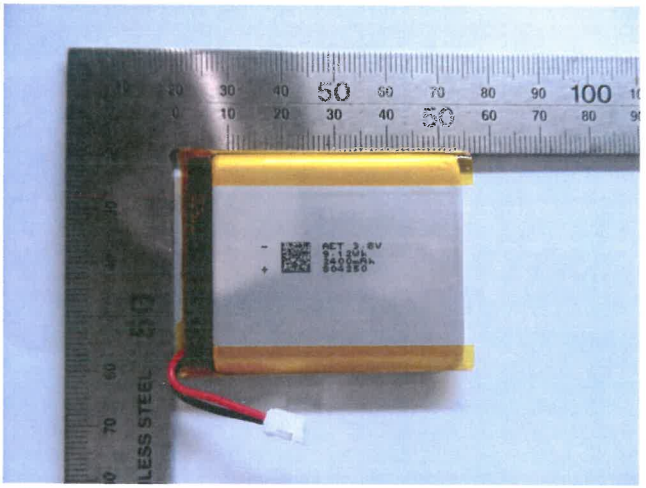
Prüfbericht-Nr.: *Test Report No.:*	**50058376 001**	**Auftrags-Nr.:** *Order No.:*	**164075755**	Seite 1 von 26 *Page 1 of 26*
Kunden-Referenz-Nr.: *Client Reference No.:*	N/A	**Auftragsdatum:** *Order date:*	09.22.2016	
Auftraggeber: *Client:*	GUANGDONG AN-ENERGY TECHNOLOGY CO., LTD No.1, 1st Zhonglong Road, Xiasha 3rd Industrial District, Shipai, Dongguan, P.R. China			
Prüfgegenstand: *Test item:*	Lithium-ion battery			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	804250, SA01			
Auftrags-Inhalt: *Order content:*	**Test report**			
Prüfgrundlage: *Test specification:*	**IEC 62133: 2012**			

Wareneingangsdatum: *Date of receipt:*	09.22.2016
Prüfmuster-Nr.: *Test sample No.:*	1609004B01-001-018 1609004C01-001-068
Prüfzeitraum: *Testing period:*	09.22.2016 - 10.12.2016
Ort der Prüfung: *Place of testing:*	Shenzhen Manytek Technology Co., Ltd.
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.
Prüfergebnis*: *Test result*:*	Pass



geprüft von / *tested by:*			**kontrolliert von** / *reviewed by:*		
10.17.2016	Daniel Dai / Project Engineer	Daniel Dai	10.17.2016	Charlie Zeng / Reviewer	Charlie Zeng
Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*

Sonstiges / *Other:*

1. This test report is issued for reporting the test result only;
2. The complete test report includes the following documents:
3. Test report (26 pages); Attachment 1: Equipment list (1 page); Attachment 2: Photo document (3 pages)

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT
IEC 62133
Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications

Report Number. .....:	50058376 001
Date of issue .....:	See cover page
Total number of pages.....	See cover page
Applicant's name.....:	See cover page
Address .....:	See cover page
Test specification:	
Standard .....:	IEC 62133: 2012 (Second Edition)
Test procedure .....:	Test report
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC62133B
Test Report Form(s) Originator ....:	UL(Demko)
Master TRF.....:	Dated 2013-03

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

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

Test item description .....:	Lithium-ion battery
Trade Mark .....:	AET
Manufacturer.....:	352 ECO-Technologies Co., Ltd
Address .....:	Room 418, JinJiYe Plaza, No. 2 Mid ShengGu Road, Chaoyang District, Beijing, P.R. China
Model/Type reference .....:	804250, SA01
Ratings .....:	3.8V, 2400mAh, 9.12Wh

Testing procedure and testing location:		
☐ **CB Testing Laboratory:**		
Testing location/ address .....:		
☐ **Associated CB Testing Laboratory:**		
Testing location/ address .....:		
Tested by (name + signature) .....:	See cover page	
Approved by (name + signature) .....:	See cover page	
☐ **Testing procedure: TMP**		
Testing location/ address .....:		
Tested by (name + signature) .....:		
Approved by (name + signature) .....:		
☐ **Testing procedure: WMT**		
Testing location/ address .....:		
Tested by (name + signature) .....:		
Witnessed by (name + signature)....:		
Approved by (name + signature) .....:		
☐ **Testing procedure: SMT**		
Testing location/ address .....:		
Tested by (name + signature) .....:		
Approved by (name + signature) .....:		
Supervised by (name + signature) ..:		

List of Attachments (including a total number of pages in each attachment):

See cover page

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
cl.5.6.2 Design recommendation(Lithium system); cl.8.1 Charging procedure for test purposes (for Cells and Batteries); 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 (Batteries); cl.8.3.3 Free fall (Cells and Batteries); 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 Design evaluation – Forced internal short circuit (cells); Tests are made with the number of cells and batteries specified in IEC 62133: 2012 (Second Edition) Table 2.	**Shenzhen Manytek Technology Co., Ltd.** Room 301 and 302, Floor 3, Block C, No. B14 of the First Industrial Zone, Baihuadong, Guangming Street, Guangming New District, Shenzhen, P.R. China

Summary of compliance with National Differences:

N/A

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

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

804250

SA01

Test item particulars.....:	
Classification of installation and use.....:	N/A
Supply connection.....:	DC Connector
Recommend charging method declared by the manufacturer ..... :	Charging the battery with 480mA constant current and 4.35V constant voltage until the current reduces to 48mA at ambient 20°C±5°C
Discharge current (0,2 I_t A) ..... :	480mA
Specified final voltage ..... :	3.0V
Chemistry ..... :	☐ nickel systems ..... ☒ lithium systems
Recommend of charging limit for lithium system	
Upper limit charging voltage per cell.....:	4.35V
Maximum charging current.....:	1200mA
Charging temperature upper limit.....:	45°C
Charging temperature lower limit.....:	10°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 .....:	See cover page
Date (s) of performance of tests.....:	See cover page

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.
Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

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

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☐ **Yes** ☒ **Not applicable**

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

Name and address of factory (ies) ..... :	**Same as applicant**

General product information:

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

The batteries 804250 and SA01 are identical, except the model name.

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
804250, SA01	2400mAh	3.8V	480mA	480mA	1200mA	1200mA	4.35V	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
804250, SA01	4.35V	120mA	10°C	45°C

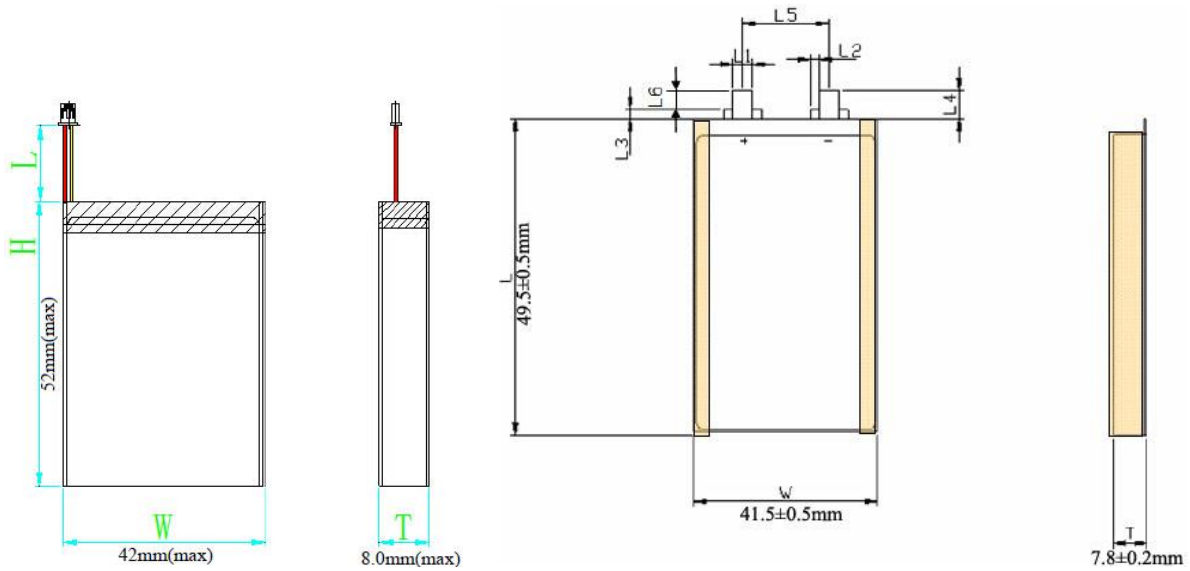
The main features of the cell in the battery pack are shown as below (clause 8.1.1):

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
804250(cell)	2400mAh	3.8V	480mA	480mA	2400mA	2400mA	4.35V	3.0V

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

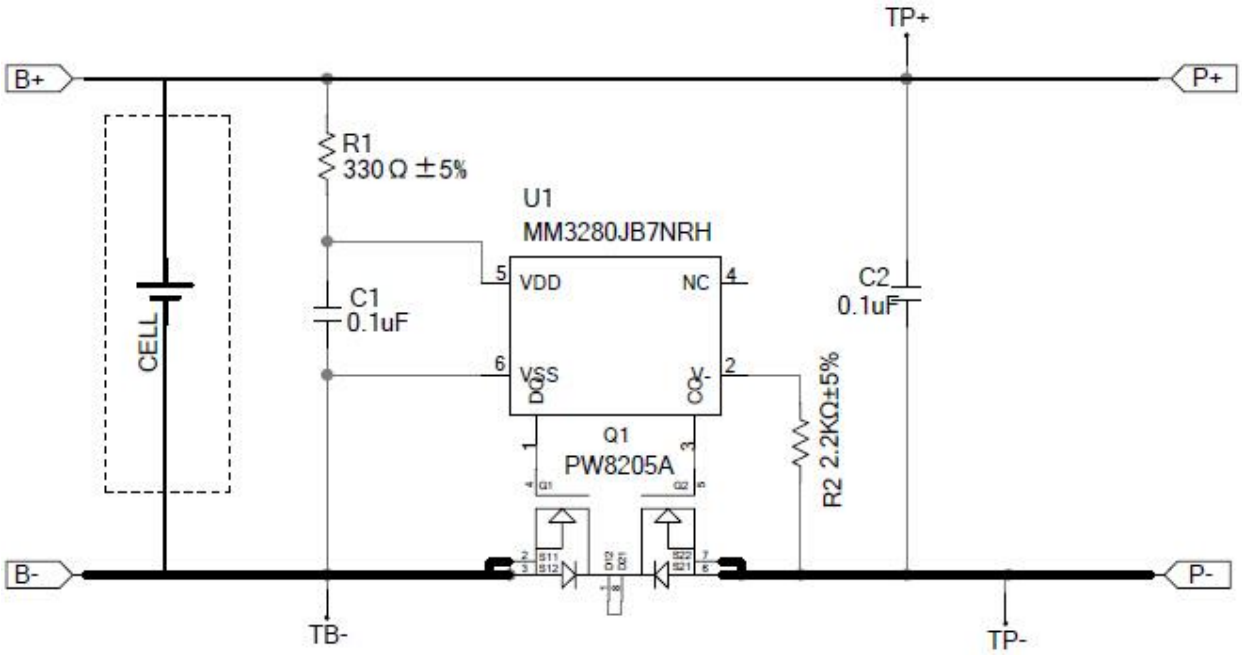
Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature
804250(cell)	4.35V	120mA	10°C	55°C

Construction:



Battery Cell

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 the 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, over discharge, 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 user manual.	P
5.5	Terminal contacts		P
	Terminals have a clear polarity marking on the external surface of the battery	See page 4.	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		P
	Terminal contacts are arranged to minimize the risk of short circuits		P
5.6	Assembly of cells into batteries	Single cell battery.	P
5.6.1	If there is more than one battery housed in a single battery case, cells used in the assembly of each battery have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer		N/A
	Each battery has an independent control and protection		N/A
	Manufacturers of cells make recommendations about current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly		N/A
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate separate circuitry to prevent the cell reversal caused by uneven discharges		N/A
	Protective circuit components are added as appropriate and consideration given to the end-device application		N/A
	When testing a battery, the manufacturer of the battery provides a test report confirming the compliance according to this standard		N/A
5.6.2	Design recommendation for lithium systems only		P
	For the battery consisting of a single cell or a single cellblock: - Charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Clause 8.1.2, Table 4; or		N/A
	- Charging voltage of the cell does not exceed the different upper limit of the charging voltage determined through Clause 8.1.2, NOTE 1.	Charging voltage: 4.35V, not exceed 4.35V specified in Clause 8.1.2, NOTE 1.	P
	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	Not requested by client.	N/A
	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		N/A
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. Table 2 for 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) ..... :		—

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No physical distortion of the battery casing resulting in exposure if internal components		N/A
7.2.4	Temperature cycling		N/A
	Results: No fire. No explosion. No leakage.		N/A
7.3	Reasonably foreseeable misuse		N/A
7.3.1	Incorrect installation cell		N/A
	The test was carried out using: - Four fully charged cells of the same brand, type, size and age connected in series, with one of them reversed; or		N/A
	- A stabilized dc power supply.		N/A
	Results: No fire. No explosion..... :	(See Table 7.3.1)	N/A
7.3.2	External short circuit		N/A
	The cells or batteries were tested until one of the following occurred: - 24 hours elapsed; or		N/A
	- The case temperature declined by 20% of the maximum temperature rise		N/A
	Results: No fire. No explosion..... :	(See Table 7.3.2)	N/A
7.3.3	Free fall		N/A
	Results: No fire. No explosion.		N/A
7.3.4	Mechanical shock (crash hazard)		N/A
	Results: No fire. No explosion. No leakage.		N/A
7.3.5	Thermal abuse		N/A
	Oven temperature (°C)..... :		—
	Results: No fire. No explosion.		N/A
7.3.6	Crushing of cells		N/A
	The crushing force was released upon: - The maximum force of 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)..... :		—

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No fire. No explosion. No leakage.		N/A
7.3.8	Overcharge		N/A
	Results: No fire. No explosion..... :	(See Table 7.3.8)	N/A
7.3.9	Forced discharge		N/A
	Results: No fire. No explosion..... :	(See Table 7.3.9)	N/A

8	**Specific requirements and tests (lithium systems)**		**P**
8.1	Charging procedures for test purposes		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 10-55°C declared. 10°C used for lower limit tests for cell and battery. 60°C used for upper limit tests for cell. 45°C used for upper limit tests for battery.	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	4.35V applied.	P
	A valid rationale was provided to ensure the safety of the cell (see Figure A.1) ..... :		P
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)		P

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	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)		P
	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		P
	Results: No fire. No explosion.	No fire. No explosion.	P
8.3.4	Thermal abuse (cells)		P
	The cells were held at 130°C ± 2°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 kN ± 1 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		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

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	- Returned to ambient		P
	Results: No fire. No explosion..... :	(See Table 8.3.6)	P
8.3.7	Forced discharge (cells)		P
	Results: No fire. No explosion..... :	(See Table 8.3.7)	P
8.3.8	Transport tests		P
	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	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.	Cell specification provided.	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.	Battery pack specification provided.	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	Not requested.	N/A
	Batteries marked in accordance with the requirements for the cells from which they are assembled.		N/A

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
	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 disposal instructions mentioned in manufacturer's specifications.	P
	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	Charging voltage is 4.35V	P
A.3.2	Upper limit charging voltage	4.35V	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	4.35V applied.	P
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 declared by client is: 10-55°C	P
A.4.3	High temperature range	Charging high temperature declared by client is: 55°C.	P
A.4.3.1	General		P
A.4.3.2	Explanation of safety viewpoint		P
A.4.3.3	Safety considerations when specifying charging conditions in high temperature range		P

IEC 62133: 2012			
Clause	Requirement + Test	Result - Remark	Verdict
A.4.3.4	Safety consideration when specifying new upper limit in high temperature range	60°C applied.	P
A.4.4	Low temperature range	Not lower than the temperature range specific in this standard.	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 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		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

	TABLE: Critical components information				P
Object/part no.	**Manufacturer/ trademark**	**Type/model**	**Technical data**	**Standard**	**Mark(s) of conformity** [1)]
PCB	Shenzhen road access technology Co., Ltd	AET-SWE001-A	V-0, 105°C	--	--
Protection IC (U1)	MITSUMI	MM3280JB7NRH	Overcharge Detection Voltage: 4.405~4.445V, Over-discharge Detection Voltage: 2.465~2.535V, Discharge Current threshold: 2~6A, Operating temperature range: -40-85°C	--	Test with appliance
MOSFET (Q1)	Jin Jia Limited by share Ltd	PW8205A	VDS: 20V, VGS: ±12V, ID(at TA=25°C): 6.0A, IDM: 20A, TJ, TSTG: -55 - 155°C)	--	Test with appliance
Wiring	DONGGUAN ZHONGZHENG WIRE & CABLE TECH CO LTD	1007	26AWG, 80°C, 300Vac	UL 758	UL E336285
Wiring (Alternative)	Interchangeable	Interchangeable	Min. 26AWG, 80°C, 300Vac	UL 758	UL Approved
Connector	Shenzhenshi pengmai electronic co., ltd	PH-2P	2P	--	--
Connector (Alternative)	Interchangeable	Interchangeable	2P	--	--
Cell	GUANGDONG AN-ENERGY TECHNOLOGY CO., LTD	804250(cell)	2400mAh, 3.8V	IEC 62133: 2012	Test with appliance
-Positive electrode	Jiangmen branch constant industrial co., LTD	LC0-4	Material: $LiCoO_2$, D50: 11-14μm, Tap density: ≥3.0g/cm^3, Specific surface area: 0.21±0.03m^2/g	--	--
-Negative electrode	Dalian macro light LiYe co., LTD	HG-8D	Material: graphite, D50: 20.0±1.5μm, Tap density: 0.90±0.10g/cm^3, Specific surface area: 1.50±0.30m^2/g	--	--
-Separator	W-SCOPE KOREA CO., LTD.	W-Scope16	Thickness : 16μm, Shutdown temperature: 135-140°C	--	--
-Electrolyte	Dongguan from battery material co., LTD	E02	Material: $LiPF_6$+EC+DEC, Electrical conductivity: 7.5-8.5(25°C, ms/cm)	--	--
-Outer case	Toppan Printing Co. Ltd.	113	Material: Al+pp+ polyester, Thickness: 113μm	--	--

-Positive electrode tab	united electronic technology co., LTD	4*0.08	Material: Aluminum, Thickness: 0.08mm	--	--
-Negative electrode tab	Jiangmen Rio united electronic technology co., LTD	4*0.08	Material: nickel, Thickness: 0.08mm	--	--
Supplementary information: **[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:

- 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 ± 5ºC 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:

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

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

Supplementary information:

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

8.2.1	TABLE: Continuous charging at constant voltage (cells)			P
Model	**Recommended charging voltage V_c, (Vdc)**	**Recommended charging current I_{rec}, (A)**	**OCV at start of test, (Vdc)**	**Results**
#1	4.35	0.48	4.33	P
#2	4.35	0.48	4.33	P
#3	4.35	0.48	4.32	P
#4	4.35	0.48	4.32	P
#5	4.35	0.48	4.33	P

Supplementary information:

- No fire or explosion
- No leakage

8.3.1	TABLE: External short circuit (cell)				P
Model	**Ambient, (°C)**	**OCV at start of test, (Vdc)**	**Resistance of circuit, (mΩ)**	**Maximum case temperature rise ΔT, ~~(°C)~~**	**Results**
Samples charged at charging temperature upper limit (60°C)					
#1	20.8	4.32	80	116.6	P
#2	20.8	4.31	80	114.8	P
#3	20.8	4.31	80	121.0	P
#4	20.8	4.31	80	117.1	P
#5	20.8	4.32	80	121.0	P
Samples charged at charging temperature lower limit (10°C)					
#6	21.0	4.23	80	112.2	P
#7	21.0	4.22	80	113.9	P
#8	21.0	4.22	80	113.3	P
#9	21.0	4.23	80	116.5	P
#10	21.0	4.22	80	104.7	P
Supplementary information: - No fire or explosion					

8.3.2	TABLE: External short circuit (battery)				P
Model	**Ambient, (°C)**	**OCV at start of test, (Vdc)**	**Resistance of circuit, (mΩ)**	**Maximum case temperature rise ΔT, ~~(°C)~~**	**Results**
Samples charged at charging temperature upper limit (45°C)					
#1	54.3	4.31	80	1.6	P
#2	54.3	4.32	80	1.6	P
#3	54.3	4.31	80	1.6	P
#4	54.3	4.32	80	1.6	P
#5	54.3	4.32	80	1.6	P
Samples charged at charging temperature lower limit (10°C)					
#6	54.3	4.22	80	1.7	P
#7	54.3	4.23	80	1.7	P
#8	54.3	4.23	80	1.7	P
#9	54.3	4.23	80	1.7	P
#10	54.3	4.22	80	1.8	P
Supplementary information: - No fire or 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 (60°C)					
Cell #1	4.32	4.32	--	--	P
Cell #2	4.31	4.31	--	--	P
Cell #3	4.32	4.32	--	--	P
Cell #4	4.32	4.32	--	--	P
Cell #5	4.31	4.31	--	--	P

Note:
A 13kN force applied at the wide side of prismatic cells.
No voltage abrupt drop occurred.
Supplementary information:
- No fire or explosion

8.3.6	TABLE: Over-charging of battery			P
Constant charging current (A).....:		**4.8**		—
Supply voltage (Vdc).....:		**5.0**		—
Model	**OCV before charging, (Vdc)**	**Resistance of circuit, (mΩ)**	**Maximum outer casing temperature, (°C)**	**Results**
Battery #1	3.41	20	21.3	P
Battery #2	3.40	20	21.3	P
Battery #3	3.40	20	21.3	P
Battery #4	3.40	20	21.3	P
Battery #5	3.41	20	21.4	P

Supplementary information:
*The min. overcharge detections voltage as specified in battery specifications.
- No fire or explosion

8.3.7	TABLE: Forced discharge (cells)			P
Model	**OCV before application of reverse charge, (Vdc)**	**Measured Reverse charge I_t, (A)**	**Time for reversed charge, (minutes)**	**Results**
#1	3.41	2.4	90	P
#2	3.40	2.4	90	P
#3	3.41	2.4	90	P
#4	3.41	2.4	90	P
#5	3.40	2.4	90	P

Supplementary information:

- No fire or explosion

8.3.8 T-5	TABLE: External short circuit (cell)				P
Model	**Ambient, (°C)**	**OCV at start of test, (Vdc)**	**Resistance of circuit, (mΩ)**	**Maximum case temperature rise ΔT, ~~(°C)~~**	**Results**
#1	53.7	4.32	80	77.9	P
#2	53.7	4.32	80	70.1	P
#3	53.7	4.31	80	73.0	P
#4	53.7	4.32	80	77.3	P
#5	53.7	4.31	80	77.3	P
#6	54.3	4.32	80	80.4	P
#7	54.3	4.32	80	75.2	P
#8	54.3	4.32	80	78.8	P
#9	54.3	4.31	80	87.1	P
#10	54.3	4.32	80	72.0	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**
#1	10	4.22	1	400	0	P
#2	10	4.23	1	400	4	P
#3	10	4.23	1	400	2	P
#4	10	4.22	2	400	1	P
#5	10	4.23	2	400	5	P
#6	45	4.32	1	400	1	P
#7	45	4.31	1	400	3	P
#8	45	4.31	1	400	4	P
#9	45	4.32	2	400	0	P
#10	45	4.32	2	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 --

Attachment 1 Equipment list

Sequence No.	Equipment No.	Name	Model No.	Date of Calibration	Date of next Calibration
1	MAN-LA-EQ-039	Charging and discharging equipment	GD-TX5V6A-08	2015.07.25	2016.10.24
2	MAN-LA-EQ-004	Thermal abuse chamber	BE-101-1A	2015.07.25	2016.10.24
3	MAN-LA-EQ-001	Precise oven	BE-1000A-72	2015.07.25	2016.10.24
4	MAN-LA-EQ-032	Drop tester	HE-F-315S	2015.07.25	2016.10.24
5	MAN-LA-EQ-002	Crush and penetration tester	BE-6047	2015.07.25	2016.10.24
6	MAN-LA-EQ-006	Low pressure chamber	BE-DY-27	2015.06.07	2016.10.24
7	MAN-LA-EQ-012	Temp＆Humi Programmable Chamber	LD-80-C	2015.07.25	2016.10.24
8	MAN-LA-EQ-030	Electro-dynamic vibration test system	EV130	2015.07.25	2016.10.24
9	MAN-LA-EQ-033	Shock tester	SKT25	2015.07.25	2016.10.24
10	MAN-LA-EQ-008	Internal short-circuit Tester	HY-DL-21	2015.07.25	2016.10.24
11	MAN-LA-IN-005	20 channel multiplexer	34972A	2015.07.25	2016.10.24
12	MAN-LA-IN-007	Midi logger	GL820	2015.07.25	2016.10.24
13	MAN-LA-EQ-024	DC regulated power supply	RS1305DF-P	2015.07.25	2016.10.24
14	MAN-LA-EQ-026	DC regulated power supply	RS1305DF-P	2015.07.25	2016.10.24
15	MAN-LA-EQ-027;	DC regulated power supply	RS1305DF-P	2015.07.25	2016.10.24
16	MAN-LA-EQ-028	DC regulated power supply	RS1305DF-P	2015.07.25	2016.10.24
17	MAN-LA-EQ-029	DC regulated power supply	RS1305DF-P	2015.07.25	2016.10.24

Product: Lithium-ion battery

Type Designation: 804250, SA01

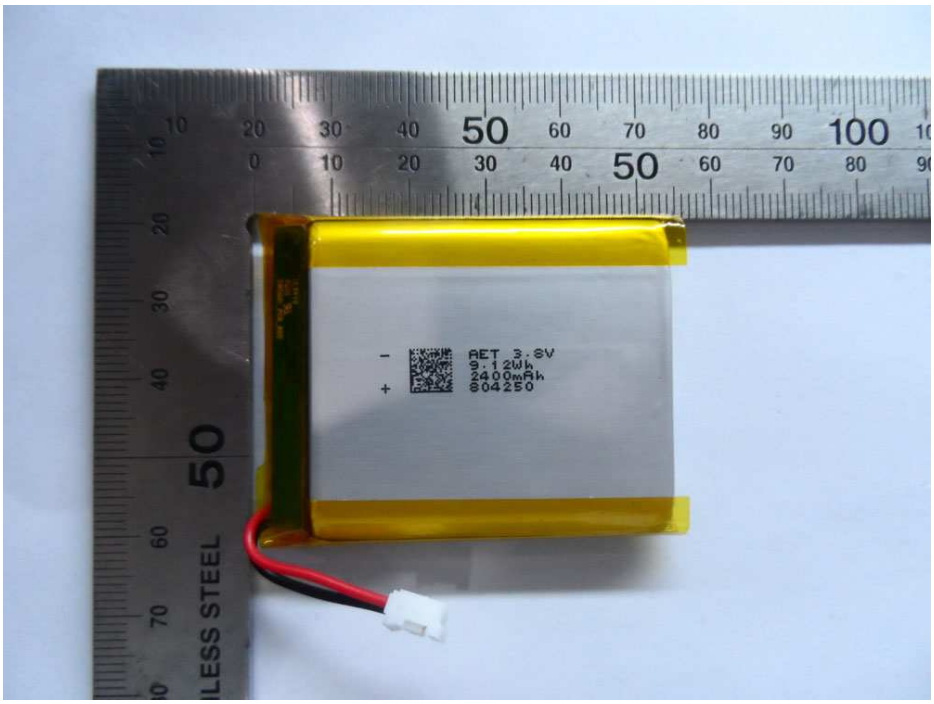


Figure 1 Front view of battery

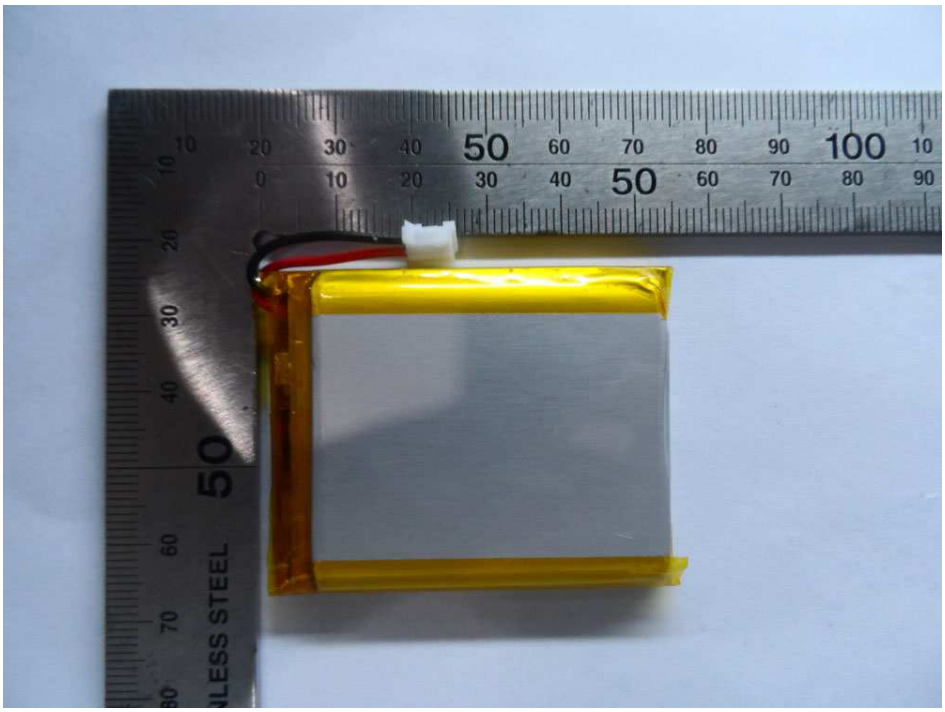


Figure 2 Back view of battery

Product: Lithium-ion battery

Type Designation: 804250, SA01

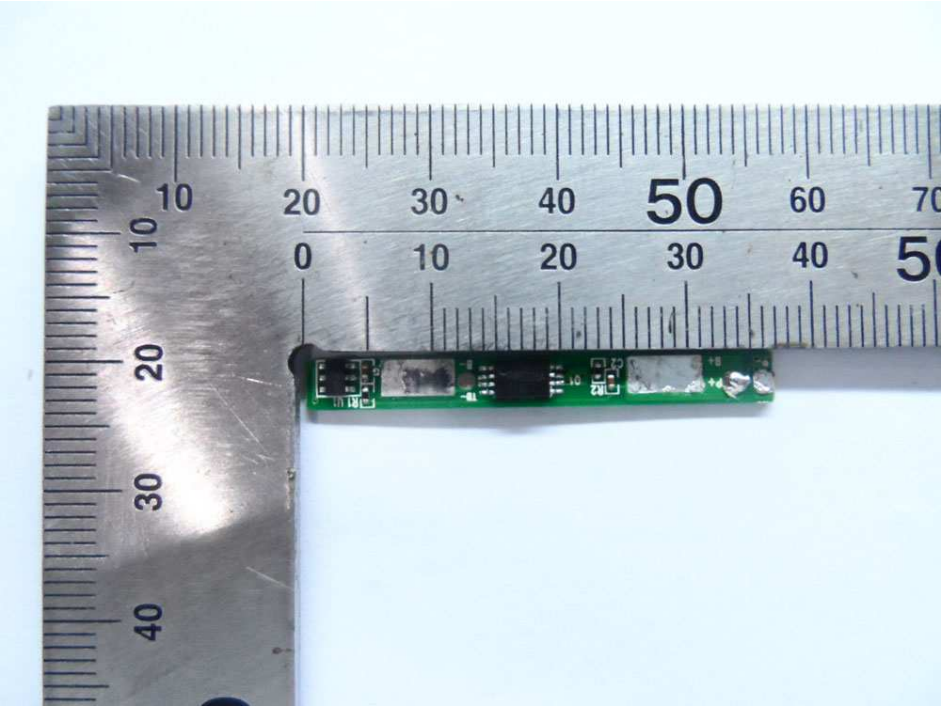


Figure 3 Component view of PCB

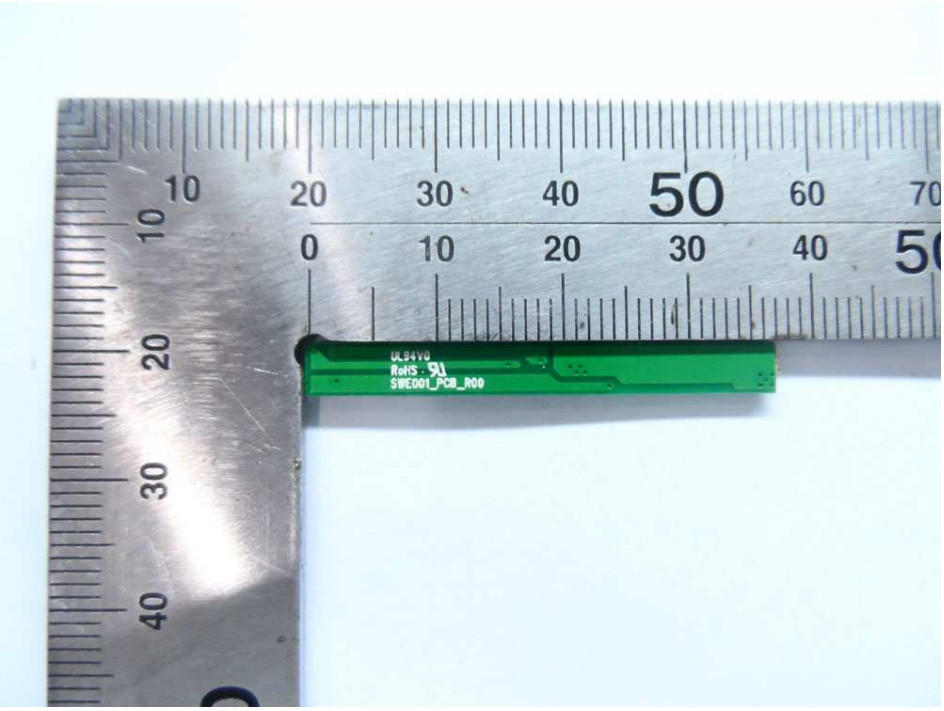


Figure 4 Trace view of PCB

Product: Lithium-ion battery

Type Designation: 804250, SA01

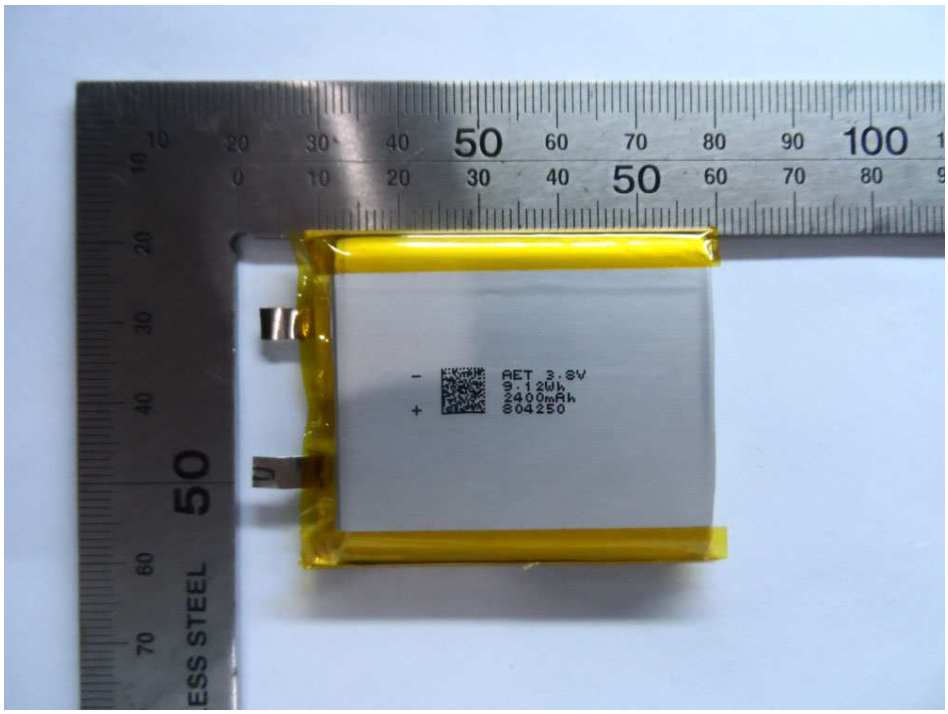


Figure 5 Front view of cell

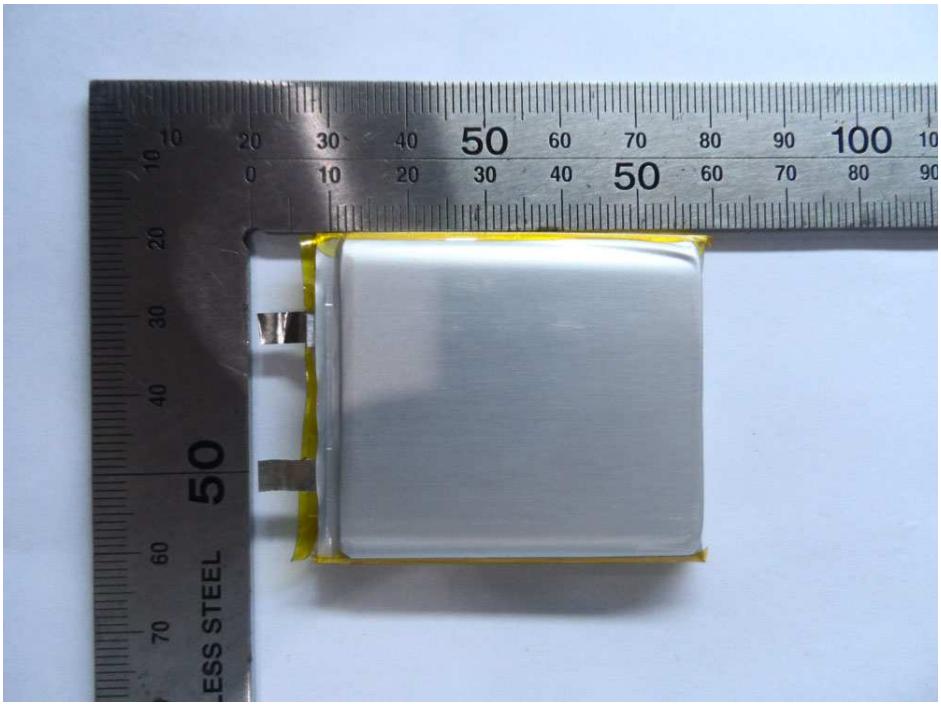


Figure 6 Back view of cell