

TEST REPORT

Client company : Shenzhen Huadian Lighting Co., Ltd.
Client address : 2/F, Building A, Jinkaijin Industrial Park Shilongzai Industrial Area Shuitian
Shiyan Town, Bao'an District 518108 Shenzhen, Guangdong P.R. China
Manufacturer : Shenzhen Huadian Lighting Co., Ltd.
Address : 2/F, Building A, Jinkaijin Industrial Park Shilongzai Industrial Area Shuitian
Shiyan Town, Bao'an District 518108 Shenzhen, Guangdong P.R. China

Report on the submitted samples said to be:

Sample Name : LED Street Light
Trade Mark : N/A
Style/ Item No. : HD-SL03-30W, HD-SL03-40W, HD-SL03-50W, HD-SL03-60W, HD-SL03-70W,
HD-SL03-75W, HD-SL03-80W, HD-SL03-90W, HD-SL03-100W, HD-SL03-120W,
HD-SL03-130W, HD-SL03-140W, HD-SL03-150W, HD-SL03-170W,
HD-SL03-180W, HD-SL03-190W,HD-SL03-200W
Sample Receiving Date : April 29, 2025
Testing Period : April 29, 2025 ~ May 9, 2025
Results : Please refer to next page(s).

Summary of Test Results:

TEST REQUEST

CONCLUSION

A RoHS Directive (EU) 2017/2102 amending Annex II to Directive 2011/65/EU.

POSITIVE

Signed for and on behalf of AOCE

Written By:

Sunny Su

Sunny Su
File administrators

Approved by:

Alice Zhou

Alice Zhou
Manager

Results:

A. EU RoHS Directive 2011/65/EU and its amendment directives on XRF

Test method: With reference to IEC 62321-3-1:2013, Screening by X-ray Fluorescence Spectroscopy (XRF)

Seq. No.	Tested Part(s)	Results				
		Pb	Cd	Hg	Cr	Br
1	Gray metal enclosure	BL	BL	BL	BL	BL
2	Silver metal enclosure	BL	BL	BL	BL	BL
3	Lamp shade	BL	BL	BL	BL	BL
4	Lamp bead	BL	BL	BL	BL	BL
5	Silver metal screw	BL	BL	BL	BL	BL
6	Red wire	BL	BL	BL	BL	BL
7	Blue wire	BL	BL	BL	BL	BL
8	Yellow wire	BL	BL	BL	BL	BL
9	Black wire	BL	BL	BL	BL	BL
10	Connector	BL	BL	BL	BL	BL
11	Chips of resistance	BL	BL	BL	BL	BL
12	Chips of capacitance	BL	BL	BL	BL	BL
13	PCB	BL	BL	BL	BL	BL
14	Solder on PCB	BL	BL	BL	BL	BL

Note:

-- = Not Conducted
 * = Screening by XRF and detected by chemical method. The test results of chemical method please refer to next pages.

- i 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

- ii The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.
- iii The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2011/65/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 diphenylethers (PBDEs)	1000
Bis(2-ethylhexyl) phthalate(DEHP)	1000
Butyl benzyl phthalate(BBP)	1000
Dibutyl phthalate(DBP)	1000
Diisobutyl phthalate(DIBP)	1000

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.

B. The Test Results of Chemical Method:

Test method:

Lead & Cadmium Content:

With reference to IEC 62321-5:2013, by acid digestion and analysis was performed by inductively coupled plasma atomic emission spectrometer (ICP-AES)

Mercury Content:

With reference to IEC 62321-4:2013, by acid digestion and analysis was performed by inductively coupled plasma atomic emission spectrometer (ICP-AES)

Hexavalent Chromium Content:

With reference to IEC 62321-7-1:2013, by alkaline digestion and analysis was performed by UV-visible spectrophotometer (UV-Vis)

PBBs & PBDEs Content:

With reference to IEC 62321-6:2015, by solvent extraction and analysis was performed by gas chromatographic-mass spectrometer (GC-MS)

Phthalates Content:

With reference to IEC 62321-8:2017, by gas chromatography-mass spectrometry (GC-MS)

1) The test results of Lead (Pb)

Item	Unit	MDL	Results		Limit
			(1)	(2)	
Lead Content (Pb)	mg/kg	2	38	21	1000 mg/kg
Conclusion	/	/	Pass	Pass	/

2) The test results of PBBs & PBDEs

Item	Unit	MDL	Results		Limit
			1	2	
Polybrominated Biphenyls (PBBs)					
Monobromobiphenyl	mg/kg	5	N.D.	N.D.	
Dibromobiphenyl	mg/kg	5	N.D.	N.D.	
Tribromobiphenyl	mg/kg	5	N.D.	N.D.	
Tetrabromobiphenyl	mg/kg	5	N.D.	N.D.	
Pentabromobiphenyl	mg/kg	5	N.D.	N.D.	
Hexabromobiphenyl	mg/kg	5	N.D.	N.D.	
Heptabromobiphenyl	mg/kg	5	N.D.	N.D.	
Octabromobiphenyl	mg/kg	5	N.D.	N.D.	
Nonabromodiphenyl	mg/kg	5	N.D.	N.D.	
Decabromodiphenyl	mg/kg	5	N.D.	N.D.	
Total content	mg/kg	/	N.D.	N.D.	1000 mg/kg
Polybrominated Diphenylethers (PBDEs)(Mon-Deca)					
Monobromodiphenyl ether	mg/kg	5	N.D.	N.D.	
Dibromodiphenyl ether	mg/kg	5	N.D.	N.D.	
Tribromodiphenyl ether	mg/kg	5	N.D.	N.D.	
Tetrabromodiphenyl ether	mg/kg	5	N.D.	N.D.	
Pentabromodiphenyl ether	mg/kg	5	N.D.	N.D.	
Hexabromodiphenyl ether	mg/kg	5	N.D.	N.D.	
Heptabromodiphenyl ether	mg/kg	5	N.D.	N.D.	
Octabromodiphenyl ether	mg/kg	5	N.D.	N.D.	
Nonabromodiphenyl ether	mg/kg	5	N.D.	N.D.	
Decabromodiphenyl ether	mg/kg	5	N.D.	N.D.	
Total content	mg/kg	/	N.D.	N.D.	1000 mg/kg

Item	Unit	MDL	Results					Limit
			(1)	(2)	(3)	(4)	(5)	
Dibutyl Phthalate(DBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000 mg/kg
Benzylbutyl Phthalate(BBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000 mg/kg
Bis(2-ethylhexyl) Phthalate(DEHP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000 mg/kg
Diisobutyl phthalate(DIBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000 mg/kg

Item	Unit	MDL	Results					Limit
			(6)	(7)	(8)	(9)	(10)	
Dibutyl Phthalate(DBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000 mg/kg
Benzylbutyl Phthalate(BBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000 mg/kg
Bis(2-ethylhexyl) Phthalate(DEHP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000 mg/kg
Diisobutyl phthalate(DIBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	N.D.	1000 mg/kg

Item	Unit	MDL	Results					Limit
			(11)	(12)	(13)	(14)	--	
Dibutyl Phthalate(DBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	--	1000 mg/kg
Benzylbutyl Phthalate(BBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	--	1000 mg/kg
Bis(2-ethylhexyl) Phthalate(DEHP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	--	1000 mg/kg
Diisobutyl phthalate(DIBP)	mg/kg	50	N.D.	N.D.	N.D.	N.D.	--	1000 mg/kg

Note:

- N.D. = Not Detected or less than MDL
- mg/kg = ppm
- MDL = Method Detection Limit
- Photo appendix is included.

Appendix

Photograph of Sample



Fig.1



Fig.2



Fig.3

AOCE authenticate the photo on original report only

***** End of Report *****