TEST REPORT

Product Name	:	**Rechargeable Li-ion Battery (Home Energy Storage Battery (Lithium Battery Module))**
Model Number	:	**AT48-200H, AT48-200H-B, VT-12040**

Prepared for	:	V-TAC EXPORT LIMITED
Address	:	Room 301 Kam ON Building 176A ,Queen's Road Central HongKong
Prepared by	:	EMTEK(DONGGUAN) CO., LTD.
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Report Number	:	EDG2301030146S00401R
Date(s) of Tests	:	August 31, 2022 to October 19, 2022
Date of issue	:	January 04, 2023

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.....:	EDG2301030146S00401R
Date of issue.....:	January 04, 2023
Total number of pages.....:	25 pages
Applicant's name .....:	V-TAC EXPORT LIMITED
Address.....:	Room 301 Kam ON Building 176A ,Queen's Road Central HongKong
Manufacturer's name .....:	Dongguan Antai Electronic Technology Co., Ltd
Address.....:	Building E, 22 Yuhua Street, Hongye Industrial Zone, Tangxia Town, Dongguan City, Guangdong Provinc
Factory's name .....:	Dongguan Antai Electronic Technology Co., Ltd
Address .....:	Building E, 22 Yuhua Street, Hongye Industrial Zone, Tangxia Town, Dongguan City, Guangdong Provinc
Test specification:	
Standard.....:	IEC 62619: 2017
Test procedure.....:	Test Report
Non-standard test method.....:	N/A
Test item description.....:	Rechargeable Li-ion Battery (Home Energy Storage Battery (Lithium Battery Module))
Trade Mark.....:	V-TAC Meaningful Innovation.
Model/Type reference.....:	AT48-200H, AT48-200H-B, VT-12040
Ratings.....:	51.2V 200Ah 10240Wh

Testing Laboratory:

Testing location/ address.....	EMTEK(DONGGUAN) CO., LTD. -1&2F, Building 2, Zone A, Zhongda Marine Biotechnology Research and Development Base, No.9, Xincheng Avenue, Songshanhu High-technology Industrial Development Zone, Dongguan, Guangdong, China
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EMTEK (DONGGUAN) CO.,LTD. TESTING

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

List of Attachments:
Appendix 1: 3 pages of Photo Documentation

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
cl.7.1 Charging procedures for test purposes cl.7.2.1 External short circuit test (cell); cl.7.2.2 Impact test (cell); cl.7.2.3.2 Whole drop test (cell); cl.7.2.4 Thermal abuse test (cell); cl.7.2.5 Overcharge test (cell); cl.7.2.6 Forced discharge test (cell); cl.7.3.2 Internal short-circuit test (cell) cl.7.3.3 Propagation test (battery system) cl.8.2.1 Requirements for the BMS. 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 IEC 62619: 2017.	All tests as described in Test Case and Measurement Sections were performed at the laboratory described on page **Subcontracted Test Condition:** N/A

Summary of compliance with National Differences
N/A

☒ **The product fulfils the requirements of IEC 62619: 2017 & EN 62619: 2017**

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

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.

ANTAI
Rechargeable Li-ion Battery
Home Energy Storage Battery (Lithium Battery Module)
Model: AT48-200H
Storage Capacity: 10240Wh 48V
Standard Capacity: 200Ah/51.2V
Continuous Input Current: 100A
Continuous Output Current: 100A
Standard Charging voltage: 57.6V-60V
Cut off: 36V-48V
Made in China
Dongguan Antai Electronic Technology Co., Ltd

V-TAC Meaningful Innovation.
Rechargeable Li-ion Battery
Home Energy Storage Battery (Lithium Battery Module)
Model: AT48-200H
Storage Capacity: 10240Wh 48V
Standard Capacity: 200Ah/51.2V
Continuous Input Current: 100A
Continuous Output Current: 100A
Standard Charging voltage: 57.6V-60V
Cut off: 36V-48V
Made in China
Dongguan Antai Electronic Technology Co., Ltd
DDMMYYYY

ANTAI
Rechargeable Li-ion Battery
Home Energy Storage Battery (Lithium Battery Module)
Model: AT48-200H-B
Storage Capacity: 10240Wh 48V
Standard Capacity: 200Ah/51.2V
Continuous Input Current: 100A
Continuous Output Current: 100A
Standard Charging voltage: 57.6V-60V
Cut off: 36V-48V
Made in China
Dongguan Antai Electronic Technology Co., Ltd
DDMMYYYY

V-TAC Meaningful Innovation.
Rechargeable Li-ion Battery
Home Energy Storage Battery (Lithium Battery Module)
Model: AT48-200H-B
Storage Capacity: 10240Wh 48V
Standard Capacity: 200Ah/51.2V
Continuous Input Current: 100A
Continuous Output Current: 100A
Standard Charging voltage: 57.6V-60V
Cut off: 36V-48V
Made in China
Dongguan Antai Electronic Technology Co., Ltd
DDMMYYYY

ANTAI
Rechargeable Li-ion Battery
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Model: VT-12040
Storage Capacity: 10240Wh 48V
Standard Capacity: 200Ah/51.2V
Continuous Input Current: 100A
Continuous Output Current: 100A
Standard Charging voltage: 57.6V-60V
Cut off: 36V-48V
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Cut off: 36V-48V
Made in China
Dongguan Antai Electronic Technology Co., Ltd
DDMMYYYY

Remark:

YYYYMMDD means: YYYY for year, MM for month, DD for day.

Note:

-The above markings are the minimum requirements required by the safety standard. For the final production, the additional markings which do not give rise to misunderstanding may be added.

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

Test item particulars..... :	
Classification of installation and use.....:	To be defined in final product
Supply Connection.....:	DC supply
.....:	--
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.....:	August 31, 2022
Date (s) of performance of tests.....:	August 31, 2022 to October 19, 2022

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.
"(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 point is used as the decimal separator.

Remark:

Amendment : This report was the revision based on previous report with report number EDG2301030146S00401R dated October 26, 2022 and superseded it due to following amendments:

-Add a model name VT-12040 for battery, model VT-5139, modelAT48-200H, and model AT48-200H-B are identical except for the model name.

No additional testing need to be re-considered and performed based on above amendments, and still complied with the requirements of standards covered in this report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

General product information:

The cell consists of the positive electrode plate, negative electrode plate, separator, electrolyte, case. The positive and negative electrode plates are housed in the case in the state being separated by the separator.

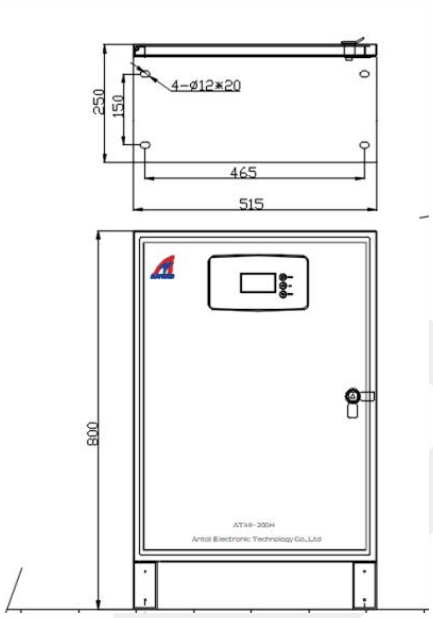
The main features of the cell are shown as below:

Product name	Rechargeable Li-ion Battery	Rechargeable Li-ion Cell
Model	AT48-200H	LP54173210-202Ah
Nominal capacity	200Ah	202Ah
Nominal voltage	51.2V	3.2V
Nominal Charge Current	80A	101A
Maximum Charge Current	100A	202A
Nominal Discharge Current	80A	101A
Maximum Discharge Current	100A	202A
Maximum Charge Voltage	57.6V	3.65V
Cut-off Voltage	46.4V	2.0V
Upper charge temperature	55°C	55°C
Lower charge temperature	-20°C	-20°C
Upper discharge temperature	60°C	60°C
Lower discharge temperature	-30°C	-30°C
Storage temperature range	-20°C~35°C	-20°C~35°C
Recommend charging method declared by the manufacturer	Charging the battery with 80A constant current until 56.0V, then constant voltage untill the charge current reduces to 8A at ambient 25°C±5°C.	Charging the cell with 80A constant current until 3.65V, then constant voltage untill the charge current reduces to 8A at ambient 25°C±5°C.
Charging procedure for internal short-circuit test	N/A	Stabilize cell at 55°C or -5°C for 1 to 4 hours, CC–CV Charge cell at 101A to 3.65V and until current reaches 0.05 I_t A
Recommend discharging method declared by the manufacturer	Discharged at 25±5 ºC at a constant current 80A down to 46.4V	Discharged at 25±5 ºC at a constant current 101A down to 2.0V
Nominal mass (g).....	90.3kg	3.91kg
External dimensions (mm).....	Max. 800.0*515.0*250.0	Max. 211.1*173.5*54.5

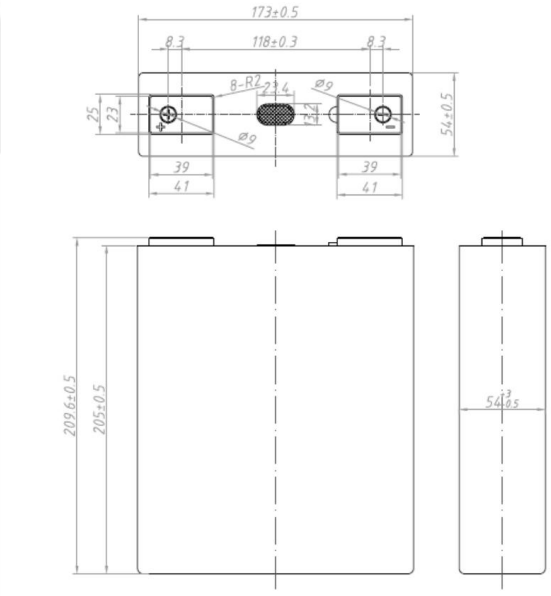
IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

Construction:

Battery dimension: (unit: mm)



Cell dimension: (unit: mm)



The final evaluation of the cell must be conducted in the end product for which the cell will be used.

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
5.2	**Insulation and wiring**		**P**
	Voltage, current, altitude, and humidity requirements		P
	Adequate clearances and creepage distances between connectors		P
	The mechanical integrity of internal connections		P
5.3	**Venting**		**P**
	Pressure relief function	Venting mechanism exists on the top of cell.	P
	Encapsulation used to support cells within an outer casing	No such construction.	N/A
5.4	**Temperature/voltage/current management**		**P**
	The design prevents abnormal temperature-rise		P
	Voltage, current, and temperature limits of the cells		P
	Specifications and charging instructions for equipment manufacturers		P
5.5	**Terminal contacts of the battery pack and/or battery system**		**P**
	Polarity marking(s)		P
	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
	Independent control and protection method(s)		P
	Recommendations of cell operating limits by the cell manufacturer		P
	Batteries designed for the selective discharge of a portion of their series connected cells		P
	Protective circuit component(s) and consideration to the end-device application		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.2	Battery system design		P
	The voltage control function		P
	The voltage control for series-connected batteries		P
5.7	**Operating region of lithium cells and battery systems for safe use**		**P**
	The cell operating region.....:	Specify in cell user manual.	P
	Designation of battery system to comply with the cell operating region		N/A
5.8	**Quality plan**		**P**
	Manufacturing quality plan (for example: ISO9001, etc.) prepared and implemented..... :	Complied. ISO 9001: 2015 certificate 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		N/A
	The cells or batteries charged using the method specified by the manufacturer.....:		P
7.2	**Reasonably foreseeable misuse**		**P**
7.2.1	External short-circuit test (cell or cell block)	Tested complied.	P
	Short circuit with total resistance of 30 mΩ ± 10 mΩ at 25 °C ± 5 °C		P
	Results: no fire, no explosion	(See Table 7.2.1)	P
7.2.2	Impact test (cell or cell block)		P
	Cylindrical cell, longitudinal axis impact		P
	Prismatic cell, longitudinal axis and lateral axis impact		N/A
	Results: no fire, no explosion.	No fire, no explosion	P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
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)		P
	Description of the Test Unit.....:		—
	Mass of the test unit (kg)..... :	Approx.1.92kg	—
	Height of drop (m)..... :	1.0	—
	Results: no fire, no explosion	No fire, no explosion	P
7.2.3.3	Edge and corner drop test (cell or cell block, and battery system)	Less than 7kg, whole drop test was conducted.	N/A
	Description of the Test Unit.....:		—
	Mass of the test unit (kg)..... :		—
	Height of drop (m)..... :		—
	Results: no fire, no explosion		N/A
7.2.4	Thermal abuse test (cell or cell block)		P
	Results: no fire, no explosion	No fire, no explosion	P
7.2.5	Overcharge test (cell or cell block)		P
	For those battery systems that are provided with only a single protection for the charging voltage control		—
	Results: no fire, no explosion.....:	(See Table 7.2.5.)	P
7.2.6	Forced discharge test (cell or cell block)		P
	Upper limit charge voltage of the cell.....:	3.65V	P
	Cells connected in series in the battery system..... :	Single cell only.	N/A
	Redundant or single protection for discharge voltage control provided in battery system..... :		N/A
	Target Voltage..... :	-3.65V	P
	Maximum discharge current of the cell, I_m..... :	100A	P
	Discharge current for forced discharge, 1.0 It.....:	100A	P
	Discharging time, t = (1 It / I_m) x 90 (min.)..... :	90min	P
	Results: no fire, no explosion.....:	(See Table 7.2.6.)	P
7.3	**Considerations for internal short-circuit – Design evaluation**		**P**
7.3.1	General		P
7.3.2	Internal short-circuit test (cell)		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	Samples preparation procedure: a), in accordance with 8.3.9 of IEC62133:2012; or b), the nickel particle inserted before charging, or c), the nickel particle was inserted before electrolyte filling.....:	Procedure: a)	P
	Tested according to Cl. 8.3.9 of IEC 62133:2012 test method, except all tests were carried out in an ambient temperature of 25 °C ± 5 °C.		P
	The appearance of the short-circuit location recorded by photograph or other means..... :	Location 1	—
	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	400N for prismatic cell.	P
	Results: no fire, no explosion.....:	(See Table 7.3.2.)	P
7.3.3	**Propagation test (battery system)**		**P**
	Method to create a thermal runaway in one cell .... :		P
	Results: No external fire from the battery system or no battery case rupture.....:		P
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, 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)..... :		P
	Results: no fire, no explosion.....:	See Table 8.2.2.	P
	The BMS interrupted the overcharging before reaching 110% of the upper limit charging voltage		P
8.2.3	Overcharge control of current (battery system)		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	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..... :		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	**INFORMATION FOR SAFETY**		**P**
	The cell manufacturer provides information about current, voltage and temperature limits of their products	Specific in cell user manual.	P
	The battery system manufacturer provides information regarding how to mitigate hazards to equipment manufacturers or end-users.		N/A
10	**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	ICR19/66	P
	Battery designation	Cell only.	P
	Battery structure formulation		P
ANNEX A	**OPERATING REGION OF CELLS FOR SAFE USE**		**P**
A.1	General		P
A.2	Charging conditions for safe use		P
A.3	Consideration on charging voltage		P
A.4	Consideration on temperature		P
A.5	High temperature range		P
A.6	Low temperature range		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
A.7	Discharging conditions for safe use		P
A.8	Example of operating region		P

ANNEX B	**PROCEDURE OF 7.3.3 PROPAGATION TEST**		**N/A**
B.1	General		N/A
B.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..... :		—
B.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 C	**PACKAGING**		**P**
	The materials and pack design chosen in such a way as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants		P

Table

5.1	TABLE: Critical components information				P
Object/part No.	Manufacturer/ trademark	Type/ model	Technical data	Standard	Mark(s)of conformity
Positive electrode	Beijing Easpring Material Technology Co., Ltd.	RH0015000097	Li(Ni0.8Co0.1Mn0.1)O_2 Specific capacity: 200mAh/g	--	--
Negative electrode	BTR New Energy Materials Inc.	RH0027000002	Graphite Specific capacity: 400mAh/g	--	--
Separator	Celgard, LLC.	RS0001002150	PP+Al_2O_3 Shutdown temperature: 150°C.	--	--
Electrolyte	Shenzhen Capchem Technology Co.,Ltd.	RH0002000200	$LiPF_6$, EC, DMC Conductivity:11 mS/cm	--	--
Supplementary information: N/A					

7.2.1	TABLE: External short-circuit test (cell or cell block)				P
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**
C01	23.8	3.59	32.3	117.4	A
C02	23.8	3.59	35.6	116.1	A
C03	23.8	3.59	34.1	111.9	A

Supplementary information:

A - No fire or Explosion
B - Fire
C - Explosion
D - The test was completed after 6 h
E - The test was completed after the case temperature declines by 80% of the maximum temperature rise
F - Other (Please explain):___

7.2.5	TABLE: Overcharge test (cell or cell block)					P
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**
C13	2.95	3.58	202	3.65	27.3	A
C14	2.95	3.59	202	3.65	26.2	A
C15	2.96	3.59	202	3.65	27.4	A

Supplementary information:

Results:
A - No fire or Explosion
B - Fire
C - Explosion
D - Test concluded when temperature reached a steady state condition
E - Test concluded when temperature returned to ambient
F - Other (Please explain): _____

7.2.6	TABLE: Forced discharge test (cell or cell block)				P
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**
C16	2.97	-3.65	202	90	A
C17	2.96	-3.65	202	90	A
C18	2.96	-3.65	202	90	A
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)			P
Sample No.	**OCV at start of test, (V dc)**	**Particle location [1)]**	**Maximum applied pressure, (N)**	**Results**
Samples charged at charging temperature upper limit (55°C)				
C19	3.59	1	413.2	A
C20	3.59	1	414.5	A
C21	3.60	1	418.6	A
C22	3.58	2	412.9	A
C23	3.58	2	411.2	A
Samples charged at charging temperature lower limit (-25°C)				
C24	3.28	1	413.4	A
C25	3.28	1	415.6	A
C26	3.27	1	416.1	A
C27	3.26	2	417.1	A
C28	3.26	2	413.5	A

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)				P
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**
B1	56.7	3.61	79.3	52.1	A
B2	56.6	3.60	76.2	53.7	A
B3	56.6	3.59	77.8	55.6	A

Method of cell failure [1)]	**Location of target cell**	**Area for fire protection (m^2)**
Heat	DUT Enclosure	N/A
Heat	DUT Enclosure	N/A
Heat	DUT Enclosure	N/A

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**
B4	3.61	100	3.59	4.015	A
B5	3.61	100	3.60	4.015	A
B6	3.61	100	3.60	4.015	A

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

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**
B7	3.61	120	57.6	A
B8	3.60	120	57.6	A
B9	3.60	120	57.6	A

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**
B10	52.1	100	57.6
B11	52.3	100	57.6
B12	52.2	100	57.6
Maximum Specified Temperature of Battery System, °C		**Maximum Measured Cell Case Temperature, °C**	**Results**
24.3		31.2	A
24.2		33.7	A
24.2		33.1	A

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): ____

Appendix 1

Photo Documentation

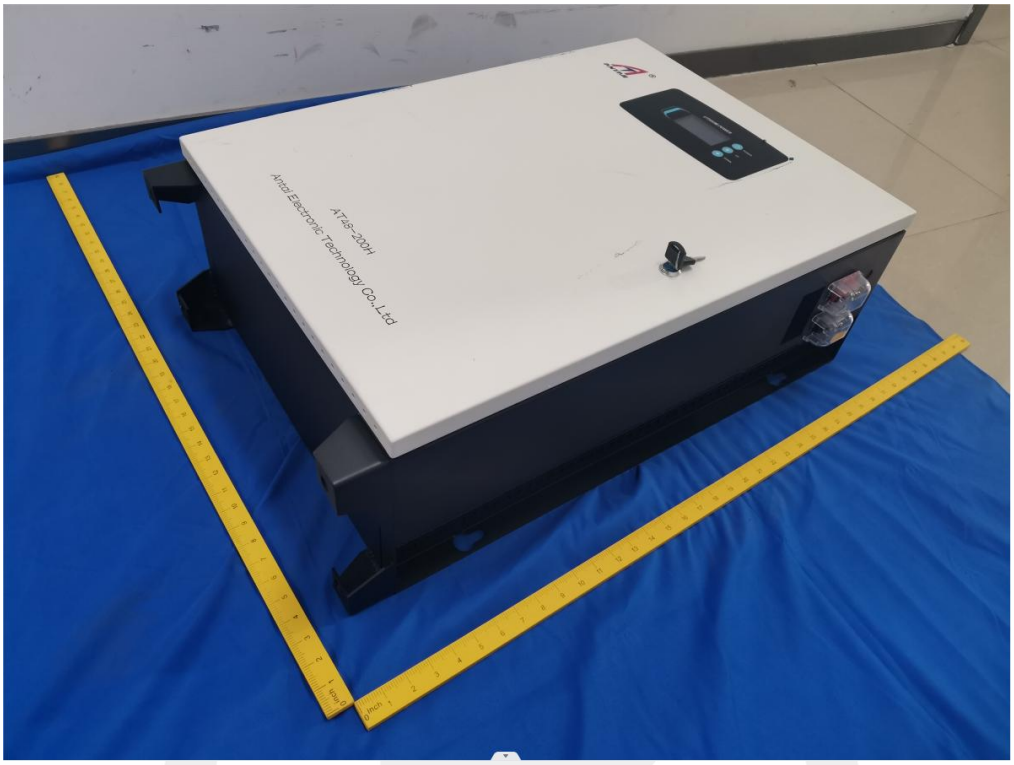


Figure 1 Over view of battery

Figure 2 Back view of battery

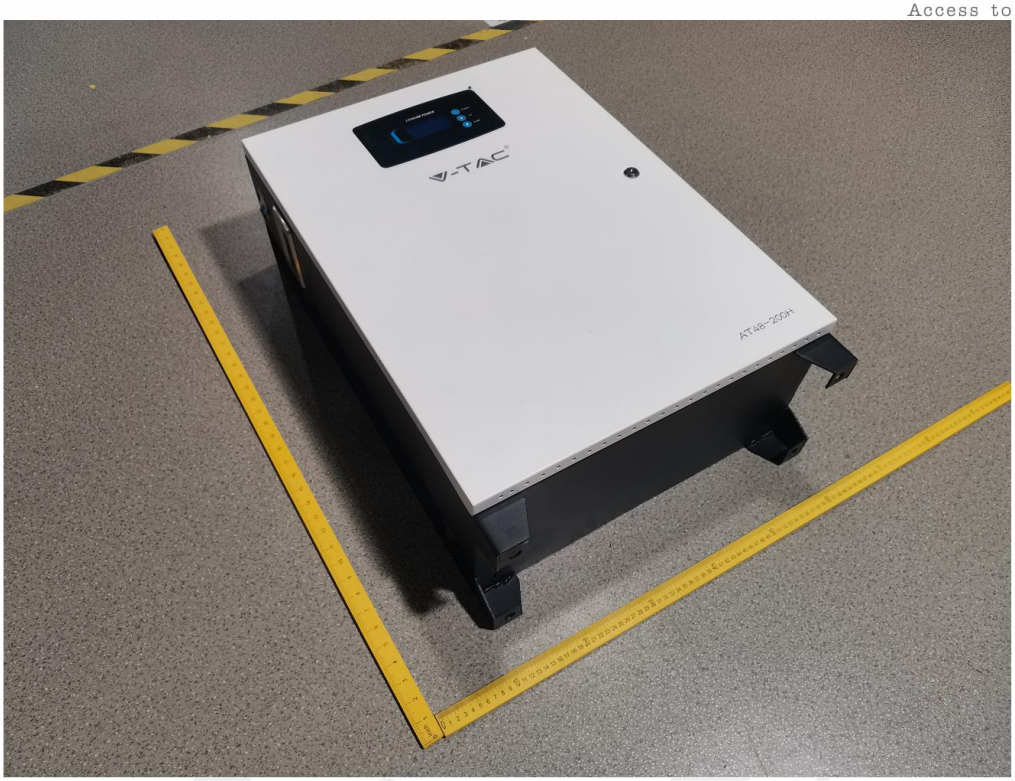


Figure 3 Over view of battery

Figure 4 Over view of battery

Figure 5 Inside view of battery

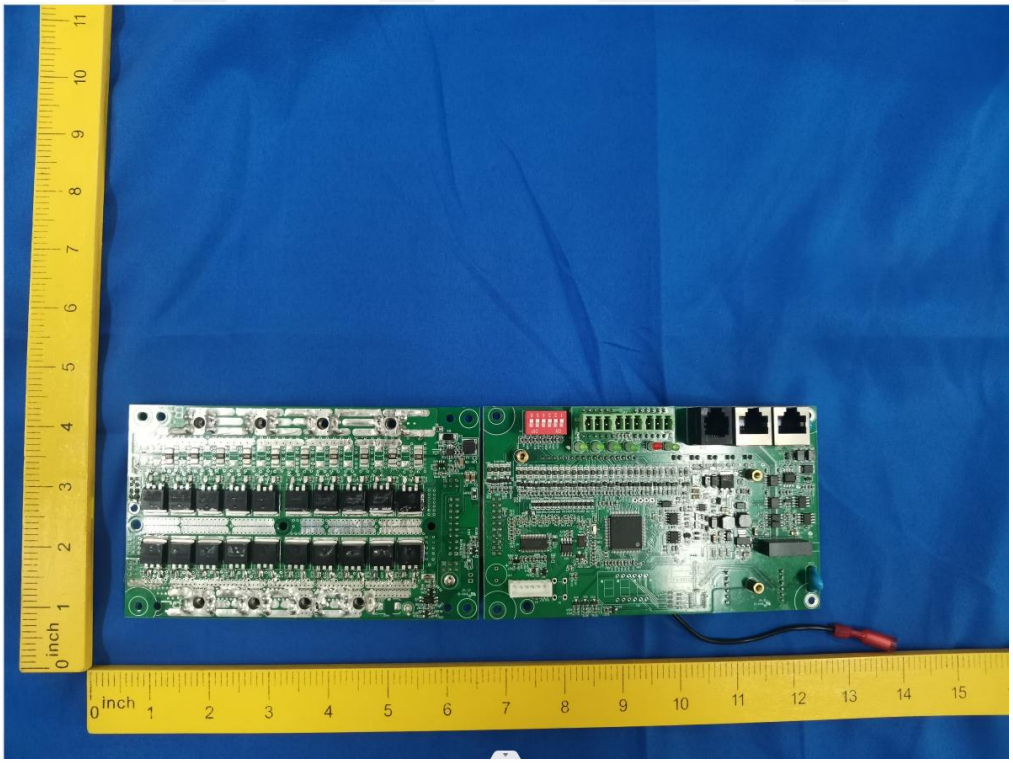


Figure 6 Over view of PCB /PCB

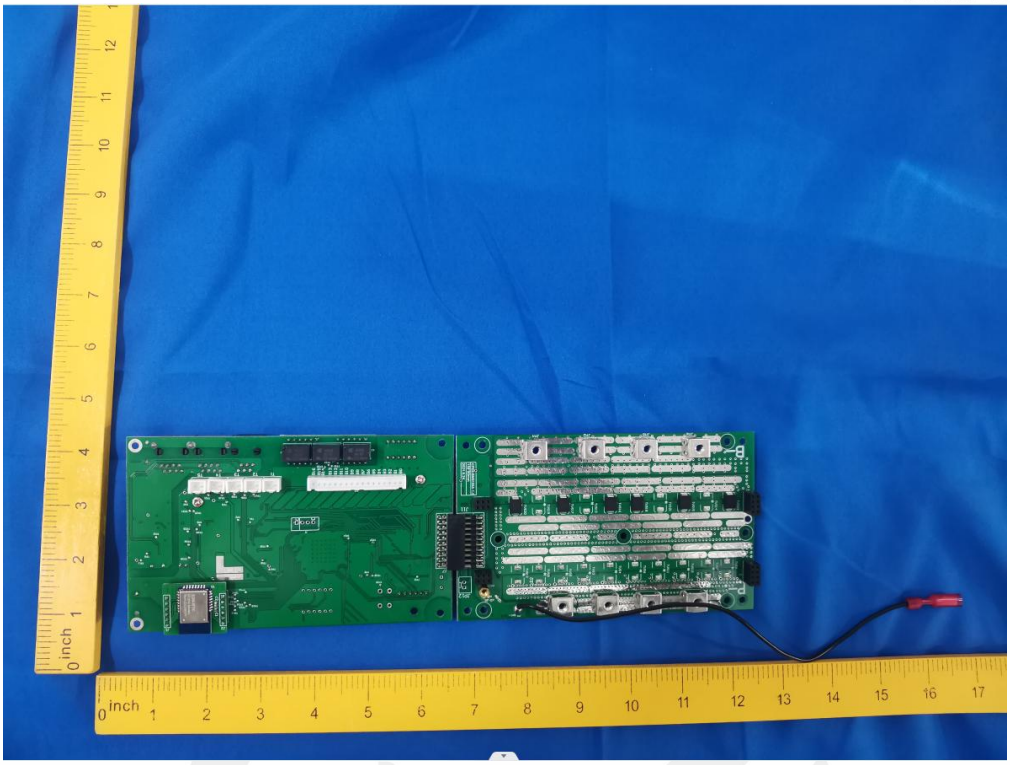


Figure 7 Back view of PCB /PCB

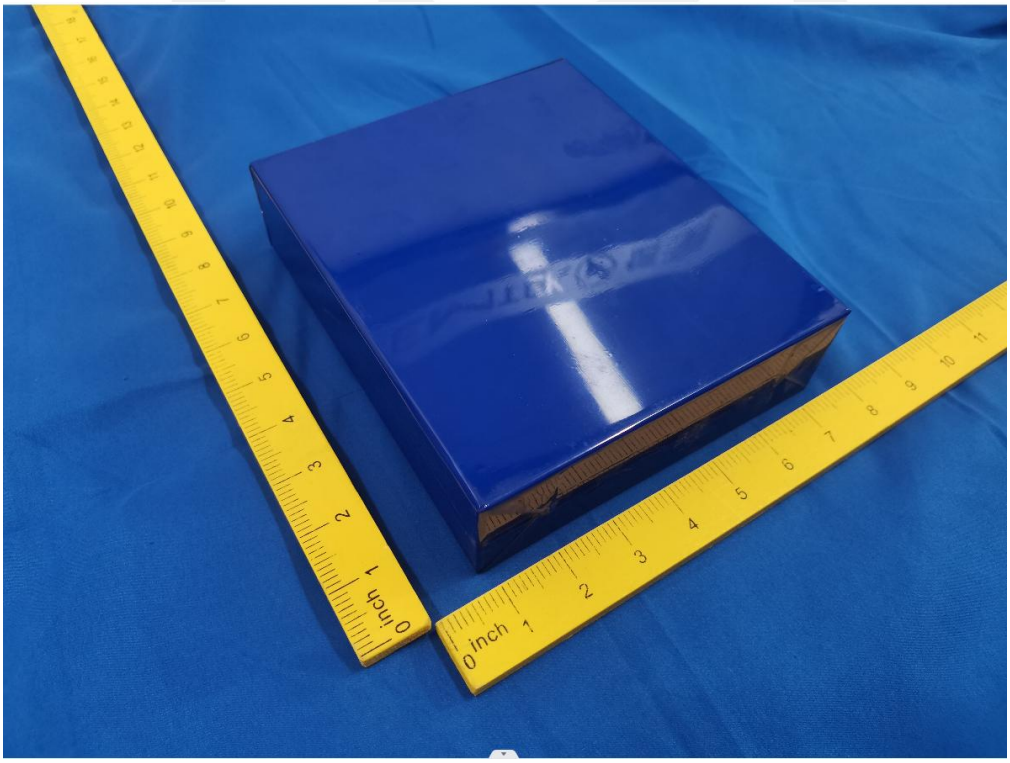


Figure 8 Cell body

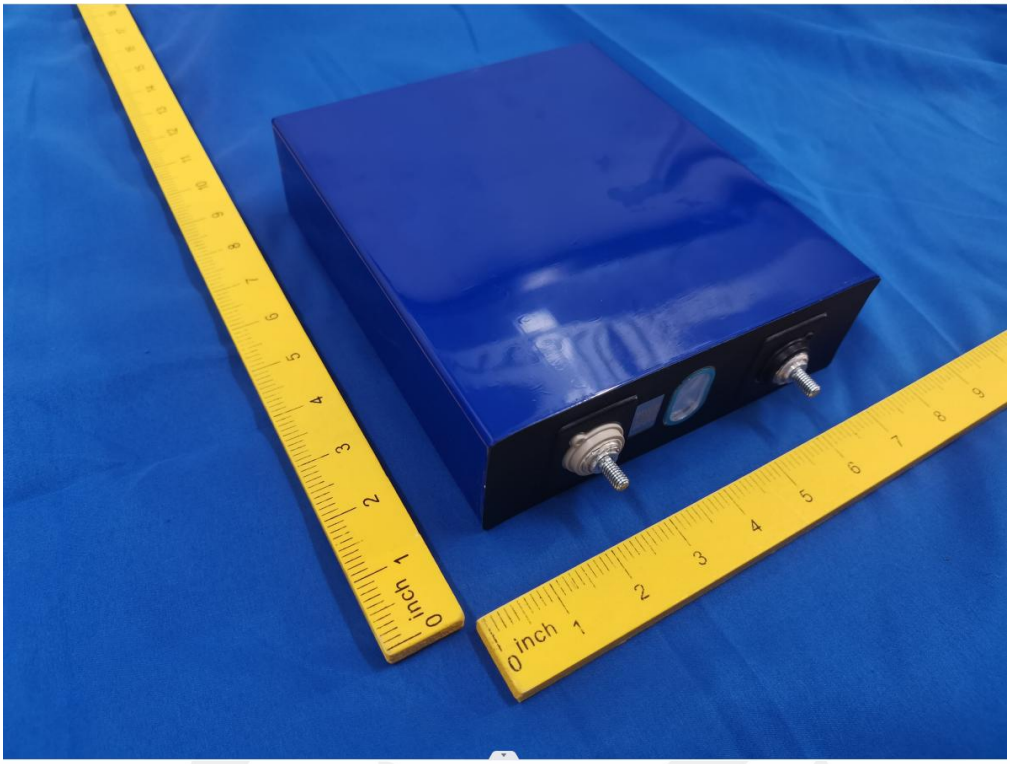


Figure 9 Cell body

-- End of Report –

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