



Test Report issued under the responsibility of:



TEST REPORT

IEC 62133-1

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 1: Nickel systems

Report Number..... SHES230200228601

Date of issue..... 2023-02-16

Total number of pages 27 pages

Applicant's name Suzhou Xinlvzhou Electronics Co., Ltd.

Address..... No.158 Shanji Road, Xiangcheng District, Suzhou, Jiangsu, China

Test specification:

Standard..... IEC 62133-1:2017

Test procedure CB Scheme

Non-standard test method N/A

Test Report Form No. IEC62133_1A

Test Report Form(s) Originator TÜV SÜD

Master TRF Dated 2017-09-14

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General disclaimer:

The test results presented in this report relate only to the object tested.

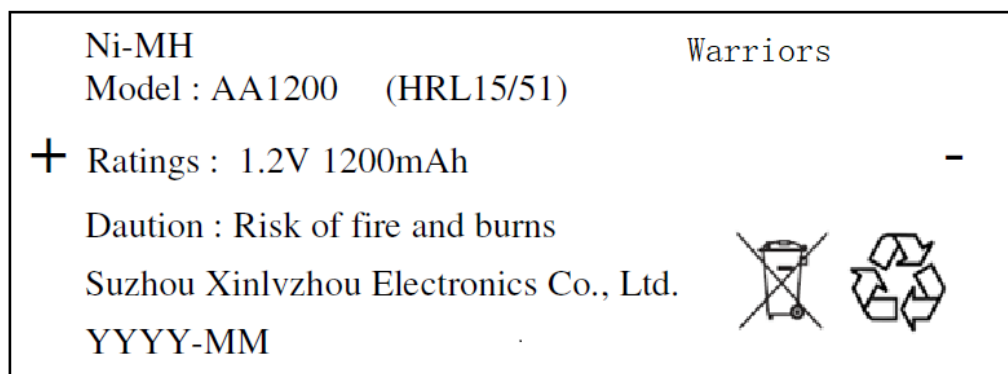
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Test item description :	Ni-MH Cylindrical Cell	
Trade Mark :	Warriors	
Manufacturer	Same as applicant	
Model/Type reference	AA100, AA150, AA200, AA250, AA300, AA350, AA400, AA500, AA600, AA700, AA800, AA900, AA1000, AA1100, AA1200	
Ratings	Rated Voltage: 1,2 V Rated Capacity: see page 6 for details	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒	CB Testing Laboratory:	SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Testing location/ address :		588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China
Tested by (name, function, signature) :		Gina Yu / Project Engineer <i>Gina Yu</i>
Approved by (name, function, signature) ... :		Bruce Wu / Project Reviewer <i>Bruce Wu</i>
☐	Testing procedure: CTF Stage 1:	N/A
Testing location/ address :		
Tested by (name, function, signature) :		
Approved by (name, function, signature) ... :		
☐	Testing procedure: CTF Stage 2:	N/A
Testing location/ address :		
Tested by (name + signature)		
Witnessed by (name, function, signature) .:		
Approved by (name, function, signature) ... :		
☐	Testing procedure: CTF Stage 3:	N/A
☐	Testing procedure: CTF Stage 4:	N/A
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 1: 2 pages of Photo documentation; Attachment 2: 2 pages of Information for safety; Attachment 3: 1 page of Packaging; Attachment 4: 15 page of Product specification.	
Summary of testing: The sample(s) tested complies with the requirements of IEC 62133-1:2017. No decision rule is specified by 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"). All test data in this report were copied from SGS CB test report No. SHES191202814201, CB certificate No. BE-36055, with following changes and/or additions: - Changed the trademark from "TROILY" to "Warriors"; - Changed the applicant and manufacturer to "Suzhou Xinlvzhou Electronics Co., Ltd. / No.158 Shanji Road, Xiangcheng District, Suzhou, Jiangsu, China"; After comparison, no additional test was considered necessary. Remark: Model AA1200, AA1000, AA800, AA700, AA500, AA400, AA350, AA300, AA250, AA200, AA150 and AA100 were considered and full tested according to standard in this report.	
Tests performed (name of test and test clause): ☐ 5.2 Insulation resistance ☒ 7.2.1 Continuous low-rate charging (cells) ☒ 7.2.2 Vibration ☐ 7.2.3 Case stress at high ambient temperature (batteries) ☒ 7.2.4 Temperature cycling ☒ 7.3.1 Incorrect installation (cells) ☒ 7.3.2 External short circuit ☒ 7.3.3 Free fall ☒ 7.3.4 Mechanical shock (crash hazard) ☒ 7.3.5 Thermal abuse (cells) ☒ 7.3.6 Crushing of cells ☒ 7.3.7 Low pressure (cells) ☒ 7.3.8 Overcharge ☒ 7.3.9 Forced discharge (cells)	Testing location: SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. 588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China
Summary of compliance with National Differences (List of countries addressed): EU Group difference and UK National difference. ☒ The product fulfils the requirements of EN 62133-1:2017 and BS EN 62133-1:2017.	

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 National Certification Body that own these marks.

**Remark:**

1. The marking for other models are the same pattern.
2. "YYYY-MM" represents for the manufactured date, "YYYY" for year, "MM" for Month

Test item particulars.....:	--
Classification of installation and use.....:	--
Supply connection.....:	--
Recommend charging method declared by the manufacturer	CC: 16 hours at 0,1C
Discharge current (0,2 I_t A)	See page 6 for detail
Specified final voltage	1,0 V
Chemistry	nickel systems
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	2023-02-14
Date (s) of performance of tests	Original: 2019-12-11 to 2020-02-12
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. This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.	

Manufacturer's Declaration per sub-clause 4.2.5 of IEC60086-2:

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) : Henan Troily New Energy Technology Co., Ltd.
 Industrial Cluster of Yudong, Xinxiang 453000
 Henan, China

General product information:

Model No.	Designation of cell	Rated voltage:	Rated Capacity:	Standard charge current	Discharge current (0,2 It A)
AA100	HRL15/51	1,2 V	100mAh	10mA (0,1C)	20 mA
AA150	HRL15/51	1,2 V	150mAh	15mA (0,1C)	30 mA
AA200	HRL15/51	1,2 V	200mAh	20mA (0,1C)	40 mA
AA250	HRL15/51	1,2 V	250mAh	25mA (0,1C)	50 mA
AA300	HRL15/51	1,2 V	300mAh	30mA (0,1C)	60 mA
AA350	HRL15/51	1,2 V	350mAh	35mA (0,1C)	70 mA
AA400	HRL15/51	1,2 V	400mAh	40mA (0,1C)	80 mA
AA500	HRL15/51	1,2 V	500mAh	50mA (0,1C)	100 mA
AA600	HRL15/51	1,2 V	600mAh	60mA (0,1C)	120 mA
AA700	HRL15/51	1,2 V	700mAh	70mA (0,1C)	140 mA
AA800	HRL15/51	1,2 V	800mAh	80mA (0,1C)	160 mA
AA900	HRL15/51	1,2 V	900mAh	90mA (0,1C)	180 mA
AA1000	HRL15/51	1,2 V	1000mAh	100mA (0,1C)	200 mA
AA1100	HRL15/51	1,2 V	1100mAh	110mA (0,1C)	220 mA
AA1200	HRL15/51	1,2 V	1200mAh	120mA (0,1C)	240 mA
Remark: All models have same dimensions, construction, techniques and composition, except for Model No. and rated capacity.					

Remark: See Attachment 4 for more details.

IEC 62133-1			
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	Cell only.	N/A
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 MΩ		N/A
	Insulation resistance (MΩ) :		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		N/A
	Orientation of wiring maintains adequate creepage and clearance distances between conductors		N/A
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		N/A
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	A pressure relief mechanism used to relieve excessive internal pressure.	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 and current management	Cell only.	N/A
	Batteries are designed such that abnormal temperature-rise conditions are prevented		N/A
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer		N/A
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that associated chargers are designed to maintain charging within the temperature, voltage and current limits specified		N/A
5.5	Terminal contacts		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

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Terminal contacts are arranged to minimize the risk of short circuits		P
5.6	Assembly of cells into batteries	Cell only.	N/A
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
	Battery has some type of safety device or feature for charging.		N/A
	Manufacturers of cells specify 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 circuitry to prevent operation of cells outside the limits specified by the cell manufacturer		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 document		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	Quality plan was provided.	P

6	Type test and sample size		P
	Tests were made with the number of cells or batteries specified in Table 1 using cells or batteries that are not more than six months old	Test are performed according to test items specified in table 1 of the standard.	P
	Unless noted otherwise in the test methods, testing was conducted in an ambient of 20°C ± 5°C.	The tests are conducted in an ambient of 20°C ± 5°C.	P

7	Specific requirements and tests		P
7.1	Charging procedure for test purposes		P
7.2	Intended use		P
7.2.1	Continuous low-rate charging (cells)		P
	Results: No fire. No explosion		P
7.2.2	Vibration		P
	Results: No fire. No explosion. No leakage	(See Table 7.2.2)	P
7.2.3	Case stress at high ambient temperature(batteries)		N/A

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Oven temperature (°C)..... :		—
	Results: No physical distortion of the battery case resulting in exposure of internal protective components and cells		N/A
7.2.4	Temperature cycling		P
	Results: No fire. No explosion. No leakage.		P
7.3	Reasonably foreseeable misuse		P
7.3.1	Incorrect installation (cells)		P
	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		P
	- A stabilized dc power supply.		N/A
	Results: No fire. No explosion..... :		P
7.3.2	External short circuit		P
	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		P
	Results: No fire. No explosion..... :	(See Table 7.3.2)	P
7.3.3	Free fall		P
	Results: No fire. No explosion.		P
7.3.4	Mechanical shock (crash hazard)		P
	Results: No fire. No explosion. No leakage.		P
7.3.5	Thermal abuse (cells)		P
	Oven temperature (°C)..... :	Raised at a rate of 5 °C/min to a temperature of 130 °C.	—
	Results: No fire. No explosion.		P
7.3.6	Crushing of cells		P
	The crushing force was released upon: - The maximum force of 13 kN ± 0.78 kN has been applied; or		P
	- 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..... :		P
7.3.7	Low pressure (cells)		P
	Chamber pressure (kPa)..... :	11,6	—

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No fire. No explosion. No leakage.		P
7.3.8	Overcharge		P
	Results: No fire. No explosion..... :	(See Table 7.3.8)	P
7.3.9	Forced discharge		P
	Results: No fire. No explosion..... :		P

8	Information for safety		P
8.1	General		P
	The manufacturer of secondary cells ensures that information is provided about current, voltage and temperature limits of their products.	See Attachment 4 for detail.	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.	Cell only.	N/A
	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
	Guidance is provided in IEC TR 62188 on the design are provided for information in Annex A and Annex B.		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.		N/A
	-Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2h 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		P
	Cells marked as specified in the applicable cell standards: IEC 61951-1 or IEC 61951-2.		P

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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
	However, cell marking can be indicated with the battery, the instructions and/or the specifications.		N/A
9.2	Battery marking	Cell only.	N/A
	Batteries marked as specified in the applicable cell standards: IEC 61951-1 or IEC 61951-2.		N/A
	Batteries marked with an appropriate caution statement.		N/A
	Terminals have clear polarity marking on the external surface of the battery.		N/A
	Batteries with keyed external connector need 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		N/A
	Small cells and batteries determined to be small are including 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 are given on the immediate package.		N/A
9.4	Other information		P
	Storage and disposal instructions marked on or supplied with the battery.	Storage and disposal instructions were supplied with the cell. See attachment 2 for detail.	P
	Recommended charging instructions marked on or supplied with the battery.	Charging instructions were supplied with the cell. See attachment 4 for detail.	P

10	Packaging		P
	Packaging for button cells are not be small enough to fit within the limits of the ingestion gauge of Figure 2		N/A
	Annex C for information regarding packaging	See Attachment 3 for detail.	P

Annex A (informative)	Recommendations to equipment manufacturers and battery assemblers	P
Annex B (informative)	Recommendations to the end-users	P
Annex C (informative)	Packaging	P

IEC 62133-1			
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⁾
Cell	Henan Troily New Energy Technology Co., Ltd.	See page 6 for details	See page 6 for details	IEC 62133-1: 2017 EN 62133-1: 2017	Tested with appliance
- Electrolyte	Xinxiang Delu Material Co., Ltd.	KOH	1,3g/ml	--	--
- Separator	Henan Kegao Radiation Chemical Technology Co., Ltd.	Nylon	The absorption≥200%	--	--
- Cathode material	Jiangmen Chancsun Umicore Industry Co., Ltd.	Nicky Hydroxide	≥250mAh/g	--	--
- Anode material	Ningbo Shenjiang Technology Co., Ltd	Alloy Powder	≥300mAh/g	--	--
Supplementary information: ¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.1	TABLE: Continuous low rate charge (cells)					P
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	
AA100 (#1)	CC	--	0,01	1,410	P	
AA100 (#2)	CC	--	0,01	1,389	P	
AA100 (#3)	CC	--	0,01	1,400	P	
AA100 (#4)	CC	--	0,01	1,411	P	
AA100 (#5)	CC	--	0,01	1,410	P	
AA150 (#1)	CC	--	0,015	1,436	P	
AA150 (#2)	CC	--	0,015	1,438	P	
AA150 (#3)	CC	--	0,015	1,437	P	
AA150 (#4)	CC	--	0,015	1,437	P	
AA150 (#5)	CC	--	0,015	1,438	P	
AA200 (#1)	CC	--	0,02	1,439	P	
AA200 (#2)	CC	--	0,02	1,438	P	
AA200 (#3)	CC	--	0,02	1,438	P	
AA200 (#4)	CC	--	0,02	1,436	P	
AA200 (#5)	CC	--	0,02	1,437	P	
AA250 (#1)	CC	--	0,025	1,440	P	
AA250 (#2)	CC	--	0,025	1,440	P	
AA250 (#3)	CC	--	0,025	1,438	P	
AA250 (#4)	CC	--	0,025	1,438	P	
AA250 (#5)	CC	--	0,025	1,438	P	
AA300 (#1)	CC	--	0,03	1,459	P	
AA300 (#2)	CC	--	0,03	1,457	P	
AA300 (#3)	CC	--	0,03	1,460	P	
AA300 (#4)	CC	--	0,03	1,458	P	
AA300 (#5)	CC	--	0,03	1,458	P	
AA350 (#1)	CC	--	0,035	1,460	P	
AA350 (#2)	CC	--	0,035	1,458	P	
AA350 (#3)	CC	--	0,035	1,461	P	
AA350 (#4)	CC	--	0,035	1,458	P	
AA350 (#5)	CC	--	0,035	1,459	P	
AA400 (#1)	CC	--	0,04	1,447	P	
AA400 (#2)	CC	--	0,04	1,446	P	

IEC 62133-1					
Clause	Requirement + Test			Result - Remark	Verdict
AA400 (#3)	CC	--	0,04	1,446	P
AA400 (#4)	CC	--	0,04	1,447	P
AA400 (#5)	CC	--	0,04	1,446	P
AA500 (#1)	CC	--	0,05	1,462	P
AA500 (#2)	CC	--	0,05	1,463	P
AA500 (#3)	CC	--	0,05	1,458	P
AA500 (#4)	CC	--	0,05	1,460	P
AA500 (#5)	CC	--	0,05	1,462	P
AA700 (#1)	CC	--	0,07	1,438	P
AA700 (#2)	CC	--	0,07	1,440	P
AA700 (#3)	CC	--	0,07	1,439	P
AA700 (#4)	CC	--	0,07	1,438	P
AA700 (#5)	CC	--	0,07	1,437	P
AA800 (#1)	CC	--	0,08	1,438	P
AA800 (#2)	CC	--	0,08	1,440	P
AA800 (#3)	CC	--	0,08	1,437	P
AA800 (#4)	CC	--	0,08	1,438	P
AA800 (#5)	CC	--	0,08	1,436	P
AA1000 (#1)	CC	--	0,1	1,468	P
AA1000 (#2)	CC	--	0,1	1,462	P
AA1000 (#3)	CC	--	0,1	1,465	P
AA1000 (#4)	CC	--	0,1	1,466	P
AA1000 (#5)	CC	--	0,1	1,464	P
AA1200 (#1)	CC	--	0,12	1,461	P
AA1200 (#2)	CC	--	0,12	1,460	P
AA1200 (#3)	CC	--	0,12	1,462	P
AA1200 (#4)	CC	--	0,12	1,464	P
AA1200 (#5)	CC	--	0,12	1,462	P
Supplementary information:					
- No fire or explosion					

7.2.2	TABLE: Vibration			P
Model	OCV at start of test, (Vdc)		Results	
AA100 (#6)	1,410		P	
AA100 (#7)	1,405		P	
AA100 (#8)	1,398		P	
AA100 (#9)	1,398		P	

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict
AA100 (#10)	1,398	P	
AA150 (#6)	1,438	P	
AA150 (#7)	1,436	P	
AA150 (#8)	1,436	P	
AA150 (#9)	1,436	P	
AA150 (#10)	1,437	P	
AA200 (#6)	1,437	P	
AA200 (#7)	1,438	P	
AA200 (#8)	1,439	P	
AA200 (#9)	1,439	P	
AA200 (#10)	1,440	P	
AA250 (#6)	1,439	P	
AA250 (#7)	1,439	P	
AA250 (#8)	1,438	P	
AA250 (#9)	1,440	P	
AA250 (#10)	1,440	P	
AA300 (#6)	1,457	P	
AA300 (#7)	1,460	P	
AA300 (#8)	1,458	P	
AA300 (#9)	1,461	P	
AA300 (#10)	1,462	P	
AA350 (#6)	1,461	P	
AA350 (#7)	1,459	P	
AA350 (#8)	1,460	P	
AA350 (#9)	1,458	P	
AA350 (#10)	1,458	P	
AA400 (#6)	1,446	P	
AA400 (#7)	1,445	P	
AA400 (#8)	1,447	P	
AA400 (#9)	1,442	P	
AA400 (#10)	1,445	P	
AA500 (#6)	1,435	P	
AA500 (#7)	1,438	P	
AA500 (#8)	1,437	P	
AA500 (#9)	1,437	P	
AA500 (#10)	1,435	P	

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict
AA700 (#6)	1,440	P	
AA700 (#7)	1,438	P	
AA700 (#8)	1,438	P	
AA700 (#9)	1,439	P	
AA700 (#10)	1,437	P	
AA800 (#6)	1,440	P	
AA800 (#7)	1,441	P	
AA800 (#8)	1,439	P	
AA800 (#9)	1,439	P	
AA800 (#10)	1,438	P	
AA1000 (#6)	1,462	P	
AA1000 (#7)	1,464	P	
AA1000 (#8)	1,465	P	
AA1000 (#9)	1,465	P	
AA1000 (#10)	1,463	P	
AA1200 (#6)	1,462	P	
AA1200 (#7)	1,463	P	
AA1200 (#8)	1,461	P	
AA1200 (#9)	1,460	P	
AA1200 (#10)	1,462	P	
Supplementary information: - No fire or explosion - No leakage			

7.3.1	TABLE: Incorrect installation (cells)		P
Model	OCV of reversed cell, (Vdc)	Results	
AA100 (#16)	1,395	P	
AA100 (#17)	1,399	P	
AA100 (#18)	1,389	P	
AA100 (#19)	1,398	P	
AA100 (#20)	1,399	P	
AA150 (#16)	1,438	P	
AA150 (#17)	1,436	P	
AA150 (#18)	1,437	P	
AA150 (#19)	1,437	P	
AA150 (#20)	1,438	P	
AA200 (#16)	1,437	P	

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict
AA200 (#17)	1,437	P	
AA200 (#18)	1,439	P	
AA200 (#19)	1,438	P	
AA200 (#20)	1,437	P	
AA250 (#16)	1,435	P	
AA250 (#17)	1,436	P	
AA250 (#18)	1,437	P	
AA250 (#19)	1,436	P	
AA250 (#20)	1,438	P	
AA300 (#16)	1,457	P	
AA300 (#17)	1,457	P	
AA300 (#18)	1,460	P	
AA300 (#19)	1,459	P	
AA300 (#20)	1,460	P	
AA350 (#16)	1,458	P	
AA350 (#17)	1,455	P	
AA350 (#18)	1,457	P	
AA350 (#19)	1,456	P	
AA350 (#20)	1,457	P	
AA400 (#16)	1,443	P	
AA400 (#17)	1,442	P	
AA400 (#18)	1,445	P	
AA400 (#19)	1,440	P	
AA400 (#20)	1,442	P	
AA500 (#16)	1,438	P	
AA500 (#17)	1,436	P	
AA500 (#18)	1,437	P	
AA500 (#19)	1,435	P	
AA500 (#20)	1,435	P	
AA700 (#16)	1,437	P	
AA700 (#17)	1,439	P	
AA700 (#18)	1,438	P	
AA700 (#19)	1,436	P	
AA700 (#20)	1,439	P	
AA800 (#16)	1,441	P	
AA800 (#17)	1,439	P	

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict
AA800 (#18)	1,438	P	
AA800 (#19)	1,438	P	
AA800 (#20)	1,439	P	
AA1000 (#16)	1,464	P	
AA1000 (#17)	1,466	P	
AA1000 (#18)	1,465	P	
AA1000 (#19)	1,463	P	
AA1000 (#20)	1,465	P	
AA1200 (#16)	1,437	P	
AA1200 (#17)	1,436	P	
AA1200 (#18)	1,436	P	
AA1200 (#19)	1,438	P	
AA1200 (#20)	1,436	P	
Supplementary information:			
- No fire or explosion			

7.3.2	TABLE: External short circuit					P
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	
AA100 (#21)	19,8	1,395	0,077	19,1	P	
AA100 (#22)	19,8	1,399	0,083	20,5	P	
AA100 (#23)	19,8	1,390	0,082	21,7	P	
AA100 (#24)	19,8	1,397	0,075	22,5	P	
AA100 (#25)	19,8	1,403	0,079	18,0	P	
AA100 (#26)	55,9	1,415	0,077	20,4	P	
AA100 (#27)	55,9	1,378	0,083	16,9	P	
AA100 (#28)	55,9	1,416	0,082	19,1	P	
AA100 (#29)	55,9	1,418	0,075	17,9	P	
AA100 (#30)	55,9	1,404	0,079	19,0	P	
AA150 (#21)	20,2	1,432	0,077	22,1	P	
AA150 (#22)	20,2	1,412	0,083	36,5	P	
AA150 (#23)	20,2	1,423	0,082	36,7	P	
AA150 (#24)	20,2	1,414	0,075	33,4	P	
AA150 (#25)	20,2	1,418	0,079	30,2	P	
AA150 (#26)	52,9	1,415	0,077	28,3	P	
AA150 (#27)	52,9	1,421	0,083	38,8	P	
AA150 (#28)	52,9	1,420	0,082	24,0	P	

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Clause	Requirement + Test			Result - Remark	Verdict
AA150 (#29)	52,9	1,422	0,075	23,2	P
AA150 (#30)	52,9	1,409	0,079	28,6	P
AA200 (#21)	20,3	1,400	0,077	38,3	P
AA200 (#22)	20,3	1,419	0,083	32,4	P
AA200 (#23)	20,3	1,408	0,082	35,7	P
AA200 (#24)	20,3	1,409	0,075	36,8	P
AA200 (#25)	20,3	1,411	0,079	33,3	P
AA200 (#26)	54,0	1,400	0,077	43,7	P
AA200 (#27)	54,0	1,419	0,083	35,9	P
AA200 (#28)	54,0	1,408	0,082	28,8	P
AA200 (#29)	54,0	1,407	0,075	29,6	P
AA200 (#30)	54,0	1,413	0,079	30,2	P
AA250 (#21)	21,1	1,436	0,077	24,7	P
AA250 (#22)	21,1	1,439	0,083	25,2	P
AA250 (#23)	21,1	1,439	0,082	25,0	P
AA250 (#24)	21,1	1,438	0,075	26,1	P
AA250 (#25)	21,1	1,435	0,079	23,4	P
AA250 (#26)	56,8	1,438	0,077	26,4	P
AA250 (#27)	56,8	1,439	0,083	23,9	P
AA250 (#28)	56,8	1,437	0,082	25,2	P
AA250 (#29)	56,8	1,437	0,075	24,7	P
AA250 (#30)	56,8	1,436	0,079	25,8	P
AA300 (#21)	22,5	1,459	0,077	28,1	P
AA300 (#22)	22,5	1,455	0,083	26,6	P
AA300 (#23)	22,5	1,460	0,082	25,2	P
AA300 (#24)	22,5	1,458	0,075	27,3	P
AA300 (#25)	22,5	1,460	0,079	28,6	P
AA300 (#26)	57,9	1,456	0,077	28,8	P
AA300 (#27)	57,9	1,458	0,083	26,4	P
AA300 (#28)	57,9	1,459	0,082	25,7	P
AA300 (#29)	57,9	1,459	0,075	29,2	P
AA300 (#30)	57,9	1,457	0,079	27,7	P
AA350 (#21)	21,1	1,458	0,077	32,1	P
AA350 (#22)	21,1	1,457	0,083	30,7	P
AA350 (#23)	21,1	1,460	0,082	28,4	P
AA350 (#24)	21,1	1,461	0,075	27,5	P

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Clause	Requirement + Test			Result - Remark	Verdict
AA350 (#25)	21,1	1,461	0,079	27,9	P
AA350 (#26)	58,8	1,462	0,077	28,8	P
AA350 (#27)	58,8	1,459	0,083	26,5	P
AA350 (#28)	58,8	1,460	0,082	29,5	P
AA350 (#29)	58,8	1,460	0,075	30,4	P
AA350 (#30)	58,8	1,458	0,079	27,6	P
AA400 (#21)	20,4	1,442	0,077	34,7	P
AA400 (#22)	20,4	1,444	0,083	35,1	P
AA400 (#23)	20,4	1,443	0,082	33,2	P
AA400 (#24)	20,4	1,440	0,075	34,3	P
AA400 (#25)	20,4	1,443	0,079	35,9	P
AA400 (#26)	57,8	1,444	0,077	18,6	P
AA400 (#27)	57,8	1,443	0,083	28,7	P
AA400 (#28)	57,8	1,440	0,082	25,8	P
AA400 (#29)	57,8	1,442	0,075	27,9	P
AA400 (#30)	57,8	1,445	0,079	30,1	P
AA500 (#21)	24,0	1,435	0,077	23,9	P
AA500 (#22)	24,0	1,435	0,083	30,1	P
AA500 (#23)	24,0	1,435	0,082	27,2	P
AA500 (#24)	24,0	1,436	0,075	22,8	P
AA500 (#25)	24,0	1,435	0,079	25,6	P
AA500 (#26)	57,7	1,438	0,077	30,7	P
AA500 (#27)	57,7	1,437	0,083	23,4	P
AA500 (#28)	57,7	1,435	0,082	26,1	P
AA500 (#29)	57,7	1,436	0,075	25,5	P
AA500 (#30)	57,7	1,436	0,079	22,8	P
AA700 (#21)	23,3	1,435	0,077	23,9	P
AA700 (#22)	23,3	1,435	0,083	24,6	P
AA700 (#23)	23,3	1,437	0,082	25,1	P
AA700 (#24)	23,3	1,438	0,075	22,7	P
AA700 (#25)	23,3	1,436	0,079	23,4	P
AA700 (#26)	56,6	1,436	0,077	25,0	P
AA700 (#27)	56,6	1,437	0,083	24,2	P
AA700 (#28)	56,6	1,437	0,082	26,3	P
AA700 (#29)	56,6	1,435	0,075	27,7	P
AA700 (#30)	56,6	1,440	0,079	25,8	P

IEC 62133-1					
Clause	Requirement + Test			Result - Remark	Verdict
AA800 (#21)	21,2	1,439	0,077	30,6	P
AA800 (#22)	21,2	1,437	0,083	33,1	P
AA800 (#23)	21,2	1,440	0,082	32,5	P
AA800 (#24)	21,2	1,438	0,075	31,8	P
AA800 (#25)	21,2	1,438	0,079	32,4	P
AA800 (#26)	58,7	1,438	0,077	34,1	P
AA800 (#27)	58,7	1,436	0,083	29,8	P
AA800 (#28)	58,7	1,437	0,082	32,7	P
AA800 (#29)	58,7	1,437	0,075	33,5	P
AA800 (#30)	58,7	1,438	0,079	31,6	P
AA1000 (#21)	22,1	1,463	0,077	21,1	P
AA1000 (#22)	22,1	1,465	0,083	32,4	P
AA1000 (#23)	22,1	1,464	0,082	25,7	P
AA1000 (#24)	22,1	1,462	0,075	19,9	P
AA1000 (#25)	22,1	1,463	0,079	23,0	P
AA1000 (#26)	57,4	1,465	0,077	25,4	P
AA1000 (#27)	57,4	1,463	0,083	19,6	P
AA1000 (#28)	57,4	1,466	0,082	17,3	P
AA1000 (#29)	57,4	1,464	0,075	20,4	P
AA1000 (#30)	57,4	1,464	0,079	26,8	P
AA1200 (#21)	21,7	1,439	0,077	32,1	P
AA1200 (#22)	21,7	1,437	0,083	30,4	P
AA1200 (#23)	21,7	1,435	0,082	28,7	P
AA1200 (#24)	21,7	1,436	0,075	33,3	P
AA1200 (#25)	21,7	1,436	0,079	29,6	P
AA1200 (#26)	58,6	1,437	0,077	28,7	P
AA1200 (#27)	58,6	1,438	0,083	20,4	P
AA1200 (#28)	58,6	1,438	0,082	26,5	P
AA1200 (#29)	58,6	1,436	0,075	30,3	P
AA1200 (#30)	58,6	1,437	0,079	24,1	P
Supplementary information:					
- No fire or explosion					

7.3.6	TABLE: Crush			P
Model		OCV at start of test, (Vdc)	OCV at removal of crushing force, (Vdc)	Results
AA100 (#44)		1,400	1,000	P

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict
AA100 (#45)	1,398	1,013	P
AA100 (#46)	1,405	0,057	P
AA100 (#47)	1,398	0,038	P
AA100 (#48)	1,403	0,095	P
AA150 (#44)	1,417	0,900	P
AA150 (#45)	1,422	0,913	P
AA150 (#46)	1,419	0,758	P
AA150 (#47)	1,432	0,776	P
AA150 (#48)	1,413	0,710	P
AA200 (#44)	1,407	0,778	P
AA200 (#45)	1,405	0,810	P
AA200 (#46)	1,412	0,800	P
AA200 (#47)	1,411	0,800	P
AA200 (#48)	1,396	0,913	P
AA250 (#44)	1,436	1,436	P
AA250 (#45)	1,440	1,439	P
AA250 (#46)	1,440	1,440	P
AA250 (#47)	1,437	1,437	P
AA250 (#48)	1,439	1,439	P
AA300 (#44)	1,457	1,457	P
AA300 (#45)	1,457	1,457	P
AA300 (#46)	1,456	1,456	P
AA300 (#47)	1,458	1,457	P
AA300 (#48)	1,457	1,457	P
AA350 (#44)	1,458	1,458	P
AA350 (#45)	1,460	1,460	P
AA350 (#46)	1,459	1,459	P
AA350 (#47)	1,457	1,457	P
AA350 (#48)	1,457	1,457	P
AA400 (#44)	1,442	1,440	P
AA400 (#45)	1,442	1,441	P
AA400 (#46)	1,440	1,440	P
AA400 (#47)	1,444	1,442	P
AA400 (#48)	1,442	1,441	P
AA500 (#44)	1,435	1,435	P
AA500 (#45)	1,437	1,436	P

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict
AA500 (#46)	1,438	1,437	P
AA500 (#47)	1,435	1,435	P
AA500 (#48)	1,436	1,436	P
AA700 (#44)	1,435	1,435	P
AA700 (#45)	1,440	1,439	P
AA700 (#46)	1,436	1,436	P
AA700 (#47)	1,439	1,439	P
AA700 (#48)	1,436	1,435	P
AA800 (#44)	1,438	1,438	P
AA800 (#45)	1,439	1,438	P
AA800 (#46)	1,439	1,439	P
AA800 (#47)	1,438	1,437	P
AA800 (#48)	1,440	1,439	P
AA1000 (#44)	1,465	1,463	P
AA1000 (#45)	1,463	1,463	P
AA1000 (#46)	1,466	1,465	P
AA1000 (#47)	1,465	1,465	P
AA1000 (#48)	1,462	1,462	P
AA1200 (#44)	1,435	1,435	P
AA1200 (#45)	1,435	1,434	P
AA1200 (#46)	1,436	1,436	P
AA1200 (#47)	1,437	1,437	P
AA1200 (#48)	1,435	1,435	P
Supplementary information:			
- No fire or explosion			

7.3.8	TABLE: Overcharge			P
Model	OCV prior to charging, (Vdc)	Maximum charge current, (A)	Time for charging, (hours)	Results
AA100 (#52)	1,093	0,025	10	P
AA100 (#53)	1,100	0,025	10	P
AA100 (#54)	1,102	0,025	10	P
AA100 (#55)	1,083	0,025	10	P
AA100 (#56)	1,090	0,025	10	P
AA150 (#52)	1,095	0,038	10	P
AA150 (#53)	1,102	0,038	10	P
AA150 (#54)	1,098	0,038	10	P

IEC 62133-1				
Clause	Requirement + Test		Result - Remark	Verdict
AA150 (#55)	1,089	0,038	10	P
AA150 (#56)	1,094	0,038	10	P
AA200 (#52)	1,092	0,050	10	P
AA200 (#53)	1,094	0,050	10	P
AA200 (#54)	1,097	0,050	10	P
AA200 (#55)	1,087	0,050	10	P
AA200 (#56)	1,089	0,050	10	P
AA250 (#52)	1,249	0,0625	10	P
AA250 (#53)	1,247	0,0625	10	P
AA250 (#54)	1,251	0,0625	10	P
AA250 (#55)	1,250	0,0625	10	P
AA250 (#56)	1,250	0,0625	10	P
AA300 (#52)	1,248	0,075	10	P
AA300 (#53)	1,248	0,075	10	P
AA300 (#54)	1,250	0,075	10	P
AA300 (#55)	1,250	0,075	10	P
AA300 (#56)	1,250	0,075	10	P
AA350 (#52)	1,249	0,0875	10	P
AA350 (#53)	1,251	0,0875	10	P
AA350 (#54)	1,250	0,0875	10	P
AA350 (#55)	1,250	0,0875	10	P
AA350 (#56)	1,248	0,0875	10	P
AA400 (#52)	1,249	0,1	10	P
AA400 (#53)	1,248	0,1	10	P
AA400 (#54)	1,250	0,1	10	P
AA400 (#55)	1,251	0,1	10	P
AA400 (#56)	1,249	0,1	10	P
AA500 (#52)	1,250	0,125	10	P
AA500 (#53)	1,246	0,125	10	P
AA500 (#54)	1,245	0,125	10	P
AA500 (#55)	1,247	0,125	10	P
AA500 (#56)	1,248	0,125	10	P
AA700 (#52)	1,248	0,175	10	P
AA700 (#53)	1,247	0,175	10	P
AA700 (#54)	1,250	0,175	10	P
AA700 (#55)	1,248	0,175	10	P

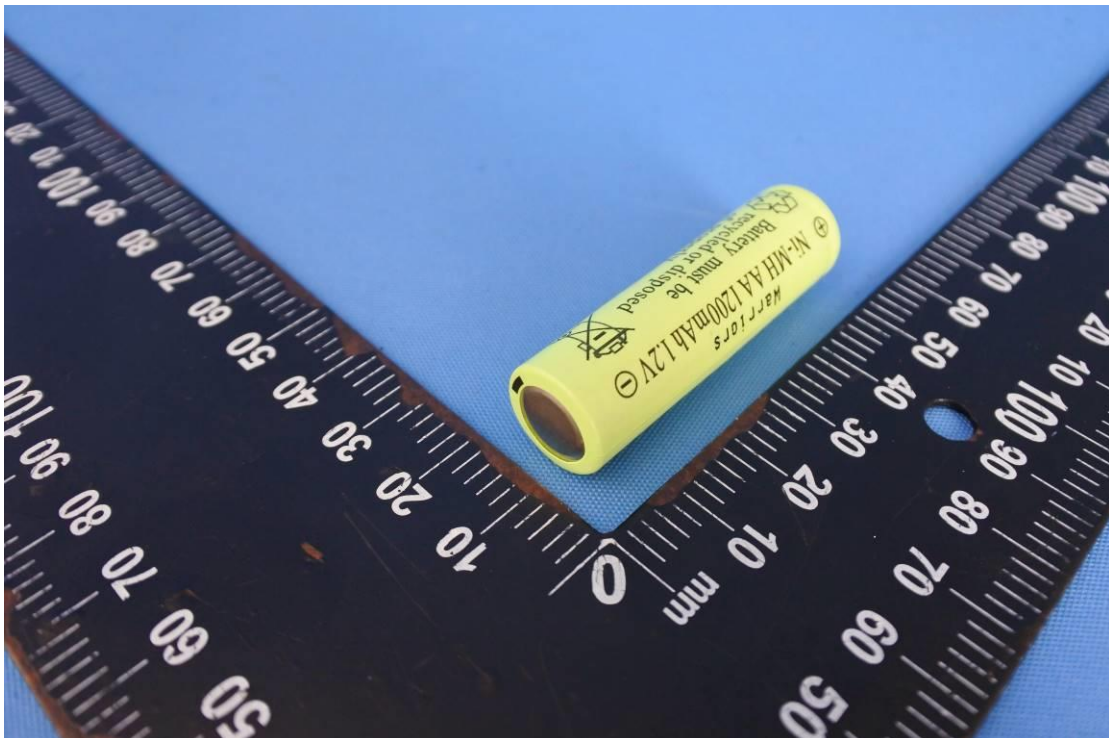
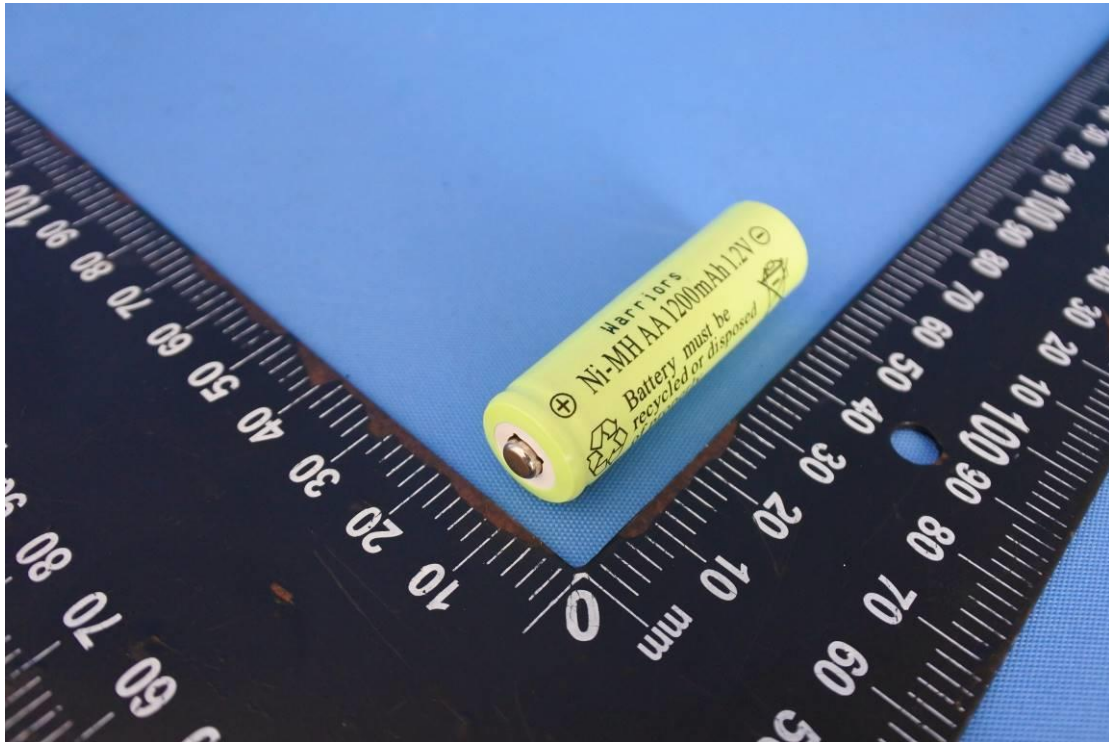
IEC 62133-1				
Clause	Requirement + Test		Result - Remark	Verdict
AA700 (#56)	1,249	0,175	10	P
AA800 (#52)	1,225	0,2	10	P
AA800 (#53)	1,230	0,2	10	P
AA800 (#54)	1,218	0,2	10	P
AA800 (#55)	1,232	0,2	10	P
AA800 (#56)	1,228	0,2	10	P
AA1000 (#52)	1,258	0,25	10	P
AA1000 (#53)	1,250	0,25	10	P
AA1000 (#54)	1,248	0,25	10	P
AA1000 (#55)	1,251	0,25	10	P
AA1000 (#56)	1,252	0,25	10	P
AA1200 (#52)	1,217	0,3	10	P
AA1200 (#53)	1,240	0,3	10	P
AA1200 (#54)	1,238	0,3	10	P
AA1200 (#55)	1,228	0,3	10	P
AA1200 (#56)	1,232	0,3	10	P
Supplementary information: - No fire or explosion Note: The recommended charging current declared by the manufacturer is 0,1C _i . The test duration is 10hour [t=2,5°C/(2,5*0,1C)].				

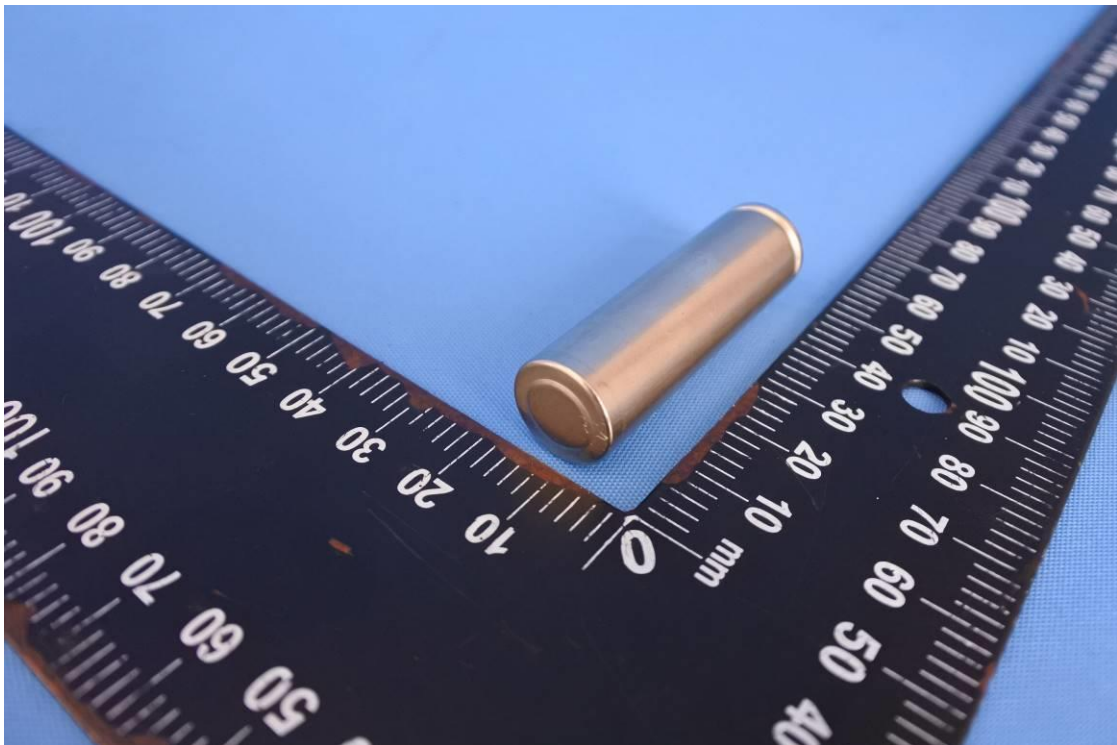
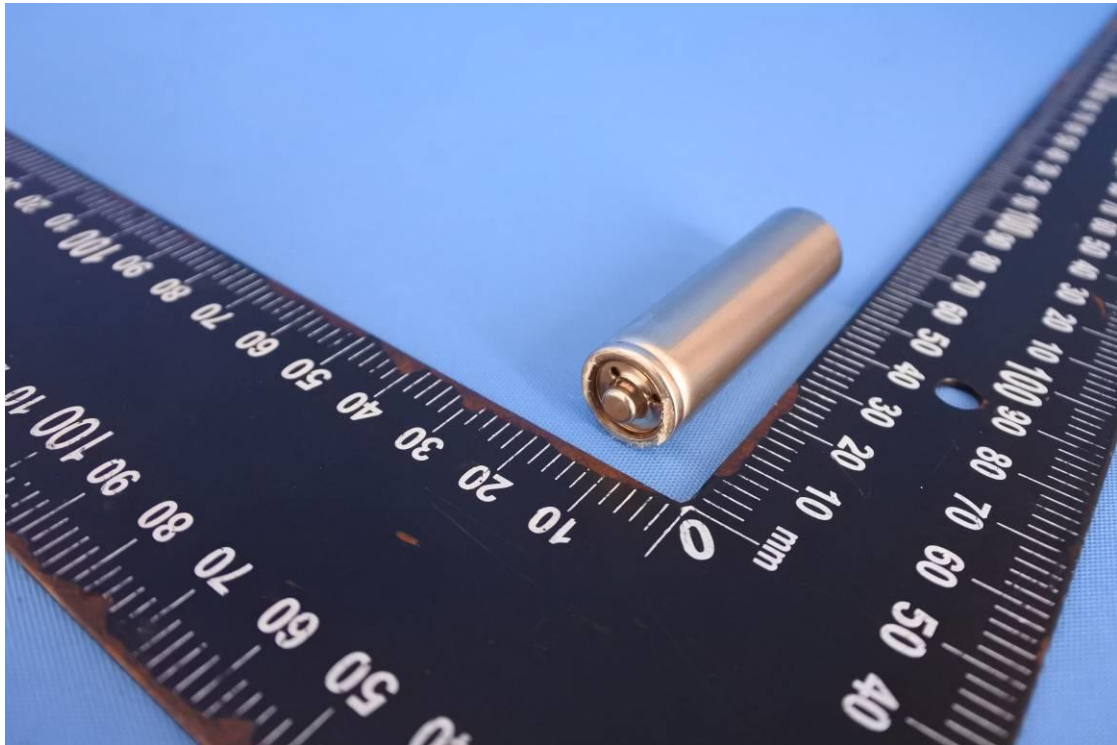
7.3.9	TABLE: Forced discharge (cells)			P
Model	OCV before application of reverse charge, (Vdc)	Measured reverse charge I _r , (A)	Time for reversed charge, (minutes)	Results
AA100 (#57)	1,071	0,1	90	P
AA100 (#58)	1,081	0,1	90	P
AA100 (#59)	1,075	0,1	90	P
AA100 (#60)	1,073	0,1	90	P
AA100 (#61)	1,086	0,1	90	P
AA150 (#57)	1,095	0,15	90	P
AA150 (#58)	1,093	0,15	90	P
AA150 (#59)	1,098	0,15	90	P
AA150 (#60)	1,092	0,15	90	P
AA150 (#61)	1,093	0,15	90	P
AA200 (#57)	1,101	0,2	90	P
AA200 (#58)	1,095	0,2	90	P
AA200 (#59)	1,103	0,2	90	P

IEC 62133-1				
Clause	Requirement + Test		Result - Remark	Verdict
AA200 (#60)	1,105	0,2	90	P
AA200 (#61)	1,100	0,2	90	P
AA250 (#57)	1,184	0,25	90	P
AA250 (#58)	1,200	0,25	90	P
AA250 (#59)	1,192	0,25	90	P
AA250 (#60)	1,192	0,25	90	P
AA250 (#61)	1,200	0,25	90	P
AA300 (#57)	1,201	0,3	90	P
AA300 (#58)	1,192	0,3	90	P
AA300 (#59)	1,193	0,3	90	P
AA300 (#60)	1,184	0,3	90	P
AA300 (#61)	1,201	0,3	90	P
AA350 (#57)	1,192	0,35	90	P
AA350 (#58)	1,183	0,35	90	P
AA350 (#59)	1,201	0,35	90	P
AA350 (#60)	1,182	0,35	90	P
AA350 (#61)	1,192	0,35	90	P
AA400 (#57)	1,202	0,4	90	P
AA400 (#58)	1,192	0,4	90	P
AA400 (#59)	1,182	0,4	90	P
AA400 (#60)	1,181	0,4	90	P
AA400 (#61)	1,193	0,4	90	P
AA500 (#57)	1,192	0,5	90	P
AA500 (#58)	1,202	0,5	90	P
AA500 (#59)	1,183	0,5	90	P
AA500 (#60)	1,182	0,5	90	P
AA500 (#61)	1,181	0,5	90	P
AA700 (#57)	1,004	0,7	90	P
AA700 (#58)	1,192	0,7	90	P
AA700 (#59)	1,203	0,7	90	P
AA700 (#60)	1,192	0,7	90	P
AA700 (#61)	1,191	0,7	90	P
AA800 (#57)	1,184	0,8	90	P
AA800 (#58)	1,192	0,8	90	P
AA800 (#59)	1,183	0,8	90	P
AA800 (#60)	1,182	0,8	90	P

IEC 62133-1				
Clause	Requirement + Test		Result - Remark	Verdict
AA800 (#61)	1,191	0,8	90	P
AA1000 (#57)	1,202	1,0	90	P
AA1000 (#58)	1,193	1,0	90	P
AA1000 (#59)	1,202	1,0	90	P
AA1000 (#60)	1,191	1,0	90	P
AA1000 (#61)	1,190	1,0	90	P
AA1200 (#57)	1,210	1,2	90	P
AA1200 (#58)	1,192	1,2	90	P
AA1200 (#59)	1,203	1,2	90	P
AA1200 (#60)	1,202	1,2	90	P
AA1200 (#61)	1,192	1,2	90	P
Supplementary information: -No fire or explosion				

---End of report---

Attachment 1 Photo documentation

Attachment 1 Photo documentation

--- End of Attachment 1 ---

Attachment 2 Information for safety

Recommendations to equipment manufacturers and battery assemblers

The following represents a typical, but non-exhaustive, list of good advice to be provided by the manufacturer of secondary cells and batteries to equipment manufacturers and battery assemblers.

- a) Do not dismantle, open or shred cells. Batteries should be dismantled only by trained personnel. Multi-cell battery cases should be designed so that they can be opened only with the aid of a tool.
- b) Compartments should be designed to prevent easy access to the batteries by young children.
- c) Do not short-circuit a cell or battery. Do not store cells or batteries haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by conductive materials.
- d) Do not remove a cell or battery from its original packaging until required for use.
- e) Do not expose cells or batteries to heat or fire. Avoid storage in direct sunlight.
- f) Do not subject cells or batteries to mechanical shock.
- g) In the event of a cell leaking, do not allow the liquid to come into contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice.
- h) Equipment should be designed to prohibit the incorrect insertion of cells or batteries and should have clear polarity marks. Always observe the polarity marks on the cell, battery and equipment and ensure correct use.
- i) Do not mix cells of different manufacture, capacity, size or type within a battery.
- j) Seek medical advice immediately if a cell or battery has been swallowed.
- k) Consult the cell or battery manufacturer on the maximum number of cells which may be assembled in a battery and on the safest way in which cells may be connected.
- l) A dedicated charger should be provided for each equipment. Complete charging instructions should be provided for all secondary cells and batteries offered for sale.
- m) Keep cells and batteries clean and dry.
- n) Wipe the cell or battery terminals with a clean dry cloth if they become dirty.
- o) Secondary cells and batteries need to be charged before use. Always refer to the cell or battery manufacturer's instructions and use the correct charging procedure.
- p) Do not maintain secondary cells and batteries on charge when not in use.
- q) After extended periods of storage, it may be necessary to charge and discharge the cells or batteries several times to obtain maximum performance.
- r) Retain the original cell and battery literature for future reference.
- s) When disposing of secondary cells or batteries, keep cells or batteries of different electrochemical systems separate from each other.

Attachment 2 Information for safety

Recommendations to the end-users

The following represents a typical, but non-exhaustive, list of good advice to be provided by the equipment manufacturer to the end-user.

- a) Do not dismantle, open or shred secondary cells or batteries.
- b) Keep batteries out of the reach of children
Especially keep batteries which are considered small out of the reach of children, particularly those batteries fitting within the limits of the ingestion gauge as defined in Figure 2. In case of ingestion of a cell or a battery, the person involved should seek medical assistance promptly.
- c) Do not expose cells or batteries to heat or fire. Avoid storage in direct sunlight.
- d) Do not short-circuit a cell or a battery. Do not store cells or batteries haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.
- e) Do not remove a cell or battery from its original packaging until required for use.
- f) Do not subject cells or batteries to mechanical shock.
- g) In the event of a cell leaking, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice.
- h) Do not use any charger other than that specifically provided for use with the equipment.
- i) Observe the plus (+) and minus (-) marks on the cell, battery and equipment and ensure correct use.
- j) Do not use any cell or battery which is not designed for use with the equipment.
- k) Do not mix cells of different manufacture, capacity, size or type within a device.
- l) Battery usage by children should be supervised.
- m) Seek medical advice immediately if a cell or a battery has been swallowed.
- n) Always purchase the battery recommended by the device manufacturer for the equipment.
- o) Keep cells and batteries clean and dry.
- p) Wipe the cell or battery terminals with a clean dry cloth if they become dirty.
- q) Secondary cells and batteries need to be charged before use. Always use the correct charger and refer to the manufacturer's instructions or equipment manual for proper charging instructions.
- r) Do not leave a battery on prolonged charge when not in use.
- s) After extended periods of storage, it may be necessary to charge and discharge the cells or batteries several times to obtain maximum performance.
- t) Retain the original product literature for future reference.
- u) Use the cell or battery only in the application for which it was intended.
- v) When possible, remove the battery from the equipment when not in use.
- w) Dispose of properly.

- - - End of Attachment 2 - - -

Attachment 3 Packaging



- - - End of Attachment 3 - - -

Attachment 4 Product specificationSpecification for AA100

Number	Item		Character
3.1	Model		AA100
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		100
3.4	Standard Charge		10mA charge 16h
3.5	Rapid Charge		20mA charge 7.5h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5°C, Termination voltage 1.0v)		200mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20°C)		≥65%
3.10	Dimensions (mm)	D*H (mm)	$14.5^{+0}_{-0.7} * 49.6 \pm 0.5$
3.11	Approx weight (g)		8.4 (including casing)
3.12	Internal resistance (mΩ)		≤55
3.13	Operating temperature range (°C)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

Attachment 4 Product specificationSpecification for AA150

Number	Item		Character
3.1	Model		AA150
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		150
3.4	Standard Charge		15mA charge 16h
3.5	Rapid Charge		30mA charge 7.5h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5℃, Termination voltage 1.0v)		300mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20℃)		≥65%
3.10	Dimensions (mm)	D*H (mm)	$14.5^{+0}_{-0.7} * 49.6 \pm 0.5$
3.11	Approx weight (g)		8.9 (including casing)
3.12	Internal resistance (mΩ)		≤50
3.13	Operating temperature range (℃)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

Attachment 4 Product specificationSpecification for AA200

Number	Item		Character
3.1	Model		AA200
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		200
3.4	Standard Charge		20mA charge 16h
3.5	Rapid Charge		40mA charge 7.5h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5℃, Termination voltage 1.0v)		400mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20℃)		≥65%
3.10	Dimensions (mm)	D*H (mm)	14.5 ⁰ _{-0.7} *49.6±0.5
3.11	Approx weight (g)		9.5 (including casing)
3.12	Internal resistance (mΩ)		≤50
3.13	Operating temperature range (℃)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

Attachment 4 Product specificationSpecification for AA250

Number	Item		Character
3.1	Model		AA250
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		250
3.4	Standard Charge		25mA charge 16h
3.5	Rapid Charge		50mA charge 7.5h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5°C, Termination voltage 1.0v)		500mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20°C)		≥65%
3.10	Dimensions (mm)	D*H (mm)	$14.5^{+0}_{-0.7} * 49.6 \pm 0.5$
3.11	Approx weight (g)		10.1 (including casing)
3.12	Internal resistance (mΩ)		≤50
3.13	Operating temperature range (°C)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

Attachment 4 Product specificationSpecification for AA300

Number	Item		Character
3.1	Model		AA300
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		300
3.4	Standard Charge		30mA charge 16h
3.5	Rapid Charge		60mA charge 7.5h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5°C, Termination voltage 1.0v)		600mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20°C)		≥65%
3.10	Dimensions (mm)	D*H (mm)	14.5 ⁰ _{-0.7} *49.6±0.5
3.11	Approx weight (g)		10.6 (including casing)
3.12	Internal resistance (mΩ)		≤40
3.13	Operating temperature range (°C)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

Attachment 4 Product specificationSpecification for AA350

Number	Item		Character
3.1	Model		AA350
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		350
3.4	Standard Charge		35mA charge 16h
3.5	Rapid Charge		70mA charge 7.5h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5°C, Termination voltage 1.0v)		700mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20°C)		≥65%
3.10	Dimensions (mm)	D*H (mm)	14.5 ⁰ _{-0.7} *49.6±0.5
3.11	Approx weight (g)		11.5 (including casing)
3.12	Internal resistance (mΩ)		≤40
3.13	Operating temperature range (°C)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

Attachment 4 Product specificationSpecification for AA400

Number	Item		Character
3.1	Model		AA400
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		400
3.4	Standard Charge		40mA charge 16h
3.5	Rapid Charge		80mA charge 7.5h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5°C, Termination voltage 1.0v)		800mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20°C)		≥65%
3.10	Dimensions (mm)	D*H (mm)	14.5 ⁰ _{-0.7} *49.6±0.5
3.11	Approx weight (g)		12.5 (including casing)
3.12	Internal resistance (mΩ)		≤35
3.13	Operating temperature range (°C)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

Attachment 4 Product specificationSpecification for AA500

Number	Item		Character
3.1	Model		AA500
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		500
3.4	Standard Charge		50mA charge 16h
3.5	Rapid Charge		100mA charge 7.5h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5°C, Termination voltage 1.0v)		1000mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20°C)		≥65%
3.10	Dimensions (mm)	D*H (mm)	14.5 ⁰ _{-0.7} *49.6±0.5
3.11	Approx weight (g)		13.4 (including casing)
3.12	Internal resistance (mΩ)		≤35
3.13	Operating temperature range (°C)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

Attachment 4 Product specificationSpecification for AA600

Number	Item		Character
3.1	Model		AA600
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		600
3.4	Standard Charge		60mA charge 16h
3.5	Rapid Charge		120mA charge 7.5h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5℃, Termination voltage 1.0v)		1200mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20℃)		≥65%
3.10	Dimensions (mm)	D*H (mm)	$14.5^{+0}_{-0.7} * 49.6 \pm 0.5$
3.11	Approx weight (g)		14.7 (including casing)
3.12	Internal resistance (mΩ)		≤35
3.13	Operating temperature range (°C)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

Attachment 4 Product specificationSpecification for AA700

Number	Item		Character
3.1	Model		AA700
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		700
3.4	Standard Charge		70mA charge 16h
3.5	Rapid Charge		140mA charge 7.5h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5℃, Termination voltage 1.0v)		1400mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20℃)		≥65%
3.10	Dimensions (mm)	D*H (mm)	14.5 ⁰ _{-0.7} *49.6±0.5
3.11	Approx weight (g)		15.6 (including casing)
3.12	Internal resistance (mΩ)		≤35
3.13	Operating temperature range (℃)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

Attachment 4 Product specificationSpecification for AA800

Number	Item		Character
3.1	Model		AA800
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		800
3.4	Standard Charge		80mA charge 16h
3.5	Rapid Charge		160mA charge 7.5h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5℃, Termination voltage 1.0v)		1600mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20℃)		≥65%
3.10	Dimensions (mm)	D*H (mm)	14.5 ⁰ _{-0.7} *49.6±0.5
3.11	Approx weight (g)		14.7 (including casing)
3.12	Internal resistance (mΩ)		≤35
3.13	Operating temperature range (℃)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

Attachment 4 Product specificationSpecification for AA900

Number	Item		Character
3.1	Model		AA900
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		900
3.4	Standard Charge		90mA charge 16h
3.5	Rapid Charge		180mA charge 7.5h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5°C, Termination voltage 1.0v)		1800mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20°C)		≥65%
3.10	Dimensions (mm)	D*H (mm)	14.5 ⁰ _{-0.7} *49.6±0.5
3.11	Approx weight (g)		18.2 (including casing)
3.12	Internal resistance (mΩ)		≤35
3.13	Operating temperature range (°C)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

Attachment 4 Product specificationSpecification for AA1000

Number	Item		Character
3.1	Model		AA1000
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		1000
3.4	Standard Charge		100mA charge 16h
3.5	Rapid Charge		200mA charge 7.5h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5°C, Termination voltage 1.0v)		2000mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20°C)		≥65%
3.10	Dimensions (mm)	D*H (mm)	$14.5^{+0}_{-0.7} * 49.6 \pm 0.5$
3.11	Approx weight (g)		19.1 (including casing)
3.12	Internal resistance (mΩ)		≤35
3.13	Operating temperature range (°C)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

Attachment 4 Product specificationSpecification for AA1100

Number	Item		Character
3.1	Model		AA1100
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		1100
3.4	Standard Charge		110mA charge 16h
3.5	Rapid Charge		220mA charge 7.5h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5℃, Termination voltage 1.0v)		2200mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20℃)		≥65%
3.10	Dimensions (mm)	D*H (mm)	14.5 ⁰ _{-0.7} *49.6±0.5
3.11	Approx weight (g)		19.8 (including casing)
3.12	Internal resistance (mΩ)		≤35
3.13	Operating temperature range (℃)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

Attachment 4 Product specificationSpecification for AA1200

Number	Item		Character
3.1	Model		AA1200
3.2	Nominal Voltage (V)		1.2
3.3	Nominal Capacity (mAh)		1200
3.4	Standard Charge		120mA charge 16h
3.5	Rapid Charge		240mA charge 7.0h
3.6	Trickle Charge current (mA)		0.03c-0.05c
3.7	Maximum continuous discharge current (mA) (20±5°C, Termination voltage 1.0v)		2400mA
3.8	Discharge cut-off Voltage (V)		1.0
3.9	Charge Retention (20°C)		≥65%
3.10	Dimensions (mm)	D*H (mm)	14.5 ⁰ _{-0.7} *49.6±0.5
3.11	Approx weight (g)		21.2 (including casing)
3.12	Internal resistance (mΩ)		≤30
3.13	Operating temperature range (°C)	Standard Charge	0~45
		Rapid Charge	10~40
		Discharge	-20~65
		Storage	-20~35(RH≤85%)

- - - End of Attachment 4 - - -