

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..... : CMC260422001

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Applicant's name : **Shenzhen Enershare Tech Company Limited**

Address..... : 1603 Huitong Building, No.10 Longgang Road, Pingnan Community, Longgang Street, Longgang District, Shenzhen, Guangdong Province, China

Manufacturer's name..... : **Shenzhen Enershare Company Limited**

Address..... : A502 Julong Factory, No.24 Cuibao Road, Baolong Community, Baolong Street, Longgang District, Shenzhen, Guangdong Province, Guangdong Province, China

Test specification:

Standard : IEC 62619: 2022

Test procedure..... : Type approved

Non-standard test method : N/A

Test result..... : Pass

Test item description..... : Lithium-ion battery

Trade Mark..... : N/A

Model/Type reference..... : Active16Pro

Ratings..... : 51.2V, 314Ah, 16076.8Wh

General disclaimer:

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 CMC. The authenticity of this Test Report and its contents can be verified by contacting the CMC, responsible for this Test Report.

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

Attachment 1: Photo documentation (4 pages).

Summary of testing:

Tests performed (name of test clause and test performed):

cl.7.2.3 Drop test (battery system)
cl.8.2.2 Overcharge control of voltage (battery system);
cl.8.2.3 Overcharge control of current (battery system);
cl.8.2.4 Overheating control (battery system)

The component cell (PF173-314A) was evaluated according to IEC 62619-2022 by CB Certif. No.: JPTUV-156588-A1/M1

Tests are made with the number of batteries specified in IEC 62619: 2022.

Testing location:

CMC Testing International (Shenzhen) Co., Ltd.

1-3/F., Building 7, He'er Hongben Industrial Zone, Dawangshan Community, Shajing Subdistrict, Baoan District, Shenzhen, Guangdong, China

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

N/A

☒ The product fulfils the requirements of EN 62619:2022.

Copy of marking plate:

Red: + Black: -

Lithium-ion battery

Active16Pro

51.2V, 314Ah, 16076.8Wh (IFpP/74/176/209/[16S]M/-20+50/95)

Recommend charge method: Charge at constant current 157A until voltage reaches 57.6V, then charge at constant voltage 57.6V till current reduced to 15.7A.

Shenzhen Enershare Company Limited

Date: YYYYMMDD Made in China

Risk of Fire and Burns. Do Not Open, Crush, Heat Above 60°C/140°F or Incinerate. Follow Manufacturer's Instructions.

Remark:

Date code YYYYMMDD

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 IECCE.

IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECCE 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.

Test item particulars..... :
Classification of installation and use : To be defined in final system.
Supply Connection..... : Not directly connected mains.
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..... : 2026-05-14
Date (s) of performance of tests..... : 2026-05-19 to 2026-05-27
Test Environment Condition : Ambient temperature: 22.2°C~23.9°C
Sample No. : SN260422001B001
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. "(CXXX)" refers to sample number of cells, "X" is 0~9; "(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.
Name and address of factory (ies) : Same as manufacturer

General product information and other remarks:

The product for Active16Pro is Lithium-ion battery with a nominal voltage of 51.2V which is used in energy storage applications.

The battery consists of 16 pcs Lithium Iron Phosphate cells connected in a 16S formation.

The main features of the battery are shown as below:

Product name	Component Cell used inside	Lithium-ion battery
Model Designation	PF173-314A	Active16 Pro
Rated capacity (Ah)	314	314
Nominal voltage (V)	3.2	51.2
Nominal Charging Current (A)	157	157
Maximum Charging Current (A)	402	200
Nominal Discharge Current (A)	157	157
Maximum Discharging Current (A)	402	250
Charge temperature Range (°C)	0~60	0~55
Discharge temperature Range (°C)	-30~60	-20~60
Recommend Charge voltage(V)	3.65	57.6
Maximum charge voltage(V)	3.65	57.6
Upper limit Charging Voltage (V)	3.8	--
End of discharge voltage (V)	2.5	43.2
Weight (Kg)	5.7±0.3	117.3
Battery configuration		
Cell in connection	16S	
Recommend charging method declared by the manufacturer-Battery system	Charge at constant current 157A until voltage reaches 57.6V, then charge at constant voltage 57.6V till current reduced to 15.7A.	
Recommend discharging method declared by the manufacturer-Battery system	Discharge at constant current 157A until voltage reaches 43.2V	

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
	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	See above	P
	Specifications and charging instructions for equipment manufacturers	The charging limits specified in the manufacturer's specification.	P
5.5	Terminal contacts of the battery pack and/or battery system		P
	Polarity marking(s)	Battery surface marking "+" "-"	P
	Capability to carry the maximum anticipated current		P
	External terminal contact surfaces	See above	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, mounting advice, storage conditions and other design recommendations by the cell manufacturer		P
	Batteries designed for the selective discharge of a portion of their series connected cells	No such design.	N/A

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	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		P
	Designation of battery system to comply with the cell operating region	Information mentioned in manufacturer's specifications	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	No such design.	N/A
5.9	Quality plan		P
	Manufacturing quality plan (for example: ISO9001, etc.) prepared and implemented	Complied. Quality control plan 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 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	Used CB Approved Cell	P
7.2	Reasonably foreseeable misuse		N/A
7.2.1	External short-circuit test (cell or cell block)	Used CB Approved Cell	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)	Used CB Approved Cell	N/A
	Cylindrical cell, longitudinal axis impact		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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 system	—
	Mass of the test unit (kg)	117.3kg	—
	Height of drop (m)	0.025m	—
	Results: no fire, no explosion		P
7.2.4	Thermal abuse test (cell or cell block)	Used CB Approved Cell	N/A
	Results: no fire, no explosion		N/A
7.2.5	Overcharge test (cell or cell block)	Used CB Approved Cell	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)	Used CB Approved Cell	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
	Target Voltage		-
	Maximum discharge current of the cell, I_m		-
	Discharge current for forced discharge, 1.0 I_t		-
	Discharging time, $t = (1 I_t / I_m) \times 90$ (min.)		-
	Results: no fire, no explosion		N/A
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)	Used CB Approved Cell	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 $25^\circ\text{C} \pm 5^\circ\text{C}$.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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 ... :	Alternate, 7.3.2 for cell have tested.	N/A
	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		N/A
	Conduct of a process hazard analysis for both the cell manufacturing process and the battery system manufacturing process		N/A
	Conduct of risk assessment and mitigation of the battery system		N/A
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		N/A
	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		N/A
	Elevated temperature for charging, 5 °C above maximum operating temperature		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: no fire, no explosion	See Table 8.2.4.	P
	The BMS detected the overheat temperature and terminated charging		P
	The battery system operated as designed during test	Complied.	P

9	EMC		N/A
	Battery system fulfil EMC requirements of the end-device application		N/A

10	MARKING AND DESIGNATION (REFER TO CLAUSE 5 OF IEC 62620)		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

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	The final product is battery	N/A
	Battery designation	IFpP/74/176/209/[16S]M/-20+50/95	P
	Battery structure formulation	16S	P

12	PACKAGING AND TRANSPORT		N/A
	Refer to Annex D	Informative.	N/A

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

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
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
	The cell fully charged according to the manufacturer recommended conditions		—
	Laser irradiation point on the cell		—
	Output power of laser irradiation		—
	Repeat of cell test for 3 times		N/A
B.2.2	Battery system test (main test)		N/A
	The battery system fully charged according to the manufacturer recommended conditions		N/A
	Target cell to be laser irradiated		—
	The irradiation point on the target cell same or similar as that on the cell test		N/A
	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		N/A
	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		N/A
	Regulations concerning international transport of secondary lithium batteries		N/A

5.1		TABLE: Critical components information				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
Cell	CORNEX NEW ENERGY CO.LTD.	PF173-314A	3.2V,314Ah	IEC 62619:2022	CB Ref.Certif. No.: JPTUV-156588-A1/M1	
Metal enclosure	Guangdong Liyao Industry Co., LTD	L800W360H233	SPCC	--	Tested with appliance	
PCB	Nantong SKG Electronic Technology Co., Ltd	SKG-M	V-0, 130°C	UL 796 UL 94	UL E532336	
IC for AFE(U1)	MPS	MP3716DFP-0001	VDD: -0.3 to 86.5V, Operating temperature: -40°C to 85°C	--	Tested with appliance	
MOSFET for charge (MC01~MC12)	JieJie Microelectronics Co., Ltd.	JMSH1001MTL	VDS: 100 V, VGS: ±20 V, ID: 467 A (TC = 25 °C), RDS:1mW TJ, Tstg: -55 °C to 150 °C	--	Tested with appliance	
Transformer (T1)	Wuxi Guoci Electronic Compinent Manufacturing Co., Ltd	EPC13	N1(1,2): 1P*24Ts 100uH±10%, N2(6, 7): 1P*24Ts, N3(9,10): 1P*36Ts, -40°C to 150°C	--	Tested with appliance	
FUSE (F2)	SHANGHAI FULLNESS ELECTRICAL CO LTD	24F	20A/72V	UL 248-1	UL E485357	
NTC (NTC1,NTC2,N TC3,NTC4)	Guangdong Xinshiheng Technology Co., Ltd	MF52C-103F3435	10KΩ±1%. B=3435K±1%. T:-40°C to 105°C	UL 1434	UL E240991	
Power Line	Dongguan YiAo New Energy Technology Co., Ltd	3512	200°C, 600V	UL 758	UL E348933	

Supplementary information:

¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039.

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: - No fire or Explosion						

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: - No fire or Explosion						

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 I_t , (A)	Total Time for Reversed Charge Application (min)	Results
Supplementary information: - No fire or Explosion					

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:					

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 (m²)		
-		-		-		
Supplementary information:						

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	
SN260422001B001	3.021~3.106	200	58.405	3.652	P	
			Charge Voltage Applied Battery System: 1)			
			Whole		Part	
			66.88		--	
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:						
– No Fire or Explosion						
– The voltage of the measured cells or cell blocks did not exceed the upper limit charging voltage						
– All function of battery system did operate as intended during the test						

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
SN260422001B001	48.364	240	48.927	P
Supplementary information: Results: – No fire or Explosion – Overcurrent sensing function of BMU did operate and then charging stopped – All function of battery system did operate as intended during the test				

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	
SN260422001B001	53.216	200	54.673	
Maximum Specified Temperature of Battery System, °C		Maximum Measured Cell Case Temperature, °C	Results	
55		57.4	--	
Supplementary information:				
– No fire or Explosion				
– Temperature sensing function of BMU did operate and then charging stopped				
– All function of battery system did operate as intended during the test				

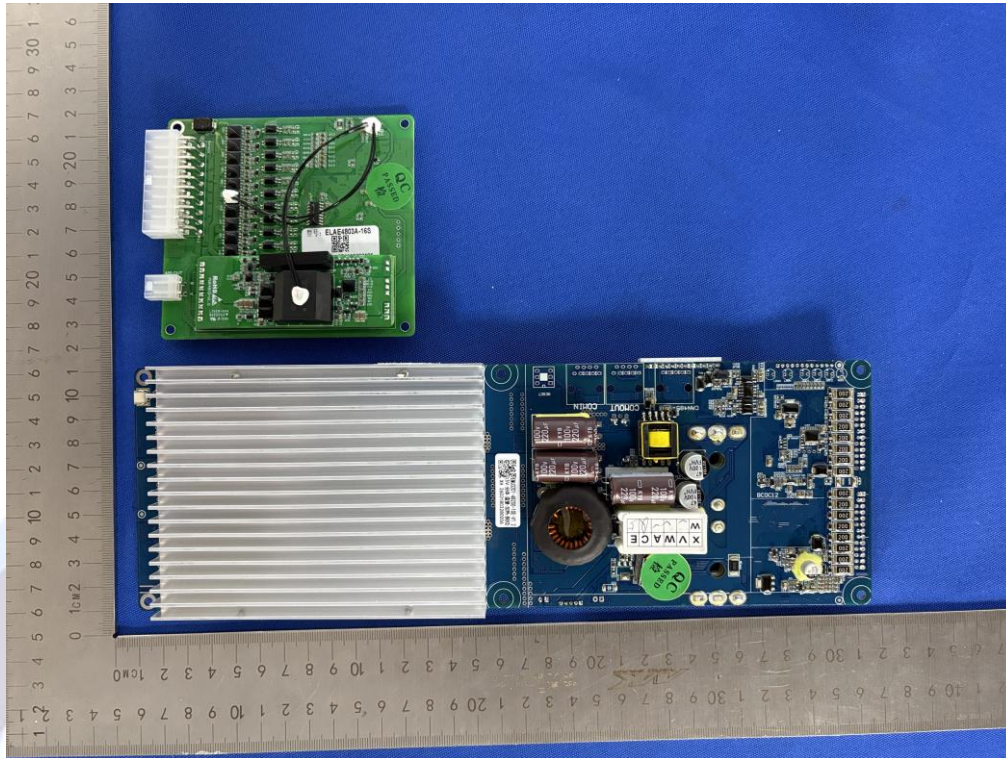
Attachment 1: Photo documentation



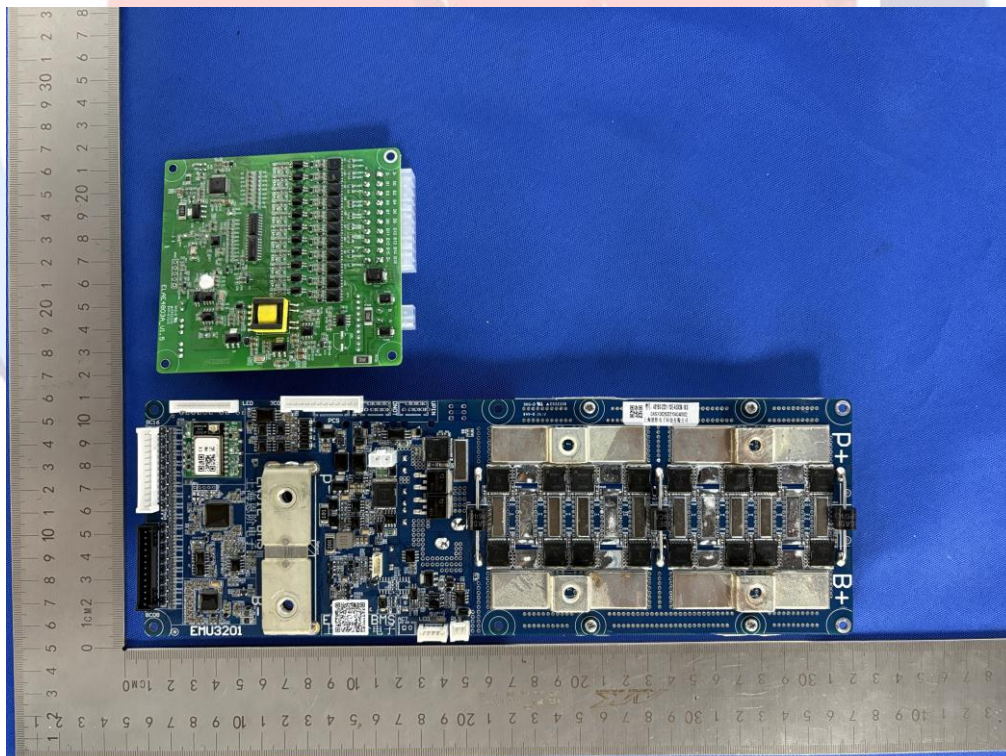
Picture 1. Front view of Battery



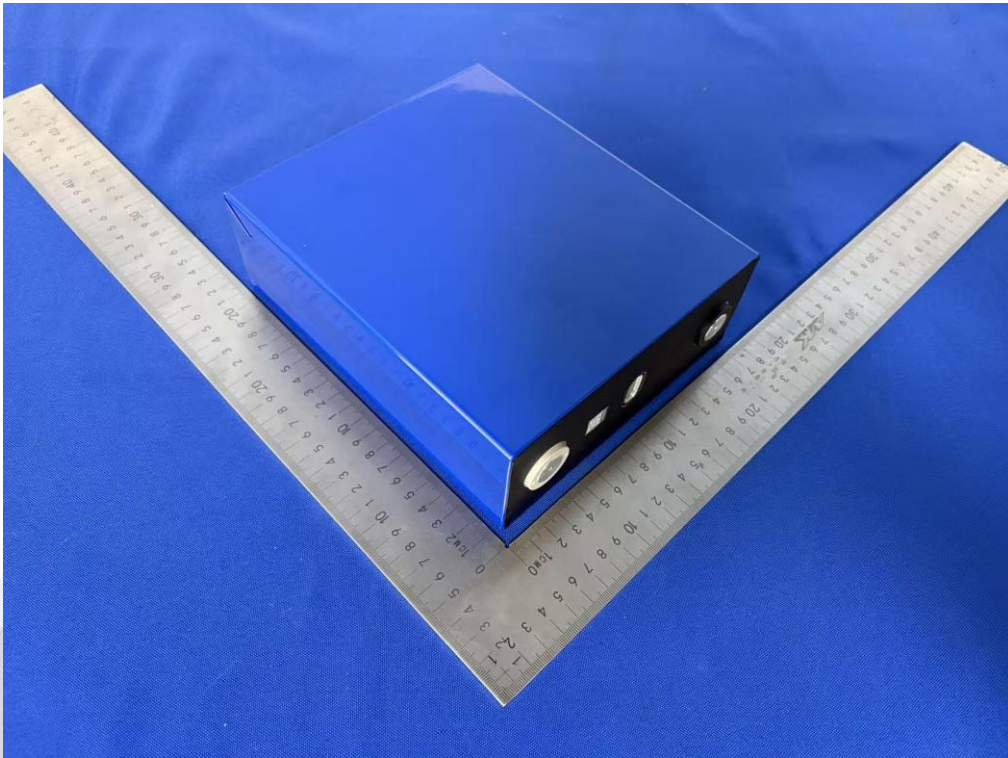
Picture 2. Back view of Battery



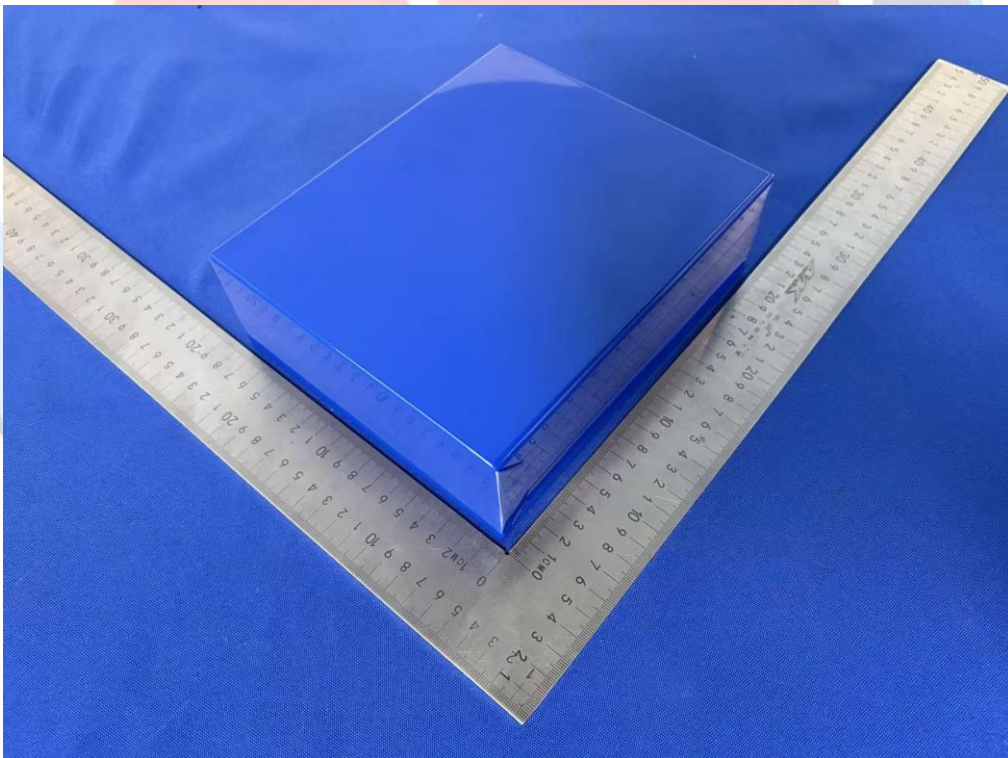
Picture 3. Front view of PCB



Picture 4. Back view of PCB



Picture 5. Front view of Cell



Picture 6. Back view of Cell

Important

1. The test report is invalid if it is not affixed the official seal of the laboratory to it.
2. Copies of the test report without the official seal of the laboratory are invalid.
3. It is forbidden to copy the test report partially without the written approval of the laboratory.
4. The test report is invalid without the signatures of Approver, Reviewer and Testing engineer.
5. The test report is invalid if it is blotted out.
6. Objections to the test report must be submitted to CMC within 15 days.
7. The test report is valid for the tested samples only.
8. As for the Verdict, “-” means “no need for judgement”, “P” means “pass”, “F” means “fail” and “N/A” means “not applicable”.

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-- End of Report --