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检测
TESTING
CNAS L6478

TEST REPORT

Report No.	:	WTF24F04094133C
Applicant	:	Mid Ocean Brands B.V.
Address	:	7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer	:	110075
Sample Name	:	Foldable ANC headphone
Sample Model	:	MO2275
Test Requested	:	Refer to next page (s)
Test Method	:	Refer to next page (s)
Test Conclusion	:	Refer to next page (s)
Date of Receipt sample	:	2024-04-24
Testing period	:	2024-04-24 to 2024-05-06
Date of Issue	:	2024-05-07
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.

Swing.Liang

WTF24F04094133C

Summary:

Test Requested	Test Conclusion
In accordance with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863, to determine the 10 restricted substances content in the submitted sample.	**Pass** (Please refer to next pages for details)

Sample Photo(s):



MO2275



MO2275

Test Results:

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

Test method:

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 62321-6:2015, 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	Black leather sheet	BL	BL	BL	BL	BL	NA
2	Black leather sheet	BL	BL	BL	BL	BL	NA
3	Black plastic shell	BL	BL	BL	BL	BL	NA
4	Black plastic key	BL	BL	BL	BL	BL	NA
5	Black fibrous sheet	BL	BL	BL	BL	BL	NA
6	White sponge ring	BL	BL	BL	BL	BL	NA
7	Transparent plastic sheet	BL	BL	BL	BL	BL	NA
8	Blue sponge sheet	BL	BL	BL	BL	BL	NA
9	Black plastic shell	BL	BL	BL	BL	BL	NA
10	Black sponge sheet	BL	BL	BL	BL	BL	NA
11	Black plastic shell	BL	BL	BL	BL	BL	NA
12	Black plastic shell	BL	BL	BL	BL	BL	NA
13	Black plastic sheet	BL	BL	BL	BL	BL	NA
14	Black plastic sheet	BL	BL	BL	BL	BL	NA
15	Black plastic 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	
16	Black plastic sheet with adhesive	BL	BL	BL	BL	BL	NA
17	Black plastic part	BL	BL	BL	BL	BL	NA
18	Black plastic shell	BL	BL	BL	BL	BL	NA
19	Black plastic shell	BL	BL	BL	BL	BL	NA
20	Black sponge sheet with adhesive	BL	BL	BL	BL	BL	NA
21	White glue	BL	BL	BL	BL	BL	NA
22	Black sponge sheet with adhesive	BL	BL	BL	BL	BL	NA
23	Yellow transparent plastic adhesive tape	BL	BL	BL	BL	BL	NA
24	Silvery metal screw with black plating	BL	BL	BL	BL	--	NA
25	Silvery metal screw with black plating	BL	BL	BL	IN	--	Cr^{6+} : Negative
26	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
27	Black sponge sheet with adhesive	BL	BL	BL	BL	BL	NA
28	Solder	BL	BL	BL	BL	--	NA
29	Black plastic holder	BL	BL	BL	BL	IN	PBBs : ND PBDEs : 254
30	Transparent plastic film	BL	BL	BL	BL	BL	NA
31	Coppery varnished wire	BL	BL	BL	BL	BL	NA
32	Black magnetic core	BL	BL	BL	BL	--	NA
33	Silvery metal shell	BL	BL	BL	BL	--	NA
34	Black paper sheet	BL	BL	BL	BL	BL	NA
35	Green PCB	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	
36	Solder	BL	BL	BL	BL	--	NA
37	Black glue	BL	BL	BL	BL	BL	NA
38	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
39	Black plastic wire covering	BL	BL	BL	BL	BL	NA
40	Red plastic wire covering	BL	BL	BL	BL	BL	NA
41	Coppery metal wire	BL	BL	BL	BL	--	NA
42	Chip IC	BL	BL	BL	BL	BL	NA
43	Chip capacitor	BL	BL	BL	BL	BL	NA
44	Chip resistor	BL	IN	BL	BL	BL	Pb :604
45	Silvery metal sheet	BL	BL	BL	BL	--	NA
46	Solder	BL	BL	BL	BL	--	NA
47	Black plastic wire jacket	BL	BL	BL	BL	BL	NA
48	Green varnished wire	BL	BL	BL	BL	BL	NA
49	White fibrous wire	BL	BL	BL	BL	BL	NA
50	Coppery varnished wire	BL	BL	BL	BL	BL	NA
51	Blue varnished wire	BL	BL	BL	BL	BL	NA
52	Red varnished wire	BL	BL	BL	BL	BL	NA
53	Red plastic wire covering	BL	BL	BL	BL	BL	NA
54	Coppery MIC	BL	BL	BL	BL	BL	NA
55	Black sponge sheet with adhesive	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	
56	Black plastic wire covering	BL	BL	BL	BL	BL	NA
57	Silvery MIC	BL	BL	BL	IN	BL	Cr^{6+} : ND
58	Black plastic key(switch)	BL	BL	BL	BL	BL	NA
59	Black plastic shell(switch)	BL	BL	BL	BL	BL	NA
60	Silvery metal shell(switch)	BL	BL	BL	IN	--	Cr^{6+} : Negative
61	Silvery metal sheet(switch)	BL	BL	BL	IN	--	Cr^{6+} : Negative
62	Black plastic shell(socket)	BL	BL	BL	BL	BL	NA
63	Silvery metal sheet(socket)	BL	BL	BL	BL	--	NA
64	Silvery metal shell(Type-C socket)	BL	BL	BL	IN	--	Cr^{6+} : Negative
65	Silvery metal pin(Type-C socket)	BL	BL	BL	BL	--	NA
66	Black plastic core(Type-C socket)	BL	BL	BL	BL	BL	NA
67	Chip IC	BL	BL	BL	BL	BL	NA
68	Chip LED	BL	BL	BL	BL	BL	NA
69	Chip capacitor	BL	BL	BL	BL	BL	NA
70	Chip resistor	BL	BL	BL	IN	BL	Cr^{6+} : ND
71	Chip IC	BL	BL	BL	BL	BL	NA
72	Chip crystal oscillator	BL	BL	BL	BL	BL	NA
73	Solder	BL	BL	BL	BL	--	NA
74	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
75	Black 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	
76	Red plastic wire covering	BL	BL	BL	BL	BL	NA
77	Silvery metal wire	BL	BL	BL	BL	--	NA
78	White plastic core(USB plug)	BL	BL	BL	BL	BL	NA
79	Silvery metal shell(USB plug)	BL	BL	BL	BL	--	NA
80	Semi-transparent plastic sheet(USB plug)	BL	BL	BL	BL	BL	NA
81	Black plastic jacket(USB plug)	BL	BL	BL	BL	BL	NA
82	Silvery metal pin(USB plug)	BL	BL	BL	IN	--	Cr^{6+} : Negative
83	Solder(USB plug)	BL	BL	BL	BL	--	NA
84	Black plastic jacket(Type-C plug)	BL	BL	BL	BL	BL	NA
85	Semi-transparent plastic sheet(Type-C plug)	BL	BL	BL	BL	BL	NA
86	Solder(Type-C plug)	BL	BL	BL	BL	--	NA
87	Red PCB(Type-C plug)	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
88	Silvery metal shell(Type-C plug)	BL	BL	BL	IN	--	Cr^{6+} : Negative
89	Silvery metal pin(Type-C plug)	BL	BL	BL	BL	--	NA
90	Black plastic core(Type-C plug)	BL	BL	BL	BL	BL	NA
91	Black plastic wire jacket	BL	BL	BL	BL	BL	NA
92	White plastic wire covering	BL	BL	BL	BL	BL	NA
93	Pink plastic wire covering	BL	BL	BL	BL	BL	NA
94	Coppery metal wire	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 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 -- = 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, $\mu g/cm^2$= 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) LOQ = Limit of quantitation.

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

The LOQ for single compound of PBBs and PBDEs is 5 mg/kg, LOQ of Cr^{6+} for polymer and composite sample is 8 mg/kg and LOQ of Cr^{6+} for metal sample is 0.1 $\mu g/cm^2$.

(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 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 0.10 ug/cm^2.
Positive = Presence of Cr^{6+} coating, the detected concentration in boiling water extraction solution is greater than 0.13 ug/cm^2.
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) 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:

Test method:

With reference to IEC 62321-8:2017, determination of Phthalates content by GC-MS.

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1+2+5△	ND	ND	ND	ND
T02	3+4+7+9+11△	ND	ND	ND	ND
T03	6+8+10△	ND	ND	ND	ND
T04	12+13+14+15+16△	ND	ND	ND	ND
T05	17+18+19+23+29△	ND	ND	ND	ND
T06	20+21+22△	ND	ND	511	ND
T07	24	--	--	--	--
T08	25	--	--	--	--
T09	26+35+38+74+87△	ND	ND	ND	ND
T10	27+30+34△	ND	ND	302	ND
T11	28	--	--	--	--
T12	31+48+50+51+52△	ND	ND	ND	ND
T13	32	--	--	--	--
T14	33	--	--	--	--
T15	36	--	--	--	--
T16	37+39+40△	124	ND	ND	ND
T17	41	--	--	--	--
T18	42+43+44+54+57△	ND	ND	ND	ND
T19	45	--	--	--	--
T20	46	--	--	--	--
T21	47+49+53△	ND	ND	ND	ND
T22	55+56+75△	ND	ND	ND	ND
T23	58+59+62+66+78△	ND	ND	ND	ND
T24	60	--	--	--	--
T25	61	--	--	--	--
T26	63	--	--	--	--
T27	64	--	--	--	--

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T28	65	--	--	--	--
T29	67+68+69+70+71△	ND	ND	ND	ND
T30	72	ND	ND	ND	ND
T31	73	--	--	--	--
T32	76+81+84△	ND	ND	ND	ND
T33	77	--	--	--	--
T34	79	--	--	--	--
T35	80+85+90△	ND	ND	ND	ND
T36	82	--	--	--	--
T37	83	--	--	--	--
T38	86	--	--	--	--
T39	88	--	--	--	--
T40	89	--	--	--	--
T41	91+92+93△	ND	ND	ND	ND
T42	94	--	--	--	--

Note:

(1) mg/kg = milligram per kilogram= ppm

(2) ND = Not Detected or lower than limit of quantitation.

(3) -- = Not Regulated.

(4) LOQ = Limit of quantitation.

Test Items	DBP	BBP	DEHP	DIBP
Units	mg/kg	mg/kg	mg/kg	mg/kg
LOQ	50	50	50	50

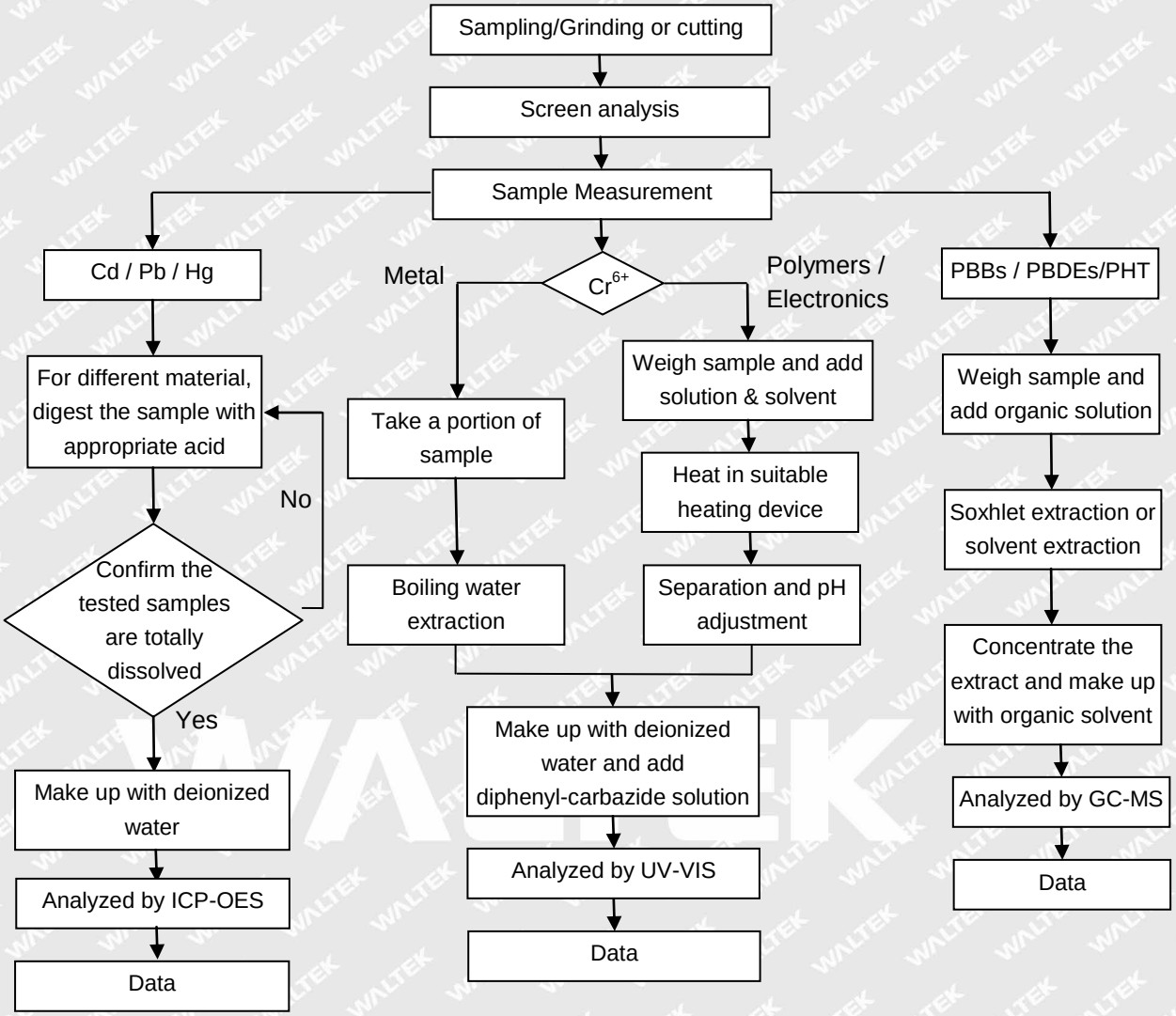
(5) Abbreviation:
"DBP" denotes Dibutyl phthalate, "BBP" denotes Benzyl butyl phthalate (BBP), "DEHP" denotes Bis(2-ethylhexyl)-phthalate, "DIBP" denotes Diisobutyl phthalate, "PHT" denotes Phthalates.

(6) 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)

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

Measurement Flowchart:



Photograph(s) of parts tested:

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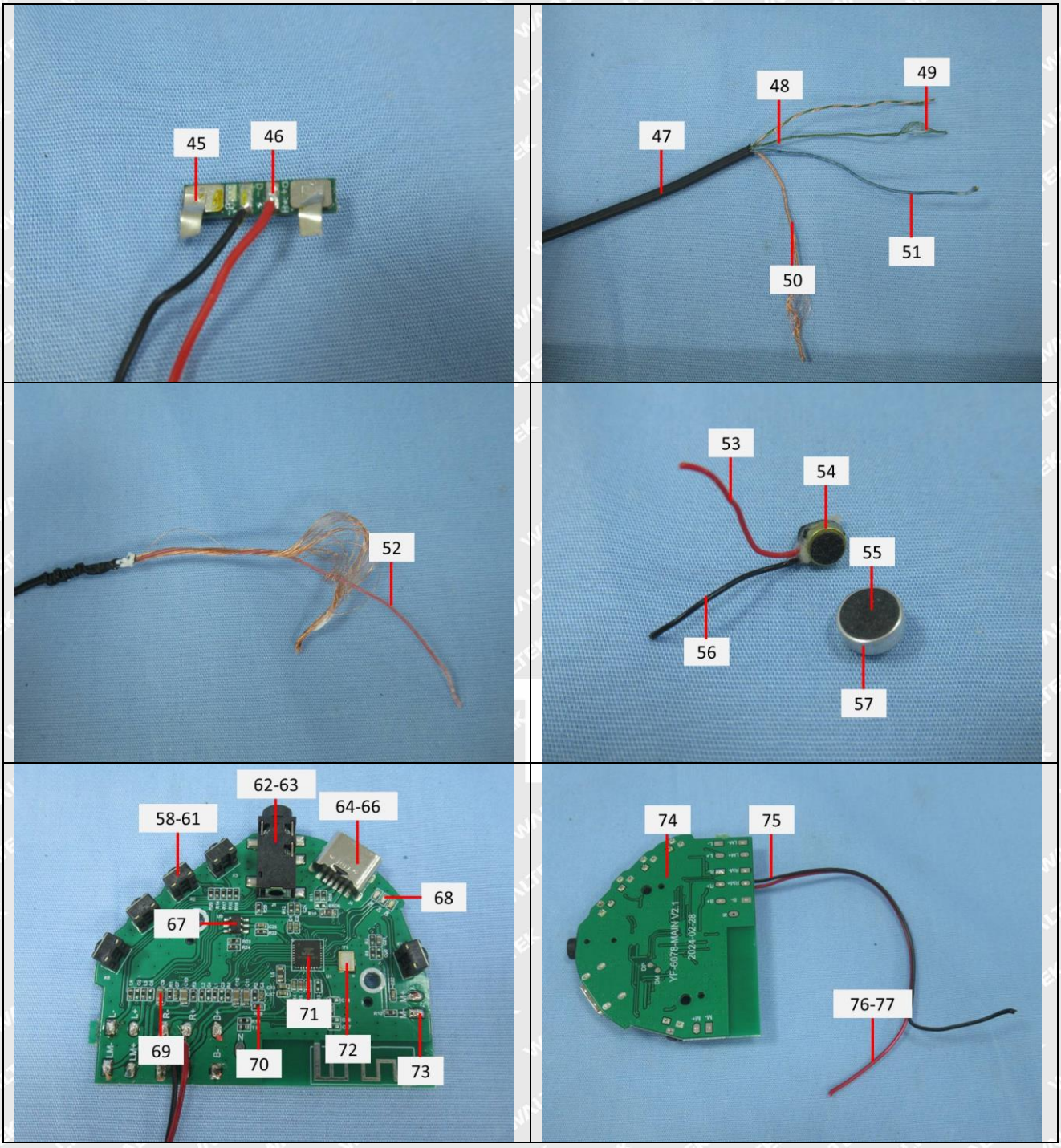
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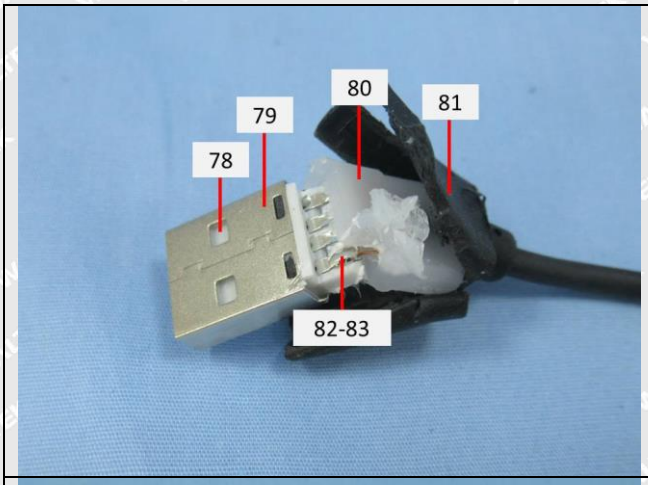
<td>
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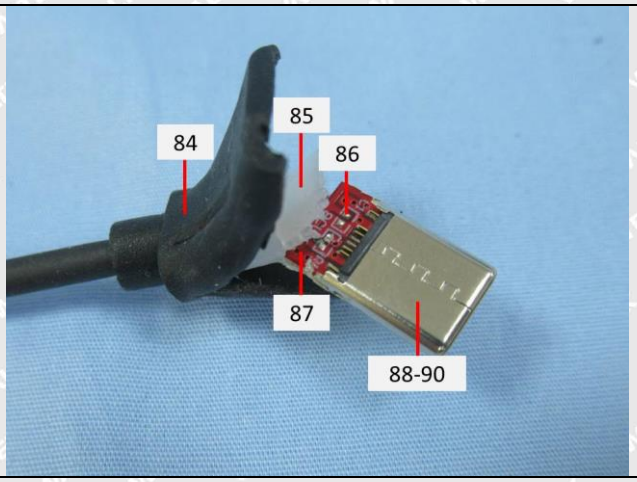
<td>
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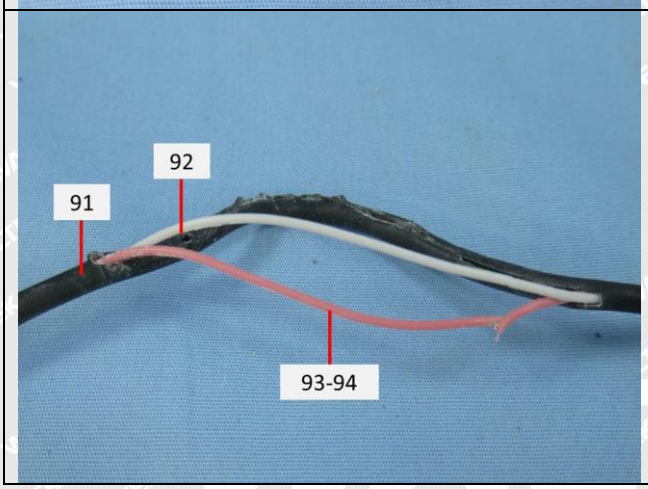
<td>
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====== End of Report ======