



TEST REPORT

Report No. : WTZ20F08055842A1X1C

Applicant : Zhongshan Songwei Lighting Electrical co; LTD

Address : No. 502, Dong'an North Road, Cao Er, Guzhen Town, Zhongshan, Guangdong

Manufacturer : Zhongshan Songwei Lighting Electrical co; LTD

Address : No. 502, Dong'an North Road, Cao Er, Guzhen Town, Zhongshan, Guangdong

Sample Name : Bread light

Model No. : 191244005-1

Reference Model No. : 191143001-1, 191144001-1

Sample Receiving Date : 2020-08-17 & 2020-08-27

Testing Period : 2020-08-17 to 2020-08-27

Date of Issue : 2020-08-31

Test Result : Please refer to next page (s)

Note..... : This report is based on Waltek test report WTZ20F08055842A1C for revising, and replaced report WTZ20F08055842A1C.

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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Test Requested : In accordance with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863.

Test Method : 1) With Reference to IEC 62321-2:2013, disassembly, disjunction and mechanical sample preparation
2) With Reference to IEC 62321-3-1:2013, screening - Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry
3) With reference to IEC 62321-4:2013+AMD1:2017 CSV, determination of Mercury by ICP-OES
4) With reference to IEC 62321-5:2013, determination of Lead and Cadmium by ICP-OES
5) With reference to IEC 62321-7-2: 2017 and IEC 62321-7-1: 2015, determination of Hexavalent Chromium by UV-Vis
6) With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS
7) With reference to IEC 62321-8:2017, determination of Phthalates content by GC-MS.

Test Conclusion..... : **Pass** (As per client's requirement, to test the specified components. The results of specified components comply with the requirement of EU RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863.)



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**Test Results:****1. Lead, Mercury, Cadmium, Hexavalent Chromium, PBBs and PBDEs**

Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
1	White paper adhesive label with black printing	BL	BL	BL	BL	BL	NA
2	White coating	BL	BL	BL	BL	BL	NA
3	Silvery metal shell without white coating	BL	BL	BL	BL	BL	NA
4	White plastic shell	BL	BL	BL	BL	BL	NA
5	Transparent plastic sheet	BL	BL	BL	BL	BL	NA
6	White paper adhesive label with black printing	BL	BL	BL	BL	BL	NA
7	Chip LED	BL	BL	BL	BL	BL	NA
8	White plastic shell of plug	BL	BL	BL	BL	BL	NA
9	Silvery metal pin of plug	BL	BL	BL	BL	BL	NA
11	White plastic wire covering	BL	BL	BL	BL	BL	NA
12	White coating	BL	BL	BL	BL	BL	NA
13	Silvery metal sheet without white coating	BL	BL	BL	BL	BL	NA
15	Silvery metal wire	BL	BL	BL	BL	BL	NA
16	Silvery metal screw	BL	BL	BL	BL	BL	NA
17	Silvery metal screw	BL	BL	BL	BL	BL	NA
18	Silvery metal screw	BL	BL	BL	BL	BL	NA
19	Silvery metal gasket	BL	BL	BL	BL	BL	NA
21	Coppery metal wire	BL	BL	BL	BL	BL	NA
22	Golden metal terminal	BL	BL	BL	BL	BL	NA



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
23	Green paper sheet	BL	BL	BL	BL	BL	NA
24	White plastic shell of connector	BL	BL	BL	BL	BL	NA
25	Silvery metal sleeve of connector	BL	BL	BL	BL	BL	NA
26	Silvery metal screw of connector	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
27	Grey resistor with multicolour coating	BL	BL	BL	BL	BL	NA
28	Silvery metal pin of resistor	BL	BL	BL	BL	BL	NA
29	Black heat-shrinkable tube of inductor	BL	BL	BL	BL	BL	NA
30	Black magnetic core of inductor	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND
31	Coppery metal wire of inductor	BL	BL	BL	BL	BL	NA
32	Yellow plastic adhesive tape of inductor	BL	BL	BL	BL	BL	NA
33	Black plastic bobbin of inductor	BL	BL	BL	BL	BL	NA
34	Dark grey magnetic core of inductor	BL	BL	BL	BL	BL	NA
35	Coppery metal winding of inductor	BL	BL	BL	BL	BL	NA
36	Purple plastic film of electrolytic capacitor	BL	BL	BL	BL	BL	NA
37	Silvery metal shell of electrolytic capacitor	BL	BL	BL	BL	BL	NA
38	Black rubber stopper of electrolytic capacitor	BL	BL	BL	BL	BL	NA
39	Grey metal foil of electrolytic capacitor	BL	BL	BL	BL	BL	NA
40	Silvery-grey metal foil of electrolytic capacitor	BL	BL	BL	BL	BL	NA
41	Brown paper of electrolytic capacitor	BL	BL	BL	BL	BL	NA
42	Dark grey magnetic core of transformer	BL	BL	BL	BL	BL	NA



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
43	Coppery metal winding of transformer	BL	BL	BL	BL	BL	NA
44	Yellow plastic adhesive tape of transformer	BL	BL	BL	BL	BL	NA
45	Black plastic bobbin of transformer	BL	BL	BL	BL	BL	NA
46	Yellow plastic shell of capacitor	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
47	Yellow epoxy resin of capacitor	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
48	Silvery metal foil of capacitor	BL	BL	BL	BL	BL	NA
49	Blue body of capacitor	BL	BL	BL	BL	BL	NA
50	White plastic shell of socket	BL	BL	BL	BL	BL	NA
51	Silvery metal pin of socket	BL	BL	BL	BL	BL	NA
52	Chip resistor	BL	*OL	BL	BL	BL	NA
53	Chip capacitor	BL	BL	BL	BL	BL	NA
54	Chip IC	BL	BL	BL	BL	BL	NA
55	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
58	Chip diode	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
59	Chip rectifier	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
60	Chip resistor	BL	*OL	BL	BL	BL	NA
61	White plastic wire covering	BL	BL	BL	BL	BL	NA
62	Grey plastic wire covering	BL	BL	BL	BL	BL	NA
64	White heat-shrinkable tube	BL	BL	BL	BL	BL	NA
65	Red plastic wire covering	BL	BL	BL	BL	BL	NA



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
66	Black plastic wire covering	BL	BL	BL	BL	BL	NA
67	Green plastic wire covering	BL	BL	BL	BL	BL	NA
68	Silvery metal wire	BL	BL	BL	BL	BL	NA
69	White plastic box with black printing	BL	BL	BL	BL	BL	NA
70	Black plastic adhesive film	BL	BL	BL	BL	BL	NA
71	White-black PCB	BL	BL	BL	BL	BL	NA
72	Silvery metal cover	BL	BL	BL	BL	BL	NA
73	Solder	BL	BL	BL	BL	BL	NA
74	Solder	BL	BL	BL	BL	BL	NA
75	Black plastic sheet	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
76	Silvery metal pin	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
77	Chip capacitor	BL	BL	BL	BL	BL	NA
78	Red glue	BL	BL	BL	BL	BL	NA
79	Chip IC	BL	BL	BL	BL	BL	NA
80	Chip audion	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
81	Chip resistor	BL	BL	BL	BL	BL	NA
82	Brown-black PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
83	Red plastic shell of switch	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
84	White plastic key of switch	BL	BL	BL	BL	BL	NA
85	Black plastic base of switch	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
86	Silvery metal pin of switch	BL	BL	BL	BL	BL	NA
87	Chip IC	BL	BL	BL	BL	BL	NA
88	Transparent body of LED	BL	BL	BL	BL	BL	NA
89	Black plastic holder	BL	BL	BL	BL	BL	NA
90	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
91	Chip audion	BL	BL	BL	BL	BL	NA
92	Solder	BL	BL	BL	BL	BL	NA
93	Solder	BL	BL	BL	BL	BL	NA

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 IEC 62321-3-1: 2013 (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) mg / kg =milligram per kilogram=ppm, $\mu\text{g}/\text{cm}^2$ = Micrograms per square centimetre.
- (5) ND = Not Detected or lower than limit of quantitation.
- (6) NA = Not Applicable, as the XRF screening test result was below the limit or as the XRF screening directly determine that test result was over the limit, it was not need to conduct the wet chemical testing.



(7) LOQ = Limit of quantitation.

Test Items	Pb	Cd	Hg	Cr ⁶⁺		PBB	PBDE
Units	mg/kg	mg/kg	mg/kg	mg/kg	μg/cm ²	mg/kg	mg/kg
LOQ	2	2	2	8	0.1	5	5

The LOQ for single compound of PBBs and PBDEs is 5mg/kg, LOQ of Cr⁶⁺ for polymer and composite sample is 8mg/kg and LOQ of Cr⁶⁺ for metal sample is 0.1μg/cm².

(8) RoHS Requirement

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr ⁶⁺)	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)

(9) According to IEC 62321-7-1:2015, determined of Cr⁶⁺ on metal sample by boiling water extraction test method, and result is shown as Positive/Negative.

Boiling water extraction:

Negative = Absence of Cr⁶⁺ coating, the detected concentration in boiling water extraction solution is less than 0.10ug/cm².

Positive = Presence of Cr⁶⁺ coating, the detected concentration in boiling water extraction solution is greater than 0.13ug/cm².

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.

(10) Abbreviation:

"Pb" denotes Lead, "Cd" denotes Cadmium, "Hg" denotes Mercury, "Cr" denotes Chromium, "Cr (VI)" denotes Hexavalent Chromium, "Br" denotes Bromine, "PBBs" denotes Total Polybrominated Biphenyls, "PBDEs" denotes Total Polybrominated Diphenyl Ethers.

(11)* = According to the declaration from client, the source of lead in test sample is from the glass or ceramic material of that electronic component which is exempted by Directive 2011/65/EU ANNEX III.

(12) As per client's requirement, to test the specified components. The test results relate only to the components tested, and it doesn't mean that the whole product complies with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863.



2. Phthalates:

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1+6 [△]	<50	<50	<50	<50
T02	2	<50	<50	<50	<50
T03	4+5+24 [△]	<50	<50	<50	<50
T04	7+27+30+34+42 [△]	<50	<50	<50	<50
T05	8	<50	<50	<50	<50
T06	11	105	<50	<50	<50
T07	12	<50	<50	<50	<50
T08	23	<50	<50	<50	<50
T09	29	<50	<50	<50	<50
T10	32	<50	<50	<50	<50
T11	33+45+46 [△]	<50	<50	<50	<50
T12	36	<50	<50	<50	<50
T13	38	<50	<50	<50	<50
T14	41	<50	<50	<50	<50
T15	44	<50	<50	<50	<50
T16	47	<50	<50	<50	<50
T17	49+52+53+54+55 [△]	<50	<50	<50	<50
T18	50	<50	<50	<50	<50
T19	58+59+60+71 [△]	<50	<50	<50	<50
T20	61	<50	<50	<50	<50
T21	62	<50	<50	<50	<50
T22	64	<50	<50	<50	<50
T23	65	406	<50	175	<50
T24	66	641	<50	<50	<50
T25	67	640	<50	123	<50
T26	69	<50	<50	<50	<50
T27	70	<50	<50	<50	<50
T28	75	<50	<50	<50	<50
T29	77+79+80+81+82 [△]	<50	<50	<50	<50
T30	78	<50	<50	<50	<50
T31	83+84+85+89 [△]	<50	<50	<50	<50
T32	87+88+90+91 [△]	<50	<50	<50	<50

**Note:**

- (1) "<" = less than
- (2) mg/kg = milligram per kilogram= ppm
- (3) Abbreviation:

"DBP" denotes Dibutyl phthalate, "BBP" denotes Benzyl butyl phthalate (BBP), "DEHP" denotes Bis(2-ethylhexyl)-phthalate, "DIBP" denotes Diisobutyl phthalate, "PHT" denotes Phthalates.

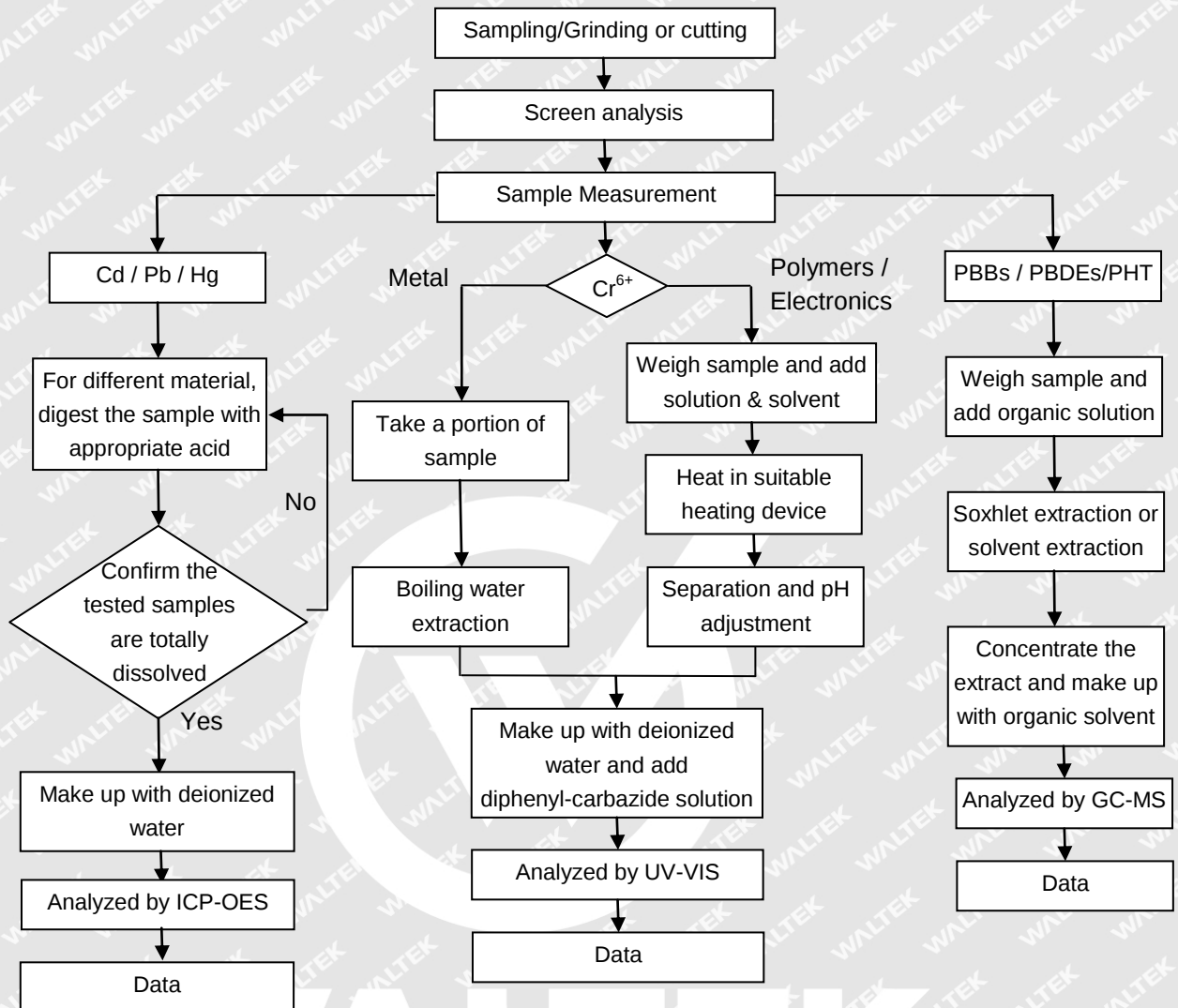
- (4) RoHS requirement

Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

- (5) "△"= As client's requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.
- (6) As per client's requirement, to test the specified components. The test results relate only to the components tested, and it doesn't mean that the whole product complies with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863.



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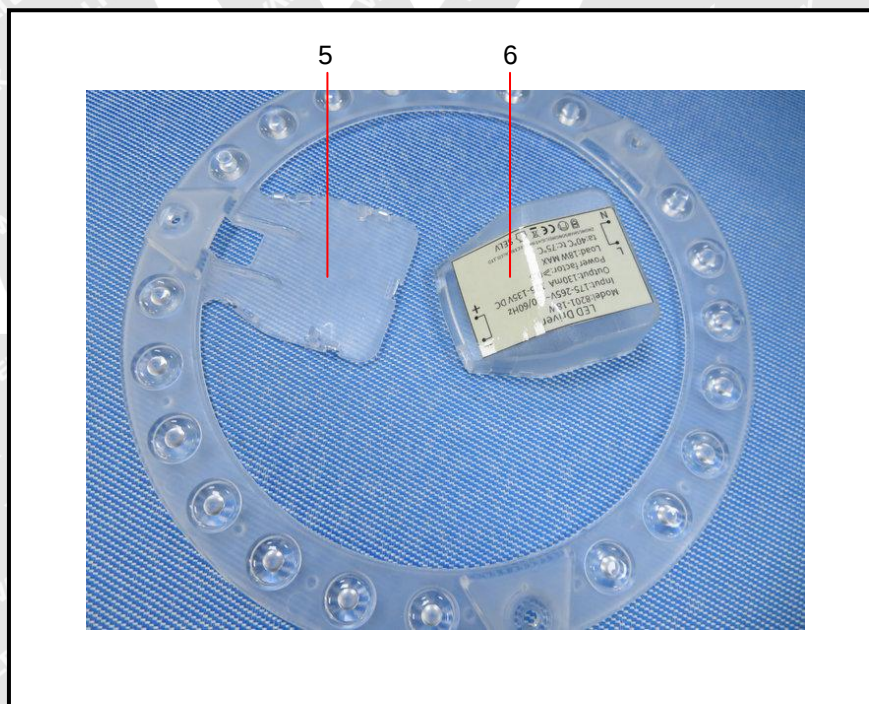
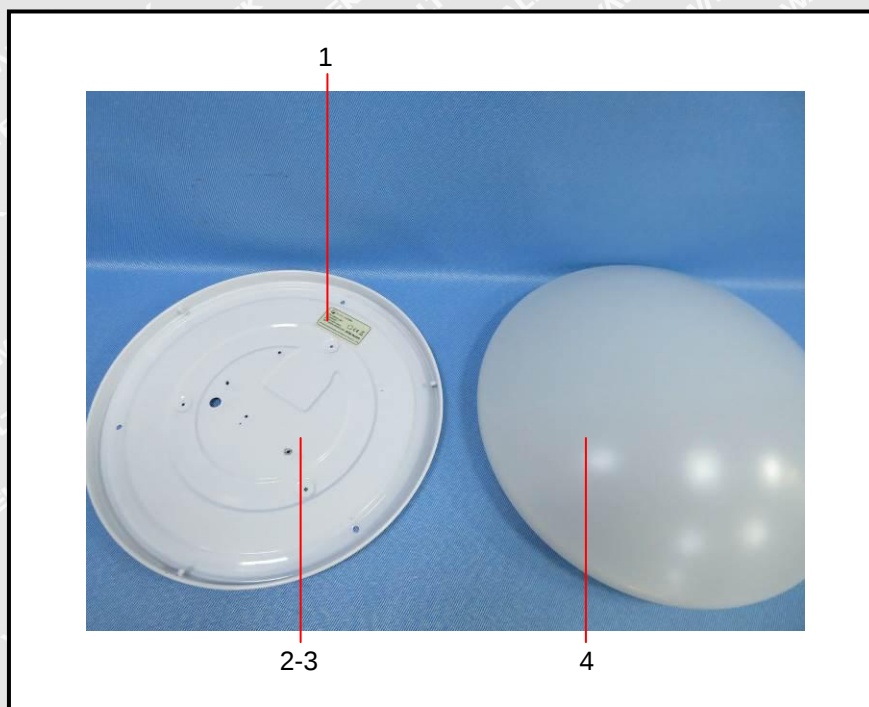
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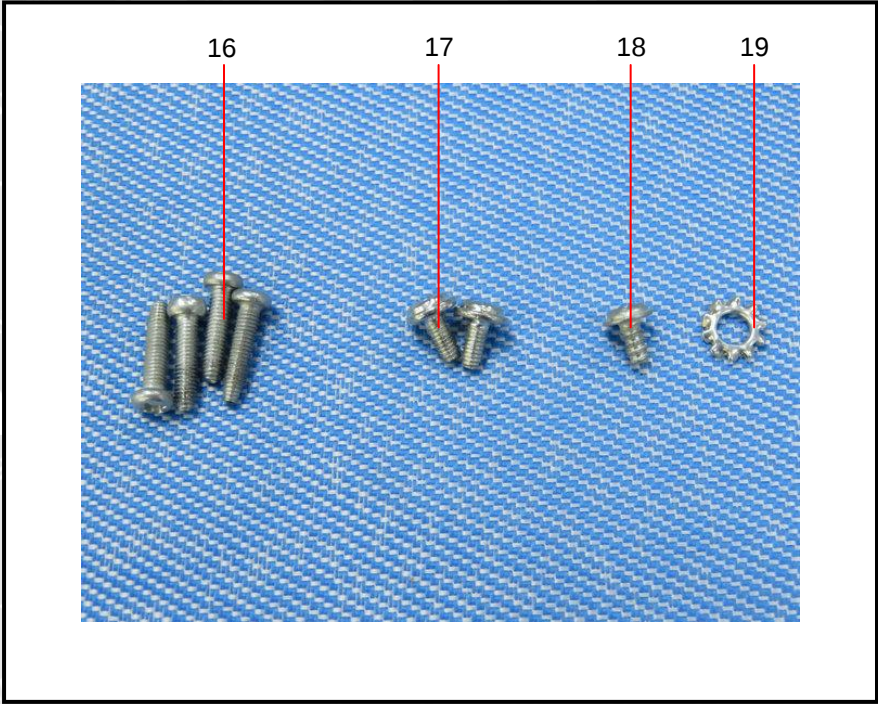
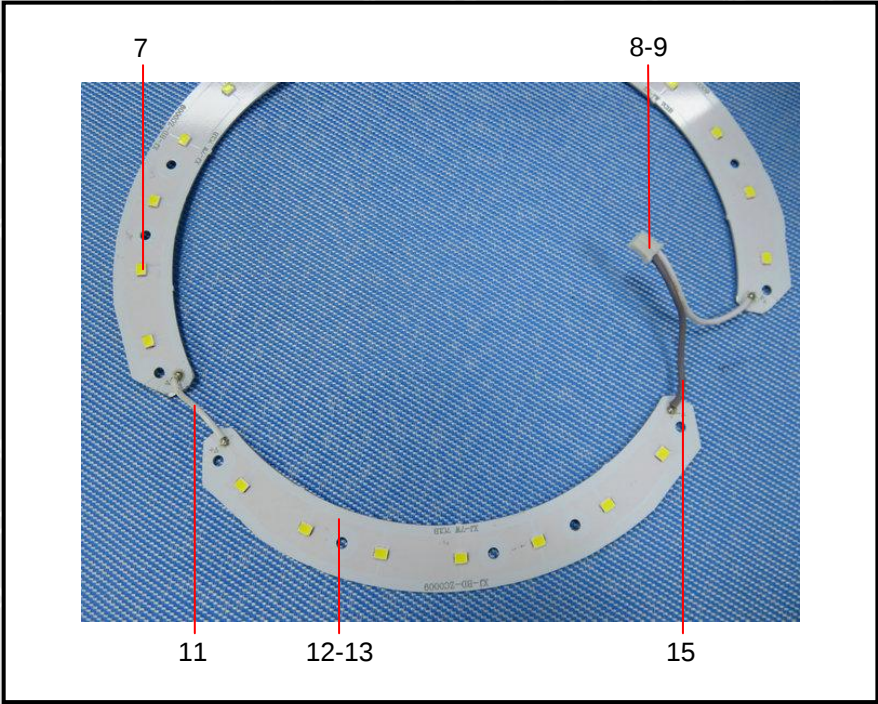


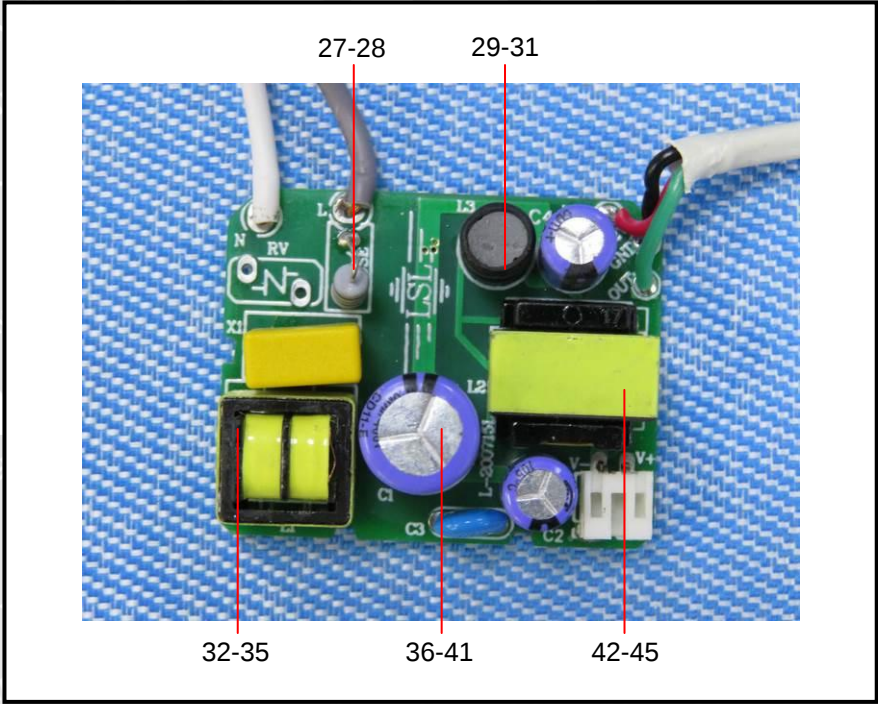
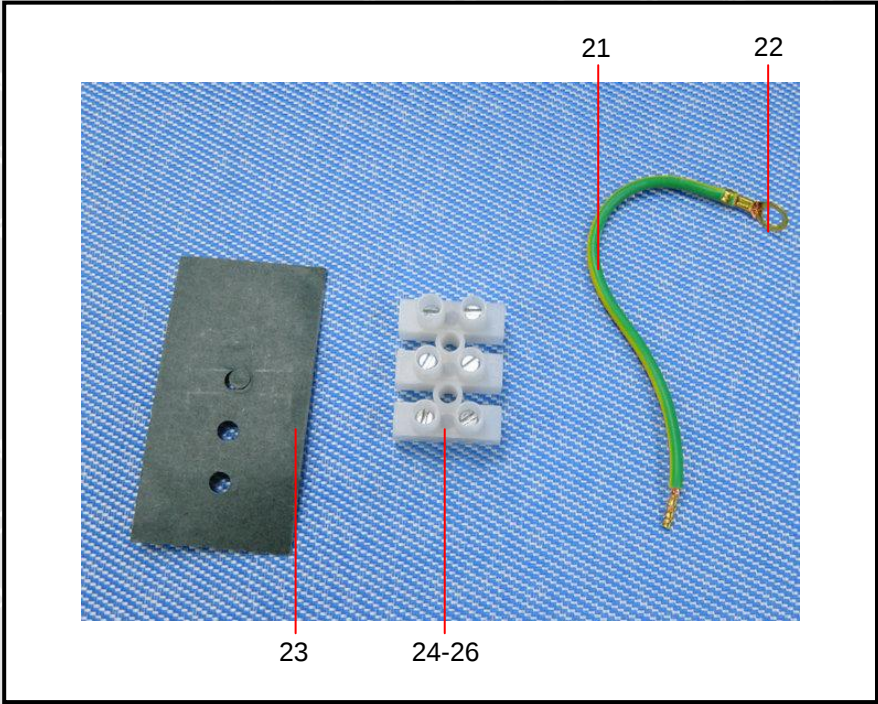
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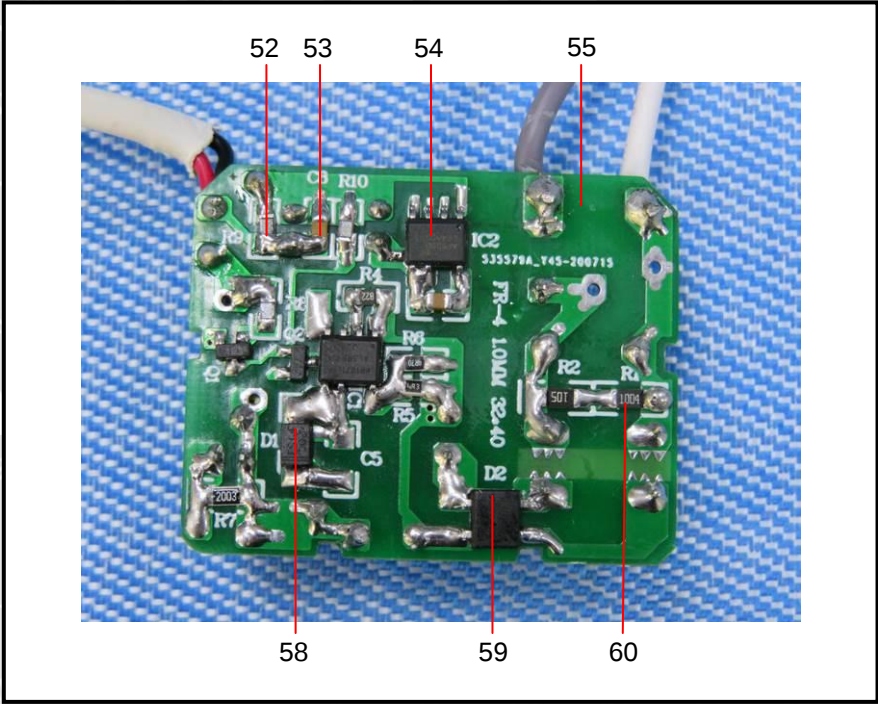
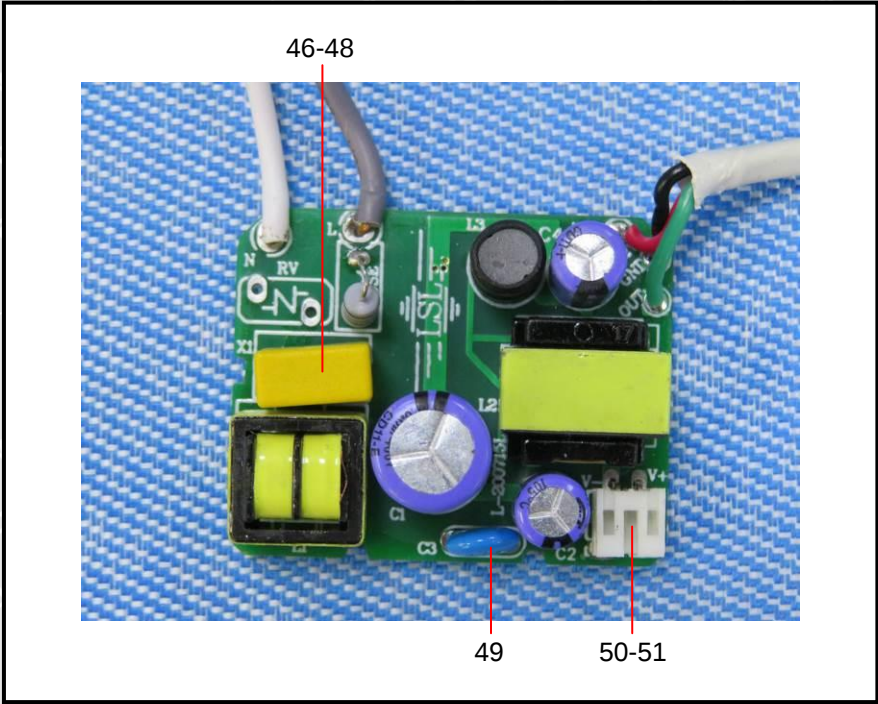


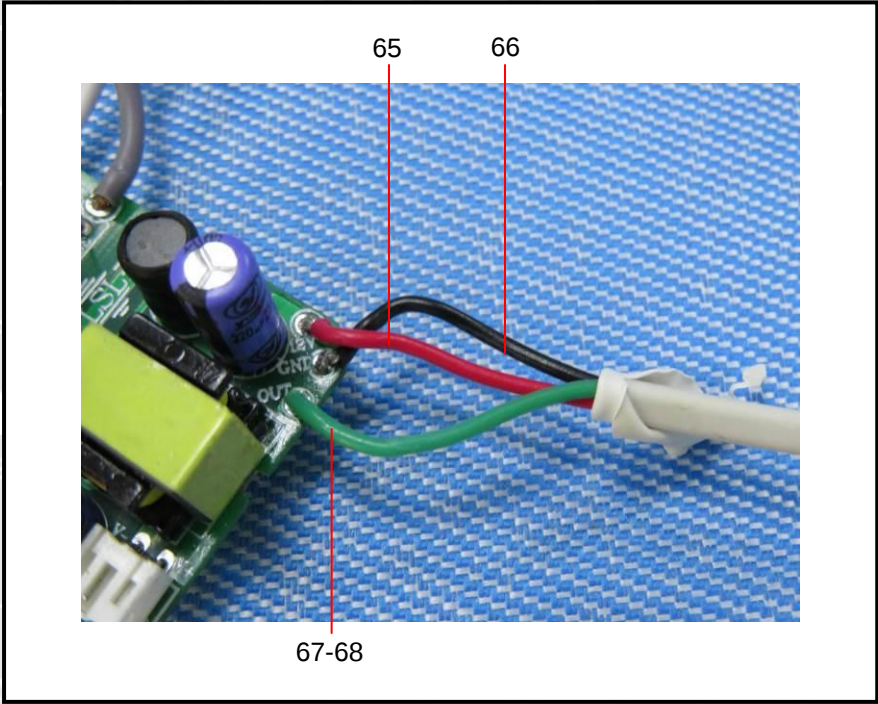
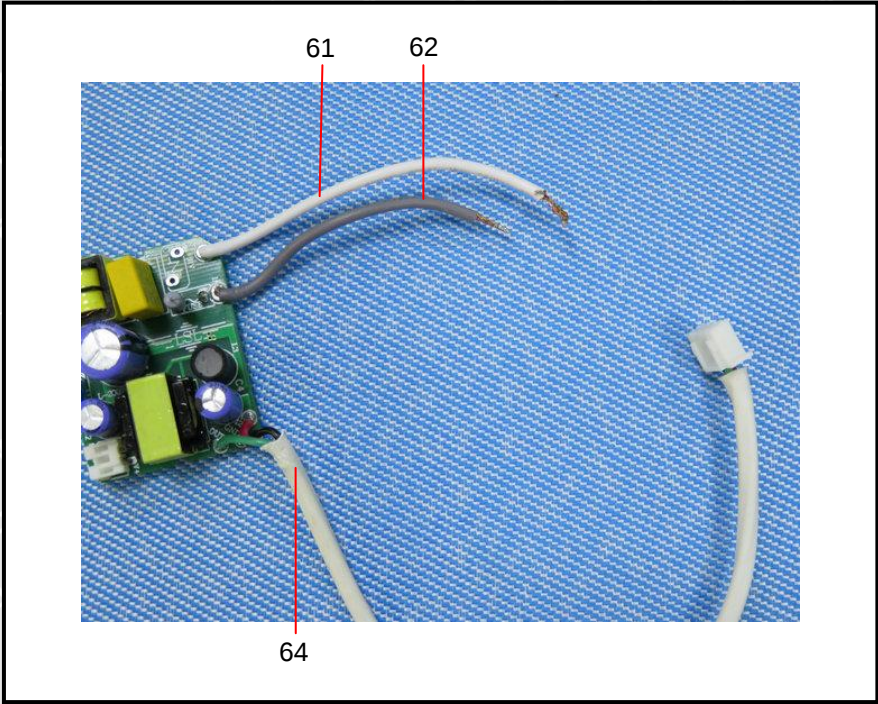
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**Photograph(s) of parts tested:**



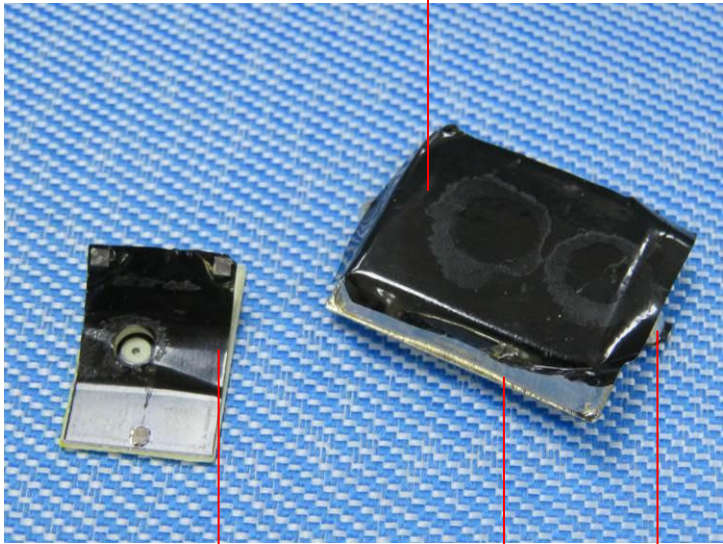








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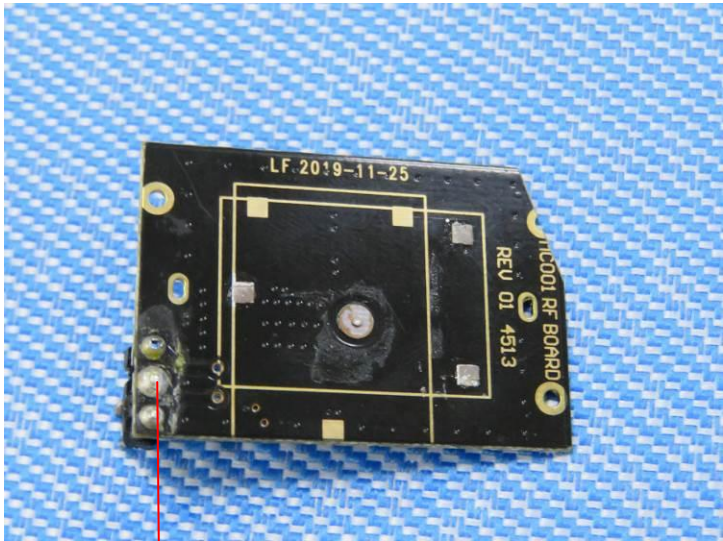


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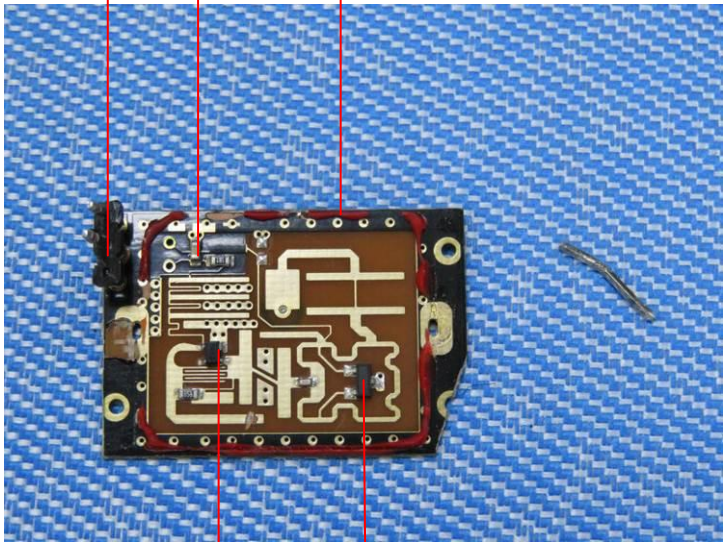
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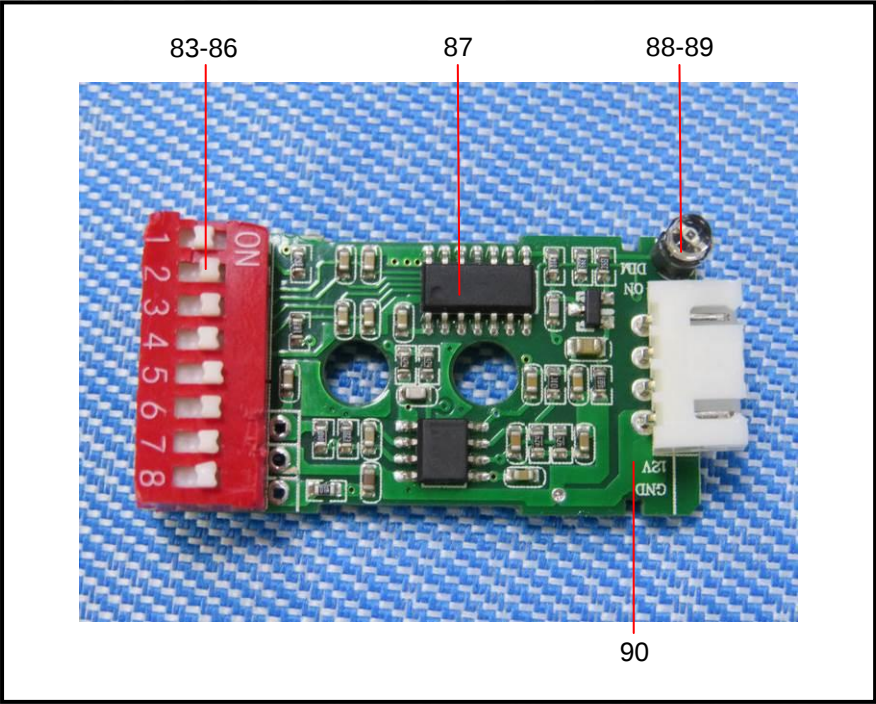
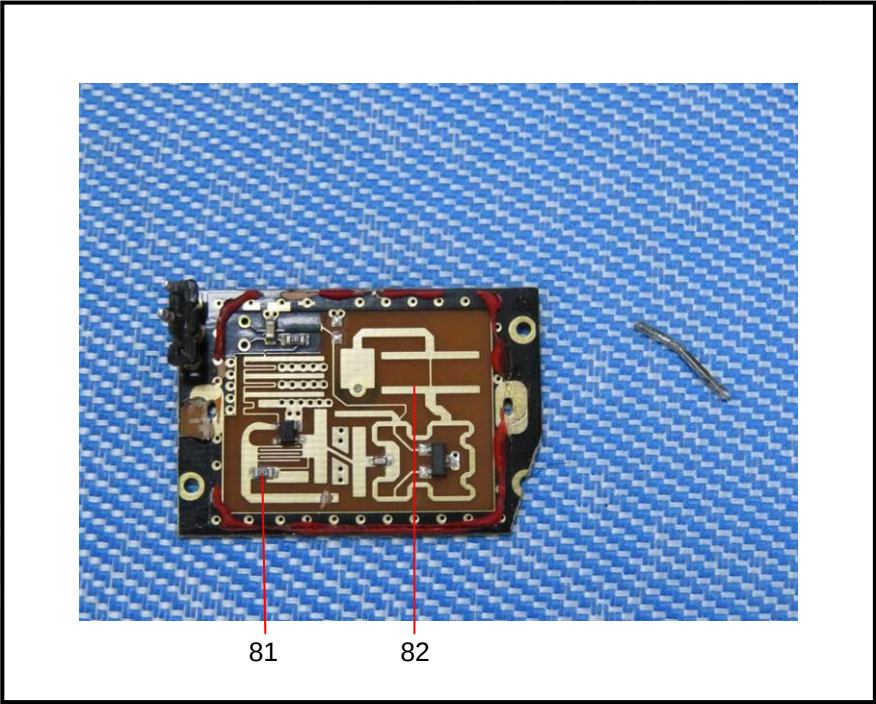
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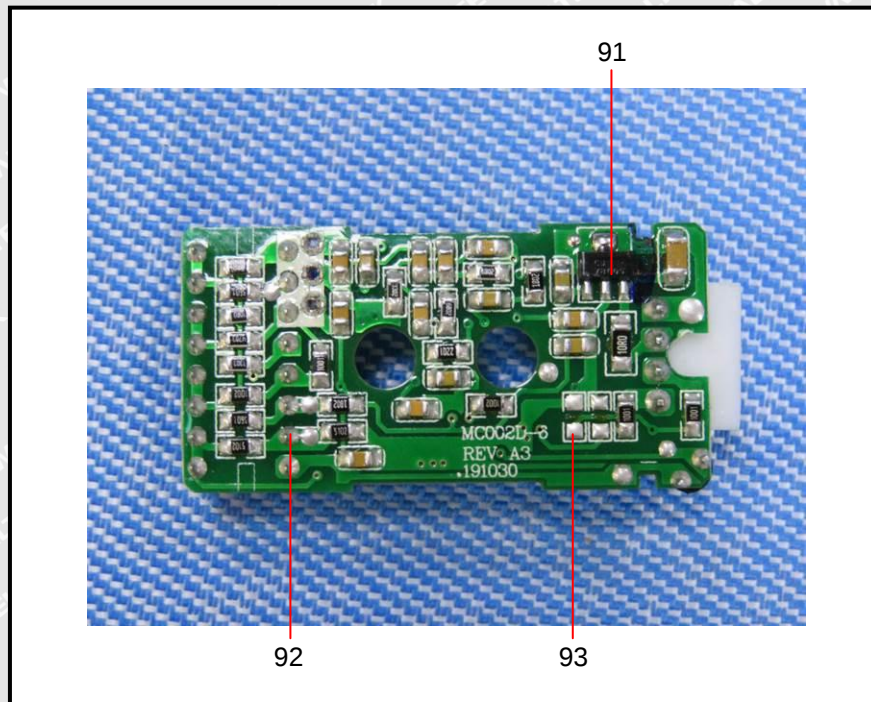
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===== End of Report =====

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