


<b>Test report no.:</b> <i>Prüfbericht-Nr.:</i>	<b>CN23OTRO 001</b>	<b>Order No.:</b> <i>Auftragsnr.:</i>	168436467	<b>Page 1 of 33</b> <i>Seite 1 von 33</i>
<b>Client reference no.:</b> <i>Kunden-Referenz-Nr.:</i>	N/A	<b>Order date:</b> <i>Auftragsdatum:</i>	2023.07.24	
<b>Client:</b> <i>Auftraggeber:</i>	DNK POWER COMPANY LIMITED Floor 7, 35 Building, Tongfuyu Industry Park, Hua Fan Road, Da Lang Street, LongHua District, Shenzhen City, Guangdong, P.R. China			
<b>Test item:</b> <i>Prüfgegenstand:</i>	Li-ion Polymer Cell			
<b>Identification / Type no.:</b> <i>Bezeichnung / Typ-Nr.:</i>	See table 4 on page 6			
<b>Order content:</b> <i>Auftrags-Inhalt:</i>	TÜVus mark approval			
<b>Test specification:</b> <i>Prüfgrundlage:</i>	UL 1642:2020 R10.22			
<b>Date of sample receipt:</b> <i>Wareneingangsdatum:</i>	2023.07.19	See Attachment 2: Photo documents		
<b>Test sample no.:</b> <i>Prüfmuster-Nr.:</i>	2307170578A-01-001~ 2307170578A-01-115 2307170578A-02-001~ 2307170578A-02-115 2307170578A-03-001~ 2307170578A-03-115			
<b>Testing period:</b> <i>Prüfzeitraum:</i>	2023.07.25 to 2023.08.24			
<b>Place of testing:</b> <i>Ort der Prüfung:</i>	Shenzhen LCS Compliance Testing Laboratory Ltd.			
<b>Testing laboratory:</b> <i>Prüflaboratorium:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
<b>Test result*:</b> <i>Prüfergebnis*:</i>	Pass			
<b>created by:</b> <i>erstellt von:</i>				
<b>Date:</b> 2023.10.24 <i>Datum:</i>	Jeffrey Qin	<b>Issue date:</b> 2023.10.24 <i>Ausstellungsdatum:</i>	Kaman Qiu	
<b>Position / Stellung:</b>	Project Engineer	<b>Position / Stellung:</b>	Reviewer	
<b>Other:</b> <i>Sonstiges:</i>	1. The complete test report includes the following attachments: - Attachment 1: Equipment list (3 pages); - Attachment 2: Photo documents (4 pages).			
<b>Condition of the test item at delivery:</b> <i>Zustand des Prüfgegenstandes bei Anlieferung:</i>	Test item complete and undamaged Prüfmuster vollständig und unbeschädigt			
* Legend: P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested * Legende: P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet				
<b>This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</b> <i>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</i>				

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Remarks Anmerkungen		
1	<p>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</p> <p><i>Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</i></p>	
2	<p>As contractually agreed, this document has been signed digitally only. TÜV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TÜV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged.</p> <p><i>Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben.</i></p>	
3	<p>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</p> <p><i>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</i></p>	
4	<p>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</p> <p><i>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</i></p>	

**Test item particulars:**

Information about the product needed to establish a (Test item particulars are selected by the TRF correct test program, such as product mobility, type of Originator base on the requirements in the standard) power connections and similar.

Designation.....	: See table 4 on page 6
Trademark.....	: N/A
Nominal voltage.....	: 3.7V
Rated capacity.....	: See table 4 on page 6
Maximum charge voltage.....	: 4.25V
Maximum charge current.....	: See table 4 on page 6
Final voltage.....	: 2.75V
Ambient temperature range.....	: 10~45°C (charge), -20~60°C (discharge)
Recommend charging method declared by the manufacturer.....	: Charge the cell at 0.2C CC to 4.2V, then 4.2V CV until charging current reaches 0.01C at ambient 20±5°C.

Utilization Type.....: Technician replaceable cell

**Testing:**
**Test clauses and results:**

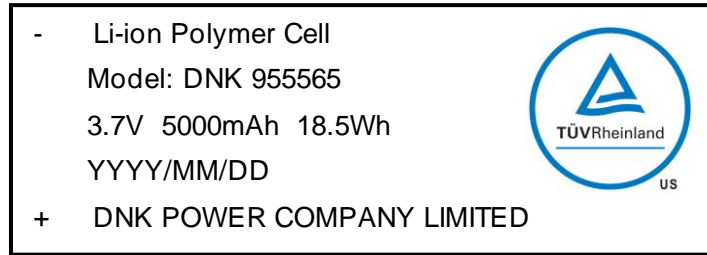
cl.10 Short-Circuit Test.....	: P
cl.11 Abnormal Charging Test.....	: P
cl.12 Forced-Discharge Test.....	: N/A
cl.13 Crush Test.....	: P
cl.14 Impact Test.....	: P
cl.14A Round Bar Crush Test.....	: N/A
cl.15 Shock Test.....	: P
cl.16 Vibration Test.....	: P
cl.17 Heating Test.....	: P
cl.18 Temperature Cycling Test.....	: P
cl.19 Low Pressure (Altitude Simulation) Test.....	: P
cl.20 Projectile Test.....	: P

**Testing location:**

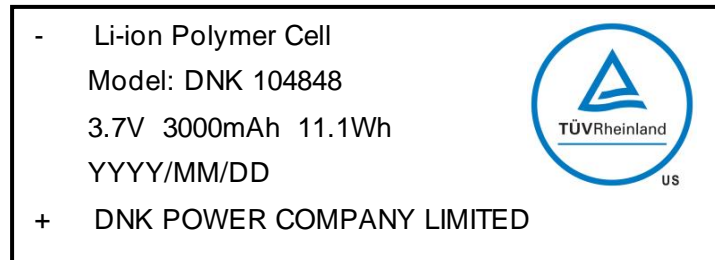
Shenzhen LCS Compliance Testing Laboratory Ltd.  
 Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

**General remarks:**

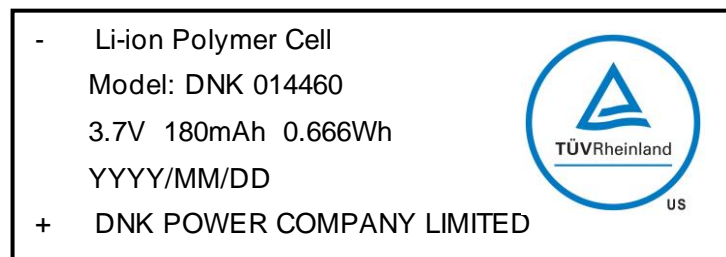
This report shall not be reproduced, except in full, without the written approval of the testing laboratory.  
 The test results presented in this report relate only to the object tested.  
 "(see remark #)" refers to a remark appended to the report.  
 "(see appended table)" refers to a table appended to the report.  
 Throughout this report a point is used as the decimal separator.

**Copy of marking plate:**


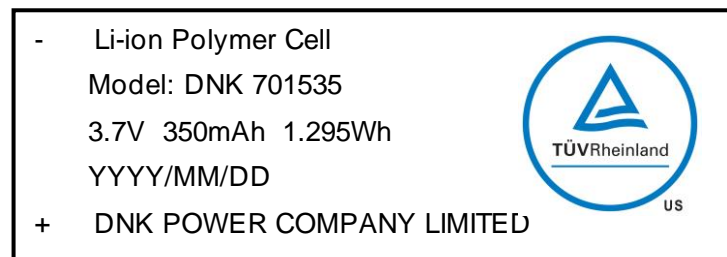
Label 1 for model DNK 955565



Label 2 for model DNK 104848



Label 3 for model DNK 014460



Label 4 for model DNK 701535

**Remark:**

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

"YYYY" means year for manufacture;

"MM" means month for manufacture;

"DD" means day for manufacture.

2. Due to similarity of the marking plate, only labels of four representative models listed.

**General product information:**

This cell consists of the positive electrode plate, negative electrode plate, separator and electrolyte. The positive and negative electrode plates are housed in the case in the state being separated by the separator. The cell is evaluated according to UL 1642:2020 R10.22 in this test report, and passed all the tests.

- 1) These tested cells have not been evaluated in combination with charger(s) or host product(s). Additional evaluation to determine compliance may be required on the combination(s) in the end product evaluation.
- 2) The tested cells were evaluated for a maximum charge current and maximum voltage limit outlined in the Table below. The end product evaluation shall ensure that current and voltage limits noted are maintained.
- 3) The fifteen models (Model name: DNK 955565, DNK 114960, DNK 104848, DNK 103450, DNK 633555, DNK 524050, DNK 503759, DNK 502541, DNK 303060, DNK 304045, DNK 501840, DNK 701535, DNK 601830, DNK 451350, DNK 014460) are identical (same shape, same chemical system, using same material), except the model name and the capacity. The tested models DNK 955565, DNK 104848 and DNK 014460 are representatives of all models.

- Table 1: Electrical parameter of model DNK 955565:

Model	Rated capacity	Nominal voltage	Nominal Charge current	Nominal discharge current	Max. charge current	Max. discharge current	Max. charge voltage	End discharge voltage
DNK 955565	5000mAh	3.7V	1000mA	1000mA	2500mA	2500mA	4.25V	2.75V

- Table 2: Electrical parameter of model DNK 104848:

Model	Rated capacity	Nominal voltage	Nominal Charge current	Nominal discharge current	Max. charge current	Max. discharge current	Max. charge voltage	End discharge voltage
DNK 104848	3000mAh	3.7V	600mA	600mA	1500mA	1500mA	4.25V	2.75V

- Table 3: Electrical parameter of model DNK 014460:

Model	Rated capacity	Nominal voltage	Nominal Charge current	Nominal discharge current	Max. charge current	Max. discharge current	Max. charge voltage	End discharge voltage
DNK 014460	180mAh	3.7V	36mA	36mA	90mA	90mA	4.25V	2.75V

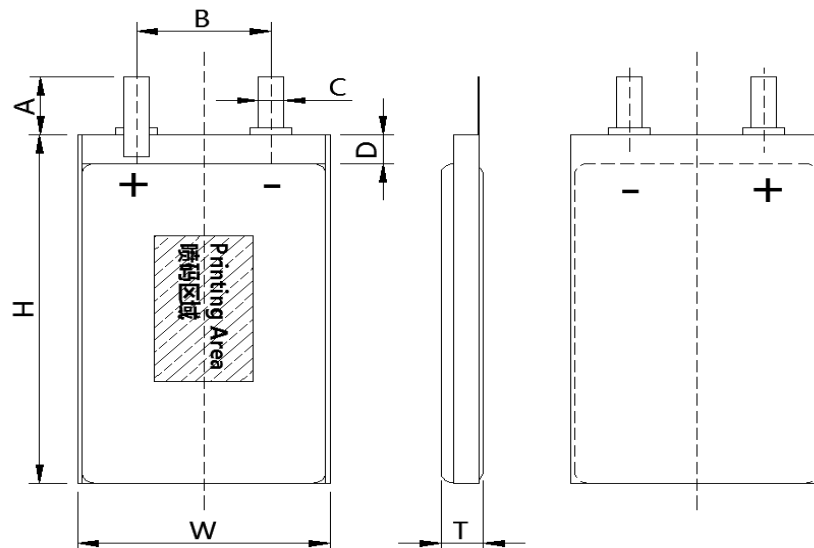
Remark: for other models feature, see Table 4 below.

- Table 4: All of the models:

Model	Energy density (Wh/L)	Rated capacity (mAh)	Max. Thickness (mm)	Max. Width (mm)	Max. Height (mm)	Nominal charge current (mA)	Nominal discharge current (mA)	Max. charge current (mA)	Max. discharge current (mA)
<b>DNK 955565</b>	<b>544.7</b>	<b>5000</b>	<b>9.5</b>	<b>55.0</b>	<b>65.0</b>	<b>1000</b>	<b>1000</b>	<b>2500</b>	<b>2500</b>
DNK 114960	457.6	4000	11.0	49.0	60.0	800	800	2000	2000
<b>DNK 104848</b>	<b>481.8</b>	<b>3000</b>	<b>10.0</b>	<b>48.0</b>	<b>48.0</b>	<b>600</b>	<b>600</b>	<b>1500</b>	<b>1500</b>
DNK 103450	391.8	1800	10.0	34.0	50.0	360	360	900	900
DNK 633555	457.6	1500	6.3	35.0	55.0	300	300	750	750
DNK 524050	426.9	1200	5.2	40.0	50.0	240	240	600	600
DNK 503759	406.8	1200	5.0	37.0	59.0	240	240	600	600
DNK 502541	411.5	570	5.0	25.0	41.0	114	114	285	285
DNK 303060	376.9	550	3.0	30.0	60.0	110	110	275	275
DNK 304045	342.6	500	3.0	40.0	45.0	100	100	250	250
DNK 501840	390.6	380	5.0	18.0	40.0	76	76	190	190
DNK 701535	352.4	350	7.0	15.0	35.0	70	70	175	175
DNK 601830	342.6	300	6.0	18.0	30.0	60	60	150	150
DNK 451350	379.5	300	4.5	13.0	50.0	60	60	150	150
<b>DNK 014460</b>	<b>252.3</b>	<b>180</b>	<b>1.0</b>	<b>44.0</b>	<b>60.0</b>	<b>36</b>	<b>36</b>	<b>90</b>	<b>90</b>

Remark: All the models have the same nominal voltage 3.7V and the same end discharge voltage 2.75V, and have the same Max. charge voltage 4.25V.

**Construction:**



Dimensions value refer to Table 4  
Cell

**Factory:**

Guangdong YFX New Energy Co.,Ltd  
 Building 41, Zhongnan HighTech Xinhui Rongzhi Chuangmei Industrial Valley, No.44, Xinhang Road, Siqian Town, Xinhui District, Jiangmen, Guangdong, P.R. China.

UL 1642:2020			
Clause	Requirement + Test	Result - Remark	Verdict
<b>INTRODUCTION</b>			
1	Scope		P
2	General		P
3	Glossary		P
<b>CONSTRUCTION</b>			
4	General		N/A
4.1	Casing		N/A
4.1.1	The casing of a lithium battery shall have the strength and rigidity necessary to resist the abuses to which it may be subjected, without resulting in a risk of fire. The casing of a user-replaceable lithium battery shall have the strength and rigidity necessary to resist the abuses to which it may be subjected without resulting in a risk of injury to persons.	Technician replaceable cell without enclosure.	N/A
4.1.2	A cell of a user-replaceable battery shall be in a rigid casing of sufficient strength to prevent flexing. A tool providing the mechanical advantage of a pliers, screwdriver, or hacksaw shall be the minimum capable of opening the user-replaceable cell casing, if opening of the casing will expose metallic lithium.	See above	N/A
4.2	Electrolyte		N/A
4.2.1	A user-replaceable battery shall not contain pressurized vapor or liquid that could spray materials into the eyes or leak more than 5 mL of liquid when the battery casing is punctured under normal laboratory conditions, 23 ±2°C (73 ±3.6°F).	Technician-replaceable Battery.	N/A
4.3	Use		N/A
4.3.1	A lithium battery shall be protected from abnormal charging currents during use. A battery tested and found acceptable for the charging current, IC (see Section 11), under fault conditions specified by the manufacturer, shall be protected from larger charging currents in the end product application by: a) Two blocking components, such as diodes, or b) One blocking component and one current limiting component, such as a resistor or a fuse. The current limiting component shall limit the charging current to one-third the value used in the Abnormal Charging Test, Section 11.	Single cell only	N/A
<b>PERFORMANCE</b>			
5	General		P
5.1	Technician-replaceable Batteries		P
5.1.1	Technician-replaceable lithium cells or batteries are to be tested as described in Sections 10 – 20. Section 12, Forced-Discharge Test, is applicable only to cells intended to be used in series-connected multicell applications such as battery packs. For multicell installations, also see 5.3.1.		P

<b>UL 1642:2020</b>			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.2	When a fire or explosion occurs as a result of the Crush Test, Section 13, or the Impact Test, Section 14, or the Round Bar Crush Test, Section 14A, or the cell or battery ruptures to the extent that the aluminum test cage is penetrated during the Projectile Test, Section 20; the use of the technician replaceable cell or battery shall be restricted to applications in which it is not exposed to, or is protected from, any conditions shown to cause a fire or explosion.	No fire or explosion occurs	P
5.1.3	Cells and batteries subjected to the Shock Test, Section 15, Vibration Test, Section 16, Temperature Cycling Test, Section 18, and Low Pressure (Altitude Simulation) Test, Section 19, shall also not leak or vent. For these tests, unacceptable leakage is determined to have occurred when the resulting mass loss exceeds the values shown in Table 5.1, Venting and leakage mass loss criteria.	No leak or vent	P
5.2	User-replaceable Batteries		N/A
5.2.1	User-replaceable lithium cells or batteries are to be tested as described in Sections 10 – 20. Section 12, Forced Discharge Test, is applicable only to cells intended to be used in multicell applications such as battery packs. In addition to complying with the requirements for a technician replaceable cell or battery as specified in 5.1.1, a user-replaceable cell or battery shall not explode or ignite when subjected to the Crush Test, Section 13, or the Impact Test, Section 14. A user-replaceable battery shall comply with the requirements for Sections 10 – 20 and with the applicable construction requirements outlined in Section 4. Secondary lithium cells shall not be considered user-replaceable.	Technician-replaceable cell	N/A
5.2.2	Sets of five specimens each are to be used for the Projectile Test, Section 20.3; see Table 6.1. When only one specimen from a set of five does not comply with the requirements, another set of five specimens is to be tested. All specimens from this second set shall comply with the requirements.	Technician-replaceable cell	N/A
5.3	Multicell Installations		N/A
5.3.1	A technician-replaceable or user-replaceable cell intended for use in multicell installations or battery packs shall also be tested as described in 10.3 and Section 12. No fire or explosion shall occur as a result of these tests. In addition, batteries subjected to the test described in 10.3 shall meet the requirements as described in 5.1.1 and 5.2.1 for a cell or battery subjected to the Short-Circuit Test, Section 10.	Single cell.	N/A
<b>6</b>	<b>Samples</b>		P

<b>UL 1642:2020</b>			
Clause	Requirement + Test	Result - Remark	Verdict
6.1	Fully charged primary cells or batteries and primary cells or batteries that have been conditioned by partial or complete discharge, or both, are to be used for the tests described in Sections 10 – 20. The number of samples to be used in each test for a primary cell or battery is shown in Table 6.1. When a group of cells or batteries of different sizes, but similar chemistries is involved, selected sizes representative of the range are to be tested.	The samples are secondary cells.	N/A
6.2	Fully charged secondary cells or batteries and secondary cells or batteries that have been conditioned by charge-discharge cycling are to be used for the tests described in Sections 10 – 20. The number of samples to be used in each test for a secondary cell or battery is shown in Table 6.2. When a group of cells or batteries of different sizes, and similar chemistries is involved, selected sizes representative of the range are to be tested.	The samples are secondary technician-replaceable cells. Prepared as required.	P
6.3	Prior to conducting the testing in Section 17, the lithium ion cell samples shall be pre-conditioned as outlined in 6.4 and 6.5.	Prepared as required.	P
6.4	For the heating test of Section 17, two sets of five lithium ion cell samples are to be fully discharged (i.e. to the manufacturer's specified end point voltage). The samples are then placed in a test chamber and conditioned for 1 to 4 h (5 samples at the upper temperature limit and 5 samples at the lower temperature limit of the operating region) as outlined in Table 6.3.	Prepared as required.	P
6.5	While still in the test chamber set at the temperature limits, the samples are charged (5 samples at the upper temperature limit and 5 samples at lower temperature limit) at the specified maximum charging current and upper limit charging voltage per Table 6.3, using a constant voltage charging method. Charging is continued until the charge current is reduced to the specified end of charge conditions (i.e. 0.05 times the charge current).	Prepared as required.	P
<b>7</b>	<b>Conditioning of Samples</b>		P
7.1	Discharge		N/A
7.1.1	Primary batteries are to be completely discharged by connecting their terminals through resistors that provide the desired level of discharge within 60 days. Batteries are to be discharged at room temperature. Cells with a liquid cathode such as thionyl chloride or sulfur dioxide, shall also be conditioned by one-half discharge	The samples are secondary cells.	N/A

<b>UL 1642:2020</b>			
Clause	Requirement + Test	Result - Remark	Verdict
7.1.2	For solid electrolyte and other types of primary lithium batteries that cannot be discharged within 60 days because of the small currents they inherently produce, longer discharge times plus discharge at higher temperatures may be used to obtain the desired level of discharge. The manufacturer's recommended discharge procedures are to be followed so as to obtain the required discharge level in the minimum time.	The samples are secondary cells.	N/A
7.2	Charge-discharge cycling		P
7.2.1	Secondary cells are to be conditioned at 25°C (77°F). Cells are continuously cycled as per the manufacturer's specifications. The specification shall be such that the full rated capacity of the cell is utilized and the number of cycles accumulated shall be at least equal to 25% of the advertised cycle life of the cell or cycled continuously for 90 days, whichever is shorter. Cycling is to be done either individually or in groups. Cells are to be recharged prior to testing as indicated in Table 6.2.	The samples are cycled at manufacturer's factory before they were sent for test.	P
<b>8</b>	<b>Important test considerations</b>		P
8.1	Some lithium batteries are capable of exploding when the tests described in Sections 10 – 20 are conducted. It is important that personnel be protected from the flying fragments, explosive force, sudden release of heat, and noise that results from such explosions. The test area is to be well ventilated to protect personnel from possible harmful fumes or gases.	Prepared the tests as required.	P
8.2	As an additional precaution, the temperatures on the surface of the battery casings shall be monitored during the tests described in Sections 10, 11, 12, 13, and 14. All personnel involved in the testing of lithium batteries are to be instructed never to approach a lithium battery while the surface temperature exceeds 90°C (194°F) and not to touch the lithium battery while the surface temperature exceeds 45°C (113°F).	Prepared the tests as required.	P
8.3	For protection, the Projectile Test, Section 20 is to be conducted in a room separate from the observer.	Prepared the tests as required.	P
<b>9</b>	<b>Temperature Measurements</b>		P
9.1	Temperatures are to be measured by thermocouples consisting of wires not larger than 24 AWG (0.21 mm <sup>2</sup> ) and not smaller than 30 AWG (0.05 mm <sup>2</sup> ) and a potentiometer-type instrument.	Prepared the tests as required.	P
9.2	The temperature measurements on the batteries are to be made with the measuring junction of the thermocouple held tightly against the metal casing of the battery.	Prepared the tests as required. Casing temperature was recorded on the center of the cell surface;	P
<b>TESTS FOR TECHNICIAN-REPLACEABLE AND USER-REPLACEABLE BATTERIES</b>			
<b>ELECTRICAL TESTS</b>			
<b>10</b>	<b>Short-Circuit Test</b>		P

<b>UL 1642:2020</b>			
Clause	Requirement + Test	Result - Remark	Verdict
10.1	Each test sample battery, in turn, is to be short-circuited by connecting the positive and negative terminals of the battery with a circuit load having a resistance load of $80 \pm 20 \text{ m}\Omega$ . The temperature of the battery case is to be recorded during the test. The battery is to discharge until a fire or explosion is obtained, or until it has reached a completely discharged state of less than 0.2 V and the battery case temperature has returned to $\pm 10^\circ\text{C}$ ( $\pm 18^\circ\text{F}$ ) of ambient temperature. The voltage at the end of the test may not reach 0.2 V due to operation of protective devices in the circuit. The return to near ambient of the battery (cell) casing in an indication of ultimate results.	Tested as required. See table 10	P
10.2	Tests are to be conducted at $20 \pm 5^\circ\text{C}$ ( $68 \pm 9^\circ\text{F}$ ) and at $55 \pm 5^\circ\text{C}$ ( $131 \pm 9^\circ\text{F}$ ). The batteries are to reach equilibrium at $20 \pm 5^\circ\text{C}$ or $55 \pm 5^\circ\text{C}$ , as applicable, before the terminals are connected.	Tested as required.	P
10.3	A battery is to be tested individually unless the manufacturer indicates that it is intended for use in series or parallel. For series or parallel use, additional tests on five sets of batteries are to be conducted using the maximum number of batteries to be covered for each configuration.	Tested as required.	P
10.4	When an overcurrent protective device activates during the test, the test shall be repeated with the battery supply connected to the maximum load that does not cause the protective device to open. Protective devices that are relied upon to meet the compliance criteria for the short circuit test shall comply with 2.3.1.	Only one single lithium-ion cell, no over-current or thermal protective device was integrated into the cell.	N/A
10.5	The samples shall not explode or catch fire.	The test results meet the requirements.	P
<b>11</b>	<b>Abnormal Charging Test</b>		P
11.1	Primary cells or batteries shall comply with 11.2 – 11.7.	Secondary cell	N/A
11.2	Cells or batteries conditioned in accordance with Tables 6.1, as applicable, are to be used for this test. The batteries are to be tested in an ambient temperature of $20 \pm 5^\circ\text{C}$ ( $68 \pm 9^\circ\text{F}$ ).		N/A

<b>UL 1642:2020</b>			
Clause	Requirement + Test	Result - Remark	Verdict
11.3	<p>Each test sample battery is to be subjected to a charging current of three times the current <math>I_c</math>, specified by the manufacturer by connecting it in opposition to a dc-power supply. The specified charging current is to be obtained by connecting a resistor of the specified size and rating in series with the battery. The test charging time is to be calculated using the formula:</p> $t_c = \frac{2.5C}{3(I_c)}, \text{ in which}$ <p><math>t_c</math> is the charging time in hour  <math>C</math> is the capacity of the cell/battery in ampere-hours, and  <math>I_c</math> is the maximum charging current, in amperes, specified by the manufacturer.  The minimum charging time is to be 7 hours.</p>		N/A
11.4	<p>When a non-resettable overcurrent or protective device operates during the test, the test is to be repeated at a charge current below the level that the protective device operates. When a resettable protective device operates during the test, the protector is allowed to reset to a total of 10 cycles; or until the appropriate charging time has been completed, but not less than 7 hours. Protective devices that are relied upon to meet the compliance criteria for the abnormal charging test shall comply with 2.3.1.</p>		N/A
11.5	The samples shall not explode or catch fire.		N/A
11.6	Secondary cells or batteries shall comply with 11.7 – 11.10.	See table 11, tested as required	P
11.7	Cells or batteries conditioned in accordance with Tables 6.2, as applicable, are to be used for this test. The batteries are to be tested in an ambient temperature of $20 \pm 5^\circ\text{C}$ ( $68 \pm 9^\circ\text{F}$ ).	Tested as required.	P
11.8	Each test sample battery is to be discharged at a constant current of $0.2 C/1 \text{ h}$ , to a manufacturer specified discharge endpoint voltage. The cell or battery is then to be charged with a constant maximum specified output voltage and a current limit of three times the maximum charging current $I_c$ , specified by the manufacturer. Charging duration is to be 7 hours or the time required to reach the manufacturer's specified end-of-charge condition, whichever is greater.	Tested as required.	P

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Clause	Requirement + Test	Result - Remark	Verdict
11.9	When a non-resettable overcurrent or protective device operates during the test, the test shall be repeated at an overcharging current below the level that the protection device operates. When a resettable protective device operates during the test, the protector is to be allowed to reset to a total of 10 cycles; or until the appropriate charging time has been completed, but not less than 7 hours. Protective devices that are relied upon to meet the compliance criteria for the abnormal charging test shall comply with 2.3.1.	The samples are to be tested without any assistance of over-current or thermal protective devices.	N/A
11.10	The samples shall not explode or catch fire.	No explosion or catch fire during and after the test	P
<b>12</b>	<b>Forced-Discharged Test</b>		N/A
12.1	This test is intended for cells that are to be used in series-connected, multicell applications, such as battery packs.	One single cell	N/A
12.2	A fully discharged cell is to be force-discharged by connecting it in series with fully charged cells of the same kind. The number of fully charged cells to be connected in series with the discharged cell is to equal the maximum number less one of the cells to be covered for series use. Five cells are to be completely discharged, at room temperature.		N/A
12.3	Once the fully discharged cell is connected in series with the specified number of fully charged cells the resultant battery pack is to be short circuited.		N/A
12.4	The positive and negative terminals of the sample are to be connected with a copper wire with a resistance load of $80 \pm 20 \text{m}\Omega$ . The sample is to discharge until a fire or explosion is obtained, or until it has reached a completely discharged state of less than 0.2V and the battery case temperature has returned to $\pm 10^\circ\text{C}$ ( $18^\circ\text{F}$ ) of ambient temperature. The voltage at the end of the test may not reach 0.2V due to operation of protective devices in the circuit. The return to near ambient of the cell casing is an indication of ultimate results.		N/A
12.5	When an overcurrent or protective operates during the test, the test shall be repeated with the battery supply connected to the maximum load that does not cause the protective device to open. Protective devices that are relied upon to meet the compliance criteria for the forced discharge test shall comply with 2.3.1.		N/A
12.6	The samples shall not explode or catch fire.		N/A
<b>MECHANICAL TESTS</b>			
<b>13</b>	<b>Crush Test</b>		P

<b>UL 1642:2020</b>			
Clause	Requirement + Test	Result - Remark	Verdict
13.1	A battery is to be crushed between two flat surfaces. The force for the crushing is to be applied by a hydraulic ram or similar force mechanism. The flat surfaces are to be brought in contact with the cells and the crushing is to be continued until an applied force of 13 ±1 kN (3000 ±224 lbs) is reached. Once the maximum force has been obtained it is to be released.	Tested as required. See table 13	P
13.2	A cylindrical, pouch or prismatic cell is to be crushed with its longitudinal axis parallel to the flat surfaces of the crushing apparatus. A prismatic cell is also to be rotated 90° around its longitudinal axis so that both the wide and narrow sides will be subjected to the crushing force. Each sample is to be subjected to a crushing force in only one direction. Separate samples are to be used for each test.	Tested as required. The sample are pouch li-ion polymer cells.	P
	Exception: For Lithium ion systems, a cylindrical, pouch or prismatic cell is to be crushed with its longitudinal axis parallel to the flat surface of the crushing apparatus. Each sample is to be subjected to a crushing force in only one direction. Test only the wide side of pouch and prismatic cells.	Li-ion cell.	P
13.3	A coin or button battery is to be crushed with the flat surface of the battery parallel with the flat surfaces of the crushing apparatus.	Not a coin or button battery	N/A
13.4	The samples shall not explode or catch fire.	No explosion or catch fire during and after the test	P
<b>14</b>	<b>Impact Test</b>		P
14.1	A test sample battery is to be placed on a flat surface. A 15.8 ±0.1-mm (5/8 ±0.004-in) diameter bar is to be placed across the center of the sample. A 9.1 ±0.46-kg (20 ±1-lb) weight is to be dropped from a height of 610 ±25 mm (24 ±1 in) onto the sample. See Figure 14.1.	Tested as required. See table 14.	P
14.2	A cylindrical, pouch or prismatic cell is to be impacted with its longitudinal axis parallel to the flat surface and perpendicular to the longitudinal axis of the 15.8-mm (5/8-in) diameter curved surface lying across the center of the test sample. A prismatic cell is also to be rotated 90° around its longitudinal axis so that both the wide and narrow sides are subjected to the impact. Each sample is to be subjected to only a single impact. Separate samples are to be used for each test.	Tested as required. The sample are pouch li-ion polymer cells.	P
	Exception 1: For Lithium ion systems, a cylindrical, pouch or prismatic cell is to be impacted with its longitudinal axis parallel to the flat surface and perpendicular to the longitudinal axis of the 15.8-mm (5/8-in) diameter curved surface lying across the center of the test sample. Each sample is to be subjected to only a single impact. Test only the wide side of pouch and prismatic cells.	The sample are pouch li-ion polymer cells.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Exception 2: Pouch cells not evaluated to this test, and with a capacity greater than 300 mAh, shall comply with the Round Bar Crush Test in Section 14A.		N/A
14.3	A coin or button battery is to be impacted with the flat surface of the test sample parallel to the flat surface and the 15.8-mm (5/8-in) diameter curved surface lying across its center.	Not a coin or button battery	N/A
14.4	The samples shall not explode or catch fire.	No explosion or catch fire.	P
<b>14A</b>	<b>Round Bar Crush Test</b>		N/A
14A.1	With reference to Exception No. 2 in 14.2, pouch cells not evaluated with the Impact Test in Section 14 and with a capacity greater than 300 mAh shall be evaluated with this test.		N/A
14A.2	The sample shall be fully charged with the method recommended by the manufacturer.		N/A
14A.3	The sample shall be positioned on a flat surface with a 25 ±1 mm (1 ±0.039 in) diameter steel round bar placed on top of the sample. The edge of the bar is to be aligned with the top edge of the cell body, with the longitudinal axis of the bar perpendicular to the tab of the cell. The bar shall extend beyond the width of the test sample on each side by at least 5 mm (0.197 in) as shown in Figure 14A.1. A preload pressure of 0.4 – 0.6 N/cm <sup>2</sup> (0.58 – 0.87 psi) shall be applied before the sample thickness is measured in 14A.5 and the crush force in 14A.6 is applied. See 14A.4. NOTE: A sample may be taped, glued or clamped to the flat surface, avoiding obstructing the round bar placement and crush plate motion, to eliminate any unevenness between the sample and the flat test surface.		N/A
14A.4	For cells with the positive tab and negative tab on opposite sides, the bar placement in 14A.3 and the crush force application in 14A.6 are applied on each side of the cell near the tabs, using a different set of samples for each side.		N/A
14A.5	After the bar placement per 14A.3 or 14A.4 and the preload pressure is applied per 14A.3, the thickness of the sample shall be measured allowing a tolerance of ±0.1 mm (±0.039 in), using the Measuring Method of Cell Thickness in the Annex for Dimensions of the Cell with a Laminate Film Case in the Standard for Secondary Cells and Batteries Containing Alkaline or Other Non-Acid Electrolytes – Secondary Lithium Cells and Batteries for Portable Applications – Part 3: Prismatic and Cylindrical Lithium Secondary Cells, and Batteries Made from Them, IEC 61960-3.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
14A.6	A crush force shall be applied onto the round bar, with a crushing direction of $90 \pm 1^\circ$ between the crushing direction and round bar and the crushing direction and test platform. The displacement in the vertical direction shall be measured. The moving speed of the crush plate is to be no greater than 0.1 mm/s (0.004 in/s). The displacement of the crush plate shall be stopped and held for 30 s once the cell deformation reaches $13 \pm 1\%$ of the cell thickness (starting from the preload thickness measured in 14A.5) or the crush force reaches the force value in Table 14A.1, whichever comes first. See Figure 14A.1 and Figure 14A.2.		N/A
14A.7	The samples shall not explode or catch fire.		N/A
<b>15</b>	<b>Shock Test</b>		P
15.1	The cell is to be secured to the testing machine by means of a rigid mount which supports all mounting surfaces of the cell. Each cell shall be subjected to a total of three shocks of equal magnitude. The shocks are to be applied in each of three mutually perpendicular directions unless it has only two axes of symmetry in which case only two directions shall be tested. Each shock is to be applied in a direction normal to the face of the cell. For each shock the cell is to be accelerated in such a manner that during the initial 3 ms the minimum average acceleration is 75 g (where g is the local acceleration due to gravity). The peak acceleration shall be between 125 and 175 g. Cells shall be tested at a temperature of $20 \pm 5^\circ\text{C}$ ( $68 \pm 9^\circ\text{F}$ ).	Prepared the test as required. See table 15	P
15.2	The samples shall not explode or catch fire. In addition, the sample shall not vent or leak as described in 5.1.1.	No explosion or catch fire, the sample not vent or leak	P
<b>16</b>	<b>Vibration Test</b>		P
16.1	A battery is to be subjected to simple harmonic motion with an amplitude of 0.8 mm (0.03 inch) [1.6 mm (0.06 inch) total maximum excursion].	Prepared the test as required. See table 16.	P
16.2	The frequency is to be varied at the rate of 1 Hz/min between 10 and 55 Hz, and return in not less than 90 nor more than 100 min. The battery is to be tested in three mutually perpendicular directions. For a battery that has only two axes of symmetry, the battery is to be tested perpendicular to each axis.	Tested as required.	P
16.3	The samples shall not explode or catch fire. In addition the sample shall not vent or leak as described in 5.1.1.	The test results meet the requirements.	P
<b>ENVIRONMENTAL TESTS</b>			
<b>17</b>	<b>Heating Test</b>		P

<b>UL 1642:2020</b>			
Clause	Requirement + Test	Result - Remark	Verdict
17.1	A battery is to be heated in a gravity convection or circulating air oven with an initial temperature of 20 ±5°C (68±9°F). The temperature of the oven is to be raised at a rate of 5 ±2°C (9±3.6°F) per minute to a temperature of 130 ±2°C (266±3.6°F) and remain for 10 min. The sample shall return to room temperature (20±5°C) and then be examined. For batteries specified for temperatures above 100°C (212°F), the conditioning temperature shall be increased from 130 ±2°C (266±3.6°F), to 30±2°C (86±3.6°F) above the manufacturers maximum specified temperature. For a battery of lithium metal chemistry, the conditioning temperature shall be increased to a maximum of 170 ±2°C (338±3.6°F).	Tested as required. Oven temperature: 130°C.	P
17.2	The samples shall not explode or catch fire.	The test results meet the requirements.	P
<b>18</b>	<b>Temperature Cycling Test</b>		P
18.1	The batteries are to be placed in a test chamber and subjected to the following cycles: a) Raising the chamber-temperature to 70 ±3°C (158 ±5°F) within 30 minutes and maintaining this temperature for 4 hours. b) Reducing the chamber temperature to 20 ±3°C (68 ±5°F) within 30 minutes and maintaining this temperature for 2 hours. c) Reducing the chamber temperature to minus 40 ±3°C (minus 40 ±5°F) within 30 minutes and maintaining this temperature for 4 hours. d) Raising the chamber temperature to 20 ±3°C (68 ±5°F) within 30 minutes. e) Repeating the sequence for a further 9 cycles. f) After the 10th cycle, storing the batteries for a minimum of 24 hours, at a temperature of 20 ±5°C (68 ±9°F) prior to examination.	Tested as required. See table 18	P
18.2	The samples shall not explode or catch fire. In addition, the samples shall not vent or leak as described in 5.1.1.	The test results meet the requirements.	P
<b>19</b>	<b>Low Pressure (Altitude Simulation) Test</b>		P
19.1	Sample batteries are to be stored for 6 hours at an absolute pressure of 11.6 kPa (1.68 psi) and a temperature of 20 ± 3°C (68 ± 5°F).	Tested as required. See table 19	P
19.2	The samples shall not explode or catch fire as a result of the Low Pressure (Altitude Simulation) Test. In addition, the samples shall not vent or leak as described in 5.1.1.	The test results meet the requirements.	P
<b>FIRE EXPOSURE TEST</b>			
<b>20</b>	<b>Projectile Test</b>		P
20.1	When subjected to the test described in 20.2 - 20.5 no part of an exploding cell or battery shall penetrate the wire screen such that some or all of the cell or battery protrudes through the screen.	The test results meet the requirements.	P

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Clause	Requirement + Test	Result - Remark	Verdict
20.2	Each test sample cell or battery is to be placed on a screen that covers a 102-mm (4-inch) diameter hole in the center of a platform table. The screen is to be constructed of steel wire mesh having 20 openings per 25.4 mm (1 in) and a wire diameter of 0.43 mm (0.017 in).	Prepared the test as required.	P
20.3	The screen is to be mounted 38 mm (1-1/2 in) above a Meker type burner. The fuel and air flow rates are to be set to provide a bright blue flame that causes the supporting screen to glow a bright red.	Prepared the test as required.	P
20.4	An eight-sided covered wire cage, 610-mm (2-ft) across and 305-mm (1-ft) high, made from metal screening is to be placed over the test sample. See Figure 20.1. The metal screening is to be constructed from 0.25-mm (0.010-in) diameter aluminum wire with 16 -18 wires per 25.4 mm (1 inch) in each direction.	Tested as required.	P
20.5	The sample is to be heated and shall remain on the screen until it explodes or the cell or battery has ignited and burned out. It is not required to secure the sample in place unless it is at risk of falling off the screen before the test is completed. When required, the sample shall be secured to the screen with a single wire tied around the sample.	Tested as required.	P
<b>MARKING</b>			
<b>21</b>	<b>General</b>		P
21.1	A battery shall be legibly and permanently marked with:  The manufacturer's name, trade name, or trademark or other descriptive marking by which the organization responsible for the product may be identified;  A distinctive ("catalog" or "model") number or the equivalent;  The date or other dating period of manufacture not exceeding any three consecutive months.	See marking plate on page 4	P
21.2	If a manufacturer produces a battery at more than one factory, each battery package shall have a distinctive marking to identify it as the product of a particular factory.	One factory only.	N/A
<b>22</b>	<b>Primary Batteries</b>		N/A
22.1	A primary battery shall be marked with the word "WARNING" and the following or an equivalent statement: "Risk of fire and burns. Do not recharge, open, crush, heat above (the manufacturer's specified temperature rating), or incinerate." If space does not permit marking on the battery, the marking may be on the smallest unit package.	Secondary cell	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
22.2	<p>The packaging for a user-replaceable battery shall be marked with the word "CAUTION" and the following or equivalent statements:</p> <p>"Risk of fire and burns. Do not recharge, disassemble, heat above (the manufacturer's specified temperature rating), or incinerate. Keep battery out of reach of children and in original package until ready to use. Dispose of used batteries promptly."</p>		N/A
22.3	<p>For user replaceable lithium primary coin cells (3.0 V) the packaging shall also include the following or equivalent: "WARNING – Never put batteries in mouth. Swallowing may lead to serious injury or death. If ingested, immediately seek medical attention and have the doctor phone the National Capital Poison Control Center." This marking may be combined with the marking of 22.2, if the signal word "WARNING" is used instead of "CAUTION."</p>		N/A

10	TABLE: Short-Circuit Test (model: DNK 955565)					P
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-003	2307170578A-03-004	2307170578A-03-005	2307170578A-03-006	2307170578A-03-007	
Ambient temperature: (at 20±5°C, °C)	24.2	24.2	24.2	24.2	24.2	
Max. casing temp Tmax (°C)	116.4	114.2	117.9	113.7	112.5	
Sample No.	2307170578A-03-008	2307170578A-03-009	2307170578A-03-0108	2307170578A-03-0119	2307170578A-03-012	
Ambient temperature: (at 55 ±5°C, °C)	55.9	55.9	55.9	55.9	55.9	
Max. casing temp Tmax (°C)	114.1	118.6	115.1	112.8	118.0	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-013	2307170578A-03-014	2307170578A-03-015	2307170578A-03-016	2307170578A-03-017	
Ambient temperature: (at 20±5°C, °C)	23.9	23.9	23.9	23.9	23.9	
Max. casing temp Tmax (°C)	110.6	108.4	112.8	106.9	109.0	
Sample No.	2307170578A-03-018	2307170578A-03-019	2307170578A-03-0208	2307170578A-03-0219	2307170578A-03-022	
Ambient temperature: (at 55 ±5°C, °C)	55.7	55.7	55.7	55.7	55.7	
Max. casing temp Tmax (°C)	107.6	110.5	108.7	112.2	113.3	
Supplementary information: Tmax was recorded on the centre of the cell surface. No explode or catch fire.						

10	TABLE: Short-Circuit Test (model: DNK 104848)					P
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-0231	2307170578A-03-0242	2307170578A-03-0253	2307170578A-03-0264	2307170578A-03-0275	
Ambient temperature: (at 20±5°C, °C)	24.1	24.1	24.1	24.1	24.1	
Max. casing temp Tmax (°C)	113.9	111.7	117.0	115.4	118.2	
Sample No.	2307170578A-03-0286	2307170578A-03-0297	2307170578A-03-0308	2307170578A-03-0319	2307170578A-03-0320	
Ambient temperature: (at 55 ±5°C, °C)	55.9	55.9	55.9	55.9	55.9	
Max. casing temp Tmax (°C)	117.5	114.4	118.9	113.6	114.7	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-0331	2307170578A-03-012	2307170578A-03-0343	2307170578A-03-0354	2307170578A-03-0365	
Ambient temperature: (at 20±5°C, °C)	24.3	24.3	24.3	24.3	24.3	
Max. casing temp Tmax (°C)	112.4	108.5	109.4	110.8	106.8	
Sample No.	2307170578A-03-0376	2307170578A-03-0387	2307170578A-03-0398	2307170578A-03-0409	2307170578A-03-0410	
Ambient temperature: (at 55 ±5°C, °C)	55.8	55.8	55.8	55.8	55.8	
Max. casing temp Tmax (°C)	112.6	109.8	110.2	108.0	109.8	
Supplementary information: Tmax was recorded on the centre of the cell surface. No explode or catch fire.						

<b>10</b>	<b>TABLE: Short-Circuit Test (model: DNK 014460)</b>					<b>P</b>
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-0421	2307170578A-03-0432	2307170578A-03-0443	2307170578A-03-0454	2307170578A-03-0465	
Ambient temperature: (at 20±5°C, °C)	24.4	24.4	24.4	24.4	24.4	
Max. casing temp Tmax (°C)	106.9	104.7	104.4	104.9	104.0	
Sample No.	2307170578A-03-0476	2307170578A-03-0487	2307170578A-03-0498	2307170578A-03-0509	2307170578A-03-0510	
Ambient temperature: (at 55 ±5°C, °C)	55.7	55.7	55.7	55.7	55.7	
Max. casing temp Tmax (°C)	107.9	105.8	110.7	105.7	106.3	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-0521	2307170578A-03-0532	2307170578A-03-0543	2307170578A-03-0554	2307170578A-03-0565	
Ambient temperature: (at 20±5°C, °C)	22.7	22.7	22.7	22.7	22.7	
Max. casing temp Tmax (°C)	103.7	106.2	104.5	103.5	104.8	
Sample No.	2307170578A-03-0576	2307170578A-03-0587	2307170578A-03-0598	2307170578A-03-0609	2307170578A-03-0610	
Ambient temperature: (at 55 ±5°C, °C)	55.8	55.8	55.8	55.8	55.8	
Max. casing temp Tmax (°C)	107.1	110.1	109.1	106.8	109.6	
Supplementary information: Tmax was recorded on the centre of the cell surface. No explode or catch fire.						

11	TABLE: Abnormal Charging Test (model: DNK 955565)					P
Id	<u>1</u> A		Ue		<u>2.75</u> V	
Ic	<u>2.5</u> A		Uc		<u>4.25</u> V	
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-0621	2307170578A-03-0632	2307170578A-03-0643	2307170578A-03-0654	2307170578A-03-0665	
Ambient temperature: (°C)	23.8	23.8	23.8	23.8	23.8	
Max. casing temp Tmax (°C)	32.5	34.6	31.9	32.8	30.7	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-0676	2307170578A-03-0687	2307170578A-03-0698	2307170578A-03-0709	2307170578A-03-0710	
Ambient temperature: (°C)	24.0	24.0	24.0	24.0	24.0	
Max. casing temp Tmax (°C)	29.6	35.6	33.9	34.7	34.9	
Supplementary information: Test current is 7.5A. No explode or catch fire.						

11	TABLE: Abnormal Charging Test (model: DNK 104848)					P
Id	<u>0.6</u> A		Ue		<u>2.75</u> V	
Ic	<u>1.5</u> A		Uc		<u>4.25</u> V	
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-0721	2307170578A-03-0732	2307170578A-03-0723	2307170578A-03-0744	2307170578A-03-0755	
Ambient temperature: (°C)	24.0	24.0	24.0	24.0	24.0	
Max. casing temp Tmax (°C)	32.4	30.7	31.5	29.8	33.6	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-0766	2307170578A-03-0777	2307170578A-03-0788	2307170578A-03-0799	2307170578A-03-0800	
Ambient temperature: (°C)	24.1	24.1	24.1	24.1	24.1	
Max. casing temp Tmax (°C)	31.2	30.6	31.7	33.6	34.8	
Supplementary information: Test current is 4.5A. No explode or catch fire.						

<b>11</b>	<b>TABLE: Abnormal Charging Test (model: DNK 014460)</b>					<b>P</b>
Id	<u>0.036</u> A		Ue	<u>2.75</u> V		
Ic	<u>0.09</u> A		Uc	<u>4.25</u> V		
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-0811	2307170578A-03-0822	2307170578A-03-023	2307170578A-03-0834	2307170578A-03-0845	
Ambient temperature: (°C)	23.3	23.3	23.3	23.3	23.3	
Max. casing temp Tmax (°C)	29.2	30.4	31.6	30.0	30.3	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-0856	2307170578A-03-0867	2307170578A-03-0878	2307170578A-03-0889	2307170578A-03-0890	
Ambient temperature: (°C)	22.8	22.8	22.8	22.8	22.8	
Max. casing temp Tmax (°C)	32.5	30.9	30.5	29.8	31.3	
Supplementary information: Test current is 0.27A. No explode or catch fire.						

<b>13</b>	<b>TABLE: Crush Test (model: DNK 95565)</b>					<b>P</b>
Ambient temperature: 23.7°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-0901	2307170578A-03-0912	2307170578A-03-0923	2307170578A-03-0934	2307170578A-03-0945	
Fire or explosion?	No	No	No	No	No	
Crush direction	Wide side	Wide side	Wide side	Wide side	Wide side	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-0956	2307170578A-03-0967	2307170578A-03-0978	2307170578A-03-0989	2307170578A-03-0990	
Fire or explosion?	No	No	No	No	No	
Crush direction	Wide side	Wide side	Wide side	Wide side	Wide side	
Supplementary information: no explosion or catch fire.						

<b>13</b>	<b>TABLE: Crush Test (model: DNK 104848)</b>					<b>P</b>
Ambient temperature: 23.8°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-1001	2307170578A-03-1012	2307170578A-03-1023	2307170578A-03-1034	2307170578A-03-1045	
Fire or explosion?	No	No	No	No	No	
Crush direction	Wide side	Wide side	Wide side	Wide side	Wide side	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-1056	2307170578A-03-1067	2307170578A-03-038	2307170578A-03-039	2307170578A-03-040	
Fire or explosion?	No	No	No	No	No	
Crush direction	Wide side	Wide side	Wide side	Wide side	Wide side	
Supplementary information: no explosion or catch fire.						

<b>13</b>	<b>TABLE: Crush Test (model: DNK 014460)</b>					<b>P</b>
Ambient temperature: 23.2°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-031	2307170578A-03-032	2307170578A-03-033	2307170578A-03-034	2307170578A-03-035	
Fire or explosion?	No	No	No	No	No	
Crush direction	Wide side	Wide side	Wide side	Wide side	Wide side	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-036	2307170578A-03-037	2307170578A-03-038	2307170578A-03-039	2307170578A-03-040	
Fire or explosion?	No	No	No	No	No	
Crush direction	Wide side	Wide side	Wide side	Wide side	Wide side	
Supplementary information: no explosion or catch fire.						

<b>14</b>	<b>TABLE: Impact Test (model: DNK 955565)</b>					<b>P</b>
Ambient temperature: 23.8°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-041	2307170578A-03-042	2307170578A-03-043	2307170578A-03-044	2307170578A-03-045	
Fire or explosion?	No	No	No	No	No	
Impact direction	Wide side	Wide side	Wide side	Wide side	Wide side	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-046	2307170578A-03-047	2307170578A-03-048	2307170578A-03-049	2307170578A-03-050	
Fire or explosion?	No	No	No	No	No	
Impact direction	Wide side	Wide side	Wide side	Wide side	Wide side	
Supplementary information: no explosion or catch fire.						

<b>14</b>	<b>TABLE: Impact Test (model: DNK 104848)</b>					<b>P</b>
Ambient temperature: 24.0°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-041	2307170578A-03-042	2307170578A-03-043	2307170578A-03-044	2307170578A-03-045	
Fire or explosion?	No	No	No	No	No	
Impact direction	Wide side	Wide side	Wide side	Wide side	Wide side	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-046	2307170578A-03-047	2307170578A-03-048	2307170578A-03-049	2307170578A-03-050	
Fire or explosion?	No	No	No	No	No	
Impact direction	Wide side	Wide side	Wide side	Wide side	Wide side	
Supplementary information: no explosion or catch fire.						

<b>14</b>	<b>TABLE: Impact Test (model: DNK 014460)</b>					<b>P</b>
Ambient temperature: 23.0°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-041	2307170578A-03-042	2307170578A-03-043	2307170578A-03-044	2307170578A-03-045	
Fire or explosion?	No	No	No	No	No	
Impact direction	Wide side	Wide side	Wide side	Wide side	Wide side	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-046	2307170578A-03-047	2307170578A-03-048	2307170578A-03-049	2307170578A-03-050	
Fire or explosion?	No	No	No	No	No	
Impact direction	Wide side	Wide side	Wide side	Wide side	Wide side	
Supplementary information: no explosion or catch fire.						

<b>14A</b>	<b>TABLE: Round Bar Crush Test</b>					<b>N/A</b>
Ambient temperature: °C						
<b>Fully Charged Samples</b>						
Sample No.						
Fire or explosion?						
Cell thickness (mm)						
<b>Cycled Samples</b>						
Sample No.						
Fire or explosion?						
Cell thickness (mm)						
Supplementary information:						

15	TABLE: Shock Test (model: DNK 955565)					P
Ambient temperature: 24.0°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-051	2307170578A-03-052	2307170578A-03-053	2307170578A-03-054	2307170578A-03-055	
Mass before test (g)	68.711	68.678	68.724	68.667	68.413	
Mass after test (g)	68.710	68.676	68.721	68.665	68.410	
Mass loss ratio (%)	0.001	0.003	0.004	0.003	0.004	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-056	2307170578A-03-057	2307170578A-03-058	2307170578A-03-059	2307170578A-03-060	
Mass before test (g)	68.429	68.678	68.674	68.726	68.671	
Mass after test (g)	68.428	68.676	68.672	68.723	68.670	
Mass loss ratio (%)	0.001	0.003	0.003	0.004	0.001	
Supplementary information: no explosion or catch fire, in addition the sample did not vent or leak. Max loss less than 0.1%						

15	TABLE: Shock Test (model: DNK 104848)					P
Ambient temperature: 23.9°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-051	2307170578A-03-052	2307170578A-03-053	2307170578A-03-054	2307170578A-03-055	
Mass before test (g)	43.280	43.124	43.477	43.034	43.571	
Mass after test (g)	43.278	43.123	43.476	43.032	43.570	
Mass loss ratio (%)	0.005	0.002	0.002	0.005	0.002	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-056	2307170578A-03-057	2307170578A-03-058	2307170578A-03-059	2307170578A-03-060	
Mass before test (g)	43.447	43.259	43.368	43.177	43.247	
Mass after test (g)	43.446	43.257	43.366	43.176	43.245	
Mass loss ratio (%)	0.002	0.005	0.005	0.002	0.005	
Supplementary information: no explosion or catch fire, in addition the sample did not vent or leak. Max loss less than 0.1%						

15	TABLE: Shock Test (model: DNK 014460)					P
Ambient temperature: 23.3°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-051	2307170578A-03-052	2307170578A-03-053	2307170578A-03-054	2307170578A-03-055	
Mass before test (g)	5.295	5.296	5.227	5.308	5.311	
Mass after test (g)	5.294	5.296	5.226	5.307	5.311	
Mass loss ratio (%)	0.019	0.000	0.019	0.019	0.000	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-056	2307170578A-03-057	2307170578A-03-058	2307170578A-03-059	2307170578A-03-060	
Mass before test (g)	5.280	5.128	5.200	5.181	5.210	
Mass after test (g)	5.280	5.128	5.200	5.180	5.210	
Mass loss ratio (%)	0.000	0.000	0.000	0.019	0.000	
Supplementary information: no explosion or catch fire, in addition the sample did not vent or leak. Max loss less than 0.1%						

16	TABLE: Vibration Test (model: DNK 955565)					P
Ambient temperature: 23.7°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-061	2307170578A-03-062	2307170578A-03-063	2307170578A-03-064	2307170578A-03-065	
Mass before test (g)	68.677	68.678	68.714	68.476	68.468	
Mass after test (g)	68.674	68.675	68.712	68.473	68.466	
Mass loss ratio (%)	0.004	0.004	0.003	0.004	0.003	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-066	2307170578A-03-067	2307170578A-03-068	2307170578A-03-069	2307170578A-03-070	
Mass before test (g)	68.722	68.647	68.323	68.476	68.841	
Mass after test (g)	68.720	68.644	68.320	68.474	68.839	
Mass loss ratio (%)	0.003	0.004	0.004	0.003	0.003	
Supplementary information: no explosion or catch fire, in addition the sample did not vent or leak. Max loss less than 0.1%						

16	TABLE: Vibration Test (model: DNK 104848)					P
Ambient temperature: 23.7°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-061	2307170578A-03-062	2307170578A-03-063	2307170578A-03-064	2307170578A-03-065	
Mass before test (g)	43.211	43.478	43.247	43.327	43.114	
Mass after test (g)	43.210	43.475	43.245	43.324	43.112	
Mass loss ratio (%)	0.002	0.007	0.005	0.007	0.005	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-066	2307170578A-03-067	2307170578A-03-068	2307170578A-03-069	2307170578A-03-070	
Mass before test (g)	43.216	43.546	43.216	43.422	43.374	
Mass after test (g)	43.213	43.544	43.215	43.420	43.371	
Mass loss ratio (%)	0.007	0.005	0.002	0.005	0.007	
Supplementary information: no explosion or catch fire, in addition the sample did not vent or leak. Max loss less than 0.1%						

16	TABLE: Vibration Test (model: DNK 014460)					P
Ambient temperature: 22.9°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-061	2307170578A-03-062	2307170578A-03-063	2307170578A-03-064	2307170578A-03-065	
Mass before test (g)	5.189	5.202	5.205	5.298	5.206	
Mass after test (g)	5.189	5.202	5.205	5.297	5.206	
Mass loss ratio (%)	0.000	0.000	0.000	0.019	0.000	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-066	2307170578A-03-067	2307170578A-03-068	2307170578A-03-069	2307170578A-03-070	
Mass before test (g)	5.290	5.133	5.220	5.163	5.310	
Mass after test (g)	5.290	5.132	5.219	5.163	5.310	
Mass loss ratio (%)	0.000	0.019	0.019	0.000	0.000	
Supplementary information: no explosion or catch fire, in addition the sample did not vent or leak. Max loss less than 0.1%						

18	TABLE: Temperature Cycling Test (model: DNK 955565)					P
Ambient temperature: 24.0°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-091	2307170578A-03-092	2307170578A-03-093	2307170578A-03-094	2307170578A-03-095	
Mass before test (g)	68.624	68.728	68.677	68.409	68.817	
Mass after test (g)	68.616	68.720	68.668	68.402	68.808	
Mass loss ratio (%)	0.012	0.012	0.013	0.010	0.013	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-096	2307170578A-03-097	2307170578A-03-098	2307170578A-03-099	2307170578A-03-100	
Mass before test (g)	68.724	68.821	68.727	68.766	68.684	
Mass after test (g)	68.717	68.812	68.720	68.758	68.675	
Mass loss ratio (%)	0.010	0.013	0.010	0.012	0.013	
Supplementary information: no explosion or catch fire, in addition the sample did not vent or leak. Max loss less than 0.1%						

18	TABLE: Temperature Cycling Test (model: DNK 104848)					P
Ambient temperature: 23.4°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-091	2307170578A-03-092	2307170578A-03-093	2307170578A-03-094	2307170578A-03-095	
Mass before test (g)	43.124	43.278	43.179	43.445	43.346	
Mass after test (g)	43.119	43.273	43.172	43.439	43.341	
Mass loss ratio (%)	0.012	0.012	0.016	0.014	0.012	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-096	2307170578A-03-097	2307170578A-03-098	2307170578A-03-099	2307170578A-03-100	
Mass before test (g)	43.277	43.478	43.366	43.241	43.318	
Mass after test (g)	43.272	43.471	43.361	43.235	43.311	
Mass loss ratio (%)	0.012	0.016	0.012	0.014	0.016	
Supplementary information: no explosion or catch fire, in addition the sample did not vent or leak. Max loss less than 0.1%						

18	TABLE: Temperature Cycling Test (model: DNK 014460)					P
Ambient temperature: 23.1°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-091	2307170578A-03-092	2307170578A-03-093	2307170578A-03-094	2307170578A-03-095	
Mass before test (g)	5.216	5.216	5.173	5.221	5.205	
Mass after test (g)	5.213	5.214	5.171	5.219	5.203	
Mass loss ratio (%)	0.058	0.038	0.039	0.038	0.038	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-096	2307170578A-03-097	2307170578A-03-098	2307170578A-03-099	2307170578A-03-100	
Mass before test (g)	5.248	5.125	5.204	5.145	5.275	
Mass after test (g)	5.246	5.123	5.201	5.142	5.273	
Mass loss ratio (%)	0.038	0.039	0.058	0.058	0.038	
Supplementary information: no explosion or catch fire, in addition the sample did not vent or leak. Max loss less than 0.1%						

19	TABLE: Low Pressure (Altitude Simulation) Test (model: DNK 955565)					P
Ambient temperature: 22.7°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-101	2307170578A-03-102	2307170578A-03-103	2307170578A-03-104	2307170578A-03-105	
Mass before test (g)	68.726	68.814	68.664	68.723	68.766	
Mass after test (g)	68.724	68.811	68.662	68.720	68.764	
Mass loss ratio (%)	0.003	0.004	0.003	0.004	0.003	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-106	2307170578A-03-107	2307170578A-03-108	2307170578A-03-109	2307170578A-03-110	
Mass before test (g)	68.821	68.746	68.624	68.766	68.623	
Mass after test (g)	68.819	68.744	68.621	68.764	68.620	
Mass loss ratio (%)	0.003	0.003	0.004	0.003	0.004	
Supplementary information: no explosion or catch fire, in addition the sample did not vent or leak. Max loss less than 0.1%						

19	TABLE: Low Pressure (Altitude Simulation) Test (model: DNK 104848)					P
Ambient temperature: 22.9°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-101	2307170578A-03-102	2307170578A-03-103	2307170578A-03-104	2307170578A-03-105	
Mass before test (g)	43.220	43.217	43.427	43.334	43.178	
Mass after test (g)	43.218	43.214	43.426	43.332	43.176	
Mass loss ratio (%)	0.005	0.007	0.002	0.005	0.005	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-106	2307170578A-03-107	2307170578A-03-108	2307170578A-03-109	2307170578A-03-110	
Mass before test (g)	43.417	43.329	43.412	43.276	43.178	
Mass after test (g)	43.416	43.327	43.410	43.273	43.175	
Mass loss ratio (%)	0.002	0.005	0.005	0.007	0.007	
Supplementary information: no explosion or catch fire, in addition the sample did not vent or leak. Max loss less than 0.1%						

19	TABLE: Low Pressure (Altitude Simulation) Test (model: DNK 014460)					P
Ambient temperature: 23.0°C						
<b>Fully Charged Samples</b>						
Sample No.	2307170578A-03-101	2307170578A-03-102	2307170578A-03-103	2307170578A-03-104	2307170578A-03-105	
Mass before test (g)	5.213	5.142	5.309	5.176	5.271	
Mass after test (g)	5.212	5.142	5.308	5.176	5.271	
Mass loss ratio (%)	0.019	0.000	0.019	0.000	0.000	
<b>Cycled Samples</b>						
Sample No.	2307170578A-03-106	2307170578A-03-107	2307170578A-03-108	2307170578A-03-109	2307170578A-03-110	
Mass before test (g)	5.152	5.287	5.283	5.125	5.242	
Mass after test (g)	5.151	5.287	5.283	5.124	5.242	
Mass loss ratio (%)	0.019	0.000	0.000	0.020	0.000	
Supplementary information: no explosion or catch fire, in addition the sample did not vent or leak. Max loss less than 0.1%						

<b>Critical Components</b>					
Material: e.g. external enclosure, PCB, closed-end connector, sleeves, cord anchorage etc					
Components with winding: e.g. motor, transformer, magnetic coil etc.					
Other components: e.g. switch, thermostat, heater, plug, internal wire, capacitor, relay, varistor etc.					
<b>Object/ Part No.</b>	<b>Manufacturer/ trademark</b>	<b>Type/ Model</b>	<b>Technical data</b>	<b>Standard</b>	<b>Mark(s) of conformity</b>
-Positive electrode	JIANGXI HANYA O LITHIUM RICH TECHNOLOGY Co., Ltd	YHF-10S	LiNi <sub>0.5</sub> Co <sub>0.2</sub> Mn <sub>0.3</sub> O <sub>2</sub> , Carbon black, PVDF, Conductive Additive: Aluminum foil	--	--
-Negative electrode	KEDA (ANHUI) CLEAN ENERGY NEW MATERIAL CO.,LTD	KD6B	Graphite, D50: 16±3µm	--	--
-Separator	Dongguan Mochuan New Energy Material Co.,Ltd	16µm	PE, 16µm, Shutdown temperature: 130°C	--	--
-Electrolyte	Dongguan Tianfeng Power Material Co.,Ltd	TF-3142	LiPF <sub>6</sub> , EC, EMC, DEC, PC	--	--
-Aluminium plastic film	Crown Advanced Material Co.,Ltd	CAN113	CPP+Al+Nylon, Thickness: 113±2µm	--	--

**--End of main report--**

**Attachment 1**  
Equipment list

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Produkte  
Products

	Eq. No.	Name	Manufacturer	Model No.	Date of Calibration	Date of next Calibration
<input checked="" type="checkbox"/>	LCS-S-030	Digital temperature hygrometer	VICTOR	HTC-1	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-089	Vibration Test Instrument	Dongling	ES-3-150N	2023/07/25	2024/07/24
<input checked="" type="checkbox"/>	LCS-S-090	Vertical Shock Tester	Dongling	SY10-5	2023/07/25	2024/07/24
<input checked="" type="checkbox"/>	LCS-S-091	Battery Crush Tester	Bell	BE-6045-2T	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-094	Low Altitude Simulation Tester	Bell	BE-ZK-64	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-097	Battery Burning Tester	Bell	BE-6046	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-098	Rapid Temperature Tester	Bell	BTKS-150C	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-100	Battery Charge/Discharge Tester	Xinwei	CT-3008-5V10A-204	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-101	Battery Charge/Discharge Tester	Xinwei	CT-3008-5V10A-204	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-105	Internal Resistance Tester	TESTPAD ELECTRONIC CO LTD	BTS-100	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-168	Electronic Balance	Yingheng	5003	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-206	Battery Charge/Discharge Tester	Xinwei	CT-4008-5V6A-S1	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-207	Battery Charge/Discharge Tester	Xinwei	CT-4008-5V6A-S1	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-222	Temperature recorder	Agilent	34970A	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-247	Temperature & Humidity Chamber	Weihuang Technology	FTH-408-40	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-251	Rapid Temperature Tester	Weihuang Technology	SCT-150-40	2023/07/20	2024/07/19
<input checked="" type="checkbox"/>	LCS-S-281	Digital multimeter	FLUKE	F15B+	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-282	Digital multimeter	FLUKE	F15B+	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-287	DC source	ITECH ELECTONLC CO.,LTD.	IT6512	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-288	DC source	ITECH ELECTONLC CO.,LTD.	IT6512	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-289	DC source	ITECH ELECTONLC CO.,LTD.	IT6512	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-290	DC source	ITECH ELECTONLC CO.,LTD.	IT6512	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-291	DC source	ITECH ELECTONLC CO.,LTD.	IT6512	2023/09/19	2024/09/18

Shenzhen LCS Compliance Testing Laboratory Ltd.

Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

**Attachment 1**  
Equipment list

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**Produkte**  
Products

	Eq. No.	Name	Manufacturer	Model No.	Date of Calibration	Date of next Calibration
<input checked="" type="checkbox"/>	LCS-S-296	Digital temperature hygrometer	HuaSheng	HS-1	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-299	Digital temperature hygrometer	HuaSheng	HS-1	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-301	Battery Thermal Abuse Tester	WuSuo	SPH201	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-381	Temperature recorder	Agilent	34970A	2023/09/19	2024/09/18
<input checked="" type="checkbox"/>	LCS-S-502	Battery Short Circuit Tester	Angui Testing Co.,LTD	AG383T55	2023/06/07	2024/06/06
<input checked="" type="checkbox"/>	LCS-S-505	Temperature controlled Battery Short Circuit Tester	Xiangmin	XM-WK002	2023/06/07	2024/06/06
<input checked="" type="checkbox"/>	LCS-S-516	Battery Crush Tester	Bell	BE-6045-2T	2023/06/07	2024/06/06
<input checked="" type="checkbox"/>	LCS-S-553	Battery Heavy Impact Tester	Gaoxin	GX-5066-A	2023/04/18	2024/04/17

\*) Initial calibration or verification only

Shenzhen LCS Compliance Testing Laboratory Ltd.

Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street,  
Bao'an District, Shenzhen, Guangdong, China

**Attachment 1**

Equipment list

CN23OTRO 001

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[www.lcs-cert.com](http://www.lcs-cert.com)

Produkte

Products

**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		±1.0%
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%.

Shenzhen LCS Compliance Testing Laboratory Ltd.

Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

Product: Li-ion Polymer Cell

Type Designation: **DNK 955565**, DNK 114960, **DNK 104848**, DNK 103450, DNK 633555, DNK 524050, DNK 503759, DNK 502541, DNK 303060, DNK 304045, DNK 501840, DNK 701535, DNK 601830, DNK 451350, **DNK 014460**

Remark: The tested models DNK 955565, DNK 104848 and DNK 014460 are representatives of other models.

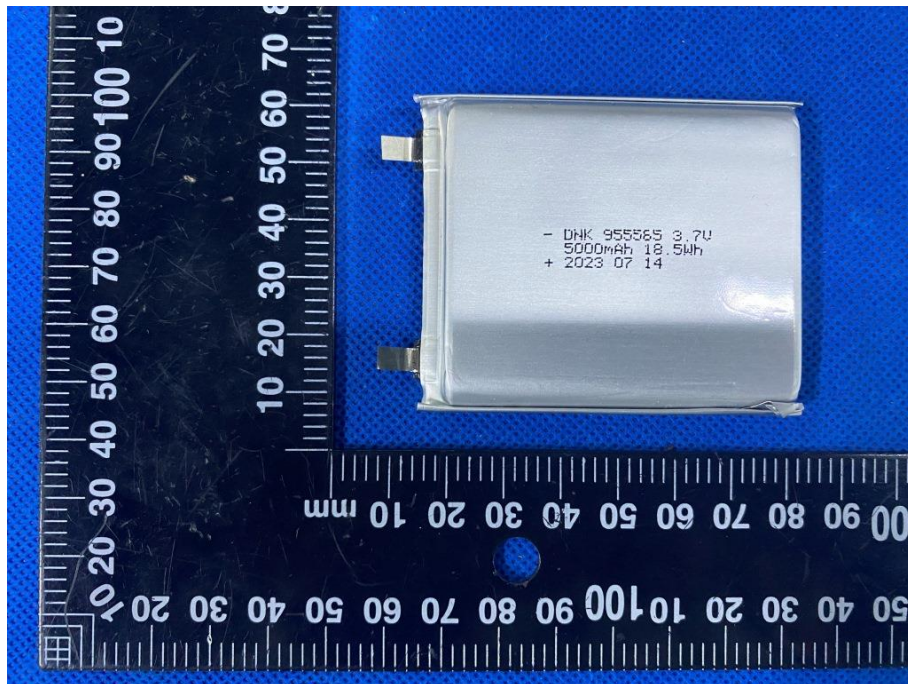


Figure 1 Front view of cell (Model: DNK 955565)

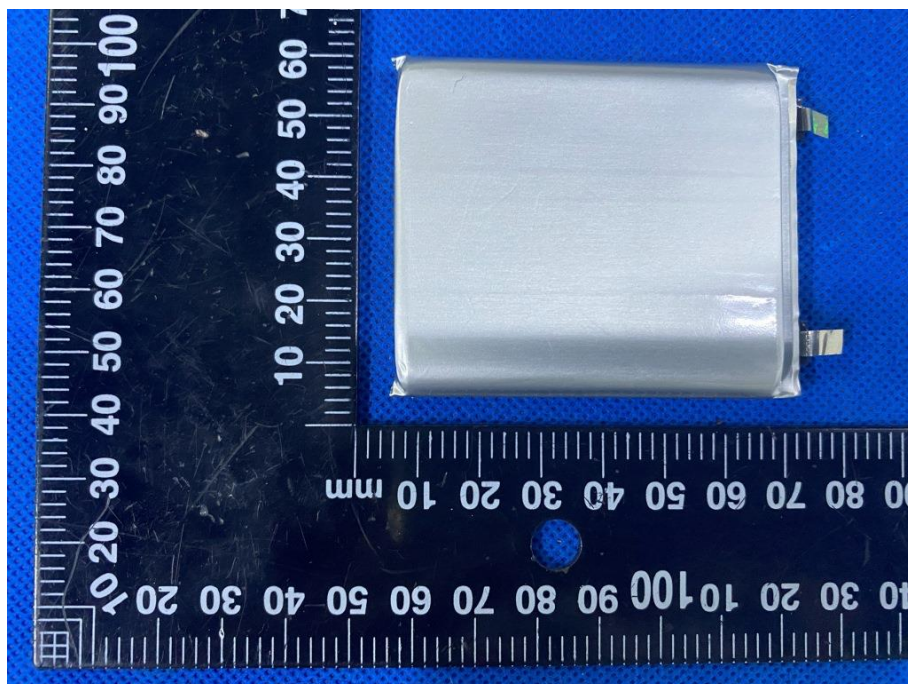


Figure 2 Back view of cell (Model: DNK 955565)

Product: Li-ion Polymer Cell

Type Designation: **DNK 955565**, DNK 114960, **DNK 104848**, DNK 103450, DNK 633555, DNK 524050, DNK 503759, DNK 502541, DNK 303060, DNK 304045, DNK 501840, DNK 701535, DNK 601830, DNK 451350, **DNK 014460**

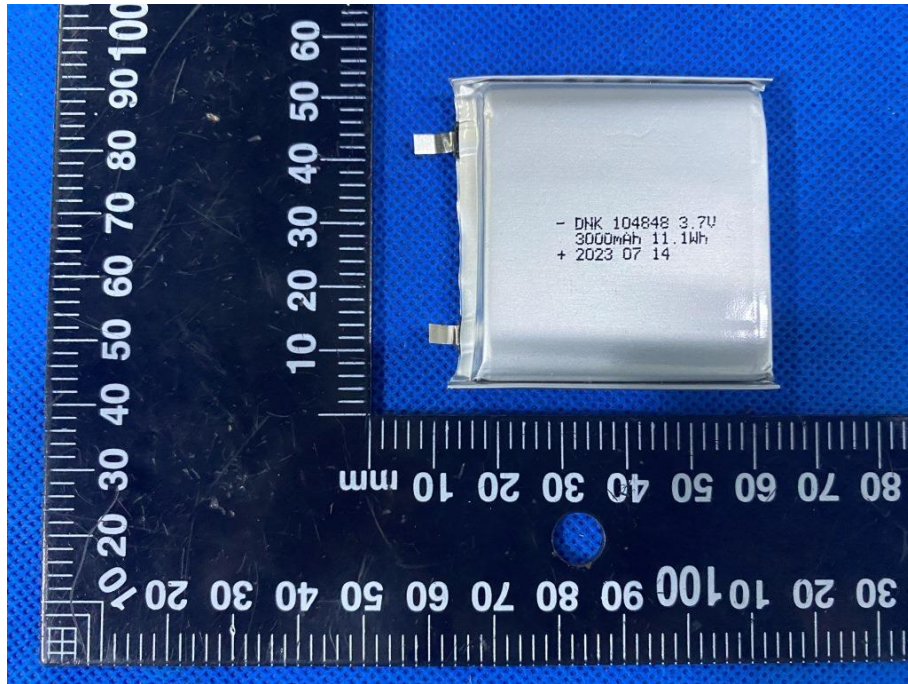


Figure 3 Front view of cell (Model: DNK 104848)

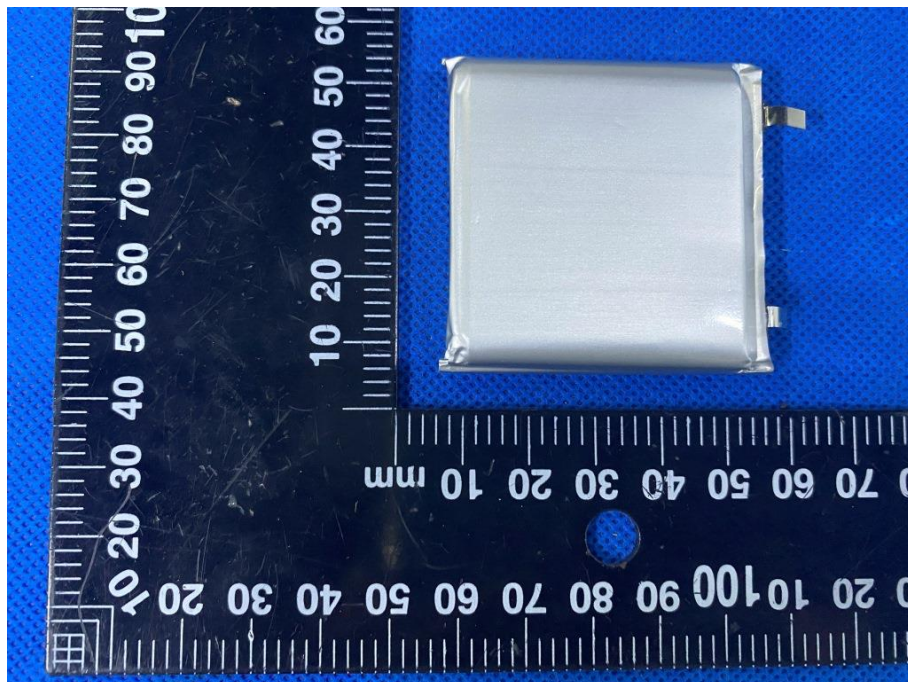


Figure 4 Back view of cell (Model: DNK 104848)

Product: Li-ion Polymer Cell

Type Designation: **DNK 955565**, DNK 114960, **DNK 104848**, DNK 103450, DNK 633555, DNK 524050, DNK 503759, DNK 502541, DNK 303060, DNK 304045, DNK 501840, DNK 701535, DNK 601830, DNK 451350, **DNK 014460**

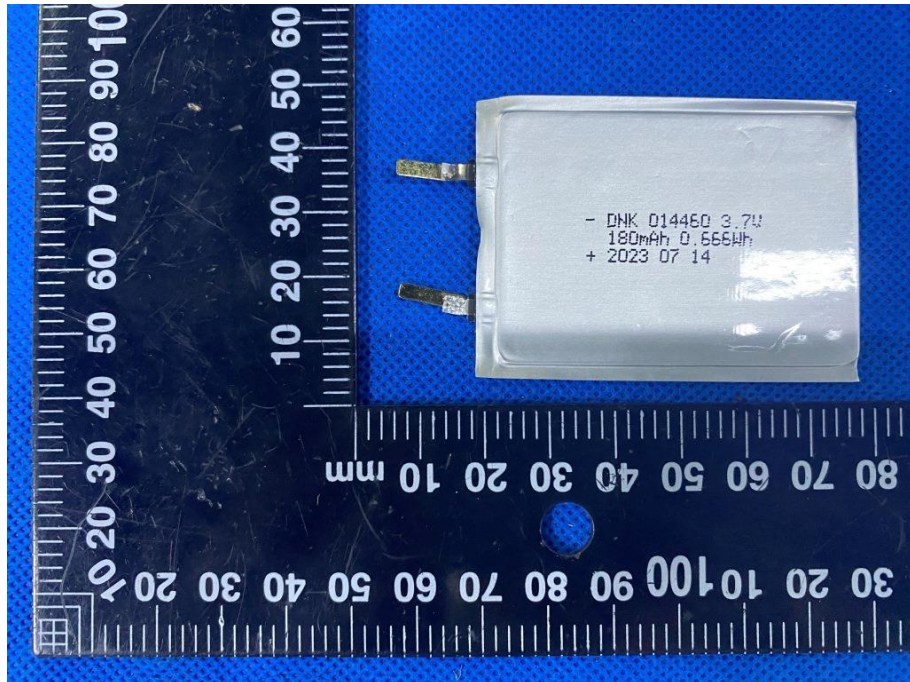


Figure 5 Front view of cell (Model: DNK 014460)

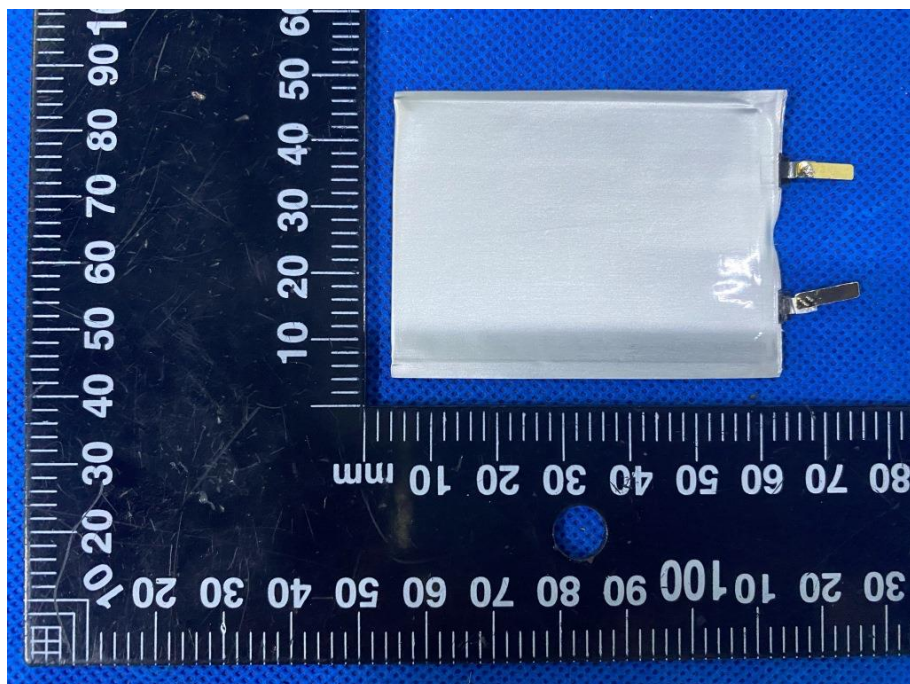


Figure 6 Back view of cell (Model: DNK 014460)

Product: Li-ion Polymer Cell

Type Designation: **DNK 955565**, DNK 114960, **DNK 104848**, DNK 103450, DNK 633555, DNK 524050, DNK 503759, DNK 502541, DNK 303060, DNK 304045, DNK 501840, DNK 701535, DNK 601830, DNK 451350, **DNK 014460**

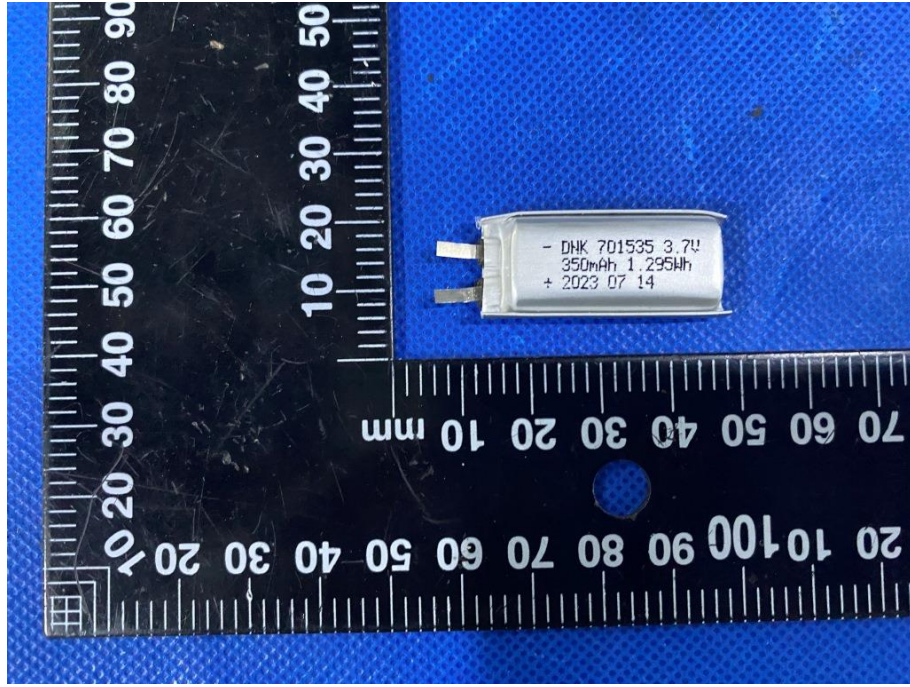


Figure 7 Front view of cell (Model: DNK 701535)

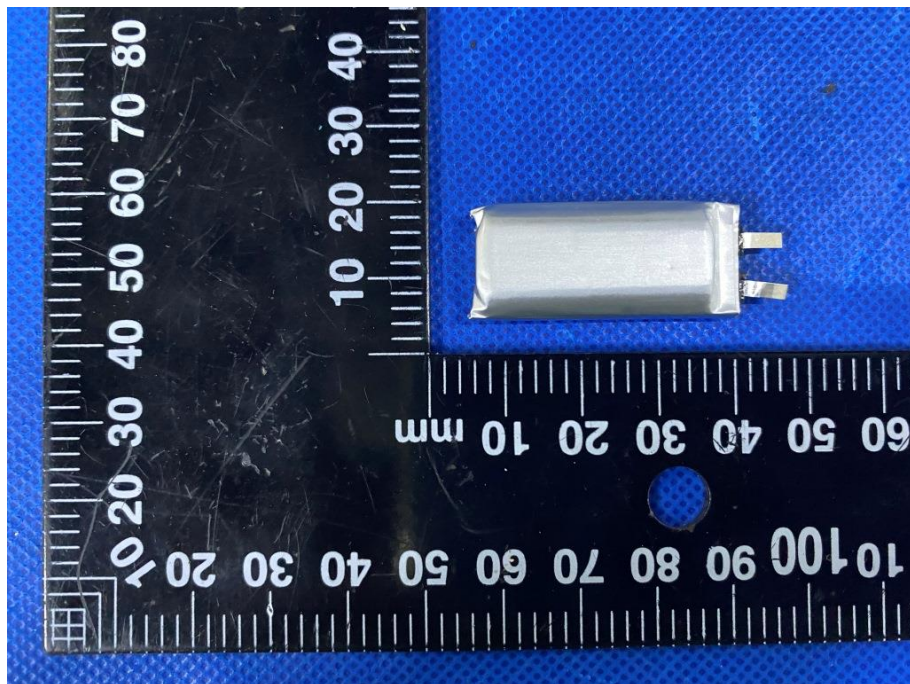


Figure 8 Back view of cell (Model: DNK 701535)