Report No.: KS2212S5989B01R1

UN38.3 Test Report

Samples Name 样品名称	Rechargeable Li-ion Battery System 可充电锂离子电池系统
Model 型号	MF-GREENE-BAT
Applicant 委托单位	Master Battery S.L.

科测 KSIGN

广东科正技术服务有限公司

KSIGN(Guangdong) Testing Co., Ltd.

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General Information
基本资料

Sample Name **样品名称**	Rechargeable Li-ion Battery System 可充电锂离子电池系统	**Model Name** **型号**	MF-GREENE-BAT
Rating **标称**	51.2Vd.c., 100Ah	**Watt-hour** **瓦时**	5.12kWh
Dimension **尺寸(T*W*L)**	240.0*540.0*530.0 (mm)	**Weight** **重量**	Appr.: 54.5kg
Sample Status **样品状态**	Good 良好	**Sample Information** **样品信息**	Battery（16S1P） 电池（16 串 1 并）
Applicant **委托单位**	Master Battery S.L.		
Applicant Address **委托单位地址**	Paseo De Extremadura 39, 28935 Móstoles, Madrid, Spain		
Factory **生产工厂**	CATL-KSTAR Science and Technology Co., Ltd 宁德时代科士达科技有限公司		
Factory Address **生产工厂地址**	No.8 Songshan Road, Xiapu Economic Development Zone, Ningde City, FujianProvince, China 福建省宁德市霞浦经济开发区松山路 8 号		
Factory Telephone **生产工厂电话**	+86-18928484760	**Factory Email** **生产工厂邮箱**	LeiGX@catlkstar.com
Factory Web **生产工厂网址**	www.catlkstar.com		
Test Method & Criterion **检验方法及判定标准**	UNITED NATION “Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Test and Criteria ” ST/SG/AC.10/11/Rev.7/Amend.1 38.3 联合国《关于危险品货物运输的建议书试验和标准手册》第七修订版,修正 1 第 38.3 节		
Testing Laboratory **检测单位**	KSIGN(Guangdong) Testing Co., Ltd. 广东科正技术服务有限公司 West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China 广东省深圳市宝安区沙井街道沙头社区民主九九工业区福源厂新厂房A区C栋一层西侧，518104		
Sample Receiving Date **收样接收日期**	2023 年 02 月 27 日	**Test Date** **测试日期**	--
Conclusion **测试结论**	The Rechargeable Li-ion Battery System submitted by Master Battery S.L. the sample's difference between this report and original report KS2212S5989B01 is comply with the requirement of the “Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Test and Criteria ” ST/SG/AC.10/11/Rev.7/Amend.1 38.3. No need to test. 由 Master Battery S.L.送检的可充电锂离子电池系统，与原报告 KS2212S5989B01 的样品差异符合《关于危险品货物运输的建议书试验和标准手册》第七修订版,修正 1 第 38.3 节相关规定，无需测试。 **Seal/签章：** **Date of issue/签发日期：** 2023 年 03 月 03 日		

Tested By: 主检 Test Engineer 黄思奇

Checker: 审核 Project Engineer 林晓东

Approver: 批准 Technical Director 杨龙

Test Summary Lists
测试摘要列表

Test No. 测试编号	Test Item 测试项目	Test Results 测试结果	Conclusion 本项结论
T1	Altitude simulation / 高度模拟	See Appendix 1 见附表1	Passed 合格
T2	Thermal test /温度试验	See Appendix 2 见附表2	Passed 合格
T3	Vibration / 振动测试	See Appendix 3 见附表3	Passed 合格
T4	Shock / 冲击测试	See Appendix 4 见附表4	Passed 合格
T5	External short circuit / 外部短路	See Appendix 5 见附表5	Passed 合格
T6	Impact / 撞击	N/A 不适用	N/A 不适用
	Crush / 挤压	See Appendix 6 见附表6	Passed 合格
T7	Overcharge / 过度充电	See Appendix 7 见附表7	Passed 合格
T8	Forced discharge / 强制放电测试	See Appendix 8 见附表8	Passed 合格
Remark 备注	1) Impact test applicable to cylindrical cells not less than 18.0mm in diameter. 撞击试验适用于直径不小于 18.0mm 的圆柱形电芯。 2) Crush test applicable to prismatic, pouch, coin/button cells and cylindrical cells less than 18.0mm in diameter. 挤压试验适用于棱柱形、袋状、硬币/纽扣电芯和直径不超过 18.0mm 的圆柱形电芯。 3) Batteries or single cell batteries not equipped with battery overcharge protection that aredesigned for use only as a component in another battery or in equipment, which affords such protection, are not applicable to overcharge test. 未安装过度充电保护装置、按设计要求只能作为部件用在另一个带过度充电保护装置的电池组或设备中的电池组或单一电池电池组，无需满足过充试验的要求。 4) This report is a change report of the original report KS2212S5989B01, and does not involve new test items. The test items and test data in this report are based on the original report, which was issued on January 05, 2023. 本报告是原报告 KS2212S5989B01 的变更报告，不涉及新的测试项目，本报告测试项目和测试数据均基于原报告，原报告签发于 2023 年 01 月 05 日。 5) The applicant company information and label of the entrusting party have been changed. This change does not change the key materials, product design and production process of the samples in the original report, nor does the manufacturer. 本报告中变更了委托单位公司信息和标签，该变更未改变原报告中样品的关键材料，产品设计和生产工艺，生产厂也未改变。		

Test Item测试项目	Sample No. 样品编号	Sample State 样品状态
T1~T5	B01~B02	At first cycle, in fully charged states 第1个充放电周期，完全充电状态
	B03~B04	After 25 cycles ending in fully charged states 第25个充放电周期，完全充电状态
T6	C01~C05	At first cycle at 50% of the design rated capacity 第1个充放电周期 50%设计额定容量状态
	C06~C10	After 25 cycle at 50% of the design rated capacity 第25个充放电周期 50%设计额定容量状态
T7	B05~B06	At first cycle, in fully charged states 第1个充放电周期，完全充电状态
	B07~B08	After 25 cycles ending in fully charged states 第25个充放电周期，完全充电状态
T8	C11~C20	At first cycle in fully discharged states 第1个充放电周期，完全放电状态
	C21~C30	After 25 cycles ending in fully discharged states 第25个充放电周期，完全放电状态
The above samples have been charged and discharged cycles by the factory as required before the test. 备注：以上样品在测试前已由工厂按要求进行充放电循环处理。		

Appendix 1
附表 1

Test Items 测试项目	Altitude simulation 高度模拟
1.1	Test procedure 测试步骤
	Test cells and batteries shall be stored at a pressure of 11.6kPa or less for at least six hour at ambient temperature (20±5℃). Cells and batteries meet this requirement if there is no mass loss, 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. 试验电芯和电池在环境温度(20±5℃)下，储存在小于等于11.6kPa的压力下至少六小时。 试验电芯或电池应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧，并且每个试验电芯或电池在试验后的开路电压不少于其在进行这一试验前电压的 90%（完全放电状态的试验电芯或电池除外）。
1.2	Result 测试结果

Sample No. 样品编号	Before 测试前		After 测试后		Mass loss 质量损失 (%)	Residual OCV 剩余电压 (%)	Test result 测试结果
	Mass 样品质量 (kg)	Voltage 开路电压 (V)	Mass 样品质量 (kg)	Voltage 开路电压 (V)			
B01	54.40	55.95	54.40	55.91	0.00	99.93	O
B02	54.46	56.00	54.46	55.97	0.00	99.95	O
B03	54.50	55.94	54.50	55.92	0.00	99.96	O
B04	54.42	56.97	54.42	56.96	0.00	99.98	O

Note: **L**- Leakage, **V**- Venting, **D**- Disassembly, **R**- Rupture, **F**- Fire,
O- No leakage, no venting, no disassembly, no rupture, no fire, no mass loss, change ratio is not less than 90 %.
注：**L**- 泄漏；**V**- 排气；**D**- 解体；**R**- 破裂；**F**- 起火；
O- 无泄漏、无排气、无解体、无破裂、无起火、无质量损失、电压比不小于 90 %。

Appendix 2
附表 2

Test Items 测试项目	Thermal test 温度试验
2.1	Test procedure 测试步骤
	Test cells and batteries are to be stored for at least six hours at a test temperature equal to 72±2℃, followed by storage for at least six hours at a test temperature equal to -40±2℃. The maximum time interval between test temperature extremes in 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℃). For large cells and batteries, the duration of exposure to the test temperature extremes should be at least 12 hours. Cells and batteries meet this requirement if there is no mass loss, 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. 将电芯和电池在温度为72±2℃的条件下贮存不少于6个小时，然后，在温度-40±2℃条件下贮存不少于6个小时，两个温度间的间隔最长为30min，重复操作上述步骤直到10次，然后，将其在环境温度为20±5℃的条件下放置24个小时。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。 试验电芯或电池应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧，并且每个试验电芯或电池在试验后的开路电压不少于其在进行这一试验前电压的 90%（完全放电状态的试验电池或电池除外）。
2.2	Result 测试结果

Sample No. 样品编号	Before 测试前		After 测试后		Mass loss 质量损失 (%)	Residual OCV 剩余电压 (%)	Test result 测试结果
	Mass 样品质量 (kg)	Voltage 开路电压 (V)	Mass 样品质量 (kg)	Voltage 开路电压 (V)			
B01	54.40	55.91	54.40	55.57	0.00	99.39	O
B02	54.46	55.97	54.46	55.64	0.00	99.41	O
B03	54.50	55.92	54.50	55.56	0.00	99.36	O
B04	54.42	56.96	54.42	56.58	0.00	99.33	O

Note: **L**- Leakage, **V**- Venting, **D**- Disassembly, **R**- Rupture, **F**- Fire,
O- No leakage, no venting, no disassembly, no rupture, no fire, no mass loss, change ratio is not less than 90 %.
注：**L**- 泄漏；**V**- 排气；**D**- 解体；**R**- 破裂；**F**- 起火；
O- 无泄漏、无排气、无解体、无破裂、无起火、无质量损失、电压比不小于 90 %。

Appendix 3 附表 3	
Test Items 测试项目	Vibration 振动
3.1	Test procedure 测试步骤
	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 wave form with a logarithmic sweep between 7Hz and 200Hz and back to 7Hz traversed in 15minutes, this cycle shall be repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting position 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 12kg (cells and small batteries), and for batteries with a gross mass of more than 12kg (large batteries). For cells and small batteries: from 7Hz a peak acceleration of 1gn is maintained until 18Hz is reached. The amplitude is then maintained at 0.8mm (1.6mm total excursion) and the frequency increased until a peak acceleration of 8gn occurs (approximately 50Hz). A peak acceleration of 8gn is then maintained until the frequency is increased to 200Hz. For large batteries: from 7Hz to a peak acceleration of 1gn is maintained until 18Hz is reached. The amplitude is then maintained at 0.8mm (1.6mm total excursion) and the frequency increased until a peak acceleration of 2gn occurs (approximately 25Hz). A peak acceleration of 2gn is then maintained until the frequency is increased to 200Hz. Cells and batteries meet this requirement if there is no mass loss, 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. 将电芯和电池牢固地安装在振动台的台面上，然后开始振动。振动以正弦波形式，以 7Hz 增加至 200Hz，然后再减少回到 7Hz 为一个循环，一个循环持续 15 分钟的对数扫频。每个电芯和电池从三个互相垂直的方向上循环 12 次，每个方向共计 3 个小时。其中一个振动方向必须是垂直样品的极性平面。 对于质量不大于 12kg 的样品(电芯和小电池)和质量超过 12kg 的电池(大电池)，对数扫频不同。 对于电芯和小电池，对数扫频为：从 7Hz 开始保持 1gn 的最大加速度直到频率为 18Hz，然后将振幅保持在 0.8mm (总偏移 1.6mm) 并增加频率直到最大加速度达到 8gn (频率约为 50Hz)，将最大加速度保持在 8gn 直到频率增加到 200Hz。 对于大电池，对数扫频为：从 7Hz 开始保持 1gn 的最大加速度直到频率为 18Hz，然后将振幅保持在 0.8mm (总偏移 1.6mm)并增加频率直到最大加速度达到 2gn (频率约为 25Hz)，将最大加速度保持在 2gn 直到频率增加到 200Hz。 试验电芯或电池应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧，并且每个试验电芯或电池在试验后的开路电压不少于其在进行这一试验前电压的 90%（完全放电状态的试验电芯或电池除外）。
3.2	Result 测试结果

Sample No. 样品编号	Before 测试前		After 测试后		Mass loss 质量损失 (%)	Residual OCV 剩余电压 (%)	Test result 测试结果
	Mass 样品质量 (kg)	Voltage 开路电压 (V)	Mass 样品质量 (kg)	Voltage 开路电压 (V)			

B01	54.40	55.57	54.40	55.54	0.00	99.95	O
B02	54.46	55.64	54.46	55.64	0.00	100.00	O
B03	54.50	55.56	54.50	55.52	0.00	99.93	O
B04	54.42	56.58	54.42	56.56	0.00	99.96	O

Note: **L**- Leakage, **V**- Venting, **D**- Disassembly, **R**- Rupture, **F**- Fire,
O- No leakage, no venting, no disassembly, no rupture, no fire, no mass loss, change ratio is not less than 90 %.
注：**L**- 泄漏；**V**- 排气；**D**- 解体；**R**- 破裂；**F**- 起火；
O- 无泄漏、无排气、无解体、无破裂、无起火、无质量损失、电压比不小于 90 %。

Appendix 4
附表 4

Test Items 测试项目	Shock 冲击
4.1	Test procedure 测试步骤

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 or battery shall be subjected to a halfsine shock of peak acceleration of 150gn and pulse duration of 6milliseconds. Alternatively, large cells may besubjected to a half-sine shock of peak acceleration of 50gn and pulse duration of 11 milliseconds. Each battery shall be subjected to a half-sine shock of peak acceleration depending on themass 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.
将试验电芯和电池用坚硬的支架固定在试验装置上，支架支撑着每个试验电池的所有安装面;电芯经受峰值加速度 150gn 和脉冲持续时间 6ms 的半正弦波冲击;大电芯需经受峰值加速度 50gn 和脉冲持续时间 11ms 的半正弦波冲击;每个电池需经受半正弦波冲击的峰值加速度取决于电池的质量。小型电池的脉冲持续时间为 6ms，大型电池为 11ms。以下提供的公式用来计算适合的最小峰值加速度。

Battery	Minimum peak acceleration	Pulse duration
Small batteries	150 gn or result of formula $\text{Acceleration(gn)}=\sqrt{\frac{100850}{\text{mass}^*}}$ whichever is smaller	6 ms
Large batteries	50 gn or result of formula $\text{Acceleration(gn)}=\sqrt{\frac{30000}{\text{mass}^*}}$ whichever is smaller	11 ms

Note: "*" Mass is expressed in kilograms

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.
Cells and batteries meet this requirement if there is no mass loss, 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.(NOTE: Mass is express in kilograms)
每个电芯或电池须在三个互相垂直的电芯安装方位的正方向经受三次冲击，接着反方向经受三次冲击，总共经受 18 次冲击。
各试验电芯或电池应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧，并且每个试验电芯或电池在试验后的开路电压不少于其在进行这一试验前电压的 90%（完全放电状态的试验电芯或电池除外）。

4.2 Result 测试结果

Sample No. 样品编号	Before 测试前		After 测试后		Mass loss 质量损失 (%)	Residual OCV 剩余电压 (%)	Test result 测试结果
	Mass 样品质量 (kg)	Voltage 开路电压 (V)	Mass 样品质量 (kg)	Voltage 开路电压 (V)			
B01	54.40	55.54	54.40	55.52	0.00	99.96	O
B02	54.46	55.64	54.46	55.61	0.00	99.95	O
B03	54.50	55.52	54.50	55.51	0.00	99.98	O
B04	54.42	56.56	54.42	56.52	0.00	99.93	O

Note: **L**- Leakage, **V**- Venting, **D**- Disassembly, **R**- Rupture, **F**- Fire,
O- No leakage, no venting, no disassembly, no rupture, no fire, no mass loss, change ratio is not less than 90 %.
注：**L**- 泄漏；**V**- 排气；**D**- 解体；**R**- 破裂；**F**- 起火；
O- 无泄漏、无排气、无解体、无破裂、无起火、无质量损失、电压比不小于 90 %。

Appendix 5 附表 5		
Test Items 测试项目	External short circuit 外部短路	
5.1	Test procedure 测试步骤	
	The cell or battery to be tested shall be heated for a period of time necessary to reacha 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. Cells and batteries meet this requirement if their external temperature does not exceed 170℃ and there is no disassembly, no rupture and no fire within six hours of this test. 用于测试的电芯或电池外壳温度达到恒温57 ± 4 °C后，再进行外部短路。短路的时间取决于电芯或电池的尺寸和设计，并需被评估和记录。如果这个评估无法进行，那么小电芯和小电池短路时间至少6小时，大电芯和大电池短路时间至少12小时。然后电芯或电池在57±4℃环境下经受一个阻值小于0.1Ω的外部电路短路。 电芯或电池温度到57±4℃之后，短路时间需持续1小时，大型电池短路温度下降到最大温升的一半并保持。短路和降温阶段至少应在环境温度下进行。电芯或电池的外壳温度应不超过 170℃，并且试验后6h 内应无解体、无破裂和无燃烧。	
5.2	Result 测试结果	
Sample No. 样品编号	Max. External Temperature 样品表面最高温度(℃)	Test result 测试结果
B01	58.4	O
B02	58.6	O
B03	58.5	O
B04	58.1	O

Note: **D**- Disassembly, **R**- Rupture, **F**- Fire, **O**- No disassembly, no rupture, no fire, test sample external temperature does not exceed 170 °C.
注： **D**- 解体；**R**- 破裂；**F**- 起火；**O**- 无解体、无破裂、无起火，测试样品表面温度不超过 170 °C。

Appendix 6 附表 6	
Test Items 测试项目	☐Impact撞击 ☒Crush挤压
6.1	Test procedure 测试步骤
	A cell or component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5cm/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 13kN ± 0.78kN; (b) The voltage of the cell drops by at least 100mV; 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 100mV or more, or the cell is deformed by at least 50% of its original thickness, the pressure shall be released. Cells and component cells meet this requirement if their external temperature does not exceed 170℃ and there is no disassembly and no fire during the test and within six hours after this test. 将试验电芯或元件电芯放在两个平面之间挤压。挤压在第一个接触点以约 1.5cm/s 的速度慢慢进行，直到下面三个选项之一达到为止： (a) 挤压力达到 13kN±0.78kN； (b) 电芯电压降至少达到 100mV； (c) 电池厚度和最初比较变形至少 50%。 一旦达到最大压力，电压降超过 100mV 或者电芯变形超过 50%，压力应该解除。 试验电芯或电池的组成电芯外部温度不超过 170℃，并且在试验过程中和试验后 6 小时内应无解体、无破裂、无起火。
6.2	Result 测试结果

Sample No. 样品编号	Max. External Temperature 样品表面最高温度(℃)	Test result 测试结果
C01	24.6	O
C02	24.8	O
C03	24.4	O
C04	24.2	O
C05	23.8	O
C06	24.1	O
C07	24.4	O
C08	24.5	O
C09	24.0	O
C10	24.3	O

Note: **D**- Disassembly, **F**- Fire, **O**- No disassembly, no fire, test sample external temperature does not exceed 170 °C.
注：**D**- 解体；**F**- 起火； **O**- 无解体、无起火，测试样品表面温度不超过 170 °C。

Appendix 7 附表 7		
Test Items 测试项目	Overcharge 过度充电	
7.1	Test procedure 测试步骤	
	The charge current shall be twice the manufacturer's recommended maximum continuous charge current. The duration of the test shall be 24 hours. The minimum voltage of the test shall be as follows: 充电电流必须是制造商建议的最大持续充电电流的两倍，测试时间为 24 小时。试验的最小电压如下：	
	When the manufacturer's recommended charge voltage is not more than 18V, the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the or 22V. Rechargeable batteries meet this requirement if there is no disassembly and no fire within seven days of the test. 如果厂家推荐的充电电压不超过 18V，则测试电压是两倍的厂家推荐的最大充电电压或者 22V 之间的较小值。 试验样品在试验后 7 天内应无解体和无燃烧。	N/A 不适用
	When the manufacturer's recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times maximum charge voltage. Rechargeable batteries meet this requirement if there is no disassembly and no fire within seven days of the test. 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该为 1.2 倍的厂家推荐的最大充电电压。 试验样品在试验后 7 天内应无解体和无燃烧。	The specified maximum charge voltage is 56.5V; The specified maximum charge current is 50A; The test voltage is 67.8V; The test current is 100A. 厂家规定的最大充电电压为 56.5V; 厂家规定的最大充电电流为 50A; 测试电压为 67.8V; 测试电流为 100A。
7.2	Result 测试结果	

Sample No. 样品编号	Voltage Before test(V) 测试前开路电压(V)	Test result 测试结果
B05	55.94	O
B06	55.97	O
B07	55.98	O
B08	55.95	O

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

Appendix 8
附表 8

Test Items 测试项目	Forced discharge 强制放电				
8.1	Test procedure 测试步骤				
	Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12V D.C, power supply at an initial current equal to the maximum discharge current specified 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). Primary or rechargeable cells meet this requirement if there is no disassembly and no fire within seven days of the test. 每个电芯应在环境温度下与 12V 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强制放电。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)。原电池或可再充电电池在试验后 7 天内应无解体和无燃烧。				
8.2	Result 测试结果				
Sample No. 样品编号	Voltage Before test 测试前开路电压(V)	Test result 测试结果	Sample No. 样品编号	Voltage Before test 测试前开路电压(V)	Test result 测试结果
C11	2.684	O	C21	2.673	O
C12	2.686	O	C22	2.672	O
C13	2.682	O	C23	2.669	O
C14	2.685	O	C24	2.670	O
C15	2.680	O	C25	2.671	O
C16	2.677	O	C26	2.666	O
C17	2.682	O	C27	2.672	O
C18	2.680	O	C28	2.673	O
C19	2.676	O	C29	2.670	O
C20	2.681	O	C30	2.664	O

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

Photos of samples
样品图片

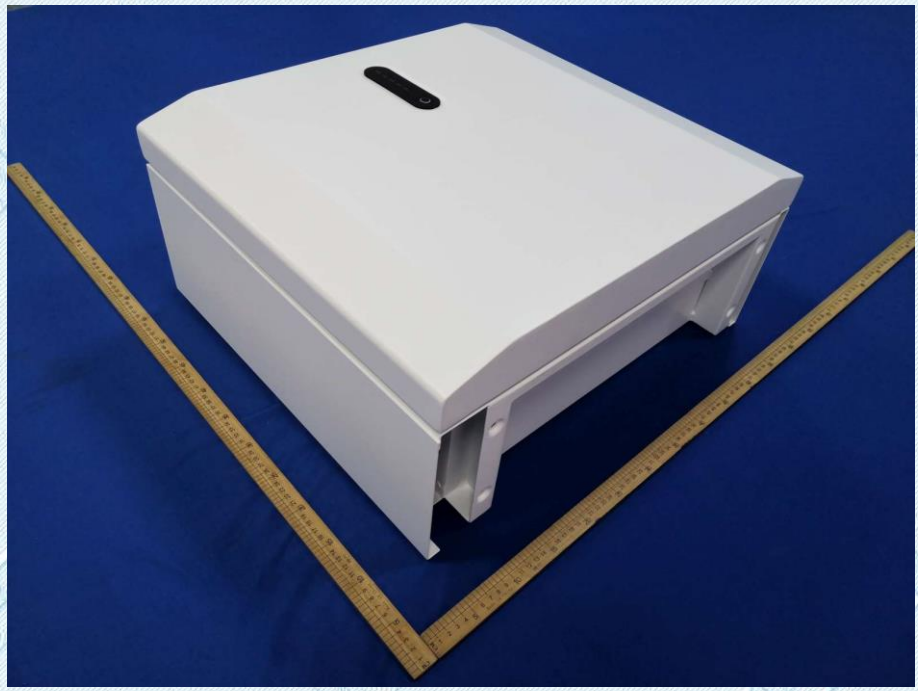

Figure 1 Front view of battery

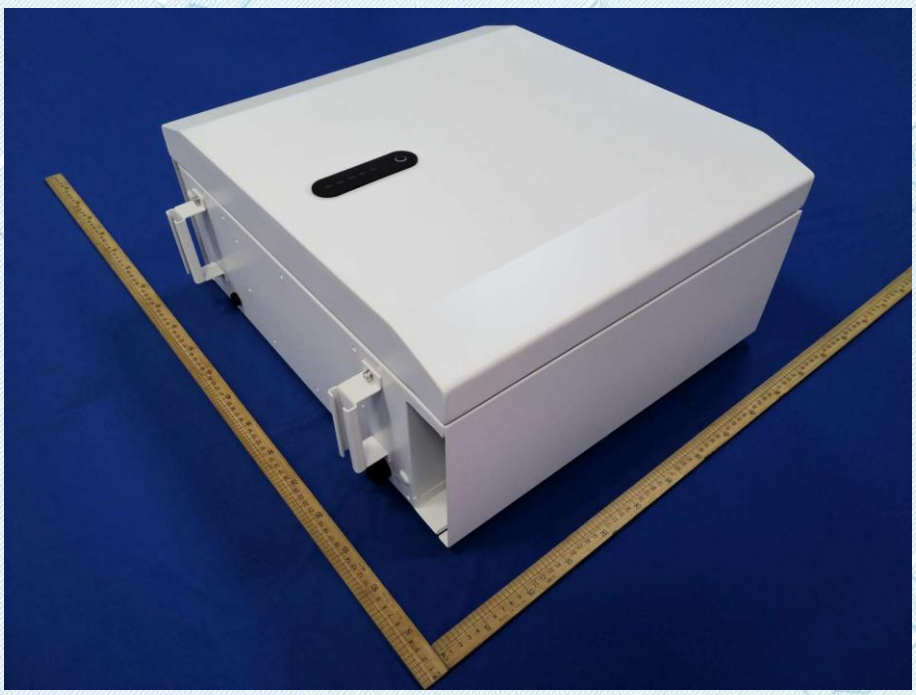

Figure 2 Back view of battery

Photos of samples
样品图片

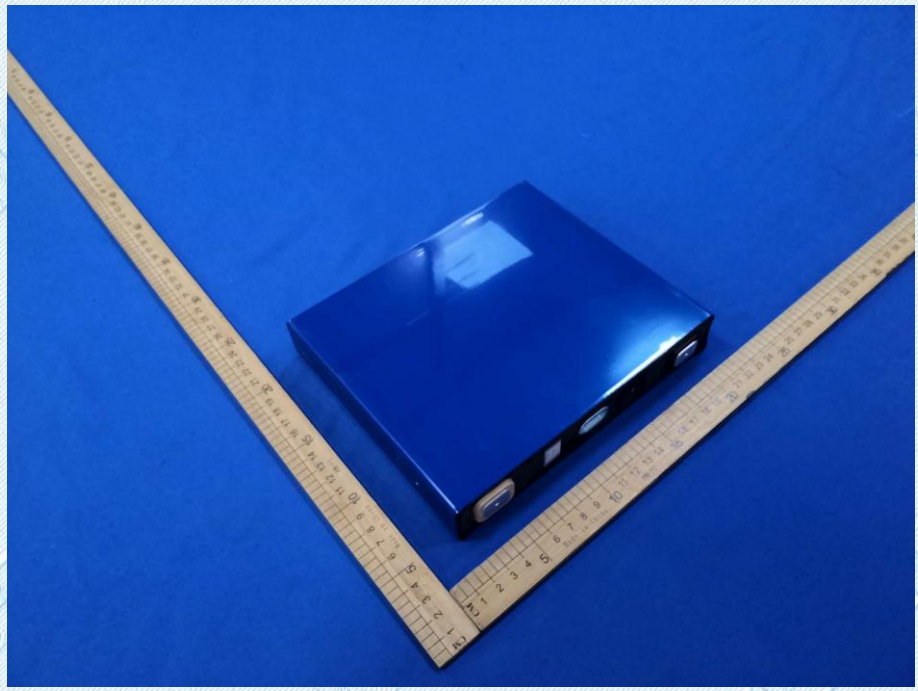

Figure 3 Front view of cell

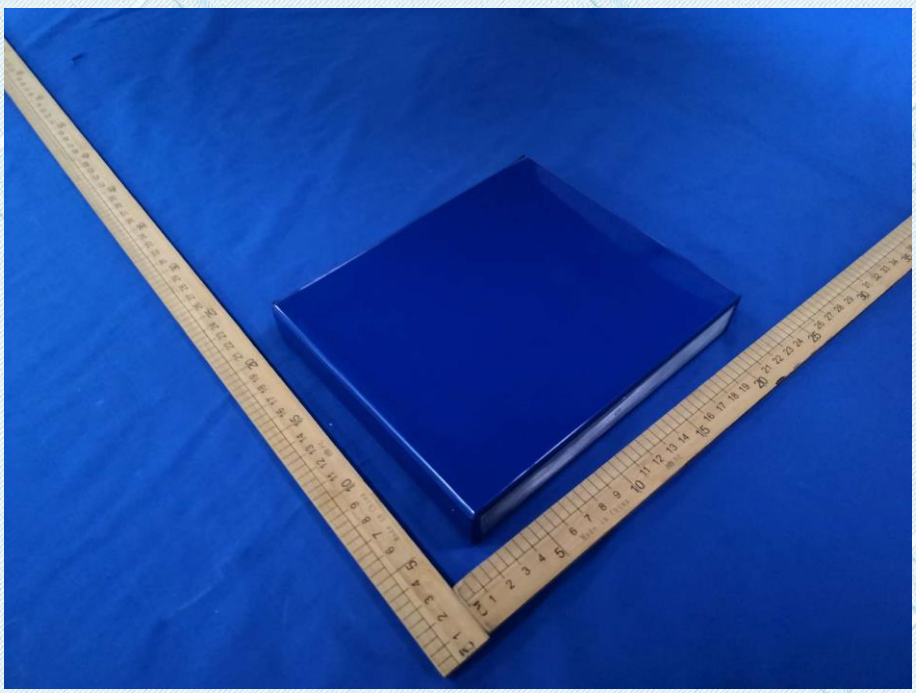

Figure 4 Back view of cell

Photos of samples
样品图片

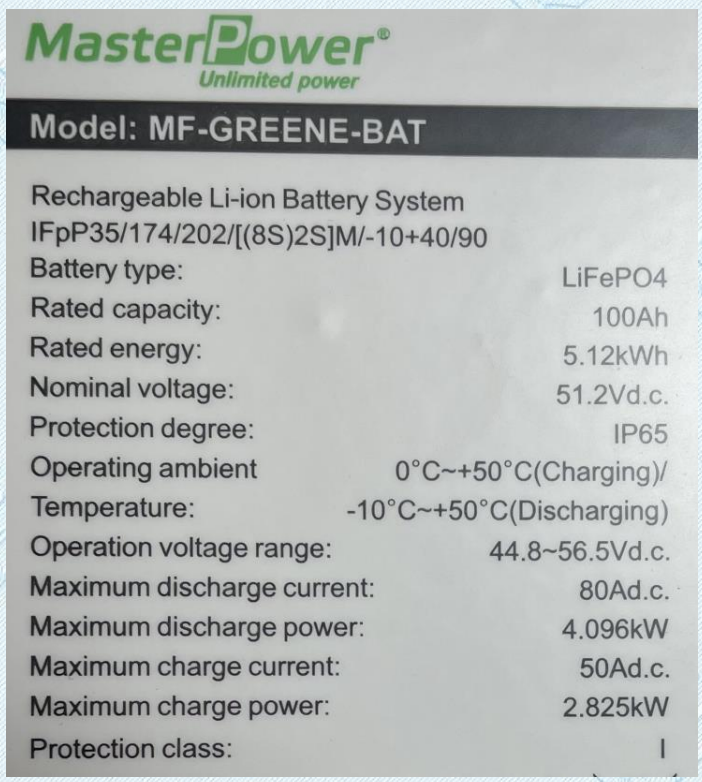

Figure 5 Label view

Important Notice
注意事项

1. The report is invalid if it is not stamped with the "Testing Special Stamp" and the "Riding Seam Stamp".
   报告未加盖“检测专用章”和“骑缝章”无效。
2. The test report is invalid without the signatures of Approver, Reviewer and Testing engineer.
   本报告书无批准人、审核人、及主检人签名无效。
3. The test report can not be partially copied unless prior written approval is issued from our lab.
   检测报告未经本实验室书面批准，不得部分复制。
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无效。
5. Product information and customer information provided by the applicant, we are not responsible for its authenticity.
   产品信息和客户信息由申请人提供，我们不对其真实性负责。
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. If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.
   如对本报告有异议，可在收到报告后15 天内向本单位申诉，逾期不予受理。

检测单位： 广东科正技术服务有限公司
Laboratory KSIGN(Guangdong) Testing Co., Ltd.
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--- End of Report ---
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