



TEST REPORT

Report No. : WTX20X12101405C

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Applicant..... : Lumi United Technology Co., Ltd
Applicant Address..... : 8th Floor, JinQi Wisdom Valley, No.1 Tangling Road, Liuxian Ave, Taoyuan Residential District, Nanshan District, Shenzhen.China
Manufacturer..... : Lumi United Technology Co., Ltd
Manufacturer Address.... : 8th Floor, JinQi Wisdom Valley, No.1 Tangling Road, Liuxian Ave, Taoyuan Residential District, Nanshan District, Shenzhen.China
Date of Receipt Sample.. : Dec.25, 2020
Testing Period..... : Dec.25, 2020 to Jan.06, 2021
Date Of Issue..... : Feb.26, 2021
Test Requested..... : In accordance with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863, to determine the 10 restricted substances content in the submitted sample.
Test Conclusion..... : **Pass** (Based on the performed tests on the submitted samples, the results comply with the requirement of EU RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863).

*****FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S) *****



Signed for and on behalf of
Waltek Testing Group (Shenzhen) Co., Ltd.

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Tested by:	<i>Charles Wang</i>	Reviewed by:	<i>Eric Lu</i>	Approved by:	<i>Hugo Chen</i>
	Charles Wang		Eric Lu		Hugo Chen

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Sample Name..... : Smart Wall Switch H1 EU (No Neutral, Double Rocker), Smart Wall Switch H1 EU (No Neutral, Single Rocker)

Model No. : WS-EUK02

Reference Model No. : WS-EUK01

Brand..... : Aqara

Test Method:

- IEC 62321-3-1:2013, screening - Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry (XRF)
- IEC 62321-4:2017 for mercury (Hg), analyzed by ICP-OES
- IEC 62321-5:2013 for lead (Pb) and cadmium (Cd), analyzed by ICP-OES
- IEC 62321-7-2:2017 and/or IEC 62321-7-1:2015 for hexavalent chromium (Cr⁶⁺), analyzed by UV-Vis
- IEC 62321-6:2015 for PBBs and PBDEs, analyzed by GC-MS
- IEC 62321-8:2017 for phthalates, analyzed by GC-MS

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

No.	Part Description	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
1	White plastic shell	BL	BL	BL	BL	BL	NA
2	Gray plastic shell	BL	BL	BL	BL	BL	NA
3	Red rubber	BL	BL	BL	BL	BL	NA
4	Transplant hard plastic	BL	BL	BL	BL	BL	NA
5	White coating	BL	BL	BL	BL	BL	NA
6	Silvery metal plate	BL	BL	BL	BL	NA	NA
7	Silvery metal	BL	BL	BL	IN	NA	Cr ⁶⁺ : Negative
8	Silvery metal screw	BL	BL	BL	IN	NA	Cr ⁶⁺ : Negative
9	Silvery metal screw	BL	BL	BL	BL	NA	NA
10	Black cladding metal screw	BL	BL	BL	BL	NA	NA
11	Golden cladding metal screw	BL	BL	BL	BL	NA	NA
12	Black plastic	BL	BL	BL	BL	BL	NA



No.	Part Description	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
13	Silvery metal PIN	BL	BL	BL	BL	NA	NA
14	Brown capacitor SMD	BL	BL	BL	BL	BL	NA
15	Black IC SMD	BL	BL	BL	BL	BL	NA
16	Black soft plastic tube	BL	BL	BL	BL	BL	NA
17	Silvery metal PIN (fuse)	BL	BL	BL	BL	NA	NA
18	Silvery metal cap (fuse)	BL	BL	BL	BL	NA	NA
19	Silvery metal filament (fuse)	BL	BL	BL	BL	NA	NA
20	White ceramic body (fuse)	BL	BL	BL	BL	BL	NA
21	Black plastic	BL	BL	BL	BL	IN	PBBs: ND PBDEs: ND
22	Coppery metal coil	BL	BL	BL	BL	NA	NA
23	Silvery metal axle	BL	BL	BL	BL	NA	NA
24	Silvery metal sheet	BL	BL	BL	BL	NA	NA
25	Rose red cladding metal sheet	BL	BL	BL	BL	NA	NA



No.	Part Description	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
26	Golden cladding metal body	IN	BL	BL	BL	NA	Pb:4890#
27	Black body	BL	BL	BL	BL	BL	NA
28	Blue body (Y capacitor)	BL	BL	BL	BL	BL	NA
29	Silvery metal PIN (Y capacitor)	BL	BL	BL	BL	NA	NA
30	Dark red body w/grey printing (film capacitor)	BL	BL	BL	BL	BL	NA
31	Silvery metal filling (film capacitor)	BL	BL	BL	BL	NA	NA
32	Yellow plastic adhesive tape (Transformer)	BL	BL	BL	BL	BL	NA
33	Gray solid material base (Transformer)	BL	BL	BL	BL	BL	NA
34	Black solid material axle (Transformer)	BL	BL	BL	BL	BL	NA
35	Coppery metal coil (Transformer)	BL	BL	BL	BL	NA	NA
36	Black plastic w/white printing 1 (capacitor)	BL	BL	BL	BL	BL	NA
37	Black rubber cover 1 (capacitor)	BL	BL	BL	BL	BL	NA
38	Silvery metal shell 1 (capacitor)	BL	BL	BL	BL	NA	NA



No.	Part Description	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
39	Silvery metal PIN 1 (capacitor)	BL	BL	BL	BL	NA	NA
40	Black rubber cover 2 (capacitor)	BL	BL	BL	BL	BL	NA
41	Silvery metal shell 2 (capacitor)	BL	BL	BL	BL	NA	NA
42	Silvery metal PIN 2 (capacitor)	BL	BL	BL	BL	NA	NA
43	Black rubber cover 3 (capacitor)	BL	BL	BL	BL	BL	NA
44	Silvery metal shell 3 (capacitor)	BL	BL	BL	BL	NA	NA
45	Silvery metal PIN 3 (capacitor)	BL	BL	BL	BL	NA	NA
46	Black plastic shell (electromagnetic relay)	BL	BL	BL	BL	IN	PBBs: ND PBDEs: ND
47	Coppery metal sheet (electromagnetic relay)	BL	BL	BL	BL	NA	NA
48	Silvery metal support (electromagnetic relay)	BL	BL	BL	BL	NA	NA
49	Silvery metal axle (electromagnetic relay)	BL	BL	BL	BL	NA	NA
50	Coppery metal wire coil (electromagnetic relay)	BL	BL	BL	BL	NA	NA
51	Silvery metal	BL	BL	BL	IN	NA	Cr ⁶⁺ : Negative



No.	Part Description	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
52	Transplant plastic button (switch)	BL	BL	BL	BL	BL	NA
53	Black plastic (switch)	BL	BL	BL	BL	BL	NA
54	Silvery metal sheet (switch)	BL	BL	BL	BL	NA	NA
55	Black cladding PCB board	BL	BL	BL	BL	IN	PBBs: ND PBDEs: ND
56	Solder	BL	BL	BL	BL	NA	NA
57	Black diode SMD	BL	BL	BL	BL	BL	NA
58	Black cladding PCB board	BL	BL	BL	BL	IN	PBBs: ND PBDEs: ND
59	Solder	BL	BL	BL	BL	NA	NA

**Note:**

- (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 ≤ (70-3σ) < IN < (130+3σ) ≤ OL	BL ≤ (70-3σ) < IN < (130+3σ) ≤ OL	LOD < IN < (150+3σ) ≤ OL
Pb	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL
Hg	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL
Cr	BL ≤ (700-3σ) < IN	BL ≤ (700-3σ) < IN	BL ≤ (500-3σ) < IN
Br	BL ≤ (300-3σ) < IN	--	BL ≤ (250-3σ) < 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, μg/cm²= Micrograms per square centimeter.
- (5) ND = Not Detected, less than the value of Method Detection Limit.
- (6) NA = Not Applicable, as the XRF screening test result was below the limit, it was not need to conduct the chemical testing.
- (7) MDL= Method Detection Limit in chemical test.

Test Items	Pb	Cd	Hg	Cr ⁶⁺	PBB	PBDE
Units	mg/kg	mg/kg	mg/kg	mg/kg	μg/cm ²	mg/kg
MDL	10	10	10	10	0.1	10

The MDL for single compound of PBBs and PBDEs is 10mg/kg, MDL of Cr⁶⁺ for polymer and composite sample is 10mg/kg and MDL of Cr⁶⁺ for metal sample is 0.1μg/cm².

- (8) Requirement as per RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863

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 0.10μg/cm².

Positive = Presence of Cr⁶⁺ coating, the detected concentration in boiling water extraction solution is greater than 0.13μg/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, “Cr⁶⁺” denotes Hexavalent Chromium, “Br” denotes Bromine, “PBBs” denotes Total Polybrominated Biphenyls, “PBDEs” denotes Total Polybrominated Diphenyl Ethers.

(11) #= Sample is copper alloy. The lead content which is under 4% (40000ppm) is exempted from the requirement of RoHS Directive (2011/65/EU).

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**2. Phthalates (DEHP, BBP, DBP, DIBP)**

Serial No.	Part No.	Result (mg/kg)			
		DIBP	DBP	BBP	DEHP
T01	3	ND	ND	ND	ND
T02	5	ND	ND	ND	ND
T03	1+2+4+12+21 [△]	ND	ND	ND	ND
T04	14+15+20+27+28 [△]	ND	ND	ND	ND
T05	16+52+53 [△]	ND	ND	ND	ND
T06	30+55+57+58 [△]	ND	ND	ND	ND
T07	32+33+34 [△]	ND	ND	ND	ND
T08	36+37+40+43 [△]	ND	ND	ND	ND

Note:

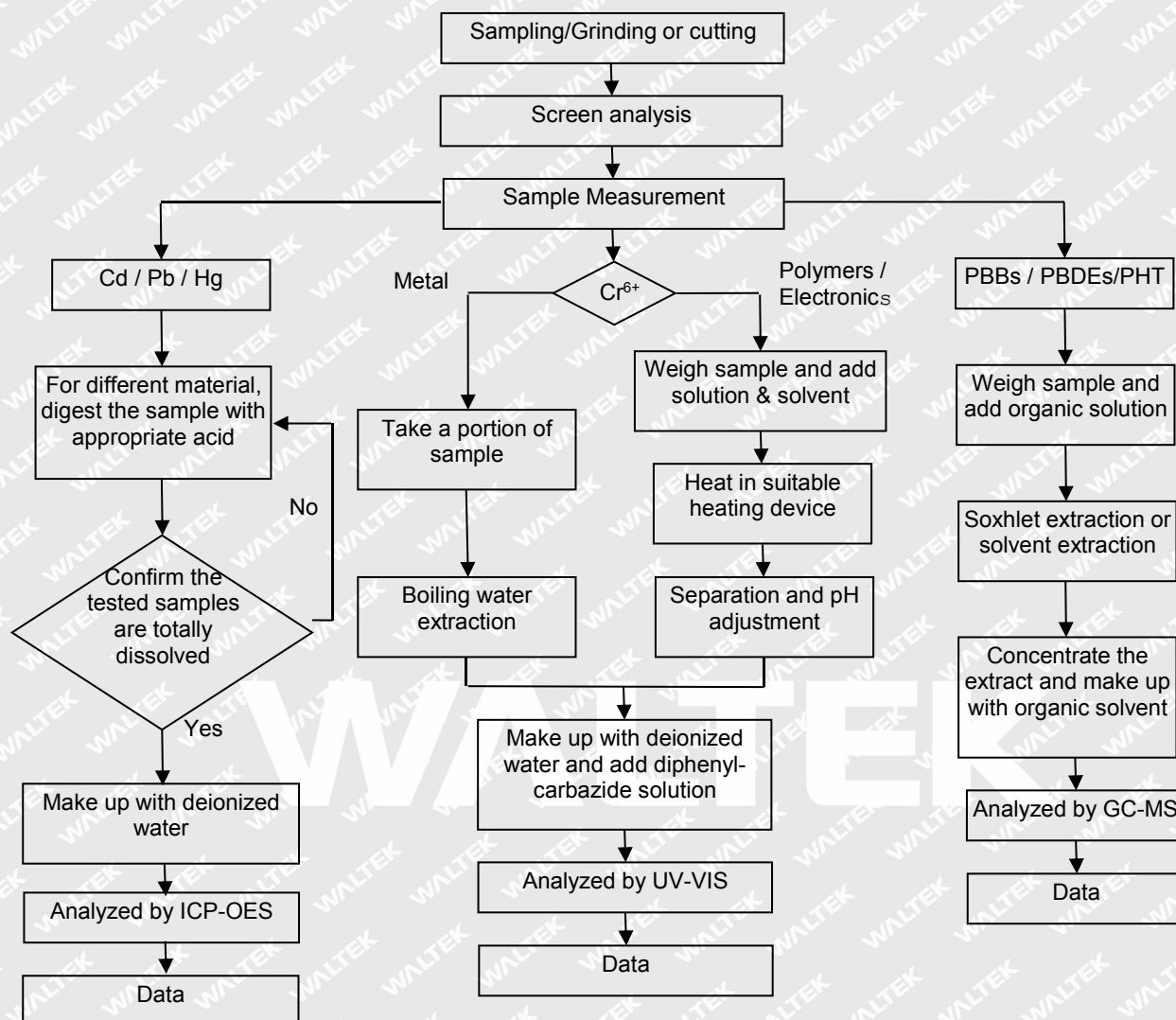
- (1) mg/kg = milligram per kilogram = ppm.
- (2) Requirement as per RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863

Test Item(s)	Limit (mg/kg)
Bis (2-ethylhexyl)- phthalate (DEHP)	1000
Dibutyl phthalate (DBP)	1000
Benzylbutyl phthalate (BBP)	1000
Diisobutyl phthalate (DIBP)	1000

- (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) Method Detection Limit (MDL) : 50mg/kg for each of phthalate.
- (5) “△” = As client’s requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.

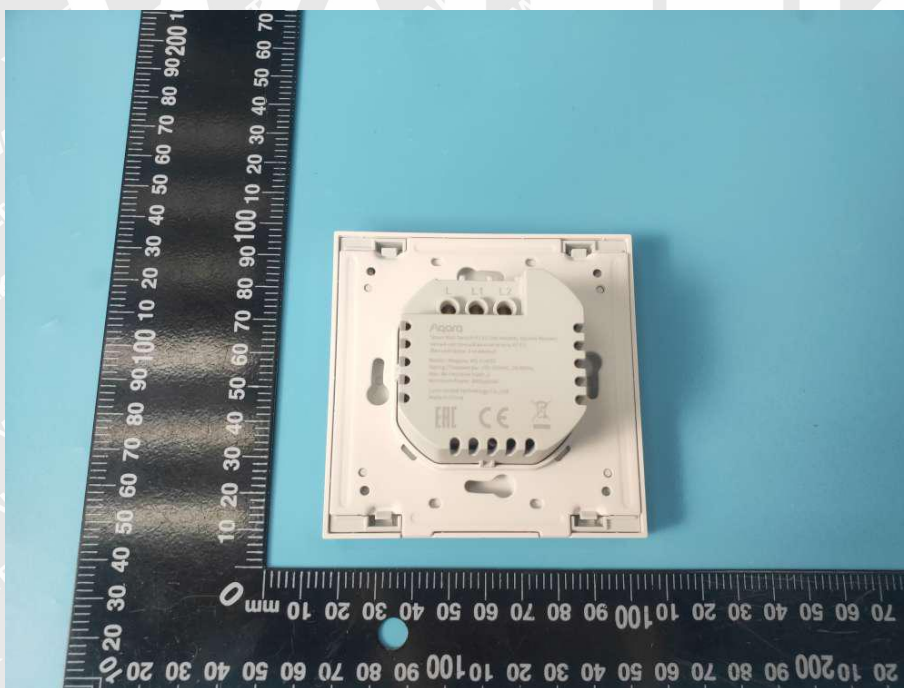


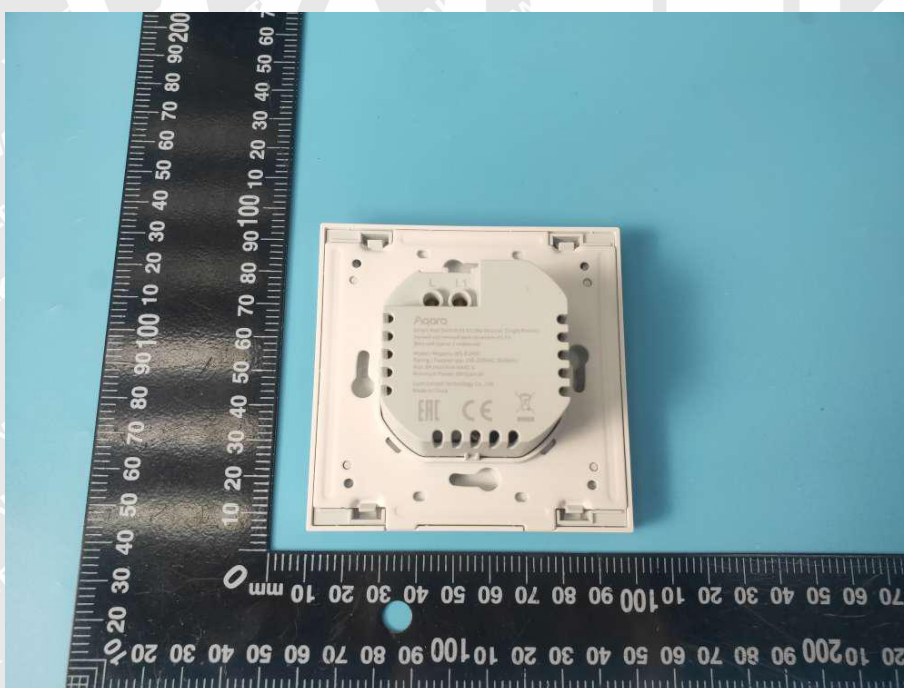
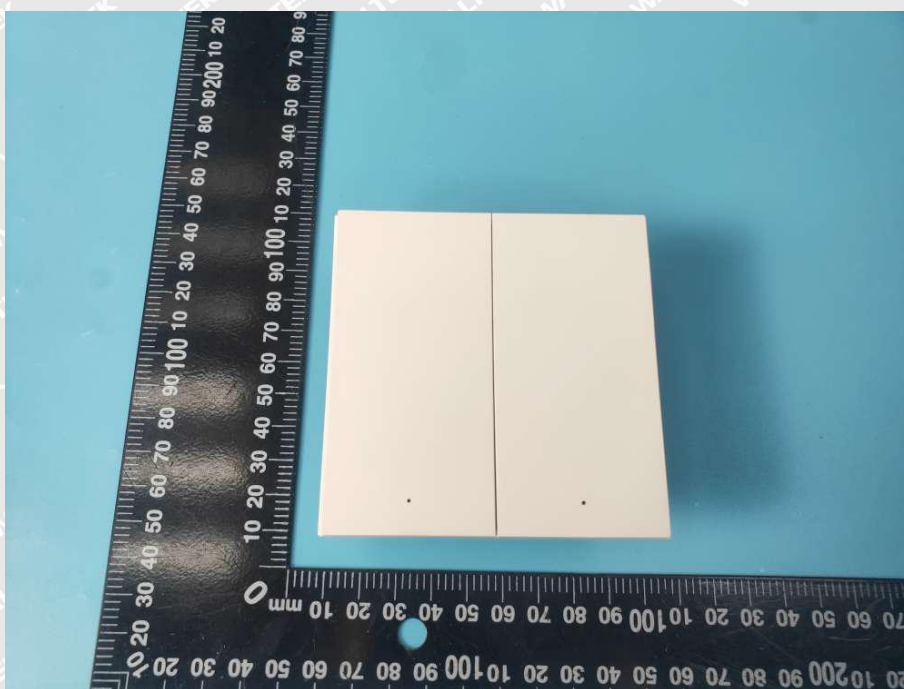
Measurement Flow chart:





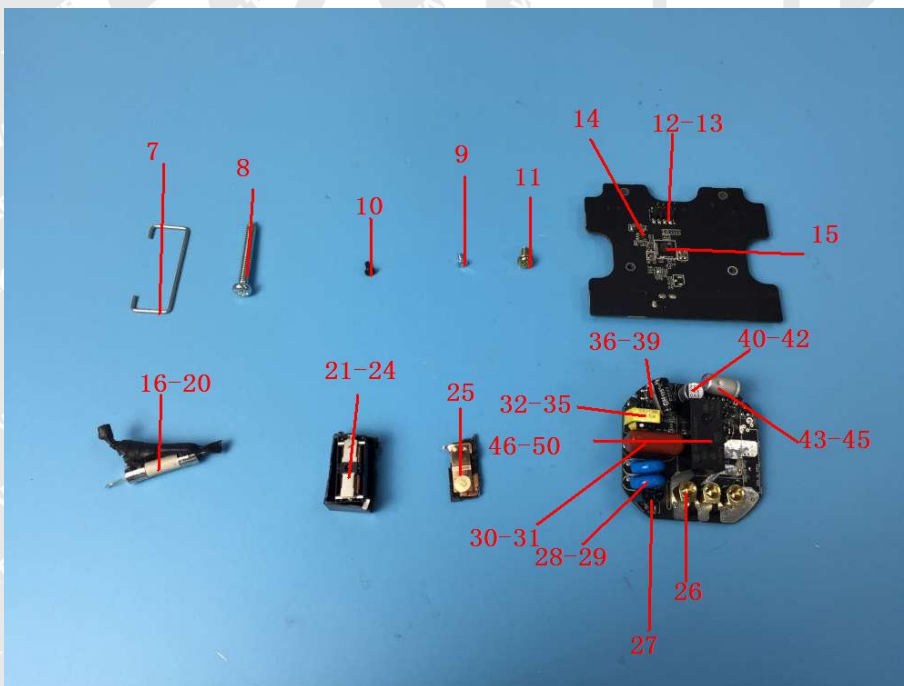
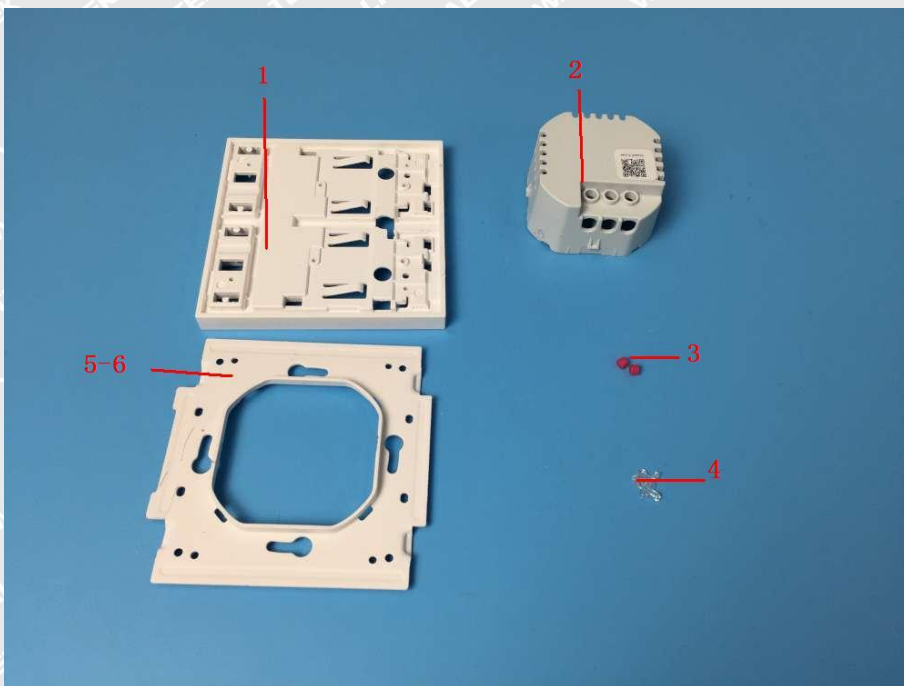
Sample Photo:

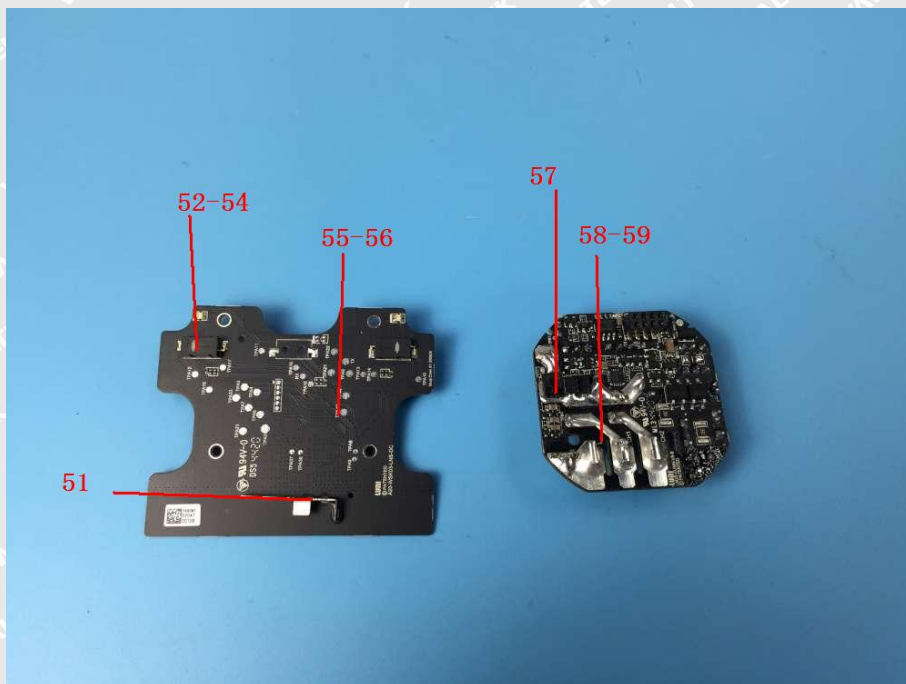






Photograph of parts tested :





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End of Report
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