TEST REPORT

Client :	Mid Ocean Brands B.V.
Address :	Unit 711-716, 7/F., Tower A, 83 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.

The following merchandise was (were) submitted and identified by the client as:

Name of Product :	Multifunctional COB Light
Test Model :	MO2834
Model May Cover :	/
Main Material:	ABS+aluminium alloy+PS
Supplier:	118518
Buyer:	Mid Ocean Brands B.V.
Sample Received :	Sep. 17, 2025 Oct. 09, 2025 Oct. 17, 2025 Oct. 28, 2025
Test Period :	Sep. 17, 2025 - Sep. 22, 2025 Oct. 09, 2025 - Oct. 11, 2025 Oct. 17, 2025 - Oct. 21, 2025 Oct. 28, 2025 - Oct. 30, 2025

Test Specification and Conclusion:

1. RoHS Directive 2011/65/EU(RoHS 2.0) and its subsequent amendments Directive (EU) 2015/863	PASS
2. Total Lead, Cadmium and Mercury content according to the Batteries Regulation- Regulation (EU) 2023/1542	PASS

Prepared By :		**Reviewed By :**		**Issued By :**	
Jolin Li		**Carina Ma**		**Kevin Chen**	
Testing Engineer		**Report Supervisor**		**Lab Manager**	

FS2025090358-1E

PRODUCT PHOTO

******** To be continued ********

TEST RESULTS:

1.RoHS 10

Test Method:

1. Sample prepared with reference to IEC 62321-2:2021 Determination of certain substances in electrotechnical products - Part 2: Disassembly, disjunction and mechanical sample preparation
2. Sample Screening testing with reference to IEC 62321-3-1:2013 Determination of certain substances in electrotechnical products - Part 3-1: Screening - Lead, mercury, cadmium, total chromium and total bromine using X-ray fluorescence spectrometry.
3. Wet Chemical Test Method
   a. Determination of Lead ,Cadmium by ICP-OES with reference to IEC 62321-5:2013
   b. Determination of Mercury by ICP-OES with reference to IEC 62321-4:2013+A1:2017
   c. Determination of Hexavalent Chromium by UV-Vis Method with reference to IEC 62321-7-1:2015 or IEC 62321-7-2:2017
   d. Determination of PBBs and PBDEs by GC-MS with reference to IEC 62321-6:2015
   e. Determination of Phthalates by GC-MS with reference to IEC 62321-8:2017

******** To be continued ********

Part No.	Test Part Description	Note	Test Results (1)(2) (mg/kg)									
			Pb	Cd	Hg	Cr(VI)	PBBs	PBDEs	DEHP	BBP	DBP	DIBP
1	Black plastic cover	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
2	Black plastic with white printing shell	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
3	Red plastic button	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
4	Silvery metal screw	XRF	BL	BL	BL	IN	---		---	---	---	---
		CHEM	---	---	---	Neg.	---	---	---	---	---	---
5	Black metal shell	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
6	Transparent plastic sheet	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
7	Black plastic part	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.

Part No.	Test Part Description	Note	Test Results (1)(2) (mg/kg)									
			Pb	Cd	Hg	Cr(VI)	PBBs	PBDEs	DEHP	BBP	DBP	DIBP
8	Black metal ring	XRF	BL	BL	BL	IN	---		---	---	---	---
		CHEM	---	---	---	Neg.	---	---	---	---	---	---
9	Transparent plastic with glue part	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
10	Translucent plastic ring	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
11	White foam with double-sided adhesive tape	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
12	Silvery metal magnet	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
13	Silvery metal shell	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
14	Silvery metal solder	XRF	IN	BL	BL	BL	---		---	---	---	---
		CHEM	683	---	---	---	---	---	---	---	---	---

Part No.	Test Part Description	Note	Test Results (1)(2) (mg/kg)									
			Pb	Cd	Hg	Cr(VI)	PBBs	PBDEs	DEHP	BBP	DBP	DIBP
15	Yellow glue	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
16	White PCB	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
17	Red plastic wire jacket	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
18	Blue plastic wire jacket	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
19	White plastic wire jacket	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
20	Coppery metal wire	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
21	Black plastic wire jacket	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.

Part No.	Test Part Description	Note	Test Results (1)(2) (mg/kg)									
			Pb	Cd	Hg	Cr(VI)	PBBs	PBDEs	DEHP	BBP	DBP	DIBP
22	Silvery metal solder	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
23	Silvery metal shell	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
24	Yellow LED	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
25	Silvery metal solder	XRF	IN	BL	BL	BL	---		---	---	---	---
		CHEM	N.D.	---	---	---	---	---	---	---	---	---
26	Black triode	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
27	Black IC	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
28	Black IC	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.

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Part No.	Test Part Description	Note	Test Results (1)(2) (mg/kg)									
			Pb	Cd	Hg	Cr(VI)	PBBs	PBDEs	DEHP	BBP	DBP	DIBP
29	Blue plastic wire jacket	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
30	Red plastic wire jacket	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
31	Brown SMD capacitor	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
32	Black SMD resistor	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
33	Green PCB	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
34	Silvery metal solder	XRF	IN	BL	BL	BL	---		---	---	---	---
		CHEM	190	---	---	---	---	---	---	---	---	---
35	Red plastic button	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.

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Part No.	Test Part Description	Note	Test Results (1)(2) (mg/kg)									
			Pb	Cd	Hg	Cr(VI)	PBBs	PBDEs	DEHP	BBP	DBP	DIBP
36	Silvery metal pin	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
37	Transparent plastic part	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
38	Silvery metal sheet	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
39	Silvery metal sheet	XRF	BL	BL	BL	IN	---		---	---	---	---
		CHEM	---	---	---	Neg.	---	---	---	---	---	---
40	Silvery metal frame	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
41	Black plastic bottom	XRF	BL	BL	BL	BL	IN		---	---	---	---
		CHEM	---	---	---	---	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
42	Silvery metal shell	XRF	BL	BL	BL	IN	---		---	---	---	---
		CHEM	---	---	---	Neg.	---	---	---	---	---	---

Part No.	Test Part Description	Note	Test Results (1)(2) (mg/kg)									
			Pb	Cd	Hg	Cr(VI)	PBBs	PBDEs	DEHP	BBP	DBP	DIBP
43	Silvery metal pin	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
44	Black plastic insulator	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
45	Silvery metal solder	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
46	Silvery metal shell	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
47	Silvery metal shell	XRF	BL	BL	BL	IN	---		---	---	---	---
		CHEM	---	---	---	Neg.	---	---	---	---	---	---
48	Black plastic shell	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
49	Black plastic shell	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.

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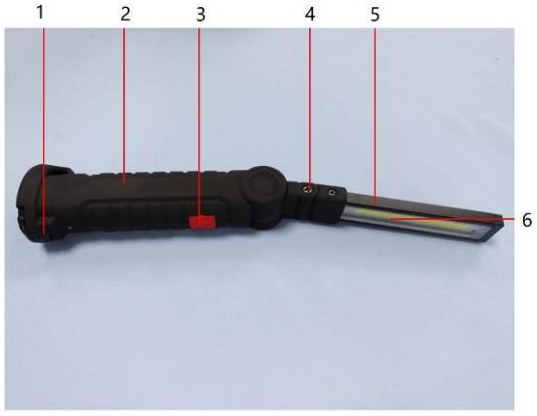
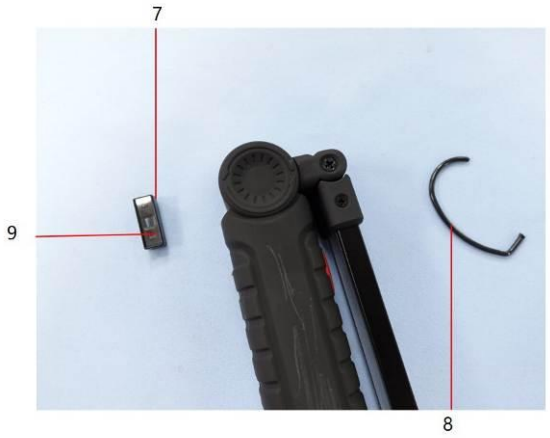
Part No.	Test Part Description	Note	Test Results (1)(2) (mg/kg)									
			Pb	Cd	Hg	Cr(VI)	PBBs	PBDEs	DEHP	BBP	DBP	DIBP
50	Silvery metal solder	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
51	White plastic insulator	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
52	Silvery metal pin	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
53	Silvery metal solder	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
54	Silvery metal frame	XRF	BL	BL	BL	IN	---		---	---	---	---
		CHEM	---	---	---	Neg.	---	---	---	---	---	---
55	Golden metal pin	XRF	BL	BL	BL	BL	---		---	---	---	---
		CHEM	---	---	---	---	---	---	---	---	---	---
56	Black SMD resistor	XRF	IN	BL	BL	BL	BL		---	---	---	---
		CHEM	237	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.

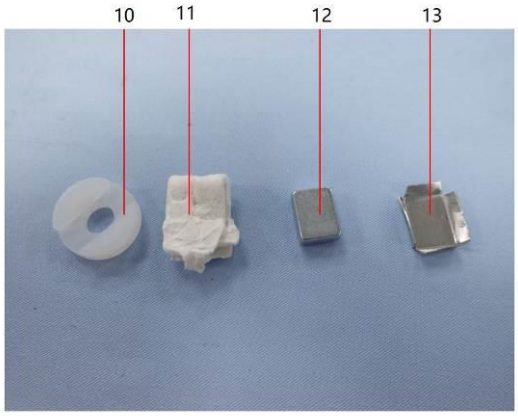
Part No.	Test Part Description	Note	Test Results (1)(2) (mg/kg)									
			Pb	Cd	Hg	Cr(VI)	PBBs	PBDEs	DEHP	BBP	DBP	DIBP
57	Black plastic insulator	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
58	Green PCB	XRF	BL	BL	BL	BL	IN		---	---	---	---
		CHEM	---	---	---	---	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
59	Red plastic wire jacket	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
60	Black plastic wire jacket	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.
61	Black plastic cable jacket	XRF	BL	BL	BL	BL	BL		---	---	---	---
		CHEM	---	---	---	---	---	---	N.D.	N.D.	N.D.	N.D.

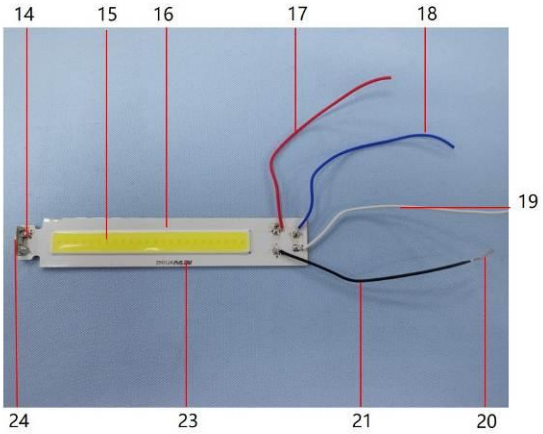
******** To be continued ********

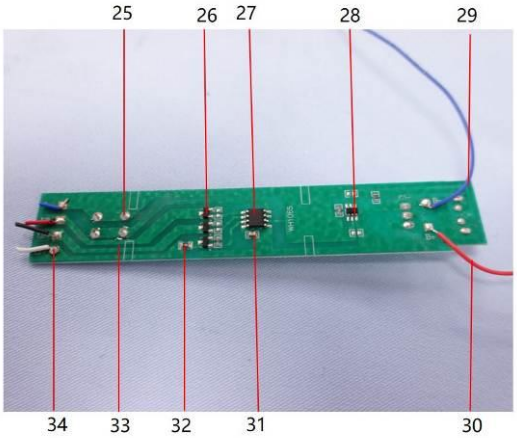
TEST PART PHOTOS

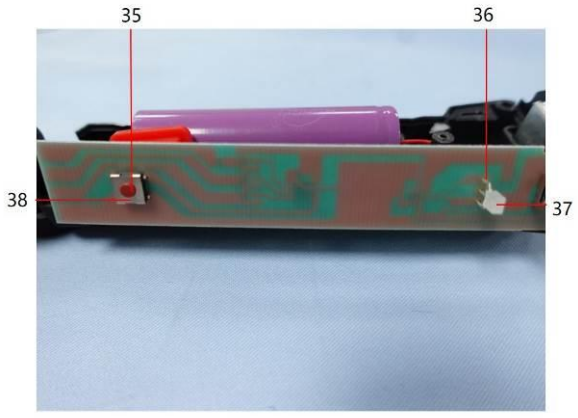


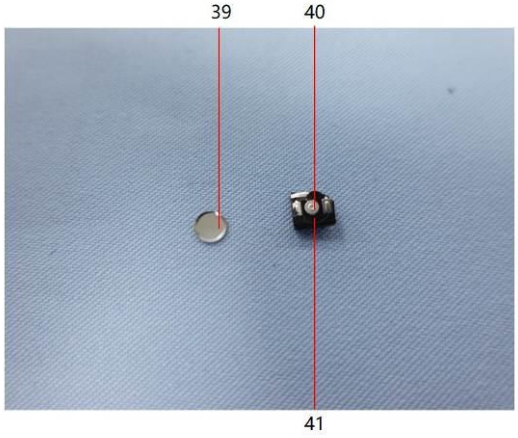








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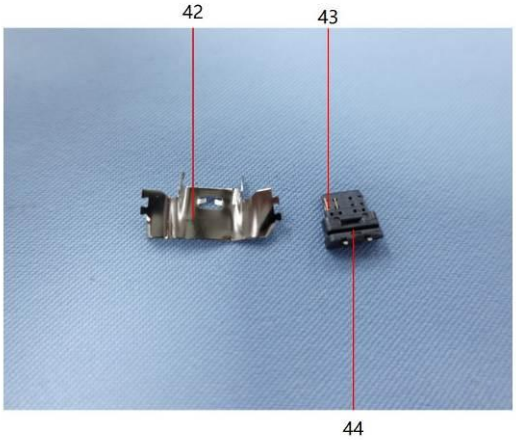
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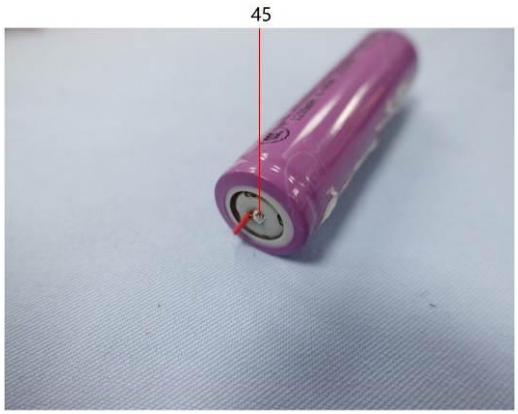
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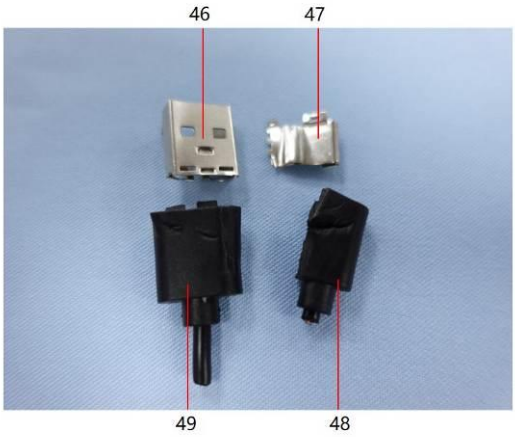
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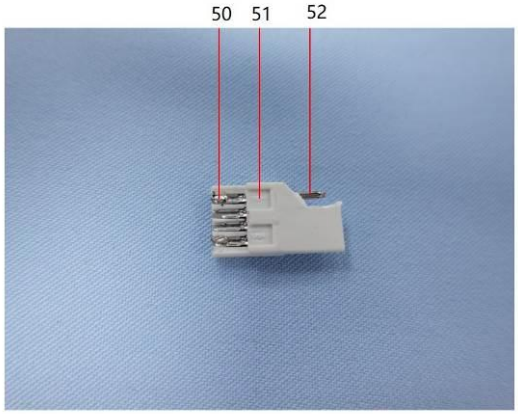
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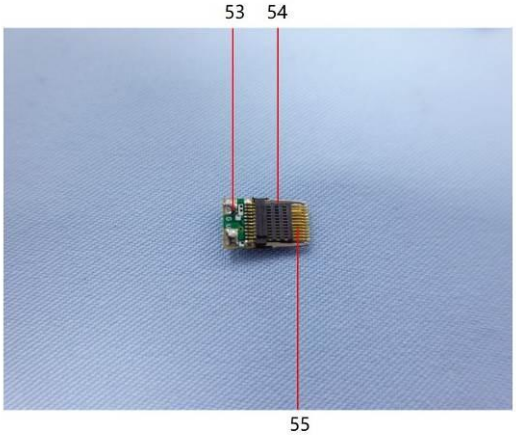
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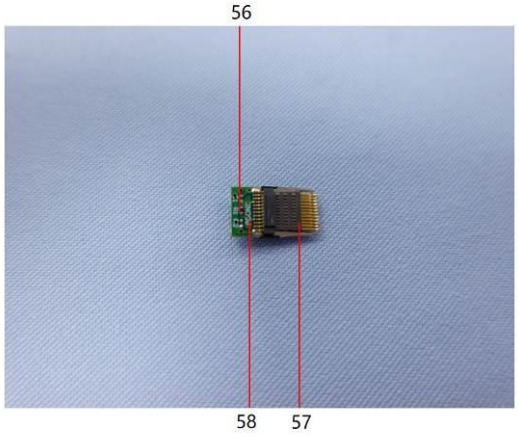

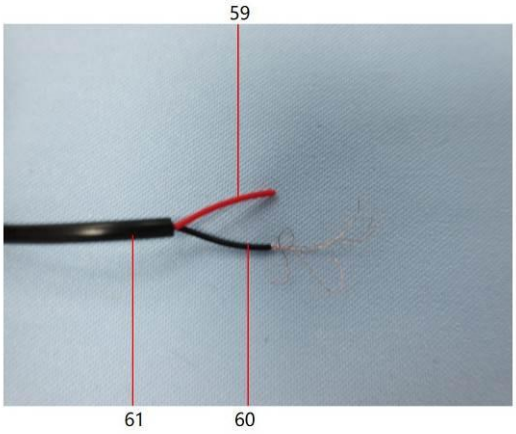

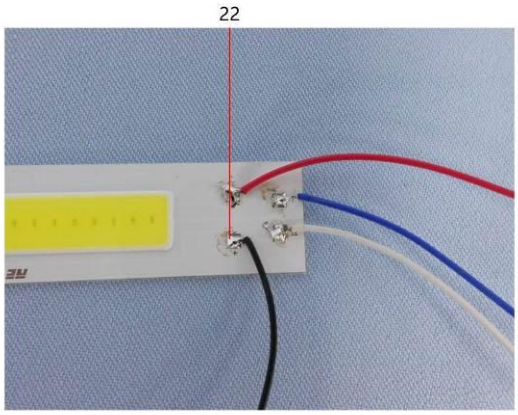

******** To be continued ********

Remark:

(1) For results of XRF

(a) It is the result on total Br while test item on restricted substances is PBBs/PBDEs. It is the result on total Cr while test item on restricted substances is Cr^{6+}.

(b)Results are obtained by EDXRF for primary screening, and further chemical testing by ICP-OES (for Cd, Pb, Hg), UV-Vis (for Cr^{6+}) and GC/MS (for PBBs, PBDEs) is recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1:2013 (unit: mg/kg)

Element	Polymer	Metal	Composite Materials
Cd	BL≤(70-3σ)<X<(130+3σ) ≤OL	BL≤(70-3σ)<X<(130+3σ) ≤OL	LOD<X<(150+3σ) ≤OL
Pb	BL≤(700-3σ)<X<(1300+3σ) ≤OL	BL≤(700-3σ)<X<(1300+3σ) ≤OL	BL≤(500-3σ)<X<(1500+3σ) ≤OL
Hg	BL≤(700-3σ)<X<(1300+3σ) ≤OL	BL≤(700-3σ)<X<(1300+3σ) ≤OL	BL≤(500-3σ)<X<(1500+3σ) ≤OL
Br	BL≤(300-3σ)<X	--	BL≤(250-3σ)<X
Cr	BL≤(700-3σ)<X	BL≤(700-3σ)<X	BL≤(500-3σ)<X

(c) BL = Below Limit, OL = Over Limit, IN = Inconclusive, LOD = Limit of Detection, -- = Not Regulated, NA = Not Applicable.

(d) The XRF screening test for RoHS elements - The reading may be different to the actual content in the sample be of non-uniformity composition.

(2) For results of Chemical testing

(a) mg/kg = ppm = 0.0001%, N.D.= Not Detected (<MDL), --- = Not Conducted.

(b) Unit and Method Detection Limit (MDL) in wet chemical test

Test Items	Pb	Cd	Hg	DEHP	BBP	DBP	DIBP
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MDL	10	10	10	50	50	50	50

The MDL for single compound of PBBs & PBDEs is 10 mg/kg and MDL of Cr^{6+} for polymer & composite sample is 10 mg/kg.

(c) According to IEC 62321-7-1:2015, result on Cr^{6+} for metal sample is shown as Pos./Neg.
Pos. =Positive, Neg. = Negative
Pos. = Presence of Cr^{6+} coating, Neg. = Absence of Cr^{6+} coating.

******** To be continued ********

(3)RoHS Requirement

Restricted substances	Limits
Lead (Pb)	0.1% (1000mg/kg)
Cadmium (Cd)	0.01% (100mg/kg)
Mercury (Hg)	0.1% (1000mg/kg)
Chromium (VI) (Cr^{6+})	0.1% (1000mg/kg)
Polybrominated biphenyls (PBBs)	0.1% (1000mg/kg)
Polybrominated diphenyl ethers (PBDEs)	0.1% (1000mg/kg)
Di-(2-ethylhexyl) phthalate (DEHP)	0.1% (1000mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000mg/kg)
Di-n-butyl phthalate (DBP)	0.1% (1000mg/kg)
Di-isobutyl phthalate (DIBP)	0.1% (1000mg/kg)

******** To be continued ********

(4)RoHS Exemptions

Exemptions	
RoHS Directive 2011/65/EU ANNEX III and its subsequent amendments	
Exemption Items	**Expires Date**
1,Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):	
1(a),For general lighting purposes < 30 W: 2,5 mg	Expires on 24 February 2023
1(b),For general lighting purposes ≥ 30 W and < 50 W: 3,5 mg	Expires on 24 February 2023
1(c),For general lighting purposes ≥ 50 W and < 150 W: 5 mg	Expires on 24 February 2023
1(d),For general lighting purposes ≥ 150 W: 15 mg	Expires on 24 February 2023
1(e),For general lighting purposes with circular or square structural shape and tube diameter ≤ 17 mm: 5 mg	Expires on 24 February 2023
1(f)-I ,For lamps designed to emit mainly light in the ultraviolet spectrum: 5 mg	Expires on 24 February 2027
1(f)-II ,For special purposes: 5 mg	Expires on 24 February 2025'
1(g),For general lighting purposes < 30 W with a lifetime equal or above 20 000 h: 3,5 mg	Expires on 24 August 2023
2(a),Mercury in double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp):	
2(a)(1),Tri-band phosphor with normal lifetime and a tube diameter < 9 mm (e.g. T2): 4 mg	Expires on 24 February 2023
2(a)(2),Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 3 mg	Expires on 24 February 2023
2(a)(3),Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8): 3,5 mg	Expires on 24 February 2023
2(a)(4),Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12): 3,5 mg	Expires on 24 February 2023
2(a)(5),Tri-band phosphor with long lifetime (≥ 25 000 h): 5 mg.	Expires on 24 February 2023
2(b), Mercury in other fluorescent lamps not exceeding (per lamp):	
2(b)(2), Non-linear halophosphate lamps (all diameters): 15 mg	Expires on 13 April 2016
2(b)(3), Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9):15mg	Expires on 24 February 2023; 10 mg may be used per lamp from 25 February 2023 until 24 February 2025
2(b)(4)-I ,Lamps for other general lighting and special purposes (e.g. induction lamps): 15 mg	Expires on 24 February 2025
2(b)(4)-II ,Lamps emitting mainly light in the ultraviolet spectrum: 15 mg	Expires on 24 February 2027
2(b)(4)-III ,Emergency lamps: 15 mg	Expires on 24 February 2027
3,Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes used in EEE placed on the market before 24 February 2022 not exceeding (per lamp):	

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Exemptions	
RoHS Directive 2011/65/EU ANNEX III and its subsequent amendments	
Exemption Items	**Expires Date**
3(a),Short length (≤ 500 mm): 3,5 mg	Expires on 24 February 2025
3(b),Medium length (> 500 mm and ≤ 1 500 mm): 5 mg	Expires on 24 February 2025
3(c),Long length (> 1 500 mm): 13 mg	Expires on 24 February 2025
4(a),Mercury in other low pressure discharge lamps (per lamp): 15 mg	Expires on 24 February 2023
4(a)-I ,Mercury in low pressure non-phosphor coated discharge lamps, where the application requires the main range of the lampspectral output to be in the ultraviolet spectrum: up to 15 mg mercury may be used per lamp	Expires on 24 February 2027
4(b),Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 80: P ≤ 105 W: 16 mg may be used per burner	Expires on 24 February 2027
4(b)-I ,Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60: P ≤ 155 W: 30 mg may be used per burner	Expires on 24 February 2023
4(b)-II ,Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60: 155 W < P ≤ 405 W: 40 mg may be used per burner	Expires on 24 February 2023
4(b)-III ,Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60: P > 405 W: 40 mg may be used per burner	Expires on 24 February 2023
4(c),Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner):	
4(c)-I ,P ≤ 155 W: 20 mg	Expires on 24 February 2027
4(c)-II ,155 W < P ≤ 405 W: 25 mg	Expires on 24 February 2027
4(c)-III ,P > 405 W: 25 mg	Expires on 24 February 2027
4(e), Mercury in metal halide lamps (MH)	Expires on 24 February 2027
4(f)-I, Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex	Expires on 24 February 2025
4(f)-II, Mercury in high pressure mercury vapour lamps used in projectors where an output ≥ 2000 lumen ANSI is required	Expires on 24 February 2027
4(f)-III, Mercury in high pressure sodium vapour lamps used for horticulture lighting	Expires on 24 February 2027
4(f)-IV, Mercury in lamps emitting light in the ultraviolet spectrum	Expires on 24 February 2027

Exemptions	
RoHS Directive 2011/65/EU ANNEX III and its subsequent amendments	
Exemption Items	**Expires Date**
4(g), Mercury in hand crafted luminous discharge tubes used for signs, decorative or architectural and specialist lighting and light-artwork, where the mercury content shall be limited as follows: (a) 20 mg per electrode pair+0,3mg per tube length in cm, but not more than 80 mg, for outdoor applications and indoor applications exposed to temperatures below 20 ℃; (b) 15 mg per electrode pair+0,24mg per tube length in cm, but not more than 80 mg, for all other indoor applications	Expires on 31 December 2018’
5(a), Lead in glass of cathode ray tubes	
5(b), Lead in glass of fluorescent tubes not exceeding 0,2 % by weight	
6(a), Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35 % lead by weight	Expires on: — 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; — 21 July 2023 for category 8 in vitro diagnostic medical devices; — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
6(a)-I, Lead as an alloying element in steel for machining purposes containing up to 0,35 % lead by weight and in batch hot dip galvanised steel components containing up to 0,2 % lead by weight	Expires on 21 July 2021 for categories 1-7 and 10.
6(b), Lead as an alloying element in aluminium containing up to 0,4 % lead by weight	Expires on: — 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments, — 21 July 2023 for category 8 in vitro diagnostic medical devices, — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
6(b)-I Lead as an alloying element in aluminium containing up to 0,4 % lead by weight, provided it stems from lead-bearing aluminium scrap recycling	Expires on 21 July 2021 for categories 1-7 and 10.
6(b)-II Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight	Expires on 18 May 2021 for categories 1-7 and 10

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Exemptions	
RoHS Directive 2011/65/EU ANNEX III and its subsequent amendments	
Exemption Items	**Expires Date**
6(c), Copper alloy containing up to 4 % lead by weight	Expires on: — 21 July 2021 for categories 1-7 and 10, —21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments, —21 July 2023 for category 8 in vitro diagnostic medical devices, — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
7(a), Lead in high melting temperature type solders (i.e. lead- based alloys containing 85 % by weight or more lead)	Applies to categories 1-7 and 10 (except applications covered by point 24 of this Annex) and expires on 21 July 2021. For categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments expires on 21 July 2021. For category 8 in vitro diagnostic medical devices expires on 21 July 2023. For category 9 industrial monitoring and control instruments, and for category 11 expires on 21 July 2024.
7(b), Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications	

Exemptions	
RoHS Directive 2011/65/EU ANNEX III and its subsequent amendments	
Exemption Items	**Expires Date**
7(c)-I, Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound	Applies to categories 1-7 and 10 (except applications covered under point 34) and expires on 21 July 2021. For categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments expires on 21 July 2021. For category 8 in vitro diagnostic medical devices expires on 21 July 2023. For category 9 industrial monitoring and control instruments, and for category 11 expires on 21 July 2024.
7(c)-II, Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher	Does not apply to applications covered by point 7(c)-I and 7(c)-IV of this Annex. Expires on: — 21 July 2021 for categories 1-7 and 10; —21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; — 21 July 2023 for category 8 in vitro diagnostic medical devices; — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
7(c)-III, Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013

Exemptions	
RoHS Directive 2011/65/EU ANNEX III and its subsequent amendments	
Exemption Items	**Expires Date**
7(c)-Ⅳ, Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors	Expires on: — 21 July 2021 for categories 1-7 and 10; —21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; — 21 July 2023 for category 8 in vitro diagnostic medical devices; — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
8(a), Cadmium and its compounds in one shot pellet type thermal cut-offs	Expires on 1 January 2012 and after that date may be used in spare parts for EEE placed on the market before 1 January 2012
8(b), Cadmium and its compounds in electrical contacts	Applies to categories 8, 9 and 11 and expires on: — 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; — 21 July 2023 for category 8 in vitro diagnostic medical devices; — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
8(b)-I Cadmium and its compounds in electrical contacts used in: — circuit breakers, — thermal sensing controls, — thermal motor protectors (excluding hermetic thermal motor protectors), — AC switches rated at: — 6 A and more at 250 V AC and more, or — 12 A and more at 125 V AC and more, — DC switches rated at 20 A and more at 18 V DC and more, and — switches for use at voltage supply frequency ≥ 200 Hz.	Applies to categories 1 to 7 and 10 and expires on 21 July 2021.

Exemptions	
RoHS Directive 2011/65/EU ANNEX III and its subsequent amendments	
Exemption Items	**Expires Date**
9, Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0,75 % by weight in the cooling solution	Applies to categories 8, 9 and 11 and expires on: — 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments, — 21 July 2023 for category 8 in vitro diagnostic medical devices, —21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
9(a)-I Up to 0,75 % hexavalent chromium by weight, used as an anticorrosion agent in the cooling solution of carbon steel cooling systems of absorption refrigerators (including minibars) designed to operate fully or partly with electrical heater, having an average utilised power input < 75 W at constant running conditions	Applies to categories 1-7 and 10 and expires on 5 March 2021.
9(a)-II Up to 0,75 % hexavalent chromium by weight, used as an anticorrosion agent in the cooling solution of carbon steel cooling systems of absorption refrigerators: — designed to operate fully or partly with electrical heater, having an average utilized power input ⩾ 75 W at constant running conditions, — designed to fully operate with non-electrical heater.	Applies to categories 1-7 and 10 and expires on 5 March 2021.
9(a)-III Up to 0,7 % hexavalent chromium by weight, used as an anticorrosion agent in the working fluid of the carbon steel sealed circuit of gas absorption heat pumps for space and water heating.	Applies to category 1 and expires on 31 December 2026.
9(b), Lead in bearing shells and bushes for refrigerant- containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications	Applies to categories 8, 9 and 11; expires on: — 21 July 2023 for category 8 in vitro diagnostic medical devices, —21 July 2024 for category 9 industrial monitoring and control instruments and for category 11, —21 July 2021 for other subcategories of categories 8 and 9.
9(b)-(I), Lead in bearing shells and bushes for refrigerant- containing hermetic scroll compressors with a stated electrical power input equal or below 9 kW for heating, ventilation, air conditioning and refrigeration (HVACR) applications	Applies to category 1; expires on 21 July 2019.'
11(a), Lead used in C-press compliant pin connector systems	May be used in spare parts for EEE placed on the market before 24 September 2010

Exemptions	
RoHS Directive 2011/65/EU ANNEX III and its subsequent amendments	
Exemption Items	**Expires Date**
11(b), Lead used in other than C-press compliant pin connector systems	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013
12, Lead as a coating material for the thermal conduction module C-ring	May be used in spare parts for EEE placed on the market before 24 September 2010
13(a), Lead in white glasses used for optical applications	Applies to all categories; expires on: — 21 July 2023 for category 8 in vitro diagnostic medical devices; —21 July 2024 for category 9 industrial monitoring and control instruments and for category 11; — 21 July 2021 for all other categories and subcategories
13(b),Cadmium and lead in filter glasses and glasses used for reflectance standards	Applies to categories 8, 9 and 11; expires on: — 21 July 2023 for category 8 in vitro diagnostic medical devices; —21 July 2024 for category 9 industrial monitoring and control instruments and for category 11; —21 July 2021 for other subcategories of categories 8 and 9
13(b)-(I),Lead in ion coloured optical filter glass types	Applies to categories 1 to 7 and 10; expires on 21 July 2021 for categories 1 to 7 and 10’
13(b)-(II) ,Cadmium in striking optical filter glass types; excluding applications falling under point 39 of this Annex	Applies to categories 1 to 7 and 10; expires on 21 July 2021 for categories 1 to 7 and 10’
13(b)-(III), Cadmium and lead in glazes used for reflectance standards	Applies to categories 1 to 7 and 10; expires on 21 July 2021 for categories 1 to 7 and 10’
14, Lead in solders consisting of more than two elements for the connection between the pins and the package of micropro-cessors with a lead content of more than 80 % and less than 85 % by weight	Expires on 1 January 2011 and after that date may be used in spare parts for EEE placed on the market before 1 January 2011

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Exemptions	
RoHS Directive 2011/65/EU ANNEX III and its subsequent amendments	
Exemption Items	**Expires Date**
15, Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages	Applies to categories 8, 9 and 11 and expires on: — 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; — 21 July 2023 for category 8 in vitro diagnostic medical devices; — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
15(a) Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages where at least one of the following criteria applies: — a semiconductor technology node of 90 nm or larger; —a single die of 300 mm^2 or larger in any semiconductor technology node; —stacked die packages with die of 300 mm^2 or larger, or silicon interposers of 300 mm^2 or larger.	Applies to categories 1 to 7 and 10 and expires on 21 July 2021.
17, Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications	
18(b), Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP ($BaSi_2O_5$:Pb)	Expires on: — 21 July 2021 for categories 1-7 and 10; —21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; —21 July 2023 for category 8 in vitro diagnostic medical devices; — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
18(b)-I Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps containing phosphors such as BSP (BaSi2O5:Pb) when used in medical phototherapy equipment	Applies to categories 5 and 8, excluding applications covered by entry 34 of Annex IV, and expires on 21 July 2021.

Exemptions	
RoHS Directive 2011/65/EU ANNEX III and its subsequent amendments	
Exemption Items	**Expires Date**
21, Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	Applies to categories 8, 9 and 11 and expires on: — 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; — 21 July 2023 for category 8 in vitro diagnostic medical devices; — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
21(a) Cadmium when used in colour printed glass to provide filtering functions, used as a component in lighting applications installed in displays and control panels of EEE	Applies to categories 1 to 7 and 10 except applications covered by entry 21(b) or entry 39 and expires on 21 July 2021.
21(b) Cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	Applies to categories 1 to 7 and 10 except applications covered by entry 21(a) or 39 and expires on 21 July 2021.
21(c) Lead in printing inks for the application of enamels on other than borosilicate glasses	Applies to categories 1 to 7 and 10 and expires on 21 July 2021.
23, Lead in finishes of fine pitch components other than connectors with a pitch of 0,65 mm and less	May be used in spare parts for EEE placed on the market before 24 September 2010
24, Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors	Expires on: — 21 July 2021 for categories 1-7 and 10, — 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments, —21 July 2023 for category 8 in vitro diagnostic medical devices, — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
25, Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring	

Exemptions	
RoHS Directive 2011/65/EU ANNEX III and its subsequent amendments	
Exemption Items	**Expires Date**
29, Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC (1)	Expires on: — 21 July 2021 for categories 1-7 and 10; — 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and ontrol instruments; — 21 July 2023 for category 8 in vitro diagnostic medical devices; — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
30, Cadmium alloys as electrical/mechanical solder joints to elec-trical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more	
31, Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting)	
32, Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes	Expires on: — 21 July 2021 for categories 1-7 and 10, — 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments, — 21 July 2023 for category 8 in vitro diagnostic medical devices, —21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
33, Lead in solders for the soldering of thin copper wires of 100 μm diameter and less in power transformers	
34, Lead in cermet-based trimmer potentiometer elements	Applies to all categories; expires on: — 21 July 2021 for categories 1-7 and 10, —21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments, —21 July 2023 for category 8 in vitro diagnostic medical devices, — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.

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Exemptions	
RoHS Directive 2011/65/EU ANNEX III and its subsequent amendments	
Exemption Items	**Expires Date**
37, Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body	Expires on: — 21 July 2021 for categories 1-7 and 10; — 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; — 21 July 2023 for category 8 in vitro diagnostic medical devices; — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
38, Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide	
39(a), Cadmium selenide in downshifting cadmium-based semiconductor nanocrystal quantum dots for use in display lighting applications (< 0,2 µg Cd per mm^2 of display screen area)	Expires for all categories on 21 November 2025.
39(b), Cadmium in downshifting semiconductor nanocrystal quantum dots directly deposited on LED semiconductor chips for use in display and projection applications (< 5 µg Cd per mm^2 of LED chip surface) with a maximum amount per device of 1 mg	Expires for all categories on 31 December 2027.
41, Lead in solders and termination finishes of electrical and electronic components and finishes of printed circuit boards used in ignition modules and other electrical and electronic engine control systems, which for technical reasons must be mounted directly on or in the crankcase or cylinder of hand-held combustion engines (classes SH:1, SH:2, SH:3 of Directive 97/68/EC of the European Parliament and of the Council)	Applies to all categories and expires on: — 31 March 2022 for categories 1 to 7, 10 and 11; — 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; — 21 July 2023 for category 8 in vitro diagnostic medical devices; —21 July 2024 for category 9 industrial monitoring and control instruments.

Exemptions	
RoHS Directive 2011/65/EU ANNEX III and its subsequent amendments	
Exemption Items	**Expires Date**
42, Lead in bearings and bushes of diesel or gaseous fuel powered internal combustion engines applied in non-road professional use equipment: — with engine total displacement ⩾ 15 litres; or — with engine total displacement < 15 litres and the engine is designed to operate in applications where the time between signal to start and full load is required to be less than 10 seconds; or regular maintenance is typically performed in a harsh and dirty outdoor environment, such as mining, construction, and agriculture application	Applies to category 11, excluding applications covered by entry 6(c) of this Annex. Expires on 21 July 2024.
43, Bis(2-ethylhexyl) phthalate in rubber components in engine systems, designed for use in equipment that is not intended solely for consumer use and provided that no plasticised material comes into contact with human mucous membranes or into prolonged contact with human skin and the concentration value of bis(2-ethylhexyl) phthalate does not exceed: (a) 30 % by weight of the rubber for (i) gasket coatings; (ii) solid-rubber gaskets; or (iii) rubber components included in assemblies of at least three components using electrical, mechanical or hydraulic energy to do work, and attached to the engine. (b) 10 % by weight of the rubber for rubber-containing components not referred to in point (a). For the purposes of this entry, “prolonged contact with human skin” means continuous contact of more than 10 minutes duration or intermittent contact over a period of 30 minutes, per day.	Applies to category 11 and expires on 21 July 2024.
44. Lead in solder of sensors, actuators, and engine control units of combustion engines within the scope of Regulation (EU) 2016/1628 of the European Parliament and of the Council (*) , installed in equipment used at fixed positions while in operation which is designed for professionals, but also used by non-professional users	Applies to category 11 and expires on 21 July 2024.
45. Lead diazide, lead styphnate, lead dipicramate, orange lead (lead tetroxide), lead dioxide in electric and electronic initiators of explosives for civil (professional) use and barium chromate in long time pyrotechnic delay charges of electric initiators of explosives for civil (professional) use	Applies to category 11 and expires on 20 April 2026’

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Exemptions	
RoHS Directive 2011/65/EU ANNEX III and its subsequent amendments	
Exemption Items	**Expires Date**
46. Cadmium and lead in plastic profiles containing mixtures produced from polyvinyl chloride waste (hereinafter referred to as “recovered rigid PVC”), used for electrical and electronic windows and doors, where the concentration in the recovered rigid PVC material does not exceed 0,1 % cadmium by weight and 1,5 % lead by weight. From 28 May 2026, rigid PVC recovered from electrical and electronic windows and doors shall only be used for the production of new articles under the categories specified in entry 63, points 18(a) to (d) of Annex XVII to Regulation (EC) No 1907/2006. Suppliers of PVC articles containing recovered rigid PVC with a concentration of lead equal to or greater than 0,1 % by weight of the PVC material shall ensure, before placing those articles on the market, that they are visibly, legibly and indelibly marked with the statement: “Contains ≥ 0,1 % lead”. Where the marking cannot be provided on the article due to the nature of the article, it shall be on the packaging of the article. Suppliers of PVC articles containing recovered rigid PVC shall submit to national enforcement authorities upon request documentary evidence to substantiate the claims on the recovered origin of the PVC in those articles. Certificates issued by schemes to provide proof of traceability and recycled content, such as those developed according to EN 15343:2007 or equivalent recognised standards, may be used to substantiate such claims for PVC articles produced in the Union. Claims made on the recovered origin of the PVC in imported articles shall be accompanied by a certificate that provides equivalent proof of traceability and recycled content, issued by an independent third party.	Applies to category 11 and expires on 28 May 2028.
Note: (1) OJ L 326, 29.12.1969, p.36. (*) Regulation (EU) 2016/1628 of the European Parliament and of the Council of 14 September 2016 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery, amending Regulations (EU) No 1024/2012 and (EU) No 167/2013, and amending and repealing Directive 97/68/EC (OJ L 252, 16.9.2016, p. 53).’	

Exemptions	
RoHS Directive 2011/65/EU ANNEX IV and its subsequent amendments Equipment utilising or detecting ionising radiation	
Exemption Items	**Expires Date**
1. Lead, cadmium and mercury in detectors for ionising radiation.	
2. Lead bearings in X-ray tubes.	

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Exemptions	
RoHS Directive 2011/65/EU ANNEX IV and its subsequent amendments Equipment utilising or detecting ionising radiation	
Exemption Items	**Expires Date**
3. Lead in electromagnetic radiation amplification devices: micro-channel plate and capillary plate.	
4. Lead in glass frit of X-ray tubes and image intensifiers and lead in glass frit binder for assembly of gas lasers and for vacuum tubes that convert electromagnetic radiation into electrons.	
5. Lead in shielding for ionising radiation.	
6. Lead in X-ray test objects.	
7. Lead stearate X-ray diffraction crystals.	
8. Radioactive cadmium isotope source for portable X-ray fluorescence spectrometers. Sensors, detectors and electrodes	
8.1a. Lead and cadmium in ion selective electrodes including glass of pH electrodes.	
8.1b. Lead anodes in electrochemical oxygen sensors.	
8.1c. Lead, cadmium and mercury in infra-red light detectors.	
8.1d. Mercury in reference electrodes: low chloride mercury chloride, mercury sulphate and mercury oxide.	
9. Cadmium in helium-cadmium lasers.	
10. Lead and cadmium in atomic absorption spectroscopy lamps.	
11. Lead in alloys as a superconductor and thermal conductor in MRI.	
12. Lead and cadmium in metallic bonds creating superconducting magnetic circuits in MRI, SQUID, NMR (Nuclear Magnetic Resonance) or FTMS (Fourier Transform Mass Spectrometer) detectors.	Expires on 30 June 2021
13. Lead in counterweights.	
14. Lead in single crystal piezoelectric materials for ultrasonic transducers.	
15. Lead in solders for bonding to ultrasonic transducers.	
16. Mercury in very high accuracy capacitance and loss measurement bridges and in high frequency RF switches and relays in monitoring and control instruments not exceeding 20 mg of mercury per switch or relay.	
17. Lead in solders in portable emergency defibrillators.	
18. Lead in solders of high performance infrared imaging modules to detect in the range 8-14 μm.	
19. Lead in Liquid crystal on silicon (LcoS) displays.	
20. Cadmium in X-ray measurement filters.	
21. Cadmium in phosphor coatings in image intensifiers for X-ray images until 31 December 2019 and in spare parts for X-ray systems placed on the EU market before 1 January 2020.	
22. Lead acetate marker for use in stereotactic head frames for use with CT and MRI and in positioning systems for gamma beam and particle therapy equipment.	Expires on 30 June 2021.
23. Lead as an alloying element for bearings and wear surfaces in medical equipment exposed to ionising radiation.	Expires on 30 June 2021
24. Lead enabling vacuum tight connections between aluminium and steel in X-ray image intensifiers.	Expires on 31 December 2019

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Exemptions	
RoHS Directive 2011/65/EU ANNEX IV and its subsequent amendments Equipment utilising or detecting ionising radiation	
Exemption Items	**Expires Date**
25. Lead in the surface coatings of pin connector systems requiring nonmagnetic connectors which are used durably at a temperature below – 20 °C under normal operating and storage conditions.	Expires on 30 June 2021
26. Lead in the following applications that are used durably at a temperature below – 20 °C under normal operating and storage conditions: (a) solders on printed circuit boards; (b)termination coatings of electrical and electronic components and coatings of printed circuit boards; (c) solders for connecting wires and cables; (d) solders connecting transducers and sensors. Lead in solders of electrical connections to temperature measurement sensors in devices which are designed to be used periodically at temperatures below – 150 °C.	Expires on 30 June 2021
27. Lead in — solders, — termination coatings of electrical and electronic components and printed circuit boards, — connections of electrical wires, shields and enclosed connectors, which are used in (a)magnetic fields within the sphere of 1 m radius around the isocentre of the magnet in medical magnetic resonance imaging equipment, including patient monitors designed to be used within this sphere, or (b)magnetic fields within 1 m distance from the external surfaces of cyclotron magnets, magnets for beam transport and beam direction control applied for particle therapy. (c)MRI non-integrated coils, for which the Declaration of Conformity of this model is issued for the first time before 23 September 2022, or (d)MRI devices including integrated coils, which are used in magnetic fields within the sphere of 1 m radius around the isocentre of the magnet in medical magnetic resonance imaging equipment, for which the Declaration of Conformity is issued for the first time before 30 June 2024.	Expires on 30 June 2027.
28. Lead in solders for mounting cadmium telluride and cadmium zinc telluride digital array detectors to printed circuit boards.	Expires on 31 December 2017
29. Lead in alloys, as a superconductor or thermal conductor, used in cryo-cooler cold heads and/or in cryo-cooled cold probes and/or in cryo-cooled equipotential bonding systems, in medical devices (category 8) and/or in industrial monitoring and control instruments.	Expires on 30 June 2021
30. Hexavalent chromium in alkali dispensers used to create photocathodes in X-ray image intensifiers until 31 December 2019 and in spare parts for X-ray systems placed on the EU market before 1 January 2020.	

Exemptions	
RoHS Directive 2011/65/EU ANNEX IV and its subsequent amendments Equipment utilising or detecting ionising radiation	
Exemption Items	**Expires Date**
31a. Lead, cadmium, hexavalent chromium, and polybrominated diphenyl ethers (PBDE) in spare parts recovered from and used for the repair or refurbishment of medical devices, including in vitro diagnostic medical devices, or electron microscopes and their accessories, provided that the reuse takes place in auditable closed-loop business-to-business return systems and that each reuse of parts is notified to the customer.	Expires on: (a) 21 July 2021 for the use in medical devices other than in vitro diagnostic medical devices; (b) 21 July 2023 for the use in in vitro diagnostic medical devices; (c) 21 July 2024 for the use in electron microscopes and their accessories.'
32. Lead in solders on printed circuit boards of detectors and data acquisition units for Positron Emission Tomographs which are integrated into Magnetic Resonance Imaging equipment.	Expires on 31 December 2019
33. Lead in solders on populated printed circuit boards used in Directive 93/42/EEC class IIa and IIb mobile medical devices other than portable emergency defibrillators.	Expires on 30 June 2016 for class IIa and on 31 December 2020 for class IIb.
34. Lead as an activator in the fluorescent powder of discharge lamps when used for extracorporeal photopheresis lamps containing BSP ($BaSi_2O_5$:Pb) phosphors.	Expires on 22 July 2021
35. Mercury in cold cathode fluorescent lamps for back-lighting liquid crystal displays, not exceeding 5 mg per lamp, used in industrial monitoring and control instruments placed on the market before 22 July 2017	Expires on 21 July 2024
36. Lead used in other than C-press compliant pin connector systems for industrial monitoring and control instruments.	Expires on 31 December 2020. May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021.'
37. Lead in platinized platinum electrodes used for conductivity measurementswhere at least one of the following conditions applies: (a) wide-range measurements with a conductivity range covering more than 1 order of magnitude (e.g. range between 0,1 mS/m and 5 mS/m) in laboratory applications for unknown concentrations; (b) measurements of solutions where an accuracy of +/– 1 % of the sample range and where high corrosion resistance of the electrode are required for any of the following: (i) solutions with an acidity < pH 1; (ii) solutions with an alkalinity > pH 13; (iii) corrosive solutions containing halogen gas; (c) measurements of conductivities above 100 mS/m that must be performed with portable instruments.	Expires on 31 December 2025

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Exemptions	
RoHS Directive 2011/65/EU ANNEX IV and its subsequent amendments Equipment utilising or detecting ionising radiation	
Exemption Items	**Expires Date**
38. Lead in solder in one interface of large area stacked die elements with more than 500 interconnects per interface which are used in X-ray detectors of computed tomography and X-ray systems	Expires on 31 December 2019. May be used after that date in spare parts for CT and X-ray systems placed on the market before 1 January 2020.
39. Lead in micro-channel plates (MCPs) used in equipment where at least one of the following properties is present: (a)a compact size of the detector for electrons or ions, where the space for the detector is limited to a maximum of 3 mm/MCP (detector thickness+space for installation of the MCP), a maximum of 6 mm in total, and an alternative design yielding more space for the detector is scientifically and technically impracticable; (b)a two-dimensional spatial resolution for detecting electrons or ions, where at least one of the following applies: (i)a response time shorter than 25 ns; (ii)a sample detection area larger than 149 mm^2; (iii)a multiplication factor larger than $1,3 \times 10^3$. (c)a response time shorter than 5 ns for detecting electrons or ions; (d)a sample detection area larger than 314 mm^2 for detecting electrons or ions; (e)a multiplication factor larger than $4,0 \times 10^7$.	(a) 21 July 2021 for medical devices and monitoring and control instruments; (b) 21 July 2023 for in-vitro diagnostic medical devices; (c) 21 July 2024 for industrial monitoring and control instruments
40. Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC for industrial monitoring and control instruments	Expires on 31 December 2020. May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021
41. Lead as a thermal stabiliser in polyvinyl chloride (PVC) used as base material in amperometric, potentiometric and conductometric electrochemical sensors which are used in in-vitro diagnostic medical devices for the analysis of blood and other body fluids and body gases.	Expires on 31 March 2022
41(a). Lead as a thermal stabilizer in polyvinyl chloride (PVC) used as base material in amperometric, potentiometric and conductometric electrochemical sensors which are used in in vitro diagnostic medical devices for the analysis of creatinine and blood urea nitrogen in whole blood.	Applies to category 8 and expires on 31 December 2023
42. Mercury in electric rotating connectors used in intravascular ultrasound imaging systems capable of high operating frequency (> 50 MHz) modes of operation.	Expires on 30 June 2026
43. Cadmium anodes in Hersch cells for oxygen sensors used in industrial monitoring and control instruments, where sensitivity below 10 ppm is required.	Expires on 15 July 2023

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Exemptions	
RoHS Directive 2011/65/EU ANNEX IV and its subsequent amendments Equipment utilising or detecting ionising radiation	
Exemption Items	**Expires Date**
44. Cadmium in radiation tolerant video camera tubes designed for cameras with a centre resolution greater than 450 TV lines which are used in environments with ionising radiation exposure exceeding 100 Gy/hour and a total dose in excess of 100kGy.	Applies to category 9. Expires on 31 March 2027.
45. Bis(2-ethylhexyl) phthalate (DEHP) in ion-selective electrodes applied in point of care analysis of ionic substances present in human body fluids and/or in dialysate fluids	Expires on 21 July 2028.
46. Bis(2-ethylhexyl) phthalate (DEHP) in plastic components in MRI detector coils	Expires on 1 January 2024.
47. Bis(2-ethylhexyl) phthalate (DEHP), butyl benzyl phthalate (BBP), dibutyl phthalate (DBP) and diisobutyl phthalate (DIBP) in spare parts recovered from and used for the repair or refurbishment of medical devices, including in vitro diagnostic medical devices, and their accessories, provided that the reuse takes place in auditable closed-loop businessto-business return systems and that each reuse of parts is notified to the customer	Expires on 21 July 2028.
48. Lead in bismuth strontium calcium copper oxide (BSCCO) superconductor cables and wires and lead in electrical connections to these wires.	Expires on 30 June 2027.
49. Mercury in melt pressure transducers for capillary rheometers at temperatures over 300 °C and pressures over 1 000 bar.	Applies to category 9 and expires on 31 December 2025.

2. Lead (Pb), Cadmium (Cd) and Mercury (Hg) Content

Test Method:

For Pb and Cd content: Analysis was performed by ICP-OES.

For Hg content: Analysis was performed by cold vapor atomic absorption spectrometry.

Test Item(s)	MDL (%)	Test Result(s) (%)	Limited Value* (%)	Labelling Requirement# (%)
		62		
Pb	0.0005	N.D.	0.01	>0.004
Cd	0.0005	N.D.	0.002	>0.002
Hg	0.0001	N.D.	0.0005	---

Remark: 1) *The limited value is based on Annex I of Regulation (EU) 2023/1542;

RESTRICTION ON SUBSTANCES

Column 1	Column 2

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Designation of the substance or group of substances	Conditions of restriction
1. Mercury CAS No 7439-97-6 EC No 231-106-7 and its compounds	Batteries, whether or not incorporated into appliances, light means of transport or other vehicles, shall not contain more than 0,0005 % of mercury (expressed as mercury metal) by weight.
2. Cadmium CAS No 7440-43-9 EC No 231-152-8 and its compounds	Portable batteries, whether or not incorporated into appliances, light means of transport or other vehicles, shall not contain more than 0,002 % of cadmium (expressed as cadmium metal) by weight.
3. Lead CAS No 7439-92-1 EC No 231-100-4 and its compounds	1. From 18 August 2024, portable batteries, whether or not incorporated into appliances, shall not contain more than 0,01 % of lead (expressed as lead metal) by weight. 2. The restriction set out in point 1 shall not apply to portable zinc-air button cells until 18 August 2028.

2) #Non portable batteries containing more than 0.002% cadmium or more than 0.004 % lead, shall be marked with the chemical symbol for the metal concerned: Cd or Pb. Portable batteries containing or more than 0.004% but no more than 0.1% lead, shall be marked with the chemical symbol for the metal concerned: Pb.
The relevant chemical symbol indicating the heavy metal content shall be printed beneath the separate collection symbol as shown in Part B of Annex VI in Regulation (EU) 2023/1542 and shall cover an area of at least one-quarter the size of that symbol;

3) --- = Not Regulated.

Test Part Description:

62 Battery

******** To be continued ********

SAMPLE PHOTO

62

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

GENERAL CONDITIONS OF SERVICES

STQ Testing Services Co.,Ltd. (hereinafter “STQ”), The testing or examining under the request of the customer should obey terms as follow, according to regulation of "Contract Law of the People's Republic of China" on processing and undertaking contract, our company have legal right of termination without any reason and have the right to accept or refuse testing or examining request:

1. STQ only acts for the person or body originating the instructions (the“Clients”). No other party is entitled to give instructions, particularly on the scope of testing or delivery of report or certificate, unless authorized by the Clients.
2. Sample recycling: when the testing or examining is finished, the customer should recycle the sample. Within 30 days after issuing of testing report, if the customer could not recycle the sample or send notification of sample recycling in written (for example, if the sample belongs to consumables, toxic drugs, dangerous goods and other items that are not suitable for long-term storage, such as semi-finished products and fragile samples such as liquids and powders , the retention period will be shortened to 7 days). After the retention period,STQ has the right to dispose of the sample arbitrarily without paying compensation or compensation to the customer and take no responsibility for the consequences that damages the customer’s trade secrets and intellectual property rights due to the loss of the sample.
3. The delivery and return fee of the samples which need to do testing at STQ should be paied by the client. STQ will not bear the responsibility for the testing error that is caused by transporting，packaging and labelling.
4. The Clients shall always comply with the following before or during STQ providing its services:

a) provide sample(s) and relevant data, at the same time, guarantee the consistence of the sample(s)’name they declared with the sample(s) or the goods provided. Otherwise, STQ will not bear any relevant responsibilities;
b) giving timely instructions and adequate information to enable STQ to perform the services effectively;
c) supply, when requested by STQ, any equipment and personnel for the performance of the services;
d) take all necessary steps to eliminate or remedy any obstruction in the performance of the services;
e) inform STQ in advance of any hazards or dangers, actual or potential, associated with any order of samples or testing;
f) provide all necessary access for STQ’s representative to enable the required services to be performed effectively;
g) ensure all essential steps are taken for safety of working conditions, sites and installations during the performance of services;
h) fully discharge all its liabilities under any contract like sales contract with a third party, whether or not a report or certificate has been issued by STQ, failing which STQ shall be under no obligation to the Clients.

5. Subject to STQ’s accepting the Client’s instructions, STQ will issue reports or certificates which reflect statements of opinion made with due care within the scope of instructions but STQ is not obliged to report upon any facts outside the instructions, if there were any dissidence about the report or certificate, the Client should provide the written declaration to STQ within 15 days after the date receiving the report or certificate, otherwise, STQ will not hear the case after the date limit.
6. STQ is irrevocably authorized by the Clients to deliver at its discretion the report or the certificate to any third party when instructed by the Clients or where it implicitly follows from circumstances, trade custom, usage or practice as determined by STQ.
7. A test report will be issued in confidence to the Clients and it will be strictly treated as such by STQ. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of STQ. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by STQ, to his customer, supplier or other persons directly concerned. STQ will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the report unless required by the relevant governmental authorities, laws or court orders.
8. Applicants wishing to use STQ’s reports in court proceedings or arbitration shall inform STQ to that effect prior to submitting the sample for testing.
9. The report will refer only to the sample tested and will not apply to the bulk, unless the sampling has been carried out by STQ and is stated as such in the Report. Also, the report is only for reference.
10. Any documents containing engagements between the Clients and third parties like contracts of sale, letters of credit, bills of lading, etc. are regarded as information for STQ only and do not affect the scope of the services or the obligations accepted by STQ.
11. If the Clients do not specify the methods/standards to be applied, STQ will choose the appropriate ones and further information regarding the methods can be obtained by direct contact with STQ, for the in－house method, STQ will only provide the summary.
12. No liability shall be incurred by and no claim shall be made against STQ or its servants, agents, employees or independent contractors in respect of any loss or damage to any such materials, equipment and property occurring whilst at STQ or any work places in which the testing is carried out, or in the course of transit to or from STQ or the said work places, whether or not resulting from any acts, neglect or default on the part of any such servants, agents, employees or independent contractors of STQ.
13. STQ will not be liable, or accept responsibility for any loss or damage howsoever arising from the use of information contained in any of its reports or in any communication whatsoever about its said tests or investigations.
14. Except for term 11 and term 12, if the test sample is damaged due to the negligence of ZOTAC, the total compensation for loss and damage to the sample or loss to the customer shall not exceed twice of the test service fee.
15. In the event of STQ prevented by any cause outside STQ’s control from performing any service for which an order has been given or an agreement made, the Clients shall pay to STQ:

a) the amount of all abortive expenditure actually made or incurred;
b) a proportion of the agreed fee or commission equal to the proportion (if any) of the service actually carried out by STQ, and STQ shall be relieved of all responsibility whatsoever for the partial or total non－performance of the required service.

16. STQ shall be discharged from all liabilities for all claims for loss, damage or expense unless suit is brought within one calendar

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year after the date of the performance by STQ of the service relating to the claim or in the event of any alleged non－performance within one year of the date when such service should have been completed.

17. The Clients acknowledge that STQ does not, either by entering into a contract or by performing service, assume or undertake to discharge any duty of the Clients to any other persons. STQ is neither an insurer nor a guarantor and disclaims all liability in such capacity.
18. The Clients shall hold harmless and indemnify STQ and its officers, employees, agents or independent contractors against all claims made by any third party for loss，damage or expense of whatsoever nature including reasonable legal expenses relating to the performance or non- performance of any services to the extent that the aggregate of any such claims relating to any one service exceed the limits mentioned in Clause 13.
19. Any unauthorized alteration, forgery or falsification of the content or appearance of the report/certificate is unlawful and offenders may be prosecuted to the fullest extent of the law; in the event of improper use of the report, STQ reserves the right to withdraw it, and to adopt any other measures which may be appropriate.
20. Samples are deposited with and accepted by STQ on the basis that either they are insured by the Clients or the Clients assumes entire responsibility for loss through fire, theft, burglary or for damages arising in the course of analysis or handling, without recourse whatsoever to STQ or its servants, agent, employees or independent contractors.
21. If the requirements of the Clients require the analysis of samples by the Clients' or any third party's laboratory, STQ will only convey the result of the analysis without responsibility for its accuracy. If STQ is only able to witness an analysis by the Clients' or any third Party's laboratory STQ will only confirm that the correct sample has been analyzed without responsibility for the accuracy of any analysis or results.
22. In the event of any unforeseen additional time or costs being incurred in the course of carrying out any of its services, STQ shall be entitled to charge the Clients additional fees to reflect the additional time and costs incurred.
23. All rights（including but not limited to copyright）in any reports, certificates or other materials produced by STQ in the course of providing its services shall remain vested in STQ.
24. Unless otherwise agreed in written, payment should be arranged within 10 days after the invoice date or the debit note date. If the payment is overdue, the overdue penalty shall be calculated at 1‰ per day of the unpaid part till the actual payment date. All expenses, costs and losses incurred by STQ as a result of collecting or claiming the fees owed shall be borne by the customer, including but not limited to attorney fees, litigation fees, preservation fees, preservation guarantee fees, travel expenses, etc.
25. Test results may be transmitted by electronic means at the Client's request. However, it should be noted that electronic transmission cannot guarantee the information contained will not be lost, delayed or intercepted by third party. STQ is not liable for any disclosure, error or omission in the content of such messages as a result of electronic transmission.
26. If necessary, STQ may subcontract part of or all tests to competent subcontractors. If no objection is raised at the time of the Clients submitting the application, STQ shall assume the Client's approval.
27. This report/certificate does not relieve sellers/suppliers from their contractual responsibility with regards to the quality/quantity of this delivery nor does it prejudice the Client's right to claim towards sellers/suppliers for compensation for any apparent and/or hidden defects not detected during STQ's random inspection or testing or audit.
28. The testing data and result(s) in this reportis(are) just for scientific research, education, internal quality control and product development etc.
29. STQ reserves the right to include Special Conditions in addition to the foregoing General Conditions if warranted by the particular circumstances of the required test or investigation [this clause is only effective when the other party has been informed].
30. The foregoing General Conditions shall in all respects be governed, construed, interpreted and operated in accordance with the relevant Chinese laws and regulations. Unless otherwise agreed, the arbitration shall take place in P．R．C
31. These General Condition have been drafted in Chinese and may be translated into other languages. In the event of any discrepancy, the Chinese version shall prevail.
32. In general sample will be stored for 30 days. But for liquid, powder, etc semi-product & fragile product, it will be stored only for 7 days.

Test Report issued under the responsibility of:

TÜVRheinland®

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

Report Number. ..... :	CN24K3MI 001
Date of issue ..... :	2024-09-10
Total number of pages ..... :	33 pages
Name of Testing Laboratory preparing the Report ..... :	Guangzhou MCM Certification & Testing Co., Ltd.
Applicant's name ..... :	
Address ..... :	
Test specification:	
Standard ..... :	IEC 62133-2:2017, IEC 62133-2:2017/AMD1:2021
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
TRF template used ..... :	IECEE OD-2020-F1:2021, Ed.1.4
Test Report Form No. ..... :	IEC62133_2C
Test Report Form(s) Originator .... :	DEKRA Certification B.V.
Master TRF ..... :	Dated 2022-07-01

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

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

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing NCB. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description ..... :	Cylindrical Lithium-ion Rechargeable Cell
Trade Mark(s) ..... :	N/A
Manufacturer ..... :	Same as applicant
Model/Type reference ..... :	IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh
Ratings ..... :	3.7V, 600mAh, 2.22Wh; 3.7V, 700mAh, 2.59Wh; 3.7V, 800mAh, 2.96Wh; 3.7V, 1050mAh, 3.89Wh; 3.7V, 1200mAh, 4.44Wh; 3.7V, 1500mAh, 5.55Wh; 3.7V, 1800mAh, 6.66Wh

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):

☒	**CB Testing Laboratory:**	Guangzhou MCM Certification & Testing Co., Ltd.	
Testing location/ address ..... :		Room 101 to 116 & 216, Building 2 (Office Building and Workshop)No. 45 Zhong Er Section of Shiguang Road, Zhongcun Street, Panyu District, Guangzhou City, Guangdong Province, China	
Tested by (name, function, signature) ..... :		Owen Huang (Engineer)	Owen Huang
Approved by (name, function, signature) .. :		Liang Hongcheng (Reviewer)	LiangHongcheng
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address ..... :			
Tested by (name + signature) ..... :			
Witnessed by (name, function, signature). :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Witnessed by (name, function, signature). :			
Approved by (name, function, signature) .. :			
Supervised by (name, function, signature) :			

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

- Attachment 1: National Differences (3 pages)
- Attachment 2: Photo Documentation (21 pages)

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
cl.7.1 Charging procedure for test purposes (for Cells); cl.7.2.1 Continuous charging at constant voltage (cells); cl.7.3.1 External short circuit (cells); cl.7.3.3 Free fall (cells); cl.7.3.4 Thermal abuse (cells); cl.7.3.5 Crush (cells); cl.7.3.7 Forced discharge (cells); cl.7.3.9 Design evaluation – Forced internal short-circuit (cells). Tests are made with the number of cells specified in IEC 62133-2:2017, IEC 62133-2:2017/AMD1:2021 Table 1.	Guangzhou MCM Certification & Testing Co., Ltd. Room 101 to 116 & 216, Building 2 (Office Building and Workshop)No. 45 Zhong Er Section of Shiguang Road, Zhongcun Street, Panyu District, Guangzhou City, Guangdong Province, China

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

KR

KR=Republic of Korea

☒ **The product fulfils the requirements of EN 62133-2:2017, EN 62133-2:2017/A1:2021, BS EN 62133-2:2017+A1:2021, SASO-IEC-62133-2.**

Use of uncertainty of measurement for decisions on conformity (decision rule) :

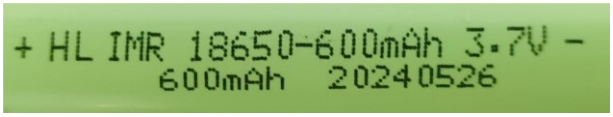
☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").

☐ Other: N/A (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

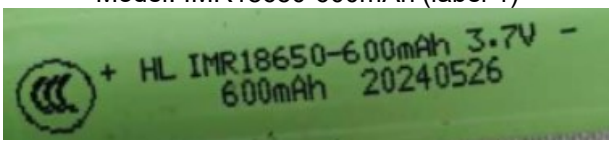
Information on uncertainty of measurement:
The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.
IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.
Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

Copy of marking plate:

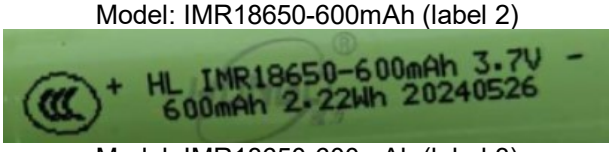
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



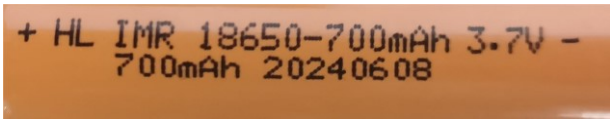
Model: IMR18650-600mAh (label 1)



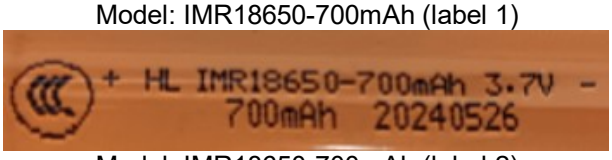
Model: IMR18650-600mAh (label 2)



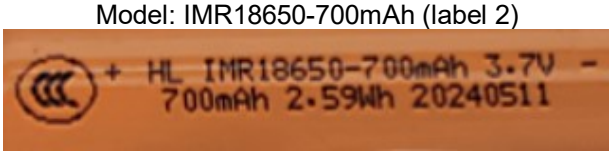
Model: IMR18650-600mAh (label 3)



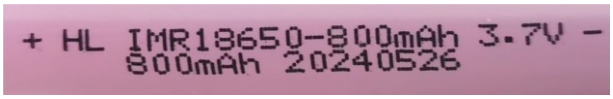
Model: IMR18650-700mAh (label 1)



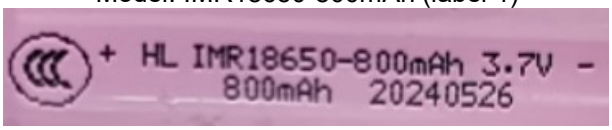
Model: IMR18650-700mAh (label 2)



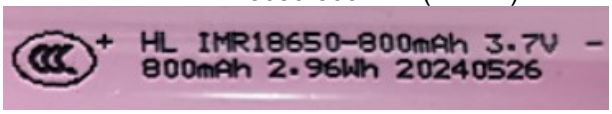
Model: IMR18650-700mAh (label 3)



Model: IMR18650-800mAh (label 1)

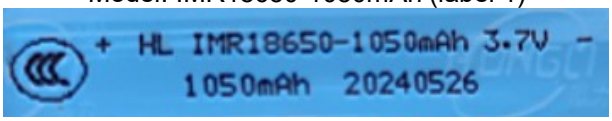


Model: IMR18650-800mAh (label 2)

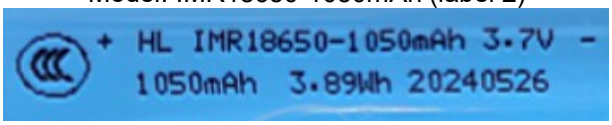


Model: IMR18650-800mAh (label 3)

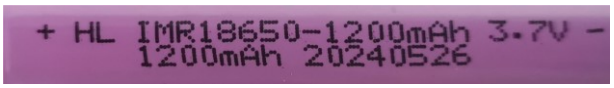
Model: IMR18650-1050mAh (label 1)



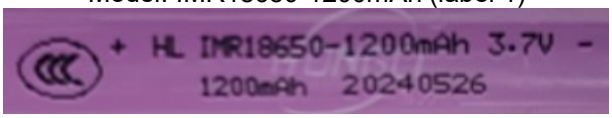
Model: IMR18650-1050mAh (label 2)



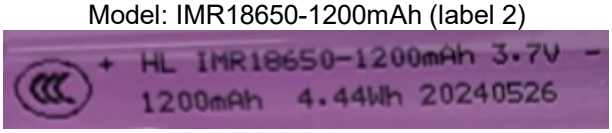
Model: IMR18650-1050mAh (label 3)



Model: IMR18650-1200mAh (label 1)

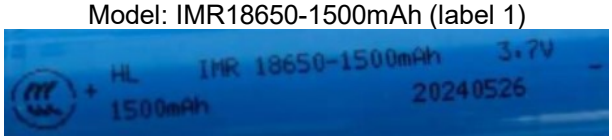


Model: IMR18650-1200mAh (label 2)

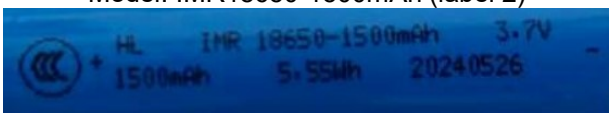


Model: IMR18650-1200mAh (label 3)

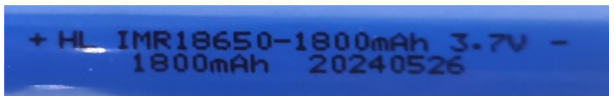
Model: IMR18650-1500mAh (label 1)



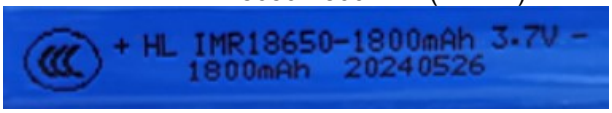
Model: IMR18650-1500mAh (label 2)



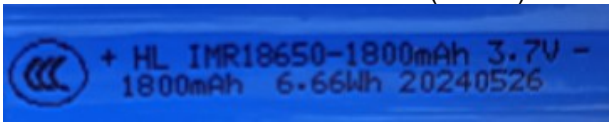
Model: IMR18650-1500mAh (label 3)



Model: IMR18650-1800mAh (label 1)



Model: IMR18650-1800mAh (label 2)



Model: IMR18650-1800mAh (label 3)

Remark: The agreement about marking plate between battery pack manufacturer and cell factory provided.

Test item particulars .....:	
Classification of installation and use.....:	To be defined in final product
Supply Connection .....:	DC terminal
Recommend charging method declared by the manufacturer.....:	Charging the cell with 0.2C constant current and 4.2V constant voltage until the current reduces to 0.02C at ambient 20°C±5°C.
Discharge current (0,2 It A).....:	IMR18650-600mAh: 120mA, IMR18650-700mAh: 140mA, IMR18650-800mAh: 160mA, IMR18650-1050mAh: 210mA, IMR18650-1200mAh: 240mA, IMR18650-1500mAh: 300mA, IMR18650-1800mAh: 360mA
Specified final voltage.....:	3.0V
Upper limit charging voltage per cell.....:	4.2V
Maximum charging current.....:	See page 7
Charging temperature upper limit.....:	45°C
Charging temperature lower limit .....:	0°C
Polymer cell electrolyte type.....:	☐ gel polymer ☐ solid polymer ☒ N/A
Possible test case verdicts:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)
Testing ..... :	
Date of receipt of test item..... :	2024-07-31
Date (s) of performance of tests ..... :	2024-07-31 to 2024-08-15
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. **Throughout this report a ☐ comma / ☒ point is used as the decimal separator.**	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	☐ **Yes** ☒ **Not applicable**
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)..... :	Same as applicant

General product information and other remarks:

The cell consists of the positive electrode plate, negative electrode plate, separator, electrolyte and case. The positive and negative electrode plates are housed in the case in the state being separated by the separator.

Model differences:

Series models IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh have exactly the same materials, components, electrical specification, the same construction except cell model and rated capacity.

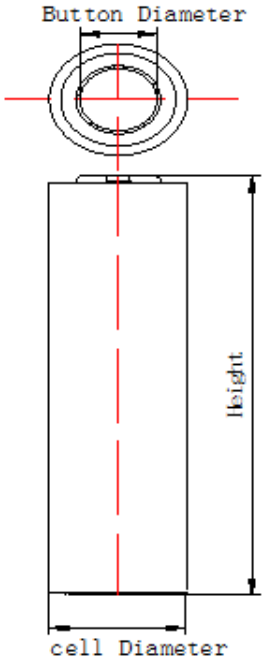
The main features of the cell are shown as below (clause 7.1.1):

Model	Rated capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Recommended Charge Voltage	Specified Final Voltage
IMR18650-600mAh	600mAh	3.7V	120mA	120mA	300mA	300mA	4.2V	3.0V
IMR18650-700mAh	700mAh	3.7V	140mA	140mA	350mA	350mA	4.2V	3.0V
IMR18650-800mAh	800mAh	3.7V	160mA	160mA	400mA	400mA	4.2V	3.0V
IMR18650-1050mAh	1050mAh	3.7V	210mA	210mA	525mA	525mA	4.2V	3.0V
IMR18650-1200mAh	1200mAh	3.7V	240mA	240mA	600mA	600mA	4.2V	3.0V
IMR18650-1500mAh	1500mAh	3.7V	300mA	300mA	750mA	750mA	4.2V	3.0V
IMR18650-1800mAh	1800mAh	3.7V	360mA	360mA	900mA	900mA	4.2V	3.0V

The main features of the cell are shown as below (clause 7.1.2):

Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature
IMR18650-600mAh	4.2V	30mA	0°C	45°C
IMR18650-700mAh	4.2V	35mA	0°C	45°C
IMR18650-800mAh	4.2V	40mA	0°C	45°C
IMR18650-1050mAh	4.2V	52.5mA	0°C	45°C
IMR18650-1200mAh	4.2V	60mA	0°C	45°C
IMR18650-1500mAh	4.2V	75mA	0°C	45°C
IMR18650-1800mAh	4.2V	90mA	0°C	45°C

Construction:



Cell diameter(电池直径) mm	Cell Height(电池高度)mm	Button diameter(盖帽直径)mm
18.2±0.3	65.0±0.5	7.5±0.2(平)

Cell (unit: mm)

Circuit diagram:

None, Cell only

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
4	**PARAMETER MEASUREMENT TOLERANCES**		P
	Parameter measurement tolerances		P
5	**GENERAL SAFETY CONSIDERATIONS**		P
5.1	**General**		P
	Cells and batteries so designed and constructed that they are safe under conditions of both intended use and reasonably foreseeable misuse		P
5.2	**Insulation and wiring**	Cell 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		N/A
	Insulation resistance (MΩ) ..... :	N/A	—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		N/A
	Orientation of wiring maintains adequate clearances and creepage distances between conductors		N/A
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		N/A
5.3	**Venting**		P
	Battery cases and cells incorporate a pressure relief mechanism or are constructed so that they relieve excessive internal pressure at a value and rate that will preclude rupture, explosion and self-ignition	Explosion-proof safety valve for venting exists.	P
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief		N/A
5.4	**Temperature, voltage and current management**	Cell only.	N/A
	Batteries are designed such that abnormal temperature rise conditions are prevented		N/A
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer		N/A
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that specified chargers are designed to maintain charging within the temperature, voltage and current limits specified		N/A
5.5	**Terminal contacts**	Complied.	P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current		P

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Clause	Requirement + Test	Result - Remark	Verdict
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance		P
	Terminal contacts are arranged to minimize the risk of short circuits		P
5.6	**Assembly of cells into batteries**	Cell only.	N/A
5.6.1	General		N/A
	Each battery has an independent control and protection for current, voltage, temperature and any other parameter required for safety and to maintain the cells within their operating region		N/A
	This protection may be provided external to the battery such as within the charger or the end devices		N/A
	If protection is external to the battery, the manufacturer of the battery provide this safety relevant information to the external device manufacturer for implementation		N/A
	If there is more than one battery housed in a single battery case, each battery has protective circuitry that can maintain the cells within their operating regions		N/A
	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly		N/A
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate circuitry to prevent operation of cells outside the limits specified by the cell manufacturer		N/A
	Protective circuit components are added as appropriate and consideration given to the end-device application		N/A
	The manufacturer of the battery provide a safety analysis of the battery safety circuitry with a test report including a fault analysis of the protection circuit under both charging and discharging conditions confirming the compliance		N/A
5.6.2	Design recommendation	Cell only.	N/A
	For the battery consisting of a single cell or a single cellblock, it is recommended that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 2		N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that the voltages of any one of the single cells or single cellblocks does not exceed the upper limit of the charging voltage, specified in Table 2, by monitoring the voltage of every single cell or the single cellblocks		N/A
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that charging is stopped when the upper limit of the charging voltage is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks		N/A
	For batteries consisting of series-connected cells or cell blocks, nominal charge voltage are not counted as an overcharge protection		N/A
	For batteries consisting of series-connected cells or cell blocks, cells have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer		N/A
	It is recommended that the cells and cell blocks are not discharged beyond the cell manufacturer's specified final voltage		N/A
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry are incorporated into the battery management system		N/A
5.6.3	Mechanical protection for cells and components of batteries	Cell only.	N/A
	Mechanical protection for cells, cell connections and control circuits within the battery are provided to prevent damage as a result of intended use and reasonably foreseeable misuse		N/A
	The mechanical protection can be provided by the battery case or it can be provided by the end product enclosure for those batteries intended for building into an end product		N/A
	The battery case and compartments housing cells are designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer		N/A
	For batteries intended for building into a portable end product, testing with the battery installed within the end product is considered when conducting mechanical tests		N/A
5.7	**Quality plan**		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The manufacturer prepares and implements a quality plan that defines procedures for the inspection of materials, components, cells and batteries and which covers the whole process of producing each type of cell or battery	Complied. ISO 9001: 2015 certificate provided.	P
5.8	**Battery safety components**		N/A
6	**TYPE TEST AND SAMPLE SIZE**		P
	Tests are made with the number of cells or batteries specified in Table 1 using cells or batteries that are not more than six months old		P
	The internal resistance of coin cells are measured in accordance with Annex D. Coin cells with internal resistance less than or equal to 3 Ω are tested in accordance with Table 1	Not coin cells	N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of 20 °C ± 5 °C		P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and over discharge protection		N/A
	When conducting the short-circuit test, consideration is 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	Cell only.	N/A
7	**SPECIFIC REQUIREMENTS AND TESTS**		P
7.1	**Charging procedure for test purposes**		P
7.1.1	First procedure		P
	This charging procedure applies to subclauses other than those specified in 7.1.2		P
	Unless otherwise stated in this document, the charging procedure for test purposes is carried out in an ambient temperature of 20 °C ± 5 °C, using the method declared by the manufacturer	See page 6.	P
	Prior to charging, the battery has been discharged at 20 °C ± 5 °C at a constant current of 0,2 It A down to a specified final voltage	See page 6.	P
7.1.2	Second procedure		P
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9		P

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Clause	Requirement + Test	Result - Remark	Verdict
	After stabilization for 1 h to 4 h, at an ambient temperature of the highest test temperature and the lowest test temperature, respectively, 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 current to constant voltage charging method	Charge temperature specified by manufacturer: 0-45°C. -5°C used for lower limit tests (see cl. A.4.4.4). 45°C used for upper limit tests (see cl. A.4.3.4).	P
7.2	**Intended use**		P
7.2.1	Continuous charging at constant voltage (cells)	Tested complied.	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	Charging for 7days with 0.2C and 4.2V.	P
	Results: no fire, no explosion, no leakage..... :	(See appended table 7.2.1)	P
7.2.2	Case stress at high ambient temperature (battery)	Cell only.	N/A
	Oven temperature (°C) ..... :	N/A	—
	Results: no physical distortion of the battery case resulting in exposure of internal protective components and cells		N/A
7.3	**Reasonably foreseeable misuse**		P
7.3.1	External short-circuit (cell)	Tested complied.	P
	The cells were tested until one of the following occurred:		P
	- 24 hours elapsed; or		N/A
	- The case temperature declined by 20 % of the maximum temperature rise		P
	Results: no fire, no explosion .....:	(See appended table 7.3.1)	P
7.3.2	External short-circuit (battery)	Cell only.	N/A
	The batteries were tested until one of the following occurred:		N/A
	- 24 hours elapsed; or		N/A
	- The case temperature declined by 20 % of the maximum temperature rise		N/A
	In case of rapid decline in short circuit current, the battery pack remained on test for an additional one hour after the current reached a low end steady state condition		N/A
	A single fault in the discharge protection circuit is conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	A single fault applies to protective component parts such as MOSFET (metal oxide semiconductor field-effect transistor), fuse, thermostat or positive temperature coefficient (PTC) thermistor		N/A
	Results: no fire, no explosion .....:		N/A
7.3.3	Free fall	Tested complied.	P
	Results: no fire, no explosion	No fire. No explosion	P
7.3.4	Thermal abuse (cells)	Tested complied.	P
	Oven temperature (°C) ..... :	130°C	—
	Results: no fire, no explosion	No fire. No explosion	P
7.3.5	Crush (cells)	Tested complied.	P
	The crushing force was released upon:		P
	- The maximum force of 13 kN ± 0,78 kN has been applied; or		P
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N/A
	Results: no fire, no explosion .....:	(See appended table 7.3.5)	P
7.3.6	Over-charging of battery	Cell only.	N/A
	The supply voltage which is:		N/A
	- 1,4 times the upper limit charging voltage presented in Table A.1 (but not to exceed 6,0 V) for single cell/cell block batteries or		N/A
	- 1,2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and		N/A
	- Sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached		N/A
	Test was continued until the temperature of the outer casing:		N/A
	- Reached steady state conditions (less than 10 °C change in 30-minute period); or		N/A
	- Returned to ambient		N/A
	Results: no fire, no explosion .....:		N/A
7.3.7	Forced discharge (cells)	Tested complied.	P
	Discharge a single cell to the lower limit discharge voltage specified by the cell manufacturer		P
	The discharged cell is then subjected to a forced discharge at 1 It A to the negative value of the upper limit charging voltage		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- The discharge voltage reaches the negative value of upper limit charging voltage within the testing duration. The voltage is maintained at the negative value of the upper limit charging voltage by reducing the current for the remainder of the testing duration		N/A
	- The discharge voltage does not reach the negative value of upper limit charging voltage within the testing duration. The test is terminated at the end of the testing duration		P
	Results: no fire, no explosion .....:	(See appended table 7.3.7)	P
7.3.8	Mechanical tests (batteries)		N/A
7.3.8.1	Vibration	Cell only.	N/A
	Results: no fire, no explosion, no rupture, no leakage or venting. .....:		N/A
7.3.8.2	Mechanical shock	Cell only.	N/A
	Results: no leakage, no venting, no rupture, no explosion and no fire.....:		N/A
7.3.9	Design evaluation – Forced internal short-circuit (cells)	Tested complied.	P
	The cells complied with national requirement for ..... :	France, Japan, Korea, Switzerland	—
	The pressing was stopped upon:		P
	- A voltage drop of 50 mV has been detected; or		N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached	Cylindrical cell, 800N.	P
	Results: no fire .....:	(See appended table 7.3.9)	P
8	**INFORMATION FOR SAFETY**		P
8.1	**General**		P
	Manufacturers of secondary cells provides information about current, voltage and temperature limits of their products	Information for safety mentioned in manufacturer's specifications.	P
	Manufacturers of batteries provides information regarding how to minimize and mitigate hazards to equipment manufacturers or end-users	Cell only.	N/A
	Systems analyses are performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		N/A
	As appropriate, any information relating to hazard avoidance resulting from a system analysis is provided to the end user		N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Do not allow children to replace batteries without adult supervision		N/A
8.2	**Small cell and battery safety information**		N/A
	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:		N/A
	- Keep small cells and batteries which are considered swallowable out of the reach of children		N/A
	- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion		N/A
	- In case of ingestion of a cell or battery, seek medical assistance promptly		N/A
9	**MARKING**		P
9.1	**Cell marking**		P
	Cells are marked as specified in IEC 61960, except coin cells		N/A
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity		N/A
	By agreement between the cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked	Agreement between the cell manufacturer and user provided.	P
9.2	**Battery marking**	Cell only.	N/A
	Batteries are marked as specified in IEC 61960, except for coin batteries		N/A
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity		N/A
	Batteries are marked with an appropriate caution statement		N/A
	- Terminals have clear polarity marking on the external surface of the battery, or		N/A
	- Not be marked with polarity markings if the design of the external connector prevents reverse polarity connections		N/A
9.3	**Caution for ingestion of small cells and batteries**	Not small cells.	N/A
	Coin cells and batteries identified as small batteries include a caution statement regarding the hazards of ingestion in accordance with 8.2		N/A

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	Small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion is given on the immediate package		N/A
9.4	**Other information**		P
	The following information are marked on or supplied with the battery:	Information for storage and disposal instructions mentioned in manufacturer's specifications.	P
	- Storage and disposal instructions		P
	- Recommended charging instructions		P
10	**PACKAGING AND TRANSPORT**		N/A
	Packaging for coin cells are not be small enough to fit within the limits of the ingestion gauge of Figure 3		N/A
ANNEX A	**CHARGING AND DISCHARGING RANGE OF SECONDARY LITHIUM ION CELLS FOR SAFE USE**		P
A.1	**General**		P
A.2	**Safety of lithium ion secondary battery**	Complied.	P
A.3	**Consideration on charging voltage**	Complied.	P
A.3.1	General		P
A.3.2	Upper limit charging voltage	4.2V applied.	P
A.3.2.1	General		P
A.3.2.2	Explanation of safety viewpoint		N/A
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	4.2V applied.	N/A
A.4	**Consideration of temperature and charging current**		P
A.4.1	General		P
A.4.2	Recommended temperature range	See A.4.2.2.	P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Charging temperature declared by client is: 0~45°C.	P
A.4.3	High temperature range	Charging high temperature declared by client is: 45°C.	N/A
A.4.3.1	General		N/A
A.4.3.2	Explanation of safety viewpoint		N/A
A.4.3.3	Safety considerations when specifying charging conditions in the high temperature range		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range	Not higher than the temperature range specific in this standard	N/A
A.4.4	Low temperature range	Charging low temperature declared by client is: 0°C.	P
A.4.4.1	General		P
A.4.4.2	Explanation of safety viewpoint		P
A.4.4.3	Safety considerations, when specifying charging conditions in the low temperature range		P
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range	No documents provided by manufacturer explaining the lower limit exceed 10°C, -5°C applied for testing in this report for safety considerations.	P
A.4.5	Scope of the application of charging current		P
A.4.6	Consideration of discharge		P
A.4.6.1	General		P
A.4.6.2	Final discharge voltage and explanation of safety viewpoint	3.0V specified by cell manufacturer.	P
A.4.6.3	Discharge current and temperature range		P
A.4.6.4	Scope of application of the discharging current		P
A.5	**Sample preparation**		P
A.5.1	General		P
A.5.2	Insertion procedure for nickel particle to generate internal short		P
A.5.3	Disassembly of charged cell		P
A.5.4	Shape of nickel particle		P
A.5.5	Insertion of nickel particle in cylindrical cell		P
A.5.5.1	Insertion of nickel particle in winding core		P
A.5.5.2	Marking the position of the nickel particle on both ends of the winding core of the separator		P
A.5.6	Insertion of nickel particle in prismatic cell		N/A
A.6	**Experimental procedure of the forced internal short-circuit test**		P
A.6.1	Material and tools for preparation of nickel particle		P
A.6.2	Example of a nickel particle preparation procedure		P
A.6.3	Positioning (or placement) of a nickel particle		P
A.6.4	Damaged separator precaution		P

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Clause	Requirement + Test	Result - Remark	Verdict
A.6.5	Caution for rewinding separator and electrode		P
A.6.6	Insulation film for preventing short-circuit		P
A.6.7	Caution when disassembling a cell		P
A.6.8	Protective equipment for safety		P
A.6.9	Caution in the case of fire during disassembling		P
A.6.10	Caution for the disassembling process and pressing the electrode core		P
A.6.11	Recommended specifications for the pressing device		P
ANNEX B	**RECOMMENDATIONS TO EQUIPMENT MANUFACTURERS AND BATTERY ASSEMBLERS**		N/A
ANNEX C	**RECOMMENDATIONS TO THE END-USERS**		N/A
ANNEX D	**MEASUREMENT OF THE INTERNAL AC RESISTANCE FOR COIN CELLS**		N/A
D.1	**General**		N/A
D.2	**Method**		N/A
	A sample size of three coin cells is required for this measurement		N/A
	Coin cells with an internal resistance greater than 3 Ω require no further testing ..... :		N/A
	Coin cells with an internal resistance less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1		N/A
ANNEX E	**PACKAGING AND TRANSPORT**		N/A
ANNEX F	**COMPONENT STANDARDS REFERENCES**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

7.2.1	TABLE: Continuous charging at constant voltage (cells)			P
Sample No.	**Recommended charging voltage Vc (Vdc)**	**Recommended charging current I_{rec} (A)**	**OCV before test (Vdc)**	**Results**
Cell #1[1]	4.2	0.12	4.14	P
Cell #2[1]	4.2	0.12	4.15	P
Cell #3[1]	4.2	0.12	4.15	P
Cell #4[1]	4.2	0.12	4.14	P
Cell #5[1]	4.2	0.12	4.14	P
Cell #1[2]	4.2	0.16	4.13	P
Cell #2[2]	4.2	0.16	4.14	P
Cell #3[2]	4.2	0.16	4.13	P
Cell #4[2]	4.2	0.16	4.15	P
Cell #5[2]	4.2	0.16	4.14	P
Cell #1[3]	4.2	0.21	4.13	P
Cell #2[3]	4.2	0.21	4.13	P
Cell #3[3]	4.2	0.21	4.14	P
Cell #4[3]	4.2	0.21	4.15	P
Cell #5[3]	4.2	0.21	4.15	P
Cell #1[4]	4.2	0.24	4.14	P
Cell #2[4]	4.2	0.24	4.13	P
Cell #3[4]	4.2	0.24	4.15	P
Cell #4[4]	4.2	0.24	4.14	P
Cell #5[4]	4.2	0.24	4.14	P
Cell #1[5]	4.2	0.30	4.13	P
Cell #2[5]	4.2	0.30	4.14	P
Cell #3[5]	4.2	0.30	4.15	P
Cell #4[5]	4.2	0.30	4.15	P
Cell #5[5]	4.2	0.30	4.14	P
Cell #1[6]	4.2	0.36	4.13	P
Cell #2[6]	4.2	0.36	4.15	P
Cell #3[6]	4.2	0.36	4.13	P
Cell #4[6]	4.2	0.36	4.14	P
Cell #5[6]	4.2	0.36	4.13	P

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

Supplementary information:

- No fire or explosion
- No leakage

Remark:

[1] Tested with cell (model: IMR18650-600mAh).

[2] Tested with cell (model: IMR18650-800mAh).

[3] Tested with cell (model: IMR18650-1050mAh).

[4] Tested with cell (model: IMR18650-1200mAh)

[5] Tested with cell (model: IMR18650-1500mAh).

[6] Tested with cell (model: IMR18650-1800mAh).

7.3.1	TABLE: External short circuit (cell)				P
Sample No.	**Ambient (°C)**	**OCV at start of test (Vdc)**	**Resistance of circuit (mΩ)**	**Maximum case temperature ~~rise ΔT (K)~~ , °C**	**Results**
Samples charged at charging temperature upper limit (45°C)					
Cell #6[1]	57.0	4.15	84.5	117.0	P
Cell #7[1]	57.0	4.15	85.4	112.3	P
Cell #8[1]	57.0	4.16	87.2	120.1	P
Cell #9[1]	57.0	4.15	82.3	112.2	P
Cell #10[1]	57.0	4.15	86.7	118.8	P
Samples charged at charging temperature lower limit (-5°C)					
Cell #11[1]	57.4	4.03	86.4	115.5	P
Cell #12[1]	57.4	4.02	83.6	119.5	P
Cell #13[1]	57.4	4.04	85.8	117.8	P
Cell #14[1]	57.4	4.03	83.4	118.6	P
Cell #15[1]	57.4	4.02	87.5	122.7	P
Samples charged at charging temperature upper limit (45°C)					
Cell #6[2]	56.7	4.16	85.1	124.1	P
Cell #7[2]	56.7	4.15	88.5	123.9	P
Cell #8[2]	56.7	4.14	86.8	119.4	P
Cell #9[2]	56.7	4.14	87.3	128.1	P
Cell #10[2]	56.7	4.15	82.7	123.5	P
Samples charged at charging temperature lower limit (-5°C)					
Cell #11[2]	57.5	4.03	85.4	124.1	P
Cell #12[2]	57.5	4.03	87.8	108.0	P
Cell #13[2]	57.5	4.04	83.9	122.7	P

IEC 62133-2					
Clause	Requirement + Test		Result - Remark		Verdict
Cell #14[2]	57.5	4.02	85.1	109.4	P
Cell #15[2]	57.5	4.02	88.5	114.2	P
Samples charged at charging temperature upper limit (45°C)					
Cell #6[3]	57.3	4.14	87.5	130.2	P
Cell #7[3]	57.3	4.15	83.9	128.6	P
Cell #8[3]	57.3	4.14	84.7	122.7	P
Cell #9[3]	57.3	4.16	81.5	126.6	P
Cell #10[3]	57.3	4.14	82.1	124.6	P
Samples charged at charging temperature lower limit (-5°C)					
Cell #11[3]	57.4	4.03	86.7	118.8	P
Cell #12[3]	57.4	4.03	87.3	115.5	P
Cell #13[3]	57.4	4.03	85.5	119.5	P
Cell #14[3]	57.4	4.04	84.6	117.8	P
Cell #15[3]	57.4	4.03	88.4	118.6	P
Samples charged at charging temperature upper limit (45°C)					
Cell #6[4]	57.3	4.16	86.4	111.1	P
Cell #7[4]	57.3	4.14	87.6	110.1	P
Cell #8[4]	57.3	4.15	82.8	118.2	P
Cell #9[4]	57.3	4.14	84.6	120.2	P
Cell #10[4]	57.3	4.15	86.7	111.4	P
Samples charged at charging temperature lower limit (-5°C)					
Cell #11[4]	57.4	4.02	87.9	122.4	P
Cell #12[4]	57.4	4.03	82.8	114.9	P
Cell #13[4]	57.4	4.03	84.5	117.1	P
Cell #14[4]	57.4	4.04	86.1	112.2	P
Cell #15[4]	57.4	4.03	88.3	123.0	P
Samples charged at charging temperature upper limit (45°C)					
Cell #6[5]	57.1	4.14	84.6	123.6	P
Cell #7[5]	57.1	4.16	85.2	113.1	P
Cell #8[5]	57.1	4.15	83.6	114.4	P
Cell #9[5]	57.1	4.14	87.2	122.2	P
Cell #10[5]	57.1	4.14	82.8	125.8	P
Samples charged at charging temperature lower limit (-5°C)					
Cell #11[5]	57.5	4.04	82.8	124.1	P
Cell #12[5]	57.5	4.03	85.4	111.0	P

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Clause	Requirement + Test	Result - Remark	Verdict

Cell #13[5]	57.5	4.02	86.3	122.7	P
Cell #14[5]	57.5	4.02	88.1	112.4	P
Cell #15[5]	57.5	4.03	82.4	114.2	P
Samples charged at charging temperature upper limit (45°C)					
Cell #6[6]	57.4	4.14	83.2	118.8	P
Cell #7[6]	57.4	4.15	82.5	115.5	P
Cell #8[6]	57.4	4.14	86.6	119.5	P
Cell #9[6]	57.4	4.14	81.6	117..8	P
Cell #10[6]	57.4	4.16	84.9	118.6	P
Samples charged at charging temperature lower limit (-5°C)					
Cell #6[6]	57.5	4.04	82.0	108.0	P
Cell #7[6]	57.5	4.03	83.0	122.7	P
Cell #8[6]	57.5	4.03	86.2	109.4	P
Cell #9[6]	57.5	4.02	83.8	114.2	P
Cell #10[6]	57.5	4.04	87.7	126.0	P

Supplementary information:

- No fire or explosion

Remark:

[1] Tested with cell (model: IMR18650-600mAh).

[2] Tested with cell (model: IMR18650-800mAh).

[3] Tested with cell (model: IMR18650-1050mAh).

[4] Tested with cell (model: IMR18650-1200mAh)

[5] Tested with cell (model: IMR18650-1500mAh).

[6] Tested with cell (model: IMR18650-1800mAh).

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)~~ °C**	**Component single fault condition**	**Results**

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

7.3.5	TABLE: Crush (cells)			P
Sample No.	**OCV before test (Vdc)**	**OCV at removal of crushing force (Vdc)**	**Maximum force applied to the cell during crush (kN)**	**Results**
Samples charged at charging temperature upper limit (45°C)				
Cell #29[1]	4.14	4.14	13.10	P
Cell #30[1]	4.15	4.15	13.07	P
Cell #31[1]	4.14	4.14	13.13	P
Cell #32[1]	4.16	4.16	13.15	P
Cell #33[1]	4.14	4.14	13.09	P
Samples charged at charging temperature lower limit (-5°C)				
Cell #34[1]	4.03	4.03	13.16	P
Cell #35[1]	4.04	4.04	13.08	P
Cell #36[1]	4.03	4.03	13.12	P
Cell #37[1]	4.04	4.04	13.09	P
Cell #38[1]	4.02	4.02	13.10	P
Samples charged at charging temperature upper limit (45°C)				
Cell #29[2]	4.14	4.14	13.13	P
Cell #30[2]	4.15	4.15	13.11	P
Cell #31[2]	4.14	4.14	13.14	P
Cell #32[2]	4.14	4.14	13.08	P
Cell #33[2]	4.15	4.15	13.12	P
Samples charged at charging temperature lower limit (-5°C)				
Cell #34[2]	4.03	4.03	13.15	P
Cell #35[2]	4.04	4.04	13.11	P
Cell #36[2]	4.04	4.04	13.10	P
Cell #37[2]	4.02	4.02	13.07	P
Cell #38[2]	4.03	4.03	13.09	P
Samples charged at charging temperature upper limit (45°C)				
Cell #29[3]	4.14	4.14	13.15	P
Cell #30[3]	4.14	4.14	13.08	P
Cell #31[3]	4.16	4.16	13.05	P
Cell #32[3]	4.14	4.14	13.12	P
Cell #33[3]	4.15	4.15	13.10	P
Samples charged at charging temperature lower limit (-5°C)				
Cell #34[3]	4.03	4.03	13.12	P

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Clause	Requirement + Test		Result - Remark	Verdict
Cell #35[3]	4.02	4.02	13.07	P
Cell #36[3]	4.03	4.03	13.11	P
Cell #37[3]	4.04	4.04	13.14	P
Cell #38[3]	4.02	4.02	13.04	P
Samples charged at charging temperature upper limit (45°C)				
Cell #29[4]	4.14	4.14	13.09	P
Cell #30[4]	4.15	4.15	13.07	P
Cell #31[4]	4.16	4.16	13.12	P
Cell #32[4]	4.16	4.16	13.15	P
Cell #33[4]	4.14	4.14	13.11	P
Samples charged at charging temperature lower limit (-5°C)				
Cell #34[4]	4.04	4.04	13.08	P
Cell #35[4]	4.02	4.02	13.14	P
Cell #36[4]	4.03	4.03	13.07	P
Cell #37[4]	4.02	4.02	13.12	P
Cell #38[4]	4.02	4.02	13.13	P
Samples charged at charging temperature upper limit (45°C)				
Cell #29[5]	4.14	4.14	13.05	P
Cell #30[5]	4.15	4.15	13.15	P
Cell #31[5]	4.14	4.14	13.08	P
Cell #32[5]	4.14	4.14	13.13	P
Cell #33[5]	4.16	4.16	13.07	P
Samples charged at charging temperature lower limit (-5°C)				
Cell #34[5]	4.02	4.02	13.06	P
Cell #35[5]	4.02	4.02	13.14	P
Cell #36[5]	4.03	4.03	13.18	P
Cell #37[5]	4.03	4.03	13.10	P
Cell #38[5]	4.04	4.04	13.08	P
Samples charged at charging temperature upper limit (45°C)				
Cell #29[6]	4.14	4.14	13.05	P
Cell #30[6]	4.15	4.15	13.14	P
Cell #31[6]	4.16	4.16	13.07	P
Cell #32[6]	4.14	4.14	13.11	P
Cell #33[6]	4.15	4.15	13.08	P
Samples charged at charging temperature lower limit (-5°C)				

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Clause	Requirement + Test	Result - Remark	Verdict

Cell #34[6]	4.04	4.04	13.09	P
Cell #35[6]	4.03	4.03	13.14	P
Cell #36[6]	4.04	4.04	13.13	P
Cell #37[6]	4.03	4.03	13.07	P
Cell #38[6]	4.02	4.02	13.12	P

Supplementary information:

- No fire or explosion

Remark:

[1] Tested with cell (model: IMR18650-600mAh).

[2] Tested with cell (model: IMR18650-800mAh).

[3] Tested with cell (model: IMR18650-1050mAh).

[4] Tested with cell (model: IMR18650-1200mAh)

[5] Tested with cell (model: IMR18650-1500mAh).

[6] Tested with cell (model: IMR18650-1800mAh).

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:

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Clause	Requirement + Test	Result - Remark	Verdict

7.3.7	TABLE: Forced discharge (cells)			P
Sample No.	**OCV before application of reverse charge (Vdc)**	**Measured reverse charge I_t (A)**	**Lower limit discharge voltage (Vdc)**	**Results**
Cell #39[1]	3.42	0.6	3.0	P
Cell #40[1]	3.41	0.6	3.0	P
Cell #41[1]	3.41	0.6	3.0	P
Cell #42[1]	3.40	0.6	3.0	P
Cell #43[1]	3.42	0.6	3.0	P
Cell #39[2]	3.41	0.8	3.0	P
Cell #40[2]	3.43	0.8	3.0	P
Cell #41[2]	3.42	0.8	3.0	P
Cell #42[2]	3.40	0.8	3.0	P
Cell #43[2]	3.41	0.8	3.0	P
Cell #39[3]	3.42	1.05	3.0	P
Cell #40[3]	3.41	1.05	3.0	P
Cell #41[3]	3.43	1.05	3.0	P
Cell #42[3]	3.42	1.05	3.0	P
Cell #43[3]	3.42	1.05	3.0	P
Cell #39[4]	3.40	1.2	3.0	P
Cell #40[4]	3.42	1.2	3.0	P
Cell #41[4]	3.41	1.2	3.0	P
Cell #42[4]	3.42	1.2	3.0	P
Cell #43[4]	3.42	1.2	3.0	P
Cell #39[5]	3.43	1.5	3.0	P
Cell #40[5]	3.42	1.5	3.0	P
Cell #41[5]	3.41	1.5	3.0	P
Cell #42[5]	3.41	1.5	3.0	P
Cell #43[5]	3.42	1.5	3.0	P
Cell #39[6]	3.40	1.8	3.0	P
Cell #40[6]	3.40	1.8	3.0	P
Cell #41[6]	3.43	1.8	3.0	P
Cell #42[6]	3.42	1.8	3.0	P
Cell #43[6]	3.42	1.8	3.0	P

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

Supplementary information:

- No fire or explosion

Remark:

[1] Tested with cell (model: IMR18650-600mAh).

[2] Tested with cell (model: IMR18650-800mAh).

[3] Tested with cell (model: IMR18650-1050mAh).

[4] Tested with cell (model: IMR18650-1200mAh)

[5] Tested with cell (model: IMR18650-1500mAh).

[6] Tested with cell (model: IMR18650-1800mAh).

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:					

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:					

7.3.9	TABLE: Forced internal short circuit (cells)				P
Sample No.	**Chamber ambient T (°C)**	**OCV before test (Vdc)**	**Particle location [1)]**	**Maximum applied pressure (N)**	**Results**
Samples charged at charging temperature upper limit (45°C)					
Cell #44[1]	45	4.16	1	800	P
Cell #45[1]	45	4.15	1	800	P
Cell #46[1]	45	4.15	1	800	P
Cell #47[1]	45	4.14	1[7]	800	P
Cell #48[1]	45	4.14	1[7]	800	P
Samples charged at charging temperature lower limit (-5°C)					

IEC 62133-2					
Clause	Requirement + Test		Result - Remark		Verdict
Cell #49[1]	-5	4.02	1	800	P
Cell #50[1]	-5	4.03	1	800	P
Cell #51[1]	-5	4.03	1	800	P
Cell #52[1]	-5	4.04	1[7]	800	P
Cell #53[1]	-5	4.03	1[7]	800	P
Samples charged at charging temperature upper limit (45°C)					
Cell #44[2]	45	4.15	1	800	P
Cell #45[2]	45	4.14	1	800	P
Cell #46[2]	45	4.14	1	800	P
Cell #47[2]	45	4.14	1[7]	800	P
Cell #48[2]	45	4.13	1[7]	800	P
Samples charged at charging temperature lower limit (-5°C)					
Cell #49[2]	-5	4.03	1	800	P
Cell #50[2]	-5	4.02	1	800	P
Cell #51[2]	-5	4.03	1	800	P
Cell #52[2]	-5	4.03	1[7]	800	P
Cell #53[2]	-5	4.04	1[7]	800	P
Samples charged at charging temperature upper limit (45°C)					
Cell #44[3]	45	4.14	1	800	P
Cell #45[3]	45	4.15	1	800	P
Cell #46[3]	45	4.14	1	800	P
Cell #47[3]	45	4.15	1[7]	800	P
Cell #48[3]	45	4.14	1[7]	800	P
Samples charged at charging temperature lower limit (-5°C)					
Cell #49[3]	-5	4.03	1	800	P
Cell #50[3]	-5	4.02	1	800	P
Cell #51[3]	-5	4.02	1	800	P
Cell #52[3]	-5	4.03	1[7]	800	P
Cell #53[3]	-5	4.04	1[7]	800	P
Samples charged at charging temperature upper limit (45°C)					
Cell #44[4]	45	4.14	1	800	P
Cell #45[4]	45	4.16	1	800	P
Cell #46[4]	45	4.14	1	800	P
Cell #47[4]	45	4.15	1[7]	800	P
Cell #48[4]	45	4.14	1[7]	800	P

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

Samples charged at charging temperature lower limit (-5°C)					
Cell #49[4]	-5	4.03	1	800	P
Cell #50[4]	-5	4.04	1	800	P
Cell #51[4]	-5	4.03	1	800	P
Cell #52[4]	-5	4.02	1[7]	800	P
Cell #53[4]	-5	4.03	1[7]	800	P
Samples charged at charging temperature upper limit (45°C)					
Cell #44[5]	45	4.14	1	800	P
Cell #45[5]	45	4.15	1	800	P
Cell #46[5]	45	4.15	1	800	P
Cell #47[5]	45	4.14	1[7]	800	P
Cell #48[5]	45	4.14	1[7]	800	P
Samples charged at charging temperature lower limit (-5°C)					
Cell #49[5]	-5	4.04	1	800	P
Cell #50[5]	-5	4.03	1	800	P
Cell #51[5]	-5	4.02	1	800	P
Cell #52[5]	-5	4.03	1[7]	800	P
Cell #53[5]	-5	4.03	1[7]	800	P
Samples charged at charging temperature upper limit (45°C)					
Cell #44[6]	45	4.14	1	800	P
Cell #45[6]	45	4.15	1	800	P
Cell #46[6]	45	4.14	1	800	P
Cell #47[6]	45	4.16	1[7]	800	P
Cell #48[6]	45	4.14	1[7]	800	P
Samples charged at charging temperature lower limit (-5°C)					
Cell #49[6]	-5	4.04	1	800	P
Cell #50[6]	-5	4.03	1	800	P
Cell #51[6]	-5	4.02	1	800	P
Cell #52[6]	-5	4.02	1[7]	800	P
Cell #53[6]	-5	4.04	1[7]	800	P

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

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

Remark:

[1] Tested with cell (model: IMR18650-600mAh).

[2] Tested with cell (model: IMR18650-800mAh).

[3] Tested with cell (model: IMR18650-1050mAh).

[4] Tested with cell (model: IMR18650-1200mAh)

[5] Tested with cell (model: IMR18650-1500mAh).

[6] Tested with cell (model: IMR18650-1800mAh).

[7]: No location 2 exists.

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:				

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

	TABLE: Critical components information				**P**
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
Cell		IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh	3.7V, 600mAh, 2.22Wh; 3.7V, 700mAh, 2.59Wh; 3.7V, 800mAh, 2.96Wh; 3.7V, 1050mAh, 3.89Wh; 3.7V, 1200mAh, 4.44Wh; 3.7V, 1500mAh, 5.55Wh; 3.7V, 1800mAh, 6.66Wh	IEC 62133-2:2017, IEC 62133-2:2017/ AMD1:2021	Tested with appliance
-Positive electrode		HL-04	$LiMn_2O_4$	--	--
-Negative electrode	Yunnan Zhongsheng New Materials Co., Ltd	AG-1	Graphite	--	--
-Separator	Henan Huiqiang New Energy Materials Technology Co., Ltd.	PP 0.025×61mm	PP, Shutdown temperature: 130°C	--	--
-Electrolyte	Xinxiang Huarui Lithium New Energy Co., Ltd.	HR-HL01	$LiPF_6$, EC, DEC, EMC, Conductivity: 10.5mS/cm, H_2O<20ppm	--	--
-Cell case	Xinxiang Shengda New Energy Technology Co., Ltd.	18650	Low Carbon Steel, 0.22mm±0.02mm	--	--
Supplementary information: [1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

-- End of Report --

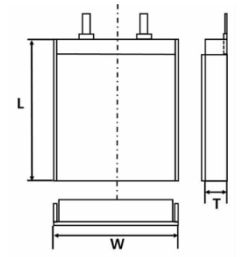
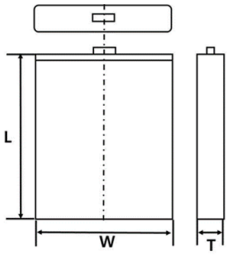
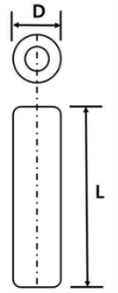
Attachment 1 Report No.: CN24K3MI 001

ATTACHMENT to IEC62133_2C			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT **IEC 62133-2** **(Republic of Korea) NATIONAL DIFFERENCES** (Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary lithium cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems)			
Differences according to.....:	National standard KC62133-2(2020-07)		
TRF template used:.....:	IECEE OD-2020-F3:2022, Ed. 1.2		
Attachment Form No.....:	KR_ND_IEC62133_2C		
Attachment Originator .....:	KTR		
Master Attachment.....:	2023-08-02		
	National Differences		P
7.3.6	**Over-charging of battery**		N/A
(Revision)	***[Add the bolded text]*** b) Test The test shall be carried out in an ambient temperature of 20 °C ± 5 °C. Each test battery shall be discharged at a constant current of 0,2 I_t A, to a final discharge voltage specified by the manufacturer. Sample batteries shall then be charged at a constant current of 2,0 I_t A, using a supply voltage which is: • 1,4 times the upper limit charging voltage presented in Table A.1 (but not to exceed 6,0 V) for single cell/cell block batteries or • 1,2 times the upper limit charging voltage presented in Table A.1 per cell for series connected multi-cell batteries, and • sufficient to maintain a current of 2,0 I_t A throughout the duration of the test or until the supply voltage is reached. **• In case the charging voltage specified by the manufacturer is higher than the overcharge test voltage, the maximum charging voltage specified by manufacturer should be applied with 2.**0 I_t A**,** **(e.g., quick charging power bank, etc.)**	Cell only.	N/A

Attachment 1 Report No.: CN24K3MI 001

ATTACHMENT to IEC62133_2C			
Clause	Requirement + Test	Result - Remark	Verdict
	[Replace to the following statement] c) Acceptance criteria Filling beyond the manufacturer's specified limits should not result in ignition or explosion		N/A
Annex G	**Definition for shape and materials of outer case for cell**		—
(Addition)	G.1 General Annex G provides definitions for shape and materials of outer case for cell G.2 Shape of outer case for cell G 2.1 Cylindrical cell Cell with a cylindrical shape in which the overall height is equal to or greater than diameter. G 2.2 Prismatic cell Cell having the shape of a parallelepiped whose faces are rectangular G.3 Materials of outer case for cell G.3.1 Soft case Non-metallic outer case or container for cell G.3.2 Hard case Metallic outer case or container for cell.	(Shape of outer cases) ☒ Cylindrical ☐ Prismatic (Materials of outer cases) ☒ Hard ☐ Soft	—
Annex H	**Calculation method of the volumetric energy density for cell**		—
(Addition)	Annex H provide a calculation method of the volumetric energy density for cell in use of smart phone, tablet, notebook. H.1 General Unless otherwise stated in the Annex E, the dimensions for calculation are based on these for cell before shipment and the volumetric energy density shall be calculated with a maximum values specified by manufacturer. If the specification for cell can't be provided a dimension for calculation, the manufacturer's other documentation shall be provided to demonstrate compliance for its calculation.	126.09Wh/L (IMR18650-600mAh); 147.10Wh/L (IMR18650-700mAh); 168.12Wh/L (IMR18650-800mAh); 220.66Wh/L (IMR18650-1050mAh); 252.18Wh/L (IMR18650-1200mAh); 315.22Wh/L (IMR18650-1500mAh); 378.27Wh/L (IMR18650-1800mAh);	—

Attachment 1 Report No.: CN24K3MI 001

ATTACHMENT to IEC62133_2C			
Clause	Requirement + Test	Result - Remark	Verdict
	H.2 Calculation Method  L : Length (max.) of cell (including terrace) W : Width (max.) of cell T : Thickness (max.) when shipping charge (For reference, Please Exclude the dimension of any tape that Is attached to cell) $Volumetric\ energy\ density\ (Wh/L) = \frac{Nominal\ voltage\ (V) \times Rated\ capacity\ (Ah)}{Length\ (L) \times Width\ (W) \times Thickness\ (T)}$ [H.1 – Prismatic cell using soft case]  L : Length (max.) of cell W : Width (max.) of cell T : Thickness when shipping charge (For reference, Please Exclude the dimension of any tape that Is attached to cell) $Volumetric\ energy\ density\ (Wh/L) = \frac{Nominal\ voltage\ (V) \times Rated\ capacity\ (Ah)}{Length\ (L) \times Width\ (W) \times Thickness\ (T)}$ [H.2 – Prismatic cell using hard case]  D : Diameter (max.) of cell L : Length (max.) of cell (According to shape of cell at shipping, The dimension of tube for cell may be included In overall dimension of cell) $Volumetric\ energy\ density\ (Wh/L) = \frac{Nominal\ voltage\ (V) \times Rated\ capacity\ (Ah)}{3.14159 \times \frac{Diameter\ (D)^2}{4} \times Length(L)}$ [H.3 – Cylindrical cell using hard case]		—

Attachment 2 Photo Documentation

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

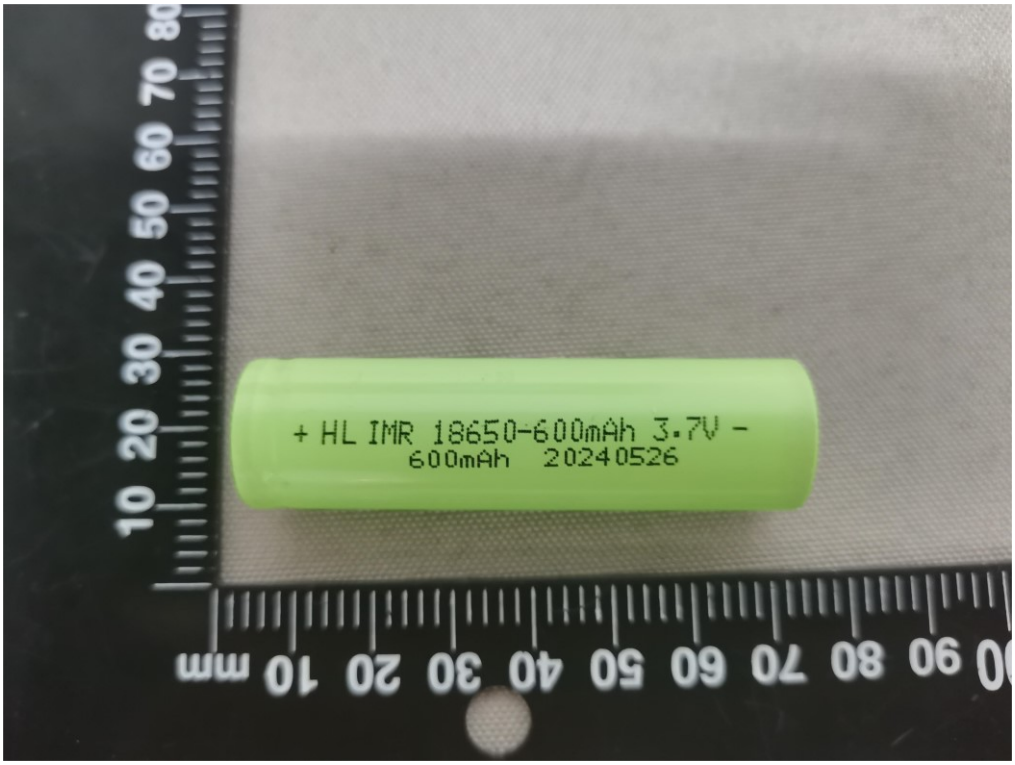


Figure 1 Front view of cell (Model: IMR18650-600mAh) (label 1)

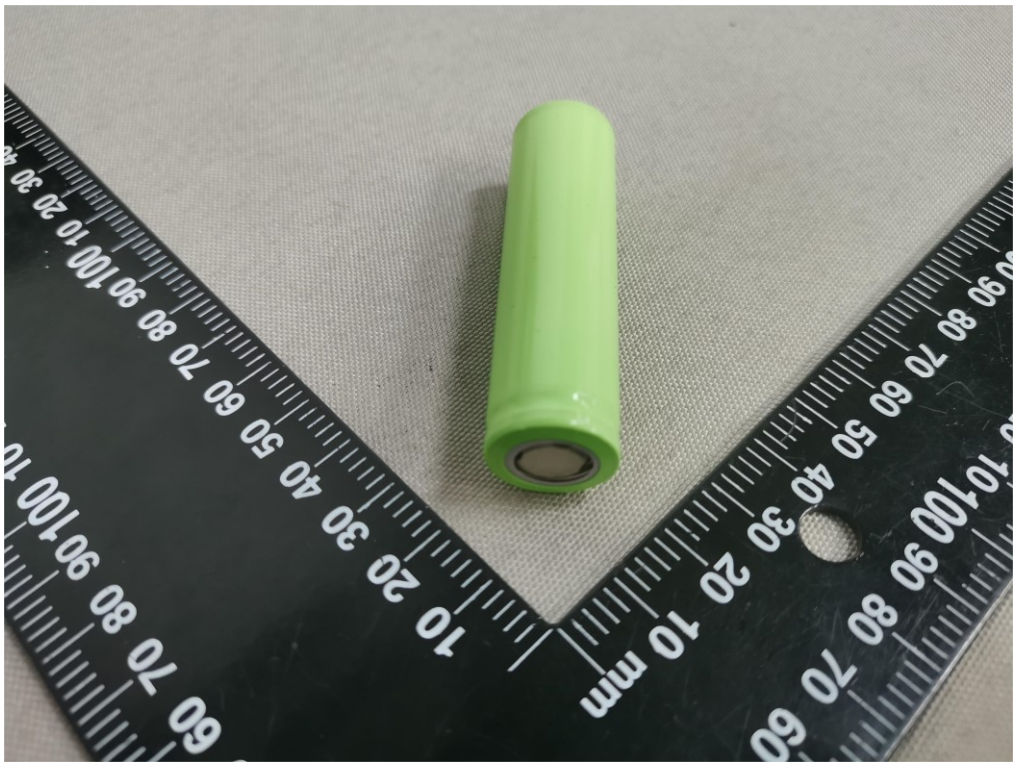


Figure 2 Side view of cell (Model: IMR18650-600mAh) (label 1)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

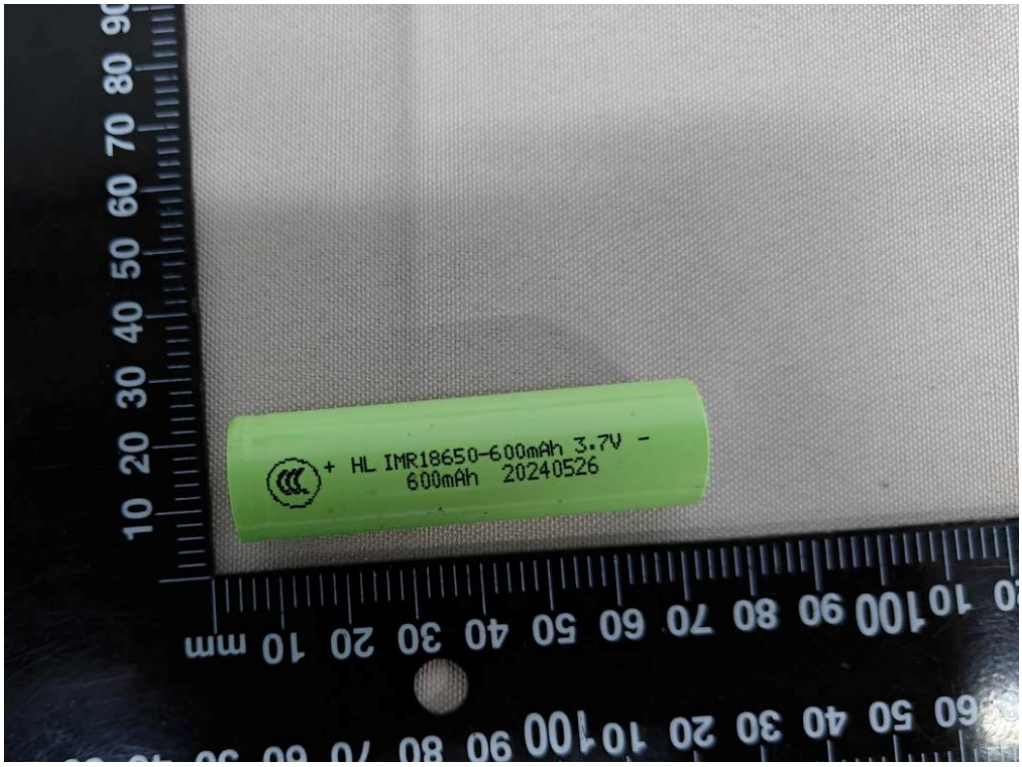


Figure 3 Front view of cell (Model: IMR18650-600mAh) (label 2)

Figure 4 Side view of cell (Model: IMR18650-600mAh) (label 2)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

Figure 5 Front view of cell (Model: IMR18650-600mAh) (label 3)

Figure 6 Side view of cell (Model: IMR18650-600mAh) (label 3)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

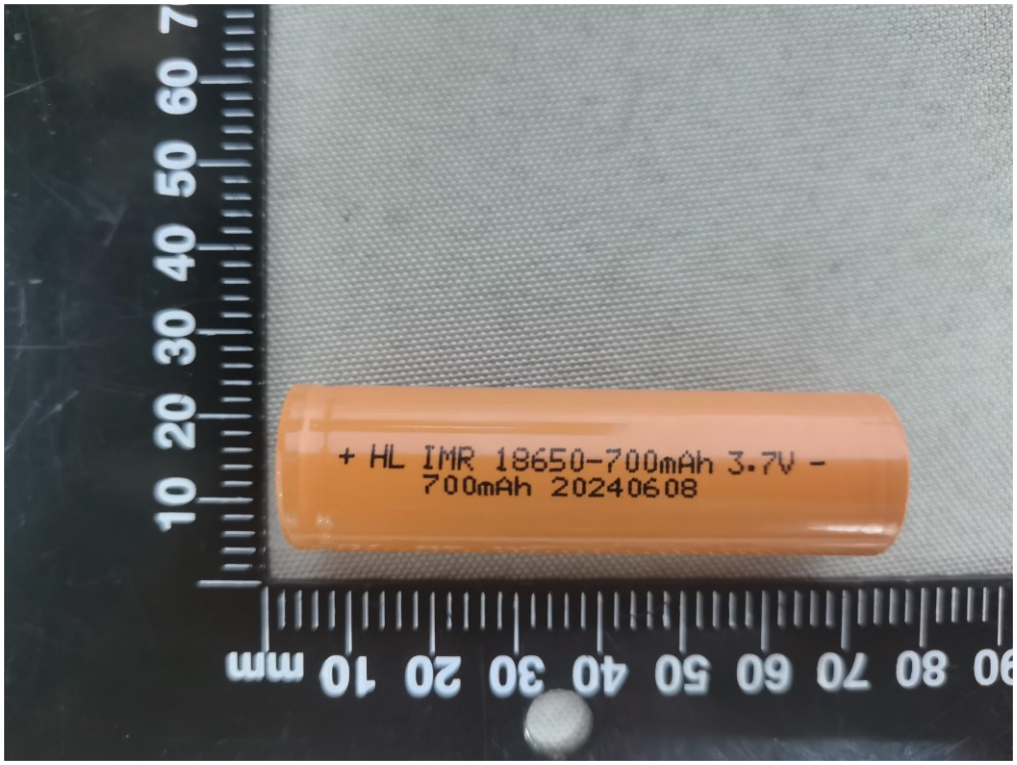


Figure 7 Front view of cell (Model: IMR18650-700mAh) (label 1)

Figure 8 Side view of cell (Model: IMR18650-700mAh) (label 1)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

Figure 9 Front view of cell (Model: IMR18650-700mAh) (label 2)

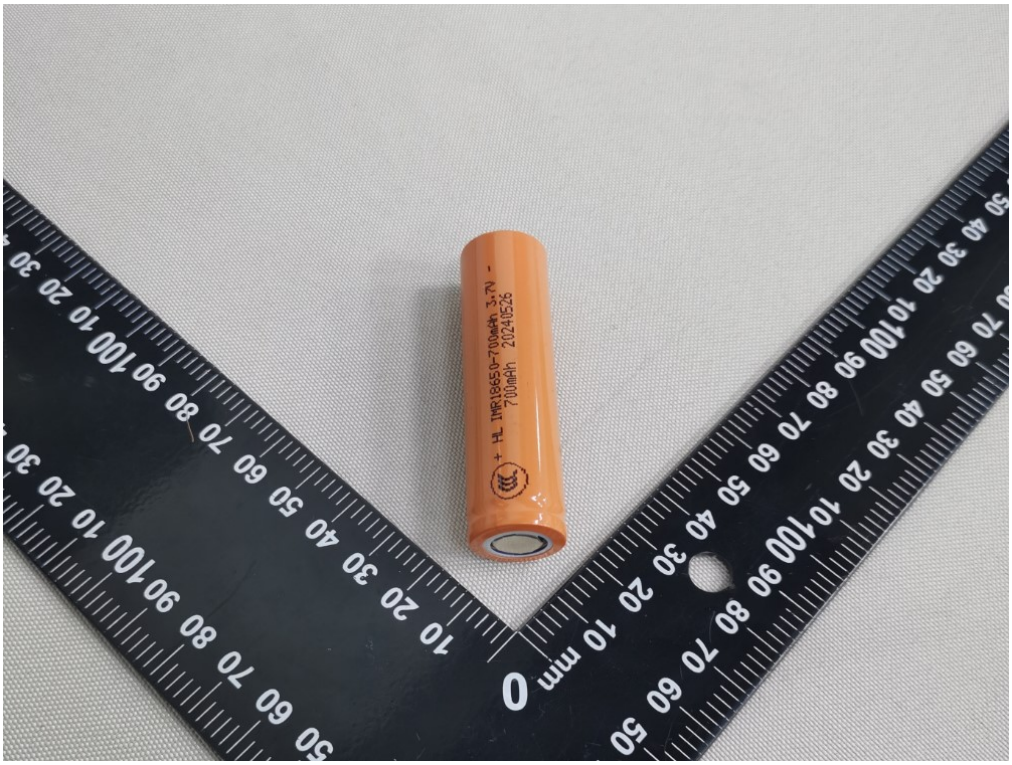


Figure 10 Side view of cell (Model: IMR18650-700mAh) (label 2)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

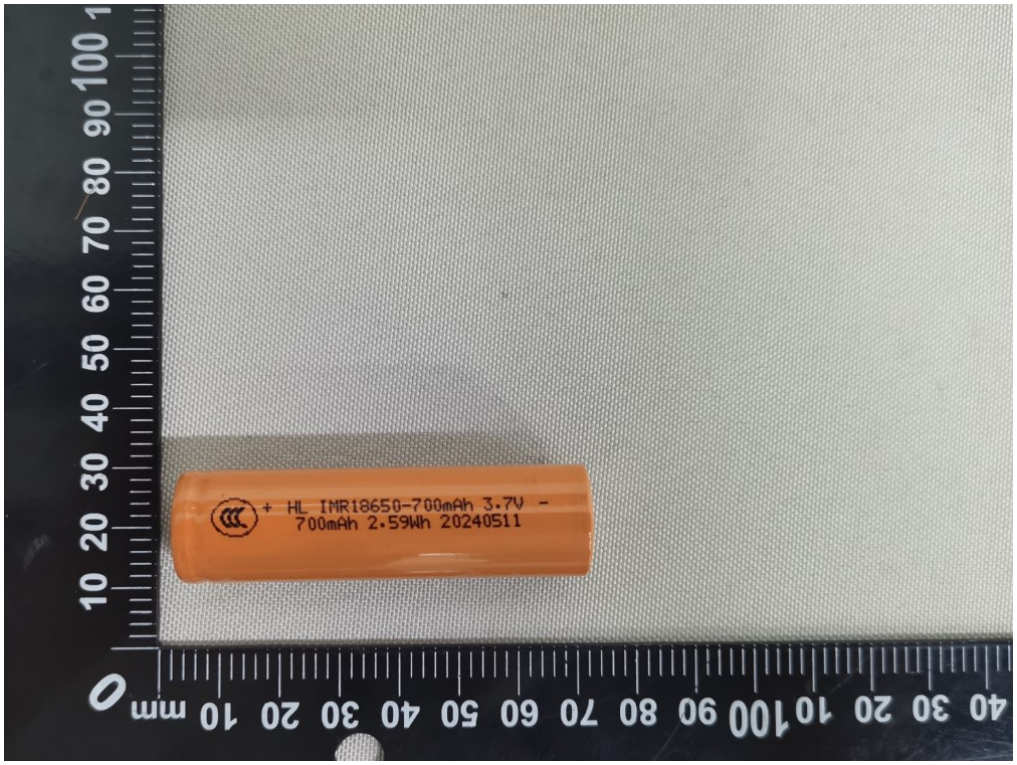


Figure 11 Front view of cell (Model: IMR18650-700mAh) (label 3)

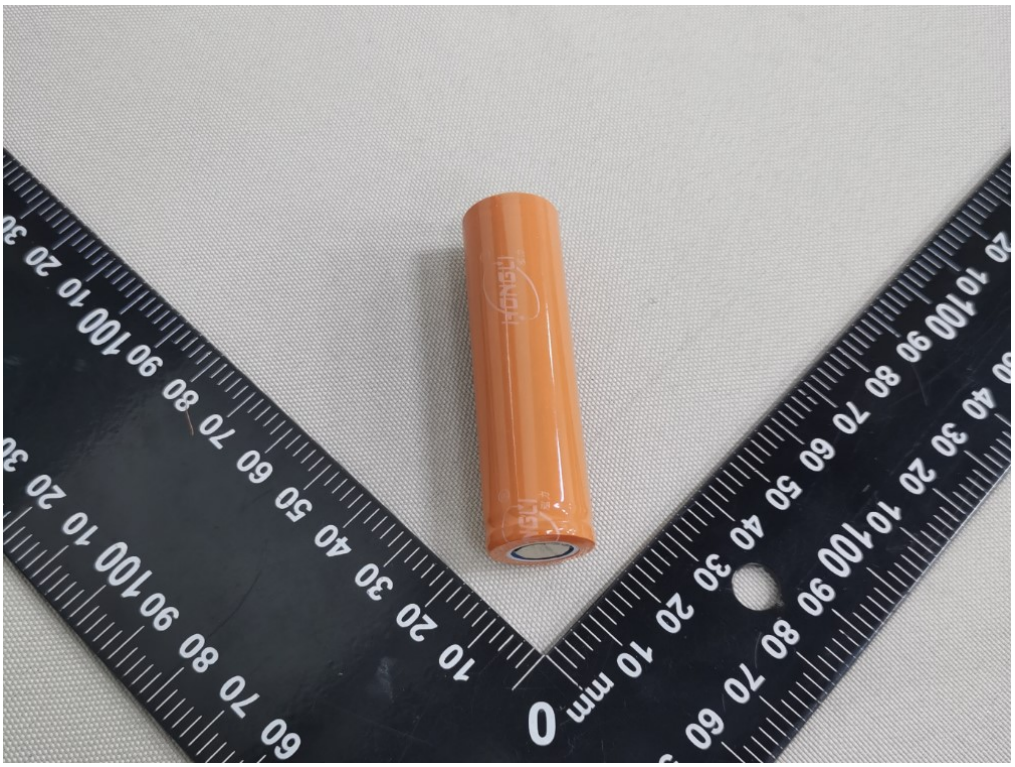


Figure 12 Side view of cell (Model: IMR18650-700mAh) (label 3)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

Figure 13 Front view of cell (Model: IMR18650-800mAh) (label 1)

Figure 14 Side view of cell (Model: IMR18650-800mAh) (label 1)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

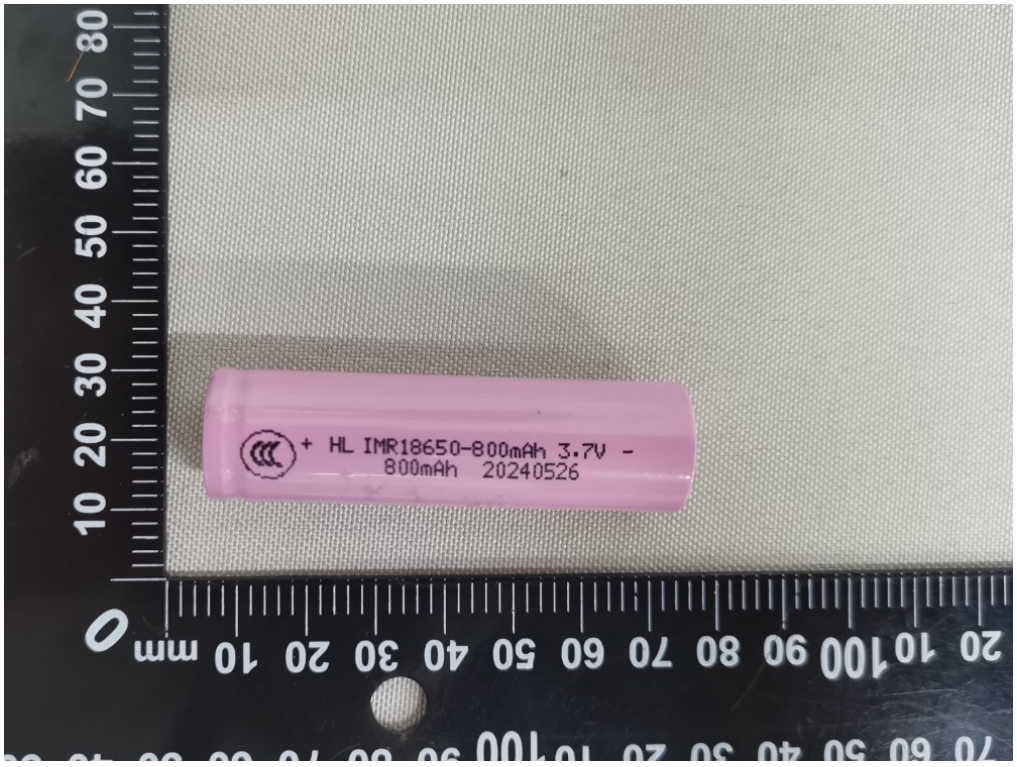


Figure 15 Front view of cell (Model: IMR18650-800mAh) (label 2)

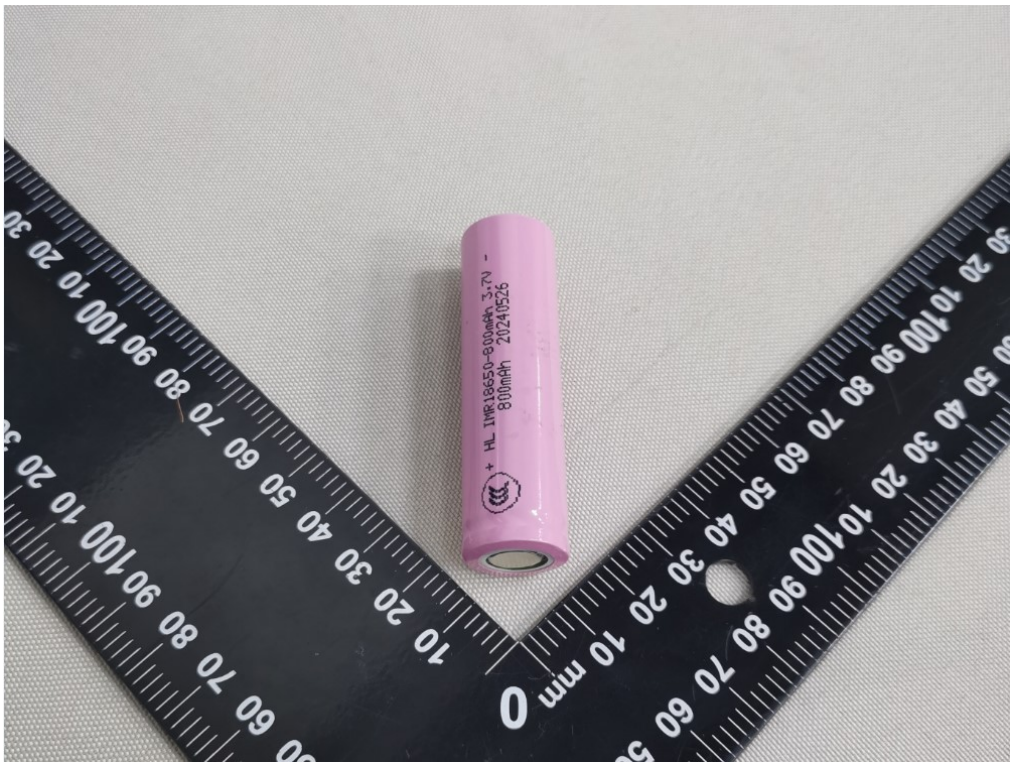


Figure 16 Side view of cell (Model: IMR18650-800mAh) (label 2)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

Figure 17 Front view of cell (Model: IMR18650-800mAh) (label 3)

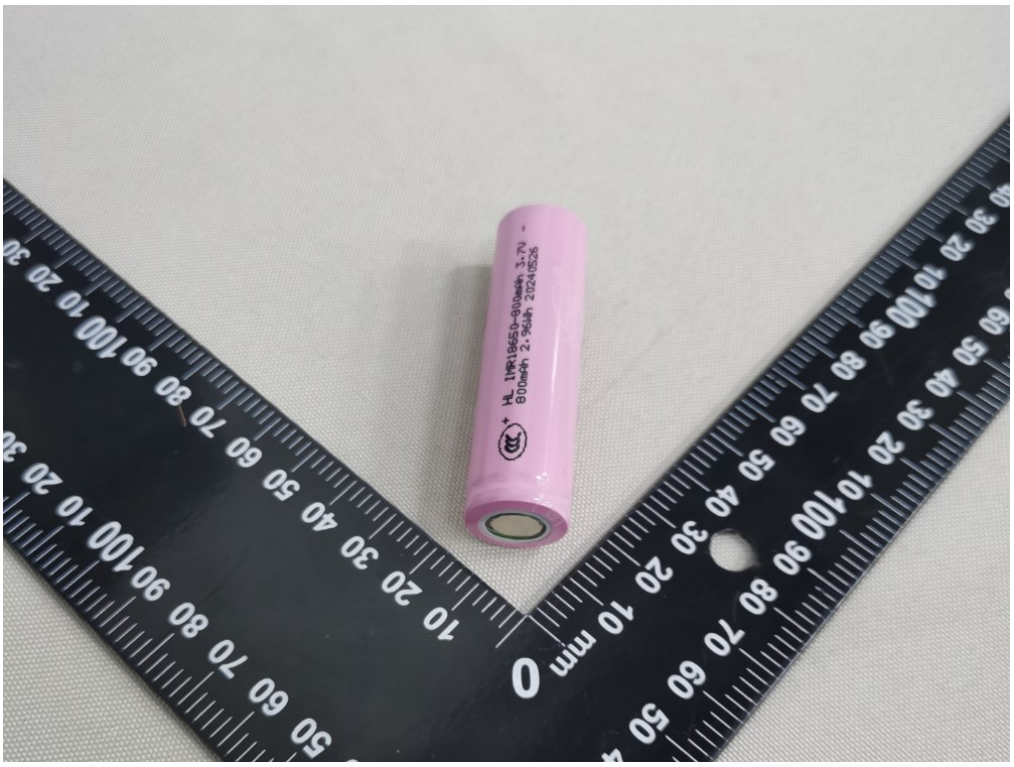


Figure 18 Side view of cell (Model: IMR18650-800mAh) (label 3)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

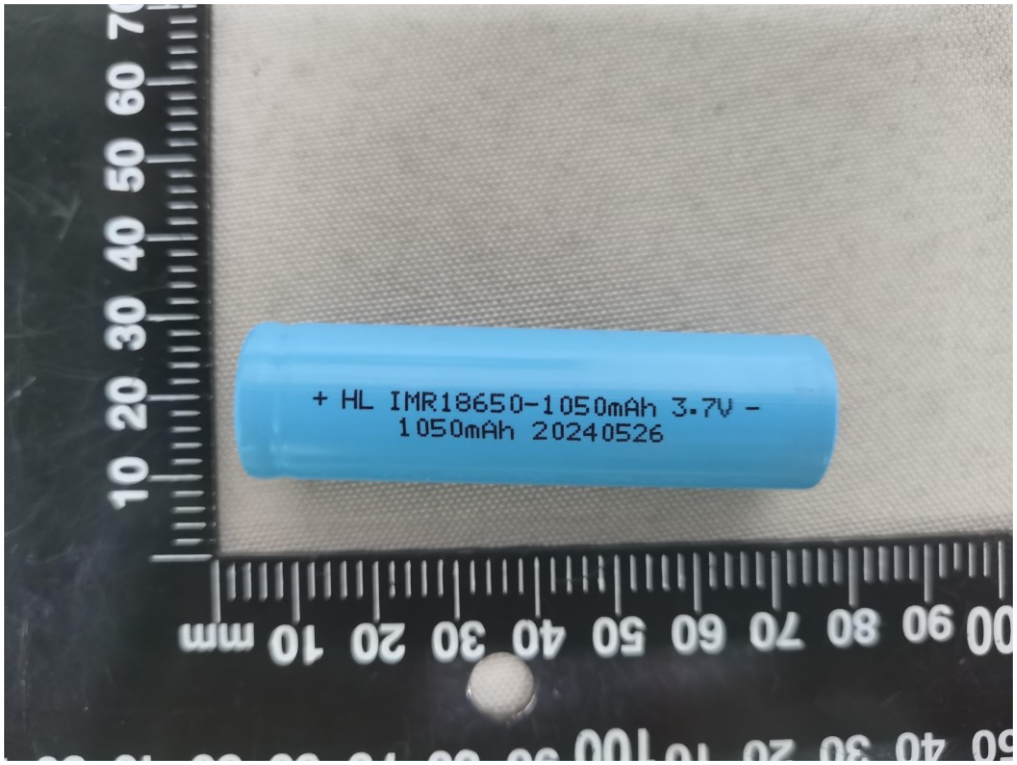


Figure 19 Front view of cell (Model: IMR18650-1050mAh) (label 1)

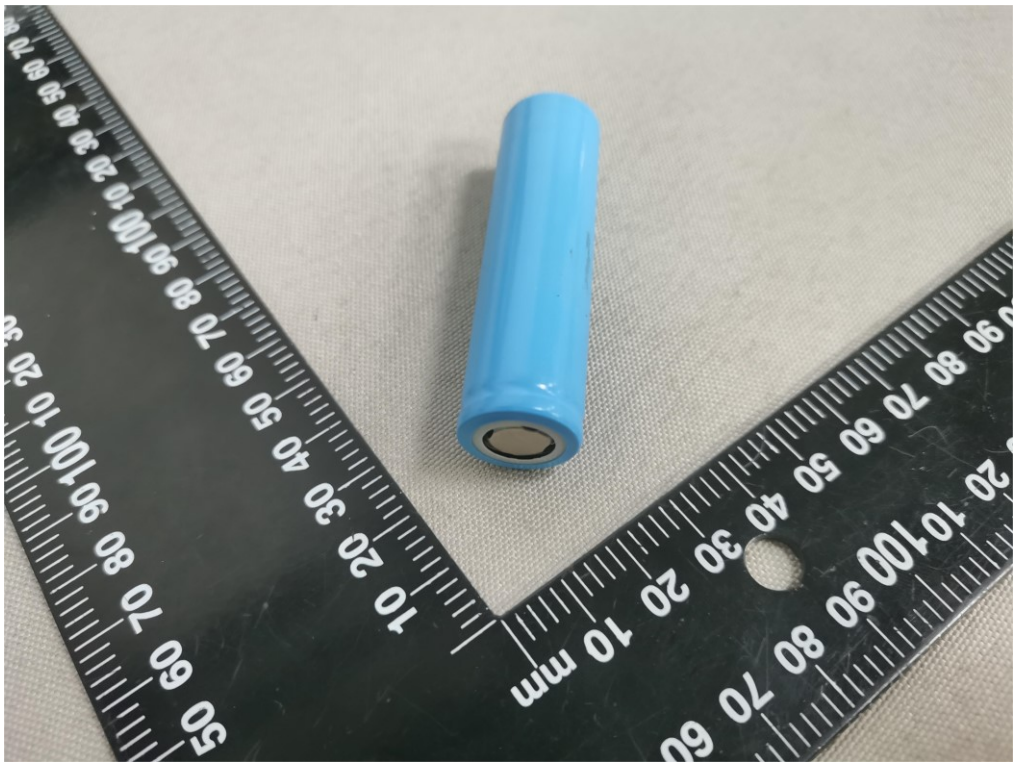


Figure 20 Side view of cell (Model: IMR18650-1050mAh) (label 1)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

Figure 21 Front view of cell (Model: IMR18650-1050mAh) (label 2)

Figure 22 Side view of cell (Model: IMR18650-1050mAh) (label 2)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

Figure 23 Front view of cell (Model: IMR18650-1050mAh) (label 3)

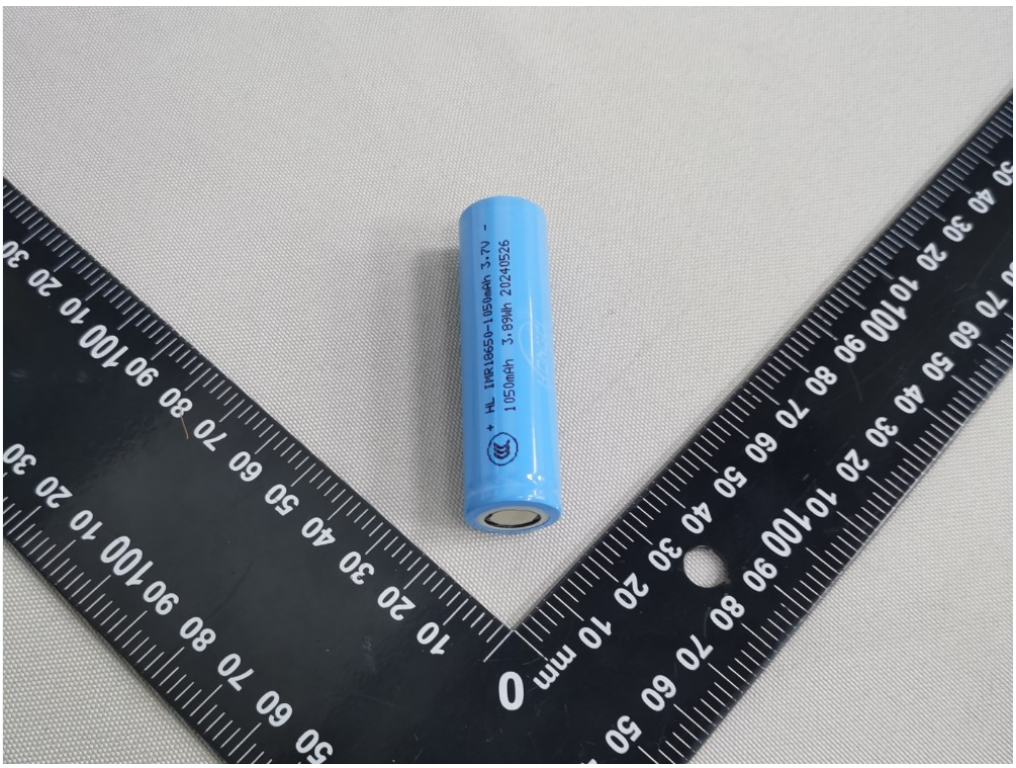


Figure 24 Side view of cell (Model: IMR18650-1050mAh) (label 3)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

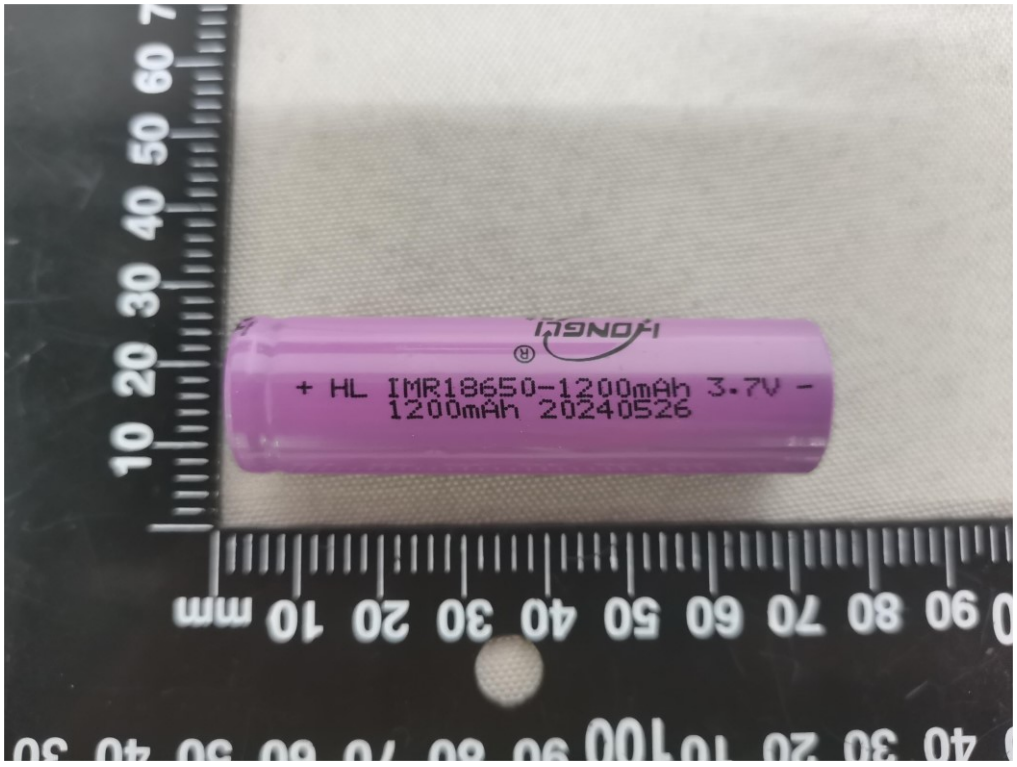


Figure 25 Front view of cell (Model: IMR18650-1200mAh) (label 1)

Figure 26 Side view of cell (Model: IMR18650-1200mAh) (label 1)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

Figure 27 Front view of cell (Model: IMR18650-1200mAh) (label 2)

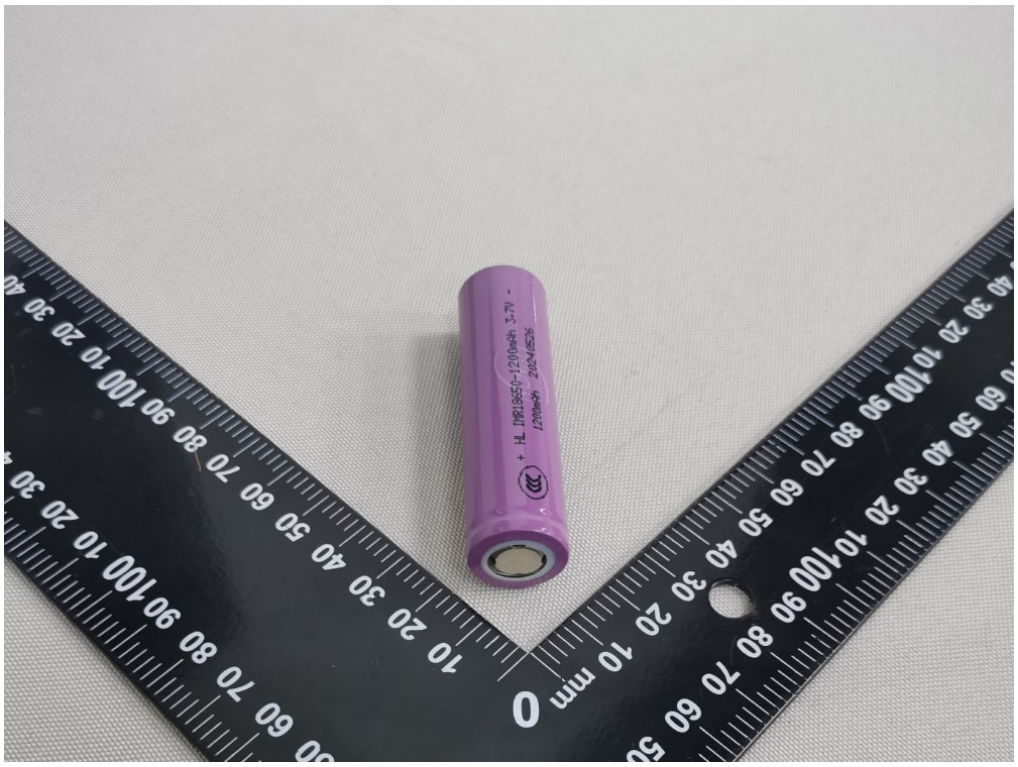


Figure 28 Side view of cell (Model: IMR18650-1200mAh) (label 2)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

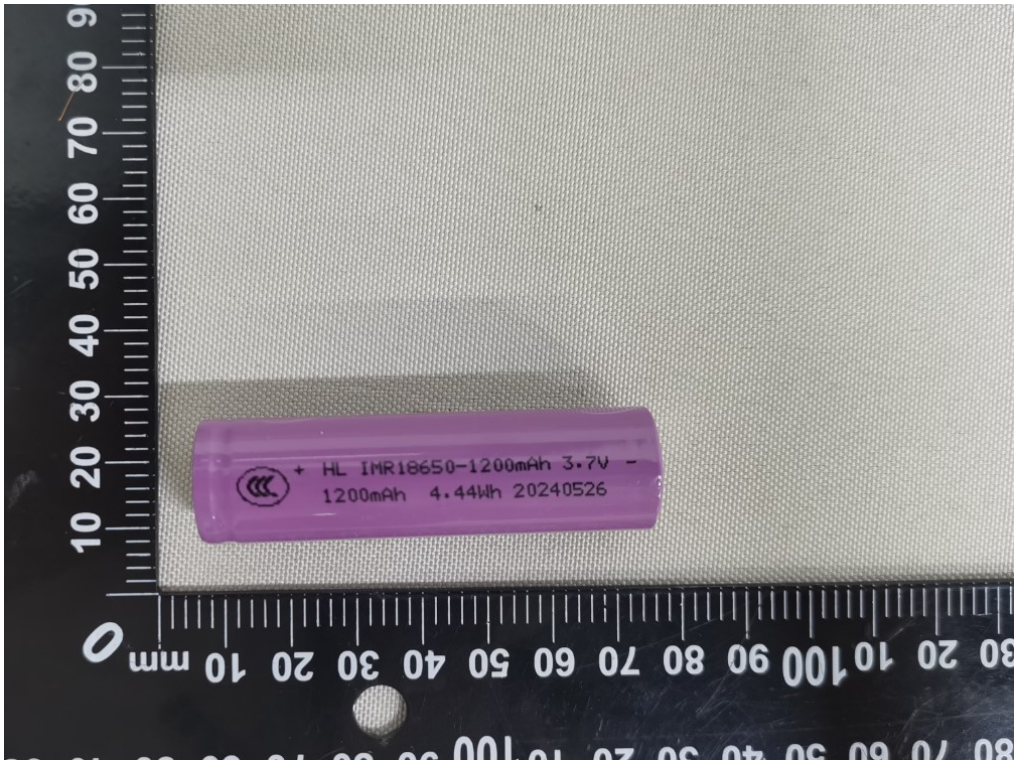


Figure 29 Front view of cell (Model: IMR18650-1200mAh) (label 3)

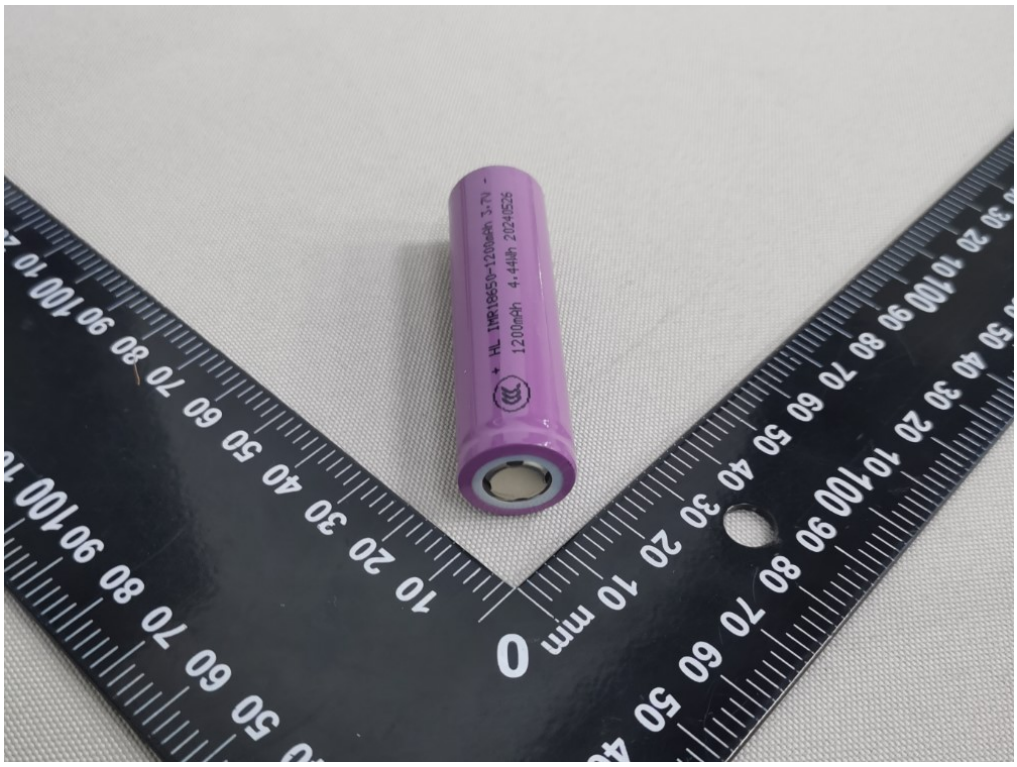


Figure 30 Side view of cell (Model: IMR18650-1200mAh) (label 3)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

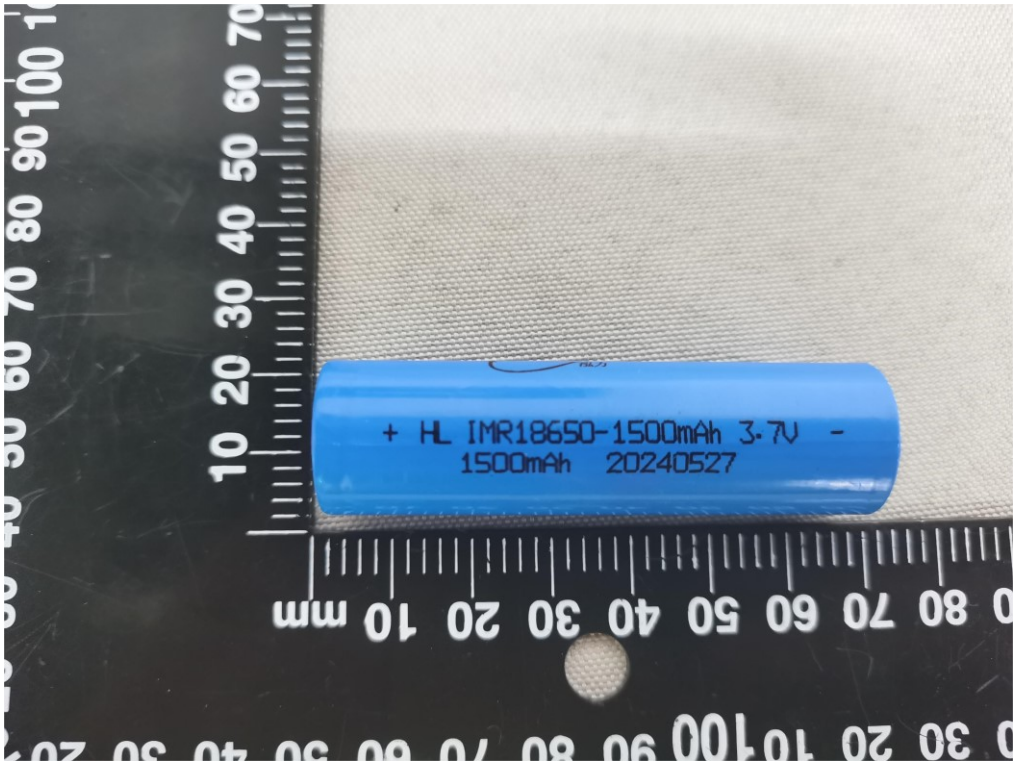


Figure 31 Front view of cell (Model: IMR18650-1500mAh) (label 1)

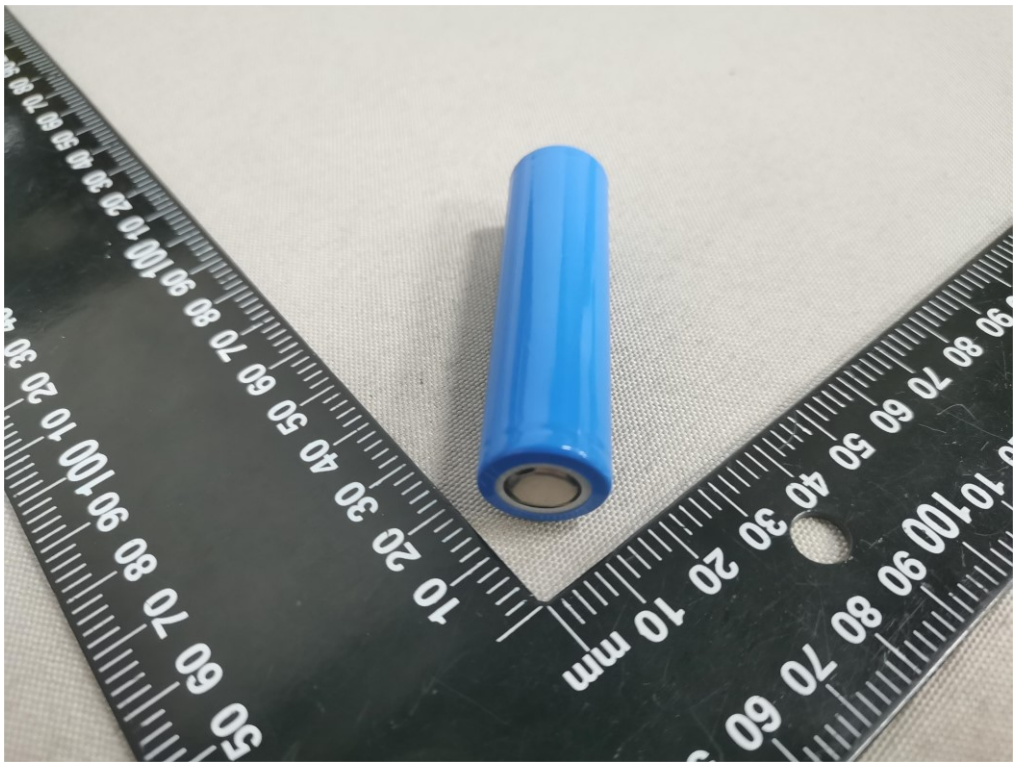


Figure 32 Side view of cell (Model: IMR18650-1500mAh) (label 1)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

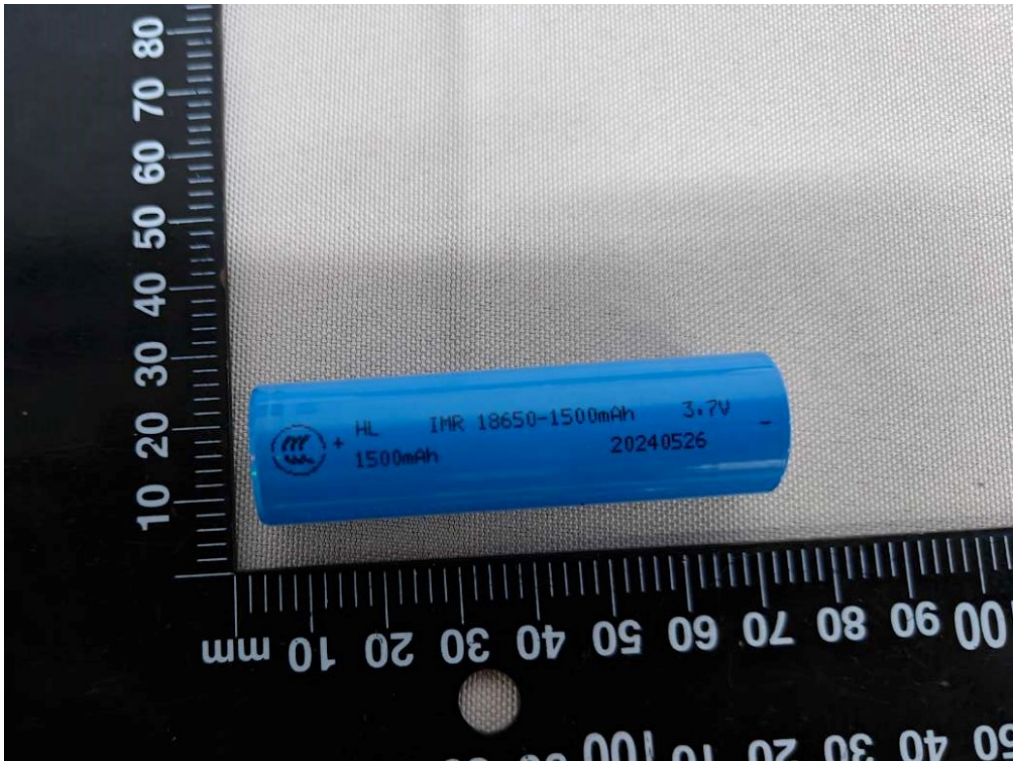


Figure 33 Front view of cell (Model: IMR18650-1500mAh) (label 2)

Figure 34 Side view of cell (Model: IMR18650-1500mAh) (label 2)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

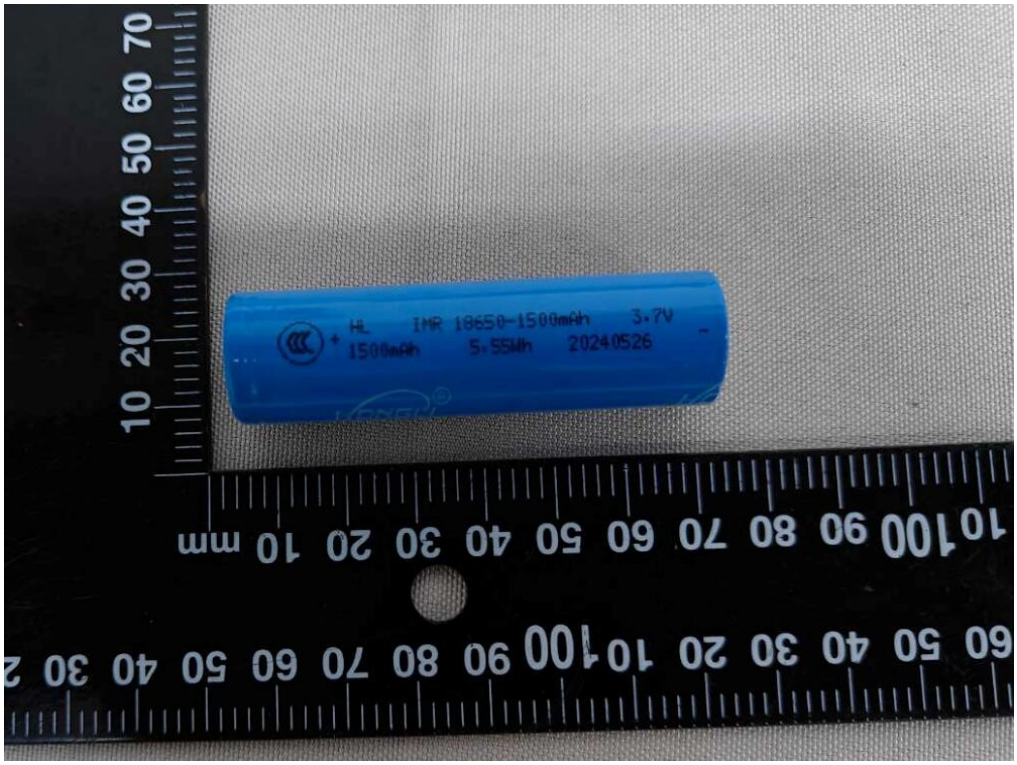


Figure 35 Front view of cell (Model: IMR18650-1500mAh) (label 3)

Figure 36 Side view of cell (Model: IMR18650-1500mAh) (label 3)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

Figure 37 Side view of cell (Model: IMR18650-1800mAh) (label 1)

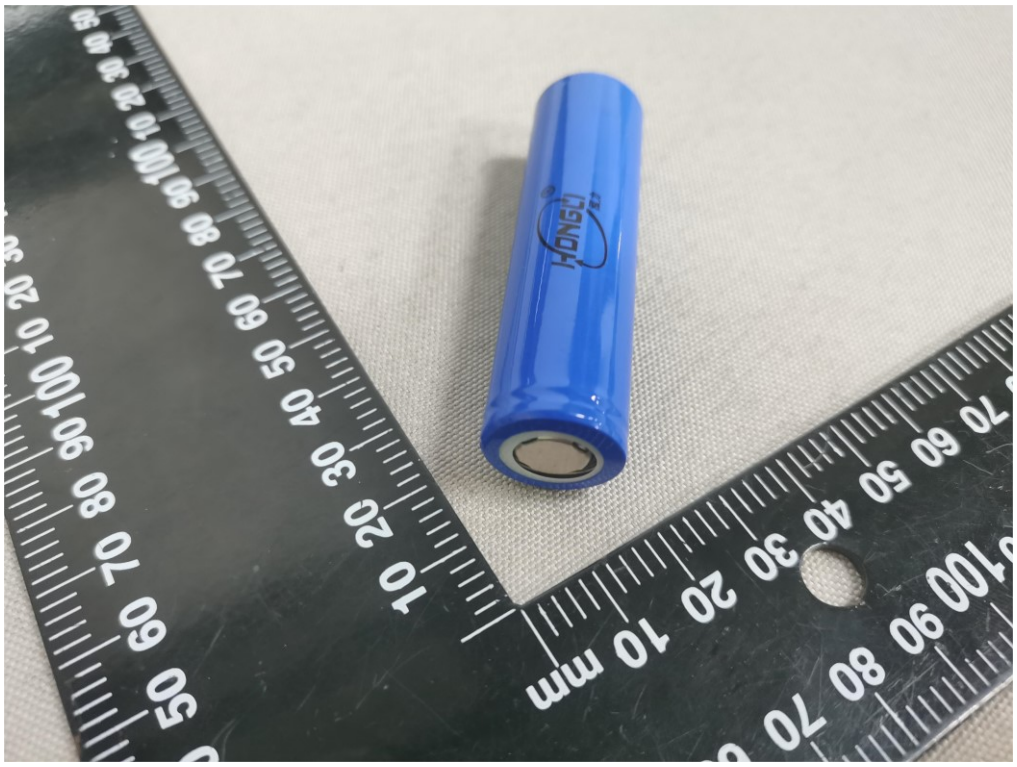


Figure 38 Side view of cell (Model: IMR18650-1800mAh) (label 1)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

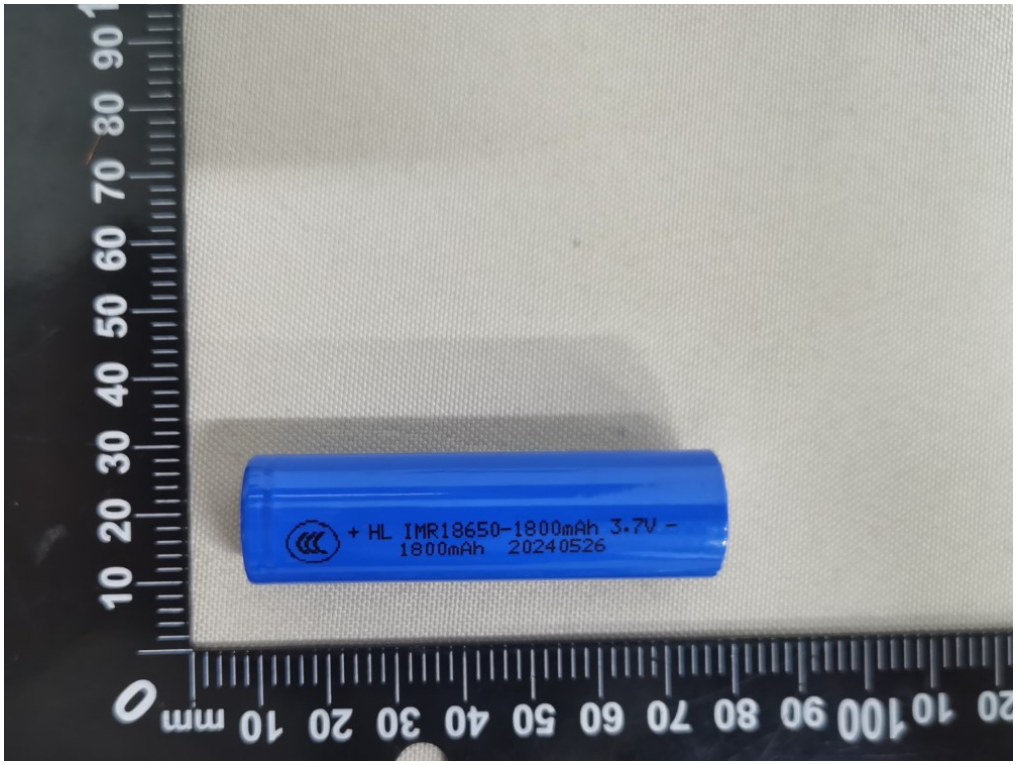


Figure 39 Front view of cell (Model: IMR18650-1800mAh) (label 2)

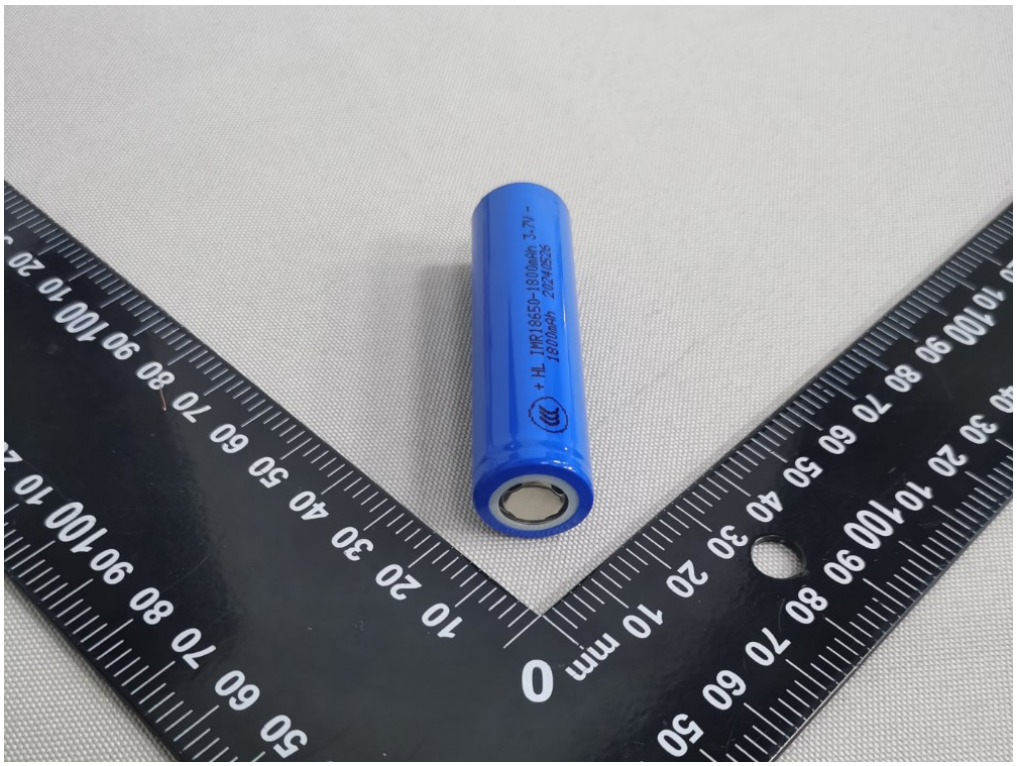


Figure 40 Side view of cell (Model: IMR18650-1800mAh) (label 2)

Product: Cylindrical Lithium-ion Rechargeable Cell

Type Designation: IMR18650-600mAh, IMR18650-700mAh, IMR18650-800mAh, IMR18650-1050mAh, IMR18650-1200mAh, IMR18650-1500mAh, IMR18650-1800mAh

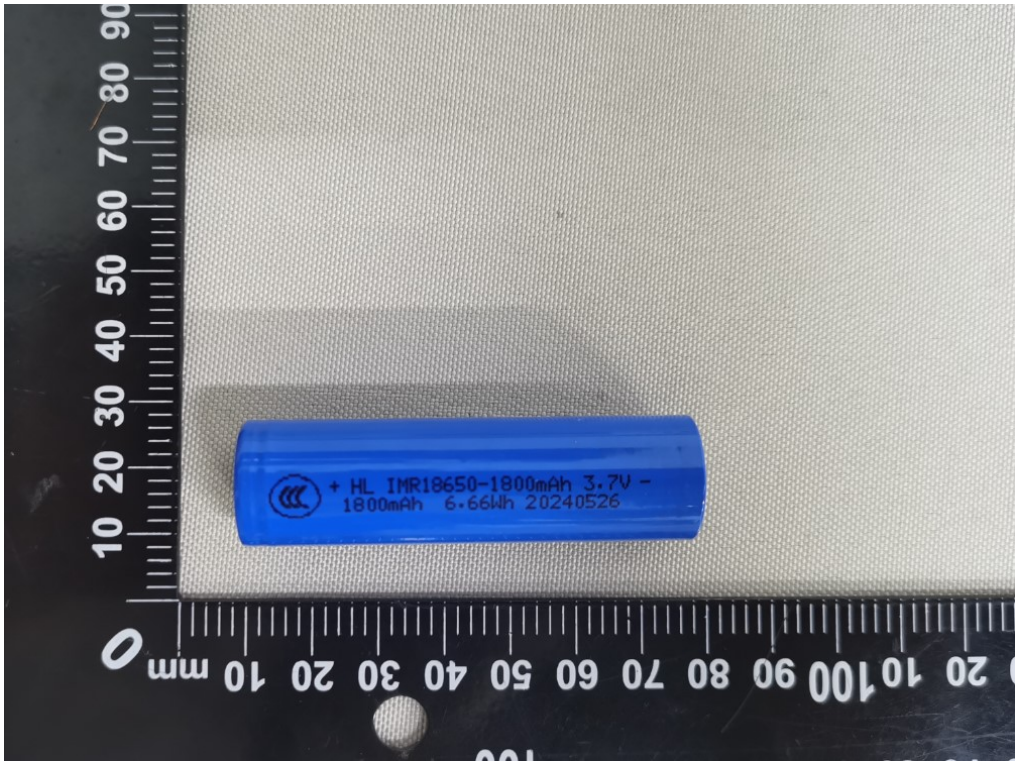


Figure 41 Front view of cell (Model: IMR18650-1800mAh) (label 3)

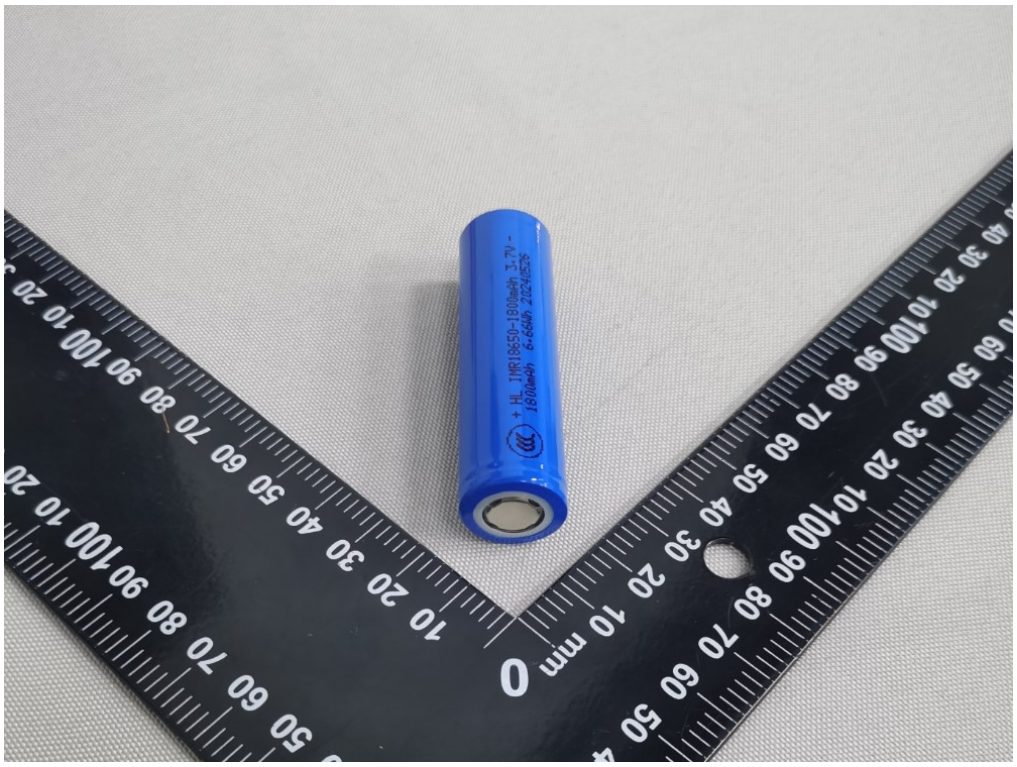


Figure 42 Side view of cell (Model: IMR18650-1800mAh) (label 3)