Test Report issued under the responsibility of:

TEST REPORT
IEC 62133-2
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

Report Number. .....:	**T211-0013/22**
Date of issue .....:	2022-01-27
Total number of pages.....:	76
Name of Testing Laboratory preparing the Report.....:	SIQ Ljubljana SIQ Ljubljana is accredited by Slovenian Accreditation with accreditation number LP-009 in the field of testing
Applicant's name.....:	GlobTek, Inc.
Address .....:	186 Veterans Dr. Northvale, NJ 07647, USA
Test specification:	
Standard .....:	IEC 62133-2:2017, IEC 62133-2:2017/AMD1:2021
Test procedure .....:	CB Scheme
Non-standard test method.....:	N/A
TRF template used .....:	IECEE OD-2020-F1:2021, Ed.1.4
Test Report Form No.....:	IEC62133_2B
Test Report Form(s) Originator ....:	DEKRA Certification B.V.
Master TRF.....:	Dated 2021-08-31

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

General disclaimer:

The test results presented in this report relate only to the object tested.
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Test item description ..... :	Rechargeable Li-Ion battery pack
Trade Mark(s) ..... :	GlobTek, Inc.
Manufacturer ..... :	GlobTek, Inc. 186 Veterans Dr. Northvale, NJ 07647, USA
Model/Type reference ..... :	BL3500C1865001S1PCMK; BL3500C1865001S1P******
Ratings ..... :	3,6 V; 3350 mAh; 12,06 Wh

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):

☒ **CB Testing Laboratory:**	SIQ Ljubljana	
Testing location/ address .....:	Mašera-Spasićeva ulica 10, SI-1000 Ljubljana, Slovenia SIQ Ljubljana is accredited by Slovenian Accreditation with accreditation number LP-009 in the field of testing	
Tested by (name, function, signature) .....:	Mark Leban	
Approved by (name, function, signature)...:	Matej Žontar	
☐ **Testing procedure: CTF Stage 1:**		
Testing location/ address .....:		
Tested by (name, function, signature) .....:		
Approved by (name, function, signature)...:		
☐ **Testing procedure: CTF Stage 2:**		
Testing location/ address .....:		
Tested by (name + signature) .....:		
Witnessed by (name, function, signature) .:		
Approved by (name, function, signature)...:		
☐ **Testing procedure: CTF Stage 3:**		
☐ **Testing procedure: CTF Stage 4:**		
Testing location/ address .....:		
Tested by (name, function, signature) .....:		
Witnessed by (name, function, signature) .:		
Approved by (name, function, signature)...:		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment):
Attachment No.1- Photo documentation (25 pages)
Attachment No.2- Technical documentation (21 pages)
Attachment No.3- US/CAN National Deviations (5 pages)

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
7.1.1 (Charge procedure) 7.2.2 (Case stress) 7.3.2 (External short circuit) 7.3.3 (Free fall) 7.3.6 (Overcharge) 7.3.8 (Mechanical - Vibration + Shock)	SIQ Ljubljana, Mašera-Spasićeva ulica 10, SI-1000 Ljubljana, Slovenia.

Summary of compliance with National Differences (List of countries addressed):

☒ **The product fulfils the requirements of IEC 62133-2:2017 + A1:2021 and EN 62133-2:2017 + A1:2021**

Use of uncertainty of measurement for decisions on conformity (decision rule) :

☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").

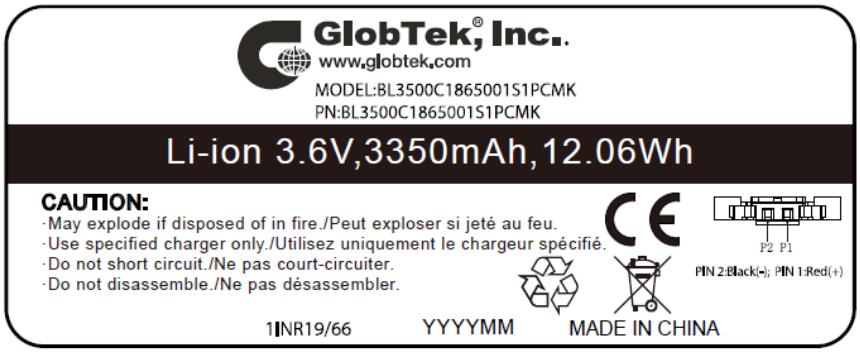
☐ Other:… (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

Information on uncertainty of measurement:
The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.
IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.
Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

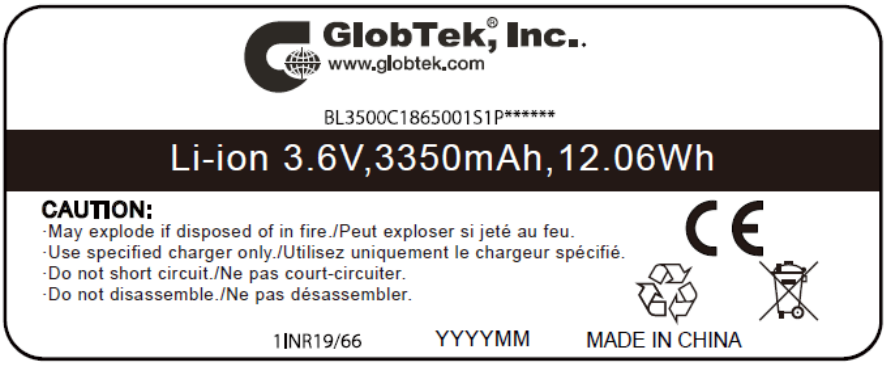
Copy of marking plate:

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.

BL3500C1865001S1PCMK;



BL3500C1865001S1P******



Test item particulars ..... :	
Classification of installation and use ..... :	Rechargeable Li-ion battery pack
Supply Connection ..... :	Connector
Recommend charging method declared by the manufacturer ..... :	CC/CV
Discharge current (0,2 It A) ..... :	670 mA
Specified final voltage ..... :	3,00 Vdc
Upper limit charging voltage per cell ..... :	4,20 Vdc
Maximum charging current ..... :	1675 mA
Charging temperature upper limit ..... :	45°C
Charging temperature lower limit ..... :	0°C
Polymer cell electrolyte type ..... :	☐ gel polymer ☐ solid polymer ☒ 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 .....:	2021-10-14
Date (s) of performance of tests .....:	(2021-12-02) to (2022-01-14)

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 / ☐ 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) .....:	GlobTek (Suzhou) Co., Ltd. Building 4 No. 76, Jinling East Road Suzhou Industrial Park Jiangsu 215021, P.R. China

General product information and other remarks:

The BL3500C1865001S1PCMK and BL3500C1865001S1P****** is a 3,6 V; 3350 mAh; 12,06 Wh portable battery pack.

Configuration: 1S1P with cells LR1865HB made by Tianjin Lishen Battery Joint-Stock Co., Ltd.

Additional constructions types information for BL3500C1865001S1P******

The first '*' May be A~Z or 0~9 for marketing purposes.
The second '*' May be A~Z or 0~9,
when'*' = S means SOLDER TAB,
when'*' = W means WELDED TABS,
when'*' = P means PLASTIC HOUSING
when'*' = C means cables or wires,
the rest may vary for marketing purposes.
The third '*' May be A~Z or 0~9,
when'*' = N means Nickel wires,
the rest may vary for marketing purposes
The fourth '*' May be A~Z or 0~9 for marketing purposes
The fifth '*' May be A~Z or 0~9 for marketing purposes
The sixth '*' May be A~Z or 0~9 for marketing purposes

Construction types examples:

1	BL3500C1865001S1PCMK	1 cell with PCM and wire
2	BL3500C1865001S1PCMK***	1 cell with PCM
3	BL3500C1865001S1P*S****	1 cell with PCM plus solder tab
4	BL3500C1865001S1P*C****	1 cell with PCM plus add wire (PCBA is at the top of the battery)
5	BL3500C1865001S1P*P****	1 cell with PCM and enclosure
6	BL3500C1865001S1P*WN***	1 cell with PCM plus added 2 welded pads insulated

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
4	**PARAMETER MEASUREMENT TOLERANCES**		P
	Parameter measurement tolerances	Considered	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		P
5.2	**Insulation and wiring**		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 external metal surfaces	N/A
	Insulation resistance (MΩ)..... :		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements	See details in LOCC	P
	Orientation of wiring maintains adequate clearances and creepage distances between conductors	Adequately fixed	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	Battery case and cells provided with such pressure relief	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**		P
	Batteries are designed such that abnormal temperature rise conditions are prevented	Electronic protective circuit incorporated (BMS) with overcharge, over-discharge, over current, short-circuit and over temperature protection	P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	Electronic protective circuit incorporated (BMS) with overcharge, over-discharge, over current, short-circuit and over temperature protection	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	Technical specifications provided, see Attachment No.2- Technical documentation	P
5.5	**Terminal contacts**		P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current		P
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance		P
	Terminal contacts are arranged to minimize the risk of short circuits		P
5.6	**Assembly of cells into batteries**		P
5.6.1	General		P
	Each battery has 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	Electronic protective circuit incorporated (BMS) with Overcharge, over-discharge, over current, short-circuit and over temperature protection	P
	This protection may be provided external to the battery such as within the charger or the end devices	Electronic protective circuit (BMS) incorporated in battery pack	N/A
	If protection is external to the battery, the manufacturer of the battery provide this safety relevant information to the external device manufacturer for implementation	Electronic protective circuit (BMS) incorporated in battery pack	N/A
	If there is more than one battery housed in a single battery case, each battery has protective circuitry that can maintain the cells within their operating regions	Single cell battery	N/A
	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly	See Attachment No.2- Technical documentation	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	Single cell battery	N/A
	Protective circuit components are added as appropriate and consideration given to the end-device application	See details in LOCC	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	Preformed during this approval	N/A
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	Electronic protective circuit incorporated (BMS) with overcharge protection	P
	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	Single cell battery pack	N/A
	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	Single cell battery pack. Electronic protective circuit incorporated (BMS) with overcharge protection	N/A
	For batteries consisting of series-connected cells or cell blocks, nominal charge voltage are not counted as an overcharge protection	Single cell battery pack	N/A
	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	Single cell battery pack	N/A
	It is recommended that the cells and cell blocks are not discharged beyond the cell manufacturer's specified final voltage	Over-discharge protection incorporated in protective circuit (BMS)	P
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry are incorporated into the battery management system	Single cell battery pack	N/A
5.6.3	Mechanical protection for cells and components of batteries		P
	Mechanical protection for cells, cell connections and control circuits within the battery are 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	Mechanical protection provided by the end product enclosure.	P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The battery case and compartments housing cells are 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 is considered when conducting mechanical tests		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	ISO 9001 certificate for battery/cell manufacturer.	P
5.8	**Battery safety components**	Safety components on protective circuit tested with fault conditions	N/A
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
	The internal resistance of coin cells are measured in accordance with Annex D. Coin cells with internal resistance less than or equal to 3 Ω are tested in accordance with Table 1	No coin cells	N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of 20 °C ± 5 °C		P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and over discharge protection	Electronic protective circuit (BMS) analysed, mosfets identified as critical components.	P
	When conducting the short-circuit test, consideration is 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	Considered, see appended table 7.3.2	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

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Unless otherwise stated in this document, the charging procedure for test purposes is carried out in an ambient temperature of 20 °C ± 5 °C, using the method declared by the manufacturer	CC/CV	P
	Prior to charging, the battery has been discharged at 20 °C ± 5 °C at a constant current of 0,2 It A down to a specified final voltage	Discharged with 670 mA to 2,8 Vdc	P
7.1.2	Second procedure		N/A
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9	Battery pack with certified cell	N/A
	After stabilization for 1 h to 4 h, at an ambient temperature of the highest test temperature and the lowest test temperature, respectively, 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 current to constant voltage charging method		N/A
7.2	**Intended use**		P
7.2.1	Continuous charging at constant voltage (cells)	Battery pack with certified cell	N/A
	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/A
	Results: no fire, no explosion, no leakage .....:	(See appended table 7.2.1)	N/A
7.2.2	Case stress at high ambient temperature (battery)		P
	Oven temperature (°C) .....:	72°C	—
	Results: no physical distortion of the battery case resulting in exposure of internal protective components and cells	Tested samples: S202109217 S202109218 S202109219	P
7.3	**Reasonably foreseeable misuse**		P
7.3.1	External short-circuit (cell)	Battery pack with certified cell	N/A
	The cells were tested until one of the following occurred:		N/A
	- 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 appended table 7.3.1)	N/A
7.3.2	External short-circuit (battery)		P
	The batteries were tested until one of the following occurred:		P
	- 24 hours elapsed; or		N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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
	A single fault in the discharge protection circuit is conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test	(See appended table 7.3.2)	P
	A single fault applies to protective component parts such as MOSFET (metal oxide semiconductor field-effect transistor), fuse, thermostat or positive temperature coefficient (PTC) thermistor	Applied on mosfets, for details see appended table 7.3.2	P
	Results: no fire, no explosion..... :	(See appended table 7.3.2)	P
7.3.3	Free fall		P
	Results: no fire, no explosion	Tested samples: S202109217 S202109218 S202109219	P
7.3.4	Thermal abuse (cells)	Battery pack with certified cells	N/A
	Oven temperature (°C)..... :		—
	Results: no fire, no explosion		N/A
7.3.5	Crush (cells)	Battery pack with certified cell	N/A
	The crushing force was released upon:		N/A
	- The maximum force of 13 kN ± 0,78 kN has been applied; or		N/A
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N/A
	Results: no fire, no explosion..... :	(See appended table 7.3.5)	N/A
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	5,88 V	P
	- 1,2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and		N/A
	- Sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached	6,7 A	P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	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		P
	- Returned to ambient		N/A
	Results: no fire, no explosion .....:	(See appended table 7.3.6)	P
7.3.7	Forced discharge (cells)	Battery pack with certified cell	N/A
	Discharge a single cell to the lower limit discharge voltage specified by the cell manufacturer		N/A
	The discharged cell is then subjected to a forced discharge at 1 It A to the negative value of the upper limit charging voltage		N/A
	- 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/A
	- 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/A
	Results: no fire, no explosion .....:	(See appended table 7.3.7)	N/A
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)		N/A
	The cells complied with national requirement for .....:	France, Japan, Korea, Switzerland	—
	The pressing was stopped upon:		N/A
	- 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 appended table 7.3.9)	N/A
8	**INFORMATION FOR SAFETY**		P
8.1	**General**		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Manufacturers of secondary cells provides information about current, voltage and temperature limits of their products	See Attachment No.2-Technical documentation	P
	Manufacturers of batteries provides information regarding how to minimize and mitigate hazards to equipment manufacturers or end-users	See Attachment No.2-Technical documentation	P
	Systems analyses are performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product	Considered	P
	As appropriate, any information relating to hazard avoidance resulting from a system analysis is provided to the end user		N/A
8.2	**Small cell and battery safety information**		N/A
	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:		N/A
	- Keep small cells and batteries which are considered swallowable out of the reach of children	No small cells	N/A
	- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion		N/A
	- In case of ingestion of a cell or battery, seek medical assistance promptly		N/A
9	**MARKING**		P
9.1	**Cell marking**	Battery pack with certified cells	N/A
	Cells are marked as specified in IEC 61960, except coin cells		N/A
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity		N/A
	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/A
9.2	**Battery marking**		P
	Batteries are marked as specified in IEC 61960, except for coin batteries	See copy of marking plate	P
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity	No coin batteries	N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Batteries are marked with an appropriate caution statement		P
	- Terminals have clear polarity marking on the external surface of the battery, or	Polarity marked on marking label	P
	- Not be marked with polarity markings if the design of the external connector prevents reverse polarity connections		N/A
9.3	**Caution for ingestion of small cells and batteries**	No small cells or batteries	N/A
	Coin cells and batteries identified as small batteries include a caution statement regarding the hazards of ingestion in accordance with 8.2		N/A
	Small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion is given on the immediate package		N/A
9.4	**Other information**		P
	The following information are marked on or supplied with the battery:		P
	- Storage and disposal instructions	See Attachment No.2-Technical documentation	P
	- Recommended charging instructions	See Attachment No.2-Technical documentation	P
10	**PACKAGING AND TRANSPORT**		
	Packaging for coin cells are not be small enough to fit within the limits of the ingestion gauge of Figure 3	No coin cells	N/A
ANNEX A	**CHARGING AND DISCHARGING 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

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
A.4.1	General		P
A.4.2	Recommended temperature range	Battery pack: +0°C – +45°C Cells: 0°C – +45°C	P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Considered Battery within upper and lower temperature limits of used cells	P
A.4.3	High temperature range	No new high temperature range defined	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 the high temperature range		N/A
A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range		N/A
A.4.4	Low temperature range	No new low temperature range defined	N/A
A.4.4.1	General		N/A
A.4.4.2	Explanation of safety viewpoint		N/A
A.4.4.3	Safety considerations, when specifying charging conditions in the low temperature range		N/A
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range		N/A
A.4.5	Scope of the application of charging current		N/A
A.4.6	Consideration of discharge		N/A
A.4.6.1	General	Considered	P
A.4.6.2	Final discharge voltage and explanation of safety viewpoint	Considered	P
A.4.6.3	Discharge current and temperature range	Considered	P
A.4.6.4	Scope of application of the discharging current	Considered	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
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 in cylindrical cell		N/A
A.5.5.1	Insertion of nickel particle in winding core		N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
A.5.5.2	Marking the position of the nickel particle on both ends of the winding core of the separator		N/A
A.5.6	Insertion of nickel particle in prismatic cell		N/A
A.6	**Experimental procedure of the forced internal short-circuit test**		N/A
A.6.1	Material and tools for preparation of nickel particle		N/A
A.6.2	Example of a nickel particle preparation procedure		N/A
A.6.3	Positioning (or placement) of a nickel particle		N/A
A.6.4	Damaged separator precaution		N/A
A.6.5	Caution for rewinding separator and electrode		N/A
A.6.6	Insulation film for preventing short-circuit		N/A
A.6.7	Caution when disassembling a cell		N/A
A.6.8	Protective equipment for safety		N/A
A.6.9	Caution in the case of fire during disassembling		N/A
A.6.10	Caution for the disassembling process and pressing the electrode core		N/A
A.6.11	Recommended specifications for the pressing device		N/A
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/A
D.1	**General**	No coin cells	N/A
D.2	**Method**		N/A
	A sample size of three coin cells is required for this measurement		N/A
	Coin cells with an internal resistance greater than 3 Ω require no further testing.....:	(See appended table D.2)	N/A
	Coin cells with an internal resistance less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1		N/A
ANNEX E	**PACKAGING AND TRANSPORT**		**N/A**
ANNEX F	**COMPONENT STANDARDS REFERENCES**		**N/A**

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.1	TABLE: Continuous charging at constant voltage (cells)			N/A
Sample No.	**Recommended charging voltage Vc (Vdc)**	**Recommended charging current I_{rec} (A)**	**OCV before test (Vdc)**	**Results**

Supplementary information:

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

7.3.1	TABLE: External short circuit (cell)				N/A
Sample No.	**Ambient (°C)**	**OCV at start of test (Vdc)**	**Resistance of circuit (mΩ)**	**Maximum case temperature rise ΔT (K)**	**Results**
Samples charged at charging temperature upper limit					
Samples charged at charging temperature lower limit					

Supplementary information:

- No fire or explosion
- Others (please explain)

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict

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**
S202109220	22	4,199	80	0	-	P
S202109221	22	4,201	80	0	-	P
S202109222	22	4,187	80	0	-	P
S202109223	22	4,185	80	0	1	P
S202109224	22	4,189	80	0	2	P

Supplementary information:

- No fire or explosion
- Others (please explain):

Battery short-circuit without single faulted components on protective circuit (BMS) – Mosfets on protective circuit (BMS) reacted immediately (U2). Battery normally working after the test.

Battery short-circuit with components single faulted on protective circuit (BMS):

1) Short-circuit of Mosfet U2 (S1-D1 pins) – Mosfet U2 (S2-D2) reacted, no hazard. Battery normally working after the test.
2) Short-circuit of Mosfet U2 (S2-D2 pins) – Mosfet U2 (S1-D1) reacted, no hazard. Battery normally working after the test.

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.5	TABLE: Crush (cells)			N/A
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				
Samples charged at charging temperature lower limit				

Supplementary information:

- No fire or explosion
- Others (please explain)

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.6	TABLE: Over-charging of battery		P
Constant charging current (A).....:		6,70 A	—
Supply voltage (Vdc).....:		5,88 V	—

Sample No.	OCV before charging (Vdc)	Total charging time (minute)	Maximum outer case temperature (°C)	Results
S202109225	3,086	*	23,4	P
S202109226	3,076	*	22,8	P
S202109227	3,081	*	23,2	P
S202109228	3,073	*	23,3	P
S202109229	3,078	*	22,6	P

Supplementary information:

- No fire or explosion

- Others (please explain): *Batteries are charging with 6,7 A for few seconds, then the overcharge protection reacts, terminating the charging.

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

Supplementary information:

- No fire or explosion

- Others (please explain)

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.8.1	TABLE: Vibration				P
Sample No.	**OCV before test (Vdc)**	**OCV after test (Vdc)**	**Mass before test (g)**	**Mass after test (g)**	**Results**
S202109245	4,192	4,182	48,953	48,949	P
S202109246	4,201	4,193	48,825	48,823	P
S202109247	4,188	4,181	49.028	49.025	P

Supplementary information:
- No fire or explosion
- No rupture
- No leakage
- No venting
- Others (please explain): /

7.3.8.2	TABLE: Mechanical shock				P
Sample No.	**OCV before test (Vdc)**	**OCV after test (Vdc)**	**Mass before test (g)**	**Mass after test (g)**	**Results**
S202109245	4,179	4,177	48,950	48,950	P
S202109246	4,191	4,190	48,822	48,821	P
S202109247	4,178	4,179	49.023	49.021	P

Supplementary information:
- No fire or explosion
- No rupture
- No leakage
- No venting
- Others (please explain): /

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.9	TABLE: Forced internal short circuit (cells)				N/A
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					
Samples charged at charging temperature lower limit					

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
- Others (please explain)

D.2	TABLE: Internal AC resistance for coin cells			N/A
Sample no.	**Ambient T (°C)**	**Store time (h)**	**Resistance Rac (Ω)**	**Results [1)]**

Supplementary information:

[1)] Coin cells with an internal resistance less than or equal to 3 Ω, see test result on corresponding tables according to Clause 6 and Table 1.

IEC 62133-2			
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)]
Outer wrap (Heath shrinkable tubing)	Interchangeable	Interchangeable	Min. 70°C	IEC/EN 62133-2	Tested with the unit
Terminal's insulation (Heath shrinkable tubing) (Optional)	Interchangeable	Interchangeable	Min. 300 V, Min. 125°C	IEC/EN 62133-2	Tested with the unit
External wiring (Optional)	Interchangeable	Interchangeable	Min. 28 AWG; Min.30 V, Min. 80°C	IEC/EN 62133-2	Tested with the unit
PVC housing (Optional)	SABIC	945	1,5 mm; V-0; GWFI 800°C	UL 764	UL E207780 UL E45329
- PVC housing (Optional) (Alternative)	SABIC	SE1X	2,0 mm; V-1; GWFI 725°C	UL 764	UL E45329 UL E207780
- PVC housing (Optional) (Alternative)	SABIC	C2950	Min. V-0, Min. thickness: 2.0 mm, 85°C	UL 764	UL E45329 UL E207780
PCB	Shenzhen Jia Li Chuang Technology Development Co LTD	JLC-1	V-0, 130°C	UL 94 UL 746 IEC/EN 62133-2	UL E479892 Tested with the unit
- PCB (Alternative)	Interchangeable	Interchangeable	Min. V-0, 130°C	UL 94 UL 746	UL Approved
-Protection IC (U1)	HYCON	HY2113-FB2B	Overcharge Protection Voltage: 4.25V±0.025V, Over discharge Protection Voltage: 2.5 V±0.05 V, Topr: -40°C ~+85°C	IEC/EN 62133-2	Tested with the unit
- Mosfets (U2, U3) (U3 optional)	NCEPOWER	NCE2010E	7 A; 20 V	IEC/EN 62133-2	Tested with the unit
- Mosfets (Alternative)	Interchangeable	Interchangeable	7 A; 20 V	IEC/EN 62133-2	Tested with the unit
Cell	LiShen	LR1865HB	3350 mAh; 3.6 V; Lithium-ion Cell	IEC 62133-2:2017	FI-44360
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

List of test equipment used: N/A (CBTL)

A completed list of used test equipment shall be provided in the Test Reports when a Customer's Testing Facility according to CTF stage 1 or CTF stage 2 procedure has been used.
Note: This page may be removed when CTF stage 1 or CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date

Attachment No.1.: Photos

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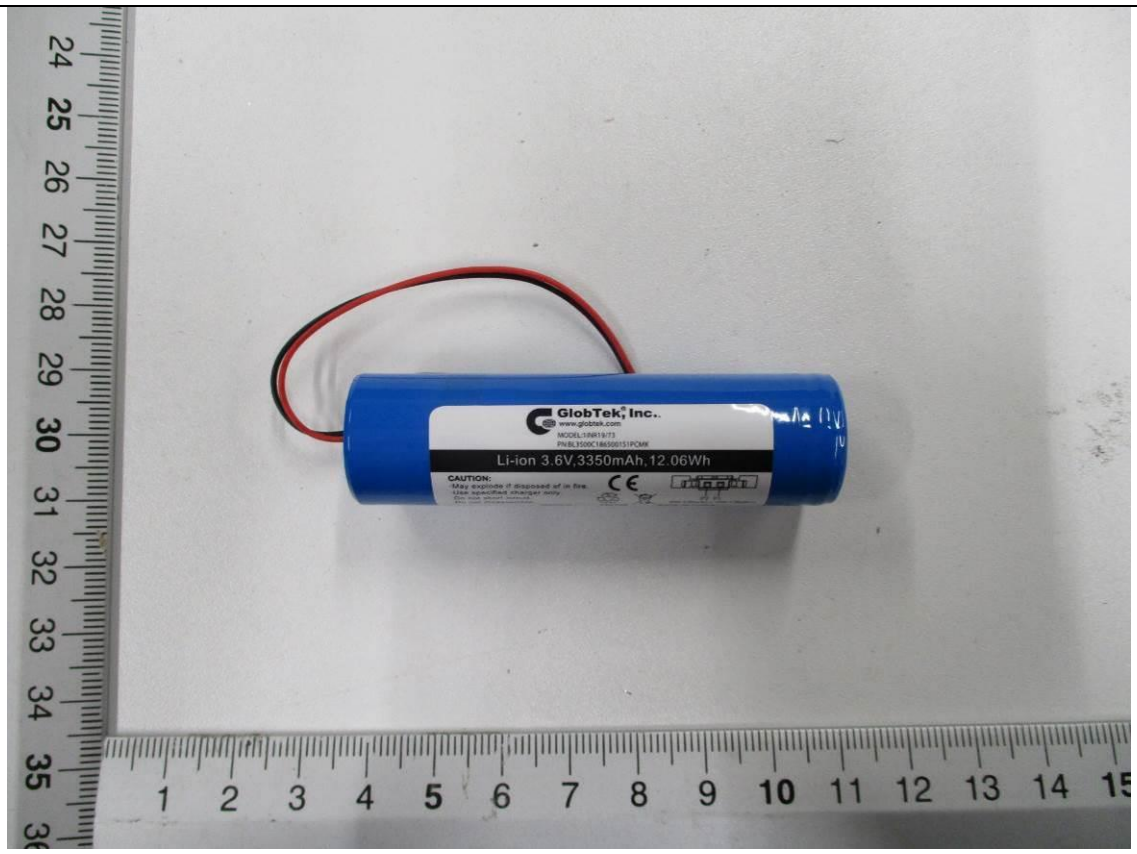

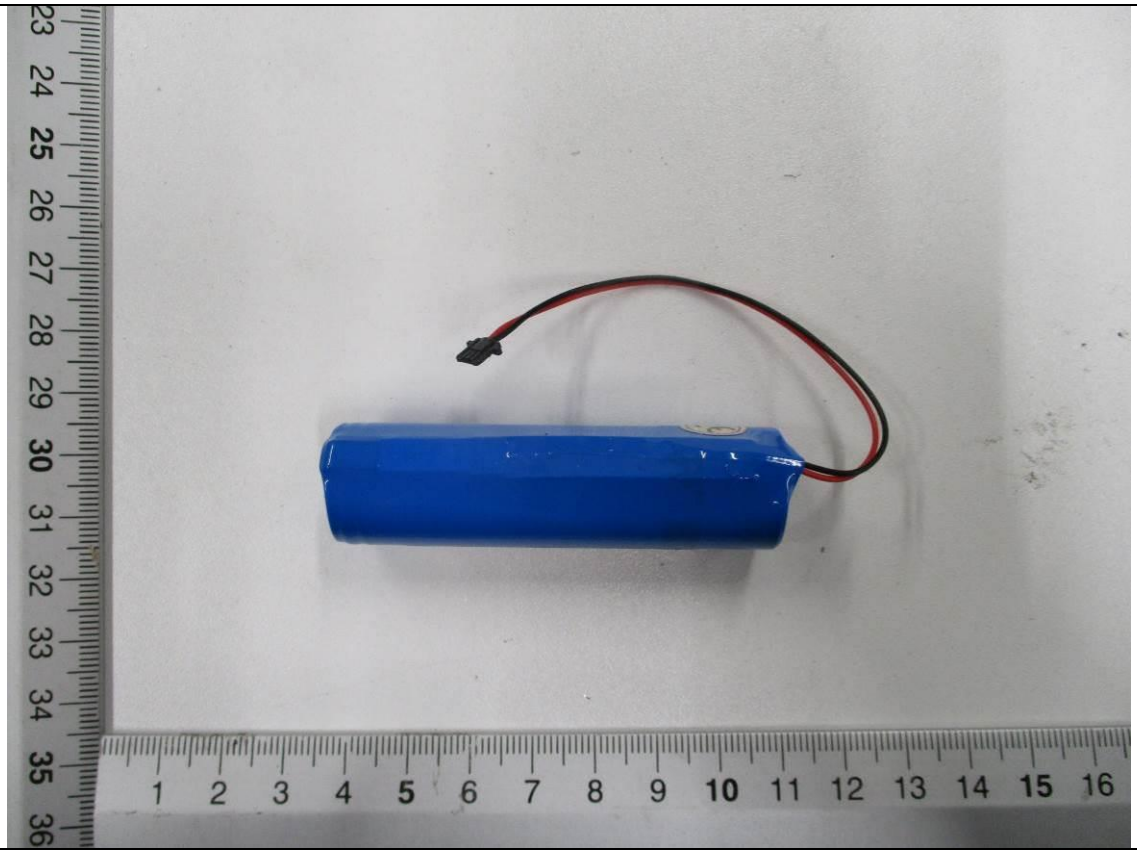

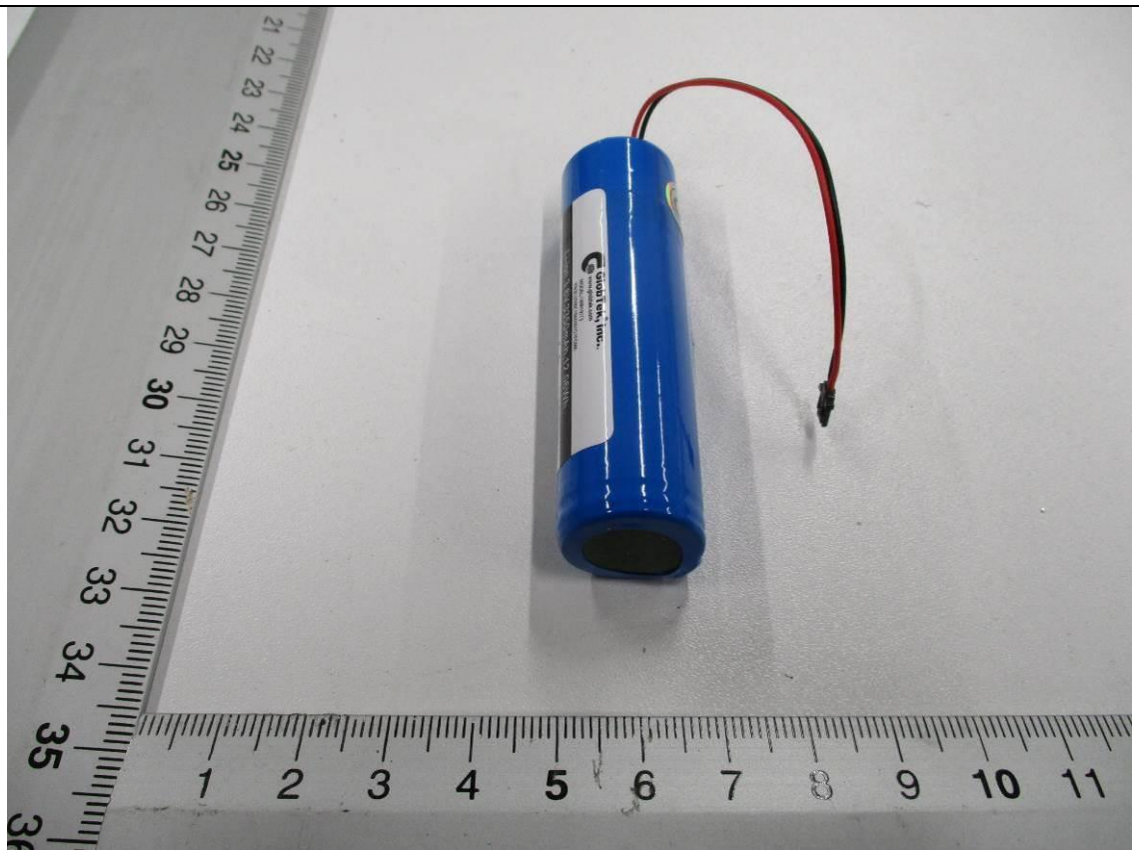

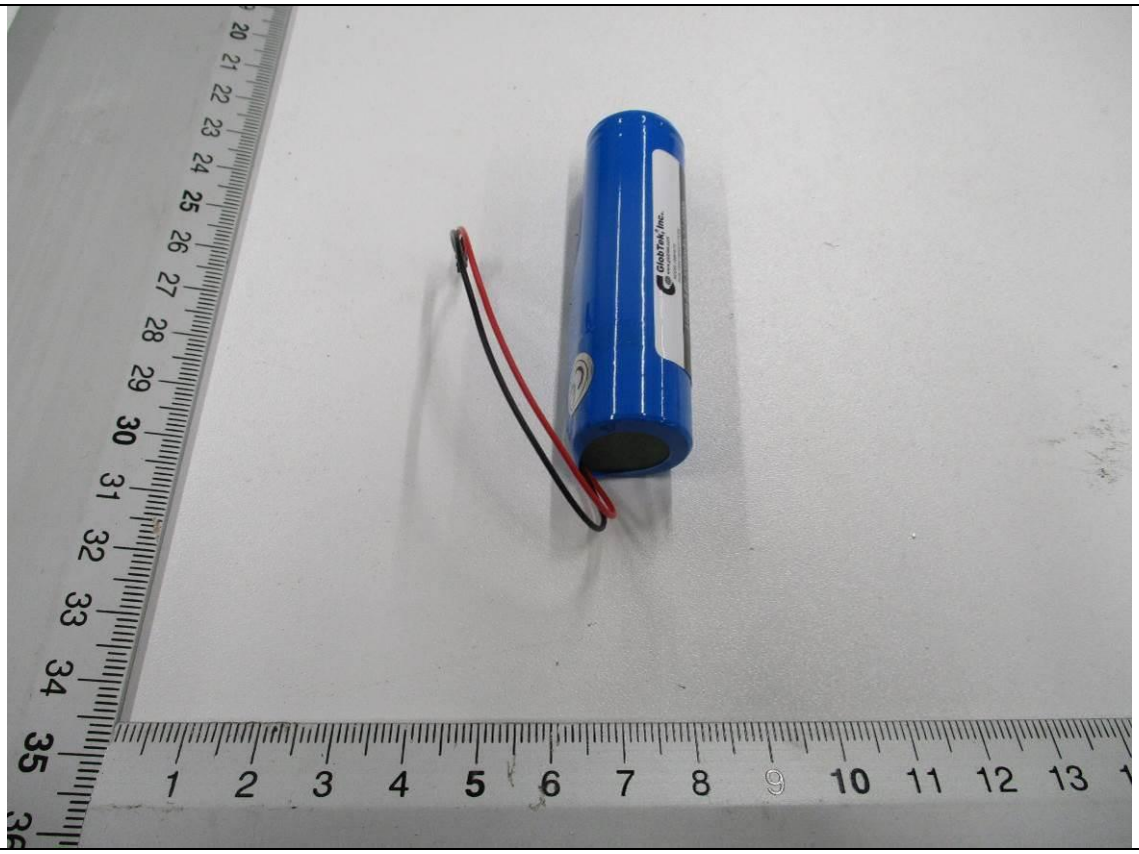

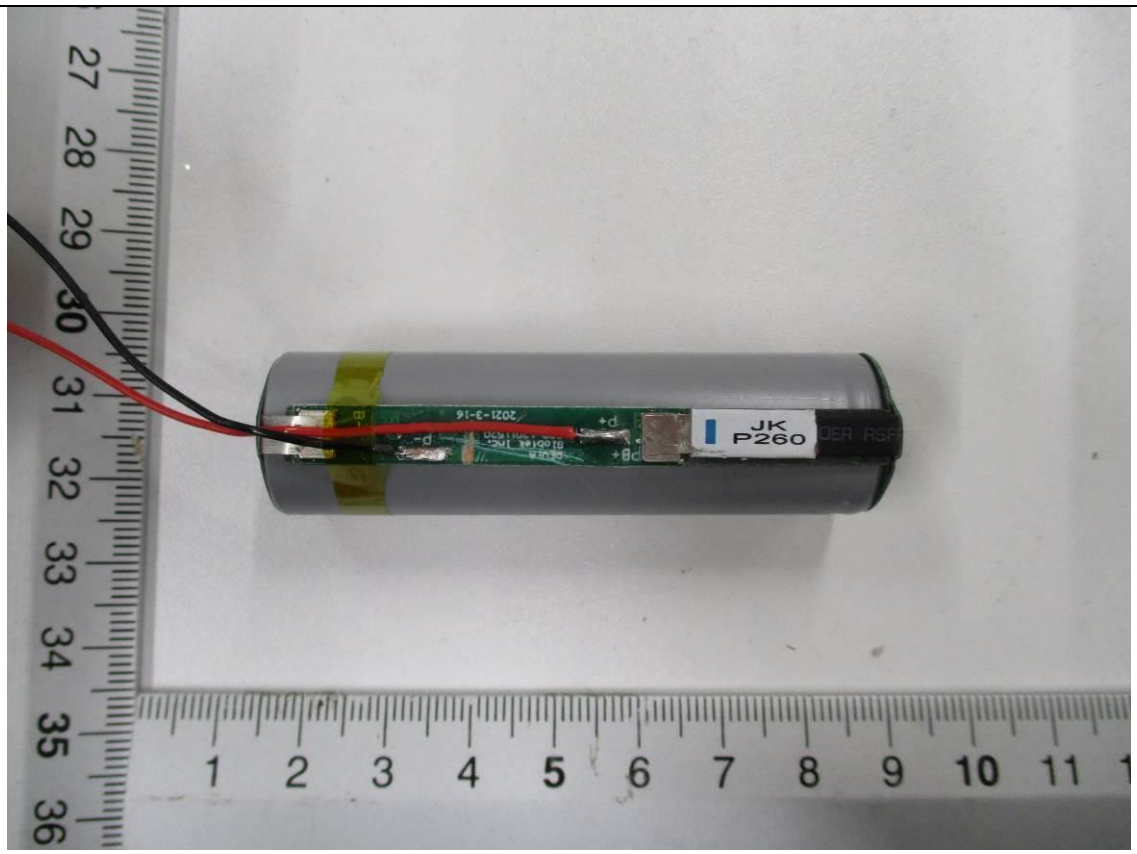
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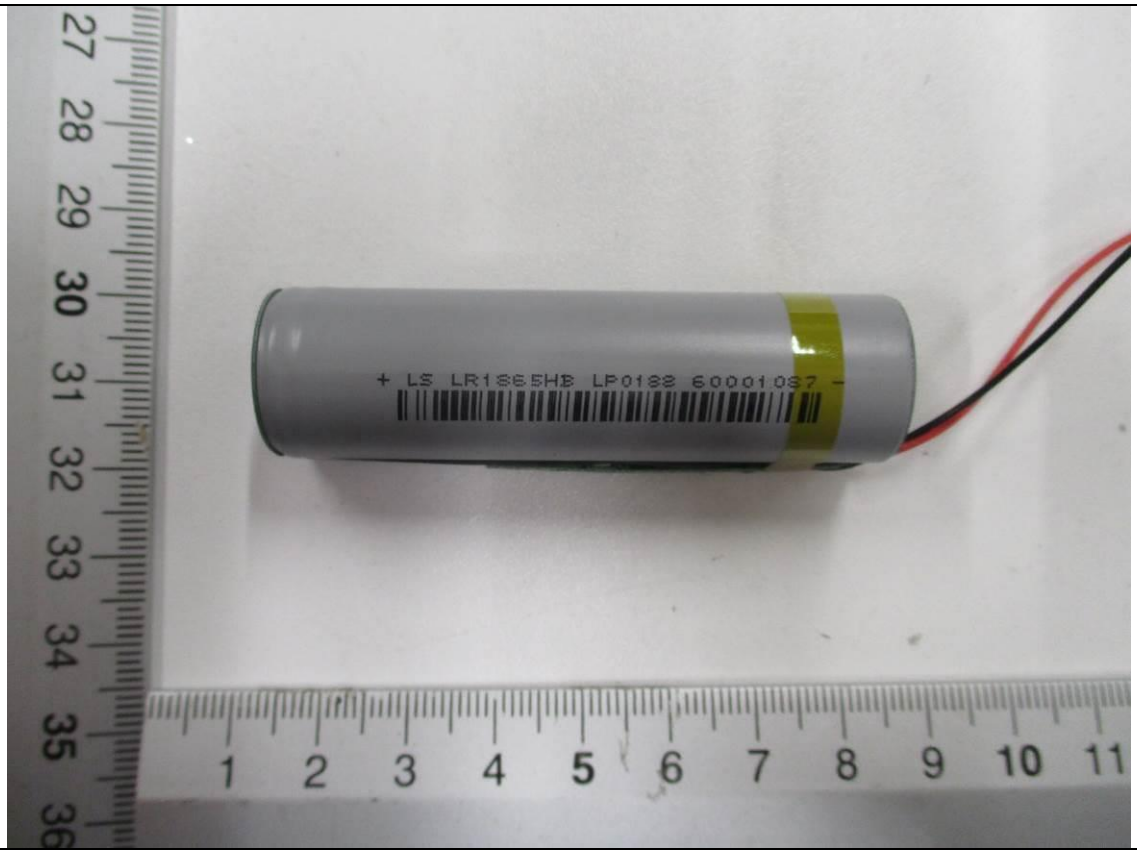
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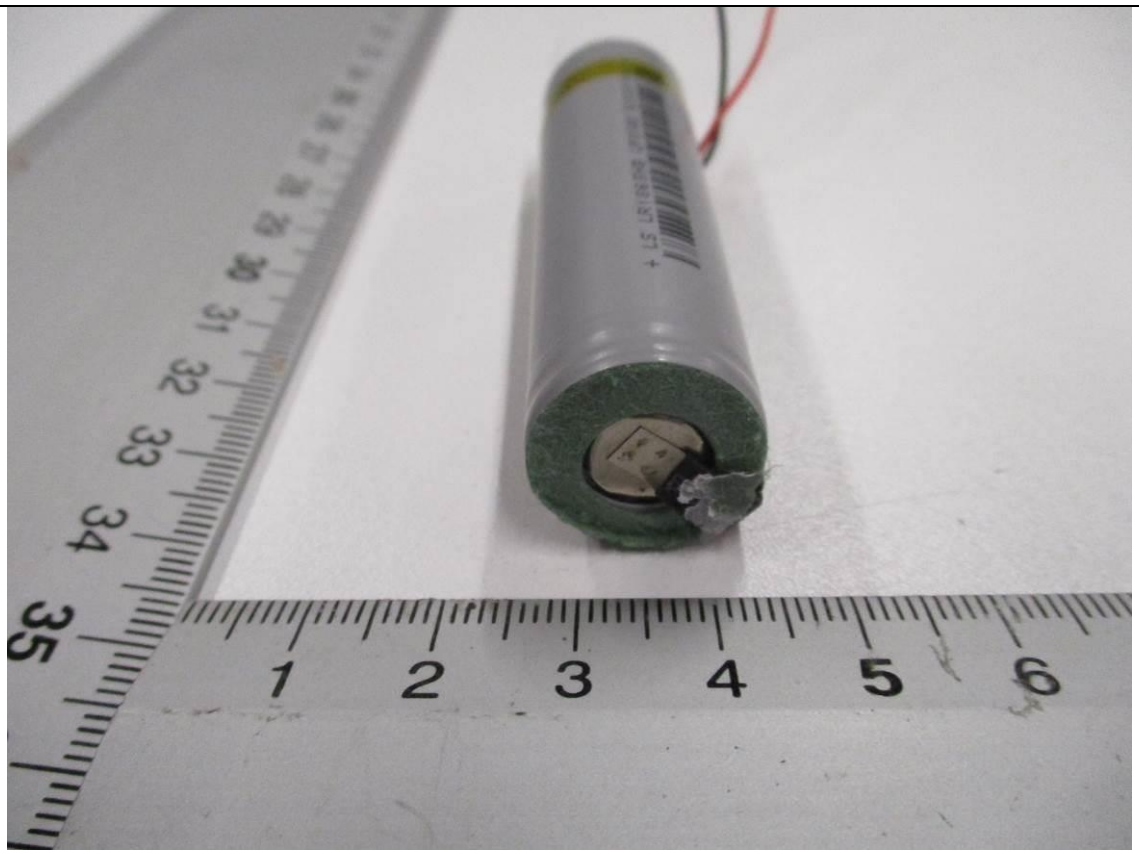

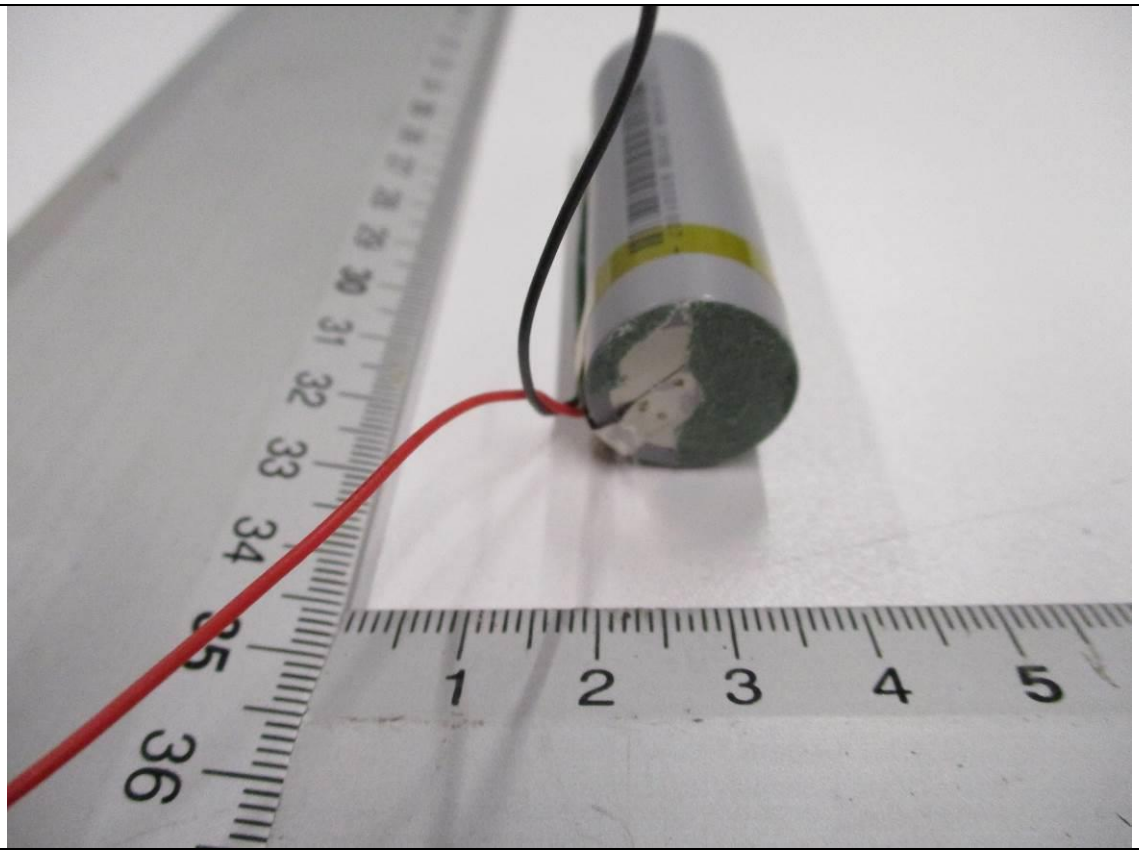

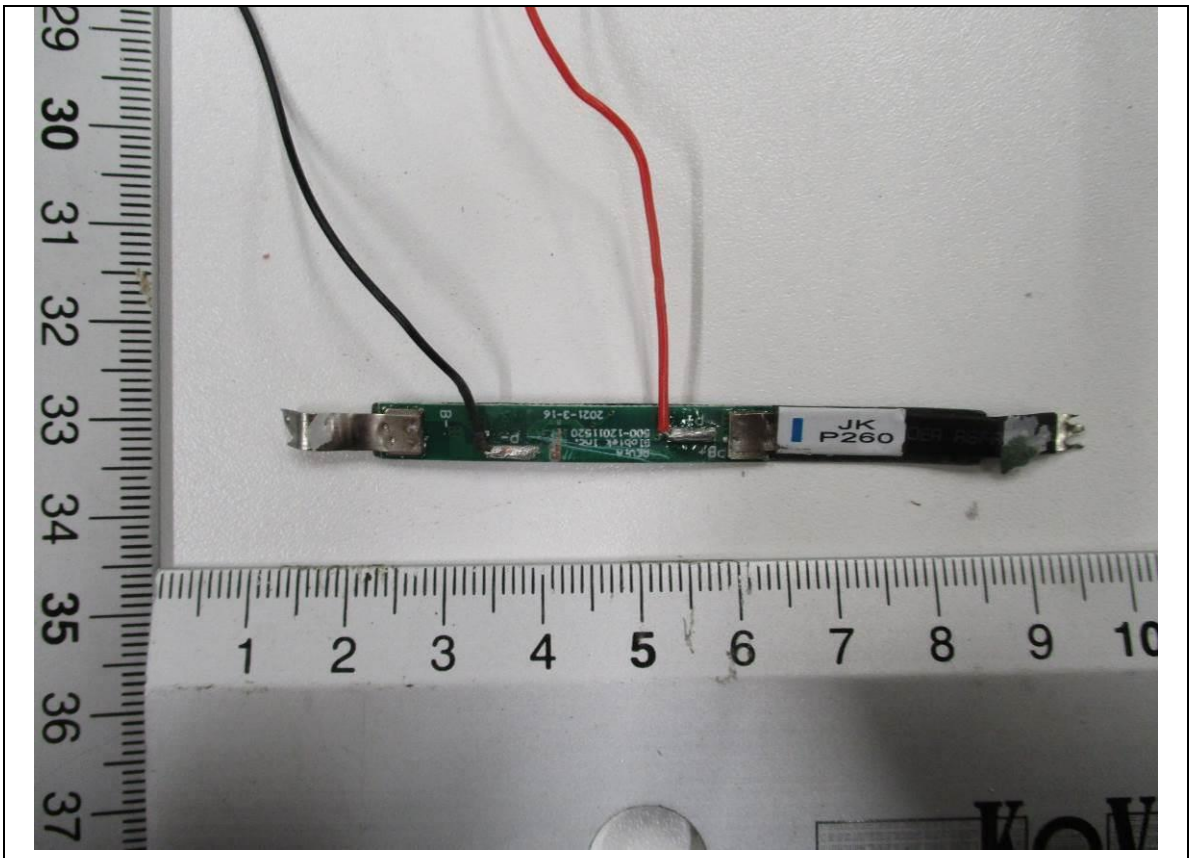
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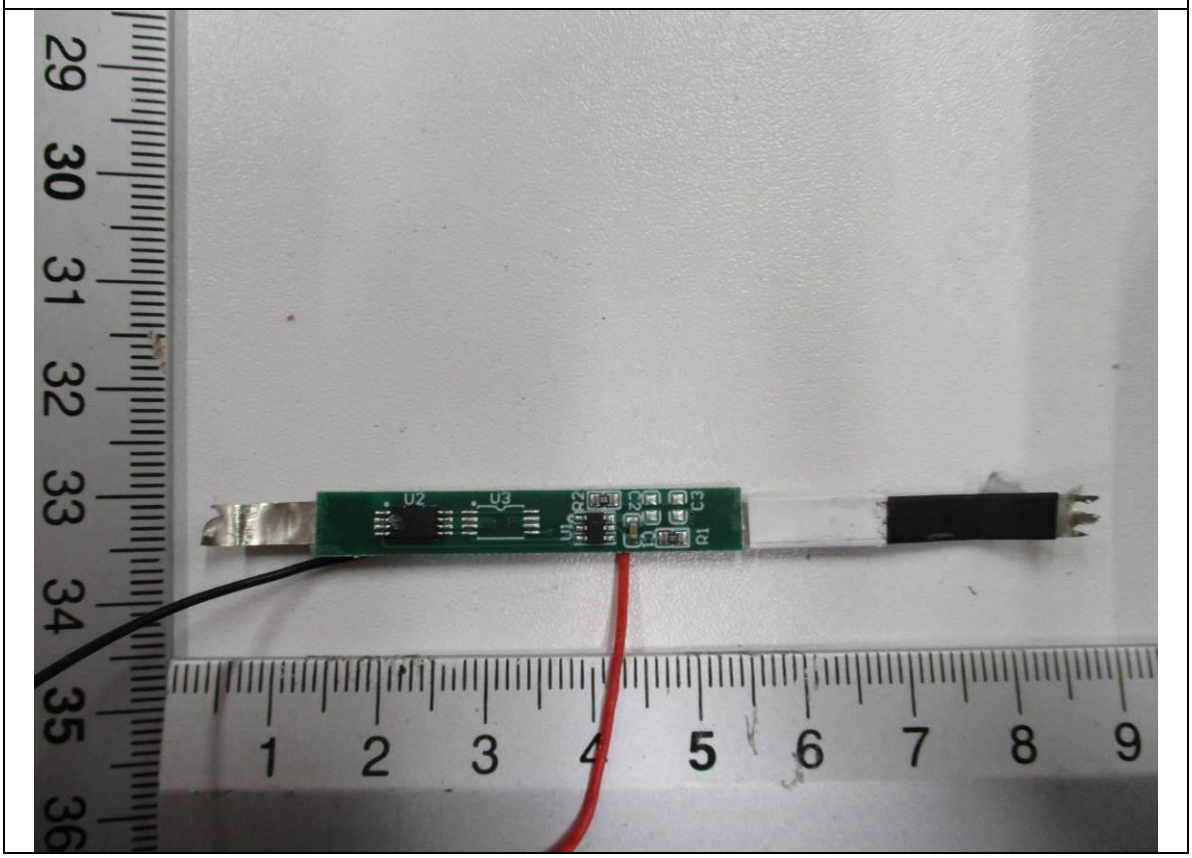

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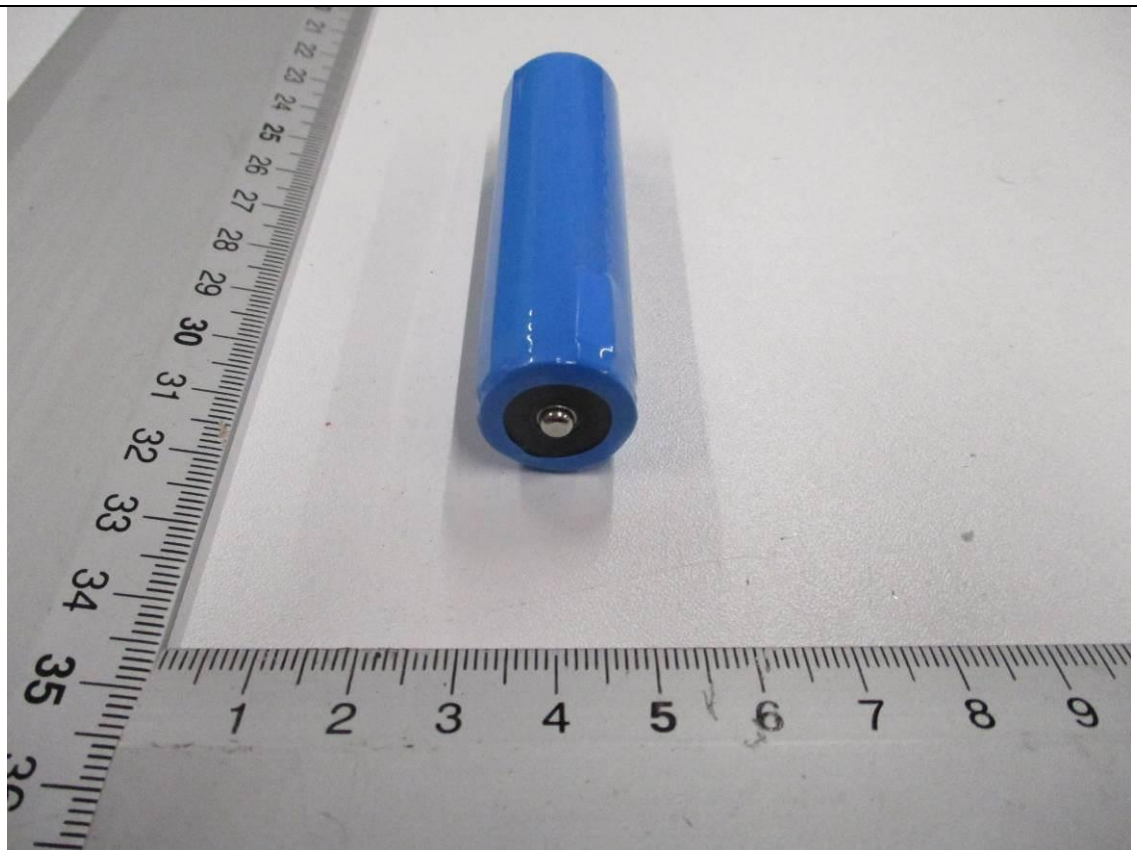

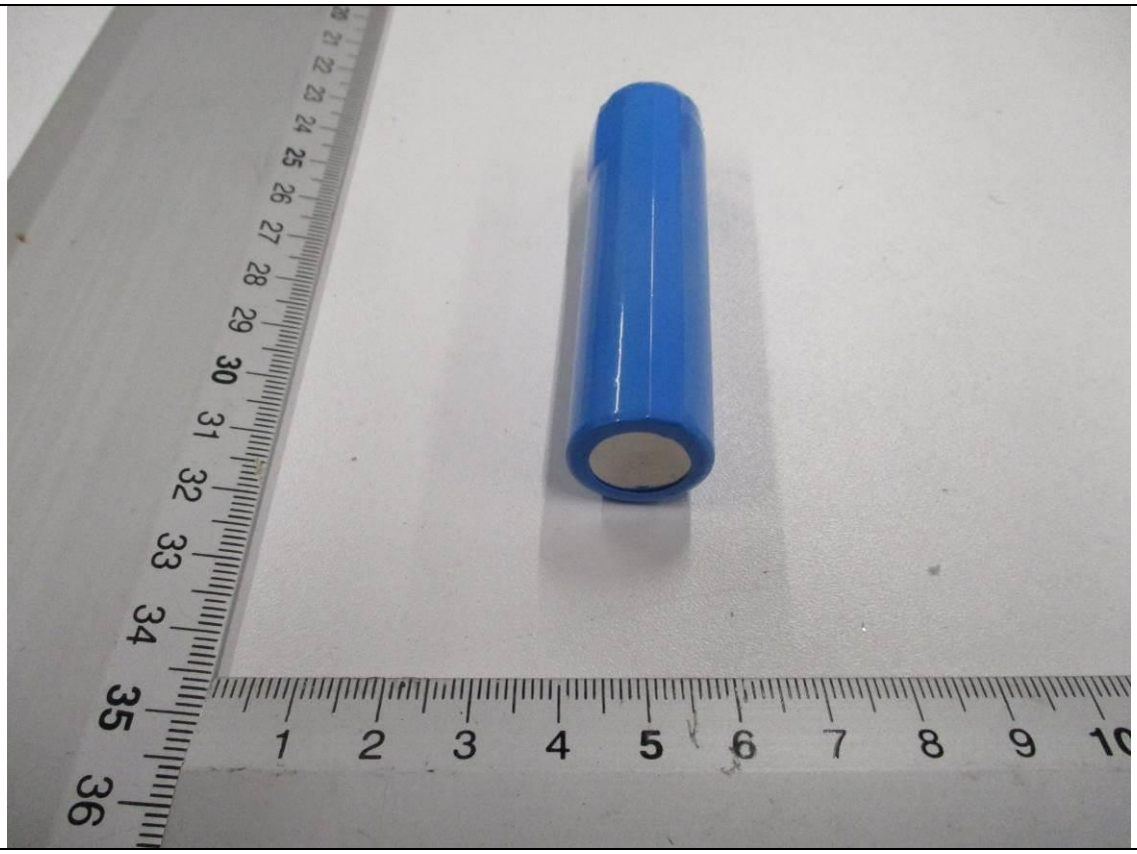

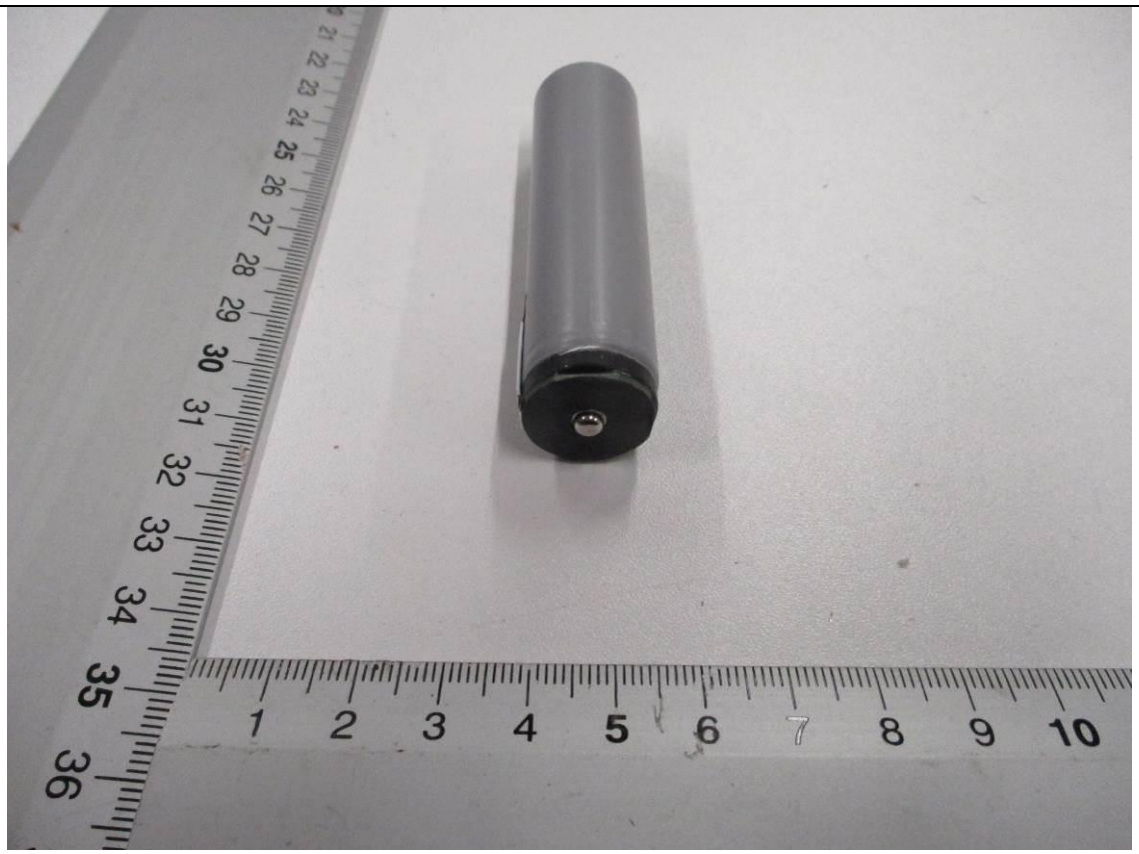

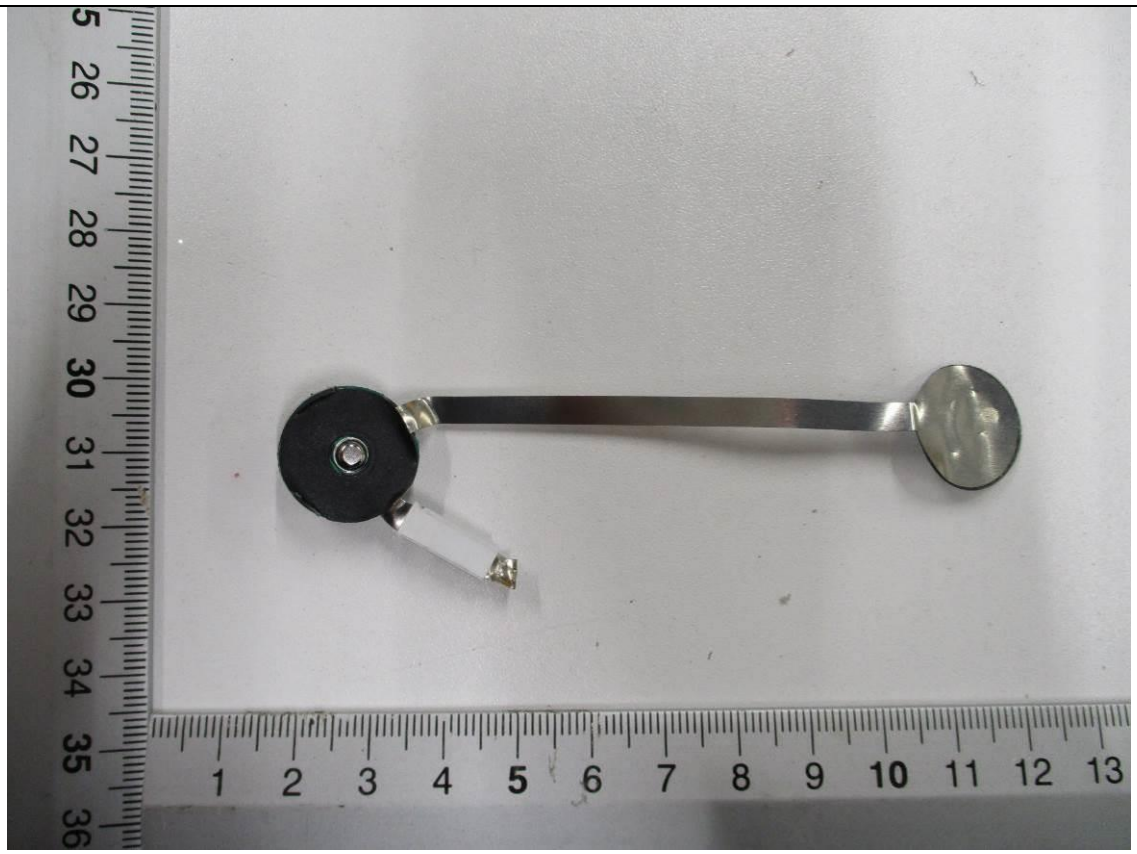

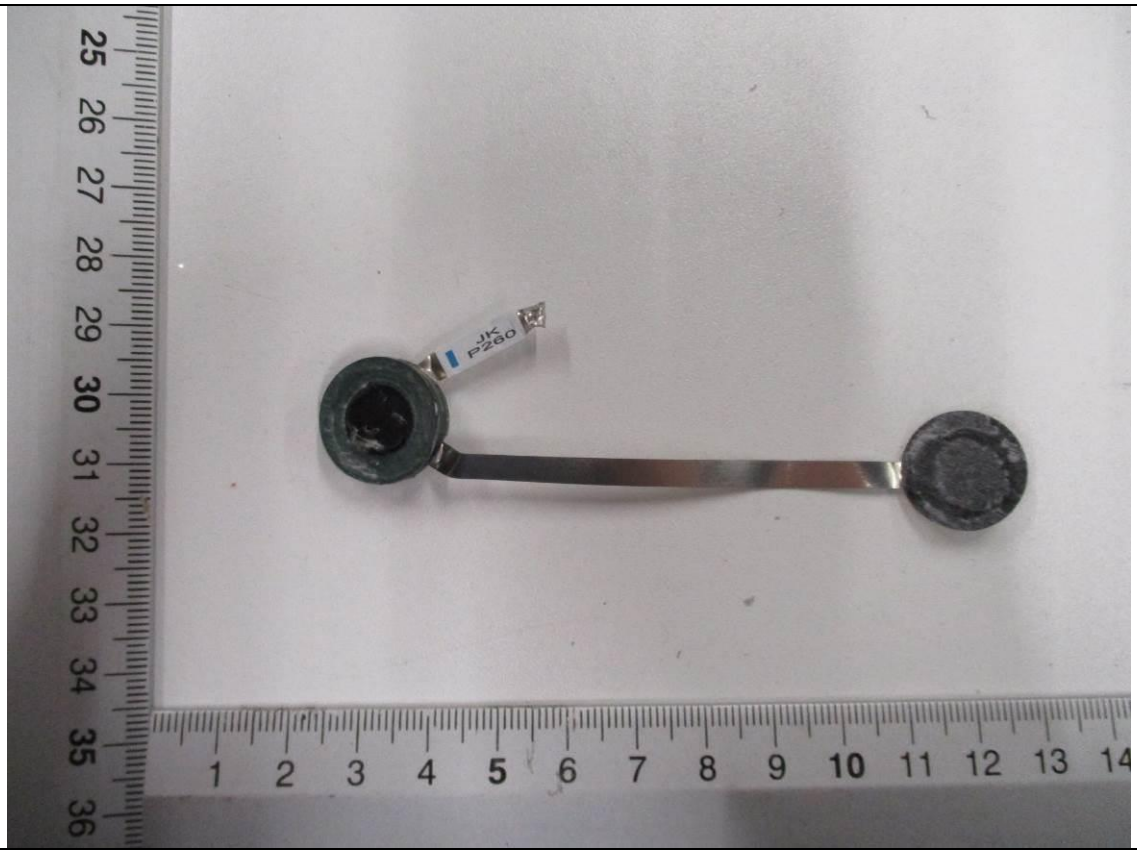
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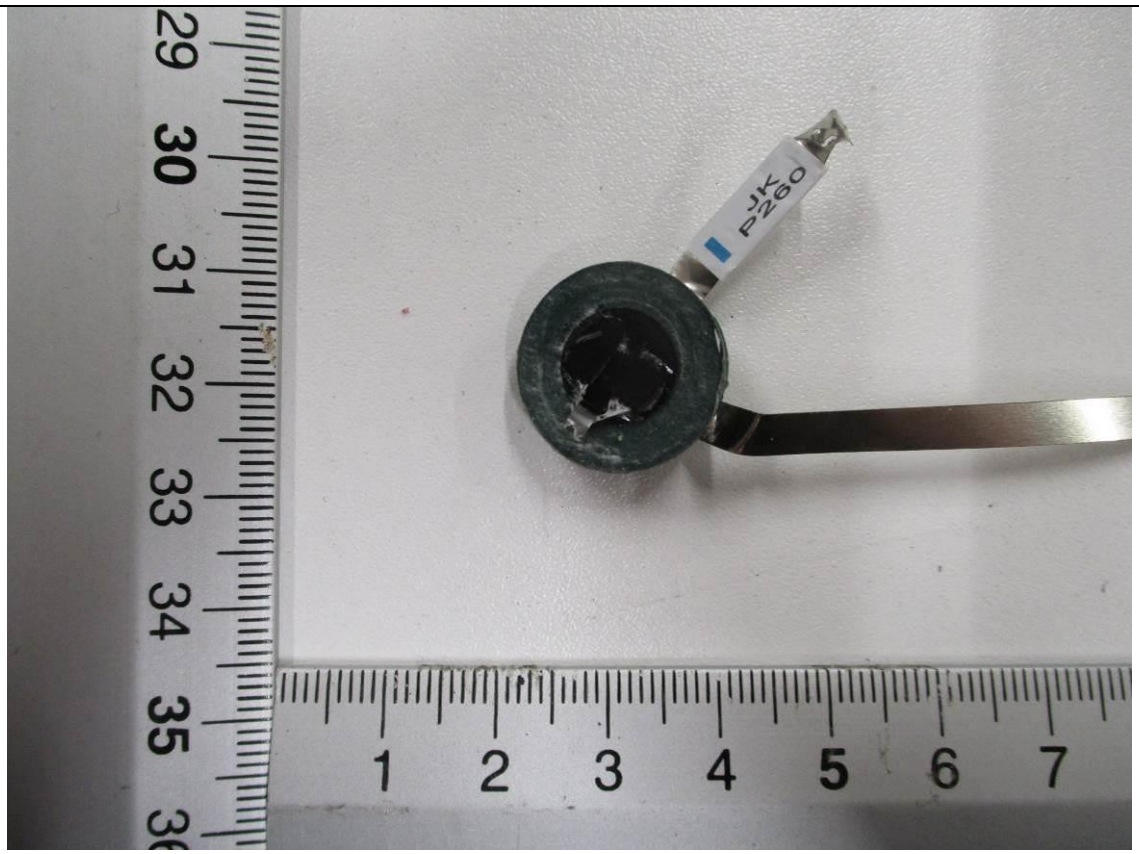
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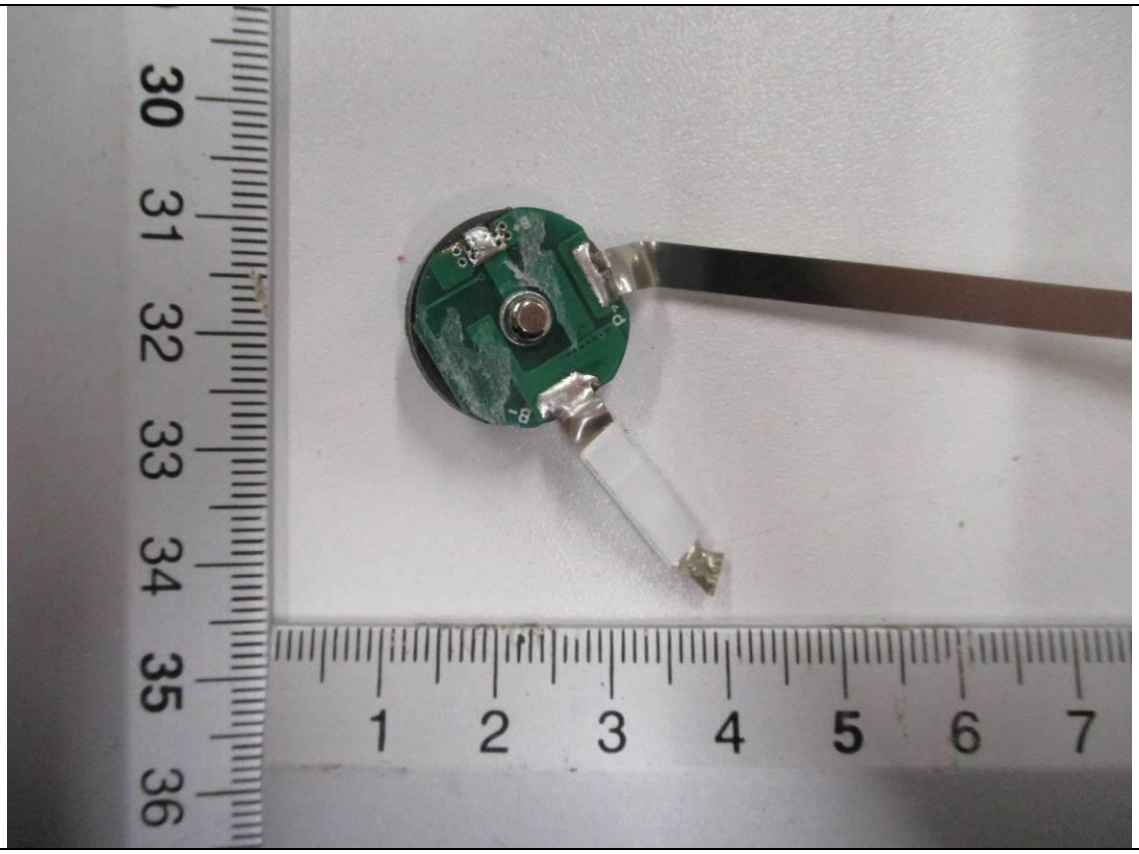

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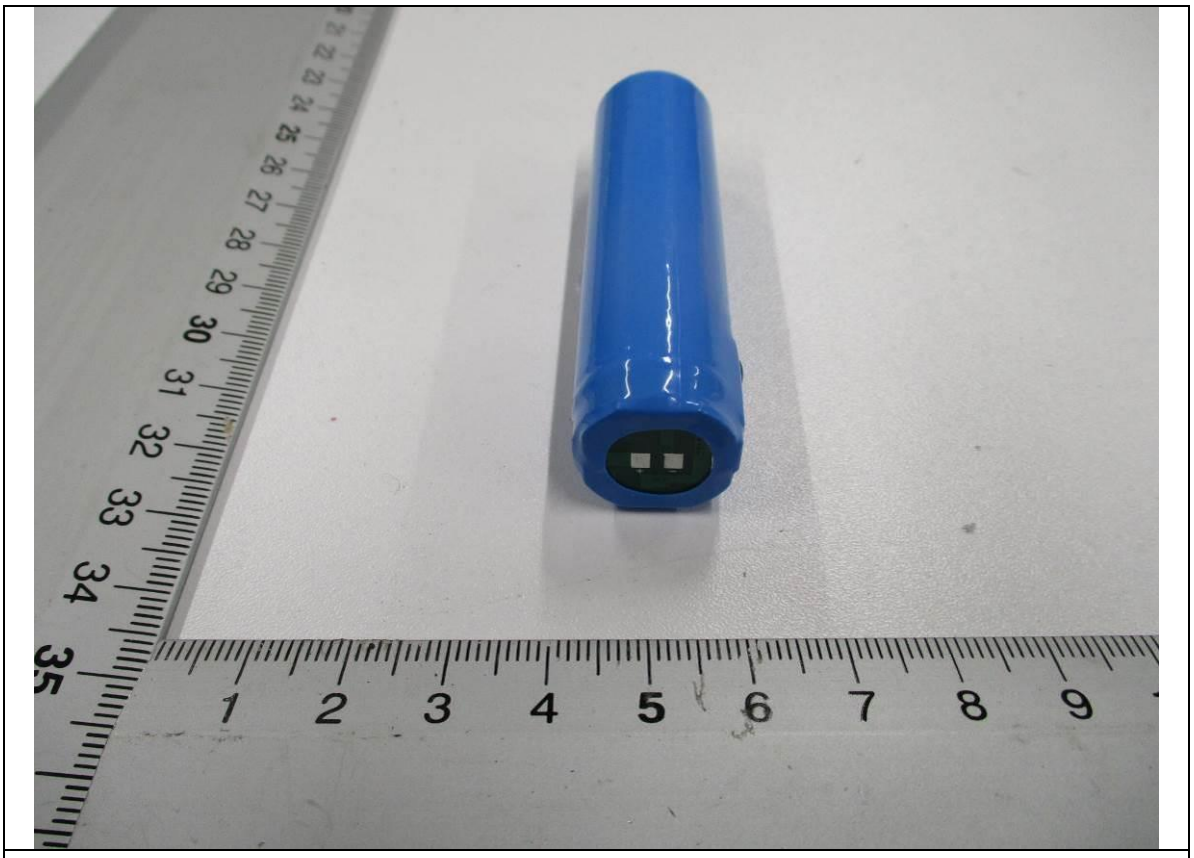

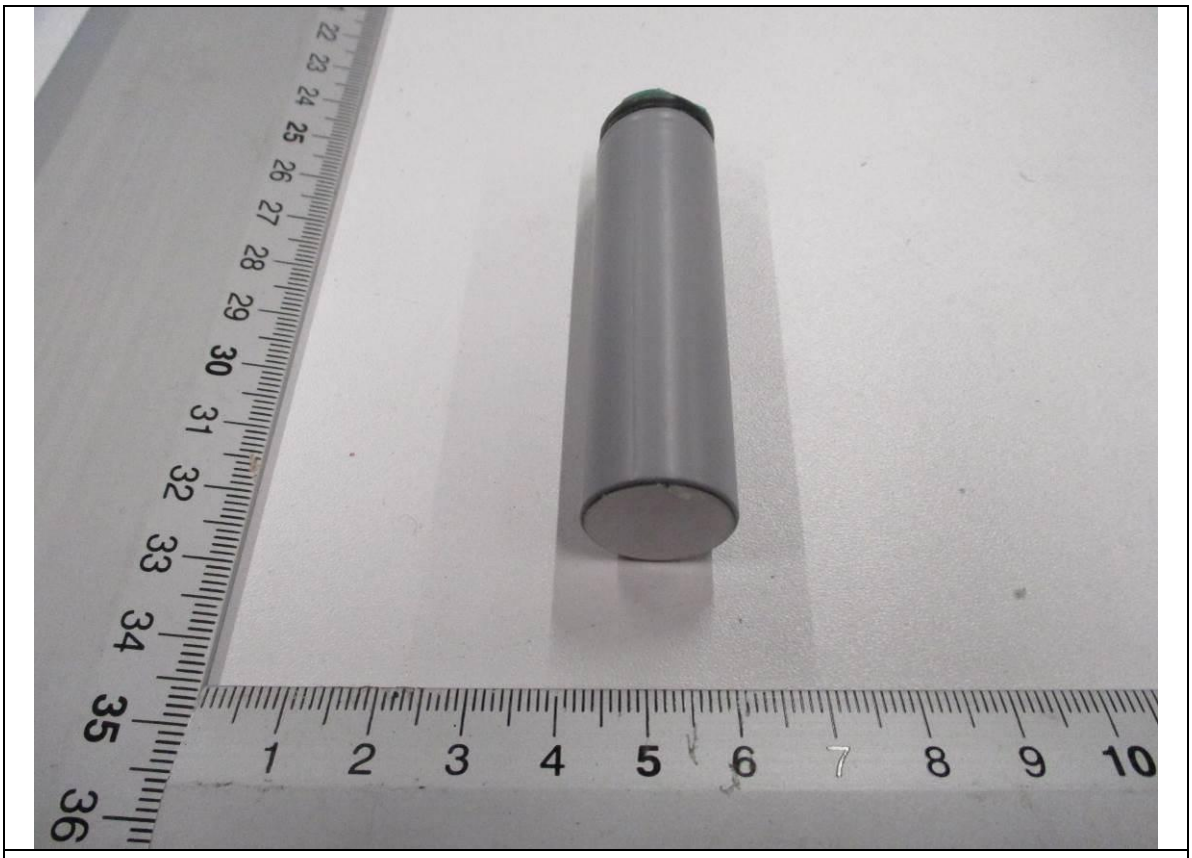

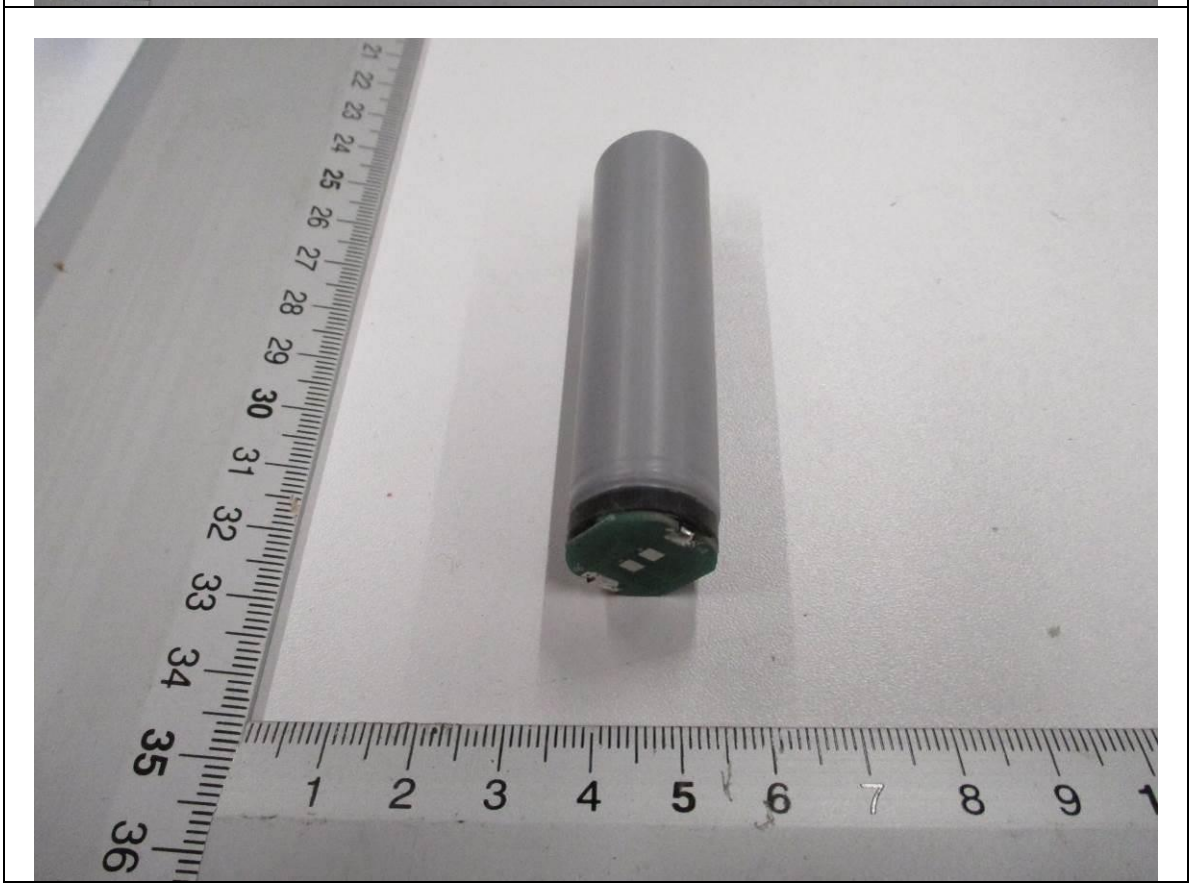

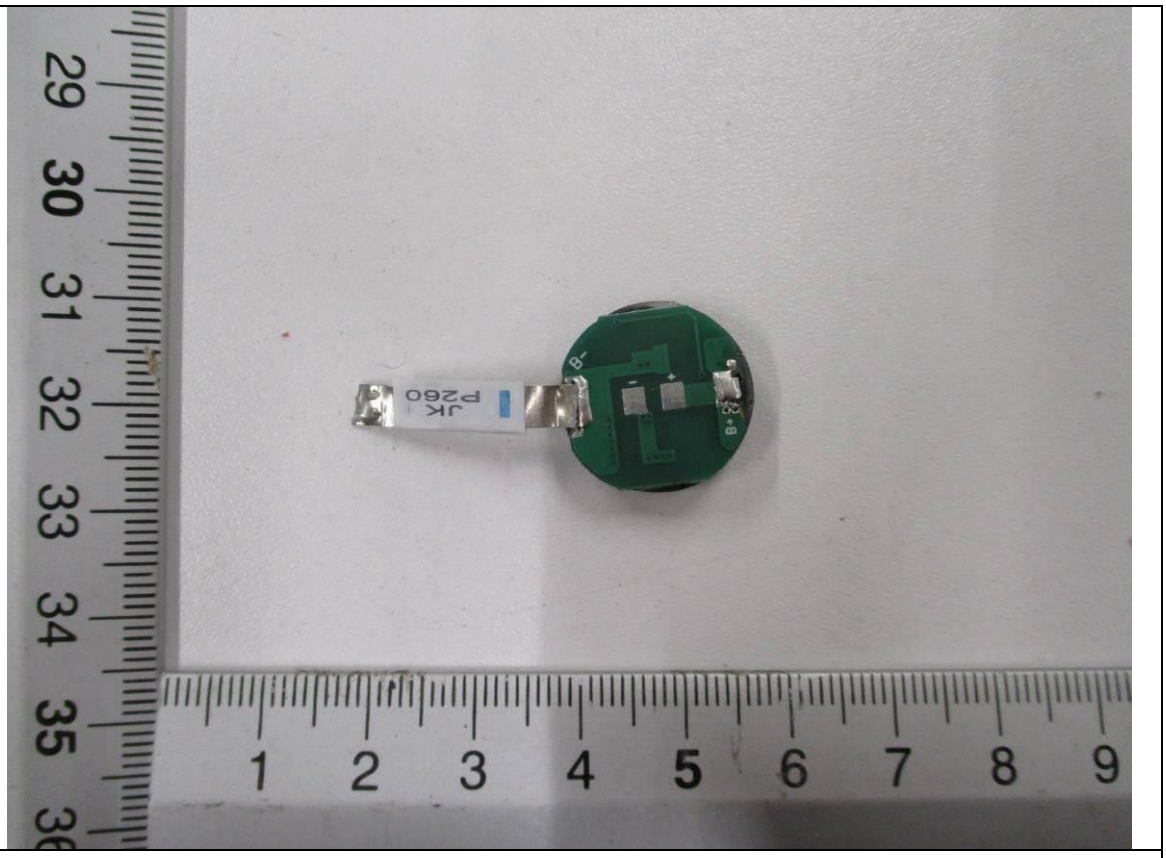
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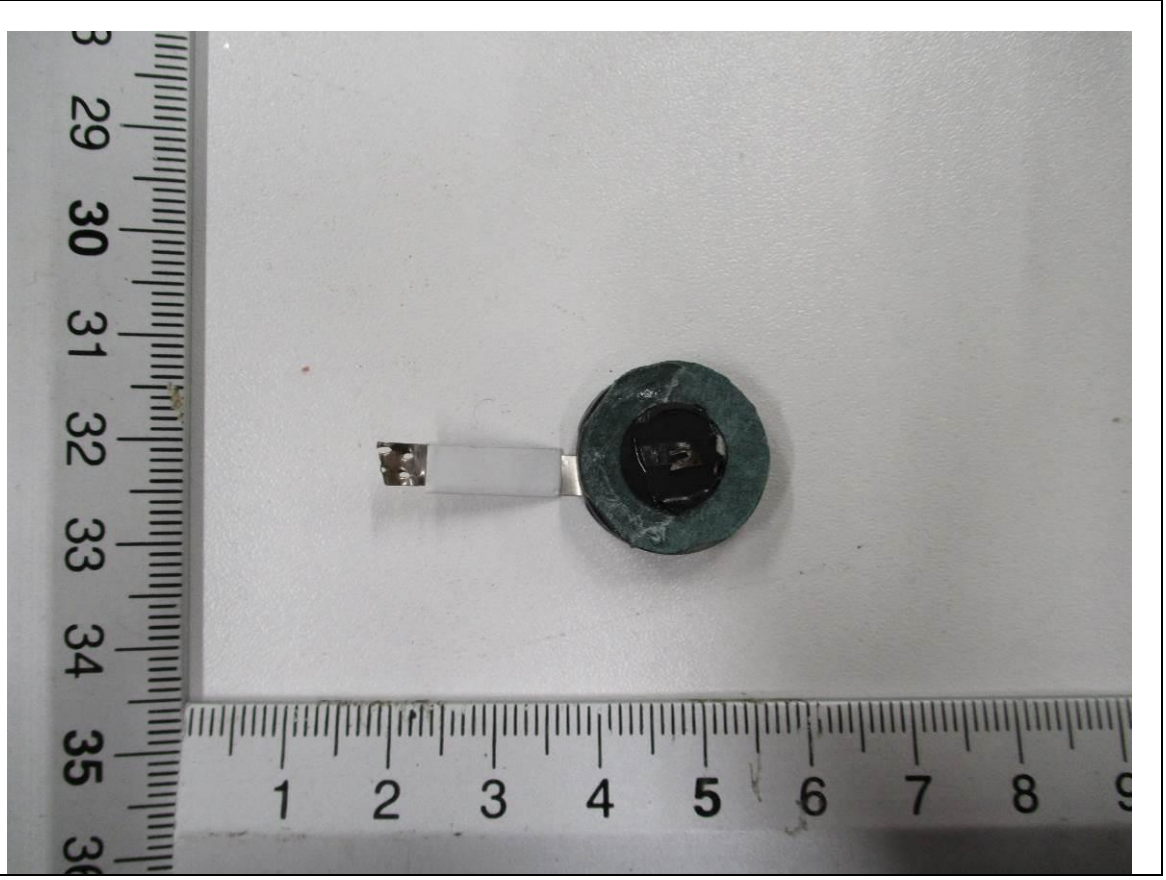
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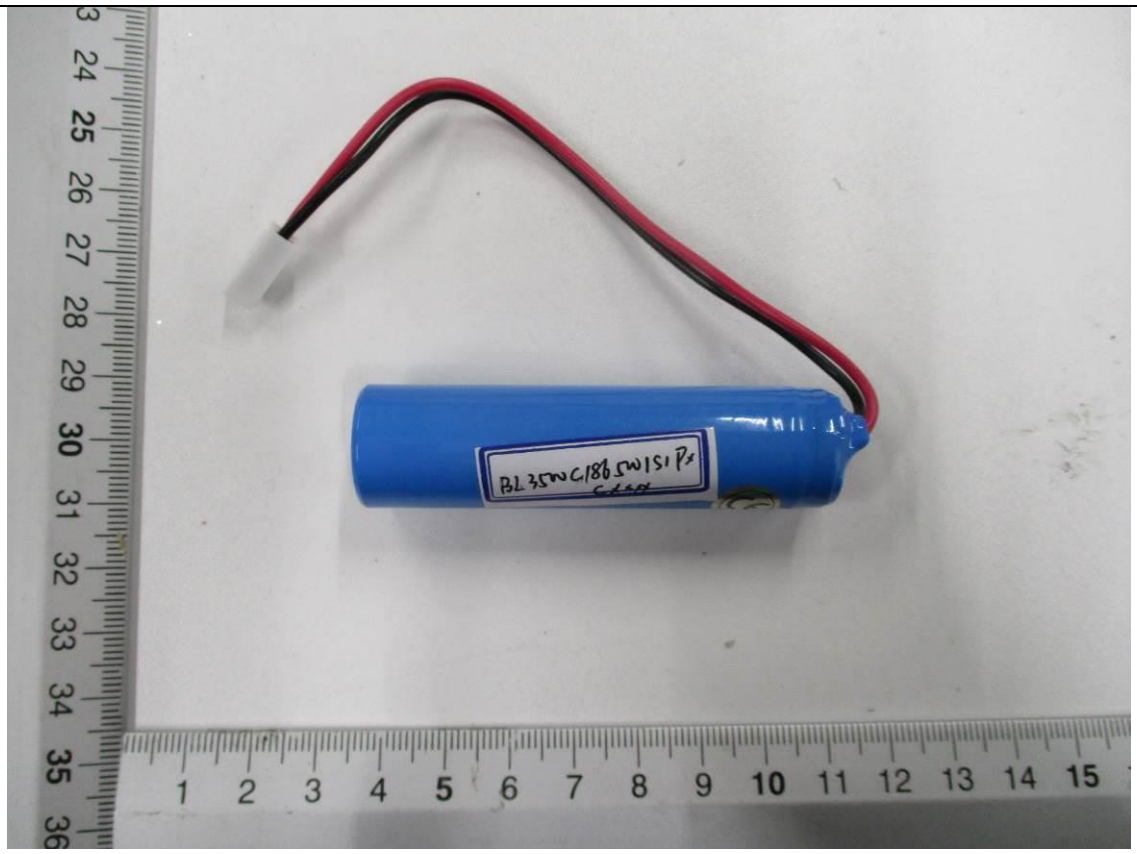

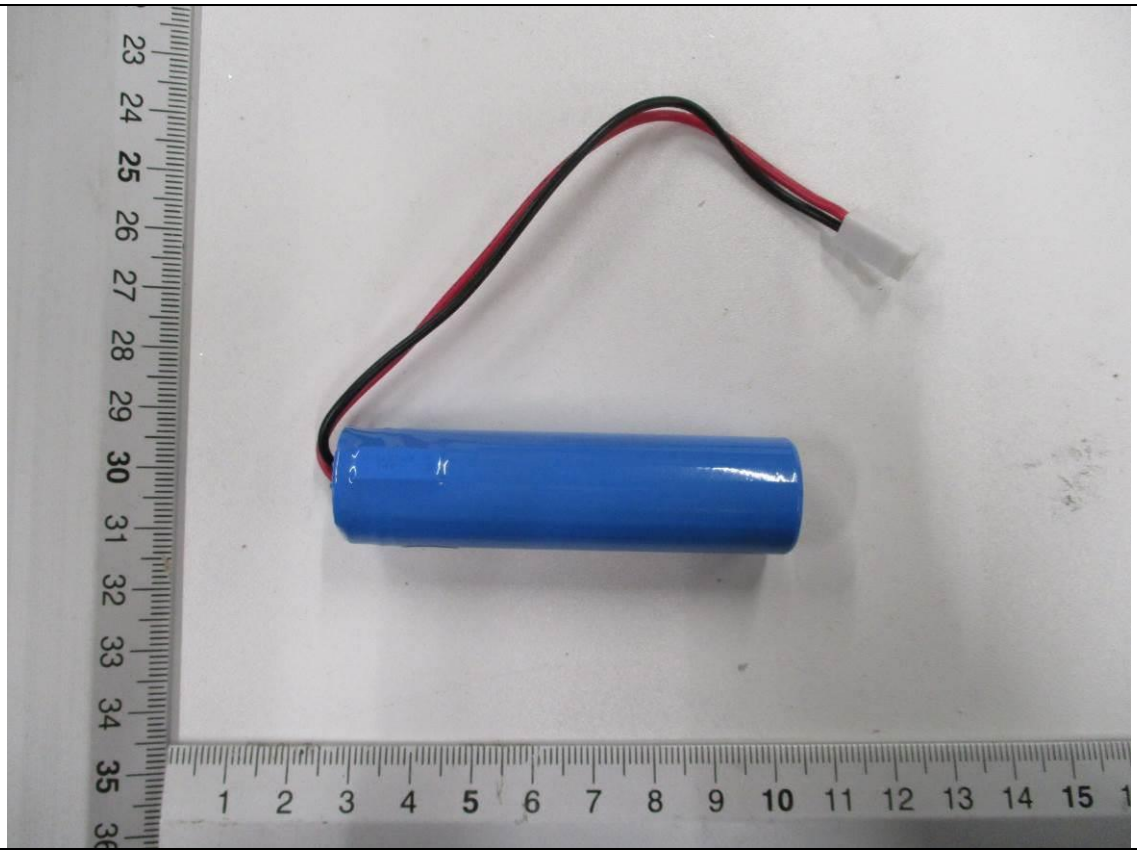

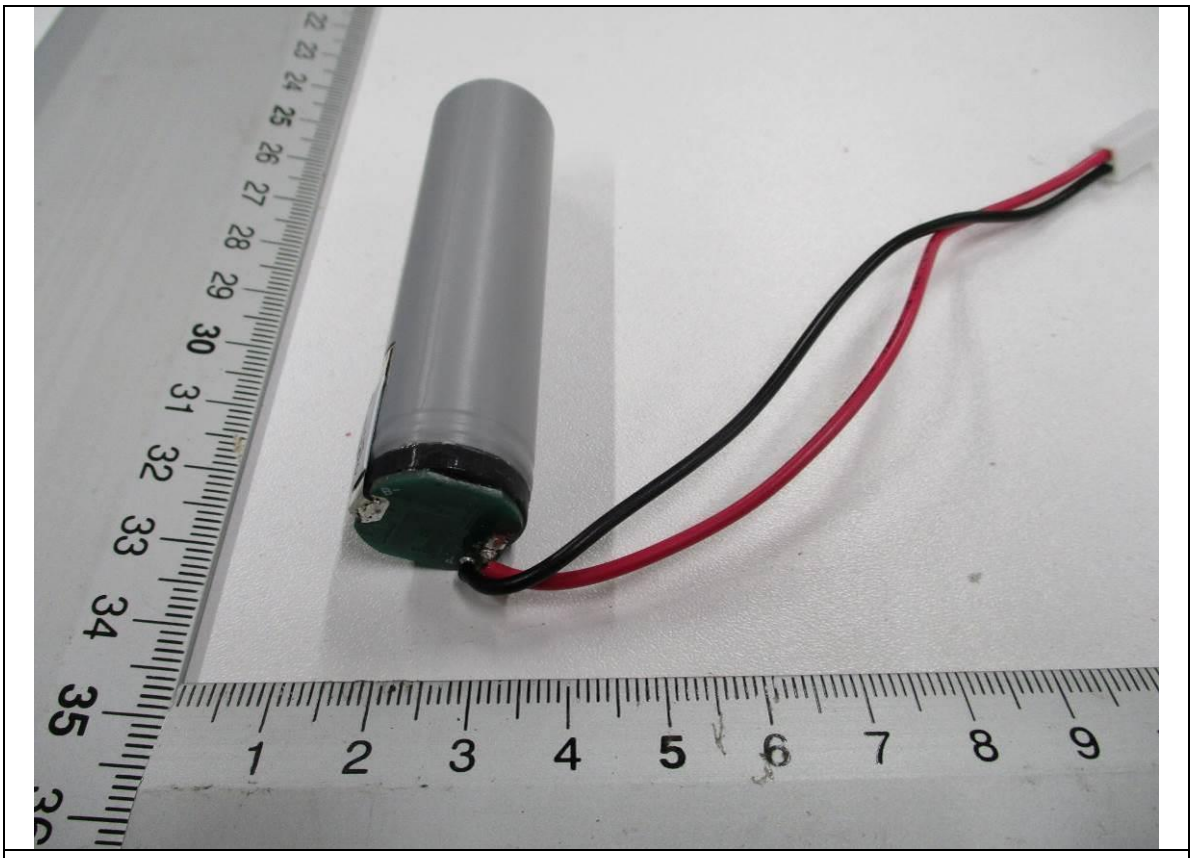

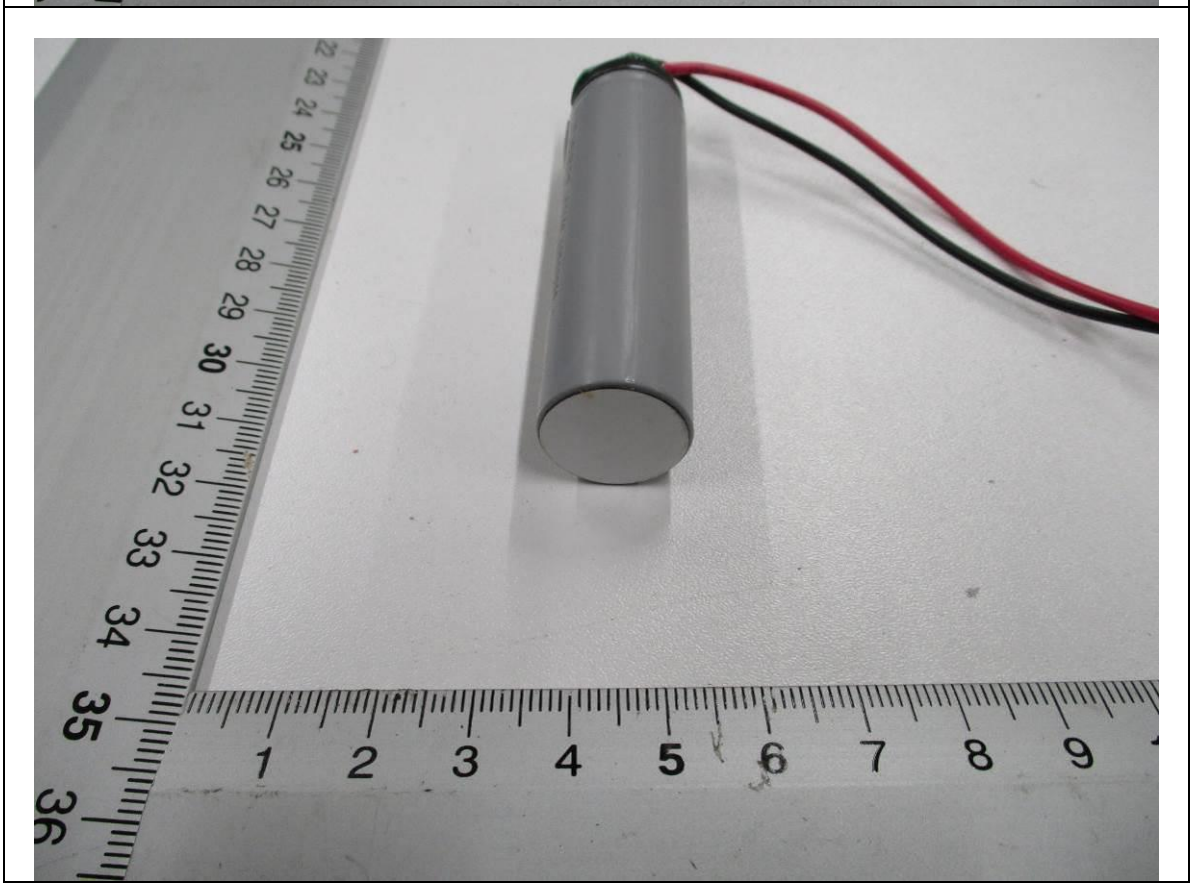

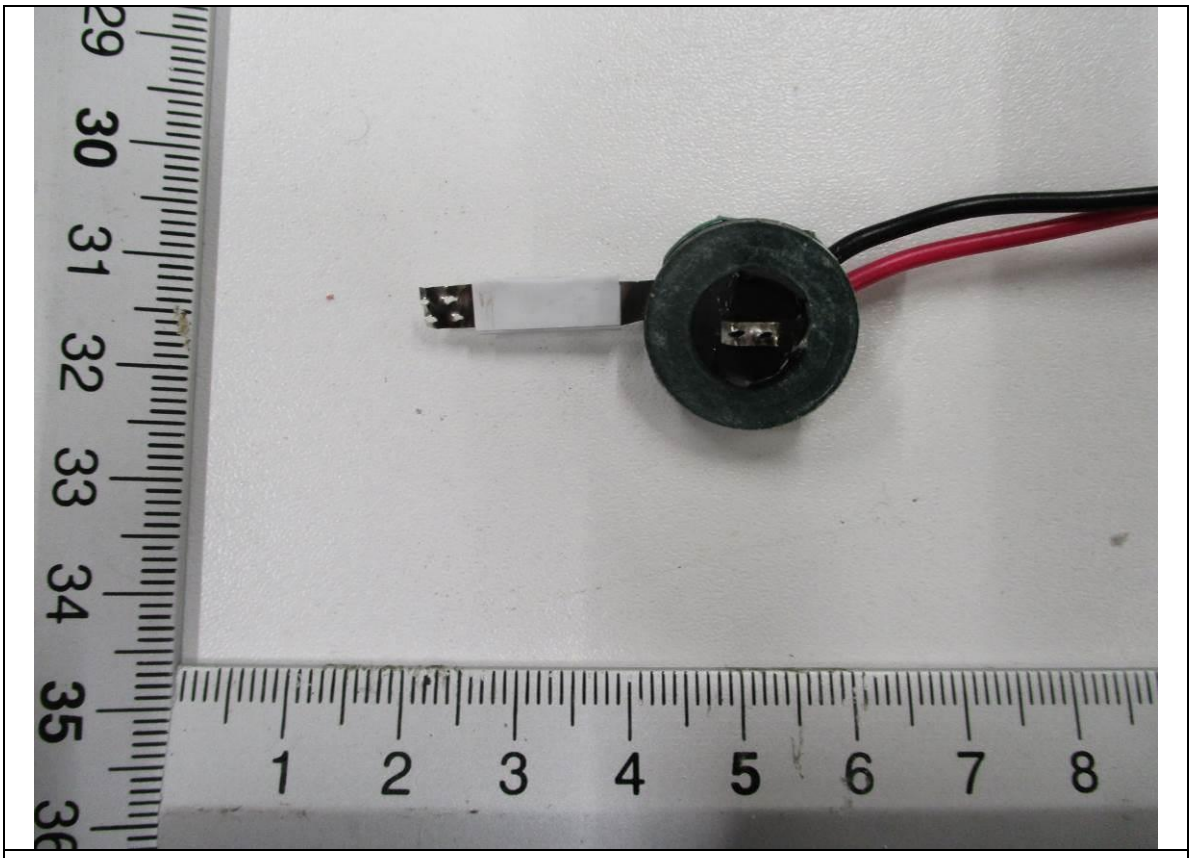

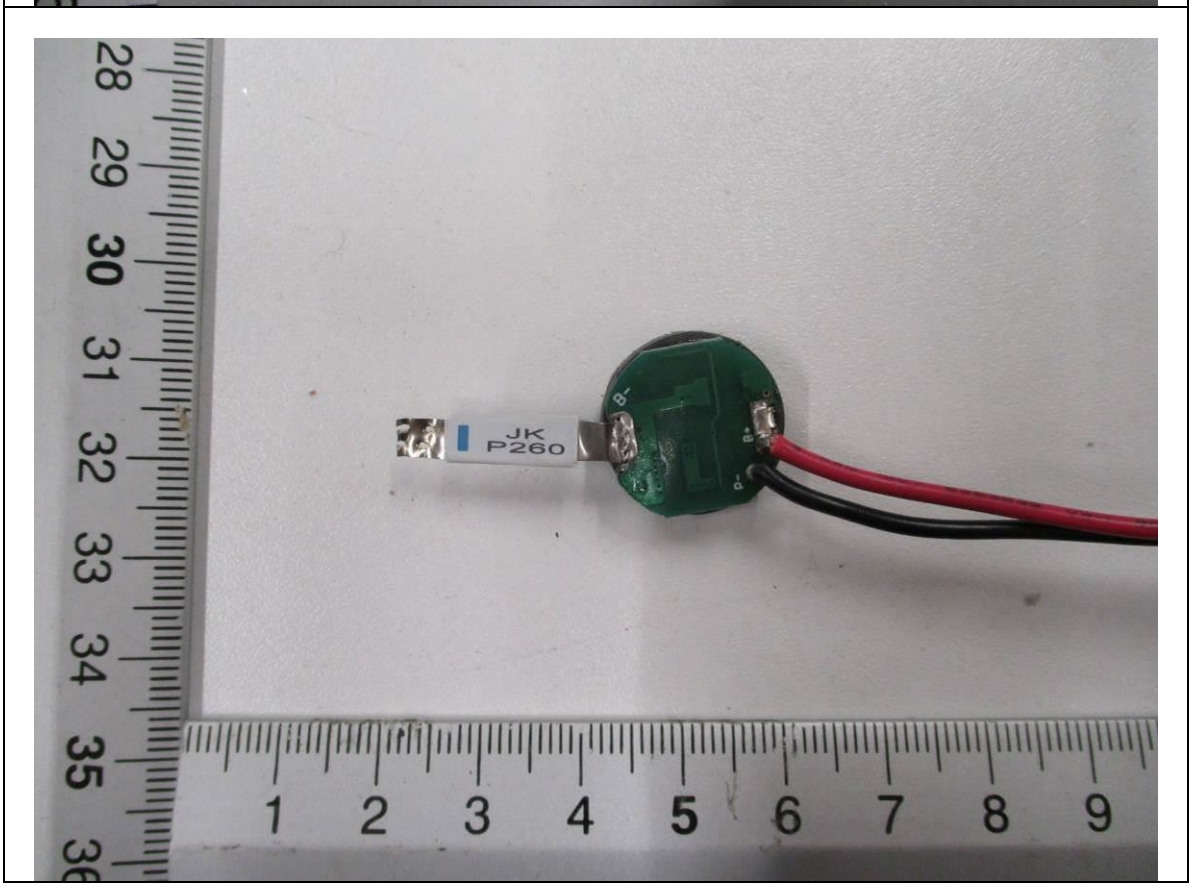
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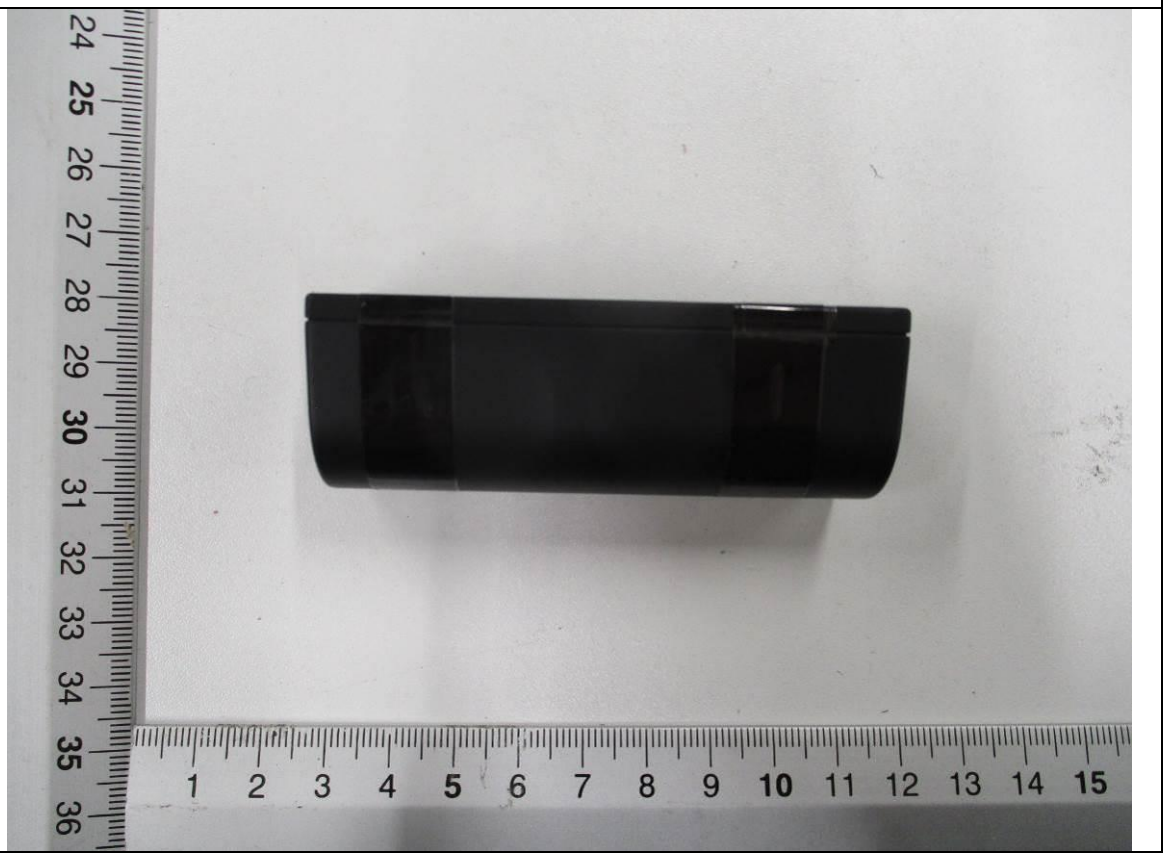


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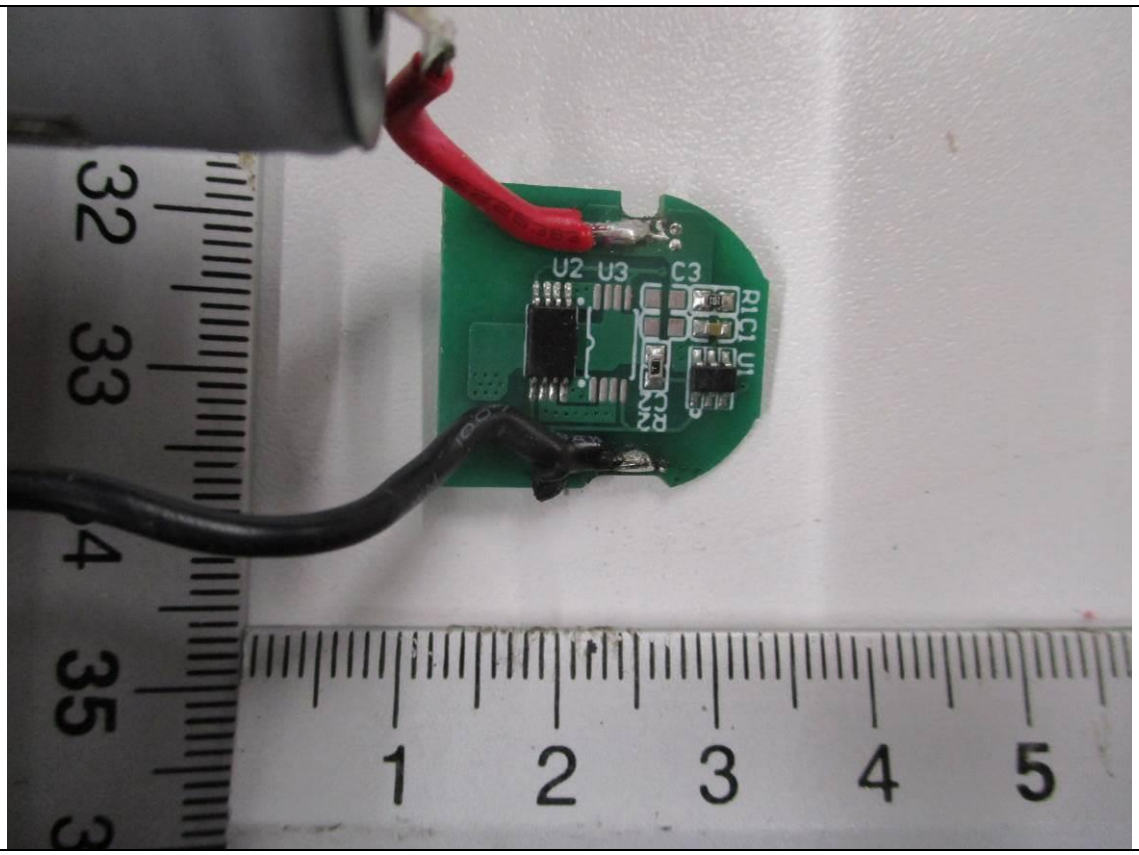
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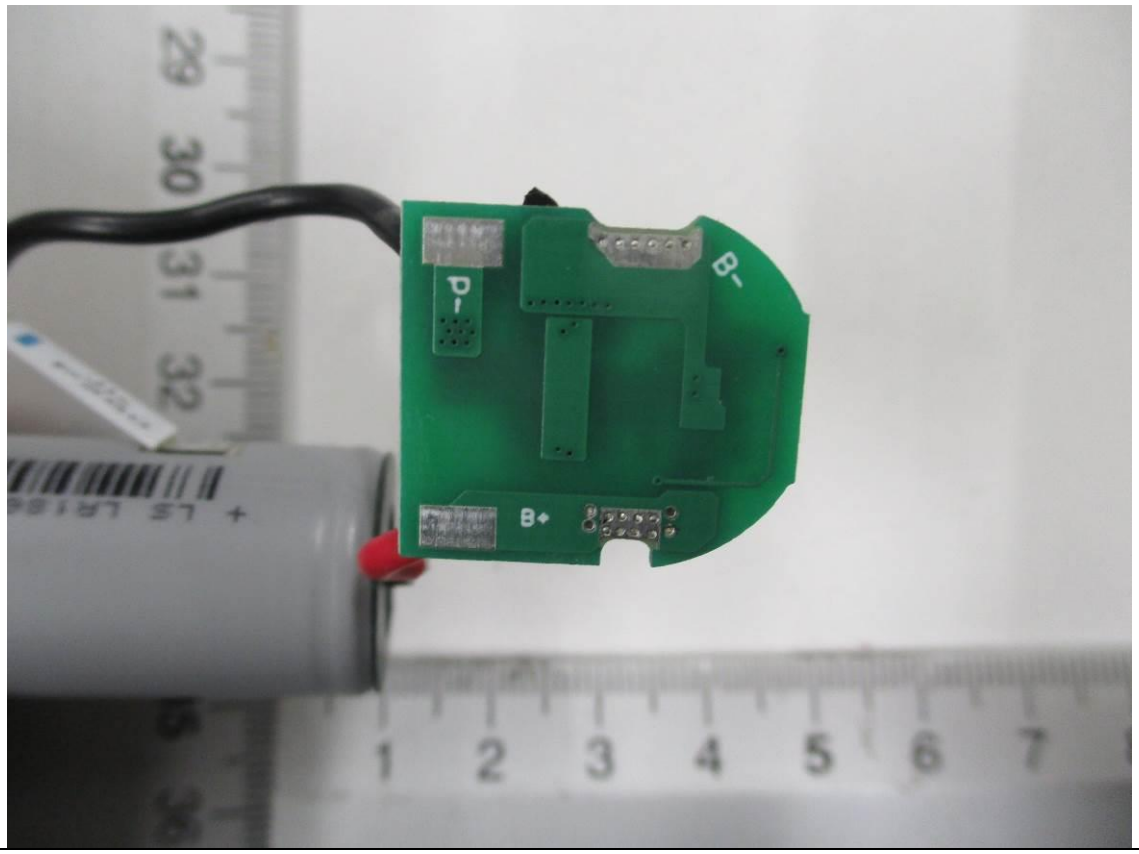
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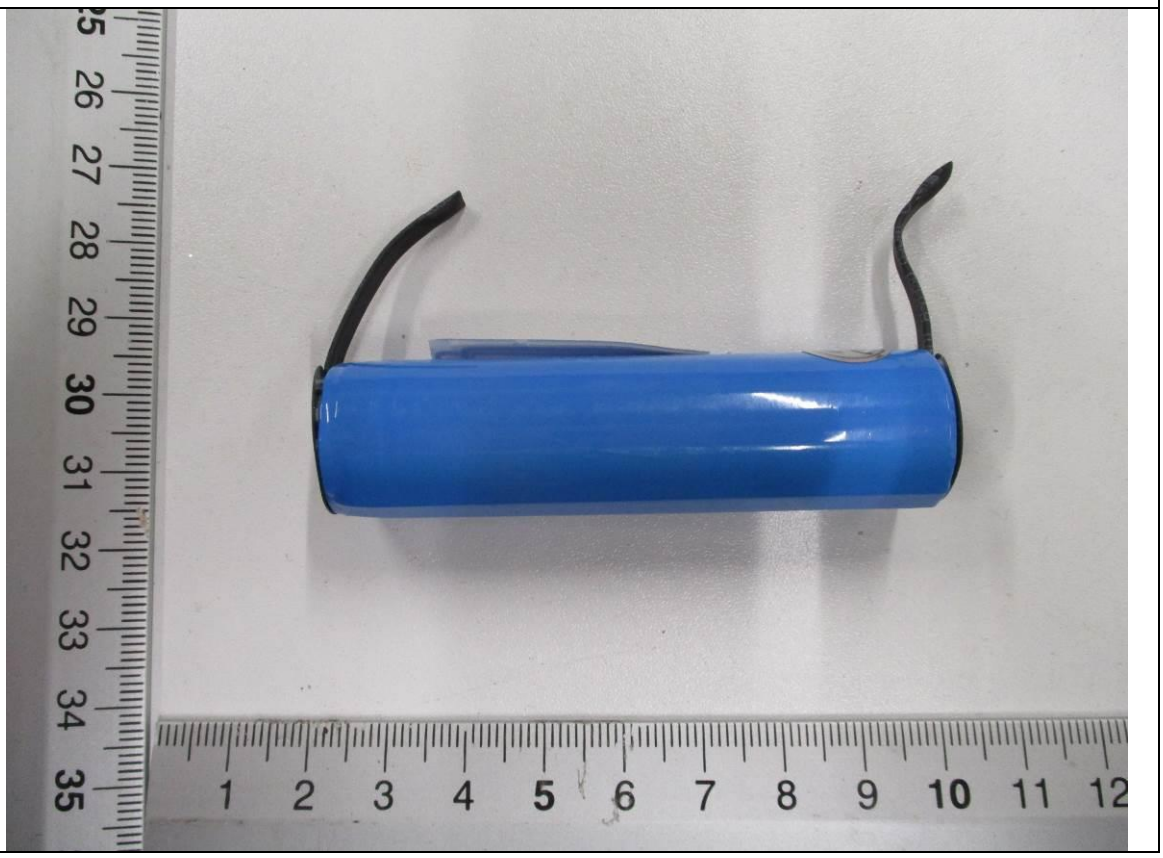

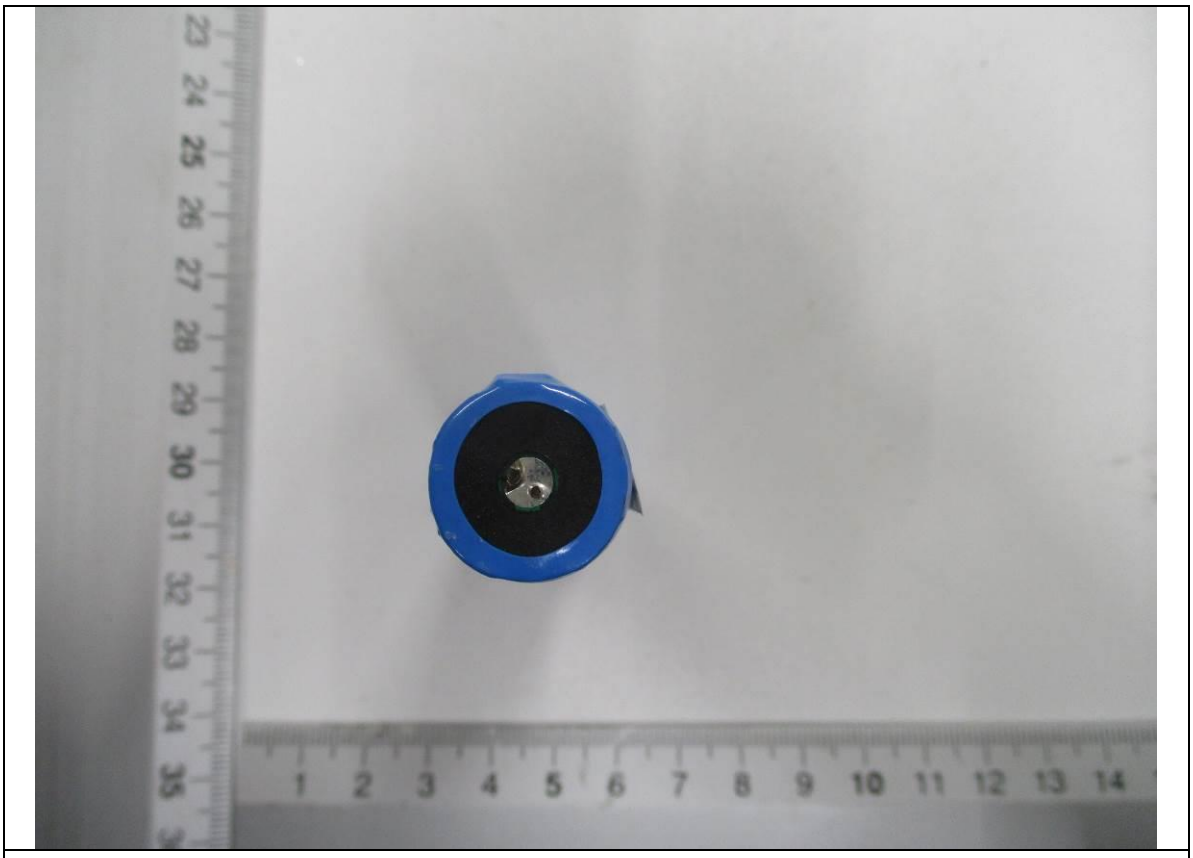

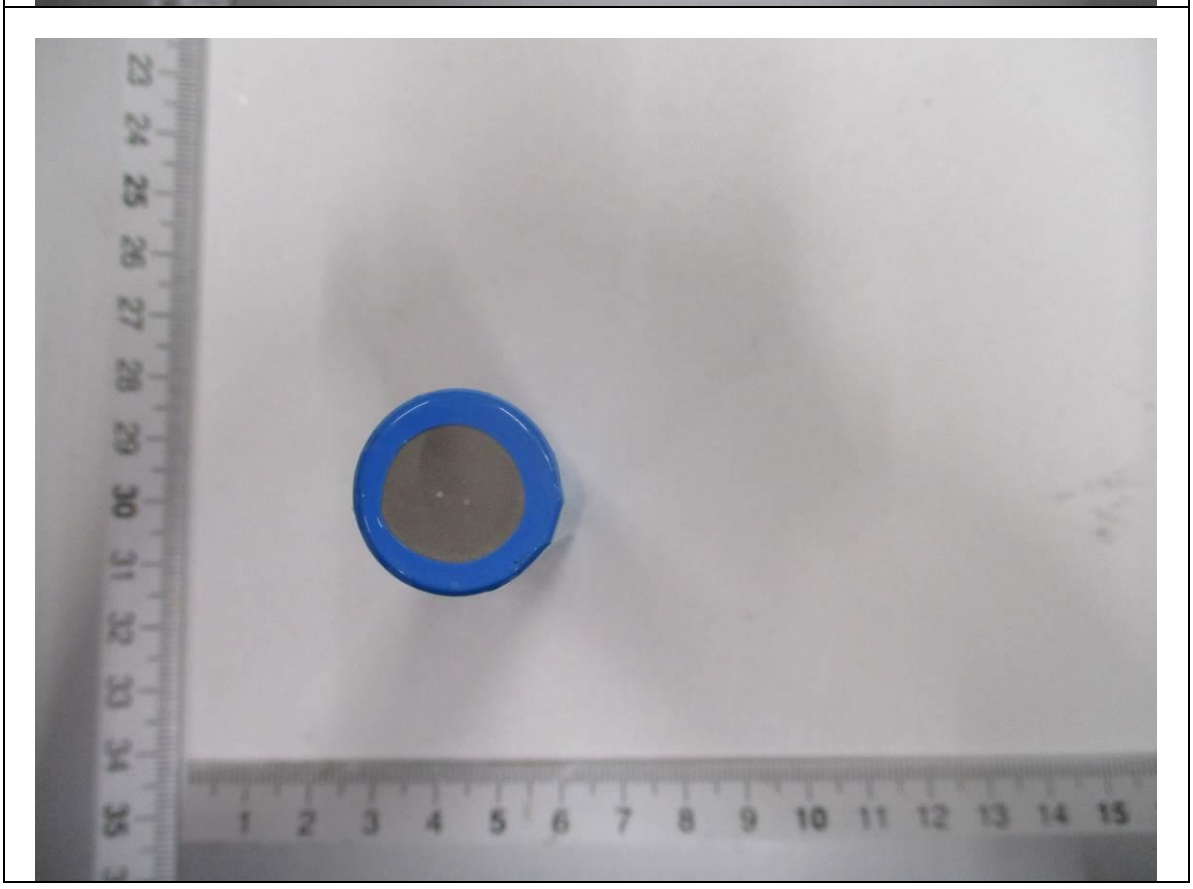

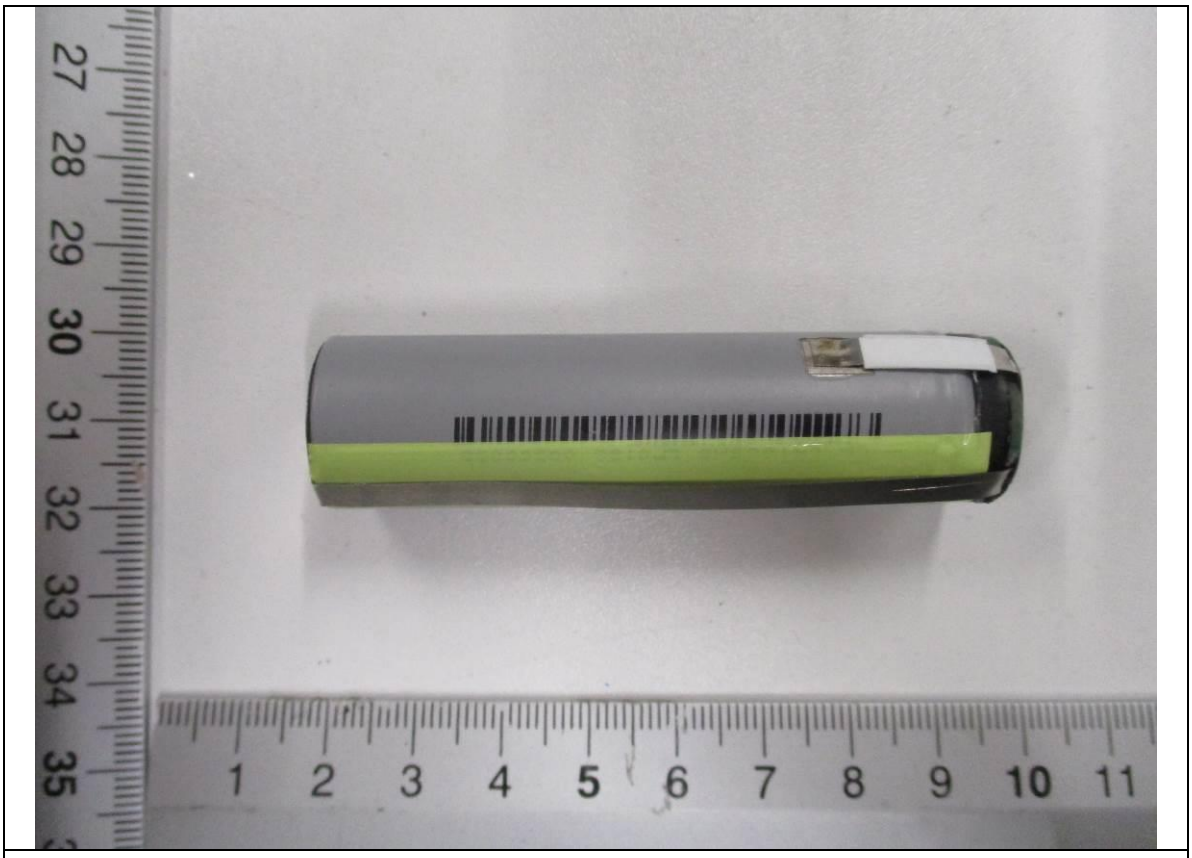

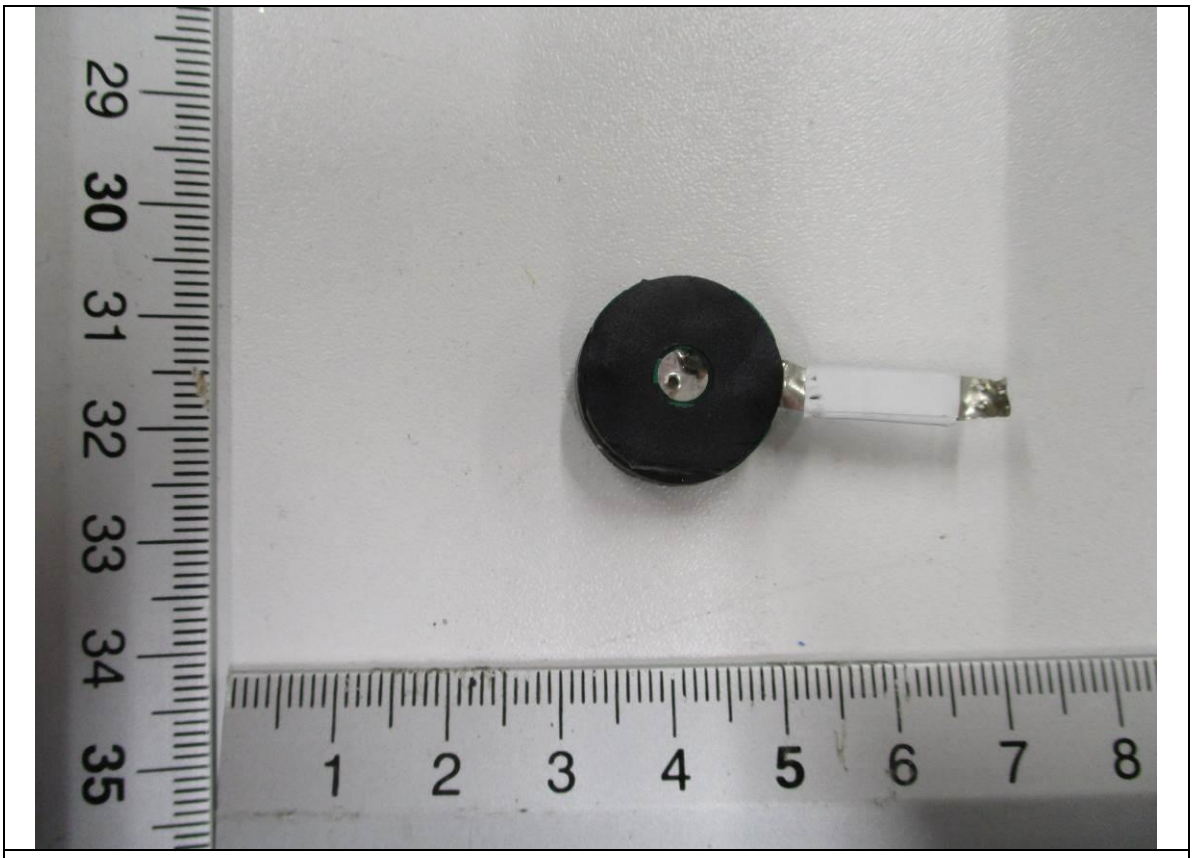
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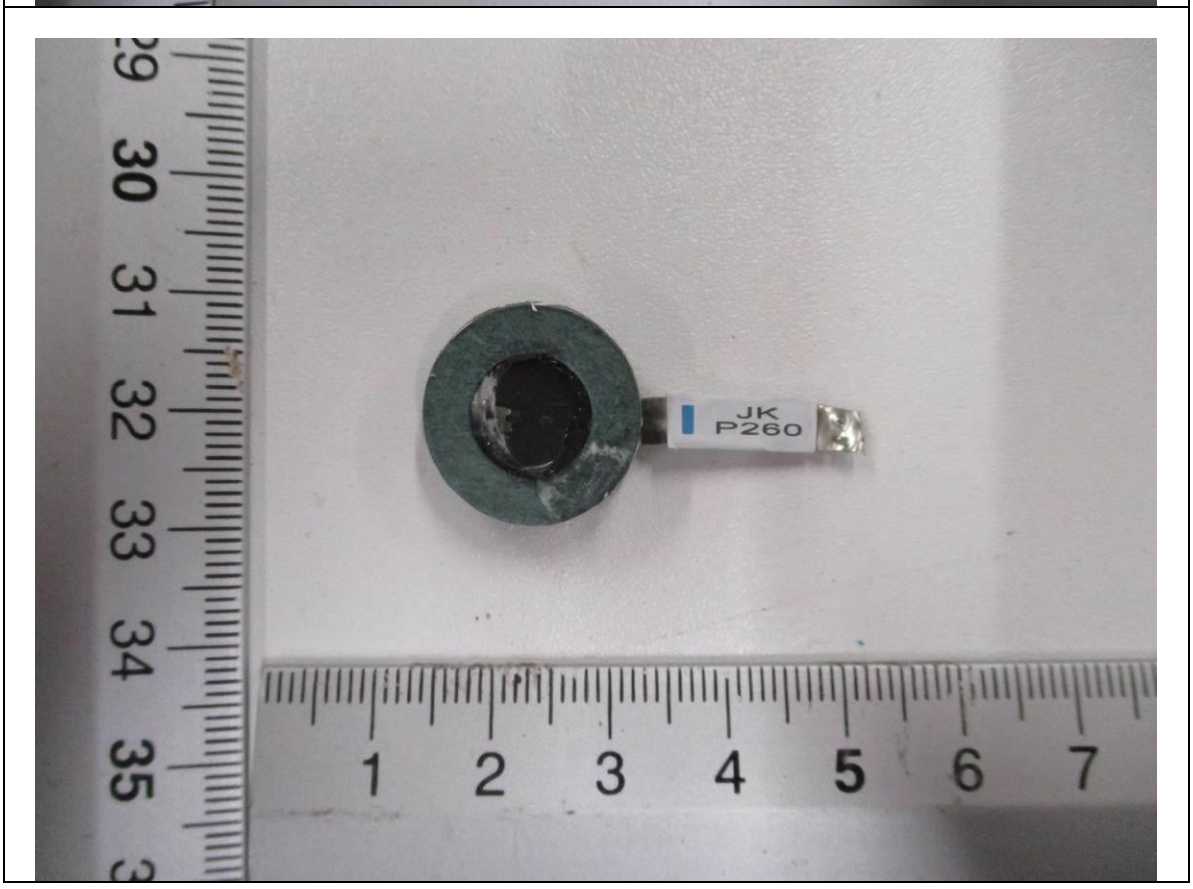
JK
P260
30 31 32 33 34 35
1 2 3 4 5 6 7

Attachment No.2.:
Technical documentation

PROPRIETARY INFORMATION:

By customer signing or accepting this document, they agree to acknowledge and accept the
Guidelines and cautions, Safety Notes, and Safety Precautions published on GlobTek's website
http://en.globtek.com/safety-cautions.php#.UUD-NRzU_I8

GlobTek offers a 5-year warranty on workmanship and electrical components assembly on all new battery pack products excluding the battery cells themselves which are covered by the Manufacturer's original warranty at their published warranty period. Please refer to the manufacturer's manufacturer's warranty policy for cells. For GlobTek brand cells, GlobTek provides a 12-month warranty for Li-Ion batteries. The warranty period is based upon the expectation that the battery will deliver 80% of its initial capacity after 300 cycles at low to moderate power loads.
High power loads may cause a battery to reach 80% of initial capacity in less than the 12-month warranty period. Li-Ion batteries will continue to operate below the 80% capacity threshold; however, the capacity (run time) delivered between charges will continue to decrease.

The purchaser of GlobTek battery pack products (Customer) agrees that they are a "Sophisticated user" who understands battery technology and that it is their sole responsibility to determine suitability of the product described for their application and to take precautions for protection against any hazards attendant to the handling and use of the product. GlobTek products are only designed for professional use and integration by companies into their products and may not be used by consumers directly. GlobTek provides batteries and battery packs as a component of an end system.

The acceptance of GlobTek specifications, the information on this page and use of the product(s) described in this or other GlobTek documents indicate that the product was qualified for use (tested and/or sample waiver signed), and the acceptance and binding of the customer to GlobTek terms and conditions, which supersede all other agreements, terms and conditions (http://en.globtek.com/terms-and-conditions/).

Customer Approval of Specification:

Please approve, sign and send back to GlobTek so we can complete order processing.
A delay in receipt of this form will delay delivery schedule.
Company Name:
Customer P/N:
Quote Number:
Date:
Authorized Representative Name:

Authorized Representative Signature:

GlobTek, Inc.
www.globtek.com
186 Veterans Drive, Northvale, NJ 07467
Tel. 201-784-1000 Fax 201-784-0111

Drawing Title: Li-Ion Battery Pack, 1S1P, 3350mAh	
MODEL NO: BL3500C1865001S1PCMK	
PART NO: BL3500C1865001S1PCMK	REV F

PROPRIETARY INFORMATION:
PROPRIETARY OF GLOBTEK, INC. ANY REPRODUCTION, DISCLOSURE OR USE OF THIS DRAWING, IN WHOLE OR IN PART, IS HEREBY PROHIBITED EXCEPT AS SPECIFIED IN WRITING BY GLOBTEK, INC.

1.GENERAL SPECIFICATION:	
BATTERY WITH SAFETY CIRCUIT AND PLASTIC HOUSING	
CELL:	LR1865HB
PCM:	GLOBTEK STANDARD
NTC:	N/A
ID:	N/A
CONFIGURATION:	1S1P
WEIGHT:	APROX 45 G
2.ELECTRICAL SPECIFICATION:	
RATED CAPACITY:	3350 mAh
NOMINAL VOLTAGE:	3.6
WATT-HOUR RATING:	12.06Wh
CHARGING METHOD:	CONSTANT CURRENT + CONSTANT VOLTAGE
MAX. CHARGE VOLTAGE [V]:	4.2
CHARGE CURRENT:	0.5C MAX
REC. CHARGE CUT OFF:	BY CURRENT 67mA OR TIMER 6H
MAX. CONTINUOUS DISCHARGE CURRENT:	2A
REC. DISCHARGE CUT OFF:	3.0V
INTERNAL IMPEDANCE:	≤220 mΩ
EXP. CYCLE LIFE:	>500 CYCLES > 70% OF INITIAL CAP. (0,5C/0,5C)
CELL PROTECTION:	
OVER CHARGE DETECTION:	4.25 ±0.03V
(0.8 TO 1.2 SEC. DELAY, RESUME 4.19±0.03V)	
OVER DISCHARGE DETECTION:	2.80 ±0.05V
(130 to 160msec. DELAY, RESUME 3.0±0.05V)	
OVER CURRENT DETECTION:	4.0A to 7.0 A (8 to 15msec. DELAY)
3. AMBIENT CONDITIONS	
TEMPERATURE RANGE:	
CHARGE:	0 TO +45°C
DISCHARGE:	-10 TO +60°C
CHARGE RETENTION/STORAGE [%]:	1 YEAR AT -20 TO +20°C >80%
	3 MONTHS AT -20 TO +45°C >80%
	1 MONTH AT -20 To +60°C >80%
HUMIDITY:	60 ±25%RH
4.ENVIORMENTAL AND SAFETY	
PLEASE FOLLOW GlobTek, Inc. HANDLING AND SAFETY PRECAUTIONS FOR LiIon & LiPolymer.	
5. CELL REGULATORY APPROVALS:	
UL:	UL1642
6. BATTERY PACK APPROVALS:	
RoHS:	COMPLIES WITH EU 2002/95/EC AND CHINA SJ/T 11363-2006
CE Mark:	COMPLIES WITH 2013/56/EU EN61000-6-1:2007, EN61000-6-3:2007
TRANSPORTATION:	PACK DESIGNED TO MEET un38.3
UL:	Design to meet UL2054, IEC62133

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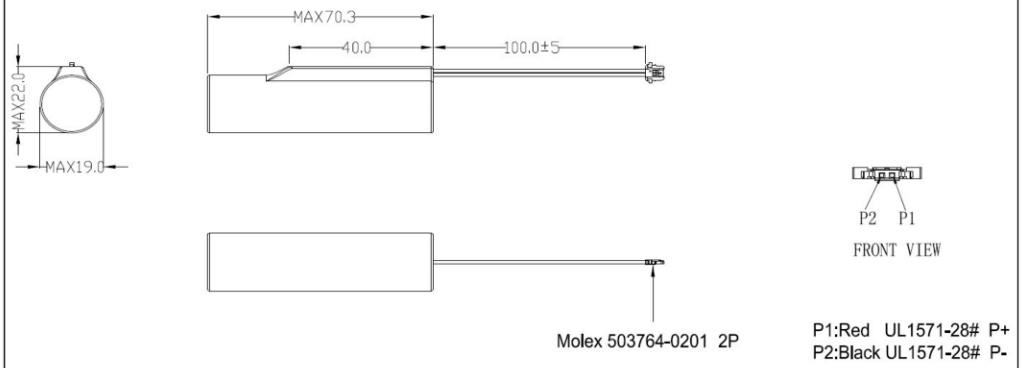
Drawing Title: Li-Ion Battery Pack, 1S1P, 3350mAh	
MODEL NO: BL3500C1865001S1PCMK	
PART NO: BL3500C1865001S1PCMK	REV F

PROPRIETARY INFORMATION:

6. MECHANICAL:

DIMENSIONS:	70.3(mm) x 19(mm) Max.
SHRINK WRAP:	Blue PVC with GlobTek Brand
WIRE TYPE:	UL1571- 28AWG
WIRE LENGTH:	100mm +/- 5.0
WIRE POLARITY:	RED POSITIVE (+)
WIRE POLARITY:	BLACK NEGATIVE (-)
STRIP LENGTH:	CUT BLUNT
TIN LENGTH:	N/A
ADDITIONAL REQUIREMENTS:	N/A



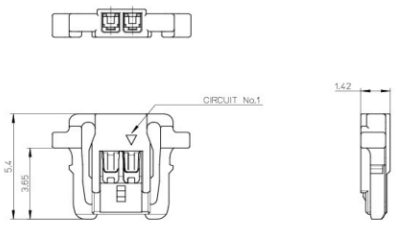
ADDITIONAL OUTPUT PLUG OPTIONS ARE AVAILABLE BY CLICKING THIS LINK.
STANDARD PLUGS AND CONNECTORS CAN BE SEEN ONLINE BY CLICKING THIS LINK

GlobTek, Inc. www.globtek.com 186 Veterans Drive, Northvale, NJ 07467 Tel. 201-784-1000 Fax 201-784-0111	Drawing Title: Li-Ion Battery Pack, 1S1P, 3350mAh MODEL NO: BL3500C1865001S1PCMK PART NO: BL3500C1865001S1PCMK	 REV F

SHEET 4 of 7

PROPRIETARY INFORMATION:

7. OUTPUT CONNECTOR:
ACTUAL CONNECTOR'S, OVERMOLDS, MAY VARY SLIGHTLY FROM THE PICTURE BELOW



EQUIVALENT	Y / N	
PLUG TYPE	Y	Molex 503764-0201, 2 POS
OVER MOLD ORIENTATION	Y	with overmold
CONTACTS	Y	Molex 503765 (2 req'd)
PIN 1	Y	RED(+)
PIN 2	Y	BLACK(-)
ADDITIONAL REQUIREMENTS		N/A

ADDITIONAL OUTPUT PLUG OPTIONS ARE AVAILABLE BY CLICKING THIS LINK.
STANDARD PLUGS AND CONNECTORS CAN BE SEEN ONLINE BY CLICKING THIS

GlobTek, Inc. www.globtek.com 186 Veterans Drive, Northvale, NJ 07467 Tel. 201-784-1000 Fax 201-784-0111	Drawing Title: Li-Ion Battery Pack, 1S1P, 3350mAh MODEL NO: BL3500C1865001S1PCMK PART NO: BL3500C1865001S1PCMK	 REV F

SHEET 5 of 7

PROPRIETARY INFORMATION:

8. LABEL:

MATERIAL:	TBD
BACKGROUND COLOR:	WHITE
TEXT COLOR:	BLACK
LABEL WIDTH: (mm)	45.0 mm
LABEL HEIGHT: (mm)	18.0 mm
ADDITIONAL REQUIREMENTS:	N/A

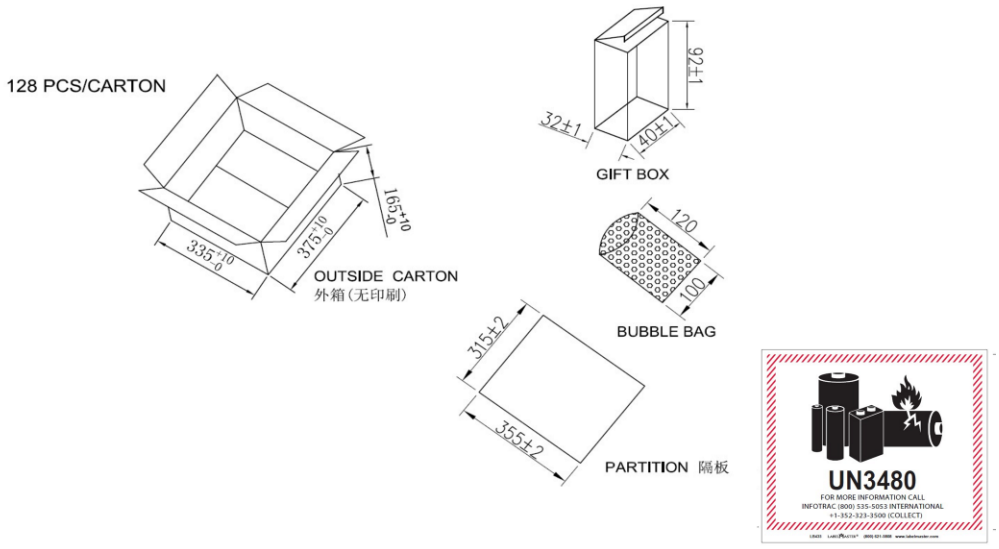
GlobTek, Inc. www.globtek.com 186 Veterans Drive, Northvale, NJ 07467 Tel. 201-784-1000 Fax 201-784-0111	Drawing Title: Li-Ion Battery Pack, 1S1P, 3350mAh MODEL NO: BL3500C1865001S1PCMK PART NO: BL3500C1865001S1PCMK	 REV F

SHEET 6 of 7

PROPRIETARY INFORMATION:

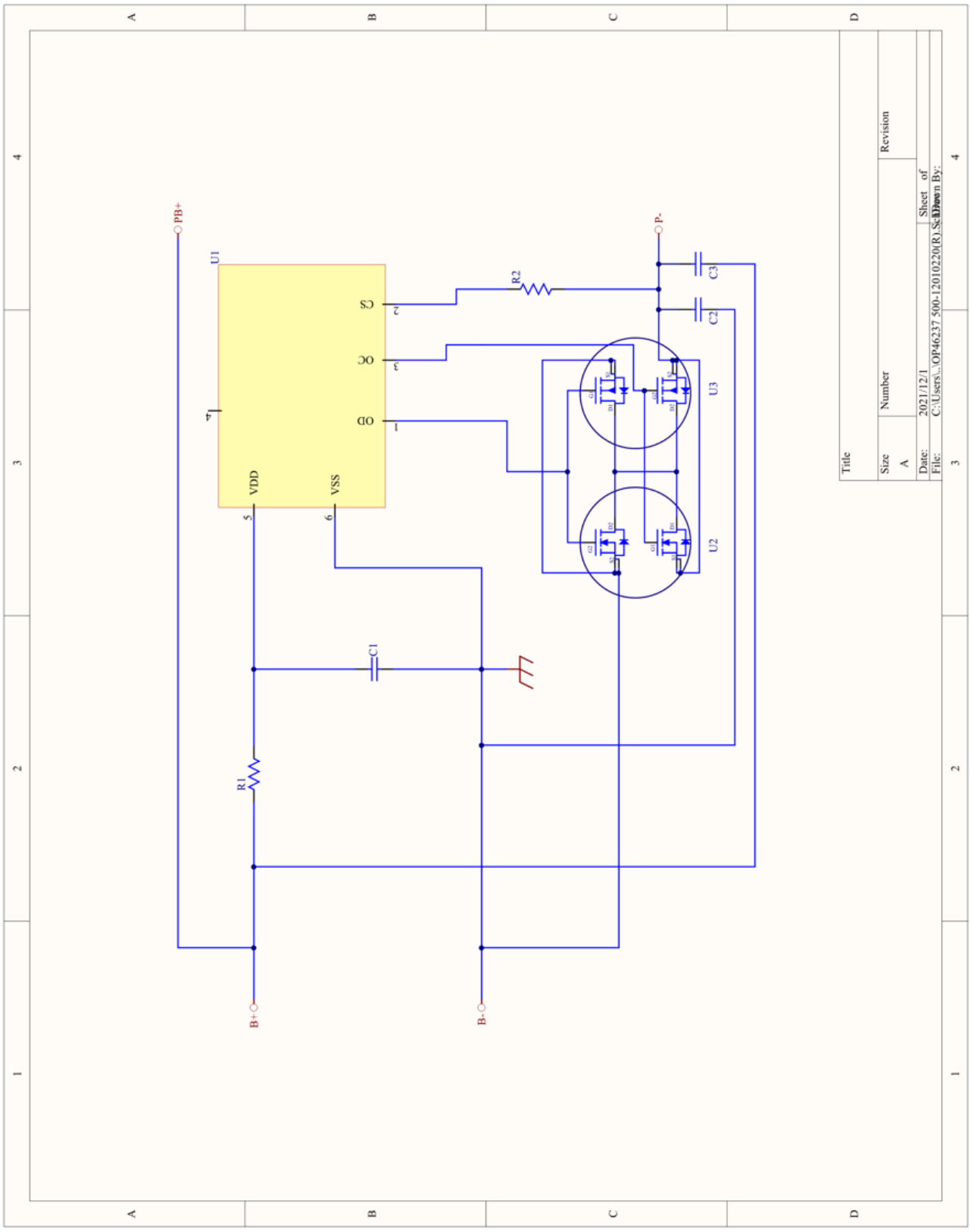
9. PACKAGING:

PE BAG SIZE	120*100mm
CARTON SIZE:	335*375*165mm
QUANTITY PER CARTON:	128pcs
G.W.	TBD



GlobTek, Inc. www.globtek.com 186 Veterans Drive, Northvale, NJ 07467 Tel. 201-784-1000 Fax 201-784-0111	Drawing Title: Li-Ion Battery Pack, 1S1P, 3350mAh MODEL NO: BL3500C1865001S1PCMK PART NO: BL3500C1865001S1PCMK	 REV F

SHEET 7 of 7


PB+
P-
U1
R2
C3
C2
CS
CO
DO
VDD
VSS
U3
U2
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Size
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Date:
2021/12/1
File:
Sheet of

PRODUCT SPECIFICATION

Cylindrical Lithium-ion Cell

LR1865HB

Customer Approval	Signature	Date
	Company Name：	
	Company Stamp：	

Prepared By	Checked By	QA	Approved By

TEL: (86) -22-23866002 FAX: (86)-22-23866800

http://www.lishen.com.cn

Tianjin Lishen Battery Joint-Stock Co., Ltd

Product Specification

TITLE: Cylindrical Lithium Ion Cell LR1865HB

REV: V0
Page: 1 of 12
Date: 20210420

History of revision

Revision	Date	Originator	Reason of Revision
0	2/25/2020	Liuzhongwen	Original Release
1	4/20/2021	Huhai	Change maximum charge current

1 SCOPE

The product specification describes the requirements of the Cylindrical Lithium-ion Cell to be supplied to the customer by Tianjin Lishen Battery J/S Co.,Ltd.. Should there be any additional information required by the customer, customer are advised to contact Tianjin Lishen Battery J/S Co.,Ltd..

2 DESCRIPTION AND MODEL

2.1	Description	Cylindrical Lithium Ion Cell
2.2	Model	LR1865HB

3 GENERAL SPECIFICATIONS

3.1	Nominal Capacity	3350mAh (at 0.2C Discharge)	
	Minimum Capacity	3250mAh (at 0.2C Discharge)	
	Nominal capacity is measured by the discharge at 0.2C to 2.5V end voltage after standard fully charged according to specification at 25℃.		
3.2	Maximum Charge Voltage	4.20V±0.03V	
3.3	Average working Voltage	3.60V@0.2C	
3.4	Standard Charge Method(25℃±2℃)	Constant Current and Constant Voltage (CC/CV)	
		Current	0.2C (670mA)
		Voltage	4.2V
		End Current	67mA±5mA
3.5	Maximum Charge Current	0℃ ≤ T ≤ 10℃	0.1C(335mA)
		10℃ < T ≤ 20℃	0.2C(670mA)
		20℃ < T ≤ 45℃	0.5C(1675mA)
3.6	Charge time	Standard charge	6.0h
		Rapid charge	3.0h
3.7	Standard Discharge	Constant Current (CC)	
		Current	0.2C (670mA)
		End Voltage	2.5V
3.8	Maximum Discharge Current	-20℃≤ T ≤20℃	1.0C(3350mA)
		20℃< T ≤45℃	2.0C(6700mA)
		45℃ < T ≤ 55℃	1.0C (3350mA)
3.9	Cycle Life		
	500th cycle ≥70% of 1st Capacity (25℃±2℃，4.2V-2.5V)		
	If charged at high rate and high temperature (≥35℃) frequently, cell cycle life will be shorten. If discharged at high temperature (>60℃) frequently, cell safety may be occurred.		
3.10	Weight of Bare Cell	Max.	50g
3.11	Operating Environmental Temperature	Charge	0℃ ~ 45℃

		Discharge	-20℃ ~ 55℃
3.12	Storage Temperature	1 month	-20℃ ~ 50℃
	（For shipping state）	3 months	-20℃ ~ 40℃
		12 months	-20℃~ 20℃

4 OUTLINE DIMENSION (UNIT: mm)

Dimension: Diameter 18.4mm±0.2mm, Height 65.4mm±0.2mm. Refer to the attached drawing 1.

5 APPEARANCE

There shall be no such defect as deep scratch, flaw, crack, rust, leakage, which may adversely affect commercial value of the cell.

6 TEST CONDITION AND DEFINITIONS

6.1 Measuring Equipment

6.1.1 Slide caliper

The slide caliper should have a scale of 0.02mm.

6.1.2 Voltage-Impedance meter

The impedance meter should be operated at AC 1kHz.

6.2 Unless otherwise specified, all tests shall be performed at 25±2°C and humidity of 65±20% RH.

The cells used for the test mentioned should be new ones delivered a week before at most.

6.3 Definitions :

C Rate (“C”): The rate (milliamperes) at which a fully charged cell is discharged to its end voltage in one (1) hour.

7 CHARACTERISTICS

7.1 Charge method

7.1.1Charging shall consist of charging at a 0.2C constant current rate until the cell voltage reaches 4.2V. The cell shall then be charged at constant voltage of 4.2V while tapering the charge current. Charging shall be terminated when the charging current has tapered to 0.02C.
7.1.2Charging shall consist of charging at a 0.5C constant current rate until the cell voltage reaches 4.2V. The cell shall then be charged at constant voltage of 4.2V while tapering the charge current. Charging shall be terminated when the charging current has tapered to 0.05C.

7.2 Discharge method :

7.2.1 Cells shall be discharged at a constant current of 0.2C to 2.5 volts

7.2.2 Cells shall be discharged at a constant current of 0.5C to 2.5 volts

7.2.3 Cells shall be discharged at a constant current of 1.0C to 2.5 volts

7.2.4 Cells shall be discharged at a constant current of 2.0C to 2.5 volts

7.3 Internal Impedance

The impedance shall be measured by 6.1.2.

Initial Internal Impedance ≤ 30mΩ.

7.4 Discharge Rate characteristics

Cells shall be charged per standard charge method at 25℃±2℃ and discharged per 7.2.1(0.2C), 7.2.2 (0.5C), 7.2.3 (1C) , 7.2.4 (2C). The discharge capacity of each cell at respective discharge rate shall be compared with the discharge capacity at 0.2C and the percentage shall be calculated. Each cell shall meet or exceed the requirements of Table 1.

Table 1

0.2C	0.5C	1C	2C
100%	⩾95%	⩾93%	⩾90%

7.5 Cycle Life

Charge cells per 7.1. 2. Rest 15 minutes. Discharge per 7.2.3. Rest 15 minutes before recharge. The test environmental temperature is 25℃±2℃. A cycle is defined as one charge and one discharge. Discharge capacity shall be measured after 500 cycles.

Discharge capacity (500th Cycle) ⩾ 70% of 1st Cycle Capacity

7.6 Storage Characteristics

After charge as per standard charge method 7.1.1, store the testing cells at 25℃±2℃ for 28 days. Then discharge as per 7.2.2. Then the same cell is fully charged as per 7.1.1 again and discharged a second time and measured as per 7.2.2.

The recovery discharge capacity（2nd discharge capacity） ⩾90% of Initial capacity.

After charge as per standard charge method 7.1.1, store the testing cells at 55℃±2℃ for 7 days. Then discharge as per 7.2.2. Then the same cell is fully charged as per 7.1.1 again and discharged a second time and measured as per 7.2.2.

The recovery discharge capacity（2nd discharge capacity） ⩾90% of Initial capacity.

7.7 Temperature Characteristics

Cells shall be charged per standard charge method and discharged per 7.2.3. Cells, full charged, shall be stored for 3 hours at the test temperature prior to discharging and then shall be discharged at the test temperature. The capacity of a cell at each temperature shall be compared to the capacity achieved at 25℃ and the percentage shall be calculated. Each cell shall meet or exceed the requirements of Table 2.

Table 2

-10℃	0℃	25℃	45℃	55℃
⩾70%	⩾80%	100%	⩾95%	⩾90%

8 SAFETY

8.1 External Short-circuiting Test at 25℃

Cell charged per standard charge method, is to be short circuited by connecting the positive (+) and negative (-) terminals with a total external resistance of 80±20mohm. Stop the test when the cell voltage falls below 0.1V and the cell case temperature has returned to a value within 10℃ of the original testing temperature.

Criteria: No Fire, No Explosion

8.2 Overcharge Test

Cell charged per standard charge method, is to be overcharged with 3C to 4.2V while tapering the charge

current. Monitoring change of cell temperature during testing. The charge duration is 7 hours. Stop the test when cell temperature decays to room temperature.

Criteria: No Fire, No Explosion

8.3 Overdischarge Test

Cell charged per standard charge method, is discharged at constant current of 1C for 90min.

Criteria: No Fire, No Explosion

8.4 Heating Test

Cell charged per standard charge method , is to be placed in the hot oven.Store the testing cells connecting with thermocouple in constant temperature box, heating the cells and box(speed of ascending temperature is 5℃±2℃ per min) together at room temperature simultaneity, monitor the temperature change of the box, keep for 30 minutes after the box temperature reaches 130℃±2℃,then stop the test.

Criteria: No Fire, No Explosion

8.5 Crush Test

Cell charged per standard charge method, is to be crushed between two flat surfaces and with cell longitudinal axis parallel to the flat surfaces of the crushing apparatus.The force for the crushing is to be applied by a hydraulic ram with a 1.25 inch (32 mm) diameter piston. The crushing is to be continued until a pressurereading of 2500 psig (17.2 MPa) is reached on the hydraulic ram, applied force of 3000 pounds (13 kN). Once the maximum pressure has been obtained it is to be released.

Criteria: No Fire, No Explosion

8.6 Drop test

After charge as per 7.1.1, the cell is dropped from 1.5m above a concrete floor by the positive and negative terminal down. Wait for 1h.

Criteria: No Fire, No Explosion

9 PACKAGING

Loading 100 cells per box, 2 boxes per case for a total of 200 cells. Sketch map refer to attached drawing 2.

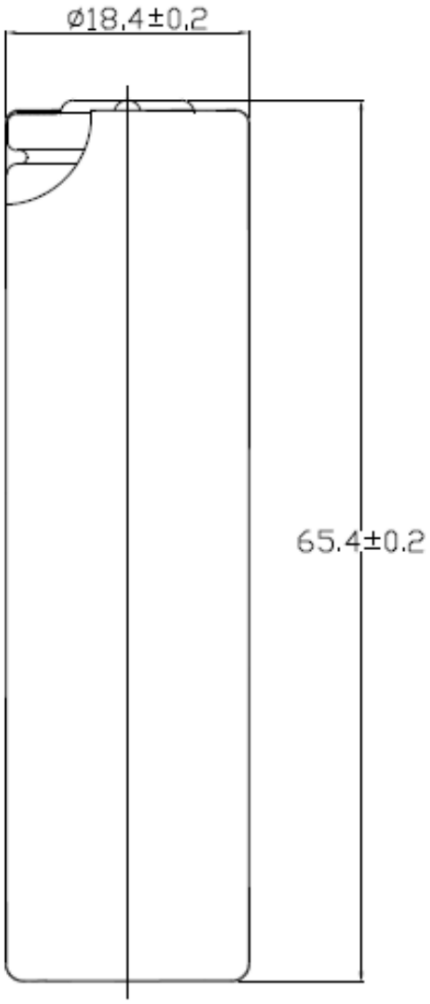
10 OTHERS

Any matter not included in this specification shall be confered between the both parties.

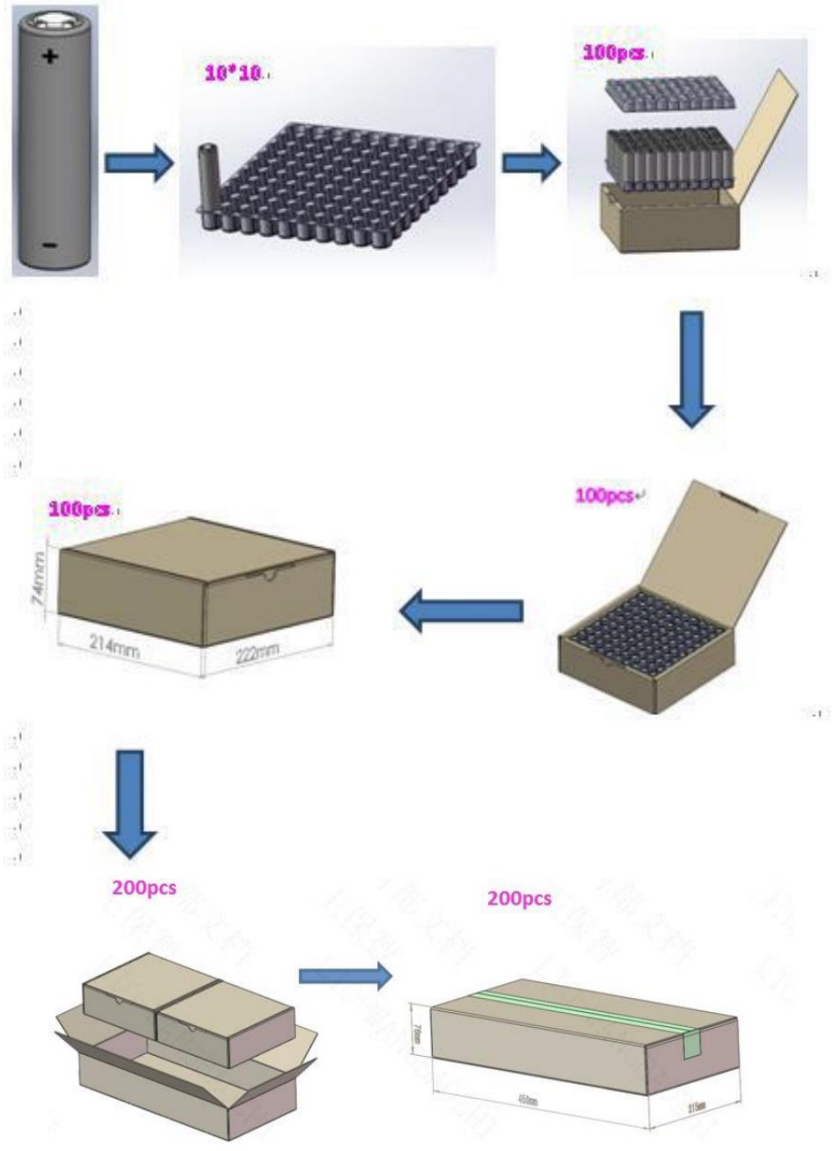
11 SHIPPING

The capacity of delivery cell is 10%-30%SOC. It is not specified more than 10% capacity remain at customer, because of self-discharge. During transportation, keep the cell from acutely vibration, impacting, solarization, drenching.

Attached 1: LR1865HB Cell Size Drawing



Attached 2: LR1865HB Packaging Sketch map Drawing



The following caution and warning should appear in manuals and/or instructions for users, especially at the point of use.

HANDLING INSTRUCTIONS
FOR
LITHIUM ION RECHARGEABLE CELL

1 ELECTRIC CAR, CHARGER AND BATTERY PACK DESIGN CONSIDERATIONS

1.1 Charging

1.1.1 Cell must be charged with constant current-constant voltage method. Charging voltage must below 4.20V/cell and the charging cut-off current is greater than or equal to 1/20C. Even if the charge could be out of order, charge voltage of charger should not be above 4.23V/cell to avoid over-charging. Cell life will be shorten by charging voltage above 4.20V.

1.1.2 Charger should be equipped with a complete charging detection device including the timer inspection, current and open circuit voltage to detect the current state of charge. When one of the detection such as timer, current and voltage detected the full charge, charge should be completely cut off the charging circuit, avoid produce turbulence.

1.1.3 Charger should start charging at temperature range 0℃~ +45℃(see spec 3.5).When the cell temperature exceeds this range, it should be placed in the battery temperature to teach the above range before recharging.

1.1.4 For cycle life, use the normal charging or trickle charging method and minimize the fast charge.

1.2 Discharging

1.2.1 Discharge end voltage must be over 2.5V.

1.2.2 Discharge temperature range should be -20℃ ~ +55℃(see spec 3.8).. If surface temperature exceeds 55 degrees, the discharge must be stopped.

1.3 Storage

Any storage, cell should be in low humidity （less than 70%RH）, no corrosive gas atmosphere area. And there is no press and condensation on the cell. Best temperature range -20℃~20℃. The capacity of cell is 25%-35% SOC.

When stored within 1 month : -20℃ ~ 50℃
When stored within 3 months : -20℃ ~ 40℃
When stored within 12 months : -20℃ ~ 20℃

1.4 Precautions on battery pack design

1.4.1 Battery pack Shape, Mechanism and Material
The battery pack should be designed to ensure that it can not be charged by an unauthorized charger. The battery pack should be designed to ensure that it can not be connected to unauthorized equipment and equipment; both ends of the battery pack should be designed to avoid short circuits or positive and negative The battery pack design should have anti-static function and can prevent the dust , The battery should be designed so that even if the battery leakage occurs, the electrolyte can not reach the protection circuit board; battery design should ensure that the battery is fixed in the battery pack, can not move; battery pack in the structure should ensure that The use of materials such as double-sided tape and rubber should verify its flammability; welding mold should be sealed with glue; if the welding die in the sealed when the welding of the mold can not be used, The use of ultrasonic welding method, for the emergence of any defects, God does not bear anything Either.

1.4.2 Battery pack structure (battery pack limits the number of batteries used)

The number of parallel connections is unlimited, but the battery pack must pass the overcharge test (the charging current of the overcharge test is the maximum charge current of the charger and the product of the parallel quantity); the number of series is unlimited and the fuse is required; the battery should be away from the heat Device to avoid deterioration of battery performance; PCBA circuit board and battery pack should be insulated between the insulation material (such as plastic barrier to provide air isolation or non-conducting thermal insulation material).

If charged and discharged at high rate and high temperature (≥35℃) frequently, cell cycle life will be shorten. If charged and discharged at high temperature (≥55℃) frequently, cell safety may be occurred.

1.4.3 Protection Circuit insure safety of battery

The following protection circuit should be installed in the battery pack:

Overcharge protection. For safety reasons and in order not to shorten the cycle life, the maximum overcharge protection voltage for the individual cells within each module should be less than 4.23V (including tolerances);

Over discharge protection. If the single cell voltage reaches 2.5V, we recommend that the discharge protection should cut off the discharge current, the circuit current consumption should be as small as possible;

Overcurrent protection. If the discharge current of the single cell exceeds about 2C, the overcurrent protection should cut off the discharge current circuit.

External short protection: The battery pack has function not to cause external short cut.

Over temperature protection: Set the temperature protection of pack according to the cell use condition in SPEC.

Battery pack should have cell voltage balancing function and cell imbalance protection circuit.

Battery pack should have function to avoid thermal propagation when the cell is failure.

Weld spot welding lead plate onto cell, and solder lead wire or lead plate. the battery pack in the discharge, the internal cell temperature difference should be less than or equal to 5 ℃.

In order to avoid long-term storage over discharge mode, battery pack protection circuit current consumption should be set as small as possible. Long-term use, to regularly check the remaining state of electricity, to ensure that the battery within the single cell can not achieve over-discharge state.

1.4.4 Cell connection

Do not solder onto a cell in order to avoid a damage on the cell. The battery pack should be equipped with appropriate shock absorbers in the pack in order to minimize shock, which can damage the cells.

1.5 Cell usage

1.5.1 When using batteries for serial and use, use the same gear, the same batch and the same state of charge batteries, you can get this information from the inside and outside the box label. Batteries need to be used before the detection of voltage resistance, and in accordance with its use for the combination, God recommended at least to ensure that the use of batteries within 30mV voltage within the internal resistance within 6mOhm.

1.5.2 Battery pack before shipment Check the voltage, internal resistance, protection line function, thermistor, thermal fuse.

1.5.3 Transfer the batteries to the assembly process to pay special attention to prohibit the transport process caused by external damage, the transport process is recommended to use the same transport packaging, even if there is a process of opening the package.

1.5.4 Do not use damaged or leaked batteries due to transport damage, drop, short circuit or other reasons.

2 SAFETY INSTRUCTIONS

Batteries containing organic solvents and other flammable substances, such as improper use may cause the core heat or fire, resulting in damage to the battery or personal injury. Please pay attention to the use of prohibited items, while the protection device should be added to avoid the use of equipment caused by abnormal batteries accident. Before using lithium-ion rechargeable batteries, please read the following safety guidelines carefully. In addition, God strongly recommends adding these instructions to the user manual.

2.1 Dangerous matter

2.1.1 Don't use or place batteries in high temperature (above 55℃) environment. Do not put it into fire, wate or make it moisture. Do not repair or disassemble batteries, there is a risk of causing the batteries to ignite, overheat, leak or explode.

2.1.2 Don't place the batteries in a chaotic manner, away from metal and other conductive materials to avoid positive (+) negative (-) short circuit, do not reverse the positive (+) negative (-) pole

2.1.3 Don't use non-specified charging equipment and violate charging requirements. Non-specified conditions charge will cause the battery to overcharge or abnormal chemical reactions, heat generation, smoke, rupture or fire.

2.1.4 Don't connect the battery to the AC plug (outlet) or the car plug. The battery needs to have a specific charger. If the battery is connected directly to the plug, the battery may catch fire, smoke, explode, or cause heat.

2.1.5 Don't overcharge, over-discharge, drive nail into the cell, strike it by hammer or tread and step on it

2.1.6 Don't hit or throw batteries. If the batteries appear to fall, please treat the waste, can not continue to use.

2.1.7 Don't dissect the battery. If the protection line is damaged, the battery will no longer be protected. Then, the battery may fire, smoke, explode or cause heat.

2.1.8 Don't charge near high temperatures. If the battery is charged near the high temperature, the battery can not be recharged due to the protection line. In this case, the protection circuit may be interrupted, the battery may fire, smoke, explode or cause heat.

2.1.9 Don't use batteries that are clearly damaged or deformed. May cause fever, smoke, rupture or burning.

2.1.10 Don't direct soldering of batteries, overheating will lead to insulation gaskets and other parts of the deformation, causing cell deformation, leakage, explosion or fire.

2.1.11 Don't reverse polarity charge. In the case of charging, the battery is reverse charging will be abnormal chemical reaction. In addition, there is an unpredictable high current through the discharge. These may cause heat, smoke, rupture or burning.

2.2 Warning

2.2.1 Batteries should be kept away from infants and young children. In case of swallowing the battery, please seek medical attention immediately.

2.2.2 Don't place the battery in a microwave oven or other cooking utensils. Due to the heating and electrical shock of the microwave oven, the battery may ignite, smoke, explode or cause heat.

2.2.3 Don't mix with other batteries. The battery can not be mixed with other different capacities, chemical systems, or manufacturers' batteries. Do not connect other batteries or mix other batteries. The battery may catch fire, smoke, explode or cause heat.

2.2.4 Don't use an abnormal battery. If there are obvious abnormalities, such as odor, fever, deformity or discoloration, stop using the battery. Such batteries may be defective and, if used, may cause fire, smoke, heat or explosion.

2.2.5 If the charging process does not end, stop charging. If the battery can not complete the charging process for a specified period of time, stop the charging step. The battery may catch fire, smoke, explode or cause heat.

2.2.6 Don't use a leaky battery near a flame. If the battery or liquid out of the battery produces a pungent odor, the battery should remain away from the flame. The battery may be ignited or exploded.

2.2.7 Don't touch the leaky battery. If the liquid leaked from the battery into the eyes, will cause serious damage. If you come from your leaked liquid into your eyes, rinse your eyes with water immediately. Please consult a doctor immediately. If the liquid is left in the eyes, it will cause serious damage.

2.2.8 In order to avoid short circuit or damage, please tightly put the battery into a box or carton.

2.2.9 Don't store the cell in a pocket or a bag together with metallic objects such as keys, necklaces, hairpins, coins, or screws.

2.3 Precautions

2.3.1 Don't use or place batteries in high temperature environments, such as in direct sunlight. The battery may catch fire, smoke, explode or cause heat. At the same time, may cause battery performance and life degradation.

2.3.2 Battery pack has a protective line. Do not use batteries in places where static electricity (over 100V) is generated, which may damage the protection circuit. If the protective line of the battery is damaged, the battery may catch fire, smoke, explode or cause heat. Do not use Lithium ion cell with the primary batteries or secondary batteries whose capacity or kinds or maker is different. If do that, the cell will be discharged or charged excessively in use. And it may cause the generating heat, smoke, rupture or flame because of the abnormal chemical reaction in cells.

2.3.3 Specified the charging temperature range. Do not charge the battery outside the specified temperature range. Failure to do so may result in heat, leakage, or serious damage. In addition, battery performance and life degradation may occur.

2.3 4 Please read the manual before use. Please keep this manual for future reference.

2.3.5 Please read the charging method of the charger manual.

2.3.6 In the first use, if the battery has an abnormal smell, heat or rust, please contact the supplier.

2.3.7 Keep away from flammable materials during charging and discharging. May cause fire, smoke, explosion or cause heat.

2.3.8 If the electrolyte leaks from the battery, gets on the clothes or on the skin, rinse it immediately with water. Otherwise it may irritate the skin.

2.3.9 If wires or metal objects come out of the battery, completely seal and insulate them. Otherwise, the battery may cause a short circuit, fire, smoke, explosion, or cause heat.

2.3.10 After use, please carry out battery recycling according to local laws and regulations.

3 EXCLUSION LIABILITY

3.1 Lishen is not liable for any loss caused by breach of notice in the specification;

3.2 Lishen is not responsible for any problems caused by design defects in battery packs, electric cars and chargers;

3.3 Lishen does not accept abnormal batteries caused by improper assembly;

3.4 Lishen is not liable for any loss caused by incorrect or incongruent with the SPEC charge and discharge method and inappropriate environment;

3.5 Lishen is not liable for any force majeure (ex. Lightening, storm, flood, fire, earthquake, etc)

3.6 In order to standardize the use of sample batteries, the rights, obligations and responsibilities of every customer and Lishen are clarified. Before using the battery, please read carefully and thoroughly understand the contents of the specification. In order to ensure the safety of the battery, please contact LISHEN to discuss design of the application. Also, if there are special usage conditions (for example: a large current load, a quick charge method, or a special usage pattern), please consult LISHEN before finalizing the product specification.

If you choose to use this battery, your use will be regarded as an endorsement of all the contents of this statement.

The amendment, renewal and final interpretation of this statement are belong to Lishen.

4 CONSULTATION

If there is any problem in this specification, please contact us as following:

Add: 38 Haitai South Road, Binhai Hi-Tech Industry Park, Tianjin, China

Tianjin Lishen Battery Joint-Stock Co., Ltd.

Tel No.: 0086-22-23866002

Fax No.: 0086-22-23866800

URL.:http://www.lishen.com.cn

For the sake of safety assurance, please discuss the equipment design, its system and protection circuit of Lithium-ion cell with Lishen in advance. And consult about the high rate current, rapid charge and special application in the same way.

	Ref. Certif. No.
IEC IECEE CB SCHEME	FI-44360

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	Battery Cell
Name and address of the applicant	Tianjin Lishen Battery Joint-Stock Co., Ltd. No.38 South HaiTai Road, Binghai Hi-Tech Industry Park, Tianjin, 300384, P.R. China
Name and address of the manufacturer	Tianjin Lishen Battery Joint-Stock Co., Ltd. No.38 South HaiTai Road, Binghai Hi-Tech Industry Park, Tianjin, 300384, P.R. China
Name and address of the factory Note: *When more than one factory, please report on page 2*	Tianjin Lishen Battery Joint-Stock Co., Ltd. No.38 South HaiTai Road, Binghai Hi-Tech Industry Park, Tianjin, 300384, P.R. China ☐ Additional Information on page 2
Ratings and principal characteristics	Rated Voltage: 3,6 V d.c.; Rated Capacity: 3350 mAh
Trademark / Brand (if any)	-
Customer's Testing Facility (CTF) Stage used	-
Model / Type Ref.	LR1865HB
Additional information (if necessary may also be reported on page 2)	Cylindrical Rechargeable Lithium-Ion Cell ☐ Additional Information on page 2
A sample of the product was tested and found to be in conformity with	IEC 62133-2:2017 National Differences: -
As shown in the Test Report Ref. No. which forms part of this Certificate	SZES191101696101

This CB Test Certificate is issued by the National Certification Body

SGS Fimko Ltd.
Takomotie 8
FI-00380 Helsinki, Finland

SGS Fimko Ltd.

Date: 2020-04-07

Signature:

Mark Lohmann
Certification Manager

Issued 2018-06-05 1/1

QUALITY MANAGEMENT SYSTEM CERTIFICATE

Certificate No. 00121Q35204R4M/3200

We hereby certify that

GlobTek（SuZhou）Co., Ltd.

Unified Social Credit Code: 91320594674405629Q

Building 4&6 No.76, East Jinling Road, Weiting Town Suzhou Industrial Park, Jiangsu Province, China

by reason of its

Quality Management System

has been awarded this certificate for compliance with the standard

GB/T 19001-2016 / ISO 9001:2015

The Quality Management System Applies in the following area:

Design and Manufacture of Power Supplies

Certified since: June 1, 2009 Valid from: June 10, 2021 Valid until: June 9, 2024

the expiry date of last certification cycle: June 9, 2021 the date of recertification audit: May 24, 2021 to May 25, 2021

After a surveillance cycle, the certificate is valid only when used together with an Acceptance Notice of Surveillance Audit issued by CQC.
Please access www.cqc.com.cn for checking validity of the certificate.
This certificate and its relevant information can query in the website of Certification and Accreditation Administration of the People's Republic of China (www.cnca.gov.cn).

IAF CNAS 中国认可 国际互认 管理体系 MANAGEMENT SYSTEM CNAS C001-M Signed by: Lu Mei IQNet CHINA QUALITY CERTIFICATION CENTRE 中国质量认证中心

CHINA QUALITY CERTIFICATION CENTRE

Section 9, No.188, Nansihuan(the South Fourth Ring Road) Xilu(West Road), Beijing 100070,China

http://www.cqc.com.cn

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质量管理体系认证证书

证书编号：00121Q35204R4M/3200

兹证明

环球特科（苏州）电源科技有限公司

统一社会信用代码: 91320594674405629Q

中国江苏省苏州工业园区唯亭镇金陵东路 76 号 4 栋&6 栋

建立的质量管理体系符合标准：

GB/T 19001-2016 / ISO 9001:2015

通过认证范围如下：

电源供应器的设计和制造

首次发证日期：2009年6月1日 本次发证日期：2021年6月10日 有效期至：2024年6月9日

上一周期证书到期日：2021年6月9日 再认证审核日期：2021年5月24日至2021年5月25日

在一个监督周期后，本证书必须与CQC签发的监督审核合格通知书合并使用方可有效。查询证书有效状态请登陆www.cqc.com.cn。
本证书信息可在国家认证认可监督管理委员会官方网站（www.cnca.gov.cn）上查询

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中国质量认证中心

中国·北京·南四环西路188号9区 100070

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Attachment No.3.:
US/CAN National Deviations

Country	Canada
IECEE Member NCB	CSA Group
IEC Standard	IEC 62133-2 (Ed 1), dated 2017-02
Corresponding National Standard	CAN/CSA-E62133:13
Regulatory Requirements	N/A

We hereby declare the following against the above IEC Standard:
National Differences X
Regulatory Requirements ☐
Special National Conditions ☐

Clause and Sub-clause	Exact wording
1	*[Add the following]* This Standard covers secondary cells and batteries that are intended to be installed or used in accordance with CSA C22.1, *Canadian Electrical Code, Part I*.
2	**2 Normative references** *[Add the following]* Where reference is made to CSA Group publications, such reference shall be considered to refer to the latest edition and all amendments published to that edition. This Standard refers to the following publications, and the years shown indicate the latest editions available at the time of printing: **CSA Group** C22.1-12 *Canadian Electrical Code, Part I* CAN/CSA-C22.2 No. 0-10 *General requirements — Canadian Electrical Code, Part II* C22.2 No. 0.15-01 (R2012) *Adhesive labels* CAN/CSA-C22.2 No. 0.17-00 (R2013) *Evaluation of properties of polymeric materials* C22.2 No. 39-12 *Fuseholder assemblies* C22.2 No. 127-09 *Equipment and lead wires* CAN/CSA-C22.2 No. 198.1-06 (R2010) *Extruded insulating tubing* C22.2 No. 235-04 (R2013) *Supplementary protectors* Certification Informs, Component Acceptance Service No. 53 (January 2013) *Positive temperature coefficient (PTC) thermistors*

3	*[Add the following clause]* **3A General requirements** General requirements applicable to these products are provided in CAN/CSA-C22.2 No. 0.
5	**5 General safety considerations** **5.1 General** *[Add the following at the end of Clause 5.1]* All safety components shall be suitable for use in accordance with the applicable CSA Group Standards where available. Examples of such components and subassemblies are as follows: a) wiring in accordance with CSA C22.2 No. 127; b) insulation tubing in accordance with CAN/CSA-C22.2 No. 198.1; c) protection devices such as fuses in accordance with CSA C22.2 No. 235, and PTC thermistors in accordance with CSA Component Acceptance Service No. 53; d) fuseholders in accordance with CSA C22.2 No. 39; and e) printed wiring boards and outer plastic enclosures shall be flammability rated a minimum of V-1 in accordance with CAN/CSA-C22.2 No. 0.17.
9	**9 Marking** **9.1 Cell marking** *[Add the following after the first paragraph]* Cell marking shall also include the model or type number. Cautions and warnings shall be in English and French in accordance with CAN/CSA-C22.2 No. 0. If external labels are used, they shall be a suitable type in accordance with CSA C22.2 No. 0.15. **10.2 Battery marking** *[Add the following after the first paragraph]* Cautions and warnings shall be in English and French in accordance with CAN/CSA-C22.2 No. 0. If external labels are used, they shall be a suitable type in accordance with CSA C22.2 No. 0.15.

UL 62133-2 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT UL 62133-2:2017 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			
Differences according to.....:	UL 62133-2 ED.1:2020		
Attachment Form No. .....:	US_ND_UL62133-2		
Attachment Originator.....:	SIQ		
Master Attachment .....:	2021-07-05		
1.DV.2 DR	Modification to add the following paragraph to Clause 1 (Canada only):		P
	This standard deals with the covered components used in accordance with CAN/CSA-C22.2 No.0.		P
2.DV.1 DR	Modification to add the following to Clause 2 (Canada only:		P
	CAN/CSA-C22 No. 0, General Requirements – Canadian Electrical Code, Part II		P
2DV.2 D1	Modification to add the following to Clause 2:		P
	CAN/CSA-C22 No. 0.17, Evaluation of Properties of Polymeric Materials UL 94, Tests for Flammability of Plastic Materials for Parts in Devices and Appliances	V-0 materials for current carrying parts	P
2DV.3 DC	Modification to add the following to Clause 2 (US only):		P
	UL 1642, Lithium Batteries		N/A
5.6.1DV.1 D1	Modification to add the following to Clause 5.6.1		P
	For products where no end-product standard requirements exist, printed wiring board and outer moulded battery cases shall be flammability rated a minimum of V-1 in accordance with CAN/CSA-C22 No. 0.17 or UL 94	End product standard exists	P
	Batteries shall be constructed of:		P
	a) Cells meeting the requirements of this standard; or	See LOCC	P
	b) Cells in compliance with the requirements of UL 1642	See LOCC	N/A
9.2DV.1 DR	Modification to add the following after the first paragraph of Clause 9.2:		P
	A symbol may be used in place of the appropriate caution statement if the significance of the symbol is explained in the instructions.		N/A
9.2DV.2 DR	Modification to add the following after Clause 9.2DV.1 (Canada only):		P

UL 62133-2 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	If the appropriate caution statement is provided with text, it shall be in both English and French	See copy of marking plate	P
Annex DVF DC	Modification of Annex F to add Clause and replace Table F.1 with Table DVF.1 and make Annex F (normative):		P
Annex DVF.DVF.1	The following north American standards in Table DVF.1 replace the referenced IEC standards where applicable and provide additional requirements. For undated references, the latest edition of the referenced document (including any amendments) applies.		P