

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

Lithium-ion cell or battery Certification

No: MDW-PC1901

Date: 2019.02.20

1. ☐単電池 / ☐single cell ☐single cell battery
☒組電池 / battery(pack) (セル構成 / composition of cell : 1P3S)
2. 機種名 / customer model name : AP18L4K Murata model name : LIS3121
3. 顧客名 / customer : Acer
4. 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 : 2019/01/24~2019/02/03

梱包試験実施日 / Tested Date for Package : 2019/01/18~2019/01/22

5. 定格 / rated

項目 / item	規格値 / specification	備考 / remarks
公称電圧 / nominal voltage	11.4V	
定格容量 / rated capacity	3720mAh	
ワット時定格値 (Wh) / Watt-hour rating	42.4Wh	単電池 ≤ 20Wh 組電池 ≤ 100Wh cells ≤ 20Wh batteries ≤ 100Wh

上記テスト結果は国連勧告試験(UN Manual of Tests and Criteria 6th revised edition Amendment 1, 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 revised edition Amendment 1, Part III, sub-section 38.3.

Weiwei Tang / Manager
 CS-Quality Assurance Department
 Murata Energy Device Wuxi Co., Ltd.

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国联劝告 结果 1

Test Result of UN Recommendations Part 1

机种名/Murata Model Name	LIS3121ACPC		
cell使用/Cell Model Name	US486588H	构成/Configuration	1P 3S
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	86-510-8523-9120
试验室/Test Room	MDW国联劝告试验室	试验期间/Test Dates	2019.01.24~2019.02.03
判定基准/Criterion	UN Manual of Tests and Criteria 6th revised edition Amendment1, 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	221.441	12.892	221.440	12.881	0.00%	99.9%	N
2		221.398	12.892	221.388	12.884	0.00%	99.9%	N
3		221.406	12.893	221.367	12.884	0.02%	99.9%	N
4		221.483	12.894	221.476	12.886	0.00%	99.9%	N
5	25次循环后满充 电/ After 25 cycles, fully charged	221.600	12.896	221.575	12.888	0.01%	99.9%	N
6		222.042	12.904	222.034	12.895	0.00%	99.9%	N
7		222.046	12.903	222.036	12.894	0.00%	99.9%	N
8		222.056	12.906	222.044	12.900	0.01%	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	221.440	12.881	221.442	12.607	0.00%	97.9%	N
2		221.388	12.884	221.386	12.452	0.00%	96.6%	N
3		221.367	12.884	221.366	12.461	0.02%	96.7%	N
4		221.476	12.886	221.469	12.548	0.00%	97.4%	N
5	25次循环后满充 电/ After 25 cycles, fully charged	221.575	12.888	221.576	12.590	0.01%	97.7%	N
6		222.034	12.895	222.038	12.652	0.00%	98.1%	N
7		222.036	12.894	222.040	12.659	0.00%	98.2%	N
8		222.044	12.900	222.041	12.635	0.01%	97.9%	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	221.442	12.607	221.421	12.530	0.01%	99.4%	N
2		221.386	12.452	221.332	12.327	0.02%	99.0%	N
3		221.366	12.461	221.288	12.336	0.04%	99.0%	N
4		221.469	12.548	221.442	12.450	0.01%	99.2%	N
5	25次循环后满充 电/ After 25 cycles, fully charged	221.576	12.590	221.585	12.501	0.00%	99.3%	N
6		222.038	12.652	222.035	12.616	0.00%	99.7%	N
7		222.040	12.659	222.033	12.602	0.00%	99.5%	N
8		222.041	12.635	222.025	12.593	0.01%	99.7%	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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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	221.421	12.530	221.422	12.526	0.00%	100.0%	N
2		221.332	12.327	221.338	12.322	0.00%	100.0%	N
3		221.288	12.336	221.293	12.331	0.00%	100.0%	N
4		221.442	12.450	221.436	12.445	0.00%	100.0%	N
5	25次循环后满充 电/ After 25 cycles, fully charged	221.585	12.501	221.581	12.498	0.00%	100.0%	N
6		222.035	12.616	222.020	12.614	0.01%	100.0%	N
7		222.033	12.602	222.034	12.599	0.00%	100.0%	N
8		222.025	12.593	222.027	12.591	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	55.0°C	N	5	25次循环后满充电 / After 25 cycles, fully charged	55.3°C	N	
2		55.3°C	N	6		54.9°C	N	
3		55.3°C	N	7		55.0°C	N	
4		55.2°C	N	8		55.1°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	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 50%充电 / First cycle, 50% charged	<160°C	N	6	25循环后 50%充电 / 25 cycle, 50% charged	<160°C	N	
2		<160°C	N	7		<160°C	N	
3		<160°C	N	8		<160°C	N	
4		<160°C	N	9		<160°C	N	
5		<160°C	N	10		<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	25次循环后 满充电/ After 25 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

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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	25次循环后 完全放电 / After 25 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

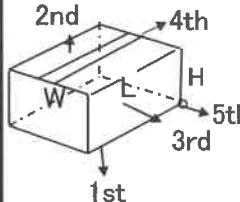
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Test Result of UN Recommendations for Package

試験場所/ 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
試験室/ Test Room	MDW国联劝告試験室	試験期間/ Test Dates	2019.01.18~2019.01.22	
機种名/ Murata Model Name	LIS3121ACPC		梱包入り数/ /Quantity	30 pcs
使用セル/ Cell Model Name	US486588H	構成/ Configuration	1P3S	梱包製造所/ Package Factory MDW
包装等級/ Packing Group	等級 II /Packing Group Number II			
寸法・質量/ Dimensions and Gross Weight	長辺/Length(L)	短辺 /Wide (W)	高度/Height (H)	質量 /Gross Weight (kg)
	359 mm	359 mm	160 mm	9.0 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
落下姿勢(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 damage liable to affect safety during
	第2回落下试验	頂面水平向下 / flat on the top	著しい破損なし/No Leakage, No damage 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 damage 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 damage 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 damage 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

■ 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		165 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	試験品は漏洩があつてはならない。試験品は、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


 Weiwei Tang / Manager
 CS Quality Assurance Department
 Murata Energy Device Wuxi Co., Ltd.

総合判定

合格/OK

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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: LIS3121ACPC

Before



After



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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: LIS3121ACPC

Before



After

