



TEST REPORT

Report No. : WTF21F10112643A1C

Applicant : Mid Ocean Brands B.V.

Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong

Manufacturer : 114538

Sample Name : Desk light wireless charger

Model No. : MO6514

Sample Receiving Date : 2021-11-22 & 2021-12-07

Testing Period : 2021-11-22 to 2021-12-02 & 2021-12-07 to 2021-12-16

Date of Issue : 2021-12-17

Test Result : Please refer to next page (s)

Remarks:

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Prepared By:

Waltek Testing Group (Foshan) Co., Ltd.

Address: No.13-19, 2/F., 2nd Building, Sunlink International Machinery City,
Chencun, Shunde District, Foshan, Guangdong, China

Tel:+86-757-23811398 Fax:+86-757-23811381 E-mail:info@waltek.com.cn

Compiled by:

Approved by:

Fat. Li

Swing Liang

Fat.Li / Project Engineer

Swing.Liang / Technical Manager



- 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 plastic shell	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
2	Black plastic sheet	BL	BL	BL	BL	BL	NA
3	Silvery coating	BL	BL	BL	BL	BL	NA
4	Silvery metal sleeve	BL	BL	BL	BL	BL	NA
5	Silvery metal nut	BL	BL	BL	BL	BL	NA
6	Black soft plastic washer	BL	BL	BL	BL	BL	NA
7	Silvery metal spring	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
8	Black soft plastic foot pad	BL	BL	BL	BL	BL	NA
9	Yellow plastic adhesive tape	BL	BL	BL	BL	BL	NA
10	Silvery metal screw	BL	BL	BL	BL	BL	NA
11	Black plastic button with silvery plating	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
12	Black plastic wire covering	BL	BL	BL	BL	BL	NA
13	Silvery metal wire	BL	BL	BL	BL	BL	NA
14	Coppery metal foil	BL	BL	BL	BL	BL	NA
15	Solder	BL	IN	BL	BL	BL	Pb : 163
16	White plastic jacket of plug	BL	BL	BL	BL	BL	NA
18	Silvery metal shell of plug	BL	BL	BL	BL	BL	NA
19	Golden metal pin of plug	BL	BL	BL	BL	BL	NA
20	White plastic core of plug	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	
21	Solder of plug	BL	BL	BL	BL	BL	NA
23	Silvery metal shell of plug	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
24	Silvery metal pin of plug	BL	BL	BL	BL	BL	NA
25	Black plastic core of plug	BL	BL	BL	BL	BL	NA
26	Solder of plug	BL	BL	BL	BL	BL	NA
27	Green PCB of plug	BL	BL	BL	BL	BL	NA
28	White plastic jacket of plug	BL	BL	BL	BL	BL	NA
29	Chip resistor	BL	BL	BL	BL	BL	NA
30	Chip capacitor	BL	BL	BL	BL	BL	NA
31	White plastic wire covering	BL	BL	BL	BL	BL	NA
32	Red plastic wire covering	BL	BL	BL	BL	BL	NA
33	White plastic wire jacket	BL	BL	BL	BL	BL	NA
34	Green plastic wire covering	BL	BL	BL	BL	BL	NA
35	Black plastic wire covering	BL	BL	BL	BL	BL	NA
36	Coppery metal wire	BL	BL	BL	BL	BL	NA
37	Chip resistor	BL	BL	BL	BL	BL	NA
38	Solder	BL	BL	BL	BL	BL	NA
39	Red plastic wire covering	BL	BL	BL	BL	BL	NA
40	White PCB	BL	BL	BL	BL	BL	NA
41	Chip LED	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	
42	Yellow plastic wire covering	BL	BL	BL	BL	BL	NA
43	Silvery metal wire	BL	BL	BL	BL	BL	NA
44	Yellow transparent plastic adhesive tape	BL	BL	BL	BL	BL	NA
45	White fibrous wire jacket	BL	BL	BL	BL	BL	NA
46	Coppery metal wire	BL	BL	BL	BL	BL	NA
47	Black magnetic core	BL	BL	BL	BL	BL	NA
48	Red body of capacitor	BL	BL	BL	BL	BL	NA
49	Silvery metal pin of capacitor	BL	BL	BL	BL	BL	NA
50	Solder	BL	BL	BL	BL	BL	NA
51	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
52	Semi-transparent adhesive tape	BL	BL	BL	BL	BL	NA
53	Chip audion	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
54	Chip diode	BL	BL	BL	BL	BL	NA
55	Chip IC	BL	BL	BL	BL	BL	NA
56	Chip resistor	BL	BL	BL	BL	BL	NA
57	Chip IC	BL	BL	BL	BL	BL	NA
58	Chip capacitor	BL	BL	BL	BL	BL	NA
59	Chip capacitor	BL	BL	BL	BL	BL	NA
60	Chip inductor	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND
61	Chip resistor	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	
62	Chip audion	BL	BL	BL	BL	BL	NA
63	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
64	Silvery metal shell of socket	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
65	Silvery metal pin of socket	BL	BL	BL	BL	BL	NA
66	Black plastic core of socket	BL	BL	BL	BL	BL	NA
67	Solder	BL	BL	BL	BL	BL	NA
68	Chip LED	BL	BL	BL	BL	BL	NA
69	Chip LED	BL	BL	BL	BL	BL	NA
70	Chip IC	BL	BL	BL	BL	BL	NA
71	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 ≤ (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 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) 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+2+11+20 [△]	<50	<50	91	<50
T02	3	437	<50	370	<50
T03	6	<50	<50	<50	<50
T04	8	<50	<50	<50	<50
T05	9	122	<50	126	<50
T06	12	79	<50	148	<50
T07	16	<50	<50	<50	<50
T08	25	<50	<50	<50	<50
T09	27+40+51+63 [△]	<50	<50	<50	<50
T10	28	<50	<50	<50	<50
T11	29+30+37+41+47 [△]	<50	<50	<50	<50
T12	31	<50	<50	<50	<50
T13	32	<50	<50	<50	<50
T14	33	<50	<50	<50	<50
T15	34	<50	<50	<50	<50
T16	35	<50	<50	<50	<50
T17	39	150	<50	276	<50
T18	42	111	<50	106	<50
T19	44	202	<50	170	<50
T20	45	<50	<50	249	<50
T21	48+53+54+55+56 [△]	<50	<50	<50	<50
T22	52	146	<50	317	<50
T23	57+58+59+60+61 [△]	<50	<50	<50	<50
T24	62+68+69+70 [△]	<50	<50	<50	<50
T25	66	<50	<50	<50	<50

Note:

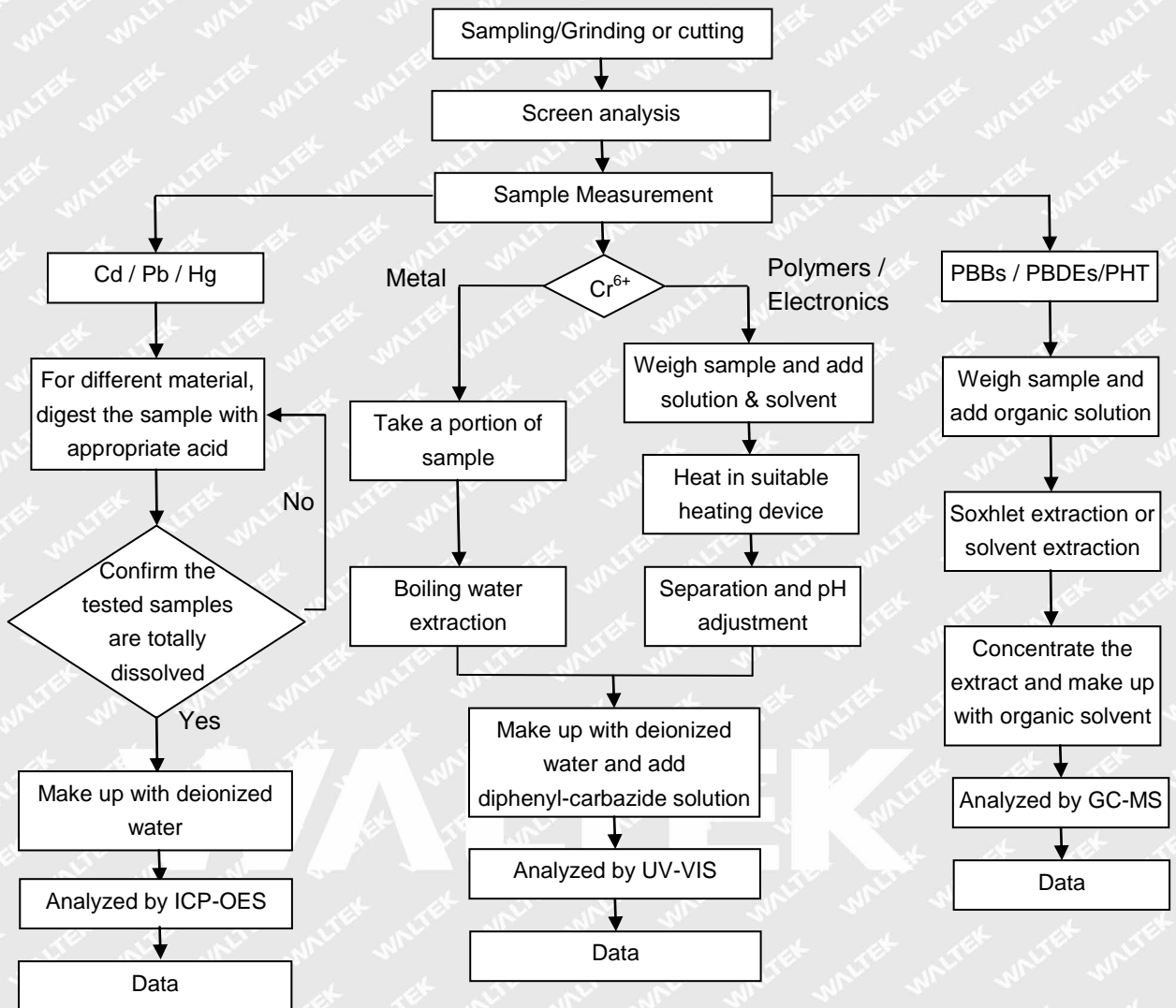
- (1) "<" = less than
- (2) mg/kg = milligram per kilogram= ppm
- (3) Abbreviation:
 "DBP" denotes Dibutyl phthalate, "BBP" denotes Benzyl butyl phthalate (BBP), "DEHP" denotes Bis(2-ethylhexyl)-phthalate, "DIBP" denotes Diisobutyl phthalate, "PHT" denotes Phthalates.
- (4) RoHS requirement

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.

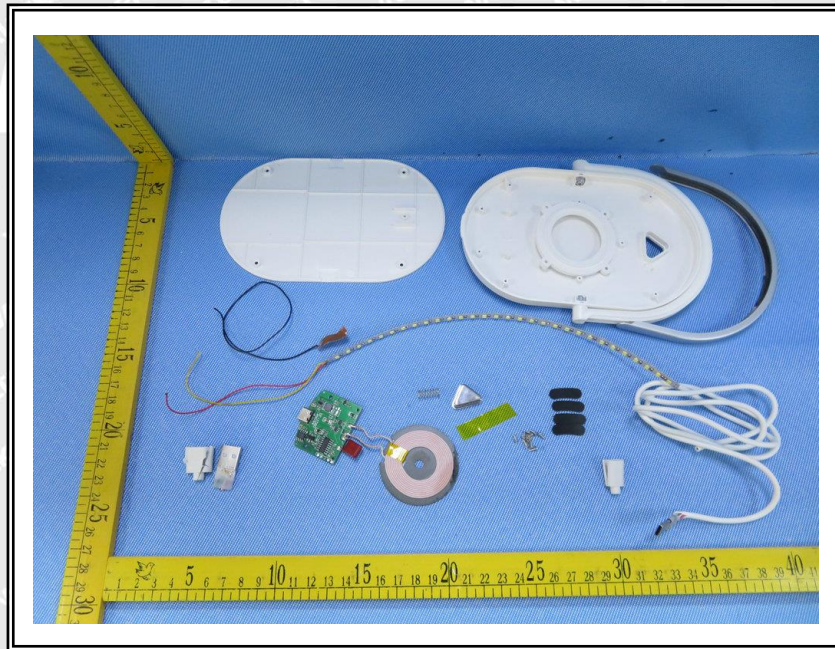


Measurement Flowchart:



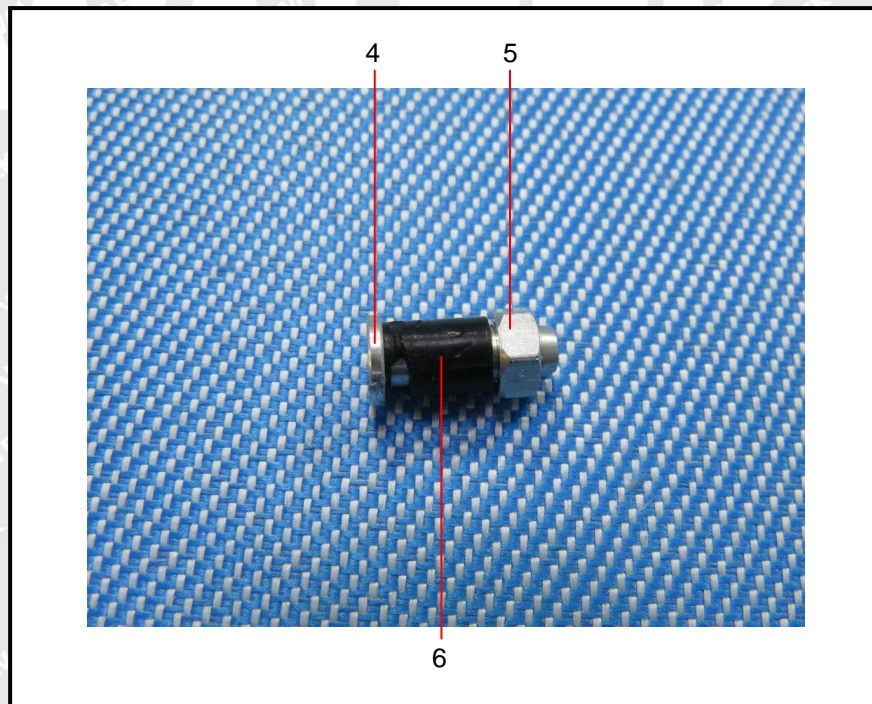
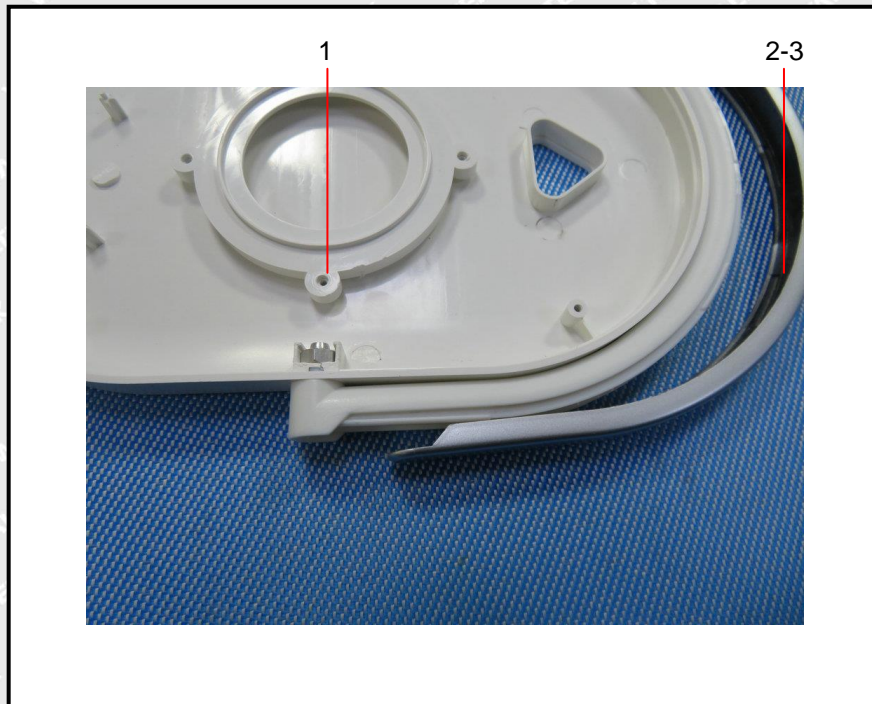


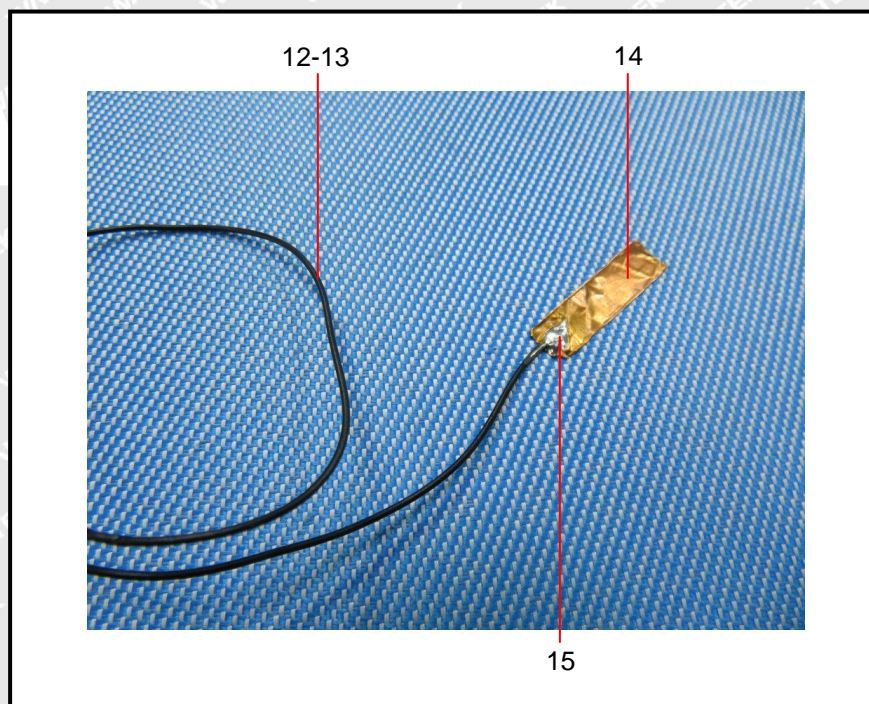
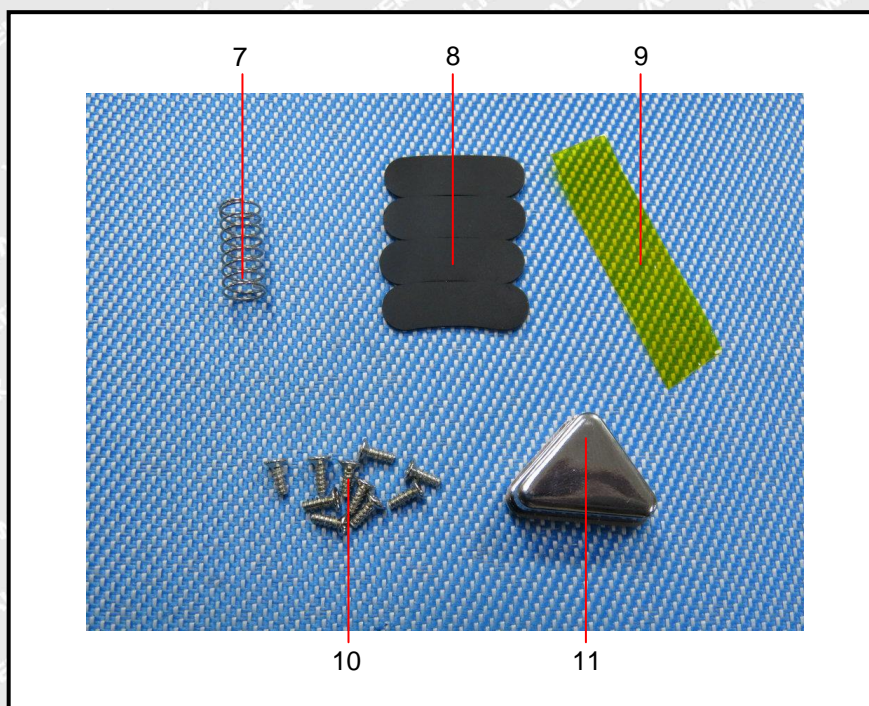
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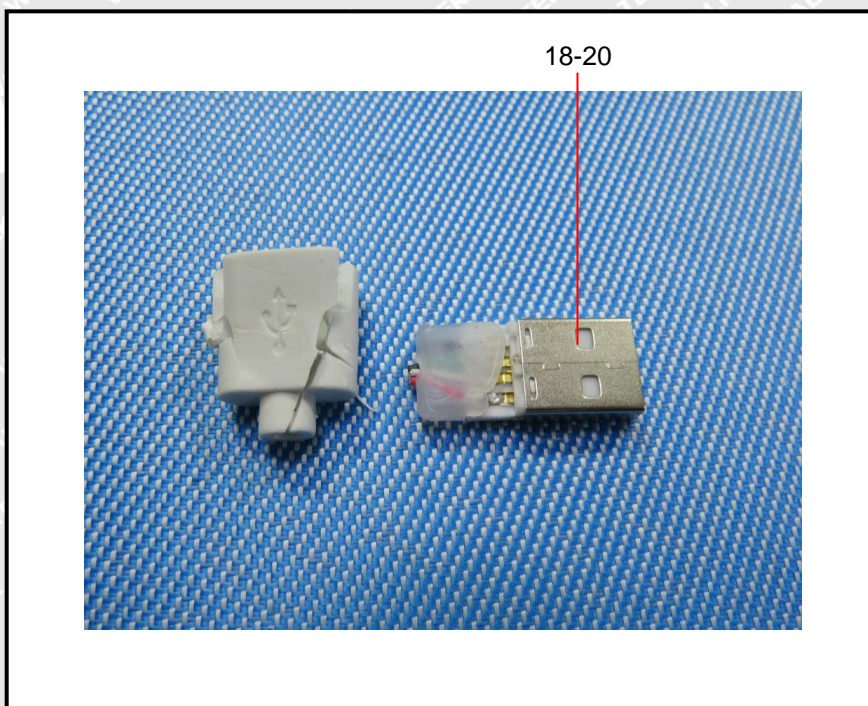
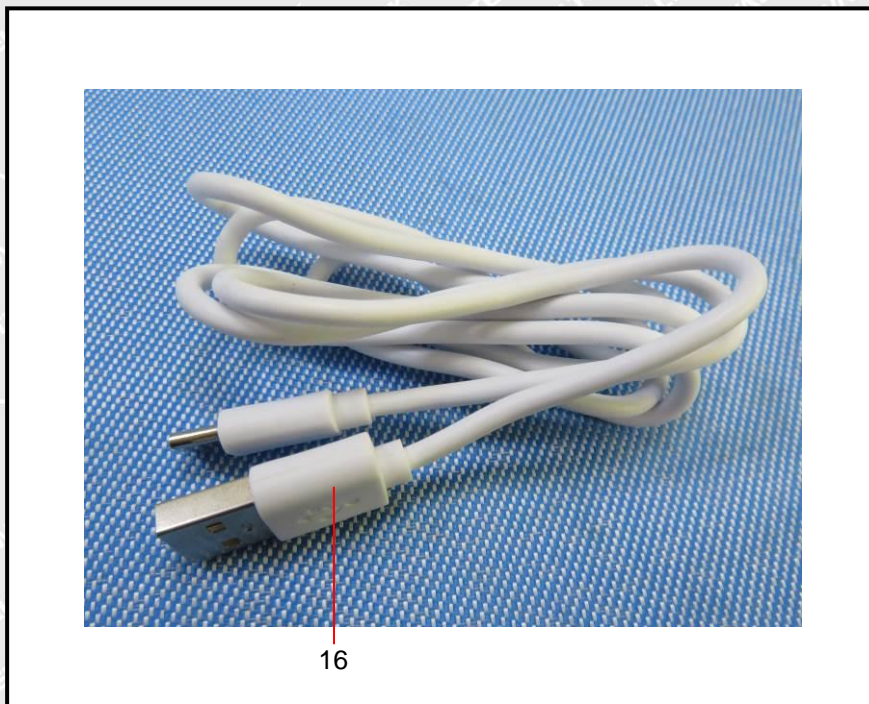


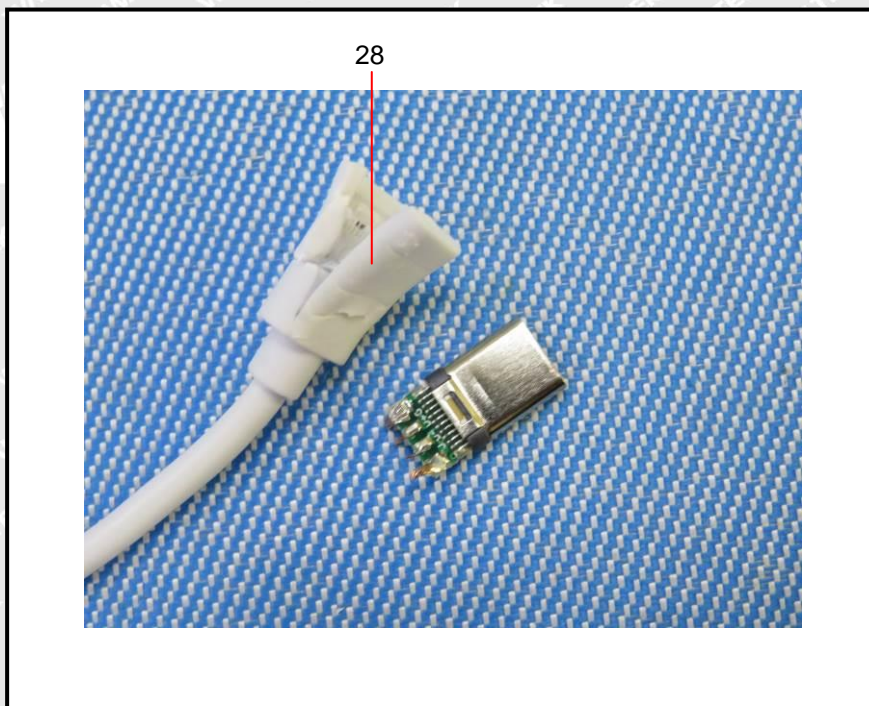
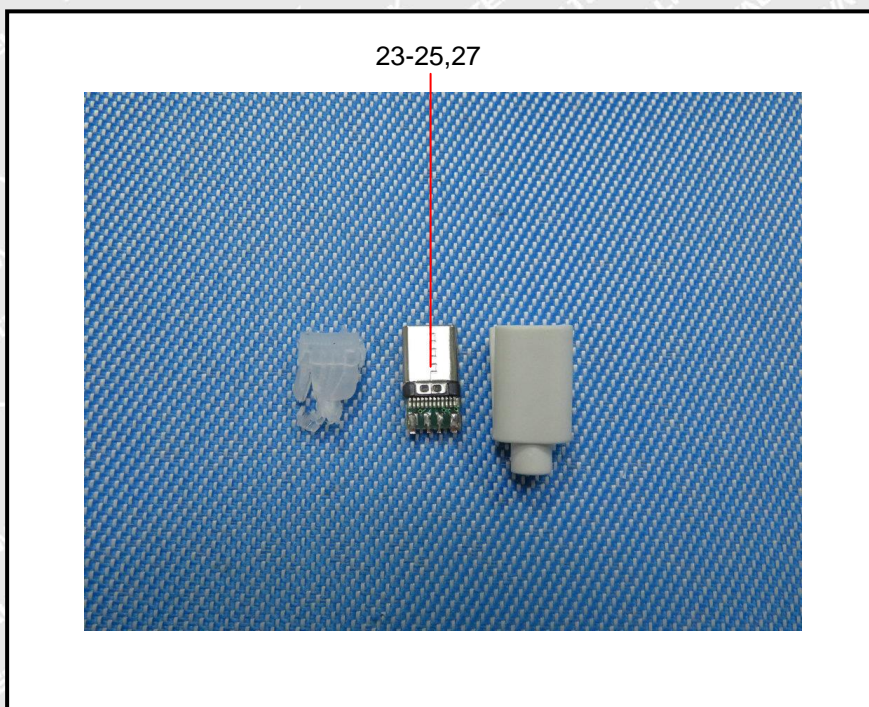


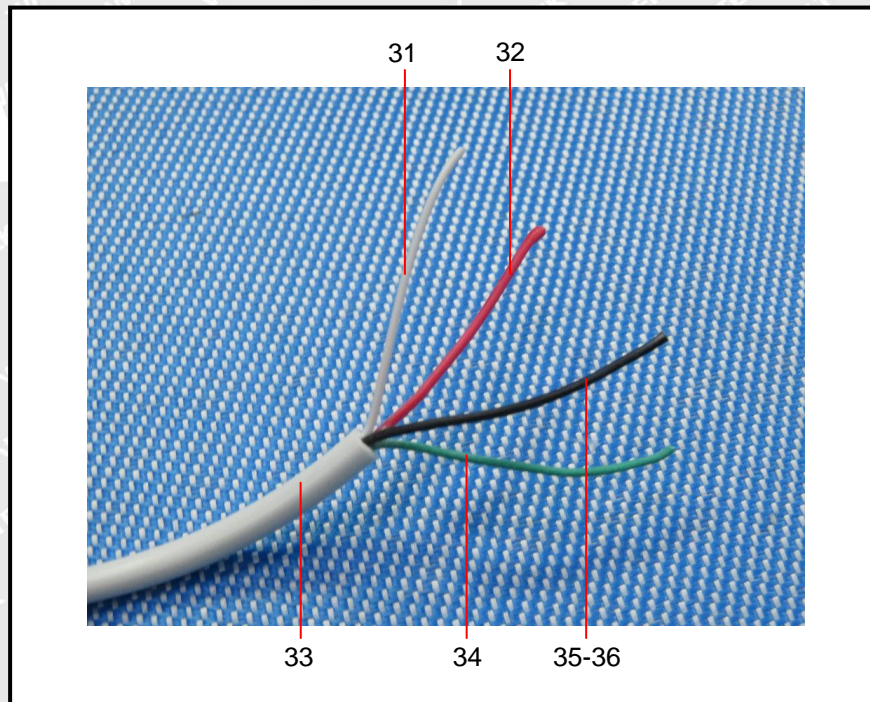
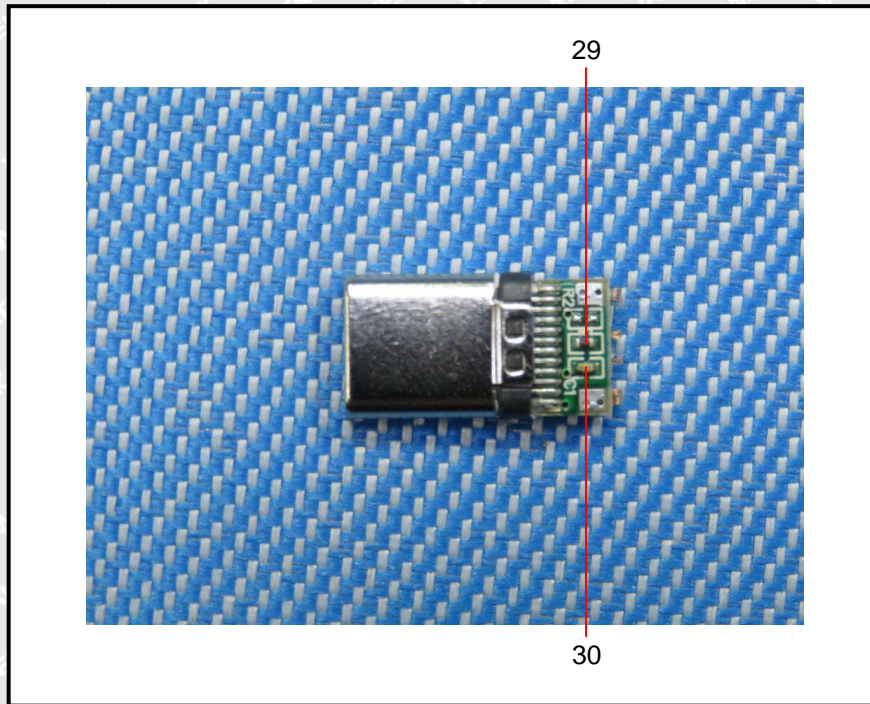
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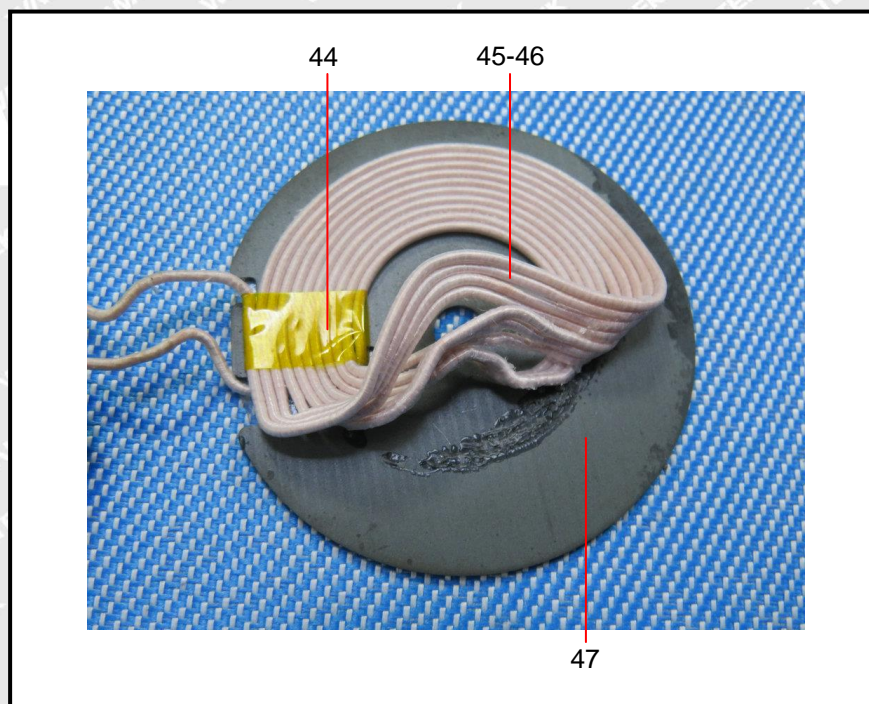
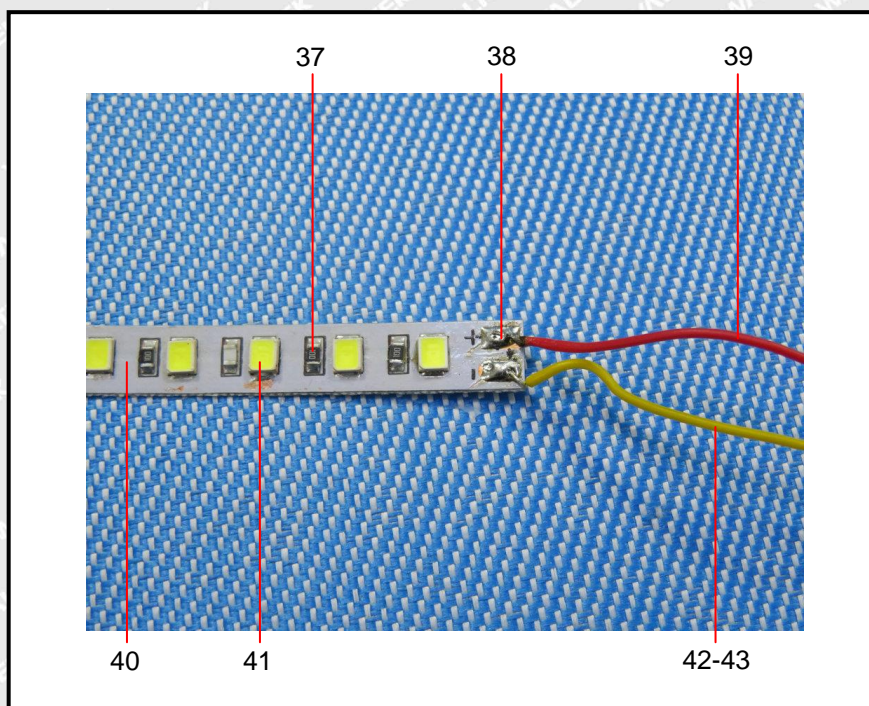


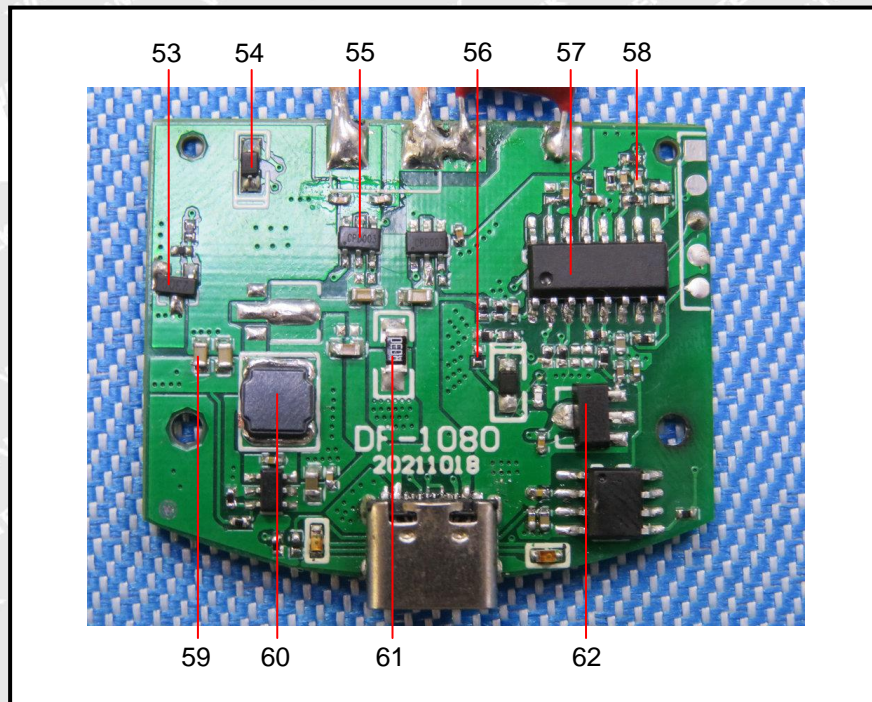
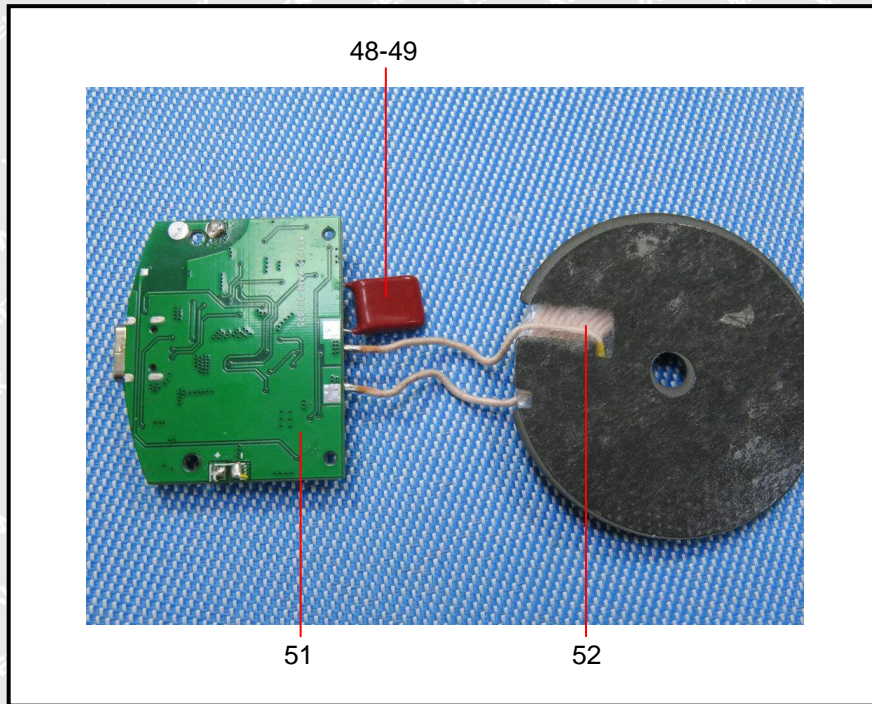


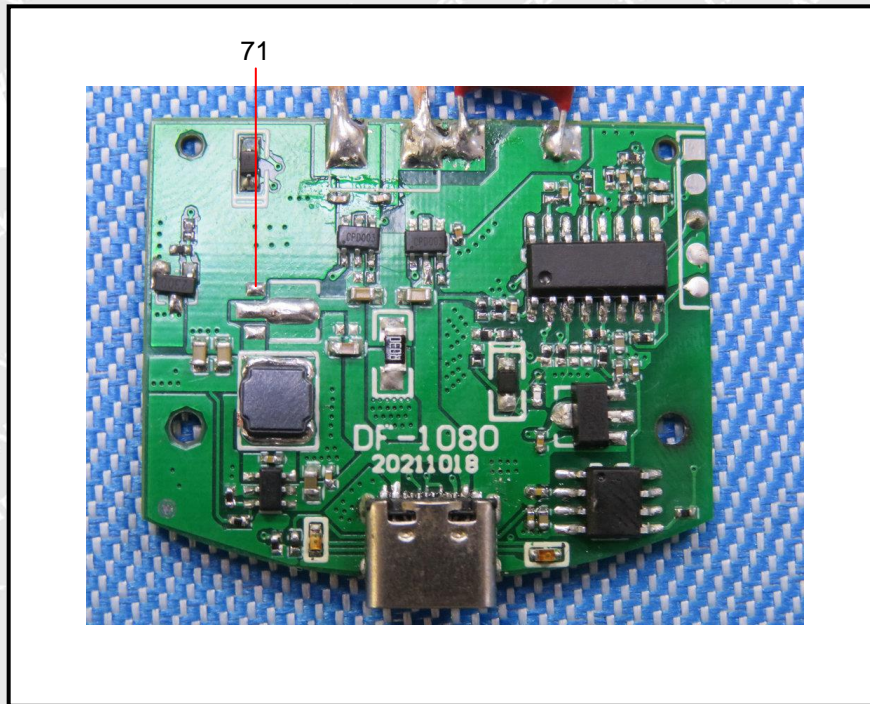
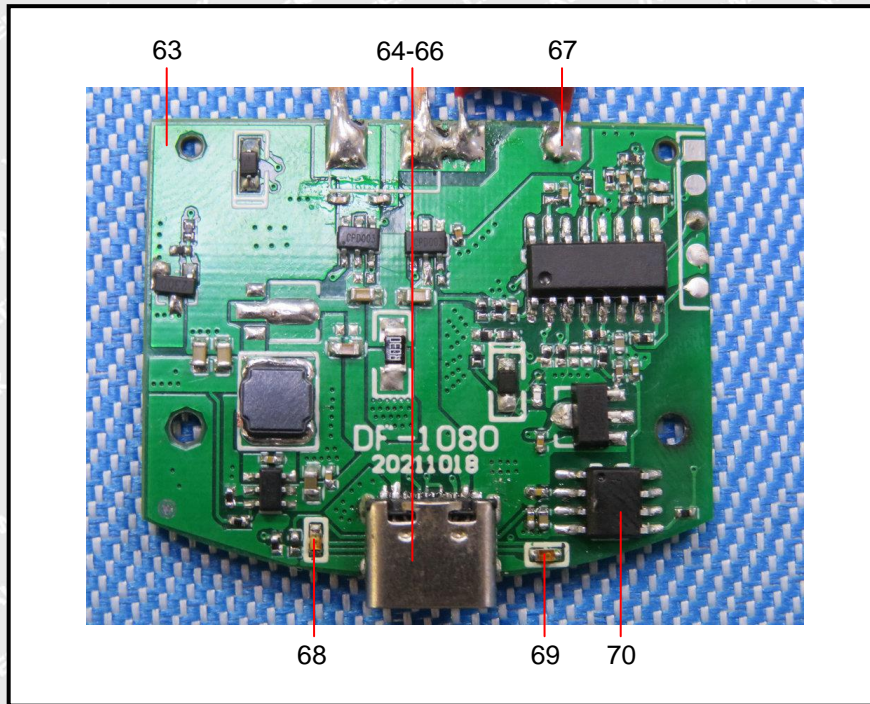


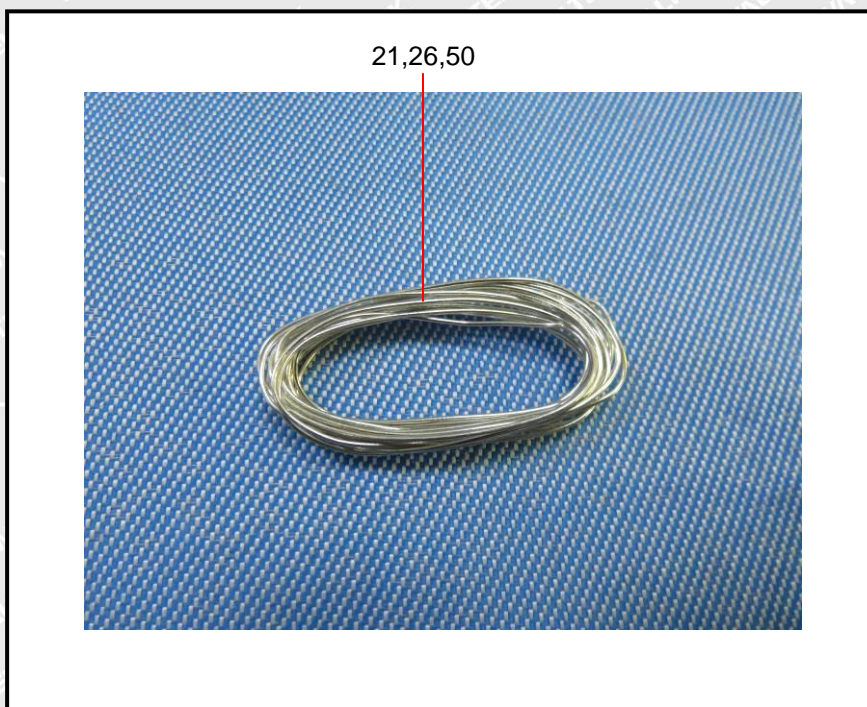












===== End of Report =====

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