Test Report

Applicant : Ningbo Lvneng Lithium battery Technology Co. LTD

Address : 220 Jiangning Road, Jiangkou Street, Fenghua City, Ningbo City, Zhejiang Province, China

The following sample(s) and sample information was/were submitted and identified by/on behalf of the client

Sample Name	:	Rechargeable Li-ion Battery
Sample Model	:	18650-2000mAh 3.7V 2000mAh 7.4Wh 18650-4000mAh 3.7V 4000mAh 14.8Wh 18650-2200mAh 3.7V 2200mAh 8.14Wh 18650-2600mAh 3.7V 2600mAh 9.62Wh 18650-6600mAh 3.7V 6600mAh 24.42Wh 18650-8800mAh 3.7V 8800mAh 32.56Wh 18650-1200mAh 3.7V 1200mAh 4.44Wh 18650-1500mAh 3.7V 1500mAh 5.55Wh 18650-1800mAh 3.7V 1800mAh 6.66Wh 18650-3600mAh 3.7V 3600mAh 13.32Wh 18650-4400mAh 3.7V 4400mAh 16.28Wh 18650-5400mAh 3.7V 5400mAh 19.98Wh 18650-7200mAh 3.7V 7200mAh 26.64Wh
Sample Style	:	/
Sample Lot	:	/
Sample Received Date	:	May 25, 2022
Test Completed Date	:	May 28, 2022
Test Requested	:	As specified by client, with reference to Directive 2006/66/EC and its amended Directive 2013/56/EU to determine Lead(Pb), Cadmium(Cd), Mercury(Hg) contents in the submitted sample.
Test Method	:	Refer to the next page(s).
Test Results	:	Refer to the next page(s).
Test Conclusion	:	Based upon the performed tests by submitted samples, the test results comply with the limits of the Directive 2006/66/EC and its amended Directive 2013/56/EU

Reviewed by: _____ Lab Senior Engineer

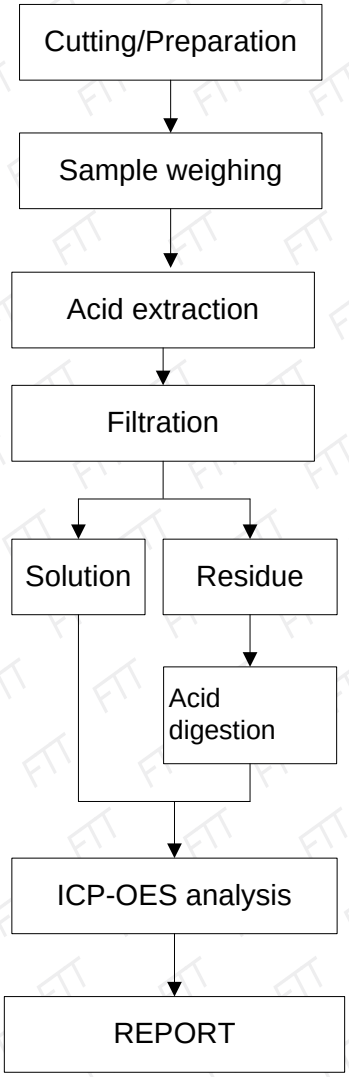
Authorized Signature: _____ Technology Manager

Test Results:

Test Item	Test method/Instrument	MDL (%)	Result (%)	Limit (%)
Lead(Pb)	EPA3050B&EPA3052/ICP-OES	0.0002	N.D.	--
Cadmium(Cd)	EPA3050B&EPA3052/ICP-OES	0.0002	N.D.	0.002
Mercury(Hg)	EPA3050B&EPA3052/ICP-OES	0.0002	N.D.	0.0005

Note:
(1) 1 mg/kg = 1 ppm = 0.0001%
(2) N.D. = Not Detected (less than MDL)
(3) MDL = Method Detection Limit
(4) "--" = Not Regulated
(5) Remark: According to the Article 21(3) of Directive 2006/66/EC, Battery, accumulator and button cell shall include the chemical symbol Mercury when containing morn than 0.0005% of Hg, the chemical symbol Cadmium when containing more than 0.002% of Cd and the chemical symbol Pb when containing more than 0.004% of Pb
Remark: The test report is only used for customer research, teaching, internal quality control, product development and other purposes, for internal reference only.

Testing Flow Chart:



Test Part Description: Battery

Sample Photo

Note: The results shown in this report refer only to the sample(s) tested.

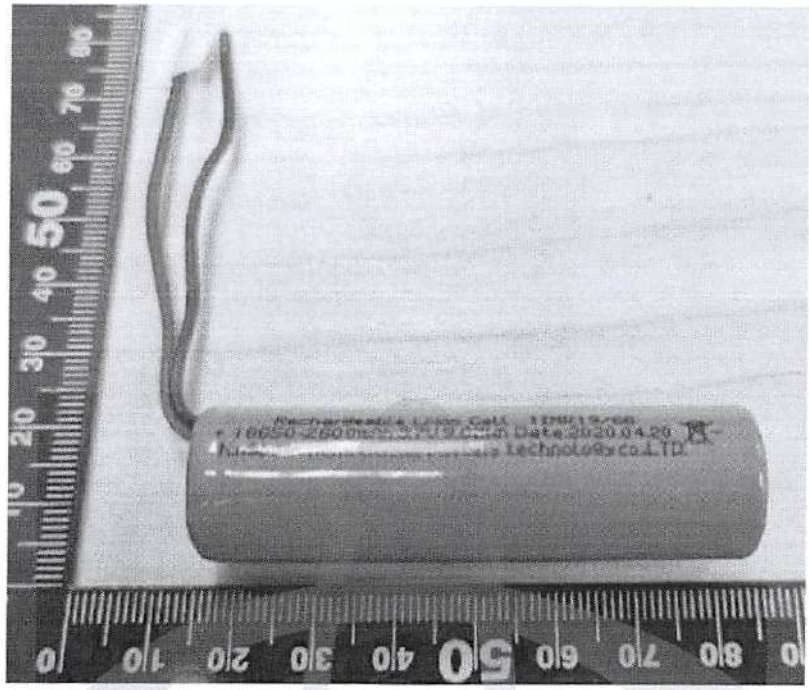
* * * * * End of Report * * * * *

FLION TESTING TECHNOLOGIES
Add :Gangzi Industrial Park,Furong Industrial Area, Xinqiao Village, Shajing Town, Bao'an District, Shenzhen City
Tel : 86-0755-2724 8885 Fax : 86-0755-2746 0090 Http://www.cnftt.com

UN38.3 试验概要
UN38.3 Test Summary

812000600151211

单位信息 Company information			
委托单位 Consignor	宁波绿能锂电池科技有限公司 Ningbo Lvneng Lithium Battery Technology Co., Ltd. 浙江省宁波市奉化区江口街道江宁路 Jiangning road, jiangkou street, fenghua district, ningbo city, zhejiang province, China 18069253365 81386729@qq.com /		
生产单位 Manufacturer	宁波绿能锂电池科技有限公司 Ningbo Lvneng Lithium Battery Technology Co., Ltd. 浙江省宁波市奉化区江口街道江宁路 Jiangning road, jiangkou street, fenghua district, ningbo city, zhejiang province, China 18069253365 81386729@qq.com /		
测试单位 Test lab	苏州 UL 美华认证有限公司广州分公司 UL-CCIC Company Limited Guangzhou Branch 广东省广州高新技术开发区科学城南云二路 8 号 UL 美华公司 Electronic Building, Parage Electronic Industrial Park, No. 8 Nanyun Er Road, Guangzhou Science Park, Guangzhou, China 02032131300 Sean.Song@ul.com www.chinaul.com		
电池信息 Battery information			
名称 Name	可充电锂离子电池	品牌 Brand	/
型号 Type	18650-2600mAh	原始测试型号 Original tested type	/
标称电压(V) Nominal voltage	3.7	容量/能量 Capacity/energy	2600mAh 9.62Wh
描述 Description	可充电锂离子单电芯电池 Rechargeable Li-ion single cell battery	锂含量(g) Li content	/
质量(kg) Mass	0.0491	外观 Appearance	蓝色塑料薄膜外壳 Blue plastic film shell
测试信息 Test information			
原报告编号 Original test report No.	4789465711-1	测试报告日期 Date of test report	2020-06-11
测试标准 Test standard	联合国《关于危险货物运输的建议书 试验和标准手册》第38.3章 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria 38.3		ST/SG/AC.10/11/Rev.6/Amend.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	T.6 撞击 Impact	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)	/

样品图片 Sample Picture
   

结论 Conclusion	测试样品符合联合国《关于危险货物运输的建议书试验和标准手册》ST/SG/AC.10/11/Rev.6/Amend.1 38.3 标准要求。 The tested samples meet the requirements of test items of the UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1 38.3		
备注 Remark	/		
签名 Signature 职务 Title	王寅 副总工程师 Vice chief engineer	签发日期 Issued date	2020-06-24

-验证码:518852-

报告结束

空 运
By Air

危险品

仅限货机
CAO

NO.212200117685009

CNAS 中国认可 检验 INSPECTION CNAS IB0071

货物运输条件鉴定书

Certification for Safe Transport of Chemical Goods

危险品

样品名称 ： 可充电锂离子电池，型号18650-2600mAh，2600mAh，3.7V，9.62Wh

Sample name: Rechargeable Li-ion Battery, Model 18650-2600mAh, 2600mAh, 3.7V, 9.62Wh

委托单位 ： 宁波绿能锂电池科技有限公司
Ningbo Lvneng Lithium Battery Technology Co., Ltd.

生产单位 ： 宁波绿能锂电池科技有限公司
Ningbo Lvneng Lithium Battery Technology Co., Ltd.

上海化工院检测有限公司 检验检测专用章

Witness Better Life
SICIT 上海化工院检测有限公司
Shanghai Institute of Chemical Industry Testing Co., Ltd

空 运
By Air

空 运
By Air

货物运输条件鉴定书

Certification for Safe Transport of Chemical Goods

NO. 212200117685009

样品名称 Sample Name	中文 Chinese	可充电锂离子电池，型号18650-2600mAh，2600mAh，3.7V，9.62Wh
	英文 English	Rechargeable Li-ion Battery, Model 18650-2600mAh, 2600mAh, 3.7V, 9.62Wh
委托单位 Consignor		宁波绿能锂电池科技有限公司 Ningbo Lvneng Lithium Battery Technology Co., Ltd.
生产单位 Manufacturer		宁波绿能锂电池科技有限公司 Ningbo Lvneng Lithium Battery Technology Co., Ltd.
检验方法、程序 Inspection method and procedure		国际航空运输协会《危险品规则》63版 IATA Dangerous Goods Regulations (DGR) 63rd Edition
样品外观 Sample appearance		蓝色塑料薄膜外壳 Blue Plastic film shell
包装件信息 Package information		锂电池总净重≤10kg。 Lithium batteries total net weight≤10kg.

序号 NO.	电池种类 Battery type	型号 Model	容量Capacity /锂含量Li content	放置方式 Placement	单颗重量kg Unit weight	数量 Quantity
1	可充电锂离子单电芯电池 Rechargeable Li-ion single cell battery	18650-2600mAh	2600mAh 9.62Wh	电池单独运输 Battery only	0.0491	180

鉴定结论 IDENTIFICATION CONCLUSION

1. 危险性识别(Hazards identification)

杂项。
Miscellaneous.

2. 空运按照国际航空运输协会《危险品规则》办理的类项(Suggestion according to IATA DGR)

Shipping name:Lithium ion batteries
Class or division:9
UN Number:UN3480

3. 包装要求(Packaging requirements)

按包装说明965第IB部分要求办理。
The goods are packaged according to the Packaging Instruction 965 section IB.

仅限货机
Cargo Aircraft Only

检验日期: Inspection Date: 2022-01-07　签发日期: Issue Date: 2022-01-07　生效日期: Effective Date: 2022-01-07

上海化工院检测有限公司 检验检测专用章 (35)

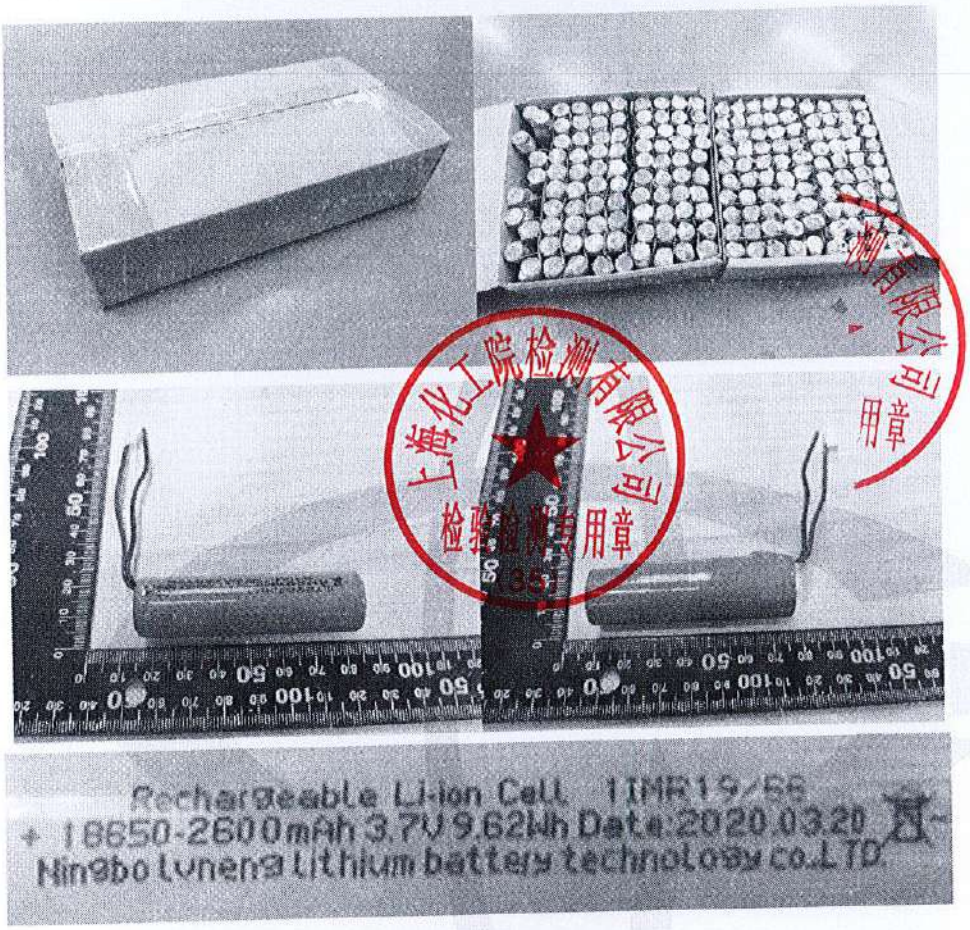
备注 Comment	/

批准 Approver:　审核 Checker:　主检 Appraiser:

货物运输条件鉴定书

Certification for Safe Transport of Chemical Goods

序号 No.	检验结果及其他事项 Inspection results and other things
1	本报告所述锂电池按照《危险品规则》(63版)[以下简称DGR] 3.9.2.6.1(e)规定的质量管理体系进行制造。 本报告所述锂电池不属于因安全原因召回的锂电池。 本报告所述锂电池不进行以回收或处置为目的的航空运输，不属于废弃锂电池。 Lithium cells and batteries listed in this report were manufactured under the quality management program described in IATA DGR 63rd 3.9.2.6.1(e). Lithium cells and batteries listed in this report are not the defective cells or batteries returned to the manufacturer for safety reasons. Lithium cells and batteries listed in this report are not waste lithium cells or batteries, and they will not be shipped for recycling or disposal.
2	本报告所述锂电池已通过《联合国试验和标准手册》第III部分38.3小节相应测试要求。 包装件能够承受1.2m跌落试验。 Lithium cells and batteries listed in this report are of the types proved to meet the requirements of each applicable test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3. The package has passed the 1.2m drop test. UN38.3试验概要编号 The UN38.3 Test Summary No.(s) 812000600151211 详细信息请扫描右侧二维码。 Please scan the QR code on the right for more information.
3	锂电池完全封装在内包装内，位于坚固的刚性外包装中。 电池具有适当的防短路措施。 Lithium cells and batteries are packed in inner packagings that completely enclose the cell or battery and placed in a strong rigid outer packaging. Cells and batteries are properly protected to prevent short circuits.
4	按DGR IB部分托运的电池必须根据第8部分规定在托运人申报单中描述；并且当使用航空货运单时，货运单必须包含8.2.1和8.2.2中相关适用要求。 Cells or batteries shipped under the provisions of Section IB in IATA DGR must be described on a Shipper's Declaration as set out in Section 8, and the air waybill, when used, must contain the applicable information required by 8.2.1 and 8.2.2.
5	除使用9类锂电池危险性标签(DGR图7.3.X)外，每个包装件必须按DGR图7.1.C所示做耐久清晰的标记。 每个包装件必须按DGR7.1.4.1(a)和(b)要求标记，此外当7.1.4.1(c)有要求时还必须标明包装件净重。 每个包装件必须贴有“仅限货机”标签(DGR图7.4.B)。 Each package must be durably and legibly marked with the mark shown in Figure 7.1.C in IATA DGR in addition to the Class 9-Lithium Battery hazard label (Figure 7.3.X in IATA DGR). Each package must be marked in accordance with the requirements of 7.1.4.1(a) and (b) in IATA DGR and in addition the net weight when required by 7.1.4.1(c) must be marked on the package. Each package must be labelled with the "Cargo Aircraft Only" label(Figure 7.4.B in IATA DGR).
6	根据委托单位声明，本报告所述锂离子电池交付运输时，其荷电状态必须不超过额定容量的30%。 According to the statement of the consignor, lithium ion cells and batteries listed in this report must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated capacity.
7	电池不得与第1类爆炸品(1.4S项除外)，2.1项易燃气体，第3类易燃液体，4.1项易燃固体或5.1项氧化性物质等危险品包装在同一外包装或集合包装内。 Cells and batteries must not be packed in the same outer packaging or overpack with dangerous goods classified in Class 1 (explosives) other than Division 1.4S, Division 2.1 (flammable gases), Class 3 (flammable liquids), Division 4.1 (flammable solids) or Division 5.1 (oxidizers).


Rechargeable Li-ion Cell IMR18/65
+ 18650-2600mAh 3.7V 9.62Wh Date:2020.03.20
Ningbo Lvneng Lithium battery technology co.LTD

报告结束

海 运
By Sea

NO.212200517585710

CNAS 中国认可 检验 INSPECTION CNAS IB0071

货物运输条件鉴定书

Certification for Safe Transport of Chemical Goods

锂电池类货物

样品名称： 可充电锂离子电池，型号18650-2600mAh，2600mAh，3.7V，9.62Wh

Sample name: Rechargeable Li-ion Battery, Model 18650-2600mAh, 2600mAh, 3.7V, 9.62Wh

委托单位： 宁波绿能锂电池科技有限公司
Ningbo Lvneng Lithium Battery Technology Co., Ltd.

生产单位： 宁波绿能锂电池科技有限公司
Ningbo Lvneng Lithium Battery Technology Co., Ltd.

上海化工院检测有限公司 检验检测专用章

Witness Better Life
SICIT 上海化工院检测有限公司
Shanghai Institute of Chemical Industry Testing Co., Ltd

海 运
By Sea

海 运
By Sea

货物运输条件鉴定书

Certification for Safe Transport of Chemical Goods

NO. 212200517585710

样品名称 Sample Name	中文 Chinese	可充电锂离子电池，型号18650-2600mAh，2600mAh，3.7V，9.62Wh
	英文 English	Rechargeable Li-ion Battery, Model 18650-2600mAh, 2600mAh, 3.7V, 9.62Wh
委托单位 Consignor		宁波绿能锂电池科技有限公司 Ningbo Lvneng Lithium Battery Technology Co., Ltd.
生产单位 Manufacturer		宁波绿能锂电池科技有限公司 Ningbo Lvneng Lithium Battery Technology Co., Ltd.
检验方法、程序 Inspection method and procedure		国际海事组织《国际海运危险货物规则》(2020版) IMO International Maritime Dangerous Goods Code (2020 Edition)
样品外观 Sample appearance		蓝色塑料薄膜外壳 Blue Plastic film shell
包装件信息 Package information		重量≤30kg。 weight≤30kg.

序号 NO.	电池种类 Battery type	型号 Model	容量Capacity /锂含量Li content	放置方式 Placement
1	可充电锂离子单电芯电池 Rechargeable Li-ion single cell battery	18650-2600mAh	2600mAh 9.62Wh	电池单独运输 Battery only

鉴定结论 IDENTIFICATION CONCLUSION

1. 危险性识别(Hazards identification)

锂离子电池。

Lithium ion battery.

2. 海运按照国际海事组织《国际海运危险货物规则》办理的类项(Suggestion according to IMO IMDG Code)

根据特殊规定188，该物品不受IMO IMDG Code其他条款限制。

The article is not subject to other provisions of IMO IMDG Code according to special provision 188.

3. 包装要求(Packaging requirements)

无。

None.

上海化工院检测有限公司 检验检测专用章 (35)

检验日期: Inspection Date: 2022-01-07 签发日期: Issue Date: 2022-01-07 生效日期: Effective Date: 2022-01-07

备注 Comment /

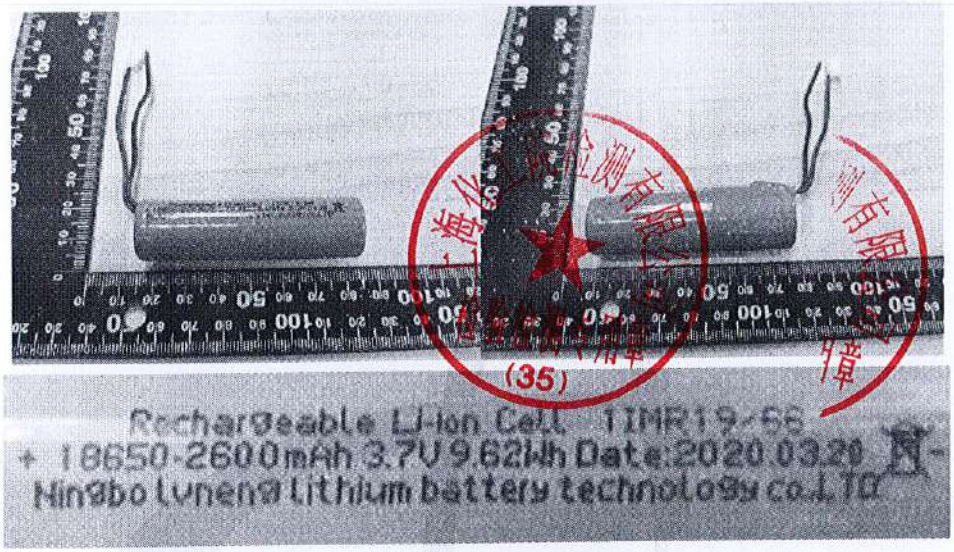
批准 Approver: 王宏 审核 Checker: 董学胜 主检 Appraiser: 孙倩

货物运输条件鉴定书

Certification for Safe Transport of Chemical Goods

NO. 212200517585710

序号 No.	检验结果及其他事项 Inspection results and other things
1	本报告所述锂电池按照《国际海运危险货物规则》(2020版) 2.9.4.5规定的质量管理体系进行制造。 Lithium cells and batteries listed in this report were manufactured under the quality management program described in IMDG CODE 2020 EDITION 2.9.4.5 .
2	本报告所述锂电池已通过《联合国试验和标准手册》第III部分38.3小节相应测试要求。 包装件能够承受1.2m跌落试验。 Lithium cells and batteries listed in this report are of the types proved to meet the requirements of each applicable test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3. The package has passed the 1.2m drop test. UN38.3试验概要编号 The UN38.3 Test Summary No.(s) 812000600151211 详细信息请扫描右侧二维码。 Please scan the QR code on the right for more information.
3	锂电池完全封装在内包装内，位于坚固的外包装中。 Lithium cells and batteries are packed in inner packagings that completely enclose the cell or battery and placed in a strong outer packaging.
4	电池具有适当的防短路措施。 Cells and batteries are properly protected to prevent short circuits.
5	每个包装件必须标示恰当的锂电池标记。 装有锂电池的包装件，符合国际民航组织《危险物品安全航空运输技术细则》第4部分第II章的包装说明965或968第IB部分规定的，贴5.2.1.10(锂电池标记)和5.2.2.2所示的9A型标签，应视为符合本特殊规定188的规定。 Each package shall be marked with the appropriate lithium battery mark. Packages containing lithium batteries packed in conformity with the provisions of part 4, chapter II, packing instructions 965 or 968, section IB of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by air that bear the mark as shown in 5.2.1.10(lithium battery mark) and the label shown 5.2.2.2, Model No.9A shall be deemed to meet the provisions of this special provision 188.
6	/
7	/


Rechargeable Li-ion Cell IIMR19-66
+ 18650-2600mAh 3.7V 9.62Wh Date:2020.03.20
Ningbo Lyneng Lithium battery technology co.,LTD

报告结束

三帕认证

Safety Data Sheet

安全技术说明书

Product Name 产品名称:	Rechargeable Li-ion Battery 可充电锂离子电池
Model 型号:	18650-2600mAh
Issue Date 签发日期:	2021.12.30
Effective date 生效日期:	2022.01.01
Report No.报告号:	NBFS20211228SDS03
Compiler 编制:	Jack Yang
Reviewer 审核:	Tracy Chen
Approver 批准:	

广州三帕认证技术服务有限公司

Guangzhou CP-UP Certification Technology Service Co., Ltd.

Tel: 86-020 3112 7037 Email: info@cp-up.com Website: www.cp-up.com

Section 1 - Chemical and Company Identification 第一部分-化学品及企业标识		
Product Name 产品名称		Rechargeable Li-ion Battery 可充电锂离子电池
Model/型号		18650-2600mAh
Ratings/额定参数		3.7V, 2600mAh, 9.62Wh
Applicant 申请商		Ningbo Lvneng Lithium Battery Technology Co., Ltd. 宁波绿能锂电池科技有限公司
Applicant address 申请商地址		220 Jiangning Road, Jiangkou Street, Fenghua, Ningbo, Zhejiang, China 浙江省宁波市奉化市江口街道江宁路 220 号
Manufacturer 制造商		Ningbo Lvneng Lithium Battery Technology Co., Ltd. 宁波绿能锂电池科技有限公司
Manufacturer Contact information 制造商联系信息	address 地址	220 Jiangning Road, Jiangkou Street, Fenghua, Ningbo, Zhejiang, China 浙江省宁波市奉化市江口街道江宁路 220 号
	Tel./应急电话	86-18069253365
	Email/邮箱	81386729@qq.com

Section 2 - Hazards Identification
第二部分-危险性概述

Hazards Identification：危险性描述

Not dangerous with normal use. Do not dismantle, open or shred the battery ingredients contained within or their ingredients products could be harmful.

正常使用没有危险，不能拆解、打开或分解电池，里面的材料或成分是有害的。

Primary Route (s) of Exposure: 接触途径

inhalation, ingestion, Skin contact and Eye contact.

吸入、食入、皮肤接触、眼睛接触。

Potential Health Effects: 潜在健康影响

inhalation： Vapors or mists from a ruptured battery may cause respiratory irritation.

吸入：破裂的电池散发出来的气雾会引起呼吸道刺激。

Ingestion： The battery ingredients contained within or their ingredients products can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.

食入：电池的组成成分或原料可以导致嘴，食道和胃肠道的严重化学烧伤。

Skin： Skin contact with contents of an open battery can cause severe irritation or burns to the skin.

皮肤：皮肤接触到电池的内部化学材料可能会导致严重的刺激或烧伤皮肤。

Eye： Eye contact with contents of an open battery can cause severe irritation or burns to the eye.

眼睛：眼睛接触到电池的内部化学材料可能会导致严重的刺激或烧伤眼睛。

Section 3- Composition/Information on Ingredients 第三部分-成分/组成信息		
Chemical Name **化学名称**	**CAS Number** **CAS 号（化学文摘索引登记号）**	**Concentration or concentration ranges (%)** **浓度或浓度范围(%)**
$LiNiCoMnO_2$	346417-97-8	14.26-16.21
$LiMn_2O_4$	12057-17-9	21.81-23.89
Carbon	7440-44-0	15.30-17.31
$LiPF_6$	21324-40-3	1.51-1.72
Acetylene Black	1333-86-4	0.16-0.18
PVDF	7782-41-4	0.61-0.84
SBR	7723-14-0	0.58-0.74
Copper	7440-50-8	6.11-6.80
Aluminum	7429-90-5	3.21-3.52
Nickel	7440-02-0	0.16-0.18
Note: CAS number is Chemical Abstract Service Registry Number. 注意：CAS 号是化学文摘服务注册号。 N/A=Not apply. N/A=不适用		

Section 4- First Aid Measure 第四部分-急救措施	
Inhalation **吸入**	Remove source of contamination or move victim to fresh air. Obtain medical advice. 移除污染源或者将受害者移至新鲜空气处。寻求医生建议。
Ingestion **食入**	Please rinse mouth thoroughly with water, induce vomiting under the guidance of professional personage. Please seek medical treatment in time. 立即用清水漱口，在专业人士的指导下催吐，速就医。
Skin contact **皮肤接触**	Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid. 脱下已污染衣服，用大量的水冲洗至少 15 分钟，速就医。
Eye contact **眼睛接触**	Irrigate with flowing water for 15 minutes. If irritation persists, consult a physician. 用流动水冲洗 15 分钟，如刺激持续发生，请求助于医生。

Section 5- Fire Fighting Measures 第五部分-消防措施	
Characteristics of Hazard **危险特性**	Toxic fumes, gases or vapors may evolve on burning. 火灾时可释放有害浓烟、气体或者蒸汽。
Hazardous Combustion Products **燃烧产生的危险物品**	Carbon monoxide, carbon dioxide, lithium oxide fumes and so on. 一氧化碳，二氧化碳，锂氧化物烟气等。

Fire-extinguishing Methods and Extinguishing Media **灭火方法及灭火剂**	Please use water, dry sand and other proper fire extinguishing media. 请使用水，干沙等合适的灭火介质。
Attention in Fire-extinguishing **灭火注意事项**	The firemen should put on antigas masks and full fire-fighting suits. 消防人员须佩戴防毒面具、穿全身消防服。

Section 6- Accidental Release Measure **第六部分-泄漏应急处理**	
Personal Precautions, protective equipment, and emergency procedures **个人预防措施、防护装备和应急程序**	Restrict access to area until completion of clean-up. Do not touch the spilled material. Wear adequate personal protective equipment as indicated in Section 8. 限制区域，直到完成清理工作。请勿触摸泄漏的材料。穿戴适当的个人防护设备，如第 8 部分所示。
Environmental Precautions **环境保护措施**	Prevent material from contaminating soil and from entering sewers or waterways. 防止物质污染土壤和进入下水道或水道。
Methods and materials for Containment **方法和材料控制**	Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately. 出于安全，阻止泄漏，可以用干沙或沙土来遏制液体泄露，立即清理泄漏。
Methods and materials for cleaning up **清理的方法和材料**	Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal. 用惰性吸收剂(干沙或沙土)吸收溢出的材料。污染物转移到可吸收废物的容器。收集所有受污染的吸收剂和根据第 13 部分的指令处置。用洗涤剂和水清洁污染区域,收集所有受污染的洗涤水进行适当处置。

Section 7- Handling and Storage **第七部分-操作处置与储存**	
Handling **操作**	Don't handing the batteries in manner that allows terminals to short circuit. Do not open, disassemble, crush or burn battery. 不要以让接头短路的方式对电池进行操作。不要打开，分解，挤压或燃烧电池。
Storage **储存**	if the battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the battery periodically. 如果电池长期存放超过 3 个月，建议定期对电池充电。 Long period storage: 25±5°C, 60±25%R.H 长期存储：25±5°C,相对湿度 60±25% Do not storage the battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects. 不要将电池随意丢在盒子或抽屉里，以免电池之间或电池与其他金属物质发生短路。 Keep out of reach of children.

	储存在小孩接触不到的地方。 Do not expose the battery to heat or fire. Avoid storage in direct sunlight. 不要将电池暴露在火源和热源附近，避免在阳光直射下存储。 Do not store together with oxidizing and acidic materials. 不要与氧化和酸性物质存储在一起。

Section 8 - Exposure Controls/Personal Protection **第八部分-接触控制和个体防护**	
Engineering Controls **工程控制**	No engineering controls are required for handling batteries that have not been damaged. Personal protective equipments for damaged batteries should include chemical resistant gloves and safety glasses. 操作未破损的电池，没有工程控制要求。对于破损的电池，个人防护用品应包括化学品防护手套和安全眼镜。
Personal Protective Equipment **个人防护设备**	Respiratory Protection: in case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Respiratory Protection is not necessary under conditions of normal use. Not necessary under conditions of normal use. 呼吸保护：当电池排气阀打开时，应尽量使通风设备开至最大，避免将打开排气阀的电芯局限在某一狭窄空间内。正常操作条件下，呼吸保护是不必要的。正常使用条件下不必考虑。 Protective Gloves: Not necessary under conditions of normal use. 防护手套：正常使用条件下不必考虑。 Other Protective Clothing or Equipment: Not necessary under conditions of normal use. 其他防护服装或设备：正常使用条件下不必考虑。 Personal Protection is recommended for venting battery: Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields. 当电池排气阀打开时，应做好个人防护。呼吸防护，防护手套，防护服装和有护边的安全玻璃罩都是要准备的。

Section 9- Physical and Chemical Properties **第九部分-理化特性**
Physical state: Solid **物理状态：**固体
Form: Cylindrical **形状：**圆柱形
Melting Point ℃: >300℃ **熔点℃：**>300℃
Odor: Odorless **气味：**无气味
Solubility: Partial soluble in water **溶解度：**部分溶于水

Section 10 - Stability and Reactivity 第十部分-稳定性和反应性	
Stability **稳定性**	Stable under normal temperatures and pressures. 常温常压下稳定。
Conditions to Avoid **应避免的条件**	Heat above 70°C or Incinerate, Deform, Mutilate, Crush, Disassemble, Overcharge, Short circuit, Expose over a long period to humid conditions. 加热 70°C 以上或焚烧、变形、毁坏、粉碎、拆卸、过充电、短路，长时间暴露在潮湿的条件下。
Hazardous Decomposition Products **危害分解物**	Toxic Fumes, and may form peroxides. 有毒烟雾，并可能形成过氧化物。
Possibility of Hazardous Reaction **危险反应的可能性**	If leaked, forbidden to contact with strong oxidizers ,mineral acids ,strong alkalis, halogenated hydrocarbons. 如果发生泄露，避免与强氧化剂，无机酸，强碱，卤代烃接触。

Section 11 - Toxicological Information 第十一部分-毒理学信息	
Irritation **刺激**	In the event of exposure to internal contents, vapor fumes may be very irritating to the eyes and skin. 内部物质暴露的情况下，蒸汽烟雾可能对眼睛和皮肤产生刺激性。
Sensitization **致敏**	Not applicable. 不适用
Reproductive Toxicity **再生毒性**	Not applicable. 不适用
Toxicologically Synergistic Materials **协同材料毒理学**	Not applicable. 不适用

Section 12-Ecological Information 第十二部分-生态学信息	
General note **通用信息**	Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. 不允许未稀释或大量的产品到达地下水、水道或污水系统。
Anticipated behavior of a chemical product in environment/possible environmental impact/ ecotoxicity **化学产品在环境/可能的环境预 期的行为的一种生态毒性**	Not applicable. 不适用
Mobility in soil **土壤中移动性**	Not applicable. 不适用
Persistence and Degradability **持久性和降解性**	Not applicable. 不适用

Section 13 - Disposal Considerations 第十三部分-废弃处置	
Waste Treatment **废弃处置方法**	Recycle or dispose of in accordance with government, state & local regulations. 建议遵照国家和地方法规处置或再利用。
Attention for Waste Treatment **废弃注意事项**	Deserted batteries couldn't be treated as ordinary trash. Couldn't be thrown into fire or placed in high temperature. Couldn't be dissected, pierced, crushed or treated similarly. Best way is recycling. 废电池不能被当做普通垃圾。不能扔进火中或置于高温下。不能解体， 刺穿，破碎或类似的处理。最好的办法是回收利用。

Section 14 - Transport Information
第十四部分-运输信息

The battery shall be passed the test items of the UNITED NATIONS “Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria" section 38.3 and meet the requirements of UNITED NATIONS “Recommendations on the Transport of Dangerous Goods, model Regulations "
该电池必须通过联合国《关于危险货物运输的建议书 试验和标准手册》第 38.3 章节的测试项目和满足联合国《关于危险货物运输的建议书 规章范本》的要求。

The battery shall be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to short circuit;
该电池必须做好防短路保护。包括防止与同一封装内的导电材料接触可能导致的短路。

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking.
包装应足以避免在运输，处理和堆放期间的机械损坏。

The package must be handled with care and that a flammability hazard exists if the package is damaged. 包装必须小心处理，如果包装损坏，存在易燃危险。

With regard to transport, the following regulations are cited and considered:
关于运输，引用和考虑了以下法规：
-The international Civil Aviation Organization (ICAO) Technical Instructions.
-国际民用航空组织(ICAO)技术细则。
-The international Air transport Association (IATA) Dangerous Goods Regulations.
-国际航空运输协会(IATA)危险物品规则。
The battery can be shipped by air in according to PACKING INSTRUCTION 965 Section IB, or PACKING INSTRUCTION 966∽967 Section II of the 2022 IATA Dangerous Goods regulations 63rd Edition.
该电池可以根据 2022 年 IATA 危险物品规则第 63 版包装指令 965 第 IB 部分或包装指令 966∽967 第 II 部分运输。
UN number: UN3480 or UN3481;
UN 编号：UN3480 或 UN3481:
UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries packed with equipment or Lithium ion batteries contained in equipment;
UN 合适的运输名称/描述(技术名称)：锂离子电池或锂离子电池与设备包装在一起或锂离子电池内置于设备中;
UN Classification (Transport hazard class): Class 9 (PI965 Section IB) or N/A (PI966∽967 Section II)

UN 分类(运输危险类别): 9 类危险品(包装指令 965 第 IB 部分)或者不适用(包装指令 966～967 第 II 部分)
UN packaging group: N/A
UN 包装类别：不适用

-The international Maritime Dangerous Goods (IMDG) Code.
-国际海运危险货物(IMDG)规则。
UN number: UN3480 or UN3481;
UN 编号：UN3480 或 UN3481；
UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries packed with equipment or Lithium ion batteries contained in equipment;
UN 合适的运输名称/描述(技术名称)：锂离子电池或锂离子电池与设备包装在一起或锂离子电池内置于设备中;
UN Classification (Transport hazard class): N/A
UN 分类(运输危险类别)：不适用
UN packaging group: N/A
UN 包装类别：不适用
The battery is not restricted according to IMO IMDG Code (inc. Amendment 40-20) Special Provision188.
海运按照国际海事组织《国际海运危险货物规则》(40-20 版)特殊规定 188 不受限制。

Section 15 - Regulatory Information
第十五部分-法规信息

International Civil Aviation Organization (ICAO) Technical Instructions
ICAO 国际民用航空组织(ICAO)技术细则:
1.Unless be exempted according to ICAO TI, the lithium ion cell/batteries (UN 3480，PI 965) and lithium metal cell/batteries (UN 3090，PI 968) are forbidden for carriage on passenger aircraft.
除非依据《技术细则》的相关要求取得豁免，单独包装的锂离子电池（芯）(UN 3480,PI 965）和锂金属电池（芯）（UN 3090，PI 968）货物禁止使用客机运输。
2.Unless be approved according to ICAO TI, Lithium ion cells/batteries (UN 3480，PI 965) must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design capacity.
除非依据《技术细则》的相关要求取得特别批准，按照包装说明 965 要求运输的锂离子电池（芯）货物，交运时锂离子电池（芯）的荷电状态不得超过其额定容量的 30%。

Section 16 - Additional Information
第十六部分-附加信息

Compile unit 编制单位：

Guangzhou CP-UP Certification Technology Service Co., Ltd.
广州三帕认证技术服务有限公司
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Web/网址: www.cp-up.com
Email/邮箱: info@cp-up.com

Revision 修订: 0

Other Information 其他信息：

The information above is believed to be accurate and represents the best information currently available to us. However, we makes no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. This safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

在我们看来上面的信息是准确的，这是我们目前能提供的最佳的信息。但是，对于这些信息，我们不对商品的性能做任何明示的或者暗示的保证，我们也不对使用这些信息造成的后果担负任何责任。用户应当自己调查研究后决定这些信息是否适用于他们的特定用途。尽管在该文档里提出了合理的预警，但是这仅仅只是给您做参考、考量和调查。这份安全技术说明书提供了安全处理和使用该产品的指南，但是它没有，也不能对所有可能发生的情景提出建议，所以您需要根据您对该产品的特定使用情况来决定是否需要其他的预防措施。

--End of report--

--报告结束--

Test Report issued under the responsibility of:
检测报告负责发行机构:

中国认可
检测
TESTING
CNAS L2065

检 测 报 告
TEST REPORT

样品信息：	可充电锂离子电池，型号 18650-2600mAh, 2600mAh, 3.7V, 9.62Wh
SAMPLE INFORMATION:	Rechargeable Li-ion Battery, Model 18650-2600mAh, 2600mAh, 3.7V, 9.62Wh
申请单位：	宁波绿能锂电池科技有限公司
APPLICANT:	Ningbo lvneng lithium battery technology co. LTD
检测类别：	商业委托检测
TYPE OF TEST:	Commercial Inspection and Testing Services

苏州UL美华认证有限公司广州分公司
UL-CCIC Company Limited Guangzhou Branch

Date Issued: 2019-01-31
Date Revised: 2019-11-25

Test Summary 测试总览	
样品名称 Name of samples	可充电锂离子电池 Rechargeable Li-ion Battery
型号规格 Type/ Model	电池型号 18650-2600mAh, 2600mAh, 3.7V, 9.62Wh Battery Model 18650-2600mAh, 2600mAh, 3.7V, 9.62Wh
商标 Trade mark	不适用 N/A
申请单位 Applicant	宁波绿能锂电池科技有限公司 Ningbo lvneng lithium battery technology co. LTD
申请单位地址 Applicant address	浙江省宁波市奉化市江口街道江宁路220号 220 Jiangning Road, Jiangkou Street, Fenghua, Ningbo, Zhejiang, China
制造商 Manufacturer	宁波绿能锂电池科技有限公司 Ningbo lvneng lithium battery technology co. LTD
制造商地址 Manufacturer Address	浙江省宁波市奉化市江口街道江宁路220号 220 Jiangning Road, Jiangkou Street, Fenghua, Ningbo, Zhejiang, China
联系电话 Telephone： 电子邮箱 Email: 公司网址 Website:	Anjun Yang, +86-574-88935310 3388256833@qq.com www.nblvneng.com
样品外观颜色 Appearance	蓝色圆柱形电池组 Blue Cylindrical Battery Pack
样品数量 Quantity of sample	电池组 Battery Pack: 18 pcs; 电池芯 Battery Cell: 30 pcs
样品标识序号 Sample identification	电池组 Battery Pack: 3036621-S1~3036621-S18; 电池 Battery Cell: 3036624-S1~3036624-S30
测试标准 Testing standard	联合国《关于危险品货物运输的建议书》试验和标准手册第六修订版修正 1 (2017)，第38.3节：锂电池 United Nations: Recommendations on the Transport of Dangerous Goods - Manual of Tests and Criteria, Amendment 1 to Sixth revised edition, 2017 (ST/SG/AC.10/11/Rev.6/Amend.1), Section 38.3: Lithium Batteries
接样日期 Received date	2020-04-29
完成日期 Completion date	2020-05-28
备注 Remark: 按照标准要求，单电芯电池（电池包）被视作“电芯”（电池芯），以“电芯”的要求进行测试，本测试项目样品包含如前所述电池包和电池芯。有关测试详情，请查阅测试结论表格及各单项测试记录页。 According to the Standard, a single-cell battery (Battery Pack) is considered a “Cell” (Battery Cell) and shall be tested according to the testing requirements for “Cell”. This testing included the samples of Battery Pack and Battery Cell as aforementioned. For testing details, please refer to Table of Test Conclusion and individual test record page.	

Test Conclusion
测试结论

Clause 章节	Name of test 测试项目名称	Sample Condition 样品状态	Conclusion 结论	Remarks 备注
38.3.4.1	试验T.1 Altitude simulation 高度模拟	First cycle in fully charged state/第一个交替充电放电周期完全充电 25th cycle ending in fully charged state/第二十五个交替充电放电周期完全充电	Pass 通过	--
38.3.4.2	试验T.2 Thermal test 温度试验	First cycle in fully charged state/第一个交替充电放电周期完全充电 25th cycle ending in fully charged state/第二十五个交替充电放电周期完全充电	Pass 通过	--
38.3.4.3	试验T.3 Vibration 振动	First cycle in fully charged state/第一个交替充电放电周期完全充电 25th cycle ending in fully charged state/第二十五个交替充电放电周期完全充电	Pass 通过	--
38.3.4.4	试验T.4 Shock 冲击	First cycle in fully charged state/第一个交替充电放电周期完全充电 25th cycle ending in fully charged state/第二十五个交替充电放电周期完全充电	Pass 通过	--
38.3.4.5	试验T.5 External Short-circuit 外部短路	First cycle in fully charged state/第一个交替充电放电周期完全充电 25th cycle ending in fully charged state/第二十五个交替充电放电周期完全充电	Pass 通过	--
38.3.4.6	试验T.6 Impact/Crush 撞击/挤压	First cycle in 50% charged state /第一个交替充电放电周期半充电 25th cycle ending in 50% charged state/第二十五个交替充电放电周期半充电	Pass 通过	--
38.3.4.7	试验T.7 Overcharge 过度充电	First cycle in fully charged state/第一个交替充电放电周期完全充电 25th cycle ending in fully charged state/第二十五个交替充电放电周期完全充电	Pass 通过	--
38.3.4.8	试验T.8 Forced discharge 强制放电	First cycle in fully discharged state/第一个交替充电放电周期完全放电 25th cycle ending in fully discharged state/第二十五个交替充电放电周期完全放电	Pass 通过	--

Test Conclusion/检验结论：

由宁波绿能锂电池科技有限公司送检的可充电锂离子电池，型号 18650-2600mAh, 2600mAh, 3.7V, 9.62Wh，依据《关于危险品货物运输的建议书》试验和标准手册第六修订版修订1第38.3节进行全项目测试。当采用准确度方法判定规则时，被测样品符合规范的要求。

The Rechargeable Li-ion Battery, Model 18650-2600mAh, 2600mAh, 3.7V, 9.62Wh submitted by Ningbo lvneng lithium battery technology co. LTD is tested according to Section 38.3 of Amendment 1 to the Sixth Revised Edition of the Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria (ST/SG/AC.10/11/Rev.6 Amend.1 Section 38.3). The test items are full items.

The sample received complies with Specification when Accuracy Method decision rule is applied.

测试结果：通过。

The test results: Pass.

签发日期/Date of issue: 2020-06-10

Approved by: Carson
批准： 陈世明
Title: manager
职衔：经理

Reviewed by: Carson
审核： 陈世明
Title: manager
职衔：经理

Tested by: Ade Su
检测：苏祥德
Title: Engineer
职衔：工程师

T.1 Altitude simulation
高度模拟

Test Method 测试方法

The samples were stored for at least 6 hours at a pressure of 11.6 kPa (1.68 psi) or less and a temperature of 20 ± 5°C (68 ± 9°F). The samples were weighed before and after the exposure. The cell/battery voltage was also determined before and after the test. 将测试样品放在温度为20±5°C，大气压力为不大于11.6kpa的环境中贮存不少于6个小时。对样品在测试前后进行称重，并记录电压。

Test Results/测试结果

Sample No. 样品编号	Sample Condition 样品状态	Weight Before Test(g) 测试前质量（克）	Weight After Test(g) 测试后质量（克）	Percentage of Weight Loss 质量损失%	Voltage Before Test(V) 测试前电压（伏）	Voltage After Test(V) 测试后电压（伏）	Percentage of residual Voltage 残余电压%	Results 结果
3036621-S1	(C)	48.817	48.815	0.004	4.136	4.133	99.927	(6), (7)
3036621-S2	(C)	48.918	48.922	0.000	4.142	4.139	99.928	(6), (7)
3036621-S3	(C)	48.953	48.956	0.000	4.132	4.128	99.903	(6), (7)
3036621-S4	(C)	49.036	49.033	0.006	4.138	4.134	99.903	(6), (7)
3036621-S5	(C)	48.992	48.995	0.000	4.142	4.139	99.928	(6), (7)
3036621-S6	(D)	49.143	49.140	0.006	4.139	4.136	99.928	(6), (7)
3036621-S7	(D)	48.718	48.715	0.006	4.135	4.132	99.927	(6), (7)
3036621-S8	(D)	48.677	48.677	0.000	4.193	4.189	99.905	(6), (7)
3036621-S9	(D)	48.703	48.701	0.004	4.142	4.138	99.903	(6), (7)
3036621-S10	(D)	49.008	49.008	0.000	4.196	4.191	99.881	(6), (7)

Results/结果:

(1) Leakage/漏液.

(2) Venting/排气.

(3) Disassembly/解体.

(4) Rupture/破裂.

(5) Fire/着火.

(6) No leakage, no venting, no disassembly, no rupture, no fire/无漏液，无排气，无解体，无破裂，无着火.

(7) The open circuit voltage of each cell after testing was greater than 90%/开路电压不低于试验前开路电压的90％.

T.2 Thermal test
温度试验

Test Method 测试方法

The samples were subjected to temperature cycling consisting of the following.
The samples were weighed before and after the exposure. The cell/battery voltage was also determined before and after the test. 测试样品将进行如下温度循环测试。样品测试前后进行称重，并记录电压。

Samples In/ 样品进箱	The chamber temperature was raised to 72 ± 2°C (162 ± 4°F) within 30 minutes and maintained at this temperature for X* hours. 烤箱温度在30分钟内上升到72 ± 2°C，并维持此温度X*小时。
	The chamber temperature was reduced to -40 ± 2°C (-40 ± 4°F) within 30 minutes and maintained at this temperature for X* hours. 烤箱温度在30分钟内降低到-40 ± 2°C，并维持此温度X*小时。
	Repeat the sequence for 9 additional cycles (total of 10 cycles). 重复此顺序测试额外9个循环（总共10个循环）。
Samples Out/样品出箱	After the 10th cycle, store the batteries at ambient temperature 20 ± 5°C (68 ± 9°F) for 24 hours prior to examination. 在第10个循环后，于20 ± 5°C环境下储存24小时，然后检查其状态。

Note: The duration of exposure to the test temperature extremes(X*) was determined as below:
注：样品承受极端温度的持续时间（X*）按如下确定：
[X] Small cells and small batteries: 6 hours; 小电芯和小电池为6小时;
[ ] Large cells and large batteries: 12 hours. 大电芯和大电池为12小时。

Test Results/测试结果

Sample No. 样品编号	Sample Condition 样品状态	Weight Before Test(g) 测试前质量（克）	Weight After Test(g) 测试后质量（克）	Percentage of Weight Loss 质量损失%	Voltage Before Test(V) 测试前电压（伏）	Voltage After Test(V) 测试后电压（伏）	Percentage of residual Voltage 残余电压%	Results 结果
3036621-S1	(C)	48.815	48.811	0.008	4.133	4.104	99.298	(6), (7)
3036621-S2	(C)	48.922	48.920	0.004	4.139	4.108	99.251	(6), (7)
3036621-S3	(C)	48.956	48.953	0.006	4.128	4.097	99.249	(6), (7)
3036621-S4	(C)	49.033	49.030	0.006	4.134	4.105	99.299	(6), (7)
3036621-S5	(C)	48.995	48.992	0.006	4.139	4.109	99.275	(6), (7)
3036621-S6	(D)	49.140	49.022	0.240	4.136	4.106	99.275	(6), (7)
3036621-S7	(D)	48.715	48.711	0.008	4.132	4.103	99.298	(6), (7)
3036621-S8	(D)	48.677	48.675	0.004	4.189	4.147	98.997	(6), (7)
3036621-S9	(D)	48.701	48.681	0.041	4.138	4.108	99.275	(6), (7)
3036621-S10	(D)	49.008	49.005	0.006	4.191	4.147	98.950	(6), (7)

Results/结果:
(1) Leakage/漏液.
(2) Venting/排气.
(3) Disassembly/解体.
(4) Rupture/破裂.
(5) Fire/着火.
(6) No leakage, no venting, no disassembly, no rupture, no fire/无漏液，无排气，无解体，无破裂，无着火.
(7) The open circuit voltage of each cell after testing was greater than 90%/开路电压不低于试验前开路电压的90％.

T.3 Vibration
振动

Test Method 测试方法

The samples were subjected to vibration tests consisting of the following. The samples were weighed before and after the exposure. The cell/battery voltage was also determined before and after the test. 测试样品将进行如下振动测试。样品测试前后进行称重，并记录电压。

The samples were firmly secured to the platform of the vibration machine without distorting the cells in such a manner as to faithfully transmit the vibration. The vibration was a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle was repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting positions of the cell. One of the directions of vibration was perpendicular to the terminal face. 电芯和电池牢固地安装在振动台上。振动以正弦波形式，以7Hz增加至200Hz，然后在减少回到7Hz为一个循环，一个循环持续15分钟的对数前移传送。以振动的其中一个方向必须是垂直样品极性，对每个电芯从三个互相垂直的方向上循环12次，每个方向3个小时。

The logarithmic frequency sweep was as follows/对数扫频如下:

[X] For cells and small batteries: From 7 Hz a peak acceleration of 1 g was maintained until 18 Hz is reached. The amplitude was then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 8 g occurred (approximately 50 Hz). A peak acceleration of 8 g was then maintained until the frequency was increase to 200 Hz. 对于小电芯和小电池：7赫兹开始保持1gn的最大加速度直到频率为18赫兹，然后将振幅保持在0.8毫米（总偏移1.6毫米）并增加频率直到最大加速度达到8gn（频率约为50赫兹），将最大加速度保持在8gn直到频率增加到200赫兹。

[ ] For large batteries: From 7 Hz a peak acceleration of 1 g was maintained until 18 Hz is reached. The amplitude was then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 2 g occurred (approximately 25 Hz). A peak acceleration of 2 g was then maintained until the frequency was increase to 200 Hz. 对大电芯和大电池： 7赫兹开始保持1gn的最大加速度直到频率为18赫兹，然后将振幅保持在0.8毫米（总偏移1.6毫米）并增加频率直到最大加速度达到2gn（频率约为25赫兹），将最大加速度保持在2gn直到频率增加到200赫兹。

Test Results/测试结果

Sample No. 样品编号	Sample Condition 样品状态	Weight Before Test(g) 测试前质量（克）	Weight After Test(g) 测试后质量（克）	Percentage of Weight Loss 质量损失%	Voltage Before Test(V) 测试前电压（伏）	Voltage After Test(V) 测试后电压（伏）	Percentage of residual Voltage 残余电压%	Results 结果
3036621-S1	(C)	48.811	48.809	0.004	4.104	4.036	98.343	(6), (7)
3036621-S2	(C)	48.920	48.915	0.010	4.108	4.105	99.927	(6), (7)
3036621-S3	(C)	48.953	48.951	0.004	4.097	4.096	99.976	(6), (7)
3036621-S4	(C)	49.030	49.024	0.012	4.105	4.083	99.464	(6), (7)
3036621-S5	(C)	48.992	48.990	0.004	4.109	4.108	99.976	(6), (7)
3036621-S6	(D)	49.022	48.943	0.161	4.106	4.074	99.221	(6), (7)
3036621-S7	(D)	48.711	48.708	0.006	4.103	4.102	99.976	(6), (7)
3036621-S8	(D)	48.675	48.672	0.006	4.147	4.143	99.904	(6), (7)
3036621-S9	(D)	48.681	48.679	0.004	4.108	4.107	99.976	(6), (7)
3036621-S10	(D)	49.005	49.003	0.004	4.147	4.145	99.952	(6), (7)

Results/结果:

(1) Leakage/漏液.

(2) Venting/排气.

(3) Disassembly/解体.

(4) Rupture/破裂.

(5) Fire/着火.

(6) No leakage, no venting, no disassembly, no rupture, no fire/无漏液，无排气，无解体，无破裂，无着火.

(7) The open circuit voltage of each cell after testing was greater than 90%/开路电压不低于试验前开路电压的90%.

T.4 Shock
冲击

Test Method 测试方法

The samples were subjected to shock. The samples were weighed before and after the exposure. The cell/battery voltage was also determined before and after the test. The sample cell was secured to the testing machine by means of a rigid mount, which supports all mounting surfaces of the sample. Each sample was subjected to a half-sine shock as below: 样品将进行如下冲击测试。对样品在测试前后进行称重，并记录电压。以稳固的托架固定住每个电芯和电池样品的全部配件表面。每个样品将进行如下半正弦冲击测试：

[X] For cells: Peak acceleration of 150 gn and pulse duration of 6 milliseconds. 小电芯：峰值为150gn，脉冲持续6毫秒。

[ ] For large cells: Peak acceleration of 50 gn and pulse duration of 11 milliseconds. 大电芯：峰值为50gn，脉冲持续11毫秒。

[ ] For small batteries: Peak acceleration of the smaller of the following, and pulse duration of 6 milliseconds: 小电池：取如下较小值为峰值，脉冲持续6毫秒。

- 150 gn.
- √(100850 / mass of the battery in kg)

[ ] For large batteries: Peak acceleration of the smaller of the following, and pulse duration of 11 milliseconds: 大电池：取如下较小值为峰值，脉冲持续6毫秒。

- 50 gn.
- √(30000 / mass of the battery in kg)

Each sample was subjected to three shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicular mounting positions of the cell for a total of 18 shocks. 每个测试样品须在三个互相垂直的电池安装方位的正方向经受三次冲击，接着在反方向经受三次冲击，总共经受18次冲击。

Test Results/测试结果

Sample No. 样品编号	Sample Condition 样品状态	Weight Before Test(g) 测试前质量（克）	Weight After Test(g) 测试后质量（克）	Percentage of Weight Loss 质量损失%	Voltage Before Test(V) 测试前电压（伏）	Voltage After Test(V) 测试后电压（伏）	Percentage of residual Voltage 残余电压%	Results 结果
3036621-S1	(C)	48.809	48.809	0.000	4.036	4.036	100.000	(6), (7)
3036621-S2	(C)	48.915	48.915	0.000	4.105	4.013	97.759	(6), (7)
3036621-S3	(C)	48.951	48.951	0.000	4.096	4.096	100.000	(6), (7)
3036621-S4	(C)	49.024	49.024	0.000	4.083	4.023	98.530	(6), (7)
3036621-S5	(C)	48.990	48.990	0.000	4.108	4.108	100.000	(6), (7)
3036621-S6	(D)	48.943	48.943	0.000	4.074	4.074	100.000	(6), (7)
3036621-S7	(D)	48.708	48.708	0.000	4.102	4.102	100.000	(6), (7)
3036621-S8	(D)	48.672	48.672	0.000	4.143	4.140	99.928	(6), (7)
3036621-S9	(D)	48.679	48.645	0.070	4.107	4.107	100.000	(6), (7)
3036621-S10	(D)	49.003	49.003	0.000	4.145	4.144	99.976	(6), (7)

Results/结果:

(1) Leakage/漏液.

(2) Venting/排气.

(3) Disassembly/解体.

(4) Rupture/破裂.

(5) Fire/着火.

(6) No leakage, no venting, no disassembly, no rupture, no fire/无漏液，无排气，无解体，无破裂，无着火.

(7) The open circuit voltage of each cell after testing was greater than 90%/开路电压不低于试验前开路电压的90％.

T.5 External short circuit
外部短路

Test Method 测试方法

The samples were shall be heated for a period of time noted below, to reach a homogeneous stabilized temperature of 57 ± 4 °C, measured on the external case: 为使样品达到均匀稳定的初始温度：57 ± 4 °C，样品需在此环境下暴露一段时间。

- Small cells and small batteries: 6 hours. 小电芯和小电池至少暴露6小时。
- Large cells and large batteries: 12 hours.大电芯和大电池至少暴露12小时。
- **[X]** __1__hours, assessed depended on the size and design of the sample. __1___小时，根据样品尺寸设计评估所得。

The samples were then subjected to a short circuit condition with a total external resistance of less than 0.1 ohm, until: 然后将样品正负极用小于0.1欧姆的总电阻回路进行短路，直到：

- Small cells, small batteries and large cells: 1 hour after the external case temperature of sample has returned to 57 ± 4 °C.
  小电芯，小电池和大电芯： 样品外表温度恢复到57 ± 4 °C之后保持短路状态1小时以上。
- Large batteries: After the external case temperature of sample has decreased by half of the maximum temperature increase observed during the test and remains below that value.
  大电池：样品表面温度下降所测最大温升的一半，并保持低于该数值。

Test Results/测试结果

Sample No. 样品编号	Sample Condition 样品状态	Voltage Before Test(V) 测试前电压（伏）	Maximum Temperature, °C 最高温度（°C）	Results 结果
3036621-S1	(C)	4.036	57.7	(4), (5)
3036621-S2	(C)	4.013	57.7	(4), (5)
3036621-S3	(C)	4.096	58.0	(4), (5)
3036621-S4	(C)	4.023	57.8	(4), (5)
3036621-S5	(C)	4.108	57.6	(4), (5)
3036621-S6	(D)	4.074	58.2	(4), (5)
3036621-S7	(D)	4.102	57.9	(4), (5)
3036621-S8	(D)	4.140	57.8	(4), (5)
3036621-S9	(D)	4.107	57.8	(4), (5)
3036621-S10	(D)	4.144	57.9	(4), (5)

Results/结果:

(1) Disassembly/解体.

(2) Rupture/破裂.

(3) Fire/着火.

(4) No disassembly, no rupture, no fire within 6 hours after the test/测试后6小时内无解体，无破裂，无着火.

(5) The maximum temperature did not exceed 170°C/最高温度不超过170摄氏度.

Samples Condition note for T1 to T5/试验T1至T5的样品状态备注 :

(A) Fully discharged state/完全放电.

(B) Undischarged state/未放电.

(C) First cycle in fully charged state/第一个交替充电放电周期完全充电.

(D) After 25 cycles ending in fully charged state/第二十五个交替充电放电周期完全充电.

T.6 Impact / Crush
撞击 / 挤压

Test Method 测试方法

[X] Impact (for cylindrical cells greater not less than 18 mm in diameter)/ 撞击（适用于直径不小于18毫米的圆柱形电池）

A test sample was placed on a flat surface. A 15.8 mm ± 0.1 mm diameter, at least 6 cm long, or the longest dimension of the cell, whichever is greater, Type 316 stainless steel bar was placed across the center of the sample. A 9.1 kg ± 0.1 kg mass was dropped from a height of 61 ± 2.5 cm at the intersection of the bar and sample in a controlled manner, using a near frictionless, vertical sliding track or channel with minimal drag on the falling mass. The vertical track or channel used to guide the falling mass was oriented 90 degrees from the horizontal supporting surface. 将试验样品放在一个平坦光滑的平面上。将一条316型不锈钢棒，其直径为15.8 mm ± 0.1 mm，长度为至少6 cm，或电芯的最长边长度（两者中较大者），放置在样品中心。将一质量为9.1 kg ± 0.1 kg的物体于61 ± 2.5 cm的高度, 无摩擦地从垂直滑轨落向样品。垂直滑轨与横向支承面互相垂直，保持90度。

The test sample was impacted with its longitudinal axis parallel to the flat surface and perpendicular to the longitudinal axis of a 15.8 mm ± 0.1 mm diameter curved surface lying across the center of the test sample. Separate samples were used for each test. 接受撞击的试样，纵轴应与平坦的表面平行并与横放在试样中心的直径15.8 mm ± 0.1 mm弯曲表面的纵轴垂直。每一个试样只经受一次撞击。

[ ] Crush (for prismatic, pouch, coin/button cells and cylindrical cells less than 18 mm in diameter)/挤压（适用于棱柱形、袋装、硬币/纽扣电池和直径小于18毫米的圆柱形电池）

A sample was crushed between two flat surfaces. The crushing was gradual with a speed of approximately 1.5 cm/s at the first point of contact. The crushing was continued until the first of the three options below has reached/将样品放在两个平面之间挤压。挤压力度逐渐加大，在第一个接触点上的速度大约为1.5厘米/秒。挤压持续进行，直到出现以下三种情况之一：

- The applied force reaches 13 kN ± 0.78 kN/施加的力达到13 kN ± 0.78 kN;
- The voltage of the cell drops by at least 100 mV; or/电池的电压下降至少100毫伏，或者
- The cell is deformed by 50% or more of its original thickness/电池变形达原始厚度的50%以上。
-

A prismatic or pouch cell was crushed by applying the force to the widest side. A button/coin cell was crushed by applying the force on its flat surfaces. For cylindrical cells, the crush force was applied perpendicular to the longitudinal axis/棱柱形或袋装电池应从最宽的一面施压。纽扣/硬币形电池应从其平坦表面施压。圆柱形应从与纵轴垂直的方向施压。

The test sample was observed for a further 6 hours. Separate samples that have not previously been subjected to other tests were used for each test/测试样品进一步观察6小时。未进行过其他测试的样品用于此测试。

Test Results/测试结果

Sample No. 样品编号	Sample Condition 样品状态	Voltage Before Test(V) 测试前电压（伏）	Maximum Temperature, °C 最高温度（°C）	Results 结果
3036624-S21	(C)	3.656	116.4	(3), (4)
3036624-S22	(C)	3.655	121.4	(3), (4)
3036624-S23	(C)	3.660	54.9	(3), (4)
3036624-S24	(C)	3.652	128.6	(3), (4)
3036624-S25	(C)	3.658	59.0	(3), (4)
3036624-S26	(D)	3.656	124.5	(3), (4)
3036624-S27	(D)	3.655	102.7	(3), (4)
3036624-S28	(D)	3.653	121.1	(3), (4)
3036624-S29	(D)	3.661	104.3	(3), (4)
3036624-S30	(D)	3.659	55.2	(3), (4)

Results/结果:
(1) Disassembly/解体.
(2) Fire/着火.
(3) No disassembly, no fire within 6 hours after the test/测试后6小时内无解体，无着火.
(4) The maximum temperature did not exceed 170°C/最高温度不超过170摄氏度.

Samples Condition note/样品状态备注

(A) Undischarged/未放电.

(B) Fully discharged/完全放电.

(C) First cycle in 50% charged state/第一个循环周期半满电.

(D) 25 cycles ending at 50% charged state/第二十五个交替充电放电周期半满电.

T.7 Overcharge
过度充电

Test Method 测试方法

Batteries were subjected to a charge current of twice the manufacturer's recommended maximum continuous charge current. 2倍制造厂推荐的最大持续充电电流对样品充电。

The minimum voltage of the test was as follows/最小的测试电压由按如下决定：

- When the manufacturer's recommended charge voltage is not more than 18 V, the minimum voltage of the test was the lesser of 2 times the maximum charge voltage of the battery or 22 V. 如果厂家推荐的充电电压不超过18V，本测试的最小充电电压应是厂家标定最大充电电压的两倍或者是22V之中的较小者。
- When the manufacturer's recommended charge voltage is more than 18 V, the minimum voltage of the test was 1.2 times the maximum charge voltage. 如果厂家推荐的充电电压超过18V，本测试的最小充电电压应是厂家标定最大充电电压的1.2倍。

Tests were conducted at ambient temperature 20 ± 5°C. The duration of the test was 24 hours. 测试在20 ± 5°C的环境温度下进行，试验持续24小时。

Overcharge Current/过充电流	2*3000=6000mA
Overcharge Voltage/过充电压	2*4.2V=8.4V

Test Results/测试结果

Sample No. 样品编号	Sample Condition 样品状态	Voltage Before Test, V 测试前电压（伏）	Measured Overcharge Current, mA 测量的过充电流（毫安）	Results 结果
3036621-S11	(A)	4.179	0	(3)
3036621-S12	(A)	4.175	0	(3)
3036621-S13	(A)	4.179	0	(3)
3036621-S14	(A)	4.177	0	(3)
3036621-S15	(B)	4.178	0	(3)
3036621-S16	(B)	4.177	0	(3)
3036621-S17	(B)	4.178	0	(3)
3036621-S18	(B)	4.177	8	(3)

Results/结果:

(1) Disassembly/解体.

(2) Fire/着火.

(3) No disassembly, no fire within seven days after the test/测试后7天内无解体，无着火.

Samples Condition note/样品状态备注

(A) First cycle in fully charged state/第一个交替充电放电周期完全充电.

(B) After 25 cycles ending in fully discharged state/第二十五个交替充电放电周期完全充电.

T.8 Forced discharge
强制放电

Test Method 测试方法

Each cell was forced discharged at ambient temperature by connecting it in series with a 12 V DC power supply at an initial current equal to the maximum discharge current specified by the manufacturer. 在常温环境下，将单个电芯连接在12V的直流电源上进行强制放电，此直流电源提供给每个电芯初始电流为制造厂指定的最大放电电流。

The specified discharge current was obtained by connecting a resistive load of the appropriate size and rating in series with the test cell. Each cell was forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in amperes). 指定的放电电流通过串联在测试电芯上的合适大小和功率的负载来获得，每个电芯的强制放电时间（小时）为额定容量除以初始电流（安培）。

Test Results/测试结果

Sample No. 样品编号	Condition 样品状态	Initial Discharge Current, mA 初始放电电流 （毫安）	Voltage of Discharged Cell Before Test(V) 测试前电压（伏）	Voltage After Test(V) 测试后电压（伏）	Results 结果
3036624-S1	(B)	3019	3.213	0.000	(3)
3036624-S2	(B)	3003	3.196	0.000	(3)
3036624-S3	(B)	3001	3.179	0.000	(3)
3036624-S4	(B)	3006	3.252	0.000	(3)
3036624-S5	(B)	3001	3.241	0.000	(3)
3036624-S6	(B)	3005	3.158	0.000	(3)
3036624-S7	(B)	3002	3.206	0.000	(3)
3036624-S8	(B)	3004	3.253	0.000	(3)
3036624-S9	(B)	3012	3.265	0.000	(3)
3036624-S10	(B)	3009	3.261	0.000	(3)
3036624-S11	(C)	3023	3.339	0.000	(3)
3036624-S12	(C)	3006	3.350	0.000	(3)
3036624-S13	(C)	3004	3.294	0.000	(3)
3036624-S14	(C)	3009	3.341	0.000	(3)
3036624-S15	(C)	3006	3.346	0.000	(3)
3036624-S16	(C)	3004	3.347	0.000	(3)
3036624-S17	(C)	3010	3.341	0.000	(3)
3036624-S18	(C)	3002	3.337	0.000	(3)
3036624-S19	(C)	3004	3.346	0.000	(3)
3036624-S20	(C)	3005	3.344	0.000	(3)

Results/结果:

(1) Disassembly/解体.

(2) Fire/着火.

(3) No disassembly, no fire within seven days after the test/测试后七天内无解体、无着火.

Samples Condition note /样品状态备注

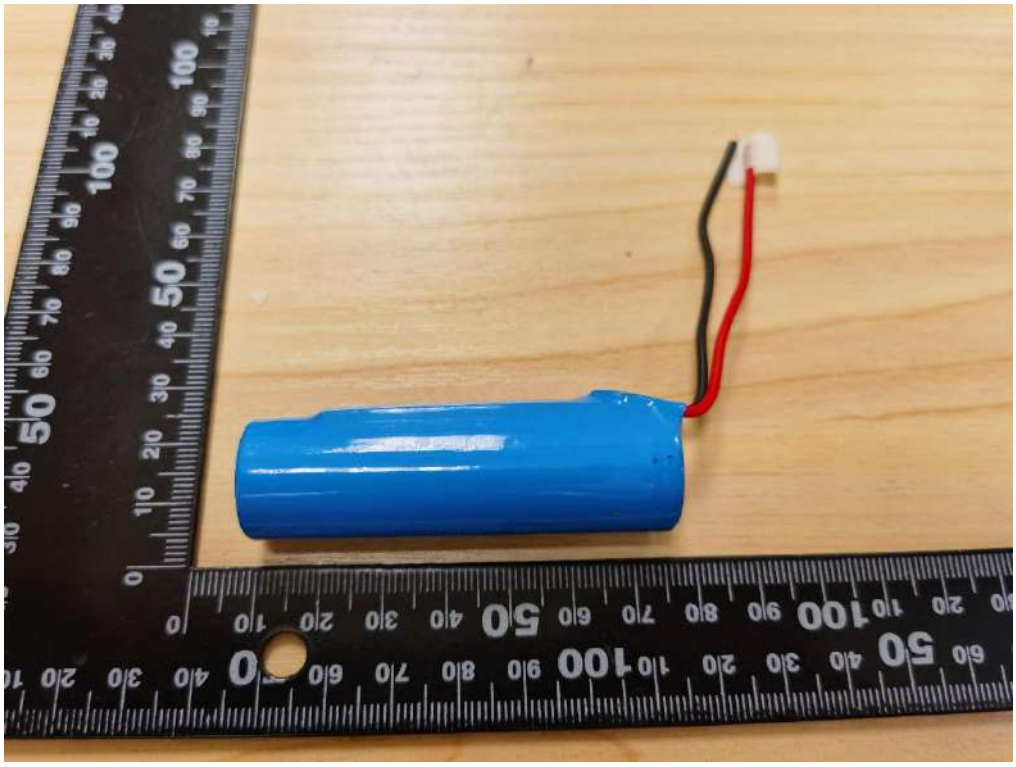
(A) Fully discharged state/完全放电.

(B) First cycle in fully discharged state/第一个交替充电放电周期完全放电.

(C) After 25 cycles ending in fully discharged state/第二十五个交替充电放电周期完全放电.

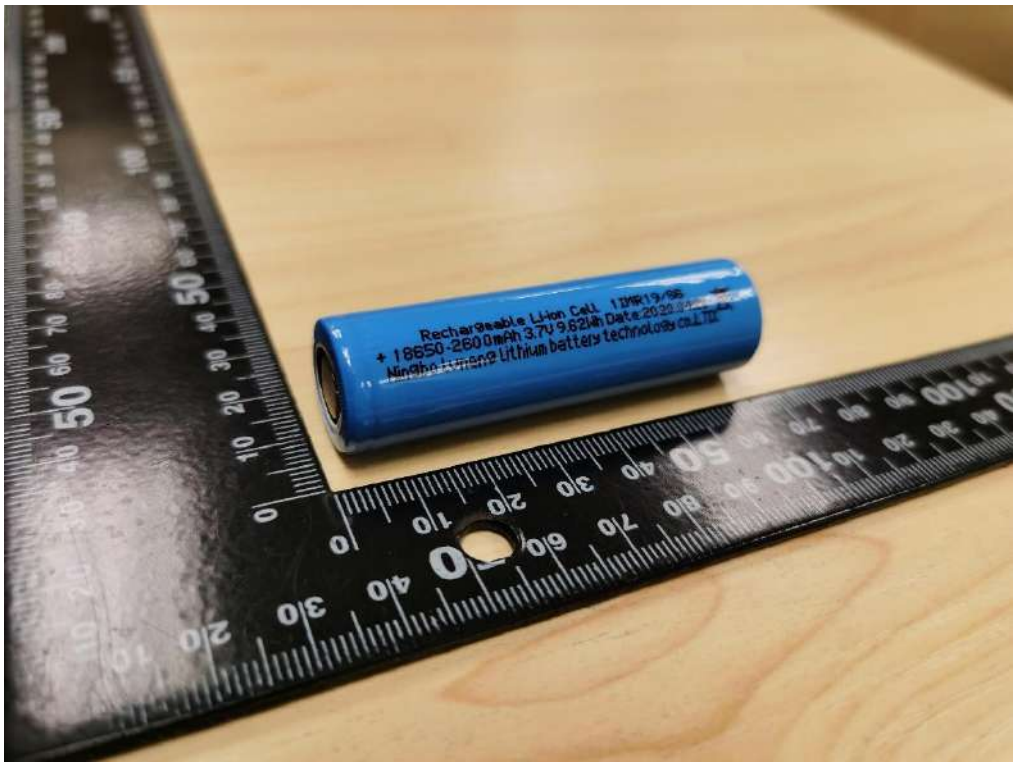
Test samples
测试样品照片

Rechargeable Li-ion Battery, Model 18650-2600mAh, 2600mAh, 3.7V, 9.62Wh
可充电锂离子电池，电池型号 18650-2600mAh, 2600mAh, 3.7V, 9.62Wh

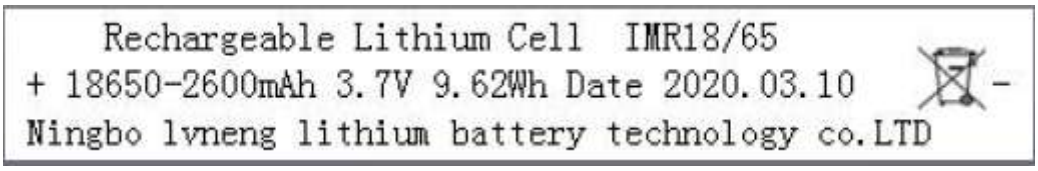


Test samples
测试样品照片

Inner Cell, Model 18650-2600mAh, 2600mAh, 3.7V, 9.62Wh, manufactured by Ningbo lvneng lithium battery technology co. LTD.
内部电芯，型号 18650-2600mAh, 2600mAh, 3.7V, 9.62Wh，由宁波绿能锂电池科技有限公司制造



Battery Label
电池标签



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   Throughout this report a point is used as the decimal separator.

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