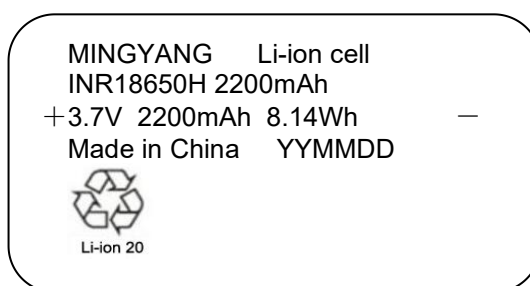




| | | | | | |
|--|--|----------------------------|--|--|-----------------|
| 試験報告書番号: Test Report No. | ZKS201100700-1 | 頁: | Page 1 of 17 | | |
| 申請者: Applicant: | WUXI CITY MINGYANG BATTERY CO.,LTD. Caiwan Village, Ganlu, Ehu Town, Xishan District, Wuxi City, Jiangsu Province 214000, P. R. China | | | | |
| 製造者/輸入者: Manufacturer/ Importer: | WUXI CITY MINGYANG BATTERY CO.,LTD. Caiwan Village, Ganlu, Ehu Town, Xishan District, Wuxi City, Jiangsu Province 214000, P. R. China | | | | |
| 試験品: Test item: | Li-ion cell | | | | |
| 識別表示: Identification: | INR18650H 2200mAh | 製造番号: Serial No.: | Engineering sample | | |
| 申請受理番号: Receipt No.: | ZKS201100700 | 申請受理日: Date of receipt: | 2020-11-12 | | |
| 試験場所: Testing location: | Dongguan ZRLK Testing Technology Co., Ltd. Building D, No.2, Jinyuyuan Industrial Park, No.18, West Industrial Road, Songshan Lake High-tech Industrial Development Zone, Dongguan City, 523808, Guangdong, China | | | | |
| 適用した試験基準: Test specification: | 電気用品の技術上の基準を定める省令の解釈(R01.12.25) 別表第九リチウムイオン蓄電池 Interpretation for METI Ordinance of Technical Requirements (R01.12.25) Appendix 9: Lithium ion secondary batteries | | | | |
| 試験所: Testing Laboratory: | Dongguan ZRLK Testing Technology Co., Ltd. Building D, No.2, Jinyuyuan Industrial Park, No.18, West Industrial Road, Songshan Lake High-tech Industrial Development Zone, Dongguan City, 523808, Guangdong, China | | | | |
| 試験結果: Test result: | 上記試験品は、適合した。 The a. m. test item PASSED. | | | | |
| 試験者: tested by: | 2020-12-16 Jacky Sun | 検査者: checked by: | 2020-12-16 Ekko Wang | | |
| 日付 Date | 氏名 Name | 署名 Signature | 日付 Date | 氏名 Name | 署名 Signature |
| 備考/Other Aspects: | | | | | |
| 電気用品安全法 – 特定電気用品以外の電気用品 – リチウムイオン蓄電池 Electrical Appliance and Material Safety Law – Other electrical appliances and materials – Li-Ion secondary batteries | | | | | |
| 略語: OK, Pass or P F or Fail N/A or N | = 適合 = 不適合 = 該当せず | Abbreviations: | OK, Pass or P F or Fail N/A or N | = passed = failed = not applicable | |
| この試験報告書は上記試験品に関するものであり、当該試験所の許可無しに、この試験報告書を抜粋し複写してはいけません。 また、この試験報告書は、当該製品又は類似製品に何れかの試験マークを附す権利を与えるものではありません。 This test report relates to the a. m. test item. Without permission of the test centre this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark on this or similar products. | | | | | |

Test item description.....: Li-ion cell
Model/Type reference.....: INR18650H 2200mAh
Manufacturer/Importer Name or Trade Mark.....: WUXI CITY MINGYANG BATTERY CO., LTD.
Caiwan Village, Ganlu, Ehu Town, Xishan District, Wuxi City, Jiangsu Province 214000, P. R. China
Factory.....: WUXI CITY MINGYANG BATTERY CO., LTD.
Caiwan Village, Ganlu, Ehu Town, Xishan District, Wuxi City, Jiangsu Province 214000, P. R. China
Seller Name of Trade mark.....: MINGYANG
Ratings.....: 3.7V, 2200mAh, 8.14Wh

Copy of marking plate:

Remark: YYMMDD represents the date of manufacture, “YY” represents the year, “MM” represents the month, “DD” represents the date.

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 : 2020-11-12

Date (s) of performance of tests : 2020-11-12 to 2020-12-14

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

General product information:

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

Dimension: see page 5

Weight: approx. 43g

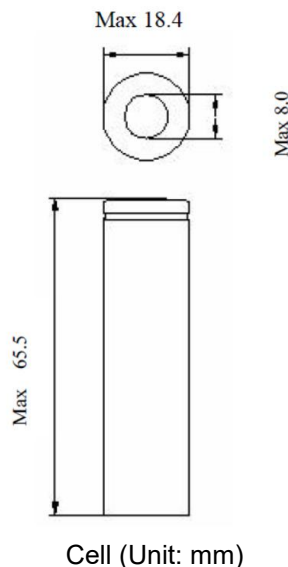
Type classification

| Factor | Classification |
|--|--|
| Shape of secondary cell | <input checked="" type="checkbox"/> Cylindrical <input type="checkbox"/> Prismatic <input type="checkbox"/> Other |
| Type of electrolyte in secondary cell | <input type="checkbox"/> Liquid state <input checked="" type="checkbox"/> Other |
| Upper-limit charge voltage of secondary cell | <input checked="" type="checkbox"/> 4.25V or less <input type="checkbox"/> More than 4.25V |
| Weight of secondary battery | <input checked="" type="checkbox"/> 7 kg or less <input type="checkbox"/> More than 7 kg |
| Overcharge protection | Cell only |
| Uses | <input checked="" type="checkbox"/> For mobile equipment <input type="checkbox"/> For desktop equipment <input type="checkbox"/> Other |
| Highest Test Temperature (°C) | 50°C |
| Lowest Test Temperature (°C) | 0°C |
| Type of secondary battery | Cell only |

The main features of this cell shown as below:

| Model | Nominal capacity | Nominal voltage | Nominal Charge Current | Nominal Discharge Current | Maximum Charge Current | Maximum Discharge Current | Maximum Charge Voltage | Cut-off Voltage |
|----------------------|------------------|-----------------|------------------------|---------------------------|------------------------|---------------------------|------------------------|-----------------|
| INR18650H 2200mAh | 2200mAh | 3.7V | 1100mA | 2200mA | 4000mA | 11000mA | 4.25V | 2.5V |

Construction:



Circuit diagram:

Cell only.

Summary of Testing:

- 2.(1) Continuous low-rate charging
- 2.(2) Vibration Test
- 2.(4) Temperature cycling Test
- 3.(1a) External short circuit (cells)
- 3.(2) Free fall Test
- 3.(3) Mechanical shock (crash hazard)
- 3.(4) Thermal abuse Test
- 3.(5) Crushing of cells
- 3.(6) Low pressure
- 3.(7) Overcharge
- 3.(8) Forced discharge
- 3.(9) Cell protection against a high charging rate
- 3.(10) Forced internal short circuit of cells

| Clause | Requirement - Test | Result - Remark | Verdict |
|--------------|--|---|---------|
| 1. | Basic Design | | P |
| 1.(1) | Insulation and Wiring | | P |
| | a) Insulation Resistance between an accessible metal case (excluding electrical contacts) and positive terminals $\geq 5M\Omega$. | No metal on the case. | N/A |
| | b) Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements | See tests of clause 2 and clause 3. | P |
| | c) Orientation of wiring maintains adequate creepage and clearance distances between conductors. Mechanical integrity of internal connections are sufficient to accommodate conditions of reasonably foreseeable misuse. | See tests of clause 2 and clause 3. | P |
| 1.(2) | Inner Pressure Reduction Mechanism | | P |
| | a) Battery cases and cells incorporate a pressure relief mechanism or are constructed so that they relieve excessive internal pressure at a value and rate that will preclude rupture, explosion and self-ignition. | Venting mechanism exists on the top of cylindrical cell. | P |
| | b) Encapsulant used to support cells within an outer casing does not cause the battery to overheat during normal operation no inhibit pressure relief. | | N/A |
| 1.(3) | Temperature and current management | Cell only | N/A |
| | The batteries are designed such that abnormal temperature rise conditions are prevented. | | N/A |
| | Means is provided to limit current to safe levels during charge and discharge. | | N/A |
| 1.(4) | Terminal contacts | | P |
| | a) Terminals have a clear polarity marking on the external surface of the battery or be designed with no fear of misconnection. | The "+" and "-" polarity explicitly marked on surface of the cell, also see page 2. | P |
| | b) The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current. | The DC terminal contacts complied with the requirements. | P |
| | c) External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance. | The DC terminal contacts complied with the requirements. | P |
| | Terminal contacts are arranged to minimize the risk of short circuits. | The DC terminal contacts complied with the requirements. | P |
| 1.(5) | Assembly of cells into batteries | Cell only | N/A |
| | Cells used in the battery assembly have closely matched capacities, are of the same design, and are of the same chemistry and same manufacturer. | | N/A |
| | The battery incorporates separate circuitry to prevent cell reversal from uneven charges as the pack is designed for the selective discharge of a portion of its series connected cells. | | N/A |

| Clause | Requirement - Test | Result - Remark | Verdict |
|--------------|---|--|---------|
| 2. | Intended Use | | P |
| 2.(1) | Continuous Low Rate Charge | | P |
| | Fully charged cells are subjected for 28 days to a charge as specified by the manufacturer. | Arrange the test as required. | P |
| | Ambient temperature when testing | 55°C | P |
| | Results: no fire, no explosion, no leakage | No fire, no explosion, no leakage. | P |
| 2.(2) | Vibration | | P |
| | The measured open circuit voltage of the fully charged cells or batteries is within anticipated parameters | See test below. | P |
| | The cells or batteries are subjected to a vibration sequence with amplitude of 0.76 mm and a total maximum excursion of 1.52 mm. The frequency was varied at the rate of 1 Hz/min between the limits of 10 Hz and 55 Hz. The entire range of frequencies (10 Hz to 55 Hz) and return (55 Hz to 10 Hz) was traversed in 90 min ± 5 min for each mounting position. | Arrange the test as required. | P |
| | The vibration was applied in each of three mutually perpendicular directions. | Arrange the test as required. | P |
| | Results: no fire, no explosion, no leakage | No fire, no explosion, no leakage. | P |
| 2.(3) | Battery enclosure test at high ambient temperature | | N/A |
| | Fully charged batteries were placed in an air-circulating oven at a temperature of 70°C ± 2°C for 7 hours. Afterwards, they are removed and allowed to return to room temperature. | | N/A |
| | Results: no physical distortion of the battery casing resulting in exposure of internal components. | | N/A |
| 2.(4) | Temperature cycling | | P |
| | Fully charged cells or batteries were subjected to temperature cycling (+75°C, +20°C, -20°C, +20°C) in forced draught chambers according to the procedure. | Arrange the test as required. | P |
| | After the fifth cycle, the cells or batteries were stored at 20 ± 5°C for 7 days prior to examination. | Arrange the test as required. | P |
| | Results: No fire, no explosion, no leakage | No fire, no explosion, no leakage. | P |
| 3 | Reasonably foreseeable misuse | | P |
| 3.(1) | External short circuit | | P |
| | a) Fully charged cells were subjected to a short circuit test at 55°C ± 5°C. | Arrange the test as required. Each 5pcs cells charged at ambient temperature 55°C and -5°C respectively prepared for the test. | P |

| Clause | Requirement - Test | Result - Remark | Verdict |
|--------------|--|--|---------|
| | The external resistance did not exceed $80 \pm 20 \text{ m}\Omega$. | See table 3.(1) | P |
| | The cells were tested for 24 h or until the case temperature declined by 20% of the maximum temperature rise. | Tested until the case temperature declined by 20% of the maximum temperature rise. | P |
| | b) Fully charged batteries were subjected to a short circuit test at $20^\circ\text{C} \pm 5^\circ\text{C}$. | Cell only | N/A |
| | The external resistance did not exceed $80 \pm 20 \text{ m}\Omega$. | See table 3.(1) | N/A |
| | The batteries were tested for 24 h or until the case temperature declined by 20% of the maximum temperature rise. | | N/A |
| | If battery incorporates protective device or protective circuit and the current has stopped, then for one hour after the current stopped. | | N/A |
| | Results: no fire, no explosion. | No fire, no explosion. | P |
| 3.(2) | Free fall | | P |
| | Fully charged cells or batteries were dropped 3 times from a height of 1.0 m onto a concrete floor. | Arrange the test as required. | P |
| | Provided that this does not apply to charged batteries weighting more than 7 kg. | | P |
| | Results: no fire, no explosion | No fire, no explosion. | P |
| 3.(3) | Mechanical shock (crash hazard) | | P |
| | a) Fully charged cells or batteries were subjected to a total of three shocks of equal magnitude applied in each of three mutually perpendicular directions. | Arrange the test as required. | P |
| | b) During the initial 3 milliseconds, the minimum average acceleration was 735 m/s^2 . The peak acceleration was between 1228 m/s^2 and 1716 m/s^2 . | | P |
| | Results: no fire, no explosion, no leakage | No fire, no explosion, no leakage. | P |
| 3.(4) | Thermal abuse | | P |
| | Fully charged cells were placed in a gravity or circulating air-convection oven. The oven temperature was raised at a rate of $5^\circ\text{C}/\text{min} \pm 2^\circ\text{C}/\text{min}$ to a temperature of $130^\circ\text{C} \pm 2^\circ\text{C}$. The cell remained at that temperature for 10 minutes before the test was discontinued. | Arrange the test as required. Each 5pcs cells charged at ambient temperature 55°C and -5°C respectively prepared for the test. | P |
| | Results: no fire, no explosion | No fire, no explosion. | P |
| 3.(5) | Crushing of cells | | P |
| | a) Fully charged cells were crushed between two flat surfaces with a hydraulic ram exerting a force of $13 \text{ kN} \pm 1 \text{ kN}$. | Arrange the test as required. Each 5pcs cells charged at ambient temperature 55°C and -5°C respectively prepared for the test. | P |
| | b) The force was released when | | P |

| Clause | Requirement - Test | Result - Remark | Verdict |
|--------------|---|--|---------|
| | (1) the maximum forces applied | The max. force is achieved when the force applied crushing the cell. | P |
| | (2) an abrupt voltage drop of one-third of the original voltage has been obtained | | N/A |
| | (3) There was 10% deformation of battery height | | N/A |
| | c) A cylindrical or prismatic cell was crushed with its longitudinal axis parallel to the flat surfaces of the crushing apparatus. | Cylindrical cell | P |
| | A second set of prismatic cells was tested, rotated 90 degrees around their longitudinal axis compared to the first set. | | N/A |
| | Ambient temperature when testing | Ambient temperature 55°C and -5°C respectively. | P |
| | Results: no fire, no explosion. | No fire, no explosion. | P |
| 3.(6) | Low pressure | Arrange the test as required. | P |
| | Fully charged cells are placed in a vacuum chamber whose internal pressure was gradually reduced to a pressure equal to or less than 11.6 kPa and held at that value for 6 hours. | | P |
| | Results: no fire, no explosion, no leakage | No fire, no explosion, no leakage. | P |
| 3.(7) | Overcharge | | P |
| | A discharged cell was charged from a power supply of ≥ 10 V, at a charging current I_{rec} recommended by the manufacturer for $2.5 C_5/I_{rec}$ hours or until it reach the test voltage. | Arrange the test as required. | P |
| | Ambient temperature when testing | Ambient temperature 55°C and -5°C respectively. | P |
| | Results: no fire, no explosion. | No fire, no explosion. | P |
| 3.(8) | Forced discharge | | P |
| | Discharged cells intended for use in multi-cell applications, were subjected to a reverse charge at $1.0 I_t$ (A) for 90 minutes. | Arrange the test as required. | P |
| | Ambient temperature when testing | Ambient temperature 55°C and -5°C respectively. | P |
| | Results: no fire, no explosion | No fire, no explosion. | P |
| 3.(9) | Cell protection against a high charging rate | | P |
| | Discharged cells were charged at three times the charging current recommended by the manufacturer until | Arrange the test as required. | P |
| | the cells were fully charged, or | | P |
| | A protective device in the equipment or battery cut off the charge current before the cell became fully charged. | No protective device exists on the cell. | N/A |

| Clause | Requirement - Test | Result - Remark | Verdict |
|---------------|--|--|---------|
| | Ambient temperature when testing | Ambient temperature 55°C and -5°C respectively. | P |
| | Results: no fire, no explosion | No fire, no explosion. | P |
| 3.(10) | Forced internal short circuit of cells | | P |
| | Pressed the winding core of charged cell (except when electrolyte is not liquid) by pressing jig under condition that nickel peace was inserted. | Arrange the test as required. Each 10pcs cells charged at ambient temperature 55°C and -5°C respectively prepared for the test. | P |
| | Inserted between the positive active material and negative active material | Arrange the test as required. | P |
| | Inserted between the uncoated current collector of positive electrode and the active material coated negative active electrode | Arrange the test as required. | P |
| | Test was stopped when voltage drop of over 50 mV was obtained, or | | N/A |
| | Stopped when the pressure reached 800 N (for prismatic cells, 400N). | The force reached 800N. | P |
| | Ambient temperature when testing | Ambient temperature 55°C and -5°C respectively. | P |
| | Number of test sample | Each 10pcs cells charged at ambient temperature 55°C and -5°C respectively prepared for the test. | P |
| | Results: no fire, no explosion | No fire, no explosion. | P |
| 3.(11) | Function of the overvoltage protection of batteries | Cell only | N/A |
| | The cell block in the battery shall not exceed the upper limited charging voltage at 20 ± 5°C ambient temperature. | | N/A |
| | a) For batteries made of a one cell block, the voltage applied to the cell block during charging shall be measured. | | N/A |
| | b) For batteries consisting of a series of two pieces or more of cell blocks, it shall be charged while measuring the voltage of each cell block and at the same time, one cell block shall forcibly be discharged and the voltages of the other cell blocks shall gradually be measured. | | N/A |
| | c) For batteries consisting of a series of connection of two pieces or more of cell blocks, a voltage exceeding the upper limited charging voltage specified in Annex Table 1-2 shall be applied to the cell block while measuring the voltage of each cell block. When the charging stops, the voltage shall be measured. | | N/A |
| | The battery provides with protective circuits | | N/A |

| Clause | Requirement - Test | Result - Remark | Verdict |
|---------------|---|--|---------|
| | Appliance in which battery is installed or battery charger provides with protective circuits. | | N/A |
| 3.(12) | Free fall of appliance | Cell only | N/A |
| | The charged battery shall be installed to be used, and shall be dropped once a concrete floor or iron plate in a direction considered to most likely affect the battery in a negative manner. | | N/A |
| | An equivalent load shall be applied to the battery | | N/A |
| | Kind of equipment | | N/A |
| | Weight of appliance | | N/A |
| | Applicable standard | | N/A |
| | Height in drop testing | | N/A |
| | Results: no short-circuiting | | N/A |
| 4 | Labeling | | P |
| | Labeling for batteries shall be provided as below on surface where it can easily be seen but not easily faded. | The label of battery meets the requirements. | P |
| | Rated voltage | See page 2 | P |
| | Rated capacity | See page 2 | P |

| Object/part No. | TABLE 1: List of Critical Components | | | | | P |
|------------------------|--|----------------------|--|----------|--------------------------|---|
| | Manufacturer/ trademark | Type/Model | Technical Data | Standard | Marks of Conformity | |
| Cell | WUXI CITY MINGYANG BATTERY CO.,LTD | INR18650H 2200mAh | 3.7V, 2200mAh | -- | Tested with appliance | |
| -Electrolyte | GUANGZHOU TINCI MATERIALS TECHNOLOGY CO.,LTD | TC-EMY06 | LiPF ₆ , DMC, EMC, EC | -- | -- | |
| -Separator | SHENZHEN BAOCHANG ELECTRONIC Co.,Ltd | S05 | PE, 20μm(T), Shutdown temperature: 135°C | -- | -- | |
| -Negative electrode | KAIJIN NEW ENERGY TECHNOLOGY CO.,LTD | AML400 | Graphite | -- | -- | |
| -Positive electrode | XINXIANG TIANLI LI LIMITED BY SHARE LTD | TLM510 | LiNi _x Co _y Mn _{1-x-y} O ₂ , Ni: Co: Mn=5: 2: 3 | -- | -- | |
| -Case | WUXI CITY JINYANG NEW TYPE POWER SUPPLY CO.,LTD | 17.68*68.05mm | Nickle plate iron | -- | -- | |

| TABLE: 2.(1) Continuous Low Rate Charge Test (Cell) | | | | | P |
|---|---|--------------------------------------|--------------------------------------|---------------------------|---------|
| Model | Recommended Charging Method, CC, CV, or CC/CV | Recommended Charging Voltage Vc, Vdc | Recommended Charging Current Irec, A | OCV at Start of Test, Vdc | Results |
| Cell #1 | CC and CV | 4.20 | 1.1 | 4.19 | P |
| Cell #2 | CC and CV | 4.20 | 1.1 | 4.19 | P |
| Cell #3 | CC and CV | 4.20 | 1.1 | 4.19 | P |
| Cell #4 | CC and CV | 4.20 | 1.1 | 4.19 | P |
| Cell #5 | CC and CV | 4.20 | 1.1 | 4.19 | P |

Supplementary information: no fire, explosion or leakage observed

| TABLE: 2.(2) – Vibration Test (Cell) | | | P |
|--------------------------------------|---------------------------|---------|---|
| Model | OCV at Start of Test, Vdc | Results | |
| Cell #6 | 4.19 | P | |
| Cell #7 | 4.19 | P | |
| Cell #8 | 4.19 | P | |
| Cell #9 | 4.19 | P | |
| Cell #10 | 4.19 | P | |

Supplementary information: no fire, explosion or leakage observed

| TABLE: 2.(2) – Vibration Test (Battery Pack) | | | N/A |
|--|---------------------------|---------|-----|
| Model | OCV at Start of Test, Vdc | Results | |
| -- | -- | -- | |
| -- | -- | -- | |
| -- | -- | -- | |
| -- | -- | -- | |
| -- | -- | -- | |

Supplementary information: no fire, explosion or leakage observed

| TABLE: 3.(1) – External Short Circuit Test (Cell) | | | | | P |
|---|-------------------------|---------------------------|--------------------------|--------------------------------------|---------|
| Model | Ambient (At 55°C ± 5°C) | OCV at start of test, Vdc | Resistance of Circuit, Ω | Maximum Case Temperature Rise ΔT, °C | Results |
| Cell #16 | 56.8 | 4.22 | 0.087 | 109.7 | P |
| Cell #17 | 56.8 | 4.22 | 0.082 | 110.9 | P |
| Cell #18 | 56.8 | 4.22 | 0.075 | 112.8 | P |
| Cell #19 | 56.8 | 4.22 | 0.084 | 107.3 | P |
| Cell #20 | 56.8 | 4.21 | 0.081 | 113.9 | P |
| MODEL | Ambient (At 55°C ± 5°C) | OCV at start of test, Vdc | Resistance of Circuit, Ω | Maximum Case Temperature Rise ΔT, °C | Results |

| | | | | | |
|---|------|------|-------|-------|---|
| Cell #21 | 56.3 | 4.12 | 0.080 | 114.4 | P |
| Cell #22 | 56.3 | 4.13 | 0.087 | 116.7 | P |
| Cell #23 | 56.3 | 4.13 | 0.083 | 112.0 | P |
| Cell #24 | 56.3 | 4.12 | 0.076 | 118.9 | P |
| Cell #25 | 56.3 | 4.13 | 0.079 | 113.8 | P |
| Supplementary information: no fire or explosion | | | | | |

| TABLE: 3.(1) – External Short Circuit Test (Battery Pack) | | | | | N/A |
|---|-------------------------|---------------------------|--------------------------|--------------------------------------|---------|
| Model | Ambient (At 20°C ± 5°C) | OCV at start of test, Vdc | Resistance of Circuit, Ω | Maximum Case Temperature Rise ΔT, °C | Results |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| Model | Ambient (At 20°C ± 5°C) | OCV at start of test, Vdc | Resistance of Circuit, Ω | Maximum Case Temperature Rise ΔT, °C | Results |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- |
| Supplementary information: no fire or explosion | | | | | |

| TABLE: 3.(7) – Overcharge Tests (Lithium Systems) | | | | | | P |
|---|--------------|---------------------------|------------------------------|-------------------------------|---------------------------|---------|
| Model | Ambient (°C) | OCV at start of test, Vdc | Maximum Charging Current, mA | Maximum Charging Voltage, Vdc | Total Time of Charging, h | Results |
| Cell #67 | 55 | 3.26 | 4000 | 10 | 1.375 | P |
| Cell #68 | 55 | 3.29 | 4000 | 10 | 1.375 | P |
| Cell #69 | 55 | 3.32 | 4000 | 10 | 1.375 | P |
| Cell #70 | 55 | 3.29 | 4000 | 10 | 1.375 | P |
| Cell #71 | 55 | 3.27 | 4000 | 10 | 1.375 | P |
| Cell #72 | -5 | 3.30 | 4000 | 10 | 1.375 | P |
| Cell #73 | -5 | 3.28 | 4000 | 10 | 1.375 | P |
| Cell #74 | -5 | 3.25 | 4000 | 10 | 1.375 | P |
| Cell #75 | -5 | 3.24 | 4000 | 10 | 1.375 | P |
| Cell #76 | -5 | 3.26 | 4000 | 10 | 1.375 | P |
| Supplementary information: the test voltage reached 10V after the test applied for 1.375 hours. No fire or explosion. | | | | | | |

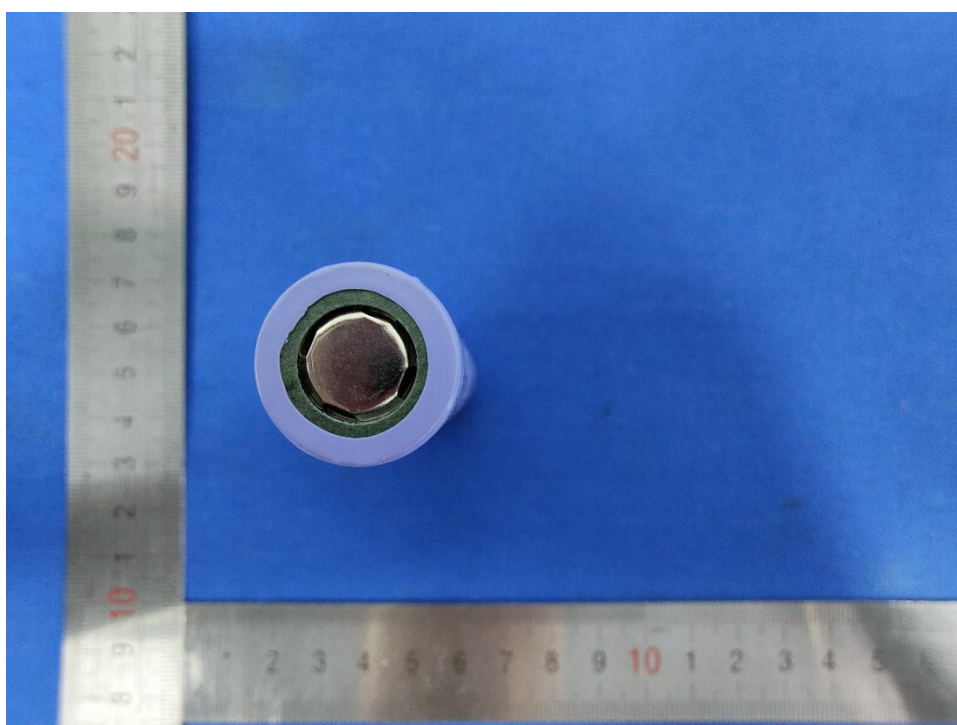
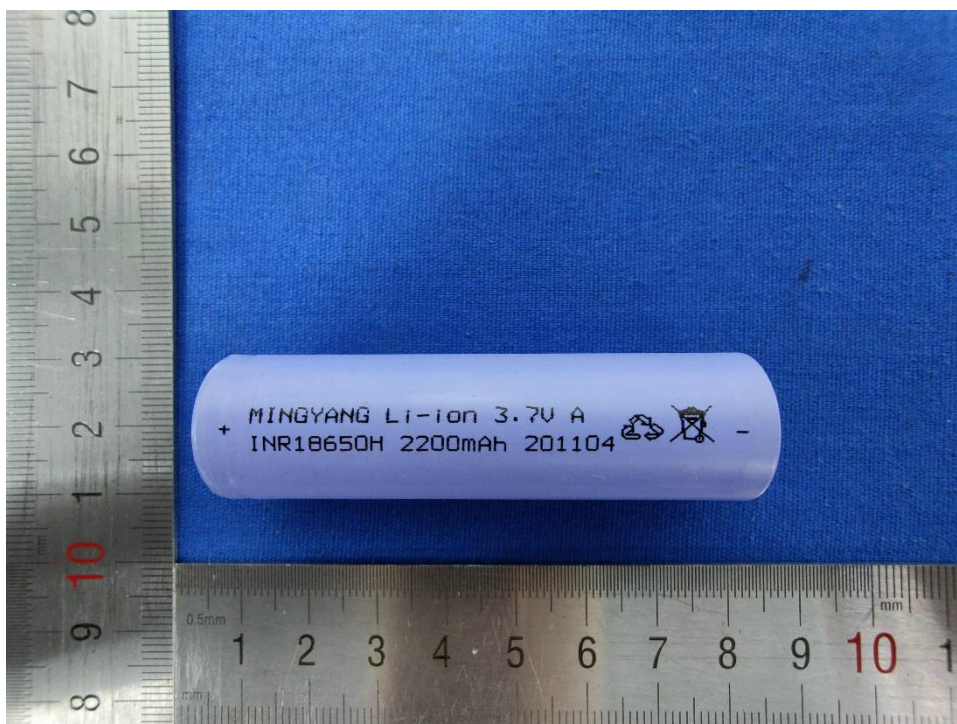
| TABLE: 3.(8) – Forced Discharge Test (Cell) | | | | | P |
|--|--------------|---|-------------------------------|---|---------|
| Model | Ambient (°C) | OCV before application of reverse charge, Vdc | Measured Reverse Charge It, A | Total Time for Reversed Charge Application, Min | Results |
| Cell #77 | 55 | 3.25 | 2.2 | 90 | P |
| Cell #78 | 55 | 3.24 | 2.2 | 90 | P |
| Cell #79 | 55 | 3.29 | 2.2 | 90 | P |
| Cell #80 | 55 | 3.26 | 2.2 | 90 | P |
| Cell #81 | 55 | 3.31 | 2.2 | 90 | P |
| Cell #82 | -5 | 3.28 | 2.2 | 90 | P |
| Cell #83 | -5 | 3.27 | 2.2 | 90 | P |
| Cell #84 | -5 | 3.31 | 2.2 | 90 | P |
| Cell #85 | -5 | 3.30 | 2.2 | 90 | P |
| Cell #86 | -5 | 3.26 | 2.2 | 90 | P |
| Supplementary information: no fire or explosion | | | | | |

| TABLE: 3.(9) – Cell Protection Against a High Charging Rate Test (Lithium Systems) | | | | | P |
|---|--------------|---------------------------|-----------------------------|-------------------------------|---------|
| Model | Ambient (°C) | OCV at start of test, Vdc | Maximum Charging Current, A | Maximum Charging Voltage, Vdc | Results |
| Cell #87 | 55 | 3.29 | 12.0 | 4.25 | P |
| Cell #88 | 55 | 3.31 | 12.0 | 4.25 | P |
| Cell #89 | 55 | 3.29 | 12.0 | 4.25 | P |
| Cell #90 | 55 | 3.29 | 12.0 | 4.25 | P |
| Cell #91 | 55 | 3.31 | 12.0 | 4.25 | P |
| Cell #92 | -5 | 3.30 | 12.0 | 4.25 | P |
| Cell #93 | -5 | 3.26 | 12.0 | 4.25 | P |
| Cell #94 | -5 | 3.27 | 12.0 | 4.25 | P |
| Cell #95 | -5 | 3.25 | 12.0 | 4.25 | P |
| Cell #96 | -5 | 3.30 | 12.0 | 4.25 | P |
| Supplementary information: no fire or explosion | | | | | |

| TABLE: 3.(10) – Forced internal short circuit of cells | | | | | P |
|--|--------------------------|---------------------------|----------------------|-----------------------------|---------|
| Model (Cell) | Ambient temperature (°C) | OCV at start of test, Vdc | Maximum Pressure (N) | Voltage Drop (ΔV) | Results |
| Cell #97 | 55 | 4.22 | 800 | 8 | P |
| Cell #98 | 55 | 4.23 | 800 | 6 | P |
| Cell #99 | 55 | 4.22 | 800 | 7 | P |
| Cell #100 | 55 | 4.22 | 800 | 9 | P |
| Cell #101 | 55 | 4.22 | 800 | 10 | P |
| Cell #102 | 55 | 4.23 | 800 | 8 | P |
| Cell #103 | 55 | 4.22 | 800 | 5 | P |
| Cell #104 | 55 | 4.22 | 800 | 7 | P |
| Cell #105 | 55 | 4.22 | 800 | 6 | P |
| Cell #106 | 55 | 4.22 | 800 | 9 | P |
| Cell #107 | -5 | 4.13 | 800 | 11 | P |
| Cell #108 | -5 | 4.14 | 800 | 7 | P |
| Cell #109 | -5 | 4.14 | 800 | 10 | P |
| Cell #110 | -5 | 4.13 | 800 | 12 | P |
| Cell #111 | -5 | 4.13 | 800 | 6 | P |
| Cell #112 | -5 | 4.13 | 800 | 9 | P |
| Cell #113 | -5 | 4.13 | 800 | 10 | P |
| Cell #114 | -5 | 4.14 | 800 | 12 | P |
| Cell #115 | -5 | 4.13 | 800 | 8 | P |
| Cell #116 | -5 | 4.13 | 800 | 7 | P |
| supplementary information: No Fire or Explosion | | | | | |

Photos

Model: INR18650H 2200mAh



-- End of Report --