



# UN38.3 试验概要

## UN38.3 Test Summary



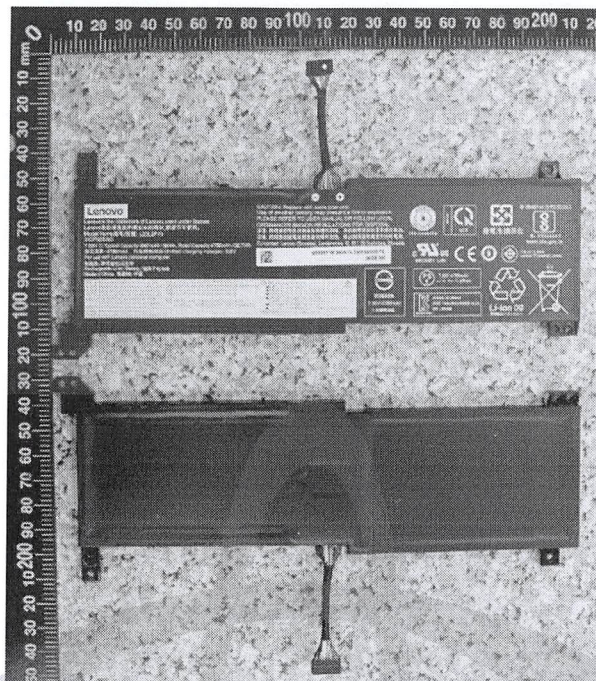
812000000863598

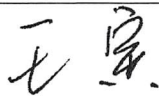
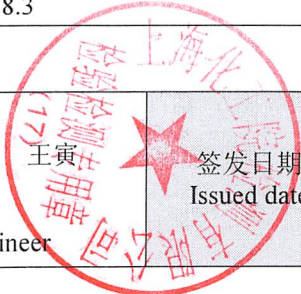
单位信息 Company information			
委托单位 Consignor	乐金化学(南京)信息电子材料有限公司 LG Chem(Nanjing) I&E Materials Co.,Ltd 南京经济技术开发区恒谊路 17 号 NO 17 HENGYI RD NANJING ECONOMICAL & TECHNICAL DEVELOPMENT ZONE 025-85603000 zhanghonglu@lgchem.com www.lgchem.com		
生产单位 Manufacturer	南京莱斯康电子有限公司 Nan Jing Nexcon Electronics Co.,Ltd 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	L20L2PF0	原始测试型号 Original tested type	/
标称电压(V) Nominal voltage	7.68	容量/能量 Capacity/energy	Typical Capacity:4947mAh 38Wh/Rated Capacity:4786mAh 36.7Wh
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	0.150	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-200824-B-L20L2PF0	测试报告日期 Date of test report	2020-08-24
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



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 2020-10-20

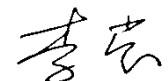
-验证码:233253-

\*\*\*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 : <a href="http://www.lgchem.com">www.lgchem.com</a>		
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 : <a href="http://www.lgchem.com">www.lgchem.com</a>		
	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 : <a href="http://www.lgchem.com">www.lgchem.com</a>		
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-200824-B-L20L2PF0	Test 1. Altitude Simulation	Pass
Date of test report	2020.08.24	Test 2. Thermal Test	Pass
Model name	L20L2PF0	Test 3. Vibration	Pass
Nominal voltage (V)	7.68	Test 4. Shock	Pass
Capacity (Nominal Wh)	38.00	Test 5. External Short Circuit	Pass
Weight (g)	149.45	Test 6. Impact or Crush	Pass
Dimensions (mm)	201.20X61.65X6.70	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.  
 E-mail: njliying@lgchem.com



Document Number	QDI-200824-B-L20L2PF0	
Prepared	Jie Ma	
Approved	Ying Li	

# UN38.3 Test Report

– L20L2PF0 (Nom. 38.00Wh, 7.68V) –

## Index

1. UN38.3 Test Condition
2. Test Result
3. Sample Image

2020. 08. 24

# 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℃	<ul style="list-style-type: none"> <li>- After OCV (%) ≥ 90%</li> <li>- No leakage, no venting, no disassembly, no rupture, no fire</li> <li>- Mass loss limit (leakage)                             <ul style="list-style-type: none"> <li>1) If M&lt;1g, less than 0.5%,</li> <li>2) If 1g≤M≤75g, less than 0.2%,</li> <li>3) If M&gt;75g, less than 0.1%)</li> </ul> </li> </ul>	<p>T1~T5 : Sequence Tests</p> <pre> graph TD     T1[Test 1 Altitude Simulation] --&gt; T2[Test 2 Thermal Test]     T2 --&gt; T3[Test 3 Vibration]     T3 --&gt; T4[Test 4 Shock]     T4 --&gt; 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℃	<ul style="list-style-type: none"> <li>- No disassembly, no rupture, no fire within 6 hours after the test</li> <li>- Max. Temp ≤ 170℃</li> </ul>	
Test 6. Impact	Φ=15.8±0.1mm bar, 9.1±0.1kg mass, 61±2.5cm height	<ul style="list-style-type: none"> <li>- No disassembly, no fire within 6 hours after the test</li> <li>- Max. Temp ≤ 170℃</li> </ul>	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)	<ul style="list-style-type: none"> <li>- No disassembly, no fire within 7 days after the test</li> </ul>	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	<ul style="list-style-type: none"> <li>- No disassembly, no fire within 7 days after the test</li> </ul>	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	8.3411	149.08	8.3305	149.06	99.87	0.013	Pass	8.1428	149.05	97.75	0.007	Pass	8.1389	149.06	99.95	0.000	Pass	8.1379	149.04	99.99	0.013	Pass
2	8.3457	149.29	8.3355	149.27	99.88	0.013	Pass	8.1477	149.26	97.75	0.007	Pass	8.1455	149.26	99.97	0.000	Pass	8.1450	149.25	99.99	0.007	Pass
3	8.3426	149.45	8.3329	149.44	99.88	0.007	Pass	8.1514	149.42	97.82	0.013	Pass	8.1472	149.43	99.95	0.000	Pass	8.1458	149.42	99.98	0.007	Pass
4	8.3434	149.37	8.3342	149.36	99.89	0.007	Pass	8.1520	149.35	97.81	0.007	Pass	8.1504	149.36	99.98	0.000	Pass	8.1490	149.34	99.98	0.013	Pass

B. 25th cycle fully charged state

5	8.3610	149.33	8.3519	149.31	99.89	0.013	Pass	8.1615	149.30	97.72	0.007	Pass	8.1619	149.29	100.00	0.007	Pass	8.1237	149.30	99.53	0.000	Pass
6	8.3580	149.75	8.3471	149.73	99.87	0.013	Pass	8.1615	149.72	97.78	0.007	Pass	8.1620	149.73	100.00	0.000	Pass	8.1591	149.73	99.96	0.000	Pass
7	8.3590	149.52	8.3479	149.51	99.87	0.007	Pass	8.1637	149.50	97.79	0.007	Pass	8.1644	149.51	100.00	0.000	Pass	8.1632	149.49	99.99	0.013	Pass
8	8.3574	149.45	8.3448	149.44	99.85	0.007	Pass	8.1585	149.44	97.77	0.000	Pass	8.1593	149.43	100.00	0.000	Pass	8.1578	149.43	99.98	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	8.1379	58.38	Pass
2	8.1450	58.32	Pass
3	8.1458	57.37	Pass
4	8.1490	57.66	Pass

B. 25th cycle fully charged state

5	8.1237	58.38	Pass
6	8.1591	58.28	Pass
7	8.1632	57.71	Pass
8	8.1578	57.70	Pass

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

A. 1st cycle fully charged state

9	8.3424	25.42	Pass
10	8.3443	25.26	Pass
11	8.3473	25.22	Pass
12	8.3437	25.02	Pass

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

B. 25th cycle fully charged state

13	8.3626	25.08	Pass
14	8.3575	24.82	Pass
15	8.3580	25.08	Pass
16	8.3569	24.86	Pass

# 2-3. T6/T8 Test Result (P595490E1)

Crush (T6)			
NO.	Initial OCV(V)	Max. Temp (°C)	Result

A. 1st cycle 50% charged state

C-1	3.8446	20.22	Pass
C-2	3.8446	21.44	Pass
C-3	3.8441	20.63	Pass
C-4	3.8438	20.82	Pass
C-5	3.8434	21.34	Pass

B. 25st cycle 50% charged state

C-6	3.8526	21.11	Pass
C-7	3.8533	21.25	Pass
C-8	3.8529	21.43	Pass
C-9	3.8530	21.40	Pass
C-10	3.8502	21.38	Pass

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

A. 1st cycle fully discharged state

C-6	3.4360	77.16	Pass
C-7	3.4318	78.62	Pass
C-8	3.4379	79.36	Pass
C-9	3.4358	81.00	Pass
C-10	3.4340	83.50	Pass
C-11	3.4362	79.35	Pass
C-12	3.4392	78.72	Pass
C-13	3.4389	77.61	Pass
C-14	3.4380	76.63	Pass
C-15	3.4359	72.98	Pass

B. 25th cycle fully discharged state

C-16	3.4474	78.20	Pass
C-17	3.4349	74.99	Pass
C-18	3.4367	75.95	Pass
C-19	3.4364	76.59	Pass
C-20	3.4458	79.39	Pass
C-21	3.4419	76.88	Pass
C-22	3.4395	76.78	Pass
C-23	3.4482	78.44	Pass
C-24	3.4362	78.62	Pass
C-25	3.4662	77.42	Pass





Document Number	QDI-200824-B-L20L2PF0-D1	
Prepared	Jie Ma	
Approved	Ying Li	

# 1.2m Drop Test Report


– L20L2PF0 (Nom. 38.00Wh, 7.68V) –

2020. 08. 24



# 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 <sup>th</sup> ) special provisions 188	<b>1.2m Box Drop</b> - 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	380*285*160mm	Battery Quantity	30pcs/Box
Gross weight	6.040 kg	Net Weight of Batteries	4.479 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.