

PSE TEST REPORT

For

Product Name:	Hand warmer
Trademark:	N/A
Model Number:	M08
Prepared For:	Shenzhen Choupijiang Electronics Co., LTD
Address:	305, Building A1, Huangzhu Third Industrial Zone, Huangzhu Community, Hangcheng Street, Baoan District, Shenzhen
Prepared By:	Shenzhen Huaxiang Testing Co , Ltd
Address:	201, Building A10, Fuhai Information Port, Fuhai Street, Bao'an District, Shenzhen City
Test Date:	Oct. 17, 2023- Oct. 24, 2023
Date of Report:	Oct. 24, 2023
Report No.:	HUAX231018014KR

TEST REPORT

JIS C 8714: 2007 & JIS C 8712: 2015 (also see IEC 62133: 2012) .
 METI Ordinance of Technical Requirements (H2 5 . 0 7 . 0 1) Appendix Information 9 : Lithium ion
 secondary batteries (Cell part—test only as client 's request)-- Part 1: General requirements.

Reference No.....: HUAX231018014KR

Date of issue.....: Oct. 24, 2023

Testing laboratory

Name.....: Shenzhen Huaxiang Testing Co , Ltd

Address.....: 201, Building A10, Fuhai Information Port, Xinhe Community, Fuhai
 Street, Bao'an District, Shenzhen City, Guangdong, China

Testing location.....: Same as above

Client

Name.....: Shenzhen Choupijiang Electronics Co., LTD

Address.....: 305, Building A1, Huangzhu Third Industrial Zone, Huangzhu
 Community, Hangcheng Street, Baoan District, Shenzhen

Test specification

Standard.....: JIS C 8714: 2007 & JIS C 8712: 2015 (also see IEC 62133: 2012)

Test procedure: ---

Non-standard test method.....: N/A

Test item

Description.....: Hand warmer

Brand name.....: N/A

Model and/or type reference.....: M08

Manufacturer.....: Shenzhen Choupijiang Electronics Co., LTD

Address.....: 305, Building A1, Huangzhu Third Industrial Zone, Huangzhu
 Community, Hangcheng Street, Baoan District, Shenzhen

Test Result.....: Please refer to next page(s) for details.

Testing procedure and testing location

Laboratory name..... : Shenzhen Huaxiang Testing Co , Ltd

Testing location/address: : 201, Building A10, Fuhai Information Port, Fuhai Street, Bao'an District, Shenzhen City

Tested By : Marke
(Test Engineer)

Reviewed By : Amy Jiang
(Supervisor)



Copy of marking plate:

Hand warmer

Model : M08

Rating : DC 5V 2A 3000mAh



Do not disassemble, crush, puncture, or short external wires
Do not dispose of in fire or water

Shenzhen Choupijiang Electronics Co., LTD

Made in China

Note: Due to the similar of rating label, Only above label is listed.


Possible test case verdicts:

- test case does not apply to the test object..... : N/A (Not Applicable)
- test object does meet the requirement..... : P (Pass)
- test object does not meet the requirement..... : F (Fail)

Testing:

Date of receipt of test item : Oct. 17, 2023
 Date (s) of performance of tests : Oct. 17, 2023- Oct. 24, 2023

Test item particulars:

Supply Connection:	
Protection against ingress of water..... : IP2X	
Classification of installation and use	Portable
Supply connection	Wire
Recommend charging method declared by the manufacturer	Charge the battery to 5V at a constant current of 2.0C, then constant voltage at ambient 20°C±5°C until the charge current drops to 1.5C.
Discharge current (It A)	2A
Specified final voltage	5V
Upper limit charging voltage per cell	3.7V
Maximum charging current	2A
Charging temperature upper limit	45°C
Charging temperature lower limit	-20°C

General remarks

This test report shall not be reproduced except in full without the written approval of the testing laboratory.

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

“(see remark #)” refers to a remark appended to the report.

“(see appended table)” refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

General product information:

This Li-poly is constructed with 1 lithium-ion cells and has overcharge, over-discharge, over current and short-circuits proof circuit.

The main features of the battery are shown as below (clause 7.1.1): (For battery pack)

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage
M08	3000mAh	5V	2A	2A	2A	2A	5V

The main features of the cell in the battery are shown as below (clause 7.1.2): (For battery pack)

Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature
M08	5V	1000mA	-20°C	45°C

Construction: 95*60*30(Battery Unit: mm) (For battery pack)

Weight: 0. 35Kg (For battery pack)

Type classification

型式の区分 Classification of type	
要素 Factor	区分 Classification
単電池の形状 Shape of secondary cell	円筒形のも の Cylindrical
	√ 角形のも の Angular
	その他のも の Other
単電池の電解質の種類 Type of electrolyte in secondary	液体状のも の Liquid state
	√ その他のも の Other
単電池の上限充電電圧 Upper limit charge voltage of secondary cell	4 . 25 V以下のも の 4.25 V or less
	√ 4 . 25 Vを超えるも の More than 4.25 V
組電池の質量 Weight of secondary battery	√ 7 k g 以下のも の 7 kg or less
	7 k g を超えるも の More than 7 kg
電池ブロックの個数 Number of battery blocks	1 個のも の Single
	√ 2個以上のも の Multiple
過充電の保護機能 Overcharge protection	√ 組電池で制御するも の Controlled by secondary battery
	組電池搭載機器又は充電器で制御するも の Controlled by equipment incorporating a secondary battery or a charger
用途 Uses	携帯機器用のも の For mobile equipment
	√ 卓上機器用のも の For desktop equipment
	その他のも の Other
組電池の種類 Type of secondary battery	はんだ付けその他の接合方法により、容易に取り外すことができない状態で機械器具に固定して用いられるものその他の特殊な構造のも の Those designed to fix to appliances by soldering or other joining methods so that it cannot be easily removed, or those having other special construction
	√ その他のも の Other

JIS C 8714:2007

Clause	Requirement - Test	Result - Remark	Verdict
4	Type Test Conditions		P
	Tests were conducted with the number of cells or batteries as outlined in Table 1 of JIS C 8714 with cells or batteries.	Compliance checked	P
	Unless noted otherwise in the test methods, testing of cells were conducted at both highest test temperature and lowest test temperature.	Compliance checked	P
5	Specific requirements and tests		P
5.1	Charging procedure for test purposes	Compliance checked	P
5.2	Crushing of cells		P
	Fully charged cells were crushed between two flat surfaces with a hydraulic ram exerting a force of 13 kN 1 kN.	Compliance checked	P
	A cylindrical or prismatic cell was crushed with its longitudinal axis parallel to the flat surfaces of the crushing apparatus.	Compliance checked	P
	A second set of prismatic cells was tested, rotated 90 degrees around their longitudinal axis compared to the first set.	Compliance checked	P
	Results: no fire, no explosion.	No fire, no explosion.	P
5.3	External short circuit of cells	See below	P
	Fully charged cells or batteries were subjected to a short circuit test at 55C 5C.	See Table 4.3.2.	P
	The total external resistance of 80±20 mΩ .		P
	The cells were tested for 24 h or until the case temperature declined by 20% of the maximum temperature rise.	The batteries were tested for 24h	P
	Results: no fire, no explosion.	See Table 4.3.2.	P
5.4	Thermal abuse of cells		P
	Fully charged cells were placed in an oven. The oven temperature was raised at a rate of 5C/min 2C/min to a temperature of 130C 2C. The cell remained at that temperature for 10 minutes before the test was discontinued.	Compliance checked	P
	Results: no fire, no explosion	No fire, no explosion	P
5.5	Forced internal short circuit of cells		P

JIS C 8714:2007			
Clause	Requirement - Test	Result - Remark	Verdict
	Fully charged cells were dismantled and a winding core were removed at the condition of ambient temperature of 20C ± 5C, and dew point of below -25C.	See Annex A	P
	Results: no fire.		P
5.6	Free fall of batteries	See below	P
	Fully charged batteries were dropped once in the direction most likely to affect in negative manner from height, which is specified in JIS C 6950 or JIS C 6065, according to the portable electronic applications.	Fall test applied on the top, side and bottom of enclosure, were dropped 3 times from a height of 1.0 m onto a concrete floor.	P
	Results: no external short circuit, no internal short circuit	No external short circuit, no internal short circuit	P
5.7	External short circuit of batteries	See below	P
	Fully charged batteries were subjected to a short circuit test at 20C ± 5C.	See Table 4.3.2.	P
	The total external resistance of 80±20 mΩ .		P
	The batteries were tested for 24 h or until the case temperature declined by 20% of the maximum temperature rise.	The batteries were tested for 24h	P
	Results: no fire, no explosion.	See Table 4.3.2.	P
5.8	Function of the overcharge protection of batteries		P
	a) the battery is made of a cell or one cellblock		P
	b) the battery consists of a series connection of over two pieces of cells or cellblocks		N/A
	c) the battery consists of a the series connection of over two pieces of cells or cellblocks		N/A
Annex A	Procedure of forced internal short circuit test		P
A.1	Number of test cells	Ten pieces	P
A.2	Charging procedure for test purpose	Compliance checked	P
A.3	Insertion procedure of a small piece of metallic nickel to cause internal short circuit	Compliance checked	P
A.3.1	Dismantling of charged cell	Compliance checked	P
A.3.2	Shape and material of a small piece of metallic nickel	Compliance checked	P
A.3.3.	Insertion of a small piece of metallic nickel		P
	a) cylindrical cells were shown in figure A.2		N/A

JIS C 8714:2007

Clause	Requirement - Test	Result - Remark	Verdict
	b) prismatic cells were shown in figure A.3	Compliance checked	P
A.3.4	Reassembling		P
	a) cylindrical cells		N/A
	b) prismatic cells		P
A.3.5	Enclose of winding core		P
A.4	Procedure of pressing		P
A.4.1	Temperature adjustment in pre-heated oven		P
A.4.2	Installation in constant temperature test oven		P
A.4.3	Internal short circuit test	Prismatic cell	P
A.4.4	Stop pressing	400N, 30s	P
A.4.5	Acceptance criteria	No fire	P
Annex B	Procedure of the decision of new charging condition and the adoption of new model		N/A

JIS C 8712: 2015			
Clause	Requirement - Test	Result - Remark	Verdict
1	General		P
	Parameter measurement tolerances	Compliance checked	P
2	General Safety Considerations		P
	Cells and batteries subject to intended use be safe and continue to function in all respects	Compliance checked	P
	Cells and batteries subject to reasonably foreseeable misuse do not present significant hazards.	Compliance checked	P
2.1	Insulation and Wiring	See below	P
	– Insulation Resistance between an accessible metal case (excluding electrical contacts) and positive terminals 5MΩ .		N/A
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements	Internal wires/conductors possess adequate cross-sectional areas for their intended application.	P
	Orientation of wiring maintains adequate creepage and clearance distances between conductors. Mechanical integrity of internal connections are sufficient to accommodate conditions of reasonably foreseeable misuse.	Compliance checked	P
2.2	Venting	See below	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.	Compliance checked	P
	Encapsulant used to support cells within an outer casing does not cause the battery to overheat during normal operation no inhibit pressure relief.	Compliance checked	P
2.3	Temperature/current management	See below	P
	The batteries are designed such that abnormal temperature rise conditions are prevented.	Compliance checked	P
	Means is provided to limit current to safe levels during charge and discharge.	Protective IC and PCB used	P
2.4	Terminal contacts	See below	P
	Terminals have a clear polarity marking on the external surface of the battery	Marked with “+” and “-” for polarity marking	P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated	Compliance checked	P

JIS C 8712: 2015			
Clause	Requirement - Test	Result - Remark	Verdict
	current.		
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance.	Compliance checked	P
	Terminal contacts are arranged to minimize the risk of short circuits.	Compliance checked	P
2.5	Assembly of cells into batteries	See below	P
	Cells used in the battery assembly have closely matched capacities, are of the same design, and are of the same chemistry and same manufacturer.	Only one cell used	P
	The battery incorporates separate circuitry to prevent cell reversal from uneven charges as the pack is designed for the selective discharge of a portion of its series connected cells.	No series connected	N/A
2.6	Quality Plan		P
	The manufacture has prepared a quality plan defining the procedures for the inspection of materials, components, cells and batteries and which covers the process of producing each type of cell and battery.	Compliance checked	P
3	Type Test Conditions		P
	Tests were conducted with the number of cells or batteries as outlined in Table 1 of JIS C 8712 with cells or batteries that were not more than 3 months old.	Compliance checked	P
	Unless noted otherwise in the test methods, testing was conducted in an ambient of 20C ± 5C.	Compliance checked	P
4	Specific requirements and tests		P
4.1	Charging procedure for test purposes	Compliance checked	P
4.2	Intended Use	Compliance checked	P
4.2.1	Continuous Low Rate Charge	Compliance checked	P
	Fully charged cells are subjected for 28 days to a charge as specified by the manufacturer.	See Table 4.2.1.	P
	Nickel systems: no fire, no explosion		N/A
	Lithium systems: no fire, no explosion, no leakage	See Table 4.2.1.	P
4.2.2	Vibration	See below	P
	The measured open circuit voltage of the fully charged cells or batteries is within anticipated parameters	See Table 4.2.2.	P

JIS C 8712: 2015			
Clause	Requirement - Test	Result - Remark	Verdict
	The cells or batteries are subjected to a vibration sequence as outlined in Table 2 of JIS C8712 with amplitude of 0.75 mm and a total maximum excursion of 1.52 mm. The frequency was varied at the rate of 1 Hz/min between the limits of 10 Hz and 55 Hz. The entire range of frequencies (10 Hz to 55 Hz) and return	See Table 4.2.2.	P
	(55 Hz to 10 Hz) was traversed in 90 min 5 min for each mounting position.		
	The vibration was applied in each of three mutually perpendicular directions.	See Table 4.2.2.	P
	Results: no fire, no explosion, no leakage	See Table 4.2.2.	P
4.2.3	Moulded case stress at high ambient temperature	See below.	P
	Fully charged batteries were placed in an air-circulating oven at a temperature of 70C ± 2C for 7 hours. Afterwards, they are removed and allowed to return to room temperature.	Test performed on 70C for 7 hours.	P
	Results: no physical distortion of the battery casing resulting in exposure if internal components.	No physical distortion of the battery case resulting in exposure if internal components.	P
4.2.4	Temperature cycling	See below	P
	Fully charged cells or batteries were subjected to temperature cycling (-20C, +75C) in forced draught chambers according to the procedure outlined in 4.2.4 b) and Fig. 1 of JIS C8712.	Compliance checked	P
	After the fifth cycle, the cells or batteries were stored for 7 days prior to examination.	Compliance checked	P
	Results: No fire, no explosion, no leakage	No fire, no explosion, no leakage	P
4.3	Reasonably foreseeable misuse		P
4.3.1	Incorrect installation of a cell (nickel systems only)	Not nickel battery	N/A
	Four fully charged cells of the same brand, type, size and age were connected in series with one of the four cells reversed. The assembly was connected across a 1-ohm resistor until the vent opens or until the temperature of the reversed cell returns to ambient		N/A

JIS C 8712: 2015			
Clause	Requirement - Test	Result - Remark	Verdict
	temperature.		
	Alternatively, a stabilized dc power supply was used to simulate the conditions imposed on the reversed cell.		N/A
	Results: no fire, no explosion		N/A
4.3.2	External short circuit	See below	P
	Fully charged cells or batteries were subjected to a short circuit test at 20C ± 5C.	See Table 4.3.2.	P
	Fully charged cells or batteries were subjected to a short circuit test at 55C ± 5C.	See Table 4.3.2.	P
	The external resistance did not exceed 100 mΩ .		P
	The cells or batteries were tested for 24 h or until the case temperature declined by 20% of the maximum temperature rise.	The batteries were tested for 24h	P
	Results: no fire, no explosion.	See Table 4.3.2.	P
4.3.3	Free fall	See below	P
	Fully charged cells or batteries were dropped 3 times from a height of 1.0 m onto a concrete floor.	Fall test applied on the top, side and bottom of enclosure	P
	Results: no fire, no explosion	No fire, no explosion	P
4.3.4	Mechanical shock (crash hazard)	See below	P
	Fully charged cells or batteries were subjected to a total of three shocks of equal magnitude applied in each of three mutually perpendicular directions. At least one of the directions was perpendicular to a flat face. During the initial 3 milliseconds, the minimum average acceleration was 75 gn. The peak acceleration was between 125 gn and 175 gn.	Shock test applied in each of three mutually perpendicular directions.	P
	Results: no fire, no explosion, no leakage	No fire, no explosion, no leakage	P
4.3.5	Thermal abuse		P
	Fully charged cells were placed in a gravity or circulating air-convection oven. The oven temperature was raised at a rate of 5C/min ± 2C/min to a temperature of 130C ± 2C. The cell remained at that temperature for 10 minutes before the test was discontinued.	Compliance checked	P
	Results: no fire, no explosion	No fire, no explosion	P
4.3.6	Crushing of cells		P

JIS C 8712: 2015			
Clause	Requirement - Test	Result - Remark	Verdict
	Fully charged cells were crushed between two flat surfaces with a hydraulic ram exerting a force of 13 kN 1 kN.	Compliance checked	P
	A cylindrical or prismatic cell was crushed with its longitudinal axis parallel to the flat surfaces of the crushing apparatus.	Compliance checked	P
	A second set of prismatic cells was tested, rotated 90 degrees around their longitudinal axis compared to the first set.	Compliance checked	P
	Results: no fire, no explosion.	No fire, no explosion.	P
4.3.7	Low pressure		P
	Fully charged cells are placed in a vacuum chamber whose internal pressure was gradually reduced to a pressure equal to or less than 11.6 kPa and held at that value for 6 hours.	Compliance checked	P
	Results: no fire, no explosion, no leakage	No fire, no explosion, no leakage	P
4.3.8	Overcharge for nickel systems	Not nickel systems.	N/A
	A discharged cell or battery was subjected to a high-rate charge of 2.5 times the recommended charging current for a time that produced a 250% charge input (250% of rated capacity).		N/A
	Results: no fire, no explosion.		N/A
4.3.9	Overcharge for lithium systems	Compliance checked	P
	A discharged cell was charged from a power supply of 10 V, at a charging current I_{rec} recommended by the manufacturer for 2.5 C5/ I_{rec} hours..	See Table 4.3.9.	P
	Results: no fire, no explosion.	No fire, no explosion.	P
4.3.10	Forced discharge	Compliance checked	P
	Discharged cells intended for use in multi-cell applications, were subjected to a reverse charge 1t 1.0 It (A) for 90 minutes.	See Table 4.3.10.	
	Results: no fire, no explosion	No fire, no explosion	P
4.3.11	Cell protection against a high charging rate (lithium systems only)		N/A
	Discharged cells were charged at three times the charging current recommended by the manufacturer until the cells was fully charged or an internal safety devices cut off the charge current		N/A

JIS C 8712: 2015			
Clause	Requirement - Test	Result - Remark	Verdict
	before the cell became fully charged.		
	Results: no fire, no explosion		N/A
5	Information for safety	See below	P
	Information is provided to equipment manufacturers in the form of instructions to minimize and mitigate hazards associated with the cells or batteries in accordance with guidelines outlined in informative Annex A.	Information is provided in the product specification.	P
	Information is provided to end-users in the form of instructions to minimize and mitigate hazards associated with the batteries in accordance with guidelines outlined in informative Annex B.	Information is provided in the product specification.	P
6	Marking		P
6.1	Cell Marking		P
	The cells are marked in accordance with JIS C8705, JIS C8708 or JIS C8711 as applicable. See Copy of Marking Plate item in the beginning of this report.	See Copy of Marking Plate	P
6.2	Battery Marking		N/A
	The batteries are marked in accordance with JIS C8705, JIS C8708 or JIS C8711 as applicable. See Copy of Marking Plate item in the beginning of this report		N/A
6.3	Other Information		P
	Disposal instructions are marked on the battery or supplied in the information packaged with the battery.	Information is provided in the product specification.	P
	Recommended charging instruction are marked on the battery or supplied in the information packaged with the battery.	Information is provided in the product specification.	P
7	Packaging		P
	Cells or batteries were provided with packaging that was adequate to avoid mechanical damage during transport, handling and stacking. The materials and pack design was chosen to prevent the development of unintentional electrical conduction, corrosion of the terminal and ingress of moisture.	Compliance checked	P

JIS C 8712: 2015

Clause	Requirement - Test	Result - Remark	Verdict
--------	--------------------	-----------------	---------

TABLE: 4.2.1 Continuous Low Rate Charge Test					P
Model	Recommended Charging Method, CC, CV, or CC/CV	Recommended Charging Voltage Vc, Vdc	Recommended Charging Current Irec, A	OCV at Start of Test, Vdc	Results
For cell	CC/CV	5	10000mA	4.79	No fire, no explosion, no leakage
	CC/CV	5	10000mA	4.78	No fire, no explosion, no leakage
	CC/CV	5	10000mA	4.79	No fire, no explosion, no leakage
	CC/CV	5	10000mA	4.77	No fire, no explosion, no leakage
	CC/CV	5	10000mA	4.76	No fire, no explosion, no leakage
Supplementary information:					

TABLE: 4.2.2 – Vibration Test			P
Model	OCV at Start of Test, Vdc	Results	
For battery	5.18 at X/Y/Z axis	No fire, no explosion, no leakage	
For battery	5.19 at X/Y/Z axis	No fire, no explosion, no leakage	
For battery	5.19 at X/Y/Z axis	No fire, no explosion, no leakage	
For battery	5.19 at X/Y/Z axis	No fire, no explosion, no leakage	
For battery	5.18 at X/Y/Z axis	No fire, no explosion, no leakage	
Supplementary information:			

TABLE: 4.3.1 Incorrect Installation of a Cell Test (Nickel Systems)			N/A
Model	OCV (reversed cell), Vdc	Results	
Supplementary information:			

JIS C 8712: 2015

Clause	Requirement - Test	Result - Remark	Verdict
--------	--------------------	-----------------	---------

TABLE: 4.3.2 – External Short Circuit Test					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
For battery	20.2/55.1	5.18/5.16	<0.1	1.1/0.7	No fire, no explosion
For battery	20.8/55.6	5.14/5.17	<0.1	0.8/0.9	No fire, no explosion
For battery	21.1/55.3	5.19/5.15	<0.1	0.8/1.2	No fire, no explosion
For battery	20.4/54.4	5.19/5.18	<0.1	1.2/1.3	No fire, no explosion
For battery	20.0/55.3	5.13/5.19	<0.1	1.0/0.6	No fire, no explosion
Supplementary information:					

TABLE: 4.3.2 – External Short Circuit Test					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
For cell	20.4/55.3	5.21/5.19	<0.1	13.0/5.2	No fire, no explosion
For cell	20.4/55.3	5.22/5.20	<0.1	12.2/4.7	No fire, no explosion
For cell	21.6/55.3	5.22/5.22	<0.1	13.4/5.1	No fire, no explosion
For cell	20.4/55.4	5.19/5.21	<0.1	12.7/5.3	No fire, no explosion
For cell	20.3/55.3	5.21/5.20	<0.1	13.1/5.1	No fire, no explosion
Supplementary information:					

TABLE: 4.3.8 – Overcharge Test (Nickel Systems)				N/A
Model	OCV prior to charging, Vdc	Maximum Charge Current, A	Time for Charging, h	Results
Supplementary information:				

JIS C 8712: 2015

Clause	Requirement - Test	Result - Remark	Verdict
--------	--------------------	-----------------	---------

TABLE: 4.3.9 – Overcharge Tests (Lithium Systems)					P
Model	OCV at start of test, Vdc	Maximum Charging Current, mA	Maximum Charging Voltage, Vdc	Total Time of Charging, h	Results
For cell	—	10000	10	5	No fire, no explosion
For cell	—	10000	10	5	No fire, no explosion
For cell	—	10000	10	5	No fire, no explosion
For cell	—	10000	10	5	No fire, no explosion
For cell	—	10000	10	5	No fire, no explosion

Supplementary information:

TABLE: 4.3.10 – Forced Discharge Test				P
Model	OCV before application of reverse charge, Vdc	Measured Reverse Charge It, A	Total Time for Reversed Charge Application, Min	Results
For cell	4.75	2.4	90	No fire, no explosion
For cell	4.72	5	90	No fire, no explosion
For cell	4.72	5	90	No fire, no explosion
For cell	4.71	5	90	No fire, no explosion
For cell	4.73	5	90	No fire, no explosion

Supplementary information:

TABLE: 4.3.11 – Cell Protection Against a High Charging Rate Test (Lithium)				N/A
Model	OCV at start of test, Vdc	Maximum Charging	Maximum Charging	Results

Supplementary information:

METI Ordinance of Technical Requirements (H25.07.01) Appendix Information 9

Clause	Requirement - Test	Result - Remark	Verdict
1	General safety considerations		P
	The safety of secondary cells and batteries requires the consideration of two sets of applied conditions:		P
	a) intended use;		P
	b) reasonably foreseeable misuse		P
	It is expected that cells or batteries subjected to misuse may fail to function following such experience.		P
	They shall not however present significant hazards. It may also be expected that cells and batteries subjected to intended use shall not only be safe but shall continue to be functional in all respects.		P
1.(1)	Insulation and Wiring		P
	a) Insulation Resistance between an accessible metal case (excluding electrical contacts) and positive terminals 5MΩ	No metal case exists.	N/A
	b) Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements	See tests of clause 2 and clause 3.	P
	c) Orientation of wiring maintains adequate creepage and clearance distances between conductors. Mechanical integrity of internal connections are sufficient to accommodate conditions of reasonably foreseeable misuse.	See tests of clause 2 and clause 3.	P
1.(2)	Inner Pressure Reduction Mechanism		P
	a) 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 the cell.	P
	b) Encapsulant used to support cells within an outer casing does not cause the battery to overheat during normal operation no inhibit pressure relief.		N/A
1.(3)	Temperature and current management		P
	The batteries are designed such that abnormal temperature rise conditions are prevented.	Overcharge, over-discharge, over current and short-circuit proof circuit used in this battery. See tests of clause 3.	P
	Means is provided to limit current to safe levels during charge and discharge.	Overcharge, over-discharge, over current and short-circuit proof circuit used in this battery. See tests of clause 3.	P

METI Ordinance of Technical Requirements (H25.07.01) Appendix Information 9

Clause	Requirement - Test	Result - Remark	Verdict
1.(4)	Terminal contacts		P
	a) Terminals have a clear polarity marking on the external surface of the battery or be designed with no fear of misconnection.	The DC connector contacts complied with the requirements.	P
	b) The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current.	Complied.	P
	c) External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance.		P
	Terminal contacts are arranged to minimize the risk of short circuits.		P
1.(5)	Assembly of cells into batteries	10S2P	P
	Cells used in the battery assembly have closely matched capacities, are of the same design, and are of the same chemistry and same manufacturer.		P
	The battery incorporates separate circuitry to prevent cell reversal from uneven charges as the pack is designed for the selective discharge of a portion of its series connected cells.		N/A
2	Intended Use		P
	In the tests mentioned below, the number and test ambient temperature of cells or batteries to be tested shall be as per Annex Table 1- 1. Provided that these tests can be handled by using an equivalent or severer test method. Moreover, if the battery structure has been partially modified and the test results before the change can be used instead, no further tests are required on that particular part.		P
2.(1)	Continuous Low Rate Charge		P
	Fully charged cells are subjected for 28 days to a charge as specified by the manufacturer.	Arrange the test as required.	P
	Ambient temperature when testing	50°C	P
	Results: no fire, no explosion, no leakage	No fire, no explosion, no leakage.	P
2.(2)	Vibration		P
	The measured open circuit voltage of the fully charged cells or batteries is within anticipated parameters	See test below.	P
	The cells or batteries are subjected to a vibration sequence with amplitude of 0.76 mm and a total maximum excursion of 1.52 mm. The frequency was varied at the rate of 1 Hz/min between the limits of 10 Hz and 55 Hz. The entire range of frequencies (10 Hz to 55	Arrange the test as required.	P

METI Ordinance of Technical Requirements (H25.07.01) Appendix Information 9

Clause	Requirement - Test	Result - Remark	Verdict
	Hz) and return (55 Hz to 10 Hz) was traversed in 90 min \pm 5 min for each mounting position.		
	The vibration was applied in each of three mutually perpendicular directions.	Arrange the test as required.	P
	Results: no fire, no explosion, no leakage	No fire, no explosion, no leakage.	P
2.(3)	Battery enclosure test at high ambient temperature		P
	Fully charged batteries were placed in an air-circulating oven at a temperature of 70°C \pm 2°C for 7 hours. Afterwards, they are removed and allowed to return to room temperature.		P
	Results: no physical distortion of the battery casing resulting in exposure if internal components.		P
2.(4)	Temperature cycling		P
	Fully charged cells or batteries were subjected to temperature cycling (+75°C, +20°C, -20°C, +20°C) in forced draught chambers according to the procedure.	Arrange the test as required.	P
	After the fifth cycle, the cells or batteries were stored at 20 \pm 5°C for 7 days prior to examination.	Arrange the test as required.	P
	Results: No fire, no explosion, no leakage	No fire, no explosion, no leakage.	P
3	Reasonably foreseeable misuse		P
	In tests specified below, the number and test ambient temperature of cells or batteries to be tested shall be as per Annex Table 1- 1. Provided that these tests can be conducted by using an equivalent or severer test method. Moreover, if the battery structure has been partially modified and the test results before the change can be used instead, no further tests are required on that particular part.		
3.(1)	External short circuit		P
	a) Fully charged cells were subjected to a short circuit test at 55°C \pm 5°C.	Arrange the test as required. Each 5 pcs batteries charged at ambient temperature 50°C and -5°C respectively prepared for the test.	P
	The external resistance did not exceed 80 \pm 20 m Ω .	See table 3.(1)	P

METI Ordinance of Technical Requirements (H25.07.01) Appendix Information 9

Clause	Requirement - Test	Result - Remark	Verdict
	The cells were tested for 24 h or until the case temperature declined by 20% of the maximum temperaturerise.	Tested until the case temperature declined by 20% of the maximum temperature rise	P
	b) Fully charged batteries were subjected to a short circuit test at 20°C ±5°C.	Arrange the test as required. Each 5pcs batteries charged at ambient temperature 50°C and -5°C respectively prepared for the test.	P
	The external resistance did not exceed 80 ±20 mΩ .	See table 3.(1)	P
	The batteries were tested for 24 h or until the case temperature declined by 20% of the maximum temperaturerise.	Tested for 24 hours.	P
	If battery incorporates protective device or protective circuit and the current has stopped, then for one hour after the current stopped.		N/A
	Results: no fire, no explosion.	No fire, no explosion.	P
3.(2)	Free fall		P
	Fully charged cells or batteries were dropped 3 times from a height of 1.0 m onto a concrete floor.	Arrange the test as required.	P
	Provided that this does not apply to charged batteries weighting more than 7 kg.		N/A
	Results: no fire, no explosion	No fire, no explosion.	P
3.(3)	Mechanical shock (crash hazard)		P
	a) Fully charged cells or batteries were subjected to a total of three shocks of equal magnitude applied in each of three mutually perpendicular directions.	Arrange the test as required.	P
	b) During the initial 3 milliseconds, the minimum average acceleration was 735 m/s ² . The peak acceleration was between 1228 m/s ² and 1716 m/s ² .		P
	Results: no fire, no explosion, no leakage	No explosion, no leakage.	P
3.(4)	Thermal abuse		P
	Fully charged cells were placed in a gravity or circulating air-convection oven. The oven temperature was raised at a rate of 5°C/min ±2°C/min to a temperature of 130°C ±2°C. The cell remained at that temperature for 10 minutes before the test was discontinued.	Arrange the test as required. Each 5pcs cells charged at ambient temperature 50°C and -5°C respectively prepared for the test.	P
	Results: no fire, no explosion	No fire, no explosion	P
3.(5)	Crushing of cells		P
	a) Fully charged cells were crushed between two flat surfaces with a hydraulic ram exerting a force of 13 kN ± 1 kN.	Arrange the test as required. Each 5pcs cells charged at ambient temperature 50°C and -5°C	P

METI Ordinance of Technical Requirements (H25.07.01) Appendix Information 9

Clause	Requirement - Test	Result - Remark	Verdict
		for the test.	
	b) The force was released when		P
	(1) the maximum forces applied	Arrange the test as required. The Maximum force is achieved when the force applied crushing the cell from wide side.	P
	(2) an abrupt voltage drop of one-third of the original voltage has been obtained		N/A
	(3) There was 10% deformation of battery height		N/A
	c) A cylindrical or prismatic cell was crushed with its longitudinal axis parallel to the flat surfaces of the crushing apparatus.		P
	A second set of prismatic cells was tested, rotated 90 degrees around their longitudinal axis compared to the first set.		N/A
	Ambient temperature when testing	Ambient temperature 50°C and -5°C respectively.	P
	Results: no fire, no explosion.	No fire, no explosion.	P
3.(6)	Low pressure		P
	Fully charged cells are placed in a vacuum chamber whose internal pressure was gradually reduced to a pressure equal to or less than 1 1.6 kPa and held at that value for 6 hours.	Arrange the test as required.	P
	Results: no fire, no explosion, no leakage	No fire, no explosion, no leakage	P
3.(7)	Overcharge		P
	A discharged cell was charged from a power supply of 10 V, at a charging current I _{rec} recommended by the manufacturer for 2.5 C ₅ /I _{rec} hours or until it reach the test voltage.	Arrange the test as required. Each 5pcs cells overcharged at ambient temperature 50°C and -5°C respectively during the test	P
	Ambient temperature when testing	Ambient temperature 50°C and -5°C respectively.	P
	Results: no fire, no explosion.	No fire, no explosion.	P
3.(8)	Forced discharge		P
	Discharged cells intended for use in multi-cell applications, were subjected to a reverse charge at 1.0 It (A) for 90 minutes.	Arrange the test as required. Each 5pcs cells overcharged at ambient temperature 50°C and	P

METI Ordinance of Technical Requirements (H25.07.01) Appendix Information 9

Clause	Requirement - Test	Result - Remark	Verdict
		-5°C respectively during the test.	
	Ambient temperature when testing	Ambient temperature 50°C and -5°C respectively.	P
	Results: no fire, no explosion	No fire, no explosion	P
3.(9)	Cell protection against a high charging rate		P
	Discharged cells were charged at three times the charging current recommended by the manufacturer until	Arrange the test as required	P
	the cells was fully charged, or		N/A
	A protective devices in the equipment or battery cut off the charge current before the cell became fully charged.	Arrange the test as required. Each 5pcs cells overcharged at ambient temperature 50°C and -5°C respectively during the test.	P
	Ambient temperature when testing	Ambient temperature 50°C and -5°C respectively.	P
	Results: no fire, no explosion	No fire, no explosion	P
3.(10)	Forced internal short circuit of cells		P
	Pressed the winding core of charged cell (except when electrolyte is not liquid) by pressing jig under condition that nickel peace was inserted.	Arrange the test as required. Each 5pcs cells overcharged at ambient temperature 50°C and -5°C respectively during the test.	N/A
	Inserted between the positive active material and negative active material		P
	Inserted between the uncoated current collector of positive electrode and the active material coated negative active electrode	Arrange the test as required	P
	Test was stopped when voltage drop of over 50 mV was obtained, or		N/A
	Stopped when the pressure reached 800 N (for prismatic cells, 400N).	800N	P
	Ambient temperature when testing	Ambient temperature 50°C and -5°C respectively.	P
	Number of test sample	Each 10pcs cells overcharged at ambient temperature 50°C and -5°C respectively during the test.	P

METI Ordinance of Technical Requirements (H25.07.01) Appendix Information 9

Clause	Requirement - Test	Result - Remark	Verdict
	Results: no fire	No fire	P
3.(11)	Function of the overvoltage protection of batteries		P
	The cell block in the battery shall not exceed the upper limited charging voltage at 20 ±5°C ambient temperature.		P
	a) For batteries made of a one cell block, the voltage applied to the cell block during charging shall be measured		N/A
	b) For batteries consisting of a series of two pieces or more of cell blocks, it shall be charged while measuring the voltage of each cell block and at the same time, one cell block shall forcibly be discharged and the voltages of the other cell blocks shall gradually be measured	Arrange the test as required on the cell. The max. voltage measured are not exceed the limit.	P
	c) For batteries consisting of a series of connection of two pieces or more of cell blocks, a voltage exceeding the upper limited charging voltage specified in Annex Table 1-2 shall be applied to the cell block while measuring the voltage of each cell block. When the charging stops, the voltage shall be measured		N/A
3.(12)	Free fall of appliance		N/A
	The charged battery shall be installed to be used, and shall be dropped once a concrete floor or iron plate in a direction considered to most likely affect the battery in a negative manner.	Arrange the test as required	N/A
	An equivalent load shall be applied to the battery		N/A
	Kind of equipment		N/A
	Weight of appliance		N/A
	Applicable standard		N/A
	Height in drop testing		N/A
	Results: no short-circuiting		N/A
4	Labeling		P
	Labeling shall be provided as specified in Annex Table 2.	See marking	P
Remarks:	Remarks 1. ItA shall be expressed in the following formula [see IEC 61434 (1996)]: ItA = MPC-RTL3000Ah/1 h. 2. Supporting documents complying with the procedure specified in JIS C 8714 (2007), Supplement B shall be stored. 3. If an upper limited charging voltage having a value other than listed in Table 2 is newly used, one shall store supporting documents regarding		P

METI Ordinance of Technical Requirements (H25.07.01) Appendix Information 9

Clause	Requirement - Test	Result - Remark	Verdict
	specified in JIS C 8714 (2007), Supplement B, and use said value as the upper limited charging voltage. 4. When a highest or a lowest test temperature having a value other than listed in Table 2 is newly used, supporting documents regarding temperature changes shall be stored complying with said procedure and said value can be stored as the highest or lowest test temperature according to JIS C 8714 (2007), Supplement B, "Procedure of the decision of new charging condition and the adoption of new model."		
Supplementary rules			P
[Date of enforcement]			P
	Article 1 This ministerial ordinance will come into effect on the date of enforcement (November 20, 2008) of the Law for Revising Part of the Electrical Appliance and Material Safety Law (Law No. 116 of 2007).		P
[Transitory measures]			P
	Article 2 Regulations (11) and (12) of Attached Table 9-3 of the Ministerial Ordinance for Determining Technical Standards for Electrical Appliances revised according to said ministerial ordinance will not be applied for three years after the date this ministerial ordinance came into effect.		P
	For three years after the date of enforcement of this ministerial ordinance, Annex Tables 1- 1 and 1-2 of Attached Table 9 of the Ministerial Ordinance for Determining Technical Standards for Electrical Appliances revised according to said ministerial ordinance may be applied under the test conditions specified in Attached Tables 1 and 2 in the Supplementary Rules. Provided that, this shall not apply to (1), (4), or (5) of Attached Table 9-3 regarding Lithium Ion Secondary Cells and Batteries for Portable Electronic Applications and Others.		P

2-1	TABLE: Continuous Low Rate Charge Test				P
Sample no.	Recommended charging voltage Vc (Vdc)	Recommended charging current Irec (A)	OCV before test (Vdc)	Results	
Cell #1	5	1.1	5.089	P	
Cell #2	5	1.1	5.089	P	
Cell #3	5	1.1	5.092	P	
Cell #4	5	1.1	5.090	P	
Cell #5	5	1.1	5.093	P	
Supplementary information: - No fire or explosion - No leakage Note(s): Test time is 28 days.					

2-2	TABLE: Conditions for vibration test				P
Sample no.	OCV before test (Vdc)	OCV after test (Vdc)	Vibration time (minute)	Visual examination result	
For cells:					
Cell #6	5.085	5.090	90*3	No fire, no explosion, no leakage	
Cell #7	5.083	5.087	90*3		
Cell #8	5.083	5.088	90*3		
Cell #9	5.084	5.086	90*3		
Cell #10	5.083	5.087	90*3		
For batteries:					
Battery #1	5.068	5.076	90*3	No fire, no explosion, no leakage	
Battery #2	5.066	5.069	90*3		
Battery #3	5.070	5.071	90*3		
Battery #4	5.066	5.068	90*3		
Battery #5	5.069	5.065	90*3		
Note(s): 1. The vibration is applied in each of three mutually perpendicular directions. 2. Rest cell or batteries for 1 h, then make a visual inspection.					

2-3	TABLE: Moulded case stress at high ambient temperature			P
Sample No.	OCV at Start of Test, Vdc	Temperature(C)	Result	
Battery- 30	5.031	70 C ± 2 C	No physical distortion of the battery case resulting in exposure of internal components.	
Battery- 31	5.033	70 C ± 2 C		
Battery- 32	5.033	70 C ± 2 C		
Note(s): Test time is 7 hours.				

2-4	TABLE: Temperature cycling			P
Sample No.	OCV at Start of Test, Vdc	Temperature(C)	Result	
Cells:				
Cell- 11	5.07	(-20 C, +75 C)	No fire, no explosion, no leakage.	
Cell- 12	5.08	(-20 C, +75 C)		
Cell- 13	5.07	(-20 C, +75 C)		
Cell- 14	5.08	(-20 C, +75 C)		
Cell- 15	5.09	(-20 C, +75 C)		
Batteries				
Battery- 06	5.076	(-20 C, +75 C)	No fire, no explosion, no leakage.	
Battery- 07	5.069	(-20 C, +75 C)		
Battery- 08	5.071	(-20 C, +75 C)		
Battery- 09	5.068	(-20 C, +75 C)		
Battery- 10	5.065	(-20 C, +75 C)		
Note(s):				

3-1	TABLE: External short-circuit (cell)					P
Sample no.	Ambient T (C)	OCV before test (Vdc)	Resistance of circuit (m)	Maximum case temperature (C)	Results	
Samples charged at charging temperature upper limit (45°C)						
Cell #16	55.1	5.08	85.9	97.3	P	
Cell #17	55.0	5.06	88.4	96.5	P	

Cell #18	55.2	5.08	86.3	97.5	P
Cell #19	55.0	5.07	88.2	97.4	P
Cell #20	55.1	5.07	86.7	98.4	P
Samples charged at charging temperature lower limit (-5°C)					
Cell #21	55.0	5.07	83.2	100.6	P
Cell #22	55.1	5.07	86.7	101.8	P
Cell #23	55.3	5.07	89.5	98.9	P
Cell #24	55.1	5.08	92.1	97.6	P
Cell #25	55.0	5.08	93.2	104.4	P
Supplementary information: - No fire or explosion					

3-2	TABLE: External short-circuit (battery)					P
Sample no.	Ambient T (C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature (C)	Component single fault condition	Results
Samples charged at charging temperature upper limit (45°C)						
Battery #11	23.2	5.021	87.7	26.0	--	P
Battery #12	23.1	5.021	88.2	26.2	--	P
Battery #13	23.3	5.022	90.4	27.4	--	P
Battery #14	23.0	5.020	91.5	25.4	--	P
Battery #15	23.2	5.023	89.3	26.7	--	P
Samples charged at charging temperature lower limit (-5°C)						
Battery #16	23.5	5.052	87.2	26.2	--	P
Battery #17	23.4	5.056	88.3	26.0	--	P
Battery #18	23.1	5.049	91.1	25.5	--	P
Battery #19	23.3	5.051	90.2	25.4	--	P
Battery #20	23.2	5.051	87.6	26.2	--	P
Supplementary information: - No fire or explosion						

3-2	TABLE: Free fall			P
Sample No.	OCV at start of test, Vdc	Drop height (m)	Result	
Cells				

Cell#26	5.028	2.4	No fire, no explosion.
Cell#27	5.031	2.4	No fire, no explosion.
Cell#28	5.026	2.4	No fire, no explosion.
Batteries			
Battery#21	5.056	2.4	No fire, no explosion.
Battery#22	5.049	2.4	No fire, no explosion.
Battery#23	5.051	2.4	No fire, no explosion.
Note (s): Each sample dropped for 3 times.			

3-3	TABLE: Mechanical shock (crash hazard)			P
Sample No.	OCV at start of test, Vdc		Result	
Cells				
Cell#29	5.028		No fire, no explosion, no leakage.	
Cell#30	5.031			
Cell#31	5.026			
Cell#32	5.029			
Cell#33	5.033			
Batteries				
Battery#24	5.011		No fire, no explosion, no leakage.	
Battery#25	5.011			
Battery#26	5.020			
Battery#27	5.010			
Battery#28	5.013			
Note (s):				

3-4	TABLE: Thermal abuse				P
Sample No.	OCV at start of test, Vdc	Ambient temperature, (C)	Temperature raised at a rate(C/min)	Result	
Samples charged at charging temperature of -5C					
Cell#34	5.028	130±2	5±2	No fire, no	

				explosion
Cell#35	5.031	130±2	5±2	No fire, no explosion
Cell#36	5.026	130±2	5±2	No fire, no explosion
Cell#37	5.029	130±2	5±2	No fire, no explosion
Cell#38	5.033	130±2	5±2	No fire, no explosion
Samples charged at charging temperature of 45C				
Cell#39	5.080	130±2	5±2	No fire, no explosion
Cell#40	5.077	130±2	5±2	No fire, no explosion
Cell#41	5.081	130±2	5±2	No fire, no explosion
Cell#42	5.075	130±2	5±2	No fire, no explosion
Cell#43	5.078	130±2	5±2	No fire, no explosion

3-5 TABLE: Crush (cells)				P
Sample no.	OCV before test (Vdc)	Width of cell before crush, (mm)	Width of cell after crush, (mm)	Results
Samples charged at charging temperature upper limit (45°C)				
A prismatic cell was crushed with its longitudinal axis parallel to the flat surfaces of the crushing apparatus				
Cell #44	5.028	20.1	--	P
Cell #45	5.031	20.0	--	P
Cell #46	5.026	20.1	--	P
Cell #47	5.029	20.0	--	P
Cell #48	5.033	20.0	--	P
A second set of prismatic cells was tested, rotated 90 degrees around their longitudinal axis compared to the first set.				
Cell #49	5.026	32.0	--	P
Cell #50	5.029	32.1	--	P
Cell #51	5.031	32.0	--	P
Cell #52	5.026	32.1	--	P

Cell #53	5.091	32.1	--	P
Samples charged at charging temperature lower limit (-5°C)				
A prismatic cell was crushed with its longitudinal axis parallel to the flat surfaces of the crushing apparatus				
Cell #54	5.031	18.1	--	P
Cell #55	5.026	18.1	--	P
Cell #56	5.091	18.2	--	P
Cell #57	5.031	18.2	--	P
Cell #58	5.026	18.2	--	P
A second set of prismatic cells was tested, rotated 90 degrees around their longitudinal axis compared to the first set.				
Cell #59	5.029	32.0	--	P
Cell #60	5.031	32.0	--	P
Cell #61	5.026	32.0	--	P
Cell #62	5.029	32.1	--	P
Cell #63	5.031	32.0	--	P
Supplementary information: - No fire or explosion				

3-6	TABLE: Low pressure			P
Sample No.	OCV at start of test, Vdc	Pressure	Result	
Cell #64	5.077	≤ 11.6KPa	No fire, no explosion, no leakage.	
Cell #65	5.081	≤ 11.6KPa	No fire, no explosion, no leakage.	
Cell #66	5.075	≤ 11.6KPa	No fire, no explosion, no leakage.	
Note (s): Test time is 6 hours.				

3-7	TABLE:OVERCHARGE				P
Sample No.	OCV at start of test, Vdc	Maximum Charging Voltage, Vdc	Maximum chargingcurrent (A)	Total time of charging (h)	Result
Test ambient temperature: -5C					
Cell #67	5.028	5.080	2.4	2.5	No fire, no explosion.
Cell #68	5.031	5.077	2.4	2.5	No fire, no explosion.
Cell #69	5.026	5.081	2.4	2.5	No fire, no

					explosion.
Cell #70	5.029	5.075	2.4	2.5	No fire, no explosion.
Cell #71	5.033	5.078	2.4	2.5	No fire, no explosion.
Test ambient temperature: 45C					
Cell #72	5.080	5.025	2.4	2.5	No fire, no explosion.
Cell #73	5.077	5.033	2.4	2.5	No fire, no explosion.
Cell #74	5.081	5.022	2.4	2.5	No fire, no explosion.
Cell #75	5.075	5.027	2.4	2.5	No fire, no explosion.
Cell #76	5.078	5.031	2.4	2.5	No fire, no explosion.
Note (s):					

3-8		TABLE: Forced discharge				P
Sample No.	Before reverse charge, Vdc	OCV after Test, Vdc	Reverse Charge current 1 It A	Total time of charging (h)	Result	
Test ambient temperature: -5C						
Cell #77	5.0	3.7	2.4	1.5	No fire, no explosion.	
Cell #78	5.0	3.7	2.4	1.5		
Cell #79	5.0	3.7	2.4	1.5		
Cell #80	5.0	3.7	2.4	1.5		
Cell #81	5.0	3.7	2.4	1.5		
Test ambient temperature: 45C						
Cell #82	5.0	3.7	2.4	1.5	No fire, no explosion.	
Cell #83	5.0	3.7	2.4	1.5		
Cell #84	5.0	3.7	2.4	1.5		
Cell #85	5.0	3.7	2.4	1.5		
Cell #86	5.0	3.7	2.4	1.5		
Note (s):						

3-9		TABLE: Cell protection against a high charging rate (lithium systems only)			P
Sample No.	OCV at start of Test, Vdc	Charged current (A)	Maximum charging voltage, Vdc	Result	
Test ambient temperature: -5C					
Cell #87	3.7	2.4	5.0	No fire, no explosion.	
Cell #88	3.7	2.4	5.0	No fire, no explosion.	
Cell #89	3.7	2.4	5.0	No fire, no explosion.	
Cell #90	3.7	2.4	5.0	No fire, no explosion.	
Cell #91	3.7	2.4	5.0	No fire, no explosion.	
Test ambient temperature: 45C					
Cell #92	3.7	2.4	5.0	No fire, no explosion.	
Cell #93	3.7	2.4	5.0	No fire, no explosion.	
Cell #94	3.7	2.4	5.0	No fire, no explosion.	
Cell #95	3.7	2.4	5.0	No fire, no explosion.	
Cell #96	3.7	2.4	5.0	No fire, no explosion.	
Note (s):					

3-10		TABLE: Forced internal short circuit of cells			P
Sample No.	Chamber ambient, (C)	OCV at start of Test, Vdc	Particle location	Maximum applied pressure, (N)	Result
Test ambient temperature: -5C					
Cell #97	-5	5.018	1	800	No fire, no explosion.
Cell #98	-5	5.013	1	800	
Cell #99	-5	5.020	1	800	
Cell #100	-5	5.015	1	800	
Cell #101	-5	5.019	1	800	
Test ambient temperature: 45C					
Cell #102	45	5.022	1	800	No fire, no explosion.
Cell #103	45	5.024	1	800	
Cell #104	45	5.015	1	800	
Cell #105	45	5.023	1	800	

Cell #106	45	5.019	1	800	
Note (s):					

3-11	TABLE: Function of overcharge protection of batteries				P
Sample No.	OCV at start of test, Vdc	Maximum Cell Voltage, Vdc	Charging Current, (A)	Result	
Battery#29	5.098	5.5	2.4	Maximum Battery Voltage below 8.4V	
Note (s): The overcharge protection function was OK.					

3-12	TABLE: Free fall of appliances				P
Sample No.	OCV at start of test, Vdc	OCV at after of test, Vdc	Drop height (m)	Result	
Battery#21	5.052	5.021	4.0	No external short circuit inside of the battery, no internal short circuit in cells.	
Battery#22	5.056	5.021	4.0		
Battery#23	5.049	5.022	4.0		
Note (s):					
1. Each sample dropped for 3 times					

Appendix I: Photographs of the EUT

Photo 1

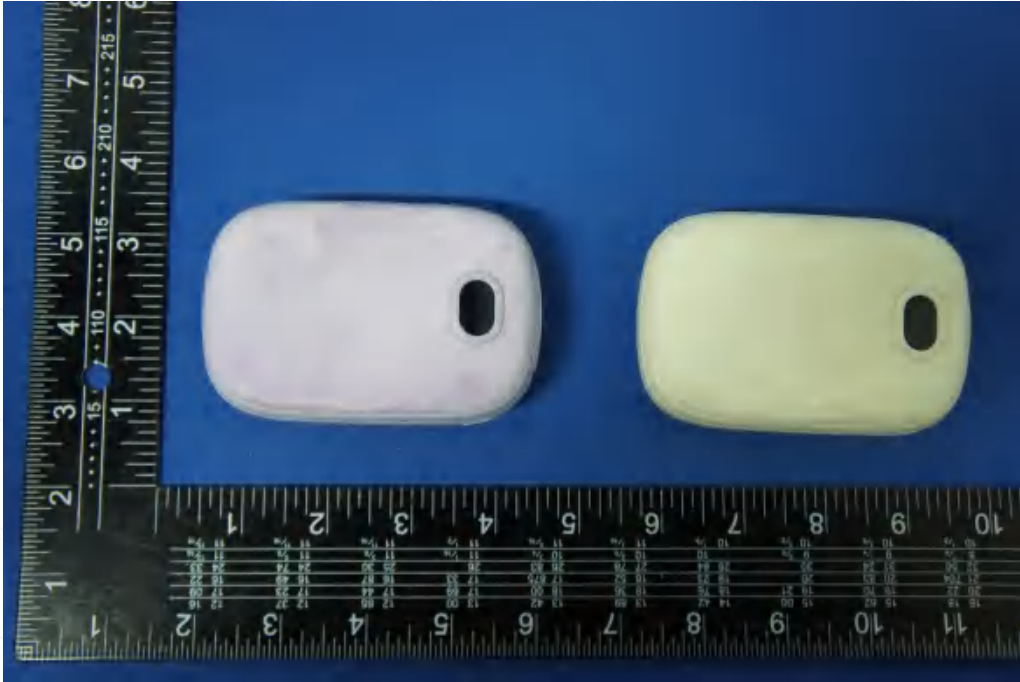


Photo 2



Photo 3



Photo 4



Photo 5



Photo 6

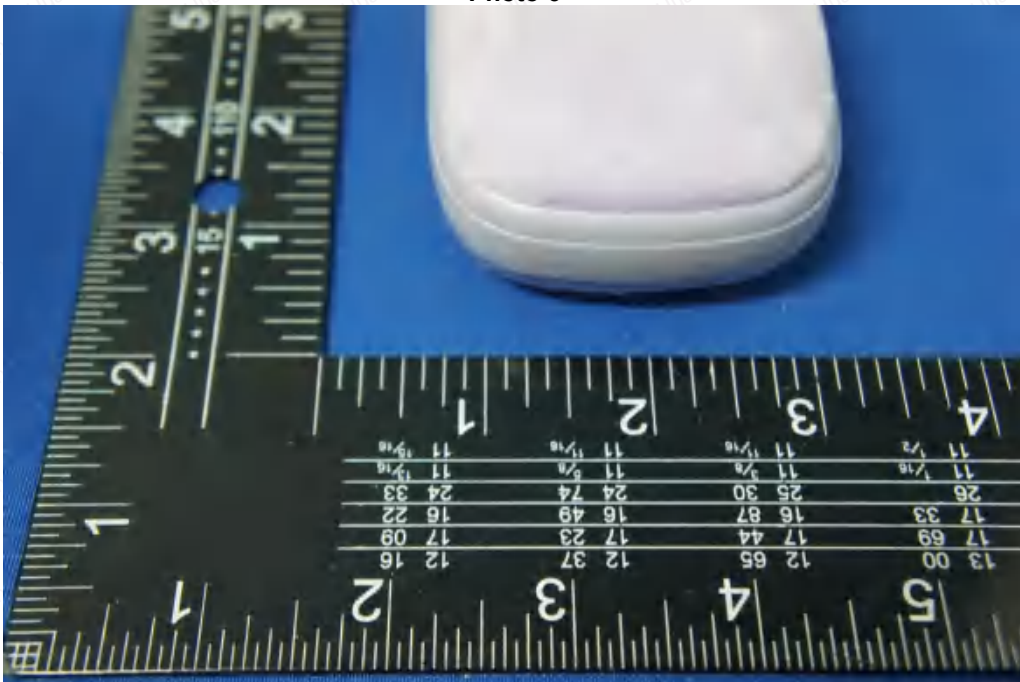


Photo 7

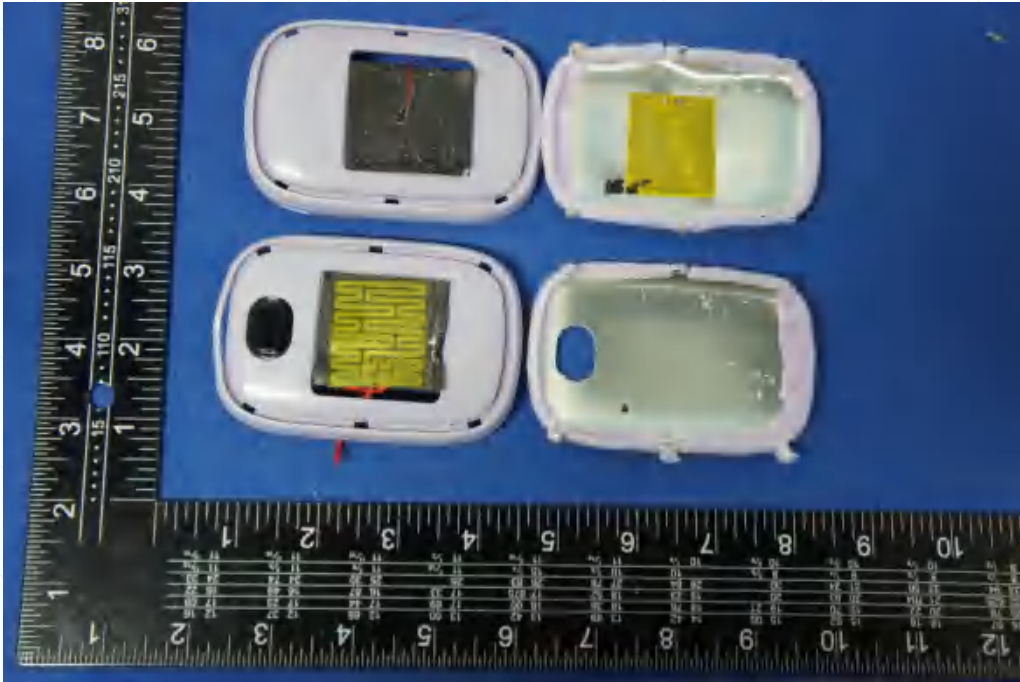


Photo 8



Photo 9

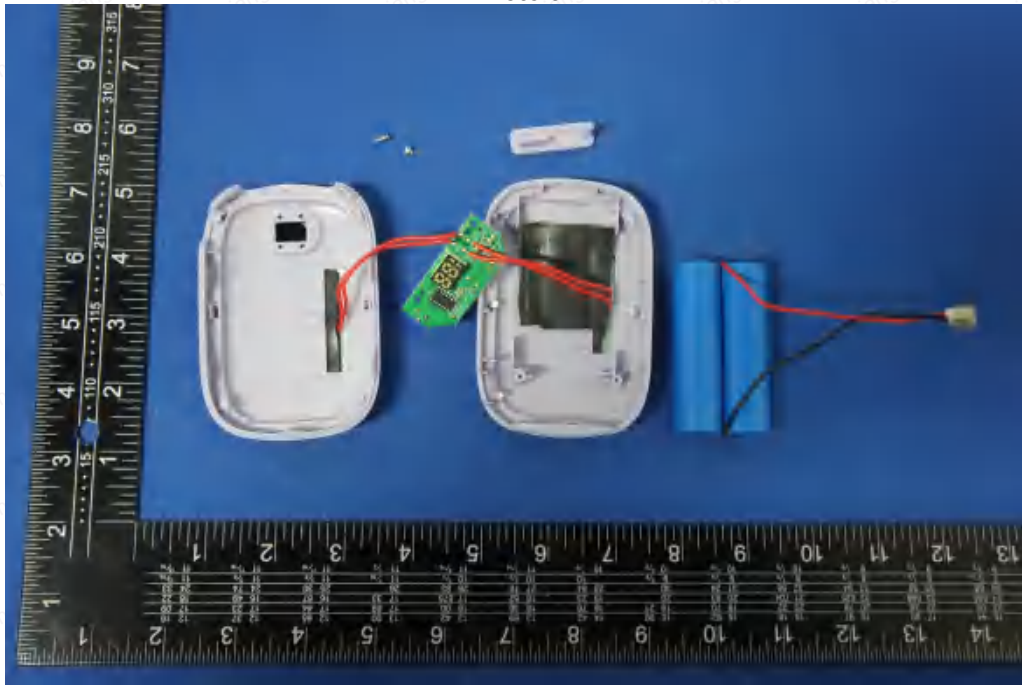


Photo 10

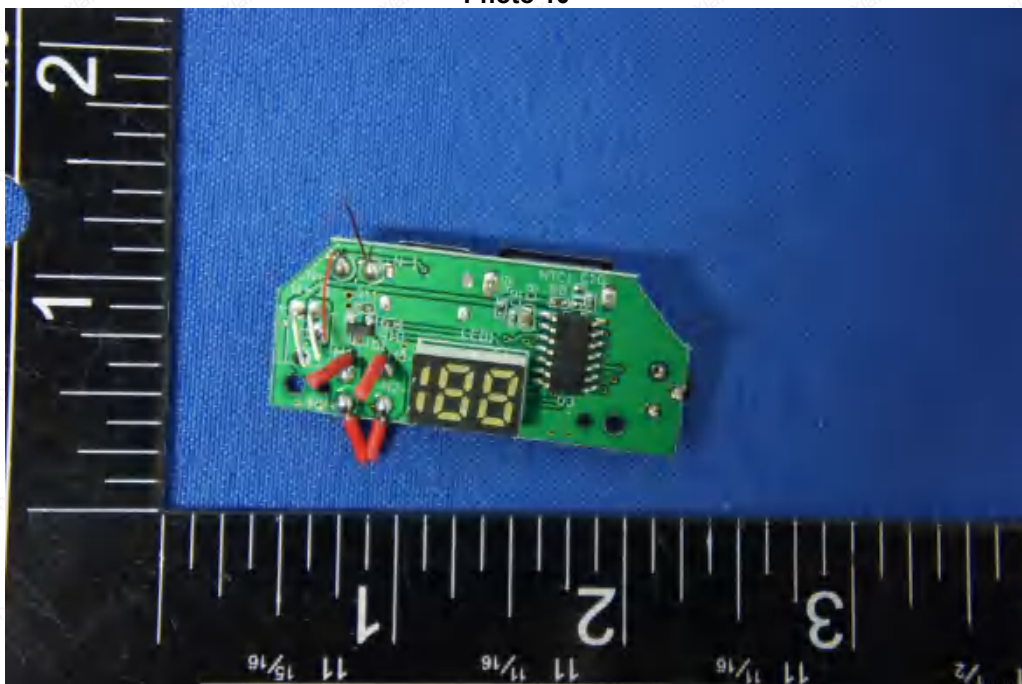
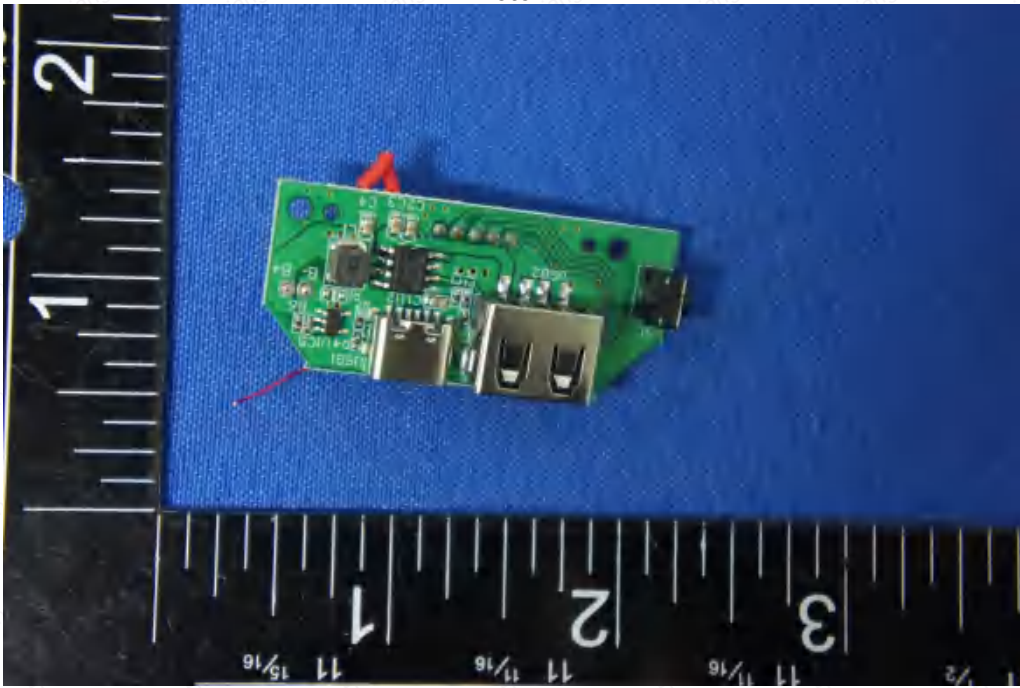


Photo 11



※※※※※ END OF REPORT ※※※※※