



# UN38.3 检测报告

## UN38.3 Test Report

样品名称:	可充电锂离子电池 ARB-L21-4000P
Sample Name:	Rechargeable Li-ion Battery ARB-L21-4000P
型号规格:	ARB-L21-4000P 3.6V 4000mAh 14.4Wh
Model:	
委托单位:	深圳市朗恒电子有限公司
Applicant:	SHEN ZHEN LANG HENG ELECTRONIC CO.,LTD
检测项目:	高度模拟、温度试验、振动、冲击、外部短路、撞击、过度充电、强制放电
Test Items:	Altitude simulation, Thermal test, Vibration, Shock, External short circuit, Impact, Overcharge, Forced discharge
检测类别:	委托检测
Test Category:	Commission test

北京迪捷姆空运技术开发有限公司

Beijing DGM Air Transport Technology Co., Ltd.



# 报告书使用约定

## Terms of the Using of the Report

1. 本公司依据委托人（托运人或其代理人）提供的物品，做出检测并出具此报告书。  
The report is issued by DGM China according to the test of the goods and the information of its shipping provided by the applicant (shipper or his agent).
2. 依据检测的需要，本公司要求委托人提供真实、完整的货物样品及资料。  
According to the demand of test, DGM China requires the applicant to provide true and exact sample and data of the cargo.
3. 委托人保证申报的物品和/或提供的样品与交运的货物是一致的。  
The applicant guarantees that the declared goods and/or the sample who provides should be identical with the contents of cargo that is to be transported.
4. 本公司仅对样品的检测结果负责。  
DGM China is only responsible for the test of the sample provided by the applicant.
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北京迪捷姆空运技术开发有限公司  
Beijing DGM Air Transport Technology Co., Ltd.  
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UN38.3 Test Report

样品类型 Sample Type	可充电锂离子电池 Rechargeable Li-ion Battery		商标 Trademark	FENIX
			型号/规格 Model	ARB-L21-4000P 3.6V 4000mAh 14.4Wh
委托单位 Applicant	名称 Name	深圳市朗恒电子有限公司 SHEN ZHEN LANG HENG ELECTRONIC CO.,LTD		
	地址 Address	深圳市宝安 33 区东方明工业城二栋八楼 8/F, 2nd Building, DongFangMing Industrial Center, 33rd District, Bao'an, Shenzhen		
来样方式 Means of Receiving	委托方送样 Submitted by applicant		送样日期 Accepted Date	2019.08.27
检测日期 Test Date	2019.08.28-2019.09.25			
检测地点 Test Site	深圳实验室 Shenzhen Laboratory		出证地点 Certificate Site	深圳分公司 Shenzhen Branch
检测项目 Test Items	高度模拟、温度试验、振动、冲击、外部短路、撞击、过度充电、强制放电 Altitude simulation, Thermal test, Vibration, Shock, External short circuit, Impact, Overcharge, Forced discharge			
检测依据 Test Method	联合国《关于危险货物运输的建议书-试验和标准手册》(第 6 版修订一) 38.3 节 UN Recommendations on the Transport of Dangerous Goods Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6 /Amend. 1/ Subsection 38.3			
检测结论 Conclusion	<p>根据联合国《关于危险货物运输的建议书-试验和标准手册》(第 6 版修订一) 38.3 节的规定, 该电池样品通过所有项目检测, 符合该条款的性能要求。</p> <p>The samples have passed all test items of UN Recommendations on the Transport of Dangerous Goods - Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6 /Amend. 1/ Subsection 38.3.</p> <p>检测单位(盖章) Test Lab(Stamp)</p> <p>签发日期(Issue Date): 2019 年 09 月 29 日</p>			

检测:

Tested by:

罗晓峰

审核:

Checked by:

王明

批准:

Approved by:

冯海



电池信息 Information for battery			
电芯生产厂家 Cell manufacturer	三星 SDI 株式会社 SAMSUNG SDI CO.,LTD		
电芯厂家联系电话 Phone number	张先生 +86-025-82129971	邮箱 e-mail	lee@samsungsdi.com
电芯厂家地址 Address	天津经济技术开发区逸仙科学工业园庆龄大道 1 号生产栋南区 South Zone, No.1 Production Building, Qingling Avenue, Yixian Science Park, Tianjin Economic And Technological Development Zone		
电芯厂家网址 Website	//		
Pack 厂家 Pack manufacturer	深圳市优能电源技术有限公司 SHENZHEN YOUR POWER TECHNOLOGY CO.,LTD		
Pack 厂家联系电话 Phone number	武凤杰 13603018105	邮箱 e-mail	Sales@yourpower.cn
Pack 厂家地址 Address	深圳市龙华区民治街道民康路东明大厦 811 811.8/F Dongming Building Min Kang Road Long Hua District Shenzhen, China		
Pack 厂家网址 Website	//		



电芯参数 Parameter for cell			
电芯型号 Cell model	INR21700-40T		
标称电压 Nominal Voltage	3.6V	额定容量 Rated Capacity	4000mAh
标准充电电流 Standard Charging Current	800mA	标准放电电流 Standard discharging Current	800mA
最大连续充电电流 Maximum charging current	2000mA	最大放电电流 Maximum discharge current	4000mA
充电限制电压 Limited charging voltage	4.2V	放电截止电压 Cut-Off voltage	2.50V
外观形状 Appearance	紫色圆柱体 Purple cylinder	电芯尺寸 Cell size	Φ21.0×70.0mm

电池参数 Parameter for battery			
标准充电电流 Standard Charging Current	800mA	标准放电电流 Standard discharging Current	800mA
最大连续充电电流 Maximum charging current	2000mA	最大放电电流 Maximum discharge current	4000mA
充电限制电压 Limited charging voltage	4.2V	放电截止电压 Cut-Off voltage	2.50V
规格/型号 Model	ARB-L21-4000P 3.6V 4000mAh 14.4Wh	电池尺寸 Battery size	Φ21.4×74.5mm
组成电芯数量 Number of cell	单电芯 Single cell	外观形状 Appearance	黄黑杂色圆柱体 Yellow and black cylinder



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序号 No.	检测项目 Test Items	标准要求或标准条款 Standard Requirement or the Clause of Standard	检测结果 Test Result	单项评价 Conclusion	备注 Remark
1	高度模拟 Altitude Simulation	ST/SG/AC.10/11/Rev.6/ Amend. 1/ Subsection 38.3 Test T.1	无泄漏、无排气、无解体、无破裂、无起火， 试验后的开路电压不低于试验前的 90%。 No leakage, no venting, no disassembly, no rupture and no fire. The open circuit voltage of each battery after testing is not less than 90% of its voltage immediately prior to this procedure.	符合 Pass	/
2	温度试验 Thermal Test	ST/SG/AC.10/11/Rev.6/ Amend. 1/ Subsection 38.3 Test T.2	无泄漏、无排气、无解体、无破裂、无起火， 试验后的开路电压不低于试验前的 90%。 No leakage, no venting, no disassembly, no rupture and no fire. The open circuit voltage of each battery after testing is not less than 90% of its voltage immediately prior to this procedure.	符合 Pass	/
3	振动 Vibration	ST/SG/AC.10/11/Rev.6/ Amend. 1/ Subsection 38.3 Test T.3	无泄漏、无排气、无解体、无破裂、无起火， 试验后的开路电压不低于试验前的 90%。 No leakage, no venting, no disassembly, no rupture and no fire. The open circuit voltage of each battery after testing is not less than 90% of its voltage immediately prior to this procedure.	符合 Pass	/
4	冲击 Shock	ST/SG/AC.10/11/Rev.6/ Amend. 1/ Subsection 38.3 Test T.4	无泄漏、无排气、无解体、无破裂、无起火， 试验后的开路电压不低于试验前的 90%。 No leakage, no venting, no disassembly, no rupture and no fire. The open circuit voltage of each battery after testing is not less than 90% of its voltage immediately prior to this procedure.	符合 Pass	/
5	外部短路 External Short Circuit	ST/SG/AC.10/11/Rev.6/ Amend. 1/ Subsection 38.3 Test T.5	外壳温度不超过 170 °C，无解体、无破裂、无 起火。 External temperature does not exceed 170°C. No disassembly, no rupture and no fire.	符合 Pass	/
6	撞击 Impact	ST/SG/AC.10/11/Rev.6/ Amend. 1/ Subsection 38.3 Test T.6	外壳温度不超过 170 °C，无解体、无起火。 External temperature does not exceed 170°C. No disassembly, no fire.	符合 Pass	/
7	过度充电 Overcharge	ST/SG/AC.10/11/Rev.6/ Amend. 1/ Subsection 38.3 Test T.7	无解体、无起火。 No disassembly, no fire.	符合 Pass	/
8	强制放电 Forced Discharge	ST/SG/AC.10/11/Rev.6/ Amend. 1/ Subsection 38.3 Test T.8	无解体、无起火。 No disassembly, no fire.	符合 Pass	/
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## T.1: 高度模拟

### T.1: Altitude Simulation

样品编号 Sample No.	样品状态 Sample Status	检测前 Pre-test		检测后 After-test				有无泄漏、排气、 解体、破裂、起火 Leakage, Venting, Disassembly, Rupture, Fire(Yes/No)
		质量 Mass $m_1(g)$	开路电压 OCV $V_1(V)$	质量 Mass $m_2(g)$	质量损失 Mass Loss (%)	开路电压 OCV $V_2(V)$	剩余电压 Residual OCV (%)	
A1	首次完全充电 First cycle fully charged	70.058	4.177	70.058	0.000	4.159	99.57	No
A2	首次完全充电 First cycle fully charged	69.839	4.175	69.836	0.004	4.157	99.57	No
A3	首次完全充电 First cycle fully charged	69.962	4.175	69.959	0.004	4.157	99.57	No
A4	首次完全充电 First cycle fully charged	69.819	4.172	69.819	0.000	4.155	99.59	No
A5	首次完全充电 First cycle fully charged	70.140	4.175	70.135	0.007	4.158	99.59	No
A6	25 次完全充电 25 cycles fully charged	69.922	4.175	69.920	0.003	4.169	99.86	No
A7	25 次完全充电 25 cycles fully charged	70.068	4.176	70.064	0.006	4.169	99.83	No
A8	25 次完全充电 25 cycles fully charged	69.984	4.172	69.980	0.006	4.165	99.83	No
A9	25 次完全充电 25 cycles fully charged	70.007	4.173	70.004	0.004	4.166	99.83	No
A10	25 次完全充电 25 cycles fully charged	69.879	4.173	69.877	0.003	4.167	99.86	No
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## T.2: 温度试验

## T.2: Thermal Test

样品编号 Sample No.	样品状态 Sample Status	检测前 Pre-test		检测后 After-test				有无泄漏、排气、 解体、破裂、起火 Leakage, Venting, Disassembly, Rupture, Fire(Yes/No)
		质量 Mass	开路电压 OCV	质量 Mass	质量损失 Mass Loss	开路电压 OCV	剩余电压 Residual	
		m <sub>1</sub> (g)	V <sub>1</sub> (V)	m <sub>2</sub> (g)	(%)	V <sub>2</sub> (V)	OCV (%)	
A1	首次完全充电 First cycle fully charged	70.058	4.159	70.055	0.004	4.073	97.93	No
A2	首次完全充电 First cycle fully charged	69.836	4.157	69.830	0.009	4.072	97.96	No
A3	首次完全充电 First cycle fully charged	69.959	4.157	69.952	0.010	4.073	97.98	No
A4	首次完全充电 First cycle fully charged	69.819	4.155	69.810	0.013	4.072	98.00	No
A5	首次完全充电 First cycle fully charged	70.135	4.158	70.131	0.006	4.070	97.88	No
A6	25次完全充电 25 cycles fully charged	69.920	4.169	69.914	0.009	4.083	97.94	No
A7	25次完全充电 25 cycles fully charged	70.064	4.169	70.061	0.004	4.082	97.91	No
A8	25次完全充电 25 cycles fully charged	69.980	4.165	69.974	0.009	4.081	97.98	No
A9	25次完全充电 25 cycles fully charged	70.004	4.166	70.000	0.006	4.081	97.96	No
A10	25次完全充电 25 cycles fully charged	69.877	4.167	69.870	0.010	4.082	97.96	No
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### T.3: 振动

### T.3: Vibration

样品编号 Sample No.	样品状态 Sample Status	检测前 Pre-test		检测后 After-test				有无泄漏、排气、 解体、破裂、起火 Leakage, Venting, Disassembly, Rupture, Fire(Yes/No)
		质量 Mass	开路电压 OCV	质量 Mass	质量损失 Mass Loss	开路电压 OCV	剩余电压 Residual	
		m <sub>1</sub> (g)	V <sub>1</sub> (V)	m <sub>2</sub> (g)	(%)	V <sub>2</sub> (V)	OCV (%)	
A1	首次完全充电 First cycle fully charged	70.055	4.073	70.051	0.006	4.073	100.00	No
A2	首次完全充电 First cycle fully charged	69.830	4.072	69.825	0.007	4.072	100.00	No
A3	首次完全充电 First cycle fully charged	69.952	4.073	69.949	0.004	4.072	99.98	No
A4	首次完全充电 First cycle fully charged	69.810	4.072	69.804	0.009	4.071	99.98	No
A5	首次完全充电 First cycle fully charged	70.131	4.070	70.126	0.007	4.070	100.00	No
A6	25次完全充电 25 cycles fully charged	69.914	4.083	69.908	0.009	4.081	99.95	No
A7	25次完全充电 25 cycles fully charged	70.061	4.082	70.055	0.009	4.082	100.00	No
A8	25次完全充电 25 cycles fully charged	69.974	4.081	69.967	0.010	4.080	99.98	No
A9	25次完全充电 25 cycles fully charged	70.000	4.081	69.997	0.004	4.081	100.00	No
A10	25次完全充电 25 cycles fully charged	69.870	4.082	69.864	0.009	4.082	100.00	No
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## T.4: 冲击

## T.4: Shock

样品编号 Sample No.	样品状态 Sample Status	检测前 Pre-test		检测后 After-test				有无泄漏、排气、 解体、破裂、起火 Leakage, Venting, Disassembly, Rupture, Fire(Yes/No)
		质量 Mass	开路电压 OCV	质量 Mass	质量损失 Mass Loss	开路电压 OCV	剩余电压 Residual	
		m <sub>1</sub> (g)	V <sub>1</sub> (V)	m <sub>2</sub> (g)	(%)	V <sub>2</sub> (V)	OCV (%)	
A1	首次完全充电 First cycle fully charged	70.051	4.073	70.049	0.003	4.072	99.98	No
A2	首次完全充电 First cycle fully charged	69.825	4.072	69.823	0.003	4.071	99.98	No
A3	首次完全充电 First cycle fully charged	69.949	4.072	69.947	0.003	4.071	99.98	No
A4	首次完全充电 First cycle fully charged	69.804	4.071	69.804	0.000	4.069	99.95	No
A5	首次完全充电 First cycle fully charged	70.126	4.070	70.126	0.000	4.070	100.00	No
A6	25次完全充电 25 cycles fully charged	69.908	4.081	69.905	0.004	4.079	99.95	No
A7	25次完全充电 25 cycles fully charged	70.055	4.082	70.055	0.000	4.080	99.95	No
A8	25次完全充电 25 cycles fully charged	69.967	4.080	69.966	0.001	4.079	99.98	No
A9	25次完全充电 25 cycles fully charged	69.997	4.081	69.994	0.004	4.080	99.98	No
A10	25次完全充电 25 cycles fully charged	69.864	4.082	69.863	0.001	4.081	99.98	No
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## T.5: 外部短路

## T.5: External Short Circuit

样品编号 Sample No	样品状态 Sample Status	样品表面最高温度(°C) Highest External Temperature/°C	有无解体、破裂、起火 Disassembly, Rupture, Fire(Yes/No)
A1	首次完全充电 First cycle fully charged	56.8	No
A2	首次完全充电 First cycle fully charged	56.6	No
A3	首次完全充电 First cycle fully charged	57.3	No
A4	首次完全充电 First cycle fully charged	58.1	No
A5	首次完全充电 First cycle fully charged	59.2	No
A6	25 次完全充电 25 cycles fully charged	58.5	No
A7	25 次完全充电 25 cycles fully charged	59.6	No
A8	25 次完全充电 25 cycles fully charged	57.7	No
A9	25 次完全充电 25 cycles fully charged	58.4	No
A10	25 次完全充电 25 cycles fully charged	57.9	No
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**T.6: 撞击****T.6: Impact**

样品编号 Sample No.	样品状态 Sample Status	样品表面最高温度(°C) Highest External Temperature/°C	有无解体、起火 Disassembly, Fire(Yes/No)
B1	首次 50%容量 First cycle charged 50% rated capacity	32.9	No
B2	首次 50%容量 First cycle charged 50% rated capacity	32.5	No
B3	首次 50%容量 First cycle charged 50% rated capacity	32.8	No
B4	首次 50%容量 First cycle charged 50% rated capacity	32.6	No
B5	首次 50%容量 First cycle charged 50% rated capacity	32.4	No
B6	25 次 50%容量 25 cycles charged 50% rated capacity	32.6	No
B7	25 次 50%容量 25 cycles charged 50% rated capacity	33.2	No
B8	25 次 50%容量 25 cycles charged 50% rated capacity	32.9	No
B9	25 次 50%容量 25 cycles charged 50% rated capacity	33.1	No
B10	25 次 50%容量 25 cycles charged 50% rated capacity	33.5	No
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## T.7: 过度充电

## T.7: Overcharge

样品编号 Sample No.	样品状态 Sample Status	有无解体、起火 Disassembly, Fire(Yes/No)
C1	首次完全充电 First cycle fully charged	No
C2	首次完全充电 First cycle fully charged	No
C3	首次完全充电 First cycle fully charged	No
C4	首次完全充电 First cycle fully charged	No
C5	25 次完全充电 25 cycles fully charged	No
C6	25 次完全充电 25 cycles fully charged	No
C7	25 次完全充电 25 cycles fully charged	No
C8	25 次完全充电 25 cycles fully charged	No
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## T.8: 强制放电

### T.8: Forced Discharge

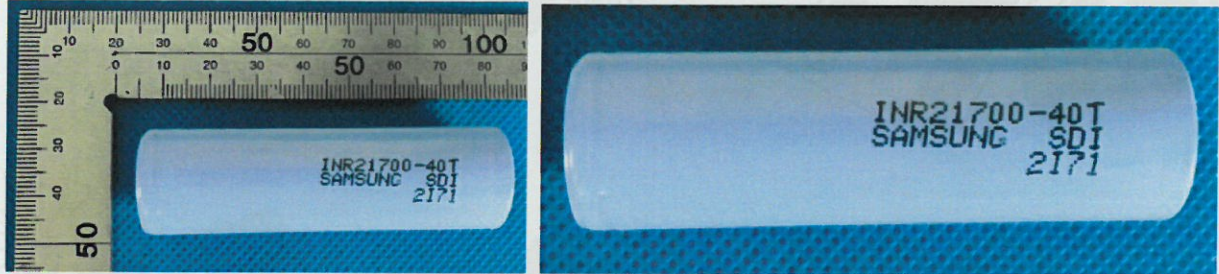
样品编号 Sample No.	样品状态 Sample Status	有无解体、起火 Disassembly, Fire(Yes/No)
D1	首次完全放电 First cycle fully discharged	No
D2	首次完全放电 First cycle fully discharged	No
D3	首次完全放电 First cycle fully discharged	No
D4	首次完全放电 First cycle fully discharged	No
D5	首次完全放电 First cycle fully discharged	No
D6	首次完全放电 First cycle fully discharged	No
D7	首次完全放电 First cycle fully discharged	No
D8	首次完全放电 First cycle fully discharged	No
D9	首次完全放电 First cycle fully discharged	No
D10	首次完全放电 First cycle fully discharged	No
D11	25 次完全放电 25 cycles fully discharged	No
D12	25 次完全放电 25 cycles fully discharged	No
D13	25 次完全放电 25 cycles fully discharged	No
D14	25 次完全放电 25 cycles fully discharged	No
D15	25 次完全放电 25 cycles fully discharged	No
D16	25 次完全放电 25 cycles fully discharged	No
D17	25 次完全放电 25 cycles fully discharged	No
D18	25 次完全放电 25 cycles fully discharged	No
D19	25 次完全放电 25 cycles fully discharged	No
D20	25 次完全放电 25 cycles fully discharged	No
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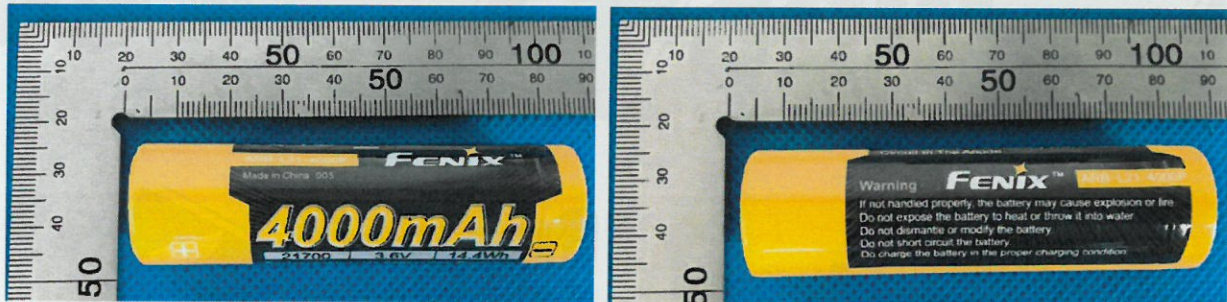
# UN38.3 检测报告

## UN38.3 Test Report

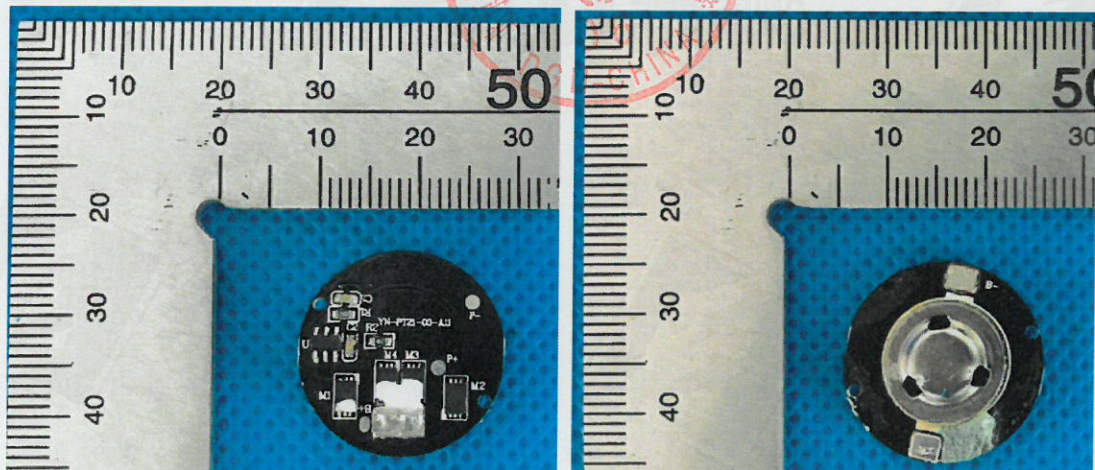
电芯照片/Cell pictures



电池照片/Battery pictures



保护装置/Protective devices



\* End of the report \*