TEST REPORT

Report No.	:	WTF25F08227473C
Job No.	:	FSW2508251091CJ
Applicant	:	Sunlu(Guangdong)Technology Co., Ltd.
Address	:	No.162 Tanlong North Road, Tanzhou Town, Zhongshan City, China.
Sample Name	:	Filament Connector
Sample Model	:	FC01
Test Requested	:	With reference to EU RoHS Directive 2011/65/EU and its amendment Directive EU 2015/863, to determine the Pb, Cd, Hg, Cr^{6+}, PBBs, PBDEs, DBP, BBP, DEHP, DIBP content in the submitted sample.
Test Method	:	Refer to next page (s)
Test Conclusion	:	**Pass**
Date of Receipt Sample	:	2025-08-25 & 2025-09-03
Testing Period	:	2025-08-25 to 2025-09-09
Date of Issue	:	2025-09-10
Test Result	:	Refer to next page (s)

Prepared By:
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Signed for and on behalf of
Waltek Testing Group (Foshan) Co., Ltd.

WTF25F08227473C

Swing Liang
Waltek Testing Group (Foshan) Co., Ltd.

Sample photo:

FC01

Test Results:

1. Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs and PBDEs

Test Method/Equipment:

1) With reference to IEC 62321-2:2021, 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 62321-12:2023, determination of PBBs and PBDEs by GC-MS

Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
1	Grey transparent plastic shell with green printing	BL	BL	BL	BL	BL	NA
2	Black plastic shell	BL	BL	BL	BL	BL	NA
3	Transparent plastic shell with silvery surface	BL	BL	BL	BL	BL	NA
4	Black plastic part with silvery surface	BL	BL	BL	BL	BL	NA
5	Silvery metal axle	BL	BL	BL	IN	--	Cr^{6+} : Negative
6	Silvery metal spring	BL	BL	BL	IN	--	Cr^{6+} : Negative
7	Silvery metal blade	BL	BL	BL	IN	--	Cr^{6+} : Negative
8	Black plastic wire covering	BL	BL	BL	BL	BL	NA
9	White plastic shell	BL	BL	BL	BL	BL	NA
10	Silvery metal pin	BL	BL	BL	BL	--	NA
11	Red plastic wire covering	BL	BL	BL	BL	BL	NA
12	Silvery metal wire	BL	BL	BL	BL	--	NA
13	Black plastic shell	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	
14	Silvery metal sheet	BL	BL	BL	BL	--	NA
15	Silvery metal top pin	BL	BL	BL	BL	--	NA
16	Solder	BL	BL	BL	IN	--	Cr^{6+} : Negative
17	Grey dry glue	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
18	Yellow FPC with adhesive	BL	BL	BL	IN	BL	Cr^{6+} : 117
19	White wet glue	BL	BL	BL	BL	BL	NA
20	Silvery metal sheet(switch)	BL	BL	BL	IN	--	Cr^{6+} : Negative
21	Black plastic shell(switch)	BL	BL	BL	BL	BL	NA
22	Black plastic button(switch)	BL	BL	BL	BL	BL	NA
23	Silvery metal spring(switch)	BL	BL	BL	BL	--	NA
24	Silvery metal pin(switch)	BL	BL	BL	BL	--	NA
25	Black PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
26	Beige plastic shell	BL	BL	BL	BL	BL	NA
27	Silvery metal pin	BL	BL	BL	BL	--	NA
28	Transparent glass diode	BL	**OL**	BL	BL	BL	***Pb : 1.84×10^5**
29	Red plastic shell	BL	BL	BL	BL	BL	NA
30	Brown transparent plastic tube	BL	BL	BL	BL	BL	NA
31	Transparent 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	
32	Coppery metal wire	BL	BL	BL	BL	--	NA
33	Silvery metal sheet	BL	BL	BL	BL	--	NA
34	Chip IC	BL	BL	BL	BL	BL	NA
35	Pink plastic shell	BL	BL	BL	BL	BL	NA
36	Solder	BL	BL	BL	BL	--	NA
37	Chip resistor	BL	**OL**	BL	BL	BL	***Pb : 1550**
38	Chip audion	BL	BL	BL	BL	BL	NA
39	Black plastic shell(buzzer)	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
40	White dry glue(buzzer)	BL	BL	BL	BL	BL	NA
41	Silvery metal sheet(buzzer)	BL	BL	BL	BL	--	NA
42	Green PCB(buzzer)	BL	BL	BL	BL	BL	NA
43	Coppery varnished wire(buzzer)	BL	BL	BL	BL	BL	NA
44	Silvery metal sheet(buzzer)	BL	BL	BL	BL	--	NA
45	Black magnetic ring(buzzer)	BL	BL	BL	BL	--	NA
46	Silvery metal pin(buzzer)	BL	IN	BL	BL	--	Pb : 57
47	Chip capacitor	BL	BL	BL	BL	BL	NA
48	Chip diode	BL	**OL**	BL	BL	BL	***Pb : 1.81×10^4**
49	Chip inductor	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	
50	Transparent glass plate	BL	BL	BL	BL	--	NA
51	Black transparent plastic sheet	BL	BL	BL	BL	BL	NA
52	Transparent plastic plate	BL	BL	BL	BL	BL	NA
53	White plastic sheet	BL	BL	BL	BL	BL	NA
54	White semi-transparent plastic sheet	BL	BL	BL	BL	BL	NA
55	Silvery plastic adhesive tape	BL	BL	BL	BL	BL	NA
56	Chip LED	BL	BL	BL	BL	BL	NA
57	White PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
58	Silvery plastic adhesive tape	BL	BL	BL	BL	BL	NA
59	White cotton sheet	BL	BL	BL	BL	BL	NA
60	Black plastic part	BL	BL	BL	BL	BL	NA
61	Golden metal tube	IN	**OL**	BL	BL	--	Cd : 34 **#Pb : 2.28×10^4**
62	Black soft plastic stopper with adhesive	BL	BL	BL	BL	BL	NA
63	Silvery metal screw with black surface	BL	BL	BL	IN	--	Cr^{6+} : Negative
64	Silvery metal screw with black surface	BL	BL	BL	IN	--	Cr^{6+} : Negative

2. Phthalates

Test Method/Equipment:

1) With reference to IEC 62321-12:2023, determination of DBP, BBP, DEHP, DIBP by GC-MS

Serial No.	Part No.	Result mg/kg			
		DBP	BBP	DEHP	DIBP
T01	1+2+3△	ND	ND	ND	ND
T02	4+9+13△	ND	ND	ND	ND
T03	8+11+31△	ND	ND	ND	ND
T04	21+60△	ND	ND	ND	ND
T05	22^	ND	ND	ND	ND
T06	17	ND	ND	ND	ND
T07	18	ND	ND	ND	ND
T08	19^	ND	ND	ND	ND
T09	25+42+57△	ND	ND	ND	ND
T10	26+29+35△	ND	ND	ND	ND
T11	28+34+37△	ND	ND	ND	ND
T12	30+62△	ND	ND	ND	ND
T13	38+47+48△	ND	ND	ND	ND
T14	39+51△	ND	ND	ND	ND
T15	40^	ND	ND	ND	ND
T16	43	ND	ND	ND	ND
T17	49+56△	ND	ND	ND	ND
T18	52+53+54△	ND	ND	ND	ND
T19	55^	ND	ND	ND	ND
T20	58^	ND	ND	ND	ND
T21	59	ND	ND	ND	ND
T22	5	--	--	--	--
T23	6	--	--	--	--
T24	7	--	--	--	--
T25	10	--	--	--	--
T26	12	--	--	--	--
T27	14	--	--	--	--
T28	15	--	--	--	--
T29	16	--	--	--	--
T30	20	--	--	--	--
T31	23	--	--	--	--
T32	24	--	--	--	--
T33	27	--	--	--	--
T34	32	--	--	--	--
T35	33	--	--	--	--

Serial No.	Part No.	Result mg/kg			
		DBP	BBP	DEHP	DIBP
T36	36	--	--	--	--
T37	41	--	--	--	--
T38	44	--	--	--	--
T39	45	--	--	--	--
T40	46	--	--	--	--
T41	50	--	--	--	--
T42	61	--	--	--	--
T43	63	--	--	--	--
T44	64	--	--	--	--

Remark:

(1) Results are obtained by XRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-VIS (for Cr^{6+}) 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

(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, $\mu g/cm^2$= 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) -- = Not Regulated

(8) LOQ = Limit of quantitation.

Test Items	Pb	Cd	Hg	Cr^{6+}		PBB	PBDE	DBP	BBP	DEHP	DIBP
Units	mg/kg	mg/kg	mg/kg	mg/kg	$\mu g/cm^2$	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOQ	2	2	2	8	0.1	5	5	50	50	50	50

The LOQ for single compound of PBBs and PBDEs is 5mg/kg, LOQ of Cr^{6+} for polymer and composite sample is 8mg/kg and LOQ of Cr^{6+} for metal sample is 0.1μg/cm².

(9) According to IEC 62321-7-1:2015, determined of Cr^{6+} on metal sample by boiling water extraction test method, and result is shown as Positive/Negative.

Boiling water extraction:

Negative = Absence of Cr^{6+} coating, the detected concentration in boiling water extraction solution is less than 0.10μg/cm².

Positive = Presence of Cr^{6+} 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 Cr^{6+} results represent status of the sample at the time of testing.

(10) 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)
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)

(11) Abbreviation:

"Pb" denotes Lead, "Cd" denotes Cadmium, "Hg" denotes Mercury, "Cr" denotes Chromium, "Cr^{6+}" denotes Hexavalent Chromium, "Br" denotes Bromine, "PBBs" denotes Total Polybrominated Biphenyls, "PBDEs" denotes Total Polybrominated Diphenyl Ethers.

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

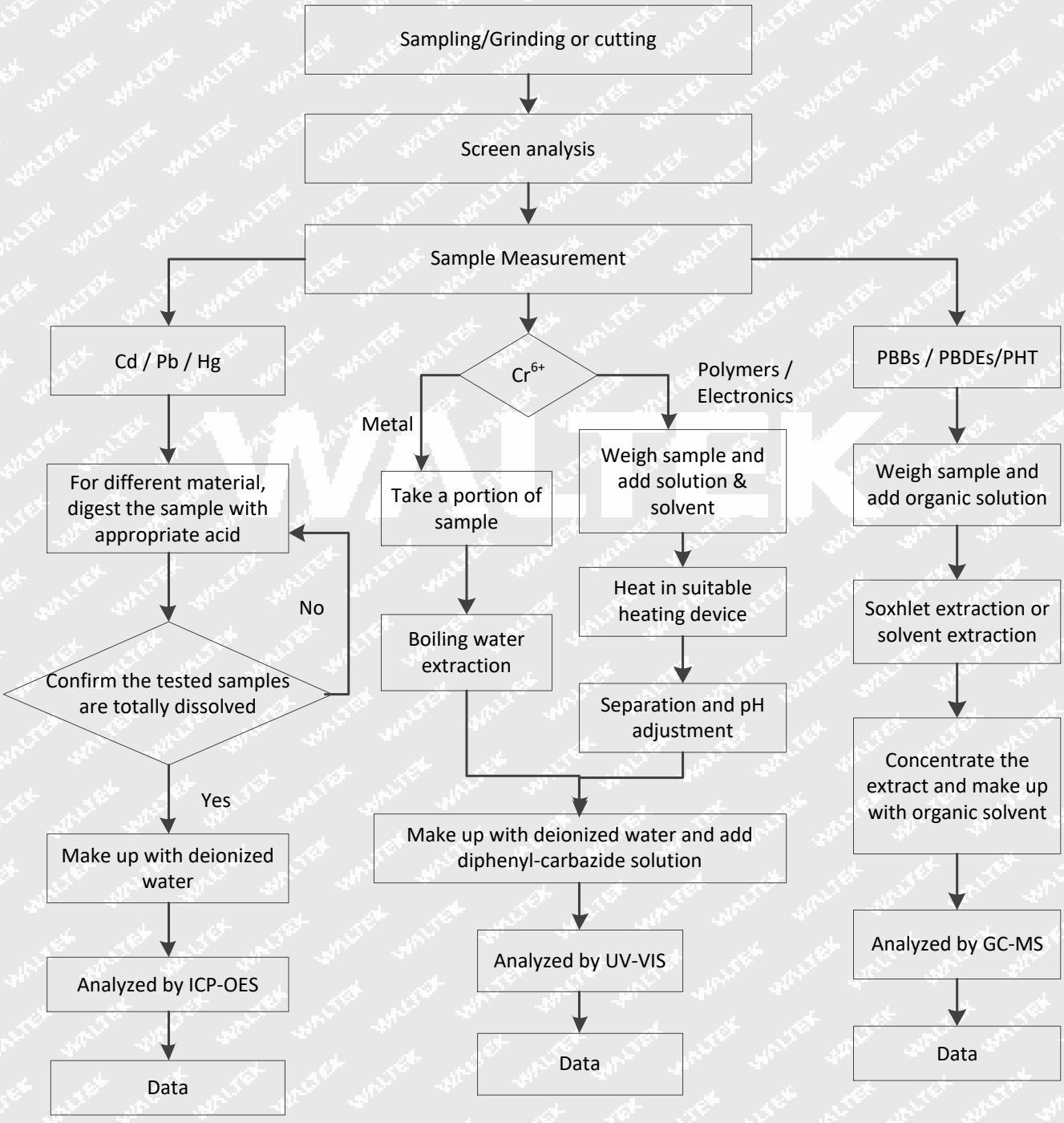
(12) "△"=As per applicant's requirement, the testing was conducted based on mixed components by weight in equal ratio, results are calculated by the minimum weight of mixed components.

(13) * = 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-7(c)-I.

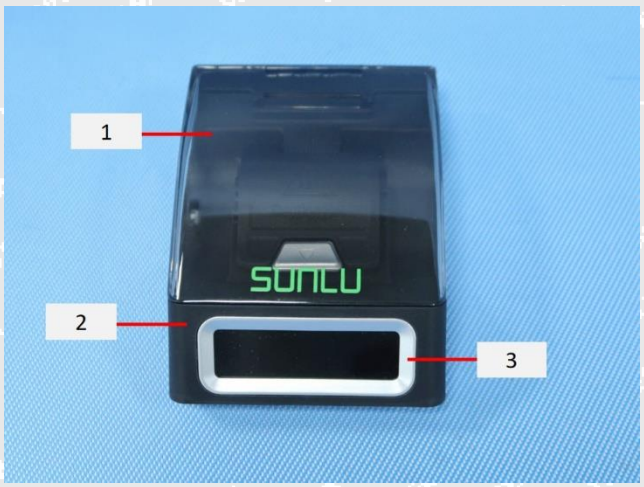
(14) # = According to the declaration from client, the source of lead in test sample is from copper alloy while lead as copper alloy containing up to 4% lead by weight is exempted by Directive 2011/65/EU ANNEX III-6(c).

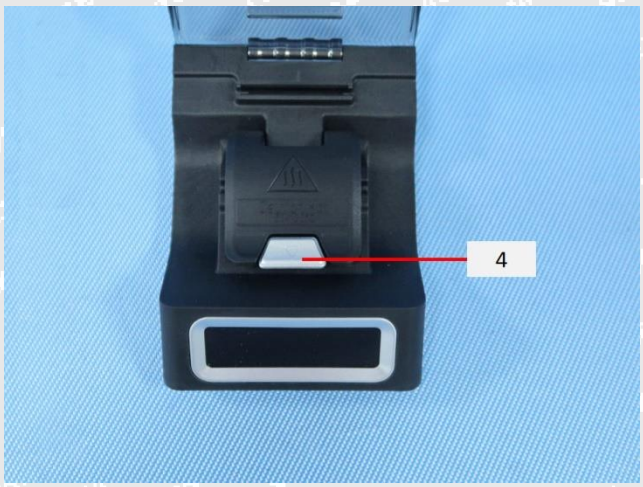
(15) ^= The weight of test sample is insufficient, the test result is for reference only.

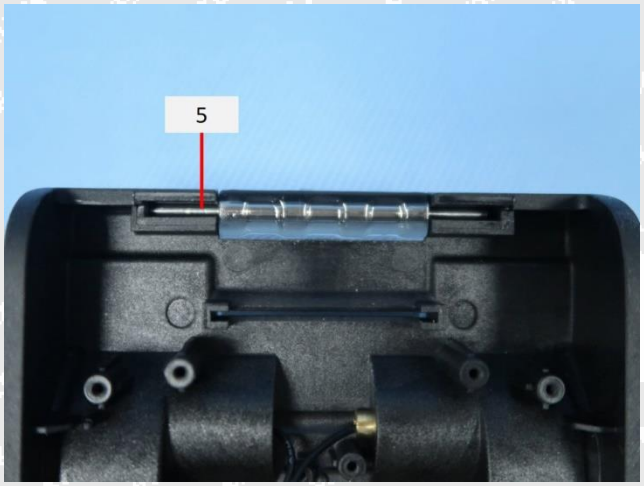
Testing Flow chart:

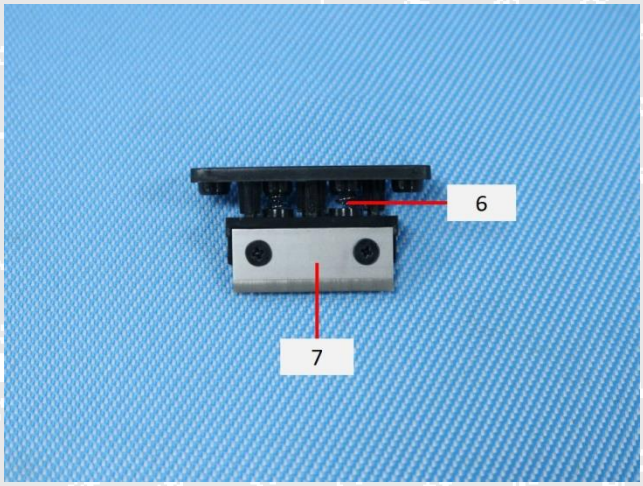


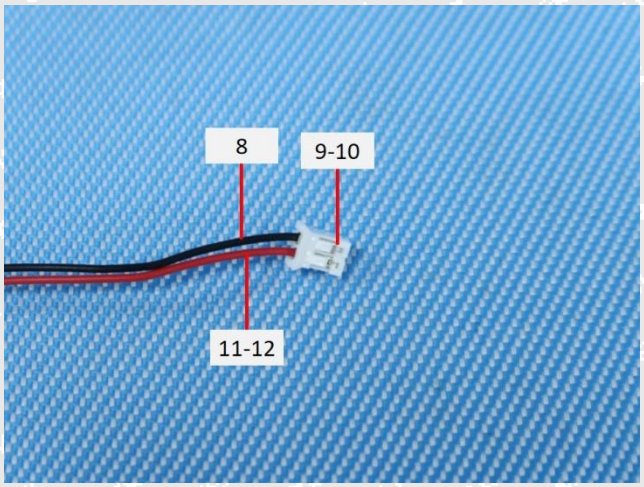
Photograph of parts tested:

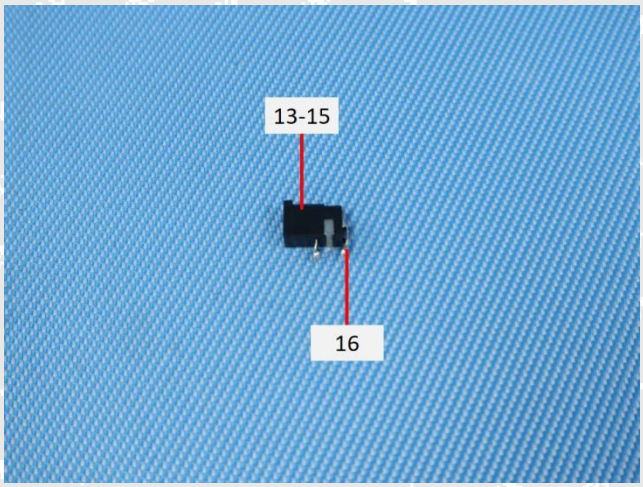


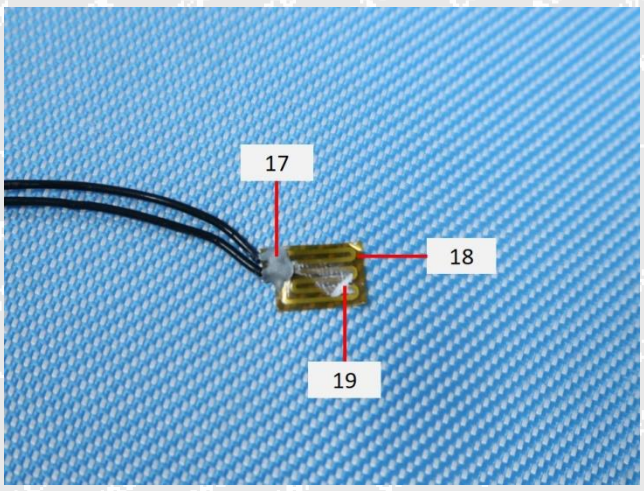








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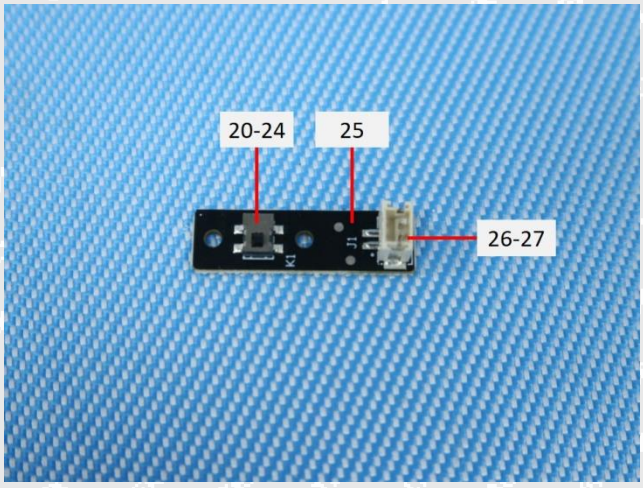
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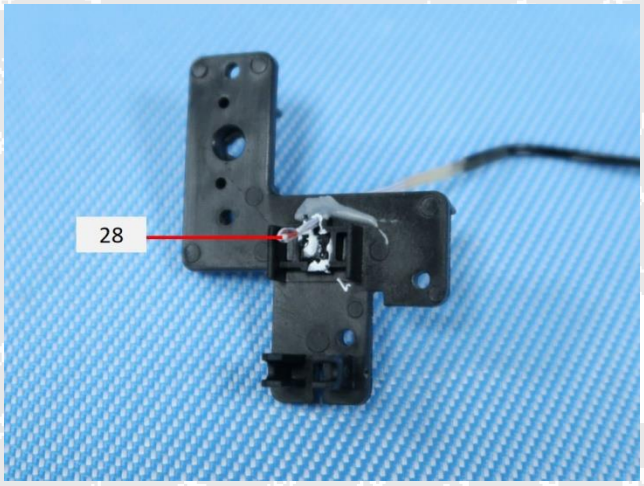
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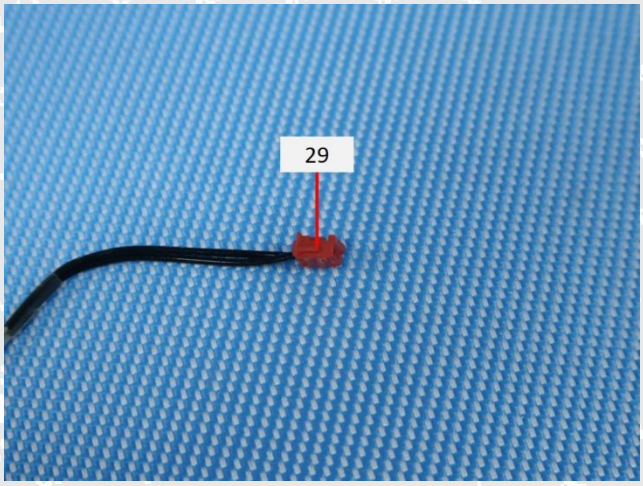
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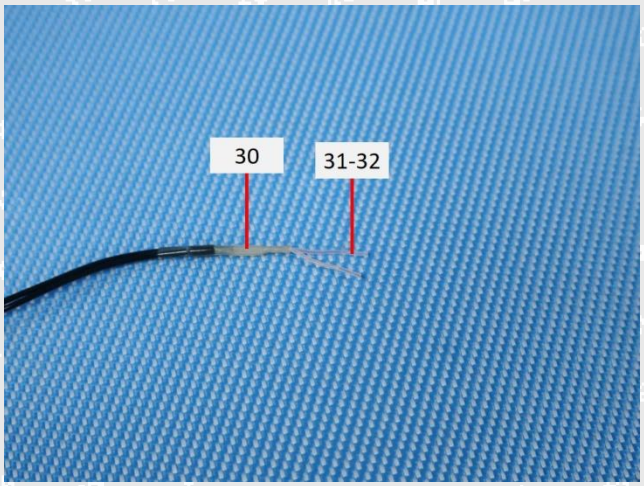
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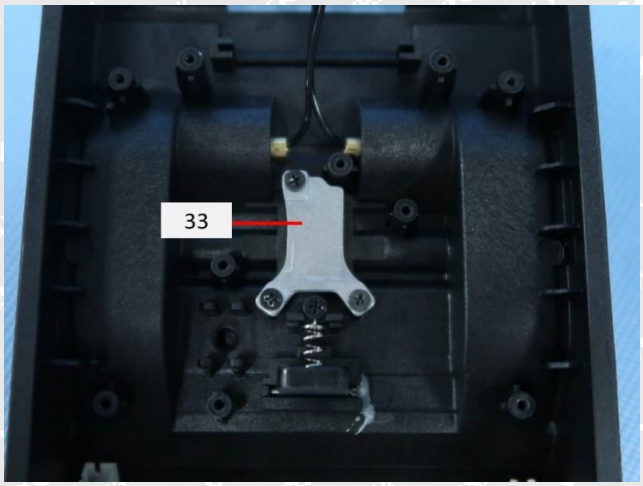
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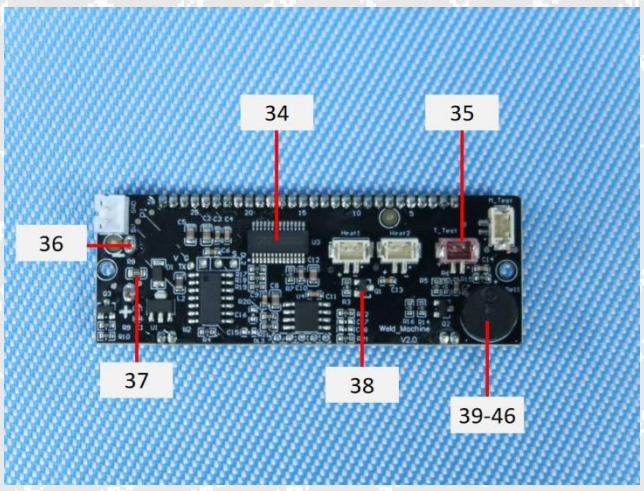
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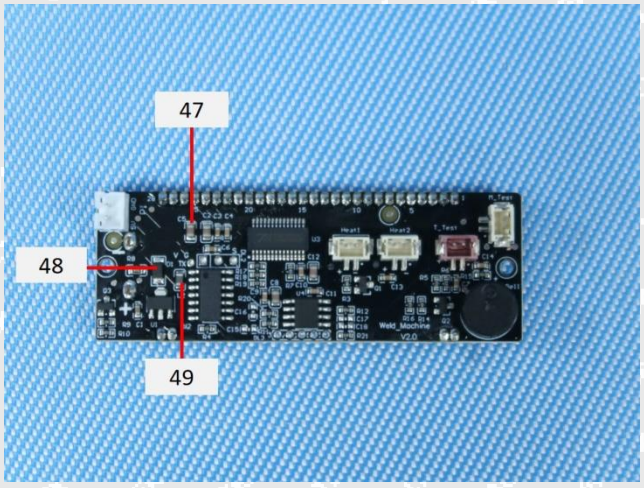
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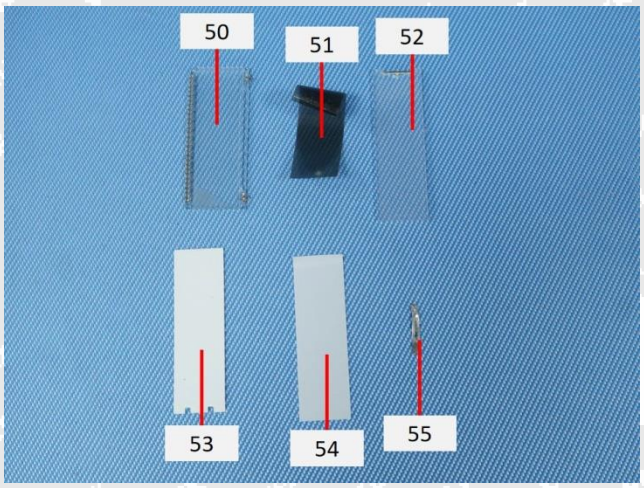
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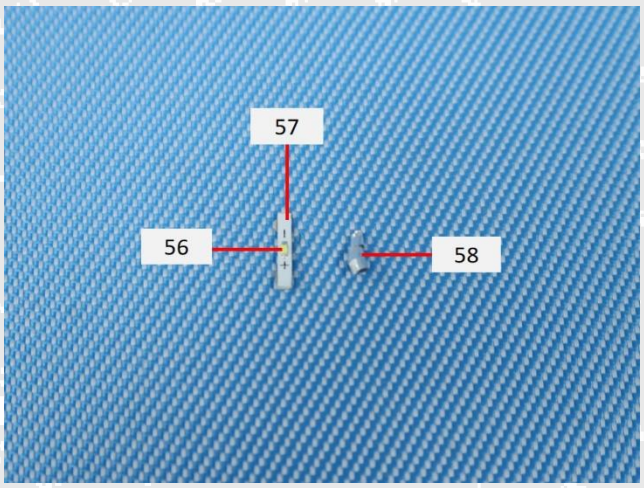
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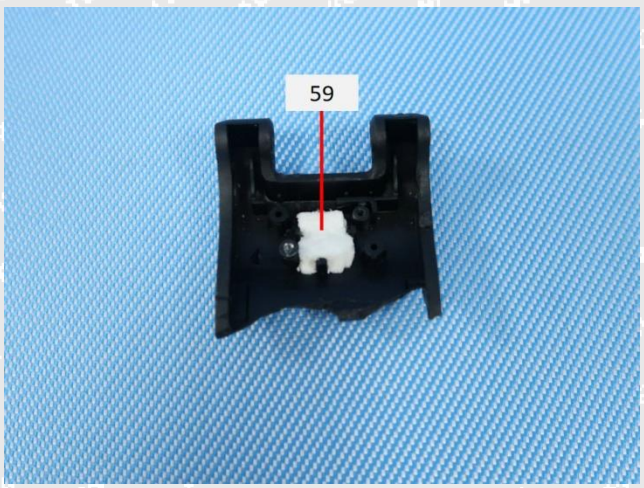
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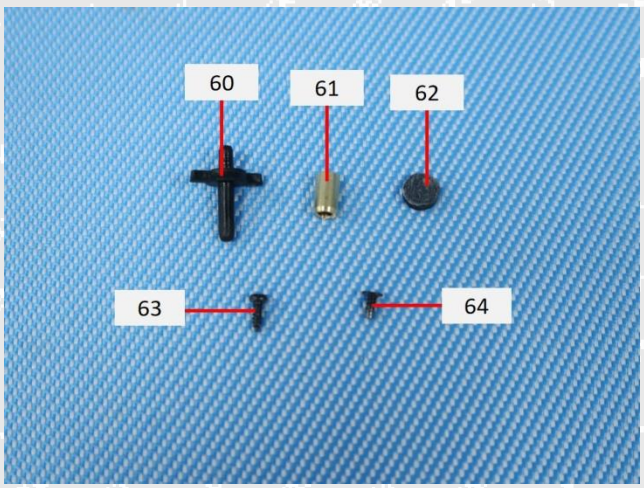
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Remarks:

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