



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No...... : WTF24F05107695A1R1C
Applicant..... : Mid Ocean Brands B.V.
Address..... : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer..... : 117486
Sample Name..... : Wireless multi 4 in 1 speaker
Sample Model..... : MO2378
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..... : 2024-05-10 & 2024-06-07 & 2024-07-03
Testing period..... : 2024-05-10 to 2024-06-04 & 2024-06-07 to 2024-06-13 & 2024-07-03 to 2024-07-05
Date of Issue..... : 2024-07-08
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



WTF24F05107695A1R1C



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, Mercury, Cadmium, 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, 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

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 (Type-C plug)	BL	BL	BL	BL	BL	NA
3	White plastic jacket (USB plug)	BL	BL	BL	BL	BL	NA
4	Solder (Type-C plug)	BL	BL	BL	BL	--	NA
5	Green PCB (Type-C plug)	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
6	Silvery metal pin (Type-C plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
7	Black plastic shell (Type-C plug)	BL	BL	BL	BL	BL	NA
8	Silvery metal shell (Type-C plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
9	Golden metal pin (Type-C plug)	BL	BL	BL	BL	--	NA
10	Coppery metal wire	BL	BL	BL	BL	--	NA
11	Solder (USB plug)	BL	BL	BL	BL	--	NA
12	Silvery metal shell (USB plug)	BL	BL	BL	BL	--	NA
13	Golden metal pin (USB plug)	BL	BL	BL	BL	--	NA
14	White plastic core (USB plug)	BL	BL	BL	BL	BL	NA
15	Green 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	Black plastic wire covering	BL	BL	BL	BL	BL	NA
17	White plastic wire covering	BL	BL	BL	BL	BL	NA
18	Red plastic wire covering	BL	BL	BL	BL	BL	NA
19	White plastic shell	BL	BL	BL	BL	BL	NA
20	Grey main fabric	BL	BL	BL	BL	BL	NA
21	Grey soft plastic gasket with adhesive	BL	BL	BL	BL	BL	NA
22	Black plastic shell	BL	BL	BL	BL	BL	NA
23	White fabric wire covering	BL	BL	BL	BL	BL	NA
24	Coppery metal wire	BL	BL	BL	BL	--	NA
25	Black magnetic sheet	BL	BL	BL	BL	--	NA
26	Silvery metal screw	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
27	Brown plastic adhesive tape	BL	BL	BL	BL	BL	NA
28	Black sponge adhesive tape	BL	BL	BL	BL	BL	NA
29	Black sponge adhesive tape	BL	BL	BL	BL	BL	NA
30	Silvery metal screw	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
31	Black plastic cap (button)	BL	BL	BL	BL	BL	NA
32	Off-white plastic shell (button)	BL	BL	BL	BL	BL	NA
33	Silvery metal shell (button)	BL	BL	BL	BL	--	NA
34	Silvery metal sheet (button)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
35	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	
36	Silvery metal pin (socket)	BL	BL	BL	BL	--	NA
37	Black plastic core (socket)	BL	BL	BL	BL	BL	NA
38	Green PCB	BL	BL	BL	BL	BL	NA
39(R1)	Solder	BL	IN	BL	BL	--	Pb :221
40	Chip capacitor	BL	BL	BL	BL	BL	NA
41	Chip IC	BL	BL	BL	BL	BL	NA
42	Black magnetic shell(inductor)	BL	BL	BL	BL	--	NA
43	Copperry varnished wire(inductor)	BL	BL	BL	BL	BL	NA
44	Red capacitor	BL	BL	BL	BL	BL	NA
45	Chip IC	BL	BL	BL	BL	BL	NA
46	Chip IC	BL	BL	BL	BL	BL	NA
47	Chip diode	BL	BL	BL	BL	BL	NA
48	Chip resistor	BL	IN	BL	BL	BL	Pb :162
49	White plastic shell (plug)	BL	BL	BL	BL	BL	NA
50	Silvery metal pin (plug)	BL	BL	BL	BL	--	NA
51	Yellow plastic wire covering	BL	BL	BL	BL	BL	NA
52	Red plastic wire covering	BL	BL	BL	BL	BL	NA
53	Blue plastic film	BL	BL	BL	BL	BL	NA
54	Beige plastic shell (socket)	BL	BL	BL	BL	BL	NA
55	Silvery metal wire	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	
56	Black plastic wire covering	BL	BL	BL	BL	BL	NA
57	Black sponge adhesive tape	BL	BL	BL	BL	BL	NA
58	Dark green paper sheet with adhesive	BL	BL	BL	BL	BL	NA
59	Purple plastic film	BL	BL	BL	BL	BL	NA
60	Silvery metal sheet	BL	BL	BL	BL	--	NA
61	Chip IC	BL	BL	BL	BL	BL	NA
62	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
63	Silvery metal sheet with black surface	BL	BL	BL	BL	--	NA
64	Black soft plastic sheet	BL	BL	BL	BL	BL	NA
65	Black magnetic rim	BL	BL	BL	BL	--	NA
66	Silvery metal shell	BL	BL	BL	BL	--	NA
67	Chip crystal oscillator	BL	BL	BL	BL	BL	NA
68	Black rubber stopper(electrolytic capacitor)	BL	BL	BL	BL	BL	NA
69	Brown paper(electrolytic capacitor)	BL	BL	BL	BL	BL	NA
70	Black plastic base(electrolytic capacitor)	BL	BL	BL	BL	BL	NA
71	Silvery metal shell(electrolytic capacitor)	BL	BL	BL	BL	--	NA
72	Grey metal foil(electrolytic capacitor)	BL	BL	BL	BL	--	NA
73	Silvery-grey metal foil(electrolytic capacitor)	BL	BL	BL	BL	--	NA
74	Silvery metal pin(electrolytic capacitor)	BL	IN	BL	BL	--	Pb :54
75	Chip IC	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	
76	Chip audio	BL	BL	BL	BL	BL	NA
77	Green PCB	BL	BL	BL	BL	BL	NA
78	Chip glass diode	BL	OL	BL	BL	BL	*Pb : 1.23×10^5
79	Chip LED	BL	BL	BL	BL	BL	NA
80	Chip LED	BL	BL	BL	BL	BL	NA
81	Transparent plastic sheet without black coating	BL	BL	BL	BL	BL	NA
82	Black coating with adhesive	BL	BL	BL	BL	BL	NA
83	Black plastic shell	BL	BL	BL	BL	BL	NA
84	Red plastic wire covering	BL	BL	BL	BL	BL	NA
85	Black plastic wire covering	BL	BL	BL	BL	BL	NA
86	Silvery metal wire	BL	BL	BL	BL	--	NA
87	Chip LED	BL	BL	BL	BL	BL	NA
88	Solder	BL	BL	BL	BL	--	NA
89	White FPC	BL	BL	BL	BL	BL	NA
90	Transparent dry glue	BL	BL	BL	BL	BL	NA
91	Black body	BL	BL	BL	BL	BL	NA
92	Red metal wire	BL	BL	BL	BL	--	NA
93	Red plastic wire covering	BL	BL	BL	BL	BL	NA
94	Silvery metal wire	BL	BL	BL	BL	--	NA
95	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	
96	Black paper rim	BL	BL	BL	BL	BL	NA
97	Black synthetic leather	BL	BL	BL	BL	BL	NA
98	Black paper sheet	BL	BL	BL	BL	BL	NA
99	Black plastic sheet	BL	BL	BL	BL	BL	NA
100	Silvery metal shell	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
101	White paper sheet	BL	BL	BL	BL	BL	NA
102(R1)	Solder	BL	IN	BL	BL	--	Pb :221
103	Silvery metal rivet	BL	BL	BL	BL	--	NA
104	Brown paper tube	BL	BL	BL	BL	BL	NA
105	Coppery varnished wire	BL	BL	BL	BL	BL	NA
106	Brown plastic net	BL	BL	BL	BL	BL	NA
107	Coppery metal wire	BL	BL	BL	BL	--	NA
108	Chip diode	BL	BL	BL	BL	BL	NA



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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 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 ug/cm^2 .
Positive = Presence of Cr^{6+} coating, the detected concentration in boiling water extraction solution is greater than 0.13 ug/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 the glass or ceramic material of that electronic component which is exempted by Directive 2011/65/EU ANNEX III-7(c)-I.
- (12) As per client's requirement, the result of specimen No.1 to No.107 was quoted from Report No. WTF24F05107695A1C specimen No.1 to No.107.

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+3 [△]	ND	ND	ND	ND
T02	4	--	--	--	--
T03	5+38+62+77+89 [△]	ND	ND	ND	ND
T04	6	--	--	--	--
T05	7+14+19+22+31 [△]	ND	ND	ND	ND
T06	8	--	--	--	--
T07	9	--	--	--	--
T08	10	--	--	--	--
T09	11	--	--	--	--
T10	12	--	--	--	--
T11	13	--	--	--	--
T12	15	ND	ND	ND	ND
T13	16+17+18 [△]	ND	ND	133	ND
T14	20+23+106 [△]	ND	ND	ND	ND
T15	21	ND	ND	ND	ND
T16	24	--	--	--	--
T17	25	--	--	--	--
T18	26	--	--	--	--
T19	27	ND	ND	ND	ND
T20	28+29+57 [△]	ND	ND	ND	ND
T21	30	--	--	--	--
T22	32+37+49+54+70 [△]	ND	ND	ND	ND
T23	33	--	--	--	--



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Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T24	34	--	--	--	--
T25	35	--	--	--	--
T26	36	--	--	--	--
T27	39(R1)	--	--	--	--
T28	40+41+44+45+46 [△]	ND	ND	ND	ND
T29	42	--	--	--	--
T30	43	ND	ND	ND	ND
T31	47+48+61+67+75 [△]	ND	ND	ND	ND
T32	50	--	--	--	--
T33	51+52 [△]	ND	ND	ND	ND
T34	53+59 [△]	ND	ND	ND	ND
T35	55	--	--	--	--
T36	56+84+85 [△]	ND	ND	ND	ND
T37	58	ND	ND	ND	ND
T38	60	--	--	--	--
T39	63	--	--	--	--
T40	64+68 [△]	ND	ND	ND	ND
T41	65	--	--	--	--
T42	66	--	--	--	--
T43	69+96+98 [△]	ND	ND	ND	ND
T44	71	--	--	--	--
T45	72	--	--	--	--
T46	73	--	--	--	--
T47	74	--	--	--	--
T48	76+78+79+80+87 [△]	ND	ND	ND	ND
T49	81+83+90+99 [△]	ND	ND	ND	ND
T50	82	ND	ND	ND	ND
T51	86	--	--	--	--
T52	88	--	--	--	--
T53	91	ND	ND	ND	ND
T54	92	--	--	--	--
T55	93+95 [△]	ND	ND	ND	ND
T56	94	--	--	--	--
T57	97	ND	ND	ND	ND
T58	100	--	--	--	--
T59	101+104 [△]	ND	ND	ND	ND
T60	102(R1)	--	--	--	--
T61	103	--	--	--	--
T62	105	ND	ND	ND	ND
T63	107	--	--	--	--
T64	108	ND	ND	ND	ND



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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

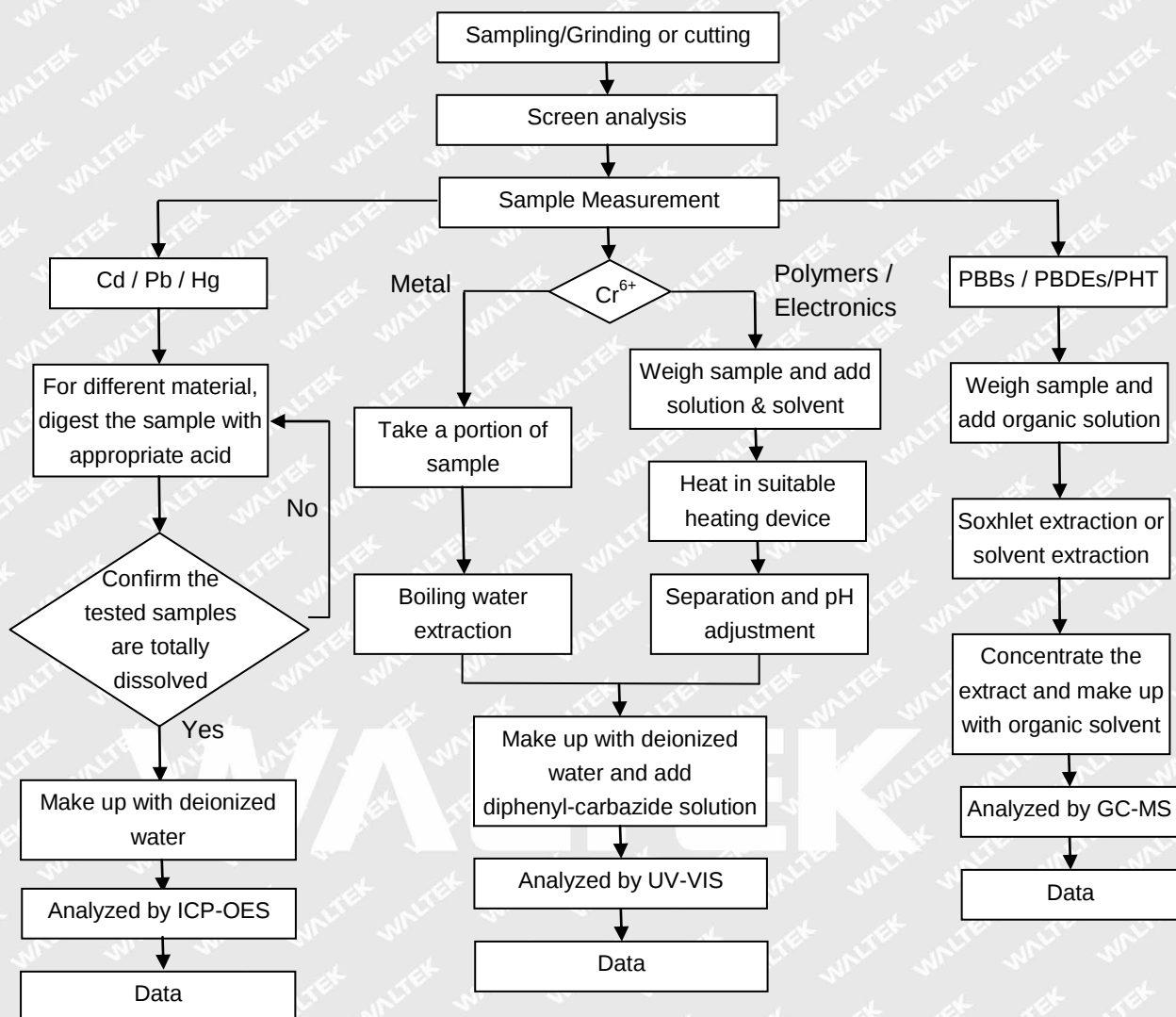
Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

- (7) "△"= As client's requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.
- (8) The weight of test sample No.27 and No.90 is insufficient, the test result is for reference only.
- (9) As per client's requirement, the result of specimen No.1 to No.107 was quoted from Report No. WTF24F05107695A1C specimen No.1 to No.107.

WALTEK

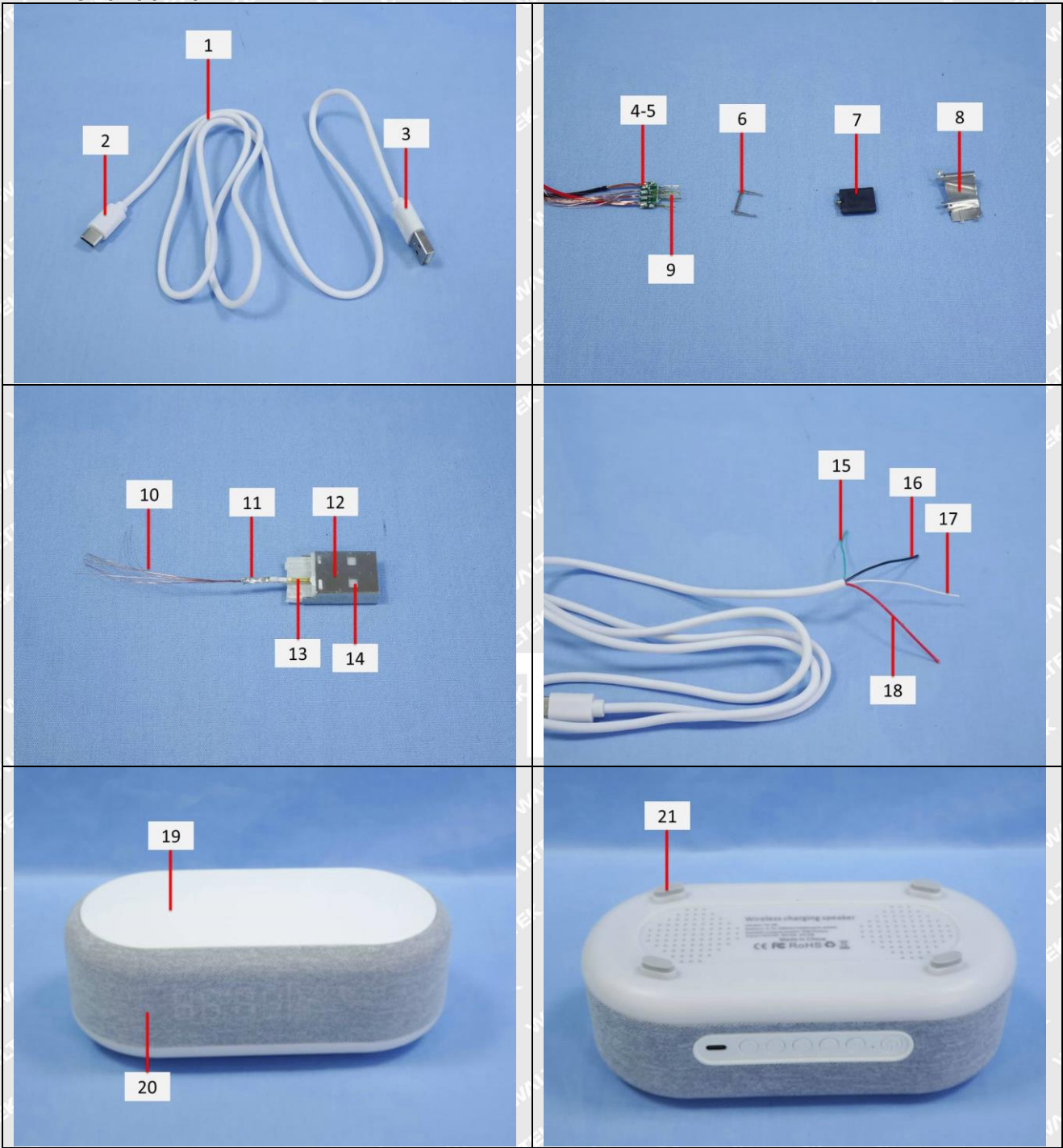


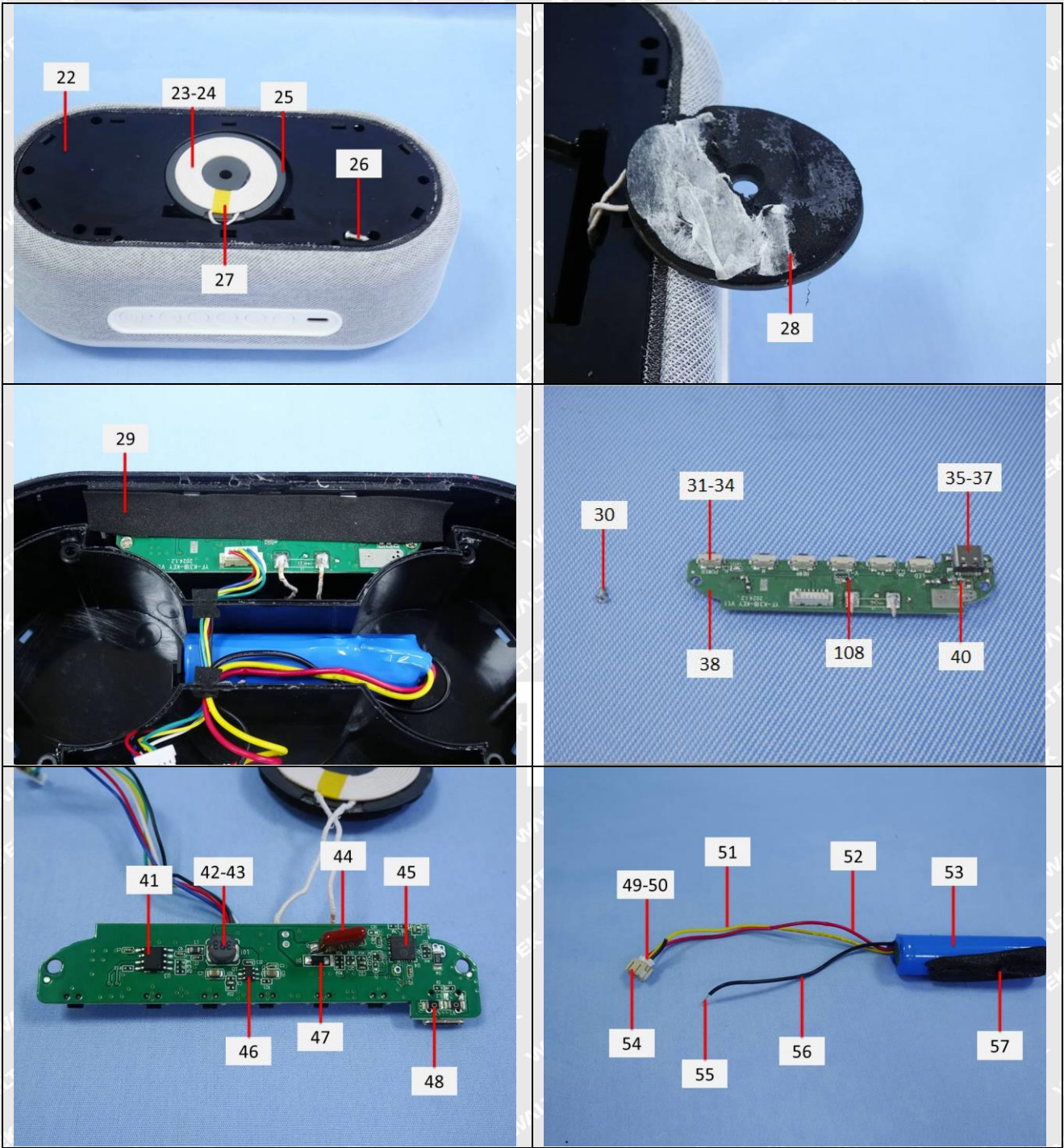
Measurement Flowchart:

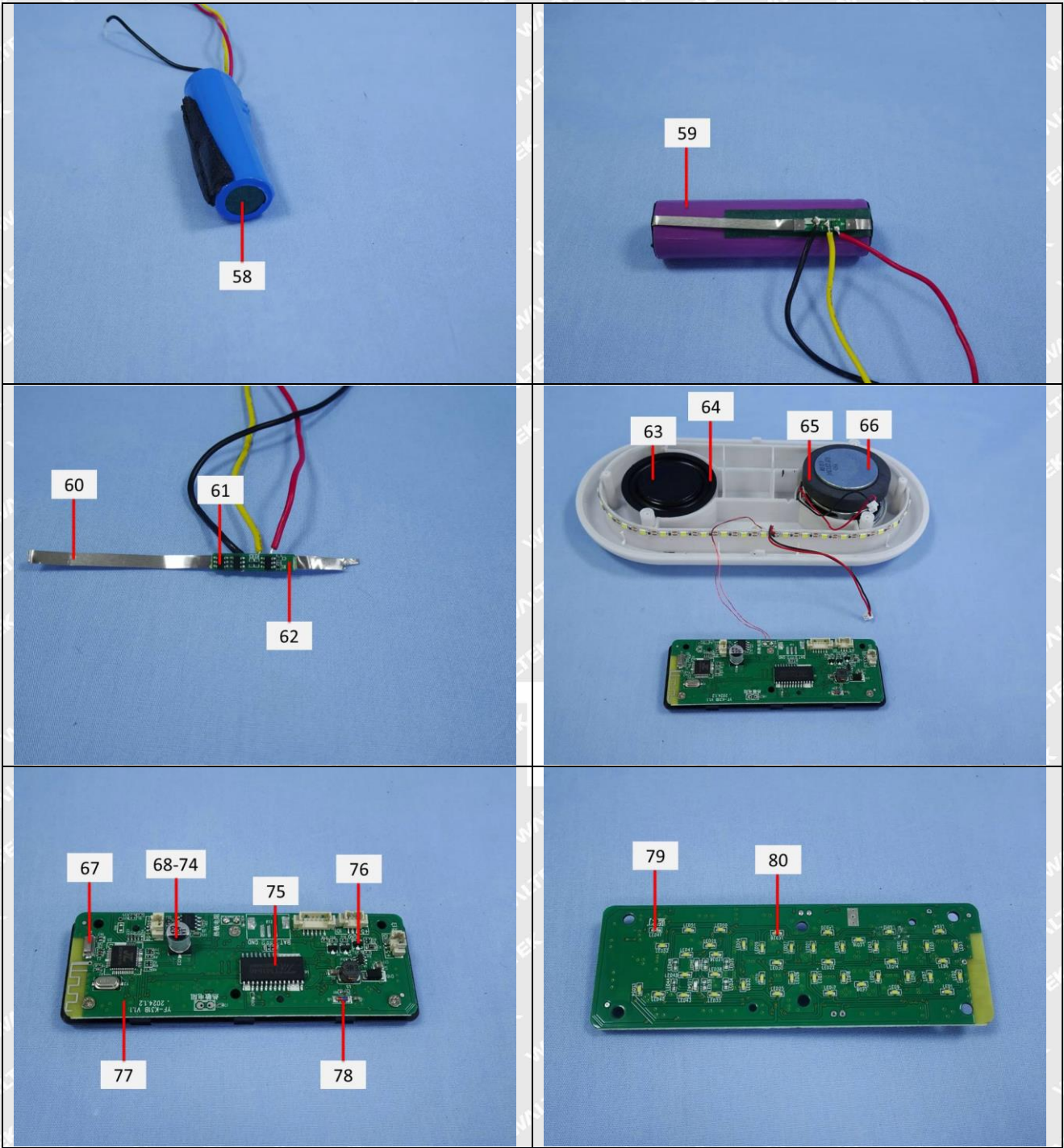


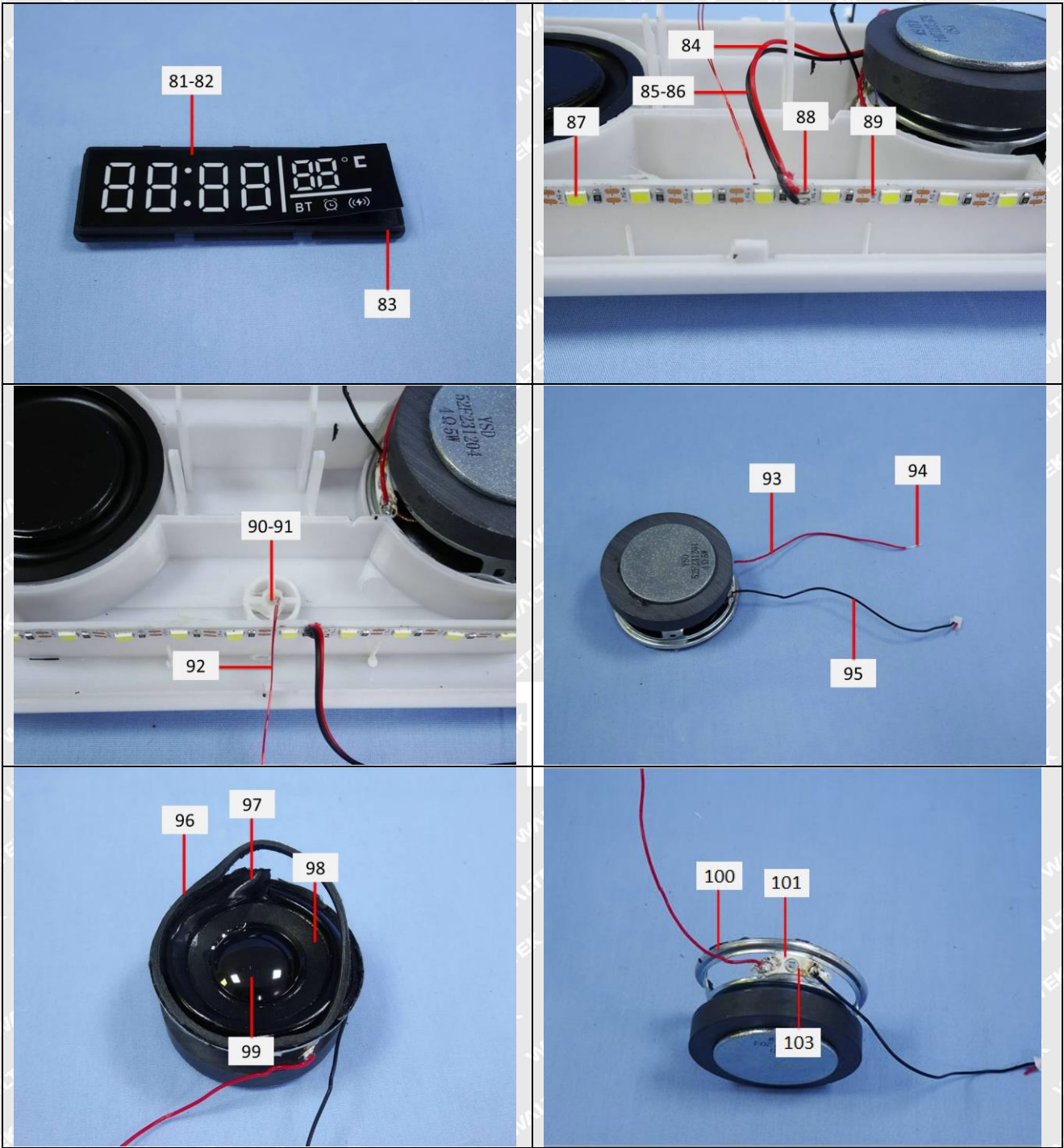


Photograph(s) of parts tested:











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;
5. If the report is not stamped with the accreditation recognized seal, it will only be used for scientific research, education, and internal quality control activities, and is not used for the purpose of issuing supporting data to the society.
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 =====