



中国认可  
国际互认  
检测  
TESTING  
CNAS L6478



# TEST REPORT

**Report No.**..... : WTF22F09190597A1C  
**Applicant**..... : Mid Ocean Brands B.V.  
**Address**..... : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong  
**Manufacturer** ..... : 118051  
**Sample Name** ..... : Solar bamboo wireless speaker  
**Sample Model**..... : MO6838  
**Date of Receipt sample** ..... : 2022-09-20 & 2022-11-25  
**Testing period** ..... : 2022-09-20 to 2022-11-22 & 2022-11-25 to 2022-11-30  
**Date of Issue**..... : 2022-12-01  
**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.: WTF22F09190597A1C

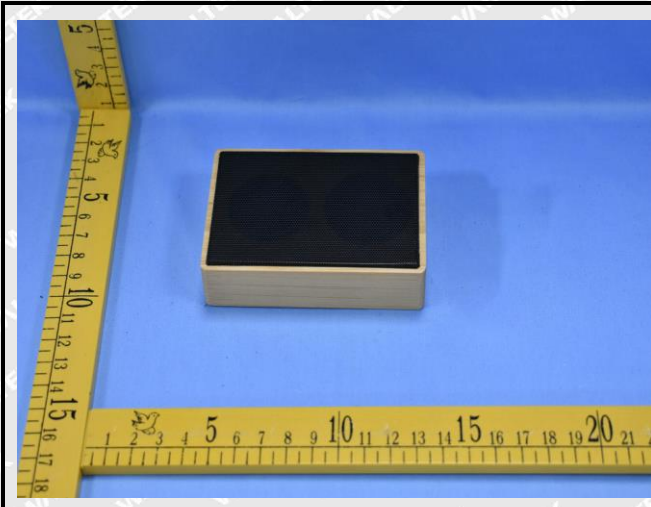
- Test Requested** ..... : In accordance with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863.
- Test Method**..... : 1) With reference to IEC 62321-2:2021, disassembly, disjunction and mechanical sample preparation  
2) With reference to IEC 62321-3-1:2013, screening - Lead, mercury, 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.
- 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)

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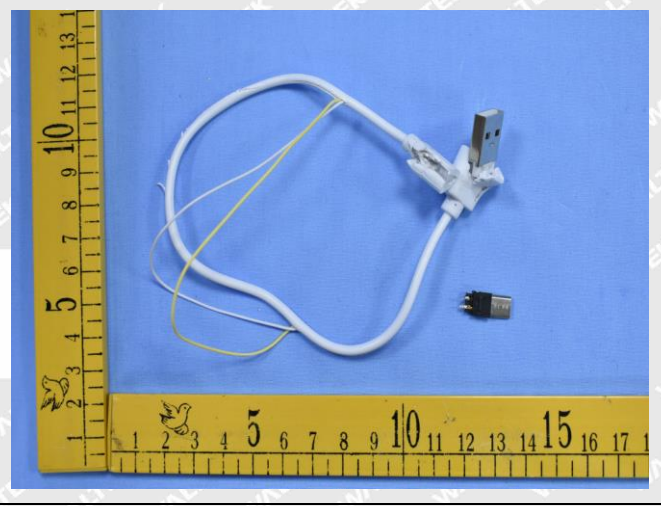
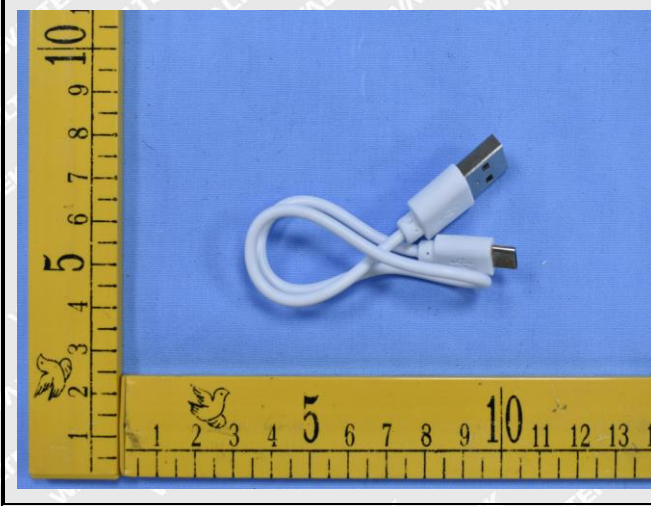
Sample Photo(s):



MO6838



MO6838



**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)
		Cd	Pb	Hg	Cr	Br	
1	Red plastic wire covering	BL	BL	BL	BL	BL	NA
2	Silvery metal wire	BL	BL	BL	BL	--	NA
3	Black plastic wire covering	BL	BL	BL	BL	BL	NA
4	Black sponge sheet with adhesive	BL	BL	BL	BL	BL	NA
5	Red plastic film	BL	BL	BL	BL	BL	NA
6	Silvery metal base	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
7	Semi-transparent hot melt glue	BL	BL	BL	BL	BL	NA
8	White plastic shell(connector)	BL	BL	BL	BL	BL	NA
9	Silvery metal pin(connector)	BL	BL	BL	BL	--	NA
10	Solder	BL	BL	BL	BL	--	NA
11	White paper sheet	BL	BL	BL	BL	BL	NA
12	Silvery metal rivet	BL	BL	BL	BL	--	NA
13	Black sponge sheet with adhesive	BL	BL	BL	BL	BL	NA
14	Brown wooden shell	BL	BL	BL	BL	BL	NA
15	Black soft plastic sheet	BL	BL	BL	BL	BL	NA
16	Silvery metal sheet with black coating	BL	BL	BL	BL	--	NA
17	Transparent double faced adhesive tape	BL	BL	BL	BL	BL	NA
18	Silvery metal net with black plating	BL	BL	BL	BL	--	NA
19	Transparent plastic sheet with black coating	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	
20	Black PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
21	Black plastic film	BL	BL	BL	BL	BL	NA
22	Silvery metal wire	BL	IN	BL	BL	--	Pb :292
23	Solder	BL	BL	BL	BL	--	NA
24	Red plastic wire covering	BL	BL	BL	BL	BL	NA
25	Black plastic wire covering	BL	BL	BL	BL	BL	NA
26	Silvery metal wire	BL	BL	BL	BL	--	NA
27	Black plastic ring	BL	BL	BL	BL	BL	NA
28	Black soft plastic sheet	BL	BL	BL	BL	BL	NA
29	Black plastic film	BL	BL	BL	BL	BL	NA
30	Black paper sheet	BL	BL	BL	BL	BL	NA
31	Brown paper holder	BL	BL	BL	BL	BL	NA
32	Red varnished wire	BL	BL	BL	BL	BL	NA
33	Coppery varnished wire	BL	BL	BL	BL	BL	NA
34	Brown fibrous net	BL	BL	BL	BL	BL	NA
35	Silvery metal holder	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
36	Silvery magnetic core	BL	BL	BL	IN	--	Cr <sup>6+</sup> : ND
37	Silvery metal screw with black plating	BL	BL	BL	BL	--	NA
38	Black plastic key(switch)	BL	BL	BL	BL	BL	NA
39	Black plastic base(switch)	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
40	Silvery metal shell(switch)	BL	BL	BL	BL	--	NA
41	Silvery metal sheet(switch)	BL	BL	BL	BL	--	NA
42	Chip capacitor	BL	BL	BL	BL	BL	NA
43	Chip LED	BL	BL	BL	BL	BL	NA
44	Silvery metal shell(socket)	BL	BL	BL	BL	--	NA
45	Silvery metal pin(socket)	BL	BL	BL	BL	--	NA
46	Black plastic core(socket)	BL	BL	BL	BL	BL	NA
47	Black sponge sheet with adhesive	BL	BL	BL	BL	BL	NA
48	Black plastic base(crystal oscillator)	BL	BL	BL	BL	BL	NA
49	Silvery crystal oscillator	BL	BL	BL	BL	BL	NA
50	Chip diode	BL	BL	BL	BL	BL	NA
51	Chip resistor	BL	BL	BL	IN	BL	Cr <sup>6+</sup> : ND
52	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
53	Chip IC	BL	BL	BL	BL	BL	NA
54	Chip IC	BL	BL	BL	BL	BL	NA
55	Beige plastic shell(socket)	BL	BL	BL	BL	BL	NA
56	Silvery metal pin(socket)	BL	BL	BL	BL	--	NA
57	Solder	BL	BL	BL	BL	--	NA
58	Yellow plastic adhesive tape	BL	BL	BL	BL	BL	NA
59	Yellow plastic sheet	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
60	Red plastic wire covering	BL	BL	BL	BL	BL	NA
61	Solder	BL	BL	BL	BL	--	NA
62	Silvery metal sheet	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
63	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
64	Black plastic wire covering	BL	BL	BL	BL	BL	NA
65	Silvery metal wire	BL	BL	BL	BL	--	NA
66	White plastic shell(connector)	BL	BL	BL	BL	BL	NA
67	Silvery metal pin(connector)	BL	BL	BL	BL	--	NA
68	Chip IC	BL	BL	BL	BL	BL	NA
69	Chip capacitor	BL	BL	BL	BL	BL	NA
70	Chip resistor	BL	BL	BL	BL	BL	NA
71	White plastic jacket(USB plug)	BL	BL	BL	BL	BL	NA
72	Silvery metal shell(USB plug)	BL	BL	BL	BL	--	NA
73	Silvery metal pin(USB plug)	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
74	White plastic core(USB plug)	BL	BL	BL	BL	BL	NA
75	White plastic jacket(micro-USB plug)	BL	BL	BL	BL	BL	NA
76	Silvery metal shell(micro-USB plug)	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
77	Silvery metal pin(micro-USB plug)	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
78	Black plastic core(micro-USB plug)	BL	BL	BL	BL	BL	NA
79	Solder(micro-USB plug)	BL	BL	BL	BL	--	NA



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
80	White plastic wire jacket	BL	BL	BL	BL	BL	NA
81	White plastic wire covering	BL	BL	BL	BL	BL	NA
82	Yellow plastic wire covering	BL	BL	BL	BL	BL	NA
83	Coppery metal wire	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 Cr<sup>6+</sup>) 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                      -- = 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, μg/cm<sup>2</sup>= 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 <sup>6+</sup>		PBB	PBDE
Units	mg/kg	mg/kg	mg/kg	mg/kg	μg/cm <sup>2</sup>	mg/kg	mg/kg
LOQ	2	2	2	8	0.1	5	5

The LOQ for single compound of PBBs and PBDEs is 5mg/kg, LOQ of Cr<sup>6+</sup> for polymer and composite sample is 8mg/kg and LOQ of Cr<sup>6+</sup> for metal sample is 0.1μg/cm<sup>2</sup>.





## (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 <sup>6+</sup> )	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<sup>6+</sup> on metal sample by boiling water extraction test method, and result is shown as Positive/Negative.

Boiling water extraction:

Negative = Absence of Cr<sup>6+</sup> coating, the detected concentration in boiling water extraction solution is less than 0.10ug/cm<sup>2</sup>.

Positive = Presence of Cr<sup>6+</sup> coating, the detected concentration in boiling water extraction solution is greater than 0.13ug/cm<sup>2</sup>.

Information on storage conditions and production date of the tested sample is unavailable and thus Cr<sup>6+</sup> 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.

## 2. Phthalates:

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1	ND	ND	ND	ND
T02	2	--	--	--	--
T03	3	ND	ND	ND	ND
T04	4	ND	ND	ND	ND
T05	5	ND	ND	ND	ND
T06	6	--	--	--	--
T07	7	ND	ND	ND	ND
T08	8+19+27+38 <sup>△</sup>	ND	281	ND	ND
T09	9	--	--	--	--
T10	10	--	--	--	--
T11	11	ND	ND	ND	ND
T12	12	--	--	--	--
T13	13	ND	ND	ND	ND
T14	14	ND	ND	ND	ND
T15	15	139	ND	ND	ND
T16	16	--	--	--	--
T17	17	ND	ND	ND	ND



Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T18	18	--	--	--	--
T19	20+52+63 <sup>△</sup>	ND	ND	ND	ND
T20	21	ND	ND	ND	ND
T21	22	--	--	--	--
T22	23	--	--	--	--
T23	24	112	ND	115	ND
T24	25	159	ND	ND	ND
T25	26	--	--	--	--
T26	28	ND	ND	ND	ND
T27	29	ND	ND	ND	ND
T28	30	ND	ND	ND	ND
T29	31	ND	ND	ND	ND
T30	32+33 <sup>△</sup>	ND	ND	ND	ND
T31	34	ND	ND	ND	ND
T32	35	--	--	--	--
T33	36	--	--	--	--
T34	37	--	--	--	--
T35	39+46+55+59 <sup>△</sup>	ND	ND	ND	ND
T36	40	--	--	--	--
T37	41	--	--	--	--
T38	42+43+49+50+51 <sup>△</sup>	ND	ND	ND	ND
T39	44	--	--	--	--
T40	45	--	--	--	--
T41	47	ND	ND	ND	ND
T42	48	ND	ND	ND	ND
T43	53+54+68+69+70 <sup>△</sup>	ND	ND	ND	ND
T44	56	--	--	--	--
T45	57	--	--	--	--
T46	58	ND	ND	ND	ND
T47	60	340	ND	ND	ND
T48	61	--	--	--	--
T49	62	--	--	--	--
T50	64	320	ND	ND	ND
T51	65	--	--	--	--
T52	66	ND	ND	ND	ND
T53	67	--	--	--	--
T54	71	ND	ND	ND	ND
T55	72	--	--	--	--
T56	73	--	--	--	--
T57	74+78 <sup>△</sup>	ND	ND	353	ND
T58	75	ND	ND	ND	ND
T59	76	--	--	--	--
T60	77	--	--	--	--
T61	79	--	--	--	--



Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T62	80	ND	ND	ND	ND
T63	81	ND	ND	ND	ND
T64	82	ND	ND	ND	ND
T65	83	--	--	--	--

**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.

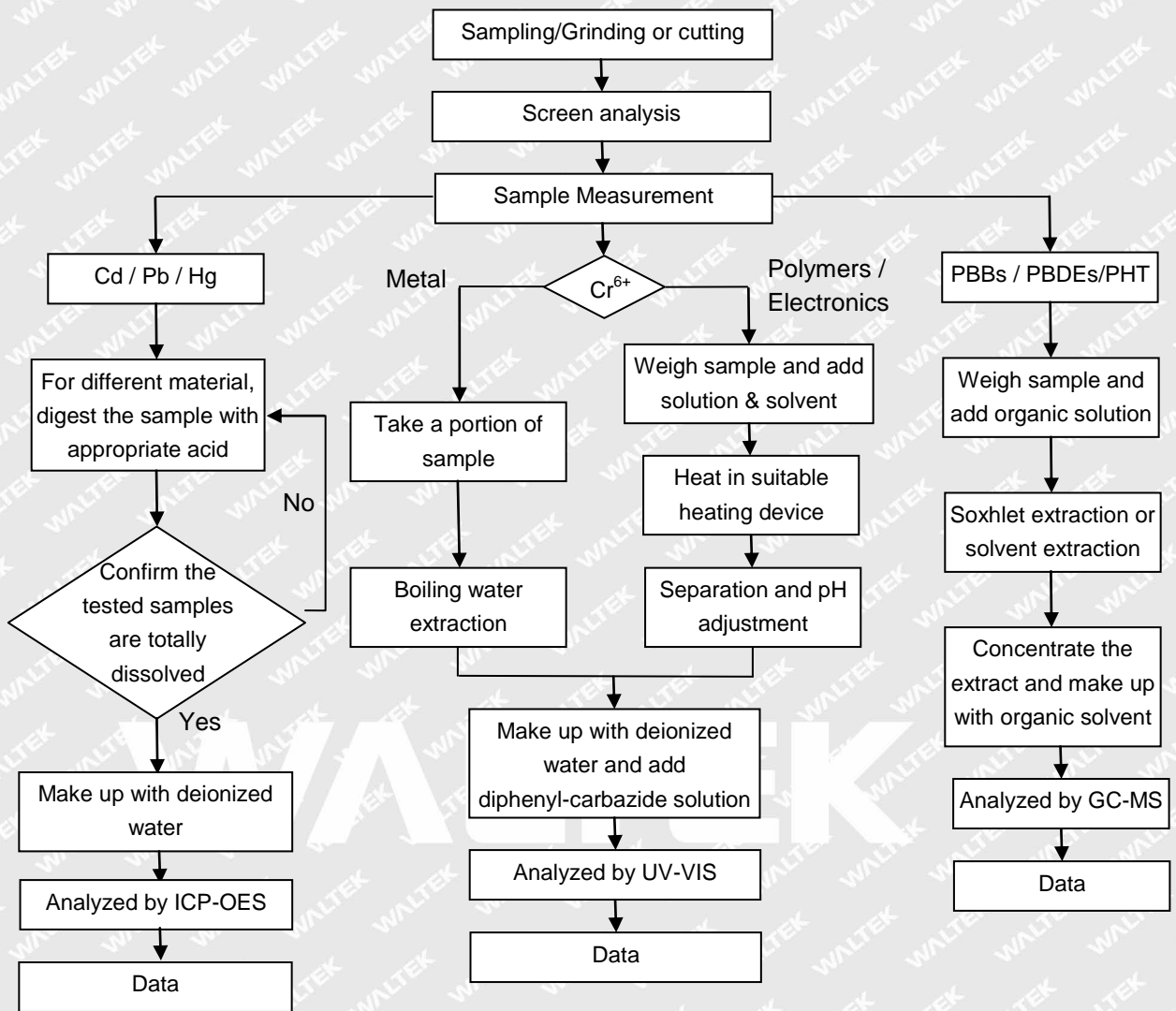
- (6) RoHS requirement

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.

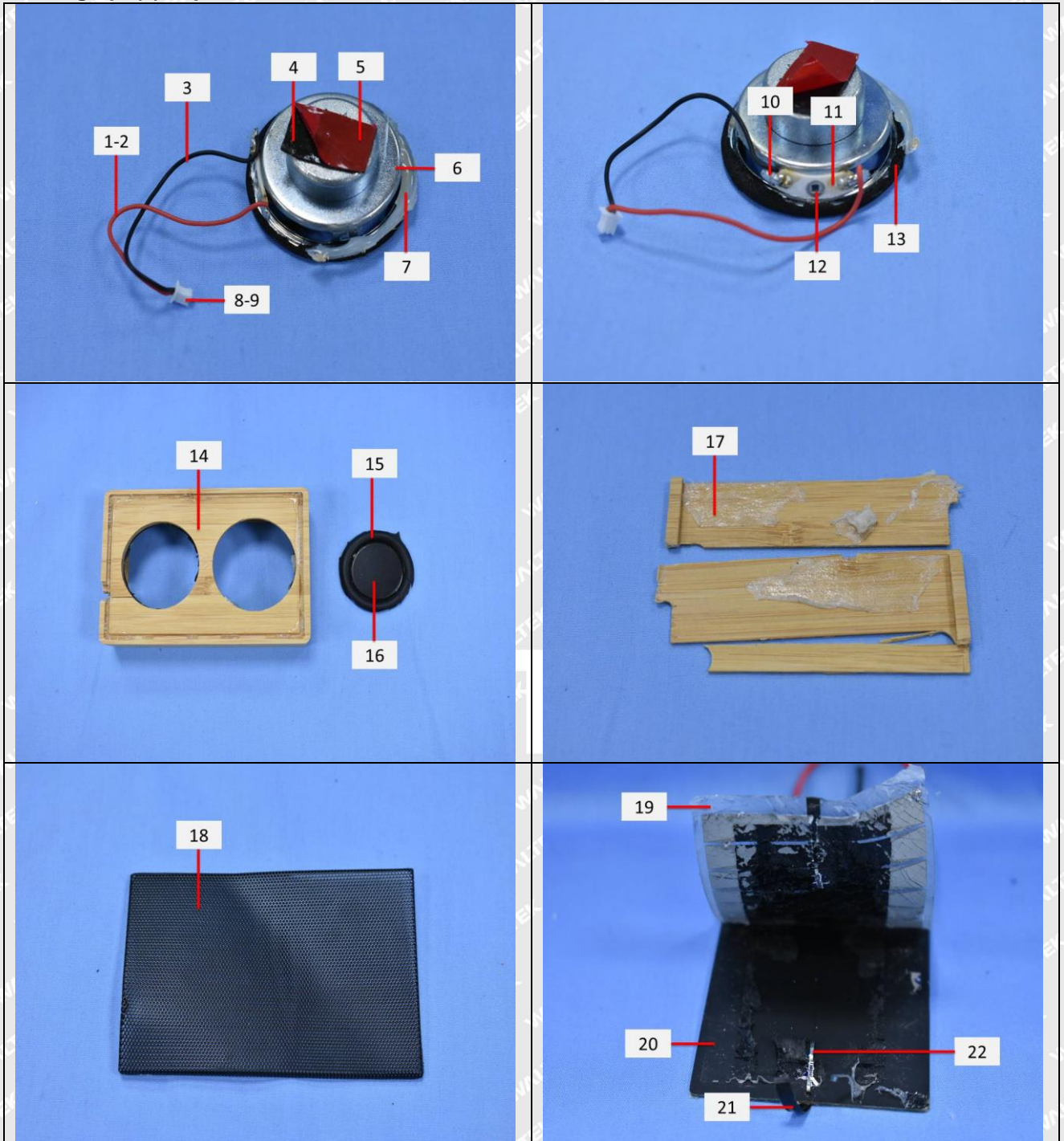


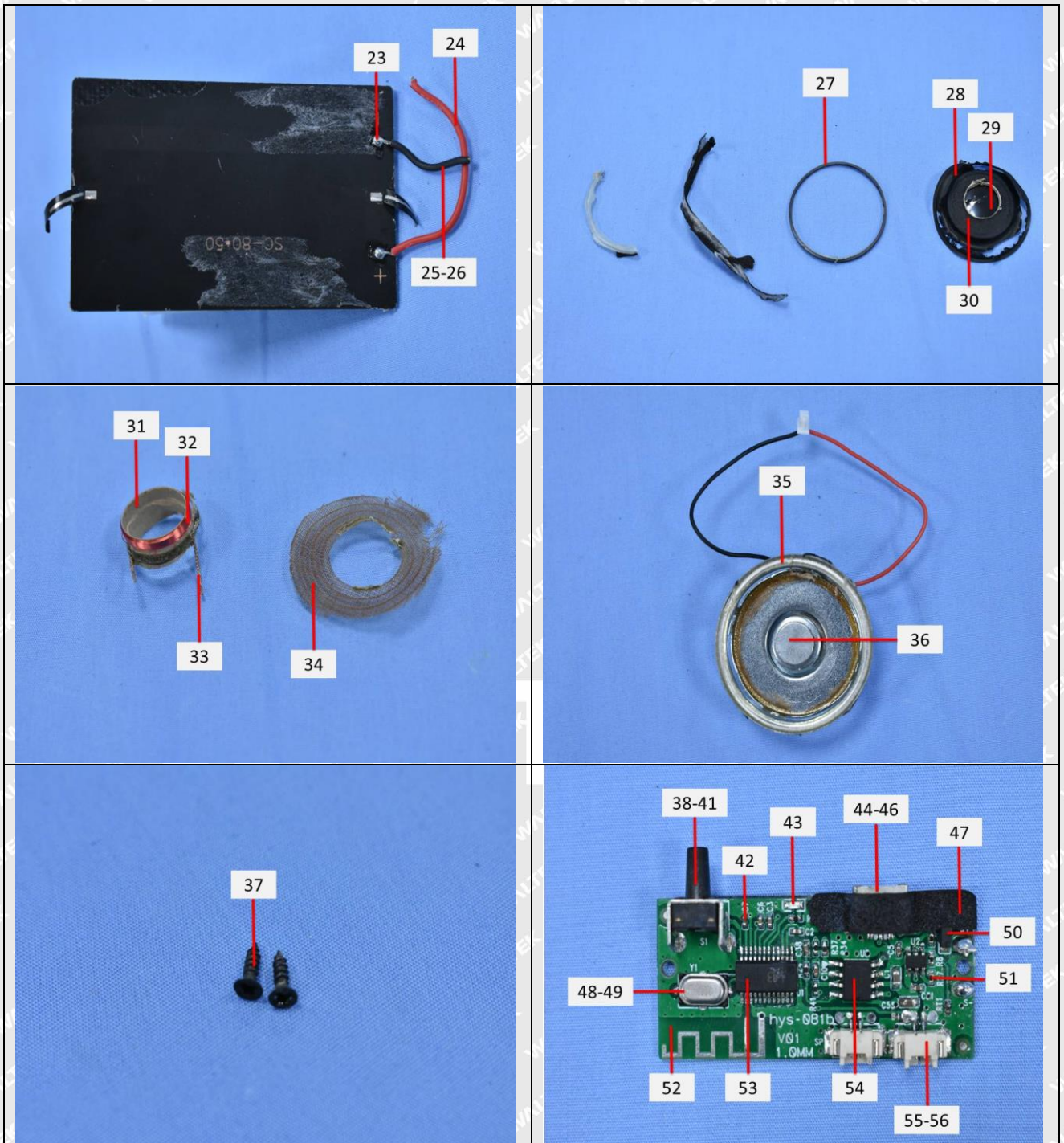
**Measurement Flowchart:**

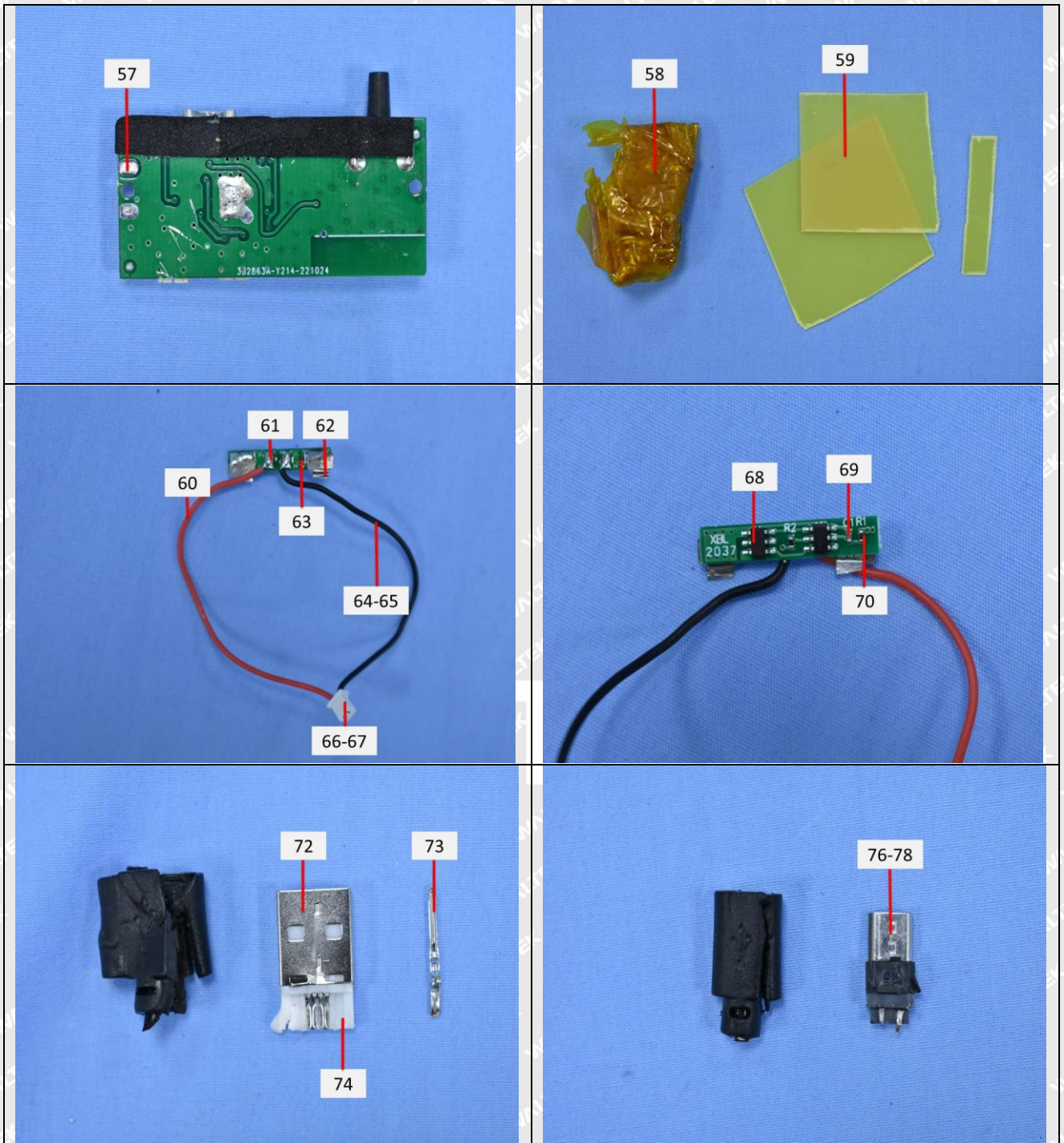


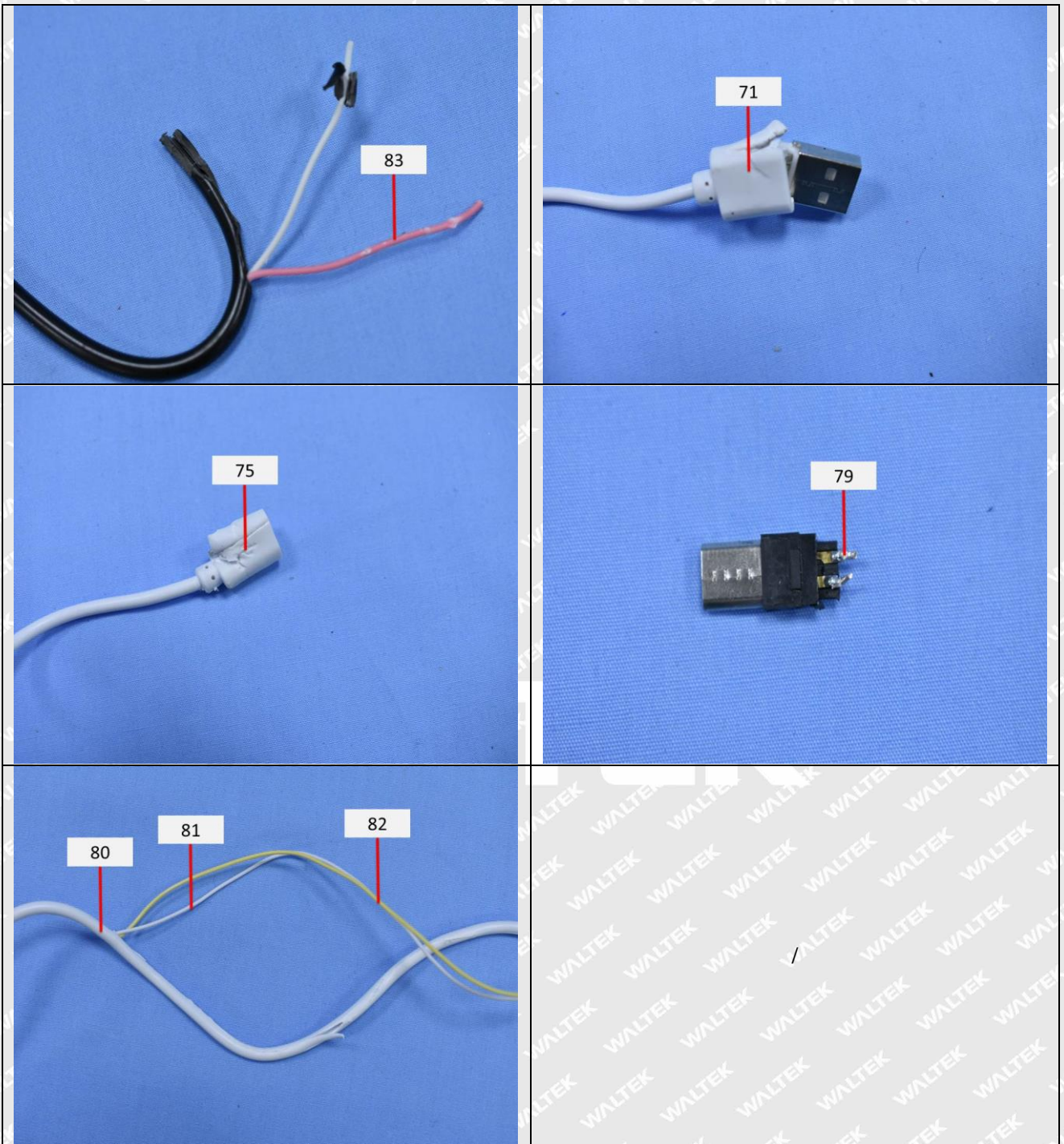


Photograph(s) of parts tested:













Report No.: WTF22F09190597A1C

Remarks:

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

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