



UN38.3 试验概要

UN38.3 Test Summary



811900800330830

单位信息 Company information

委托单位 Consignor	三洋能源(苏州)有限公司 SANYO ENERGY(SUZHOU) CO., LTD. 苏州市吴中区胥口镇孙武路 86 号 No.86 Sunwu Road,Xukou,Wuzhong District,Suzhou 0512-66210838-3935 chenluxiao@cn.panasonic.com https://panasonic.cn/
生产单位 Manufacturer	三洋能源(苏州)有限公司 SANYO ENERGY(SUZHOU) CO., LTD. 苏州市吴中区胥口镇孙武路 86 号 No.86 Sunwu Road,Xukou,Wuzhong District,Suzhou 0512-66210838-3935 chenluxiao@cn.panasonic.com https://panasonic.cn/
测试单位 Test lab	三洋能源(苏州)有限公司 SANYO ENERGY(SUZHOU) CO., LTD. 苏州市吴中区胥口镇孙武路 86 号 No.86 Sunwu Road,Xukou,Wuzhong District,Suzhou 0512-66210838-3935 chenluxiao@cn.panasonic.com https://panasonic.cn/

电池信息 Battery information

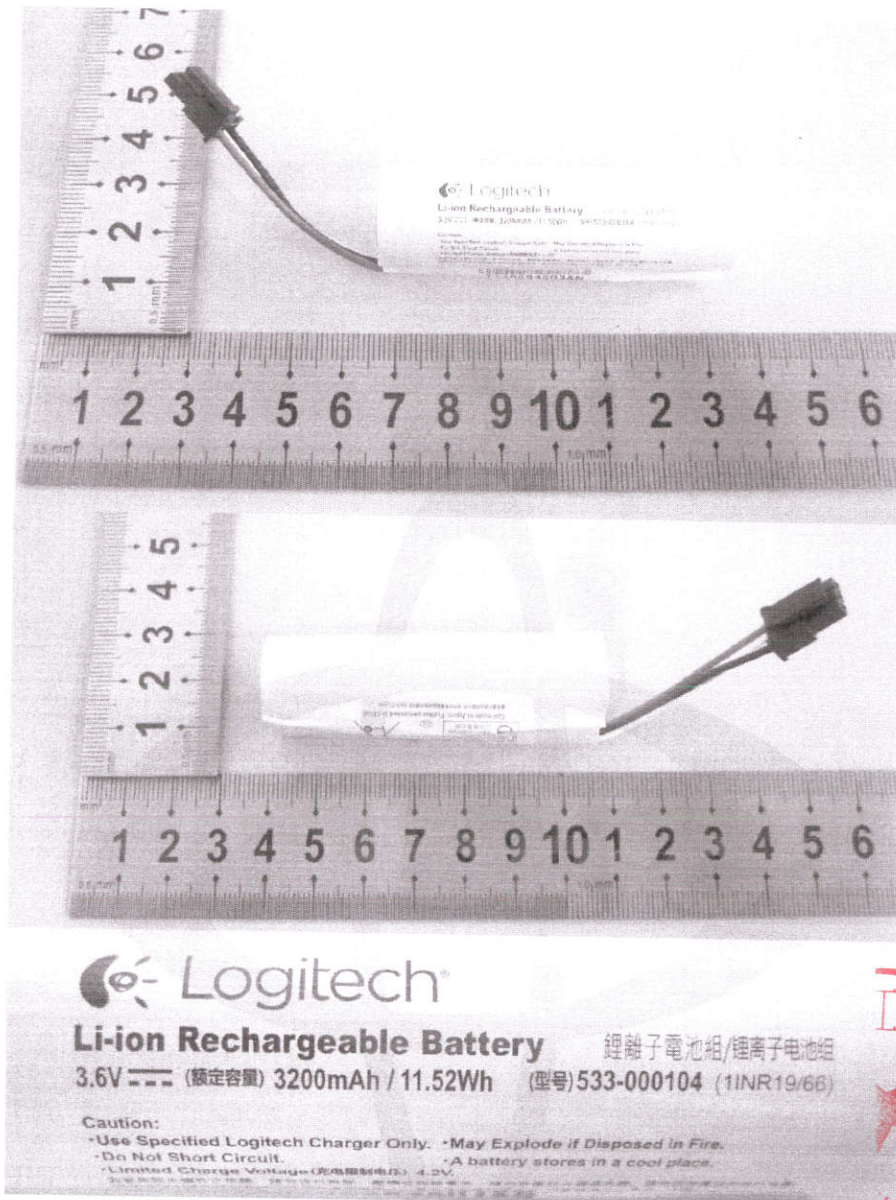
名称 Name	锂电池组	品牌 Brand	/
型号 Type	533-000104 (11NR19/66)	原始测试型号 Original tested type	1NCR18650-1-T1021
标称电压(V) Nominal voltage	3.6	容量/能量 Capacity/energy	11.52Wh
描述 Description	可充电锂离子单电芯电池 Rechargeable Li-ion single cell battery	锂含量(g) Li content	/
质量(kg) Mass	0.0469	外观 Appearance	白色塑料薄膜外壳 white plastics film shell

测试信息 Test information

原报告编号 Original test report No.	E1826380	测试报告日期 Date of test report	2018-07-04
测试标准 Test standard	联合国《关于危险货物运输的建议书 试验和标准手册》第 38.3 章 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria 38.3 ST/SG/AC.10/11/Rev.5/Amend.1		
T.1 高度模拟 Altitude simulation	合格 Passed	T.2 温度测试 Thermal test	合格 Passed
T.3 振动测试 Vibration	合格 Passed	T.4 冲击测试 Shock	合格 Passed
T.5 外部短路 External short circuit	合格 Passed	T.6 挤压 Crush	合格 Passed
T.7 过度充电 Overcharge	合格 Passed	T.8 强制放电 Forced discharge	合格 Passed
38.3.3 (f)	/	38.3.3 (g)	/



样品图片 Sample Picture



结论 Conclusion	测试样品符合联合国《关于危险货物运输的建议书试验和标准手册》ST/SG/AC.10/11/Rev.5/Amend.138.3 标准要求。The tested samples meet the requirements of test items of the UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5/Amend.1 38.3		
备注 Remark	/		
签名 Signature 职务 Title	王寅 副总工程师 Vice chief engineer	签发日期 Issued date	2019-12-04

-验证码:725281-

报告结束

UN Test Report

Name of Sample	Lithium Ion Battery 1NCR18650-1-T1406
Consignor	SANYO Energy(Suzhou) CO.,LTD
Manufacturer	SANYO Energy(Suzhou) CO.,LTD
Test Method	United Nations "Recomenndations on the TRANSPORT OF DANGEROUS GOODS"
Criterion	United Nations "Recomenndations on the TRANSPORT OF DANGEROUS GOODS"
Appearance	Black rectangular parallelepiped
Test Date	T1-T5 2010/11/24-2010/12/01 T6 2013/03/06 T7 2012/12/12-2012/12/20 T8 2013/03/12-2013/03/19
Test Items	Altitude simulation, Thermal test, Vibration test, Shock test, External short circuit, Overcharged
Conclusion	The sample has passed the items of UN38.3.
Remark	Certification by Original Cell Model Certification by Similar Battery Model:1NCR18650-1-T1021 Ratio of (1NCR18650-1-T1406)/(1NCR18650-1-T1021) [Wh rating ratio]: 100%, [Voltage ratio]: 100%
Consignor Address	No.86 Sunwu Road, Xukou, Wuzhong District, Suzhou City, Jiangsu Province 215164, China

Sanyo Energy(Suzou) Co.,Ltd.

A.Kawasumi

Approval

Jenny Hu

Check

Candy Tang

Writing

CONFIDENTIAL

Date: July 04, 2018

B: Checklist for Judging New Type Battery or not

Confirmation of presence of change in "The element which is given influence"

(Change ⇒ ○、No change ⇒ -)

When there is no change in all items, it is NOT considered to be a New Type Battery.

Model which UN regulation test has completed	1NCR18650-1-T1021
Target model which is not a new type	1NCR18650-1-T1406

Test Item (Function)	The element which is given influence	Presence of change
T1: Altitude Simulation (Decompression load)	<ul style="list-style-type: none"> • Crimped part, Gasket (Cell) • Gas Release Vent, Cell Case (Cell) • Pack (Plastic) Case • Holding Member (Insulator, Insulation Tape, Both Sides Tape) • Coating materials 	-
T2: Thermal Shock (Repetition of high temp. and low temp.)	<ul style="list-style-type: none"> • Crimped part, Gasket (Cell) • Gas Release Vent, Cell Case (Cell) • Finished state of Wound Electrodes (Cell) • Pack (Plastic) Case • Holding Member (Insulator, Insulation Tape, Both Sides Tape) • Coating materials 	-
T3: Vibration (Vibration load)	<ul style="list-style-type: none"> • Finished state of Wound Electrodes (Cell) • Electric wiring member • Electronic Parts on a circuit board • Cell Holding Member (Adhesive, Both Sides Tape, Lib of Plastic Case) 	-
T4: Shock (Shock load)	<ul style="list-style-type: none"> • Wiring Member • Electronic Parts on a circuit board • Cell Holding Member (Adhesive, Both Sides Tape, Lib of Plastic Case) • Finished state of Wound Electrodes (Cell) 	-
T5: External Short Circuit (Short current)	<ul style="list-style-type: none"> • Over-voltage Protection • Current Control Device • Safety Device of cell (Cell) • Lead Tab 	-
T6 (Cell): Impact/Crush	<ul style="list-style-type: none"> • Separator (Cell) • Insulation State in a cell (Cell) 	-
T7 (Pack): Overcharge (Charge load)	<ul style="list-style-type: none"> • Overcharge Protection • Thermal Device • Safety Device of cell (Cell) 	-
T8 (Cell): Forced Discharge	• Finished state of Wound Electrodes	- / NA *1
Wh of cell	Is Wh difference of cell less than 20%?	-
Voltage of cell	Is increase of cell voltage less than 20%?	-
Judgment result	New Type or not	New <u>(Not new)</u>

*1 Judgement has not applied if first checking was run under the UN test manual ver. 5 or former.

Sanyo Energy (Suzou) Co., Ltd.

A. Kawasaki

approval

Lenny Hu

Check

Candy Tang

Writing

Certificate of UN test for Lithium ion single cell battery

Panasonic Energy (Shuzhou) Co., Ltd.

UN評価合格

三洋電機株式会社

T.Kura

T.Kura Manager

Customer Model : 533-000104
 Global Code : BJ-A310037BA
 Product Name : 1NCR18650-1-T1406

We declare that this battery passed UN test.

Manual of Tests and Criteria (38.3 Lithium batteries)		Test results	Note	Number of test batteries/cells	
No.	Test item				
T 1	Altitude simulation	Pass		First cycle fully charged 10 cells	
T 2	Thermal test	Pass			
T 3	Vibration	Pass			
T 4	Shock	Pass			
T 5	External short circuit	Pass			
T 6	Crush	Pass		First cycle 50% charged 5 cells	
T 7	Overcharge	Pass		First cycle, Fully charged 4 batteries	After 50 cycles, Fully charged 4 batteries
T 8	Forced discharge	Pass		First cycle, fully discharged 10 cells	After 50 cycles, fully discharged 10 cells

*The test data may contain additional test result other than above table.

Lithium ion battery Specification

Item	Nominal value	Note
Watt-hour rating	11.52 Wh	
Nominal voltage	3.6 V	
Lithium equivalent content	0.96 g	

Above test procedures are compliant to the following manual.

(Manual of Tests and Criteria ST/AC.10/11, PartIII, sub-section 38.3, Rev.5A1 for cell, Rev.5A1 for battery)

Certificate of Package Drop Test for Lithium ion single cell battery

Panasonic Energy (Shuzhou) Co., Ltd.

UN評価合格

三洋電機株式会社



T.Kura Manager

Customer Model : 533-000104
Global Code : BJ-A310037BA
Product Name : 1NCR18650-1-T1406

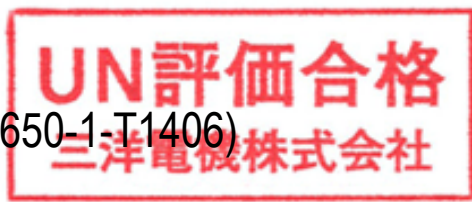
We declare that this battery passed UN test.

Test item	Test results	Note
Package Drop Test	Pass	The package shall be dropped from 1.2m high on to a concrete surface (flat and horizontal) with five orientations (drop once a sample) ;

Lithium ion battery Specification

Item	Nominal value	Note
Watt-hour rating	11.52 Wh	
Nominal voltage	3.6 V	
Lithium equivalent content	0.96 g	

Above test procedures are compliant to the following regulation.
(Model Regulations ST/SG/AC.10/1/Rev.19, Special Provision188)



UN Test Data (Model:1NCR18650-1-T1406)

- 1.Test Item: Altitude simulation (T1)
2.Test Purpose: This test simulates air transport under low-pressure conditions.
3.Test Procedure:

Test cells and batteries shall be stored at a pressure of 11.6kPa or less for at least six hours at ambient temperature(20±5°C).

SANYO Internal Procedure:

As above.

4.Test Requirements:

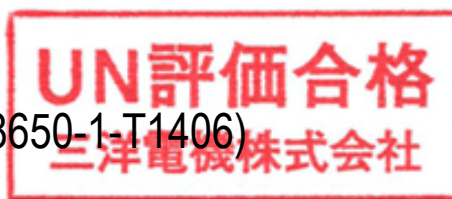
No mass loss,no leakage,no venting,no disassembly,no rupture and no fire,and the voltage retention is not less than 90%.

5.Test Date: 2013/02/13

6.Test Data

Cell No.		Mass(g)		Mass loss (%) (=<0.2%)	Voltage(V)		Voltage Retention (%)(=>90	Other event	Result	Judgement
		Before test	After test		Before test	After test				
At first cycle,in fully charged states	1	46.906	46.907	0.00	4.163	4.162	100.0	0	PASS	PASS
	2	46.895	46.894	0.00	4.163	4.162	100.0	0	PASS	
	3	46.894	46.895	0.00	4.164	4.162	100.0	0	PASS	
	4	46.933	46.934	0.00	4.163	4.162	100.0	0	PASS	
	5	46.847	46.848	0.00	4.163	4.162	100.0	0	PASS	
	6	46.900	46.901	0.00	4.163	4.161	100.0	0	PASS	
	7	46.883	46.884	0.00	4.163	4.161	100.0	0	PASS	
	8	46.893	46.895	0.00	4.163	4.162	100.0	0	PASS	
	9	46.922	46.923	0.00	4.164	4.162	100.0	0	PASS	
	10	46.916	46.917	0.00	4.164	4.162	100.0	0	PASS	

Notes: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire,
0-No leakage, no venting, no disassembly, no rupture & no fire



UN Test Data (Model:1NCR18650-1-T1406)

1.Test Item: Thermal Test (T2)

2.Test Purpose: This test assesses cell and battery seal integrity and internal electrical connections. The test is conducted using rapid and extreme temperature changes.

3.Test Procedure:

Test cells and batteries are to be stored for at least six hours at a test temperature equal to 72±2°C, followed by storage for at least six hours at a test temperature equal to -40±2°C.The maximum time interval between test temperature extremes is 30 minutes.This procedure is to be repeated 10 times, after which all test cells and batteries are to be stored for 24 hours at ambient temperature (20 ±5°C). For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12 hours.

SANYO Internal Procedure:

As above.

4.Test Requirements:

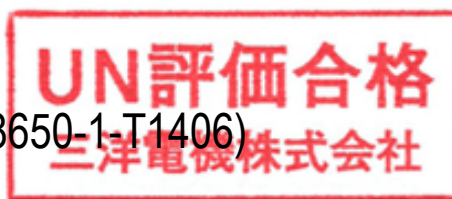
No mass loss,no leakage,no venting,no disassembly,no rupture and no fire,and the voltage retention is not less than 90%.

5.Test Date:2013/02/15- 2013/02/20

6.Test Data

Cell No.		Mass(g)		Mass loss (%) (=<0.2%)	Voltage(V)		Voltage Retention(%) (=>90%)	Other event	Result	Judgement
		Before test	After test		Before test	After test				
At first cycle,in fully charged states	1	46.907	46.901	0.01	4.162	4.104	98.6	0	PASS	PASS
	2	46.894	46.890	0.01	4.162	4.105	98.6	0	PASS	
	3	46.895	46.890	0.01	4.162	4.105	98.6	0	PASS	
	4	46.934	46.928	0.01	4.162	4.105	98.6	0	PASS	
	5	46.848	46.844	0.01	4.162	4.104	98.6	0	PASS	
	6	46.901	46.896	0.01	4.161	4.104	98.6	0	PASS	
	7	46.884	46.879	0.01	4.161	4.104	98.6	0	PASS	
	8	46.895	46.890	0.01	4.162	4.105	98.6	0	PASS	
	9	46.923	46.918	0.01	4.162	4.105	98.6	0	PASS	
	10	46.917	46.912	0.01	4.162	4.105	98.6	0	PASS	

Notes: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire,
0-No leakage, no venting, no disassembly, no rupture & no fire



UN Test Data (Model:1NCR18650-1-T1406)

- 1.Test Item: Vibration (T3)
2.Test Purpose: This test simulates vibration during transport.
3.Test Procedure:

Cells and batteries are firmly secured to the platform of the vibration machine without distorting the cells in such a manner as to faithfully transmit the vibration. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting positions of the cell. One of the directions of vibration must be perpendicular to the terminal face.

The logarithmic frequency sweep is as follows: from 7 Hz a peak acceleration of 1gn is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm(1.6 mm total excursion) and the frequency increased until a peak acceleration of 8gn occurs (approximately 50Hz). A peak acceleration of 8 gn is then maintained until the frequency is increased to 200Hz.

SANYO Internal Procedure:

As above.

4.Test Requirements:

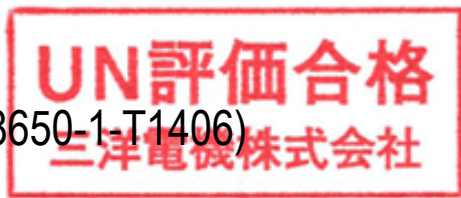
No mass loss, no leakage, no venting, no disassembly, no rupture and no fire, and the voltage retention is not less than 90%.

5.Test Date: 2013/02/21

6.Test Data

Cell No.		Mass(g)		Mass loss (%) (= $\leq 0.2\%$)	Voltage(V)		Voltage Retention(%) (= $\geq 90\%$)	Other event	Result	Judgement
		Before test	After test		Before test	After test				
At first cycle, in fully charged states	1	46.901	46.900	0.00	4.104	4.105	100.0	0	PASS	PASS
	2	46.890	46.888	0.00	4.105	4.105	100.0	0	PASS	
	3	46.890	46.890	0.00	4.105	4.105	100.0	0	PASS	
	4	46.928	46.927	0.00	4.105	4.105	100.0	0	PASS	
	5	46.844	46.843	0.00	4.104	4.105	100.0	0	PASS	
	6	46.896	46.895	0.00	4.104	4.105	100.0	0	PASS	
	7	46.879	46.878	0.00	4.104	4.105	100.0	0	PASS	
	8	46.890	46.890	0.00	4.105	4.105	100.0	0	PASS	
	9	46.918	46.918	0.00	4.105	4.105	100.0	0	PASS	
	10	46.912	46.912	0.00	4.105	4.106	100.0	0	PASS	

Notes: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire,
0-No leakage, no venting, no disassembly, no rupture & no fire



UN Test Data (Model:1NCR18650-1-T1406)

- 1.Test Item: Shock (T4)
2.Test Purpose: This test simulates possible impacts during transport.
3.Test Procedure:

Test cells and batteries shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery. Each cell or battery shall be subjected to a half-sine shock of peak acceleration of 150 g_n and pulse duration of 6 milliseconds. Each cell or battery shall be subjected to three shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicular mounting positions of the cell or battery for a total of 18 shocks.
However, large cells and large batteries shall be subjected to a half-sine shock of peak acceleration of 50 g_n and pulse duration of 11 milliseconds. Each cell or battery is subjected to three shocks in the positive direction followed by three shocks in the negative direction of each of three mutually perpendicular mounting positions of the cell for a total of 18 shocks.

SANYO Internal Procedure:
As above.

- 4.Test Requirements:
No mass loss,no leakage,no venting,no disassembly,no rupture and no fire,and the voltage retention is not less than 90%.

5.Test Date: 2013/02/26
6.Test Data

Cell No.		Mass(g)		Mass loss (%) (=<0.2%)	Voltage(V)		Voltage Retention(%) (=>90%)	Other event	Result	Judgement
		Before test	After test		Before test	After test				
At first cycle, in fully charged states	1	46.900	46.900	0.00	4.105	4.103	100.0	0	PASS	PASS
	2	46.888	46.888	0.00	4.105	4.103	100.0	0	PASS	
	3	46.890	46.888	0.00	4.105	4.104	100.0	0	PASS	
	4	46.927	46.927	0.00	4.105	4.104	100.0	0	PASS	
	5	46.843	46.842	0.00	4.105	4.103	100.0	0	PASS	
	6	46.895	46.895	0.00	4.105	4.103	100.0	0	PASS	
	7	46.878	46.878	0.00	4.105	4.103	100.0	0	PASS	
	8	46.890	46.889	0.00	4.105	4.104	100.0	0	PASS	
	9	46.918	46.918	0.00	4.105	4.103	100.0	0	PASS	
	10	46.912	46.912	0.00	4.106	4.104	100.0	0	PASS	

Notes: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire,
0-No leakage, no venting, no disassembly, no rupture & no fire



UN Test Data (Model:1NCR18650-1-T1406)

1. **Test Item:** External short circuit (T5)
2. **Test Purpose:** This test simulates an external short circuit.
3. **Test Procedure:**

The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches $55\pm2^{\circ}\text{C}$ and then the cell or battery shall be subjected to a short circuit condition with a total external resistance of less than 0.1ohm at $55\pm2^{\circ}\text{C}$. This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to $55\pm2^{\circ}\text{C}$. The cell or battery must be observed for a further six hours for the test to be concluded.

SANYO Internal Procedure:
As above.

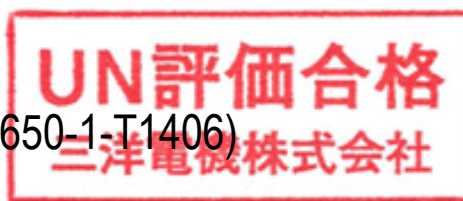
4. **Test Requirements:**
External temperature of test batteries does not exceed 170°C and there is no disassembly, no rupture and no fire within six hours after this test.

5. **Test Date:** 2013/2/27

6. **Test Data**

Cell No.		Maximum temperature ($^{\circ}\text{C}$)	Other event	Result	Judgement
At first cycle, in fully charged states	1	86.7	0	PASS	PASS
	2	72.8	0	PASS	
	3	71.8	0	PASS	
	4	76.8	0	PASS	
	5	66.1	0	PASS	
	6	84.0	0	PASS	
	7	76.7	0	PASS	
	8	65.2	0	PASS	
	9	67.3	0	PASS	
	10	65.8	0	PASS	

Notes: D-Disassembly, R-Rupture, F-Fire, 0-No disassembly, no rupture & no fire



UN Test Data (Model:1NCR18650-1-T1406)

1.Test Item: Crush (T6)

2.Test Purpose: This test simulates mechanical abuse from an crush that may result in an internal short circuit.

3.Test Procedure:

Crush (applicable to prismatic, pouch cells and cylindrical cells not more than 20 mm in diameter)

A cell or component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5 cm/s at the first point of contact. The crushing is to be continued until the first of the three options below is reached.

(a) The applied force reaches 13 kN±0.78 kN;

Example: The force shall be applied by a hydraulic ram with a 32 mm diameter piston until a pressure of 17 Mpa is reached on the hydraulic ram.

(b) The voltage of the cell drops by at least 100 mV; or

(c) The cell is deformed by 50% or more of its original thickness.

Once the maximum pressure has been obtained, the voltage drops by 100 mB or more, or the cell is deformed by at least 50% of its original thickness, the pressure shall be released.

A prismatic or pouch cell shall be crushed by applying the force to the widest side. A button/coin cell shall be crushed by applying the force on tts flat surfaces. For cylindrical cells, the crush force shall be applied perpendicular to the longitudinal axis.

Each test cell or component cell is to be subjected to one crush only. The test sample shall be observed for a further 6 h. The test shall be conducted using test cells or component cells that have not previously been subjected to other tests.

SANYO Internal Procedure:

As above.

4.Test Requirements:

External temperature of test batteries does not exceed 170°C and there is no disassembly and no fire within six hours after this test.

5.Test Date: 2013/03/06

6.Test Data:

Cell No.		Maximum Temperature(°C)	Other event	Result	Judgement
At first cycle, 50% charged states	1	24.1	0	PASS	PASS
	2	23.2	0	PASS	
	3	23.5	0	PASS	
	4	23.1	0	PASS	
	5	23.5	0	PASS	

Notes: D-Disassembly, F-Fire, 0-No disassembly & no fire

UN Test Data (Model:1NCR18650-1-T1406)

UN評価合格
三洋電機株式会社

1.Test Item:Overcharge (T7) P.9/10

2.Test Purpose: This test evaluates the ability of a rechargeable battery to withstand an overcharge condition.

3.Test Procedure:
The charge current shall be twice the manufacturer’s recommended maximum continuous charge current.
The minimum voltage of the test shall be as follows:

- (a) when the manufacturer’s recommended charge voltage is not more than 18V,the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the battery or 22V.
- (b) when the manufacturer’s recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage.

Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours.

SANYO Internal Procedure:

Min.Charge Voltage:	8.4 V
Charge Current:	3.25 A

4.Test Requirements:
There is no disassembly and no fire within seven days of the test.

5.Test Date: 2012/12/12 - 2012/12/20

6.Test Data

Battery No.		Event	Result	Judgement
At first cycle in fully charged states	1	0	PASS	PASS
	2	0	PASS	
	3	0	PASS	
	4	0	PASS	
After 50 cycles ending in fully charged states	5	0	PASS	
	6	0	PASS	
	7	0	PASS	
	8	0	PASS	

Notes: D-Disassembly, F-Fire, 0-No disassembly & no fire



UN Test Data (Model:1NCR18650-1-T1406)

- 1.Test Item:**Forced discharge (T8)
2.Test Purpose: This test evaluates the ability of a primary or a rechargeable cell to withstand a forced discharge condition.

3.Test Procedure:
Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12V D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer. The specified discharge current is to be obtained by connecting a resistive load of the appropriate size and rating in series with the test cell. Each cell shall be forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in Ampere).

SANYO Internal Procedure:
As above.

4.Test Requirements:
There is no disassembly and no fire within seven days after the test.

5.Test Date: 2013/03/12- 2013/03/19

6.Test Data

Cell No.	Maximum Temperature(°C)	Other event	Result	Judgement
At first cycle, in fully discharged states	1	89.3	0	PASS
	2	92.4	0	PASS
	3	93.8	0	PASS
	4	89.7	0	PASS
	5	92.1	0	PASS
	6	87.4	0	PASS
	7	91.0	0	PASS
	8	87.2	0	PASS
	9	91.9	0	PASS
	10	88.7	0	PASS
After 50 cycles ending, in fully discharged states	11	98.2	0	PASS
	12	98.6	0	PASS
	13	93.2	0	PASS
	14	100.2	0	PASS
	15	97.2	0	PASS
	16	93.9	0	PASS
	17	101.6	0	PASS
	18	93.4	0	PASS
	19	101.0	0	PASS
	20	98.0	0	PASS

Notes: D-Disassembly, R-Rupture, F-Fire, 0-No disassembly, no rupture & no fire



UN Test Data (Model:1NCR18650-1-T1406)

1.Test Item: Drop Test

2.Test Purpose: This test simulates the drop of the packaging during transport.

3.Test Procedure:

Number of Test Samples (Per design type, Manufacturer) and Drop Orientation For other than flat drops the centre of gravity must be vertically over the point of impact. Where more than one orientation is possible for a given drops, the orientation most likely to result in failure of the packaging must be used.

Packaging	Number of test samples	Drop orientation
Boxes of natural wood Plywood boxes Reconstituted wood boxes Fibreboard boxes Plastic boxes Steel or aluminum boxes Composite Packagings which are in the shape of a box.	Five (one for each drop)	First drop: flat on the bottom Second drop: flat on the long side Third drop: flat on the short side Fourth drop: on a long edge Fifth drop: on a corner

SANYO Internal Procedure:

Packaging: Fiberboard boxes. Number of test samples: Five(one for each drop). It may do the drop of five orientations with one sample if the packing does not have the big damage.

Drop orientation: As above.

4.Test Requirements:

A Package passes the test if it meets the following criteria:

Each package is capable of withstanding a 1.2 meter drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (or cell to cell) contact and without release of contents.

5.Test Date: 2018/07/04

6.Test Results: PASS(Drop height 1.2m)

Packaging size:
311*186*240(mm)
Packaging weight(Before) :
8.5(kg)
Packaging weight(After) :
8.5(kg)
Quantity in a packaging:
150(qty)
Mass of each cell or battery in a package:*
49.188(g)

* Remark: It maybe difference to the original type's mass in test data page in condition of extension type. Based on UN38.3 reuquirement, extension type can use original type's UN testing data because it was not considered as a new type.