

Prüfbericht-Nr.: Test Report No.:	16077071 001	Auftrags-Nr.: Order No.:	174050915	Seite 1 von 23 Page 1 of 23	
Kunden-Referenz-Nr.: Client Reference No.:	N/A	Auftragsdatum: Order date:	2016-05-23		
Auftraggeber: Client:	ASCENT INT'L GROUP CO., LIMITED Flat C, 9/F BLK 5, WILLOW MANSIONS, 120 BAKER ST, SITE 3 WHAMPOA GARDEN, HUNG HOM KL, Hong Kong				
Prüfgegenstand: Test item:	Rechargeable Li-ion Polymer Battery				
Bezeichnung / Typ-Nr.: Identification / Type No.:	ABI751671				
Auftrags-Inhalt: Order content:	Test report				
Prüfgrundlage: Test specification:	IEC 62133: 2012 EN 62133: 2013				
Wareneingangsdatum: Date of receipt:	2016-05-23				
Prüfmuster-Nr.: Test sample No.:	Engineering sample				
Prüfzeitraum: Testing period:	2016-05-23 to 2016-06-17				
Ort der Prüfung: Place of testing:	TÜV Rheinland (Shenzhen) Co., Ltd.				
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Guangdong) Ltd.				
Prüfergebnis*: Test result*:	Pass				



geprüft von / tested by:			kontrolliert von / reviewed by:		
<div style="display: flex; justify-content: space-around;"> <div> 2016-06-29 Barry He  </div> <div> 2016-06-29 Kevin He  </div> </div>					
Datum Date	Name / Stellung Name / Position	Unterschrift Signature	Datum Date	Name / Stellung Name / Position	Unterschrift Signature

Sonstiges / Other:

- TÜV Rheinland test report procedure.
- Test specification was agreed by the client;
- The test results were obtained according to the submitted test sample.

Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend N/A = nicht anwendbar	4 = ausreichend N/T = nicht getestet	5 = mangelhaft
Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory N/A = not applicable	4 = sufficient N/T = not tested	5 = poor

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated

Test item description	Rechargeable Li-ion Polymer Battery
Trade Mark	N/A
Manufacturer.....	Same as applicant
Address	Same as applicant
Model/Type reference	ABI751671
Ratings	3.7V, 840mAh, 3.108Wh

List of Attachments (including a total number of pages in each attachment): Attachment 1: Photo documentation (5 pages).	
Summary of testing:	
Tests performed (name of test and test clause): cl.5.6.2 Design recommendation(Lithium system); cl.8.1 Charging procedure for test purposes (for Cells and Pack); cl.8.2.1 Continuous charging at constant voltage (Cells); cl.8.3.1 External short circuit (Cells); cl.8.3.2 External short circuit (Battery); cl.8.3.3 Free fall (for Cells and Pack); cl.8.3.4 Thermal abuse (Cells); cl.8.3.5 Crush (Cells); cl.8.3.6 Over-charging of battery; cl.8.3.7 Forced discharge (Cells); cl.8.3.8 Transport tests (Cells); cl. 8.3.9 Forced internal short circuit (Cells) The electrolyte type of this cell doesn't belong to polymer, and the additional test cl.8.3.9 was carried out to evaluate the cell. Tests are made with the number of cells and batteries specified in IEC 62133: 2012 (Second Edition) Table 2.	Testing location: TÜV Rheinland (Shenzhen) Co., Ltd. East of F/1, F/2~F/4, Building 1, Cybio Technology Building No. 6 Langshan No.2 Road, North Hi-tech Industry Park 518057 Shenzhen Nanshan District CHINA
Summary of compliance with National Differences: <input checked="" type="checkbox"/> The product fulfils the requirements of <u>EN 62133: 2013</u>	

Copy of marking plate:

Rechargeable Li-ion Polymer Battery

Model: ABI751671 1ICP8/16/71

3.7V 840mAh 3.108Wh

ASCENT INT'L GROUP CO., LIMITED

Date: 201605 Made in China



Test item particulars.....:	
Classification of installation and use.....:	To be defined in final product
Supply connection.....:	DC connector
Recommend charging method declared by the manufacturer	Charging the battery with 168mA constant current until 4.2V, then constant voltage until the charge current reduces to 16.8mA at ambient 20°C±5°C.
Discharge current (0,2 I_t A)	168mA
Specified final voltage.....	3.0V
Chemistry	<input type="checkbox"/> nickel systems <input checked="" type="checkbox"/> lithium systems
Recommend of charging limit for lithium system	
Upper limit charging voltage per cell.....:	4.25V
Maximum charging current	840mA
Charging temperature upper limit	45°C
Charging temperature lower limit.....:	0°C
Polymer cell electrolyte type	<input type="checkbox"/> gel polymer <input type="checkbox"/> solid polymer <input checked="" type="checkbox"/> N/A
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item	2016-05-23
Date (s) of performance of tests	2016-05-23 to 2016-06-17
General remarks:	
<p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p> <p>"(See Enclosure #)" refers to additional information appended to the report.</p> <p>"(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p>	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)	SHENZHEN JUHEYUAN SCIENCE & TECHNOLOGY CO., LTD. No. 3, Lane Tianlong, Qingshui Rd. Longxi Community, Longcheng Street, Longgang District, Shenzhen City, Guangdong 518116, P.R. China

General product information:

This battery is constructed with one lithium-ion cell, and has overcharge, over-discharge, over current and short-circuits proof circuit.

The main features of the cell in the battery pack are shown as below (clause 8.1.1):

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
ABI751671 (Cell)	840mAh	3.7V	168mA	420mA	840mA	2520mA	4.2V	3.0V

The main features of the cell in the battery pack are shown as below (clause 8.1.2):

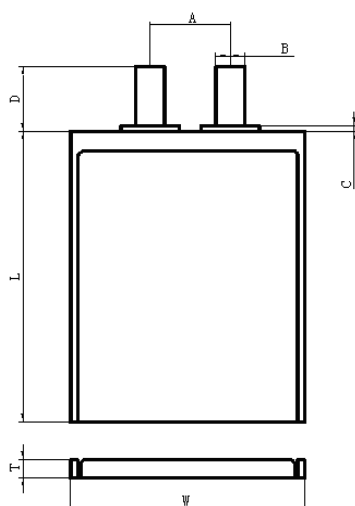
Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature
ABI751671 (Cell)	4.2V	42mA	0 °C	45 °C

The main features of the battery pack are shown as below (clause 8.1.1):

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
ABI751671	840mAh	3.7V	168mA	420mA	840mA	2520mA	4.2V	3.0V

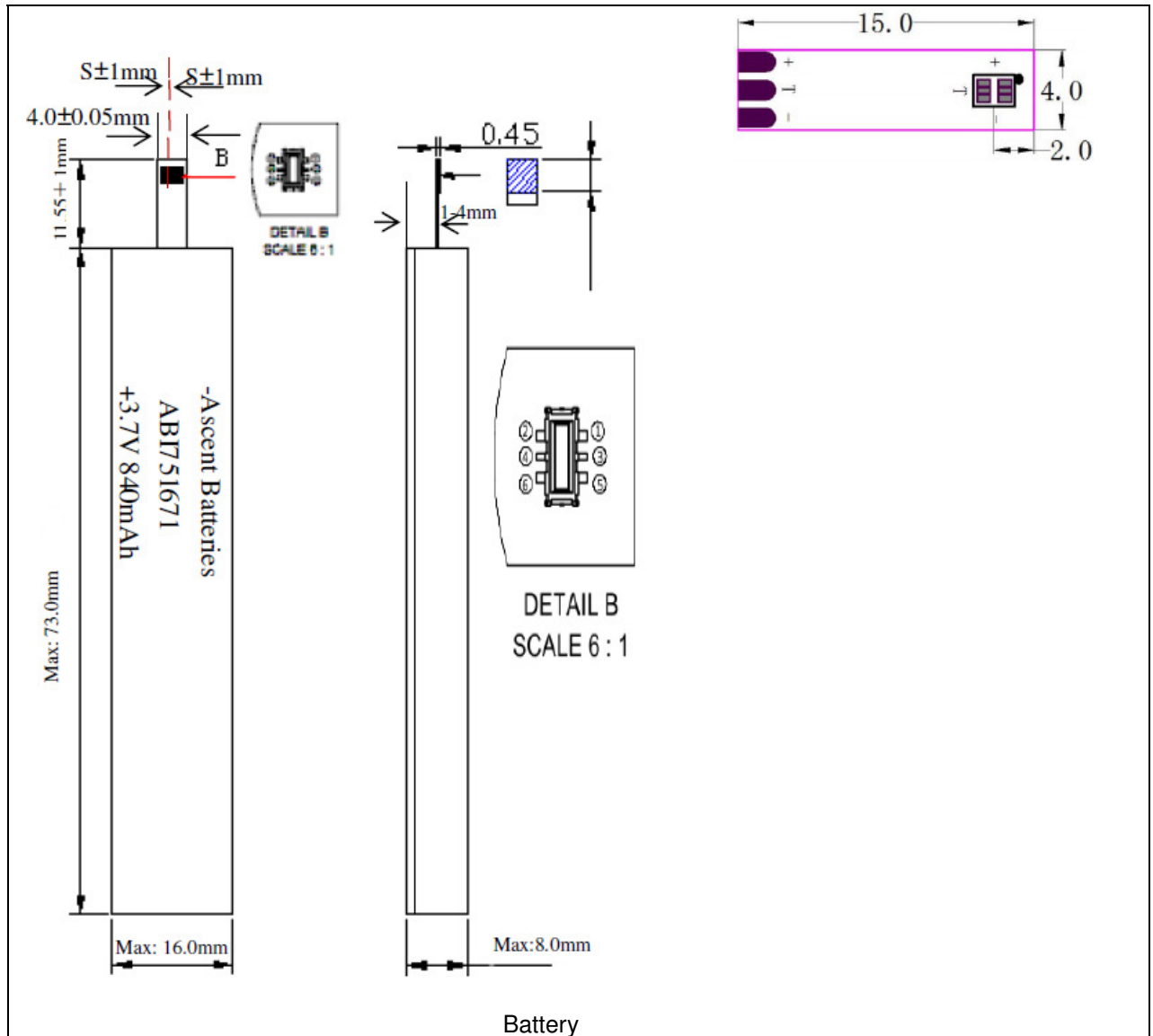
The main features of the battery pack are shown as below (clause 8.1.2):

Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature
ABI751671	4.2V	42mA	0 °C	45 °C

Construction:


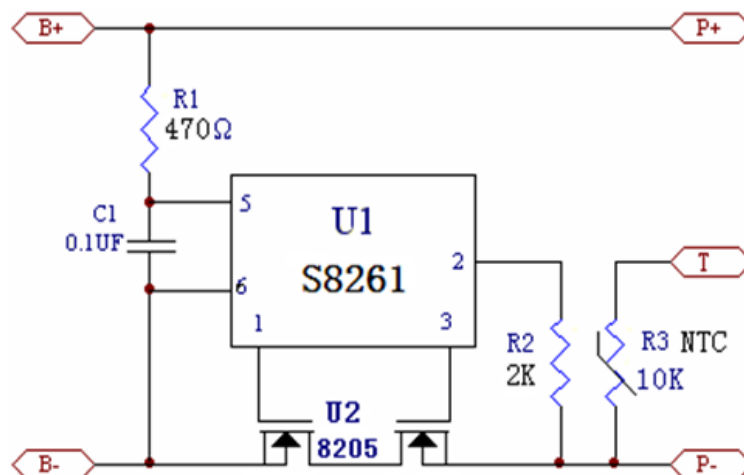
Cell

T	7.5mm Max
W	15.8mm Max
L	70.5mm Max



Battery

Circuit diagram:



IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
4	Parameter measurement tolerances		P
	Parameter measurement tolerances		P
5	General safety considerations		P
5.1	General		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 metal case exists.	N/A
	Insulation resistance (MΩ)..... :		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		P
	Orientation of wiring maintains adequate creepage and clearance distances between conductors		P
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		P
5.3	Venting		P
	Battery cases and cells incorporate a pressure relief mechanism or are constructed so that they relieve excessive internal pressure at a value and rate that will preclude rupture, explosion and self-ignition	Venting mechanism exists on narrow side of the pouch cell.	P
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief		N/A
5.4	Temperature/voltage/current management		P
	Batteries are designed such that abnormal temperature rise conditions are prevented	Overcharge, overdischarge, over current and short-circuit proof circuit used in this battery. See tests of clause 8.	P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	See above.	P
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that associated chargers are designed to maintain charging within the temperature, voltage and current limits specified	The charging limits specified in the manufacturer's specifications.	P
5.5	Terminal contacts		P
	Terminals have a clear polarity marking on the external surface of the battery	The "+" and "-" polarity explicitly marked near the connector of the battery.	P

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	DC connector contacts complied with the requirements.	P
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance	Complied.	P
	Terminal contacts are arranged to minimize the risk of short circuits	Complied.	P
5.6	Assembly of cells into batteries		P
5.6.1	If there is more than one battery housed in a single battery case, cells used in the assembly of each battery have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer	Single cell in the battery.	N/A
	Each battery has an independent control and protection		N/A
	Manufacturers of cells make recommendations about current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly		N/A
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate separate circuitry to prevent the cell reversal caused by uneven discharges		N/A
	Protective circuit components are added as appropriate and consideration given to the end-device application		N/A
	When testing a battery, the manufacturer of the battery provides a test report confirming the compliance according to this standard		N/A
5.6.2	Design recommendation for lithium systems only		P
	For the battery consisting of a single cell or a single cellblock: - Charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Clause 8.1.2, Table 4; or	Charging voltage: 4.2V, not exceed 4.25V specified in Clause 8.1.2, Table 4.	P
	- Charging voltage of the cell does not exceed the different upper limit of the charging voltage determined through Clause 8.1.2, NOTE 1.		N/A
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks: - The voltages of any one of the single cells or single cellblocks does not exceed the upper limit of the charging voltage, specified in Clause 8.1.2, Table 4, by monitoring the voltage of every single cell or the single cellblocks; or		N/A

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	- The voltages of any one of the single cells or single cellblocks does not exceed the different upper limit of the charging voltage, determined through Clause 8.1.2, NOTE 1, by monitoring the voltage of every single cell or the single cellblocks		N/A
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks: - Charging is stopped when the upper limit of the charging voltage, specified in Clause 8.1.2, Table 4, is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks; or		N/A
	- Charging is stopped when the upper limit of the different charging voltage, determined through Clause 8.1.2, NOTE 1, is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks		N/A
5.7	Quality plan		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. ISO 9001: 2008 certificate provided.	P
6	Type test conditions		P
	Tests were made with the number of cells or batteries specified in Table 1 for nickel-cadmium and nickel-metal hydride systems and Table 2 for lithium systems, using cells or batteries that are not more than six months old	Complied. Lithium system.	P
	Unless noted otherwise in the test methods, testing was conducted in an ambient of 20°C ± 5°C.	Tests are carried out at 20°C ± 5°C.	P
7	Specific requirements and tests (nickel systems)		N/A
7.1	Charging procedure for test purposes	Lithium system.	N/A
7.2	Intended use		N/A
7.2.1	Continuous low-rate charging (cells)		N/A
	Results: No fire. No explosion		N/A
7.2.2	Vibration		N/A
	Results: No fire. No explosion. No leakage	(See Table 7.2.2)	N/A
7.2.3	Moulded case stress at high ambient temperature		N/A
	Oven temperature (°C)		—
	Results: No physical distortion of the battery casing resulting in exposure if internal components		N/A
7.2.4	Temperature cycling		N/A

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No fire. No explosion. No leakage.		N/A
7.3	Reasonably foreseeable misuse		N/A
7.3.1	Incorrect installation cell		N/A
	The test was carried out using: - Four fully charged cells of the same brand, type, size and age connected in series, with one of them reversed; or		N/A
	- A stabilized dc power supply.		N/A
	Results: No fire. No explosion	(See Table 7.3.1)	N/A
7.3.2	External short circuit		N/A
	The cells or batteries were tested until one of the following occurred: - 24 hours elapsed; or		N/A
	- The case temperature declined by 20% of the maximum temperature rise		N/A
	Results: No fire. No explosion	(See Table 7.3.2)	N/A
7.3.3	Free fall		N/A
	Results: No fire. No explosion.		N/A
7.3.4	Mechanical shock (crash hazard)		N/A
	Results: No fire. No explosion. No leakage.		N/A
7.3.5	Thermal abuse		N/A
	Oven temperature (°C)		—
	Results: No fire. No explosion.		N/A
7.3.6	Crushing of cells		N/A
	The crushing force was released upon: - The maximum force of 13 kN ± 1 kN has been applied; or		N/A
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N/A
	The cell is prismatic type and a second set of samples was tested, rotated 90° around longitudinal axis compared to the first set		N/A
	Results: No fire. No explosion	(See Table 7.3.6)	N/A
7.3.7	Low pressure		N/A
	Chamber pressure (kPa)		—
	Results: No fire. No explosion. No leakage.		N/A
7.3.8	Overcharge		N/A
	Results: No fire. No explosion	(See Table 7.3.8)	N/A
7.3.9	Forced discharge		N/A

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No fire. No explosion	(See Table 7.3.9)	N/A
8	Specific requirements and tests (lithium systems)		P
8.1	Charging procedures for test purposes	Complied.	P
8.1.1	First procedure: This charging procedure applied to tests other than those specified in 8.1.2		P
8.1.2	Second procedure: This charging procedure applied to the tests of 8.3.1, 8.3.2, 8.3.4, 8.3.5, and 8.3.9		P
	If a cell's specified upper and/or lower charging temperature exceeds values for the upper and/or lower limit test temperatures of Table 4, the cells were charged at the specified values plus 5 °C for the upper limit and minus 5 °C for the lower limit	Charge temperature 0-45 °C declared. -5 °C used for lower limit tests. 45 °C used for upper limit tests.	P
	A valid rationale was provided to ensure the safety of the cell (see Figure A.1)		P
	For a different upper limit charging voltage (i.e. other than for lithium cobalt oxide systems at 4,25 V), the applied upper limit charging voltage and upper limit charging temperatures were adjusted accordingly	Lithium cobalt oxide system only.	N/A
	A valid rationale was provided to ensure the safety of the cell (see Figure A.1)	4.25V applied.	N/A
8.2	Intended use		P
8.2.1	Continuous charging at constant voltage (cells)	Tested complied.	P
	Results: No fire. No explosion	(See Table 8.2.1)	P
8.2.2	Moulded case stress at high ambient temperature (battery)	No moulded case exists.	N/A
	Oven temperature (°C)		—
	Results: No physical distortion of the battery casing resulting in exposure of internal components		N/A
8.3	Reasonably foreseeable misuse		P
8.3.1	External short circuit (cell)	Tested complied.	P
	The cells were tested until one of the following occurred: - 24 hours elapsed; or		N/A
	- The case temperature declined by 20% of the maximum temperature rise		P
	Results: No fire. No explosion	(See Table 8.3.1)	P
8.3.2	External short circuit (battery)	Tested complied.	P

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	The batteries were tested until one of the following occurred: - 24 hours elapsed; or		P
	- The case temperature declined by 20% of the maximum temperature rise		N/A
	In case of rapid decline in short circuit current, the battery pack remained on test for an additional one hour after the current reached a low end steady state condition		N/A
	Results: No fire. No explosion	(See Table 8.3.2)	P
8.3.3	Free fall	Tested complied.	P
	Results: No fire. No explosion.	No fire. No explosion.	P
8.3.4	Thermal abuse (cells)		P
	The cells were held at $130^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for: - 10 minutes; or	Tested complied.	P
	- 30 minutes for large cells (gross mass of more than 500 g as defined in IEC 62281)		N/A
	Oven temperature (°C)	130°C	—
	Gross mass of cell (g)	<500g, small cell.	—
	Results: No fire. No explosion.	No fire. No explosion.	P
8.3.5	Crush (cells)		P
	The crushing force was released upon: - The maximum force of $13 \text{ kN} \pm 1 \text{ kN}$ has been applied; or	Tested complied.	P
	- An abrupt voltage drop of one-third of the original voltage has been obtained; or		N/A
	- 10% of deformation has occurred compared to the initial dimension		N/A
	Results: No fire. No explosion	(See Table 8.3.5)	P
8.3.6	Over-charging of battery	Tested complied.	P
	Test was continued until the temperature of the outer casing: - Reached steady state conditions (less than 10°C change in 30-minute period); or		N/A
	- Returned to ambient		P
	Results: No fire. No explosion	(See Table 8.3.6)	P
8.3.7	Forced discharge (cells)	Tested complied.	P
	Results: No fire. No explosion	(See Table 8.3.7)	P
8.3.8	Transport tests	Tested complied.	P

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	Manufacturer's documentation provided to show compliance with UN Recommendations on Transport of Dangerous Goods	Tested complied.	P
8.3.9	Design evaluation – Forced internal short circuit (cells)	Tested complied.	P
	The cells complied with national requirement for:	France, Japan, Republic of Korea and Switzerland.	—
	The pressing was stopped upon: - A voltage drop of 50 mV has been detected; or		N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached	400N for prismatic cells.	P
	Results: No fire	(See Table 8.3.9)	P
9	Information for safety		P
	The manufacturer of secondary cells ensures that information is provided about current, voltage and temperature limits of their products.	Information for safety mentioned in manufacturer's specifications.	P
	The manufacturer of batteries ensures that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards.	Information for safety mentioned in manufacturer's specifications.	P
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		N/A
	As appropriate, information relating to hazard avoidance resulting from a system analysis is provided to the end user.....:		N/A
10	Marking		P
10.1	Cell marking		N/A
	Cells marked as specified in the applicable cell standards: IEC 61951-1, IEC 61951-2 or IEC 61960.	The final product is battery.	N/A
10.2	Battery marking		P
	Batteries marked in accordance with the requirements for the cells from which they are assembled.	The battery is marked in accordance with IEC 61960, also see page 3.	P
	Batteries marked with an appropriate caution statement.		N/A
10.3	Other information		P
	Storage and disposal instructions marked on or supplied with the battery.	Information for storage instructions mentioned in manufacturer's specifications.	P

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	Recommended charging instructions marked on or supplied with the battery.	Information for recommended charging instructions mentioned in manufacturer's specifications.	P

11	Packaging		P
	The materials and packaging design are chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants.		P

Annex A	Charging range of secondary lithium ion cells for safe use		P
A.1	General		P
A.2	Safety of lithium-ion secondary battery	Complied.	P
A.3	Consideration on charging voltage	Complied.	P
A.3.1	General		P
A.3.2	Upper limit charging voltage	4.25V applied.	P
A.3.2.1	General		P
A.3.2.2	Explanation of safety viewpoint		N/A
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	4.25V applied.	N/A
A.4	Consideration of temperature and charging current		P
A.4.1	General		P
A.4.2	Recommended temperature range	See A.4.2.2.	P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Charging temperature range declared by client is: 0-45°C	P
A.4.3	High temperature range	Not higher than the temperature specific in this standard.	N/A
A.4.3.1	General		N/A
A.4.3.2	Explanation of safety viewpoint		N/A
A.4.3.3	Safety considerations when specifying charging conditions in high temperature range		N/A
A.4.3.4	Safety consideration when specifying new upper limit in high temperature range		N/A
A.4.4	Low temperature range	Charging low temperature declared by client is: 0°C.	P
A.4.4.1	General		P
A.4.4.2	Explanation of safety viewpoint		P

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
A.4.4.3	Safety considerations, when specifying charging conditions in low temperature range		P
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range	-5°C used.	P
A.4.5	Scope of the application of charging current		P
A.5	Sample preparation		P
A.5.1	General		P
A.5.2	Insertion procedure for nickel particle to generate internal short		P
	The insertion procedure carried out at 20°C±5°C and under -25 °C of dew point		P
A.5.3	Disassembly of charged cell		P
A.5.4	Shape of nickel particle		P
A.5.5	Insertion of nickel particle to cylindrical cell		N/A
A.5.5.1	Insertion of nickel particle to winding core		N/A
A.5.5.2	Mark the position of nickel particle on the both end of winding core of the separator		N/A
A.5.6	Insertion of nickel particle to prismatic cell		P

¹⁾ Provided evidence ensures the agreed level of compliance.

7.2.1	TABLE: Continuous low rate charge (cells)					N/A
Model	Recommended charging method, (CC, CV, or CC/CV)	Recommended charging voltage V_c , (Vdc)	Recommended charging current I_{rec} , (A)	OCV at start of test, (Vdc)	Results	
Supplementary information: <ul style="list-style-type: none"> - No fire or explosion - No leakage - Leakage - Fire - Explosion - Bulge - Others (please explain) 						

7.2.2	TABLE: Vibration		N/A
Model	OCV at start of test, (Vdc)	Results	
Supplementary information: - No fire or explosion - No leakage - Leakage - Fire - Explosion - Bulge - Others (please explain)			

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

Supplementary information:

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

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

Supplementary information:

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

7.3.6	TABLE: Crush			N/A
Model	OCV at start of test, (Vdc)	OCV at removal of crushing force, (Vdc)	Results	

Supplementary information:

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

7.3.8	TABLE: Overcharge				N/A
Model	OCV prior to charging, (Vdc)	Maximum charge current, (A)	Time for charging, (hours)	Results	
Supplementary information: <ul style="list-style-type: none"> - No fire or explosion - No leakage - Leakage - Fire - Explosion - Bulge - Others (please explain) 					

7.3.9	TABLE: Forced discharge (cells)				N/A
Model	OCV before application of reverse charge, (Vdc)	Measured reverse charge I_r , (mA)	Time for reversed charge, (minutes)	Results	
Supplementary information: <ul style="list-style-type: none"> - No fire or explosion - No leakage - Leakage - Fire - Explosion - Bulge - Others (please explain) 					

8.2.1	TABLE: Continuous charging at constant voltage (cells)				P
Model	Recommended charging voltage V _c , (Vdc)	Recommended charging current I _{rec} , (mA)	OCV at start of test, (Vdc)	Results	
C1#	4.20	168	4.19	P	
C2#	4.20	168	4.19	P	
C3#	4.20	168	4.19	P	
C4#	4.20	168	4.19	P	
C5#	4.20	168	4.19	P	
Supplementary information: - No fire - No explosion - No leakage					

8.3.1	TABLE: External short circuit (cells)				P
Model	Ambient, (°C)	OCV at start of test, (Vdc)	Resistance of circuit, (mΩ)	Maximum case temperature rise ΔT_c (°C)	Results
Samples charged at charging temperature upper limit (45°C)					
C1#	24.5	4.22	75	103.3	P
C2#	24.5	4.21	75	106.6	P
C3#	24.5	4.21	75	105.7	P
C4#	24.5	4.22	75	103.3	P
C5#	24.5	4.20	75	101.8	P
Samples charged at charging temperature lower limit (-5°C)					
C6#	24.5	4.19	75	100.0	P
C7#	24.5	4.18	75	98.8	P
C8#	24.5	4.19	75	101.8	P
C9#	24.5	4.19	75	97.5	P
C10#	24.5	4.19	75	98.3	P
Supplementary information: - No fire - No explosion					

8.3.5	TABLE: Crush					P
Model	OCV at start of test, (Vdc)	OCV at removal of crushing force, (Vdc)	Width/ diameter of cell before crush, (mm)	Required deformation for crush, (mm)	Results	
Samples charged at charging temperature upper limit (45°C)						
C1#	4.22	4.22	--	--	P	
C2#	4.22	4.22	--	--	P	
C3#	4.21	4.21	--	--	P	
C4#	4.21	4.21	--	--	P	
C5#	4.21	4.21	--	--	P	
Note: A 13kN force applied at the wide side of prismatic cells. No voltage abrupt drop occurred. Supplementary information: - No fire - No explosion						

8.3.6	TABLE: Over-charging of battery				P
Constant charging current (A).....:			1.68		—
Supply voltage (Vdc).....:			5.0		—
Model	OCV before charging, (Vdc)	Resistance of circuit, (mΩ)	Maximum outer casing temperature, (°C)	Results	
B1#	3.30	14.3	25.4	P	
B2#	3.31	15.5	25.3	P	
B3#	3.30	16.2	25.3	P	
B4#	3.29	14.4	25.2	P	
B5#	3.28	15.2	25.3	P	
Supplementary information:					
- No fire					
- No explosion					

8.3.7	TABLE: Forced discharge (cells)				P
Model	OCV before application of reverse charge, (Vdc)	Measured Reverse charge I _r , (mA)	Time for reversed charge, (minutes)	Results	
C1#	3.30	840	90	P	
C2#	3.31	840	90	P	
C3#	3.29	840	90	P	
C4#	3.32	840	90	P	
C5#	3.28	840	90	P	
Supplementary information:					
- No fire					
- No explosion					

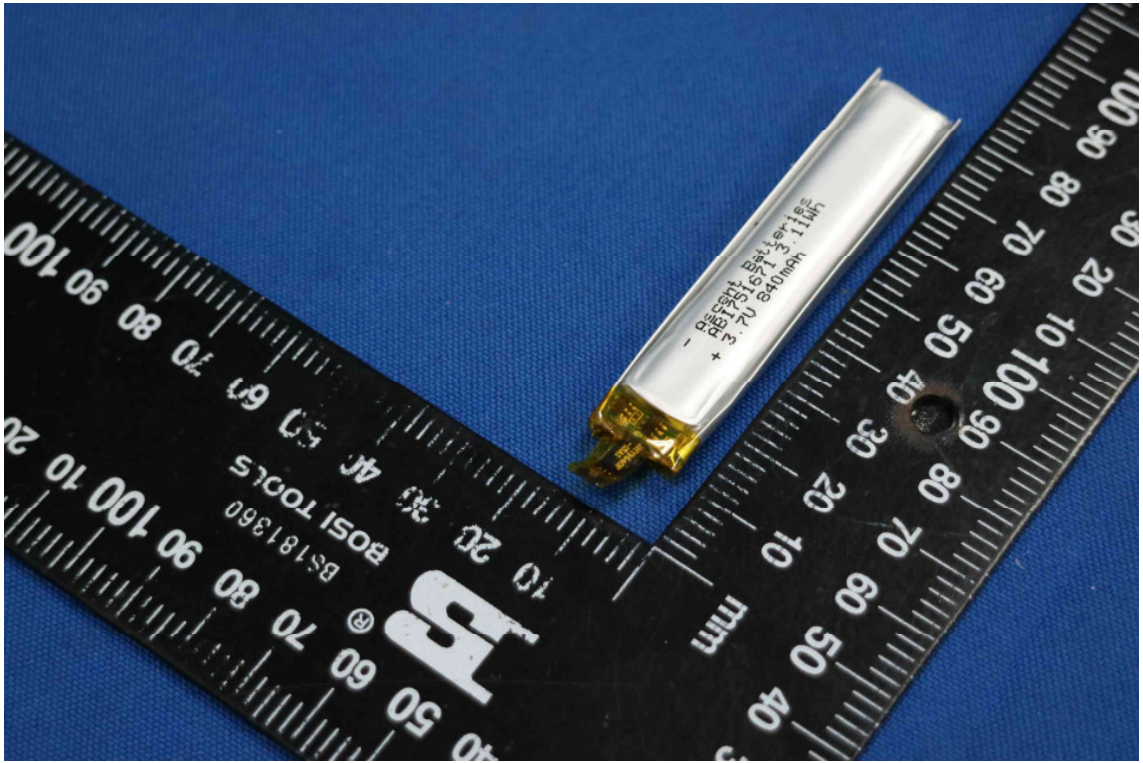
8.3.8 T-5	TABLE: External short circuit (cells)					P
Model	Ambient, (°C)	OCV at start of test, (Vdc)	Resistance of circuit, (mΩ)	Maximum case temperature rise ΔT_r , (°C)	Results	
C1#	55.0	4.20	76	108.3	P	
C2#	55.0	4.19	76	108.9	P	
C3#	55.0	4.19	76	106.5	P	
C4#	55.0	4.18	76	111.2	P	
C5#	55.0	4.19	76	111.8	P	
C6#	55.0	4.19	76	105.7	P	
C7#	55.0	4.19	76	109.5	P	
C8#	55.0	4.20	76	104.7	P	
C9#	55.0	4.20	76	109.1	P	
C10#	55.0	4.19	76	106.0	P	
Supplementary information:						
The external short-circuit test of 10 pcs samples performed after the test of Altitude, Thermal cycling, Vibration and Shock in sequence.						
- No excessive temperature rise, no rupture, no explosion and no fire.						

8.3.9		TABLE: Forced internal short circuit (cells)				P
Model	Chamber ambient, (°C)	OCV at start of test, (Vdc)	Particle location ¹⁾	Maximum applied pressure, (N)	Voltage drop, (mV)	Results
C1#	45	4.23	1	400	1	P
C2#	45	4.23	2	400	1	P
C3#	45	4.22	2	400	2	P
C4#	45	4.22	1	400	1	P
C5#	45	4.22	1	400	3	P
C6#	10	4.18	1	400	1	P
C7#	10	4.19	2	400	2	P
C8#	10	4.19	1	400	1	P
C9#	10	4.19	2	400	1	P
C10#	10	4.19	1	400	2	P
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						

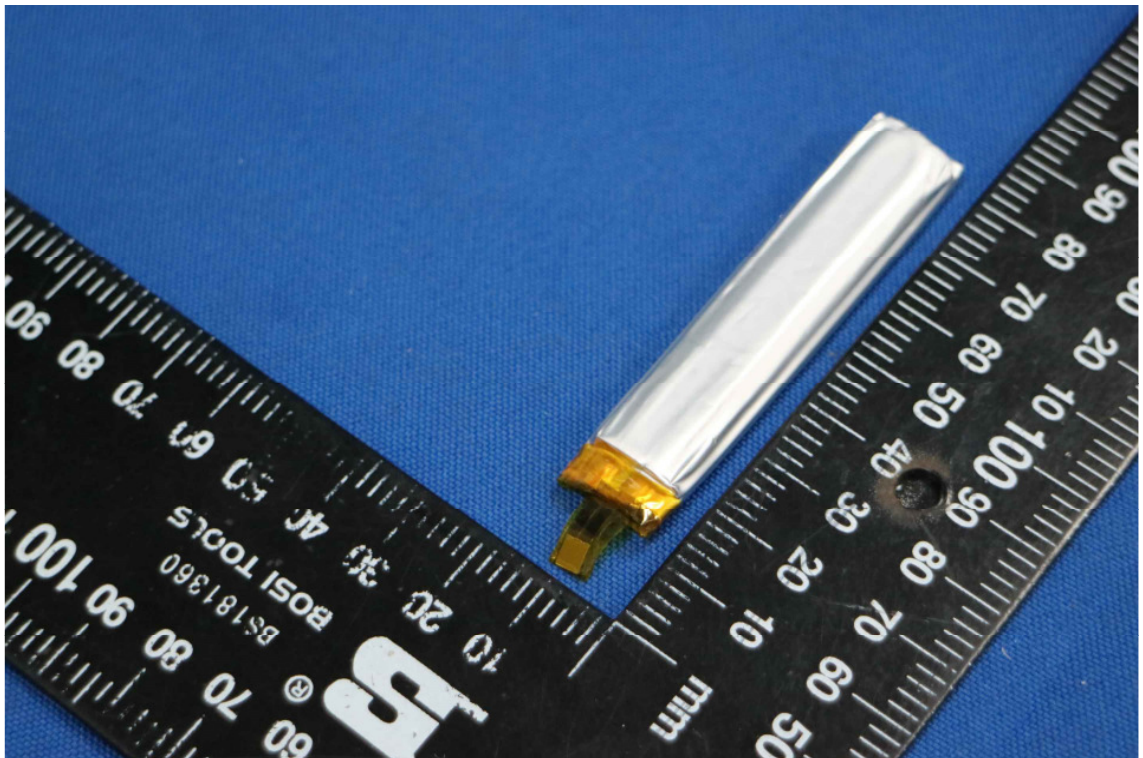
-- End of Report --

Product: Rechargeable Li-ion Polymer Battery

Type Designation: ABI751671



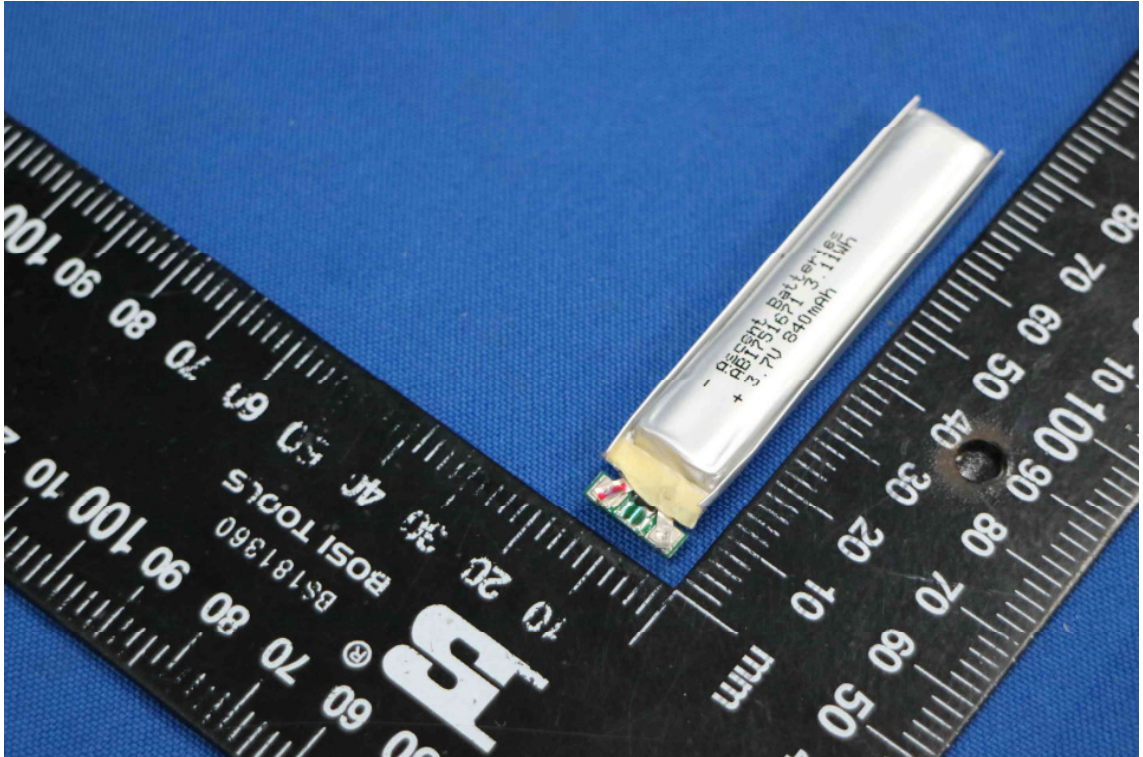
Picture 1 Battery view-1



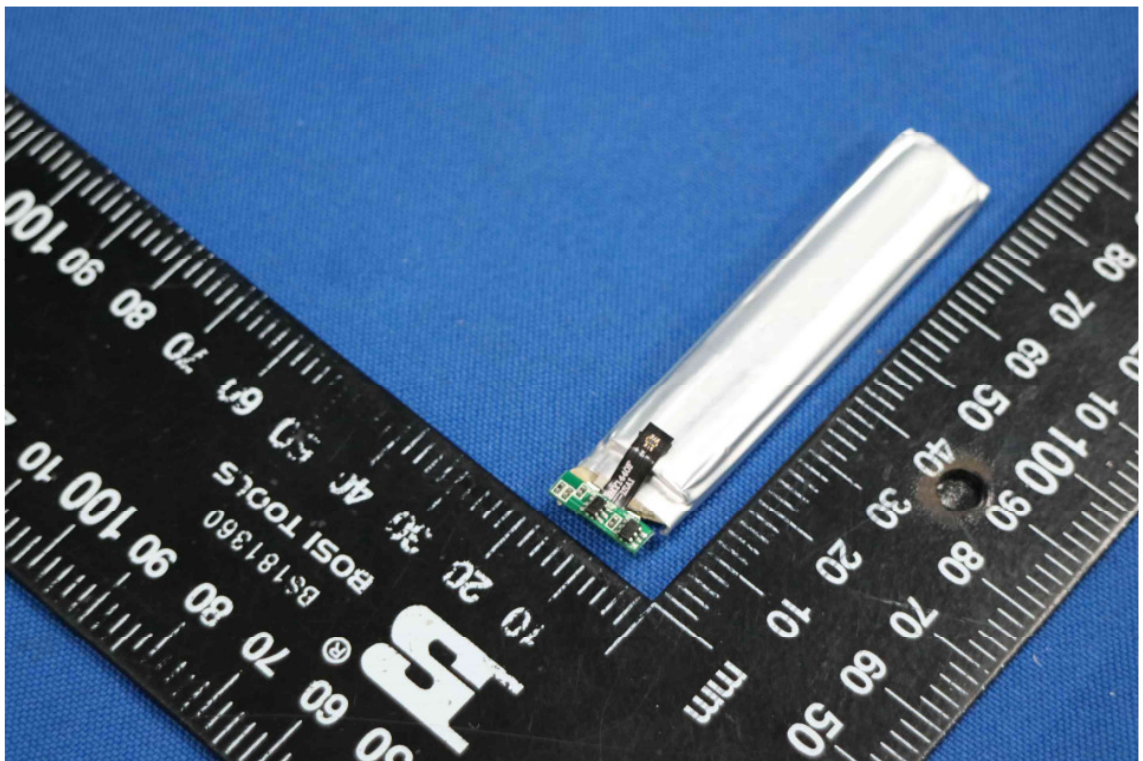
Picture 2 Battery view-2

Product: Rechargeable Li-ion Polymer Battery

Type Designation: ABI751671



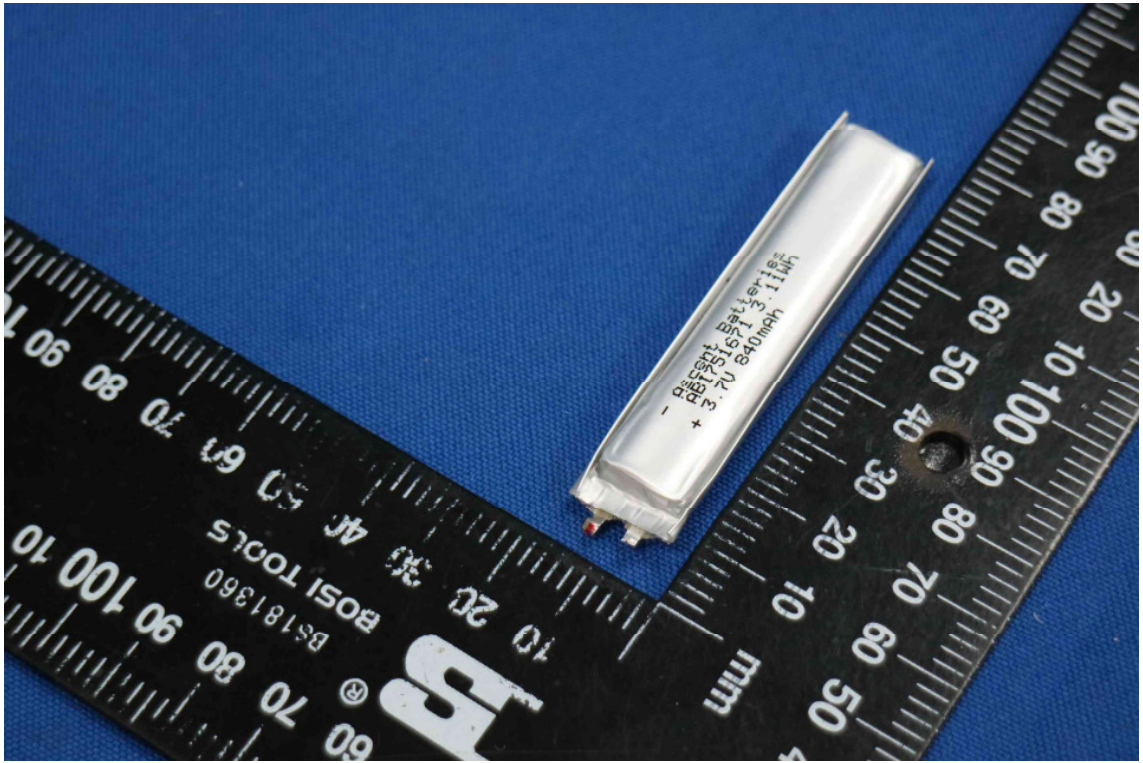
Picture 3 Battery view-3



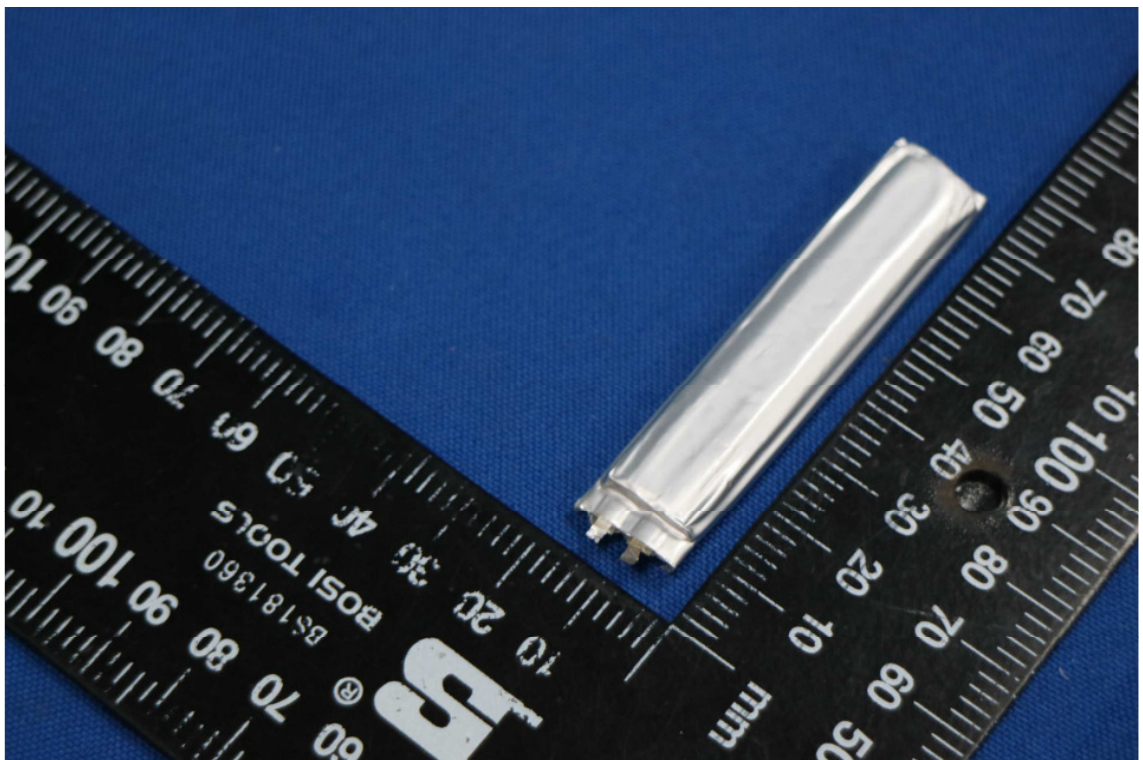
Picture 4 Battery view-4

Product: Rechargeable Li-ion Polymer Battery

Type Designation: ABI751671



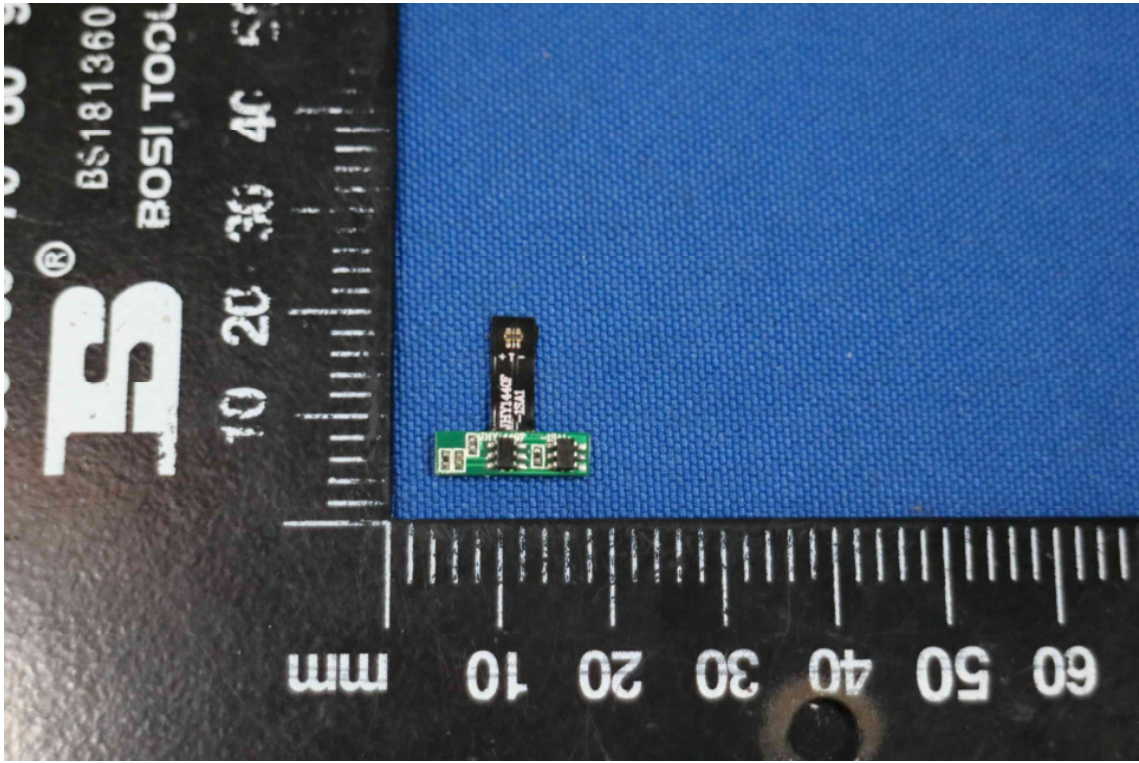
Picture 5 Cell view-1



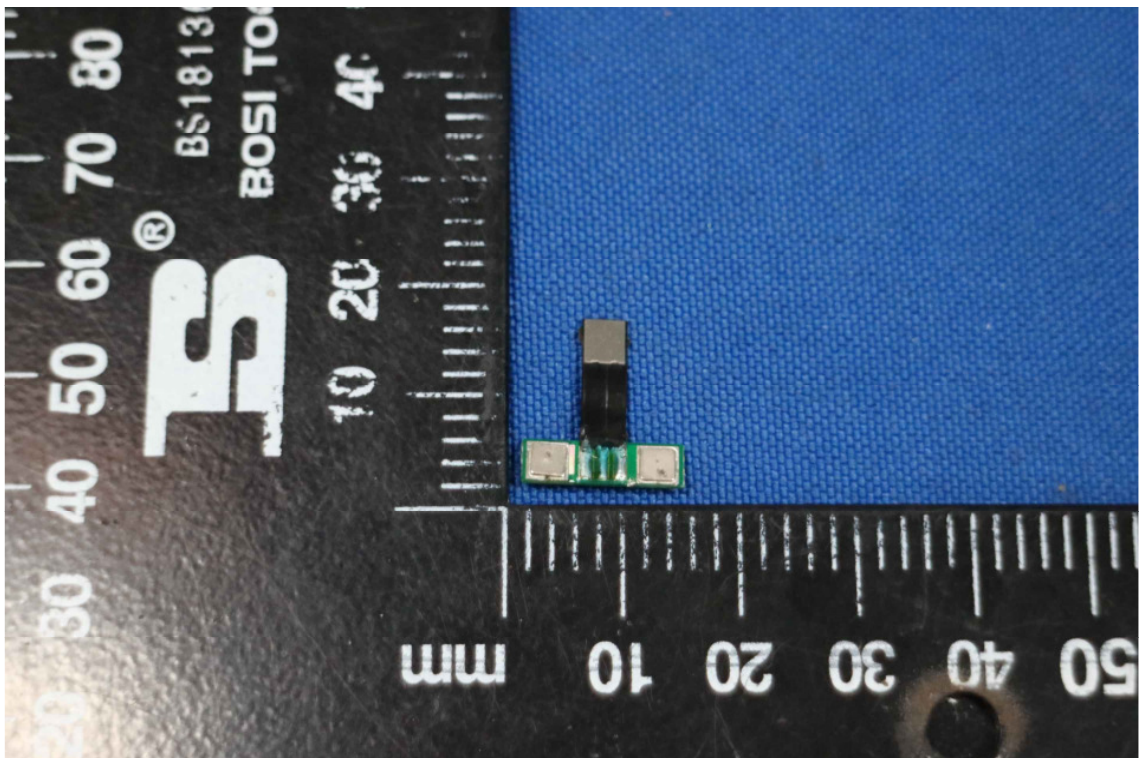
Picture 6 Cell view-2

Product: Rechargeable Li-ion Polymer Battery

Type Designation: ABI751671



Picture 7 Protection board view-1



Picture 8 Protection board view-2

Product: Rechargeable Li-ion Polymer Battery

Type Designation: ABI751671

Rechargeable Li-ion Polymer Battery
Model: ABI751671 1ICP8/16/71
3.7V 840mAh 3.108Wh
ASCENT INT'L GROUP CO., LIMITED
Date: 201605 Made in China



Picture 9 Label