



UN38.3 试验概要

UN38.3 Test Summary

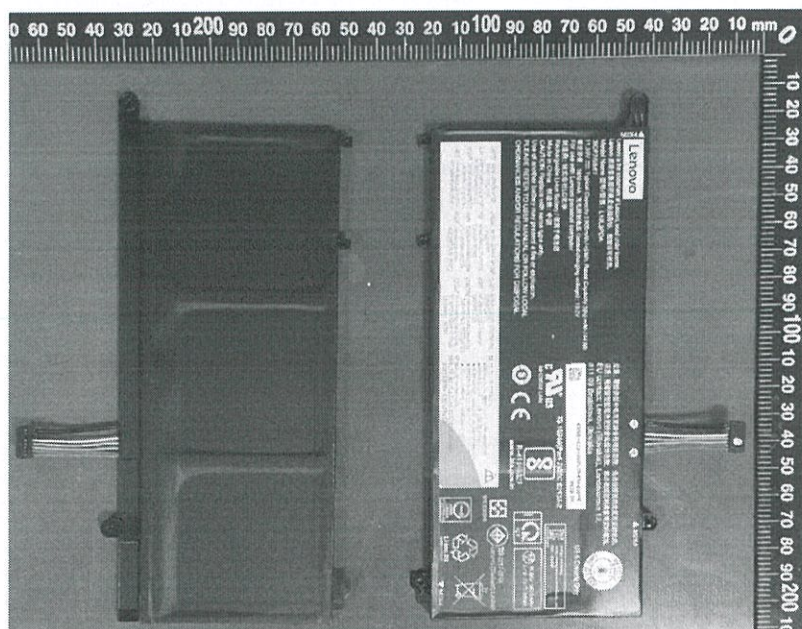


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单位信息 Company information			
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生产单位 Manufacturer	南京莱斯康电子有限公司 Nan Jing Nexcon Electronics Co.,Ltd 南京经济技术开发区栖霞街道刀枪河路 11 号 No.11, Daoqianghe Road, Economic & Technical Development Zone East Side, Qixia Area, Nanjing City, Jiangsu Province, China 15895891460 caolijun132x@nexcontech.net http://www.nexcontech.com/		
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电池信息 Battery information			
名称 Name	锂离子电池	品牌 Brand	/
型号 Type	L19L3PDA	原始测试型号 Original tested type	L19L3PDA
标称电压(V) Nominal voltage	11.55	容量/能量 Capacity/energy	Typical Capacity:3900mAh 45Wh/Rated Capacity:3810mAh 44Wh
描述 Description	可充电锂离子电池组 Rechargeable Li-ion battery	锂含量(g) Li content	/
质量(kg) Mass	0.177	外观 Appearance	黑色塑料薄膜外壳 Black plastic film shell
测试信息 Test information			
原报告编号 Original test report No.	QDI-200416-B-L19L3PDA	测试报告日期 Date of test report	2020-04-16
测试标准 Test standard	联合国《关于危险货物运输的建议书 试验和标准手册》第 38.3 章 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria 38.3 ST/SG/AC.10/11/Rev.6/Amend.1		
T.1 高度模拟 Altitude simulation	合格 Passed	T.2 温度测试 Thermal test	合格 Passed
T.3 振动测试 Vibration	合格 Passed	T.4 冲击测试 Shock	合格 Passed
T.5 外部短路 External short circuit	合格 Passed	T.6 挤压 Crush	合格 Passed
T.7 过度充电 Overcharge	合格 Passed	T.8 强制放电 Forced discharge	合格 Passed
38.3.3 (f)	/	38.3.3 (g)	/



样品图片 Sample Picture



Lenovo
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 Model Name 型号/型号: L19L3PDA
 3ICP7/59/67
 11.55V --- Typical Capacity 3900mAh / 45 Wh, Rated Capacity 3810 mAh / 44 Wh
 额定容量: 3810mAh 充电限制电压 (limited charging voltage): 13.2V
 For use with Lenovo personal computer
 制造商: 株式会社LG化学
 Rechargeable Li-ion Battery / 锂离子电池组
 Made in China 制造地: 中国
 CAUTION: Replace with same type only.
 Use of another battery may present a fire or explosion.
 PLEASE REFER TO USER MANUAL OR FOLLOW LOCAL
 ORDINANCES AND/OR REGULATIONS FOR DISPOSAL

结论 Conclusion	测试样品符合联合国《关于危险货物运输的建议书试验和标准手册》ST/SG/AC.10/11/Rev.6/Amend.1 38.3 标准要求。The tested samples meet the requirements of test items of the UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1 38.3		
备注 Remark	/		
签名 Signature 职务 Title	王寅 副总工程师 Vice chief engineer	签发日期 Issued date	2020-08-11

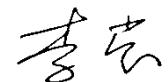
-验证码:705891-

报告结束

UN38.3 Test Summary

Manufacture's contact information	LG Chem, Ltd. 128 Yeoui-Daero, Yeongdeungpo-gu, SEOUL, 150-721, REPUBLIC OF KOREA Telephone : +82-10-7742-5427 E-mail : kkammy@lgchem.com Website : www.lgchem.com		
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	LG Chem (Nanjing) I&E Materials Co., Ltd NO.17 Hengyi Road, Nanjing Economic & Technological Development Zone, Nanjing, Jiangsu, China Telephone : +86-025-85603000-8231 E-mail : njliying@lgchem.com Website : www.lgchem.com		
Description		List of Test Completed	
Cell/Battery Type (Physical Description)	Lithium Ion battery pack (Pouch)	Revised edition	Revision 6 Amendment 1
Test Report Number	QDI-200416-B-L19L3PDA	Test 1. Altitude Simulation	Pass
Date of test report	2020.04.16	Test 2. Thermal Test	Pass
Model name	L19L3PDA	Test 3. Vibration	Pass
Nominal voltage (V)	11.55	Test 4. Shock	Pass
Capacity (Nominal Wh)	45.00	Test 5. External Short Circuit	Pass
Weight (g)	176.09	Test 6. Impact or Crush	Pass
Dimensions (mm)	179.00X79.20X6.90	Test 7. Overcharge	Pass
Reference to assembled battery testing requirements	Not applicable	Test 8. Forced Discharge	Pass

Approved By: Ying Li
 Team Leader
 Cyl NPI&CE lab part DQA Team
 LG Chem, Ltd.
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Document Number	QDI-200416-B-L19L3PDA	
Prepared	Jie Ma	
Approved	Ying Li	

UN38.3 Test Report

– L19L3PDA (Nom. 45.00Wh, 11.55V) –

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2020. 04. 16

1. UN38.3 Test Condition

Rev.6 Amendment 1

Test item	Test Condition	Requirements	Etc.
Test 1. Altitude Simulation	Storing at (low pressure)11.6kPa for 6hr at 20+/-5℃	- After OCV (%) ≥ 90% - No leakage, no venting, no disassembly, no rupture, no fire - Mass loss limit (leakage) 1) If M<1g, less than 0.5%, 2) If 1g≤M≤75g, less than 0.2%, 3) If M>75g, less than 0.1%	T1~T5 : Sequence Tests <pre> graph TD T1[Test 1 Altitude Simulation] --> T2[Test 2 Thermal Test] T2 --> T3[Test 3 Vibration] T3 --> T4[Test 4 Shock] T4 --> T5[Test 5 Ext. Short Circuit] </pre>
Test 2. Thermal Test	[72±2℃,6hr ↔ -40±2℃,6hr, interval max. 30min] x 10cycle Storing at 20±5℃ for 24h		
Test 3. Vibration	[7Hz↔200Hz↔7Hz, in 15min] x 12 times x 3 direction 1) sinusoidal waveform with a logarithmic sweep 2) 7Hz 18Hz (maintaining 1gn) app. 50Hz (until 8gn) 200Hz (maintaining 8gn), 1.6mm total excursion		
Test 4. Shock	Half sine shock 1) Peak acceleration - For cells & single cell batteries : 150gn - For batteries (whichever is smaller) : 150gn or $\sqrt{\frac{100850}{Mass(kg)}} gn$ 2) Pulse duration : 6msec 3) 6 direction (±x, y, z) x 3 cycle		
Test 5. External Short Circuit	1) Samples to be heated to 57±4℃ in chamber (Measured on external case) 2) Less than 0.1Ω, ext. short-circuit at 57±4℃ 3) 1hr continue after returning to 57±4℃	- No disassembly, no rupture, no fire within 6 hours after the test - Max. Temp ≤ 170℃	
Test 6. Impact	Φ=15.8±0.1mm bar, 9.1±0.1kg mass, 61±2.5cm height	- No disassembly, no fire within 6 hours after the test - Max. Temp ≤ 170℃	for cylindrical cells (not less than 18mm diameter)
Test 6. Crush	Crushing rate :1.5cm/s, until 13kN±0.78kN or 100mV drop or 50% deformation		for cylindrical cells (less than 18mm diameter) for prismatic, pouch, coin/button cells
Test 7. Overcharge	Current = Manufacturer's recommended max. continuous charge current X 2 Voltage 1.If charge voltage ≤ 18V, V (min.) = 2 x (max. charge voltage) or 22V. 2.If charge voltage > 18V, V (min.) = 1.2 x (max. charge voltage)	- No disassembly, no fire within 7 days after the test	Only for Single Cell Battery / Battery
Test 8. Forced Discharge	Discharge at max. discharge current (connecting in series with 12V DC power supply), Duration time = rated capacity/initial test current	- No disassembly, no fire within 7 days after the test	Resistance of Electric Loader 1/Ω = (max. discharge current) / (12 + Initial OCV)

2-1. T1-T4 Test Result

Before			Altitude (T1)					Thermal (T2)					Vibration (T3)					Shock (T4)				
NO.	OCV	Mass (g)	After OCV (V)	Mass (g)	After OCV(%)	Mass Loss(%)	Result	After OCV (V)	Mass (g)	After OCV(%)	Mass Loss(%)	Result	After OCV (V)	Mass (g)	After OCV(%)	Mass Loss(%)	Result	After OCV (V)	Mass (g)	After OCV(%)	Mass Loss(%)	Result

A. 1st cycle fully charged state

1	12.6583	175.77	12.6492	175.76	99.93	0.006	Pass	12.8481	175.77	100.00	0.000	Pass	12.8438	175.74	99.97	0.017	Pass	12.8422	175.75	99.99	0.000	Pass
2	12.6573	175.77	12.6478	175.76	99.92	0.006	Pass	12.8449	175.74	100.00	0.011	Pass	12.8405	175.74	99.97	0.000	Pass	12.8387	175.74	99.99	0.000	Pass
3	12.6588	175.98	12.6503	175.97	99.93	0.006	Pass	12.8509	175.95	100.00	0.011	Pass	12.8467	175.95	99.97	0.000	Pass	12.8448	175.95	99.99	0.000	Pass
4	12.6584	176.09	12.6506	176.08	99.94	0.006	Pass	12.8459	176.06	100.00	0.011	Pass	12.8417	176.06	99.97	0.000	Pass	12.8396	176.06	99.98	0.000	Pass

B. 25th cycle fully charged state

5	12.6693	176.20	12.6607	176.19	99.93	0.006	Pass	12.8657	176.18	100.00	0.006	Pass	12.8616	176.18	99.97	0.000	Pass	12.8594	176.19	99.98	0.000	Pass
6	12.6637	175.82	12.6536	175.82	99.92	0.000	Pass	12.8663	175.80	100.00	0.011	Pass	12.8623	175.80	99.97	0.000	Pass	12.8602	175.80	99.98	0.000	Pass
7	12.6751	176.01	12.6652	176.00	99.92	0.006	Pass	12.8738	175.99	100.00	0.006	Pass	12.8694	175.98	99.97	0.006	Pass	12.8675	175.99	99.99	0.000	Pass
8	12.6589	175.78	12.6506	175.77	99.93	0.006	Pass	12.8648	175.76	100.00	0.006	Pass	12.8603	175.75	99.97	0.006	Pass	12.8586	175.76	99.99	0.000	Pass

2-2. T5/T7 Test Result

EXT.Short Circuit (T5)			
NO.	Initial OCV(V)	Max. Temp (°C)	Result

A. 1st cycle fully charged state

1	12.8422	58.45	Pass
2	12.8387	58.57	Pass
3	12.8448	57.88	Pass
4	12.8396	58.07	Pass

B. 25th cycle fully charged state

5	12.8594	58.40	Pass
6	12.8602	58.56	Pass
7	12.8675	57.88	Pass
8	12.8586	58.06	Pass

Over Charge (T7)			
NO.	Initial OCV(V)	Max. Temp (°C)	Result

A. 1st cycle fully charged state

9	12.6549	25.42	Pass
10	12.6538	25.16	Pass
11	12.6540	25.22	Pass
12	12.6572	27.74	Pass

Over Charge (T7)			
NO.	Initial OCV(V)	Max. Temp (°C)	Result

B. 25th cycle fully charged state

13	12.6728	24.88	Pass
14	12.6711	27.34	Pass
15	12.6709	24.78	Pass
16	12.6597	24.65	Pass

2-3. T6/T8 Test Result (P615967A1)

Cell Document Number	QDI-200415-C-P615967A1
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Crush (T6)			
NO.	Initial OCV(V)	Max. Temp (℃)	Result

Forced Discharge (T8)							
NO.	Initial OCV(V)	Max. Temp (℃)	Result	NO.	Initial OCV(V)	Max. Temp (℃)	Result

A. 1st cycle 50% charged state

11	3.8487	22.06	Pass
12	3.8476	21.06	Pass
13	3.8498	22.55	Pass
14	3.8493	21.00	Pass
15	3.8470	22.86	Pass

A. 1st cycle fully discharged state

B. 25th cycle fully discharged state

21	3.4798	80.99	Pass	31	3.4918	93.51	Pass
22	3.4781	77.59	Pass	32	3.4898	82.84	Pass
23	3.4806	88.72	Pass	33	3.4824	82.51	Pass
24	3.4817	92.68	Pass	34	3.4897	83.17	Pass
25	3.4823	81.13	Pass	35	3.4741	82.38	Pass
26	3.4800	86.51	Pass	36	3.4982	84.70	Pass
27	3.4815	78.84	Pass	37	3.4888	83.89	Pass
28	3.4805	83.73	Pass	38	3.4820	83.99	Pass
29	3.4790	81.30	Pass	39	3.4887	83.25	Pass
30	3.4798	88.22	Pass	40	3.4780	80.59	Pass

B. 25th cycle 50% charged state

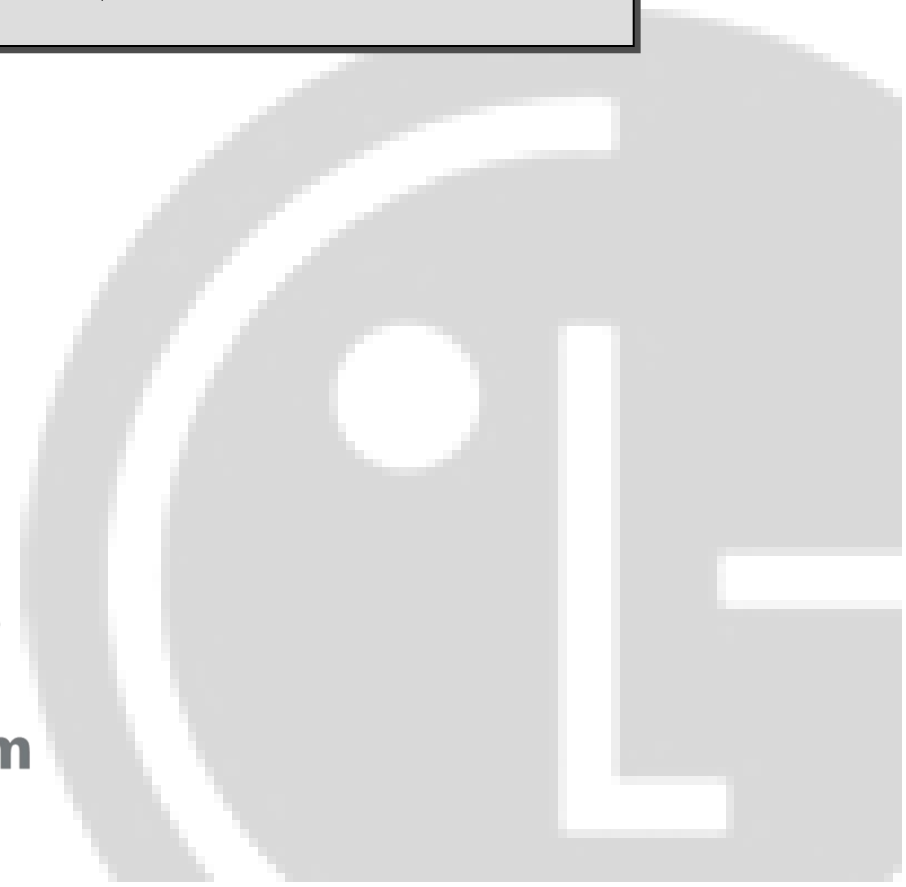
16	3.8642	22.57	Pass
17	3.8635	23.29	Pass
18	3.8637	22.05	Pass
19	3.8625	22.19	Pass
20	3.8635	22.73	Pass

Document Number	QDI-200416-B-L19L3PDA-D1	
Prepared	Jie Ma	
Approved	Ying Li	

1.2m Drop Test Report

- L19L3PDA (Nom. 45.00Wh, 11.55V) -

2020. 04. 16



1.2m Drop Test Report

A. Test Information

Standard requirement or The Clause Number of Standard	Test Condition	Requirement
UNITED NATIONS “Recommendations on the TRANSPORT OF DANGEROUS GOODS” Model Regulations(18 th) special provisions 188	1.2m Box Drop - 1st drop : corner - 2nd drop : flat on the bottom - 3rd drop : flat on the top - 4th drop : flat on the long side - 5th drop : flat on the short side 	Without ; - Damage to cells or batteries contained therein - Shifting of the contents so as to allow battery to battery (or cell to cell) contact - Release of contents

B. Box Information

Dimensions	385 x 290 x200mm	Battery Quantity	34 pcs/Box
Gross weight	7.980 kg	Net Weight of Batteries	5.981 kg

C. Image

Image-1	Image-2
	

D. Test Result

Result	Result Detail
PASS	The box was not cracked, the contents were not damaged and not shifted.