Test Report

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Applicant:	Shenzhen HiLED Technology Co., Ltd.
Address:	No.337 Changfeng Road, Changzhen Community, Yutang Street, Guangming District, Shenzhen 518000.
Manufacture:	Shenzhen HiLED Technology Co., Ltd.
Address:	No.337 Changfeng Road, Changzhen Community, Yutang Street, Guangming District, Shenzhen 518000.
Trade Mark:	SZHILED

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

Sample Name:	LED Display
Main Model:	P3.91
Series Model:	P0.5,P0.6,P0.8,P0.9,P1.0,P1.2,P1.25,P1.26,P1.49,P1.454,P1.5,P1.56,P1.575,P1.579, P1.6,P1.62,P1.667,P1.8,P1.875,P1.89,P1.9,P1.935,P2,P2.5,P2.54,P2.571,P2.6,P2.9, P2.97,P3,P3.076,P3.2,P3.75,P3.91,P4,P4.572,P4.81,P5,P5.6,P5.7,P5,95,P6,P6.25, P6.4,P6.6,P6.667,P7,P7.62,P7.81,P8,P8.25,P8.333,P8.75,P8.9,P10,P10.417,P10.66, P12,P12.5,P12.8,P14,P15.6,P16,P16.25,P16.6,P18,P18.75,P20,P22,P22.4,P25, P31.25,P33.3
Sample Received Date:	Jul.01,2022
Testing Period:	Jul.01,2022 To Jul.07,2022
Test Requested:	1. As specified by client ,to screen Lead(Pb),Cadmium(Cd),Mercury(Hg), Chromium(Cr)and Bromine(Br)in the submitted sample(s)by XRF. 2. As specified by client ,when screening results exceed the XRF screening limit in IEC62321:2013 Edition 1.0,further use of wet chemical methods are required to test Lead(Pb),Cadmium(Cd),Mercury(Hg),Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs),Polybrominated Diphenyl Ethers(PBDEs), and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP) ,Butyl benzyl phthalate (BBP), Dibutylphthalate (DBP) ,and Diisobutyl phthalate (DIBP) in the submitted sample(s).
Test Method:	Please refer to next page(s).
Test Result:	Please refer to next page(s).
Test Conclusion:	The test results comply with the limits of RoHS 2.0 Directive (EU) 2015/863 and (EU)2017/2102 amending Annex II to Directive 2011/65/EU.

Note:The device described above is tested by us with the listed standards and found it and model ROHS have the same material quality and manufacturing engineering the model name.“LED Display ” has passed ROHS tests (Report No. TST20220770059-3RR the detailed content).
So, no tests are necessary. The test results are contained in this test report.

Signed for and on behalf of

Andy

Dongguan True Safety Testing Co., Ltd. Approve

Andy Zheng
Technical Director

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

Test Method:

A. Disassembly, disjointment and mechanical sample preparation

—Ref. to IEC 62321-2:2021, 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-AES	mg/kg	2	1000
Cd	IEC62321-5:2013	ICP-AES	mg/kg	2	100
Hg	IEC 62321-4:2013 /AMD1:2017	ICP-AES	mg/kg	2	1000
Cr(VI) (Metal)	IEC62321-7-1:2015	UV-Vis	μg/cm2	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	1000
PBDEs	IEC62321-6:2015	GC-MS	mg/kg	5	1000

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Test result(s):

No.	Sample Description	Results of XRF					Chemical confirmation results (mg/kg)	Conclusion
		Pb	Cd	Hg	Cr	Br		
1	black metal case	BL	BL	BL	BL	---	---	Pass
2	black metal bezel	BL	BL	BL	BL	---	---	Pass
3	black metal handle	BL	BL	BL	BL	---	---	Pass
4	black paint	BL	BL	BL	BL	BL	---	Pass
5	red plastic	BL	BL	BL	BL	BL	---	Pass
6	blue plastic	BL	BL	BL	BL	BL	---	Pass
7	white plastic connector	BL	BL	BL	BL	BL	---	Pass
8	yellow wire	BL	BL	BL	BL	BL	---	Pass
9	red wire	BL	BL	BL	BL	BL	---	Pass
10	green wire	BL	BL	BL	BL	BL	---	Pass
11	black wire	BL	BL	BL	BL	BL	---	Pass
12	label	BL	BL	BL	BL	X	PBBs:N.D. PBDEs:N.D.	Pass
13	PCB	BL	BL	BL	BL	BL	---	Pass
14	LED	BL	BL	BL	BL	BL	---	Pass
15	IC	BL	BL	BL	BL	BL	---	Pass
16	resistance	BL	BL	BL	BL	BL	---	Pass
17	capacitance	BL	BL	BL	BL	BL	---	Pass
18	inductance	BL	BL	BL	BL	BL	---	Pass
19	triode	BL	BL	BL	BL	BL	---	Pass

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Test Report

No.	Sample Description	Results of XRF					Chemical confirmation results (mg/kg)	Conclusion
		Pb	Cd	Hg	Cr	Br		
20	diode	BL	BL	BL	BL	BL	---	Pass
21	transformer	BL	BL	BL	BL	BL	---	Pass
22	sensor	BL	BL	BL	BL	BL	---	Pass
23	crystal oscillator	BL	BL	BL	BL	BL	---	Pass
24	display	BL	BL	BL	BL	BL	---	Pass
25	PIN	BL	BL	BL	BL	---	---	Pass
26	Core	BL	BL	BL	BL	---	---	Pass
27	screw	BL	BL	BL	X	---	Cr^{6+}:N.D.	Pass
28	nut	BL	BL	BL	X	---	Cr^{6+}:N.D.	Pass
29	Metal plating	BL	BL	BL	BL	---	---	Pass

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Remark:

a. 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).

b. The XRF screening test for RoHS elements-The reading may be different to the actual content in the sample be of non-uniformity composition.

c. Results are obtained by EDXRF for primary screening, and further chemical testing by ICP-AES (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 warming 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≤700-3σ≤X＜1300+3σ≤OL	BL≤700-3σ≤X＜1300+3σ≤OL	BL≤500-3σ≤X＜1500+3σ≤OL
Cd	BL≤70-3σ≤X＜130+3σ≤OL	BL≤70-3σ≤X＜130+3σ≤OL	LOD＜X＜150+3σ≤OL
Hg	BL≤700-3σ≤X＜1300+3σ≤OL	BL≤700-3σ≤X＜1300+3σ≤OL	BL≤500-3σ≤X＜1500+3σ≤OL
Cr	BL≤700-3σ＜X	BL≤700-3σ＜X	BL≤500-3σ＜X
Br	BL≤300-3σ＜X	--	BL≤250-3σ＜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 = Furture chemical test will be conducted while result is above the screening limit

-X = inconclusive, the region where need further chemical testing by ICP-AES (for Pb, Cd, Hg), UV-VIS (for Cr(VI)) and GC/MSD (for PBBs, PBDEs).

-3σ=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,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

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Test result(s):

Part No.	Test item (mg/kg)				Conclusion
	DBP	BBP	DEHP	DIBP	
4	N.D.	N.D.	N.D.	N.D.	Pass
5+6+7	N.D.	N.D.	N.D.	N.D.	Pass
8+9+10	N.D.	N.D.	N.D.	N.D.	Pass
11	N.D.	N.D.	N.D.	N.D.	Pass
12	N.D.	N.D.	N.D.	N.D.	Pass
13	N.D.	N.D.	N.D.	N.D.	Pass
14	N.D.	N.D.	N.D.	N.D.	Pass
15	N.D.	N.D.	N.D.	N.D.	Pass
16+17+18	N.D.	N.D.	N.D.	N.D.	Pass
19+20	N.D.	N.D.	N.D.	N.D.	Pass
21+22	N.D.	N.D.	N.D.	N.D.	Pass
23	N.D.	N.D.	N.D.	N.D.	Pass
24	N.D.	N.D.	N.D.	N.D.	Pass

Note: - mg/kg=0.0001%

-ND=Not Detected(<MDL)

-*1 = The samples were resubmitted on

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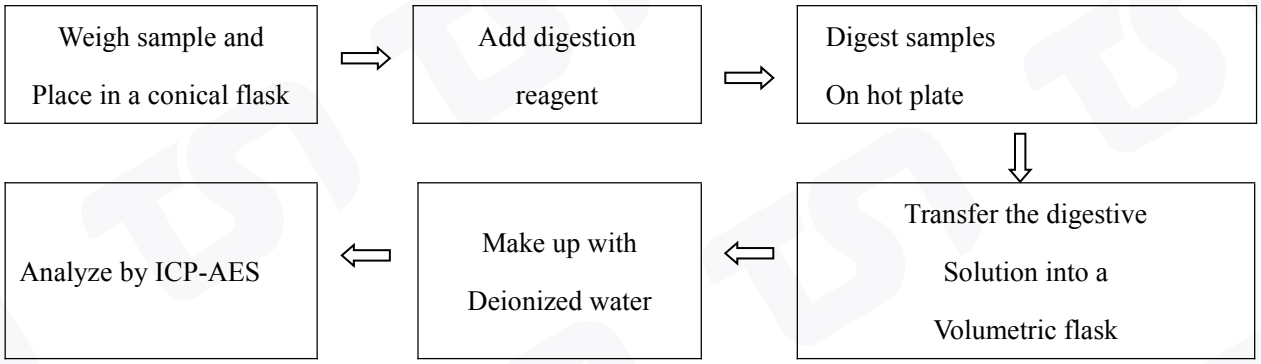
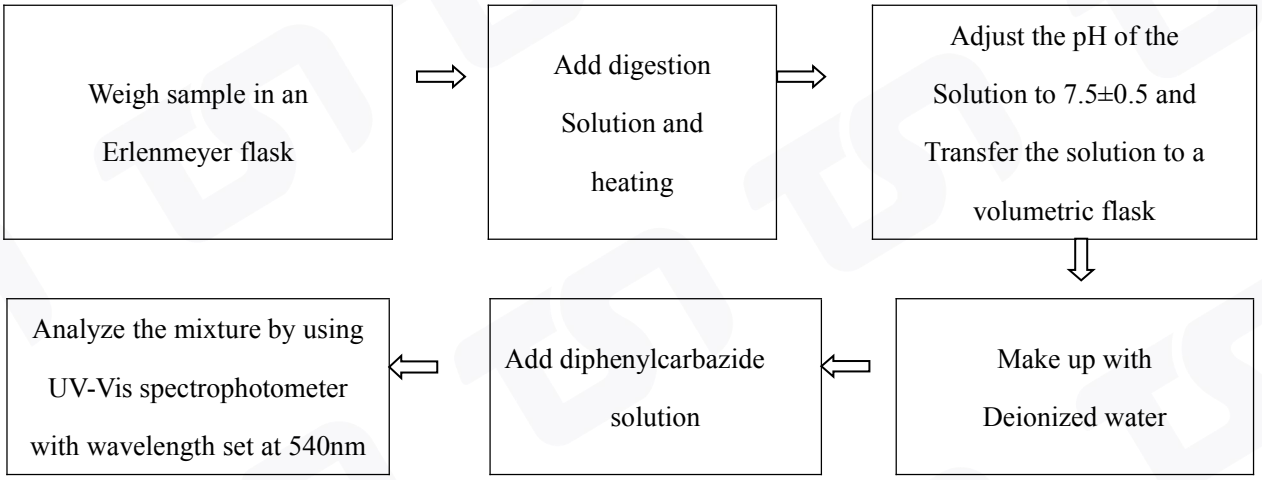
Chemical Test Process:

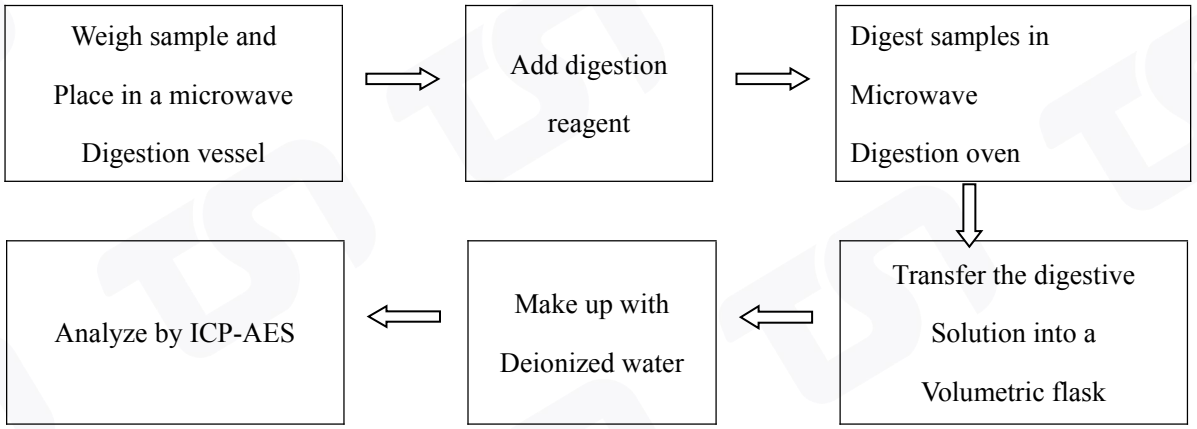
1.Test for Pb/ CdContent



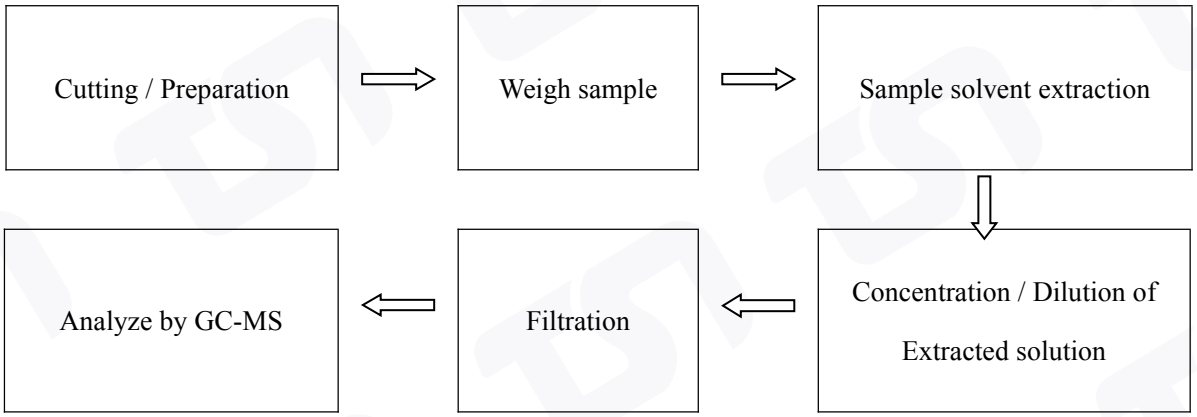
2.Test for Chromium(VI)Content



3.Test for Hg Contents



4.Test for PBBs/PBDES/DIBP/DBP/BBP/DEHP



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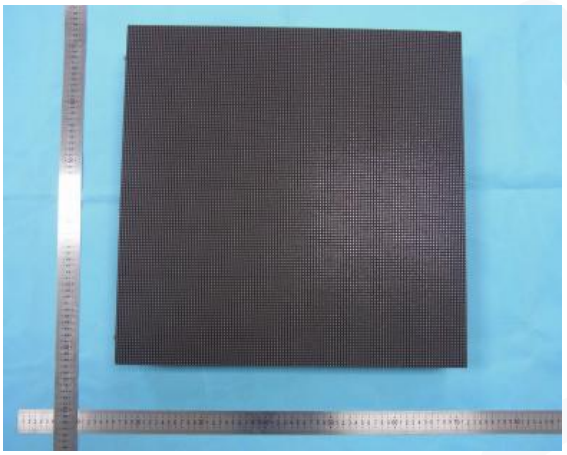
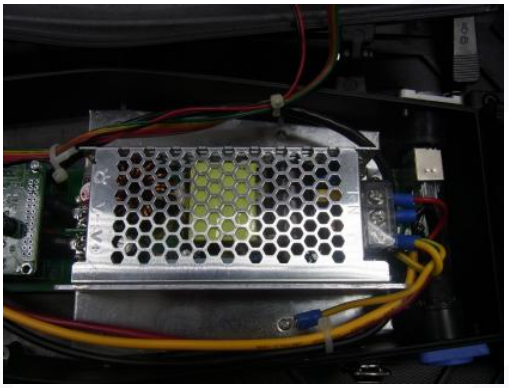
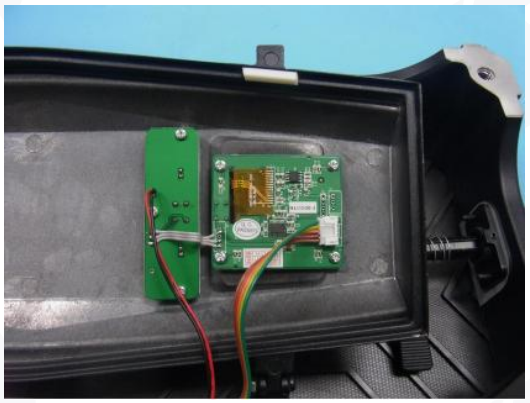
Sample photo:





*** End of Report ***

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