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中国认可
检验
INSPECTION
CNAS IB0078

运 输 危 险 性 鉴 别 报 告 书

Identification and Classification Report for Transport of Goods

非限制性
(Not subject to these Regulations)

此报告本年度有效
有效期至2026年12月31日

报告编号：
Issued No: SEKQD202601096142QL480001

生效日期：
Effective Date: 2026.01.12

委托单位：广州征能电子科技有限公司

Applicant: Guang Zhou ZhengNeng Electronic Technology Co., Ltd.

物品名称：绝缘电阻测试仪 ES3045E（内置锂离子电池 AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh）

Name of Goods: DIGITAL INSULATION TESTER ES3045E (Containing Li-ion Battery AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh)

北京迪捷姆空运技术开发有限公司
Beijing DGM Air Transport Technology Development 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）提供的物品及其运输信息，确定物品的危险性并出具此报告书。
   The report is issued by DGM China according to the information of the goods and the information of its shipping provided by the applicant (shipper or his agent).
2. 依据鉴别的需要，本公司要求委托人提供真实、完整的样品及资料。
   According to the demand of identification and classification, DGM China requires the applicant to provide true and exact sample and data of the goods.
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同一种物质。
   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. 本公司仅对委托方所提供样品的鉴别结果负责。
   DGM China is only responsible for the identification and classification of the sample provided by the applicant.
5. 本报告书经主检员、审核人和批准人签字并加盖本公司印章后生效。
   This report will be effective only after it is signed by the inspector:, checker and approver, and stamped by DGM China.
6. 未经本公司书面批准，不得复制本报告书。
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   The report is invalid when anything of the following happens - illegal transfer, reproduce, embezzlement, imposture, modification or tampering in any media form.
8. 报告书仅在本年度内有效。
   This report is only valid within the year.

地址：北京首都机场货运北路天竺综合保税区 BGS 货运楼 249 室　　邮编：101300

电话：010-69479673　　传真：010-69479621

网址：www.dgmchina.com.cn　　E-mail: test@dgmchina.com.cn

北京迪捷姆空运技术开发有限公司

项目编号 Item No.		SEKQD202601096142	签发日期 Issued Date	2026.01.12
鉴别目的 Identification Purpose		是否属于运输危险物品 Dangerous Goods or not restricted	鉴别日期 Identification Date	2026.01.09-2026.01.09
鉴别依据 Identification Criteria		IMDG CODE (Amdt 42-24)		
物品名称 Name of Goods	中文名称 Name of Chinese	绝缘电阻测试仪 ES3045E（内置锂离子电池 AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47 Wh）		
	英文名称 Name of English	DIGITAL INSULATION TESTER ES3045E (Containing Li-ion Battery AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh)		
生产厂家 Manufacturer		惠州奥科奇电子科技有限公司 Huizhou Akocsi Electronic Technology Co., LTD		
物品信息 Nature of Goods		该物品为锂离子电池，蓝色，近长方体，尺寸：(70.5×55.7×20.1)mm。 型号/族号：AK 18650 2600mAh 10.95V 每包装件中电池或电芯数量：1块 安装在设备上 (注：该电池已经做好防意外启动措施。单块电池的重量约为145.588g。每包装件含1台设备，每台设备含一块电池。) The goods are lithium ion batteries, blue, almost cuboid, Size: (70.5×55.7×20.1)mm. Model/Group:AK 18650 2600mAh 10.95V Number of batteries or cells per package:1 pieces Contained in equipment		
鉴别结论 Conclusions		非限制性 (Not subject to these Regulations)		
		UN 编号(UN No.):	/	
		运输专用名称(PSN)	/	
		危险性类别(Class or Div.)	/	
		包装等级(PG)	/	
备注 Comment		根据IMDG CODE特殊规定188不受限制，可按非危险货物运输。 Not Restricted As per IMDG CODE Special Provision 188 and can be shipped as non-dangerous goods.		

主检员 Appraiser 刘振振　　审核人 Checker 孙术龙　　批准人 Approver

报告单位（盖章）Stamp

项目编号 Item No.		SEKQD202601096142
物品名称 Name of Goods	中文名称 Name of Chinese	绝缘电阻测试仪 ES3045E（内置锂离子电池 AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47 Wh）
	英文名称 Name of English	DIGITAL INSULATION TESTER ES3045E (Containing Li-ion Battery AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh)

鉴别项目名称 Item	检验结果 Inspection Result
该电池额定瓦特小时数为 28.47 Wh。 Watt-hour rating of the battery is 28.47 Wh.	≤100Wh
锂电池已通过 UN38.3 测试。 Each battery is of a type proved to meet the Requirements of each test in the UN MANUAL OF TESTS AND CRITERIA, Part III,sub-section 38.3.	符合 Conform
电池按照规定的质量管理体系进行制造。 Batteries be manufactured under a quality management programme.	符合 Conform
该锂电池不属于召回电池，不属于废弃和回收电池。 The lithium batteries don't belong to batteries returned to the manufacturer for safety reasonsare not waste lithium batteries and not lithium batteries being shipped for recycling or disposal.	符合 Conform
通过包装件 1.2 米跌落试验。 Each package is capable of withstanding a 1.2m drop test in any orientation.	不适用 Not applicable
包装件需要按照特殊规定188的要求进行适当标记。 The package must be appropriately marked according to special provision 188.	符合 Conform
每票托运物品均有随附文件说明： 包装件内装锂离子电池或电芯； 必须小心操作。如包装件破损，有易燃危险性； 包装件破损时应采取的特殊措施，包括检查和必要时的重新包装； 应急电话号码。 Each consignment is accompanied with a document with an indication that: the package contains lithium ion cells or batteries; the package must be handled with care, and that a flammability hazard exists if the package is damaged; special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and a telephone number for additional information.	不适用 Not applicable
/	/
/	/

注意事项 Remarks	必须防止设备意外启动。 The equipment must be equipped with an effective means of preventing accidental activation.Cells have been protected so as to prevent short circuits and have been equipped with an effective means of preventing accidental activation.

出单：刘振振

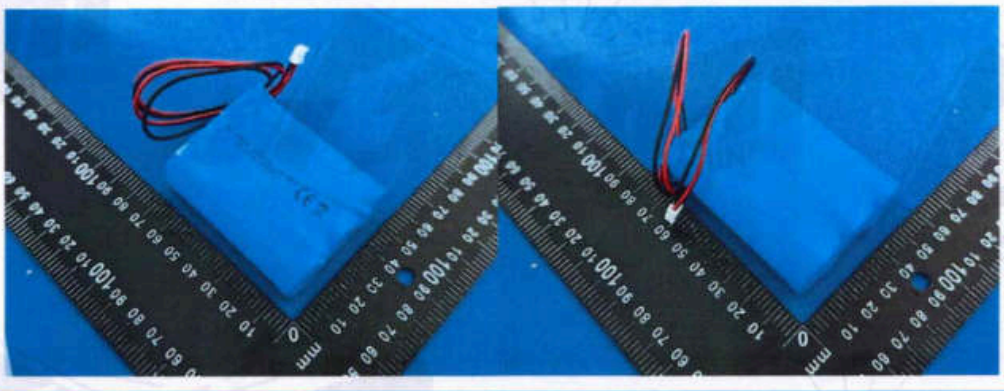
绝缘电阻测试仪 ES3045E (内置锂离子电池 AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh)

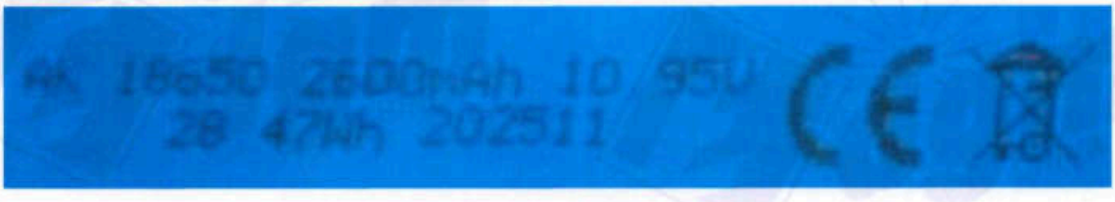
SEKQD202601096142











锂电池/钠离子电池 UN38.3 试验概要 Test Summary

项目编号：SEKQD202601096142

单位信息 Company Information	
委托单位 Consignor	广州征能电子科技有限公司 Guang Zhou ZhengNeng Electronic Technology Co., Ltd.
生产单位 Manufacturer	惠州奥科奇电子科技有限公司/ Huizhou Akocsi Electronic Technology Co., LTD 惠州仲恺高新区陈江街道五一村学塘排 6 号青年创业园 B 栋 4 楼/ 4th Floor of building B of youth entrepreneurship pack, No 6 xuetangpai of wuyi Village, chenjiang street, zhongkai district, huizhou, guangdong, china. 电话/Tel：+86-020-37319325　　邮箱/Mail：3089558796@qq.com
测试单位 Test Lab	深圳市通测检测技术有限公司/Shenzhen TCT Testing Technology Co., Ltd. 广东省深圳市宝安区福海街道桥头社区稔山工业区振昌胶粘制品厂 2101、2201/2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China 电话/Tel：400-6611-140　　邮箱/Mail：service@tct-lab.com 网址/Website：http://www.tct-lab.com

电池信息 Battery Information			
名称 Name	锂离子电池 Li-ion Battery	电池/电芯类别 Battery/Cell Classification	锂离子电池 Li-ion Battery
型号 Type	AK 18650 2600mAh 10.95V	商标 Trademark	/
额定电压 Normal Voltage	10.95V	额定容量 Rated Capacity	2600mAh
额定能量 Watt-hour rating	28.47Wh	外观/Appearance	蓝色近长方体 Approximate Blue Cuboid
质量/Mass	145.588g	锂含量/Li Content	不适用 N/A

测试信息 Test Information					
测试报告编号 Test Report Number	TCT251125B037		测试报告签发日期 Date of Test Report	2025. 12. 03	
测试标准 Edition of UN Manual of Tests and Criteria Used	联合国《试验和标准手册》（第 8 版）38.3 节 UN "Manual of Tests and Criteria" ST/SG/AC.10/11/Rev.8/Subsection 38.3				
T.1：高度模拟 Altitude Simulation	通过 Pass	T.2：温度试验 Thermal Test	通过 Pass	T.3：振动 Vibration	通过 Pass
T.4：冲击 Shock	通过 Pass	T.5：外部短路 External Short Circuit	通过 Pass	T.6：撞击/挤压 Impact/Crush	通过 Pass
T.7：过度充电 Overcharge	通过 Pass	T.8：强制放电 Forced Discharge	通过 Pass		
UN38.3.3.1(f)或/or UN38.3.3.2(d)	不适用 N/A		UN38.3.3.1(g)或/or UN38.3.3.2(e)	不适用 N/A	
备注 Note	/				
签名 Signatory 职务 Title	刘振振 工程师		签发日期 Issued Date	2026-01-09	

中国认可
检验
INSPECTION
CNAS IB0078

锂电池
符合相关包装说明第Ⅱ部分

航空运输危险性鉴别报告

Identification and Classification Report for Air Transport of Goods

此报告本年度有效
有效期至2026年12月31日

报告编号：
Issued No.: PEKQD2026010985l7QL560001

生效日期：
Effective Date: 2026.01.12

委托单位：广州征能电子科技有限公司

Applicant: Guang Zhou ZhengNeng Electronic Technology Co., Ltd.

物品名称：绝缘电阻测试仪 ES3045E（内置锂离子电池 AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh）

Name of Goods: DIGITAL INSULATION TESTER ES3045E (Containing Li-ion Battery AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh)

北京迪捷姆空运技术开发有限公司

Beijing DGM Air Transport Technology Development Co.,Ltd.

报 告 书 使 用 约 定
Terms of the Using of the Report

1. 本公司依据本年度国际航协《危险品规则》以及委托人（托运人或其代理人）提供的物品及其运输信息，确定物品的航空运输危险性并出具此报告书。
   The report is issued by DGM China according to IATA ***Dangerous Goods Regulations*** published in the current year and the information of the goods and the information of its shipping provided by the applicant (shipper or his agent).

2. 依据鉴别的需要，本公司要求委托人提供真实、完整的样品及资料。
   According to the demand of identification and classification, DGM China requires the applicant to provide true and exact sample and data of the goods.

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同一种物质。
   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. 本公司仅对委托方所提供样品的鉴别结果负责。
   DGM China is only responsible for the identification and classification of the sample provided by the applicant.

5. 本报告书经主检员、审核人和批准人签字并加盖本公司印章后生效。
   This report will be effective only after it is signed by the inspector, checker and approver, and stamped by DGM China.

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8. 为适应国际航协《危险品规则》的年度变化，报告书仅在本年度内有效。
   This report is only valid within the year in which the IATA ***Dangerous Goods Regulations*** is effective.

地址：北京首都国际机场货运北路天竺综合保税区BGS货运楼249室　　邮编：101300

电话：010-69479673　　传真：010-69479621

网址：www.dgmchina.com.cn　　E-mail: test@dgmchina.com.cn

项目编号 Item No.		PEKQD202601098517	签发日期 Issued Date	2026.01.12
鉴别目的 Identification Purpose		是否属于航空运输危险物品 Dangerous Goods or not restricted	鉴别日期 Identification Date	2026.01.09
鉴别依据 Identification Criteria		IATA DGR 67th, 2026		
物品名称 Name of Goods	中文 Chinese	绝缘电阻测试仪 ES3045E（内置锂离子电池 AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh）		
	英文 English	DIGITAL INSULATION TESTER ES3045E (Containing Li-ion Battery AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh)		
生产厂家 Manufacturer		惠州奥科奇电子科技有限公司 Huizhou Akocsi Electronic Technology Co., LTD		
件数 Pieces			托运人或托运人代理人声明 本人（本单位）声明：上述运输信息填写真实、准确，鉴别报告已获得委托单位的授权使用，实际运输的货物情况与本鉴别报告一致。如因信息填写错误、实际运输的货物情况与本鉴别报告不一致造成的一切后果，由本人（本单位）承担全部责任，并赔偿对承运人造成的全部损失。 托运人或托运人代理人签字： 盖章：	
运单号 Air waybill No.				
目的港 Destination				
物品信息 Nature of the goods		该样品为蓝色近长方体电池。 型号：AK 18650 2600mAh 10.95V 尺寸：(70.5×55.7×20.1)mm 每包装件中电池/电芯数量：1 每包装件中电池/电芯净重：0.146kg 该锂电池不属于召回电池，不属于废弃和回收电池，并按照DGR3.9.2.6.1(e)规定的质量体系进行制造。 (注：该电池已经做好防意外启动措施。单块电池的重量约为145.588g。每包装件含1台设备，每台设备含一块电池。) This sample is blue almost cuboid battery. Model: AK 18650 2600mAh 10.95V Size: (70.5×55.7×20.1)mm Number of batteries / cells per package: 1 Net quantity of batteries/cells per package: 0.146kg The lithium batteries don't belong to batteries returned to the manufacturer for safety reasons, are not waste lithium batteries and not lithium batteries being shipped for recycling or disposal, are manufactured under a quality management program as described in 3.9.2.6.1(e).		

项目编号 Item No.		PEKQD202601098517
物品名称 Name of Goods	中文 Chinese	绝缘电阻测试仪 ES3045E（内置锂离子电池 AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh）
	英文 English	DIGITAL INSULATION TESTER ES3045E (Containing Li-ion Battery AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh)
鉴别结论 Conclusions		该物品为锂离子/聚合物电池，安装在设备上。额定瓦特小时为28.47Wh。已通过 UN38.3 测试，包装件通过3米堆码试验，每个包装件上均有电池标记。 根据IATA DGR，锂离子电池符合包装说明967第II部分。 This goods is lithium ion/polymer battery, contained in equipment. Watt-hour rating is 28.47Wh. Each battery is of a type proved to meet the Requirements of each test in the UN MANUAL OF TESTS AND CRITERIA, Part III, sub-section 38.3, The package is capable of withstanding the 3m stack test, Each package is marked with battery mark. According to IATA DGR, lithium ion batteries in compliance with Section II of PI 967.

运输危险性建议 Suggestion for Transport	UN/ID 编号 UN/ID No.	运输专用名称 Proper Shipping Name	类或项 Class or Div. (次要危险性) (Subsidiary Risk)	包装等级 Packing Group
	/	/	/	/

包装说明 Packing Inst.	客货机 Passenger and Cargo Aircraft	/
	仅限货机 Cargo Aircraft only	/
注意事项 Remarks	电池或电芯必须加以保护，防止短路，设备必须采取措施防止意外启动。 Batteries or cells must be protected so as to prevent short circuits, and the equipment must be equipped with an effective means of preventing accidental activation.	

主检员 Prepared by: 刘振振　　审核人 Checked by: 孙术龙　　批准人 Approved by:

报告单位（盖章） Stamp

制单： 刘振振

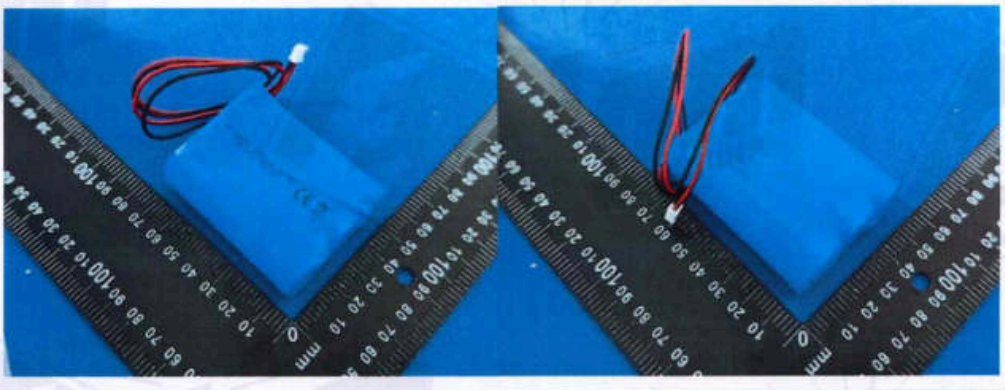
绝缘电阻测试仪 ES3045E (内置锂离子电池 AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh)

PEKQD202601098517











锂电池/钠离子电池 UN38.3 试验概要 Test Summary

项目编号：PEKQD202601098517

单位信息 Company Information	
委托单位 Consignor	广州征能电子科技有限公司 Guang Zhou ZhengNeng Electronic Technology Co., Ltd.
生产单位 Manufacturer	惠州奥科奇电子科技有限公司/ Huizhou Akocsi Electronic Technology Co., LTD 惠州仲恺高新区陈江街道五一村学塘排 6 号青年创业园 B 栋 4 楼/ 4th Floor of building B of youth entrepreneurship pack, No 6 xuetangpai of wuyi Village, chenjiang street, zhongkai district, huizhou, guangdong, china. 电话/Tel：+86-020-37319325　　邮箱/Mail：3089558796@qq.com
测试单位 Test Lab	深圳市通测检测技术有限公司/Shenzhen TCT Testing Technology Co., Ltd. 广东省深圳市宝安区福海街道桥头社区稔山工业区振昌胶粘制品厂 2101、2201/2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China 电话/Tel：400-6611-140　　邮箱/Mail：service@tct-lab.com 网址/Website：http://www.tct-lab.com

电池信息 Battery Information			
名称 Name	锂离子电池 Li-ion Battery	电池/电芯类别 Battery/Cell Classification	锂离子电池 Li-ion Battery
型号 Type	AK 18650 2600mAh 10.95V	商标 Trademark	/
额定电压 Normal Voltage	10.95V	额定容量 Rated Capacity	2600mAh
额定能量 Watt-hour rating	28.47Wh	外观/Appearance	蓝色近长方体 Approximate Blue Cuboid
质量/Mass	145.588g	锂含量/Li Content	不适用 N/A

测试信息 Test Information					
测试报告编号 Test Report Number	TCT251125B037		测试报告签发日期 Date of Test Report	2025. 12. 03	
测试标准 Edition of UN Manual of Tests and Criteria Used	联合国《试验和标准手册》（第 8 版）38.3 节 UN "Manual of Tests and Criteria" ST/SG/AC.10/11/Rev.8/Subsection 38.3				
T.1：高度模拟 Altitude Simulation	通过 Pass	T.2：温度试验 Thermal Test	通过 Pass	T.3：振动 Vibration	通过 Pass
T.4：冲击 Shock	通过 Pass	T.5：外部短路 External Short Circuit	通过 Pass	T.6：撞击/挤压 Impact/Crush	通过 Pass
T.7：过度充电 Overcharge	通过 Pass	T.8：强制放电 Forced Discharge	通过 Pass	/	
UN38.3.3.1(f)或/or UN38.3.3.2(d)	不适用 N/A		UN38.3.3.1(g)或/or UN38.3.3.2(e)	不适用 N/A	
备注 Note	/				
签名 Signatory 职务 Title	刘振振 工程师		签发日期 Issued Date	2026-01-09	

UN38.3 Test Report

UN38.3 检测报告

Applicant's Name 委托方名称	Guang Zhou ZhengNeng Electronic Technology Co., Ltd. 广州征能电子科技有限公司
Applicant's Address 委托方地址	4 floor of Building 6, Hongjie Industrial Park, Baiyun District of Guangzhou city, Guangdong Province 广东省广州市白云区弘捷工业园 6 号楼 4 楼
Name of Sample 样品名称	Li-ion Battery 锂离子电池
Model 型号	AK 18650 2600mAh 10.95V
Testing Laboratory 测试实验室	Shenzhen TCT Testing Technology Co., Ltd. 深圳市通测检测技术有限公司 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China 广东省深圳市宝安区福海街道桥头社区稔山工业区振昌胶粘制品厂 2101、2201
Report No. 报告编号	TCT251125B037
Date of Issue 签发日期	2025. 12. 03
Test Conclusion 测试结论: 经检测，该样品符合联合国《试验和标准手册》（第八修订版)38.3 节测试要求。 After testing, the sample meets the UN "Manual of Tests and Criteria" ST/SG/AC.10/11/Rev.8 Subsection 38.3 test requirements.	

Tested by主检人: Summer Chen 陈婧如

Summer Chen / Test Engineer 陈婧如/测试工程师

Approved by 批准人: Evan Chen 陈祖铭

Evan Chen /Technical Manager 陈祖铭/技术负责人

Reviewer by 审核人: Cherry Huang 黄娇玲

Cherry Huang/ Project Engineer 黄娇玲/项目工程师

Seal of TCT 报告单位（盖章）:

Ⅰ、General product information:
一般产品信息

Manufacturer's Name 生产单位名称	Huizhou Akocsi Electronic Technology Co., LTD 惠州奥科奇电子科技有限公司				
Manufacturer's Address 生产单位地址	4th Floor of building B of youth entrepreneurship pack, No 6 xuetangpai of wuyi Village, chenjiang street, zhongkai district, huizhou, guangdong, china. 惠州仲恺高新区陈江街道五一村学塘排 6 号青年创业园 B 栋 4 楼				
Manufacturer's Contact Telephone 生产单位联系电话	+86-020-37319325		**E-mail** 邮箱	3089558796@qq.com	
Web 网址	----		**Trade Mark** 商标	----	
Name of Sample 样品名称	Li-ion Battery 锂离子电池		**Model** 型号	AK 18650 2600mAh 10.95V	
Shape 形状	Prismatic 棱柱形		**Size** 尺寸 **(L×W×T)**	(70.5×55.7×20.1) mm	
Nominal Voltage 标称电压	10.95V	**Rated Capacity** 额定容量	2600mAh 28.47Wh	**Charge Voltage** 充电电压	12.75V
Nominal Charge Current 标称充电电流	520mA	**Maximum Charge Current** 最大充电电流	1300mA	**End of Charge Current** 结束充电电流	52mA
Nominal Discharge Current 标称放电电流	520mA	**Maximum Discharge Current** 最大放电电流	1300mA	**Discharge Cut-off Voltage** 放电截止电压	9.0V
Cell Model 电芯型号	18650	**Nominal Voltage of Cell** 电芯标称电压	3.65V	**Rated Capacity of Cell** 电芯额定容量	2600mAh
Number of Cell 电芯数量	3PCS	**Sample Receiving Date** 样品接收日期	2025. 11. 10	**Testing Date** 测试日期	2025. 11. 18 — 2025. 12. 03

Ⅱ、Test Standard 检测标准

UN "Manual of Tests and Criteria" ST/SG/AC.10/11/Rev.8/Subsection 38.3.
联合国《试验和标准手册》（第八修订版）38.3 节。

Ⅲ、Test Item 检测项目

Test clause 测试条款	Tests performed 测试项目	Test conclusion 测试结论
38.3.4.1	Test T.1. Altitude simulation 高度模拟	Pass 合格
38.3.4.2	Test T.2. Thermal test 温度试验	Pass 合格
38.3.4.3	Test T.3. Vibration 振动	Pass 合格
38.3.4.4	Test T.4. Shock 冲击	Pass 合格
38.3.4.5	Test T.5. External short circuit 外部短路	Pass 合格
38.3.4.6	Test T.6. Impact 撞击	Pass 合格
38.3.4.7	Test T.7. Overcharge 过度充电	Pass 合格
38.3.4.8	Test T.8. Forced discharge 强制放电	Pass 合格

Possible test case verdicts: 可能发生的试验情况判定

- test case does not apply to the test object 试验情况不适用本试验产品： N/A
- test object does meet the requirement 试验样品满足要求： P (Pass 合格)
- test object does not meet the requirement 试验样品不满足要求： F (Fail 不合格)

Ⅳ、Test Method and Requirement 检测方法和要求

T.1. Altitude simulation 高度模拟

Purpose 目的

This test simulates air transport under low-pressure conditions.

本试验模拟在低压条件下的空运。

Test procedure 测试程序

Test cells and batteries shall be stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature (20 ± 5 °C).

试验电池和电池组应在压力等于或低于 11.6 千帕和环境温度 (20 ± 5 °C) 下存放至少 6 小时。

Requirement 要求

Cells and batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.

如果无渗漏、无排气、无解体、无破裂和无起火，并且每个试验电池或电池组在试验后的开路电压不小于其在进行这一试验前电压的 90%，电池和电池组即符合这一要求。有关电压的要求不适用于完全放电状态的试验电池和电池组。

T.2. Thermal test 温度试验

Purpose 目的

This test assesses cell and battery seal integrity and internal electrical connections. The test is conducted using rapid and extreme temperature changes.

本试验评估电池和电池组的密封完善性和内部电连接。试验利用迅速和极端的温度变化进行。

Test procedure 测试程序

Test Cells and batteries are to be stored for at least six hours at a test temperature equal to 72 ± 2°C, followed by storage for at least six hours at a test temperature equal to -40 ± 2°C. The maximum time interval between test temperature extremes is 30 minutes. This procedure is to be repeated until 10 total cycles are complete, after which all test cells and batteries are to be stored for 24 hours at ambient temperature (20 ± 5°C). For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12 hours.

试验电池和电池组应先在试验温度等于 72 ± 2℃的条件下存放至少6小时，接着再在试验温度等于-40 ± 2℃的条件下存放至少6小时。两个极端试验温度之间的最大时间间隔为30分钟。此程序重复进行，共完成10次，接着将所有试验电池和电池组在环境温度 (20 ± 5℃)下存放24小时。对于大型电池和电池组，暴露于极端试验温度的时间至少应为12小时。

Requirement 要求

Cells and batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.

如果无渗漏、无排气、无解体、无破裂和无起火，并且每个试验电池或电池组在试验后的开路电压不小于其在进行这一试验前电压的 90%，电池和电池组即符合这一要求。有关电压的要求不适用于完全放电状态的试验电池和电池组。

T.3. Vibration 振动

Purpose 目的

This test simulates vibration during transport.

本试验模拟运输过程中的振动。

Test procedure 测试程序

Cells and batteries are 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 shall be a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be 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 must be perpendicular to the terminal face.

The logarithmic frequency sweep shall differ for cells and batteries with a gross mass of not more than 12 kg (cells and small batteries), and for batteries with a gross mass of more than 12 kg (large batteries).

For cells and small batteries: from 7 Hz a peak acceleration of 1 gn is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 8 gn occurs (approximately 50 Hz). A peak acceleration of 8 gn is then maintained until the frequency is increased to 200 Hz.

For large batteries: from 7 Hz to a peak acceleration of 1 gn is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 2 gn occurs (approximately 25 Hz). A peak acceleration of 2 gn is then maintained until the frequency is increased to 200 Hz.

电池和电池组紧固于振动机平台，但紧固程度不能造成电池变形以致不能准确传递振动。振动应是正弦波形，对数频率扫描从 7 赫兹到 200 赫兹，再回到 7 赫兹，跨度为 15 分钟。这一振动过程须对三个互相垂直的电池安装方位的每一方向重复进行 12 次，总共为时 3 小时。其中一个振动方向必须与端面垂直。

作对数式频率扫描，对总质量不足 12 千克的电池和电池组(电池和小型电池组)，和对 12 千克及更大的电池组(大型电池组)应有所不同。

对电池和小型电池组：从 7 赫兹开始，保持 1 gn 的最大加速度，直到频率达到 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 8 gn(频率约为 50 赫兹)。将最大加速度保持在 8 gn 直到频率增加到 200 赫兹。

对大型电池组：从 7 赫兹开始，保持 1 gn 的最大加速度，直到频率达到 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 2 gn(频率约为 25 赫兹)。将最大加速度保持在 2 gn 直到频率增加到 200 赫兹。

Requirement 要求

Cells and batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire during the test and after the test and if the open circuit voltage of each test cell or battery directly after testing in its third perpendicular mounting position is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.

如果试验中和试验后无渗漏、无排气、无解体、无破裂和无起火，并且每个试验电池或电池组在第三个垂直安装方位上的试验后立即测得的开路电压不小于在进行这一试验前电压的 90%，电池和电池组即符合本项要求。有关电压的要求不适用于完全放电状态的试验电池和电池组。

T.4. Shock 冲击

Purpose 目的

This test assesses the robustness of cells and batteries against cumulative shocks.

本试验评估电池和电池组对累积冲击效应的耐受程度。

Test procedure 测试程序

Test cells and batteries shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery.

Each cell shall be subjected to a half-sine shock of peak acceleration of 150 gn and pulse duration of 6 milliseconds. Alternatively, large cells may be subjected to a half-sine shock of peak acceleration of 50 gn and pulse duration of 11 milliseconds.

Each battery shall be subjected to a half-sine shock of peak acceleration depending on the mass of the battery. The pulse duration shall be 6 milliseconds for small batteries and 11 milliseconds for large batteries. The formulas below are provided to calculate the appropriate minimum peak accelerations.

Each cell or battery shall be subjected to three shocks in the positive direction and to three shocks in the negative direction in each of three mutually perpendicular mounting positions of the cell or battery for a total of 18 shocks.

试验电池和电池组用坚固支架紧固在试验机上，支架支撑着每个试验电池组的所有安装面。

每个电池须经受最大加速度 150 gn 和脉冲持续时间 6 毫秒的半正弦波冲击。不过，大型电池须经受最大加速度 50 gn 和脉冲持续时间 11 毫秒的半正弦波冲击。

每个电池须经受的正弦波冲击的最大加速度取决于电池组的质量。小型电池组的脉冲持续时间 6 毫秒，大型电池组的脉冲持续时间 11 毫秒。以下公式用于计算合适的最低限度最大加速度。

每个电池或电池组须在三个互相垂直的电池或电池组安装方位的正极方向经受三次冲击，接着在负极方向经受三次冲击，总共经受 18 次冲击。

The formulas below are provided to calculate the appropriate minimum peak accelerations. 以下公式用于计算合适的最低限度最大加速度。

Battery 电池组	Minimum peak acceleration 最低限度最大加速度	Pulse duration 脉冲持续时间
Small batteries 小型电池组	150 g_n or result of formula Acceleration(g_n) = $\sqrt{\left(\frac{100850}{mass*}\right)}$ whichever is smaller	6 ms
Large batteries 大型电池组	50 g_n or result of formula Acceleration(g_n) = $\sqrt{\left(\frac{30000}{mass*}\right)}$ whichever is smaller	11 ms

* Mass is expressed in kilograms.

*质量用千克表示

Requirement 要求

Cells and batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.

如果无渗漏、无排气、无解体、无破裂和无起火，并且每个试验电池或电池组在试验后的开路电压不小于其在进行这一试验前电压的 90%，电池和电池组即符合这一要求。有关电压的要求不适用于完全放电状态的试验电池和电池组。

T.5. External short circuit 外部短路

Purpose 目的

This test simulates an external short circuit.

本试验模拟外部短路。

Test procedure 测试程序

The cell or battery to be tested shall be heated for a period of time necessary to reach a homogeneous stabilized temperature of 57 ± 4 °C, measured on the external case. This period of time depends on the size and design of the cell or battery and should be assessed and documented. If this assessment is not feasible, the exposure time shall be at least 6 hours for small cells and small batteries, and 12 hours for large cells and large batteries. Then the cell or battery at 57 ± 4 °C shall be subjected to one short circuit condition with a total external resistance of less than 0.1 ohm.

This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to 57 ± 4 °C, or in the case of the large batteries, has decreased by half of the maximum temperature increase observed during the test and remains below that value.

The short circuit and cooling down phases shall be conducted at least at ambient temperature.

对于待试电池或电池组，应加温一段必要的时间，使从外壳测量的温度达到均匀的稳定温度57 ± 4°C。这段时间的长短取决于电池或电池组的大小和设计，对于这个持续时间应加以评估和记录。如无法进行这种评估，则小型电池和小型电池组的暴露时间应至少6小时，大型电池和大型电池组的暴露时间应至少12小时。然后，电池或电池组应在57 ± 4°C条件下经受总外电阻小于0.1欧姆的短路条件。这一短路条件应在电池或电池组外壳温度回到57 ± 4°C后继续至少1小时，或在大型电池组的情况下外壳温度降幅达试验中所观察的的最高温升幅的二分之一并保持低于该数值。

短路和降温阶段的温度应至少相当于环境温度。

Requirement 要求

Cells and batteries meet this requirement if their external temperature does not exceed 170 °C and there is no disassembly, no rupture and no fire during the test and within six hours after the test.

如果外壳温度不超过 170℃，并且在试验过程中及试验后 6 小时内无解体、无破裂，无起火，电池和电池组即符合本项要求。

T.6. Impact / Crush 撞击/挤压

Purpose 目的

These tests simulate mechanical abuse from an impact or crush that may result in an internal short circuit.

本节的试验模拟撞击或挤压等可能造成内部短路的机械性破坏。

Test procedure – Impact (applicable to cylindrical cells not less than 18.0 mm in diameter)

测试程序 – 撞击（适用于直径不小于 18.0 毫米的圆柱形电池）

The test sample cell or component cell is to be placed on a flat smooth surface. A 15.8 mm ± 0.1mm diameter, at least 6 cm long, or the longest dimension of the cell, whichever is greater, Type 316 stainless steel bar is to be placed across the centre of the sample. A 9.1 kg ± 0.1 kg mass is to be 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 shall be oriented 90 degrees from the horizontal supporting surface.

The test sample is to be impacted with its longitudinal axis parallel to the flat surface and perpendicular to the longitudinal axis of the 15.8 mm ± 0.1mm diameter curved surface lying across the centre of the test sample. Each sample is to be subjected to only a single impact.

试样电池或元件电池放在平坦光滑的表面上。一根 316 型不锈钢棒横放在试样中心，钢棒直径 15.8 毫米±0.1 毫米，长度至少 6 厘米，或电池最长端的尺寸，取二者之长者。将一块 9.1 千克±0.1 千克的重锤从 61 ± 2.5 厘米高处跌落到钢棒和试样交叉处，使用一个几乎没有摩擦的、对落体重锤阻力最小的垂直轨道或管道加以控制。垂直轨道或管道用于引导落锤沿与水平支撑表面呈 90 度落下。

接受撞击的试样，纵轴应与平坦表面平行并与横放在试样中心的直径 15.8 ± 0.1 毫米弯曲表面的纵轴垂直。每一试样只经受一次撞击。

Test procedure – Crush (applicable to prismatic, pouch, coin/button cells and cylindrical cells less than 18.0 mm in diameter)

测试程序 – 挤压（适用于棱柱形、袋状、硬币/纽扣电池和直径小于 18.0 毫米的圆柱形电池）

A cell or component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5 cm/s at the first point of contact. The crushing is to be continued until the first of the three options below is reached.

(a) The applied force reaches 13 kN ± 0.78 kN;

(b) The voltage of the cell drops by at least 100 mV; or

(c) The cell is deformed by 50% or more of its original thickness.

Once the maximum pressure has been obtained, the voltage drops by 100 mV or more, or the cell is deformed by at least 50% of its original thickness, the pressure shall be released.

A prismatic or pouch cell shall be crushed by applying the force to the widest side. A button/coin cell shall be crushed by applying the force on its flat surfaces. For cylindrical cells, the crush force shall be applied perpendicular to the longitudinal axis.

Each test cell or component cell is to be subjected to one crush only. The test sample shall be observed for a further 6 h. The test shall be conducted using test cells or component cells that have not previously been subjected to other tests.

将电池或元件电池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：

(a)施加的力量达到 13 千牛顿 ±0.78 千牛顿；

(b)电池的电压下降至少 100 毫伏；或

(c)电池形变达原始厚度的 50%或以上。

一旦达到最大压力、电压下降 100 毫伏或更多，或电池变形至少达原厚度的 50%，即可解除压力。

棱柱形或袋状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。圆柱形电池应从与纵轴垂直的方向施压。

每个试样电池或元件电池只做一次挤压试验。试样应继续观察 6 小时。试验应使用之前未做过其他试验的电池或元件电池进行。

Requirement 要求

Cells and component cells meet this requirement if their external temperature does not exceed 170 °C and there is no disassembly and no fire during the test and within six hours after this test.

如果外壳温度不超过 170°C，并且在试验过程中及试验后 6 小时内无解体、无破裂，无起火，电池和电池组即符合本项要求。

T.7. Overcharge 过度充电

Purpose 目的

This test evaluates the ability of a rechargeable battery or a single cell rechargeable battery to withstand an overcharge condition.

本试验评估可再充电电池组或可再充电单一电池电池组承受过度充电状况的能力。

Test procedure 测试程序

The charge current shall be twice the manufacturer's recommended maximum continuous charge current. The minimum voltage of the test shall be as follows:

(a) When the manufacturer's recommended charge voltage is not more than 18 V, the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the battery or 22 V.

(b) When the manufacturer's recommended charge voltage is more than 18 V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage.

Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours.

充电电流必须是制造商建议的最大持续充电电流的两倍。试验的最小电压如下：

(a)制造商建议的充电电压不大于 18 伏时，试验的最小电压应是电池组最大充电电压的两倍或 22 伏两

者中的较小者。

(b)制造商建议的充电电压大于 18 伏时，试验的最小电压应是最大充电电压的 1.2 倍。

试验应在环境温度下进行，进行试验的时间应为 24 小时。

Requirement 要求

Rechargeable batteries meet this requirement if there is no disassembly and no fire during the test and within seven days after the test.

充电电池组在试验过程中和试验后 7 天内无解体、无起火，即符合本项要求。

T.8. Forced discharge 强制放电

Purpose 目的

This test evaluates the ability of a primary or a rechargeable cell to withstand a forced discharge condition.

本试验评估原电池或充电电池承受强制放电状况的能力。

Test procedure 测试程序

Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12 V D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer.

The specified discharge current is to be obtained by connecting a resistive load of the appropriate size and rating in series with the test cell. Each cell shall be forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in ampere).

每个电池应在环境温度下与 12 伏直流电源串联在起始电流等于制造商给定的最大放电电流的条件下强制放电。

将适当大小和额定值的电阻负荷与试验电池串联，计算得出给定的放电电流。对每个电池进行强制放电，放电时间(小时)应等于其额定容量除以初始试验电流(安培)。

Requirement 要求

Primary or rechargeable cells meet this requirement if there is no disassembly and no fire during the test and within seven days after the test.

原电池或充电电池如在试验过程中和试验后 7 天内无解体，无起火，即符合本项要求。

V、General Remarks 一般附注

1. Tests T.1 to T.5 shall be conducted in sequence on the same cell or battery. Tests T.6 and T.8 shall be conducted using not otherwise tested cells. Test T.7 may be conducted using undamaged batteries previously used in Tests T.1 to T.5 for purposes of testing on cycled batteries.

测试T.1-T.5须按顺序依次在同一组电芯或电池上进行。T.6和T.8须用全新的电芯进行测试。T.7 可以用之前T.1-T.5测试中完整无损的电池进行测试。

2. In order to quantify the mass loss, the following procedure is provided:

质量损失的量化值，可用以下公式计算：

$$\text{Mass loss 质量损失 (\%)} = (M_1 - M_2)/M_1 \times 100$$

Where M_1 is the mass before the test and M_2 is the mass after the test. When mass loss does not exceed the values in Table 38.3.1, it shall be considered as "no mass loss".

式中：M_1 是试验前的质量，M_2 是试验后的质量。如果质量损失不超过表 38.3.1 所列的数值，应视为“无质量损失”。

Table 38.3.1: Mass loss limit

表 38.3.1: 质量损失限值

Mass M of cell or battery 电池或电池组质量 M	Mass loss limit 质量损失限值
M ＜ 1 g	0.5%
1 g ≤ M ≤75 g	0.2%
M ＞ 75 g	0.1%

3. Unless otherwise stated in this document, the test procedure was performed at ambient temperatures of 20±5°C.

除非本文档另有说明，否则测试过程在 20°C±5°C 的环境温度下进行。

Ⅴ、Test Data 测试数据

T.1. Altitude simulation 高度模拟

Test sample status 测试样品状态	No. 编号	Pre-test 试验前		After test 试验后		Mass loss 质量损失 (%)	Change ratio 电压比 (%)	Status 结果
		Mass 质量(g)	Voltage 电压(V)	Mass 质量(g)	Voltage 电压(V)			
first cycle, fully charged state 第 1 个充放电周期，完全充电状态	B01	145.243	12.51	145.243	12.51	0.00	100.0	P
	B02	145.588	12.54	145.552	12.54	0.02	100.0	P
	B03	145.215	12.57	145.215	12.55	0.00	99.8	P
	B04	144.999	12.51	144.999	12.51	0.00	100.0	P
25th cycle, fully charged state 第 25 个充放电周期，完全充电状态	B05	145.570	12.54	145.570	12.54	0.00	100.0	P
	B06	145.462	12.57	145.433	12.57	0.02	100.0	P
	B07	145.366	12.51	145.366	12.51	0.00	100.0	P
	B08	145.096	12.54	145.096	12.52	0.00	99.8	P

Supplementary information 补充信息:

After the test, there is no leakage, no venting, no disassembly, no rupture and no fire. And Change ratio is not less than 90 %. 测试后，样品无渗漏、无排气、无解体、无破裂和无起火。电压比不小于 90 %。

T.2. Thermal test 温度试验

Test sample status 测试样品状态	No. 编号	Pre-test 试验前		After test 试验后		Mass loss 质量损失 (%)	Change ratio 电压比 (%)	Status 结果
		Mass 质量(g)	Voltage 电压(V)	Mass 质量(g)	Voltage 电压(V)			
first cycle, fully charged state 第 1 个充放电周期，完全充电状态	B01	145.243	12.51	145.218	12.42	0.02	99.3	P
	B02	145.552	12.54	145.513	12.41	0.03	99.0	P
	B03	145.215	12.55	145.174	12.44	0.03	99.1	P
	B04	144.999	12.51	144.931	12.43	0.05	99.4	P
25th cycle, fully charged state 第 25 个充放电周期，完全充电状态	B05	145.570	12.54	145.514	12.45	0.04	99.3	P
	B06	145.433	12.57	145.405	12.49	0.02	99.4	P
	B07	145.366	12.51	145.327	12.42	0.03	99.3	P
	B08	145.096	12.52	145.036	12.41	0.04	99.1	P

Supplementary information 补充信息:

After the test, there is no leakage, no venting, no disassembly, no rupture and no fire. And Change ratio is not less than 90 %. 测试后，样品无渗漏、无排气、无解体、无破裂和无起火。电压比不小于 90 %。

T.3. Vibration 振动

Test sample status 测试样品状态	No. 编号	Pre-test 试验前		After test 试验后		Mass loss 质量损失 (%)	Change ratio 电压比 (%)	Status 结果
		Mass 质量(g)	Voltage 电压(V)	Mass 质量(g)	Voltage 电压(V)			
first cycle, fully charged state 第 1 个充放电周期，完全充电状态	B01	145.218	12.42	145.202	12.42	0.01	100.0	P
	B02	145.513	12.41	145.513	12.39	0.00	99.8	P
	B03	145.174	12.44	145.174	12.44	0.00	100.0	P
	B04	144.931	12.43	144.931	12.43	0.00	100.0	P
25th cycle, fully charged state 第 25 个充放电周期，完全充电状态	B05	145.514	12.45	145.514	12.45	0.00	100.0	P
	B06	145.405	12.49	145.389	12.49	0.01	100.0	P
	B07	145.327	12.42	145.327	12.40	0.00	99.8	P
	B08	145.036	12.41	145.036	12.41	0.00	100.0	P
Supplementary information 补充信息: After the test, there is no leakage, no venting, no disassembly, no rupture and no fire. And Change ratio is not less than 90 %. 测试后，样品无渗漏、无排气、无解体、无破裂和无起火。电压比不小于 90 %。								

T.4. Shock 冲击

Test sample status 测试样品状态	No. 编号	Pre-test 试验前		After test 试验后		Mass loss 质量损失 (%)	Change ratio 电压比 (%)	Status 结果
		Mass 质量(g)	Voltage 电压(V)	Mass 质量(g)	Voltage 电压(V)			
first cycle, fully charged state 第 1 个充放电周期，完全充电状态	B01	145.202	12.42	145.202	12.42	0.00	100.0	P
	B02	145.513	12.39	145.513	12.38	0.00	99.9	P
	B03	145.174	12.44	145.162	12.44	0.01	100.0	P
	B04	144.931	12.43	144.931	12.43	0.00	100.0	P
25th cycle, fully charged state 第 25 个充放电周期，完全充电状态	B05	145.514	12.45	145.514	12.45	0.00	100.0	P
	B06	145.389	12.49	145.377	12.49	0.01	100.0	P
	B07	145.327	12.40	145.327	12.39	0.00	99.9	P
	B08	145.036	12.41	145.036	12.41	0.00	100.0	P
Supplementary information 补充信息: After the test, there is no leakage, no venting, no disassembly, no rupture and no fire. And Change ratio is not less than 90 %. 测试后，样品无渗漏、无排气、无解体、无破裂和无起火。电压比不小于 90 %。								

T.5. External short circuit 外部短路

Test sample status 测试样品状态	No. 编号	Maximum external temperature (°C) 表面最高温度(°C)	Status 结果
first cycle, fully charged state 第 1 个充放电周期，完全充电状态	B01	57.2	P
	B02	57.3	P
	B03	57.5	P
	B04	57.2	P
25th cycle, fully charged state 第 25 个充放电周期，完全充电状态	B05	57.7	P
	B06	57.5	P
	B07	57.1	P
	B08	57.9	P
Supplementary information 补充信息: Test sample external temperature does not exceed 170 °C and there is no disassembly, no rupture and no fire during the test and within six hours after the test. 测试样品表面温度不超过 170 °C，测试中与测试后 6 小时内无解体、无破裂、无起火。			

T.6. Impact 撞击

Test sample status 测试样品状态	No. 编号	Maximum external temperature (°C) 表面最高温度(°C)	Status 结果
first cycle, 50% charged state 第 1 个充放电周期，50%充电状态	C01	93.1	P
	C02	91.8	P
	C03	98.2	P
	C04	94.3	P
	C05	99.0	P
25th cycle, 50% charged state 第 25 个充放电周期，50%充电状态	C06	93.9	P
	C07	98.1	P
	C08	91.4	P
	C09	99.1	P
	C10	93.3	P
Supplementary information 补充信息: Test sample external temperature does not exceed 170 °C and there is no disassembly, no rupture and no fire during the test and within six hours after the test. 测试样品表面温度不超过 170 °C，测试中与测试后 6 小时内无解体、无破裂、无起火。			

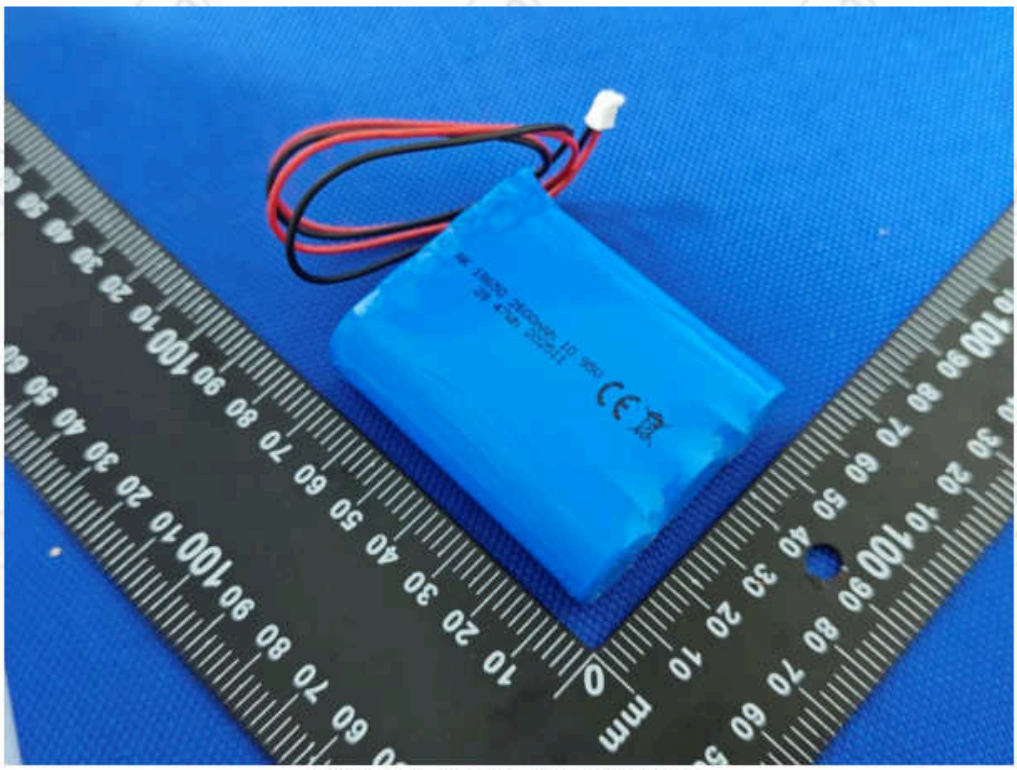
T.7. Overcharge 过度充电

Test sample status 测试样品状态	No.编号	Status 结果
first cycle, fully charged state 第 1 个充放电周期，完全充电状态	B09	P
	B10	P
	B11	P
	B12	P
25th cycle, fully charged state 第 25 个充放电周期，完全充电状态	B13	P
	B14	P
	B15	P
	B16	P
Supplementary information 补充信息: There is no disassembly and no fire during the test and within seven days after the test. 样品在测试中和测试后 7 天内无解体、无起火。		

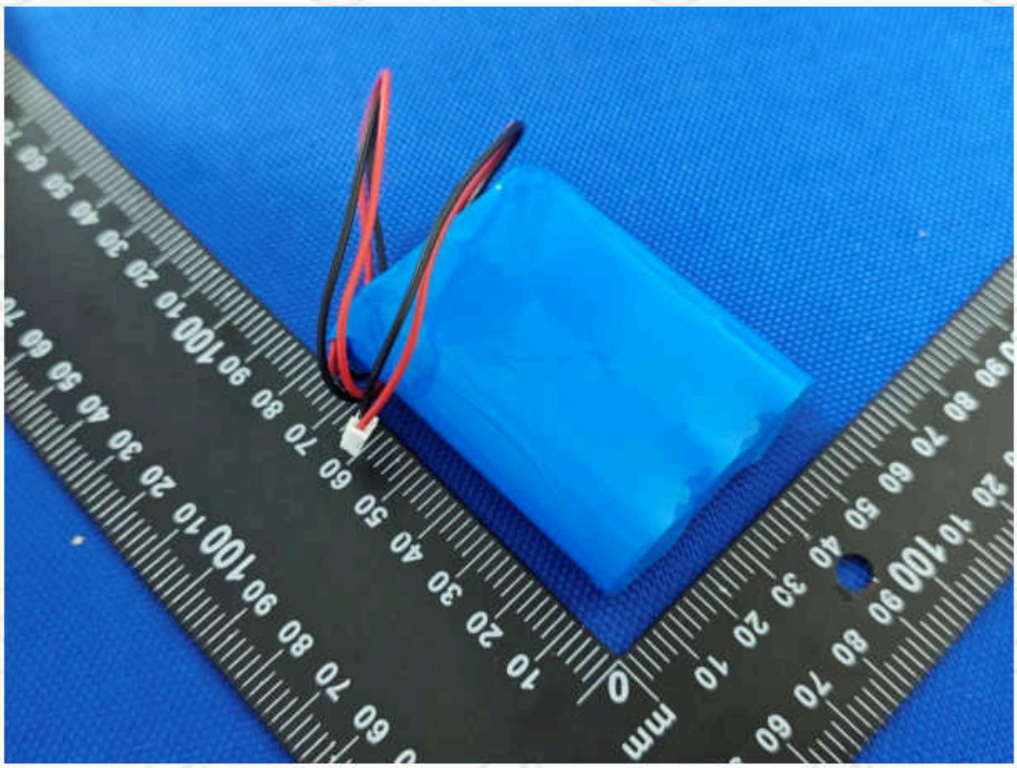
T.8. Forced discharge 强制放电

Test sample status 测试样品状态	No.编号	Status 结果
first cycle, fully discharged state 第 1 个充放电周期，完全放电状态	C11	P
	C12	P
	C13	P
	C14	P
	C15	P
	C16	P
	C17	P
	C18	P
	C19	P
	C20	P
25th cycle, fully discharged state 第 25 个充放电周期，完全放电状态	C21	P
	C22	P
	C23	P
	C24	P
	C25	P
	C26	P
	C27	P
	C28	P
	C29	P
	C30	P
Supplementary information 补充信息: There is no disassembly and no fire during the test and within seven days after the test. 样品在测试中和测试后 7 天内无解体、无起火。		

Ⅵ、Picture of the sample 样品图片



Picture 1. Front view of battery
图片 1. 电池组前视图



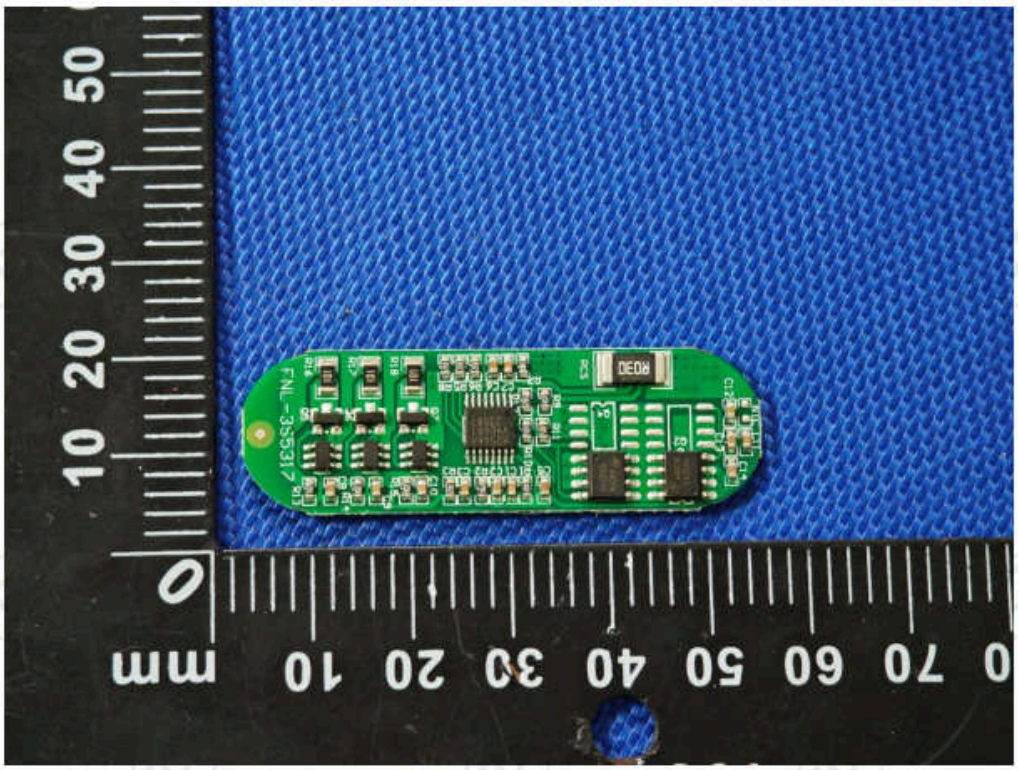
Picture 2. Back view of battery
图片 2. 电池组后视图



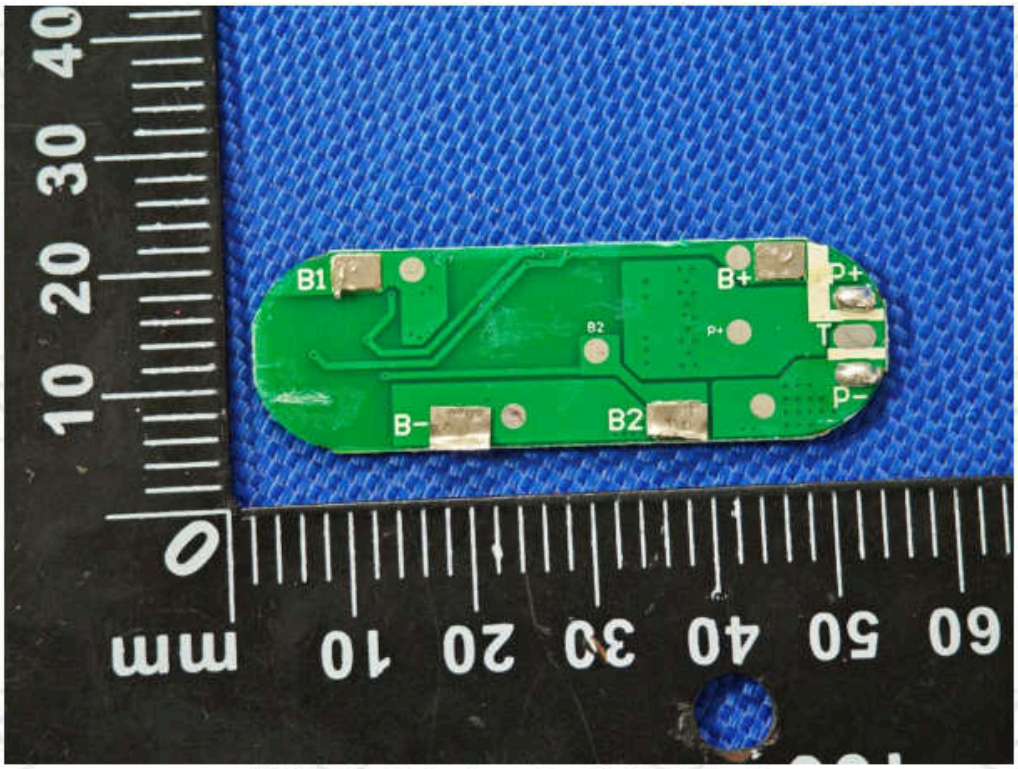
Picture 3. Front view of cell
图片 3. 电芯前视图



Picture 4. Back view of cell
图片 4. 电芯后视图



Picture 5. Front view of protection board
图片 5. 保护板前视图



Picture 6. Back view of protection board
图片 6. 保护板后视图

********End of Report 报告结束********

Important Notice

注意事项

1. The test report is invalid without the official stamp of TCT.
   本报告书无 TCT 盖章无效。
2. Nobody is allowed to photocopy or partly photocopy this test report without written permission of TCT.
   未经 TCT 书面同意，不得复制或部分地复制本报告书。
3. The test report is invalid without the signatures of Ratifier, Reviewer and Testing engineer.
   本报告书无批准人、审核人、及主检人签名无效。
4. The report is invalid when anything of following happens – illegal transfer, reproduce, embezzlement, imposture, modification or tampering in any media form.
   私自转让、复制、盗用、冒用、涂改、或以任何媒体形式篡改的报告书无效。
5. Objections to the test report must be submitted to TCT within 15 days.
   对报告书若有异议，应于收到报告之日起 15 天内向本公司提出。
6. The test report is valid for the tested samples only.
   本报告仅对本次测试样品有效。
7. The Chinese contents in this report are only for reference.
   本报告中的中文内容仅供参考。

Safety Data Sheet（SDS）
安全技术说明书

Applicant's Name: **委托方名称:**	Guang Zhou ZhengNeng Electronic Technology Co., Ltd. 广州征能电子科技有限公司
Applicant's Address: **委托方地址:**	4 floor of Building 6, Hongjie Industrial Park, Baiyun District of Guangzhou city, Guangdong Province 广东省广州市白云区弘捷工业园 6 号楼 4 楼
Name of Sample: **样品名称:**	Li-ion Battery 锂离子电池
Model: **型号:**	AK 18650 2600mAh 10.95V
Nominal Voltage: **标称电压:**	10.95V
Rated Capacity: **额定容量:**	2600mAh, 28.47Wh
Weight: **重量:**	145.588g
Size: (L×W×T) **尺寸:**	(70.5×55.7×20.1)mm
Prepared By: **编制单位:**	Shenzhen TCT Testing Technology Co., Ltd. 深圳市通测检测技术有限公司
Address: **地址:**	2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China 广东省深圳市宝安区福海街道桥头社区稔山工业区振昌胶粘制品厂 2101、2201
No.: **编号:**	TCT251125M037

Written by 编写: Summer Chen 陆婧如 **Approved by 批准:** Zyan Chen 陈琪铭

Inspected by 审核: Cherry Huang 黄娇珍 **Effective Date 生效日期:** 2026. 01. 01

Section 1- Identification of the substance/mixture and of the company/undertaking

第一部分 物质或混合物和供应商的标识

1.1 Product identifier 产品标识

Name of Sample 样品名称	Li-ion Battery 锂离子电池
Model 型号	AK 18650 2600mAh 10.95V

1.2 Relevant identified uses of the substance or mixture and uses advised against 产品的推荐用途和限制用途

Recommended Use 建议用途	Used in consumer goods 用于消费品
Uses advised against 限制用途	No information available 无资料

1.3 Details of the supplier of the safety data sheet 供应商的详细资料

Manufacturer's Name 生产单位名称	Huizhou Akocsi Electronic Technology Co., LTD 惠州奥科奇电子科技有限公司
Manufacturer's Address 生产单位地址	4th Floor of building B of youth entrepreneurship pack, No 6 xuetangpai of wuyi Village, chenjiang street, zhongkai district, huizhou, guangdong, china. 惠州仲恺高新区陈江街道五一村学塘排 6 号青年创业园 B 栋 4 楼
Phone 电话	86-020-37319325
Fax 传真	/
E-mail 邮箱	3089558796@qq.com

1.4 Emergency telephone number 应急电话

86-020-37319325

Section 2- Hazards Identification

第二部分 危险标识

2.1 Classification of the substance or mixture 物质或混合物的分类

According to the classification requirements of the 11th revision of the United Nations GHS system
根据联合国 GHS 制度第 11 修订版要求分类
Not applicable (Not within the scope of the 11th revised edition of the UNITED NATIONS GHS system.)
不适用（不在联合国 GHS 制度第 11 修订版范围内）

2.2 Label elements 标签要素

Symbols/Pictograms	Not applicable
象形图	不适用
Signal word	Not applicable
信号词	不适用
Hazard Statements	Not applicable
危险说明	不适用

Precautionary statements 防范说明

Prevention	Not applicable
预防措施	不适用
Response	Not applicable
事故响应	不适用
Storage	Not applicable
安全储存	不适用
Disposal	Not applicable
废弃处置	不适用

2.3 Hazard description 危害描述

Contact with the electrolyte of battery may be irritating to skin, eyes and mucous membranes. Fire will produce irritating, corrosive and/or toxic gases. Fumes may cause dizziness or suffocation.
与电池电解液接触可能会刺激皮肤、眼睛和粘膜。火灾会产生刺激性、腐蚀性和/或有毒气体。烟雾可能导致头晕或窒息。
Using the battery under normal conditions according to the manufacturer's instructions is not hazardous. In the case of improper use, there is a risk of rupture, fire, hot, leakage of internal components, and may cause accidental losses. Improper use includes, but is not limited to, the following conditions: prolonged charging, short circuit, fire exposure, hard object impact, sharp object puncture, fragmentation and rupture.正常条件下根据制造商的说明使用电池不会产生危害。使用不当的情况下，有破裂、起火、发烫、内部成分泄露的危险，并可能造成意外损失。使用不当的行为包括但不仅限于下列情况：长时间充电、短路、投入火中、硬物撞击、尖物刺破、破碎和破裂。

Section 3- Composition/Information on Ingredients
第三部分 成分/组成信息

Article 物品

Chemical Name **化学名称**	**CAS No.** **化学文摘号**	**Content%** **百分含量 %**
Lithium Cobalt Oxide 钴酸锂	12190-79-3	15-40
Graphite 石墨	7782-42-5	10-30
Phosphate(1-), hexafluoro-, lithium 六氟磷酸锂	21324-40-3	10-30
Copper 铜	7440-50-8	7-13
Aluminum foil 铝箔	7429-90-5	5-10
Nickel 镍	7440-02-0	1-5

Section 4- First Aid Measures
第四部分 急救措施

4.1 Description of first aid measures
急救措施的描述

General advice
一般建议
In case of accident or unwellness, seek medical advice immediately.
如果发生意外或不适，立即寻求医疗帮助。

Inhalation
吸入
If fumes or combustion products are inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
如果吸入烟气或燃烧的产物，迅速脱离现场至空气新鲜处，保持呼吸通畅，若感到不适，寻求医生帮助。

Ingestion
摄入
Give water to rinse out mouth, then drink plenty of water, vomiting, and go to a doctor.
用清水冲洗嘴巴，然后喝大量的水，催吐，并就医。

Eye contact
眼睛接触
Keep eyelids apart and away from eye and moving the eyelids by lifting the upper and lower lids occasionally, flush eyes with plenty of water or saline water for at least 15 minutes, call a physician if irritation persists.
提起眼睑，用流动清水或生理盐水冲洗至少 15 分钟，若仍有刺激感，立即就医。

Skin contact
皮肤接触
No apparent symptoms. If skin irritation persists, call a physician.
无明显症状，如果皮肤出现持续刺激，请就医。

Protecting of first-aiders 急救人员的防护	Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination. 确保医护人员了解产品的危害特性，并采取自身防护措施，以保护自己和防止污染传播。

4.2 Most important symptoms and effects, both acute and delayed
最重要的症状和效果,急性和延迟

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.
有限的证据表明反复或长期职业接触可能会产生涉及器官或生化系统累积性的健康影响

4.3 Indication of any immediate medical attention and special treatment needed
紧急医疗处理和特殊处理的说明

Treat symptomatically，Symptoms may be delayed.
根据症状治疗，注意症状可能会出现延迟。

Section 5- Fire Fighting Measures
第五部分 消防措施

5.1 Extinguishing media 灭火介质

Suitable extinguishing media 合适的灭火剂	Use fire extinguishing media suitable for the surrounding environment 使用适用于周围环境的灭火介质
Unsuitable extinguishing media 不合适的灭火剂	No information available 无资料

5.2 Special hazards arising from the substance or mixture 源于此物质或混合物产生的特殊危害

May decompose upon combustion to generate irritating, corrosive or toxie fumes. Fumes may cause dizziness or suffocation.
燃烧时可能分解，产生刺激性、腐蚀性或有毒烟雾。烟雾可能引起头晕或窒息。

5.3 Advice for firefighters 对消防人员的建议

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear;
消防人员应佩戴自给式呼吸器和全套的消防服；
Prevent, by any means available, spillage from entering drains or water courses;
用任何方式，防止泄漏进入下水道或河道；
Use water delivered as a fine spray to control fire and cool adjacent area.
用水作为一个很好的喷雾控制火和冷却的邻近区域。

Section 6- Accidental Release Measures
第六部分 泄露应急处理

6.1 Personal precautions, protective equipment and emergency procedures
个人预防措施、防护装备和应急程序

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area, dispose the case after the batteries cool and vapors dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors.
如果电池材料被释放，请撤离该区域，直到烟雾消散。提供最大程度的通风，清除有害气体。最好的反应是离开该区域，在电池冷却和蒸汽消散后处理掉外壳。提供最大程度的通风。避免皮肤和眼睛接触或吸入蒸汽。

6.2 Environmental precautions
环境保护措施

Prevent product from entering drains
防止产品进入下水道。

6.3 Methods and material for containment and cleaning up
收集和清理的方法和材料

Pick up and transfer to properly labeled containers. Avoid generation of dust
收集和转移到合适的带标签的容器中，避免落灰。

6.4 Reference to other sections
参考其他部分

Personal Protective Equipment advice is contained in Section 8 of the SDS.
个人防护设备建议见 SDS 第 8 部分。
Disposal considerations advice is contained in Section 13 of the SDS.
废弃处置建议见 SDS 第 13 部分。

Section 7- Handling and Storage
第七部分 操作处置与储存

7.1 Precautions for safe handling 安全操作注意事项

Specific safe handling advice: Never throw out cells in a fire or expose to high temperatures. Do not soak cells in water and seawater. Do not expose to strong oxdizers. Do not give a strong mechanical shock or throw down. Never disassemble, modify or deform. Do not connect the positive terminal to the negative terminal with electrically conductive material.
具体的安全处理建议:不要将电池扔进火中或暴露在高温下。不要将电池浸泡在水中或海水中。不要暴露在强氧化剂中。不得造成强烈的机械冲击或摔倒。切勿拆卸、修改或变形。请勿用导电材料连接正极和负极。

7.2 Conditions for safe storage, including any incompatibilities
安全储存条件，包括任何不相容性

Do not place the battery cell near heating equipment, nor expose to direct sunlight for long periods. Elevated temperatures can result in shortened battery cell life and degrade performance. Store in cool place. Incompatible products: Conductive materials, water, seawater, strong oxidizers and strong acids. Equipped with corresponding varieties and number of fire equipment and leakage emergency treatment equipment.
请勿将电池单体放置在加热设备附近，也不要长时间暴露在阳光直射下。温度升高会缩短电池寿命，降低电池性能。保存在阴凉的地方。不兼容产品:导电材料、水、海水、强氧化剂、强酸。配备相应品种和数量的消防设备和泄漏应急处理设备。

7.3 Reference to other sections 特定用途

In addition to use mentioned in the Section 1.2, unforeseen other specific end uses.
除第 1.2 部分提及的用途外，未预见其它具体用途。

Section 8 - Exposure Controls/Personal Protection
第八部分 接触控制和个体防护

8.1 Control parameters 控制参数

Occupational Exposure Limit, OEL 职业接触限值	No relevant regulations 无相关规定
Biological limit values 生物限值	No relevant regulations 无相关规定
Predicted No Effect Concentration（PNEC）预测的无效应浓度	No relevant regulations 无相关规定
Derived No effect level, DNEL 衍生的无效应水平	No relevant regulations 无相关规定

8.2 接触控制 (Exposure controls)

Engineering Controls 工程控制	Ensure adequate ventilation, especially in confined areas, Ensure that eyewash stations and safety showers are close to the workstation location, Use explosion-proofelectrical/ventilating/lighting/equipment, Set up emergency exit and necessary risk-elimination area. 保持充分的通风，特别在封闭区内；确保在工作场所附近有洗眼和淋浴设施；使用防爆电器、通风、照明等设备；设置应急撤离通道和必要的泄险区。

Personal protective equipment
个人防护设备

Eye protection 眼睛防护	Must wear appropriate anti-corrosion goggles. Wash hands or take a shower after working 必须佩戴合适的防腐蚀护目镜。
Hand protection 手部防护	Must wear acid and alkali resistant chemical protective gloves. 必须戴耐酸碱的化学防护手套。
Respiratory protection 呼吸系统防护	Must wear appropriate personal respiratory protective equipment. 必须佩戴合适的个人呼吸防护用品。
Skin and body protection 皮肤和身体防护	Must wear acid and alkali resistant chemical protective clothing. 必须穿抗酸碱化学防护服。

Section 9- Physical and Chemical Properties
第九部分 理化特性

9.1 Information on basic physical and chemical properties 理化特性

Physical state 物理状态	Solid 固体
Colour 颜色	Blue 蓝色
Odor 气味	Odorless 无气味
Odor threshold 嗅觉阈值	Not applicable 不适用
pH **pH 值**	Not applicable 不适用
Melting/freezing point 熔点/凝固点	Not applicable 不适用
Boiling Point, initial boiling point and Boiling range 沸点/沸腾范围	Not applicable 不适用
Flash Point (Closed cup, °C) 闪点(闭杯，°C)	Not applicable 不适用
Evaporation rate 蒸发率	Not applicable 不适用
Flammability 可燃性	No information available 无资料
Upper/lower flammability or explosive limits 可燃性或爆炸性上/下限	No information available 无资料
Vapor pressure 蒸汽压	Not applicable 不适用
Vapor Density (Air = 1) 相对蒸汽密度（空气=1)	Not applicable 不适用
Density/relative density (Water=1) 相对密度(水=1)	Not applicable 不适用
Solubility 溶解性	Not applicable 不适用
n-octanol/water partition coefficient 辛醇/水分配系数	Not applicable 不适用
Autoignition temperature 自燃温度(°C)	Not applicable 不适用
Decomposition temperature 分解温度(°C)	No information available 无资料

Kinematic viscosity(mm²/s) **运动粘度(mm²/s)**	Not applicable 不适用

9.2 Other information 其他信息

No information available
无资料

Section 10 -Stability and Reactivity
第十部分 稳定性和反应性

10.1 Reactivity 反应性

Contact with incompatible substances can cause decomposition or other chemical reactions.与不相容物质接触可发生分解或其它化学反应。

10.2 Chemical stability 化学稳定性

Stable under proper operation and storage conditions.
在正确的使用和存储条件下是稳定的。

10.3 Possibility of hazardous reactions 危险反应的可能性

In contact with oxidants causes severe reactions, and may cause a fire or explosion. Flammable, its gas or powder, if in contact with air, may form explosive mixtures. In contact with metal alkoxides may cause a fire.
与氧化剂反应剧烈，有引起燃烧爆炸的危险。具有可燃性，其蒸气（或粉末）与空气接触可形成爆炸性混合物。与金属烷氧化物接触会发生着火。

10.4 Conditions to avoid 避免的条件

Do not subject battery to mechanical shock. Keep away from open flames, high temperature.
不要使电池受到机械冲击。远离明火、高温。

10.5 Incompatible materials 禁配物

Conductive materials, water, seawater, strong oxidizers and strong acids.
导电材料、水、海水、强氧化剂、强酸。

10.6 Hazardous decomposition products 有害的分解产物

Carbon oxides, other irritating and toxic gases.
碳氧化物、其他刺激性和有毒气体。

Section 11 – Toxicological Information
第十一部分 毒理学信息

11.1 Information on hazard classes 危险类别信息

Acute toxicity **急毒性**	According to the available information, it does not meet the classification criteria. 根据现有资料，不符合分类标准。
Skin corrosion/irritation **皮肤腐蚀/刺激**	In the event of exposure to internal contents, vapor fumes may be very irritating to the skin and eyes. 如果在内容物暴露的情况下，蒸汽烟雾可能对皮肤和眼睛非常刺激。

Serious eye damage/eye irritation	In the event of exposure to internal contents, vapor fumes may be very irritating to the skin and eyes.
严重眼损伤/眼睛刺激	如果在内容物暴露的情况下，蒸汽烟雾可能对皮肤和眼睛非常刺激。
Sensitization	Not applicable
致敏作用	不适用
Germ cell mutagenicity	Not applicable
生殖细胞突变性	不适用
Carcinogenicity	Not applicable
致癌性	不适用
Reproductive toxicity	Not applicable
生殖毒性	不适用
STOT - single exposure	Not applicable
特定目标器官毒性-单次接触	不适用
STOT - repeated exposure	Not applicable
特定目标器官毒性-反复接触	不适用
Aspiration hazard	Not applicable
吸入性危害	不适用

11.2 Information on other hazards 其他危险信息

Endocrine disrupting properties
内分泌干扰物特性
No information available
无可用资料

Other Information 其他信息
See Section 11.1
见第 11.1 节

Section 12-Ecological Information
第十二部分 生态学信息

12.1 Toxicity 水毒性
No information available
无可用资料

12.2 Persistence and degradability 持久性和降解性
No information available
无可用资料

12.3 Bioaccumulative potential 生物积累的潜在可能性
No information available
无可用资料

12.4 Mobility in soil 土壤中移动性
No information available
无可用资料

12.5 Results of PBT and vPvB assessment PBT 和 vPvB 的结果评价
No information available
无可用资料

12.6 Endocrine disrupting properties 内分泌干扰物特性

No information available
无可用资料

12.7 Other adverse effects 其他不利影响

No information available
无可用资料

Section 13 – Disposal Considerations
第十三部分 废弃处置

Waste treatment methods 废弃物处置方法

Product disposal recommendation **产品处理建议**	National and local regulations should be referred to before disposal. 处置之前应参阅国家和地方有关法规。
Packaging disposal recommendation: **包装处理建议**	Packaging disposal recommendation: Containers may be recycled or re-used. Observe National and local regulations. 容器可以回收或者重用，遵守国家和地方有关法规。
Disposal recommendations **废弃注意事项**	Deserted batteries shouldn't be treated as ordinary trash. Shouldn't be thrown into fire or placed in high temperature. Shouldn't be dissected, pierced, crushed or treated similarly. Best disposal method is recycling. 废电池不能被当作普通垃圾。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。最好的处理办法是回收利用。

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

ICAO/IATA 空运 (DGR 67th)	**IMDG-CODE 海运危规 (Amdt 42-24)**	**ADR 公路运输 (ADR 2025)**
14.1 UN number or ID number 联合国危险货物编号		
3480 & 3481	3480 & 3481	3480 & 3481
14.2 Rroper shipping name 正式运输名称		
Lithium ion batteries (including lithium ion polymer batteries) or; 锂离子电池(包括锂离子聚合物电池)或; Lithium ion batteries packed with equipment (including lithium ion polymer batteries) or; 与设备一起包装的锂离子电池(包括锂离子聚合物电池)或; Lithium ion batteries contained in equipments (including lithium ion polymer batteries). 包含在设备中的锂离子电池(包括锂离子聚合物电池)。		
14.3 Transport hazard class(es)运输危害分类		
9	9	9
14.4 Packing Group 包装等级		
N/A	N/A	N/A

14.5 Marine pollutant 海洋污染物		
No.否	No.否	No.否
14.6 Special precautions for user 用户特别注意事项		
Can be shipped by air in accordance with international Civil Aviation Organization (ICAO), TI or International Air Transport Association (IATA) DGR Packing Instructions (PI) PI966 and PI967 Section II appropriately. 可根据国际民用航空组织（ICAO），TI 或国际航空协会（IATA）DGR 包装说明（PI）PI966 和 PI967 第 II 部分相关规定进行空运	International Maritime Dangerous Goods Code under Special Provision 188 《国际海运危险货物规则》（IMDG CODE）根据特殊规定 188	European Agreement concerning the International Carriage of Dangerous Goods by Road under Special Provision 188 《国际危险货物道路运输欧洲协定》（ADR）根据特殊规定 188
May be shipped without being declared as Class 9 dangerous goods, when meet to the requirements above. 当符合上述规定时，可不被申报为第 9 类危险品运输		

The dangerous goods regulations require that each battery design be subject to tests contained in Section 38.3 of the UN Manual of Tests and Criteria prior to being offered for transport. UN38.3 Report No.: TCT251125B037.

危险品规例规定，运输前，每一个电池设计须通过联合国试验和标准手册 38.3 节所载的测试。UN38.3 报告编号：TCT251125B037。

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

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture 针对该物质或混合物的安全，健康和环境法规/立法

International chemical inventory
国际化学品名录

With regard to transport, the flowing regulations are cited and considered:
关于运输,引用和考虑了以下法规：

Recommendations on the Transport of Dangerous Goods Model Regulations (TDG)
关于危险货物运输的建议书规章范本(TDG)

International Civil Aviation Association Dangerous Goods Regulation (IATA-DGR)
国际民用航空协会《危险品规则》(IATA-DGR)

International Maritime Dangerous Goods Code (IMDG-CODE)
国际海运危险货物规则(IMDG-CODE)

International Railway Transport Dangerous Goods Regulations (RID)
国际铁路运输危险货物规则 (RID)

Agreement on the International Carriage of Dangerous Goods by Road (ADR)
国际公路运输危险货物协定(ADR)

Agreement on the International Carriage of Dangerous Goods by Inland Waters (ADN)
国际内河运输危险货物协定（ADN）

Recommendations on the Transport of Dangerous Goods-Manual of Tests and Criteria
联合国《关于危险货物运输的建议书 试验和标准手册》

International Air Transport Association (IATA)
《国际航空运输协会》（IATA）

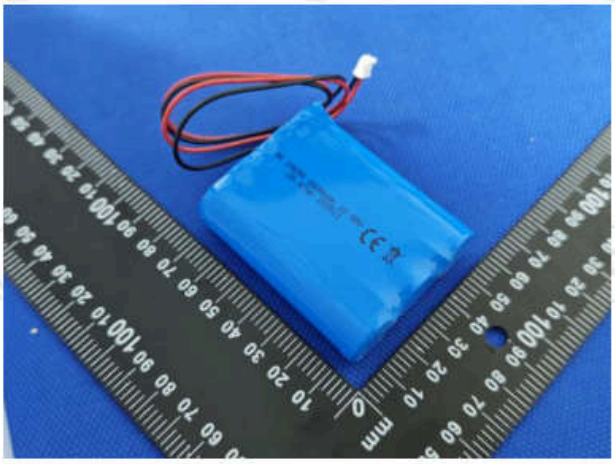
Technical Instructions for the Safe Transport of Dangerous Goods
《危险货物安全运输技术指南》

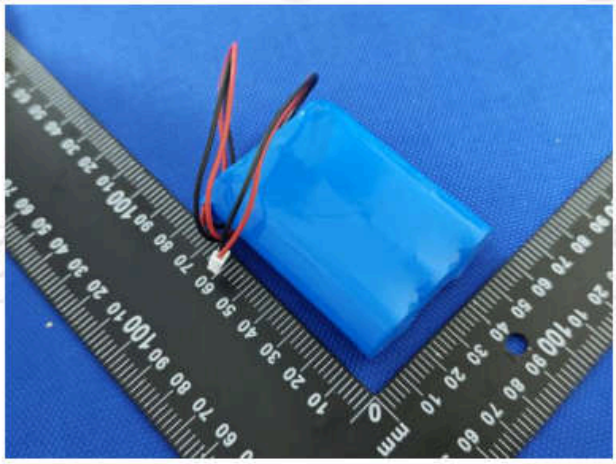
Classification and code of dangerous goods
《危险货物分类和品名编号》

OSHA Hazard Communication Standard
《职业安全与健康标准》危险通信标准

Section 16 – Other Information
第十六部分 其他信息

SDS creation date: 2026 Version: 1.0
Sample photo 样品照片:





Disclaimer 免责声明

This SDS is only compiled for battery and based on the information such as ingredients provided by the applicant and our current knowledge. This SDS shall be used only as a guide. If the battery is used as a component in another product, the information in this SDS may not be applicable. The users of this SDS must make independent judgments on the correctness and completeness and then decide its suitability according to the actual situation. The users should take the relevant legal responsibilities for the consequences of use.

本 SDS 报告仅针对电池。报告内容是根据申请单位提供的成分含量等信息和我司现有知识编写，仅作为指导使用。如果电池被用于其它产品中的组件，本 SDS 报告的信息可能不适用。本 SDS 的使用者必须对内容的正确性与完整性做出独立判断，根据实际情况决定其适用性，并对使用后果承担相关法律责任。

******End of document 文件结束******

中国认可 国际互认 检测 TESTING CNAS L6165

Stacking Test Report

堆码试验报告

Applicant's Name 委托方名称	Guang Zhou ZhengNeng Electronic Technology Co., Ltd. 广州征能电子科技有限公司
Applicant's Address 委托方地址	4 floor of Building 6, Hongjie Industrial Park, Baiyun District of Guangzhou city, Guangdong Province 广东省广州市白云区弘捷工业园 6 号楼 4 楼
Name of Goods 货物名称	DIGITAL INSULATION TESTER ES3045E (Containing Li-ion Battery AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh) 绝缘电阻测试仪 ES3045E (内置锂离子电池 AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh）)
Testing Laboratory 测试实验室	Shenzhen TCT Testing Technology Co., Ltd. 深圳市通测检测技术有限公司 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China 广东省深圳市宝安区福海街道桥头社区稔山工业区振昌胶粘制品厂 2101、2201
Report No. 报告编号	TCT251225T141
Date of Issue 签发日期	205.12.30
Test Type 检验类别	Testing by delegation 委托测试
Test Conclusion 测试结论: **The test results are qualified. 测试结果为合格。**	

Tested by 主检人: Renne Zhou 周丽君

Approved by 批准人: ZyanChen 陈祖铨

Reviewer by 审核人: Cherry Huang 黄娇珍

Seal of TCT 报告单位（盖章）

Ⅰ、General product information一般产品信息:

Name of Goods 货物名称	DIGITAL INSULATION TESTER ES3045E (Containing Li-ion Battery AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh) 绝缘电阻测试仪 ES3045E (内置锂离子电池 AK 18650 2600mAh 10.95V 10.95V 2600mAh 28.47Wh)		
Packaging Container Manufacturer 包装容器生产商	Guangzhou Guangwei Paper Products Co., Ltd. 广州市广为纸品有限公司		
Packaging Container Manufacturer's Address 包装容器生产商地址	Room 102, Building 1, No. 22-1, Lane 1, Zhuyuan, Daganling Village, Zhongluotan Town, Baiyun District, Guangzhou City 广州市白云区钟落潭镇大纲领村竹园一巷 22 号之一 1 栋 102 房		
Packaging Parts Manufacturer 包装件生产商	Guang Zhou ZhengNeng Electronic Technology Co., Ltd. 广州征能电子科技有限公司		
Packaging Parts Manufacturer's Address 包装件生产商地址	4 floor of Building 6, Hongjie Industrial Park, Baiyun District of Guangzhou city, Guangdong Province 广东省广州市白云区弘捷工业园 6 号楼 4 楼		
Shape 形状	Prismatic 棱柱形	**Trade Mark** 商标	----
Packaging dimensions 包装尺寸 **(L×W×T)**	(48.0×22.0×39.2)cm	**Battery number per packaging** 每包装件电池数量	1PCS
Net weight of batteries per package 每包装件电池的净重	0.146kg	**Gross weight per package** 每包装件毛重	6.20kg
Number of stacking layers 堆码层数	8	**The required compressive strength of the carton** 纸箱所需抗压强度	43.40kgf
Start Testing Date 开始测试日期	2025-12-23	**Completing Date** 完成日期	2025-12-30

Ⅱ、Test Standard 检测标准

United Nations "Recommendations on the Transport of Dangerous Goods-Model Regulations" (Rev.23) 6.1.5.6

联合国《关于危险货物运输的建议书-规章范本》（23 修订版）6.1.5.6

Ⅲ、TEST ITEM 检测项目

Stacking test 堆码试验

Ⅳ、Test Method and Requirement 检测方法和要求

Ambient temperature 环境温度: 23±2°C Ambient humidity 环境湿度：50±2%RH；
Paper or fibreboard packagings shall be conditioned for at least 24 hours in an atmosphere having a controlled temperature and relative humidity (r.h.). 纸和纤维板包装应在控制温度和相对湿度的环境下至少放置 24 小时；
Press plate moving speed 压板移动速度：10mm/min
Pre pressure 预压力：43.40kgf
The required compressive strength of the carton $= \left(\frac{3m}{Height\ of\ single\ packing\ case\ (m)} - 1\right) *$ Weight of single package. The load lasts for 24 hours. 纸箱所需抗压强度=$\left(\frac{3m}{单个包装箱高度\ (m)} - 1\right)$x 单个包装箱重量,负荷持续 24 小时。
Test requirements 试验要求： 1. The samples in the packing case are not damaged or leaked; 包装箱中的样品没有损坏或泄漏； 2. The test sample must not be damaged in a way that may adversely affect the safety of transport, or deform that may reduce its strength or cause unstable stacking of the package. 试验样品不得显出可能对运输安全有不利影响的损坏,或者可能降低其强度或造成包装件堆码不稳定的变形； 3. In the case of composite or combination packaging, the contents shall not leak out of the inner receptor and inner package. 对复合或组合包装而言,不得有所装的物质从内贮器和内包装中漏出。

Ⅴ、TEST APPARATUS 检测仪器

Serial No. 设备编号	Name of Equipment 设备名称	Model 型号	Calibration Date /Due Date 校准日期/到期日
TC-B117	Carton stacking machine 纸箱堆码试验机	GX-6010-M	2025. 09. 17 2026. 09. 16
TC-B67	Electronic Platform Scale 电子台秤	TCS-150	2025. 06. 26 2026. 06. 25
TC-B104	Tape measure 卷尺	TH-2103	2025. 01. 24 2026. 01. 23

Ⅵ、TEST RESULT 检测结果

Drop position 样品编号	Test status 测试结果	Conclusion 结论
X1- X3	After the test 测试后： 1. The samples in the packing case are not damaged or leaked; 包装箱中的样品没有损坏或泄漏； 2. The test sample does not show damage that may adversely affect the safety of transportation, or deformation that may reduce its strength or cause unstable stacking of the package; 试验样品未显出可能对运输安全有不利影响的损坏，或者可能降低其强度或造成包装件堆码不稳定的变形； 3. In the case of composite or combination packaging, the contents shall not leak out of the inner receptor and inner package. 对复合或组合包装而言,不得有所装的物质从内贮器和内包装中漏出。	Pass 合格

Ⅶ、Appendix Photos 附录图片





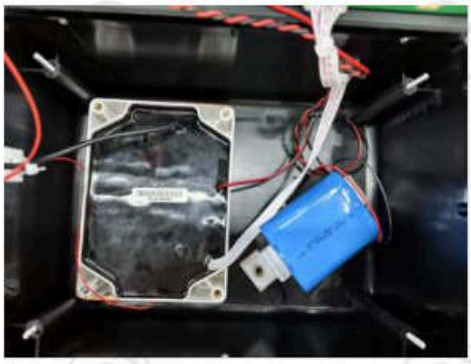














Important Notice

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   本报告仅对本次测试样品有效。
7. The Chinese contents in this report are only for reference.
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******End of Report 报告结束******