

**XRF Screening and chemical confirmation test report**

**Number: 190702544SHA-001**

Applicant: Wenzhou YingRun Electric Co., Ltd.  
No. 57 Xilong RD, Xinguang Industrial Zone, Liushi Wenzhou

Date: Aug. 28, 2019

Sample Description:

Item Name : Waterproof switch socket  
Brand name : YRPROFIT  
Type designation : YRL-SRS

Tests conducted:

As requested by the applicant, for details refer to attached page(s).

Conclusion:

<u>Tested sample</u>	<u>Standard</u>	<u>Result</u>
Submitted samples	Screening by XRF spectroscopy and chemical confirmation test for RoHS Directive 2011/65/EU and (EU)2015/863	Pass

To be continued

Authorized by:  
For Intertek testing services Ltd., Shanghai



Jonny Jing  
Operation Manager



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 (BLphthalates)	Chemical Confirmation Result	Conclusion on RoHS
1	CAP (LUCENCY NONMETAL)	/	Cd	P	NA	/	PASS
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	
			Br	P		/	
			DEHP	NA	BL	/	
			BBP	NA	BL	/	
			DBP	NA	BL	/	
2	CAP (WHITE PLASTIC)	/	Cd	P	NA	/	PASS
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	
			Br	P		/	
			DEHP	NA	BL	/	
			BBP	NA	BL	/	
			DBP	NA	BL	/	
3	SEAL RING (BLACK NONMETAL)	/	Cd	P	NA	/	PASS
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	
			Br	P		/	
			DEHP	NA	BL	/	
			BBP	NA	BL	/	
			DBP	NA	BL	/	
4	SWITCH CAP (WHITE PLASTIC)	/	Cd	P	NA	/	PASS
			Pb	P		/	
			Hg	P		/	



			Cr	P		/		
			Br	X		PBB=ND PBDE=ND		
			DEHP	NA	BL	/		
			BBP	NA	BL	/		
			DBP	NA	BL	/		
			DIBP	NA	BL	/		
5	CONTACTED SHEET							
5-1	CONTACTED SHEET (BRASS METAL)	/	Cd	X	NA	ND	PASS	
			Pb	P		/		
			Hg	P		/		
			Cr	P		/		
			Br	NA		/		
			DEHP	NA		NA		/
			BBP	NA		NA		/
			DBP	NA		NA		/
5-2	CONTACTED DOT (SILVER/COPPER METAL)	/	Cd	X	NA	5681ppm(#2)	PASS	
			Pb	P		/		
			Hg	P		/		
			Cr	P		/		
			Br	NA		/		
			DEHP	NA		NA		/
			BBP	NA		NA		/
			DBP	NA		NA		/
6	SWITCH PEDESTAL (WHITE PLASTIC)	/	Cd	P	NA	/	PASS	
			Pb	P		/		
			Hg	P		/		
			Cr	P		/		
			Br	P		/		
			DEHP	NA		BL		/
			BBP	NA		BL		/
			DBP	NA		BL		/
7	SPRING (SILVER METAL)	/	Cd	P	NA	/	PASS	
			Pb	P		/		
			Hg	P		/		



			Cr	X		Negative		
			Br	NA		/		
			DEHP	NA	NA	/		
			BBP	NA	NA	/		
			DBP	NA	NA	/		
			DIBP	NA	NA	/		
			Cd	P	NA	/		
			Pb	P		/		
Hg	P	/						
Cr	P	/						
Br	NA	/						
DEHP	NA	NA	/					
BBP	NA	NA	/					
DBP	NA	NA	/					
DIBP	NA	NA	/					
8	FIXED PLATE (SILVER 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		/
9	SWITCH SPRING (SILVER 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		/
10	SCREW (SILVER 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		/
11	SHELL (WHITE PLASTIC)	/	Cd	P	NA	/	PASS	
			Pb	P		/		
			Hg	P		/		
			Cr	P		/		



			Br	X		PBB=ND PBDE=ND		
			DEHP	NA	BL	/		
			BBP	NA	BL	/		
			DBP	NA	BL	/		
			DIBP	NA	BL	/		
12	COVER (GOLDEN 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		/
13	SCREW (GOLDEN 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		/
14	CONTACTED SHEET (GOLDEN 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		/
15	CONTACTED SHEET							
15-1	PIN (SILVER 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	/		
15-2	TERMINAL BLOCKS (GOLDEN METAL)	/	Cd	P	NA	/	PASS	
			Pb	X		10600ppm(#1)		
			Hg	P		/		
			Cr	P		/		
			Br	NA		/		
			DEHP	NA		NA		/
			BBP	NA		NA		/
			DBP	NA		NA		/
			DIBP	NA		NA		/
16	TERMINAL BLOCKS							
16-1	TERMINAL BLOCKS (SILVER 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		/
16-2	SCREW (GOLDEN 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		/
17	PEDESTAL (BLUE-GREY PLASTIC)	/	Cd	P	NA	/	PASS	
			Pb	P		/		
			Hg	P		/		
			Cr	P		/		



			Br	X		PBB=ND PBDE=ND	
			DEHP	NA	BL	/	
			BBP	NA	BL	/	
			DBP	NA	BL	/	
			DIBP	NA	BL	/	
18	PEDESTAL (GREY PLASTIC)	/	Cd	P	NA	/	PASS
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	
			Br	X		PBB=ND PBDE=ND	
			DEHP	NA	BL	/	
			BBP	NA	BL	/	
			DBP	NA	BL	/	
			DIBP	NA	BL	/	
19	PEDESTAL						
19-1	PEDESTAL (BLACK PLASTIC)	/	Cd	P	NA	/	PASS
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	
			Br	X		PBB=ND PBDE=ND	
			DEHP	NA	BL	/	
			BBP	NA	BL	/	
			DBP	NA	BL	/	
			DIBP	NA	BL	/	
19-2	SUPPORT (BLACK PLASTIC)	/	Cd	P	NA	/	PASS
			Pb	P		/	
			Hg	P		/	
			Cr	P		/	
			Br	X		PBB=ND PBDE=ND	
			DEHP	NA	BL	/	
			BBP	NA	BL	/	
			DBP	NA	BL	/	
			DIBP	NA	BL	/	
19-3	SPRING (SILVER 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	/		
19-4	SPRING (SILVER 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		/
20	SOCKET							
20-1	PEDESTAL (BLACK PLASTIC)	/	Cd	P	NA	/	PASS	
			Pb	P		/		
			Hg	P		/		
			Cr	P		/		
			Br	X		PBB=ND PBDE=ND		
			DEHP	NA		BL		/
			BBP	NA		BL		/
			DBP	NA		BL		/
			DIBP	NA		BL		/
20-2	SUPPORT (BLACK 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		/
20-3	SCREW (SILVER 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	/		
20-4	FIXED PLATE (SILVER 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		/
20-5	PIN (SILVER METAL)	/	Cd	P	NA	/	PASS	
			Pb	X		19240ppm(#1)		
			Hg	P		/		
			Cr	X		Negative		
			Br	NA		/		
			DEHP	NA		NA		/
			BBP	NA		NA		/
			DBP	NA		NA		/
			DIBP	NA		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

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

(#2) = According to the client's statement, the Cadmium content of the component is coming from the constituent of electrical contacts. According to EU RoHS Directive, Cadmium in electrical contacts of this component can be exempted.

(B)

(B1) 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	$P \leq 700 < X < 1300 \leq F$	$P \leq 700 < X < 1300 \leq F$	$P \leq 500 < X < 1500 \leq F$



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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	$P \leq 250 < X$

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To be continued



Tests Conducted

(B2) Preliminary screening test will be used for phthalates, if the results exceed the warning area in the following table, further chemical methods will be conducted 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

(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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**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.**

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(D) Chemical confirmation test methods:

Testing Item	Testing Method	Reporting Limit
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
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 IEC62321-8 : 2017, by solvent extraction and determined by GC/MS	100mg/kg

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To be continued



Tests Conducted

(E) RoHS requirement

<b>Restricted Substances</b>	<b>Limits</b>
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr <sup>6+</sup> )	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)
Phthalates (DEHP, BBP, DBP, DIBP)	0.1% (1000 mg/kg)

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

Date sample received: Jul. 25, 2019 & Aug. 20, 2019

Testing period: Jul. 26, 2019 To Aug. 28, 2019

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To be continued



Tests Conducted

Photo



Tests Conducted

Photo



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**End of report**

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