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# TEST REPORT

Report: **STSGZ1912100001-V4**  
 Date: 12-Jun-2020  
 Page: 1 of 10

**Client Name:** Shenzhen First Union Technology Co., Ltd.  
**Client Address:** Building C, Tangwei High-Technology Park, Fuyong Street, Bao' an District, Shenzhen, Guangdong Province, China

The following sample(s) and sample information was/were submitted and identified by client as:

**Item Name:** Inspire Battery  
**Model/Style/Item #:** TD43315B  
**Series Model #:** -  
**Brand/Customer:** -  
**Supplier/Manufacturer:** Shenzhen First Union Technology Co., Ltd.  
**Receiving Date:** 10-Dec-2019, 17-Dec-2019, 19-Dec-2019, 13-Apr-2020  
**Test Period:** 10-Dec-2019 - 16-Apr-2020  
**Add Information:** This report shall replace STSGZ1912100001-V3.

## Report Summary

#	Test	Reference Standard/Method	Result
1	Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs, PBDEs, DBP, BBP, DEHP and DIBP EU RoHS Directive 2011/65/EU and its amendment directives 2015/863/EU (RoHS 2.0)	IEC 62321-3-1:2013 IEC 62321-4:2013+A1:2017 IEC 62321-5:2013 IEC 62321-6:2015 IEC 62321-7-1:2015 IEC 62321-7-2:2017 IEC 62321-8:2017	PASS

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Signed for and on behalf of STS

Kevin Liu  
 (Chemical Test Manager)





# TEST REPORT

Report: **STSGZ1912100001-V4**  
Date: 12-Jun-2020  
Page: 2 of 10

## Result:

### 1. EU RoHS Directive 2011/65/EU and its amendment directives on XRF IEC 62321-3-1:2013, Screening by X-ray Fluorescence Spectroscopy (XRF)

Seq. No.	Tested Part(s)	Results				
		Pb	Cd	Hg	Cr	Br
<b>A</b>	<b>Appearance</b>					
1	Golden plated silver metal,Shell	BL	BL	BL	X	NA
2	Silver metal,Shell	BL	BL	BL	X	NA
3	Black coating,shell	BL	BL	BL	BL	BL
4	White coating,shell	BL	BL	BL	BL	BL
5	White plastic,cover	BL	BL	BL	BL	BL
6	Black coating,cover	BL	BL	BL	BL	BL
7	White coating,cover	BL	BL	BL	BL	BL
8	Golden coating,cover	BL	BL	BL	BL	BL
9	Silver coating,cover	BL	BL	BL	BL	BL
10	Translucence soft plastic,inner	BL	BL	BL	BL	BL
11	Translucence soft plastic,inner	BL	BL	BL	BL	BL
12	Black plstic,loose items	BL	BL	BL	BL	BL
13	Silver metal,cover	X	BL	BL	BL	NA
14	White plastic,inner	BL	BL	BL	BL	BL
15	Golden metal,spring	BL	BL	BL	BL	NA
16	Silver metal,inner	X	BL	BL	BL	NA
17	Silver metal,solder	BL	BL	BL	BL	NA
18	Transparent plastic,inner	BL	BL	BL	BL	BL
19	Black sponge,inner	BL	BL	BL	BL	BL
20	Black plastic,wire jacket	BL	BL	BL	BL	BL
21	Blue plastic,wire jacket	BL	BL	BL	BL	BL
22	Red plastic,wire jacket	BL	BL	BL	BL	BL



# TEST REPORT

Report: **STSGZ1912100001-V4**  
Date: 12-Jun-2020  
Page: 3 of 10

23	Silver metal,wire	BL	BL	BL	BL	NA
24	Silver metal,solder	BL	BL	BL	BL	NA
25	Yellow plastic with glue	BL	BL	BL	BL	BL
26	Red plastic with glue	BL	BL	BL	BL	BL
27	Black plastic with glue	BL	BL	BL	BL	BL
28	White nonwovens,buzzer	BL	BL	BL	BL	BL
29	Silver metal,buzzer shell	BL	BL	BL	BL	NA
30	Silver metal,in buzzer	BL	BL	BL	BL	NA
31	Red plastic,buzzer	BL	BL	BL	BL	BL
32	Silver plastic,in buzzer	BL	BL	BL	BL	BL
33	Silver metal,ring	BL	BL	BL	BL	NA
34	White plastic,ring	BL	BL	BL	BL	BL
35	Black body,IC	BL	BL	BL	BL	BL
36	Brown PCB	BL	BL	BL	BL	X
37	Yellow body,IC	BL	BL	BL	BL	BL
38	Silver metal,solder	BL	BL	BL	BL	NA
39	Black soft plastic,charger shell	BL	BL	BL	BL	BL
40	Silver metal,USB	BL	BL	BL	BL	NA
41	White plastic,in USB	BL	BL	BL	BL	BL
42	Golden plated silver metal,lead	BL	BL	BL	BL	NA
43	Translucence plastic,USB inner	BL	BL	BL	BL	BL
44	Red PCB	BL	BL	BL	BL	X
45	Black body,IC	BL	BL	BL	BL	BL
46	Yellow body,capacitor	BL	BL	BL	BL	BL
47	Black body,resistance	BL	BL	BL	BL	BL
48	Silver metal,solder	BL	BL	BL	BL	NA
49	Black plastic,wire jacket	BL	BL	BL	BL	BL
50	Red plastic,wire jacket	BL	BL	BL	BL	BL



# TEST REPORT

Report: **STSGZ1912100001-V4**  
 Date: 12-Jun-2020  
 Page: 4 of 10

51	Silver metal,connector	X	BL	BL	BL	NA
52	Silver metal,connector inner	X	BL	BL	BL	NA
53	Translucence soft plastic,USB inner	BL	BL	BL	BL	BL

**Remark:**

- (1) Results were obtained by XRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs) are recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1:2013.

Element	Unit	Non-metal	Metal	Composite Material
Cd	mg/kg	$BL \leq 70 - 3\sigma < X < 130 + 3\sigma \leq OL$	$BL \leq 70 - 3\sigma < X < 130 + 3\sigma \leq OL$	$BL \leq 50 - 3\sigma < X < 150 + 3\sigma \leq OL$
Pb	mg/kg	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma < X < 1500 + 3\sigma \leq OL$
Hg	mg/kg	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma < X < 1500 + 3\sigma \leq OL$
Cr	mg/kg	$BL \leq 700 - 3\sigma < X$	$BL \leq 700 - 3\sigma < X$	$BL \leq 500 - 3\sigma < X$
Br	mg/kg	$BL \leq 300 - 3\sigma < X$	--	$BL \leq 250 - 3\sigma < X$

**Note:**

BL = Below Limit  
 OL = Over Limit  
 X = Inconclusive

- (2) The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.
- (3) The maximum permissible limit is quoted from the document 2011/65/EU and its amendment directives 2015/863/EU:

RoHS Restricted Substances	Maximum Concentration Value (mg/kg) (by weight in homogenous materials)
Cadmium (Cd)	100
Lead (Pb)	1000
Mercury (Hg)	1000



# TEST REPORT

Report: **STSGZ1912100001-V4**  
Date: 12-Jun-2020  
Page: 5 of 10

Hexavalent Chromium (Cr(VI))	1000
Polybrominated biphenyls (PBBs)	1000
Polybrominated diphenyl ethers (PBDEs)	1000

#### (4) Disclaimers:

This XRF Screening report is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF screening report is sufficient for its/his/her purposes. The result shown in this XRF screening report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect (e.g. plastic, rubber, metal, glass, ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis are required to obtain quantitative data.

#### (5) The selection of test portions was recommended by the client and the conclusion of chemical test is only for the selected portions.

## 2. Hexavalent Chromium (Cr(VI))

Metal: IEC 62321-7-1:2015, extracted by boiling water and analyzed by UV-Vis

Compound	Material		Limit	RL
	1	2		
1 Hexavalent Chromium (Cr(VI))	Negative	Negative	#	-
<b>Conclusion</b>	<b>PASS</b>	<b>PASS</b>	-	-

Remark(s) (a) ug/cm<sup>2</sup>: microgram per square centimeter

(b) RL: Report Limit

(c) Negative = Sample Cr(VI) concentration is less than 0.10 ug/cm<sup>2</sup>

Positive = Sample Cr(VI) concentration is greater than 0.13 ug/cm<sup>2</sup>

(d) # = Positive indicates the presence of Cr(VI) on the tested areas and result be regarded as conflict with RoHS requirement.

Negative indicates the absence of Cr(VI) on the tested areas and result be regarded as no conflict with RoHS requirement.



# TEST REPORT

Report: **STSGZ1912100001-V4**  
Date: 12-Jun-2020  
Page: 6 of 10

### 3. Lead Content (Pb) IEC62321-5:2013, acid digested and determined by ICP-OES

Compound	Material				Limit (mg/kg)	RL (mg/kg)
	13	16	51	52		
1 Lead (Pb)	38360	28898	32707	34682	1000	10
<b>Conclusion</b>	<b>PASS*</b>	<b>PASS*</b>	<b>PASS*</b>	<b>PASS*</b>	-	-

Remark(s): (a) mg/kg: milligram per kilogram  
(b) RL: Report limit  
(c) N.D.: Not detected (result is less than RL)  
(d) \* = Copper alloy containing up to 4% lead by weight

### 4. Polybrominated Biphenyls and Polybrominated Diphenyl Ethers (PBBs and PBDEs) IEC 62321-6:2015, solvent extract and determined by GC/MS

Compound	Material		Limit (mg/kg)	RL (mg/kg)
	36	44		
1 Monobromo biphenyl	N.D.	N.D.	-	50
2 Dibromo biphenyl	N.D.	N.D.	-	50
3 Tribromo biphenyl	N.D.	N.D.	-	50
4 Tetrabromo biphenyl	N.D.	N.D.	-	50
5 Pentabromo biphenyl	N.D.	N.D.	-	50
6 Hexabromo biphenyl	N.D.	N.D.	-	50
7 Heptabromo biphenyl	N.D.	N.D.	-	50
8 Octabromo biphenyl	N.D.	N.D.	-	50
9 Nonabromo biphenyl	N.D.	N.D.	-	50
10 Decabromo biphenyl	N.D.	N.D.	-	50
11 Monobromo diphenyl ether	N.D.	N.D.	-	50
12 Dibromo diphenyl ether	N.D.	N.D.	-	50



# TEST REPORT

Report: **STSGZ1912100001-V4**  
Date: 12-Jun-2020  
Page: 7 of 10

13	Tribromo diphenyl ether	N.D.	N.D.	-	50
14	Tetrabromo diphenyl ether	N.D.	N.D.	-	50
15	Pentabromo diphenyl ether	N.D.	N.D.	-	50
16	Hexabromo diphenyl ether	N.D.	N.D.	-	50
17	Heptabromo diphenyl ether	N.D.	N.D.	-	50
18	Octabromo diphenyl ether	N.D.	N.D.	-	50
19	Nonabromo diphenyl ether	N.D.	N.D.	-	50
20	Decabromo diphenyl ether	N.D.	N.D.	-	50
21	Sum of PBBs	N.D.	N.D.	1000	-
22	Sum of PBDEs	N.D.	N.D.	1000	-
<b>Conclusion</b>		<b>PASS</b>	<b>PASS</b>	-	-

Remark(s): (a) mg/kg: milligram per kilogram  
(b) RL: Report limit  
(c) N.D.: Not detected (result is less than RL)

## 5. Phthalates – (DBP, BBP, DEHP, DIBP) IEC 62321-8:2017, Solvent extract and determined by GC/MS

Compound			Material				Limit (%)	RL(%)
			3+4	5+12+14	6+7+8	9		
1	DBP	Dibutylphthalate CAS# 84-74-2	N.D.	N.D.	N.D.	N.D.	0.1	0.005
2	BBP	Benzylbutylphthalate CAS# 85-68-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
3	DEHP	Diethylhexylphthalate CAS# 117-81-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
4	DIBP	Diisobutyl phthalate CAS# 84-69-5	N.D.	N.D.	N.D.	N.D.	0.1	0.005
<b>Conclusion</b>			<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	-	-



# TEST REPORT

Report: **STSGZ1912100001-V4**  
Date: 12-Jun-2020  
Page: 8 of 10

Compound			Material				Limit (%)	RL(%)
			10	11	18	19		
1	DBP	Dibutylphthalate CAS# 84-74-2	N.D.	N.D.	N.D.	N.D.	0.1	0.005
2	BBP	Benzylbutylphthalate CAS# 85-68-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
3	DEHP	Diethylhexylphthalate CAS# 117-81-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
4	DIBP	Diisobutyl phthalate CAS# 84-69-5	N.D.	N.D.	N.D.	N.D.	0.1	0.005
<b>Conclusion</b>			<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	-	-

Compound			Material				Limit (%)	RL(%)
			20	21	22	25+26+27		
1	DBP	Dibutylphthalate CAS# 84-74-2	N.D.	N.D.	N.D.	N.D.	0.1	0.005
2	BBP	Benzylbutylphthalate CAS# 85-68-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
3	DEHP	Diethylhexylphthalate CAS# 117-81-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
4	DIBP	Diisobutyl phthalate CAS# 84-69-5	N.D.	N.D.	N.D.	N.D.	0.1	0.005
<b>Conclusion</b>			<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	-	-

Compound			Material				Limit (%)	RL(%)
			28	31+32+34	35+37	36		
1	DBP	Dibutylphthalate CAS# 84-74-2	N.D.	N.D.	N.D.	N.D.	0.1	0.005
2	BBP	Benzylbutylphthalate CAS# 85-68-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
3	DEHP	Diethylhexylphthalate CAS# 117-81-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
4	DIBP	Diisobutyl phthalate CAS# 84-69-5	N.D.	N.D.	N.D.	N.D.	0.1	0.005
<b>Conclusion</b>			<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	-	-





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# TEST REPORT

Report: **STSGZ1912100001-V4**  
Date: 12-Jun-2020  
Page: 9 of 10

Compound			Material				Limit (%)	RL(%)
			39	41+43	44	45+46+47		
1	DBP	Dibutylphthalate CAS# 84-74-2	N.D.	N.D.	N.D.	N.D.	0.1	0.005
2	BBP	Benzylbutylphthalate CAS# 85-68-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
3	DEHP	Diethylhexylphthalate CAS# 117-81-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
4	DIBP	Diisobutyl phthalate CAS# 84-69-5	N.D.	N.D.	N.D.	N.D.	0.1	0.005
<b>Conclusion</b>			<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	<b>PASS</b>	-	-

Compound			Material		Limit (%)	RL(%)
			49+50	53		
1	DBP	Dibutylphthalate CAS# 84-74-2	N.D.	N.D.	0.1	0.005
2	BBP	Benzylbutylphthalate CAS# 85-68-7	N.D.	N.D.	0.1	0.005
3	DEHP	Diethylhexylphthalate CAS# 117-81-7	N.D.	N.D.	0.1	0.005
4	DIBP	Diisobutyl phthalate CAS# 84-69-5	N.D.	N.D.	0.1	0.005
<b>Conclusion</b>			<b>PASS</b>	<b>PASS</b>	-	-

Remark(s): (a) RL: Report limit  
(b) N.D.: Not detected (result is less than RL)



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# TEST REPORT

Report: **STSGZ1912100001-V4**  
Date: 12-Jun-2020  
Page: 10 of 10

## Photo(s):



««««« END OF REPORT »»»»»