TEST REPORT
IEC 62619
Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial applications

Report Number.....:	S03A22100403L00801
Date of issue.....:	2022-11-08
Total number of pages.....:	22
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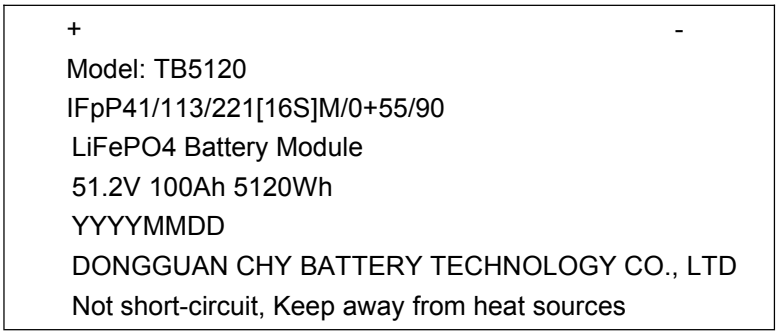
Address.....:	Room 101, 201-208, Unit 1, Building 1, No. 9 Headquarters 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China.
Applicant's name.....:	DONGGUAN CHY BATTERY TECHNOLOGY CO., LTD
Address.....:	No. 2, Qinghe Road, HuangJingKeng Village, HuangJiang Town, DongGuan City
Test specification:	
Standard.....:	☒ IEC 62619: 2017
	☐ EN 62619: 2017
Test item description.....:	LiFePO4 Battery Module
Trade Mark.....:	N/A
Manufacturer.....:	Same as applicant
Address.....:	Same as applicant
Factory.....:	Same as applicant
Address.....:	Same as applicant
Model/Type reference.....:	TB5120
Ratings.....:	51.2V, 100Ah, 5120Wh

Guangdong ESTL Technology Co., Ltd. GTG * CERTIFICATE *

List of Attachments (including a total number of pages in each attachment): N/A	
Summary of testing:	
Tests performed (name of test and test clause): Product safety test: - 7.2.1 External short-circuit test (Cell) - 7.2.2 Impact test (Cell) - 7.2.3.2 Whole drop test (Cell) - 7.2.3.3 Edge and corner drop test (cell or cell block, and battery system) - 7.2.4 Thermal abuse test (Cell) - 7.2.5 Overcharge test (cell) - 7.2.6 Forced discharge test (Cell) - 8.2.2 Overcharge control of voltage (battery system) - 8.2.4 Overheating control (battery system) Tests are made with the number of cells and batteries specified in IEC 62619: 2017 Table 1.	**Testing location:** Guangdong ESTL Technology Co., Ltd. ☒ Room 101, 201-208, Unit 1, Building 1, No. 9 Headquarters 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China. ☒ Room 101, Unit 2, Building 1, No. 11 Headquarters 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China.
Summary of compliance with National Differences (List of countries addressed): N/A ☒ **The product fulfils the requirements of EN 62619:2017.**	

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Remark: 1. “YYYY” means to years; “MM” means to months; “DD” means to days.

2. The “+” represents the anode; The “-” represents the cathode

Test item particulars..... :	
Classification of installation and use.....:	N/A
Supply Connection.....:	DC terminal
.....:	
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing..... :	
Date of receipt of test item.....:	2022-10-13
Date (s) of performance of tests.....:	2022-10-13 to 2022-11-03

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

General product information and other remarks:

This battery is constructed with 16pcs Li-ion Cell in 16S1P, and has overcharge, over-discharge, over current and short-circuits proof circuit.

The main features of the battery are shown as below :

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
TB5120	100Ah	51.2V	50A	50A	100A	150A	57.6V	44.8V

The main features of the battery are shown as below :

Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature
TB5120	57.6V	5A	0°C	55°C

The main features of the cell in the battery are shown as below :

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
BAKCBBK100	100Ah	3.2V	100A	100A	150A	200A	3.65V	2.5V

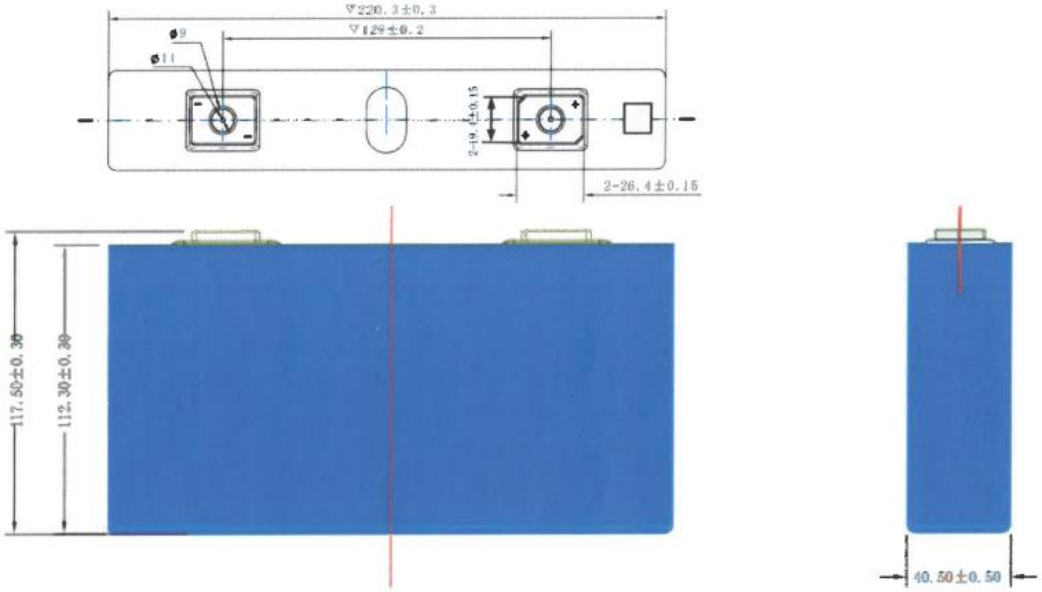
The main features of the cell in the battery are shown as below :

Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature
BAKCBBK100	3.65V	5A	0°C	50°C

Circuit diagram: N/A

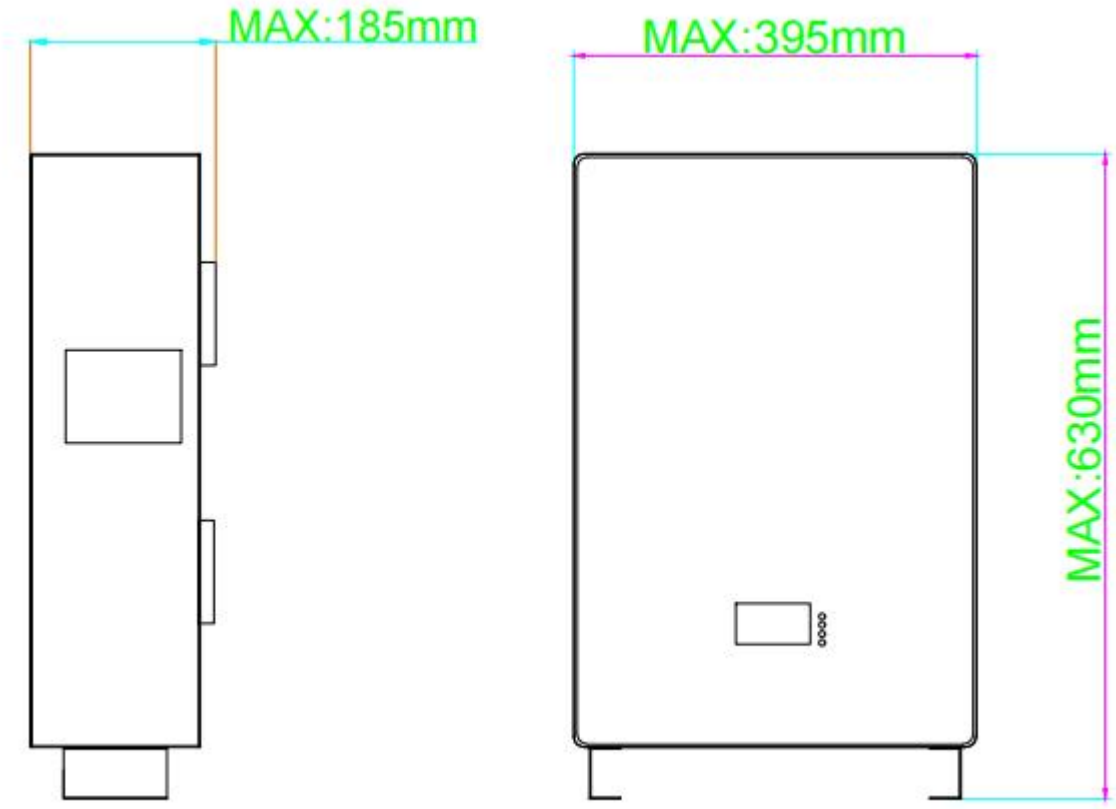
Construction:

Cell



Cell: Max. 41.0mm (T) x Max. 112.6.mm (W) x Max. 220.6mm (L)

Battery



IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

4	PARAMETER MEASUREMENT TOLERANCES		P
	Parameter measurement tolerances		P

5	GENERAL SAFETY CONSIDERATIONS		P
5.1	**General**		**P**
	Cells and batteries are safe under conditions of both intended use and reasonably foreseeable misuse.. :	See also table 5.1 for Critical components information	P
5.2	**Insulation and wiring**		**P**
	Voltage, current, altitude, and humidity requirements	See instructions;	P
	Adequate clearances and creepage distances between connectors		P
	The mechanical integrity of internal connections		P
5.3	**Venting**		**P**
	Pressure relief function		P
	Encapsulation used to support cells within an outer casing		P
5.4	**Temperature/voltage/current management**		**P**
	The design prevents abnormal temperature-rise		P
	Voltage, current, and temperature limits of the cells		P
	Specifications and charging instructions for equipment manufacturers		P
5.5	**Terminal contacts of the battery pack and/or battery system**		**P**
	Polarity marking(s)		P
	Capability to carry the maximum anticipated current		P
	External terminal contact surfaces		P
	Terminal contacts are arranged to minimize the risk of short circuits		P
5.6	**Assembly of cells, modules, or battery packs into battery systems**		**P**
5.6.1	General		P
	Independent control and protection method(s)		P
	Recommendations of cell operating limits by the cell manufacturer		P
	Batteries designed for the selective discharge of a portion of their series connected cells		P
	Protective circuit component(s) and consideration to the end-device application		P
5.6.2	Battery system design		P
	The voltage control function		P
	The voltage control for series-connected batteries		P
5.7	**Operating region of lithium cells and battery systems for safe use**		**P**
	The cell operating region.....:	0~50°C	P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	Designation of battery system to comply with the cell operating region	0-50°C	P
5.8	**Quality plan**		**P**
	Manufacturing quality plan (for example: ISO9001, etc.) prepared and implemented..... :	Reference: ISO 9001: 2015	P
	The process capabilities and the process controls		P
6	**TYPE TEST CONDITIONS**		**P**
6.1	**General**		**P**
6.2	**Test items**		**P**
	Cells or batteries that are not more than six months old (See Table 1 of IEC62619)		P
	Capacity confirmation of the cells or batteries		P
	Default ambient temperature of test, 25 °C ± 5 °C		P
7	**SPECIFIC REQUIREMENTS AND TESTS**		**P**
7.1	**Charging procedure for test purposes**		**P**
	The battery discharged to a specified final voltage prior to charging		P
	The cells or batteries charged using the method specified by the manufacturer.....:		P
7.2	**Reasonably foreseeable misuse**		**P**
7.2.1	External short-circuit test (cell or cell block)		P
	Short circuit with total resistance of 30 mΩ ± 10 mΩ at 25 °C ± 5 °C		P
	Results: no fire, no explosion	(See Table 7.2.1)	P
7.2.2	Impact test (cell or cell block)		P
	Cylindrical cell, longitudinal axis impact		P
	Prismatic cell, longitudinal axis and lateral axis impact		P
	Results: no fire, no explosion.	No fire, no explosion.	P
7.2.3	Drop test (cell or cell block, and battery system)		P
7.2.3.1	General		P
7.2.3.2	Whole drop test (cell or cell block, and battery system)		P
	Description of the Test Unit.....:	Cell	—
	Mass of the test unit (kg)..... :	2.12kg	—
	Height of drop (m)..... :	1.0m	—
	Results: no fire, no explosion	No fire, no explosion.	P
7.2.3.3	Edge and corner drop test (cell or cell block, and battery system)	More than 20 kg	P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	Description of the Test Unit.....:	battery system	—
	Mass of the test unit (kg)..... :	43.0kg	—
	Height of drop (m)..... :	0.1m	—
	Results: no fire, no explosion	No fire, no explosion	P
7.2.4	Thermal abuse test (cell or cell block)		P
	Results: no fire, no explosion	No fire, no explosion.	P
7.2.5	Overcharge test (cell or cell block)		P
	For those battery systems that are provided with only a single protection for the charging voltage control		—
	Results: no fire, no explosion.....:	See Table 7.2.5	P
7.2.6	Forced discharge test (cell or cell block)	cell block	P
	Upper limit charge voltage of the cell.....:	3.65V	P
	Cells connected in series in the battery system..... :	16S	P
	Redundant or single protection for discharge voltage control provided in battery system..... :	Two protection provided	P
	Target Voltage..... :	-3.65V	P
	Maximum discharge current of the cell, I_m..... :	The maximum discharge current is greater than 1.0 ItA	N/A
	Discharge current for forced discharge, 1.0 It.....:		N/A
	Discharging time, t = (1 It / I_m) x 90 (min.)..... :		N/A
	Results: no fire, no explosion.....:	See Table 7.2.6.	P
7.3	**Considerations for internal short-circuit – Design evaluation**		**N/A**
7.3.1	General		N/A
7.3.2	Internal short-circuit test (cell)		N/A
	Samples preparation procedure: a), in accordance with 8.3.9 of IEC62133:2012; or b), the nickel particle inserted before charging, or c), the nickel particle was inserted before electrolyte filling.....:		N/A
	Tested according to Cl. 8.3.9 of IEC 62133:2012 test method, except all tests were carried out in an ambient temperature of 25 °C ± 5 °C.		N/A
	The appearance of the short-circuit location recorded by photograph or other means..... :		—
	The pressing was stopped - When a voltage drop of 50 mV was detected; or		N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) was reached		N/A
	Results: no fire, no explosion.....:		N/A
7.3.3	**Propagation test (battery system)**		**N/A**
	Method to create a thermal runaway in one cell .... :		N/A

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No external fire from the battery system or no battery case rupture.....:		N/A

8	BATTERY SYSTEM SAFETY (CONSIDERING FUNCTIONAL SAFETY)		P
8.1	**General requirements**		**P**
	Functional safety analysis for critical controls		P
	Conduct of a process hazard, risk assessment and mitigation of the battery system		P
8.2	**Battery management system (or battery management unit)**		**P**
8.2.1	Requirements for the BMS		P
	The safety integrity level (SIL) target of the BMS		P
	The charge control evaluated by tests in clauses 8.2.2 to 8.2.4		P
8.2.2	Overcharge control of voltage (battery system)		P
	The exceeded charging voltage applied to the whole battery system		P
	The exceeded charging voltage applied to only a part of the battery system, such as the cell(s)..... :		P
	Results: no fire, no explosion.....:	See Table 8.2.2.	P
	The BMS interrupted the overcharging before reaching 110% of the upper limit charging voltage		P
8.2.3	Overcharge control of current (battery system)	Maximum ability of charging current of the system is lower than the maximum charging current for the battery	N/A
	Results: no fire, no explosion.....:		N/A
	The BMS detected the overcharging current and controlled the charging to a level below the maximum charging current		N/A
8.2.4	Overheating control (battery system)		P
	The cooling system, if provided, was disconnected		P
	Elevated temperature for charging, 5 °C above maximum operating temperature..... :		P
	Results: no fire, no explosion.....:	See Table 9.2.5	P
	The BMS detected the overheat temperature and terminated charging		P
	The battery system operated as designed during test		P

9	INFORMATION FOR SAFETY		P
	The cell manufacturer provides information about current, voltage and temperature limits of their products		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	The battery system manufacturer provides information regarding how to mitigate hazards to equipment manufacturers or end-users.		P
10	**MARKING AND DESIGNATION (REFER TO CLAUSE 5 OF IEC 62620)**		**P**
	The marking items shown in Table 1 in IEC 62620 indicated on the cell, battery system or instruction manual.	See page 3 for MARKING	P
	Cell or battery system has clear and durable markings		P
	Cell designation		P
	Battery designation		P
	Battery structure formulation		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX A	OPERATING REGION OF CELLS FOR SAFE USE		P
A.1	General		P
A.2	Charging conditions for safe use		P
A.3	Consideration on charging voltage		P
A.4	Consideration on temperature		P
A.5	High temperature range		P
A.6	Low temperature range		P
A.7	Discharging conditions for safe use		P
A.8	Example of operating region		P

ANNEX B	PROCEDURE OF 7.3.3 PROPAGATION TEST		P
B.1	General		P
B.2	Test conditions:		P
	– The battery fully charged according to the manufacturer recommended conditions.....:	CC and CV	—
	– Target cell forced into thermal runaway.....:		—
	– A specially prepared sample (e.g. a heater or a hole for nail penetration provided) used for ease of testing..... :	Heater	—
B.3	Method used for initiating the thermal runaway. 1) Heater (Heater, Burner, Laser, Inductive heating 2) Overcharge 3) Nail penetration of the cell 4) Combination of above methods 5) Other methods..... :	Heater	—

ANNEX C	PACKAGING		N/A
	The materials and pack design chosen in such a way as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants		N/A

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

5.1	TABLE: Critical components information				P
Object/part no.	**Manufacturer/ trademark**	**Type/model**	**Technical data**	**Standard**	**Mark(s) of conformity 1)**
Cell	FuZhou BAK Battery Co., ltd.	BAKCBBK100	3.2V, 100Ah	IEC 62619: 2017	Tested with appliance
-Electrolyte	Xianghe Kunlun Chemical Co., Ltd.	XHLK-01	$LiPF_6$, DEC, DMC, EMC, EC	--	--
-Separator	Shenzhen Xing Yuan Material Technology Co., Ltd	16*125	16μm, PE, Shut down temperature: 105°C	--	--
-Positive	Jiangsu Leneng Material Co., Ltd	LN-01	$LiFePO_4$	--	--
-Negative	Luoyang Yuexing New Energy Technology Co., Ltd.	YXA-S	Graphite	--	--
PCB	Interchangeable	Interchangeable	V-0, 130°C	UL 796	UL approved
IC	NATION	N32G455VEL7	Overcharge Detection Voltage: 1.8~3.6 V Over-discharge Detection Voltage: 1.8~3.6V Operating temperature range: -40~105°C	--	Tested with appliance
MOSFET	China Resources Microelectronics (Chongqing) Limited	CRSS028N10N	V_{DS}=100V, V_{GS}=±20V, I_D=180A, T_J=-55~150°C	--	Tested with appliance
NTC	Shenzhen Sunlord Electronics Co., Ltd.	SDNT1608X103F3435FTF	R_{25}= 10KΩ± 1%, $B_{25/85}$=3435K±1%	--	--
Lead Wire	Interchangeable	Interchangeable	8AWG, 200°C, 600V	UL 758	UL approved

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

Connector	Interchangeable	Interchangeable	V-1	UL 94	UL approved

Supplementary information:

[1)] Provided evidence ensures the agreed level of compliance. See OD-2039.

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.1	TABLE: External short-circuit test (cell or cell block)				P
Sample No.	**Ambient (at 25°C ± 5ºC)**	**OCV at start of test (V dc)**	**Resistance of Circuit (mΩ)**	**Maximum Case Temperature Rise ΔT (°C)**	**Results**
C1	23.5	3.486	25	62.5	A, E

Supplementary information:

A - No fire or Explosion
B - Fire
C - Explosion
D - The test was completed after 6 h
E - The test was completed after the cell casing cooled to 20% of the maximum temperature rise
F - Other (Please explain):___

7.2.5	TABLE: Overcharge test (cell or cell block)					P
Sample No.	**OCV at start of test (V dc)**	**OCV at end of test (V dc)**	**Measured Maximum Charging Current (A)**	**Measured Maximum Charging Voltage (V dc)**	**Max. Cell Case Temperature, (°C)**	**Results**
C6	2.924	3.65	100	3.623	42.6	A, E

Supplementary information:

Results:
A - No fire or Explosion
B - Fire
C - Explosion
D - Test concluded when temperature reached a steady state condition
E - Test concluded when temperature returned to ambient
F - Other (Please explain): _____

7.2.6	TABLE: Forced discharge test (cell or cell block)				P
Sample No.	**OCV before applying reverse charge, (V dc)**	**Target Voltage (V dc)**	**Measured Reverse Charge Current It, (A)**	**Total Time for Reversed Charge Application (min)**	**Results**
C7	2.938	-3.65	100	90	A

Supplementary information:

Results:
A - No fire or Explosion
B - Fire
C - Explosion
D - Other (Please explain): ___

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.2	TABLE: Internal short-circuit test (cell)			N/A
Sample No.	**OCV at start of test, (V dc)**	**Particle location [1)]**	**Maximum applied pressure, (N)**	**Results**

Supplementary information:

[1)] Identify one of the following**:**

1: Nickel particle inserted between positive and negative (active material) coated area.

2: Nickel particle inserted between positive aluminium foil and negative active material coated area.

Results:

A - No fire or explosion
B – Fire
C - Explosion
D – Test concluded when 50 mV voltage drop occurred prior to reaching force limit
E – Test concluded when 800/400 N pressure was reached and 50 mV voltage drop was not achieved
F – Test was concluded when fire or explosion occurred
G - Other (Please explain): __

7.3.3	TABLE: Propagation test (battery system)				N/A
Sample No.	**OCV of Battery System Before Test, (V dc)**	**OCV of Target Cell Before Test, (V dc)**	**Maximum Cell Case Temperature, (°C)**	**Maximum DUT Enclosure Temperature, (°C)**	**Results**
Method of cell failure [1)]		**Location of target cell**		**Area for fire protection (m^2)**	

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

1) Cell can be failed through applied heat, overcharge, nail penetration or combinations of these failures or other acceptable methods. See supporting documentation for details on cell failure method

2) If the battery system has no outer covering, the manufacturer is required to specify the area for fire protection.

Results:
A – No fire external to DUT enclosure or area for fire protection or no battery case rupture
B – Fire external to DUT enclosure or area for fire protection
C – Explosion
D – Battery case rupture
E - Other (Please explain): __

8.2.2	TABLE: Overcharge control of voltage (battery system)				P
Sample No.	**OCV at start of test for Cell/Cell Blocks, (V dc)**	**Maximum Charging Current, (A)**	**Max. Charging Voltage, (V dc)**	**Max. Voltage of Cell/Cell Blocks, (V dc)**	**Results**
B2	2.911	100	64.24	3.617	A, D, F
	2.907			3.612	A, D, F
	2.902			3.628	A, D, F
	2.915			3.615	A, D, F
	2.898			3.620	A, D, F
	2.910			3.626	A, D, F
	2.911			3.619	A, D, F
	2.907			3.613	A, D, F
	2.902			3.624	A, D, F
	2.916			3.627	A, D, F
	2.899			3.622	A, D, F
	2.911			3.615	A, D, F
	2.910			3.620	A, D, F
	2.905			3.625	A, D, F
	2.909			3.619	A, D, F
	2.912			3.623	A, D, F
			Charge Voltage Applied Battery System: 1)		
			Whole	**Part**	
			--	--	

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

1. The exceeded voltage can be applied to only a part of the system such as the cell(s) in the battery system per Figure 6 of IEC 62619, if it is difficult to do it in using the whole battery system.

Results:
A - No Fire or Explosion
B – Fire
C - Explosion
D - The voltage of the measured cells or cell blocks did not exceed the upper limit charging voltage
E - The voltage of the measured cells or cell blocks did exceed the upper limit charging voltage
F - All function of battery system did operate as intended during the test.
G - All function of battery system did not operate as intended during the test.
H - Other (Please explain): ___

8.2.3	TABLE: Overcharge control of current (battery system)			N/A
Sample No.	**OCV at start of test, (V dc)**	**Max. Charging Current, (A)**	**Max. Charging Voltage, (V dc)**	**Results**

Supplementary information:

Results:
A – No fire or Explosion
B – Fire
C – Explosion
D - Overcurrent sensing function of BMU did operate and then charging stopped
E - Overcurrent sensing function of BMU did not operate and then charging stopped
F - All function of battery system did operate as intended during the test.
G - All function of battery system did not operate as intended during the test.
H - Other (Please explain): ____

8.2.4	TABLE: Overheating control (battery system)		P
Model No.	**OCV at start(SOC 50%) of test, V dc**	**Maximum Charging Current, A**	**Maximum Charging Voltage, V dc**
B3	51.84	100	57.30
Maximum Specified Temperature of Battery System, °C		**Maximum Measured Cell Case Temperature, °C**	**Results**
55		60.1	A, D ,F

Supplementary information:

Results:
A – No fire or Explosion
B – Fire
C – Explosion
D - Temperature sensing function of BMU did operate and then charging stopped
E - Temperature sensing function of BMU did not operate and then charging stopped
F - All function of battery system did operate as intended during the test.
G - All function of battery system did not operate as intended during the test.
H - Other (Please explain): ____

Photos

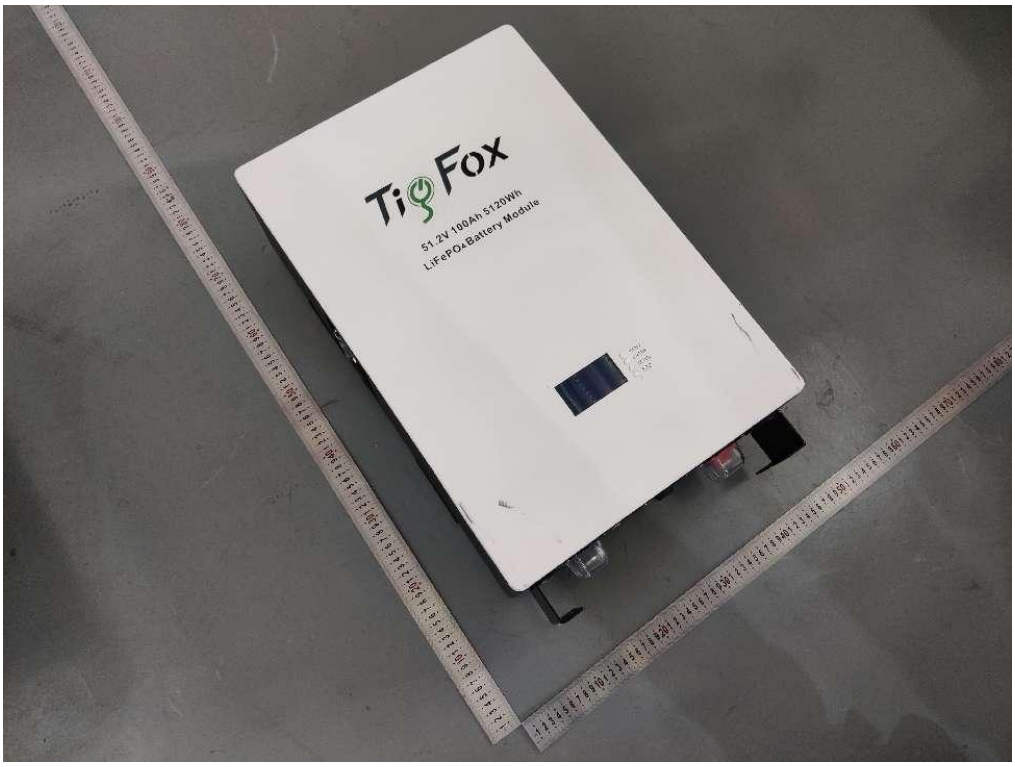


Fig. 1

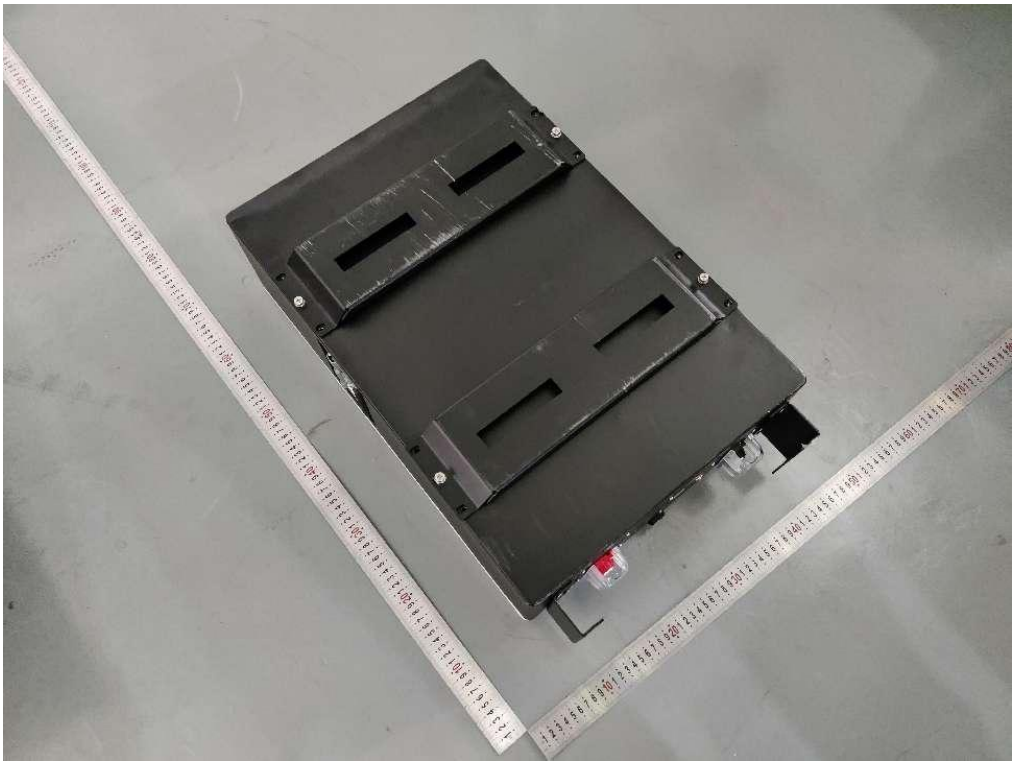


Fig. 2

Photos

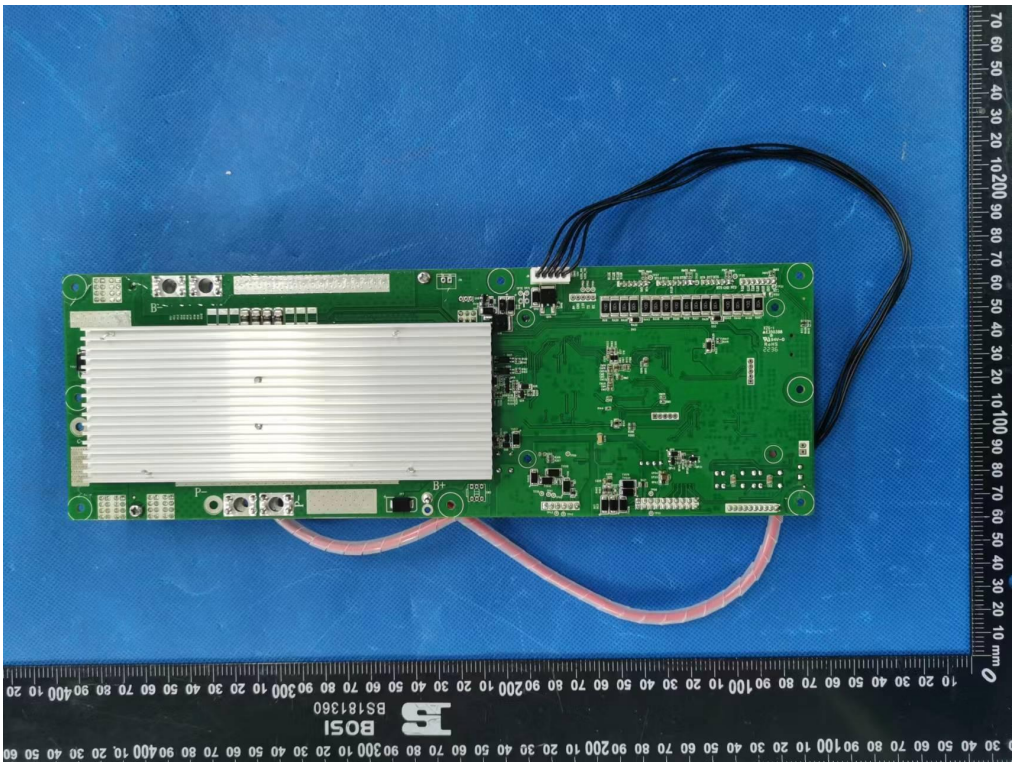


Fig. 3

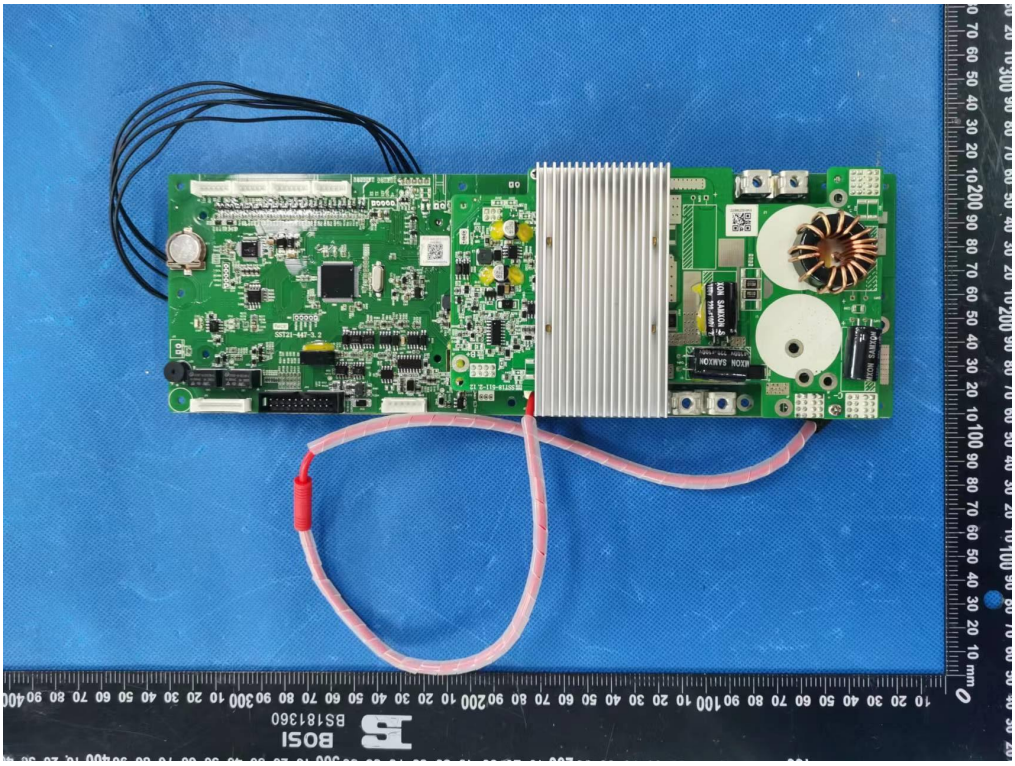


Fig. 4

Photos

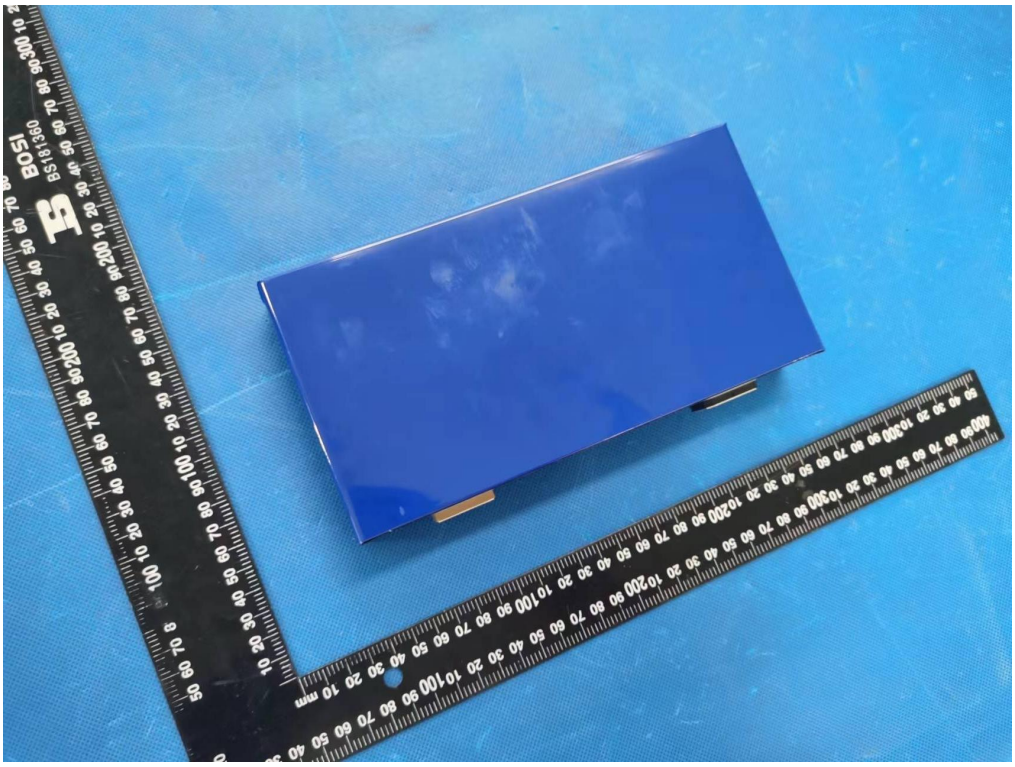


Fig. 5

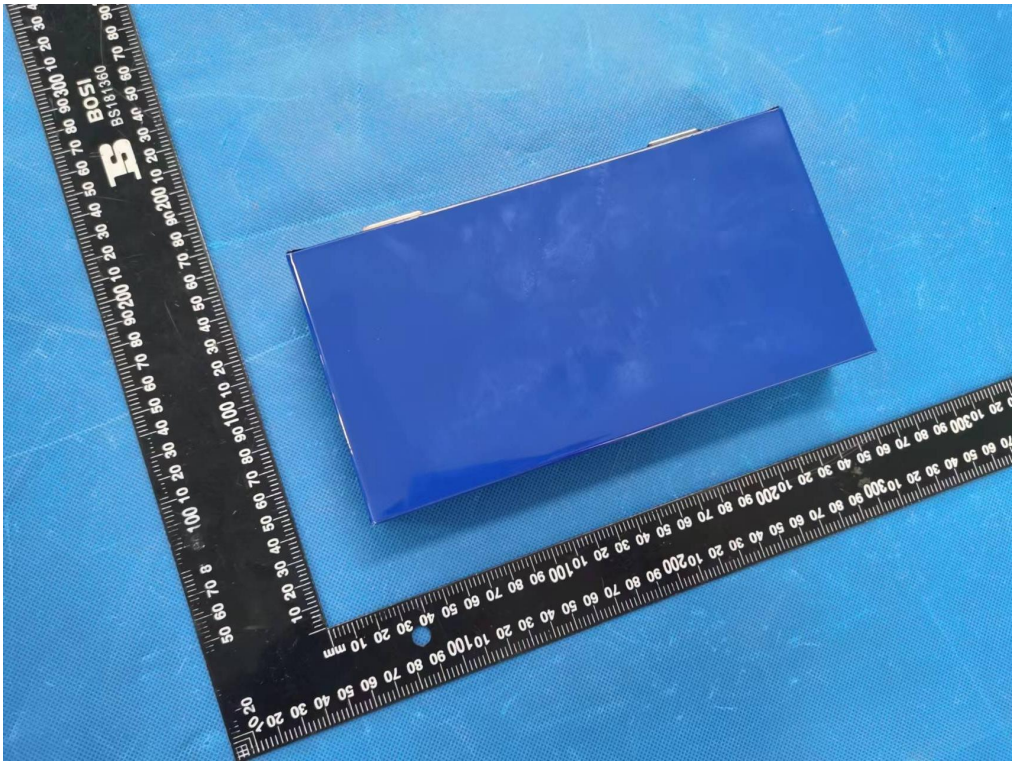


Fig. 6

--- End of Report ---

锂电池 UN38.3 试验概要
Lithium Battery Test Summary

报告编号 Report No.: S03A22100403Z00401

单位信息 Company Information					
委托单位 Consignor	东莞市创汇原电源技术有限公司 DONGGUAN CHY BATTERY TECHNOLOGY CO., LTD. 湖南省郴州市安仁县永乐江镇东莞市黄江镇黄京坑村清河路 2 号 No. 2, Qinghe Road, HuangJingKeng Village, HuangJiang Town, DongGuan City				
生产单位 Manufacturer	东莞市创汇原电源技术有限公司 DONGGUAN CHY BATTERY TECHNOLOGY CO., LTD. 湖南省郴州市安仁县永乐江镇东莞市黄江镇黄京坑村清河路 2 号 No. 2, Qinghe Road, HuangJingKeng Village, HuangJiang Town, DongGuan City 电话/Tel：0769-82698200　邮箱/Mail：lixintang@aisun-power.com				
测试单位 Test Lab	广东储能检测技术有限公司 Guangdong ESTL Technology Co., Ltd. 广东省东莞市松山湖园区总部二路 9 号 1 栋 1 单元 101、201-208 室。 Room 101, 201-208, Unit 1, Building 1, No. 9 Headquarters 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China. 电话/Tel：0769-85075888　邮箱/Mail：gdestl@gdestl.com 网址/Website: www.gdestl.com				
电池信息 Battery Information					
名称 Name	磷酸铁锂电池模块 LiFePO4 Battery Module		电池/电芯类别 Battery/Cell Classification	锂离子电池 Li-ion Battery	
型号 Type	TB5120		商标 Trademark	/	
额定电压 Normal Voltage	51.2V		额定容量 Rated Capacity	100Ah	
额定能量 Watt-hour rating	5120Wh		外观/Appearance	多种颜色近长方体 Approximate Multi-colors Cuboid	
质量/Mass	46.73Kg		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	S03A22100403U00401		测试报告签发日期 Date of Test Report	2022-10-31	
测试标准 Edition of UN Manual of Tests and Criteria Used	联合国《试验和标准手册》（第 7 版）38.3 节 UN "Manual of Tests and Criteria" ST/SG/AC.10/11/Rev.7/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(f)	不适用 N/A		UN38.3.3(g)	不适用 N/A	
签名 Signatory 职务 Title	工程经理	签发日期 Issued Date	2022-10-31		

广东储能检测技术有限公司 报告专用章 Special Seal for Report Guangdong ESTL Technology Co., Ltd.