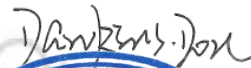





TEST REPORT IEC 62133-1 Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications - Part 1: Nickel systems	
Report Number.....:	BCTC-YLH1812100087B
Date of issue.....:	2019-01-17
Total number of pages.....:	16 pages
Applicant's name.....:	Shantou chaoyue Battery Co., Ltd.
Address.....:	Pumei Industrial Area, Chenghai District, Shantou City, Guangdong Province
Test specification:	
Standard..... :	IEC 62133-1:2017
Test procedure.....:	Test report
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. This report shall not be reproduced, except in full, without the written approval of Shenzhen BCTC Testing Co., Ltd. The authenticity of this Test Report and its contents can be verified by contacting the Shenzhen BCTC Testing Co., Ltd., responsible for this Test Report.	
Test item description.....:	Ni-Cd cell
Trade Mark.....:	N/A
Manufacturer.....:	Same as applicant
Address.....:	Same as applicant
Model/Type reference.....:	Test model:AA700mAh Cover model: AA300mAh, AA400mAh, AA500mAh, AA 600mAh
Ratings.....:	1.2V, 700mAh

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	Testing Laboratory:	Shenzhen BCTC Testing Co., Ltd.
Testing location/ address..... :		BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China
Tested by (name, signature)..... :	Dawkins Dou	
Checked by (name, signature)..... :	Dawn Zhou	
Approved by (name, signature)..... :	Jim deng	
		
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
Testing location/ address..... :		
Tested by (name, function, signature)..... :		
Approved by (name, function, signature)... :		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
Testing location/ address..... :		
Tested by (name + signature)..... :		
Witnessed by (name, function, signature).. :		
Approved by (name, function, signature)... :		
<input type="checkbox"/>	Testing procedure: CTF Stage 3:	
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	
Testing location/ address..... :		
Tested by (name, function, signature)..... :		
Witnessed by (name, function, signature).. :		
Approved by (name, function, signature)... :		
Supervised by (name, function, signature) :		

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

Main report: 16pages.

Attachment 1:Photo documentation (1page).

Summary of testing:**Tests performed (name of test and test clause):**

cl.7.2.1 Continuous low-rate charging
cl.7.2.2 Vibration;
cl.7.2.4 Temperature cycling;
cl.7.3.1 Incorrect installation;
cl.7.3.2 External short circuit;
cl.7.3.3 Free fall;
cl.7.3.4 Mechanical shock;
cl.7.3.5 Thermal abuse;
cl.7.3.6 Crushing of cells;
cl.7.3.7 Low pressure;
cl.7.3.8 Overcharge;
cl.7.3.9 Forced discharge;

Testing location:

Shenzhen BCTC Testing Co., Ltd.
BCTC Building & 1-2F, East of B Building,
Pengzhou Industrial, Fuyuan 1st Road, Qiaotou
Community, Fuyong Street, Bao'an District,
Shenzhen, China

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

N/A

☐ **The product fulfils the requirements of EN62133-1: 2017****Note:**

Compare with test model(AA700mAh) , the cover model(AA300mAh, AA400mAh, AA500mAh, AA 600mAh)material and chemical properties are exactly the same, only the capacity is different.

Copy of marking plate:**The artwork below may be only a draft.**

Ni-Cd cell	KRLT6	AA700mAh	
+	1.2V, 700mAh 0.1C, 16h	YY/MM/DD	-
Shantou chaoyue Battery Co., Ltd.			

Remark: YY/MM/DD represents the production date.

Test item particulars..... :	
Classification of installation and use..... :	To be defined in final product
Supply Connection..... :	DC terminal
Recommend charging method declared by the manufacturer..... :	0.1CFor 16 Hours
Discharge current (0,2 It A)..... :	140mA
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..... :	2018-12-18
Date (s) of performance of tests..... :	2018-12-18 to 2019-01-17
General remarks:	
<p>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.</p>	
<p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p>	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 62133-1:	
<p>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..... :</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)..... :	Same as manufacturer

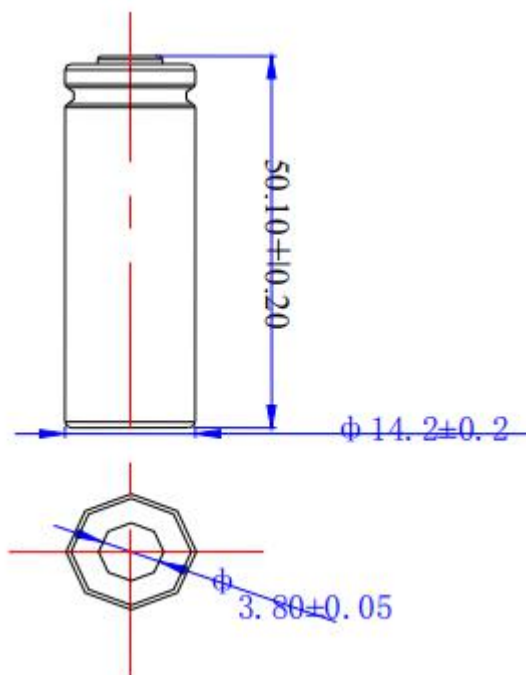
General product information:

This battery is constructed with one Ni-Cd cells in 1S1P, and has overcharge, over-discharge, over current and short-circuits proof circuit.

The main features of the cell pack are shown as below:

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Cut-off Voltage
AA700mAh	700mAh	1.2V	70mA	140mA	700mA	700mA	1.0V

Construction:



Cell (Unit: mm)

4	PARAMETER MEASUREMENT TOLERANCES		P
	Parameter measurement tolerances		P
5	General safety considerations		P
5.1	General		P
5.2	Insulation and wiring		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	No metal surfaces exists	N/A
	Insulation resistance (MΩ)..... :		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements	Complied	N/A
	Orientation of wiring maintains adequate creepage and clearance distances between conductors	Complied	N/A
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse	Complied	N/A
5.3	Venting	Venting mechanism facilitated on cells.	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		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	A temperature protector device exists for preventing abnormal temperature rise.	P
	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	The “+” and “-” polarity explicitly marked on surface of the cell	P

	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		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 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 ambient temperature Charging method: CC=70mA for 16 hours	P
7.2	Intended use		P
7.2.1	Continuous low-rate charging (cells)	CC=70mA, Duration: 28days	P
	Results: No fire. No explosion	(See Table 7.2.1)	P
7.2.2	Vibration	Tested complied.	P
	Results: No fire. No explosion. No leakage	(See Table 7.2.2)	P

TRF No. IEC 62133_1A

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7.2.3	Case stress at high ambient temperature(batteries)		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		P
	Results: No fire. No explosion. No leakage.	Tested complied.	P
7.3	Reasonably foreseeable misuse		P
7.3.1	Incorrect installation (cells)	Tested complied.	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.		P
	Results: No fire. No explosion..... :	(See Table 7.3.1)	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.	No fire. No explosion.	P
7.3.4	Mechanical shock (crash hazard)		P
	Results: No fire. No explosion. No leakage.	Tested complied.	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	Tested complied.	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	Cylindrical cell.	N/A
	Results: No fire. No explosion..... :	(See Table 7.3.6)	P
7.3.7	Low pressure (cells)		P
	Chamber pressure (kPa)..... :	11.6kPa	—

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	Results: No fire. No explosion. No leakage.	Tested complied.	P
7.3.8	Overcharge	Tested complied.	P
	Results: No fire. No explosion..... :	(See Table 7.3.8)	P
7.3.9	Forced discharge	Tested complied.	P
	Results: 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.	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		P
	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:		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 cell is marked in accordance with IEC 61951-2, also see page 4.	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	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		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.		P
9.4	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

10	Packaging		P
	Packaging for button cells are not be small enough to fit within the limits of the ingestion gauge of Figure 2		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	Shantou chaoyue Battery Co., Ltd	AA700mAh	1.2V, 700mAh	IEC 62133-1: 2017	Tested with appliance
-Electrolyte	XINXIANG ZHONGYUE POW ER SUPPLY LTD.COMPANY	AA	HKO	--	--
-Positive electrode	XINXIANG ZHONGYUE POW ER SUPPLY LTD.COMPANY	AA	NiO ₂ , C	--	Tested with appliance
-Negative electrode	XINXIANG ZHONGYUE POW ER SUPPLY LTD.COMPANY	AA	Nickel &Iron	--	Tested with appliance
-Separator	XINXIANG ZHONGYUE POW ER SUPPLY LTD.COMPANY	AA	PP+PE+PP three layers	--	Tested with appliance
Supplementary information: ¹⁾ Provided evidence ensures the agreed level of compliance.					

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	
C01	CC	--	0.07	1.48	P	
C02	CC	--	0.07	1.49	P	
C03	CC	--	0.07	1.48	P	
C04	CC	--	0.07	1.49	P	
C05	CC	--	0.07	1.48	P	
Supplementary information: - No fire or explosion						

7.2.2	TABLE: Vibration (cells)		P
Model	OCV at start of test, (Vdc)	Results	
C06	1.50	P	
C07	1.49	P	
C08	1.48	P	
C09	1.47	P	
C10	1.48	P	
Supplementary information: - No fire or explosion - No leakage			

7.2.2	TABLE: Vibration (batteries)		N/A
Model		OCV at start of test, (Vdc)	Results
Supplementary information: - No fire or explosion - No leakage			

7.3.1	TABLE: Incorrect installation (cells)		P
Model	OCV of reversed cell, (Vdc)	Results	
C19	1.48	P	
C23	1.46	P	
C27	1.48	P	
C31	1.47	P	
C35	1.48	P	
Supplementary information:			
- No fire or explosion			

7.3.2	TABLE: External short circuit(cells)					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 (°C)	Results	
C36	22.8	1.46	0.080	72.1	P	
C37	22.8	1.47	0.078	75.4	P	
C38	22.8	1.48	0.082	73.4	P	
C39	22.8	1.45	0.078	74.9	P	
C40	22.8	1.46	0.084	71.0	P	
C41	56.7	1.47	0.083	75.5	P	
C42	56.7	1.46	0.078	76.2	P	
C43	56.7	1.45	0.080	69.5	P	
C44	56.7	1.47	0.078	71.0	P	
C45	56.7	1.45	0.081	70.7	P	
Supplementary information:						
- No fire or explosion						

Supplementary information:

Supplementary information:

Supplementary information:

7.3.8	TABLE: Overcharge (batteries)				N/A
Model	OCV prior to charging, (Vdc)	Maximum charge current, (A)	Time for charging, (hours)	Results	
Supplementary information:					
- No fire or explosion					

7.3.9	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	
C72	1.47	0.7	90	P	
C73	1.46	0.7	90	P	
C74	1.46	0.7	90	P	
C75	1.47	0.7	90	P	
C76	1.46	0.7	90	P	
Supplementary information:					
- No fire or explosion					

-- End of Report--

Attachment 1

Photo Documentation



Page 1 of 1

Report No.
BCTC-YLH1812100087B

Product: Ni-Cd cell
Type Designation: AA700mAh



Figure 1 Front view of cell



Figure 2 Front view of cell

TRF No. IEC 62133_1A

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