Prüfbericht-Nr.: *Test Report No.:*	**50148275 001**	**Auftrags-Nr.:** *Order No.:*	**164128744**	Seite 1 von 33 *Page 1 of 33*
Kunden-Referenz-Nr.: *Client Reference No.:*	N/A	**Auftragsdatum:** *Order date:*	07.05.2018	
Auftraggeber: *Client:*	Power System Electronic Technology Co., Ltd. No.1 Shangbian Road, Puxin Industrial District, Shipai Town, Dongguan City, Guangdong, China			
Prüfgegenstand: *Test item:*	Portable Charger			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	LIV-300			
Auftrags-Inhalt: *Order content:*	**TÜV Rheinland Test Report**			
Prüfgrundlage: *Test specification:*	Interpretation for METI Ordinance of Technical Requirements (H29.04.03) Appendix 12, J62133 (H28) *(JISC 8712:2015)*			

Wareneingangsdatum: *Date of receipt:*	19.06.2018
Prüfmuster-Nr.: *Test sample No.:*	A000760276-001-136
Prüfzeitraum: *Testing period:*	25.06.2018-25.07.2018
Ort der Prüfung: *Place of testing:*	TÜV Rheinland (Shenzhen) Co., Ltd.
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.
Prüfergebnis*: *Test result*:*	Pass

geprüft von / *tested by*: Jason Tang

Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*
10.08.2018	Jason Tang/ Project Engineer	

kontrolliert von / *reviewed by*: Daniel Dai

Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*
10.08.2018	Daniel Dai / Reviewer	

Sonstiges / *Other*:

1. This test report is issued for the purpose of TÜV Rheinland test report only;
2. The complete test report includes the following documents:
   Test report (33 pages); -Attachment 1: Equipment list (2 pages); -Attachment 2: Photo documentation (5 pages).

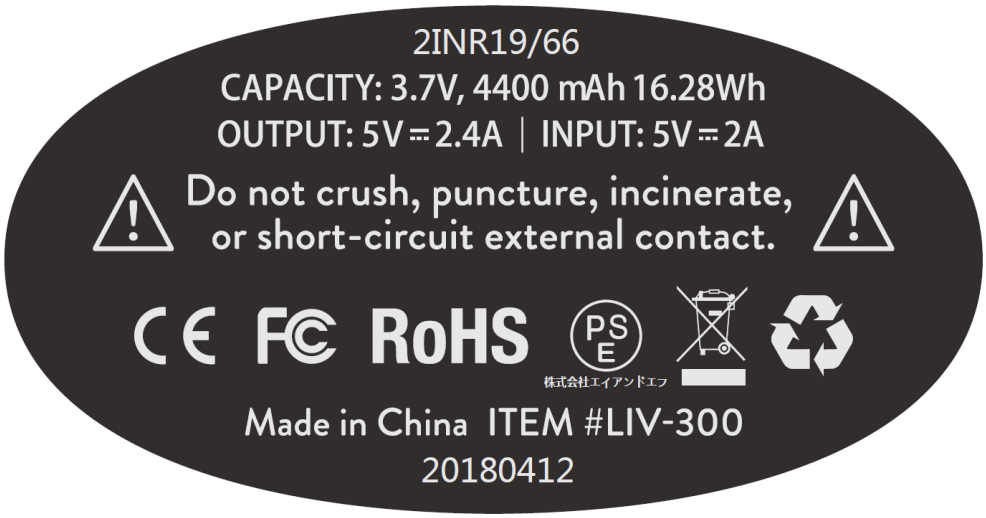
Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Test item description .....:	Portable Charger
Model/Type reference ..... :	LIV-300
Manufacturer ..... :	Power System Electronic Technology Co., Ltd.
	No.1 Shangbian Road, Puxin Industrial District, Shipai Town, Dongguan City, Guangdong, China
Factory ..... :	Same as manufacturer
Trade mark ..... :	BAREBONES
Ratings ..... :	Input: DC 5V/2A, Output: DC 5V/2.4A, 3.7V, 4400mAh, 16.28Wh

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Label on bottom side

Label on front surface

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

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
8.2.1 Continuous charge 8.2.2 Moulded case stress at high temperature 8.3.1 External short (cells) 8.3.2 External short (battery) 8.3.3 Free fall 8.3.4 Thermal abuse 8.3.5 Crush 8.3.6 Overcharge(Battery) 8.3.6A Overcharge(cells) 8.3.7 Forced Discharge(cells) 8.3.8 Forced internal short circuit 8.3.8A Shock 8.3.8B Low pressure 8.3.8C High rate charge 8.3.8D Free fall of batteries installed in the device 8.3.8E Overcharge protection of batteries	**TÜV Rheinland (Shenzhen) Co., Ltd.** East of F/1, F/2~F/4, Building 1, Cybio Technology Building No. 6 Langshan No.2 Road, North Hi-tech Industry Park 518057 Shenzhen Nanshan District CHINA

Test item particulars.....:	
Classification of installation and use.....:	To be defined in final product
Supply connection.....:	DC USB connection
Recommend charging method declared by the manufacturer ..... :	Charging the portable charger with 2000mA constant current until internal battery reach 4.25V and all LED lights on.
Discharge current (0,2 I_t A) ..... :	880mA
Specified final voltage ..... :	4.75V
Chemistry ..... :	☐ nickel systems ..... ☐ lithium systems
Recommend of charging limit for lithium system	
Upper limit charging voltage per cell.....:	4.25V
Maximum charging current.....:	2100mA
Charging temperature upper limit.....:	40°C
Charging temperature lower limit.....:	0°C
Polymer cell electrolyte type ..... :	☐ gel polymer ..... ☐ solid polymer
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 .....:	See cover page
Date (s) of performance of tests.....:	See cover page

General product information:

This portable charger is constructed with two lithium-ion cells (1S2P), and has overcharge, over-discharge, over current and short-circuits proof circuit.

For the portable charger, the specified charging and discharge temperature is 0-40°C.

For the component cell, the specified charging temperature is 0-45°C and the specified discharging temperature is -20-60°C.

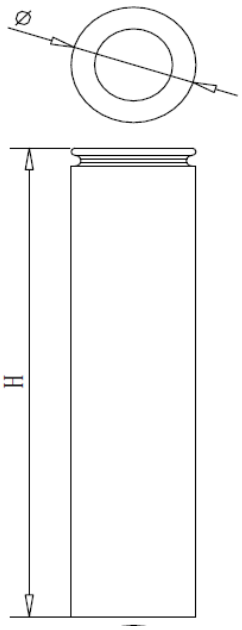
The main features of this model are shown as below:

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
LIV-300	4400mAh	5.0V	2000mA	2100mA	2100mA	2400mA	5.25V	4.75V

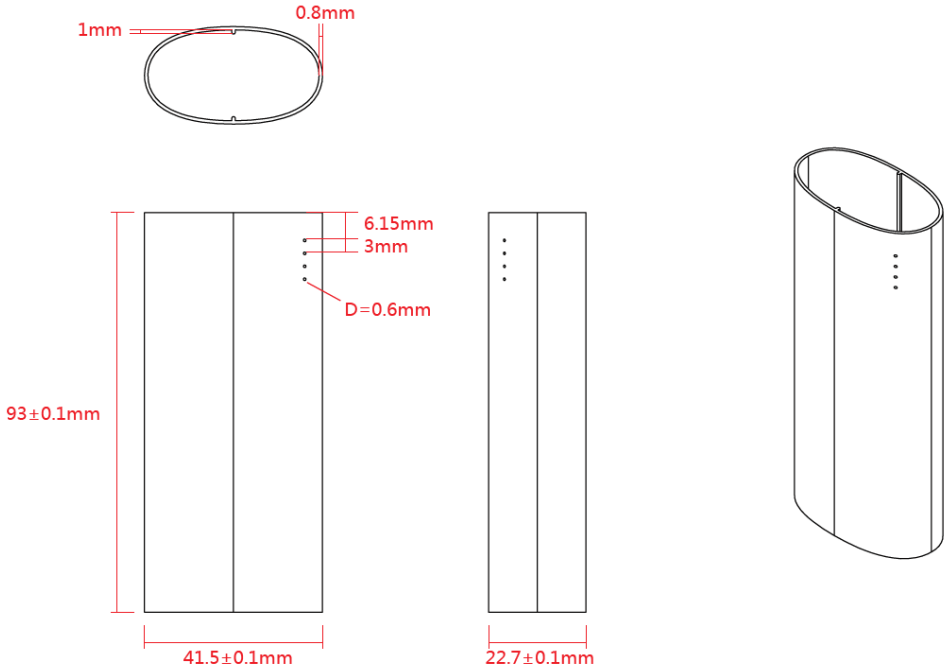
The main features of this cell within the battery pack shown as below:

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
18650 (cell)	2200mAh	3.7V	440mA	440mA	2200mA	4400mA	4.25V	2.95V

Construction:

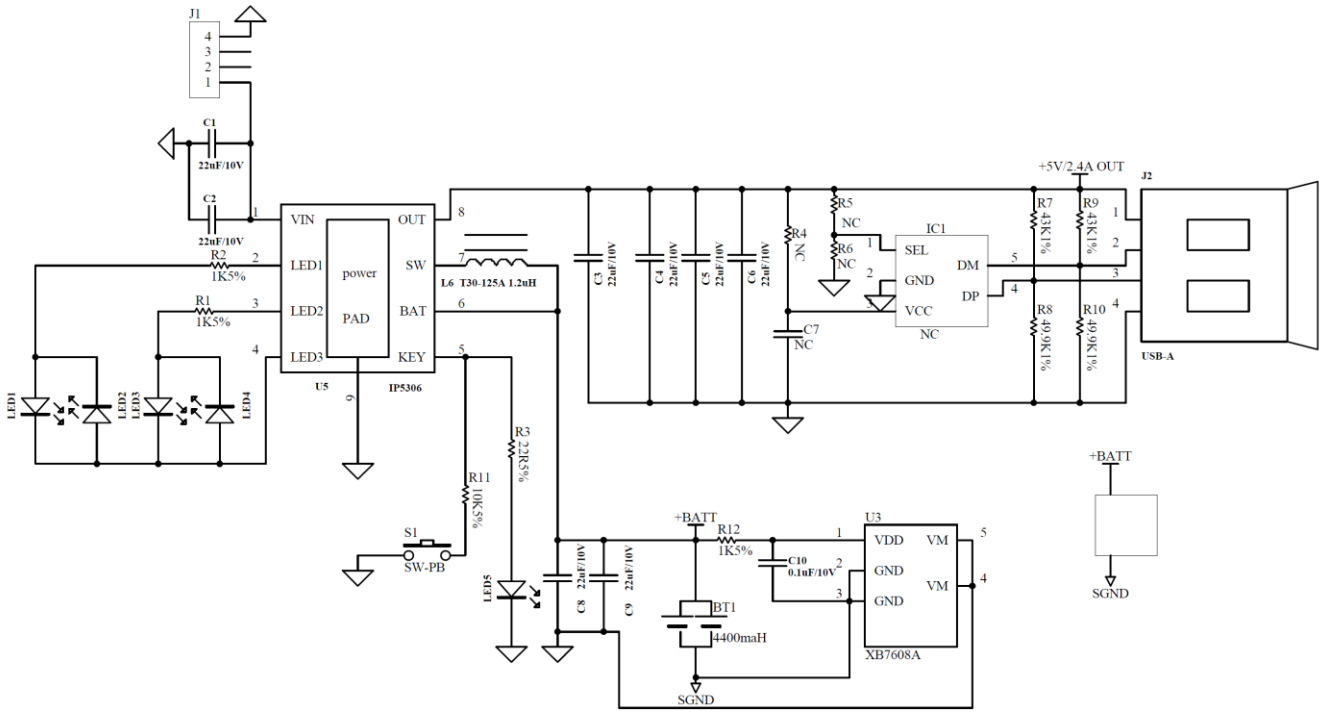


Diameter*Height=18.5mm(max)*65.5mm(max)
Cell (Unit: mm)



Portable charger

Circuit diagram:



Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict

4	**Parameter measurement tolerances**		**P**
	Parameter measurement tolerances a) Voltage ± 1% b) Current ± 1% c) Capacity ± 1% d) Temperature ± 2°C e) Time ±0.1% f) Dimension ±0.1 mm		P

5	**General safety considerations**		**P**
5.1	General		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 exposed 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 creepage and clearance distances between conductors		P
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		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 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/current management		P
5.4.1	For Nickel Systems, batteries are designed such that abnormal temperature rise conditions are prevented.	Lithium systems.	N/A
	Batteries are provided with specifications and charging instructions for equipment manufacturers.		N/A

Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.2	For Lithium Systems, 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	P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer.	See above	P
	Means are provided to limit current to safe levels during charge and discharge except in the case where the equipment provides such means.		P
	Cell manufacturer shall provide the information about safety limit of temperature, voltage and current to battery manufacturer. Batteries are provided with the information about safety limit of temperature, voltage and current to equipment manufacturer.	The charging limits specified in the specifications.	P
5.5	Terminal contacts		P
	Terminals have a clear polarity marking on the external surface of the battery	Reverse contact between terminals can be prevented by the USB connector	N/A
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current		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
	Exception: If connecter which prevent reverse contact between positive and negative terminal is available the requirements for polarity marking do not apply.		P
5.6	Assembly of cells into batteries		P
5.6.1	If there is more than one battery housed in a single battery case, cells used in the assembly of each battery have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer	1S2P.	P
	Each battery shall have an independent control and protection except where the chargers equip such a function.		N/A
	Exception: If charger have such a protection device, the requirements above do not apply.		N/A

Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict
	Manufacturers of cells make recommendations about current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly		P
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate separate circuitry to prevent the cell reversal caused by uneven discharges		N/A
	Protective circuit components are added as appropriate and consideration given to the end-device application		P
	When testing a battery, the manufacturer of the battery provides a test report confirming the compliance according to this standard		N/A
5.6.2	Design recommendation for lithium systems only		P
	For the battery consisting of a single cell or a single cellblock: - Charging voltage of the cell shall not exceed the upper limit of the charging voltage specified in Clause 8.1.2, Table 4 Where the function to control the voltage within upper limit charging voltage is provided by equipment, equipment shall be evaluated that the cell does not exceed the upper limit charging voltage.	Charging voltage: 4.25V, not exceed 4.25V.	P
	Following shall be taken into account for battery design. a) For the battery consisting of cellblocks, charging voltage of the cell shall not exceed the upper limit of the charging voltage specified in Table 4.		N/A
	b) For the battery consisting of series-connected plural single cells or series-connected plural cellblocks: - The voltages of any one of the single cells or single cellblocks shall not exceed the upper limit of the charging voltage, specified in Table 4, by monitoring the voltage of every single cell or the single cellblocks.		N/A
	c) For the battery consisting of series-connected plural single cells or series-connected plural cellblocks: - Charging shall be stopped when the upper limit of the charging voltage, specified in Table 4, is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks; or		N/A
5.7	Quality plan		P

Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict
	The manufacturer prepares and implements a quality plan that defines procedures for the inspection of materials, components, cells and batteries and which covers the whole process of producing each type of cell or battery	Complied. ISO 9001: 2015 certificate provided.	P
6	**Type test conditions**		**P**
	Tests were made with the number of cells or batteries specified in Table 1 for nickel-cadmium and nickel-metal hydride systems and Table 2 for lithium systems, using cells or batteries that are not more than six months old		P
	Unless noted otherwise in the test methods, testing was conducted in an ambient of 20°C ± 5°C.		P
7	**Specific requirements and tests (nickel systems)**		**N/A**
7.1	Charging procedure for test purposes	Not applicable to Lithium system.	N/A
7.2	Intended use		N/A
7.2.1	Continuous low-rate charging (cells)		N/A
	Results: No fire. No explosion		N/A
7.2.2	Vibration		N/A
	Results: No fire. No explosion. No leakage		N/A
7.2.3	Moulded case stress at high ambient temperature		N/A
	Oven temperature (°C) ..... :		—
	Results: No physical distortion of the battery casing resulting in exposure if internal components		N/A
7.2.4	Temperature cycling		N/A
	Results: No fire. No explosion. No leakage.		N/A
7.3	Reasonably foreseeable misuse		N/A
7.3.1	Incorrect installation cell		N/A
	The test was carried out using: - Four fully charged cells of the same brand, type, size and age connected in series, with one of them reversed; or		N/A
	- A stabilized dc power supply.		N/A
	Results: No fire. No explosion..... :		N/A
7.3.2	External short circuit		N/A

Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict
	The cells or batteries 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		N/A
	Results: No fire. No explosion..... :		N/A
7.3.3	Free fall		N/A
	Results: No fire. No explosion.		N/A
7.3.4	Mechanical shock (crash hazard)		N/A
	Results: No fire. No explosion. No leakage.		N/A
7.3.5	Thermal abuse		N/A
	Oven temperature (°C)..... :		—
	Results: No fire. No explosion.		N/A
7.3.6	Crushing of cells		
	The crushing force was released upon: - The maximum force of 13 kN ± 1 kN has been applied; or		N/A
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N/A
	The cell is prismatic type and a second set of samples was tested, rotated 90° around longitudinal axis compared to the first set		N/A
	Results: No fire. No explosion..... :		N/A
7.3.7	Low pressure		N/A
	Chamber pressure (kPa)..... :		—
	Results: No fire. No explosion. No leakage.		N/A
7.3.8	Overcharge		N/A
	Results: No fire. No explosion..... :		N/A
7.3.9	Forced discharge		N/A
	Results: No fire. No explosion..... :		N/A

8	**Specific requirements and tests (lithium systems)**		**P**
8.0A	Number of tested cell and battery is according to Table 2. Test temperature is specified in each clause of clause 8.		P
8.1	Charging procedures for test purposes		P

Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.1	First procedure: Cells and batteries are charged in an ambient temperature of 20 °C ± 5 °C, using the method declared by the manufacturer. Prior to charging, cells and batteries are discharged at 20 °C ± 5 °C at a constant current of 0,2 *I*t A down to a specified final voltage. This charging procedure applied to tests of 8.2.1, 8.2.2, 8.2.2A, 8.2.2B, 8.3.3, 8.3.8A, 8.3.8B and 8.3.8D.		P
8.1.2	Second procedure: After stabilization for 1 to 4 hours respectively at ambient temperature of highest test temperature and lowest test temperature, as specified in Table **4**, cells are charged by using the upper limited charging voltage and maximum charging current, until the charging current is reduced to 0,05 *I*t A, using a constant voltage charging method.		P
	For 8.3.2 External short circuit (battery), batteries are charged to fully charged states of battery or equipment at ambient temperature of highest test temperature and lowest test temperature in Table 4. Prior to charging, the battery shall have been discharged at 20 °C ± 5 °C at a constant current of 0,2 *I*t A down to a specified final voltage.		P
	This charging procedure applied to the tests of 8.3.1, 8.3.2, 8.3.4, 8.3.5, and 8.3.8		P
	If a cell's specified upper and/or lower charging temperature exceeds values for the upper and/or lower limit test temperatures of Table 4, the cells were charged at the specified values plus 5 °C for the upper limit and minus 5 °C for the lower limit	Charge temperature 0-40°C for the portable charger, 0-45°C for the cell declared. The upper limit test temperature was 45°C; The lower limit test temperature was -5°C.	P
	A valid rationale was provided to ensure the safety of the cell (see Figure A.1) ..... :		P
	For a different upper limit charging voltage (i.e. other than for lithium cobalt oxide systems at 4,25 V), the applied upper limit charging voltage and upper limit charging temperatures were adjusted accordingly	4.25V applied.	N/A
	A valid rationale was provided to ensure the safety of the cell (see Figure A.1) ..... :		N/A
8.2	Intended use		P
8.2.1	Continuous charging at constant voltage (cells)	Tested complied.	P

Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict
	Fully charged cells according to 8.1.1 are subjected for 28 days to a charge with upper limit charging voltage at upper limit test temperature.		P
	Results: No fire. No explosion. No leakage. ..... :	(See Table 8.2.1)	P
8.2.2	Moulded case stress at high ambient temperature (battery)	Tested complied.	P
	Fully charged batteries, according to 8.1.1, are exposed to high temperature. The battery is placed in an air circulating oven at a temperature of 70 °C ± 2 °C for 7 h, after which they are removed and return to 20 ± 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 casing resulting in exposure if internal components	P
8.2.2A	Vibration	Tested complied.	P
	Fully charged cells or batteries according to 8.1.1. are vibration-tested under the following test conditions and the sequence in Table 4A.		P
	A simple harmonic motion is applied to the cells or batteries with an amplitude of 0,76 mm, and a total maximum excursion of 1,52 mm. The frequency is 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), is traversed in 90 min ± 5 min for each mounting position (direction of vibration).		P
	The vibration is applied in each of three mutually perpendicular directions, in the sequence specified below.		P
	Step 1: Verify that the measured voltage is typical of the charged product being tested.		P
	Steps 2-4: Apply the vibration as specified in Table 4A.		P
	Step 5: Rest cell for 1 h, then make a visual inspection.		P
	Exception: Test is not applicable to the batteries with special construction.		N/A
	Results: No fire. No explosion. No leakage.	No fire. No explosion. No leakage.	P
8.2.2B	Temperature cycling	Tested complied.	P

Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict
	Fully charged cells or batteries according to 8.1.1. are subjected to temperature cycling in according to the following procedure. Step 1: Place the cells or batteries in an ambient temperature of 75 °C ± 2 °C for 4 h. Step 2: Change the ambient temperature to 20 °C ± 5 °C within 30 min and maintain at this temperature for a minimum of 2 h. Step 3: Change the ambient temperature to –20 °C ± 2 °C within 30 min and maintain at this temperature for 4 h. Step 4: Change the ambient temperature to 20 °C ± 5 °C within 30 min and maintain at this temperature for a minimum of 2 h. Step 5: Repeat steps 1 to 4 for a further four cycles. Step 6: After the fifth cycle, store the cells or batteries for seven days at 20 ± 5 °C prior to examination.		P
	Results: No fire. No explosion. No leakage	No fire. No explosion. No leakage	P
8.3	Reasonably foreseeable misuse		
8.3.1	External short circuit (cell)	Tested complied.	P
	Charging procedure: 8.1.2		P
	Ambient temperature: 55 ± 5 °C	(See Table 8.3.1)	P
	Resistance of circuit (mΩ): 80 ± 20 mΩ	(See Table 8.3.1)	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 Table 8.3.1)	P
8.3.2	External short circuit (battery)	Tested complied.	P
	Charging procedure: 8.1.2		P
	Ambient temperature: 20 ± 5 °C	(See Table 8.3.1)	P
	Resistance of circuit (mΩ): 80 ± 20 mΩ	(See Table 8.3.1)	P
	The cells were tested until one of the following occurred: - 24 hours elapsed; or		P
	- The case temperature declined by 20% of the maximum temperature rise		N/A

Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict
	In case of rapid decline in short circuit current, the battery remained on test for an additional one hour after the current reached a low end steady state condition.		N/A
	Results: No fire. No explosion..... :	(See Table 8.3.2)	P
8.3.3	Free fall	Tested complied.	P
	Each fully charged cell or battery according to 8.1.1. is dropped three times from a height of 1000 ± 10mm onto a concrete floor. The cells or batteries are dropped so as to obtain impacts in random orientations.		P
	Exception: Not applicable to the batteries more than 7 kg and the batteries with special construction.		N/A
	Results: No fire. No explosion.	No fire. No explosion.	P
8.3.4	Thermal abuse (cells)	Tested complied.	P
	Charging procedure: 8.1.2		P
	The oven temperature is raised at a rate of 5 °C/min ± 2 °C/min to a temperature of 130 °C ± 2 °C.		P
	The cells were held at 130°C ± 2°C for: - 10 minutes		P
	Oven temperature (°C)..... :	130°C	—
	Results: No fire. No explosion.	No fire. No explosion.	P
8.3.5	Crush (cells)	Tested complied.	P
	Charging procedure: 8.1.2		P
	Cells are crushed between 2 flat plates.		P
	The crushing force was released upon: - The maximum force of 13 kN ± 1 kN has been applied; or		P
	- An abrupt voltage drop of one-third of the original voltage has been obtained; or		N/A
	- 10% of deformation has occurred compared to the initial dimension		N/A
	A cylindrical or prismatic cell is crushed with its longitudinal axis parallel to the flat surfaces of the crushing apparatus.	Cylindrical cell.	P
	A prismatic cell is also to be rotated 90 degrees around its longitudinal axis so that both the wide and narrow sides will be subjected to the crush. Each sample is to be subjected to only a single crush with separate samples to be used.		P

Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No fire. No explosion..... :	(See Table 8.3.5)	P
8.3.6	Over-charging of battery	Tested complied.	P
	Ambient temperature: 20±5°C		P
	Each test battery shall be discharged at a constant current of 0,2 I_t A, to a final discharge voltage specified by the manufacturer.		P
	Batteries shall then be charged at a constant current of 2,0 I_t A, using a supply voltage (not to exceed the maximum voltage supplied by the recommended charger – if value not available it shall be 5,0 V per cell) sufficient to maintain this current of 2,0 I_t A throughout the duration of the test or until the supply voltage is reached.		P
	Test is continued until the temperature of the outer casing: - Reached steady state conditions (less than 10°C change in 30-minute period); or		P
	- Returned to 20±5°C		N/A
	Results: No fire. No explosion..... :	(See Table 8.3.6)	P
8.3.6A	Over-charging of cell	Tested complied.	P
	Cells discharged to the final voltage specified by manufacturer is tested.		P
	Over charged with charging current specified by manufacturer by using power supply of not less than 10V.		P
	Test will continue until the cells reach 250% of the rated capacity or the test voltage.		P
	Results: No fire. No explosion..... :	(See Table 8.3.6A)	P
8.3.7	Force discharge (cells)	Tested complied.	P
	Cells discharged to the final voltage specified by manufacturer is tested.		P
	Ambient temperature: Upper limit test temperature and Lower limit test temperature		P
	Force discharge current: $1I_tA$		P
	Duration: 90 min		P
	Results: No fire. No explosion..... :	(See Table 8.3.7)	P
8.3.8	Forced internal short circuit (cells)	Tested complied.	P
	Charging procedure: 8.1.2 .....:		—
	Press speed: 0.1 mm/sec		P

Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict
	The pressing was stopped upon: - A voltage drop of 50 mV has been detected; or		P
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached		P
	Results: No fire ..... :	(See Table 8.3.9)	P
8.3.8A	Shock (cells and battery)	Tested complied.	P
	Charging procedure: 8.1.1		P
	Ambient temperature: 20±5°C		P
	Cell or battery is secured to the testing machine by means of a rigid mount which will support all mounting surfaces of the cell or battery. The cell or battery is subjected to a total of three shocks of equal magnitude. The shocks are applied in each of three mutually perpendicular directions.		P
	For each shock the cell or battery is accelerated in such a manner that during the initial 3 milliseconds the minimum average acceleration is 735 m/s^2. The peak acceleration shall be between 1226 m/s^2 and 1716 m/s^2.		P
	Results: No fire. No explosion. No leakage	No fire. No explosion. No leakage	P
8.3.8B	Low pressure (cells)	Tested complied.	P
	Charging procedure: 8.1.1		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. No leakage	No fire. No explosion. No leakage	P
8.3.8C	High rate charge (cells)	Tested complied.	P
	Cells discharged to the final voltage specified by manufacturer is tested.		P
	Charged at three times the charging current recommended by the manufacturer, until the cell is fully charged or an internal safety device cuts off the charge current before the cell is fully charged.	Charged until the cell is fully charged.	P
	Results: no fire, no explosion	No fire, no explosion.	P
8.3.8D	Free fall of batteries installed in the device	Tested complied.	P

Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict
	Battery equipped with Device is tested.	The power bank is the final device.	P
	The battery that is charged according to 8.1.1 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.	No external short circuit or internal short circuit occurs.	P
8.3.8E	Overcharge protection of batteries	Tested complied.	P
	Ambient temperature: 20±5°C		P
	One of the following test is conducted		P
	a) When the battery is made of a cell or one cellblock, voltage, which is applied to the cell or one cell block during charging is measured.	Single cell block battery.	P
	2)When the battery is consists of a series connection of over two pieces of cells or cell blocks, charging is conducted while measuring the voltage of each cell or each cellblock. At the same time, one of the cells or cellblocks is forcibly discharged gradually, and voltages of the other cells and cellblocks are measured.		N/A
	3)When the battery consists of a series connection of over two pieces of cells or cellblocks, voltage exceeding upper limited charging voltage, as specified in table 4 is applied to the cell or cellblock, while measuring the voltage of each cell or each cellblock. The voltage is measured, when charging is stopped.		N/A
	Requirement: cells or cellblocks shall not exceed upper limit voltage.	Not exceed upper limit voltage.	P

9	**Information for safety**		**P**
	The manufacturer of secondary cells ensures that information is provided about current, voltage and temperature limits of their products.		P

Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict
	The manufacturer of batteries ensures that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards.		P
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		P
	As appropriate, information relating to hazard avoidance resulting from a system analysis is provided to the end user ..... :		P
10	**Marking**		**P**
10.1	Cell marking		N/A
	Cells marked as specified in the applicable cell standards: JIS C 8705 or JIS C 8708 (Nickel), JIS C 8711 (Lithium) (IEC61960:2011)	The final product is battery	N/A
10.2	Battery marking		P
	Batteries marked in accordance with the requirements for the cells from which they are assembled.	The product is marked in accordance with IEC 61960, also see page 2.	P
	Batteries marked with an appropriate caution statement.		P
	Lithium battery shall carry clear and durable markings.		P
	If battery has no enough space for marking, marks may be attached on minimum unit of package.		N/A
10.3	Other information		P
	Storage and disposal instructions marked on or supplied with the battery.		N/A
	Recommended charging instructions marked on or supplied with the battery.	Information for recommended charging instructions mentioned in manufacturer's specifications.	P
11	**Packaging**		**P**
	The materials and packaging design are chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants.		P
Annex A	**Charging range of secondary lithium ion cells for safe use**		**P**

Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict
A.1	General		P
A.2	Safety of lithium-ion secondary battery	Complied.	P
A.3	Consideration on charging voltage	Complied.	P
A.3.1	General		P
A.3.2	Upper limit charging voltage	4.25V	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	Not higher than the temperature range specific in this standard.	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 high temperature range		N/A
A.4.3.4	Safety consideration when specifying new upper limit in high temperature range		N/A
A.4.4	Low temperature range	Charging low temperature 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 low temperature range		P
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range	-5°C applied.	P
A.4.5	Scope of the application of charging current		P
A4.6	Decision of the adoption of new model (See JISC 8714:2007 Annex B)		P
A.5	Sample preparation		P

Interpretation for METI Ordinance of Technical Requirements (H29.04.03), Appendix 12, J62133 (H28) *(JISC 8712:2015)*			
Clause	Requirement + Test	Result - Remark	Verdict
A.5.1	General		P
A.5.2	Insertion procedure for nickel particle to generate internal short		P
	The insertion procedure carried out at 20°C±5°C and under -25 °C of dew point		P
A.5.3	Disassembly of charged cell		P
A.5.4	Shape of nickel particle		P
A.5.5	Insertion of nickel particle to cylindrical cell		P
A.5.5.1	Insertion of nickel particle to winding core		P
A.5.5.2	Mark the position of nickel particle on the both end of winding core of the separator		P
A.5.6	Insertion of nickel particle to prismatic cell		N/A

Table 2 Test Samples and conditions (Lithium system)

Test Clause	Cell			Battery (Pack)		
	Charging temp.	Testing temp.	No. of samples	Charging temp.	Testing temp.	No. of samples
8.2.1 Continuous charge at constant voltage	20°C ± 5°C	Highest test temp.	5 pcs.	--	--	--
8.2.2 Moulded case stress at high ambient temperature	--	--	--	20°C ± 5°C	70°C ± 2°C	3 pcs.
8.2.2A Vibration	20°C ± 5°C	20°C ± 5°C	5 pcs.	20°C ± 5°C	20°C ± 5°C	5 pcs.
8.2.2B Temperature cycling	20°C ± 5°C	--	5 pcs.	20°C ± 5°C	--	5 pcs.
8.3.1& 8.3.2 External short circuit	Lowest test temp.	55°C ± 5°C	5 pcs.	--	--	--
	Highest test temp.	55°C ± 5°C	5 pcs.	--	--	--
	--	--	--	Lowest test temp.	20°C ± 5°C	5 pcs.
	--	--	--	Highest test temp.	20°C ± 5°C	5 pcs.
8.3.3 Free fall	20°C ± 5°C	20°C ± 5°C	3 pcs.	20°C ± 5°C	20°C ± 5°C	3 pcs.
8.3.4 Thermal abuse	Lowest test temp.	130°C ± 2°C	5 pcs.	--	--	--
	Highest test temp.	130°C ± 2°C	5 pcs.	--	--	--

Test Clause	Cell			Battery (Pack)		
	Charging temp.	Testing temp.	No. of samples	Charging temp.	Testing temp.	No. of samples
8.3.5 Crush	Lowest test temp.	Lowest test temp.	Cylindrical 5 pcs. Prismatic 10 pcs	--	--	--
	Highest test temp.	Highest test temp.	Cylindrical 5 pcs. Prismatic 10 pcs	--	--	--
8.3.6& 8.3.6A Overchage	--	--	--	--	20°C ± 5°C	5 pcs.
	--	Lowest test temp.	5 pcs.	--	--	--
	--	Highest test temp.	5 pcs.	--	--	--
8.3.7 Forced discharge	--	Lowest test temp.	5 pcs.	--	--	--
	--	Highest test temp.	5 pcs.	--	--	--
8.3.8 Forced internal short circuit	Lowest test temp.	Lowest test temp.	5～10 pcs (10～20 pcs).	--	--	--
	Highest test temp.	Highest test temp.	5～10 pcs (10～20 pcs).	--	--	--
8.3.8A Shock	20°C ± 5°C	20°C ± 5°C	5 pcs.	20°C ± 5°C	20°C ± 5°C	5 pcs.
8.3.8B Low pressure	20°C ± 5°C	--	3 pcs.	--	--	--
8.3.8C Cell protection against a high charging rate	--	Lowest test temp.	5 pcs.	--	--	--
	--	Highest test temp.	5 pcs.	--	--	--
8.3.8D Free fall of batteries installed in the device	--	--	--	20°C ± 5°C	20°C ± 5°C	3 pcs.
8.3.8E Overcharge protection	--	--	--	--	20°C ± 5°C	1 pc.

	TABLE: Critical components information				P
Object/part no.	**Manufacturer/ trademark**	**Type/model**	**Technical data**	**Standard**	**Mark(s) of conformity [1)]**
Cell	SHENZHEN BOFUNENG BATTERY CO.,LTD	18650	2200mA, 3.7V	J 62133 (JIS C 8712: 2015)	Tested with appliance
-Electrolyte	DONGGUAN SHANSHAN BATTERY MATERIALS CO.,LTD	LD-1039	1,19-1,25 g/cm^3, 9,3-10,3ms/cm, $LiPF_6$+DEC+EC	--	--
-Separator	W-SCOPE KOREA CO.,LTD	20µm	20µm, Polypropylene Thermal shrinkage 135°C	--	--
-Positive electrode	XINXIANG TIANLI ENERGY CO.,LTD	TLM510	$LiNiCoMnO_2$, NMP, PVDF, Conductive, Additive, Aluminum foil	--	--
-Negative electrode	Ganzhou RFT Technology Co., Ltd	AGF-2	Graphite, CMC, SBR, Conductive, Additive, Copper foil	--	--
PCB	KAIMAU ELECTRONICS DINGNAN COMPANY LTD	6FR4	V-0, 130°C	UL 796 UL 94	UL E353492
IC (U3)	INJOINIC TECHNOLOGY	IP5306	Input: 5V/2.1A, Output: 5V/2.1A	--	Tested with appliance
Wiring	DONGGUAN DASHENG ELECTRIC CO.,LTD	1007	22AWG, 80°C, 300Vac	UL 758	UL E493602
Plastic case part	FORMOSA CHEMICALS & FIBRE CORP PLASTICS DIV	AC310(+)	V-0, 85°C	UL 746 UL 94	UL E162823
Aluminum case	Shenzhen Wati Technology Co., Ltd.	AL6063	Rigidity: 14-16, Aluminum	--	--

Supplementary information:

[1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.

7.2.1	TABLE: Continuous low rate charge (cells)	

Model	Recommended charging method, (CC, CV, or CC/CV)	Recommended charging voltage V_c, (Vdc)	Recommended charging current I_{rec}, (A)	OCV at start of test, (Vdc)	Results

Supplementary information:

- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

7.2.2	TABLE: Vibration	

Model	OCV at start of test, (Vdc)	Results

Supplementary information:

- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

7.3.1	TABLE: Incorrect installation (cells)	

Model	OCV of reversed cell, (Vdc)	Results

Supplementary information:

- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

7.3.2	TABLE: External short circuit	

Model	Ambient (at 20°C ± 5°C or 55°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
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

7.3.6	TABLE: Crush	

Model	OCV at start of test, (Vdc)	OCV at removal of crushing force, (Vdc)	Results

Supplementary information:

- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

7.3.8	TABLE: Overcharge	

Model	OCV prior to charging, (Vdc)	Maximum charge current, (A)	Time for charging, (hours)	Results

Supplementary information:

- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

7.3.9	TABLE: Forced discharge (cells)			
Model	**OCV before application of reverse charge, (Vdc)**	**Measured reverse charge I_t, (A)**	**Time for reversed charge, (minutes)**	**Results**

Supplementary information:

- No fire or explosion
- No leakage
- Leakage
- Fire
- Explosion
- Bulge
- Others (please explain)

8.2.1	TABLE: Continuous charge (cells)			P
Model	**Recommended charging voltage V_c, (Vdc)**	**Recommended charging current I_{rec}, (mA)**	**OCV at start of test, (Vdc)**	**Results**
Cell #1	4.20	440	4.17	P
Cell #2	4.20	440	4.17	P
Cell #3	4.20	440	4.17	P
Cell #4	4.20	440	4.17	P
Cell #5	4.20	440	4.17	P

Supplementary information:

- No fire or explosion
- No leakage

8.3.1	TABLE: External short circuit (cell)				P
Model	**Ambient, (°C)**	**OCV at start of test, (Vdc)**	**Resistance of circuit, (mΩ)**	**Maximum case temperature ~~rise ΔT~~, (°C)**	**Results**
Samples charged at charging temperature upper limit (45°C)					
Cell #1	55.5	4.15	81.4	80.6	P
Cell #2	55.5	4.15	80.6	79.5	P
Cell #3	55.5	4.15	81.3	77.9	P
Cell #4	55.5	4.15	81.7	82.1	P
Cell #5	55.5	4.15	80.8	77.7	P
Samples charged at charging temperature lower limit (-5°C)					
Cell #6	55.3	4.08	81.4	76.8	P
Cell #7	55.3	4.08	80.6	75.8	P
Cell #8	55.3	4.06	81.3	78.6	P
Cell #9	55.3	4.07	81.7	75.2	P
Cell #10	55.3	4.08	80.8	75.5	P
Supplementary information: - No fire or explosion					

8.3.2	TABLE: External short circuit (battery)				P
Model	**Ambient, (°C)**	**OCV at start of test, (Vdc)**	**Resistance of circuit, (mΩ)**	**Maximum case temperature ~~rise ΔT~~, (°C)**	**Results**
Samples charged at charging temperature upper limit (45°C)					
Battery #1	23.6	5.16	78.6	24.1	P
Battery #2	23.6	5.15	77.5	24.2	P
Battery #3	23.6	5.16	78.4	24.1	P
Battery #4	23.6	5.15	77.9	24.3	P
Battery #5	23.6	5.18	79.2	24.0	P
Samples charged at charging temperature lower limit (-5°C)					
Battery #6	23.8	5.15	78.6	24.1	P
Battery #7	23.8	5.16	77.5	24.1	P
Battery #8	23.8	5.19	78.4	24.1	P
Battery #9	23.8	5.14	77.9	24.3	P
Battery #10	23.8	5.15	79.2	24.1	P
Supplementary information: - No fire or explosion					

8.3.5	TABLE: Crush				P
Model	**OCV at start of test, (Vdc)**	**OCV at removal of crushing force, (Vdc)**	**Width/ diameter of cell before crush, (mm)**	**Required deformation for crush, (mm)**	**Results**
Samples charged at charging temperature upper limit (45°C) (longitudinal axis)					
Cell #1	4.22	--	--	--	P
Cell #2	4.23	--	--	--	P
Cell #3	4.23	--	--	--	P
Cell #4	4.22	--	--	--	P
Cell #5	4.23	--	--	--	P
Samples charged at charging temperature upper limit (45°C) (narrow side)					
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
Samples charged at charging temperature lower limit (-5°C) (longitudinal axis)					
Cell #6	4.09	--	--	--	P
Cell #7	4.10	--	--	--	P
Cell #8	4.08	--	--	--	P
Cell #9	4.09	--	--	--	P
Cell #10	4.08	--	--	--	P
Samples charged at charging temperature lower limit (-5°C) (narrow side)					
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--

Supplementary information:

A 13kN force applied at the longitudinal axis of the cylindrical cells.

- No fire or explosion

8.3.6	TABLE: Over-charging of battery			P
Constant charging current (A) .....:		8.8		—
Supply voltage (Vdc) .....:		5		—

Model	OCV before charging, (Vdc)	Resistance of circuit, (mΩ)	Maximum outer casing temperature, (°C)	Results
Battery #1	5.15	--	29.5	P
Battery #2	5.14	--	29.4	P
Battery #3	5.18	--	30.3	P
Battery #4	5.16	--	28.3	P
Battery #5	5.14	--	29.5	P

Supplementary information:
- No fire or explosion

8.3.6A	TABLE: Over-charging (cell)			P

Model	OCV at start of test, Vdc	Maximum Charging Current, mA	Maximum Charging Voltage, Vdc	Results
Samples charged at charging temperature upper limit (45°C)				
Cell #1	3.13	440	10	P
Cell #2	3.13	440	10	P
Cell #3	3.13	440	10	P
Cell #4	3.13	440	10	P
Cell #5	3.13	440	10	P
Samples charged at charging temperature lower limit (-5°C)				
Cell #6	3.13	440	10	P
Cell #7	3.13	440	10	P
Cell #8	3.14	440	10	P
Cell #9	3.13	440	10	P
Cell #10	3.13	440	10	P

Supplementary information:
- No fire or explosion

8.3.7	TABLE: Forced discharge (cells)			P
Model	**OCV before application of reverse charge, (Vdc)**	**Measured Reverse charge I_t, (mA)**	**Time for reversed charge, (minutes)**	**Results**
Cell #1	3.12	2200	90	P
Cell #2	3.13	2200	90	P
Cell #3	3.12	2200	90	P
Cell #4	3.13	2200	90	P
Cell #5	3.12	2200	90	P
Cell #6	3.13	2200	90	P
Cell #7	3.13	2200	90	P
Cell #8	3.14	2200	90	P
Cell #9	3.13	2200	90	P
Cell #10	3.14	2200	90	P
Supplementary information: - No fire or explosion				

8.3.8		TABLE: Forced internal short circuit (cells)				P
Model	**Chamber ambient, (°C)**	**OCV at start of test, (Vdc)**	**Particle location [1)]**	**Maximum applied pressure, (N)**	**Voltage drop, (mV)**	**Results**
Cell #1	45	4.15	1	800	1	P
Cell #2	45	4.15	1	800	1	P
Cell #3	45	4.15	1	800	0	P
Cell #4	45	4.15	1	800	2	P
Cell #5	45	4.14	1	800	3	P
Cell #6	-5	4.07	1	800	2	P
Cell #7	-5	4.07	1	800	1	P
Cell #8	-5	4.07	1	800	3	P
Cell #9	-5	4.07	1	800	1	P
Cell #10	-5	4.07	1	800	0	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.

No location 2 in this cell.

- No fire or explosion

8.3.8C	TABLE: High rate charge			P
Model	**OCV at start of test, Vdc**	**Maximum Charging Current, mA**	**Maximum Charging Voltage, Vdc**	**Results**
Samples charged at charging temperature upper limit (45°C)				
Cell #1	3.13	6600	4.2	P
Cell #2	3.14	6600	4.2	P
Cell #3	3.13	6600	4.2	P
Cell #4	3.14	6600	4.2	P
Cell #5	3.13	6600	4.2	P
Samples charged at charging temperature upper limit (-5°C)				
Cell #6	3.13	6600	4.2	P
Cell #7	3.13	6600	4.2	P
Cell #8	3.13	6600	4.2	P
Cell #9	3.14	6600	4.2	P
Cell #10	3.14	6600	4.2	P

Supplementary information:

- No fire or explosion

-- End of Report --

Produkte
Products

	Eq. No.	Name	Manufacturer	Model No.	Date of Calibration	Date of next Calibration
☒	1.901	Low pressure chamber	DongGuan HengGong Equipment Ltd	HG-LQ600	2017.09.13	2018.09.12
☒	1.903	Hydraulic shock tester	SuZhou DongLing Vibratioin Testing Equipment Ltd	SY10-50	2017.11.29	2018.11.28
☒	1.908	Electro-dynamic vibration test system	LDS Test and Measurement Ltd	V850-440-LPT600/SPA32K	2018.02.07	2019.02.06
☒	1.919	Midi logger	Graphtec corporation	GL200A	2018.03.05	2019.03.04
☒	1.921	Oven	Guangzhou Espec Environmental Equipment Co. Ltd	SPH201	2017.10.12	2018.10.11
☒	1.923	Multimeter	Fluke	F117C	2017.09.13	2018.09.12
☒	1.955	Internal short-circuit Tester	Dongguan Bell Experiment Equipment Co., Ltd	BE-6045W	2018.05.14	2019.05.13
☒	1.956	Nitrogen operation cabinet	Nanjing university equipment factory	zkx	2017.10.30	2018.10.29
☒	1.962	Walk-in chamber	YinHe (ChongQing) Testing Equipment Co.Ltd	KWGD69A	2017.12.28	2018.12.27
☒	1.965	Battery Test System	repower	CTS 5V-5A	2018.07.04	2019.07.03
☒	1.971	DC power supply	GWINSTEK	GPS18500	2017.09.13	2018.09.12
☒	1.972	DC power supply	GWINSTEK	GPS18500	2017.09.13	2018.09.12
☒	1.975	Thermal cycling chamber	YinHe (ChongQing) Testing Equipment Co.Ltd	ESS-KWGD	2018.02.08	2019.02.07
☒	1.980	DHG-9246A Oven	Shanghai JingHong Laboratory Instrument Co., Ltd	DHG-9246A	2018.02.07	2019.02.06
☒	1.984	Battery Test System	NEWARE	CT-4008-5V10A-FA	2018.03.05	2019.03.04
☒	1.985	Battery Test System	NEWARE	CT-4008-5V10A-FA	2018.03.05	2019.03.04
☒	1.986	Battery Test System	NEWARE	CT-4008-5V10A-FA	2018.03.05	2019.03.04
☒	2.007	Auto Range DC Power Supply	ITECH	IT6952A 60V/25A/600W	2018.02.06	2019.02.05
☒	2.008	Auto Range DC Power Supply	ITECH	IT6952A 60V/25A/600W	2018.02.06	2019.02.05
☒	2.009	Auto Range DC Power Supply	ITECH	IT6952A 60V/25A/600W	2018.02.06	2019.02.05
☒	2.010	Auto Range DC Power Supply	ITECH	IT6952A 60V/25A/600W	2018.02.06	2019.02.05
☒	2.011	Auto Range DC Power Supply	ITECH	IT6952A 60V/25A/600W	2018.02.06	2019.02.05
☒	2.012	Auto Range DC Power Supply	ITECH	IT6952A 60V/25A/600W	2018.02.06	2019.02.05
☒	2.016	Midi Logger	GRAPHTEC	GL240	2018.02.06	2019.02.05
☒	2.023	Resistance Meter	HIOKI	RM3544	2018.05.16	2019.05.15
☒	2.025	Oven	GWS EVIRONMENTAL EQUIPMENI CO., LTD	PH-01	2017.10.30	2018.10.29
☒	2.050	Crush Tester	Dongguan Bell Experiment Equipment Co., Ltd.	BE-6045W-2T	2018.05.14	2019.05.13
☒	3.902	Drop tester	DongGuan GaoXin Testing Equipment Ltd	GX-6050-A	--	*)

*) Initial calibration or verification only

Statement of Uncertainty

Unless otherwise specified, combined measurement uncertainty for values stated in the test report is as stated below:

Voltage measurement:		±1. 0% (true rms value) ±1.0% (DC voltage)
Current measurement:		±1.0% (true rms value) ±1.0% (DC current)
Frequency		±0.5%
Resistance		±1%
Temperature		±2.0°C (without thermocouple; for thermocouple add 2°C)
Time		± 0.1%
Linear dimensions		±0.1 mm
Mass	- below 1.2 kg	±0.1%
	- 1.2 kg and more	±0.5%
Force		±1%
Relative humidity		±5%
Air pressure (barometric)		±0.2 kPa

Values stated in this document represent the worst case for equipment which is in possession of the laboratory and setups commonly used for testing.

For units or cases not specified in this document the evaluation of uncertainty shall be made upon request on individual basis.

The reported combined uncertainty is stated as standard uncertainty of reported value multiplied by coverage factor k = 2, which for normal distribution corresponds to a coverage probability of approximately 95%.

Product: Portable Charger

Type Designation: LIV-300

Figure 1 Front view of the portable charger

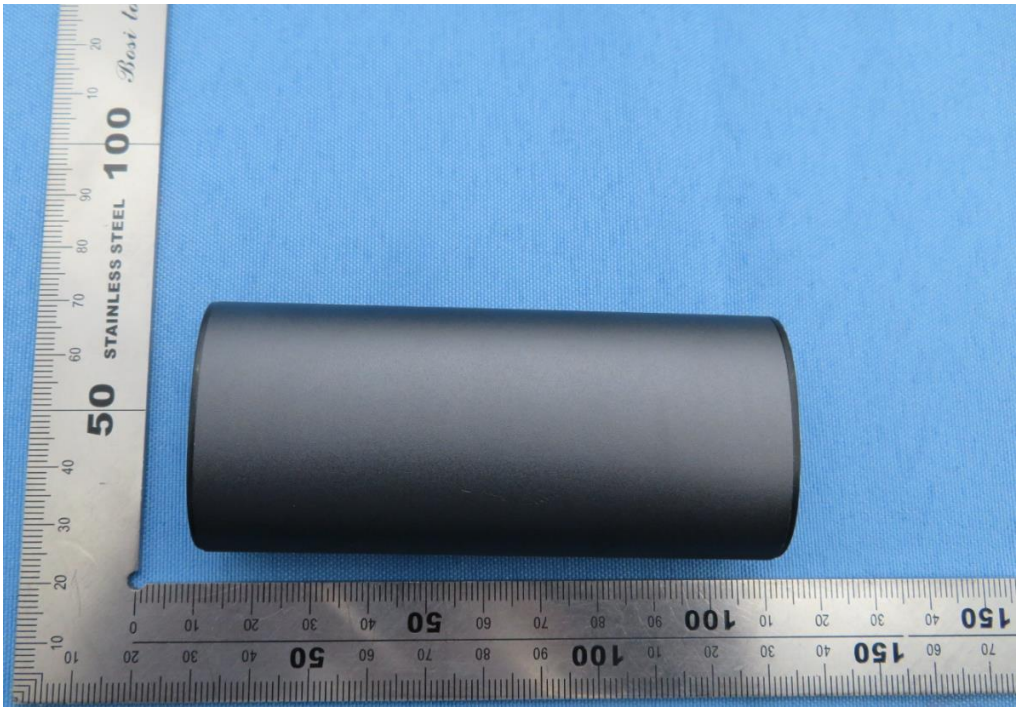


Figure 2 Back view of the portable charger

Product: Portable Charger

Type Designation: LIV-300

Figure 3 Side view of the portable charger

Figure 4 Port view of the portable charger

Product: Portable Charger

Type Designation: LIV-300

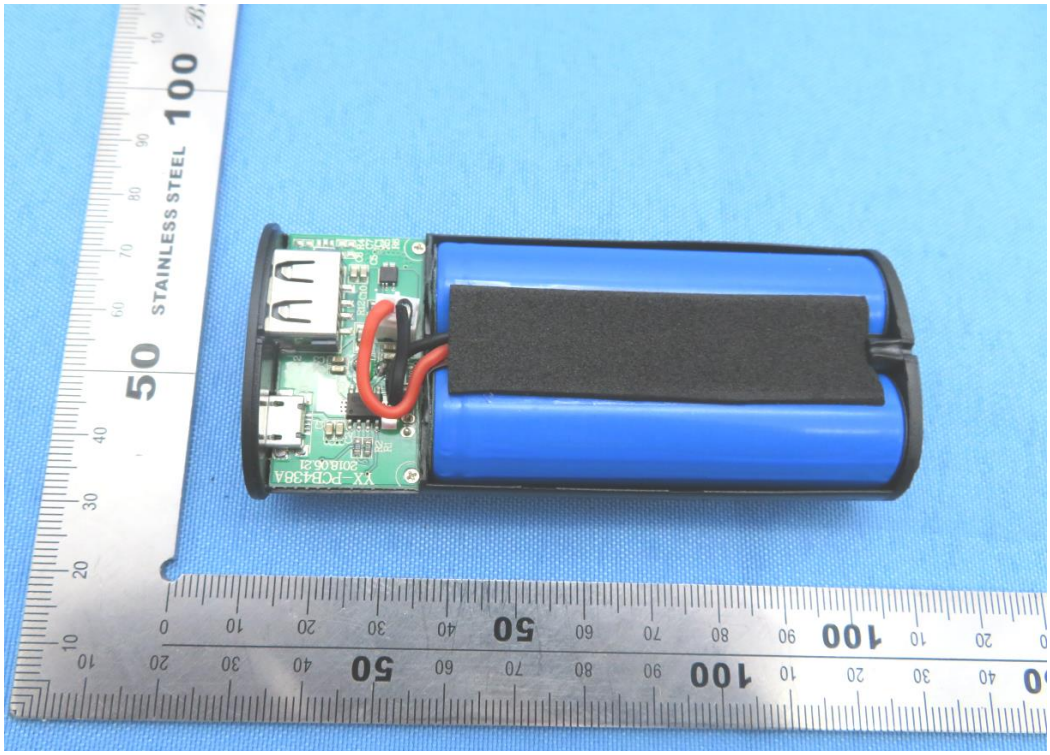


Figure 5 Inside view 1 of the portable charger

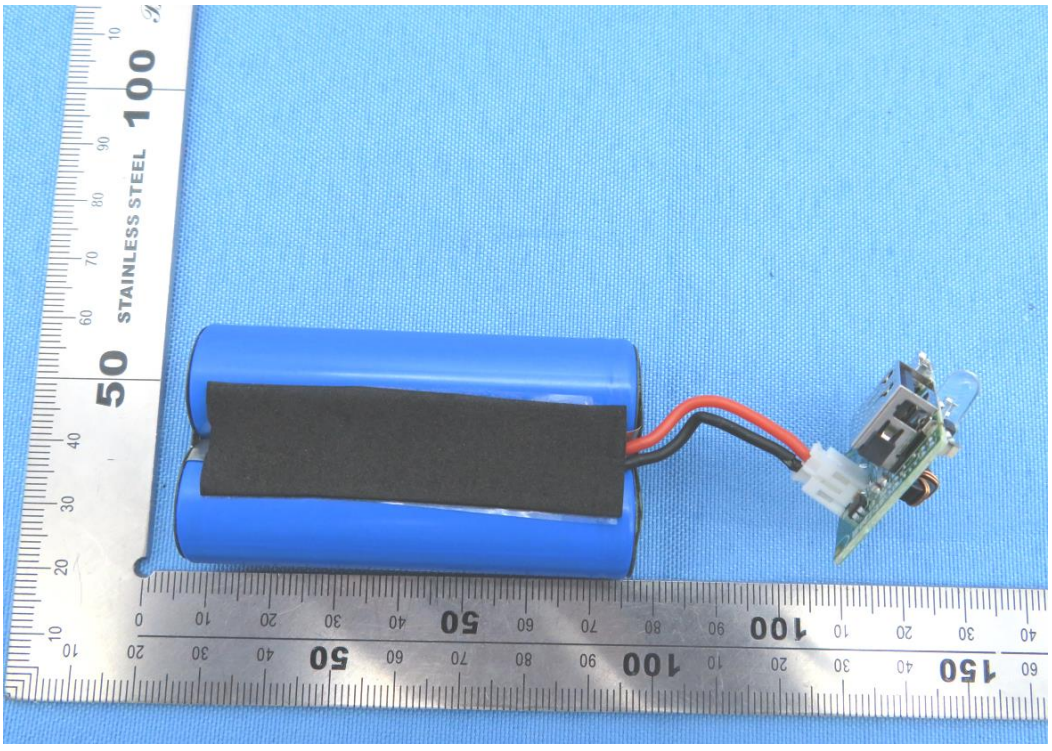


Figure 6 Inside veiw 2 of the portable charger

Product: Portable Charger

Type Designation: LIV-300

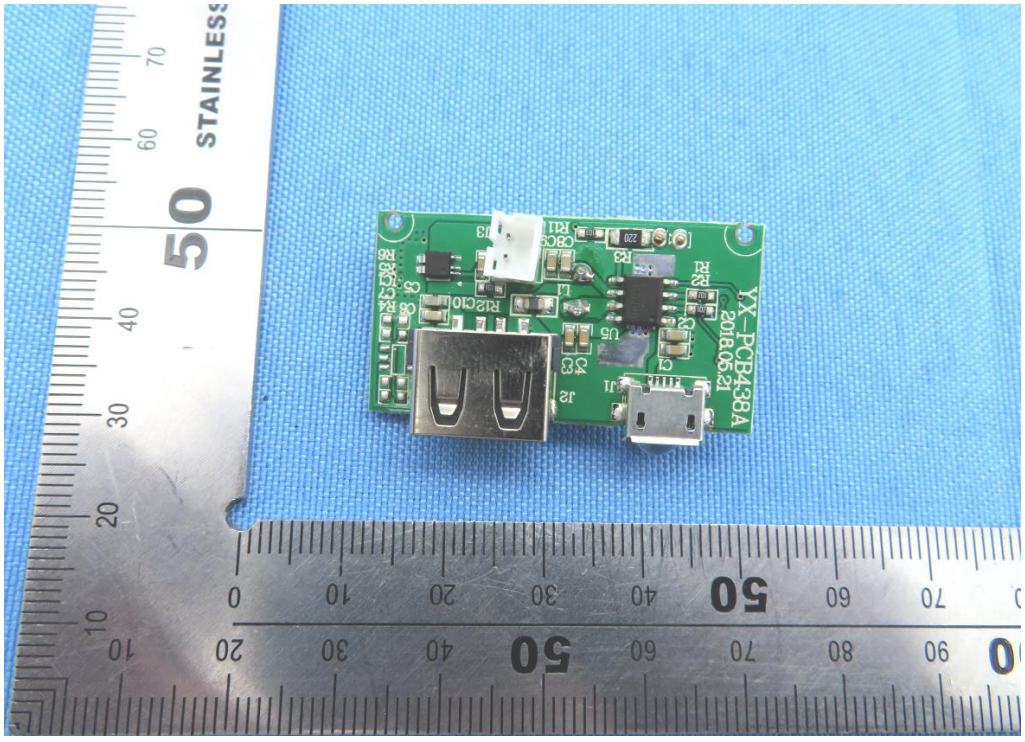


Figure 7 Side A view of PCB

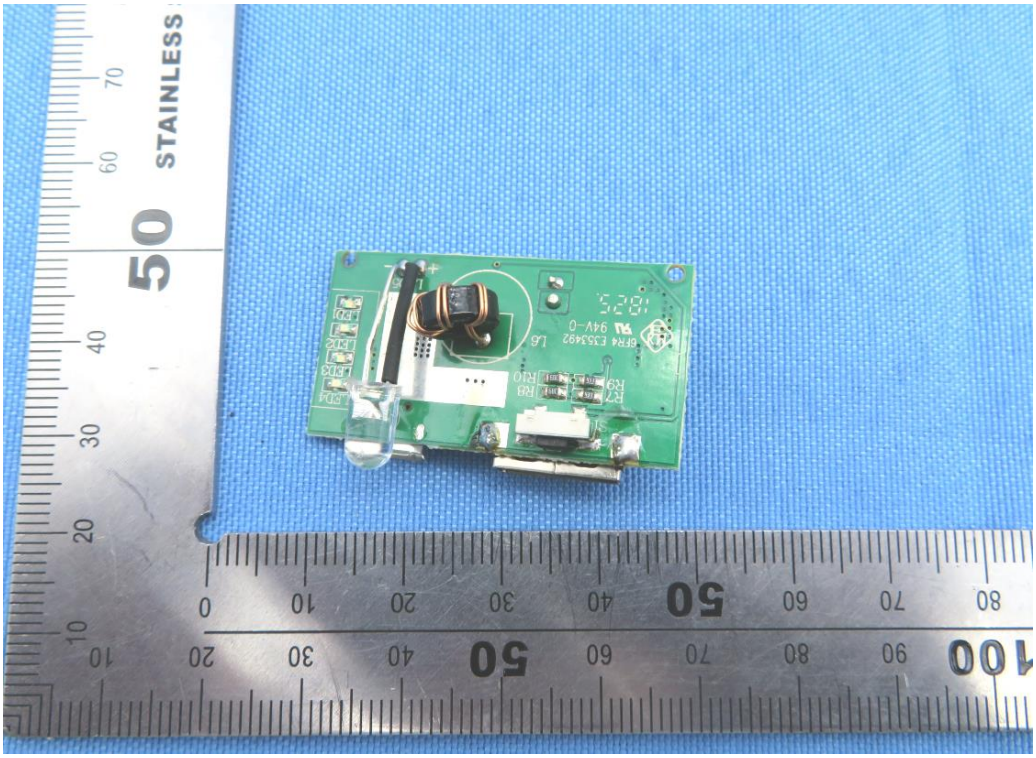


Figure 8 Side B view of PCB

Product: Portable Charger

Type Designation: LIV-300

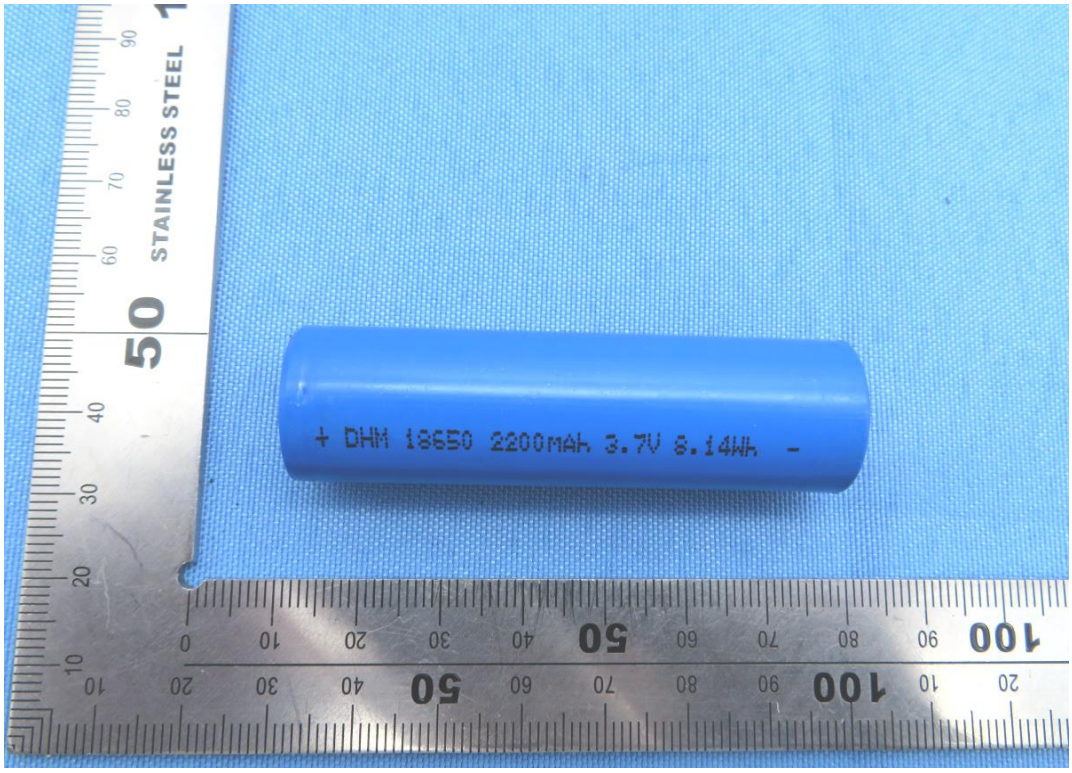


Figure 9 view of component cell