

# UN38.3 测试报告

## UN38.3 Test Report

样品名称 : 带保护锂离子可充电电池 P1450C2  
3.7V, 1000mAh, 3.70Wh

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Sample name : Protected Li-ion Rechargeable Battery P1450C2  
3.7V, 1000mAh, 3.70Wh

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委托单位 : 深圳领跑能源科技有限公司

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Consignor : KEEPOWER TECHNOLOGY CO., LIMITED.

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深圳信特斯检测技术有限公司  
Shenzhen SEM Test Technology Co., Ltd.



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样品名称 Sample name	中文 Chinese	带保护锂离子可充电电池 P1450C2 3.7V, 1000mAh, 3.70Wh			
	英文 English	Protected Li-ion Rechargeable Battery P1450C2 3.7V, 1000mAh, 3.70Wh			
样品编号 Sample No.	01~48				
委托单位 Consignor	深圳领跑能源科技有限公司 KEEPPower TECHNOLOGY CO., LIMITED.				
生产单位 Manufacturer	深圳领跑能源科技有限公司 KEEPPower TECHNOLOGY CO., LIMITED.				
测试方法 和判定标准 Test method and criterion	联合国《关于危险货物运输的建议书 实验和标准手册》 ST/SG/AC.10/11/Rev.6/Amendment.1, 38.3 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amendment.1, 38.3				
样品外观 Appearance	黑色圆柱形电池, 尺寸 $\Phi 14.4 \times 52.1\text{mm}$ Black cylindrical battery, size $\Phi 14.4 \times 52.1\text{mm}$				
样品接收日期 Accepted date	2019-03-11	测试起讫日期 Test date	2019-03-11 ~ 2019-03-21		
测试项目 Test items	高度模拟、温度试验、振动、冲击、外部短路、挤压、过度充电、强制放电 Altitude simulation, Thermal test, Vibration, Shock, External short circuit, Crush, Overcharge, Forced discharge.				
测试结论 Conclusion	<p>经测试, 该样品符合联合国《关于危险货物运输的建议书 实验和标准手册》 ST/SG/AC.10/11/Rev.6/Amendment.1, 38.3 标准要求。</p> <p>The sample has passed the test items of UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amendment.1, 38.3</p> <p style="text-align: right;">签发日期(Issue date): 2020-04-08</p>				
备注 Comments	/				
编制 Compiler:		审核 Checker:		批准 Approver:	



序号 No.	测试项目名称 Name of test	标准要求或标准条款号 Standard requirement or the clause number of standard	测试结果 Test result	本项结论 Test conclusion	备注 Remarks	
1	高度模拟 Altitude simulation	联合国《关于危险货物运输的建议书 实验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amendment.1, 38.3 试验 T.1 Test T.1	见附表 1 See Appendix 1	合格 Passed	/	
2	温度试验 Thermal test	联合国《关于危险货物运输的建议书 实验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amendment.1, 38.3 试验 T.2 Test T.2	见附表 2 See Appendix 2	合格 Passed	/	
3	振动 Vibration	联合国《关于危险货物运输的建议书 实验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amendment.1, 38.3 试验 T.3 Test T.3	见附表 3 See Appendix 3	合格 Passed	/	
4	冲击 Shock	联合国《关于危险货物运输的建议书 实验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amendment.1, 38.3 试验 T.4 Test T.4	见附表 4 See Appendix 4	合格 Passed	/	
5	外部短路 External short-circuit	联合国《关于危险货物运输的建议书 实验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amendment.1, 38.3 试验 T.5 Test T.5	见附表 5 See Appendix 5	合格 Passed	/	
6	挤压 Crush	联合国《关于危险货物运输的建议书 实验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amendment.1, 38.3 试验 T.6 Test T.6	见附表 6 See Appendix 6	合格 Passed	/	
7	过度充电 Overcharge	联合国《关于危险货物运输的建议书 实验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amendment.1, 38.3 试验 T.7 Test T.7	见附表 7 See Appendix 7	合格 Passed	/	
8	强制放电 Forced discharge	联合国《关于危险货物运输的建议书 实验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amendment.1, 38.3 试验 T.8 Test T.8	见附表 8 See Appendix 8	合格 Passed	/	
测试环境条件 Test environment condition		环境温度: 20℃ - 25℃; 环境湿度: 45% - 75% Ambient temperature: 20℃ - 25℃, Ambient humidity: 45% - 75%				
分包测试情况 Subcontracted test condition		测试项目 Test items	/			
		分包实验室 Subcontracted Laboratory	名称 Name	/	邮编 Post code	/
			地址 Address	/	电话 Tel	/



附表 1  
Appendix 1

序号 No.	1	测试项目名称 Name of Test Items		高度模拟 Altitude simulation				
样品编号 Sample No.	样品状态 Sample status	测试前 Before		测试后 After		质量损失 Mass loss (%)	剩余电压 Residual OCV (%)	测试结果 Test result
		电池质量 $m_1$ (g)	开路电压 $V_1$ (V)	电池质量 $m_2$ (g)	开路电压 $V_2$ (V)			
01	首次循环,完全充电 1st CYC, Fully Charged	21.552	4.200	21.547	4.199	0.023	99.98	O
02	首次循环,完全充电 1st CYC, Fully Charged	21.524	4.200	21.519	4.198	0.023	99.95	O
03	首次循环,完全充电 1st CYC, Fully Charged	21.447	4.200	21.443	4.198	0.019	99.95	O
04	首次循环,完全充电 1st CYC, Fully Charged	21.440	4.200	21.434	4.199	0.028	99.98	O
05	首次循环,完全充电 1st CYC, Fully Charged	21.561	4.200	21.556	4.198	0.023	99.95	O
06	第 25 个循环,完全充电 25th CYC, Fully Charged	21.430	4.200	21.426	4.199	0.019	99.98	O
07	第 25 个循环,完全充电 25th CYC, Fully Charged	21.440	4.200	21.436	4.198	0.019	99.95	O
08	第 25 个循环,完全充电 25th CYC, Fully Charged	21.478	4.200	21.474	4.199	0.019	99.98	O
09	第 25 个循环,完全充电 25th CYC, Fully Charged	21.561	4.200	21.556	4.199	0.023	99.98	O
10	第 25 个循环,完全充电 25th CYC, Fully Charged	21.349	4.200	21.345	4.198	0.019	99.95	O
以下空白								
注: L-泄露; V-排气; D-解体; R-破裂; F-起火; O-无泄露、无排气、无解体、无破裂、无起火。 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O-No leakage, no venting, no disassembly, no rupture & no fire								



附表 2  
Appendix 2

序号 No.	2	测试项目名称 Name of Test Items		温度试验 Thermal test				
样品编号 Sample No.	样品状态 Sample status	测试前 Before		测试后 After		质量损失 Mass loss (%)	剩余电压 Residual OCV (%)	测试结果 Test result
		电池质量 $m_1$ (g)	开路电压 $V_1$ (V)	电池质量 $m_2$ (g)	开路电压 $V_2$ (V)			
01	首次循环,完全充电 1st CYC, Fully Charged	21.547	4.199	21.532	4.119	0.070	98.09	O
02	首次循环,完全充电 1st CYC, Fully Charged	21.519	4.198	21.514	4.120	0.023	98.14	O
03	首次循环,完全充电 1st CYC, Fully Charged	21.443	4.198	21.433	4.121	0.047	98.17	O
04	首次循环,完全充电 1st CYC, Fully Charged	21.434	4.199	21.421	4.118	0.061	98.07	O
05	首次循环,完全充电 1st CYC, Fully Charged	21.556	4.198	21.548	4.118	0.037	98.09	O
06	第 25 个循环,完全充电 25th CYC, Fully Charged	21.426	4.199	21.423	4.119	0.014	98.09	O
07	第 25 个循环,完全充电 25th CYC, Fully Charged	21.436	4.198	21.421	4.119	0.070	98.12	O
08	第 25 个循环,完全充电 25th CYC, Fully Charged	21.474	4.199	21.467	4.118	0.033	98.07	O
09	第 25 个循环,完全充电 25th CYC, Fully Charged	21.556	4.199	21.541	4.117	0.070	98.05	O
10	第 25 个循环,完全充电 25th CYC, Fully Charged	21.345	4.198	21.341	4.117	0.019	98.07	O
以下空白								
注: L-泄露; V-排气; D-解体; R-破裂; F-起火; O-无泄露、无排气、无解体、无破裂、无起火。 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O-No leakage, no venting, no disassembly, no rupture & no fire								



附表 3  
Appendix 3

序号 No.	3	测试项目名称 Name of Test Items		振动 Vibration				
样品编号 Sample No.	样品状态 Sample status	测试前 Before		测试后 After		质量损失 Mass loss (%)	剩余电压 Residual OCV (%)	测试结果 Test result
		电池质量 $m_1$ (g)	开路电压 $V_1$ (V)	电池质量 $m_2$ (g)	开路电压 $V_2$ (V)			
01	首次循环,完全充电 1st CYC, Fully Charged	21.532	4.119	21.531	4.118	0.005	99.98	O
02	首次循环,完全充电 1st CYC, Fully Charged	21.514	4.120	21.512	4.119	0.009	99.98	O
03	首次循环,完全充电 1st CYC, Fully Charged	21.433	4.121	21.432	4.119	0.005	99.95	O
04	首次循环,完全充电 1st CYC, Fully Charged	21.421	4.118	21.420	4.117	0.005	99.98	O
05	首次循环,完全充电 1st CYC, Fully Charged	21.548	4.118	21.547	4.117	0.005	99.98	O
06	第 25 个循环,完全充电 25th CYC, Fully Charged	21.423	4.119	21.422	4.118	0.005	99.98	O
07	第 25 个循环,完全充电 25th CYC, Fully Charged	21.421	4.119	21.420	4.117	0.005	99.95	O
08	第 25 个循环,完全充电 25th CYC, Fully Charged	21.467	4.118	21.465	4.116	0.009	99.95	O
09	第 25 个循环,完全充电 25th CYC, Fully Charged	21.541	4.117	21.540	4.116	0.005	99.98	O
10	第 25 个循环,完全充电 25th CYC, Fully Charged	21.341	4.117	21.340	4.116	0.005	99.98	O
以下空白								
注: L-泄露; V-排气; D-解体; R-破裂; F-起火; O-无泄露、无排气、无解体、无破裂、无起火。 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O-No leakage, no venting, no disassembly, no rupture & no fire								



附表 4  
Appendix 4

序号 No.	4	测试项目名称 Name of Test Items		冲击 Shock				
样品编号 Sample No.	样品状态 Sample status	测试前 Before		测试后 After		质量损失 Mass loss (%)	剩余电压 Residual OCV (%)	测试结果 Test result
		电池质量 $m_1$ (g)	开路电压 $V_1$ (V)	电池质量 $m_2$ (g)	开路电压 $V_2$ (V)			
01	首次循环,完全充电 1st CYC, Fully Charged	21.531	4.118	21.531	4.118	0.000	100.00	O
02	首次循环,完全充电 1st CYC, Fully Charged	21.512	4.119	21.512	4.119	0.000	100.00	O
03	首次循环,完全充电 1st CYC, Fully Charged	21.432	4.119	21.431	4.118	0.005	99.98	O
04	首次循环,完全充电 1st CYC, Fully Charged	21.420	4.117	21.420	4.116	0.000	99.98	O
05	首次循环,完全充电 1st CYC, Fully Charged	21.547	4.117	21.546	4.117	0.005	100.00	O
06	第 25 个循环,完全充电 25th CYC, Fully Charged	21.422	4.118	21.422	4.118	0.000	100.00	O
07	第 25 个循环,完全充电 25th CYC, Fully Charged	21.420	4.117	21.420	4.116	0.000	99.98	O
08	第 25 个循环,完全充电 25th CYC, Fully Charged	21.465	4.116	21.465	4.116	0.000	100.00	O
09	第 25 个循环,完全充电 25th CYC, Fully Charged	21.540	4.116	21.539	4.115	0.005	99.98	O
10	第 25 个循环,完全充电 25th CYC, Fully Charged	21.340	4.116	21.340	4.116	0.000	100.00	O
以下空白								
注: L-泄露; V-排气; D-解体; R-破裂; F-起火; O-无泄露、无排气、无解体、无破裂、无起火。 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O-No leakage, no venting, no disassembly, no rupture & no fire								



附表 5  
Appendix 5

序号 No.	5	测试项目名称 Name of Test Items	外部短路 External short circuit	
样品编号 Sample No.	样品状态 Sample status	样品表面最高温度 Max. External Temperature (°C)	测试结果 Test result	备注 Remark
01	首次循环,完全充电 1st CYC, Fully Charged	58.3	O	/
02	首次循环,完全充电 1st CYC, Fully Charged	57.9	O	/
03	首次循环,完全充电 1st CYC, Fully Charged	58.8	O	/
04	首次循环,完全充电 1st CYC, Fully Charged	58.6	O	/
05	首次循环,完全充电 1st CYC, Fully Charged	58.4	O	/
06	第 25 个循环,完全充电 25th CYC, Fully Charged	58.7	O	/
07	第 25 个循环,完全充电 25th CYC, Fully Charged	58.2	O	/
08	第 25 个循环,完全充电 25th CYC, Fully Charged	57.8	O	/
09	第 25 个循环,完全充电 25th CYC, Fully Charged	58.6	O	/
10	第 25 个循环,完全充电 25th CYC, Fully Charged	58.5	O	/
以下空白				
注: D-解体; R-破裂; F-起火; O-无解体、无破裂、无起火。 Note: D-Disassembly, R-Rupture, F-Fire, O-No disassembly, no rupture & no fire				





附表 6  
Appendix 6

序号 No.	6	测试项目名称 Name of Test Items	挤压 Crush		
样品编号 Sample No.	样品状态 Sample status	样品表面最高温度 Max. External Temperature (°C)	测试结果 Test result	备注 Remark	
11	首次循环, 50%充电 1st CYC, 50% Charged	56.9	O	/	
12	首次循环, 50%充电 1st CYC, 50% Charged	71.6	O	/	
13	首次循环, 50%充电 1st CYC, 50% Charged	28.3	O	/	
14	首次循环, 50%充电 1st CYC, 50% Charged	91.7	O	/	
15	首次循环, 50%充电 1st CYC, 50% Charged	29.6	O	/	
16	第 25 次循环, 50%充电 25th CYC, 50% Charged	28.8	O		
17	第 25 次循环, 50%充电 25th CYC, 50% Charged	86.5	O		
18	第 25 次循环, 50%充电 25th CYC, 50% Charged	83.1	O		
19	第 25 次循环, 50%充电 25th CYC, 50% Charged	29.8	O		
20	第 25 次循环, 50%充电 25th CYC, 50% Charged	98.5	O		
以下空白					

注: D-解体; F-起火; O-无解体、无起火。  
Note: D-Disassembly, F-Fire, O-No disassembly & no fire



附表 7  
Appendix 7

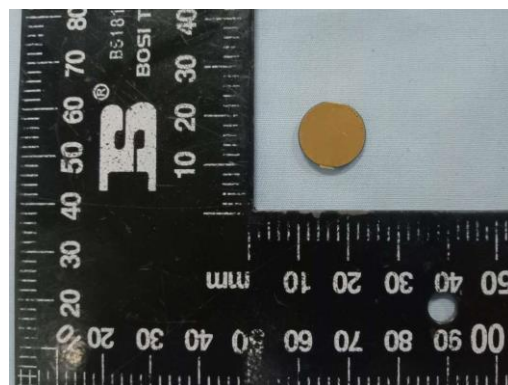
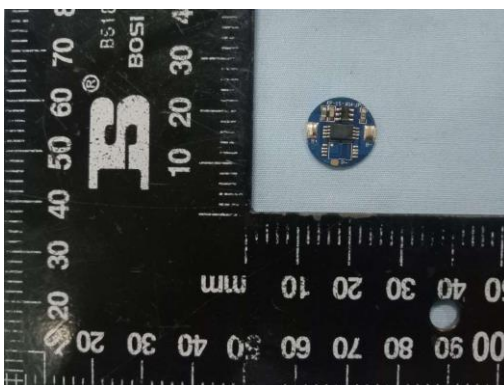
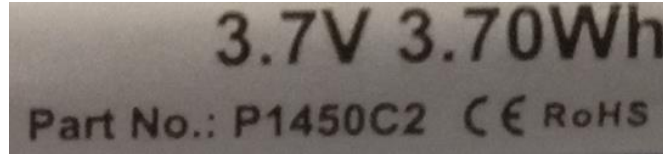
序号 No.	7	测试项目名称 Name of Test Items	过度充电 Overcharge
样品编号 Sample No.	样品状态 Sample status	测试结果 Test result	备注 Remark
21	首次循环,完全充电 1st CYC, Fully Charged	O	/
22	首次循环,完全充电 1st CYC, Fully Charged	O	/
23	首次循环,完全充电 1st CYC, Fully Charged	O	/
24	首次循环,完全充电 1st CYC, Fully Charged	O	/
25	第 25 个循环,完全充电 25th CYC, Fully Charged	O	/
26	第 25 个循环,完全充电 25th CYC, Fully Charged	O	/
27	第 25 个循环,完全充电 25th CYC, Fully Charged	O	/
28	第 25 个循环,完全充电 25th CYC, Fully Charged	O	/
以下空白			
注: D-解体; F-起火; O-无解体、无起火。 Note: D-Disassembly, F-Fire, O-No disassembly & no fire			



附表 8  
Appendix 8

序号 No.	8	测试项目名称 Name of Test Items	强制放电 Forced discharge
样品编号 Sample No.	样品状态 Sample status	测试结果 Test result	备注 Remark
29	首次循环, 完全放电 1st CYC, Fully Discharged	O	/
30	首次循环, 完全放电 1st CYC, Fully Discharged	O	/
31	首次循环, 完全放电 1st CYC, Fully Discharged	O	/
32	首次循环, 完全放电 1st CYC, Fully Discharged	O	/
33	首次循环, 完全放电 1st CYC, Fully Discharged	O	/
34	首次循环, 完全放电 1st CYC, Fully Discharged	O	/
35	首次循环, 完全放电 1st CYC, Fully Discharged	O	/
36	首次循环, 完全放电 1st CYC, Fully Discharged	O	/
37	首次循环, 完全放电 1st CYC, Fully Discharged	O	/
38	首次循环, 完全放电 1st CYC, Fully Discharged	O	/
39	第 25 次循环, 完全放电 25th CYC, Fully Discharged	O	/
40	第 25 次循环, 完全放电 25th CYC, Fully Discharged	O	/
41	第 25 次循环, 完全放电 25th CYC, Fully Discharged	O	/
42	第 25 次循环, 完全放电 25th CYC, Fully Discharged	O	/
43	第 25 次循环, 完全放电 25th CYC, Fully Discharged	O	/
44	第 25 次循环, 完全放电 25th CYC, Fully Discharged	O	/
45	第 25 次循环, 完全放电 25th CYC, Fully Discharged	O	/
46	第 25 次循环, 完全放电 25th CYC, Fully Discharged	O	/
47	第 25 次循环, 完全放电 25th CYC, Fully Discharged	O	/
48	第 25 次循环, 完全放电 25th CYC, Fully Discharged	O	/
注: D-解体; F-起火; O-无解体、无起火。 Note: D-Disassembly, F-Fire, O-No disassembly & no fire			

# 样品照片 Sample photo



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报告结束 End of Report  
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