中国认可
国际互认
检测
TESTING
CNAS L6478

TEST REPORT

Report No.	:	WTF20F03011448A2C
Applicant	:	Mid Ocean Brands B.V.
Address	:	7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer	:	103221
Sample Name	:	Bluetooth Speaker
Model No.	:	MO9260
Sample Receiving Date	:	2020-03-19 & 2020-04-01 & 2020-06-12 & 2020-07-02
Testing Period	:	2020-03-19 to 2020-03-26 & 2020-04-01 to 2020-05-27 & 2020-06-12 to 2020-06-15 & 2020-07-02 to 2020-07-06
Date of Issue	:	2020-07-06
Test Result	:	Please refer to next page (s)
Note	:	As per client's requirement, results of specimen from No.1 to No.113 are extracted from report No.WTF20F03011448A2C.

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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Approved by: Swing Liang

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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)

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	Black plastic shell	BL	BL	BL	BL	BL	NA
2	Black fibrous net	BL	BL	BL	BL	BL	NA
3	Black rubber sheet	BL	BL	BL	BL	BL	NA
4	Black plastic shell	BL	BL	BL	BL	BL	NA
5	Black adhesive sponge	BL	BL	BL	BL	BL	NA
6	Black plastic button	BL	BL	BL	BL	IN	PBBs : ND PBDEs : 59
7	Beige plastic adhesive tape	BL	BL	BL	BL	BL	NA
8	Transparent glue	BL	BL	BL	BL	BL	NA
9	Red plastic wire covering	BL	BL	BL	BL	BL	NA
10	Black plastic wire covering	BL	BL	BL	BL	BL	NA
11	Slivery metal wire	BL	BL	BL	BL	BL	NA
12	White plastic jacket of plug	BL	BL	BL	BL	BL	NA
13	Solder of plug	BL	BL	BL	BL	BL	NA
14	Slivery metal shell of plug	BL	BL	BL	BL	BL	NA
15	Black plastic core of plug	BL	BL	BL	BL	BL	NA
16	Coppery metal pin of plug	BL	BL	BL	BL	BL	NA
17	White plastic shell of plug	BL	BL	BL	BL	BL	NA
18	Solder of plug	BL	BL	BL	BL	BL	NA
19	Slivery metal 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	
20	White plastic core of plug	BL	BL	BL	BL	BL	NA
21	Slivery metal pin of plug	BL	BL	BL	BL	BL	NA
22	Red plastic wire covering	BL	BL	BL	BL	BL	NA
23	White plastic wire jacket	BL	BL	BL	BL	BL	NA
24	Coppery metal wire	BL	BL	BL	BL	BL	NA
25	White plastic wire covering	BL	BL	BL	BL	BL	NA
26	White plastic shell of plug	BL	BL	BL	BL	BL	NA
27	Solder of plug	BL	BL	BL	BL	BL	NA
28	Slivery metal sleeve of plug	BL	BL	BL	BL	BL	NA
29	Slivery metal pin of plug	IN	**OL**	BL	BL	BL	Cd :12 **#Pb :2.44×10^4**
30	Black plastic core of plug	BL	BL	BL	BL	BL	NA
31	Red plastic wire covering	BL	BL	BL	BL	BL	NA
32	White plastic wire covering	BL	BL	BL	BL	BL	NA
33	Black plastic wire covering	BL	BL	BL	BL	BL	NA
34	White plastic wire jacket	BL	BL	BL	BL	BL	NA
35	Slivery metal screw	BL	BL	BL	BL	BL	NA
36	Yellow transparent plastic adhesive tape	BL	BL	BL	IN	BL	Cr^{6+} : ND
37	Slivery metal sheet	BL	BL	BL	BL	BL	NA
38	Dark grey magnetic core	BL	BL	BL	IN	BL	Cr^{6+} : ND
39	Beige fibrous net 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	
40	Coppery metal wire of loudspeaker	BL	BL	BL	BL	BL	NA
41	Slivery metal rivet of loudspeaker	BL	BL	BL	BL	BL	NA
42	White plastic sheet of loudspeaker	BL	BL	BL	BL	BL	NA
43	Solder of loudspeaker	BL	BL	BL	BL	BL	NA
44	Blue plastic wire covering	BL	BL	BL	BL	BL	NA
45	Slivery metal shell of loudspeaker	BL	BL	BL	IN	BL	Cr^{6+} : Negative
46	White plastic wire covering of loudspeaker	BL	BL	BL	BL	BL	NA
47	Black plastic sheet of loudspeaker	BL	BL	BL	BL	BL	NA
48	Black plastic film of loudspeaker	BL	BL	BL	BL	BL	NA
49	Black plastic sheet of loudspeaker	BL	BL	BL	BL	BL	NA
50	Red metal wire of loudspeaker	BL	BL	BL	BL	BL	NA
51	Beige plastic sheet	BL	BL	BL	BL	BL	NA
52	Red plastic wire covering	BL	BL	BL	BL	BL	NA
53	Black plastic wire covering	BL	BL	BL	BL	BL	NA
54	Coppery metal wire	BL	BL	BL	BL	BL	NA
55	Solder	BL	BL	BL	BL	BL	NA
56	Slivery metal sheet	BL	BL	BL	IN	BL	Cr^{6+} : Negative
57	Slivery metal sheet	BL	BL	BL	BL	BL	NA
58	Solder	BL	BL	BL	BL	BL	NA
59	Chip IC	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 capacitor	BL	BL	BL	BL	BL	NA
61	Chip resistor	BL	BL	BL	IN	BL	Cr^{6+} : ND
62	Slivery metal shell of socket	BL	BL	BL	BL	BL	NA
63	Black plastic core of socket	BL	BL	BL	BL	BL	NA
64	Chip audion	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
65	Chip diode	BL	BL	BL	BL	BL	NA
66	Solder	BL	BL	BL	BL	BL	NA
67	Chip capacitor	BL	BL	BL	BL	BL	NA
68	Chip capacitor	BL	BL	BL	BL	BL	NA
69	Black plastic cap	BL	BL	BL	BL	BL	NA
70	Slivery metal shell of switch	BL	BL	BL	IN	BL	Cr^{6+} : Negative
71	Black plastic key of switch	BL	BL	BL	BL	BL	NA
72	Black plastic base of switch	BL	BL	BL	BL	BL	NA
73	Chip resistor	BL	***OL**	BL	BL	BL	NA
74	Chip LED	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
75	Chip IC	BL	BL	BL	BL	BL	NA
76	Slivery metal body of crystal oscillator	BL	BL	BL	BL	BL	NA
77	Black plastic base of crystal oscillator	BL	BL	BL	BL	BL	NA
78	Chip IC	BL	BL	BL	BL	BL	NA
79	Green PCB	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	
80	Black plastic shell of socket	BL	BL	BL	BL	BL	NA
81	Golden metal sheet of socket	BL	BL	BL	BL	BL	NA
82	Black plastic cap of button	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
83	Slivery metal shell of button	BL	BL	BL	BL	BL	NA
84	White plastic shell of button	BL	BL	BL	BL	BL	NA
85	Slivery metal sheet of button	BL	BL	BL	IN	BL	Cr^{6+} : Negative
86	Solder of MIC	BL	BL	BL	BL	BL	NA
87	White fabric of MIC	BL	BL	BL	BL	BL	NA
88	White plastic ring of MIC	BL	BL	BL	BL	BL	NA
89	Purple plastic gasket of MIC	BL	BL	BL	BL	BL	NA
90	Chip IC of MIC	BL	BL	BL	BL	BL	NA
91	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
92	Silvery plastic film of MIC	BL	BL	BL	BL	BL	NA
93	Silvery metal ring of MIC	BL	BL	BL	BL	BL	NA
94	Golden metal shell of MIC	BL	BL	BL	BL	BL	NA
95	Grey plastic shell	BL	BL	BL	BL	BL	NA
96	Grey rubber sheet	BL	BL	BL	BL	BL	NA
97	Grey fibrous net	BL	BL	BL	BL	BL	NA
98	Grey plastic shell	BL	BL	BL	BL	BL	NA
99	Red rubber 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	
100	Red plastic shell	BL	BL	BL	BL	BL	NA
101	Red plastic shell	BL	BL	BL	BL	BL	NA
102	Red fibrous net	BL	BL	BL	BL	BL	NA
103	Light blue plastic shell	BL	BL	BL	BL	BL	NA
104	Light blue rubber sheet	BL	BL	BL	BL	BL	NA
105	Light blue plastic shell	BL	BL	BL	BL	BL	NA
106	Light blue fibrous net	BL	BL	BL	BL	BL	NA
107	Light green rubber sheet	BL	BL	BL	BL	BL	NA
108	Light green plastic shell	BL	BL	BL	BL	BL	NA
109	Light green fibrous net	BL	BL	BL	BL	BL	NA
110	Light green plastic shell	BL	BL	BL	BL	BL	NA
111	Blue plastic shell	BL	BL	BL	BL	BL	NA
112	Blue plastic shell	BL	BL	BL	BL	BL	NA
113	Blue fibrous net	BL	BL	BL	BL	BL	NA
114	Chip diode	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 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 5mg/kg, LOQ of Cr^{6+} for polymer and composite sample is 8mg/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 0.10ug/cm^2.

Positive = Presence of Cr^{6+} coating, the detected concentration in boiling water extraction solution is greater than 0.13ug/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.
(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.
(12)# = 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.

2. Phthalates:

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1	<50	<50	<50	<50
T02	2	<50	<50	262	<50
T03	3	<50	<50	<50	<50
T04	4	<50	<50	<50	<50
T05	5	<50	<50	122	<50
T06	6	<50	<50	<50	<50
T07	7	<50	<50	<50	<50
T08	8	<50	<50	<50	<50
T09	9	<50	<50	<50	<50
T10	10	<50	<50	<50	<50
T11	12	<50	<50	115	<50
T12	15	<50	<50	<50	<50
T13	17	<50	<50	<50	<50
T14	20	<50	<50	<50	<50
T15	22	188	<50	80	<50
T16	23	253	<50	72	<50
T17	25	130	<50	<50	<50
T18	26	<50	<50	<50	<50
T19	30	<50	<50	<50	<50
T20	31	<50	<50	<50	<50
T21	32	<50	<50	<50	<50
T22	33	<50	<50	<50	<50
T23	34	<50	<50	<50	<50
T24	36	<50	<50	483	<50
T25	38+59+60+61+64△	<50	<50	<50	<50
T26	39	<50	<50	<50	<50
T27	42	<50	<50	<50	<50
T28	44	<50	<50	<50	<50
T29	46	<50	<50	<50	<50
T30	47+48△	<50	<50	<50	<50
T31	49	<50	<50	<50	<50
T32	51	<50	<50	<50	<50
T33	52	<50	<50	<50	<50

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T34	53	<50	<50	<50	<50
T35	63	<50	<50	<50	<50
T36	65+67+68+73+74△	<50	<50	<50	<50
T37	69+71+72+80△	<50	<50	<50	<50
T38	75+78+79+90+91△	<50	<50	<50	<50
T39	77	<50	<50	<50	<50
T40	82	<50	<50	<50	<50
T41	84	<50	<50	<50	<50
T42	87	<50	<50	<50	<50
T43	88	<50	<50	<50	<50
T44	89	<50	<50	<50	<50
T45	92	<50	<50	<50	<50
T46	95+98+100+101△	<50	<50	497	<50
T47	96	<50	<50	<50	<50
T48	97+102△	<50	<50	374	<50
T49	99	<50	<50	<50	<50
T50	103+105+108+110△	<50	<50	<50	<50
T51	104	<50	<50	<50	<50
T52	106+109△	<50	<50	<50	<50
T53	107	<50	<50	<50	<50
T54	111	<50	<50	<50	<50
T55	112	<50	<50	<50	<50
T56	113	<50	<50	<50	<50
T57	114	<50	<50	<50	<50

Note:

(1) "<" = less than

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

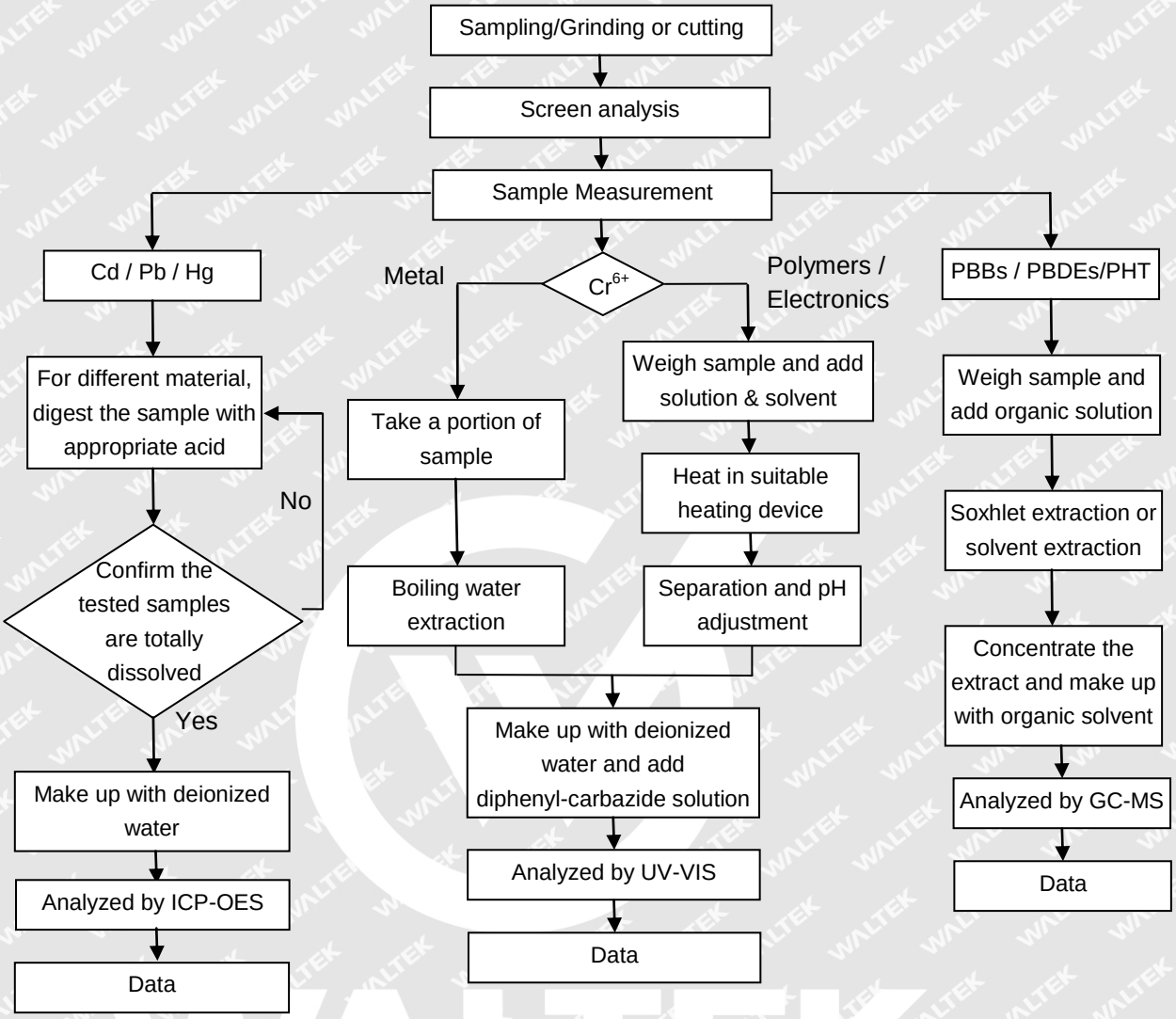
(3) Abbreviation:
"DBP" denotes Dibutyl phthalate, "BBP" denotes Benzyl butyl phthalate (BBP), "DEHP" denotes Bis(2-ethylhexyl)-phthalate, "DIBP" denotes Diisobutyl phthalate, "PHT" denotes Phthalates.

(4) RoHS requirement

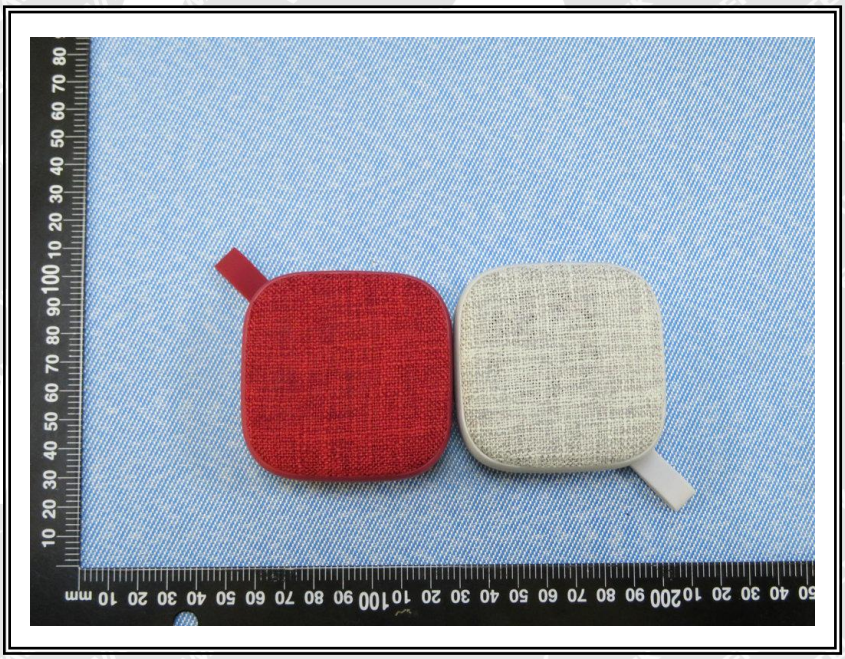
Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

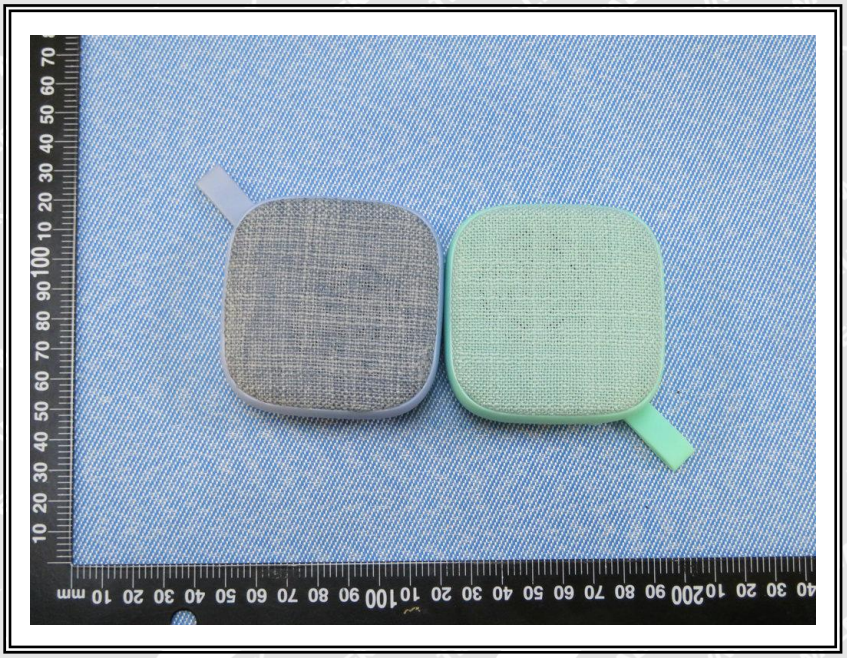
(5) "△"= As client's requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.

Measurement Flowchart:

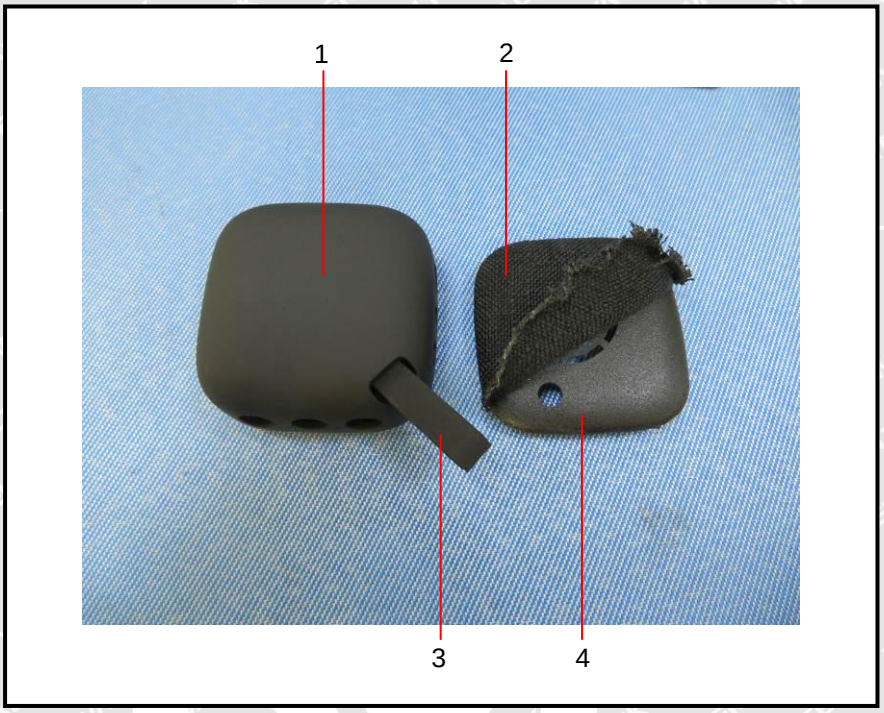


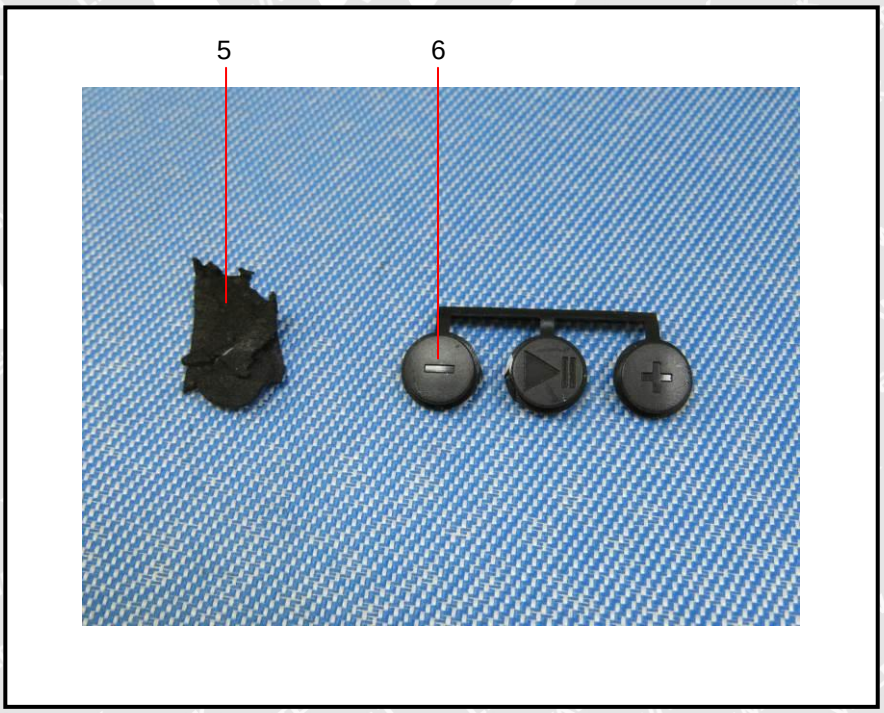
Sample Photo:

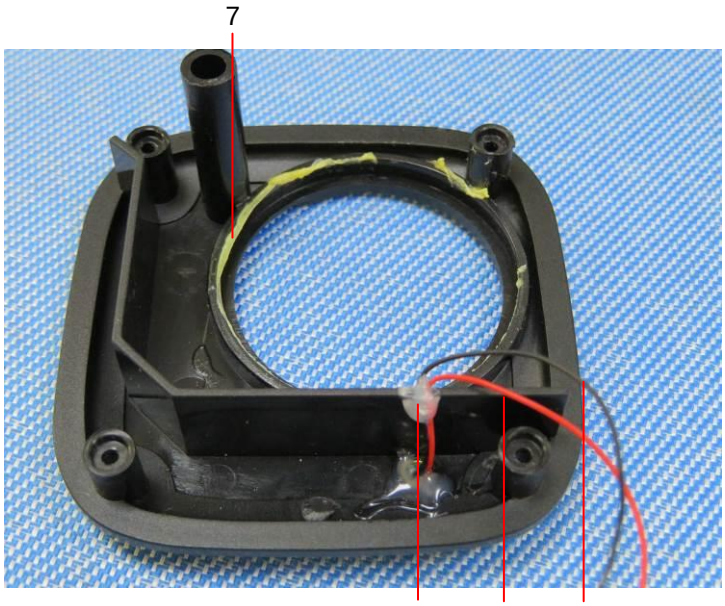




Photograph of parts tested:



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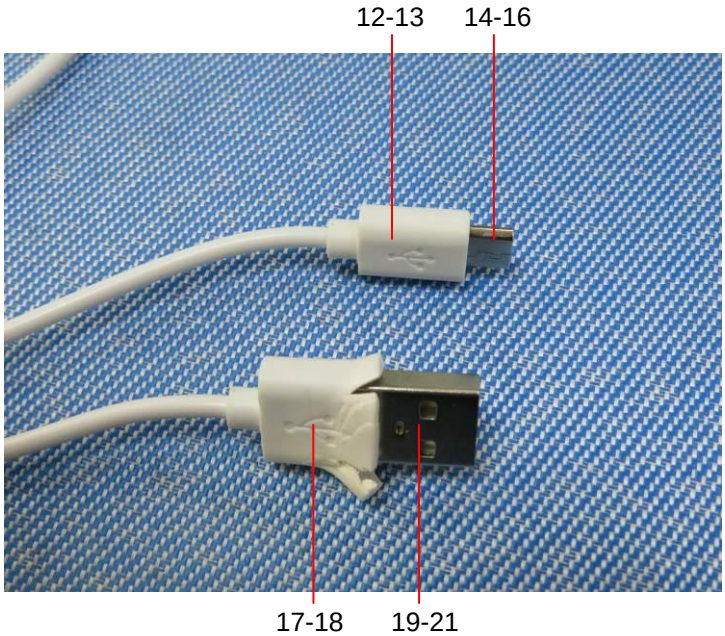
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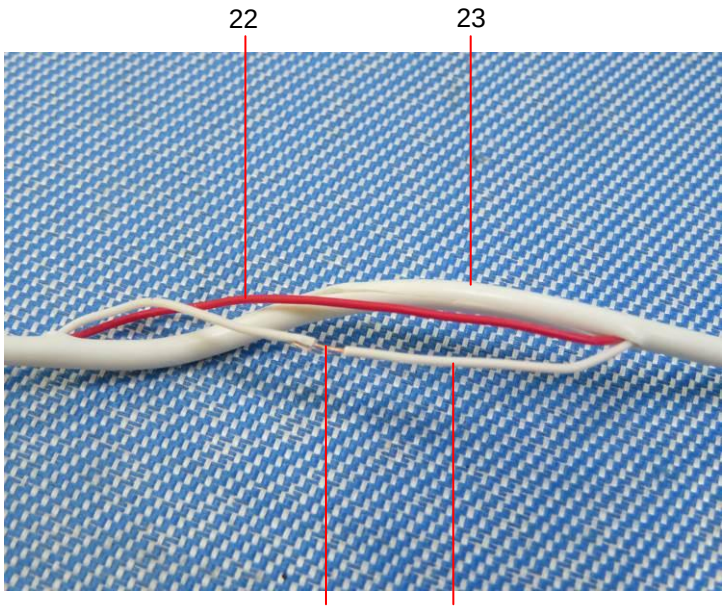
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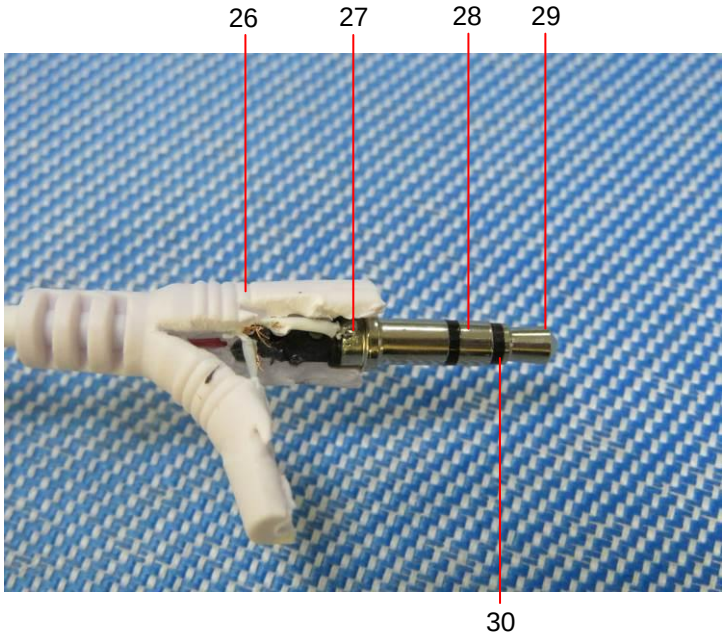
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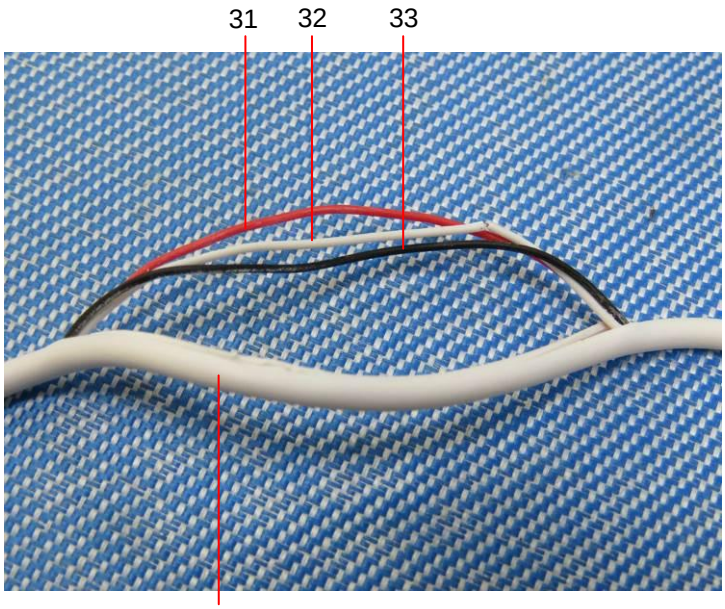
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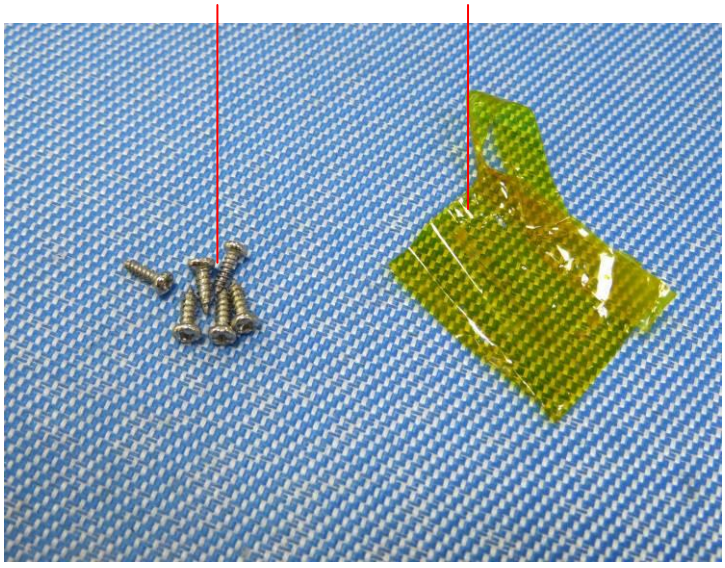
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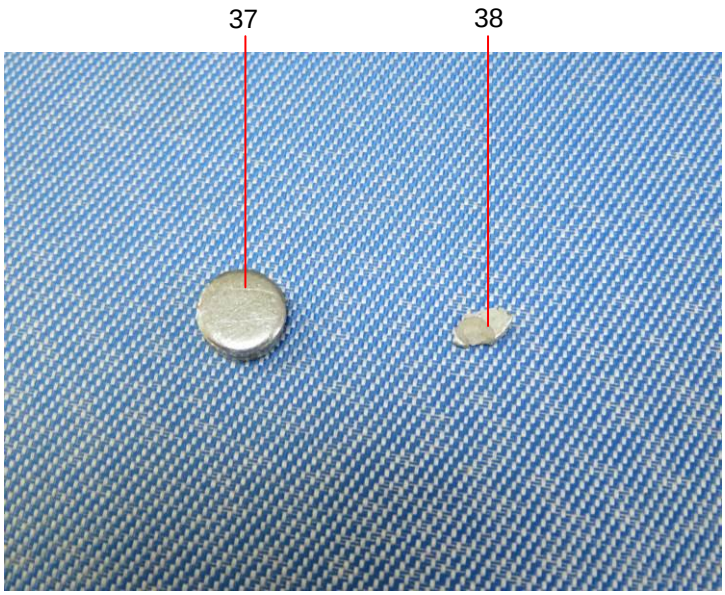
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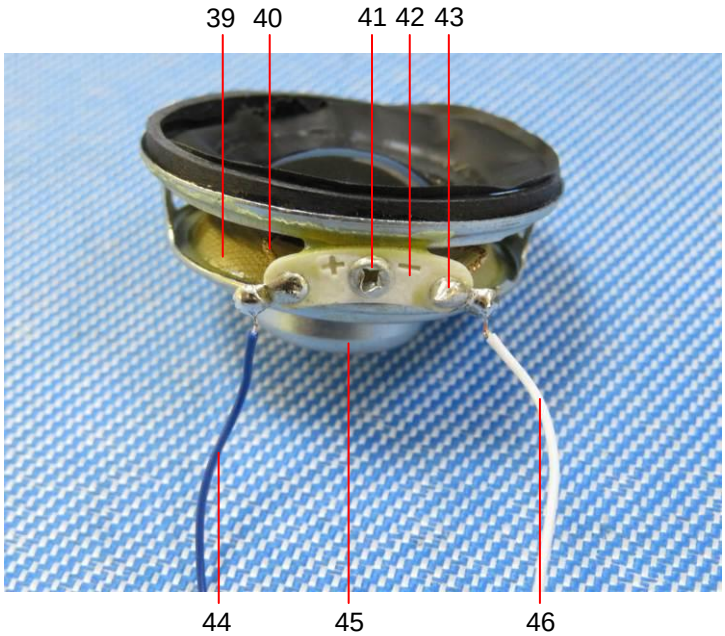
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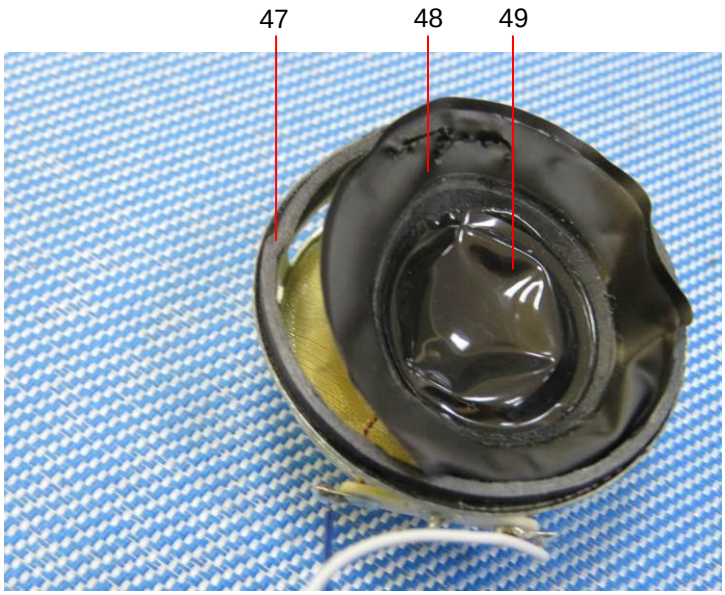
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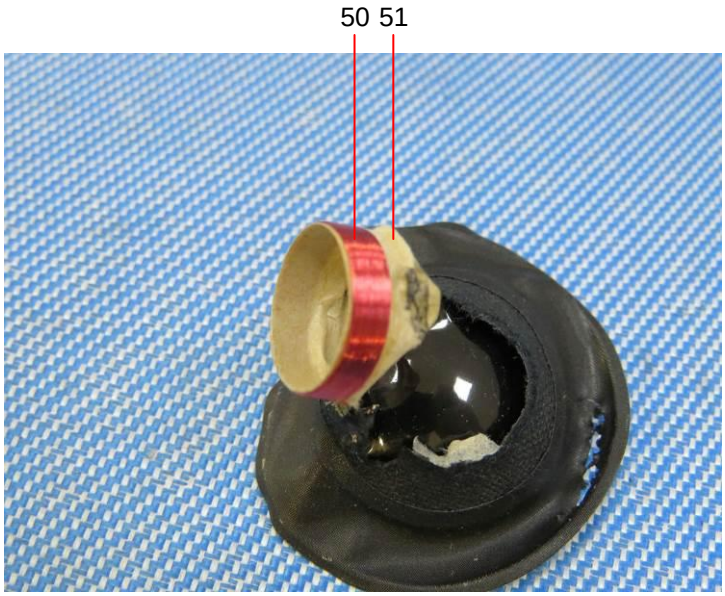
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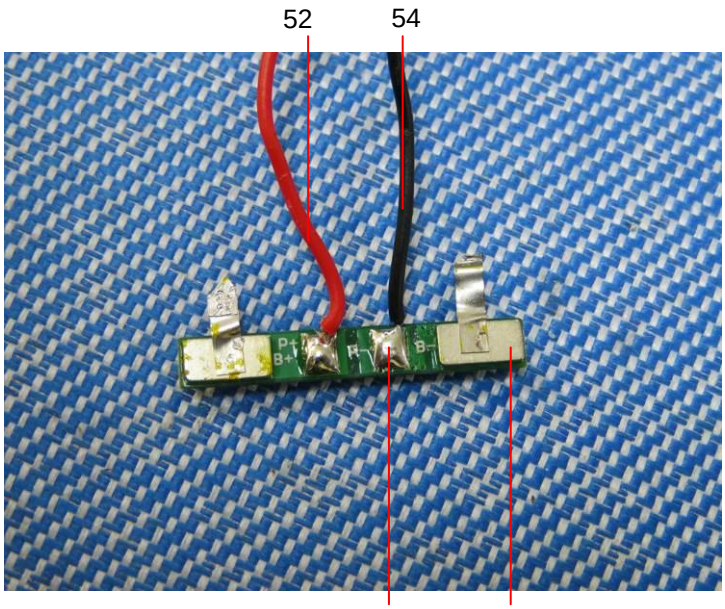
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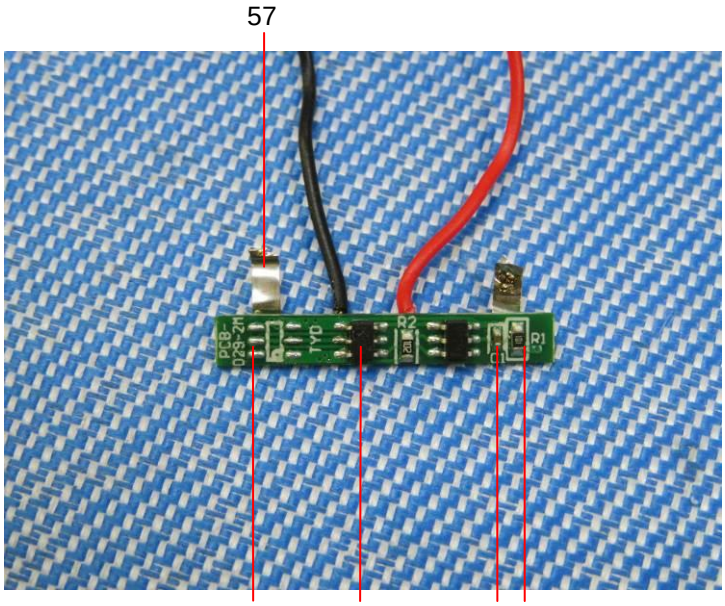
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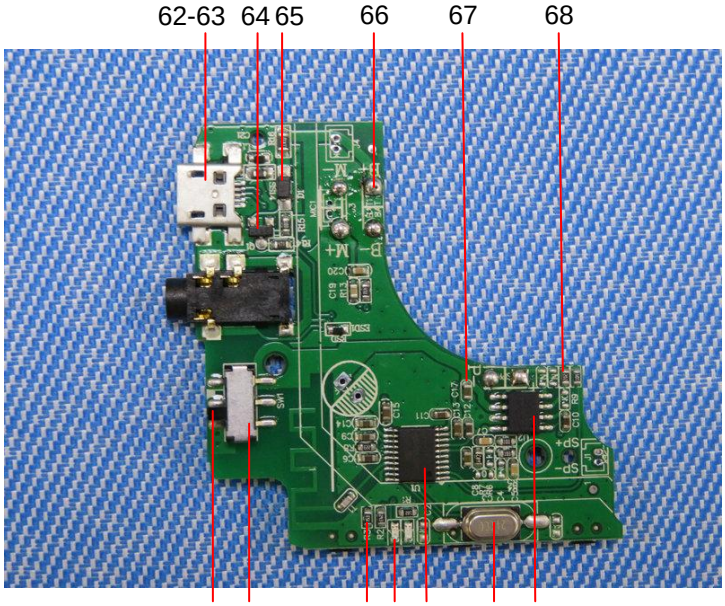
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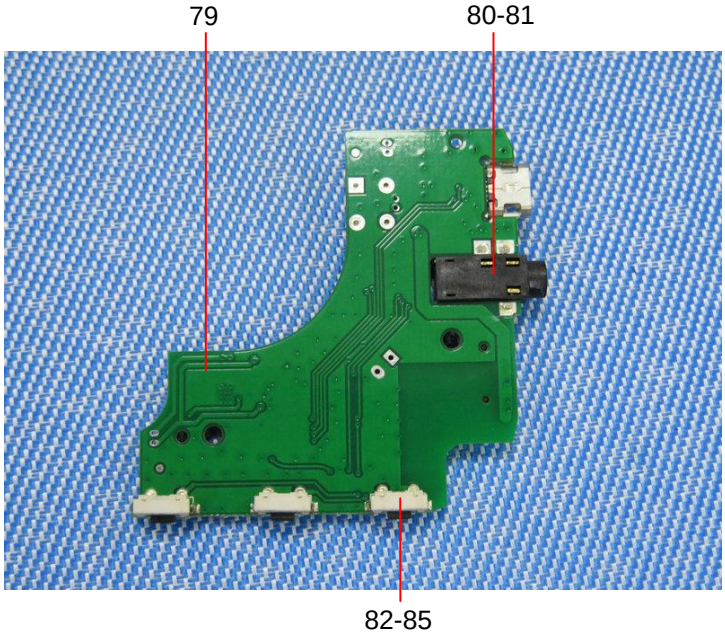
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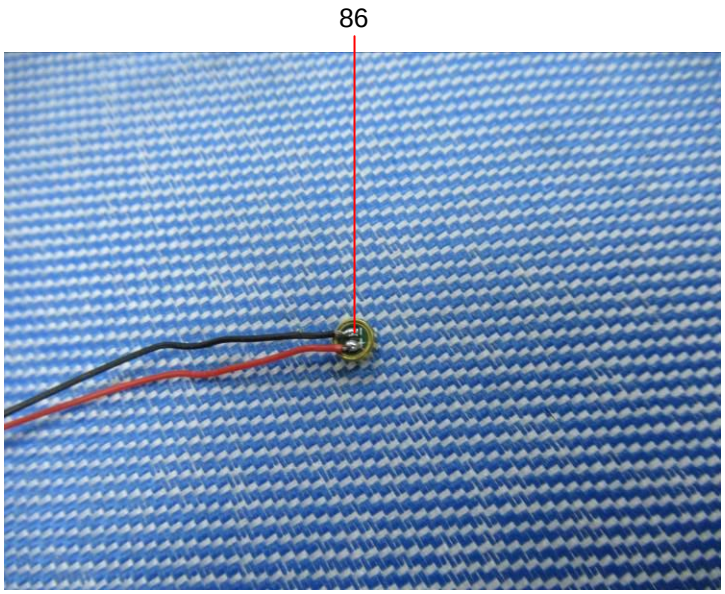
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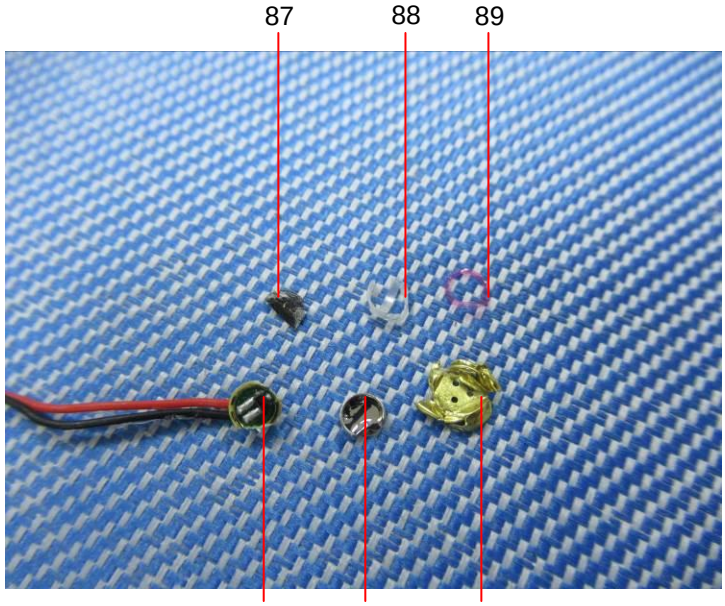
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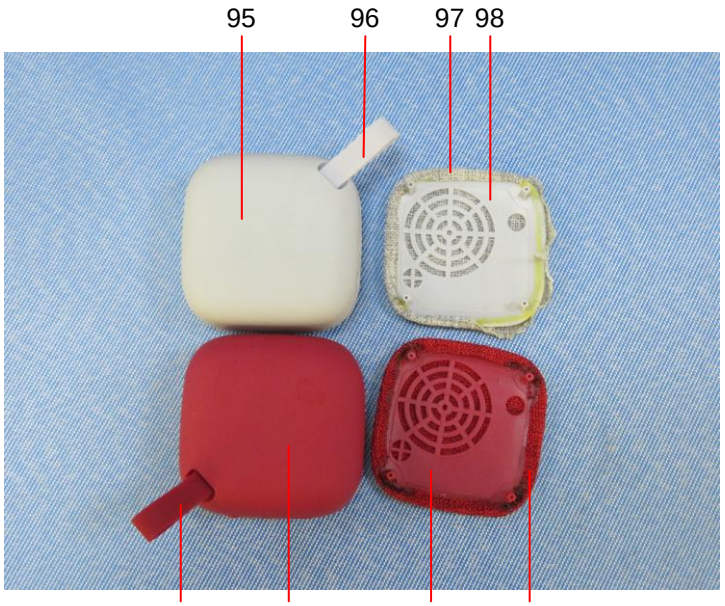
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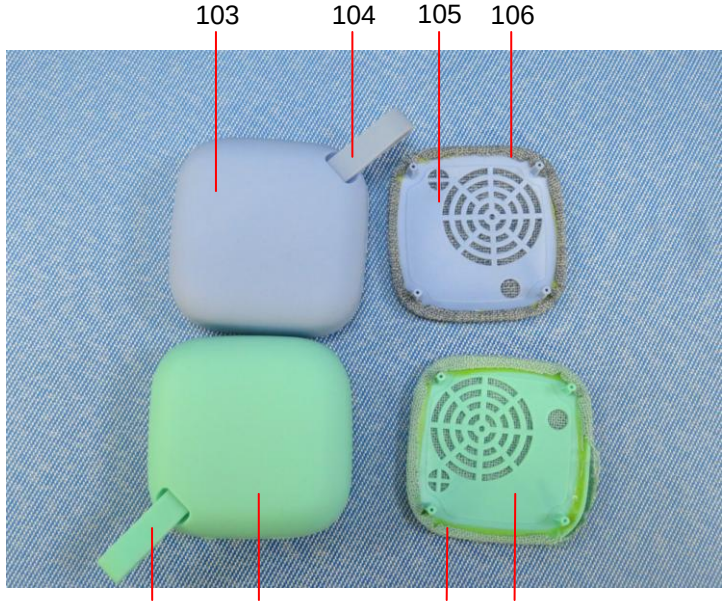
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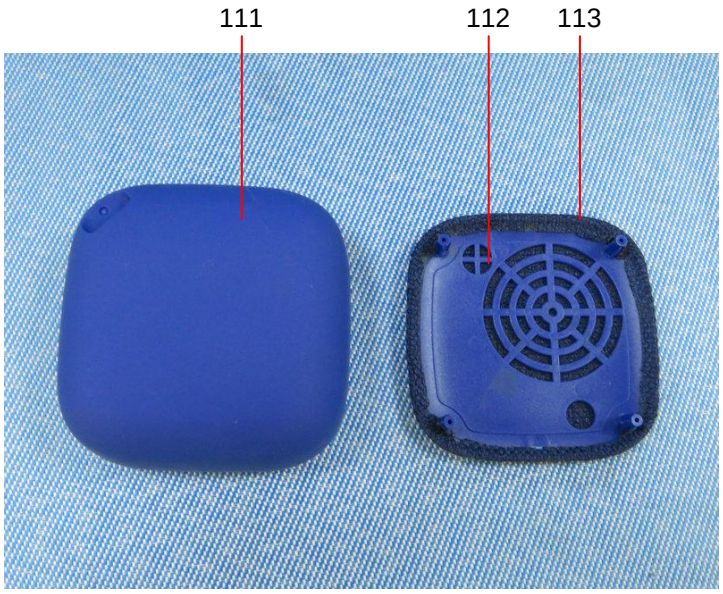
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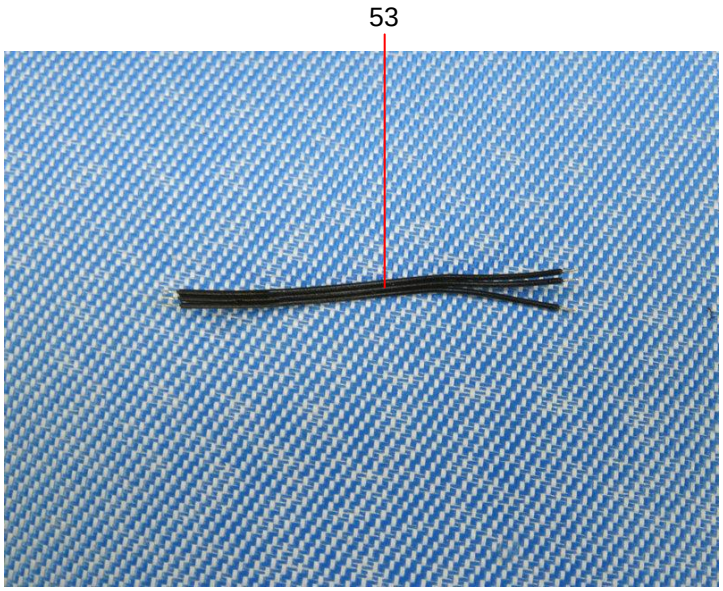
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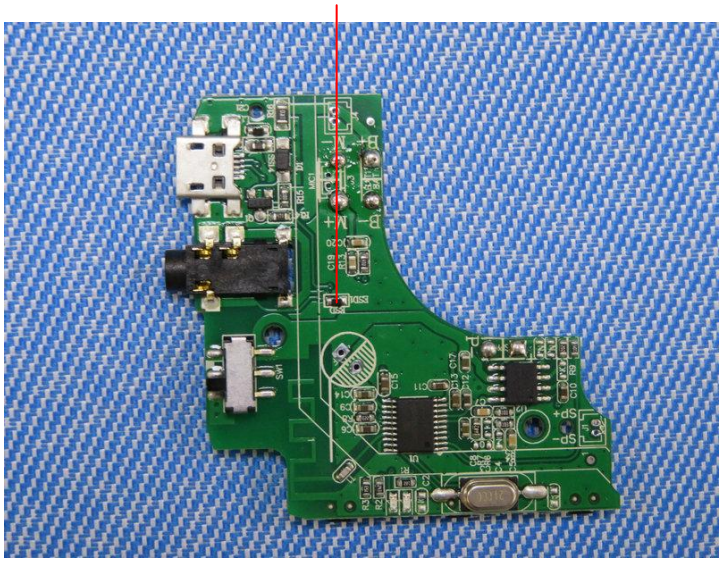

====== End of Report ======