



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No...... : WTF24F08196289A1C
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 : TWS earbuds in bamboo case
Sample Model..... : MO2303
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 : 2024-10-11 & 2024-10-21
Testing period : 2024-10-11 to 2024-10-18 & 2024-10-21 to 2024-10-24
Date of Issue..... : 2024-10-25
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



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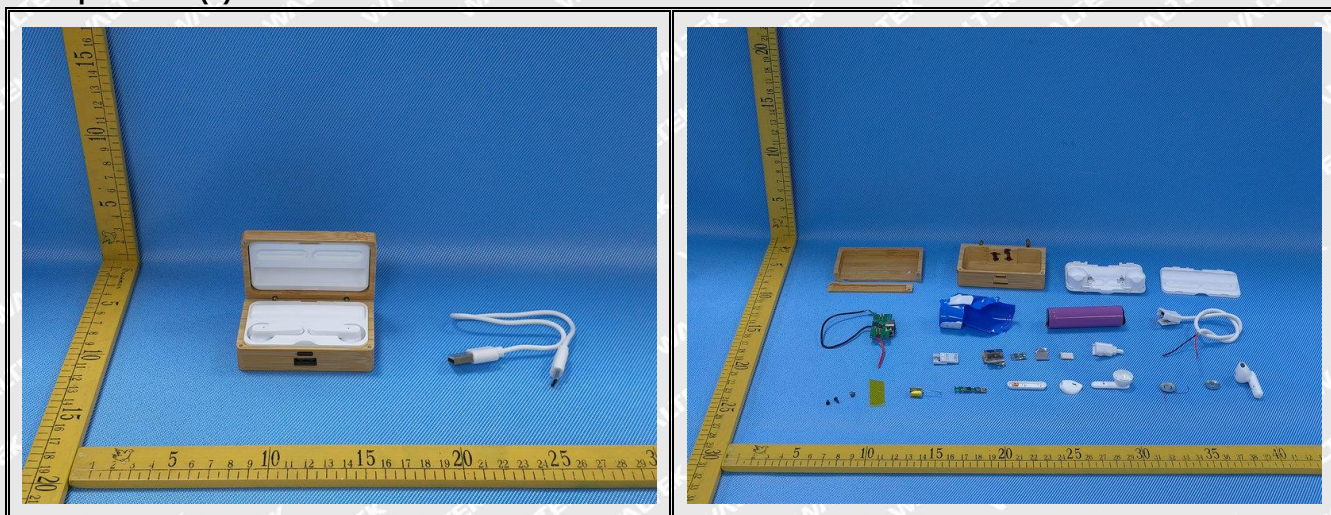
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Job No.: FSW2410110176CJ

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, Cadmium, Mercury, 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, cadmium, mercury, 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	White plastic wire jacket	BL	BL	BL	BL	BL	NA
2	White plastic jacket (USB plug)	BL	BL	BL	BL	BL	NA
3	Black dark glue (USB plug)	BL	BL	BL	BL	BL	NA
4	White plastic core (USB plug)	BL	BL	BL	BL	BL	NA
5	Silvery metal shell (USB plug)	BL	BL	BL	BL	--	NA
6	Golden metal pin (USB plug)	BL	BL	BL	BL	--	NA
7	Solder (USB plug)	BL	BL	BL	BL	--	NA
8	White plastic jacket (Type-C plug)	BL	BL	BL	BL	BL	NA
9	Silvery metal pin (Type-C plug)	BL	BL	BL	BL	--	NA
10	White plastic core (Type-C plug)	BL	BL	BL	BL	BL	NA
11	Silvery metal shell (Type-C plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
12	Chip resistor (Type-C plug)	BL	IN	BL	BL	BL	Pb :596
13	Blue PCB (Type-C plug)	BL	BL	BL	BL	BL	NA
14	Solder (Type-C plug)	BL	IN	BL	BL	--	Pb :67
15	Black plastic wire covering	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	
16	Red plastic wire covering	BL	BL	BL	BL	BL	NA
17	Coppery metal wire	BL	BL	BL	BL	--	NA
18	Silvery magnet part	BL	BL	BL	BL	--	NA
19	White plastic shell	BL	BL	BL	BL	BL	NA
20	Brown wood shell	BL	BL	BL	BL	BL	NA
21(R1)	Coppery metal part	IN	OL	BL	BL	--	Cd :24 #Pb : 2.72×10 ⁴
22	Blue plastic film	BL	BL	BL	BL	BL	NA
23	White sponge adhesive tape	BL	BL	BL	BL	BL	NA
24	Silvery metal screw with black plating	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
25	Silvery magnetic part	BL	BL	BL	BL	--	NA
26	Black plastic core (socket)	BL	BL	BL	BL	BL	NA
27	Silvery metal shell (socket)	BL	BL	BL	BL	--	NA
28	Silvery metal pin (socket)	BL	BL	BL	BL	--	NA
29	Black plastic wire covering	BL	BL	BL	BL	BL	NA
30	Golden metal pin	IN	OL	BL	BL	--	Cd :19 #Pb : 2.60×10 ⁴
31	Silvery metal spring	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
32	Chip IC	BL	BL	BL	BL	BL	NA
33	Red plastic wire covering	BL	BL	BL	BL	BL	NA
34	Silvery metal wire	BL	BL	BL	BL	--	NA
35	Green PCB	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	
36	Black plastic core (socket)	BL	BL	BL	BL	BL	NA
37	Silvery metal shell (socket)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
38	Silvery metal pin (socket)	BL	BL	BL	BL	--	NA
39	Chip LED	BL	BL	BL	BL	BL	NA
40	Chip EC	BL	BL	BL	BL	BL	NA
41	Chip capacitor	BL	BL	BL	BL	BL	NA
42	Solder	BL	BL	BL	BL	--	NA
43	Black magnetic shell (inductor)	BL	BL	BL	IN	--	Cr ⁶⁺ : ND
44	Copper varnished wire (inductor)	BL	BL	BL	BL	BL	NA
45	White dry glue	BL	BL	BL	BL	BL	NA
46	Purple plastic film	BL	BL	BL	BL	BL	NA
47	Dark green paper sheet with adhesive	BL	BL	BL	BL	BL	NA
48	Dark silvery metal net	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
49	Golden metal pin	IN	OL	BL	BL	--	Cd :19 #Pb : 3.43×10 ⁴
50	White plastic shell	BL	BL	BL	BL	BL	NA
51	Chip MIC	BL	BL	BL	BL	BL	NA
52	Chip capacitor	BL	BL	BL	BL	BL	NA
53	Copper metal foil	BL	BL	BL	BL	--	NA
54	Chip crystal oscillator	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND
55(R1)	Solder	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	Silvery metal shell	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
57	Red plastic wire covering	BL	BL	BL	BL	BL	NA
58	Black-white fabric adhesive tape	BL	BL	BL	BL	BL	NA
59	Solder	BL	BL	BL	BL	--	NA
60	White dry glue	BL	BL	BL	BL	BL	NA
61	Green PCB	BL	BL	BL	BL	BL	NA
62	Black plastic wire covering	BL	BL	BL	BL	BL	NA
63	Silvery metal sheet	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
64	White plastic adhesive tape	BL	BL	BL	BL	BL	NA
65	Transparent plastic film	BL	BL	BL	BL	BL	NA
66	Coppery varnished wire	BL	BL	BL	BL	BL	NA
67	Silvery magnetic part	BL	BL	BL	BL	--	NA
68	White plastic wire covering	BL	BL	BL	BL	BL	NA
69	Brown plastic adhesive tape	BL	BL	BL	BL	BL	NA
70	Blue plastic wire covering	BL	BL	BL	BL	BL	NA

**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

-- = 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, $\mu\text{g}/\text{cm}^2$ = 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 Cr⁶⁺ for polymer and composite sample is 8 mg/kg and LOQ of Cr⁶⁺ 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)



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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) 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).

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+8 [△]	ND	ND	341	ND
T02	3+45+60 [△]	ND	ND	ND	ND
T03	4+10+19+26+36 [△]	ND	ND	ND	ND
T04	5	--	--	--	--
T05	6	--	--	--	--
T06	7	--	--	--	--
T07	9	--	--	--	--
T08	11	--	--	--	--
T09	12+32+39+40+41 [△]	ND	ND	ND	ND
T10	13+35+61 [△]	ND	ND	ND	ND
T11	14	--	--	--	--
T12	15+16+29 [△]	ND	ND	ND	ND
T13	17	--	--	--	--
T14	18	--	--	--	--
T15	20	ND	ND	ND	ND
T16	21(R1)	--	--	--	--
T17	22+65 [△]	ND	ND	ND	ND
T18	23	464	ND	118	ND
T19	24	--	--	--	--
T20	25	--	--	--	--
T21	27	--	--	--	--
T22	28	--	--	--	--
T23	30	--	--	--	--
T24	31	--	--	--	--



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Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T25	33+57+62 [△]	ND	ND	ND	ND
T26	34	--	--	--	--
T27	37	--	--	--	--
T28	38	--	--	--	--
T29	42	--	--	--	--
T30	43	--	--	--	--
T31	44+46 [△]	ND	ND	ND	ND
T32	47	ND	ND	ND	ND
T33	48	--	--	--	--
T34	49	--	--	--	--
T35	50	ND	ND	ND	ND
T36	51+52+54 [△]	ND	ND	ND	ND
T37	53	--	--	--	--
T38	55(R1)	--	--	--	--
T39	56	--	--	--	--
T40	58	136	ND	ND	ND
T41	59	--	--	--	--
T42	63	--	--	--	--
T43	64+69 [△]	173	ND	ND	ND
T44	66	ND	ND	ND	ND
T45	67	--	--	--	--
T46	68+70 [△]	ND	ND	ND	ND
T47	69	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

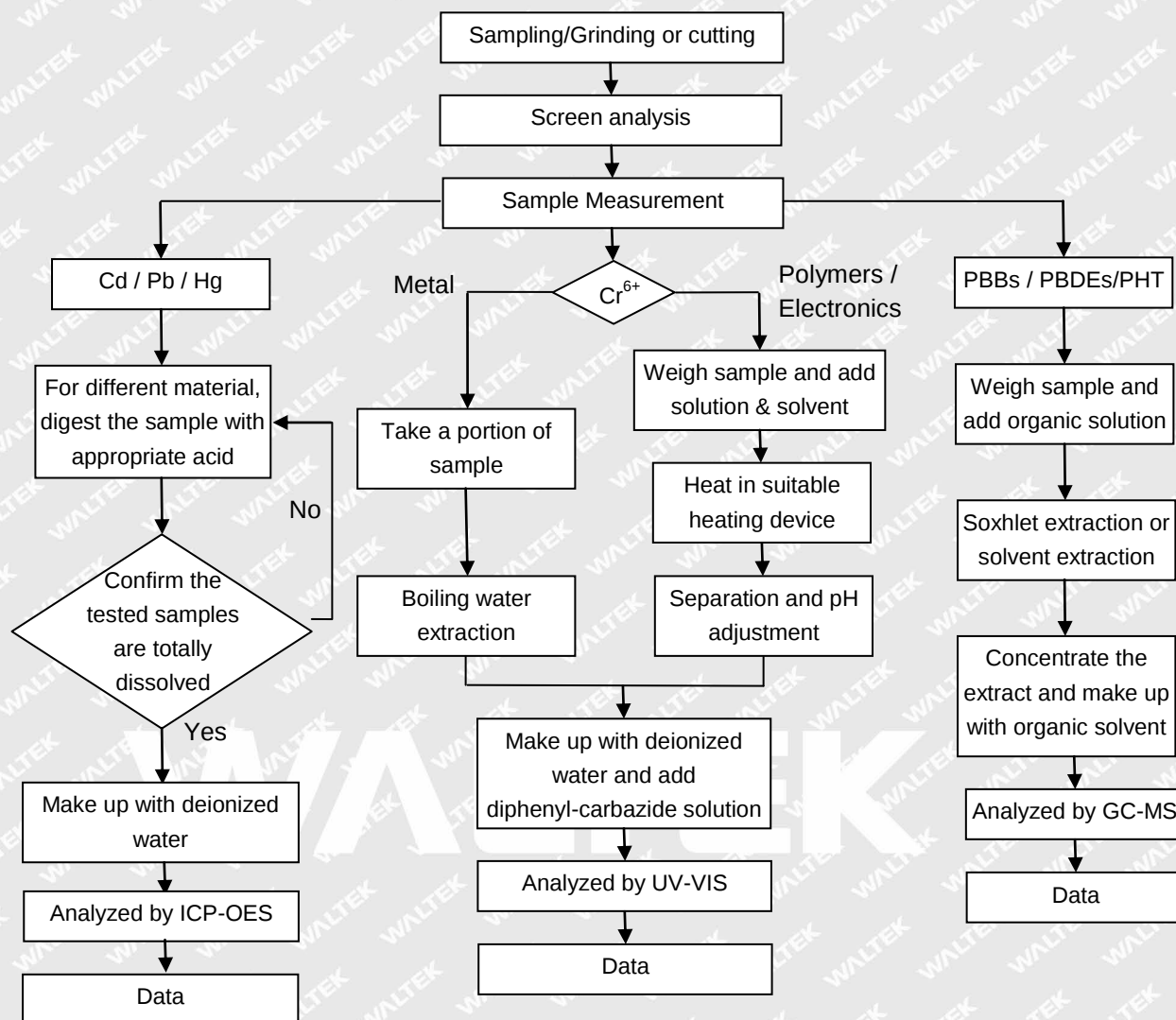
- (5) Abbreviation:

“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

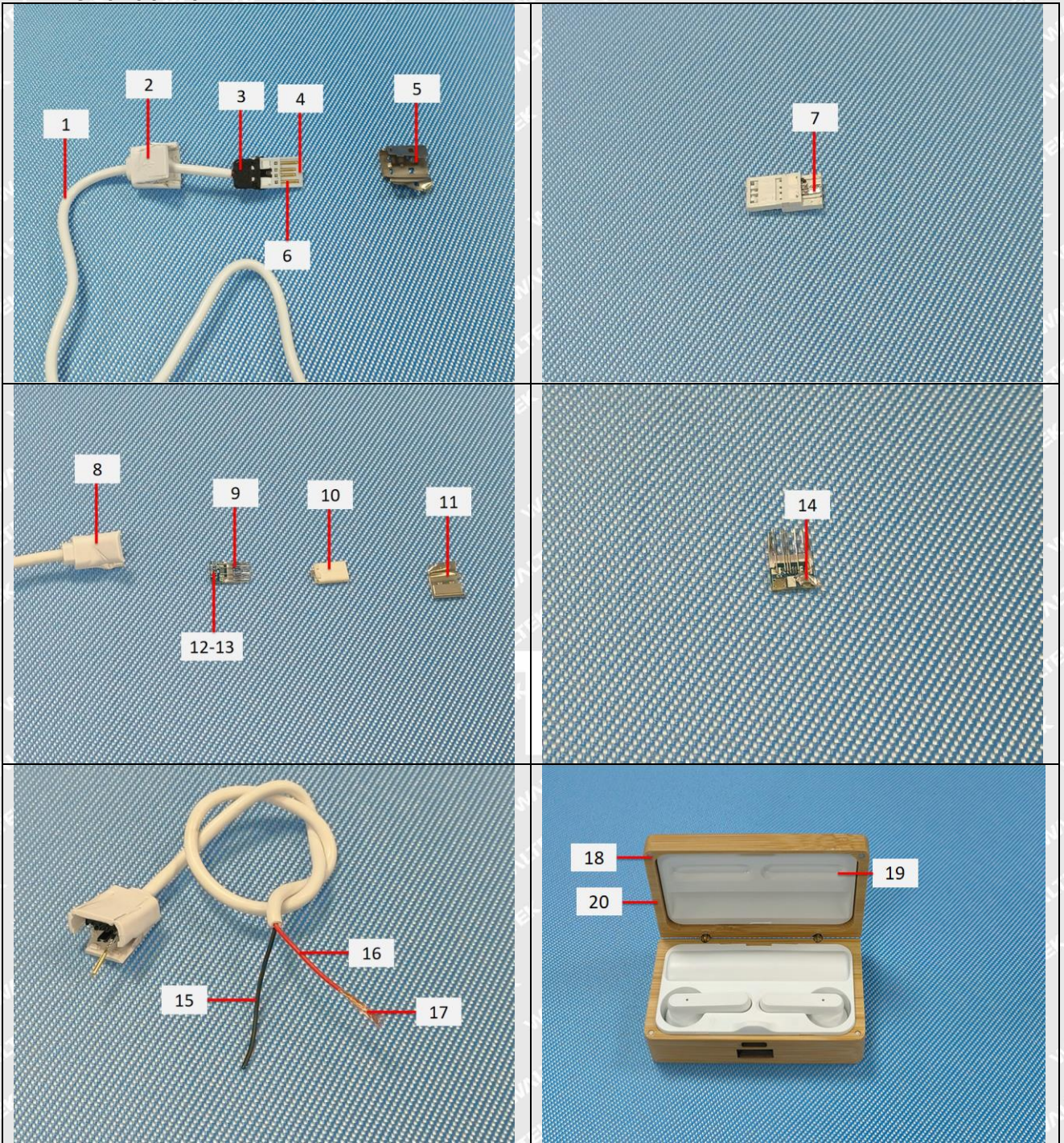
Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

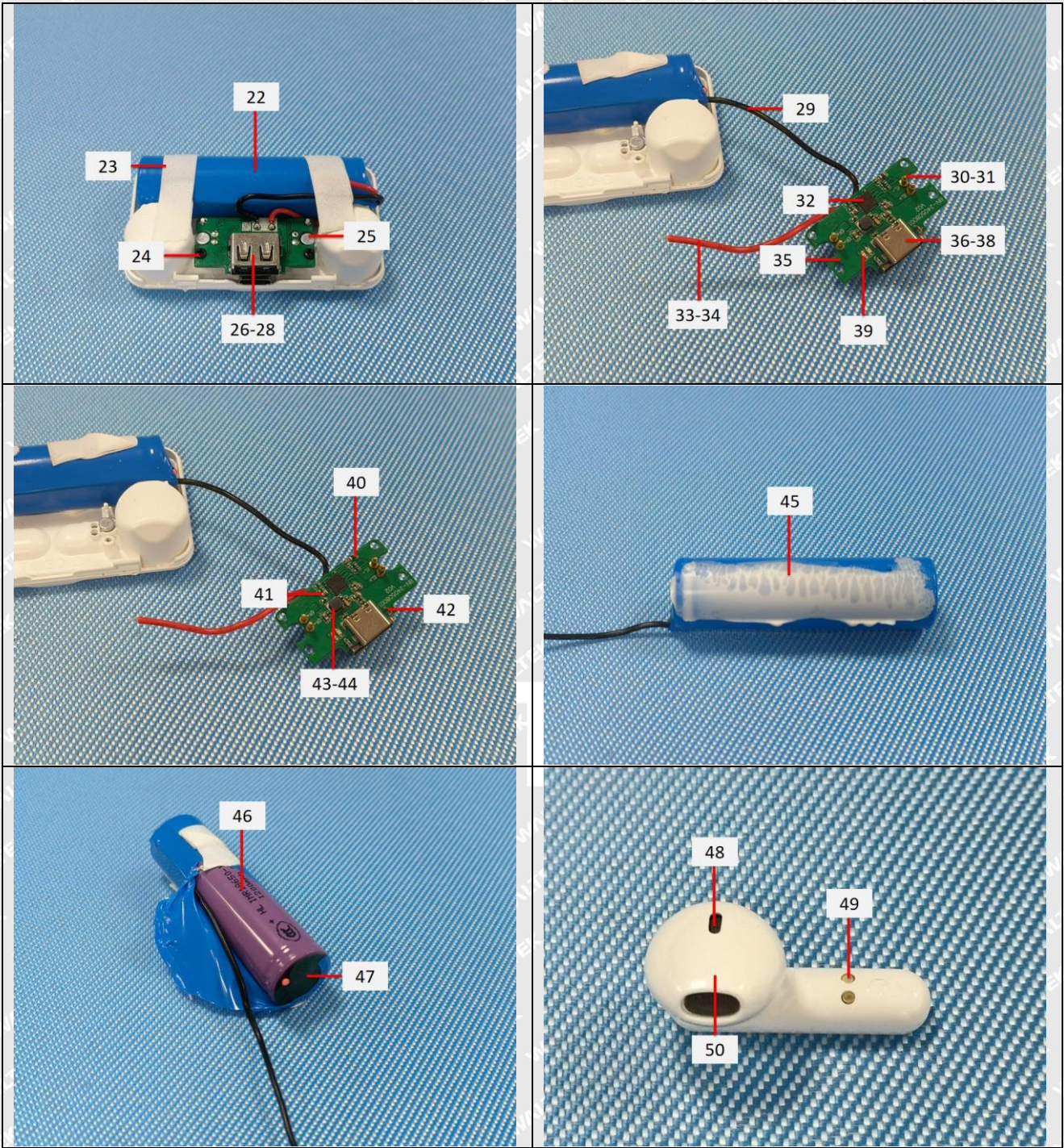
- (7) “△”= As client's requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.

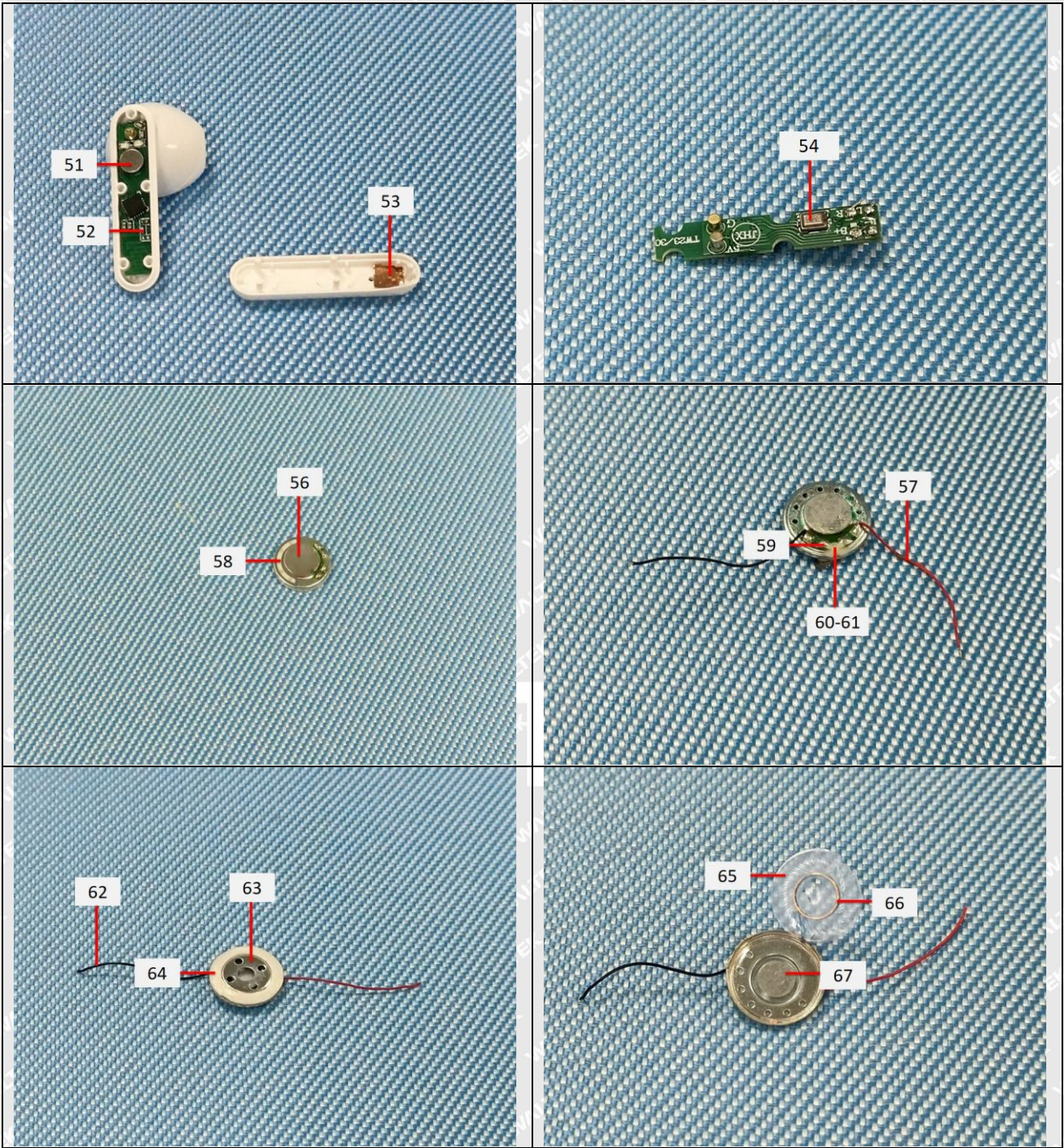
**Measurement Flowchart:**

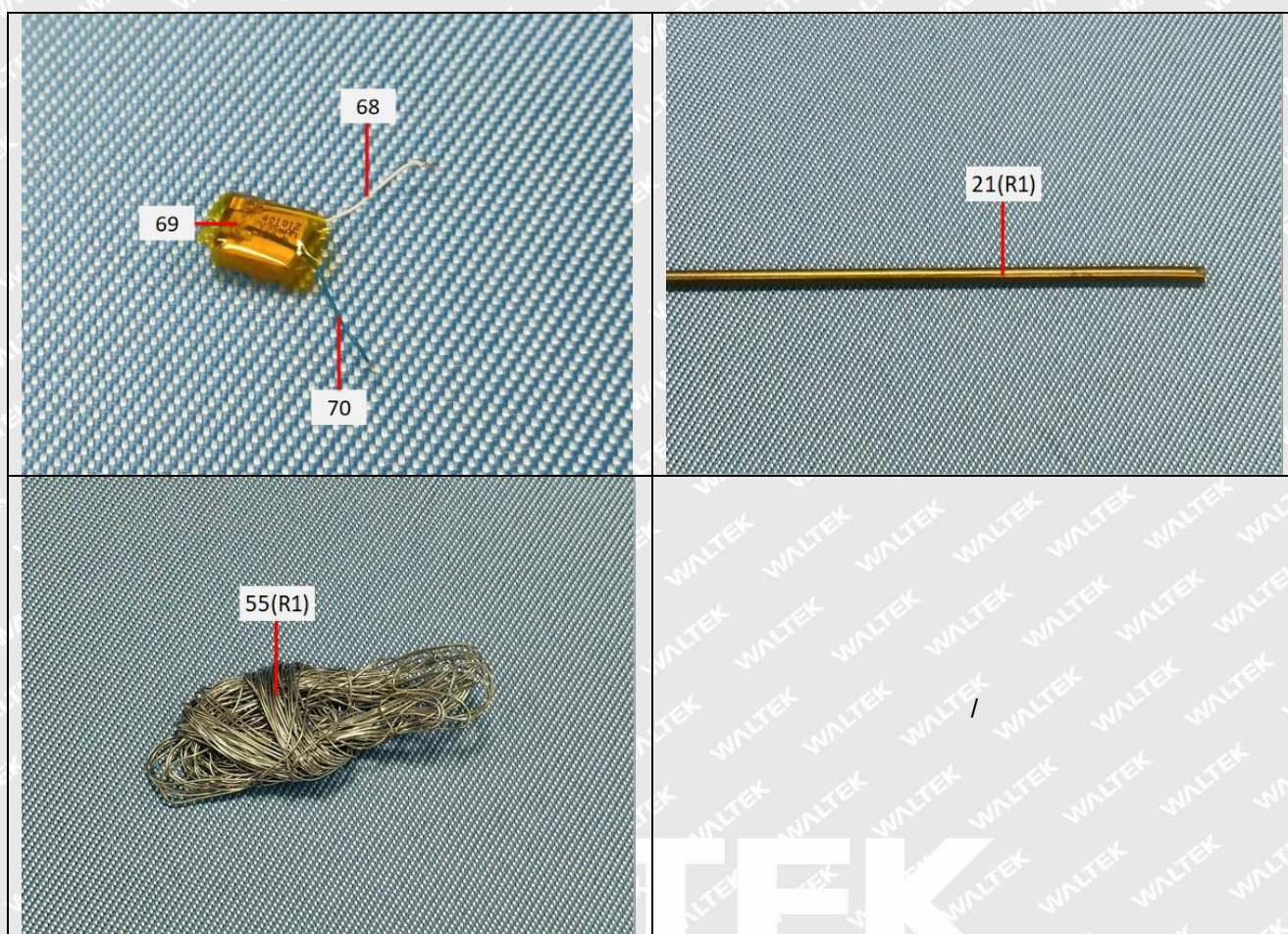


Photograph(s) of parts tested:







**Remarks:**

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