

# Test Report

Report No.: U01601200426301E

Query Password: QW7552

Date: Apr. 29, 2020

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**Applicant:** Shenzhen Lanrry Technology Co.,Ltd**Contact information:** Floor 3,Building 2,Hongfa Industrial park, Longxin community,Shiyan street,Bao'an district,Shenzhen**The following sample(s) was (were) submitted and identified by client as:**

Sample Description : Embedded industrial motherboard  
Model No. : PCM-4403  
Manufacturer : Shenzhen Lanrry Technology Co.,Ltd  
Address : Floor 3,Building 2,Hongfa Industrial park, Longxin community,Shiyan street, Bao'an district,Shenzhen  
Sample Received Date : Apr. 26, 2020  
Testing Period : From Apr. 26, 2020 to Apr. 29, 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



Ally Chi

Checked by



Nora Deng

Approved by



Levent Liang

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**Summary of test results:****TEST REQUEST**

RoHS Directive 2011/65/EU and its subsequent amendments &amp; 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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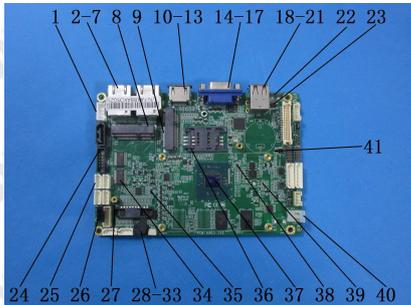
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### Test Material List

Material No.	Description (Location)	Photo(s) of tested materials
1	White plastic (terminal housing)	
2	White paper with black print	
3	Silver metal (USB)	
4	Yellow plastic (lamp shade)	
5	Green plastic (lamp shade)	
6	Copper metal (pin)	
7	Black plastic (jack)	
8	Black plastic (socket)	
9	Copper metal (pin)	
10	Black plastic (jack)	
11	Black inner plastic	
12	Copper metal (pin)	
13	Silver metal (USB)	
14	Silver metal (nut)	
15	Silver sheet metal	
16	Copper metal (pin)	
17	Blue plastic (base)	
18	Blue inside plastic	
19	Black inner plastic	
20	Silver metal (USB)	
21	Copper metal (pin)	
22	Gold metal (pin)	
23	Black body (diode, PCB)	
24	Black plastic (terminal housing)	
25	Beige plastic (terminal housing)	
26	Black plastic (socket)	
27	Gold metal (nut)	

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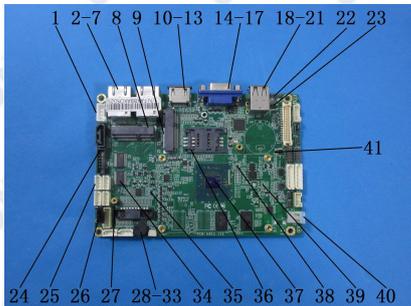
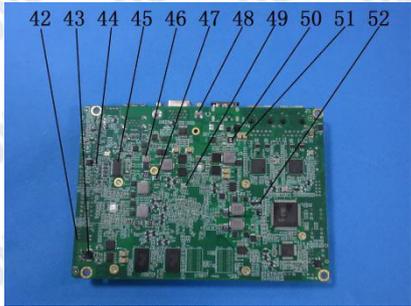
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Material No.	Description (Location)	Photo(s) of tested materials	
28	Black plastic (case, buzzer)		
29	Black magnetic ring (buzzer)		
30	Silver metal (patch, buzzer)		
31	Copper metal (coil, buzzer)		
32	Silver metal (shaft, buzzer)		
33	Silver metal (connector, buzzer)		
34	Black body (integrated circuit, PCB)		
35	Black body (triode, PCB)		
36	Black plastic (card slot)		
37	Black sheet glass		
38	Black body (fuse, PCB)		
39	Brown body (capacitance, PCB)		
40	White plastic (terminal housing)		
41	Black body (resistance, PCB)		
42	Green PCB		
43	Black body (diode, PCB)		
44	Black body (resistance, PCB)		
45	Black body (integrated circuit, PCB)		
46	Grey body (inductance, PCB)		
47	Black body (EC, PCB)		
48	Silver metal (solder)		
49	Silver metal body (crystal vibration, PCB)		
50	Black body (resistance, PCB)		
51	Brown body (capacitance, PCB)		
52	Black body (triode, PCB)		

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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 <sup>(1)</sup>					Chemical Result <sup>(2)</sup> (mg/kg)	Remark <sup>(3)</sup>	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	NA	—	—	PASS
4	BL	BL	BL	BL	BL	—	—	PASS
5	BL	BL	BL	BL	BL	—	—	PASS
6	BL	BL	BL	BL	NA	—	—	PASS
7	BL	BL	BL	BL	BL	—	—	PASS
8	BL	BL	BL	BL	BL	—	—	PASS
9	BL	BL	BL	BL	NA	—	—	PASS
10	BL	BL	BL	BL	BL	—	—	PASS
11	BL	BL	BL	BL	BL	—	—	PASS
12	BL	BL	BL	BL	NA	—	—	PASS
13	BL	BL	BL	BL	NA	—	—	PASS
14	BL	BL	BL	BL	NA	—	—	PASS
15	BL	BL	BL	BL	NA	—	—	PASS
16	BL	BL	BL	BL	NA	—	—	PASS
17	BL	BL	BL	BL	X	PBBs: N.D. PBDEs: 77	—	PASS
18	BL	BL	BL	BL	BL	—	—	PASS
19	BL	BL	BL	BL	BL	—	—	PASS
20	BL	BL	BL	BL	NA	—	—	PASS
21	BL	BL	BL	BL	NA	—	—	PASS
22	BL	BL	BL	BL	NA	—	—	PASS

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No.	EDXRF Result <sup>(1)</sup>					Chemical Result <sup>(2)</sup> (mg/kg)	Remark <sup>(3)</sup>	Conclusion
	Pb	Cd	Hg	Cr	Br			
23	BL	BL	BL	BL	BL	—	—	PASS
24	BL	BL	BL	BL	BL	—	—	PASS
25	BL	BL	BL	BL	BL	—	—	PASS
26	BL	BL	BL	BL	BL	—	—	PASS
27	OL	BL	BL	BL	NA	Pb: 28000#	Copper alloy	PASS
28	BL	BL	BL	BL	BL	—	—	PASS
29	BL	BL	BL	BL	BL	—	—	PASS
30	BL	BL	BL	BL	NA	—	—	PASS
31	BL	BL	BL	BL	NA	—	—	PASS
32	BL	BL	BL	BL	NA	—	—	PASS
33	BL	BL	BL	BL	NA	—	—	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	BL	—	—	PASS
38	BL	BL	BL	BL	BL	—	—	PASS
39	BL	BL	BL	BL	BL	—	—	PASS
40	BL	BL	BL	BL	BL	—	—	PASS
41	BL	BL	BL	BL	BL	—	—	PASS
42	BL	BL	BL	BL	BL	—	—	PASS
43	BL	BL	BL	BL	BL	—	—	PASS
44	BL	BL	BL	BL	BL	—	—	PASS
45	BL	BL	BL	BL	BL	—	—	PASS
46	BL	BL	BL	BL	BL	—	—	PASS
47	BL	BL	BL	BL	BL	—	—	PASS
48	BL	BL	BL	BL	NA	—	—	PASS
49	BL	BL	BL	BL	NA	—	—	PASS

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No.	EDXRF Result <sup>(1)</sup>					Chemical Result <sup>(2)</sup> (mg/kg)	Remark <sup>(3)</sup>	Conclusion
	Pb	Cd	Hg	Cr	Br			
50	BL	BL	BL	BL	BL	—	—	PASS
51	BL	BL	BL	BL	BL	—	—	PASS
52	BL	BL	BL	BL	BL	—	—	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	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

## 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).

②Unit 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

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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.

① 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.

## (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
4	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
10	N.D.	N.D.	N.D.	N.D.	PASS
11	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
19	N.D.	N.D.	N.D.	N.D.	PASS
23	N.D.	N.D.	N.D.	N.D.	PASS
24	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)				
25	N.D.	N.D.	N.D.	N.D.	PASS
26	N.D.	N.D.	N.D.	N.D.	PASS
28	N.D.	N.D.	N.D.	N.D.	PASS
29	N.D.	N.D.	N.D.	N.D.	PASS
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
38	N.D.	N.D.	N.D.	N.D.	PASS
39	N.D.	N.D.	N.D.	N.D.	PASS
40	N.D.	N.D.	N.D.	N.D.	PASS
41	N.D.	N.D.	N.D.	N.D.	PASS
42	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
46	N.D.	N.D.	N.D.	N.D.	PASS
47	N.D.	N.D.	N.D.	N.D.	PASS
50	N.D.	N.D.	N.D.	N.D.	PASS
51	N.D.	N.D.	N.D.	N.D.	PASS
52	N.D.	N.D.	N.D.	N.D.	PASS

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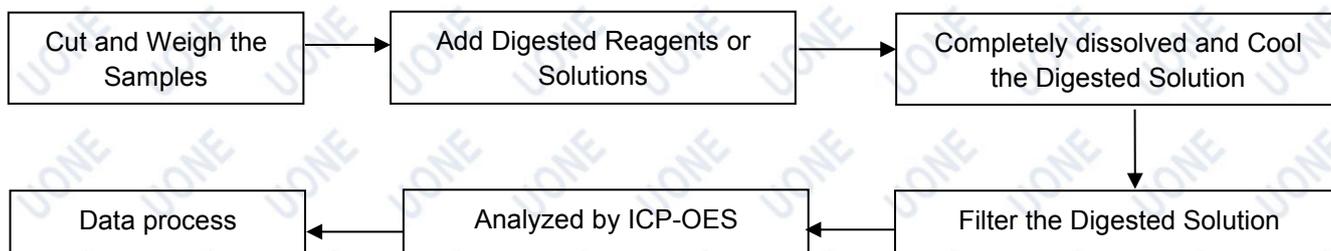
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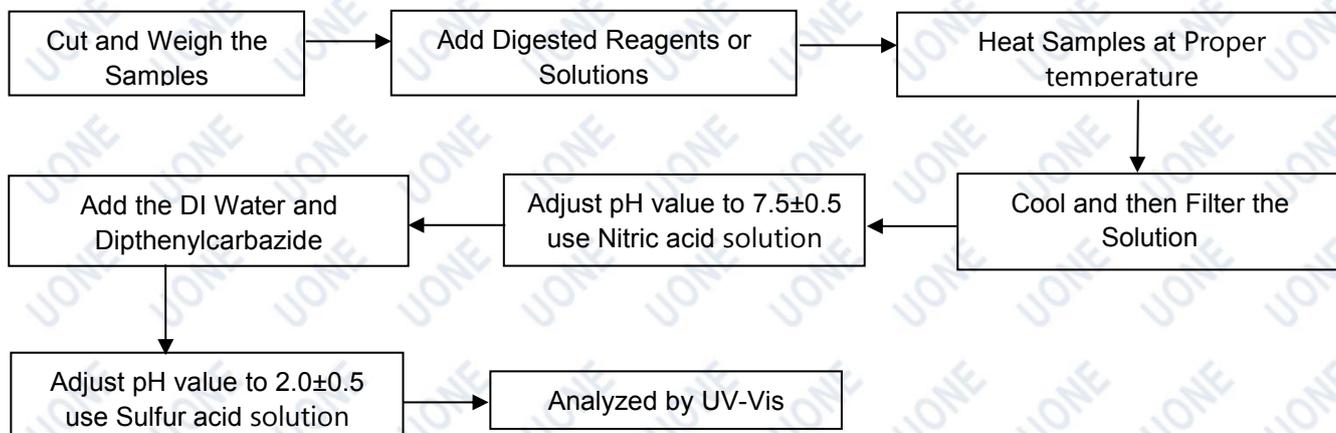
- Note:**
1. mg/kg = milligram per kilogram (ppm).
  2. RL = report limit.
  3. N.D.=not detected(less than RL).

### Test Process Flow

#### 1. Lead, Cadmium, Mercury



#### 2. Hexavalent Chromium (Non-metal)



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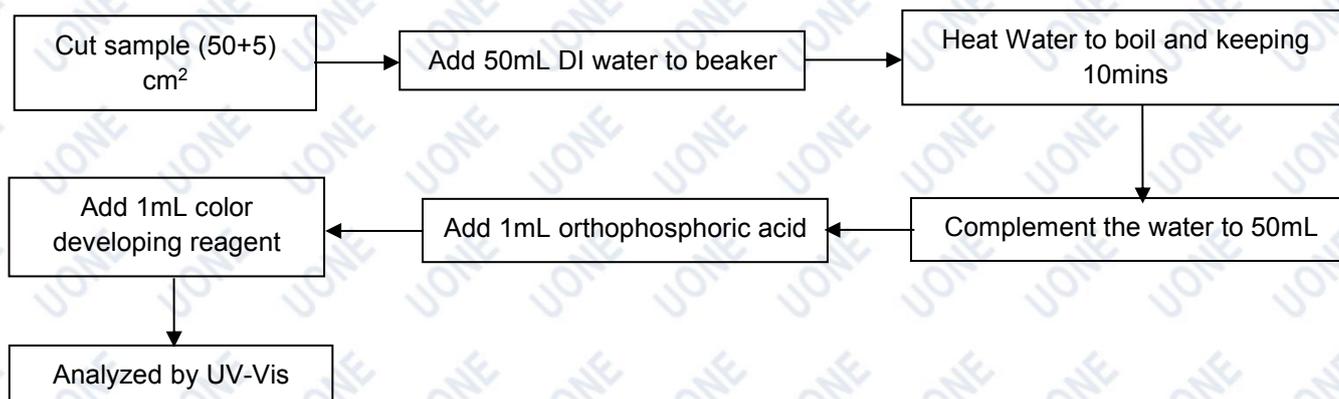
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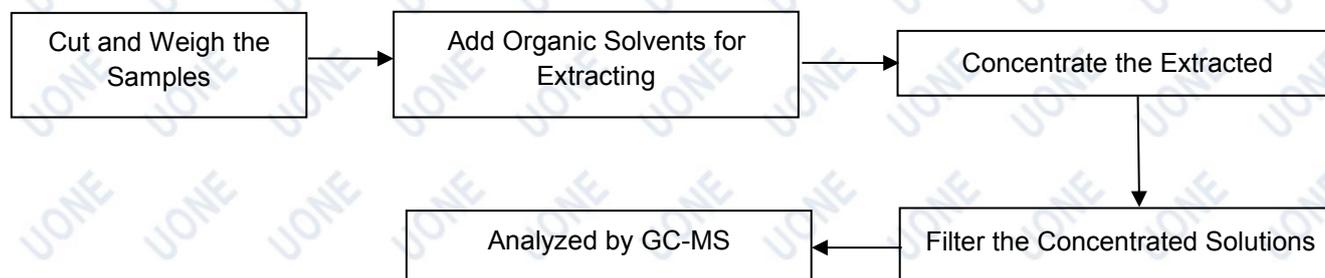
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## Hexavalent Chromium (Metal)



## 3. PBBs & PBDEs, Phthalates



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**Photo(s) of Sample:****\*\*\*End of Report\*\*\***

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