MDW

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Murata Energy Device Wuxi Co., Ltd.
No.27, Changjiang Road, New District, Wuxi, Jiangsu Province , 214028 P.R.C
Phone: 86-510-8523-9120

リチウムイオン電池認証書（類似機種用）
Lithium-ion cell or battery
Certification for Similar Models

No: MDW-CB1840
Date: 2018.12.29

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：UBATIA299AFN1　Murata model name：LIS1704SPPC

3．顧 客 名／customer：Sharp

4．定格／rated

項目／item	規格値／specification	備考／remarks
公称電圧／nominal voltage	3.85V	
定格容量／rated capacity	3200mAh	
ワット時定格値(Wh)／Watt-hour rating	12.4Wh	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）：　LIS1646SPPC(3.8V 3160mAh 12.1Wh)

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：2017/02/06~2017/02/16
梱包試験実施日／Tested Date for Package：2018/12/26

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%.

LIS1704SPPC／LIS1646SPPC：　ワット時定格値(Wh 比／Watt-hour Ratio＝102%、
電圧比／Voltage Ratio＝101%

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Weiwei Tang / Manager
CS·Quality Assurance Department
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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 : LIS1704SPPC Component Cell Model : US454992BH7

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

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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 : LIS1704SPPC

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

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国联劝告 结果 1

Test Result of UN Recommendations Part 1

机种名/Murata Model Nam	LIP1646SPPC		
cell使用/Cell Model Name	US446770H7	构成/Configuratior	1P 1S
试验场所/Test Company	村田新能源(无锡)有限公司		
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	2017.02.06~2017.02.16
判定基准/Criterion	UN Manual of Tests and Criteria Rev6, 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	53.341	4.293	53.340	4.292	0.00%	100.0%	N
2		53.335	4.292	53.336	4.291	0.00%	100.0%	N
3		53.605	4.296	53.603	4.294	0.00%	100.0%	N
4		53.490	4.293	53.488	4.292	0.00%	100.0%	N
5		53.540	4.292	53.542	4.291	0.00%	100.0%	N
6		53.327	4.294	53.325	4.293	0.00%	100.0%	N
7		53.492	4.300	53.494	4.299	0.00%	100.0%	N
8		53.386	4.293	53.387	4.292	0.00%	100.0%	N
9		53.634	4.296	53.636	4.294	0.00%	100.0%	N
10		53.490	4.300	53.492	4.298	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	53.340	4.292	53.342	4.251	0.00%	99.0%	N
2		53.336	4.291	53.335	4.248	0.00%	99.0%	N
3		53.603	4.294	53.605	4.253	0.00%	99.0%	N
4		53.488	4.292	53.487	4.250	0.00%	99.0%	N
5		53.542	4.291	53.544	4.249	0.00%	99.0%	N
6		53.325	4.293	53.326	4.249	0.00%	99.0%	N
7		53.494	4.299	53.495	4.256	0.00%	99.0%	N
8		53.387	4.292	53.386	4.251	0.00%	99.0%	N
9		53.636	4.294	53.638	4.254	0.00%	99.1%	N
10		53.492	4.298	53.494	4.256	0.00%	99.0%	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	53.342	4.251	53.341	4.250	0.00%	100.0%	N
2		53.335	4.248	53.336	4.246	0.00%	100.0%	N
3		53.605	4.253	53.606	4.252	0.00%	100.0%	N
4		53.487	4.250	53.485	4.248	0.00%	100.0%	N
5		53.544	4.249	53.545	4.247	0.00%	100.0%	N
6		53.326	4.249	53.324	4.248	0.00%	100.0%	N
7		53.495	4.256	53.494	4.255	0.00%	100.0%	N
8		53.386	4.251	53.387	4.250	0.00%	100.0%	N
9		53.638	4.254	53.636	4.252	0.00%	100.0%	N
10		53.494	4.256	53.496	4.255	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

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	53.341	4.250	53.342	4.249	0.00%	100.0%	N
2		53.336	4.246	53.338	4.245	0.00%	100.0%	N
3		53.606	4.252	53.604	4.250	0.00%	100.0%	N
4		53.485	4.248	53.487	4.247	0.00%	100.0%	N
5		53.545	4.247	53.547	4.246	0.00%	100.0%	N
6		53.324	4.248	53.326	4.246	0.00%	100.0%	N
7		53.494	4.255	53.493	4.254	0.00%	100.0%	N
8		53.387	4.250	53.386	4.250	0.00%	100.0%	N
9		53.636	4.252	53.637	4.251	0.00%	100.0%	N
10		53.496	4.255	53.495	4.254	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 (℃) 170℃	现象确认/ Occurrence	番号 No.	电池状态 Conditions	最大表面温度/Max. Surface Temperature (℃) 170℃	现象确认/ Occurrence
1	初回满充电/ First cycle, fully charged	58.2℃	N	6	初回满充电/ First cycle, fully charged	58.2℃	N
2		58.1℃	N	7		58.1℃	N
3		57.9℃	N	8		58.0℃	N
4		58.5℃	N	9		57.7℃	N
5		57.6℃	N	10		57.6℃	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 (℃) 170℃	现象确认/Occurrence
1	初回 50%充电 (宽面)/ First cycle, 50% charged (wide surface)	<160℃	N
2		<160℃	N
3		<160℃	N
4		<160℃	N
5		<160℃	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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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>				

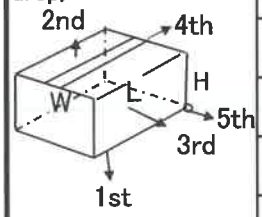
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国連勧告試験　梱包結果

Test Result of UN Recommendations for Package

试验场所/ Test Company	村田新能源(无锡)有限公司				
地址/ Address	中国江苏省无锡市新区长江路27号			電話/ Tel	86-18068308951
试验室/ Test Room	MDW国联劝告试验室	试验期间/ Test Dates	2018.12.26	試験番号/Test No	MDW-K1817
机种名/ Murata Model Name	LIS1704SPPC		梱包入り数/Quantity		170 pcs
使用セル/ Cell Model Name	US454992BH7	构成/ Configuration	1P1S	梱包製造所/ Package Factory	MDW
包装等级 / Packing Group	等級Ⅱ/Packing Group Number Ⅱ				
寸法・质量 / Dimensions and Gross Weight	长边/Length(L)	短边 /Wide (W)	高度/Height (H)	质量 /Gross Weight (kg)	
	400 mm	300 mm	160 mm	11.0 kg	

■ 落下試験/Drop Test

试验设备	虹创力　HD-S015		
试验条件/ Test condition	落下高度 /Drop height	1.2m	試験結果 /Occurrence
落下姿势(方向)/ Five (one for each drop) 	第1回落下试验	底面水平向下/ flat on the bottom	著しい破損なし/No Leakage, No damege liable to affect safety during
	第2回落下试验	顶面水平向下 / flat on the top	著しい破損なし/No Leakage, No damege liable to affect safety during
	第3回落下试验	长侧面水平向下/ flat on the long side	著しい破損なし/No Leakage, No damege liable to affect safety during
	第4回落下试验	短侧面水平向下/ flat on the short side	著しい破損なし/No Leakage, No damege liable to affect safety during
	第5回落下试验	一角向下※/ on a corner	著しい破損なし/No Leakage, No damege liable to affect safety during
	※一角：选择容器最易受损的方向		
判定基準/ Criterion	Each package must be capable of withstanding a 1.2m drop test in any orientation without : · Damage to cells or batteries contained therein; · Shifting of contents so as to allow battery(or cell to cell) contact · Release of contents	判定/ Judgment	合格/OK

MURATA ENERGY DEVICE WUXI CO., LTD.
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WeiWei Tang / Manager
CS Quality Assurance Department
Murata Energy Device Wuxi Co., Ltd.

総合判定
合格/OK

品保-P检-022(4)

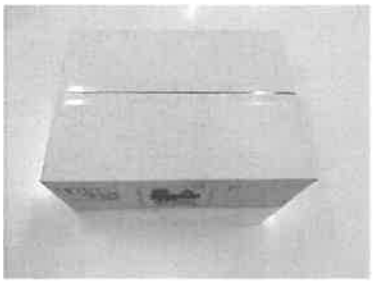
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1．2m落下試験写真／1．2mDrop Test Photo

リチウムイオン電池／lithium-ion cell or battery

ムラタ機種名／Murata model name：　LIS1704SPPC

Before



After

