

**TEST REPORT OF CLASSIFICATION
FOR DANGEROUS GOODS – LITHIUM METAL AND
LITHIUM ION BATTERIES**

New Application Modification Other:

Report ID: 2018096J13909

Sample Name: Lithium-ion Battery

Model/Type: M4856 51.2V56Ah/2.85kWh

Applicant: Alpha ESS Co., Ltd.



CQC Intime Testing Technology Co.,Ltd

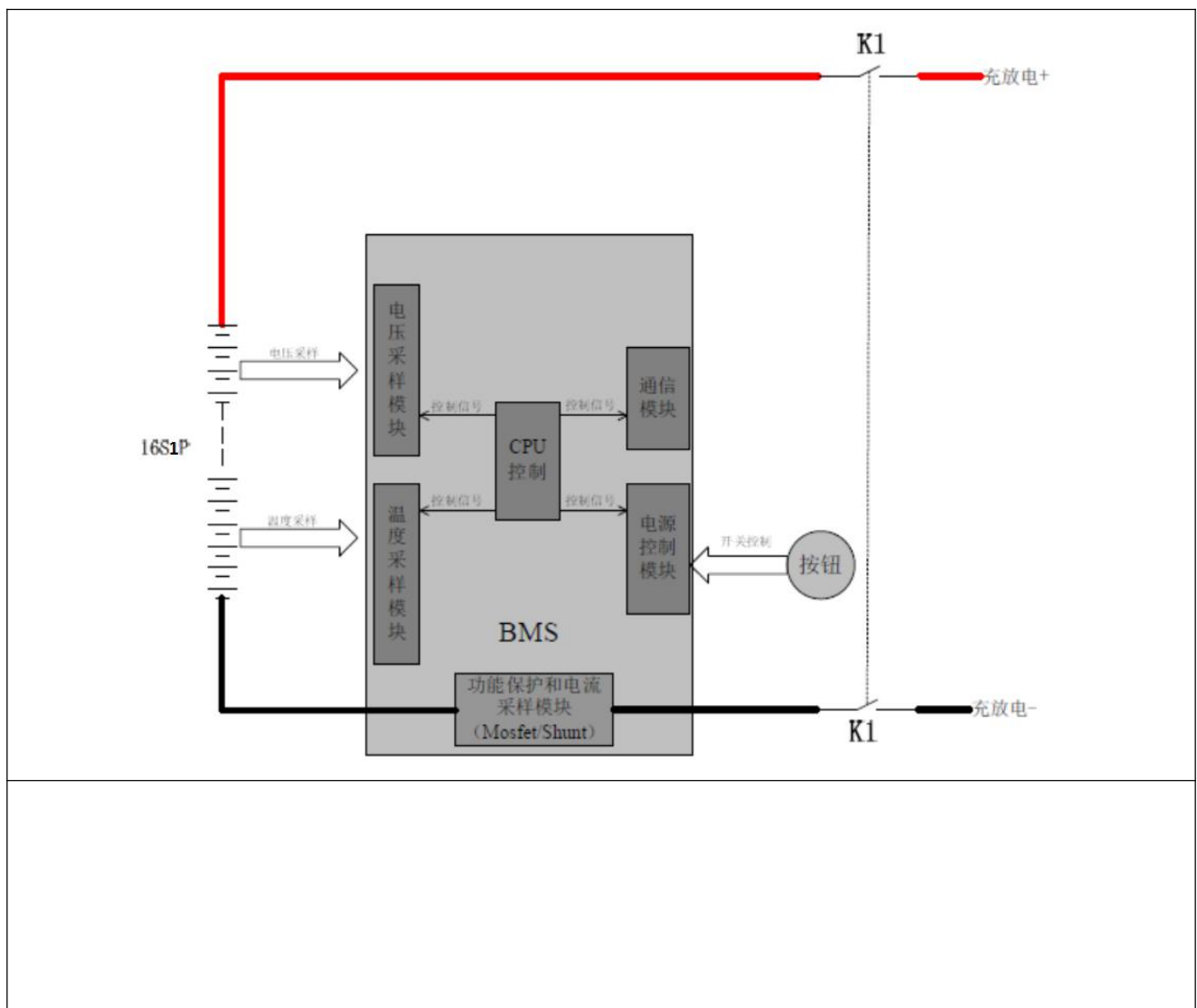
TEST REPORT

Report ID: 2018096J13909	
Test Unit: CQC Intime Testing Technology Co., Ltd	
Address: East Taihu Technology and Finance City, No.1368 Wuzhong Dadao Rd., Wuzhong Economic Development Zone, Suzhou, Jiangsu.	
Postal code: 215104	Phone: 0512-66303623
Fax: 0512-66303625	
Testing location/procedure: East Taihu Technology and Finance City, No.1368 Wuzhong Dadao Rd., Wuzhong Economic Development Zone, Suzhou, Jiangsu.	
Applicant's name: Alpha ESS Co., Ltd.	
Address: JiuHua Road 888, Nantong High-Tech Industrial Development Zone, Nantong City	
Sample Name: Lithium-ion Battery	Trade Mark: Alpha-ESS
Model/Type: M4856	Ratings: 51.2V56Ah/2.85kWh
Manufacturer: Alpha ESS Co., Ltd.	
Address: JiuHua Road 888, Nantong High-Tech Industrial Development Zone, Nantong City	
Standard Specification: UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, sub-section 38.3. Rev.5	
Test Procedure: —	Non-standard Test Method: —
Test Item: Altitude Simulation, Thermal Test, Vibration, Shock, External Short Circuit, Impact, Overcharge, Force Discharge	
Date of receipt of test item: 2018.09.03	
Finished Date: 2018.09.30	
Conclusion: The Submitted Sample(s) Meet the Requirement of the Standard.	
Testing Conditions: Temperature: 21.0℃ ~ 25.2℃ Relative Humidity: 53.7%~65.5%	
Engineer: Liu Rong	Signature: _____
	Date: 2018.10.08
Auditor: Cao Wei	Signature: _____
	Date: 2018.10.08
Approver: Zhao Runsheng	Signature: _____
	Date: 2018.10.08
Seal of CQC IT	
Date of issue:	
2018.10.08	
Remark: (1) P : Test object does meet the requirement. (2) F: Test object does not meet the requirement. (3) N/A: Test case does not apply to the test object. (4) ---: Test case does not conduct	

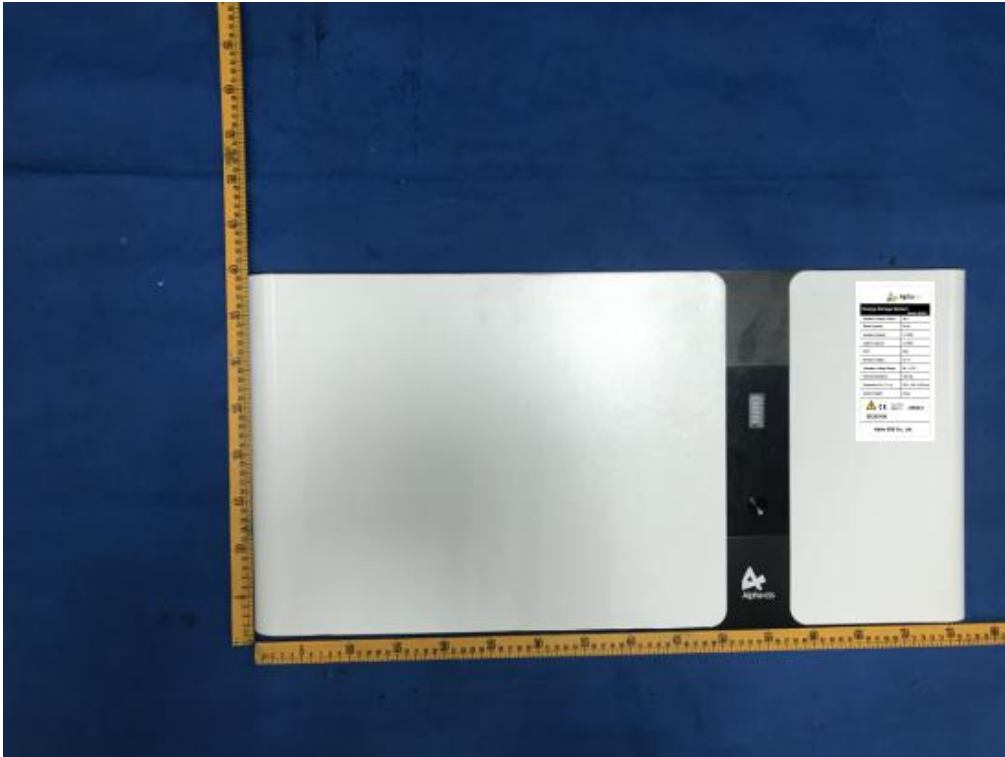
The Table of Battery Fundamental Parameters

Item	Rated Performance	Item	Rated Performance
Nominal capacity (Ah)	56	Nominal voltage(V)	51.2
Rated power(Wh)	2850	Limited charge voltage(V)	57.6
Charge current(A)	56	Maximum continous charging current (A)	56
End charge current(mA)	56	Discharge current(A)	56
Cut-off voltage (V)	48	Cell numbers	16
Maximum discharge current(A)	56	Type of cell(mm)	square
Permutation of cell	16S1P	Capacity of cell(Ah)	56
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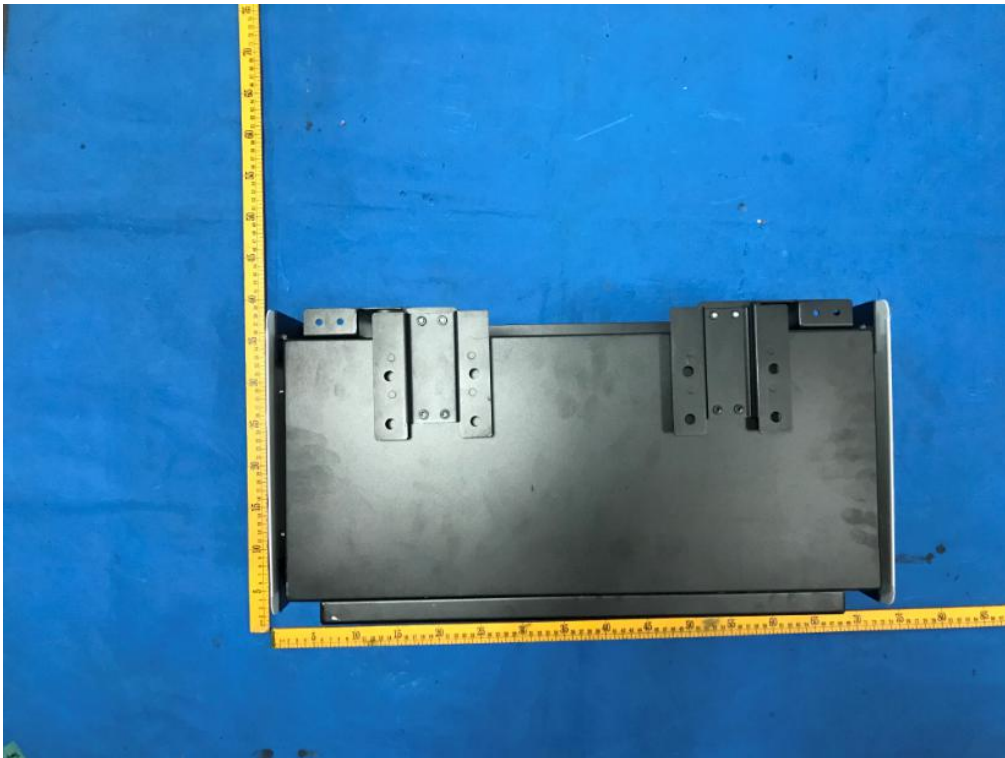
The Battery Electrical Connection Diagram



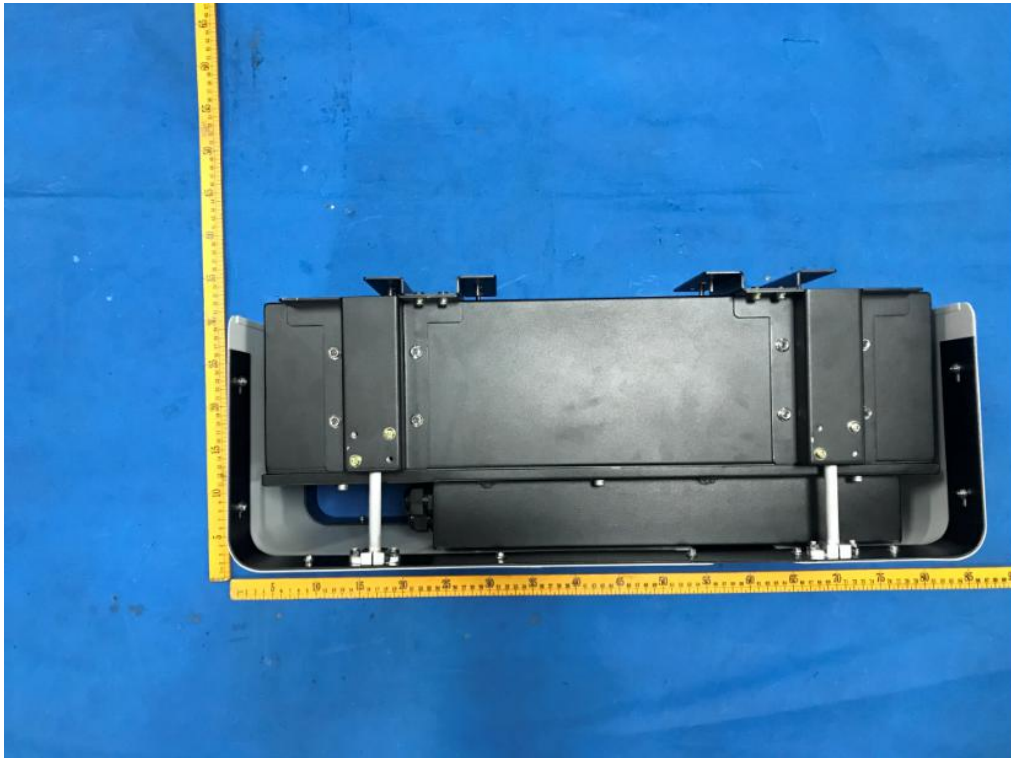
Sample photograph-1



Sample photograph-2



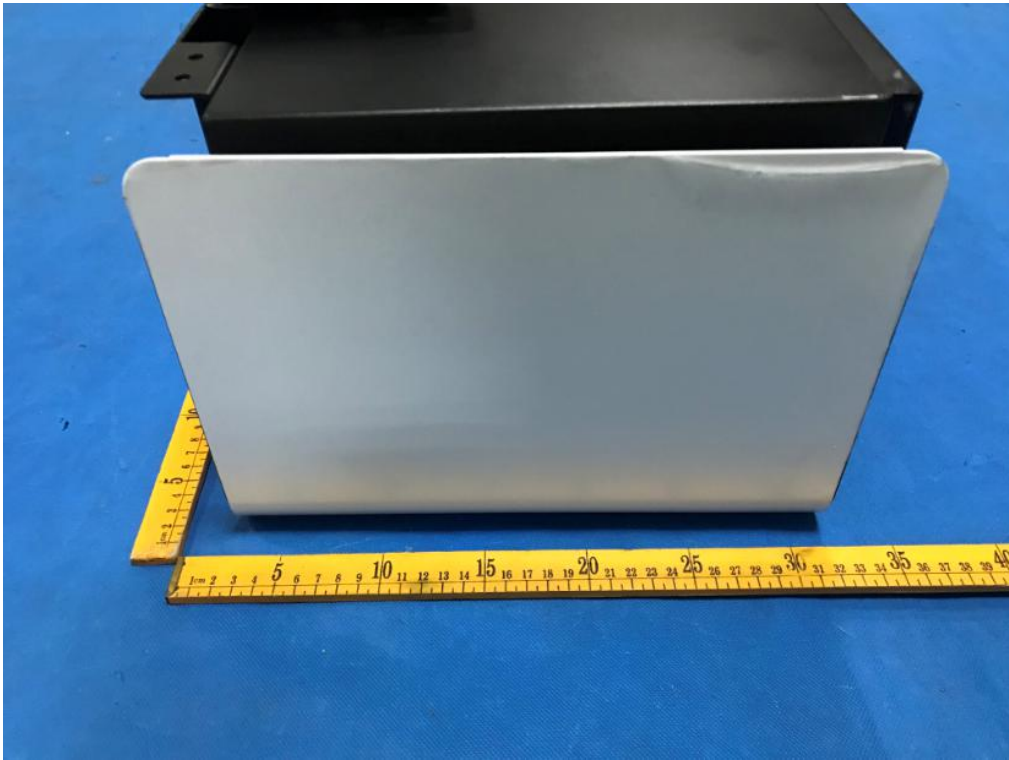
Sample photograph-3



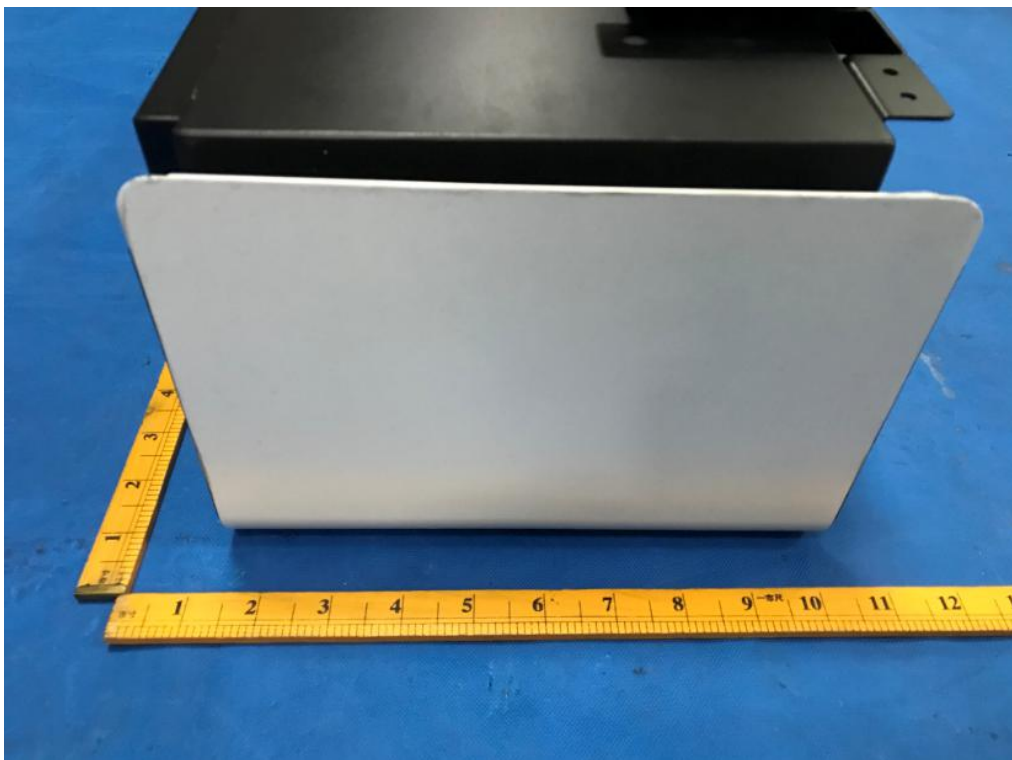
Sample photograph-4








Sample photograph-5



Sample photograph-6



Sample photograph-7

 Energy Storage System Model: M4856	
Standard Charge Current	56 A
Rated Capacity	56 Ah
Installed Capacity	2.85 kWh
Usable Capacity	2.6 kWh
DOD	90%
Nominal Voltage	51.2 V
Operation Voltage Range	48 ~ 57.6 V
Internal Resistance	≤30 mΩ
Dimension (W × D × H)	610 × 240 × 305 mm
System Weight	42 kg
    IEC62109	
Alpha ESS Co., Ltd.	

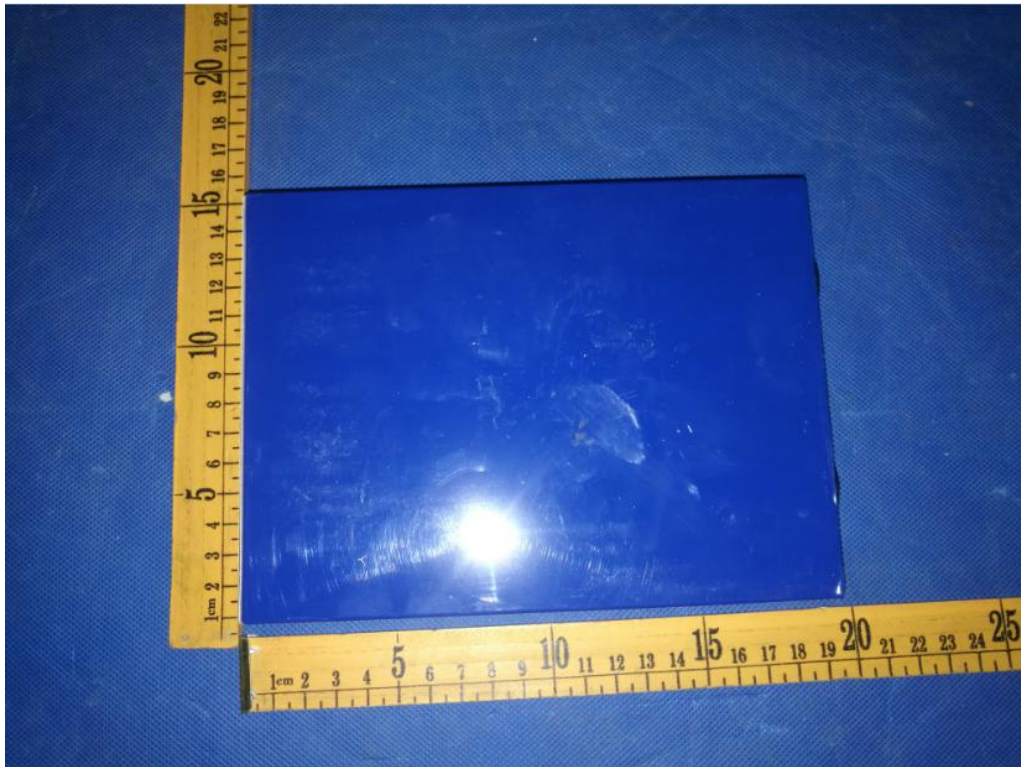
Sample photograph-8



Sample photograph-9



Sample photograph-10



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TEST REPORT

Test results

UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, subsection 38.3

Clause	Test item	Specification	Unit	Sample ID	Test results	Pass/Fail Conclusion
38.3.4.1 Altitude simulation	<p>Battery at first cycle in fully charged state.</p> <p>Test batteries shall be stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature ($20 \pm 5^\circ\text{C}$).</p>	<p>No leakage No venting No disassembly No rupture No fire The open circuit voltage of each test battery after testing is not less than 90% of its voltage, Mass loss limit 0.1%.</p>	/	Group1 Group2	<p>No leakage No venting No disassembly No rupture No fire The open circuit voltage of each test battery after testing is not less than 90% of its voltage. No mass loss. Test data is shown in Annex 1.</p>	P
	<p>Battery after 25 cycles in fully charged state.</p> <p>Test batteries shall be stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature ($20 \pm 5^\circ\text{C}$).</p>			Group3 Group4		P

*When mass loss does not exceed the limited value, it shall be considered as "no mass loss".

CQC Intime Testing Technology Co., Ltd

TEST REPORT

Test results

UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, sub-section 38.3

Clause	Test item	Specification	Unit	Sample ID	Test results	Pass/Fail Conclusion
38.3.4.2 Thermal test	<p>Battery at first cycle in fully charged state.</p> <p>Test batteries are to be stored for at least six hours at a test temperature equal to $72\pm 2^{\circ}\text{C}$, followed by storage for at least six hours at a test temperature equal to $-40\pm 2^{\circ}\text{C}$. The maximum time interval between test temperature extremes is 30 minutes. This procedure is to be repeated 10 times, after which all test batteries are to be stored for 24 hours at ambient temperature ($20\pm 5^{\circ}\text{C}$).</p>	<p>No leakage No venting No disassembly No rupture No fire The open circuit voltage of each test battery after testing is not less than 90% of its voltage, Mass loss limit 0.1%.</p>	/	Group1 Group2	<p>No leakage No venting No disassembly No rupture No fire The open circuit voltage of each test battery after testing is not less than 90% of its voltage. No mass loss. Test data is shown in Annex 2.</p>	P
	<p>Battery after 25 cycles in fully charged state.</p> <p>Test batteries are to be stored for at least six hours at a test temperature equal to $72\pm 2^{\circ}\text{C}$, followed by storage for at least six hours at a test temperature equal to $-40\pm 2^{\circ}\text{C}$. The maximum time interval between test temperature extremes is 30 minutes. This procedure is to be repeated 10 times, after which all test batteries are to be stored for 24 hours at ambient temperature ($20\pm 5^{\circ}\text{C}$).</p>			/		Group3 Group4

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CQC Intime Testing Technology Co., Ltd

TEST REPORT

Test results

UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, subsection 38.3

Clause	Test item	Specification	Unit	Sample ID	Test results	Pass/Fail Conclusion
38.3.4.3 Vibration	<p>Battery at first cycle in fully charged state.</p> <p>Batteries are firmly secured to the platform of the vibration machine without distorting the cells. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting positions of the cell. One of the directions of vibration must be perpendicular to the terminal face. The logarithmic frequency sweep is as follows: from 7 Hz a peak acceleration of 1 g_n is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 8 g_n occurs (approximately 50 Hz). A peak acceleration of 8 g_n is then maintained until the frequency is increased to 200 Hz.</p>	<p>No leakage No venting No disassembly No rupture No fire The open circuit voltage of each test battery after testing is not less than 90% of its voltage, Mass loss limit 0.1%.</p>	/	Group1 Group2	<p>No leakage No venting No disassembly No rupture No fire The open circuit voltage of each test battery after testing is not less than 90% of its voltage No mass loss. Test data is shown in Annex 3.</p>	P

*When mass loss does not exceed the limited value, it shall be considered as "no mass loss".

CQC Intime Testing Technology Co., Ltd

TEST REPORT

Test results

UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, sub-section 38.3

Clause	Test item	Specification	Unit	Sample ID	Test results	Pass/Fail Conclusion
38.3.4.3 Vibration	<p>Battery after 25 cycles in fully charged state.</p> <p>Batteries are firmly secured to the platform of the vibration machine without distorting the cells. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting positions of the cell. One of the directions of vibration must be perpendicular to the terminal face. The logarithmic frequency sweep is as follows: from 7 Hz a peak acceleration of 1 g_n is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 8 g_n occurs (approximately 50 Hz). A peak acceleration of 8 g_n is then maintained until the frequency is increased to 200 Hz.</p>	<p>No leakage No venting No disassembly No rupture No fire The open circuit voltage of each test battery after testing is not less than 90% of its voltage, Mass loss limit 0.1%.</p>	/	Group3 Group4	<p>No leakage No venting No disassembly No rupture No fire The open circuit voltage of each test battery after testing is not less than 90% of its voltage No mass loss . Test data is shown in Annex 3.</p>	P

*When mass loss does not exceed the limited value, it shall be considered as "no mass loss".

CQC Intime Testing Technology Co., Ltd

TEST REPORT

Test results

UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, subsection 38.3

Clause	Test item	Specification	Unit	Sample ID	Test results	Pass/Fail Conclusion
38.3.4.4 Shock	<p>Battery at first cycle in fully charged state.</p> <p>Test batteries shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery.</p> <p>Each battery shall be subjected to a half sine shock of peak acceleration of 50 g_n and pulse duration of 11 milliseconds.</p> <p>Each battery shall be subjected to three shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicular mounting positions of the battery for a total of 18 shocks.</p>	<p>No leakage No venting No disassembly No rupture No fire The open circuit voltage of each test battery after testing is not less than 90% of its voltage, Mass loss limit 0.1%.</p>	/	Group1 Group2	<p>No leakage No venting No disassembly No rupture No fire The open circuit voltage of each test battery after testing is not less than 90% of its voltage. No mass loss . Test data is shown in Annex 4.</p>	P

*When mass loss does not exceed the limited value, it shall be considered as "no mass loss".

CQC Intime Testing Technology Co., Ltd

TEST REPORT

Test results

UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, subsection 38.3

Clause	Test item	Specification	Unit	Sample ID	Test results	Pass/Fail Conclusion
38.3.4.4 Shock	<p>Battery after 25 cycles in fully charged state.</p> <p>Test batteries shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery.</p> <p>Each battery shall be subjected to a half sine shock of peak acceleration of 50 g_n and pulse duration of 11 milliseconds.</p> <p>Each battery shall be subjected to three shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicular mounting positions of the battery for a total of 18 shocks.</p>	<p>No leakage No venting No disassembly No rupture No fire The open circuit voltage of each test battery after testing is not less than 90% of its voltage, Mass loss limit 0.1%.</p>	/	Group3 Group4	<p>No leakage No venting No disassembly No rupture No fire The open circuit voltage of each test battery after testing is not less than 90% of its voltage. No mass loss . Test data is shown in Annex 4.</p>	P

*When mass loss does not exceed the limited value, it shall be considered as "no mass loss".

CQC Intime Testing Technology Co., Ltd

TEST REPORT

Test results

UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, subsection 38.3

Clause	Test item	Specification	Unit	Sample ID	Test results	Pass/Fail Conclusion
38.3.4.5 External short circuit	<p>Battery at first cycle in fully charged state.</p> <p>The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches $55\pm 2^{\circ}\text{C}$ and then the cell or battery shall be subjected to a short circuit condition with a total external resistance of less than 0.1 ohm at $55 \pm 2^{\circ}\text{C}$. This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to $55\pm 2^{\circ}\text{C}$. The battery must be observed for a further six hours for the test to be concluded.</p>	<p>External temperature does not exceed 170°C. No disassembly No rupture No fire</p>	/	Group1 Group2	<p>External temperature does not exceed 170°C. No disassembly No rupture No fire Test data is shown in Annex 5.</p>	P

CQC Intime Testing Technology Co., Ltd

TEST REPORT

Test results

UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, subsection 38.3

Clause	Test item	Specification	Unit	Sample ID	Test results	Pass/Fail Conclusion
38.3.4.5 External short circuit	<p>Battery after 25 cycles in fully charged state.</p> <p>The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches $55\pm 2^{\circ}\text{C}$ and then the cell or battery shall be subjected to a short circuit condition with a total external resistance of less than 0.1 ohm at $55\pm 2^{\circ}\text{C}$. This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to $55\pm 2^{\circ}\text{C}$. The battery must be observed for a further six hours for the test to be concluded.</p>	<p>External temperature does not exceed 170°C. No disassembly No rupture No fire</p>	/	Group3 Group4	<p>External temperature does not exceed 170°C. No disassembly No rupture No fire Test data is shown in Annex 5.</p>	P

CQC Intime Testing Technology Co., Ltd TEST REPORT

Test results

UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, sub-section 38.3

Clause	Test item	Specification	Unit	Sample ID	Test results	Pass/Fail Conclusion
38.3.4.6 Crush	<p>Cell at first cycle at 50% of the design rated capacity.</p> <p>A cell or component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5 cm/s at the first point of contact. The crushing is to be continued until the first of the three options below is reached.</p> <p>(a) The applied force reaches 13 kN ± 0.78 kN; (b) The voltage of the cell drops by at least 100 mV; or (c) The cell is deformed by 50% or more of its original thickness. Once the maximum pressure has been obtained, the voltage drops by 100 mV or more, or the cell is deformed by at least 50% of its original thickness, the pressure shall be released. A prismatic or pouch cell shall be crushed by applying the force to the widest side. A button/coin cell shall be crushed by applying the force on its flat surfaces. For cylindrical cells, the crush force shall be applied perpendicular to the longitudinal axis. Each test cell or component cell is to be subjected to one crush only. The test sample shall be observed for a further 6h. The test shall be conducted using test cells or component cells that have not previously been subjected to other tests.</p>	<p>External temperature does not exceed 170°C. No disassembly No fire</p>	/	1 # 2 # 3 # 4 # 5 #	<p>External temperature does not exceed 170°C. No disassembly No fire Test data is shown in Annex 6.</p>	P

*: Component Cells Of Battery.

CQC Intime Testing Technology Co., Ltd

TEST REPORT

Test results

UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, sub-section 38.3

Clause	Test item	Specification	Unit	Sample ID	Test results	Pass/Fail Conclusion
38.3.4.7 Overcharge	<p>Battery at first cycle in fully discharged state.</p> <p>The charge current shall be the twice the manufactures recommended maximum continuous charge current. The minimum voltage of the test shall be follows:</p> <p>(a) When the manufactures recommended charge voltage is not more than 18V, the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the battery or 22V.</p> <p>(b) When the manufactures recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage.</p> <p>Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours. The test sample shall be observed for a further 7 days.</p>	<p>No disassembly No fire</p>	/	Group5 Group6	<p>No disassembly No fire Test data is shown in Annex 7</p>	P

CQC Intime Testing Technology Co., Ltd

TEST REPORT

Test results

UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, subsection 38.3

Clause	Test item	Specification	Unit	Sample ID	Test results	Pass/Fail Conclusion
38.3.4.7 Overcharge	<p>Battery after 25 cycles in fully charged state.</p> <p>The charge current shall be the twice the manufactures recommended maximum continuous charge current. The minimum voltage of the test shall be follows:</p> <p>(c) When the manufactures recommended charge voltage is not more than 18V, the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the battery or 22V.</p> <p>(d) When the manufactures recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage.</p> <p>Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours. The test sample shall be observed for a further 7 days.</p>	<p>No disassembly No fire</p>	/	Group7 Group8	<p>No disassembly No fire Test data is shown in Annex 7</p>	P

CQC Intime Testing Technology Co., Ltd

TEST REPORT

Test results

UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, sub-section 38.3

Clause	Test item	Specification	Unit	Sample ID	Test results	Pass/Fail Conclusion
38.3.4.8 Forced discharge	<p>Battery at first cycle in fully discharged state.</p> <p>Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12V D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer.</p> <p>The specified discharge current is to be obtained by connecting a resistive load of the appropriate size and rating in series with the test cell. Each cell shall be forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in ampere).</p> <p>The test sample shall be observed for a further 7 days.</p>	No disassembly No fire	/	6#-15#	No disassembly No fire Test data is shown in Annex 8	P

*: Component Cells Of Battery.

CQC Intime Testing Technology Co., Ltd

TEST REPORT

Test results

UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, sub-section 38.3

Clause	Test item	Specification	Unit	Sample ID	Test results	Pass/Fail Conclusion
38.3.4.8 Forced discharge	<p>Battery after 50 cycles in fully charged state.</p> <p>Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12V D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer.</p> <p>The specified discharge current is to be obtained by connecting a resistive load of the appropriate size and rating in series with the test cell. Each cell shall be forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in ampere).</p> <p>The test sample shall be observed for a further 7 days.</p>	No disassembly No fire	/	16#-25#	No disassembly No fire Test data is shown in Annex 8	P

*: **Component Cells Of Battery.**

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TEST REPORT

List of Test Equipment

No	Test Equipment	Equipment Model	Equipment No	Expiry Date of Calibration	Remarks (√)
1	Low Pressure Chamber	315Z	ITCS1206013	2019-04-26	√
2	Thermal Shock Chambers	KWGDS61	ITCB16001	2019-04-16	√
3	Electric Vibration Test System	HV-300-D-25	ITCEN07007	2019-08-19	√
4	Explosion proof impact test box	H-FZ-500	ITCEN07009	2019-04-05	√
5	High Temperature Explosion-proof Chamber	SPHH-101	ITCS06031	2019-04-18	√
6	Electric Vehicle Battery Tester	BNT100-0100ME	ITCB13010	2019-06-27	√
7	Electric Vehicle Battery Tester	BNT100-0100ME	ITCB13011	2019-04-18	√
8	Temperature Recorder	MV2020	ITCS111001	2019-04-05	√
9	Digital Multicenter	FLUKE177	ITCS06060-3	2019-04-18	√
10	Battery internal resistance tester	BT3563	ITCB14001	2018-11-06	√
11	Battery Impact Tester	H-FZ-500	ITCEN07009	2019-04-05	√
12	Battery charge and discharge detection equipment	CDS-5V100A-T	ITCB170205	2018-11-23	√
13	Battery charge and discharge detection equipment	CDS-5V100A-T	ITCB170209	2018-11-16	√
14	Electronic Scale	BCS-ACSC-30	ITCS11030	2019-08-26	√
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CQC Intime Testing Technology Co., Ltd

TEST REPORT

Annex 1. Altitude Simulation

No	Battery Condition	Before Test OCV ₁ (V)	Before Test M ₁ (g)	After Test OCV ₂ (V)	After Test M ₂ (V)	OCV ₂ /OCV ₁ (%)	Mass Loss (M ₂ -M ₁)/M ₁ (%)	Remarks
Group 1	First cycle fully charged	53.37	41730	53.37	41730	100.00%	0.000%	--
Group 2	First cycle fully charged	53.38	41630	53.38	41630	100.00%	0.000%	--
Group 3	After 25 cycles fully charged	53.38	41680	53.37	41680	99.98%	0.000%	--
Group 4	After 25 cycles fully charged	53.36	41710	53.36	41710	100.00%	0.000%	--
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Remarks:

NL: No leakage **NV:** No Venting **ND:** No Disassembly **NR:** No Rupture **NF:** No Fire
LK: Leakage **VNT:** Venting **DSM:** Disassembly **RUP:** Rupture **FR:** Fire

CQC Intime Testing Technology Co., Ltd

TEST REPORT

Annex 2. Thermal Test

No	Battery Condition	Before Test OCV ₁ (V)	Before Test M ₁ (g)	After Test OCV ₂ (V)	After Test M ₂ (V)	OCV ₂ /OCV ₁ (%)	Mass Loss (M ₂ -M ₁)/M ₁ (%)	Remarks
Group 1	First cycle fully charged	53.37	41730	53.34	41720	99.94%	0.024%	--
Group 2	First cycle fully charged	53.38	41630	53.34	41620	99.93%	0.024%	--
Group 3	After 25 cycles fully charged	53.37	41680	53.33	41670	99.93%	0.024%	--
Group 4	After 25 cycles fully charged	53.36	41710	53.33	41700	99.94%	0.024%	--
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Remarks:
NL: No leakage **NV:** No Venting **ND:** No Disassembly **NR:** No Rupture **NF:** No Fire
LK: Leakage **VNT:** Venting **DSM:** Disassembly **RUP:** Rupture **FR:** Fire

CQC Intime Testing Technology Co., Ltd

TEST REPORT

Annex 5. External Short Circuit

No	Battery Condition	Voltage (V)	Initial Temperature (°C)	Max Temperature (°C)	Remarks
Group 1	First cycle fully charged	53.33	57.0	57.4	--
Group 2	First cycle fully charged	53.32	57.0	57.3	--
Group 3	After 25 cycles fully charged	53.32	57.1	57.3	--
Group 4	After 25 cycles fully charged	53.32	57.1	57.5	--
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Remarks: NL: No leakage NV: No Venting ND: No Disassembly NR: No Rupture NF: No Fire LK: Leakage VNT: Venting DSM: Disassembly RUP: Rupture FR: Fire					

CQC Intime Testing Technology Co., Ltd

TEST REPORT

Annex 6. Crush

No	Battery Condition	Voltage (V)	Initial Temperature (°C)	Max Temperature (°C)	Remarks
1	First cycle in 50% rated capacity	3.299	23.5	24.1	--
2	First cycle in 50% rated capacity	3.299	23.5	23.9	--
3	First cycle in 50% rated capacity	3.299	23.5	24.1	--
4	First cycle in 50% rated capacity	3.300	23.5	23.7	--
5	First cycle in 50% rated capacity	3.300	23.5	23.8	--
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Remarks: NL: No leakage NV: No Venting ND: No Disassembly NR: No Rupture NF: No Fire LK: Leakage VNT: Venting DSM: Disassembly RUP: Rupture FR: Fire					

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TEST REPORT

Annex 7. Overcharge

No	Battery Condition	Voltage (V)	Initial Temperature (°C)	Max Temperature (°C)	Remarks
Group 5	First cycle fully charged	53.38	25.2	29.5	--
Group 6	First cycle fully charged	53.37	25.1	28.6	--
Group 7	After 25 cycles fully charged	53.38	25.3	28.9	--
Group 8	After 25 cycles fully charged	53.37	25.3	28.5	--
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Remarks: NL: No leakage NV: No Venting ND: No Disassembly NR: No Rupture NF: No Fire LK: Leakage VNT: Venting DSM: Disassembly RUP: Rupture FR: Fire					

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TEST REPORT

Annex 8. Force Discharge

No	Battery Condition	Voltage (V)	Initial Temperature (°C)	Max Temperature (°C)	Remarks
6 #	First cycle in fully charged	2.815	23.5	39.3	--
7#	First cycle in fully charged	2.818	23.5	38.2	--
8#	First cycle in fully charged	2.818	23.5	38.8	--
9#	First cycle in fully charged	2.814	23.5	37.7	--
10#	First cycle in fully charged	2.823	23.5	36.0	--
11#	First cycle in fully charged	2.821	23.5	37.7	--
12#	First cycle in fully charged	2.819	23.5	38.2	--
13#	First cycle in fully charged	2.821	23.5	34.4	--
14#	First cycle in fully charged	2.813	23.5	35.7	--
15#	First cycle in fully charged	2.813	23.5	36.0	--
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Remarks:

NL: No leakage **NV:** No Venting **ND:** No Disassembly **NR:** No Rupture **NF:** No Fire

LK: Leakage **VNT:** Venting **DSM:** Disassembly **RUP:** Rupture **FR:** Fire

CQC Intime Testing Technology Co., Ltd

TEST REPORT

Annex 8. Force Discharge

No	Battery Condition	Voltage (V)	Initial Temperature (°C)	Max Temperature (°C)	Remarks
16#	After 50 cycles in fully charged	2.817	23.5	40.5	--
17#	After 50 cycles in fully charged	2.817	23.5	41.7	--
18#	After 50 cycles in fully charged	2.818	23.5	42.0	--
19#	After 50 cycles in fully charged	2.819	23.5	39.5	--
20#	After 50 cycles in fully charged	2.820	23.5	39.2	--
21#	After 50 cycles in fully charged	2.820	23.5	42.3	--
22#	After 50 cycles in fully charged	2.817	23.5	38.2	--
23#	After 50 cycles in fully charged	2.814	23.5	37.1	--
24#	After 50 cycles in fully charged	2.815	23.5	25.3	--
25#	After 50 cycles in fully charged	2.820	23.5	28.5	--
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Remarks:

NL: No leakage **NV:** No Venting **ND:** No Disassembly **NR:** No Rupture **NF:** No Fire

LK: Leakage **VNT:** Venting **DSM:** Disassembly **RUP:** Rupture **FR:** Fire

Unless otherwise stated, All of the above tests were conducted at 20 ± 5 °C .

—End—

Statement

1. Don't copy the report partly, if you don't obtain the laboratory allows you to do that, unless you copy the whole report.
2. The test report is only valid to the samples which have been tested.
3. You can bring forward written appeal to the laboratory in ten days after you receive the report if you have objection to the test result.
4. The laboratory will deal with samples with itself if client don't take away samples in sixty days after client receive test report.

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