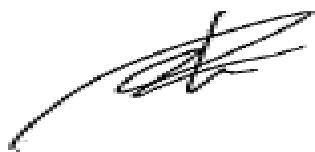


UN38.3 Test Summary

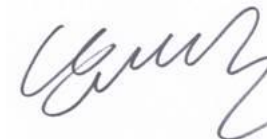
The following product has been evaluated according to the 5th revised edition Amendment 2 of the UN Manual of Tests and Criteria.
We, LG Chem, Ltd., hereby certify that this battery meets the requirements of the regulation for transportation of lithium-ion cells, batteries and single cell batteries.

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-170706-B-L17L2PB4	Test 1. Altitude Simulation	Pass
Date of test report	2017.07.06	Test 2. Thermal Test	Pass
Model name	L17L2PB4	Test 3. Vibration	Pass
Type	Pouch	Test 4. Shock	Pass
Nominal voltage	7.72 V	Test 5. External Short Circuit	Pass
Capacity	39.0 Wh	Test 6. Impact or Crush	Pass
Weight	155.0 g	Test 7. Overcharge	Pass
Dimensions	118.18mm X 118.39mm X 8.40mm	Test 8. Forced Discharge	Pass

Reviewed By: Joohong Park
IT & New Application Part Leader
Global Standard Certification Team
LG Chem, Ltd.
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Team Leader
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Document Number	QDI-170706-B-L17L2PB4	
Prepared	MyeongHoon Choi	<i>Choi</i>
Reviewed	MinJe Woo	<i>[Signature]</i>
Approved	DaeHo Nam	<i>[Signature]</i>

UN38.3 Test Report

- L17L2PB4 (Nom.39Wh, 7.72V) -

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3. Test Result
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2017. 07. 06



1. UN38.3 Test Condition

Rev.5 / Amd.2

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"> - After OCV (%) ≥ 90% - No leakage, no venting, no disassembly, no rupture, no fire - Mass loss limit (leakage) <ol style="list-style-type: none"> 1) If $M < 1g$, less than 0.5%, 2) If $1g \leq M \leq 75g$, less than 0.2%, 3) If $M > 75g$, less than 0.1% 	<p>T1~T5 : Sequence Tests</p> <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 (peak acceleration : 150gn, pulse duration : 6msec) x 6 (±x, y, z), direction x 3 cycle		
Test 5. External Short Circuit	100mΩ ext. short-circuit at 55±2℃ 1hr continue after returning at 55±2℃		
Test 6. Impact	Φ=15.8±0.1mm bar, 9.1±0.1kg mass, 61±2.5cm height	<ul style="list-style-type: none"> - 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)	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - No disassembly, no fire within 7 days after the test 	Resistance of Electric Loader 1/Ω = (max. discharge current) / (12 + Initial OCV)

2. General Information

1. Standard charge / discharge Condition

	Mode	Condition	End Condition
Charge	CC / CV	Current = 2460 mA Voltage = 8.8 V	Current = 246 mA
Discharge	CC	Current = 984 mA	Voltage = 6.0 V

2. Cycle Condition

	Mode	Condition	End Condition
Charge	CC / CV	Current = 2460 mA Voltage = 8.8 V	Current = 246 mA
Discharge	CC	Current = 984 mA	Voltage = 6.0 V

3. Test Condition

	Mode	Condition
Test 7. Overcharge	CC / CV	Max. Charge Current = 2706 mA CC/CV 2Imax (5412mA) 17.6 V cut-off 24Hr
Test 8. Forced Discharge	CC	Max. Discharge Current = 4920 mA Duration Time = 60 min

3-1. 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	8.785	155.09	8.778	155.08	99.92	0.006	Pass	8.635	154.99	98.37	0.058	Pass	8.633	154.98	99.98	0.006	Pass	8.629	154.98	99.95	0.000	Pass
2	8.783	155.02	8.776	155.02	99.92	0.000	Pass	8.670	155.01	98.79	0.006	Pass	8.666	155.00	99.95	0.006	Pass	8.644	155.00	99.75	0.000	Pass
3	8.781	155.07	8.778	155.06	99.97	0.006	Pass	8.669	155.00	98.76	0.039	Pass	8.666	154.99	99.97	0.006	Pass	8.625	154.99	99.53	0.000	Pass
4	8.781	155.07	8.777	155.07	99.95	0.000	Pass	8.664	155.01	98.71	0.039	Pass	8.661	155.01	99.97	0.000	Pass	8.635	155.00	99.70	0.006	Pass

B. 50th cycle fully charged state

5	8.781	155.04	8.776	155.04	99.94	0.000	Pass	8.644	155.03	98.50	0.006	Pass	8.639	155.03	99.94	0.000	Pass	8.637	155.02	99.98	0.006	Pass
6	8.777	155.06	8.775	155.05	99.98	0.006	Pass	8.648	155.04	98.55	0.006	Pass	8.635	154.98	99.85	0.039	Pass	8.632	154.98	99.97	0.000	Pass
7	8.782	155.06	8.779	155.06	99.97	0.000	Pass	8.645	155.04	98.47	0.013	Pass	8.633	155.02	99.86	0.013	Pass	8.629	155.02	99.95	0.000	Pass
8	8.785	155.09	8.780	155.09	99.94	0.000	Pass	8.648	155.03	98.50	0.039	Pass	8.633	155.03	99.83	0.000	Pass	8.633	155.02	100.00	0.006	Pass

3-2. 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	8.629	55.31	Pass
2	8.644	55.58	Pass
3	8.625	55.65	Pass
4	8.635	55.87	Pass

B. 50th cycle fully charged state

5	8.637	55.51	Pass
6	8.632	55.20	Pass
7	8.629	55.58	Pass
8	8.633	55.18	Pass

Over Charge (T7)

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

9	8.645	24.53	Pass
10	8.641	25.58	Pass
11	8.644	25.66	Pass
12	8.643	25.94	Pass

Over Charge (T7)

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

B. 50th cycle fully charged state

13	8.620	26.08	Pass
14	8.627	24.36	Pass
15	8.628	25.97	Pass
16	8.626	25.78	Pass

3-3. T6/T8 Test Result (ICP595490C2)

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

A. 1st cycle 50% charged state

C-1	3.894	21.28	Pass
C-2	3.898	21.45	Pass
C-3	3.901	21.34	Pass
C-4	3.887	21.49	Pass
C-5	3.891	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	3.119	42.74	Pass	C-16	3.126	42.99	Pass
C-7	3.112	42.87	Pass	C-17	3.117	40.38	Pass
C-8	3.082	40.83	Pass	C-18	3.126	43.11	Pass
C-9	3.112	41.56	Pass	C-19	3.106	41.94	Pass
C-10	3.087	41.29	Pass	C-20	3.138	40.67	Pass
C-11	3.079	41.32	Pass	C-21	3.122	42.08	Pass
C-12	3.110	40.56	Pass	C-22	3.148	41.68	Pass
C-13	3.085	43.44	Pass	C-23	3.155	43.03	Pass
C-14	3.116	42.94	Pass	C-24	3.148	41.46	Pass
C-15	3.110	42.90	Pass	C-25	3.109	40.88	Pass

B. 50th cycle fully discharged state

4. Sample Image



Lenovo

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 Rechargeable Li-ion Battery
 (锂离子电池组) (2ICP6/55/90)
 Model Name 型号/型号: L17L2PB4
 Manufactured By LGC
 Made in China
 制造地: 中国 / 製造地: 中国 制造商: LG Chem, Ltd.

Rating: 7.72V == TYP. 5055mAh/39Wh MIN. 4920mAh/38Wh
 For use with Lenovo personal computer
 EU contact : Lenovo, Einsteinova 21, 851 01 Bratislava, Slovakia
 CAUTION: Replace with same type only.
 Use of another battery may present a fire or explosion
 STORE BETWEEN 0°C-60°C 32°F-140°F
 For use with Lenovo personal computer
 PLEASE REFER TO USER MANUAL OR FOLLOW LOCAL ORDINANCES AND/OR REGULATIONS FOR DISPOSAL
 请参考使用说明或者遵循相关法律法规规定处理废弃电池

TIS 2017-0548
 机电产品回收
 CE EU 4920 mAh
 US MH29581 LNA
 7.72V 4920mAh
 5
 RECYCLE 7500-822-8981
 EU
 Li-ion00
 4920mAh
 7.72V/4920mAh
 二次充电电池
 US & Canada Only
 4920mAh 7.72V 4920mAh 2017.06

FARE MÅ IKKE ÅPNES ELLER UTSÆTTES FOR VARME OVER 100°C
 PELIGRO NO ABRIRE O EXPONER A TEMPERATURAS SUPERIORES A 100°C
 PERIGÓ NÃO ABRIRE NEM EXPOR A TEMPERATURAS SUPERIORES A 100°C
 PERIGÓ NÃO ABRIRE OU EXPOÑHA A AQUECIMENTO ACIMA DE 100°C
 VORSICHT NICHT ÖFFNEN ODER AUSSETZEN MIT WÄRME
 IL-BERÜHRUNG BRINGEN ODER ÜBER 100°C ERHITZEN
 DANGER DO NOT OPEN OR EXPOSE TO HEAT ABOVE 100°C
 DANGER NE PAS OUVRIRE NI EXPOSER À PLUS DE 100°C
 GEVAAR NIET OPENEN NIET BLOOTSTELLEN AAN TEMPERATUREN BOVEN 100°C

FARLIG MÅ IKKE ÅPNES ELLER UDSÆTTES FOR TEMPERATURER OVER 100°C
 ATTENZIONE! NON APRIRE O RISCALDARE AD UNA TEMPERATURA SUPERIORE AI 100°C
 FARA ÖPNNA ATE BATTISKÄT OCH UTSÄTTI DET INTE FÖR VÄRME ÖVER 100°C
 VAARA ÄLÄ KÄÄKKÄÄ LUUKA KÄUMENÄSTÄ JU IKÄ ASTEEN LÄMPÖTILAN
 注意: 用錯誤型號電池更換會有爆炸危險
 務必換前請將電池用完的電池
 注意: 用錯誤型號電池更換會有爆炸危險
 務必按照說明書用完的電池

危険 発熱、変圧、短絡の恐れがあるため。
 ● 衝撃を受けないでください。
 ● 前型をならしたバッテリーパックは、使用をやめてください。
 ● 短期間が経ったバッテリーパックは新しいものと交換してください。
 ● 分解、改造、火中への投下、100°C以上の加熱、および高温中の使用、保管をしないでください。
 ● 指定の充電方法以外で充電しないでください。
 ● バッテリーパックの金属端子をショート(短絡)させないで
 引当 本製品は 100°C 以上の温度にさらさないでください。
 危険 禁止事項、警告、外部短絡防止、および充電制限、
 使用説明書、請参照して電圧可変の、電池を必ず見直し。

