

ACCURATE TEST SOLUTIONS NOIDAULR No. :
TC543323000002176F

DOC No. : 23E2A8CN F 21 SECTOR 11 NOIDA 201301, NOIDA, Gautam
Telephone : +91 9810820552 Buddha Nagar, Uttar Pradesh, India - 201301
FAX : -
E-Mail : accuratetests@gmail.com
BO Code : NA

Test REPORT AS PER : IS 16046 : Part 2 (2018)**QR Code/Barcode : 159290CRS****REPORT NO : SC23EPF13836_1**

DATE : 19 Sep, 2023

PART A. PARTICULARS OF SAMPLE SUBMITTED

a) Customer Name & Address : Zhongshan Zhongwangde New Energy
Technology Co.,Ltd
1- 2 FLOORS NO.3 FACTORY BUILDING DONGYA
AREA, DACHE INDUSTRIAL PARK, NANGLANG
TOWN, ZHONGSHAN, NA, GUANGDONG, China -
528451

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 : 45

g) Date of Receipt : 16 Aug, 2023

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 : 16 Aug, 2023

l) Date of Completion of Testing : 19 Sep, 2023

m) Section Code : 23E2A8CN

n) Section Report No. : 23E2A8CN_1

o) Report Type : New

p) Reference Report No. :

q) Remarks :

Ankit Pandey
OIC SAMPLE CELL
(Authorized Signatory)
Authorized on: 19 Sep, 2023 11:36 AM

1.

This is a Computer Generated Report.

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 ? | No |

Subhash .
OIC Electrical
(Authorized Signatory)
Authorized on: 19 Sep, 2023 11:32 AM

This is a Computer Generated Report.

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	-	-	-	Complies
2	9.4	Other information	Storage and disposal instructions Recommended charging instructions	-	-	-	Information supplied with cell
3	9.3	Caution for ingestion of small cells and batteries	Caution for ingestion of small cells and batteries	-	-	-	Complies
4	9.2	Battery Marking	Batteries marked as specified in IEC 61960, except for coin batteries	-	-	-	For battery only
5	9.1	Cell Marking	cell marking	-	-	-	Complies
6	9	Marking	marking	-	-	-	Complies
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.	-	-	-	Complies
8	8.1	General	N/A	-	-	-	Complies
9	8	Information for safety	N/A	-	-	-	Complies
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	-	-	-	No fire, No explosion For more described results see final attachment.
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)	-	-	-	No fire, No explosion, No leakage
12	7.1	Charging procedure for test purposes	Charging procedure for test purposes	-	-	-	Complies
13	7	Specific requirements and tests	SPECIFIC REQUIREMENTS AND TESTS	-	-	-	Complies
14	6	Tyoe Test amd Sample Size	N/A	-	-	-	Complies

15	5.8	Battery Safety Components	N/A	-	-	-	For battery only.
16	5.7	Quality Plan	Quality plan*	-	-	-	Quality document provided
17	5.6	Assembly of Cells into batteries	5.6.1 General Design recommendation 5.6.2 Design 5.6.3 Mechanical protection for cells and components of batteries	-	-	-	For battery only.
18	5.5	Terminal Contacts	Terminal contacts*	-	-	-	Complies
19	5.4	Temperature, Voltage and Current Management	Temperature, voltage and current management	-	-	-	For battery only.
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	-	-	-	Complies
21	5.2	Insulation and Wiring	Insulation and wiring	-	-	-	For battery only.
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	-	-	-	Complies
23	5	General Safety Considerations	General	-	-	-	Complies
24	4	Parameter Measurement Tolerances	Parameter measurement tolerances	-	-	-	Complies

Subhash .
OIC Electrical
 (Authorized Signatory)
 Authorized on: 19 Sep, 2023 11:32 AM

This is a Computer Generated Report.

.....

PART D. REMARKS

Subhash .
OIC Electrical
(Authorized Signatory)
Authorized on: 19 Sep, 2023 11:32 AM

This is a Computer Generated Report.

SUMMARY OF TEST REPORT

Test Report No: SC23EPF13836_1

DATE: 19/09/2023

ULR-TC543323000002176F

DISCIPLINE: Electrical

GROUP: Cells and Batteries

(Number of Pages in Test Report: Page No. 1 to 39)

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

- 1. Name of the Manufacturer:** Zhongshan Zhongwangde New Energy Technology Co.,Ltd
- 2. Product:** Rechargeable Li-ion Polymer Cell
- 3. Model:** ZWD603026S
- 4. Model differences provided (if applicable):** N/A
- 5. Model differences verified as per MEITY Guidelines for series formulation:** N/A
- 6. Test Results:**

S. No.	TEST REQUIREMENT	CLAUSE	VERDICT
1	Parameter measurement tolerances	Cl. 4.0	P
2	Insulation and wiring	Cl. 5.2	N/A
3	Venting	Cl. 5.3	P
4	Temperature/voltage/Current management	Cl. 5.4	N/A
5	Terminal contacts	Cl. 5.5	P
6	Assembly of cells into batteries	Cl. 5.6	N/A
7	Quality plan	Cl. 5.7	P
8	Battery Safety Component	Cl. 5.8	N/A
9	Type test and Sample Size	Cl. 6.0	P
10	Charging procedure for test purposes	Cl. 7.1	P




Report No: SC23EPF13836_1

DATE: 19/09/2023

11	Intended use	Cl. 7.2	P
12	Reasonably foreseeable misuse	Cl. 7.3	P
13	Information for Safety	Cl. 8.1	P
14	Small Cell and Battery Safety Information	Cl. 8.2	P
15	Cell marking	Cl. 9.1	P
16	Battery marking	Cl. 9.2	N/A
17	Caution for ingestion of small cells and batteries	Cl. 9.3	P
18	Other information	Cl. 9.4	P
19	Packaging and Transport	Cl. 10.0	P
20	Charging and Discharging range of secondary lithium ion cells for safe use	Annex A	P
21	Recommendation to equipment manufacturers and battery assemblers	Annex B	P
22	Recommendations to the End User	Annex C	P
23	Measurement of the internal AC resistance for coin cells	Annex D	N/A
24	Packaging and Transport	Annex E	P
25	Component standards references	Annex F	N/A



Subh

Report No: SC23EPF13836_1

DATE: 19/09/2023

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 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 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.



(Signature of Authorized person with Stamp)



Test Report No: SC23EPF13836_1

Page 1 of 39

Issue Date: 19/09/2023

Manufacturer:	Zhongshan Zhongwangde New Energy Technology Co.,Ltd 1- 2 FLOORS NO.3 FACTORY BUILDING DONGYA AREA, DACHE INDUSTRIAL PARK, NANGLANG TOWN, ZHONGSHAN, GUANGDONG, 528451		
Test item:	Rechargeable Li-ion Polymer Cell		
Identification:	ZWD603026S	Serial No.:	NIL
Receipt No.:	23E2A8CN	Date of receipt:	16/08/2023
Testing laboratory and its address:	Accurate Test Solutions F-21, Sector- 11, Noida-201301, U.P.,(INDIA)		
Test specification:	IS 16046 (Part 2):2018 / IEC 62133-2:2017		
Test Result:	The test item passed / failed the test specification(s).		
Other Aspects:	Rechargeable Li-ion Polymer Cell has been tested as per IS 16046 (Part 2):2018 / IEC 62133 -2:2017 complies with all applicable parameters.		
This test report relates to the test sample submitted and list of documents attached.			

Tested by:	Approved by / Authorized Signatory:	Issued by:
		
Raju Kumar (Testing Engineer)	Subhash (Technical Manager)	Yad Ram (Head of Laboratory)
Date: 19/09/2023	Date: 19/09/2023	Date: 19/09/2023



TEST REPORT	
IS 16046 (Part 2):2018 / IEC 62133-2:2017 2 of 39	
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 Reference No.	SC23EPF13836_1
Date of issue	19/09/2023
Total number of pages	39
Testing Laboratory	Accurate Test Solutions
Address	F-21, Sector- 11, Noida-201301, U.P.,(INDIA)
Manufacturer's name	Zhongshan Zhongwangde New Energy Technology Co.,Ltd
Address	1- 2 FLOORS NO.3 FACTORY BUILDING DONGYA AREA, DACHE INDUSTRIAL PARK, NANGLANG TOWN, ZHONGSHAN, GUANGDONG, 528451
Test specification:	
Standard	IS 16046 (Part 2):2018 / IEC 62133-2:2017
Test procedure	BIS 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-ion Polymer Cell
Trade Mark	ZWDB
Model/ Type reference	ZWD603026S
Ratings	3.8V, 650mAh
Other Documents submitted	Please refer to Table – List of Attachments at Page No. 04

Tested by:	Approved by / Authorized Signatory:	Issued by:
		
Raju Kumar (Testing Engineer)	Subhash (Technical Manager)	Yad Ram (Head of Laboratory)
Date: 19/09/2023	Date: 19/09/2023	Date: 19/09/2023

Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 3 of 39

Dated: 19/09/2023

IEC 62133-2:2017

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	02	02	02	7
General safety considerations	Insulation and wiring	05	00	00	8
General safety considerations	Venting	03	02	02	9
General safety considerations	Temperature/ voltage/Current management	04	00	00	10
General safety considerations	Terminal contacts	04	04	04	11
General safety considerations	Assembly of cells into batteries	23	00	00	12
General safety considerations	Quality plan	02	02	02	15
General safety considerations	Battery safety components	02	00	00	16
Type test and sample size	Type test conditions	06	03	03	17
Specific requirements and tests	Charging procedure for test purposes	09	08	08	18
Specific requirements and tests	Intended use	06	04	04	19
Specific requirements and tests	Reasonably foreseeable misuse	46	16	16	20
Information for safety	Information for safety	12	08	08	23
Marking Requirements	Marking	16	07	07	24
Packaging and Transport	Packaging	03	02	02	26
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	25	25	28
Measurement of the internal AC resistance for coin cells	Measurement of the internal AC resistance for coin cells (Annex D)	06	00	00	31

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

.....
(Approving Authority)




Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 4 of 39

Dated: 19/09/2023

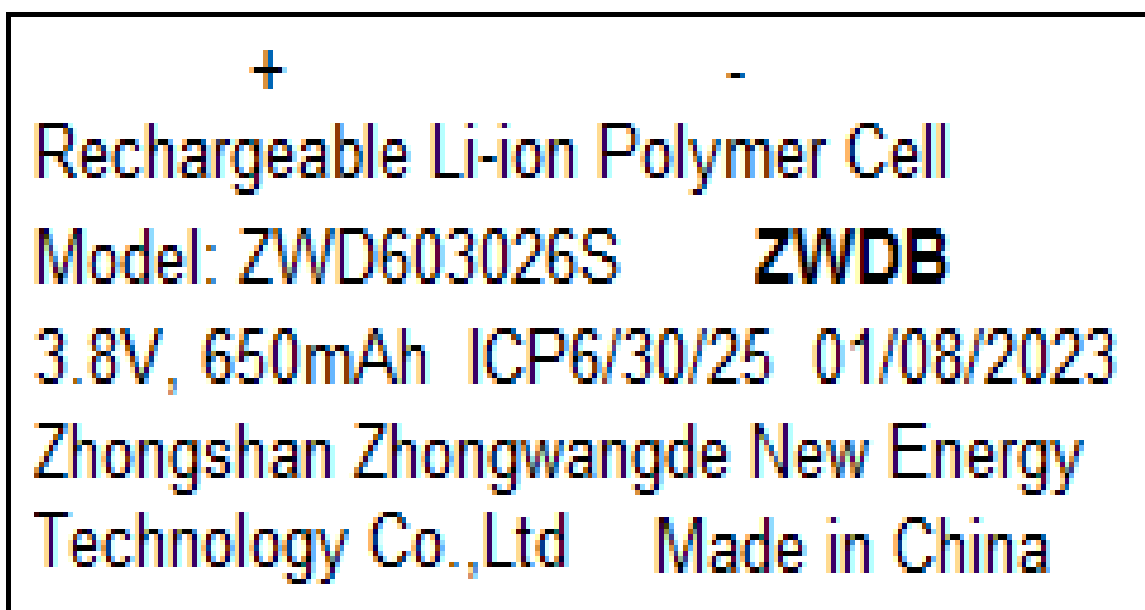
IEC 62133-2:2017

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

Attachment No.	Attachment Description	No. of pages in Attachment
Attachment – 1	Photographs of the EUT	Page No. 39 (1 Page)

Copy of marking Plate:

Cell Marking



Caution Statement For Small Cell on packaging

Cautions:

- Keep small cells and batteries which are considered swallowable out of the reach of children.
- Swallowing may lead to burns, perforation of short tissue, and death. Severe burns can occur within 2h of ingestion.
- In case of ingestion of a cell or battery, seek medical assistance promptly




Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 5 of 39

Dated: 19/09/2023

IEC 62133-2:2017

Test item particulars.....:	Rechargeable Li-ion Polymer Cell		
Classification of installation and use.....:	For use in portable applications		
Supply Connection.....:	Connected by welding of terminals		
Recommend charging method declared by the manufacturer.....:	CC/CV		
Discharge current (0,2 It A)	130mA		
Specified final voltage.....:	3.0V		
Upper limit charging voltage per cell.....:	4.20V		
Maximum charging current.....:	650mA		
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.....:	See Below		
Date of receipt of test item.....:	16/08/2023		
Date(s) of performance of tests.....:	16/08/2023 to 19/09/2023		
General remarks:			
<p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p> <p>"(See Enclosure #)" refers to additional information appended to the report.</p> <p>"(See appended table)" refers to a table appended to the report.</p>			
Laboratory Conditions:			
Ambient Temperature.....: 20±5 °C			
Ambient Humidity.....: 45-75% RH			



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 6 of 39

Dated: 19/09/2023

IEC 62133-2:2017

General product information:

1) Application details / Description of the product:

The product under test is Rechargeable Li-ion Polymer Cell for use in portable applications. It has a rating of 3.8V, 650mAh. It is a Prismatic Cell.

Charging Specification:

Model:	Limited Charge Voltage (V)	Standard Charging Current (mA)	Maximum Charging Current (mA)	Standard Discharging Current (mA)	End of Discharge Voltage (V)	Cut off Charging Current (mA)
ZWD60302 6S	4.20	130	650	130	3.0	13

Max. specified ambient temperature (°C): 0°C ~ 45°C (Charging)
-20°C ~ 60°C (Discharging)

2) Differences between the models.....: N/A

Model No. tested with-in the family series : N/A

3) 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.




Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 7 of 39

Dated: 19/09/2023

IEC 62133-2:2017

Clause	Requirement + Test	Result - Remark	Verdict
4	PARAMETER MEASUREMENT TOLERANCES		P
	Parameter measurement tolerances	Complies	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: = 00

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

.....
(Approving Authority)



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 8 of 39

Dated: 19/09/2023

IEC 62133-2:2017

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	Complies	P
5.2	Insulation and wiring	For Battery Only	N/A
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 MΩ	See Above	N/A
	Insulation resistance (MΩ).....:	See Above	—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements	See Above	N/A
	Orientation of wiring maintains adequate clearance and creepage distances between conductors	See Above	N/A
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse	See Above	N/A

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

Total No of applicable Requirement: = 03

No of Requirements for which the sample passed: = 03

Total number of tests to be conducted: = 05

Total No of applicable Tests: = 00

No. of tests for which the sample passed: = 00

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

.....
(Approving Authority)




Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 9 of 39

Dated: 19/09/2023

IEC 62133-2:2017

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	Constructional design provides relieve of excessive internal pressure	P
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief		N/A

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

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

.....
(Approving Authority)



Report No.: SC23EPF13836_1	IS 16046 (Part 2):2018 /	Page 10 of 39
Dated: 19/09/2023	IEC 62133-2:2017	

Clause	Requirement + Test	Result - Remark	Verdict
5.4	Temperature, voltage and current management	For Battery Only	N/A
	Batteries are designed such that abnormal temperature rise conditions are prevented	See Above	N/A
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	See Above	N/A
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that specified chargers are designed to maintain charging within the temperature, voltage and current limits specified	See Above	N/A

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

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

.....
(Approving Authority)



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 11 of 39

Dated: 19/09/2023

IEC 62133-2:2017

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	Complies	P
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance	Complies	P
	Terminal contacts are arranged to minimize the risk of short-circuit	Proper spacing provided between the 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: = 00

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

.....
(Approving Authority)



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 12 of 39

Dated: 19/09/2023

IEC 62133-2:2017

Clause	Requirement + Test	Result - Remark	Verdict
5.6	Assembly of cells into batteries	For Battery Only	N/A
5.6.1	General	See Above	N/A
	Each battery have an independent control and protection for current, voltage, temperature and any other parameter required for safety and to maintain the cells within their operating region	See Above	N/A
	This protection may be provided external to the battery such as within the charger or the end devices	See Above	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	See Above	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	See Above	N/A
	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly	See Above	N/A
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate circuitry to prevent operation of cells outside the limits specified by the cell manufacturer	See Above	N/A
	Protective circuit components added as appropriate and consideration given to the end-device application	See Above	N/A
	The manufacturer of the battery provide a safety analysis of the battery safety circuitry with a test report including a fault analysis of the protection circuit under both charging and discharging conditions confirming the compliance	See Above	N/A
5.6.2	Design recommendation	See Above	N/A
	For the battery consisting of a single cell or a single cellblock, it is recommended that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 2	See Above	N/A



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 13 of 39

Dated: 19/09/2023

IEC 62133-2:2017

	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	See Above	N/A
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that charging is stopped when the upper limit of the charging voltage is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks	See Above	N/A
	For batteries consisting of series-connected cells or cell blocks, nominal charge voltage not be counted as an overcharge protection	See Above	N/A
	For batteries consisting of series-connected cells or cell blocks, cells have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer	See Above	N/A
	It is recommended that the cells and cell blocks not discharged beyond the cell manufacturer's specified final voltage	See Above	N/A
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry incorporated into the battery management system	See Above	N/A
5.6.3	Mechanical protection for cells and components of batteries	See Above	N/A
	Mechanical protection for cells, cell connections and control circuits within the battery provided to prevent damage as a result of intended use and reasonably foreseeable misuse	See Above	N/A
	The mechanical protection can be provided by the battery case or it can be provided by the end product enclosure for those batteries intended for building into an end product	See Above	N/A
	The battery case and compartments housing cells designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer	See Above	N/A




Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 14 of 39

Dated: 19/09/2023

IEC 62133-2:2017

	For batteries intended for building into a portable end product, testing with the battery installed within the end product considered when conducting mechanical tests	See Above	N/A
--	--	-----------	-----

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

Total No of applicable Requirement: = 00

No of Requirements for which the sample passed: = 00

Total number of tests to be conducted: =00

Total No of applicable Tests: =00

No. of tests for which the sample passed: =00

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

.....
(Approving Authority)



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 15 of 39

Dated: 19/09/2023

IEC 62133-2:2017

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	Quality document provided	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: = 00

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

.....
(Approving Authority)




Report No.: SC23EPF13836_1	IS 16046 (Part 2):2018 /	Page 16 of 39
Dated: 19/09/2023	IEC 62133-2:2017	

Clause	Requirement + Test	Result - Remark	Verdict
5.8	Battery safety components	For Battery Only	N/A
	According annex F	See Above	N/A

Total number of Requirements to be observed/inspected: = 02
Total No of applicable Requirement: = 00
No of Requirements for which the sample passed: = 00

Total number of tests to be conducted: = 00
Total No of applicable Tests: = 00
No. of tests for which the sample passed: = 00

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

.....
(Approving Authority)



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 17 of 39

Dated: 19/09/2023

IEC 62133-2:2017

Clause	Requirement + Test	Result - Remark	Verdict
6	TYPE TEST AND SAMPLE SIZE	See Below	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	Complies	P
	Coin cells with resistance $\leq 3 \Omega$ (measured according annex D) are tested according table 1	For Coin Cell Only	N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of $20^\circ\text{C} \pm 5^\circ\text{C}$	Complies	P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and overdischarge protection	For Battery Only	N/A
	When conducting the short-circuit test, consideration given to the simulation of any single fault condition that is likely to occur in the protecting circuit that would affect the short-circuit test	For Battery Only	N/A

Total number of Requirements to be observed/inspected: = 06

Total No of applicable Requirement: = 03

No of Requirements for which the sample passed: = 03

Total number of tests to be conducted: = 00

Total No of applicable Tests: = 00

No. of tests for which the sample passed: = 00

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

.....

(Approving Authority)




Report No.: SC23EPF13836_1 IS 16046 (Part 2):2018 / Page 18 of 39
Dated: 19/09/2023 IEC 62133-2:2017

Clause	Requirement + Test	Result - Remark	Verdict
7	SPECIFIC REQUIREMENTS AND TESTS	See Below	P
7.1	Charging procedure for test purposes	See Below	P
7.1.1	First procedure	See Below	P
	This charging procedure applies to subclauses other than those specified in 7.1.2	Complies	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	Complies	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		N/A
7.1.2	Second procedure	See Below	P
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9	Charging procedure applies to Clause 7.3.1, 7.3.4, 7.3.5	P
	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	Complies	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 = 06
No. of tests for which the sample passed: = 06

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

.....
(Approving Authority)



Report No.: SC23EPF13836_1 IS 16046 (Part 2):2018 / Page 19 of 39
Dated: 19/09/2023 IEC 62133-2:2017

Clause	Requirement + Test	Result - Remark	Verdict
7.2	Intended use	See Below	P
7.2.1	Continuous charging at constant voltage (cells)	See Below	P
	Fully charged cells are subjected for 7 days to a charge using the charging method for current and standard voltage specified by the cell manufacturer	Five fully charged cells as per clause 7.1.1 are subjected to Continuous charging at constant voltage for 7 days	P
	Results: No fire, No explosion, No leakage.....:	No fire, No explosion, No leakage	P
7.2.2	Case stress at high ambient temperature (battery)	For Battery Only	N/A
	Oven temperature (°C).....:	See Above	—
	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: = 02
No of Requirements for which the sample passed: = 02

Total number of tests to be conducted: = 03
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.

.....
(Approving Authority)



Report No.: SC23EPF13836_1 IS 16046 (Part 2):2018 / Page 20 of 39
Dated: 19/09/2023 IEC 62133-2:2017

Clause	Requirement + Test	Result - Remark	Verdict
7.3	Reasonably foreseeable misuse	See Below	P
7.3.1	External short-circuit(cell)	See Below	P
	The cells were tested until one of the following occurred:	See Below	P
	- 24 hours elapsed; or	See Below	N/A
	- The case temperature declined by 20 % of the maximum temperature rise	Cell case temperature declined by 20 % of the maximum temperature rise	P
	Results: No fire. No explosion.....	No fire. No explosion	P
7.3.2	External short-circuit (battery)	For Battery Only	N/A
	The batteries were tested until one of the following occurred:	See Above	N/A
	- 24 hours elapsed; or	See Above	N/A
	- 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	See Above	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	See Above	N/A
	A single fault applies to protective component parts such as MOSFET, fuse, thermostat or positive temperature coefficient (PTC) thermistor	See Above	N/A
	Results: No fire. No explosion.....	See Above	N/A
7.3.3	Free fall	See Below	P
	Results: No fire. No explosion	No fire. No explosion	P
7.3.4	Thermal abuse (cells)	See Below	P
	Oven temperature (°C).....	The oven temperature raised at a rate of 5°C/min±2°C/min to a temperature of 130°C ±2°C. The cell remained at that temperature for 30 minutes before the test stopped.	—
	Results: No fire. No explosion	No fire, No explosion	P



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 21 of 39

Dated: 19/09/2023

IEC 62133-2:2017

7.3.5	Crush (cells)	See Below	P
	The crushing force was released upon:	See Below	P
	- The maximum force of 13 kN \pm 0.78 kN has been applied; or	Complies (See Table 7.3.5)	P
	- An abrupt voltage drop of one-third of the original voltage has been obtained	See Above	N/A
	Results: No fire. No explosion.....	No fire. No explosion	P
7.3.6	Over-charging of battery	For Battery Only	N/A
	The supply voltage which is:	See Above	N/A
	- 1,4 times the upper limit charging voltage presented in Table A.1 (but not to exceed 6,0 V) for single cell/cell block batteries or	See Above	N/A
	- 1,2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and	See Above	N/A
	- Sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached	See Above	N/A
	Test was continued until the temperature of the outer casing:	See Above	N/A
	- Reached steady state conditions (less than 10 °C change in 30-minute period); or	See Above	N/A
	- Returned to ambient	See Above	N/A
	Results: No fire. No explosion.....	See Above	N/A
7.3.7	Forced discharge (cells)	See Below	P
	If the discharge voltage reaches the negative value of upper limit charging voltage within the testing duration, the voltage is maintained at the negative value of the upper limit charging voltage by reducing the current for the remainder of the testing duration.	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.	P
	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	See Above	N/A
	Results: No fire. No explosion.....	No fire. No explosion	P
7.3.8	Mechanical tests (batteries)	For Battery Only	N/A
7.3.8.1	Vibration	See Above	N/A
	Results: No fire, no explosion, no rupture, no leakage or venting.	See Above	N/A



Report No.: SC23EPF13836_1 IS 16046 (Part 2):2018 / Page 22 of 39
Dated: 19/09/2023 IEC 62133-2:2017

7.3.8.2	Mechanical shock	See Above	N/A
	Results: No leakage, no venting, no rupture, No explosion and no fire..... :	See Above	N/A
7.3.9	Design evaluation – Forced internal short-circuit (cells)	Not Applicable for India	N/A
	The cells complied with national requirement for...:	France, Japan, Korea, Switzerland	--
	The pressing was stopped upon:	See Above	N/A
	- A voltage drop of 50 mV has been detected; or	See Above	N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached	See Above	N/A
	Results: No fire.....:	See Above	N/A

Total number of Requirements to be observed/inspected: = 09
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: = 10
No. of tests for which the sample passed: = 10

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

.....
(Approving Authority)




Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 23 of 39

Dated: 19/09/2023

IEC 62133-2:2017

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	Information provided in the specification	P
	Manufacturers of batteries ensure that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards	For Battery Only	N/A
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product	For Battery Only	N/A
	As appropriate, any information relating to hazard avoidance resulting from a system analysis provided to the end user	For Battery Only	N/A
	Do not allow children to replace batteries without adult supervision	For Battery Only	N/A
8.2	Small cell and battery safety information	See Below	P
	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:	Safety information marked on packaging	P
	- Keep small cells and batteries which are considered swallowable out of the reach of children	Complies	P
	- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion	Complies	P
	- In case of ingestion of a cell or battery, seek medical assistance promptly	Complies	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: = 00

Total No of applicable Tests: = 00

No. of tests for which the sample passed: = 00

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

.....
(Approving Authority)




Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 24 of 39

Dated: 19/09/2023

IEC 62133-2:2017

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	See copy of marking plate	P
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity	For coin cell only	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	Marking is provided on cell surface	N/A
9.2	Battery marking	For Battery Only	N/A
	Batteries marked as specified in IEC 61960, except for coin batteries	See Above	N/A
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity. Batteries also marked with an appropriate caution statement	See Above	N/A
	Terminals have clear polarity marking on the external surface of the battery	See Above	N/A
	Batteries with keyed external connectors designed for connection to specific end products need not be marked with polarity markings if the design of the external connector prevents reverse polarity connections	See Above	N/A
9.3	Caution for ingestion of small cells and batteries	See Below	P
	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 Cell and Battery only	N/A
	When small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion given on the immediate package	Caution statement provided on packaging	P



Report No.: SC23EPF13836_1	IS 16046 (Part 2):2018 /	Page 25 of 39
Dated: 19/09/2023	IEC 62133-2:2017	

9.4	Other information	Information supplied with the Cell	P
	Storage and disposal instructions	For Battery Only	N/A
	Recommended charging instructions	Charging Specification is provided in Technical Specification	P

Total number of Requirements to be observed/inspected: = 16
Total No of applicable Requirement: = 07
No of Requirements for which the sample passed: = 07

Total number of tests to be conducted: = 00
Total No of applicable Tests: = 00
No. of tests for which the sample passed: = 00

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

.....
(Approving Authority)



Report No.: SC23EPF13836_1 IS 16046 (Part 2):2018 / Page 26 of 39
Dated: 19/09/2023 IEC 62133-2:2017

Clause	Requirement + Test	Result - Remark	Verdict
10	PACKAGING AND TRANSPORT	See Below	P
	Packaging for coin cells not small enough to fit within the limits of the ingestion gauge of Figure 3	For Coin Cell Only	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	Complies	P

Total number of Requirements to be observed/inspected: = 03
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: = 00

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

.....
(Approving Authority)



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 27 of 39

Dated: 19/09/2023

IEC 62133-2:2017

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	For Battery Only	N/A
A.3	Consideration on charging voltage	Charging Voltage applied as per manufacturer specification	P
A.3.1	General	See below	P
A.3.2	Upper limit charging voltage	Upper limit charging voltage: 4.20V	P
A.3.2.1	General	Complies	P
A.3.2.2	Explanation of safety viewpoint	See Below	P
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	Upper limit charging voltage within limit	N/A
A.4	Consideration of temperature and charging current	Temperature and charging current considered as per manufacturer specification	P
A.4.1	General	See Below	P
A.4.2	Recommended temperature range	See Below	P
A.4.2.1	General	Lower Limit Temperature: 0°C Upper Limit Temperature: 45°C	P
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Lower Limit Temperature: 0°C (Specified), -5°C (Tested) Upper Limit Temperature: 45°C (Specified), 45°C (Tested)	P
A.4.3	High temperature range	See Below	P
A.4.3.1	General	Upper limit Temperature: 45°C	P
A.4.3.2	Explanation of safety viewpoint	Upper Limit temperature is within the limit as specified in Standard	P
A.4.3.3	Safety considerations when specifying charging conditions in the high temperature range	See Above	P
A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range	See Above	N/A
A.4.4	Low temperature range	See Below	P
A.4.4.1	General	Lower limit Temperature: 0°C	P
A.4.4.2	Explanation of safety viewpoint	Lower limit temperature is applied : -5°C	P
A.4.4.3	Safety considerations, when specifying charging conditions in the low temperature range	See Above	P
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range	See test result clause: 7.2 to 7.3	P

Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 28 of 39

Dated: 19/09/2023

IEC 62133-2:2017

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: 3.0V	P
A.4.6.2	Final discharge voltage and explanation of safety viewpoint	See Above	P
A.4.6.3	Discharge current and temperature range	Cells were discharged at 20°C±5°C at a constant current of 0,2 It A.	P
A.4.6.4	Scope of application of the discharging current	Alternating Discharging current not used	N/A
A.5	Sample preparation	Not Applicable For India	N/A
A.5.1	General	See Above	N/A
A.5.2	Insertion procedure for nickel particle to generate internal short	See Above	N/A
A.5.3	Disassembly of charged cell	See Above	N/A
A.5.4	Shape of nickel particle	See Above	N/A
A.5.5	Insertion of nickel particle in cylindrical cell	See Above	N/A
A.5.5.1	Insertion of nickel particle in winding core	See Above	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	N/A
A.5.6	Insertion of nickel particle in prismatic cell	See Above	N/A
A.6	Experimental procedure of the forced internal short-circuit test	See Above	N/A
A.6.1	Material and tools for preparation of nickel particle	See Above	N/A
A.6.2	Example of a nickel particle preparation procedure	See Above	N/A
A.6.3	Positioning (or placement) of a nickel particle	See Above	N/A
A.6.4	Damaged separator precaution	See Above	N/A
A.6.5	Caution for rewinding separator and electrode	See Above	N/A
A.6.6	Insulation film for preventing short-circuit	See Above	N/A
A.6.7	Caution when disassembling a cell	See Above	N/A
A.6.8	Protective equipment for safety	See Above	N/A
A.6.9	Caution in the case of fire during disassembling	See Above	N/A
A.6.10	Caution for the disassembling process and pressing the electrode core	See Above	N/A
A.6.11	Recommended specifications for the pressing device	See Above	N/A

Total number of Requirements to be observed/inspected: = 51

Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 29 of 39

Dated: 19/09/2023

IEC 62133-2:2017

Total No of applicable Requirement: = 25

No of Requirements for which the sample passed: = 25

Total number of tests to be conducted: = 00

Total No of applicable Tests: = 00

No. of tests for which the sample passed: = 00

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

.....
(Approving Authority)



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 30 of 39

Dated: 19/09/2023

IEC 62133-2:2017

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




Report No.: SC23EPF13836_1 IS 16046 (Part 2):2018 / Page 31 of 39
Dated: 19/09/2023 IEC 62133-2:2017

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

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

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

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

.....
(Approving Authority)



Report No.: SC23EPF13836_1	IS 16046 (Part 2):2018 /	Page 32 of 39
Dated: 19/09/2023	IEC 62133-2:2017	

ANNEX E	PACKAGING AND TRANSPORT	P
----------------	--------------------------------	---

ANNEX F	COMPONENT STANDARDS REFERENCES	N/A
----------------	---------------------------------------	-----



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 33 of 39

Dated: 19/09/2023

IEC 62133-2:2017

TABLE: Critical components information					P
Object / part No.	Manufacturer / trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
Positive Electrode	Tianjin B&M Science and Technology Co., Ltd	HVC-17B	LiCoO2	IS 16046 (Part 2): 2018/ IEC 62133-2:2017	Tested with cell
Negative Electrode	Jiangxi Zichen Technology co.,Ltd	Y515	C, content: 99.9% Particle size D50: 14µm	IS 16046 (Part 2): 2018/ IEC 62133-2:2017	Tested with cell
Electrolyte	Shenzhen Capchem Technology Co.,Ltd	LBC445D58	LiPF6 salt+EC solvent Conductivity : 6.27±0.50mS/cm	IS 16046 (Part 2): 2018/ IEC 62133-2:2017	Tested with cell
Separator	Shenzhen XuRan Electronics Co., LTD.	7+6um	Material: PE Dimensions: 1150 mm * 22.5mm* 13um Shut down temperature: 135-145°C	IS 16046 (Part 2): 2018/ IEC 62133-2:2017	Tested with cell
Case	RESONAC PACKAGING CORPORATION	MD-PSF-004-1187L	packing foil	IS 16046 (Part 2): 2018/ IEC 62133-2:2017	Tested with cell
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.					



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 34 of 39

Dated: 19/09/2023

IEC 62133-2:2017

7.2.1	TABLE: Continuous charging at constant voltage (cells)				P
Sample no.	Recommended Charging voltage Vc (Vdc)	Recommended charging current Irec (A)	OCV before test (Vdc)	Results	
Sample No. 1	4.20	0.13	4.16	No fire, No explosion, No Leakage	
Sample No. 2	4.20	0.13	4.15	No fire, No explosion, No Leakage	
Sample No. 3	4.20	0.13	4.13	No fire, No explosion, No Leakage	
Sample No. 4	4.20	0.13	4.16	No fire, No explosion, No Leakage	
Sample No. 5	4.20	0.13	4.15	No fire, No explosion, No Leakage	
Supplementary information: - No fire or explosion - No leakage - Others					

7.3.1	TABLE: External short-circuit (cell)					P
Sample no.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K)	Results	
Samples charged at charging temperature upper limit: 45°C						
Sample No. 6	55±5	4.14	83.4	40.1	No fire, No explosion	
Sample No. 7	55±5	4.17	82.6	43.9	No fire, No explosion	
Sample No. 8	55±5	4.15	83.7	41.4	No fire, No explosion	
Sample No. 9	55±5	4.15	81.8	44.1	No fire, No explosion	
Sample No. 10	55±5	4.17	83.6	42.6	No fire, No explosion	
Samples charged at charging temperature lower limit: -5°C						
Sample No. 11	55±5	4.13	82.6	42.2	No fire , No explosion	
Sample No. 12	55±5	4.15	81.4	45.3	No fire , No explosion	
Sample No. 13	55±5	4.16	83.4	43.8	No fire , No explosion	
Sample No. 14	55±5	4.16	84.6	40.1	No fire , No explosion	
Sample No. 15	55±5	4.14	82.6	43.8	No fire , No explosion	
Supplementary information: - No fire or explosion -Others						



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 35 of 39

Dated: 19/09/2023

IEC 62133-2:2017

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

7.3.5	TABLE: Crush (cells)				P
Sample no.	OCV before test (Vdc)	OCV at removal of crushing force (Vdc)	Maximum force applied to the cell during crush (kN)	Results	
Samples charged at charging temperature upper limit: 45°C					
Sample No. 16	4.16	4.16	13.108	No fire, No explosion	
Sample No. 17	4.18	4.18	13.060	No fire, No explosion	
Sample No. 18	4.15	4.15	13.056	No fire, No explosion	
Sample No. 19	4.15	4.15	13.077	No fire, No explosion	
Sample No. 20	4.14	4.14	13.109	No fire, No explosion	
Samples charged at charging temperature Lower limit: -5°C					
Sample No. 21	4.17	4.17	13.096	No fire, No explosion	
Sample No. 22	4.15	4.15	13.102	No fire, No explosion	
Sample No. 23	4.18	4.18	13.049	No fire, No explosion	
Sample No. 24	4.16	4.16	13.074	No fire, No explosion	
Sample No. 25	4.15	4.15	13.065	No fire, No explosion	
Supplementary information:					
- No fire or explosion					
- Others					



Report No.: SC23EPF13836_1 IS 16046 (Part 2):2018 / Page 36 of 39
Dated: 19/09/2023 IEC 62133-2:2017

7.3.6	TABLE: Over-charging of battery				N/A
Constant charging current (A).....:		--			
Supply voltage (Vdc).....:		--			
Sample no.	OCV before charging (Vdc)	Total charging time (minute)	Maximum outer case temperature (°C)	Results	
--	--	--	--	--	
--	--	--	--	--	
Supplementary information:					
- No fire or explosion					
- Others					

7.3.7	TABLE: Forced discharge (cells)				P
Sample no.	OCV before application of reverse charge (Vdc)	Measured reverse charge It (A)	Lower limit discharge voltage (Vdc)	Results	
Sample No. 26	3.14	0.65	3.0	No fire , No explosion	
Sample No. 27	3.17	0.65	3.0	No fire , No explosion	
Sample No. 28	3.16	0.65	3.0	No fire , No explosion	
Sample No. 29	3.14	0.65	3.0	No fire , No explosion	
Sample No. 30	3.18	0.65	3.0	No fire , No explosion	
Supplementary information:					
- No fire or explosion					
- Others					

7.3.8.1	TABLE: Vibration					N/A
Sample no.	OCV before test (Vdc)	OCV after Test (Vdc)	Mass before test (g)	Mass after test (g)	Results	
--	--	--	--	--	--	
Supplementary information:						
- No fire or explosion						
- No rupture						
- No leakage						
- No venting						
- Others						



Report No.: SC23EPF13836_1 IS 16046 (Part 2):2018 / Page 37 of 39
Dated: 19/09/2023 IEC 62133-2:2017

7.3.8.2	TABLE: Mechanical shock					N/A
Sample no.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results	
--	--	--	--	--	--	
Supplementary information: - No fire or explosion - No rupture - No leakage - No venting - Others						

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 lower 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						

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.					



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

Page 38 of 39

Dated: 19/09/2023

IEC 62133-2:2017

ATTACHMENT

Enclosures:

Supplement Id	Description
01	Photograph of EUT



Report No.: SC23EPF13836_1

IS 16046 (Part 2):2018 /

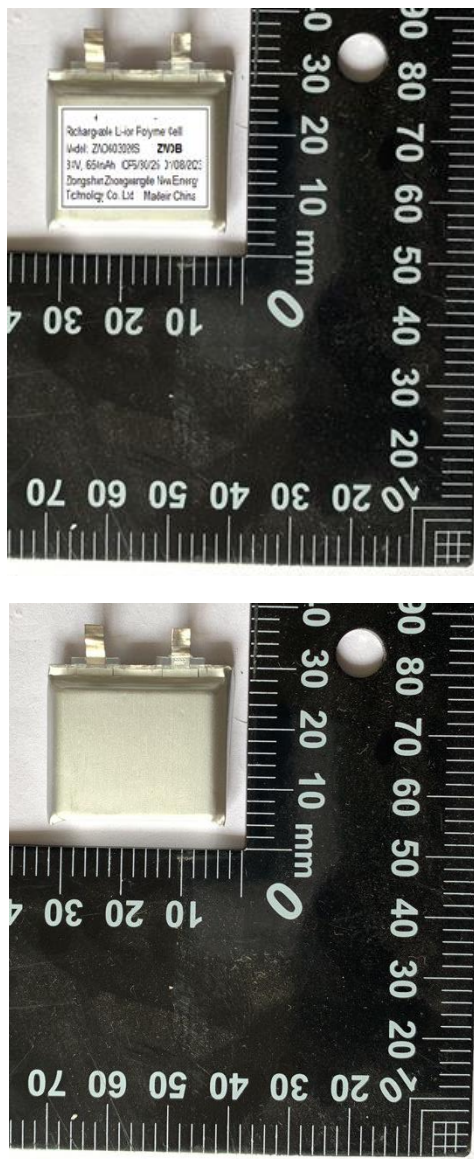
Page 39 of 39

Dated: 19/09/2023

IEC 62133-2:2017

01

Photograph of EUT:



External view

****End of Test Report****



Signature