

Test Report

Report No.: A001R20170914046

Date: Sept.21, 2017

Page 1 of 13

Applicant:

Address:

Report on the submitted sample(s) said to be:

Sample Name: Colorful Bluetooth Earbuds

Sample Model: XO-9277

Sample Received Date: Sept.14, 2017

Testing Period: Sept.14, 2017 to Sept.21, 2017

Test Requested: Please refer to following page(s).

Test Method: Please refer to following page(s).

Test Result: Please refer to following page(s).

Tested by: Huisu Luo

Reviewed by: Leon

Approved by: Jason

Luohuisu

Suhongliang, Leon

Jiangyuncheng, Jason

Test Engineer

Test Team Leader

Laboratory Manager



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Add: Building 2, No. 171, Meihua Road, Shangmeilin, Futian District, Shenzhen, Guangdong China

Test Report

Report No.: A001R20170714046

Date: Sept.21, 2017

Page 2 of 13

Test Requested:

As specified by client, to determine the Pb, Cd, Hg, Cr⁶⁺, PBBs, PBDEs content in the submitted sample in accordance with EU RoHS Directive 2011/65/EU(RoHS) and its amendment directives on XRF and Chemical Method.

Conclusion

Pass

Test Methods:

A: Screening by X-ray Fluorescence Spectrometry (XRF) :With reference to IEC 62321-3-1:2013 Ed 1.0 Screening – Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry

B: Chemical test:

Test Item	Test Method	Measuring Instrument	MDL
Cadmium (Cd)	IEC 62321-5:2013 Ed 1.0 Section 7	ICP-OES	2 mg/kg
Lead (Pb)	IEC 62321-5:2013 Ed 1.0 Section 7	ICP-OES	2 mg/kg
Mercury (Hg)	IEC 62321-4:2013 Ed 1.0 Section 7	ICP-OES	2 mg/kg
Non-metal Hexavalent Chromium (Cr ⁶⁺)	IEC 62321-7-2:2017 Ed 1.0	UV-Vis	1 mg/kg
Metal Hexavalent Chromium (Cr ⁶⁺)	IEC 62321-7-1:2015 Ed 1.0	UV-Vis	/
PBBs/PBDEs	IEC 62321-6:2015 Ed 1.0	GC-MS	5 mg/kg

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Test Report

Report No.: A001R20170714046

Date: Sept.21, 2017

Page 3 of 13

Test Results:
A、EU RoHS Directive 2011/65/EU and its amendment directives on XRF

Seq. No.	Tested Part(s)	Results(mg/kg)				
		Cd	Pb	Hg	Cr	Br
1	Black plastic shell(ear shell)	BL	BL	BL	BL	BL
2	Black silicone plug(ear shell)	BL	BL	BL	BL	BL
3	Metal cover(horn)	BL	BL	BL	BL	-
4	Diaphragm(horn)	BL	BL	BL	BL	BL
5	Enameled wire(horn)	BL	BL	BL	BL	-
6	Tin solder(horn)	BL	BL	BL	BL	-
7	PCB board(horn)	BL	BL	BL	BL	BL
8	Glue(horn)	BL	BL	BL	BL	BL
9	magnet(horn)	BL	BL	BL	BL	-
10	Metal shell(horn)	BL	BL	BL	BL	-
11	Black plastic shell(Sound controller)	BL	BL	BL	BL	BL
12	Black Buckle(Sound controller)	BL	BL	BL	BL	BL
13	IC Ontology(IC) (Sound controller)	BL	BL	BL	BL	BL
14	Pin(IC) (Sound controller)	BL	BL	BL	BL	-
15	SMD crystal(Sound controller)	BL	BL	BL	BL	BL
16	Patch IC(Sound controller)	BL	BL	BL	BL	BL
17	SMD capacitor(Sound controller)	BL	BL	BL	BL	BL
18	PCB board(Sound controller)	BL	BL	BL	BL	BL
19	Tin solder(Sound controller)	BL	BL	BL	BL	-
20	Microphone(Sound controller)	BL	BL	BL	BL	BL
21	Metal shell(Micro joint)	BL	BL	BL	BL	-
22	Black plastic joint(Micro joint)	BL	BL	BL	BL	BL
23	Pin(Micro joint)	BL	BL	BL	BL	-
24	White toggle plastic(Toggle switch)	BL	BL	BL	BL	BL

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Test Report

Report No.: A001R20170714046

Date: Sept.21, 2017

Page 4 of 13

Seq. No.	Tested Part(s)	Results(mg/kg)				
		Cd	Pb	Hg	Cr	Br
25	Metal shell(Toggle switch)	BL	BL	BL	BL	-
26	Black plastic seat(Toggle switch)	BL	BL	BL	BL	BL
27	Brown tape(Battery)	BL	BL	BL	BL	BL
28	Electric core(Battery)	BL	BL	BL	BL	-
29	Patch IC(Battery)	BL	BL	BL	BL	X*
30	Black leather(Battery)	BL	BL	BL	BL	BL
31	Wire core(Battery)	BL	BL	BL	BL	-
32	Red skin(Battery)	BL	BL	BL	BL	BL
33	Tin solder(Battery)	BL	BL	BL	BL	-
34	PCB board(Battery)	BL	BL	BL	BL	BL
35	Black leather(Wire rod)	BL	BL	BL	BL	BL
36	Brown enameled wire(Wire rod)	BL	BL	BL	BL	-
37	Bullet proof wire(Wire rod)	BL	BL	BL	X*	BL
38	Blue Enameled wire(Wire rod)	BL	BL	BL	BL	-
USB line						
39	Black grip(USB plug)	BL	BL	BL	BL	BL
40	Tin solder(USB plug)	BL	BL	BL	BL	-
41	White plastic plug(USB plug)	BL	BL	BL	BL	BL
42	Pin(USB plug)	BL	BL	BL	BL	-
43	Metal shell(USB plug)	BL	BL	BL	BL	-
44	Black plastic plug(Micro joint)	BL	BL	BL	BL	X*
45	Metal Thimble(Micro joint)	BL	BL	BL	X*	-
46	Pin(Micro joint)	BL	BL	BL	BL	-
47	Metal shell(Micro joint)	BL	BL	BL	BL	-
48	Black outside leather(Wire rod)	BL	BL	BL	BL	BL
49	White leather(Wire rod)	BL	BL	BL	BL	BL

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Test Report

Report No.: A001R20170714046

Date: Sept.21, 2017

Page 5 of 13

Seq. No.	Tested Part(s)	Results(mg/kg)				
		Cd	Pb	Hg	Cr	Br
50	Wire core(Wire rod)	BL	BL	BL	BL	-
51	Pink wire leather(Wire rod)	BL	BL	BL	BL	BL
difference						
52	White silicone plug(Earplugs)(White earphone)	BL	BL	BL	BL	BL
53	White plastic ear shell (Earplugs) (White earphone)	BL	BL	BL	BL	BL
54	White wire leather(Wire rod) (White earphone)	BL	BL	BL	BL	BL
55	White wire buckle(Sound controller) (White earphone)	BL	BL	BL	BL	BL
56	White plastic shell(Sound controller) (White earphone)	BL	BL	BL	BL	BL
57	Blue silicone plug(Earplugs) (Blue earphone)	BL	BL	BL	BL	BL
58	Blue plastic ear shell(Earplugs) (Blue earphone)	BL	BL	BL	BL	BL
59	Blue wire leather(Wire rod) (Blue earphone)	BL	BL	BL	BL	BL
60	Blue wire buckle(Sound controller) (Blue earphone)	BL	BL	BL	X*	BL
61	Blue plastic shell(Sound controller) (Blue earphone)	BL	BL	BL	BL	BL
62	Red silicone plug(Earplugs) (red earphone)	BL	BL	BL	BL	BL
63	Red plastic ear shell (Earplugs) (red earphone)	BL	BL	BL	BL	BL
64	Red wire leather (Wire rod) (red earphone)	BL	BL	BL	X*	BL
65	Red wire buckle(Sound controller) (red earphone)	BL	BL	BL	BL	BL
66	Red plastic shell(Sound controller) (red earphone)	BL	BL	BL	BL	BL
67	Green silicone plug(Earplugs) (green earphone)	BL	BL	BL	BL	BL
68	Green plastic ear shell(Earplugs) (green earphone)	BL	BL	BL	BL	BL
69	Green wire leather(Wire rod) (green earphone)	BL	BL	BL	X*	BL
70	Green wire buckle(Sound controller) (green earphone)	BL	BL	BL	BL	BL
71	Green plastic shell(Sound controller) (green earphone)	BL	BL	BL	BL	BL

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Test Report

Report No.: A001R20170714046

Date: Sept.21, 2017

Page 6 of 13

Element	Unit	Non-metal	Metal	Composite Material
Cd	mg/kg	$BL \leq 70 - 3\sigma < X$ $< 130 + 3\sigma \leq OL$	$BL \leq 70 - 3\sigma < X$ $< 130 + 3\sigma \leq OL$	$BL \leq 50 - 3\sigma < X$ $< 150 + 3\sigma \leq OL$
Pb	mg/kg	$BL \leq 700 - 3\sigma < X$ $< 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma < X$ $< 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma < X$ $< 1500 + 3\sigma \leq OL$
Hg	mg/kg	$BL \leq 700 - 3\sigma < X$ $< 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma < X$ $< 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma < X$ $< 1500 + 3\sigma \leq OL$
Cr	mg/kg	$BL \leq 700 - 3\sigma < X$	$BL \leq 700 - 3\sigma < X$	$BL \leq 500 - 3\sigma < X$
Br	mg/kg	$BL \leq 300 - 3\sigma < X$	-	$BL \leq 250 - 3\sigma < X$

Note: BL= Below Limit

OL= Over limited

X= Inconclusive

“-“= Not regulated

*= Scanning by XRF and detected by chemical method. The test results of chemical method please refer to next pages.

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Test Report

Report No.: A001R20170714046

Date: Sept.21, 2017

Page 7 of 13

Remark:

- i Results were obtained by XRF for primary scanning, and further chemical testing by ICP (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs) are recommended to be performed, if the concentration exceeds the above warning value according to IEC 62321-3-1:2013 Ed 1.0.
- ii The XRF scanning test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.
- iii The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2011/65/EU:

RoHS Restricted Substances	Maximum Concentration Value (mg/kg) (by weight in homogenous materials)
Cadmium (Cd)	100
Lead (Pb)	1000
Mercury (Hg)	1000
Hexavalent Chromium (Cr(VI))	1000
Polybrominated biphenyls (PBBs)	1000
Polybrominated diphenylethers (PBDEs)	1000

Disclaimers:

This XRF Scanning report is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF screening report is sufficient for its/his/her purposes.

The result shown in this XRF scanning report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect (e.g. plastic, rubber, metal, glass, ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis are required to obtain quantitative data.

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Test Report

Report No.: A001R20170714046

Date: Sept.21, 2017

Page 8 of 13

B. The Test Results of Chemical Method:

 1) The Test Results of non-metal Cr⁶⁺

Test Item(s)	Unit	Result(s)				Limit
		37	60	64	69	
Hexavalent Chromium(Cr ⁶⁺)	mg/kg	N.D.	N.D.	N.D.	N.D.	1000

Note: N.D. = Not Detected or less than MDL
 MDL = Method Detection Limit

 2)The Test Results of metal Cr⁶⁺

Test Item(s)	MDL	Result(s)	Limit
		45	
Hexavalent Chromium (Cr ⁶⁺)	See note	Negative	#

Note:

- Negative = Absence of Cr(VI) on the tested areas
- MDL = Method Detection Limit
- Boiling-water-extraction:

Number	Colorimetric result (Cr(VI) concentration)	Qualitative result
1	The sample solution is < the 0,10 µg/cm ² equivalent comparison standard solution	The sample is negative for Cr(VI) – The Cr(VI) concentration is below the limit of quantification. The coating is considered a non-Cr(VI) based coating.
2	The sample solution is ≥ the 0,10 µg/cm ² and ≤ the 0,13 µg/cm ² equivalent comparison standard solutions	The result is considered to be inconclusive – Unavoidable coating variations may influence the determination.
3	The sample solution is > the 0,13 µg/cm ² equivalent comparison standard solution	The sample is positive for Cr(VI) – The Cr(VI) concentration is above the limit of quantification and the statistical margin of error. The sample coating is considered to contain Cr(VI).

- # = Negative indicates the absence of Cr(VI) on the tested areas concentration is below the limit of quantification. The coating is considered a non-Cr(VI) based coating.
- Uncertainty indicates the absence of Cr(VI) on the tested areas unavoidable coating variations may influence the determination.

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Test Report

Report No.: A001R20170714046

Date: Sept.21, 2017

Page 9 of 13

Positive indicates the presence of Cr(VI) on the tested areas concentration is above the limit of quantification and the statistical margin of error. The sample coating is considered to contain Cr(VI).

Storage conditions and production date of the tested sample are unavailable and thus result of Cr(VI) represent status of the sample at the time of testing.

3) The Test Results of PBBs & PBDEs

Unit:mg/kg

Item(s)	MDL	Result(s)		Limit
		29	44	
Polybrominated Biphenyls (PBBs)				
Monobromobiphenyl	5	N.D.	N.D.	Total PBBs Content <1000
Dibromobiphenyl	5	N.D.	N.D.	
Tribromobiphenyl	5	N.D.	N.D.	
Tetrabromobiphenyl	5	N.D.	N.D.	
Pentabromobiphenyl	5	N.D.	N.D.	
Hexabromobiphenyl	5	N.D.	N.D.	
Heptabromobiphenyl	5	N.D.	N.D.	
Octabromobiphenyl	5	N.D.	N.D.	
Nonabromodiphenyl	5	N.D.	N.D.	
Decabromodiphenyl	5	N.D.	N.D.	
Total content	/	N.D.	N.D.	
Polybrominated Diphenylethers (PBDEs)				
Monobromodiphenyl ether	5	N.D.	N.D.	Total PBDEs Content <1000
Dibromodiphenyl ether	5	N.D.	N.D.	
Tribromodiphenyl ether	5	N.D.	N.D.	
Tetrabromodiphenyl ether	5	N.D.	N.D.	
Pentabromodiphenyl ether	5	N.D.	N.D.	
Hexabromodiphenyl ether	5	N.D.	N.D.	
Heptabromodiphenyl ether	5	N.D.	N.D.	
Octabromodiphenyl ether	5	N.D.	N.D.	
Nonabromodiphenyl ether	5	N.D.	N.D.	
Decabromodiphenyl ether	5	N.D.	N.D.	
Total content	/	N.D.	N.D.	
Conclusion	/	Pass	Pass	/

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Test Report

Report No.: A001R20170714046

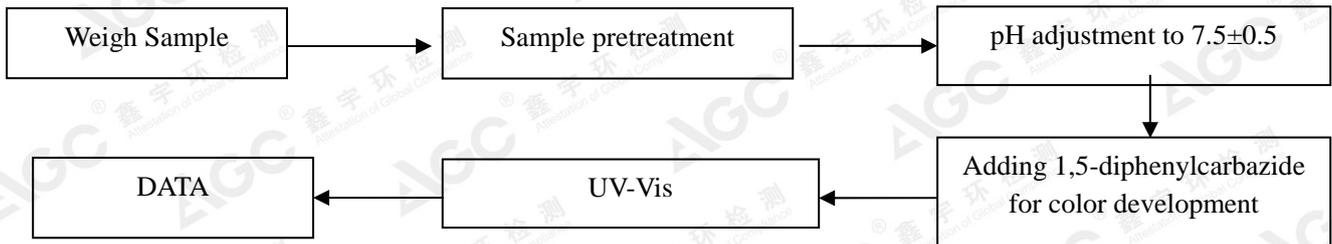
Date: Sept.21, 2017

Page 10 of 13

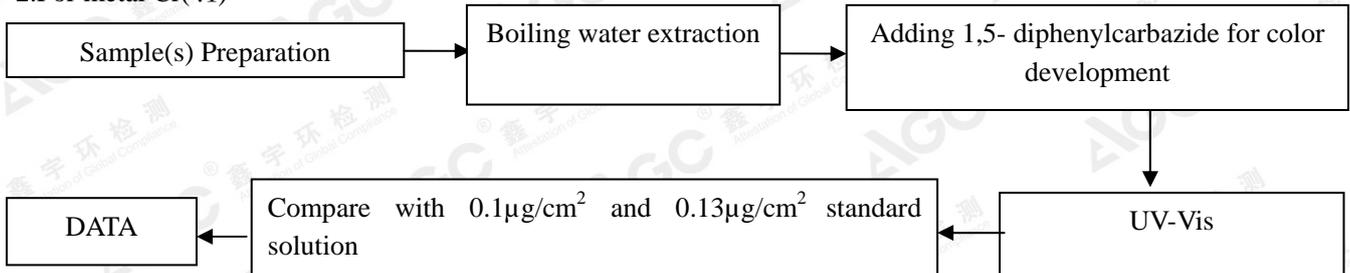
Note: N.D. = Not Detected or less than MDL
MDL = Method Detection Limit

Test Flow Chart

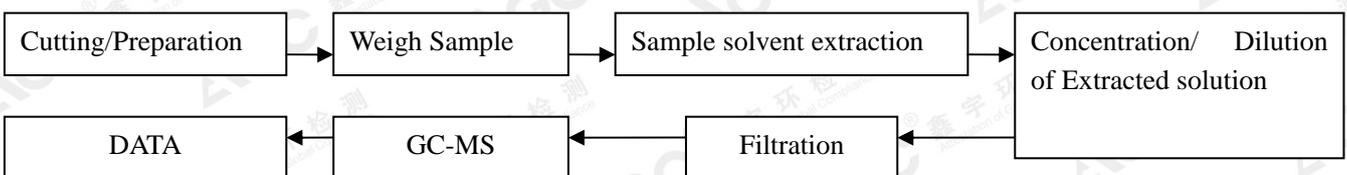
1. For non-metal Cr(VI)



2. For metal Cr(VI)



3. For PBBs & PBDEs



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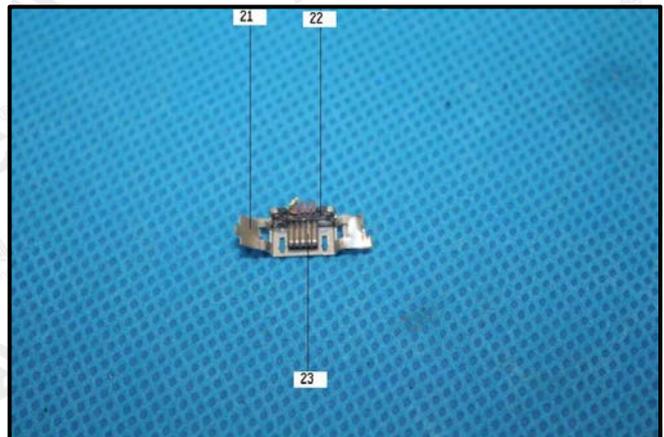
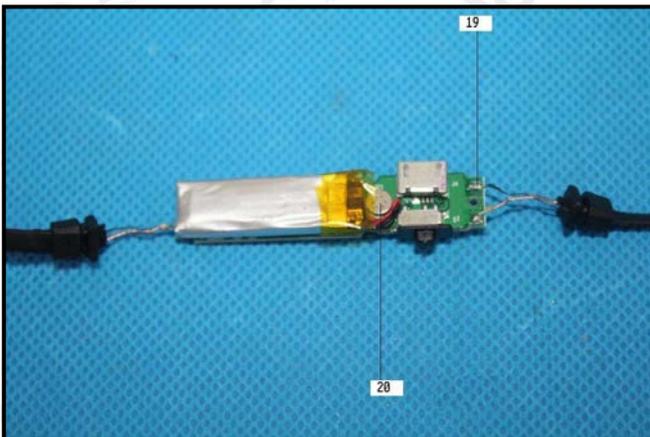
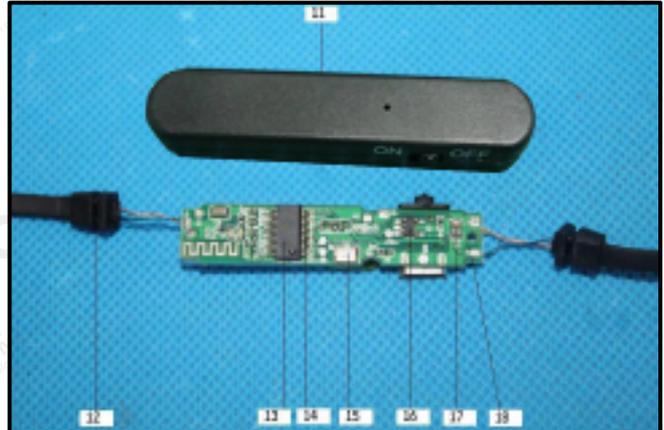
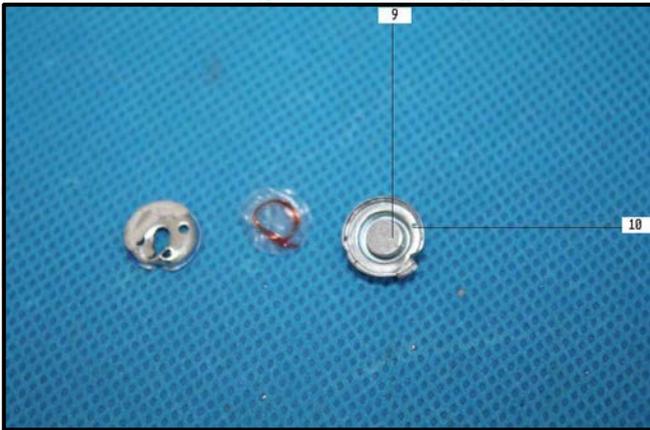
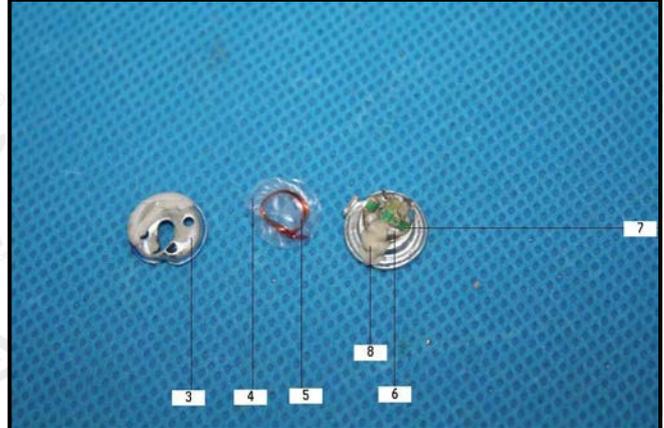
Test Report

Report No.: A001R20170714046

Date: Sept.21, 2017

Page 11 of 13

The photo of the sample



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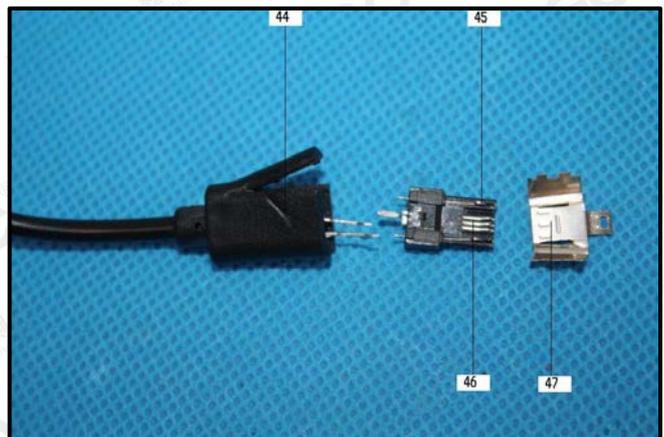
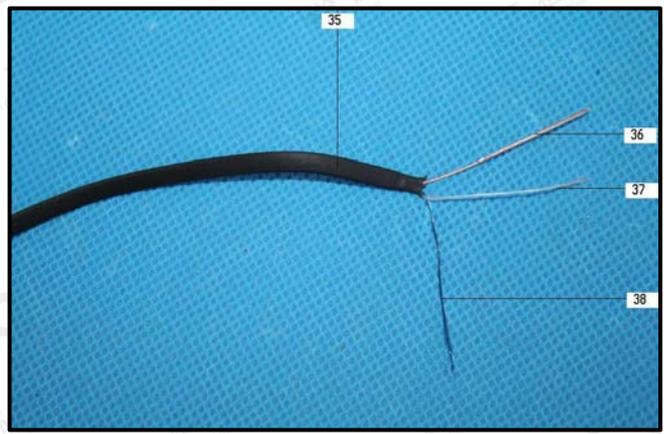
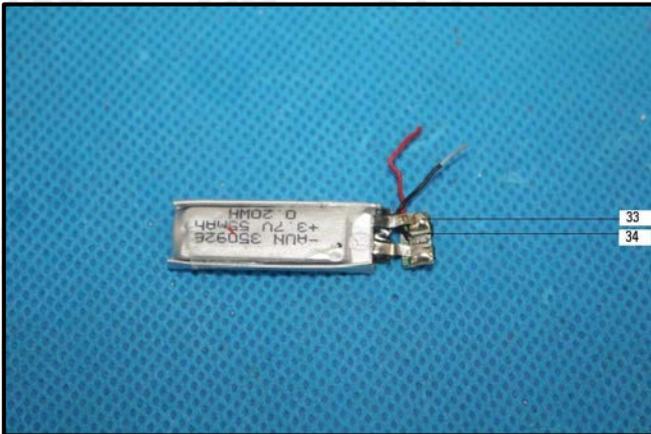
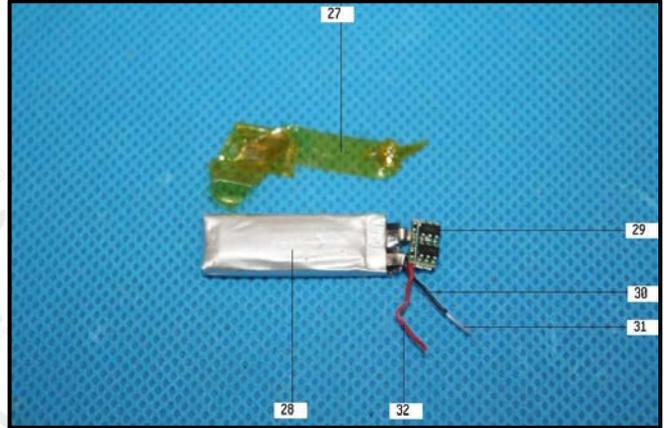
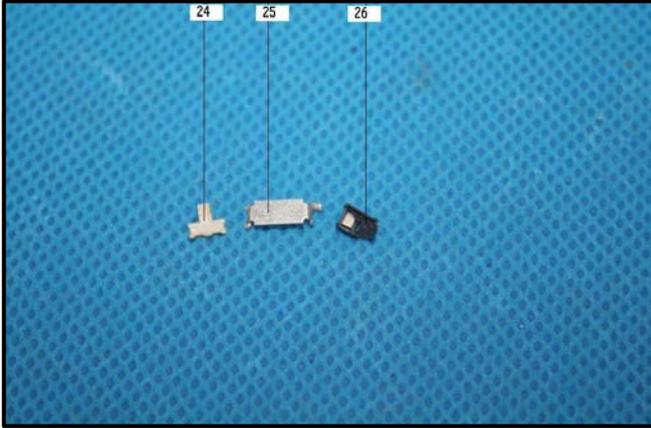


Test Report

Report No.: A001R20170714046

Date: Sept.21, 2017

Page 12 of 14



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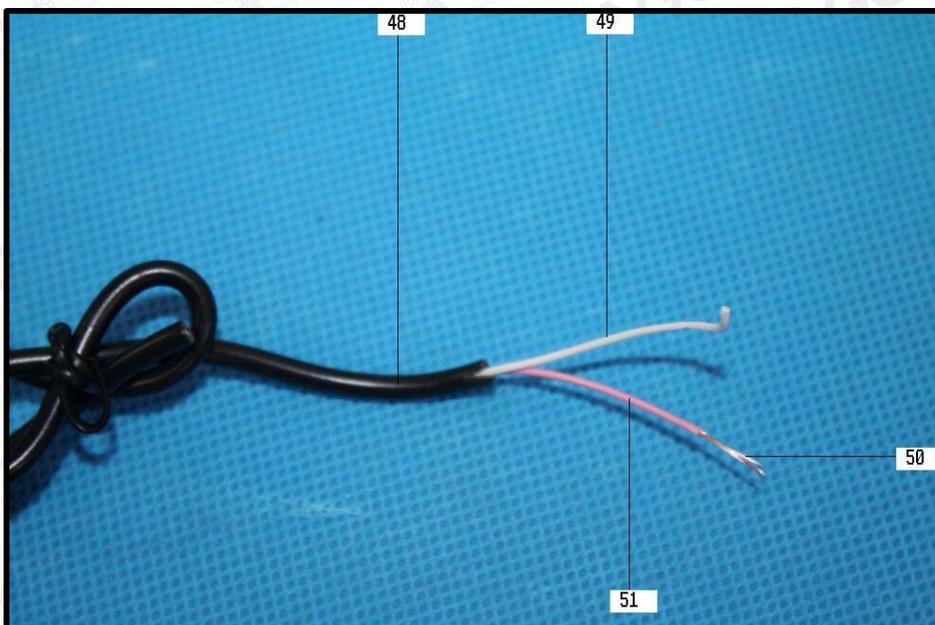
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Test Report

Report No.: A001R20170714046

Date: Sept.21, 2017

Page 13 of 13



AGC authenticate the photo only on original report

*** End of Report ***

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