

Test Report

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 1 of 19

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: Wireless Speaker

Sample Model: MO2648

Sample Received Date: Aug. 06, 2025

Testing Period: Aug. 06, 2025 to Aug. 15, 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

Guangdong KEYS Testing Technology Co., Ltd.

Address: Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China
Tel: +86-0769-22221088 <http://www.keys-lab.com> E-mail: info@keys-lab.com

This report is only responsible for the test results of the samples submitted for inspection, and is not responsible for the source of the samples submitted for inspection.
This report shall not be altered, increased or deleted. Without written approval of KEYS, this test report shall not be copied except in full and published as advertisement.

Test Report

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 2 of 19

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

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 3 of 19

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	BL	--	Pass
7	BL	BL	BL	BL	BL	--	Pass
8	BL	BL	BL	BL	BL	--	Pass
9	BL	BL	BL	BL	--	--	Pass
10	BL	BL	BL	BL	BL	--	Pass
11	BL	BL	BL	BL	BL	--	Pass
12	BL	BL	BL	BL	BL	--	Pass
13	BL	BL	BL	BL	--	--	Pass
14	BL	BL	BL	BL	BL	--	Pass
15	BL	BL	BL	BL	BL	--	Pass
16	BL	BL	BL	BL	BL	--	Pass
17	BL	BL	BL	BL	--	--	Pass
18	BL	BL	BL	BL	--	--	Pass
19	BL	BL	BL	BL	--	--	Pass
20	BL	BL	BL	X	--	CrVI: Negative	Pass
21	BL	BL	BL	BL	--	--	Pass
22	BL	BL	BL	BL	BL	--	Pass
23	BL	BL	BL	BL	--	--	Pass
24	BL	BL	BL	BL	--	--	Pass
25	BL	BL	BL	BL	--	--	Pass

Guangdong KEYS Testing Technology Co., Ltd.

Address: Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China
Tel: +86-0769-22221088 <http://www.keys-lab.com> E-mail: info@keys-lab.com

This report is only responsible for the test results of the samples submitted for inspection, and is not responsible for the source of the samples submitted for inspection.
This report shall not be altered, increased or deleted. Without written approval of KEYS, this test report shall not be copied except in full and published as advertisement.

Test Report

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 4 of 19

No.	XRF Result(mg/kg)					Chemical Test (mg/kg)	Conclusion
	Pb	Cd	Hg	Cr	Br		
26	BL	BL	BL	BL	BL	--	Pass
27	BL	BL	BL	BL	BL	--	Pass
28	BL	BL	BL	BL	--	--	Pass
29	BL	BL	BL	BL	--	--	Pass
30	BL	BL	BL	BL	BL	--	Pass
31	BL	BL	BL	BL	--	--	Pass
32	BL	BL	BL	BL	--	--	Pass
33	BL	BL	BL	BL	BL	--	Pass
34	BL	BL	BL	BL	BL	--	Pass
35	BL	BL	BL	BL	BL	--	Pass
36	BL	BL	BL	BL	BL	--	Pass
37	BL	BL	BL	BL	BL	--	Pass
38	BL	BL	BL	BL	BL	--	Pass
39	BL	BL	BL	BL	--	--	Pass
40	BL	BL	BL	BL	X	PBBs/PBDEs: N.D.	Pass
41	BL	BL	BL	BL	X	PBBs/PBDEs: N.D.	Pass
42	BL	BL	BL	BL	BL	--	Pass
43	BL	BL	BL	BL	BL	--	Pass
44	BL	BL	BL	BL	BL	--	Pass
45	BL	BL	BL	BL	--	--	Pass
46	BL	BL	BL	BL	X	PBBs/PBDEs: N.D.	Pass
47	BL	BL	BL	BL	BL	--	Pass
48	BL	BL	BL	BL	BL	--	Pass
49	BL	BL	BL	BL	BL	--	Pass
50	BL	BL	BL	BL	BL	--	Pass
51	BL	BL	BL	BL	BL	--	Pass
52	BL	BL	BL	BL	BL	--	Pass

Guangdong KEYS Testing Technology Co., Ltd.

Address: Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China
Tel: +86-0769-22221088 <http://www.keys-lab.com> E-mail: info@keys-lab.com

This report is only responsible for the test results of the samples submitted for inspection, and is not responsible for the source of the samples submitted for inspection.
This report shall not be altered, increased or deleted. Without written approval of KEYS, this test report shall not be copied except in full and published as advertisement.

Test Report

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 5 of 19

No.	XRF Result(mg/kg)					Chemical Test (mg/kg)	Conclusion
	Pb	Cd	Hg	Cr	Br		
53	BL	BL	BL	BL	BL	--	Pass
54	BL	BL	BL	BL	--	--	Pass
55	BL	BL	BL	BL	--	--	Pass
56	BL	BL	BL	BL	--	--	Pass
57	BL	BL	BL	BL	--	--	Pass
58	BL	BL	BL	BL	BL	--	Pass
59	BL	BL	BL	BL	BL	--	Pass
60	BL	BL	BL	BL	BL	--	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	$BL \leq 700 - 3\sigma \leq X < 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma \leq X < 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma \leq X < 1500 + 3\sigma \leq OL$
Cd	$BL \leq 70 - 3\sigma \leq X < 130 + 3\sigma \leq OL$	$BL \leq 70 - 3\sigma \leq X < 130 + 3\sigma \leq OL$	$LOD < X < 150 + 3\sigma \leq OL$
Hg	$BL \leq 700 - 3\sigma \leq X < 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma \leq X < 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma \leq X < 1500 + 3\sigma \leq OL$
Cr	$BL \leq 700 - 3\sigma < X$	$BL \leq 700 - 3\sigma < X$	$BL \leq 500 - 3\sigma < X$
Br	$BL \leq 300 - 3\sigma < X$	--	$BL \leq 250 - 3\sigma < X$

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

Guangdong KEYS Testing Technology Co., Ltd.

Address: Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China
Tel: +86-0769-22221088 <http://www.keys-lab.com> E-mail: info@keys-lab.com

This report is only responsible for the test results of the samples submitted for inspection, and is not responsible for the source of the samples submitted for inspection.
This report shall not be altered, increased or deleted. Without written approval of KEYS, this test report shall not be copied except in full and published as advertisement.

Test Report

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 6 of 19

- 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

Guangdong KEYS Testing Technology Co., Ltd.

Address: Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China
Tel: +86-0769-22221088 <http://www.keys-lab.com> E-mail: info@keys-lab.com

This report is only responsible for the test results of the samples submitted for inspection, and is not responsible for the source of the samples submitted for inspection.
This report shall not be altered, increased or deleted. Without written approval of KEYS, this test report shall not be copied except in full and published as advertisement.

Test Report

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 7 of 19

- 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 $\mu\text{g}/\text{cm}^2$ 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 $\mu\text{g}/\text{cm}^2$ and 0.13 $\mu\text{g}/\text{cm}^2$ 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 $\mu\text{g}/\text{cm}^2$, 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

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 8 of 19

(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
6	N.D.	N.D.	N.D.	N.D.	Pass
7	N.D.	N.D.	N.D.	N.D.	Pass
8	N.D.	N.D.	N.D.	N.D.	Pass
10	N.D.	N.D.	N.D.	N.D.	Pass
11	N.D.	N.D.	N.D.	N.D.	Pass
12	N.D.	N.D.	N.D.	N.D.	Pass
14	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
22	N.D.	N.D.	N.D.	N.D.	Pass
26	N.D.	N.D.	N.D.	N.D.	Pass
27	N.D.	N.D.	N.D.	N.D.	Pass
30	N.D.	N.D.	N.D.	N.D.	Pass
33	N.D.	N.D.	N.D.	N.D.	Pass
34	N.D.	N.D.	N.D.	N.D.	Pass
35	N.D.	N.D.	N.D.	N.D.	Pass
36	N.D.	N.D.	N.D.	N.D.	Pass
37	N.D.	N.D.	N.D.	N.D.	Pass
38	N.D.	N.D.	N.D.	N.D.	Pass
40	N.D.	N.D.	N.D.	N.D.	Pass
41	N.D.	N.D.	N.D.	N.D.	Pass

Guangdong KEYS Testing Technology Co., Ltd.

Address: Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China
Tel: +86-0769-22221088 <http://www.keys-lab.com> E-mail: info@keys-lab.com

This report is only responsible for the test results of the samples submitted for inspection, and is not responsible for the source of the samples submitted for inspection.
This report shall not be altered, increased or deleted. Without written approval of KEYS, this test report shall not be copied except in full and published as advertisement.

Test Report

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 9 of 19

Test No.	Test Item(s)				Conclusion
	Dibutyl Phthalate (DBP)	Butyl benzyl phthalate (BBP)	Di-(2-ethylhexyl) Phthalate (DEHP)	Diisobutyl phthalate (DIBP)	
42	N.D.	N.D.	N.D.	N.D.	Pass
43	N.D.	N.D.	N.D.	N.D.	Pass
44	N.D.	N.D.	N.D.	N.D.	Pass
46	N.D.	N.D.	N.D.	N.D.	Pass
47	N.D.	N.D.	N.D.	N.D.	Pass
48	N.D.	N.D.	N.D.	N.D.	Pass
49	N.D.	N.D.	N.D.	N.D.	Pass
50	N.D.	N.D.	N.D.	N.D.	Pass
51	N.D.	N.D.	N.D.	N.D.	Pass
52	N.D.	N.D.	N.D.	N.D.	Pass
53	N.D.	N.D.	N.D.	N.D.	Pass
58	N.D.	N.D.	N.D.	N.D.	Pass
59	N.D.	N.D.	N.D.	N.D.	Pass
60	N.D.	N.D.	N.D.	N.D.	Pass

- Note:**
1. mg/kg= ppm=0.0001%
 2. N.D.= Not Detected(<MDL)

Test Report

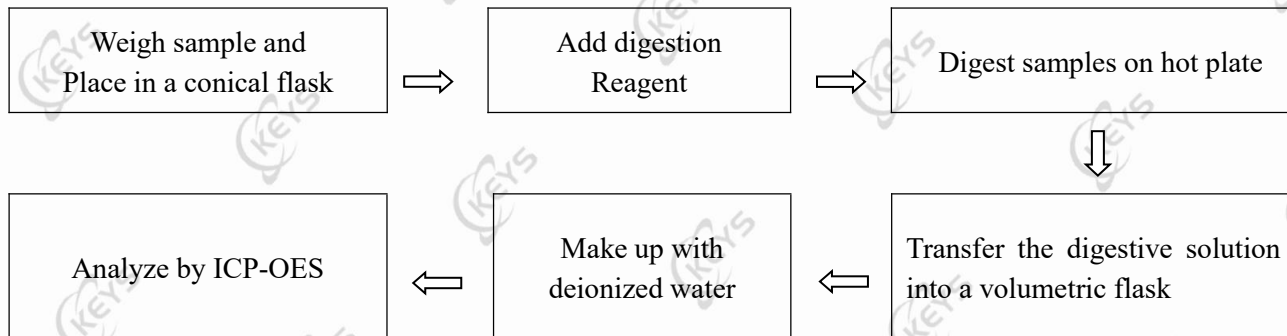
Report No.: RKEYS250806038

Date: Aug. 22, 2025

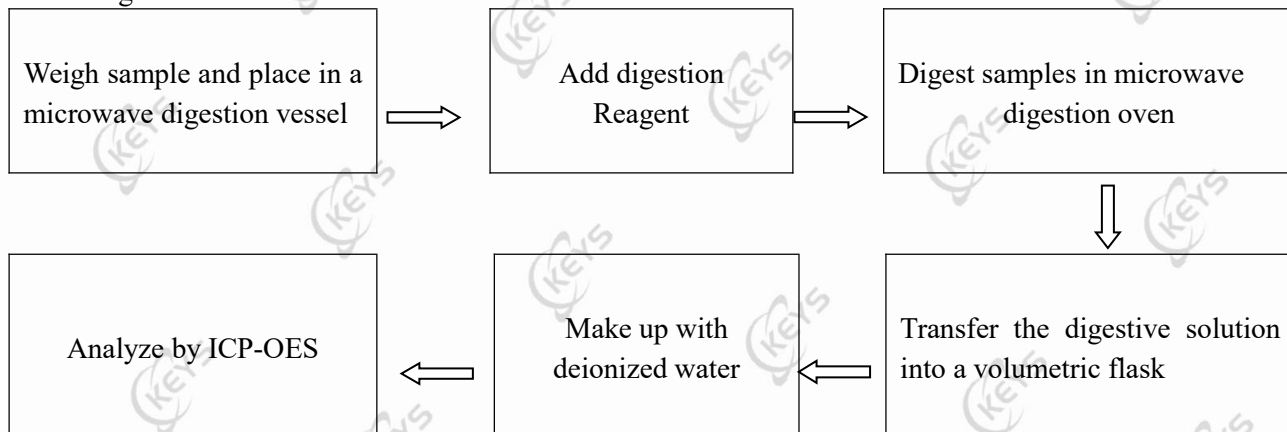
Page 10 of 19

Test Process:

1. Test for Cd/Pb Content



2. Test for Hg Content



Test Report

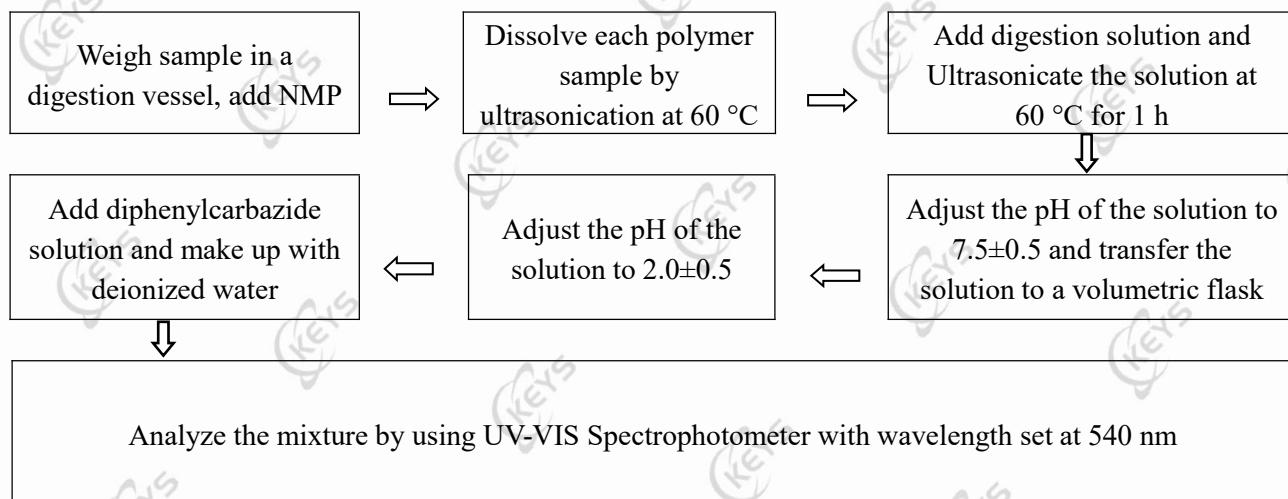
Report No.: RKEYS250806038

Date: Aug. 22, 2025

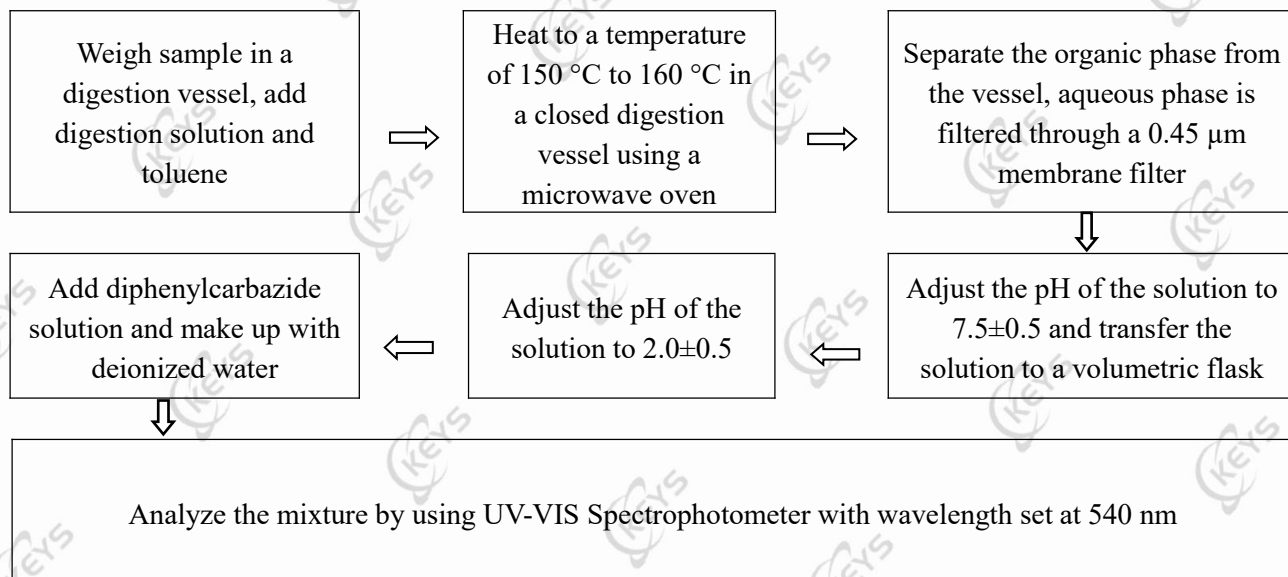
Page 11 of 19

3. Test for Chromium (VI) Content

Soluble polymers:



Insoluble/unknown polymers and electronics without Sb



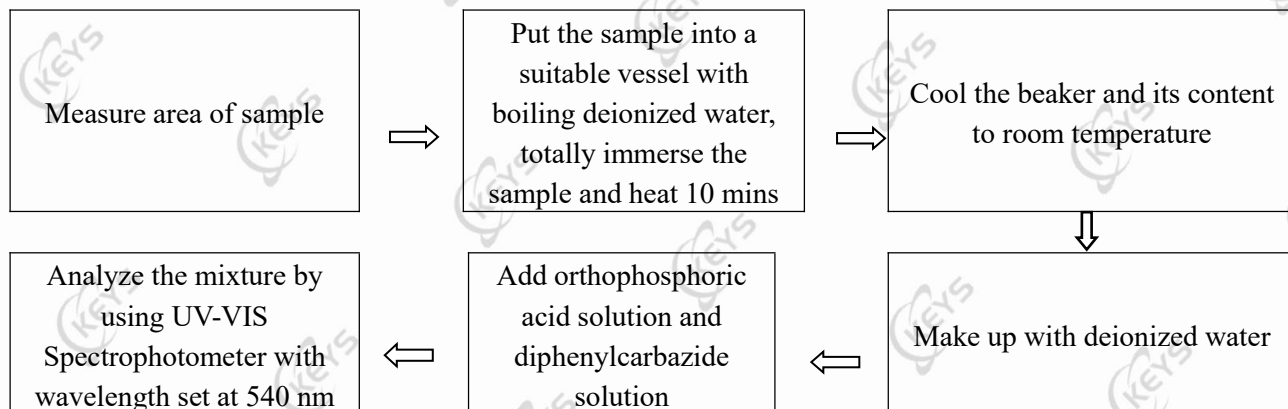
Test Report

Report No.: RKEYS250806038

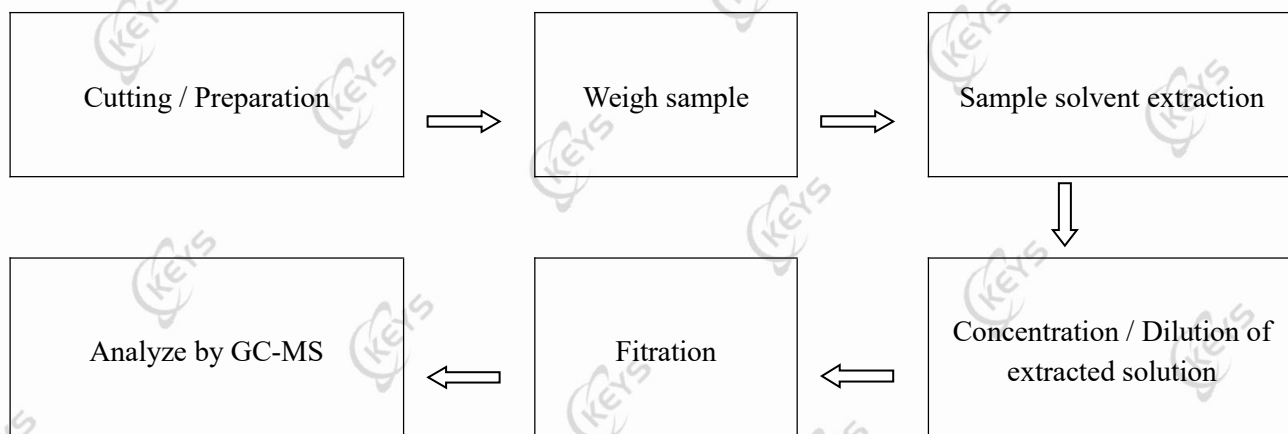
Date: Aug. 22, 2025

Page 12 of 19

Metal material



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



Test Report

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 13 of 19

Sample Description:

No.	Description
1	Transparent white glue
2	Black silicone base pad
3	White printing black plastic shell
4	Black plastic tape with black woven mesh fabric shell
5	Black plastic eardrum outer skin
6	Black silicone outer skin
7	Black woven tape
8	Brown eardrum paper
9	Copper-colored metal enameled wire
10	Black plastic base
11	Transparent yellow plastic tape
12	White plastic fasteners
13	Silvery metal stylus
14	Black plastic casing
15	Black plastic fasteners
16	Black plastic fixation
17	Silvery metal stylus
18	Silvery metal casing
19	Silvery metal base
20	Silvery metal screw
21	Silvery metal casing
22	Black plastic fixation
23	Silvery metal frame
24	Silvery metal solder
25	Black metal magnet
26	Black printing with Silvery plastic outer skin battery
27	Black sensor

Guangdong KEYS Testing Technology Co., Ltd.

Address: Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China
Tel: +86-0769-22221088 <http://www.keys-lab.com> E-mail: info@keys-lab.com

This report is only responsible for the test results of the samples submitted for inspection, and is not responsible for the source of the samples submitted for inspection.
This report shall not be altered, increased or deleted. Without written approval of KEYS, this test report shall not be copied except in full and published as advertisement.

Test Report

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 14 of 19

No.	Description
28	Red metal enameled wire
29	Green metal enameled wire
30	Black plastic wire skin
31	Copper-colored metal wire core
32	Silvery metal wire core
33	Red plastic wire skin
34	Black plastic wire skin
35	Red plastic wire skin
36	Black plastic wire skin
37	Black plastic wire skin
38	Black plastic fasteners
39	Silvery metal stylus
40	Green PCB
41	Green PCB
42	Black IC
43	Black resistor
44	Brown capacitor
45	Silvery metal fixed iron sheet
46	Green PCB
47	Black transistor
48	Black IC
49	Brown capacitor
50	Black resistor
51	White LED light
52	Black plastic switch
53	Silvery metal crystal oscillator
54	Silvery metal solder
55	Silvery metal solder

Test Report

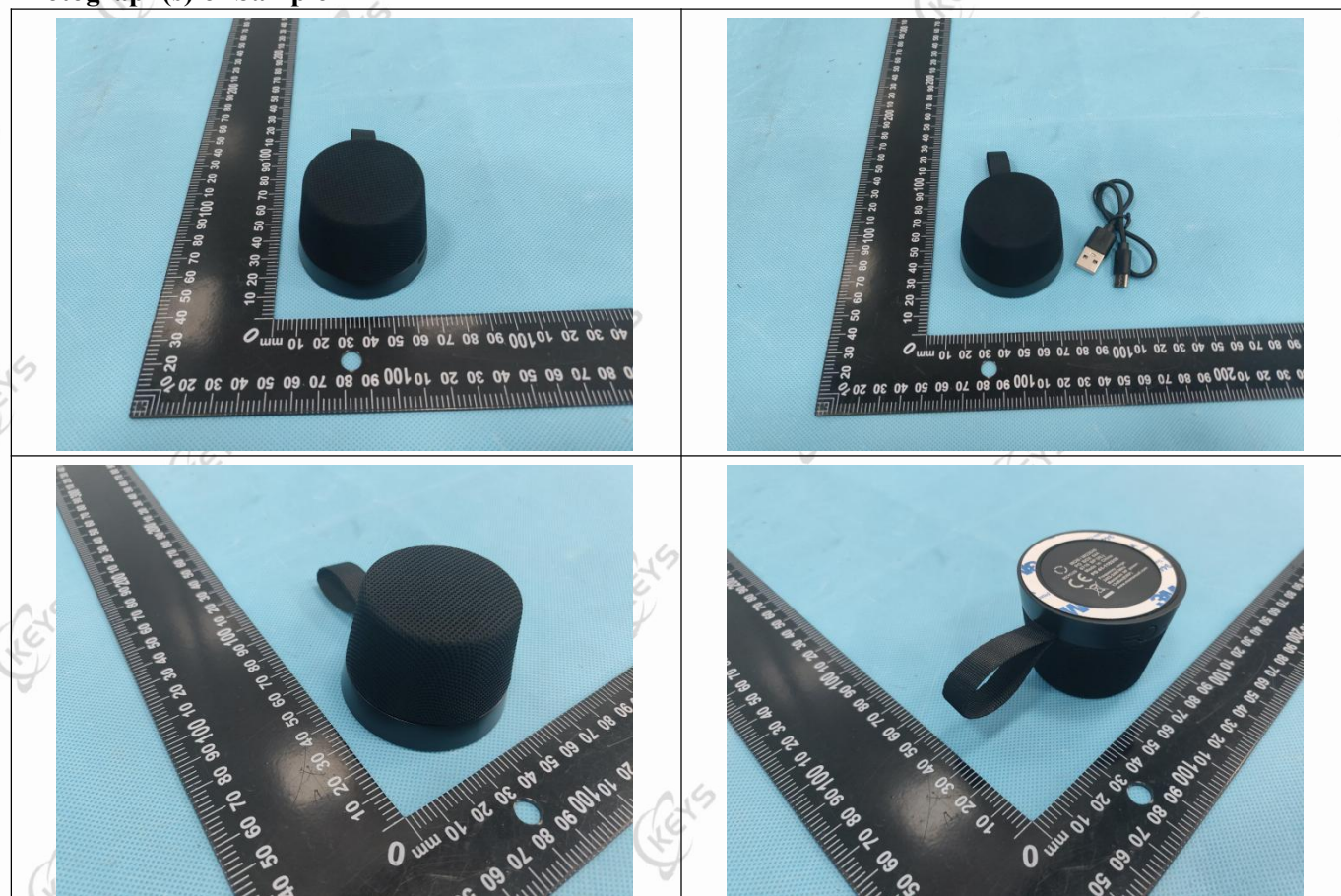
Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 15 of 19

No.	Description
56	Silvery metal solder
57	Silver metal
58	Black plastic ring
59	Black plastic
60	Black plastic

Photograph(s) of Sample

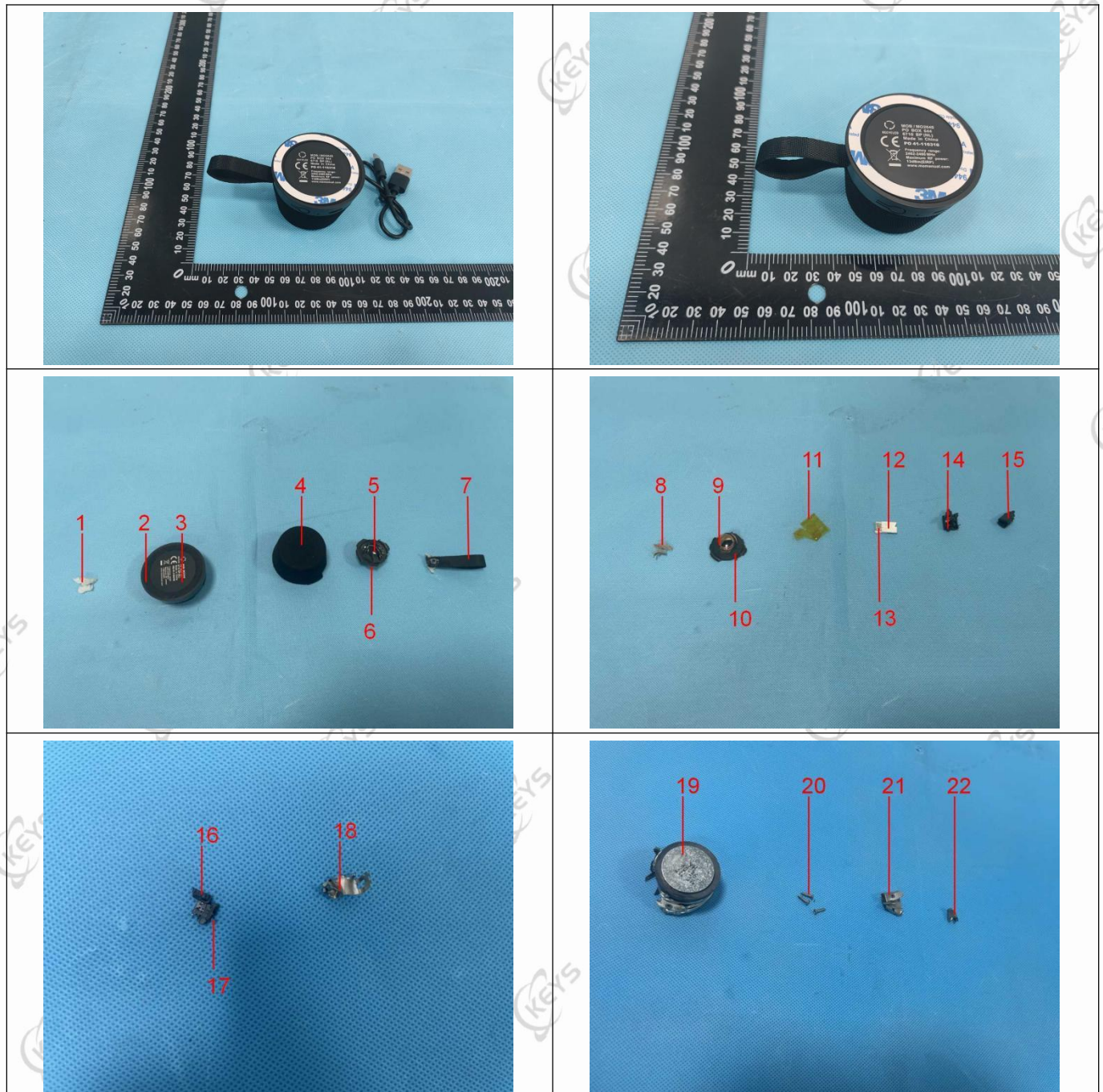


Test Report

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 16 of 19

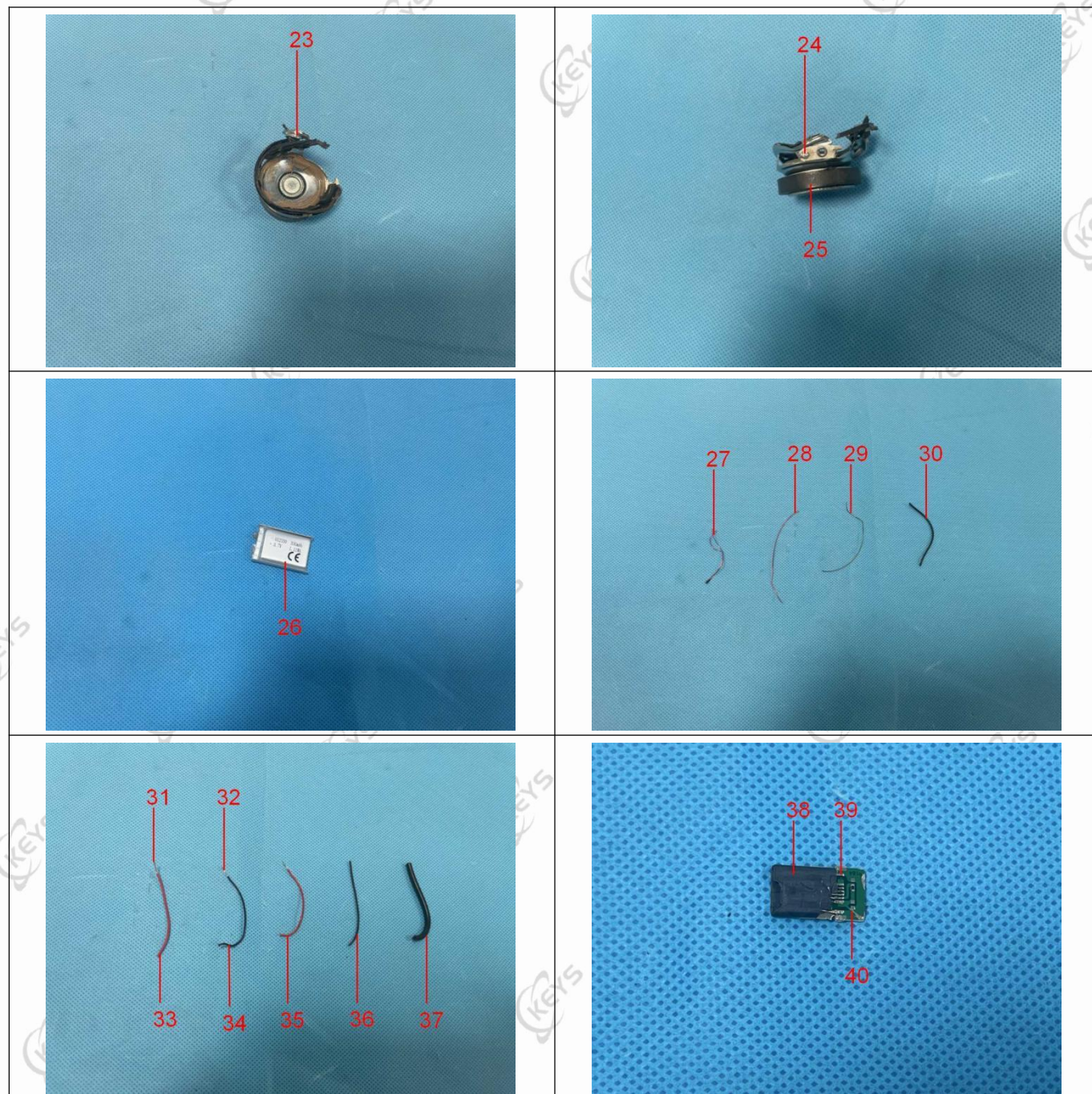


Test Report

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 17 of 19

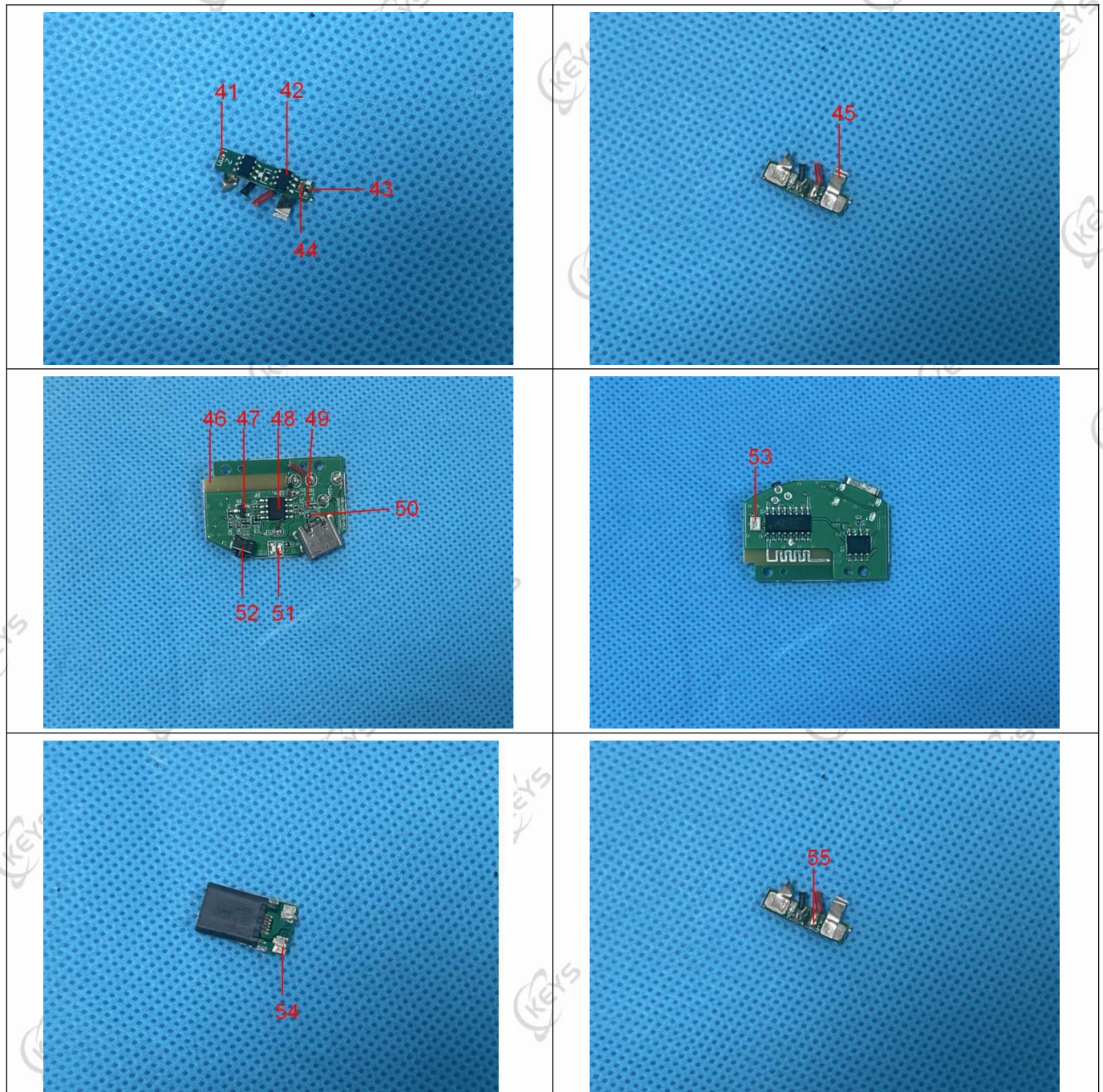


Test Report

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 18 of 19



Guangdong KEYS Testing Technology Co., Ltd.

Address: Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China
Tel: +86-0769-22221088 <http://www.keys-lab.com> E-mail: info@keys-lab.com

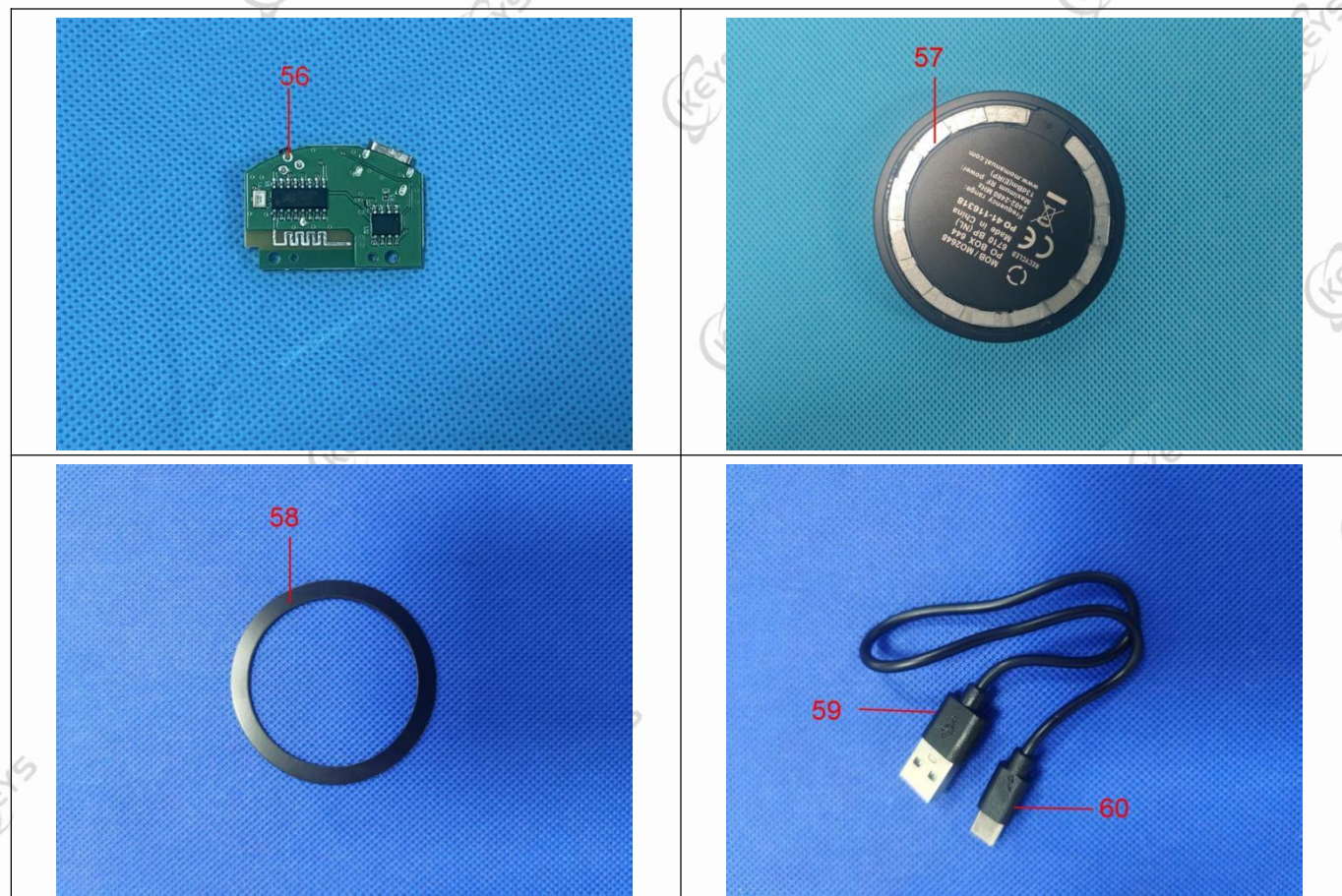
This report is only responsible for the test results of the samples submitted for inspection, and is not responsible for the source of the samples submitted for inspection.
This report shall not be altered, increased or deleted. Without written approval of KEYS, this test report shall not be copied except in full and published as advertisement.

Test Report

Report No.: RKEYS250806038

Date: Aug. 22, 2025

Page 19 of 19



*** End of Report ***