

Test Report

Report No.: U05101200225018E

Query Password: QW4238

Date: Mar. 4, 2020

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Applicant: Dragino Technology Co., Limited**Contact information:** Room 202, Block B, BCT Incubation Bases (BaoChengTai), No.8 CaiYunRoad
LongCheng Street, LongGang District ; Shenzhen 518116,China**The following sample(s) was (were) submitted and identified by client as:**

Sample Description : Temperature & Humidity Sensor
Model No. : LHT65
Brand : Dragino
Sample Received Date : Feb. 26, 2020
Testing Period : From Feb. 26, 2020 to Mar. 4, 2020
Test Request : Please refer to next page(s).
Test Result(s) : Please refer to next page(s).

Signed for and on behalf of Shen Zhen UONE Test Co., LTD.

Prepared by



Carol Hu

Checked by



Nora Deng

Approved by



Pascal Shi

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Summary of test results:**TEST REQUEST**

RoHS Directive 2011/65/EU and its subsequent amendments & Directive (EU) 2015/863

To determine Lead (Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)),

(1) Polybrominated Biphenyls (PBBs) and Polybrominated DiphenylEthers (PBDEs) content by screening test and chemical test

(2) To determine Phthalates (DBP, BBP, DEHP, DIBP) content by chemical test

CONCLUSION**PASS****PASS**

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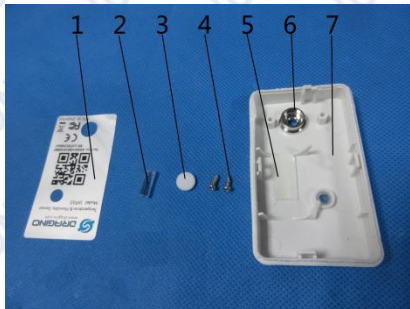
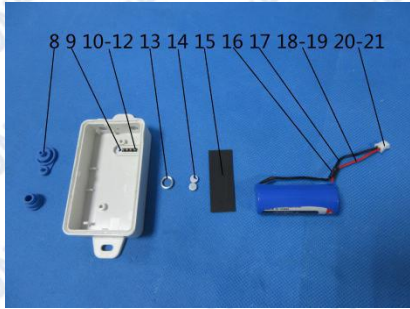
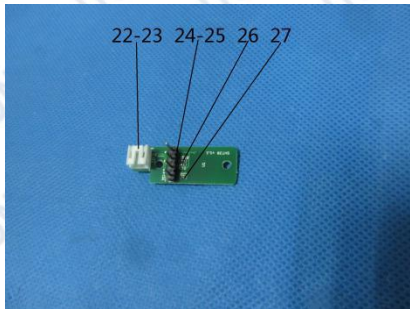
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Test Material List

Material No.	Description (Location)	Photo(s) of tested materials
1	Silvery adhesive plastic with black/blue printing(label)	
2	Transparent plastic(LED cover)	
3	White foam(cushion)	
4	Silvery metal(screw)	
5	White adhesive foam(tape)	
6	Silvery metal(ring)	
7	White plastic(shell)	
8	Blue soft plastic(button)	
9	Black plastic(holder)	
10	Golden metal(pin, connector)	
11	Golden metal(shell, connector)	
12	Silvery metal(spring, connector)	
13	Silvery metal(ring)	
14	Silvery magnet(core)	
15	Black adhesive foam(cushion)	
16	Black soft plastic(sleeve, battery)	
17	Black soft plastic(wire jacket, battery)	
18	Red soft plastic(wire jacket, battery)	
19	Silvery metal(wire, battery)	
20	White plastic(terminal holder)	
21	Silvery metal(terminal)	
22	White plastic(pin holder, socket)	
23	Silvery metal(pin, socket)	
24	Black plastic(pin holder, connector)	
25	Silvery metal(pin, connector)	
26	Black body(resistor, PCB)	
27	Brown body(capacitor, PCB)	

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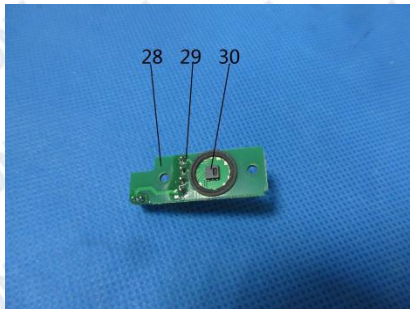
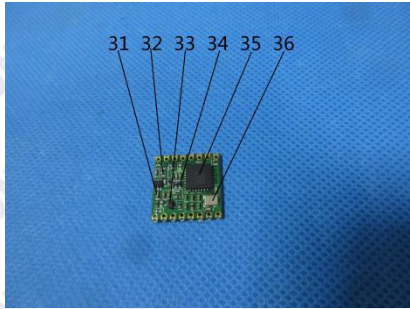
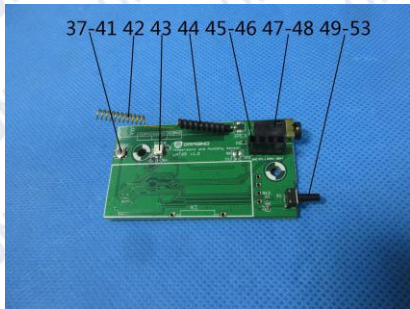
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Material No.	Description (Location)	Photo(s) of tested materials
28	Green PCB	
29	Silvery solder(PCB)	
30	Black body(IC, PCB)	
31	Brown body(capacitor, PCB)	
32	Black body(resistor, PCB)	
33	Black body(triode, PCB)	
34	Blue body(EC, PCB)	
35	Black body(IC, PCB)	
36	Silvery body(crystal, PCB)	
37	Black plastic(button, switch)	
38	Silvery metal(cover, switch)	
39	Silvery metal(foil, switch)	
40	Black plastic(base switch)	
41	Silvery metal(connector, switch)	
42	Golden metal(spring, PCB)	
43	White body(LED, PCB)	
44	Black soft plastic(sleeve, spring)	
45	Black plastic(socket)	
46	Silvery metal(connector, socket)	
47	Black plastic(shell, audio socket)	
48	Golden metal(connector, audio socket)	
49	Black plastic(button, switch)	
50	Silvery metal(cover, switch)	
51	Silvery metal(foil, switch)	

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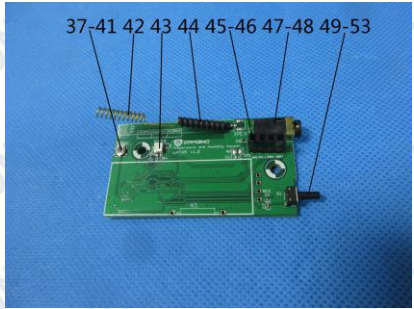
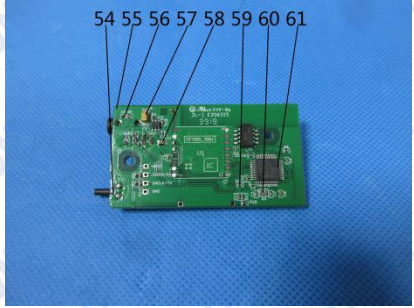
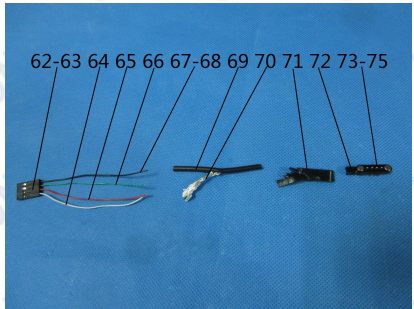
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Material No.	Description (Location)	Photo(s) of tested materials
52	Black plastic(base, switch)	
53	Silvery metal(connector, switch)	
54	Silvery solder(PCB)	
55	Green PCB	
56	Black body(diode, PCB)	
57	Brown body(capacitor, PCB)	
58	Brown body(capacitor, PCB)	
59	Black body(resistor, PCB)	
60	Silvery body(crystal, PCB)	
61	Black body(IC, PCB)	
62	Black plasticterminal holder)	
63	Silvery metalterminal)	
64	White soft plastic(wire jacket)	
65	Red soft plastic(wire jacket)	
66	Green soft plastic(wire jacket)	
67	Black soft plastic(wire jacket)	
68	Coppery metal(wire)	
69	Black soft plastic(cable jacket)	
70	Silvery metal(foil)	
71	Black plastic(shell, plug)	
72	Black plastic(holder, plug)	
73	Golden metal(pin, connector)	
74	Golden metal(shell, connector)	

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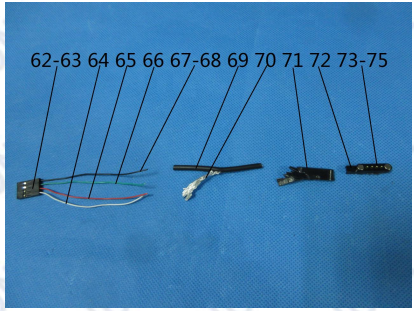
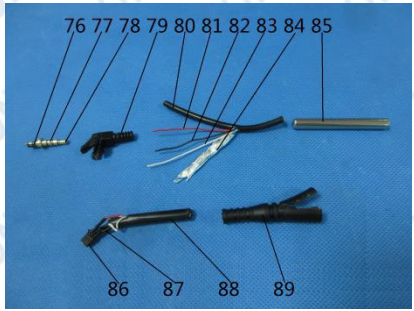
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Material No.	Description (Location)	Photo(s) of tested materials
75	Silvery metal(spring, connector)	
76	Black plastic(tube, audio plug)	
77	Silvery metal(tube, audio plug)	
78	Silvery metal(pin, audio plug)	
79	Black plastic(shell, audio plug)	
80	Black soft plastic(cable jacket)	
81	Red soft plastic(wire jacket)	
82	Black soft plastic(wire jacket)	
83	White soft plastic(wire jacket)	
84	Silvery/blue metal(foil)	
85	Silvery metal(tube)	
86	Black body(triode)	
87	Black soft plastic(sleeve)	
88	Black soft plastic(sealing)	
89	Black plastic(shell)	

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Test Result(s):

(1) Lead (Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls (PBBs) and Polybrominated DiphenylEthers (PBDEs)

Test Method: IEC62321-3-1: 2013, IEC62321-4: 2013+A1:2017, IEC62321-5: 2013, IEC62321-6: 2015, IEC 62321-7-1:2015, IEC 62321-7-2: 2017, analyzed by EDXRF & ICP-OES & GC-MS & UV-Vis.

No.	EDXRF Result ⁽¹⁾					Chemical Result ⁽²⁾ (mg/kg)	Remark ⁽³⁾	Conclusion
	Pb	Cd	Hg	Cr	Br			
1	ND	ND	ND	ND	ND	—	—	PASS
2	ND	ND	ND	ND	ND	—	—	PASS
3	ND	ND	ND	ND	ND	—	—	PASS
4	ND	ND	ND	ND	NA	—	—	PASS
5	ND	ND	ND	ND	ND	—	—	PASS
6	ND	ND	ND	ND	NA	—	—	PASS
7	ND	ND	ND	ND	ND	—	—	PASS
8	ND	ND	ND	ND	ND	—	—	PASS
9	BL	BL	BL	BL	X	PBBs: N.D. PBDEs: N.D.	—	PASS
10	ND	ND	ND	ND	NA	—	—	PASS
11	OL	BL	BL	BL	NA	Pb: 21170#	—	PASS
12	ND	ND	ND	ND	NA	—	—	PASS
13	OL	BL	BL	BL	NA	Pb: 22150#	—	PASS
14	ND	ND	ND	ND	ND	—	—	PASS
15	ND	ND	ND	ND	ND	—	—	PASS
16	ND	ND	ND	ND	ND	—	—	PASS
17	ND	ND	ND	ND	ND	—	—	PASS
18	ND	ND	ND	ND	ND	—	—	PASS
19	ND	ND	ND	ND	NA	—	—	PASS
20	ND	ND	ND	ND	ND	—	—	PASS
21	ND	ND	ND	ND	NA	—	—	PASS
22	ND	ND	ND	ND	ND	—	—	PASS

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No.	EDXRF Result ⁽¹⁾					Chemical Result ⁽²⁾ (mg/kg)	Remark ⁽³⁾	Conclusion
	Pb	Cd	Hg	Cr	Br			
23	ND	ND	ND	ND	NA	—	—	PASS
24	BL	BL	BL	BL	X	PBBs: N.D. PBDEs: N.D.	—	PASS
25	ND	ND	ND	ND	NA	—	—	PASS
26	ND	ND	ND	ND	ND	—	—	PASS
27	ND	ND	ND	ND	ND	—	—	PASS
28	ND	ND	ND	ND	ND	—	—	PASS
29	ND	ND	ND	ND	NA	—	—	PASS
30	ND	ND	ND	ND	ND	—	—	PASS
31	ND	ND	ND	ND	ND	—	—	PASS
32	ND	ND	ND	ND	ND	—	—	PASS
33	ND	ND	ND	ND	ND	—	—	PASS
34	ND	ND	ND	ND	ND	—	—	PASS
35	ND	ND	ND	ND	ND	—	—	PASS
36	ND	ND	ND	ND	ND	—	—	PASS
37	ND	ND	ND	ND	ND	—	—	PASS
38	ND	ND	ND	ND	NA	—	—	PASS
39	ND	ND	ND	ND	NA	—	—	PASS
40	ND	ND	ND	ND	ND	—	—	PASS
41	ND	ND	ND	ND	NA	—	—	PASS
42	ND	ND	ND	ND	NA	—	—	PASS
43	ND	ND	ND	ND	ND	—	—	PASS
44	ND	ND	ND	ND	ND	—	—	PASS
45	BL	BL	BL	BL	X	PBBs: N.D. PBDEs: N.D.	—	PASS
46	ND	ND	ND	ND	NA	—	—	PASS
47	ND	ND	ND	ND	ND	—	—	PASS
48	ND	ND	ND	ND	NA	—	—	PASS

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No.	EDXRF Result ⁽¹⁾					Chemical Result ⁽²⁾ (mg/kg)	Remark ⁽³⁾	Conclusion
	Pb	Cd	Hg	Cr	Br			
49	ND	ND	ND	ND	ND	—	—	PASS
50	ND	ND	ND	ND	NA	—	—	PASS
51	ND	ND	ND	ND	NA	—	—	PASS
52	ND	ND	ND	ND	ND	—	—	PASS
53	ND	ND	ND	ND	NA	—	—	PASS
54	ND	ND	ND	ND	NA	—	—	PASS
55	ND	ND	ND	ND	ND	—	—	PASS
56	ND	ND	ND	ND	ND	—	—	PASS
57	ND	ND	ND	ND	ND	—	—	PASS
58	ND	ND	ND	ND	ND	—	—	PASS
59	ND	ND	ND	ND	ND	—	—	PASS
60	ND	ND	ND	ND	ND	—	—	PASS
61	ND	ND	ND	ND	ND	—	—	PASS
62	ND	ND	ND	ND	ND	—	—	PASS
63	ND	ND	ND	ND	NA	—	—	PASS
64	ND	ND	ND	ND	ND	—	—	PASS
65	ND	ND	ND	ND	ND	—	—	PASS
66	ND	ND	ND	ND	ND	—	—	PASS
67	ND	ND	ND	ND	ND	—	—	PASS
68	ND	ND	ND	ND	NA	—	—	PASS
69	ND	ND	ND	ND	ND	—	—	PASS
70	ND	ND	ND	ND	NA	—	—	PASS
71	ND	ND	ND	ND	ND	—	—	PASS
72	ND	ND	ND	ND	ND	—	—	PASS
73	ND	ND	ND	ND	NA	—	—	PASS
74	OL	BL	BL	BL	NA	Pb: 19620#	—	PASS
75	ND	ND	ND	ND	NA	—	—	PASS

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No.	EDXRF Result ⁽¹⁾					Chemical Result ⁽²⁾ (mg/kg)	Remark ⁽³⁾	Conclusion
	Pb	Cd	Hg	Cr	Br			
76	ND	ND	ND	ND	ND	—	—	PASS
77	ND	ND	ND	ND	NA	—	—	PASS
78	OL	BL	BL	BL	NA	Pb: 15710#	—	PASS
79	ND	ND	ND	ND	ND	—	—	PASS
80	ND	ND	ND	ND	ND	—	—	PASS
81	ND	ND	ND	ND	ND	—	—	PASS
82	ND	ND	ND	ND	ND	—	—	PASS
83	ND	ND	ND	ND	ND	—	—	PASS
84	ND	ND	ND	ND	NA	—	—	PASS
85	ND	ND	ND	ND	NA	—	—	PASS
86	ND	ND	ND	ND	ND	—	—	PASS
87	ND	ND	ND	ND	ND	—	—	PASS
88	ND	ND	ND	ND	ND	—	—	PASS
89	ND	ND	ND	ND	ND	—	—	PASS

Remark:

(1) ①Results are obtained by EDXRF for primary screening, and further wet 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, if an inconclusive result was found (as "X" in below table) (unit: mg/kg).

②OL = Over Limit, BL = Below Limit, X = Inconclusive, NA = Not Applicable.

③The EDXRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.

Element	Polymer	Metal	Composite Materials
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
Pb	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Br	$BL \leq (300-3\sigma) < X$	NA	$BL \leq (250-3\sigma) < X$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

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Units and limits in EU RoHS Directive 2011/65/EU:

Element	Pb	Cd	Hg	Cr(VI)	PBBs(single)	PBDEs(single)
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit	1000	100	1000	1000	1000	1000

(2) ① mg/kg = ppm = 0.0001%, N.D. = Not Detected (Less than RL).

② Unit and RL (Report limit) in wet chemical test.

Element	Pb	Cd	Hg	Cr(VI)	PBBs(single)	PBDEs(single)
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
RL	2	2	2	2	5	5

③ According to IEC 62321-7-1:2015, result on Cr(VI) for metal sample is shown as Positive/Negative.

Negative = Absence of Cr(VI) coating, Positive = Presence of Cr(VI) coating.

Storage condition and production date of the tested sample are unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

④ According to IEC 62321-3-1:2013, this column represents the results of wet chem test.

(3) This column represents the exempted decoration of material or other related testing sample's information.

According to the declaration from the client, Lead in specimen(s) is exempted by EU RoHS Directive 2011/65/EU and its amendment Directive EU 2015/863 base on:

Copper alloy containing up to 4 % lead by weight.

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(2) Phthalates (DBP, BBP, DEHP, DIBP) content

Test Method: IEC 62321-8: 2017, analyzed by gas chromatographic- mass spectrometer (GC-MS).

Substances	DBP	BBP	DEHP	DIBP	Conclusion
CAS No.	84-74-2	85-68-7	117-81-7	84-69-5	
Limit (mg/kg)	1000	1000	1000	1000	
RL (mg/kg)	30	30	30	30	
Material No.	Result (mg/kg)				
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
5	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
9	N.D.	N.D.	N.D.	N.D.	PASS
14	N.D.	N.D.	N.D.	N.D.	PASS
15	N.D.	N.D.	123	N.D.	PASS
16	N.D.	N.D.	N.D.	N.D.	PASS
17	N.D.	N.D.	N.D.	N.D.	PASS
18	N.D.	N.D.	N.D.	N.D.	PASS
20	N.D.	N.D.	N.D.	N.D.	PASS
22	N.D.	N.D.	N.D.	N.D.	PASS
24	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
28	N.D.	N.D.	N.D.	N.D.	PASS
30	N.D.	N.D.	N.D.	N.D.	PASS
31	N.D.	N.D.	N.D.	N.D.	PASS
32	N.D.	N.D.	N.D.	N.D.	PASS
33	N.D.	N.D.	N.D.	N.D.	PASS

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Substances	DBP	BBP	DEHP	DIBP	Conclusion
CAS No.	84-74-2	85-68-7	117-81-7	84-69-5	
Limit (mg/kg)	1000	1000	1000	1000	
RL (mg/kg)	30	30	30	30	
Material No.	Result (mg/kg)				
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
40	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
45	N.D.	N.D.	N.D.	N.D.	PASS
47	N.D.	N.D.	N.D.	N.D.	PASS
49	N.D.	N.D.	N.D.	N.D.	PASS
52	N.D.	N.D.	N.D.	N.D.	PASS
55	N.D.	N.D.	N.D.	N.D.	PASS
56	N.D.	N.D.	N.D.	N.D.	PASS
57	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
61	N.D.	N.D.	N.D.	N.D.	PASS
62	N.D.	N.D.	N.D.	N.D.	PASS
64	N.D.	N.D.	N.D.	N.D.	PASS
65	N.D.	N.D.	N.D.	N.D.	PASS
66	N.D.	N.D.	N.D.	N.D.	PASS
67	N.D.	N.D.	N.D.	N.D.	PASS
69	N.D.	N.D.	N.D.	N.D.	PASS

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Substances	DBP	BBP	DEHP	DIBP	Conclusion
CAS No.	84-74-2	85-68-7	117-81-7	84-69-5	
Limit (mg/kg)	1000	1000	1000	1000	
RL (mg/kg)	30	30	30	30	
Material No.	Result (mg/kg)				
71	N.D.	N.D.	N.D.	N.D.	PASS
72	N.D.	N.D.	N.D.	N.D.	PASS
76	N.D.	N.D.	N.D.	N.D.	PASS
79	N.D.	N.D.	N.D.	N.D.	PASS
80	N.D.	N.D.	N.D.	N.D.	PASS
81	N.D.	N.D.	N.D.	N.D.	PASS
82	N.D.	N.D.	N.D.	N.D.	PASS
83	N.D.	N.D.	N.D.	N.D.	PASS
86	N.D.	N.D.	N.D.	N.D.	PASS
87	N.D.	N.D.	N.D.	N.D.	PASS
88	N.D.	N.D.	N.D.	N.D.	PASS
89	N.D.	N.D.	N.D.	N.D.	PASS

- Note:**
1. mg/kg = milligram per kilogram (ppm).
 2. RL = report limit.
 3. N.D.=not detected(less than RL).

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Test Report

Report No.: U05101200225018E

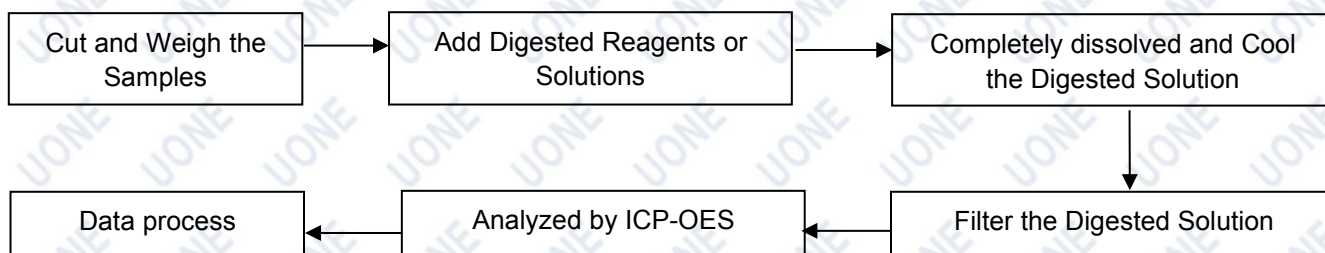
Query Password: QW4238

Date: Mar. 4, 2020

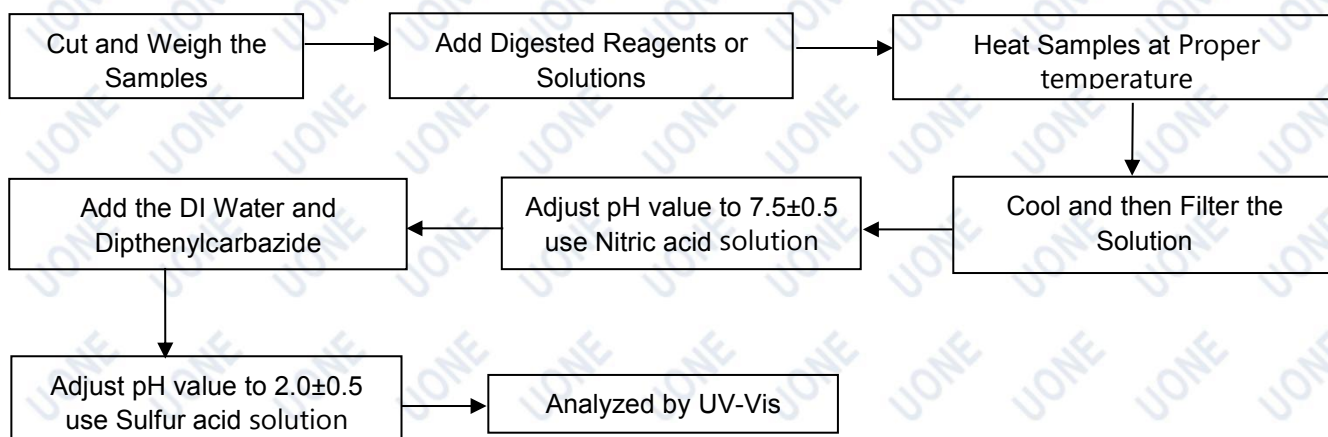
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Test Process Flow

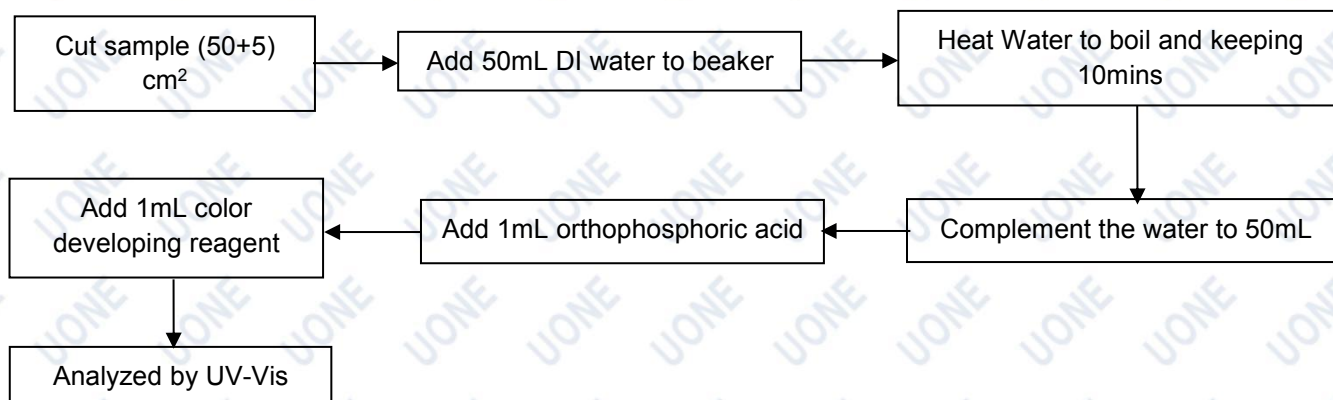
1. Lead, Cadmium, Mercury



2. Hexavalent Chromium (Non-metal)



Hexavalent Chromium (Metal)



This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

Test Report

Report No.: U05101200225018E

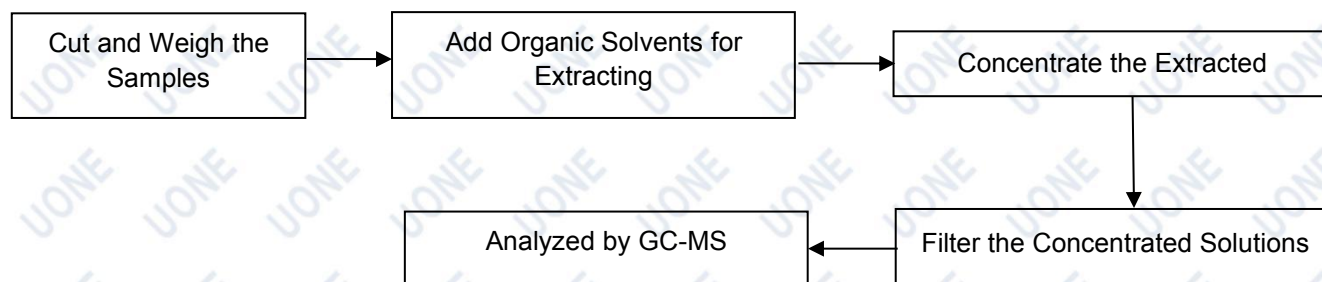
Query Password: QW4238

Date: Mar. 4, 2020

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Test Process Flow (Continued):

3. PBBs & PBDEs, Phthalates



Photo(s) of Sample:



End of Report

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