



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No. : WTF25F05116763A1C
Job No. : FSW2506040125CJ
Applicant : Mid Ocean Brands B.V.
Address : Unit 711-716, 7/F., Tower A, 83 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.
Manufacturer : 106613
Sample Name : Recycled PU wireless speaker
Sample Model : MO2173
Test Requested : With reference to EU RoHS Directive 2011/65/EU and its amendment Directive EU 2015/863, to determine the Pb, Cd, Hg, Cr⁶⁺, PBBs, PBDEs, DBP, BBP, DEHP, DIBP content in the submitted sample.
Test Method : Refer to next page (s)
Test Conclusion : **Pass**
Date of Receipt Sample : 2025-06-04 & 2025-06-14
Testing Period : 2025-06-04 to 2025-06-11 & 2025-06-14 to 2025-06-19
Date of Issue : 2025-06-20
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.

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Waltek Testing Group (Foshan) Co., Ltd.

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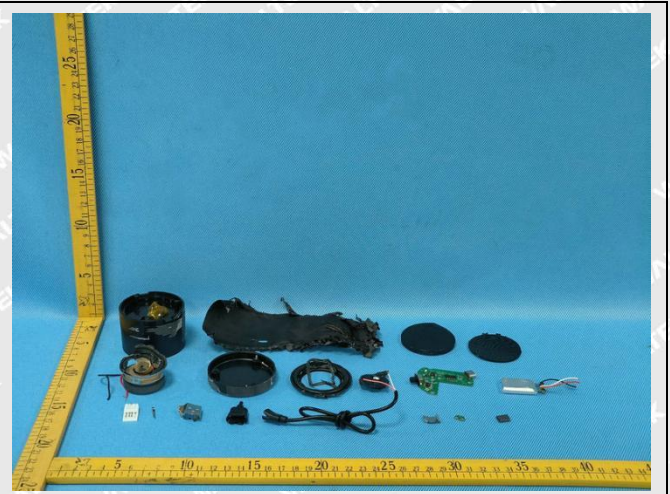
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Sample photo:



MO2173



MO2173

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Test Results:**1. Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs and PBDEs**

Test Method/Equipment:

- 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 coating	BL	BL	BL	BL	BL	NA
2	Silvery metal net without black coating	BL	BL	BL	BL	--	NA
3	Black synthetic leather with adhesive	BL	BL	BL	BL	BL	NA
4	Black soft plastic sheet with adhesive	BL	BL	BL	BL	BL	NA
5	Silvery metal screw	BL	BL	BL	BL	--	NA
6	Black soft plastic sheet	BL	BL	BL	BL	BL	NA
7	Black synthetic leather	BL	BL	BL	BL	BL	NA
8	Black paper sheet	BL	BL	BL	BL	BL	NA
9	Black plastic sheet	BL	BL	BL	BL	BL	NA
10	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
11	Green paper adhesive label with white printing	BL	BL	BL	BL	BL	NA
12	Black plastic cap(button)	BL	BL	BL	BL	BL	NA
13	Brown plastic sheet(button)	BL	BL	BL	BL	BL	NA



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Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
14	Silvery metal shell(button)	BL	BL	BL	BL	--	NA
15	Silvery metal pin(button)	BL	BL	BL	BL	--	NA
16	Chip IC	BL	BL	BL	BL	BL	NA
17	Chip IC	BL	BL	BL	BL	BL	NA
18	Black plastic core(socket)	BL	BL	BL	BL	BL	NA
19	Silvery metal shell(socket)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
20	Silvery metal pin(socket)	BL	BL	BL	BL	--	NA
21	Chip LED	BL	BL	BL	BL	BL	NA
22	Chip resistor	BL	BL	BL	BL	BL	NA
23	Chip crystal oscillator	BL	BL	BL	BL	BL	NA
24	Solder	BL	BL	BL	BL	--	NA
25	Chip capacitor	BL	BL	BL	BL	BL	NA
26	Chip resistor	BL	OL	BL	BL	BL	*Pb : 3590
27	Red plastic wire covering	BL	BL	BL	BL	BL	NA
28	Silvery metal wire	BL	BL	BL	BL	--	NA
29	White plastic wire covering	BL	BL	BL	BL	BL	NA
30	Black plastic wire covering	BL	BL	BL	BL	BL	NA
31	Brown plastic adhesive tape	BL	BL	BL	BL	BL	NA



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Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
32	Transparent glue	BL	BL	BL	BL	BL	NA
33	Chip IC	BL	BL	BL	BL	BL	NA
34	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
35	Black magnetic rim	BL	BL	BL	BL	--	NA
36	Silvery metal sheet	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
37	Silvery metal sheet	BL	BL	BL	BL	--	NA
38	Solder	BL	BL	BL	BL	--	NA
39	White paper sheet	BL	BL	BL	BL	BL	NA
40	Silvery metal rivet	BL	BL	BL	BL	--	NA
41	Black plastic wire covering	BL	BL	BL	BL	BL	NA
42	Coppery metal wire	BL	BL	BL	BL	--	NA
43	Red plastic wire covering	BL	BL	BL	BL	BL	NA
44(R1)	Solder	BL	IN	BL	BL	--	Pb : 69
45	Brown paper tube	BL	BL	BL	BL	BL	NA
46	Coppery metal wire	BL	BL	BL	BL	--	NA
47	Coppery varnished wire	BL	BL	BL	BL	BL	NA
48	Brown fabric net	BL	BL	BL	BL	BL	NA
49	Black plastic wire jacket	BL	BL	BL	BL	BL	NA



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Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
50	Black plastic jacket(USB plug)	BL	BL	BL	BL	BL	NA
51	Silvery metal shell(USB plug)	BL	BL	BL	BL	--	NA
52	White plastic core(USB plug)	BL	BL	BL	BL	BL	NA
53	Solder(USB plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
54	Silvery metal pin(USB plug)	BL	BL	BL	BL	--	NA
55	White plastic wire covering	BL	BL	BL	BL	BL	NA
56	Red plastic wire covering	BL	BL	BL	BL	BL	NA
57	Coppery metal wire	BL	BL	BL	BL	--	NA
58	Silvery metal shell(Type-C plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
59	Black plastic jacket(Type-C plug)	BL	BL	BL	BL	BL	NA
60	Chip resistor(Type-C plug)	BL	BL	BL	BL	BL	NA
61	Black plastic core(Type-C plug)	BL	BL	BL	BL	BL	NA
62	Silvery metal pin(Type-C plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
63	Green PCB(Type-C plug)	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
64	Solder(Type-C plug)	BL	BL	BL	BL	--	NA



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2. Phthalates

Test Method/Equipment:

1) With reference to IEC 62321-8:2017, determination of DBP, BBP, DEHP, DIBP by GC-MS

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1	ND	ND	281	ND
T02	3+7 [△]	ND	ND	ND	ND
T03	4+6+27 [△]	ND	ND	ND	ND
T04	8+39+45 [△]	ND	ND	ND	ND
T05	9+12+13+18+52 [△]	ND	ND	ND	ND
T06	10+34+63 [△]	ND	ND	ND	ND
T07	11	ND	ND	ND	ND
T08	16+17+21+22+23 [△]	ND	ND	ND	ND
T09	25+26+33+60 [△]	ND	ND	ND	ND
T10	29+30+41 [△]	ND	ND	ND	ND
T11	31	ND	ND	ND	ND
T12	32	ND	ND	ND	ND
T13	43+49+50 [△]	ND	ND	ND	ND
T14	47	ND	ND	ND	ND
T15	48	ND	ND	ND	ND
T16	55+56+59 [△]	ND	ND	ND	ND
T17	61	ND	ND	ND	ND
T18	2	--	--	--	--
T19	5	--	--	--	--
T20	14	--	--	--	--
T21	15	--	--	--	--
T22	19	--	--	--	--
T23	20	--	--	--	--
T24	24	--	--	--	--
T25	28	--	--	--	--
T26	35	--	--	--	--
T27	36	--	--	--	--
T28	37	--	--	--	--
T29	38	--	--	--	--
T30	40	--	--	--	--
T31	42	--	--	--	--
T32	44(R1)	--	--	--	--
T33	46	--	--	--	--
T34	51	--	--	--	--



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Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T35	53	--	--	--	--
T36	54	--	--	--	--
T37	57	--	--	--	--
T38	58	--	--	--	--
T39	62	--	--	--	--
T40	64	--	--	--	--

Remark:

- (1) Results are obtained by XRF 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

- (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) -- = Not Regulated
- (8) LOQ = Limit of quantitation.

Test Items	Pb	Cd	Hg	Cr ⁶⁺		PBB	PBDE	DBP	BBP	DEHP	DIBP
Units	mg/kg	mg/kg	mg/kg	mg/kg	μg/cm ²	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOQ	2	2	2	8	0.1	5	5	50	50	50	50

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.



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- (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 $0.10\mu\text{g}/\text{cm}^2$.

Positive = Presence of Cr^{6+} 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 Cr^{6+} results represent status of the sample at the time of testing.

(10) 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)
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)

(11) Abbreviation:

"Pb" denotes Lead, "Cd" denotes Cadmium, "Hg" denotes Mercury, "Cr" denotes Chromium, " Cr^{6+} " denotes Hexavalent Chromium, "Br" denotes Bromine, "PBBs" denotes Total Polybrominated Biphenyls, "PBDEs" denotes Total Polybrominated Diphenyl Ethers.

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

- (12) " Δ "=As per applicant's requirement, the testing was conducted based on mixed components by weight in equal ratio, results are calculated by the minimum weight of mixed components.

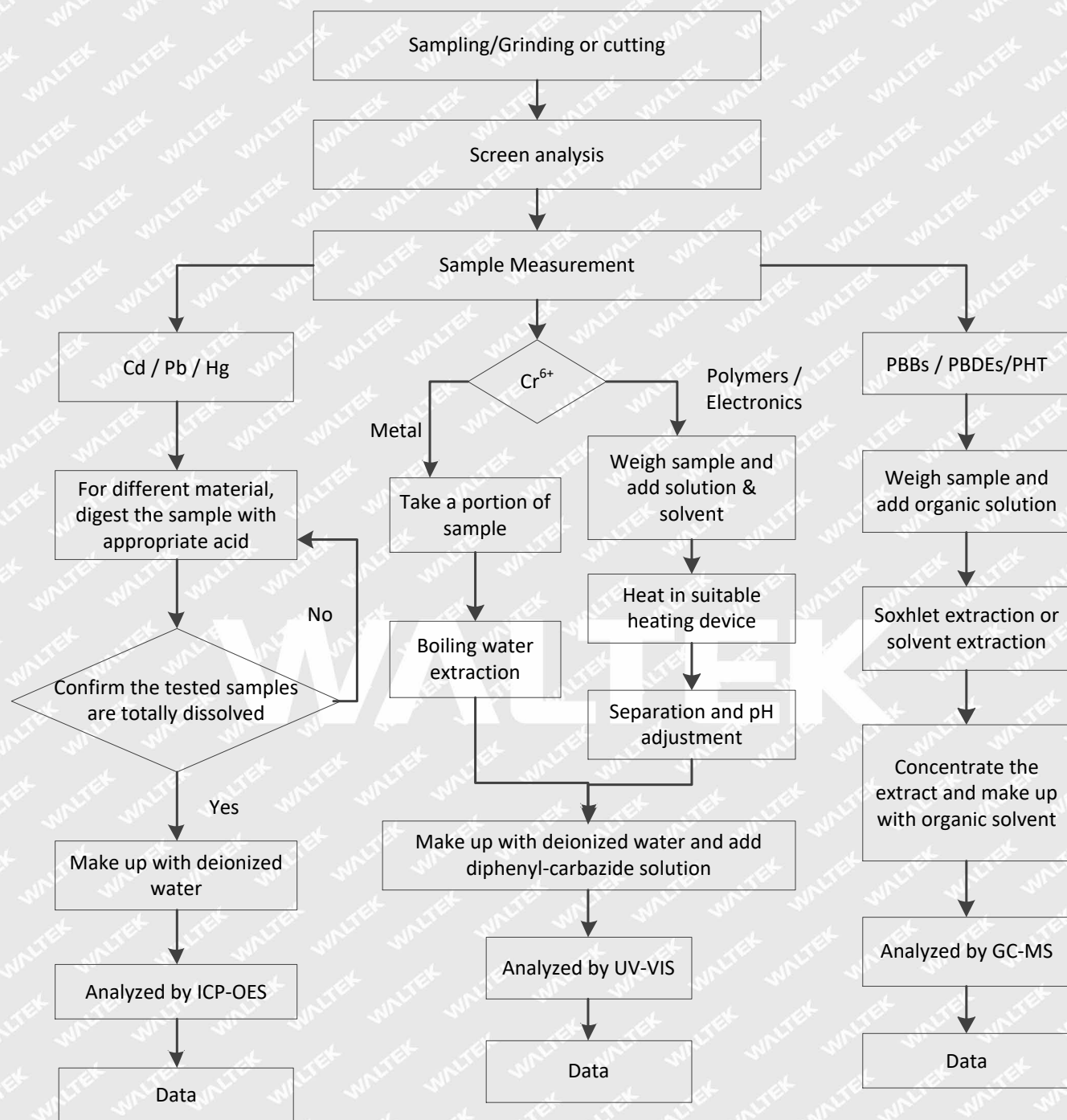
- (13)* = According to the declaration from client, the source of lead in test sample is from the glass or ceramic material of that electronic component which is exempted by Directive 2011/65/EU ANNEX III-7(c)-I.



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Testing Flow chart:

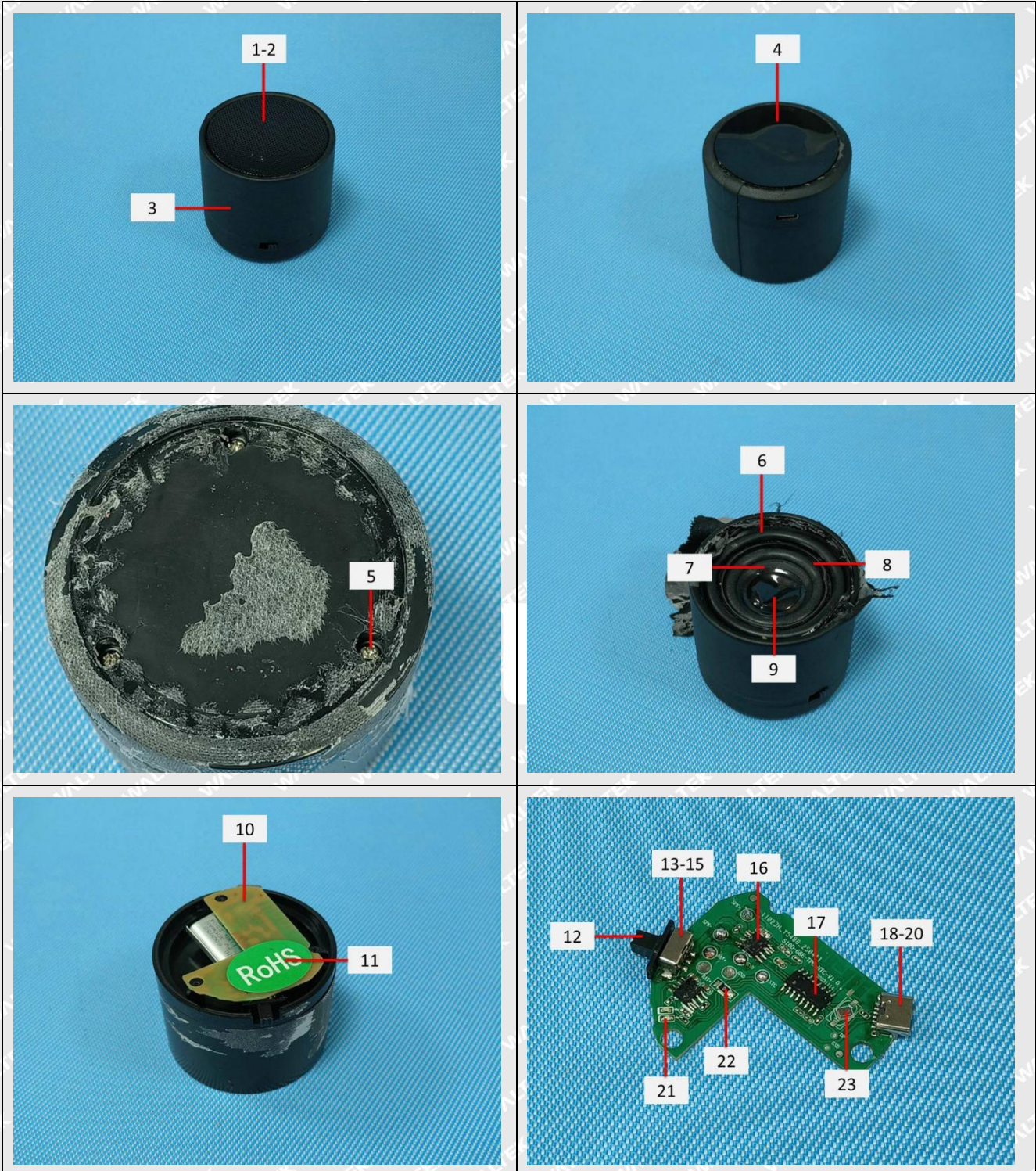




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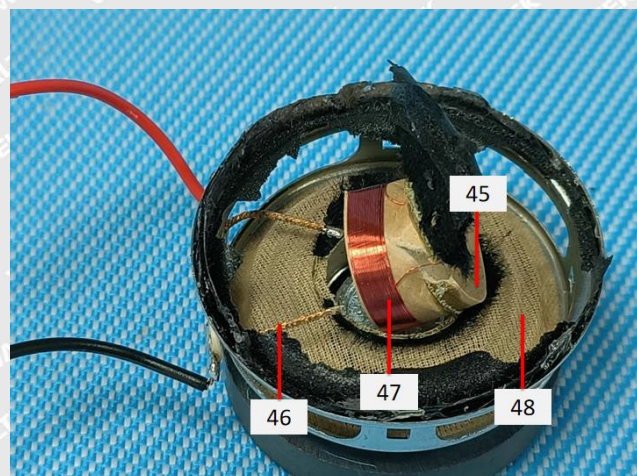
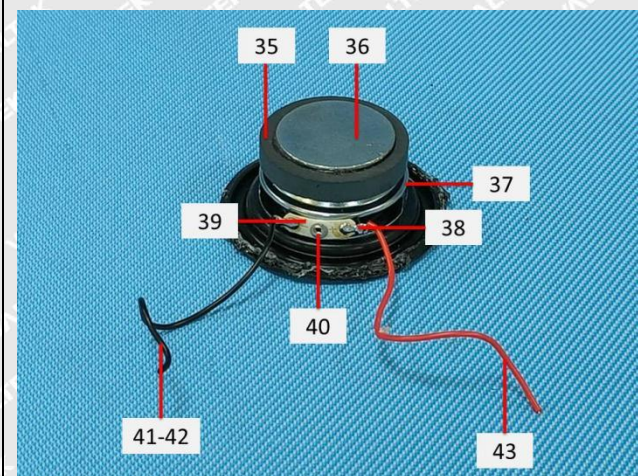
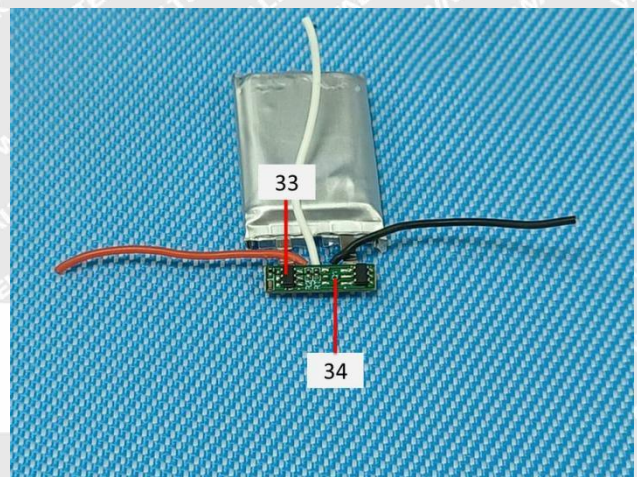
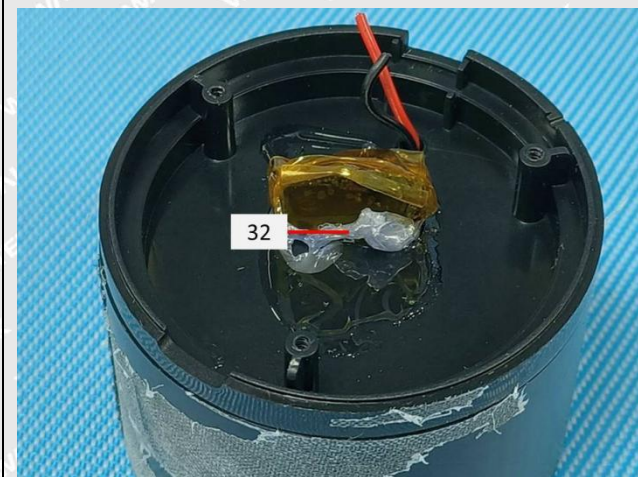
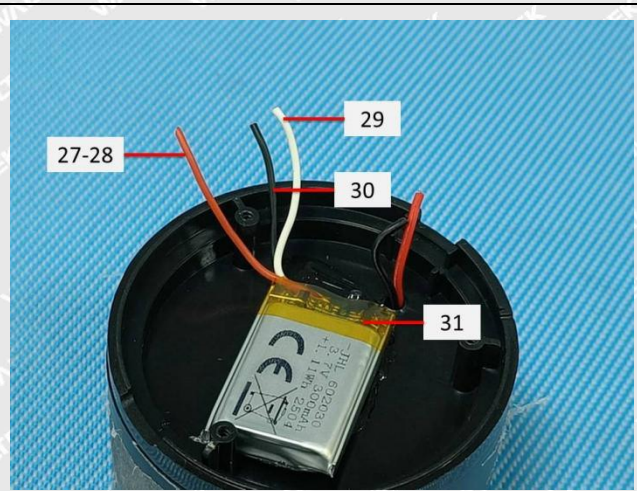
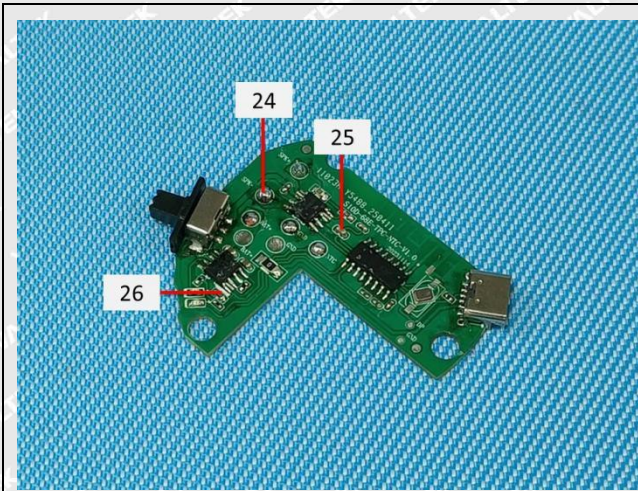
Photograph of parts tested:





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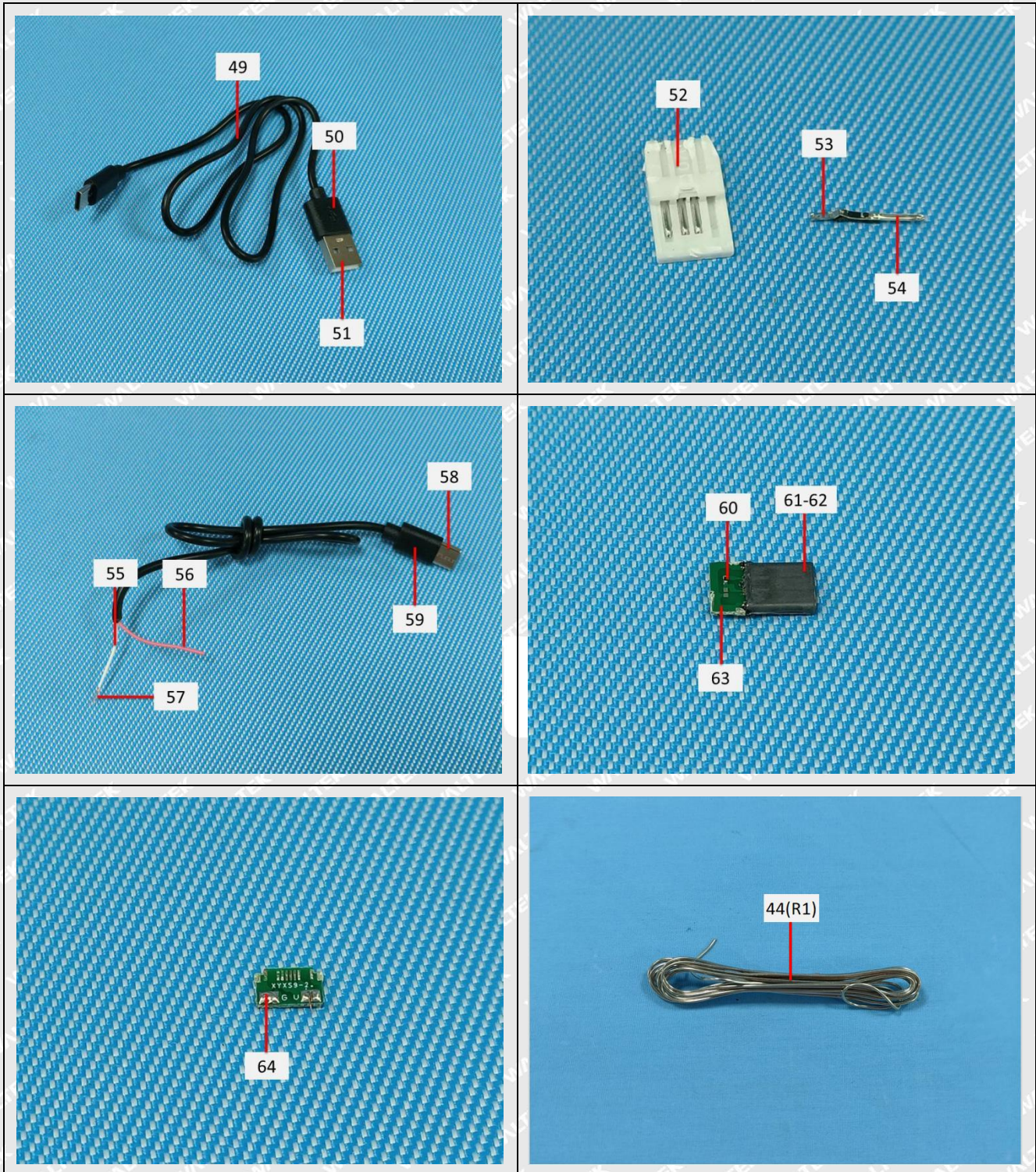
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