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检测
TESTING
CNAS L6478

TEST REPORT

Report No.	:	WTF21F01006885C
Applicant	:	Mid Ocean Brands B.V.
Address	:	7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer	:	109328
Sample Name	:	Health bracelet
Model No.	:	MO6195
Sample Receiving Date	:	2021-01-21
Testing Period	:	2021-01-21 to 2021-01-27
Date of Issue	:	2021-01-28
Test Result	:	Please refer to next page (s)

Remarks:
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Approved by: Swing Liang / Technical Manager

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)

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	Golden metal pin	BL	BL	BL	BL	BL	NA
3	Silvery metal spring	BL	BL	BL	IN	BL	Cr^{6+} : Negative
4	Black plastic jacket of USB plug	BL	BL	BL	BL	BL	NA
5	Silvery metal shell of USB plug	BL	BL	BL	BL	BL	NA
6	Silvery metal pin of USB plug	BL	BL	BL	BL	BL	NA
7	White plastic sheet of USB plug	BL	BL	BL	BL	BL	NA
8	Solder of USB plug	BL	BL	BL	BL	BL	NA
9	Red plastic wire covering	BL	BL	BL	BL	BL	NA
10	Black plastic wire covering	BL	BL	BL	BL	BL	NA
11	Coppery metal wire	BL	BL	BL	BL	BL	NA
12	Black plastic wire jacket	BL	BL	BL	BL	BL	NA
13	Golden-grey fibrous adhesive sheet	BL	BL	BL	BL	BL	NA
14	Silvery metal rivet	IN	**OL**	BL	BL	BL	Cd : 41 **#Pb : 3.08×10^4**
15	Black transparent plastic sheet	BL	BL	BL	BL	BL	NA
16	Golden metal pin	IN	**OL**	BL	BL	BL	Cd : 16 **#Pb : 2.41×10^4**
17	Red soft plastic bracelet	BL	BL	BL	BL	BL	NA
18	Black plastic buckle	BL	BL	BL	BL	BL	NA
19	Black body of IR	BL	BL	BL	BL	BL	NA
20	Black 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	
21	Silvery metal sheet	BL	BL	BL	IN	BL	Cr^{6+} : Negative
22	Chip diode	BL	BL	BL	BL	BL	NA
23	Chip inductor	BL	BL	BL	BL	BL	NA
24	Chip audion	BL	BL	BL	BL	BL	NA
25	Black plastic base of connector	BL	BL	BL	BL	BL	NA
26	Silvery metal pin of connector	BL	BL	BL	BL	BL	NA
27	Chip oscillator	BL	BL	BL	BL	BL	NA
28	Chip IC	BL	BL	BL	BL	BL	NA
29	Chip IC	BL	BL	BL	BL	BL	NA
30	Chip IC	BL	BL	BL	BL	BL	NA
31	Chip resistor	BL	BL	BL	BL	BL	NA
32	Blue PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
33	Solder	BL	BL	BL	BL	BL	NA
34	Chip capacitor	BL	BL	BL	BL	BL	NA
35	Chip capacitor	BL	BL	BL	BL	BL	NA
36	Golden metal terminal	BL	BL	BL	IN	BL	Cr^{6+} : Negative
37	Black sponge adhesive sheet	BL	BL	BL	BL	BL	NA
38	Brown FPC	BL	BL	BL	BL	BL	NA
39	Black transparent plastic sheet	BL	BL	BL	BL	BL	NA
40	Transparent glass sheet	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	
41	Silvery glass strip	BL	BL	BL	BL	BL	NA
42	Chip LED	BL	BL	BL	BL	BL	NA
43	Black plastic adhesive tape	BL	BL	BL	BL	BL	NA
44	Black plastic frame	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-black plastic film	BL	BL	BL	BL	BL	NA
48	White semi-transparent plastic film	BL	BL	BL	BL	BL	NA
49	Blue plastic wire covering	BL	BL	BL	BL	BL	NA
50	Silvery metal shell of sensor	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	BL	NA
53	Beige glue	BL	BL	BL	BL	BL	NA
54	Silvery magnetic ring of sensor	BL	BL	BL	BL	BL	NA
55	Coppery metal winding of sensor	BL	BL	BL	BL	BL	NA
56	Golden metal ring of sensor	BL	BL	BL	BL	BL	NA
57	Silvery metal sheet of sensor	BL	IN	BL	BL	BL	Hg : 233
58	Green PCB of sensor	BL	BL	BL	BL	BL	NA
59	White plastic sheet of sensor	BL	BL	BL	BL	BL	NA
60	Yellow plastic wire covering	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	
61	Red plastic wire covering	BL	BL	BL	BL	BL	NA
62	Brown transparent plastic adhesive tape	BL	BL	BL	BL	BL	NA
63	Black plastic wire covering	BL	BL	BL	BL	BL	NA
64	Chip resistor	BL	BL	BL	BL	BL	NA
65	Chip IC	BL	BL	BL	BL	BL	NA
66	Chip capacitor	BL	BL	BL	BL	BL	NA
67	Solder	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	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^{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	BL ≤ (70-3σ) < IN < (130+3σ) ≤ OL	BL ≤ (70-3σ) < IN < (130+3σ) ≤ OL	LOD < IN < (150+3σ) ≤ OL
Pb	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL
Hg	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL
Cr	BL ≤ (700-3σ) < IN	BL ≤ (700-3σ) <IN	BL ≤ (500-3σ) < IN
Br	BL ≤ (300-3σ) < IN	--	BL ≤ (250-3σ) < 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, $\mu g/cm^2$= 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	$\mu g/cm^2$	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 Cr^{6+} for polymer and composite sample is 8mg/kg and LOQ of Cr^{6+} for metal sample is 0.1μg/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)

(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 0.10ug/cm^2.
Positive = Presence of Cr^{6+} coating, the detected concentration in boiling water extraction solution is greater than 0.13ug/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 copper alloy while lead as copper alloy containing up to 4% lead by weight is exempted by Directive 2011/65/EU ANNEX III.

2. Phthalates:

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1+7+15+18△	<50	<50	<50	<50
T02	4	<50	<50	<50	<50
T03	9	<50	<50	<50	<50
T04	10	<50	<50	<50	<50
T05	12	<50	<50	<50	<50
T06	13	124	<50	112	<50
T07	17	<50	<50	<50	<50
T08	19+20+22+23+24△	<50	<50	<50	<50
T09	25	<50	<50	61	<50
T10	27+28+29+30+31△	<50	<50	<50	<50
T11	32+34+35+38+40△	<50	<50	<50	<50
T12	37	<50	<50	<50	<50
T13	39+44+45△	<50	<50	<50	<50
T14	41+42+54+58+64△	<50	<50	<50	<50
T15	43	174	<50	174	<50
T16	46	<50	<50	<50	<50
T17	47	<50	<50	<50	<50
T18	48	<50	<50	<50	<50
T19	49	177	<50	185	<50
T20	51	<50	<50	<50	<50
T21	53	<50	<50	<50	<50
T22	59	<50	<50	<50	<50
T23	60	581	<50	61	<50
T24	61	91	<50	<50	<50
T25	62	<50	<50	<50	<50
T26	63	62	<50	<50	<50
T27	65+66+68△	<50	<50	<50	<50

Note:

(1) "<" = less than

(2) mg/kg = milligram per kilogram= ppm

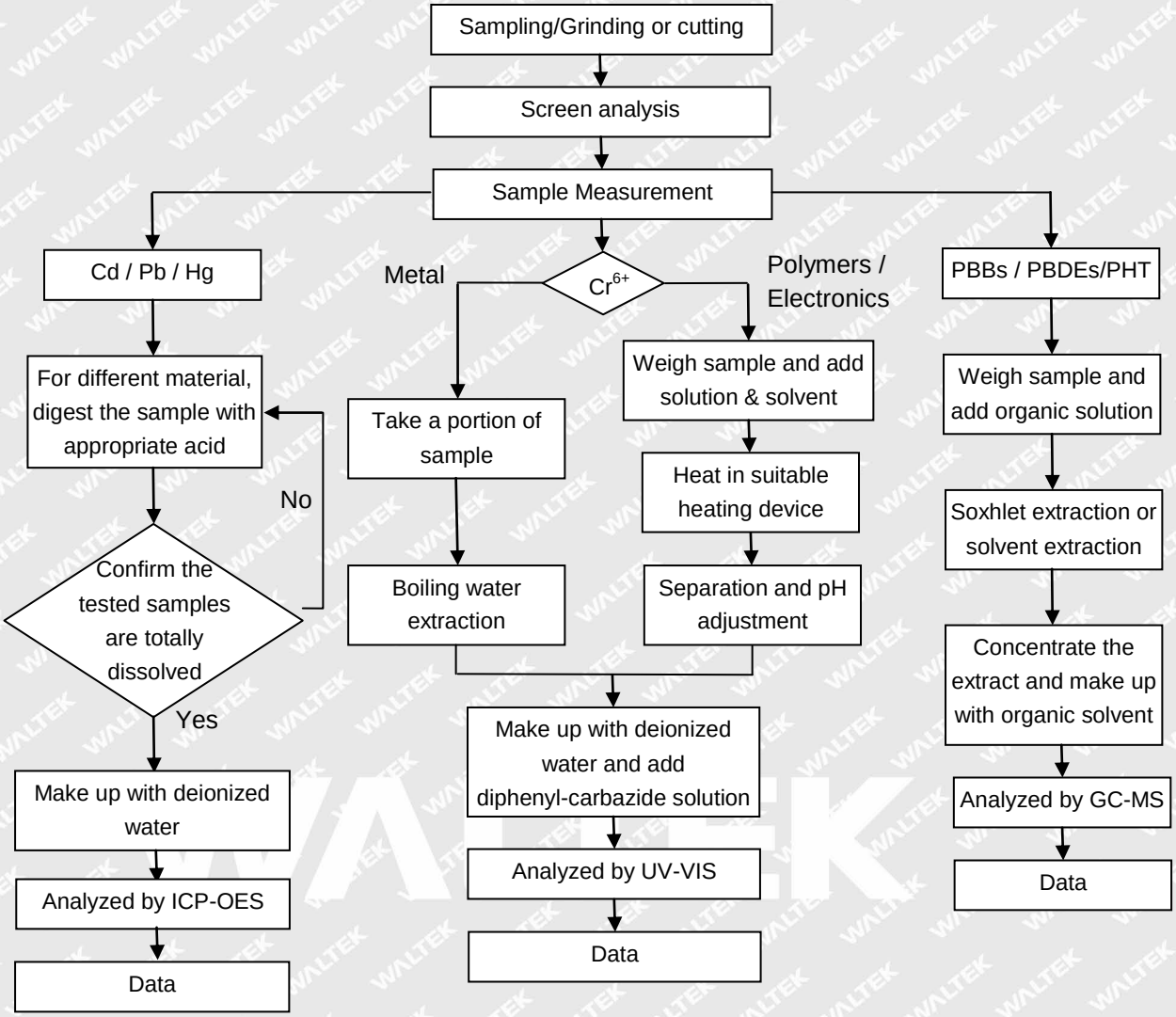
(3) Abbreviation:
"DBP" denotes Dibutyl phthalate, "BBP" denotes Benzyl butyl phthalate (BBP), "DEHP" denotes Bis(2-ethylhexyl)-phthalate, "DIBP" denotes Diisobutyl phthalate, "PHT" denotes Phthalates.

(4) RoHS requirement

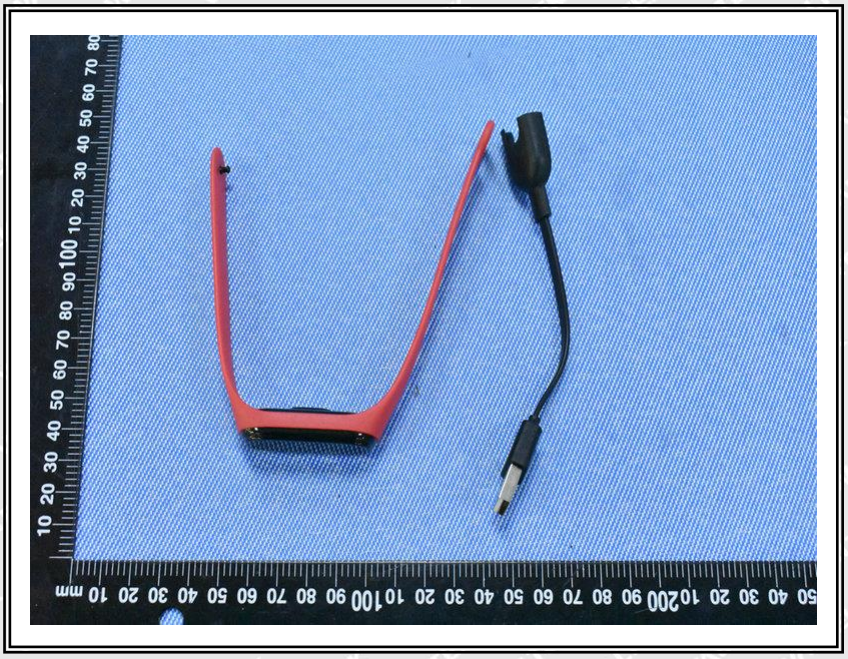
Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

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

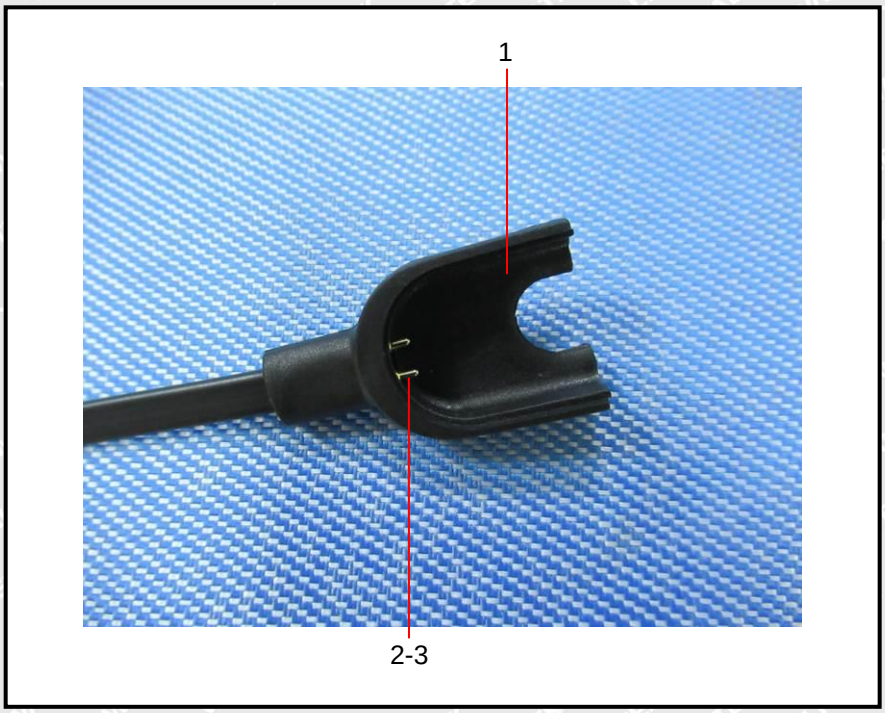
Measurement Flowchart:

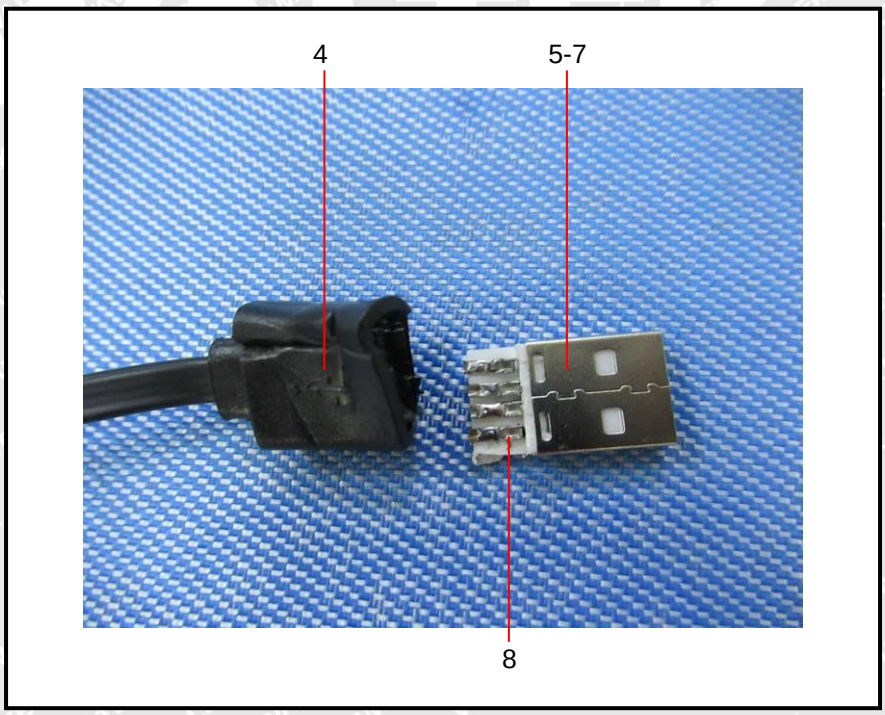


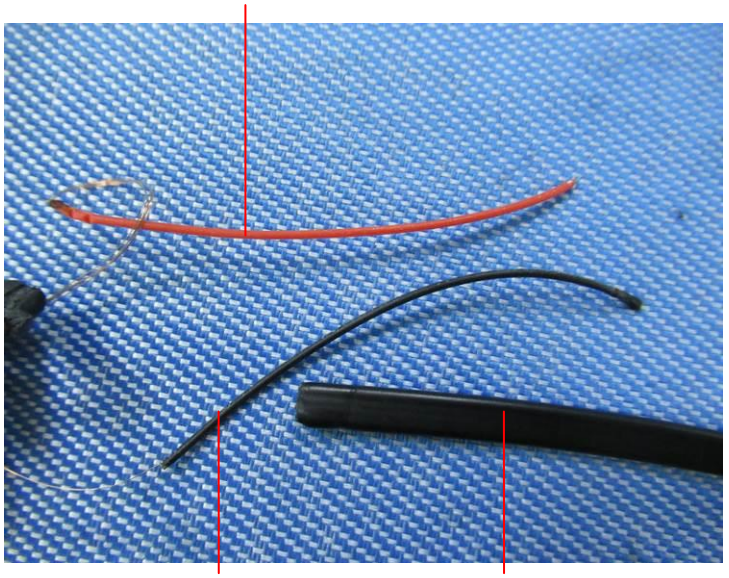
Sample Photo:



Photograph(s) of parts tested:



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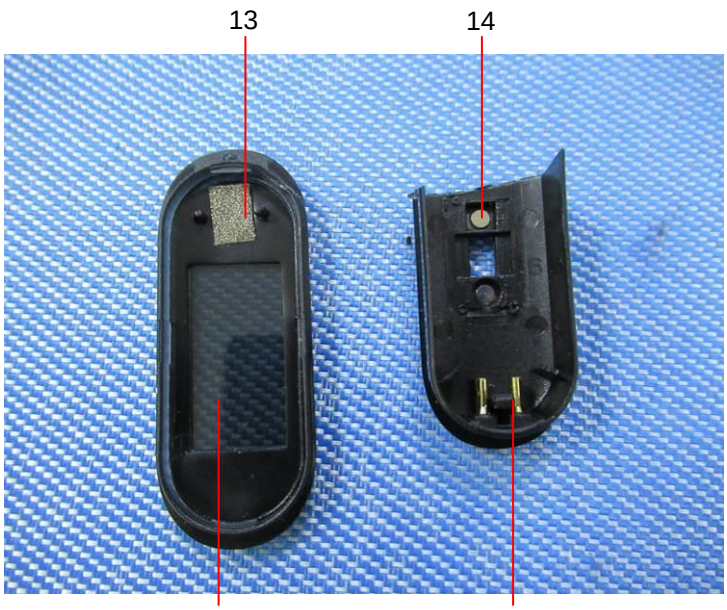
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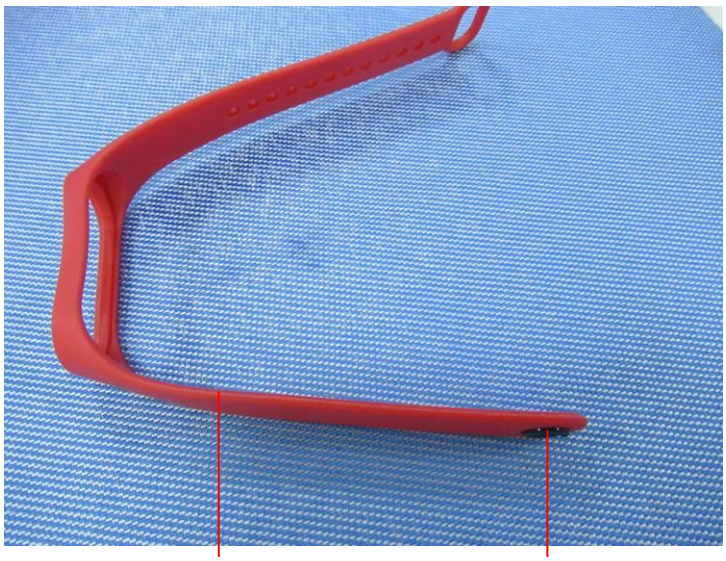
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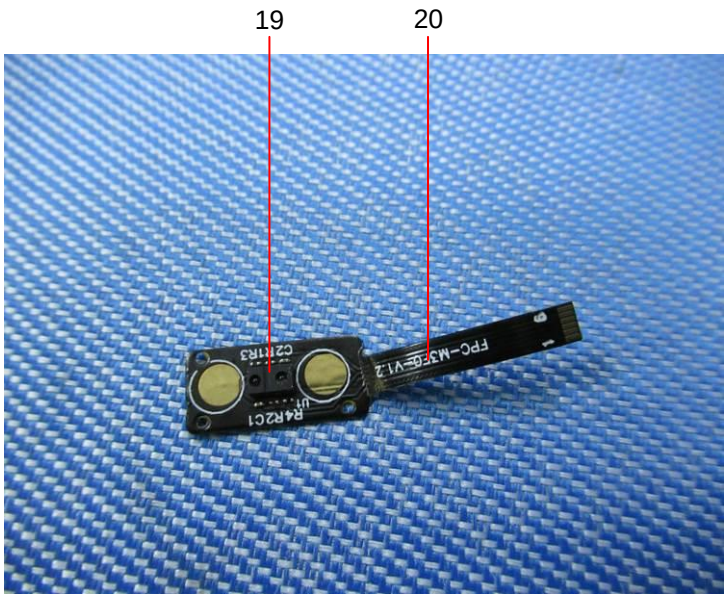
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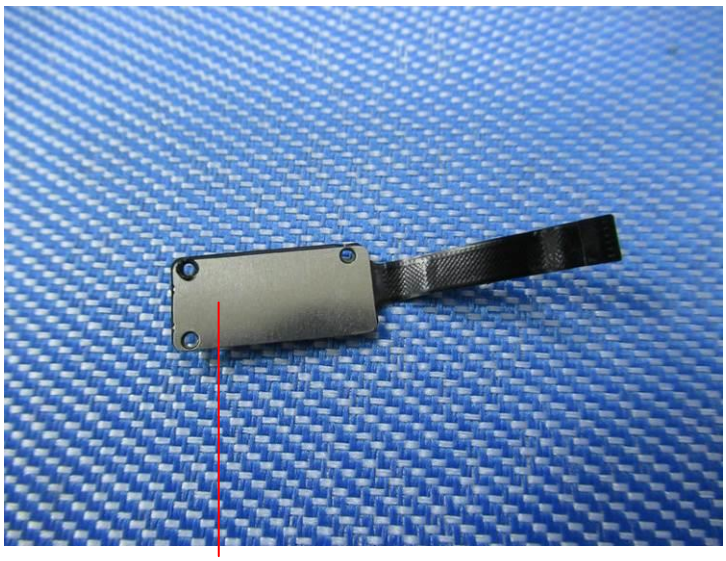
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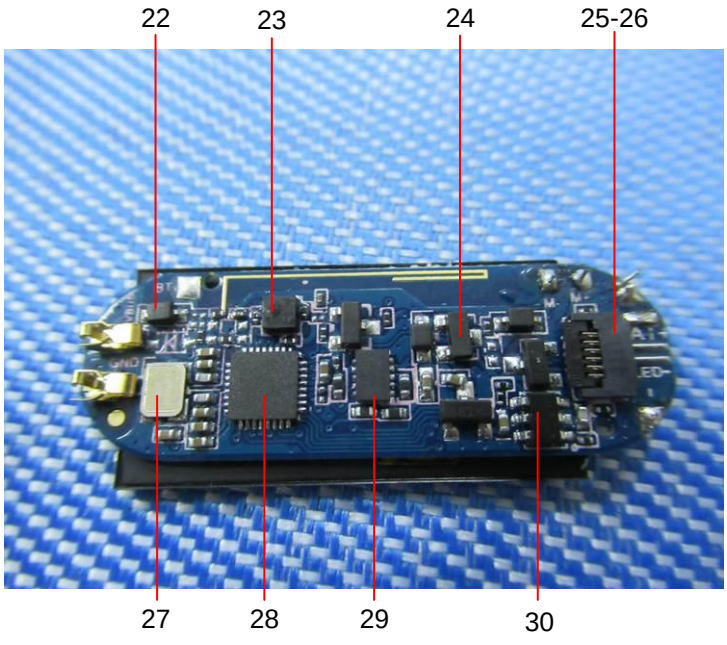
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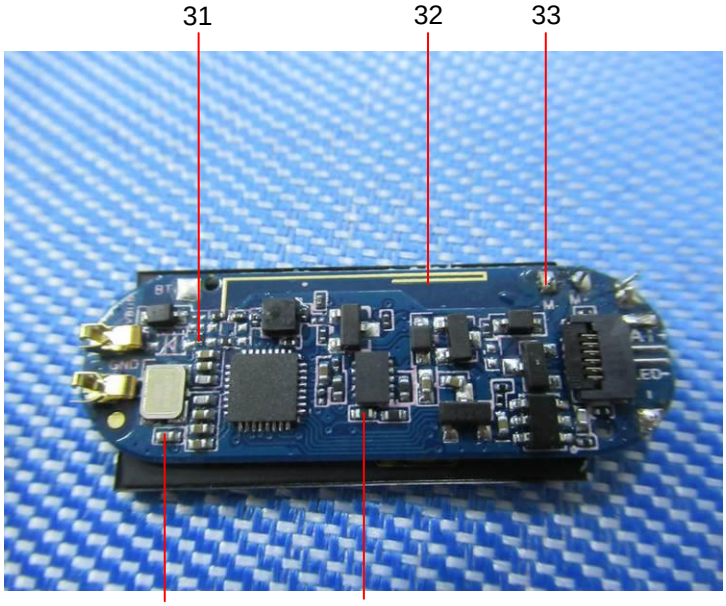
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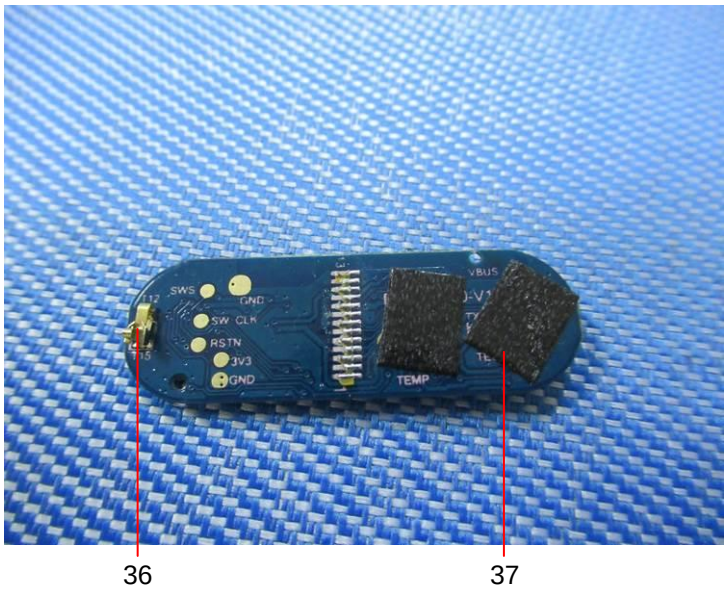
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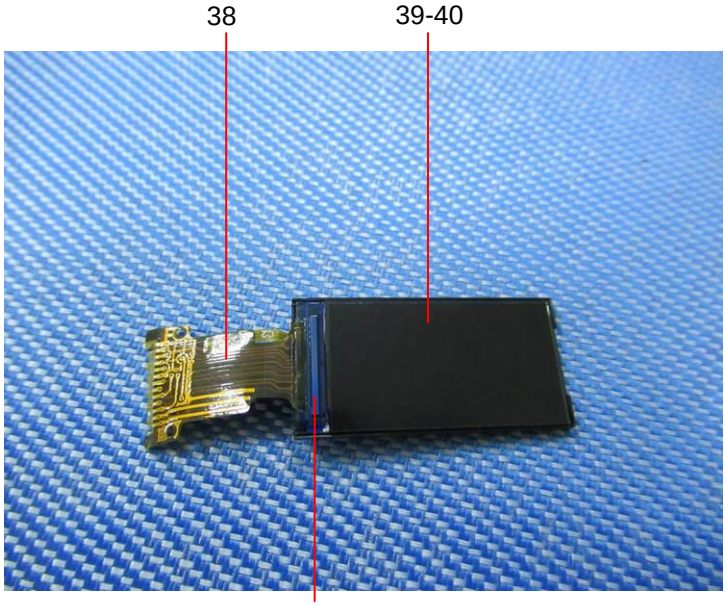
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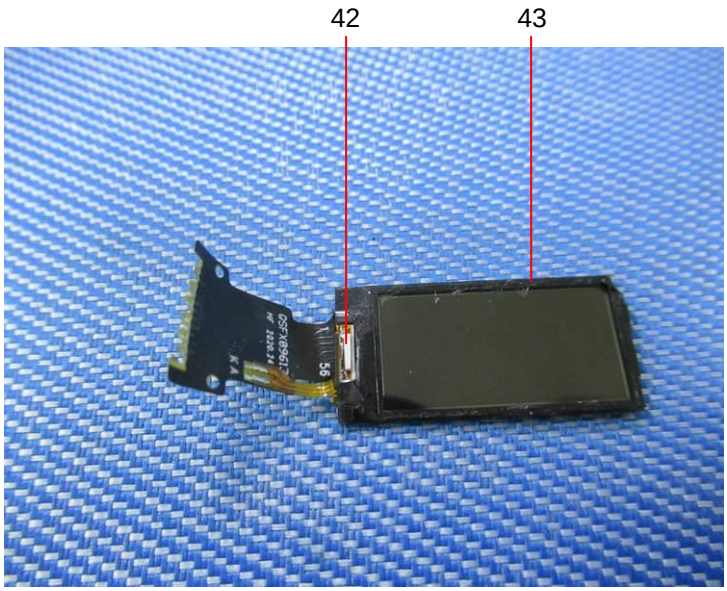
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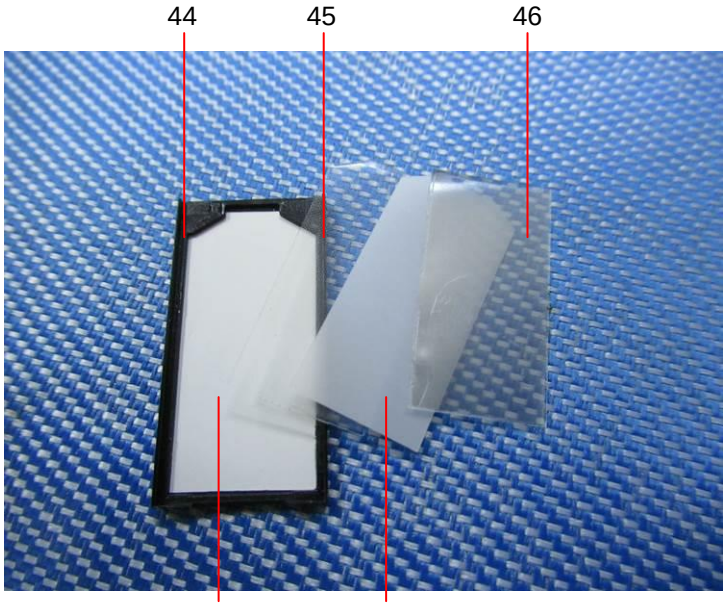
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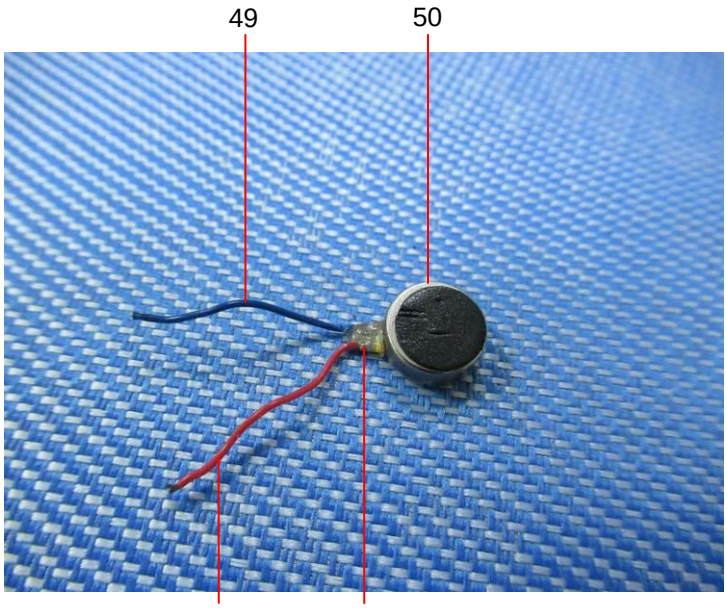
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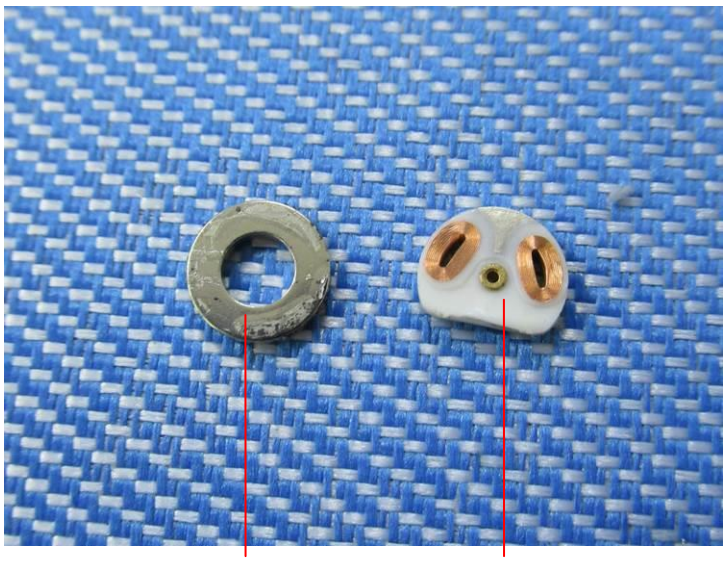
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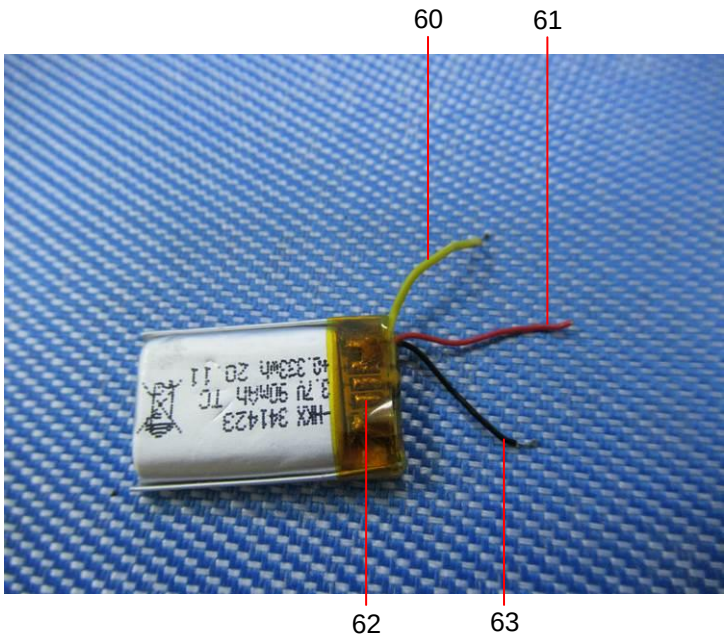
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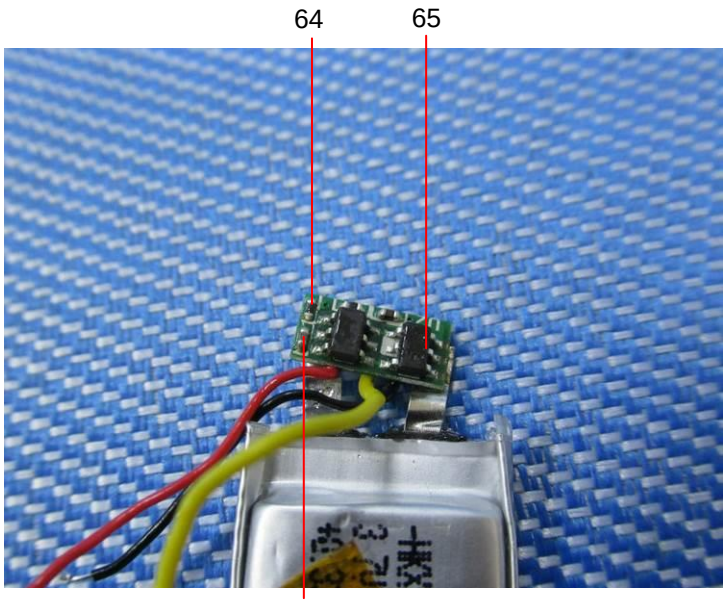

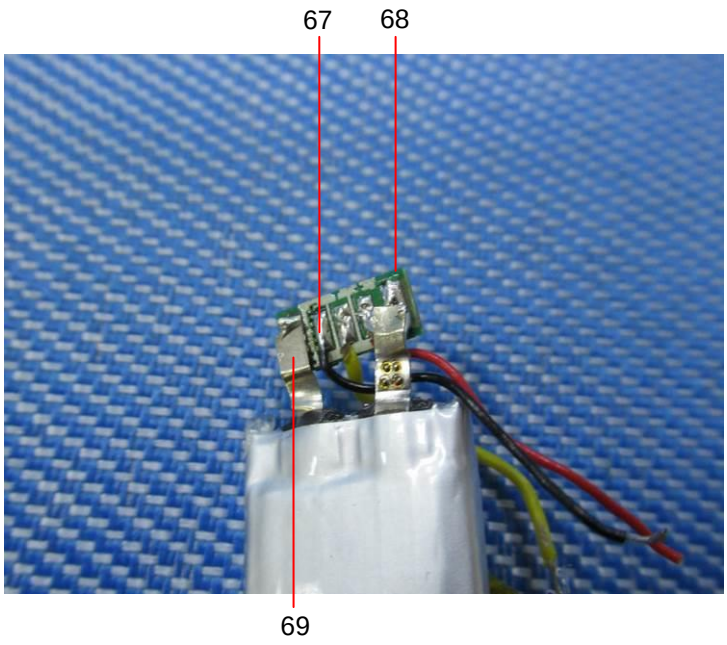

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