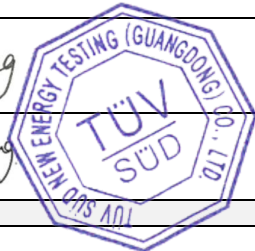


	Test Report issued under the responsibility of: NCB TÜV SÜD PSB Pte. Ltd. 15 International Business Park, TÜV SÜD @IBP, Singapore 609937, Singapore	
TEST REPORT IEC 63056 Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in electrical energy storage systems		
Report Number.....: 085-282460520-000 Date of issue: 2025-01-22 Total number of pages.....: 22 pages		
Name of Testing Laboratory preparing the Report.....: TÜV SÜD New Energy Testing (Guangdong) Co., Ltd.		
Applicant's name: AISWEI New Energy Technology (Yangzhong) Co., Ltd. Address: No.588 Gangxing Road, Economic Development Zone, 212200 Yangzhong, PEOPLE'S REPUBLIC OF CHINA		
Test specification: Standard: IEC 63056:2020 Test procedure.....: CB Scheme Non-standard test method.....: N/A		
TRF template used.....: IECEE OD-2020-F1:2020, Ed.1.4 Test Report Form No.....: IEC63056A Test Report Form(s) Originator.....: UL(Demko) Master TRF: Dated 2020-10-15		
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Test item description..... :	Rechargeable Li-ion Battery System	
Trade Mark(s)..... :	 Solplanet	
Manufacturer..... :	Same as the applicant	
Model/Type reference..... :	ASW5120-LB-G3	
Ratings..... :	51.2Vd.c., 100Ah	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒	CB Testing Laboratory:	TÜV SÜD New Energy Testing (Guangdong) Co., Ltd.
Testing location/ address.....:		North-1/F, 2/F & Unit 301-3/F, TÜV SÜD Testing Center, D1, No. 63 Chuangqi Road, Shilou Town, Panyu District, Guangzhou 511447, China
Tested by (name, function, signature).....:		Ava Deng (Project Handler)  
Approved by (name, function, signature)....:		Vitta Wang (Designated 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): Photo documentation: 9 Pages	
Summary of testing:	
Tests performed (name of test and test clause): In section 7, Cl. 7.4, Cl. 7.6, Cl. 7.8 and Cl. 7.9.2 was carried out on battery system, model: ASW5120-LB-G3. - Cl. 7.4 Electric insulation check during transport and installation - Cl. 7.6 Protection against short circuit during transport and installation - Cl. 7.8 Overdischarge control of voltage (battery system) - Cl. 7.9.2 Whole drop test The samples comply with the requirements of IEC 63056:2020.	Testing location: TÜV SÜD New Energy Testing (Guangdong) Co., Ltd. Address: North-1/F, 2/F & Unit 301-3/F, TÜV SÜD Testing Center, D1, No. 63 Chuangqi Road, Shilou Town, Panyu District, Guangzhou 511447, China
Summary of compliance with National Differences (List of countries addressed): N/A	
Statement concerning the uncertainty of the measurement systems used for the tests (may be required by the product standard or client) ☐ Internal procedure used for type testing through which traceability of the measuring uncertainty has been established: Procedure number, issue date and title: Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing. ☒ Statement not required by the standard used for type testing (Note: When IEC or ISO standard requires a statement concerning the uncertainty of the measurement systems used for tests, this should be reported above. The informative text in parenthesis should be delete in both cases after selecting the applicable option)	

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.

		Rechargeable Li-ion Battery System	
Model:	ASW5120-LB-G3	Nominal Voltage:	DC 51.2V
Rated Capacity:	100Ah	Rated Energy:	5.12kWh
Protective Class:	II	Ingress Protection:	IP66
Working Voltage Range:	DC 40V, ..., 58.4V		
Rated Charge/Discharge Current:	DC 60A/60A		
Max.Charge/Discharge Current:	DC 100A/100A		
Working Temperature Range:	-8°C, ..., 58°C(Charge) -18°C, ..., 58°C(Discharge)		
IFP52/161/120[16S]M/-30+60/90			
Serial Number:			
AISWEI New Energy Technology (Yangzhong) Co., Ltd. No.588 Gangxing Road, Economic Development Zone, 212200 Yangzhong, PEOPLE'S REPUBLIC OF CHINA www.solplanet.net			

Warning label:

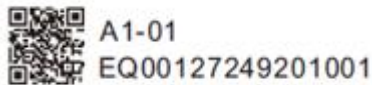
 **DANGER**
CHEMICAL HAZARD & SHOCK HAZARD

- The battery modules and its components should be protected from damage when transporting and handling.
- Do not insert unrelated objects into any part of the battery modules.
- Do not impact, pull, drag, or step on the battery modules.
- Do not throw the battery module into a fire.
- Do not soak the battery modules in water or seawater.
- Do not expose to strong oxidizers.
- Do not short circuit the battery modules.
- Do not use cleaning solvents to clean the battery modules.
- The battery modules cannot be stored directly under the sun.
- The battery modules cannot be stored at high temperatures (more than 45°C).
- The battery modules cannot be stored in a high humidity environment.
- Do not use the battery modules if it is defective, or appears cracked, broken or otherwise damaged, or fails to operate.
- Do not attempt to open, disassemble, repair, tamper with, or modify the battery modules. The battery modules are not user-serviceable.







Serial code:**Remark:**

1. “+”, “-” are marked near the terminals of the battery.
2. Manufacture code tab “EQ00127249201001” will be marked on the external surface of the battery, which can be used to trace the manufacture information of the battery. The 8th to 12th figures represent date of manufacture, 8th to 9th figures represent the year, the numbers “20” ~ “40” represent 2020 ~ 2040, the 10th figure represent the month, 1 for Jan., 2 for Feb.,, 9 for Sept., A for Oct., B for Nov., C for Dec., 11th to 12th figures represent the date, the numbers “01” ~ “31” represent 1st to 31st date of a month. For example, “24920” means the manufacture day is September 20, 2024. This manufacture code is not the manufacture code of actual samples and just for example.

Test item particulars : Rechargeable Li-ion Battery System	
Classification of installation and use..... : Use in industrial applications	
Supply Connection : Supply by 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..... : 2024-10-21 Date (s) of performance of tests : 2024-10-29 to 2025-01-16	
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.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60529:	
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. AISWEI New Energy Technology (Yangzhong) Co., Ltd. No.588 Gangxing Road, Economic Development Zone, 212200 Yangzhong, PEOPLE'S REPUBLIC OF CHINA Factory 2. Suzhou Hengge Energy Technology Co.,Ltd. No.111 Caizi Road, Wujiang District, 215200 Suzhou City, Jiangsu Province, PEOPLE'S REPUBLIC OF CHINA	

General product information and other remarks:

1. The Rechargeable Li-ion Battery System is used in industrial applications, which consists of 16pcs approved cells (model no.: GSP50160119F) connected in 16S. The cell model No. GSP50160119F has been approved with IEC 62619:2022 certification.

Additionally, details information of the battery system is shown in following table:

Product name	Rechargeable Li-ion Cell	Rechargeable Li-ion Battery System
Type/model	GSP50160119F	ASW5120-LB-G3
Nominal voltage	3.2Vd.c.	51.2Vd.c.
Rated capacity	100Ah	100Ah
Charging voltage declared by manufacturer	3.65V	58.4V (3.65V/cell)
Upper limit charging voltage	3.8V	59.2V (3.7V/cell)
Recommended charging power / current by manufacturer	50A	60A
Maximum continuous charging current	120A	100A
Recommended discharging power / current by manufacturer	50A	60A
Maximum continuous discharging current	200A	100A
Discharging cut off voltage	2.5V	40V or any cell reaches 2.5V ($0^{\circ}\text{C} \leq T \leq 58^{\circ}\text{C}$), 36.8V or any cell reaches 2.3V ($-18^{\circ}\text{C} \leq T < 0^{\circ}\text{C}$)
Lower limit discharging voltage	2.0V	32V or any cell reaches 2.0V
Standard temperature range for charging	-10°C to 60°C	-8°C to 58°C
Standard temperature range for discharging	-30°C to 60°C	-18°C to 58°C
Standard charging method by manufacturer	Charging the cell with 50A constant current until to 3.65V, then constant voltage 3.65V until charging current reduces to 5A.	Charge at constant current 60A until battery SOC reach 95%, then charge at constant current 30A until any cell voltage reach 3.65V.
Charging method for internal short-circuit test	Charged at constant current 120A till the voltage reaches 3.8V, then charged at constant voltage 3.8V till the current reduces to 0.05 /t A (5A).	-
Dimension	Max: T x W x H: 51.5mm x 160.7mm x 119.1mm	Width x Depth x Height: (630 $\pm$ 5) mm * (185 $\pm$ 5) mm * (320 $\pm$ 5) mm
Weight	(1.92 $\pm$ 0.1)kg	(46 $\pm$ 1) kg
Configuration	-	16S

Remark:

The final evaluation of the battery must be conducted in the end device application for which the battery rack will be used.

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict

4	PARAMETER MEASUREMENT TOLERANCES		P
	Parameter measurement tolerances		P

5	GENERAL SAFETY CONSIDERATIONS		P
5.1	General		P
	Battery systems and the cells they contain comply with the applicable general safety considerations of IEC 62619	IEC 62619:2022 report No.: 085-282460519-000 Cert: SG PSB-BT-05718	P
	Within the standard temperature range, secondary cells are charged at the maximum charge current		P
	Lithium-ion cells are operated within the operating region and the storage conditions		P
	Cells and battery systems are safe under conditions of both intended use and reasonably foreseeable misuse.....:	See also Table 5.1 for Critical Components information	P
	Moving parts apply appropriate design to reduce the risk of injuries		N/A
5.2	Insulation and Wiring		P
	Sufficient for maximum voltage, current, temperature, altitude, and humidity requirements :	See also Table 5.1 for Critical Components information	P
	Adequate clearances and creepage distances between connectors according to IEC 60950-1:2005, 3.1 and 3.2		P
	Hazardous live parts are protected to avoid the risk of electric shock		P
	The mechanical integrity of whole battery system and internal connections follow end use equipment manufacturer's requirements or Annex A:	See also Annex A	P
	Maximum allowed number of series connections of a module or a battery system is provided in the specifications or instruction manual		P
5.3	The peak voltage of charging		P
	Battery system manufacturer ensures the peak voltage of charging current is under the upper limit charging voltage by monitoring the voltage of every single cell or cell block.		P

6	TYPE TEST CONDITIONS		P
6.1	General		P
6.2	Test items		P

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict
	DUT (device under test) is stored under conditions specified by cell manufacturer and is not more than six months old		P
	Capacity confirmation of the DUT		P
	Default ambient temperature of test, 25 °C ± 5 °C		P
	See Table 1 of IEC 63056 for the type tests and the sample quantity for each tests		P
7	SPECIFIC REQUIREMENTS AND TESTS		P
7.1	Basic requirement		P
	Cells and batteries used in battery systems evaluated to this standard comply with the test requirements of IEC62619 and this standard	IEC 62619:2022 report No.: 085-282460519-000 Cert: SG PSB-BT-05718	P
7.2	Resistance of abnormal heat		N/A
	Non-metallic materials, on which parts at hazardous voltage are directly mounted, are resistant to abnormal heat and comply with ball pressure test in IEC 60695-10-2.....:	See Table 7.2	N/A
	Results: The dimension <i>d</i> of indentation does not exceed 2 mm		N/A
	Dimension <i>d</i> is the largest distance that can be measured across the indentation from one clearly defined edge of the indentation to another		—
7.3	Casing material of a battery system which can be transported for installation or maintenance		P
	The class of thermoplastic casing (V-2 or higher)	Metal case	—
	Where components cannot be protected against overheating under fault conditions, the following additional requirements are met:		—
	(1) Mounted on V-1 or higher class material, and	In battery system: Plastic material: V-0 Plastic part of connector: V-0 Plastic part of cable gland: V-0	—
	(2) Separated from the V-2 class case material by min. 13 mm of air, or by a solid barrier of V-1 or higher class material.....:		—
	Materials are tested at a thickness equal to the smallest thickness used in the application and classified according to IEC 60695-11-10 (mm)		N/A
7.4	Electric insulation check during transport and installation		P

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict
	The hazardous live parts of battery or cell are covered or insulated from personnel		P
	Unless the end use equipment has specific requirements, the test method is in accordance with the insulation resistance test of IEC 62133:2017, Clause 5.2		P
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery is not less than 5 MΩ at 500 Vdc when measured 60 s after applying the voltage		P
	Results: The insulation resistance is equal to or higher than 5 MΩ..... :	See Table 7.4	P
7.5	Charging procedures for test purposes		P
	The battery is discharged at a constant current of 0,2 It A to a specified final voltage prior to charging		P
	Discharge current, 0,2 It A..... :	20A	—
	The cells or batteries are charged using the method specified by the manufacturer :	Charge at constant current 60A until battery SOC reach 95%, then charge at constant current 30A until any cell voltage reach 3.65V.	—
7.6	Protection for short circuit during transport and installation		P
	A safeguard is provided to prevent the risk of short circuit for personnel during transport and installation		P
	Safeguards are provided for battery system and for each part when the battery system is divided into parts for transportation		P
	Fully charged DUT is discharged to SOC (state of charge) for installation or maintenance, which is specified by the manufacturer		P
	Unless otherwise specified by the manufacturer, tests are carried out without discharging after charging in accordance with 7.2.		P
	DUT is stored in an ambient temperature until its temperature is stabilized at 25 °C ± 5 °C. Then, DUT is short-circuited by connecting the positive and negative terminals.		P
	The external resistance to short circuits is (30 mΩ ± 10 mΩ) × module configuration (= number of series connections / number of parallel connections) or less than 5 mΩ, whichever is higher; total external resistance less than 100 mΩ.		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Test is continued for 6 hours or the case temperature declined by 80 % of maximum temperature rise, whichever is sooner		P
	Results: No rupture, no fire, no explosion:	See Table 7.6	P
7.7	Protection for reverse connection		N/A
	Battery systems consisting of multiple battery packs or modules - that are not designed to prevent a reverse polarity connection or - that are not connected into the battery system with the BMS at the factory	The designation prevents a reverse polarity connection	N/A
	Fully charged DUT is discharged to SOC (state of charge) for installation or maintenance, which is specified by the manufacturer		N/A
	One of the DUTs of battery system is connected with opposite polarity		N/A
	The battery system is fully charged or stopped by a safety protection, and then rested for one hour		N/A
	If the battery system can be discharged, - with the maximum discharge current until it stops discharging, and it's rested for one hour.		N/A
	If the battery system cannot be discharged, it is rested for one hour.		N/A
	Results: No rupture, no fire, no explosion:	See Table 7.7	N/A
7.8	Overdischarge control of voltage test (battery system)		P
	The BMS controls the cell voltage during discharging above the lower limit discharging voltage of the cells		—
	The cooling system remains functional during the test and the main contactors are closed with the battery system controlled by the BMS		N/A
	The battery system is discharged at a constant current of 0,2 It A to 30 % of the rated capacity, and then is discharged at the specified maximum discharging current		P
	The discharge is continued until the BMS terminates the discharging before exceeding the lower limit discharging voltage of the cells		P
	If difficult to overdischarge the whole system, the exceeded voltage applied to the cell(s) in the battery system		N/A
	Data acquisition/monitoring was continued for 1 h after discharging is stopped		P

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No fire, no explosion..... :	See Table 7.8	P
	The BMS interrupts the discharging before exceeding the lower limit discharging voltage of the cells		P
	All functions of the battery system are fully operational as designed during the test		P
7.9	Drop test		P
7.9.1	General		P
	For the simulation of a drop during installation and maintenance		P
	The DUT is (Cell, Module or Battery System)..... :	Battery System: ASW5120-LB-G3	—
7.9.2	Whole drop test		P
	For DUT's mass less than 50 kg	Measured: 45.2kg	P
	Fully charged DUT is discharged to SOC (state of charge) for installation or maintenance, which is specified by the manufacturer.		N/A
	Where SOC for installation or maintenance is not specified by the manufacturer, tests carried out without discharging after charging per clause 7.2.		P
	Description of the DUT..... :		—
	The DUT is dropped one time from a height shown in Table 2 of IEC63056		P
	For DUT's mass less than 7 kg, it drops so as to obtain impact in random orientation		N/A
	For DUT's mass between 7 kg and 50 kg, it drops in the bottom down direction. The bottom surface of the DUT is specified by the manufacturer		P
	After the test, the DUT is put on rest for 1 h, and a visual inspection is performed		P
	Results: No fire, no explosion..... :	See Table 7.9.2	P
7.9.3	Edge and corner drop test		N/A
	For DUT's mass equal to or more than 50 kg		N/A
	Fully charged DUT is discharged to SOC (state of charge) for installation or maintenance, which is specified by the manufacturer.		N/A
	Unless otherwise specified by the manufacturer, tests are carried out without discharging after charging in accordance with 7.2.		N/A
	Description of the DUT..... :		—

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict

	The DUT is dropped two times from a height shown in Table 2 of IEC63056		N/A
	Test is arranged for reproducible impact points for the shortest edge drop impact and the corner impacted		N/A
	The two impacts, per impact type, are on the same corner and on the same shortest edge		N/A
	After the test, the DUT is put on rest for 1 h, and a visual inspection is performed		N/A
	Results: No fire, no explosion..... :	See Table 7.9.3	N/A

8	INFORMATION FOR SAFETY		P
	Information for safety in accordance with IEC 62619 was provided	IEC 62619:2022 report No.: 085-282460519-000 Cert: SG PSB-BT-05718	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

9	MARKING AND DESIGNATION		P
	The marking items shown in Table 1 of IEC 62620 indicated on the cell, battery system or instruction manual		P
	Cell or battery system has clear and durable markings		P
	Cell designation		P
	Battery designation		P
	Battery structure formulation		P

ANNEX A	WIRING, CONNETIONS AND SUPPLY		P
Table A.1	Wiring, connections and supply requirement, as addressed in IEC 60950-1:2005		P
Table A.2	Wiring, connections and supply requirement, as addressed in IEC 62368-1		P

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict

7.2	TABLE: Resistance of abnormal heat			N/A
Allowed impression diameter (mm) :				¾
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
-	-	-	-	
-	-	-	-	
-	-	-	-	
-	-	-	-	

Supplementary information:

The test is made in a heating cabinet at a temperature of $(\Delta T + T_{max} + 15\text{ °C}) \pm 2\text{ °C}$.

- ΔT means the maximum temperature rise of thermoplastic parts during the most adverse operation specified by the battery system manufacturer at $25\text{ °C} \pm 5\text{ °C}$.
- T_{max} means upper limit ambient temperature specified by the battery system manufacturer.

7.4	TABLE: Electric insulation check during transport and installation		P
Sample No.		Insulation resistance (MΩ)(1)/(2)	Results
Battery 1 (Positive terminal to metal case)		25900	A
Battery 1 (Negative terminal to metal case)		25800	A
Supplementary information: 1. The insulation resistance is measured between the positive terminal and externally exposed metal surfaces of the battery at 500 Vdc when measured 60 s after applying the voltage 2. The insulation resistance is measured between the negative terminal and externally exposed metal surfaces of the battery at 500 Vdc when measured 60 s after applying the voltage Results: A – The insulation resistance is equal to or higher than 5 MΩ B – The insulation resistance is less than 5 MΩ C – Other (Please explain): ____			

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict

7.6	TABLE: Protection for short circuit during transport and installation (For Battery system)			P
Constant discharging current, 0,2 It (A).....:		20A		—
SOC for installation or maintenance (Ah or Wh).....:		100Ah		—
Battery configuration (XS/YP).....:		16S		—
Sample No.	DUT's temperature at start of test (°C)(1)	External resistance (mΩ)(2)	Results	
Battery 1	24.6	94.155	A, E	
Supplementary information:				
1. Prior to test, the DUT is stored in an ambient temperature until its temperature is stabilized at 25 °C ± 5 °C.				
2. The external resistance to short circuits is (30 mΩ ± 10 mΩ) × battery configuration (= number of series connections / number of parallel connections) or less than 5 mΩ, whichever is higher. Total external resistance is less than 100 mΩ.				
Results:				
A – No rupture or fire or explosion				
B – Rupture				
C – Fire				
D – Explosion				
E – The test is completed after 6 h				
F – The test is completed after the casing cooled to 20% of the maximum temperature rise				
G – Other (Please explain):				

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict

7.7	TABLE: Protection for reverse connection			N/A
Constant discharging current, 0,2 It (A)		-		—
SOC for installation or maintenance (Ah or Wh)		-		—
Sample No.	Charging voltage (Vdc)	Charging current (A)	Maximum discharging current (A)	Results
-	-	-	-	-
Supplementary information: Results: A – No fire or explosion B – Fire C – Explosion D – The DUT is fully charged and then is rested for one hour E – The charging is stopped by a safety protection and then is rested for one hour F – The DUT can be discharged with maximum discharge current until stopped by itself and then is rested for one hour G – The DUT can't be discharged and then is rested for one hour H – Other (Please explain): ____ Remark: The designation prevents a reverse polarity connection.				

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict

7.8	TABLE: Overdischarge control of voltage test (battery system)					P
Constant discharging current, 0,2 It (A).....:			20A			—
30% of rated capacity (Ah).....:			30Ah			—
Sample No.	Maximum discharging current applying to battery (A)(1)		OCV at end of the test (Vdc)		Lower limit discharging voltage of the cell (Vdc)	Results
	Whole system	Cell(s)	Whole system	Cell(s)		
Battery 1	100	-	40.698	2.594	2.0	A, D

Supplementary information:

1. If it is difficult to overdischarge the whole system, the exceeded voltage can be applied to a part of the system such as the cell(s) in the 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 lower limit discharging voltage

E - The voltage of the measured cells or cell blocks did exceed the lower limit discharging voltage

F – Other (Please explain): ____

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict

7.9.2	TABLE: Whole drop test					P
Constant discharging current, 0,2 It (A).....:			20A			—
SOC for installation or maintenance (Ah or Wh).....:			100Ah			—
Sample No.	Mass of DUT (kg)	Height of drop (m)(1)	OCV at start of the test (Vdc)	Impacted points (2)	Results	
Battery 1	45.2	0.5	54.016	Whole	A	
Supplementary information:						
Mass of the DUT, <i>m</i>		Test method	Orientation		Height of drop	
<i>m</i> < 7 kg		Whole	Random		100,0 cm	
7 kg ≤ <i>m</i> < 20 kg		Whole	Bottom down direction (Note)		100,0 cm	
20 kg ≤ <i>m</i> < 50 kg		Whole	Bottom down direction (Note)		50,0 cm	
50 kg ≤ <i>m</i> < 100 kg		Edge and corner	--		5,0 cm	
<i>m</i> ≥ 100 kg		Edge and corner	--		2,5 cm	
Note – The bottom surface of the DUT is specified by the manufacturer						
Results: A – No fire or explosion B – Fire C – Explosion D – Other (Please explain): ____						

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict

7.9.3	TABLE: Edge and corner drop test					N/A
Constant discharging current, 0,2 It (A)..... :					—	
SOC for installation or maintenance (Ah or Wh)					—	
Sample No.	Mass of DUT (kg)	Height of drop (m)(1)	OCV at start of the test (Vdc)	Impacted points (2)	Results	
-	-	-	-	-	-	
Supplementary information:						
Mass of the DUT, <i>m</i>		Test method	Orientation		Height of drop	
<i>m</i> < 7 kg		Whole	Random		100,0 cm	
7 kg ≤ <i>m</i> < 20 kg		Whole	Bottom down direction (Note)		100,0 cm	
20 kg ≤ <i>m</i> < 50 kg		Whole	Bottom down direction (Note)		50,0 cm	
50 kg ≤ <i>m</i> < 100 kg		Edge and corner	--		5,0 cm	
<i>m</i> ≥ 100 kg		Edge and corner	--		2,5 cm	
Note – The bottom surface of the DUT is specified by the manufacturer						
Results:						
A – No fire or explosion		C – Explosion				
B – Fire		D – Other (Please explain): ____				

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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⁾
1.Cell (16pcs)	Guangzhou Great Power Energy Storage Technology Co., Ltd	GSP50160119F	3.2Vd.c., 100Ah	IEC 62619:2022	Cert. No.: SG PSB-BT-04339, Report No.: 085-282360754-000
2. BMS	AISWEI New Energy Technology (Yangzhong) Co., Ltd.	270-900630-00 (Software version: L610-90003-00, Hardware version: L270-900630-02)	Overcharge detection voltage for each cell: 3.7V, Overdischarge detection voltage for each cell: 2.4V (T≥0°C), 2.2V (T<0°C), Charge overcurrent detection current: 115A, Discharge overcurrent detection current: 115A, High temperature charging protection: 58°C, Low temperature charging protection: -8°C, High temperature discharging protection: 58°C, Low temperature discharging protection: -18°C.	-	-
- PCB material	SHENGYI TECHNOLOGY CO LTD	S1000H	V-0, 130°C	UL 746	UL E109769
- IC for MCU (U119)	GigaDevice Semiconductor Inc.	GD32F305VCT 6	Supply voltage: 2.6V to 3.6V, Topr: -40°C to 85°C	-	-
- IC for CAN (U107)	Shanghai Chipanalog Microelectronics Co., Ltd.	CA-IS3062W	Supply voltage: 4.5V to 5.5V, Topr: -40°C to 125°C	DIN EN IEC 60747-17 (VDE 0884-17):2021-10	VDE 40052786
- IC for AFE (U115)	Texas Instruments	BQ7695204PF BR	Supply voltage: -0.3V to 85V, Topr: -40°C to 85°C	-	-
- IC for ADC (U101)	Texas Instruments	INA228AIDGST	Supply voltage: -0.3V to 85V, Topr: -40°C to 125°C	-	-

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Clause	Requirement + Test		Result - Remark		Verdict
- IC for watchdog (U121)	SGMICRO	SGM823-TXN5G/TR	Supply voltage: -0.3V to 6V, T _{opr} : -40°C to 125°C	-	-
- IC for PWM controller (U119)	GigaDevice Semiconductor Inc.	GD32F305VCT6	Supply voltage: 2.6V-3.6V, T _{opr} : -40°C to 85°C	-	-
- MOSFET for charge & discharge (U132-U135, U116, U100, U124, U122, 8pcs connected in parallel)	Innoscence	INV100FQ030A	V _{DD} : 100V, V _{GD} : 6V, V _{DG} : 100V, I _D : 100A (T _A =25°C), T _J : -40°C to 150°C	-	-
- Current sampling resistor (R163, R164, R191, R192, R200, R207, R292, R293, R310, R332, R333, R335 12pcs connected in parallel)	C&B ELECTRONICS (SHENZHEN) CO., LTD.	SEWF2512F3L00P9	3mΩ±1%, 4W, T _{opr} : -65°C to 170°C	-	-
- PTC	THINKING ELECTRONIC INDUSTRIAL CO LTD	PPL11250MA2 C8CKB	V _{max} : 380Vac, I _h : 123mA, I _t : 245mA, I _{max} : 2A, T _{opr} : -20°C to 85°C (V=V _{max})	UL 1434	UL E138827
- Fuse for Secondary protection action execution switch (F100, F107-F109, 4pcs connected in parallel)	DONGGUAN TLC ELECTRONIC TECHNOLOGY CO LTD	WSFD4550-A	80V, 45A, T _{opr} : -20°C to 65°C	UL 248-1	UL E467707
- Fuse for short-circuit protection (F102-F106, F110-F124, 20pcs connected in parallel)	SHENZHEN VICTORS INDUSTRIAL CO LTD	12SF025	65V, 25A, T _{opr} : -55°C to 125°C	UL 248-1	UL E357828

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Clause	Requirement + Test		Result - Remark		Verdict
- NTC (R320, R321, 2pcs)	THINKING ELECTRONIC	TSM1A153H39 51RZ	R ₂₅ = 15kΩ±3%, B _{25/50} = 3950K±1%, T _{opr} : -40°C to 125°C	UL 1434	UL E138827
3. LED board	AISWEI New Energy Technology (Yangzhong) Co., Ltd.	L270-900640-00 (Hardware version: V1.0)	Control LED switch	-	-
- PCB material	SHENGYI TECHNOLOGY CO LTD	S1000H	V-0, 130°C	UL 746	UL E109769
- LED light	Shenzhen Hongliang Optoelectronics Co.Ltd	H3433AVGB0F C02	V _{DD} : 3.5V to 5.4V, I _{DD} : 0.5mA, T _{opr} : -40°C to 105°C	-	-
4. NTC for cell (8pcs)	SEMITEC Corporation	103KT1608T-1P	R ₂₅ = 10kΩ±1%, B _{25/85} = 3435K±1%, T _{opr} : -40°C to 125°C	-	-
5. Connector for P-	Shenzhen GU Precision Industry Co., Ltd	R057MM05AK-08	1500V, 125A, -40°C to 125°C	UL 4128	UL E527779
6. Connector for P+	Shenzhen GU Precision Industry Co., Ltd	R057MM05BK-08	1500V, 125A, -40°C to 125°C	UL 4128	UL E527779
7. Battery Switch	LANBOO INTELLIGENT Technology Co., Ltd.	LB16QC-P10F/E/S	12V/24V, 0.2A, -40°C to 80°C	EN 60947-5-1:2017	CE: M.2020.206. C6718
8. Cable gland for P-	Shenzhen GU Precision Industry Co., Ltd	P057C025AK-8	1500V, 125A, -40°C to 125°C	UL 4128	UL E527779
- Alternative	Shenzhen GU Precision Industry Co., Ltd	P057C025AK-13	1500V, 125A, -40°C to 125°C	UL 4128	UL E527779
9. Cable gland for P+	Shenzhen GU Precision Industry Co., Ltd	P057C025BK-8	1500V, 125A, -40°C to 125°C	UL 4128	UL E527779
- Alternative	Shenzhen GU Precision Industry Co., Ltd	P057C025AK-13	1500V, 125A, -40°C to 125°C	UL 4128	UL E527779
10. Wiring for Connector (B+, B-)	LINOYA ELECTRONIC TECHNOLOGY CO LTD	3512	4AWG, 600Vac, 200°C	UL 758	UL E315619
- Alternative	JIANGYIN WEICHENG SPECIAL CABLE CO LTD	3512	4AWG, 600Vac, 200°C	UL 758	UL E325197

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Clause	Requirement + Test		Result - Remark		Verdict
11. Wiring for Connecting BMS and button	KUNSHAN NEW ZHICHENG ELECTRONICS TECHNOLOGIE S CO LTD	1332	20awg, 200°C, 300V	UL 758	UL E237831
- Alternative	HAIYAN ADS SPECIAL CABLE CO LTD	1332	20awg, 200°C, 300V	UL 758	UL E363968
12. Wiring for Connecting LED board and BMS	KUNSHAN NEW ZHICHENG ELECTRONICS TECHNOLOGIE S CO LTD	1332	22awg, 200°C, 300V	UL 758	UL E237831
- Alternative	HAIYAN ADS SPECIAL CABLE CO LTD	1332	22awg, 200°C, 300V	UL 758	UL E363968
13. Wiring for Internal communication	Suzhou Fuertai Electronic Co Ltd	2517	24awg, 105°C, 300V	UL 758	UL E519190
14. Grounding Wire for System	LINOYA ELECTRONIC TECHNOLOGY CO LTD	3512	10awg, 200°C, 600V	UL 758	UL E315619
- Alternative	JIANGYIN WEICHENG SPECIAL CABLE CO LTD	3512	4AWG, 600Vac, 200°C	UL 758	UL E325197
15. Fire extinguisher	HUBEI JIANDUN FIRE TECHNOLOGY CO.,LTD	QRR0.03G/S	-50°C to 100°C, 50g/m ³	EU 2015/863	EMTEK Report No.: EDG2402010056C00101R
16. Case	Xing Ming Jiang Precision metal	STAINLESS IRON430	Thickness: 1.2mm	-	-
Supplementary information:					
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

---End of report--