

IEC 62133-1 TEST REPORT

For

Ni-MH RECHARGEABLE BATTERY

Model: AA2000mAh, AA1200mAh, AA600mAh,
AA300mAh, AA100mAh

Series model: AA150mAh, AA200mAh, AA250mAh, AA400mAh, AA500mAh, AA700mAh,
AA800mAh, AA900mAh, AA1000mAh, AA1500mAh, AA1800mAh, 2/3AA100mAh,
2/3AA150mAh, 2/3AA200mAh, 2/3AA250mAh, 2/3AA300mAh, 2/3AA350mAh,
2/3AA400mAh, 2/3AA500mAh, 2/3AA600mAh

Prepared for: XINXIANG CITY HENGQIANG NEW ENERGY CO., LTD
DAKUAI INDUSTRIAL ZONE, DAKUAI TOWN, FENGQUAN DISTRICT,
XINXIANG CITY, HENAN, CHINA

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Report Number: NY20240102967G1-1

Date of Test: 2024-02-14 to 2024-03-20

Date of Issue: 2024-03-20

Tested By: Wang Bo
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Zhu Jie

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Zhang Yang

Seal of Noah: 

The results detailed in this test report relate only to the specific sample(s) tested. This report is not to be reproduced except in full, without written approval from Noah Testing Technology.

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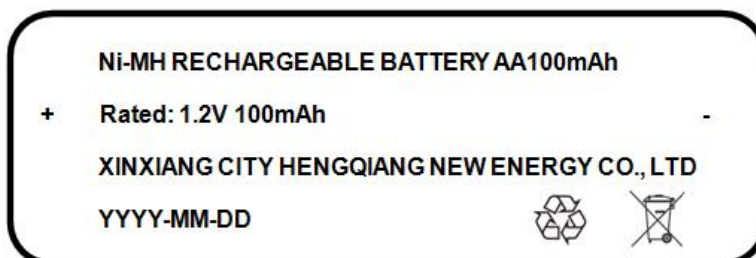
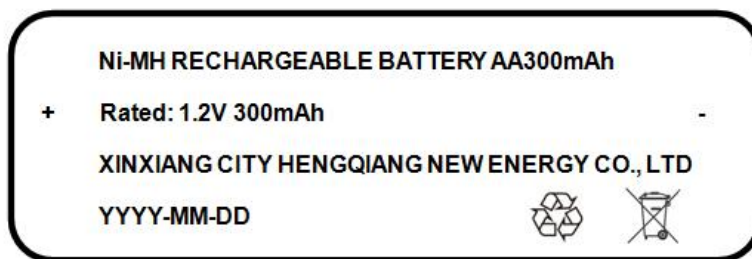
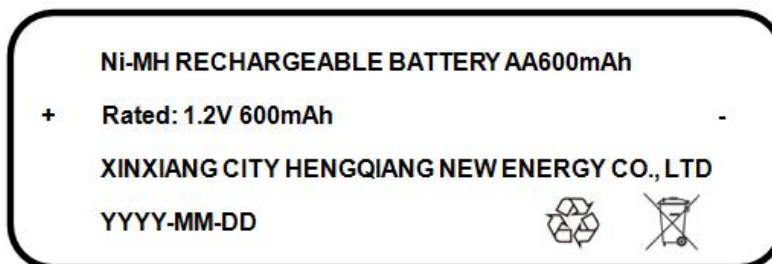
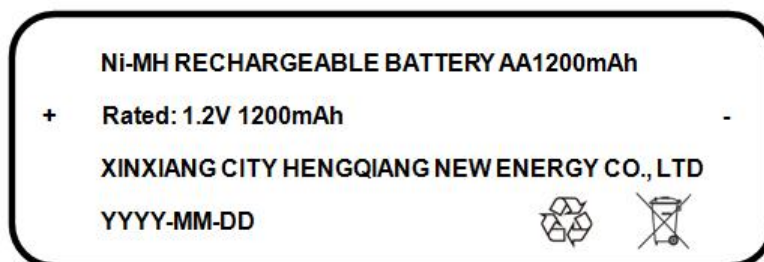
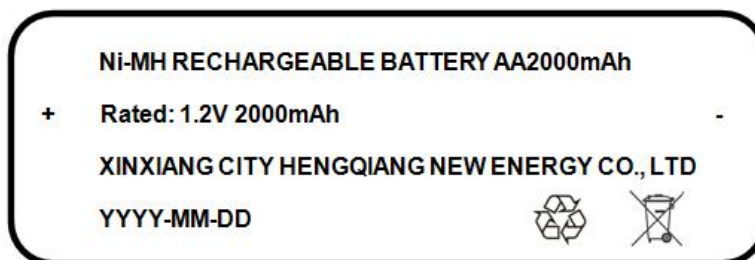
TEST REPORT IEC 62133-1 Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications - Part 1: Nickel systems	
Report Number.....:	NY20240102967G1-1
Date of issue.....:	2024-03-20
Total number of pages.....:	27 pages
Applicant's name.....:	XINXIANG CITY HENGQIANG NEW ENERGY CO., LTD
Address.....:	DAKUAI INDUSTRIAL ZONE, DAKUAI TOWN, FENGQUAN DISTRICT, XINXIANG CITY, HENAN, CHINA
Test specification:	
Standard.....:	IEC 62133-1:2017
Test procedure.....:	Test Report
Non-standard test method.....:	N/A
Test item description.....: Ni-MH RECHARGEABLE BATTERY	
Trade Mark.....:	N/A
Manufacturer.....:	Same as applicant
Address.....:	Same as applicant
Model/Type reference.....:	AA2000mAh, AA1200mAh, AA600mAh, AA300mAh, AA100mAh AA150mAh, AA200mAh, AA250mAh, AA400mAh, AA500mAh, AA700mAh, AA800mAh, AA900mAh, AA1000mAh, AA1500mAh, AA1800mAh, 2/3AA100mAh, 2/3AA150mAh, 2/3AA200mAh, 2/3AA250mAh, 2/3AA300mAh, 2/3AA350mAh, 2/3AA400mAh, 2/3AA500mAh, 2/3AA600mAh
Ratings.....:	See page 5 for details



Testing procedure and testing location:	
Testing Laboratory: Testing location/ address..... : Noah (Shenzhen) Testing Co., Ltd. 1st Floor, Building B, Tangdong Industrial Park, Hangcheng Avenue, Guxing Community, Xixiang Street, Bao'an District, Shenzhen	
List of Attachments: Appendix 1: 5 pages of Photo Documentation	
Summary of testing:	
Tests performed (name of test and test clause): cl.7.1 Charging procedure for test purposes (for Cells); cl.7.2.1 Continuous low-rate charging(cells); cl.7.2.2 Vibration(cells); cl.7.2.4 Temperature cycling(cells); cl.7.3.1 Incorrect installation(cells); cl.7.3.2 External short circuit(cells); cl.7.3.3 Free fall(cells); cl.7.3.4 Mechanical shock(cells); cl.7.3.5 Thermal abuse(cells); cl.7.3.6 Crushing of cells; cl.7.3.7 Low pressure(cells); cl.7.3.8 Overcharge(cells); cl.7.3.9 Forced discharge(cells) Tests are made with the number of cells and batteries specified in IEC 62133-1: 2017 Table 1.	Testing location: Noah (Shenzhen) Testing Co., Ltd. 1st Floor, Building B, Tangdong Industrial Park, Hangcheng Avenue, Guxing Community, Xixiang Street, Bao'an District, Shenzhen
Summary of compliance with National Differences N/A	
☒ The product fulfils the requirements of <u>EN 62133-1: 2017</u>	

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.



Note: other model's labels are identical to those labels, except for model name and rating.

Test item particulars..... :	
Classification of installation and use.....:	Portable cell
Supply connection.....:	DC Contact
Recommend charging method declared by the manufacturer.....:	For AA2000mAh, AA1200mAh, AA600mAh, AA300mAh, AA100mAh: Charging at 0.1C constant current for 16 hours at ambient 20°C±5°C
Discharge current (0,2 I_A)	See page 5 for details
Specified final voltage..... :	1.0V
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.....:	2024-02-14
Date (s) of performance of tests.....:	2024-02-14 to 2024-03-20
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.	
Name and address of factory (ies)	Same as applicant

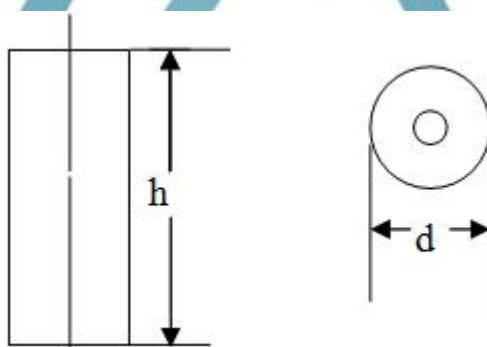
General product information:

EUT in this report are Ni-MH cells which intend for portable use.

All the models are manufactured through the same production process, the tested models AA2000mAh, AA1200mAh, AA600mAh, AA300mAh, AA100mAh are representatives of other models.

The main features of the cells are shown as below:

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
AA2000mAh	2000mAh	1.2V	200mA	400mA	2000mA	2000mA	--	1.0V
AA1200mAh	1200mAh	1.2V	120mA	240mA	1200mA	1200mA	--	1.0V
AA600mAh	600mAh	1.2V	60mA	120mA	600mA	600mA	--	1.0V
AA300mAh	300mAh	1.2V	30mA	60mA	300mA	300mA	--	1.0V
AA100mAh	100mAh	1.2V	10mA	20mA	100mA	100mA	--	1.0V

Construction:


Cell (Max)
D:13.9mm*H:49.5

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		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		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 top of cylindrical 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 and current management		N/A
	Batteries are designed such that abnormal temperature-rise conditions are prevented	Cell only.	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		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	Cell only.	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	Complied. ISO 9001 certificates 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	Complied.	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		P
7.1	Charging procedure for test purposes	Test is carried out at 20°C±5°C.	P
7.2	Intended use	See tests below.	P

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict
7.2.1	Continuous low-rate charging (cells)		P
	Results: No fire. No explosion	No fire. No explosion. (See Table 7.2.1)	P
7.2.2	Vibration		P
	Results: No fire. No explosion. No leakage	No fire. No explosion. No leakage.	P
7.2.3	Case stress at high ambient temperature(batteries)	Cell only.	N/A
	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	Tested and complied.	P
	Results: No fire. No explosion. No leakage.	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..... :	No fire. No explosion.	P
7.3.2	External short circuit	See below.	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..... :	No fire. No explosion. (See Table 7.3.2)	P
7.3.3	Free fall		P
	Results: No fire. No explosion.	No fire. No explosion.	P
7.3.4	Mechanical shock (crash hazard)		P
	Results: No fire. No explosion. No leakage.	No fire. No explosion. No leakage.	P
7.3.5	Thermal abuse (cells)		P
	Oven temperature (°C)..... :	130°C	—
	Results: No fire. No explosion.	No fire. No explosion.	P
7.3.6	Crushing of cells		P

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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..... :	No fire. No explosion. (See Table 7.3.6)	P
7.3.7	Low pressure (cells)		P
	Chamber pressure (kPa)..... :	11.6kPa	—
	Results: No fire. No explosion. No leakage.	No fire. No explosion. No leakage.	P
7.3.8	Overcharge		P
	Results: No fire. No explosion..... :	No fire. No explosion. (See Table 7.3.8)	P
7.3.9	Forced discharge		P
	Results: No fire. No explosion..... :	No fire. No explosion. (See Table 7.3.9)	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.	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.		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	Small cell.	P

IEC 62133-1			
Clause	Requirement + Test	Result - Remark	Verdict
	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:	Information for safety mentioned on the immediate package.	P
	-Keep small cells and batteries which are considered swallowable out of the reach of children.		P
	-Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2h of ingestion.		P
	-In case of ingestion of a cell or battery, seek medical assistance promptly.		P
9	Marking		P
9.1	Cell marking		P
	Cells marked as specified in the applicable cell standards: IEC 61951-1 or IEC 61951-2.	The battery is marked in accordance with IEC 61951-2	P
	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		N/A
	Batteries marked as specified in the applicable cell standards: IEC 61951-1 or IEC 61951-2.	The final product is cell.	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	Small cells.	P
	Small cells and batteries determined to be small are including a caution statement regarding the hazards of ingestion in accordance with 8.2.		P
	Small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion are given on the immediate package.	Caution statement provided on the immediate package.	P
9.4	Other information		P

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

	Storage and disposal instructions marked on or supplied with the battery.	Information for storage and 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

10	Packaging		P
	Packaging for button cells are not be small enough to fit within the limits of the ingestion gauge of Figure 2	Complied.	P
	Annex C for information regarding packaging		P

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

TABLE: Critical components information					P
Object/part no.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity ¹⁾
Cell	XINXIANG CITY HENGQIANG NEW ENERGY CO., LTD	AA2000mAh, AA1200mAh, AA600mAh, AA300mAh, AA100mAh	1.2V	IEC 62133-1: 2017	Tested with appliance
-Positive electrode	--	--	Nickel + Cobalt + Nickel foam	--	Tested with appliance
-Negative electrode	--	--	Cadmium oxide – Cadmium - Nickel - Zinc oxide	--	Tested with appliance
-Separator	--	--	PP, Shutdown temperature: 120°C	--	Tested with appliance
-Electrolyte	--	--	KOH: 17.2%, NaOH: 10.9%, LiOH: 2.2%,	--	Tested with appliance
Supplementary information: ¹⁾ Provided evidence ensures the agreed level of compliance.					

7.2.1	TABLE: Continuous low rate charge (Cells) AA2000mAh					P
Model	Recommended charging method, (CC, CV, or CC/CV)	Recommended charging voltage V_c , (Vdc)	Recommended charging current I_{rec} , (mA)	OCV at start of test, (Vdc)	Results	
Cell #1	CC	--	200	1.48	NF,NE	
Cell #2	CC	--	200	1.47	NF,NE	
Cell #3	CC	--	200	1.46	NF,NE	
Cell #4	CC	--	200	1.46	NF,NE	
Cell #5	CC	--	200	1.47	NF,NE	
Supplementary information: NF, NE- No fire or explosion, NL- No leakage						

7.2.1	TABLE: Continuous low rate charge (Cells) AA1200mAh					P
Model	Recommended charging method, (CC, CV, or CC/CV)	Recommended charging voltage V_c , (Vdc)	Recommended charging current I_{rec} , (mA)	OCV at start of test, (Vdc)	Results	
Cell #1	CC	--	120	1.46	NF,NE	
Cell #2	CC	--	120	1.47	NF,NE	
Cell #3	CC	--	120	1.47	NF,NE	
Cell #4	CC	--	120	1.46	NF,NE	
Cell #5	CC	--	120	1.46	NF,NE	
Supplementary information: NF, NE- No fire or explosion, NL- No leakage						

7.2.1	TABLE: Continuous low rate charge (Cells) AA600mAh					P
Model	Recommended charging method, (CC, CV, or CC/CV)	Recommended charging voltage V_c , (Vdc)	Recommended charging current I_{rec} , (mA)	OCV at start of test, (Vdc)	Results	
Cell #1	CC	--	60	1.47	NF,NE	
Cell #2	CC	--	60	1.45	NF,NE	
Cell #3	CC	--	60	1.46	NF,NE	
Cell #4	CC	--	60	1.45	NF,NE	
Cell #5	CC	--	60	1.45	NF,NE	
Supplementary information: NF, NE- No fire or explosion, NL- No leakage						

7.2.1	TABLE: Continuous low rate charge (Cells) AA300mAh					P
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Model	Recommended charging method, (CC, CV, or CC/CV)	Recommended charging voltage V_c , (Vdc)	Recommended charging current I_{rec} , (mA)	OCV at start of test, (Vdc)	Results
Cell #1	CC	--	30	1.47	NF,NE
Cell #2	CC	--	30	1.44	NF,NE
Cell #3	CC	--	30	1.45	NF,NE
Cell #4	CC	--	30	1.45	NF,NE
Cell #5	CC	--	30	1.47	NF,NE
Supplementary information: NF, NE- No fire or explosion, NL- No leakage					

7.2.1	TABLE: Continuous low rate charge (Cells) AA100mAh					P
Model	Recommended charging method, (CC, CV, or CC/CV)	Recommended charging voltage V_c , (Vdc)	Recommended charging current I_{rec} , (mA)	OCV at start of test, (Vdc)	Results	
Cell #1	CC	--	10	1.46	NF,NE	
Cell #2	CC	--	10	1.46	NF,NE	
Cell #3	CC	--	10	1.47	NF,NE	
Cell #4	CC	--	10	1.45	NF,NE	
Cell #5	CC	--	10	1.46	NF,NE	
Supplementary information: NF, NE- No fire or explosion, NL- No leakage						

7.3.2	TABLE: External short circuit (Cells) AA2000mAh	P
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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
Cell #1	24.3	1.44	0.080	112.4	NF,NE
Cell #2	24.3	1.45	0.075	109.3	NF,NE
Cell #3	24.3	1.44	0.078	105.3	NF,NE
Cell #4	24.3	1.45	0.079	104.8	NF,NE
Cell #5	24.3	1.45	0.083	110.7	NF,NE
Cell #6	55.2	1.46	0.076	106.2	NF,NE
Cell #7	55.2	1.44	0.079	112.4	NF,NE
Cell #8	55.2	1.45	0.082	108.3	NF,NE
Cell #9	55.2	1.45	0.079	101.7	NF,NE
Cell #10	55.2	1.45	0.083	106.5	NF,NE
Supplementary information: NF, NE- No fire or explosion, NL- No leakage					

7.3.2	TABLE: External short circuit (Cells) AA1200mAh					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	
Cell #1	24.4	1.45	0.082	110.5	NF,NE	
Cell #2	24.4	1.46	0.076	107.3	NF,NE	
Cell #3	24.4	1.44	0.083	103.9	NF,NE	
Cell #4	24.4	1.45	0.082	107.8	NF,NE	
Cell #5	24.4	1.44	0.079	114.5	NF,NE	
Cell #6	55.4	1.46	0.075	109.4	NF,NE	
Cell #7	55.4	1.45	0.080	106.4	NF,NE	
Cell #8	55.4	1.46	0.082	108.5	NF,NE	
Cell #9	55.4	1.44	0.077	111.8	NF,NE	
Cell #10	55.4	1.45	0.080	100.6	NF,NE	
Supplementary information: NF, NE- No fire or explosion, NL- No leakage						

7.3.2	TABLE: External short circuit (Cells) AA600mAh					P
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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
Cell #1	24.3	1.44	0.079	103.4	NF,NE
Cell #2	24.3	1.45	0.082	99.8	NF,NE
Cell #3	24.3	1.45	0.078	110.2	NF,NE
Cell #4	24.3	1.45	0.081	101.9	NF,NE
Cell #5	24.3	1.45	0.082	105.4	NF,NE
Cell #6	55.2	1.44	0.077	112.7	NF,NE
Cell #7	55.2	1.45	0.079	99.4	NF,NE
Cell #8	55.2	1.44	0.083	104.2	NF,NE
Cell #9	55.2	1.44	0.079	100.4	NF,NE
Cell #10	55.2	1.45	0.082	108.4	NF,NE
Supplementary information: NF, NE- No fire or explosion, NL- No leakage					

7.3.2	TABLE: External short circuit (Cells) AA300mAh					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	
Cell #1	24.2	1.46	0.076	109.6	NF,NE	
Cell #2	24.2	1.45	0.082	110.4	NF,NE	
Cell #3	24.2	1.44	0.081	107.6	NF,NE	
Cell #4	24.2	1.45	0.080	113.9	NF,NE	
Cell #5	24.2	1.45	0.078	97.8	NF,NE	
Cell #6	55.5	1.45	0.079	105.3	NF,NE	
Cell #7	55.5	1.46	0.080	108.4	NF,NE	
Cell #8	55.5	1.44	0.079	107.5	NF,NE	
Cell #9	55.5	1.45	0.082	111.7	NF,NE	
Cell #10	55.5	1.45	0.078	106.5	NF,NE	
Supplementary information: NF, NE- No fire or explosion, NL- No leakage						

7.3.2	TABLE: External short circuit (Cells) AA100mAh					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	

Cell #1	24.3	1.45	0.081	103.5	NF,NE
Cell #2	24.3	1.45	0.081	99.8	NF,NE
Cell #3	24.3	1.45	0.072	112.4	NF,NE
Cell #4	24.3	1.46	0.079	101.4	NF,NE
Cell #5	24.3	1.46	0.081	98.4	NF,NE
Cell #6	55.4	1.45	0.082	105.3	NF,NE
Cell #7	55.4	1.46	0.083	98.4	NF,NE
Cell #8	55.4	1.46	0.081	100.5	NF,NE
Cell #9	55.4	1.46	0.082	107.4	NF,NE
Cell #10	55.4	1.45	0.082	99.4	NF,NE

Supplementary information:

NF, NE- No fire or explosion, NL- No leakage

7.3.6	TABLE: Crush (Cells) AA2000mAh				P
Model	OCV at start of test, (Vdc)	OCV at removal of crushing force, (Vdc)	Results		
Cell #1	1.45	1.37	NF,NE		
Cell #2	1.44	1.34	NF,NE		
Cell #3	1.45	1.35	NF,NE		
Cell #4	1.45	1.36	NF,NE		
Cell #5	1.45	1.34	NF,NE		

Supplementary information:

NF, NE- No fire or explosion, NL- No leakage

7.3.6	TABLE: Crush (Cells) AA1200mAh				P
Model	OCV at start of test, (Vdc)	OCV at removal of crushing force, (Vdc)	Results		
Cell #1	1.46	1.37	NF,NE		
Cell #2	1.45	1.35	NF,NE		
Cell #3	1.46	1.36	NF,NE		
Cell #4	1.47	1.35	NF,NE		
Cell #5	1.45	1.36	NF,NE		

Supplementary information:

NF, NE- No fire or explosion, NL- No leakage

7.3.6	TABLE: Crush (Cells) AA600mAh				P
Model	OCV at start of test, (Vdc)	OCV at removal of crushing force, (Vdc)	Results		
Cell #1	1.45	1.37	NF,NE		

Cell #2	1.46	1.36	NF,NE
Cell #3	1.46	1.35	NF,NE
Cell #4	1.45	1.36	NF,NE
Cell #5	1.47	1.38	NF,NE
Supplementary information: NF, NE- No fire or explosion, NL- No leakage			

7.3.6	TABLE: Crush (Cells) AA300mAh			P
Model	OCV at start of test, (Vdc)	OCV at removal of crushing force, (Vdc)	Results	
Cell #1	1.45	1.37	NF,NE	
Cell #2	1.45	1.36	NF,NE	
Cell #3	1.45	1.38	NF,NE	
Cell #4	1.46	1.36	NF,NE	
Cell #5	1.47	1.37	NF,NE	
Supplementary information: NF, NE- No fire or explosion, NL- No leakage				

7.3.6	TABLE: Crush (Cells) AA100mAh			P
Model	OCV at start of test, (Vdc)	OCV at removal of crushing force, (Vdc)	Results	
Cell #1	1.45	1.37	NF,NE	
Cell #2	1.46	1.36	NF,NE	
Cell #3	1.45	1.35	NF,NE	
Cell #4	1.45	1.37	NF,NE	
Cell #5	1.44	1.36	NF,NE	
Supplementary information: NF, NE- No fire or explosion, NL- No leakage				

7.3.8	TABLE: Overcharge (Cells) AA2000mAh			P
Model	OCV prior to charging, (Vdc)	Maximum charge current, (mA)	Time for charging, (hours)	Results
Cell #1	1.16	2000	1.0	NF,NE
Cell #2	1.17	2000	1.0	NF,NE

Cell #3	1.15	2000	1.0	NF,NE
Cell #4	1.17	2000	1.0	NF,NE
Cell #5	1.16	2000	1.0	NF,NE
Supplementary information: NF, NE- No fire or explosion, NL- No leakage				

7.3.8	TABLE: Overcharge (Cells) AA1200mAh				P
Model	OCV prior to charging, (Vdc)	Maximum charge current, (mA)	Time for charging, (hours)	Results	
Cell #1	1.17	1200	1.0	NF,NE	
Cell #2	1.18	1200	1.0	NF,NE	
Cell #3	1.16	1200	1.0	NF,NE	
Cell #4	1.17	1200	1.0	NF,NE	
Cell #5	1.16	1200	1.0	NF,NE	
Supplementary information: NF, NE- No fire or explosion, NL- No leakage					

7.3.8	TABLE: Overcharge (Cells) AA600mAh				P
Model	OCV prior to charging, (Vdc)	Maximum charge current, (mA)	Time for charging, (hours)	Results	
Cell #1	1.16	600	1.0	NF,NE	
Cell #2	1.16	600	1.0	NF,NE	
Cell #3	1.17	600	1.0	NF,NE	
Cell #4	1.17	600	1.0	NF,NE	
Cell #5	1.16	600	1.0	NF,NE	
Supplementary information: NF, NE- No fire or explosion, NL- No leakage					

7.3.8	TABLE: Overcharge (Cells) AA300mAh				P
Model	OCV prior to charging, (Vdc)	Maximum charge current, (mA)	Time for charging, (hours)	Results	
Cell #1	1.17	300	1.0	NF,NE	
Cell #2	1.16	300	1.0	NF,NE	
Cell #3	1.17	300	1.0	NF,NE	

Cell #4	1.17	300	1.0	NF,NE
Cell #5	1.18	300	1.0	NF,NE
Supplementary information: NF, NE- No fire or explosion, NL- No leakage				

7.3.8	TABLE: Overcharge (Cells) AA100mAh				P
Model	OCV prior to charging, (Vdc)	Maximum charge current, (mA)	Time for charging, (hours)	Results	
Cell #1	1.16	100	1.0	NF,NE	
Cell #2	1.17	100	1.0	NF,NE	
Cell #3	1.17	100	1.0	NF,NE	
Cell #4	1.18	100	1.0	NF,NE	
Cell #5	1.17	100	1.0	NF,NE	
Supplementary information: NF, NE- No fire or explosion, NL- No leakage					

7.3.9	TABLE: Forced discharge (cells) AA2000mAh				P
Model	OCV before application of reverse charge, (Vdc)	Measured reverse charge I_r , (mA)	Time for reversed charge, (minutes)	Results	
Cell #1	1.16	2000	90	NF,NE	
Cell #2	1.17	2000	90	NF,NE	
Cell #3	1.15	2000	90	NF,NE	
Cell #4	1.16	2000	90	NF,NE	
Cell #5	1.17	2000	90	NF,NE	
Supplementary information: NF, NE- No fire or explosion, NL- No leakage					

7.3.9	TABLE: Forced discharge (cells) AA1200mAh				P
Model	OCV before application of reverse charge, (Vdc)	Measured reverse charge I_r , (mA)	Time for reversed charge, (minutes)	Results	
Cell #1	1.16	1200	90	NF,NE	
Cell #2	1.16	1200	90	NF,NE	
Cell #3	1.17	1200	90	NF,NE	

Cell #4	1.17	1200	90	NF,NE
Cell #5	1.16	1200	90	NF,NE
Supplementary information: NF, NE- No fire or explosion, NL- No leakage				

7.3.9	TABLE: Forced discharge (cells) AA600mAh				P
Model	OCV before application of reverse charge, (Vdc)	Measured reverse charge I_t , (mA)	Time for reversed charge, (minutes)	Results	
Cell #1	1.16	600	90	NF,NE	
Cell #2	1.16	600	90	NF,NE	
Cell #3	1.15	600	90	NF,NE	
Cell #4	1.16	600	90	NF,NE	
Cell #5	1.16	600	90	NF,NE	
Supplementary information: NF, NE- No fire or explosion, NL- No leakage					

7.3.9	TABLE: Forced discharge (cells) AA300mAh				P
Model	OCV before application of reverse charge, (Vdc)	Measured reverse charge I_t , (mA)	Time for reversed charge, (minutes)	Results	
Cell #1	1.16	300	90	NF,NE	
Cell #2	1.15	300	90	NF,NE	
Cell #3	1.16	300	90	NF,NE	
Cell #4	1.15	300	90	NF,NE	
Cell #5	1.16	300	90	NF,NE	
Supplementary information: NF, NE- No fire or explosion, NL- No leakage					

7.3.9	TABLE: Forced discharge (cells) AA100mAh				P
Model	OCV before application of reverse charge, (Vdc)	Measured reverse charge I_t , (mA)	Time for reversed charge, (minutes)	Results	
Cell #1	1.15	100	90	NF,NE	
Cell #2	1.16	100	90	NF,NE	
Cell #3	1.16	100	90	NF,NE	

Cell #4	1.16	100	90	NF,NE
Cell #5	1.15	100	90	NF,NE
Supplementary information: NF, NE- No fire or explosion, NL- No leakage				



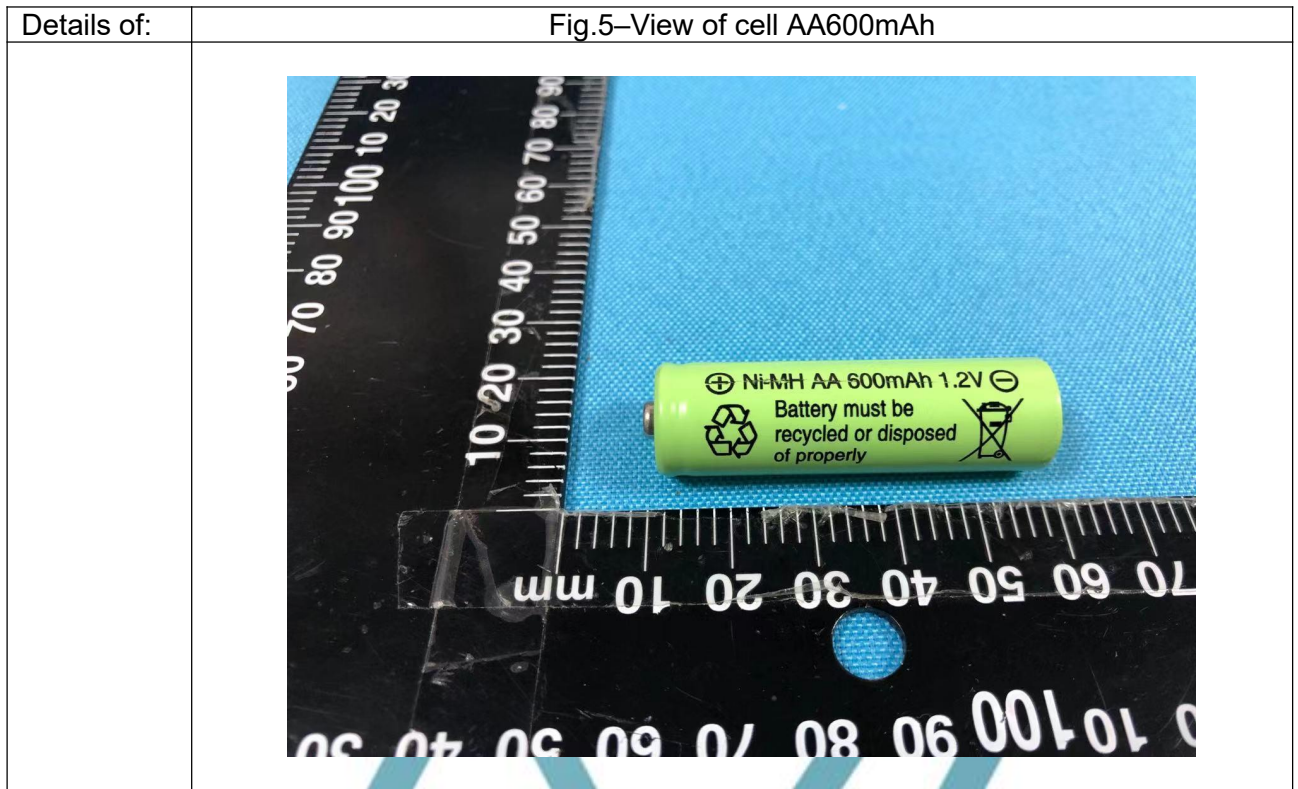
Appendix 1 Photo Documentation

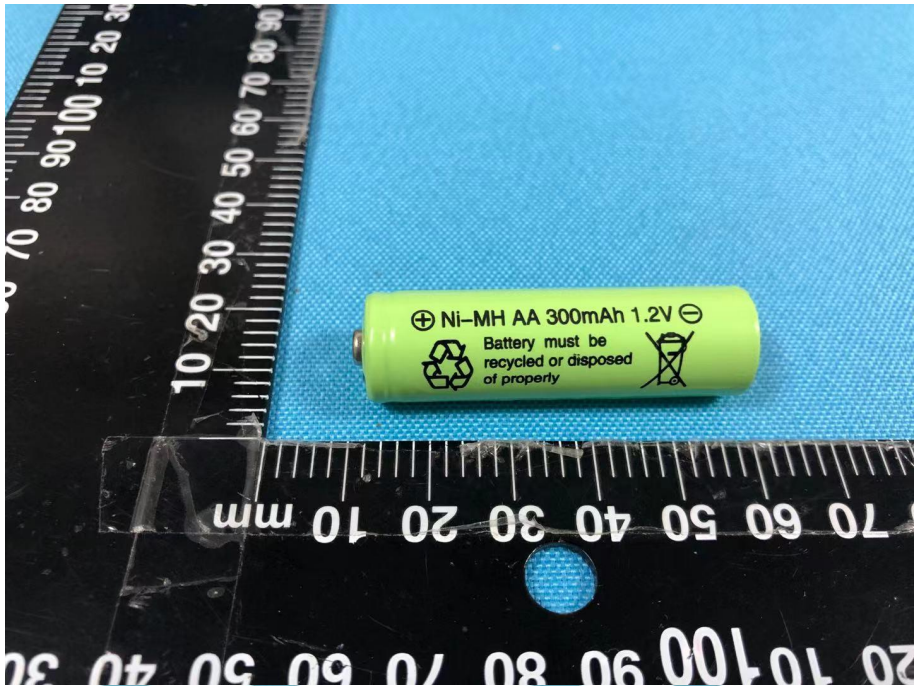
Details of:	Fig.1–View of cell AA2000mAh
	

Details of:	Fig. 2–View of cell AA2000mAh
	

Details of:	Fig.3–View of cell AA1200mAh
	

Details of:	Fig. 4–View of cell AA1200mAh
	



Details of:	Fig.7-View of cell AA300mAh
	

Details of:	Fig. 8-View of cell AA300mAh
	

---End of Test Report---