

Report No.: 18360BC30048801

APPLICATION FOR IEC TEST REPORT

Client Name : Huizhou Epever Technology Co., Ltd.

Address : No.103, Dongxing Rd, Chenjiang Street,
Zhongkai High-Tech Zone, Huizhou, China

Product Name : Lithium Battery

Date : Dec. 28, 2023

Shenzhen Anbotech Compliance Laboratory Limited

Shenzhen Anbotech Compliance Laboratory Limited

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TEST REPORT**IEC 62619: 2022****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**

Reference No.: 18360BC30048801

Compiled by (+ signature): Doma Mao / Project Engineer

Doma Mao

Approved by (+ signature): Dely Yang/ Project Manager

Dely Yang

Date of issue: Dec. 28, 2023

Contents: 23 pages(including 1 page of photos)

Testing laboratory

Name: Shenzhen Anbotek Compliance Laboratory Limited

Address: Zone South, 1/F., Building 2, Hengchangrong High-Tech Industrial Park, Huangtian Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China

Testing location: Shenzhen Anbotek Compliance Laboratory Limited

Client

Name: Huizhou Epever Technology Co., Ltd.

Address: No.103, Dongxing Rd, Chenjiang Street, Zhongkai High-Tech Zone, Huizhou, China

Test specification

Standard: IEC 62619: 2022

Test procedure: Compliance with IEC 62619: 2022

Non-standard test method: N.A.

Test item

Description: Lithium Battery

Trade mark(s):



Model and/or type reference: LFP2.56KWH25.6V-P20L1

Manufacturer: Huizhou Epever Technology Co., Ltd.

Address: No.103, Dongxing Rd, Chenjiang Street, Zhongkai High-Tech Zone, Huizhou, China

Factory: Huizhou Epever Technology Co., Ltd.

Address: No.103, Dongxing Rd, Chenjiang Street, Zhongkai High-Tech Zone, Huizhou, China

Rating(s): DC 25.6V, 100Ah, 2560Wh



Particulars: test item vs. test requirements

Ambient temperature..... : 20°C ± 5°C.

Test case verdicts

Test case does not apply to the test object..... : N (.A.)

Test item does meet the requirement..... : P (ass)

Test item does not meet the requirement..... : F (ail)

Testing

Date of receipt of test item : Oct. 14, 2023

Date(s) of performance of test..... : Oct. 16, 2023 to Nov. 15, 2023

Tests performed (name of test and test clause):

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 (LF100LA) was evaluated according to IEC 62619:2022 by TÜV SÜD certificate No.: B 098952 0027 Rev. 00

The samples comply with the requirement of IEC 62619: 2022.

General remarks

This test report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report are only relevant to the test sample.

"(see remark #)" refers to a remark appended to the report.

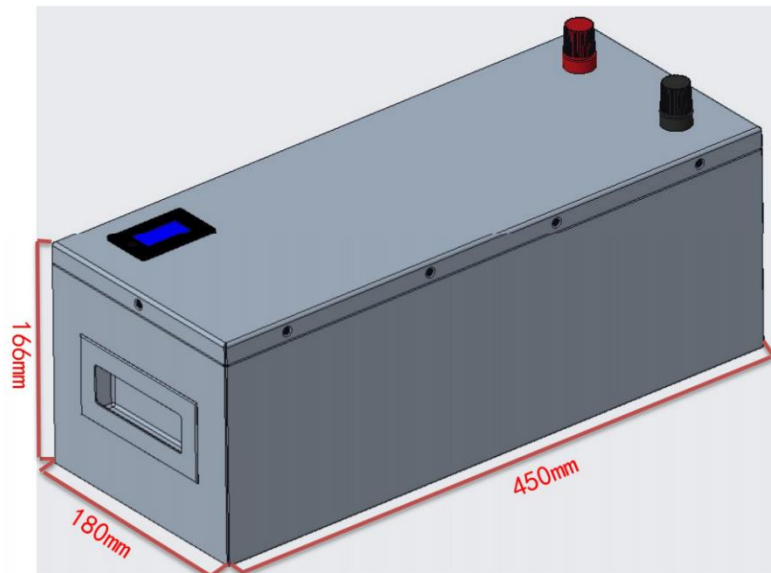
"(see appended table)" refers to a table appended to the report

Throughout this report a dot is used as the decimal separator.

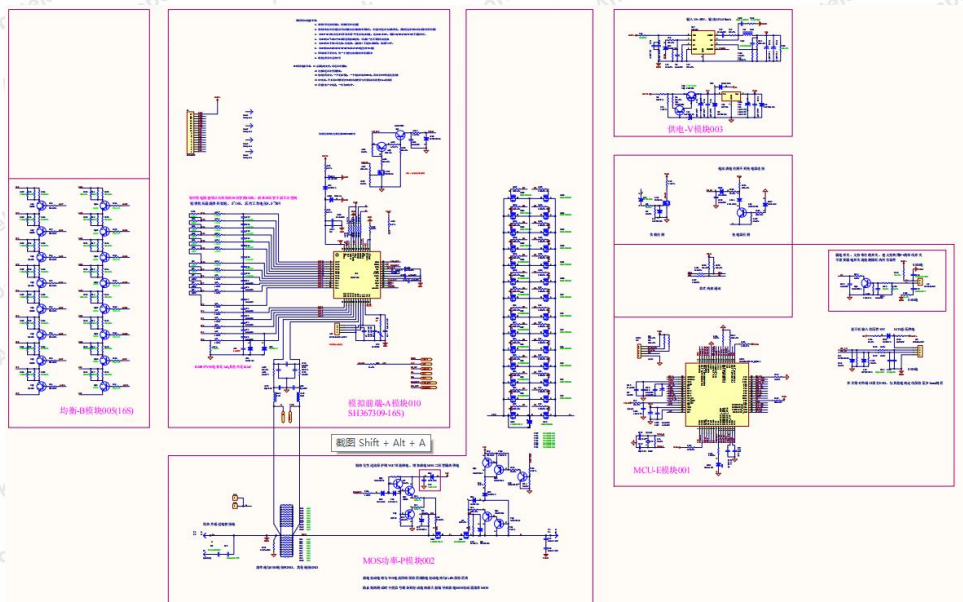
The product fulfils the requirements of EN IEC 62619: 2022



Dimension diagram (unit:mm)



Circuit diagram:



Copy of marking plate:

The artwork below may be only a draft.

Lithium Battery

Model:LFP2.56KWH25.6V-P20L1

Rating:25.6V, 100Ah, 2560Wh

IFpP51/161/119/[8S]M/-20+50/90

+

YYMMDD

Huizhou Epever Technology Co., Ltd.

-

Recommended charge: 50A charge to 29.2V CC-CV till current drops to 5A

**锂电池 Lithium Battery**

产品型号

Product Type

LFP2.56KWH25.6V-P20L1

额定电压

Rated Voltage

25.6V

额定容量

Rated Capacity

100Ah/2560Wh

化学类型

Chemical Type

LFP

电池编号

Battery Code

EP25610023N0100001

生产日期

Production Date

20231201

惠州汇能精电科技有限公司

HUIZHOU EPEVER TECHNOLOGY CO.,LTD.



Date of code: YYMMDD

Remark:

The YY=01-99 represent the year, for example 23 means year of 2023;

The MM=01-12 represent the month, for example 03 means March;

The DD= 01-31 represent the date.



[Warnings!] [警告!]

- Use specified charge, discharge conditions.
使用指定的充放电条件。
- Specified product use only.
仅用于指定的产品中。
- Don't throw the battery in water, please keep it from humidity.
禁止投入水中，储存时注意不要受潮。
- Do not heat or throw in fire or store it in high temperature place.
禁止加热或投入火中或在高温下储存电池。
- Do not attempt to crush or drop.
禁止尝试挤压或跌落。
- Do not attempt to modify.
禁止任何改装。
- Leave in cool places.
存放在阴凉处。
- Do not put it in microwave oven, oven or pressure container.
禁止放在微波炉，炉子或压力容器里。
- Do not use battery if not recover during conditions above.
假如在上述条件下电池不能恢复请不要继续使用。
- Keep small cells and batteries which are considered swallowable out of reach of children
请将小电池和电芯放到儿童不可接触到的地方。
- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion.
吞咽可能导致烧伤、软组织穿孔和死亡。在摄入后 2 小时内可能发生严重损害。
- In case of ingestion of a cell or battery, seek medical assistance promptly.
如果不小心摄入电池或电芯，请立即寻求医疗帮助。



General product information and other remarks:

This battery is constructed with 8PCS lithium-ion cells (8S1P), and has overcharge, over-discharge, over current and short-circuits proof circuit.

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

Product name	Cell	Battery
Model Name	LF100LA	LFP2.56KWH25.6V-P20L1
Capacity (Ah)	102	100
Nominal voltage (V)	3.2	25.6
Nominal charge current (A)	50	50
Maximum continuous charge current (A)	100	50
Nominal discharge current (A)	50	50
Maximum continuous discharge current (A)	250	100
Maximum Charge Voltage (V)	3.65	29.2
Upper limited charging voltage (V)	3.90	29.2
End-of-discharge Voltage (V)	2.0	20
Charge temperature range (°C)	0 to 65	0 to 55
Discharge temperature range (°C)	-30 to 65	-20 to 60
Storage temperature range (°C)	-20 to 45 one month 0 to 35 one year	-20 to 45 one month 0 to 25 one year
Recommend charging method declared by the manufacturer	At constant current 50A till cell voltage reaches 3.65V, then switch to constant voltage 3.65V till charge current drops to 5.1A	At constant current 50A till cell voltage reaches 29.2V, then switch to constant voltage 29.2V till charge current drops to 5A
Nominal mass (Kg)	1.98±0.1	22±1.0
Structure	☐ Cylindrical ☒ Prismatic	1 parallel & 8 series
External dimensions (mm)	L*W*H (160.0±0.8) × (50.1±0.5) × (118.5±0.5)	W*L*H (180±2)mm × (450±2)mm × (166±2)mm



IEC 62619: 2022			
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		P
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	Wires and cables used are certified.	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	Overcharge, over current and overheating proof circuit used in this battery. See tests of clause 8.	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 user manual.	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		P
	Capability to carry the maximum anticipated current	DC connector complied with the requirements.	P



IEC 62619: 2022			
Clause	Requirement + Test	Result - Remark	Verdict
	External terminal contact surfaces		P
	Terminal contacts are arranged to minimize the risk of short circuits		P
5.6	Assembly of cells, modules, or battery packs into battery systems		P
5.6.1	General		P
	Independent control and protection method(s)	Battery system has independent control and protective functions, and BMS is integrated into battery system.	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
	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.....:	Information mentioned in manufacturer's specifications.	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	Non-resettable protect function provided in the BMS security Mechanism.	P
	Manual with procedure for resetting of battery operation	Information mentioned in maintenance manual.	P
	Emergency battery final discharge	Not for such application	N
5.8	Quality plan		P
	Manufacturing quality plan (for example: ISO9001, etc.) prepared and implemented.....:	Manufacturing quality plan provided.	P
	The process capabilities and the process controls		P



IEC 62619: 2022			
Clause	Requirement + Test	Result - Remark	Verdict

6	TYPE TEST CONDITIONS		P
6.1	General		P
6.2	Test items		
	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	Tests were carried out in an ambient temperature of 25±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	Final voltage: 20V.	P
	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
	Short circuit with total resistance of 30 mΩ ± 10 mΩ at 25 °C ± 5 °C		N
	Results: no fire, no explosion		N
7.2.2	Impact test (cell or cell block)	CB approved cell used.	N
	Cylindrical cell, longitudinal axis impact		N
	Prismatic cell, longitudinal axis and lateral axis impact		N
	Results: no fire, no explosion.		N
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
	Description of the Test Unit.....:		—
	Mass of the test unit (kg).....:		—
	Height of drop (m).....:		—
	Results: no fire, no explosion		N
7.2.3.3	Edge and corner drop test (cell or cell block, and battery system)	Battery system applied.	P
	Description of the Test Unit.....:	Battery system.	—



IEC 62619: 2022			
Clause	Requirement + Test	Result - Remark	Verdict
	Mass of the test unit (kg)..... :	21.10kg.	—
	Height of drop (m)..... :	0.1m.	—
	Results: no fire, no explosion	See Table 7.2.3.3.	P
7.2.4	Thermal abuse test (cell or cell block)	CB approved cell used.	N
	Results: no fire, no explosion		N
7.2.5	Overcharge test (cell or cell block)	CB approved cell used.	N
	For those battery systems that are provided with only a single protection for the charging voltage control		—
	Results: no fire, no explosion..... :		N
7.2.6	Forced discharge test (cell or cell block)	CB approved cell used.	N
	Upper limit charge voltage of the cell..... :		N
	Cells connected in series in the battery system..... :		N
	Redundant or single protection for discharge voltage control provided in battery system..... :		N
	Target Voltage..... :		N
	Maximum discharge current of the cell, I_m :		N
	Discharge current for forced discharge, 1.0 I_t :		N
	Discharging time, $t = (1 I_t / I_m) \times 90$ (min.)..... :		N
	Results: no fire, no explosion..... :		N
7.3	Considerations for internal short-circuit – Design evaluation		P
7.3.1	General	CB approved cell used.	N
7.3.2	Internal short-circuit test (cell)		N
	Samples preparation procedure: In accordance with Clause A.5 and A.6 of IEC 62133-2:2017		N
	Tested per 7.3.2 b) in an ambient temperature of $25^\circ\text{C} \pm 5^\circ\text{C}$.		N
	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
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) was reached		N
	Results: no fire..... :		N
7.3.3	Propagation test (battery system)		N



IEC 62619: 2022			
Clause	Requirement + Test	Result - Remark	Verdict
	Method to create a thermal runaway in one cell :		N
	Results: No external fire from the battery system or no battery case rupture.....:		N
8	BATTERY SYSTEM SAFETY (CONSIDERING FUNCTIONAL SAFETY)		N
8.1	General requirements		N
	Functional safety analysis for critical controls		N
	Conduct of a process hazard analysis for both the cell manufacturing process and the battery system manufacturing process		N
	Conduct of risk assessment and mitigation of the battery system		N
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
	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
	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		P
	Elevated temperature for charging, 5 °C above maximum operating temperature..... :	60°C.	P
	Results: no fire, no explosion.....:	See Table 8.2.4.	P
	The BMS detected the overheat temperature and terminated charging		P



IEC 62619: 2022			
Clause	Requirement + Test	Result - Remark	Verdict
	The battery system operated as designed during test		P
9	EMC		N
	Battery system fulfil EMC requirements of the end-device application.....		N
10	INFORMATION FOR SAFETY		P
	The cell manufacturer provides information about current, voltage and temperature limits of their products	Included in datasheet.	P
	The battery system manufacturer provides information regarding how to mitigate hazards to equipment manufacturers or end-users.	Written in instruction manual.	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.	The battery is marked in accordance with IEC 62620, also see page 4.	P
	Cell or battery system has clear and durable markings		P
	Cell designation		N
	Battery designation	IFpP51/161/119/[8S]M/-20+50/90	P
	Battery structure formulation	8S1P	P
12	PACKAGING AND TRANSPORT		N
	Refer to Annex D		N
ANNEX A	OPERATING REGION OF CELLS FOR SAFE USE		N
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	Charging high temperature limit 55°C.	P



IEC 62619: 2022			
Clause	Requirement + Test	Result - Remark	Verdict
A.6	Low temperature range	Charging low temperature limit 0°C.	P
A.7	Discharging conditions for safe use	-20°C to 60°C.	P
A.8	Example of operating region		P

ANNEX B	PROCEDURE OF 7.3.3 PROPAGATION TEST BY LASER IRRADIATION		N
B.1	General		N
B.2	Test conditions		N
B.2.1	Cell test (preliminary test)		N
	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
	Repeat of cell test for 3 times		N
B.2.2	Battery system test (main test)		N
	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

ANNEX C	PROCEDURE OF 7.3.3 PROPAGATION TEST BY METHODS OTHER THAN LASER		N
C.1	General		N
C.2	Test conditions:		N
	– 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		—



IEC 62619: 2022			
Clause	Requirement + Test	Result - Remark	Verdict

	3) Nail penetration of the cell 4) Combination of above methods 5) Other methods.....:		
--	--	--	--

ANNEX D	PACKAGING AND TRANSPORT	N
	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
	Regulations concerning international transport of secondary lithium batteries	N



5.	TABLE: List of critical components				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity ¹⁾
Cell	EVE Power Co., Ltd.	LF100LA	3.2V,102Ah	IEC 62619: 2022	TÜV SÜD certificate No.: B 098952 0027 Rev. 00
Metal Enclosure	Huizhou Epever Technology Co., Ltd.	LFP2.56KWH25 .6V-P20L1	Thickness min.: 1.2mm; Dimensions: L450*W180*H16 4.5mm	--	Test with appliance
Power Input / Output Connector	Dongguan special united electronics Co., LTD	M8	600VDC, 200A, -40°C to 105°C	--	Test with appliance
Heat shrinkable tubing	SHENZHEN WOLIDA TRADING CO LTD	RSFR-H	150V , 125°C, VW-1	UL 224	UL E329530
Internal Connecting Power Wires (P+)	Dongguan Yueshun Electronic Technology Co., LTD	3512	6AWG, 600V, 200°C	UL 758	UL E526255
Internal Connecting Power Wires (P-)	Dongguan Yueshun Electronic Technology Co., LTD	3512	4AWG, 600V, 200°C	UL 758	UL E526255
PC Mylar tablet	SUZHOU OMA Y OPTICAL MATERIALS CO LTD	SE42B	V-0, Thickness min.:0.3mm	UL94	UL E249605
Epoxy plate	GOLDENMAX INTERNATIONAL TECHNOLOGY LTD	GF432PP	V-0, Thickness min.:0.3mm	UL94	UL E224772
PCB	SHENZHEN TIE FA ELECTRONIC LTD	TF-M	V-0,130°C Minimum thickness 0.08mm	UL 94 UL 796	UL E346897
Protective IC	Nanjing Jiche Electronic	DVC1006	V _{BAT} :7V~30V T _{OPR} :	IEC 62619: 2022	Test with appliance



5.	TABLE: List of critical components				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity ¹⁾
	Technology		40°C to 85°C		
Protective IC	Telink Microelectronics Shanghai) Co., LTD	TLSR8250F512	V _{DD} : 1.8V to 3.6V T _{OPR} : -40°C to 85°C	IEC 62619: 2022	Test with appliance
MOSFET	Shenzhen Semi-one Technology Co., Ltd.	PES016N08R	V _{ds} 90V V _{GS} : +20V I _D : 360A T _{STG} : -55°C to 175°C	IEC 62619: 2022	Test with appliance
NTC	DONG GUAN SENSICOM	SNS103	1600V, 125°C, R ₂₅ = 10KΩ ± 1%,	UL 1434	UL E318986
Sense Resistor	Suzhou Juyongchang Electronics Co., Ltd	ARD-2512-G F-RO01	1mΩ ± 1%, 3W Topr: -55°C to 170°C	IEC 62619: 2022	Test with appliance
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-2039.					



7.2.1	TABLE: External short-circuit test (cell or cell block)					N
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	
C1	--	--	--	--	--	
C2	--	--	--	--	--	
C3	--	--	--	--	--	
Supplementary information: Results: 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
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
C16	--	--	--	--	--	--
C17	--	--	--	--	--	--
C18	--	--	--	--	--	--
Supplementary information: Results: 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):						



7.2.6	TABLE: Forced discharge test (cell or cell block)					N
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	
C19	--	--	--	--	--	
C20	--	--	--	--	--	
C21	--	--	--	--	--	
Supplementary information: Results: A – No fire or Explosion B – Fire C – Explosion D – Other (Please explain): _____						

7.3.2	TABLE: Internal short-circuit test (cell)				N
Sample No.	OCV at start of test, (V dc)	Particle location ¹⁾	Maximum applied pressure, (N)	Results	
C22	--	--	--	--	
C23	--	--	--	--	
C24	--	--	--	--	
C25	--	--	--	--	
C26	--	--	--	--	
Supplementary information: ¹⁾ Identify one of the following: 1: Nickel particle inserted between positive and negative (active material) coated area. 2: Nickel particle inserted between positive aluminium foil and negative active material coated area. Results: A – No fire or explosion B – Fire C – Explosion D – Test concluded when 50 mV voltage drop occurred prior to reaching force limit E – Test concluded when 800/400 N pressure was reached and 50 mV voltage drop was not achieved F – Test was concluded when fire or explosion occurred G – Other (Please explain): _____					



7.3.3		TABLE: Propagation test (battery system)				N
Sample No.	OCV of Battery System Before Test, (V dc)	OCV of Target Cell Before Test, (V dc)	Maximum Cell Case Temperature, (°C)	Maximum DUT Enclosure Temperature, (°C)	Results	
--	--	--	--	--	--	
--	--	--	--	--	--	
--	--	--	--	--	--	
Method of cell failure ¹⁾		Location of target cell		Area for fire protection (m ²)		
--		--		--		
--		--		--		
--		--		--		
Supplementary information:						
1) Cell can be failed through applied heat, overcharge, nail penetration or combinations of these failures or other acceptable methods. See supporting documentation for details on cell failure method						
2) If the battery system has no outer covering, the manufacturer is required to specify the area for fire protection.						
Results:						
A – No fire external to DUT enclosure or area for fire protection or no battery case rupture						
B – Fire external to DUT enclosure or area for fire protection						
C – Explosion						
D – Battery case rupture						
E – Other (Please explain):						



8.2.2	TABLE: Overcharge control of voltage (battery system)					P
Sample No.	OCV at start of test for Cell/Cell Blocks, (V dc)	Maximum Charging Current, (A)	Max. Charging Voltage, (V dc)	Max. Voltage of Cell/Cell Blocks, (V dc)	Results	
B2	3.031	50	28.84	3.650	A, D, F	
			Charge Voltage Applied Battery System: 1)			
			Whole		Part	
			32.12V		/	
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	
B2	24.12	60	28.81	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	Maximum Charging Voltage, V dc	
B2	24.64	50	29.20	
Maximum Specified Temperature of Battery System, °C		Maximum Measured Cell Case Temperature, °C	Results	
55.0		60.3	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):				



ANNEX 1: PHOTOS

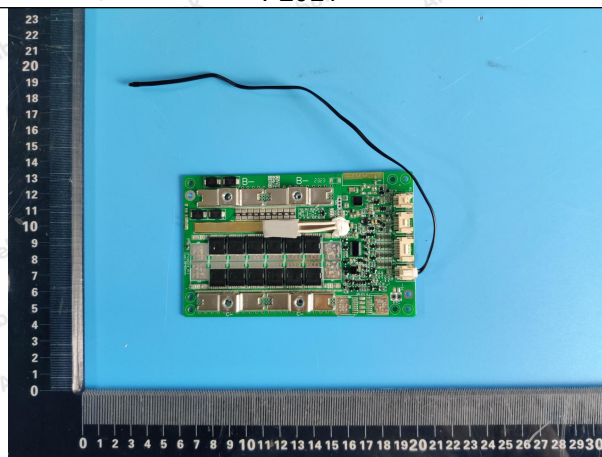
Model type: LFP2.56KWH25.6V-P20L1



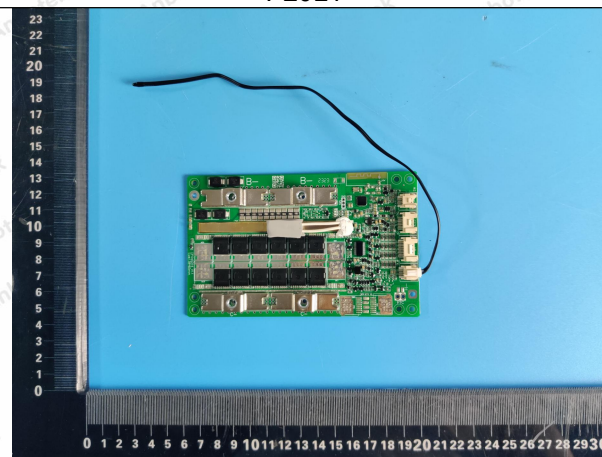
Side overview of Battery LFP2.56KWH25.6V-P20L1



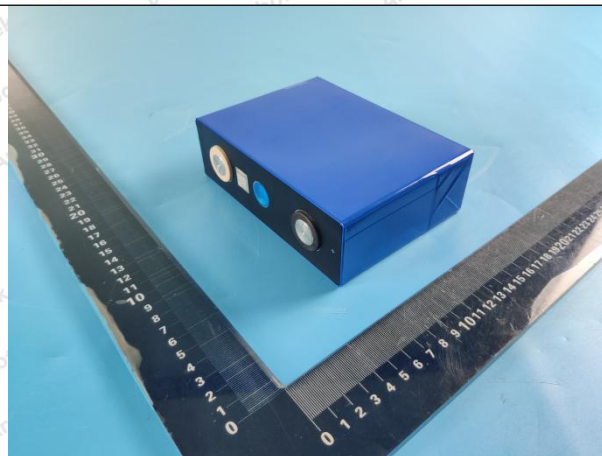
Side overview of Battery LFP2.56KWH25.6V-P20L1



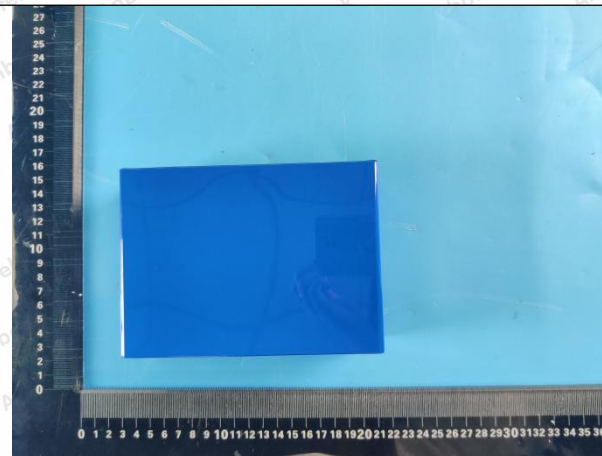
BMS main board of the EUT



BMS main board of the EUT



View of cell-1



View of cell-2

End of the report

