







ISO/IEC17025 Accredited Lab.

Report No:

File reference No: 2011-02-22

Applicant:

Product: Multifunctional flashlight (Mars no.1)

Brand Name:

Model No: LG801

Test Standards: EN 61000-6-1:2007 EN61000-3-2:2006

+A1:2009+A2:2009

EN 61000-6-3:2007 EN 61000-3-3:2008

Test result:

The EMC testing has been performed on the submitted samples

and found in compliance with council EMC Directive

2004/108/EC.

Approved By

Teny Tang

Terry Tang Manager

Dated: Feb 22,2011

Results appearing herein relate only to the sample tested

The technical reports is issued errors and omissions exempt and is subject to withdrawal at

East 5/Block 4, Anhua Industrial Zone, No.8, Tairan Rd. CheGongMiao, FuTian District, Shenzhen, CHINA

Tel +86-755-83448688 Fax +86-755-83442996

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Date: 2011-02-22



Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 899988

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 899988.

IC-Registration No.: IC5205A-01

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration IC No.: 5205A-01.

VCCI- Registration No.: R-3015 and C-3332

The EMC Laboratory has been registered and fully described in a report filed with the (VCCI) Voluntary Control Council for Interference. The acceptance letter from the VCCI is maintained in our files. Registration IC No.: R-3015 and C-3332





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1.0 **General Details**

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Name: Address:

Telephone: +86-755-83448688 +86-755-83442996 Fax:

1.2 **Applicant Details**

> Applicant: Address:

Telephone: 0574-63731378 Fax: 0574-63731368

1.3 Description of EUT

> Multifunctional flashlight (Mars no.1); Multifunctional flashlight (Mars no.2) Product:

Manufacturer:

Address:

Brand Name:

Model Number: LG801 Adding Model Number: LG802

Remark: Please See Page36.

Rating:Input:3V Output: 3V (White light)300mA (Red light)120mA

(White light)0.9W (Red light)0.36W

1.4 Submitted Sample

1 Sample

1.5 **Test Duration**

2011-02-21 to 2011-02-22

1.6 **Test Uncertainty**

> Conducted Emissions Uncertainty = 3.6dB Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

The sample tested by

Print Name: Leo Lau

The report refers only to the sample tested and does not apply to the bulk.



2.0 List of Measurement Equipment

2.1 **Conducted Emission Test**

				Calibration	Calibration
Name	Model No.	Serial No.	Manufacturer	Date	Cycle
EMI Test Receiver	ESH3	860905/006	RS	2010.5.14	1Year
Spectrum Analyzer	ESA-L1500A	US37451154	HP	2010.5.14	1Year
PULSE LIMITER	ESH3-Z2	100281	RS	2010.5.14	1Year
LISN	ESH3-Z5	100294	RS	2010.5.14	1Year
LISN	ESH3-Z5	100253	RS	2010.5.14	1Year

2.2 Radiated Disturbance Test

				Calibration	Calibration
Name	Model No	Serial No.	Manufacturer	Date	Cycle
EMI Test Receiver	ESVD	100008	RS	2010.5.14	1Year
Coaxial Switch	MP59B	M70585	ANRITSU	N/A	N/A
Spectrum Analyzer	8595E	3441A00893	HP	2010.5.14	1Year
Amplifier	8447D	2727A05017	HP	2010.5.14	1Year
Bilog Antenna	VULB9163	9163/340	Schwarebeck	2010.5.14	1Year

2.3 Harmonic & Flicker Test

				Calibration	Calibration
Name	Model No.	Serial No.	Manufacturer	Date	Cycle
Harmonics Flicker Test System	PACS-1	72305	CI	2010.5.14	1Year
5K VA AC Power Source	5001iX	56060	CI	2010.5.14	N/A

2.4 **ESD Test**

				Calibration	Calibration
Name	Model No.	Serial No.	Manufacturer	Date	Cycle
ESD Simulator	DITO	0404-24	EM TEST	2010.5.14	1Year



2.5 RF field Strength Susceptibility

				Calibration	Calibration
Name	Model No.	Serial No.	Manufacturer	Date	Cycle
Signal Generator	SMT03	100059	RS	2010.5.14	1Year
Power Meter	NRVS		RS	2010.5.14	1Year
Voltage Probe	URV5-Z2	100012	RS	2010.5.14	1Year
Voltage Probe	URV5-Z2	100013	RS	2010.5.14	1Year
Power Amplifier	150W1000	300999	AR	2010.5.14	1Year
Power Amplifier	25S1G4AM1	305993	AR	2010.5.14	1Year
Field Probe	CBL6111C	2576	Holaday	2010.5.14	1Year
Bilog Antenna	MCDC		Chase	2010.5.14	1Year

2.6 Electrical Fast Transient/Burst (EFT/B) Immunity test

				Calibration	Calibration
Name	Model No.	Serial No.	Manufacturer	Date	Cycle
EFT Generator	UCS 500 M4	0304-42	EM TEST	2010.5.14	1Year
Power Source	MV2616	0104-14	EM TEST	2010.5.14	1Year

2.7 Surge Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
Ultra Compact	UCS 500			2010.5.14	
Simulator	M4	0304-42	EM TEST		1Year
Power Source	MV2616	0104-14	EM TEST	2010.5.14	1Year

2.8 Conducted Immunity Test

					Calibration	Calibration
Name		Model No.	Serial No.	Manufacturer	Date	Cycle
Continuous	Wave					
Simulator		CWS 500C	0407-05	EM TEST	2010.5.14	1 Year

2.9 Power-frequency Magnetic Field

					Calibration	Calibration
Name		Model No.	Serial No.	Manufacturer	Date	Cycle
Continuous	Wave	UCS 500 M4	0304-42		2010.5.14	
Simulator		UCS 300 M4	0304-42	EM TEST		1 Year
Power	Source	MW 2616	0104 14		2010.5.14	
Network		MV 2616	0104-14	EM TEST		1 Year

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Current Transformer	MC2630	(EM TEST	2010.5.14	1 Year
Magnetic Coil	MS100	0304-42	EM TEST	2010.5.14	1 Year

2.10 Voltage Dips/Interruption Immunity Test

				Calibration	Calibration
Name	Model No.	Serial No.	Manufacturer	Date	Cycle
Ultra Compact				2010.5.14	
Simulator	UCS 500 M4	0304-42	EM TEST		1Year
Power Source	MV2616	0104-14	EM TEST	2010.5.14	1Year

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3.0 **Technical Details**

3.1 **Investigations Requested** Perform Electromagnetic Interference [EMI] & Electromagnetic Susceptibility [EMS] tests for CE Marking

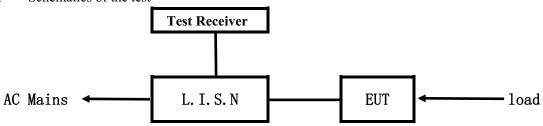
3.2 Test Standards

	Test Standards					
EN 61000-6-3: 2007		atibility (EMC)—Part 6-3:Generic Standards for residential, commercial and light-industrial				
EN 61000-3-2: 2006	Electromagnetic comp	patibility(EMC)- Part 3-2:Limits-Limits for harmonic				
+A1:2009+A2:2009	current emissions(equi	pment input current ≤16A per phase)				
EN 61000-3-3: 2008	changes, Voltage flue	atibility (EMC)- Part 3-3:Limits-Limitation of voltage ctuations and flicker in public low-voltage supply at with rated current ≤16A per phase and not subject on				
EN 61000-6-1: 2007		atibility (EMC)—Part 6-1:Generic Standards I for residential, commercial and light-industrial				
	EN 61000-4-2:2009	Electrostatic discharge				
	EN 61000-4-3:2006	RF field strength susceptibility				
	EN 61000-4-4:2004	Electrical Fast transients				
	EN 61000-4-5:2006	06 Surge				
	EN 61000-4-6:2009	2009 Conducted susceptibility				
	EN 61000-4-8:1993 +A1:2001	Magnetic Field				
	EN 61000-4-11:2004	Dips/Voltage Interruption Variation				



4.0 Power line Conducted Emission Test

4.1 Schematics of the test

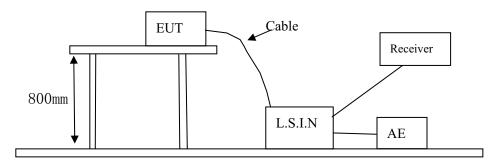


EUT: Equipment Under Test

4.2 Test Method:

The test was performed in accordance with EN 61000-6-3:2007

Block diagram of Test setup



4.3 Power line conducted Emission Limit

Erroguanov (MILT)	Limits (dB μ V)			
Frequency (MHz)	Quasi-peak Level	Average Level		
0.15 ~ 0.50	66.00~56.00*	56.00~46.00*		
$0.50 \sim 5.00$	56.00	46.00		
5.00 ~ 30.00	60.00	50.00		

Notes:

- 1. *Decreasing linearly with logarithm of frequency.
- 2. The lower limit shall apply at the transition frequencies

4.4 Test Results

Limits for Conducted Emission test, Please refer to limit line (Quasi-peak) in the following diagram labelled as (QP)

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Date: 2011-02-22

A: Conducted Emission on Live Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Normal Operation Mode

Results: N/A

Please refer to following diagram for individual

Eraguanay	Reading(dB μ V)				Limit		
Frequency (MHz)	Live		Live Neutral		(dB µ V)		
(WITIZ)	Quasi-peak Average		Quasi-peak	Average	Quasi-peak	Average	

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B: Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Normal Operation Mode

Results: N/A

Please refer to following diagram for individual

Fraguanay		Reading	(dB μ V)		Limi	t
Frequency (MHz)	Live		Live Neutral		(dB µ V)	
(WITIZ)	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average

Note: Due to DC operation, this test item not applicable.



5.0 Radiated Disturbance Test

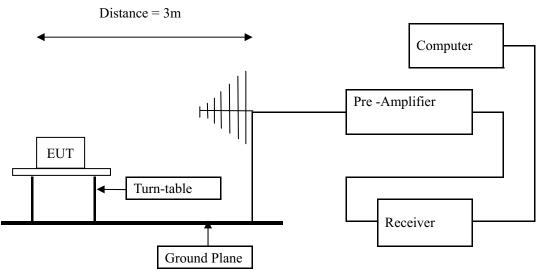
5.1 Schematics of the test



5.2 Test Method:

The test was performed in accordance with EN 61000-6-3:2007

Block diagram of Test setup



5.3 Power line conducted Emission Limit

Frequency Range (MHz)	Quasi-Peak limits (dB μ V/m)
30-230	40.00
230-1000	47.00

Note: The lower limit shall apply at the transition frequencies

5.4 Test result

Please refer to following table

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A: Radiated Disturbance In Horizontal (30MHz----1000MHz)

EUT set Condition: ON

Model No.: LG801

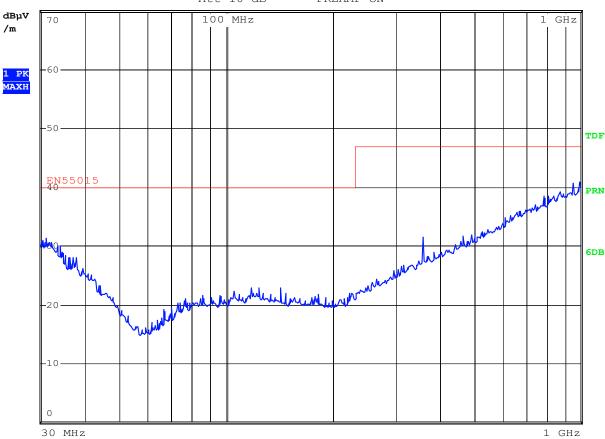
Results: Pass

Please refer to following diagram for individual



 $\begin{array}{ccc} \text{RBW} & 120 \text{ kHz} \\ \text{MT} & 100 \text{ } \mu\text{s} \end{array}$

Att 10 dB PREAMP ON



Date: 21.FEB.2011 15:04:37

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \mu V/m)
-	-	Н	-
-	-	Н	-

-The test data shows much less than the limit, no necessary take down the records.

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B: Radiated Disturbance In Vertical (30MHz---1000MHz)

EUT set Condition: ON

Model No.: LG801

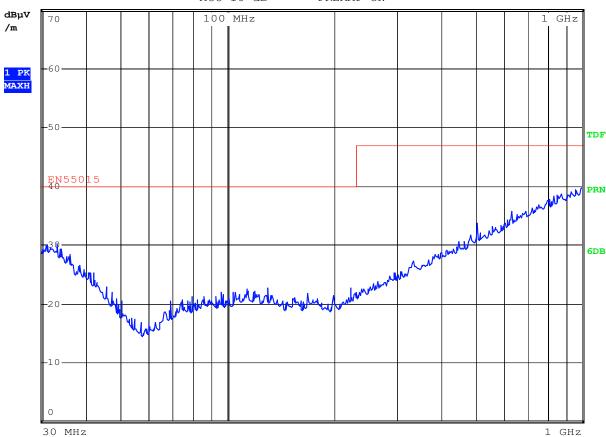
Results: Pass

Please refer to following diagram for individual



RBW 120 kHz MT 100 μs

Att 10 dB PREAMP ON



Date: 21.FEB.2011 15:02:29

Frequency (MHz)	Level@3m (dBµV/m)	Antenna Polarity	Limit@3m (dBµV/m)
-	-	V	-
-	-	V	-

-The test data shows much less than the limit, no necessary take down the records.

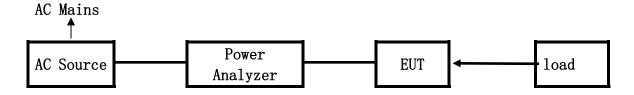
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6.0 Voltage Fluctuations & Flicker Test

6.1 Schematic of the test



EUT: Equipment Under Test

6.2 Test Method:

The test was performed in accordance with EN 61000-3-3:2008

6.3 Test Results

Result: N/A

Please refer to the following pages

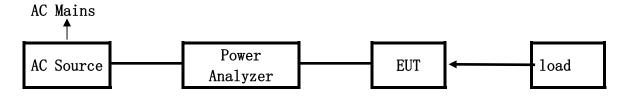
Maximum Occurring Levels:

Ut: 230.1	(EUT	Test RMS V	oltage)	
Pst:	-	Limit=	1.0	(The Highest short Term Flicker Value)
Plt:	-	Limit=	0.65	(The Highest Long Term Flicker Value)
dt(%):	-	Limit=	3.3%	(The Highest instantaneous Voltage Change (10ms))
dc(%):	-	Limit=	3.3%	(The highest Relative steady state voltage change (1sec))
dmax:	-	Limit=	4%	(The highest Max Relative voltage change)
Tdt:	-	Limit=	200ms	(The Max Time(in milli-sec) that dt exceeds 3%)



7.0 Harmonic Current Emission Test

7.1 Schematic of the test



EUT: Equipment Under Test

7.2 Test Method

The test was performed in accordance with EN 61000-3-2:2006 +A1:2009+A2:2009

*: The Level of the product is: CLASS A

7.3 Test Results

Result: N/A

Please refer to the following pages

Rating:

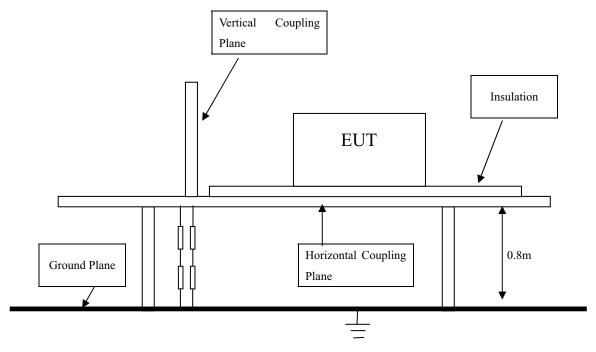
Harmonic results as a% of the limits

No	(Test	No	(Test	No	(Test	No	(Test
	result/Limit)%		result/Limit)%		result/Limit)%		result/Limit)%
1	-	11	-	21	-	31	1
2	-	12	-	22	-	32	-
3	-	13	1	23	1	33	1
4	-	14	-	24	-	34	-
5	-	15	-	25	-	35	1
6	-	16	-	26	-	36	-
7	-	17	-	27	-	37	-
8	-	18	1	28	1	38	1
9	-	19	-	29	-	39	-
10	-	20	-	30	-	40	-



8.0 Electrostatic Discharge

8.1 Schematic of the test



8.2 Test method

The test was performed in accordance with EN 61000-4-2:2009

8.3 Test severity

- ±4kV for direct & in-direct Contact Discharge
- $\pm 8kV$ for air Discharge

Performance Criterion Require: A (Please see following table)

8.4 Susceptibility performance Criteria and Severity level

A	Normal performance within the specification limits
В	Temporary degradation or loss of function or performance which is
	self recoverable
С	Temporary degradation or loss of function or performance which
	requires operator intervention or system reset
D	Degradation or loss of function which is not recoverable due to
	damage of equipment(components) or software, or loss of data

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Severity Level

Level	Test Voltage Direct & in-direct contact	Test Voltage Air
	Discharge (kV)	discharge(kV)
1	±2kV	$\pm 2 \mathrm{kV}$
2	$\pm 4 \mathrm{kV}$	$\pm 4 \mathrm{kV}$
3	$\pm 6 \mathrm{kV}$	$\pm 8 \mathrm{kV}$
4	$\pm 8 \mathrm{kV}$	$\pm 15 \text{kV}$

8.5 Test Result

Please refer to the following table for individual results.

Location	Discharge Method	Test Voltage	Results
HCP (Horizontal coupling plane)	In-Direct	$\pm 2kV$, $\pm 4kV$	Pass
VCP (Vertical Coupling plane)	In-Direct	$\pm 2kV$, $\pm 4kV$	Pass
	Contact Discharge	$\pm 2kV$, $\pm 4kV$	N/A
Gap	Air Discharge	±8kV	Pass
Function Key	Air Discharge	±8kV	Pass

Remark: Calculated measurement uncertainty= 0.2kV

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9.0 RF field strength susceptibility (80MHz----2700MHz

9.1 Schematics of the test



9.2 Test Method:

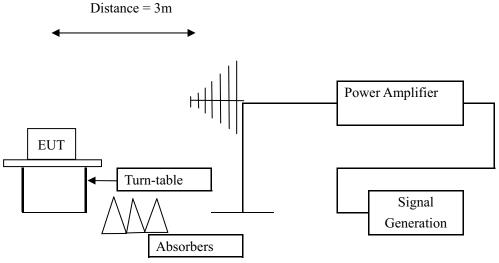
The test was performed in accordance with EN 61000-4-3:2006

Severity: Level 2 (3V/m) and Level 1 (1V/m)

Modulation: 80% AM

Performance Criterion Require: A (Please see following table)

Block diagram of Test setup



9.3 Susceptibility performance Criteria and severity Level

Susceptibility performance Criteria

A	Normal performance within the specification limits
В	Temporary degradation or loss of function or performance which is
	self recoverable
C	Temporary degradation or loss of function or performance which
	requires operator intervention or system reset
D	Degradation or loss of function which is not recoverable due to
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Severity Level

Level	Field Strength (V/m)
1	1
2	3
3	10

9.4 Test Result:

Please refer to the following table for individual results.

Frequency	Face	Polarity	Level	Dwell	Sweep	Results
(MHz)			(V/m)	Time(s)	Rate (%)	
80-1000	0°	Horizontal	3	1	1	Pass
1400-2000						Pass
80-1000	90°	Horizontal	3	1	1	Pass
1400-2000						
80-1000	180°	Horizontal	3	1	1	Pass
1400-2000						
80-1000	270°	Horizontal	3	1	1	Pass
1400-2000						
80-1000	0°	Vertical	3	1	1	Pass
1400-2000						
80-1000	90°	Vertical	3	1	1	Pass
1400-2000						
80-1000	180°	Vertical	3	1	1	Pass
1400-2000						
80-1000	270°	Vertical	3	1	1	Pass
1400-2000						
2000-2700	0°	Horizontal	1	1	1	Pass
2000-2700	90°	Horizontal	1	1	1	Pass
2000-2700	180°	Horizontal	1	1	1	Pass
2000-2700	270°	Horizontal	1	1	1	Pass
2000-2700	0°	Vertical	1	1	1	Pass
2000-2700	90°	Vertical	1	1	1	Pass
2000-2700	180°	Vertical	1	1	1	Pass
2000-2700	270°	Vertical	1	1	1	Pass

Remark: Calculated measurement uncertainty= 80MHz to 1000MHz (+3.7/ -1.3) V/m

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10.0 Electrical Fast Transient/Burst (EFT/B) immunity test

10.1 Schematics of the test



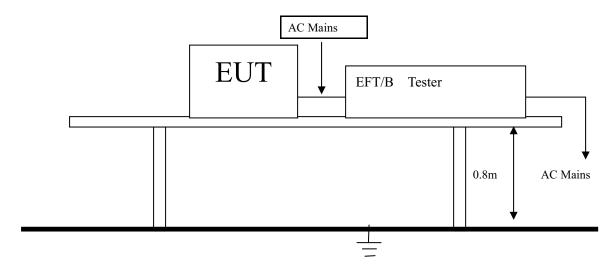
10.2 Test Method:

The test was performed in accordance with EN 61000-4-4:2004

Severity: Level 2 (1kV)

Performance Criterion Require: B (Please see following table)

Block diagram of Test setup



10.3 Susceptibility performance Criteria and Severity Level Susceptibility performance Criteria

A	Normal performance within the specification limits
В	Temporary degradation or loss of function or performance which is
	self recoverable
С	Temporary degradation or loss of function or performance which
	requires operator intervention or system reset
D	Degradation or loss of function which is not recoverable due to
	damage of equipment(components) or software, or loss of data

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Severity Level

•		
	Open Circuit output Test Voltag	ge $\pm 10\%$
Level	On power Supply Lines	On I/O (Input/output) Signal data and control lines
1	0.5kV	0.5kV
2	1kV	1kV
3	2kV	2kV
4	4kV	4kV
X	Special	Special

10.4 Test Results

Please refer to following page.

Inject location:

Inject Line	Voltage kV	Inject Times (s)	Method	Results
L-N	±1	60	Direct	N/A

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11.0 Surge test

11.1 Schematics of the test



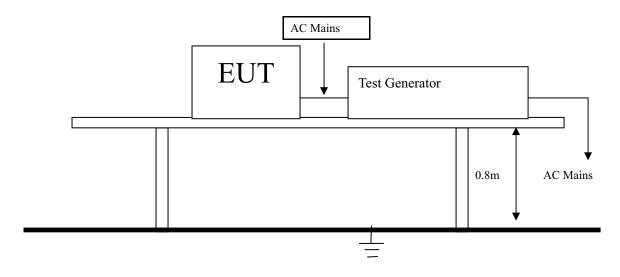
11.2 Test Method:

The test was performed in accordance with EN 61000-4-5:2006

Severity: Level 2 (Line to Neutral at 1kV)

Performance Criterion Require: C (Please see following table)

Block diagram of Test setup



11.3 Susceptibility performance Criteria and Severity Level

Susceptibility performance Criteria

A	Normal performance within the specification limits
В	Temporary degradation or loss of function or performance which is
	self recoverable
С	Temporary degradation or loss of function or performance which
	requires operator intervention or system reset
D	Degradation or loss of function which is not recoverable due to
	damage of equipment(components) or software, or loss of data

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Severity Level

Severity Level	Open-Circuit Test Voltage		
	kV		
1	0.5		
2	1.0		
3	2.0		
4	4.0		
*	Special		

11.4 Test Results

Please refer to following page.

Test location:

Location	Polarity	Phase	No of	Pulse	Results
		Angle	Pulse	Voltage(kV)	
	+	0	5	1.0	N/A
	+	90	5	1.0	N/A
	+	180	5	1.0	N/A
L-N	+	270	5	1.0	N/A
	-	0	5	1.0	N/A
	-	90	5	1.0	N/A
	-	180	5	1.0	N/A
	-	270	5	1.0	N/A

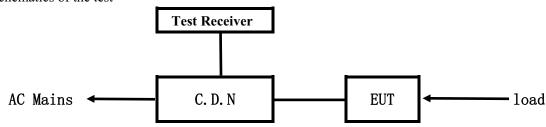
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12.0 Conducted Immunity test

12.1 Schematics of the test



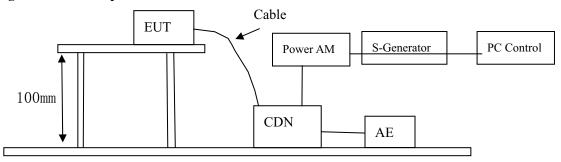
12.2 Test Method

The test was performed in accordance with EN 61000-4-6:2009

Severity: Level 2 (3 V rms),0.15MHz—80MHz

Performance Criterion Require: A (Please see following table)

Block diagram of Test setup



12.3 Susceptibility performance Criteria and Severity Level

Susceptibility performance Criteria

A	Normal performance within the specification limits
В	Temporary degradation or loss of function or performance which is
	self recoverable
С	Temporary degradation or loss of function or performance which
	requires operator intervention or system reset
D	Degradation or loss of function which is not recoverable due to
	damage of equipment(components) or software, or loss of data

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Severity Level

Severity Level	Field Strength V/m
1	1
2	3
3	10
*	Special

12.4 Test Results:

Please refer to the following page

Frequency	Injected Position	Strength	Criterion	Result
Range (MHz)				
0.15 - 20	0.15 - 20 AC Line		A	N/A
20 - 80	20 - 80 AC Line		A	N/A

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13.0 Power Frequency magnetic field test

13.1 Schematics of the test



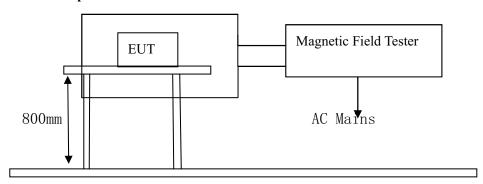
13.2 Test Method

The test was performed in accordance with EN 61000-4-8:1993+A1:2001

Severity: Level 2 (3A/m),

Performance Criterion Require: A (Please see following table)

Block diagram of Test setup



13.3 Susceptibility performance Criteria and Severity Level

Susceptibility performance Criteria

A	Normal performance within the specification limits		
В	Temporary degradation or loss of function or performance which is		
	self recoverable		
С	Temporary degradation or loss of function or performance which		
	requires operator intervention or system reset		
D	Degradation or loss of function which is not recoverable due to		
	damage of equipment(components) or software, or loss of data		

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Severity Level

Severity Level	Magnetic Field Strength A/m	
1	1	
2	3	
3	10	
4	30	
5	100	
* Special		

13.4 Test Results:

Please refer to the following page

_					
	Test Level	Testing Duration	Coil Orientation	Criterion	Result
	3A/m	5 Mins	X	A	N/A
	3A/m	5 Mins	Y	A	N/A
	3A/m	5 Mins	Z	A	N/A

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14.0 Voltage Dips/Interruptions immunity test

14.1 Schematics of the test

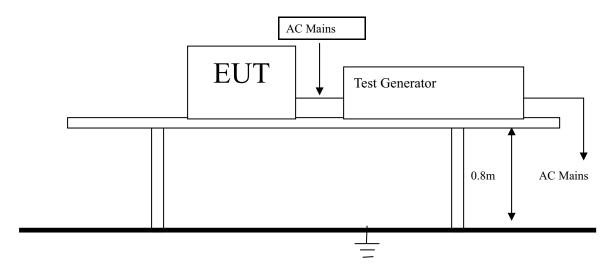


14.2 Test Method:

The test was performed in accordance with EN 61000-4-11:2004

Performance Criterion Require: C&B (Please see following table)

Block diagram of Test setup



14.3 Susceptibility performance Criteria and Severity Level Susceptibility performance Criteria

A	Normal performance within the specification limits		
В	Temporary degradation or loss of function or performance which is		
	self recoverable		
С	Temporary degradation or loss of function or performance which		
	requires operator intervention or system reset		
D	Degradation or loss of function which is not recoverable due to		
	damage of equipment(components) or software, or loss of data		

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Severity Level

Test Level %Ut	Voltage dip and short interruptions %Ut	Duration(in period)	
		0.5	
0	100	1	
		5	
70		10	
		25	
	30	50	
		*	

14.4 Test Result:

Please refer to the following page

Test Level % Ut	Voltage dips &short interruptions % Ut	Duration(in period)	Phase Angle	Criterion	Result
0	100	0.5P	0° - 360°	В	N/A
0	100	1P	0° - 360°	В	N/A
70	30	25P	0° - 360°	С	N/A
0	100	250P	0° -360°	С	N/A

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15.0 Product Labelling

15.1 CE Mark label specification

Text of the mark is black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing and shall be affixed at a conspicuous location on the EUT or silk-screened onto the EUT.



15.2 Mark Location: On the product body.

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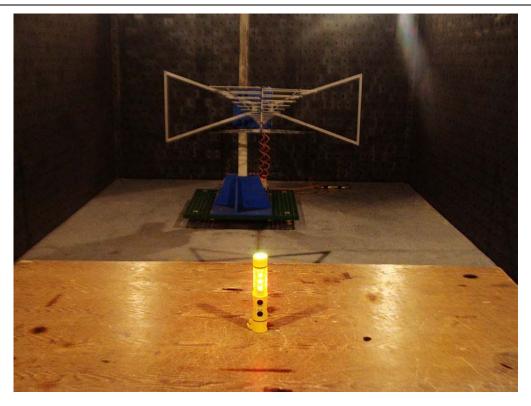
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Appendix:

Conducted emission test view:--N/A

Radiated emission test view:



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Photos of the Product





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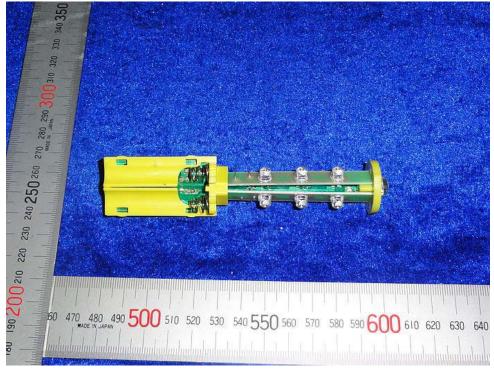
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Photos of the Product





CIXI LEIGE AUTOMOBILE SUPPLIES FACTORY

Date: _2011.2.23

Subject: Authorization for adding family models

To whom it may concern,

Statement

The shape of Multifunctional flashlight is different between them

We need adding model for CE-EMC approval LG802
Brand name is LEIGE
The original Model No. LG801
original brade name is

Original report No. is_____(if applicable)

Yours sincerely,

Signature:

CIXI LEIGE AUTOMOBILE SUPPLIES FACTORY

End of the report