



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No. : WTF21F04040354A1C

Applicant : Mid Ocean Brands B.V.

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

Manufacturer : 116266

Sample Name : RABS 3W round wireless speaker

Model No. : MO6251

Sample Receiving Date : 2021-04-27 & 2021-05-18

Testing Period : 2021-04-27 to 2021-05-11 & 2021-05-18 to 2021-05-22

Date of Issue : 2021-05-27

Test Result : Please refer to next page (s)

Remarks:

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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	White plastic shell	BL	BL	BL	BL	BL	NA
2	Beige glue	BL	BL	BL	BL	BL	NA
3	Dark grey soft plastic foot pad	BL	BL	BL	BL	BL	NA
4	Black paper ring of loudspeaker	BL	BL	BL	BL	BL	NA
5	Silvery metal shell of loudspeaker	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
6	Beige fibrous net of loudspeaker	BL	BL	BL	BL	BL	NA
7	Black paper sheet of loudspeaker	BL	BL	BL	BL	BL	NA
8	Black plastic film of loudspeaker	BL	BL	BL	BL	BL	NA
9	Black plastic wire covering	BL	BL	BL	BL	BL	NA
10	Red plastic wire covering	BL	BL	BL	BL	BL	NA
11	Silvery metal wire	BL	BL	BL	BL	BL	NA
12	White paper of loudspeaker	BL	BL	BL	BL	BL	NA
13	Silvery metal rivet of loudspeaker	BL	BL	BL	BL	BL	NA
14	Solder of loudspeaker of loudspeaker	BL	IN	BL	BL	BL	Pb : 574
15	Coppery metal wire of loudspeaker	BL	BL	BL	BL	BL	NA
16	Red metal winding of loudspeaker	BL	BL	BL	BL	BL	NA
17	Beige paper bobbin of loudspeaker	BL	BL	BL	BL	BL	NA
18	Black soft plastic sheet of loudspeaker	BL	BL	BL	BL	BL	NA
19	Silvery metal sheet with black plating of loudspeaker	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 gasket of loudspeaker	BL	BL	BL	BL	BL	NA
21	Dark grey magnetic ring of loudspeaker	BL	BL	BL	BL	BL	NA
22	Silvery metal cap of loudspeaker	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
23	Black sponge adhesive sheet of loudspeaker	BL	BL	BL	BL	BL	NA
24	Black fibrous net	BL	BL	BL	BL	BL	NA
25	Silvery metal net with black plating	BL	BL	BL	BL	BL	NA
26	Red metal wire	BL	BL	BL	BL	BL	NA
27	Black body of resistor	BL	BL	BL	BL	BL	NA
28	Black plastic wire covering	BL	BL	BL	BL	BL	NA
29	Red plastic wire covering	BL	BL	BL	BL	BL	NA
30	Chip IC	BL	BL	BL	BL	BL	NA
31	Silvery metal body of oscillator	BL	BL	BL	BL	BL	NA
32	Black plastic base of oscillator	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
33	Chip IC	BL	BL	BL	BL	BL	NA
34	Silvery metal shell of switch	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
35	Golden metal button of switch	BL	BL	BL	BL	BL	NA
36	Silvery metal sheet of switch	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
37	Dark grey plastic base of switch	BL	BL	BL	BL	BL	NA
38	Chip LED	BL	BL	BL	BL	BL	NA
39	Chip resistor	BL	*OL	BL	IN	BL	Cr ⁶⁺ : ND



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
40	Solder	BL	BL	BL	BL	BL	NA
41	Chip inductor	BL	BL	BL	BL	BL	NA
42	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
43	Chip resistor	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND
44	Solder	BL	BL	BL	BL	BL	NA
45	Silvery metal shell of MIC	BL	BL	BL	BL	BL	NA
46	Silvery metal ring of MIC	BL	BL	BL	BL	BL	NA
47	Silvery metal sheet of MIC	BL	BL	BL	BL	BL	NA
48	Silvery plastic film of MIC	BL	BL	BL	BL	BL	NA
49	Yellow transparent plastic gasket of MIC	BL	BL	BL	BL	BL	NA
50	Chip IC of MIC	BL	BL	BL	BL	BL	NA
51	Green PCB of MIC	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
52	Silvery metal shell of socket	BL	BL	BL	BL	BL	NA
53	Silvery metal pin of socket	BL	BL	BL	BL	BL	NA
54	Black plastic sheet of socket	BL	BL	BL	BL	BL	NA
55	Silvery metal sheet	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
56	Solder	BL	BL	BL	BL	BL	NA
57	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
58	Yellow transparent plastic adhesive film	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND
59	Chip resistor	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
60	Chip IC	BL	BL	BL	BL	BL	NA
61	Chip capacitor	BL	BL	BL	BL	BL	NA
62	Silvery metal screw	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
63	Black plastic jacket of USB plug	BL	BL	BL	BL	BL	NA
64	Silvery metal shell of USB plug	BL	BL	BL	BL	BL	NA
65	Silvery metal pin of USB plug	BL	BL	BL	BL	BL	NA
66	White plastic sheet of USB plug	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
67	Solder of USB plug	BL	BL	BL	BL	BL	NA
68	Black plastic jacket of plug	BL	BL	BL	BL	BL	NA
69	Silvery metal shell of plug	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
70	Silvery metal pin of plug	BL	BL	BL	BL	BL	NA
71	Solder of plug	BL	IN	BL	BL	BL	Pb : 317
72	Black plastic sheet of plug	BL	BL	BL	BL	BL	NA
73	Black plastic wire jacket	BL	BL	BL	BL	BL	NA
74	Yellow plastic wire covering	BL	BL	BL	BL	BL	NA
75	White plastic wire covering	BL	BL	BL	BL	BL	NA
76	Coppery metal wire	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 0.10 $\mu\text{g}/\text{cm}^2$.

Positive = Presence of Cr⁶⁺ coating, the detected concentration in boiling water extraction solution is greater than 0.13 $\mu\text{g}/\text{cm}^2$.

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.

2. Phthalates:

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1+8+37 [△]	<50	<50	<50	<50
T02	2	<50	<50	<50	<50
T03	3	<50	<50	<50	<50
T04	4+7 [△]	<50	<50	<50	<50
T05	6	<50	<50	<50	<50
T06	9	<50	<50	<50	<50
T07	10	<50	<50	<50	<50
T08	12	<50	<50	<50	<50
T09	17	<50	<50	<50	<50
T10	18	<50	<50	<50	<50
T11	21+27+30+33+38 [△]	<50	<50	<50	<50
T12	23	<50	<50	<50	<50
T13	24	<50	<50	<50	<50
T14	28	<50	<50	192	<50
T15	29	<50	<50	<50	<50
T16	32	<50	<50	<50	<50
T17	39+41+42+43+61 [△]	<50	<50	<50	<50
T18	48	<50	<50	<50	<50
T19	49	<50	<50	<50	<50
T20	50+51+57+59+60 [△]	<50	<50	<50	<50
T21	54	<50	<50	<50	<50
T22	58	<50	<50	<50	<50
T23	63	<50	<50	<50	<50
T24	66+72 [△]	<50	<50	<50	<50
T25	68	<50	<50	<50	<50
T26	73	<50	<50	<50	<50
T27	74	<50	<50	<50	<50
T28	75	<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

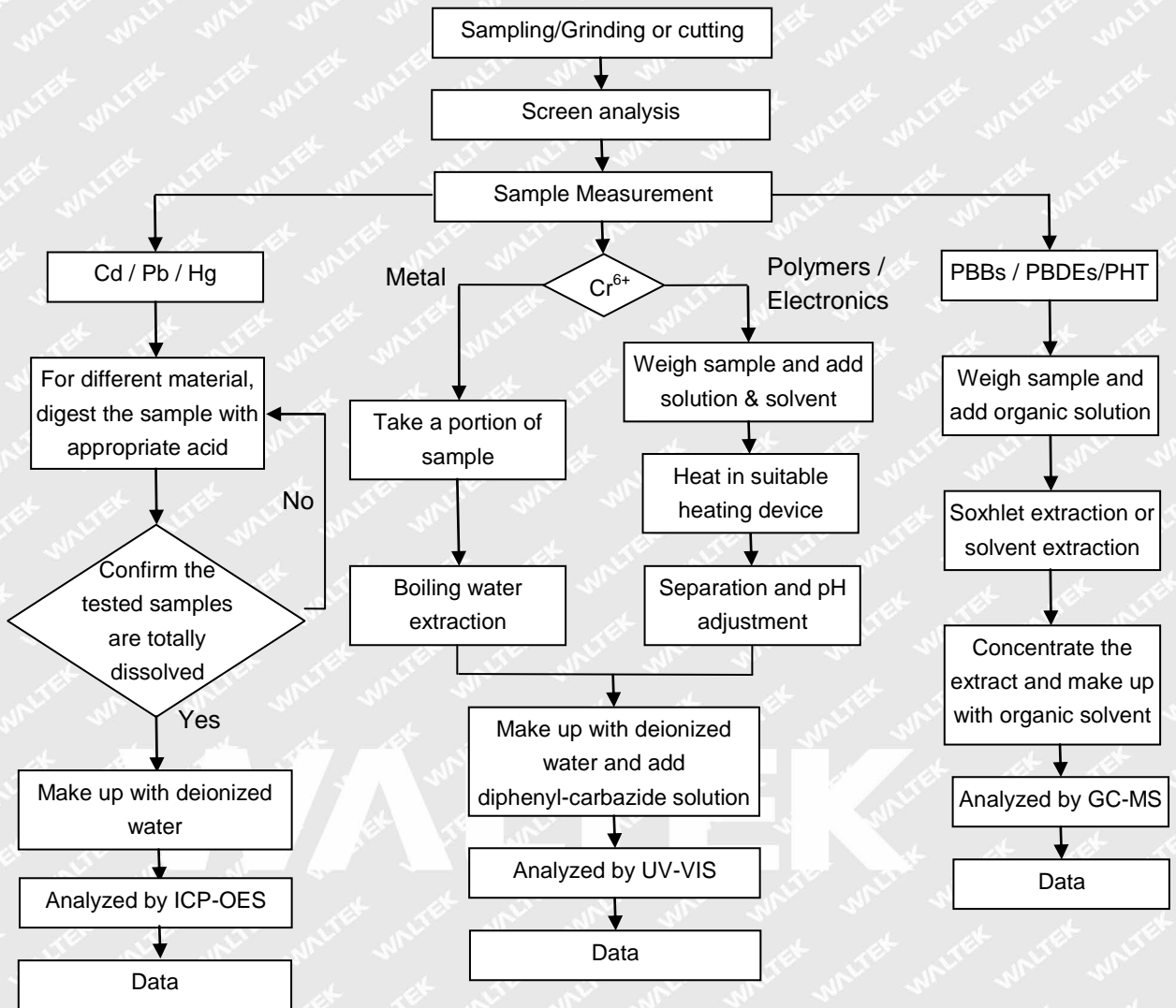
Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

(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:



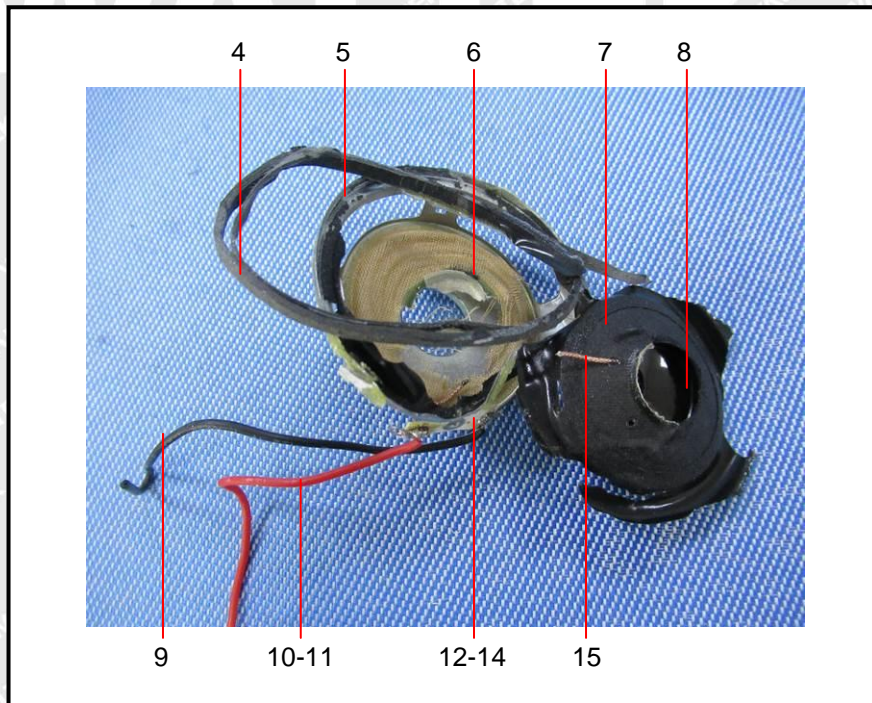
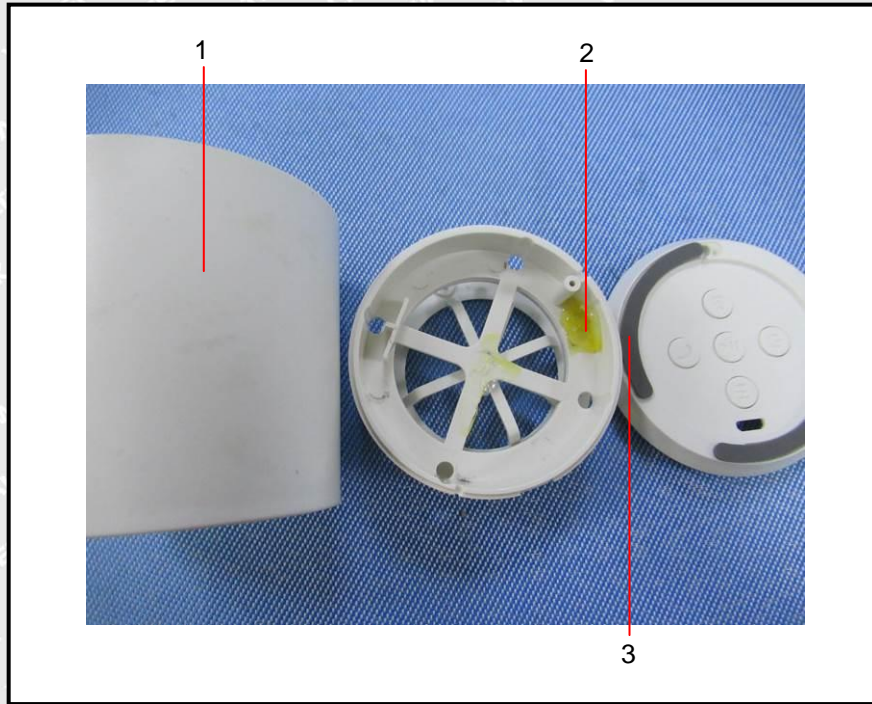


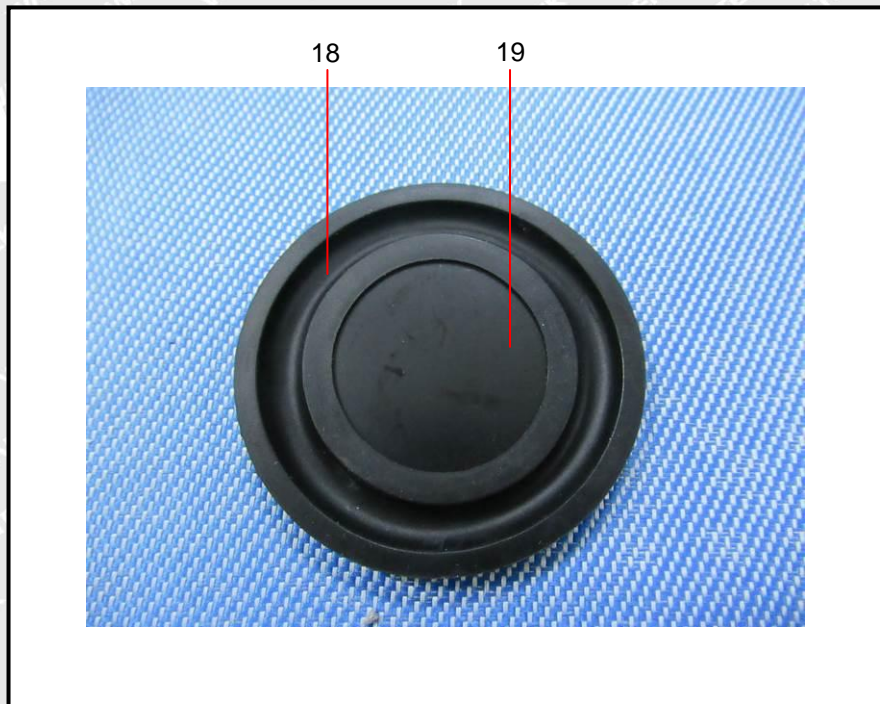
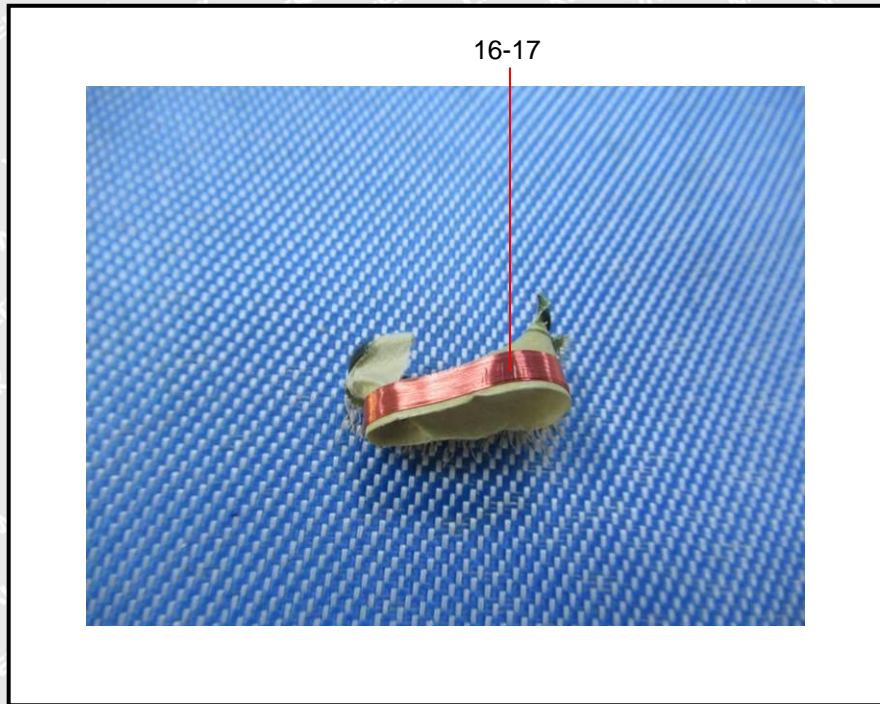
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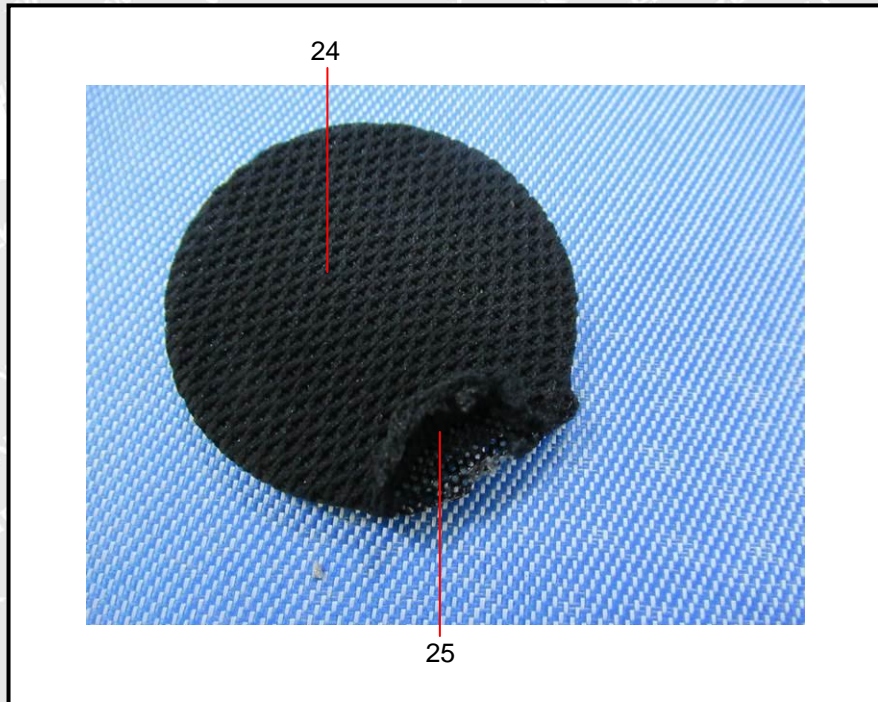
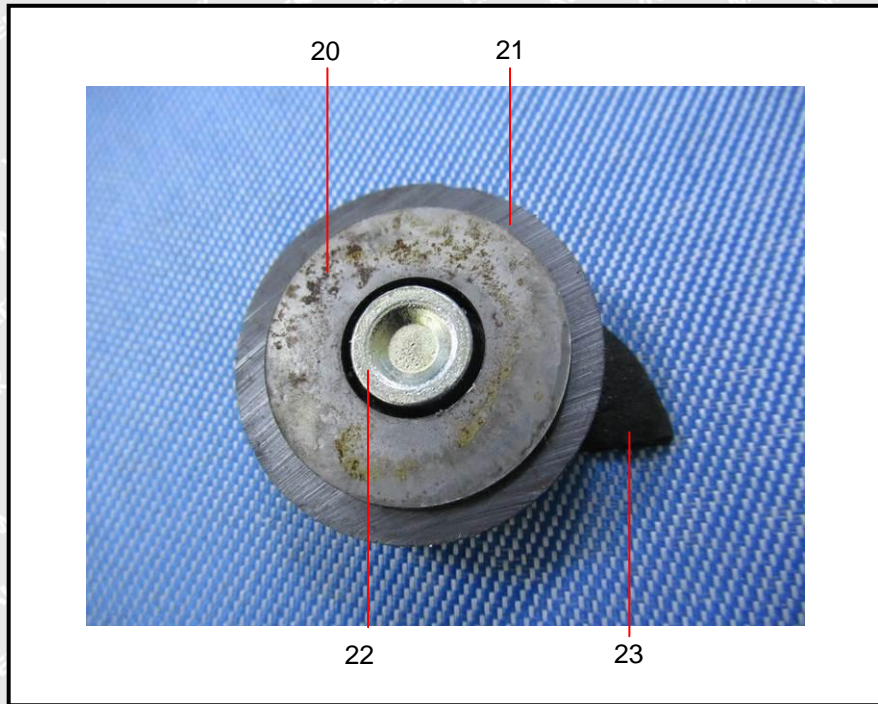


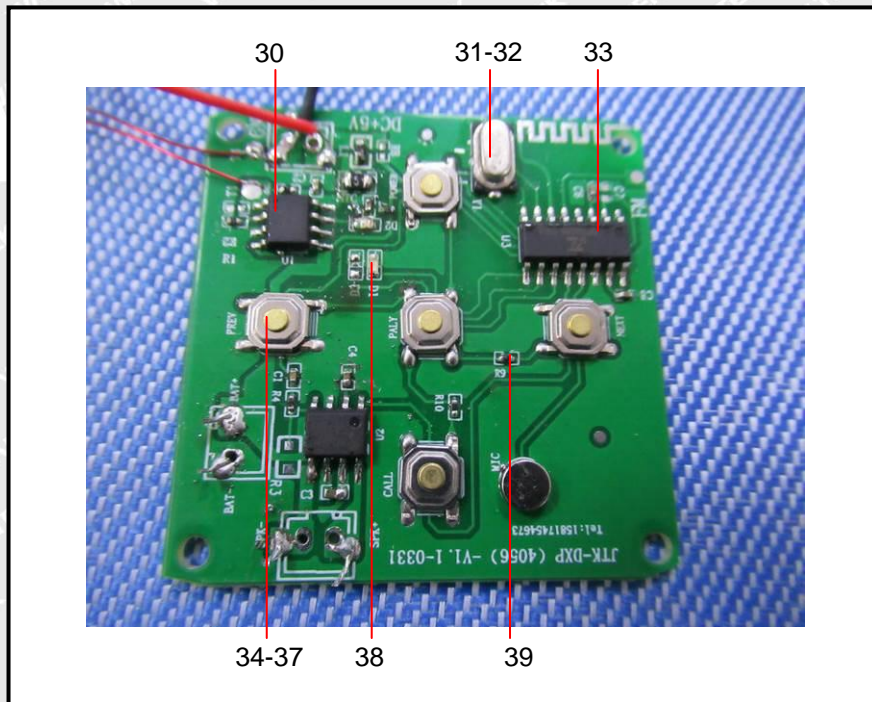
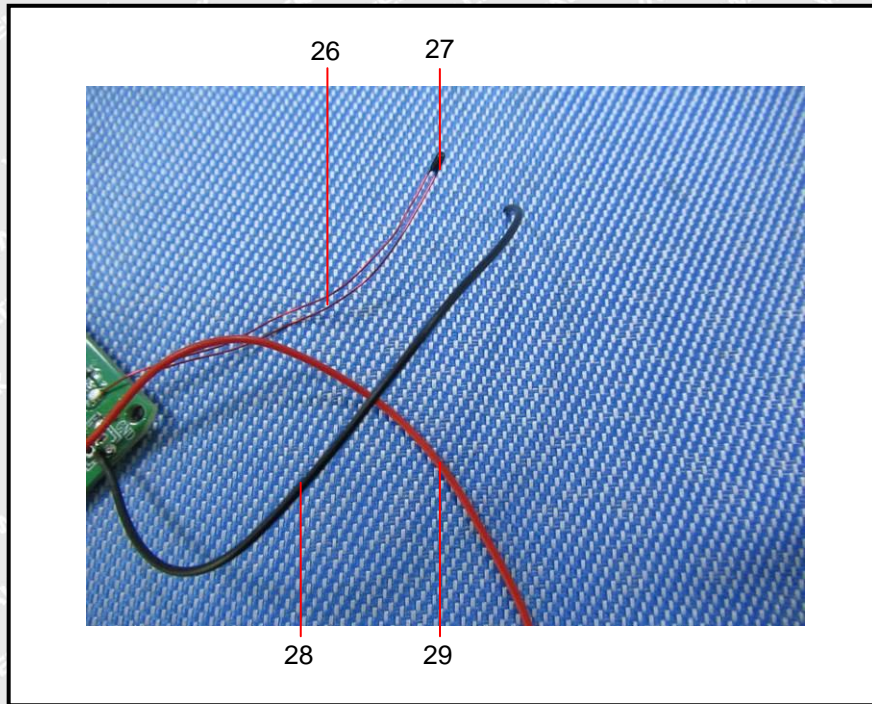


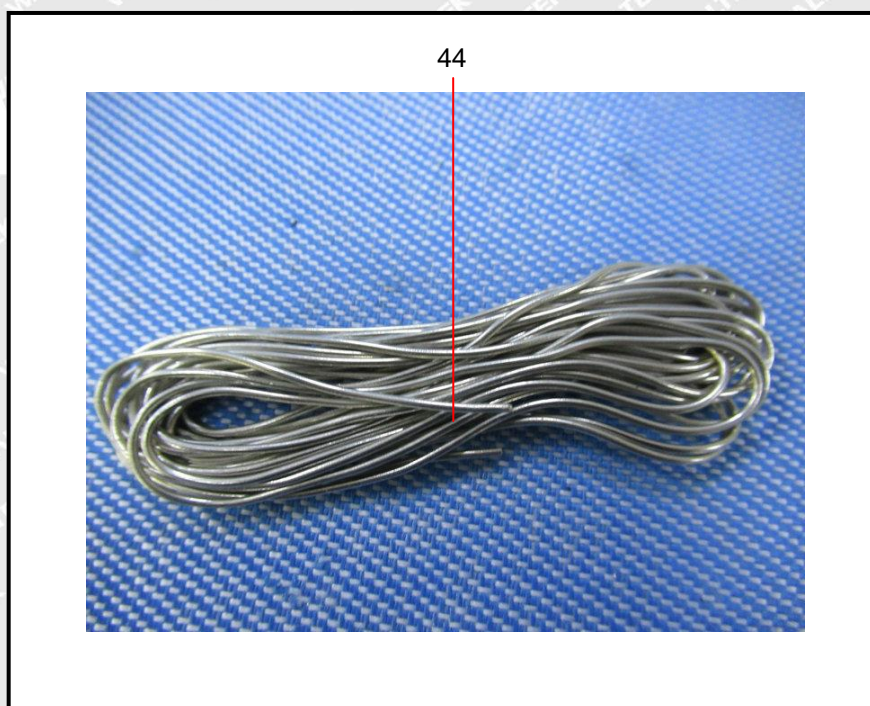
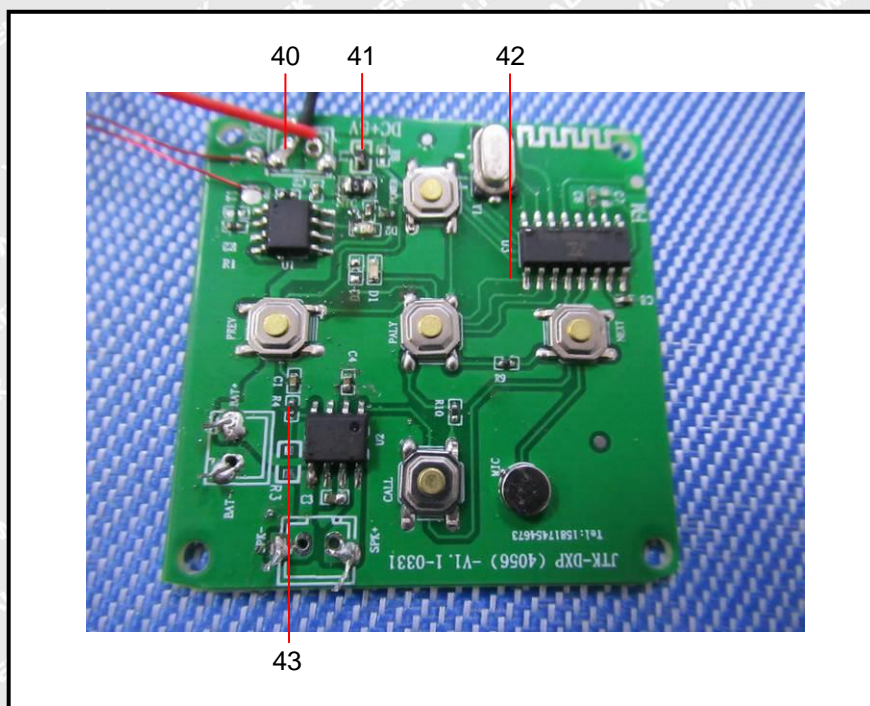
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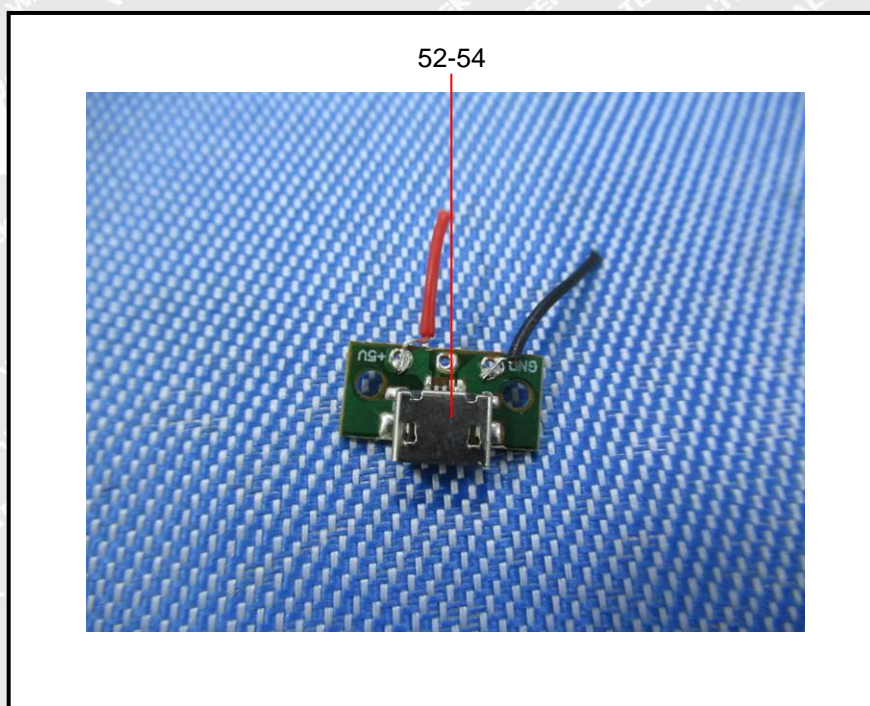
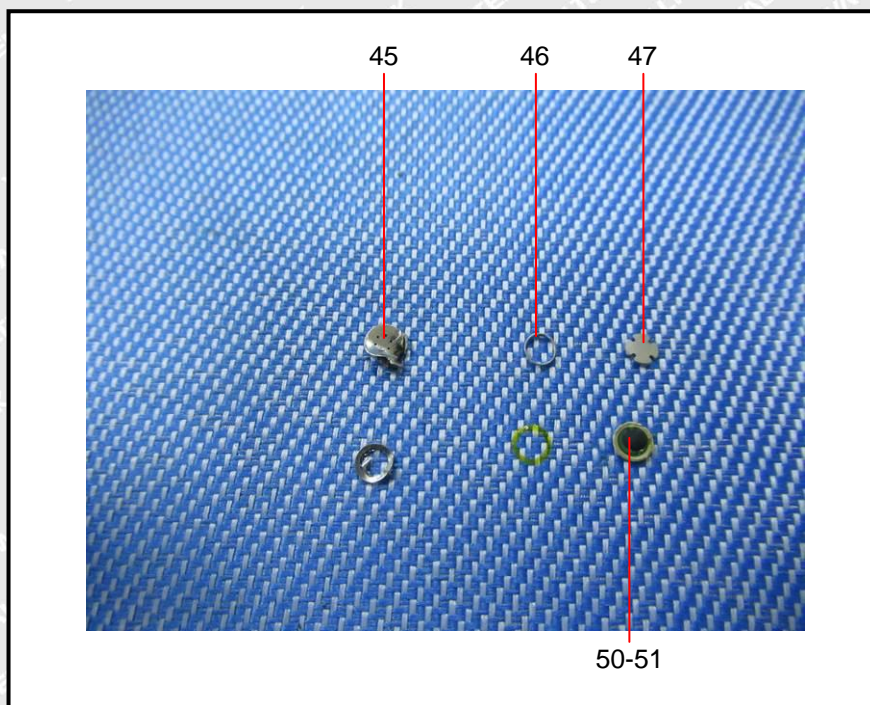


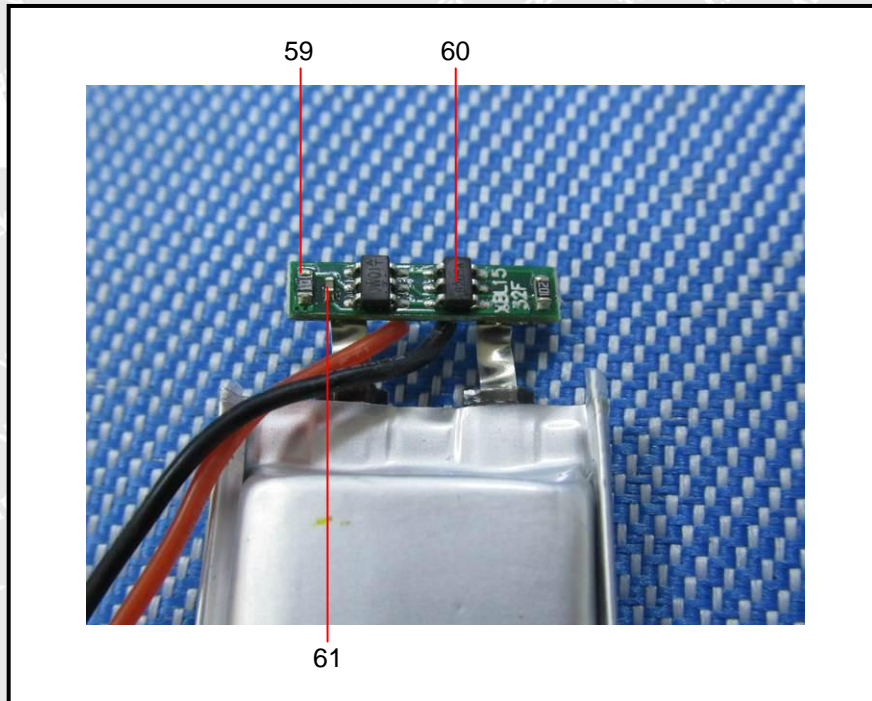
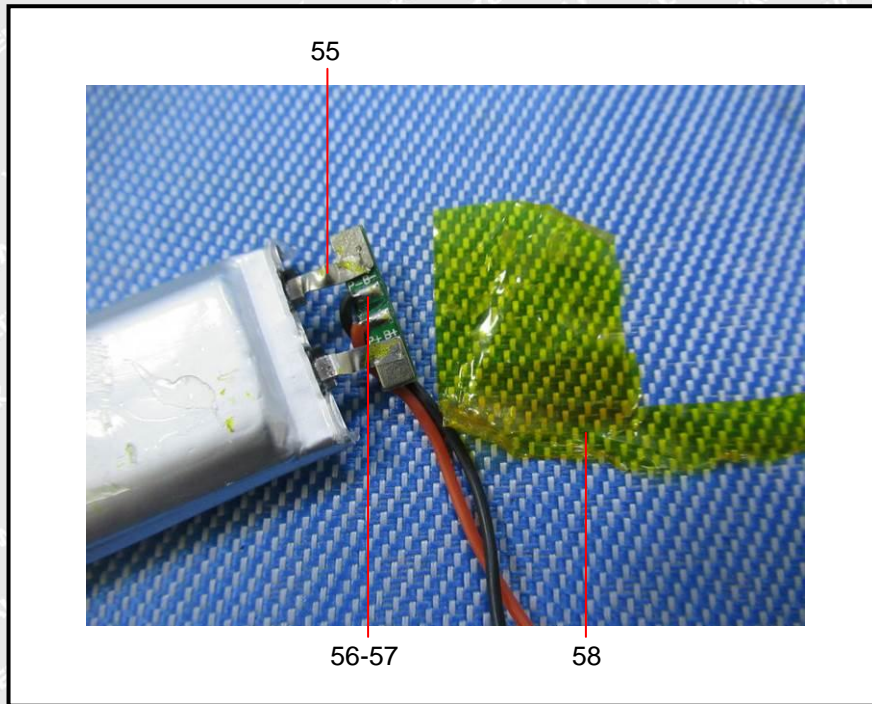


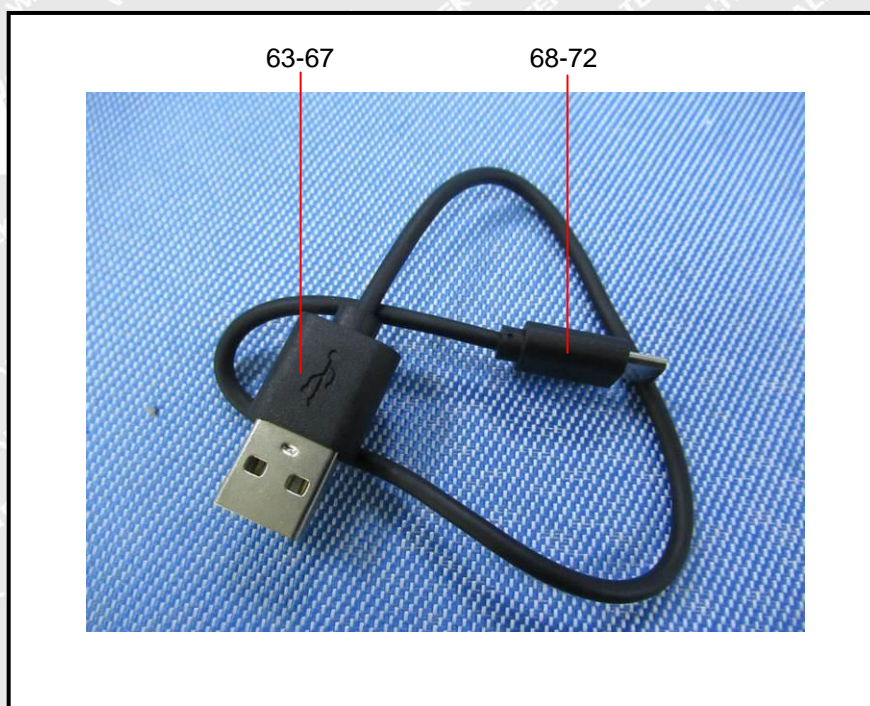
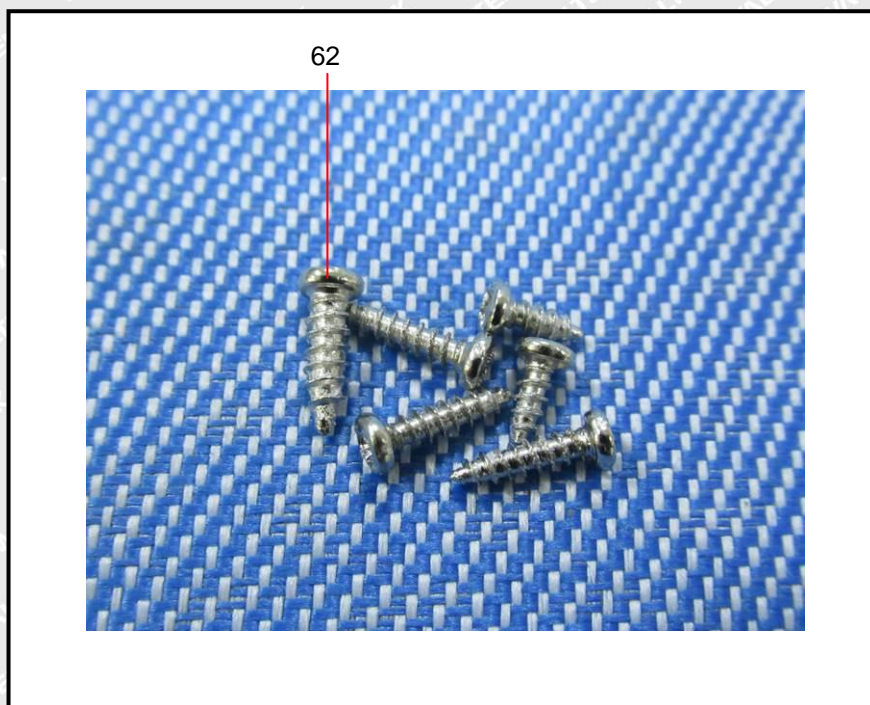


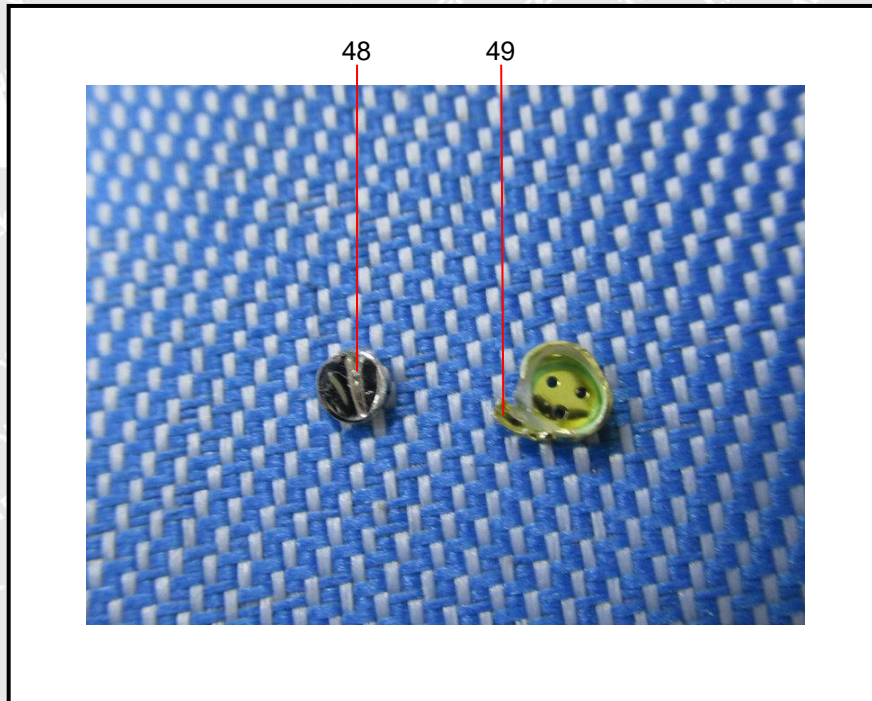
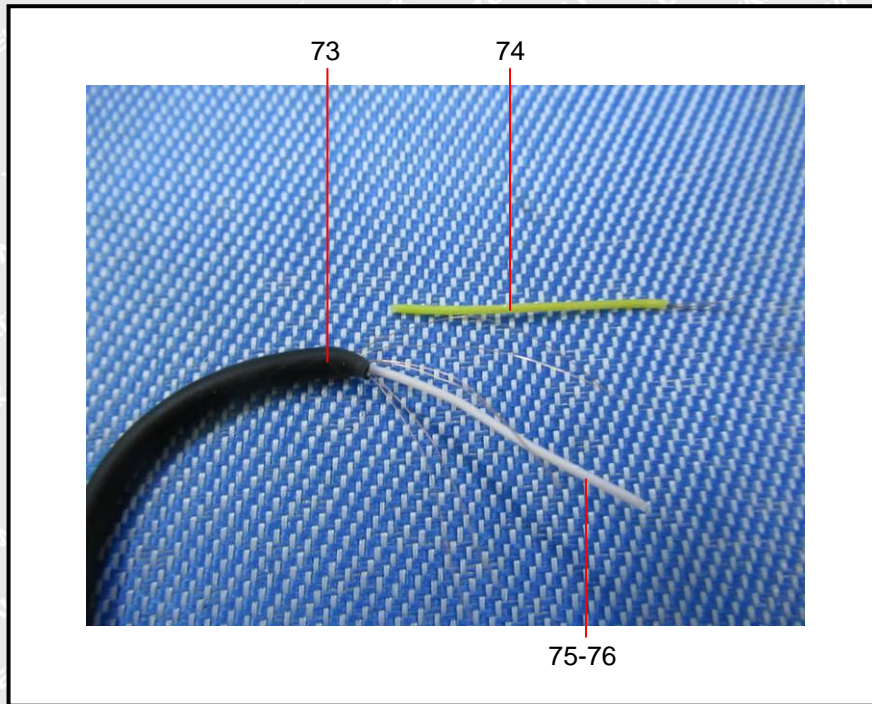












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