

# Test Report

**Report No.:** A001R20170724038

**Date:** Jul.31, 2017

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**Applicant:**

**Address:**

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

**Sample Name:** Bluetooth speaker

**Sample Model:** XO-9319

**Sample Received Date:** Jul.24, 2017

**Testing Period:** Jul.24, 2017 to Jul.31, 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:** Huaisu Luo

Luohuisu

Test Engineer

**Reviewed by:** Leon

Suhongliang, Leon

Test Team Leader

**Approved by:** Jason

Jiangyuncheng, Jason

Laboratory Manager



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**Test Requested:**
**Conclusion**

As specified by client, to determine the Pb, Cd, Hg, Cr<sup>6+</sup>, 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.

**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 <sup>6+</sup> )	IEC 62321-7-2:2017 Ed 1.0	UV-Vis	1 mg/kg
Metal Hexavalent Chromium (Cr <sup>6+</sup> )	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 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	Blue plastic shell(shell)	BL	BL	BL	BL	BL
2	Blue plastic button(shell) BL		BL	BL	BL	BL
3	Metal mesh(shell)	BL	BL	BL	BL	-
4	Sponge cushion(shell)	BL	BL	BL	BL	BL
5	Screw	BL	BL	BL	BL	-
6	Black dust-proof net	BL	BL	BL	BL	BL
7	Blue plastic shell BL		BL	BL	BL	BL
8	Black diaphragm	BL	BL	BL	BL	BL
9	Black metal sheet	BL	BL	BL	BL	-
10	Black sponge pad	BL	BL	BL	BL	BL
11	T iron(horn)	BL	BL	BL	BL	-
12	magnet(horn)	BL	BL	BL	BL	BL
13	Black line leather(horn)	BL	BL	BL	BL	BL
14	Red line leather(horn)	BL	BL	BL	BL	BL
15	Wire core(horn)	BL	BL	BL	BL	-
16	Black press ring(horn)	BL	BL	BL	BL	BL
17	Black diaphragm(horn)	BL	BL	BL	BL	BL
18	globe-roof(horn)	BL	BL	BL	BL	BL
19	Enameled wire(horn)	BL	BL	BL	BL	-
20	Elastic wave(horn)	BL	BL	BL	BL	BL
21	Metal rack(horn)	BL	BL	BL	BL	-
22	Tin solder(horn)	BL	BL	BL	BL	-
23	Screw	BL	BL	BL	BL	-
24	IC Ontology(Pin)	BL	BL	BL	BL	X*

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Seq. No.	Tested Part(s)	Results(mg/kg)				
		Cd	Pb	Hg	Cr	Br
25	Pin(Pin)	BL	BL	BL	BL	-
26	Crystal oscillator	BL	BL	BL	BL	BL
27	Black plastic seat	BL	BL	BL	BL	BL
28	chip resistor	BL	BL	BL	X*	BL
29	SMD capacitor	BL	BL	BL	BL	BL
30	Patch LED	BL	BL	BL	BL	BL
31	Black plastic head(Black plastic audio)	BL	BL	BL	BL	BL
32	Pin Black plastic audio)	BL	BL	BL	BL	-
33	Patch audion	BL	BL	BL	BL	BL
34	PCB board	BL	BL	BL	BL	BL
35	Tin solder	BL	BL	BL	BL	-
36	PCB board	BL	BL	BL	BL	X*
37	Metal ring	BL	BL	BL	BL	-
38	metal sheet	BL	BL	BL	BL	-
39	White plastic ring	BL	BL	BL	BL	BL
40	Purple plastic ring	BL	BL	BL	BL	BL
41	Diaphragm	BL	BL	BL	BL	BL
42	Metal shell	BL	BL	BL	BL	-
43	Diaphragm	BL	BL	BL	BL	BL
44	metal dome(Tact Switch)	BL	BL	BL	BL	-
45	Brown tape(Tact Switch)	BL	BL	BL	BL	BL
46	Metal shell(Tact Switch)	BL	BL	BL	X*	-
47	Copper contact(Tact Switch)	BL	BL	BL	BL	-
48	Black plastic seat(Tact Switch)	BL	BL	BL	BL	BL
49	Pin(Tact Switch)	BL	BL	BL	BL	-
50	Metal shell(Android plug)	BL	BL	BL	BL	-

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Seq. No.	Tested Part(s)	Results(mg/kg)				
		Cd	Pb	Hg	Cr	Br
51	Metal needle(Android plug)	BL	BL	BL	BL	-
52	Black plastic plug(Android plug)	BL	BL	BL	BL	BL
53	White plastic shelf	BL	BL	BL	BL	BL
54	Silver screw	BL	BL	BL	BL	-
55	Car color tape	BL	BL	BL	BL	BL
56	Black line leather	BL	BL	BL	BL	BL
57	Wire core	BL	BL	BL	BL	-
58	Red line leather	BL	BL	BL	BL	BL
59	Electric core	BL	BL	BL	BL	-
difference						
60	Black plastic shell	BL	BL	BL	BL	BL
61	Silver coating	BL	BL	BL	BL	BL
62	Black plastic button	BL	BL	BL	BL	BL

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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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**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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**B、The Test Results of Chemical Method:**

**1) The Test Results of non-metal Cr<sup>6+</sup>**

Test Item(s)	Unit	Result(s)	Limit
		28	
Hexavalent Chromium(Cr <sup>6+</sup> )	mg/kg	N.D.	1000

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

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**2)The Test Results of metal Cr<sup>6+</sup>**

Test Item(s)	MDL	Result(s)	Limit
		46	
Hexavalent Chromium (Cr <sup>6+</sup> )	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 <sup>2</sup> 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 <sup>2</sup> and ≤ the 0,13 µg/cm <sup>2</sup> 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 <sup>2</sup> 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.  
 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.

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## 3) The Test Results of PBBs & PBDEs

Unit:mg/kg

Item(s)	MDL	Result(s)		Limit
		24	36	
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	/

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

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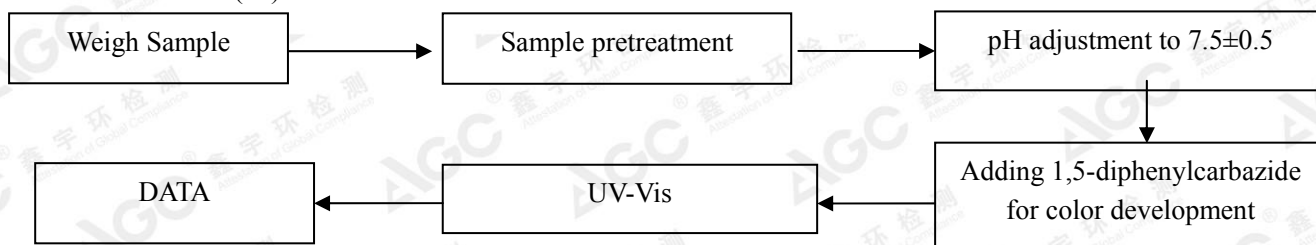
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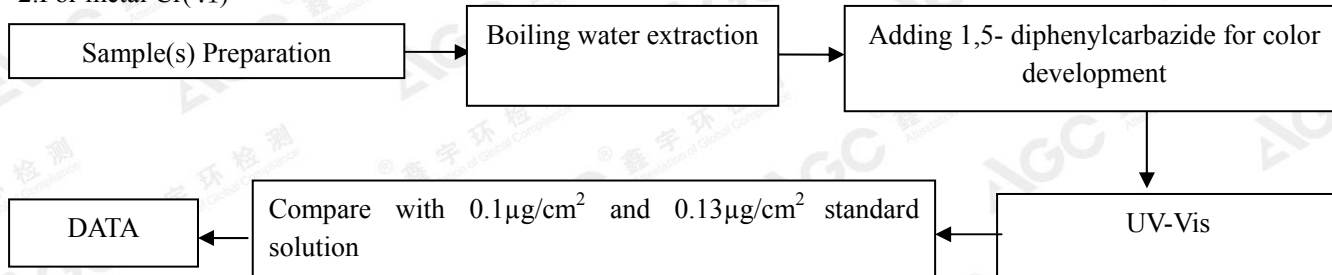
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## Test Flow Chart

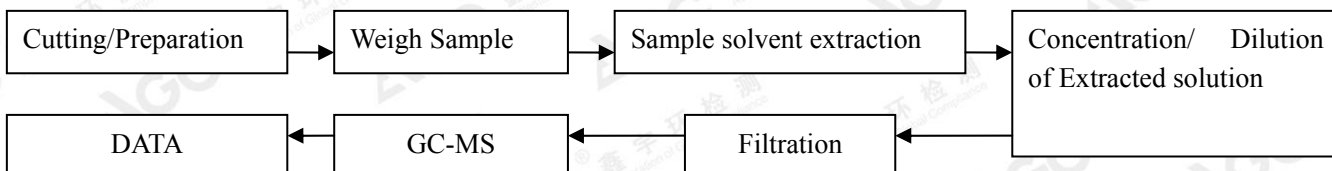
### 1.For non-metal Cr(VI)



### 2.For metal Cr(VI)



### 3.For PBBs & PBDEs



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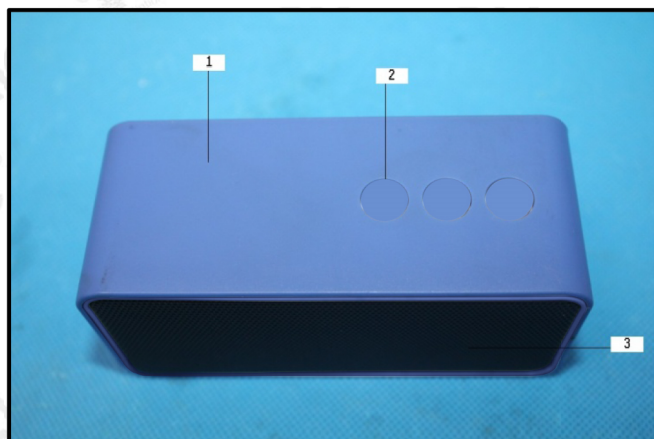
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## The photo of the sample



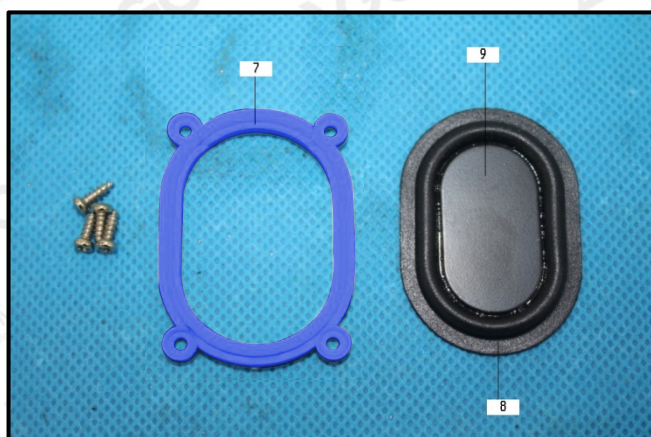
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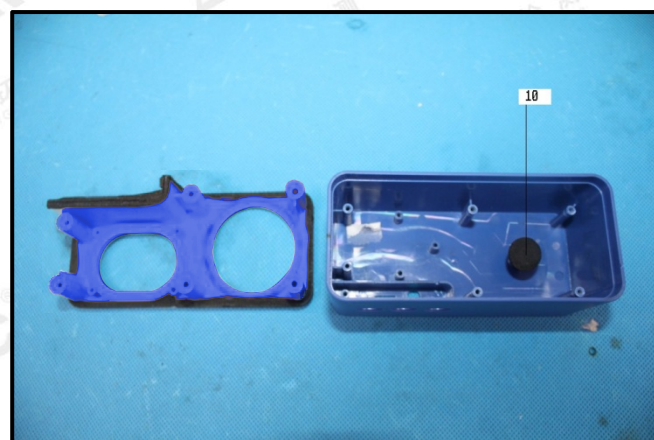
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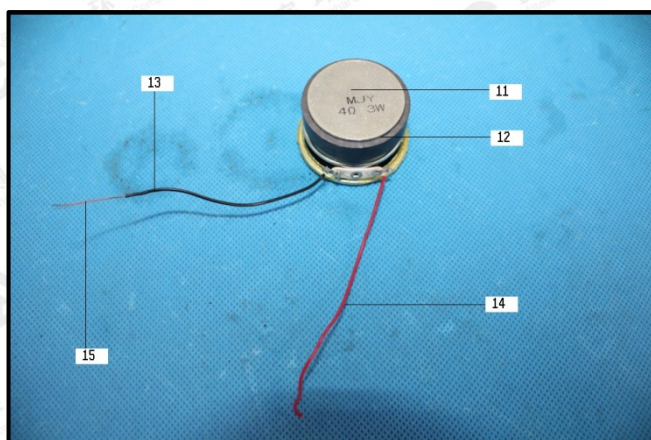
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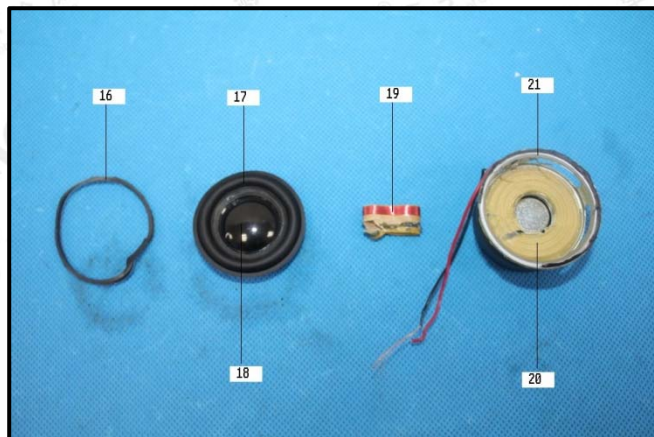


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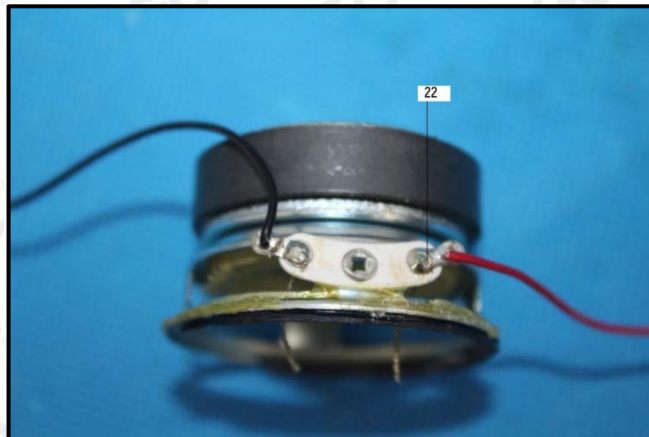
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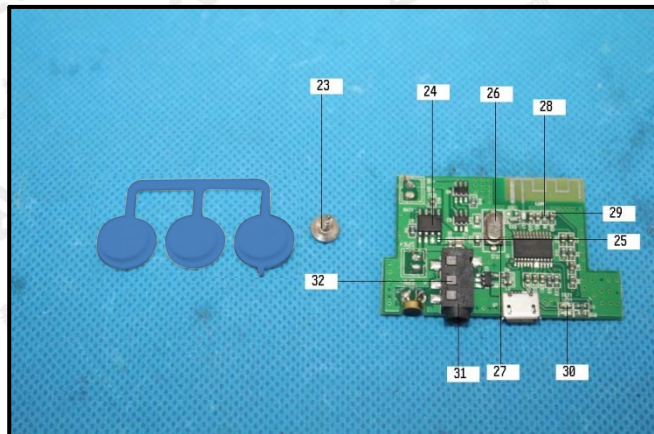
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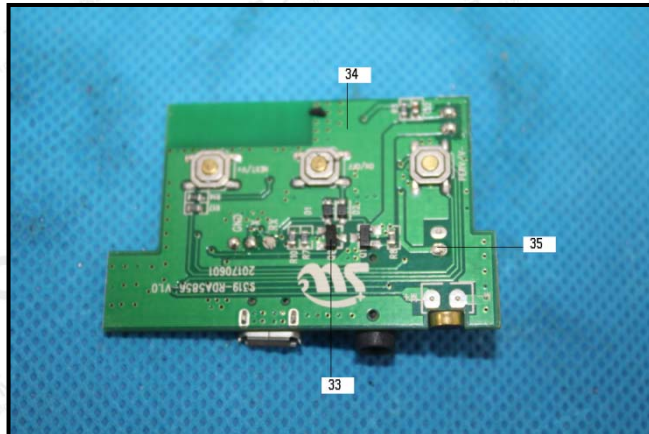
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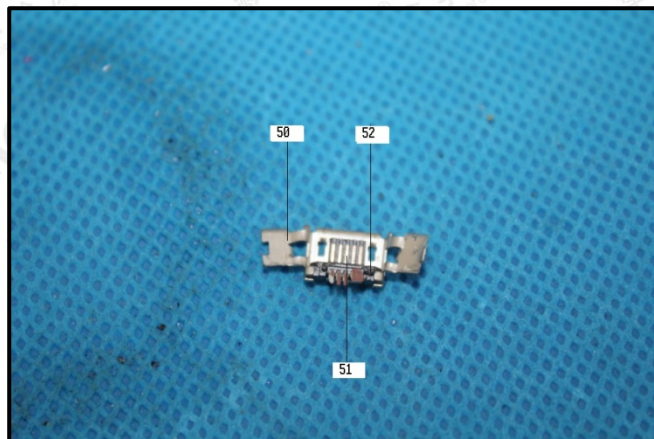


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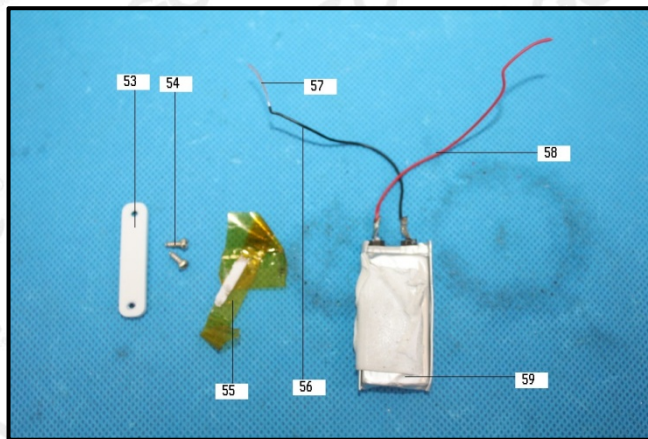
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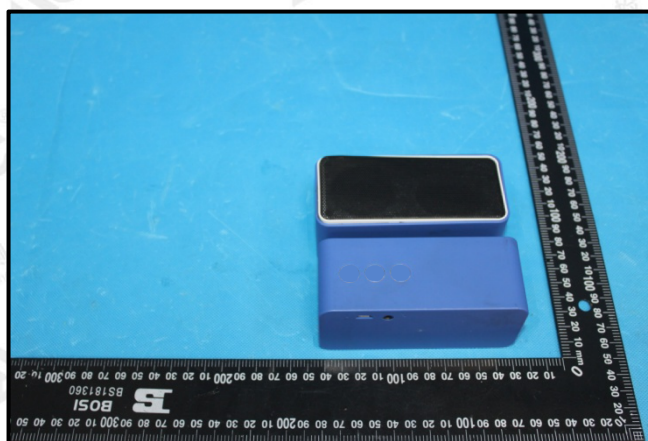
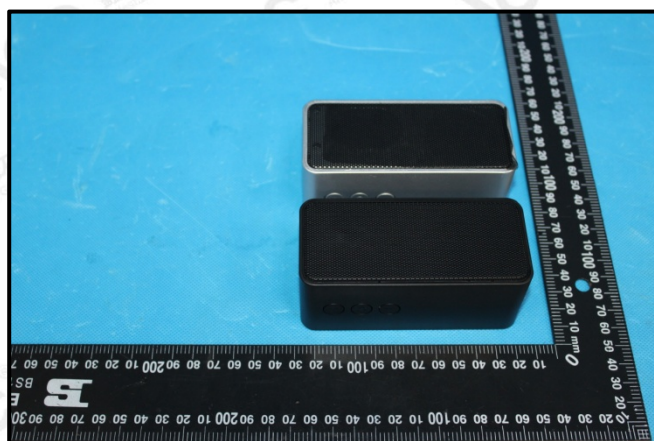
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