



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No. : WTF24F06150685R1C

Applicant..... : Mid Ocean Brands B.V.

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

Manufacturer : 107122

Sample Name : Wireless speaker

Sample Model..... : MO9084

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 : 2024-06-27 & 2024-07-19

Testing period : 2024-06-27 to 2024-07-05 & 2024-07-19 to 2024-07-24

Date of Issue..... : 2024-07-25

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

Swing.Liang



WTF24F06150685R1C



Report No.: WTF24F06150685R1C

Job No.: FSW2406281108CJ

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):



**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 plastic wire jacket	BL	BL	BL	BL	BL	NA
2	Black plastic jacket (DC plug)	BL	BL	BL	BL	BL	NA
3	Black plastic jacket (USB plug)	BL	BL	BL	BL	BL	NA
4	Black plastic jacket (Type-C plug)	BL	BL	BL	BL	BL	NA
5	Solder (USB plug)	BL	BL	BL	BL	--	NA
6	Silvery metal shell (USB plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
7	White plastic core (USB plug)	BL	BL	BL	BL	BL	NA
8	Silvery metal pin (USB plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
9	Solder (Type-C plug)	BL	BL	BL	BL	--	NA
10	Silvery metal shell (Type-C plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
11	Green PCB (Type-C plug)	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
12	Chip resistor (Type-C plug)	BL	BL	BL	BL	BL	NA
13	Black plastic core (Type-C plug)	BL	BL	BL	BL	BL	NA
14	Golden metal pin (Type-C plug)	BL	BL	BL	BL	--	NA
15	Silvery metal pin (Type-C plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
16	Silvery metal pin (DC plug)	IN	OL	BL	BL	--	Cd :22 #Pb : 2.57×10⁴
17	Silvery metal shell (DC plug)	BL	BL	BL	BL	--	NA
18	Black plastic core (DC plug)	BL	BL	BL	BL	BL	NA
19	Solder (DC plug)	BL	BL	BL	BL	--	NA
20	Black plastic wire covering	BL	BL	BL	BL	BL	NA
21	White plastic wire covering	BL	BL	BL	BL	BL	NA
22	Red plastic wire covering	BL	BL	BL	BL	BL	NA
23	Coppery metal wire	BL	BL	BL	BL	--	NA
24	Silvery metal screw with black surface	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
25	Black plastic shell	BL	BL	BL	BL	BL	NA
26	Brown plastic film	BL	BL	BL	BL	BL	NA
27	Black sponge adhesive gasket	BL	BL	BL	BL	BL	NA
28	Black plastic sheet	BL	BL	BL	BL	BL	NA
29	Black paper sheet	BL	BL	BL	BL	BL	NA
30	Black synthetic leather	BL	BL	BL	BL	BL	NA
31	Black paper gasket	BL	BL	BL	BL	BL	NA
32	Silvery metal shell	BL	BL	BL	BL	--	NA
33	Black plastic shell	BL	BL	BL	BL	BL	NA
34	Silvery metal screw with black surface	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
35	Brown wood shell	BL	BL	BL	BL	BL	NA



Report No.: WTF24F06150685R1C

Job No.: FSW2406281108CJ

Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
36	Yellow dry glue	BL	BL	BL	BL	BL	NA
37	White paper sheet	BL	BL	BL	BL	BL	NA
38	Solder	BL	IN	BL	BL	--	Pb :734
39	Silvery metal rivet	BL	BL	BL	BL	--	NA
40	Black magnet ring	BL	BL	BL	BL	--	NA
41	Coppery metal wire	BL	BL	BL	BL	--	NA
42	Silvery metal shell	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
43	Red metal wire	BL	BL	BL	BL	--	NA
44	Brown paper shell	BL	BL	BL	BL	BL	NA
45	Brown net fabric	BL	BL	BL	BL	BL	NA
46	Silvery metal screw	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
47	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
48	Black plastic film(electrolytic capacitor)	BL	BL	BL	BL	BL	NA
49	Black rubber stopper(electrolytic capacitor)	BL	BL	BL	BL	BL	NA
50	Brown paper(electrolytic capacitor)	BL	BL	BL	BL	BL	NA
51	Silvery metal shell(electrolytic capacitor)	BL	BL	BL	BL	--	NA
52	Silvery metal pin(electrolytic capacitor)	BL	BL	BL	BL	--	NA
53	Grey metal foil(electrolytic capacitor)	BL	BL	BL	BL	--	NA
54	Silvery-grey metal foil(electrolytic capacitor)	BL	BL	BL	BL	--	NA
55	Black magnet shell (inductor)	BL	BL	BL	BL	--	NA



Report No.: WTF24F06150685R1C

Job No.: FSW2406281108CJ

Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
56	Coppery varnished wire (inductor)	BL	BL	BL	BL	BL	NA
57	Black plastic cap (button)	BL	BL	BL	BL	BL	NA
58	Black plastic part (button)	BL	BL	BL	BL	BL	NA
59	Brown plastic sheet (button)	BL	BL	BL	BL	BL	NA
60	Silvery metal shell (button)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
61	Silvery metal sheet (button)	BL	BL	BL	BL	--	NA
62	Chip capacitor (Yellow)	BL	BL	BL	BL	BL	NA
63	Chip resistor	BL	IN	BL	BL	BL	Pb :252
64	Black plastic core (socket)	BL	BL	BL	BL	BL	NA
65	Silvery metal shell (socket)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
66	Silvery metal pin (socket)	BL	BL	BL	BL	--	NA
67	Black plastic shell (socket)	BL	BL	BL	BL	BL	NA
68	Silvery metal pin (socket)	BL	BL	BL	BL	--	NA
69	Chip crystal oscillator	BL	BL	BL	BL	BL	NA
70	Chip diode	BL	OL	BL	BL	IN	*Pb : 1.24×10^4 PBBs : ND PBDEs : ND
71	Chip IC	BL	BL	BL	BL	BL	NA
72	Solder	BL	BL	BL	BL	--	NA
73	Chip capacitor (white)	BL	BL	BL	BL	BL	NA
74	Chip LED	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	
75	Brown dry glue	BL	BL	BL	BL	BL	NA
76	Brown plastic adhesive tape	BL	BL	BL	BL	BL	NA
77(R1)	Black plastic wire covering	BL	BL	BL	BL	BL	NA
78(R1)	White plastic wire covering	BL	BL	BL	BL	BL	NA
79(R1)	Red plastic wire covering	BL	BL	BL	BL	BL	NA
80	Silvery metal wire	BL	BL	BL	BL	--	NA
81	Chip IC	BL	BL	BL	BL	BL	NA
82	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
83	Silvery metal sheet	BL	BL	BL	BL	--	NA
84	Solder	BL	BL	BL	BL	--	NA
85	Chip inductor	BL	IN	BL	IN	BL	Pb :38 Cr ⁶⁺ : ND

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

-- = 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.



Report No.: WTF24F06150685R1C

Job No.: FSW2406281108CJ

- (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) LOQ = Limit of quantitation.

Test Items	Pb	Cd	Hg	Cr^{6+}		PBB	PBDE
Units	mg/kg	mg/kg	mg/kg	mg/kg	$\mu\text{g}/\text{cm}^2$	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 $\mu\text{g}/\text{cm}^2$.

- (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 $\mu\text{g}/\text{cm}^2$.
 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) 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-6(c).
- (12)^{*} = 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.

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	ND	ND	ND	ND
T02	2+3+4 [△]	ND	ND	ND	ND



Report No.: WTF24F06150685R1C

Job No.: FSW2406281108CJ

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T03	5	--	--	--	--
T04	6	--	--	--	--
T05	7+13+18+25+28 [△]	ND	ND	ND	ND
T06	8	--	--	--	--
T07	9	--	--	--	--
T08	10	--	--	--	--
T09	11+47+82 [△]	ND	ND	ND	ND
T10	12+62+63+69+70 [△]	ND	ND	ND	ND
T11	14	--	--	--	--
T12	15	--	--	--	--
T13	16	--	--	--	--
T14	17	--	--	--	--
T15	19	--	--	--	--
T16	20+21+22 [△]	ND	ND	95	ND
T17	23	--	--	--	--
T18	24	--	--	--	--
T19	26+48 [△]	ND	ND	ND	ND
T20	27	90	ND	ND	ND
T21	29+31+37 [△]	ND	ND	ND	ND
T22	30	ND	ND	ND	ND
T23	32	ND	ND	ND	ND
T24	33+36+57+58+59 [△]	ND	ND	ND	ND
T25	34	ND	ND	ND	ND
T26	35	ND	ND	ND	ND
T27	38	--	--	--	--
T28	39	--	--	--	--
T29	40	--	--	--	--
T30	41	--	--	--	--
T31	42	--	--	--	--
T32	43	--	--	--	--
T33	44+50 [△]	ND	ND	ND	ND
T34	45	ND	ND	ND	ND
T35	46	--	--	--	--
T36	49	ND	ND	ND	ND
T37	51	--	--	--	--
T38	52	--	--	--	--
T39	53	--	--	--	--
T40	54	--	--	--	--
T41	55	--	--	--	--
T42	56	ND	ND	ND	ND
T43	60	--	--	--	--
T44	61	--	--	--	--
T45	64+67+75 [△]	ND	ND	ND	ND
T46	65	--	--	--	--



Report No.: WTF24F06150685R1C

Job No.: FSW2406281108CJ

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T47	66	--	--	--	--
T48	68	--	--	--	--
T49	71+73+74+81 [△]	ND	ND	ND	ND
T50	72	--	--	--	--
T51	76	ND	ND	ND	ND
T52	77(R1)+78(R1)+79(R1) [△]	ND	ND	ND	ND
T53	80	--	--	--	--
T54	83	--	--	--	--
T55	84	--	--	--	--
T56	85	ND	ND	ND	ND

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

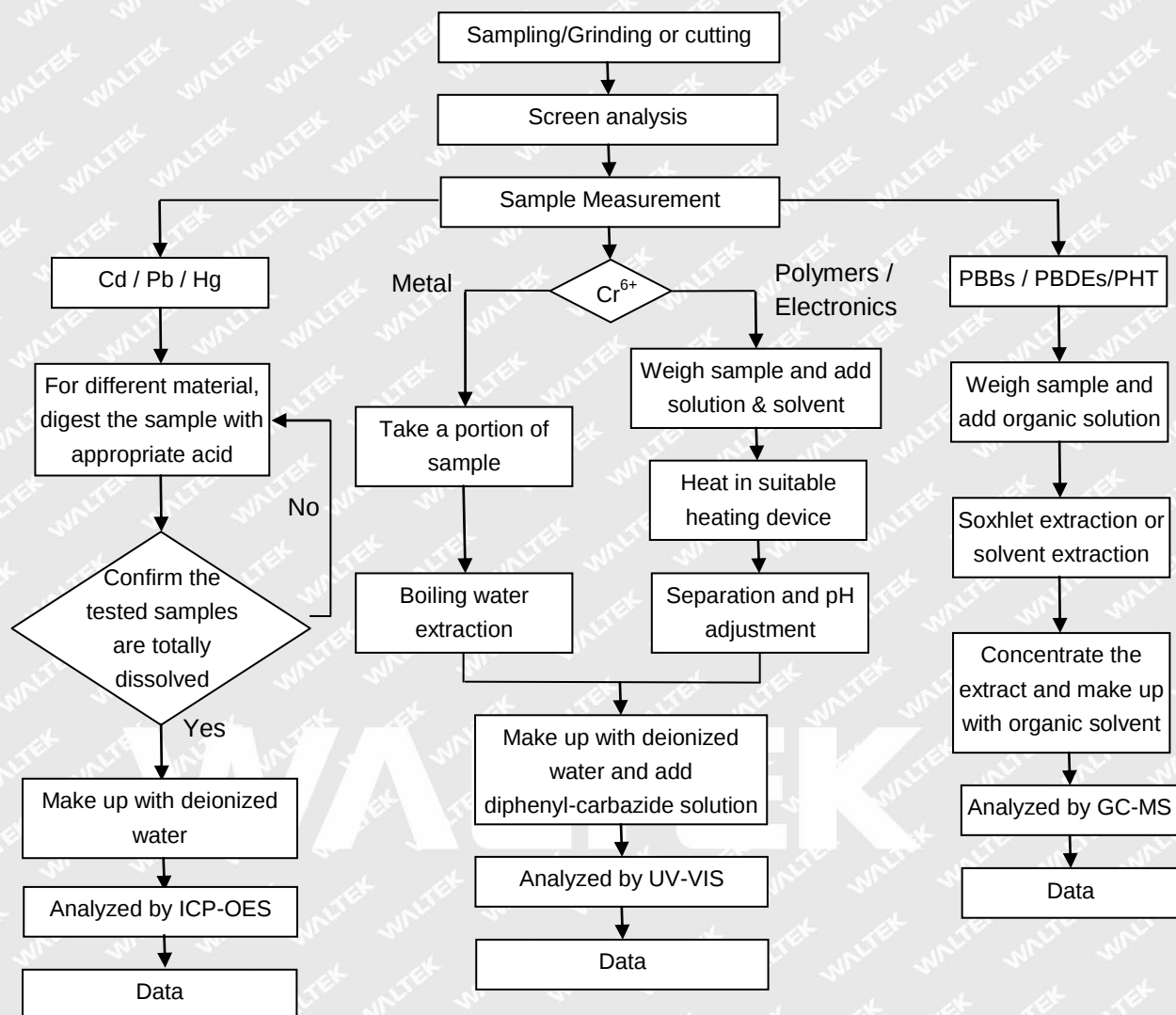
- (5) Abbreviation:

“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

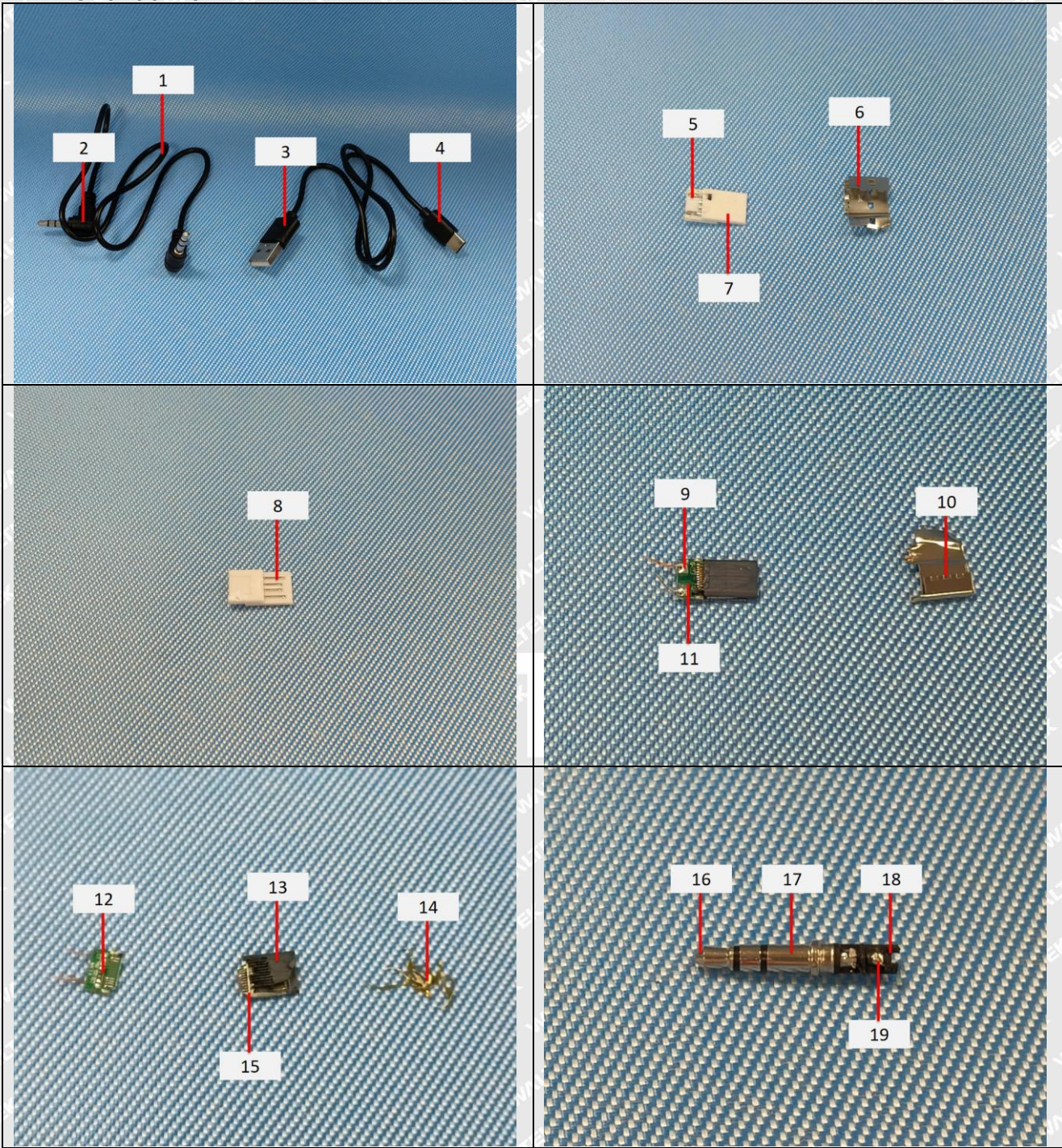
Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

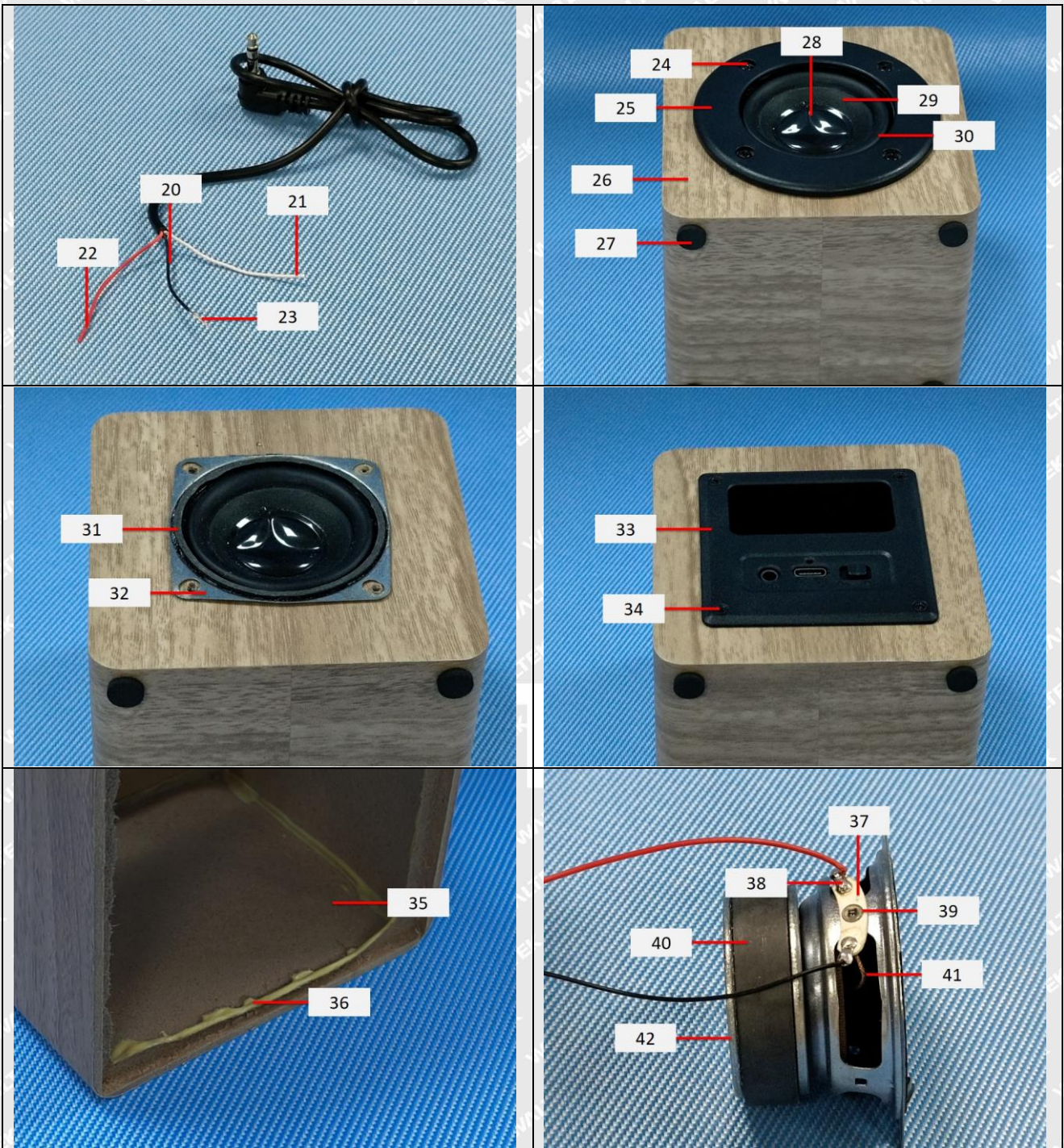
- (7) “△”= As client’s requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.

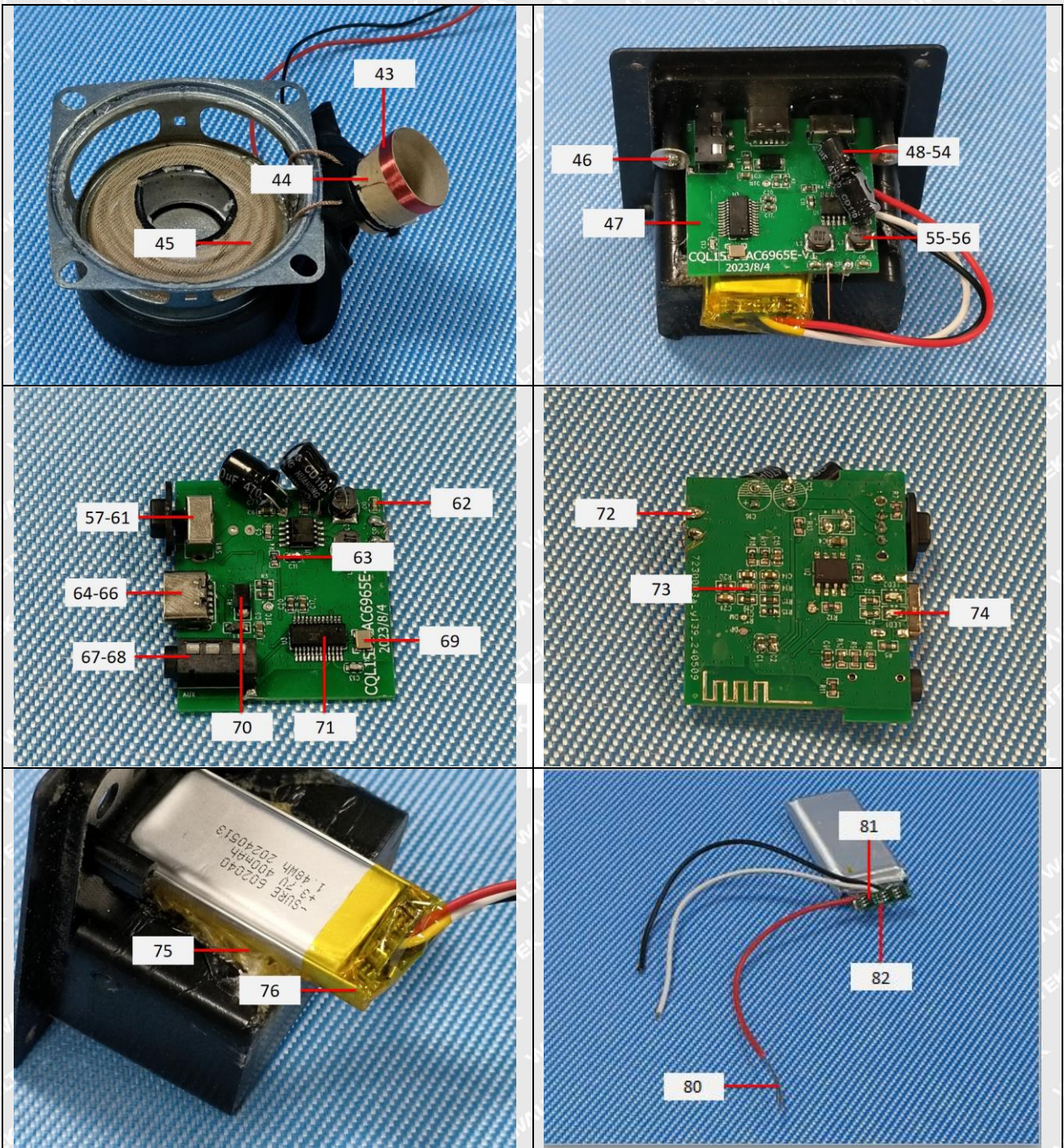
**Measurement Flowchart:**

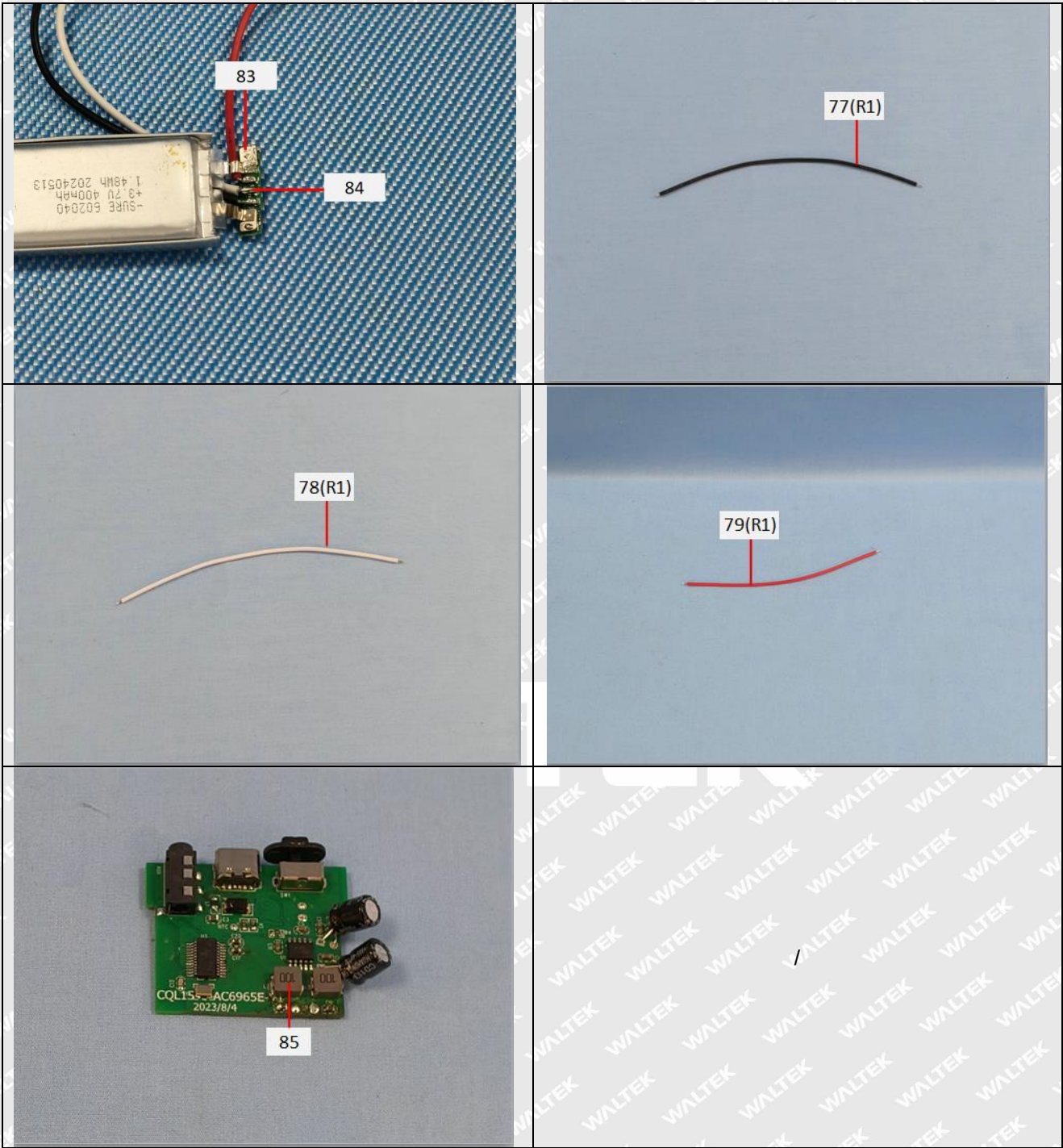


Photograph(s) of parts tested:









Report No.: WTF24F06150685R1C

Job No.: FSW2406281108CJ



Remarks:

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

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