Product Service

Technical Report No.: 64.105.21.30723.01

Date: 2022-10-08

Client:	Report holder's name:	Long Sing Technology Group (Hongkong) Limited
	Report holder's Address:	Room 2305, 23/F., OTB Builiding, 160 Gloucester Road, Wanchai, Hongkong, China
	Contact person of report holder:	Rachel Huang
	Manufacturer's name:	Wuhan Langsheng New Energy Technology CO., LTD.
	Manufacturer's address:	418-26, Office Building of Customs Supervision Place, No.301 Guanggu Avenue, Donghu New Technology Development Zone, Wuhan, China
Factory:	Factory's name:	same as manufacturer
	Factory's address:	same as manufacturer
Test object:	Product:	Battery
	Model:	ER26500, ER34615, ER26500+HPC1520, ER34615+HPC1520, ER34615+HPC1550
	Trade mark:	LONGSING
Test specification:	EN IEC 60079-0:2018 (Partial), EN 60079-11:2012 (Partial) The tests are based on harmonised standard of ATEX directive	
Purpose of examination:	· Testing and evaluation according to the test specification	
Test result:	The products comply with ATEX standard EN IEC 60079-0:2018 (Partial), EN 60079-11:2012 (Partial), see item 3 of this report for details.	

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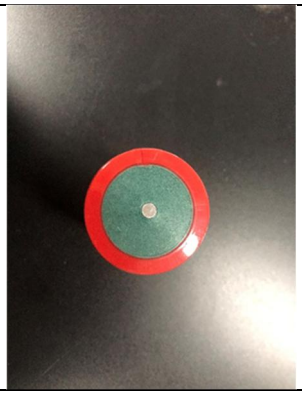
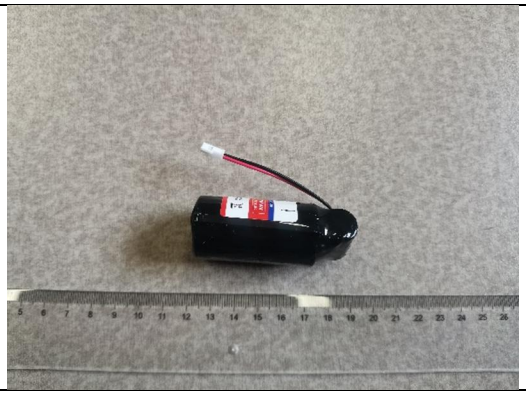
1. Description of the test object

1.1 Picture(s)

	
Overview of ER26500	Overview of ER26500
	
Overview of ER34615	Overview of ER34615
	
Overview of ER26500+HPC1520	Overview of ER26500+HPC1520

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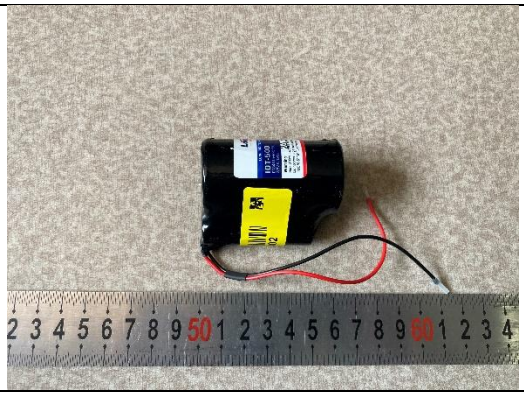
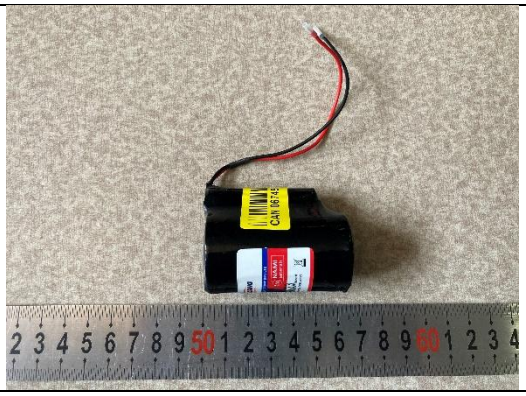
Overview of ER34615+HPC1520	Overview of ER34615+HPC1520
	
Overview of ER34615+HPC1550	Overview of ER34615+HPC1550

1.2 Function

ER26500 and ER34615 are lithium primary battery composed of cathode from thionyl chloride, anode from lithium, and electrolyte from non-aqueous inorganic.

ER26500+HPC1520, ER34615+HPC1520 and ER34615+HPC1550 are lithium thionyl chloride battery + hybrid pulse battery capacitor.

The maximum ambient of them are 85°C as state by client.

1.3 Consideration of the foreseeable use

☐ Not applicable
☒ Covered through the applied standard
☐ Covered by the following comment*
☐ Covered by attached risk analysis

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1.4 Technical Data

Type/Model	Rated voltage (V)	Rated capacity (Ah)	Weight (g)	Dimension (mm)
ER26500	3.6	8.5	53	Max. (Φ25.7×49.8)
ER34615	3.6	19	100	Max. (Φ33.0×60.5)
ER26500+ HPC1520	3.6	8.5	63	Max. (Φ27×67)
ER34615+ HPC1520	3.6	19	113	Max. (Φ34×79)
ER34615+ HPC1550	3.6	19	130	Max. (Φ49×62)

2. Order

2.1 Date of Purchase Order, Customer's Reference

2021-05-20

2.2 Test Sample(s)

- Reception date(s): 2021-08-18, 2021-10-25, 2022-01-05, 2022-08-26
- Location(s) of reception: TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
- Condition of test sample(s): intact

2.3 Date(s) of Testing

2021-08-18 to 2022-09-26

2.4 Location(s) of Testing

China National Quality Supervision and Testing Center of Explosion-proof Equipment (Guangdong)
No.3598, East Huangpu Road, Huangpu District, Guangzhou

2.5 Points of Non-Compliance or Exceptions of the Test Procedure

- None

3. Test Results

According to Clause 10.5 of EN 60079-11:2012:

Ten test samples are subjected to the most onerous of the short-circuit test until discharged.

- The resistance of the short-circuit link, excluding connections to it, either shall not exceed 3mΩ or have a voltage drop across it not exceeding 200mV or 15% of the cell e.m.f.
- Before short-circuit, the open voltage of each batteries/cells is measured.
- During short-circuit, short-circuit current of each batteries/cells is measured.

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- During short-circuit, the maximum surface temperature is recorded by a thermal couple.
- After short-circuit, the test samples are placed over a piece of blotting paper for a period of at least 12h to observe electrolyte leakage.
- Internal resistance is calculated by o-c voltage divided s-c current.
- Five samples are tested at (25±5)°C, five samples are tested at (85±5)°C.
- Resistance of the short-circuit link: 2.4mΩ (ER26500, ER34615); 2.7mΩ (ER26500+ HPC1520, ER34615+ HPC1520); 2.6mΩ (ER34615+ HPC1550).

The results are listed in below table 1:

Table 1: ER26500

Sample	Max. Open-circuit voltage (V)	Max. Short-circuit current (A)	Max. Surface temperature (°C)		Min. Internal resistance (Ω)
			Test at 25±5°C, corrected to 25°C	Test at 85±5°C, corrected to 85°C	
1	3.674	1.08	59.0	-	3.40
2	3.671	1.25	70.5	-	2.94
3	3.668	1.25	63.9	-	2.93
4	3.676	1.73	77.7	-	2.12
5	3.672	0.92	62.6	-	3.99
6	3.673	1.26	-	104.5	2.92
7	3.677	1.37	-	106.2	2.68
8	3.667	1.49	-	105.4	2.47
9	3.674	2.43	-	111.4	1.51
10	2.679	1.85	-	113.0	1.45
Remark: there is no visible sign of electrolyte on the blotting paper or on the external surfaces of the test samples. According to specification of product, the battery is NOT provided with internal current-limiting device. This test is carried out without any internal current-limiting device being short-circuited.					

Table 2: ER34615

Sample	Max. Open-circuit voltage (V)	Max. Short-circuit current (A)	Max. Surface temperature (°C)		Min. Internal resistance (Ω)
			Test at 25±5°C, corrected to 25°C	Test at 85±5°C, corrected to 85°C	
1	3.695	1.53	66.7	-	2.42
2	3.695	2.25	76.9	-	1.64
3	3.693	1.44	63.7	-	2.56
4	3.692	1.78	69.7	-	2.07
5	3.690	1.74	61.1	-	2.12
6	3.687	2.67	-	110.8	1.38
7	3.597	2.50	-	110.9	1.44
8	3.683	2.27	-	107.1	1.62
9	3.686	2.18	-	104.6	1.69
10	3.687	1.80	-	101.6	2.05
Remark: there is no visible sign of electrolyte on the blotting paper or on the external surfaces of the test samples. According to specification of product, the battery is NOT provided with internal current-limiting device. This test is carried out without any internal current-limiting device being short-circuited.					

Table 3: ER26500+ HPC1520

Sample	Max. Open-circuit voltage (V)	Max. Short-circuit current (A)	Max. Surface temperature (°C)		Min. Internal resistance (Ω)
			Test at 25±5°C, corrected to 25°C	Test at 85±5°C, corrected to 85°C	
1	3.670	1.54	40.4	-	2.38
2	3.669	1.84	35.1	-	1.99
3	3.668	3.02	62.0	-	1.21
4	3.673	2.81	45.4	-	1.31
5	3.690	10.48	86.0	-	0.35
6	3.656	7.08	-	101.2	0.52
7	3.650	1.94	-	103.5	1.88
8	3.647	1.30	-	106.2	2.81
9	3.635	2.25	-	106.5	1.62
10	3.632	2.71	-	108.5	1.34
Remark: there is no visible sign of electrolyte on the blotting paper or on the external surfaces of the test samples. According to specification of product, the battery is NOT provided with internal current-limiting device. This test is carried out without any internal current-limiting device being short-circuited.					

Table 4: ER34615+ HPC1520

Sample	Max. Open-circuit voltage (V)	Max. Short-circuit current (A)	Max. Surface temperature (°C)		Min. Internal resistance (Ω)
			Test at 25±5°C, corrected to 25°C	Test at 85±5°C, corrected to 85°C	
1	3.683	14.87	92.5	-	0.25
2	3.649	10.80	83.2	-	0.34
3	3.684	12.93	84.7	-	0.28
4	3.691	11.46	47.6	-	0.32
5	3.691	7.75	53.1	-	0.48
6	3.656	6.64	-	108.8	0.55
7	3.657	3.91	-	105.6	0.94
8	3.662	1.93	-	100.8	1.90
9	3.657	1.68	-	104.8	2.18
10	3.658	1.40	-	99.2	2.61
Remark: there is no visible sign of electrolyte on the blotting paper or on the external surfaces of the test samples. According to specification of product, the battery is NOT provided with internal current-limiting device. This test is carried out without any internal current-limiting device being short-circuited.					

Table 5: ER34615+ HPC1550

Sample	Max. Open-circuit voltage (V)	Max. Short-circuit current (A)	Max. Surface temperature (°C)		Min. Internal resistance (Ω)
			Test at 25±5°C, corrected to 25°C	Test at 85±5°C, corrected to 85°C	
1	3.657	27.25	64.8	-	0.13
2	3.657	30.13	68.8	-	0.12
3	3.660	25.90	69.3	-	0.14

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4	3.657	26.12	63.8	-	0.14
5	3.661	29.52	64.4	-	0.12
6	3.652	23.59	-	111.0	0.15
7	3.653	22.64	-	107.4	0.16
8	3.649	17.93	-	114.7	0.20
9	3.655	18.51	-	106.8	0.20
10	3.641	20.49	-	110.1	0.18
Remark: there is no visible sign of electrolyte on the blotting paper or on the external surfaces of the test samples. According to specification of product, the battery is NOT provided with internal current-limiting device. This test is carried out without any internal current-limiting device being short-circuited.					

4. Remarks

4.1 The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further particulars as well as of the composition and layout.

4.2 When the product is placed on the market, it must be accompanied with safety Instructions written in official language of the country. The instructions shall give information regarding safe operation, installation and maintenance

4.3 When measurement results are close to limit value of specified requirement, manufacturer shall take actions during the production process to keep the limit, especially if the result of a measurement is in a bandwidth within ±10% to the limit value.

4.4 According to the EU directives which have been aligned with EU NLF (new legislative framework), both of manufacturer and importer's name and address shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on the EU market.

4.5 The manufacturer/ Importer has to ensure the appliance placing on the EU market conforms to the applicable EU directives which provide the affixing of the CE marking, such as LVD, EMC, RoHS, ErP, and so on.

5. Documentation

File	File name	Date
ER26500/C	Technical specification ER26500	-
ER34615/D	Technical specification ER34615	-
IOT-20C	Technical specification ER26500+ HPC1520	-
IOT-20D	Technical specification ER34615+ HPC1520	-

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IOT-50D	Technical specification ER34615+ HPC1550	-

6. Summary

Clause 10.5 tests for batteries of EN 60079-11 were conducted on 10 samples. Test results including maximum surface temperature, maximum short circuit current, minimum internal resistance, were listed in Table 1 to 5 which can be used for determination of temperature class and assessing the spark ignition compliance in end product. As temperature result in Table 1 to 5, they all conform the temperature class T4.

TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
TÜV SÜD Group

Tested by:

Gareth Liao, Project Handler

Approved by:

Frank Zhu, Designated Reviewer

--- End of Report ---

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