



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No...... : WTF23F10219507A1C
Applicant..... : Mid Ocean Brands B.V.
Address..... : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer : 118641
Sample Name : Wireless charging lamp speaker
Sample Model..... : MO2124
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 : 2023-10-13 & 2023-11-03
Testing period : 2023-10-13 to 2023-10-31 & 2023-11-03 to 2023-11-09
Date of Issue..... : 2023-11-10
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

Swing.Liang



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

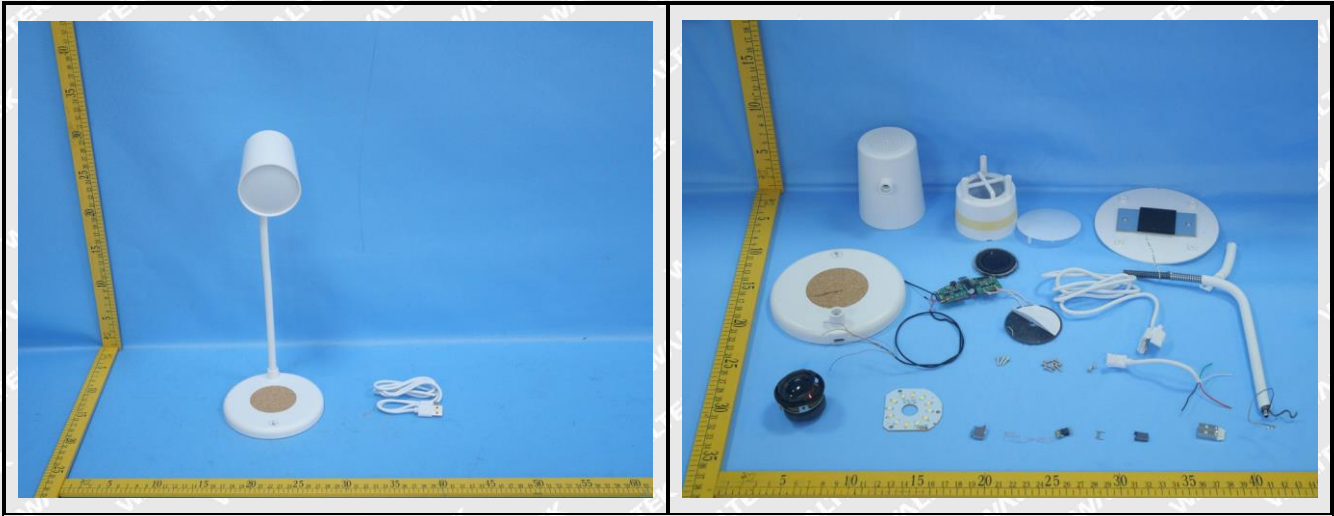
Test Method : 1) With reference to IEC 62321-2:2021, disassembly, disjunction and mechanical sample preparation
2) With reference to IEC 62321-3-1:2013, screening - Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry
3) With reference to IEC 62321-4:2013+AMD1:2017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



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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	White plastic shell	BL	BL	BL	BL	BL	NA
2	White soft plastic jacket	BL	BL	BL	BL	BL	NA
3	Brown cork board with adhesive	BL	BL	BL	BL	BL	NA
4	White semi-transparent plastic shell	BL	BL	BL	BL	BL	NA
5	White sponge gasket with glue	BL	BL	BL	BL	BL	NA
6	White plastic adhesive label with black printing	BL	BL	BL	BL	BL	NA
7	Dark silvery metal spring	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
8	Silvery metal tube	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
9	Silvery metal spring	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
10	Coppery metal wire	BL	BL	BL	BL	--	NA
11	Red metal wire	BL	BL	BL	BL	--	NA
12	Green metal wire	BL	BL	BL	BL	--	NA
13	Blue metal wire	BL	BL	BL	BL	--	NA
14	White fabric wire	BL	BL	BL	BL	BL	NA
15	Black heat-shrinkable tube	BL	BL	BL	BL	BL	NA
16	Solder	BL	BL	BL	BL	--	NA
17	Silvery metal screw	BL	BL	BL	BL	--	NA
18	Chip LED	BL	BL	BL	BL	BL	NA
19	Chip LED	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	
20	White-brown PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
21	Silvery metal sheet without black coating	BL	BL	BL	BL	--	NA
22	Transparent dry glue	BL	BL	BL	BL	BL	NA
23	Black synthetic leather	BL	BL	BL	BL	BL	NA
24	Yellow paper adhesive tape	BL	BL	BL	BL	BL	NA
25	White plastic shell	BL	BL	BL	BL	BL	NA
26	Black paper sheet	BL	BL	BL	BL	BL	NA
27	Black synthetic leather	BL	BL	BL	BL	BL	NA
28	Black plastic cap	BL	BL	BL	BL	BL	NA
29	Solder	BL	BL	BL	BL	--	NA
30	Black magnetic ring	BL	BL	BL	BL	--	NA
31	Black sponge adhesive tape	BL	BL	BL	BL	BL	NA
32	Multicolour metal shell	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
33	White paper sheet	BL	BL	BL	BL	BL	NA
34	Silvery metal rivet	BL	BL	BL	BL	--	NA
35	Brown paper tube	BL	BL	BL	BL	BL	NA
36	Red varnished wire	BL	BL	BL	BL	BL	NA
37	Coppery metal wire	BL	BL	BL	BL	--	NA
38	Brown net fabric	BL	BL	BL	BL	BL	NA
39	Silvery metal shell (socket)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative



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Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
40	Black plastic core (socket)	BL	BL	BL	BL	BL	NA
41	Silvery metal pin (socket)	BL	BL	BL	BL	--	NA
42	Silvery metal plate	BL	BL	BL	BL	--	NA
43	Black sponge adhesive tape	BL	BL	BL	BL	BL	NA
44	Silvery metal screw	BL	BL	BL	BL	--	NA
45	Transparent dry glue	BL	BL	BL	BL	BL	NA
46	Solder	BL	BL	BL	BL	--	NA
47	Coppery foil adhesive tape	BL	BL	BL	BL	BL	NA
48	Black magnetic core (inductor)	BL	BL	BL	IN	--	Cr ⁶⁺ : ND
49	Coppery varnished wire (inductor)	BL	BL	BL	BL	BL	NA
50	Chip IC	BL	OL	BL	BL	BL	*Pb : 2.14×10^3
51	Chip IC	BL	BL	BL	BL	BL	NA
52	Solder	BL	IN	BL	BL	--	Pb :112
53	Transparent plastic wire covering	BL	BL	BL	BL	BL	NA
54	Silvery metal wire	BL	BL	BL	BL	--	NA
55	Chip IC	BL	OL	BL	BL	BL	*Pb : 3.04×10^3
56	Black body	BL	BL	BL	BL	BL	NA
57	White fabric wire covering	BL	BL	BL	BL	BL	NA
58	Coppery metal wire	BL	BL	BL	BL	--	NA
59	Red varnished wire	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	
60	White paper sheet	BL	BL	BL	BL	BL	NA
61	Chip resistor	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND
62	Chip LED	BL	BL	BL	BL	BL	NA
63	Chip capacitor	BL	BL	BL	BL	BL	NA
64	Chip diode	BL	BL	BL	BL	BL	NA
65	Chip IC	BL	IN	BL	BL	BL	Pb :14
66	Solder	BL	IN	BL	BL	--	Pb :112
67	Chip IC	BL	OL	BL	BL	BL	*Pb : 3.17×10^3
68	Solder	BL	BL	BL	BL	--	NA
69	Black plastic wire covering	BL	BL	BL	BL	BL	NA
70	Silvery metal wire	BL	BL	BL	BL	--	NA
71	Chip audion	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
72	Black plastic film(electrolytic capacitor)	BL	BL	BL	BL	BL	NA
73	Silvery metal shell(electrolytic capacitor)	BL	BL	BL	BL	--	NA
74	Brown paper(electrolytic capacitor)	BL	BL	BL	BL	BL	NA
75	Grey metal foil(electrolytic capacitor)	BL	BL	BL	BL	--	NA
76	Silvery-grey metal foil(electrolytic capacitor)	BL	BL	BL	BL	--	NA
77	Black rubber stopper(electrolytic capacitor)	BL	BL	BL	BL	BL	NA
78	Silvery metal pin(electrolytic capacitor)	BL	BL	BL	BL	--	NA
79	Chip crystal oscillator	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	
80	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
81	Red capacitor	BL	BL	BL	BL	BL	NA
82	Brown plastic adhesive tape	BL	BL	BL	BL	BL	NA
83	Transparent double faced adhesive tape	BL	BL	BL	BL	BL	NA
84	Grey magnetic sheet	BL	BL	BL	BL	--	NA
85	White plastic wire jacket	BL	BL	BL	BL	BL	NA
86	White plastic jacket (USB plug)	BL	BL	BL	BL	BL	NA
87	Silvery metal shell (USB plug)	BL	BL	BL	BL	--	NA
88	White plastic jacket (Type-C plug)	BL	BL	BL	BL	BL	NA
89	Silvery metal shell (Type-C plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
90	White plastic core (USB plug)	BL	BL	BL	BL	BL	NA
91	Golden metal pin (USB plug)	BL	BL	BL	BL	--	NA
92	Solder (USB plug)	BL	BL	BL	BL	--	NA
93	Solder (Type-C plug)	BL	BL	BL	BL	--	NA
94	Chip resistor (Type-C plug)	BL	BL	BL	BL	BL	NA
95	Silvery metal pin (Type-C plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
96	Black plastic core (Type-C plug)	BL	BL	BL	BL	BL	NA
97	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
98	Green plastic wire covering	BL	BL	BL	BL	BL	NA
99	White plastic wire covering	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	
100	Red plastic wire covering	BL	BL	BL	BL	BL	NA
101	Black plastic wire covering	BL	BL	BL	BL	BL	NA
102	Black coating	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 Cr^{6+}) 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	$\text{BL} \leq (70-3\sigma) < \text{IN} < (130+3\sigma) \leq \text{OL}$	$\text{BL} \leq (70-3\sigma) < \text{IN} < (130+3\sigma) \leq \text{OL}$	$\text{LOD} < \text{IN} < (150+3\sigma) \leq \text{OL}$
Pb	$\text{BL} \leq (700-3\sigma) < \text{IN} < (1300+3\sigma) \leq \text{OL}$	$\text{BL} \leq (700-3\sigma) < \text{IN} < (1300+3\sigma) \leq \text{OL}$	$\text{BL} \leq (500-3\sigma) < \text{IN} < (1500+3\sigma) \leq \text{OL}$
Hg	$\text{BL} \leq (700-3\sigma) < \text{IN} < (1300+3\sigma) \leq \text{OL}$	$\text{BL} \leq (700-3\sigma) < \text{IN} < (1300+3\sigma) \leq \text{OL}$	$\text{BL} \leq (500-3\sigma) < \text{IN} < (1500+3\sigma) \leq \text{OL}$
Cr	$\text{BL} \leq (700-3\sigma) < \text{IN}$	$\text{BL} \leq (700-3\sigma) < \text{IN}$	$\text{BL} \leq (500-3\sigma) < \text{IN}$
Br	$\text{BL} \leq (300-3\sigma) < \text{IN}$	--	$\text{BL} \leq (250-3\sigma) < \text{IN}$

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 Cr^{6+} for polymer and composite sample is 8 mg/kg and LOQ of Cr^{6+} for metal sample is 0.1 $\mu\text{g}/\text{cm}^2$.



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(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 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)* = According to the declaration from client, the source of lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages is exempted by Directive 2011/65/EU ANNEX III.

2. Phthalates:

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1+4+25 [△]	ND	ND	ND	ND
T02	2	ND	ND	ND	ND
T03	3	ND	ND	ND	ND
T04	5	ND	ND	104	ND
T05	6	ND	ND	ND	ND
T06	7	--	--	--	--
T07	8	--	--	--	--
T08	9	--	--	--	--
T09	10	--	--	--	--
T10	11	--	--	--	--
T11	12	--	--	--	--
T12	13	--	--	--	--
T13	14	ND	ND	65	ND
T14	15	ND	ND	ND	ND



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Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T15	16	--	--	--	--
T16	17	--	--	--	--
T17	18+19+50+51+55 [△]	ND	ND	ND	ND
T18	20+80 [△]	ND	ND	ND	ND
T19	21	--	--	--	--
T20	22	ND	ND	ND	ND
T21	23	ND	ND	ND	ND
T22	24	ND	ND	ND	ND
T23	26	ND	ND	452	ND
T24	27	ND	ND	239	ND
T25	28	ND	ND	ND	ND
T26	29	--	--	--	--
T27	30	--	--	--	--
T28	31	ND	ND	ND	ND
T29	32	--	--	--	--
T30	33	ND	ND	ND	ND
T31	34	--	--	--	--
T32	35	ND	ND	ND	ND
T33	36+49+59+94+97 [△]	ND	ND	ND	ND
T34	37	--	--	--	--
T35	38	ND	ND	ND	ND
T36	39	--	--	--	--
T37	40	ND	ND	ND	ND
T38	41	--	--	--	--
T39	42	--	--	--	--
T40	43	ND	ND	ND	ND
T41	44	--	--	--	--
T42	45	ND	ND	ND	ND
T43	46	--	--	--	--
T44	47	ND	ND	ND	ND
T45	48	--	--	--	--
T46	52	--	--	--	--
T47	53	ND	ND	ND	ND
T48	54	--	--	--	--
T49	56+61+62+63+64 [△]	ND	ND	ND	ND
T50	57	ND	ND	106	ND
T51	58	--	--	--	--
T52	60	ND	ND	ND	ND
T53	65+67+71+79+81 [△]	ND	ND	ND	ND
T54	66	--	--	--	--
T55	68	--	--	--	--
T56	69	ND	ND	ND	ND
T57	70	--	--	--	--
T58	72	ND	ND	ND	ND



Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T59	73	--	--	--	--
T60	74	ND	ND	ND	ND
T61	75	--	--	--	--
T62	76	--	--	--	--
T63	77	ND	ND	ND	ND
T64	78	--	--	--	--
T65	82	ND	ND	ND	ND
T66	83	ND	ND	87	ND
T67	84	--	--	--	--
T68	85	147	ND	98	ND
T69	86	ND	ND	153	ND
T70	87	--	--	--	--
T71	88	ND	ND	175	ND
T72	89	--	--	--	--
T73	90	ND	ND	ND	ND
T74	91	--	--	--	--
T75	92	--	--	--	--
T76	93	--	--	--	--
T77	95	--	--	--	--
T78	96	ND	ND	ND	ND
T79	98	ND	ND	ND	ND
T80	99	ND	ND	ND	ND
T81	100	ND	ND	89	ND
T82	101	ND	ND	86	ND
T83	102	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.

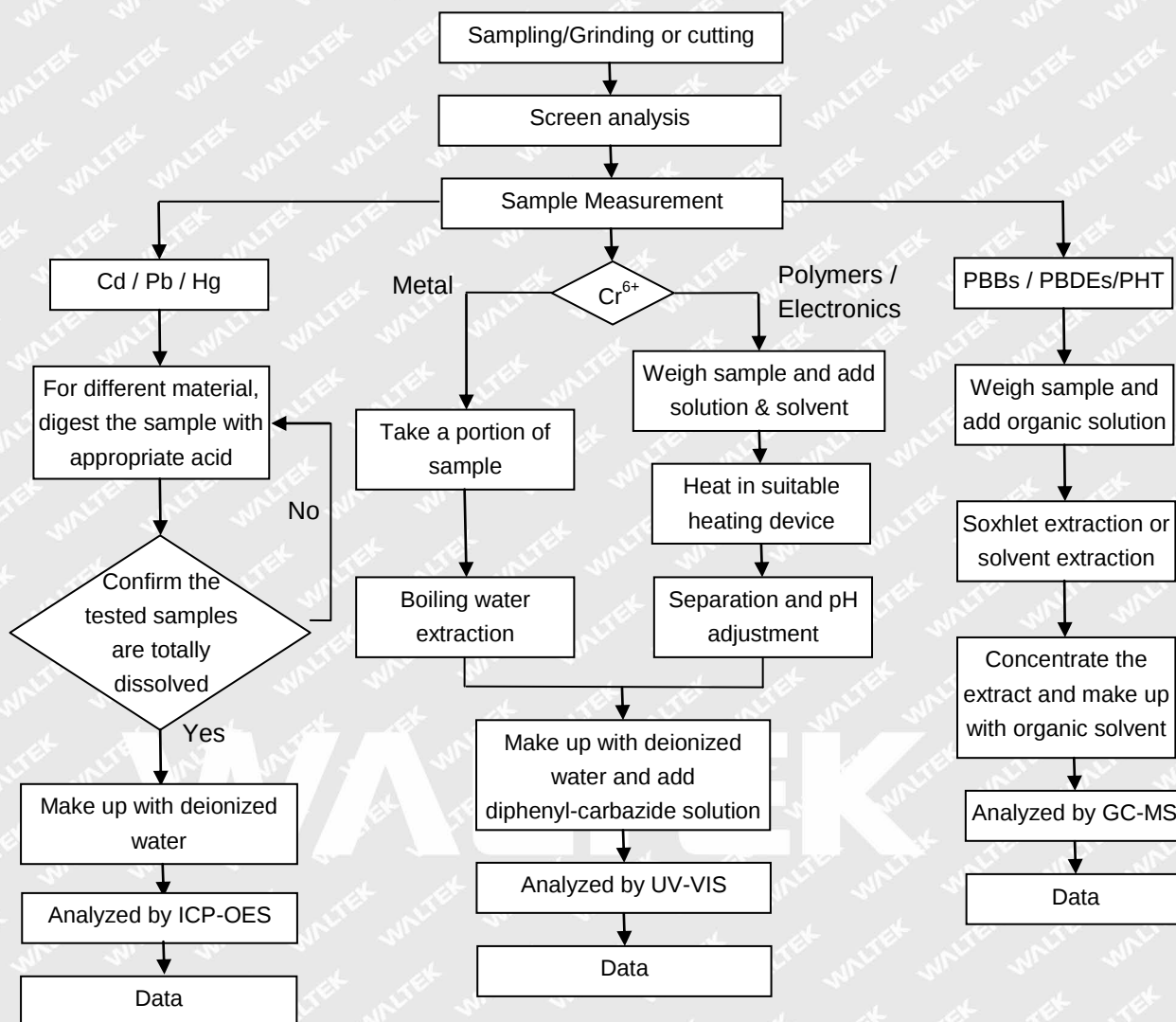
- (6) RoHS requirement

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.

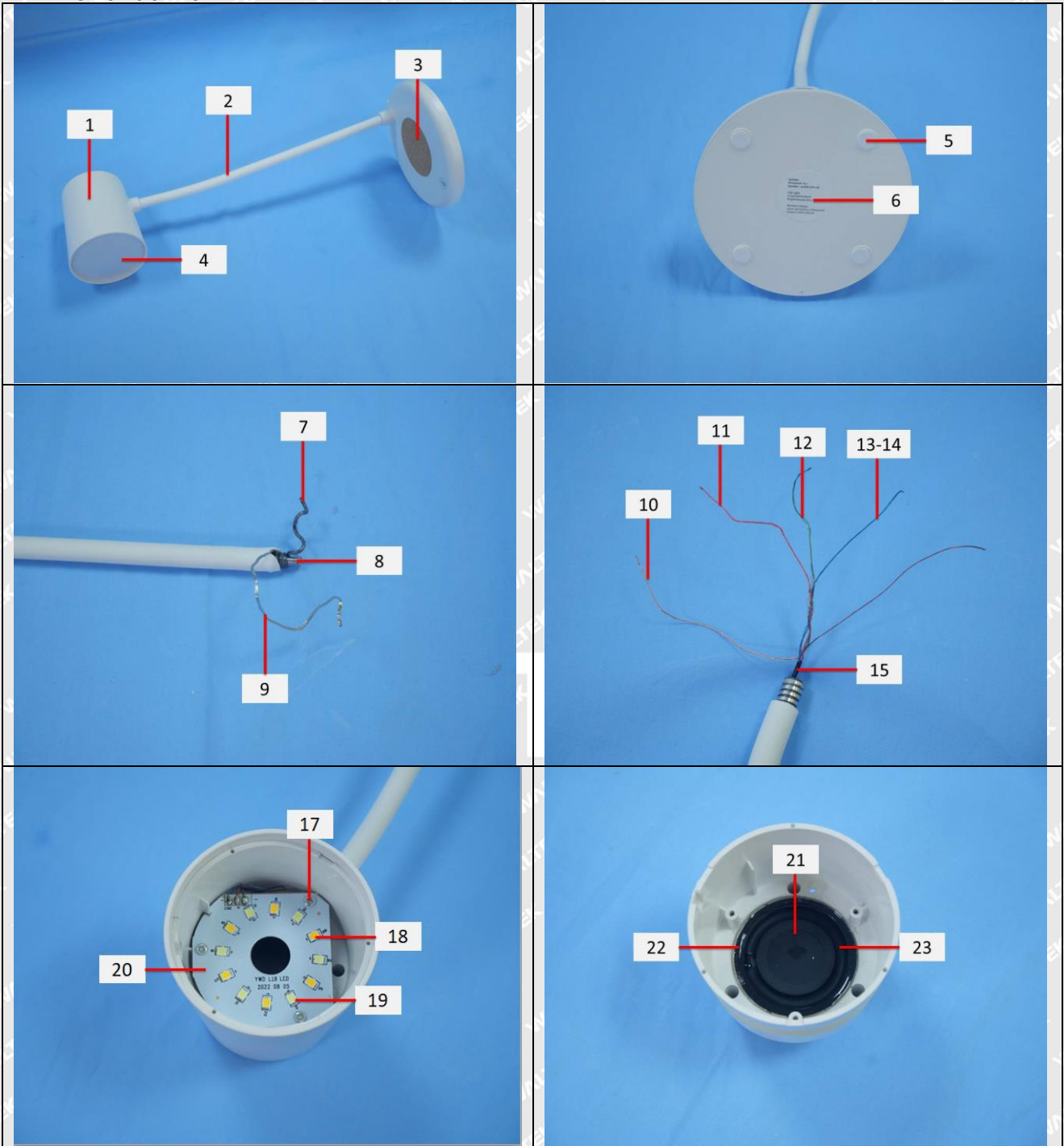


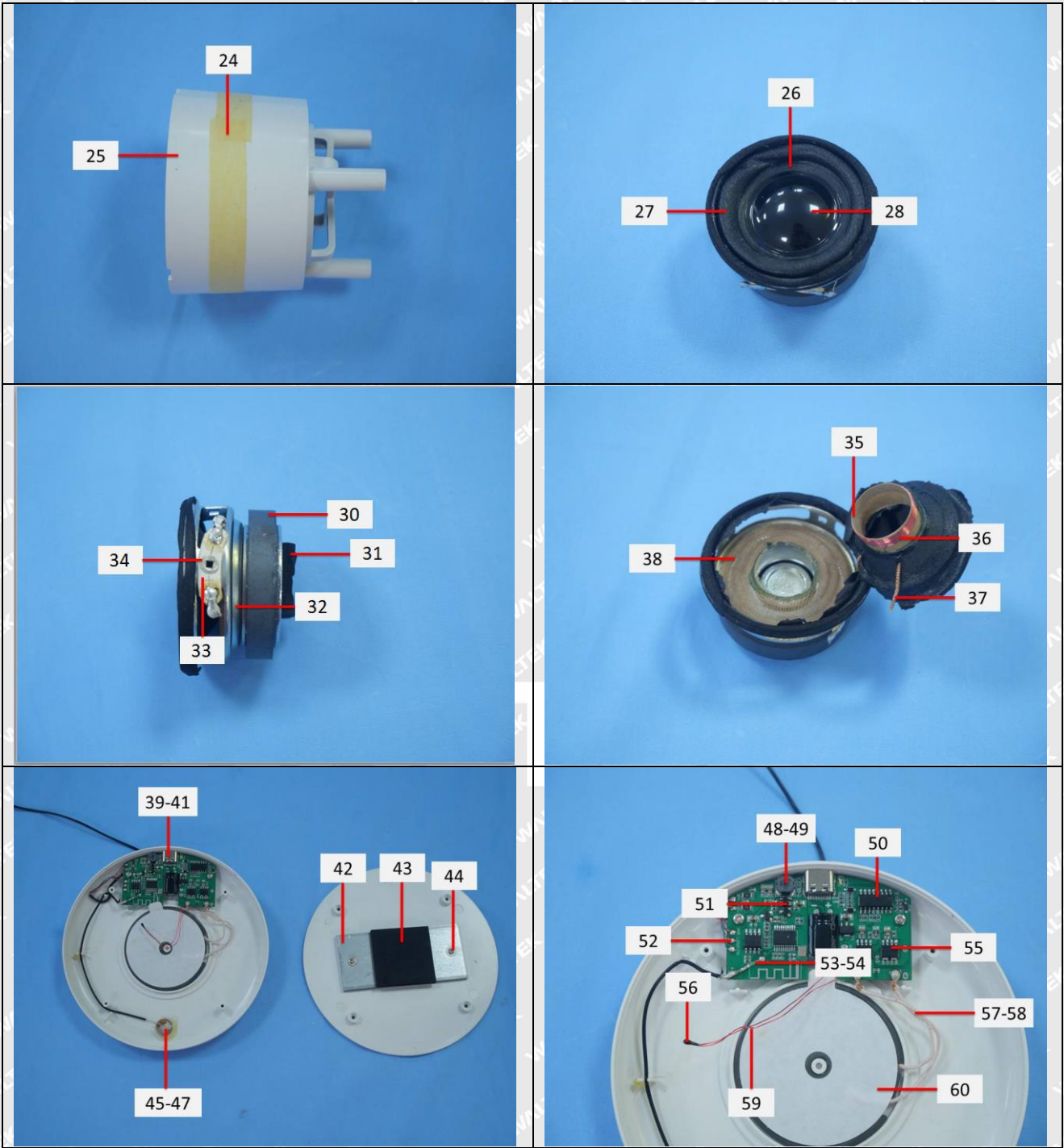
Measurement Flowchart:

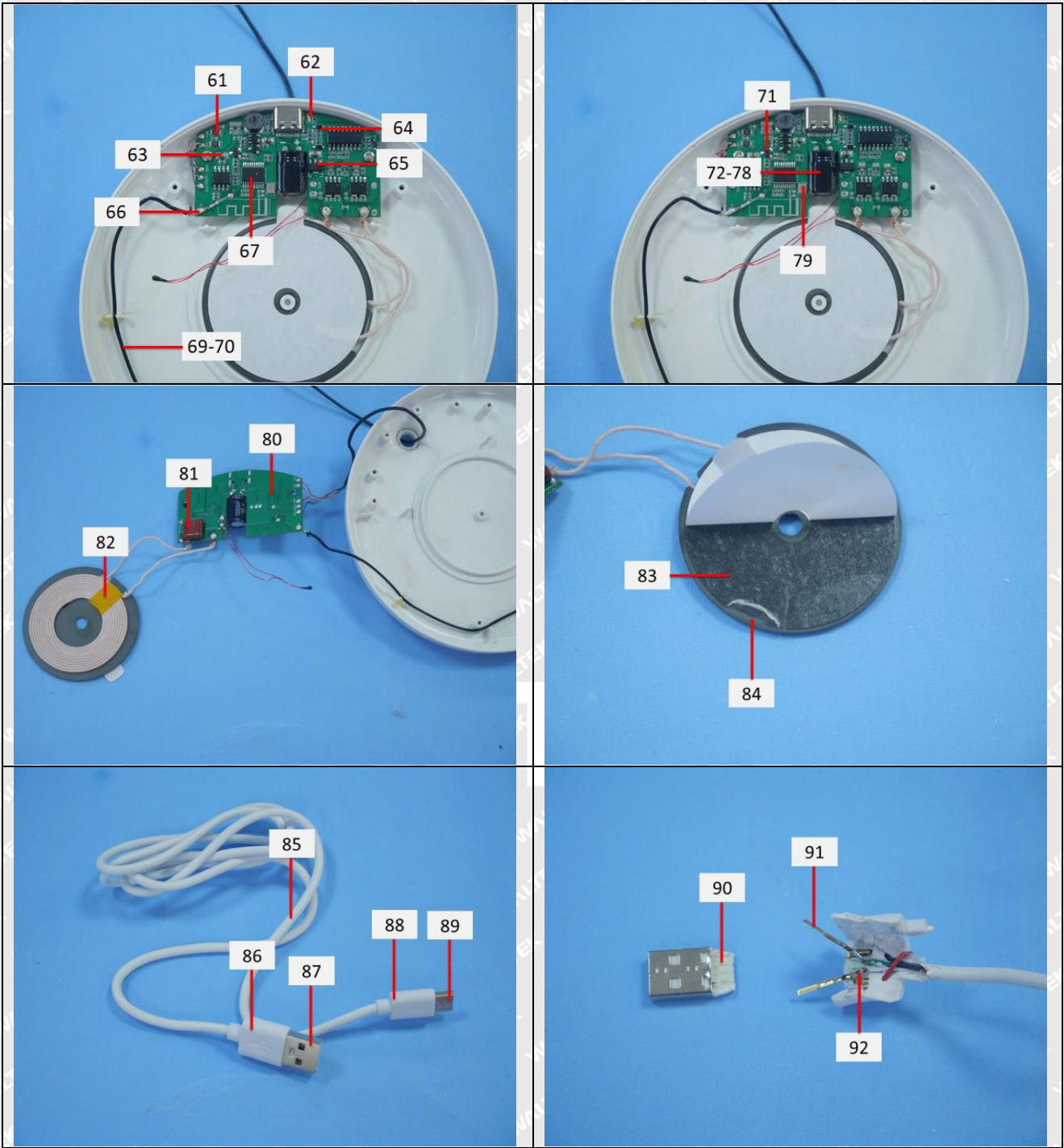


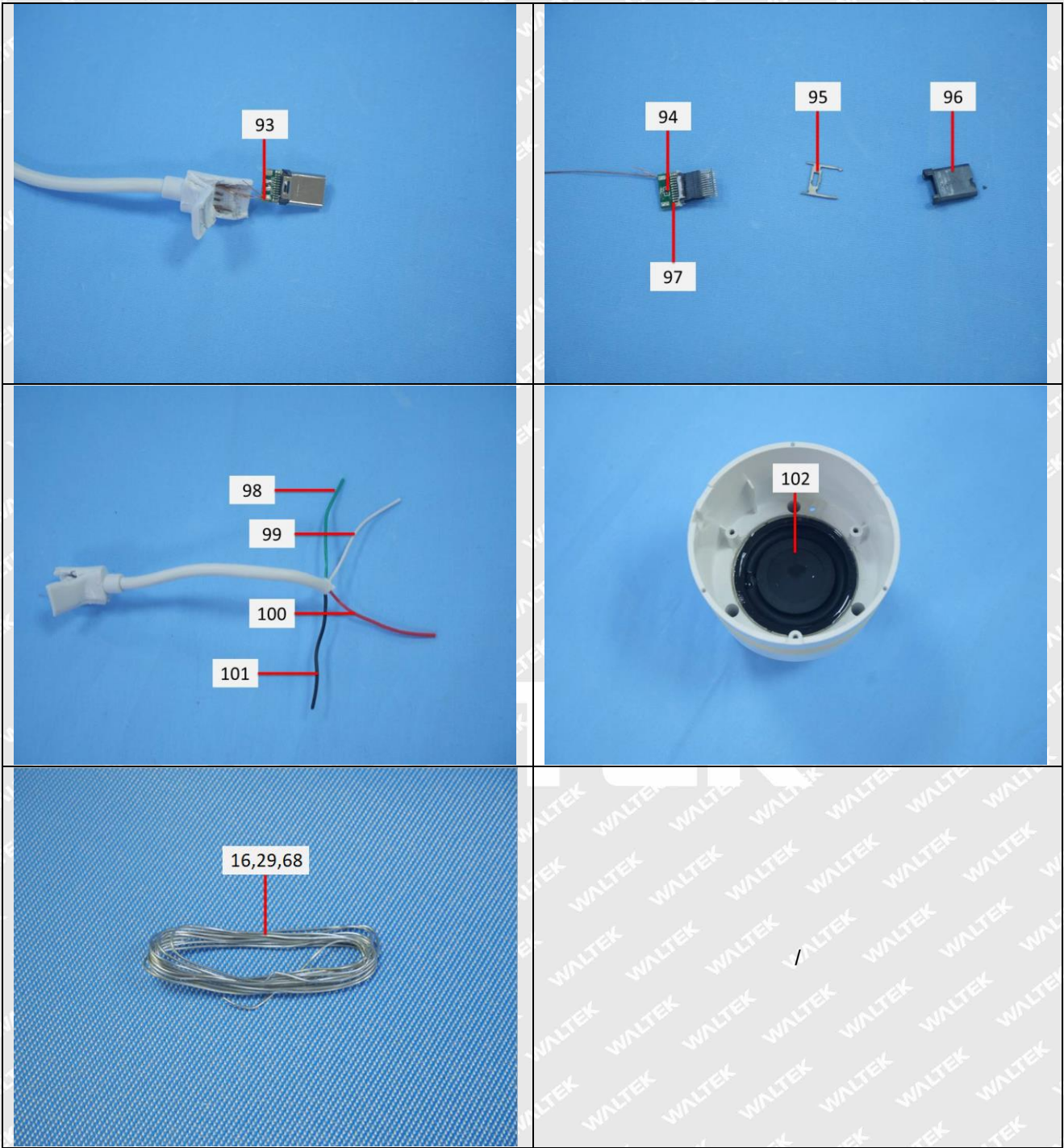


Photograph(s) of parts tested:











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Remarks:

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

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