



Test Report

Report No: KEYS24032986004RH-03

Date: Apr. 7, 2024

Page 1 of 18

Applicant : Shenzhen Atnen Technology Co.,LTD

Address : Room 301&401, Building D, No.17, Innovation Industrial Park, Xintian Community,
Guanhu Street, Longhua District, Shenzhen 518110, P. R. China

Manufacturer : Shenzhen Atnen Technology Co.,LTD

Address : Room 301&401, Building D, No.17, Innovation Industrial Park, Xintian Community,
Guanhu Street, Longhua District, Shenzhen 518110, P. R. China

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

Sample Name : Li-ion Battery Charger

Sample Model : LBC015Model(M/N):LBC015252050/LBC015294050/LBC015xxxyyy/LBC015xxxyyy/LBC015492030/LBC015504030/LBC015480301/LBC015584030/LBC015588030 ("xxx" and "yyy" are variable, see model list of table A for details.)
Input: 100-240V~,2.5A(MAX.), 50-60Hz, Class II;Output: See model list of table A.

Table A: Model list and output rating

Model No.	Input rating	Output voltage (Vdc)	Output current (A)	Max. Output Power (W)	Transformer (T1)	Li-ion Battery Information	
LBC015252050	100-240V~, 2.5A(MAX.), 50-60Hz	25.2	5.0	126.0	T015-2405A	22.2Vdc, 10.4Ah	
LBC015294050		29.4	5.0	147.0		25.9Vdc, 10.4Ah	
LBC015xxxyyy		40.0-42.0	4.0	168.0	T015-1004J	37.0Vdc, 16Ah	
		42.1-43.8	3.8	166.44			
LBC015492030		49.2	3.0	147.6	T015-1303D	44.4Vdc, 10.4Ah	
LBC015504030		50.4	3.0	151.2		44.4Vdc, 10.4Ah	
LBC015480301		54.6	3.0	163.8		48.1Vdc, 10.4Ah	
LBC015584030		58.4	3.0	175.2		51.2Vdc, 10.4Ah	
LBC015588030		58.8	3.0	176.4			51.8Vdc, 10.4Ah
							51.8Vdc, 10.4Ah

Note:
1. xxx=400-438 which represents the rated output voltage range 40.0-43.8Vdc, in steps of 0.1V;
2. yyy=038 or 040 which represents the rated output current range 3.8A or 4.0A;
3. All models of transformers are identical except for model name and secondary winding.

Sample Received Date : Apr. 2, 2024

Testing Period : Apr. 2, 2024 To Apr. 7, 2024

Test Requested : Selected test (s) in the selected parts as requested by client with the RoHS 2 Directive 2011/65/EU Annex II (EU) 2015/863 as last amended by Directive (EU) 2017/2102.

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Test Method

: 1. As specified by client, to screen Lead(Pb), Cadmium(Cd), Mercury(Hg), Chromium(Cr) and Bromine(Br) in the submitted sample(s) by XRF.
2. As specified by client, when screening results exceed the XRF screening limit in IEC 62321-3-1: 2013, further use of wet chemical methods are required to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutylphthalate (DBP), and Diisobutyl phthalate (DIBP) in the submitted sample(s).

Test Result

: Please refer to next page(s).

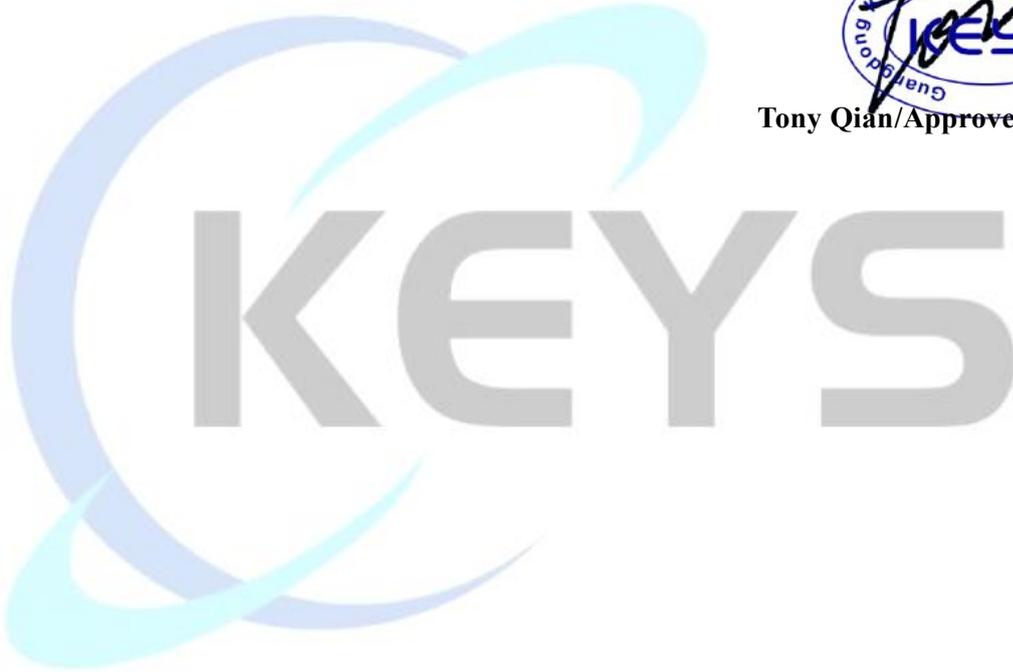
Conclusion

: **PASS** (Based on test results)

Signed for and on behalf of



Tony Qian/Approved Signatory





Test Report

Report No: KEYS24032986004RH-03

Date: Apr. 7, 2024

Page 3 of 18

Summary of Test Results:

TEST REQUEST	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



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Test Report

Report No: KEYS24032986004RH-03

Date: Apr. 7, 2024

Page 4 of 18

Sample Description:

No.	Name
1	Black Plastic Case
2	Yellow Plastic
3	Black Foam
4	Grey Plastic
5	Black Plastic
6	Silver Metal
7	Silver Metal
8	PCB
9	Transformer
10	Yellow Capacitance
11	Inductance
12	Fuse Wire
13	Blue Capacitance
14	Red Capacitance
15	White Glue
16	Brown Electrolytic Capacitor
17	Green Electrolytic Capacitor
18	Green Capacitance
19	Inductance

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Test Report

Report No: KEYS24032986004RH-03

Date: Apr. 7, 2024

Page 5 of 18

No.	Name
20	Resistance
21	IC
22	LED
23	Triode
24	Silver Metal
25	Thermistor
26	Resistance
27	Capacitance
28	IC
29	Black Plastic
30	Soldering Tin
31	IC
32	Triode
33	Diode
34	Black Outer Leather
35	Red Leather
36	Black Leather
37	Wire Core
38	DC Silver Metal Interface
39	Screw

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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	--	--	Pass
8	BL	BL	BL	BL	BL	--	Pass
9	BL	BL	BL	BL	--	--	Pass
10	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	--	--	Pass
17	BL	BL	BL	BL	--	--	Pass
18	BL	BL	BL	BL	--	--	Pass

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Test Report

Report No: KEYS24032986004RH-03

Date: Apr. 7, 2024

Page 7 of 18

No.	XRF Result(mg/kg)					Chemical Test (mg/kg)	Conclusion
	Pb	Cd	Hg	Cr	Br		
19	BL	BL	BL	BL	--	--	Pass
20	BL	BL	BL	BL	--	--	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
26	BL	BL	BL	BL	--	--	Pass
27	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	--	--	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	--	--	Pass

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Test Report

Report No: KEYS24032986004RH-03

Date: Apr. 7, 2024

Page 8 of 18

No.	XRF Result(mg/kg)					Chemical Test (mg/kg)	Conclusion
	Pb	Cd	Hg	Cr	Br		
38	BL	BL	BL	BL	--	--	Pass
39	BL	BL	BL	BL	--	--	Pass



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Guangdong KEYS Testing Technology Co., Ltd.

Address: Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan,
Guangdong, China
Tel:+86-0769-89798319 <http://www.keys-lab.com> E-mail: info@keys-lab.com

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: 2013 Annex 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

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 is necessary

-3σ = The reproducibility of analytical instruments

-LOD = Detection limit

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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%

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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.



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3. Phthalate, PBBs, PBDEs Test Result:

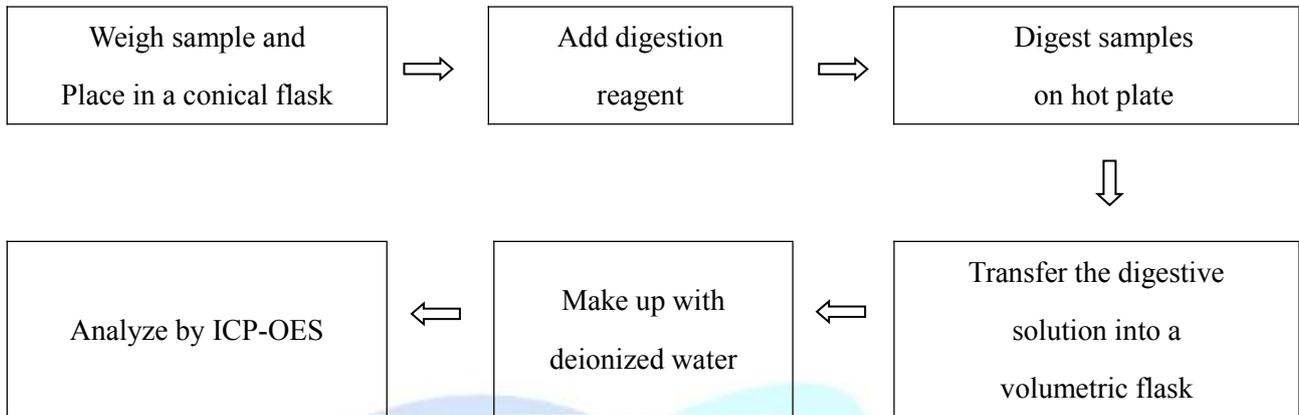
Test No.	Test Item(s)						Conclusion
	Dibutyl Phthalate (DBP)	Butyl benzyl phthalate (BBP)	Di-(2-ethylhexyl) Phthalate (DEHP)	Diisobutyl phthalate (DIBP)	PBBs	PBDEs	
1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
3	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
8	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
15	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
22	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
29	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
34	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
35	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass
36	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Pass

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

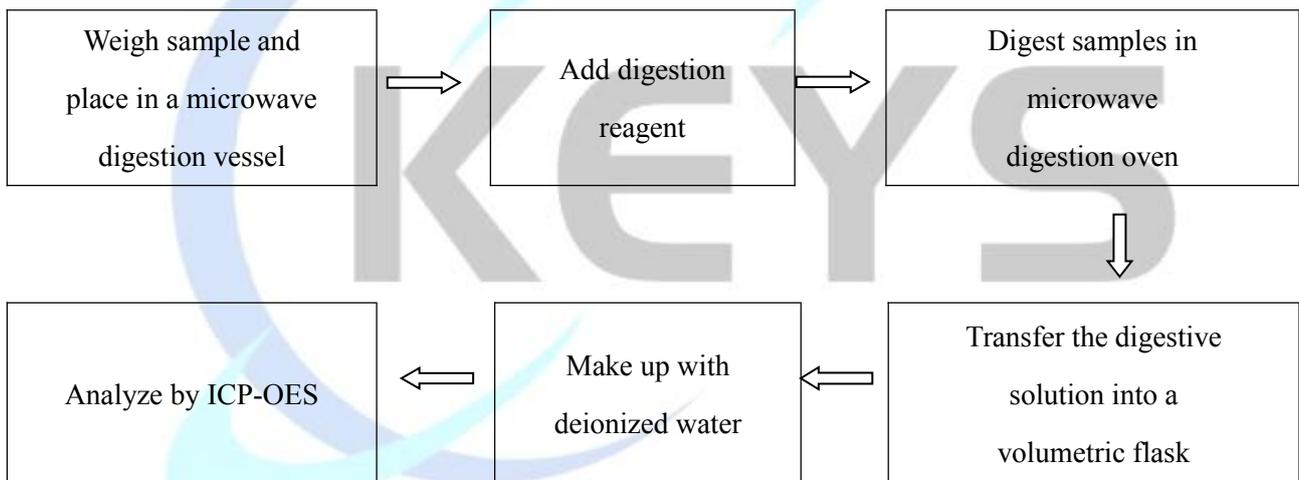
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Test Process:

1. Test for Cd/Pb Content



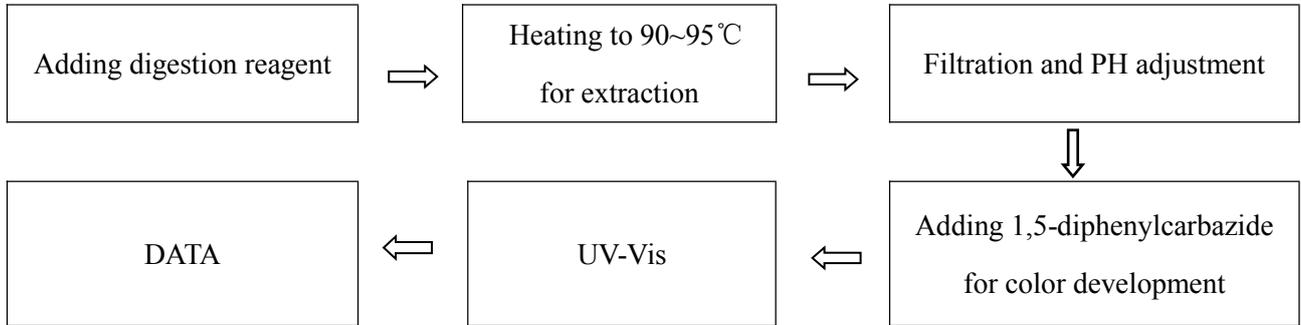
2. Test for Hg Content



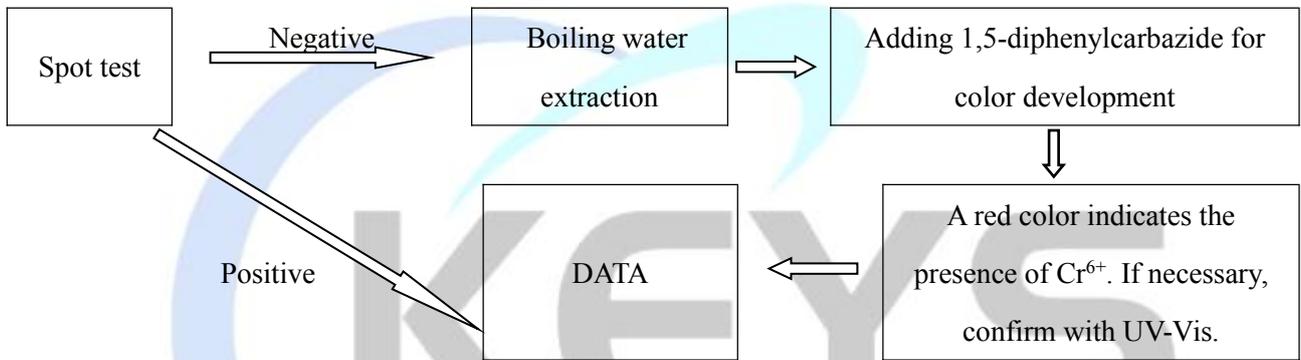
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3. Test for Chromium (VI) Content

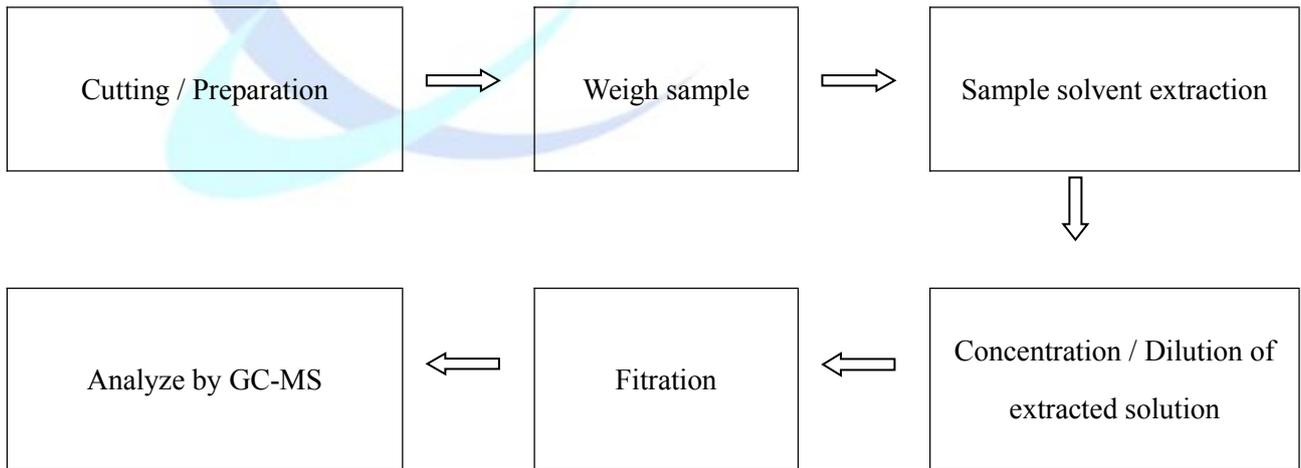
Nonmetal material



Metal material



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

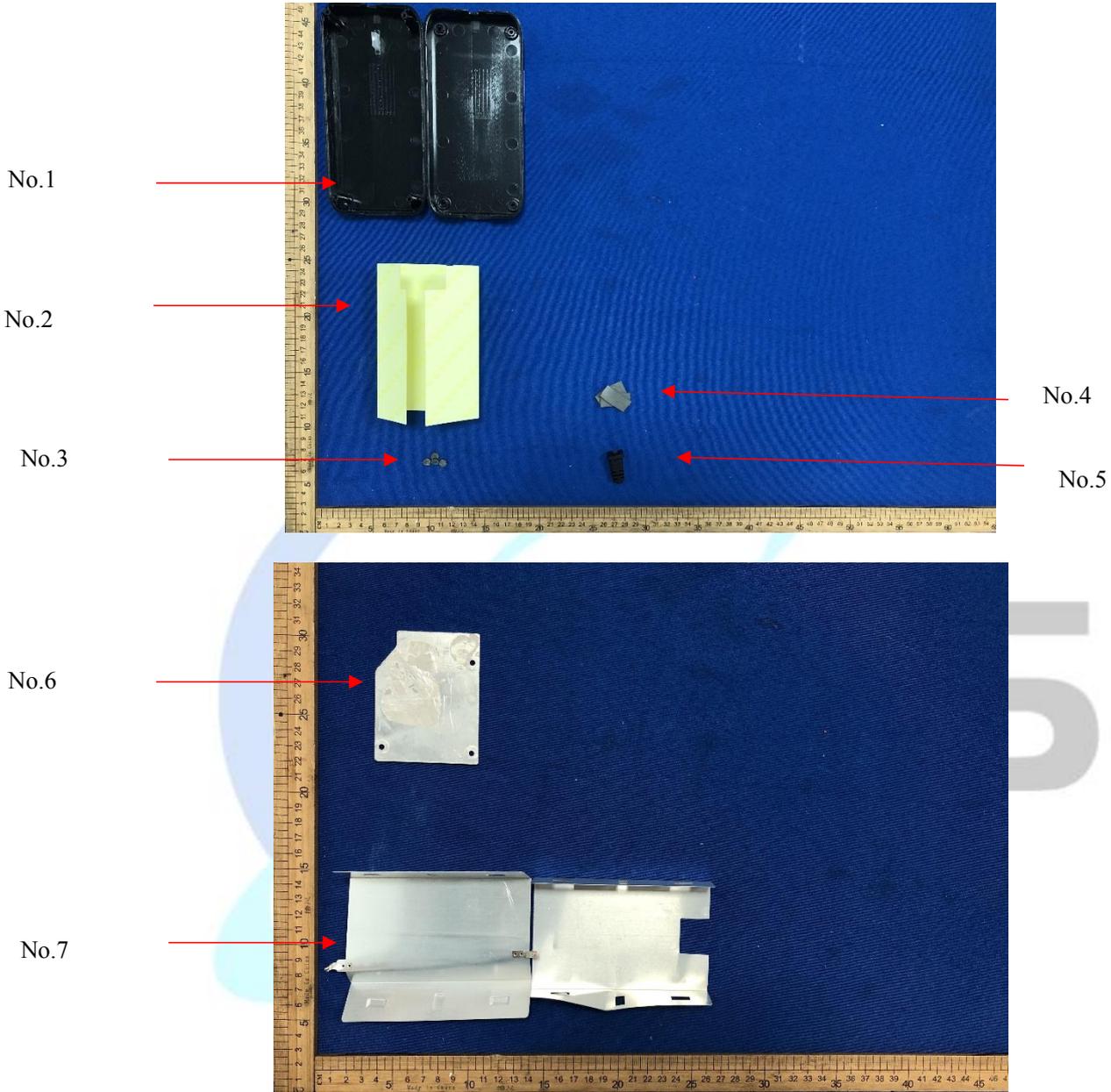


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Sample Photo:



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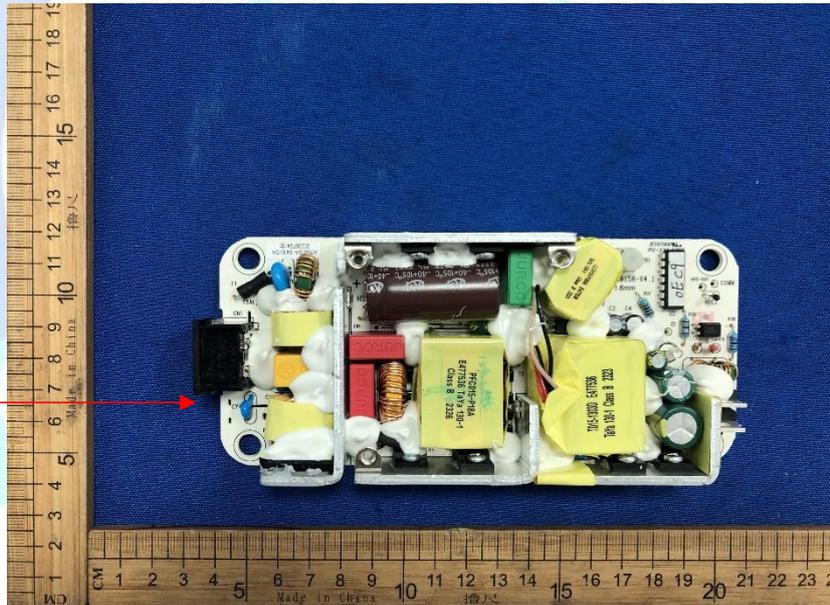
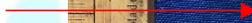


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No.39

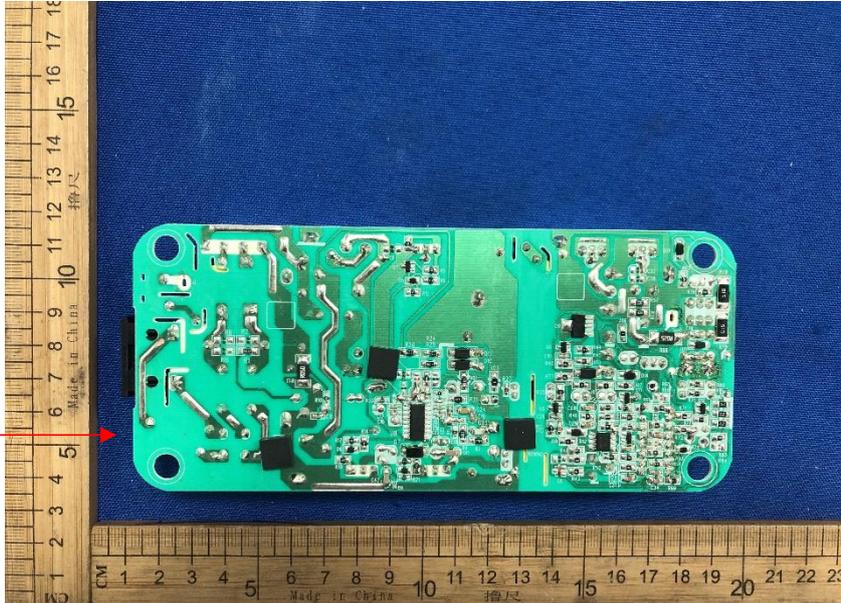


No.8-25

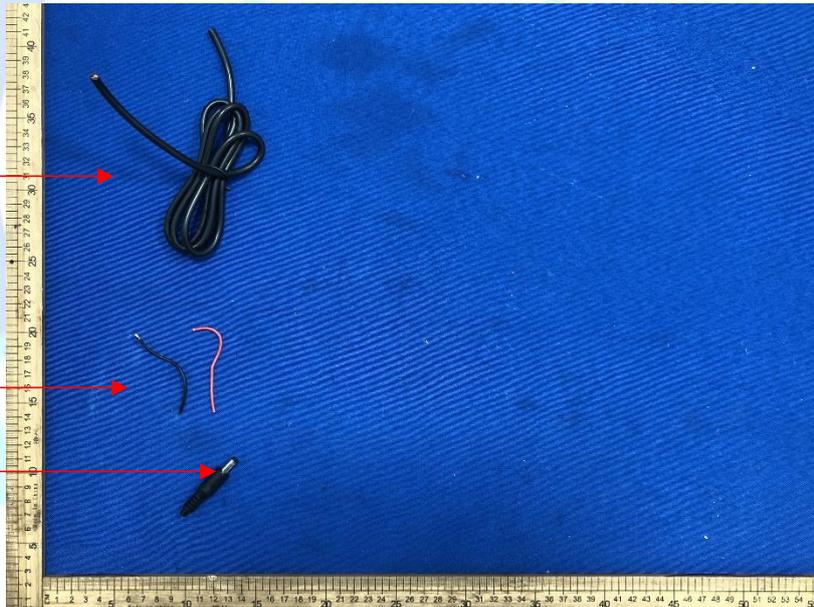


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No.26-33



No.34



No.35-37

No.38

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