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TEST REPORT

Report: **STSGZ19071106**
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Client Name:	SHENZHEN MOTTO ELECTRONICS CO., LTD
Client Address:	Floor 2, Building D, No. 71-4 Of Xintian Avenue, Fuyong St., Baoan Dist., 518103 Shenzhen, Guangdong, China
Item Name:	kids smart watch
Model/Style/Item #:	LT05
Series Model #:	Y01, M05, LT01, LT02, LT03, LT06, LT07, LT08, LT09, LT10, LT11, LT12, LT13, LT15, G300, G900A, G900S, G700S, TD-02, TD-02S, TD-05D, TD-06, TD-06S, TD-06W, TD-07S, TD-08, TD-08W, TD-11, TD-12, TD-13, TD-15, TD-16, TD-17, TD-18, TD-19, TD-20, TD-21, TD-22, TD-23, TD-24, TD-25, TD-26, TD-27, TD-30, TD-31, TD-32, TD-35, TD-36, TD-37, TD-38, TD-39, TD-40, TD-41, TD-42, S02, MT01, MT02, MT03, E01, E07, E08
Brand/Customer:	-
Supplier/Manufacturer:	-
Receiving Date:	10-Jul-2019, 19-Jul-2019
Test Period:	10-Jul-2019 - 23-Jul-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	Black plastic(Watch clasp)	BL	BL	BL	BL	BL
2	Gray/Blue rubber(Watch band)	BL	BL	BL	BL	BL
3	Silver label	BL	BL	BL	BL	BL
4	Silver metal(Screw)	BL	BL	BL	X	BL
5	Blue rubber(Watch band)	BL	BL	BL	BL	BL
6	Gray plastic(Shell)	BL	BL	BL	BL	BL
7	Black plastic with glue	BL	BL	BL	BL	BL
8	Black plastic with glue	BL	BL	BL	BL	BL
9	Blue plastic(Shell)	BL	BL	BL	BL	BL
10	Silver metal(Magnet)	BL	BL	BL	BL	BL
11	Golden metal(Shell)	X	BL	BL	BL	BL
12	Transparent plastic(Screen)	BL	BL	BL	BL	BL
13	Black glass(Inner layer of screen)	BL	BL	BL	BL	BL
14	White plastic(Light)	BL	BL	BL	BL	BL
15	Silver plastic(Inner layer of screen)	BL	BL	BL	BL	BL
16	White plastic(Inner layer of screen)	BL	BL	BL	BL	BL
17	Transparent plastic(Inner layer of screen)	BL	BL	BL	BL	BL
18	White/silver plastic(Inner layer of screen)	BL	BL	BL	BL	BL
19	Silver metal(Switch)	BL	BL	BL	X	BL
20	Black plastic(Screw driver)	BL	BL	BL	BL	BL
21	Silver metal(Screw driver)	BL	BL	BL	X	BL
22	Silver metal(Tweezers)	BL	BL	BL	BL	BL
23	Black/Golden plastic(Transmission band)	BL	BL	BL	BL	BL
24	Copper metal(Inner)	BL	BL	BL	BL	BL



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25	Silver metal(Speaker)	BL	BL	BL	BL	BL
26	Golden copper(Speaker)	BL	BL	BL	BL	BL
27	Transparent plastic film(Speaker)	BL	BL	BL	BL	BL
28	Silver magnet(Speaker)	BL	BL	BL	BL	BL
29	Black plastic(Speaker)	BL	BL	BL	BL	BL
30	Golden metal(Nut)	X	BL	BL	BL	BL
31	White rubber(Inner)	BL	BL	BL	BL	BL
32	Silver plastic (Inner)	BL	BL	BL	BL	BL
33	Silver metal(Watch band)	BL	BL	BL	BL	BL
34	Black glass with glue(Shell)	BL	BL	BL	BL	BL
B	Main PCB					
35	Silver sponge (PCB)	BL	BL	BL	BL	BL
36	Golden plastic (Transmission band PCB)	BL	BL	BL	BL	BL
37	Silver metal(IC cover)	BL	BL	BL	BL	BL
38	Pink rubber(PCB)	BL	BL	BL	BL	BL
39	Silver metal sheet (Switch)	BL	BL	BL	BL	BL
40	Yellow plastic(Light)	BL	BL	BL	BL	BL
41	Black rubber (Microphone)	BL	BL	BL	BL	BL
42	Golden metal(Microphone)	BL	BL	BL	BL	BL
43	Silver magnet(Microphone)	BL	BL	BL	BL	BL
44	Golden copper(Microphone)	BL	BL	BL	BL	BL
45	Green PCB	BL	BL	BL	BL	X
46	Solder	BL	BL	BL	BL	BL
47	Golden metal(Spring on PCB)	BL	BL	BL	X	BL
48	Black IC	BL	BL	BL	BL	BL
49	Black IC	BL	BL	BL	BL	BL
50	Black IC	BL	BL	BL	BL	BL
51	Black IC	BL	BL	BL	BL	BL



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52	Black IC	BL	BL	BL	BL	BL
53	Black IC	BL	BL	BL	BL	BL
54	Black IC	BL	BL	BL	BL	BL
55	Black IC	BL	BL	BL	BL	BL
56	Black IC	BL	BL	BL	BL	BL
57	Black IC	BL	BL	BL	BL	BL
58	Black IC	BL	BL	BL	BL	BL
59	Black IC	BL	BL	BL	BL	BL
60	Solder	BL	BL	BL	BL	BL
61	Golden metal(PCB)	BL	BL	BL	BL	BL
62	Silver metal(PCB)	BL	BL	BL	BL	BL
63	Black plastic(Wire jacket- PCB)	BL	BL	BL	BL	BL
64	Red plastic (Wire jacket-PCB)	BL	BL	BL	BL	BL
C	Battery					
65	Gold metal (Joint)	BL	BL	BL	BL	BL
66	Black plastic (wire)	BL	BL	BL	BL	BL
67	Silver metal wire	BL	BL	BL	BL	BL
68	Black plastic	BL	BL	BL	BL	BL
69	Black plastic film	BL	BL	BL	BL	BL
70	Silver metal paper	BL	BL	BL	BL	BL
71	Transparent/yellow plastic film	BL	BL	BL	BL	BL
72	Black plastic whit glue	BL	BL	BL	BL	BL
73	Black IC	BL	BL	BL	BL	BL
74	Silver metal whit glue	BL	BL	BL	BL	BL
75	Solder	BL	BL	BL	BL	BL
76	Red plastic(Wire jacket)	BL	BL	BL	BL	BL
77	Black plastic(Wire jacket)	BL	BL	BL	BL	BL
78	White plastic(Wire jacket)	BL	BL	BL	BL	BL



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79	Silver metal(Wire)	BL	BL	BL	BL	BL
D	Data line					
80	Silver metal(USB)	BL	BL	BL	X	BL
81	White plastic(In USB)	BL	BL	BL	BL	BL
82	Silver metal pin(In USB)	BL	BL	BL	BL	BL
83	White plastic(USB holder)	BL	BL	BL	BL	BL
84	White plastic(Jacket)	BL	BL	BL	BL	BL
85	Black plastic(Wire jacket)	BL	BL	BL	BL	BL
86	White plastic(Wire jacket)	BL	BL	BL	BL	BL
87	Coppery metal(Wire)	BL	BL	BL	BL	BL
88	White plastic(Charging head)	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.



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- (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
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 #4	Material #19	Material #21	Material #47	Limit	RL (ug/cm ²)
1 Hexavalent Chromium (Cr(VI))	Negative	Negative	Negative	Negative	#	0.05
Conclusion	PASS	PASS	PASS	PASS	-	-

Table 2.2

Compound	Material #80	Limit	RL (ug/cm ²)
1 Hexavalent Chromium (Cr(VI))	Negative	#	0.05
Conclusion	PASS	-	-



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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. Lead Content (Pb)

IEC62321-5:2013, acid digested and determined by ICP-OES

Table 3.1

Compound		Material #11	Material #30	Limit (mg/kg)	RL (mg/kg)
1	Lead (Pb)	17212	22707	1000	10
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)
(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

Table 4.1

Compound		Material #45	Limit (mg/kg)	RL (mg/kg)
1	Monobromo biphenyl	N.D.	-	50
2	Dibromo biphenyl	N.D.	-	50
3	Tribromo biphenyl	N.D.	-	50
4	Tetrabromo biphenyl	N.D.	-	50
5	Pentabromo biphenyl	N.D.	-	50
6	Hexabromo biphenyl	N.D.	-	50
7	Heptabromo biphenyl	N.D.	-	50
8	Octabromo biphenyl	N.D.	-	50



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9	Nonabromo biphenyl	N.D.	-	50
10	Decabromo biphenyl	N.D.	-	50
11	Monobromo diphenyl ether	N.D.	-	50
12	Dibromo diphenyl ether	N.D.	-	50
13	Tribromo diphenyl ether	N.D.	-	50
14	Tetrabromo diphenyl ether	N.D.	-	50
15	Pentabromo diphenyl ether	N.D.	-	50
16	Hexabromo diphenyl ether	N.D.	-	50
17	Heptabromo diphenyl ether	N.D.	-	50
18	Octabromo diphenyl ether	N.D.	-	50
19	Nonabromo diphenyl ether	N.D.	-	50
20	Decabromo diphenyl ether	N.D.	-	50
21	Sum of PBBs	N.D.	1000	-
22	Sum of PBDEs	N.D.	1000	-
Conclusion		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)

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

Material #	Position / Sample Description
1	Black plastic (Watch clasp)
2	Gray/Blue rubber(Watchband)
3	Silver label
4	Blue rubber(Watchband)



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5	Gray plastic(Shell)
6	Black plastic whit glue
7	Blue plastic(Shell)
8	Transparent plastic(Screen)
9	Black plastic(Screwdriver)
10	White rubber(Inner)
11	Silver plastic(Inner)
12	Black plastic(Wire jacket-PCB)
13	Red plastic (Wire jacket-PCB)
14	Red plastic(Wire jacket)
15	Black plastic(Wire jacket)
16	White plastic(Wire jacket)
17	White plastic(USB holder)
18	White plastic(Jacket)
19	Black plastic(Wire jacket-USB)
20	White plastic(Wire jacket-USB)
21	White plastic(In USB)
22	White plastic(Charging head)

Table 5.1

Compound			Material #1+7+9	Material #2+4	Material #10	Material #3	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



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	Conclusion	PASS	PASS	PASS	PASS	-	-
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Table 5.2

Compound			Material #5+6+8	Material #11	Material #12	Material #13	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	-	-

Table 5.3

Compound			Material #14	Material #15	Material #16	Material #17	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	-	-

Table 5.4

Compound			Material #18	Material #19	Material #20	Material #21+22	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.	0.0138	0.0739	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	-	-

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

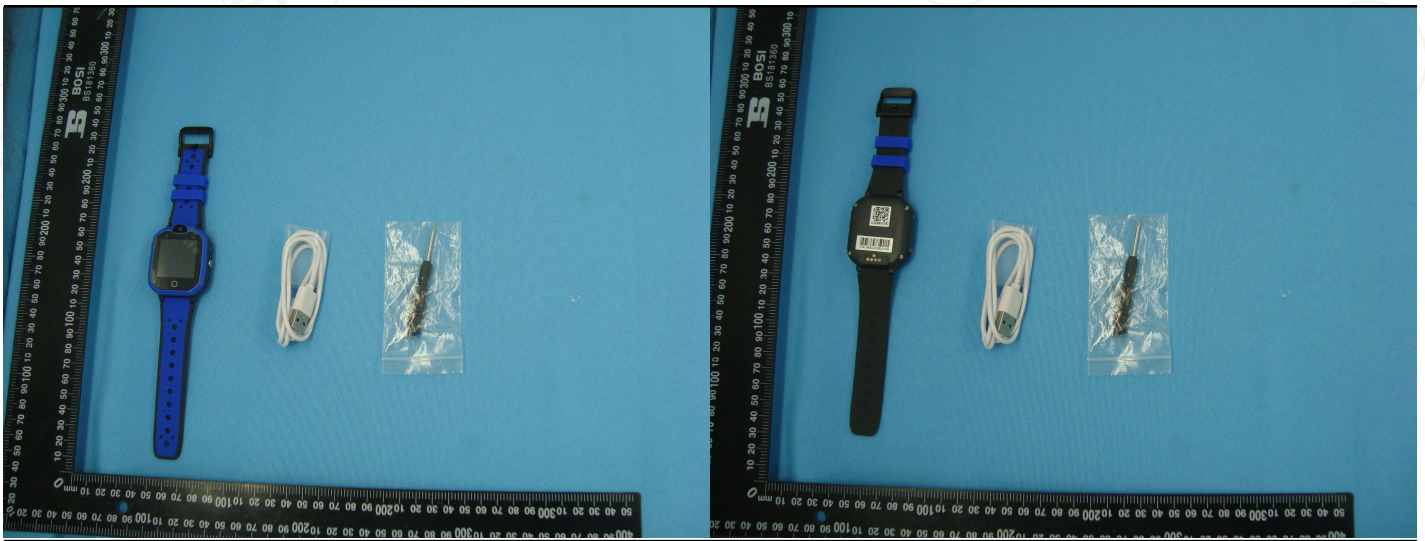


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Photo(s)



Product Photo

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