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TEST REPORT

Applicant Company	:	V-TAC EXPORT LIMITED
Address	:	Room 301 Kam ON Building 176A ,Queen's Road Central HongKong
Manufacturer	:	V-TAC EXPORT LIMITED
Address	:	Room 301 Kam ON Building 176A ,Queen's Road Central HongKong

Sample Information

Sample Name	:	Portable Power Station
Trade Mark	:	/
Basic Model No.	:	K5-VT-1001
Series Model No.	:	/
Testing Period	:	March 11, 2022-March 30, 2022
Date of issue	:	November 29, 2022
Results	:	Please refer to next page(s).

TEST REQUEST	CONCLUSION
As specified by client, based on the performed tests on submitted sample, the result of Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), PBBs, PBDEs, Dibutyl Phthalate(DBP), Butylbenzyl Phthalate(BBP), Di-2-ethylhexyl Phthalate(DEHP) and Diisobutyl phthalate(DIBP) content comply with the limits set by RoHS Directive 2011/65/EU with amendment (EU) 2015/863.	Pass

Edited by: Wick Wu

Approved by:

Results:

1. EU RoHS Directive 2011/65/EU and its amendment directives

Test method: With reference to IEC 62321-3-1:2013, Screening by X-ray Fluorescence Spectroscopy (XRF)

Sample No.	Sample Description	Results					
		Cd	Pb	Hg	Cr▼	Br▼	
						PBBs	PBDEs
1	Silver metal shell	BL	BL	BL	BL	/	/
2	Black plastic shell	BL	BL	BL	BL	BL	BL
3	Black wire jacket	BL	BL	BL	BL	BL	BL
4	Red wire	BL	BL	BL	BL	/	/
5	Dark red wire jacket	BL	BL	BL	BL	BL	BL
6	Red wire	BL	BL	BL	BL	/	/
7	Blue wire jacket	BL	BL	BL	BL	BL	BL
8	Red wire	BL	BL	BL	BL	/	/
9	Yellow wire jacket	BL	BL	BL	BL	BL	BL
10	Black plastic shell	BL	BL	BL	BL	BL	BL
11	White plastic shell	BL	BL	BL	BL	X	X
12	Gold metal flakes	BL	BL	BL	BL	/	/
13	Black plastic shell	BL	BL	BL	BL	BL	BL
14	Black plastic shell	BL	BL	BL	BL	BL	BL
15	Green plastic shell	BL	BL	BL	BL	BL	BL
16	Green plastic shell	BL	BL	BL	BL	BL	BL
17	Green plastic shell	BL	BL	BL	BL	BL	BL
18	Black plastic shell	BL	BL	BL	BL	BL	BL
19	Black plastic shell	BL	BL	BL	BL	BL	BL
20	Black plastic shell	BL	BL	BL	BL	BL	BL
21	Black metal screw	BL	BL	BL	X	/	/
22	Silver metal screw	BL	BL	BL	BL	/	/
23	Silver metal screw	BL	BL	BL	X	/	/
24	Silver metal screw	OL	BL	BL	X	/	/
25	White plastic shell	BL	BL	BL	BL	BL	BL
26	Black wire jacket	BL	BL	BL	BL	BL	BL
27	Red wire jacket	BL	BL	BL	BL	BL	BL
28	Black plastic shell	BL	BL	BL	BL	X	X
29	Silver metal screw	BL	BL	BL	BL	/	/
30	PCB(Tested as a whole)	BL	BL	BL	BL	BL	BL
31	White plastic shell	BL	BL	BL	BL	BL	BL
32	Yellow plastic shell	BL	BL	BL	BL	X	X

Sample No.	Sample Description	Results					
		Cd	Pb	Hg	Cr▼	Br▼	
						PBBs	PBDEs
33	PCB(Tested as a whole)	BL	BL	BL	BL	X	X
34	Black resistance(Tested as a whole)	BL	BL	BL	BL	BL	BL
35	Silver sheet metal	BL	BL	BL	BL	/	/
36	Black plastic shell	BL	BL	BL	BL	X	X
37	Silvery wire jacket	BL	BL	BL	BL	BL	BL
38	Black wire jacket	BL	BL	BL	BL	/	/
39	Silvery wire jacket	BL	BL	BL	BL	/	/
40	Red wire jacket	BL	BL	BL	BL	BL	BL
41	Black plastic shell	BL	BL	BL	BL	BL	BL
42	Black plastic shell	BL	BL	BL	BL	BL	BL
43	Silver metal screw	BL	BL	BL	BL	/	/
44	Yellow plastic shell	BL	BL	BL	BL	BL	BL
45	Transparent plastic shell	BL	BL	BL	BL	BL	BL
46	Silvery metal solder	BL	BL	BL	BL	/	/
47	Silver sheet metal	BL	BL	BL	X	/	/
48	LED(Tested as a whole)	BL	BL	BL	BL	BL	BL
49	White plastic shell	BL	BL	BL	BL	BL	BL
50	Purple thread skin	BL	BL	BL	BL	BL	BL
51	White wire jacket	BL	BL	BL	BL	BL	BL
52	Purple thread skin	BL	BL	BL	BL	BL	BL
53	White wire jacket	BL	BL	BL	BL	BL	BL
54	White plastic shell	BL	BL	BL	BL	BL	BL
55	White plastic shell	BL	BL	BL	BL	BL	BL
56	Black wire jacket	BL	BL	BL	BL	BL	BL
57	Black wire jacket	BL	BL	BL	BL	BL	BL
58	Red wire jacket	BL	BL	BL	BL	BL	BL
59	White wire jacket	BL	BL	BL	BL	BL	BL
60	White / red skin	BL	BL	BL	BL	BL	BL
61	White plastic shell	BL	BL	BL	BL	BL	BL
62	Yellow plastic shell	BL	BL	BL	BL	BL	BL
63	Black plastic	BL	BL	BL	BL	BL	BL
64	Red wire jacket	BL	BL	BL	BL	BL	BL
65	Black wire jacket	BL	BL	BL	BL	BL	BL
66	White plastic shell	BL	BL	BL	BL	BL	BL
67	White wire jacket	BL	BL	BL	BL	BL	BL

Sample No.	Sample Description	Results					
		Cd	Pb	Hg	Cr▼	Br▼	
						PBBs	PBDEs
68	White wire jacket	BL	BL	BL	BL	BL	BL
69	White plastic shell	BL	BL	BL	BL	BL	BL
70	Green capacitor	BL	BL	BL	BL	BL	BL
71	White capacitance(Tested as a whole)	BL	BL	BL	BL	BL	BL
72	Black resistance(Tested as a whole)	BL	BL	BL	BL	BL	BL
73	Orange-yellow capacitance(Tested as a whole)	BL	BL	BL	BL	BL	BL
74	Silver metal shell	BL	BL	BL	BL	/	/
75	Blue capacitor	BL	BL	BL	BL	BL	BL
76	Orange-yellow capacitance(Tested as a whole)	BL	BL	BL	BL	X	X
77	Dark copper enameled wire	BL	BL	BL	BL	/	/
78	Black wire jacket	BL	BL	BL	BL	BL	BL
79	Red wire jacket	BL	BL	BL	BL	BL	BL
80	Green capacitor	BL	BL	BL	BL	BL	BL

Note:

1. Results were obtained by XRF for primary screening, 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 below warning value according to IEC 62321-3-1:2013(Unit: mg/kg).

Element	Polymers	Metals	Composite material
Cd	BL≤(70-3σ)<X<(130+3σ)≤OL	BL≤(70-3σ)<X<(130+3σ)≤OL	LOD<X<(150+3σ)≤OL
Pb	BL≤(700-3σ)<X<(1300+3σ)≤OL	BL≤(700-3σ)<X<(1300+3σ)≤OL	BL≤(500-3σ)<X<(1500+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	N/A	BL≤(250-3σ)<X

Remark:

- BL= Below Limit
- OL= Over Limit
- X= The range of needing to do further testing
- 3σ= The reproducibility of analytical instruments
- N/A= Not applicable
- LOD= Detection limit

2. The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.

3. The maximum permissible limit is quoted from the document RoHS Directive 2011/65/EU with amendment (EU) 2015/863.

4. ▼=For restricted substances PBBs and PBDEs, the results show the total Br content, the restricted substance was Cr(VI), and the results showed the total Cr content.

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
Dibutyl Phthalate(DBP)	1000
Butylbenzyl Phthalate(BBP)	1000
Di-(2-ethylhexyl) Phthalate(DEHP)	1000
Diisobutyl phthalate(DIBP)	1000

Disclaimers:

This XRF Screening 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 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.). Further wet chemical pre-treatment with relevant chemical equipment analysis are required to obtain quantitative data.

2. EU RoHS Directive 2011/65/EU and its amendment Directives 2015/863/EU on Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs, PBDEs, DBP, BBP, DEHP, DIBP content.

Test method:

Lead(Pb) & Cadmium(Cd) Content:

With reference to IEC 62321-5:2013, by acid digestion and analysis was performed by inductively coupled plasma atomic emission spectrometer (ICP-OES)

Mercury(Hg) Content:

With reference to IEC 62321-4:2013+AMD1:2017 CSV, by acid digestion and analysis was performed by inductively coupled plasma atomic emission spectrometer (ICP-OES)

Hexavalent Chromium(Cr(VI)) Content:

With reference to IEC 62321-7-1:2015 or IEC 62321-7-2:2017, by alkaline digestion and analysis was performed by UV-visible spectrophotometer (UV-Vis)

PBBs & PBDEs Content:

With reference to IEC 62321-6:2015, by solvent extraction and analysis was performed by gas chromatographic-mass spectrometer (GC-MS)

BBP DBP DEHP & DIBP Content:

With reference to IEC 62321-8:2017, by solvent extraction and analysis was performed by gas chromatographic-mass spectrometer (GC-MS)

1) The test results of Cadmium (Cd)

Item	Unit	MDL	Results	Limit
			(24)	
Cadmium (Cd) Content	mg/kg	5	N.D.	100

2) The test results of Hexavalent Chromium(Cr(VI))(for metal)

Tested Items	Unit	MDL	Results			Limit
			(21)	(23)	(24)	
Hexavalent Chromium(Cr(VI)) Content★	μg/cm^2	0.10 (LOQ)	Negative	Negative	Negative	1000

Tested Items	Unit	MDL	Results	Limit
			(47)	
Hexavalent Chromium(Cr(VI)) Content★	μg/cm^2	0.10 (LOQ)	Negative	1000

3) The test results of Phthalates(DBP, BBP, DEHP &DIBP)

Tested Items	Unit	MDL	Results				Limit
			(2)	(3)	(5)	(7)	
Diisobutyl phthalate(DIBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Dibutyl Phthalate(DBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Butylbenzyl Phthalate(BBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000

Tested Items	Unit	MDL	Results				Limit
			(9)	(10)	(26)	(27)	
Diisobutyl phthalate(DIBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Dibutyl Phthalate(DBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Butylbenzyl Phthalate(BBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000

Tested Items	Unit	MDL	Results				Limit
			(37)	(40)	(50)	(51)	
Diisobutyl phthalate(DIBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Dibutyl Phthalate(DBP) Content	mg/kg	100	N.D.	N.D.	747	658	1000
Butylbenzyl Phthalate(BBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000

Tested Items	Unit	MDL	Results				Limit
			(52)	(53)	(56)	(57)	
Diisobutyl phthalate(DIBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Dibutyl Phthalate(DBP) Content	mg/kg	100	495	531	N.D.	N.D.	1000
Butylbenzyl Phthalate(BBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000

Tested Items	Unit	MDL	Results				Limit
			(58)	(59)	(60)	(64)	
Diisobutyl phthalate(DIBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Dibutyl Phthalate(DBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Butylbenzyl Phthalate(BBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000

Tested Items	Unit	MDL	Results				Limit
			(65)	(68)	(78)	(79)	
Diisobutyl phthalate(DIBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Dibutyl Phthalate(DBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Butylbenzyl Phthalate(BBP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000

Tested Items	Unit	MDL	Results		Limit
			(13,14,15,16, 17,18)	(19,20,25,30, 31,41)	
Diisobutyl phthalate(DIBP) Content	mg/kg	100	N.D.	N.D.	1000
Dibutyl Phthalate(DBP) Content	mg/kg	100	N.D.	N.D.	1000
Butylbenzyl Phthalate(BBP) Content	mg/kg	100	N.D.	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	mg/kg	100	N.D.	N.D.	1000

Tested Items	Unit	MDL	Results		Limit
			(42,45,44,48, 49)	(54,55,61,62, 63)	
Diisobutyl phthalate(DIBP) Content	mg/kg	100	N.D.	N.D.	1000
Dibutyl Phthalate(DBP) Content	mg/kg	100	N.D.	N.D.	1000
Butylbenzyl Phthalate(BBP) Content	mg/kg	100	N.D.	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	mg/kg	100	N.D.	N.D.	1000

Tested Items	Unit	MDL	Results		Limit
			(66,67,69,70, 71)	(34,72,73,75, 80)	
Diisobutyl phthalate(DIBP) Content	mg/kg	100	N.D.	N.D.	1000
Dibutyl Phthalate(DBP) Content	mg/kg	100	N.D.	N.D.	1000
Butylbenzyl Phthalate(BBP) Content	mg/kg	100	N.D.	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	mg/kg	100	N.D.	N.D.	1000

Tested Items	Unit	MDL	Results	Limit
			(11,28,32,33,36,76)	
Diisobutyl phthalate(DIBP) Content	mg/kg	100	N.D.	1000
Dibutyl Phthalate(DBP) Content	mg/kg	100	N.D.	1000
Butylbenzyl Phthalate(BBP) Content	mg/kg	100	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	mg/kg	100	N.D.	1000

4) The test results of PBBs & PBDEs

Tested Items	Unit	MDL	Results	Limit
			(11,28,32,33,36,76)	
Polybrominated Biphenyls(PBBs) Content				
Monobromobiphenyl	mg/kg	5	N.D.	/
Dibromobiphenyl	mg/kg	5	N.D.	/
Tribromobiphenyl	mg/kg	5	N.D.	/
Tetrabromobiphenyl	mg/kg	5	N.D.	/
Pentabromobiphenyl	mg/kg	5	N.D.	/
Hexabromobiphenyl	mg/kg	5	N.D.	/
Heptabromobiphenyl	mg/kg	5	N.D.	/
Octabromobiphenyl	mg/kg	5	N.D.	/
Nonabromodiphenyl	mg/kg	5	N.D.	/
Decabromodiphenyl	mg/kg	5	N.D.	/
Total content	mg/kg	/	N.D.	1000
Polybrominated Diphenylethers(PBDEs) Content				
Monobromodiphenyl ether	mg/kg	5	N.D.	/
Dibromodiphenyl ether	mg/kg	5	N.D.	/
Tribromodiphenyl ether	mg/kg	5	N.D.	/
Tetrabromodiphenyl ether	mg/kg	5	N.D.	/
Pentabromodiphenyl ether	mg/kg	5	N.D.	/
Hexabromodiphenyl ether	mg/kg	5	N.D.	/
Heptabromodiphenyl ether	mg/kg	5	N.D.	/
Octabromodiphenyl ether	mg/kg	5	N.D.	/
Nonabromodiphenyl ether	mg/kg	5	N.D.	/
Decabromodiphenyl ether	mg/kg	5	N.D.	/
Total content	mg/kg	/	N.D.	1000

Note: This report test result(s) refers to the test result(s) reported by TBT-CHE2203026.

Note:

- MDL = Method Detection Limit
- /= Not apply
- N.D.=Not Detected(<MDL or LOQ)
- mg/kg = ppm=parts per million
- LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10 μg/cm^2

- ★ = a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13μg/cm^2. The sample coating is considered to contain Cr(VI).

  b. The sample is negative for Cr(VI) if Cr(VI) is N.D.(concentration less than 0.10μg/cm^2). The sample coating is considered a non- Cr(VI) based coating.

  c. The result between 0.10μg/cm^2 and 0.13μg/cm^2 is considered to be inconclusive, unavoidable coating variations may influence the determination.
- Information on storage conditions and production date of the tested samples is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

#1 According to RoHS Directive 2011/65/EU and its amendments, Lead is exempted as an alloying element in Copper containing up to 4% (40000ppm) by weight.

#2 According to RoHS Directive 2011/65/EU and its amendments, Lead is exempted in glass of cathode ray tubes, electronic components and fluorescent tubes.

#3 According to RoHS Directive 2011/65/EU and its amendments, Lead is exempted in electronic ceramic parts (e.g. piezoelectronic devices).

#4 According to RoHS Directive 2011/65/EU and its amendments, Lead is exempted in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead).

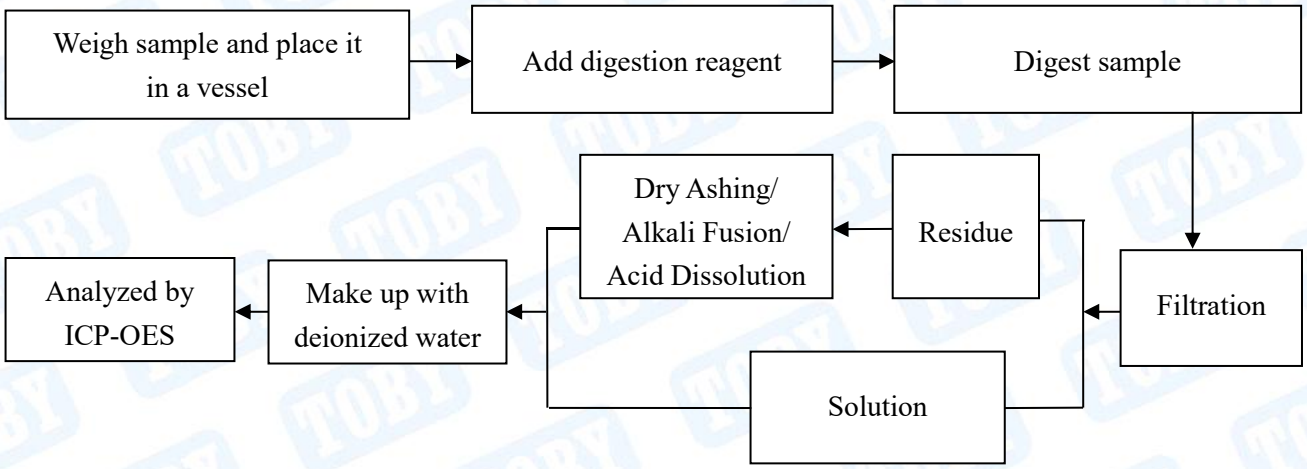
#5 According to RoHS Directive 2011/65/EU and its amendments, Lead is exempted as an alloying element in Aluminum containing up to 0.4% (4000ppm) by weight.

#6 According to RoHS Directive 2011/65/EU and its amendments, Cadmium and its compounds in electrical contact are exempted.

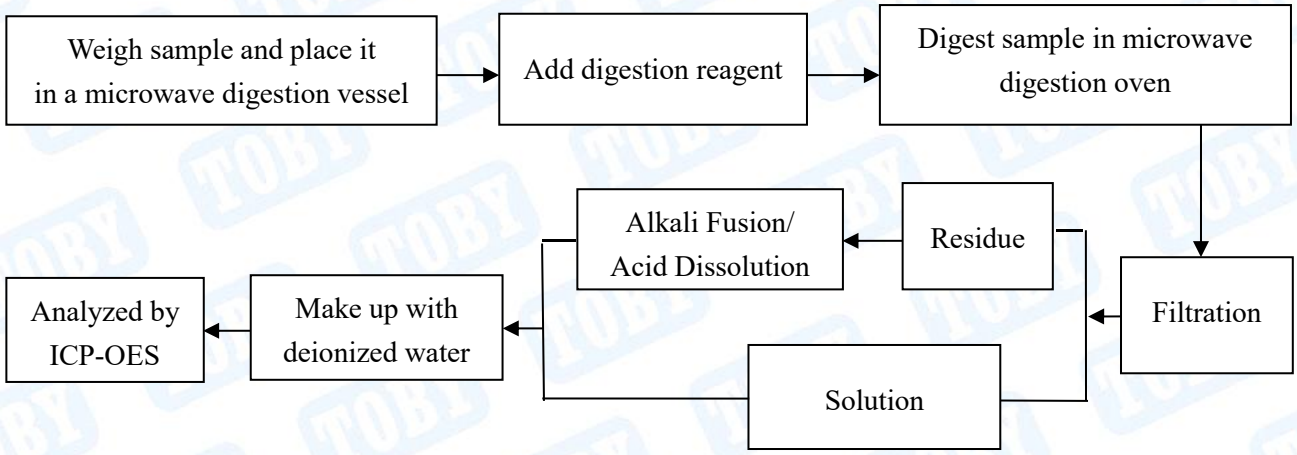
#7 According to RoHS Directive 2011/65/EU and its amendments, Lead is exempted in steel for machining purposes and in galvanised steel containing up to 0.35% (3500ppm) by weight.

Test Process

1. Lead(Pb) & Cadmium(Cd): IEC 62321-5:2014

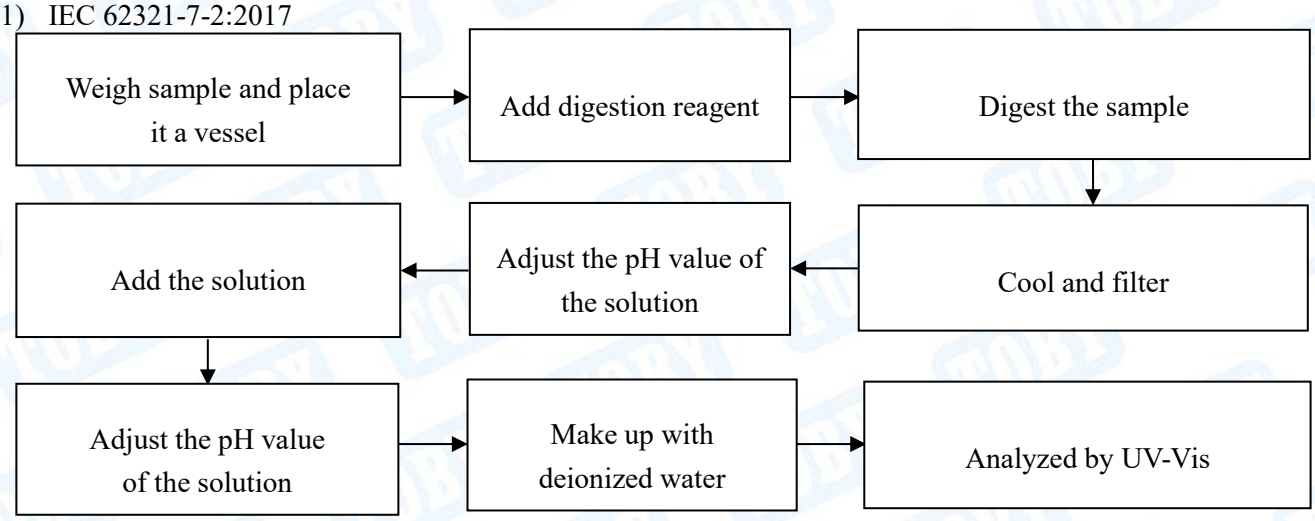


2. Mercury(Hg): BS EN 62321-4:2014+A1:2017

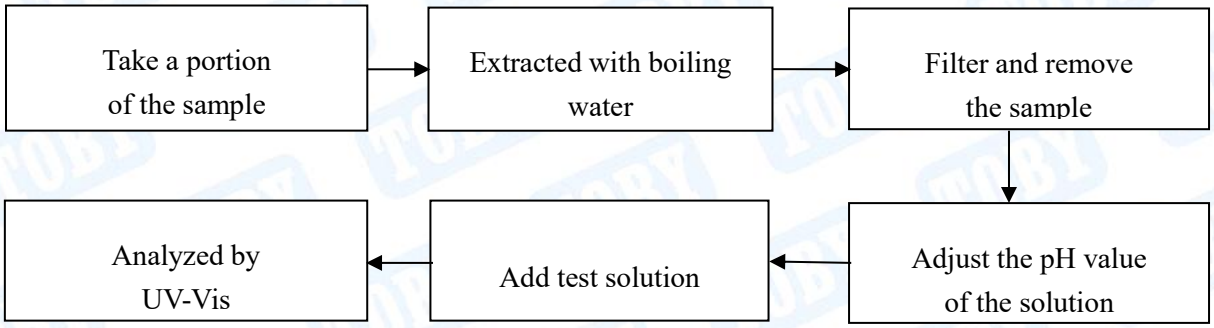


3. Hexavalent Chromium(Cr(VI))

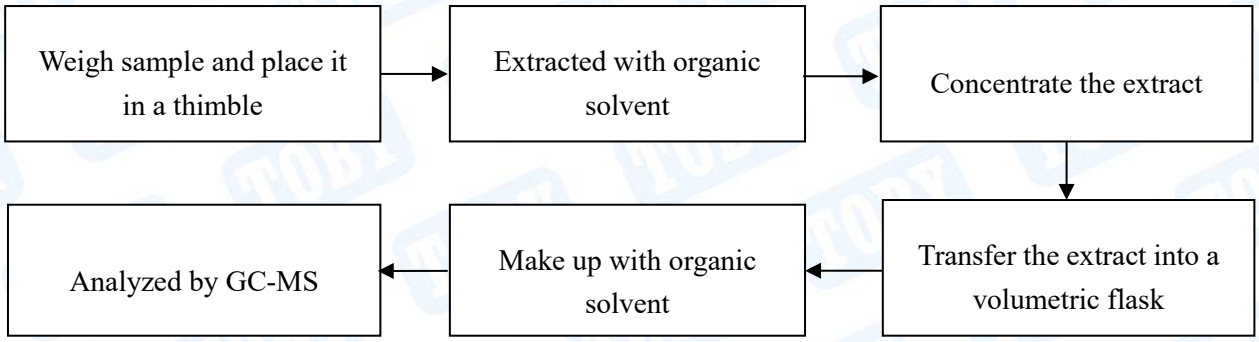
1) IEC 62321-7-2:2017



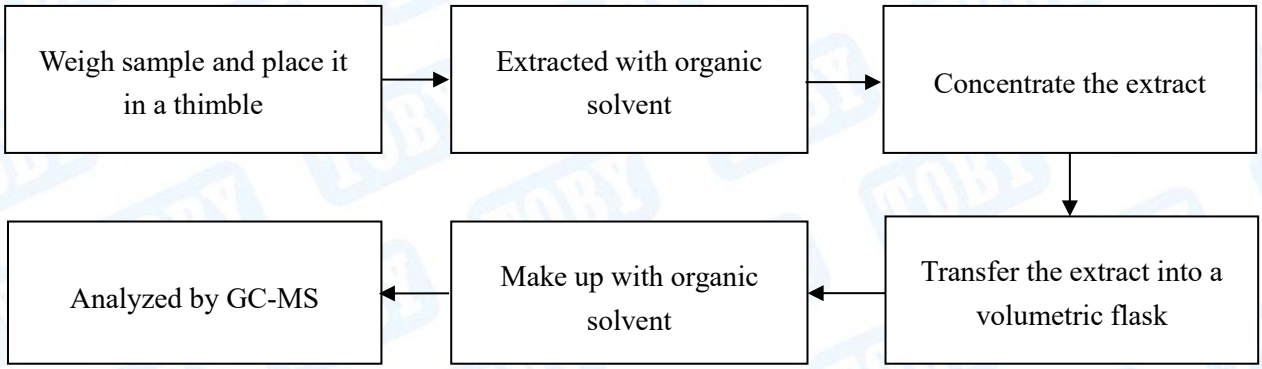
2) IEC 62321-7-1:2015



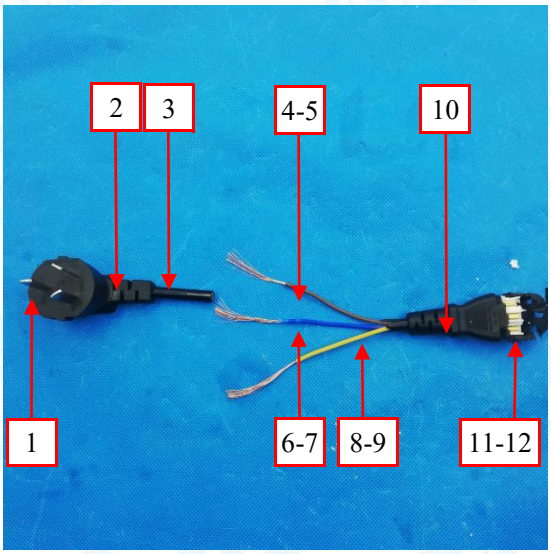
4. Polybrominated Biphenyls(PBBs) & Polybrominated Diphenyl Ethers(PBDEs) : IEC 62321-6:2015



5. Phthalates(DBP, BBP, DEHP & DIBP) : IEC 62321-8:2017



Sample Photo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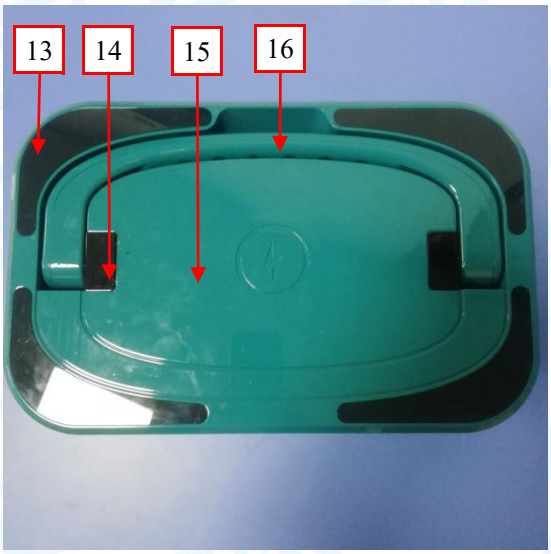
8-9
11-12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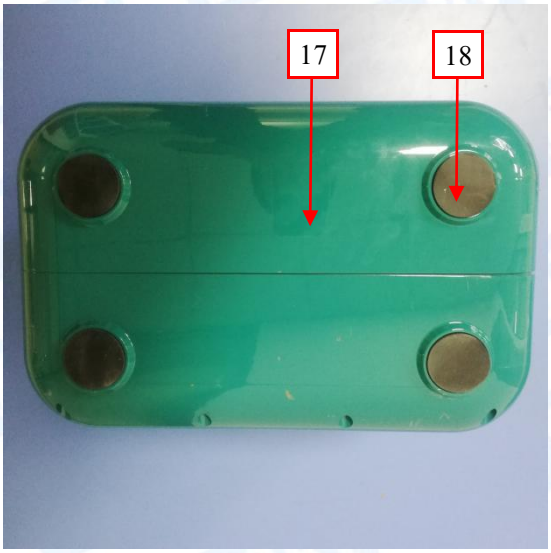
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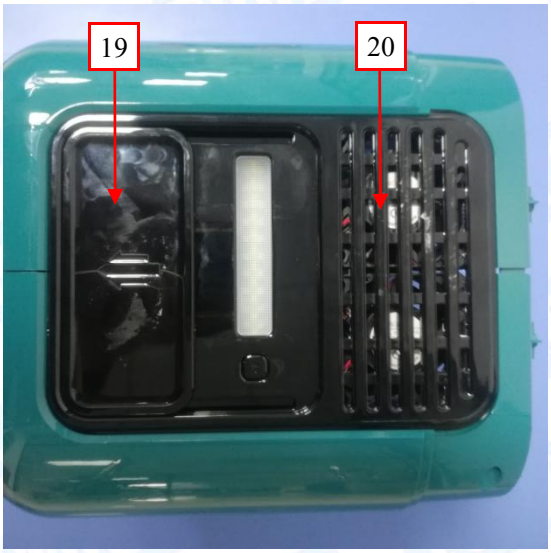
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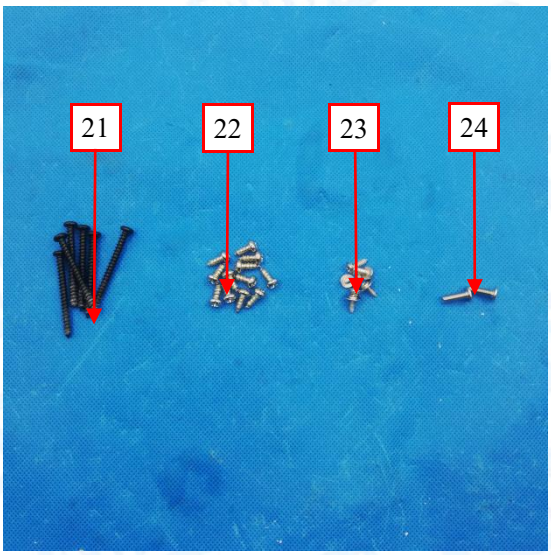
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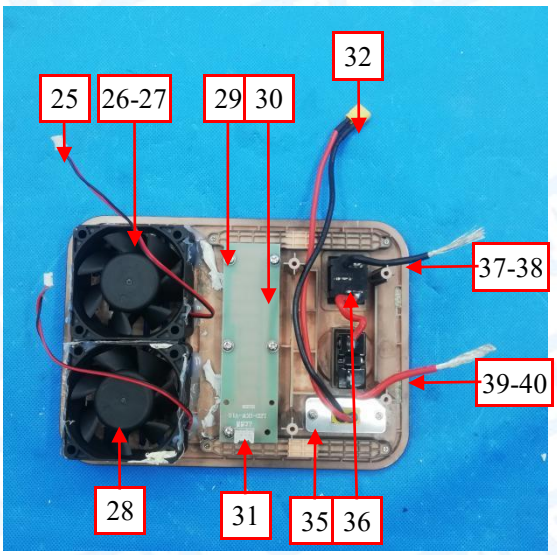
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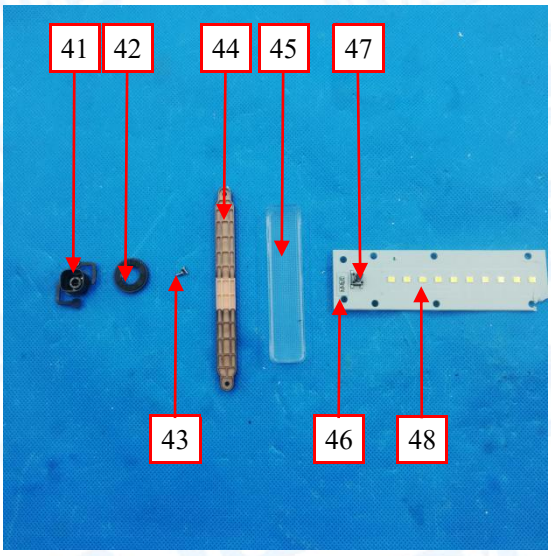
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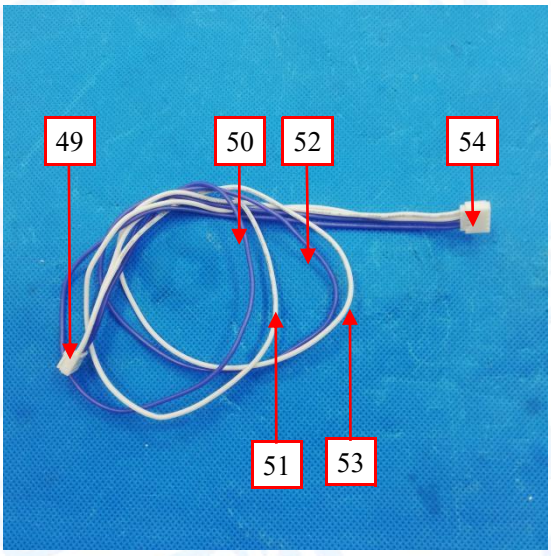
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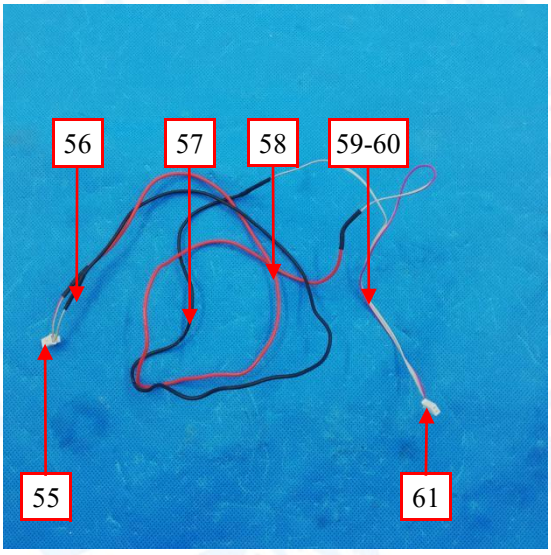
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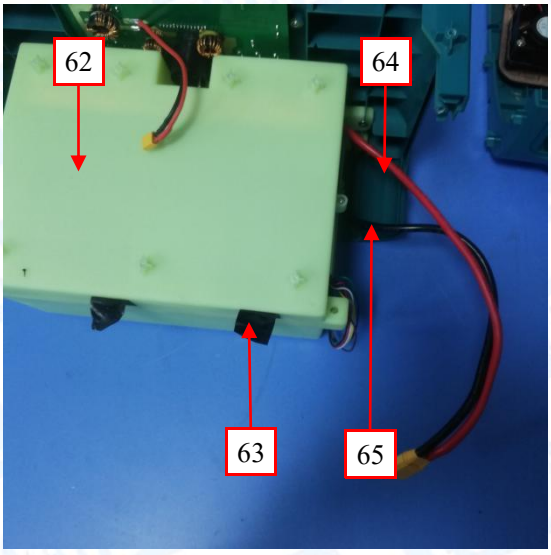
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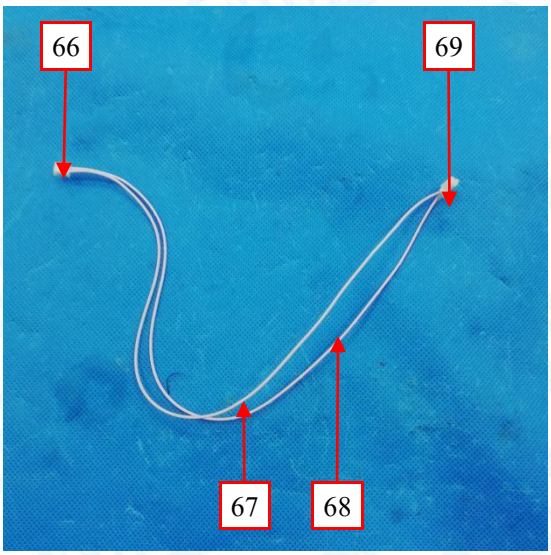
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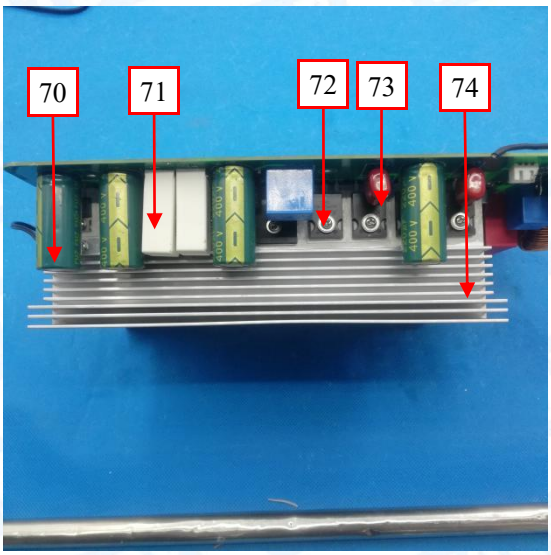
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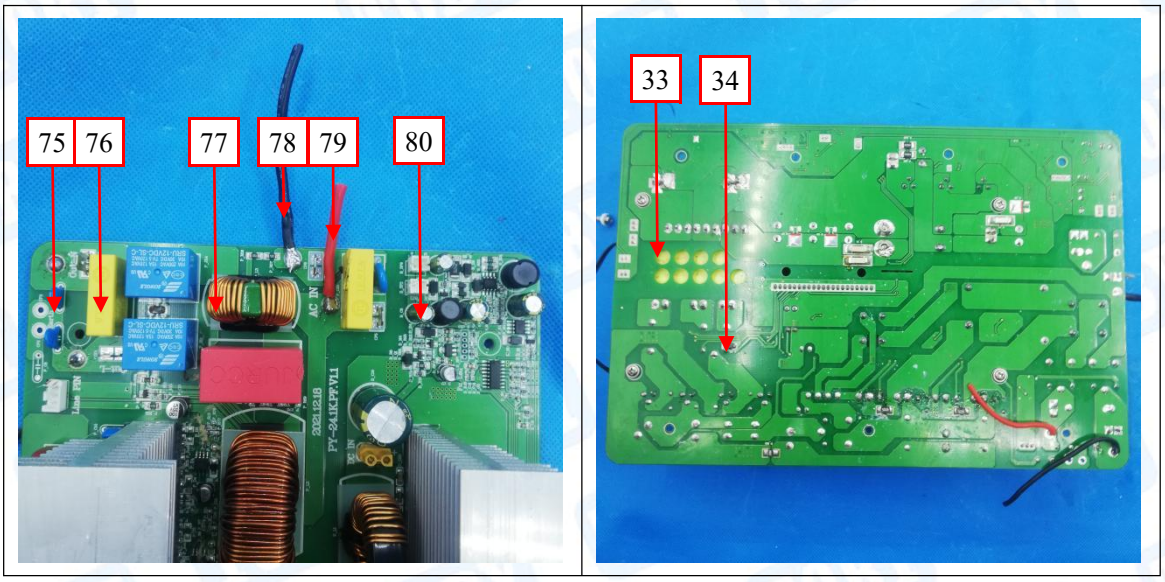

***** END OF REPORT *****

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