

Applicant Shenzhen Wins Novelty Co.,Ltd
Address 2F, NO.30 Building, Chentian Industrial Area, Xixiang Street, Bao an district, Shenzhen, China
Manufacturer Shenzhen Wins Novelty Co.,Ltd
Address 2F, NO.30 Building, Chentian Industrial Area, Xixiang Street, Bao an district, Shenzhen, China

The following sample(s) was /were submitted and identified on behalf of the clients as :

Sample Name: Head Up Display

Model Name: G4

Trade Name: N/A

Sample Received Date: May 16, 2022

Testing Period: May 16, 2022-May 23, 2022

Report Date: May 24, 2022

Test Requested: Selected test (s) in the selected parts as requested by client with the RoHS 2.0 Directive (EU) 2015/863 and (EU)2017/2102 amending Annex II to Directive 2011/65/EU on the restriction of hazardous substances.

Test Method Please refer to next page(s).

Test Result Please refer to next page(s).

Test conclusion: Based upon the performed tests by submitted samples, the test results comply with the limits of the RoHS 2.0 Directive (EU) 2015/863 and (EU)2017/2102 amending Annex II to Directive 2011/65/EU.

Signed for and on behalf of

Vivian Jiang

Technical Director

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1. Pb, Cd, Cr(VI), Hg, PBBs&PBDEs

Test Method:

A. Disassembly, disjointment and mechanical sample preparation

—Ref. to IEC 62321-2:2013, Disassembly, disjointment and mechanical sample preparation.

B. With reference to IEC 62321-1:2013, tests were performed for the samples indicated by the photos in this report.

(1) Screening – Lead, mercury, cadmium, total chromium and total bromine

—Ref. to IEC 62321-3-1:2013, Screening for Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry.

(2) Wet chemical test method

Test Item(s)	Test Method	Test Equipment	Unit	MDL	Limit
Pb	IEC62321-5:2013	ICP-OES	mg/kg	2	1000
Cd	IEC62321-5:2013	ICP-OES	mg/kg	2	100
Hg	IEC 62321-4:2013 /AMD1:2017	ICP-OES	mg/kg	2	1000
Cr(VI) (Metal)	IEC62321-7-1:2015	UV-Vis	μg/cm ²	0.1	0.13
Cr(VI) (Nonmetal)	IEC62321-7-2:2017	UV-Vis	mg/kg	8	1000
PBBs	IEC62321-6:2015	GC-MS	mg/kg	5	100
PBDEs	IEC62321-6:2015	GC-MS	mg/kg	5	1000

Test result(s):

No.	Sample Description	Results of XRF					Chemical confirmation results (mg/kg)	Conclusion
		Pb	Cd	Hg	Cr	Br		
1	IC	BL	BL	BL	BL	BL	---	PASS
2	PCB	BL	BL	BL	BL	BL	---	PASS
3	White plastic	BL	BL	BL	BL	BL	---	PASS
4	The lamp bead	BL	BL	BL	BL	BL	---	PASS
5	Red gasket	BL	BL	BL	BL	BL	---	PASS
6	Black plastic	BL	BL	BL	BL	BL	---	PASS
7	Aluminum substrate	BL	BL	BL	BL	BL	---	PASS
8	Digital stickers	BL	BL	BL	BL	BL	---	PASS
9	External GPS antenna	BL	BL	BL	BL	BL	---	PASS
10	Silver metal shell	BL	BL	BL	BL	---	---	PASS

Remark:

- 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(VI).
- The XRF screening test for RoHS elements-The reading may be different to the actual content in the sample be of non-uniformity composition.
- Results are obtained by EDXRF for primary screening, and further chemical testing by ICP-OES (for Pb, Cd, Hg), UV-VIS for Cr(VI) and GC/MSD (for PBBs/PBDEs) is recommended to be performed if the concentration exceeds the below warning value according to IEC 62321-3-1:2013.

Attached table 1, XRF screening limits in mg/kg for regulated elements in various matrices:

Element	Polymer Material	Metallic Material	Composite Material
Pb	$BL \leq 700-3 \sigma \leq X < 1300+3 \sigma \leq OL$	$BL \leq 700-3 \sigma \leq X < 1300+3 \sigma \leq OL$	$BL \leq 500-3 \sigma \leq X < 1500+3 \sigma \leq OL$
Cd	$BL \leq 70-3 \sigma \leq X < 130+3 \sigma \leq OL$	$BL \leq 70-3 \sigma \leq X < 130+3 \sigma \leq OL$	$LOD < X < 150+3 \sigma \leq OL$
Hg	$BL \leq 700-3 \sigma \leq X < 1300+3 \sigma \leq OL$	$BL \leq 700-3 \sigma \leq X < 1300+3 \sigma \leq OL$	$BL \leq 500-3 \sigma \leq X < 1500+3 \sigma \leq OL$
Cr	$BL \leq 700-3 \sigma < X$	$BL \leq 700-3 \sigma < X$	$BL \leq 500-3 \sigma < X$
Br	$BL \leq 300-3 \sigma < X$	--	$BL \leq 250-3 \sigma < X$

XRF detection limits in mg/kg for regulated elements in various material

Element	Polymer Material	Metallic Material	Composite Material
Pb	10	50	50
Cd	10	50	50
Hg	10	50	50
Cr	10	50	50
Br	10	50	50

Note:

- BL = Under the XRF screening limit
- OL = Future chemical test will be conducted while result is above the screening limit
- X = inconclusive, the region where need further chemical testing by ICP-OES (for Pb, Cd, Hg), UV-VIS (for Cr(VI)) and GC/MSD (for PBBs, PBDEs).
- 3 σ =The reproducibility of analytical instruments
- LOD=Detection limit
- “---” = Not Applicable
- mg/kg=0.0001%
- N.D.=Not Detected(<MDL)
- MDL = Method Detection Limit
- Negative = Absence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is less than 0.02 mg/kg with 50cm² sample surface area used.
- *=According to 2011/65/EU Annex, point 6-Lead as an alloying element is steel containing up to 0.35% lead by weight, aluminum containing up to 0.4% lead by weight and as a copper alloy, containing up to 4% lead by weight can be exempted.

2. Phthalates—DBP, BBP, DEHP & DIBP

Test Item(s)	Test Method	Test Equipment	Unit	MDL	Limit
Dibutyl Phthalate(DBP)	IEC62321-8:2017	GC-MS	mg/kg	30	1000
Benzylbutyl Phthalate (BBP)	IEC62321-8:2017	GC-MS	mg/kg	30	1000
Di-(2-ethylhexyl) Phthalate(DEHP)	IEC62321-8:2017	GC-MS	mg/kg	30	1000
Diisobutyl phthalate (DIBP)	IEC62321-8:2017	GC-MS	mg/kg	30	1000

Test result(s):

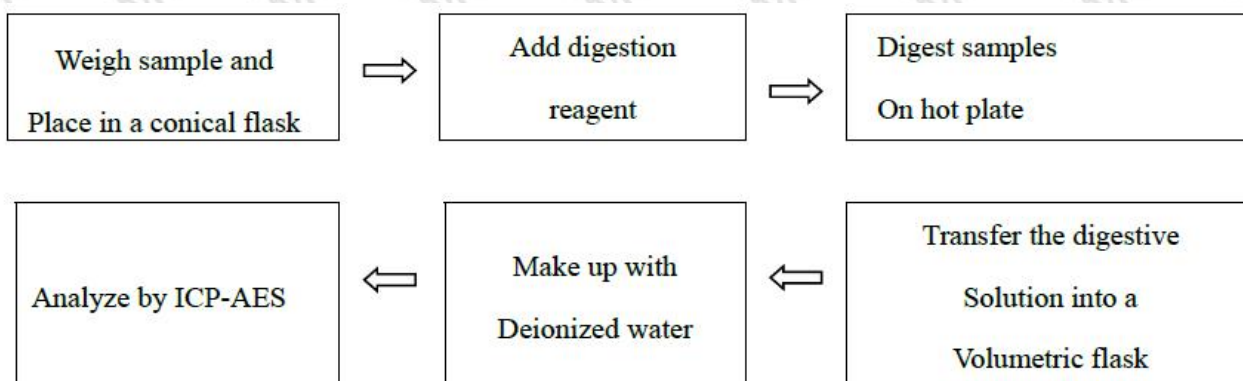
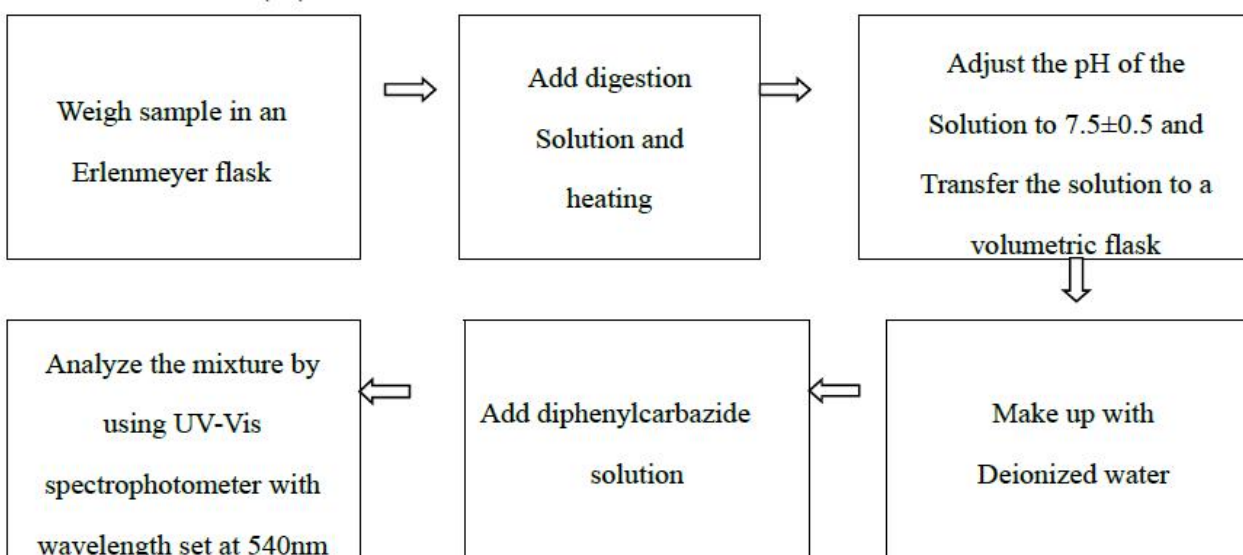
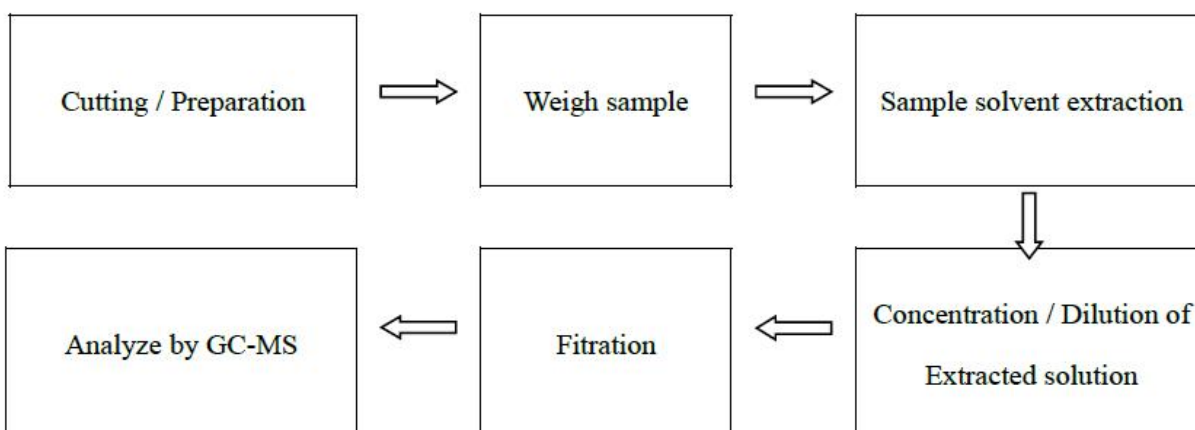
No.	Test item (mg/kg)				Conclusion
	DBP	BBP	DEHP	DIBP	
1	N.D.	N.D.	N.D.	N.D.	PASS
2	N.D.	N.D.	N.D.	N.D.	PASS
3	N.D.	N.D.	N.D.	N.D.	PASS
4	N.D.	N.D.	N.D.	N.D.	PASS
5	N.D.	N.D.	N.D.	N.D.	PASS
6	N.D.	N.D.	N.D.	N.D.	PASS
7	N.D.	N.D.	N.D.	N.D.	PASS
8	N.D.	N.D.	N.D.	N.D.	PASS
9	N.D.	N.D.	N.D.	N.D.	PASS

Note:

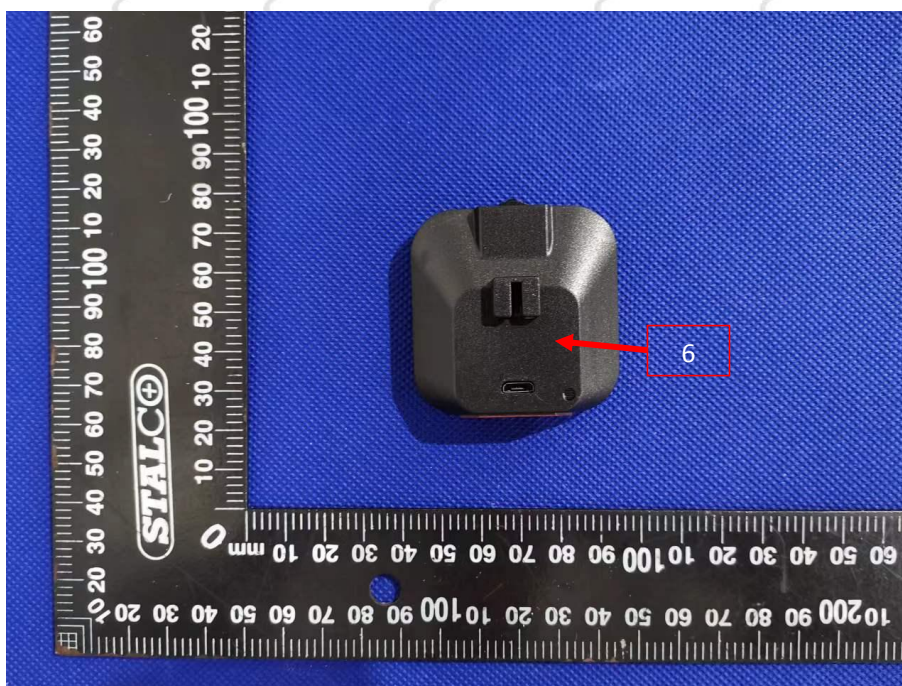
- mg/kg=0.0001%

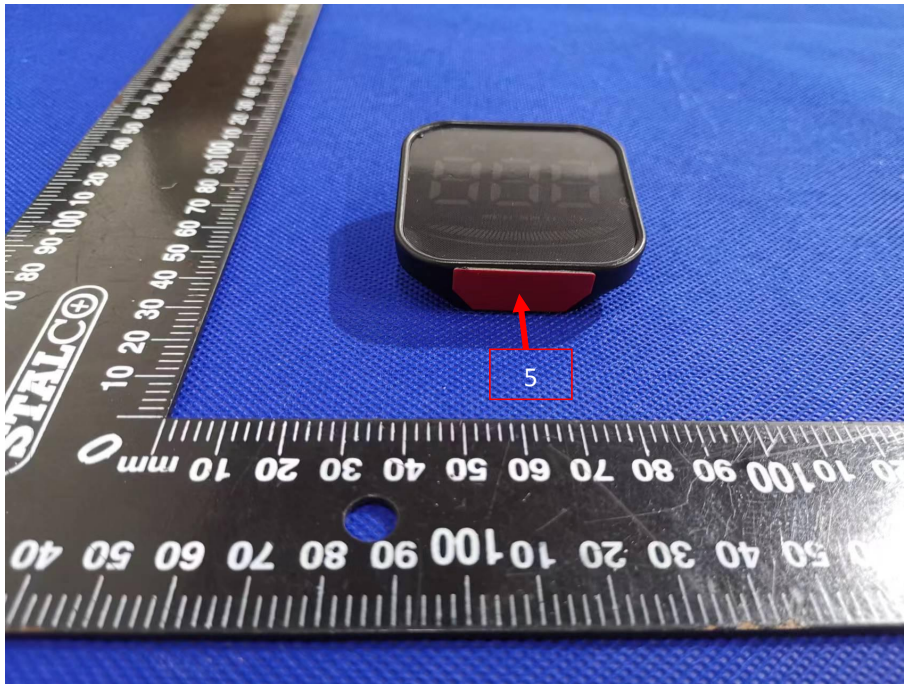
-ND=Not Detected(<MDL)

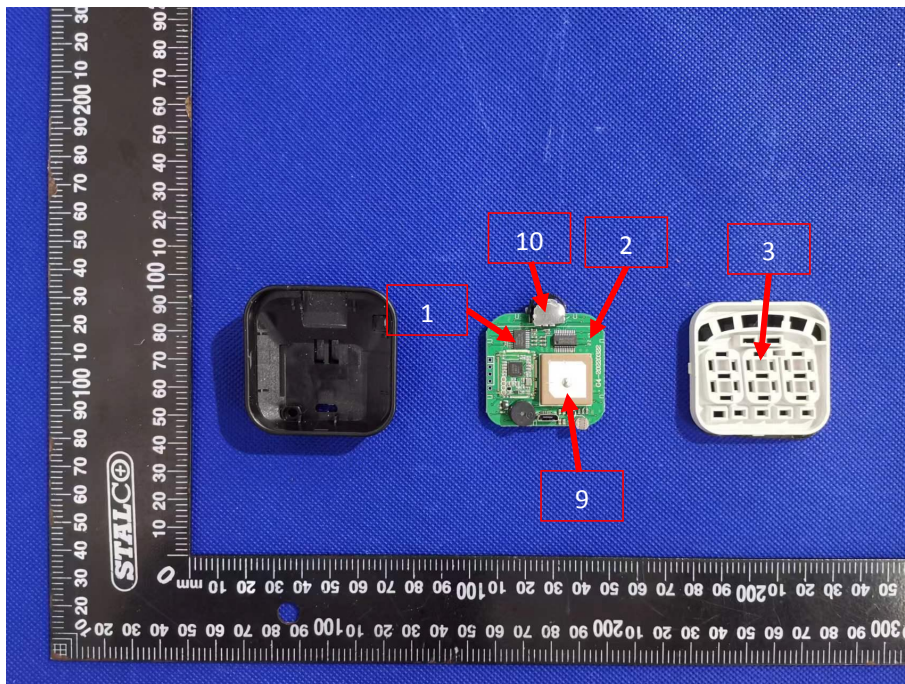
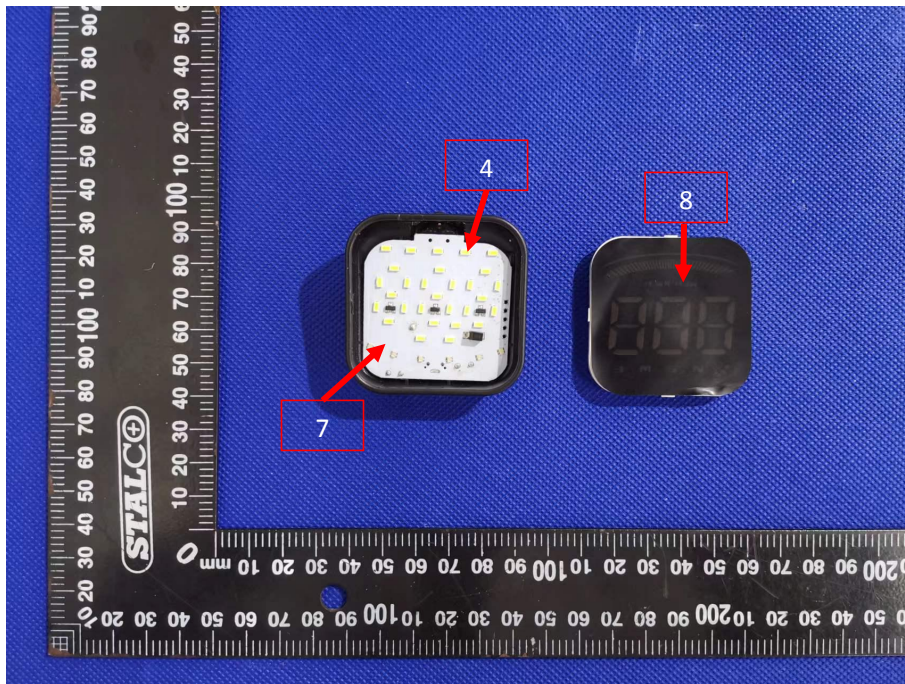
-*1 = The samples were resubmitted on

Test Process:
1. Test for Cd/Pb /Hg

2. Test for Chromium (VI) Content

3. Test for PBBs/PBDES/DIBP/DBP/BBP/DEHP Content


Sample photo:







END OF REPORT