

MDW



Murata Energy Device Wuxi Co., Ltd.

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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-PC1806

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 : 2P1S)

2. 機種名/customer model name : L13N2P21 Murata model name : LIS2207

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 : 2014/01/07~2014/01/23


梱包試験実施日/Tested Date for Package : 2013/09/22~2013/09/25

5. 定格/rated

| 項目/ item | 規格値/ specification | 備考/ remarks |
|--------------------------------------|-----------------------|--|
| 公称電圧/ nominal voltage | 3.75 V | |
| 定格容量/ rated capacity | 6700 mAh | |
| ワット時定格値(Wh) / Watt-hour rating | 25 Wh | 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 | LIS2207LVPC | | |
| cell使用/Cell Model Name | US3183A2K7S | 构成/Configuration | 2P 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 | 2014.1.7-2014.1.23 |
| 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 | 134.080 | 4.297 | 134.080 | 4.288 | 0.00% | 99.8% | N |
| 2 | | 134.080 | 4.289 | 134.080 | 4.280 | 0.00% | 99.8% | N |
| 3 | | 133.970 | 4.291 | 133.970 | 4.282 | 0.00% | 99.8% | N |
| 4 | | 133.500 | 4.290 | 133.500 | 4.281 | 0.00% | 99.8% | N |
| 5 | 50次循环后满充 电/ After 50 cycles, fully charged | 134.110 | 4.281 | 134.110 | 4.274 | 0.00% | 99.8% | N |
| 6 | | 134.070 | 4.271 | 134.070 | 4.264 | 0.00% | 99.8% | N |
| 7 | | 134.070 | 4.272 | 134.070 | 4.264 | 0.00% | 99.8% | N |
| 8 | | 134.120 | 4.267 | 134.120 | 4.260 | 0.00% | 99.8% | 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 | 134.080 | 4.288 | 134.080 | 4.213 | 0.00% | 98.3% | N |
| 2 | | 134.080 | 4.280 | 134.080 | 4.214 | 0.00% | 98.5% | N |
| 3 | | 133.970 | 4.282 | 133.970 | 4.216 | 0.00% | 98.5% | N |
| 4 | | 133.500 | 4.281 | 133.500 | 4.205 | 0.00% | 98.2% | N |
| 5 | 50次循环后满充 电/ After 50 cycles, fully charged | 134.110 | 4.274 | 134.110 | 4.210 | 0.00% | 98.5% | N |
| 6 | | 134.070 | 4.264 | 134.070 | 4.207 | 0.00% | 98.7% | N |
| 7 | | 134.070 | 4.264 | 134.070 | 4.210 | 0.00% | 98.7% | N |
| 8 | | 134.120 | 4.260 | 134.120 | 4.209 | 0.00% | 98.8% | 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 | 134.080 | 4.213 | 134.080 | 4.211 | 0.00% | 100.0% | N |
| 2 | | 134.080 | 4.214 | 134.080 | 4.211 | 0.00% | 99.9% | N |
| 3 | | 133.970 | 4.216 | 133.970 | 4.212 | 0.00% | 99.9% | N |
| 4 | | 133.500 | 4.205 | 133.500 | 4.202 | 0.00% | 99.9% | N |
| 5 | 50次循环后满充 电/ After 50 cycles, fully charged | 134.110 | 4.210 | 134.110 | 4.207 | 0.00% | 99.9% | N |
| 6 | | 134.070 | 4.207 | 134.070 | 4.204 | 0.00% | 99.9% | N |
| 7 | | 134.070 | 4.210 | 134.070 | 4.207 | 0.00% | 99.9% | N |
| 8 | | 134.120 | 4.209 | 134.120 | 4.204 | 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> |
|---------------|--|

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 | 134.080 | 4.211 | 134.080 | 4.210 | 0.00% | 100.0% | N |
| 2 | | 134.080 | 4.211 | 134.080 | 4.211 | 0.00% | 100.0% | N |
| 3 | | 133.970 | 4.212 | 133.970 | 4.211 | 0.00% | 100.0% | N |
| 4 | | 133.500 | 4.202 | 133.500 | 4.200 | 0.00% | 100.0% | N |
| 5 | 50次循环后满充电/ After 50 cycles, fully charged | 134.110 | 4.207 | 134.110 | 4.205 | 0.00% | 100.0% | N |
| 6 | | 134.070 | 4.204 | 134.070 | 4.203 | 0.00% | 100.0% | N |
| 7 | | 134.070 | 4.207 | 134.070 | 4.205 | 0.00% | 100.0% | N |
| 8 | | 134.120 | 4.204 | 134.120 | 4.202 | 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 |
| | | | | | | | |
| 2 | 56.4°C | N | 6 | 55.6°C | N | | |
| 3 | 56.1°C | N | 7 | 55.5°C | N | | |
| 4 | 56.2°C | N | 8 | 55.5°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, 50% charged | <160°C | N |
| 5 | (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 |
| | | | | | |
| 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> | | | |



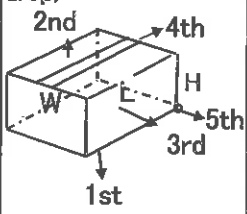
国連勧告試験 梱包結果

Test Result of UN Recommendations for Package

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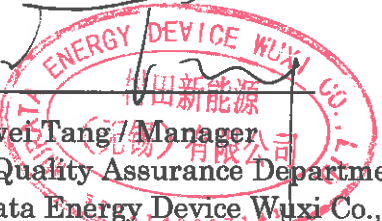
| | | | | | |
|--|----------------------------|----------------------|---------------------|---------------------------|------------|
| 試験場所/ Test Company | 村田新能源(无锡)有限公司 | | | | |
| 住所/ Address | 中国江苏省无锡市新区长江路27号 | | 電話/ Tel | 86-18068308951 | |
| 試験室/ Test Room | MDW国联劝告試験室 | 試験期間/ Test Dates | 2013.9.22-2013.9.25 | 試験番号/ Test No | MDW-PC1806 |
| 機種名/ Murata Model Name | LIS2207LVPC | | 梱包入り数/ Quantity | 50 pcs | |
| 使用セル/ Cell Model Name | US3183A2K7S | 構成/ Configuration | 2P1S | 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) | 高さ/Height (H) | 質量/Gross Weight (kg) | |
| | 359 mm | 267 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 | 試験品は漏洩があってはならない。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 |


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

品保-P検-022(3)

| |
|-------|
| 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: LIS2207LVPC

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: LIS2207LVPC

Before



After

