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. .....:	CB170804N001 001
Date of issue .....:	2017-08-10
Total number of pages.....	33
Applicant's name.....:	GlobTek, Inc.
Address .....:	186 Veterans Drive Northvale, NJ 07647 USA
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

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

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 Li-ion Battery Pack
Trade Mark .....:	GlobTek, Inc.®
Manufacturer.....:	GlobTek, Inc.
Model/Type reference .....:	BL3000F9031781S1PC*V (*can be A, B, C, H, J, K, L, S, M, N, P, Q, R, T, U, V, 1, 2, 3, 4, 5, 6, 7, 8, 9 for different output connector)
Ratings .....:	3.7Vd.c., 3000mAh, 11.1Wh

Testing procedure and testing location:		
☒ CB Testing Laboratory:	BV Shenzhen Co., Ltd. Dongguan Branch Laboratory	
Testing location/ address .....:	34 Chenwulu Section, Guantai Rd. Houjie Town 523942 Dongguan City Guangdong CHINA	
☐ Associated CB Testing Laboratory:	--	
Testing location/ address .....:	--	
Tested by (name + signature) .....:	Brian Su / Engineer	
Approved by (name + signature) .....:	James Huang / Supervisor	
☐ Testing procedure: TMP	--	
Testing location/ address .....:	--	
Tested by (name + signature) .....:	--	--
Approved by (name + signature) .....:	--	--
☐ Testing procedure: WMT	--	
Testing location/ address .....:	--	
Tested by (name + signature) .....:	--	--
Witnessed by (name + signature) ....:	--	--
Approved by (name + signature) .....:	--	--
☐ 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):

- Page 29~32 (4 pages of EUT photo)
- Page 33 (1 page of Appendix 1)

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
- 5.2 Insulation and wiring - 5.3 Venting - 5.4 Temperature/voltage/current management - 5.5 Terminal contacts - 5.6 Assembly of cells into batteries - 5.7 Quality plan - 8.1 Charging procedure for test purposes (Cells and Batteries) - 8.2.1 Continuous charging at constant voltage(Cells) - 8.2.2 Moulded case stress at high ambient temperature (Batteries) - 8.3.1 External short circuit(Cells) - 8.3.2 External short circuit(Batteries) - 8.3.3 Free fall(Cells and Batteries) - 8.3.4 Thermal abuse(Cells) - 8.3.5 Crush(Cells) - 8.3.6 Over-charging of battery - 8.3.7 Forced discharge(Cells) - 8.3.8 Transport - 8.3.9 Forced internal short circuit (cells) The load conditions used during testing: The unit is charging the empty battery and cell, discharging the full charged battery and cell according to its rating. Note: (1) Unless otherwise stated, the charging procedure for test purposes is carried out in an ambient temperature of 20±5°C, using the method declared by the manufacturer. (2) Prior to charging, the battery or cell shall have been discharged at 20±5°C at a constant current of 0.2 It A down to a specified final voltage.	BV Shenzhen Co., Ltd. Dongguan Branch Laboratory 34 Chenwulu Section, Guantai Rd. Houjie Town 523942 Dongguan City Guangdong CHINA

Summary of compliance with National Differences

List of countries addressed:

DK (DK=Denmark), HU (HU=Hungary), SE (SE=Sweden)

☒ **The product fulfils the requirements of IEC 62133: 2012 (Second Edition) and EN 62133:2013**

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.

Expliation for date code:

20170615

"2017" indicate Year;

"06" indicate month (ex: 01: January; 02 February..);

"15" indicate day;

Product model annotation:

BL3000F9031781S1PC*V, *=A, B, C, H, J, K, L, S, M, N, P, Q, R, T, U, V, 1, 2, 3, 4, 5, 6, 7, 8, 9

The models are identical except the connectors type. The "*" means the connector type,

A = Strip + tin, B = Button, C = Contacts, H = Hirose (any style), J = 2p JST, K =3p JST, L = 4p JST, S = 5p JST

M = 2p Molex, N = 3p Molex, P = 4p Molex,

Q = 6 contacts Molex, R = Multiple connectors, T= 2p Tyco,

U = 3p Tyco, V = 4pTyco,

1 = 1p connector, 2 =2p connector, 3 = 3p connector,

4 = 4p connector, 5 =5p connector, 6 = 6p connector, 7 = 7p connector, 8 =8p connector, 9 = 9p connector.

Test item particulars.....:	
Classification of installation and use.....:	Built-in and use in portable applications
Supply connection.....:	Customization connector
Recommend charging method declaired by the manufacturer ..... :	Cell: Keep 600mA charge current in CC mode until cell Voltage reach 4.2Vdc, then transfer CV mode. Battery pack: Keep 600mA charge current in CC mode until cell Voltage reach 4.2Vdc, then transfer CV mode.
Discharge current (0,2 I_t A) ..... :	Cell and Battery pack : 600mA
Specified final voltage ..... :	Cell: End of charge 4.25Vdc; End of discharge 3.0Vdc Battery pack: End of charge 4.25Vdc; End of discharge 3.0Vdc
Chemistry ..... :	☐ nickel systems ..... ☒ lithium systems
Recommend of charging limit for lithium system	
Upper limit charging voltage per cell.....:	4.25V
Maximum charging current .....:	1500mA
Charging temperature upper limit .....:	45°C
Charging temperature lower limit.....:	10°C
Polymer cell electrolyte type ..... :	☐gel polymer ..... ☐solid polymer
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 .....:	August 04, 2017
Date (s) of performance of tests .....:	August 04, 2017 – August 10, 2017

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 ☐ comma / ☒ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

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 ..... :

☒ **Yes**
☐ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) ..... : 1. GlobTek (Suzhou) Co., Ltd.
Building 4&6, No. 76, East Jinling Road, Weiting Town Suzhou Industrial Park, 215121, Jiangsu Province, China

General product information:

(1) The equipment under test (EUT) model BL3000F9031781S1PC*V (* can be A, B, C, H, J, K, L, S, M, N, P, Q, R, T, U, V, 1, 2, 3, 4, 5, 6, 7, 8, 9 for different output connector) is a Rechargeable Li-ion Battery Pack, contain single non-certified cell which completed IEC 62133 clauses 8.3.1, 8.3.3, 8.3.4, 8.3.5, 8.3.7 and 8.3.9 tested in this report.All tests were performed on model BL3000F9031781S1PCRV to represent the other connector models.
(2) Battery designating according to clause 10.2 is 1ICP9/32/77.
(3) The cell and battery pack maximum ambient temperature is specified as 10~45°C for Charging and -20 ~ 60°C for Discharging.
(4) Dimension of the Battery pack unit: 9.3 mm (T) x 32.0 mm (W) mm x 79mm (H) max.
(5) Dimension of the Cell unit: 9.0mm (T) x 31.5 mm (W) mm x 76.5mm (H) max.
(6) Battery Pack Weight: Approx. 48.7g.
Cell Weight: Approx. 46.5g.

Test condition:

Temperature: 20±5°C
Relative humidity: 60%
Air pressure: 950 mbar

The test samples were pre-production samples without serial number.

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Clause	Requirement + Test	Result - Remark	Verdict
4	**Parameter measurement tolerances**		P
	Parameter measurement tolerances	Both normal and foreseeable misuses are evaluated in the report. All control and measure values were within the tolerances.	P
5	**General safety considerations**		P
5.1	General	The battery and cells is safe and continues to function in all respects under the condition of intended use.	P
5.2	Insulation and wiring	See below	P
	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 externally exposed metal surface of the battery. The equipment is built-in type; compliance shall be evaluated in the final assembly.	N/A
	Insulation resistance (MΩ) ..... :		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements	The cross section areas of wires were considered enough to carry the rating current of the battery.	P
	Orientation of wiring maintains adequate creepage and clearance distances between conductors	The terminals were connecting with end product which can provide good mechanical strength.	P
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse	The distance between the terminals is considered enough to minimize the possibility of short circuits.	P
5.3	Venting	See below	P
	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	The edge of packing which next to the terminals was considered as the pressure relief mechanism, which can release the pressure during the abnormal operation.	P
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief	The EUT is built-in type, no such outer case used. It shall be evaluated in the final assembly.	N/A
5.4	Temperature/voltage/current management	See below	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Batteries are designed such that abnormal temperature rise conditions are prevented	Protection IC and MOSFET provided.	P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	Protection IC and MOSFET provided.	P
	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	The battery vender had provided specifications including charge instruction for equipment manufacture reference.	P
5.5	Terminal contacts	See below	P
	Terminals have a clear polarity marking on the external surface of the battery	Customize connector, and it can be prevent the polarity reverse connection.	N/A
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	The cross section areas of wires were considered enough to carry the rating current of the battery.	P
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance	The leading wire were soldering with PCB which can provides good mechanical strength.	P
	Terminal contacts are arranged to minimize the risk of short circuits	The distance between the terminals is considered enough to minimize the possibility of short circuits.	P
5.6	Assembly of cells into batteries	See below	P
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	The battery is composited by single cell.	N/A
	Each battery has an independent control and protection	Independent control and protection provided.	P
	Manufacturers of cells make recommendations about current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly	Cell vender provided cell spec including current, voltage and temperature limitation.	P
	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	The battery pack has no design for selective discharge.	N/A
	Protective circuit components are added as appropriate and consideration given to the end-device application	The battery pack’s protective circuit was considered in line with end device application.	P

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
	When testing a battery, the manufacturer of the battery provides a test report confirming the compliance according to this standard	After testing the cell and battery pack were compliance and according this standard.	N/A
5.6.2	Design recommendation for lithium systems only	See below	P
	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	For the battery consisting of a single cell that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 4.	P
	- Charging voltage of the cell does not exceed the different upper limit of the charging voltage determined through Clause 8.1.2, NOTE 1.	For the battery consisting of a single cell that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 4.	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	For the battery consisting of a single cell that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 4.	N/A
	- 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	For the battery consisting of a single cell that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 4.	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	For the battery consisting of a single cell that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 4.	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	For the battery consisting of a single cell that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 4.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.7	Quality plan	See below	P
	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	The manufacturer's procedures for the inspection of materials, components, cells and batteries and which covers the process of producing each type of cell and battery comply with the requirement.	P
6	**Type test conditions**		P
	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	The Battery pack under testing was less than 6 months old.	P
	Unless noted otherwise in the test methods, testing was conducted in an ambient of 20°C ± 5°C.	The testing was conducted at the ambient range of 15.0°C - 25°C.	P
7	**Specific requirements and tests (nickel systems)**		N/A
7.1	Charging procedure for test purposes	The battery pack is lithium system	N/A
7.2	Intended use	The battery pack is lithium system	N/A
7.2.1	Continuous low-rate charging (cells)	The battery pack is lithium system	N/A
	Results: No fire. No explosion	The battery pack is lithium system	N/A
7.2.2	Vibration	The battery pack is lithium system	N/A
	Results: No fire. No explosion. No leakage	The battery pack is lithium system	N/A
7.2.3	Moulded case stress at high ambient temperature	The battery pack is lithium system	N/A
	Oven temperature (℃)..... .....:		—
	Results: No physical distortion of the battery casing resulting in exposure if internal components	The battery pack is lithium system	N/A
7.2.4	Temperature cycling	The battery pack is lithium system	N/A
	Results: No fire. No explosion. No leakage.	The battery pack is lithium system	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
7.3	Reasonably foreseeable misuse	The battery pack is lithium system	N/A
7.3.1	Incorrect installation cell	The battery pack is lithium system	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	The battery pack is lithium system	N/A
	- A stabilized dc power supply.	The battery pack is lithium system	N/A
	Results: No fire. No explosion..... :	The battery pack is lithium system	N/A
7.3.2	External short circuit	The battery pack is lithium system	N/A
	The cells or batteries were tested until one of the following occurred: - 24 hours elapsed; or	The battery pack is lithium system	N/A
	- The case temperature declined by 20% of the maximum temperature rise	The battery pack is lithium system	N/A
	Results: No fire. No explosion..... :	The battery pack is lithium system	N/A
7.3.3	Free fall	The battery pack is lithium system	N/A
	Results: No fire. No explosion.	The battery pack is lithium system	N/A
7.3.4	Mechanical shock (crash hazard)	The battery pack is lithium system	N/A
	Results: No fire. No explosion. No leakage.	The battery pack is lithium system	N/A
7.3.5	Thermal abuse	The battery pack is lithium system	N/A
	Oven temperature (℃)..... .....:		—
	Results: No fire. No explosion.	The battery pack is lithium system	N/A
7.3.6	Crushing of cells	The battery pack is lithium system	N/A
	The crushing force was released upon: - The maximum force of 13 kN ± 1 kN has been applied; or	The battery pack is lithium system	N/A
	- An abrupt voltage drop of one-third of the original voltage has been obtained	The battery pack is lithium system	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The cell is prismatic type and a second set of samples was tested, rotated 90°around longitudinal axis compared to the first set	The battery pack is lithium system	N/A
	Results: No fire. No explosion..... :	The battery pack is lithium system	N/A
7.3.7	Low pressure	The battery pack is lithium system	N/A
	Chamber pressure (kPa)..... :		—
	Results: No fire. No explosion. No leakage.	The battery pack is lithium system	N/A
7.3.8	Overcharge	The battery pack is lithium system	N/A
	Results: No fire. No explosion..... :	The battery pack is lithium system	N/A
7.3.9	Forced discharge	The battery pack is lithium system	N/A
	Results: No fire. No explosion..... :	The battery pack is lithium system	N/A
8	**Specific requirements and tests (lithium systems)**		P
8.1	Charging procedures for test purposes	See below	P
8.1.1	First procedure: This charging procedure applied to tests other than those specified in 8.1.2	The batteries and cells are charged in the ambient temp(20 ℃ ± 5 ℃) and charging procedure according to manufacturer's spec	P
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	The batteries and cells are charged at the specified values (45℃) for the upper limit and (10 ℃) for the lower limit	P
	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 ℃ for the upper limit and minus 5 ℃ for the lower limit	Batteries and cells charged temperature: Upper limit: 45℃, Low limit: 10℃	N/A
	A valid rationale was provided to ensure the safety of the cell (see Figure A.1) ..... :	Test results which verify that the specified values (45℃) for the upper limit and (10℃) for the lower limit when tested by the methods specified in 8.2 to 8.3 meet the requirements.	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	The upper limit charging voltage of cell specified by manufacturer is 4.25V.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	A valid rationale was provided to ensure the safety of the cell (see Figure A.1) ..... :		N/A
8.2	Intended use	See below	P
8.2.1	Continuous charging at constant voltage (cells)	Five fully cells were submitted to 7 days test.	P
	Results: No fire. No explosion..... :	(See Table 8.2.1)	P
8.2.2	Moulded case stress at high ambient temperature (battery)	Conduct the test according to the requirement of the client.	P
	Oven temperature (℃)..... .....:	70	—
	Results: No physical distortion of the battery casing resulting in exposure if internal components	See the Appendix 1	P
8.3	Reasonably foreseeable misuse	See below	P
8.3.1	External short circuit (cell)	See below	P
	The cells were tested until one of the following occurred: - 24 hours elapsed; or	The case temperature declined by 20% of the maximum temperature rise	N/A
	- The case temperature declined by 20% of the maximum temperature rise	The case temperature declined by 20% of the maximum temperature rise	P
	Results: No fire. No explosion..... :	(See Table 8.3.1)	P
8.3.2	External short circuit (battery)	See below	P
	The cells were tested until one of the following occurred: - 24 hours elapsed; or	The batteries were tested for 24 hours.	P
	- The case temperature declined by 20% of the maximum temperature rise	The batteries were tested for 24 hours.	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	In short circuit test the voltage of cellblock has no drop under 0.8V or 0.1V in 30 minutes a period.	N/A
	Results: No fire. No explosion..... :	(See Table 8.3.2)	P

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Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	Free fall	See below Free fall sample ID: Cell: 903176 / C16; 903176 / C17; 903176 / C18; Battery pack: BL3000F9031781S1PCRV / B16; BL3000F9031781S1PCRV / B17; BL3000F9031781S1PCRV / B18;	P
	Results: No fire. No explosion.	After testing, no fire or explosion occurred.	P
8.3.4	Thermal abuse (cells)	See below Thermal abuse sample ID: Cells: 45 degree C: 903176 / C19; 903176 / C20; 903176 / C21; 903176 / C22; 903176 / C23; 10 degree C: 903176 / C24; 903176 / C25; 903176 / C26; 903176 / C27; 903176 / C28;	P
	The cells were held at 130°C ± 2°C for: - 10 minutes; or	Ten cells were fully charged according to and tested for these conditions.	P
	- 30 minutes for large cells (gross mass of more than 500 g as defined in IEC 62281)	The EUT is not a large cell.	N/A
	Oven temperature (℃)..... .....:	130.1	—
	Gross mass of cell (g) .....:	46.5	—
	Results: No fire. No explosion.	After testing, No fire. No explosion.	P
8.3.5	Crush (cells)	See below.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	The crushing force was released upon: - The maximum force of 13 kN ± 1 kN has been applied; or	10% of deformation has occurred compared to the initial dimension	N/A
	- An abrupt voltage drop of one-third of the original voltage has been obtained; or	10% of deformation has occurred compared to the initial dimension	N/A
	- 10% of deformation has occurred compared to the initial dimension	10% of deformation has occurred compared to the initial dimension	P
	Results: No fire. No explosion..... :	(See Table 8.3.5)	P
8.3.6	Over-charging of battery	See below	P
	Test was continued until the temperature of the outer casing: - Reached steady state conditions (less than 10℃ change in 30-minute period); or	Batteries temperature of the outer casing less than 10℃ change in 30 minutes period.	P
	- Returned to ambient	Batteries temperature of the outer casing less than 10℃ change in 30 minutes period.	N/A
	Results: No fire. No explosion..... :	(See Table 8.3.6)	P
8.3.7	Forced discharge (cells)	See below	P
	Results: No fire. No explosion..... :	(See Table 8.3.7)	P
8.3.8	Transport tests	See below.	P
	Manufacturer's documentation provided to show compliance with UN Recommendations on Transport of Dangerous Goods	The battery pack and cell meets UN Manual of Tests and Criteria.	P
8.3.9	Design evaluation – Forced internal short circuit (cells)	See below	P
	The cells complied with national requirement for .....:	France, Japan, Korea and Switzerland	—
	The pressing was stopped upon: - A voltage drop of 50 mV has been detected; or	The pressing force of 400 N has been reached	N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached	The pressing force of 400 N has been reached	P
	Results: No fire ..... ……:	(See Table 8.3.9)	P

9	**Information for safety**		P
	The manufacturer of secondary cells ensures that information is provided about current, voltage and temperature limits of their products.	Provided in the cell specification, which is given to the equipment manufacturer.	P
	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.	Provided battery specification including with safety instruction for equipment manufacture.	P

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product	Provided in the battery specification, which will be considered during the end product investigation.	N/A
	As appropriate, information relating to hazard avoidance resulting from a system analysis is provided to the end user ..... :	Provided in the battery specification, which will be considered during the end product investigation.	N/A
10	**Marking**		P
10.1	Cell marking		N/A
	Cells marked as specified in the applicable cell standards: IEC 61951-1, IEC 61951-2 or IEC 61960.	The EUT is Rechargeable Li-ion Battery Pack.	N/A
10.2	Battery marking	See below	P
	Batteries marked in accordance with the requirements for the cells from which they are assembled.	See copy of the marking plate.	P
	Batteries marked with an appropriate caution statement.	See copy of the marking plate.	P
10.3	Other information	See below.	P
	Storage and disposal instructions marked on or supplied with the battery.	The disposal instructions are provided in the specification.	P
	Recommended charging instructions marked on or supplied with the battery.	The recommended charging instructions are provided in the specification.	P
11	**Packaging**		P
	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.	The material and packing which can prevent cell for short circuit, mechanical damage and possible ingress.	P
Annex A	**Charging range of secondary lithium ion cells for safe use**		P
A.1	General	See below.	P
A.2	Safety of lithium-ion secondary battery	1. Battery pack charge voltage 4.25Vdc. 2. Cell charge voltage 4.25Vdc.	P
A.3	Consideration on charging voltage	See below.	P
A.3.1	General	1. Battery pack charge voltage 4.25Vdc. 2. Cell charge voltage 4.25Vdc.	P

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
A.3.2	Upper limit charging voltage	See below.	P
A.3.2.1	General	1. Battery pack charge voltage 4.25Vdc. 2. Cell charge voltage 4.25Vdc.	P
A.3.2.2	Explanation of safety viewpoint		N/A
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	1. Battery pack charge voltage 4.25Vdc. 2. Cell charge voltage 4.25Vdc.	N/A
A.4	Consideration of temperature and charging current		P
A.4.1	General	See below	P
A.4.2	Recommended temperature range	The cell and battery pack charging temperature is 10-45 degree C.	P
A.4.2.1	General	See below	P
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Test results which verify that the cells, charged at the new lower and high limit of test temperature (lower than 10℃; high than 45℃), and by using the upper limit of charging voltage are tested by the test methods, specified in 8.2 to 8.3.	P
A.4.3	High temperature range	See below	N/A
A.4.3.1	General	The cell high charging temperature was declared by client is 45℃.	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	Upper temperature: 45℃.	N/A
A.4.4	Low temperature range	See below	N/A
A.4.4.1	General	The cell lower charging temperature was declared by client is 10℃.	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	Lower temperature: 10℃.	N/A
A.4.5	Scope of the application of charging current	Considered.	P

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Clause	Requirement + Test	Result - Remark	Verdict
A.5	Sample preparation	Complied.	P
A.5.1	General	See below	P
A.5.2	Insertion procedure for nickel particle to generate internal short	Complied.	P
	The insertion procedure carried out at 20℃±5℃ and under -25 ℃ of dew point	Complied.	P
A.5.3	Disassembly of charged cell	Complied.	P
A.5.4	Shape of nickel particle	Complied.	P
A.5.5	Insertion of nickel particle to cylindrical cell	The cell shape is prismatic.	N/A
A.5.5.1	Insertion of nickel particle to winding core	The cell shape is prismatic.	N/A
A.5.5.2	Mark the position of nickel particle on the both end of winding core of the separator	The cell shape is prismatic.	N/A
A.5.6	Insertion of nickel particle to prismatic cell		P

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

	TABLE: Critical components information				P
Object/part no.	**Manufacturer/ trademark**	**Type/model**	**Technical data**	**Standard**	**Mark(s) of conformity [1)]**
Cell (1series – 1 parallel, 1 cell provide)		903176	3.7V, 3000mAh Rechargeable Li-ion Cell	IEC 62133: 2012	Tested in this report
- Electrolyte	Suzhou Dingcheng New Energy Technology Co., Ltd	DC-HL001	LiPF6, C3H4O3, C4H6O3, C3H10O3, etc.	--	--
- Separator	Shenzhen Senior Technology Material Co., LTD	PE	PE 12μm(Thickness) ×71mm (Width)×1773(Length) Shutdown temperature:130°C	--	--
- Anode	Jiangxi Zichen Technology Co.,Ltd	G1	Graphite	--	--
- Cathode	Hunan Shanshan Energy Technology Co., Ltd	LC420	LiCoO2	--	--
Protective IC (U1)	SII	S8261AAJMD-G2JT2x	Overcharge detection voltage: 4.325V±0.025V; Overdischarge detection voltage: 2.5V±0.05V T_{OPT}: -40 to +85 °C	--	--
MOSFET(U2, U3)		DP8205	V_{DS} =20V; I_D =5A; Torp: -55 to +150 °C	--	--
- Lead wire	LTK ELECTRIC WIRE (HUIZHOU) LTD	3302	VW-1, 30Vac, min.28AWG, min. 105°C.	UL 758	UL E148000
- Lead wire	Interchangeable	Interchangeable	VW-1, 30Vac, min.28AWG, min. 105°C.	UL 758	UL

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Clause	Requirement + Test	Result - Remark	Verdict

- Description: Interchangeable based on standardized dimensions and specified rating.					
PCB	SHENZHEN JIUHEYONG ELECTRONICS CO LTD	JHY-D	Min. V-0, min. 130°C.	UL 796	UL E311990
PCB	Interchangeable	Interchangeable	Min. V-0, min. 130°C.	UL 796	UL
- Description: Interchangeable based on standardized dimensions and specified rating.					

Supplementary information:

[1] **Provided evidence ensures the agreed level of compliance. See OD-CB2039.**

7.2.1	TABLE: Continuous low rate charge (cells)				N/A
Model	**Recommended charging method, (CC, CV, or CC/CV)**	**Recommended charging voltage V_c, (Vdc)**	**Recommended charging current I_{rec}, (A)**	**OCV at start of test, (Vdc)**	**Results**
--	--	--	--	--	--
--	--	--	--	--	--

Supplementary information:

- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

7.2.2	TABLE: Vibration		N/A
Model	**OCV at start of test, (Vdc)**	**Results**	
--	--	--	
--	--	--	

Supplementary information:

- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.1	TABLE: Incorrect installation (cells)	N/A

Model	OCV of reversed cell, (Vdc)	Results
--	--	--
--	--	--

Supplementary information:

- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

7.3.2	TABLE: External short circuit	N/A

Model	Ambient (at 20°C ± 5°C or 55℃ ± 5°C)	OCV at start of test, (Vdc)	Resistance of circuit, (Ω)	Maximum case temperature rise ΔT, (°C)	Results
--	--	--	--	--	--
--	--	--	--	--	--

Supplementary information:

- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

7.3.6	TABLE: Crush	N/A

Model	OCV at start of test, (Vdc)	OCV at removal of crushing force, (Vdc)	Results
--	--	--	--
--	--	--	--

Supplementary information:

- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.8	TABLE: Overcharge			N/A
Model	**OCV prior to charging, (Vdc)**	**Maximum charge current, (A)**	**Time for charging, (hours)**	**Results**
--	--	--	--	--
--	--	--	--	--

Supplementary information:

- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

7.3.9	TABLE: Forced discharge (cells)			N/A
Model	**OCV before application of reverse charge, (Vdc)**	**Measured reverse charge I_t, (A)**	**Time for reversed charge, (minutes)**	**Results**
--	--	--	--	--
--	--	--	--	--

Supplementary information:

- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

8.2.1	TABLE: Continuous charging at constant voltage (cells)			P
Model	**Recommended charging voltage V_c, (Vdc)**	**Recommended charging current I_{rec}, (A)**	**OCV at start of test, (Vdc)**	**Results**
903176 / C01	4.20	0.6	4.20	No fire, no explosion, no leakage
903176 / C02	4.20	0.6	4.20	No fire, no explosion, no leakage
903176 / C03	4.20	0.6	4.20	No fire, no explosion, no leakage
903176 / C04	4.20	0.6	4.20	No fire, no explosion, no leakage
903176 / C05	4.20	0.6	4.20	No fire, no explosion, no leakage

Supplementary information:

- No fire or explosion
- No leakage

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

8.3.1	TABLE: External short circuit (cell)				P
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					
903176 / C06	24.3	4.23	0.078	98.4	No fire, No explosion
903176 / C07	24.3	4.23	0.077	96.4	No fire, No explosion
903176 / C08	24.3	4.23	0.082	98.6	No fire, No explosion
903176 / C09	24.3	4.23	0.079	90.2	No fire, No explosion
903176 / C10	24.3	4.23	0.078	95.8	No fire, No explosion
Samples charged at charging temperature lower limit					
903176 / C11	24.3	4.22	0.077	94.2	No fire, No explosion
903176 / C12	24.3	4.22	0.080	100.9	No fire, No explosion
903176 / C13	24.3	4.22	0.079	97.7	No fire, No explosion
903176 / C14	24.3	4.22	0.082	84.8	No fire, No explosion
903176 / C15	24.3	4.22	0.081	99.2	No fire, No explosion
Supplementary information: - No fire or explosion					

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

8.3.2	TABLE: External short circuit (battery)				P
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					
BL3000F903178 1S1PCRV / B01	55.0	4.22	0.080	0.8	No fire, No explosion
BL3000F903178 1S1PCRV / B02	55.0	4.22	0.082	1.1	No fire, No explosion
BL3000F903178 1S1PCRV / B03	55.0	4.22	0.079	1.3	No fire, No explosion
BL3000F903178 1S1PCRV / B04	55.0	4.22	0.081	0.8	No fire, No explosion
BL3000F903178 1S1PCRV / B05	55.0	4.22	0.082	0.8	No fire, No explosion
Samples charged at charging temperature lower limit					
BL3000F903178 1S1PCRV / B06	55.0	4.22	0.077	0.7	No fire, No explosion
BL3000F903178 1S1PCRV / B07	55.0	4.23	0.079	0.9	No fire, No explosion
BL3000F903178 1S1PCRV / B08	55.0	4.22	0.082	1.6	No fire, No explosion
BL3000F903178 1S1PCRV / B09	55.0	4.23	0.076	1.2	No fire, No explosion
BL3000F903178 1S1PCRV / B10	55.0	4.22	0.079	1.4	No fire, No explosion
Supplementary information: - No fire or explosion					

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

8.3.5	TABLE: Crush				P
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					
903176 / C29	4.23	4.23	8.75	0.875	No fire, No explosion
903176 / C30	4.23	4.23	8.47	0.847	No fire, No explosion
903176 / C31	4.23	4.23	8.70	0.870	No fire, No explosion
903176 / C32	4.23	4.23	8.66	0.866	No fire, No explosion
903176 / C33	4.23	4.23	8.61	0.861	No fire, No explosion
Samples charged at charging temperature low limit					
903176 / C34	4.22	4.22	8.51	0.851	No fire, No explosion
903176 / C35	4.22	4.22	8.65	0.865	No fire, No explosion
903176 / C36	4.22	4.22	8.58	0.858	No fire, No explosion
903176 / C37	4.23	4.23	8.53	0.853	No fire, No explosion
903176 / C38	4.22	4.22	8.51	0.851	No fire, No explosion

Supplementary information:
- No fire or explosion

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

8.3.6	TABLE: Over-charging of battery				P
Constant charging current (A)..... :		6.0			—
Supply voltage (Vdc)..... :		5.0			—
Model	**OCV before charging, (Vdc)**	**Resistance of circuit, (Ω)**	**Maximum outer casing temperature, (°C)**	**Results**	
BL3000F9031781 S1PCRV / B11	3.68	0.032	31.0	No fire or explosion	
BL3000F9031781 S1PCRV / B12	3.67	0.028	30.7	No fire or explosion	
BL3000F9031781 S1PCRV / B13	3.68	0.020	30.5	No fire or explosion	
BL3000F9031781 S1PCRV / B14	3.69	0.025	29.8	No fire or explosion	
BL3000F9031781 S1PCRV / B15	3.68	0.030	31.1	No fire or explosion	
Supplementary information: - No fire or explosion					

8.3.7	TABLE: Forced discharge (cells)				P
Model	**OCV before application of reverse charge, (Vdc)**	**Measured Reverse charge I_t, (mA)**	**Time for reversed charge, (minutes)**	**Results**	
903176 / C39	3.68	3000	90	No fire or explosion	
903176 / C40	3.67	3000	90	No fire or explosion	
903176 / C41	3.68	3000	90	No fire or explosion	
903176 / C42	3.68	3000	90	No fire or explosion	
903176 / C43	3.67	3000	90	No fire or explosion	
Supplementary information: - No fire or explosion					

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict

8.3.9	TABLE: Forced internal short circuit (cells)				P
Model	**Chamber ambient, (°C)**	**OCV at start of test, (Vdc)**	**Particle location [1)]**	**Maximum applied pressure, (N)**	**Results**
903176 / C39	45	4.23	1	400	No fire
903176 / C40	45	4.23	1	400	No fire
903176 / C41	45	4.23	1	400	No fire
903176 / C42	45	4.23	1	400	No fire
903176 / C43	45	4.23	1	400	No fire
903176 / C44	10	4.22	1	400	No fire
903176 / C45	10	4.23	1	400	No fire
903176 / C46	10	4.23	1	400	No fire
903176 / C47	10	4.22	1	400	No fire
903176 / C48	10	4.23	1	400	No fire

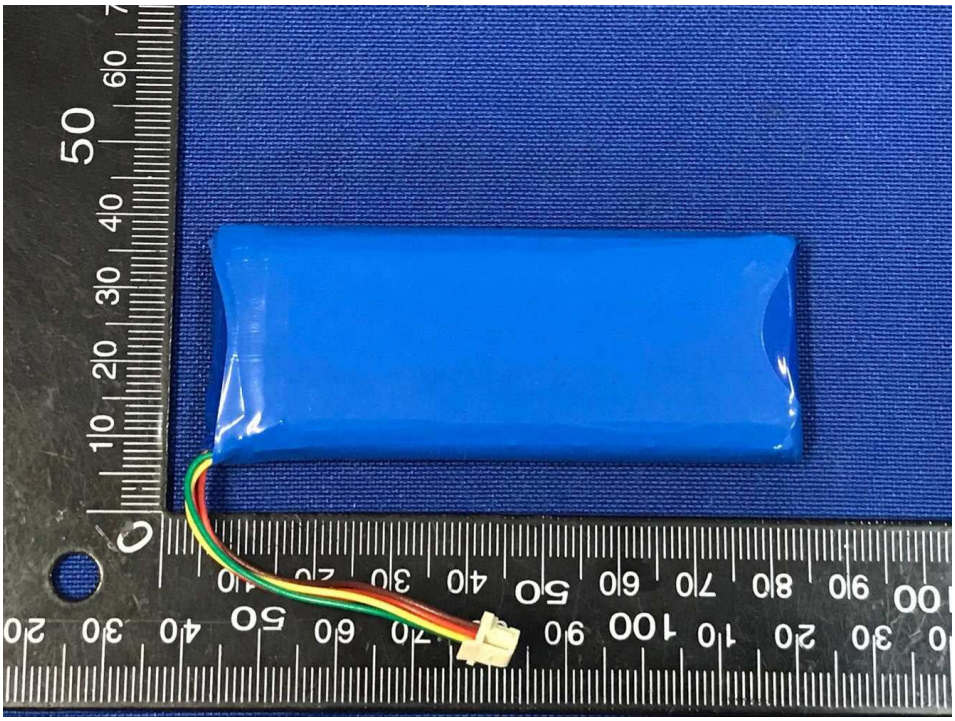
Supplementary information:

[1)] Identify one of the following:

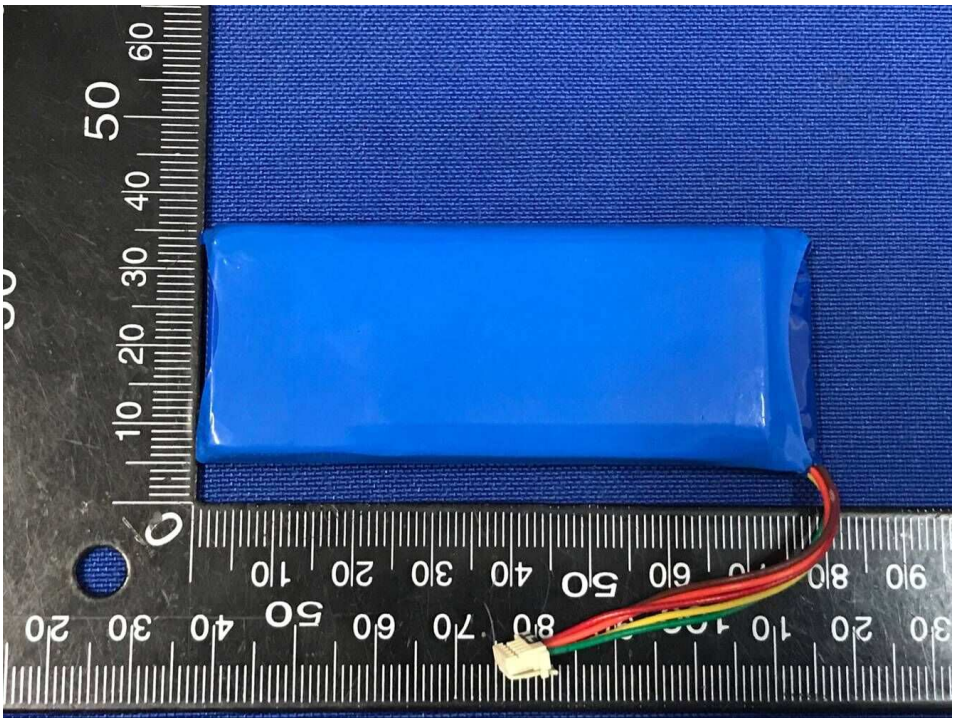
1: Nickel particle inserted between positive and negative (active material) coated area.

2: Nickel particle inserted between positive aluminium foil and negative active material coated area.

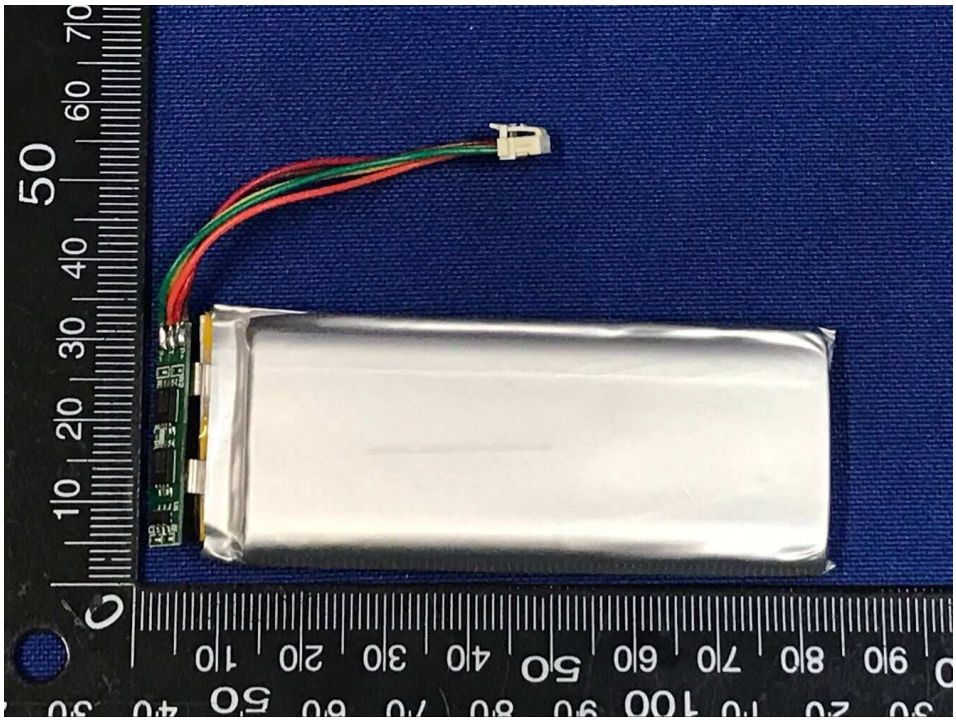
- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)



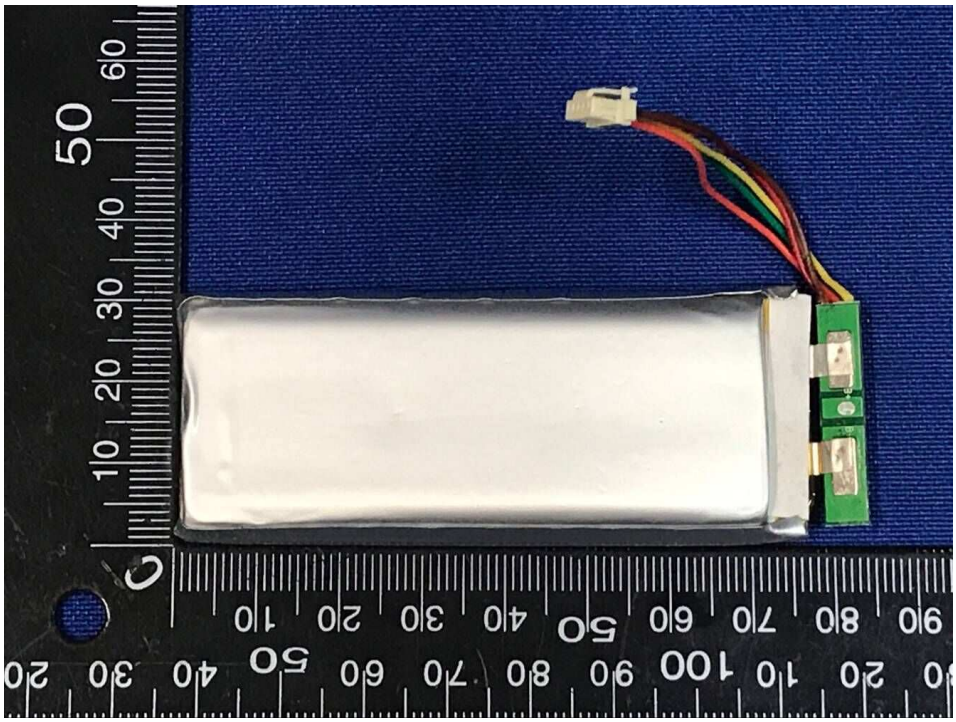
Top view of battery pack (BL3000F9031781S1PCRV)



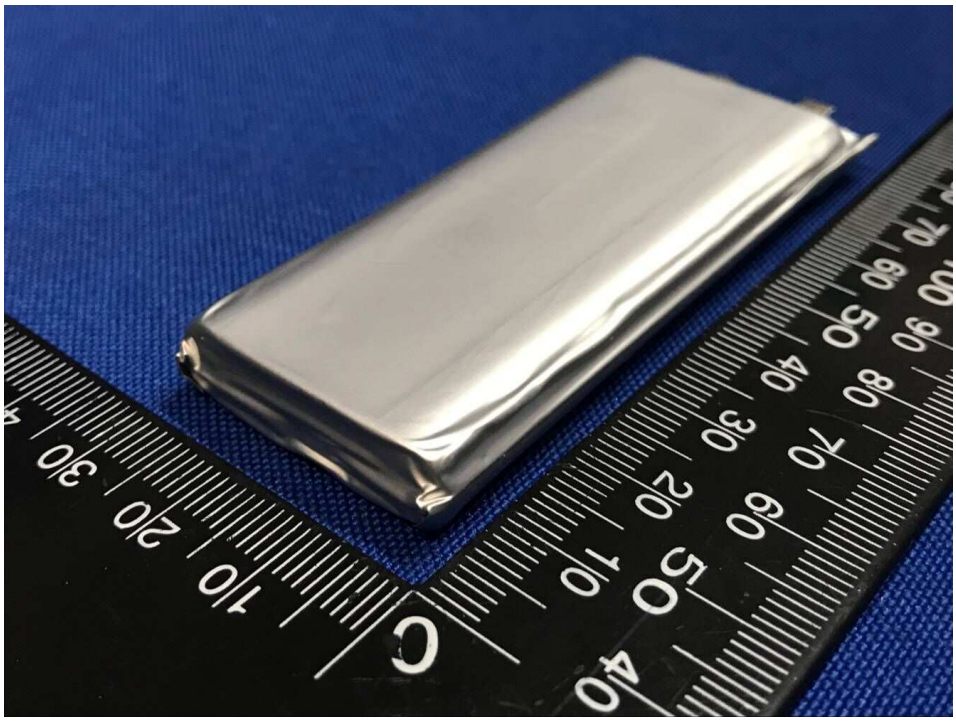
Bottom view of battery pack (BL3000F9031781S1PCRV)



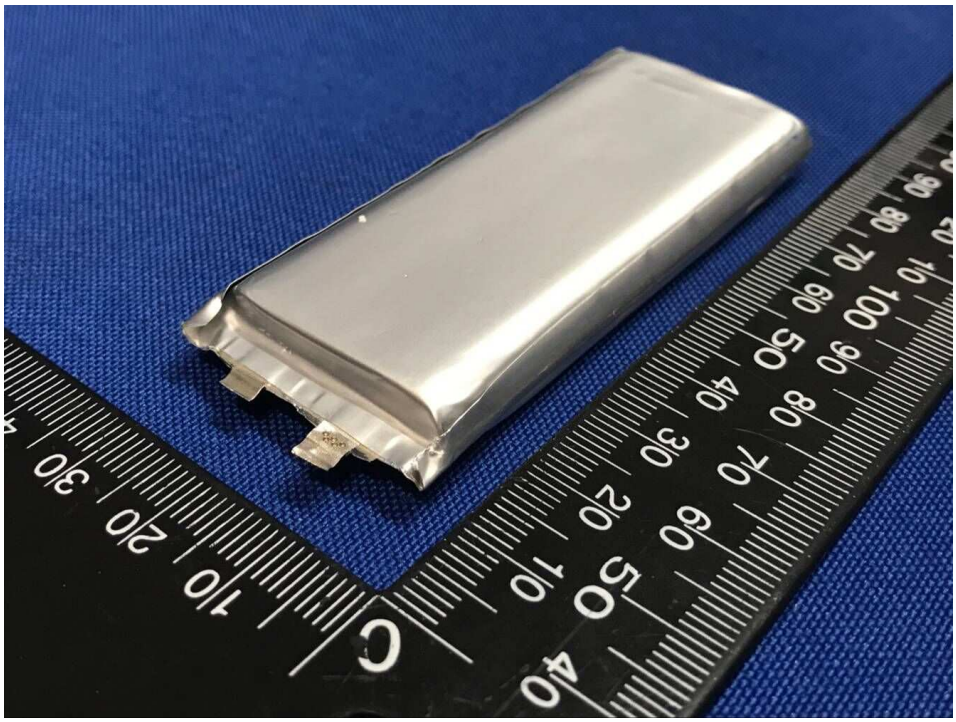
Internal view of battery pack -1 (BL3000F9031781S1PCRV)



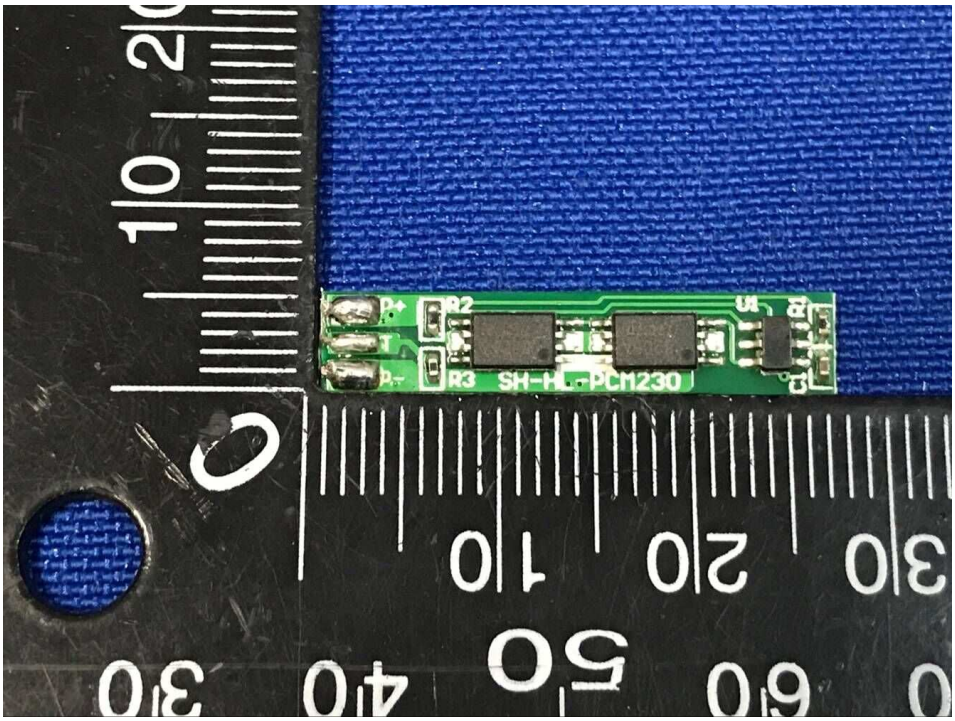
Internal view of battery pack -2 (BL3000F9031781S1PCRV)



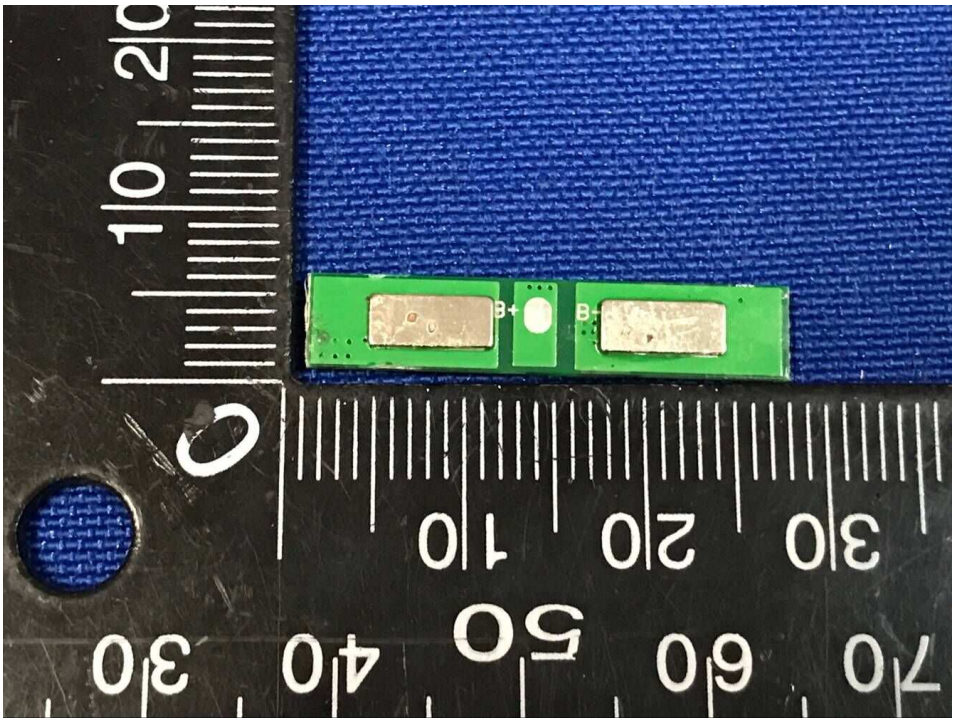
Top view of cell



Bottom view of cell



Top view of PCB



Bottom view of PCB

Appendix 1

Sub-clause 8.2.2	**Moulded case stress test (batteries)**		
Sample no.	**OCV at start of test, (Vdc)**	**Oven temp. (ºC)**	**Test results observation**
			Exposure of internal components
BL3000F9031781S1PC*V / B19	4.24	70.0	No
BL3000F9031781S1PC*V / B20	4.24	70.0	No
BL3000F9031781S1PC*V / B21	4.23	70.0	No
Note(s): According to the requirement of KC 62133 (2015-07)			
[X] There were no physical distortions of the battery case resulting in exposure of internal components after this test.			