中国认可
国际互认
检测
TESTING
CNAS L6478

TEST REPORT

Reference No.	:	WTF17F1194900C
Applicant	:	Mid Ocean Brands B.V.
Address	:	Unit 201 2/F., Laford Centre, 838 Lai Chi Kok Road, Cheung Sha Wan, Kowloon, Hong Kong.
Manufacturer	:	114889
Sample Name	:	5000mAh power bank
Model No.	:	MO9209
Test Requested		Directive 2006/66/EC and its Article 4 amendment of Directive 2013/56/EU-Heavy Metals Content in Batteries and Accumulators
Test Method	:	With reference to IEC 62321-5:2013 & IEC 62321-4:2013, analysis was performed by ICP-OES
Date of Receipt Sample	:	2017-11-10
Date of Test	:	2017-11-10 to 2017-11-16
Date of Issue	:	2017-11-27
Test Result	:	Please refer to next page (s)
Test Conclusion	:	The submitted battery sample does not exceed the limit mentioned in Directive 2006/66/EC and its Article 4 amendment of Directive 2013/56/EU.

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:
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Compiled by:

Swing.Liang / Project Engineer

Approved by:

Dino.Zhang / Lab Manager

Test Results:

Test Item(s)	Unit	Test Result	MDL	Maximum Allowable Limit
		No.1		
Lead (Pb)	%	ND	0.0002	See comment if > 0.004
Cadmium (Cd)	%	ND	0.0002	0.002
Mercury (Hg)	%	ND	0.0002	0.0005

Specimen Description:
No.1: Battery

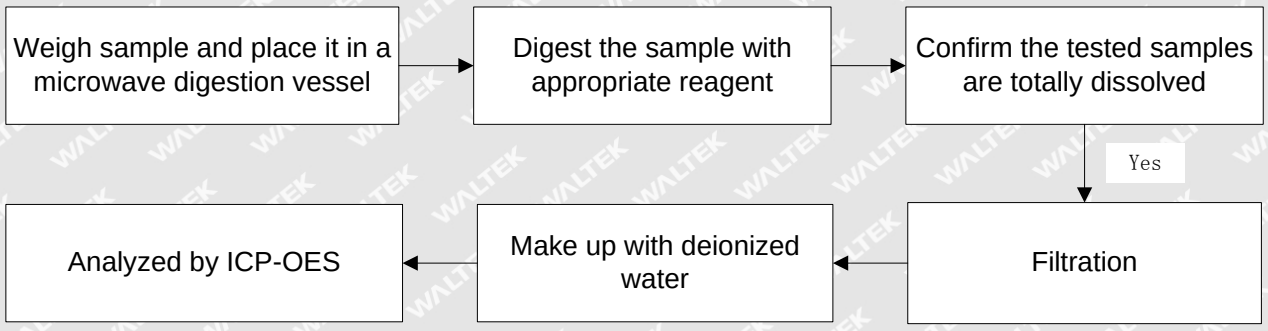
Note:
(1) ND = Not Detected or lower than method detection limit
(2) MDL = Method Detection Limit
(3) % = percentage by weight

Comment:
(1) Marking requirement:
According to Directive 2006/66/EC, all batteries, accumulators and battery packs shall be appropriately marked with the symbol as below:

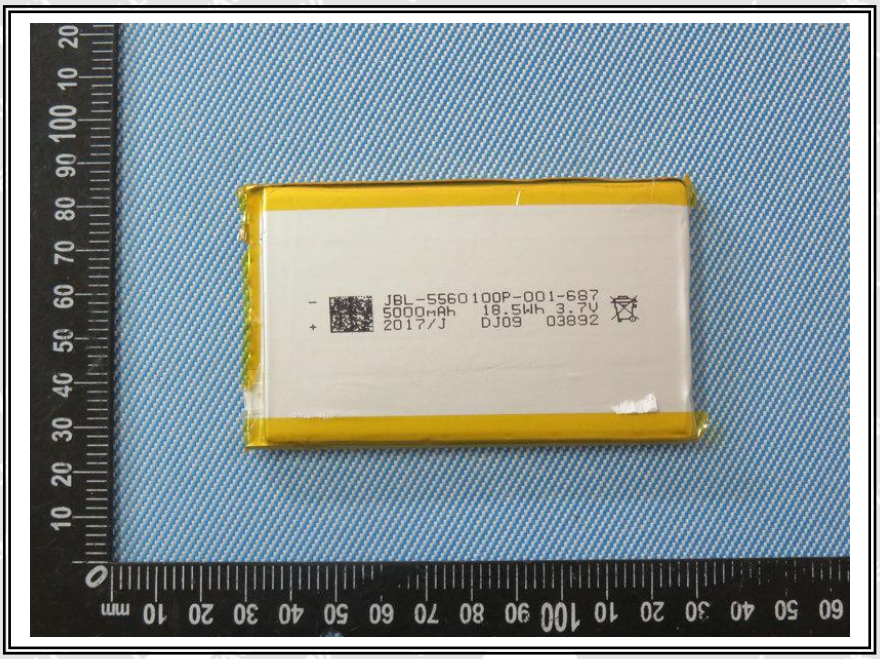
Covered area on battery, accumulator or battery pack:
— Cylindrical cells: 1.5 % of surface area (maximum 5×5 cm)；
— Others: 3 % of surface area of the largest side (maximum 5 × 5 cm)
— When the size of the battery, accumulator or battery pack is such that the symbol would be smaller than 0.5 × 0.5 cm, a symbol at least 1 × 1 cm shall be printed on the packaging.
Symbols shall be printed visibly, legibly and indelibly

(2) When the sample consists lead exceeding 0.004%, the product is to be labeled with heavy metal content with the requirements as below:
— Mark with the chemical symbol for the metal concerned: Pb
— Print beneath the symbol
— Cover an area of at least ¼ of the size of the symbol

Test Flowchart



Sample Photo:



====== End of Report ======

TEST REPORT

Reference No.	:	WTF17S1194905S
Applicant	:	Mid Ocean Brands B.V.
Address	:	Unit 201 2/F.,Laford Centre, 838 Lai Chi Kok Road, Cheung Sha Wan, Kowloon, Hong Kong.
Manufacturer	:	
Address	:	
Product	:	Rechargeable Li-ion Polymer Cell
Model(s)	:	5560100P
Brand Name	:	N/A
Total pages	:	21 pages and 1 pages of photo.
Standards	:	☒ IEC 62133: 2012
Date of Receipt sample	:	2017-11-14
Date of Test	:	2017-11-14 to 2017-11-29
Date of Issue	:	2017-12-08
Test Result	:	Pass

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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Compiled by:

Sandy Li / Project Engineer

Approved by:

Philo Zhong / Manager

List of Attachments (including a total number of pages in each attachment):
Attachments 1: Photos documentation (3 pages);

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
☒8.2.1 Continuous charging at constant voltage (cells) ☐8.2.2 Moulded case stress at high ambient temperature (battery) ☒8.3.1 External short circuit (cell) ☐8.3.2 External short circuit (battery) ☒8.3.3 Free fall ☒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 tests ☐8.3.9 Design evaluation – Forced internal short circuit (cells)	**Waltek Services (Shenzhen) Co., Ltd**. 1/F, Fukangtai Building, West Baima Rd., Songgang Street, Baoan District, Shenzhen Guangdong, China

Summary of compliance with National Differences
List of countries addressed:

☒ **The product fulfils the requirements of EN 62133: 2013.**

Test item particulars:	--
Classification of installation and use ..... . To be defined in final product	
Supply connection ..... . Didn't be provided	
Recommend charging method declaired by the manufacturer……	Charge at constant current 1000mA(0.2C) until voltage reaches 4.2V, then charge at constant voltage 4.2V till charge current reduce to 100mA(0.02C) .
Discharge current (0,2 I_t A) 1000mA	
Specified final voltage:……..	3.0V
Chemistry :……	☐ nickel systems.....☒ lithium systems
Recommend of charging limit for lithium system	
Upper limit charging voltage per cell:……	4.25V
Maximum charging current……..	Cell:5000mA
Charging temperature upper limit……	45°C
Charging temperature lower limit……	0 °C
Polymer cell electrolyte type……	☐ gel polymer..... ☐ solid ☒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.....:	
Date (s) of performance of tests .....:	
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.	
Name and address of factory (ies) .....: Same as manufacturer	

General product information:

The cells have been tested and evaluated according to their specified working conditions (as given below), which are provided by client.

Details information of the cell as following:

Product	Cell	Battery
Model	5560100P	--
Nominal voltage	3.7Vd.c.	--
Rated capacity	5000mAh	--
Charge method	CC/CV	--
Charge temp. range	0℃~45℃	--
Std. charge current	1000mA	--
Max. charge current	2500mA	--
Max. discharge current	2500mA	--
Upper limit charge voltage	4.25V	--
Discharge Cut-off voltage	3.0V	--
Dimension	MAX.100.5mm×60.0mm×5.5mm	--
Weight	Approx 78.21g	--
Shape	Prismatic	--

Circuit diagram:

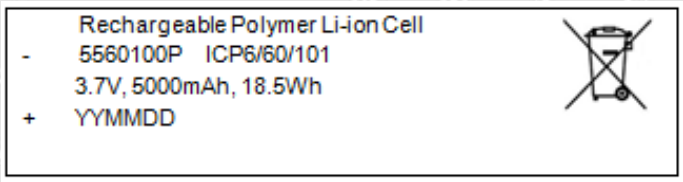
N/A

PCB BOM LIST:

No.	Item	Description	Quantity	Manufacturer
--	--	--	--	--

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.



Remark: “YYMMDD” represents the date of manufacture, “YY” represents year, “MM” represents month, “DD” represents day.

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
4	**Parameter measurement tolerances**		**P**
	Parameter measurement tolerances	All control and measure values were within the tolerances.	P
5	**General safety considerations**		**P**
5.1	General	Considered	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		N/A
	Insulation resistance (MΩ)..... :		--
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		P
	Orientation of wiring maintains adequate creepage and clearance distances between conductors		P
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		P
5.3	Venting		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		P
	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/voltage/current management		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	See below.	P
	Terminals have a clear polarity marking on the external surface of the battery	Red wire (+) Black wire(-)	P

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	Maximum anticipated current can be carried.	P
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance	Contact surfaces are conductive with good mechanical strength and corrosion resistance.	P
	Terminal contacts are arranged to minimize the risk of short circuits	Suitable arrangement of terminals to prevent short circuit.	P
5.6	Assembly of cells into batteries		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		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		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		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.		N/A

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	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
	- 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		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		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	Tests are performed according to specified in Table 2 of the standard. The samples are not more than 6 months old.	P
	Unless noted otherwise in the test methods, testing was conducted in an ambient of 20°C ± 5°C.	The tests are conducted in an ambient of 20 °C±5°C.	P
7	**Specific requirements and tests (nickel systems)**		**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 charging (cells)		N/A
	Results: No fire. No explosion	(See Table 7.2.1)	N/A

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
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) .....:		—
	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 13kN ± 1kN has been applied; or		N/A
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N/A

IEC 62133: 2012			
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		N/A
	Results: No fire. No explosion .....:	(See Table 7.3.6)	N/A
7.3.7	Low pressure		N/A
	Chamber pressure (kPa) .....:		—
	Results: No fire. No explosion. No leakage.		N/A
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)**		**P**
8.1	Charging procedures for test purposes	Considered	P
8.1.1	First procedure: This charging procedure applied to tests other than those specified in 8.1.2	Considered	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	Considered	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 °C for the upper limit and minus 5 °C for the lower limit	Charge temperature 0-45°C declared. Testing temperature: -5-45°C	P
	A valid rationale was provided to ensure the safety of the cell (see Figure A.1) ..... :		P
	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	Lithium cobalt oxide systems The upper limit charging voltage is 4.25V during test.	N/A
	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)	Considered	P
	Results: No fire, no explosion, no leakage ..... :	No fire, no explosion, no leakage (See Table 8.2.1)	P
8.2.2	Moulded case stress at high ambient temperature (battery)		N/A
	Oven temperature (°C)..... :		--

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No physical distortion of the battery casing resulting in exposure if internal components		N/A
8.3	Reasonably foreseeable misuse	See below	P
8.3.1	External short circuit (cell)	Considered	P
	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	Considered	P
	Results: No fire， no explosion ..... :	No fire. No explosion (See Table 8.3.1)	P
8.3.2	External short circuit (battery)		N/A
	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		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 ..... :	No fire. No explosion (See Table 8.3.2)	N/A
8.3.3	Free fall	3 sets of cells were tested	P
	Results: No fire, no explosion.	No fire, no explosion.	P
8.3.4	Thermal abuse (cells)	Considered	P
	The cells were held at 130°C ± 2°C for: - 10 minutes; or	Considered	P
	- 30 minutes for large cells (gross mass of more than 500 g as defined in IEC 62281)		N/A
	Oven temperature (°C)..... :	The oven temperature was raised at a rate of 5℃/min ± 2℃/min to a temperature of 130℃ ±2℃.	--
	Gross mass of cell (g) ..... :	78.21g	--
	Results: No fire, no explosion.	No fire, no explosion	P
8.3.5	Crush (cells)	Considered	P
	The crushing force was released upon: - The maximum force of 13 kN ± 1 kN has been applied; or	Considered	P

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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 ..... :	No fire, no explosion (See Table 8.3.5)	P
8.3.6	Over-charging of battery		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 ..... :	No fire, no explosion (See Table 8.3.6)	N/A
8.3.7	Forced discharge (cells)		P
	Results: No fire. No explosion..... :	(See Table 8.3.7)	P
8.3.8	Transport tests		N/A
	Manufacturer's documentation provided to show compliance with UN Recommendations on Transport of Dangerous Goods	No Provided	N/A
8.3.9	Design evaluation – Forced internal short circuit (cells)	The applicant declares that this battery isn't to be sold in France, Japan, Republic of Korea and Switzerland.	N/A
	The cells complied with national requirement for ..... :		--
	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		N/A
	Results: No fire ..... :	(See Table 8.3.9)	N/A
9	**Information for safety**		P
	The manufacturer of secondary cells ensures that information is provided about current, voltage and temperature limits of their products.		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.		N/A

IEC 62133: 2012			
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		N/A
	As appropriate, information relating to hazard avoidance resulting from a system analysis is provided to the end user ..... :		N/A
10	**Marking**		**P**
10.1	Cell marking		P
	Cells marked as specified in the applicable cell standards: IEC 61951-1, IEC 61951-2 or IEC 61960.	Please see page 5	P
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	See below.	P
	Storage and disposal instructions marked on or supplied with the battery.	Information for safety mentioned in manufacturer's specification.	P
	Recommended charging instructions marked on or supplied with the battery.	Information for safety mentioned in manufacturer's 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.	Considered.	P

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
Annex A	**Charging range of secondary lithium ion cells for safe use**		**P**
A.1	General		P
A.2	Safety of lithium-ion secondary battery		P
A.3	Consideration on charging voltage		P
A.3.1	General		P
A.3.2	Upper limit charging voltage		P
A.3.2.1	General		P
A.3.2.2	Explanation of safety viewpoint		P
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied		N/A
A.4	Consideration of temperature and charging current		P
A.4.1	General		P
A.4.2	Recommended temperature range		P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied		P
A.4.3	High temperature range		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		P
A.4.4.1	General		P
A.4.4.2	Explanation of safety viewpoint		P
A.4.4.3	Safety considerations, when specifying charging conditions in low temperature range		P
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range		P
A.4.5	Scope of the application of charging current		P
A.5	Sample preparation		N/A
A.5.1	General		N/A
A.5.2	Insertion procedure for nickel particle to generate internal short		N/A

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	The insertion procedure carried out at 20°C±5°C and under -25 °C of dew point		N/A
A.5.3	Disassembly of charged cell		N/A
A.5.4	Shape of nickel particle		N/A
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		N/A

	TABLE: Critical components information				P
Object/part no.	**Manufacturer/ trademark**	**Type/model**	**Technical data**	**Standard**	**Mark(s) of conformity [1)]**
Wire	JIANGXI JBLP NEW ENERGY TECHNOLOGY CO.,LTD	22#AWG	22AWG 3A		
Cell	JIANGXI JBLP ENERGY TECHNOLOGY CO.,LTD	5560100P	3.7V 5000mAh	--	--
- Electrolyte	Anhui Xingli new energy Co., Ltd.	XL292A	LiPF6+DEC+EMC+EC,14.02g	--	--
- Separator	Shenzhen Ding Tai Cheung Amperex Technology Limited	Wet diaphragm	0.012mm*96mm	--	--
- Positive electrode	Dry high school	QY901+QY103	QY901 gram capacity is 154 mAh/g, QY103 gram capacity is 108 mAh/g	--	--
- Negative electrode	Shenzhen City Rui Fute Technology Co. Ltd.	RFT-013	Gram capacity 350 mAh/g	--	--
-Positive electrode tab	Shenzhen Hengke Technology Co. Ltd.	Aluminium pole ear	4mm*0.08mm	--	--
-Negative electrode tab	Shenzhen Hengke Technology Co. Ltd.	Nickel pole ear	4mm*0.08mm	--	--
-Aluminium plastic film	Shenzhen outstanding new material technology Co., Ltd.	--	Thickness: 0.113mm	--	--

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: A - No fire or explosion B - Fire C - Explosion D - Others (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 - Others (please explain)			

7.3.1	TABLE: Incorrect installation (cells)	
Model	**OCV of reversed cell, (Vdc)**	**Results**
--	--	--
Supplementary information: A - No fire or explosion B - Fire C - Explosion D - Others (please explain)		

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, (Λ)**	**Maximum case temperature rise ⊗T, (°C)**	**Results**
--	--	--	--	--	--
Supplementary information: A - No fire or explosion B - Fire C - Explosion D - 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: A - No fire or explosion B - Fire C - Explosion D - Others (please explain)				

7.3.8	TABLE: Overcharge			N/A
Model	**OCV prior to charging, (Vdc)**	**Maximum charge current, (A)**	**Time for charging, (hours)**	**Results**
--	--	--	--	--
Supplementary information: A - No fire or explosion B - Fire C - Explosion D - 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: A - No fire or explosion B - Fire C - Explosion D - Others (please explain)				

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**
5560100P (#1)	4.20	1	4.169	A B
5560100P (#2)	4.20	1	4.175	A B
5560100P (#3)	4.20	1	4.178	A B
5560100P (#4)	4.20	1	4.174	A B
5560100P (#5)	4.20	1	4.188	A B

Supplementary information:

A - No fire or explosion B - No leakage C - Leakage

D - Fire E - Explosion F - Others (please explain)

8.3.1	TABLE: External short circuit (cell)				P
Model	**Ambient, (°C)**	**OCV at start of test, (Vdc)**	**Resistance of circuit, (∧)**	**Maximum case temperature rise ⊗T, (°C)**	**Results**
Samples charged at charging temperature upper limit (45°C)					
5560100P (#6)	24.5	4.185	0.086	65.6	A E
5560100P (#7)	24.5	4.183	0.086	72.5	A E
5560100P (#8)	24.5	4.188	0.086	76.1	A E
5560100P (#9)	24.5	4.180	0.086	78.4	A E
5560100P (#10)	24.5	4.184	0.086	66.9	A E
Samples charged at charging temperature lower limit (-5°C)					
5560100P (#11)	24.5	4.068	0.086	85.9	A E
5560100P (#12)	24.5	4.070	0.086	84.7	A E
5560100P (#13)	24.5	4.066	0.086	86.9	A E
5560100P (#14)	24.5	4.061	0.086	88.1	A E
5560100P (#15)	24.5	4.065	0.086	90.1	A E

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 declines to 20% of the maximum temperature rise

8.3.2	TABLE: External short circuit (battery)				N/A
Model	**Ambient, (°C)**	**OCV at start of test, (Vdc)**	**Resistance of circuit, (∧)**	**Maximum case temperature ~~rise ⊗~~T, (°C)**	**Results**
Samples charged at charging temperature upper limit (°C)					
--	--	--	--	--	--
Samples charged at charging temperature lower limit (°C)					
--	--	--	--	--	--

Supplementary information:

A – No fire or no explosion B – Fire C – Explosion D – The test was completed after 24 h

E – The test was completed after the cell casing declines by 20% of the maximum temperature rise

F - In case of rapid decline in short circuit current, the battery pack should remain on test for an additional one hour after the current reaches a low end steady state condition.

G – The per cell voltage (series cells only) of the battery is below 0.8 V and is decreasing by less than 0.1 V in a 30- minute period.

8.3.5	TABLE: Crush(Cell)				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 (45°C)					
5560100P (#29)	4.188	4.187	--	--	A
5560100P (#30)	4.185	4.184	--	--	A
5560100P (#31)	4.184	4.182	--	--	A
5560100P (#32)	4.188	4.187	--	--	A
5560100P (#33)	4.183	4.182	--	--	A
Samples charged at charging temperature lower limit (-5°C)					
5560100P (#34)	4.072	4.071	--	--	A
5560100P (#35)	4.074	4.073	--	--	A
5560100P (#36)	4.070	4.069	--	--	A
5560100P (#37)	4.069	4.068	--	--	A
5560100P (#38)	4.071	4.070	--	--	A

Supplementary information:

A - No fire or explosion B - Fire C - Explosion

D - Others (please explain)

8.3.6	TABLE: Over-charging of battery		N/A
Constant charging current (A) ..... :		--	--
Supply voltage (Vdc) ..... :		--	--

Model	OCV before charging, (Vdc)	Resistance of circuit, (∧)	Maximum outer casing temperature, (°C)	Results

Supplementary information:

A - No fire or explosion B - Fire C - Explosion

D - Others (please explain)

8.3.7	TABLE: Forced discharge cells)			P

Model	OCV before application of reverse charge, (Vdc)	Measured Reverse charge I_t, (A)	Time for reversed charge, (minutes)	Results
5560100P (#39)	3.415	5	90	A
5560100P (#40)	3.430	5	90	A
5560100P (#41)	3.391	5	90	A
5560100P (#42)	3.365	5	90	A
5560100P (#43)	3.372	5	90	A

Supplementary information:

A - No fire or no explosion B - Fire C - Explosion

D - Others (please explain)

8.3.9	TABLE: Forced internal short circuit (cells)				N/A

Model	Chamber ambient, (°C)	OCV at start of test, (Vdc)	Particle location [1)]	Maximum applied pressure, (N)	Results
--	--	--	--	--	--

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.

A - No fire B – Fire C - Others (please explain)

Attachment 1
Photo Documentation

Photo 1

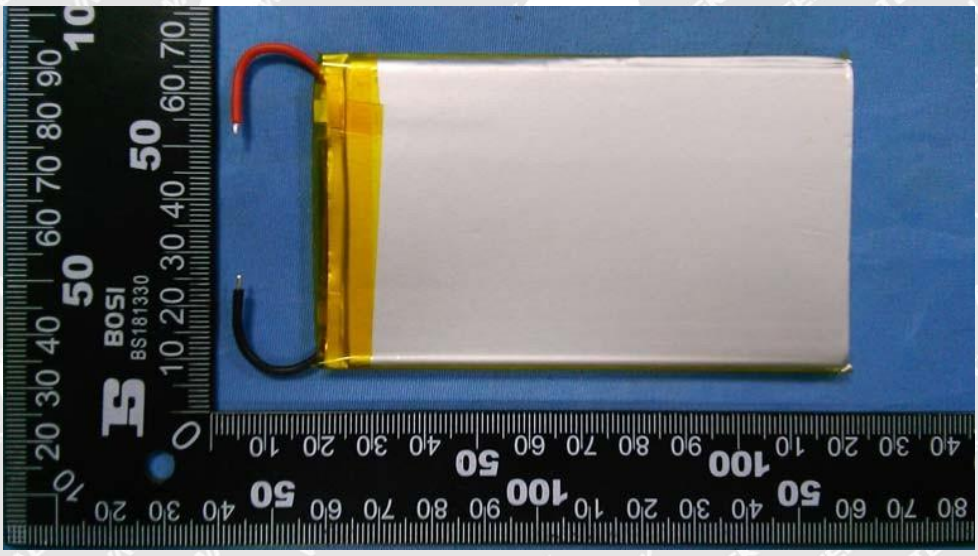


Photo 2

====== End of Report ======