



# Test Report

Report No.:SFT21100825216-06E

Date: Oct.21, 2021

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**Applicant:** Radiolink Electronic Limited

**Address:** 3/F, Building 2, Fuguo industrial park, Kaifeng Road, Meilin, Shenzhen, Guangdong China

The following merchandise was (were) submitted and identified by client as:

Sample Name: Flight controller & GPS

Model No.: PIXHAWK With SE100 GPS

Manufacturer: Radiolink Electronic Limited

Address: 3/F, Building 2, Fuguo industrial park, Kaifeng Road, Meilin, Shenzhen, Guangdong China

Test Period: From Oct.08, 2021 to Oct.19, 2021

## SUMMARY OF TEST RESULTS

TEST REQUESTED	CONCLUSION
Heavy Metals , Flame Retardants and Phthalates Content - European Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendments Commission Delegated Directive (EU) 2015/863	PASS

**Test Result(s):** Please refer to next page(s).

Signed for and on Behalf of SFT



Jack Zhong / Technical Manager  
Guangdong Safety Testing Co., Ltd.

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Guangdong Safety Testing Co., Ltd.

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Guangdong, China  
Tel:86-769-23105888 Fax: 86-769-22899858 <http://www.sft-cert.com/>

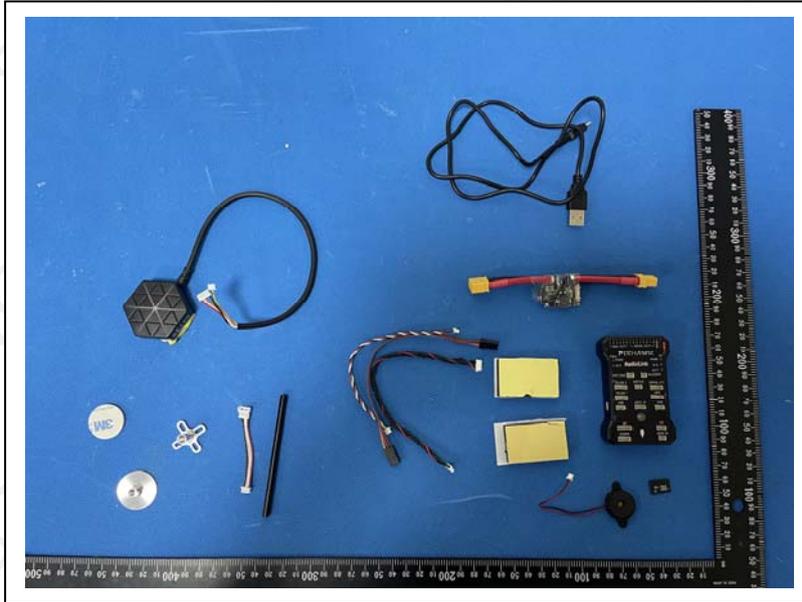
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## Photo of the Submitted Sample



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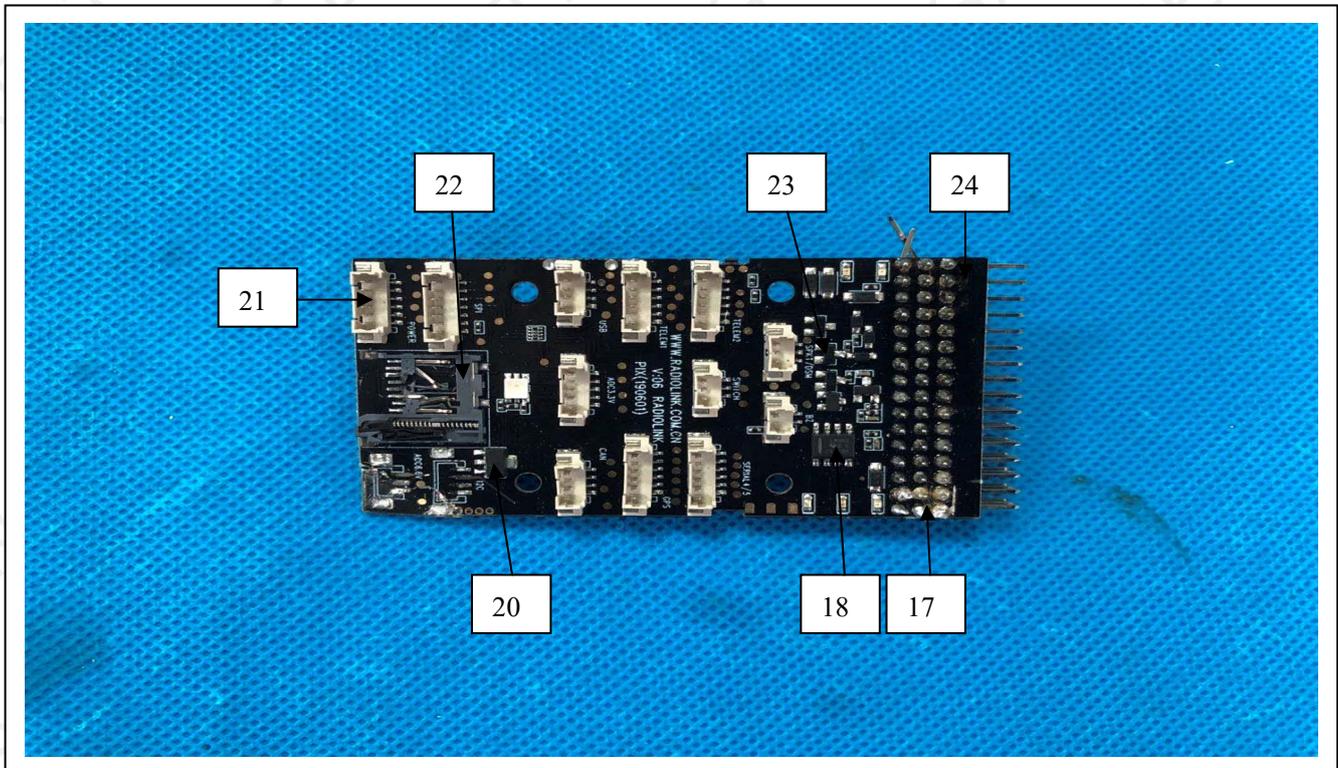
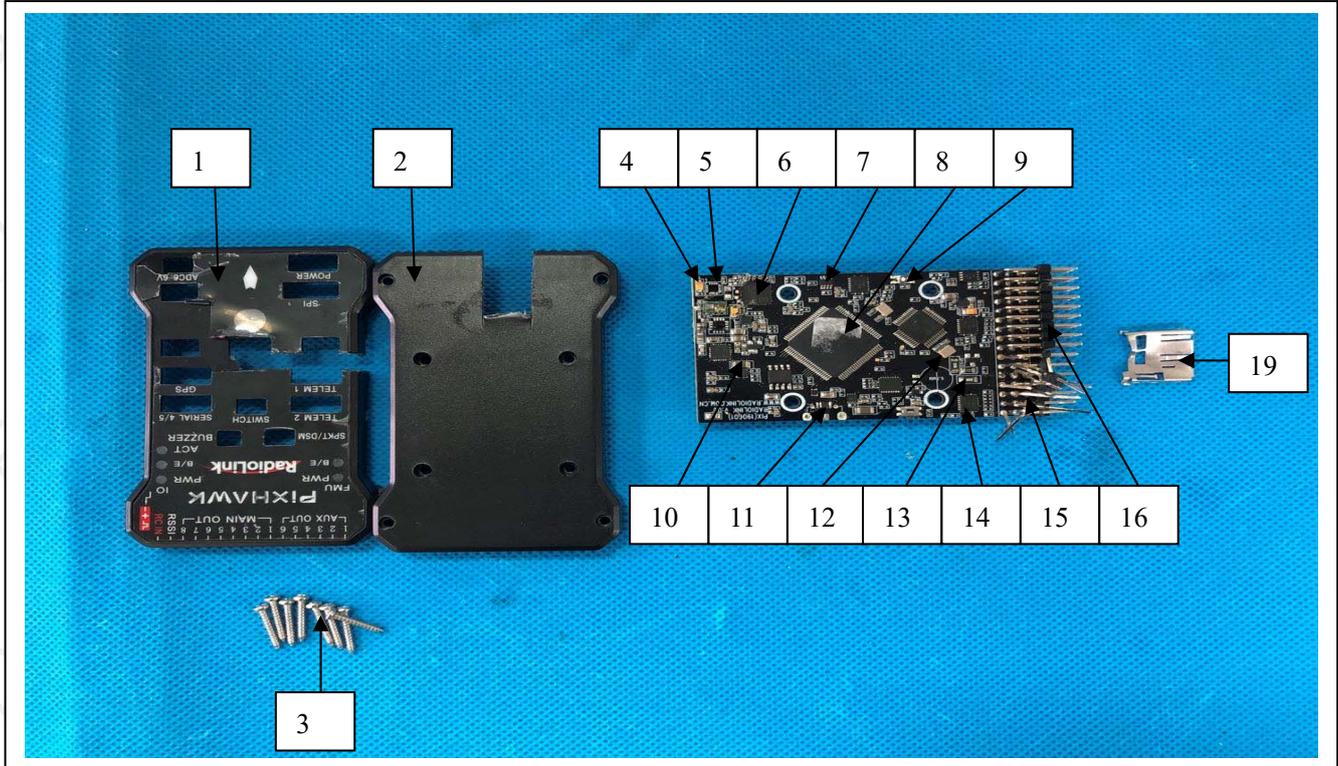
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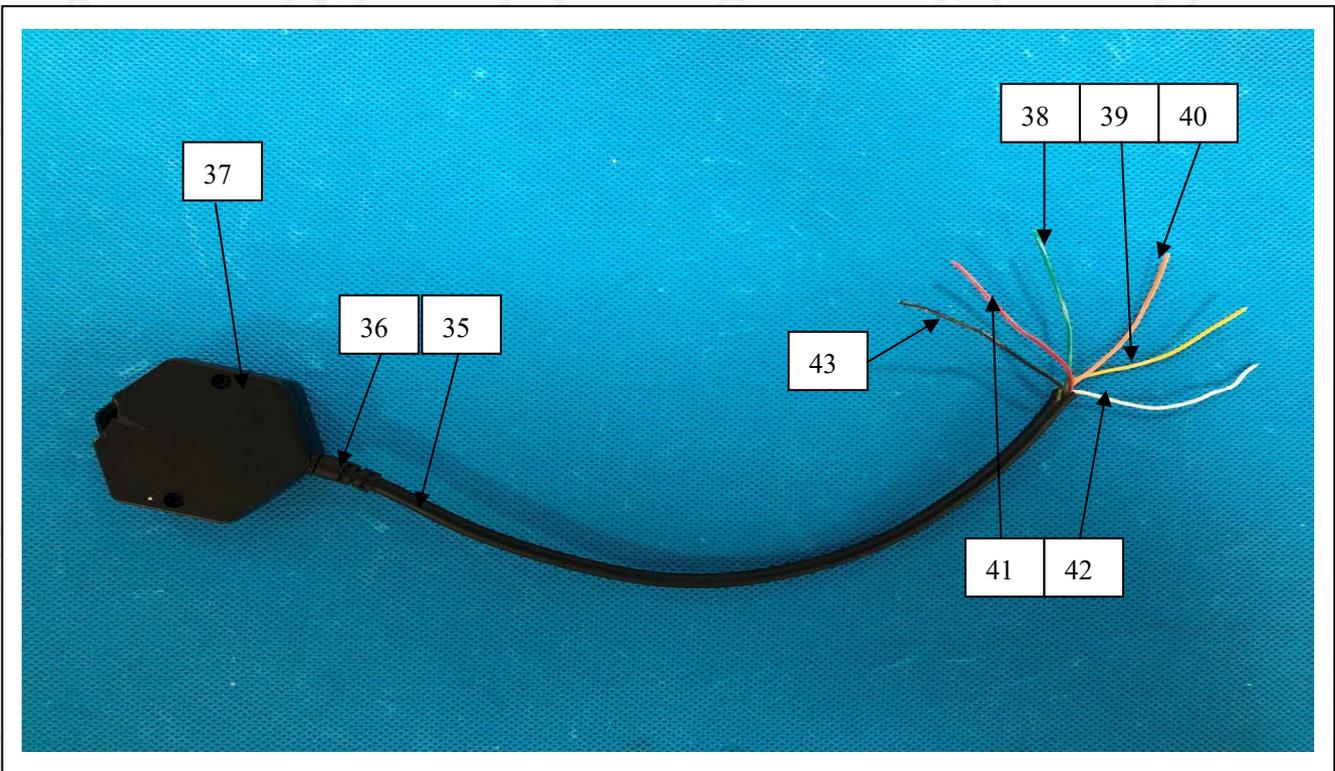
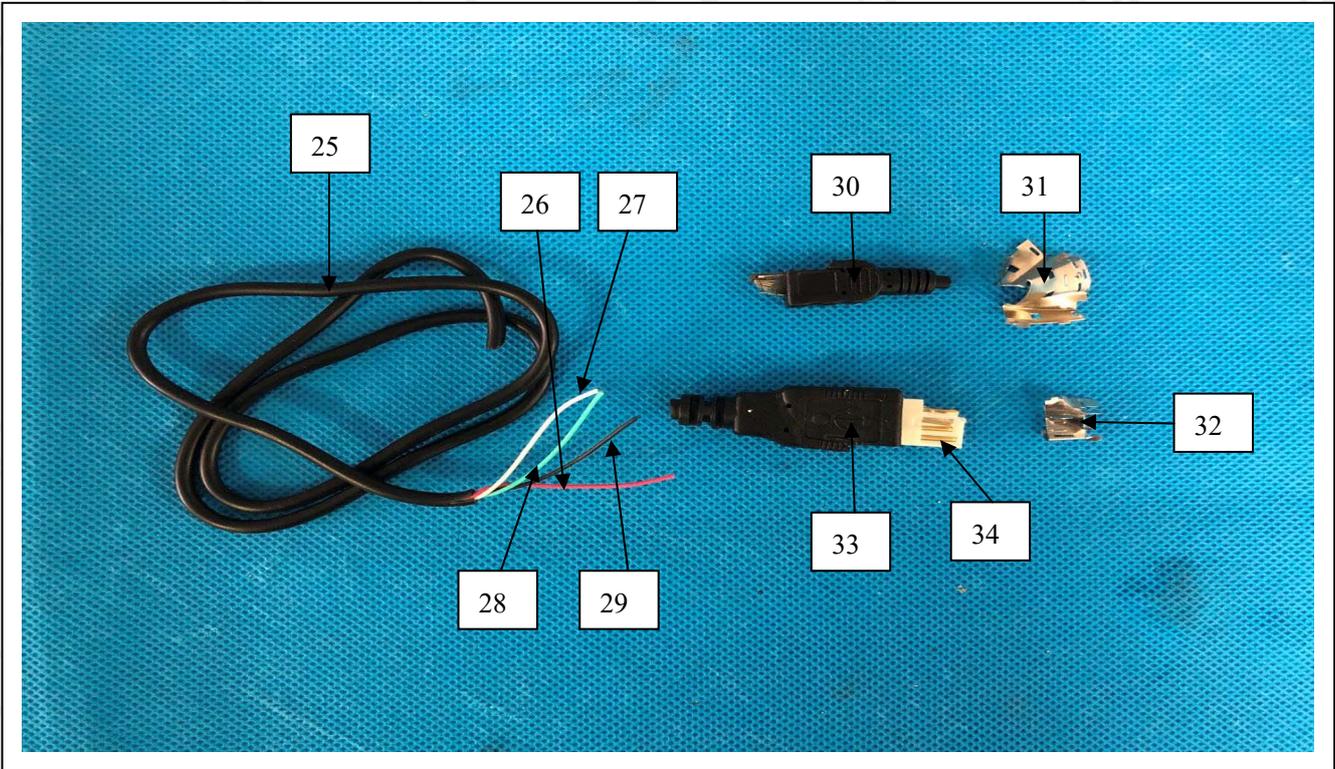
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<u>Test Item(s)</u>	<u>Component Description(s)</u>	<u>Style</u>
1	Black plastic film with white printing backing with adhesive	-
2	Black plastic	-
3	Silver metal screw	-
4	Capacitor	-
5	IC	-
6	IC	-
7	IC	-
8	IC	-
9	Silver metal	-
10	SMD capacitor	-
11	Silver metal	-
12	Crystal oscillator	-
13	SMD resistor	-
14	IC	-
15	Gold metal	-
16	Black plastic	-
17	Silver solder tin	-
18	IC	-
19	Silver metal	-
20	IC	-
21	Beige plastic	-
22	Gold metal pin	-
23	Audion	-
24	PCB	-
25	Black soft plastic wire jacket	-
26	Red soft plastic wire jacket	-
27	White soft plastic wire jacket	-
28	Green soft plastic wire jacket	-
29	Black soft plastic wire jacket	-
30	Black soft plastic	-
31	Silver metal	-
32	Silver metal	-
33	Black soft plastic	-
34	Gold metal	-

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35	Black plastic wire jacket	
36	Black soft plastic	
37	Black plastic	
38	Green plastic wire jacket	
39	Yellow plastic wire jacket	
40	Orange plastic wire jacket	
41	Red plastic wire jacket	
42	White plastic wire jacket	
43	Black plastic wire jacket	

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Test Result(s):

**Heavy Metals , Flame Retardants Content - European Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendments Commission Delegated Directive (EU) 2015/863**

Test Method:	See Appendix.
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See Analytes and their corresponding Maximum Allowable Limit in Appendix

Parameter	Lead (Pb)	Cadmium (Cd)	Mercury (Hg)	Chromium VI (Cr VI)	PBBs	PBDEs	Conclusion
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-
Test Component(s)	-	-	-	-	-	-	-
001	ND	ND	ND	ND	ND	ND	PASS
002	ND	ND	ND	ND	ND	ND	PASS
003	ND	ND	ND	Negative*	NA	NA	PASS
004	ND	ND	ND	ND	ND	ND	PASS
005	ND	ND	ND	ND	ND	ND	PASS
006	ND	ND	ND	ND	ND	ND	PASS
007	ND	ND	ND	ND	ND	ND	PASS
008	ND	ND	ND	ND	ND	ND	PASS
009	ND	ND	ND	Negative*	NA	NA	PASS
010	ND	ND	ND	ND	ND	ND	PASS
011	ND	ND	ND	ND	NA	NA	PASS
012	ND	ND	ND	ND	ND	ND	PASS
013	ND	ND	ND	ND	ND	ND	PASS
014	ND	ND	ND	ND	ND	ND	PASS
015	ND	ND	ND	ND	NA	NA	PASS
016	ND	ND	ND	ND	ND*	ND*	PASS
017	ND	ND	ND	ND	NA	NA	PASS
018	ND	ND	ND	ND	ND	ND	PASS
019	ND	ND	ND	Negative*	NA	NA	PASS
020	ND	ND	ND	ND	ND	ND	PASS
021	ND	ND	ND	ND	ND	ND	PASS
022	ND	ND	ND	ND	NA	NA	PASS
023	ND	ND	ND	ND	ND	ND	PASS
024	ND	ND	ND	ND	ND*	ND*	PASS
025	ND	ND	ND	ND	ND	ND	PASS
026	ND	ND	ND	ND	ND	ND	PASS
027	ND	ND	ND	ND	ND	ND	PASS
028	ND	ND	ND	ND	ND	ND	PASS
029	ND	ND	ND	ND	ND	ND	PASS
030	ND	ND	ND	ND	ND	ND	PASS
031	ND	ND	ND	ND	NA	NA	PASS

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032	ND	ND	ND	Negative*	NA	NA	PASS
033	ND	ND	ND	ND	ND	ND	PASS
034	ND	ND	ND	ND	NA	NA	PASS
035	ND	ND	ND	ND	ND	ND	PASS
036	ND	ND	ND	ND	ND	ND	PASS
037	ND	ND	ND	ND	ND	ND	PASS
038	ND	ND	ND	ND	ND	ND	PASS
039	ND	ND	ND	ND	ND	ND	PASS
040	ND	ND	ND	ND	ND	ND	PASS
041	ND	ND	ND	ND	ND	ND	PASS
042	ND	ND	ND	ND	ND	ND	PASS
043	ND	ND	ND	ND	ND	ND	PASS

Note / Key:

ND = Not detected

NA= Not applicable

% = percent

Detection Limit: See Appendix.

">" = Greater than

mg/kg = milligram(s) per kilogram = ppm = part(s) per million

10000 mg/kg = 1 %

**Phthalates Content - European Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendments Commission Delegated Directive (EU) 2015/863**

Analyte	Requirement (mg/kg)	Result (mg/kg)		
		Test Component		
		1+2+16	25+30+33	26+27+28
Dibutyl phthalate (DBP)	1000	ND	ND	ND
Di-(2-ethyl hexyl) phthalate (DEHP)	1000	ND	ND	ND
Benzyl butyl phthalate (BBP)	1000	ND	ND	ND
Di-(iso-butyl) phthalate (DIBP)	1000	ND	ND	ND
Conclusion		PASS	PASS	PASS

Note / Key:

ND = Not detected

NA= Not applicable

% = percent

Report Limit: See Appendix.

">" = Greater than

mg/kg = milligram(s) per kilogram = ppm = part(s) per million

10000 mg/kg = 1 %

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Remark:

- The testing approach is listed in table of Appendix.
- \* denotes as reported result(s) was (were) performed by wet chemistry method. Others were screened by XRF. For XRF screening, the result(s) of Cr VI was (were) reported as total chromium and the result(s) of PBBs and PBDEs was (were) reported as total bromine. Also, the XRF result(s) may be different to the actual content based on various factors including, but not limit to, sample size, thickness, area, non-uniformity composition, surface flatness.。
- Only selected example(s) is (are) indicated on the photograph(s) in Comment.
- According to European Council Directive 2011/65/EU, Article 5 “Adaptation of the Annexes to scientific and technical progress”, exemption(s) should be granted to the materials and components of Test Item(s) in the lists in Annexes III and IV of this directive.
- Result(s) of Cr VI for metallic material(s) was (were) expressed in term of positive and negative. Negative means the absence of Cr VI on the tested areas and the result(s) was (were) regarded as in compliance with European Council Directive 2011/65/EU, Article 4(1). While, positive means the presence of Cr VI on tested areas and the result(s) was (were) regarded as in conflict with European Council Directive 2011/65/EU, Article 4(1).
- a. The sample is positive for Cr<sup>6+</sup> if the Cr<sup>6+</sup> concentration is greater than 0.13μg/cm<sup>2</sup>, The sample coating is considered to contain Cr<sup>6+</sup>.
- b. The sample is negative for Cr<sup>6+</sup> if the Cr<sup>6+</sup> is N.D. (concentration less than 0.10μg/cm<sup>2</sup>), The coating is considered a non-Cr<sup>6+</sup> based coating.
- c. The result between 0.10μg/cm<sup>2</sup> and 0.13μg/cm<sup>2</sup> is considered to be inconclusive-unavoidable coating variations may influence the determination information on storage conditions and production date of the tested sample is unavailable and thus Cr<sup>6+</sup> results represent status of the sample at the time of testing.

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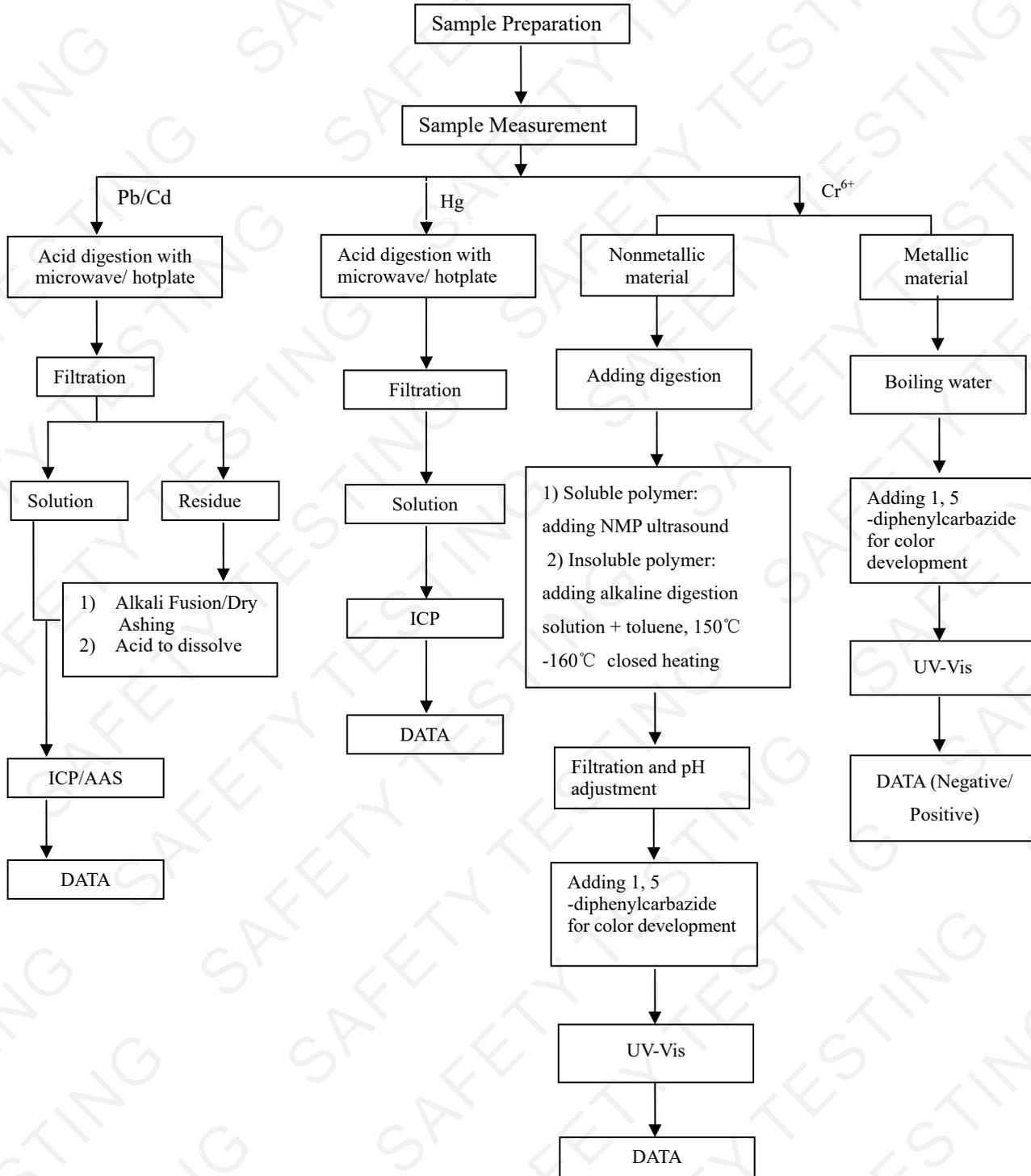
**APPENDIX**

List of Analytes and their Corresponding Test Methods, Detection Limit and Maximum Allowable Limit [for European Council Directive 2011/65/EU&(EU) 2015/863 ] :						
No.	Name of Analytes	Report Limit (mg/kg)				Maximum Allowable Limit (mg/kg)
		X-ray fluorescence (XRF) <sup>[a]</sup>			Wet Chemistry	
		Plastic	Metallic / glass / ceramic	Others		
1	Lead (Pb)	100	200	200	10 <sup>[b]</sup>	1000
2	Cadmium (Cd)	50	50	50	10 <sup>[b]</sup>	100
3	Mercury (Hg)	100	200	200	10 <sup>[c]</sup>	1000
4	Chromium (Cr)	100	200	200	NA	NA
5	Chromium VI (Cr VI)	NA	NA	NA	10 <sup>[d]</sup> / See <sup>[e]</sup>	1000 / Negative
6	Bromine (Br)	200	NA	200	NA	NA
7	Polybromobiphenyls (PBBs) - Bromobiphenyl (MonoBB) - Dibromobiphenyl (DiBB) - Tribromobiphenyl (TriBB) - Tetrabromobiphenyl (TetraBB) - Pentabromobiphenyl (PentaBB) - Hexabromobiphenyl (HexaBB) - Heptabromobiphenyl (HeptaBB) - Octabromobiphenyl (OctaBB) - Nonabromobiphenyl (NonaBB) - Decabromobiphenyl (DecaBB)	NA	NA	NA	Each 50 <sup>[f]</sup>	Sum 1000
8	Polybromodiphenyl ethers (PBDEs) - Bromodiphenyl ether (MonoBDE) - Dibromodiphenyl ether (DiBDE) - Tribromodiphenyl ether (TriBDE) - Tetrabromodiphenyl ether (TetraBDE) - Pentabromodiphenyl ether (PentaBDE) - Hexabromodiphenyl ether (HexaBDE) - Heptabromodiphenyl ether (HeptaBDE) - Octabromodiphenyl ether (OctaBDE) - Nonabromodiphenyl ether (NonaBDE) - Decabromodiphenyl ether (DecaBDE)	NA	NA	NA	Each 50 <sup>[f]</sup>	Sum 1000
9	Dibutyl phthalate (DBP) Di-(2-ethyl hexyl) phthalate (DEHP) Benzyl butyl phthalate (BBP) Di-(iso-butyl) phthalate (DIBP)	NA	NA	NA	Each 50 <sup>[g]</sup>	Each 1000
<p>NA = Not applicable</p> <p>[a] Test method with reference to IEC 62321-3-1:2013.</p> <p>[b] Test method with reference to IEC 62321-5:2013.</p> <p>[c] Test method with reference to IEC 62321-4:2013.</p> <p>[d] Polymers and Electronic-Test method with reference to European standard IEC 62321-7-2:2017.</p> <p>[e] Metal-Test method with reference to European standard IEC 62321-7-1:2015.</p> <p>[f] Test method with reference to European standard IEC 62321-6: 2015.</p> <p>[g] Test method with reference to IEC 62321-8:2017.</p>						

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## Pb/Cd/Hg/Cr<sup>6+</sup> Testing Flow Chart



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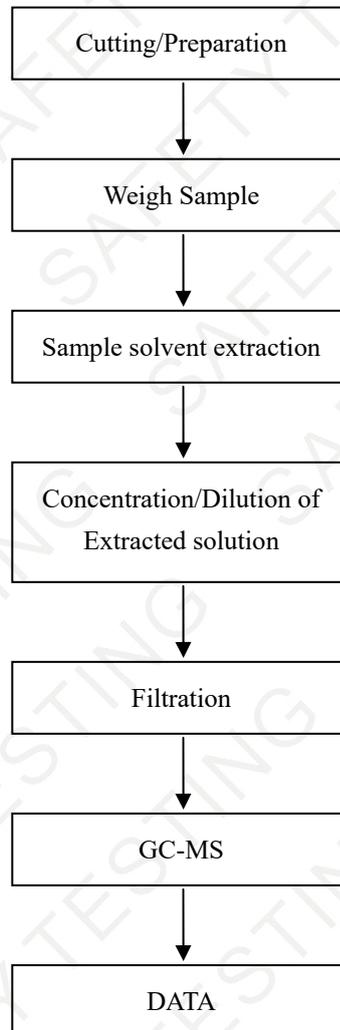
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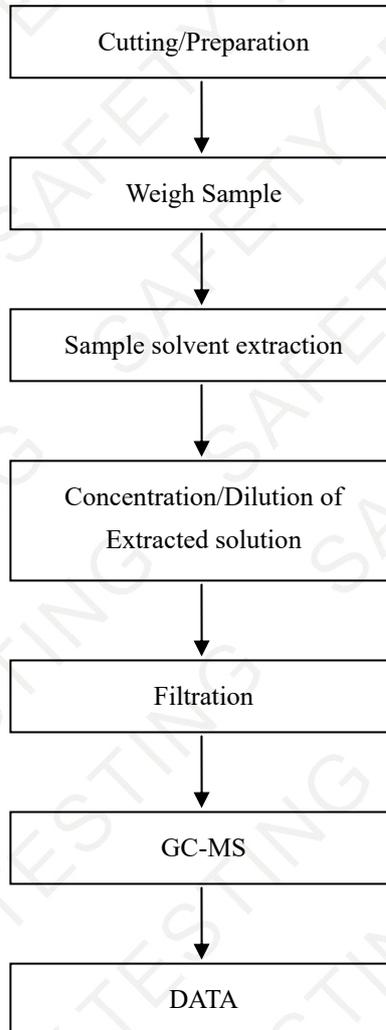
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## PBBs/PBDEs Testing Flow Chart



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## Phthalates Testing Flow Chart



\*\*\*End of Report\*\*\*

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