Test Report No.: 68.413.24.0021.01
Rev.: 01
Dated: 2024-02-28

Applicant:	Shandong Goldencell Electronics Technology Co., Ltd.
Address:	No.X6699 Guangming Boulevard Zaozhuang Hi-Tech District, Shandong Province China
Sample Description:	Materlals of Lithium ion cell
Model No.:	JGCNR18650-2200mAh-3.6V, JGCNR18650-2600mAh-3.6V, JGCNR26650-5000mA-3.6V, HTCFR26650-3800mAh-3.2V, JGPFR18650-1100mA-3.2V, JGTFR18650-1600mAh-3.2V, JGCFR18650-1600mAh-3.2V, JGCFR18650-1800mAh-3.2V, HTCFR18650-1800mAh-3.2V, JGCFR18650-2200mAh-3.2V, JGCFR26650-4500mAh-3.2V, JGCFR26650-3200mAh-3.2V, JGCFR26650-3400mAh-3.2V, JGCFR26650-3600mAh-3.2V, JGCFR26650-3800mAh-3.2V, JGCFR26650-4000mAh-3.2V, JGPFR26650-3000mAh-3.2V, 18FP-3.52Wh, 18FT-5.12Wh, 18FC-5.12Wh, 18FC-5.76Wh, 18FC-7.04Wh, 26FC-14.4Wh, 26FC-10.24Wh, 26FC-10.88Wh, 26FC-11.52Wh, 26FC-12.16Wh, 26FC-12.8Wh, 26FP-9.6Wh, 18NC-7.92Wh, 18NC-9.36Wh, 26NC-18Wh
Sample Received Date:	2024-02-06, Shenzhen
Test Period:	From 2024-02-06 to 2024-02-27, Shenzhen
Purpose of examination:	Verification of RoHS (Restriction of Hazardous Substances) directive 2011/65/EU and its amendment (EU) 2015/863 on submitted samples
Test Results:	Refer to following page(s)
Remark:	The result relates only to the items tested.

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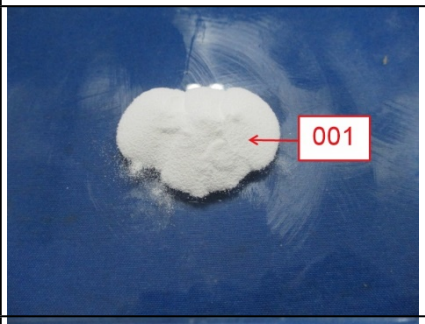
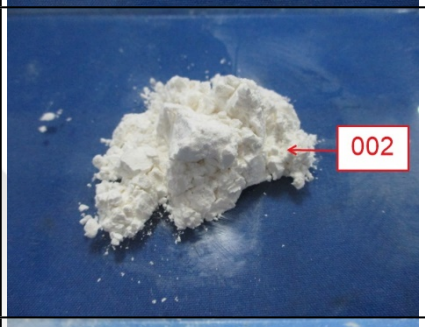
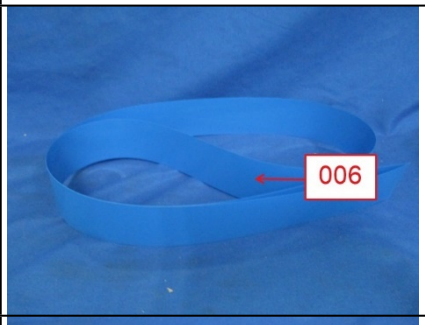
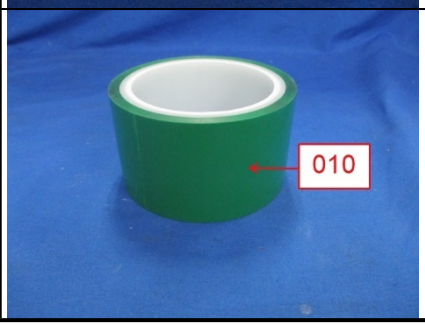
SUMMARY OF TEST RESULTS

No.	Test Requested	Conclusion	Remarks
1.	Heavy Metal (Pb, Cd, Hg and Cr VI) Content	**PASS**	
2.	Polybrominated Biphenyls (PBBs) and Polybrominated Diphenyl Ethers (PBDEs) Content	**PASS**	
3.	Phthalates (DEHP, BBP, DBP and DIBP) Content	**PASS**	

1. TESTED SUBJECT DESCRIPTION

Test No.	Sample No.	Tested Material Description	Photo
T1	**001**	White powder (PVDF)	
T2	**002**	White powder (CMC)	
T3	**003**	Black powder	
T4	**004**	Gray powder (graphite)	
T5	**005**	Gray powder (anode material)	

Test No.	Sample No.	Tested Material Description	Photo
T6	**006**	Blue plastic pad	
T7	**007**	Blue plastic sleeve	
T8	**008**	Black plastic pad	
T9	**009**	White polymer	
T10	**010**	Green plastic tape with glue	

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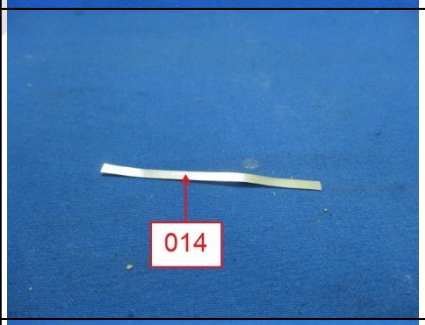
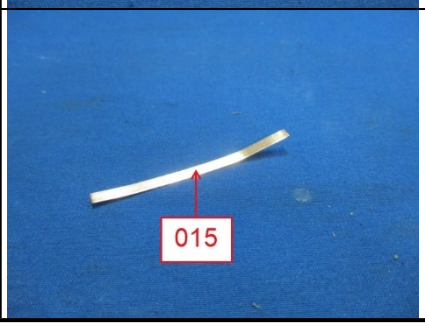
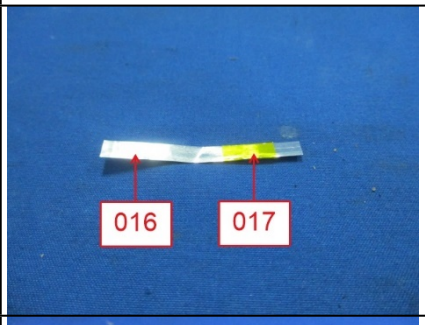
Test No.	Sample No.	Tested Material Description	Photo
T11	**011**	Brown plastic tape with glue	
T12	**012**	Silvery metal foil	
T13	**013**	Coppery metal foil	
T14	**014**	Silvery metal sheet	
T15	**015**	Coppery/silvery metal sheet	

Test No.	Sample No.	Tested Material Description	Photo
T16	**016**	Silvery metal sheet	
T17	**017**	Yellow plastic tape with glue	
T18	**018**	Silvery metal case	
T19	**019**	Brown plastic ring	
T20	**020**	Silvery metal plate	
T21	**021**	White plastic ring	
T22	**022**	Green plastic sleeve	
T23	**023**	Green blue plastic sleeve	

Test No.	Sample No.	Tested Material Description	Photo
T24	**024**	Purple plastic sleeve	

2. TEST RESULT(S)

2.1 SCREENING TEST

Test method: With reference to EN 62321-1:2013, EN IEC 62321-2:2021, EN 62321-3-1:2014 and EN 62321-8:2017. For Heavy Metals and Flame Retardants, analyzed by Energy Dispersive X-ray Fluorescence Spectrometer (XRF); for phthalates, analyzed by Gas Chromatography and Mass Spectrometer (GC-MS).

Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Cr	Hg	Pb	Br	DEHP	BBP	DBP	DIBP
006	BL	BL	BL	BL	BL	BL	BL	BL	BL
007	BL	BL	BL	BL	BL	BL	BL	BL	BL
008	BL	BL	BL	BL	BL	BL	BL	BL	BL
009	BL	BL	BL	BL	BL	BL	BL	BL	BL
010	BL	BL	BL	BL	BL	BL	BL	BL	BL
011	BL	BL	BL	BL	BL	BL	BL	BL	BL
012	BL	BL	BL	BL	NA	NA	NA	NA	NA
013	BL	BL	BL	BL	NA	NA	NA	NA	NA
014	BL	BL	BL	BL	NA	NA	NA	NA	NA
015	BL	BL	BL	BL	NA	NA	NA	NA	NA
016	BL	BL	BL	BL	NA	NA	NA	NA	NA
017	BL	BL	BL	BL	BL	BL	BL	BL	BL
018	BL	BL	BL	BL	NA	NA	NA	NA	NA
019	BL	BL	BL	BL	BL	BL	BL	BL	BL
020	BL	BL	BL	BL	NA	NA	NA	NA	NA
021	BL	BL	BL	BL	BL	BL	BL	BL	BL
022	BL	BL	BL	BL	BL	BL	BL	BL	BL
023	BL	BL	BL	BL	BL	BL	BL	BL	BL
024	BL	BL	BL	BL	BL	BL	BL	BL	BL

Note:

- "BL" denotes below limit
- "NA" denotes not applicable

-XRF screening limits in mg/kg for regulated elements in various matrices

ELEMENT	POLYMER		
	BL	INCONCLUSIVE	OL
Cd	X≤(70-3σ)	(70-3σ)<X<(130+3σ)	X≥(130+3σ)
Pb	X≤(700-3σ)	(700-3σ)<X<(1300+3σ)	X≥(1300+3σ)
Hg	X≤(700-3σ)	(700-3σ)<X<(1300+3σ)	X≥(1300+3σ)
Br	X≤(300-3σ)	X>(300-3σ)	NA
Cr	X≤(700-3σ)	X>(700-3σ)	NA

ELEMENT	METAL		
	BL	INCONCLUSIVE	OL
Cd	X≤(70-3σ)	(70-3σ)<X<(130+3σ)	X≥(130+3σ)
Pb	X≤(700-3σ)	(700-3σ)<X<(1300+3σ)	X≥(1300+3σ)
Hg	X≤(700-3σ)	(700-3σ)<X<(1300+3σ)	X≥(1300+3σ)
Cr	X≤(700-3σ)	X>(700-3σ)	NA

ELEMENT	COMPLEX MATERIAL		
	BL	INCONCLUSIVE	OL
Cd	X≤(50-3σ)	(50-3σ)<X<(150+3σ)	X≥(150+3σ)
Pb	X≤(500-3σ)	(500-3σ)<X<(1500+3σ)	X≥(1500+3σ)
Hg	X≤(500-3σ)	(500-3σ)<X<(1500+3σ)	X≥(1500+3σ)
Br	X≤(250-3σ)	X>(250-3σ)	NA
Cr	X≤(500-3σ)	X>(500-3σ)	NA

-Screening limits in mg/kg for regulated phthalates in various matrices

PHTHALATES	BL	INCONCLUSIVE
DEHP	X<600	X≥ 600
BBP	X<600	X≥ 600
DBP	X<600	X≥ 600
DIBP	X<600	X≥ 600

2.2 HEAVY METAL CONTENT

Test method: With reference to EN 62321-4:2014 /A1:2017, EN 62321-5:2014, EN 62321-7-1:2015 and EN 62321-7-2:2017, analyzed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) and Ultraviolet–visible spectrophotometer (UV-Vis).
[Reporting Limit: 2.0 mg/kg for Cadmium; 10.0 mg/kg or 0.10 μg/cm² for Hexavalent Chromium, 10.0 mg/kg for Lead and Mercury.]

Sample No.	Result(s)				
	Total Cadmium	Hexavalent Chromium	Hexavalent Chromium	Total Mercury	Total Lead
001	<2.0	<10.0	/	<10.0	<10.0
002	<2.0	<10.0	/	<10.0	<10.0
003	<2.0	<10.0	/	<10.0	<10.0
004	<2.0	<10.0	/	<10.0	<10.0
005	<2.0	<10.0	/	<10.0	<10.0
Unit	mg/kg	mg/kg	μg/cm²	mg/kg	mg/kg
RoHS Requirement	100	1000	Negative#	1000	1000

Note:

- "mg/kg" denotes milligram per kilogram
- "μg/cm²" denotes micrograms per square centimeter
- "<" denotes less than
- "Negative" denotes the absorbance value of sample is < 0.10 μg/cm², the sample is considered to be negative for Hexavalent Chromium.
- "#" According to DIRECTIVE 2011/65/EU Article 4(1) and Annex II. While, positive means the presence of CrVI on tested areas and the result(s) was (were) regarded as in conflict with European Parliament and Council Directive 2011/65/EU, Article 4(1) and Annex II.

2.3 POLYBROMINATED BIPHENYLS (PBBs) AND POLYBROMINATED DIPHENYL ETHERS (PBDEs) CONTENT

Test Method: With reference to EN 62321-6:2015, extracted by organic solvent and analyzed by Gas Chromatography and Mass Spectrometer (GC-MS). [Reporting Limit : 5 mg/kg]

Test Item		Result(s) [mg/kg]		RoHS Requirement [mg/kg]
		Sample 001	Sample 002	
PBBs	Monobromobiphenyl	<5	<5	Sum of PBBs 1000
	Dibromobiphenyl	<5	<5	
	Tribromobiphenyl	<5	<5	
	Tetrabromobiphenyl	<5	<5	
	Pentabromobiphenyl	<5	<5	
	Hexabromobiphenyl	<5	<5	
	Heptabromobiphenyl	<5	<5	
	Octabromobiphenyl	<5	<5	
	Nonabromobiphenyl	<5	<5	
	Decabromobiphenyl	<5	<5	
	Sum of detected PBBs	<50	<50	
PBDEs	Monobromodiphenyl ether	<5	<5	Sum of PBDEs 1000
	Dibromodiphenyl ether	<5	<5	
	Tribromodiphenyl ether	<5	<5	
	Tetrabromodiphenyl ether	<5	<5	
	Pentabromodiphenyl ether	<5	<5	
	Hexabromodiphenyl ether	<5	<5	
	Heptabromodiphenyl ether	<5	<5	
	Octabromodiphenyl ether	<5	<5	
	Nonabromodiphenyl ether	<5	<5	
	Decabromodiphenyl ether	<5	<5	
	Sum of detected PBDEs	<50	<50	

Note:

- "mg/kg" denotes milligram per kilogram
- "<" denotes less than

2.3 POLYBROMINATED BIPHENYLS (PBBs) AND POLYBROMINATED DIPHENYL ETHERS (PBDEs) CONTENT

Test Method: With reference to EN 62321-6:2015, extracted by organic solvent and analyzed by Gas Chromatography and Mass Spectrometer (GC-MS). [Reporting Limit : 5 mg/kg]

Test Item		Result(s) [mg/kg]		RoHS Requirement [mg/kg]
		Sample 003	Sample 004	
PBBs	Monobromobiphenyl	<5	<5	Sum of PBBs 1000
	Dibromobiphenyl	<5	<5	
	Tribromobiphenyl	<5	<5	
	Tetrabromobiphenyl	<5	<5	
	Pentabromobiphenyl	<5	<5	
	Hexabromobiphenyl	<5	<5	
	Heptabromobiphenyl	<5	<5	
	Octabromobiphenyl	<5	<5	
	Nonabromobiphenyl	<5	<5	
	Decabromobiphenyl	<5	<5	
	Sum of detected PBBs	<50	<50	
PBDEs	Monobromodiphenyl ether	<5	<5	Sum of PBDEs 1000
	Dibromodiphenyl ether	<5	<5	
	Tribromodiphenyl ether	<5	<5	
	Tetrabromodiphenyl ether	<5	<5	
	Pentabromodiphenyl ether	<5	<5	
	Hexabromodiphenyl ether	<5	<5	
	Heptabromodiphenyl ether	<5	<5	
	Octabromodiphenyl ether	<5	<5	
	Nonabromodiphenyl ether	<5	<5	
	Decabromodiphenyl ether	<5	<5	
	Sum of detected PBDEs	<50	<50	

Note:

- "mg/kg" denotes milligram per kilogram
- "<" denotes less than

2.3 POLYBROMINATED BIPHENYLS (PBBs) AND POLYBROMINATED DIPHENYL ETHERS (PBDEs) CONTENT

Test Method: With reference to EN 62321-6:2015, extracted by organic solvent and analyzed by Gas Chromatography and Mass Spectrometer (GC-MS). [Reporting Limit : 5 mg/kg]

Test Item		Result(s) [mg/kg] Sample 005	RoHS Requirement [mg/kg]
PBBs	Monobromobiphenyl	<5	Sum of PBBs 1000
	Dibromobiphenyl	<5	
	Tribromobiphenyl	<5	
	Tetrabromobiphenyl	<5	
	Pentabromobiphenyl	<5	
	Hexabromobiphenyl	<5	
	Heptabromobiphenyl	<5	
	Octabromobiphenyl	<5	
	Nonabromobiphenyl	<5	
	Decabromobiphenyl	<5	
	Sum of detected PBBs	<50	
PBDEs	Monobromodiphenyl ether	<5	Sum of PBDEs 1000
	Dibromodiphenyl ether	<5	
	Tribromodiphenyl ether	<5	
	Tetrabromodiphenyl ether	<5	
	Pentabromodiphenyl ether	<5	
	Hexabromodiphenyl ether	<5	
	Heptabromodiphenyl ether	<5	
	Octabromodiphenyl ether	<5	
	Nonabromodiphenyl ether	<5	
	Decabromodiphenyl ether	<5	
	Sum of detected PBDEs	<50	

Note:

- "mg/kg" denotes milligram per kilogram
- "<" denotes less than

2.4 PHTHALATES (DEHP, BBP, DBP and DIBP) CONTENT TEST

Test method: With reference to EN 62321-8:2017, extracted by organic solvent and analyzed by Gas Chromatography and Mass Spectrometer (GC-MS). [Reporting Limit : 100 mg/kg]

Test Item	Result(s) [mg/kg]		RoHS Requirement [mg/kg]
	Sample 001	Sample 002	
Di-(2-ethyl-hexyl) Phthalate (DEHP)	<100	<100	1000
Butyl-benzyl Phthalate (BBP)	<100	<100	1000
Di-butyl Phthalate (DBP)	<100	<100	1000
Di-iso-butyl Phthalate (DIBP)	<100	<100	1000

Test Item	Result(s) [mg/kg]		RoHS Requirement [mg/kg]
	Sample 003	Sample 004	
Di-(2-ethyl-hexyl) Phthalate (DEHP)	<100	<100	1000
Butyl-benzyl Phthalate (BBP)	<100	<100	1000
Di-butyl Phthalate (DBP)	<100	<100	1000
Di-iso-butyl Phthalate (DIBP)	<100	<100	1000

Test Item	Result(s) [mg/kg]	RoHS Requirement [mg/kg]
	Sample 005	
Di-(2-ethyl-hexyl) Phthalate (DEHP)	<100	1000
Butyl-benzyl Phthalate (BBP)	<100	1000
Di-butyl Phthalate (DBP)	<100	1000
Di-iso-butyl Phthalate (DIBP)	<100	1000

Note:

- "mg/kg" denotes milligram per kilogram
- "<" denotes less than

APPENDIX I:
According to client's declaration, tested material would be produced as relevant product(s):

	
18FC-5.76Wh	**18NC-9.36Wh**
	
18NC-7.92Wh	**18FC-7.04Wh**
	
18FP-3.52Wh	**18FC-5.12Wh**

	
18FT-5.12Wh	**26FC-10.88Wh**
	
26FP-9.6Wh	**26FC-14.4Wh**
	
26FC-10.24Wh	**26FC-12.16Wh**

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26FC-11.52Wh	**26FC-12.8Wh**
	**/**
26NC-18Wh	**/**

---------End of Report---------

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