



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No. : WTF21F09097259A1R3C

Applicant : Mid Ocean Brands B.V.

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

Manufacturer : 116266

Sample Name : 3W bluetooth bamboo speaker, Bamboo TWS TWIN wireless speaker

Model No. : MO9894, MO6389

Sample Receiving Date : 2021-10-09 & 2021-10-21 & 2022-06-01

Testing Period : 2021-10-09 to 2021-10-19 & 2021-10-21 to 2021-10-30 & 2022-06-01 to 2022-06-08

Date of Issue : 2022-06-15

Test Result : Please refer to next page (s)

Note : As per client's requirement, the results of No.1 to No.36, No.46 to No.67 were quoted from Report No. WTF21F09097259A1X1C.

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. If the report is not stamped with the accreditation recognized seal, it will only be used for scientific research, education, and internal quality control activities, and is not used for the purpose of issuing supporting data to the society.

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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 particle	BL	BL	BL	BL	BL	NA
2	White plastic core of plug	BL	BL	BL	BL	BL	NA
3	Slivery metal pin of plug	BL	BL	BL	BL	BL	NA
4	Solder of plug	BL	BL	BL	BL	BL	NA
5	Slivery metal shell of plug	BL	BL	BL	BL	BL	NA
6	Black plastic particle	BL	BL	BL	BL	BL	NA
7	Red plastic wire covering	BL	BL	BL	BL	BL	NA
8	Black plastic wire covering	BL	BL	BL	BL	BL	NA
9	Coppery metal wire	BL	BL	BL	BL	BL	NA
10	Black plastic particle	BL	BL	BL	BL	BL	NA
11	Black plastic core of plug	BL	BL	BL	BL	BL	NA
12	Solder	BL	BL	BL	BL	BL	NA
13	Slivery metal pin of plug	BL	BL	BL	BL	BL	NA
14	Slivery metal shell of plug	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
15	Brown bamboo shell	BL	BL	BL	BL	BL	NA
16	Light yellow bamboo cover	BL	BL	BL	BL	BL	NA
17	Yellow bamboo sheet	BL	BL	BL	BL	BL	NA
18	Transparent glue	BL	BL	BL	BL	BL	NA
19	Black plastic ring	BL	BL	BL	BL	IN	PBBs : ND PBDEs : 400



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
20	Slivery metal shell	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
21	Slivery metal wire	BL	BL	BL	BL	BL	NA
22	Solder	BL	BL	BL	BL	BL	NA
23	Slivery metal rivet	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative
24	White plastic sheet	BL	BL	BL	BL	BL	NA
25	Black magnetic ring	BL	BL	BL	BL	BL	NA
26	White adhesive paper with black printing	BL	BL	BL	BL	BL	NA
27	Slivery metal base	BL	BL	BL	BL	BL	NA
28	Black soft plastic film	BL	BL	BL	BL	BL	NA
29	Black paper sheet	BL	BL	BL	BL	BL	NA
30	Coppery metal winding	BL	BL	BL	BL	BL	NA
31	Yellow paper	BL	BL	BL	BL	BL	NA
32	Black fibrous net	BL	BL	BL	BL	BL	NA
33	White glue	BL	BL	BL	BL	BL	NA
34	Black plastic wire covering	BL	BL	BL	BL	BL	NA
35	White plastic wire covering	BL	BL	BL	BL	BL	NA
36	Slivery metal wire	BL	BL	BL	BL	BL	NA
37	Black plastic wire covering	BL	BL	BL	BL	BL	NA
38	Red plastic wire covering	BL	BL	BL	BL	BL	NA
39	Slivery 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	
40	Slivery metal sheet	BL	BL	BL	BL	BL	NA
41	Solder	BL	BL	BL	BL	BL	NA
42	Chip resistor	BL	BL	BL	BL	BL	NA
43	Chip IC	BL	BL	BL	BL	BL	NA
44	Chip capacitor	BL	BL	BL	BL	BL	NA
45	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
46	Yellow adhesive tape	BL	BL	BL	BL	BL	NA
47	Black sponge sheet	BL	BL	BL	BL	BL	NA
48	Black plastic knob of switch	BL	BL	BL	BL	BL	NA
49	Slivery metal shell of switch	BL	BL	BL	BL	BL	NA
50	Slivery metal sheet of switch	BL	BL	BL	BL	BL	NA
51	Brown PCB of switch	BL	BL	BL	BL	BL	NA
52	Slivery metal shell of socket	BL	BL	BL	BL	BL	NA
53	Black plastic core of socket	BL	BL	BL	BL	BL	NA
54	Slivery metal pin of socket	BL	BL	BL	BL	BL	NA
55	Chip crystal oscillator	BL	BL	BL	BL	BL	NA
56	Black plastic base	BL	BL	BL	BL	BL	NA
57	Black body of resistor	BL	BL	BL	BL	BL	NA
58	Chip resistor	BL	BL	BL	IN	BL	Cr ⁶⁺ : ND
59	Chip diode	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	Chip capacitor	BL	BL	BL	BL	BL	NA
61	Solder	BL	BL	BL	BL	BL	NA
62	Chip IC	BL	BL	BL	BL	BL	NA
63	Solder	BL	BL	BL	BL	BL	NA
64	Chip IC	BL	BL	BL	BL	BL	NA
65	Solder	BL	BL	BL	BL	BL	NA
66	Green PCB	BL	BL	BL	BL	IN	PBBs : ND PBDEs : ND
67	Slivery metal screw	BL	BL	BL	IN	BL	Cr ⁶⁺ : Negative

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 0.10µg/cm².

Positive = Presence of Cr⁶⁺ coating, the detected concentration in boiling water extraction solution is greater than 0.13µg/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+11 [△]	<50	<50	<50	<50
T03	6	<50	<50	<50	<50
T04	7	164	<50	<50	<50
T05	8	168	<50	<50	<50
T06	10	<50	<50	<50	<50
T07	15+16+17 [△]	<50	<50	<50	<50
T08	18	<50	<50	<50	<50
T09	19	<50	<50	103	<50
T10	24	<50	<50	<50	<50
T11	25+51+57+66 [△]	<50	<50	<50	<50
T12	26	245	<50	104	<50
T13	28	185	<50	<50	<50
T14	29	<50	<50	<50	<50
T15	31	<50	<50	<50	<50
T16	32	<50	<50	<50	<50
T17	33	<50	<50	<50	<50
T18	34	137	<50	<50	<50
T19	35	139	<50	<50	<50
T20	37	<50	<50	<50	<50
T21	38	<50	<50	<50	<50
T22	42+43+44 [△]	<50	<50	<50	<50
T23	45	<50	<50	<50	<50
T24	46	<50	<50	<50	<50
T25	47	<50	<50	<50	<50
T26	48	<50	<50	<50	<50
T27	53	<50	<50	<50	<50
T28	55+58 [△]	<50	<50	<50	<50
T29	56	<50	<50	<50	<50
T30	59+60+62+64 [△]	<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)

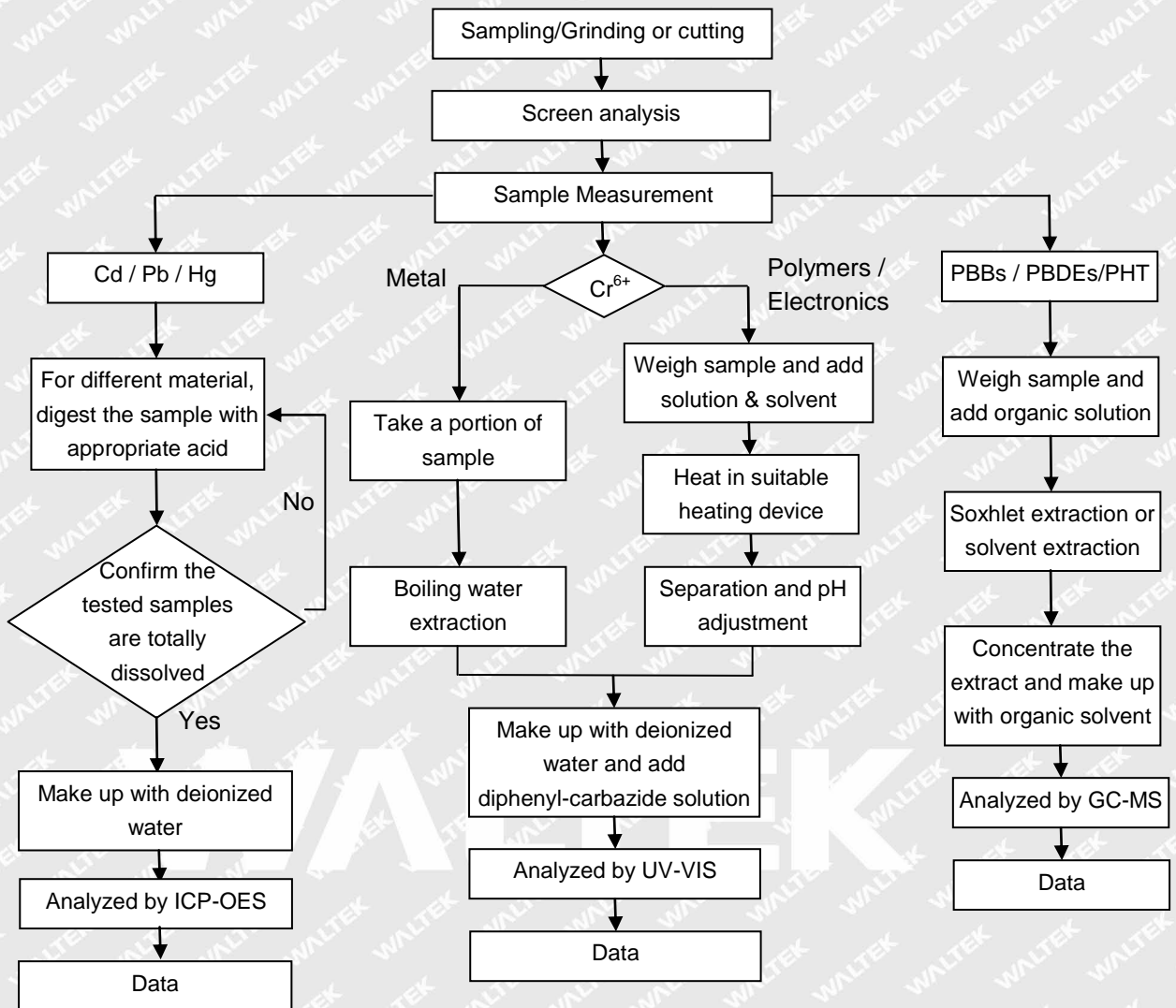


(5) “△”= As client’s requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.

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Measurement Flowchart:





Sample Photo(s):





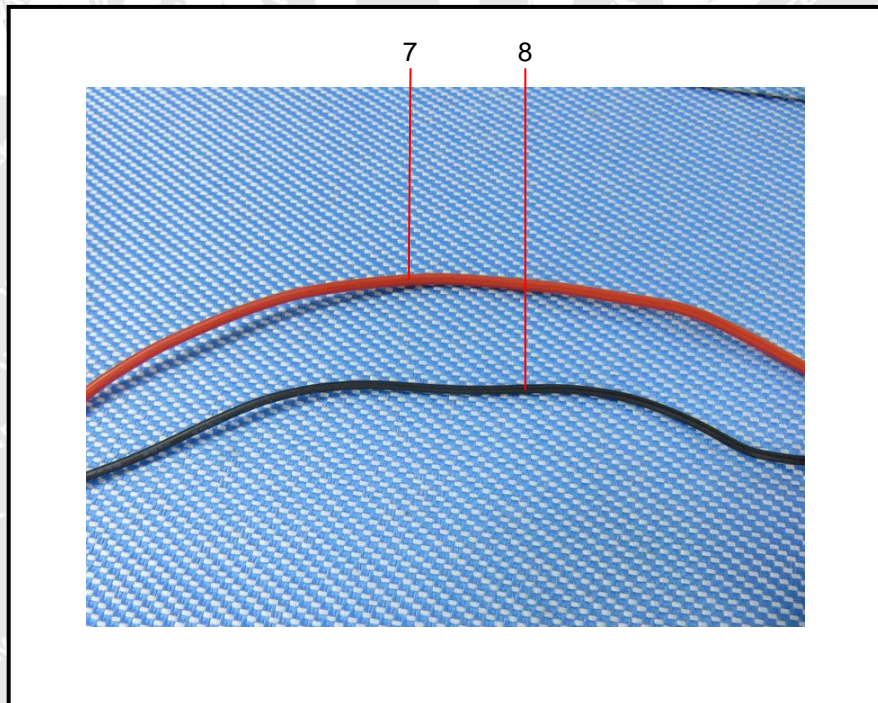
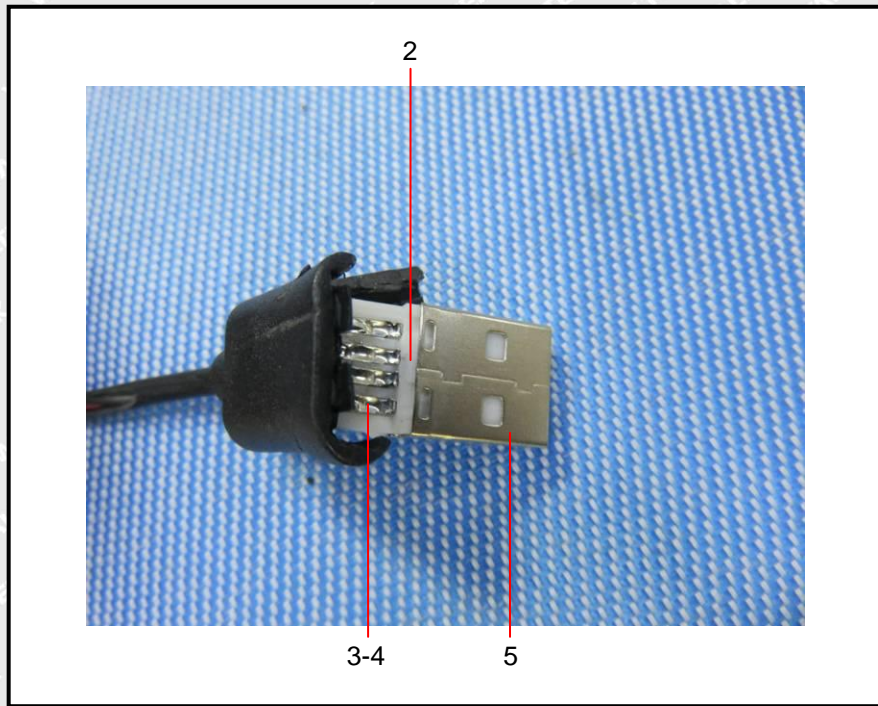
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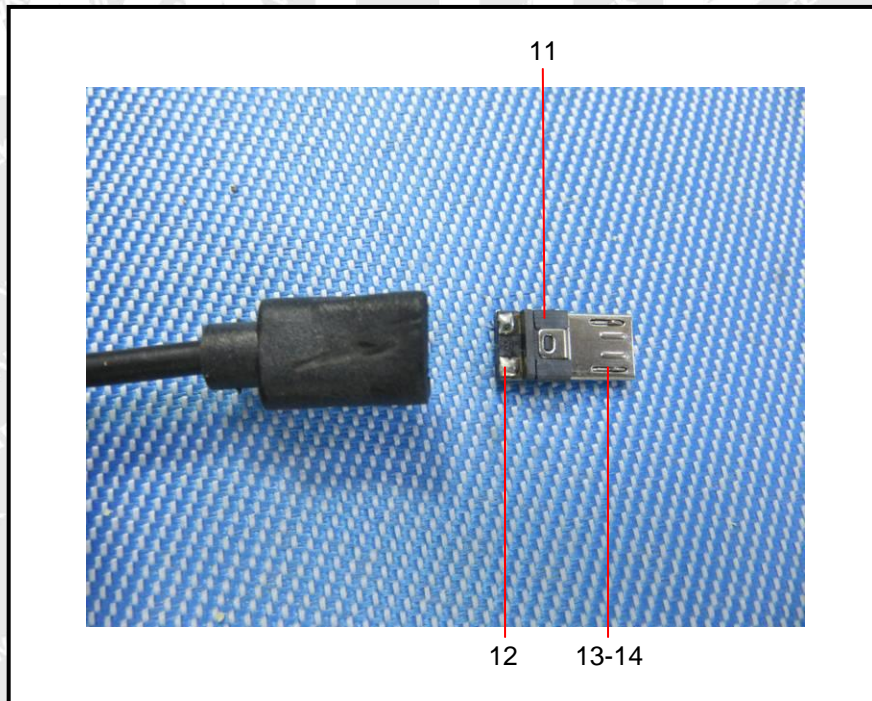
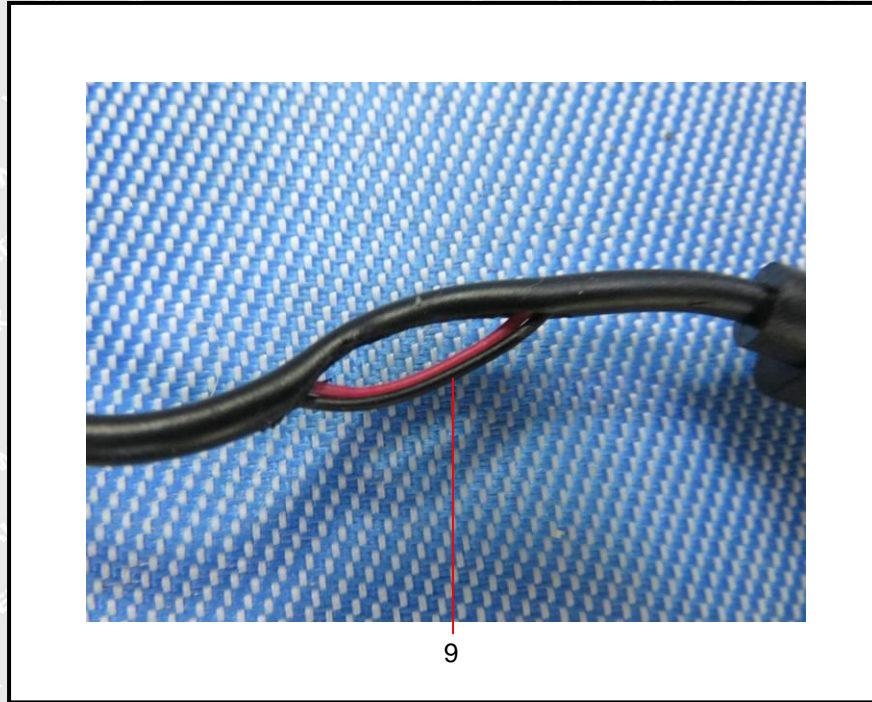


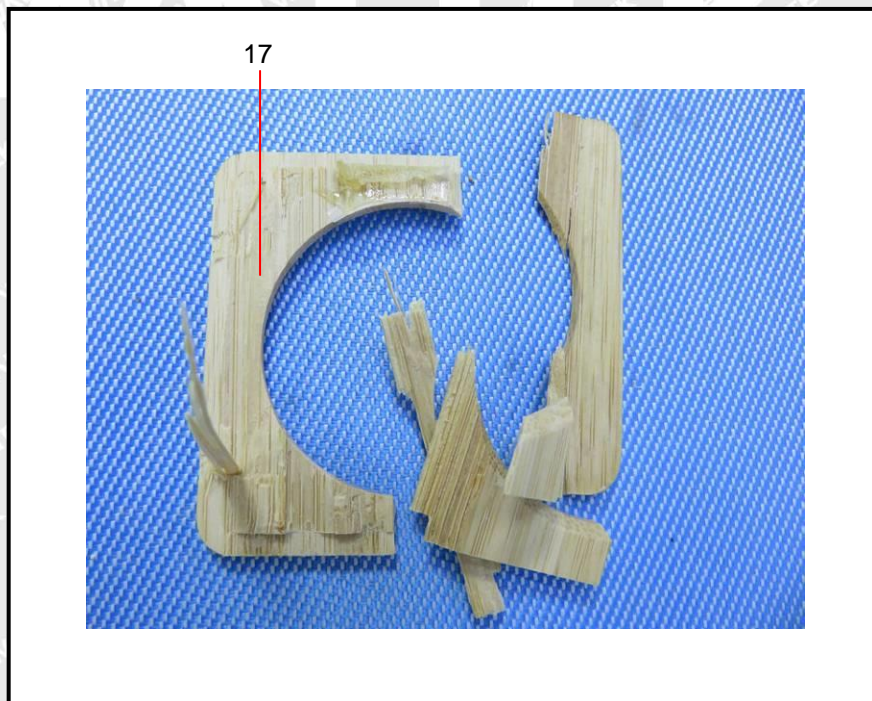
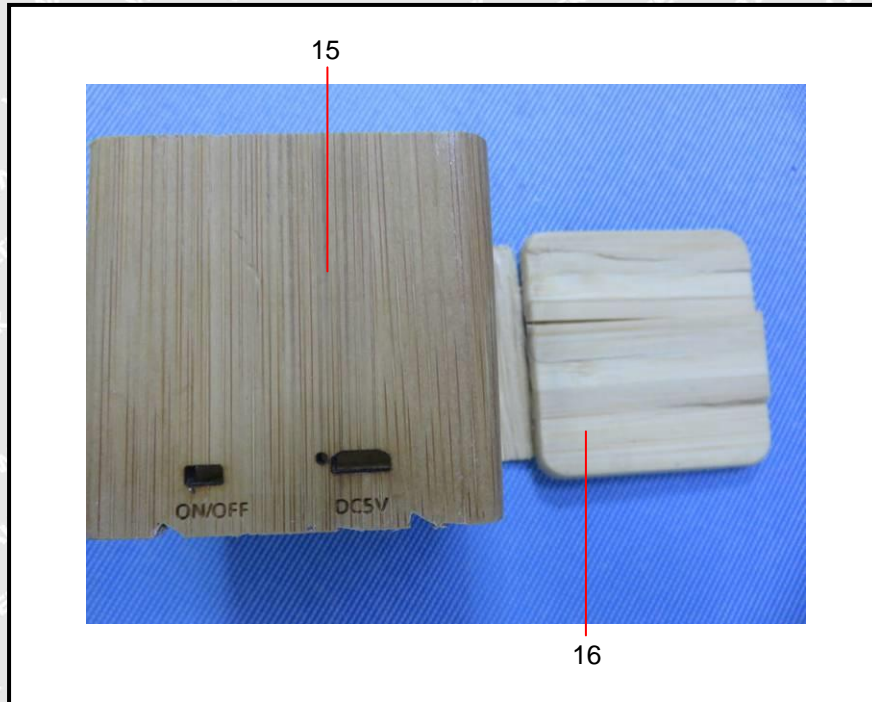
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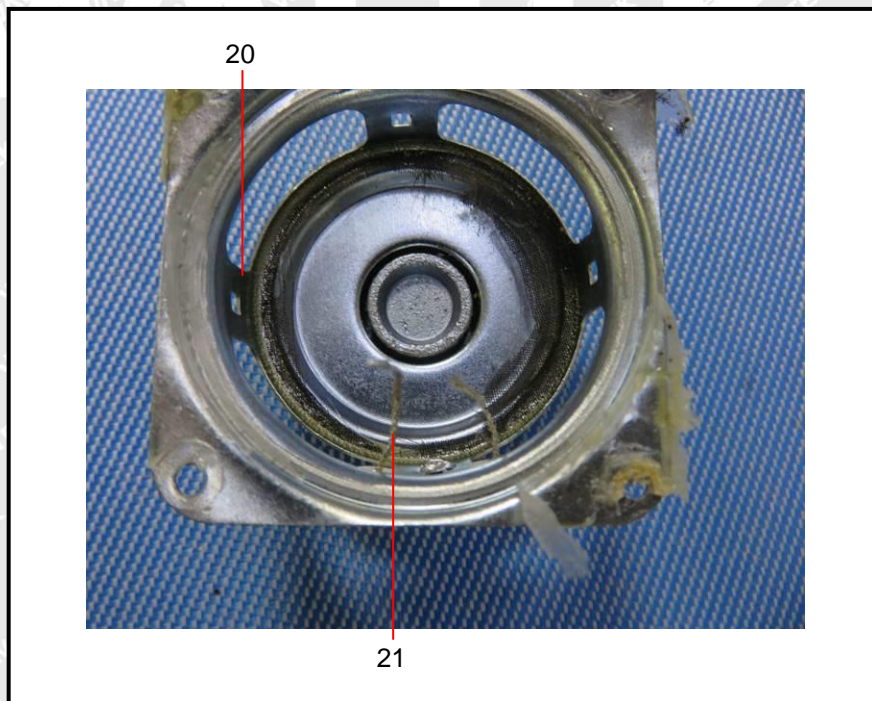
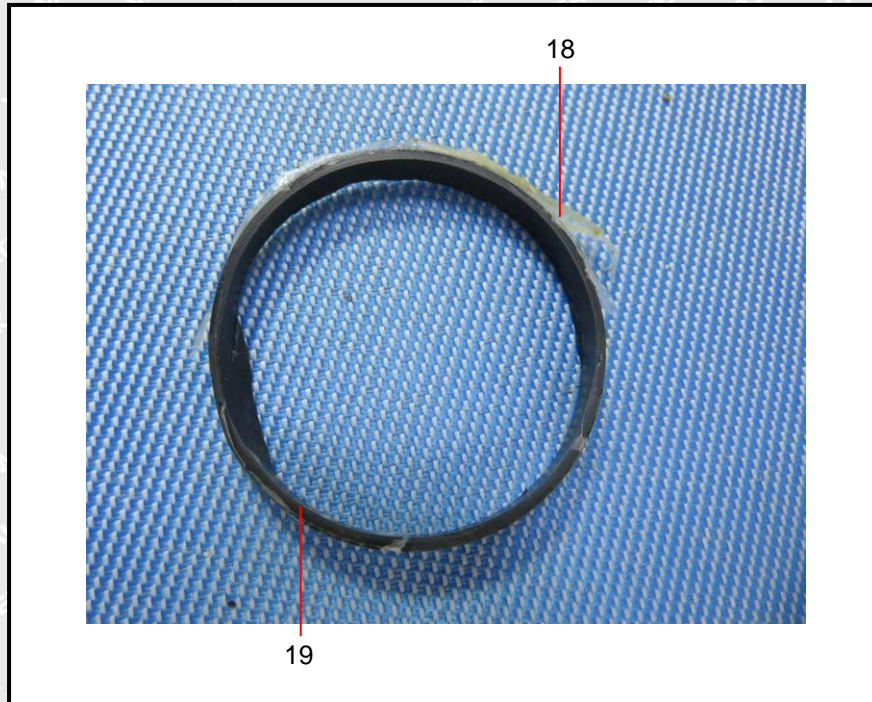


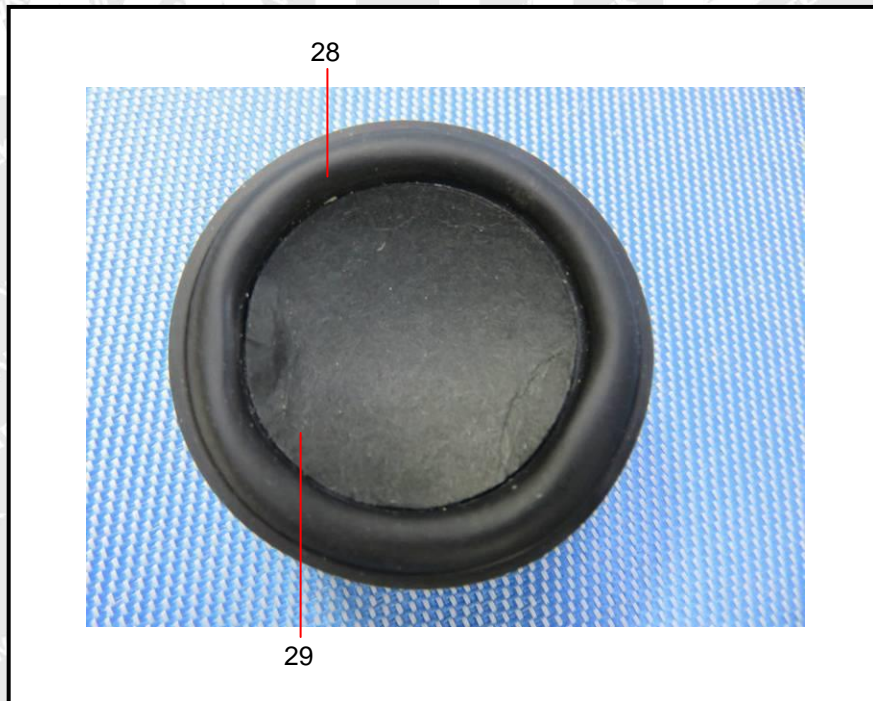
Photograph(s) of parts tested:

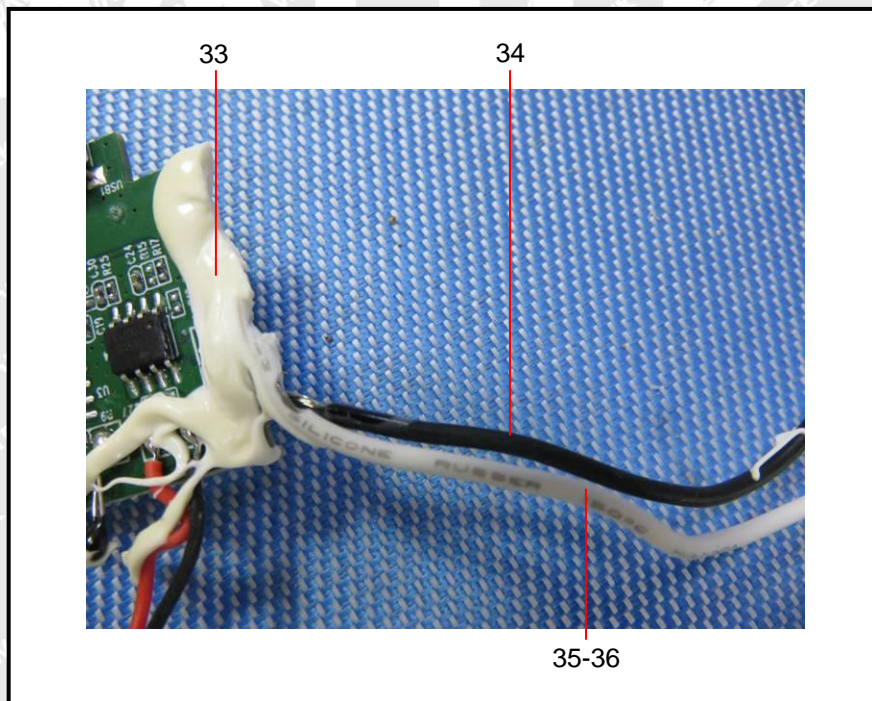
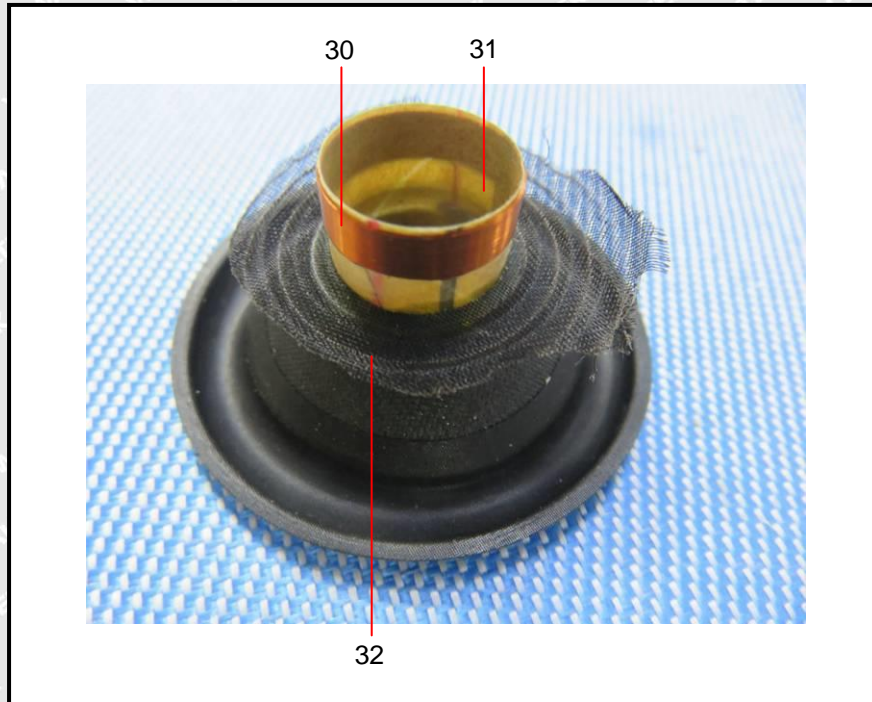


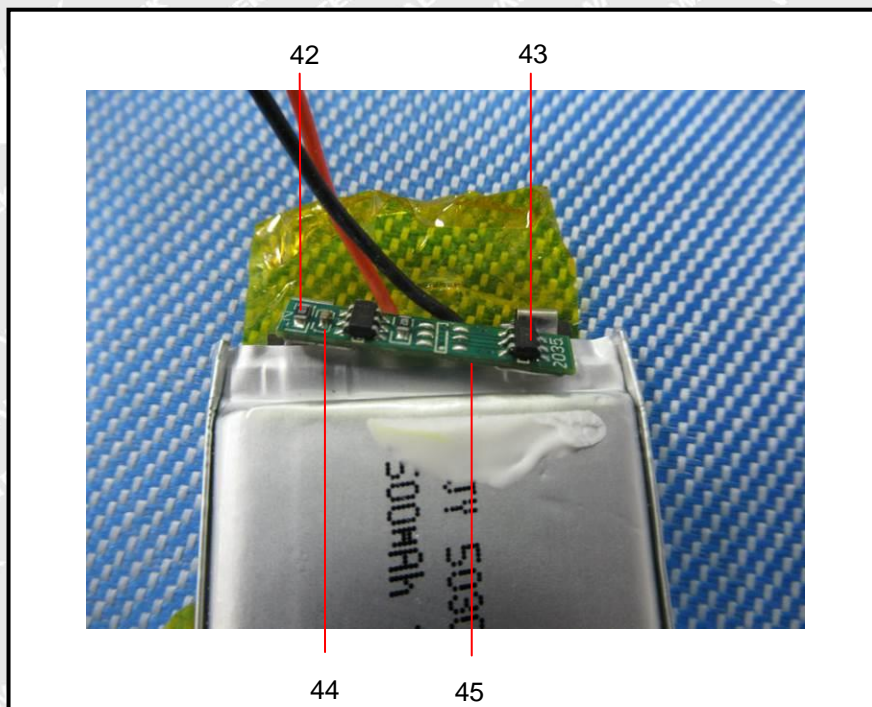
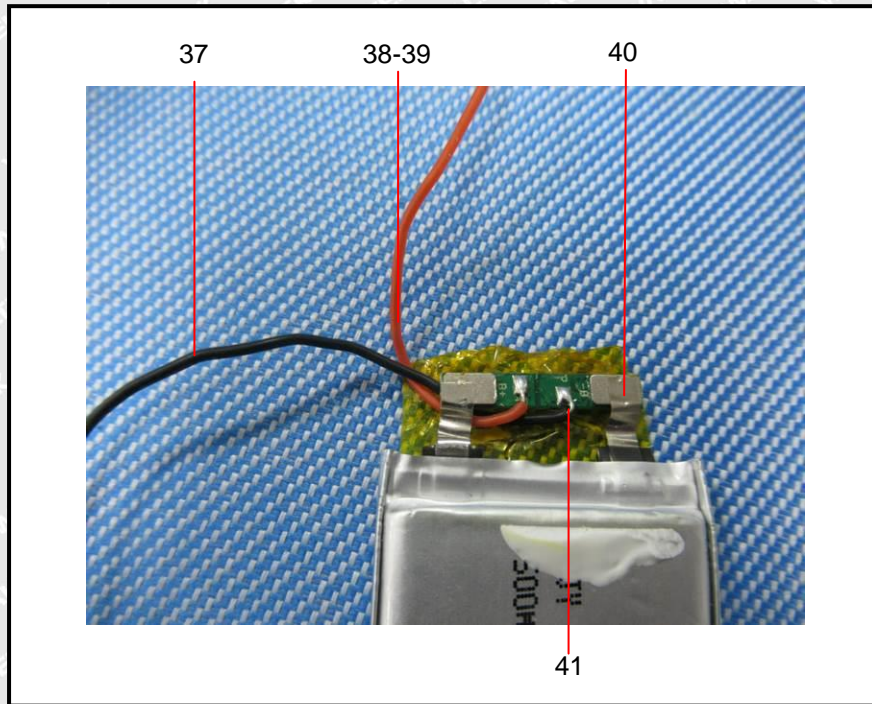


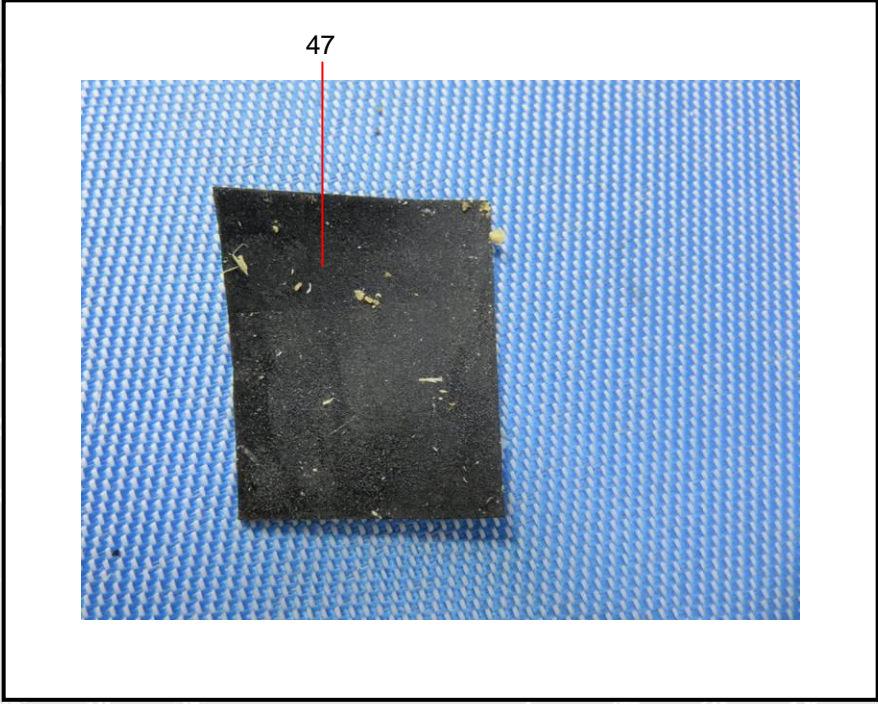
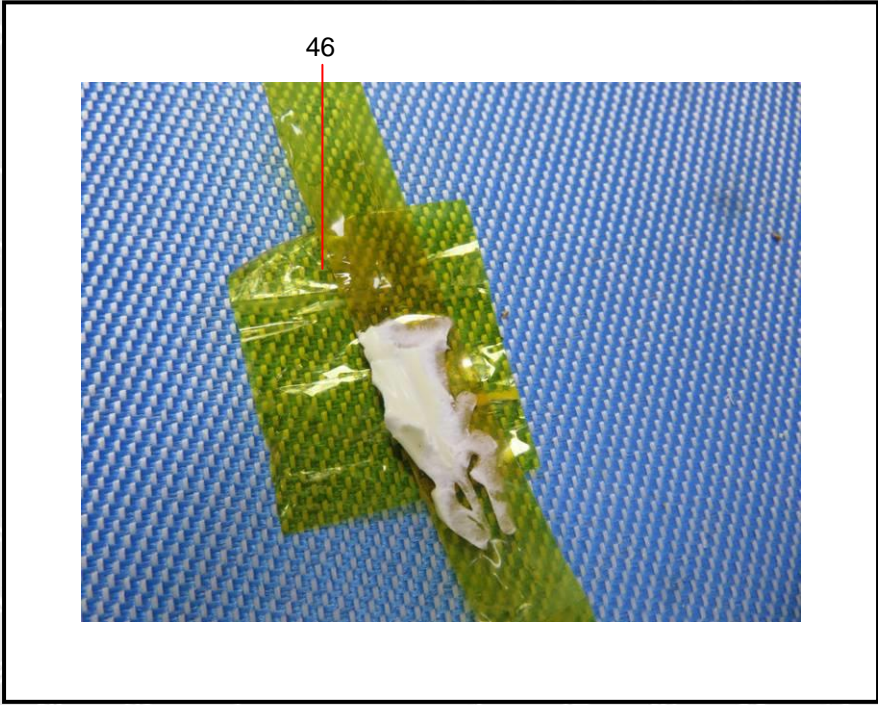


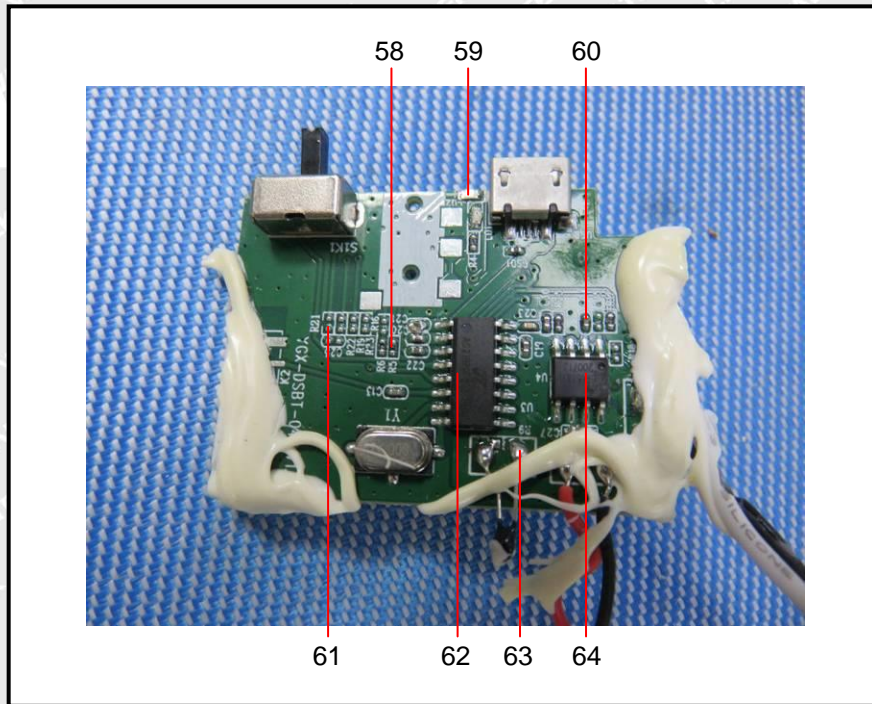
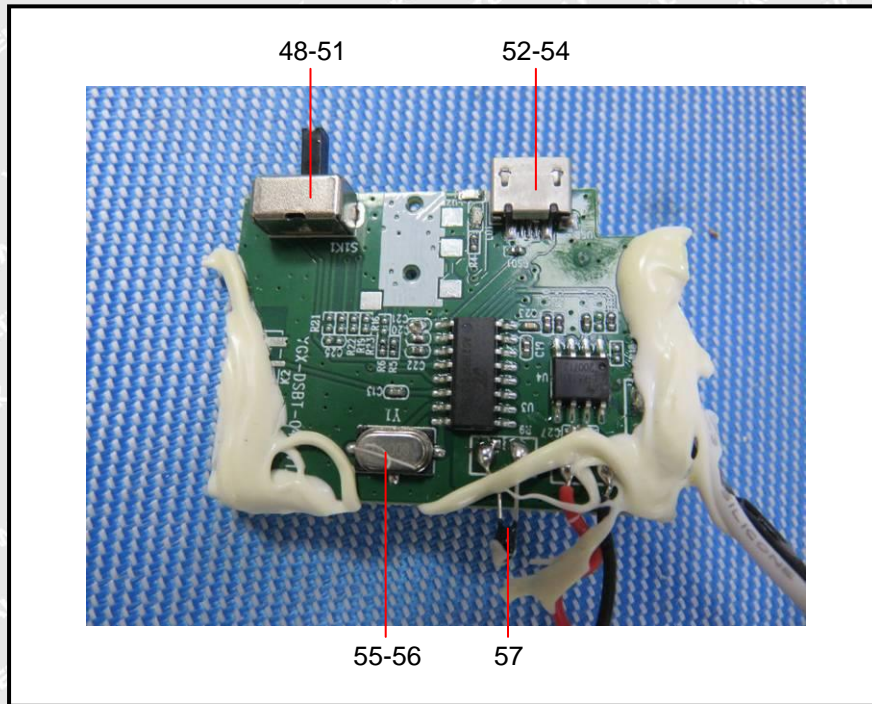


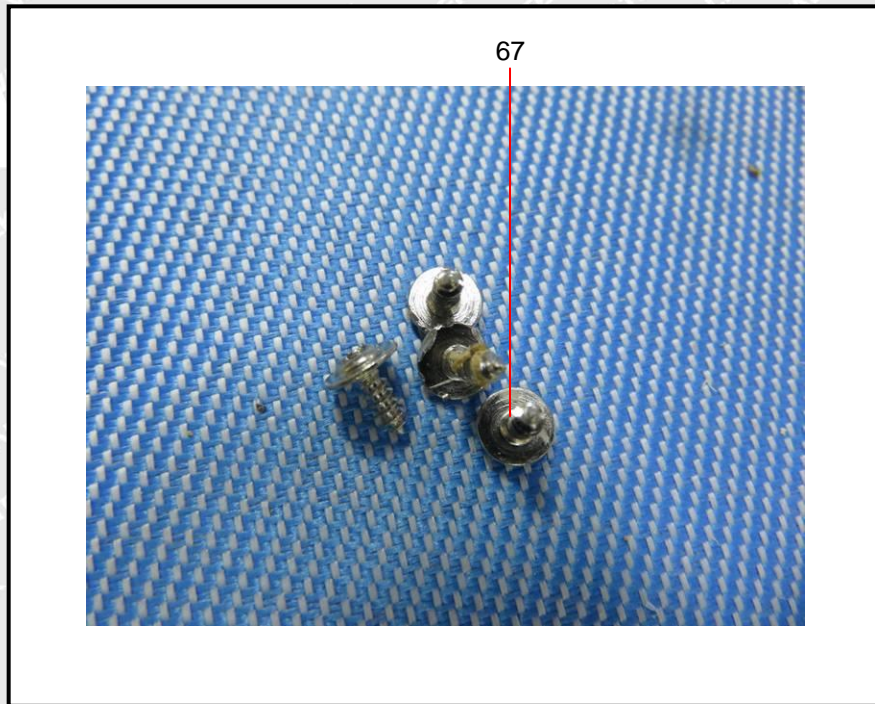
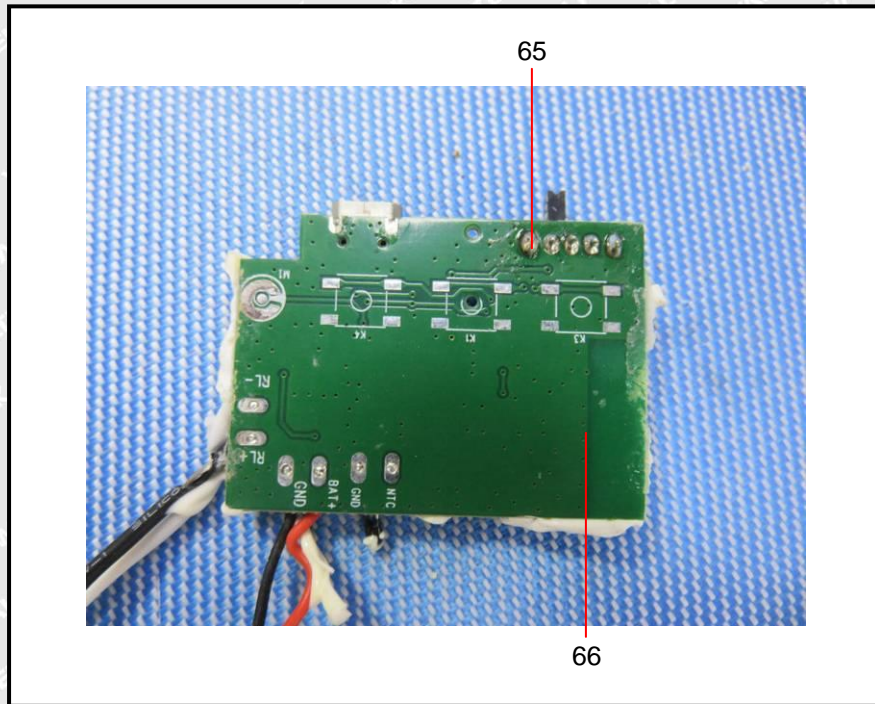


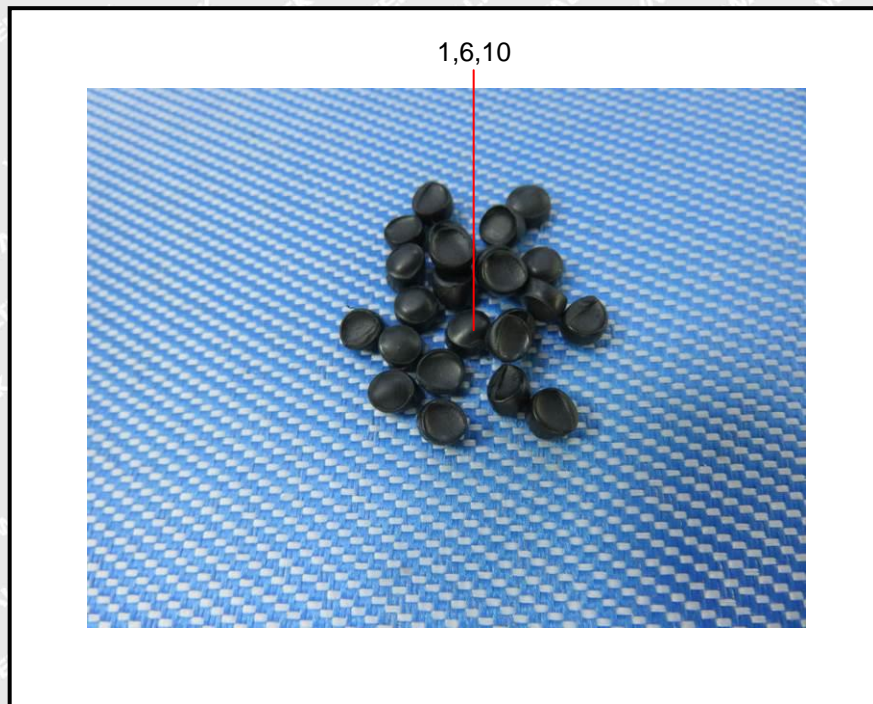












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