

REPORT No.: R2DG19122620416E

TEST REPORT

Date: January 6, 2020

Page 1 of 12

	REBONES SYSTEMS, LL 5 East Wilmington Aven	.C. ue-Ste. 140 Salt Lake City, UT 84106	
_			
-	ort on the submitted samp		
	ple Name	: Forest Lantern Antique Bronze/ Forest Lantern Red LIV-261,	LIV-262
	ntry of Origin	: China	
	ple Receiving Date	: December 26, 2019	
Test	ting Period	: From December 26, 2019 to January 6, 2020	
Res	ults	: Please refer to next page(s).	
****	*******	*********************	*******
Sun	nmary of Test Results:		
TES	ST REQUEST		CONCLUSION
Α	RoHS Directive 2011/65/	/EU and its amendment directives	
	XRF screening test and Chromium, PBBs & PBD	Wet Chemical Testing (Lead, Cadmium, Mercury, Hexavalent PEs content)	Pass
	Phthalates(DBP、BBP、	DEHP、DIBP)content	Pass
****	********	***************************************	*******
Sign	ned for and on behalf of B	ACL	
Che	cked by: Farhan Yang	Approved by: Bensen Huang	



REPORT No.: R2DG19122620416E Date: January 6, 2020 Page 2 of 12

Results:

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

XRF screening test

Test method: With reference to IEC62321-3-1:2013 screening by X-ray Fluorescence Spectroscopy (XRF)

Seq.	Tootod Part/a)	Results						
No.	Tested Part(s)	Pb	Cd	Hg	Cr	Br		
1	Silvery metal with black/bronze coating(shell, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
2	Silvery metal with black coating(big handle, Forest Lantern Antique Bronze)		BL	BL	BL			
3	Black soft plastic(sleeve, big handle, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
4	Silvery metal with black coating(small handle, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
5	Black plastic(bracket, small handle, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
6	Black plastic(inner, shell, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
7	Transparent plastic(bracket, shell, Forest Lantern Antique Bronze)		BL	BL	BL	BL		
8	Black plastic with silvery coating(reflector, Forest Lantern Antique Bronze)		BL	BL	BL	BL		
9	Silvery metal(buckle, big handle, Forest Lantern Antique Bronze)		BL	BL	BL			
10	Silvery metal(nut, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
11	Silvery metal(gasket, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
12	Black glue(fixed nut, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
13	Silvery metal with black coating(catch net, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
14	Silvery metal with black coating(LOGO, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
15	Copper metal(rivet, LOGO, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
16	Silvery metal with black coating(screw, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
17	Silvery metal(screw, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
18	Translucence plastic(lampshade, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
19	Black plastic(bracket, lampshade, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
20	Silvery metal with black/bronze coating(base, Forest Lantern Antique Bronze)	BL	BL	BL	BL			



REPORT No.: R2DG19122620416E Date: January 6, 2020 Page 3 of 12

Seq.	To stad Dout(a)	Results						
No.	Tested Part(s)	Pb	Cd	Hg	Cr	Br		
21	Silvery metal with black coating(signboard, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
22	Silvery metal(rivet, signboard, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
23	Silvery metal(plate, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
24	Black plastic(battery box, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
25	Black plastic(battery cover, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
26	White plastic(inner, base, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
27	Black plastic(knob switch, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
28	Silvery metal(dig nut, base, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
29	Silvery metal(dig gasket, base, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
30*	Yellow/green PCB("KB"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	IN		
31	Silvery solder("KB"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
32	Silvery metal(spring, "KB"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
33	Black soft plastic with white printing(wire jacket, "KB"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	ВІ		
34	Red soft plastic(wire jacket, "KB"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	ВІ		
35	Silvery metal(wire, "KB"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
36	Silvery metal(pin, plug, "KB"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
37	White plastic(pin holder, plug, "KB"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	В		
38	White PWB(PWB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	В		
39	Silvery solder(PWB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
40	Orange body(LED, PWB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	В		
41	Silvery metal(bracket, PWB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
42	White glue(radiator glue, PWB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	В		
43	Black soft plastic with white printing (wire jacket, PWB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	В		
44	Red soft plastic with black printing (wire jacket, PWB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	В		
45	Silvery metal(pin, plug, PWB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
46	White plastic(pin holder, plug, PWB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	В		
47*	Green PCB("5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	11		



REPORT No.: R2DG19122620416E Date: January 6, 2020 Page 4 of 12

Seq.	To stad Davida	Results						
No.	Tested Part(s)	Pb	Cd	Hg	Cr	Br		
48	Silvery solder("5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
49	Green body(LED, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
50*	Translucence plastic(bracket, LED, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	IN		
51	Silvery metal(fixed, switch, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
52	Silvery metal(shell, switch, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
53	Silvery metal(axle, switch, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
54	Silvery metal(inner, shell, switch, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
55	Beige plastic(gears, switch, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
56	Silvery metal(inner, gears, switch, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
57	Black plastic(bracket, gears, switch, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
58	Silvery metal(plate, switch, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
59	Green plastic(base, switch, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
60	Silvery metal(contacts, switch, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
61	Blue plastic(bracket, switch, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
62*	White plastic(pin holder, plug, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	IN		
63	Silvery metal(pin, plug, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
64	Gray soft plastic with red/black coating(wire jacket, "5110-C"PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
65*	Green PCB(PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	IN		
66	Silvery solder(PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
67	Black body(IC, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
68	Brown body(capacitor, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
69	Black body(resistor, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
70	Black body(triode, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
71	Blue plastic with golden coating(sleeve, capacitor, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		



REPORT No.: R2DG19122620416E Date: January 6, 2020 Page 5 of 12

Seq.	To stool Post(o)	Results						
No.	Tested Part(s)	Pb	Cd	Hg	Cr	Br		
72	Silvery metal(shell, capacitor, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
73	Black rubber(base, capacitor, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
74	Transparent soft plastic(film, capacitor, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
75	Brown paper with liquid(film, capacitor, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
76	Silvery metal(foil, capacitor, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
77	Dull silvery metal(foil, capacitor, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
78	Silvery metal(connector, capacitor, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
79	Silvery metal(pin, capacitor, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
80	Silvery metal(shell, USB socket, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
81	Golden metal(pin, USB socket, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL			
82	Black plastic(pin holder, USB socket, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
83	White plastic(socket, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	BL		
84*	Beige plastic(socket, PCB, Forest Lantern Antique Bronze)	BL	BL	BL	BL	IN		
85	Silvery metal with red coating(shell, Forest Lantern Red)	BL	BL	BL	BL			
86	Silvery metal with red coating(base, Forest Lantern Red)	BL	BL	BL	BL			



REPORT No.: R2DG19122620416EDate: January 6, 2020

Page 6 of 12

Remark:

(1)

--- = Not Conducted

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 IEC62321-3-1:2013.

Element	Unit	Polymers	Metal	Composite Material
Cd	mg/kg	BL≤70-3σ< X <130+3σ≤OL	BL≤70-3σ< X <130+3σ≤OL	LOD < X <150+3σ≤OL
Pb	mg/kg	BL≤700-3σ< X <1300+3σ≤OL	BL≤700-3σ< X <1300+3σ≤ OL	BL≤500-3σ< X <1500+3σ≤OL
Hg	mg/kg	BL≤700-3σ< X <1300+3σ≤OL	BL≤700-3σ< X <1300+3σ≤OL	BL≤500-3σ< X <1500+3σ≤OL
Cr	mg/kg	BL≤700-3σ< X	BL≤700-3σ< X	BL≤500-3σ< X
Br	mg/kg	BL≤300-3σ< X		BL≤250-3σ< X

BL = Below Limit
OL = Over Limit
IN = Inconclusive

LOD = Limit of Detection



REPORT No.: R2DG19122620416EDate: January 6, 2020

Page 7 of 12

- (2) The XRF screening test for RoHS elements The reading may be different to the actual content in the sample be of non-uniformity composition.
- (3) The maximum permissible limit is quoted from 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
Polybrominate ddiphenylethers (PBDEs)	1000

- (4) As requested by applicant, only components shown in this report were screened by XRF spectroscopy for 2011/65/EU and its amendment directives, other components were not screened included in this report.
- (5) Photo appendix is included.

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.



REPORT No.: R2DG19122620416E Date: January 6, 2020 Page 8 of 12

Wet Chemical Testing:

Test method:

PBBs & PBDEs Content:

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

1) The test results of PBBs & PBDEs

Item	Unit	MDL		Results		Limit
item	Unit	MIDL	30	47	50	
Polybrominated Biphenyls						
Monobromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Dibromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Tribromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Tetrabromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Pentabromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Hexabromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Heptabromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Octabromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Nonabromodiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Decabromodiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Total content	mg/kg	1	N.D.	N.D.	N.D.	1000
Polybrominated Diphenylethers						
Monobromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Dibromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Tribromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Tetrabromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Pentabromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Hexabromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Heptabromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Octabromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Nonabromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Decabromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Total content	mg/kg	1	N.D.	N.D.	N.D.	1000
Conclusion	1	1	Pass	Pass	Pass	1



REPORT No.: R2DG19122620416E Date: January 6, 2020 Page 9 of 12

Mana	11!1	MDI		Results		1 : !4
Item	Unit	MDL	62	65	84	Limit
Polybrominated Biphenyls						
Monobromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Dibromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Tribromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Tetrabromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Pentabromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Hexabromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Heptabromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Octabromobiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Nonabromodiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Decabromodiphenyl	mg/kg	5	N.D.	N.D.	N.D.	
Total content	mg/kg	1	N.D.	N.D.	N.D.	1000
Polybrominated Diphenylethers						
Monobromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Dibromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Tribromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Tetrabromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Pentabromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Hexabromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Heptabromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Octabromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Nonabromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Decabromodiphenyl ether	mg/kg	5	N.D.	N.D.	N.D.	
Total content	mg/kg	1	N.D.	N.D.	N.D.	1000
Conclusion	1	1	Pass	Pass	Pass	1

Note:

- N.D. = Not Detected or less than MDL
- MDL = Method Detection Limit
- The results less than MDL are not taken into account while calculating the sum contents.
- mg/kg = ppm
- Photo is included.



REPORT No.: R2DG19122620416E Date: January 6, 2020 Page 10 of 12

Phthalates(DBP、BBP、DEHP、DIBP)content

Test method: With reference to IEC 62321-8:2017, by gas chromatographic-mass spectrometer (GC-MS)

Item	Unit	MDL			Limit	
nem	Onit	WIDE	3+5+6	7+8+18	12+38+40	Lillin
Dibutyl Phthalate (DBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Benzylbutyl Phthalate (BBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Bis-(2-ethylhexyl) Phthalate (DEHP)	%	0.003	N.D.	N.D.	N.D.	0.1
Diisobutyl Phthalate(DIBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Conclusion	1	1	Pass	Pass	Pass	1

Item	Unit	Unit MDL		Results		Limit
item	Onit	INIDL	19+24+25	26+27+30	33+34+37	Lillin
Dibutyl Phthalate (DBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Benzylbutyl Phthalate (BBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Bis-(2-ethylhexyl) Phthalate (DEHP)	%	0.003	N.D.	N.D.	0.004	0.1
Diisobutyl Phthalate(DIBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Conclusion	1	1	Pass	Pass	Pass	1

Item	Unit	Unit MDL		Limit		
item	Offic	WIDL	42+49+55	43+44+46	47+50+59	Lillin
Dibutyl Phthalate (DBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Benzylbutyl Phthalate (BBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Bis-(2-ethylhexyl) Phthalate (DEHP)	%	0.003	N.D.	N.D.	N.D.	0.1
Diisobutyl Phthalate(DIBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Conclusion	1	1	Pass	Pass	Pass	1



REPORT No.: R2DG19122620416E Date: January 6, 2020 Page 11 of 12

Item	Unit	MDL	Results			Limit
			57+67+68	61+62+64	65+83+84	
Dibutyl Phthalate (DBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Benzylbutyl Phthalate (BBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Bis-(2-ethylhexyl) Phthalate (DEHP)	%	0.003	N.D.	N.D.	N.D.	0.1
Diisobutyl Phthalate(DIBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Conclusion	1	1	Pass	Pass	Pass	1

Item	Unit	MDL	Results			Limit
			69+70+71	73+74	75+82	Limit
Dibutyl Phthalate (DBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Benzylbutyl Phthalate (BBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Bis-(2-ethylhexyl) Phthalate (DEHP)	%	0.003	N.D.	N.D.	N.D.	0.1
Diisobutyl Phthalate(DIBP)	%	0.003	N.D.	N.D.	N.D.	0.1
Conclusion	1	1	Pass	Pass	Pass	1

Note:

- The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- N.D. = Not Detected or less than MDL
- MDL = Method Detection Limit
- mg/kg = ppm
- "+" = Mixed, The admixture of specimen is tested as a whole(part) which according to the applicant's request, the result of report as average value because of the whole specimen is regarded as constituting from the homogeneous material. If the testing of specimen may have the obvious difference, and the result may exceed the number in this report. The applicant will undertake all differences and risk.
- Photo is included.



REPORT No.: R2DG19122620416E Date: January 6, 2020 Page 12 of 12

Photograph of Sample





BACL authenticate the photo on original report only

Directions:

- This report cannot be reproduced except in full, without prior written approval of the Company.
- 2. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
- 3. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.
- 4. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
- 5. The information which provided by the applicant, such as sample description, sample name ,material component, style/item No., P.O. No., manufacture, age phase, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
- 6. The test samples were in good condition before testing.
- 7. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

*** End of Report ***