



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No...... : WTF24F03068019R1C
Applicant..... : Mid Ocean Brands B.V.
Address..... : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer..... : 118897
Sample Name..... : Smart wireless health watch
Sample Model..... : MO2271
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..... : 2024-03-29
Testing period..... : 2024-03-29 to 2024-04-11
Date of Issue..... : 2024-06-17
Test Result..... : Refer to next page (s)

Prepared By:

Waltek Testing Group (Foshan) Co., Ltd.

Address: No.13-19, 2/F., 2nd Building, Sunlink Machinery City, Xingye 4 Road, Guanglong Industrial Park, Chihua Neighborhood Committee, Chencun Town, 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



WTF24F03068019R1C



Report No.: WTF24F03068019R1C

Job No.: FSW202404012664CJ

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	Silvery metal part	IN	OL	BL	BL	--	Cd :54 #Pb : 3.34×10^4
2	Black soft plastic bracelet	BL	BL	BL	BL	BL	NA
3	Black transparent glass shell	BL	BL	BL	BL	--	NA
4	Silvery metal knob switch with black surface	IN	OL	BL	BL	--	Cd :80 #Pb : 2.93×10^4
5	Silvery metal strip	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
6	Transparent plastic sheet with glue with silvery black surface	BL	BL	BL	BL	BL	NA
7	Black plastic base	BL	BL	BL	BL	BL	NA
8	Golden metal shell	IN	OL	BL	BL	--	Cd :32 #Pb : 2.95×10^4
9	Golden metal spring	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
10	Silvery metal shell (USB plug)	BL	BL	BL	BL	--	NA
11	Black plastic jacket (USB plug)	BL	BL	BL	BL	BL	NA
12	Black plastic wire jacket	BL	BL	BL	BL	BL	NA
13	Silvery magnetic block	BL	BL	BL	BL	--	NA
14	Transparent double faced adhesive tape	BL	BL	BL	BL	BL	NA
15	Silvery metal spring	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	
16	Silvery transparent plastic film	BL	BL	BL	BL	BL	NA
17	White plastic ring	BL	BL	BL	BL	BL	NA
18	Yellow FPC	BL	BL	BL	BL	BL	NA
19	Black reinforcing plate	BL	BL	BL	BL	BL	NA
20	Brown reinforcing plate	BL	BL	BL	BL	BL	NA
21	Black transparent plastic film	BL	BL	BL	BL	BL	NA
22	Black FPC	BL	BL	BL	BL	BL	NA
23	Chip LED	BL	BL	BL	BL	BL	NA
24	Black-white FPC	BL	BL	BL	BL	BL	NA
25	Black plastic adhesive tape	BL	BL	BL	BL	BL	NA
26	White plastic sheet with black surface	BL	BL	BL	BL	BL	NA
27	Transparent plastic sheet	BL	BL	BL	BL	BL	NA
28	Silvery metal sheet	BL	BL	BL	BL	--	NA
29	White plastic sheet	BL	BL	BL	BL	BL	NA
30	Coppery varnished wire	BL	BL	BL	BL	BL	NA
31	Transparent dry glue	BL	BL	BL	BL	BL	NA
32	Black soft plastic sheet with adhesive	BL	BL	BL	BL	BL	NA
33	Green PCB	BL	BL	BL	BL	BL	NA
34	Coppery varnished wire	BL	BL	BL	BL	BL	NA
35	Golden metal ring	BL	BL	BL	BL	--	NA



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
36	Black EC	BL	BL	BL	BL	BL	NA
37	Dark grey plastic shell (socket)	BL	BL	BL	BL	BL	NA
38	Black plastic sheet (socket)	BL	BL	BL	BL	BL	NA
39	Silvery metal pin(socket)	BL	BL	BL	BL	--	NA
40	Chip audion	BL	BL	BL	BL	BL	NA
41	Off-white plastic shell (button)	BL	BL	BL	BL	BL	NA
42	Dark grey plastic cap (button)	BL	BL	BL	BL	BL	NA
43	Silvery metal sheet (button)	BL	BL	BL	BL	--	NA
44	Blue PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
45	Chip IC	BL	BL	BL	BL	BL	NA
46	Blue plastic wire covering	BL	BL	BL	BL	BL	NA
47	Black EC	BL	OL	BL	IN	BL	*Pb : 9.81×10^3 Cr ⁶⁺ : ND
48	Solder	BL	BL	BL	BL	--	NA
49	Purple plastic wire covering	BL	BL	BL	BL	BL	NA
50	Silvery crystal oscillator	BL	BL	BL	BL	BL	NA
51	Red plastic wire covering	BL	BL	BL	BL	BL	NA
52	Silvery metal wire	BL	BL	BL	BL	--	NA
53	Grey EC	BL	BL	BL	BL	BL	NA
54	Chip capacitor	BL	BL	BL	BL	BL	NA
55	Black soft plastic cover	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	
56	Black plastic wire covering	BL	BL	BL	BL	BL	NA
57	Golden microphone	BL	BL	BL	BL	BL	NA
58	White plastic sheet with glue	BL	BL	BL	BL	BL	NA
59	Brown plastic shell	BL	BL	BL	BL	BL	NA
60	Silvery metal pin	BL	BL	BL	BL	--	NA
61	Coppery metal ring	BL	BL	BL	BL	--	NA
62	Chip LED	BL	BL	BL	BL	BL	NA
63	Yellow transparent PCB	BL	BL	BL	BL	BL	NA
64	Yellow transparent plastic adhesive tape	BL	BL	BL	BL	BL	NA
65	Chip IC	BL	BL	BL	BL	BL	NA
66	Chip IC	BL	BL	BL	BL	BL	NA
67	Chip capacitor	BL	BL	BL	BL	BL	NA
68	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
69	Silvery metal sheet	BL	BL	BL	BL	--	NA
70	White plastic sheet (USB plug)	BL	BL	BL	BL	BL	NA
71	Silvery metal pin (USB plug)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
72	Black plastic jacket (USB plug)	BL	BL	BL	BL	BL	NA
73	Red plastic wire covering	BL	BL	BL	BL	BL	NA
74	Coppery metal wire	BL	BL	BL	BL	--	NA
75	Solder	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.
- (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 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 test sample is from copper alloy while lead as copper alloy containing up to 4% lead by weight is exempted by Directive 2011/65/EU ANNEX III.

(12)* = 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.

(13) As per client’s requirement, all results of specimen are extracted from report No. WTF24F03068019C.

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	--	--	--	--
T02	2	ND	ND	ND	ND
T03	3	--	--	--	--
T04	4	--	--	--	--
T05	5	--	--	--	--
T06	6	ND	ND	ND	ND
T07	7	ND	ND	ND	ND
T08	8	--	--	--	--
T09	9	--	--	--	--
T10	10	--	--	--	--
T11	11	ND	ND	ND	ND
T12	12	ND	ND	ND	ND
T13	13	--	--	--	--
T14	14	ND	ND	ND	ND
T15	15	--	--	--	--
T16	16	ND	ND	ND	ND
T17	17	ND	ND	ND	ND
T18	18	ND	ND	ND	ND
T19	19	ND	ND	ND	ND
T20	20	ND	ND	ND	ND



Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T21	21	ND	ND	ND	ND
T22	22	ND	ND	ND	ND
T23	23	ND	ND	ND	ND
T24	24	152	ND	ND	ND
T25	25	ND	ND	ND	ND
T26	26	ND	ND	ND	ND
T27	27	ND	ND	ND	ND
T28	28	--	--	--	--
T29	29	177	ND	141	123
T30	30	ND	ND	ND	ND
T31	31	ND	ND	ND	ND
T32	32	172	ND	145	ND
T33	33	ND	ND	ND	ND
T34	34	ND	ND	ND	ND
T35	35	--	--	--	--
T36	36	ND	ND	ND	ND
T37	37	ND	ND	ND	ND
T38	38	119	ND	ND	ND
T39	39	--	--	--	--
T40	40	ND	ND	ND	ND
T41	41	ND	ND	ND	ND
T42	42	ND	ND	ND	ND
T43	43	--	--	--	--
T44	44	ND	ND	ND	ND
T45	45	ND	ND	ND	ND
T46	46	ND	ND	ND	ND
T47	47	ND	ND	ND	ND
T48	48	--	--	--	--
T49	49	ND	ND	ND	ND
T50	50	ND	ND	ND	ND
T51	51	ND	ND	ND	ND
T52	52	--	--	--	--
T53	53	ND	ND	ND	ND
T54	54	ND	ND	ND	ND
T55	55	ND	ND	ND	ND
T56	56	ND	ND	ND	ND
T57	57	ND	ND	ND	ND
T58	58	ND	ND	ND	ND
T59	59	ND	ND	ND	ND
T60	60	--	--	--	--
T61	61	--	--	--	--
T62	62	ND	ND	ND	ND
T63	63	ND	ND	ND	ND
T64	64	ND	ND	ND	ND



Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T65	65	ND	ND	ND	ND
T66	66	ND	ND	ND	ND
T67	67	ND	ND	ND	ND
T68	68	ND	ND	ND	ND
T69	69	--	--	--	--
T70	70	ND	ND	ND	ND
T71	71	--	--	--	--
T72	72	ND	ND	ND	ND
T73	73	ND	ND	ND	ND
T74	74	--	--	--	--
T75	75	--	--	--	--

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

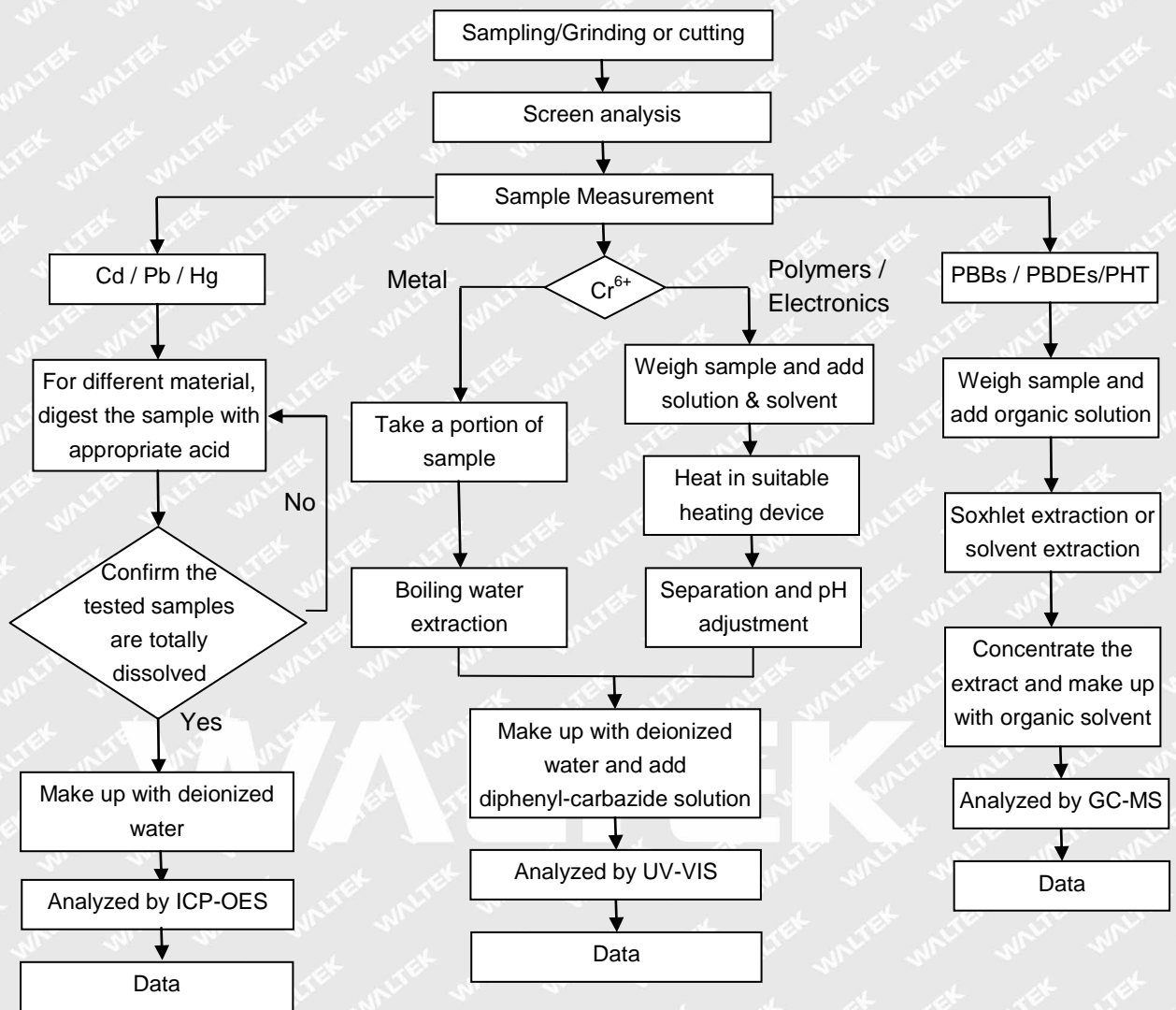
- (5) Abbreviation:
“DBP” denotes Dibutyl phthalate, “BBP” denotes Benzyl butyl phthalate (BBP), “DEHP” denotes Bis(2-ethylhexyl)-phthalate, “DIBP” denotes Diisobutyl phthalate, “PHT” denotes Phthalates.
- (6) RoHS requirement

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) The weight of test sample No.24,No.29,No.32 and No.38 is insufficient, the test result is for reference only.
- (8) As per client's requirement, all results of specimen are extracted from report No. WTF24F03068019C.

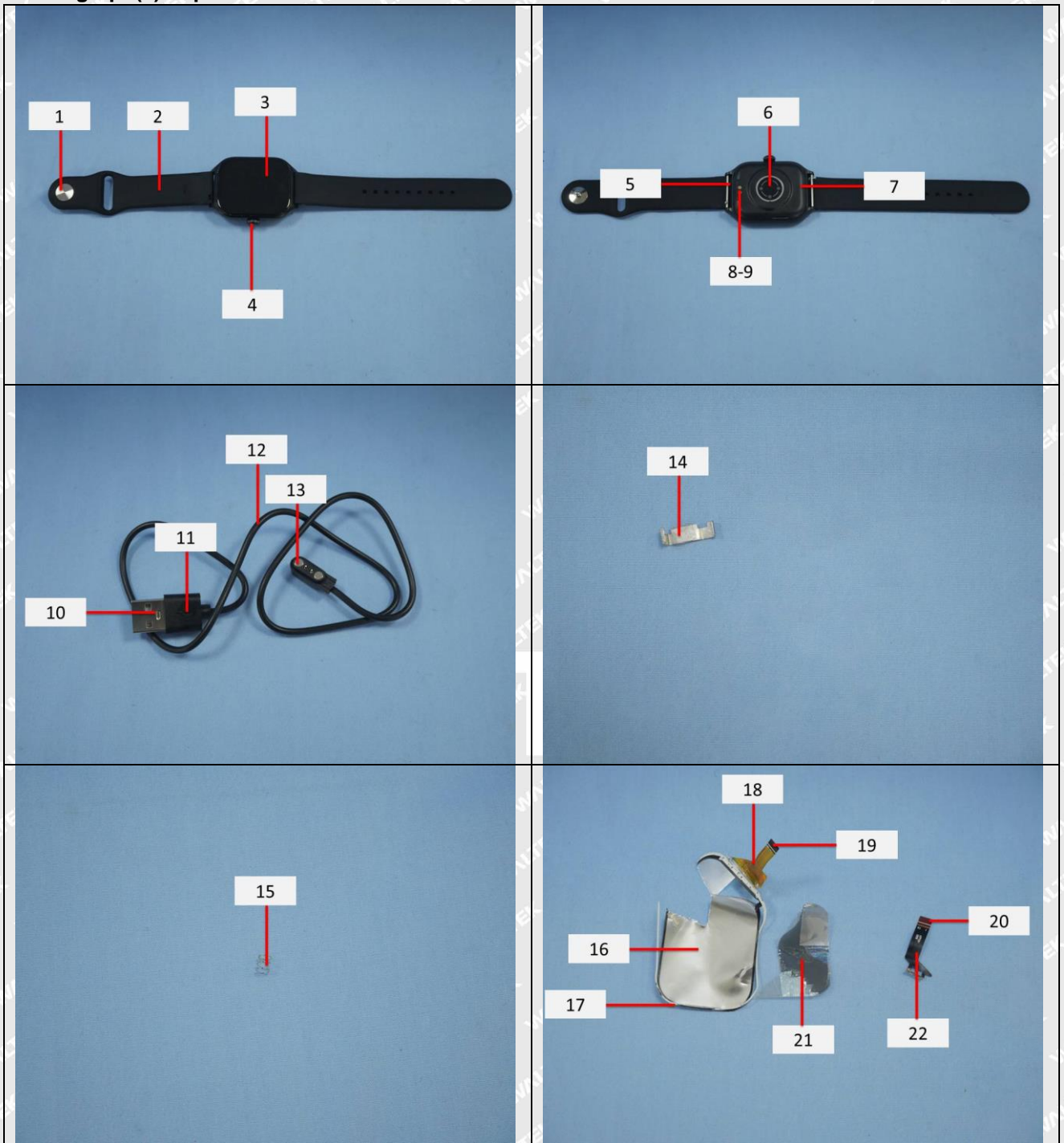


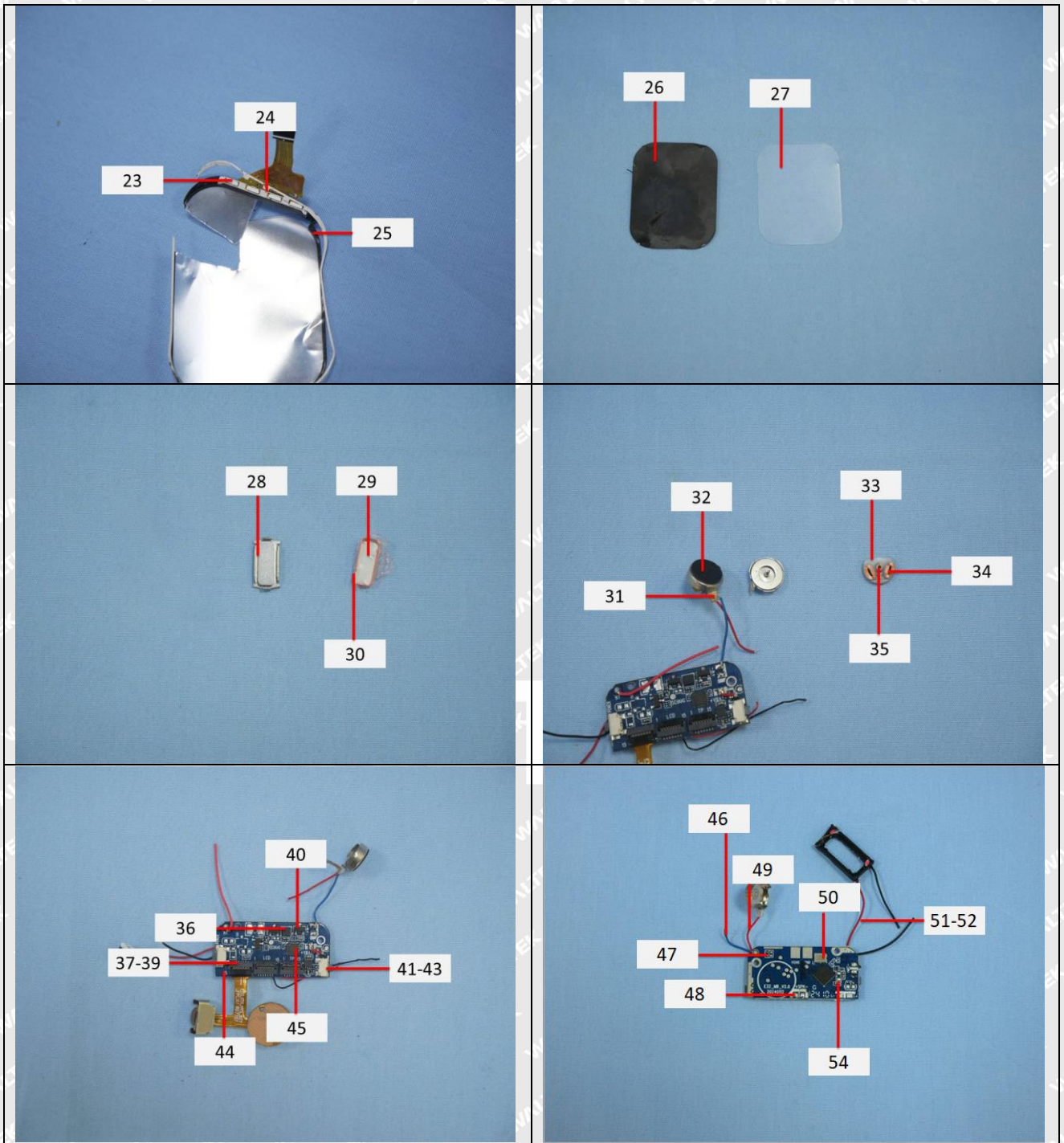
Measurement Flowchart:

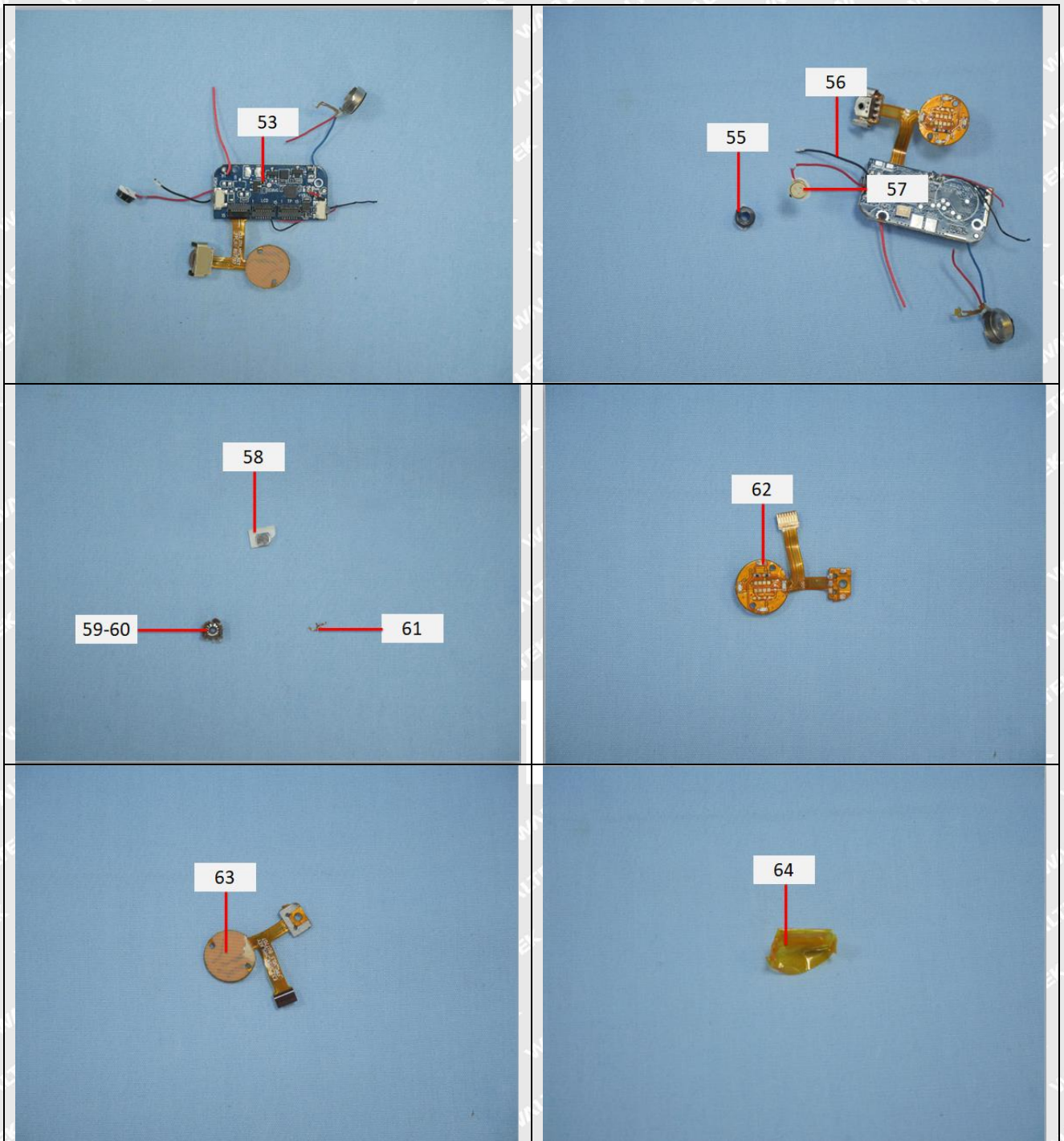


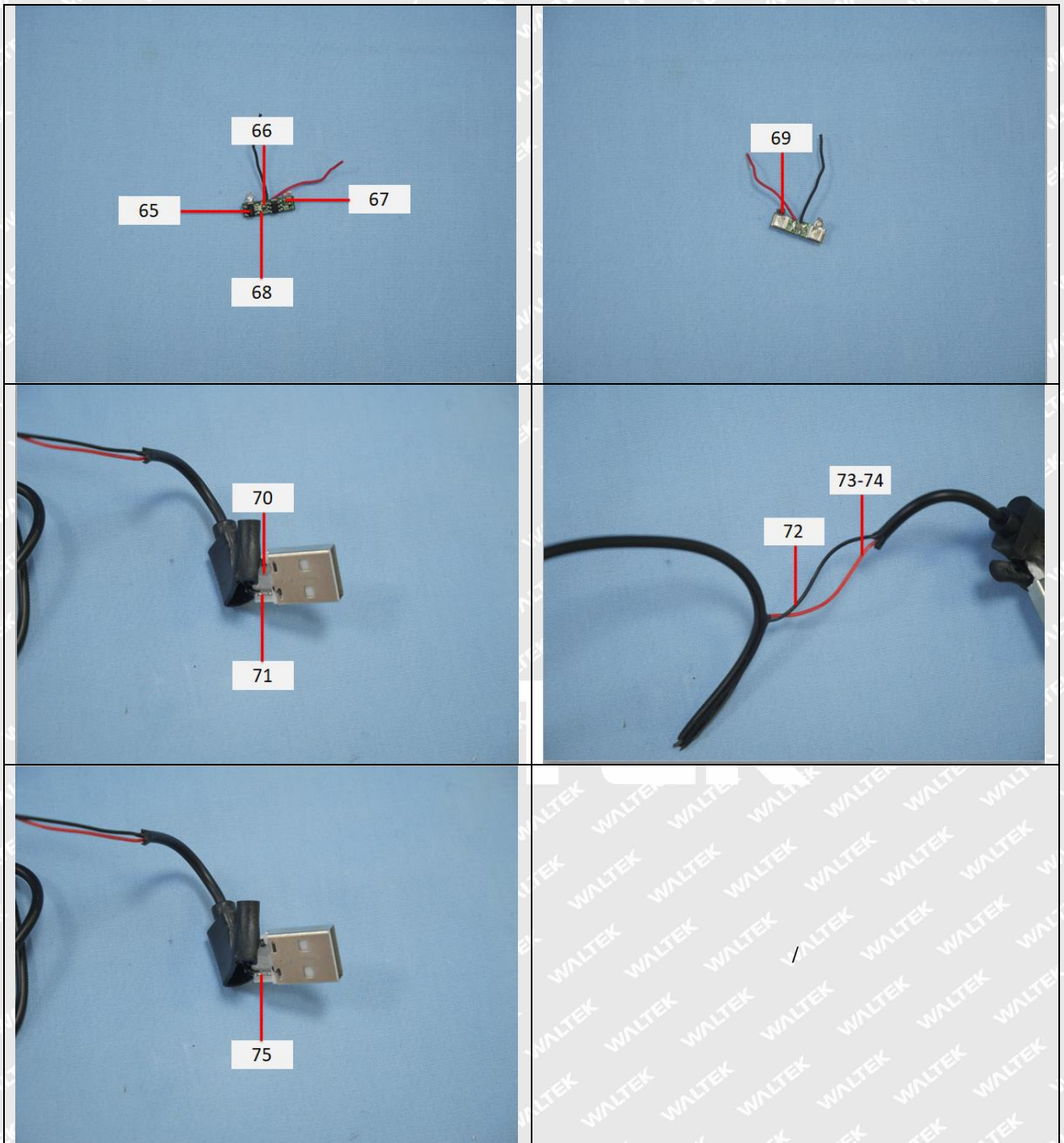


Photograph(s) of parts tested:











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Remarks:

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

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