion: C

Test Setup

Date of Test : May 7, 2010

M/N : LTT3638

Input Voltage : AC 230V/50Hz

Operation Mode : On

Temperature : 25.5°C

Humidity : 55%

Atmospheric Pressure : 101.51kPa

The test was performed with the EUT connected to the test generator with the shortest possible length suitable to the application of the EUT.

The EUT was tested for each selected combination of test level and duration with a sequence of three dips/interruptions with intervals of 10 s (between each test event). Each representative mode of operation was to be tested.

For voltage dips and short interruptions, changes in supply voltage were to occur at zero crossings of the voltage.

Table 7: Voltage Dips and Short Interruptions Immunity Test Result

Test Level in % U_T	Voltage Dips & Short Interruptions in % U_T	Durations (in Period)	Criterion	Result
0	100	0.5P	B	Pass
0	100	1P	B	Pass
70	30	25P	C	Pass
0	100	250P	C	Pass

Remark: No obvious change of function was found after the test.

6. PHOTOGRAPHS OF THE EUT

Figure 1
General Appearance of the EUT



Figure 2
General Appearance of the EUT



Figure 3
Inside view of the EUT

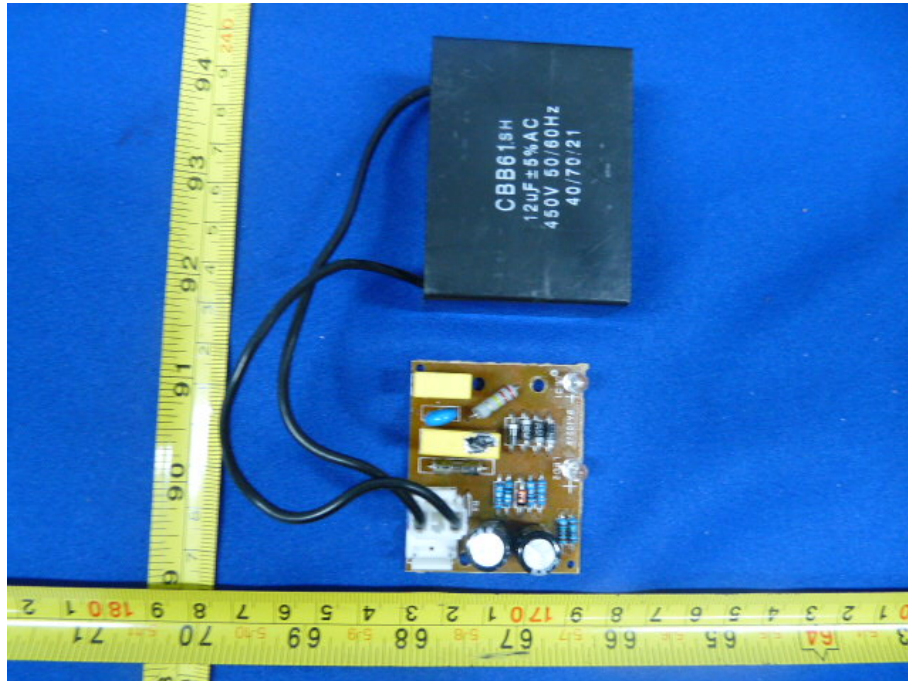


Figure 4
Inside view of the EUT

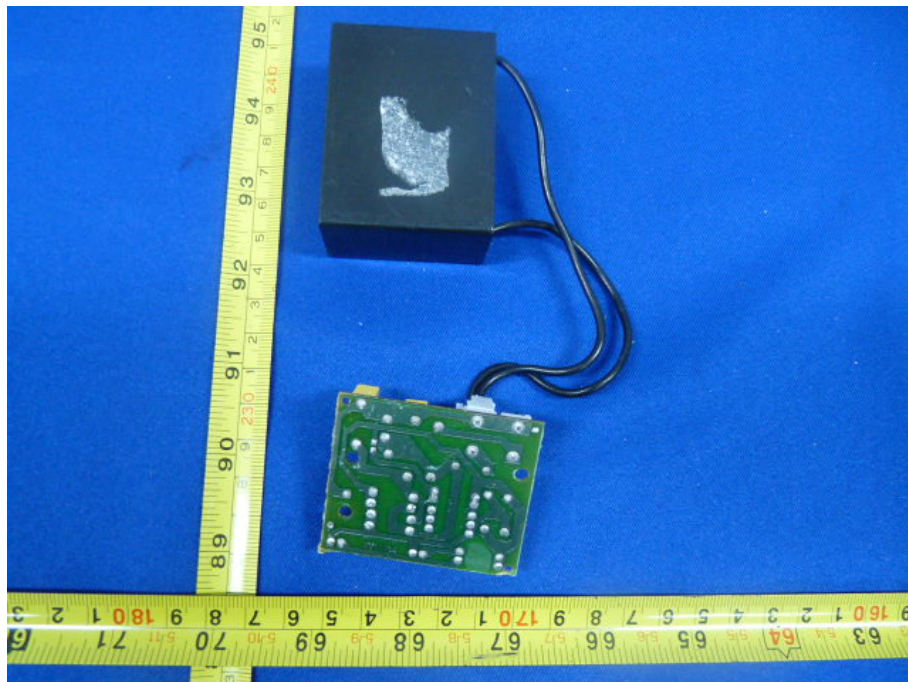


Figure 5
General Appearance of the PCB

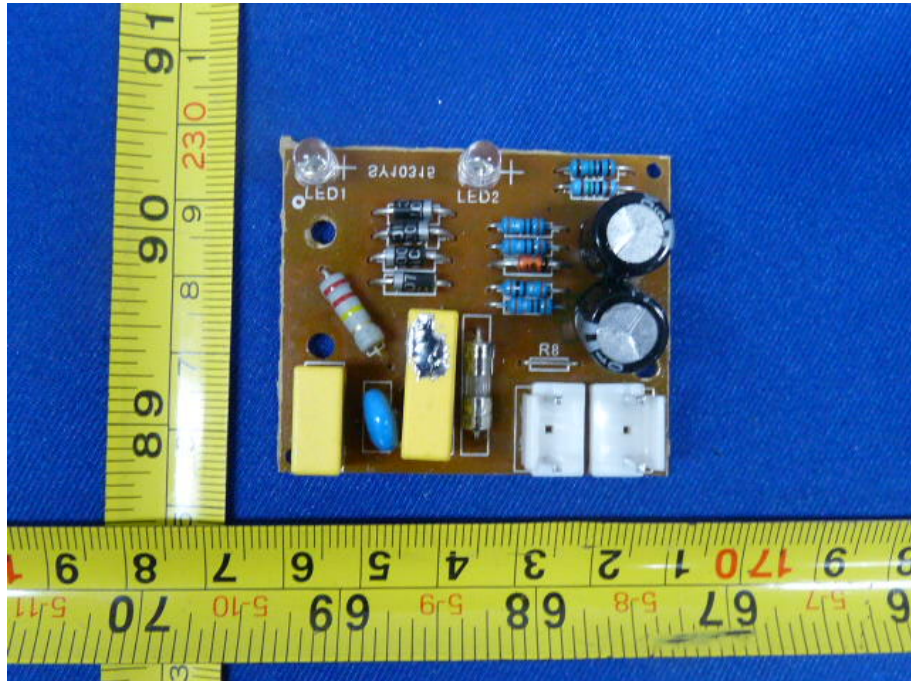
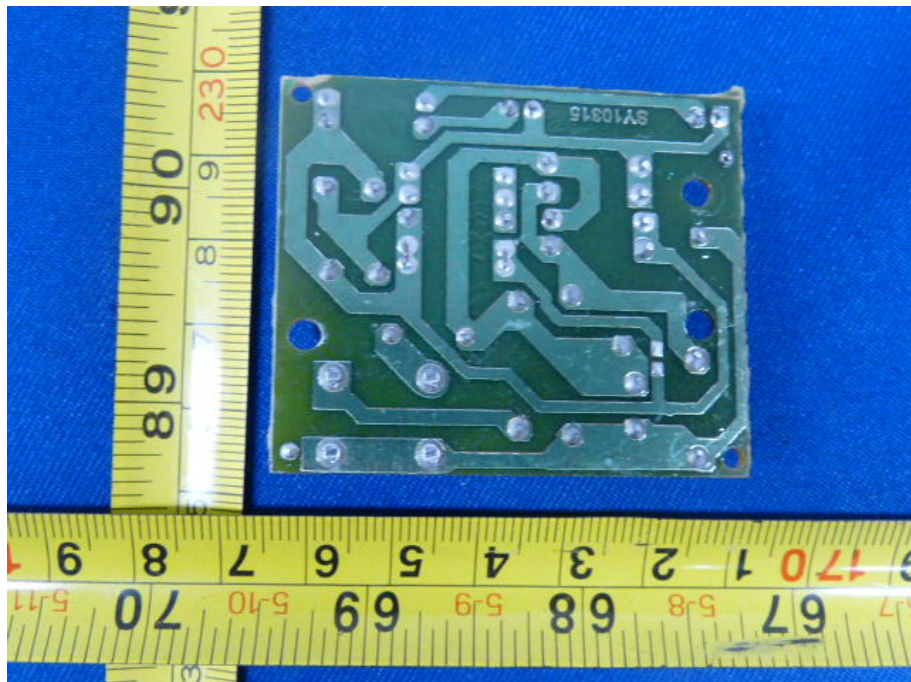


Figure 6
General Appearance of the PCB

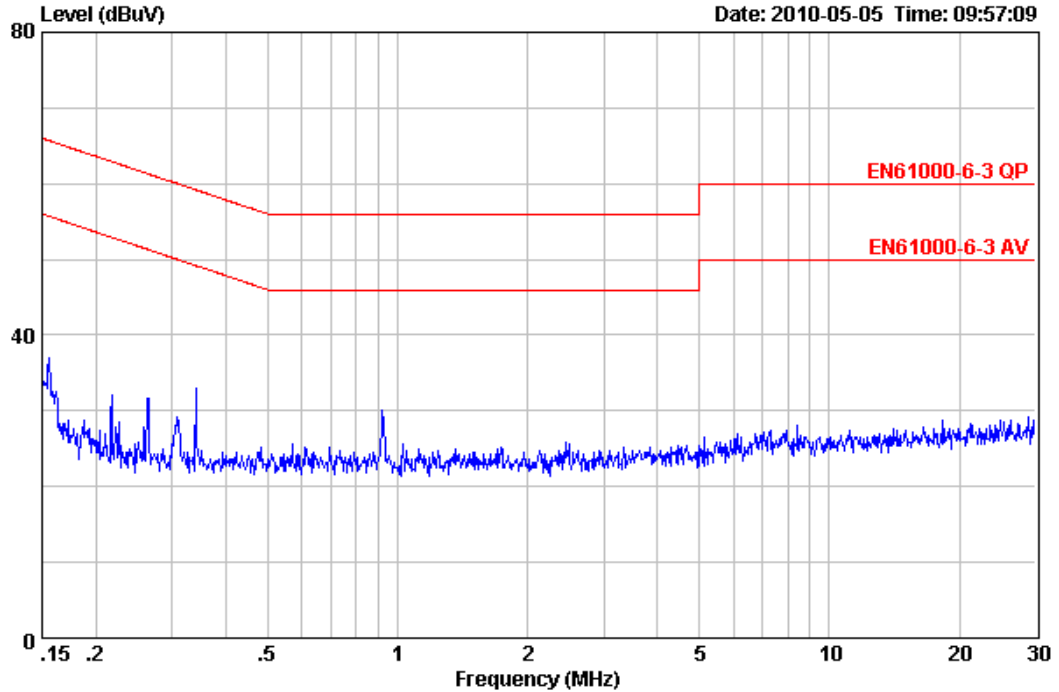


APPENDIX I

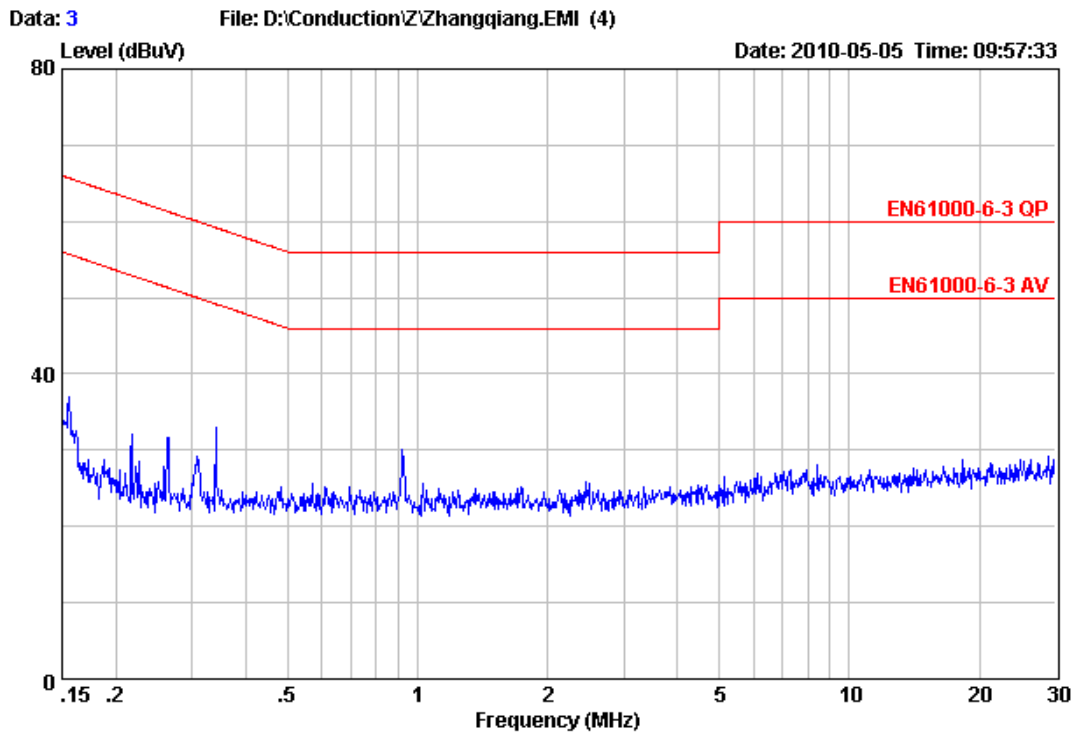


Data: 1 File: D:\Conduction\Z\Zhangqiang.EMI (4)

Date: 2010-05-05 Time: 09:57:09



Test Site : 844 Shielded Room
Limit : EN61000-6-3 QP LISN Phase : NEUTRAL
EUT : ENERGIE SVING DEVICE
Power : AC 230V/50Hz
M/N : MRP-01
TestEngineer : Leo
Comment : Temp:25.3'C Humi:55% Press:101.50kPa
Test Mode : On



Test Site : 844 Shielded Room
Limit : EN61000-6-3 QP LISN Phase : LINE
EUT : ENERGIE SVING DEVICE
Power : AC 230V/50Hz
M/N : MRP-01
Test Engineer : Leo
Comment : Temp:25.3'C Humi:55% Press:101.50kPa
Test Mode : On

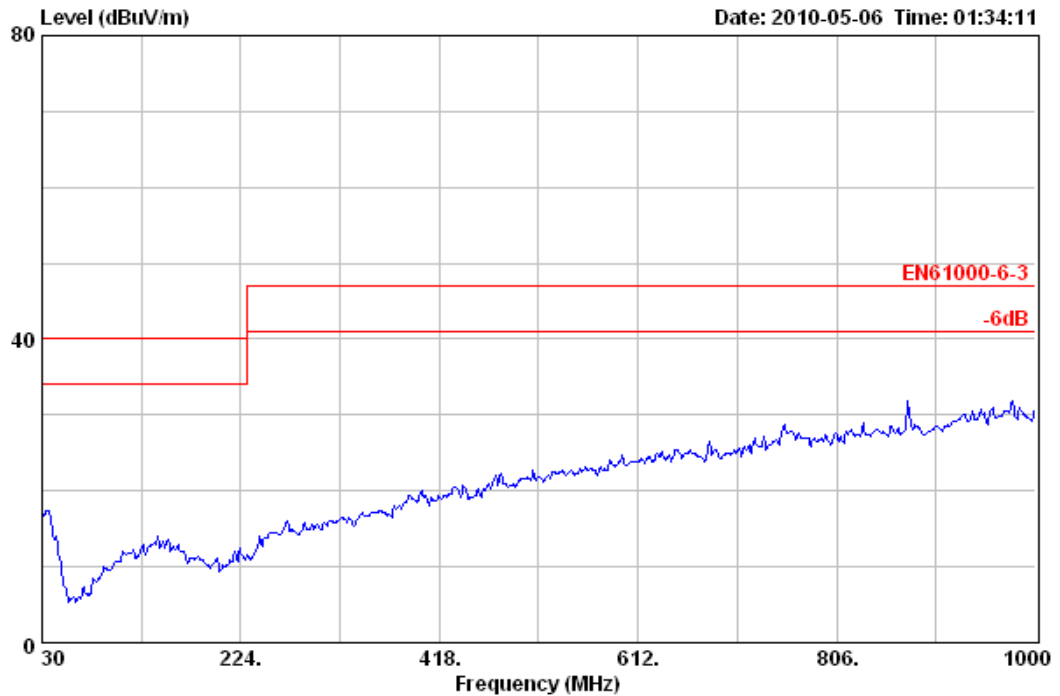
APPENDIX II



Data: 2

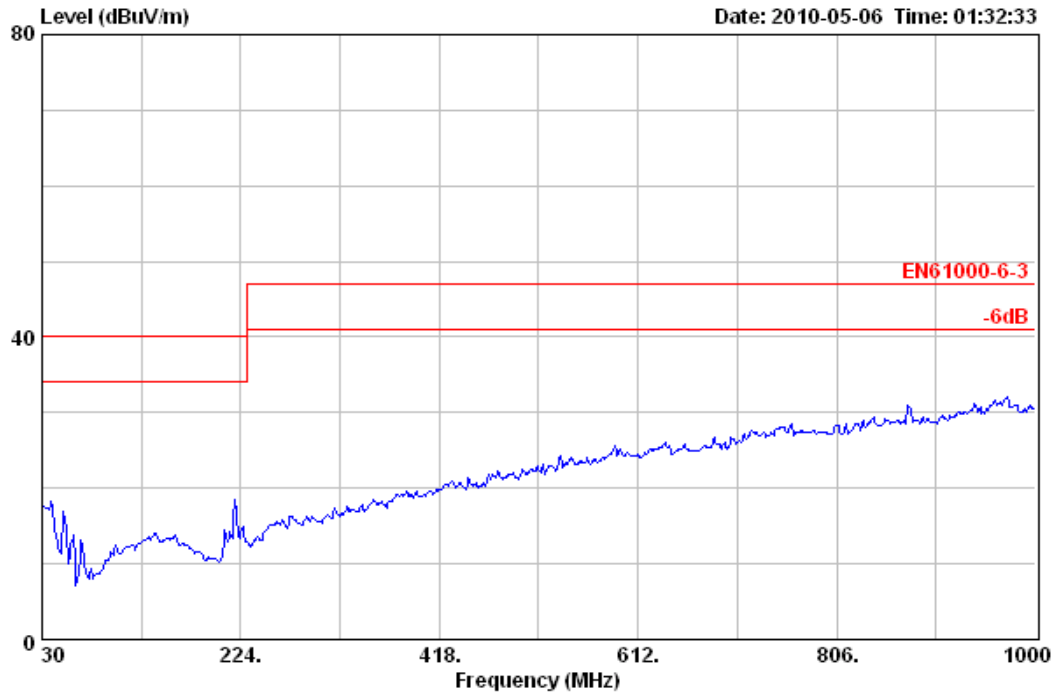
File: D:\Radiation\L\Leo\Zhangqiang.emi (4)

Date: 2010-05-06 Time: 01:34:11



Test Site : 966 Chamber
Limit : EN61000-6-3
Dis. / Ant. : 3m 25757-3M Ant. Pol.: HORIZONTAL
EUT : ENERGY SAVING DEVICE
Power : AC 230V/50Hz
M/N : MRP-01
Test Engineer : Leo
Comment : Temp:25.3'C Humi:55% Press:101.51kPa
Test Mode : On

Data: 1 File: D:\Radiation\L\Leo\Zhangqiang.emi (4)



Test Site : 966 Chamber
Limit : EN61000-6-3
Dis. / Ant. : 3m 25757-3M Ant. Pol.: VERTICAL
EUT : ENERGY SAVING DEVICE
Power : AC 230V/50Hz
M/N : MRP-01
Test Engineer : Leo
Comment : Temp:25.3'C Humi:55% Press:101.51kPa
Test Mode : On