



中国认可  
国际互认  
检测  
TESTING  
CNAS L6478



# TEST REPORT

**Report No.** ..... : WTF20F08059256A3R1C

**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** ..... : Smart Band

**Model No.** ..... : MO9771

**Sample Receiving Date** .... : 2019-08-22 & 2019-09-10 & 2019-09-23 & 2020-05-14 & 2020-08-24 & 2020-09-16 & 2020-11-19

**Testing Period**..... : 2019-08-22 to 2019-09-25 & 2020-05-14 to 2020-05-25 & 2020-08-24 to 2020-08-28 & 2020-09-16 to 2020-10-28 & 2020-11-19 to 2020-11-25

**Date of Issue**..... : 2020-11-25

**Test Result** ..... : Please refer to next page (s)

**Note**..... :  
1) As per client's requirement, results of specimen from No.1 to No.48 are extracted from report No.WTF20F05027266C.  
2) As per client's requirement, result of specimen No.56 is extracted from report No.WTF20F09067148C.  
3) As per client's requirement, results of specimen from No.49 to No.55 are extracted from report No. WTF20F08059256A3C.

**Remarks:**

The results shown in this test report refer only to the sample(s) tested; this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.  
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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	Silvery metal tube	BL	BL	BL	BL	BL	NA
2	Golden metal spring	BL	BL	BL	BL	BL	NA
3	Silvery metal buckle	BL	BL	BL	BL	BL	NA
4	Golden metal sheet	BL	BL	BL	BL	BL	NA
5	Black plastic shell	BL	BL	BL	BL	BL	NA
6	Silvery fibrous adhesive tape	BL	BL	BL	BL	BL	NA
7	Black-transparent plastic sheet	BL	BL	BL	BL	BL	NA
8	Black sponge adhesive tape	BL	BL	BL	BL	BL	NA
9	Black plastic adhesive film	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
10	Black plastic adhesive tape	BL	BL	BL	BL	BL	NA
11	White plastic film	BL	BL	BL	BL	BL	NA
12	Transparent plastic sheet	BL	BL	BL	BL	BL	NA
13	Silvery transparent plastic film	BL	BL	BL	BL	BL	NA
14	Black plastic adhesive tape	BL	BL	BL	BL	BL	NA
15	Silvery-black plastic adhesive film	BL	BL	BL	BL	BL	NA
16	Semi-transparent plastic film	BL	BL	BL	BL	BL	NA
17	Black-transparent plastic adhesive film	BL	BL	BL	BL	BL	NA
18	Black-transparent glass sheet with Silvery coating	BL	BL	BL	BL	BL	NA
19	Black plastic holder	BL	BL	BL	BL	BL	NA
20	Grey glass strip	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	Yellow-transparent plastic adhesive tape	BL	BL	BL	BL	BL	NA
22	Yellow FPC	BL	BL	BL	BL	BL	NA
23	Chip LED	BL	BL	BL	BL	BL	NA
24	Black FPC	BL	BL	BL	BL	BL	NA
25	Black body of EC	BL	BL	BL	BL	BL	NA
26	Silvery metal sheet	BL	BL	BL	BL	BL	NA
27	Red plastic wire covering	BL	BL	BL	BL	BL	NA
28	Green plastic wire covering	BL	BL	BL	BL	BL	NA
29	Silvery magnetic ring	BL	BL	BL	BL	BL	NA
30	Silvery metal shaft	BL	BL	BL	BL	BL	NA
31	Silvery metal shell	BL	BL	BL	BL	BL	NA
32	Black sponge adhesive tape	BL	BL	BL	BL	BL	NA
33	Golden metal sleeve	BL	BL	BL	BL	BL	NA
34	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
35	Coppery metal winding	BL	BL	BL	BL	BL	NA
36	White plastic sheet	BL	BL	BL	BL	BL	NA
37	Transparent plastic adhesive tape	BL	BL	BL	BL	BL	NA
38	Silvery metal sheet	BL	BL	BL	BL	BL	NA
39	Black plastic wire covering	BL	BL	BL	BL	BL	NA
40	Silvery metal wire	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	Chip audion	BL	BL	BL	BL	BL	NA
42	Blue PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
43	Chip resistor	BL	*OL	BL	IN	BL	Cr <sup>6+</sup> : ND
44	Chip IC	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
45	Chip diode	BL	*OL	BL	BL	BL	NA
46	Chip capacitor	BL	BL	BL	BL	BL	NA
47	Chip IC	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
48	Black sponge adhesive tape	BL	BL	BL	BL	BL	NA
49	Red soft plastic tape	BL	BL	BL	BL	BL	NA
50	Grey soft plastic tape	BL	BL	BL	BL	BL	NA
51	Chip capacitor	BL	BL	BL	BL	BL	NA
52	Chip IC	BL	BL	BL	BL	BL	NA
53	Chip resistor	BL	BL	BL	BL	BL	NA
54	Yellow PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
55	Chip crystal oscillator	BL	BL	BL	BL	BL	NA
56	Solder	BL	BL	BL	BL	BL	NA
57	Black soft plastic tape	BL	BL	BL	BL	BL	NA
58	Chip IC	BL	BL	BL	BL	BL	NA
59	Yellow plastic wire covering	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 5mg/kg, LOQ of Cr<sup>6+</sup> for polymer and composite sample is 8mg/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 $\mu\text{g}/\text{cm}^2$ .

Positive = Presence of Cr<sup>6+</sup> coating, the detected concentration in boiling water extraction solution is greater than 0.13 $\mu\text{g}/\text{cm}^2$ .

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.

(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	5+7 <sup>△</sup>	<50	<50	<50	<50
T02	6	<50	<50	<50	<50
T03	8	<50	<50	<50	<50
T04	9	<50	<50	<50	<50
T05	10	<50	<50	<50	<50
T06	11	<50	<50	<50	<50
T07	12	<50	<50	<50	<50
T08	13	<50	<50	<50	<50
T09	14	<50	<50	<50	<50
T10	15	<50	<50	<50	<50
T11	16	<50	<50	<50	<50
T12	17	<50	<50	<50	<50
T13	18+20+22 <sup>△</sup>	<50	<50	<50	<50
T14	19	<50	<50	<50	<50
T15	21	<50	<50	<50	<50
T16	23+24+25 <sup>△</sup>	<50	<50	<50	<50
T17	27	<50	<50	<50	<50
T18	28	546	<50	231	223
T19	29+34 <sup>△</sup>	<50	<50	<50	<50
T20	32	<50	<50	<50	<50
T21	36	<50	<50	<50	<50
T22	37	<50	<50	<50	<50
T23	39	<50	<50	<50	<50
T24	41+42 <sup>△</sup>	<50	<50	<50	<50
T25	43+44+45 <sup>△</sup>	<50	<50	<50	<50
T26	46+47 <sup>△</sup>	<50	<50	<50	<50
T27	48	<50	<50	<50	<50
T28	49	<50	<50	<50	<50
T29	50	<50	<50	<50	<50
T30	51+52+53+54+55 <sup>△</sup>	<50	<50	<50	<50
T31	57	<50	<50	<50	<50
T32	58	<50	<50	<50	<50
T33	59	469	<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.

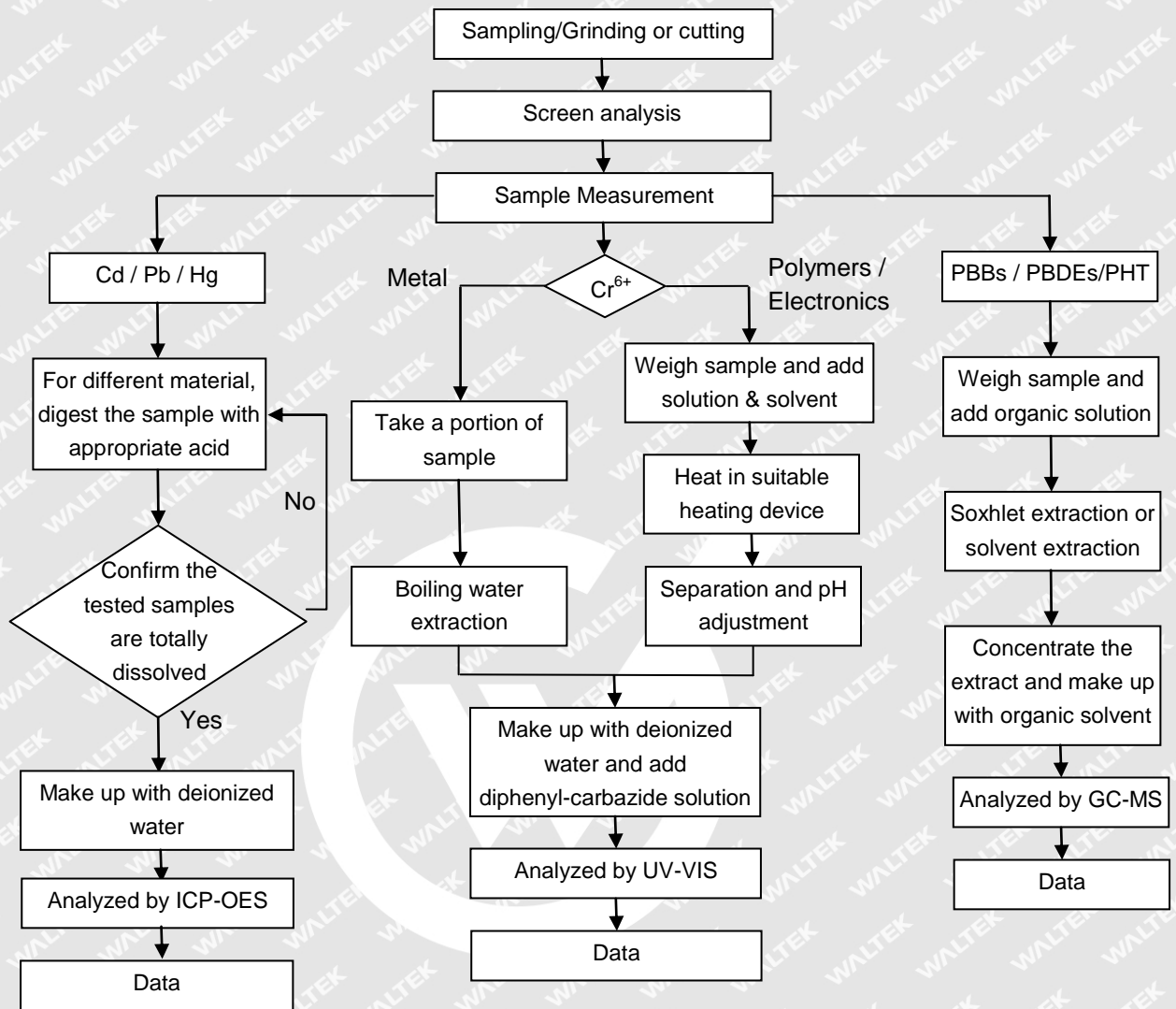


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**Measurement Flowchart:**

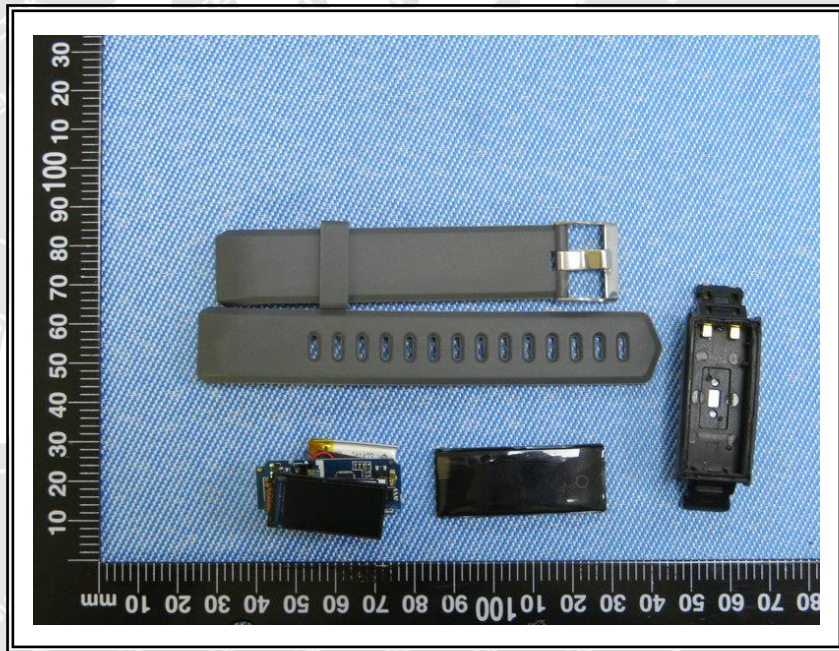




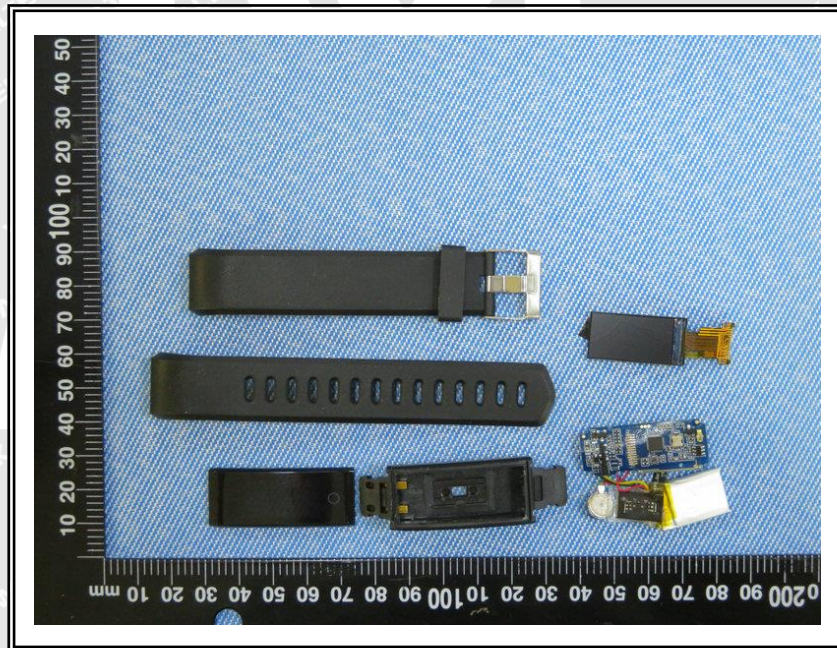
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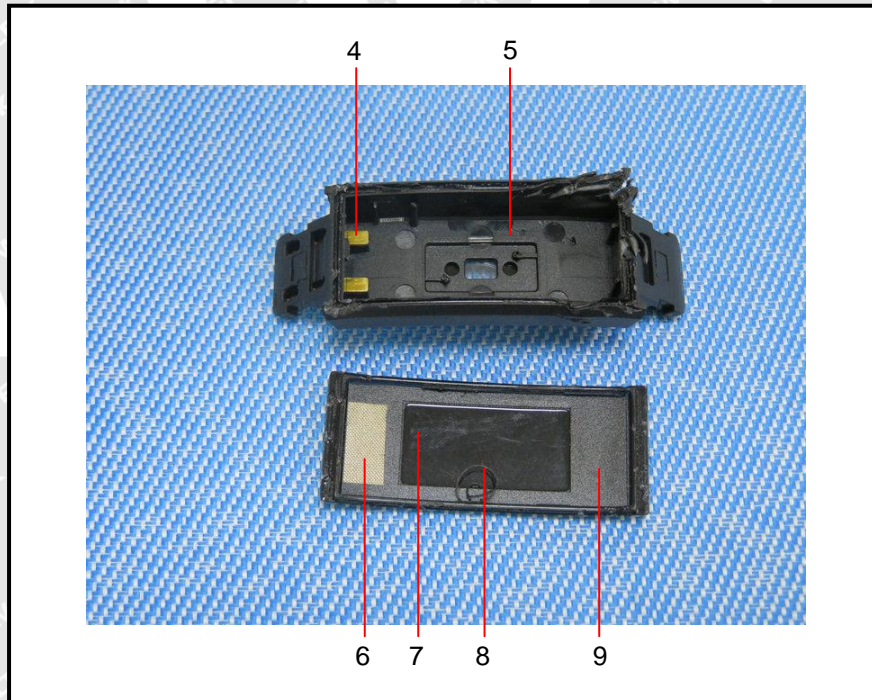
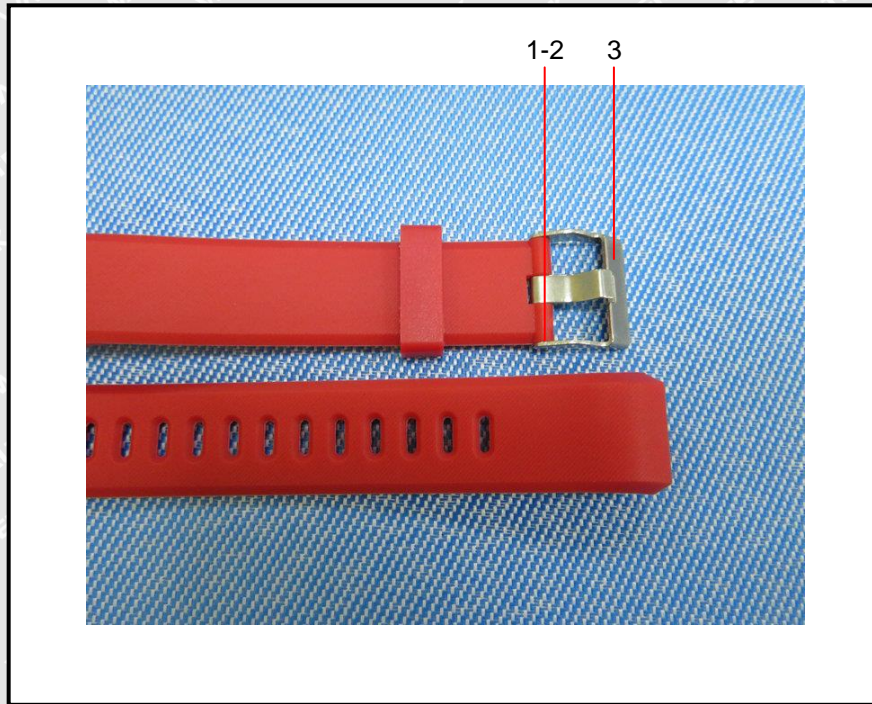




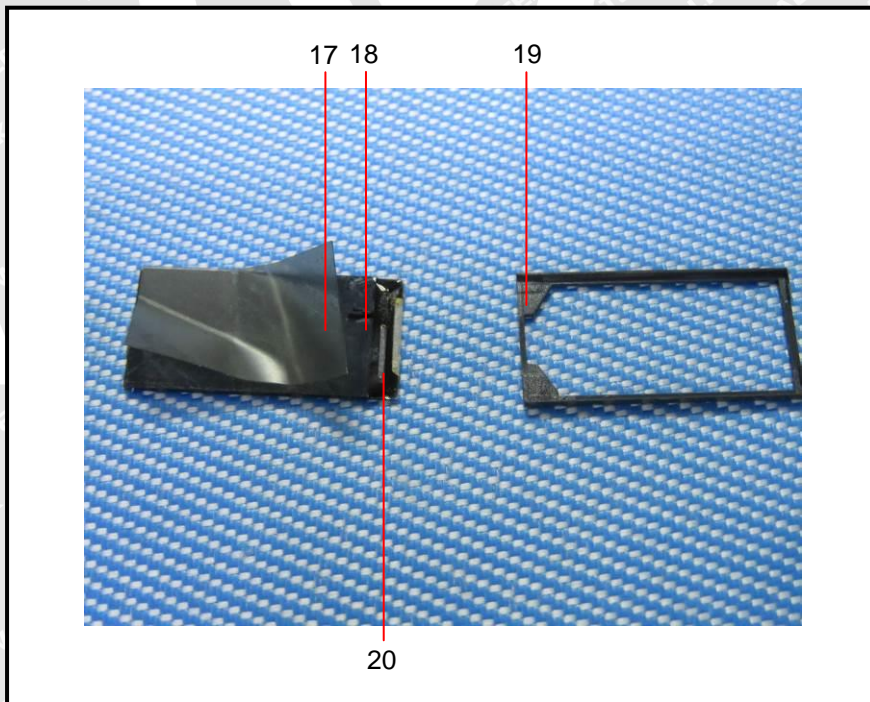
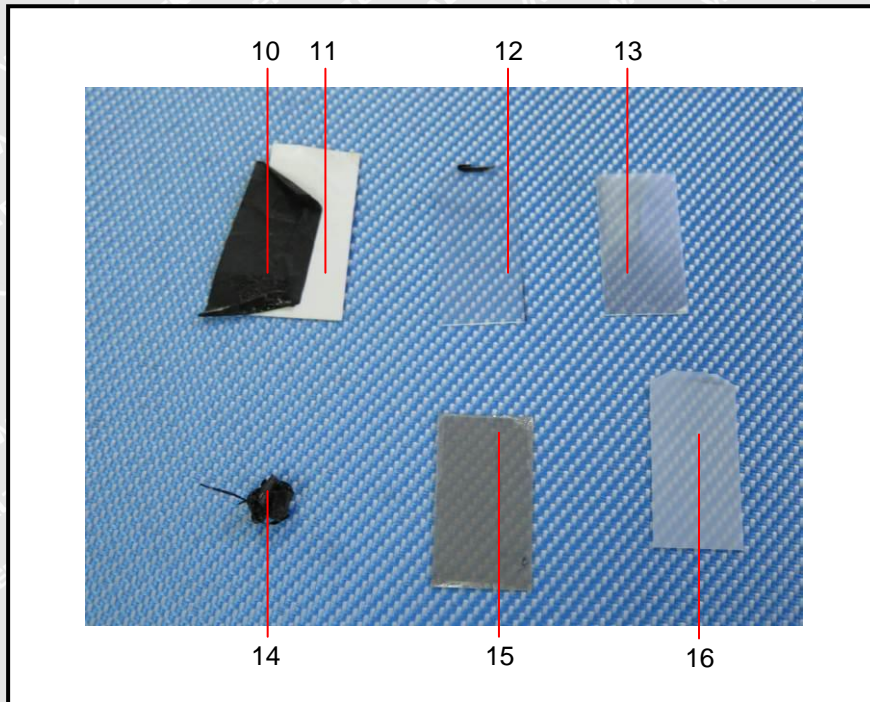




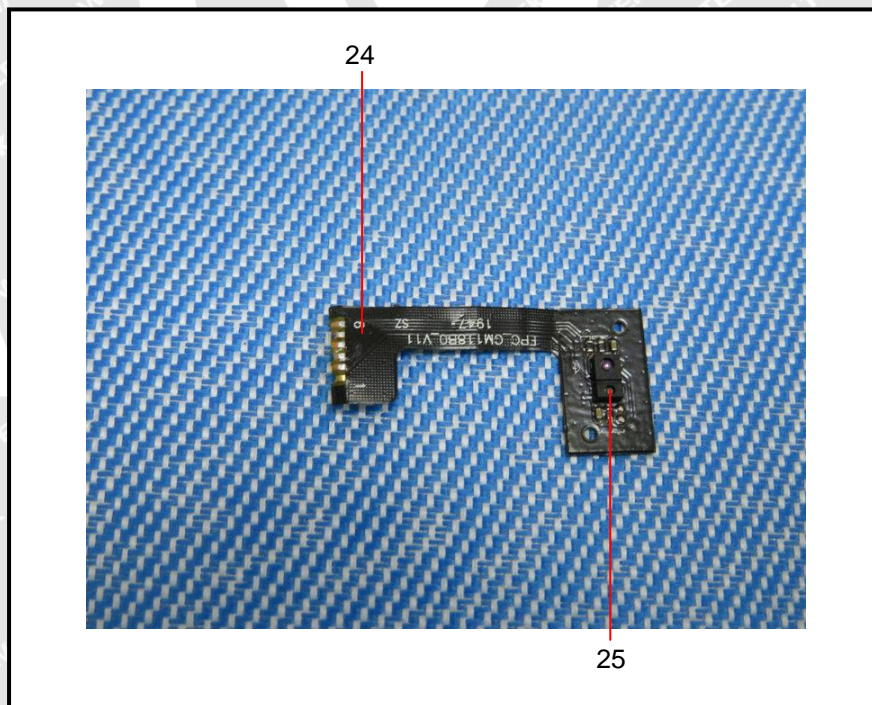
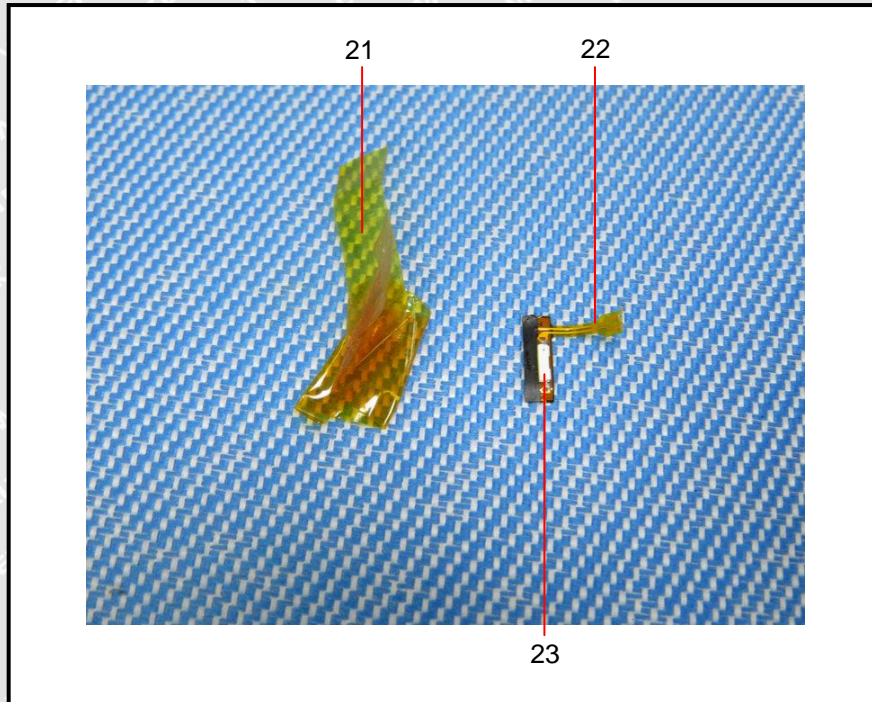
**Photograph(s) of parts tested:**



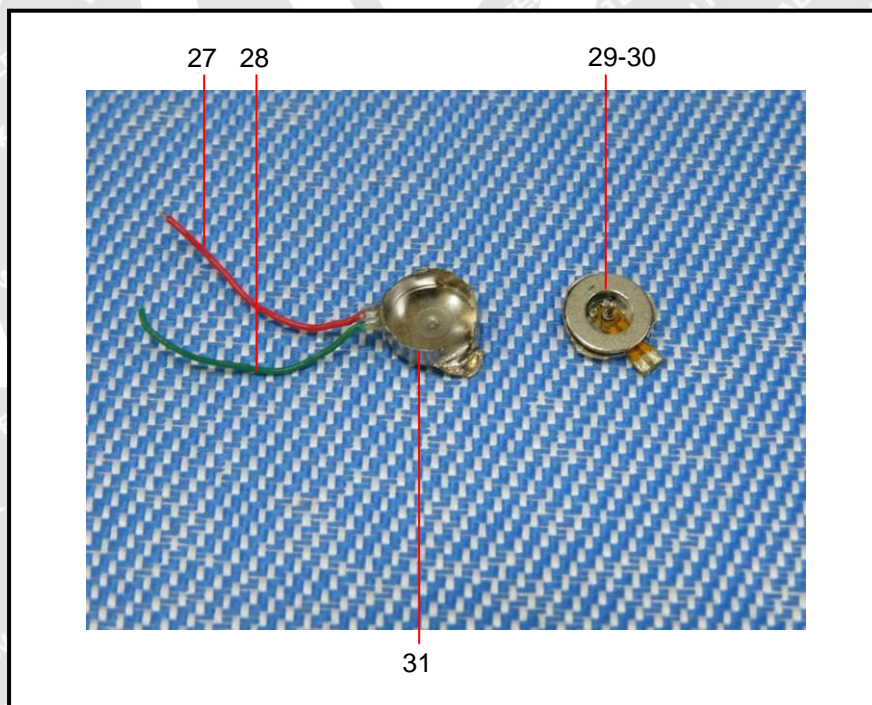
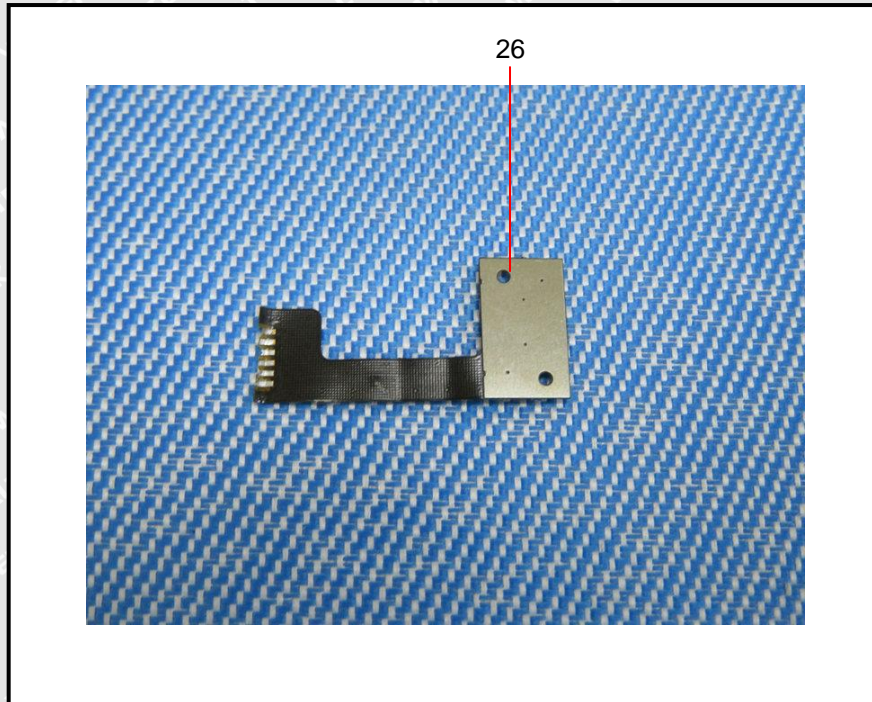




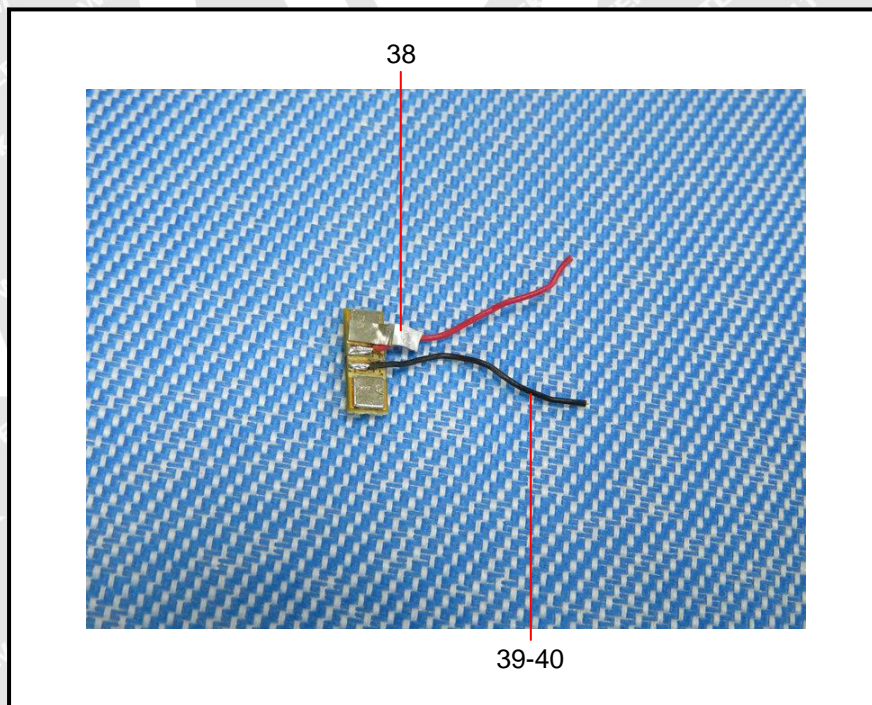
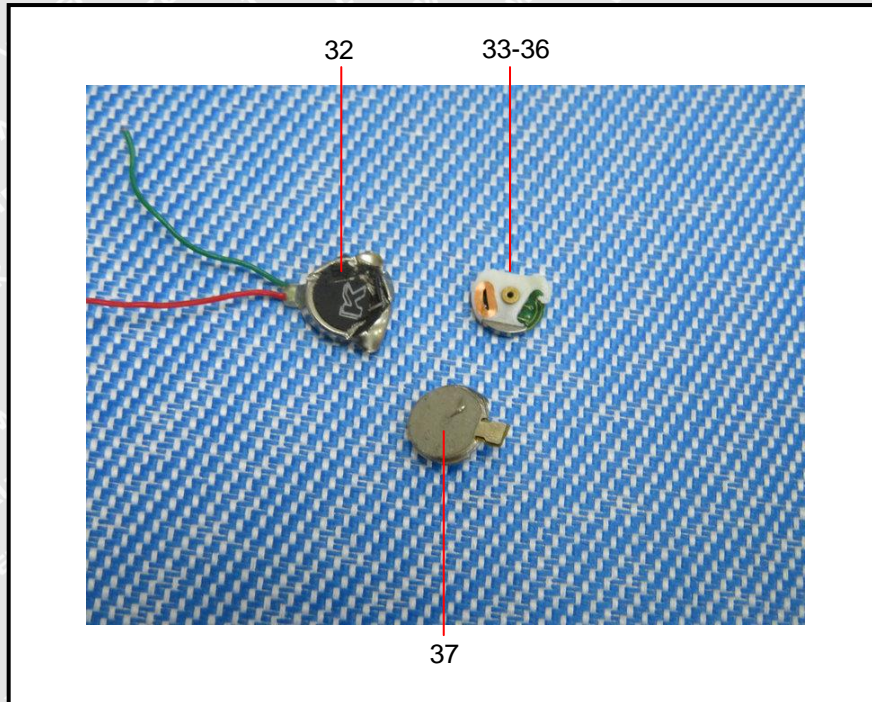




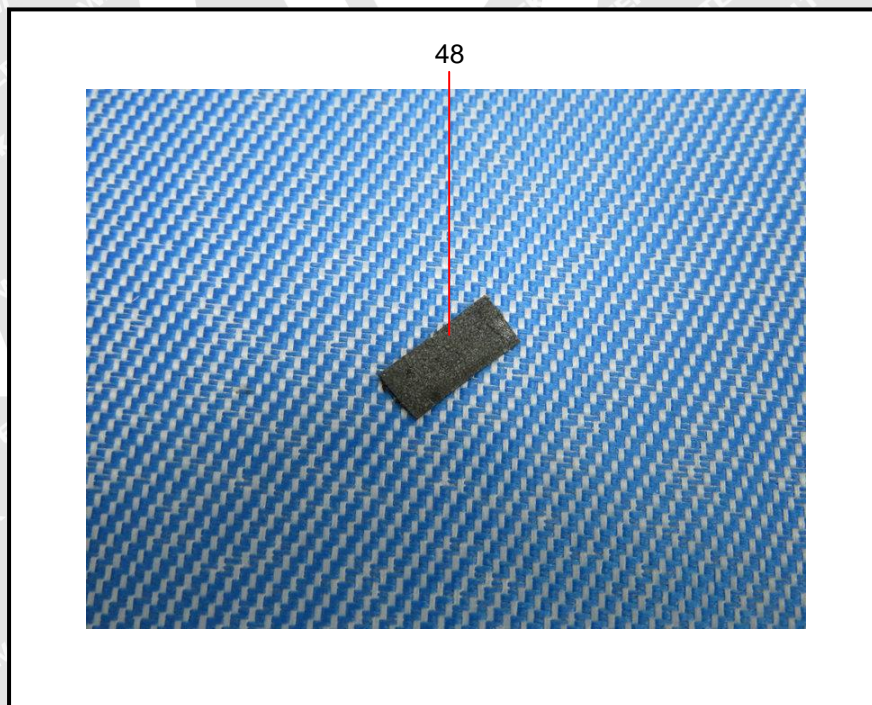
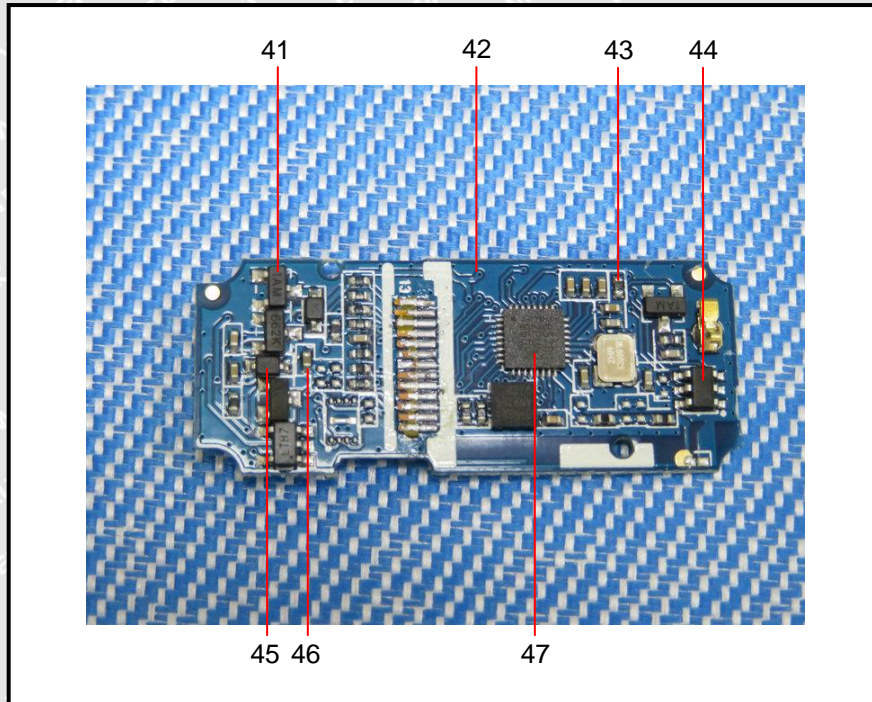




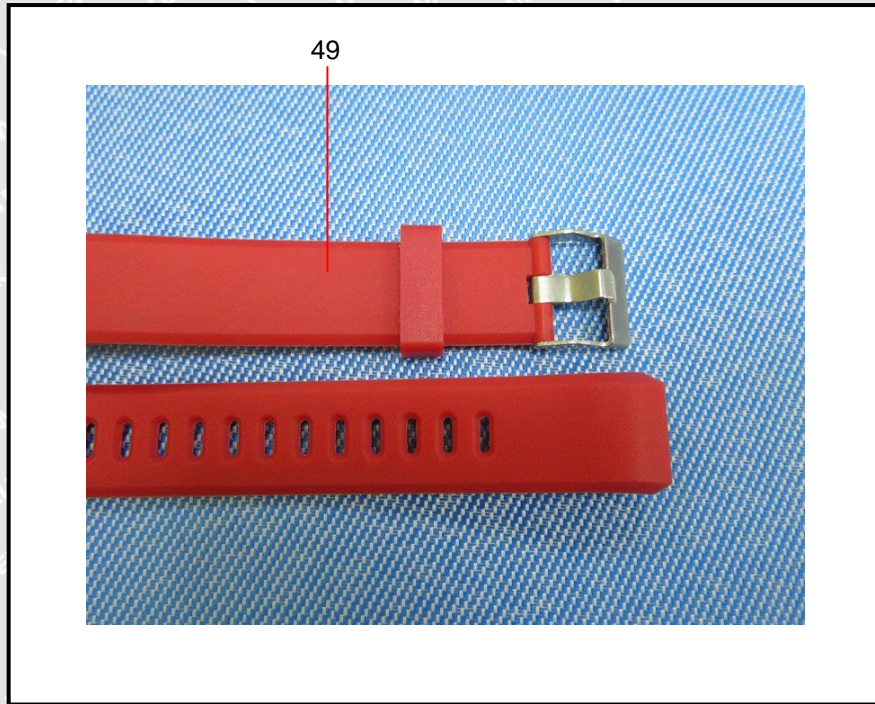




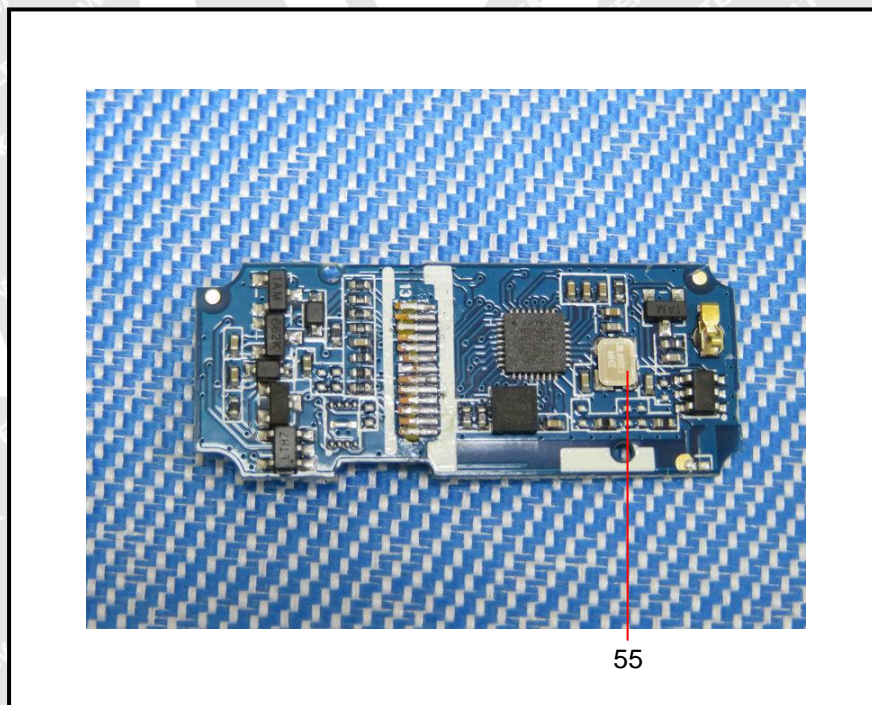
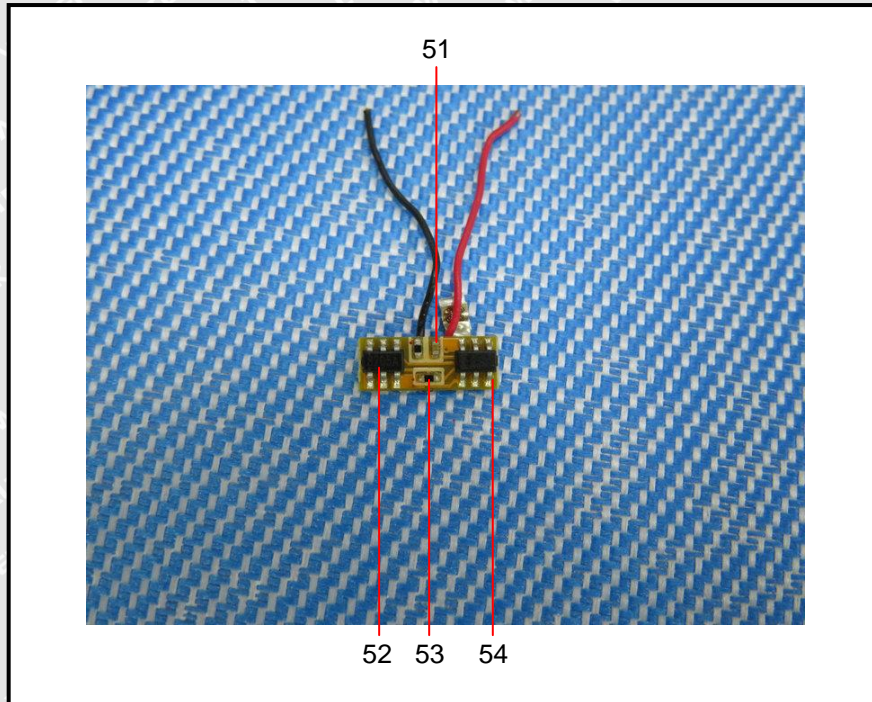




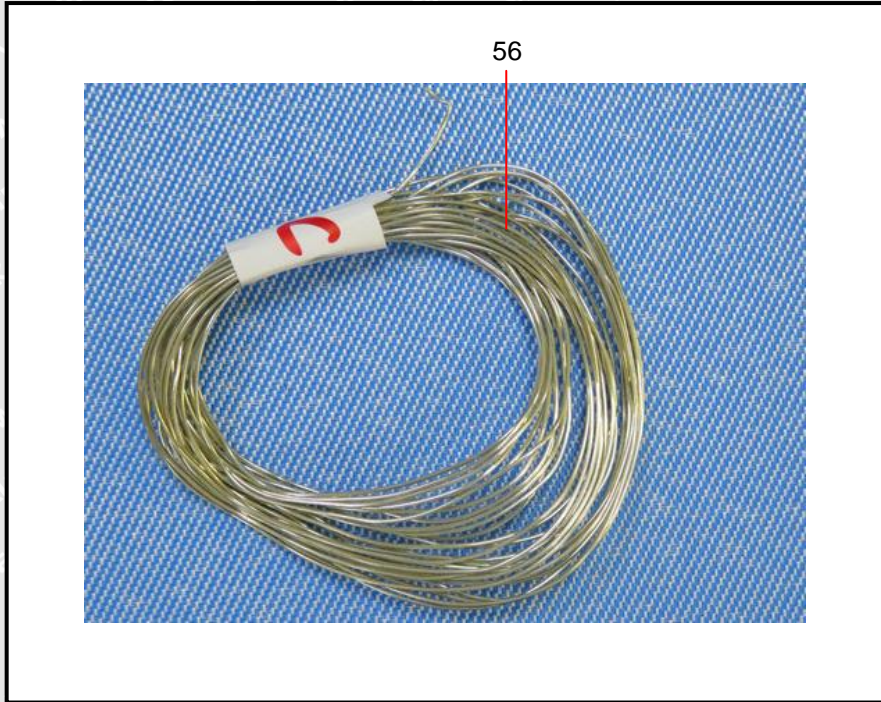




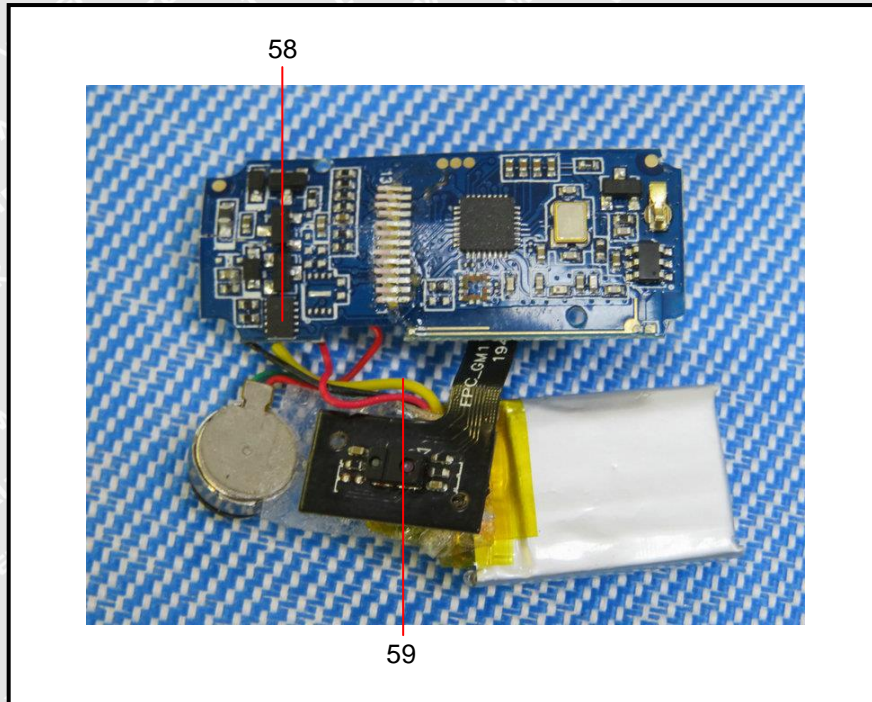












==== End of Report ====

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