



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No. : WTF21F10112112R1C

Applicant : Mid Ocean Brands B.V.

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

Manufacturer : 114889

Sample Name : Hub wireless charger penholder

Model No. : MO6351

Sample Receiving Date : 2021-10-21 & 2022-01-20 & 2022-02-15

Testing Period : 2021-10-21 to 2021-11-04 & 2022-01-20 to 2022-02-11 & 2022-02-15 to 2022-02-18

Date of Issue : 2022-02-21

Test Result : Please refer to next page (s)

Note : As per client's requirement, results of specimen from No.1 to No.14, from No.17 to No.43, No.49, No.52 and No.55 are extracted from report No.WTF21F10112112X1C.

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** (Based on the performed tests on the submitted samples, the results comply with the 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	Grey soft plastic foot pad	BL	BL	BL	BL	BL	NA
2	White plastic shell with grey printing	BL	BL	BL	BL	BL	NA
3	Grey soft plastic sheet	BL	BL	BL	BL	BL	NA
4	Transparent glue	BL	BL	BL	BL	BL	NA
5	Black sponge sheet	BL	BL	BL	BL	BL	NA
6	Silvery metal screw	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
7	Silvery metal screw	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
8	Silvery metal screw	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
9	Semi-transparent adhesive tape	BL	BL	BL	BL	BL	NA
10	Transparent plastic adhesive tape	BL	BL	BL	BL	BL	NA
11	White fibrous jacket	BL	BL	BL	BL	BL	NA
12	Coppery metal wire	BL	BL	BL	BL	BL	NA
13	Beige glue	BL	BL	BL	BL	BL	NA
14	Dark grey magnetic sheet	BL	BL	BL	BL	BL	NA
15	White plastic wire covering	BL	BL	BL	BL	BL	NA
16	Silvery metal wire	BL	BL	BL	BL	BL	NA
17	White plastic shell of plug	BL	BL	BL	BL	BL	NA
18	Silvery metal pin of plug	BL	BL	BL	BL	BL	NA
19	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	
20	Silvery metal shell of plug	BL	BL	BL	BL	BL	NA
21	Silvery metal pin of plug	BL	BL	BL	BL	BL	NA
22	White plastic jacket of plug	BL	BL	BL	BL	BL	NA
23	Solder of plug	BL	BL	BL	BL	BL	NA
24	White plastic jacket of plug	BL	BL	BL	BL	BL	NA
25	Solder of plug	BL	BL	BL	BL	BL	NA
26	Blue PCB of plug	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
27	Silvery metal shell of plug	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
28	Silvery metal pin of plug	BL	BL	BL	BL	BL	NA
29	Black plastic core of plug	BL	BL	BL	BL	BL	NA
30	Chip resistor	BL	BL	BL	BL	BL	NA
31	Black plastic wire covering	BL	BL	BL	BL	BL	NA
32	Green plastic wire covering	BL	BL	BL	BL	BL	NA
33	White plastic wire jacket	BL	BL	BL	BL	BL	NA
34	White plastic wire covering	BL	BL	BL	BL	BL	NA
35	Red plastic wire covering	BL	BL	BL	BL	BL	NA
36	Coppery metal wire	BL	BL	BL	BL	BL	NA
37	Silvery metal shell of plug	BL	BL	BL	BL	BL	NA
38	Silvery metal pin of plug	BL	BL	BL	BL	BL	NA
39	Black plastic core of plug	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	
40	Beige plastic shell of socket	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
41	Silvery metal pin of socket	BL	BL	BL	BL	BL	NA
42	Green PCB	BL	BL	BL	BL	BL	NA
43	Solder	BL	BL	BL	BL	BL	NA
44	Solder	BL	BL	BL	BL	BL	NA
45	Beige plastic shell of socket	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
46	Silvery metal pin of socket	BL	BL	BL	BL	BL	NA
47	Chip IC	BL	BL	BL	BL	BL	NA
48	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
49	Chip capacitor	BL	BL	BL	BL	BL	NA
50	Chip IC	BL	BL	BL	BL	BL	NA
51	Chip inductor	BL	BL	BL	BL	BL	NA
52	Chip LED	BL	BL	BL	BL	BL	NA
53	Dark grey magnetic of inductor	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND
54	Coppery metal wire	BL	BL	BL	BL	BL	NA
55	Chip capacitor	BL	BL	BL	BL	BL	NA
56	Chip resistor	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND
57	Chip diode	BL	BL	BL	BL	BL	NA
58	Silvery metal shell of socket	BL	BL	BL	BL	BL	NA
59	Silvery metal pin of socket	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	
60	Black plastic shell of socket	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	$\mu\text{g}/\text{cm}^2$	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 0.1 $\mu\text{g}/\text{cm}^2$.

- (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.

2. Phthalates:

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1	<50	<50	<50	<50
T02	2+19+39 [△]	<50	<50	<50	<50
T03	3	<50	<50	<50	<50
T04	4	<50	<50	<50	<50
T05	5	<50	<50	<50	<50
T06	9	<50	<50	<50	<50
T07	10	<50	<50	140	<50
T08	11	<50	<50	<50	<50
T09	13	<50	<50	284	<50
T10	14+26+42 [△]	<50	<50	<50	<50
T11	15	<50	<50	<50	<50
T12	17	<50	<50	<50	<50
T13	22	<50	<50	<50	<50
T14	24	<50	<50	<50	<50
T15	29	<50	<50	<50	<50
T16	30+49 [△]	<50	<50	<50	<50
T17	31	<50	<50	<50	<50
T18	32	<50	<50	<50	<50
T19	33	<50	<50	<50	<50
T20	34	<50	<50	<50	<50
T21	35	<50	<50	<50	<50
T22	40	<50	<50	<50	<50
T23	45	<50	<50	<50	<50
T24	47+48+50+51+53 [△]	<50	<50	<50	<50
T25	52+55 [△]	<50	<50	<50	<50
T26	56+57 [△]	<50	<50	<50	<50
T27	60	<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

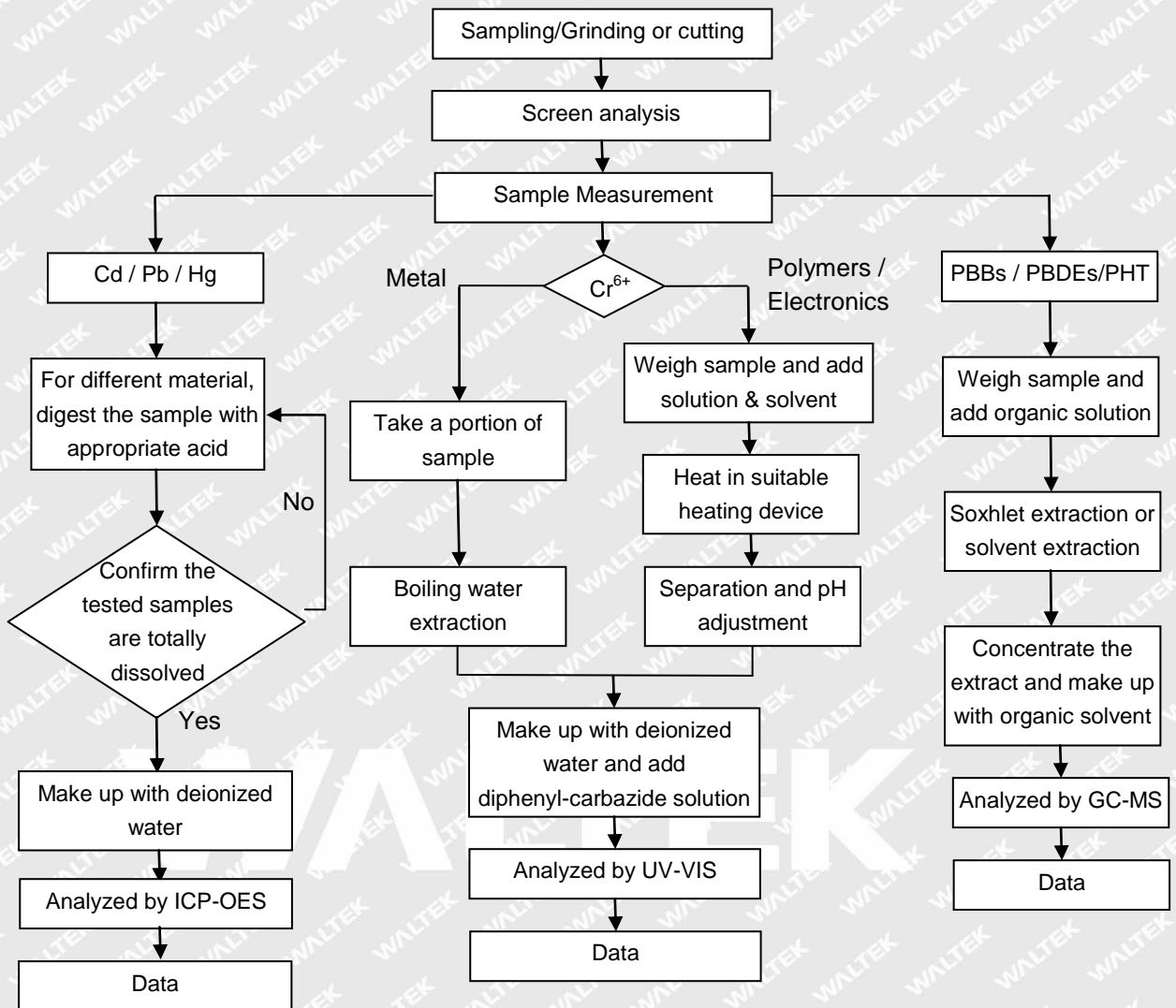
Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

- (5) "△" = As client's requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.

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Measurement Flowchart:



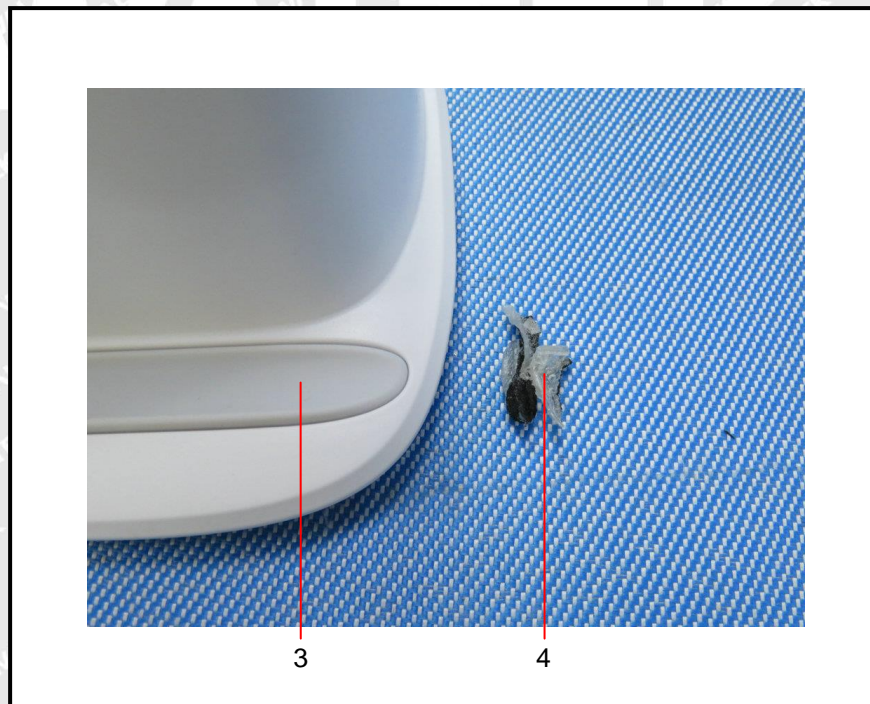


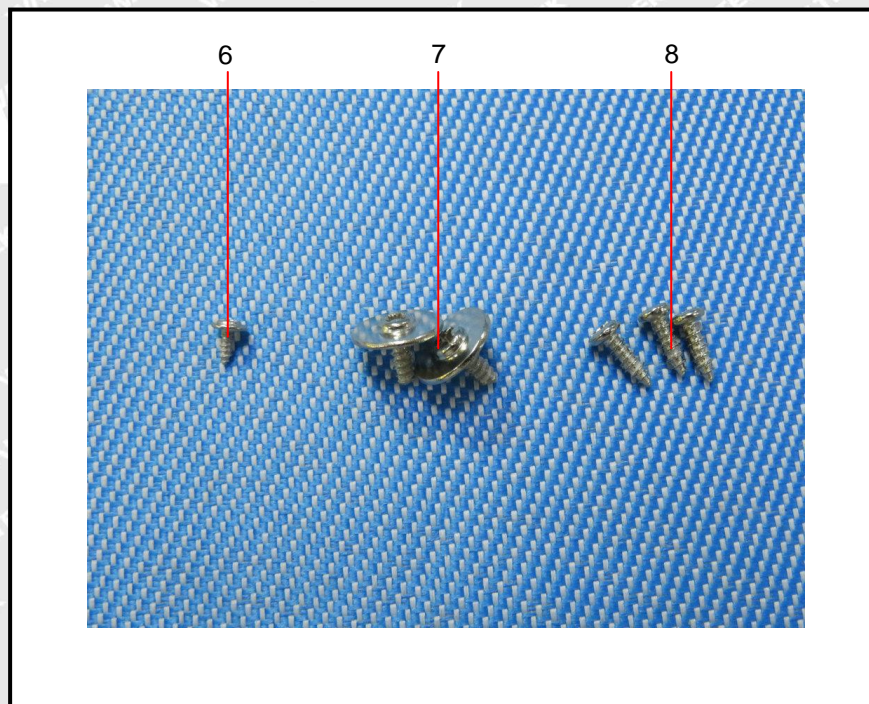
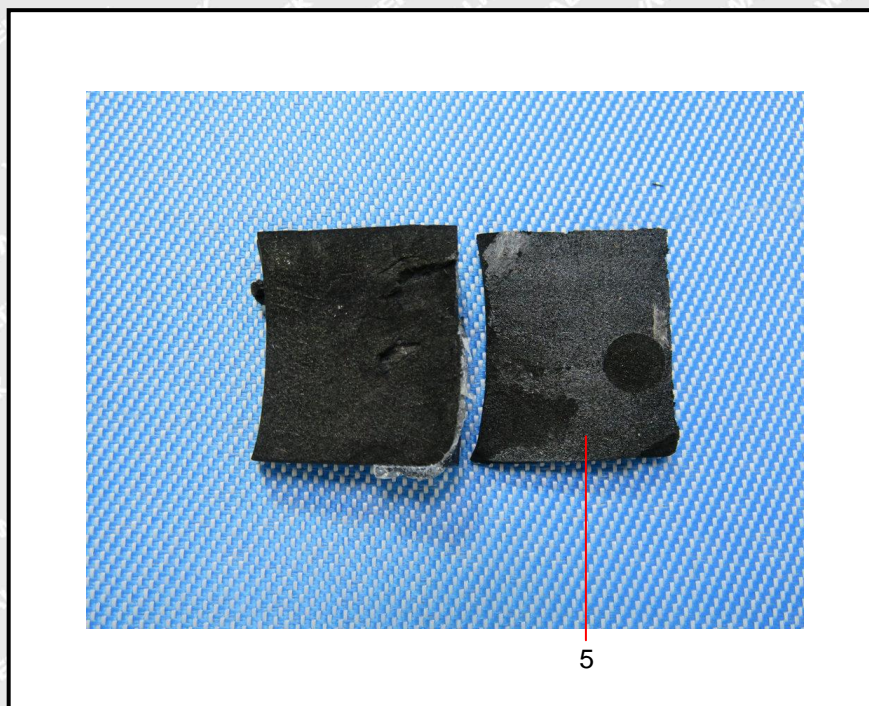
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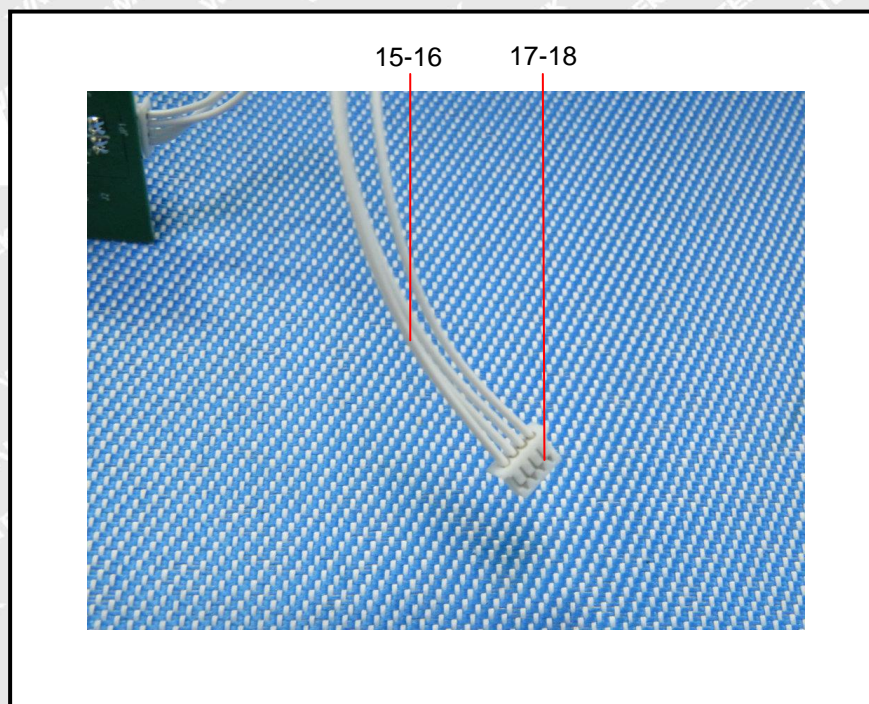
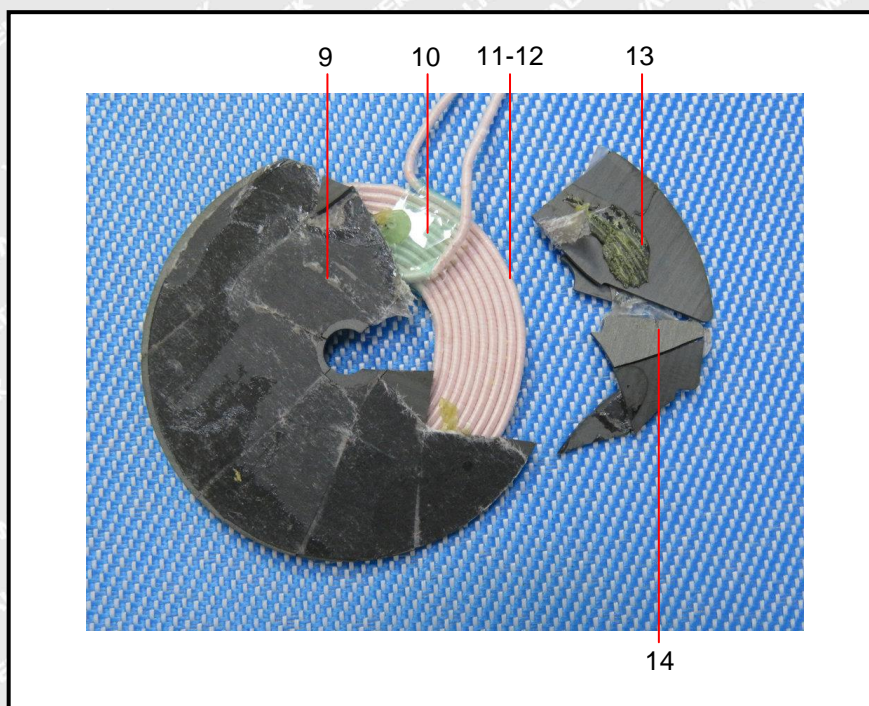


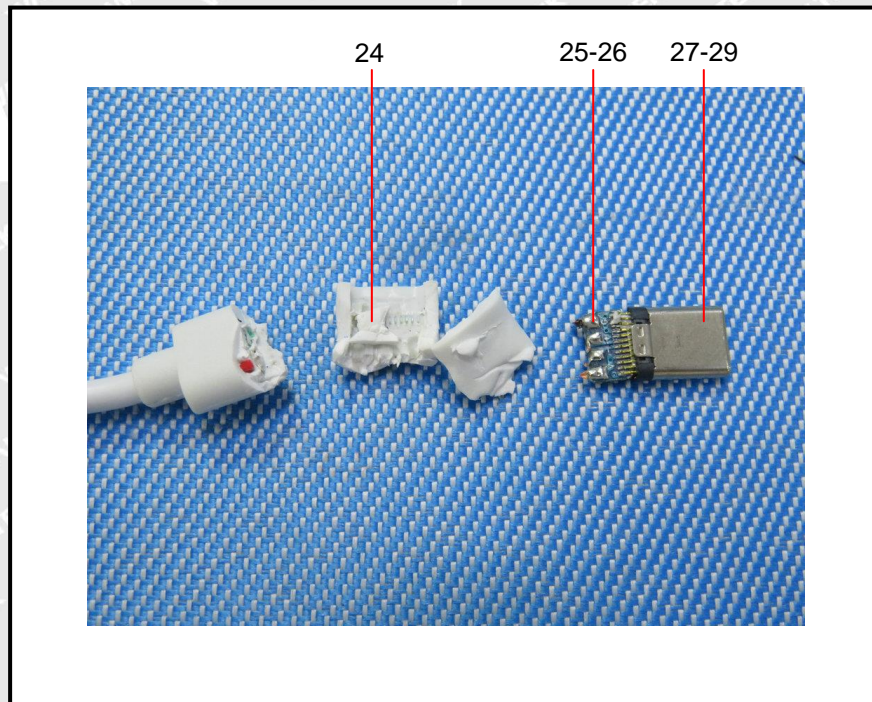
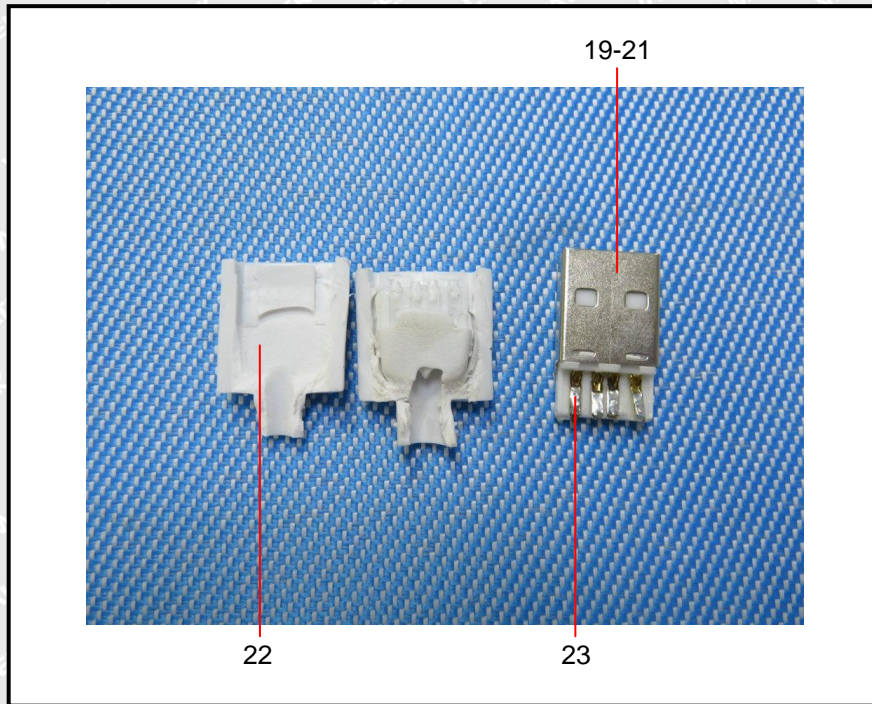


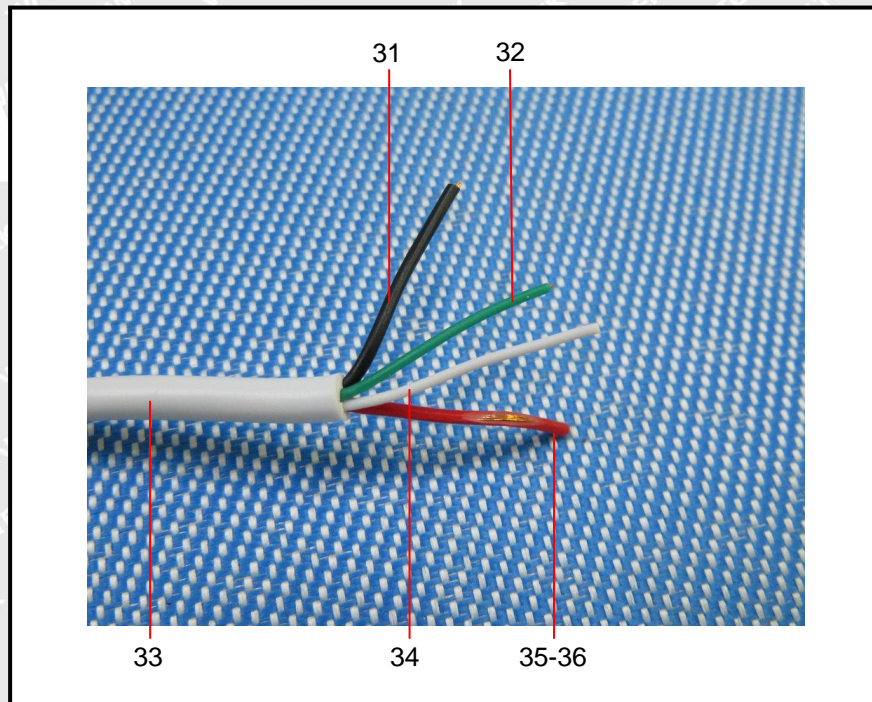
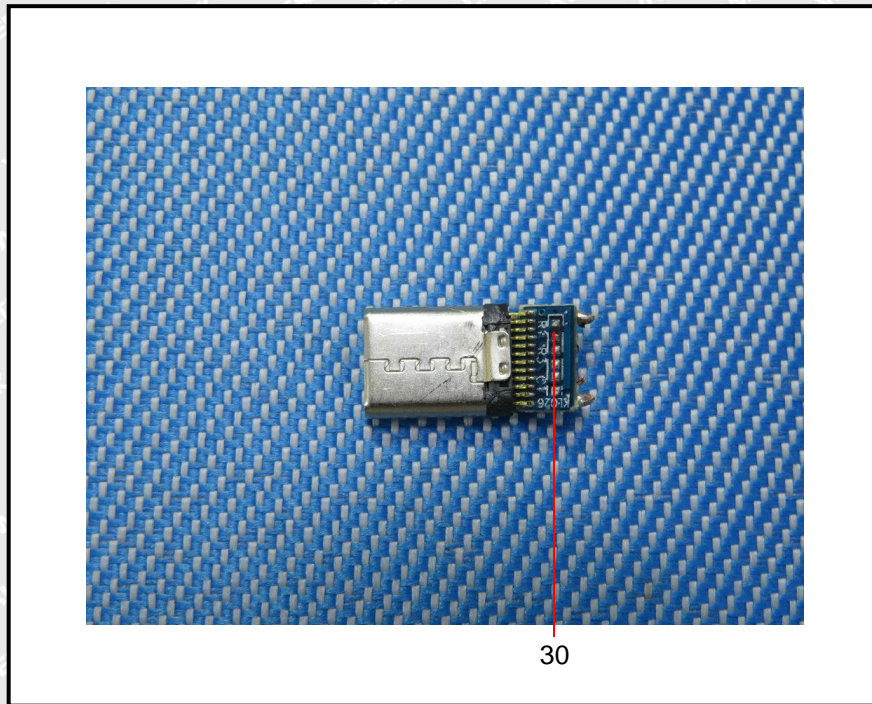
Photograph(s) of parts tested:

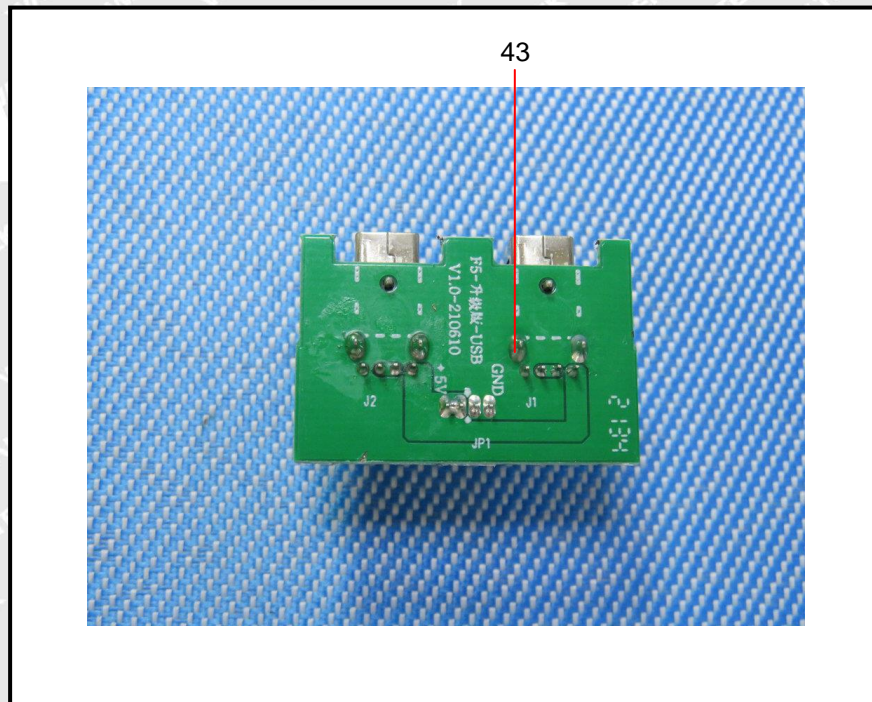
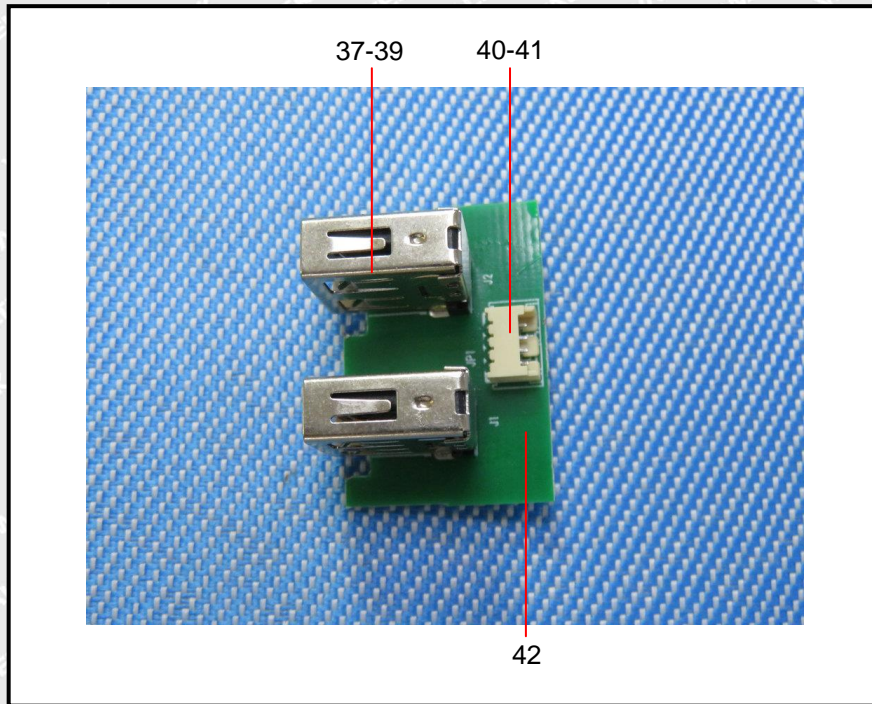


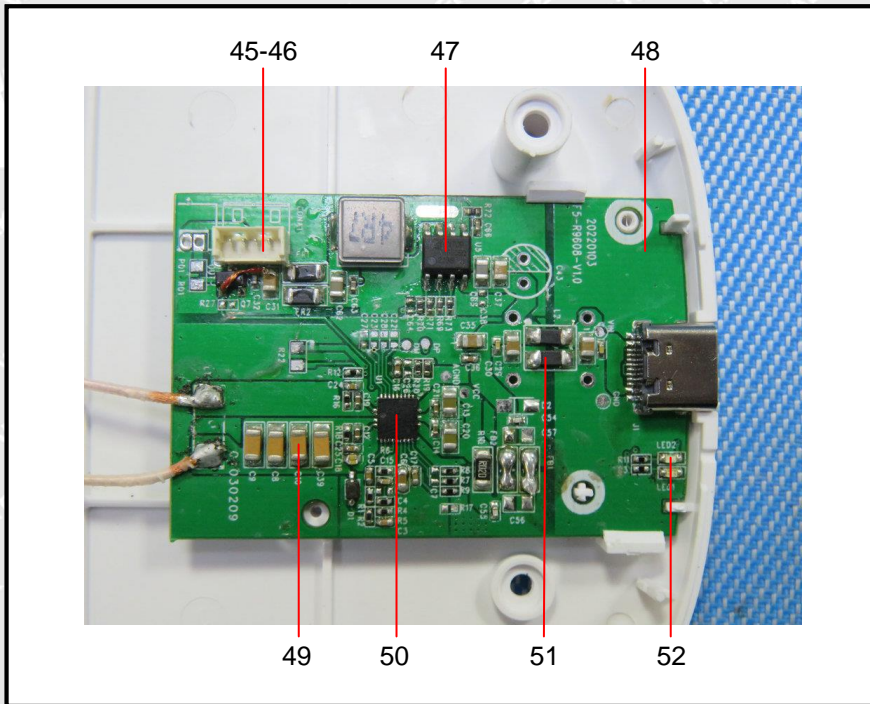
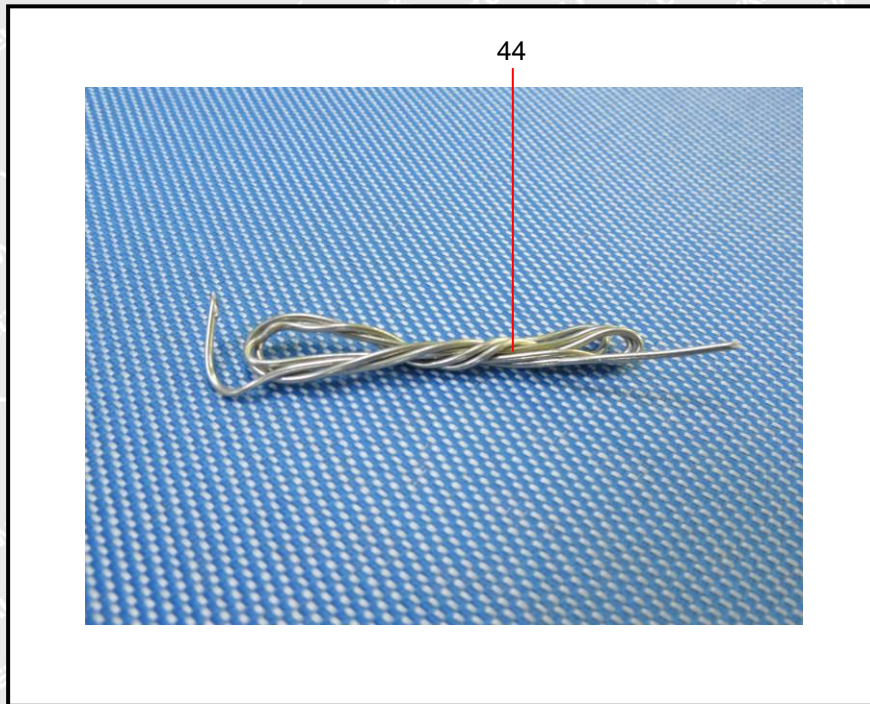


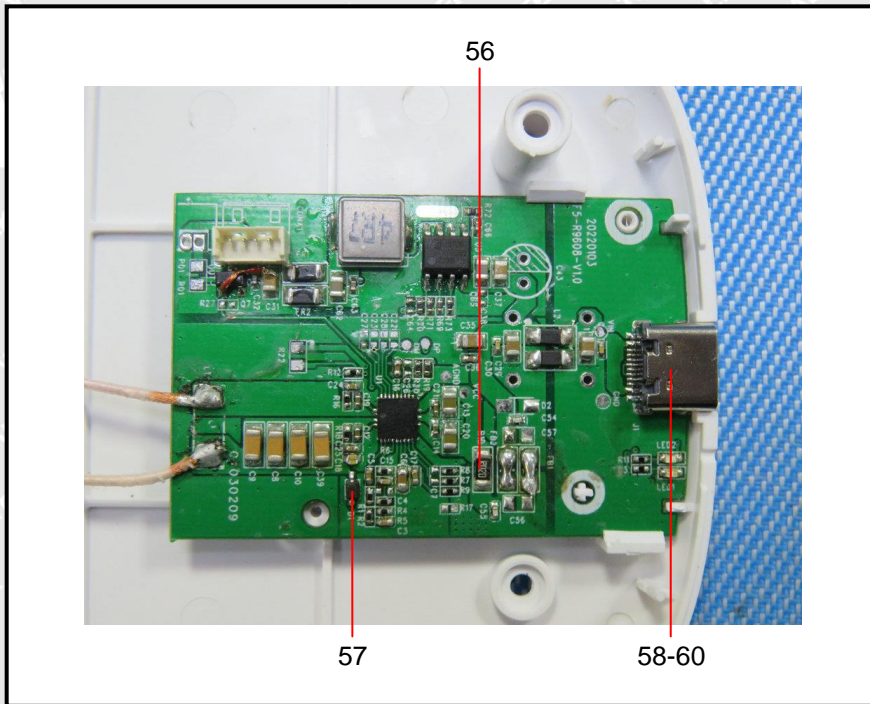
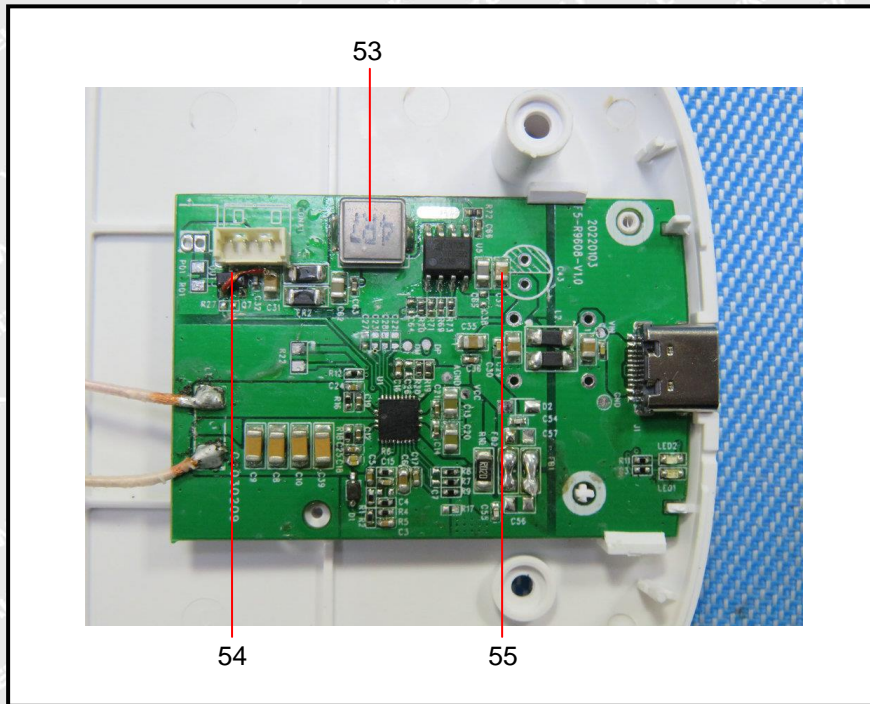












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