Test Report

Applicant: Mid Ocean Brands B.V.

Address: Unit 711-716, 7/F., Tower A, 83 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.

Manufacturer: 117486

Address: /

The following sample(s) was /were submitted and identified on behalf of the clients as:

Sample Name: Speaker

Sample Model: MO6813

Sample Received Date: May 21, 2025

Testing Period: May 21, 2025 to May 26, 2025

Test Requested

As requested by the applicant, refer to attached page(s) for details.

****

Approved by:

Tony Qian/Technical Manager

Scan to view the original file

Test Report

Summary of Test Results:

Test Standard		Conclusion
RoHS Directive 2011/65/EU and its subsequent amendments Directive (EU) 2015/863		
1	To determine Lead (Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls (PBBs) and Polybrominated DiphenylEthers (PBDEs)content by screening test and chemical test.	Pass
2	To determine Phthalates (DBP, BBP, DEHP, DIBP) content by chemical test.	Pass

Test Report

Test Results:

(1)XRF Test Result:

No.	XRF Result(mg/kg)					Chemical Test (mg/kg)	Conclusion
	Pb	Cd	Hg	Cr	Br		
1	BL	BL	BL	BL	BL	--	Pass
2	BL	BL	BL	BL	BL	--	Pass
3	BL	BL	BL	BL	BL	--	Pass
4	BL	BL	BL	BL	BL	--	Pass
5	BL	BL	BL	BL	BL	--	Pass
6	BL	BL	BL	BL	--	--	Pass
7	BL	BL	BL	BL	BL	--	Pass
8	BL	BL	BL	X	--	CrVI: Negative	Pass
9	BL	BL	BL	BL	BL	--	Pass
10	BL	BL	BL	BL	BL	--	Pass
11	BL	BL	BL	BL	--	--	Pass
12	BL	BL	BL	BL	--	--	Pass
13	BL	BL	BL	BL	--	--	Pass
14	BL	BL	BL	BL	--	--	Pass
15	BL	BL	BL	BL	BL	--	Pass
16	BL	BL	BL	BL	BL	--	Pass
17	BL	BL	BL	BL	BL	--	Pass
18	BL	BL	BL	BL	BL	--	Pass
19	BL	BL	BL	BL	BL	--	Pass
20	BL	BL	BL	BL	BL	--	Pass
21	BL	BL	BL	BL	BL	--	Pass
22	BL	BL	BL	BL	BL	--	Pass
23	BL	BL	BL	X	--	CrVI: Negative	Pass
24	BL	BL	BL	BL	BL	--	Pass
25	BL	BL	BL	BL	BL	--	Pass

Test Report

No.	XRF Result(mg/kg)					Chemical Test (mg/kg)	Conclusion
	Pb	Cd	Hg	Cr	Br		
26	BL	BL	BL	BL	--	--	Pass
27	BL	BL	BL	BL	BL	--	Pass
28	BL	BL	BL	BL	BL	--	Pass
29	BL	BL	BL	BL	BL	--	Pass
30	BL	BL	BL	BL	BL	--	Pass
31	BL	BL	BL	BL	BL	--	Pass
32	BL	BL	BL	BL	X	PBBs/PBDEs:N.D.	Pass
33	BL	BL	BL	X	--	CrVI: Negative	Pass
34	BL	BL	BL	X	--	CrVI: Negative	Pass

Remark: 1.It is the result on total Br while test item on restricted substances in PBBs/PBDEs. It is the result on total Cr while test item on restricted substances is Cr(VI).

2.Screening test by XRF spectroscopy. XRF screening limits in mg/kg for regulated elements according to IEC 62321-3-1: 2013Annex A.

Element	Polymer Material	Metallic Material	Composite Material
Pb	BL≤700-3σ≤X＜1300+3σ≤OL	BL≤700-3σ≤X＜1300+3σ≤OL	BL≤500-3σ≤X＜1500+3σ≤OL
Cd	BL≤70-3σ≤X＜130+3σ≤OL	BL≤70-3σ≤X＜130+3σ≤OL	LOD＜X＜150+3σ≤OL
Hg	BL≤700-3σ≤X＜1300+3σ≤OL	BL≤700-3σ≤X＜1300+3σ≤OL	BL≤500-3σ≤X＜1500+3σ≤OL
Cr	BL≤700-3σ＜X	BL≤700-3σ＜X	BL≤500-3σ＜X
Br	BL≤300-3σ＜X	--	BL≤250-3σ＜X

XRF Detection Limits in mg/kg for Regulated Elements in Various Material

Element	Polymer Material	Metallic Material	Composite Material
Pb	10	50	50
Cd	10	50	50
Hg	10	50	50
Cr	10	50	50
Br	10	50	50

Note: 1.BL = Under the XRF screening limit

2.OL = Future chemical test will be conducted while result is above the screening limit

3.X =The symbol“X”marks the region where further investigation in necessary

4.3σ=The reproducibility of analytical instruments

5.LOD=Detection limit

(2)Wet Chemical Test

Test Item(s)	Test Method/ Test Equipment	Unit	Limit	MDL
Cadmium(Cd)	IEC 62321-5:2013, ICP-OES	mg/kg	100	2
Lead(Pb)	IEC 62321-5:2013, ICP-OES	mg/kg	1000	2
Mercury(Hg)	IEC 62321-4:2013+AMD1:2017, ICP-OES	mg/kg	1000	2
Hexavalent Chromium(CrVI) (Metal)	IEC 62321-7-1:2015, UV-Vis	μg/cm^2	0.13	0.1
Hexavalent Chromium(CrVI) (Nonmetal)	IEC 62321-7-2:2017, UV-Vis	mg/kg	1000	8
PBBs (Next form)	IEC 62321-6:2015, GC-MS	mg/kg	1000	5
PBDEs (Next form)	IEC 62321-6:2015, GC-MS	mg/kg	1000	5
Dibutyl Phthalate(DBP)	IEC 62321-8:2017, GC-MS	mg/kg	1000	30
Butyl benzyl phthalate (BBP)	IEC 62321-8:2017, GC-MS	mg/kg	1000	30
Di-(2-ethylhexyl) Phthalate(DEHP)	IEC 62321-8:2017, GC-MS	mg/kg	1000	30
Diisobutyl phthalate (DIBP)	IEC 62321-8:2017, GC-MS	mg/kg	1000	30

PBBs		PBDEs	
Monobromobiphenyl	Hexabromobiphenyl	Monobromodiphenyl ether	Hexabromodiphenyl ether
Dibromobiphenyl	Heptabromobiphenyl	Dibromodiphenyl ether	Heptabromodiphenyl ether
Tribromobiphenyl	Octabromobiphenyl	Tribromodiphenyl ether	Octabromodiphenyl ether
Tetrabromobiphenyl	Nonabromobiphenyl	Tetrabromodiphenyl ether	Nonabromodiphenyl ether
Pentabromobiphenyl	Decabromobiphenyl	Pentabromodiphenyl ether	Decabromodiphenyl ether

Note: 1. mg/kg= ppm=0.0001%

2. N.D.= Not Detected(<MDL)

3. MDL = Method Detection Limit

4. -- = No Testing

5. When Cr (VI) in a sample is detected below the 0.10 μg/cm^2 LOQ (limit of quantification), the sample is considered to be negative for Cr (VI). Since Cr (VI) may not be uniformly distributed in the coating even within the same sample batch, a "grey zone" between 0.10 μg/cm^2 and 0.13 μg/cm^2 has been established as "inconclusive" to reduce inconsistent results due to unavoidable coating variations. In this case, additional testing may be necessary to confirm the presence of Cr (VI). When Cr (VI) is detected above 0.13 μg/cm^2, the sample is considered to be positive for the presence of Cr (VI) in the coating layer. Unavoidable coating variations may influence the determination Information on storage conditions and production date of the tested sample is unavailable and thus Cr (VI) results represent status of the sample at the time of testing.

Test Report

(3)Phthalate Test Result:

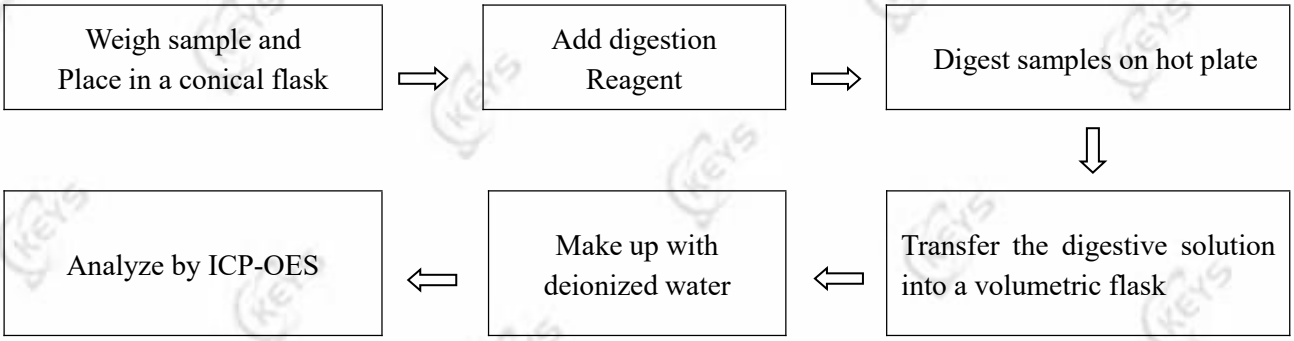
Test No.	Test Item(s)				Conclusion
	Dibutyl Phthalate (DBP)	Butyl benzyl phthalate (BBP)	Di-(2-ethylhexyl) Phthalate (DEHP)	Diisobutyl phthalate (DIBP)	
1	N.D.	N.D.	N.D.	N.D.	Pass
2	N.D.	N.D.	N.D.	N.D.	Pass
3	N.D.	N.D.	N.D.	N.D.	Pass
4	N.D.	N.D.	N.D.	N.D.	Pass
5	N.D.	N.D.	N.D.	N.D.	Pass
7	N.D.	N.D.	N.D.	N.D.	Pass
9	N.D.	N.D.	N.D.	N.D.	Pass
10	N.D.	N.D.	N.D.	N.D.	Pass
15	N.D.	N.D.	N.D.	N.D.	Pass
16	N.D.	N.D.	N.D.	N.D.	Pass
17	N.D.	N.D.	N.D.	N.D.	Pass
18	N.D.	N.D.	N.D.	N.D.	Pass
19	N.D.	N.D.	N.D.	N.D.	Pass
20	N.D.	N.D.	N.D.	N.D.	Pass
21	N.D.	N.D.	N.D.	N.D.	Pass
22	N.D.	N.D.	N.D.	N.D.	Pass
24	N.D.	N.D.	N.D.	N.D.	Pass
25	N.D.	N.D.	N.D.	N.D.	Pass
27	N.D.	N.D.	N.D.	N.D.	Pass
28	N.D.	N.D.	N.D.	N.D.	Pass
29	N.D.	N.D.	N.D.	N.D.	Pass
30	N.D.	N.D.	N.D.	N.D.	Pass
31	N.D.	N.D.	N.D.	N.D.	Pass
32	N.D.	N.D.	N.D.	N.D.	Pass

Note: 1. mg/kg= ppm=0.0001%

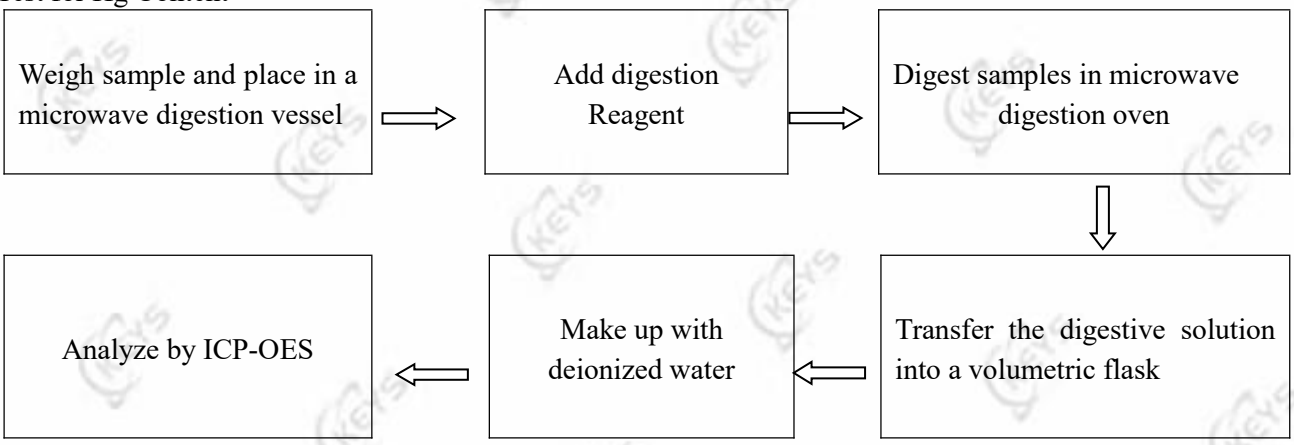
2. N.D.= Not Detected(<MDL)

Test Process:

1. Test for Cd/Pb Content

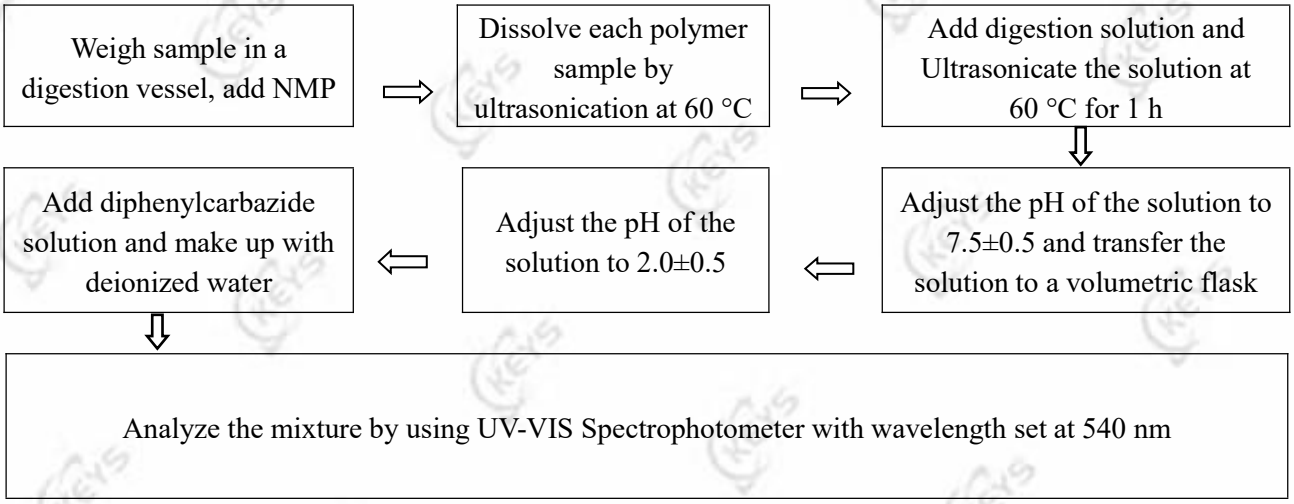


2. Test for Hg Content

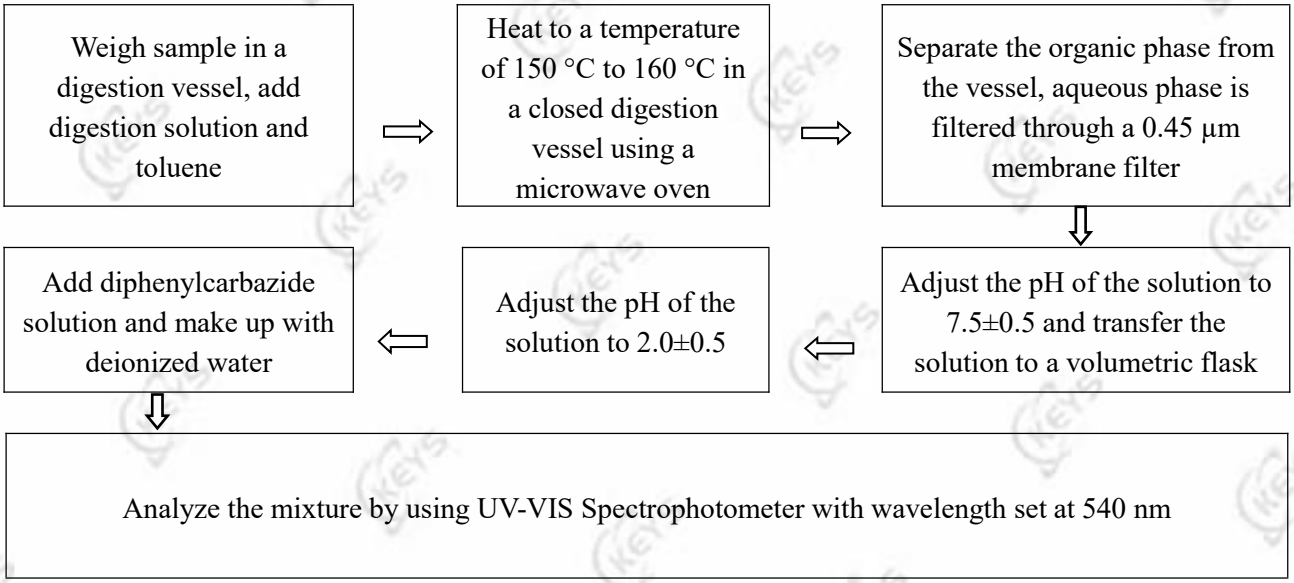


3. Test for Chromium (VI) Content

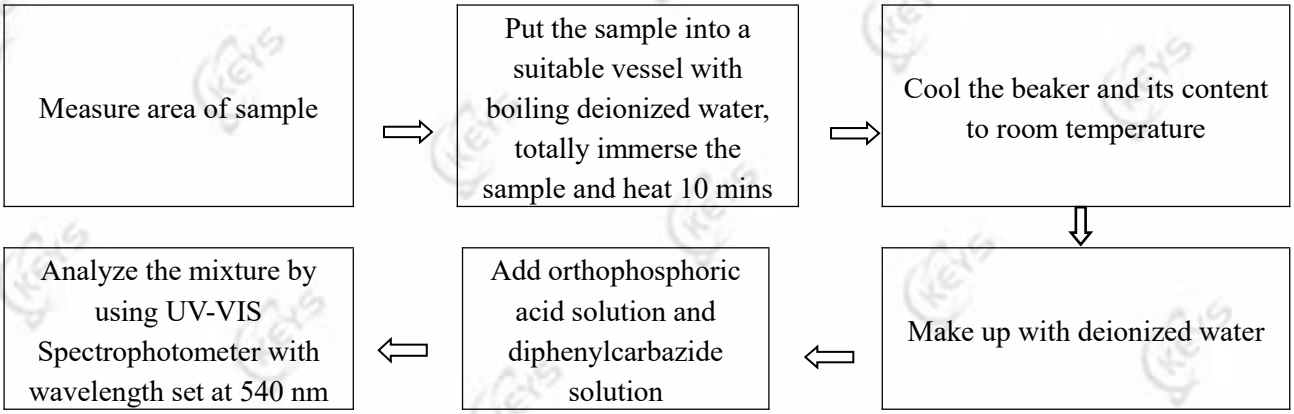
Soluble polymers：



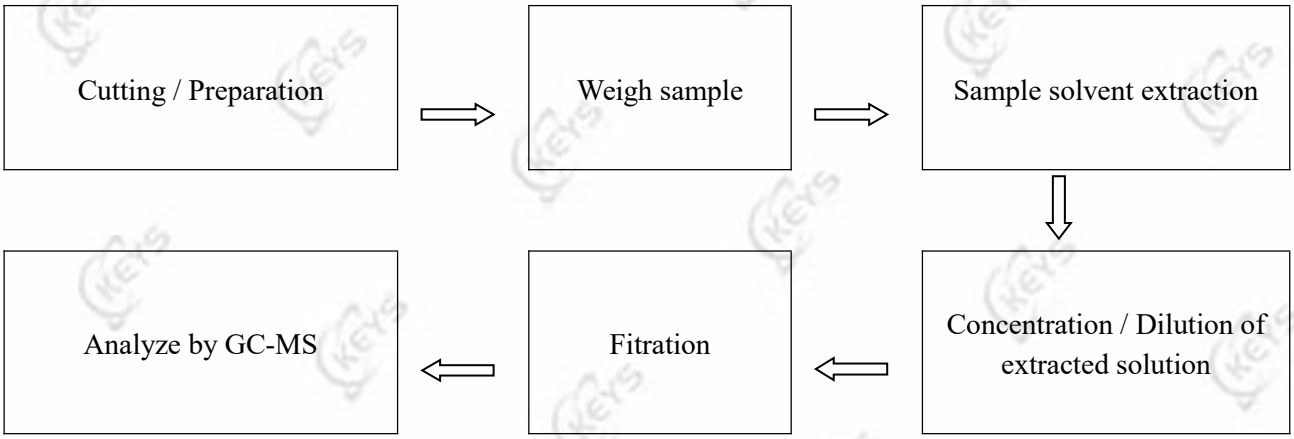
Insoluble/unknown polymers and electronics without Sb



Metal material



4. Test for DBP, BBP, DEHP, DIBP, PBB, PBDE Content



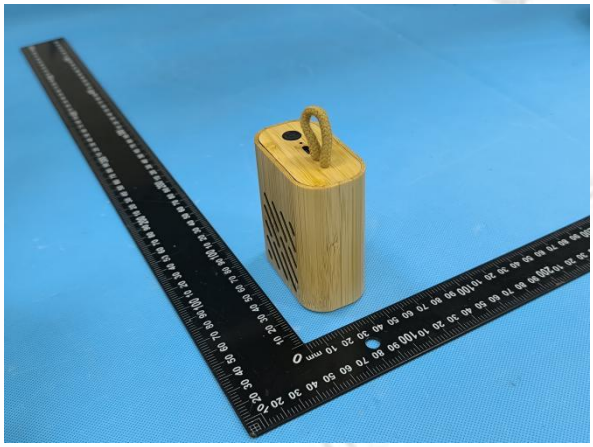
Sample Description:

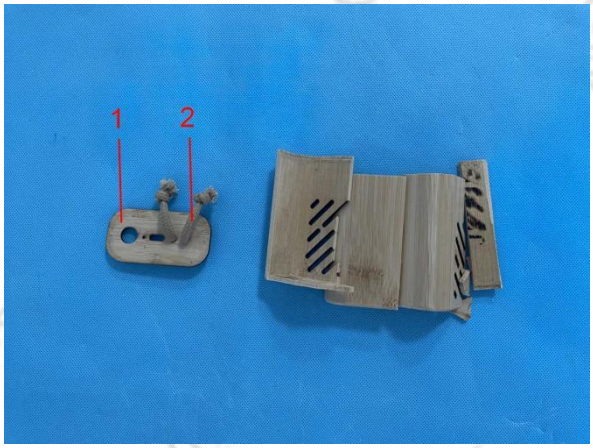
No.	Description
1	Yellow bamboo strips
2	Yellow braided rope
3	Black plastic shell
4	Black plastic mat
5	Black foam with viscose
6	Silvery metal shell
7	Yellow plastic film
8	Silvery metal screw
9	Black paper
10	Black plastic film
11	Black printing silvery metal board
12	Black magnet
13	Silvery metal frame
14	Silvery metal sheet
15	Black plastic joint shell
16	White plastic sheet
17	Pink plastic wire skin
18	White plastic wire skin
19	Black plastic wire skin
20	Red plastic wire skin
21	Black plastic wire skin
22	Red plastic wire skin
23	Copper metal wire core
24	Black IC
25	Brown capacitor
26	Silvery metal joint
27	Silvery crystal oscillator

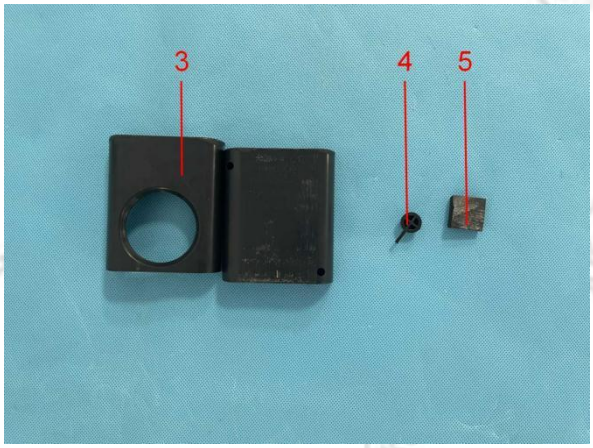
Test Report

No.	Description
28	Creamy plastic switch
29	Black triode
30	White LED
31	Black resistor
32	Green PCB
33	Silvery metal solder
34	Silvery metal solder

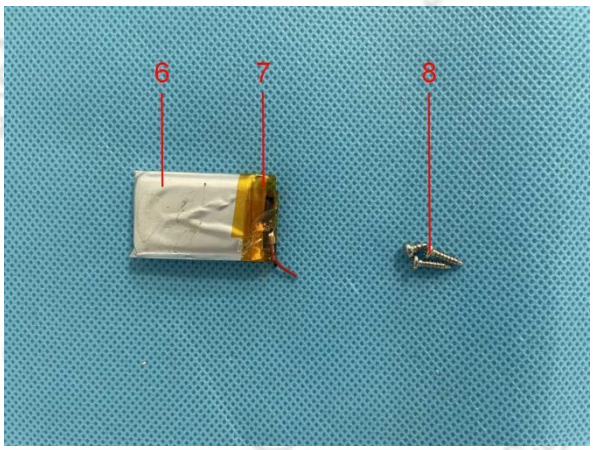
Photograph(s) of Sample：

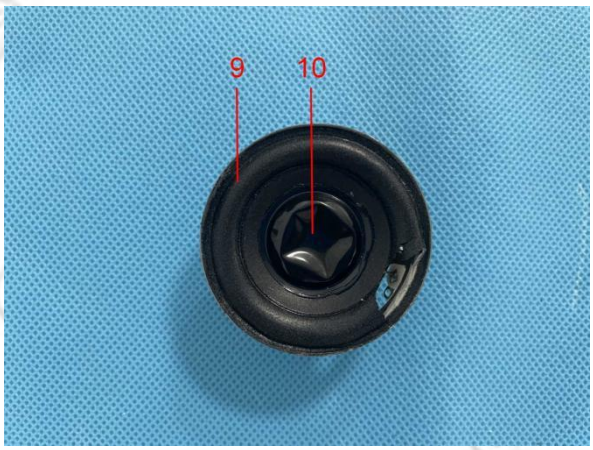


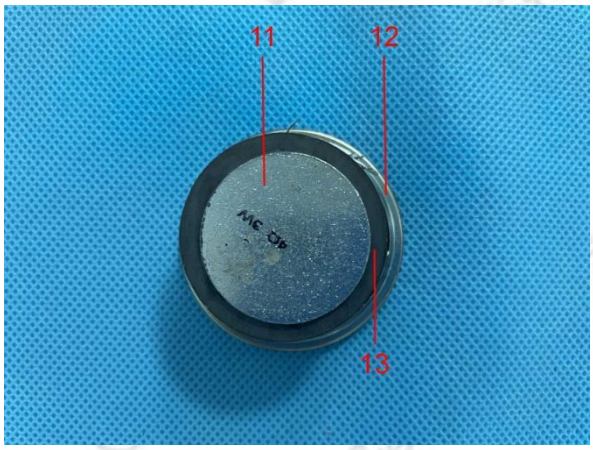


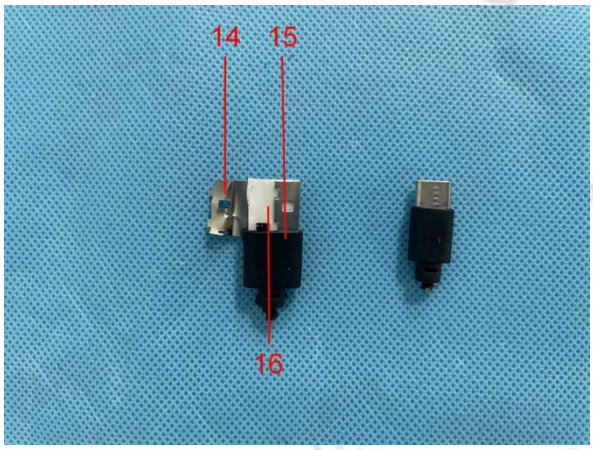


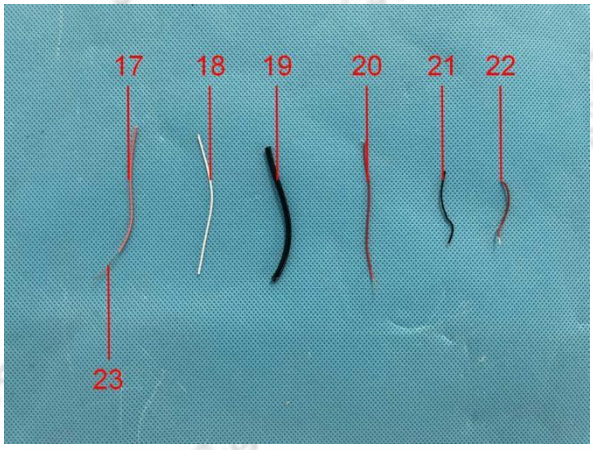
Test Report

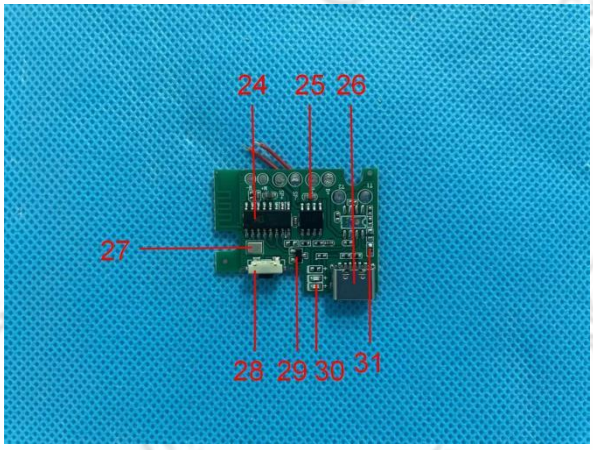


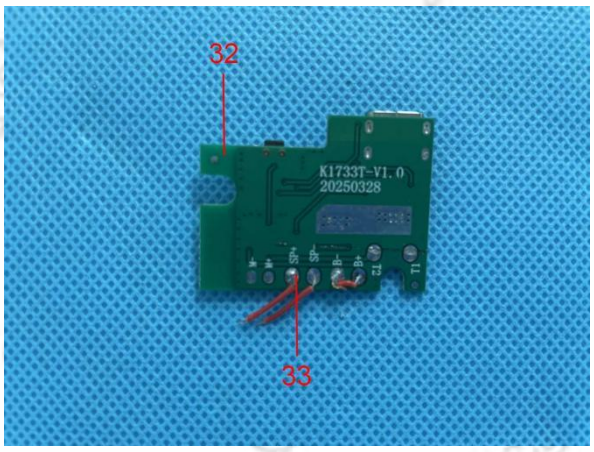
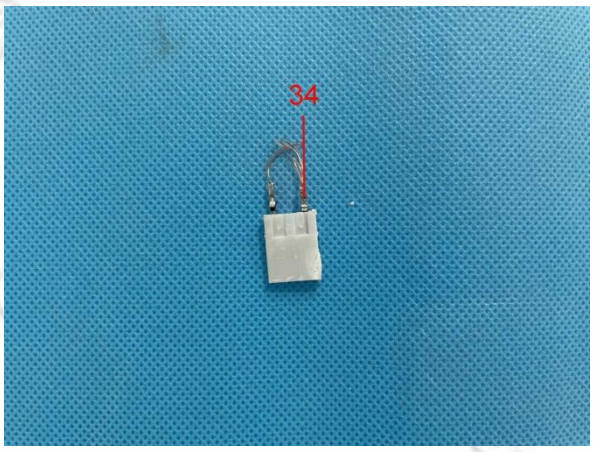










*** End of Report ***