



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No...... : WTF23F10227429A1C
Applicant..... : Mid Ocean Brands B.V.
Address..... : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer : 118144
Sample Name : ABS TWS earbuds
Sample Model..... : MO2206
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)
Date of Receipt sample : 2023-10-24 & 2023-11-28
Testing period : 2023-10-24 ~ 2023-11-24 & 2023-11-28 ~ 2023-12-01
Date of Issue..... : 2023-12-04
Test Result..... : Refer to next page (s)



Prepared By:

Waltek Testing Group (Foshan) Co., Ltd.

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Signed for and on behalf of
Waltek Testing Group (Foshan) Co., Ltd.

Swing.Liang



Report No.: WTF23F10227429A1C

Test Requested : In accordance with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863.

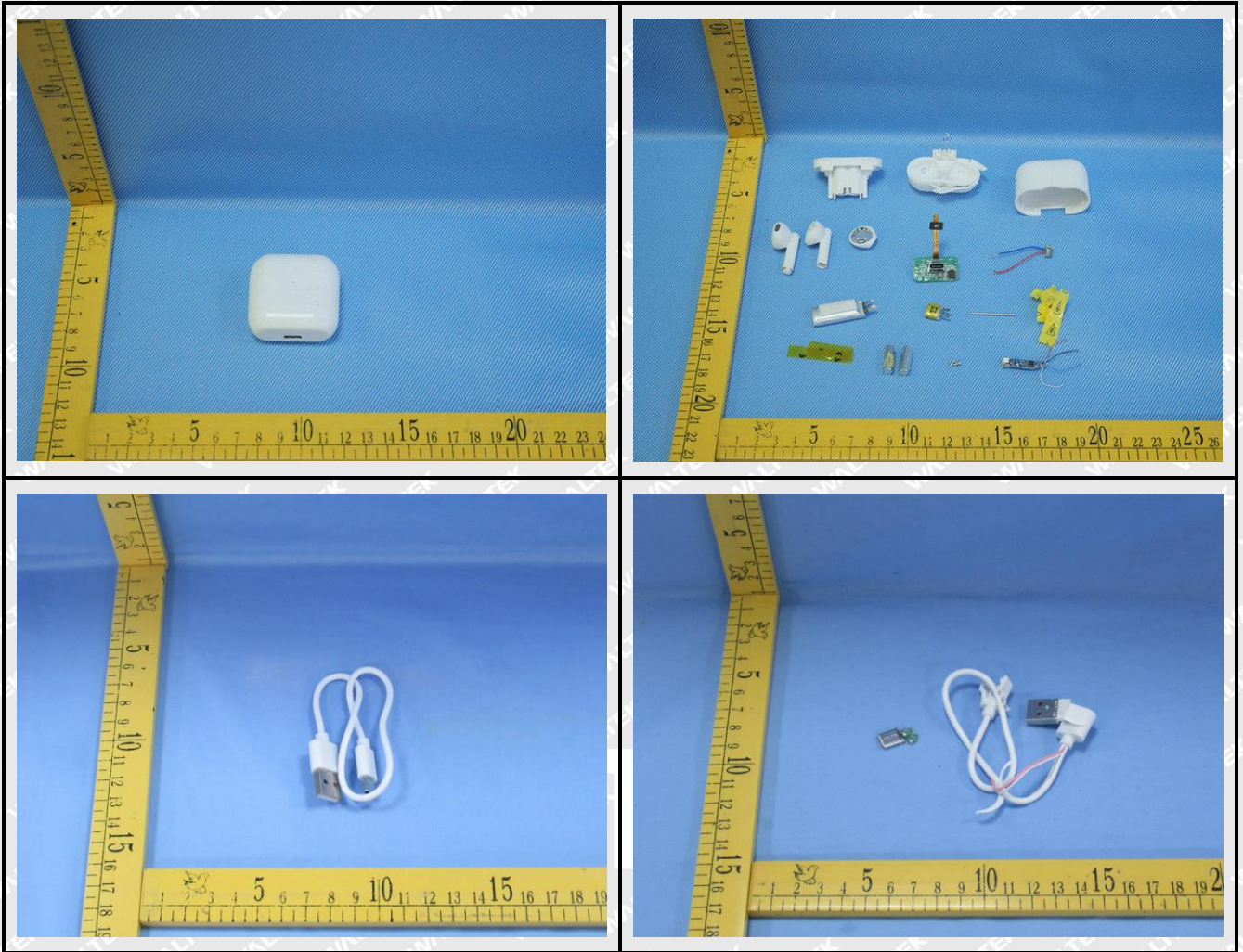
Test Method..... : 1) With reference to IEC 62321-2:2021, disassembly, disjunction and mechanical sample preparation
2) With reference to IEC 62321-3-1:2013, screening - Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry
3) With reference to IEC 62321-4:2013+AMD1:2017 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
7) With reference to IEC 62321-8:2017, determination of Phthalates content by GC-MS.

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Sample Photo(s):



**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)	Note
		Cd	Pb	Hg	Cr	Br		
1	White plastic shell	BL	BL	BL	BL	BL	NA	•
2	Silvery metal strip	BL	BL	BL	BL	--	NA	•
3	White plastic shell	BL	BL	BL	BL	BL	NA	•
4	Silvery magnetic block	BL	BL	BL	IN	--	Cr ⁶⁺ : ND	•
5	Yellow plastic adhesive tape with black printing	BL	BL	BL	BL	BL	NA	•
6	Silvery metal axle	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative	•
7	Silvery metal axle	BL	BL	BL	BL	--	NA	•
8	Chip LED	BL	BL	BL	BL	BL	NA	•
9	Black sponge gasket with adhesive tape	BL	BL	BL	BL	BL	NA	•
10	Chip IC	BL	BL	BL	BL	BL	NA	•
11	Solder	BL	IN	BL	BL	--	Pb :183	•
12	Chip capacitor	BL	BL	BL	BL	BL	NA	•
13	Silvery metal screw	BL	BL	BL	BL	--	NA	•
14	Silvery metal shell (socket)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative	•
15	Black plastic core (socket)	BL	BL	BL	BL	BL	NA	•
16	Silvery metal pin (socket)	BL	BL	BL	BL	--	NA	•
17	Chip resistor	BL	OL	BL	BL	BL	*Pb : 7.40×10 ³	•
18	Green PCB	BL	BL	BL	BL	BL	NA	•
19	Black-grey plastic shell (socket)	BL	BL	BL	BL	BL	NA	•



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)	Note
		Cd	Pb	Hg	Cr	Br		
20	Silvery metal pin (socket)	BL	BL	BL	BL	--	NA	•
21	Black plastic shell (socket)	BL	BL	BL	BL	BL	NA	•
22	Black magnetic core(transformer)	BL	BL	BL	IN	--	Cr ⁶⁺ : ND	•
23	Coppery varnished wire(transformer)	BL	BL	BL	BL	BL	NA	•
24	Silvery metal pin (socket)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative	•
25	Off-white plastic shell (socket)	BL	BL	BL	BL	BL	NA	•
26	Black plastic shell	BL	BL	BL	BL	BL	NA	•
27	Red plastic wire covering	BL	BL	BL	BL	BL	NA	•
28	Brown plastic adhesive tape	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND	•
29	White sponge adhesive tape	BL	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	•
32	Chip IC	BL	BL	BL	BL	BL	NA	•
33	Chip capacitor	BL	BL	BL	BL	BL	NA	•
34	Chip resistor	BL	BL	BL	BL	BL	NA	•
35	Solder	BL	BL	BL	BL	--	NA	•
36	Silvery metal sheet	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative	•
37	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND	•
38	White plastic part with silvery plating	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND	•
39	White plastic shell	BL	BL	BL	BL	BL	NA	•



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)	Note
		Cd	Pb	Hg	Cr	Br		
40	Silvery metal shell	BL	BL	BL	BL	--	NA	•
41	Silvery metal net with adhesive tape	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative	•
42	Black synthetic leather with adhesive tape	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND	•
43	Silvery metal shell	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative	•
44	Blue dry glue	BL	BL	BL	BL	BL	NA	•
45	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND	•
46	White plastic sheet with adhesive tape	BL	BL	BL	BL	BL	NA	•
47	Solder	BL	IN	BL	BL	--	Pb :183	•
48	Transparent plastic film	BL	BL	BL	BL	BL	NA	•
49	Black sponge gasket with adhesive tape	BL	BL	BL	BL	BL	NA	•
50	Red-coppery varnished wire	BL	BL	BL	BL	BL	NA	•
51	Silvery metal shell	BL	BL	BL	BL	--	NA	•
52	Chip MIC	BL	BL	BL	BL	BL	NA	•
53	White plastic wire covering	BL	BL	BL	BL	BL	NA	•
54	Blue plastic wire covering	BL	BL	BL	BL	BL	NA	•
55	Black plastic wire covering	BL	BL	BL	BL	BL	NA	•
56	Red plastic wire covering	BL	BL	BL	BL	BL	NA	•
57	Silvery metal wire	BL	BL	BL	BL	--	NA	•
58	Chip crystal oscillator	BL	BL	BL	BL	BL	NA	•
59	White plastic base	BL	BL	BL	BL	BL	NA	•



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)	Note
		Cd	Pb	Hg	Cr	Br		
60	Golden metal shell	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative	•
61	Chip IC	BL	BL	BL	BL	BL	NA	•
62	Chip capacitor	BL	BL	BL	BL	BL	NA	•
63	Solder	BL	IN	BL	BL	--	Pb :183	•
64	Chip resistor	BL	OL	BL	BL	BL	*Pb : 9.24×10^3	•
65	Chip LED	BL	BL	BL	BL	BL	NA	•
66	Blue PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND	•
67	White plastic wire jacket	BL	BL	BL	BL	BL	NA	Same WTF23F1 0227060 A1C-75
68	White plastic jacket(Type-C plug)	BL	BL	BL	BL	BL	NA	Same WTF23F1 0227060 A1C-76
69	White plastic core(USB plug)	BL	BL	BL	BL	BL	NA	Same WTF23F1 0227060 A1C-77
70	Silvery metal shell(USB plug)	BL	BL	BL	BL	--	NA	Same WTF23F1 0227060 A1C-78
71	Silvery metal pin(USB plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative	Same WTF23F1 0227060 A1C-79
72	Solder(USB plug)	BL	BL	BL	BL	--	NA	Same WTF23F1 0227060 A1C-80
73	White plastic wire covering	BL	BL	BL	BL	BL	NA	Same WTF23F1 0227060 A1C-81



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)	Note
		Cd	Pb	Hg	Cr	Br		
74	Pink plastic wire covering	BL	BL	BL	BL	BL	NA	Same WTF23F1 0227060 A1C-82
75	Coppery metal wire	BL	BL	BL	BL	--	NA	Same WTF23F1 0227060 A1C-83
76	White plastic jacket(USB plug)	BL	BL	BL	BL	BL	NA	Same WTF23F1 0227060 A1C-84
77	Green PCB(Type-C plug)	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND	Same WTF23F1 0227060 A1C-85
78	Silvery metal shell(Type-C plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative	Same WTF23F1 0227060 A1C-86
79	Silvery metal pin(Type-C plug)	BL	BL	BL	BL	--	NA	Same WTF23F1 0227060 A1C-87
80	Black plastic core(Type-C plug)	BL	BL	BL	BL	BL	NA	Same WTF23F1 0227060 A1C-88
81	Chip resistor(Type-C plug)	BL	BL	BL	BL	BL	NA	Same WTF23F1 0227060 A1C-89
82	Solder(Type-C plug)	BL	BL	BL	BL	--	NA	Same WTF23F1 0227060 A1C-90
83	White plastic wire covering	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 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 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 ug/cm².

Positive = Presence of Cr⁶⁺ coating, the detected concentration in boiling water extraction solution is greater than 0.13 ug/cm².

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.

- (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) “●” = Actual tested sample. Chemical tests were performed for the samples indicated by the photo in this report.

- (12) “Same” = It means that as per client’s requirement, the sample and the actual tested sample are of the same material (or results of the sample are quoted from corresponding number report) and have not been tested.

- (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.

2. Phthalates:

Serial No.	Part No.	Result (mg/kg)				Note
		DBP	BBP	DEHP	DIBP	
T01	1	ND	ND	ND	ND	●
T02	2	--	--	--	--	●
T03	3	ND	ND	ND	ND	●
T04	4	--	--	--	--	●
T05	5	ND	ND	ND	ND	●
T06	6	--	--	--	--	●
T07	7	--	--	--	--	●
T08	8	ND	ND	ND	ND	●
T09	9	238	ND	ND	ND	●
T10	10	ND	ND	ND	ND	●
T11	11	--	--	--	--	●
T12	12	ND	ND	ND	ND	●
T13	13	--	--	--	--	●
T14	14	--	--	--	--	●
T15	15	ND	ND	ND	ND	●
T16	16	--	--	--	--	●
T17	17	ND	ND	ND	ND	●
T18	18	ND	ND	ND	ND	●
T19	19	ND	ND	ND	ND	●
T20	20	--	--	--	--	●
T21	21	ND	ND	ND	ND	●
T22	22	--	--	--	--	●



Serial No.	Part No.	Result (mg/kg)				Note
		DBP	BBP	DEHP	DIBP	
T23	23	ND	ND	ND	ND	•
T24	24	--	--	--	--	•
T25	25	ND	ND	ND	ND	•
T26	26	ND	ND	ND	ND	•
T27	27	ND	ND	ND	ND	•
T28	28	ND	ND	ND	ND	•
T29	29	ND	ND	ND	ND	•
T30	30	ND	ND	ND	ND	•
T31	31	--	--	--	--	•
T32	32	ND	ND	ND	ND	•
T33	33	ND	ND	ND	ND	•
T34	34	ND	ND	ND	ND	•
T35	35	--	--	--	--	•
T36	36	--	--	--	--	•
T37	37	ND	ND	ND	ND	•
T38	38	ND	ND	ND	ND	•
T39	39	ND	ND	ND	ND	•
T40	40	--	--	--	--	•
T41	41	--	--	--	--	•
T42	42	ND	ND	ND	ND	•
T43	43	--	--	--	--	•
T44	44	ND	ND	ND	ND	•
T45	45	ND	ND	ND	ND	•
T46	46	ND	ND	ND	ND	•
T47	47	--	--	--	--	•
T48	48	ND	ND	ND	ND	•
T49	49	213	ND	ND	ND	•
T50	50	ND	ND	ND	ND	•
T51	51	--	--	--	--	•
T52	52	ND	ND	ND	ND	•
T53	53+83 [△]	ND	ND	ND	ND	•
T54	54	ND	ND	ND	ND	•
T55	55	ND	ND	ND	ND	•
T56	56	ND	ND	ND	ND	•
T57	57	--	--	--	--	•
T58	58	ND	ND	ND	ND	•
T59	59	ND	ND	ND	ND	•
T60	60	--	--	--	--	•
T61	61	ND	ND	ND	ND	•
T62	62	ND	ND	ND	ND	•
T63	63	--	--	--	--	•
T64	64	ND	ND	ND	ND	•
T65	65	ND	ND	ND	ND	•
T66	66	ND	ND	ND	ND	•



Serial No.	Part No.	Result (mg/kg)				Note
		DBP	BBP	DEHP	DIBP	
T67	67	ND	ND	ND	ND	Same WTF23F10227060A1C-75
T68	68	ND	ND	ND	ND	Same WTF23F10227060A1C-76
T69	69	ND	ND	ND	ND	Same WTF23F10227060A1C-77
T70	70	--	--	--	--	Same WTF23F10227060A1C-78
T71	71	--	--	--	--	Same WTF23F10227060A1C-79
T72	72	--	--	--	--	Same WTF23F10227060A1C-80
T73	73	ND	ND	ND	ND	Same WTF23F10227060A1C-81
T74	74	ND	ND	ND	ND	Same WTF23F10227060A1C-82
T75	75	--	--	--	--	Same WTF23F10227060A1C-83
T76	76	ND	ND	ND	ND	Same WTF23F10227060A1C-84
T77	77	ND	ND	ND	ND	Same WTF23F10227060A1C-85
T78	78	--	--	--	--	Same WTF23F10227060A1C-86
T79	79	--	--	--	--	Same WTF23F10227060A1C-87
T80	80	ND	ND	ND	ND	Same WTF23F10227060A1C-88
T81	81	ND	ND	ND	ND	Same WTF23F10227060A1C-89
T82	82	--	--	--	--	Same WTF23F10227060A1C-90

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.

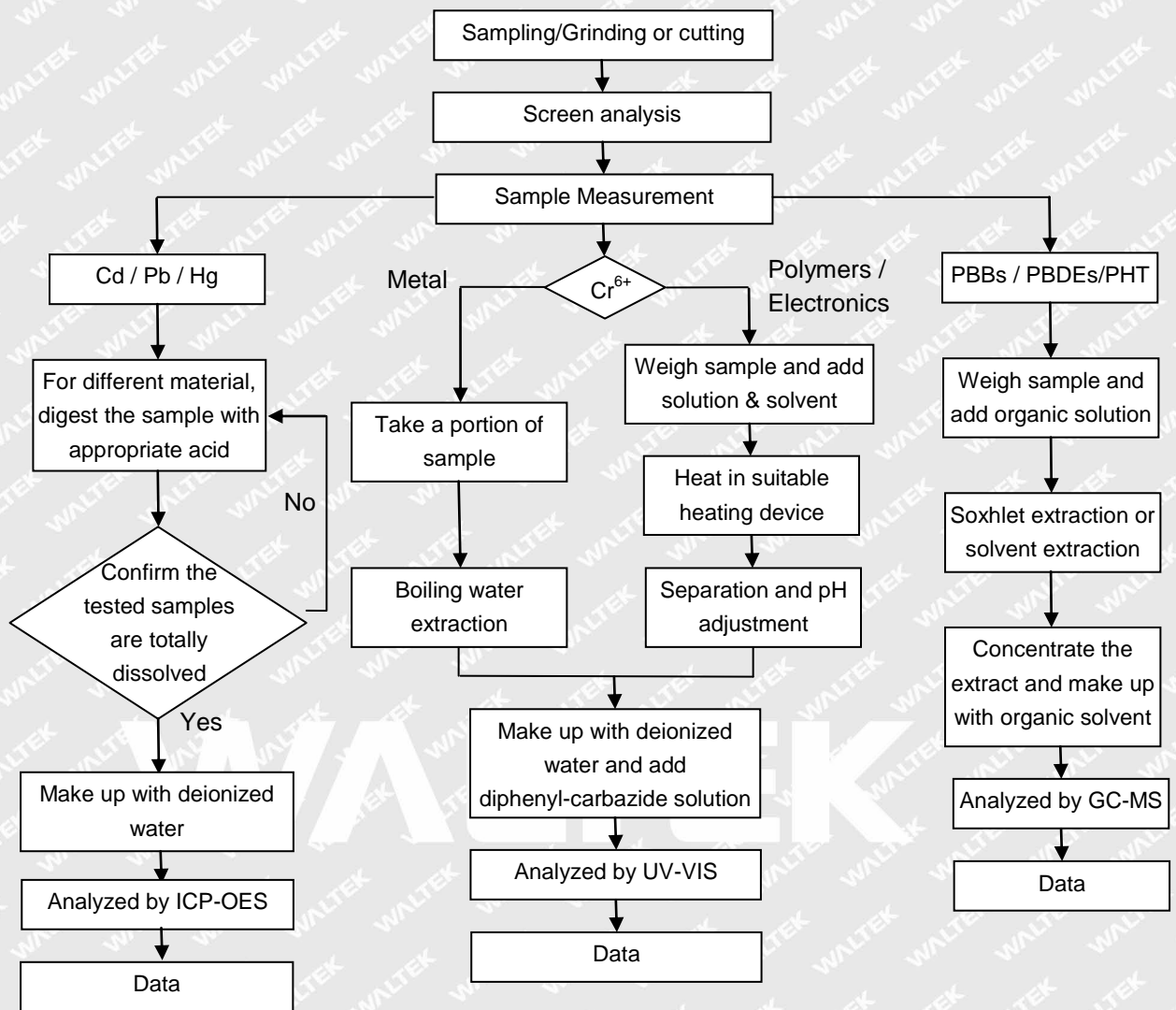
- (6) RoHS requirement

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) "●" = Actual tested sample. Chemical tests were performed for the samples indicated by the photo in this report.
- (8) "Same" = It means that as per client's requirement, the sample and the actual tested sample are of the same material (or results of the sample are quoted from corresponding number report) and have not been tested.
- (9) "△" = As client's requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.

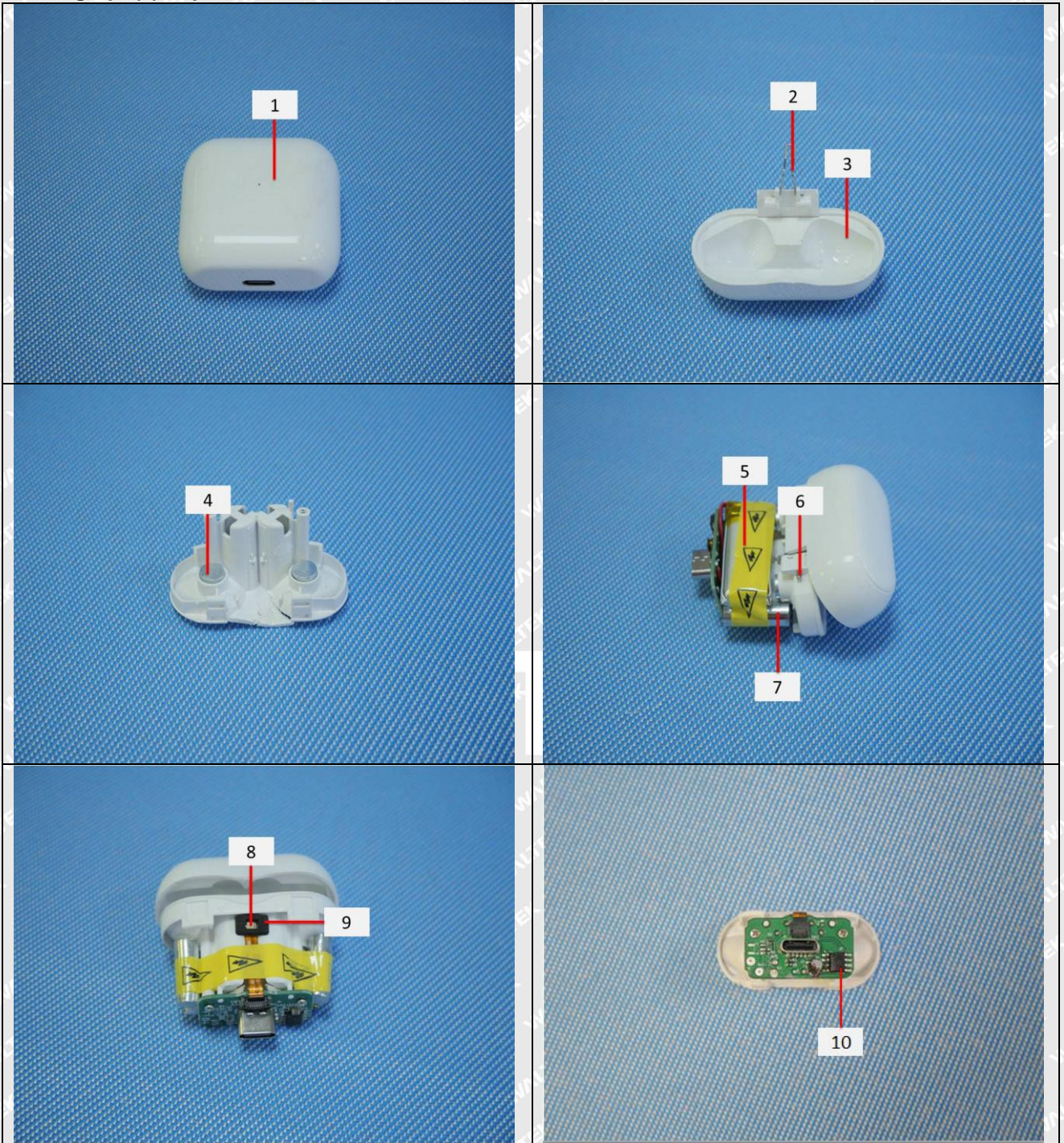


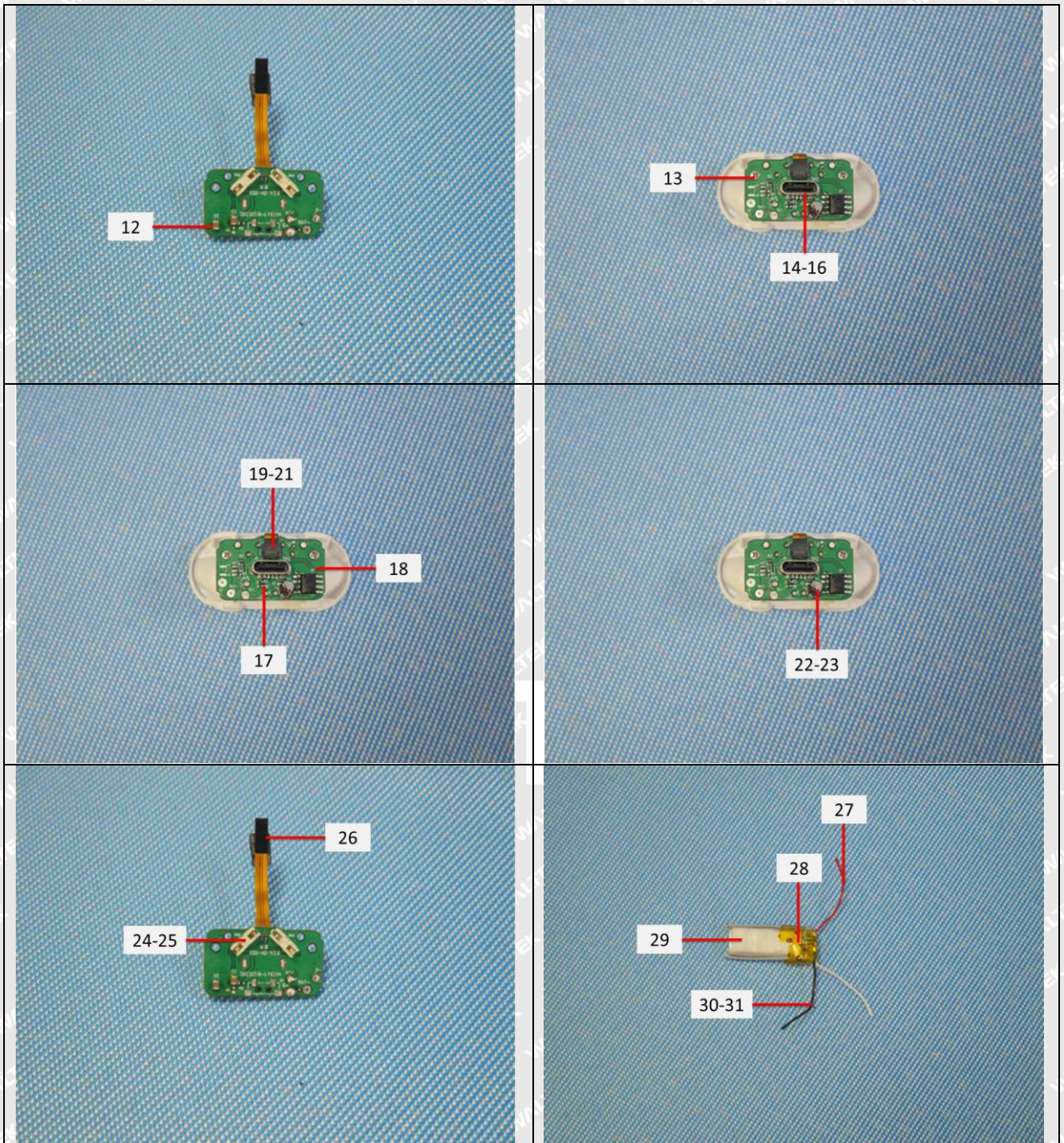
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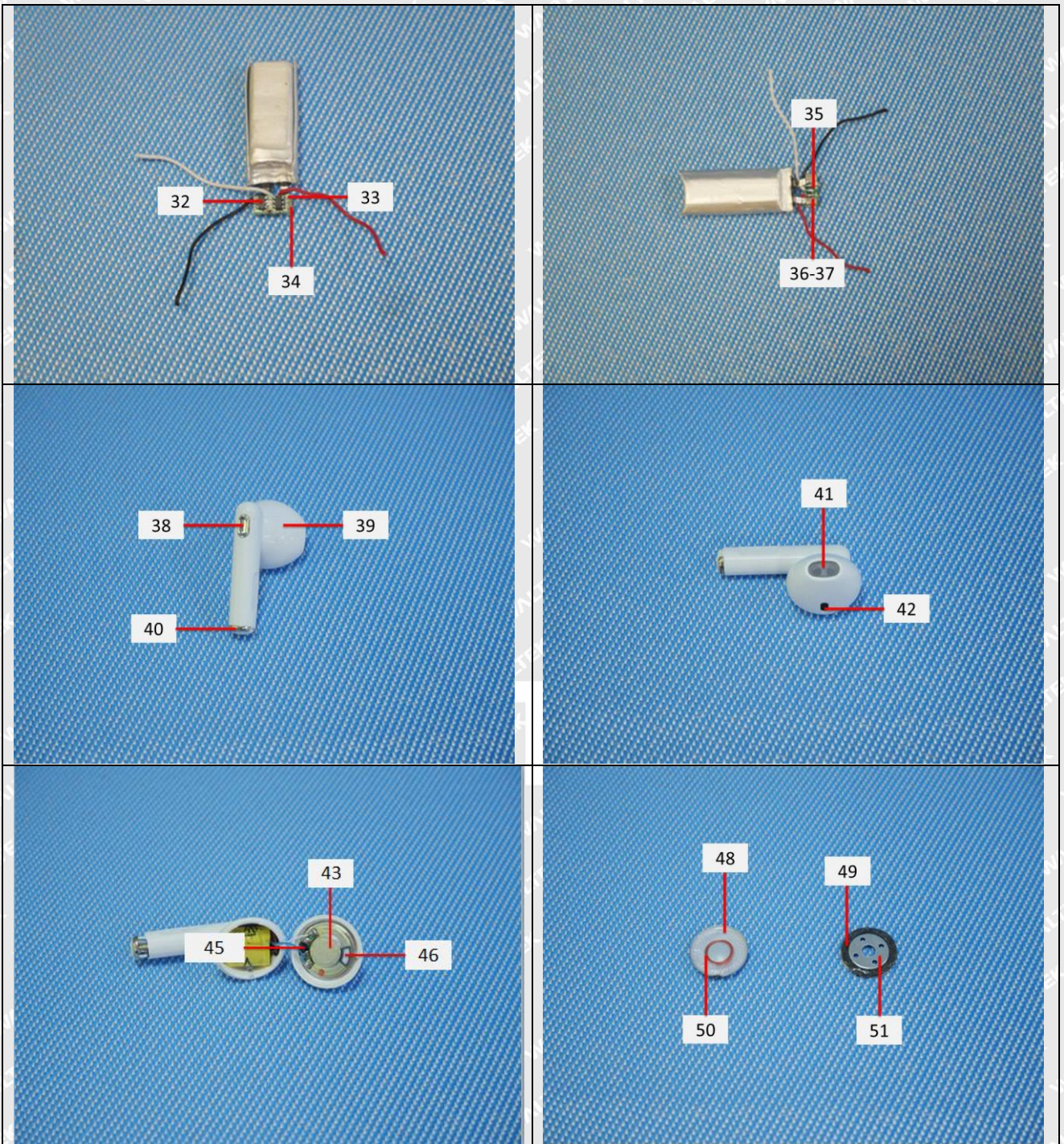


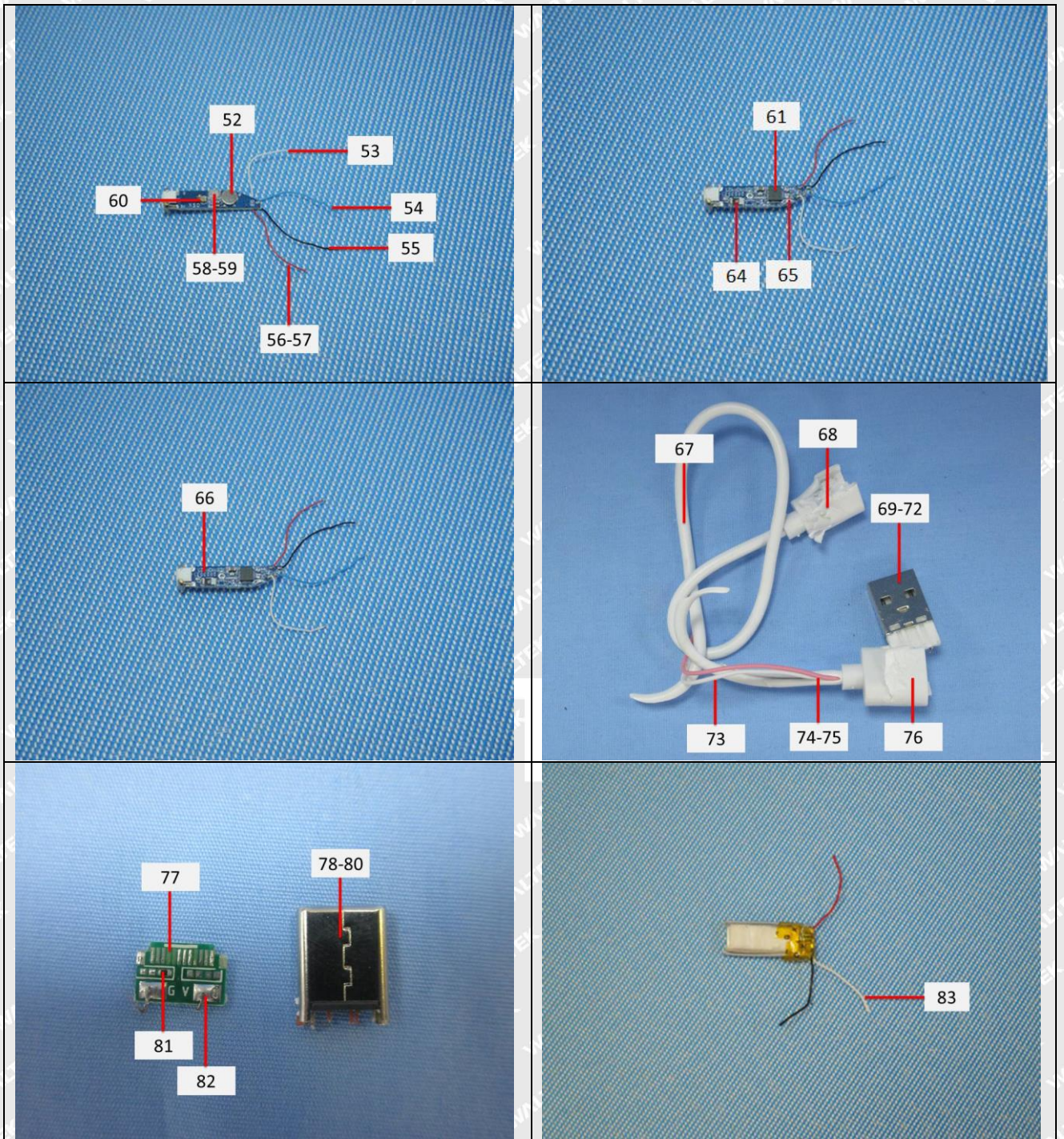


Photograph(s) of parts tested:











Remarks:

1. The results shown in this test report refer only to the sample(s) tested;
2. This test report cannot be reproduced, except in full, without prior written permission of the company;
3. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver;
4. The Applicant name and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which Waltek hasn't verified;
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6. The sample material information (Model No. information) is provided by client, not verified by test laboratory. The samples of reference Model No. are not tested. Test laboratory not responsible for the accuracy, appropriateness, completeness and authenticity of the information provided by client.

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