



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No. : WTF21F07065272C

Applicant : Mid Ocean Brands B.V.

Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong

Manufacturer : 109663

Sample Name : Smart Health wristband BT

Model No. : MO9780

Sample Receiving Date : 2021-07-05

Testing Period : 2021-07-05 to 2021-07-16

Date of Issue : 2021-07-16

Test Result : Please refer to next page (s)

Remarks:

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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 62321-2:2013, 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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**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 jacket of USB plug	BL	BL	BL	BL	BL	NA
2	White plastic sheet of USB plug	BL	BL	BL	BL	BL	NA
3	Silvery metal shell of USB plug	BL	BL	BL	BL	BL	NA
4	Silvery-golden metal pin of USB plug	BL	BL	BL	BL	BL	NA
5	Solder of USB plug	BL	BL	BL	BL	BL	NA
6	Transparent plastic core of plug	BL	BL	BL	BL	BL	NA
7	Black plastic sleeve of plug	BL	BL	BL	BL	BL	NA
8	Black plastic jacket of plug	BL	BL	BL	BL	BL	NA
9	Silvery magnetic sheet of plug	BL	BL	BL	BL	BL	NA
10	Solder of plug	BL	BL	BL	BL	BL	NA
11	Golden metal pin of plug	BL	BL	BL	BL	BL	NA
12	Golden metal base of plug	BL	BL	BL	BL	BL	NA
13	Silvery metal spring of plug	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
14	Black plastic wire jacket	BL	BL	BL	BL	BL	NA
15	White fibrous wire	BL	BL	BL	BL	BL	NA
16	Coppery metal wire	BL	BL	BL	BL	BL	NA
17	Red metal wire	BL	BL	BL	BL	BL	NA
18	Black soft plastic watchband	BL	BL	BL	BL	BL	NA
19	Silvery metal buckle	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
20	Silvery metal axle	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
21	Silvery metal spring	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
22	Black plastic shell	BL	BL	BL	BL	BL	NA
23	Transparent plastic sheet with black plating	BL	BL	BL	BL	BL	NA
24	Black plastic adhesive tape	BL	BL	BL	BL	BL	NA
25	Silvery-grey fibrous adhesive sheet	BL	BL	BL	BL	BL	NA
26	Black glue	BL	BL	BL	BL	BL	NA
27	Blue transparent plastic sheet with black printing	BL	BL	BL	BL	BL	NA
28	Yellow transparent plastic adhesive sheet	BL	BL	BL	BL	BL	NA
29	Black plastic wire covering	BL	BL	BL	BL	BL	NA
30	Brown FPC	BL	BL	BL	BL	BL	NA
31	Transparent plastic adhesive sheet	BL	BL	BL	BL	BL	NA
32	Silvery metal sheet	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
33	Red plastic wire covering	BL	BL	BL	BL	BL	NA
34	Silvery metal wire	BL	BL	BL	BL	BL	NA
35	Blue PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
36	Solder	BL	BL	BL	BL	BL	NA
37	Chip resistor	BL	BL	BL	BL	BL	NA
38	Chip capacitor	BL	BL	BL	BL	BL	NA
39	Black-brown FPC	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 sensor	BL	BL	BL	BL	BL	NA
41	Chip LED	BL	BL	BL	BL	BL	NA
42	White plastic frame	BL	BL	BL	BL	BL	NA
43	Black transparent plastic sheet	BL	BL	BL	BL	BL	NA
44	Transparent glass sheet	BL	BL	BL	BL	BL	NA
45	Transparent plastic sheet	BL	BL	BL	BL	BL	NA
46	Silvery semi-transparent plastic film	BL	BL	BL	BL	BL	NA
47	White plastic film	BL	BL	BL	BL	BL	NA
48	White-black plastic film	BL	BL	BL	BL	BL	NA
49	White plastic shell	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
50	Coppery metal sheet	BL	BL	BL	BL	BL	NA
51	Silvery-coppery metal contactor	BL	BL	BL	BL	BL	NA
52	Silvery metal sheet	BL	BL	BL	BL	BL	NA
53	Silvery metal contactor	BL	BL	BL	BL	BL	NA
54	Silvery metal sheet	BL	BL	BL	BL	BL	NA
55	Solder	BL	BL	BL	BL	BL	NA
56	Black plastic base	BL	BL	BL	BL	BL	NA
57	Black rubber sleeve	BL	BL	BL	BL	BL	NA
58	Silvery metal chunk	BL	BL	BL	BL	BL	NA
59	Silvery metal 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	
60	Golden metal pin	BL	BL	BL	BL	BL	NA
61	Coppery metal winding	BL	BL	BL	BL	BL	NA
62	Silvery magnetic core	BL	BL	BL	BL	BL	NA
63	Black plastic sheet	BL	BL	BL	BL	BL	NA
64	Silvery metal sheet	BL	BL	BL	BL	BL	NA
65	Black plastic cover	BL	BL	BL	BL	BL	NA
66	Coppery metal ring	BL	BL	BL	BL	BL	NA
67	Silvery metal axle	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
68	Chip audion	BL	BL	BL	BL	BL	NA
69	Chip IC	BL	BL	BL	BL	BL	NA
70	Chip IC	BL	BL	BL	BL	BL	NA
71	Solder	BL	BL	BL	BL	BL	NA
72	Chip IC	BL	BL	BL	BL	BL	NA
73	Chip diode	BL	BL	BL	BL	BL	NA
74	Chip IC	BL	BL	BL	BL	BL	NA
75	Chip resistor	BL	BL	BL	BL	BL	NA
76	Chip capacitor	BL	BL	BL	BL	BL	NA
77	Chip IC	BL	BL	BL	BL	BL	NA
78	Solder	BL	BL	BL	BL	BL	NA
79	Chip capacitor	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	Chip oscillator	BL	BL	BL	BL	BL	NA
81	Black plastic base of connector	BL	BL	BL	BL	BL	NA
82	Silvery metal pin of connector	BL	BL	BL	BL	BL	NA
83	Chip IC	BL	BL	BL	BL	BL	NA
84	Chip resistor	BL	BL	BL	BL	BL	NA
85	Solder	BL	BL	BL	BL	BL	NA
86	Silvery metal sheet	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
87	Blue PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND

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	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:

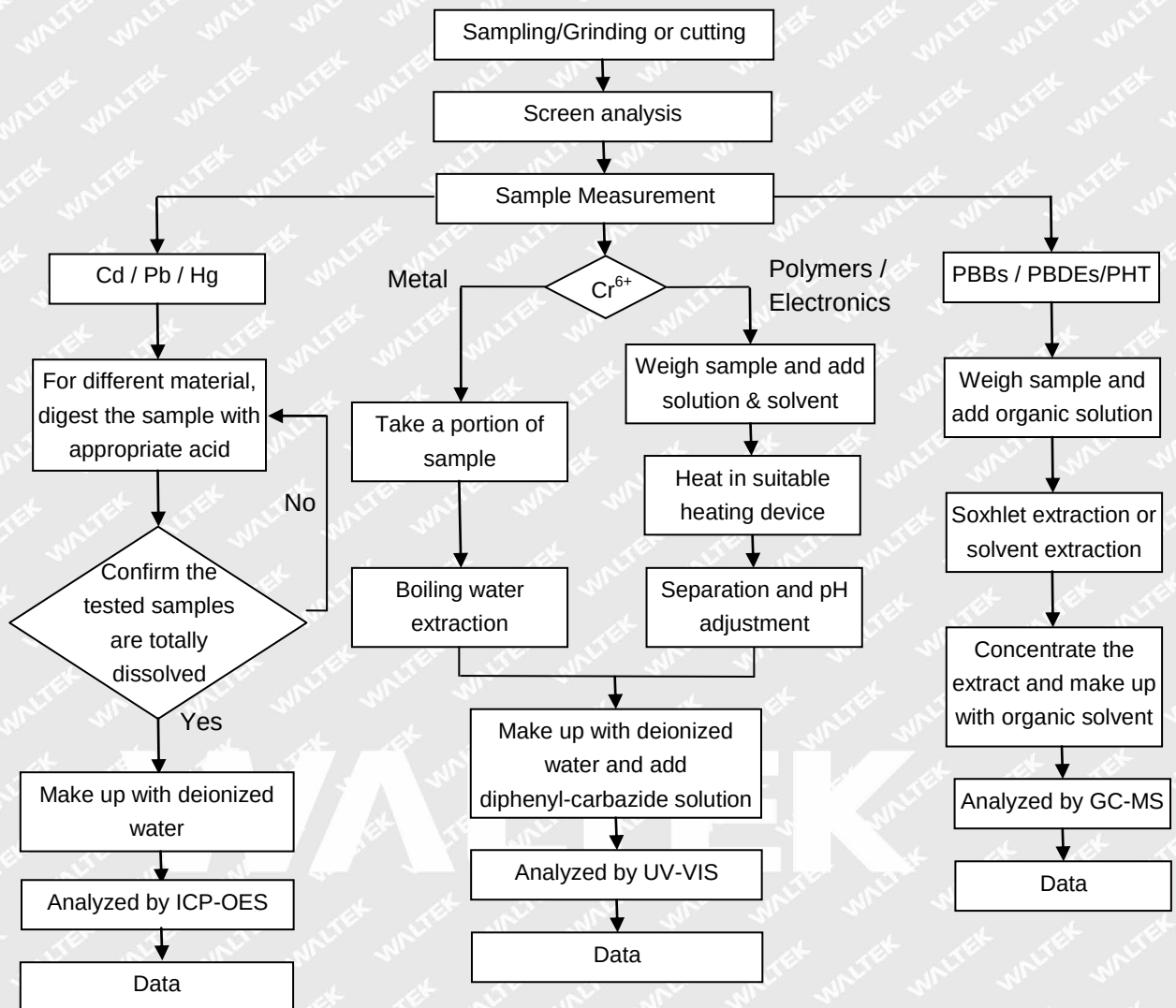
Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1	<50	<50	<50	<50
T02	2+6+7+22+23 [△]	<50	<50	<50	<50
T03	8	<50	<50	<50	<50
T04	9+30+35+37 [△]	<50	<50	<50	<50
T05	14	<50	<50	77	<50
T06	15	<50	<50	<50	<50
T07	18	<50	<50	<50	<50
T08	24	<50	<50	93	<50
T09	25	<50	<50	<50	<50
T10	26	<50	<50	<50	<50
T11	27+42+45 [△]	<50	<50	62	<50
T12	28	<50	<50	<50	<50
T13	29	<50	<50	<50	<50
T14	31	<50	<50	63	<50
T15	33	<50	<50	<50	<50
T16	38+39+40+41+44 [△]	<50	<50	<50	<50
T17	43	<50	<50	72	<50
T18	46+47+48+49+56 [△]	<50	<50	<50	<50
T19	57	<50	<50	<50	<50
T20	62+68+69+70+72 [△]	<50	<50	<50	<50
T21	63	<50	<50	<50	<50
T22	65	<50	<50	<50	<50
T23	73+74+75+76+77 [△]	<50	<50	<50	<50
T24	79+80+83+84+87 [△]	<50	<50	<50	<50
T25	81	<50	<50	<50	<50

Note:

- (1) "<" = less than
- (2) mg/kg = milligram per kilogram= ppm
- (3) Abbreviation:
 "DBP" denotes Dibutyl phthalate, "BBP" denotes Benzyl butyl phthalate (BBP), "DEHP" denotes Bis(2-ethylhexyl)-phthalate, "DIBP" denotes Diisobutyl phthalate, "PHT" denotes Phthalates.
- (4) RoHS requirement

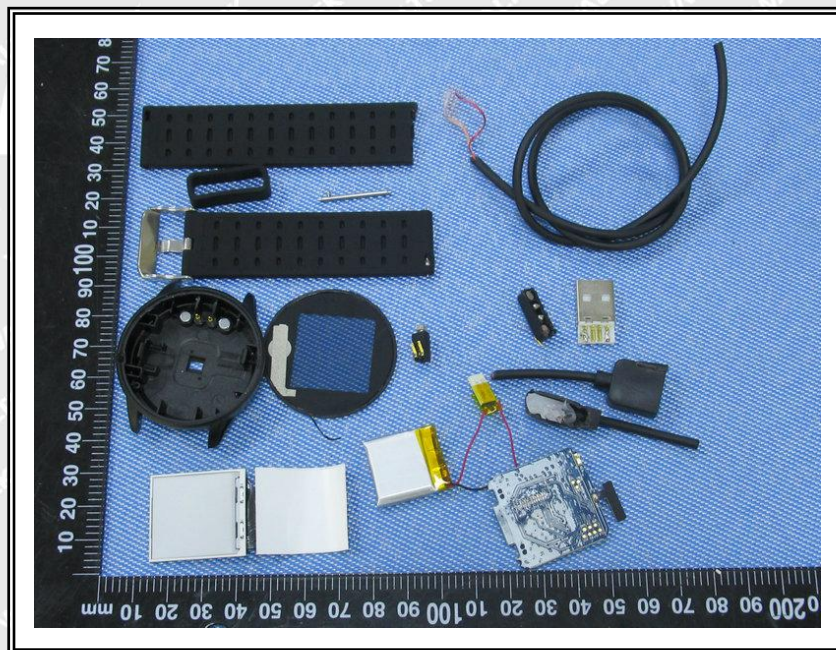
Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

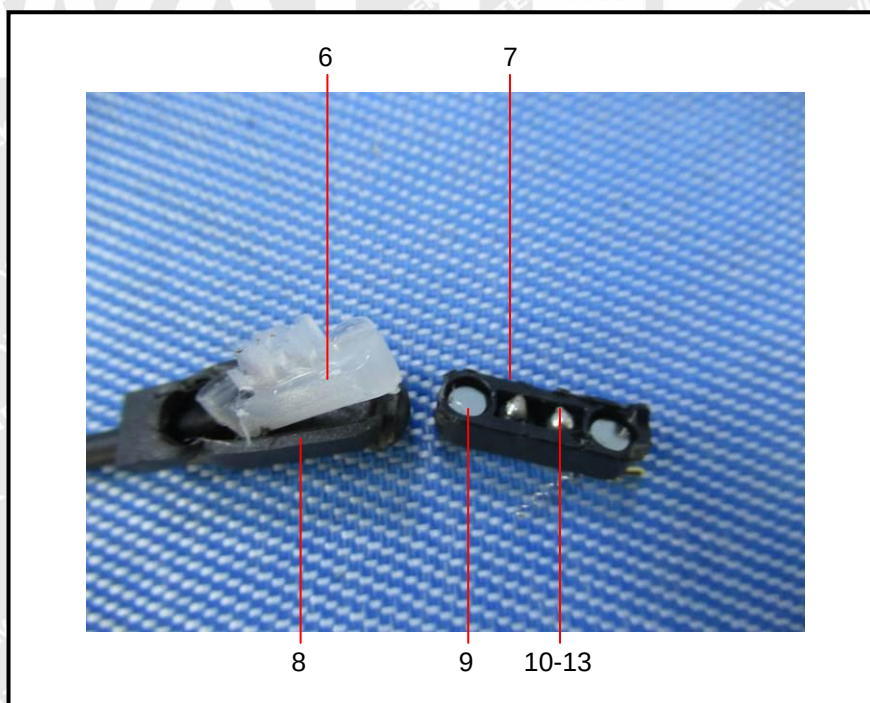
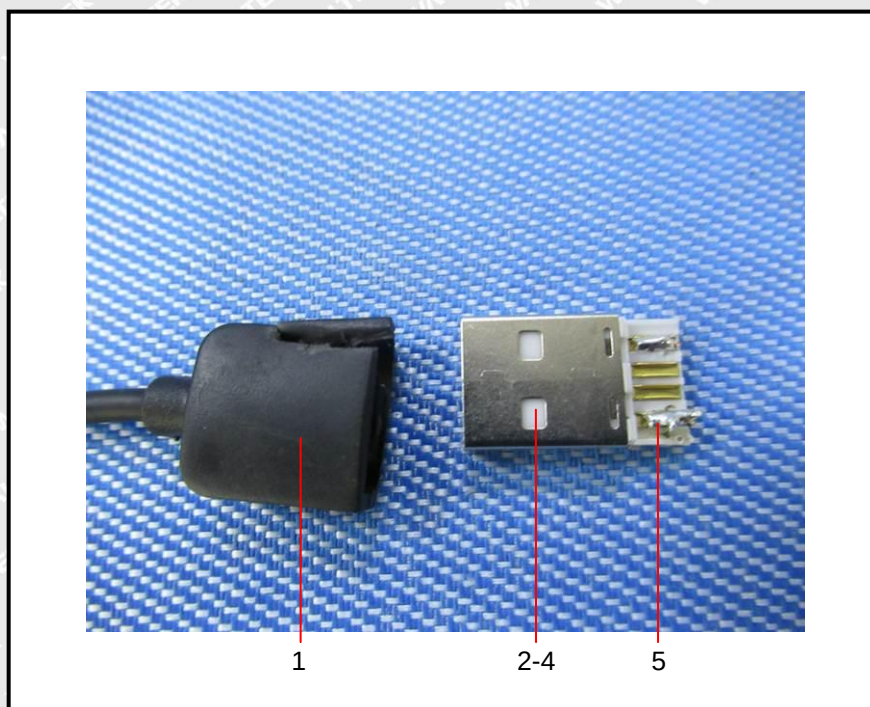
- (5) "△"= As client's requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.

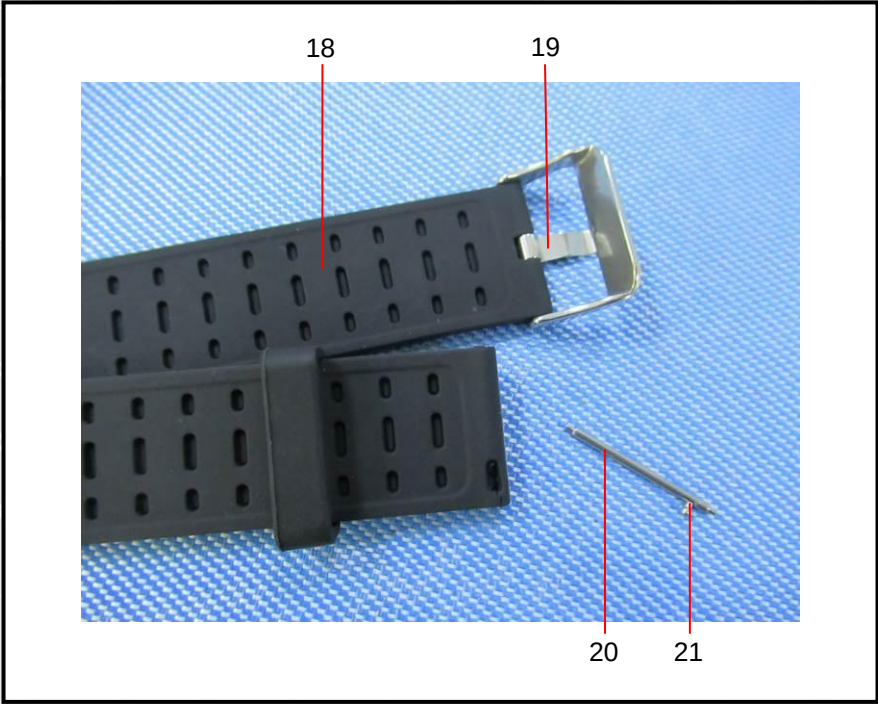
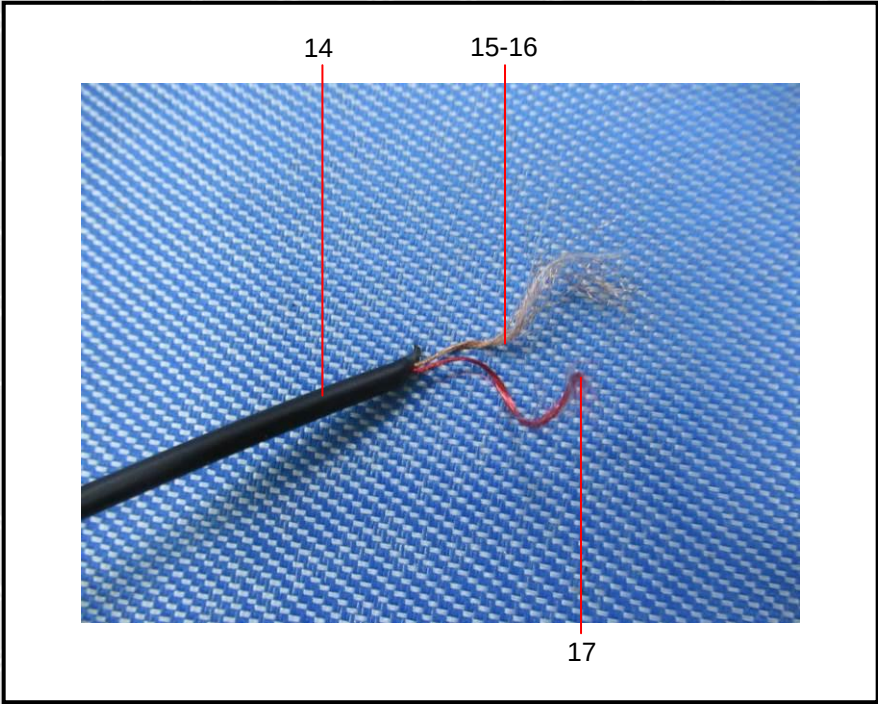
**Measurement Flowchart:**

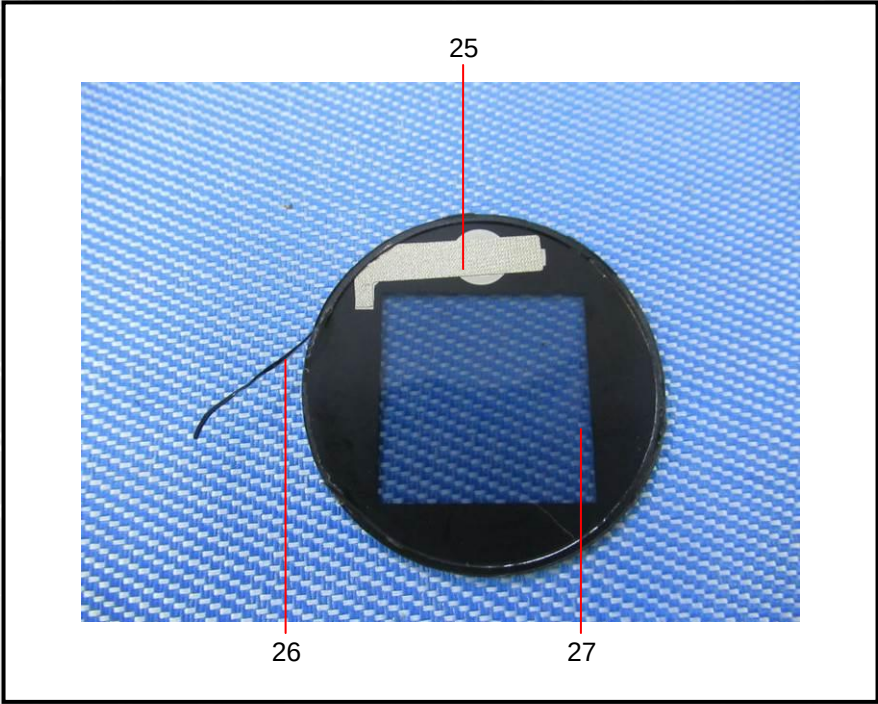


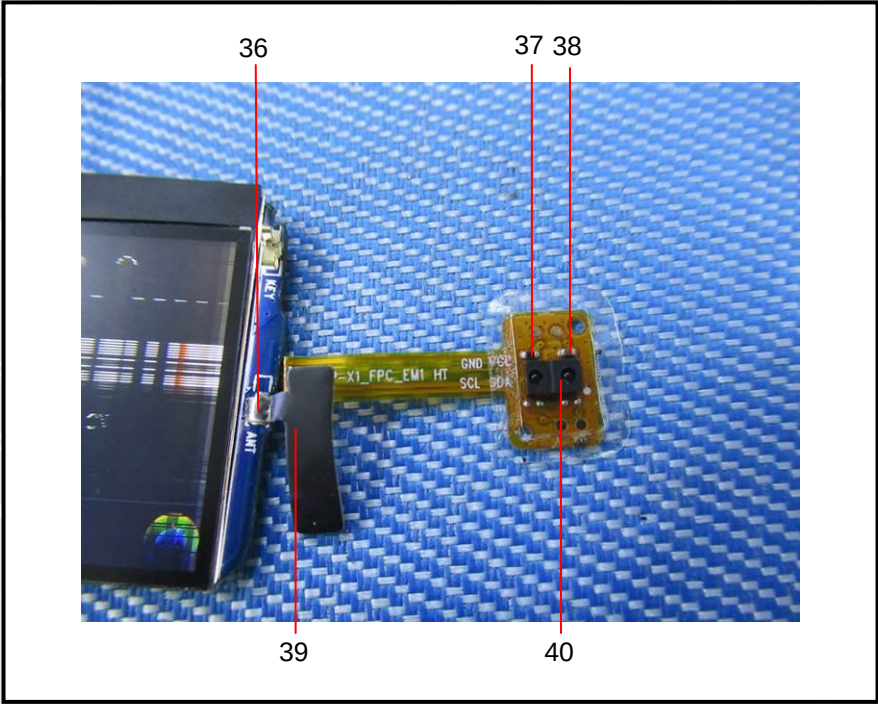
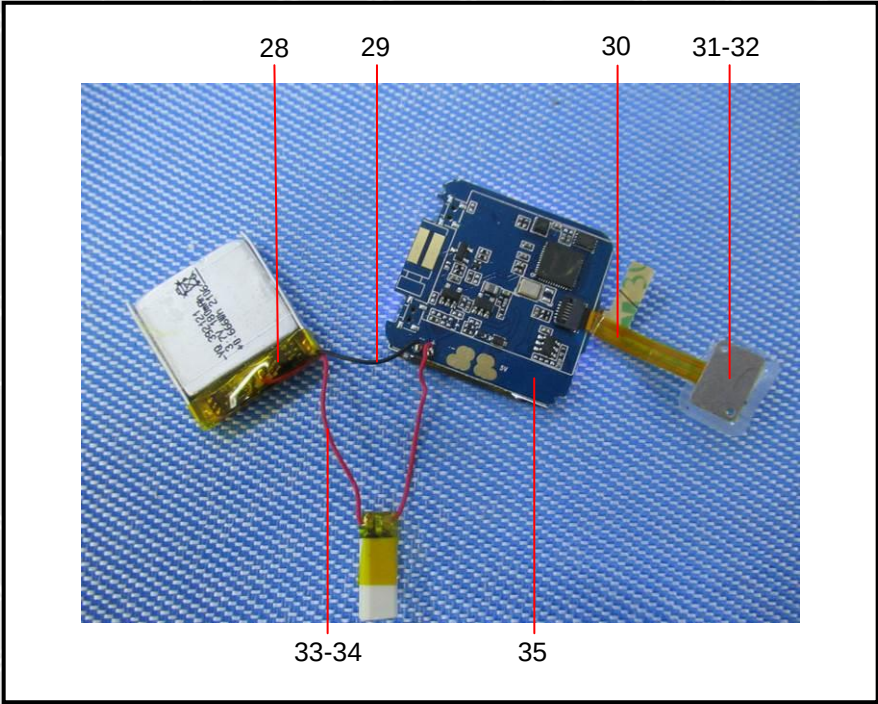
Sample Photo:

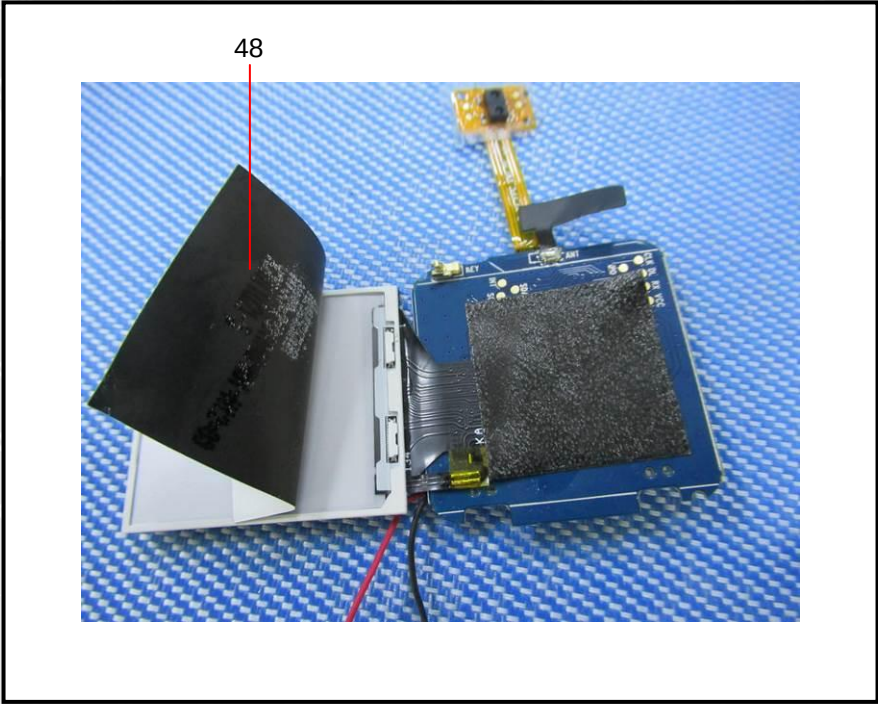
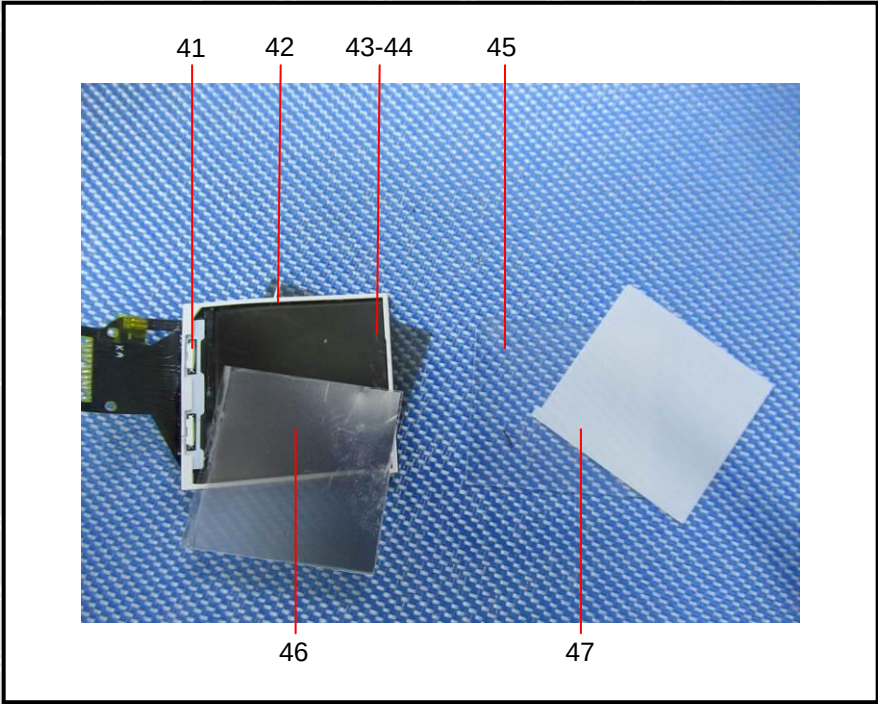


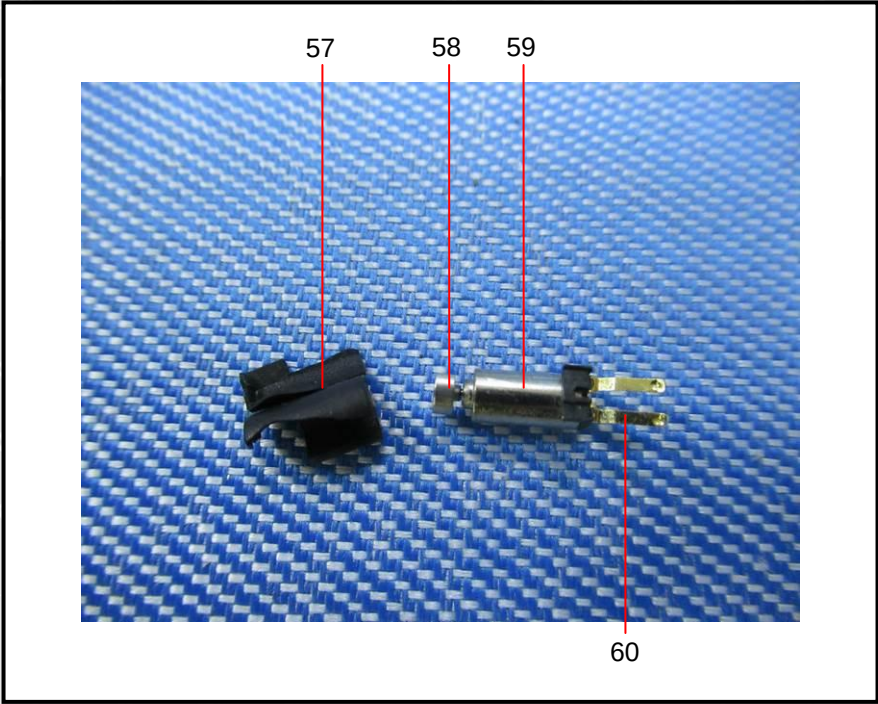
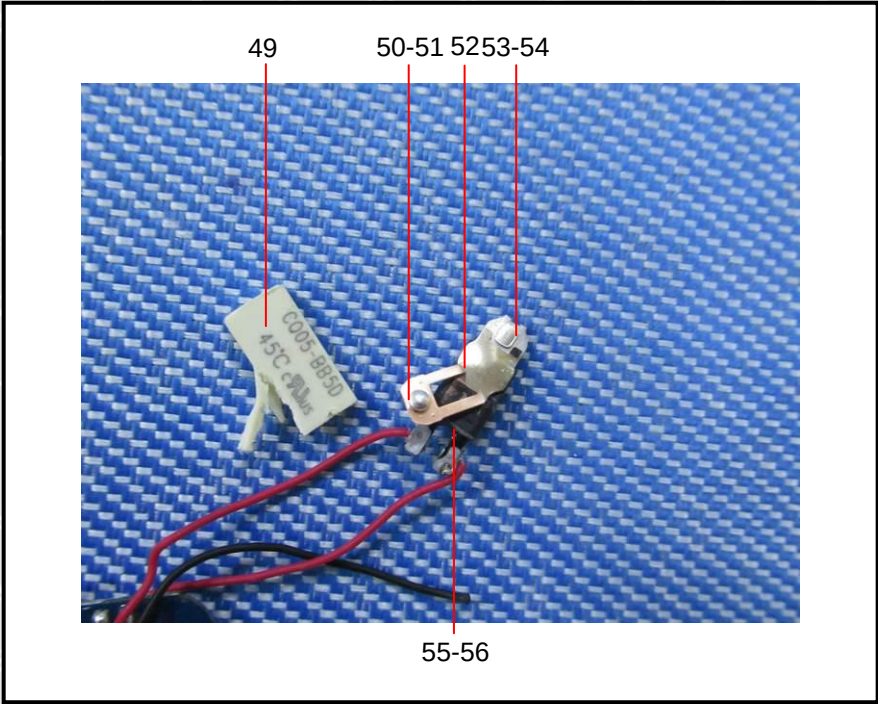
**Photograph(s) of parts tested:**

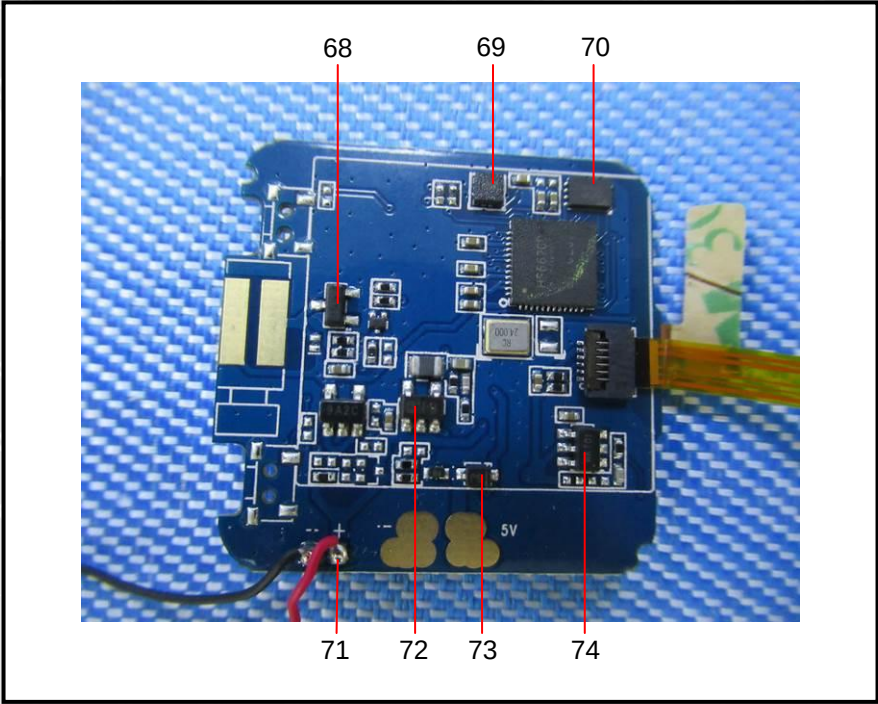
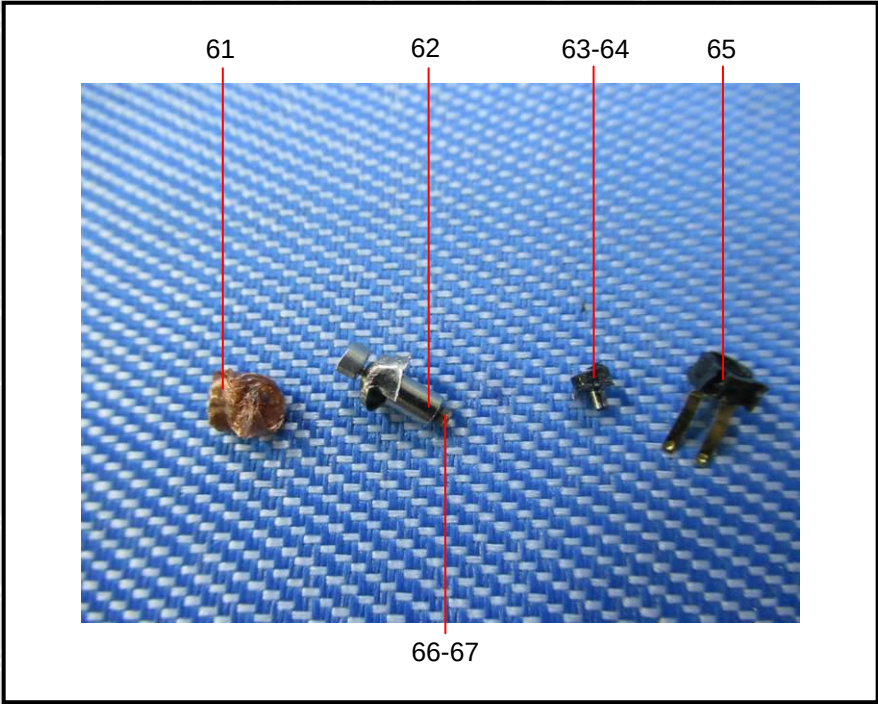


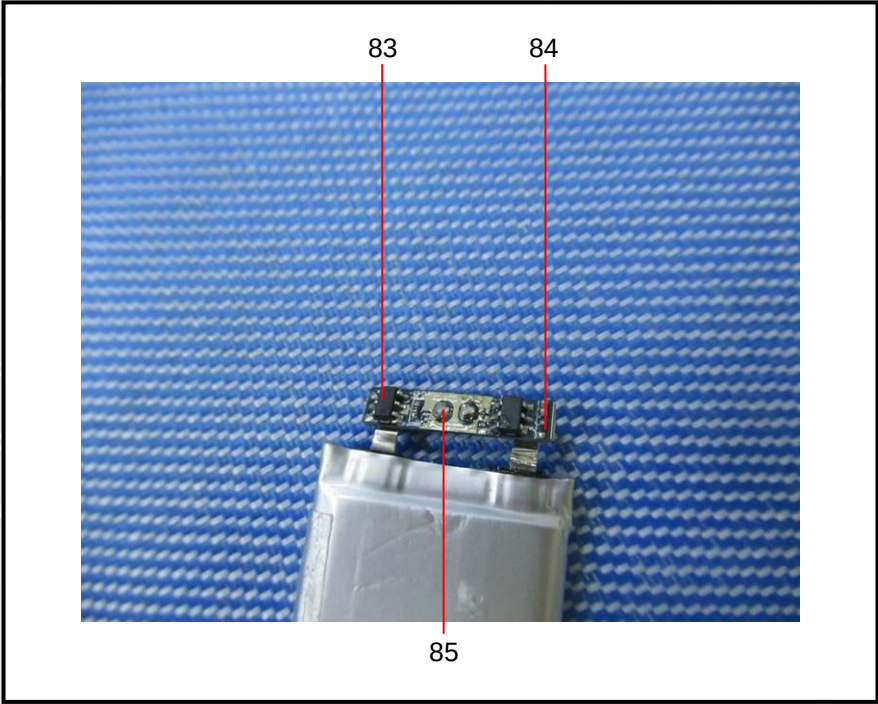
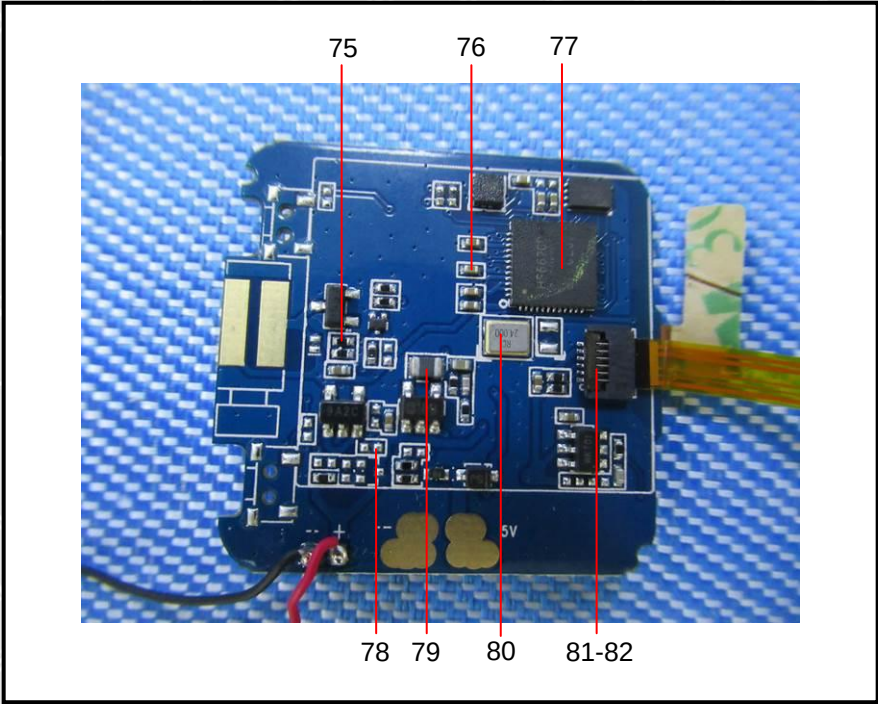


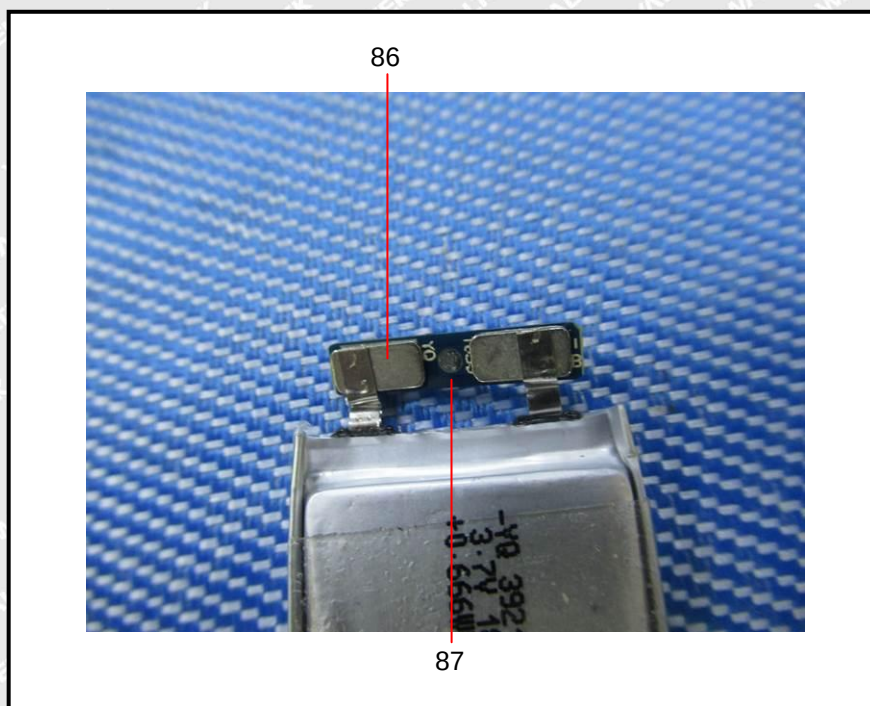












===== End of Report =====

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