XRF Screening and Chemical Confirmation Test Report Number: ETA23120003C-001

Applicant: Hangzhou Longlux Electronic Technology Co., ltd Date: December 26,2023
The Western Science Park, Hangzhou City, China

Sample Description:

One (1) piece of submitted samples said to be

Item Name	:	Waterproof light
Brand Name/Trade Name		Longlux
Tested Model	:	LLX-TriProof-118B
Referenced Model	:	LLX-TriProof-218B; LLX-TriProof-136B; LLX-TriProof-236B; LLX-TriProof-158B; LLX-TriProof-258B



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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. **ETA** takes no responsibility for any issues of product consistency caused by inaccurate and/or invalid information submitted by the client.

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Conclusion:

Tested sample	Standard	Result
Tested component of Submitted sample	Screening by XRF spectroscopy and chemical confirmation test for RoHS Directive 2011/65/EU and amendment (EU)2015/863	Pass

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To be continued

Authorized By:

For Hangzhou ETA Testing Technology Co., Ltd

Sean Wan
Manager

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Tests Conducted

Cadmium (Cd), Lead (Pb), Mercury (Hg), Chromium (Cr) and Bromine (Br) content were measured with reference to IEC 62321-3-1 Edition 1.0 : 2013 by XRF spectroscopy and chemical confirmation test for RoHS restricted substances. And Phthalates content were determined by Gas Chromatographic-Mass Spectrometric (GC-MS).

(A) Results:

Part No.	Tested Components	Refer information	Restricted Substance	XRF Result	Screened Results (phthalates)	Chemical Confirmation Result	Conclusion on RoHS
1	WHITE PLASTIC	/	Cd	P	NA	/	PASS
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	
			Br	P		/	
			DEHP	NA	BL	/	
			BBP	NA	BL	/	
			DBP	NA	BL	/	
			DIBP	NA	BL	/	
2	WHITE METAL	/	Cd	P	NA	/	PASS
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	
			Br	NA		/	
			DEHP	NA	NA	/	
			BBP	NA	NA	/	
			DBP	NA	NA	/	
			DIBP	NA	NA	/	
3	WHITE CONNECTING TERMINAL	/	Cd	P	NA	/	PASS
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	
			Br	P		/	
			DEHP	NA	BL	/	
			BBP	NA	BL	/	
			DBP	NA	BL	/	
			DIBP	NA	BL	/	

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To be continued

Part No.	Tested Components	Refer information	Restricted Substance	XRF Result	Screened Results (phthalates)	Chemical Confirmation Result	Conclusion on RoHS
4	GOLD METAL	/	Cd	P	NA	/	PASS
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	
			Br	NA		/	
			DEHP	NA	NA	/	
			BBP	NA	NA	/	
			DBP	NA	NA	/	
			DIBP	NA	NA	/	
5	TRANSPARENT PLASTIC	/	Cd	P	NA	/	PASS
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	
			Br	P		/	
			DEHP	NA	BL	/	
			BBP	NA	BL	/	
			DBP	NA	BL	/	
			DIBP	NA	BL	/	
6	GREY CABLE GLAND	/	Cd	P	NA	/	PASS
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	
			Br	P		/	
			DEHP	NA	BL	/	
			BBP	NA	BL	/	
			DBP	NA	BL	/	
			DIBP	NA	BL	/	

To be continued

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Remark: P = Pass (Below the lower screening limit of table (B1))
X = Inconclusive result (Further chemical test was suggested (see table (B1).)
BL= Below the lower screening limit of table (B2) and pass
NA = Not applicable
NT = Not tested
ND = Not detected
ppm = Parts per million = mg/kg
/ = No content.

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(B)
(B1) XRF screening limits in mg/kg for regulated elements in various matrices.

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

(B2) Preliminary screening test will used for phthalates, if the results exceed the warning area in the following table, further chemical methods will conduct to confirm the exact content by GC/MS.

Phthalates	Polymer
Bis(2-ethylhexyl)phthalate(DEHP)	BL ≤600<X
Butyl benzyl phthalate(BBP)	BL ≤600<X
Dibutyl phthalate(DBP)	BL ≤600<X
Diisobutyl phthalate(DIBP)	BL ≤600<X

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(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

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To be continued

Disclaimers：

This XRF Screening and Chemical Confirmation Test 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 and Chemical Confirmation Test Report is sufficient for its/his/her purposes.

The results shown in this XRF Screening and Chemical Confirmation Test 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.

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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 and determined by ICP - OES	2 mg/kg
Lead (Pb) content	With reference to IEC 62321-5 Edition 1.0：2013, by acid digestion and determined by ICP - OES	2 mg/kg
Mercury (Hg) content	With reference to IEC 62321-4 Edition 1.1：2017, by acid digestion and determined by ICP - OES	2 mg/kg
Chromium (VI) (Cr^{6+}) content	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/cm^2) / Negative(<0.10 μg/cm^2) / Inconclusive(0.10 μg/cm^2 --0.13 μg/cm^2)
Chromium (VI) (Cr^{6+}) content	With reference to IEC 62321-7-2 Edition 1.0:2017, by alkaline digestion and determined by UV-VIS Spectrophotometer	10 mg/kg
Polybrominated Biphenyls (PBBs)& Polybrominated Diphenyl Ethers (PBDEs) Content	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
Phthalates (DEHP, BBP, DBP, DIBP) Content	With reference to IEC 62321-8 Edition 1.0:2017,by solvent extraction and determined by GC/MS	100mg/kg

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(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)
Phthalates(DEHP, BBP, DBP, DIBP)	0.1% (1000 ppm)

The above limits were quoted from 2011/65/EU and (EU) 2015/863 for homogeneous material.

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Date sample received: December 16,2023

Testing period: December 16,2023 to December 26,2023

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To be continued