

MDW

社外秘 | INTERNAL USE ONLY

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 rechargeable (polymer) cell or battery Certification

No: MDW-PC1807

Date:2018/03/03

- 1. 単電池/single cell single cell battery
組電池/battery(pack) (セル構成/composition of cell : 2P2S)
- 2. 機種名/customer model name : L13N4P01 Murata model name : LIS4153
- 3. 顧客名/customer : Lenovo
- 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 : 2014/02/14~2014/02/25

梱包試験実施日/Tested Date for Package : 2014/02/12~2014/02/15

5. 定格/rated

項目/item	規格値/specification	備考/remarks
公称電圧/nominal voltage	7.6V	
定格容量/rated capacity	7200mAh	
ワット時定格値(Wh) /Watt-hour rating	54Wh	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

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机种名/Murata Model Name	LIS4153LVPC(SY6)		
cell使用/Cell Model Name	US4256C4H2K	构成/Configuration	2P 2S
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	2014.2.14-2014.2.25
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				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
番号 No.	电池状态 Conditions	试验前/Before		试验后/After				
		Mass(g)	OCV (V)	Mass(g)	OCV (V)			
1	初回满充电/ First cycle, fully charged	299.430	8.632	299.430	8.630	0.00%	100.0%	N
2		299.530	8.620	299.530	8.613	0.00%	99.9%	N
3		299.530	8.613	299.530	8.612	0.00%	100.0%	N
4		299.770	8.633	299.770	8.625	0.00%	99.9%	N
5	50次循环后满充 电/ After 50 cycles, fully charged	299.360	8.613	299.360	8.608	0.00%	99.9%	N
6		299.330	8.608	299.330	8.600	0.00%	99.9%	N
7		299.220	8.618	299.220	8.616	0.00%	100.0%	N
8		299.160	8.607	299.160	8.606	0.00%	100.0%	N

试验名称/Test Name		T2: 温度试验 Thermal				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
番号 No.	电池状态 Conditions	试验前/Before		试验后/After				
		Mass(g)	OCV (V)	Mass(g)	OCV (V)			
1	初回满充电/ First cycle, fully charged	299.430	8.630	299.430	8.594	0.00%	99.6%	N
2		299.530	8.613	299.530	8.591	0.00%	99.7%	N
3		299.530	8.612	299.530	8.589	0.00%	99.7%	N
4		299.770	8.625	299.770	8.592	0.00%	99.6%	N
5	50次循环后满充 电/ After 50 cycles, fully charged	299.360	8.608	299.360	8.587	0.00%	99.8%	N
6		299.330	8.600	299.330	8.586	0.00%	99.8%	N
7		299.220	8.616	299.220	8.591	0.00%	99.7%	N
8		299.160	8.606	299.160	8.587	0.00%	99.8%	N

试验名称/Test Name		T3: 振动试验 Vibration				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
番号 No.	电池状态 Conditions	试验前/Before		试验后/After				
		Mass(g)	OCV (V)	Mass(g)	OCV (V)			
1	初回满充电/ First cycle, fully charged	299.430	8.594	299.430	8.592	0.00%	100.0%	N
2		299.530	8.591	299.530	8.589	0.00%	100.0%	N
3		299.530	8.589	299.530	8.587	0.00%	100.0%	N
4		299.770	8.592	299.770	8.590	0.00%	100.0%	N
5	50次循环后满充 电/ After 50 cycles, fully charged	299.360	8.587	299.360	8.584	0.00%	100.0%	N
6		299.330	8.586	299.330	8.583	0.00%	100.0%	N
7		299.220	8.591	299.220	8.588	0.00%	100.0%	N
8		299.160	8.587	299.160	8.585	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

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Test Result of UN Recommendations Part 2

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试验名称/Test Name		T4: 冲击试验 Shock				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
番号 No.	电池状态 Conditions	试验前/Before		试验后/After				
		Mass(g)	OCV (V)	Mass(g)	OCV (V)			
1	初回满充电/ First cycle, fully charged	299.430	8.592	299.430	8.591	0.00%	100.0%	N
2		299.530	8.589	299.530	8.587	0.00%	100.0%	N
3		299.530	8.587	299.530	8.585	0.00%	100.0%	N
4		299.770	8.590	299.770	8.588	0.00%	100.0%	N
5	50次循环后满充 电/ After 50 cycles, fully charged	299.360	8.584	299.360	8.583	0.00%	100.0%	N
6		299.330	8.583	299.330	8.582	0.00%	100.0%	N
7		299.220	8.588	299.220	8.586	0.00%	100.0%	N
8		299.160	8.585	299.160	8.583	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				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	番号 No.	电池状态 Conditions				
1	初回满充电/ First cycle, fully charged	5	50次循环后满充 电/ After 50 cycles, fully charged	56.5°C	N	56.4°C	N
2		58.7°C		N	56.3°C	N	
3		59.2°C		N	56.3°C	N	
4		57.4°C		N	56.3°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

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>			



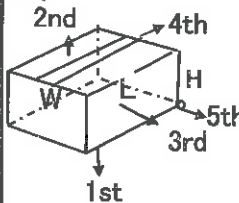
国連勸告試験 梱包結果

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	86-18068308951	
試験室/ Test Room	MDW国联劝告试验室	試験期間/ Test Dates	2014.02.12~2014.02.15	試験番号/ Test No
機種名/ Murata Model Name	LIS4153LVPC		梱包入り数/ Quantity	20 pcs
使用セル/ Cell Model Name	US4256C4H2K	構成/ Configuration	2P2S	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)	高さ/Height (H)	質量/Gross Weight (kg)
	359 mm	267 mm	220 mm	9.0 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	120 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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MURATA ENERGY DEVICE WUXI CO., LTD.
 村田新能源(无锡)有限公司

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

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: LIS4153LVPC

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: LIS4153LVPC

Before



After

