



TEST REPORT

Reference No. : WTF16F0141134C

Applicant : Xiamen PVTECH Corporation Limited

Address : Unit 28 Yangtai Road, Xinyang Industrial Zone, Haicang District, Xiamen, Fujian, China.

Manufacturer : Xiamen PVTECH Corporation Limited

Address : Unit 28 Yangtai Road, Xinyang Industrial Zone, Haicang District, Xiamen, Fujian, China.

Sample Name : LED T8 Tube

Model No. : PV-5ft-xW

Reference Model No. : PV-2FT-xW (x=5~12W), PV-4FT-xW(x=9~18W), PV-5FT-xW (x=13~23W)

Test Requested : In accordance with the RoHS Directive 2011/65/EU

Test Method : With Reference to EN 62321:2009 Procedures for the Determination of level of Six Regulated Substance in Electrotechnical Products.

1) Screening by XRF Spectroscopy

2) Wet Chemical Test Method

- Determination of Lead, Mercury and Cadmium by ICP-OES
- Determination of Hexavalent Chromium by Colorimetric Method
- Determination of PBBs and PBDEs by GC-MS

Test Conclusion : Based on the performed tests on the submitted samples, the results comply with the RoHS Directive 2011/65/EU

Date of Receipt sample : 2016-01-11

Date of Test : 2016-01-11 to 2016-01-20

Date of Issue : 2016-01-21

Test Result : Please refer to next page (s)

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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Lian Wang

Lian Wang / Lab Manager

**Test Results:**

Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
1	Golden metal pin	Cd	BL	#Pb :2.60×10 ⁴	Comply
		Pb	OL		
		Hg	BL		
		Cr	BL		
		Br	BL		
2	White plastic shell	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
3	White glue	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
4	White plastic shell	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
5	Transparent plastic shell	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
6	Silvery metal base	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
7	Chip LED	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
8	Grey plastic shell of connector	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		



Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
9	Silvery metal pin of connector	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
10	Silvery metal strip wire white coating	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
11	Blue body of capacitor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
12	Silvery metal pin of capacitor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
13	Transparent plastic sleeve	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
14	Black heat-shrinkable tube of fuse	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
15	Transparent glass body of fuse	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
16	Silvery metal cover of fuse	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		



Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
		Cd	Pb		
17	Silvery metal wire of fuse	BL	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
18	White fiber of fuse	BL	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
19	Silvery metal pin of fuse	BL	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
20	Transparent plastic adhesive tape of electrolytic capacitor	BL	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
21	White paper label with black printing of electrolytic capacitor	BL	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
22	Yellow plastic film of electrolytic capacitor	BL	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
23	Silvery metal shell of electrolytic capacitor	BL	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
24	Black rubber stopper of electrolytic capacitor	BL	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		



Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
25	Transparent adhesive tape of electrolytic capacitor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
26	Grey metal foil of electrolytic capacitor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
27	Silvery-grey metal foil of electrolytic capacitor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
28	Brown paper of electrolytic capacitor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
29	Silvery metal pin of electrolytic capacitor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
30	White plastic wire covering	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
31	Silvery metal wire	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
32	Silvery metal wire	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		



Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
33	Red body of capacitor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
34	Silvery metal pin of capacitor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
35	Yellow plastic adhesive tape of transformer	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
36	Dark gray magnetic core of transformer	Cd	BL	Cr ⁶⁺ : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	IN		
		Br	BL		
37	Black plastic bobbin of transformer	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
38	Coppery metal winding of transformer	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
39	Silvery metal pin of transformer	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
40	Yellow plastic wire covering	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		



Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
41	White plastic shell of connector	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
42	Silvery metal pin of connector	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
43	Black heat-shrinkable tube of inductor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
44	Black magnetic core of inductor	Cd	BL	Cr ⁶⁺ : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	IN		
		Br	BL		
45	Coppery metal wire of inductor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
46	Silvery metal pin of inductor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
47	Black body of audion	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
48	Silvery metal pin of audion	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		



Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
49	Black plastic film of electrolytic capacitor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
50	Chip rectifier	Cd	BL	#1Pb : ≥85%	Comply
		Pb	OL		
		Hg	BL		
		Cr	BL		
		Br	BL		
51	Chip diode	Cd	BL	#1Pb : ≥85%	Comply
		Pb	OL		
		Hg	BL		
		Cr	BL		
		Br	BL		
52	Chip IC	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		
53	Chip resistor	Cd	BL	Not tested	Comply
		Pb	*OL		
		Hg	BL		
		Cr	BL		
		Br	BL		
54	Chip resistor	Cd	BL	Not tested	Comply
		Pb	*OL		
		Hg	BL		
		Cr	BL		
		Br	BL		
55	Chip capacitor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
56	Chip capacitor	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		



Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
57	Solder	Cd	BL	Not tested	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	BL		
58	Green PCB	Cd	BL	PBBs : ND PBDEs : ND	Comply
		Pb	BL		
		Hg	BL		
		Cr	BL		
		Br	IN		



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**Remark:**

- (1) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-VIS (for Cr⁶⁺) and GC-MS (for PBBs, PBDEs) is recommended to be performed, if the concentration exceeds the below warning value according to EN 62321:2009 (unit: mg/kg)

Element	Polymer	Metal	Composite Materials
Cd	$BL \leq (70-3\sigma) < IN < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < IN < (130+3\sigma) \leq OL$	$LOD < IN < (150+3\sigma) \leq OL$
Pb	$BL \leq (700-3\sigma) < IN < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < IN < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < IN < (1500+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < IN < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < IN < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < IN < (1500+3\sigma) \leq OL$
Cr	$BL \leq (700-3\sigma) < IN$	$BL \leq (700-3\sigma) < IN$	$BL \leq (500-3\sigma) < IN$
Br	$BL \leq (300-3\sigma) < IN$	--	$BL \leq (250-3\sigma) < IN$

BL= Below Limit

OL= Over Limit

LOD = Limit of Detection

-- = Not Regulated

- (2) "IN" expresses the inconclusive region, and further chemical testing to confirm whether it complies with the requirement of RoHS Directive.
- (3) The XRF screening test for RoHS elements – the reading may be different to the actual content in the sample be of non-uniformity composition
- (4) ppm = mg / kg, based on the dry weight of tested sample.
- (5) ND = Not Detected, less than the value of Method Detection Limit.
- (6) MDL= Method Detection Limit in wet chemical test

Test Items	Pb	Cd	Hg	Cr ⁶⁺	PBB	PBDE
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MDL	2	2	2	2	5	5

The MDL for single compound of PBBs and PBDEs is 5mg/kg and MDL of Cr⁶⁺ for polymer and composite sample is 2mg/kg

- (7) According to EN 62321:2009, determined of Cr⁶⁺ on metal sample by spot test /boiling water extraction test method, and result is shown as Positive/Negative.

Spot test:

Negative = Absence of Cr⁶⁺ coating, Positive = Presence of Cr⁶⁺ coating.

(The tested sample should be further verified by boiling water extraction method if the spot test result is Negative or cannot be confirmed.)

Boiling water extraction:

Negative = Absence of Cr⁶⁺ coating

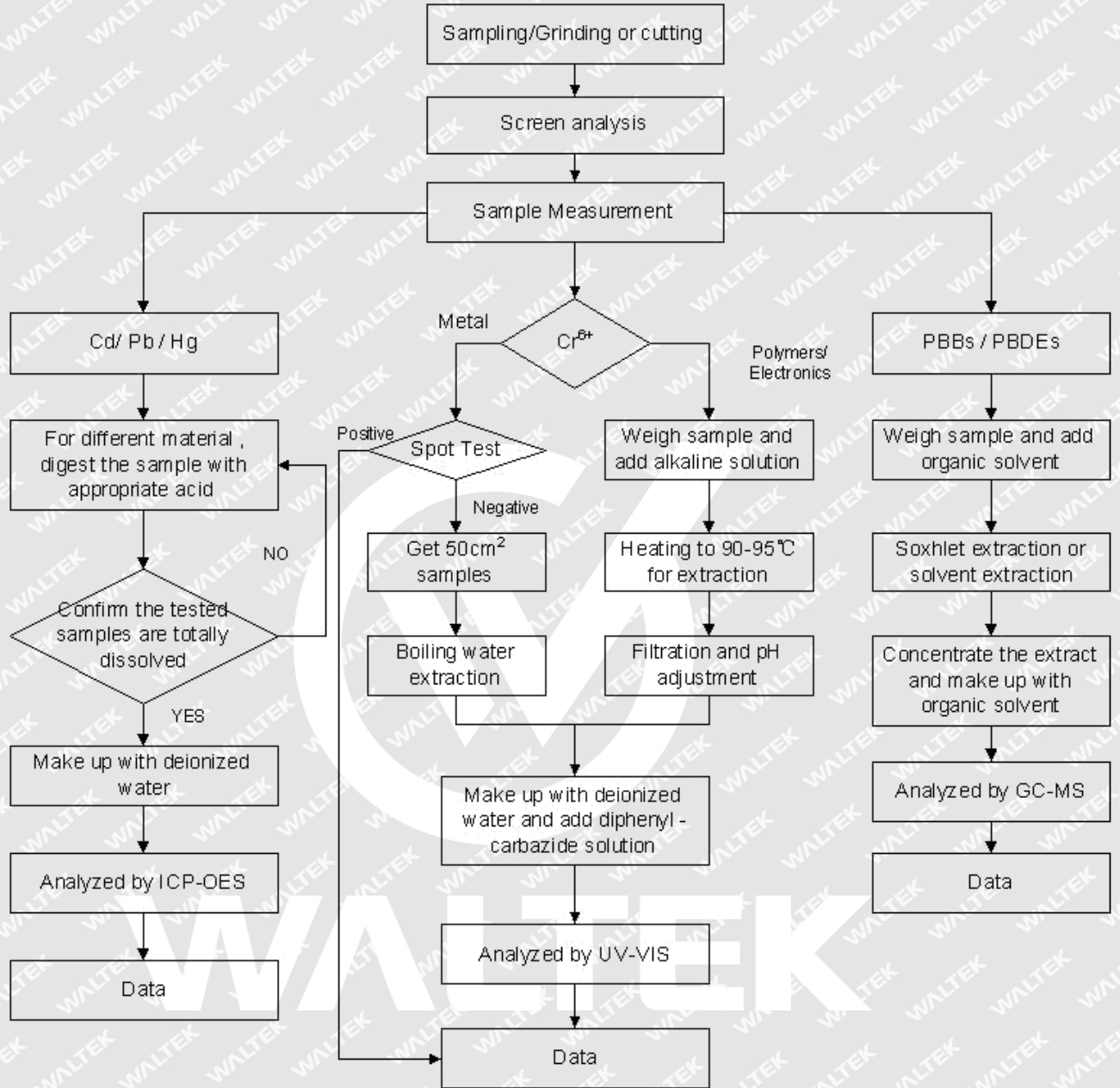
Positive = Presence of Cr⁶⁺ coating, the detected concentration in boiling water extraction solution is equal or greater than 0.02mg/kg with 50cm² sample surface area.

Information on storage conditions and production date of the tested sample is unavailable and thus Cr⁶⁺ results represent status of the sample at the time of testing.

- (8) * = According to the declaration from client, the source of lead in test sample could be from the glass or ceramic material of that electronic component which is exempted by Directive 2011/65/EU.
- (9) # = According to the declaration from client, the source of lead in test sample could be from copper alloy while lead as copper alloy containing up to 4% lead by weight is exempted by Directive 2011/65/EU.
- (10)^{#1} = According to the declaration from client, the source of lead in test sample could be from the high melting temperature type solders (i.e. lead based alloys containing 85% by weight or more lead) is exempted by Directive 2011/65/EU.



Measurement Flowchart:



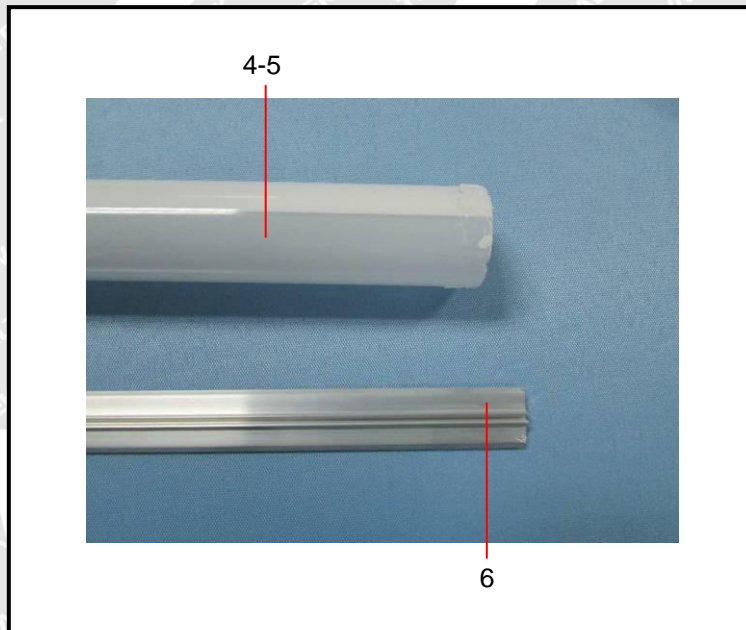
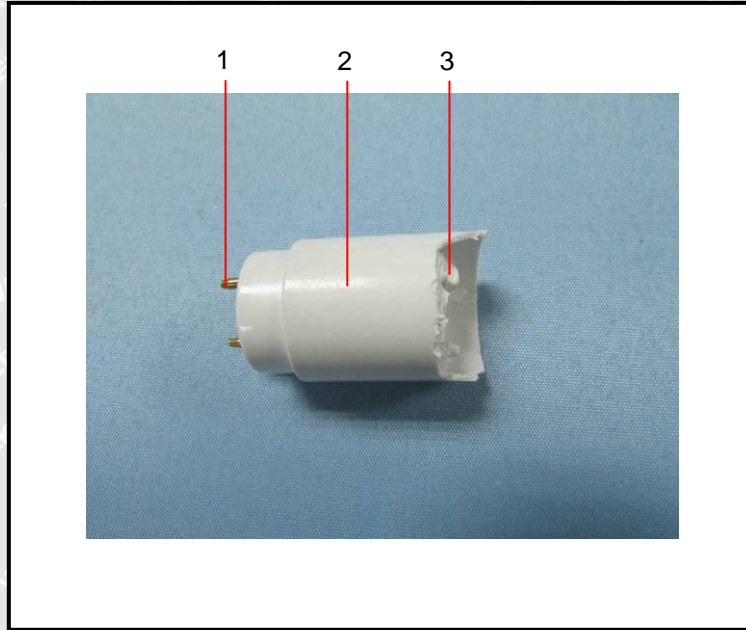


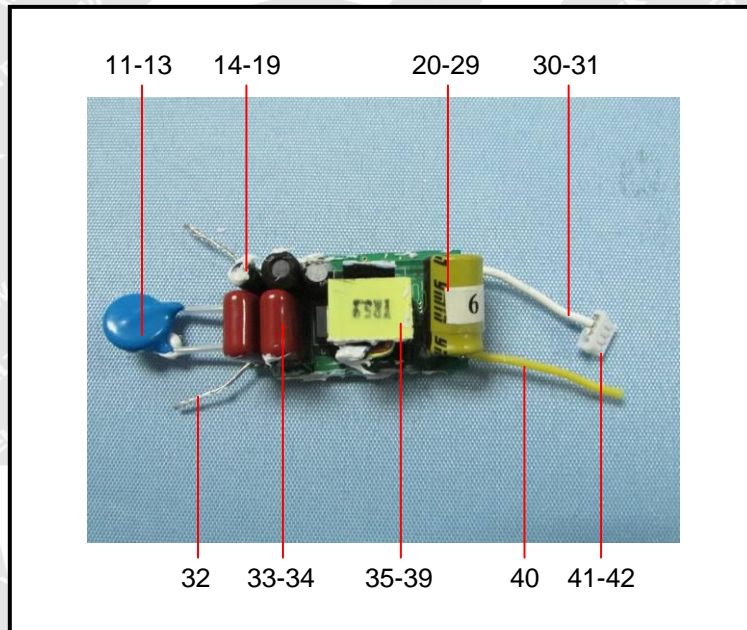
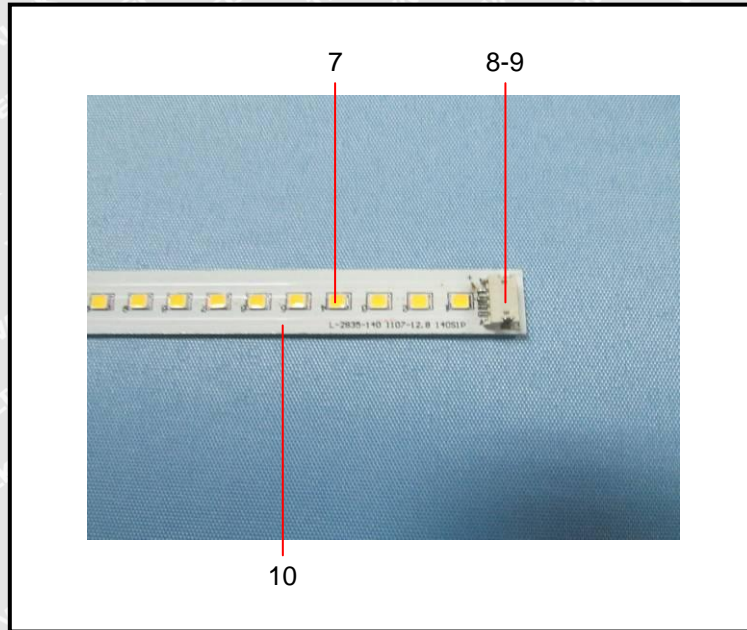
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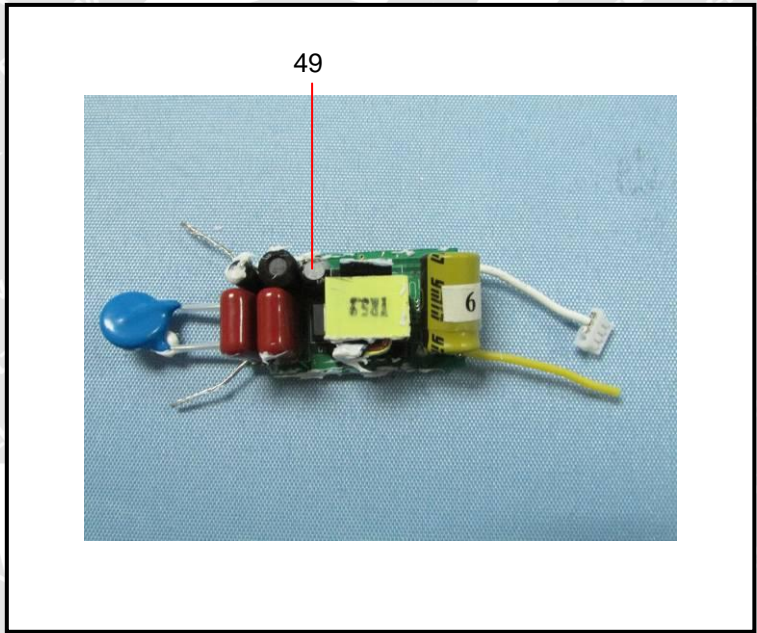
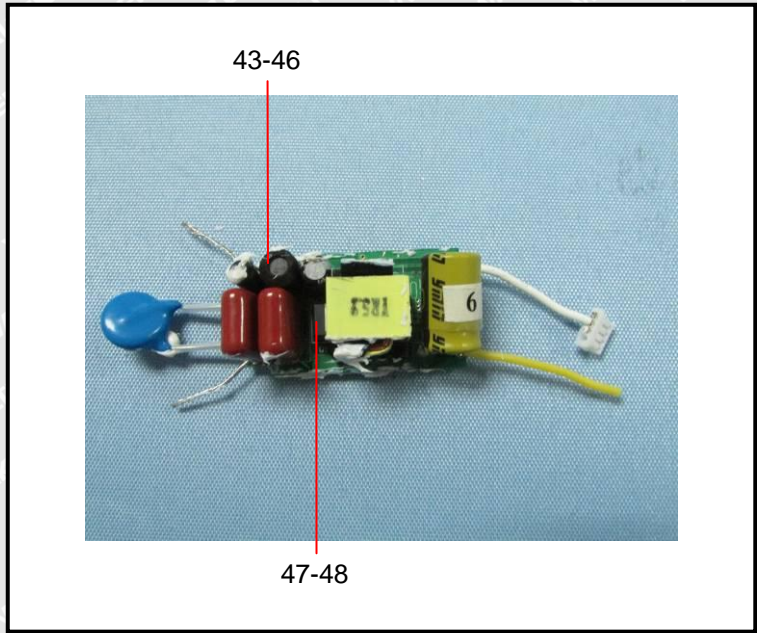


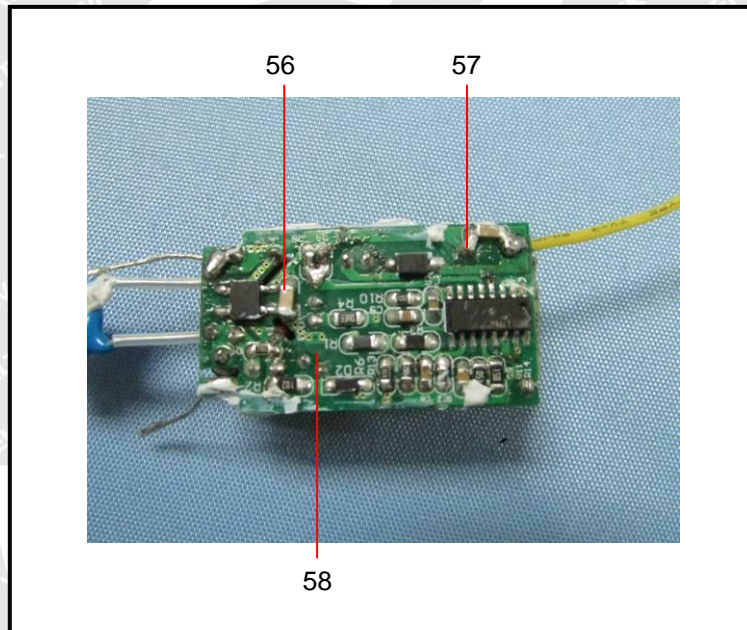
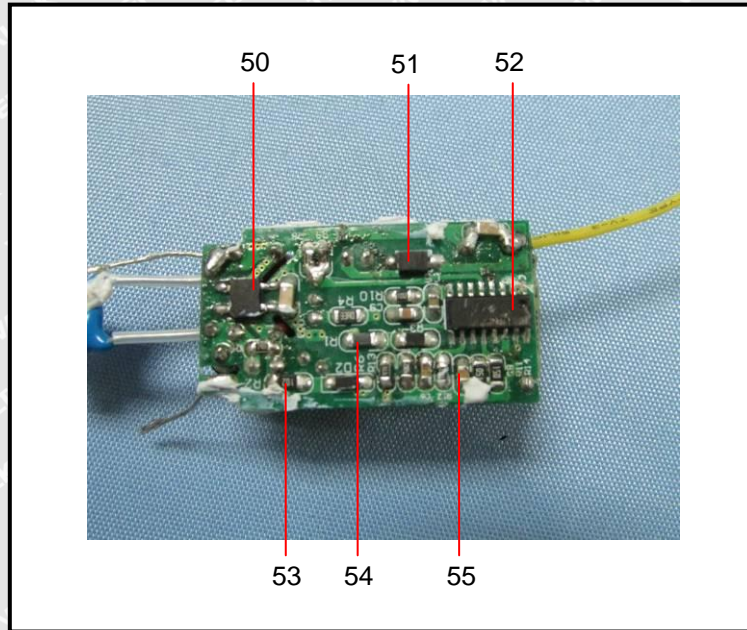


Photograph of parts tested:









===== End of Report =====