



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No. : WTF22F09190525A1C
Applicant..... : Mid Ocean Brands B.V.
Address..... : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer : 109979
Sample Name : Light and wireless charger
Sample Model..... : MO6816
Date of Receipt sample : 2022-09-20 & 2022-11-07
Testing period : 2022-09-20 to 2022-10-22 & 2022-11-07 to 2022-11-08
Date of Issue..... : 2022-11-08
Test Result..... : Refer to next page (s)

Prepared By:

Waltek Testing Group (Foshan) Co., Ltd.

Address: No.13-19, 2/F., 2nd Building, Sunlink International Machinery City,
Chencun, Shunde District, Foshan, Guangdong, China

Tel:+86-757-23811398 Fax:+86-757-23811381 E-mail:info@waltek.com.cn

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.

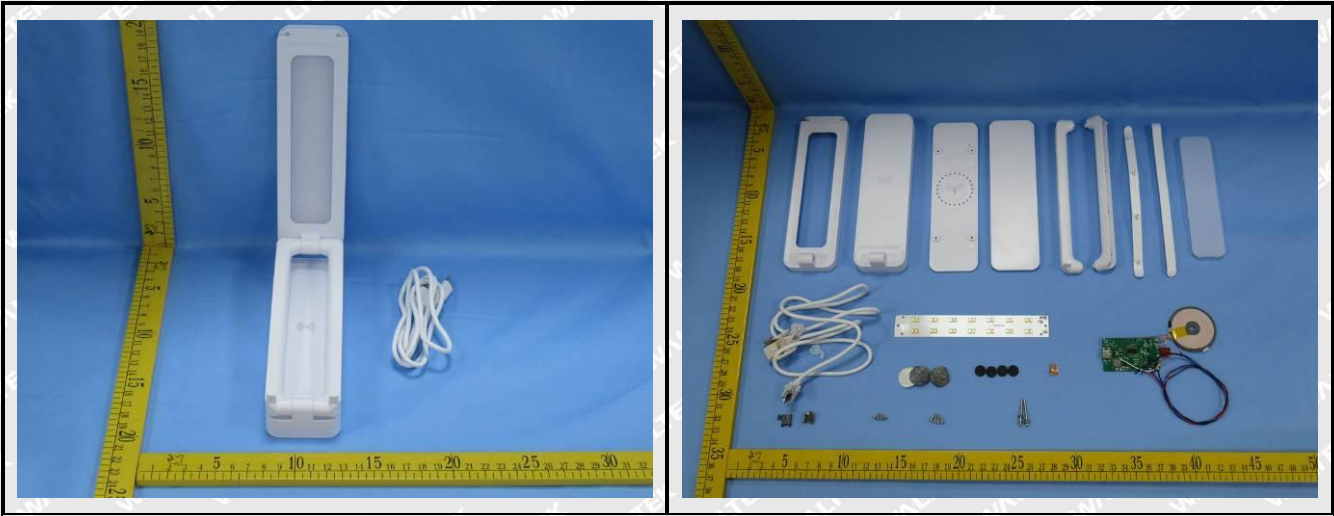
Test Conclusion : **Pass** (Based on the performed tests on the submitted samples, the results comply with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863)

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Sample Photo(s):



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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 plastic shell	BL	BL	BL	BL	BL	NA
3	White plastic strip	BL	BL	BL	BL	BL	NA
4	White plastic shell	BL	BL	BL	BL	BL	NA
5	White plastic shell	BL	BL	BL	BL	BL	NA
6	White plastic sheet	BL	BL	BL	BL	BL	NA
7	Semi-transparent plastic sheet	BL	BL	BL	BL	BL	NA
8	Chip LED	BL	BL	BL	BL	BL	NA
9	Chip LED	BL	BL	BL	BL	BL	NA
10	Silvery metal sheet without white coating	BL	BL	BL	BL	--	NA
11	White coating	BL	BL	BL	BL	BL	NA
12	Solder	BL	BL	BL	BL	--	NA
13	White fibrous tube	BL	BL	BL	BL	BL	NA
14	Coppery varnished wire	BL	BL	BL	BL	BL	NA
15	Yellow plastic adhesive tape	BL	BL	BL	BL	BL	NA
16	Dark grey magnetic sheet	BL	BL	BL	BL	--	NA
17	Transparent double faced adhesive tape	BL	BL	BL	BL	BL	NA
18	White paper film	BL	BL	BL	BL	BL	NA
19	Black sponge sheet with adhesive	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 paper film	BL	BL	BL	BL	BL	NA
21	Black soft plastic sheet with adhesive	BL	BL	BL	BL	BL	NA
22	Coppery metal foil	BL	BL	BL	BL	--	NA
23	Solder	BL	BL	BL	BL	--	NA
24	Silvery metal screw	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
25	Silvery metal screw	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
26	Silvery metal gasket	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
27	Silvery metal screw	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
28	Silvery metal gasket	BL	BL	BL	BL	--	NA
29	White plastic wire covering	BL	BL	BL	BL	BL	NA
30	Blue plastic wire covering	BL	BL	BL	BL	BL	NA
31	Red plastic wire covering	BL	BL	BL	BL	BL	NA
32	Black plastic wire covering	BL	BL	BL	BL	BL	NA
33	Silvery metal wire	BL	BL	BL	BL	--	NA
34	Black EC	BL	BL	BL	BL	BL	NA
35	Red varnished wire	BL	BL	BL	BL	BL	NA
36	Red capacitor	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	Black plastic core (socket)	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	
40	Chip IC	BL	BL	BL	BL	BL	NA
41	Solder	BL	BL	BL	BL	--	NA
42	Chip LED	BL	BL	BL	BL	BL	NA
43	Chip audion	BL	BL	BL	BL	BL	NA
44	Chip diode	BL	BL	BL	BL	BL	NA
45	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
46	Chip inductor	BL	BL	BL	IN	IN	Cr ⁶⁺ : ND PBBs : ND PBDEs : ND
47	Chip capacitor	BL	BL	BL	BL	BL	NA
48	Chip resistor	BL	BL	BL	BL	BL	NA
49	White plastic jacket (USB plug)	BL	BL	BL	BL	BL	NA
50	Semi-transparent plastic sheet (USB plug)	BL	BL	BL	BL	BL	NA
51	Silvery metal shell (USB plug)	BL	BL	BL	BL	--	NA
52	White plastic core (USB plug)	BL	BL	BL	BL	BL	NA
53	Golden metal pin (USB plug)	BL	BL	BL	BL	--	NA
54	Solder (USB plug)	BL	BL	BL	BL	--	NA
55	White plastic jacket (Type-C plug)	BL	BL	BL	BL	BL	NA
56	Semi-transparent plastic sheet (Type-C plug)	BL	BL	BL	BL	BL	NA
57	Black plastic core (Type-C plug)	BL	BL	BL	BL	BL	NA
58	Silvery metal shell (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	
59	Silvery metal pin (Type-C plug)	BL	BL	BL	BL	--	NA
60	Chip resistor (Type-C plug)	BL	BL	BL	BL	BL	NA
61	Green PCB (Type-C plug)	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
62	Solder (Type-C plug)	BL	BL	BL	BL	--	NA
63	Grey plastic wire covering	BL	BL	BL	BL	BL	NA
64	Light green plastic wire covering	BL	BL	BL	BL	BL	NA
65	White plastic wire covering	BL	BL	BL	BL	BL	NA
66	Pink plastic wire covering	BL	BL	BL	BL	BL	NA
67	Coppery metal wire	BL	BL	BL	BL	--	NA
68	White plastic wire jacket	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.



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- (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	µg/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 5mg/kg, LOQ of Cr⁶⁺ for polymer and composite sample is 8mg/kg and LOQ of Cr⁶⁺ for metal sample is 0.1µg/cm².

- (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 0.10ug/cm².
Positive = Presence of Cr⁶⁺ coating, the detected concentration in boiling water extraction solution is greater than 0.13ug/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.



2. Phthalates:

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1+2+3+4+5 [△]	ND	ND	ND	ND
T02	6+7+39+50+52 [△]	ND	ND	ND	ND
T03	8+9+14+34+35 [△]	ND	ND	ND	ND
T04	10	--	--	--	--
T05	11	ND	ND	ND	ND
T06	12	--	--	--	--
T07	13	ND	ND	ND	ND
T08	15	ND	ND	ND	ND
T09	16	--	--	--	--
T10	17	ND	ND	99	ND
T11	18	ND	ND	ND	ND
T12	19	ND	ND	ND	ND
T13	20	ND	ND	ND	ND
T14	21	ND	ND	ND	ND
T15	22	--	--	--	--
T16	23	--	--	--	--
T17	24	--	--	--	--
T18	25	--	--	--	--
T19	26	--	--	--	--
T20	27	--	--	--	--
T21	28	--	--	--	--
T22	29	ND	ND	ND	ND
T23	30	ND	ND	ND	ND
T24	31	ND	ND	ND	ND
T25	32	ND	ND	ND	ND
T26	33	--	--	--	--
T27	36+40+42+43+44 [△]	ND	ND	ND	ND
T28	37	--	--	--	--
T29	38	--	--	--	--
T30	41	--	--	--	--
T31	45+46+47+48+60 [△]	ND	ND	ND	ND
T32	49	ND	ND	ND	ND
T33	51	--	--	--	--
T34	53	--	--	--	--
T35	54	--	--	--	--
T36	55	ND	ND	105	ND
T37	56+57 [△]	ND	ND	266	ND
T38	58	--	--	--	--
T39	59	--	--	--	--
T40	61	ND	ND	ND	ND
T41	62	--	--	--	--
T42	63	ND	ND	ND	ND



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Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T43	64	ND	ND	ND	ND
T44	65	ND	ND	ND	ND
T45	66	ND	ND	ND	ND
T46	67	--	--	--	--
T47	68	ND	ND	ND	ND

Note:

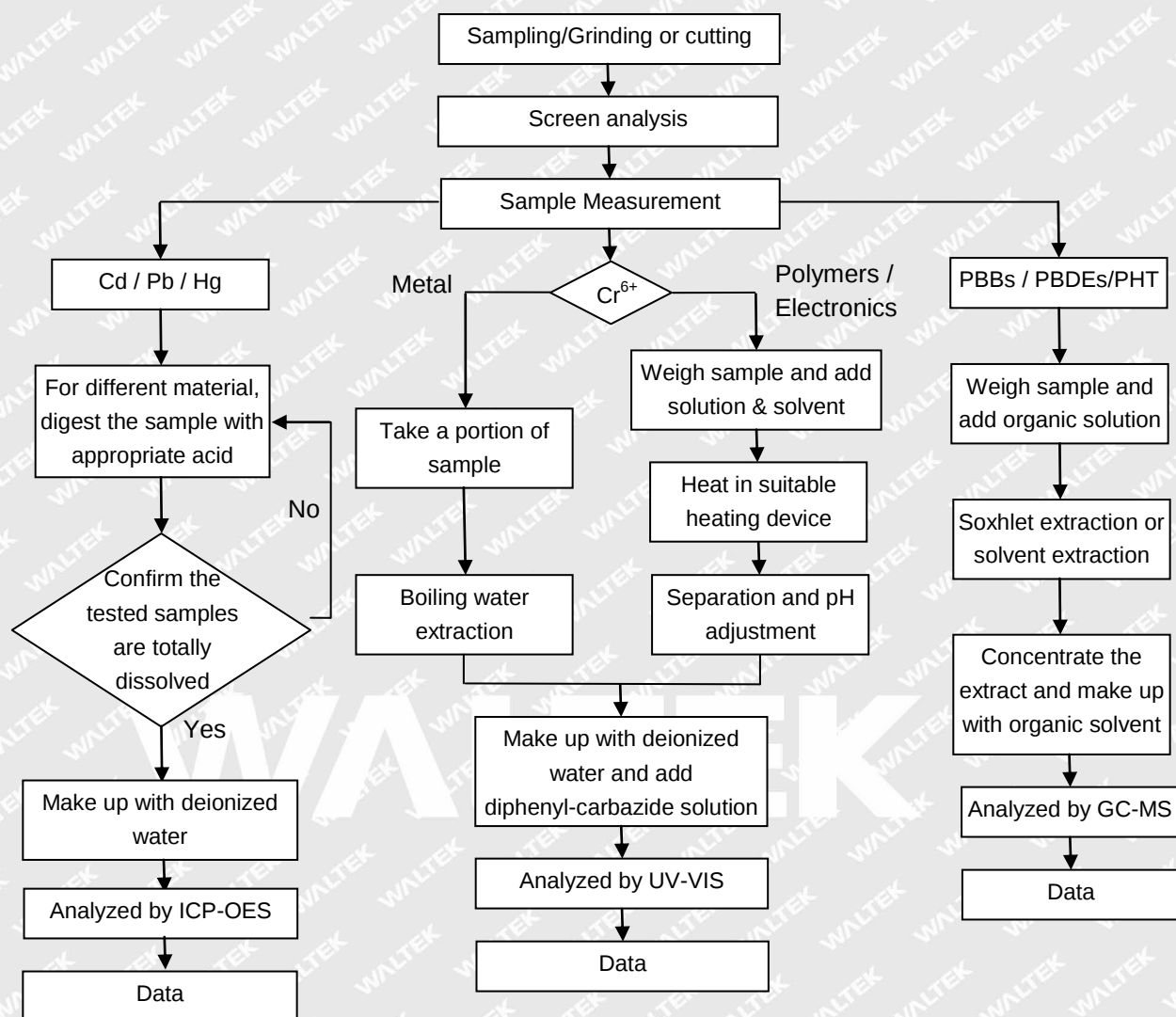
- (1) mg/kg = milligram per kilogram= ppm
- (2) ND = Not Detected or lower than limit of quantitation.
- (3) -- = Not Regulated.
- (4) LOQ = Limit of quantitation.

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

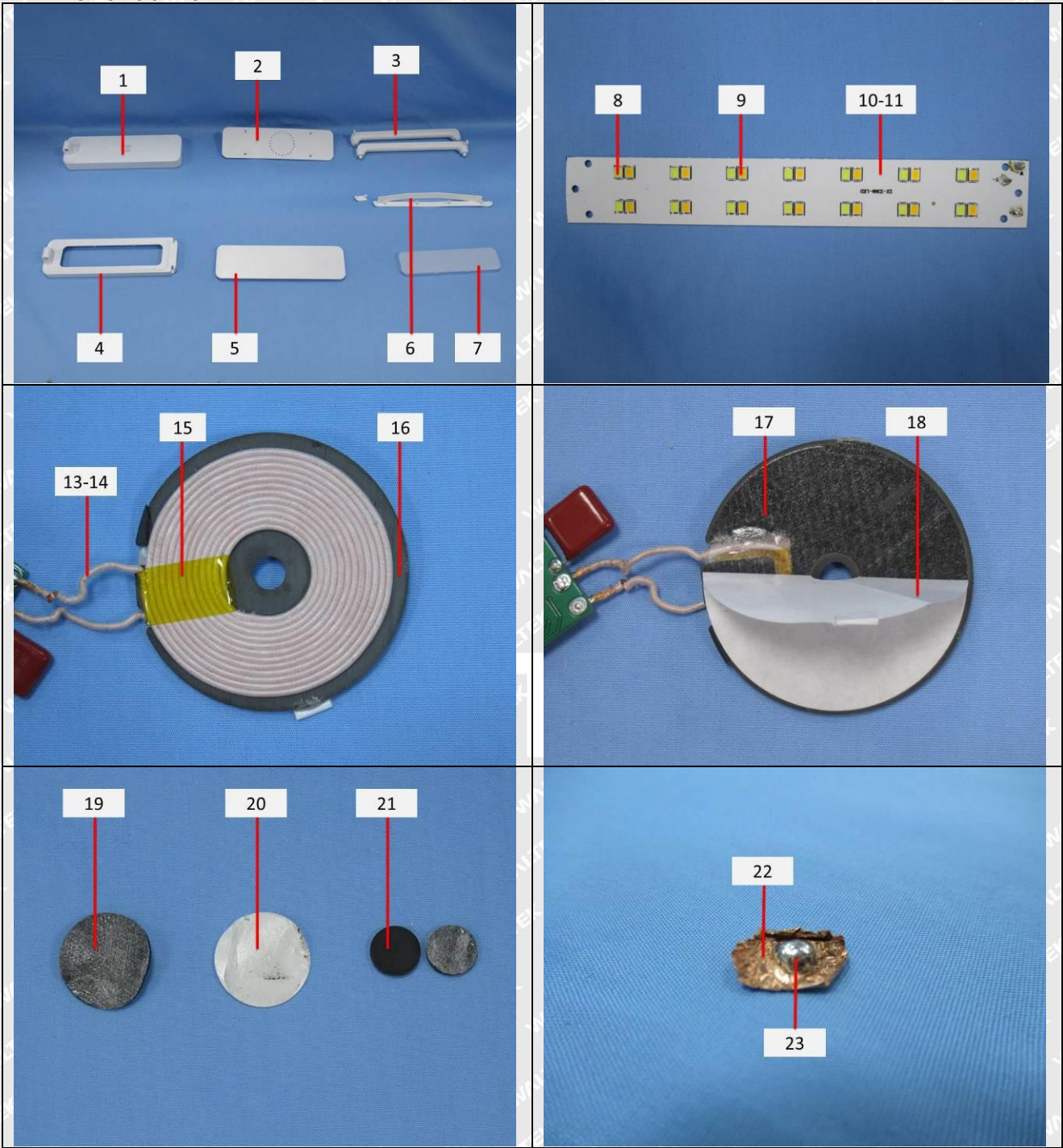
Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

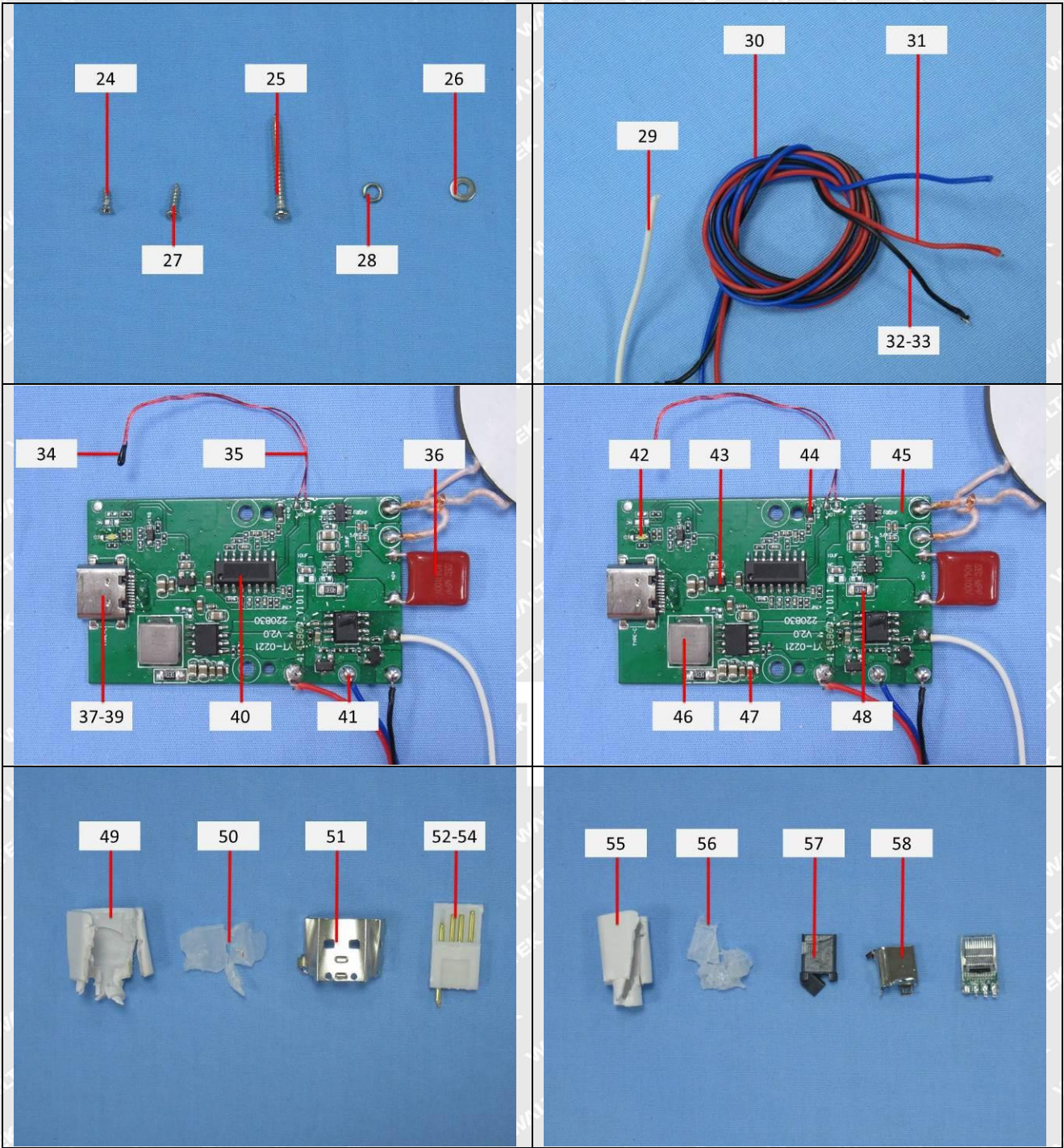
- (7) “△”= As client’s requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.

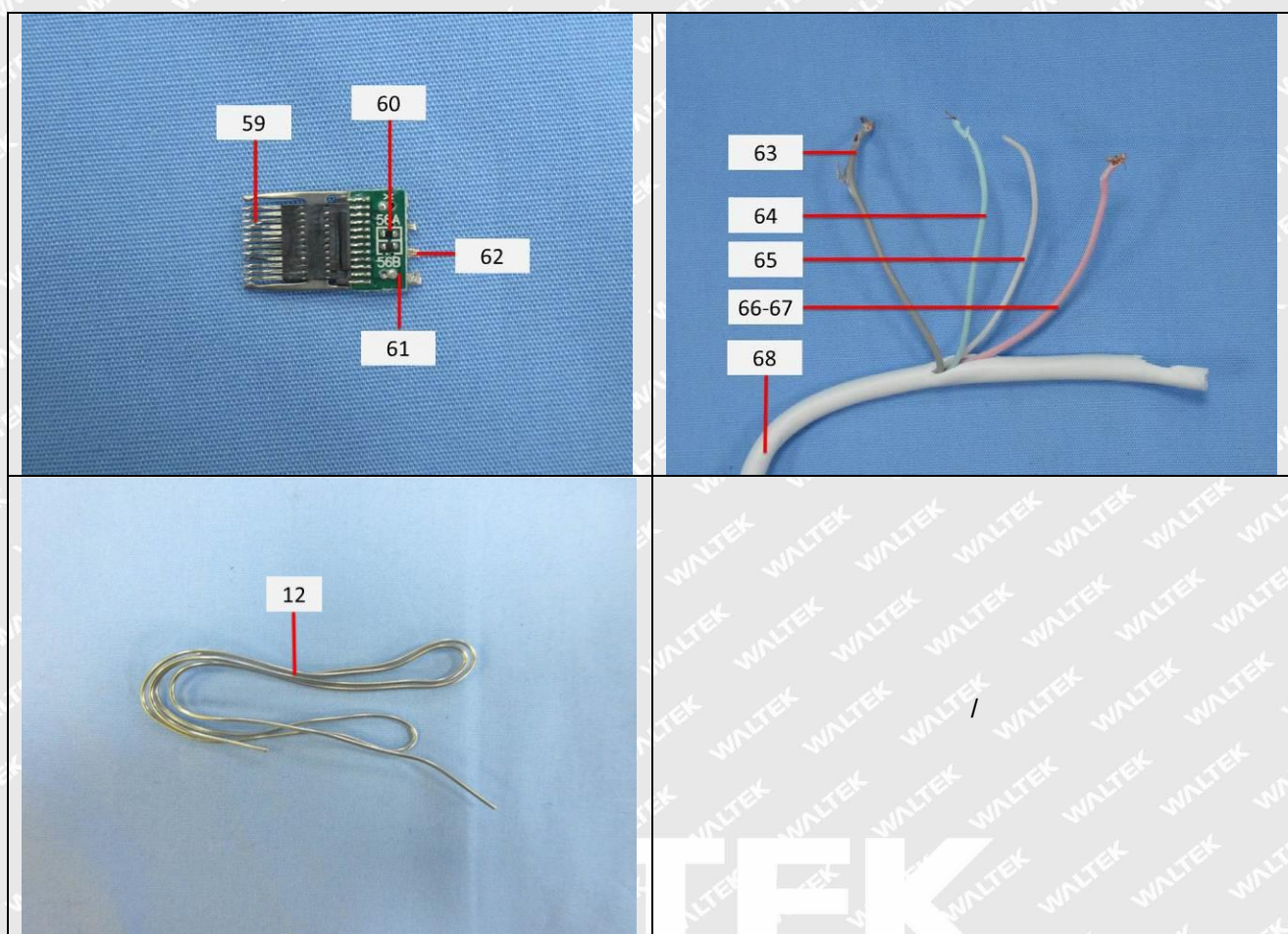
**Measurement Flowchart:**



Photograph(s) of parts tested:







Remarks:

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