

UN38.3 试验概要 UN38.3 Test Summary



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	单位信息 Comp	any information							
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生产单位 Manufacturer	前京莱斯康电子有限公司 Nan Jing Nexcon Electronics Co.,Ltd 有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 5895891460 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 南京经济技术开发区恒谊路 17 TECHNICAL DEVELOPMENT 025-85603000 zhan	「限公司 LG Chem(Nanjir 7 号 NO 17 HENGYI RD ZONE ghonglu@lgchem.com	ng) I&E Materials Co.,Ltd NANJING ECONOMICAL & www.lgchem.com						
	电池信息 Batte	ery information							
名称 Name	锂离子电池	品牌 Brand	1						
型号 Type	L20L3PG2	原始测试型号 Original tested type	1						
标称电压(V) Nominal voltage	11.4	容量/能量 Capacity/energy	Typical Capacity:3685mAh 42Wh/Rated Capacity:3590mAh 40.9Wh						
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	0.184	外观 Appearance	■黑色塑料薄膜外壳 Black plastic film shell						
	测试信息 Tes	st information							
原报告编号 Original test report No	QDI-200803-B-L20L3PG2	测试报告日期 Date of test report	2020-08-03						
测试标准 Test standard	联合国《关于危险货物运输的 册》第38.3章 UNITED NATION the TRANSPORT OF DANGER of Tests and Criteria 38.3	建议书 试验和标准手 IS "Recommendations on OUS GOODS" Manual	ST/SG/AC.10/11/Rev.6/Ame nd.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	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)	/						







UN38.3 Test Summary

Manufacture's contact informationLG Chem, ltd. 128 Yeoui-Daero, Yeongdeungpo-gu, SEOUL, 150-721, REPUBLIC OF KOREA Telephone : +82-10-7742-5427E-mail : kkammy@lgchem.comWebsite : www.lgchem.com								
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Test Laboratory Information	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 : <u>www.lgchem.com</u>							
Descr	iption	List of Test	Completed					
Cell/Battery Type (Physical Description)	Lithium Ion battery pack (Pouch) Revised edition		Revision 6 Amendment 1					
Test Report Number	QDI-200803-B-L20L3PG2	Test 1. Altitude Simulation	Pass					
Date of test report	2020.08.03	Test 2. Thermal Test	Pass					
Model name	L20L3PG2	Test 3. Vibration	Pass					
Nominal voltage (V)	11.40	Test 4. Shock	Pass					
Capacity (Nominal Wh)	42.00	Test 5. External Short Circuit	Pass					
Weight (g)	183.14	Test 6. Impact or Crush	Pass					
Dimensions (mm)	202x112x5.5	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

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Document Number	QDI-200803-B-	L20L3PG2		
Prepared	Prepared Jie Ma			
Approved	Ying Li	动物		

UN38.3 Test Report - L20L3PG2 (Nom. 42.00Wh, 11.40V) -



1. UN38.3 Test Condition

LG Chem

Test item	Test Condition	Requirements	Etc.
Test 1. Altitude Simulation	Storing at (low pressure)11.6kPa for 6hr at 20+/-5℃		T1~T5 : Sequence Tests
Test 2. Thermal Test	[72±2℃,6hr \leftrightarrow -40±2℃,6hr, interval max. 30min] x 10cycle Storing at 20±5℃ for 24h		Test 1 Altitude Simulation
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	 After OCV (%) ≥ 90% No leakage, no venting, no disassembly, no rupture, no fire Mass loss limit (leakage) 1) If M<1q. less than 0.5%. 	Test 2 Thermal Test Test 3
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	2) If 1g≤M≤75g, less than 0.2%, 3) If M>75g, less than 0.1%)	Vibration Test 4 Shock Test 5 Ext. Short Circuit
Test 5. External Short Circuit	 Samples to be heated to 57±4°C in chamber (Measured on external case) Less than 0.1Ω, ext. short-circuit at 57±4°C 1hr continue after returning to 57±4°C 	- 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	for cylindrical cells (not less than 18mm diameter)
Test 6. Crush	Crushing rate :1.5cm/s, until 13kN \pm 0.78kN or 100mV drop or 50% deformation	within 6 hours after the test - Max. Temp ≤ 170℃	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
<u>A. 1st</u>	. 1st cycle fully charged state																					
1	12.9210	183.02	12.9175	183.01	99.97	0.005	Pass	12.7505	182.97	98.71	0.022	Pass	12.7490	182.97	99.99	0.000	Pass	12.7469	182.97	99.98	0.000	Pass
2	12.9208	183.08	12.9174	183.08	99.97	0.000	Pass	12.7391	183.03	98.62	0.027	Pass	12.7376	183.06	99.99	0.000	Pass	12.7356	183.05	99.98	0.005	Pass
3	12.9207	182.29	12.9175	182.26	99.98	0.016	Pass	12.7454	182.24	98.67	0.011	Pass	12.7440	182.25	99.99	0.000	Pass	12.7422	182.25	99.99	0.000	Pass
4	12.9325	183.14	12.9295	183.11	99.98	0.016	Pass	12.7264	183.08	98.43	0.016	Pass	12.7247	183.10	99.99	0.000	Pass	12.7231	183.11	99.99	0.000	Pass
<u>B. 25th</u>	n cycle ful	ly charge	ed state																			
5	12.5536	183.13	12.5503	183.13	99.97	0.000	Pass	12.3720	183.08	98.58	0.027	Pass	12.3706	183.10	99.99	0.000	Pass	12.3663	183.09	99.97	0.005	Pass
6	12.9542	183.15	12.9521	183.15	99.98	0.000	Pass	12.7556	183.12	98.48	0.016	Pass	12.7542	183.13	99.99	0.000	Pass	12.7524	183.13	99.99	0.000	Pass
7	12.9511	182.65	12.9493	182.62	99.99	0.016	Pass	12.7823	182.59	98.71	0.016	Pass	12.7809	182.60	99.99	0.000	Pass	12.7792	182.60	99.99	0.000	Pass
8	12.9523	183.07	12.9505	183.05	99.99	0.011	Pass	12.7817	183.01	98.70	0.022	Pass	12.7802	183.02	99.99	0.000	Pass	12.7786	183.02	99.99	0.000	Pass



2-2. T5/T7 Test Result

EXT.Short Circuit (T5)								
NO.	Initial OCV(V)	Max. Temp (℃)	Result					
A. 1st cycle fully charged state								

1	12.7469	58.27	Pass
2	12.7356	58.41	Pass
3	12.7422	57.37	Pass
4	12.7231	57.34	Pass

	Over C	harge (T7)	
NO.	Initial OCV(V)	Max. Temp (℃)	Result

A. 1st cycle fully charged state

9	12.9169	27.13	Pass
10	12.9187	26.77	Pass
11	12.9171	26.83	Pass
12	12.9054	26.43	Pass

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

B. 25th cycle fully charged state

13	12.9427	26.50	Pass
14	12.9464	26.13	Pass
15	12.9459	26.20	Pass
16	12.9473	25.96	Pass

B. 25th cycle fully charged state

5	12.3663	58.47	Pass
6	12.7524	58.36	Pass
7	12.7792	57.66	Pass
8	12.7786	57.35	Pass



2-3. T6/T8 Test Result (ICP485490L1)

	Cru	sh (T6)		Forced Discharge (T8)							
NO.	Initial OCV(V)	Max. Temp (℃)	Result	NO.	Initial OCV(V)	Max. Temp (℃)	Result	NO.	Initial OCV(V)	Max. Temp (℃)	Result
A. 1st cycle 50% charged state				<u>A. 1st (</u>	cycle fully disc	harged state		<u>B. 25th</u>	cycle fully dis	charged state	
C-1	3.8407	22.63	Pass	C-6	3.3396	86.82	Pass	C-16	3.3996	96.53	Pass
C-2	3.8418	22.50	Pass	C-7	3.3386	79.17	Pass	C-17	3.3464	76.95	Pass
C-3	3.8406	22.51	Pass	C-8	3.3414	84.94	Pass	C-18	3.4022	86.23	Pass
C-4	3.8416	22.52	Pass	C-9	3.3373	71.41	Pass	C-19	3.3895	78.48	Pass
C-5	3.8414	22.53	Pass	C-10	3.3362	84.21	Pass	C-20	3.3205	76.93	Pass
B. 25st	cycle 50% cha	rged state		C-11	3.3318	77.45	Pass	C-21	3.3608	80.54	Pass
C-6	3.8630	22.53	Pass	C-12	3.3346	75.54	Pass	C-22	3.4028	88.51	Pass
C-7	3.8704	22.45	Pass	C-13	3.3348	72.08	Pass	C-23	3.3852	90.63	Pass
C-8	3.8688	22.44	Pass	C-14	3.3376	81.02	Pass	C-24	3.3960	83.58	Pass
C-9	3.8699	22.45	Pass	C-15	3.3362	78.46	Pass	C-25	3.3615	86.79	Pass
C-10	3.8635	22.40	Pass		1					<u> </u>	

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3. Sample Image





Document Number	QDI-200827-B-L20L3PG2-D2	
Prepared	Jie Ma	马杰
Approved	Ying Li	また

1.2m Drop Test Report - L20L3PG2 (Nom. 42.00Wh, 11.40V) -

2020. 08. 27



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 	Corner	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*290*170mm	Battery Quantity	34pcs/Box
Gross weight	7.900 kg	Net Weight of Batteries	6.218 kg

C. Image

Image-1	Image-2	

D. <u>Test Result</u>

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

