

Murata Energy Device Wuxi Co., Ltd.

No.27, Changjiang Road, New District, Wuxi, Jiangsu Province, 214028 P.R.C

Phone: 86-510-8523-9120

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リチウムイオン電池認証書 (類似機種用)

Lithium-ion cell or battery(polymer) cell or battery

Certification for Similar Models

No: MDW-AVG1814

Date: 2018.01.23

1. ■単電池/□single cell ■single cell battery

□組電池/battery(pack) (セル構成/composition of cell : 1P1S)

2. 機種名/customer model name : LI-92B

Murata model name : SP87YOPN2YC

3. 顧客名/customer : OLYMPUS

4. 定格/rated

項目/item	規格値/specification	備考/remarks
公称電圧/nominal voltage	3.6V	
定格容量/rated capacity	1350mAh	
ワット時定格値(Wh) /Watt-hour rating	4.9Wh	単電池/cells ≤20Wh 組電池/batteries≤100Wh

5. 類似機種及び試験結果/Similar Model and Test Result

1) 類似機種名/Similar Model (Murata model name) : SP73ICSA1000 (3.7V 1200mAh 4.5Wh)

2) 試験結果/Test Result

国連勧告テスト結果/Test results of the UN Recommendations on the Transport of Dangerous Goods

国連勧告テスト及び判定基準 (38.3 リチウム電池)		テスト結果/ test results	備考/remarks
NO	テスト項目 test item		
T1	高度シミュレーション/Altitude simulation	OK	
T2	温度試験/Thermal test	OK	
T3	振動/Vibration	OK	
T4	衝撃/Shock	OK	
T5	外部短絡/External short circuit	OK	
T6	衝突 (Impact) /圧壊 (Crush)	OK	
T7	過充電/Overcharge	OK	single cell は対象外
T8	強制放電/Forced discharge	OK	

試験実施日/Tested Date : 2013/12/12~2014/01/05

梱包試験実施日/Tested Date for Package : 2013/07/01~2013/07/04

上記テスト結果は国連勧告試験(UN Manual of Tests and Criteria 6th, Part III, sub-section 38.3)に従い確認した結果であることを証明いたします。

We, Murata Energy Device Wuxi Co., Ltd., hereby certify that above results are confirmed in accordance with the Manual of Tests and Criteria of the UN Recommendations on the Transport of Dangerous Goods, 6th, Part III, sub-section 38.3.

3) 類似機種とのワット時定格値(Wh)、電圧比率/Ratios for Watt-hour, Voltage 類似機種に対して、ワット時定格値(Wh)の変化が20%以内、且つ電圧の増加が20%以内であることを証明します。

We certify the change of the subject model to the similar model is in Watt-hour rating of less than 20% and the increase in voltage of less than 20%.

SP87YOPN2YC/SP73ICSA1000 : ワット時定格値(Wh 比/Watt-hour Ratio=109%、

電圧比/Voltage Ratio=98%

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A : Checklist for Judging New Type Cell or not

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

(Change ⇒ ○、 No change ⇒ -)

Battery Pack Model : SP87YOPN2YC

Component Cell Model : SP873440N2S

Check item	The element which is given influence	Presence of change
Safety parts and mechanical components	Are the safety parts and mechanical components of this cell the same as those of the test completion cell?	-
Cathode material system	Is cathode material system of this cell the same as that of the test completion cell?	-
Anode material system	Is anode material system of this cell the same as that of the test completion cell?	-
Electrolyte material system	Is electrolyte material system of this cell the same as that of the test completion cell?	-
Mass of cathode material	Is mass difference of the design center of each cell concerning cathode less than 20%?	-
Mass of anode material	Is mass difference of the design center of each cell concerning anode less than 20%?	-
Mass of electrolyte	Is mass difference of the design center of each cell concerning electrolyte less than 20%?	-
Judgment result	New Type or not	Not new

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.

Battery Pack Model : SP87YOPN2YC

Test Item (Function)	The element which is given influence	Presence of change
T1 : Altitude Simulation (Decompression load)	• 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.)	• 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)	• 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)	• 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)	• Over-voltage Protection • Current Control Device • Safety Device of cell (Cell) • Lead Tab	—
T6(Cell) : Impact / Crush (Crash load)	• Separator (Cell) • Insulation State in a cell (Cell)	—
T7(Pack) : Overcharge (Charge load)	• Overcharge Protection • Thermal Device • Safety Device of cell (Cell)	—
T8(Cell) : Forced Discharge (Over discharge load)	• Finished state of Wound Electrodes (Cell)	—
Judgment result	New Type or not	Not new

国联劝告 结果 1

Test Result of UN Recommendations Part 1

机种名/Murata Model Name	SP73ICSA1000 SY6		
cell使用/Cell Model Name	SP733845A10	构成/Configuration	1P 1S
试验场所/Test Company	村田新能源(无锡)有限公司公司		
地址/Address	中国江苏省无锡市新区长江路27号	电话/Tel	86-18068308951
试验室/Test Room	MDW国联劝告试验室	试验期间/Test Dates	2013.12.12~2014.01.05
判定基准/Criterion	UN Manual of Tests and Criteria Rev5, Part III, sub-section 38.3		

试验名称/Test Name		T1: 高度模拟试验 Altitude Simulation						
番号 No.	电池状态 Conditions	试验前/Before		试验后/After		质量减少率/ Mass Loss (0.1%以下)	OCV维持率/ Residual OCV (90%以上)	现象确认/ Occurrence
		Mass(g)	OCV (V)	Mass(g)	OCV (V)			
1	初回满充电/ First cycle, fully charged	24.134	4.195	24.134	4.193	0.00%	100.0%	N
2		24.125	4.195	24.125	4.193	0.00%	100.0%	N
3		24.131	4.199	24.131	4.197	0.00%	100.0%	N
4		24.135	4.199	24.135	4.197	0.00%	100.0%	N
5		24.201	4.192	24.201	4.190	0.00%	100.0%	N
6		24.189	4.194	24.189	4.192	0.00%	100.0%	N
7		24.257	4.196	24.257	4.194	0.00%	100.0%	N
8		24.303	4.194	24.303	4.192	0.00%	100.0%	N
9		24.300	4.190	24.300	4.188	0.00%	100.0%	N
10		24.296	4.193	24.296	4.191	0.00%	100.0%	N

试验名称/Test Name		T2: 温度试验 Thermal						
番号 No.	电池状态 Conditions	试验前/Before		试验后/After		质量减少率/ Mass Loss (0.1%以下)	OCV维持率/ Residual OCV (90%以上)	现象确认/ Occurrence
		Mass(g)	OCV (V)	Mass(g)	OCV (V)			
1	初回满充电/ First cycle, fully charged	24.134	4.193	24.134	4.133	0.00%	98.6%	N
2		24.125	4.193	24.124	4.156	0.00%	99.1%	N
3		24.131	4.197	24.130	4.152	0.00%	98.9%	N
4		24.135	4.197	24.135	4.147	0.00%	98.8%	N
5		24.201	4.190	24.201	4.154	0.00%	99.1%	N
6		24.189	4.192	24.189	4.155	0.00%	99.1%	N
7		24.257	4.194	24.255	4.156	0.01%	99.1%	N
8		24.303	4.192	24.303	4.145	0.00%	98.9%	N
9		24.300	4.188	24.300	4.152	0.00%	99.1%	N
10		24.296	4.191	24.296	4.155	0.00%	99.1%	N

试验名称/Test Name		T3: 振动试验 Vibration						
番号 No.	电池状态 Conditions	试验前/Before		试验后/After		质量减少率/ Mass Loss (0.1%以下)	OCV维持率/ Residual OCV (90%以上)	现象确认/ Occurrence
		Mass(g)	OCV (V)	Mass(g)	OCV (V)			
1	初回满充电/ First cycle, fully charged	24.134	4.133	24.134	4.123	0.00%	99.8%	N
2		24.124	4.156	24.124	4.155	0.00%	100.0%	N
3		24.130	4.152	24.130	4.151	0.00%	100.0%	N
4		24.135	4.147	24.135	4.144	0.00%	99.9%	N
5		24.201	4.154	24.201	4.154	0.00%	100.0%	N
6		24.189	4.155	24.189	4.155	0.00%	100.0%	N
7		24.255	4.156	24.255	4.156	0.00%	100.0%	N
8		24.303	4.145	24.303	4.140	0.00%	99.9%	N
9		24.300	4.152	24.300	4.151	0.00%	100.0%	N
10		24.296	4.155	24.296	4.154	0.00%	100.0%	N

现象/Occurrence	破裂:R <Rupture> 起火:F <Fire> 解体:D <Disassembly> 排气:V <Venting> 渗漏:L <Leakage> 无异常:N <No rupture, No fire, No disassembly, No venting, No leakage>
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国联劝告试验 结果 2

Test Result of UN Recommendations Part 2

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试验名称/Test Name		T4: 冲击试验 Shock						
番号 No.	电池状态 Conditions	试验前/Before		试验后/After		质量减少率/ Mass Loss (0.1%以下)	OCV维持率/ Residual OCV (90%以上)	现象确认/ Occurrence
		Mass(g)	OCV (V)	Mass(g)	OCV (V)			
1	初回满充电/ First cycle, fully charged	24.134	4.123	24.134	4.123	0.00%	100.0%	N
2		24.124	4.155	24.124	4.155	0.00%	100.0%	N
3		24.130	4.151	24.130	4.151	0.00%	100.0%	N
4		24.135	4.144	24.135	4.144	0.00%	100.0%	N
5		24.201	4.154	24.201	4.154	0.00%	100.0%	N
6		24.189	4.155	24.189	4.155	0.00%	100.0%	N
7		24.255	4.156	24.255	4.156	0.00%	100.0%	N
8		24.303	4.140	24.303	4.140	0.00%	100.0%	N
9		24.300	4.151	24.300	4.151	0.00%	100.0%	N
10		24.296	4.154	24.296	4.154	0.00%	100.0%	N

现象/Occurrence

破裂:R <Rupture> 起火:F <Fire> 解体:D <Disassembly> 排气:V <Venting>
 渗漏:L <Leakage> 无异常:N <No rupture, No fire, No disassembly, No venting, No leakage>

试验名称/Test Name		T5: 外短路试验 External Short Circuit					
番号 No.	电池状态 Conditions	最大表面温度/Max. Surface Temperature (°C) 170°C	现象确认/ Occurrence	番号 No.	电池状态 Conditions	最大表面温度/Max. Surface Temperature (°C) 170°C	现象确认/ Occurrence
1	初回满充电/ First cycle, fully charged	59.4°C	N	6	初回满充电/ First cycle, fully charged	57.7°C	N
2		58.4°C	N	7		56.3°C	N
3		56.1°C	N	8		56.5°C	N
4		58.9°C	N	9		55.8°C	N
5		55.9°C	N	10		57.1°C	N

现象/Occurrence

破裂:R <Rupture> 起火:F <Fire> 解体:D <Disassembly>
 无异常:N <No rupture, No fire, No disassembly>

试验名称/Test Name		T6: 撞击(impact)/挤压(crush) 试验	
番号 No.	电池状态 Conditions	最大表面温度/Max. Surface Temperature (°C) 170°C	现象确认/Occurrence
1	初回	<160°C	N
2	50%充电	<160°C	N
3	(宽面)/	<160°C	N
4	First cycle,	<160°C	N
5	50% charged (wide surface)	<160°C	N

现象/Occurrence

解体: D <Disassembly> 起火: F <Fire> 无异常: N <No fire, No disassembly>

试验名称/Test Name		T7: 过充电试验 Overcharge			
番号 No.	电池状态 Conditions	现象确认/Occurrence	番号 No.	电池状态 Conditions	现象确认/Occurrence
1	初回满充电/ First cycle, fully charged	N	5	50次循环后 满充电/ After 50 cycles, fully charged	N
2		N	6		N
3		N	7		N
4		N	8		N

现象/Occurrence

起火:F <Fire> 解体:D <Disassembly> 无异常:N <No fire, No disassembly>

* Temperature Measurement by Thermolabel



国联劝告试验 结果 3

Test Result of UN Recommendations Part 3

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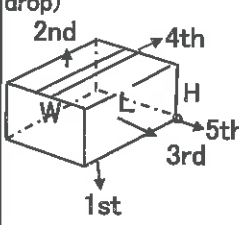
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试验名称 /Test Name		T8: 强制放电 Forced Discharge			
番号 No.	电池状态 Conditions	现象确认 /Occurrence	番号 No.	电池状态 Conditions	现象确认 /Occurrence
1	初次循环 完全放电 / First cycle, fully discharged	N	11	50次循环后 完全放电 / After 50 cycles, fully discharged	N
2		N	12		N
3		N	13		N
4		N	14		N
5		N	15		N
6		N	16		N
7		N	17		N
8		N	18		N
9		N	19		N
10		N	20		N
现象 / Occurrence		起火:F <Fire> 解体:D <Disassembly> 无异常:N <No fire, No disassembly>			

国連勧告試験 梱包結果
Test Result of UN Recommendations for Package

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試験場所/ Test Company	村田新能源(无锡)有限公司			
住所/ Address	中国江苏省无锡市新区长江路27号		電話/ Tel	86-18038308951
試験室/ Test Room	MDW国联劝告試験室	試験期間/ Test Dates	2013.7.1-2013.7.4	試験番号/ Test No
機種名/ Sony Model Name	SP872OPN2C		梱包入り数/ Quantity	300 pcs
使用セル/ Cell Model Name	SP873440N2S	構成/ Configuration	1P1S	梱包製造所/ Package Factory
包装等級/ Packing Group	等級Ⅱ/Packing Group Number Ⅱ			
寸法・質量/ Dimensions and Gross Weight	長さ/Length (L)	短辺 /Wide (W)	高さ/Height (H)	質量/Gross Weight (kg)
	400 mm	300 mm	160 mm	10.0 kg

■ 落下試験/Drop Test			
試験設備	HORAD PD-315		
試験条件/ Test condition	落下高さ /Drop height	1. 2m	試験結果 /Occurrence
落下姿勢(方向)/ Five (one for each drop) 	1回目の落下試験	底面を水平に/ flat on the bottom	著しい破損なし/No Leakage, No damage liable to affect safety during
	2回目の落下試験	天面を水平に/ flat on the top	著しい破損なし/No Leakage, No damage liable to affect safety during
	3回目の落下試験	長側面を水平に/ flat on the long side	著しい破損なし/No Leakage, No damage liable to affect safety during
	4回目の落下試験	短側面を水平に/ flat on the short side	著しい破損なし/No Leakage, No damage liable to affect safety during
	5回目の落下試験	コーナー(角)※/ on a corner	著しい破損なし/No Leakage, No damage liable to affect safety during
	※コーナー: 容器が最も破損を受ける方向を選択		
判定基準/ Criterion	外装容器及び袋の場合、外装容器の最も外側の層に輸送中の安全を脅かすようないかなる破損が生じてはならない。		判定/ Judgment
			合格/OK

■ 積み重ね試験/Stacking Test			
試験条件/Test condition	No	試験結果 /Occurrence	
試験荷重値/Weight Load	185 kg	1	漏洩・破損・歪みなし/No leakage, No distortion, No deterioration
		2	漏洩・破損・歪みなし/No leakage, No distortion, No deterioration
		3	漏洩・破損・歪みなし/No leakage, No distortion, No deterioration
判定基準/ Criterion	試供品は漏洩があつてはならない。試供品は、輸送の安全性を損なうような劣化、又はその強度を減じたり、又は輸送物の積み重ねを不安定にするような歪みが生じてはならない。		判定/ Judgment
			合格/OK

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総合判定
合格/OK



1. 2m落下試験写真／1. 2mDrop Test Photo

リチウムイオン電池／lithium-ion cell or battery

ムラタ機種名／Murata model name: SP8720PN2C

Before



After



積み重ね試験写真／/Stacking Test Photo

リチウムイオン電池／lithium-ion cell or battery

ムラタ機種名／Murata model name: SP8720PN2C

Before



After

