



中国认可
国际互认
检测
TESTING
CNAS L3767

检测报告

Test Report

报告编号 (Report No.): RTN-UN-1606-002

样 品 名 称: 锂离子电池

Sample Name: Li-ion battery

样 品 型 号: HG40

Sample Model: HG40

委 托 单 位: 东莞新能源科技有限公司

Consignor: Dongguan Amperex Technology Limited

东莞新能源科技有限公司测试中心

Dongguan Amperex Technology Limited Test Center

样品名称 Sample name	锂离子电池 Li-ion battery	测试类别 Test category	委托检测 After testing
样品型号 Sample model	HG40	样品接收日期 Accepted date	2016-05-18
样品规格 Sample specification	3.82V 10.7Wh	测试开始日期 Test start date	2016-05-19
样品数量(个) Sample quantity(pcs)	43	测试结束日期 Test end date	2016-06-13
委托单位 Consignor	东莞新能源科技有限公司 Dongguan Amperex Technology Limited		
委托单位地址 Consignor address	中国广东省东莞市松山湖科技园工业西路 1 号 West Industrial Road 1#, Songshan Lake Industry Park, Dongguan City, Guangdong Province, P. R. China		
制造商 Manufacturer	宁德新能源科技有限公司 Ningde Amperex Technology Limited		
制造商地址 Manufacturer address	中国福建省宁德市蕉城区漳湾镇新港路 1 号 No.1 XinGang Road, Zhangwan Town, JiaoCheng City, Ningde, Fujian Province, P.R. China		
测试环境条件 Test environment condition	环境温度: 15℃ - 25℃; 环境湿度: 45%~75% Ambient temperature: 15℃ - 25℃; Ambient humidity: 45%~75%		
样品外观 Appearance	银色尼龙/铝/聚丙烯复合膜 Silver nylon/Al/PP compound film		
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 试验和标准手册》 ST/SG/AC.10/11 Rev5, amend 2, 38.3 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria ST/SG/AC.10/11 Rev5, amend 2, 38.3		
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	经测试, 该样品符合联合国《关于危险货物运输的建议书 试验和标准手册》 ST/SG/AC.10/11 Rev5, amend 2, 38.3 标准的要求 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 Rev5, amend 2, 38.3		
测试人员 Testers	孙凯旋 2016.6.17 王绪成 2016.6.17 黎平超 2016.6.17		
编制人员 Compiler	陈雅 2016.6.17		
审核 Checker	2016.6.17		
批准 Approval	郭佳丽 2016.6.17 蔡京晶: 技术负责人 Cai JingJing: Technical Director 郭佳丽: 中心主任 Guo Jiali: Center Director		



东莞新能源科技有限公司
测试中心
Dongguan Amperex
Technology Limited Test Center
(签章)
(signature)

样品描述及说明

Sample description and description

样品名称 Sample name	锂离子电池	型号 Model	HG40
额定容量 Rated capacity	2810mAh	标称电压 Nominal voltage	3.82V
电池化学组分 Battery chemical composition	钴酸锂-石墨		
测试用充电程序 Test charge program	按照制造商规定的办法进行充电 (3A CC to 4.1V, CV to 2A, 2A CC to 4.4V, CV to 0.05C)		
测试用放电程序 Test using a program	按照制造商规定的电流进行恒流放电至放电截止电压 (1C DC to 3.0V)		

测试样品图

Test sample image

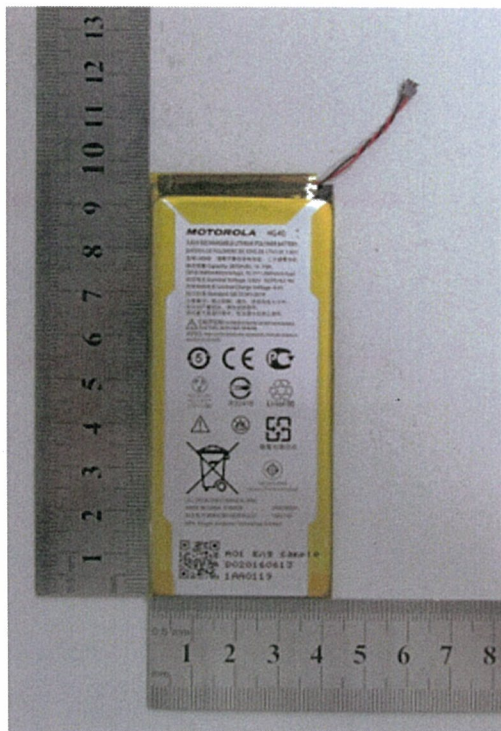


图 1: 正面
Figure 1: positive

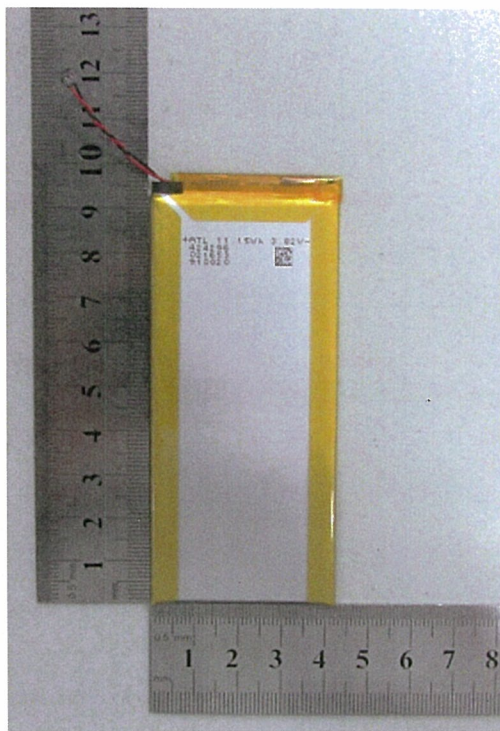


图 2: 反面
Figure 2: negative

型号: HG40 锂离子聚合物电池组 二次锂电池组
额定容量 Capacity: 2810mAh, 10.7Wh
2810/3000mAh(min/typ), 10.7/11.5Wh(min/typ)
标称电压 Nominal Voltage: 3.82V 1ICP5/42/96

图 3: 标识
Figure 3: Logo

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 Remark	
1	高度模拟 Altitude simulation	联合国《关于危险货物运输的建议书 试验和标准手册》试验 T1; UN Manual of Test and Criteria ST/SG/AC.10/11/Rev.5, amend 2, 38.3 Test 1	见附表 1 See Appendix 1	合格 Passed	/	
2	温度试验 Thermal	联合国《关于危险货物运输的建议书 试验和标准手册》试验 T2; UN Manual of Test and Criteria ST/SG/AC.10/11/Rev.5, amend 2, 38.3 Test 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 试验和标准手册》试验 T3; UN Manual of Test and Criteria ST/SG/AC.10/11/Rev.5, amend 2, 38.3 Test 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 试验和标准手册》试验 T4; UN Manual of Test and Criteria ST/SG/AC.10/11/Rev.5, amend 2, 38.3 Test 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 试验和标准手册》试验 T5; UN Manual of Test and Criteria ST/SG/AC.10/11/Rev.5, amend 2, 38.3 Test 5	见附表 5 See Appendix 5	合格 Passed	/	
6	挤压/撞击 Crush/Impact	联合国《关于危险货物运输的建议书 试验和标准手册》试验 T6; UN Manual of Test and Criteria ST/SG/AC.10/11/Rev.5, amend 2, 38.3 Test 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 试验和标准手册》试验 T7; UN Manual of Test and Criteria ST/SG/AC.10/11/Rev.5, amend 2, 38.3 Test 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 试验和标准手册》试验 T8; UN Manual of Test and Criteria ST/SG/AC.10/11/Rev.5, amend 2, 38.3 Test 8	见附表 8 See Appendix 8	合格 Passed	/	
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.	/

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 test		测试后 After test		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 U_1 (V)	电池质量 m_2 (g)	开路电压 U_2 (V)			
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0034	首次完全充电 1cyc fully charged	40.6665	4.367	40.6640	4.359	0.01%	99.82%	O
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0035	首次完全充电 1cyc fully charged	40.7380	4.366	40.7352	4.359	0.01%	99.84%	O
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0036	首次完全充电 1cyc fully charged	40.4952	4.368	40.4929	4.362	0.01%	99.86%	O
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0037	首次完全充电 1cyc fully charged	40.8086	4.367	40.8061	4.360	0.01%	99.84%	O
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0038	首次完全充电 1cyc fully charged	40.5491	4.370	40.5465	4.362	0.01%	99.82%	O
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0039	首次完全充电 1cyc fully charged	40.7633	4.367	40.7608	4.361	0.01%	99.86%	O
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0040	首次完全充电 1cyc fully charged	40.4809	4.368	40.4787	4.362	0.01%	99.86%	O
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0041	首次完全充电 1cyc fully charged	40.6317	4.369	40.6293	4.363	0.01%	99.86%	O
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0042	首次完全充电 1cyc fully charged	40.8524	4.367	40.8500	4.360	0.01%	99.84%	O
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0043	首次完全充电 1cyc fully charged	40.5962	4.370	40.5936	4.363	0.01%	99.84%	O
以下空白								

注: L-泄漏; V-排气; D-解体; R-破裂; F-起火; O-无泄漏, 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.

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 test		测试后 After test		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 U_1 (V)	电池质量 m_2 (g)	开路电压 U_2 (V)			
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0034	首次完全充电 1cyc fully charged	40.6640	4.359	40.6571	4.277	0.02%	98.12%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0035	首次完全充电 1cyc fully charged	40.7352	4.359	40.7284	4.276	0.02%	98.10%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0036	首次完全充电 1cyc fully charged	40.4929	4.362	40.4853	4.278	0.02%	98.07%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0037	首次完全充电 1cyc fully charged	40.8061	4.360	40.7998	4.277	0.02%	98.10%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0038	首次完全充电 1cyc fully charged	40.5465	4.362	40.5396	4.277	0.02%	98.05%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0039	首次完全充电 1cyc fully charged	40.7608	4.361	40.7525	4.277	0.02%	98.07%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0040	首次完全充电 1cyc fully charged	40.4787	4.362	40.4720	4.279	0.02%	98.10%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0041	首次完全充电 1cyc fully charged	40.6293	4.363	40.6223	4.278	0.02%	98.05%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0042	首次完全充电 1cyc fully charged	40.8500	4.360	40.8429	4.276	0.02%	98.07%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0043	首次完全充电 1cyc fully charged	40.5936	4.363	40.5872	4.278	0.02%	98.05%	O
以下空白								

注：L-泄漏；V-排气；D-解体；R-破裂；F-起火；O-无泄漏，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.

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 test		测试后 After test		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 U_1 (V)	电池质量 m_2 (g)	开路电压 U_2 (V)			
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0034	首次完全充电 1cyc fully charged	40.6571	4.277	40.6596	4.274	-0.01%	99.93%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0035	首次完全充电 1cyc fully charged	40.7284	4.276	40.7308	4.274	-0.01%	99.95%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0036	首次完全充电 1cyc fully charged	40.4853	4.278	40.4881	4.276	-0.01%	99.95%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0037	首次完全充电 1cyc fully charged	40.7998	4.277	40.8023	4.274	-0.01%	99.93%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0038	首次完全充电 1cyc fully charged	40.5396	4.277	40.5425	4.276	-0.01%	99.98%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0039	首次完全充电 1cyc fully charged	40.7525	4.277	40.7547	4.274	-0.01%	99.93%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0040	首次完全充电 1cyc fully charged	40.4720	4.279	40.4753	4.276	-0.01%	99.93%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0041	首次完全充电 1cyc fully charged	40.6223	4.278	40.6248	4.276	-0.01%	99.95%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0042	首次完全充电 1cyc fully charged	40.8429	4.276	40.8452	4.273	-0.01%	99.93%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0043	首次完全充电 1cyc fully charged	40.5872	4.278	40.5894	4.276	-0.01%	99.95%	O
以下空白								

注：L-泄漏；V-排气；D-解体；R-破裂；F-起火；O-无泄漏，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.

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 test		测试后 After test		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 U_1 (V)	电池质量 m_2 (g)	开路电压 U_2 (V)			
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0034	首次完全充电 1cyc fully charged	40.6596	4.274	40.6582	4.273	0.00%	99.98%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0035	首次完全充电 1cyc fully charged	40.7308	4.274	40.7299	4.273	0.00%	99.98%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0036	首次完全充电 1cyc fully charged	40.4881	4.276	40.4870	4.275	0.00%	99.98%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0037	首次完全充电 1cyc fully charged	40.8023	4.274	40.8018	4.274	0.00%	100.00%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0038	首次完全充电 1cyc fully charged	40.5425	4.276	40.5416	4.275	0.00%	99.98%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0039	首次完全充电 1cyc fully charged	40.7547	4.274	40.7531	4.274	0.00%	100.00%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0040	首次完全充电 1cyc fully charged	40.4753	4.276	40.4735	4.276	0.00%	100.00%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0041	首次完全充电 1cyc fully charged	40.6248	4.276	40.6240	4.275	0.00%	99.98%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0042	首次完全充电 1cyc fully charged	40.8452	4.273	40.8442	4.273	0.00%	100.00%	O
8S%SNN5982A%A0 11056143ATL166A--- -----IAA0043	首次完全充电 1cyc fully charged	40.5894	4.276	40.5878	4.275	0.00%	99.98%	O
以下空白								

注: L-泄漏; V-排气; D-解体; R-破裂; F-起火; O-无泄漏, 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.

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
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0034	首次完全充电 1cyc fully charged	56.1	O	/
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0035	首次完全充电 1cyc fully charged	56.0	O	/
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0036	首次完全充电 1cyc fully charged	55.9	O	/
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0037	首次完全充电 1cyc fully charged	55.9	O	/
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0038	首次完全充电 1cyc fully charged	55.5	O	/
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0039	首次完全充电 1cyc fully charged	56.0	O	/
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0040	首次完全充电 1cyc fully charged	55.8	O	/
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0041	首次完全充电 1cyc fully charged	55.8	O	/
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0042	首次完全充电 1cyc fully charged	55.9	O	/
8S%SNN5982A%A0 11056143ATL166A--- -----1AA0043	首次完全充电 1cyc fully charged	55.6	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.				

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
021653931163	首次完全放电 1cyc fully discharged	O	/
021653951716	首次完全放电 1cyc fully discharged	O	/
021653941792	首次完全放电 1cyc fully discharged	O	/
021653941483	首次完全放电 1cyc fully discharged	O	/
021653941315	首次完全放电 1cyc fully discharged	O	/
021653931252	首次完全放电 1cyc fully discharged	O	/
021653951667	首次完全放电 1cyc fully discharged	O	/
021653951120	首次完全放电 1cyc fully discharged	O	/
021653941291	首次完全放电 1cyc fully discharged	O	/
021653951810	首次完全放电 1cyc fully discharged	O	/
021653931029	50 次完全放电 50yc fully discharged	O	/
021653941446	50 次完全放电 50yc fully discharged	O	/
021653941595	50 次完全放电 50yc fully discharged	O	/
021653941305	50 次完全放电 50yc fully discharged	O	/
021653941358	50 次完全放电 50yc fully discharged	O	/
021653941180	50 次完全放电 50yc fully discharged	O	/
021653941119	50 次完全放电 50yc fully discharged	O	/
021653941598	50 次完全放电 50yc fully discharged	O	/
021653941550	50 次完全放电 50yc fully discharged	O	/
021653941561	50 次完全放电 50yc 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.			

声 明

Statement

1. 检测报告无本实验室公章无效。

The test report is invalid if not affixed the official seal of the laboratory to it.

2. 检测报告涂改无效。

The test report is invalid if it is blotted out.

3. 送样委托检测结果，仅对所送样品有效。

The conclusion of the consignment test is only valid for the provided sample.

4. 本报告未经本实验室书面许可，不可部分复制。

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