TEST REPORT

Applicant	:	Guangzhou Felicity Solar Technology Co., Ltd.
Address	:	(Airport Baiyun)No.2, 4, 6, 8, 10, and 12 Donghua Huaye Road, Renhe Town, Baiyun District, Guangzhou, Guangdong, P. R. China
Manufacturer	:	Guangzhou Felicity Solar Technology Co., Ltd.
Address	:	(Airport Baiyun)No.2, 4, 6, 8, 10, and 12 Donghua Huaye Road, Renhe Town, Baiyun District, Guangzhou, Guangdong, P. R. China
Product Name	:	Lithium iron phosphate battery
Trade Mark	:	felicity solar
Model No.	:	FLB48314TG1-H
Ratings	:	See label on page 3
Standard	:	Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for secondary lithium cells and batteries, for use in industrial applications IEC 62619:2022
Date of Receiver	:	May 30, 2025
Date of Test	:	June 02, 2025 to June 17, 2025
Date of Issue		June 30, 2025
Test Report Form No	:	NTCS-IEC 62619-A
Test Result	:	Pass*

This Test Report is Issued Under the Authority of :

Compiled by

Bettine Liao / Engineer

Approved by

Ryan Luo / Manager

*Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of Dongguan Nore Testing Center Co., Ltd. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Revision History of This Test Report

Report Number	Description	Issued Date
NTC2505445SV00	Initial Issue	2025-06-30
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Copy of marking plate:

The artwork below may be only a draft.

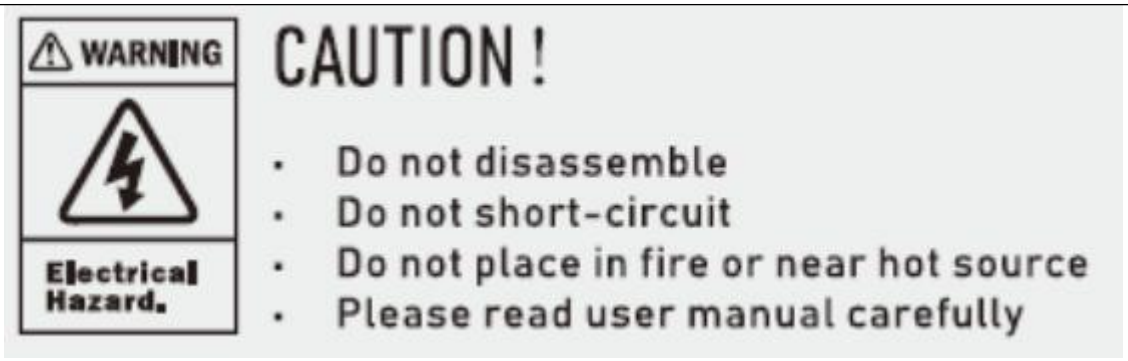
The markings below are indicated on the Battery:

felicitysolar®
Make life full of hope

Lithiumiron phosphate battery(Li-ion)

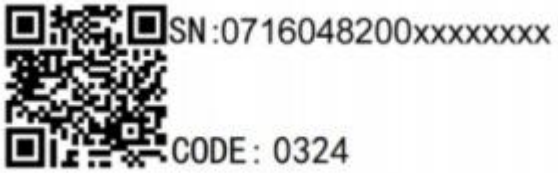
Model	FLB48314TG1-H
Nominal Energy	16kWh
Nominal Voltage	51.2V
Nominal Capacity	314Ah
Maximun Continuous Charge /Discharge Current	160A
IP Rating of Enclosure	IP65
Working Temperature Range	Charge:-20°C~+55°C
	Discharge:-20°C~+55°C
IFpP/74/176/209/[1P16S]M/-20+50/95	

Polarity is marked near connector



Label of Date Code

The production date is reflected in the QR code on the label.



The manufacture date is coding in SN, for example "071604820022110001", the 11th to 14th digit "2211" is abreviation of manufacture date year "2022" and "11th week"

Recommended charge instruction are supplied with specification:

Cycle Life	≥ 8000 Cycles(25℃ ±2℃,0.5C/0.5C,90%DOD,70%EOL)
Warranty Period[2]	10 Years
[1] Max.continuous charge/Discharge current is affected by temperature and SOC.	
[2] Conditions apply, refer to Felicitysolar Warranty policy.	

Setting	FLB48314TG1-H
Max. Charging Voltage	57.6V
Floating Charging Voltage	57.6V
Max. Charging Current	160A*N
Cut-off Voltage	44.8V

Notes:

1. "N" means the number of battery packs connected in parallel.
2. Charging method: Charge at constant current 80A until the voltage reaches 57.6V, then charge at 57.6V til charge current is 5A.

Summary of testing:
Tests performed (name of test, test clause and date test performed): cl.5.2 Insulation and wiring (battery system) cl.7.2.3.3 Edge and corner 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 samples comply with the requirement of IEC62619:2022. The component cell (CB75) was evaluated according to IEC 62619: 2022 by TÜV Rheinland (Shanghai) Co., Ltd. CB Certificate No. JPTUV-154531, report No.: CN23DD2Z 001.
Summary of compliance with National Differences (List of countries addressed): ☒ The product fulfils the requirements of EN IEC 62619:2022.
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.**
Name and address of factory (ies)..... : **Factory:** Guangzhou Felicity Solar Technology Co., Ltd. **Address:** (Airport Baiyun)No.2, 4, 6, 8, 10, and 12 Donghua Huaye Road, Renhe Town, Baiyun District, Guangzhou, Guangdong, P. R. China

General product information and other remarks:

The FLB48314TG1-H is a Lithium iron phosphate battery with a nominal voltage of 51.2V and a nominal capacity of 314Ah which is used in energy storage applications.

According to applicant requirements, only the battery part is tested, and the component cell (CB75) was evaluated according to IEC 62619: 2022by TÜV Rheinland (Shanghai) Co., Ltd. CB Certificate No. JPTUV-154531, report No.: CN23DD2Z 001.

The product has 16 lithium-ion cells in 16S1P connection and battery management system.

Hardware version: -V1.7
Software version: -V201

The electric, electronic and software controls and systems for critical safety were subjected to analysis for functional safety according to IEC 60730-1 Annex H. Redundant protections need to communicate with the end device and relies on the end device to achieve

The main features of the battery are shown as below:

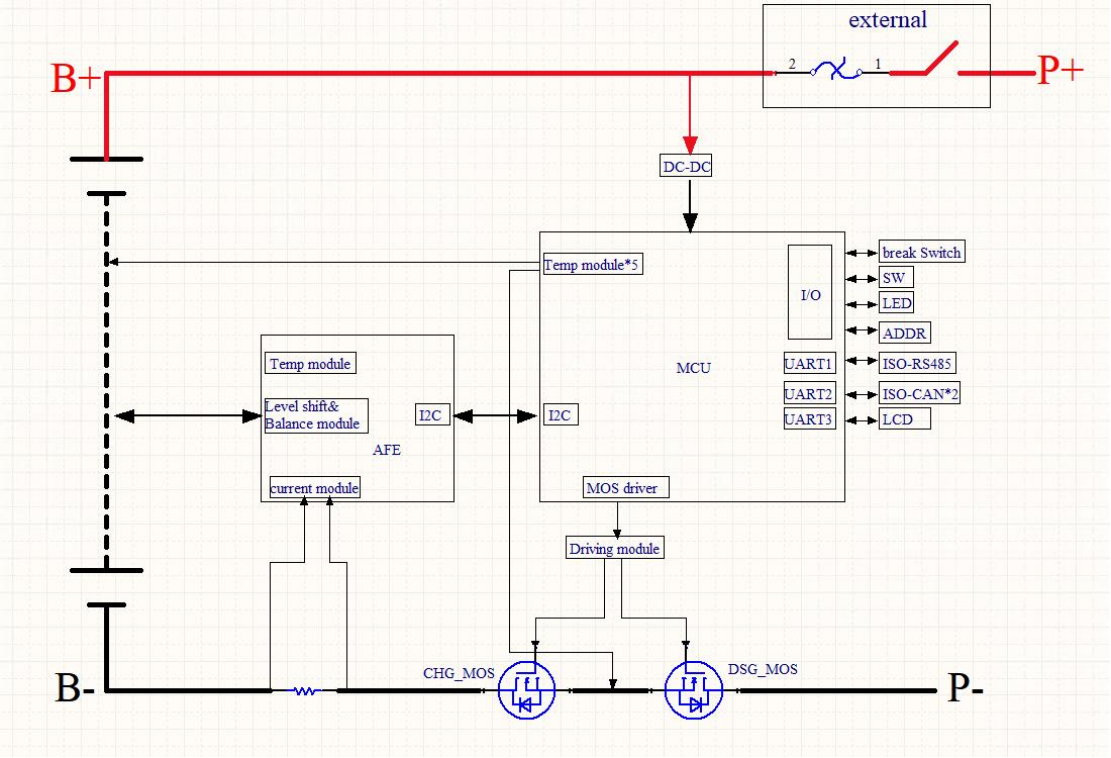
Model Designation	FLB48314TG1
Rated capacity	314Ah
Standard charge current	80A
Maximum charge current	160A
Standard continuous discharge current	80A
Maximum continuous discharge current	160A
Nominal voltage	51.2V
Standard Full Charging Voltage	57.6V
Maximum Charging Voltage	57.6V
Discharge End Point Voltage	48V
Charge temperature range	-20~55°C
Discharge temperature range	-20~55°C
Mass of appliance	121kg
Standard charging mode by manufacturer	Charge the battery at constant current 80A until voltage reaches 57.6V, then charge at constant voltage 57.6V till charge current is 5A

Internal battery operating region:

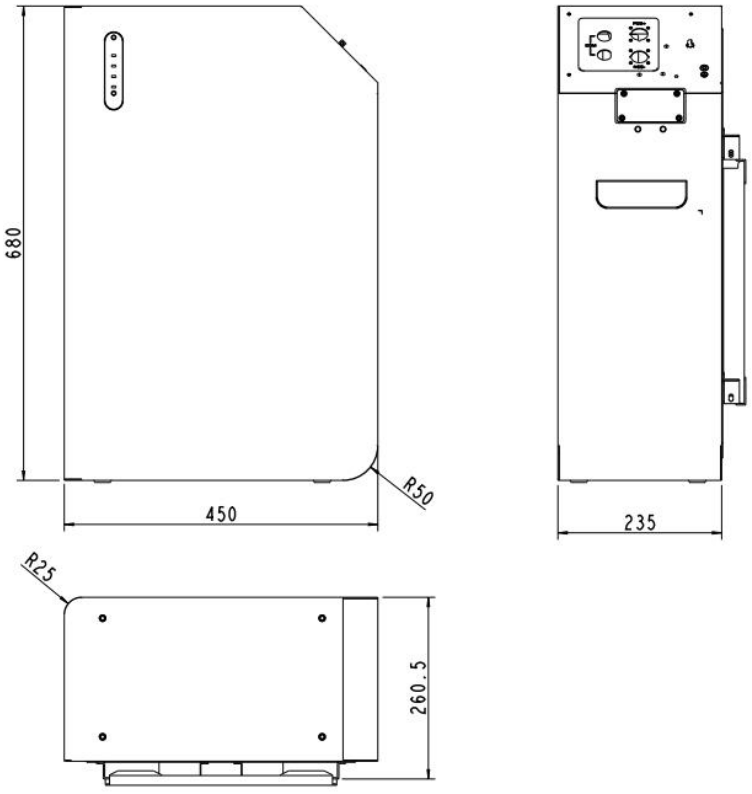
Product name	Rechargeable Prismatic Lithium-ion Cell
Model Designation	CB75
Capacity	314Ah
Nominal voltage	3.2V
Maximum continuous charging current	314A
Maximum continuous discharging current	314A
Standard full Charge Voltage	3.65V
Maximum Charge Voltage	3.65V
End of Discharge Voltage	2.5V (T>0°C); 2V (T≤0°C)

Charging temperature range	-0~60°C
Discharging temperature range	-30~60°C
Cell designation	IFpP/74/176/209/M/-30+60/95

The topology diagram as following:



Dimensions (Unit: mm)



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	The battery system was less than 60 VDC, should be reevaluated in final system.	P
	Protect from hazardous live parts, including during installation		N/A
	The mechanical integrity of internal connections		P
5.3	**Venting**		**P**
	Pressure relief function	Vent design in cell.	P
	Encapsulation used to support cells within an outer casing		P
5.4	**Temperature/voltage/current management**		**P**
	The design prevents abnormal temperature-rise	Overcharge, over discharge, over current and short-circuit proof circuit used in this battery. See tests of clause 7 and 8.	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
	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

IEC 62619			
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		P
	Batteries designed for the selective discharge of a portion of their series connected cells		N/A
	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..... :	Listed in the specification of cell.	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		N/A
5.9	**Quality plan**		**P**
	Manufacturing quality plan (for example: ISO9001, etc.) prepared and implemented..... :	Reference: No.: 2070023Q10167R1M	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	Prior to charging, the cell or battery system shall be discharged in an ambient temperature of 25°C±5°C, at a constant current of 0.2It A, down to a specified final voltage.	P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	The cells or batteries charged using the method specified by the manufacturer.....:	The method mentioned in manufacturer's specifications	P
7.2	**Reasonably foreseeable misuse**		**P**
7.2.1	External short-circuit test (cell or cell block)	CB approved cell used.	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)	CB approved cell used.	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)	Approved cell used. The mass of battery system is more than 20 kg.	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)..... :	121kg	—
	Height of drop (m)..... :	25mm	—
	Results: no fire, no explosion		P
7.2.4	Thermal abuse test (cell or cell block)	CB approved cell used.	N/A
	Results: no fire, no explosion		N/A
7.2.5	Overcharge test (cell or cell block)	CB approved cell used.	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)	CB approved cell used.	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..... :		N/A
	Maximum discharge current of the cell, Im..... :		N/A
	Discharge current for forced discharge, 1.0 It.....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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**		N/A
7.3.1	General	CB approved cell used.	N/A
7.3.2	Internal short-circuit test (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 °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.....:		N/A
7.3.3	Propagation test (battery system)		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.....:		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 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**
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

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	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
	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		P
9	**EMC**		**N/A**
	Battery system fulfil EMC requirements of the end-device application.....:		N/A
10	**INFORMATION FOR SAFETY**		**P**
	The cell manufacturer provides information about current, voltage and temperature limits of their products	CB approved cell used.	N/A
	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.	See page 3	P
	Cell or battery system has clear and durable markings		P
	Cell designation		N/A
	Battery designation	IFpP/74/176/209/[1P16S]M/-20+50/95	P
	Battery structure formulation	16S1P	P
12	**PACKAGING AND TRANSPORT**		**N/A**
	Refer to Annex D		N/A
ANNEX A	**OPERATING REGION OF CELLS FOR SAFE USE**		**P**
A.1	General		P
A.2	Charging conditions for safe use		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
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)		
	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 :		—

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
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

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 conformity1)
Whole unit					
Cell	REPT BATTERO Energy Co., Ltd.	CB75	3.2Vd.c., 314Ah	IEC 62619:2022	JPTUV-154531
Metal Enclosure	DONGGUAN DIYE METAL MANUFACTURING CO.,LTD	Iron Shell	Sheet Metal, min. 1.5mm thick.	IEC 62619:2022	Tested with appliance
Plastic Enclosure	SABIC JAPAN L L C	EXL9134	2.3mm V-0 Rti Elec =125°C Rti Lmp =110°C Rti Str=120°C	UL 94 UL746	UL E207780
Breaker	ProJoy Electric Co., Ltd.	PEBS-L-125	Rated voltage: 48V~60V DC, 2P+MXOF Rated current: 125A	EN/IEC 61947-2	TUV R 50426350
Battery Fuse	ADLER Elektrotechnik Leipzig Gmbh	AEY3250900	70VDC,250A	ISO 20934:2019	TUV RH certificate No.: J 50551893
Battery Thermistor	THINKING ELECTRONIC INDUSTRIAL CO LTD	NTS(Q)153	15KΩ -40 ~+105	UL 1434	UL E138827
Battery connection terminal	SHENZHEN TENGDAXING TECHNOLOGY CO.,LTD	RCL04X-200-S8	1500V DC,250A	PPP 51090B:2023	TUV Z2 117781 0004
Battery wire	DONGGUAN WENCHANG ELECTRONIC CO LTD	1015	4AWG, 105°C, 600Vac	UL 758	UL E214500
Internal line	DONGGUAN ZELONGKANG WIRE CO.,LTD.	2651	105V,28AWG , 80℃,VW-1	UL 758	E330488
Mylar sheet	MOKA-SHI, TOCHIGI-KEN 321-4392 Japan	FR7600	UL94-V0 , 130°C , 0.51mm	UL 94 UL 746	UL E207780
Heat shrink able tube	SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD	RSFR-H	600V, 125°C, VW-1	UL 224	UL E203950
Main Board 118-200213-00G BMS-16S200A-STD-V1.6-A0					
PCB	HUIZHOU GLORYSKY	GS-M	V-0, 130ºC	UL 94 UL 796	UL E257384

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

	ELECTRONICS CO LTD				
Fuse (F3, F4)	Dongguan city Chengrun Electronic Technology Co., Ltd.	SET	T2A, 250Vac	UL 248-1/-14	VDE 40038565 UL E358589
Relay (JK1)	Xiamen Hongfa Electoacoustic Co.,Ltd.	HF158F-V/12-H-S2	12VDC,500V DC,16A,-40°C ~ 85°C	UL 60947-1 UL 60947-4-1	UL E134517
Relay (JK2)	Xiamen Hongfa Electroacoustics Co., Ltd.	HF32FA	5A 250VAC/ 85°C	UL 60335-1 EN 61810-1	UL E134517 VDE 40006182
Thermistor	Xiamen Hongfa Electoacoustic Co.,Ltd.	MF52D 473F395028Z0090	Zero Power Resistance at 25°Cis 47KΩ -40°C~150°C	EN 60539-1	TUV R 50245892
MOSFET (Q17, Q31, Q32, Q34, Q35, Q36, Q37, Q38, Q39, Q40, Q41, Q42, Q43, Q44, Q45, Q46, Q47, Q48, Q49, Q50, Q51, Q52, Q53, Q54, Q55, Q56, Q57, Q58, Q59, Q60, Q61, Q62, Q63, Q64, Q65, Q83, Q84, Q85, Q86, Q87, Q88, Q89, Q90, Q91, Q92, Q93, Q94, Q95)	Wuxi NCE Power Co.,Ltd	NCEP039N10D	VDS =100V, ID =135A RDS(ON)=3.65mΩ , VGS=10V TJ,TSTG-55 To 175°C	IEC 62619	Tested with appliance
Power module(DC-DC)	Guangzhou City Aipu Electronic Technology Co., Ltd	FW1-05S05B	5V/200mA	IEC 62368-1	U00906201021609E
Opto-coupler (U2, U3)	Shanghai Chuantu Microelectronics Co., Ltd.	CA-IS3050CU	Dti≥ 0.4mm Int./Ext. Dcr≥ 6.1mm Int./Ext. cl≥ 6.8mm 125°C	EN IEC 60747-17 (VDE 0884-17):2021-10; EN IEC 60747-17:2020+AC:2021	VDE 40052786
Opto-coupler (U4)	Shanghai Chuantu Microelectronics Co., Ltd.	CA-IS3082WX	Dti≥ 28mm CLR=8mm CPG= 8mm -40 °C ~125 °C	EN IEC 60747-17 (VDE 0884-17):2021-10; EN IEC	VDE 40052786

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

				60747-17:2020+AC:2021	
Opto-coupler (U6, U8, U9, U11, U12)	Everlight Electronics Co.,Ltd	EL3H4	Dti≥ 0.4mm Int.Dcr/cl≥ 5.0mm Ext.Dcr/cl≥ 5.0mm 100°C	UL 1577 EN IEC 60747-5-5	UL E214129 VDE 132249
COMM Board					
PCB	HUIZHOU GLORYSKY ELECTRONICS CO LTD	GS-M	V-0, 130ºC	UL 796	UL E257384
Y-Cap (C1)	WELSON INDUSTRIAL CO LTD	KL	Y2 Y5V 103M/300V, 125°C	UL 60384-14 EN 60384-14 IEC 60384-14	UL E104572 VDE 40016156
Supplementary information: 1) Provided evidence ensures the agreed level of compliance.					

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 ± 5ºC)**	**OCV at start of test (V dc)**	**Resistance of Circuit (mΩ)**	**Maximum Case Temperature Rise ΔT (°C)**	**Results**
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Supplementary information:					

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**
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Supplementary information:						

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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Supplementary information:					

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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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

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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
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Method of cell failure 1)	Location of target cell	Area for fire protection (m^2)
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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
2509-6320	2.989	160.052	57.205	3.512	A, D, F

	Charge Voltage Applied Battery System: 1)	
	Whole	Part
	54.425	N/A

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)	P

Sample No.	OCV at start of test, (V dc)	Max. Charging Current, (A)	Max. Charging Voltage, (V dc)	Results
2509-6320	48.082	192.035	57.323	A, D, F

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

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**
2509-6320	48.068	80.375	53.823
Maximum Specified Temperature of Battery System, °C		**Maximum Measured Cell Case Temperature, °C**	**Results**
55		50.2	A, D, F

Supplementary information:

Results:
A – No fire or Explosion
B – Fire
C – Explosion
D – Temperature sensing function of BMU did operate a nd 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): ____

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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IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

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): ____

Photo documentation

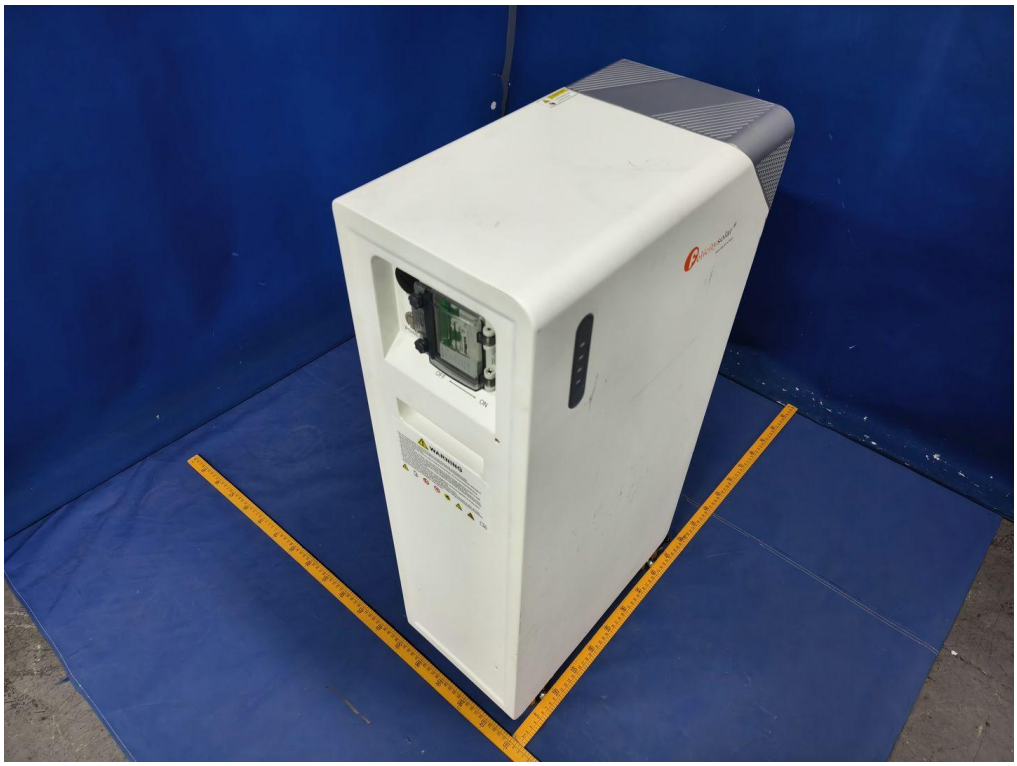

Photo 1 Over view

Photo 2 Over view

Photo 3 Over view

Photo 4 Over view

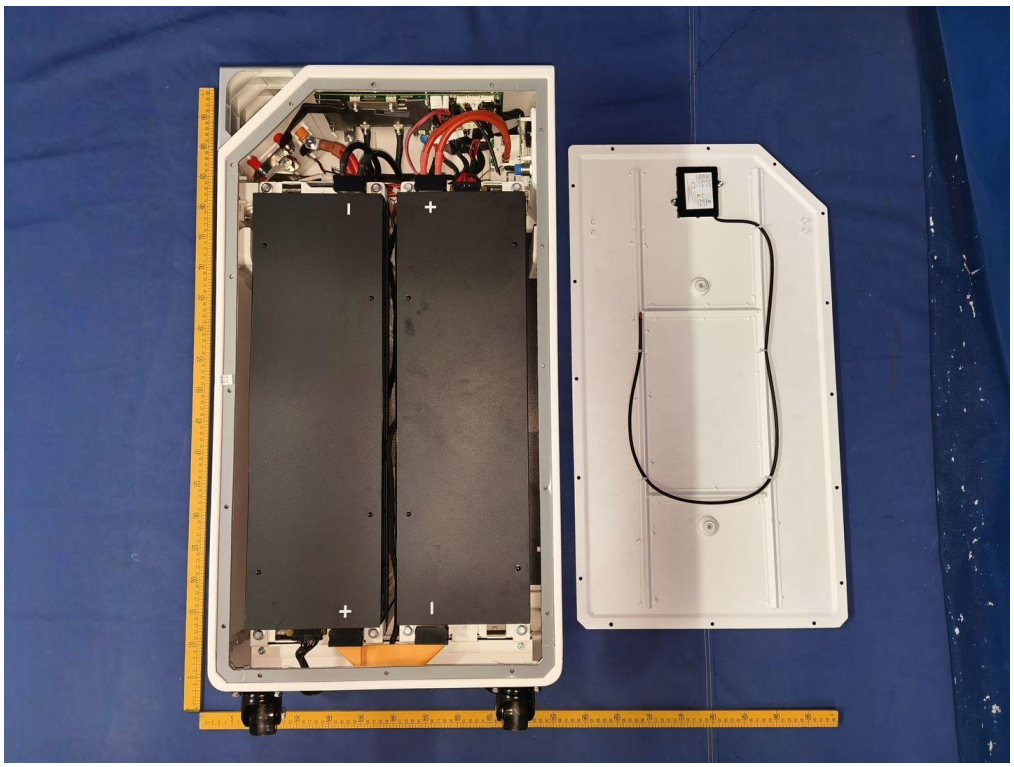

Photo 5 Internal view

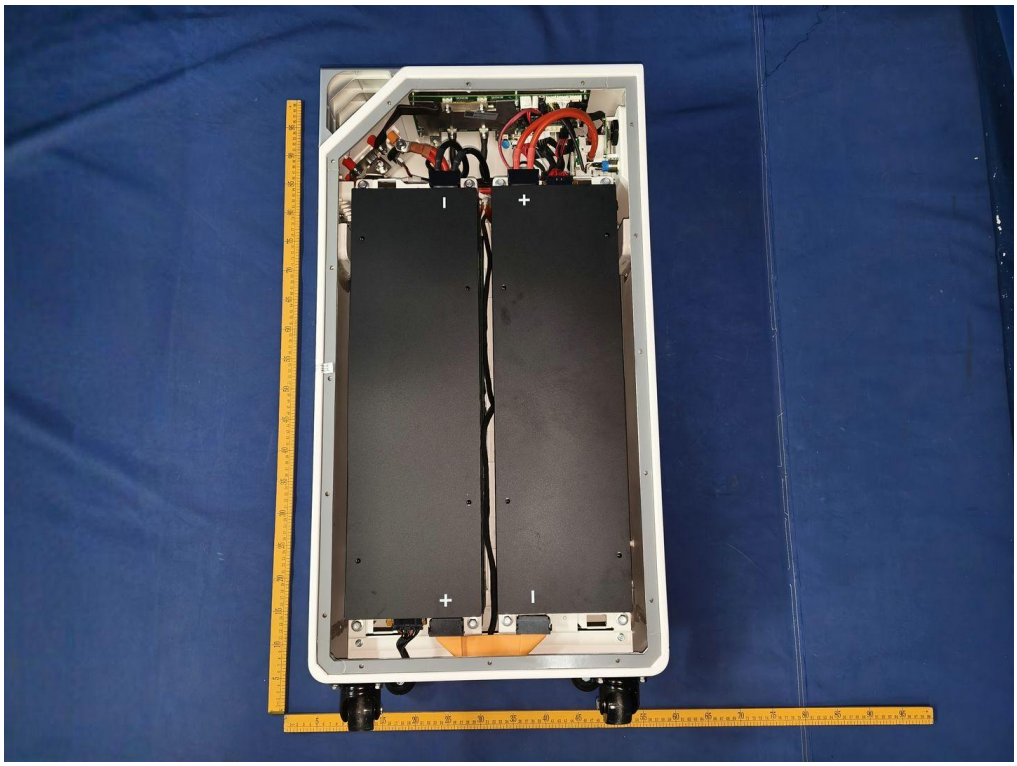

Photo 6 PCB view

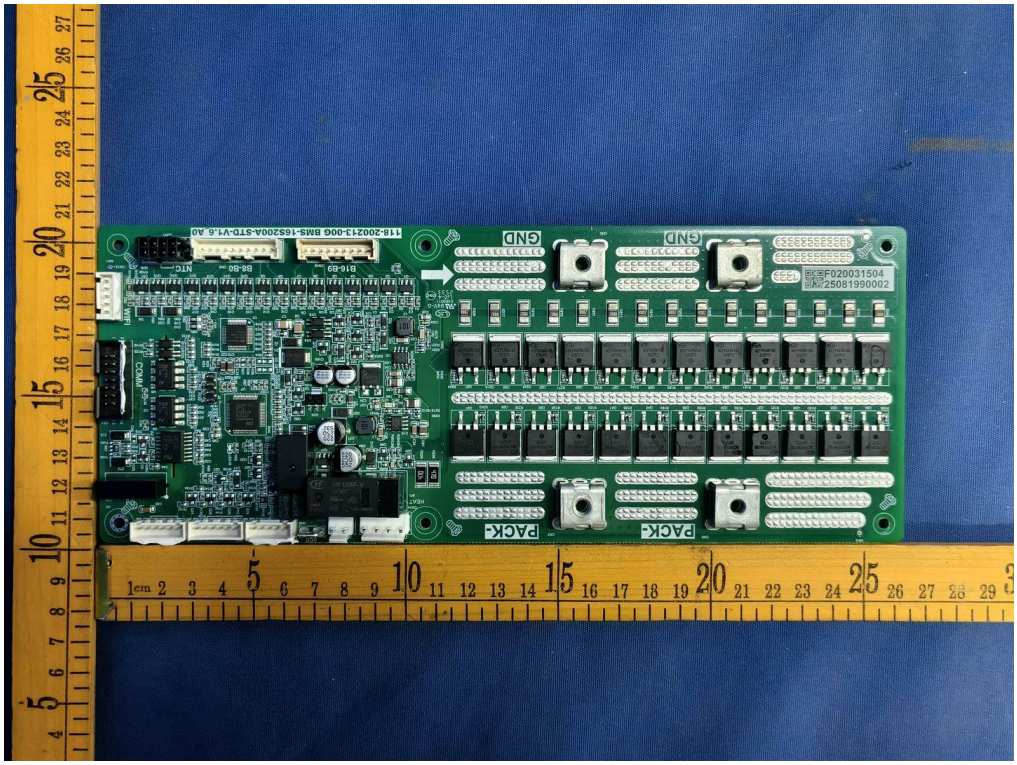

Photo 7 PCB view

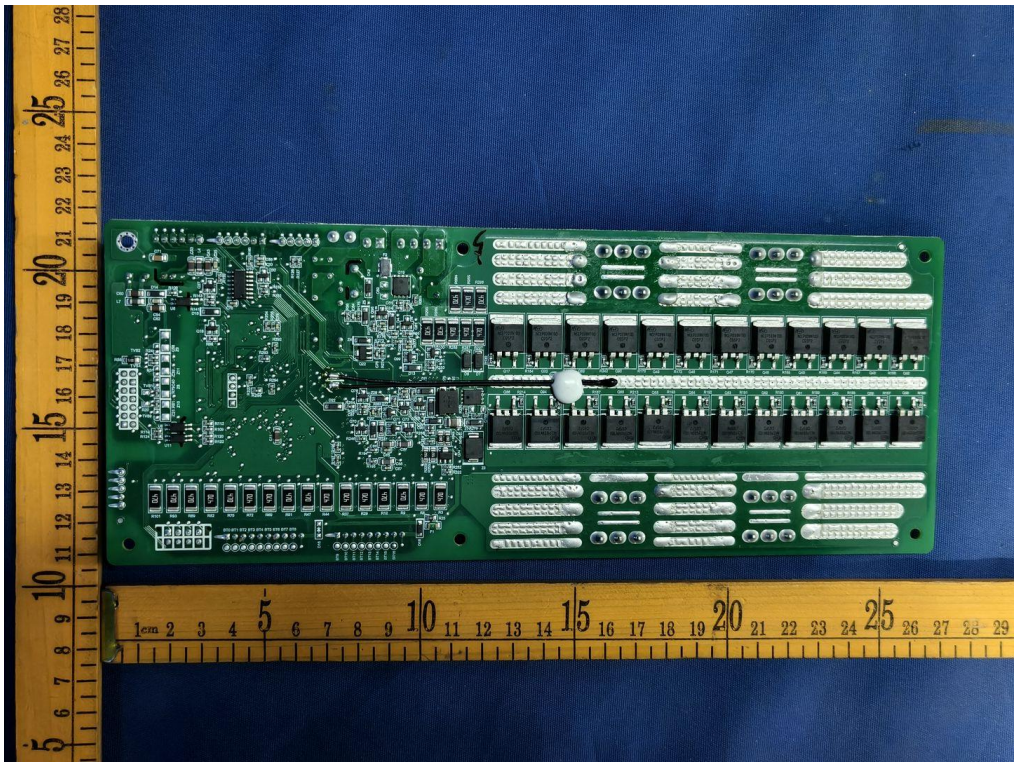

Photo 8 PCB view

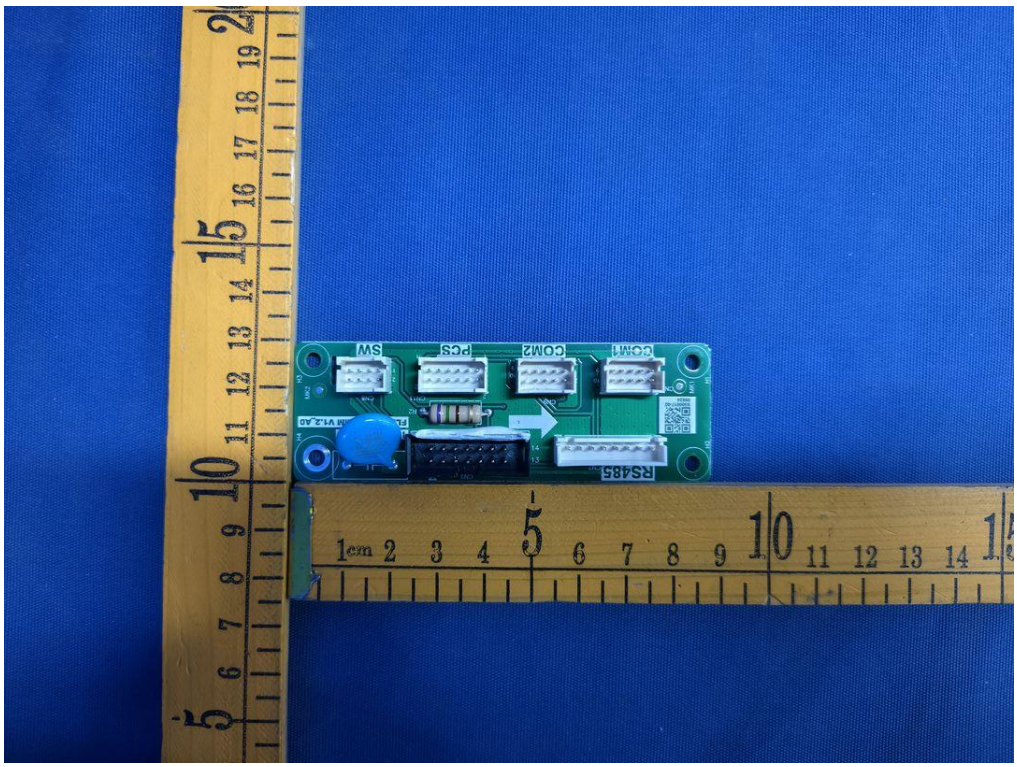

Photo 9 PCB view

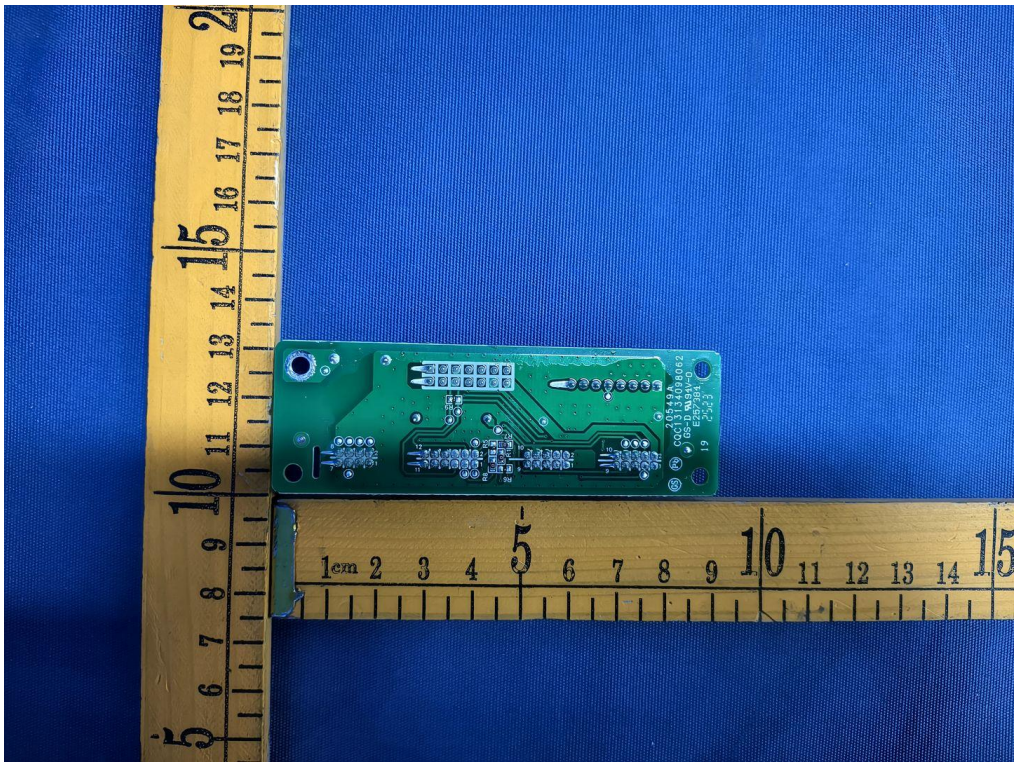

Photo 10 PCB view

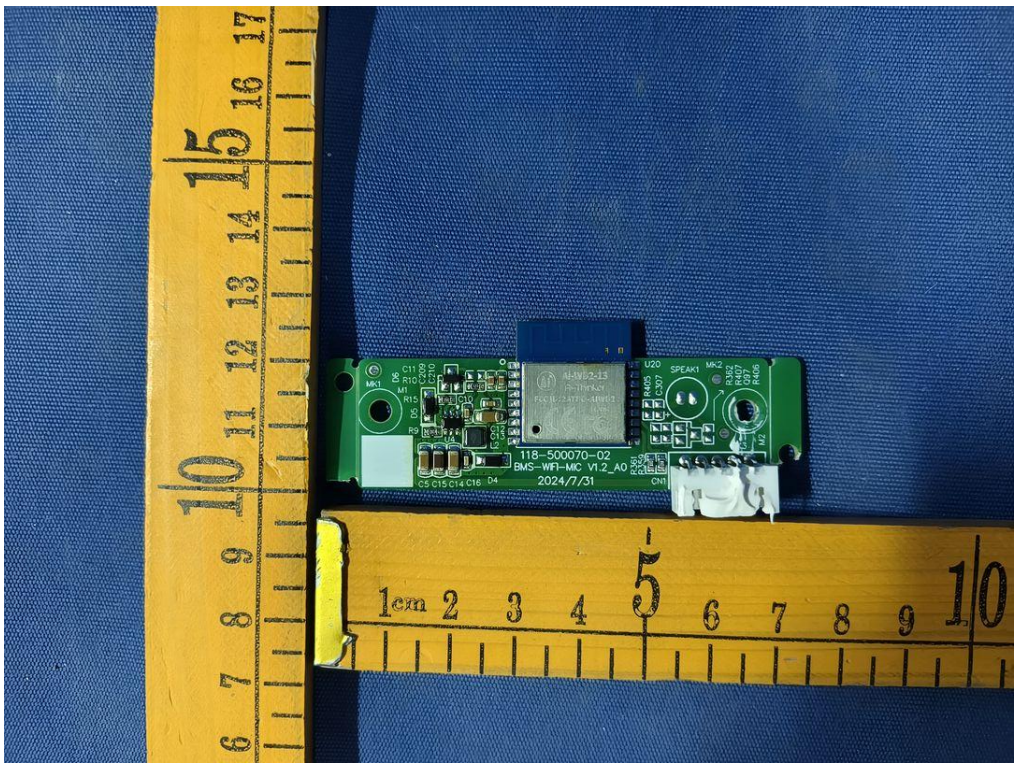

Photo 11 PCB view

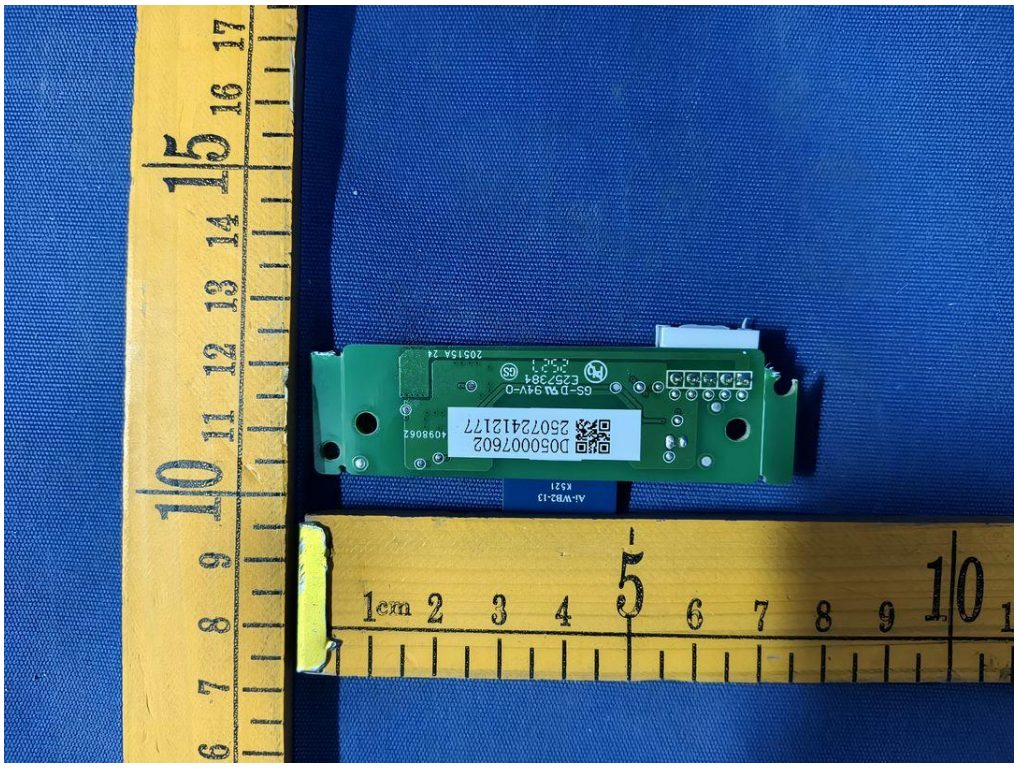

Photo 12 PCB view

Photo 13 Cell view

Photo 14 Cell view

-----END OF THIS TEST REPORT-----