



Test Report



中国认可
国际互认
检测
TESTING
CNAS L6093

Report No.: HLF19008172E

Date: Aug 20, 2019

Page 1 of 4

Applicant :

Address :

The following sample(s) and sample information was/were submitted and identified by/on behalf of the client

Sample Name : Lithium ion cell

Sample Model : 606090

Sample Style : /

Sample Received Date : Aug 17, 2019

Test Completed Date : Aug 20, 2019

Test Requested : As specified by client, with reference to Directive 2006/66/EC and its amended Directive 2013/56/EU to determine Lead(Pb), Cadmium(Cd), Mercury(Hg) contents in the submitted sample.

Test Method : Refer to the next page(s).

Test Results : Refer to the next page(s).

Test Conclusion : Based upon the performed tests by submitted samples, the test results comply with the limits of the Directive 2006/66/EC and its amended Directive 2013/56/EU

Reviewed by:

Lab Senior Engineer

Authorized Signature:

Technology Manager

In no circumstances shall the Company's responsibility extend beyond inspection, testing and reporting upon the samples actually drawn from the bulk and inspected, tested and surveyed by the Company and any inference to be drawn from the results of such inspection or survey or testing shall be entirely in the discretion and at the sole and exclusive responsibility of the Principal. This test report cannot be reproduced except in full.

FLION TESTING TECHNOLOGIES

Add: Gangzi Industrial Park, Furong Industrial Area, Xinqiao Village, Shajing Town, Bao'an District, Shenzhen City

Tel : 86-0755-2724 8885

Fax : 86-0755-2746 0090

Http://www.cnfft.com



Test Results:

Test Item	Test method/Instrument	MDL (%)	Result (%)	Limit (%)
Lead(Pb)	EPA3050B&EPA3052/ICP-OES	0.0002	N.D.	--
Cadmium(Cd)	EPA3050B&EPA3052/ICP-OES	0.0002	N.D.	0.002
Mercury(Hg)	EPA3050B&EPA3052/ICP-OES	0.0002	N.D.	0.0005

Note:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) N.D. = Not Detected (less than MDL)

(3) MDL = Method Detection Limit

(4) "--" = Not Regulated

(5) Remark: According to the Article 21(3) of Directive 2006/66/EC, Battery, accumulator and button cell shall include the chemical symbol Mercury when containing more than 0.0005% of Hg, the chemical symbol Cadmium when containing more than 0.002% of Cd and the chemical symbol Pb when containing more than 0.004% of Pb

Remark: The above result(s) was/were only given as the informality value and only for reference

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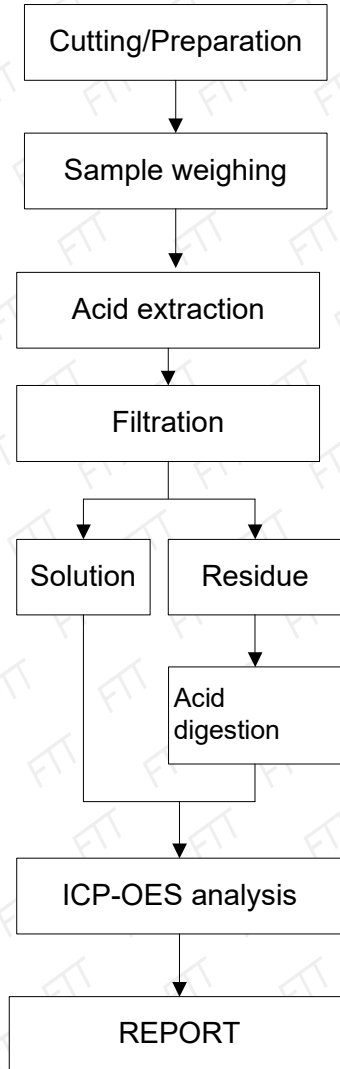
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Testing Flow Chart:



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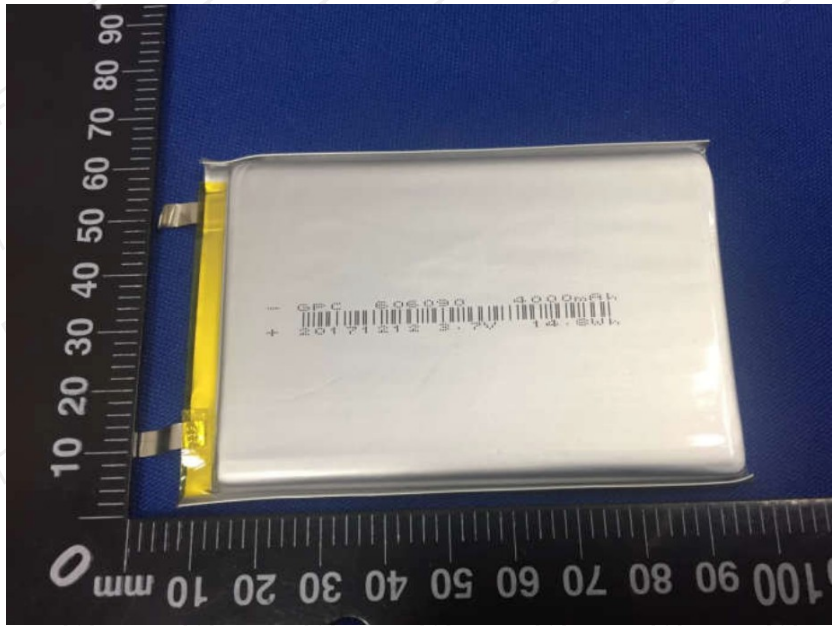
Date: Aug 20, 2019

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Test Part Description: Battery

Sample Photo

HLF19008172E



Note: The results shown in this report refer only to the sample(s) tested.

***** End of Report *****

In no circumstances shall the Company's responsibility extend beyond inspection, testing and reporting upon the samples actually drawn from the bulk and inspected, tested and surveyed by the Company and any inference to be drawn from the results of such inspection or survey or testing shall be entirely in the discretion and at the sole and exclusive responsibility of the Principal. This test report cannot be reproduced except in full.

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Test Report issued under the responsibility of:



**TEST REPORT
IEC 62133**

**Secondary cells and batteries containing alkaline or other non-acid electrolytes –
Safety requirements for portable sealed secondary cells, and for batteries made from
them, for use in portable applications**

Report Number.: 19PNC07091 01001
Date of issue.....: 2019-07-22
Total number of pages.....: 22

Applicant's name.....:
Address

Test specification:

Standard: IEC 62133: 2012 (Second Edition)
Test procedure: CB Scheme
Non-standard test method: N/A

Test Report Form No.: IEC62133B
Test Report Form(s) Originator: UL(Demko)
Master TRF.....: Dated 2013-03

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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

Test item description: Rechargeable Polymer Lithium-Ion Cell
Trade Mark: GPC
Manufacturer.....: Same as applicant
Model/Type reference: 606090, ICP6/60/91
Ratings: 3.7V, 4000mAh, 14.8Wh

Testing procedure and testing location:		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	Dongguan UTL Electronic Technology Co., Ltd.
Testing location/ address		1F Hengzheng Bldg, North Road of Station, Nancheng District, Dongguan, Guangdong, China
<input type="checkbox"/>	Associated CB Testing Laboratory:	
Testing location/ address		
Tested by (name + signature).....:		Sophie Wu/ Project Handler <i>Sophie Wu</i>
Approved by (name + signature)		Andy Huang/ Reviewer <i>Andy Huang</i>
<hr/>		
<input type="checkbox"/>	Testing procedure: TMP	
Testing location/ address		
Tested by (name + signature).....:		
Approved by (name + signature)		
<hr/>		
<input type="checkbox"/>	Testing procedure: WMT	
Testing location/ address		
Tested by (name + signature).....:		
Witnessed by (name + signature)		
Approved by (name + signature)		
<hr/>		
<input type="checkbox"/>	Testing procedure: SMT	
Testing location/ address		
Tested by (name + signature).....:		
Approved by (name + signature)		
Supervised by (name + signature)....:		

List of Attachments (including a total number of pages in each attachment):

- Enclosure (6 pages)

Summary of testing:

Tests performed (name of test and test clause):

cl.5.6.2 Design recommendation(Lithium system);
 cl.8.1 Charging procedure for test purposes (for Cells);
 cl.8.2.1 Continuous charging at constant voltage (Cells);
 cl.8.3.1 External short circuit (Cells);
 cl.8.3.3 Free fall (Cells);
 cl.8.3.4 Thermal abuse (Cells);
 cl.8.3.5 Crush (Cells);
 cl.8.3.7 Forced discharge (Cells);
 cl.8.3.8 Transport tests (Cells);
 cl.8.3.9 Design evaluation – Forced internal short circuit (Cells);

Tests are made with the number of cells specified in IEC 62133: 2012 (Second Edition) Table 2.

Testing location:

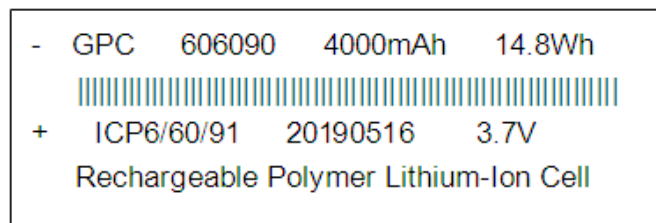
Dongguan UTL Electronic Technology Co., Ltd.
 1F Hengzheng Bldg, North Road of Station,
 Nancheng District, Dongguan, Guangdong, China

Summary of compliance with National Differences:

N/A

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Test item particulars..... :	
Classification of installation and use.....	:N/A
Supply connection.....	:N/A
Recommend charging method declared by the manufacturer	: CC-CV (Constant Current – Constant Voltage)
Discharge current (0,2 I_t A)	: 800mA
Specified final voltage	: 3.0V
Chemistry	: <input type="checkbox"/> nickel systems..... <input checked="" type="checkbox"/> lithium systems
Recommend of charging limit for lithium system	
Upper limit charging voltage per cell	:4.25V
Maximum charging current	:2000mA
Charging temperature upper limit	:45°C
Charging temperature lower limit.....	: 10°C
Polymer cell electrolyte type.....	: <input type="checkbox"/> gel polymer <input type="checkbox"/> solid polymer <input checked="" type="checkbox"/> N/A
Possible test case verdicts:	
- test case does not apply to the test object:N/A	
- test object does meet the requirement.....:P (Pass)	
- test object does not meet the requirement:F (Fail)	
Testing	
Date of receipt of test item.....	:2019-07-04
Date (s) of performance of tests	:2019-07-04 ~ 2019-07-20
General remarks:	
The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC60068-2-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	

Name and address of factory (ies) : Same as applicant
General product information: <ul style="list-style-type: none">- This Rechargeable Polymer Lithium-Ion Cell consists of the positive electrode plate, negative electrode plate, separator and electrolyte. The positive and negative electrode plates are housed in the case in the state being separated by the separator. - Model 606090 is identical to model ICP6/60/91 except for model designation. - The product was investigated to the following additional Standard for EN 62133: 2013.

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
4	Parameter measurement tolerances		Pass
	Parameter measurement tolerances		Pass
5	General Safety Considerations		Pass
5.1	General		Pass
5.2	Insulation and Wiring		Pass
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 MΩ	No metal case exists.	N/A
	Insulation resistance (MΩ)		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		Pass
	Orientation of wiring maintains adequate creepage and clearance distances between conductors.		Pass
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		Pass
5.3	Venting		Pass
	Battery cases and cells incorporate a pressure relief mechanism or are constructed so that they relieve excessive internal pressure at a value and rate that will preclude rupture, explosion and self-ignition	Venting mechanism exists on the narrow side of the pouch cell.	Pass
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief		N/A
5.4	Temperature/current management	Cell only	N/A
	Batteries are designed such that abnormal temperature rise conditions are prevented		N/A
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer		N/A
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that associated chargers are designed to maintain charging within the temperature, voltage and current limits specified		N/A
5.5	Terminal contacts		Pass
	Terminals have a clear polarity marking on the external surface of the battery	See page 3.	Pass
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current.		Pass

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance.		Pass
	Terminal contacts are arranged to minimize the risk of short circuits.		Pass
5.6	Assembly of cells into batteries	Cell only	N/A
5.6.1	If there is more than one battery housed in a single battery case, cells used in the assembly of each battery have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer		N/A
	Each battery has an independent control and protection		N/A
	Manufacturers of cells make recommendations about current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly		N/A
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate separate circuitry to prevent the cell reversal caused by uneven discharges		N/A
	Protective circuit components are added as appropriate and consideration given to the end-device application		N/A
	When testing a battery, the manufacturer of the battery provides a test report confirming the compliance according to this standard		N/A
5.6.2	Design recommendation for lithium systems only	Cell only	N/A
	For the battery consisting of a single cell or a single cellblock: - Charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Clause 8.1.2, Table 4; or		N/A
	- Charging voltage of the cell does not exceed the different upper limit of the charging voltage determined through Clause 8.1.2, NOTE 1		N/A
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks: - The voltages of any one of the single cells or single cellblocks does not exceed the upper limit of the charging voltage, specified in Clause 8.1.2, Table 4, by monitoring the voltage of every single cell or the single cellblocks; or		N/A

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
	- The voltages of any one of the single cells or single cellblocks does not exceed the different upper limit of the charging voltage, determined through Clause 8.1.2, NOTE 1, by monitoring the voltage of every single cell or the single cellblocks		N/A
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks: - Charging is stopped when the upper limit of the charging voltage, specified in Clause 8.1.2, Table 4, is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks; or		N/A
	- Charging is stopped when the upper limit of the different charging voltage, determined through Clause 8.1.2, NOTE 1, is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks		N/A
5.7	Quality Plan		Pass
	The manufacturer prepares and implements a quality plan that defines procedures for the inspection of materials, components, cells and batteries and which covers the whole process of producing each type of cell or battery	ISO9001 certificate has been provided.	Pass
6	Type Test Conditions		Pass
	Tests were made with the number of cells or batteries specified in Table 1 for nickel-cadmium and nickel-metal hydride systems and Table 2 for lithium systems, using cells or batteries that are not more than six months old	Complied. Lithium system.	Pass
	Unless noted otherwise in the test methods, testing was conducted in an ambient of 20°C ± 5°C.	Tests are carried out at 20°C ± 5°C.	Pass
7	Specific requirements and tests (nickel system)		N/A
7.1	Charging procedure for test purposes	Lithium system.	N/A
7.2	Intended Use		N/A
7.2.1	Continuous Low Rate Charge		N/A
	Results: no fire, no explosion	(See Table 7.2.1)	N/A
7.2.2	Vibration		N/A
	Results: no fire, no explosion, no leakage	(See Table 7.2.2)	N/A
7.2.3	Moulded case stress at high ambient temperature		N/A
	Oven temperature (°C).....		N/A

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: no physical distortion of the battery casing resulting in exposure if internal components.		N/A
7.2.4	Temperature cycling		N/A
	Results: No fire, no explosion, no leakage		N/A
7.3	Reasonably foreseeable misuse		N/A
7.3.1	Incorrect installation cell		N/A
	The test was carried out using: - Four fully charged cells of the same brand, type, size and age connected in series, with one of them reversed; or		N/A
	- A stabilized dc power supply.		N/A
	Results: no fire, no explosion	(See Table 7.3.1)	N/A
7.3.2	External short circuit		N/A
	The cells or batteries were tested until one of the following occurred: - 24 hours elapsed; or		N/A
	- The case temperature declined by 20% of the maximum temperature rise		N/A
	Results: no fire, no explosion.	(See Table 7.3.2)	N/A
7.3.3	Free fall		N/A
	Results: no fire, no explosion		N/A
7.3.4	Mechanical shock (crash hazard)		N/A
	Results: no fire, no explosion, no leakage		N/A
7.3.5	Thermal abuse		N/A
	Oven temperature (°C).....		—
	Results: no fire, no explosion		N/A
7.3.6	Crushing of cells		N/A
	The crushing force was released upon: - The maximum force of 13 kN± 1 kN has been applied; or		N/A
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N/A
	The cell is prismatic type and a second set of samples was tested, rotated 90° around longitudinal axis compared to the first set		N/A
	Results: no fire, no explosion.	(See Table 7.3.6)	N/A
7.3.7	Low pressure		N/A
	Chamber pressure (kPa).....:		N/A
	Results: no fire, no explosion, no leakage		—

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
7.3.8	Overcharge		N/A
	Results: no fire, no explosion.	(See Table 7.3.8)	N/A
7.3.9	Forced discharge		N/A
	Results: no fire, no explosion.	(See Table 7.3.9)	N/A
8	Specific requirements and tests (lithium systems)		Pass
8.1	Charging procedures for test purposes		Pass
8.1.1	First procedure: This charging procedure applied to tests other than those specified in 8.1.2		Pass
8.1.2	Second procedure: This charging procedure applied to the tests of 8.3.1, 8.3.2, 8.3.4, 8.3.5, and 8.3.9		Pass
	If a cell's specified upper and/or lower charging temperature exceeds values for the upper and/or lower limit test temperatures of Table 4, the cells were charged at the specified values plus 5 °C for the upper limit and minus 5 °C for the lower limit	Charge temperature 10-45°C declared.	N/A
	A valid rationale was provided to ensure the safety of the cell (see Figure A.1).....:		N/A
	For a different upper limit charging voltage (i.e. other than for lithium cobalt oxide systems at 4,25 V), the applied upper limit charging voltage and upper limit charging temperatures were adjusted accordingly	4.25V applied.	N/A
	A valid rationale was provided to ensure the safety of the cell (see Figure A.1).....:		N/A
8.2	Intended use		Pass
8.2.1	Continuous charging at constant voltage (cells)	Tested complied.	Pass
	Results: No fire. No explosion.....:	(See Table 8.2.1)	Pass
8.2.2	Moulded case stress at high ambient temperature (battery)	Cell only	N/A
	Oven temperature (°C).....:		—
	Results: No physical distortion of the battery casing resulting in exposure of internal components		N/A
8.3	Reasonably foreseeable misuse		Pass
8.3.1	External short circuit (cell)		Pass
	The cells were tested until one of the following occurred: - 24 hours elapsed; or		N/A
	- The case temperature declined by 20% of the maximum temperature rise	Tested complied.	Pass

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No fire. No explosion.....:	(See Table 8.3.1)	Pass
8.3.2	External short circuit (battery)	Cell only	N/A
	The batteries were tested until one of the following occurred: - 24 hours elapsed; or		N/A
	- The case temperature declined by 20% of the maximum temperature rise		N/A
	In case of rapid decline in short circuit current, the battery pack remained on test for an additional one hour after the current reached a low end steady state condition		N/A
	Results: No fire. No explosion.....:	(See Table 8.3.2)	N/A
8.3.3	Free fall	Tested complied.	Pass
	Results: No fire. No explosion.	No fire. No explosion.	Pass
8.3.4	Thermal abuse (cells)		Pass
	The cells were held at 130°C ± 2°C for: - 10 minutes; or	Tested complied.	Pass
	- 30 minutes for large cells (gross mass of more than 500 g as defined in IEC 62281)		N/A
	Oven temperature (°C).....:	130°C	—
	Gross mass of cell (g)	<500g, small cell.	—
	Results: No fire. No explosion.	No fire. No explosion.	Pass
8.3.5	Crush (cells)		Pass
	The crushing force was released upon: - The maximum force of 13 kN± 1 kN has been applied; or	Tested complied.	Pass
	- An abrupt voltage drop of one-third of the original voltage has been obtained; or		N/A
	- 10% of deformation has occurred compared to the initial dimension		N/A
	Results: No fire. No explosion.....:	(See Table 8.3.5)	Pass
8.3.6	Over-charging of battery	Cell only	N/A
	Test was continued until the temperature of the outer casing: - Reached steady state conditions (less than 10°C change in 30-minute period); or		N/A
	- Returned to ambient		N/A
	Results: No fire. No explosion.....:	(See Table 8.3.6)	N/A
8.3.7	Forced discharge (cells)	Tested complied.	Pass
	Results: No fire. No explosion.....:	(See Table 8.3.7)	Pass

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.8	Transport tests		Pass
	Manufacturer's documentation provided to show compliance with UN Recommendations on Transport of Dangerous Goods	UN38.3 test report provided.	Pass
8.3.9	Design evaluation – Forced internal short circuit (cells)	Tested complied.	Pass
	The cells complied with national requirement for.....:	France, Japan, Republic of Korea and Switzerland.	—
	The pressing was stopped upon: - A voltage drop of 50 mV has been detected; or		N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached	400N	Pass
	Results: no fire	(See Table 8.3.9)	Pass
9	Information for safety		Pass
	The manufacturer of secondary cells ensures that information is provided about current, voltage and temperature limits of their products.	Information is provided in manufacturer's specification	Pass
	The manufacturer of batteries ensures that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards.		N/A
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		N/A
	As appropriate, information relating to hazard avoidance resulting from a system analysis is provided to the end user		N/A
10	Marking		Pass
10.1	Cell Marking		Pass
	Cells marked as specified in the applicable cell standards: IEC 61951-1, IEC 61951-2 or IEC 61960	See marking plate on page 3.	Pass
10.2	Battery Marking		N/A
	Batteries marked in accordance with the requirements for the cells from which they are assembled.		N/A
	Batteries marked with an appropriate caution statement.		N/A
10.3	Other Information		Pass

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
	Storage and disposal instructions marked on or supplied with the battery.	Information for disposal instructions mentioned in manufacturer's specifications.	Pass
	Recommended charging instructions marked on or supplied with the battery.	Supplied in Instruction as described in Enclosure ID 02.	Pass

11	Packaging		Pass
	The materials and packaging design are chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants.	See Enclosure ID 04 for detail.	Pass

Annex A	Charging range of secondary lithium ion cells for safe use		Pass
A.1	General		Pass
A.2	Safety of lithium-ion secondary battery	Complied.	Pass
A.3	Consideration on charging voltage	Complied.	Pass
A.3.1	General	Charging voltage is 4.2V	Pass
A.3.2	Upper limit charging voltage	4.25V	Pass
A.3.2.1	General		Pass
A.3.2.2	Explanation of safety viewpoint		N/A
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	4.25V applied.	N/A
A.4	Consideration of temperature and charging current		Pass
A.4.1	General		Pass
A.4.2	Recommended temperature range	See A.4.2.2.	Pass
A.4.2.1	General		Pass
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Charging temperature declared by client is: 10-45°C	N/A
A.4.3	High temperature range	Not higher than the temperature range specific in this standard.	N/A
A.4.3.1	General		N/A
A.4.3.2	Explanation of safety viewpoint		N/A
A.4.3.3	Safety considerations when specifying charging conditions in high temperature range		N/A
A.4.3.4	Safety consideration when specifying new upper limit in high temperature range		N/A
A.4.4	Low temperature range	Not lower than the temperature range specific in this standard.	N/A

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
A.4.4.1	General		N/A
A.4.4.2	Explanation of safety viewpoint		N/A
A.4.4.3	Safety considerations, when specifying charging conditions in low temperature range		N/A
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range		N/A
A.4.5	Scope of the application of charging current		Pass
A.5	Sample preparation		Pass
A.5.1	General		Pass
A.5.2	Insertion procedure for nickel particle to generate internal short		Pass
	The insertion procedure carried out at 20°C±5°C and under -25 °C of dew point		Pass
A.5.3	Disassembly of charged cell		Pass
A.5.4	Shape of nickel particle		Pass
A.5.5	Insertion of nickel particle to cylindrical cell		N/A
A.5.5.1	Insertion of nickel particle to winding core		N/A
A.5.5.2	Mark the position of nickel particle on the both end of winding core of the separator		N/A
A.5.6	Insertion of nickel particle to prismatic cell		Pass

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE: List of critical Components					Pass
Object/part No.	Manufacturer/ trademark	Type/Model	Technical Data	Standard	Marks of Conformity
Cell		606090	3.7V, 4000mAh	IEC 62133: 2012	Tested with appliance
-Positive electrode	Lidefu	Al foil	D50: 130±3µm, Wide * Length: 80mm x 1061mm, LiCoO ₂ , Carbon black, PVDF, Conductive Additive	--	Tested with appliance
-Negative electrode	Lidefu	Cu foil	D50: 120±3µm, Wide * Length: 82mm x 957mm, Graphite, CMC, SBR, Conductive, Additive, Copper foil	--	Tested with appliance
-Separator	Yitu	20µm	Thickness: 20µm, Length* Wide: 2055mm x 84.5mm, Polypropylene, shutdown temperature: 135°C	--	Tested with appliance
-Electrolyte	JN	JN-SZGL-1301	Conductivity: 7.8±0.5mS/cm, LiPF ₆ +DEC+EC	--	Tested with appliance
Supplementary information:					
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.1	TABLE: Continuous low rate charge (cells)					N/A
Model	Recommended Charging Method, CC, CV, or CC/CV	Recommended Charging Voltage Vc, Vdc	Recommended Charging Current Irec, A	OCV at Start of Test, Vdc	Results	

Supplementary information:
A - No Fire or Explosion
B - No Leakage
C - Leakage
D - Fire
E - Explosion
F - Bulge
G - Other (Please Explain)

7.2.2	TABLE: Vibration		N/A
Model	OCV at Start of Test, Vdc	Results	

Supplementary information:
A - No Fire or Explosion
B - No Leakage
C - Leakage
D - Fire
E - Explosion
F - Bulge
G - Other (Please Explain)

7.3.1	TABLE: Incorrect installation (cells)		N/A
Model	OCV (reversed cell) Vdc	Results	

Supplementary information:
A - No Fire or Explosion
B - No Leakage
C - Leakage
D - Fire
E - Explosion
F - Bulge
G - Other (Please Explain)

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.2	TABLE: External short circuit					N/A
Model	Ambient (At 20°C ± 5°C or 55°C ± 5°C)	OCV at start of test, Vdc	Resistance of Circuit, Ω	Maximum Case Temperature Rise ΔT, °C	Results	

Supplementary information:
A – No fire or Explosion
B – Fire
C – Explosion
D – The test was completed after 24 h
E – The test was completed after the cell casing cooled to 20% of the maximum temperature rise
* - There is no obvious temperature rise during test.

7.3.6	TABLE: Crush				N/A
Model	OCV prior to charging, Vdc	Maximum Charge Current, A	Time for Charging, h	Results	

Supplementary information:
A - No Fire or Explosion
B - No Leakage
C - Leakage
D - Fire
E - Explosion
F - Bulge
G - Other (Please Explain)

7.3.8	TABLE: Overcharge					N/A
Model	OCV at start of test, Vdc	Maximum Charging Current, mA	Maximum Charging Voltage, Vdc	Total Time of Charging, h	Results	

Supplementary information:
A - No Fire or Explosion
B - No Leakage
C - Leakage
D - Fire
E - Explosion
F - Bulge
G - Other (Please Explain)

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.9	TABLE: Forced discharge (cells)				N/A
Model	OCV before application of reverse charge, Vdc	Measured Reverse Charge It, A	Total Time for Reversed Charge Application, Min	Results	

Supplementary information:
A - No Fire or Explosion
B - No Leakage
C - Leakage
D - Fire
E - Explosion
F - Bulge
G - Other (Please Explain)

8.2.1	TABLE: Continuous charging at constant voltage (cells)				Pass
Model	Recommended charging voltage Vc, (Vdc)	Recommended charging current Irec, (A)	OCV at start of test, (Vdc)	Results	
606090	4.20	2.0	4.19	A,B	
606090	4.20	2.0	4.19	A,B	
606090	4.20	2.0	4.18	A,B	
606090	4.20	2.0	4.19	A,B	
606090	4.20	2.0	4.19	A,B	

Supplementary information:
A - No Fire or Explosion
B - No Leakage
C - Leakage
D - Fire
E - Explosion
F - Bulge
G - Other (Please Explain)

8.3.1	TABLE: External short circuit (Cell)					Pass
Model	Ambient, (°C)	OCV at start of test, (Vdc)	Resistance of circuit, (Ω)	Maximum case temperature rise ΔT, (°C)	Results	
Samples charged at charging temperature upper limit (45C)						
606090	22.9	4.22	0.071	83.2	A,B	
606090	22.9	4.21	0.072	79.3	A,B	
606090	22.9	4.21	0.071	81.4	A,B	
606090	22.9	4.22	0.075	83.8	A,B	
606090	22.9	4.22	0.074	84.3	A,B	

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

Samples charged at charging temperature upper limit (10C)					
606090	22.9	4.21	0.071	80.4	A,B
606090	22.9	4.21	0.072	82.5	A,B
606090	22.9	4.22	0.071	84.9	A,B
606090	22.9	4.22	0.075	85.4	A,B
606090	22.9	4.22	0.074	81.5	A,B

Supplementary information:

A - No Fire or Explosion

B - No Leakage

C - Leakage

D - Fire

E - Explosion

F - Bulge

G - Other (Please Explain)

8.3.2	TABLE: External short circuit (battery)	N/A
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Model	Ambient, (°C)	OCV at start of test, (Vdc)	Resistance of circuit, (Ω)	Maximum case temperature rise ΔT, (°C)	Results
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Samples charged at charging temperature upper limit (C)

Samples charged at charging temperature lower limit (C)

Supplementary information:

A - No Fire or Explosion

B - No Leakage

C - Leakage

D - Fire

E - Explosion

F - Bulge

G - Other (Please Explain)

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

8.3.5	TABLE: Crush					Pass
Model	OCV at start of test, (Vdc)	OCV at removal of crushing force, (Vdc)	Width/ diameter of cell before crush, (mm)	Required deformation for crush, (mm)	Results	
Samples charged at charging temperature upper limit (45C)						
606090	4.21	4.21	--	--	A,B	
606090	4.22	4.22	--	--	A,B	
606090	4.22	4.22	--	--	A,B	
606090	4.22	4.22	--	--	A,B	
606090	4.22	4.22	--	--	A,B	
Samples charged at charging temperature lower limit (10C)						
606090	4.21	4.21	--	--	A,B	
606090	4.22	4.22	--	--	A,B	
606090	4.21	4.21	--	--	A,B	
606090	4.22	4.22	--	--	A,B	
606090	4.21	4.21	--	--	A,B	
Supplementary information: A - No Fire or Explosion B - No Leakage C - Leakage D - Fire E - Explosion F - Bulge G - Other (Please Explain)						

8.3.6	TABLE: Over-charging of battery				N/A
Model	OCV before charging, (Vdc)	Resistance of circuit, (Ω)	Maximum outer casing temperature, ($^{\circ}$ C)	Results	
Constant charging current (A).....:					—
Supply voltage (Vdc).....:					—

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

A - No Fire or Explosion

B - No Leakage

C - Leakage

D - Fire

E - Explosion

F - Bulge

G - Other (Please Explain)

8.3.7	TABLE: Forced discharge (cells)				Pass
Model	OCV before application of reverse charge, (Vdc)	Measured Reverse charge It, (A)	Time for reversed charge, (minutes)	Results	
606090	3.35	4.0	90	A,B	
606090	3.34	4.0	90	A,B	
606090	3.35	4.0	90	A,B	
606090	3.34	4.0	90	A,B	
606090	3.33	4.0	90	A,B	

Supplementary information:

A - No Fire or Explosion

B - No Leakage

C - Leakage

D - Fire

E - Explosion

F - Bulge

G - Other (Please Explain)

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

8.3.9	TABLE: Forced internal short circuit (cells)					Pass
Model	Chamber ambient, °C	OCV at start of test, Vdc	Particle location ¹⁾	Maximum applied pressure, N	Results	
606090	10	4.21	1	400	A,B	
606090	10	4.22	1	400	A,B	
606090	10	4.21	1	400	A,B	
606090	10	4.22	2	400	A,B	
606090	10	4.21	2	400	A,B	
606090	45	4.21	1	400	A,B	
606090	45	4.22	1	400	A,B	
606090	45	4.21	1	400	A,B	
606090	45	4.22	2	400	A,B	
606090	45	4.22	2	400	A,B	

Supplementary information:

¹⁾ Identify one of the following:

1: Nickel particle inserted between positive and negative (active material) coated area (3pcs).

2: Nickel particle inserted between positive aluminium foil and negative active material coated area (2pcs)

A - No Fire or Explosion

B - No Leakage

C - Leakage

D - Fire

E - Explosion

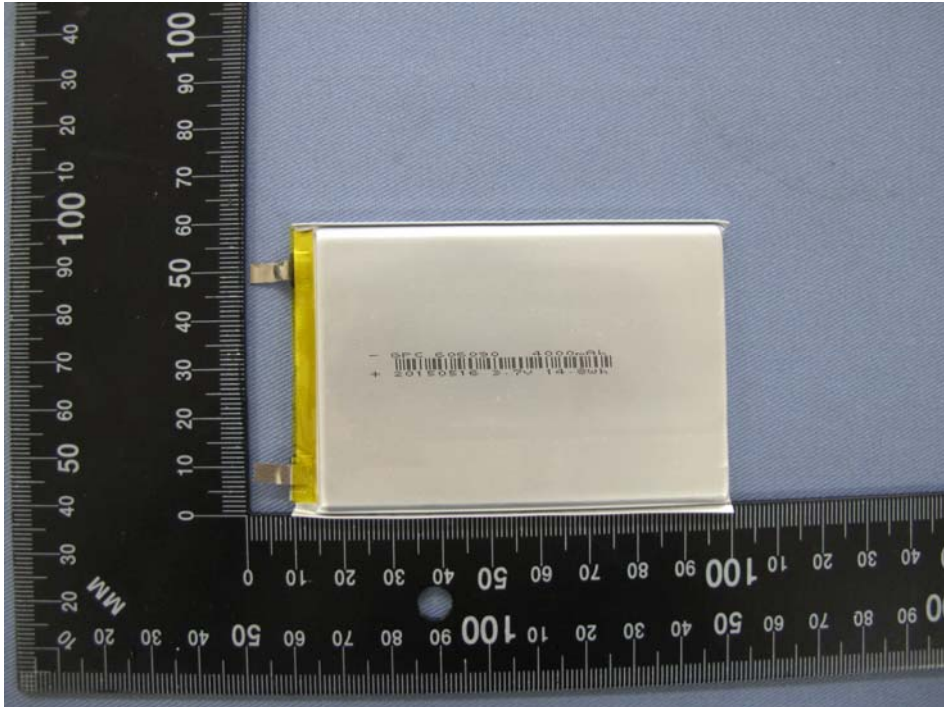
F - Bulge

G - Other (Please Explain)

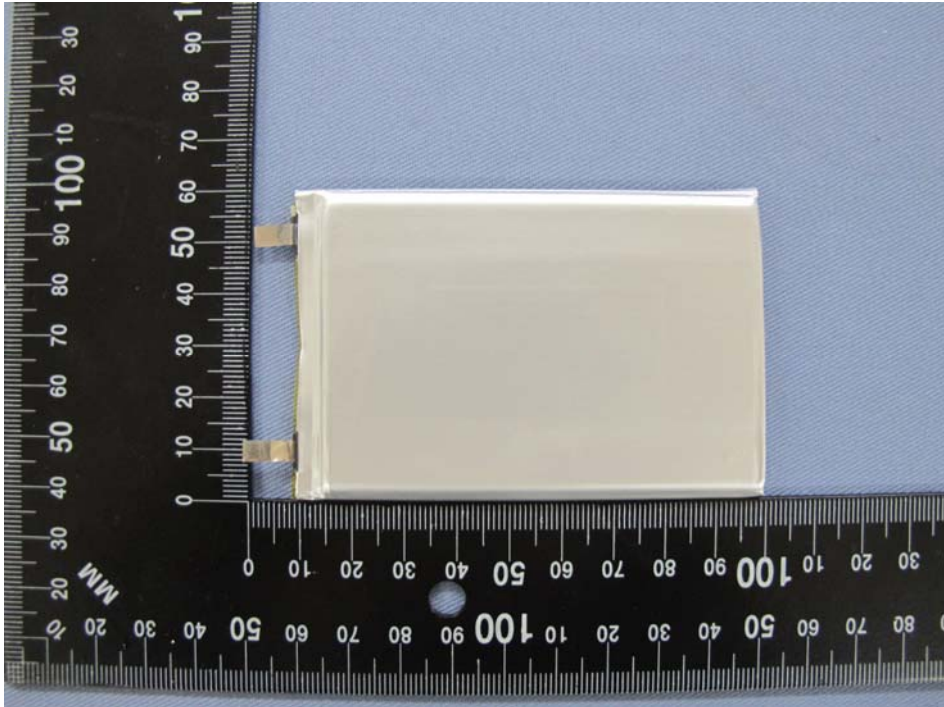
ENCLOSURE

Supplement ID	Description
01-1	Overall View 1 of cell
01-2	Overall View 2 of cell
02	Specification
03	Enclosure drawing
04	Packaging Drawing

ID 01-1



ID 01-2

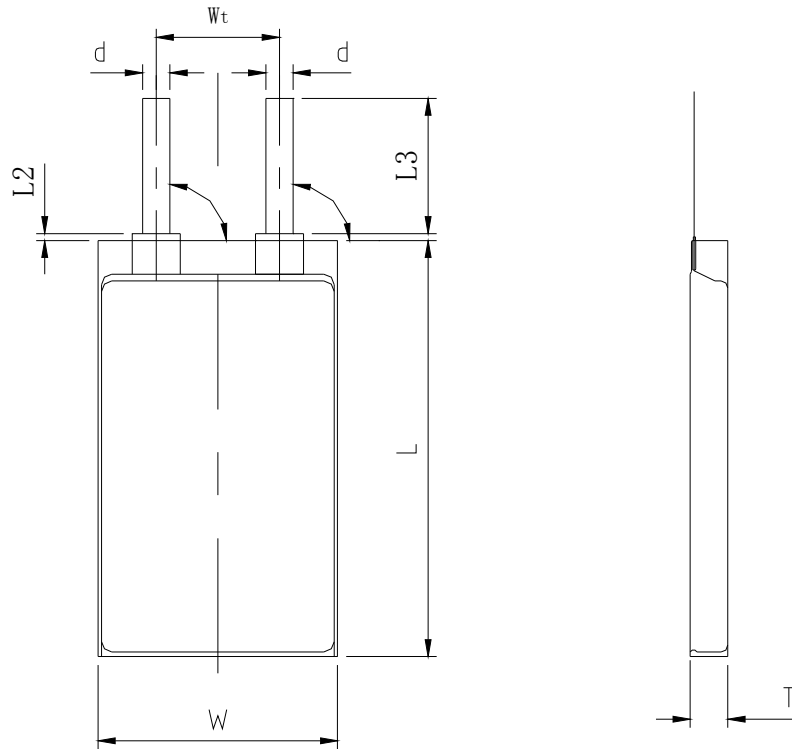


ID 02

Cell Spec

Applicant Name / UL file number	
Product Name	
Rechargeable Polymer Lithium-Ion Cell	
Model Name	
606090	
Cell Manufacturer / Type / UL file number	
LTD / 606090	
* Nominal Capacity	4000mAh/14.8Wh
* Nominal Voltage	3.7V
* Normal Charge Current	2000mA
* Maximum Charge Current	2000mA
* Normal Charge Voltage	4.2V
* Maximum Charge Voltage	4.2V
* Normal Discharge Current	800mA
* Maximum Discharge Current	4000mA
* Discharge Cut-Off Voltage	3.0V
Operation Ambient range	Charging: 10~45 degree C Discharging: 0~60 degree C
Lithium ion battery: Upper Limit Charging Voltage at the Specified Temperature for cell ___ V at ___ Degree C	4.25V at 10~45 degree C

ID 03



T	6.00mm max.
W	60.00mm max.
L	90.50mm max.

ID 04

The batteries are delivered in a plastic tray with 1 pcs in one tray; then 80 plastic trays are packed in a bulk package. (1*80=80 pcs in one box)

