EMC
Measurement and Test Report

For

Shenzhen Honcell Energy Co., Ltd.

612, Bldg. A, Weidonglong Industrial Zone, Meilong

Ave.194#, Longhua New District, Shenzhen, 518109, China.

Test Standards:	EN 61000-6-1:2007 EN 61000-6-3:2007+A1:2011+AC:2012
Product Description:	Lithium-ion polymer battery
Tested Model:	HCP402025W
Report No.:	STRD1510103E
Tested Date:	2015-10-28 to 2015-11-02
Issued Date:	2015-11-02
Tested By:	Grace Chen / Engineer
Reviewed By:	Jack kang / EMC Manager
Approved & Authorized By:	Jandy so / PSQ Manager
Prepared By:	

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1.GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	Shenzhen Honcell Energy Co., Ltd.
Address of applicant:	612, Bldg. A, Weidonglong Industrial Zone, Meilong Ave.194#, Longhua New District, Shenzhen, 518109, China.
Manufacturer:	Shenzhen Honcell Energy Co., Ltd.
Address of manufacturer:	612, Bldg. A, Weidonglong Industrial Zone, Meilong Ave.194#, Longhua New District, Shenzhen, 518109, China.

General Description of EUT	
Product Name:	Lithium-ion polymer battery
Trade Name:	/
Model No.:	HCP402025W
Adding Model(s):	/
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
Rated Voltage:	DC 3.7V
Rated Capacity:	140mAh
Rated Power:	/
Power Adaptor Model:	/
Highest Internal Frequency:	Below 108MHz

1.2 Test Standards

The following report is prepared on behalf of the Shenzhen Honcell Energy Co., Ltd. in accordance with EN 61000-6-3, Electromagnetic compatibility (EMC) -- Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments, EN61000-3-2, Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase), and EN61000-3-3, Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection, and EN 61000-6-1, Electromagnetic compatibility (EMC) -- Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments.

The objective of the manufacturer is to demonstrate compliance with the standards EN61000-6-3, EN61000-3-2, EN61000-3-3, and EN61000-6-1 for residential, commercial and light-industrial environments.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with the standards EN61000-6-3, EN61000-3-2, EN61000-3-3, and EN61000-6-1 for residential, commercial and light-industrial environments, and all related testing and measurement techniques intentional standards.

1.4 Test Facility

FCC – Registration No.: 934118

Shenzhen SEM.Test Technology Co., Ltd. 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 and the Registration is 934118.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

CNAS Registration No.: L4062

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101).

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission/immunity level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Discharging	Connected to the load

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Resistance*1	/	8.14W/5RJ	//

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

1.6 Performance Criteria for EMS

All the test data has been collected, reduced, and analyzed within this report in accordance with Immunity requires the following as specific performance criteria:

A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacturer as a permissible loss of performance.

B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacture. No change in operating state or loss or data is permitted.

C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.

1.7 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Due. Date
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2016-06-16
Amplifier	Agilent	8447F	3113A06717	2016-06-16
Amplifier	C&D	PAP-1G18	2002	2016-06-16
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2016-06-16
Horn Antenna	ETS	3117	00086197	2016-06-16
Loop Antenna	Schwarz beck	FMZB 1516	9773	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2016-06-16
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2016-06-16
AC LISN	Schwarz beck	NSLK8126	8126-224	2016-06-16
DC LISN	Schwarz beck	NNBM8126D	279	2016-06-16
8-WIRE LISN	Schwarz beck	8158	CAT3-8158-0059	2016-06-16
8-WIRE LISN	Schwarz beck	8158	CAT5-8158-0117	2016-06-16
Clamp	Schwarz beck	MDS21	3809	2016-06-16
Loop Antenna	EVERFINE	LLA-2	711001	2016-06-16
VDH Test Head	AFJ	VDH 30	SC022Z	2016-06-16
Digital Power Analyzer	California Instrument	PACS-1	72831	2016-06-16
Power Source	California Instrument	5001iX	25965	2016-06-16
ESD Generator	TESQ AG	NSG 437	161	2016-06-16
Signal Generator	Rohde & Schwarz	SMT03	100059	2016-06-16
Voltage Probe	Rohde & Schwarz	URV5-Z2	100013	2016-06-16
Power Amplifier	AR	150W1000	300999	2016-06-16
Power Amplifier	AR	25S1G4AM1	305993	2016-06-16
Transient 2000	EMC PARTNER	TRA2000	863	2016-06-16
CW Simulator	EM Test	CWS 500C	0900-03	2016-06-16
EMCPRO	KEYTEK	EMCPro	0509124	2016-06-16
Coil	KEYTEK	F-1000-4-8	0533	2016-06-16

2. SUMMARY OF TEST RESULTS

Standards	Description of Test Item	Result
EN61000-6-3	Conducted Emission	N/A
	Radiated Emission	Compliant
	EN61000-3-2 Harmonic Current Emission	N/A
	EN61000-3-3 Voltage Fluctuation And Flicker	N/A
EN61000-6-1	Electrostatic Discharge Immunity in accordance with IEC 61000-4-2	Compliant
	Radiated RF-Electromagnetic Field Immunity in accordance with IEC 61000-4-3	Compliant
	Electrical Fast Transient/Burst Immunity in accordance with IEC 61000-4-4	N/A
	Surge Immunity in accordance with IEC 61000-4-5	N/A
	Conducted disturbances Immunity in accordance with IEC 61000-4-6	N/A
	Power-frequency magnetic field Immunity in accordance with IEC 61000-4-8	N/A
	Voltage Dips/Interruptions Immunity in accordance with IEC 61000-4-11	N/A

N/A: not applicable

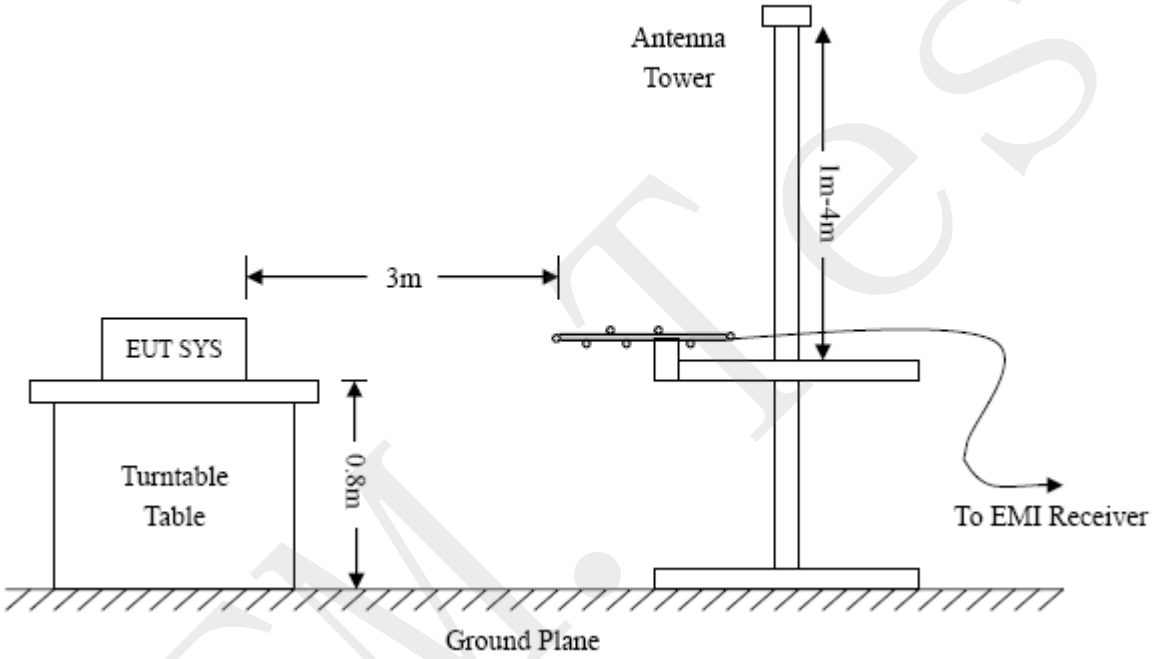
3. RADIATED EMISSION

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

3.2 Test Procedure

Test is conducting under the description of EN61000-6-3 or CISPR22, Radio disturbance characteristics - Limits and methods of measurement.



3.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – EN61000-6-3 Limit

3.4 Environmental Conditions

Temperature:	23° C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

3.5 Summary of Test Results/Plots

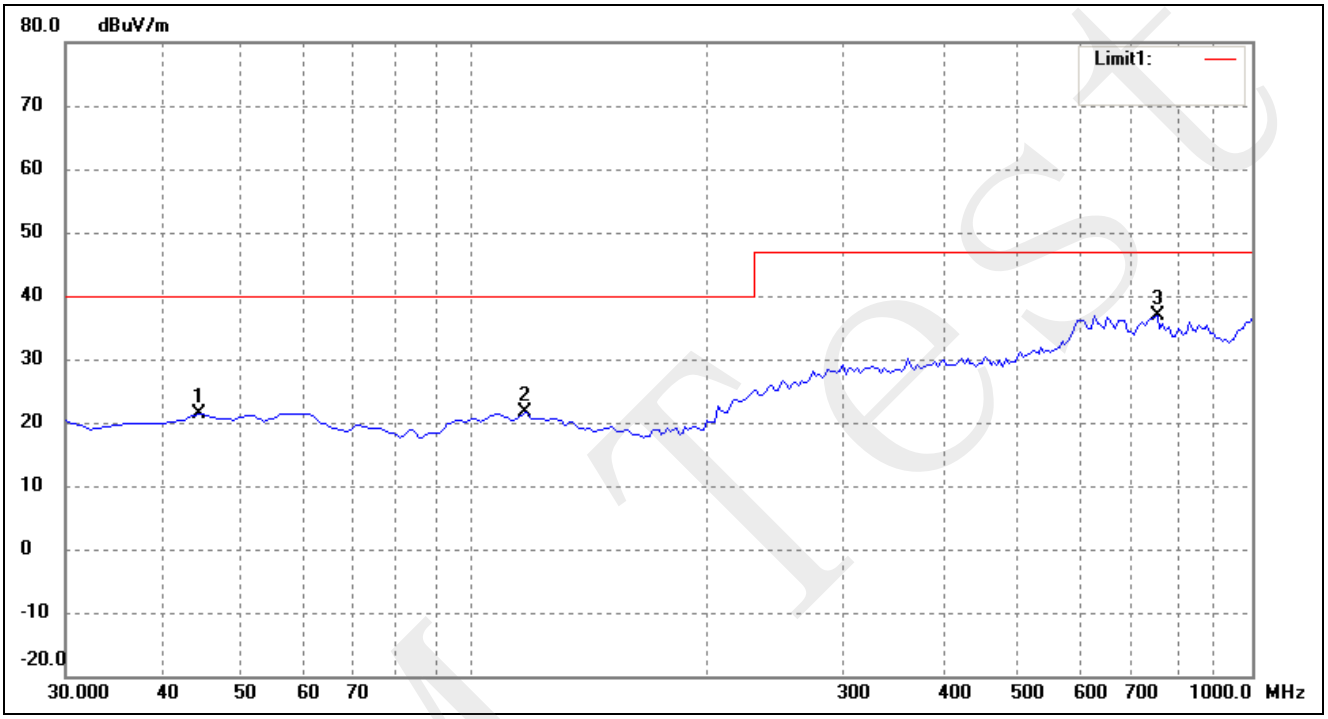
According to the data in section 4.5, the EUT complied with the EN61000-6-3 standards, and had the worst margin is:

-9.37 dB at **747.7999 MHz** in the **Vertical** polarization, **30 MHz to 1 GHz, 3Meters**

Plot of Radiated Emissions Test Data

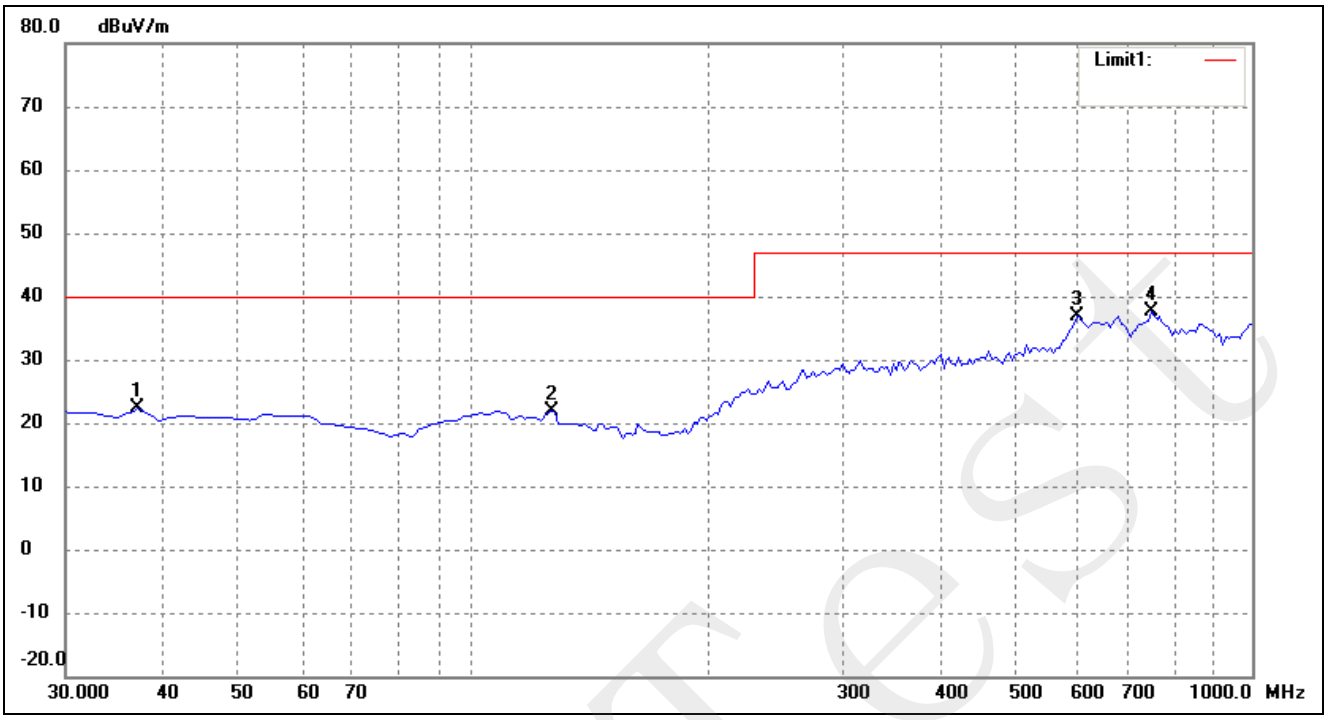
EUT: *Lithium-ion polymer battery*
Tested Model: *HCP402025W*
Operating Condition: *TM1*
Comment: *DC3.7V*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	44.5499	16.16	5.26	21.42	40.00	-18.58	100	100	peak
2	117.2999	16.57	5.03	21.60	40.00	-18.40	100	100	peak
3	759.9249	18.16	18.65	36.81	47.00	-10.19	100	100	peak

Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	37.2749	17.49	4.79	22.28	40.00	-17.72	100	100	peak
2	127.0000	17.52	4.46	21.98	40.00	-18.02	100	100	peak
3	599.8750	17.59	19.30	36.89	47.00	-10.11	100	100	peak
4	747.7999	18.44	19.19	37.63	47.00	-9.37	100	100	peak

4. Electrostatic Discharges (ESD)

4.1 Test Procedure

Test is conducting under the description of IEC61000-4-2.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

4.2 Electrostatic Discharge Immunity Test Data

Table 1: Electrostatic Discharge Immunity (Air Discharge)

EN 61000-4-2	Test Levels (kV)									
Test Points	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Surface	A	A	A	A	A	A	A	A		

Table 2: Electrostatic Discharge Immunity (Direct Contact)

EN 61000-4-2	Test Levels (kV)									
Test Points	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Metal pin	A	A	A	A						

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

EN 61000-4-2	Test Levels (kV)									
Test Points	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A						
Top Side	A	A	A	A						
Back Side	A	A	A	A						
Left Side	A	A	A	A						
Right Side	A	A	A	A						

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

EN 61000-4-2	Test Levels (kV)									
Test Points	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A						
Top Side	A	A	A	A						
Back Side	A	A	A	A						
Left Side	A	A	A	A						
Right Side	A	A	A	A						

Test Result: Pass

5. Continuous Radiated Disturbances (R/S)

5.1 Test Procedure

Test is conducting under the description of IEC61000-4-3.

Test Performance

Performance Criterion: A

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1010 mbar

5.2 Continuous Radiated Disturbances Test Data

Frequency step: 1% of fundamental
Dwell time: 1 second
Modulation: AM by 1kHz sine wave with 80% modulation depth

Frequency Range(MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	3	A	A	A	A	A	A	A	A

Test Result: Pass

EXHIBIT 1 - PRODUCT LABELING

Proposed CE Label Format

Specifications: Text is Black in color and is justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT. The 'CE' marking must be affixed to the EUT or to its data plate. Where this is not possible or not warranted on account of the nature of the apparatus, it must be affixed to the packaging, if any, and to the accompanying documents. The 'CE' marking must have a height of at least 5 mm. If the 'CE' marking is reduced or enlarged the proportions given in the above graduated drawing must be respected.

Proposed Label Location on EUT

CE Label Location

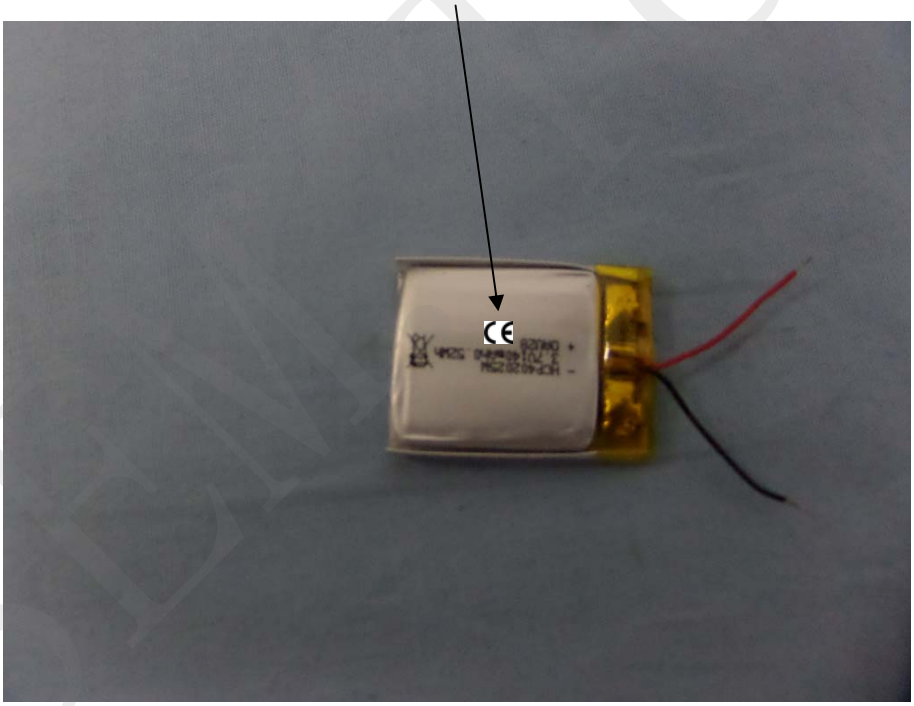
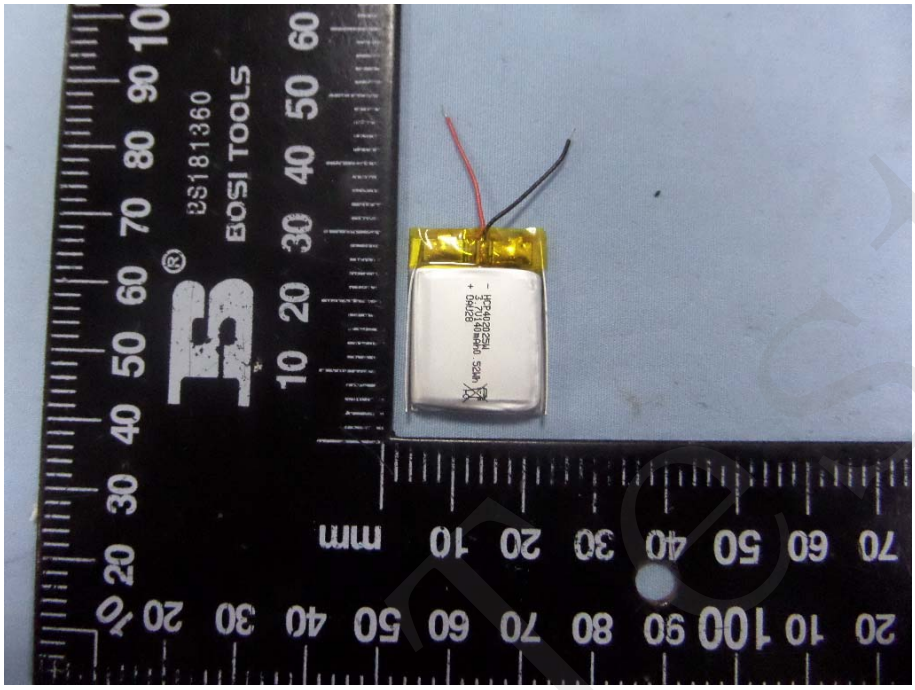


EXHIBIT 2 - EUT PHOTOGRAPHS

EUT View 1



EUT View 2

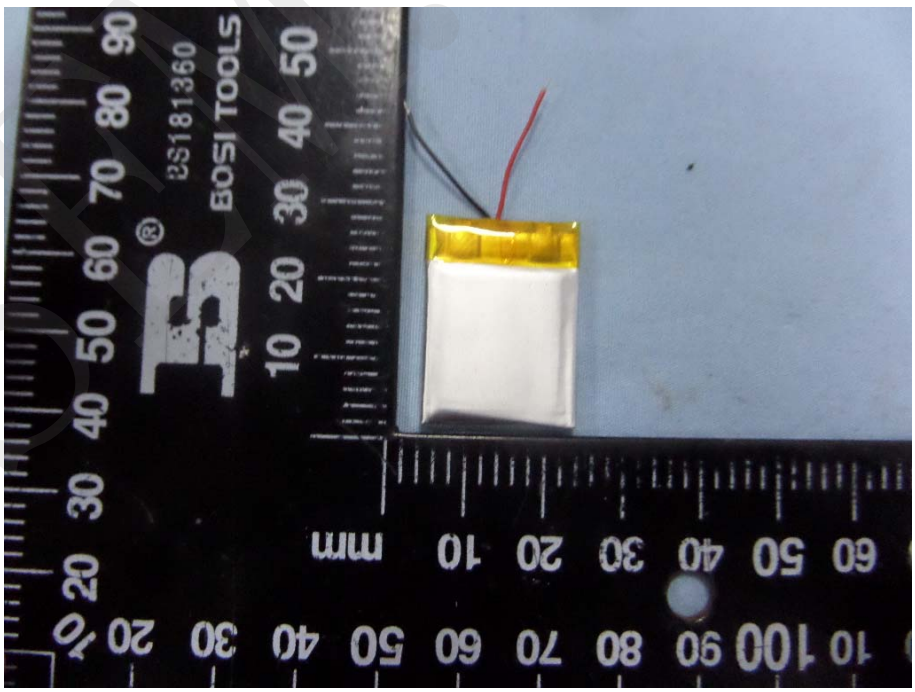
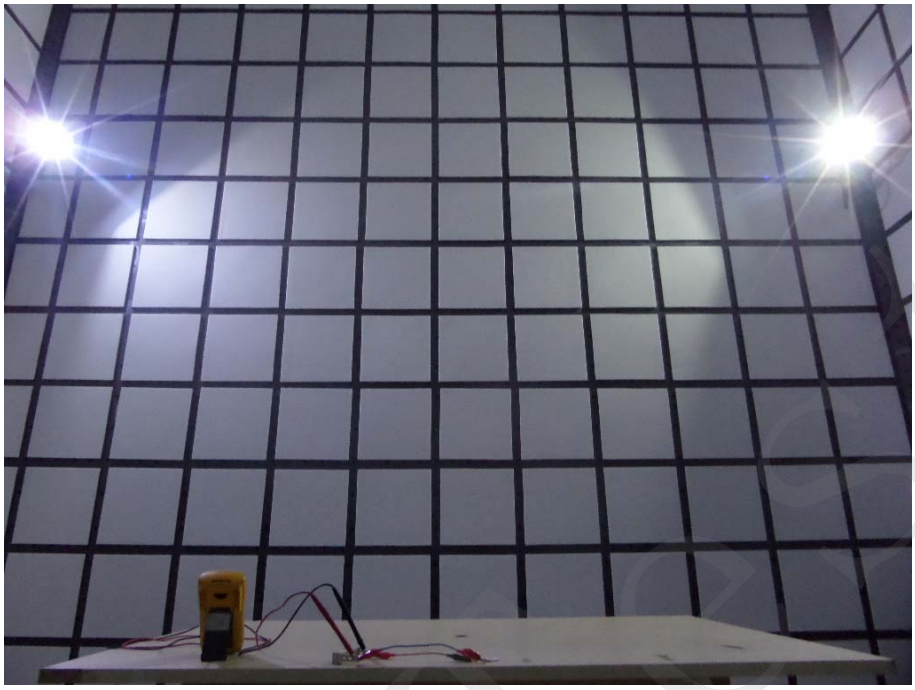


EXHIBIT 3 - TEST SETUP PHOTOGRAPHS

Radiation Emission Test View

IEC61000-4-2 Test View

IEC61000-4-3 Test View



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