

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-PC1824

Date: 2018.12.25

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 : AP18C4K

Murata model name : LIS3119

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 : 2018/12/10~2018/12/24

梱包試験実施日 / Tested Date for Package : 2018/12/14~2018/12/18

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	3880mAh	
ワット時定格値(Wh) / Watt-hour rating	44Wh	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, 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.

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

## 国联劝告 结果 1

## Test Result of UN Recommendations Part 1

机种名/Murata Model Name	LIS3119ACPA		
cell使用/Cell Model Name	US508168H5K	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	86-18068308951
试验室/Test Room	MDW国联劝告试验室	试验期间/Test Dates	2018.12.10~2018.12.24
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	224.237	12.878	224.233	12.874	0.00%	100.0%	N
2		224.375	12.880	224.363	12.873	0.01%	99.9%	N
3		223.990	12.885	223.992	12.880	0.00%	100.0%	N
4		224.478	12.897	224.480	12.889	0.00%	99.9%	N
5	50次循环后满充 电/ After 50 cycles, fully charged	224.250	12.907	224.244	12.902	0.00%	100.0%	N
6		224.117	12.888	224.116	12.879	0.00%	99.9%	N
7		224.330	12.905	224.325	12.894	0.00%	99.9%	N
8		224.214	12.904	224.210	12.879	0.00%	99.8%	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	224.233	12.874	224.231	12.632	0.00%	98.1%	N
2		224.363	12.873	224.362	12.643	0.01%	98.2%	N
3		223.992	12.880	223.993	12.637	0.00%	98.1%	N
4		224.480	12.889	224.480	12.658	0.00%	98.2%	N
5	50次循环后满充 电/ After 50 cycles, fully charged	224.244	12.902	224.246	12.640	0.00%	98.0%	N
6		224.116	12.879	224.120	12.591	0.00%	97.8%	N
7		224.325	12.894	224.322	12.632	0.00%	98.0%	N
8		224.210	12.879	224.212	12.650	0.00%	98.2%	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	224.231	12.632	224.230	12.617	0.00%	99.9%	N
2		224.362	12.643	224.361	12.621	0.00%	99.8%	N
3		223.993	12.637	223.994	12.623	0.00%	99.9%	N
4		224.480	12.658	224.477	12.642	0.00%	99.9%	N
5	50次循环后满充 电/ After 50 cycles, fully charged	224.246	12.640	224.247	12.628	0.00%	99.9%	N
6		224.120	12.591	224.122	12.564	0.00%	99.8%	N
7		224.322	12.632	224.321	12.605	0.00%	99.8%	N
8		224.212	12.650	224.213	12.636	0.00%	99.9%	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	224.230	12.617	224.230	12.613	0.00%	100.0%	N
2		224.361	12.621	224.362	12.622	0.00%	100.0%	N
3		223.994	12.623	223.994	12.623	0.00%	100.0%	N
4		224.477	12.642	224.477	12.640	0.00%	100.0%	N
5	50次循环后满充 电/ After 50 cycles, fully charged	224.247	12.628	224.247	12.625	0.00%	100.0%	N
6		224.122	12.564	224.122	12.563	0.00%	100.0%	N
7		224.321	12.605	224.321	12.604	0.00%	100.0%	N
8		224.213	12.636	224.212	12.635	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	55.4°C	N	5	50次循环后满充电 / After 50 cycles, fully charged	55.5°C	N	
2		55.6°C	N	6		55.4°C	N	
3		55.7°C	N	7		55.3°C	N	
4		55.7°C	N	8		55.3°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 50%充电 (宽面)/ First cycle, 50% charged (wide surface)	<160°C			N			
2		<160°C			N			
3		<160°C			N			
4		<160°C			N			
5		<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

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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	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

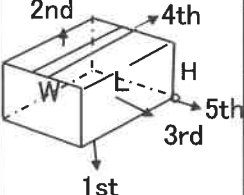
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試験場所/ Test Company	村田新能源(无锡)有限公司			
地址/ Address	中国江苏省无锡市新区长江路27号		電話/ Tel	86-18068308951
試験室/ Test Room	MDW国联劝告試験室	試験期間/ Test Dates	2018.12.14~2018.12.18	試験番号/ Test No
機种名/ Murata Model Name	LIS3119ACPA		梱包入り数/ Quantity	30 pcs
使用セル/ Cell Model Name	US508168H5K	構成/ Configuration	1P3S	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	長辺/Length(L)	短辺 /Wide (W)	高度/Height (H)	質量 /Gross Weight (kg)
	359 mm	267 mm	160 mm	8.8 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

## ■ 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		160 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、又はその強度を減弱したり、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.

品保-P検-022(4)

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: LIS3119ACPA

### 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: LIS3119ACPA

### Before



### After

