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检测
TESTING
CNAS L6478



TEST REPORT

Report No. : WTF25F04087163C
Job No. : FSW2504090417CJ
Applicant : Mid Ocean Brands B.V.
Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan,
Kowloon, Hong Kong
Manufacturer : 118966
Sample Name : Wireless charger speaker
Sample Model : MO2713
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 : 2025-04-09
Testing period : 2025-04-09 to 2025-04-18
Date of Issue : 2025-04-18
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



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Swing Liang
Waltek Testing Group (Foshan) Co., Ltd.
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Sample photo:



MO2713



MO2713

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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 fabric	BL	BL	BL	BL	BL	NA
2	Black soft plastic stopper	BL	BL	BL	BL	BL	NA
3	Brown wooden sheet with black surfaced	BL	BL	BL	BL	BL	NA
4	Black soft plastic sheet with adhesive	BL	BL	BL	BL	BL	NA
5	Black plastic shell	BL	BL	BL	BL	IN	PBBs: ND PBDEs: 365
6	Semi-transparent dry glue	BL	BL	BL	BL	BL	NA
7	Yellow dry glue	BL	BL	BL	BL	BL	NA
8	Transparent double faced adhesive tape	BL	BL	BL	BL	BL	NA
9	Black soft plastic sheet	BL	BL	BL	BL	BL	NA
10	Silvery metal sheet with black surfaced	BL	BL	BL	BL	--	NA
11	Black body	BL	BL	BL	BL	BL	NA
12	White fabric wire covering	BL	BL	BL	BL	BL	NA
13	Coppery metal wire	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	Yellow transparent plastic adhesive tape	BL	BL	BL	BL	BL	NA
15	Rose red varnished wire	BL	BL	BL	BL	BL	NA
16	Black magnetic sheet	BL	BL	BL	BL	--	NA
17	Black sponge with adhesive	BL	BL	BL	BL	BL	NA
18	Brown paper sheet	BL	BL	BL	BL	BL	NA
19	Copperty varnished wire	BL	BL	BL	BL	BL	NA
20	Yellow transparent plastic sheet	BL	BL	BL	BL	BL	NA
21	Yellow brown fibrous net	BL	BL	BL	BL	BL	NA
22	Black plastic sheet	BL	BL	BL	BL	BL	NA
23	Copperty metal wire	BL	BL	BL	BL	--	NA
24	Black paper sheet	BL	BL	BL	BL	BL	NA
25	Green dry glue	BL	BL	BL	BL	BL	NA
26	Black paper ring	BL	BL	BL	BL	BL	NA
27	Silvery metal shell	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
28	Grey magnetic ring	BL	BL	BL	BL	--	NA
29	Silvery metal sheet	BL	BL	BL	BL	--	NA
30	Black plastic wire covering	BL	BL	BL	BL	BL	NA
31	Silvery metal wire	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	Solder	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
33	Silvery metal sheet	BL	BL	BL	BL	--	NA
34	Silvery metal rivet	BL	BL	BL	BL	--	NA
35	White paper sheet	BL	BL	BL	BL	BL	NA
36	Silvery metal shell(socket)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
37	Grey plastic core(socket)	BL	BL	BL	BL	BL	NA
38	Silvery metal pin(socket)	BL	BL	BL	BL	--	NA
39	Chip IC	BL	BL	BL	BL	BL	NA
40	Chip resistor	BL	BL	BL	BL	BL	NA
41	Black plastic cap(button)	BL	BL	BL	BL	BL	NA
42	Off-white plastic shell(button)	BL	BL	BL	BL	BL	NA
43	Silvery metal sheet(button)	BL	BL	BL	BL	--	NA
44	Silvery-golden metal sheet(button)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
45	Silvery crystal oscillator	BL	BL	BL	BL	BL	NA
46	Black plastic base	BL	BL	BL	BL	BL	NA
47	Chip capacitor	BL	BL	BL	BL	BL	NA
48	Red capacitor	BL	BL	BL	BL	BL	NA
49	Chip resistor	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	Chip LED	BL	BL	BL	BL	BL	NA
51	Chip audion	BL	BL	BL	BL	BL	NA
52	Green PCB	BL	BL	BL	BL	BL	NA
53	Chip resistor	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND
54	Black plastic film(electrolytic capacitor)	BL	BL	BL	BL	BL	NA
55	Black rubber stopper(electrolytic capacitor)	BL	BL	BL	BL	BL	NA
56	Brown paper(electrolytic capacitor)	BL	BL	BL	BL	BL	NA
57	Silvery metal shell(electrolytic capacitor)	BL	BL	BL	BL	--	NA
58	Grey metal foil(electrolytic capacitor)	BL	BL	BL	BL	--	NA
59	Silvery-grey metal foil(electrolytic capacitor)	BL	BL	BL	BL	--	NA
60	Silvery metal pin(electrolytic capacitor)	BL	BL	BL	BL	--	NA
61	Chip diode	BL	BL	BL	BL	BL	NA
62	Blue plastic film	BL	BL	BL	BL	BL	NA
63	Purple plastic film	BL	BL	BL	BL	BL	NA
64	Green paper with adhesive	BL	BL	BL	BL	BL	NA
65	Semi-transparent plastic gasket	BL	BL	BL	BL	BL	NA
66	Silvery metal sheet	BL	BL	BL	BL	--	NA
67	Chip IC	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	
68	Chip capacitor	BL	BL	BL	BL	BL	NA
69	Chip resistor	BL	BL	BL	BL	BL	NA
70	Red plastic wire covering	BL	BL	BL	BL	BL	NA
71	Black plastic wire covering	BL	BL	BL	BL	BL	NA
72	Green PCB	BL	BL	BL	BL	IN	PBBs: ND PBDEs: ND
73	Silvery metal screw	BL	BL	BL	BL	--	NA
74	Silvery metal shell(USB plug)	BL	BL	BL	BL	--	NA
75	White plastic sheet(USB plug)	BL	BL	BL	BL	BL	NA
76	Black soft plastic shell(USB plug)	BL	BL	BL	BL	BL	NA
77	Golden metal pin(USB plug)	BL	BL	BL	BL	--	NA
78	Solder	BL	BL	BL	BL	--	NA
79	Semi-transparent plastic core(USB plug)	BL	BL	BL	BL	BL	NA
80	Silvery metal shell(Type-C plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
81	Grey plastic core(Type-C plug)	BL	BL	BL	BL	BL	NA
82	Golden metal pin(Type-C plug)	BL	BL	BL	BL	--	NA
83	Chip resistor(Type-C plug)	BL	BL	BL	BL	BL	NA
84	Green PCB(Type-C plug)	BL	BL	BL	BL	IN	PBBs: ND PBDEs: ND
85	Black soft plastic shell(Type-C plug)	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	
86	Semi-transparent plastic core(Type-C plug)	BL	BL	BL	BL	BL	NA
87	Black plastic wire jacket	BL	BL	BL	BL	BL	NA
88	Black plastic wire covering	BL	BL	BL	BL	BL	NA
89	Green plastic wire covering	BL	BL	BL	BL	BL	NA
90	White plastic wire covering	BL	BL	BL	BL	BL	NA
91	Pink plastic wire covering	BL	BL	BL	BL	BL	NA
92	Coppery metal wire	BL	BL	BL	BL	--	NA

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	ND	ND
T02	2+4+9 [△]	ND	ND	ND	ND
T03	3	ND	ND	222	ND
T04	5+20+22+37+41 [△]	ND	ND	ND	ND
T05	6+7+25 [△]	ND	ND	ND	ND
T06	8+14 [△]	ND	ND	ND	ND
T07	11+39+40+45+47 [△]	ND	ND	ND	ND
T08	12+21 [△]	ND	ND	ND	ND
T09	15+19 [△]	ND	ND	ND	ND
T10	17	ND	ND	ND	ND
T11	18+24+26 [△]	ND	ND	ND	ND
T12	30+70+71 [△]	247	ND	ND	ND
T13	35+56+64 [△]	ND	ND	ND	ND
T14	42+46+65 [△]	ND	ND	ND	ND
T15	48+49+50+51+53 [△]	ND	ND	ND	ND
T16	52+72 [△]	ND	ND	ND	ND



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Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T17	54+62+63 [△]	ND	ND	ND	ND
T18	55	ND	ND	ND	ND
T19	61+67+68+69 [△]	ND	ND	ND	ND
T20	75+79+81+86 [△]	ND	ND	ND	ND
T21	76+85 [△]	ND	ND	ND	ND
T22	83	ND	ND	ND	ND
T23	84	ND	ND	ND	ND
T24	87+88+89 [△]	ND	ND	ND	ND
T25	90+91 [△]	ND	ND	ND	ND
T26	10	--	--	--	--
T27	13	--	--	--	--
T28	16	--	--	--	--
T29	23	--	--	--	--
T30	27	--	--	--	--
T31	28	--	--	--	--
T32	29	--	--	--	--
T33	31	--	--	--	--
T34	32	--	--	--	--
T35	33	--	--	--	--
T36	34	--	--	--	--
T37	36	--	--	--	--
T38	38	--	--	--	--
T39	43	--	--	--	--
T40	44	--	--	--	--
T41	57	--	--	--	--
T42	58	--	--	--	--
T43	59	--	--	--	--
T44	60	--	--	--	--
T45	66	--	--	--	--
T46	73	--	--	--	--
T47	74	--	--	--	--
T48	77	--	--	--	--
T49	78	--	--	--	--
T50	80	--	--	--	--
T51	82	--	--	--	--
T52	92	--	--	--	--



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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	$BL \leq (70-3\sigma) < IN < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < IN < (130+3\sigma) \leq OL$	$LOD < IN < (150+3\sigma) \leq OL$
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

- (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) -- = 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	$\mu\text{g}/\text{cm}^2$	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 0.1 $\mu\text{g}/\text{cm}^2$.

- (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.



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(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, “Cr⁶⁺” 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.

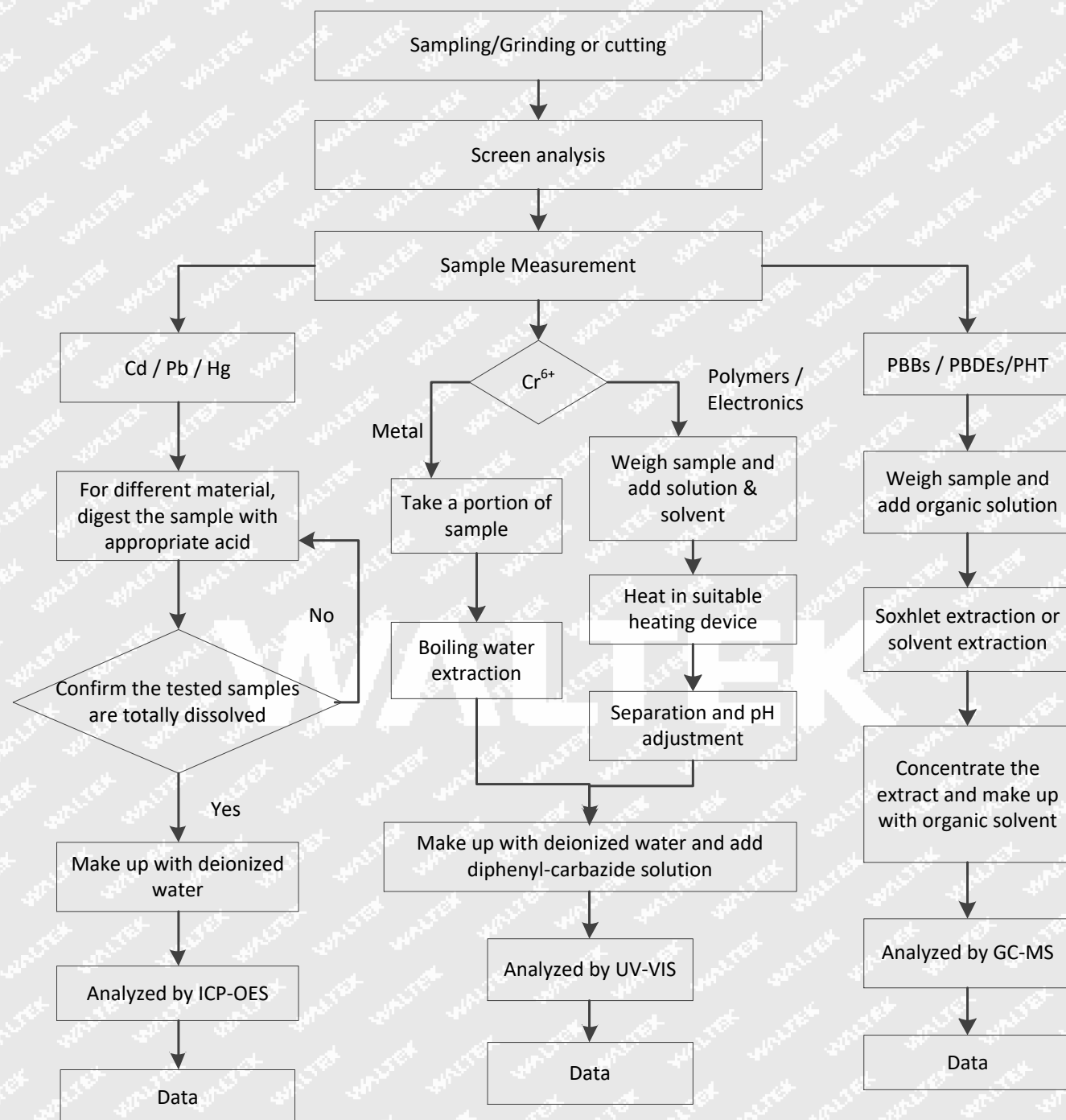
(12) “△”=As client's requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.



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Testing Flow chart:

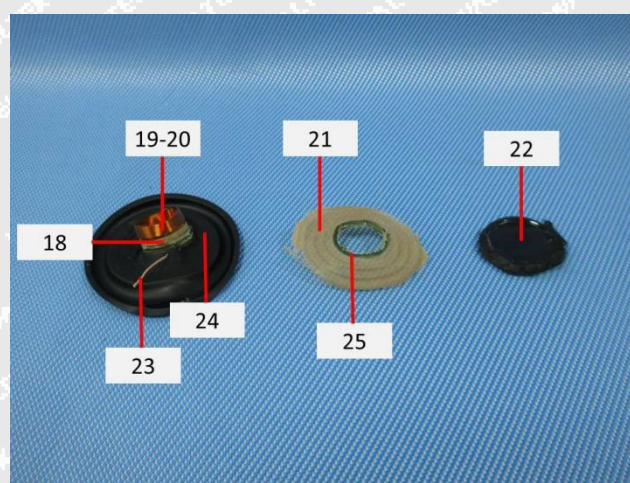
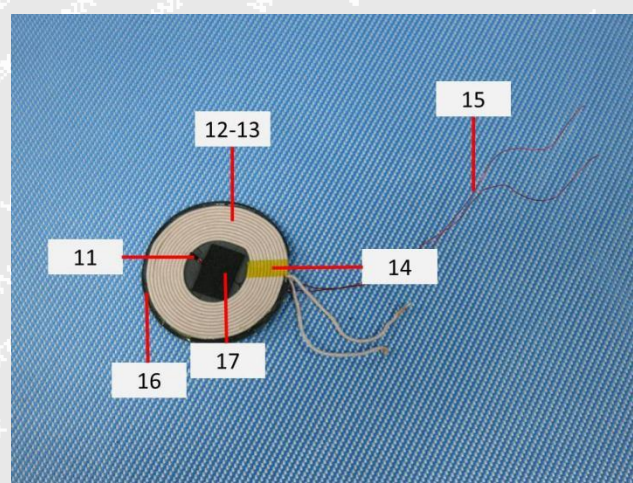
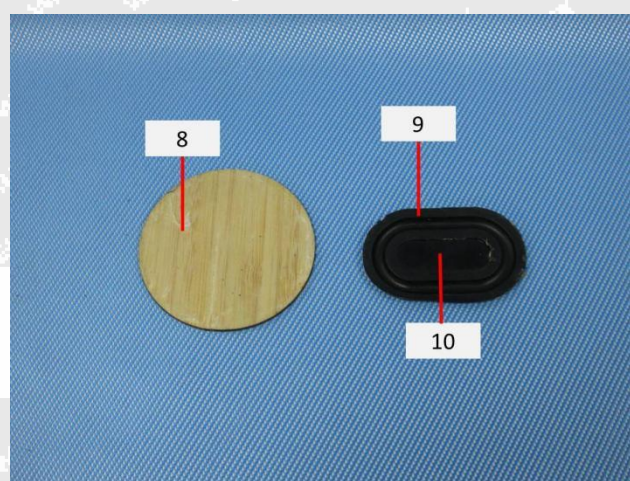
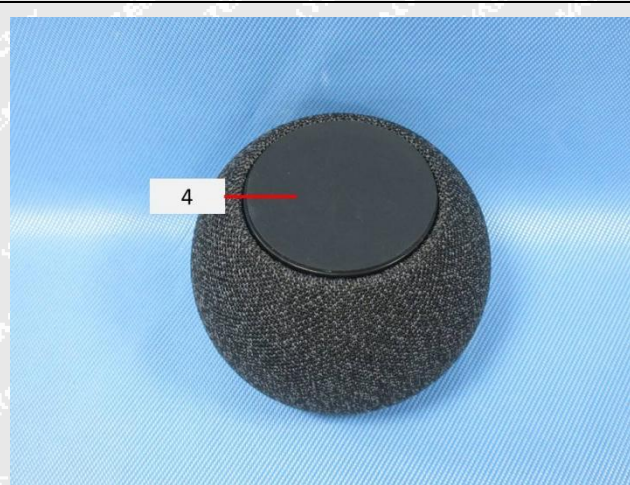
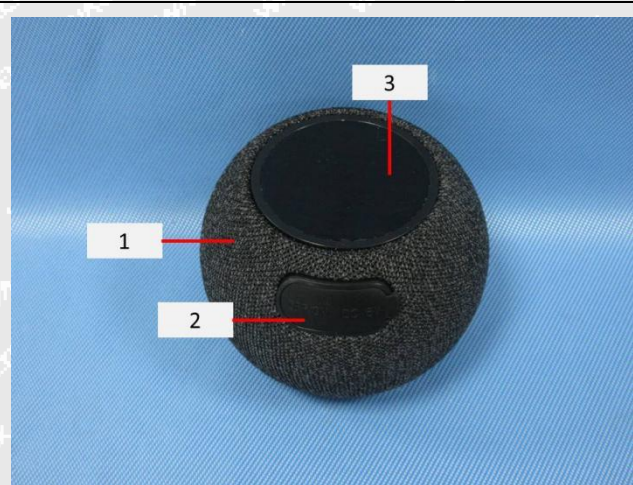




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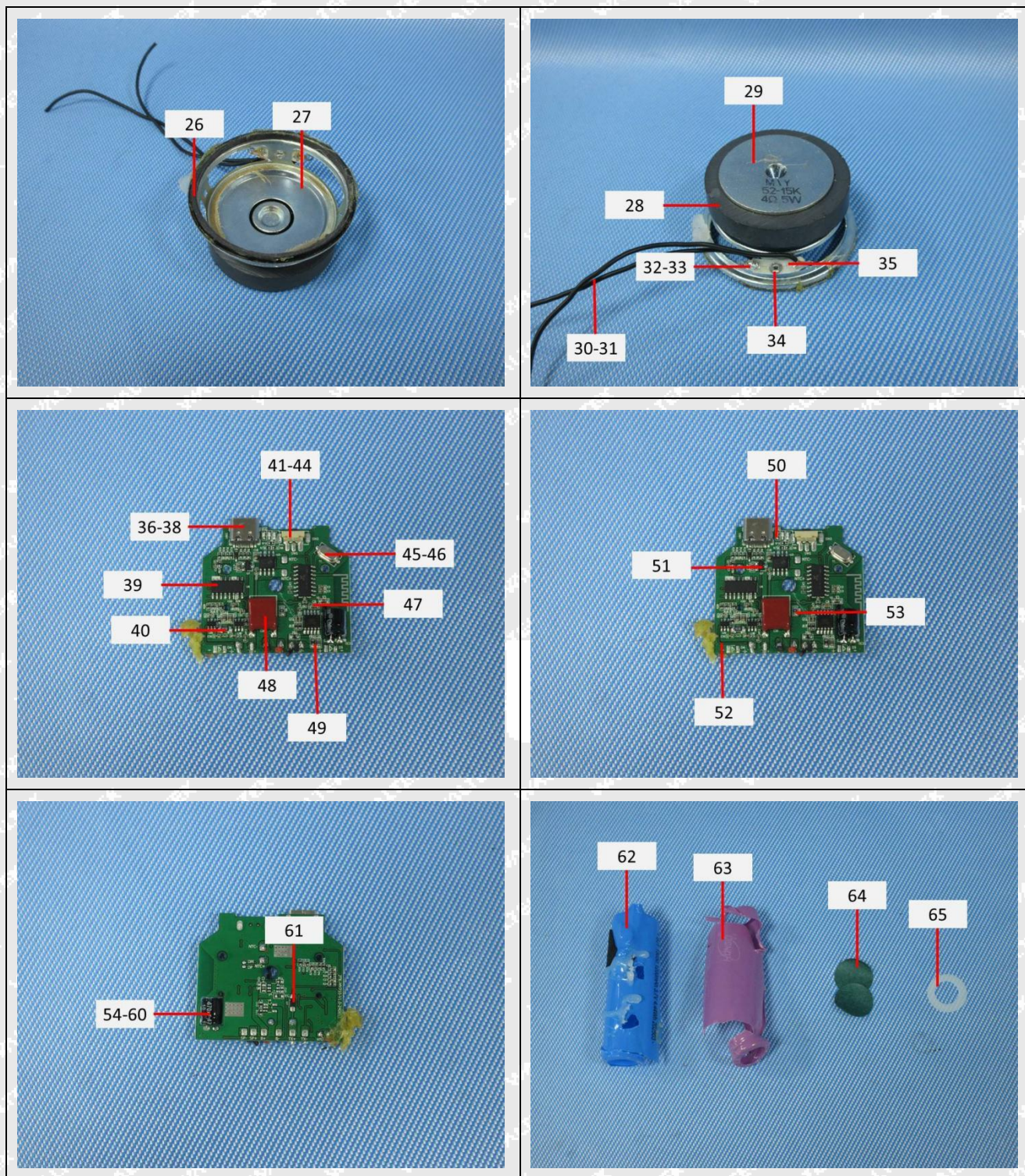
Photograph of parts tested:





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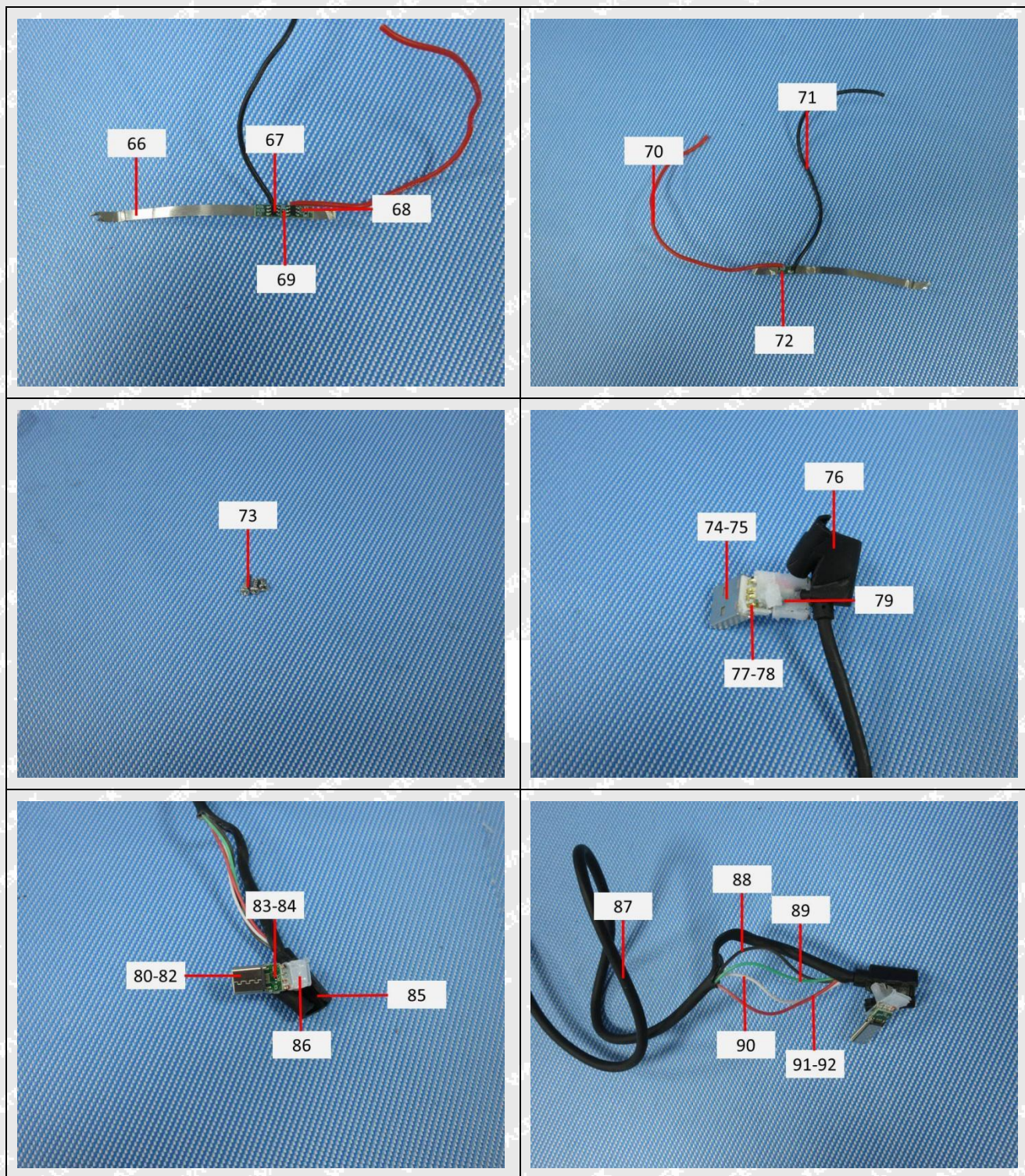
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Remarks:

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

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