

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

New Application Modification Other:

Report ID: 20190406J07985

Sample Name: Lithium-ion Battery

Model/Type: EL20 /24V 20Ah 480Wh

Applicant: EP Equipment Co.,LTD.



CQC Intime Testing Technology Co.,Ltd

TEST REPORT

Report ID: 20190406J07985

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: EP Equipment Co.,LTD.

Address: Xiaquan Village,Dipu Town,Anji County,Zhejiang Province,China

Sample Name: Lithium-ion Battery

Trade Mark:



Model/Type: EL20

Ratings: 24V 20Ah 480Wh

Manufacturer: EP Equipment Co.,LTD.

Address: Xiaquan Village,Dipu Town,Anji County,Zhejiang Province,China

Standard Specification: UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, ST/SG/AC.10/11/, sub-section 38.3. Rev.6

Test Procedure: —

Non-standard Test Method: —

Test Item: Altitude Simulation, Thermal Test, Vibration, Shock, External Short Circuit, Crush, Overcharge, Force Discharge

Date of receipt of test item: 2019.04.28

Finished Date: 2019.05.15

Conclusion: The Submitted Sample(s) Meet the Requirement of the Standard.

Testing Conditions: Temperature: 23.2°C ~ 24.3°C Relative Humidity: 53.7%~65.5%

Engineer: Hou Fengwen Signature: Date: 2019.05.15

Auditor: Liu Rong Signature: Date: 2019.05.15

Approver: Zhao Runsheng Signature: Date: 2019.05.15

Seal of CQC IT

Date of issue:

2019.05.15

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

Battery Critical Component List

No	Name	Model/Type	Manufacturer	Remarks
1	BMS	/	--	--
2	Cell	XYPAF20	--	--
3	Intercell tabs	Cu	--	--
4	Plastics cases and Lids	Plastic	--	--
5	Fuse	/	--	--
6	--	--	--	--
7	--	--	--	--
8	--	--	--	--
9	--	--	--	--
10	--	--	--	--

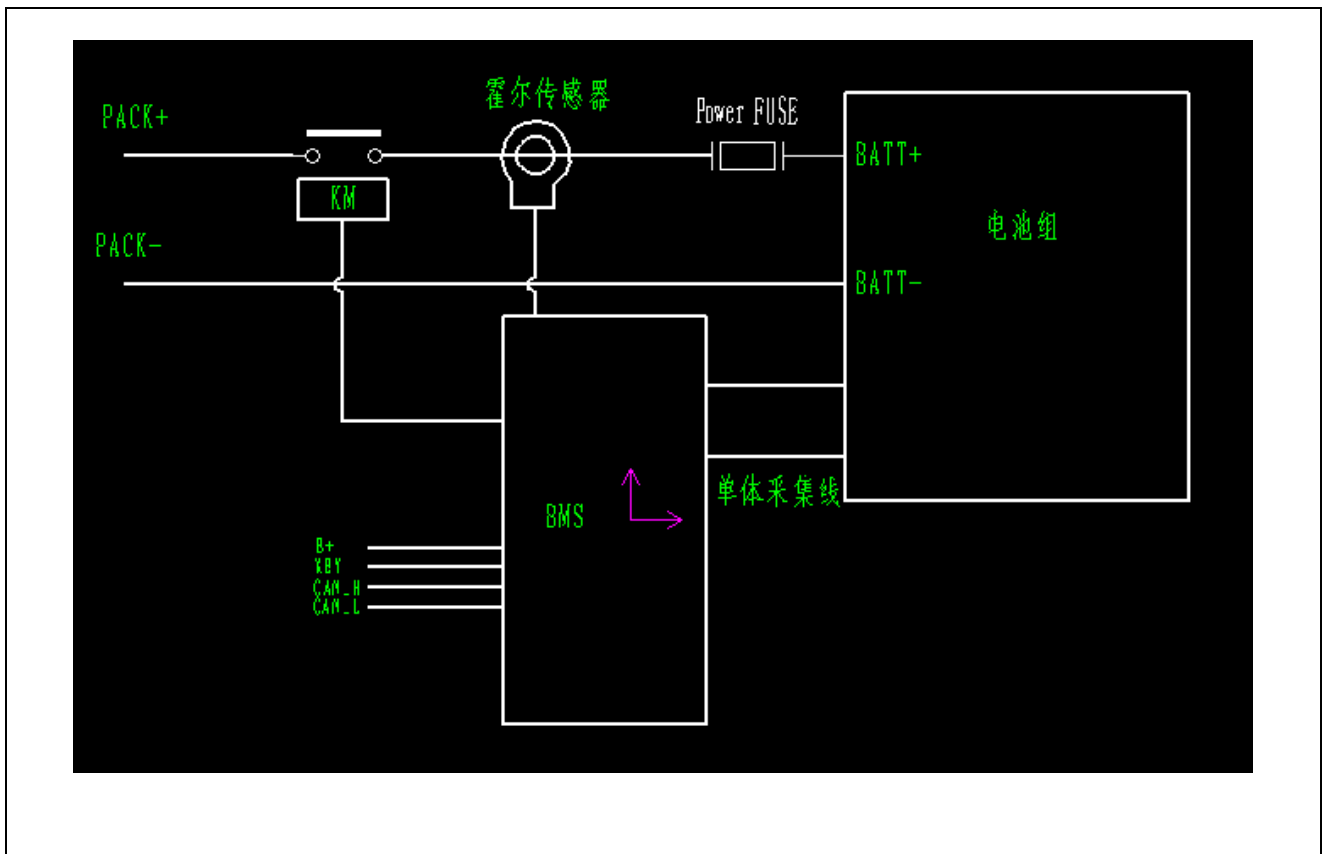
Cell Main Chemical Composition

No	Name	Component	Manufacturer	Remarks
1	Cathode material	LFP	--	--
2	Anode material	Carbon	--	--
3	Conductive agent	Conductive carbon	--	--
4	Binder	PVDF	--	--
5	Seperator	Confidential	--	--
6	Electrolyte	LiPF6、EC、EMC、DEC	--	--
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9	--	--	--	--
10	--	--	--	--

The Table of Battery Fundamental Parameters

Item	Rated Performance	Item	Rated Performance
Nominal capacity (Ah)	20	Nominal voltage(V)	24
Rated power(Wh)	480	Limited charge voltage(V)	29.2
Charge current(A)	10	Maximum continuous charging current (A)	20
End charge current(mA)	1000	Discharge current(A)	10
Cut-off voltage (V)	20.8	Cell numbers	8
Maximum discharge current(A)	30	Type of cell(mm)	Pouch Cell
Permutation of cell	8S1P	Capacity of cell(Ah)	20
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The Battery Electrical Connection Diagram



Sample photograph-1



Sample photograph-2



Sample photograph-3



Sample photograph-4



Sample photograph-5



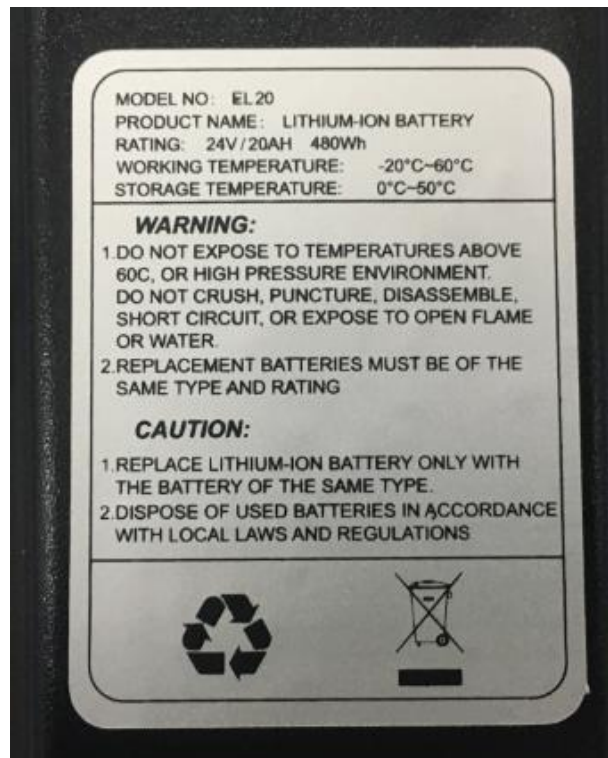
Sample photograph-6



Sample photograph-7



Sample photograph-8



Sample photograph-9



Sample photograph-10



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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	Sample ID	Test results	Pass/Fail Conclu-sion
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>	<p>Group1 Group2 Group3 Group4</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. No mass loss. Test data is shown in Annex 1.</p>	P
	<p>Battery after 50 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>	<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>	<p>Group5 Group6 Group7 Group8</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. No mass loss. Test data is shown in Annex 1.</p>	P

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

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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	Sample ID	Test results	Pass/Fail Conclu-sion
38.3.4.2 Thermal test	Battery at first cycle in fully charged state. Test batteries are to be stored for at least six hours at a test temperature equal to $75\pm 2^{\circ}\text{C}$, followed by storage for at least 6 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 ($20\pm 5^{\circ}\text{C}$).	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%.	Group1 Group2 Group3 Group4	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
	Battery after 50 cycles in fully charged state. Test batteries are to be stored for at least six hours at a test temperature equal to $75\pm 2^{\circ}\text{C}$, followed by storage for at least 6 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 ($20\pm 5^{\circ}\text{C}$).		Group5 Group6 Group7 Group8		P

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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	Sample ID	Test results	Pass/Fail Conclu-sion
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 2 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>	<p>Group1 Group2 Group3 Group4</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 No mass loss. Test data is shown in Annex 3.</p>	P

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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	Sample ID	Test results	Pass/Fail Conclu-sion
38.3.4.3 Vibration	<p>Battery after 50 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 2 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>	<p>Group5 Group6 Group7 Group8</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 No mass loss . Test data is shown in Annex 3.</p>	P

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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	Sample ID	Test results	Pass/Fail Conclu-sion
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>Small batteries shall be subjected to a half-sine shock of peak acceleration of 150 g n (or Acceleration(g n)= $\sqrt{\left(\frac{100850}{mass}\right)}$, which is smaller) and pulse duration of 6 milliseconds, large batteries shall be subjected to a half-sine of peak acceleration of 50 g n (or Acceleration(g n)= $\sqrt{\left(\frac{30000}{mass}\right)}$, which is smaller) and pulse duration of 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>	<p>Group1 Group2 Group3 Group4</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. 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".

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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	Sample ID	Test results	Pass/Fail Conclu-sion
38.3.4.4 Shock	<p>Battery after 50 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>Small batteries shall be subjected to a half-sine shock of peak acceleration of 150 g n (or Acceleration(g n) = $\sqrt{\left(\frac{100850}{mass}\right)}$, which is smaller) and pulse duration of 6 milliseconds,</p> <p>large batteries shall be subjected to a half-sine of peak acceleration of 50 g n (or Acceleration(g n) = $\sqrt{\left(\frac{30000}{mass}\right)}$, which is smaller) and pulse duration of 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>	<p>Group5 Group6 Group7 Group8</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. 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".

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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	Sample ID	Test results	Pass/Fail Conclu-sion
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 $57\pm 4^{\circ}\text{C}$ 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 $57\pm 4^{\circ}\text{C}$. This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to $57\pm 4^{\circ}\text{C}$. 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>	<p>Group1 Group2 Group3 Group4</p>	<p>External temperature does not exceed 170°C. No disassembly No rupture No fire Test data is shown in Annex 5.</p>	<p>P</p>

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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	Sample ID	Test results	Pass/Fail Conclu-sion
38.3.4.5 External short circuit	<p>Battery after 50 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 $57\pm 4^{\circ}\text{C}$ 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 $57\pm 4^{\circ}\text{C}$. This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to $57\pm 4^{\circ}\text{C}$. 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>	<p>Group5 Group6 Group7 Group8</p>	<p>External temperature does not exceed 170°C. No disassembly No rupture No fire Test data is shown in Annex 5.</p>	<p>P</p>

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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	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. (a) The applied force reaches 13 kN \pm 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>	<p>1 # 2 # 3 # 4 # 5 #</p>	<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	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>	<p>Group9 Group10 Group11 Group12</p>	<p>No disassembly No fire Test data is shown in Annex 7</p>	<p>P</p>

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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	Sample ID	Test results	Pass/Fail Conclusion
38.3.4.7 Overcharge	<p>Battery after 50 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>	<p>Group13 Group14 Group15 Group16</p>	<p>No disassembly No fire Test data is shown in Annex 7</p>	<p>P</p>

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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	Sample ID	Test results	Pass/Fail Conclu-sion
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>	<p>No disassembly No fire</p>	6#-15#	<p>No disassembly No fire Test data is shown in Annex 8</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	Sample ID	Test results	Pass/Fail Conclu-sion
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>	<p>No disassembly No fire</p>	<p>16#-25#</p>	<p>No disassembly No fire Test data is shown in Annex 8</p>	<p>P</p>

*: Component Cells Of Battery.

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List of Test Equipment

No	Test Equipment	Equipment Model	Equipment No	Expiry Date of Calibration	Remarks (√)
1	Low Pressure Chamber	315Z	ITCS1206013	2020-04-26	√
2	Thermal Shock Chambers	KWGDS61	ITCB16001	2020-04-13	√
3	Vibration Tester	HV-300-D-25	ITCEN07007	2019-08-19	√
4	Vibration Tester System	DL-8000-80	ITCE11009	2020-04-13	
5	Battery Shock Tester	IS350	ITCB180207	2019-08-19	√
6	High Temperature Explosion-proof Chamber	BE-101-512A	ITCB16005	2019-08-19	√
7	Battery Impact Tester	H-FZ-500	ITCEN07009	2020-04-13	
8	Battery Crush Tester	GX-5067-C	ITCB16006	2019-08-19	√
9	Electric Vehicle Battery Tester	BNT100-0100ME	ITCB13010	2020-05-03	
10	Electric Vehicle Battery Tester	BNT100-0100ME	ITCB13011	2020-05-03	√
11	High Temperature Explosion-proof Chamber	BE-101-512A	ITCB16004	2019-08-19	√
12	Smart Battety Test System	CTE-MCT-1806D-DC20V8A	ITCB13003	2019-08-12	√
13	High-precision battery tester	CT-4004-5V100A-NFA	ITCB15004	2020-05-03	
14	High Temperature Explosion-proof Chamber	SPHH-101	ITCS06031	2020-04-18	√
15	Battery internal resistance tester	BT3563	ITCB14001	2019-08-19	√
16	Temperature Recorder	MV2020	ITCS111001	2020-04-13	√
17	Digital Multicenter	FLUKE177	ITCS06060-3	2020-04-18	√
18	Electronic Scale	JX-A30002	ITCB170602	2020-04-13	
19	Electronic Scale	ACS-JS	ITCB180419	2020-04-18	√
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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	26.82	5681.50	26.67	5678.50	99.44%	0.053%	--
Group 2	First cycle fully charged	26.82	5640.50	26.67	5638.00	99.44%	0.044%	--
Group 3	First cycle fully charged	26.68	5491.00	26.64	5489.00	99.85%	0.036%	--
Group 4	First cycle fully charged	26.68	5706.00	26.65	5703.50	99.89%	0.044%	--
Group 5	After 50 cycles fully charged	26.69	5615.50	26.65	5612.00	99.85%	0.062%	--
Group 6	After 50 cycles fully charged	26.70	5583.50	26.67	5582.00	99.89%	0.027%	--
Group 7	After 50 cycles fully charged	26.68	5755.50	26.64	5752.50	99.85%	0.052%	--
Group 8	After 50 cycles fully charged	26.70	5539.50	26.66	5536.50	99.85%	0.054%	--
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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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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	26.67	5678.50	26.67	5677.50	100.00%	0.018%	--
Group 2	First cycle fully charged	26.67	5638.00	26.67	5637.00	100.00%	0.018%	--
Group 3	First cycle fully charged	26.64	5489.00	26.64	5488.50	100.00%	0.009%	--
Group 4	First cycle fully charged	26.65	5703.50	26.64	5703.00	99.96%	0.009%	--
Group 5	After 50 cycles fully charged	26.65	5612.00	26.65	5611.00	100.00%	0.018%	--
Group 6	After 50 cycles fully charged	26.67	5582.00	26.67	5581.50	100.00%	0.009%	--
Group 7	After 50 cycles fully charged	26.64	5752.50	26.63	5751.50	99.96%	0.017%	--
Group 8	After 50 cycles fully charged	26.66	5536.50	26.66	5535.50	100.00%	0.018%	--
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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 3. Vibration

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	26.67	5677.50	26.64	5677.00	99.89%	0.009%	--
Group 2	First cycle fully charged	26.67	5637.00	26.65	5637.00	99.93%	0.000%	--
Group 3	First cycle fully charged	26.64	5488.50	26.64	5488.50	100.00%	0.000%	--
Group 4	First cycle fully charged	26.64	5703.00	26.64	5702.50	100.00%	0.009%	--
Group 5	After 50 cycles fully charged	26.65	5611.00	26.65	5610.50	100.00%	0.009%	--
Group 6	After 50 cycles fully charged	26.67	5581.50	26.67	5581.50	100.00%	0.000%	--
Group 7	After 50 cycles fully charged	26.63	5751.50	26.62	5751.50	99.96%	0.000%	--
Group 8	After 50 cycles fully charged	26.66	5535.50	26.64	5535.00	99.92%	0.009%	--
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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 4. Shock

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	26.64	5677.00	26.64	5677.00	100.00%	0.000%	--
Group 2	First cycle fully charged	26.65	5637.00	26.64	5637.00	99.96%	0.000%	--
Group 3	First cycle fully charged	26.64	5488.50	26.64	5488.50	100.00%	0.000%	--
Group 4	First cycle fully charged	26.64	5702.50	26.64	5702.50	100.00%	0.000%	--
Group 5	After 50 cycles fully charged	26.65	5610.50	26.64	5610.00	99.96%	0.009%	--
Group 6	After 50 cycles fully charged	26.67	5581.50	26.65	5581.00	99.93%	0.009%	--
Group 7	After 50 cycles fully charged	26.62	5751.50	26.62	5751.50	100.00%	0.000%	--
Group 8	After 50 cycles fully charged	26.64	5535.00	26.64	5535.00	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 5. External Short Circuit

No	Battery Condition	Voltage (V)	Initial Temperature (°C)	Max Temperature (°C)	Remarks
Group 1	First cycle fully charged	26.64	57.4	57.5	--
Group 2	First cycle fully charged	26.64	57.1	57.1	--
Group 3	First cycle fully charged	26.64	57.2	57.5	--
Group 4	First cycle fully charged	26.64	57.4	57.6	--
Group 5	After 50 cycles fully charged	26.64	57.1	57.2	--
Group 6	After 50 cycles fully charged	26.65	57.2	57.2	--
Group 7	After 50 cycles fully charged	26.62	57.1	57.1	--
Group 8	After 50 cycles fully charged	26.64	57.2	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 7. Overcharge

No	Battery Condition	Voltage (V)	Initial Temperature (°C)	Max Temperature (°C)	Remarks
Group 9	First cycle fully charged	26.69	23.4	23.5	--
Group 10	First cycle fully charged	26.68	23.5	23.6	--
Group 11	First cycle fully charged	26.68	23.2	23.8	--
Group 12	First cycle fully charged	26.67	23.4	23.4	--
Group 13	After 50 cycles fully charged	26.69	23.3	23.5	--
Group 14	After 50 cycles fully charged	26.68	23.4	23.4	--
Group 15	After 50 cycles fully charged	26.69	23.3	23.3	--
Group 16	After 50 cycles fully charged	26.69	23.4	23.6	--
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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
6 #	First cycle in fully charged	2.937	24.3	30.9	--
7#	First cycle in fully charged	2.953	24.3	30.5	--
8#	First cycle in fully charged	2.953	24.3	30.1	--
9#	First cycle in fully charged	2.933	24.3	30.0	--
10#	First cycle in fully charged	2.954	24.3	30.4	--
11#	First cycle in fully charged	2.963	24.3	31.2	--
12#	First cycle in fully charged	2.930	24.3	30.1	--
13#	First cycle in fully charged	2.951	24.3	30.5	--
14#	First cycle in fully charged	2.953	24.3	29.9	--
15#	First cycle in fully charged	2.931	24.3	30.5	--
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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 8. Force Discharge

No	Battery Condition	Voltage (V)	Initial Temperature (°C)	Max Temperature (°C)	Remarks
16#	After 50 cycles in fully charged	2.955	24.3	31.0	--
17#	After 50 cycles in fully charged	2.963	24.3	31.2	--
18#	After 50 cycles in fully charged	2.952	24.3	30.2	--
19#	After 50 cycles in fully charged	2.939	24.3	30.5	--
20#	After 50 cycles in fully charged	2.940	24.3	30.6	--
21#	After 50 cycles in fully charged	2.947	24.3	30.1	--
22#	After 50 cycles in fully charged	2.947	24.3	30.5	--
23#	After 50 cycles in fully charged	2.948	24.3	31.0	--
24#	After 50 cycles in fully charged	2.949	24.3	30.8	--
25#	After 50 cycles in fully charged	2.951	24.3	30.5	--
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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.
5. This report only as a reference for client, can't be considered as a basis for litigation, arbitration and so on.

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