

XRF Screening and Chemical Confirmation Test Report

Number: 180600872SHA-001

Applicant: Shanghai Universe Electrical Appliance Corp.
No.1608 Chuhua Road (N) Zhelin Fengxian 201417 Shanghai
China.

Date: Jul 23, 2018

Sample Description:

One (1) piece of submitted sample said to be

Item Name	: Chain Light
Testing Model	: AA-BBB-CCDDDEEFF-GG-HH-II-K
Reference Model	: UN(SH)- A (M*N) L+C/D/E/F/R/X/Y/IPyz
	UN(SH)- A (M*N) L+C/D/E/F/R/X/Y
	UN(SH)- A (M*N) L+C/D/E/F/R/mnV/X/Y/IPyz
	UN(SH)- AL+C/D//E/F/G/R /X/Y/mnV /IPzz



Tests Conducted:

As Requested By The Applicant, For Details Refer To Attached Page(S)

Remark:

The tested samples were confirmed by client and reference models were based on the self-declaration supplied by clients. **Intertek** takes no responsibility for any issues of product consistency caused by inaccurate and/or invalid information submitted by the client.

Conclusion:

<u>Tested sample</u>	<u>Standard</u>	<u>Result</u>
Tested component of Submitted sample	Screening by XRF spectroscopy and chemical confirmation test for RoHS Directive 2011/65/EU.	Pass

To be continued

Authorized By:
For Intertek Testing Services Ltd. Shanghai

Jonny Jing
Operation Manager



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Tests Conducted

Determination of levels of regulated substances in electrotechnical products, elements of Cadmium (Cd), Lead (Pb), Mercury (Hg), Chromium (Cr) and Bromine (Br) contents were measured by XRF Spectroscopy and chemical confirmation test for RoHS restricted substances.

(A) Results:

Part No.	Tested Components	Refer information	Restricted Substance	XRF Result	Chemical Confirmation Result	Conclusion on RoHS
1	CAP (BLACK PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
2	AXIS					
2-1	WASHER (BLUE PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
2-2	CAP (BLACK PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
2-3	SHEATH (WHITE PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	X	PBB=ND PBDE=ND	

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2-4	PIN (COPPER METAL)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	NA	/	
3	LEAD					
3-1	LEAD SKIN (BLACK PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
3-2	WIRE (COPPER METAL)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	NA	/	
4	LED					
4-1	TAPE (BLACK PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
4-2	GLUE (TRANSPARENT NONMETAL)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	

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Part No.	Tested Components	Refer information	Restricted Substance	XRF Result	Chemical Confirmation Result	Conclusion on RoHS
4-3	LEAD SKIN (WHITE PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	X	PBB=ND PBDE=ND	
4-4	LED	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
5	PLUG					
5-1	SHELL (BLACK PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
5-2	SUPPORT (BLACK PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	X	PBB=ND PBDE=ND	
5-3	SUPPORT (WHITE PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
5-4	PIN (SILVER METAL)	/	Cd	P	/	PASS
			Pb	X	21320ppm#1	
			Hg	P	/	
			Cr	P	/	
			Br	NA	/	

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6	COVER (BLACK PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	X	PBB=ND PBDE=ND	
7	PCB					
7-1	FUSE (SILVER METAL)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	NA	/	
7-2	CAPACITOR	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
7-3	GLUE (TRANSPARENT NONMETAL)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
7-4	IC	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	X	PBB=ND PBDE=ND	
7-5	SOLDER (SILVER METAL)	/	Cd	P	/	PASS
			Pb	X	85840ppm#2	
			Hg	P	/	
			Cr	P	/	
			Br	NA	/	

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7-6	PCB	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	X	PBB=ND PBDE=ND	
8	CAP (BLACK PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
9	CAP (BLACK PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
10	POWER CORD					
10-1	SHEATH (BLACK PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
10-2	LEAD SKIN (BROWN PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
10-3	LEAD SKIN (BLUE PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	

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10-4	WIRE (COPPER METAL)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	NA	/	
11	PLUG					
11-1	SUPPORT (BLACK PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	P	/	
11-2	SUPPORT (WHITE PLASTIC)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	X	PBB=ND PBDE=ND	
11-3	PIN (COPPER METAL)	/	Cd	P	/	PASS
			Pb	P	/	
			Hg	P	/	
			Cr	P	/	
			Br	NA	/	

Remark: P = Pass (Below the lower screening limit of table (B))

X = Inconclusive result (Further chemical test was suggested (see table (B).))

NA = Not applicable

ND = Not detected

ppm = Parts per million = mg/kg

µg/cm² = Microgram per square centimetre

Negative = A negative test result indicated the absorbance value of testing sample solution for Cr(VI) testing is less than the absorbance value of the 0.10µg/cm² equivalent comparison standard solution, the Cr(VI) concentration is below the limit of quantification, then the sample is considered to be negative for Cr(VI).

The related expanded uncertainty (U₉₅) of the Lead (Pb) / Cadmium (Cd) test is 10%.

(#1) = As claimed by the declaration submitted by the client, the Lead content of the components is coming from the copper alloy; the limit for Lead is 40,000ppm respectively.

(#2) = As claimed by the declaration submitted by the client, the Lead content of the component is coming from the constituent of high melting temperature type solders (i.e. Lead based alloys containing 85% by weight or more lead) only. According to EU RoHS Directive, Lead in high melting temperature type solders of this component can be exempted. Corresponding confirm test didn't conduct in solders for client couldn't submit sufficient sample.

To be continued

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(B) XRF screening limits in mg/kg for regulated elements in various matrices.

Element	Polymer materials	Metallic materials	Composite materials
Cd	$P \leq 70 < X < 130 \leq F$	$P \leq 70 < X < 130 \leq F$	$P \leq 70 < X < 150 \leq F$
Pb	$P \leq 700 < X < 1300 \leq F$	$P \leq 700 < X < 1300 \leq F$	$P \leq 500 < X < 1500 \leq F$
Hg	$P \leq 700 < X < 1300 \leq F$	$P \leq 700 < X < 1300 \leq F$	$P \leq 500 < X < 1500 \leq F$
Cr	$P \leq 700 < X$	$P \leq 700 < F$	$P \leq 500 < X$
Br	$P \leq 300 < X$	Not applicable	$P \leq 250 < X$

(C) Estimated detection limits in mg/kg for regulated elements in various matrices.

Element	Polymer materials	Metallic materials	Composite materials
Cd	50	70	70
Pb	100	200	200
Hg	100	200	200
Cr	100	200	200
Br	200	Not applicable	200

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 results 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 is required to obtain quantitative data.

To be continued

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(D) Chemical confirmation test methods:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to : IEC 62321-5 Edition 1.0: 2013, by acid digestion until the tested sample was totally dissolved, and determined by ICP-OES.	2 mg/kg
Lead (Pb) content	With reference to: IEC 62321-5 Edition 1.0: 2013, by acid digestion until the tested sample was totally dissolved, and determined by ICP-OES.	2 mg/kg
Mercury (Hg) content	With reference to: IEC 62321-4 Edition 1.0: 2013, by acid digestion until the tested sample was totally dissolved, and determined by ICP-OES.	2 mg/kg
Chromium (VI) (Cr ⁶⁺) content (for non-metal)	With reference to IEC 62321-7-2 Edition 1.0: 2017, by organic solvent dissolution or swell the sample matrix, followed by alkaline digestion and determined by UV-VIS Spectrophotometer.	10mg/kg
Chromium (VI) (Cr ⁶⁺) content (for metal)	With reference to IEC 62321-7-1 Edition 1.0:2015, by boiling water extraction and determined by UV-VIS Spectrophotometer.	Positive(>0.13 µg/m ²)/ Negative(<0.10 µg/m ²) Inconclusive(0.10--0.13 µg/m ²)
Polybrominated biphenyls (PBBs)& polybrominated diphenyl ethers (PBDEs)	With reference to IEC 62321-6 Edition 1.0:2015, by solvent extraction and determined by GC/MS and further HPLC confirmation when necessary	5 mg/kg

(E) RoHS requirement

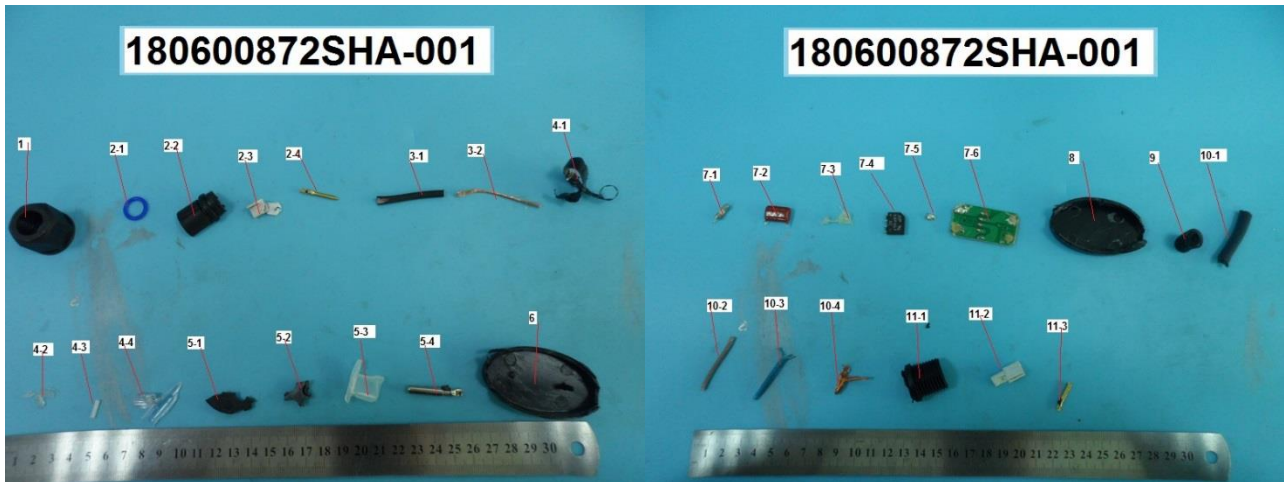
Restricted substances	Limits
Cadmium (Cd)	0.01% (100 ppm)
Lead (Pb)	0.1% (1000 ppm)
Mercury (Hg)	0.1% (1000 ppm)
Chromium (VI) (Cr ⁶⁺)	0.1% (1000 ppm)
Polybrominated biphenyls (PBBs)	0.1% (1000 ppm)
Polybrominated diphenyl ethers (PBDEs)	0.1% (1000 ppm)

The above limits were quoted from RoHS Directive 2011/65/EU.

Date sample received: Jun 12, 2018
 Testing period: Jun 12, 2018 to Jul 11, 2018

To be continued

Sample disassembling Photo(s)



End of this report

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