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TEST REPORT

Report: **STSGZ19061027**
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Client Name:

Client Address:

Item Name: Power bank

Model/Style/Item #: UP-9154/7121-71

Series Model #: UP-9149/P322.02

Brand/Customer: -

Supplier/Manufacturer:

Receiving Date: 6-Jun-2019, 14-Jun-2019

Test Period: 6-Jun-2019 - 14-Jun-2019

Add Information: -

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 IEC 62321-5:2013 IEC 62321-6:2015 IEC 62321-7-1:2015 IEC 62321-7-2:2017 IEC 62321-8:2017	PASS

Signed for and on behalf of STS

Kevin Liu
(Chemical Test Manager)





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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
A	Appearance					
1	Yellow wood with transparent/black prints(Shell)	BL	BL	BL	BL	BL
2	Black plastic(Switch)	BL	BL	BL	BL	BL
3	Silver metal(Screw)	BL	BL	BL	X	BL
B	Main PCB					
4	Silver metal(USB)	BL	BL	BL	X	BL
5	White plastic(In USB)	BL	BL	BL	BL	BL
6	Silver metal pin(In USB)	BL	BL	BL	BL	BL
7	Silver metal(Mini USB)	BL	BL	BL	X	BL
8	Black plastic(In mini USB)	BL	BL	BL	BL	BL
9	Silver metal pin(In mini USB)	BL	BL	BL	BL	BL
10	Black rubber(In switch)	BL	BL	BL	BL	BL
11	Yellow paper(In switch)	BL	BL	BL	BL	BL
12	Black plastic(Button)	BL	BL	BL	BL	BL
13	Silver metal(Button)	BL	BL	BL	BL	BL
14	Black magnet	BL	BL	BL	BL	BL
15	Golden copper	BL	BL	BL	BL	BL
16	Black IC	BL	BL	BL	BL	BL
17	Black IC	BL	BL	BL	BL	BL
18	Black IC	BL	BL	BL	BL	BL
19	Black IC	BL	BL	BL	BL	BL
20	Black IC	BL	BL	BL	BL	BL
21	Yellow plastic(Light)	BL	BL	BL	BL	BL
22	Solder	BL	BL	BL	BL	BL
23	Red plastic(Capacitor)	BL	BL	BL	BL	BL

The sample(s) and sample information was/were submitted and identified by the client
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24	Silver metal pin(Capacitor)	BL	BL	BL	BL	BL
25	Green PCB	BL	BL	BL	BL	X
26	Black plastic(Jacket)	BL	BL	BL	BL	BL
27	Red plastic(Jacket)	BL	BL	BL	BL	BL
28	Silver metal(Wire)	BL	BL	BL	BL	BL
29	Red metal(Wire)	BL	BL	BL	BL	BL
30	Black plastic(Cover the red wire)	BL	BL	BL	BL	BL
31	Yellow plastic with glue	BL	BL	BL	BL	BL
32	Pink fabric	BL	BL	BL	BL	BL
33	Golden metal(Wire)	BL	BL	BL	BL	BL
34	Black magnet(Wire base)	BL	BL	BL	BL	BL
C	Battery					
35	Gold metal (Joint)	BL	BL	BL	BL	BL
36	Black plastic (wire)	BL	BL	BL	BL	BL
37	Silver metal wire	BL	BL	BL	BL	BL
38	Black plastic	BL	BL	BL	BL	BL
39	Black plastic film	BL	BL	BL	BL	BL
40	Silver metal paper	BL	BL	BL	BL	BL
41	Black IC	BL	BL	BL	BL	BL
42	Solder	BL	BL	BL	BL	BL
43	Green PCB	BL	BL	BL	BL	X
44	Black sponge with glue	BL	BL	BL	BL	BL
D	Data line					
45	Silver metal(USB)	BL	BL	BL	X	BL
46	White plastic(In USB)	BL	BL	BL	BL	BL
47	Golden metal pin(In USB)	BL	BL	BL	BL	BL
48	Black plastic(Holder)	BL	BL	BL	BL	BL
49	Black plastic(In mini USB)	BL	BL	BL	BL	BL



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50	Silver metal(In mini USB)	BL	BL	BL	BL	BL
51	Black plastic(Jacket)	BL	BL	BL	BL	BL
52	Red plastic(Wire jacket)	BL	BL	BL	BL	BL
53	Golden metal(Wire)	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



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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.

2. Hexavalent Chromium (Cr(VI))

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

Non-metal: IEC 62321-7-2:2017, alkaline digested and analyzed by UV-Vis

Table 2.1

Compound	Material #3	Material #4	Material #7	Material #45	Limit	RL (ug/cm ²)
1 Hexavalent Chromium (Cr(VI))	Negative	Negative	Negative	Negative	#	0.05
Conclusion	PASS	PASS	PASS	PASS	-	-

Remark(s): (a) mg/kg: milligram per kilogram = part per million = ppm

(b) RL: Report limit

(c) N.D.: Not detected (result is less than RL)

(d) Negative = Sample Cr(VI) concentration is less than 0.10 ug/cm²

Positive = Sample Cr(VI) concentration is greater than 0.13 ug/cm²

(e) # = 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.

3. Polybrominated Biphenyls and Polybrominated Diphenyl Ethers (PBBs and PBDEs)

IEC 62321-6:2015, solvent extract and determined by GC/MS

Table 3.1

Compound	Material #25	Material #43	Limit (mg/kg)	RL (mg/kg)
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

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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
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	-
	Conclusion	PASS	PASS	-	-

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



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

Material #	Position / Sample Description
1	Yellow wood(Shell)
2	Black plastic(Switch)
3	Transparent/black coating(Shell)
4	White plastic(In USB)
5	Black plastic(In mini USB)
6	Black plastic(Jacket)
7	Red plastic(Jacket)
8	White plastic(Data line USB)
9	Black plastic(Holder)
10	Black plastic(In mini USB)
11	Black plastic(Jacket)
12	Red plastic(Wire jacket)
13	Black sponge with glue

Table 4.1

Compound	Material #1	Material #2+4+8	Material #3	Material #5+10	Limit (%)	RL(%)
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
Conclusion	PASS	PASS	PASS	PASS	-	-



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Table 4.2

Compound			Material #6	Material #7	Material #9	Material #11	Limit (%)	RL(%)
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	0.0371	0.0110	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
Conclusion			PASS	PASS	PASS	PASS	-	-

Table 4.3

Compound			Material #12	Material #13	Limit (%)	RL(%)
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
Conclusion			PASS	PASS	-	-

Remark(s): (a) RL: Report limit
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Photo(s)



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