# EMC TEST REPORT For

# Shenzhen XinShengLi Power Co.,LTD.

## **Battery Charger**

Model No.: Lii-100B, Lii-100

Prepared for : Shenzhen XinShengLi Power Co.,LTD.

Address : (MaoBang Industrial park )6th Floor,No.8,Lingwu industrial zone,

Junzibu, Guanlan town, Shenzhen, Guangdong, China

Prepared by : Shenzhen STONG Compliance Testing Laborary Co.,Ltd.

Address : F/4, Building 10, Da Yuan Industrial Zone, Xili Town, Nanshan

District, Shenzhen, Guangdong, China

Tel : (+86)755-26909822
Fax : (+86)755-61605504
Web : www.stong-cert.com
Mail : stong@stong-cert.com

Date of receipt of test sample : Mar 01, 2016

Number of tested samples : 1

Serial number : Prototype

Date of Test : Mar 01, 2016 - Mar 14, 2016

Date of Report : Mar 14, 2016



# EMC TEST REPORT

EN 55022: 2010

Information technology equipment-Radio disturbance characteristics-Limits of measurement

EN 55024: 2010

Information technology equipment-Immunity characteristics-Limits and methods of measurement of measurement

	measarement				
Report Reference No:	R20160301328E				
Date Of Issue:	Mar 14, 2016				
Testing Laboratory Name:	<b>Shenzhen STONG Compliance T</b>	esting Laborary Co.,Ltd.			
Address:	F/4, Building 10, Da Yuan Industria District, Shenzhen, Guangdong, Ch				
Testing Location/ Procedure:	Full application of Harmonised star				
	Partial application of Harmonised s Other standard testing method $\Box$	tandards $\square$			
Applicant's Name:	Shenzhen XinShengLi Power Co.	,LTD.			
Address:	( MaoBang Industrial park )6th Flozone, Junzibu, Guanlan town, Shenzi				
Test Specification:					
Standard::	: EN 55022: 2010 EN 55024: 2010				
Test Report Form No:	EMC-1.0				
TRF Originator:	: Shenzhen STONG Compliance Testing Laborary Co.,Ltd.				
Master TRF:	Dated 2015-03				
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Test Item Description:	Battery Charger				
Trade Mark::	LiitoKala <sup>®</sup> <b>メミル</b> 森が				
Model/ Type Reference	Lii-100B				
Ratings	Output:5V1A				
Result	Positive				
Compiled by:	Supervised by:	Approved by:			
Compiled by:	Supervised by:  Xielingling	Xu Perg			
Si feifei / File administrators	Kie Lingling / Technique principal	Xu Peng / Manager			

### Report No.: R20160301328E

# **EMC -- TEST REPORT**

Test Report No.: R20160301328E 

Mar 14, 2016

Date of issue

Type/ Model..... : Lii-100B EUT.....: : Battery Charger Applicant.....:: Shenzhen XinShengLi Power Co.,LTD. Address.....: ( MaoBang Industrial park )6th Floor, No. 8, Lingwu industrial zone, Junzibu, Guanlan town, Shenzhen, Guangdong, China Telephone.....: : / Fax....: : / Manufacturer.....: Shenzhen XinShengLi Power Co.,LTD. Address.....: ( MaoBang Industrial park )6th Floor, No. 8, Lingwu industrial zone, Junzibu, Guanlan town, Shenzhen, Guangdong, China Telephone.....: : / Fax.....: : / Factory.....: Shenzhen XinShengLi Power Co.,LTD. Address.....: ( MaoBang Industrial park )6th Floor, No. 8, Lingwu industrial zone, Junzibu, Guanlan town, Shenzhen, Guangdong, China Telephone.....: : / Fax.....:: : /

**Test Result** according to the standards on page 7: **Positive** 

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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# 1. SUMMARY OF STANDARDS AND RESULTS

# 1.1.Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

	EM	ISSION (EN 55022: 2010)			
Description of Test Item		Standard		Limits	Results
Conducted disturbance at mains terminals		EN 55022: 2010		Class B	PASS
Conducted disturbance at telecommunication port	EN 55022: 2010			Class B	N/A
Radiated disturbance		EN 55022: 2010		Class B	PASS
Harmonic current emissions	EN 6	61000-3-2: 2006+A1: 2009+A2: 20	009	Class A	PASS
Voltage fluctuations & flicker		EN 61000-3-3: 2013			PASS
IMMUNITY (EN 55024: 2010)					
Description of Test Item		Basic Standard	Performance Criteria		Results
Electrostatic discharge (ESD)		EN 61000-4-2: 2009	В		PASS
Radio-frequency, Continuous radiated disturbance		EN 61000-4-3: 2006+A2: 2010	А		PASS
Electrical fast transient (EFT)		EN 61000-4-4: 2004+A1: 2010	В		PASS
Surge (Input a.c. power ports)		EN 61000-4-5: 2006		В	PASS
Surge (Telecommunication ports)				В	N/A
Radio-frequency, Continuous conducted disturbanc	e	EN 61000-4-6: 2009	А		PASS
Power frequency magnetic field		EN 61000-4-8: 2010		Α	PASS
Voltage dips, >95% reduction		EN 61000-4-11: 2004		В	PASS
Voltage dips, 30% reduction				С	PASS
Voltage interruptions		]		С	PASS
N/A is an abbreviation for Not Ap	plical	ole.			

### 1.2.Description of Performance Criteria

#### **General Performance Criteria**

Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

- essential operational modes and states;
- tests of all peripheral access (hard disks, floppy disks, printers, keyboard, mouse, etc.);
- quality of software execution;
- quality of data display and transmission;
- quality of speech transmission.

#### 1.2.1.Performance criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacture when the equipment 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, then either of these may be deriver from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

#### 1.2.2.Performance criterion B

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacture, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.

During the test, degradation of performance is allowed. However, no change of operation state or stored data is allowed to persist after the test.

If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be deriver from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

### 1.2.3.Performance criterion C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacture's instructions.

Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be loss.

## 2. GENERAL INFORMATION

## 2.1.Description of Device (EUT)

EUT : Battery Charger

Model Number : Lii-100B

Power Supply : Output:5V---1A

EUT Clock Frequency : ≤108MHz

## 2.2.Description of Test Facility

Site Description

Test Lab. : Shenzhen STONG Compliance Testing Laborary Co.,Ltd.

Add.: F/4, Building 10, Da Yuan Industrial Zone, Xili Town, Nanshan

Report No.: R20160301328E

District, Shenzhen, Guangdong, China.

Our laboratories are accredited and approved by the following approval

agencies according to ISO/IEC 17025.

### 2.3. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the STONG quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

# 2.4. Measurement Uncertainty

Test Item Frequency Range		Frequency Range	Uncertainty	Note
Radiation Uncertainty		30MHz~200MHz	±2.96dB	(1)
	•	200MHz~1000MHz	±3.10dB	(1)
Conduction Uncertainty		150kHz~30MHz	±1.63dB	(1)
Power disturbance		30MHz~300MHz	±1.60dB	(1)

<sup>(1).</sup> This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

# 3. MEASURING DEVICE AND TEST EQUIPMENT

# 3.1.Conducted Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	<b>EMI Test Receiver</b>	ROHDE & SCHWARZ	ESCI	101142	2015/06/18
2	EMI Test Receiver	ROHDE & SCHWARZ	ESPI	101840	2015/06/18
3	Artificial Mains	ROHDE & SCHWARZ	ENV216	101288	2015/06/18
4	EMI Test Software	AUDIX	E3	N/A	2015/06/18

# 3.2.Disturbance Power

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	101142	2015/06/18
2	EMI Test Receiver	ROHDE & SCHWARZ	ESPI	101840	2015/06/18
3	Absorbing clamp	ROHDE & SCHWARZ	MDS 21	4033	2015/06/19
4	EMI Test Software	AUDIX	E3	N/A	2015/06/18

# 3.3.Radiated Electromagnetic Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	101142	2015/06/18
2	Triple-loop Antenna	EVERFINE	LLA-2	11050003	2015/06/18
3	EMI Test Receiver	ROHDE & SCHWARZ	ESPI	101840	2015/06/18
4	EMI Test Software	AUDIX	E3	N/A	2015/06/18

# 3.4. Radiated Disturbance (Electric Field)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	101142	2015/06/18
2	EMI Test Receiver	ROHDE & SCHWARZ	ESPI	101840	2015/06/18
3	Log per Antenna	SCHWARZBECK	VULB9163	9163-470	2015/06/21
4	Amplifier	Compliance Direction	PAP-0102	21001	2015/06/18
5	Spectrum Analyzer	Agilent	E4407B	MY41440754	2015/07/16
6	Horn Antenna	ETS.LINDGREN	3115	00034771	2015/12/11
7	EMI Test Software	AUDIX	E3	N/A	2015/06/18

# 3.5. Harmonic Current

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Power Analyzer Test System	Voltech	PM6000	20000670053	2015/06/18

# 3.6. Voltage fluctuation and Flicker

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Power Analyzer Test System	Voltech	PM6000	20000670053	2015/06/18

# 3.7. Electrostatic Discharge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ESD Simulator	KIKUSUI	KC001311	KES4021	2015/06/19

# 3.8.RF Field Strength Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	SIGNAL GENERATOR	HP	8648A	625U00573	2015/06/17
2	Amplifier	AR	500A100	17034	2015/06/18
3	Amplifier	AR	100W/1000M 1	17028	2015/06/18
4	Isotropic Field Monitor	AR	FM2000	16829	2015/06/18
5	Isotropic Field Probe	AR	FP2000	16755	2015/06/18
6	Bi-conic Antenna	EMCO	3108	9507-2534	2015/06/19
7	By-log-periodic Antenna	AR	AT1080	16812	2015/06/19
8	EMS Test Software	ROHDE & SCHWARZ	ESK1	N/A	2015/06/19

# 3.9. Electrical Fast Transient/Burst

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Electrical fast transient(EFT)generator	3CTEST	EFT-4021	EC0461044	2015/06/18
2	Coupling Clamp	3CTEST	EFTC	EC0441098	2015/06/18

# 3.10.Surge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Surge test system 3CTEST		SG-5006G	EC5581070	2015/06/18
2	Coupling/decoupling network	3CTEST	SGN-5010G	ECS5591033	2015/06/18

# 3.11.Conducted Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Conducted Immunity Test System	FRANKONIA	CIT-10	126A1195	2015/06/18
2	Coupling/decoupling network	FRANKONIA	CDN-M2+M3	A2210177	2015/06/18

# 3.12. Power Frequency Magnetic Field Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Power frequency mag-field generator System	EVERFINE	EMS61000-8 K	906003	2015/06/18

# 3.13. Voltage Dips

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2015/06/18

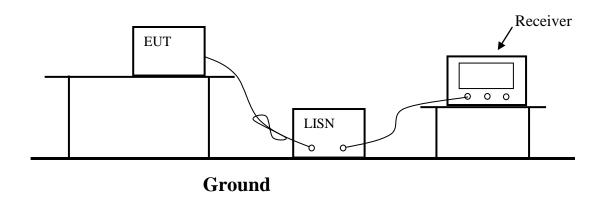
Report No.: R20160301328E

# 3.14. Voltage Short Interruptions

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2015/06/18

# 4. POWER LINE CONDUCTED EMISSION MEASUREMENT

# 4.1.Block Diagram of Test Setup



### 4.2.Test Standard

EN 55022: 2010

Power Line Conducted Emission Limits (Class B)

Frequency (MHz)			Limit (dBµV)		
			Quasi-peak Level	Average Level	
0.15	~	0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *	
0.50	~	5.00	56.0	46.0	
5.00	~	30.00	60.0	50.0	

NOTE1-The lower limit shall apply at the transition frequencies.

NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

# 4.3.EUT Configuration on Test

The following equipments are installed on Conducted Emission Measurement to see EN 55022 requirements and operating in a manner which tends to maximize its emission characteristics in normal application.

# 4.4. Operating Condition of EUT

- 4.4.1. Setup the EUT as shown on Section 4.1.
- 4.4.2. Turn on the power of all equipments.
- 4.4.3.Let the EUT work in measuring mode (ON) and measure it.

### 4.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided 50-ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 55022 regulations during conducted emission measurement.

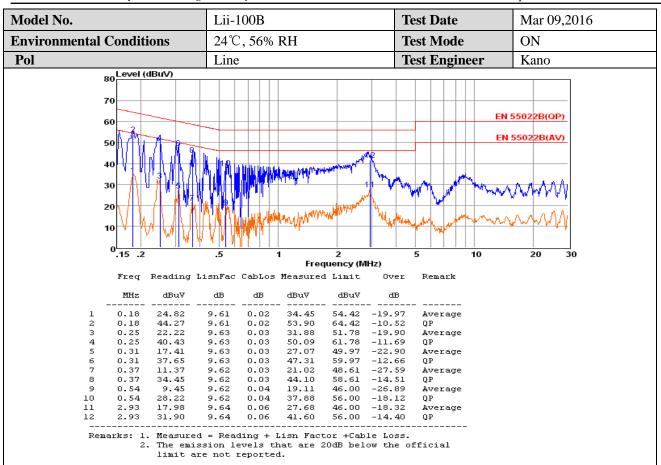
The bandwidth of the field strength meter is set at 9kHz in 150kHz~30MHz.

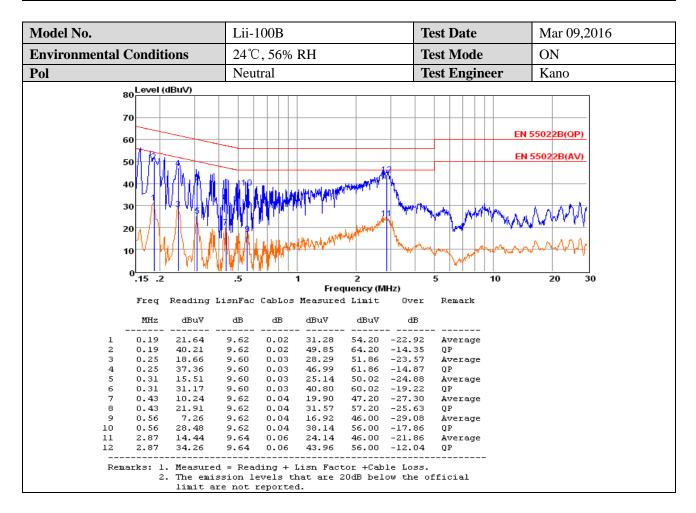
The frequency range from 150kHz to 30MHz is investigated

### 4.6.Test Results

#### PASS.

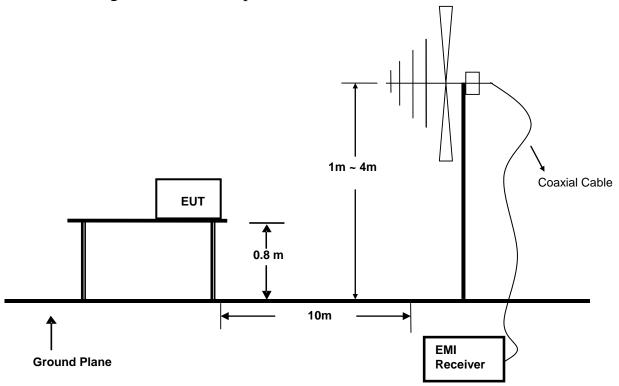
The test result please refer to the next page.





# 5. RADIATED EMISSION MEASUREMENT

# 5.1.Block Diagram of Test Setup



# 5.2. Measuring Standard

EN 55022: 2010

### 5.3. Radiated Emission Limits

#### EN 55022 Limits:

All emanations from a class B device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

### Limits for radiated disturbance Blow 1GHz

FREQUENCY	DISTANCE	FIELD STRENGTHS LIMIT
(MHz)	(Meters)	$(dB\mu V/m)$
30 ~ 230	10	30
230 ~ 1000	10	37

Note:(1)The smaller limit shall apply at the combination point between two frequency bands.

(2)Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

## 5.4.EUT Configuration on Test

The EN 55022 regulations test method must be used to find the maximum emission during radiated emission measurement.

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## 5.5. Operating Condition of EUT

- 5.5.1.Turn on the power.
- 5.5.2. After that, let the EUT work in test mode (ON) and measure it.

#### 5.6.Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 10 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. By-log antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the Receiver is set at 120kHz.

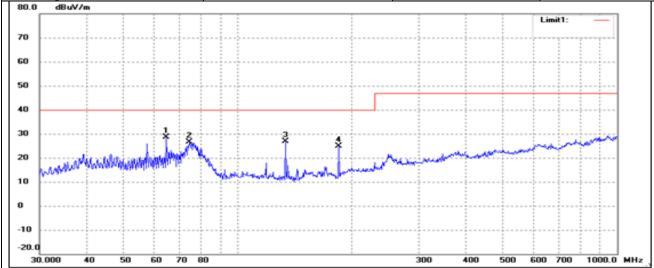
The frequency range from 30MHz to 1000MHz is investigated.

### 5.7.Test Results

### PASS.

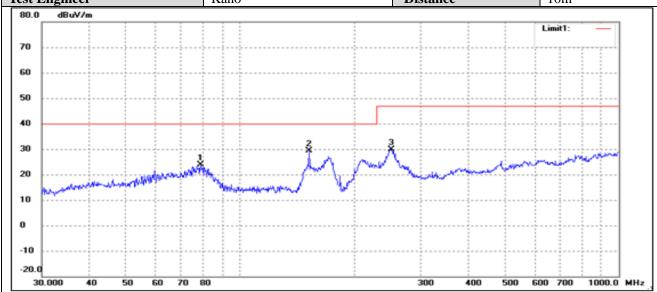
The test result please refer to the next page.

Model No.	Lii-100B	Test Date	Mar 09,2016
<b>Environmental Conditions</b>	24℃, 56% RH	Test Mode	ON
Pol	Vertical	<b>Detector Function</b>	Quasi-peak
Test Engineer	Kano	Distance	10m



No	Frequency.1	Reading.	Correct.	Result.	Limit.	Margin.	Degree.1	Height.	Remark.
.1	(MHz).1	(dBuV/m).1	<b>dB/m</b> .1	(dBuV/m).1	(dBuV/m).1	(dB).1	( )a	(cm).1	.a
1.1	64.6594.1	39.62.1	-11.09.1	28.53.1	40.00.1	-11.47.	-1	a.	peak.
2.1	74.3955.1	39.05.1	-12.46.1	26.59.1	40.00.1	-13.41.1	-7	.1	peak.
3.1	133.6188.1	39.09.1	-12.20.1	26.89.1	40.00.1	-13.11.	.n	.1	peak.
4.1	184.4898.1	35.62.1	-10.75.1	24.87.1	40.00.1	-15.13.1	.1	.1	peak.

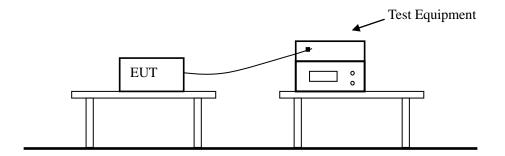
Model No.	Lii-100B	Test Date	Mar 09,2016
<b>Environmental Conditions</b>	24℃, 56% RH	Test Mode	ON
Pol	Horizontal	<b>Detector Function</b>	Quasi-peak
Test Engineer	Kano	Distance	10m



-1									
No	Frequency.	Reading.	Correct.1	Result.	Limit.	Margin.	Degree.1	Height.	Remark.
.1	(MHz).1	(dBuV/m).1	dB/m.1	(dBuV/m).1	(dBuV/m).1	(dB).1	( )a	(cm).1	a
1.1	78.6888.1	36.04.	-12.10.1	23.94.1	40.00.1	-16.06.1	a	.a	peak.
2.1	152.1297.1	41.89.	-12.39.1	29.50.1	40.00.1	-10.50.1	a	.1	peak.
3.1	251.1804.1	37.35.1	-7.55.1	29.80.1	47.00.	-17.20.1	а	.1	peak.

# 6. HARMONIC CURRENT EMISSION MEASUREMENT

# 6.1.Block Diagram of Test Setup



### 6.2.Test Standard

EN 61000-3-2: 2006+ A1: 2009+A2: 2009

# 6.3. Operation Condition of EUT

Same as Section 4.4, except the test setup replaced as Section 6.1.

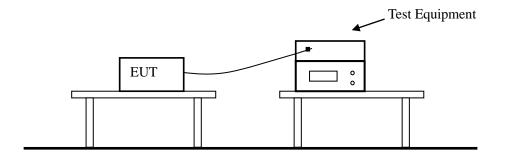
### 6.4. Test Results

### PASS.

Because power of EUT less than 75W, According standard EN 61000-3-2, Harmonic current isn't required.

# 7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

# 7.1.Block Diagram of Test Setup



# 7.2.Measuring Standard

EN 61000-3-3: 2013

# 7.3. Operation Condition of EUT

Same as Section 4.4, except the test setup replaced as Section 7.1.

### 7.4.Test Results

### PASS.

The test result please refer to the next page.

 $Shenzhen\ STONG\ Compliance\ Testing\ Laborary\ Co., Ltd.$ 

Model No.	Lii-100B	Test Date	Mar 09,2016
Test Engineer	Kano		

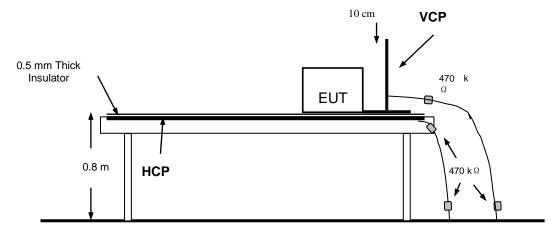
Report No.: R20160301328E

Voltech IEC61000-	Voltech IEC61000-3 Windows Software 1.14.06RC1						
Type of Test:	Flickermeter Test - Table						
Power Analyzer:	Voltech PM6000 SN: 200006700523 Firmware Version: v1.21.07RC2 Channel(s):						
	1. SN: 090015502053, 28 Adjusted Date: 22 JUN 2011. 2. SN:None Adjusted Date:None						
	3. SN:None Adjusted Date:None 4. SN:None Adjusted Date:None						
	5. SN:None Adjusted Date:None 6. SN:None Adjusted Date:None						
	Shunt(s):						
	1. SN: 091024301916, 4 Adjusted Date: 23 JUN 2011. 2. SN:None Adjusted Date:None						
	3. SN:None Adjusted Date:None 4. SN:None Adjusted Date:None						
	5. SN:None Adjusted Date:None 6. SN:None Adjusted Date:None						
AC Source:	Mains / Manual Source						
Overall Result: PASS	Notes: Measurement method - Voltage						

	Pst	dc (%)	dmax (%)	d(t) > 3.3%(ms)
Limit	1.000	3.300	4.000	500
Reading 1	0.090	0.009	0.180	0

# 8. ELECTROSTATIC DISCHARGE IMMUNITY TEST

# 8.1.Block Diagram of Test Setup



### Ground

### 8.2.Test Standard

EN 55024: 2010 (EN 61000-4-2: 2009, Severity Level: 3 / Air Discharge:  $\pm$ 8KV,

Level: 2 / Contact Discharge:  $\pm 4KV$ )

# 8.3. Severity Levels and Performance Criterion

### 8.3.1.Severity level

Level	Test Voltage	Test Voltage
	Contact Discharge (KV)	Air Discharge (KV)
1.	$\pm 2$	$\pm 2$
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

### 8.3.2.Performance Criterion: B

# 8.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.7.

## 8.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.4. Except the test set up replaced by Section 8.1.

#### 8.6. Test Procedure

### 8.6.1.Air Discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

### 8.6.2.Contact Discharge

All the procedure shall be same as Section 8.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

### 8.6.3.Indirect Discharge For Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

### 8.6.4. Indirect Discharge For Vertical Coupling Plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

### 8.7.Test Results

### PASS.

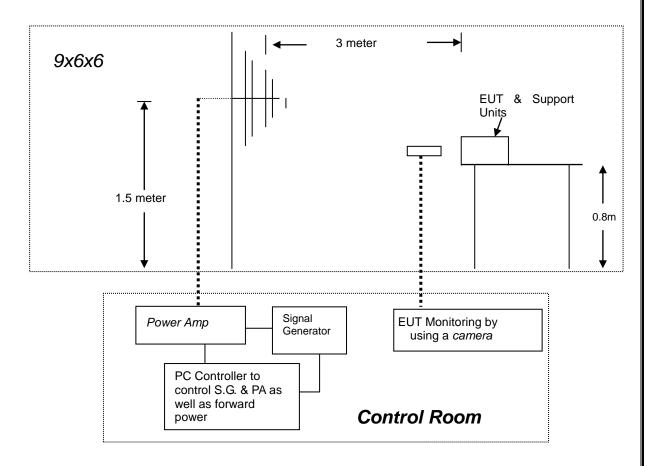
Please refer to the following pages

Electrostatic Discharger Test Results						
Standard	☐ IEC 61000-4-2 ☐ EN 61000-4-2					
Applicant	Shenzhen XinShengLi Power Co.,LTD.					
EUT	Battery Charger	Temperature	24℃			
M/N	Lii-100B	Humidity	53%			
Criterion	В	Pressure	1021mbar			
Test Mode	ON	<b>Test Date</b>	Mar 09,2016			
Test Engineer	Kano					

Test Engineer	Kano							
		A	ir Discharge					
	Test Levels				Results			
Test Points	± 2KV	± 4KV	± 8KV	Pa	ssed	Fail	Perfor Criter	mance ion
Front	$\boxtimes$	$\boxtimes$					□A	⊠B
Back	$\boxtimes$	$\boxtimes$	$\boxtimes$					$\boxtimes \mathbf{B}$
Left	$\boxtimes$	$\boxtimes$	$\boxtimes$					$\boxtimes \mathbf{B}$
Right	$\boxtimes$	$\boxtimes$	$\boxtimes$				$\Box$ A	$\boxtimes \mathbf{B}$
Тор	$\boxtimes$	$\boxtimes$	$\boxtimes$				<b>□A</b>	$\boxtimes \mathbf{B}$
Bottom	$\boxtimes$	$\boxtimes$	$\boxtimes$				$\Box$ A	$\boxtimes \mathbf{B}$
		Con	tact Dischar	ge				
		<b>Test Levels</b>				Resul	ts	
Test Points	± 2 kV		±4 kV	P	assed	Fail	Perfor Criter	
Front	$\boxtimes$		$\boxtimes$		$\boxtimes$		$\Box$ A	$\boxtimes \mathbf{B}$
Back			$\boxtimes$		$\boxtimes$			$\boxtimes B$
Left	$\boxtimes$		$\boxtimes$		$\boxtimes$		$\square$ A	$\boxtimes \mathbf{B}$
Right	$\boxtimes$		$\boxtimes$		$\boxtimes$		$\Box$ A	$\boxtimes \mathbf{B}$
Top	$\boxtimes$		$\boxtimes$		$\boxtimes$		$\Box$ A	$\boxtimes \mathbf{B}$
Bottom	$\boxtimes$		$\boxtimes$		$\boxtimes$		$\Box$ A	$\boxtimes \mathbf{B}$
	Di	scharge To I	Horizontal C	ouplin	g Plane			
		Test Levels				Resul	ts	
Side of EUT	± 2 kV		± 4 kV	P	assed	Fail	Perfor Criter	
Front	$\boxtimes$		$\boxtimes$		$\boxtimes$		$\Box$ A	$\boxtimes \mathbf{B}$
Back	$\boxtimes$		$\boxtimes$		$\boxtimes$		$\Box$ A	$\boxtimes \mathbf{B}$
Left			$\boxtimes$		$\boxtimes$			$\boxtimes \mathbf{B}$
Right	$\boxtimes$		$\boxtimes$		$\boxtimes$		$\Box$ A	$\boxtimes \mathbf{B}$
	I	Discharge To	Vertical Cou	pling	Plane	-	-	
	Test Levels			Results				
Side of EUT	± 2 kV		± 4 kV	P	assed	Fail	Perfor Criter	mance ion
Front	$\boxtimes$		$\boxtimes$		$\boxtimes$			$\boxtimes \mathbf{B}$
Back	$\boxtimes$		$\boxtimes$		$\boxtimes$		$\Box$ A	$\boxtimes \mathbf{B}$
Left	$\boxtimes$		$\boxtimes$		$\boxtimes$		$\Box$ A	$\boxtimes \mathbf{B}$
Right	$\boxtimes$		$\boxtimes$		$\boxtimes$		$\Box$ A	$\boxtimes \mathbf{B}$

# 9. RF FIELD STRENGTH SUSCEPTIBILITY TEST

# 9.1.Block Diagram of Test



### 9.2.Test Standard

EN 55024: 2010 (EN 61000-4-3: 2006+A2: 2010 Severity Level: 2, 3V / m)

# 9.3. Severity Levels and Performance Criterion

### 9.3.1. Severity Levels

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

9.3.2.Performance Criterion: A

# 9.4.EUT Configuration on Test

The configuration of the EUT is same as Section 3.8.

# 9.5. Operating Condition of EUT

Same as radiated emission measurement, which is listed in Section 4.4, except the test setup replaced as Section 9.1.

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### 9.6.Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD Recording is used to monitor its screen. All the scanning conditions are as following:

Condition of Test	Remark
Fielded Strength	3V/m (Severity Level 2)
Radiated Signal	Unmodulated
Scanning Frequency	80-1000MHz
Sweep time of radiated	0.0015 Decade/s
Dwell Time	3 Sec.
	Fielded Strength Radiated Signal Scanning Frequency Sweep time of radiated

### 9.7.Test Results

### PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results						
Standard	☐ IEC 61000-4-3 ☐ EN 61000-4-3					
Applicant	Shenzhen XinShengLi Power Co.,LTD.					
EUT	Battery Charger	Temperature	24℃			
M/N	Lii-100B	Humidity	53%			
Field Strength	3 V/m	Criterion	A			
Test Mode	ON	Test Engineer	Kano			
<b>Frequency Range</b>	80 MHz to 1000 MHz	Test Date	Mar 09,2016			
Modulation	□None □ Pulse ☑AM	1KHz 80%				
Steps	1%					

	Horizontal	Vertical
Front	PASS	PASS
Right	PASS	PASS
Rear	PASS	PASS
Left	PASS	PASS

Test Equipment:

1. Signal Generator: 2031 (MARCONI)

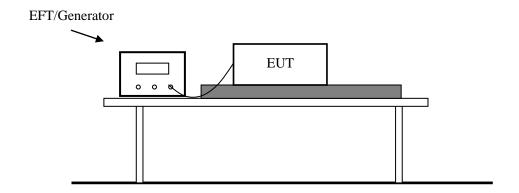
2. Power Amplifier: 500A100 & 100W/1000M1 (A&R) 3. Power Antenna: 3108 (EMCO) & AT1080 (A&R)

4. Field Monitor: FM2000 (A&R)

Note:

### 10. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

# 10.1.Block Diagram of Test Setup



### 10.2.Test Standard

EN 55024: 2010 (EN 61000-4-4: 2004+A1: 2010, Severity Level, Level 2: 1KV)

# 10.3. Severity Levels and Performance Criterion

### 10.3.1. Severity level

	Open Circuit Output Test Voltage ±10%						
Level	On Power Supply Lines	, 1 , 5					
		data and control lines					
1.	0.5 KV	0.25 KV					
2.	1 KV	0.5 KV					
3.	2 KV	1 KV					
4.	4 KV	2 KV					
X	Special	Special					

10.3.2.Performance Criterion: B

# 10.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.9.

# 10.5. Operating Condition of EUT

- 10.5.1. Setup the EUT as shown in Section 10.1.
- 10.5.2. Turn on the power of all equipments.
- 10.5.3.Let the EUT work in test mode (ON) and measure it.

### 10.6.Test Procedure

The EUT is put on the table, which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

10.6.1. For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device, which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

10.6.2. For signal lines and control lines ports: No I/O ports. It's unnecessary to test.

10.6.3. For DC output line ports: It's unnecessary to test.

### 10.7.Test Results

#### PASS.

Please refer to the following page.

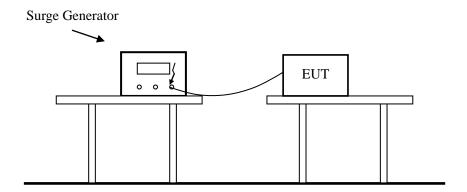
#### Electrical Fast Transient/Burst Test Results ☐ IEC 61000-4-4 **Standard** ☑ EN 61000-4-4 Shenzhen XinShengLi Power Co.,LTD. **Applicant EUT Battery Charger Temperature** 24℃ M/N Lii-100B Humidity 53% **Test Mode** ON Criterion В Mar 09,2016 **Test Engineer** Kano **Test Date**

Line	Test Voltage	Result (+)	Result (-)
L	1KV	PASS	PASS
N	1KV	PASS	PASS
PE			
L-N	1KV	PASS	PASS
L-PE			
N-PE			
L-N-PE			
Signal Line			
I/O Cable			
NT 4			

Note:

### 11. SURGE IMMUNITY TEST

# 11.1.Block Diagram of Test Setup



### 11.2.Test Standard

EN 55024: 2010 (EN 61000-4-5: 2006, Severity Level: Line to Line: Level 2, 1.0KV, Line to Earth: Level 3, 2.0KV)

# 11.3. Severity Levels and Performance Criterion

### 11.3.1.Severity level

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

11.3.2.Performance Criterion: B

# 11.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.10.

# 11.5.Operating Condition of EUT

- 11.5.1.Setup the EUT as shown in Section 11.1.
- 11.5.2. Turn on the power of all equipments.
- 11.5.3.Let the EUT work in test mode (ON) and measure it.

### 11.6.Test Procedure

- 11.6.1. Set up the EUT and test generator as shown on Section 11.1.
- 11.6.2.For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 11.6.3.At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 11.6.4. Different phase angles are done individually.
- 11.6.5.Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

### 11.7.Test Results

### PASS.

Please refer to the following page.

# Surge Immunity Test Result

Criterion

**Test Date** 

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Mar 09,2016

В

 $Shenzhen\ STONG\ Compliance\ Testing\ Laborary\ Co., Ltd.$ 

ON

Kano

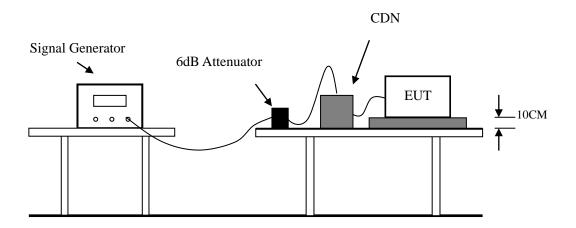
**Test Mode** 

**Test Engineer** 

Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Result
	+	0°	5	1.0	PASS
	+	90°	5	1.0	PASS
	+	180°	5	1.0	PASS
L-N	+	270°	5	1.0	PASS
L-IN	-	$0_{\rm o}$	5	1.0	PASS
	-	90°	5	1.0	PASS
	-	180°	5	1.0	PASS
	-	270°	5	1.0	PASS
L-PE					
N-PE					
Signal Line					
Note					

### 12. INJECTED CURRENTS SUSCEPTIBILITY TEST

# 12.1.Block Diagram of Test Setup



### 12.2.Test Standard

EN 55024: 2010(EN 61000-4-6: 2009, Severity Level: Level 2, 3V (rms), (0.15MHz ~ 80MHz))

## 12.3. Severity Levels and Performance Criterion

### 12.3.1.Severity level

Level	Field Strength (V)	
1	1	
2	3	
3	10	
X	Special	

#### 12.3.2.Performance Criterion: A

# 12.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.11.

# 12.5. Operating Condition of EUT

- 12.5.1. Setup the EUT as shown in Section 12.1.
- 12.5.2. Turn on the power of all equipments.
- 12.5.3.Let the EUT work in test mode (ON) and measure it.

### 12.6.Test Procedure

- 12.6.1. Set up the EUT, CDN and test generators as shown on Section 12.1.
- 12.6.2.Let the EUT work in test mode and measure it.
- 12.6.3. The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 12.6.4. The disturbance signal described below is injected to EUT through CDN.
- 12.6.5. The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 12.6.6. The frequency range is swept from 150kHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.
- 12.6.7. The rate of sweep shall not exceed 1.5\*10-3decades/s. where the frequency is swept incrementally; the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 12.6.8.Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

#### 12.7.Test Results

#### PASS.

Please refer to the following page.

Injected Currents Susceptibility Test Results			
Standard	□ IEC 61000-4-6		
Applicant	Shenzhen XinShengLi Power Co.,LTD.		
EUT	Battery Charger	Temperature	24°C
M/N	Lii-100B	Humidity	53%
Test Mode	ON	Criterion	A
Test Engineer	Kano	Test Date	Mar 09,2016

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Mains	3V	A	PASS

### Remark:

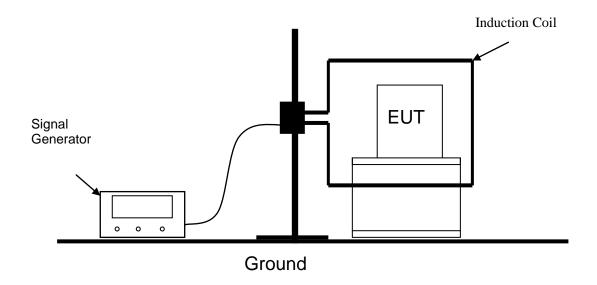
Note:

- 1. Modulation Signal:1kHz 80% AM
- 2. Measurement Equipment:

Simulator: CIT-10 (FRANKONIA) CDN : ☑CDN-M2 (FRANKONIA) □CDN-M3 (FRANKONIA)

# 13. MAGNETIC FIELD SUSCEPTIBILITY TEST

# 13.1.Block Diagram of Test Setup



### 13.2.Test Standard

EN 55024: 2010 (EN 61000-4-8: 2010, Severity Level: Level 1, 1A/m)

# 13.3. Severity Levels and Performance Criterion

### 13.3.1.Severity Levels

Level	Field Strength (A/m)
1	1
2	3
3	10
4	30
5	100
X	Special

### 13.3.2.Performance Criterion: A

# 13.4.EUT Configuration on Test

The configuration of the EUT is same as Section 3.12.

### 13.5.Test Procedure

The EUT is placed in the middle of a induction coil (1\*1m), under which is a 1\*1\*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

### 13.6.Test Results

PASS.

Please refer to the following page.

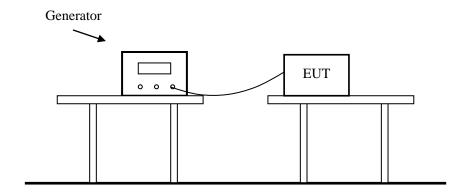
Magnetic Field Immunity Test Result				
Standard	□ IEC 61000-4-8 □ EN 61000-4-8			
Applicant	Shenzhen XinShengLi Power Co.,LTD.			
EUT	Battery Charger	Temperature	24℃	
M/N	Lii-100B	Humidity	53%	
Test Mode	ON	Criterion	A	
Test Engineer	Kano	Test Date	Mar 09,2016	

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
1	5 mins	X	A	PASS
1	5 mins	Y	A	PASS
1	5 mins	Z	A	PASS

Note:

# 14. VOLTAGE DIPS AND INTERRUPTIONS TEST

# 14.1.Block Diagram of Test Setup



### 14.2.Test Standard

EN 55024: 2010 (EN 61000-4-11: 2004)

# 14.3. Severity Levels and Performance Criterion

### 14.3.1.Severity level

Test Level (%UT)	Voltage dip and short interruptions (%UT)	Duration (in period)
0	100	0.5
70	30	25
0	100	250

### 14.3.2.Performance Criterion: B&C

# 14.4.EUT Configuration on Test

The configuration of EUT is listed in Section 3.13&3.14.

# 14.5. Operating Condition of EUT

- 14.5.1. Setup the EUT as shown in Section 14.1.
- 14.5.2. Turn on the power of all equipments.
- 14.5.3.Let the EUT work in test mode (ON) and measure it.

### 14.6.Test Procedure

- 14.6.1. Set up the EUT and test generator as shown on Section 14.1.
- 14.6.2. The interruptions are introduced at selected phase angles with specified duration.
- 14.6.3.Record any degradation of performance.

# 14.7.Test Results

### PASS.

Please refer to the following page.

#### Voltage Dips And Interruptions Test Results ☐ IEC 61000-4-11 ☑ EN 61000-4-11 **Standard Applicant** Shenzhen XinShengLi Power Co.,LTD. **EUT Battery Charger Temperature** 24℃ M/N Lii-100B Humidity 53% **Test Mode** Criterion ON B&C Kano **Test Engineer Test Date** Mar 09,2016

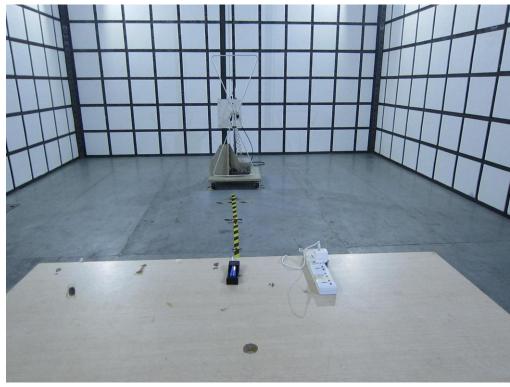
Test Level % U <sub>T</sub>		Duration (in periods)	Criterion	Result
0	100	0.5P	В	PASS
70	30	25P	С	PASS
0	100	250P	С	PASS

Note:

# 15. PHOTOGRAPH

# 15.1.Photo of Radiated Measurement





# 16. EXTERNAL AND INTERNAL PHOTOS OF THE EUT



Fig. 1

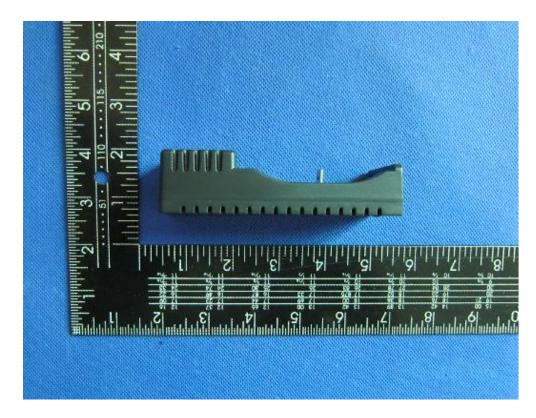


Fig. 2

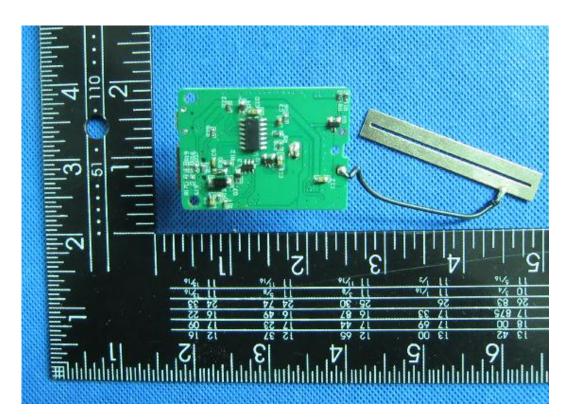


Fig. 3

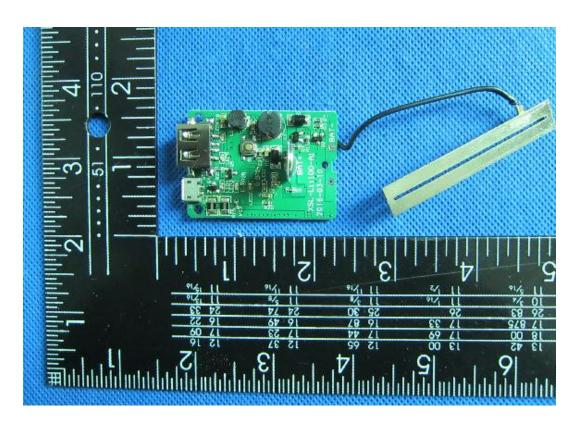


Fig. 4

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# 17. MANUFACTURER/ APPROVAL HOLDER DECLARATION

The following identical model(s):

Lii-100			
---------	--	--	--

Belong to the tested device:

Product description : Battery Charger

Model name : Lii-100B

Remark: no additional models were tested.

-----THE END OF REPORT-----