

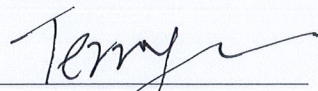
TEST REPORT

Applicant : SHENZHEN FENDA TECHNOLOGY CO., LTD.
Address : Fenda Hi-Tech Park, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen City, Guangdong, China
Manufacturer : GREAT POWER BATTERYCO., LTD
Address : CityLiangRoad No. 912, ShawanTown, Panyu District, Guangzhou City, Guangdong, China
Product Name : Li-ion Battery Pack
Trade Mark : No trade mark
Model No. : ICR18650
Ratings : 14.8Vd.c., 1800mAh, 26.64Wh
Standard : 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
–Part 2: Lithium systems
IEC 62133-2: 2017

Date of Receiver : October 19, 2018
Date of Test : October 19, 2018 to October 28, 2018
Date of Issue : October 29, 2018
Test Report Form No : NTCS-IEC62133-2-A1-IEC
Test Result : Pass *

This Test Report is Issued Under the Authority of :

Compiled by


Terry Wei Engineer

Approved by & Authorized Signer



Ryan Luo / Authorized Signer

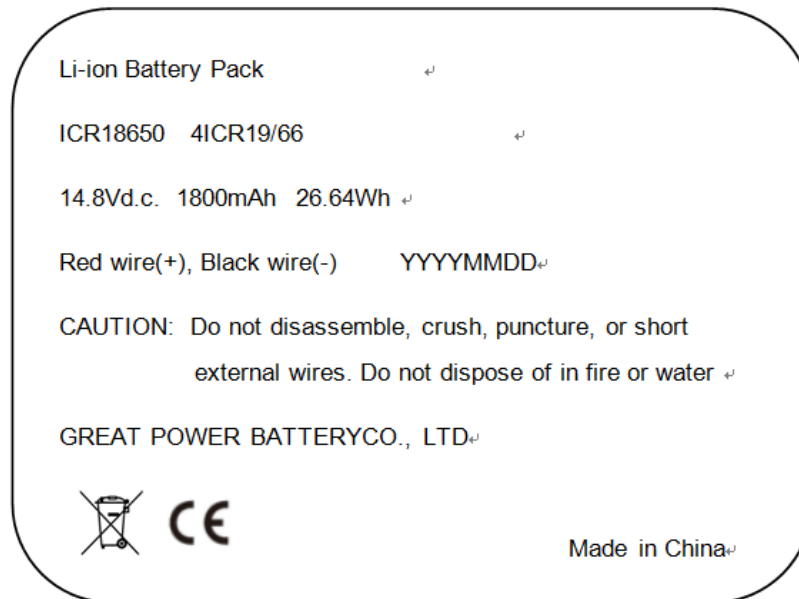
***Remarks:**

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 Dongguan Nore Testing Center Co., Ltd. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Revision History of This Test Report

Report Number	Description	Issued Date
NTC1809124SV00	Initial Issue	2018-10-29
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Copy of marking plate:



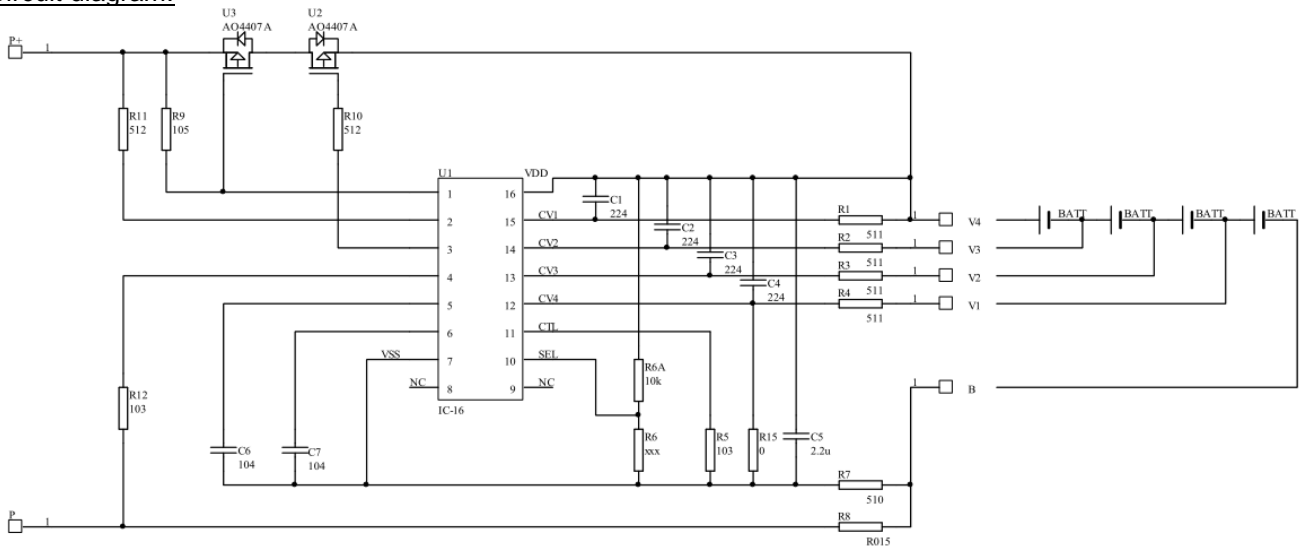
Remark: YYYY-MM-DD represents the date of manufacture

Summary of testing:

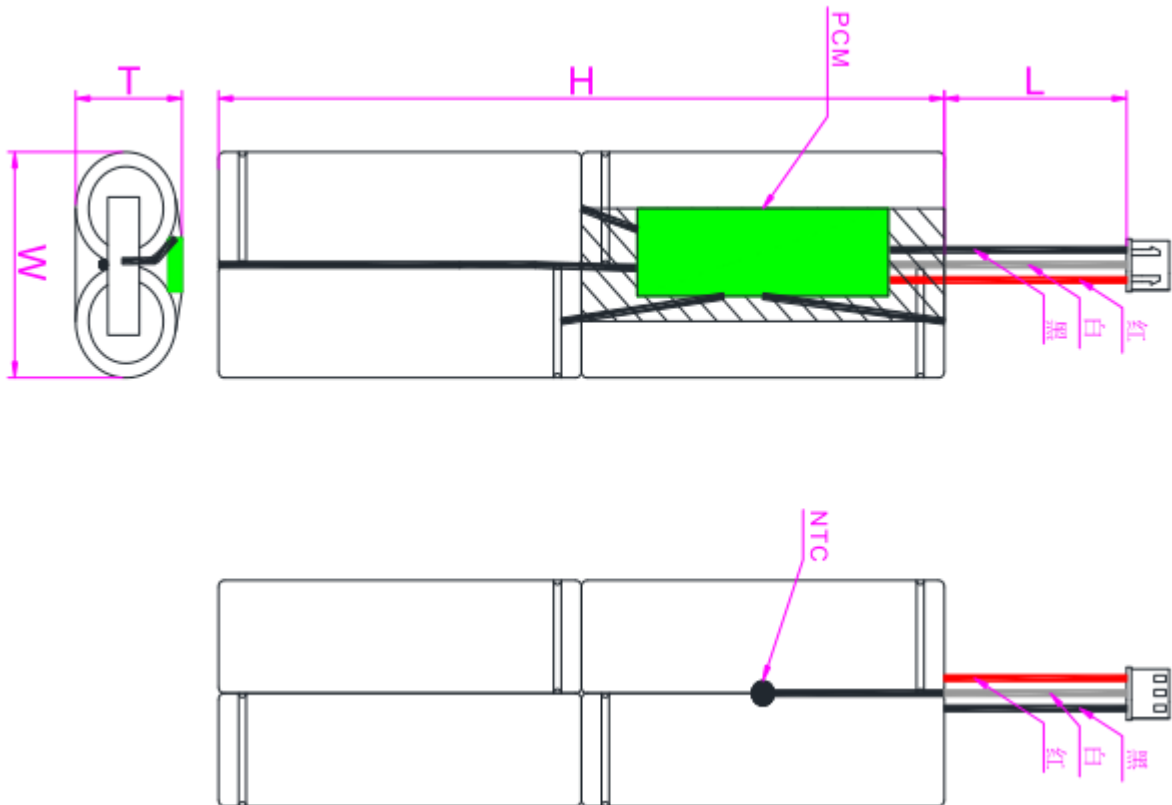
The product fulfils the requirements of IEC 62133-2: 2017 and EN 62133-2: 2017

Test item particulars								
Classification of installation and use.....: Portable use								
Supply Connection								
Recommend charging method declared by the manufacturer								
Discharge current (0,2 It A)								
Specified final voltage								
Upper limit charging voltage per cell.....								
Maximum charging current								
Charging temperature upper limit								
Charging temperature lower limit.....								
Polymer cell electrolyte type								
Possible test case verdicts:								
- test case does not apply to the test object								
- test object does meet the requirement.....								
- test object does not meet the requirement.....								
General remarks:								
"(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 is used as the decimal separator.								
General product information:								
-This battery is constructed with four Li-ion cell (4S1P), and has overcharge, over-discharge, over current and short-circuits proof circuit.								
-The cell (ICR18650 1800) inside the battery is CB approved according to IEC 62133-2: 2017. (CB Certificate No.: NL-51042, Report No.: 4343832.50).								
The main features of the battery are shown as below (clause 7.1.1):								
Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
ICR18650	1800mAh	3.70V	360mA	360mA	900mA	1800mA	4.23V	3.0V
The main features of the battery are shown as below (clause 7.1.2):								
Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature				
ICR18650	4.23V	90mA	0°C	45°C				

Circuit diagram:



Construction:



NO	Items	Units: mm		Remark
1	Thickness/厚度	T	23	MAX
2	Width/宽度	W	39	MAX
3	Height/长度	H	136	MAX
4	Cable Length/引线长度	L	150±5	

IEC 62133-2			
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		P
	Cells and batteries so designed and constructed that they are safe under conditions of both intended use and reasonably foreseeable misuse	The battery and cell 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 metal case exists.	N
	Insulation resistance (MΩ).....:		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		P
	Orientation of wiring maintains adequate clearance and creepage distances between conductors		P
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		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		P
5.4	Temperature, voltage and current management	See below	P
	Batteries are designed such that abnormal temperature rise conditions are prevented	Overcharge, over discharge, over current and short-circuit proof circuit used in this battery	P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	Protection IC and MOSFET provided.	P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that specified chargers are designed to maintain charging within the temperature, voltage and current limits specified	The charging limits specified in the user manual.	P
5.5	Terminal contacts		P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	The "Red wire (+)" and "Black wire (-)" polarity explicitly marked on surface of the battery.	P
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance	DC connector contacts complied with the requirements	P
	Terminal contacts are arranged to minimize the risk of short-circuit	Complied.	P
5.6	Assembly of cells into batteries		P
5.6.1	General	See below	P
	Each battery have an independent control and protection for current, voltage, temperature and any other parameter required for safety and to maintain the cells within their operating region		P
	This protection may be provided external to the battery such as within the charger or the end devices		N
	If protection is external to the battery, the manufacturer of the battery provide this safety relevant information to the external device manufacturer for implementation		N
	If there is more than one battery housed in a single battery case, each battery have protective circuitry that can maintain the cells within their operating regions	4S1P	P
	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly		P
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate circuitry to prevent operation of cells outside the limits specified by the cell manufacturer		N
	Protective circuit components added as appropriate and consideration given to the end-device application		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The manufacturer of the battery provide a safety analysis of the battery safety circuitry with a test report including a fault analysis of the protection circuit under both charging and discharging conditions confirming the compliance		P
5.6.2	Design recommendation		P
	For the battery consisting of a single cell or a single cellblock, it is recommended that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 2		N
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that the voltages of any one of the single cells or single cellblocks does not exceed the upper limit of the charging voltage, specified in Table 2, by monitoring the voltage of every single cell or the single cellblocks		P
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that charging is stopped when the upper limit of the charging voltage is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks		P
	For batteries consisting of series-connected cells or cell blocks, nominal charge voltage not be counted as an overcharge protection		P
	For batteries consisting of series-connected cells or cell blocks, cells have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer		P
	It is recommended that the cells and cell blocks not discharged beyond the cell manufacturer's specified final voltage		P
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry incorporated into the battery management system		P
5.6.3	Mechanical protection for cells and components of batteries		P
	Mechanical protection for cells, cell connections and control circuits within the battery provided to prevent damage as a result of intended use and reasonably foreseeable misuse		P
	The mechanical protection can be provided by the battery case or it can be provided by the end product enclosure for those batteries intended for building into an end product		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The battery case and compartments housing cells designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer		P
	For batteries intended for building into a portable end product, testing with the battery installed within the end product considered when conducting mechanical tests		P
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	Complied.	P
5.8	Battery safety components		P
	According annex F		P
6	TYPE TEST AND SAMPLE SIZE		P
	Tests are made with the number of cells or batteries specified in Table 1 using cells or batteries that are not more than six months old		P
	Coin cells with resistance $\leq 3 \Omega$ (measured according annex D) are tested according table 1		N
	Unless otherwise specified, tests are carried out in an ambient temperature of $20 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$	Tests are carried out at $20 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$	P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and overdischarge protection		P
	When conducting the short-circuit test, consideration given to the simulation of any single fault condition that is likely to occur in the protecting circuit that would affect the short-circuit test		P
7	SPECIFIC REQUIREMENTS AND TESTS		P
7.1	Charging procedure for test purposes		P
7.1.1	First procedure		P
	This charging procedure applies to subclauses other than those specified in 7.1.2		P
	Unless otherwise stated in this document, the charging procedure for test purposes is carried out in an ambient temperature of $20 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$, using the method declared by the manufacturer		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Prior to charging, the battery have been discharged at 20 °C ± 5 °C at a constant current of 0,2 It A down to a specified final voltage		P
7.1.2	Second procedure		P
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9		P
	After stabilization for 1 h and 4 h, respectively, at ambient temperature of highest test temperature and lowest test temperature, as specified in Table 2, cells are charged by using the upper limit charging voltage and maximum charging current, until the charging current is reduced to 0,05 It A, using a constant voltage charging method		P
7.2	Intended use		P
7.2.1	Continuous charging at constant voltage (cells)	CB approval cell used.	N
	Fully charged cells are subjected for 7 days to a charge using the charging method for current and standard voltage specified by the cell manufacturer		N
	Results: No fire. No explosion. No leakage		N
7.2.2	Case stress at high ambient temperature (battery)	No moulded case exists.	N
	Oven temperature (°C).....		—
	Results: No physical distortion of the battery case resulting in exposure of internal protective components and cells		N
7.3	Reasonably foreseeable misuse		P
7.3.1	External short-circuit (cell)	CB approval cell used.	N
	The cells were tested until one of the following occurred:		N
	- 24 hours elapsed; or		N
	- The case temperature declined by 20 % of the maximum temperature rise		N
	Results: No fire. No explosion		N
7.3.2	External short-circuit (battery)		P
	The batteries were tested until one of the following occurred:		P
	- 24 hours elapsed; or		N
	- The case temperature declined by 20 % of the maximum temperature rise		P
	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		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A single fault in the discharge protection circuit conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test		P
	A single fault applies to protective component parts such as MOSFET, fuse, thermostat or positive temperature coefficient (PTC) thermistor		P
	Results: No fire. No explosion	(See appended table 7.3.2)	P
7.3.3	Free fall		P
	Results: No fire. No explosion	No fire. No explosion.	P
7.3.4	Thermal abuse (cells)	CB approval cell used.	N
	Oven temperature (°C)..... :		—
	Results: No fire. No explosion		N
7.3.5	Crush (cells)	CB approval cell used.	N
	The crushing force was released upon:		N
	- The maximum force of 13 kN ± 0,78 kN has been applied; or		N
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N
	Results: No fire. No explosion		N
7.3.6	Over-charging of battery		P
	The supply voltage which is:		P
	- 1,4 times the upper limit charging voltage presented in Table A.1 (but not to exceed 6,0 V) for single cell/cell block batteries or		N
	- 1,2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and		P
	- Sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached		N
	Test was continued until the temperature of the outer casing:		P
	- Reached steady state conditions (less than 10 °C change in 30-minute period); or		N
	- Returned to ambient		P
	Results: No fire. No explosion	(See appended table 7.3.6)	P
7.3.7	Forced discharge (cells)	CB approval cell used.	N

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	If the discharge voltage reaches the negative value of upper limit charging voltage within the testing duration, the voltage is maintained at the negative value of the upper limit charging voltage by reducing the current for the remainder of the testing duration		N
	If the discharge voltage does not reach the negative value of upper limit charging voltage within the testing duration, the test is terminated at the end of the testing duration		N
	Results: No fire. No explosion		N
7.3.8	Mechanical tests (batteries)		P
7.3.8.1	Vibration		P
	Results: No fire, no explosion, no rupture, no leakage or venting	(See appended table 7.3.8.1)	P
7.3.8.2	Mechanical shock		P
	Results: No leakage, no venting, no rupture, no explosion and no fire	(See appended table 7.3.8.2)	P
7.3.9	Design evaluation – Forced internal short-circuit (cells)	CB approval cell used.	N
	The cells complied with national requirement for.....		—
	The pressing was stopped upon:		N
	- A voltage drop of 50 mV has been detected; or		N
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached		N
	Results: No fire		N
8	INFORMATION FOR SAFETY		P
8.1	General		P
	Manufacturers of secondary cells ensure that information is provided about current, voltage and temperature limits of their products	Information for safety mentioned in manufacturer's specification.	P
	Manufacturers of batteries ensure that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards	Information for safety mentioned in manufacturer's specification.	P
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		P
	As appropriate, any information relating to hazard avoidance resulting from a system analysis provided to the end user		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Do not allow children to replace batteries without adult supervision		P
8.2	Small cell and battery safety information		N
	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:		N
	- Keep small cells and batteries which are considered swallowable out of the reach of children		N
	- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion		N
	- In case of ingestion of a cell or battery, seek medical assistance promptly		N
9	MARKING		P
9.1	Cell marking		N
	Cells marked as specified in IEC 61960, except coin cells	The final product is battery.	N
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity		N
	By agreement between the cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked		N
9.2	Battery marking		P
	Batteries marked as specified in IEC 61960, except for coin batteries	The battery is marked in accordance with IEC 61960	P
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity. Batteries also marked with an appropriate caution statement		N
	Terminals have clear polarity marking on the external surface of the battery		P
	Batteries with keyed external connectors designed for connection to specific end products need not be marked with polarity markings if the design of the external connector prevents reverse polarity connections		N
9.3	Caution for ingestion of small cells and batteries		N

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Coin cells and batteries identified as small batteries according to 8.2 include a caution statement regarding the hazards of ingestion in accordance with 8.2		N
	When small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion given on the immediate package		N
9.4	Other information	Information for recommended charging instructions mentioned in manufacturer's specifications.	P
	Storage and disposal instructions		P
	Recommended charging instructions		P
10	PACKAGING AND TRANSPORT		P
	Packaging for coin cells not small enough to fit within the limits of the ingestion gauge of Figure 3		N
	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		P
ANNEX A	CHARGING AND DISCHARGING RANGE OF SECONDARY LITHIUM ION CELLS FOR SAFE USE		N
A.1	General	CB approval cell used.	N
A.2	Safety of lithium ion secondary battery		N
A.3	Consideration on charging voltage		N
A.3.1	General		N
A.3.2	Upper limit charging voltage		N
A.3.2.1	General		N
A.3.2.2	Explanation of safety viewpoint		N
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied		N
A.4	Consideration of temperature and charging current		N
A.4.1	General		N
A.4.2	Recommended temperature range		N
A.4.2.1	General		N
A.4.2.2	Safety consideration when a different recommended temperature range is applied		N
A.4.3	High temperature range		N

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
A.4.3.1	General		N
A.4.3.2	Explanation of safety viewpoint		N
A.4.3.3	Safety considerations when specifying charging conditions in the high temperature range		N
A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range		N
A.4.4	Low temperature range		N
A.4.4.1	General		N
A.4.4.2	Explanation of safety viewpoint		N
A.4.4.3	Safety considerations, when specifying charging conditions in the low temperature range		N
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range		N
A.4.5	Scope of the application of charging current		N
A.4.6	Consideration of discharge		N
A.4.6.1	General		N
A.4.6.2	Final discharge voltage and explanation of safety viewpoint		N
A.4.6.3	Discharge current and temperature range		N
A.4.6.4	Scope of application of the discharging current		N
A.5	Sample preparation		N
A.5.1	General		N
A.5.2	Insertion procedure for nickel particle to generate internal short		N
A.5.3	Disassembly of charged cell		N
A.5.4	Shape of nickel particle		N
A.5.5	Insertion of nickel particle in cylindrical cell		N
A.5.5.1	Insertion of nickel particle in winding core		N
A.5.5.2	Marking the position of the nickel particle on both ends of the winding core of the separator		N
A.5.6	Insertion of nickel particle in prismatic cell		N
A.6	Experimental procedure of the forced internal short-circuit test		N
A.6.1	Material and tools for preparation of nickel particle		N
A.6.2	Example of a nickel particle preparation procedure		N
A.6.3	Positioning (or placement) of a nickel particle		N
A.6.4	Damaged separator precaution		N
A.6.5	Caution for rewinding separator and electrode		N

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
A.6.6	Insulation film for preventing short-circuit		N
A.6.7	Caution when disassembling a cell		N
A.6.8	Protective equipment for safety		N
A.6.9	Caution in the case of fire during disassembling		N
A.6.10	Caution for the disassembling process and pressing the electrode core		N
A.6.11	Recommended specifications for the pressing device		N
ANNEX B	RECOMMENDATIONS TO EQUIPMENT MANUFACTURERS AND BATTERY ASSEMBLERS		P
ANNEX C	RECOMMENDATIONS TO THE END-USERS		P
ANNEX D	MEASUREMENT OF THE INTERNAL AC RESISTANCE FOR COIN CELLS		N
D.1	General		N
D.2	Method		N
	A sample size of three coin cells is required for this measurement	(See appended table D.2)	N
	Coin cells with an internal resistance of less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1		N
	Coin cells with an internal resistance greater than 3 Ω require no further testing		N
ANNEX E	PACKAGING AND TRANSPORT		N
ANNEX F	COMPONENT STANDARDS REFERENCES		N

TABLE: Critical components information						P
Object / part No.	Manufacturer / trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
Cell	Zhuhai Great Power Energy Co., Ltd.	ICR18650 1800	3.7 Vdc, 1800 mAh	IEC 62133-2: 2017	CB Certificate No.: NL-51042, Report No.: 4343832.50	
PCB	GUANGZHOU GREAT CIRCUIT ELECTRONIC CO LTD	PH-D	130°C, V-0	UL94, UL796	UL E350238	
PCB (Alternative)	Interchangeable	Interchangeable	130°C, V-0	UL94, UL796	UL	
IC(U1)	INJOINIC TECHNOLOGY	IP3254ACV	Overcharge Detection Voltage: 4.25V±0.025V Over-discharge Detection Voltage: 2.7V±0.1V Over current detection voltage: 0.12V±0.025V, Operating temperature range: -20°C to 85°C	--	Tested with appliance	
MOSFET (U2, U3)	ALPHA& OMEGA	AO4407A SO-8	V _{DS} : -30V; V _{GS} : ±25V; I _D : -12A; T _J , T _{STG} : -55 to 150°C	--	Tested with appliance	
Insulation tape	CHANGSHU FUBANG ADHESIVE TAPE LTD CO	FM-01 (b)	130°C	UL 510A	UL E248834	
Lead wire	DONGGUAN ZHONGZHENG WIRE & CABLE TECH CO LTD	3239	22AWG, 150°C, VW-1	UL 758	UL E336285	
Lead wire (Alternative)	Interchangeable	Interchangeable	22AWG, min.80°C, VW-1	UL 758	UL	
Connector	JAPAN SOLDERLESS TERMINAL MFG CO LTD	JST-XH-3P	Series XH, 80°C	UL 1977	UL E60389	
Connector (Alternative)	Interchangeable	Interchangeable	Series XH, 80°C	UL 1977	UL	
Supplementary information:						
¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039.						

7.2.1	TABLE: Continuous charging at constant voltage (cells)				N
Sample no.	Recommended charging voltage Vc (Vdc)	Recommended charging current I _{rec} (A)	OCV before test (Vdc)	Results	
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Supplementary information:
 - No fire or explosion
 - No leakage
 - Others (please explain)

7.3.1	TABLE: External short-circuit (cell)					N
Sample no.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K)	Results	
Samples charged at charging temperature upper limit						
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Samples charged at charging temperature lower limit						
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Supplementary information:
 - No fire or explosion
 - Others (please explain)

7.3.2	TABLE: External short-circuit (battery)					P
Sample no.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K)	Component single fault condition	Results
Battery #1	23.4	16.7459	80	0.9	--	P
Battery #2	23.3	16.7123	80	0.8	--	P
Battery #3	23.3	16.6954	80	0.8	--	P
Battery #4	23.4	16.7724	80	1.1	--	P

Battery #5	23.4	16.7531	80	0.8	--	P
Battery #6	23.4	16.7162	80	6.1	U2 Pin D-S S-C	P
Battery #7	23.7	16.7093	80	13.1	U2 Pin D-S S-C	P
Battery #8	23.7	16.7338	80	12.4	U2 Pin D-S S-C	P
Battery #9	23.6	16.7671	80	14.7	U2 Pin D-S S-C	P
Battery #10	23.6	16.7558	80	19.4	U2 Pin D-S S-C	P

Supplementary information:

- No fire or explosion
- Others (please explain)

7.3.5	TABLE: Crush (cells)				N
Sample no.	OCV before test (Vdc)	OCV at removal of crushing force (Vdc)	Maximum force applied to the cell during crush (kN)	Results	
Samples charged at charging temperature upper limit					
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--	--	--	--	--	
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--	--	--	--	--	
Samples charged at charging temperature lower limit					
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Supplementary information:

- No fire or explosion
- Others (please explain)

7.3.6	TABLE: Over-charging of battery				P
Constant charging current (A)		3.6		—	
Supply voltage (Vdc)		20.4		—	
Sample no.	OCV before charging (Vdc)	Total charging time (minute)	Maximum outer case temperature (°C)	Results	
Battery #11	12.5063	90	40.2	P	
Battery #12	12.1535	90	39.3	P	
Battery #13	12.3251	90	41.6	P	

Battery #14	12.6076	90	39.6	P
Battery #15	12.3746	90	35.5	P

Supplementary information:

- No fire or explosion
- Others (please explain)

7.3.7	TABLE: Forced discharge (cells)	N
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Sample no.	OCV before application of reverse charge (Vdc)	Measured reverse charge I_t (A)	Lower limit discharge voltage (Vdc)	Results
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Supplementary information:

- No fire or explosion
- Others (please explain)

7.3.8.1	TABLE: Vibration	P
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Sample no.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results
Battery #16	16.7338	16.7220	185.3	185.2	P
Battery #17	16.7671	16.7542	185.3	185.2	P
Battery #18	16.7558	16.7433	185.3	185.2	P

Supplementary information:

- No fire or explosion
- No rupture
- No leakage
- No venting
- Others (please explain)

7.3.8.2	TABLE: Mechanical shock	P
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Sample no.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results
Battery #19	16.7459	16.7143	185.3	185.2	P
Battery #20	16.7123	16.7011	185.3	185.2	P
Battery #21	16.7354	16.6935	185.3	185.2	P

Supplementary information:

- No fire or explosion
- No rupture
- No leakage
- No venting
- Others (please explain)

7.3.9	TABLE: Forced internal short circuit (cells)					N
Sample no.	Chamber ambient T (°C)	OCV before test (Vdc)	Particle location ¹⁾	Maximum applied pressure (N)	Results	
Samples charged at charging temperature upper limit						
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Samples charged at charging temperature lower limit						
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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 - Others (please explain)						

D.2	TABLE: Internal AC resistance for coin cells				N
Sample no.	Ambient T (°C)	Store time (h)	Resistance Rac (Ω)	Results ¹⁾	
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Supplementary information: ¹⁾ Coin cells with internal resistance less than or equal to 3 Ω, see test result on corresponding tables					

Photo documentation

Photo 1



Photo 2



Photo 3

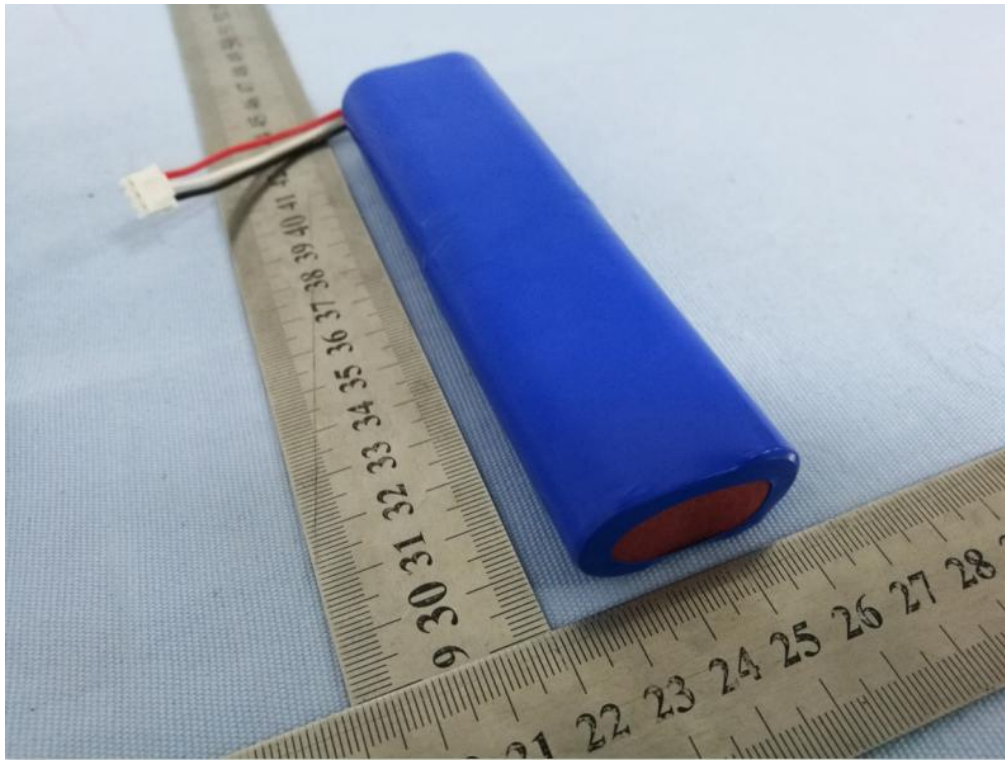


Photo 4

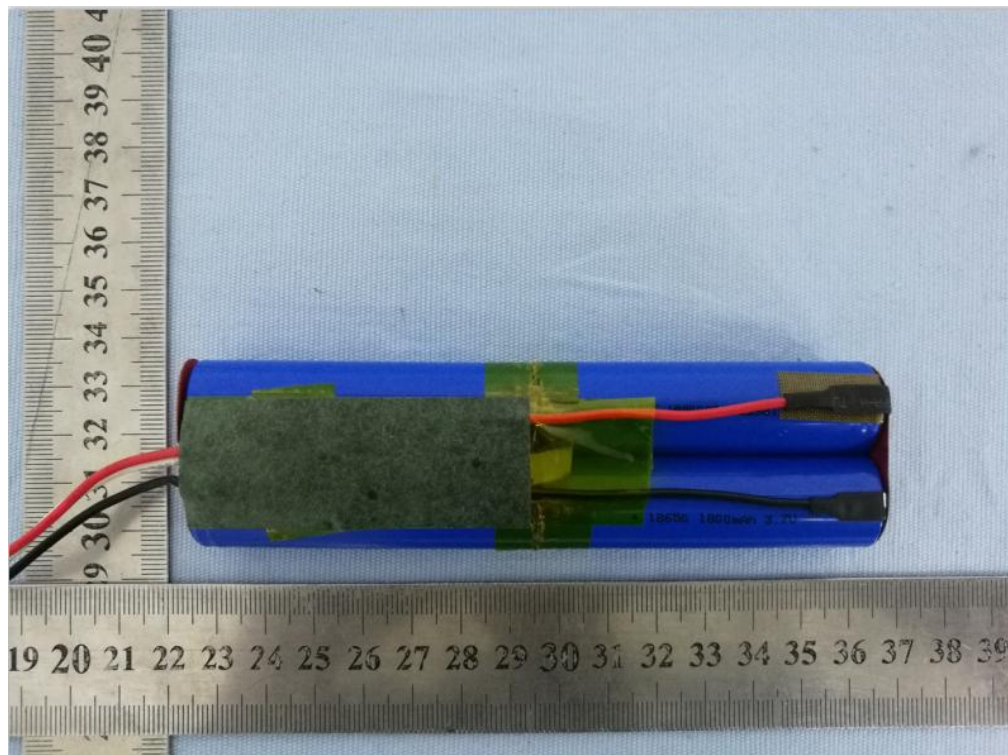


Photo 5

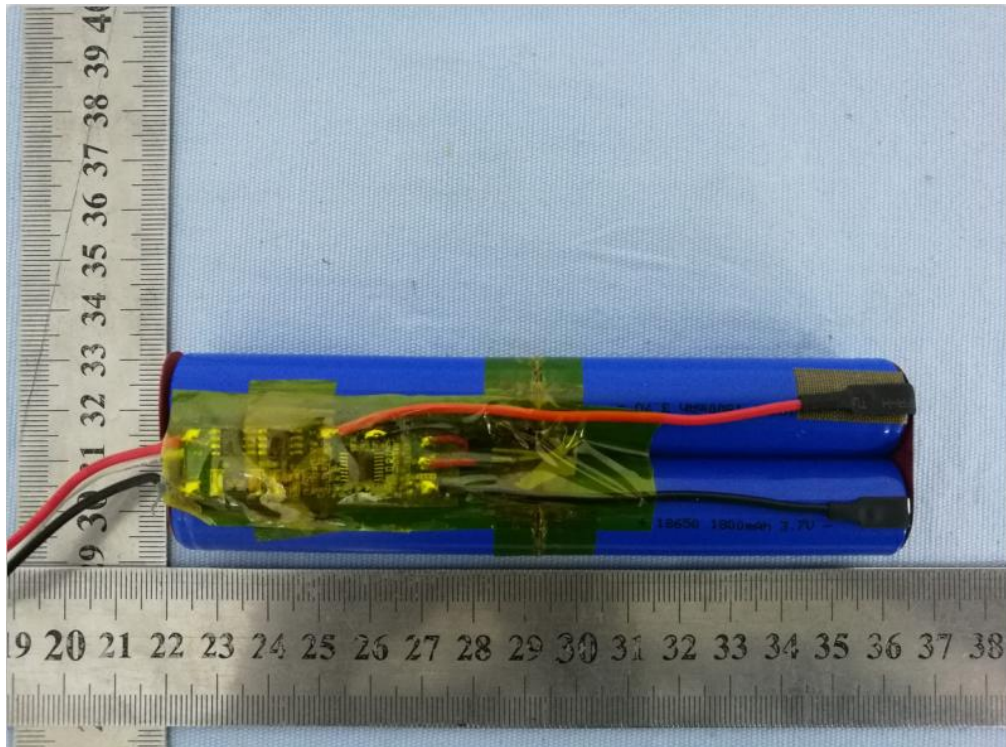


Photo 6

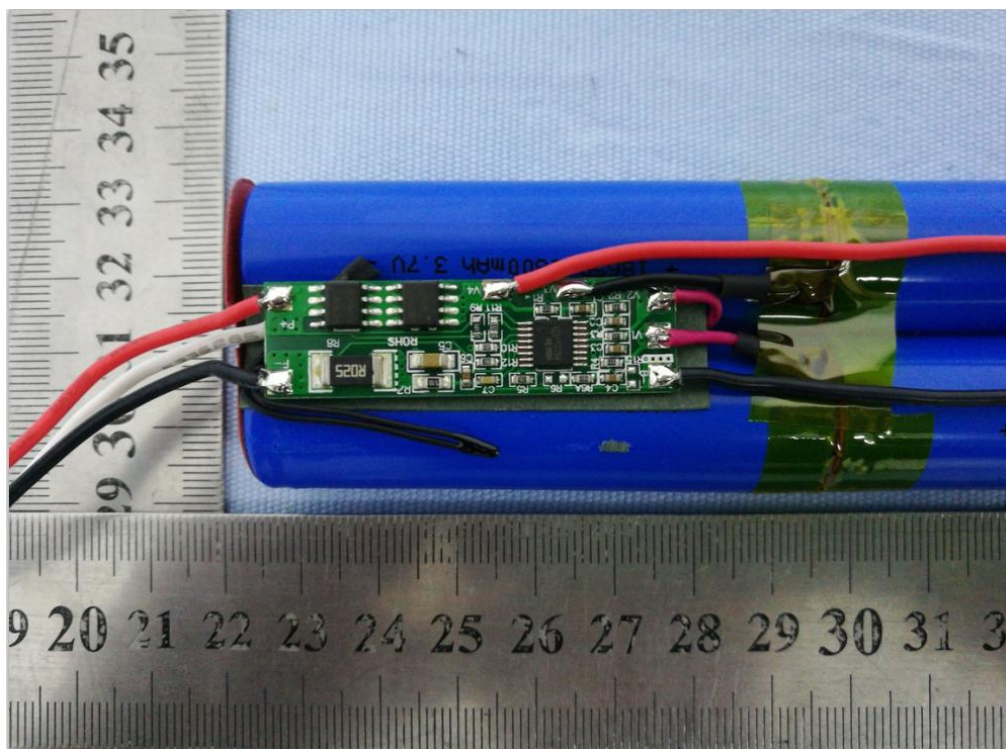


Photo 7

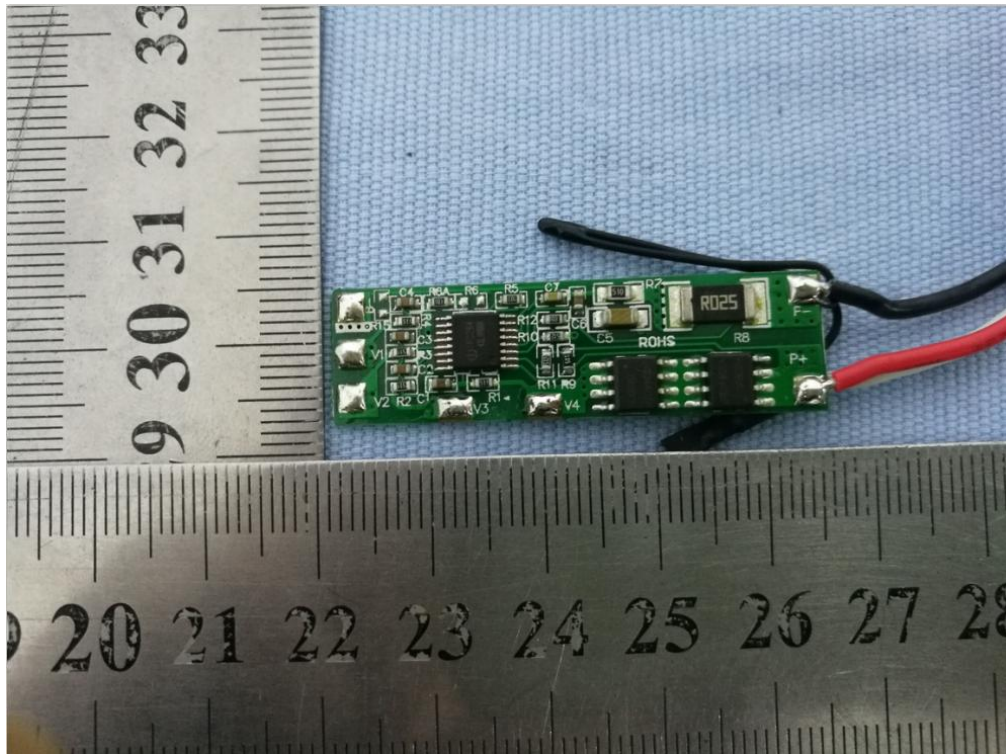


Photo 8

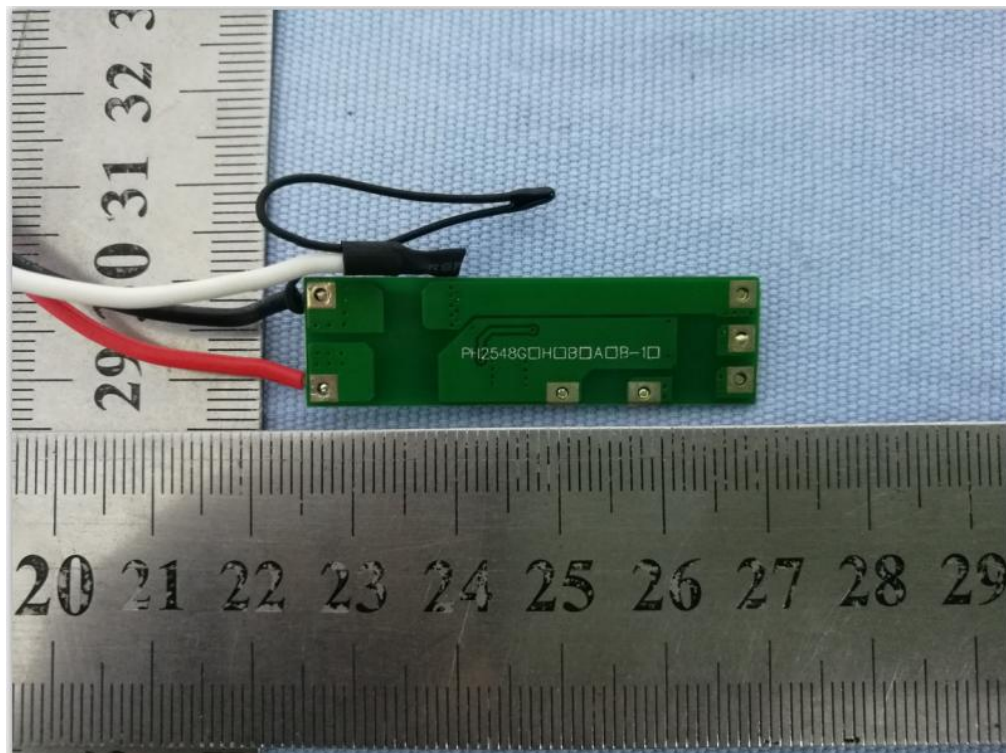


Photo 9



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