



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No...... : WTF23F11253400A1C
Applicant..... : Mid Ocean Brands B.V.
Address..... : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer..... : 115164
Sample Name..... : LED Wireless speaker
Sample Model..... : MO6662
Date of Receipt sample..... : 2023-11-28 & 2023-12-19
Testing period..... : 2023-11-28 to 2023-12-15 & 2023-12-19 to 2023-12-25
Date of Issue..... : 2023-12-27
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



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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)

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)
		Cd	Pb	Hg	Cr	Br	
1	Black plastic shell	BL	BL	BL	BL	BL	NA
2	Black soft plastic shell	BL	BL	BL	BL	BL	NA
3	Black soft plastic shell	BL	BL	BL	BL	BL	NA
4	Green plastic shell	BL	BL	BL	BL	BL	NA
5	Black main fabric	BL	BL	BL	BL	BL	NA
6	Silvery metal rivet	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
7	Black synthetic leather	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
8	White soft plastic ring	BL	BL	BL	BL	BL	NA
9	Black coating	BL	BL	BL	BL	BL	NA
10	Silvery metal sheet without black coating	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
11	Silvery metal screw with black surface	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
12	Transparent double faced adhesive tape	BL	BL	BL	BL	BL	NA
13	Silvery metal screw	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
14	Black sponge with adhesive	BL	BL	BL	BL	BL	NA
15	Black plastic shell	BL	BL	BL	BL	BL	NA
16	Chip IC	BL	BL	BL	BL	BL	NA
17	Black magnetic core(inductor)	BL	BL	BL	BL	--	NA
18	Coppery varnished wire(inductor)	BL	BL	BL	BL	BL	NA
19	Yellow hot melt adhesive	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	Silvery metal shell(USB socket)	BL	BL	BL	BL	--	NA
21	Silvery metal pin(USB socket)	BL	BL	BL	BL	--	NA
22	Black plastic core(USB socket)	BL	BL	BL	BL	BL	NA
23	Chip LED	BL	BL	BL	BL	BL	NA
24	Black plastic part(button)	BL	BL	BL	BL	BL	NA
25	White plastic shell(button)	BL	BL	BL	BL	BL	NA
26	Silvery metal shell(button)	BL	BL	BL	BL	--	NA
27	Silvery metal sheet(button)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
28	Silvery metal pin(button)	BL	BL	BL	BL	--	NA
29	Chip MIC	BL	BL	BL	BL	BL	NA
30	Black plastic shell(DC socket)	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
31	Silvery metal sheet(DC socket)	BL	BL	BL	BL	--	NA
32	Silvery metal shell(Type-C socket)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
33	Silvery metal pin(Type-C socket)	BL	BL	BL	BL	--	NA
34	Black plastic core(Type-C socket)	BL	BL	BL	BL	BL	NA
35	Chip crystal oscillator	BL	BL	BL	BL	BL	NA
36	Chip IC	BL	BL	BL	BL	BL	NA
37	Black plastic film(electrolytic capacitor)	BL	BL	BL	BL	BL	NA
38	Black rubber stopper(electrolytic capacitor)	BL	BL	BL	BL	BL	NA
39	Brown paper(electrolytic capacitor)	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	
40	Silvery metal shell(electrolytic capacitor)	BL	BL	BL	BL	--	NA
41	Silvery metal pin(electrolytic capacitor)	BL	BL	BL	BL	--	NA
42	Grey metal foil(electrolytic capacitor)	BL	BL	BL	BL	--	NA
43	Silvery-grey metal foil(electrolytic capacitor)	BL	BL	BL	BL	--	NA
44	Chip resistor	BL	BL	BL	BL	BL	NA
45	Chip IC	BL	BL	BL	BL	BL	NA
46	White plastic shell(socket)	BL	BL	BL	BL	BL	NA
47	Silvery metal pin(socket)	BL	BL	BL	BL	--	NA
48	Off-white plastic shell(socket)	BL	BL	BL	BL	BL	NA
49	Silvery metal pin(socket)	BL	BL	BL	BL	--	NA
50	Red plastic shell(socket)	BL	BL	BL	BL	BL	NA
51	Silvery metal pin(socket)	BL	BL	BL	BL	--	NA
52	Chip capacitor	BL	BL	BL	BL	BL	NA
53	Chip resistor	BL	OL	BL	IN	BL	*Pb : 7.39×10^3 Cr ⁶⁺ : ND
54	Solder	BL	IN	BL	BL	--	Pb :487
55	Chip diode	BL	BL	BL	BL	BL	NA
56	Chip diode	BL	BL	BL	BL	BL	NA
57	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
58	Silvery metal shell(socket)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
59	Black plastic shell(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	
60	Silvery metal spring(socket)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
61	Silvery metal pin(socket)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
62	Chip LED	BL	BL	BL	BL	BL	NA
63	Chip resistor	BL	BL	BL	BL	BL	NA
64	Red plastic wire covering	BL	BL	BL	BL	BL	NA
65	Black plastic wire covering	BL	BL	BL	BL	BL	NA
66	White plastic wire covering	BL	BL	BL	BL	BL	NA
67	Silvery metal wire	BL	BL	BL	BL	--	NA
68	White plastic shell(plug)	BL	BL	BL	BL	BL	NA
69	Silvery metal pin(plug)	BL	BL	BL	BL	--	NA
70	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
71	White paper gasket	BL	BL	BL	BL	BL	NA
72	Black synthetic leather	BL	BL	BL	BL	BL	NA
73	Blue plastic film	BL	BL	BL	BL	BL	NA
74	White paper sheet	BL	BL	BL	BL	BL	NA
75	Black sponge with adhesive	BL	BL	BL	BL	BL	NA
76	Black sponge with adhesive	BL	BL	BL	BL	BL	NA
77	Black plastic wire covering	BL	BL	BL	BL	BL	NA
78	Red plastic wire covering	BL	BL	BL	BL	BL	NA
79	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	
80	Silvery metal shell	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
81	Solder	BL	IN	BL	BL	--	Pb :142
82	Black magnetic ring	BL	BL	BL	BL	--	NA
83	Silvery metal rivet	BL	BL	BL	BL	--	NA
84	White paper sheet	BL	BL	BL	BL	BL	NA
85	Silvery metal shell	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
86	Brown net fabric	BL	BL	BL	BL	BL	NA
87	Brown paper tube with glue	BL	BL	BL	BL	BL	NA
88	Red varnished wire	BL	BL	BL	BL	BL	NA
89	Coppery metal wire	BL	BL	BL	BL	--	NA
90	Black plastic wire covering	BL	BL	BL	BL	BL	NA
91	Solder	BL	BL	BL	BL	--	NA
92	Silvery metal sheet	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
93	Red plastic wire covering	BL	BL	BL	BL	BL	NA
94	Silvery metal wire	BL	BL	BL	BL	--	NA
95	Green paper sheet	BL	BL	BL	BL	BL	NA
96	Blue plastic film	BL	BL	BL	BL	BL	NA
97	Chip capacitor	BL	BL	BL	BL	BL	NA
98	Chip IC	BL	BL	BL	BL	BL	NA
99	Chip resistor	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	
100	Green PCB	BL	BL	BL	BL	BL	NA
101	Black plastic wire jacket	BL	BL	BL	BL	BL	NA
102	Black plastic jacket(USB plug)	BL	BL	BL	BL	BL	NA
103	Silvery metal shell (USB plug)	BL	BL	BL	BL	--	NA
104	Black plastic jacket(Type-C plug)	BL	BL	BL	BL	BL	NA
105	Silvery metal shell (Type-C plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
106	Solder(USB plug)	BL	IN	BL	BL	--	Pb :235
107	Golden metal pin(USB plug)	BL	BL	BL	BL	--	NA
108	Red plastic wire covering	BL	BL	BL	BL	BL	NA
109	Black plastic wire covering	BL	BL	BL	BL	BL	NA
110	Coppery metal wire	BL	BL	BL	BL	--	NA
111	Solder(Type-C plug)	BL	BL	BL	BL	--	NA
112	Silvery metal sheet(Type-C plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
113	Golden metal pin(Type-C plug)	BL	BL	BL	BL	--	NA
114	Black plastic core(Type-C plug)	BL	BL	BL	BL	BL	NA
115	Green PCB(Type-C plug)	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
116	Chip resistor(Type-C plug)	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 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 $\mu\text{g}/\text{cm}^2$.

- (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.

2. Phthalates:

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1+4+22+24 [△]	101	ND	568	92
T02	2	ND	ND	ND	ND
T03	3	ND	ND	72	ND
T04	5+86 [△]	ND	ND	ND	ND
T05	6	--	--	--	--
T06	7	815	ND	215	ND
T07	8	ND	ND	ND	ND
T08	9	ND	ND	ND	ND
T09	10	--	--	--	--
T10	11	--	--	--	--
T11	12	ND	ND	ND	ND
T12	13	--	--	--	--
T13	14	ND	ND	ND	ND
T14	15	ND	ND	ND	ND
T15	16+23+29+35+36 [△]	ND	ND	ND	ND
T16	17	--	--	--	--
T17	18+88 [△]	ND	ND	ND	ND
T18	19	ND	ND	ND	ND
T19	20	--	--	--	--
T20	21	--	--	--	--
T21	25+30+34+38+46 [△]	ND	ND	ND	ND
T22	26	--	--	--	--
T23	27	--	--	--	--
T24	28	--	--	--	--
T25	31	--	--	--	--
T26	32	--	--	--	--



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Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T27	33	--	--	--	--
T28	37+73+96 [△]	ND	ND	ND	ND
T29	39+71+74 [△]	ND	ND	ND	ND
T30	40	--	--	--	--
T31	41	--	--	--	--
T32	42	--	--	--	--
T33	43	--	--	--	--
T34	44	ND	ND	ND	ND
T35	45+52+53+55+56 [△]	ND	ND	ND	ND
T36	47	--	--	--	--
T37	48+50+59+68+114 [△]	ND	ND	ND	ND
T38	49	--	--	--	--
T39	51	--	--	--	--
T40	54	--	--	--	--
T41	57+70+100+115 [△]	ND	ND	ND	ND
T42	58	--	--	--	--
T43	60	--	--	--	--
T44	61	--	--	--	--
T45	62+63+97+98+99 [△]	ND	ND	ND	ND
T46	64	ND	ND	ND	ND
T47	65	ND	ND	ND	ND
T48	66	ND	ND	ND	ND
T49	67	--	--	--	--
T50	69	--	--	--	--
T51	72	ND	ND	ND	ND
T52	75	ND	ND	79	ND
T53	76	ND	ND	77	ND
T54	77	ND	ND	ND	ND
T55	78	ND	ND	ND	ND
T56	79	--	--	--	--
T57	80	--	--	--	--
T58	81	--	--	--	--
T59	82	--	--	--	--
T60	83	--	--	--	--
T61	84+95 [△]	ND	ND	ND	ND
T62	85	--	--	--	--
T63	87	ND	ND	ND	ND
T64	89	--	--	--	--
T65	90	ND	ND	150	ND
T66	91	--	--	--	--
T67	92	--	--	--	--
T68	93	ND	ND	ND	ND
T69	94	--	--	--	--
T70	101	ND	ND	ND	ND



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Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T71	102	ND	ND	ND	ND
T72	103	--	--	--	--
T73	104	ND	ND	156	ND
T74	105	--	--	--	--
T75	106	--	--	--	--
T76	107	--	--	--	--
T77	108	ND	ND	ND	ND
T78	109	ND	ND	ND	ND
T79	110	--	--	--	--
T80	111	--	--	--	--
T81	112	--	--	--	--
T82	113	--	--	--	--
T83	116	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

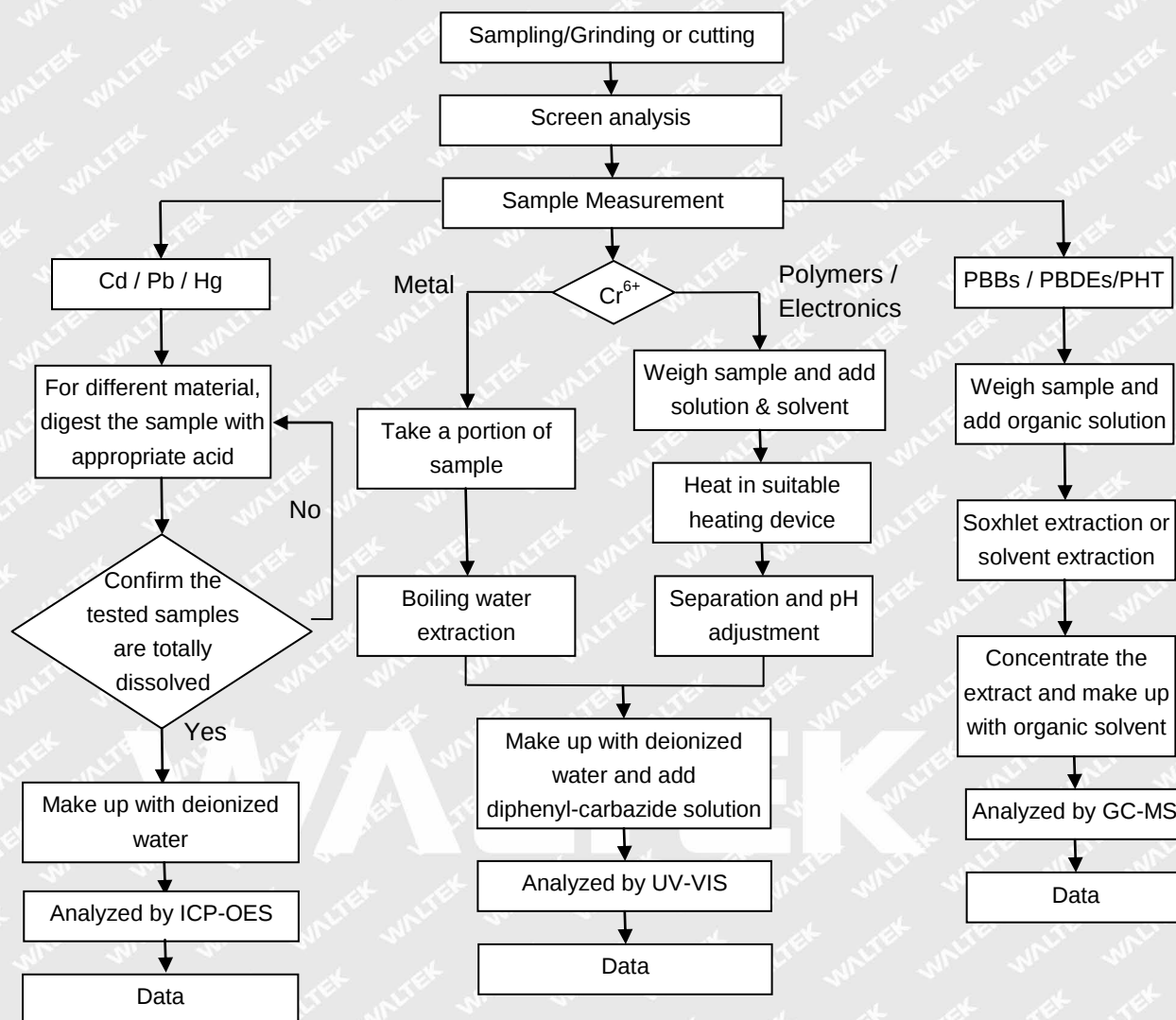
Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

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



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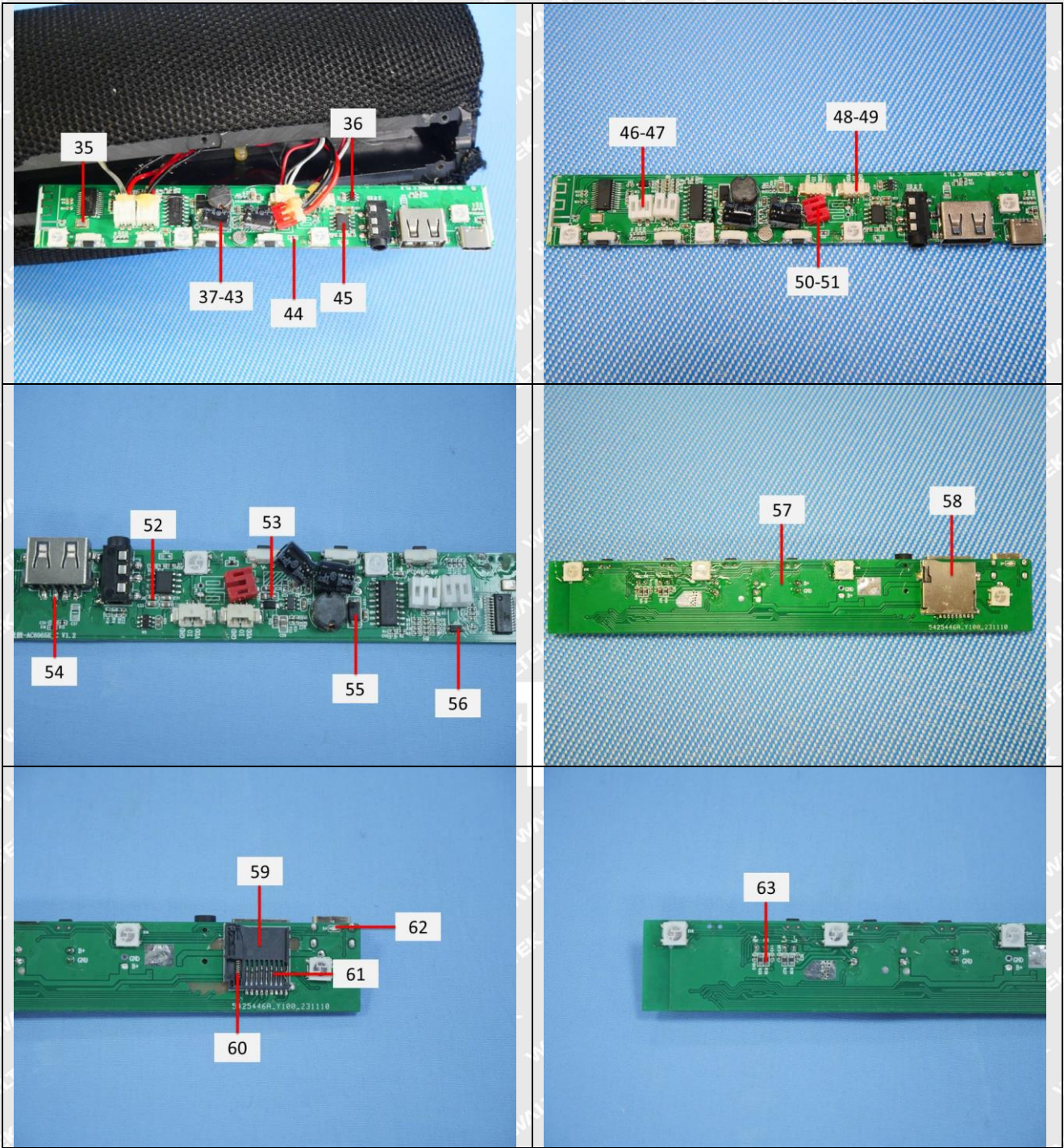
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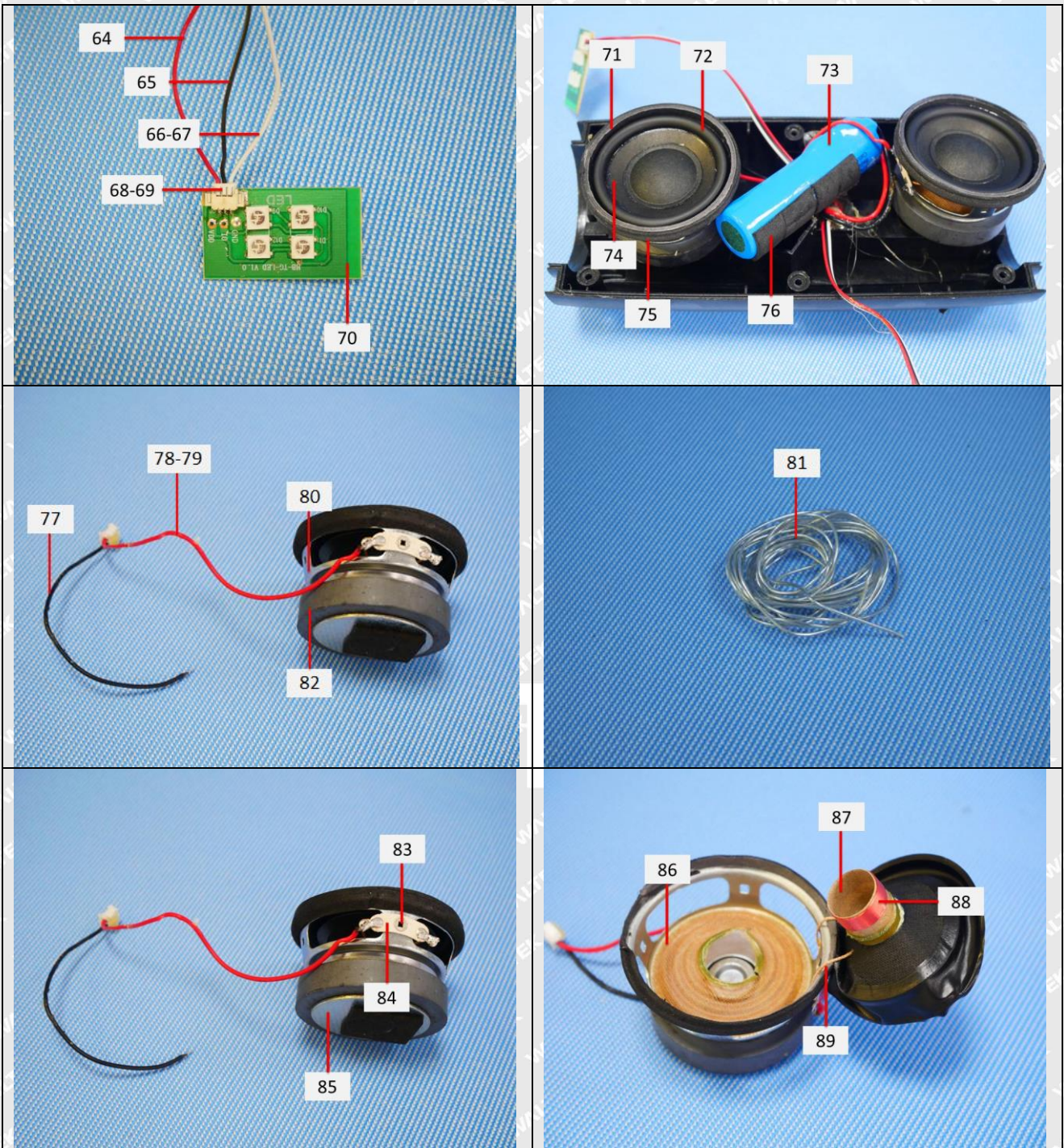


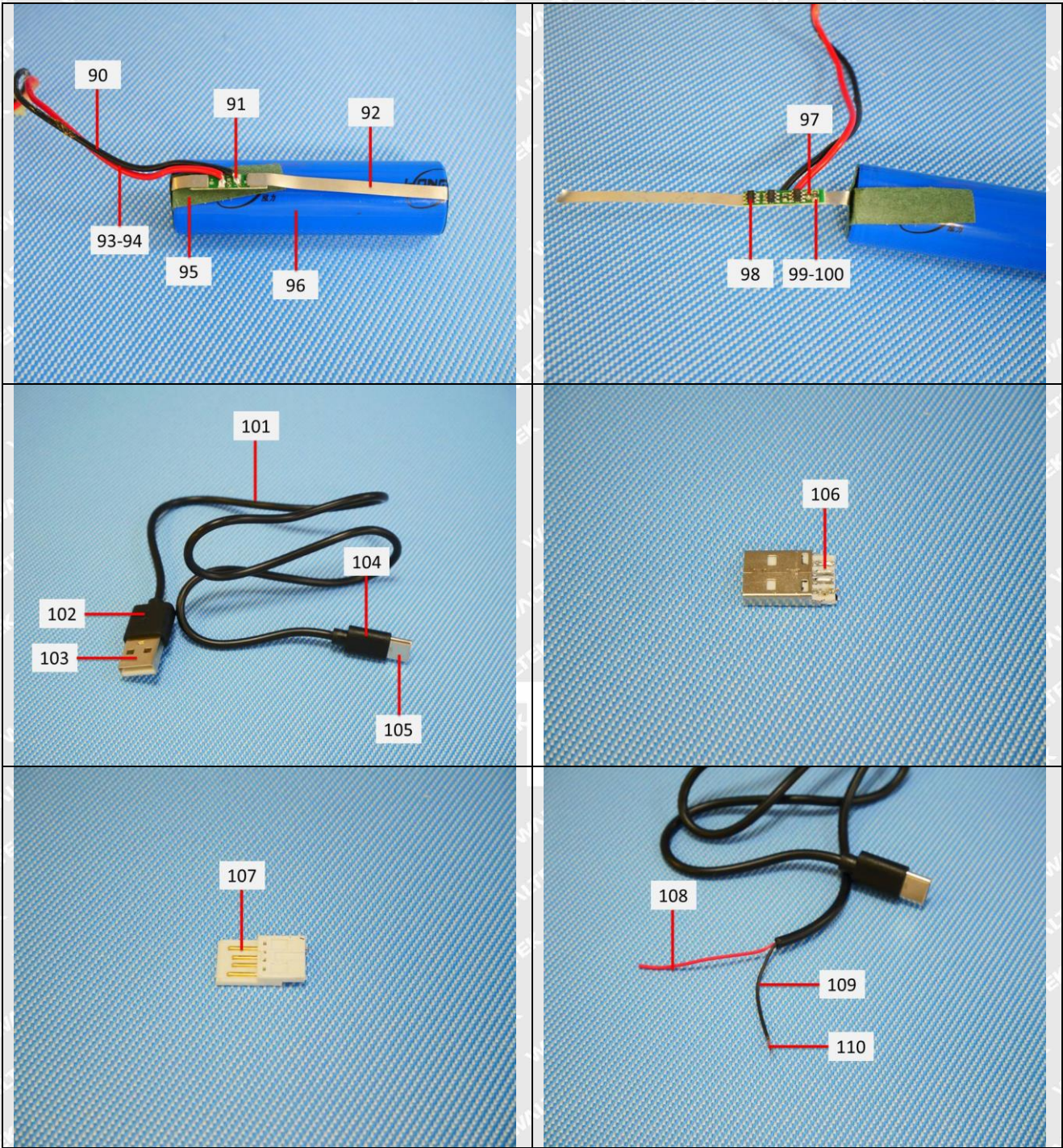


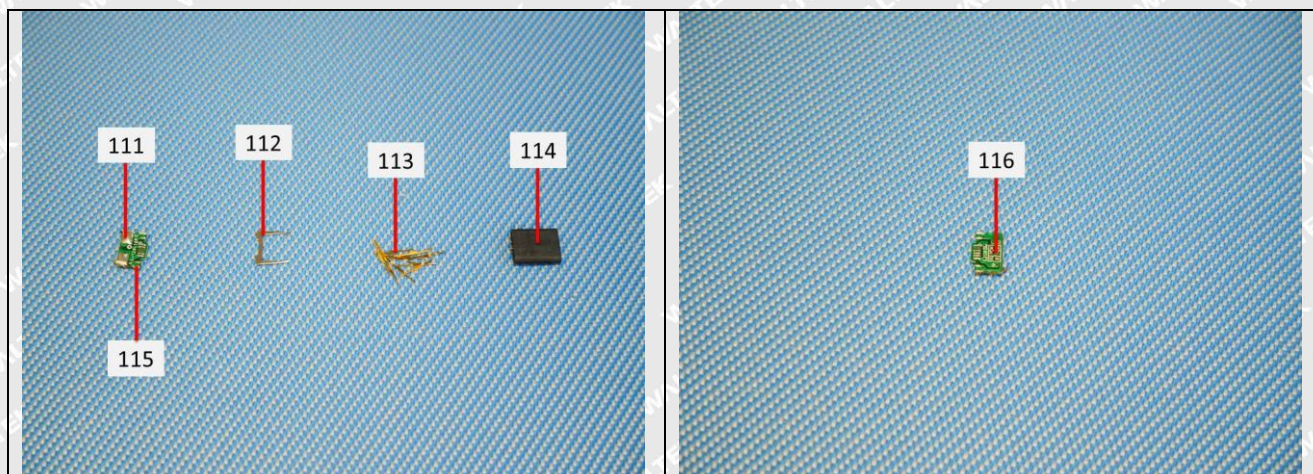
Photograph(s) of parts tested:











Remarks:

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2. This test report cannot be reproduced, except in full, without prior written permission of the company;
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===== End of Report =====