	Test Report issued under the responsibility of: **NCB TÜV SÜD PSB Pte. Ltd.** **15 International Business Park** **TÜV SÜD @ IBP** **Singapore 609937**	

TEST REPORT
IEC 62133-2
Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications – Part 2: Lithium systems

Report Number. .....:	085-28221130-000
Date of issue .....:	2021-06-02
Total number of pages.....:	30 pages
Name of Testing Laboratory preparing the Report.....:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Applicant's name.....:	Jiangxi Dongteng Lithium Co., Ltd.
Address .....:	Xinhua Industrial Community, Dayu County, 341599 Ganzhou City, Jiangxi Province, PEOPLE'S REPUBLIC OF CHINA
Test specification:	
Standard.....:	IEC 62133-2:2017
Test procedure.....:	CB Scheme
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC62133_2A
Test Report Form(s) Originator.....:	DEKRA
Master TRF.....:	Dated 2017-08-10

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
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Test item description .....:	Rechargeable Li-ion Cell
Trade Mark .....:	N/A
Manufacturer.....:	Same as the applicant
Model/Type reference .....:	1) 18650-3.7V-1500mAh, 2) 18650-3.7V-1800mAh, 3) 18650-3.7V-2000mAh, 4) 18650-3.7V-2200mAh, 5) 18650-3.7V-2400mAh, 6) 18650-3.7V-2500mAh, 7) 18650-3.7V-2600mAh
Ratings .....:	1) For model: 18650-3.7V-1500mAh: 3.7Vd.c., 1500mAh 2) For model: 18650-3.7V-1800mAh: 3.7Vd.c., 1800mAh 3) For model: 18650-3.7V-2000mAh: 3.7Vd.c., 2000mAh 4) For model: 18650-3.7V-2200mAh: 3.7Vd.c., 2200mAh 5) For model: 18650-3.7V-2400mAh: 3.7Vd.c., 2400mAh 6) For model: 18650-3.7V-2500mAh: 3.7Vd.c., 2500mAh 7) For model: 18650-3.7V-2600mAh: 3.7Vd.c., 2600mAh

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**CB Testing Laboratory:**	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch	
Testing location/ address ..... :		No.11, Jukeng Rd., Juling Village, Jutang District, Guanlan, Longhua New District, 518110 Shenzhen, CHINA	
Tested by (name, function, signature) ..... :		West Li Project handler	
Approved by (name, function, signature) .. :		Kyle Huang Project reviewer	
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address ..... :			
Tested by (name + signature) ..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
Supervised by (name, function, signature) :			

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

Attachment No.1: 3 pages of (Republic of Korea) NATIONAL DIFFERENCES

Attachment No.2: 18 pages of Photo Documentation

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
Tests are made with the number of samples specified in Table 1 of IEC 62133-2: 2017. Cl. 7.2.1 Continuous charging at constant voltage (cells) Cl. 7.3.1 External short circuit (cell) Cl. 7.3.3 Free fall Cl. 7.3.4 Thermal abuse (cells) Cl. 7.3.5 Crush (cells) Cl. 7.3.7 Forced discharge (cells) Cl. 7.3.9 Design evaluation – Forced internal short-circuit (cells) All tests above were conducted on models: 18650-3.7V-1500mAh, 18650-3.7V-1800mAh, 18650-3.7V-2200mAh and 18650-3.7V-2600mAh. The samples comply with the requirements of IEC 62133-2: 2017.	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch Address: No.11, Jukeng Rd., Juling Village, Jutang District, Guanlan, Longhua New District, 518110 Shenzhen, CHINA

Summary of compliance with National Differences (List of countries addressed):

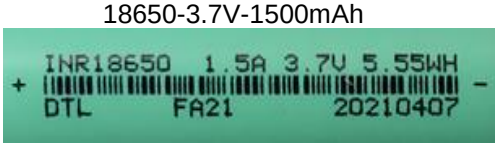
Republic of Korea

The product fulfils the requirements of EN 62133-2:2017.

Copy of marking plate:

The marking which is printed on the cell.

18650-3.7V-1500mAh



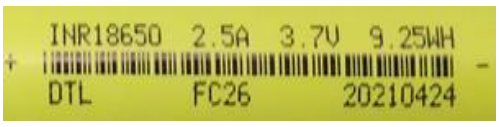
18650-3.7V-1800mAh

18650-3.7V-2000mAh

18650-3.7V-2200mAh

18650-3.7V-2400mAh

18650-3.7V-2500mAh



18650-3.7V-2600mAh

Remark:

According to Clause 9.1, by agreement between the cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked.

Test item particulars.....:	
Classification of installation and use.....:	Used in portable applications
Supply Connection.....:	Supplied by positive cap and negative can
Recommend charging method declared by the manufacturer.....:	Charge at constant current 0.2ItA until the voltage reaches 4.2V, then charge at 4.2V till charge current is 0.01ItA. (see page 5)
Discharge current (0,2 It A).....:	See page 5
Specified final voltage.....:	2.75V
Upper limit charging voltage per cell.....:	4.25V
Maximum charging current.....:	0.5ItA (see page 5)
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.....:	2021-04-13
Date (s) of performance of tests.....:	2021-04-13 to 2021-06-02

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.
Decision rule according to IEC Guide 115:2007, clause 4.4.3, 4.5.1 (accuracy method) was applied.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies).....:	Same as the applicant

General product information and other remarks:

1. The Rechargeable Li-ion Cell, Models 1) 18650-3.7V-1500mAh, 2) 18650-3.7V-1800mAh, 3) 18650-3.7V-2000mAh, 4) 18650-3.7V-2200mAh, 5) 18650-3.7V-2400mAh, 6) 18650-3.7V-2500mAh, and 7) 18650-3.7V-2600mAh are used for portable appliance.
2. All the 7 models have the same dimensions, chemistry, voltage, from the same manufacurer, but different capacities.
3. Model 18650-3.7V-1500mAh, 18650-3.7V-1800mAh, 18650-3.7V-2200mAh and 18650-3.7V-2600mAh are selected as representative models for test.
4. Additionally, detailed information of the cells are as following:

Model	Rated capacity (mAh)	Nominal voltage (V)	Recommend charge current 0.2ItA (mA)	0.2ItA discharge current (mA)	Charge voltage (V)	Final voltage (V)	Lower limited discharge voltage (V)
18650-3.7V-1500mAh	1500	3.7	300	300	4.2	2.75	2.75
18650-3.7V-1800mAh	1800	3.7	360	360	4.2	2.75	2.75
18650-3.7V-2000mAh	2000	3.7	400	400	4.2	2.75	2.75
18650-3.7V-2200mAh	2200	3.7	440	440	4.2	2.75	2.75
18650-3.7V-2400mAh	2400	3.7	480	480	4.2	2.75	2.75
18650-3.7V-2500mAh	2500	3.7	500	500	4.2	2.75	2.75
18650-3.7V-2600mAh	2600	3.7	520	520	4.2	2.75	2.75

Model	Max. charging current 0.5ItA (mA)	Maximum discharging current 5ItA (mA)	Upper limit charge voltage (V)	0.01ItA in First charging procedure (mA)	0.05ItA in Second charging procedure (mA)	Charging temperature upper/lower limit(°C)	Weight (g)
18650-3.7V-1500mAh	750	7500	4.25	15	75	45/0	42.0±1
18650-3.7V-1800mAh	900	9000	4.25	18	90	45/0	44.0±1
18650-3.7V-2000mAh	1000	10000	4.25	20	100	45/0	44.0±1
18650-3.7V-2200mAh	1100	11000	4.25	22	110	45/0	45.0±1
18650-3.7V-2400mAh	1200	12000	4.25	24	120	45/0	45.0±1
18650-3.7V-2500mAh	1250	12500	4.25	25	125	45/0	45.0±1
18650-3.7V-2600mAh	1300	13000	4.25	26	130	45/0	45.0±1

Test procedures:

First charging procedure (20°C ± 5°C)	Charge at constant current 0.2ItA until the voltage reaches 4.2V, then charge at 4.2V till charge current is 0.01ItA.
Second charging procedure	Stored at -5°C for 4 hours and 45°C for 1 hour, then charge at constant current 0.5ItA until the voltage reaches 4.25V, then charge at constant voltage 4.25V till charge current reduced to 0.05It A.

For this series, same parameter as below:

Cell designation according to IEC 61960-3: 2017	INR19/66
Dimensions	(18.3+0.3/-0.15)mm(Diameter) × (65±0.3)mm(Height)
Charging temperature range	0°C to +45°C
Discharging temperature range	-10°C to +60°C
Storage temperature	-20°C to +45°C (Less than 1 month) 0°C to +30°C (Less than 3 months) 20±5°C (Less than 1 year)

Remark:
The final evaluation of the cells must be conducted in the end product for which the cells will be used.

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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**		N/A
	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		N/A
	Insulation resistance (MΩ) ..... :		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		N/A
	Orientation of wiring maintains adequate clearance and creepage distances between conductors		N/A
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		N/A
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		P
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief		N/A
5.4	**Temperature, voltage and current management**		N/A
	Batteries are designed such that abnormal temperature rise conditions are prevented		N/A
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer		N/A
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that specified chargers are designed to maintain charging within the temperature, voltage and current limits specified		N/A
5.5	**Terminal contacts**		N/A
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance		N/A
	Terminal contacts are arranged to minimize the risk of short-circuit		N/A
5.6	**Assembly of cells into batteries**		N/A
5.6.1	General		N/A
	Each battery have 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		N/A
	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 have 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		N/A
	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 added as appropriate and consideration given to the end-device application	Considered in end-device	N/A
	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		N/A
	For the battery consisting of a single 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		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For the 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 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 batteries consisting of series-connected cells or cell blocks, nominal charge voltage not be counted as an overcharge protection		N/A
	For 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 cells and cell blocks not discharged beyond the cell manufacturer's specified final voltage		N/A
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry incorporated into the battery management system		N/A
5.6.3	Mechanical protection for cells and components of batteries		N/A
	Mechanical protection for cells, cell connections and control circuits within the battery provided to prevent damage as a result of intended use and reasonably foreseeable misuse		N/A
	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		N/A
	The battery case and compartments housing cells designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer		N/A
	For batteries intended for building into a portable end product, testing with the battery installed within the end product considered when conducting mechanical tests		N/A
5.7	**Quality plan**		P

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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		P
5.8	**Battery safety components**		N/A
	According annex F		N/A
6	**TYPE TEST AND SAMPLE SIZE**		P
	Tests are made with the number of cells or batteries specified in Table 1 using cells or batteries that are not more than six months old		P
	Coin cells with resistance ≤ 3 Ω (measured according annex D) are tested according table 1		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 overdischarge protection		N/A
	When conducting the short-circuit test, consideration 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		N/A
7	**SPECIFIC REQUIREMENTS AND TESTS**		P
7.1	**Charging procedure for test purposes**		P
7.1.1	First procedure		P
	This charging procedure applies to subclauses other than those specified in 7.1.2		P
	Unless otherwise stated in this document, the charging procedure for test purposes is carried out in an ambient temperature of 20 °C ± 5 °C, using the method declared by the manufacturer		P
	Prior to charging, the battery have been discharged at 20 °C ± 5 °C at a constant current of 0,2 It A down to a specified final voltage		P
7.1.2	Second procedure		P
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9		P

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Clause	Requirement + Test	Result - Remark	Verdict
	After stabilization for 1 h and 4 h, respectively, at ambient temperature of highest test temperature and lowest 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 is reduced to 0,05 It A, using a constant voltage charging method		P
7.2	**Intended use**		P
7.2.1	Continuous charging at constant voltage (cells)		P
	Fully charged cells are subjected for 7 days to a charge using the charging method for current and standard voltage specified by the cell manufacturer		P
	Results: No fire. No explosion. No leakage.....:	(See appended table 7.2.1)	P
7.2.2	Case stress at high ambient temperature (battery)		N/A
	Oven temperature (°C).....:		—
	Results: No physical distortion of the battery case resulting in exposure of internal protective components and cells		N/A
7.3	**Reasonably foreseeable misuse**		P
7.3.1	External short-circuit (cell)		P
	The cells were tested until one of the following occurred:		P
	- 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 (battery)		N/A
	The batteries were tested until one of the following occurred:		N/A
	- 24 hours elapsed; or		N/A
	- The case temperature declined by 20 % of the maximum temperature rise		N/A
	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		N/A
	A single fault in the discharge protection circuit conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test		N/A
	A single fault applies to protective component parts such as MOSFET, fuse, thermostat or positive temperature coefficient (PTC) thermistor		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Results: No fire. No explosion..... :		N/A
7.3.3	Free fall		P
	Results: No fire. No explosion		P
7.3.4	Thermal abuse (cells)		P
	Oven temperature (°C) ..... :	130°C±2°C	—
	Results: No fire. No explosion		P
7.3.5	Crush (cells)		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
	Results: No fire. No explosion..... :	(See appended table 7.3.5)	P
7.3.6	Over-charging of battery		N/A
	The supply voltage which is:		N/A
	- 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		N/A
	- 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		N/A
	Test was continued until the temperature of the outer casing:		N/A
	- Reached steady state conditions (less than 10 °C change in 30-minute period); or		N/A
	- Returned to ambient		N/A
	Results: No fire. No explosion..... :		N/A
7.3.7	Forced discharge (cells)		P
	If 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
	If 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

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Clause	Requirement + Test	Result - Remark	Verdict
7.3.8	Mechanical tests (batteries)		N/A
7.3.8.1	Vibration		N/A
	Results: No fire, no explosion, no rupture, no leakage or venting. ..... :		N/A
7.3.8.2	Mechanical shock		N/A
	Results: No leakage, no venting, no rupture, no explosion and no fire ..... :		N/A
7.3.9	Design evaluation – Forced internal short-circuit (cells)		P
	The cells complied with national requirement for ..... :	France, Japan, Korea, Switzerland	—
	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	P
	Results: No fire ..... :	(See appended table 7.3.9)	P
8	**INFORMATION FOR SAFETY**		P
8.1	**General**		P
	Manufacturers of secondary cells ensure that information is provided about current, voltage and temperature limits of their products		P
	Manufacturers of batteries ensure that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards		N/A
	Systems analyses 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 provided to the end user		N/A
	Do not allow children to replace batteries without adult supervision		N/A
8.2	**Small cell and battery safety information**		N/A
	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:		N/A
	- Keep small cells and batteries which are considered swallowable out of the reach of children		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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	**Cell marking**		P
	Cells marked as specified in IEC 61960, 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 cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked		P
9.2	**Battery marking**		N/A
	Batteries marked as specified in IEC 61960, except for coin batteries		N/A
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity. Batteries also marked with an appropriate caution statement		N/A
	Terminals have clear polarity marking on the external surface of the battery		N/A
	Batteries with keyed external connectors designed for connection to specific end products need not be marked with polarity markings if the design of the external connector prevents reverse polarity connections		N/A
9.3	**Caution for ingestion of small cells and batteries**		N/A
	Coin cells and batteries identified as small batteries according to 8.2 include a caution statement regarding the hazards of ingestion in accordance with 8.2		N/A
	When small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion given on the immediate package		N/A
9.4	**Other information**		N/A
	Storage and disposal instructions		N/A
	Recommended charging instructions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10	**PACKAGING AND TRANSPORT**		P
	Packaging for coin cells not small enough to fit within the limits of the ingestion gauge of Figure 3		N/A
	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 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
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		P
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied		N/A
A.4	**Consideration of temperature and charging current**		P
A.4.1	General		P
A.4.2	Recommended temperature range		P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied		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		N/A
A.4.4.1	General		N/A
A.4.4.2	Explanation of safety viewpoint		N/A
A.4.4.3	Safety considerations, when specifying charging conditions in the low temperature range		N/A
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
A.4.5	Scope of the application of charging current		P
A.4.6	Consideration of discharge		P
A.4.6.1	General		P
A.4.6.2	Final discharge 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
A.5.2	Insertion procedure for nickel particle to generate internal short		P
A.5.3	Disassembly of charged cell		P
A.5.4	Shape of nickel particle		P
A.5.5	Insertion of nickel particle in cylindrical 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 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**	P

ANNEX C	**RECOMMENDATIONS TO THE END-USERS**	N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX D	**MEASUREMENT OF THE INTERNAL AC RESISTANCE FOR COIN CELLS**		N/A
D.1	**General**		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 of less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1		N/A
	Coin cells with an internal resistance greater than 3 Ω require no further testing		N/A
ANNEX E	**PACKAGING AND TRANSPORT**		N/A
ANNEX F	**COMPONENT STANDARDS REFERENCES**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	TABLE: Critical components information				**P**
Object / part No.	**Manufacturer / trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
1. Electrolyte	Xiamen shouneng Technology Co., Ltd	SN3334H	LiPF6, EC, DMC, VC	IEC62133-2:2017	Tested with cell
2. Separator	Shenzhen Jinglitai Technology Co., LTD	ND14 (61*14)	PE, single layer	IEC62133-2:2017	Tested with cell
3. Positive electrode	Jiangxi Dongteng Lithium Co., Ltd.	TLM512	$LiNiCoMnO_2$, SUPPER-P, PVDF, etc.,Aluminum Foil	IEC62133-2:2017	Tested with cell
4. Negative electrode	Jiangxi Dongteng Lithium Co., Ltd.	HY-5	Graphite, SUPPER-P, CMC, SBR etc., Copper foil	IEC62133-2:2017	Tested with cell
5. Positive electrode tab	Shenzhen Kangheng Electronics Co. , Ltd.	0.1*4	Aluminum belt	IEC62133-2:2017	Tested with cell
6. Negative electrode tab	Shenzhen Kangheng Electronics Co., Ltd.	0.08*4	Nickel belt	IEC62133-2:2017	Tested with cell
7. Cap	Xinxiang Xinxin Battery Co., Ltd.	18#	Φ(17.6±0.05)mm×(4.3±0.1)mm (Height), Vent pressure:1.8Mpa to 2.5Mpa	IEC62133-2:2017	Tested with cell
8. CID	Xinxiang Xinxin Battery Co., Ltd.	18#	Aluminum, interruption pressure: 1.0MPa to 1.5MPa	IEC62133-2:2017	Tested with cell
9. Can	Shenzhen Wode New Energy Co., Ltd.	18#	Nickel plated steel can	IEC62133-2:2017	Tested with cell
10. Heat-shrinking outer-wrap	Huizhou Lianyun Plastic & Electronic Co. , Ltd.	P02	PVC, 0.09mm thick.	IEC62133-2:2017	Tested with cell
Supplementary information: [1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.1	TABLE: Continuous charging at constant voltage (cells)			P
Sample no.	**Recommended charging voltage Vc (Vdc)**	**Recommended charging current I_{rec} (A)**	**OCV before test (Vdc)**	**Results**
18650-3.7V-1500mAh	4.20	0.3	4.182	A, B
18650-3.7V-1500mAh	4.20	0.3	4.180	A, B
18650-3.7V-1500mAh	4.20	0.3	4.181	A, B
18650-3.7V-1500mAh	4.20	0.3	4.182	A, B
18650-3.7V-1500mAh	4.20	0.3	4.182	A, B
18650-3.7V-1800mAh	4.20	0.36	4.186	A, B
18650-3.7V-1800mAh	4.20	0.36	4.186	A, B
18650-3.7V-1800mAh	4.20	0.36	4.185	A, B
18650-3.7V-1800mAh	4.20	0.36	4.187	A, B
18650-3.7V-1800mAh	4.20	0.36	4.186	A, B
18650-3.7V-2200mAh	4.20	0.44	4.187	A, B
18650-3.7V-2200mAh	4.20	0.44	4.186	A, B
18650-3.7V-2200mAh	4.20	0.44	4.188	A, B
18650-3.7V-2200mAh	4.20	0.44	4.187	A, B
18650-3.7V-2200mAh	4.20	0.44	4.186	A, B
18650-3.7V-2600mAh	4.20	0.52	4.185	A, B
18650-3.7V-2600mAh	4.20	0.52	4.184	A, B
18650-3.7V-2600mAh	4.20	0.52	4.186	A, B
18650-3.7V-2600mAh	4.20	0.52	4.185	A, B
18650-3.7V-2600mAh	4.20	0.52	4.185	A, B

Supplementary information:

A- No fire or explosion
B- No leakage
C- Others (please explain)

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.1	TABLE: External short-circuit (cell)				P
Sample no.	**Ambient T (°C)**	**OCV before test (Vdc)**	**Resistance of circuit (mΩ)**	**Maximum case temperature rise ΔT (K)**	**Results**
Samples charged at charging temperature upper limit					
18650-3.7V-1500mAh	55.0	4.217	85	67.3	A
18650-3.7V-1500mAh	55.0	4.218	85	65.3	A
18650-3.7V-1500mAh	55.0	4.225	82	64.3	A
18650-3.7V-1500mAh	55.0	4.224	84	69.1	A
18650-3.7V-1500mAh	55.0	4.223	86	68.4	A
18650-3.7V-1800mAh	55.1	4.223	85	63.3	A
18650-3.7V-1800mAh	55.1	4.225	85	67.3	A
18650-3.7V-1800mAh	55.1	4.226	82	66.6	A
18650-3.7V-1800mAh	55.1	4.219	84	63.5	A
18650-3.7V-1800mAh	55.1	4.227	86	68.2	A
18650-3.7V-2200mAh	55.3	4.226	85	61.3	A
18650-3.7V-2200mAh	55.3	4.227	85	58.2	A
18650-3.7V-2200mAh	55.3	4.221	82	68.9	A
18650-3.7V-2200mAh	55.3	4.223	84	63.3	A
18650-3.7V-2200mAh	55.3	4.228	86	67.9	A
18650-3.7V-2600mAh	55.5	4.224	85	52.8	A
18650-3.7V-2600mAh	55.5	4.226	85	49.0	A
18650-3.7V-2600mAh	55.5	4.218	82	45.7	A
18650-3.7V-2600mAh	55.5	4.219	84	55.7	A
18650-3.7V-2600mAh	55.5	4.223	86	51.2	A

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Clause	Requirement + Test	Result - Remark	Verdict

Samples charged at charging temperature lower limit					
18650-3.7V-1500mAh	55.0	4.167	85	68.2	A
18650-3.7V-1500mAh	55.0	4.169	82	58.1	A
18650-3.7V-1500mAh	55.0	4.171	81	64.1	A
18650-3.7V-1500mAh	55.0	4.173	82	61.1	A
18650-3.7V-1500mAh	55.0	4.172	86	65.2	A
18650-3.7V-1800mAh	55.1	4.173	85	66.4	A
18650-3.7V-1800mAh	55.1	4.169	82	64.4	A
18650-3.7V-1800mAh	55.1	4.176	81	61.8	A
18650-3.7V-1800mAh	55.1	4.177	82	63.4	A
18650-3.7V-1800mAh	55.1	4.175	86	64.7	A
18650-3.7V-2200mAh	55.3	4.173	85	71.6	A
18650-3.7V-2200mAh	55.3	4.176	82	69.5	A
18650-3.7V-2200mAh	55.3	4.178	81	71.2	A
18650-3.7V-2200mAh	55.3	4.172	82	68.7	A
18650-3.7V-2200mAh	55.3	4.175	86	59.1	A
18650-3.7V-2600mAh	55.5	4.168	85	53.1	A
18650-3.7V-2600mAh	55.5	4.170	82	52.8	A
18650-3.7V-2600mAh	55.5	4.174	81	49.2	A
18650-3.7V-2600mAh	55.5	4.176	82	49.5	A
18650-3.7V-2600mAh	55.5	4.177	86	49.2	A
Supplementary information: A- No fire or explosion B- Others (please explain)					

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.2	TABLE: External short-circuit (battery)					N/A
Sample no.	**Ambient T (°C)**	**OCV before test (Vdc)**	**Resistance of circuit (mΩ)**	**Maximum case temperature rise ΔT (K)**	**Component single fault condition**	**Results**

Supplementary information:

A- No fire or explosion
B- Others (please explain)

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.5	TABLE: Crush (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 charging temperature upper limit				
18650-3.7V-1500mAh	4.218	4.215	12.94	A
18650-3.7V-1500mAh	4.222	4.220	12.97	A
18650-3.7V-1500mAh	4.225	4.222	13.03	A
18650-3.7V-1500mAh	4.219	4.217	12.96	A
18650-3.7V-1500mAh	4.224	4.221	12.98	A
18650-3.7V-1800mAh	4.220	4.218	12.93	A
18650-3.7V-1800mAh	4.224	4.221	12.96	A
18650-3.7V-1800mAh	4.226	4.224	12.92	A
18650-3.7V-1800mAh	4.221	4.218	13.01	A
18650-3.7V-1800mAh	4.225	4.222	12.99	A
18650-3.7V-2200mAh	4.224	4.221	12.90	A
18650-3.7V-2200mAh	4.225	4.222	12.98	A
18650-3.7V-2200mAh	4.229	4.227	13.03	A
18650-3.7V-2200mAh	4.221	4.219	12.96	A
18650-3.7V-2200mAh	4.228	4.225	12.95	A
18650-3.7V-2600mAh	4.224	4.221	12.91	A
18650-3.7V-2600mAh	4.226	4.223	12.97	A
18650-3.7V-2600mAh	4.221	4.219	12.98	A
18650-3.7V-2600mAh	4.220	4.216	12.93	A
18650-3.7V-2600mAh	4.222	4.218	12.95	A

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Clause	Requirement + Test	Result - Remark	Verdict

Samples charged at charging temperature lower limit				
18650-3.7V-1500mAh	4.168	4.165	12.93	A
18650-3.7V-1500mAh	4.169	4.167	13.01	A
18650-3.7V-1500mAh	4.173	4.170	13.04	A
18650-3.7V-1500mAh	4.171	4.168	12.94	A
18650-3.7V-1500mAh	4.170	4.168	12.95	A
18650-3.7V-1800mAh	4.171	4.169	12.97	A
18650-3.7V-1800mAh	4.172	4.170	12.94	A
18650-3.7V-1800mAh	4.173	4.170	12.93	A
18650-3.7V-1800mAh	4.169	4.167	13.04	A
18650-3.7V-1800mAh	4.177	4.174	12.95	A
18650-3.7V-2200mAh	4.173	4.170	13.03	A
18650-3.7V-2200mAh	4.176	4.174	12.95	A
18650-3.7V-2200mAh	4.177	4.175	12.91	A
18650-3.7V-2200mAh	4.172	4.169	12.94	A
18650-3.7V-2200mAh	4.178	4.175	12.97	A
18650-3.7V-2600mAh	4.176	4.173	13.03	A
18650-3.7V-2600mAh	4.174	4.171	12.96	A
18650-3.7V-2600mAh	4.173	4.170	12.94	A
18650-3.7V-2600mAh	4.175	4.172	12.97	A
18650-3.7V-2600mAh	4.171	4.169	12.99	A
Supplementary information: A- No fire or explosion B- Others (please explain)				

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.6	**TABLE: Over-charging of battery**			**N/A**
Constant charging current (A) ..... :				**—**
Supply voltage (Vdc) ..... :				**—**
Sample no.	**OCV before charging (Vdc)**	**Total charging time (minute)**	**Maximum outer case temperature (°C)**	**Results**

Supplementary information:

A- No fire or explosion
B- Others (please explain)

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Clause	Requirement + Test	Result - Remark	Verdict

7.3.7	TABLE: Forced discharge (cells)			P
Sample no.	**OCV before application of reverse charge (Vdc)**	**Measured reverse charge I_t (A)**	**Lower limit discharge voltage (Vdc)**	**Results**
18650-3.7V-1500mAh	3.251	1.5	2.75	A
18650-3.7V-1500mAh	3.244	1.5	2.75	A
18650-3.7V-1500mAh	3.264	1.5	2.75	A
18650-3.7V-1500mAh	3.271	1.5	2.75	A
18650-3.7V-1500mAh	3.270	1.5	2.75	A
18650-3.7V-1800mAh	3.228	1.8	2.75	A
18650-3.7V-1800mAh	3.234	1.8	2.75	A
18650-3.7V-1800mAh	3.226	1.8	2.75	A
18650-3.7V-1800mAh	3.228	1.8	2.75	A
18650-3.7V-1800mAh	3.217	1.8	2.75	A
18650-3.7V-2200mAh	3.373	2.2	2.75	A
18650-3.7V-2200mAh	3.354	2.2	2.75	A
18650-3.7V-2200mAh	3.353	2.2	2.75	A
18650-3.7V-2200mAh	3.391	2.2	2.75	A
18650-3.7V-2200mAh	3.383	2.2	2.75	A
18650-3.7V-2600mAh	3.212	2.6	2.75	A
18650-3.7V-2600mAh	3.209	2.6	2.75	A
18650-3.7V-2600mAh	3.211	2.6	2.75	A
18650-3.7V-2600mAh	3.210	2.6	2.75	A
18650-3.7V-2600mAh	3.212	2.6	2.75	A

Supplementary information:

A- No fire or explosion
B- Others (please explain)

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.8.1	TABLE: Vibration				N/A
Sample no.	**OCV before test (Vdc)**	**OCV after test (Vdc)**	**Mass before test (g)**	**Mass after test (g)**	**Results**

Supplementary information:

A- No fire or explosion
B- No rupture
C- No leakage
D- No venting
E- Others (please explain)

7.3.8.2	TABLE: Mechanical shock				N/A
Sample no.	**OCV before test (Vdc)**	**OCV after test (Vdc)**	**Mass before test (g)**	**Mass after test (g)**	**Results**

Supplementary information:

A- No fire or explosion
B- No rupture
C- No leakage
D- No venting
E- Others (please explain)

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.9	TABLE: Forced internal short circuit (cells)				P
Sample no.	**Chamber ambient T (°C)**	**OCV before test (Vdc)**	**Particle location [1)]**	**Maximum applied pressure (N)**	**Results**
Samples charged at charging temperature upper limit					
18650-3.7V-1500mAh	45	4.219	1	800	A
18650-3.7V-1500mAh	45	4.223	1	800	A
18650-3.7V-1500mAh	45	4.226	1	800	A
18650-3.7V-1500mAh	45	4.221	1	800	A
18650-3.7V-1500mAh	45	4.218	1	800	A
18650-3.7V-1800mAh	45	4.225	1	800	A
18650-3.7V-1800mAh	45	4.226	1	800	A
18650-3.7V-1800mAh	45	4.221	1	800	A
18650-3.7V-1800mAh	45	4.223	1	800	A
18650-3.7V-1800mAh	45	4.222	1	800	A
18650-3.7V-2200mAh	45	4.227	1	800	A
18650-3.7V-2200mAh	45	4.225	1	800	A
18650-3.7V-2200mAh	45	4.221	1	800	A
18650-3.7V-2200mAh	45	4.226	1	800	A
18650-3.7V-2200mAh	45	4.223	1	800	A
18650-3.7V-2600mAh	45	4.226	1	800	A
18650-3.7V-2600mAh	45	4.228	1	800	A
18650-3.7V-2600mAh	45	4.222	1	800	A
18650-3.7V-2600mAh	45	4.221	1	800	A
18650-3.7V-2600mAh	45	4.227	1	800	A

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Clause	Requirement + Test	Result - Remark	Verdict

Samples charged at charging temperature lower limit					
18650-3.7V-1500mAh	-5	4.168	1	800	A
18650-3.7V-1500mAh	-5	4.170	1	800	A
18650-3.7V-1500mAh	-5	4.173	1	800	A
18650-3.7V-1500mAh	-5	4.169	1	800	A
18650-3.7V-1500mAh	-5	4.165	1	800	A
18650-3.7V-1800mAh	-5	4.168	1	800	A
18650-3.7V-1800mAh	-5	4.173	1	800	A
18650-3.7V-1800mAh	-5	4.176	1	800	A
18650-3.7V-1800mAh	-5	4.171	1	800	A
18650-3.7V-1800mAh	-5	4.174	1	800	A
18650-3.7V-2200mAh	-5	4.171	1	800	A
18650-3.7V-2200mAh	-5	4.176	1	800	A
18650-3.7V-2200mAh	-5	4.173	1	800	A
18650-3.7V-2200mAh	-5	4.179	1	800	A
18650-3.7V-2200mAh	-5	4.175	1	800	A
18650-3.7V-2600mAh	-5	4.169	1	800	A
18650-3.7V-2600mAh	-5	4.173	1	800	A
18650-3.7V-2600mAh	-5	4.172	1	800	A
18650-3.7V-2600mAh	-5	4.174	1	800	A
18650-3.7V-2600mAh	-5	4.175	1	800	A

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.

Note: There's no test particle location 2 in the cell.

A- No fire or explosion

B- Others (please explain)

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict

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

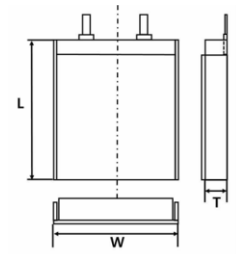
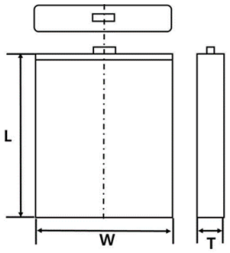
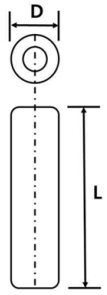
Supplementary information:

[1)] Coin cells with internal resistance less than or equal to 3 Ω, see test result on corresponding tables

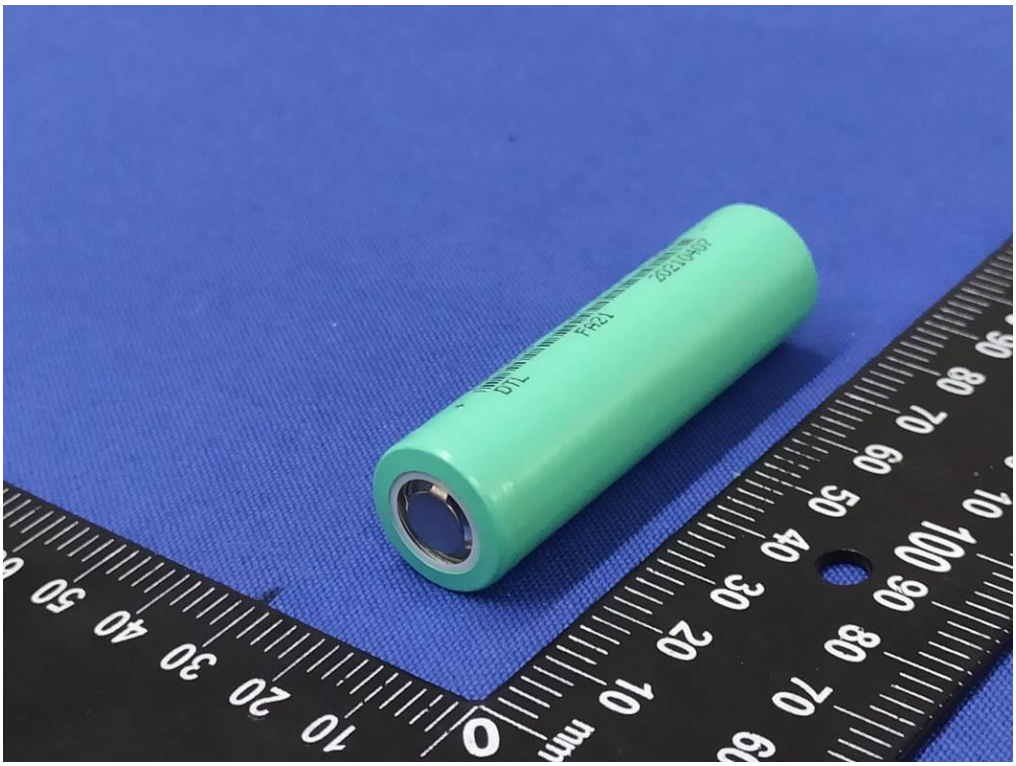
---End of report---

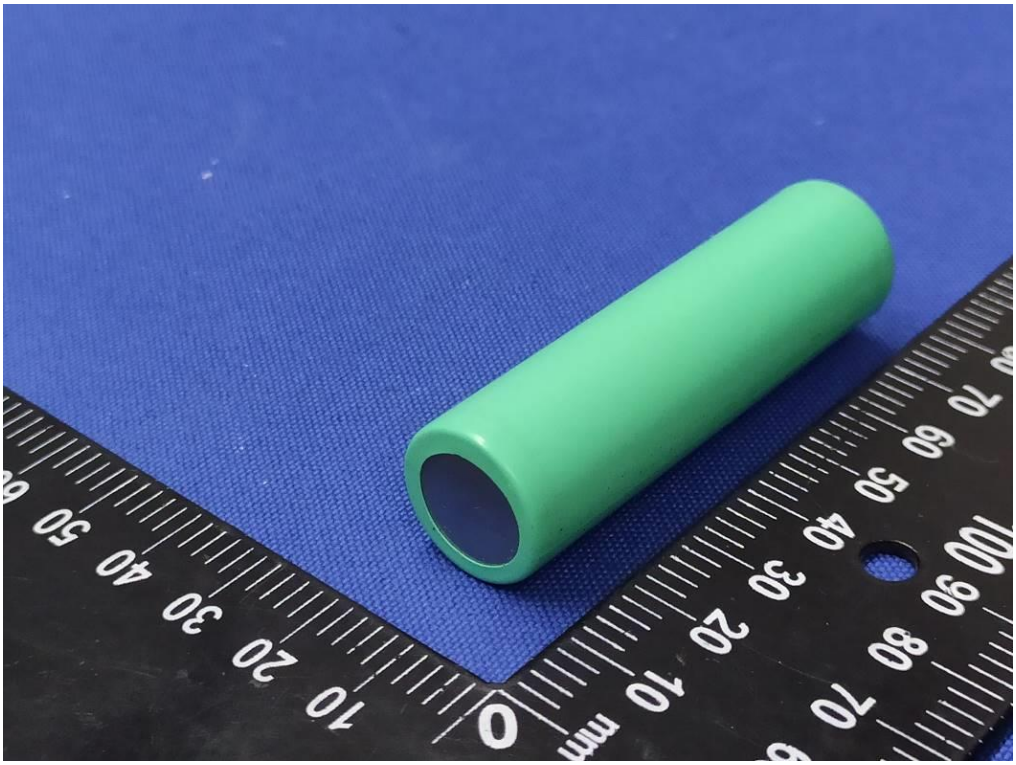
IEC62133_2A ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT **IEC 62133-2** **(Republic of Korea) NATIONAL DIFFERENCES** (Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary lithium cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems)			
Differences according to ..... :	National standard KC62133-2(2020-07)		
TRF template used: ..... :	IECEE OD-2020-F3, Ed. 1.1		
Attachment Form No. ..... : **Attachment Originator** ..... : **Master Attachment**..... :	KR_ND_IEC62133_2A KTR Dated 2020-09-25		
	National Differences		P
7.3.6	**Over-charging of battery**		N/A
(Revision)	***[Add the bolded text]*** b) Test The test shall be carried out in an ambient temperature of 20 °C ± 5 °C. Each test battery shall be discharged at a constant current of 0,2 It A, to a final discharge voltage specified by the manufacturer. Sample batteries shall then be charged at a constant current of 2,0 It A, using a supply voltage which is: • 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 • 1,2 times the upper limit charging voltage presented in Table A.1 per cell for series connected multi-cell batteries, and • sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached. **• In case the charging voltage specified by the manufacturer is higher than the overcharge test voltage, the maximum charging voltage specified by manufacturer should be applied with 2.0 ItA,** **(e.g., quick charging power bank, etc.)**		N/A

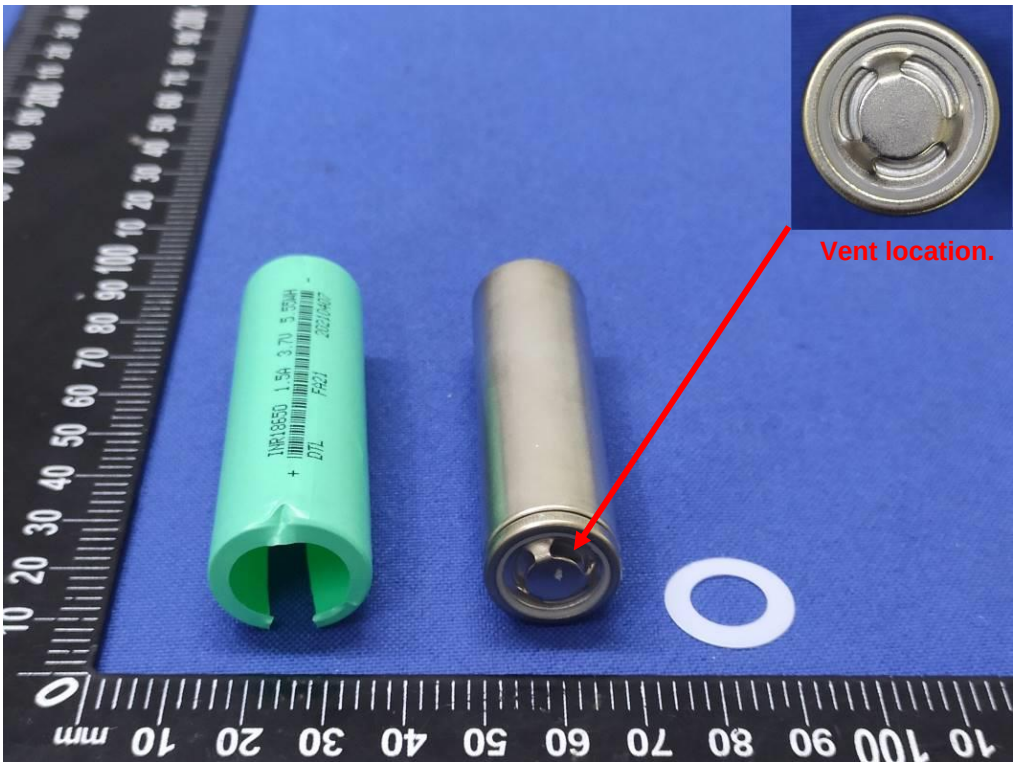
IEC62133_2A ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	[Replace to the following statement] c) Acceptance criteria Overcharging exceeding to the limits specified by the manufacturer should not result in fire or explosion.		N/A
Annex G	**Definition for shape and materials of outer case for cell**		—
(Addition)	G.1 General Annex G provides definitions for shape and materials of outer case for cell G.2 Shape of outer case for cell G 2.1 Cylindrical cell Cell with a cylindrical shape in which the overall height is equal to or greater than diameter. G 2.2 Prismatic cell Cell having the shape of a parallelepiped whose faces are rectangular G.3 Materials of outer case for cell G.3.1 Soft case Non-metallic outer case or container for cell G.3.2 Hard case Metallic outer case or container for cell.	(Shape of outer cases) ☒ Cylindrical ☐ Prismatic (Materials of outer cases) ☒ Hard ☐ Soft	—
Annex H	**Calculation method of the volumetric energy density for cell**		—
(Addition)	Annex H provide a calculation method of the volumetric energy density for cell in use of smart phone, tablet, notebook. H.1 General Unless otherwise stated in the Annex E, the dimensions for calculation are based on these for cell before shipment and the volumetric energy density shall be calculated with a maximum values specified by manufacturer. If the specification for cell can't be provided a dimension for calculation, the manufacturer's other documentation shall be provided to demonstrate compliance for its calculation.	Not in use of smart phone, tablet, notebook	—

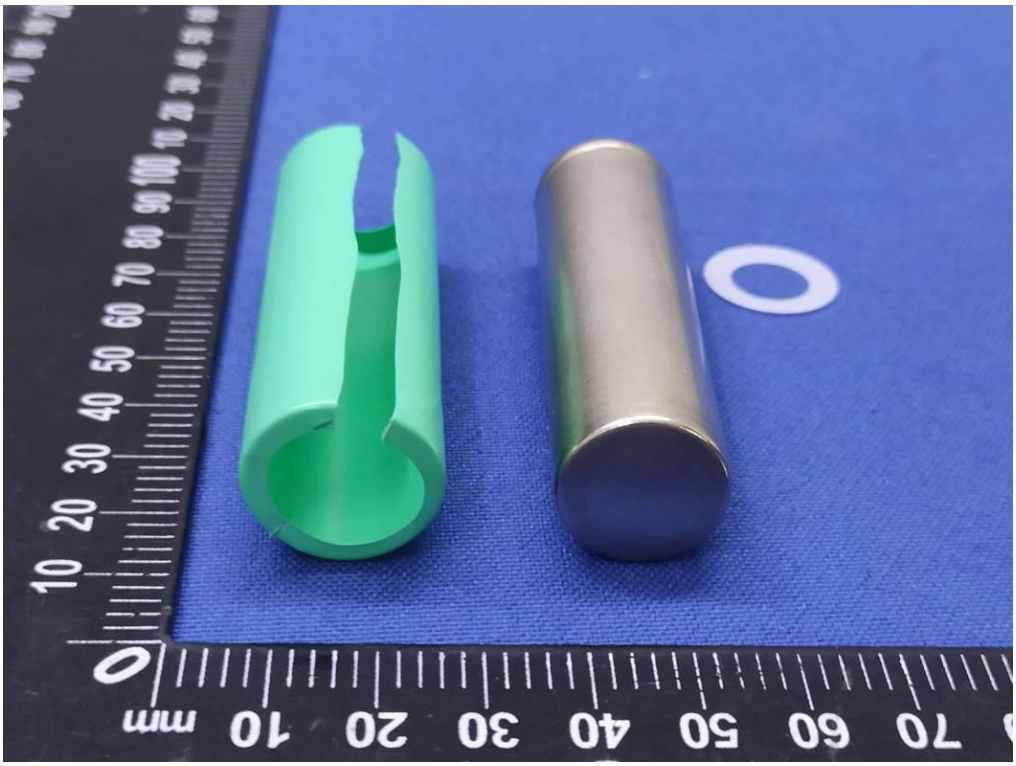
IEC62133_2A ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	H.2 Calculation Method  L : Length (max.) of cell (including terrace) W : Width (max.) of cell T : Thickness (max.) when shipping charge (For reference, Please Exclude the dimension of any tape that Is attached to cell) $Volumetric\ energy\ density\ (Wh/L) = \frac{Nominal\ voltage\ (V) \times Rated\ capacity\ (Ah)}{Length\ (L) \times Width\ (W) \times Thickness\ (T)}$ [H.1 – Prismatic cell using soft case]  L : Length (max.) of cell W : Width (max.) of cell T : Thickness when shipping charge (For reference, Please Exclude the dimension of any tape that Is attached to cell) $Volumetric\ energy\ density\ (Wh/L) = \frac{Nominal\ voltage\ (V) \times Rated\ capacity\ (Ah)}{Length\ (L) \times Width\ (W) \times Thickness\ (T)}$ [H.2 – Prismatic cell using hard case]  D : Diameter (max.) of cell L : Length (max.) of cell (According to shape of cell at shipping, The dimension of tube for cell may be included In overall dimension of cell) $Volumetric\ energy\ density\ (Wh/L) = \frac{Nominal\ voltage\ (V) \times Rated\ capacity\ (Ah)}{3.14159 \times \frac{Diameter\ (D)^2}{4} \times Length(L)}$ [H.3 – Cylindrical cell using hard case]		—

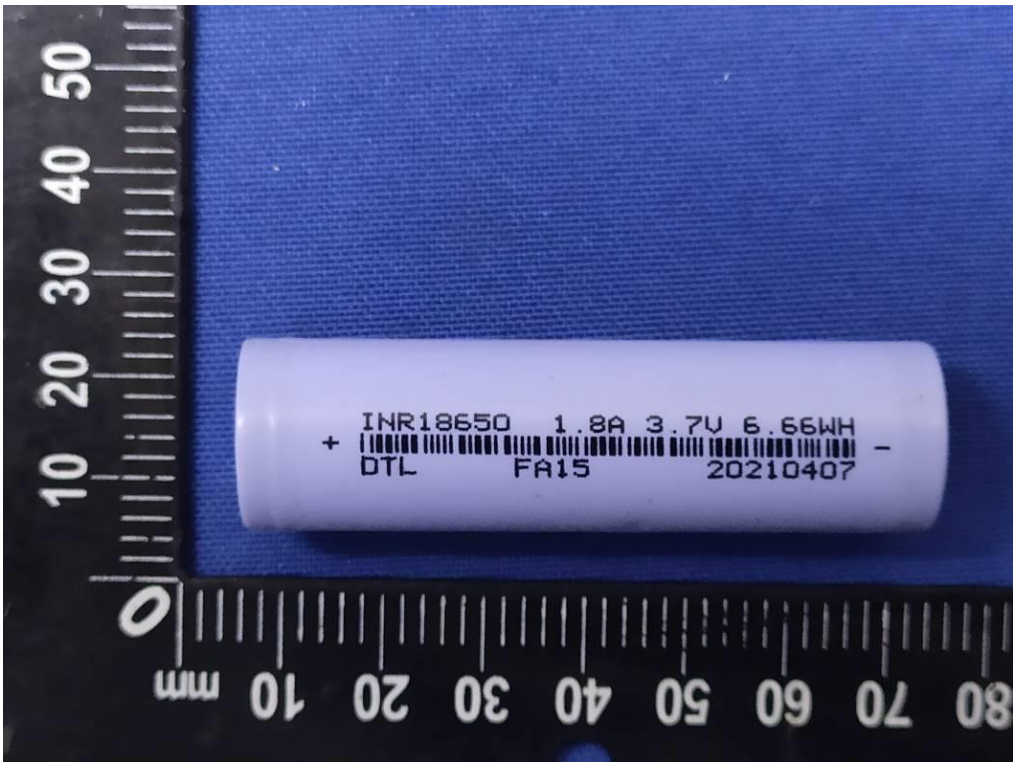
Details of:	Fig. 1 Overall view 1 of Rechargeable Li-ion Cell, model 18650-3.7V-1500mAh
	

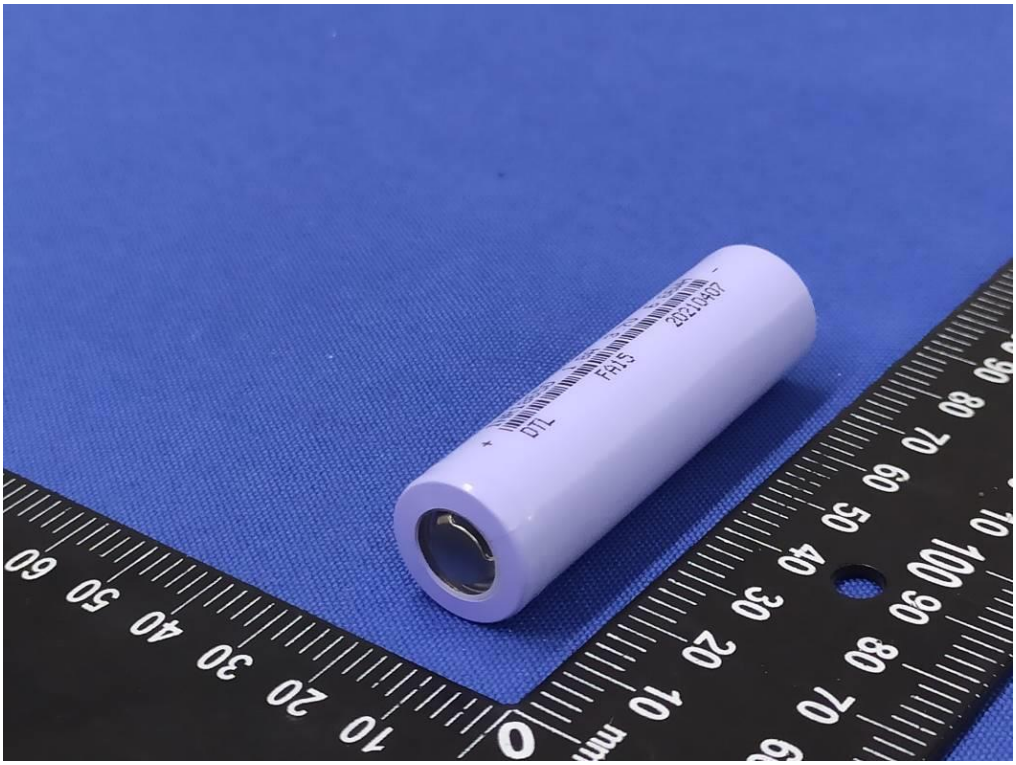
Details of:	Fig. 2 Overall view 2 of Rechargeable Li-ion Cell, model 18650-3.7V-1500mAh
	

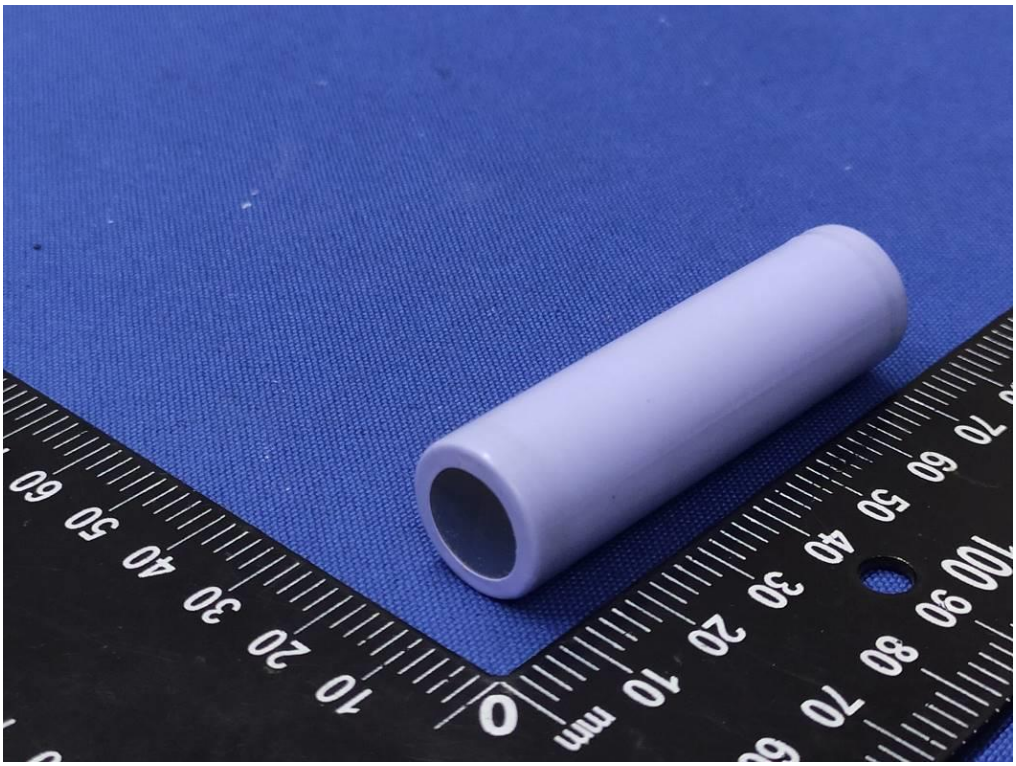
Details of:	Fig. 3 Overall view 3 of Rechargeable Li-ion Cell, model 18650-3.7V-1500mAh
	

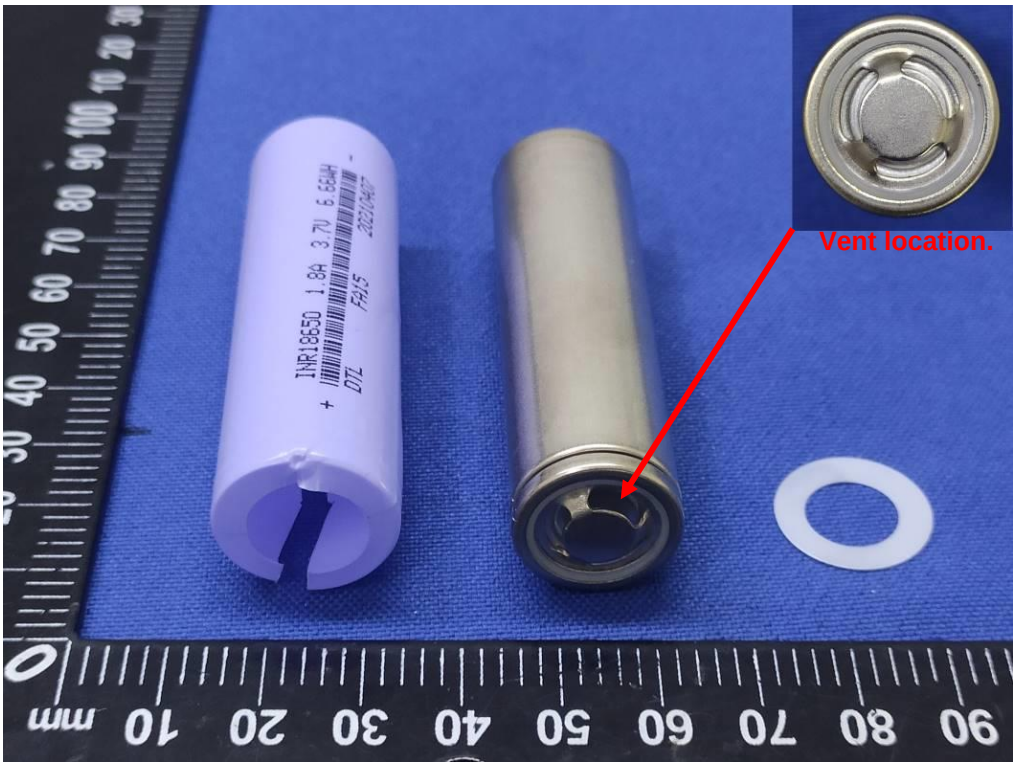
Details of:	Fig. 4 Overall view 1 of Rechargeable Li-ion Cell with heat-shrinking outer-wrap disassembled, model 18650-3.7V-1500mAh
	

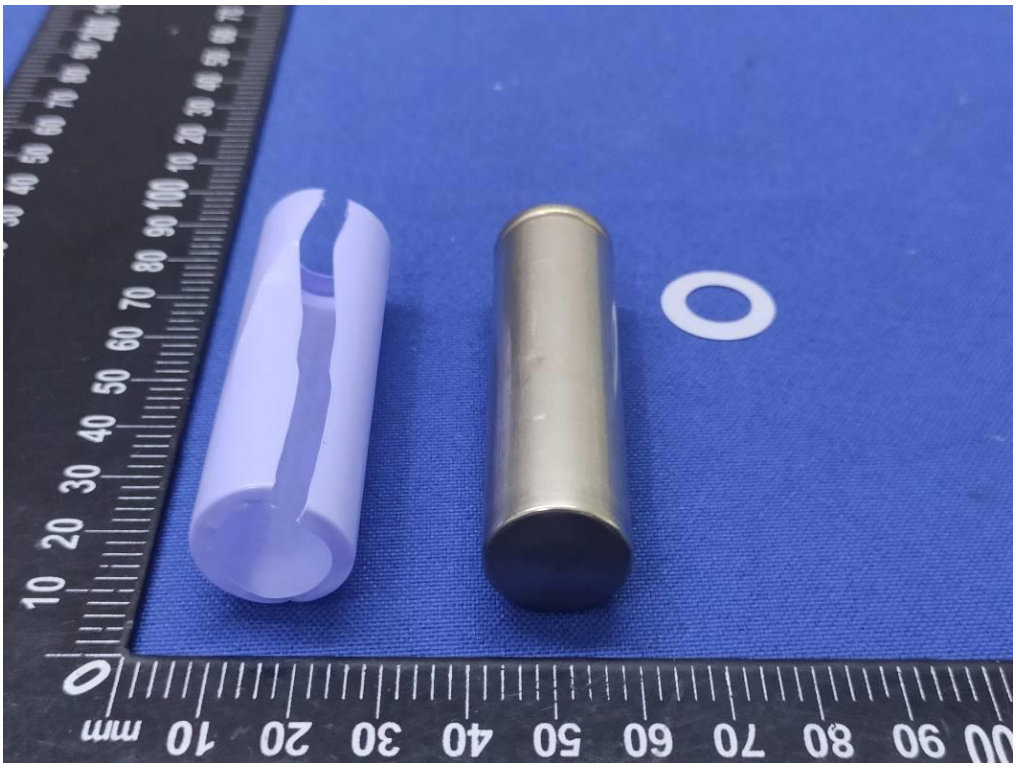
Details of:	Fig. 5 Overall view 2 of Rechargeable Li-ion Cell with heat-shrinking outer-wrap disassembled, model 18650-3.7V-1500mAh
	

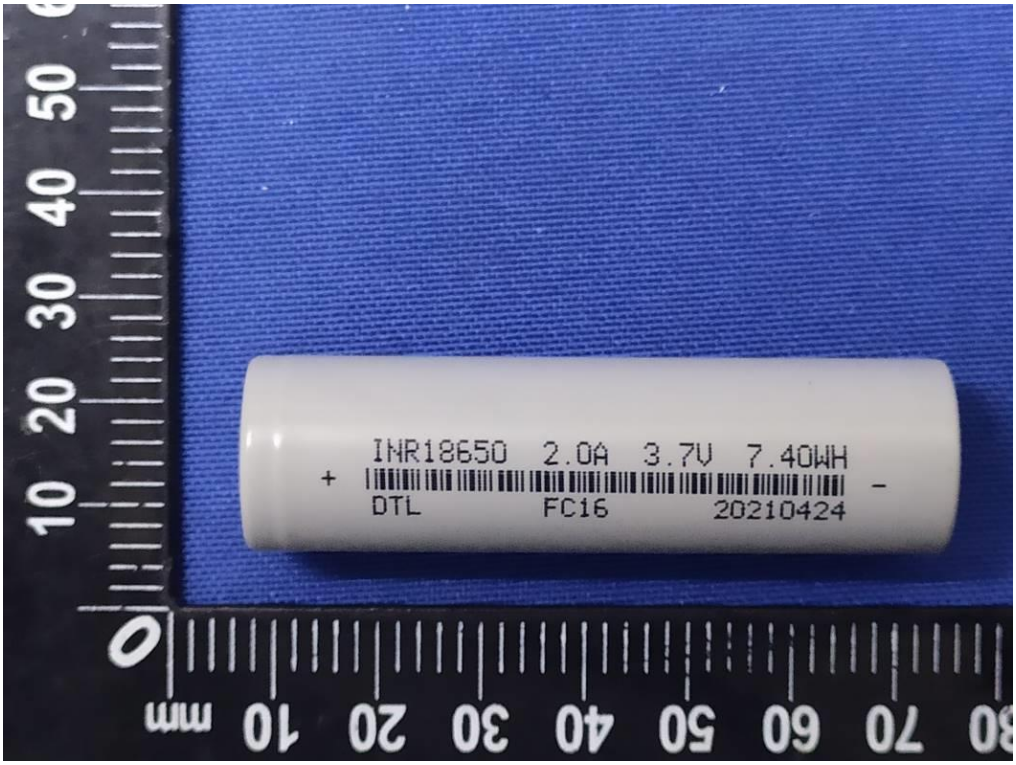
Details of:	Fig. 6 Overall view 1 of Rechargeable Li-ion Cell, model 18650-3.7V-1800mAh
	

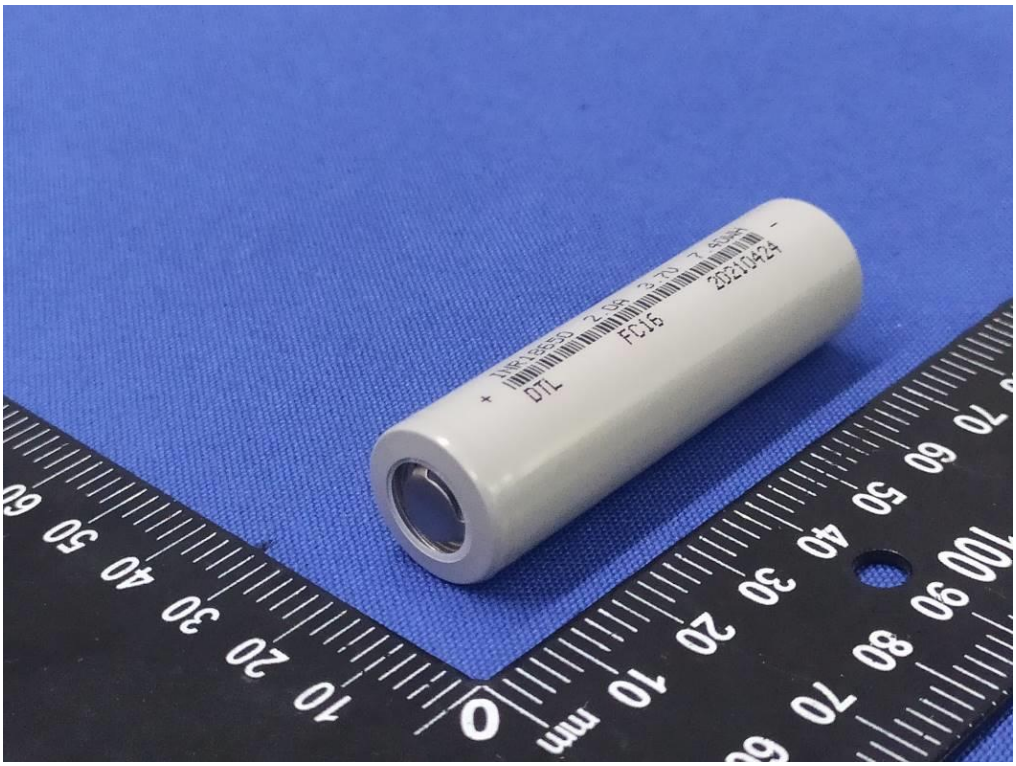
Details of:	Fig. 7 Overall view 2 of Rechargeable Li-ion Cell, model 18650-3.7V-1800mAh
	

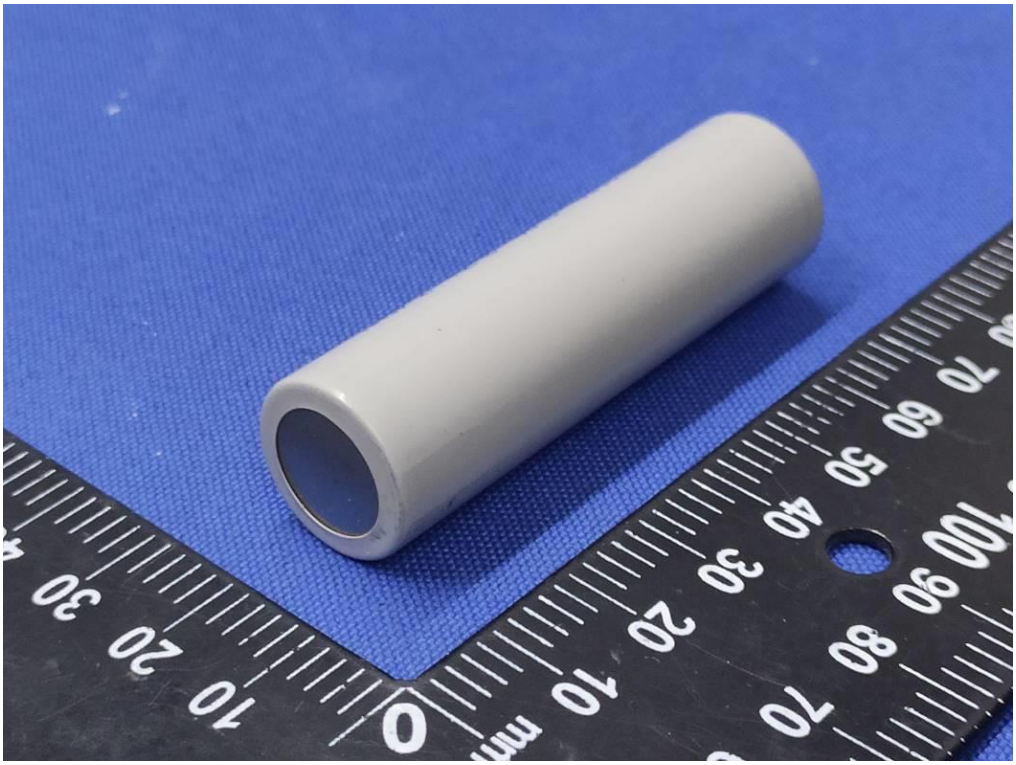
Details of:	Fig. 8 Overall view 3 of Rechargeable Li-ion Cell, model 18650-3.7V-1800mAh
	

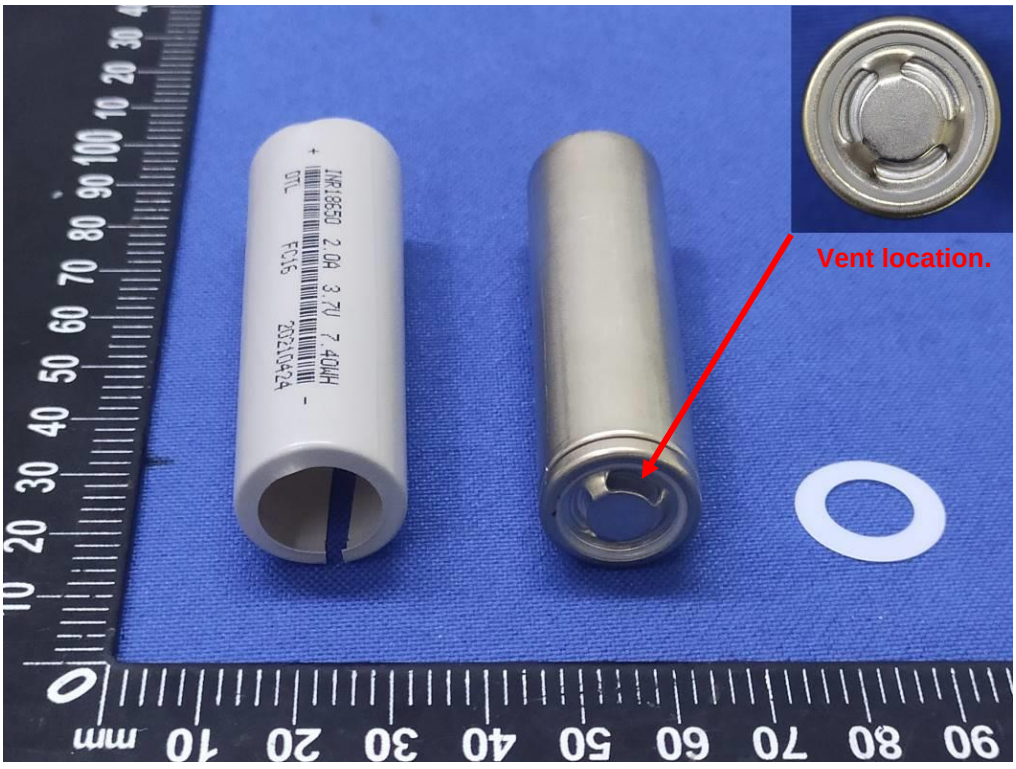
Details of:	Fig. 9 Overall view 1 of Rechargeable Li-ion Cell with heat-shrinking outer-wrap disassembled, model 18650-3.7V-1800mAh
	

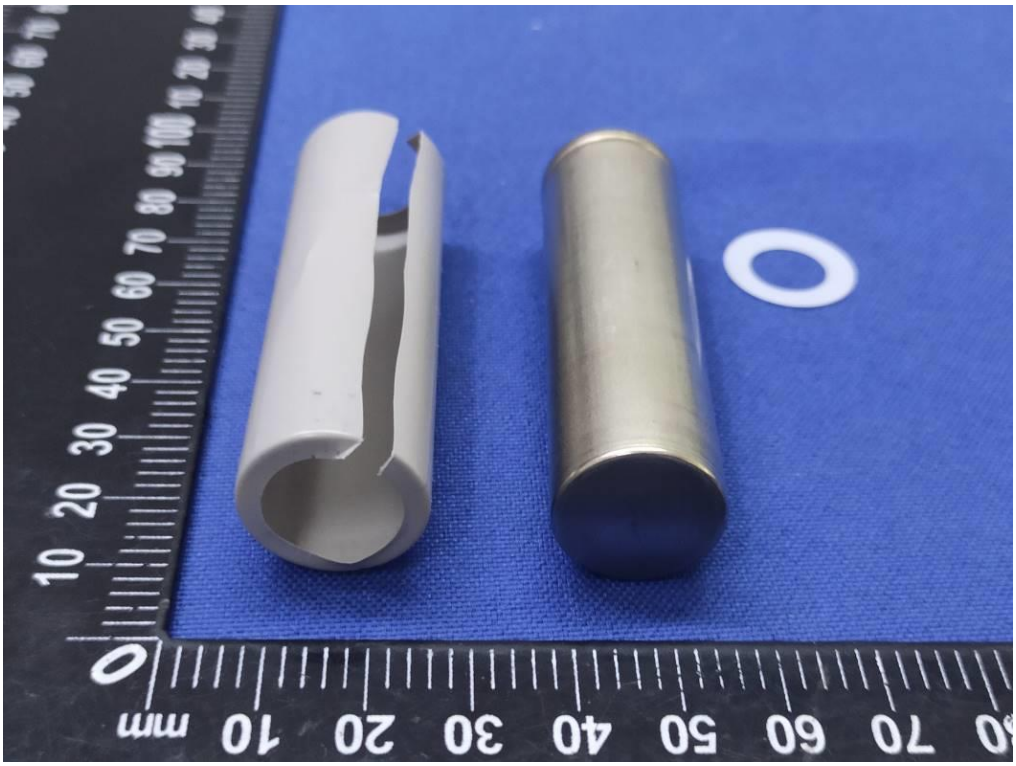
Details of:	Fig. 10 Overall view 2 of Rechargeable Li-ion Cell with heat-shrinking outer-wrap disassembled, model 18650-3.7V-1800mAh
	

Details of:	Fig. 11 Overall view 1 of Rechargeable Li-ion Cell, model 18650-3.7V-2000mAh
	

Details of:	Fig. 12 Overall view 2 of Rechargeable Li-ion Cell, model 18650-3.7V-2000mAh
	

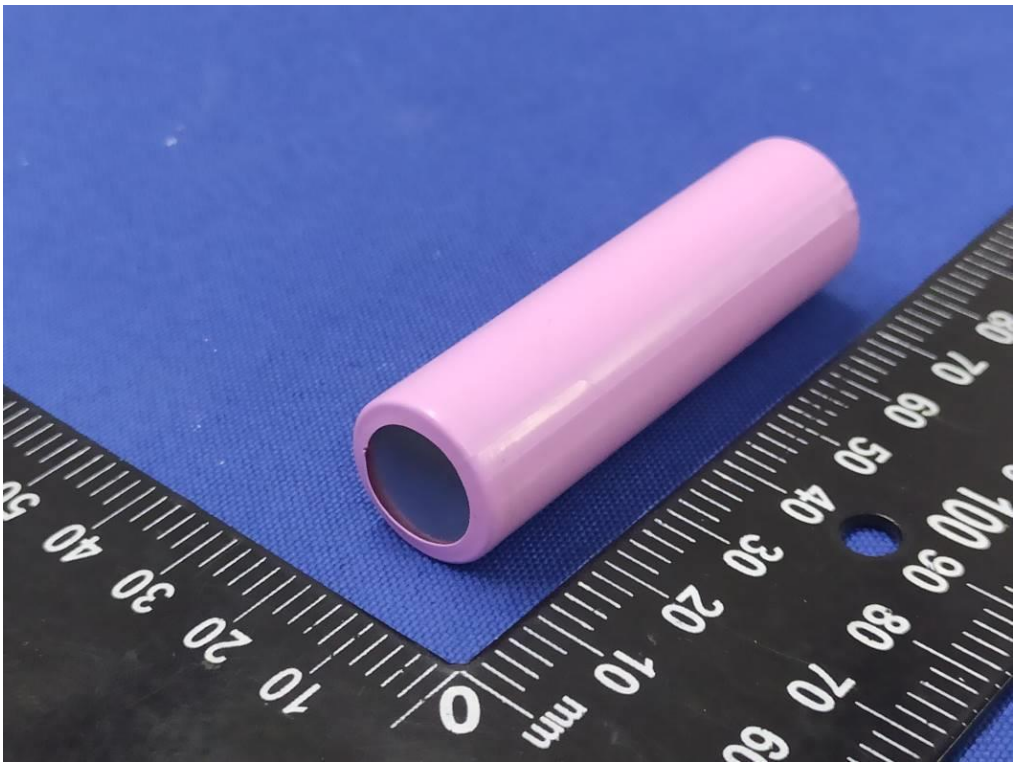
Details of:	Fig. 13 Overall view 3 of Rechargeable Li-ion Cell, model 18650-3.7V-2000mAh
	

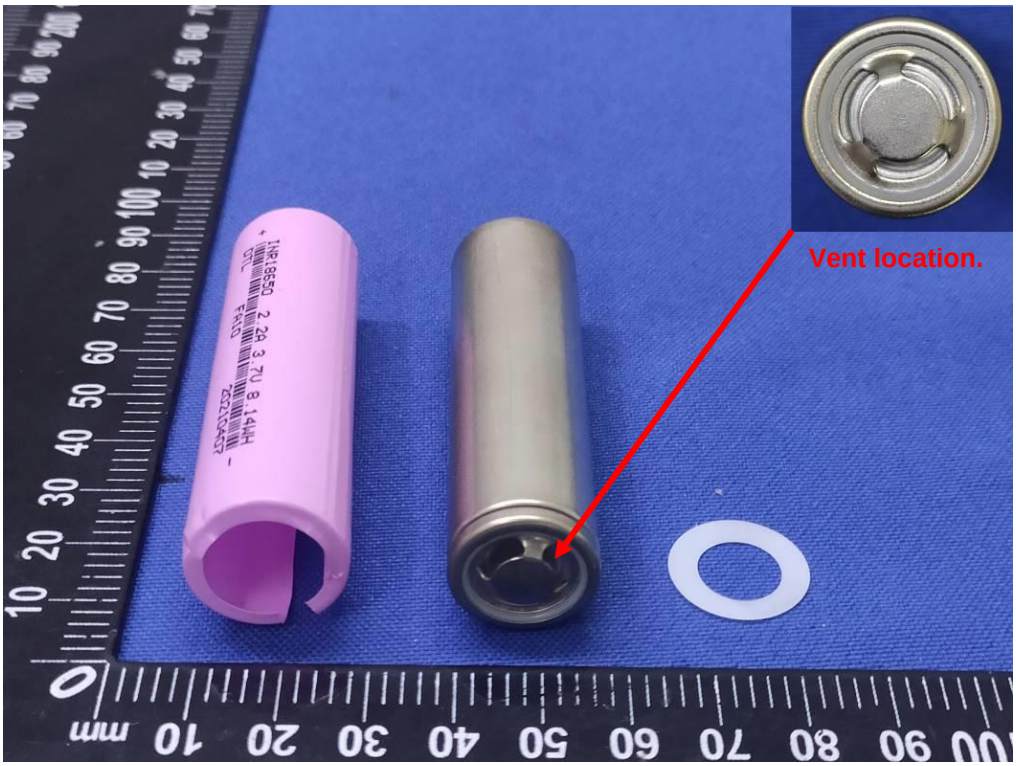
Details of:	Fig. 14 Overall view 1 of Rechargeable Li-ion Cell with heat-shrinking outer-wrap disassembled, model 18650-3.7V-2000mAh
	

Details of:	Fig. 15 Overall view 2 of Rechargeable Li-ion Cell with heat-shrinking outer-wrap disassembled, model 18650-3.7V-2000mAh
	

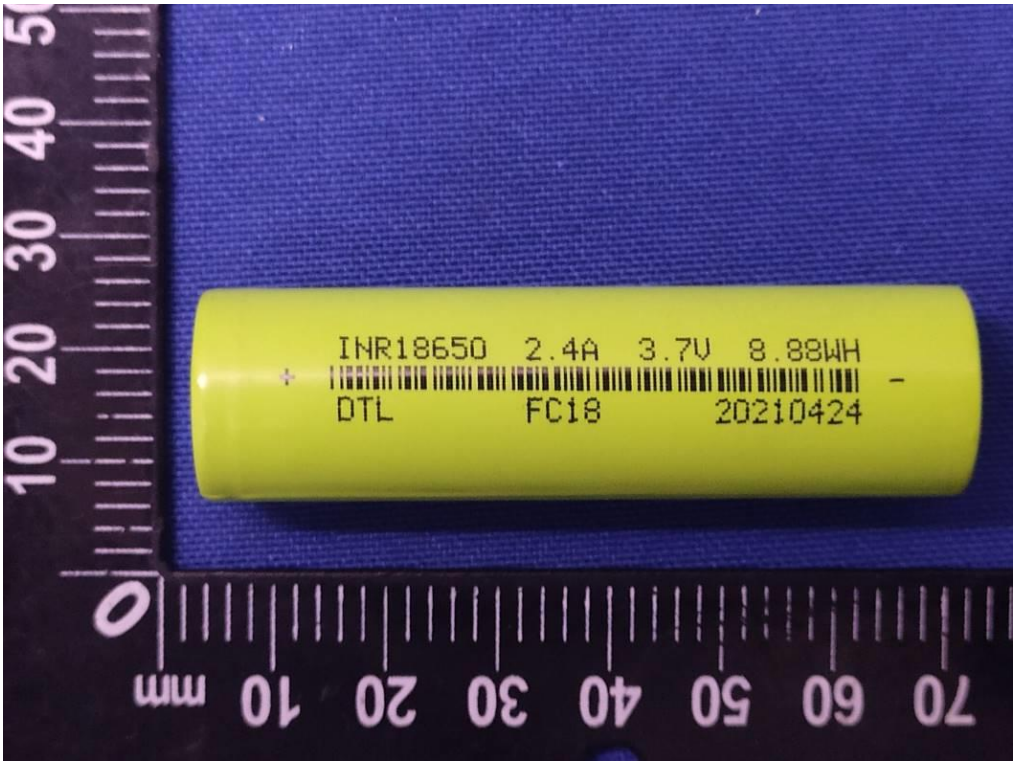
Details of:	Fig. 16 Overall view 1 of Rechargeable Li-ion Cell, model 18650-3.7V-2200mAh
	

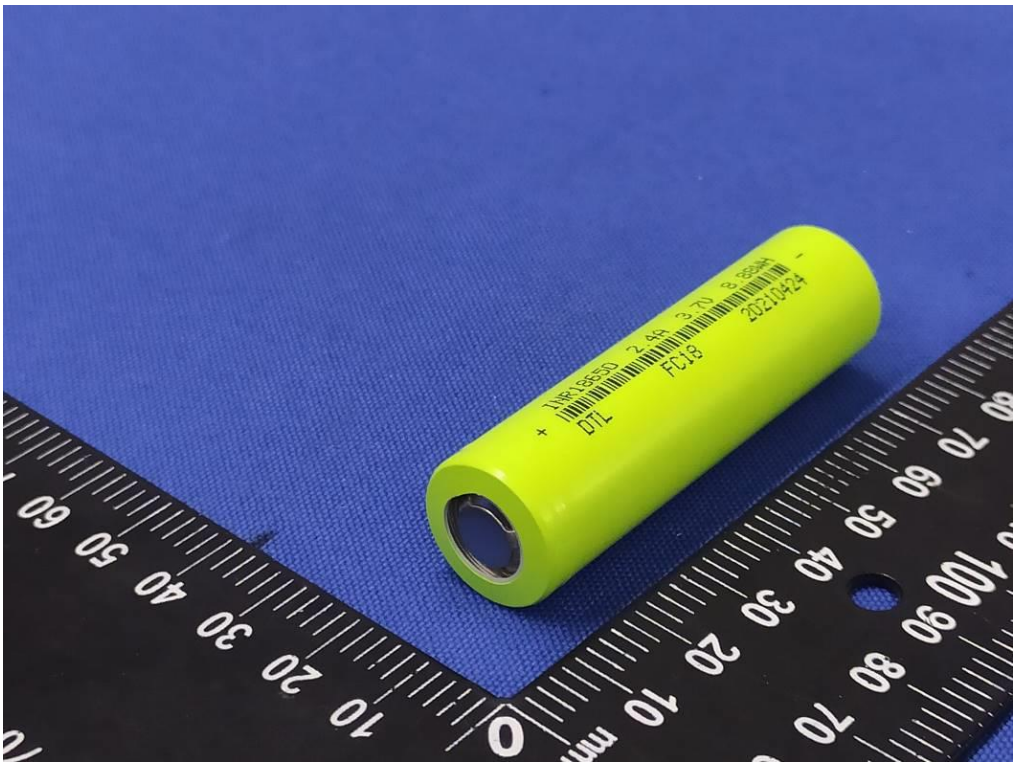
Details of:	Fig. 17 Overall view 2 of Rechargeable Li-ion Cell, model 18650-3.7V-2200mAh
	

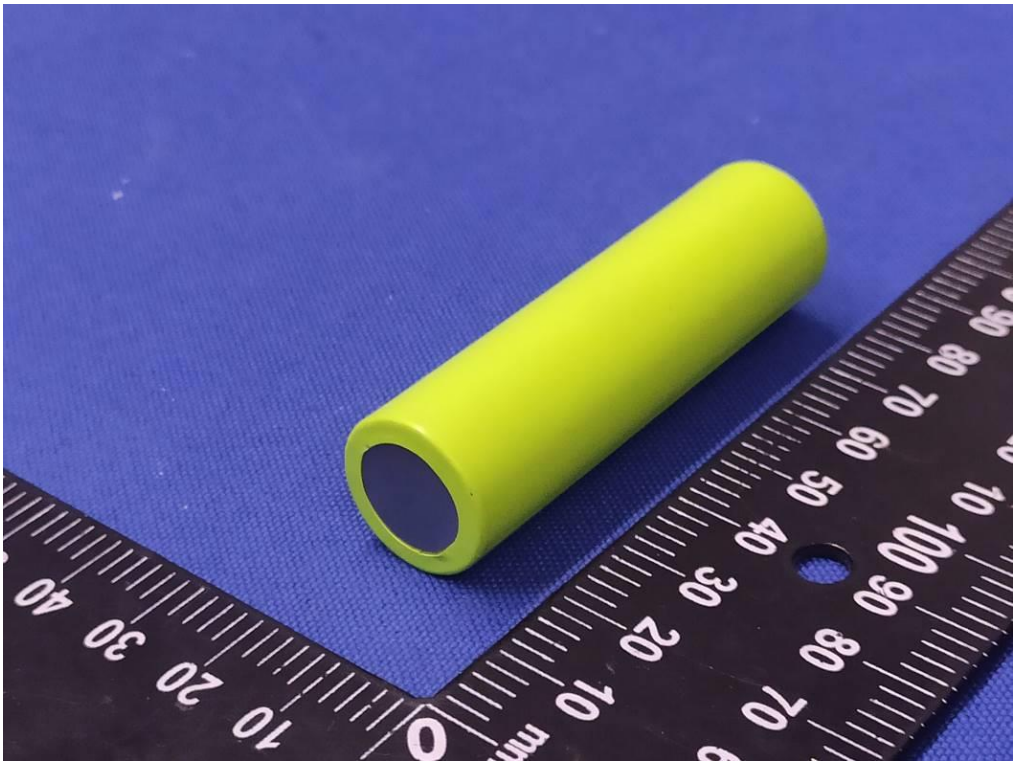
Details of:	Fig. 18 Overall view 3 of Rechargeable Li-ion Cell, model 18650-3.7V-2200mAh
	

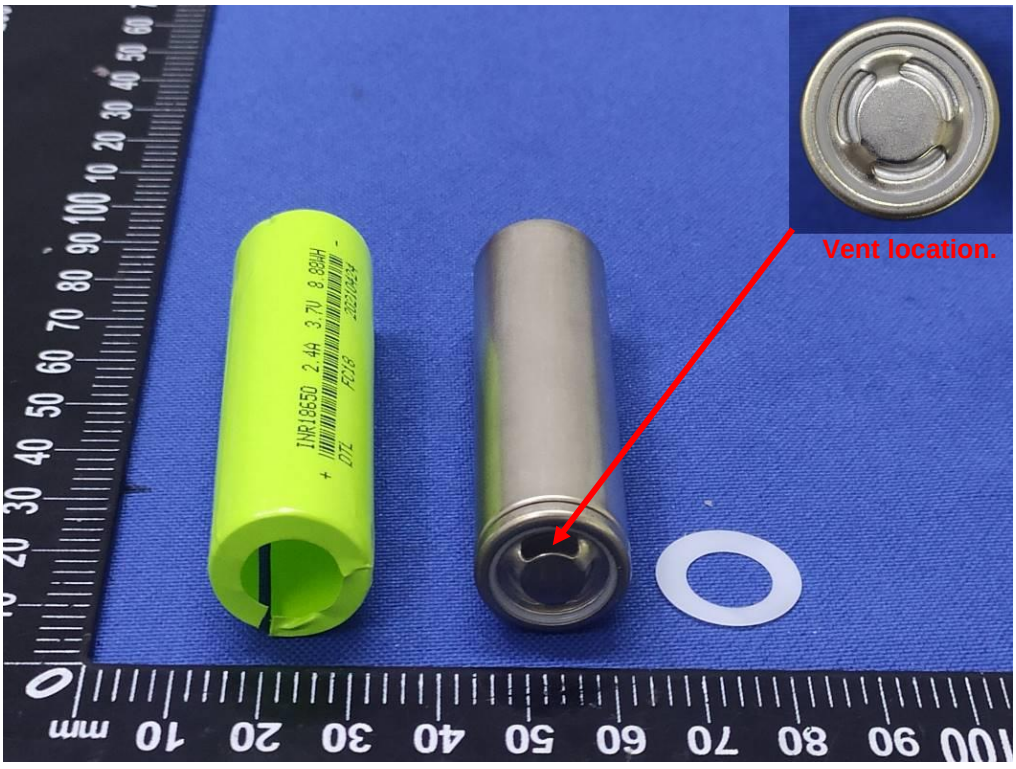
Details of:	Fig. 19 Overall view 1 of Rechargeable Li-ion Cell with heat-shrinking outer-wrap disassembled, model 18650-3.7V-2200mAh
	

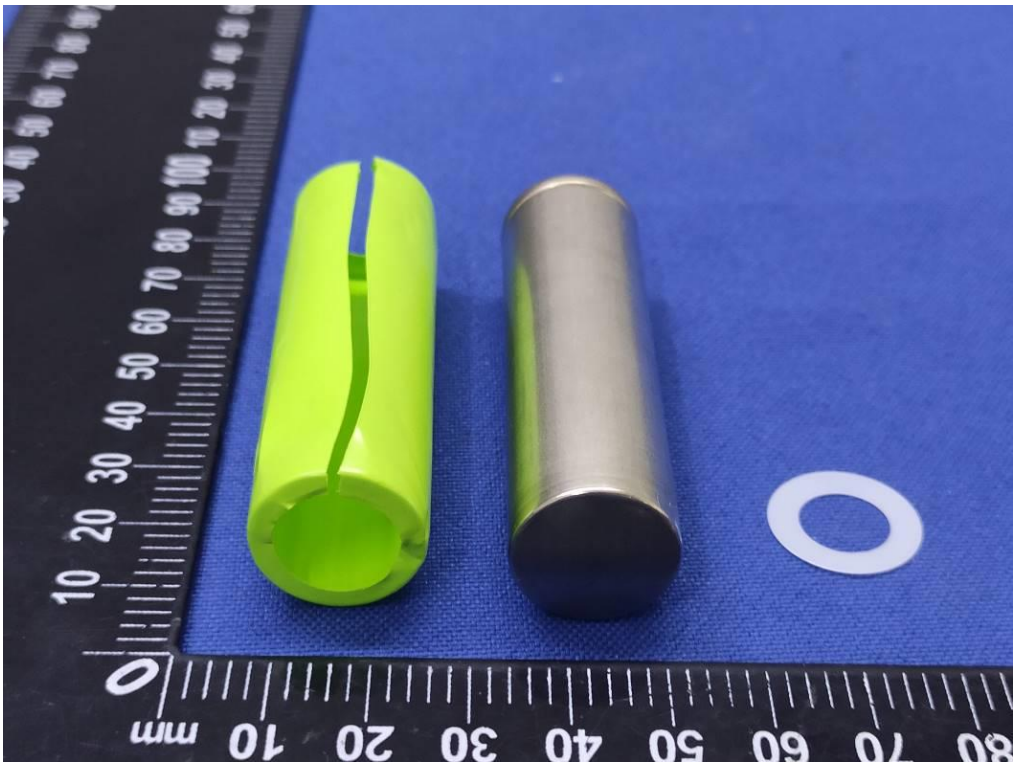
Details of:	Fig. 20 Overall view 2 of Rechargeable Li-ion Cell with heat-shrinking outer-wrap disassembled, model 18650-3.7V-2200mAh
	

Details of:	Fig. 21 Overall view 1 of Rechargeable Li-ion Cell, model 18650-3.7V-2400mAh
	

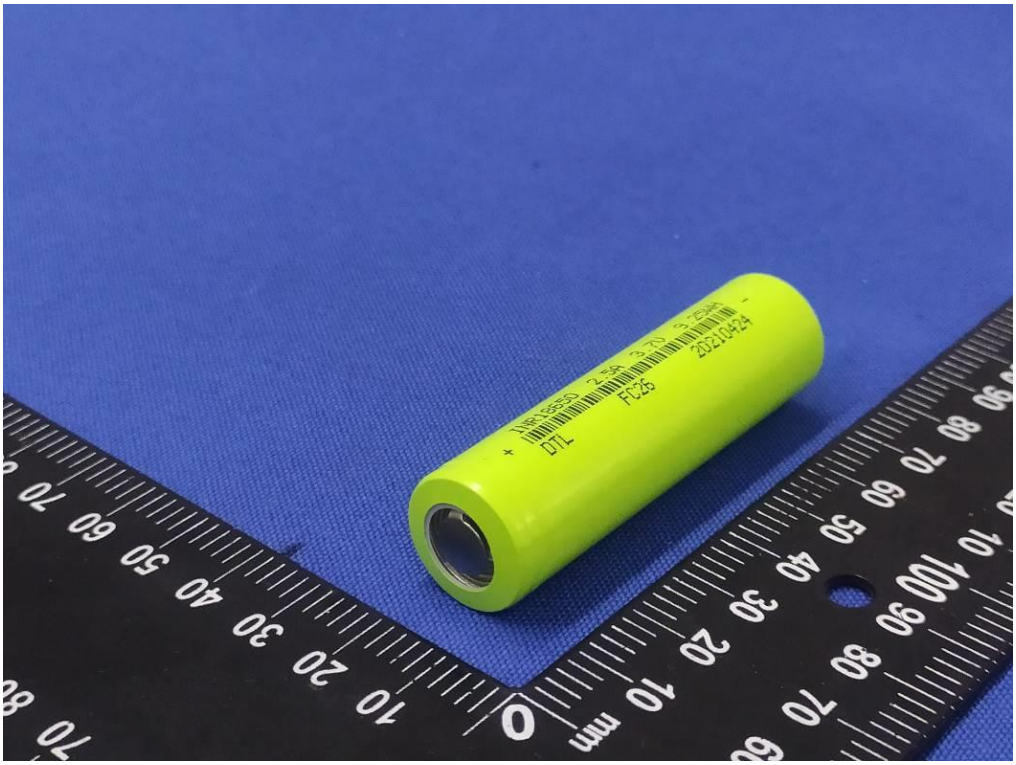
Details of:	Fig. 22 Overall view 2 of Rechargeable Li-ion Cell, model 18650-3.7V-2400mAh
	

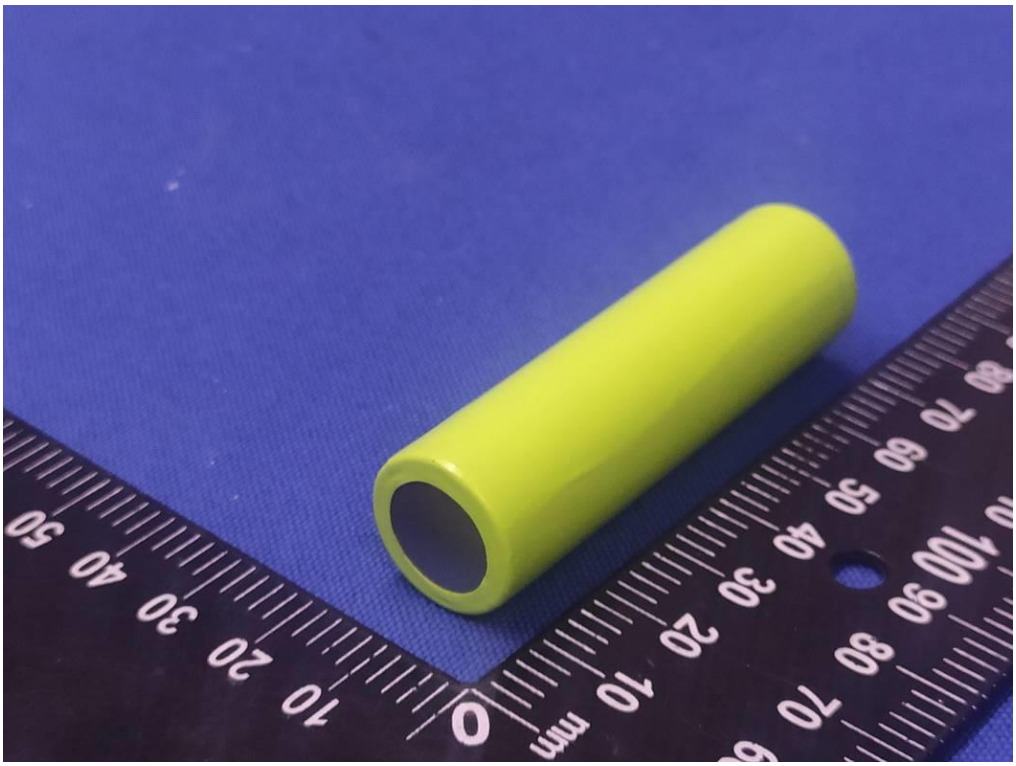
Details of:	Fig. 23 Overall view 3 of Rechargeable Li-ion Cell, model 18650-3.7V-2400mAh
	

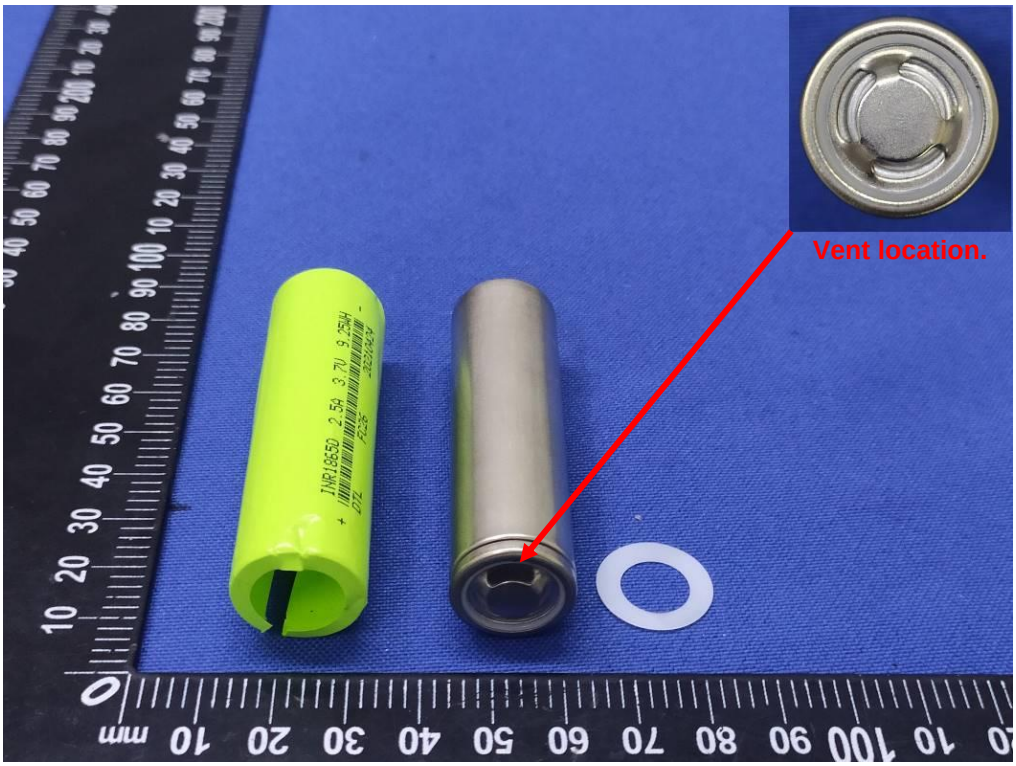
Details of:	Fig. 24 Overall view 1 of Rechargeable Li-ion Cell with heat-shrinking outer-wrap disassembled, model 18650-3.7V-2400mAh
	

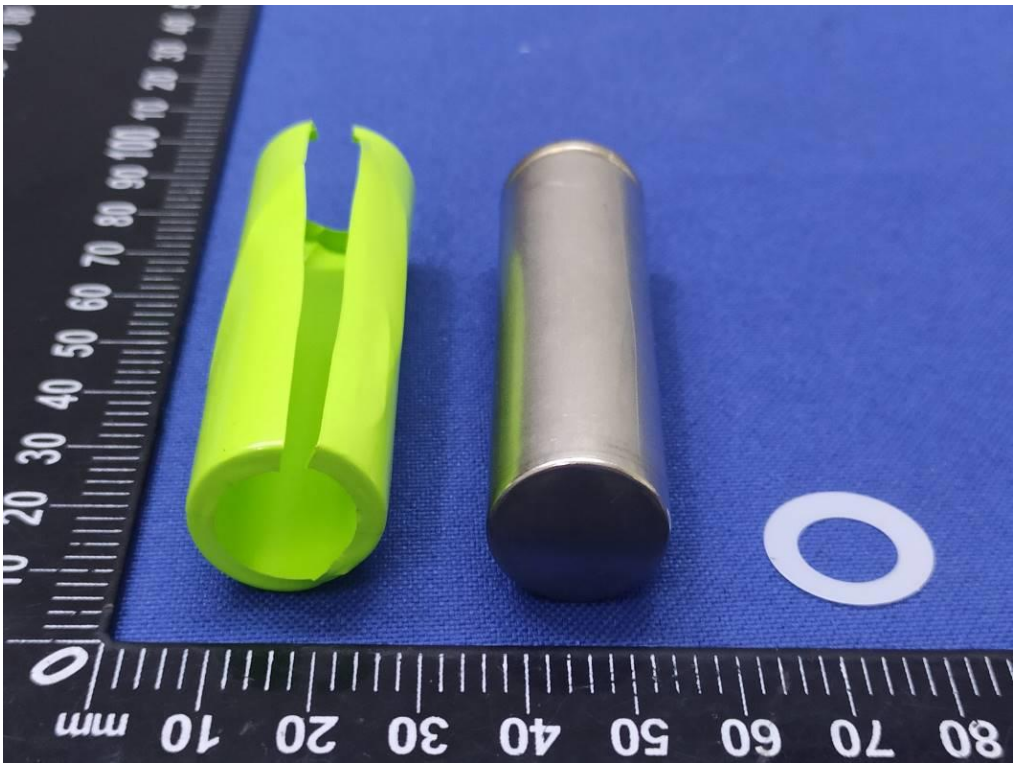
Details of:	Fig. 25 Overall view 2 of Rechargeable Li-ion Cell with heat-shrinking outer-wrap disassembled, model 18650-3.7V-2400mAh
	

Details of:	Fig. 26 Overall view 1 of Rechargeable Li-ion Cell, model 18650-3.7V-2500mAh
	

Details of:	Fig. 27 Overall view 2 of Rechargeable Li-ion Cell, model 18650-3.7V-2500mAh
	

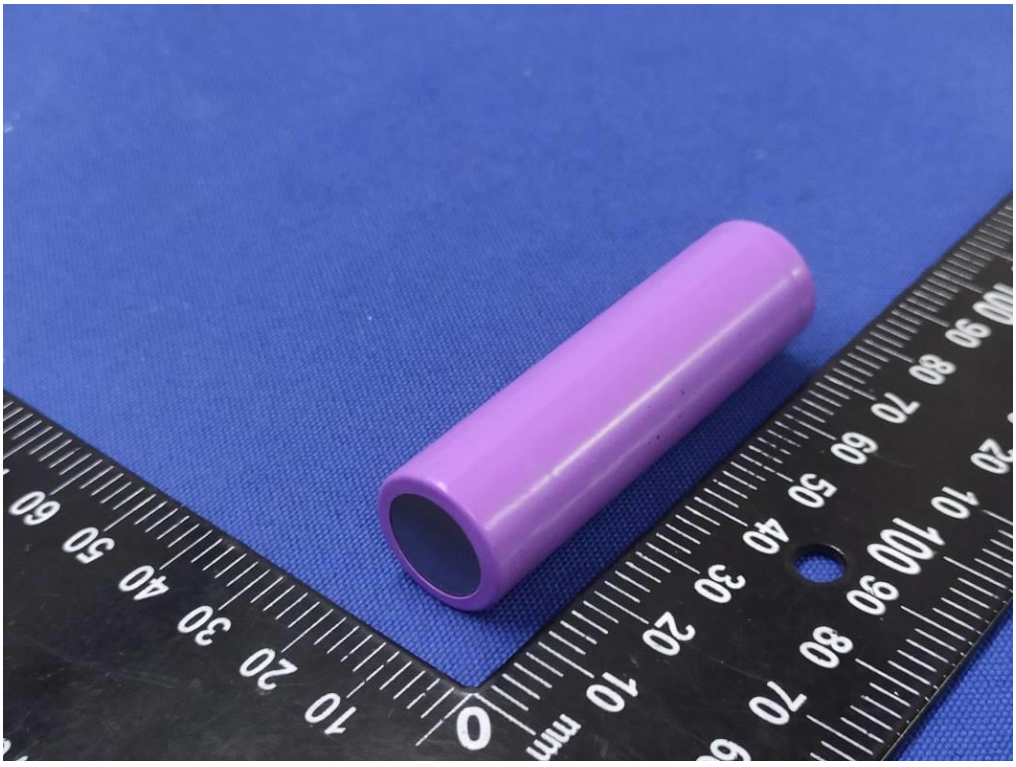
Details of:	Fig. 28 Overall view 3 of Rechargeable Li-ion Cell, model 18650-3.7V-2500mAh
	

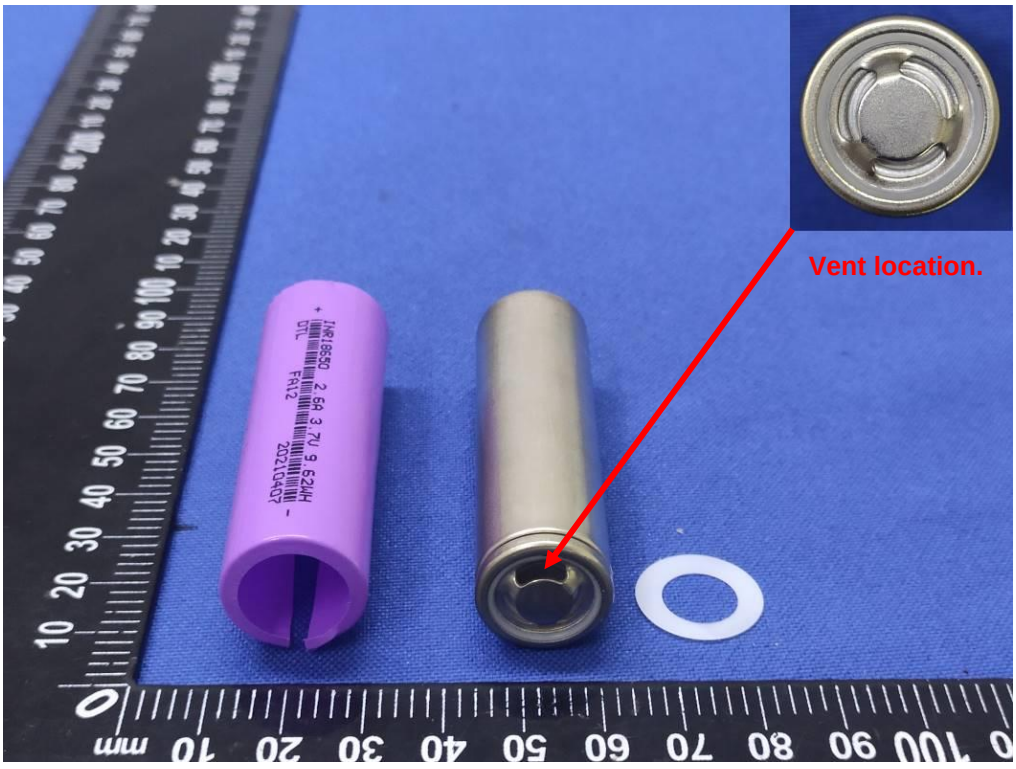
Details of:	Fig. 29 Overall view 1 of Rechargeable Li-ion Cell with heat-shrinking outer-wrap disassembled, model 18650-3.7V-2500mAh
	

Details of:	Fig. 30 Overall view 2 of Rechargeable Li-ion Cell with heat-shrinking outer-wrap disassembled, model 18650-3.7V-2500mAh
	

Details of:	Fig. 31 Overall view 1 of Rechargeable Li-ion Cell, model 18650-3.7V-2600mAh
	

Details of:	Fig. 32 Overall view 2 of Rechargeable Li-ion Cell, model 18650-3.7V-2600mAh
	

Details of:	Fig. 33 Overall view 3 of Rechargeable Li-ion Cell, model 18650-3.7V-2600mAh
	

Details of:	Fig. 34 Overall view 1 of Rechargeable Li-ion Cell with heat-shrinking outer-wrap disassembled, model 18650-3.7V-2600mAh
	

Details of:	Fig. 35 Overall view 2 of Rechargeable Li-ion Cell with heat-shrinking outer-wrap disassembled, model 18650-3.7V-2600mAh
	

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