



中国认可  
国际互认  
检测  
TESTING  
CNAS L6478



# TEST REPORT

**Report No.**..... : WTF23F10227586A1R2C  
**Applicant**..... : Mid Ocean Brands B.V.  
**Address**..... : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong  
**Manufacturer**..... : 118144  
**Sample Name**..... : USB foldable desk fan  
**Sample Model**..... : MO2123  
**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**..... : 2023-10-24 & 2023-11-16 & 2023-11-24  
**Testing period**..... : 2023-10-24 to 2023-11-14 & 2023-11-16 to 2023-11-20 & 2023-11-24 to 2023-11-27  
**Date of Issue**..... : 2023-12-08  
**Test Result**..... : Refer to next page (s)  
**Note**..... :  
1) As per client's requirement, the results of specimen No.1 to No.83 were quoted from Report No. WTF23F10227586A1C specimen No.1 to No.83.  
2) As per client's requirement, the results of specimen No.84 were quoted from Report No. WTF23F10227586A1R1C specimen No.84.

## 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.: WTF23F10227586A1R2C

- 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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Report No.: WTF23F10227586A1R2C

**Sample Photo(s):**



**MO2123**



**MO2123**

**WALTEK**

**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 shell	BL	BL	BL	BL	BL	NA
4	White plastic shell	BL	BL	BL	BL	BL	NA
5	White plastic adhesive label with grey printing	BL	BL	BL	BL	BL	NA
6	White plastic key	BL	BL	BL	BL	BL	NA
7	White plastic sheet	BL	BL	BL	BL	BL	NA
8	White plastic sheet	BL	BL	BL	BL	BL	NA
9	Transparent plastic fan blade	BL	BL	BL	BL	BL	NA
10	Black magnetic core	BL	BL	BL	BL	--	NA
11	Silvery metal axle	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
12	White plastic washer	BL	BL	BL	BL	BL	NA
13	Black soft plastic washer	BL	BL	BL	BL	BL	NA
14	Coppery metal sleeve	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
15	Beige-green PCB	BL	BL	BL	BL	BL	NA
16	Coppery varnished wire	BL	BL	BL	BL	BL	NA
17	Silvery silicon steel sheet	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
18	Black plastic holder	BL	BL	BL	BL	IN	PBBs : ND PBDEs : 57
19	Chip IC	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	Solder	BL	BL	BL	BL	--	NA
21	Chip resistor	BL	BL	BL	BL	BL	NA
22	Silvery metal shell(Type-C socket)	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
23	Silvery metal pin(Type-C socket)	BL	BL	BL	BL	--	NA
24	Black plastic core(Type-C socket)	BL	BL	BL	BL	BL	NA
25	Chip LED	BL	BL	BL	BL	BL	NA
26	Silvery metal shell(USB socket)	BL	BL	BL	BL	--	NA
27	Silvery metal pin(USB socket)	BL	BL	BL	BL	--	NA
28	Black plastic core(USB socket)	BL	BL	BL	BL	BL	NA
29	Chip resistor	BL	BL	BL	BL	BL	NA
30	Black magnetic core(inductor)	BL	BL	BL	BL	--	NA
31	Coppery varnished wire(inductor)	BL	BL	BL	BL	BL	NA
32	Chip capacitor	BL	BL	BL	BL	BL	NA
33	Chip IC	BL	BL	BL	BL	BL	NA
34	Yellow transparent plastic adhesive tape(switch)	BL	BL	BL	BL	BL	NA
35	Black plastic base(switch)	BL	BL	BL	BL	BL	NA
36	Coppery metal key(switch)	BL	BL	BL	BL	--	NA
37	Silvery metal shell(switch)	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
38	Silvery metal sheet(switch)	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
39	Chip diode	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	Chip audion	BL	BL	BL	BL	BL	NA
41	Chip IC	BL	BL	BL	BL	BL	NA
42	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
43	Solder	BL	BL	BL	BL	--	NA
44	Red plastic wire covering	BL	BL	BL	BL	BL	NA
45	Black plastic wire covering	BL	BL	BL	BL	BL	NA
46	Coppery metal wire	BL	BL	BL	BL	--	NA
47	Black sponge with adhesive	BL	BL	BL	BL	BL	NA
48	Yellow transparent plastic adhesive tape	BL	BL	BL	BL	BL	NA
49	Chip IC	BL	BL	BL	BL	BL	NA
50	Chip IC	BL	BL	BL	BL	BL	NA
51	Chip resistor	BL	BL	BL	BL	BL	NA
52	Chip capacitor	BL	BL	BL	BL	BL	NA
53	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
54	Solder	BL	BL	BL	BL	--	NA
55	Silvery metal sheet	BL	BL	BL	BL	--	NA
56	Red plastic wire covering	BL	BL	BL	BL	BL	NA
57	Black plastic wire covering	BL	BL	BL	BL	BL	NA
58	Silvery metal wire	BL	BL	BL	BL	--	NA
59	Silvery metal screw	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	White plastic wire jacket	BL	BL	BL	BL	BL	NA
61	White plastic wire covering	BL	BL	BL	BL	BL	NA
62	Yellow plastic wire covering	BL	BL	BL	BL	BL	NA
63	Coppery metal wire	BL	BL	BL	BL	--	NA
64	White plastic jacket(Type-C plug)	BL	BL	BL	BL	BL	NA
65	White plastic jacket(USB plug)	BL	BL	BL	BL	BL	NA
66	Silvery metal shell(Type-C plug)	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
67	Silvery metal pin(Type-C plug)	BL	BL	BL	BL	--	NA
68	Black plastic core(Type-C plug)	BL	BL	BL	BL	BL	NA
69	Silvery metal shell(USB plug)	BL	BL	BL	BL	--	NA
70	Silvery metal pin(USB plug)	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
71	White plastic core(USB plug)	BL	BL	BL	BL	BL	NA
72	Green PCB(Type-C plug)	BL	BL	BL	BL	BL	NA
73	Chip resistor(Type-C plug)	BL	BL	BL	BL	BL	NA
74	Solder(Type-C plug)	BL	BL	BL	BL	--	NA
75	Solder(USB plug)	BL	BL	BL	BL	--	NA
76	White fabric sheet	BL	BL	BL	BL	BL	NA
77	Black plastic sheet	BL	BL	BL	BL	BL	NA
78	Silvery metal sheet	BL	BL	BL	IN	--	Cr <sup>6+</sup> : Negative
79	Black plastic shell	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	
80	Black elastic band	BL	BL	BL	BL	BL	NA
81	Black plastic sheet	BL	BL	BL	BL	BL	NA
82	Red varnished wire	BL	BL	BL	BL	BL	NA
83	Black EC	BL	BL	BL	BL	BL	NA
84	Chip capacitor	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<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	$BL \leq (70-3\sigma) < IN < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < IN < (130+3\sigma) \leq OL$	$LOD < IN < (150+3\sigma) \leq OL$
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 <sup>6+</sup>		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<sup>6+</sup> for polymer and composite sample is 8 mg/kg and LOQ of Cr<sup>6+</sup> 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 <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 0.10 ug/cm<sup>2</sup>.

Positive = Presence of Cr<sup>6+</sup> coating, the detected concentration in boiling water extraction solution is greater than 0.13 ug/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+2 <sup>△</sup>	ND	ND	ND	ND
T02	3	ND	ND	ND	ND
T03	4	ND	ND	ND	ND
T04	5	84	ND	ND	ND
T05	6	ND	ND	ND	ND
T06	7+8+9+12+18 <sup>△</sup>	ND	ND	ND	ND
T07	10	--	--	--	--
T08	11	--	--	--	--
T09	13	ND	ND	ND	ND
T10	14	--	--	--	--
T11	15+42+53+72 <sup>△</sup>	ND	ND	ND	ND
T12	16+19+31 <sup>△</sup>	ND	ND	ND	ND
T13	17	--	--	--	--
T14	20	--	--	--	--
T15	21+25+29+32+33 <sup>△</sup>	ND	ND	ND	ND
T16	22	--	--	--	--
T17	23	--	--	--	--



Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T18	24+28+68+71 <sup>△</sup>	ND	ND	ND	ND
T19	26	--	--	--	--
T20	27	--	--	--	--
T21	30	--	--	--	--
T22	34	ND	ND	ND	ND
T23	35	ND	ND	ND	ND
T24	36	--	--	--	--
T25	37	--	--	--	--
T26	38	--	--	--	--
T27	39+40+41+49+50 <sup>△</sup>	ND	ND	ND	ND
T28	43	--	--	--	--
T29	44	86	ND	ND	ND
T30	45	128	ND	ND	ND
T31	46	--	--	--	--
T32	47	ND	ND	ND	ND
T33	48	92	ND	ND	ND
T34	51+52+73 <sup>△</sup>	ND	ND	ND	ND
T35	54	--	--	--	--
T36	55	--	--	--	--
T37	56	189	ND	ND	ND
T38	57	103	ND	ND	ND
T39	58	--	--	--	--
T40	59	--	--	--	--
T41	60	ND	ND	ND	ND
T42	61	ND	ND	ND	ND
T43	62	ND	ND	ND	ND
T44	63	--	--	--	--
T45	64	66	ND	ND	ND
T46	65	ND	ND	ND	ND
T47	66	--	--	--	--
T48	67	--	--	--	--
T49	69	--	--	--	--
T50	70	--	--	--	--
T51	74	--	--	--	--
T52	75	--	--	--	--
T53	76	ND	ND	ND	ND
T54	77	ND	ND	ND	ND
T55	78	--	--	--	--
T56	79	ND	ND	ND	ND
T57	80	ND	ND	ND	ND
T58	81	ND	ND	ND	ND
T59	82	ND	ND	ND	ND
T60	83	ND	ND	ND	ND
T61	84	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

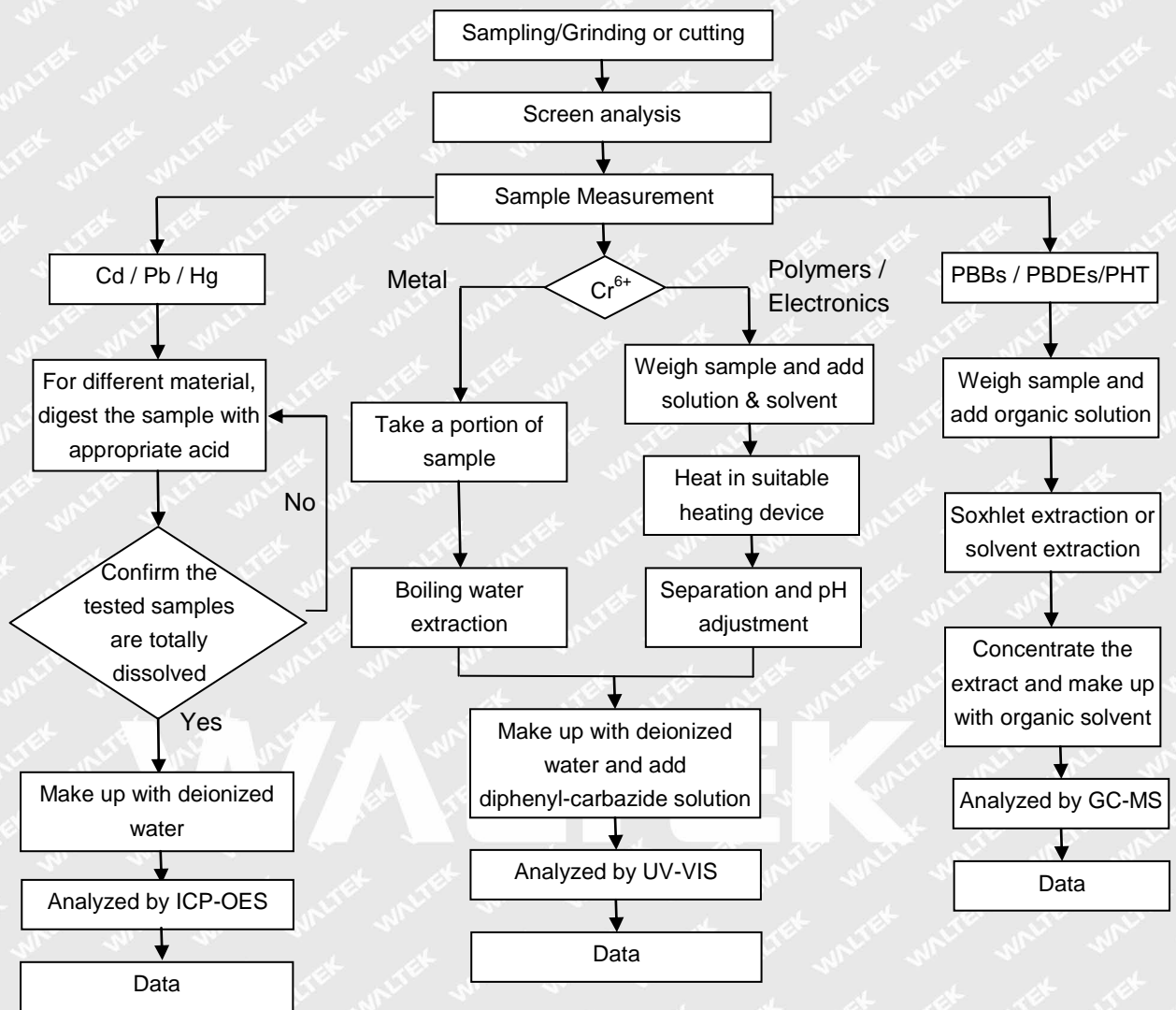
Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

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

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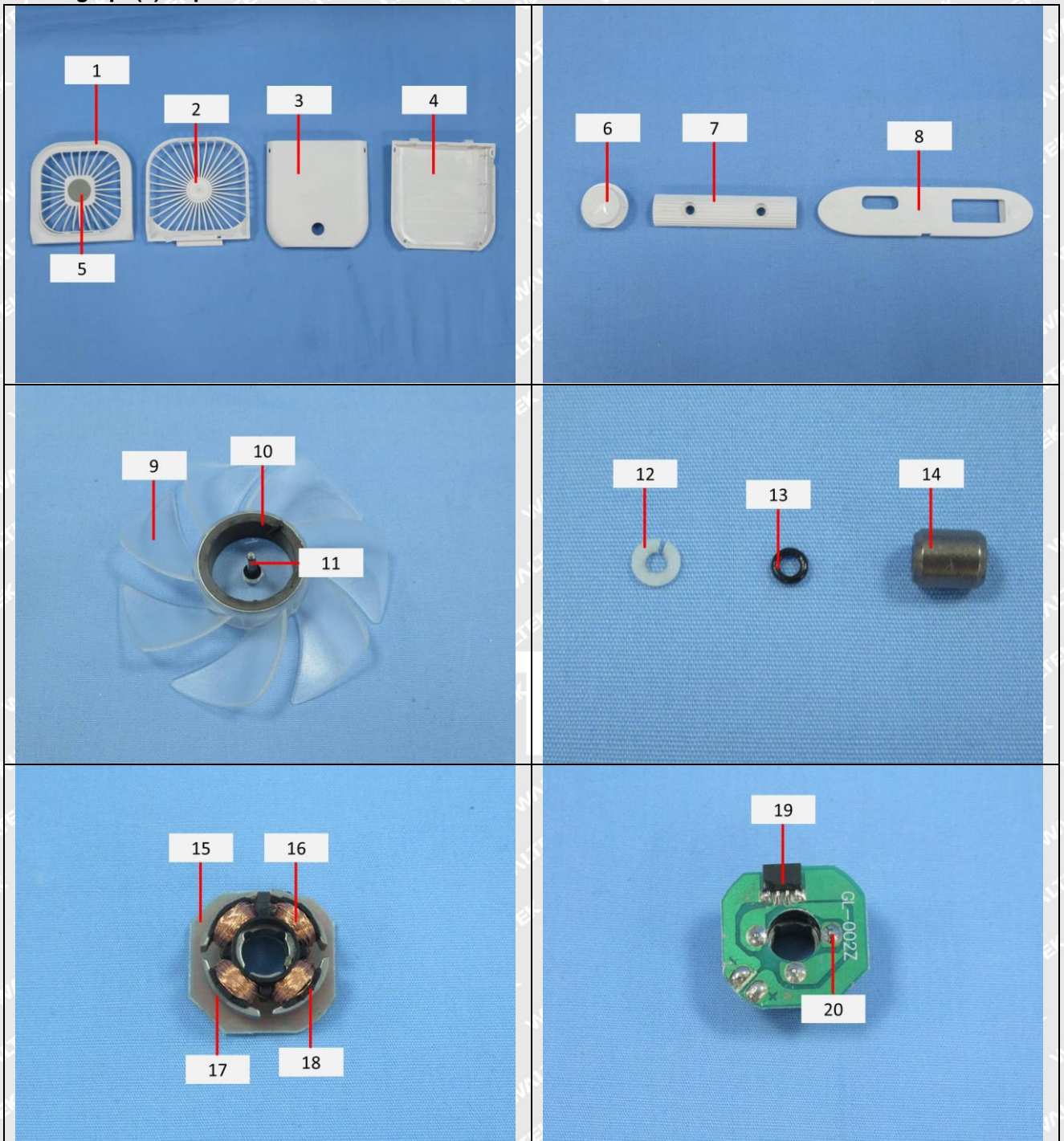
**Measurement Flowchart:**



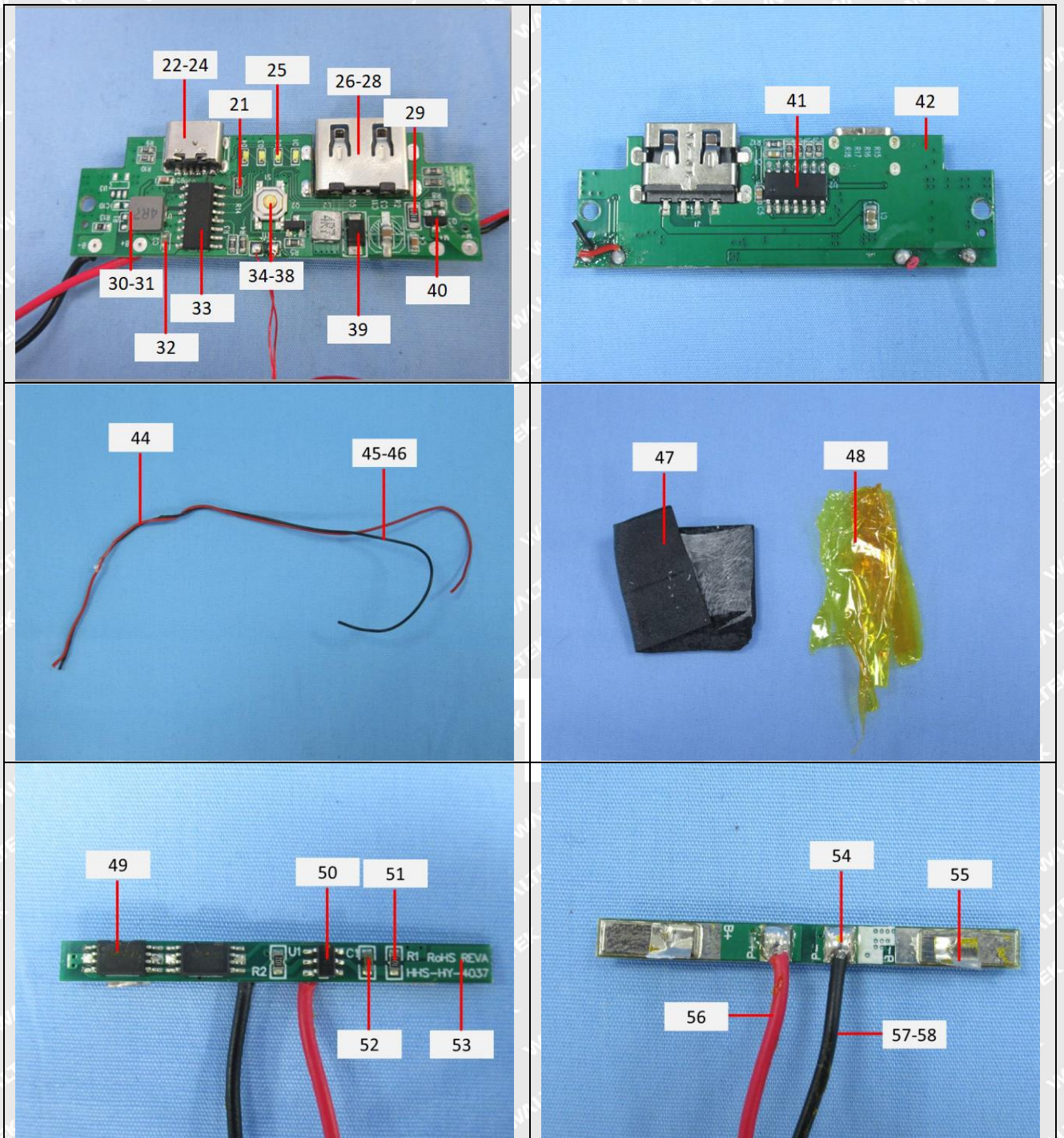




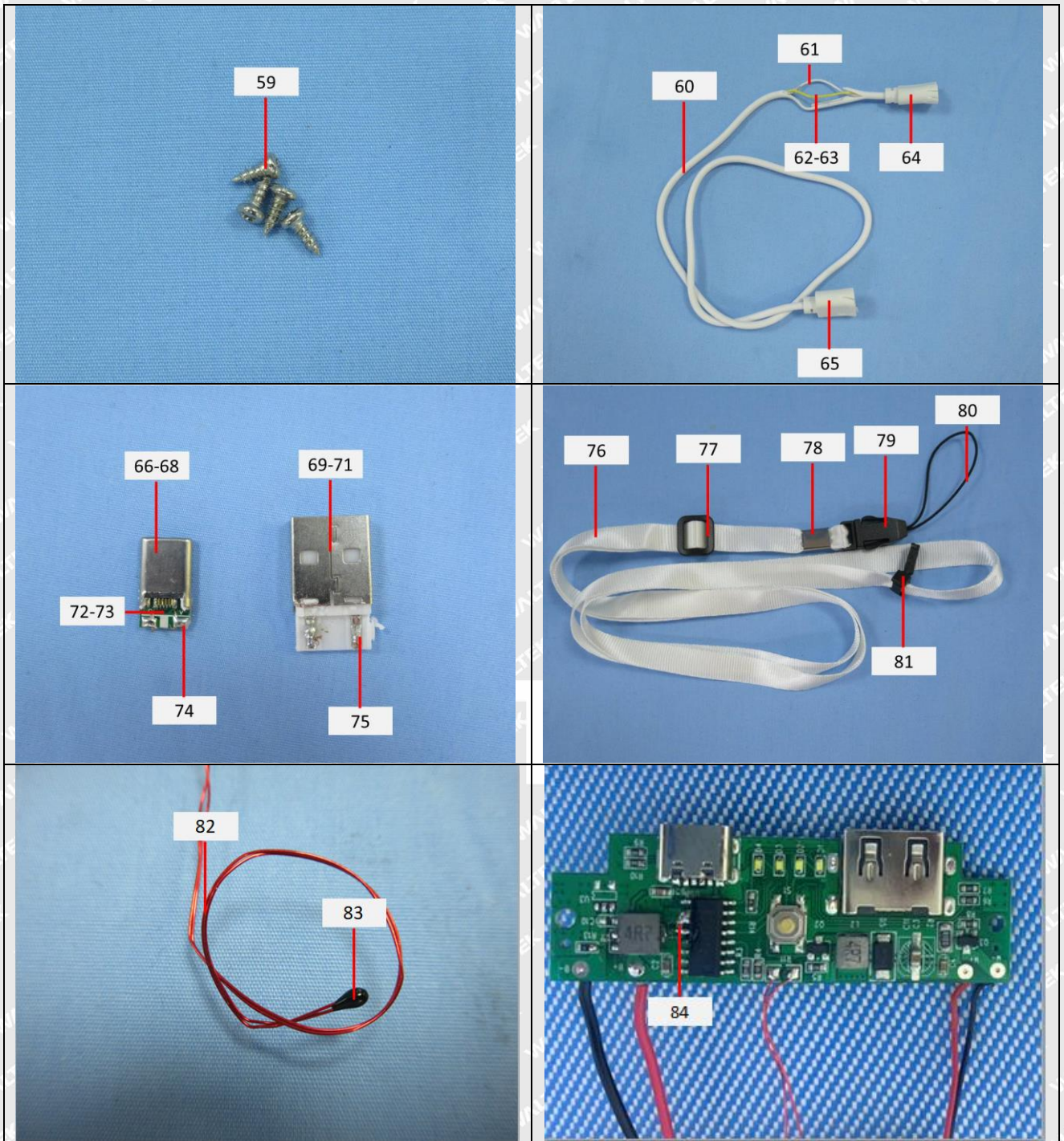
Photograph(s) of parts tested:













Remarks:

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