

Test Report

Report No.:MG26G3165R

Date: Aug. 04,2026

Page 1 of 13

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: N/A

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

Sample Name: Twist metal ball pen and charging cable set
Model No.: MO3152
Sample Received Date: Jul. 13, 2026
Testing Period: Jul. 13, 2026 to Jul. 30, 2026

Test Requested

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

Approved by:

Jack Leung

Jack Leung/ Technical Manager



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Test Report

Report No.:MG26G3165R

Date: Aug. 04,2026

Page 2 of 13

Summary of Test Results:

Test Requirement	Conclusion
European RoHS Directive 2011/65/EU and amendment (EU) 2015/863 on the restriction of the use of certain hazardous substances in electrical and electronic equipment & EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.	
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

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Test Report

Report No.:MG26G3165R

Date: Aug. 04,2026

Page 3 of 13

Test Method:

A. Screening test by XRF spectroscopy

XRF Screening Limits for Regulated Elements in Various Matrices according to IEC 62321-3-1:2013

Element	Screening limit (mg/kg)			MDL	
	Polymer Materials	Metallic Materials	Composite Materials	Polymers	Other material
Pb	$BL \leq 700 - 3\sigma \leq X < 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma \leq X < 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma \leq X < 1500 + 3\sigma \leq OL$	10mg/kg	50mg/kg
Cd	$BL \leq 70 - 3\sigma \leq X < 130 + 3\sigma \leq OL$	$BL \leq 70 - 3\sigma \leq X < 130 + 3\sigma \leq OL$	$LOD < X < 150 + 3\sigma \leq OL$	10mg/kg	50mg/kg
Hg	$BL \leq 700 - 3\sigma \leq X < 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma \leq X < 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma \leq X < 1500 + 3\sigma \leq OL$	10mg/kg	50mg/kg
Cr	$BL \leq 700 - 3\sigma < X$	$BL \leq 700 - 3\sigma < X$	$BL \leq 500 - 3\sigma < X$	10mg/kg	50mg/kg
Br	$BL \leq 300 - 3\sigma < X$	--	$BL \leq 250 - 3\sigma < X$	10mg/kg	50mg/kg

- Note:**
- BL = Under the XRF screening limit
 - OL = Future chemical test will be conducted while result is above the screening limit
 - X =The symbol“X”marks the region where further investigation in necessary
 - 3σ =The reproducibility of analytical instruments
 - MDL= Method Detection limit

B. Chemical Test

Test Item(s)	Test Method	Analysis Equipment(s)	MDL	Limit
Lead (Pb)	IEC 62321-5:2013	ICP-OES	2 mg/kg	1000mg/kg
Cadmium (Cd)	IEC 62321-5:2013	ICP-OES	2 mg/kg	100mg/kg
Mercury (Hg)	IEC 62321-4:2013+AMD1:2017	ICP-OES	2 mg/kg	1000mg/kg
Hexavalent Chromium Cr(VI)	IEC 62321-7-1:2015	UV-VIS	0.10 μ g/cm ²	1000mg/kg
	IEC 62321-7-2:2017		8 mg/kg	
Polybrominated Biphenyls (PBBs)	IEC 62321-6:2015	GC-MS	5 mg/kg	1000mg/kg
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015	GC-MS	5 mg/kg	1000mg/kg
Phthalate	IEC 62321-8:2017	GC-MS	30mg/kg	1000mg/kg

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Test Report

Report No.:MG26G3165R

Date: Aug. 04,2026

Page 4 of 13

Test Results:

1. Cadmium (Cd), Lead (Pb), Mercury (Hg), Chromium (Cr) and Bromine (Br) content were measured with reference to IEC 62321-3-1:2013 by XRF spectroscopy and chemical confirmation test for RoHS restricted substances.

No.	XRF screening Result					Chemical confirm Result (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	--	--	Pass
8	BL	BL	BL	BL	--	--	Pass
9	BL	BL	BL	BL	BL	--	Pass
10	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	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	--	--	Pass
23	BL	BL	BL	BL	--	--	Pass

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Test Report

Report No.:MG26G3165R

Date: Aug. 04,2026

Page 5 of 13

No.	XRF screening Result					Chemical confirm Result (mg/kg)	Conclusion
	Pb	Cd	Hg	Cr	Br		
24	BL	BL	BL	BL	BL	--	Pass
25	BL	BL	BL	BL	--	--	Pass
26	BL	BL	BL	BL	--	--	Pass
27	BL	BL	BL	BL	BL	--	Pass
28	BL	BL	BL	BL	--	--	Pass
29	BL	BL	BL	BL	BL	--	Pass
30	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	--	--	Pass
35	BL	BL	BL	BL	BL	--	Pass
36	BL	BL	BL	BL	--	--	Pass

2. Phthalate Content Test

Test Item(s)	Dibutyl Phthalate (DBP)	Butyl benzyl phthalate (BBP)	Di-(2-ethylhexyl) Phthalate (DEHP)	Diisobutyl phthalate (DIBP)	Conclusion
CAS No.	84-74-2	85-68-7	117-81-7	84-69-5	
Limit	1000	1000	1000	1000	
No.	Test Result (mg/kg)				
1	N.D.	N.D.	N.D.	N.D.	Pass
2+16+18	N.D.	N.D.	N.D.	N.D.	Pass
3+4	N.D.	N.D.	N.D.	N.D.	Pass
5+9	N.D.	N.D.	N.D.	N.D.	Pass
11+12+15	N.D.	N.D.	N.D.	N.D.	Pass
14	N.D.	N.D.	N.D.	N.D.	Pass
17	N.D.	N.D.	N.D.	N.D.	Pass

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Report No.:MG26G3165R

Date: Aug. 04,2026

Page 6 of 13

Test Item(s)	Dibutyl Phthalate (DBP)	Butyl benzyl phthalate (BBP)	Di-(2-ethylhexyl) Phthalate (DEHP)	Diisobutyl phthalate (DIBP)	Conclusion
CAS No.	84-74-2	85-68-7	117-81-7	84-69-5	
Limit	1000	1000	1000	1000	
No.	Test Result (mg/kg)				
19+20+21	N.D.	N.D.	N.D.	N.D.	Pass
24	N.D.	N.D.	N.D.	N.D.	Pass
27	N.D.	N.D.	N.D.	N.D.	Pass
29+35	N.D.	N.D.	N.D.	N.D.	Pass
33	N.D.	N.D.	N.D.	N.D.	Pass

Remark:

- -- = Not tested
- BL = The result is below the XRF screening limit
- OL = Over Limit
- X = Inconclusive, Future chemical test will be conducted
- mg/kg = milligram per kilogram = ppm
- N.D. = Not Detected(<MDL)
- MDL = Method Detection Limit
- Positive = A positive test result indicated the concentration of Cr(VI) is greater than threshold of 0.13 $\mu\text{g}/\text{cm}^2$ for boiling-water-extraction procedures by visual comparison / by UV-VIS Spectrophotometer analysis. The sample coating is considered to contain Cr(VI).
- Negative = A negative test result indicated the concentration of Cr(VI) is less than threshold of 0.10 $\mu\text{g}/\text{cm}^2$ for boiling-water-extraction procedures by UV-VIS Spectrophotometer analysis. The coating is considered a non-Cr(VI) based coating.
- The results shown in this XRF Screening 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.). If the XRF Screening concentration exceeds, need further chemical testing by ICP-OES (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs) is recommended to be performed.

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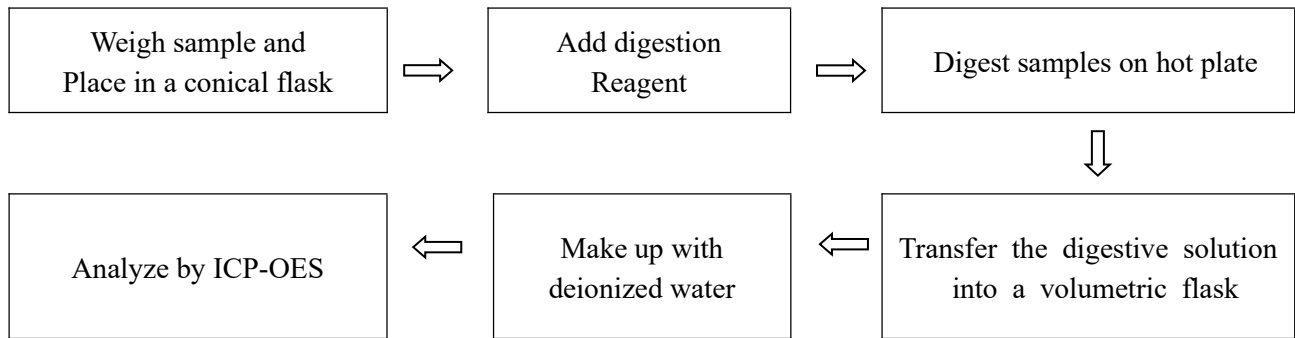
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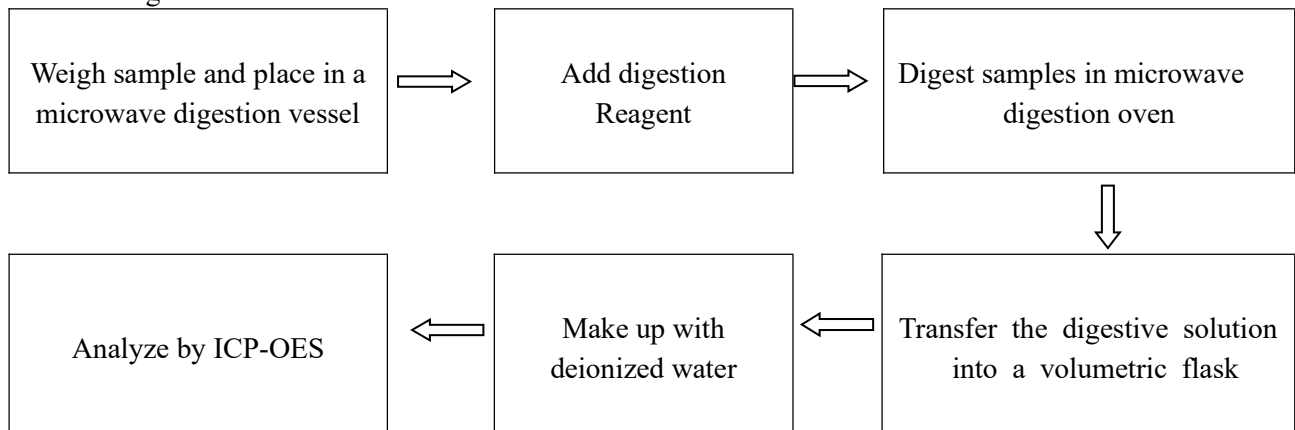
Page 7 of 13

3. Test Process

1) Test for Cd/Pb Content



2) Test for Hg Content



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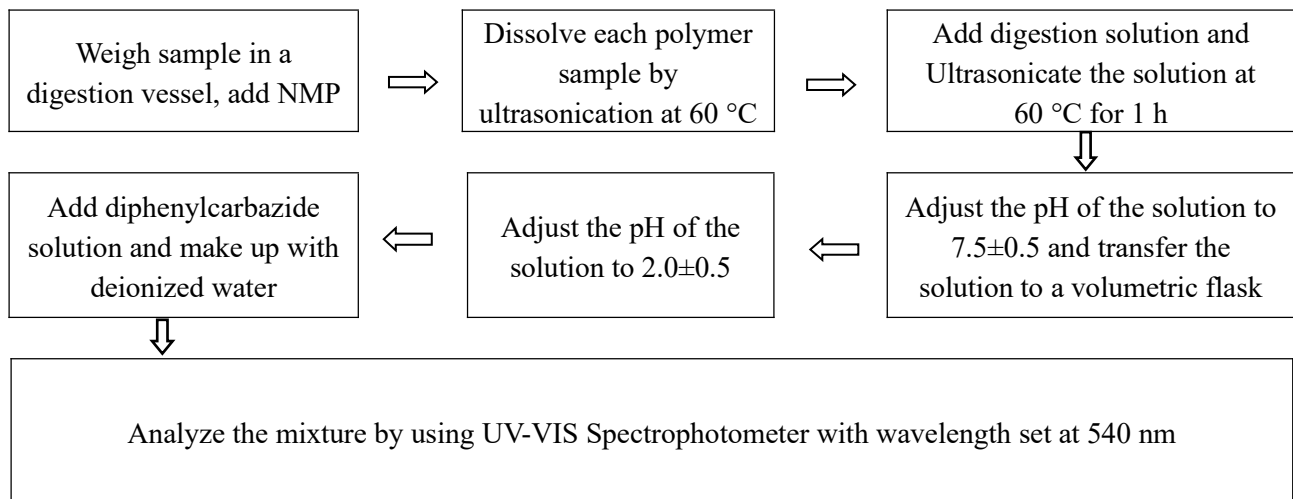
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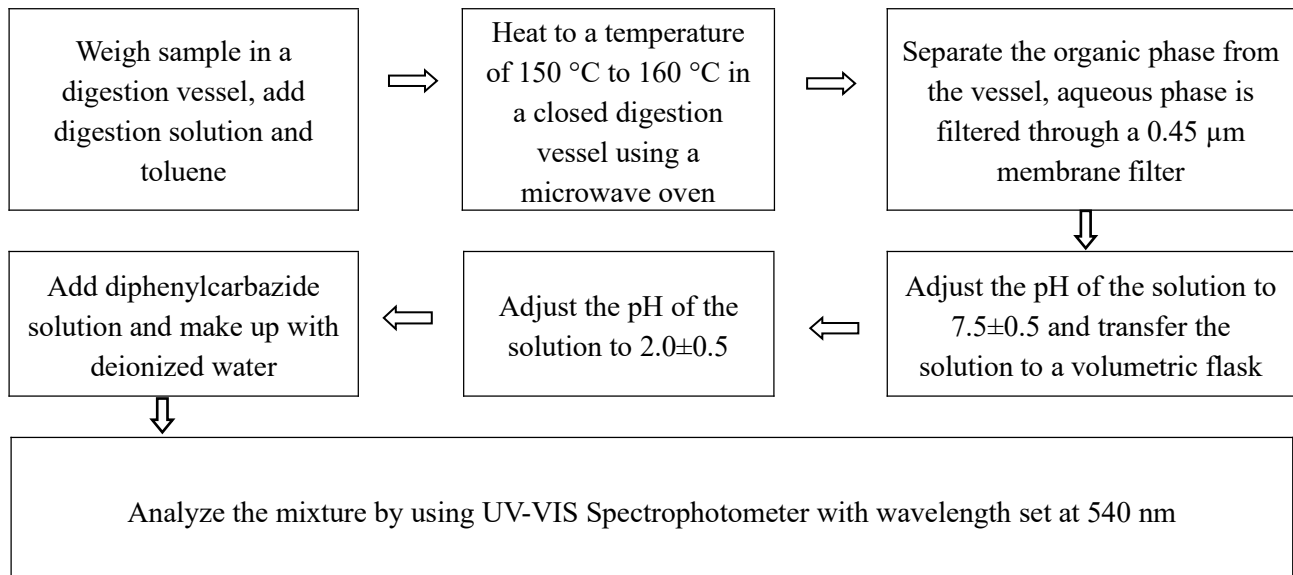
Page 8 of 13

3) Test for Chromium (VI) Content

a. Soluble polymers:



b. Insoluble/unknown polymers and electronics without Sb



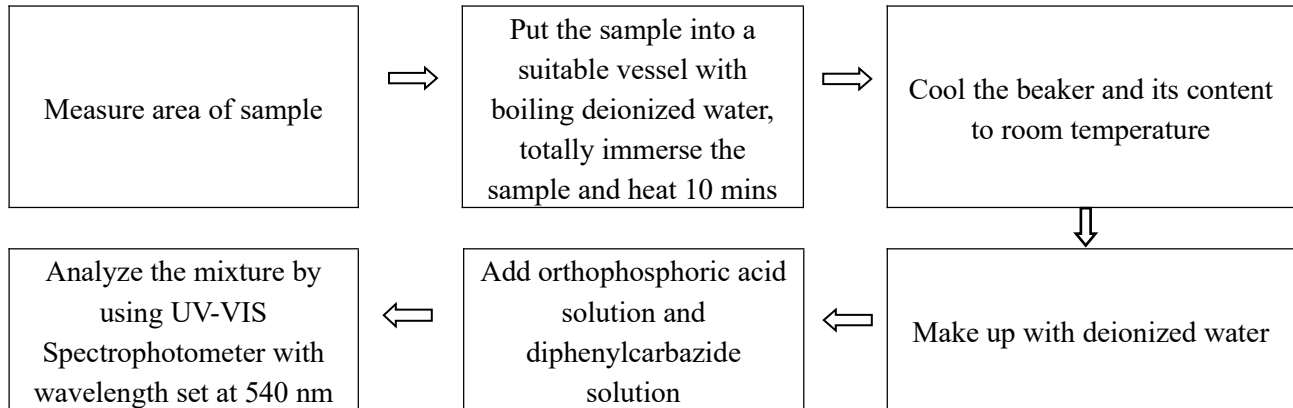
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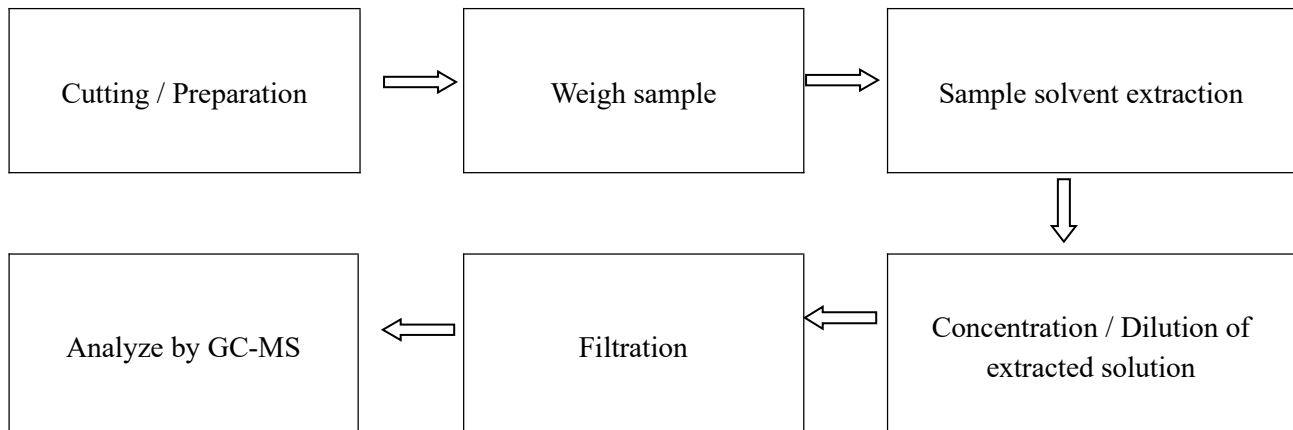
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Page 9 of 13

c. Metal material



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



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Report No.:MG26G3165R

Date: Aug. 04,2026

Page 10 of 13

Sample Description:

No.	Description
1	Black fabric(wire jacket)
2	Black soft plastic(plug case)
3	Black plastic(case)
4	Silver printed white plastic(fastener)
5	Black plastic(cover of plug case)
6	Silvery solder(front left)
7	Brass metal(connect plate)
8	Silvery metal(plug case)
9	White plastic(USB fastener)
10	Silvery metal(USB case)
11	Green PCB(plug)
12	Navy PCB(plug)
13	Silvery metal(short plug)
14	Black printed white body(resistor)
15	Green PCB(short plug)
16	Black soft plastic(wire jacket)
17	Silvery metal(wire core)
18	Red soft plastic(wire jacket)
19	White soft plastic(wire jacket)
20	Green soft plastic(wire jacket)
21	Black soft plastic(wire jacket outer)
22	Silvery metal(shaft of buckle)
23	Silvery metal(buckle body)
24	Clear laminated black printed white paper with adhesive(sticker)
25	Silvery metal(buckle switch)
26	Silvery metal(buckle spring)
27	Translucent glue(fastener)
28	Silvery metal(pin)

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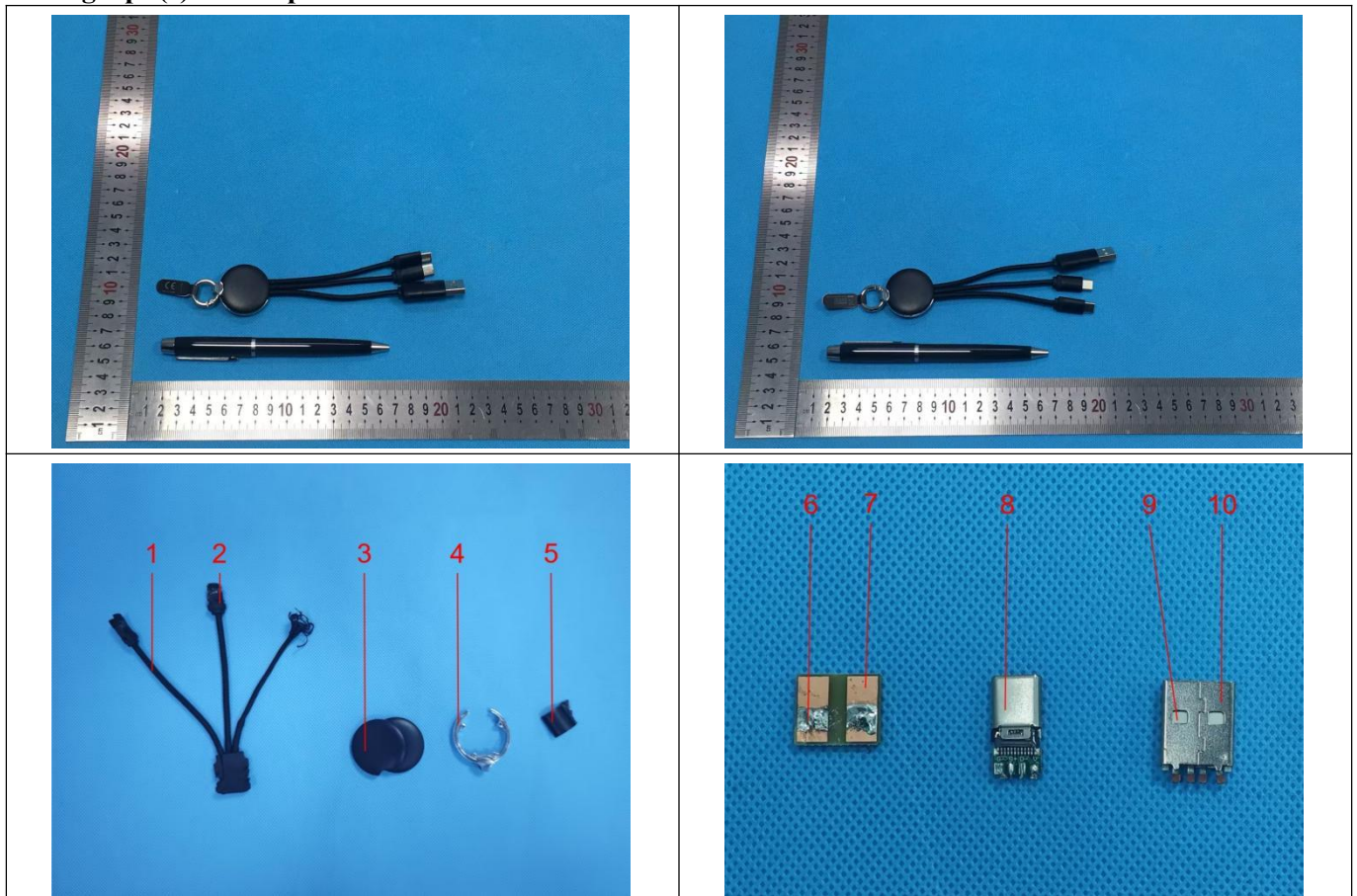
Report No.:MG26G3165R

Date: Aug. 04,2026

Page 11 of 13

No.	Description
29	Black plastic(plug fastener)
30	Silvery solder(front right)
31	Silvery solder(back right)
32	Silvery solder(back left)
33	Yellow PCB
34	Silvery metal(pin of plug)
35	Grey plastic(plug fastener)
36	Silvery solder(Type-C plug)

Photograph(s) of Sample:



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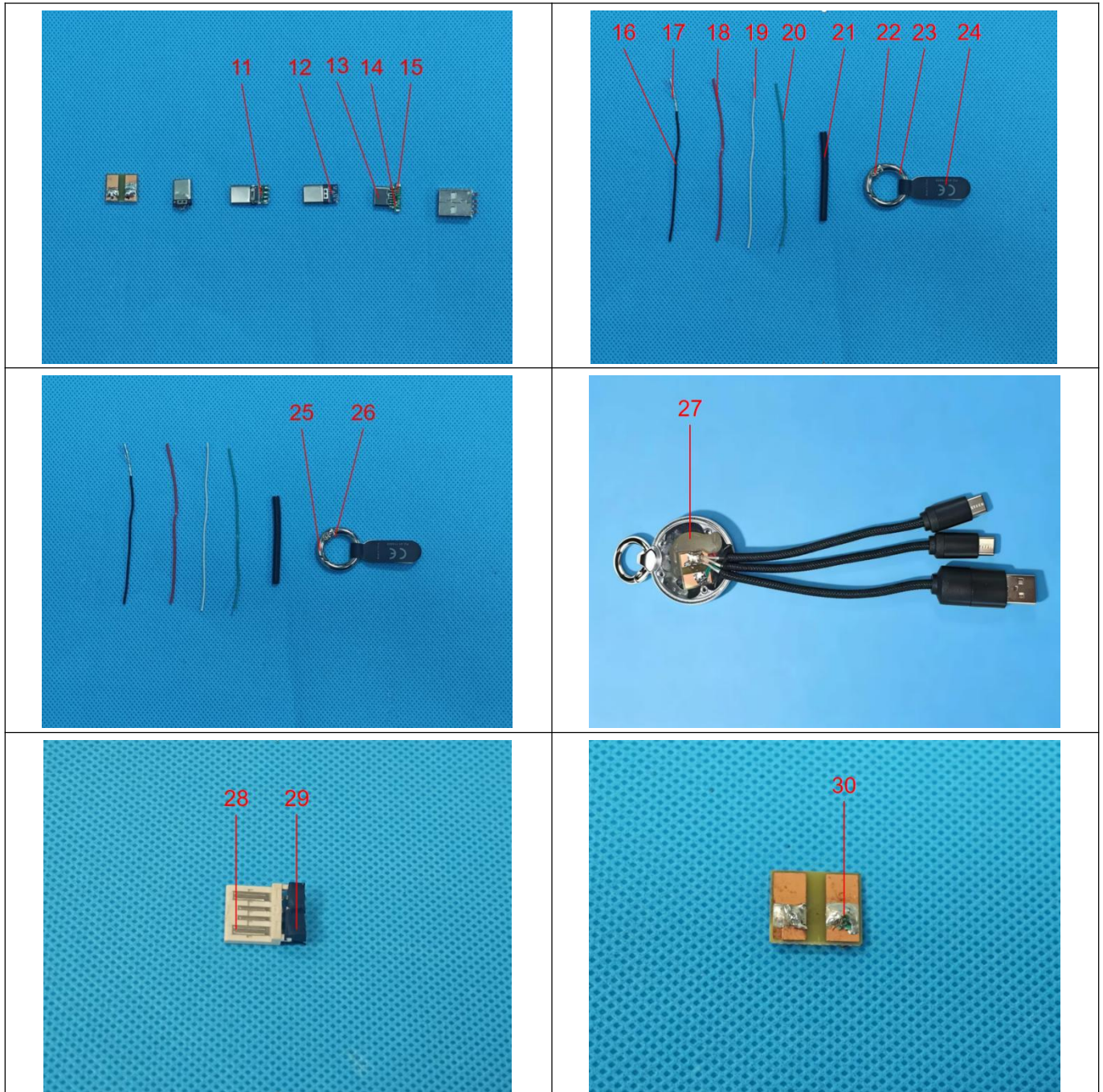
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Date: Aug. 04,2026

Page 12 of 13

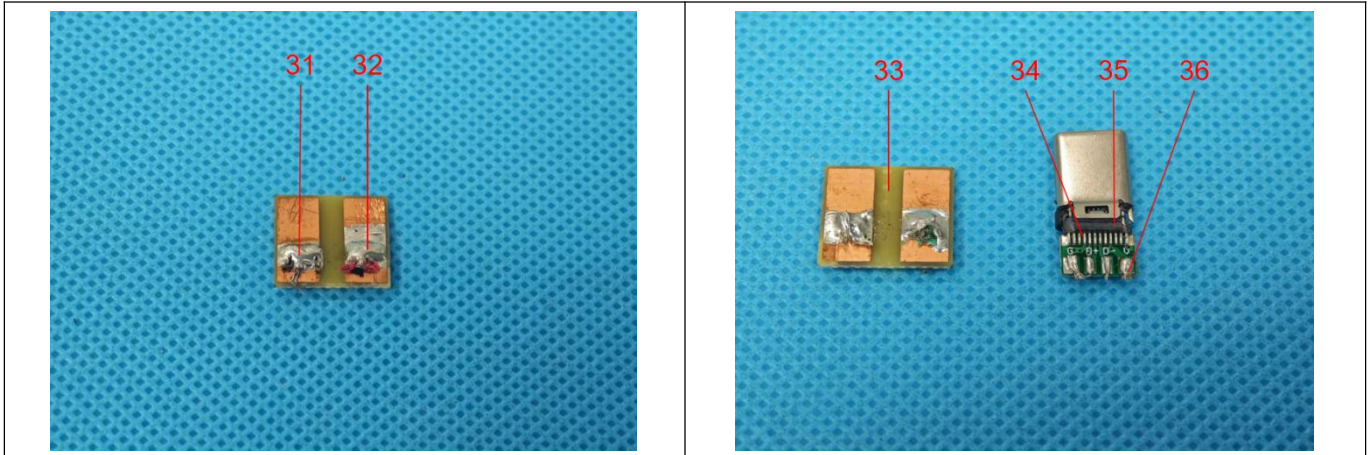


Test Report

Report No.:MG26G3165R

Date: Aug. 04,2026

Page 13 of 13



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