



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No. : WTF20F08055951A1C

Applicant : Mid Ocean Brands B.V.

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

Manufacturer : 114351

Sample Name : Bluetooth headphone

Model No. : MO9168

Sample Receiving Date.... : 2020-08-17 & 2020-09-01

Testing Period..... : 2020-08-17 to 2020-08-25 & 2020-09-01 to 2020-09-03

Date of Issue : 2020-09-07

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:

Humour.Wu

Swing Liang

Humour.Wu / 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** (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 sponge sheet	BL	BL	BL	BL	BL	NA
2	Black soft plastic sheet	BL	BL	BL	BL	BL	NA
3	Black plastic sheet	BL	BL	BL	BL	BL	NA
4	Black leather sheet	BL	BL	BL	BL	BL	NA
5	Black sponge sheet	BL	BL	BL	BL	BL	NA
6	White sponge sheet	BL	BL	BL	BL	BL	NA
7	Purple plastic sheet	BL	BL	BL	BL	BL	NA
8	White plastic sheet without silvery coating	BL	BL	BL	BL	BL	NA
9	Silvery coating	BL	BL	BL	BL	BL	NA
10	Black plastic shell	BL	BL	BL	BL	BL	NA
11	Silvery metal strip	BL	BL	BL	BL	BL	NA
12	Silvery metal sheet with black plating	BL	BL	BL	BL	BL	NA
13	Semi-transparent glue	BL	BL	BL	BL	BL	NA
14	Silvery metal screw	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
15	Silvery metal screw	BL	BL	BL	BL	BL	NA
16	Transparent plastic sheet	BL	BL	BL	BL	BL	NA
17	Black soft plastic sheet	BL	BL	BL	BL	BL	NA
18	Black plastic sheet	BL	BL	BL	BL	BL	NA
19	Black sponge adhesive tape	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	White fibrous adhesive tape	BL	BL	BL	BL	BL	NA
21	Yellow plastic adhesive tape	BL	BL	BL	BL	BL	NA
22	Solder	BL	IN	BL	BL	BL	Pb : 169
23	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
24	Yellow glue	BL	BL	BL	BL	BL	NA
25	Transparent plastic film	BL	BL	BL	BL	BL	NA
26	Coppery metal winding	BL	BL	BL	BL	BL	NA
27	White fibrous sheet	BL	BL	BL	BL	BL	NA
28	Silvery metal sheet	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
29	Silvery magnetic core	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND
30	Black plastic shell	BL	BL	BL	BL	BL	NA
31	Blue-golden metal wire	BL	BL	BL	BL	BL	NA
32	White fibrous wire	BL	BL	BL	BL	BL	NA
33	Golden metal wire	BL	BL	BL	BL	BL	NA
34	Red metal wire	BL	BL	BL	BL	BL	NA
35	Blue metal wire	BL	BL	BL	BL	BL	NA
36	Green metal wire	BL	BL	BL	BL	BL	NA
37	Black fibrous wire jacket	BL	BL	BL	BL	BL	NA
38	Black plastic wire covering	BL	BL	BL	BL	BL	NA
39	Silvery metal sheet	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	
40	Solder	BL	BL	BL	BL	BL	NA
41	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
42	Chip IC	BL	BL	BL	BL	BL	NA
43	Chip resistor	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
44	Chip capacitor	BL	BL	BL	BL	BL	NA
45	Chip inductor	BL	BL	BL	BL	BL	NA
46	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
47	Solder	BL	BL	BL	BL	BL	NA
48	Black plastic wire covering	BL	BL	BL	BL	BL	NA
49	Red plastic wire covering	BL	BL	BL	BL	BL	NA
50	Solder	BL	BL	BL	BL	BL	NA
51	Black plastic wire jacket	BL	BL	BL	BL	BL	NA
52	Black plastic wire jacket	BL	BL	BL	BL	BL	NA
53	Coppery metal wire	BL	BL	BL	BL	BL	NA
54	Silvery metal ring of MIC	BL	BL	BL	BL	BL	NA
55	Silvery plastic film of MIC	BL	BL	BL	BL	BL	NA
56	Red plastic film of MIC	BL	BL	BL	BL	BL	NA
57	Black fibrous adhesive tape of MIC	BL	BL	BL	BL	BL	NA
58	Golden metal shell of MIC	BL	BL	BL	BL	BL	NA
59	Chip capacitor of MIC	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	Chip audion of MIC	BL	BL	BL	BL	BL	NA
61	Red PCB of MIC	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
62	Silvery metal ring of MIC	BL	BL	BL	BL	BL	NA
63	Silvery metal sheet of MIC	BL	BL	BL	BL	BL	NA
64	White plastic ring of MIC	BL	BL	BL	BL	BL	NA
65	Silvery metal shell of socket	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
66	Silvery metal pin of socket	BL	BL	BL	BL	BL	NA
67	Silvery metal spring of socket	BL	BL	BL	BL	BL	NA
68	Black plastic core of socket	BL	BL	BL	BL	BL	NA
69	Chip capacitor	BL	BL	BL	BL	BL	NA
70	Chip resistor	BL	BL	BL	BL	BL	NA
71	Chip IC	BL	BL	BL	BL	BL	NA
72	Silvery metal shell of socket	BL	BL	BL	BL	BL	NA
73	Silvery metal pin of socket	BL	BL	BL	BL	BL	NA
74	Black plastic core of socket	BL	BL	BL	BL	BL	NA
75	Black plastic key of button	BL	BL	BL	BL	BL	NA
76	White plastic shell of button	BL	BL	BL	BL	BL	NA
77	Silvery metal shell of button	BL	BL	BL	BL	BL	NA
78	Silvery metal sheet of button	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
79	Solder	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	
80	Chip IC	BL	BL	BL	BL	BL	NA
81	Chip crystal oscillator	BL	BL	BL	BL	BL	NA
82	Black plastic base of crystal oscillator	BL	BL	BL	BL	BL	NA
83	Chip capacitor	BL	BL	BL	BL	BL	NA
84	Silvery metal shell of switch	BL	BL	BL	BL	BL	NA
85	Black plastic key of switch	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
86	Beige plastic sheet of switch	BL	BL	BL	BL	BL	NA
87	Silvery metal sheet of switch	BL	BL	BL	BL	BL	NA
88	Silvery metal pin of switch	BL	BL	BL	BL	BL	NA
89	Black plastic shell of socket	BL	BL	BL	BL	BL	NA
90	Silvery metal pin of socket	BL	BL	BL	BL	BL	NA
91	Chip resistor	BL	BL	BL	BL	BL	NA
92	Solder	BL	BL	BL	BL	BL	NA
93	Chip LED	BL	BL	BL	BL	BL	NA
94	Black plastic wire jacket	BL	BL	BL	BL	BL	NA
95	Black plastic cord anchorage of plug	BL	BL	BL	BL	BL	NA
96	Black plastic shell of plug	BL	BL	BL	BL	BL	NA
97	Silvery metal sleeve of plug	BL	BL	BL	BL	BL	NA
98	Solder of plug	BL	BL	BL	BL	BL	NA
99	Silvery metal pin of plug	BL	OL	BL	BL	BL	#Pb : 2.57 × 10⁴



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
100	Black plastic holder of plug	BL	BL	BL	BL	BL	NA
101	Black plastic jacket of plug	BL	BL	BL	BL	BL	NA
102	Silvery metal shell of plug	BL	BL	BL	BL	BL	NA
103	White plastic core of plug	BL	BL	BL	BL	BL	NA
104	Solder of plug	BL	BL	BL	BL	BL	NA
105	Silvery metal pin with golden plating of plug	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
106	Red plastic wire covering	BL	BL	BL	BL	BL	NA
107	Coppery metal wire	BL	BL	BL	BL	BL	NA
108	Black plastic wire jacket	BL	BL	BL	BL	BL	NA
109	Black plastic wire covering	BL	BL	BL	BL	BL	NA
110	Silvery metal shell of plug	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
111	Silvery metal pin of plug	BL	BL	BL	BL	BL	NA
112	Solder of plug	BL	BL	BL	BL	BL	NA
113	Black plastic core of plug	BL	BL	BL	BL	BL	NA
114	Black plastic shell of plug	BL	BL	BL	BL	BL	NA
115	White plastic wire jacket of plug	BL	BL	BL	BL	BL	NA
116	White plastic jacket of plug	BL	BL	BL	BL	BL	NA
117	White plastic jacket of plug	BL	BL	BL	BL	BL	NA
118	White plastic cord anchorage of plug	BL	BL	BL	BL	BL	NA
119	White plastic shell 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	
120	White plastic wire jacket	BL	BL	BL	BL	BL	NA
121	White soft plastic sheet	BL	BL	BL	BL	BL	NA
122	White plastic shell	BL	BL	BL	BL	BL	NA
123	White leather sheet	BL	BL	BL	BL	BL	NA
124	White fibrous sheet	BL	BL	BL	BL	BL	NA
125	White plastic button with silvery coating	BL	BL	BL	BL	BL	NA
126	Silvery metal sheet	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)[#] = 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.

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2. Phthalates:

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1	<50	<50	<50	<50
T02	2	<50	<50	<50	<50
T03	3+7+8+10 [△]	<50	<50	<50	<50
T04	4	<50	<50	<50	<50
T05	5	<50	<50	<50	<50
T06	6	<50	<50	<50	<50
T07	9	<50	<50	<50	<50
T08	13	<50	<50	<50	<50
T09	16+30+68 [△]	<50	<50	<50	<50
T10	17	<50	<50	<50	<50
T11	18	<50	<50	<50	<50
T12	19	<50	<50	<50	<50
T13	20	<50	<50	<50	<50
T14	21	<50	<50	<50	<50
T15	23+29+46+61 [△]	<50	<50	<50	<50
T16	24	<50	<50	<50	<50
T17	25	<50	<50	<50	<50
T18	27	<50	<50	<50	<50
T19	32	<50	<50	<50	<50
T20	37	<50	<50	<50	<50
T21	38	<50	<50	<50	<50
T22	41+91+93 [△]	<50	<50	<50	<50
T23	42+43+44 [△]	<50	<50	<50	<50
T24	45+59+60 [△]	<50	<50	<50	<50
T25	48	<50	<50	86	<50
T26	49	<50	<50	94	<50
T27	51	<50	<50	<50	<50
T28	52	<50	<50	<50	<50
T29	55	<50	<50	<50	<50
T30	56	<50	<50	<50	<50
T31	57	<50	<50	<50	<50
T32	69+70+71 [△]	<50	<50	<50	<50
T33	64	<50	<50	<50	<50
T34	74	<50	<50	<50	<50
T35	75	<50	<50	<50	<50
T36	76	<50	<50	<50	<50
T37	80+81+83 [△]	<50	<50	<50	<50
T38	82	<50	<50	<50	<50
T39	85	<50	<50	<50	<50
T40	86	<50	<50	<50	<50
T41	89+95+96+101 [△]	<50	<50	<50	<50
T42	94	<50	<50	<50	<50
T43	100+103+113+114+116 [△]	<50	<50	<50	<50



Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T44	106	105	<50	<50	<50
T45	108	623	<50	<50	<50
T46	109	<50	<50	<50	<50
T47	115	<50	<50	<50	<50
T48	117	<50	<50	<50	<50
T49	118	<50	<50	<50	<50
T50	119	<50	<50	<50	<50
T51	120	<50	<50	<50	<50
T52	121	<50	<50	<50	<50
T53	122	<50	<50	<50	<50
T54	123	<50	<50	<50	<50
T55	124	<50	<50	<50	<50
T56	125	<50	<50	<50	<50

Note:

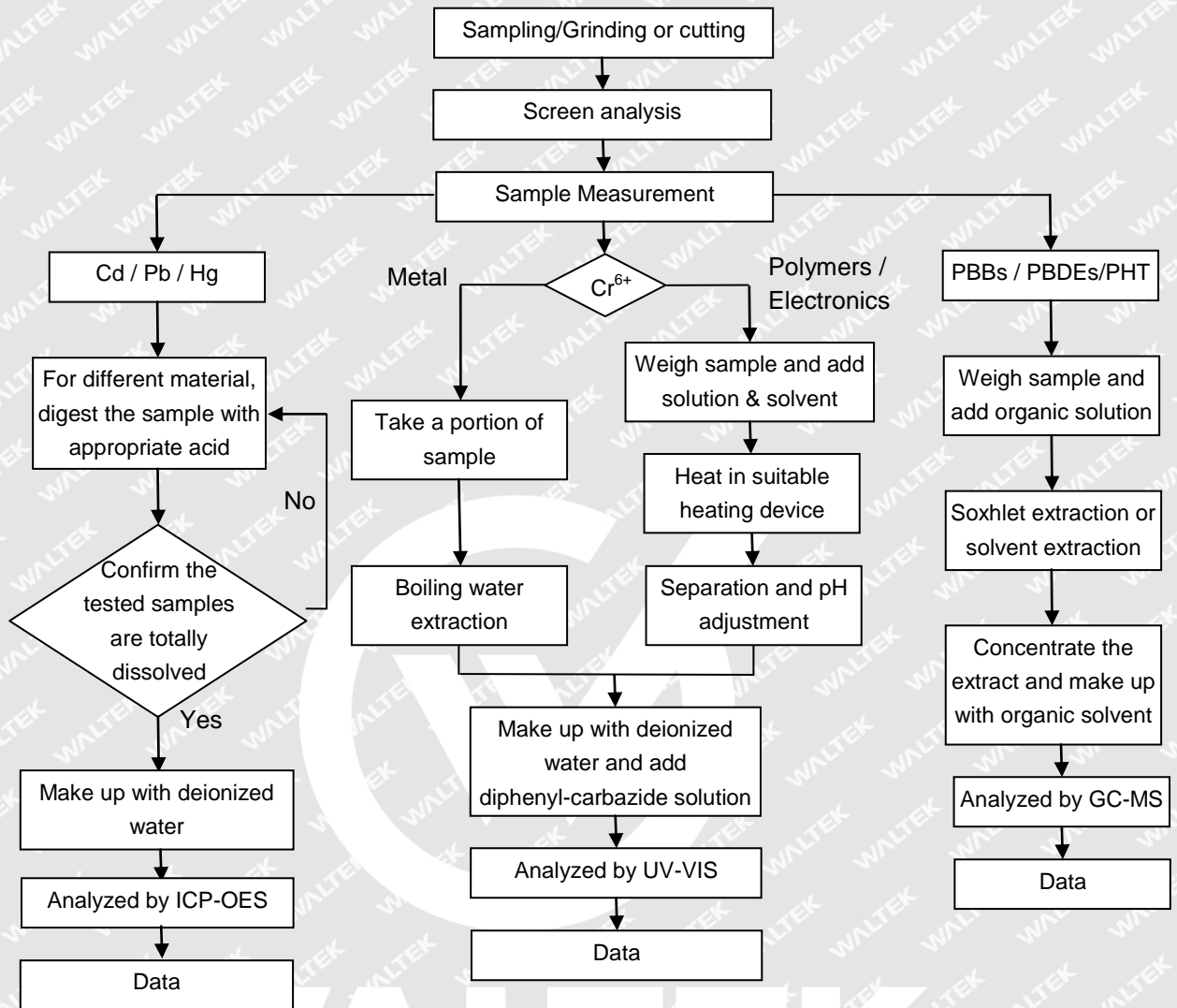
- (1) "<" = less than
- (2) mg/kg = milligram per kilogram= ppm
- (3) Abbreviation:
 "DBP" denotes Dibutyl phthalate, "BBP" denotes Benzyl butyl phthalate (BBP), "DEHP" denotes Bis(2-ethylhexyl)-phthalate, "DIBP" denotes Diisobutyl phthalate, "PHT" denotes Phthalates.
- (4) RoHS requirement

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.



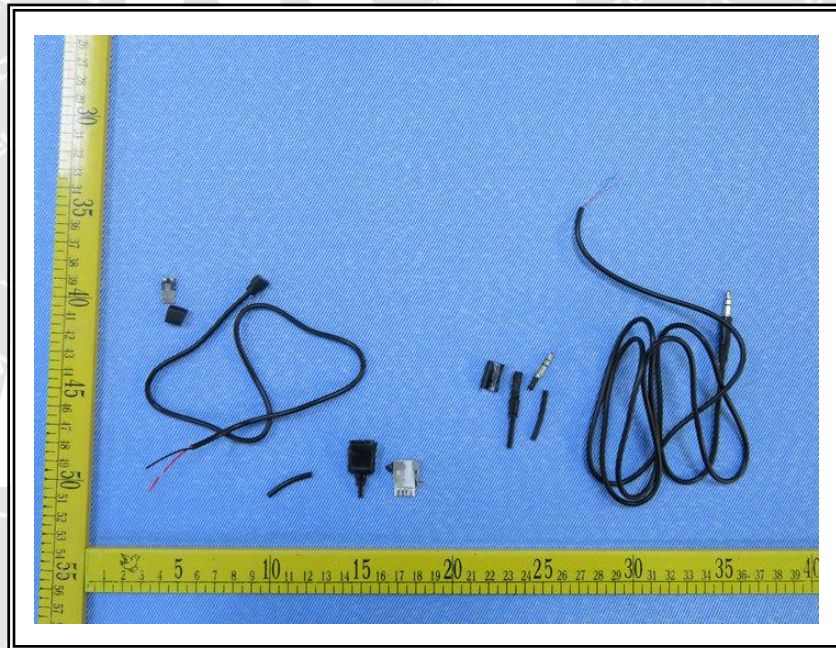
Measurement Flowchart:





Sample Photo(s):

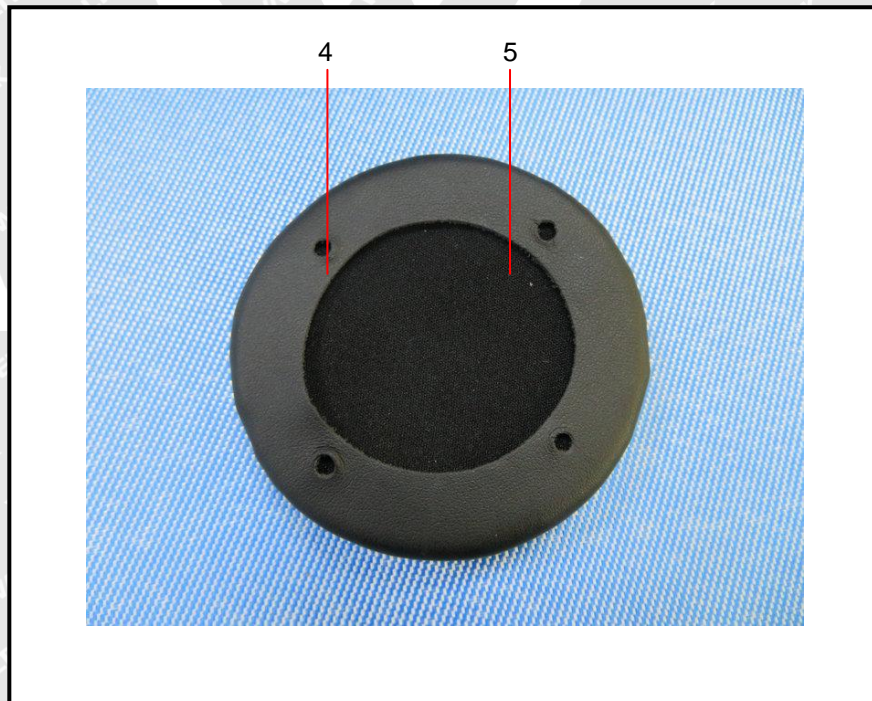
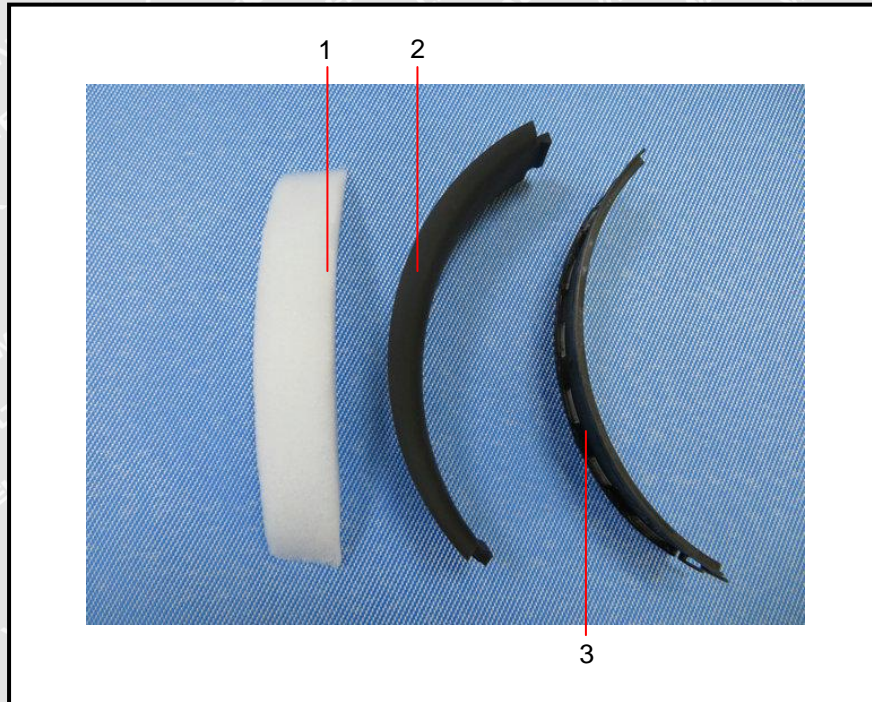


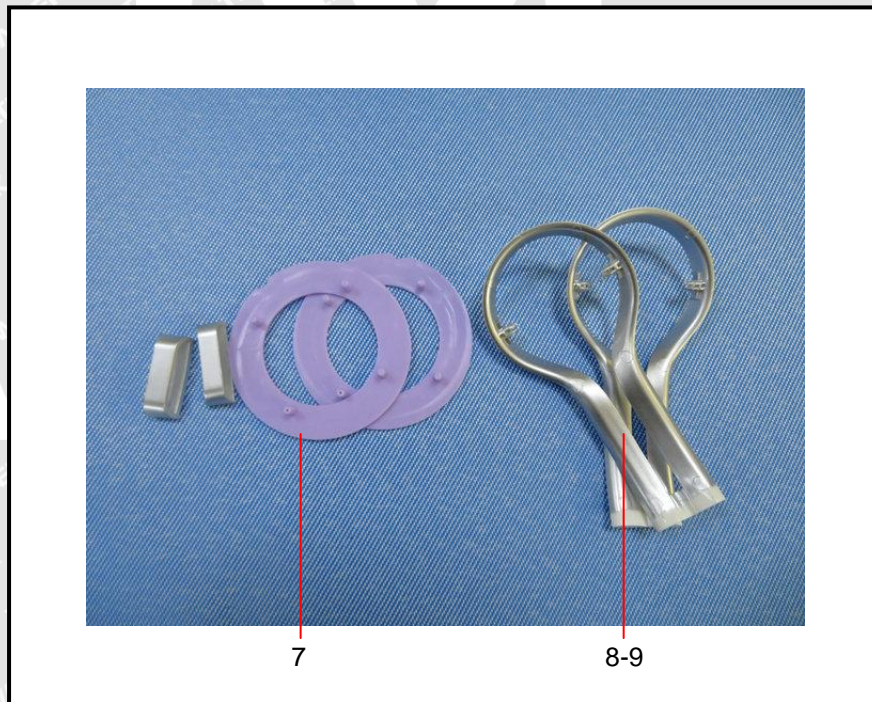
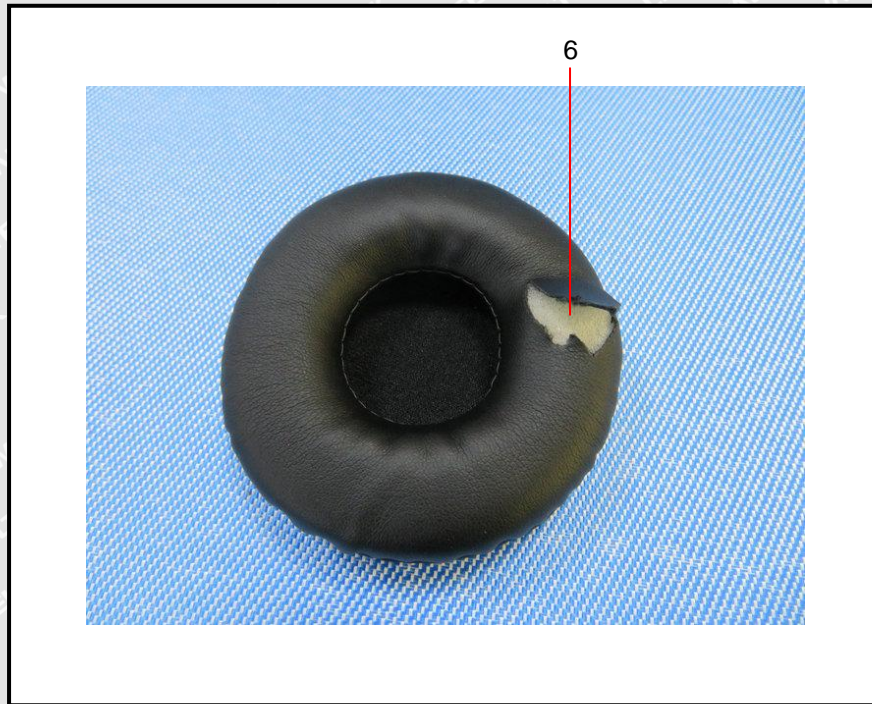


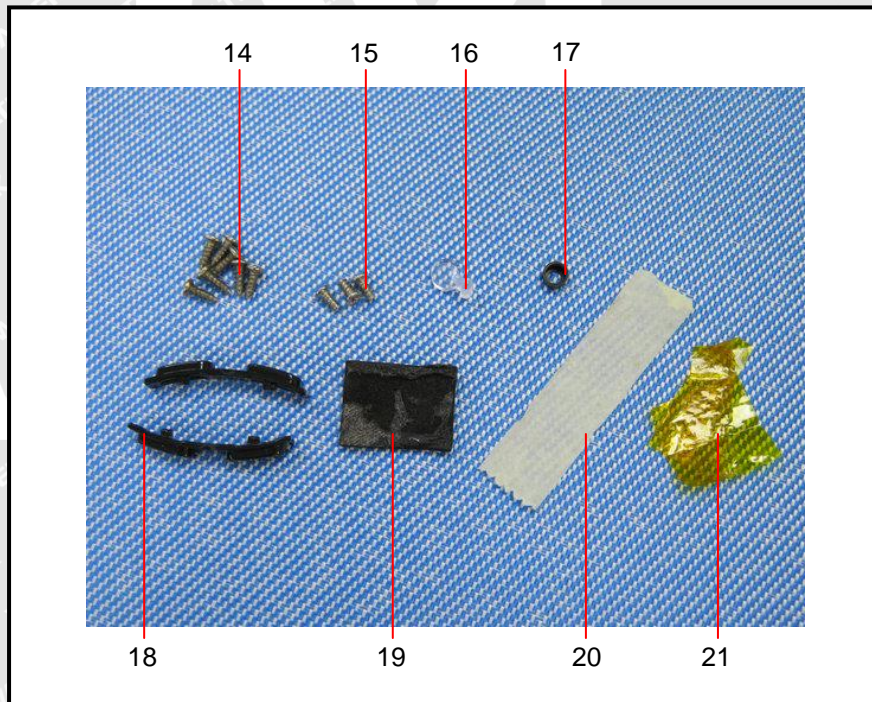
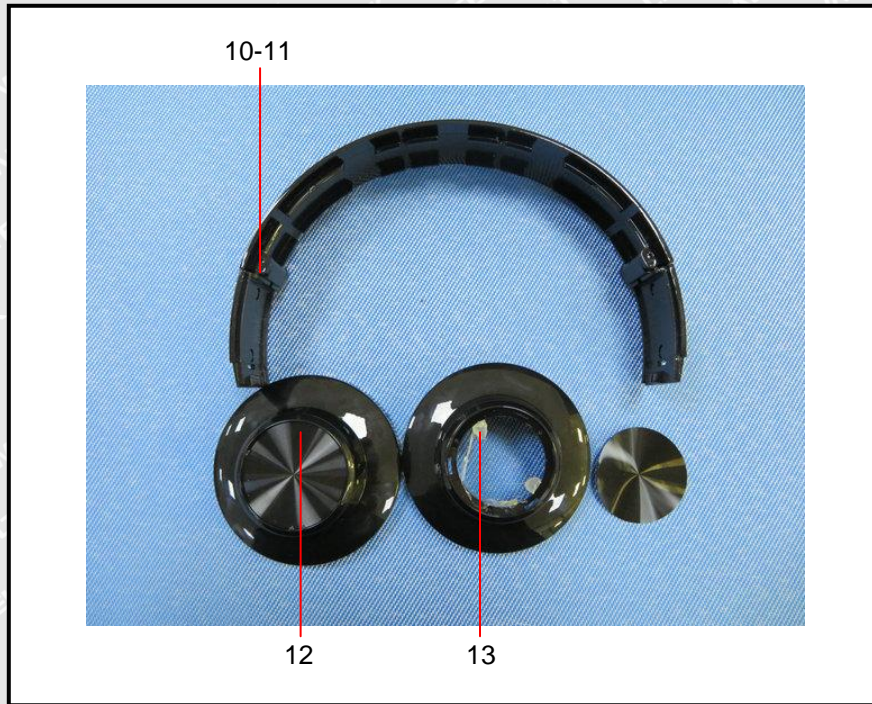


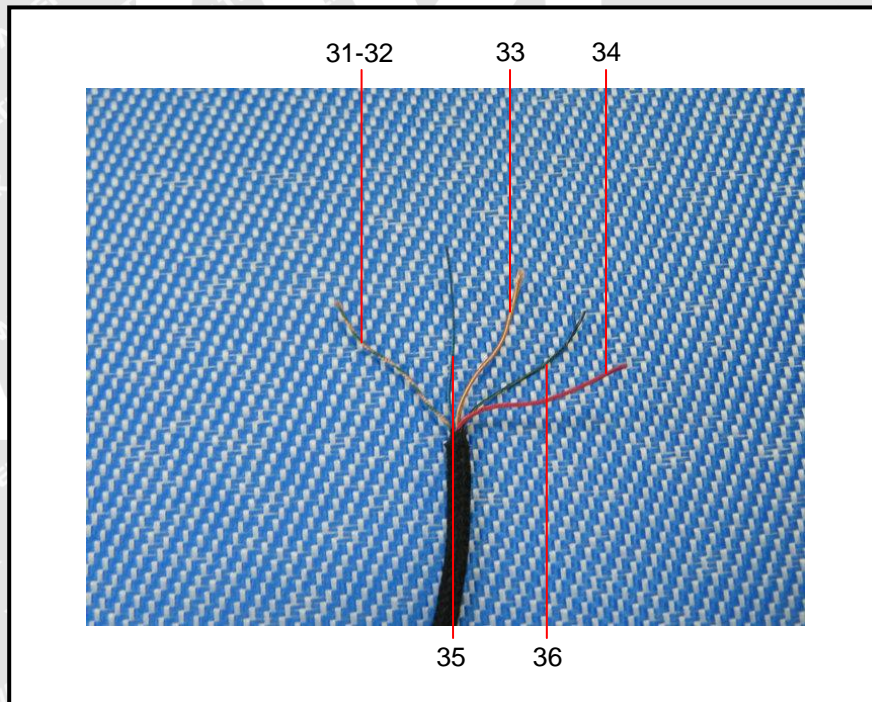
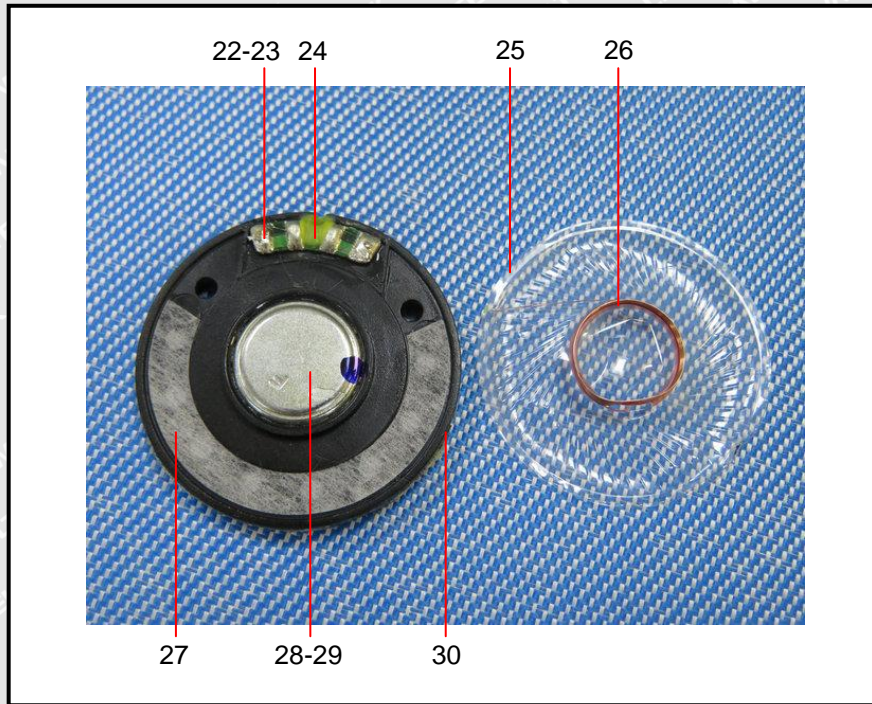


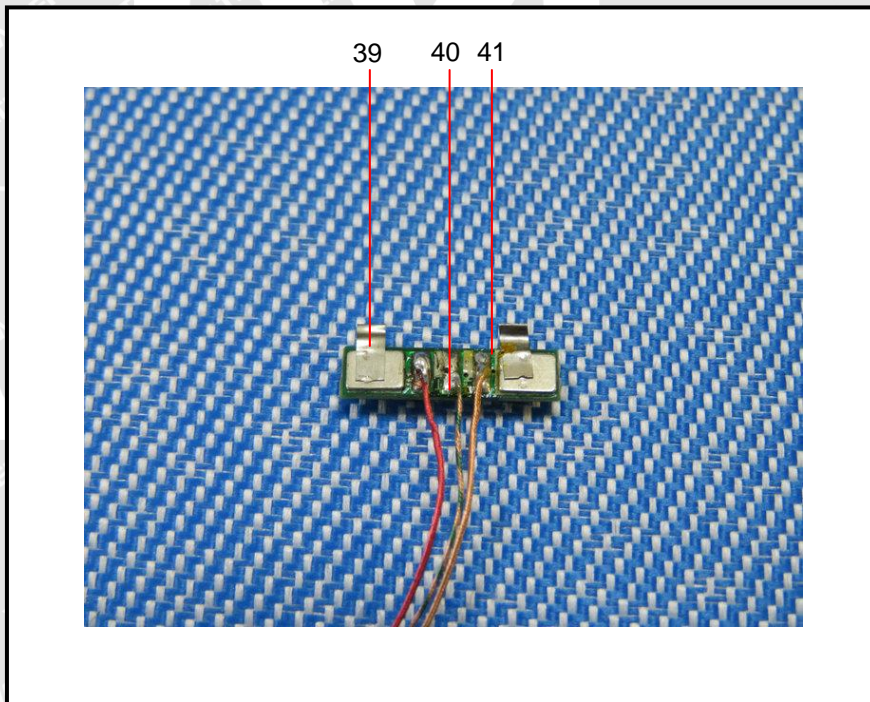
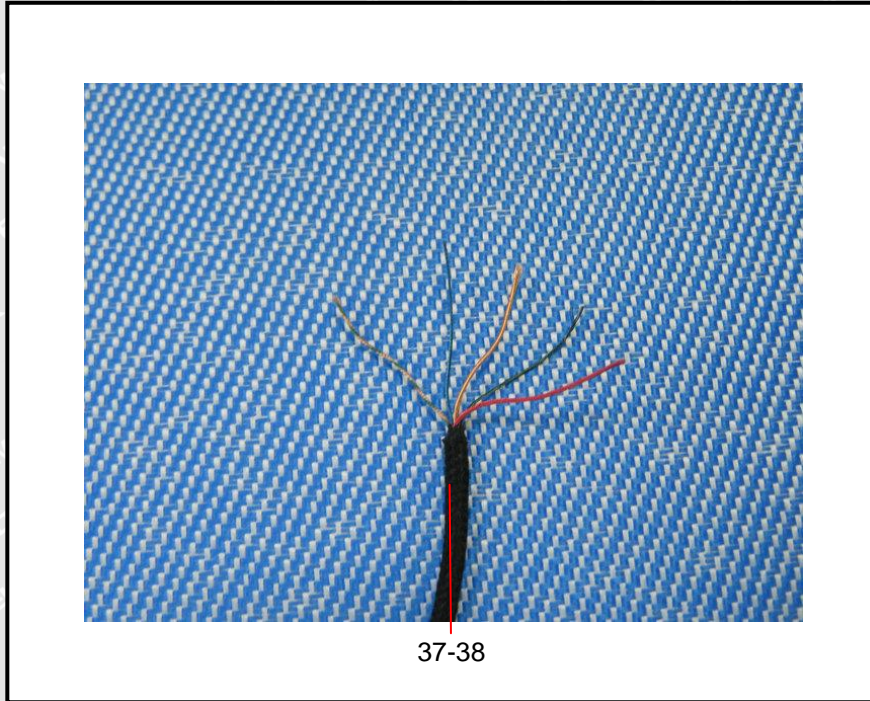
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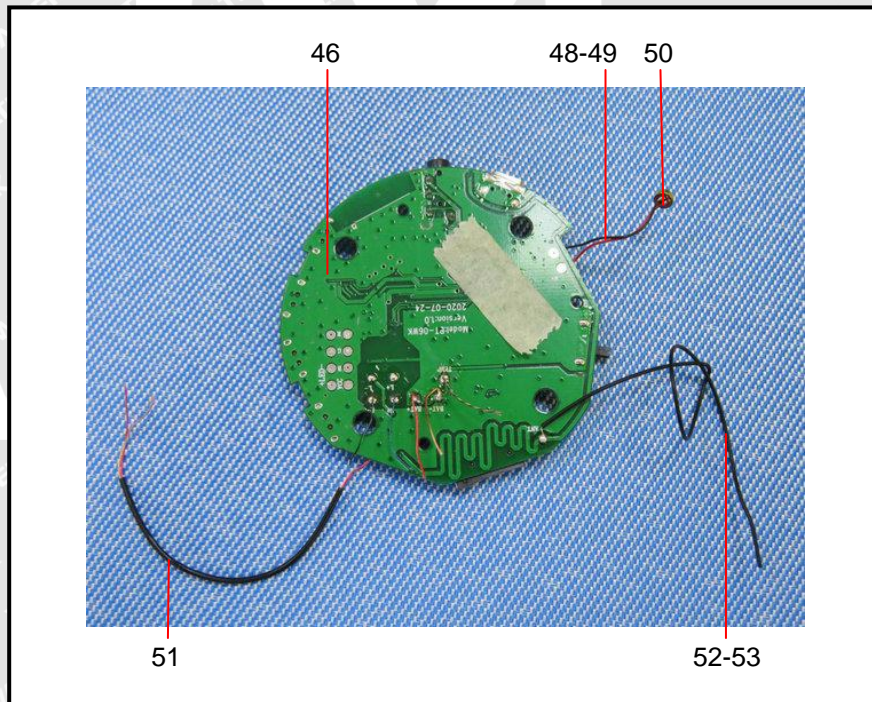
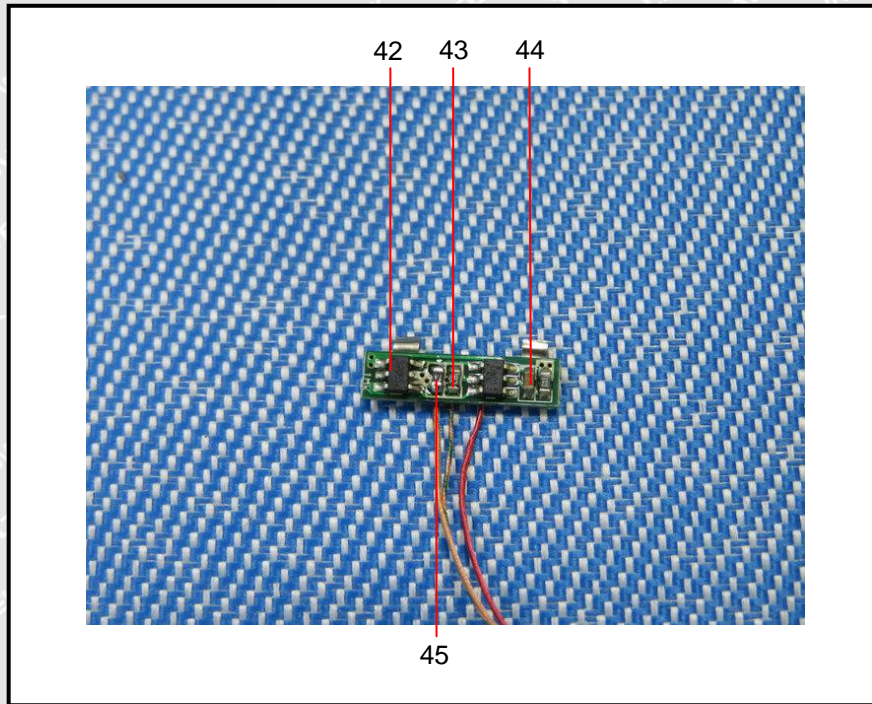


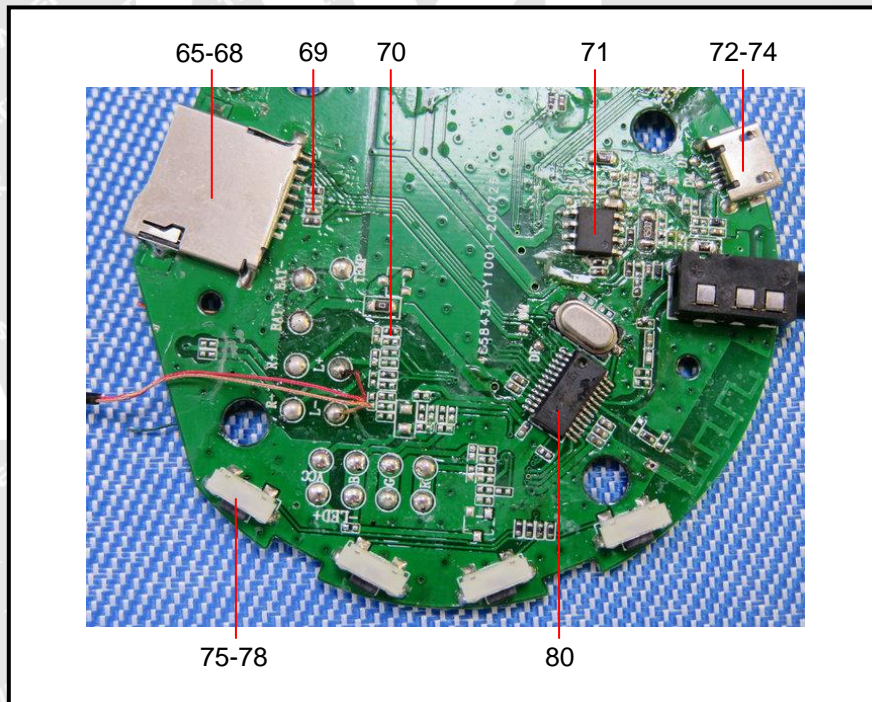
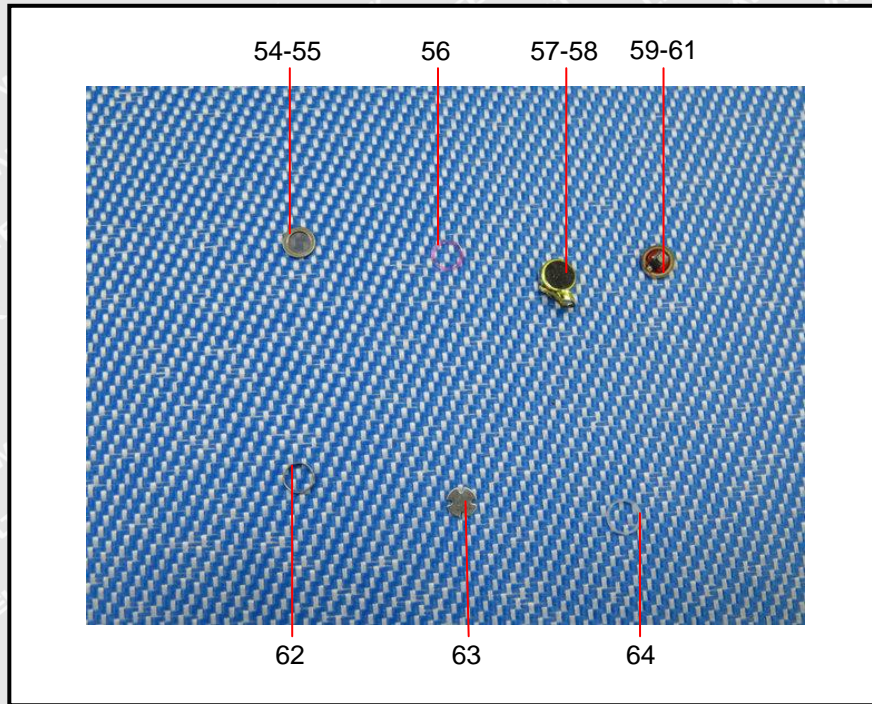


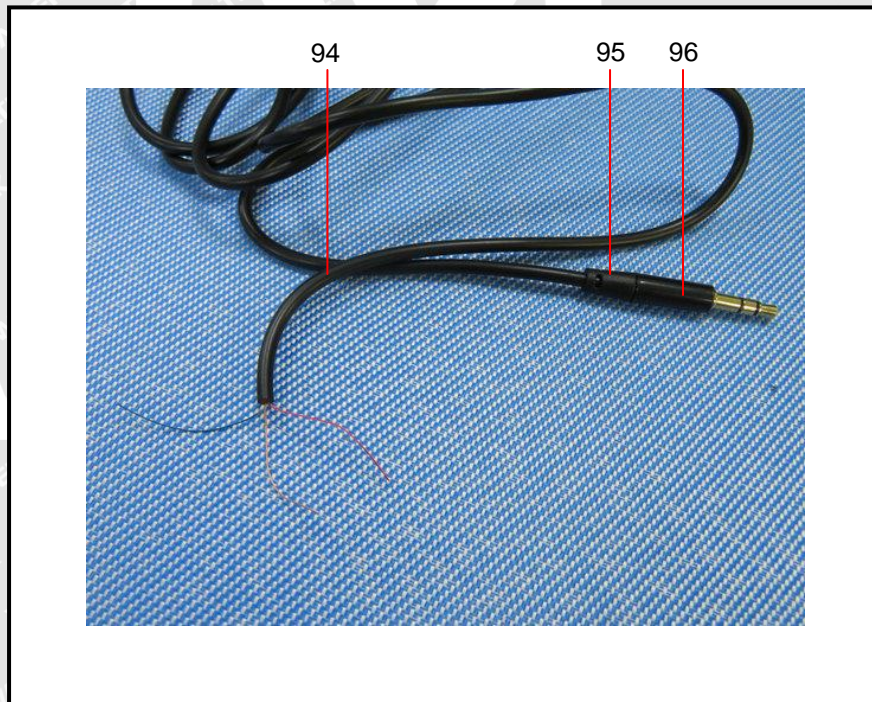
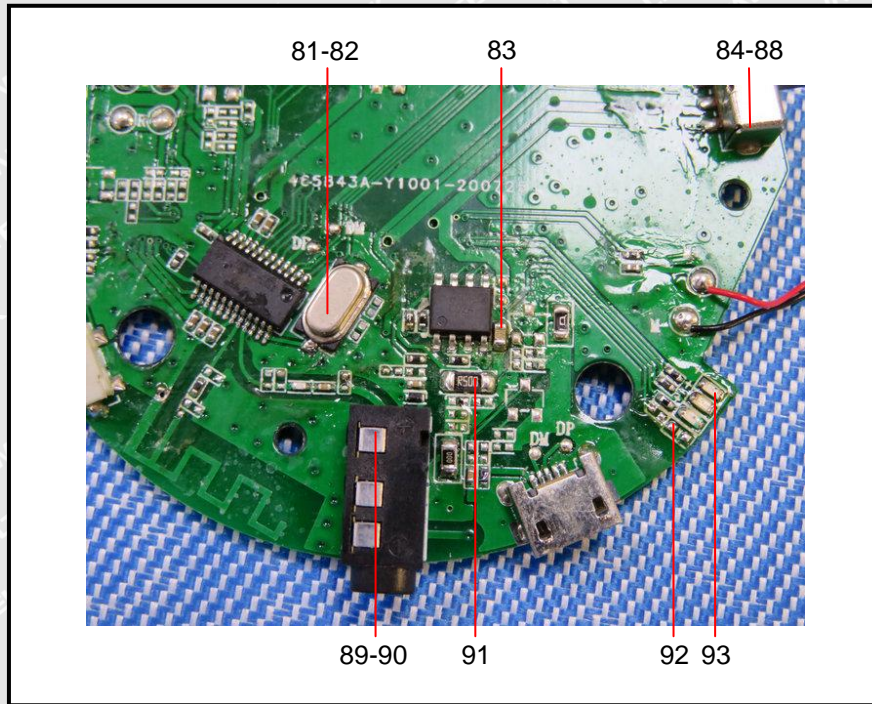


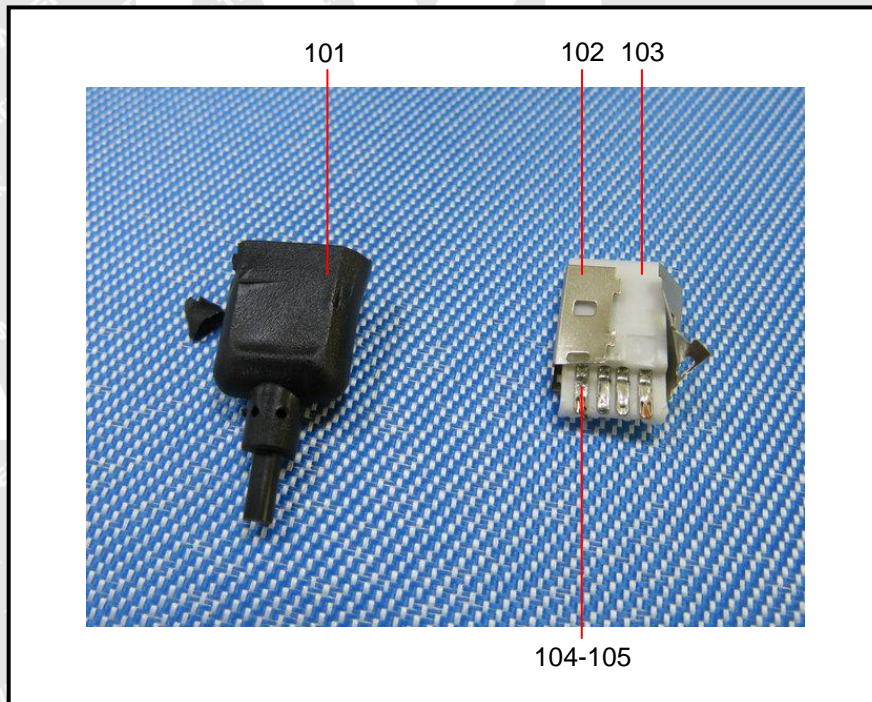
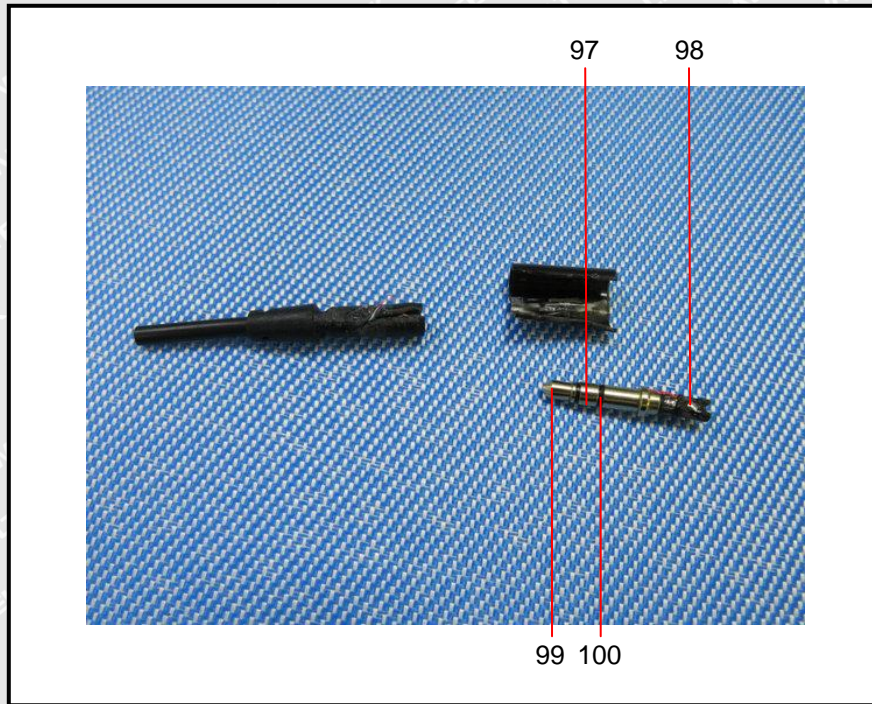


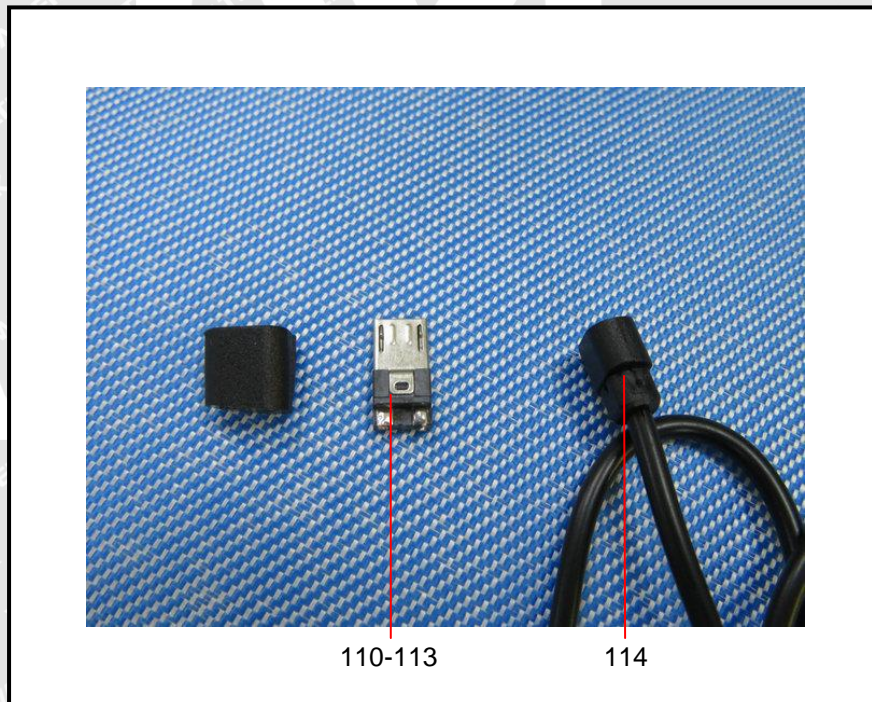
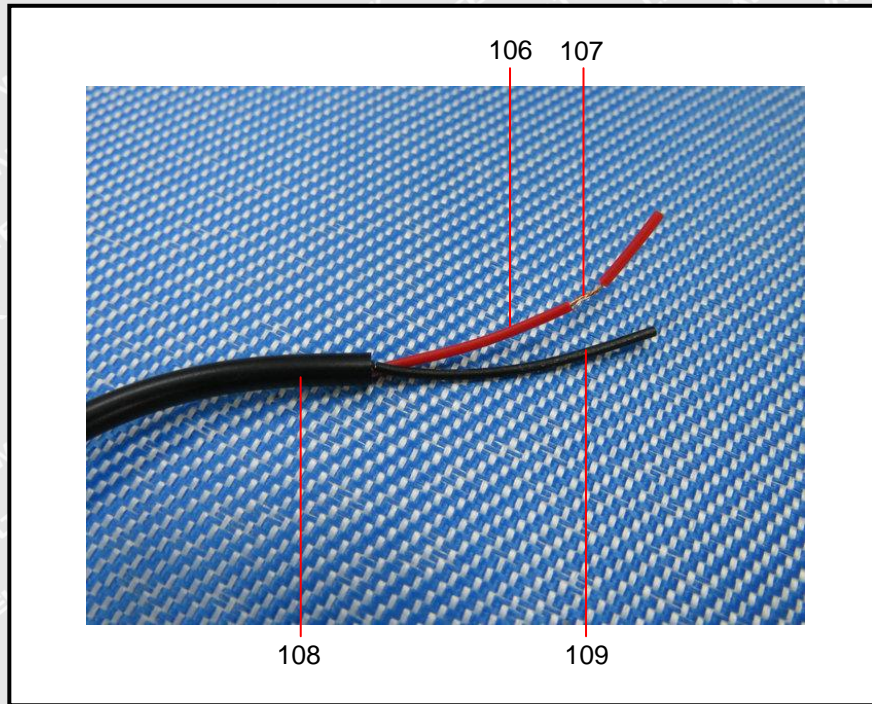


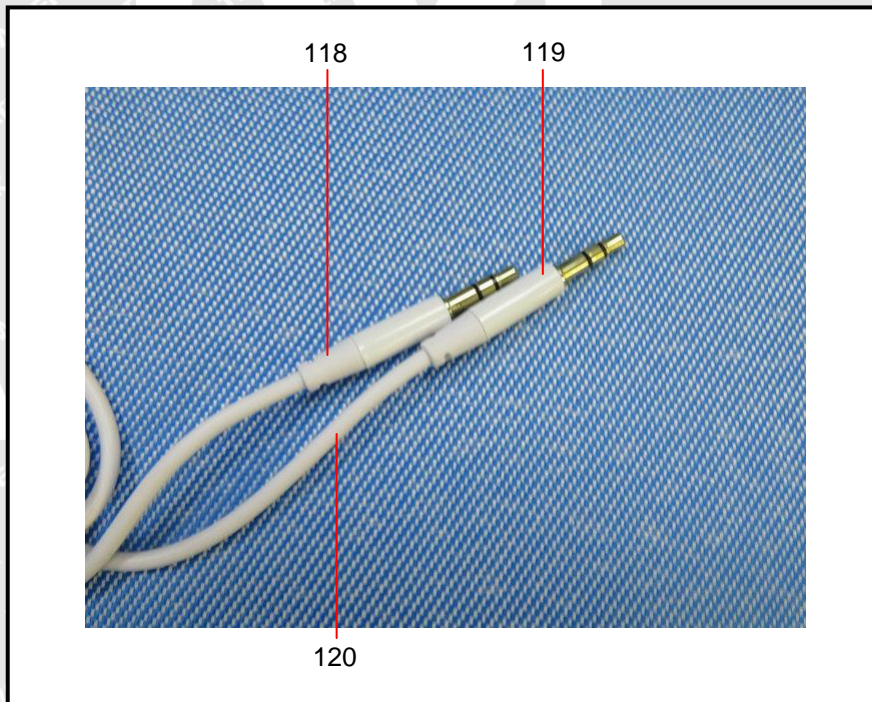
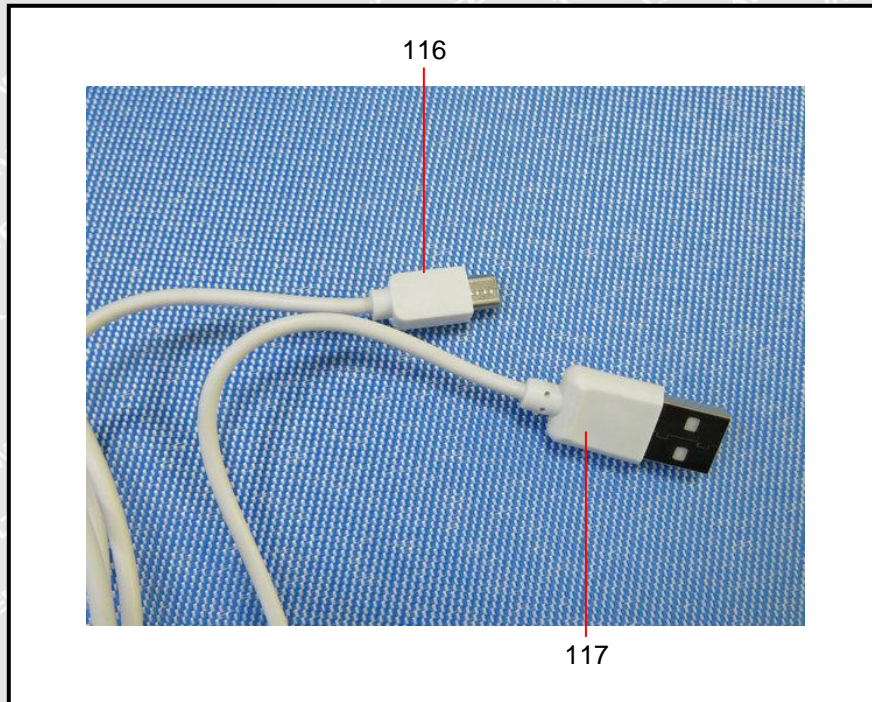


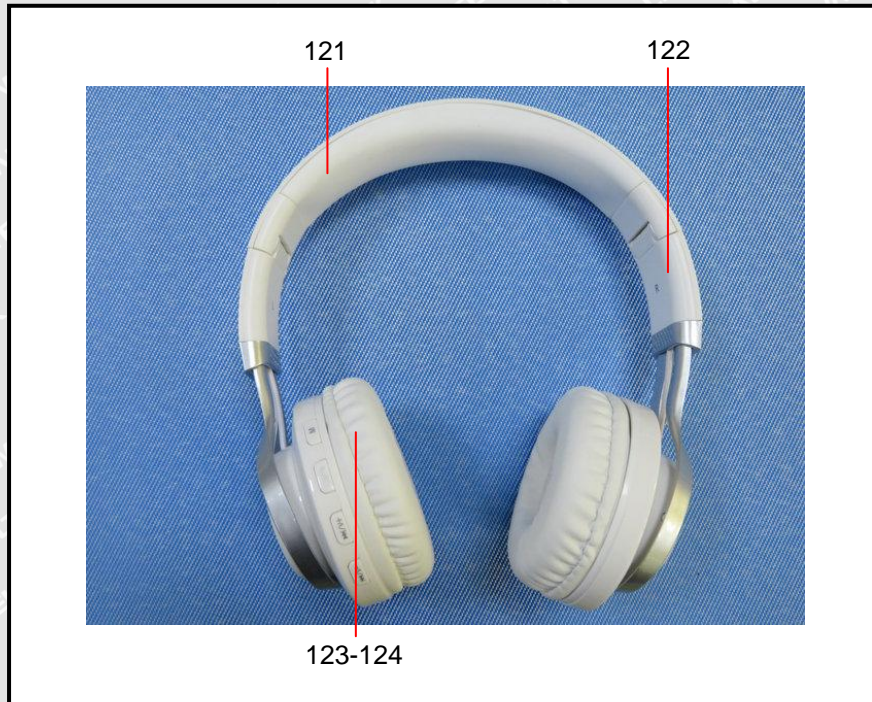


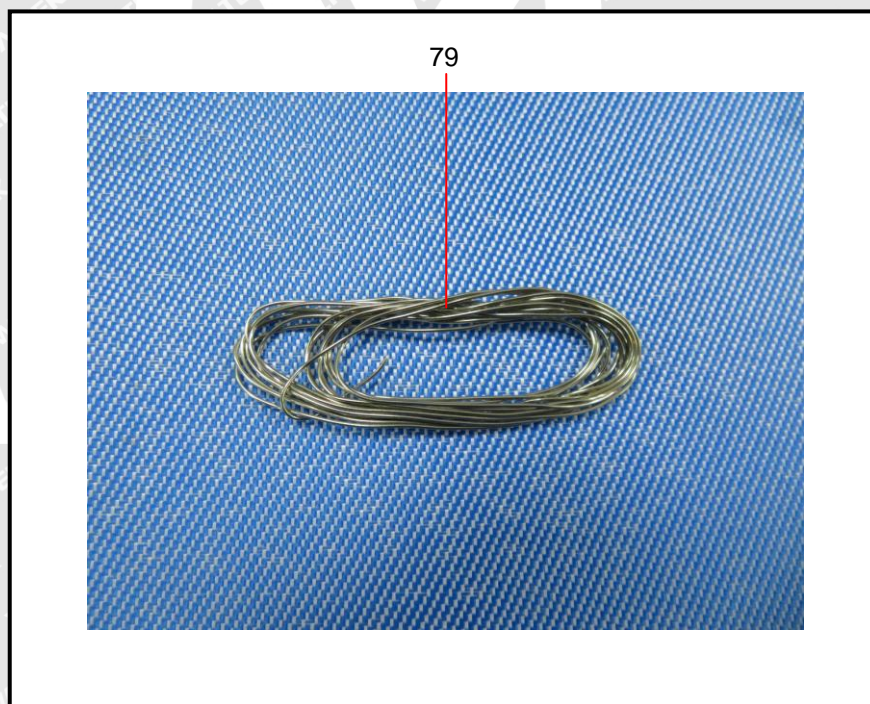
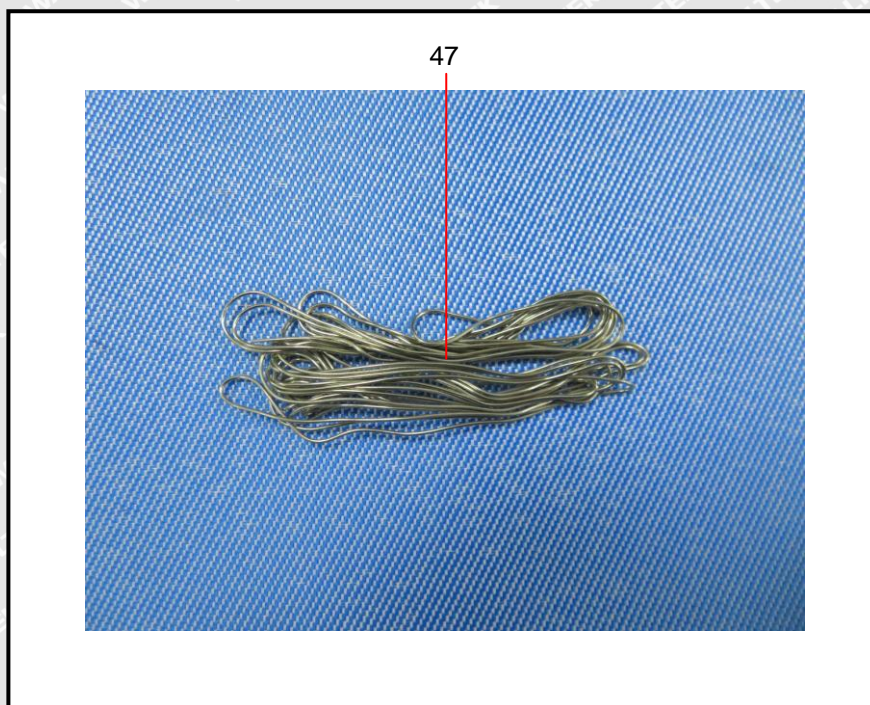


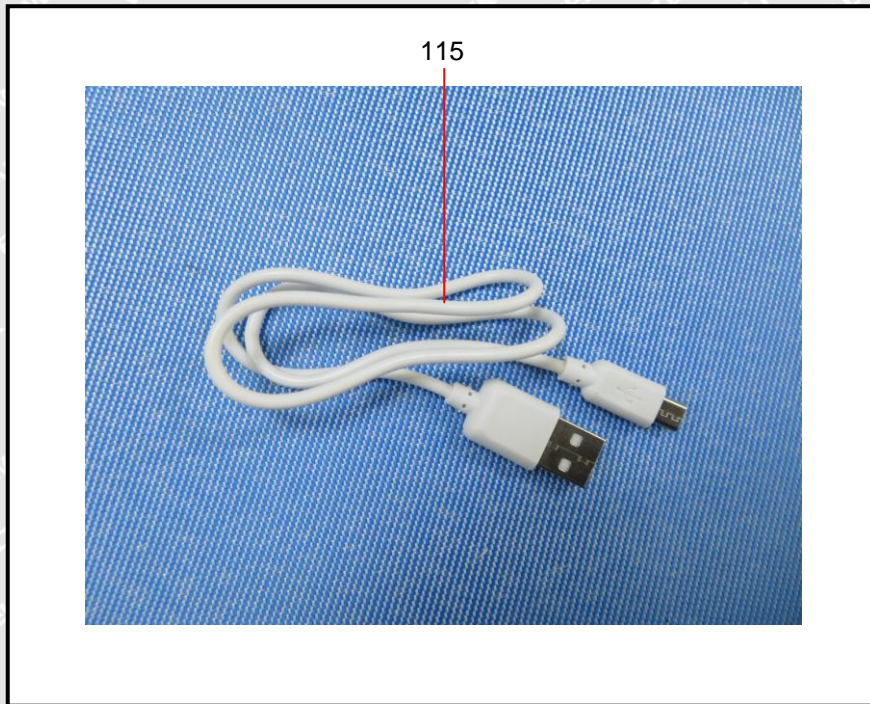












===== End of Report =====

WALTEK