Test Report issued under the responsibility of:

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..... :	CYML-ESH-P26090749
Date of issue ..... :	2026-09-29
Total number of pages ..... :	28 pages
Name of Testing Laboratory preparing the Report ..... :	LCIE CHINA COMPANY LIMITED Building 4, No. 518, Xin Zhuan Road, CaoHejing Songjiang High-Tech Park, Shanghai P.R.C (201612)
Applicant's name..... :	Huizhou FUJI Energy Technology Co., Ltd.
Address ..... :	No.11-12 Factory, Huizhou Zhongkai Zhongji Zhigu Industrial Park,Shanbei Village, Lilin Town, HZZK Hi-tech Industrial Development Zone, Huizhou City,Guangdong Province, P.R. China
Test specification:	
Standard ..... :	IEC 62619:2022
Test procedure..... :	CB Scheme
Non-standard test method..... :	N/A
TRF template used ..... :	IECEE OD-2020-F1:2022, Ed.1.5
Test Report Form No. ..... :	IEC62619B
Test Report Form(s) Originator.... :	UL Solutions (Demko)
Master TRF ..... :	Dated 2023-02-24

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Test item description ..... :	Rechargeable Lithium-ion Battery
Trademark(s) ..... :	--
Manufacturer ..... :	Same as applicant
Model/Type reference ..... :	PS5120E
Ratings ..... :	51,2V, 100Ah, 5.12kWh

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**CB Testing Laboratory:**	LCIE CHINA COMPANY LIMITED	
Testing location/ address.....:		Building 4, No. 518, Xin Zhuan Road, CaoHejing Songjiang High-Tech Park, Shanghai P.R.C (201612)	
Tested by (name, function, signature).....:		Alter Qiu (Project Manager)	
Approved by (name, function, signature)...:		Robin Wu (Project Reviewer)	
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address.....:			
Tested by (name + signature).....:			
Witnessed by (name, function, signature) .:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Witnessed by (name, function, signature) .:			
Approved by (name, function, signature)...:			
Supervised by (name, function, signature) :			

List of Attachments (including a total number of pages in each attachment):

Attachment 1 (Pictures for product): Page 23 to Page 28 (6 pages)

Summary of testing:

Tests performed (name of test, test clause and date test performed):	**Testing location: (CBTL, SPTL, CTF, Subcontractor)**
- 5.9 Quality plan - 7.2.3 Drop test (battery system) - 7.2.3.3 Edge and corner drop test (battery system) - 8.2.2 Overcharge control of voltage (battery system) - 8.2.3 Overcharge control of current (battery system) - 8.2.4 Overheating control (battery system)	LCIE CHINA COMPANY LIMITED Building 4, No. 518, Xin Zhuan Road, CaoHejing SongjiangHigh-Tech Park, Shanghai P.R.C (201612)

Summary of compliance with National Differences (List of countries addressed):

N/A

☒ **The product fulfils the requirements of AS IEC 62619:2023，EN IEC 62619:2022**

Use of uncertainty of measurement for decisions on conformity (decision rule) :

☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty (“simple acceptance” decision rule, previously known as “accuracy method”).

☐ Other: … (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

Information on uncertainty of measurement:

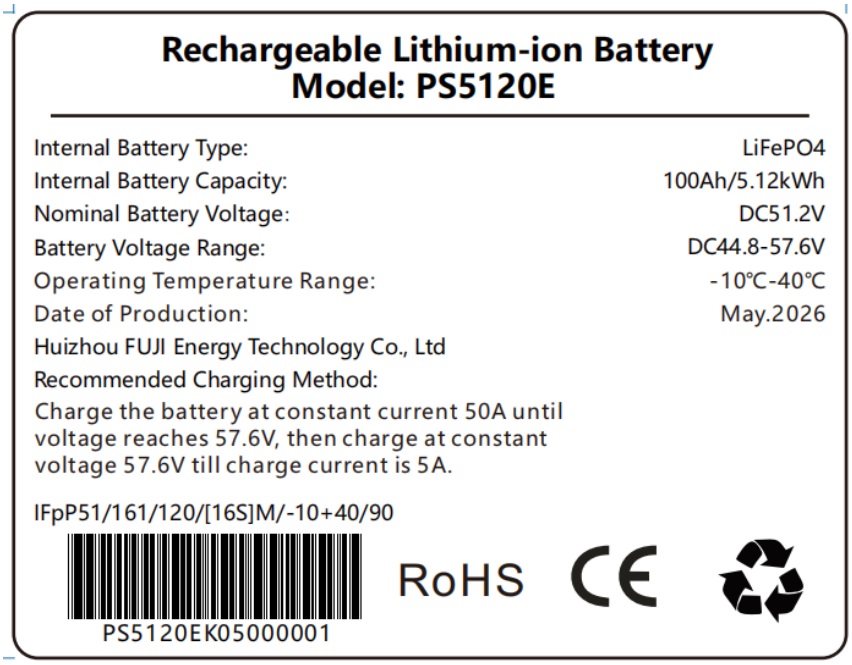
The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.

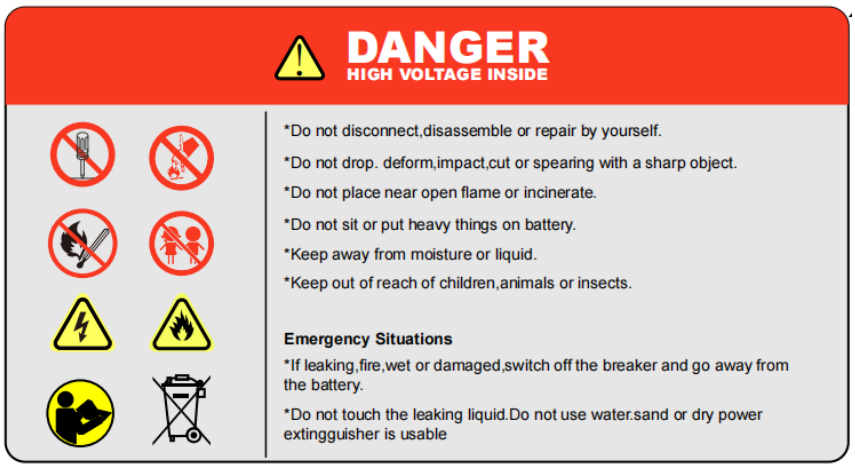
IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

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.





Test item particulars..... :	--
Classification of installation and use..... :	To be defined in final product
Supply Connection ..... :	DC Connector
..... :	
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 .....:	2026-06-22
Date (s) of performance of tests .....:	2026-06-22 to 2026-07-29

General remarks:

"(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.

☐ **This Test Report Form contains requirements according to IEC/ISO …... Standard dated ….. and i**ncludes Corrigendum dated …….

(Note: The above text maybe removed if not applicable)

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☒ **Yes** ☐ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) .....:	Factory 1: Huizhou Fuji Energy Technology Co., Ltd. No.11-12 Factory, Huizhou Zhongkai Zhongji Zhigu Industrial Park, Shanbei Village, Lilin Town, HZZK Hi-tech Industrial Development Zone, Huizhou City, Guangdong Province, P.R. China Factory 2: FUJI Electronics (Shenzhen) Co., Ltd. No. 10 Building, No.2 Industrial Zone, Tangxiayong Village, Songgang Street, Bao'an District, 518105 Shenzhen City, Guangdong, PEOPLE'S REPUBLIC OF CHINA Factory 3: FUJI (VIETNAM) ELECTRONIC COMPANY LIMITED YP 2-2 Street, Yen Phong Industrial Park, Tam Da Commune, 222800 Yen Phong City, Bac Ninh Province, VIETNAM

General product information and other remarks:

PS5120E is a Rechargeable Lithium-ion Battery with a nominal voltage of 51,2V and a Rated capacity of 100Ah which is used in energy storage applications.

The battery system consists of 16 Lithium Iron Phosphate cells connected in 16S1P, Cell model No. 50160116-102Ah.

The main features of the battery are shown as below:

Cell and battery	Cell	Rechargeable Lithium-ion Battery
Model Name	50160116-102Ah	PS5120E
Rated capacity (Ah)	102	100
Nominal voltage (V)	3,2	51,2
Standard Charge Current (A)	51	50
Standard Discharge Current (A)	51	50
Maximum continuous charge current (A)	102	80
Maximum continuous discharge current (A)	102	100
Charge temperature Range (°C)	0 to 60	0 to 50
Discharge temperature Range (°C)	-20 to 60	-20 to 55
Standard Charge Voltage (V)	3,65	57,6
Upper limit Charging Voltage (V)	3,65	58,4
End-of-discharge Voltage (V)	2,5V(T>0°C), 2,0V(T≤0°C)	44,8
Weight (Kg)	Approx. 1,95±0,1	Approx. 42,3
Recommend charging method declared bythe manufacturer	Charge the cell at constant current 51A until voltage reaches 3,65V, then charge at constant voltage 3,65V till charge current is 5,1A.	Charge the battery at constant current 50A until voltage reaches 57,6V, then charge at constant voltage 57,6V till charge current is 5A

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... :	Clause 6, Clause 7, 8.1, and 8.2. See also table 5.1 for Critical components information	P
	Reduce the risk of injuries from moving parts		N/A
5.2	**Insulation and wiring**		**P**
	Voltage, current, altitude, and humidity requirements		P
	Adequate clearances and creepage distances between connectors and live parts at different voltages or between live parts and non-current-carrying accessible parts		P
	Protect from hazardous live parts, including during installation		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	Charging instructions included in the product specification.	P
5.5	**Terminal contacts of the battery pack and/or battery system**		**P**
	Polarity marking(s)		P
	Polarity marking not provided for keyed external connector		N/A
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	Independent control and protection method(s)		P
	Recommendations of cell operating limits, mounting advice, storage conditions and other design recommendations by the cell manufacturer		N/A
	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
	Maximum charging/discharging current of the cell are not exceeded		P
5.7	**Operating region of lithium cells and battery systems for safe use**		**P**
	The cell operating region..... :	See page 6	P
	Designation of battery system to comply with the cell operating region		P
5.8	**System lock (or system lock function)**		**P**
	Non-resettable function to stop battery operation		P
	Manual with procedure for resetting of battery operation		P
	Emergency battery final discharge		N/A
5.9	**Quality plan**		**P**
	Manufacturing quality plan (for example: ISO9001, etc.) prepared and implemented..... :	ISO9001 provided.	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 IEC 62619)		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

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Clause	Requirement + Test	Result - Remark	Verdict
	The cells or batteries charged using the method specified by the manufacturer ..... :	50A CC charge to 57,6V, then CV charge till charge current current decline to ≤5A	P
7.2	**Reasonably foreseeable misuse**		**P**
7.2.1	External short-circuit test (cell or cell block)		N/A
	Short circuit with total resistance of 30 mΩ ± 10 mΩ at 25 °C ± 5 °C		N/A
	Results: no fire, no explosion		N/A
7.2.2	Impact test (cell or cell block)		N/A
	Cylindrical cell, longitudinal axis impact		N/A
	Prismatic cell, longitudinal axis and lateral axis impact		N/A
	Results: no fire, no explosion.		N/A
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)		N/A
	Description of the Test Unit ..... :		—
	Mass of the test unit (kg) ..... :		—
	Height of drop (m) ..... :		—
	Results: no fire, no explosion		N/A
7.2.3.3	Edge and corner drop test (cell or cell block, and battery system)		P
	Description of the Test Unit ..... :	Battery pack	—
	Mass of the test unit (kg) ..... :	42,28	—
	Height of drop (m) ..... :	0,1	—
	Results: no fire, no explosion		P
7.2.4	Thermal abuse test (cell or cell block)		N/A
	Results: no fire, no explosion		N/A
7.2.5	Overcharge test (cell or cell block)		N/A
	For those battery systems that are provided with only a single protection for the charging voltage control		—
	Results: no fire, no explosion ..... :		N/A
7.2.6	Forced discharge test (cell or cell block)		N/A
	Cells connected in series in the battery system ..... :		N/A
	Redundant or single protection for discharge voltage control provided in battery system ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Target Voltage ..... :		N/A
	Maximum discharge current of the cell, Im..... :		N/A
	Discharge current for forced discharge, 1.0 It ..... :		N/A
	Discharging time, t = (1 It / Im) x 90 (min.) ..... :		N/A
	Results: no fire, no explosion ..... :		N/A
7.3	**Considerations for internal short-circuit – Design evaluation**		P
7.3.1	General		P
7.3.2	Internal short-circuit test (cell)	Refer to CB test report No.: CN23EJGY 001 dated 2023-09-19	N/A
	Samples preparation procedure: In accordance with Clause A.5 and A.6 of IEC 62133-2:2017		N/A
	Tested per 7.3.2 b) 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..... :	See Table 7.3.2.	N/A
7.3.3	Propagation test (battery system)	Cell level according to 7.3.2 internal short-circuit test	N/A
	Method to create a thermal runaway in one cell ... :		N/A
	Results: No external fire from the battery system, no battery case rupture ..... :	See Table 7.3.3.	N/A

8	**BATTERY SYSTEM SAFETY (CONSIDERING FUNCTIONAL SAFETY)**		P
8.1	**General requirements**		P
	Functional safety analysis for critical controls	Analysis for functional safety according to Annex H of IEC 60730-1:2020.	P
	Conduct of a process hazard analysis for both the cell manufacturing process and the battery system manufacturing process		P
	Conduct of risk assessment and mitigation of the battery system		P
8.2	**Battery management system (or battery management unit)**		**P**

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Clause	Requirement + Test	Result - Remark	Verdict
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) ..... :		N/A
	Results: no fire, no explosion ..... :	See Table 8.2.2.	P
	The BMS terminated the charging before exceeding the upper limit charging voltage		P
8.2.3	Overcharge control of current (battery system)		P
	Results: no fire, no explosion ..... :	See Table 8.2.3	P
	The BMS detected the overcharging current and controlled the charging to a level below the maximum charging current		P
8.2.4	Overheating control (battery system)		P
	The cooling system, if provided, was disconnected	No cooling system	N/A
	Elevated temperature for charging, 5 °C above maximum operating temperature ..... :	55°C	P
	Results: no fire, no explosion ..... :	See Table 8.2.5	P
	The BMS detected the overheat temperature and terminated charging		P
	The battery system operated as designed during test		P

9	**EMC**		P
	Battery system fulfil EMC requirements of the end-device application ..... :	Refer to Shenzhen LGT Test Service Co., Ltd. EMC report No. LGT26F098EM01 dated Jun. 16, 2026	P

10	**INFORMATION FOR SAFETY**		P
	The cell manufacturer provides information about current, voltage and temperature limits of their products		P
	The battery system manufacturer provides information regarding how to mitigate hazards to equipment manufacturers or end-users.		P

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Clause	Requirement + Test	Result - Remark	Verdict
11	**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.		P
	Cell or battery system has clear and durable markings		P
	Cell designation		N/A
	Battery designation	See marking.	P
	Battery structure formulation		P
12	**PACKAGING AND TRANSPORT**		P
	Refer to Annex D		P
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 BY LASER IRRADIATION**		N/A
B.1	**General**		N/A
B.2	**Test conditions**		N/A
B.2.1	Cell test (preliminary test)		N/A
	The cell fully charged according to the manufacturer recommended conditions ..... :		—
	Laser irradiation point on the cell ..... :		—
	Output power of laser irradiation..... :		—
	Tested in an ambient temperature of 25 °C ± 5 °C		N/A
	Repeat of cell test for 3 times		N/A
B.2.2	Battery system test (main test)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The battery system fully charged according to the manufacturer recommended conditions ..... :		—
	Target cell to be laser irradiated ..... :		—
	The irradiation point on the target cell same or similar as that on the cell test		
	Output power of laser irradiation..... :		—
	Tested in an ambient temperature of 25 °C ± 5 °C		N/A
ANNEX C	**PROCEDURE OF 7.3.3 PROPAGATION TEST BY METHODS OTHER THAN LASER**		N/A
C.1	General		N/A
C.2	Test conditions:		N/A
	– The battery fully charged according to the manufacturer recommended conditions ..... :		—
	– 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..... :		—
C.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..... :		—
ANNEX D	**PACKAGING AND TRANSPORT**		P
	The materials and pack design chosen in a way as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants		P
	Regulations concerning international transport of secondary lithium batteries		P

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	Newcell Technology Limited	50160116-102Ah	3,2V, 102Ah	IEC 62619:2022	CB Ref. Certif. No.: JPTUV-152469
Key components for Battery					
Metal Enclosure	Guangzhou Shida Life Technology Co., Ltd	3U chassis	SPCC, Min. thickness: 1.2mm	--	Tested with appliance
Charging and discharging connector	Shenzhen GU Precision Industry Co Ltd	P057C025AK / P057C025BK	1500Vdc, 125A	UL 4128	UL E527779
Plastics for signal connector (485AA/CAN1, 485B-1, 485B-2)	DONGGUAN CITY FENG TONG PLASTIC CO LTD	FT-PA6 301	PA6, V-0, 65°C, Min. thickness: 1.6mm	UL 94 UL 746	UL E352852
Internal wiring	Dongguan Honglin Electronics Ltd	1015	16AWG, 105°C, 600Vac	UL 758	UL E529899
- Alt. Internal wiring	Interchangeable	Interchangeable	16AWG, 105°C, 600Vac	UL 758	UL Approved
Signal wire	SHENZHEN CITY DE XING LONG ELECTRIC CO LTD	1430	22AWG, 105°C, 300Vac	UL 758	UL E328945
- Alt. Signal wire	Interchangeable	Interchangeable	22AWG, 105°C, 300Vac	UL 758	UL Approved
Earth wire	XINYA ELECTRONIC CO LTD	1007	16AWG, 80°C, 300Vac	UL 758	UL E170689
- Alt. Earth wire	Interchangeable	Interchangeable	16AWG, 80°C, 300Vac	UL 758	UL Approved
Battery management system (BMS)	Shenzhen Pace Electronics Co.,Ltd	P16S100A-FJ21743-20A-I0B	Software version: P16S100A-0A480-2.24 Hardware version: SST19-247-3.0	--	Tested with appliance
PCB	KINGBOARD LAMINATES HOLDINGS LTD	KB-6165F	V-0, 130°C, Min thickness: 2.0mm	UL 94 UL 796	UL E123995
- Alt. PCB	Interchangeable	Interchangeable	V-0, 130°C, Min thickness: 2.0mm	UL 94 UL 796	UL Approved

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

Epoxy board	Shenzhenshi Xinjieshi Technology Co Ltd	DVD-66	FR-4.0, V-0, 130°C, Min thickness: 0.63mm	UL 94 UL 746	UL E509723
Switch	LIGHT COUNTRY CO LTD	R19A	250V, 6A	UL 61058-1	UL E104190
- Control IC (UM1)	ST Microelectronics	STM32F072VB	Operating Voltage: 2.0V to 3.6V, T_A: -40°C to 105°C	--	Tested with appliance
- IC (U7)	Nuvoton Technology Corporation Japan.	KA49503A	V_{BAT}: 12.5V to 85V, T_A: -40°C to 105°C	--	Tested with appliance
- MOSFET (QP1, QP2, QP3, QP4, QP5, QP6, QP9, QP10, QP11, QP12, QP13, QP14, QP15, QP16, QP17, QP18, QP19, QP20, QP21, QP22, QP23, QP24)	MagnaChip Semiconductor Ltd.	MDE10N026RH	V_{DSS}: 100V, V_{GSS}: ±20V, I_D: 120A (T_C=25°C), T_J, T_{STG}: -55°C to 175°C	--	Tested with appliance
- Current sensing resistor (RS1, RS3, RS5, RS7, RS9, RS12, RS14, RS16, RS18, RS20)	TA-I TECHNOLOGY CO., LTD	RLP25FEGMR002	3W, 2mΩ±1%	--	Tested with appliance
- MOSFET (QC1, QC2, QC3, QC4)	China Resources Microelectronics (Chongqing) Limited	CRSS057N10N	V_{DS}: 100V, V_{GS}: ±20V, I_D: 120A (T_C=25°C), T_J, T_{STG}: -55°C to 150°C	--	Tested with appliance
Supplementary information: [1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.1	TABLE: External short-circuit test (cell or cell block)				N/A
Sample No.	**Ambient (at 25°C ± 5°C)**	**OCV at start of test (V dc)**	**Resistance of Circuit (mΩ)**	**Maximum Case Temperature Rise ΔT (°C)**	**Results**
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--

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)					N/A
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**
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--

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): _____

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.6	TABLE: Forced discharge test (cell or cell block)				N/A
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**
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--	--	--	--	--	--
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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**
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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): __

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

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**
--	--	--	--	--	--
--	--	--	--	--	--
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Method of cell failure [1)]	**Location of target cell**	**Area for fire protection (m^2)**
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--	--	--
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Supplementary information:

1) Cell can be failed through laser exposure, 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): __

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

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**
DUT 1	2,966~2,992	80	57,75	3,613	A, D, F

	Charge Voltage Applied Battery System: 1)	
	Whole	**Part**
	64,24V	--

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): ___

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

8.2.3	TABLE: Overcharge control of current (battery system)			P
Sample No.	**OCV at start of test, (V dc)**	**Max. Charging Current, (A)**	**Max. Charging Voltage, (V dc)**	**Results**
DUT 1	47,66	96	50,39	A, D, F

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**	**Measured Maximum Charging Voltage, V dc**	
DUT 1	52,69	80	57,74	
Maximum Specified Temperature of Battery System, °C		**Maximum Measured Cell Case Temperature, °C**	**Results**	
50,0		57,3	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): ____

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

9	TABLE: EMC				N/A
Standard used for EMC test:					
Sample No.	**EMC Test Item**	**Battery Condition**	**EMC Test Level/ Parameters**	**Compliance Criteria**	**Results**
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Supplementary information:

Battery Condition During EMC test

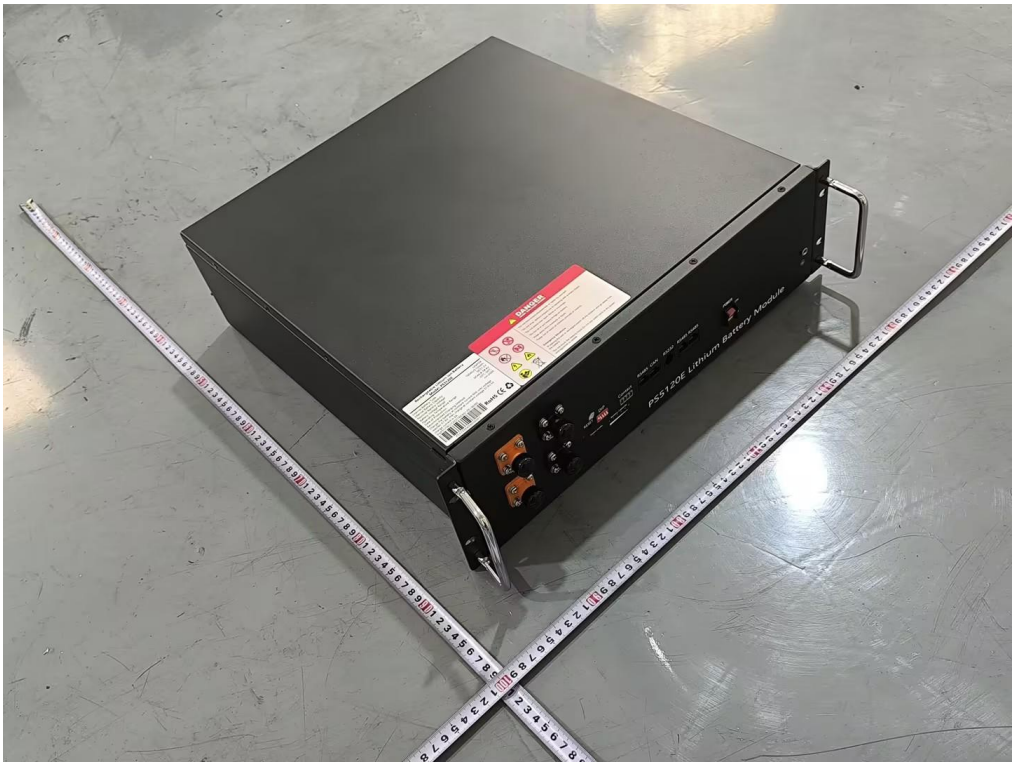
1 – In Operation Mode, [ ] Supplied at ____, [ ] Load at____

2 – In non-operation Mode, Battery state of charge (SOC) before test at around____

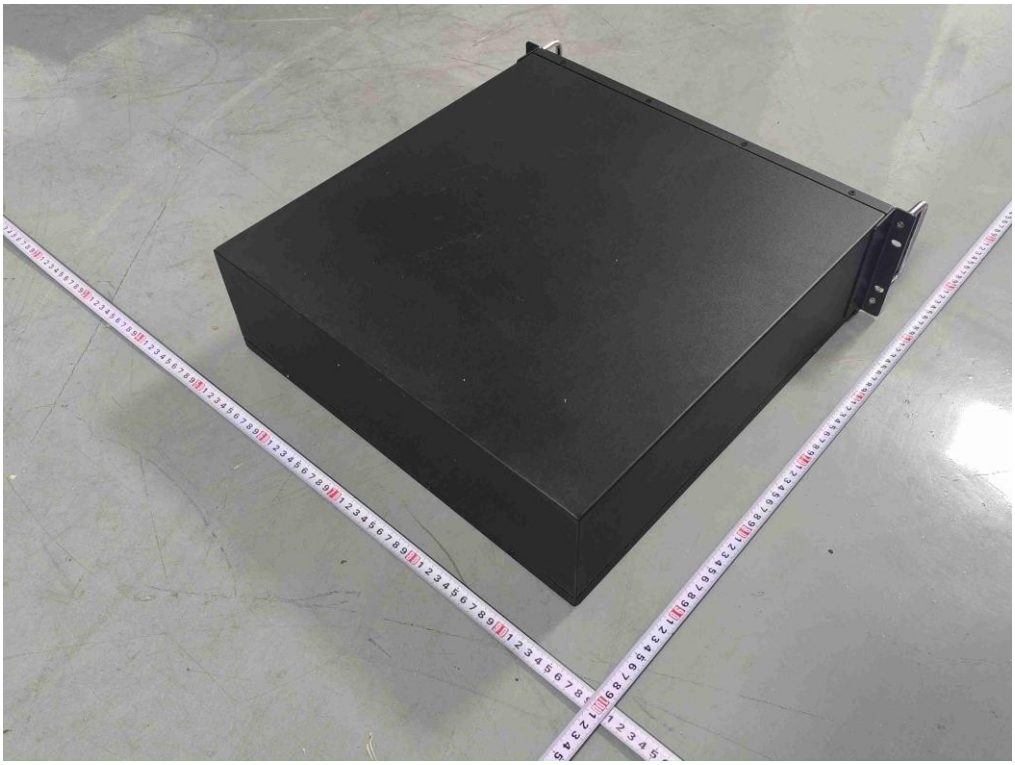
Compliance Criteria and Test Results:
A – No fire or Explosion
B – Fire
C – Explosion
D – Battery system did operate as intended during the test.
E - All function of battery system did operate as intended after the test.
F - All function of battery system did not operate as intended during the test, (Please explain): ____
G - Other (Please explain): ____

Attachment 1 (Pictures for product)

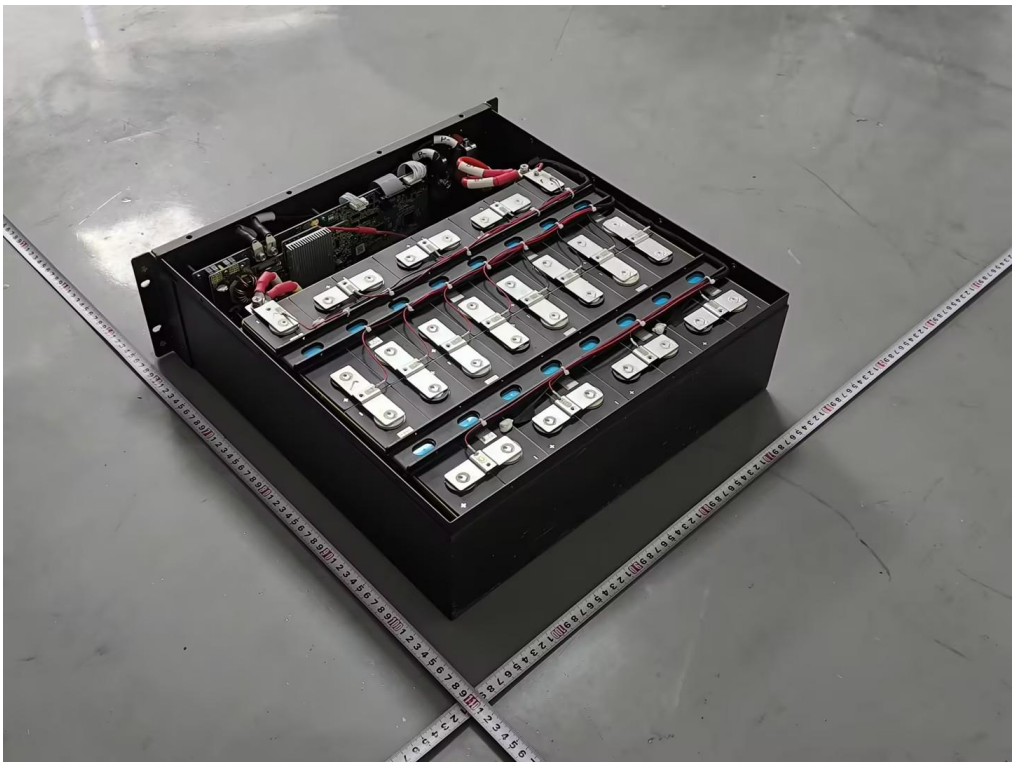
Picture for product



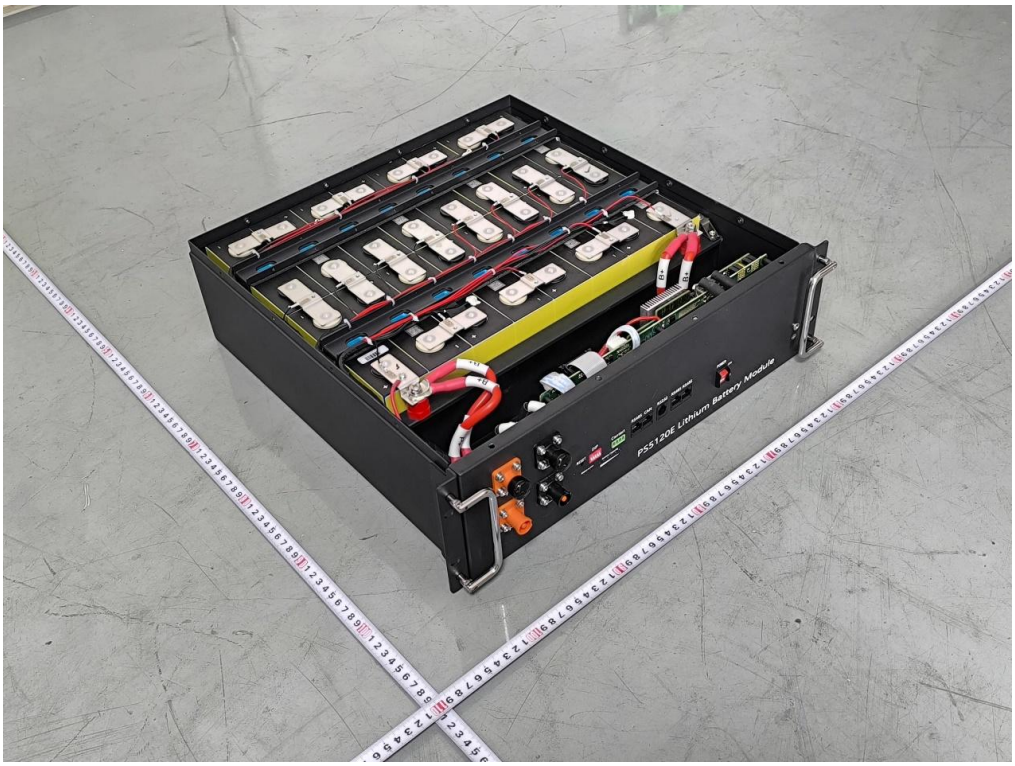
Picture for product



Internal of Picture



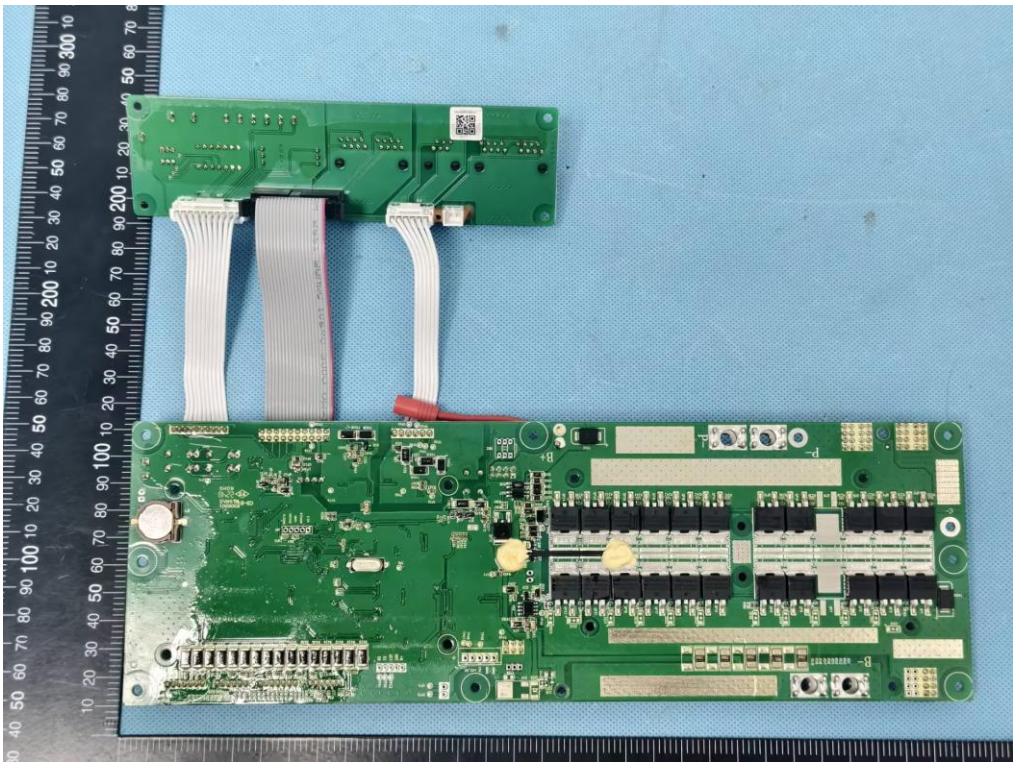
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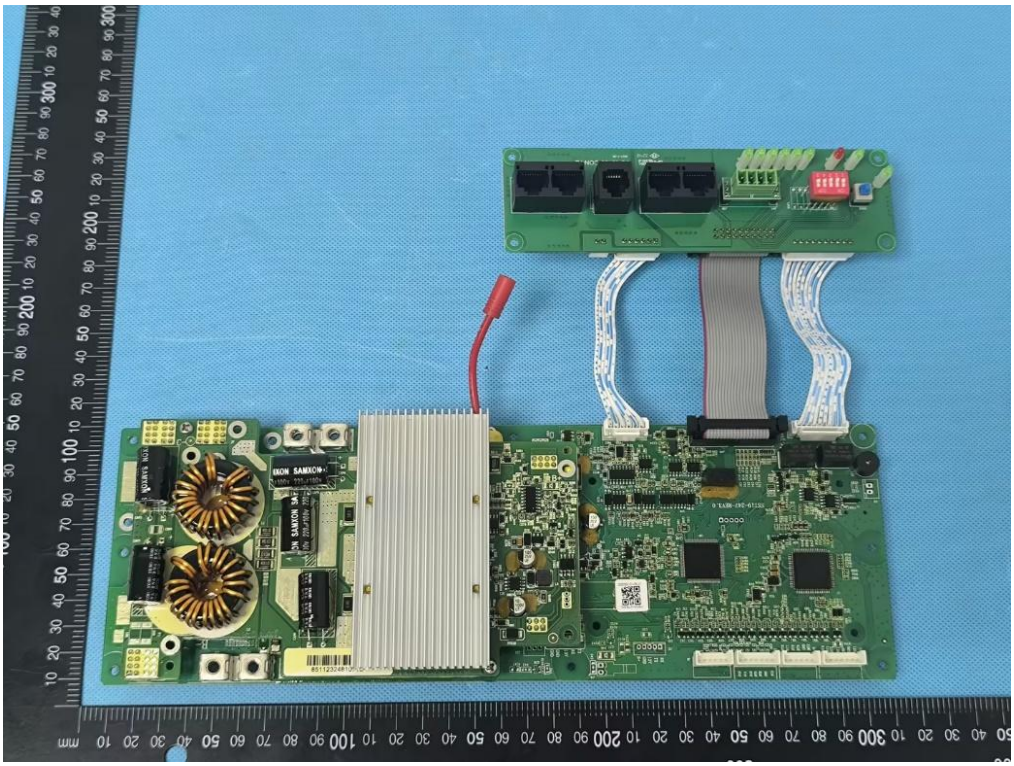
Picture for BMS board



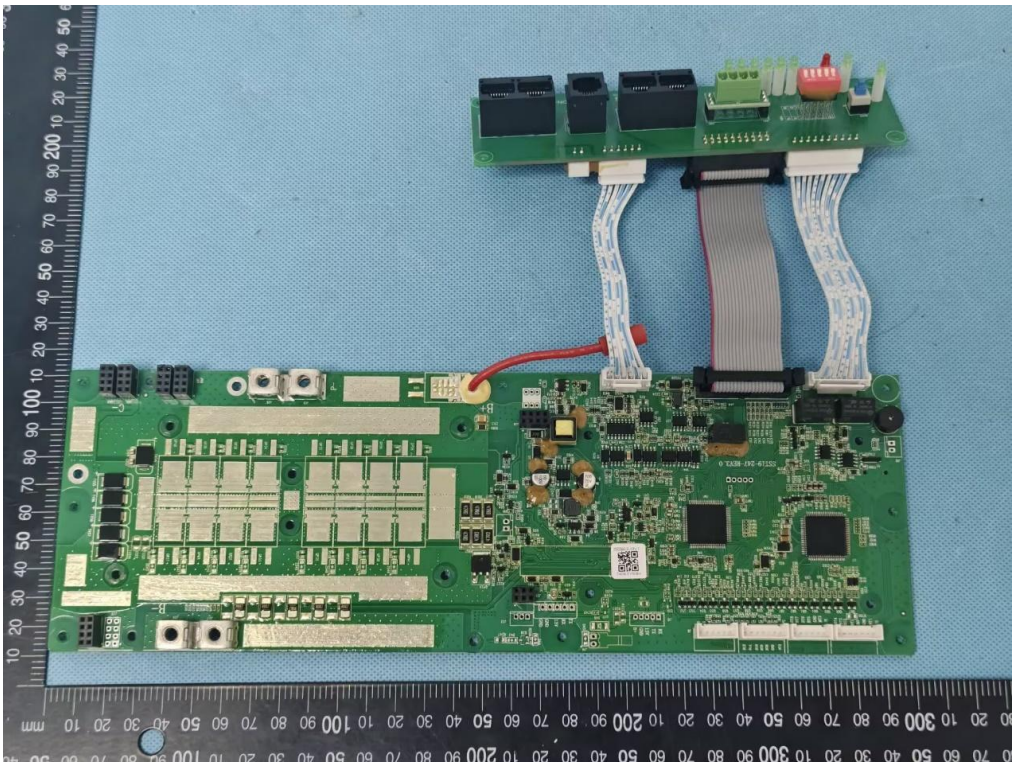
Picture for BMS board



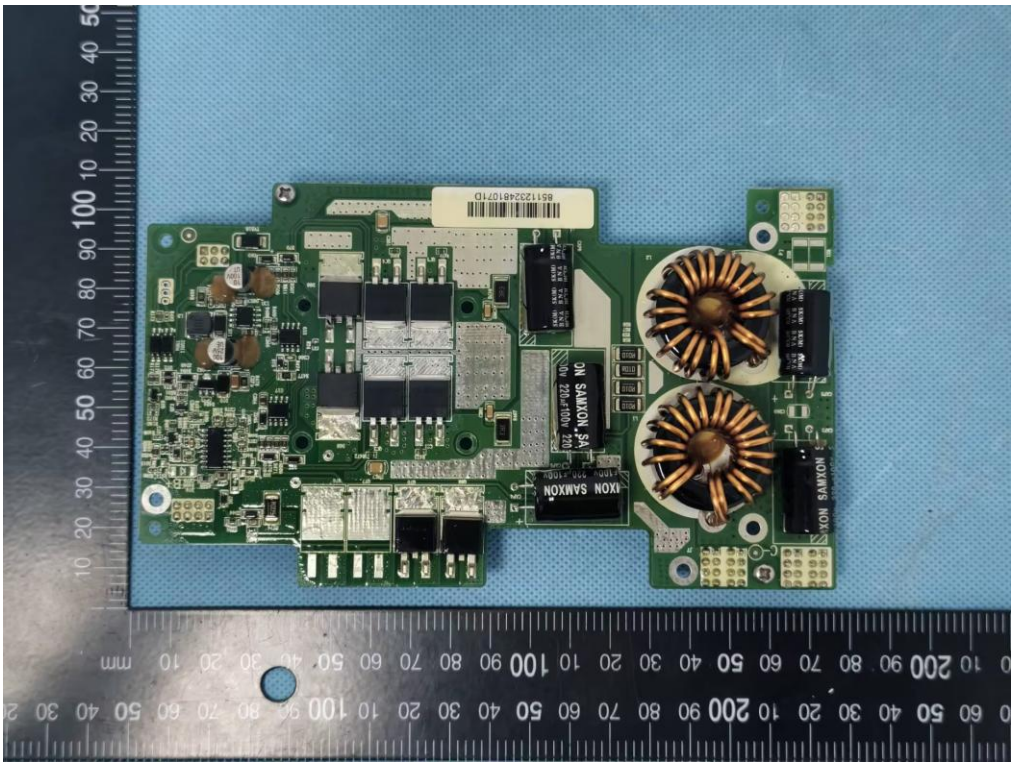
Picture for BMS board



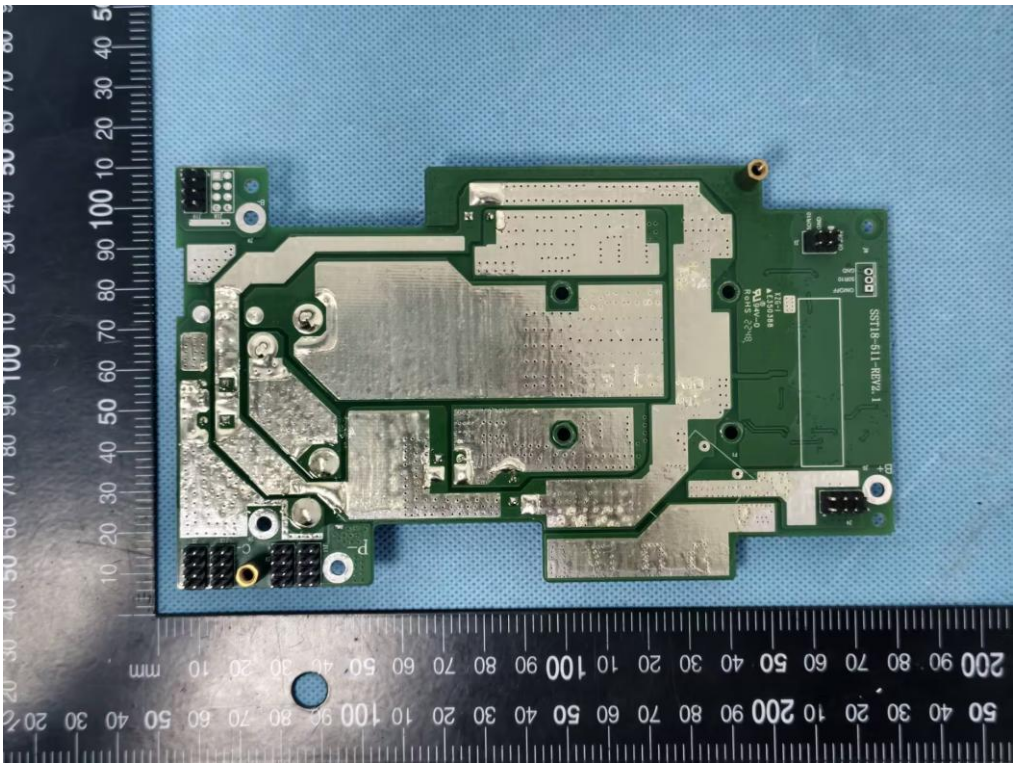
Picture for BMS board



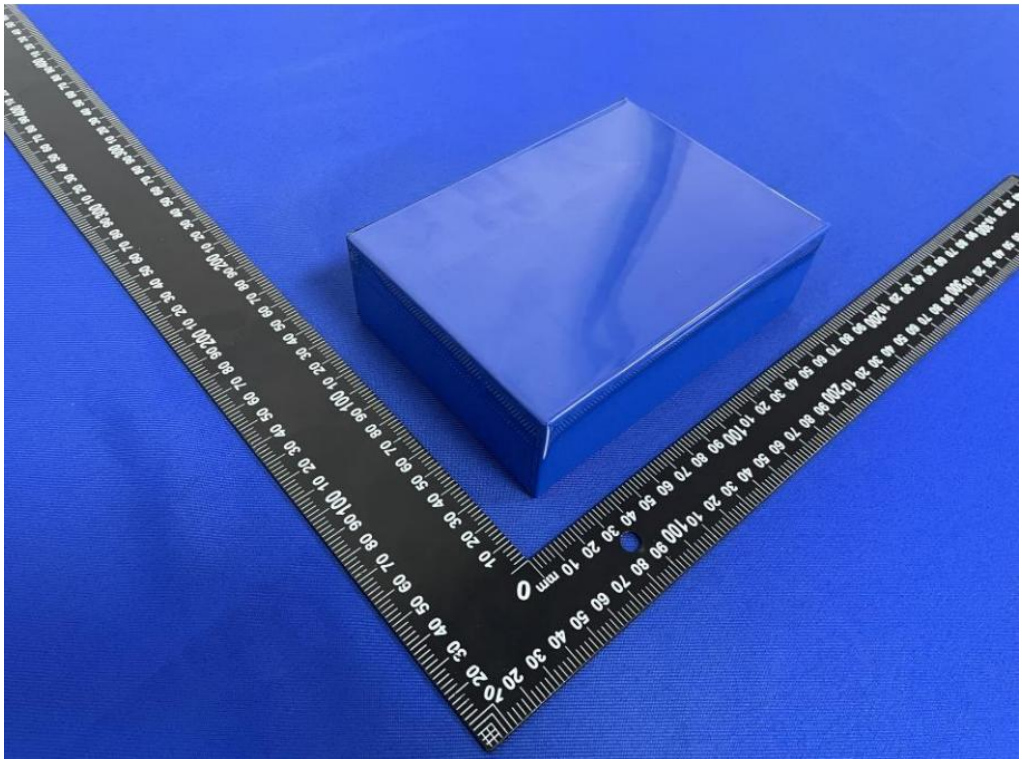
Picture for BMS board



Picture for BMS board



Picture of Cell



Picture of Cell

