

DOC No. : SC25EPF10564_1 487/25, Near Prachin Shiv Mandir Peeragarhi, DELHI,
Telephone : +91 9711227171 New Delhi, Delhi, India - 110087
FAX : -
E-Mail : electrical@alphatesthouse.com
BO Code : NA

Test REPORT AS PER : IS 16046 : Part 2 (2018)**QR Code/Barcode : 245911CRS****REPORT NO : SC25EPF10564_1**

DATE : 18 Jul, 2025

PART A. PARTICULARS OF SAMPLE SUBMITTED

a) Customer Name & Address : Simplo Technology (Chongqing) Inc.
2, ZONGBAO AVE, SHAPINGBA DISTRICT, NA,
CHONGQING, China - 401332
b) Nature of sample : -
c) Grade/Variety/Type/Class Size etc : NA
d) Declare values, if any : -
e) Batch No. & Date of Manufacture : /
f) Quantity : 32
g) Date of Receipt : 01 Jul, 2025
h) BIS Seal : Verified by Sample Cell
i) IO's Signature : Verified by Sample Cell
j) Any other Information / Expiry Date, If any : /
k) Date of Commencement of Testing : 02 Jul, 2025
l) Date of Completion of Testing : 18 Jul, 2025
m) Section Code : 25E73ACN
n) Section Report No. : 25E73ACN_1
o) Report Type : New
p) Reference Report No. :
q) Remarks : The test item Passed the test specification

ASHISH RANA
OIC SAMPLE CELL
(Authorized Signatory)
Authorized on: 18 Jul, 2025 17:12 PM

1. Alpha Test House Private Limited, Delhi

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PART B. SUPPLEMENTARY INFORMATION

- | | |
|--|----------------|
| 1. Reference to sampling procedure, wherever applicable. | Not Applicable |
| 2. Supporting documents for the measurements taken and results derived like graphs, table sketches and or photographs as appropriate to test report, if any. | Yes |
| 3. Deviation from the test methods as prescribed in relevant ISS/Work instruction, if any. | Not Applicable |
| 3. NABL Report required ? | - |

DEEPAK KUMAR

OIC Electrical

(Authorized Signatory)

Authorized on: 18 Jul, 2025 16:42 PM

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PART C. TEST RESULT

S.No.	Clause No Table No. Sl. No	Parameter - Method of test	Test Description	Min Limit	Max Limit	Unit	Result/ Observation
1	10	Packaging	PACKAGING AND TRANSPORT	-	-	-	Complied
2	9.4	Other information	Storage and disposal instructions Recommended charging instructions	-	-	-	Complied
3	9.3	Caution for ingestion of small cells and batteries	Caution for ingestion of small cells and batteries	-	-	-	Test Not Applicable
4	9.2	Battery Marking	Batteries marked as specified in IEC 61960, except for coin batteries	-	-	-	Complied
5	9.1	Cell Marking	cell marking	-	-	-	Complied
6	9	Marking	marking	-	-	-	Complied
7	8.2	Small Cell and battery safety information	The Product is Small battery which was tested by injection gauge and observe it can fit within the limits of the ingestion gauge. Therefore, The following warning language is provided on packaging of Box. • Keep small cells and batteries which are considered swallowable out of the reach of children. • Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion. • In case of ingestion of a cell or battery, seek medical assistance promptly.	-	-	-	Test Not Applicable
8	8.1	General	N/A	-	-	-	Complied
9	8	Information for safety	N/A	-	-	-	Complied
10	7.3	Reasonably foreseeable misuse	Cl.7.3.2, Cl. 7.3.3, Cl. 7.3.6, ,Cl.7.3.8.1,Cl. 7.3.8.2	-	-	-	Complied
11	7.2	Intended Use	7.2 Intended use 7.2.1 Continuous charging at constant voltage (cells) 7.2.2 Case stress at high ambient temperature (battery)	-	-	-	Test Not Applicable
12	7.1	Charging procedure for test purposes	Charging procedure for test purposes	-	-	-	Complied
13	7	Specific requirements and tests	SPECIFIC REQUIREMENTS AND TESTS	-	-	-	Complied
14	6	Type Test and Sample Size	N/A	-	-	-	Complied
15	5.8	Battery Safety Components	N/A	-	-	-	Complied

16	5.7	Quality Plan	Quality plan*	-	-	-	Complied
17	5.6	Assembly of Cells into batteries	5.6.1 General Design recommendation 5.6.2 Mechanical protection for cells and components of batteries	-	-	-	Complied
18	5.5	Terminal Contacts	Terminal contacts*	-	-	-	Complied
19	5.4	Temperature, Voltage and Current Management	Temperature, voltage and current management	-	-	-	Complied
20	5.3	Venting	Venting*-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	-	-	-	Complied
21	5.2	Insulation and Wiring	Insulation and wiring	-	-	-	Complied
22	5.1	General	Cells and batteries so designed and constructed that they are safe under conditions of both intended use and reasonably foreseeable misuse	-	-	-	Complied
23	5	General Safety Considerations	General	-	-	-	Complied
24	4	Parameter Measurement Tolerances	Parameter measurement tolerances	-	-	-	Complied

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 (Authorized Signatory)
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PART D. REMARKS

Please see attached test report

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SUMMARY OF TEST REPORT

TEST REPORT NO: SC25EPF10564_1
ULR: TC550825100001767F

DATE: 18/07/2025

(Number of Pages in Test Report: Page No. 1 to 46)

TEST FORMAT AS PER IS 16046 (Part 2):2018 / IEC 62133-2:2017

1. **Name of the Manufacturer:** Simplo Technology (Chongqing) Inc.
2. **Product:** Rechargeable Li-Polymer Battery Pack
3. **Model:** C41N2503
4. **Model differences provided (if applicable):** N/A
5. **Model differences verified as per MEITY Guidelines for series formulation:** N/A
6. **Test Results:** Refer below

SL. NO.	TEST REQUIREMENT	CLAUSE	VERDICT
1.	Parameter measurement tolerances	4.0	P
2.	Insulation and wiring	5.2	P
3.	Venting	5.3	P
4.	Temperature, Voltage/Current management	5.4	P
5.	Terminal contacts	5.5	P
6.	Assembly of cells into batteries	5.6	P
7.	Quality plan	5.7	P
8.	Battery safety components	5.8	P
9.	Type test and sample size	6.0	P
10.	Charging procedure for test purposes	7.1	P
11.	Intended use	7.2	N/A
12.	Reasonably foreseeable misuse	7.3	P
13.	Information for Safety	8.0	P
14.	marking	9.0	P
15.	Packaging and Transport	10.0	P

SUMMARY OF TEST REPORT

TEST REPORT NO: SC25EPF10564_1
ULR: TC550825100001767F

DATE: 18/07/2025

GENERAL INFORMATION:

1. The conformity certificates of critical components are verified to ensure complete testing of apparatus under test and details regarding harmonized IEC standards (where IEC standards are not available) are also provided in the list of critical components.

CONCLUSION:

1. Sample meets all relevant requirements of IS 16046 (Part 2):2018 / IEC 62133-2:2017
2. Sample fails to meet the following test requirements.

I, hereby undertake that the verdict stated in the test reports for all the test matches with the test results. The sample meets all relevant requirements of IS 16046 (Part 2):2018 / IEC 62133-2:2017/~~does not meet the requirements~~. If any deviation found, suitable punitive action may be taken by BIS

Date: 18/07/2025

(Signature of Authorized person with Stamp)


Report No :	SC25EPF10564_1	Issue Date : 18/07/2025
ULR :	TC550825100001767F	Page 1 of 46
Manufacturer :	Simplo Technology (Chongqing) Inc. 2, ZONGBAO AVE, SHAPINGBA DISTRICT, CHONGQING, CHINA, 401332	
Test Item :	Rechargeable Li-Polymer Battery Pack	
Identification :	C41N2503	Serial No. : Nil
Receipt No. :	551045176	Date : 01/07/2025
Testing Laboratory :	ALPHA TEST HOUSE PVT. LTD. 487/25, Near Prachin Shiv Mandir, Peeragarhi, New Delhi -110087	
Test Specification :	IS 16046 (Part 2):2018 / IEC 62133-2:2017	
Test Result :	The test item Passed the test specification	
Other Aspects :	This report consists of 46 pages.	

Tested By	Reviewed & Approved By	Issued By
Test Engineer : MR. PRINSH KUMAR SINGH	Technical Manager : MR. DEEPAK KUMAR	IA : MR. ASHISH RANA
Date : 18/07/2025	Date : 18/07/2025	Date : 18/07/2025

H-Office : M-577, Guru Harkishan Nagar, Paschim Vihar, New Delhi - 110087 (India)

Lab : 487/25, Near Prachin Shiv Mandir, Peeragarhi New Delhi – 110087 (India)

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Report No :	SC25EPF10564_1	Issue Date :	18/07/2025
ULR :	TC550825100001767F	Page 2 of	46
TEST REPORT IS 16046 (Part 2):2018 / IEC 62133-2:2017 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 :	SC25EPF10564_1		
Date of Issue :	18/07/2025		
Total Pages :	46		
Manufacturer :	Simplo Technology (Chongqing) Inc.		
Address :	2, ZONGBAO AVE, SHAPINGBA DISTRICT, CHONGQING, CHINA, 401332		
Test Specification :			
Standard :	IS 16046 (Part 2):2018 / IEC 62133-2:2017		
Test procedure :	Compliance Report		
Non standard test method :	N/A		
Test Report Form No. :	BIS_BAT/SCAB_IS16046(PART2)_V1.0		
Test Report Form(s) Originator :	Bureau of Indian Standards		
Master TRF :	10/01/2019		
Test Item description :	Rechargeable Li-Polymer Battery Pack		
Trade Mark :			
Manufacturer :	Simplo Technology (Chongqing) Inc.		
Model/Type reference :	C41N2503		
Ratings :	Nominal voltage: 15.6Vdc Rated Capacity: 3082mAh		
Other Documents submitted :	Please refer to Table - List of Attachment at Page No. 4		

Tested By	Reviewed & Approved By	Issued By
Test Engineer : MR. PRINSH KUMAR SINGH	Technical Manager : MR. DEEPAK KUMAR	IA : MR. ASHISH RANA
Date : 18/07/2025	Date : 18/07/2025	Date : 18/07/2025

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Sec. Report No.: 25E73ACN_1

IS 16046 (Part 2):2018 / IEC 62133-2:2017

Dated: 18/07/2025

ULR: TC550825100001767F

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Discipline :Electrical

Group: Cells and Batteries

Description	Measurement/ testing	Total No. of tests	Total no. of applicable tests/ Req.	No. of tests/ Req. passed	Page No.
General Requirements	Parameter measurement tolerances (4.0)	02	00/02	00/02	8
General safety considerations	Insulation and wiring (5.2)	09	05/02	05/02	9
General safety considerations	Venting (5.3)	03	02/02	01/01	10
General safety considerations	Temperature/ voltage/ Current management (5.4)	04	04/00	04/00	11
General safety considerations	Terminal contacts (5.5)	04	00/04	00/04	12
General safety considerations	Assembly of cells into batteries (5.6)	23	00/17	00/17	13-15
General safety considerations	Quality plan (5.7)	02	00/02	00/02	16
General safety considerations	Battery safety components (5.8)	02	00/02	00/02	17
Type test and sample size	Type test conditions (6.0)	06	05/00	05/00	18
Specific requirements and tests	Charging procedure for test purposes (7.1)	09	06/00	06/00	19-20
Specific requirements and tests	Intended use (7.2)	07	00/00	00/00	21
Specific requirements and tests	Reasonably foreseeable misuse (7.3)	48	15/06	15/06	22-25
Information for safety	Information for safety (8.0)	12	00/06	00/06	26-27
Marking Requirements	Marking (9)	16	02/08	02/08	28-29
Packaging and Transport	Packaging (10.0)	03	01/01	01/01	30
Charging and discharging range of secondary lithium ion cells for safe use	Charging and discharging range of secondary lithium ion cells for safe use (Annex A)	51	12/00	12/00	31-34
Measurement of the internal AC resistance for coin cells	Measurement of the internal AC resistance for coin cells (Annex D)	06	00/00	00/00	36

Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement tested.

.....
(Approving Authority)

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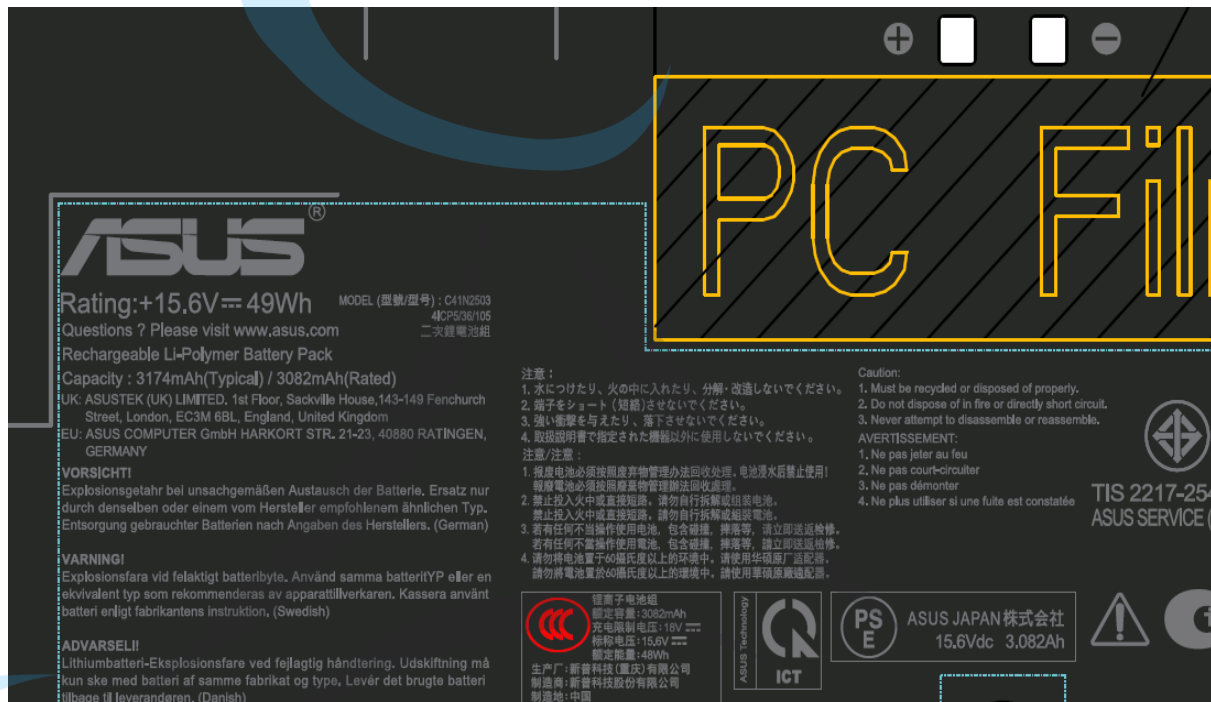
Discipline :Electrical

Group: Cells and Batteries

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

Attachment No.	Attachment Description	No. of pages in Attachment
Attachment-1	PHOTOGRAPHS	46

Copy of marking:



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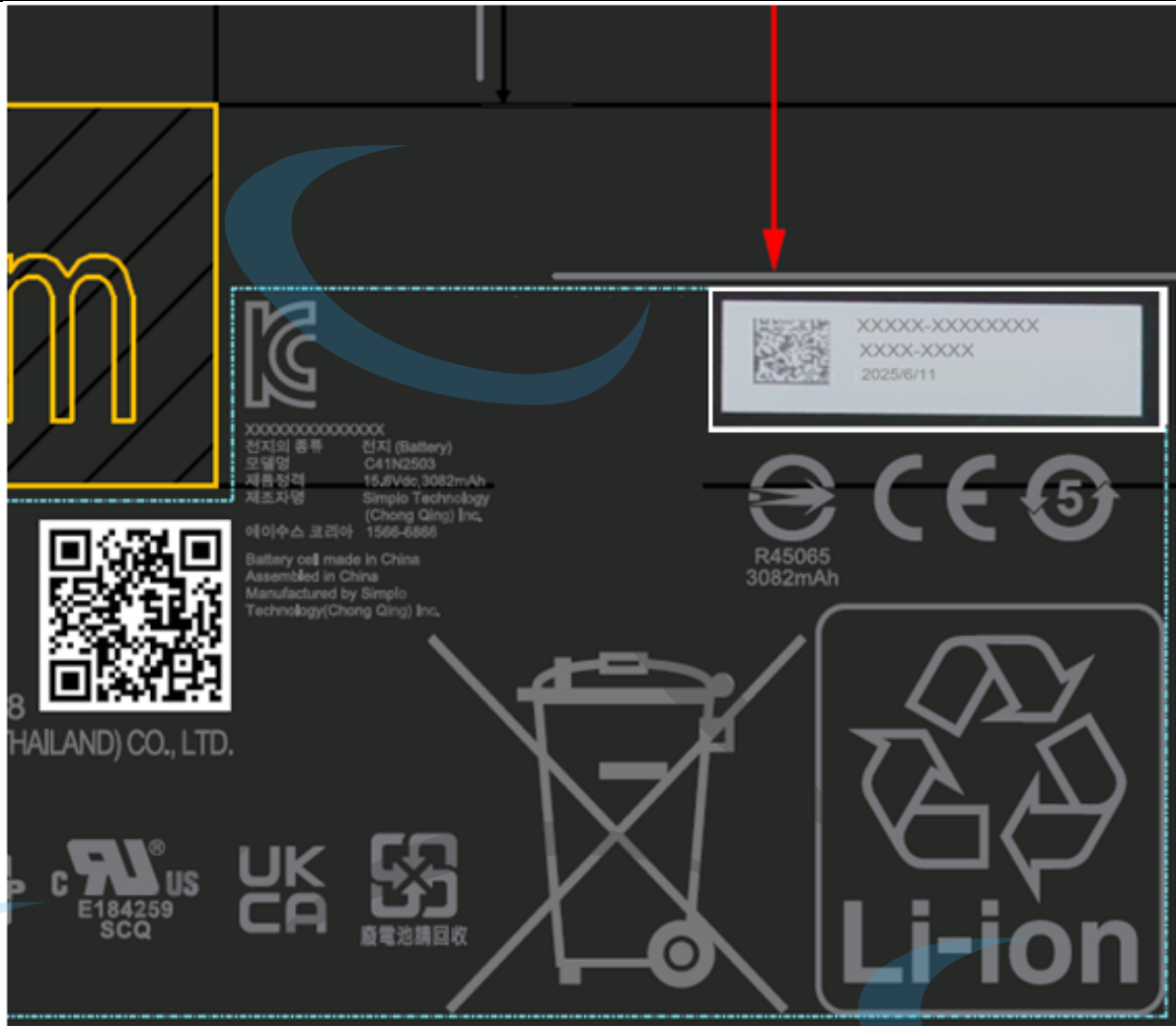
Dated: 18/07/2025

ULR: TC550825100001767F

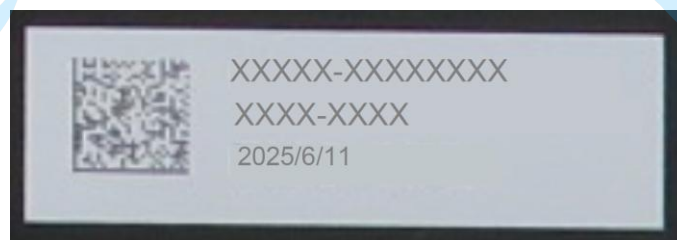
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Discipline :Electrical

Group: Cells and Batteries



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DATE CODE

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Discipline :Electrical



Group: Cells and Batteries

Test item particulars..... :	Rechargeable Li-Polymer Battery Pack
Classification of installation and use	Used in Portable applications
Supply Connection	Not directly connected to the mains
Recommend charging method declared by the manufacturer..... :	CC/CV
Discharge current (0,2 It A)	616.4mA
Specified final voltage..... :	12V
Upper limit charging voltage per cell	4.5V
Maximum charging current	3624mA
Charging temperature upper limit	45°C
Charging temperature lower limit	0°C
Polymer cell electrolyte type	<input checked="" type="checkbox"/> gel polymer <input type="checkbox"/> solid polymer <input type="checkbox"/> 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.....:	01/07/2025
Date (s) of performance of tests.....:	02/07/2025 to 18/07/2025
General remarks:	
<p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(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.</p>	
Laboratory Conditions	
Ambient Temperature.....:	(20±5)°C
Ambient Humidity.....:	<70%Rh

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Discipline :Electrical

Group: Cells and Batteries

General product information:

1) Application details / Description of the product:

The product under test is "Rechargeable Li-Polymer Battery Pack"

Model	Nominal voltage (Vdc)	Rated Capacity (mAh)	Limited Charge Voltage (Vdc)	Standard charging current (mA)	Maximum charging current (mA)	Discharge current (0,2ItA) (mA)	Specified final voltage (Vdc)
C41N2503	15.6	3082	18	3624	3624	616.4	12

Weight :180g

Max. Specified ambient temperature (°C).....:

Charging temperature: 0°C~45°C

Discharging temperature: 0°C~45°C

2) Similarities.....:

N/A

3) Differences between the models.....:

N/A

Model No. tested with-in the family series.....:

N/A

4) Options:

The equipment was tested without any optional accessory installed. Hence, this report does not cover parameters that are influenced by the installation of optional accessory that might affect safety in the meaning of this standard.

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Discipline :Electrical

Group: Cells and Batteries

Clause	Requirement + Test	Result - Remark	Verdict
4.	PARAMETER MEASUREMENT TOLERANCES*		P
	Parameter measurement tolerances*	Within the tolerance limits.	P

*Total number of Requirements to be observed / inspected = 02

Total No of applicable Requirement = 02

No of Requirements for which the sample passed = 02

Total number of tests to be conducted = 00

Total No of applicable Tests = 00

No. of tests for which the sample passed = N/A

Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement tested.

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Discipline :Electrical

Group: Cells and Batteries

Clause	Requirement + Test	Result - Remark	Verdict
5	GENERAL SAFETY CONSIDERATIONS*		P
5.1	General*	See below	P
	Cells and batteries so designed and constructed that they are safe under conditions of both intended use and reasonably foreseeable misuse	Batteries are so designed and constructed that they are safe under the condition of intended use and foreseeable misuse.	P
5.2	Insulation and wiring	See below	P
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 MΩ	No externally exposed metal surfaces	N/A
	Insulation resistance (MΩ).....:	See above	N/A
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements	Complied	P
	Orientation of wiring maintains adequate clearance and creepage distances between conductors	Adequate creepage and clearance provided	P
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse	Internal connection can accommodate conditions of reasonably foreseeable misuse	P

*Total number of Requirements to be observed / inspected = 02

Total No of applicable Requirement = 02

No of Requirements for which the sample passed = 02

Total number of tests to be conducted = 07

Total No of applicable Tests = 05

No. of tests for which the sample passed = 05

Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement tested.

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Discipline :Electrical

Group: Cells and Batteries

Clause	Requirement + Test	Result – Remark	Verdict
5.3	Venting*	See below	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	Satisfactory	P
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief		P

*Total number of Requirements to be observed / inspected = 01

Total No of applicable Requirement = 01

No of Requirements for which the sample passed = 01

Total number of tests to be conducted = 02

Total No of applicable Tests = 02

No. of tests for which the sample passed = 02


Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement tested.


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Discipline :Electrical

Group: Cells and Batteries

Clause	Requirement + Test	Result - Remark	Verdict
5.4	Temperature, voltage and current management	See below	P
	Batteries are designed such that abnormal temperature rise conditions are prevented	Complied	P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	Complied	P
	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	Charging specifications & instructions are provided	P

*Total number of Requirements to be observed / inspected = 00

Total No of applicable Requirement = 00

No of Requirements for which the sample passed = N/A

Total number of tests to be conducted = 04

Total No of applicable Tests = 04

No. of tests for which the sample passed = 04

Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement tested.

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Discipline :Electrical

Group: Cells and Batteries

Clause	Requirement + Test	Result - Remark	Verdict
5.5	Terminal contacts*	See below	P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current*	Complied	P
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance*	Complied	P
	Terminal contacts are arranged to minimize the risk of short-circuit*	Proper spacing and insulation are provided between terminals	P

*Total number of Requirements to be observed / inspected = 04

Total No of applicable Requirement = 04

No of Requirements for which the sample passed = 04

Total number of tests to be conducted = 00

Total No of applicable Tests = 00

No. of tests for which the sample passed = N/A

Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement tested.

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Discipline :Electrical

Group: Cells and Batteries

Clause	Requirement + Test	Result - Remark	Verdict
5.6	Assembly of cells into batteries*	See below	P
5.6.1	General*	See below	P
	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*	Complied	P
	This protection may be provided external to the battery such as within the charger or the end devices*	Within battery	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*	Within battery	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*	Single battery housed in single battery case	N/A
	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly*	Cell specification are provided	P
	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*	No such construction	N/A
	Protective circuit components added as appropriate and consideration given to the end-device application*	Protective circuit with appropriate protection device provided (see critical components information)	P
	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*	Complied	P
5.6.2	Design recommendation*	See below	P

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	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*	Multi cell battery	N/A
	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*	Complied	P
	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 cell blocks*	Complied	P
	For batteries consisting of series-connected cells or cell blocks, nominal charge voltage not be counted as an overcharge protection*	Complied	P
	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*	cells have same capacities, same design, same chemistry and same manufacturer	P
	It is recommended that the cells and cell blocks not discharged beyond the cell manufacturer's specified final voltage*	complied	P
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry incorporated into the battery management system*	Complied	P
5.6.3	Mechanical protection for cells and components of batteries*	See below	P
	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*	Complied	P

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	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*	Mechanical protection is considered in end product	P
	The battery case and compartments housing cells designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer*		P
	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

*Total number of Requirements to be observed / inspected = 23

Total No of applicable Requirement = 18

No of Requirements for which the sample passed = 18

Total number of tests to be conducted = 00

Total No of applicable Tests = 00

No. of tests for which the sample passed = N/A


Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement tested.

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Clause	Requirement + Test	Result – Remark	Verdict
5.7	Quality plan*	See below	P
	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*	Satisfactory	P

*Total number of Requirements to be observed / inspected = 02

Total No of applicable Requirement = 02

No of Requirements for which the sample passed = 02

Total number of tests to be conducted = 00

Total No of applicable Tests = 00

No. of tests for which the sample passed = N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.8	Battery safety components*	Components are complied with relevant standard as referred in critical components information	P
	According annex F*	Components are complied with relevant standard as referred in critical components information	P

*Total number of Requirements to be observed / inspected = 02

Total No of applicable Requirement = 02

No of Requirements for which the sample passed = 02

Total number of tests to be conducted = 00

Total No of applicable Tests = 00

No. of tests for which the sample passed = N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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	Complied	P
	Coin cells with resistance $\leq 3 \Omega$ (measured according annex D) are tested according table 1	Only for coin cells	N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of $20^\circ\text{C} \pm 5^\circ\text{C}$	Complied	P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and over discharge protection	See Critical components information	P
	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	See table 7.3.2	P

*Total number of Requirements to be observed / inspected = 00

Total No of applicable Requirement = 00

No of Requirements for which the sample passed = N/A

Total number of tests to be conducted = 06

Total No of applicable Tests = 05

No. of tests for which the sample passed = 05


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Clause	Requirement + Test	Result – Remark	Verdict
7	SPECIFIC REQUIREMENTS AND TESTS		P
7.1	Charging procedure for test purposes	See below	P
7.1.1	First procedure	See below	P
	This charging procedure applies to sub clauses other than those specified in 7.1.2	This charging procedure applied to clause 7.3.2, 7.3.3, 7.3.6 & 7.3.8	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	Complied	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	Complied	P
7.1.2	Second procedure	Not for battery	N/A
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9	Not for battery	N/A
	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	Not for battery	N/A

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*Total number of Requirements to be observed / inspected = 00

Total No of applicable Requirement = 00

No of Requirements for which the sample passed = N/A

Total number of tests to be conducted = 09

Total No of applicable Tests = 06

No. of tests for which the sample passed = 06

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Clause	Requirement + Test	Result - Remark	Verdict
7.2	Intended use*	See below	N/A
7.2.1	Continuous charging at constant voltage (cells)	Not for battery	N/A
	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	Not for battery	N/A
	Results: No fire. No explosion. No leakage*.....	Not for battery	N/A
7.2.2	Case stress at high ambient temperature (battery)	No such battery	N/A
	Oven temperature (°C).....	See above	N/A
	Results: No physical distortion of the battery case resulting in exposure of internal protective components and cells*	See above	N/A

*Total number of Requirements to be observed / inspected = 03

Total No of applicable Requirement = 00

No of Requirements for which the sample passed = 00

Total number of tests to be conducted = 04

Total No of applicable Tests = 00

No. of tests for which the sample passed = 00


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Clause	Requirement + Test	Result - Remark	Verdict
7.3	Reasonably foreseeable misuse*	See below	P
7.3.1	External short-circuit (cell)	Not for battery	N/A
	The cells were tested until one of the following occurred:	Not for battery	N/A
	- 24 hours elapsed; or	Not for battery	N/A
	- The case temperature declined by 20 % of the maximum temperature rise	Not for battery	N/A
	Results: No fire. No explosion*.....:	Not for battery	N/A
7.3.2	External short-circuit (battery)	See below	P
	The batteries were tested until one of the following occurred:	See below	P
	- 24 hours elapsed; or	Batteries were tested for 24h	P
	- The case temperature declined by 20 % of the maximum temperature rise	See above	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	Battery per cell voltage is >0.8V	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	Complied	P
	A single fault applies to protective component parts such as MOSFET, fuse, thermostat or positive temperature coefficient (PTC) thermistor	See table 7.3.2	P
	Results: No fire. No explosion*.....:	See table 7.3.2	P
7.3.3	Free fall	Complied	P
	Results: No fire. No explosion*	No fire. No explosion	P
7.3.4	Thermal abuse (cells)	Not for battery	N/A
	Oven temperature (°C).....:	Not for battery	N/A

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	Results: No fire. No explosion*	Not for battery	N/A
7.3.5	Crush (cells)	Not for battery	N/A
	The crushing force was released upon:	Not for battery	N/A
	- The maximum force of 13kN \pm 0,78kN has been applied; or	Not for battery	N/A
	- An abrupt voltage drop of one-third of the original voltage has been obtained	Not for battery	N/A
	Results: No fire. No explosion*.....:	Not for battery	N/A
7.3.6	Over-charging of battery	See below	P
	The supply voltage which is:	See below	P
	- 1,4 times the upper limit charging voltage presented in Table A.1 (but not to exceed 6,0 V) for single cell/cell block batteries or	Multi cell battery	N/A
	- 1,2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and	Complied	P
	- Sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached	Complied	P
	Test was continued until the temperature of the outer casing:	See below	P
	- Reached steady state conditions (less than 10 °C change in 30-minute period); or	See below	N/A
	- Returned to ambient	Temperature of outer casing returned to ambient temperature	P
	Results: No fire. No explosion*.....:	See table 7.3.6	P
7.3.7	Forced discharge (cells)	Not for battery	N/A

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	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	Not for battery	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	Not for battery	N/A
	Results: No fire. No explosion*.....:	Not for battery	N/A
7.3.8	Mechanical tests (batteries)	See below	P
7.3.8.1	Vibration	Complied	P
	Results: No fire, no explosion, no rupture, no leakage or venting*	See table 7.3.8.1	P
7.3.8.2	Mechanical shock	Complied	P
	Results: No leakage, no venting, no rupture, no explosion and no fire*	See table 7.3.8.2	P
7.3.9	Design evaluation – Forced internal short-circuit(cells)	Country specific test not applicable in India	N/A
	The cells complied with national requirement for.....:	See above Cl. No. 7.3.9	N/A
	The pressing was stopped upon:	See above Cl. No. 7.3.9	N/A
	- A voltage drop of 50 mV has been detected; or	See above Cl. No. 7.3.9	N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached	See above Cl. No. 7.3.9	N/A
	Results: No fire*.....:	See above Cl. No. 7.3.9	N/A

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*Total number of Requirements to be observed / inspected = 11

Total No of applicable Requirement = 06

No of Requirements for which the sample passed = 06

Total number of tests to be conducted = 37

Total No of applicable Tests = 15

No. of tests for which the sample passed = 15

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Clause	Requirement + Test	Result - Remark	Verdict
8	INFORMATION FOR SAFETY*		P
8.1	General*	See below	P
	Manufacturers of secondary cells ensure that information is provided about current, voltage and temperature limits of their products*	Not for battery	N/A
	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*	Safety Information are provided for equipment manufacturers & end-users	P
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product*	Complied	P
	As appropriate, any information relating to hazard avoidance resulting from a system analysis provided to the end user*	Complied	P
	Do not allow children to replace batteries without adult supervision*	Complied	P
8.2	Small cell and battery safety information*	No such battery	N/A
	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them*	No such battery	N/A
	- Keep small cells and batteries which are considered swallowable out of the reach of children*	No such battery	N/A

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	- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion*	No such battery	N/A
	- In case of ingestion of a cell or battery, seek medical assistance promptly*	No such battery	N/A

*Total number of Requirements to be observed / inspected = 12

Total No of applicable Requirement = 06

No of Requirements for which the sample passed = 06

Total number of tests to be conducted = 00

Total No of applicable Tests = 00

No. of tests for which the sample passed = N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9	MARKING*		P
9.1	Cell marking*	See below	P
	Cells marked as specified in IEC 61960, except coin cells*	Not for battery	N/A
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity*	No such equipment	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*	Agreement letter provided	P
9.2	Battery marking*	See below	P
	Batteries marked as specified in IEC 61960, except for coin batteries*	Complied	P
	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*	Only for coin batteries	N/A
	Terminals have clear polarity marking on the external surface of the battery*	Complied	P
	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*	Complied	P
9.3	Caution for ingestion of small cells and batteries*	No such battery	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	For coin batteries	N/A

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	When small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion given on the immediate package	No such battery	N/A
9.4	Other information*	See below	P
	Storage and disposal instructions	Complied	P
	Recommended charging instructions	Manufacturer charging specification provided	P

*Total number of Requirements to be observed / inspected = 12

Total No of applicable Requirement = 08

No of Requirements for which the sample passed = 08

Total number of tests to be conducted = 04

Total No of applicable Tests = 02


No. of tests for which the sample passed = 02

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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	Only for coin cells	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	Complied	P

*Total number of Requirements to be observed / inspected = 01

Total No of applicable Requirement = 01

No of Requirements for which the sample passed = 01

Total number of tests to be conducted = 02

Total No of applicable Tests = 01

No. of tests for which the sample passed = 01


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Clause	Requirement + Test	Result - Remark	Verdict
ANNEX A	CHARGING AND DISCHARGING RANGE OF SECONDARY LITHIUM ION CELLS FOR SAFE USE		P
A.1	General	See below	P
A.2	Safety of lithium ion secondary battery	Battery is designed by manufacturer considering standard criteria	P
A.3	Consideration on charging voltage	See below	P
A.3.1	General	Charging voltage not exceeded as specified by manufacturer	P
A.3.2	Upper limit charging voltage	Upper limit charging voltage is 4.5V per cell	P
A.3.2.1	General	Upper limit charging voltage is within the limit as specified in standard	P
A.3.2.2	Explanation of safety viewpoint	See above	P
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	See above	P
A.4	Consideration of temperature and charging current	As per clause 7.1.2, the Second procedure charging of battery is not applicable as referred only for cell	N/A
A.4.1	General	See above Cl. No. A.4	N/A
A.4.2	Recommended temperature range	See above Cl. No. A.4	N/A
A.4.2.1	General	See above Cl. No. A.4	N/A
A.4.2.2	Safety consideration when a different recommended temperature range is applied	See above Cl. No. A.4	N/A
A.4.3	High temperature range	See above Cl. No. A.4	N/A
A.4.3.1	General	See above Cl. No. A.4	N/A
A.4.3.2	Explanation of safety viewpoint	See above Cl. No. A.4	N/A
A.4.3.3	Safety considerations when specifying charging conditions in the the high temperature range	See above Cl. No. A.4	N/A

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A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range	See above Cl. No. A.4	N/A
A.4.4	Low temperature range	See above Cl. No. A.4	N/A
A.4.4.1	General	See above Cl. No. A.4	N/A
A.4.4.2	Explanation of safety viewpoint	See above Cl. No. A.4	N/A
A.4.4.3	Safety considerations, when specifying charging conditions in the low temperature range	See above Cl. No. A.4	N/A
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range	See above Cl. No. A.4	N/A
A.4.5	Scope of the application of charging current	Alternating charging current not used	N/A
A.4.6	Consideration of discharge	See below	P
A.4.6.1	General	Final discharge voltage is 12V	P
A.4.6.2	Final discharge voltage and explanation of safety viewpoint	Discharge voltage does not go beyond specified final discharge voltage.	P
A.4.6.3	Discharge current and temperature range	Discharge current does not exceed higher than maximum discharge current	P
A.4.6.4	Scope of application of the discharging current	Alternating discharging current not used	N/A
A.5	Sample preparation	See Clause No. 7.3.9	N/A
A.5.1	General	See above (Cl. A.5)	N/A
A.5.2	Insertion procedure for nickel particle to generate internal short	See above (Cl. A.5)	N/A
A.5.3	Disassembly of charged cell	See above (Cl. A.5)	N/A
A.5.4	Shape of nickel particle	See above (Cl. A.5)	N/A
A.5.5	Insertion of nickel particle in cylindrical cell	See above (Cl. A.5)	N/A

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A.5.5.1	Insertion of nickel particle in winding core	See above (Cl. A.5)	N/A
A.5.5.2	Marking the position of the nickel particle on both ends of the winding core of the separator	See above (Cl. A.5)	N/A
A.5.6	Insertion of nickel particle in prismatic cell	See above (Cl. A.5)	N/A
A.6	Experimental procedure of the forced internal short-circuit test	See above (Cl. A.5)	N/A
A.6.1	Material and tools for preparation of nickel particle	See above (Cl. A.5)	N/A
A.6.2	Example of a nickel particle preparation procedure	See above (Cl. A.5)	N/A
A.6.3	Positioning (or placement) of a nickel particle	See above (Cl. A.5)	N/A
A.6.4	Damaged separator precaution	See above (Cl. A.5)	N/A
A.6.5	Caution for rewinding separator and electrode	See above (Cl. A.5)	N/A
A.6.6	Insulation film for preventing short-circuit	See above (Cl. A.5)	N/A
A.6.7	Caution when disassembling a cell	See above (Cl. A.5)	N/A
A.6.8	Protective equipment for safety	See above (Cl. A.5)	N/A
A.6.9	Caution in the case of fire during disassembling	See above (Cl. A.5)	N/A
A.6.10	Caution for the disassembling process and pressing the electrode core	See above (Cl. A.5)	N/A
A.6.11	Recommended specifications for the pressing device	See above (Cl. A.5)	N/A

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*Total number of Requirements to be observed / inspected = 00

Total No of applicable Requirement = 00

No of Requirements for which the sample passed = N/A

Total number of tests to be conducted = 51

Total No of applicable Tests = 12

No. of tests for which the sample passed = 12

Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement tested.

.....
(Approving Authority)

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Clause	Requirement + Test	Result - Remark	Verdict
ANNEX B	RECOMMENDATIONS TO EQUIPMENT MANUFACTURERS AND BATTERY ASSEMBLERS*	Safety information provided for manufacturer and battery assemblers	P
ANNEX C	RECOMMENDATIONS TO THE END-USERS*	Safety information provided for end user	P

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Clause	Requirement + Test	Result – Remark	Verdict
ANNEX D	MEASUREMENT OF THE INTERNAL AC RESISTANCE FOR COIN CELLS*	No such equipment	N/A
D.1	General	See above Annex D	N/A
D.2	Method	See above Annex D	N/A
	A sample size of three coin cells is required for this measurement.....:	See above Annex D	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	See above Annex D	N/A
	Coin cells with an internal resistance greater than 3 Ω require no further testing	See above Annex D	N/A

*Total number of Requirements to be observed / inspected = 01

Total No of applicable Requirement = 00

No of Requirements for which the sample passed = N/A

Total number of tests to be conducted = 05

Total No of applicable Tests = 00

No. of tests for which the sample passed = N/A


Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement tested.

.....
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Clause	Requirement + Test	Result - Remark	Verdict
ANNEX E	PACKAGING AND TRANSPORT*	UN 38.3 test report and packaging information provided	P
ANNEX F	COMPONENT STANDARDS REFERENCES*	See Critical component information	P

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Terms & Conditions: 1. The results reported in this Test report are valid only for the sample (above mentioned sample name) tested in our laboratory. 2. This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory. 3. Alpha Test House Pvt. Ltd. is responsible for the information provided in the test report except for the information provided by the customer. 4. Also, Alpha Test House Pvt. Ltd. is not responsible for the information provided by the customer which can affect the test results. 5. Samples will be stored / kept in our stores for 30 days from the date of testing and shall be destroyed thereafter without any intimation. 6. Samples tested are not to be used for any other purpose after the time of sample submission. 7. This report will not be valid for judicial purpose. 8. Total liability of our test house is limited to invoiced amount.

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2.1-2.5 TABLE: Critical components information					P
Object/part No.	Manufacturer/ trademark	Type/ Model	Technical Data	Standard	Marks of Conformity ¹ .
Cell	Dongguan Amperex Technology Limited	4236A5	3.9V, 3082mAh, 12.02Wh	IS 16046(Part 2):2018 IEC 62133-2:2017	BIS R-41130630
Plastics enclosure	YEUN YIH ENTERPRISE CO LTD	C500-(+)	V-0, 80°C	UL 94(Flammability test equivalent to IEC 60695-11-10)	UL E474885
Plastics enclosure (Alternate)	FORMOSA CHEMICALS & FIBRE CORP PLASTICS DIV	AC3710	V-0, 80°C	UL 94(Flammability test equivalent to IEC 60695-11-10)	UL E162823
Plastics enclosure (Alternate)	SABIC JAPAN L L C	BPL1000(C)	V-0, 80°C	UL 94(Flammability test equivalent to IEC 60695-11-10)	UL E207780
Mosfet (Q300, Q301)	Sinopower	SM3421NS QAC-TRG	30Vdc, 14.3A	IS 16046(Part 2):2018 IEC 62133-2:2017	Tested Within Equipment
Mosfet (Q300, Q301) (Alternate)	AOS	AON7422G	30V, 25A	IS 16046(Part 2):2018 IEC 62133-2:2017	Tested Within Equipment
Fuse (F500)	Dexerials Corp. Tochigi Plant	SFJ-1412W	12A, 36 Vdc.	EN 60127-1:1991(Equivalent to IEC 60127-1) EN 60127-3:1996 (Equivalent to IEC 60127-3)	TUV J 09650637
Fuse (F500) (Alternate)	SCHOTT Japan Corporation	D6SC4-12	12A, 36 Vdc.	EN 60127-1:1991(Equivalent to IEC 60127-1) EN 60127-3:1996 (Equivalent to IEC 60127-3)	TUV J 50247451

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PCB	APCB INC	77-1	V-0, 130 °C	UL 796 (No equivalent IEC Standard)	UL E85792
PCB Alternate	APCB INC	77-4	V-0, 130 °C	UL 796 (No equivalent IEC Standard)	UL E85792
PCB Alternate	GULTECH (JIANGSU) ELECTRONICS TECHNOLOGIES CO LTD	18	V-0, 130 °C	UL 796 (No equivalent IEC Standard)	UL E467551
PCB Alternate	TAIWAN PRINTED CIRCUIT BOARD TECHVEST CO LTD	MV-0	V-0, 130 °C	UL 796 (No equivalent IEC Standard)	UL E88441
PCB Alternate	NEW-HEART TECHNOLOGY CO LTD	3M1	V-0, 130 °C	UL 796 (No equivalent IEC Standard)	UL E206991
PCB Alternate	NEW-HEART TECHNOLOGY CO LTD	3M2	V-0, 130 °C	UL 796 (No equivalent IEC Standard)	UL E206991
PCB Alternate	Kunshan Guangqian Electronics Co Ltd	M	V-0, 130 °C	UL 796 (No equivalent IEC Standard)	UL E335082
PCB Alternate	Jiangsu Guangqian Electronics Co Ltd	M(ASP 1)	V-0, 130 °C	UL 796 (No equivalent IEC Standard)	UL E523980
PCB Alternate	Jiangxi Redboard Technology Co Ltd	H103C	V-0, 130 °C	UL 796 (No equivalent IEC Standard)	UL E133472
PCB Alternate	SHING TECH ELECTRONICS CO LTD	HM01(a)	V-0, 130 °C	UL 796 (No equivalent IEC Standard)	UL E248803
PCB Alternate	JIANGSU DIFEIDA ELECTRONICS CO LTD	DFD-4C(ASPI)	V-0, 130 °C	UL 796 (No equivalent IEC Standard)	UL E213009

Supplementary information:

1. Evidences provided by the manufacturer for the listed components are verified by us and the evidences are conforming to the requirements of the relevant standard.

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7.2.1	TABLE: Continuous charging at constant voltage (cells)			N/A
Sample no.	Recommended charging voltage Vc (Vdc)	Recommended charging current Irec (mA)	OCV before test (Vdc)	Results
--	--	--	--	--
--	--	--	--	--
--	--	--	--	--

Supplementary information:

- A -No fire or explosion
- B -No leakage
- Others

7.3.1	TABLE: External short-circuit (cell)				N/A
Sample no.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (°C)	Results
Samples charged at charging temperature upper limit:					
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
Samples charged at charging temperature lower limit:					
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--

Supplementary information:

- A - No fire or explosion

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7.3.2	TABLE: External short-circuit (battery)					P
Sample no.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (°K)	Component single fault condition	Results
1	23	17.99	77	0	NORMAL	A,B
2	23	17.97	77	1	MOSFET	A,B
3	23	17.97	78	1	MOSFET	A,B
4	23	17.95	79	1	MOSFET	A,B
5	23	17.96	75	1	MOSFET	A,B
Supplementary information: A- No fire or explosion B- Battery were tested for 24h						

7.3.2	TABLE: External short-circuit (battery)					P
Sample no.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (°K)	Component single fault condition	Results
6	23	17.96	76	0	NORMAL	A,B
7	23	17.95	79	1	MOSFET	A,B
8	23	17.98	79	1	MOSFET	A,B
9	23	17.98	77	1	MOSFET	A,B
10	23	17.99	74	1	MOSFET	A,B
Supplementary information: A- No fire or explosion B- Battery were tested for 24h Mosfet (Q300, Q301)Alternate: AON7422G						

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7.3.5	TABLE: Crush (cells)			N/A
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:				
--	--	--	--	--
--	--	--	--	--
--	--	--	--	--
--	--	--	--	--
--	--	--	--	--
Supplementary information:				
A - No fire or explosion				
B -Others				

7.3.6	TABLE: Over-charging of battery			P
Constant charging current (A).....:		6.164		P
Supply voltage (Vdc).....:		21.6		P
Sample no.	OCV before charging (Vdc)	Total charging time (minute)	Maximum outer case temperature (°C)	Results
11	12.15	-	23.4	A,B
12	12.12	-	23.2	A,B
13	12.12	-	23.5	A,B
14	12.13	-	23.6	A,B
15	12.16	-	23.6	A,B
Supplementary information:				
A- No fire or explosion				
B- Protective devices are protecting battery from over-charge current				

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7.3.6	TABLE: Over-charging of battery				P
Constant charging current (A).....:			6.164		P
Supply voltage (Vdc).....:			21.6		P
Sample no.	OCV before charging (Vdc)	Total charging time (minute)	Maximum outer case temperature (°C)	Results	
16	12.08	-	23.4	A,B	
17	12.12	-	23.5	A,B	
18	12.11	-	23.2	A,B	
19	12.15	-	23.2	A,B	
20	12.15	-	23.4	A,B	
Supplementary information: A- No fire or explosion B- Protective devices are protecting battery from over-charge current Mosfet (Q300, Q301) Alternate: AON7422G					

7.3.7	TABLE: Forced discharge (cells)				N/A
Sample no.	OCV before application of reverse charge (Vdc)	Measured reverse charge It (A)	Lower limit discharge voltage (Vdc)	Results	
--	--	--	--	--	
--	--	--	--	--	
--	--	--	--	--	
Supplementary information: A -No fire or explosion - Others					

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7.3.8.1	TABLE: Vibration				P
Sample no.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after Test (g)	Results
21	17.96	17.96	180	180	A,B,C,D
22	17.98	17.98	180	180	A,B,C,D
23	17.98	17.98	180	180	A,B,C,D
Supplementary information: A- No fire or explosion B- No rupture C- No leakage D- No venting E- Others					

7.3.8.2	TABLE: Mechanical shock				P
Sample no.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after Test (g)	Results
24	17.99	17.99	180	180	A,B,C,D
25	17.97	17.97	180	180	A,B,C,D
26	17.96	17.96	180	180	A,B,C,D
Supplementary information: A- No fire or explosion B- No rupture C- No leakage D- No venting E- Others					

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7.3.9	TABLE: Forced internal short circuit (cells)				N/A
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					
--	--	--	--	--	--
Samples charged at charging temperature upper limit					
--	--	--	--	--	--
Supplementary information: 1) Identify one of the following: 1: Nickel particle inserted between positive and negative (active material) coated area. 2: Nickel particle inserted between positive aluminium foil and negative active material coated area. - No fire or explosion - Others (please explain)					

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 3Ω, see test result on corresponding tables				

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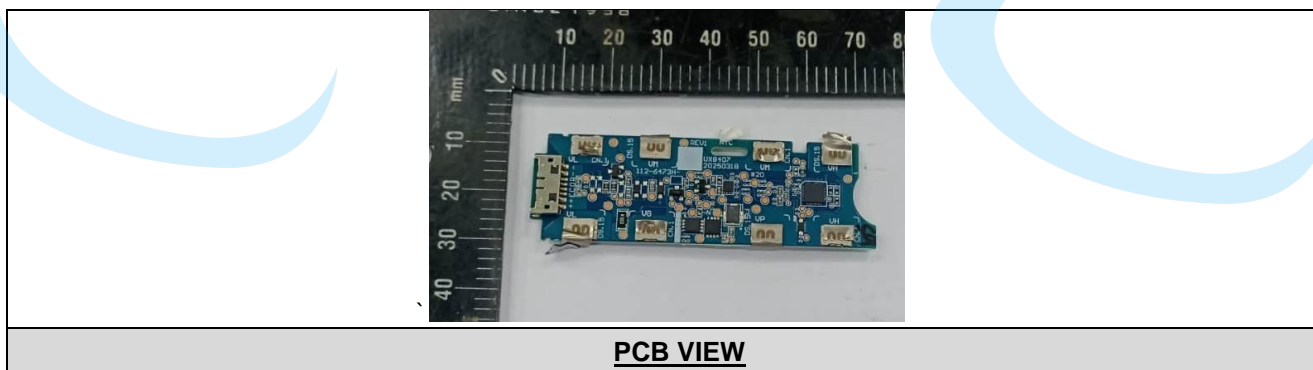
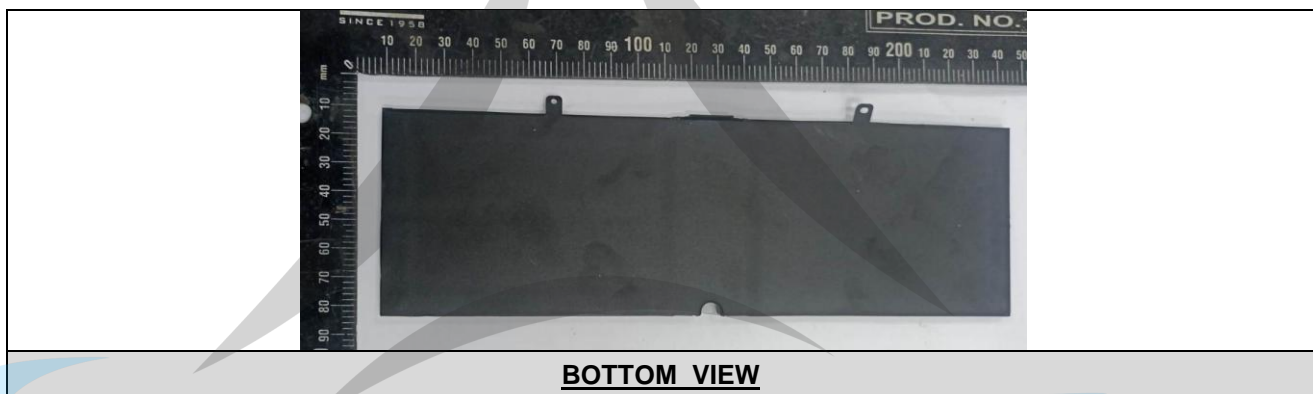
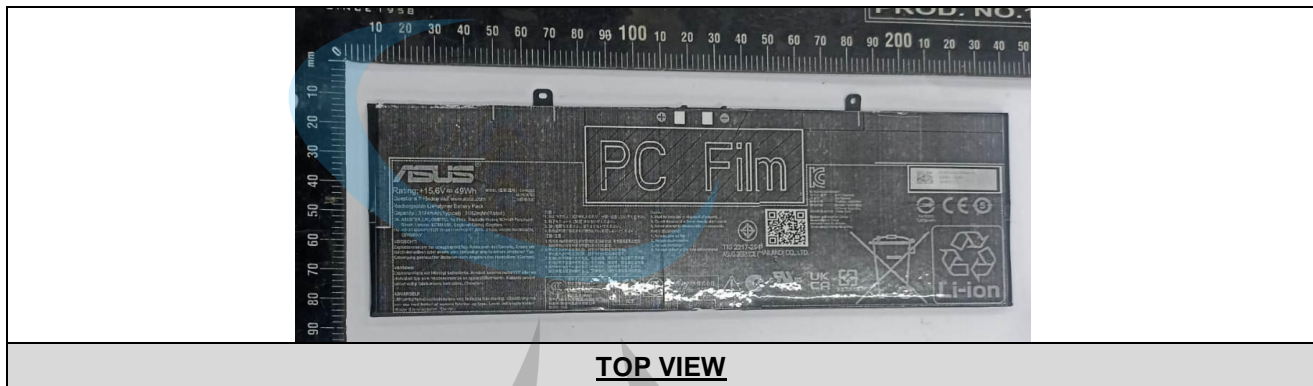
Dated: 18/07/2025

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Group: Cells and Batteries

Attachment-1

PHOTOGRAPHS



****END OF TEST REPORT****

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H-Office : M-577, Guru Harkishan Nagar, Paschim Vihar, New Delhi - 110087 (India)

Lab : 487/25, Near Prachin Shiv Mandir, Peeragarhi New Delhi – 110087 (India)

+91 011-48777888
+91 8527799406