試験報告書番号: *Test Report No.*	TSZ24EF043A04-01	頁:	Page 1 of 33
申請者: *Applicant:*	Dongguan Guitong Electronics Technology Co., Ltd. Room 301, NO.3 Building, NO.7, Luoqunpu 1 Road, Qingxi Town, Dongguan City, Guangdong, P.R. China		
製造者／輸入者: *Manufacturer/* Importer*:*	Dongguan Guitong Electronics Technology Co., Ltd. Room 301, NO.3 Building, NO.7, Luoqunpu 1 Road, Qingxi Town, Dongguan City, Guangdong, P.R. China		
試験品: *Test item:*	Power bank		
識別表示: *Identification:*	GO-BAT		
試験場所: *Testing location:*	**Shenzhen Tiansu Calibration and Testing Co., Ltd.** No.2, Jinlong Avenue, Longgang District, Shenzhen, 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(R05.05.01) 別表第十二 Interpretation for METI Ordinance of Technical Requirements (R05.05.01) Appendix 12, J62133-2(2021) (JIS C 62133-2:2020)		
試験所: *Testing Laboratory:*	**Shenzhen Tiansu Calibration and Testing Co., Ltd.** No.2, Jinlong Avenue, Longgang District, Shenzhen, Guangdong, China		
試験結果: *Test result:*	上記試験品は，適合 した。 *The a. m. test item passed.*		

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

検査者:			承認者:		
Checked by:			Approved by:		
2024-07-23	Orren Zeng	Orren Zeng	2024-07-23	Duan jiang tao	Duan jiang tao
日付	氏名	署名	日付	氏名	署名
Date	Name	Signature	Date	Name	Signature

試験者:

Tested by:

2024-07-23	Sunny Li	Sunny Li
日付	氏名	署名
Date	Name	Signature

略語:	OK, Pass or P	= 適合
	F or Fail	= 不適合
	N/A or N	= 該当せず

Abbreviations:	OK, Pass or P	= passed
	F or Fail	= failed
	N/A or N	= not applicable

Test item description ..... :	Power bank
Trade Mark(s)..... :	N/A
Manufacturer ..... :	Dongguan Guitong Electronics Technology Co., Ltd. Room 301, NO.3 Building, NO.7, Luoqunpu 1 Road, Qingxi Town, Dongguan City, Guangdong, P.R. China
Factory ..... :	Dongguan Guitong Electronics Technology Co., Ltd. Room 301, NO.3 Building, NO.7, Luoqunpu 1 Road, Qingxi Town, Dongguan City, Guangdong, P.R. China
Model/Type reference ..... :	GO-BAT
Ratings ..... :	Built-in Battery: 3.6V, 3300mAh, 11.88Wh Power bank: 2000mAh (DC5V 2A)

Copy of marking plate:

Power bank
Model: GO-BAT
Built-in Battery: 3.6V, 3300mAh, 11.88Wh
Power bank: 2000mAh (DC5V 2A)
Type-C Input: DC 5V 2A
Type-C Output: DC 5V 2A
1INR19/66 YYYY/MM/DD
Dongguan Guitong Electronics Technology Co., Ltd.
Caution:
RISK OF FIRE, EXPLOSION OR BURNING
DO NOT SHORT CIRCUIT
DO NOT DISASSEMBLE
DO NOT INCINERATE

Remark:

1. For the date code YYYY/MM/DD:

“YYYY” means year for manufacture;

“MM” means month for manufacture;

“DD” means day for manufacture.

2. The applicant and manufacturer information, product name, model, trademark and other information in this report are all provided by the applicant, and this laboratory is not responsible for verifying its authenticity.

List of Attachments (including a total number of pages in each attachment):

Attachment 1: Circuit diagram (1 page)

Attachment 2: Product Photos (3 pages)

Summary of Testing:

Tests performed (name of test and test clause):	**Testing location:**
cl.7.2.1 Continuous charging at constant voltage (secondary cells) cl.7.2.2 Battery case stress at high ambient temperature (secondary batteries) cl.7.2.2A Temperature cycle cl.7.3.1 External short-circuit (secondary cells) cl.7.3.2 External short-circuit (secondary batteries) cl.7.3.3 Free fall cl.7.3.4 Thermal abuse (secondary cells) cl.7.3.5 Crush (secondary cells) cl.7.3.6 Overcharge (secondary batteries) cl.7.3.7 Forced discharge (secondary cells) cl.7.3.8.1 Vibration (secondary batteries) cl.7.3.8.2 Mechanical shock (secondary batteries) cl.7.3.8A Low pressure (secondary cells) cl.7.3.8B High-rate charge (secondary cells) cl.7.3.8C Falling of secondary battery installed in a device (secondary batteries) cl.7.3.8D Overcharge protection (secondary batteries) cl.7.3.9 Forced internal short-circuit (secondary cells) cl.8.2 Small cell and battery safety information.	**Shenzhen Tiansu Calibration and Testing Co., Ltd.** No.2, Jinlong Avenue, Longgang District, Shenzhen, Guangdong, China

Test item particulars..... :	
Classification of installation and use.....:	To be defined in final product
Supply connection.....:	Type-C
Recommend charging method declared by the manufacturer.....:	Charging the power bank with 2000mA constant current until 5.25V, then constant voltage until charge current reduces to 66mA at ambient 20°C±5°C.
Discharge current (0,2 I_t A) .....:	660mA
End-of-discharge voltage .....:	2.75V
Upper limit charging voltage per cell.....:	4.25V
Maximum charging current .....:	2000mA
Charging temperature upper limit .....:	45°C
Charging temperature lower limit.....:	0°C
Polymer cell electrolyte type .....:	☐ gel polymer ☐ solid polymer ☐ N/A
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 .....:	2024-05-15
Date (s) of performance of tests .....:	2024-05-15 to 2024-07-23
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 and other remarks:

The power bank is constructed with one lithium-ion cell (1S1P), and has overcharge, over-discharge, over current and short-circuits proof circuit.

For the cell, the charging temperature is 0°C to 45°C and the discharging temperature is -10°C to 60°C.
For the power bank, the charging temperature is 0°C to 45°C and the discharging temperature is -10°C to 60°C.

The main features of this model are shown as below:

Model	Rated capacity	Nominal voltage	Nominal charging current	Nominal discharging current	Maximum charging current	Maximum discharging current	Maximum Charge Voltage	End-of-discharge Voltage
GO-BAT	3300mAh*	3.6V**	2000mA	2000mA	2000mA	2000mA	5.25V	2.75V

The main features of this cell within the battery pack shown as below:

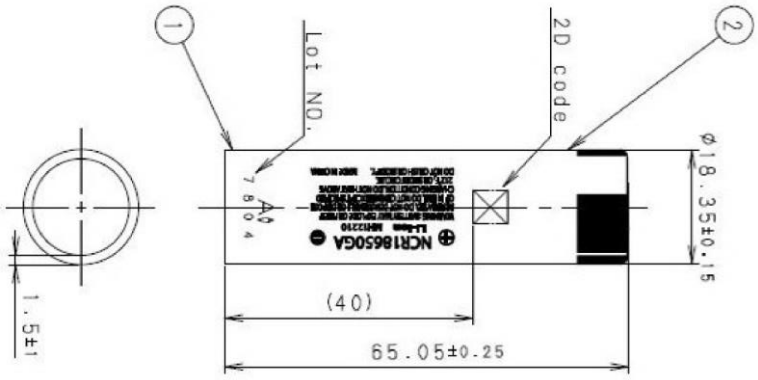
Model	Rated capacity	Nominal voltage	Nominal charging current	Nominal discharging current	Maximum charging current	Maximum discharging current	Maximum Charge Voltage	End-of-discharge Voltage
NCR18650GA	3300mAh	3.6V	670mA	670mA	5250mA	10000mA	4.2V	2.5V

The main features of the cell in the battery are shown as below (clause 7.1.2):

Model	Upper limit charging voltage	Taper-off current	Lower charge temperature	Upper charge temperature
NCR18650GA	4.25V	165mA	0°C	45°C

Remark:
* means Built-in Battery Rated capacity: 3300mAh
** means Built-in Battery Nominal voltage: 3.6V

Construction:



Cell (Unit: mm)

T: 19.6 W: 41.7 L: 80.0

Power bank (Unit: mm)

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
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 so designed and constructed that they are safe under conditions of both intended use and reasonably foreseeable misuse		P
5.2	**Insulation and wiring**		P
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 MΩ	No metal surface exists.	N/A
	Insulation resistance (MΩ) .....:		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		P
	Orientation of wiring maintains adequate clearances and creepage distances between conductors		P
	Mechanical integrity of internal connections accommodates intended use		P
5.3	**Venting**		P
	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 the cylindrical cell.	P
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief		P
5.4	**Temperature, voltage and current management**		P
	Secondary batteries are designed such that abnormal temperature rise conditions are prevented	Overcharge, over discharge, over current and short-circuit proof circuit used in this battery. See tests of clause 7.	P
	Secondary batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	See above.	P

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict
	The cell manufacturer are provided the information of temperature, voltage and current limits to the battery manufacturer	The charging limits specified in the manufacturer's specification.	P
	The battery manufacturer are provided the information of temperature, voltage and current limits to the equipment manufacturer	The charging limits specified in the manufacturer's specification.	P
5.5	**Terminal contacts**		P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	Type-C complied with the requirements.	P
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance		P
	Terminal contacts are arranged to minimize the risk of short circuits		P
5.6	**Assembly of cells into batteries**		P
5.6.1	General		P
	Each battery has an independent control and protection for current, voltage, temperature and any other parameter required for safety and to maintain the cells within their operating region	Protective circuit equipped on battery.	P
	This protection may be provided external to the battery such as within the charger or the end devices		N/A
	If protection is external to the battery, the manufacturer of the battery provide this safety relevant information to the external device manufacturer for implementation		N/A
	If there is more than one battery housed in a single battery case, each battery has protective circuitry that can maintain the cells within their operating regions		N/A
	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly	Current, voltage and temperature limits specified by cell manufacturer.	P
	Secondary batteries that are designed for the selective discharge of a portion of their series connected cells incorporate circuitry to prevent operation of cells outside the limits specified by the cell manufacturer		N/A
	Protective circuit components are added as appropriate and consideration given to the end-device application		P

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict
	The manufacturer of the battery provide a safety analysis of the battery safety circuitry with a test report including a fault analysis of the protection circuit under both charging and discharging conditions confirming the compliance		N/A
5.6.2	Design recommendation		P
	For the secondary battery consisting of a single secondary cell or a single cellblock, it is recommended that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 2	Charging cell voltage of each cell: 4.2V, not exceed 4.25V specified in Table 2.	P
	For the secondary battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that the voltages of any one of the single cells or single cellblocks does not exceed the upper limit of the charging voltage, specified in Table 2, by monitoring the voltage of every single cell or the single cellblocks		N/A
	For the secondary battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that charging is stopped when the upper limit of the charging voltage is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks		N/A
	For secondary batteries consisting of series-connected cells or cell blocks, nominal charge voltage are not counted as an overcharge protection		N/A
	For secondary batteries consisting of series-connected cells or cell blocks, cells have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer		N/A
	It is recommended that the secondary cells and cell blocks are not discharged beyond the cell manufacturer's specified final voltage	Final voltage of battery per cell: 2.5V, not exceed the final voltage specified by cell manufacturer.	P
	For secondary batteries consisting of series-connected secondary cells or cell blocks, cell balancing circuitry are incorporated into the battery management system		N/A
5.6.3	Mechanical protection for secondary cells and components of secondary batteries		P

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict
	Mechanical protection for secondary cells, cell connections and control circuits within the secondary battery are provided to prevent damage as a result of intended use and reasonably foreseeable misuse		P
	The mechanical protection can be provided by the battery case or it can be provided by the end product enclosure for those batteries intended for building into an end product		P
	The battery case and compartments housing cells are designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer		P
	For secondary batteries intended for building into a portable end product, testing with the battery installed within the end product is considered when conducting mechanical tests		N/A
5.6.3A	Prevention for sharp corner hazard		N/A
	Except in the case of necessary function, concavo-convex or sharp corner not exist to cause hazards for cell or battery.		N/A
	When the corner exist on the cell or battery enclosure or connection parts, mechanical protection provided to prevent user contact.		N/A
	For cell or battery not intended to be handled by end user, the protection applied can be decided by agreement between the cell manufacturer and the battery and/or end product manufacturer, Conformity is checked by inspection.		N/A
5.7	**Quality plan**		P
	The cell and battery manufacturer prepares and implements a quality plan that defines procedures for the inspection of materials, components, secondary cells and batteries and which covers the whole process of producing each type of secondary cell or battery. The cell and battery manufacturers should understand their process capabilities and should institute the necessary process controls as they relate to product safety.	Quality plan provided.	P
5.8	**Battery safety components**		N/A

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict

6	**TYPE TEST AND SAMPLE SIZE**		P
	Tests are made with the number of secondary cells or batteries specified in Table 1 using secondary cells or batteries that are not more than six months old		P
	The internal resistance of coin cells are measured in accordance with Annex D. Coin cells with internal resistance less than or equal to 3 Ω are tested in accordance with Table 1. No test is required for coin cells with internal resistance greater than 3 Ω	Not coin cells.	N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of 20 °C ± 5 °C		P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and over discharge protection		N/A
	When conducting the short-circuit test, consideration is given to the simulation of any single fault condition that is likely to occur in the protecting circuit that would affect the short-circuit test	See clause 7.3.2.	P

7	**SPECIFIC REQUIREMENTS AND TESTS**		P
7.0A	**General**		P
7.1	**Charging procedure for test purposes**		P
7.1.0A	The first and second procedures are specified as charging procedures for tests. These charging procedures, however, do not apply to 7.3.6, 7.3.7, 7.3.8B and 7.3.8D where the charging process is the purpose of the test.		P
7.1.1	First procedure		P
	This charging procedure applies to subclauses other than those specified in 7.1.2		P
	Unless otherwise specified in this Standard, the secondary cells and batteries shall be charged in an ambient temperature of 20 °C ± 5 °C, using the method declared by the manufacturer.		P
	Prior to charging, the secondary cell and battery shall have been discharged at an ambient temperature of 20 °C ± 5 °C at a constant current of 0.2 It A down to the designed final voltage specified by the manufacturer.		P

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict
	This charging procedure applies to 7.2.1, 7.2.2, 7.2.2A, 7.3.2, 7.3.3, 7.3.8.1, 7.3.8.2, 7.3.8A and 7.3.8C		P
7.1.2	Second procedure		P
	After stabilization for 1 h ~ 4 h, respectively, at ambient temperature of upper limit test temperature and lower limit test temperature, as specified in Table 2, cells are charged by using the upper limit charging voltage and maximum charging current, until the charging current at the time of constant voltage charge control is reduced to 0.05 It A.	Charge temperature specified by manufacturer: 0-45°C. -5°C used for lower limit tests. 45°C used for upper limit tests.	P
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9		P
7.2	Intended use		P
7.2.1	Continuous charging at constant voltage (secondary cells)	Tested complied.	P
	Fully charged secondary cells, according to the first procedure in 7.1.1, are subjected for 28 days to a charge at upper limit charging voltage and upper limit test temperature. After the test, visual inspection shall be performed.		P
	Results: No fire. No explosion. No leakage..... :	(See appended table 7.2.1)	P
7.2.2	Battery case stress at high ambient temperature (secondary batteries)	Tested complied.	P
	Fully charged secondary batteries, according to the first procedure in 7.1.1, are exposed to a high temperature. The secondary battery is placed in an air circulating oven at a temperature of 70 °C ± 2 °C. The batteries remain in the oven for 7 h, after which they are removed and allowed to return to an ambient temperature of 20 °C ± 5 °C.		P
	Oven temperature (°C)..... :	70	—
	Results: No physical distortion of the battery casing resulting in exposure if internal components	No physical distortion of the battery case.	P
7.2.2A	Temperature cycle	Tested complied.	P

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict
	Fully charged secondary cells or batteries, according to the first procedure in 7.1.1, are subjected to temperature cycling (−20 °C, +75 °C), in forced draught chambers, according to the following procedure and the temperature profile shown in Figure 0A. Step 1: Place the secondary cells or batteries in an temperature of 75 °C ± 2 °C for 4 h. Step 2: Change the temperature to 20 °C ± 5 °C within 30 min and maintain at this temperature for not less than 2 h. Step 3: Change the temperature to −20 °C ± 2 °C within 30 min and maintain at this temperature for 4 h. Step 4: Change the temperature to 20 °C ± 5 °C within 30 min and maintain at this temperature for not less than 2 h. Step 5: Repeat Steps 1 to 4 for a further four cycles. Transition from Step 4 to Step 1 within 30 min. Step 6: After the fifth cycle, store the secondary cells or batteries at 20 °C ± 5 °C for 7 days and then conduct a visual inspection.		P
	Results: No fire. No explosion. No leakage	No fire. No explosion. No leakage.	P
7.3	Reasonably foreseeable misuse		P
7.3.1	External short circuit (secondary cells)	Tested complied.	P
	Charging procedure: 7.1.2		P
	Ambient temperature: 55 °C ± 5 °C	(See appended table 7.3.1)	P
	Resistance of circuit (mΩ): 80 mΩ ± 20 mΩ	(See appended table 7.3.1)	P
	The cells were tested until one of the following occurred: - 24 hours elapsed; or		N/A
	- The case temperature declined by 20% of the maximum temperature rise		P
	Results: No fire. No explosion ..... :	(See appended table 7.3.1)	P
7.3.2	External short-circuit (secondary batteries)	Tested complied.	P
	Charging procedure: 7.1.1		P
	Ambient temperature: 20 °C ± 5 °C	(See appended table 7.3.2)	P
	Resistance of circuit (mΩ): 80 mΩ ± 20 mΩ	(See appended table 7.3.2)	P
	The batteries were tested until one of the following occurred:		P
	- 24 hours elapsed; or		N/A
	- The case temperature declined to 20 % of the maximum temperature rise		P
	In case of rapid decline in short circuit current, the battery pack remained on test for an additional one hour after the current reached a low end steady state condition		P

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict
	A single fault in the discharge protection circuit is conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test	Single fault conducted on four samples.	P
	A single fault applies to protective component parts such as MOSFET (metal oxide semiconductor field-effect transistor), fuse, thermostat or positive temperature coefficient (PTC) thermistor		P
	Results: No fire. No explosion ..... :	(See appended table 7.3.2)	P
7.3.3	Free fall	Tested complied.	P
	Fully charged secondary cells or batteries, according to the first procedure in 7.1.1, are stored in an ambient temperature of 20 °C ± 5 °C. Each secondary cell or battery is dropped three times from a height of 1.0 m ± 0.01 m onto a flat concrete floor or metal floor. The cells or batteries are dropped so as to obtain impacts in random orientations. After the test, the secondary cell or battery shall be put on rest for a minimum of 1 h and then a visual inspection shall be performed.		P
	Results: No fire. No explosion.	No fire. No explosion.	P
7.3.4	Thermal abuse (secondary cells)	Tested complied.	P
	Oven temperature (°C)..... :	130	—
	Results: No fire. No explosion.	No fire. No explosion.	P
7.3.5	Crush (secondary cells)	Tested complied.	P
	The crushing force was released upon:		P
	- The maximum force of 13 kN ± 0.78 kN has been applied; or		P
	- An abrupt voltage drop of one-third of the original voltage has been obtained;		N/A
	A cylindrical or prismatic secondary lithium cell is crushed with its longitudinal axis parallel to the flat surfaces of the crushing apparatus. Test only the wide side of prismatic secondary lithium cells. A coin cell shall be crushed by applying the force on its flat surface.	Cylindrical cell.	P
	Results: No fire. No explosion ..... :	(See appended table 7.3.5)	P
7.3.6	Overcharge (secondary batteries)	Tested complied.	P

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict
	The test shall be carried out in an ambient temperature of 20 °C ± 5 °C. Each secondary battery shall be discharged at a constant current of 0.2 It A, to the designed final voltage specified by the manufacturer.		P
	The supply voltage which is:		P
	- 1.4 times the upper limit charging voltage presented in Table A.1 (but not to exceed 6,0 V) for single cell/cell block batteries or	5.95V applied.	P
	- 1.2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and		N/A
	- Sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached		P
	Test was continued until the temperature of the outer casing:		P
	- Reached steady state conditions (less than 10 °C change in 30-minute period); or		N/A
	- Returned to ambient		P
	Results: No fire. No explosion ..... :	(See appended table 7.3.6)	P
7.3.7	Forced discharge (secondary cells)	Tested complied.	P
	A secondary cell is discharged to the designed final voltage specified by the cell manufacturer.		P
	The discharged cell is then subjected to a reverse charge at 1 It A for 90 min.		P
	- The discharge voltage reaches the negative value of upper limit charging voltage within the testing duration. The voltage is maintained at the negative value of the upper limit charging voltage by reducing the current for the remainder of the testing duration		N/A
	- The discharge voltage does not reach the negative value of upper limit charging voltage within the testing duration. The test is terminated at the end of the testing duration		P
	Results: No fire. No explosion ..... :	(See appended table 7.3.7)	P
7.3.8	Mechanical tests (secondary batteries)		P
7.3.8.1	Vibration (secondary batteries)	Tested complied.	P
	Results: no fire, no explosion or no leakage. ..... :	(See appended table 7.3.8.1)	P
7.3.8.2	Mechanical shock (secondary batteries)	Tested complied.	P

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No fire, no explosion or no leakage..... :	(See appended table 7.3.8.2)	P
7.3.8A	Low pressure (secondary cells)	Tested complied.	P
	Charging procedure: 7.1.1		P
	Ambient temperature: 20 °C ± 5 °C.		P
	Air pressure: equal to or less than 11.6 kPa (simulates an altitude of 15 240 m)		P
	Duration: 6 h.		P
	Results: No fire, no explosion or no leakage..... :	No fire. No explosion. No leakage.	P
7.3.8B	High-rate charge (secondary cells)	Tested complied.	P
	The test shall be performed at upper limit test temperature or lower limit test temperature.		P
	When the discharged secondary cell is fully charged with the charging current of three times the maximum charging current or when the corresponding electronic device or secondary battery before full charge has a protection element, charging shall be performed until charging current is broken by the actuation of the safety device of the protection element.	Charged until the cell is fully charged.	P
	Results: No fire, no explosion	No fire, no explosion.	P
7.3.8C	Falling of secondary battery installed in a device (secondary batteries)		P
	Battery equipped with Device is tested.		P
	The battery that is charged according to 7.1.1 is installed in the portable electronic application to be used, or subjected to the condition, simulating the actual use. Then, it is dropped once in the direction most likely to affect in a negative manner from the height, which is specified in JIS C 6950 or JIS C6065, according to the portable electronic applications, in which there batteries are assumed to be installed, on to a concrete floor. An iron plate may be used in place of the concrete floor.		P
	Requirement: External short circuit shall not be caused inside of the battery, and internal short circuit shall not be caused in cells contained in the battery.		P
7.3.8D	Overcharge protection (secondary batteries)	Tested complied.	P
	Ambient temperature: 20 °C ± 5°C		P
	One of the following test is conducted		P

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict
	a) When the secondary battery consists of secondary cells or one step of cell block, measure the voltage applied to the secondary cells or the cell block at the time of charge.		P
	2) In the case of the structure of the secondary battery in which two or more secondary cells or cell blocks are connected in series, charge while measuring the voltage of each secondary cell or cell block. At the same time, discharge single secondary cell or cell block gradually and compulsorily, and measure the voltage of each secondary cell or cell block of others.		N/A
	3) In the case of the structure of the secondary battery in which two or more secondary cells or cell blocks are connected in series, apply the voltage which exceeds the upper limit charging voltage in Table 2 to the secondary cell or cell block while measuring the voltage of each secondary cell or cell block, and measure the voltage when charge stops		N/A
	The battery provides with protective circuits		P
	Appliance in which battery is installed or battery charger provides with protective circuits.		N/A
	Requirement: cells or cellblocks shall not exceed upper limit charging voltage.	Not exceed upper limit charging voltage.	P
7.3.9	Forced internal short-circuit (secondary cells)	Tested complied.	P
	The pressing was stopped upon:		P
	- A voltage drop of 50 mV has been detected; or		N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached	800N for cylindrical cells.	P
	Results: No fire ..... :	(See appended table 7.3.9)	P
8	**INFORMATION FOR SAFETY**		P
8.1	**General**		P
	Manufacturers of secondary cells provides information about current, voltage and temperature limits of their products	Information for safety mentioned in manufacturer's specifications.	P
	Manufacturers of batteries provides information regarding how to minimize and mitigate hazards to equipment manufacturers or end-users	Information for safety mentioned in manufacturer's specifications.	P

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict
	Systems analyses are performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		N/A
	As appropriate, any information relating to hazard avoidance resulting from a system analysis is provided to the end user		N/A
8.2	**Small cell and battery safety information**	Not small cell and battery.	N/A
	The following warning language is to be provided with the information packaged with the small cells and batteries and equipment using them:		N/A
	- Keep small cells and batteries which are considered swallowable out of the reach of children		N/A
	- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion		N/A
	- In case of ingestion of a cell or battery, seek medical assistance promptly		N/A
9	**MARKING**		P
9.1	**Secondary cell marking**	The final product is battery.	N/A
	Secondary cells are marked as specified in JIS C 8711, except coin cells		N/A
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity		N/A
	By agreement between the secondary cell manufacturer and the battery and/or end product manufacturer, component secondary cells used in the manufacture of a battery need not be marked		N/A
	However, when component secondary cells are not marked, the secondary cell marking are indicated with the secondary battery, the instructions or the specifications.		N/A
9.2	**Secondary battery marking**		P
	Secondary batteries are marked as specified in JIS C 8711, except for coin batteries	See marking plate on page 2.	P
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity	Not coin batteries.	N/A

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict
	Secondary batteries are marked with an appropriate caution statement		P
	- Terminals have clear polarity marking on the external surface of the battery, or		P
	- Not be marked with polarity markings if the design of the external connector prevents reverse polarity connections		P
9.3	**Caution for ingestion of small secondary cells and batteries**	Not small cell and battery.	N/A
	Small secondary cells and batteries determined to be small according to 8.2 are included a caution statement regarding the hazards of ingestion in accordance with 8.2.		N/A
	Small secondary cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion is given on the immediate package		N/A
9.4	**Other information**		P
	The following information are marked on the secondary battery or supplied to the equipment manufacturer by the battery manufacturer:		P
	- Storage and disposal instructions	Information for storage and disposal instructions mentioned in manufacturer's specifications.	P
	- Recommended charging instructions	Information for storage and disposal instructions mentioned in manufacturer's specifications.	P
10	**PACKAGING AND TRANSPORT**		N/A
	Packaging for coin cells and small secondary batteries are not be small enough to fit within the limits of the ingestion gauge of Figure 3		N/A
ANNEX A	**CHARGING AND DISCHARGING RANGE OF SECONDARY LITHIUM ION CELLS FOR SAFE USE**		P
A.1	**General**		P
A.2	**Safety of lithium ion secondary battery**		P
A.3	**Consideration on charging voltage**		P

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict
A.3.1	General		P
A.3.2	Upper limit charging voltage		P
A.3.2.1	General		P
A.3.2.2	Explanation of safety viewpoint		N/A
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	4.25V applied.	N/A
A.4	**Consideration of temperature and charging current**		P
A.4.1	General		P
A.4.2	Recommended temperature range	See A.4.2.2.	P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Charging temperature declared by client is: 0-45°C	P
A.4.3	High temperature range		N/A
A.4.3.1	General		N/A
A.4.3.2	Explanation of safety viewpoint		N/A
A.4.3.3	Safety considerations when specifying charging conditions in the high temperature range		N/A
A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range		N/A
A.4.4	Low temperature range	Low temperature range declared by client is: 0°C	P
A.4.4.1	General		P
A.4.4.2	Explanation of safety viewpoint		P
A.4.4.3	Safety considerations, when specifying charging conditions in the low temperature range		P
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range	No documents provided by client explaining reason of 0°C as low temperature limit, -5°C used to meet the requirement.	P
A.4.5	Scope of the application of charging current		P
A.4.5.A	Determination of model adoption		P
A.4.6	Consideration of discharge		P
A.4.6.1	General		P
A.4.6.2	Final voltage and explanation of safety viewpoint		P
A.4.6.3	Discharge current and temperature range		P
A.4.6.4	Scope of application of the discharging current		P
A.5	**Sample preparation**		P
A.5.1	General		P

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict
A.5.2	Insertion procedure for nickel particle to generate internal short-circuit		P
A.5.3	Disassembly of charged cell		P
A.5.4	Shape and material of nickel particle		P
A.5.5	Insertion of nickel particle in cylindrical lithium ion secondary cell		P
A.5.5.1	Insertion of nickel particle in winding core		P
A.5.5.2	Marking the position of the nickel particle on both ends of the winding core of the separator		P
A.5.6	Insertion of nickel particle in prismatic lithium ion secondary cell		N/A
A.6	**Experimental procedure of the forced internal short-circuit test**		P
A.6.1	Material and tools for preparation of nickel particle		P
A.6.2	Example of a nickel particle preparation procedure		P
A.6.3	Positioning (or placement) of a nickel particle		P
A.6.4	Damaged separator precaution		P
A.6.5	Caution for rewinding separator and electrode		P
A.6.6	Insulation film for preventing short-circuit		P
A.6.7	Caution when disassembling a cell		P
A.6.8	Protective equipment for safety		P
A.6.9	Caution in the case of fire during disassembling		P
A.6.10	Caution for the disassembling process and pressing the electrode core		P
A.6.11	Recommended specifications for the pressing device		P
ANNEX B	**RECOMMENDATIONS TO EQUIPMENT MANUFACTURERS AND BATTERY ASSEMBLERS**		N/A
ANNEX C	**RECOMMENDATIONS TO THE END-USERS**		N/A
ANNEX D	**MEASUREMENT OF THE INTERNAL AC RESISTANCE FOR COIN CELLS**		N/A
D.1	**General**	Not coin cells.	N/A
D.2	**Method**		N/A
	A sample size of three coin cells is required for this measurement		N/A
	Coin cells with an internal resistance greater than 3 Ω require no further testing..... :	(See appended table D.2)	N/A

Interpretation for METI Ordinance of Technical Requirements, Appendix 12, J62133-2 (2021) *(JISC 62133-2:2020)*			
Clause	Requirement + Test	Result - Remark	Verdict
	Coin cells with an internal resistance less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1		N/A
ANNEX E	**PACKAGING AND TRANSPORT**		N/A
ANNEX F	**COMPONENT STANDARDS REFERENCES**		N/A

7.2.1	TABLE: Continuous charging at constant voltage (secondary cells)			P
Sample No.	**Upper limit charging voltage V_c, (Vdc)**	**Upper limit test temperature, (°C)**	**OCV at start of test, (Vdc)**	**Results**
C01#	4.25	45	4.17	P
C02#	4.25	45	4.18	P
C03#	4.25	45	4.18	P
C04#	4.25	45	4.17	P
C05#	4.25	45	4.18	P
Supplementary information: - No fire or explosion - No leakage				

7.3.1	TABLE: External short-circuit (secondary cells)				P
Sample No.	**Ambient, (°C)**	**OCV at start of test, (Vdc)**	**Resistance of circuit, (mΩ)**	**Maximum case temperature ~~rise~~ ~~ΔT~~ (°C)**	**Results**
Samples charged at upper limit test temperature (45°C)					
C11#	55.7	4.21	85	112.0	P
C12#	55.7	4.21	89	108.5	P
C13#	55.7	4.22	86	104.5	P
C14#	55.7	4.22	84	103.2	P
C15#	55.7	4.21	85	110.9	P
Samples charged at lower limit test temperature (-5°C)					
C16#	55.9	4.12	74	101.2	P
C17#	55.9	4.12	84	105.2	P
C18#	55.9	4.12	79	103.2	P
C19#	55.9	4.13	89	104.1	P
C20#	55.9	4.13	82	108.9	P
Supplementary information: - No fire or explosion					

7.3.2	TABLE: External short-circuit (secondary batteries)					P
Sample No.	**Ambient T (°C)**	**OCV before test (Vdc)**	**Resistance of circuit (mΩ)**	**Maximum case temperature ~~rise~~ ~~ΔT~~ (°C)**	**Component single fault condition**	**Results**
B09#	23.3	5.11	85	23.9	--	P
B10#	23.3	5.10	86	24.0	MOSFET (U1) SC	P
B11#	23.3	5.12	84	24.1	MOSFET (U1) SC	P
B12#	23.3	5.10	79	23.9	MOSFET (U2) SC	P
B13#	23.3	5.09	85	23.7	MOSFET (U2) SC	P
Supplementary information: - No fire or explosion Remark: SC= short circuit						

7.3.5	TABLE: Crush (secondary cells)			P
Sample No.	**OCV before test (Vdc)**	**OCV at removal of crushing force (Vdc)**	**Maximum force applied to the cell during crush (kN)**	**Results**
Samples charged at upper limit test temperature (45°C)				
C34#	4.21	4.20	13	P
C35#	4.22	4.21	13	P
C36#	4.22	4.21	13	P
C37#	4.22	4.20	13	P
C38#	4.21	4.20	13	P
Samples charged at lower limit test temperature (-5°C)				
C39#	4.12	4.10	13	P
C40#	4.13	4.11	13	P
C41#	4.13	4.11	13	P
C42#	4.12	4.12	13	P
C43#	4.13	4.13	13	P
Supplementary information: - No fire or explosion				

7.3.6	TABLE: Overcharge (secondary batteries)	P
Constant charging current (A)..... :	6.6	—
Supply voltage (Vdc)..... :	5.95	—

Sample No.	OCV before charging, (Vdc)	Total charging time (minute)	Maximum outer casing temperature, (°C)	Results
B17#	5.08	100	32.3	P
B18#	5.07	100	34.5	P
B19#	5.09	100	33.5	P
B20#	5.09	100	34.2	P
B21#	5.10	100	34.0	P

Supplementary information:

- No fire or explosion

7.3.7	TABLE: Forced discharge (secondary cells)	P

Sample No.	OCV before application of reverse charge (Vdc)	Measured reverse charge I_t (A)	End-of-discharge voltage (Vdc)	Results
C44#	3.22	3.3	2.5	P
C45#	3.23	3.3	2.5	P
C46#	3.22	3.3	2.5	P
C47#	3.21	3.3	2.5	P
C48#	3.20	3.3	2.5	P

Supplementary information:

- No fire or explosion

7.3.8.1	TABLE: Vibration (secondary batteries)				P
Sample no.	**OCV before test (Vdc)**	**OCV after test (Vdc)**	**Mass before test (g)**	**Mass after test (g)**	**Results**
B22#	4.18	4.17	72.245	72.242	P
B23#	4.18	4.18	72.484	72.481	P
B24#	4.17	4.17	72.654	72.650	P
B25#	4.18	4.17	72.182	72.178	P
B26#	4.17	4.17	73.086	73.081	P
Supplementary information: No fire, no explosion or no leakage.					

7.3.8.2	TABLE: Mechanical shock (secondary batteries)				P
Sample no.	**OCV before test (Vdc)**	**OCV after test (Vdc)**	**Mass before test (g)**	**Mass after test (g)**	**Results**
B27#	4.17	4.17	71.895	71.890	P
B28#	4.17	4.17	72.054	72.048	P
B29#	4.17	4.16	72.410	72.402	P
B30#	4.18	4.17	73.021	73.011	P
B31#	4.18	4.16	72.687	72.681	P
Supplementary information: No fire, no explosion or no leakage.					

7.3.8B	TABLE: High-rate charge (secondary cells)			P
Sample No.	**OCV at start of test, Vdc**	**Charging Current, A**	**Maximum Charging Voltage, Vdc**	**Results**
Samples charged at upper limit test temperature (45°C)				
C52#	3.21	15.75	4.25	P
C53#	3.21	15.75	4.25	P
C54#	3.23	15.75	4.25	P
C55#	3.22	15.75	4.25	P
C56#	3.23	15.75	4.25	P
Samples charged at lower limit test temperature (-5°C)				
C57#	3.20	15.75	4.25	P
C58#	3.23	15.75	4.25	P
C59#	3.21	15.75	4.25	P
C60#	3.22	15.75	4.25	P
C61#	3.24	15.75	4.25	P
Supplementary information: - No fire or explosion				

7.3.8D	Overcharge protection (secondary batteries)			P
Sample No.	**OCV at start of test, Vdc**	**OCV at End of test, Vdc**	**Charging Voltage, Vdc**	**Results**
B32# (cell block 1)	3.91	4.24	6	P
Supplementary information: The cell block in the battery shall not exceed the upper limited charging voltage of cell.				

7.3.9	TABLE: Forced internal short-circuit (secondary cells)				P
Sample No.	**Chamber ambient T (°C)**	**OCV before test (Vdc)**	**Particle location [1)]**	**Maximum applied pressure (N)**	**Results**
C62#	45	4.21	1	800	P
C63#	45	4.21	1	800	P
C64#	45	4.22	1	800	P
C65#	45	4.22	1	800	P
C66#	45	4.20	1	800	P
C67#	45	4.21	1	800	P
C68#	45	4.22	1	800	P
C69#	45	4.21	1	800	P
C70#	45	4.22	1	800	P
C71#	45	4.21	1	800	P
C72#	-5	4.13	1	800	P
C73#	-5	4.13	1	800	P
C74#	-5	4.12	1	800	P
C75#	-5	4.12	1	800	P
C76#	-5	4.13	1	800	P
C77#	-5	4.11	1	800	P
C78#	-5	4.11	1	800	P
C79#	-5	4.13	1	800	P
C80#	-5	4.12	1	800	P
C81#	-5	4.13	1	800	P

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.

There is no particle location 2 in this product.

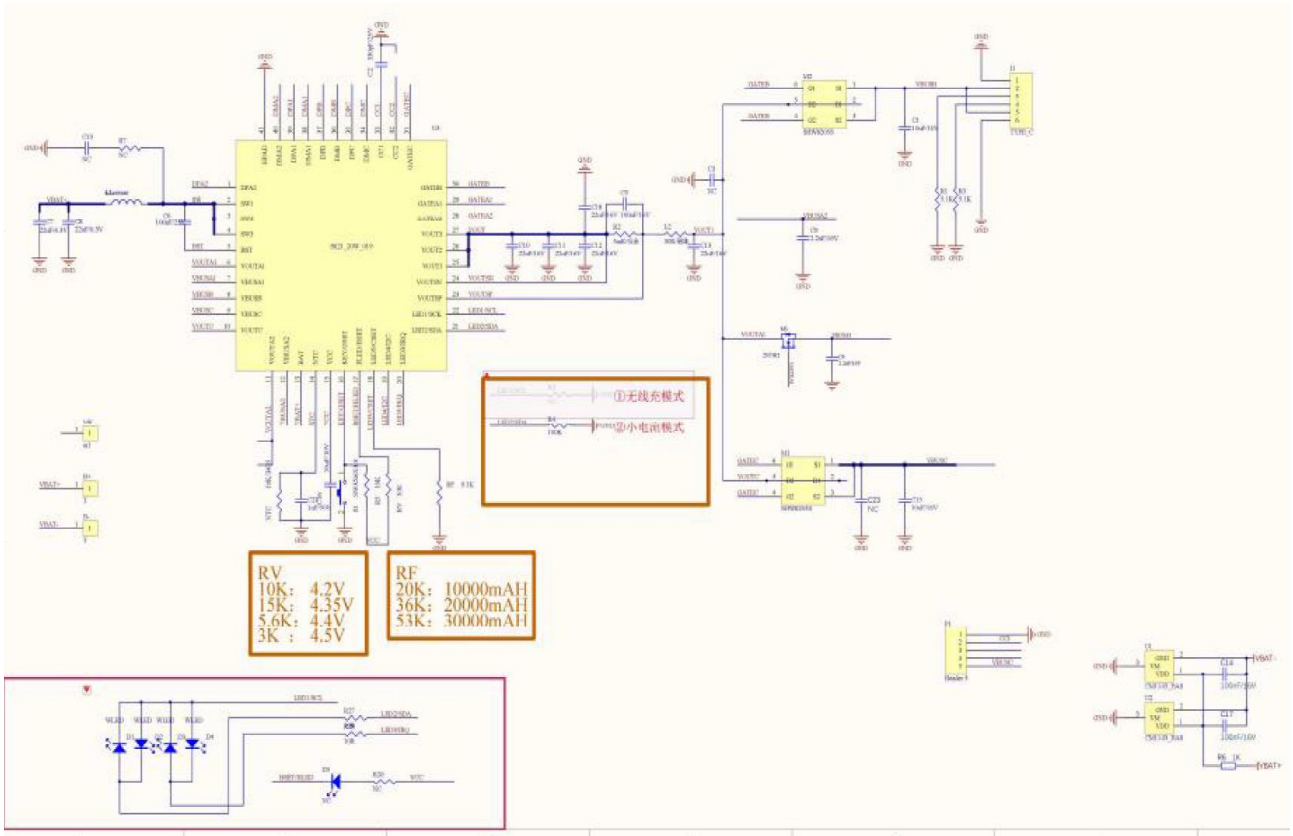
- No fire.

D.2	TABLE: Internal AC resistance for coin cells			N/A
Sample no.	**Ambient T (°C)**	**Store time (h)**	**Resistance Rac (Ω)**	**Results [1)]**

Supplementary information:

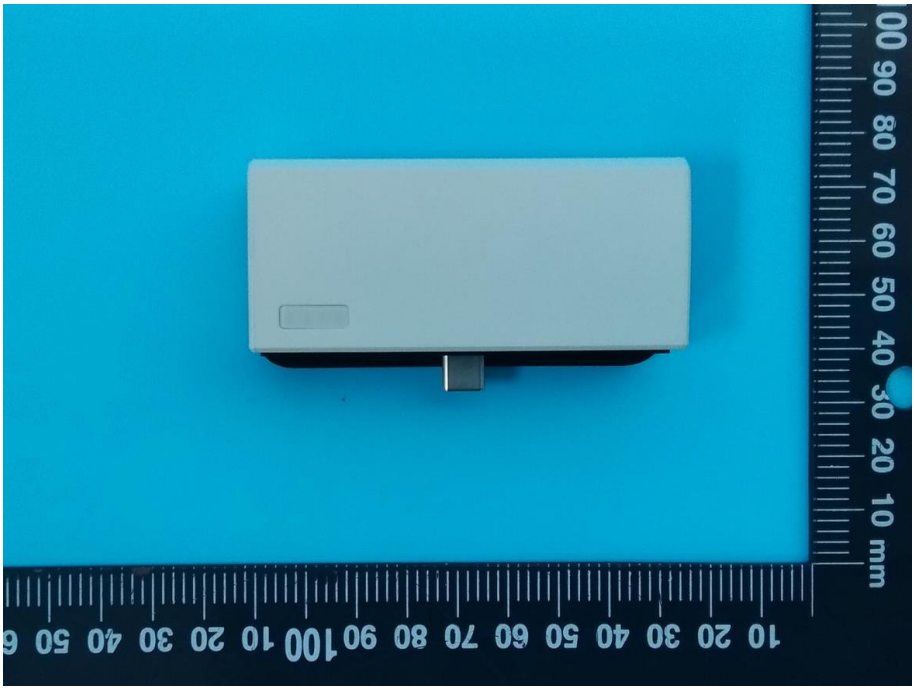
[1)] Coin cells with an internal resistance less than or equal to 3 Ω, see test result on corresponding tables according to Clause 6 and Table 1.

Attachment 1 Circuit diagram



Attachment 2 Product Photos

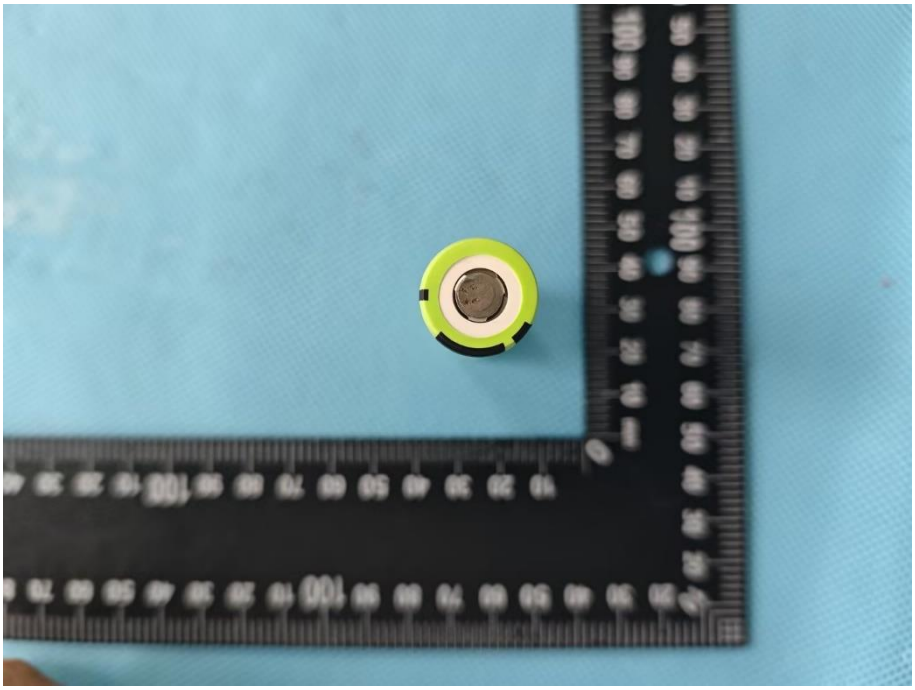
Front view of battery



Back view of battery

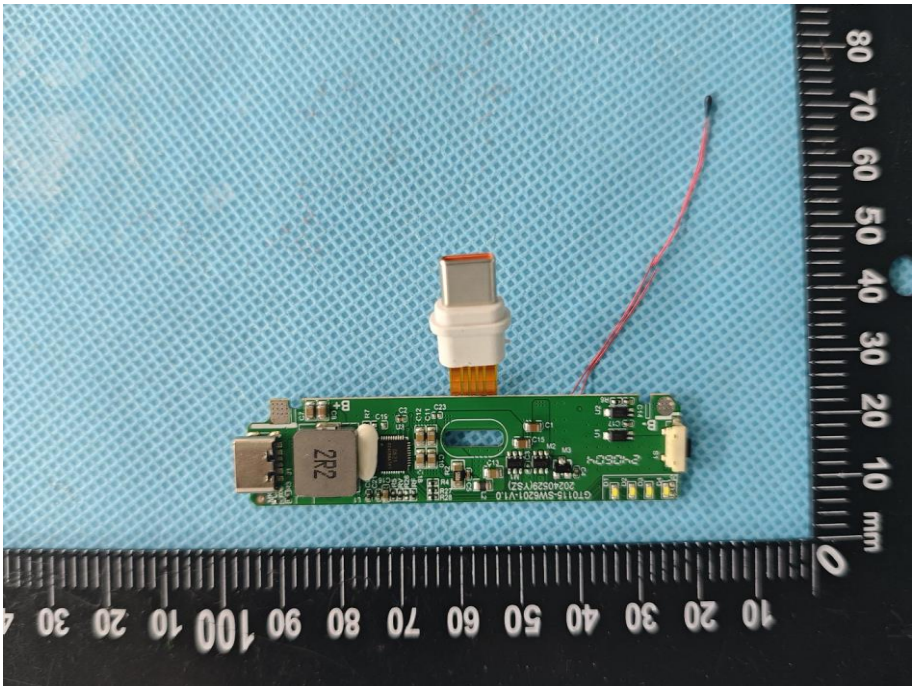
Attachment 2 Product Photos

Front view of cell

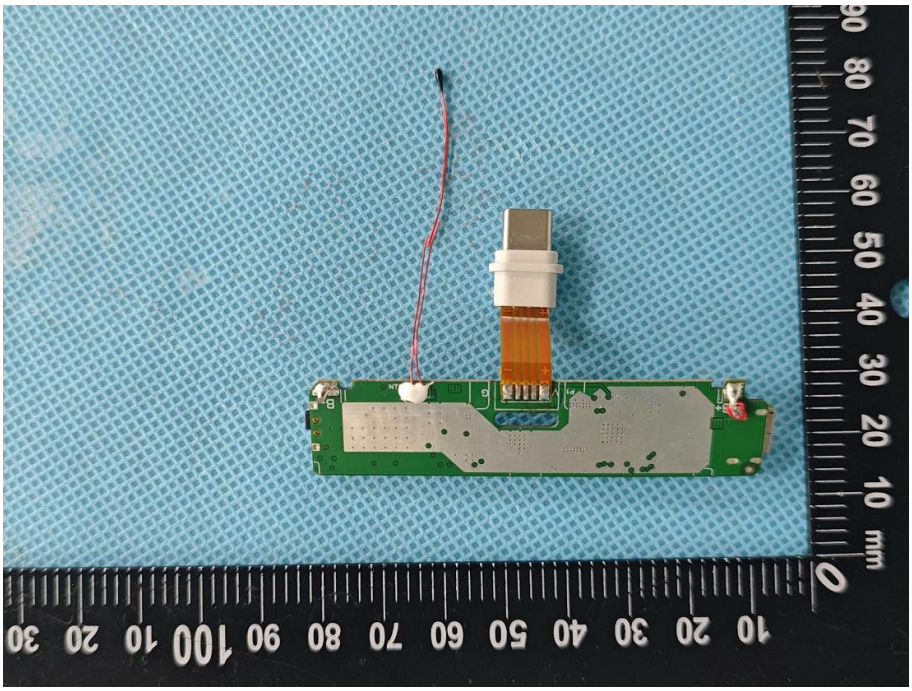


Top view of cell

Attachment 2 Product Photos



Front view of PCM



Back view of PCM

-- End of Report --