



UN38.3 试验概要

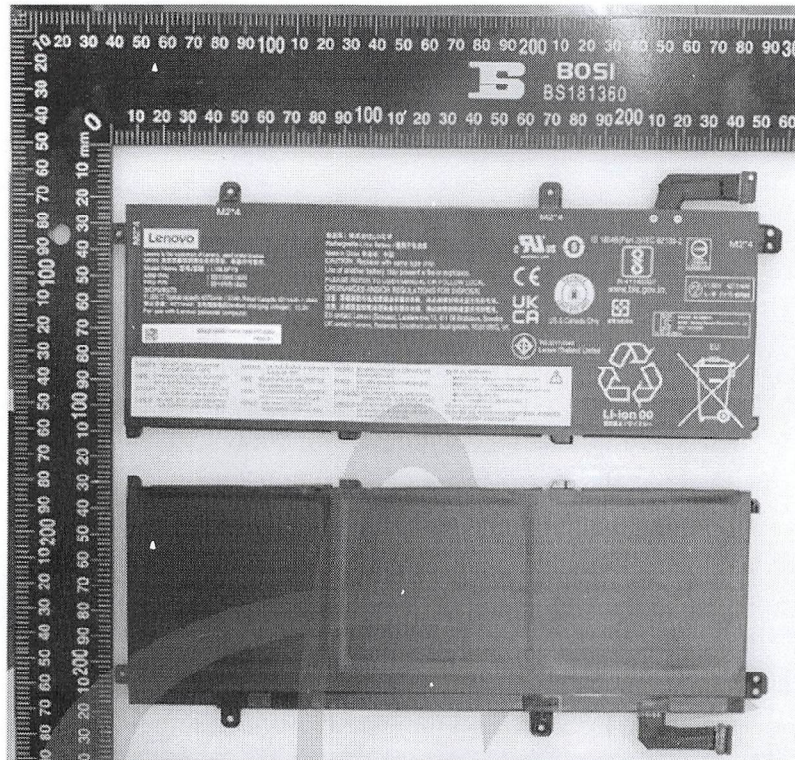
UN38.3 Test Summary



单位信息 Company information			
委托单位 Consignor	乐金化学(南京)信息电子材料有限公司 LG Chem(Nanjing) I&E Materials Co.,Ltd 南京经济技术开发区恒谊路 17 号 NO 17 HENGYI RD NANJING ECONOMICAL & TECHNICAL DEVELOPMENT ZONE 025-85603000 zhanghonglu@lgchem.com www.lgchem.com		
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/		
测试单位 Test lab	乐金化学(南京)信息电子材料有限公司 LG Chem(Nanjing) I&E Materials Co.,Ltd 南京经济技术开发区恒谊路 17 号 NO 17 HENGYI RD NANJING ECONOMICAL & TECHNICAL DEVELOPMENT ZONE 025-85603000 zhanghonglu@lgchem.com www.lgchem.com		
电池信息 Battery information			
名称 Name	锂离子电池	品牌 Brand	/
型号 Type	L18L3P73	原始测试型号 Original tested type	L18L3P73
标称电压(V) Nominal voltage	11.55	容量/能量 Capacity/energy	TYP:51Wh 4372mAh Rated:49Wh 4211mAh
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	0.203	外观 Appearance	黑色塑胶及塑料薄膜外壳 Black plastics cement and plastics film shell
测试信息 Test information			
原报告编号 Original test report No.	QDI-180820-B-L18L3P73	测试报告日期 Date of test report	2018-08-20
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		
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)	/

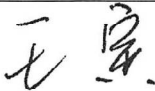


样品图片 Sample Picture



Lenovo is the trademark of Lenovo, used under license.
 Lenovo 是联想集团所属企业的商标，根据许可使用。
 Model Name 型号/型号 : L18L3P73
 ASM P/N : SB10W51925
 FRU P/N : 5B10W51826
 3ICP5/80/73
 11.55V Typical capacity 4372mAh / 51Wh, Rated Capacity 4211mAh / 49Wh
 额定容量: 4211mAh 充电限制电压(limited charging voltage): 13.2V
 For use with Lenovo personal computer



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 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 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 2020-09-27 

-验证码:714903-

报告结束



UN38.3 Test Summary

The following product has been evaluated according to the 6th revised edition of the UN Manual of Tests and Criteria.

We, LG Chem, Ltd., hereby certify that this battery meets the requirements of the regulation for transportation of lithium-ion cells, batteries and single cell batteries.

Manufacture's contact information	LG Chem, Ltd. 128 Yeoui-Daero, Yeongdeungpo-gu, SEOUL, 150-721, REPUBLIC OF KOREA Telephone : +86-10-7742-5427 E-mail : kkammy@lgchem.com Website : www.lgchem.com		
Test Laboratory information	LG Chem, Ltd. / RESEARCH PARK 188 Munjiro, Yuseong-gu, Daejeon, 305-738, REPUBLIC OF KOREA Telephone : +82-10-3099-3724 E-mail : juhongpark@lgchem.com Website : www.lgchem.com		
	LG Chem (Nanjing) I&E Materials Co., Ltd NO.17 Hengyi Road, Nanjing Economic & Technological Development Zone, Nanjing, Jiangsu, China Telephone : +86-025-85603000-8288 E-mail : xuyuannj@lgchem.com Website : www.lgchem.com		
Description		List of Test Completed	
Test Report Number	QDI-180820-B-L18L3P73	Test 1. Altitude Simulation	Pass
Date of test report	2018.08.20	Test 2. Thermal Test	Pass
Model name	L18L3P73	Test 3. Vibration	Pass
Type	Pouch	Test 4. Shock	Pass
Nominal voltage	11.55 V	Test 5. External Short Circuit	Pass
Capacity	51.00Wh	Test 6. Impact or Crush	Pass
Weight	202.96g	Test 7. Overcharge	Pass
Dimensions	205.88mmX84.60mmX5.70mm	Test 8. Forced Discharge	Pass

Approved By: Yuan Xu
 Part Leader
 Cyl NPI&CE lab part DQA Team
 LG Chem, Ltd.
 E-mail: xuyuannj@lgchem.com



Document Number	QDI-180820-B-L18L3P73	
Prepared	qianjunli	钱俊丽
Approved	Xuyuan	徐园

UN38.3 Test Report
- L18L3P73 (Nom. 51.00Wh, 11.55V) -

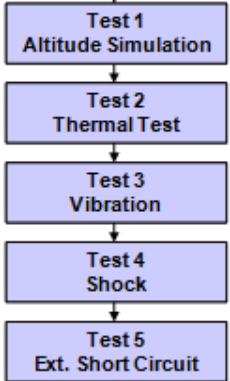
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2018. 08. 20



1. UN38.3 Test Condition

Test item	Test Condition	Requirements	Etc.
Test 1. Altitude Simulation	Storing at (low pressure) 11.6kPa for 6hr at 20+/-5°C	- 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 
Test 2. Thermal Test	[72±2°C, 6hr ↔ -40±2°C, 6hr, interval max. 30min] x 10 cycle Storing at 20±5°C 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 $\sqrt{\frac{100850}{\text{Mass(kg)}}}$ 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°C in chamber (Measured on external case) 2) Less than 0.1Ω, ext. short-circuit at 57±4°C 3) 1hr continue after returning to 57±4°C		
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°C	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	OCV	Mass	After OCV(%)	Mass Loss(%)	Result	OCV	Mass	After OCV(%)	Mass Loss(%)	Result	OCV	Mass	After OCV(%)	Mass Loss(%)	Result	OCV	Mass	After OCV(%)	Mass Loss(%)	Result

A. 1st cycle fully charged state

1	12.6101	202.22	12.6083	202.18	99.99	0.020	Pass	12.3741	202.20	98.14	0.000	Pass	12.3658	202.24	99.93	0.000	Pass	12.3688	202.24	100.00	0.000	Pass
2	12.5990	202.39	12.5990	202.36	100.00	0.015	Pass	12.3658	202.37	98.15	0.000	Pass	12.3623	202.41	99.97	0.000	Pass	12.3604	202.42	99.98	0.000	Pass
3	12.6065	201.71	12.6091	201.67	100.00	0.020	Pass	12.3713	201.70	98.11	0.000	Pass	12.3671	201.74	99.97	0.000	Pass	12.3663	201.74	99.99	0.000	Pass
4	12.6005	202.28	12.6031	202.24	100.00	0.020	Pass	12.3676	202.28	98.13	0.000	Pass	12.3652	202.30	99.98	0.000	Pass	12.3634	202.30	99.99	0.000	Pass

B. 50th cycle fully charged state

5	13.0451	201.87	13.0378	201.82	99.94	0.025	Pass	12.8138	201.84	98.28	0.000	Pass	12.8123	201.89	99.99	0.000	Pass	12.8015	201.90	99.92	0.000	Pass
6	13.0496	202.80	13.0432	202.76	99.95	0.020	Pass	12.8154	202.80	98.25	0.000	Pass	12.8143	202.83	99.99	0.000	Pass	12.8116	202.83	99.98	0.000	Pass
7	12.6352	202.96	12.6375	202.92	100.00	0.020	Pass	12.4095	202.95	98.20	0.000	Pass	12.4056	202.98	99.97	0.000	Pass	12.4034	202.99	99.98	0.000	Pass
8	13.0296	202.47	13.0236	202.44	99.95	0.015	Pass	12.8032	202.48	98.31	0.000	Pass	12.8020	202.50	99.99	0.000	Pass	12.8002	202.51	99.99	0.000	Pass

2-2. T5/T7 Test Result

EXT.Short Circuit (T5)

NO.	Initial OCV(V)	Max. Temp (°C)	Result
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A. 1st cycle fully charged state

1	12.3688	58.16	Pass
2	12.3604	58.14	Pass
3	12.3663	57.42	Pass
4	12.3634	57.20	Pass

B. 50th cycle fully charged state

5	12.4042	58.40	Pass
6	12.8116	58.36	Pass
7	12.4034	57.89	Pass
8	12.8002	57.57	Pass

Overcharge (T7)

NO.	Initial OCV(V)	Max. Temp (°C)	Result
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A. 1st cycle fully charged state

9	12.3128	21.80	Pass
10	12.6023	21.50	Pass
11	12.2304	21.70	Pass
12	12.6038	21.34	Pass

B. 50th cycle fully charged state

13	13.0469	21.50	Pass
14	13.0386	21.19	Pass
15	12.6267	21.35	Pass
16	12.6214	20.99	Pass

2-3. T6/T8 Test Result (P468073A1)

Cell Document Number				QDI-180820-C-P468073A1							
Crush (T6)				Forced Discharge (T8)							
NO.	Initial OCV(V)	Max. Temp (°C)	Result	NO.	Initial OCV(V)	Max. Temp (°C)	Result	NO.	Initial OCV(V)	Max. Temp (°C)	Result
<u>A. 1st cycle 50% charged state</u>				<u>A. 1st cycle fully discharged state</u>				<u>B. 50th cycle fully discharged state</u>			
C-1	3.8468	21.41	Pass	C-6	3.4259	83.27	Pass	C-16	3.5843	90.56	Pass
C-2	3.8458	24.91	Pass	C-7	3.4090	83.54	Pass	C-17	3.5940	94.15	Pass
C-3	3.8468	25.40	Pass	C-8	3.4187	85.99	Pass	C-18	3.5750	99.04	Pass
C-4	3.8452	25.91	Pass	C-9	3.4148	86.49	Pass	C-19	3.5455	88.28	Pass
C-5	3.8450	24.98	Pass	C-10	3.4159	92.66	Pass	C-20	3.5470	95.54	Pass
				C-11	3.4190	87.37	Pass	C-21	3.5915	98.42	Pass
				C-12	3.4250	89.10	Pass	C-22	3.5775	96.77	Pass
				C-13	3.4202	66.55	Pass	C-23	3.5735	87.43	Pass
				C-14	3.4192	90.48	Pass	C-24	3.5443	93.34	Pass
				C-15	3.4166	88.19	Pass	C-25	3.5612	85.76	Pass

3. Sample Image



Document Number	QDI-180820-B-L18L3P73-D1	
Prepared	qianjunli	钱俊丽
Approved	Xuyuan	徐园

1.2m Drop Test Report

- L18L3P73 (Nom. 51.00Wh, 11.55V) -

2018. 08. 20

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	380x285x160 mm	Battery Quantity	36 pcs/Box
Gross weight	9.160 kg	Net Weight of Batteries	7.277 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.