

# TEST REPORT

Report No: SZ180810331EN

Report Date: 2018/8/24

Applicant: UTOP Electronic (Guangzhou) Co., Ltd.

Address: NO.51 Shi Nan Road Huijiang Village Dashi town Panyu area,Guangzhou city,china.

The following sample(s) and sample information was/were submitted and identified by/on the behalf of the client.

Sample Name Transformer series  
 Sample Received Date 2018.8.20  
 Testing Period 2018.8.20-2018.8.24

Test Requirement(s):

Test Item(s)	Test Standard(s)	Conclusion
1 Lead (Pb),Cadmium (Cd),Mercury (Hg) and Hexavalent Chromium (Cr(VI))	2011/65/EU	Pass
2 Polybrominated Biphenyls(PBBs) and PolybrominatedDipheny Ethers (PBDEs) Content	2011/65/EU	Pass
3 Phthalates content	2011/65/EU & (EU)2015/863	Pass
4 Halogen test	IEC 61249-2-21:2003	Pass

Note: "EN" denotes English report.

\*\*\*\*\* For Further Details, Please Refer To the Following Page(s) \*\*\*\*\*

Approved by:

*Vargas*

Vargas He  
 Lab Director

Shenzhen IMPAQ Testing Technology Co., Ltd



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1. Lead (Pb), Cadmium (Cd), Mercury (Hg) and Hexavalent Chromium (Cr(VI))

With reference to IEC 62321-4:2013/IEC 62321-5:2013/ IEC 62321-7-2: 2017, and analyzed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) and UV-Vis spectrophotometer

Test Item(s)	Result(s)	MDL	Limit
	001		
Lead(Pb)(mg/kg)	19.2	2.0	≤ 1000
Cadmium(Cd)(mg/kg)	N.D.	2.0	≤ 100
Mercury(Hg)(mg/kg)	N.D.	2.0	≤ 1000
Hexavalent Chromium(Cr(VI))(mg/kg)	N.D.	2.0	≤ 1000

Note: The sample(s) had been digested totally tested for Lead, Cadmium, Mercury

- "MDL" denotes Method Detection Limit
- "N.D." : denotes Not Detected (<MDL)
- "mg/kg" : denotes milligram per kilogram

2. Lead (Pb), Cadmium (Cd), Mercury (Hg) and Hexavalent Chromium (Cr(VI))

With reference to IEC 62321-4:2013/IEC 62321-5:2013/IEC62321-7-1:2015, and analyzed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) and UV-Vis spectrophotometer.

Test Item(s)	Result(s)	MDL	Limit
	002		
Lead(Pb)(mg/kg)	N.D.	2.0	≤ 1000
Cadmium(Cd)(mg/kg)	N.D.	2.0	≤ 100
Mercury(Hg)(mg/kg)	N.D.	2.0	≤ 1000
Hexavalent Chromium(Cr(VI))(µg/cm <sup>2</sup> )	N.D.	0.10	--

Note: The sample(s) had been digested totally tested for Lead, Cadmium, Mercury

- "MDL" denotes Method Detection Limit
- "N.D." : denotes Not Detected (<MDL)
- "mg/kg" : denotes milligram per kilogram
- The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13µg/cm<sup>2</sup>. The sample coating is considered to contain Cr(VI).
- The sample is negative for Cr(VI) if the Cr(VI) is N.D. (concentration is less than 0.10µg/cm<sup>2</sup>). The sample coating is considered a non-Cr(VI) base coating.
- The result between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> is considered to be inconclusive unavoidable coating variations may influence the determination.

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### 3.Polybrominated Biphenyls(PBBs) and PolybrominatedDiphenyl Ethers (PBDEs) Content

With reference to IEC 62321-6: 2015, and analyzed by Gas Chromatography and Mass Spectrometry (GC-MS).

Test Item(s)	Result(s)	MDL	Limit
	001		
Monobromobiphenyl (1Br-PBB)(mg/kg)	N.D.	5.0	--
Dibromobiphenyl (2Br-PBB)(mg/kg)	N.D.	5.0	--
Tribromobiphenyl (3Br-PBB)(mg/kg)	N.D.	5.0	--
Tetrabromobiphenyl (4Br-PBB)(mg/kg)	N.D.	5.0	--
Pentabromobiphenyl (5Br-PBB)(mg/kg)	N.D.	5.0	--
Hexabromobiphenyl (6Br-PBB)(mg/kg)	N.D.	5.0	--
Heptabromobiphenyl (7Br-PBB)(mg/kg)	N.D.	5.0	--
Octabromobiphenyl (8Br-PBB)(mg/kg)	N.D.	5.0	--
Nonabromobiphenyl (9Br-PBB)(mg/kg)	N.D.	5.0	--
Decabromobiphenyl (10Br-PBB)(mg/kg)	N.D.	5.0	--
Sum of Polybrominated Biphenyls (mg/kg)	N.D.	--	≤ 1000
Monobromodiphenyl ether (1Br-PBDE)(mg/kg)	N.D.	5.0	--
Dibromodiphenyl ether (2Br-PBDE)(mg/kg)	N.D.	5.0	--
Tribromodiphenyl ether (3Br-PBDE)(mg/kg)	N.D.	5.0	--
Tetrabromodiphenyl ether (4Br-PBDE)(mg/kg)	N.D.	5.0	--
Pentabromodiphenyl ether (5Br-PBDE)(mg/kg)	N.D.	5.0	--
Hexabromodiphenyl ether (6Br-PBDE)(mg/kg)	N.D.	5.0	--
Heptabromodiphenyl ether (7Br-PBDE)(mg/kg)	N.D.	5.0	--
Octabromodiphenyl ether (8Br-PBDE)(mg/kg)	N.D.	5.0	--
Nonabromodiphenyl ether (9Br-PBDE)(mg/kg)	N.D.	5.0	--
Decabromodiphenyl ether (10Br-PBDE)(mg/kg)	N.D.	5.0	--
Sum of PolybrominatedDiphenyl Ethers(mg/kg)	N.D.	--	≤ 1000

Note: - "MDL" denotes Method Detection Limit  
 - "N.D." : denotes Not Detected (<MDL)  
 - "mg/kg" : denotes milligram per kilogram

### 4.Phthalates content

With reference to IEC 62321-8:2017, and analyzed by Gas Chromatography and Mass Spectrometry (GC-MS).

Test Item(s)	Result(s)	MDL	Limit
	001		
Di(2-ethylhexyl) phthalate (DEHP)(%)	N.D.	0.005	≤ 0.1
Dibutyl phthalate (DBP)(%)	N.D.	0.005	≤ 0.1
Benzyl butyl phthalate (BBP)(%)	N.D.	0.005	≤ 0.1
Diisobutyl phthalate (DIBP)(%)	N.D.	0.005	≤ 0.1

Note: - "MDL" denotes Method Detection Limit  
 - "N.D." : denotes Not Detected (<MDL)  
 - "%" : Denotes Percentage Based On Weight Of Sample

## 5.Halogen test

With reference to BS EN 14582:2016, Test Halogen (F, Cl, Br and I) Content

Test Item(s)	Result(s)	MDL	Limit
	001		
F(mg/kg)	N.D.	50	---
Cl(mg/kg)	N.D.	50	≤ 900
Br(mg/kg)	N.D.	50	≤ 900
I(mg/kg)	N.D.	50	---
Cl + Br(mg/kg)	N.D.	---	≤ 1500

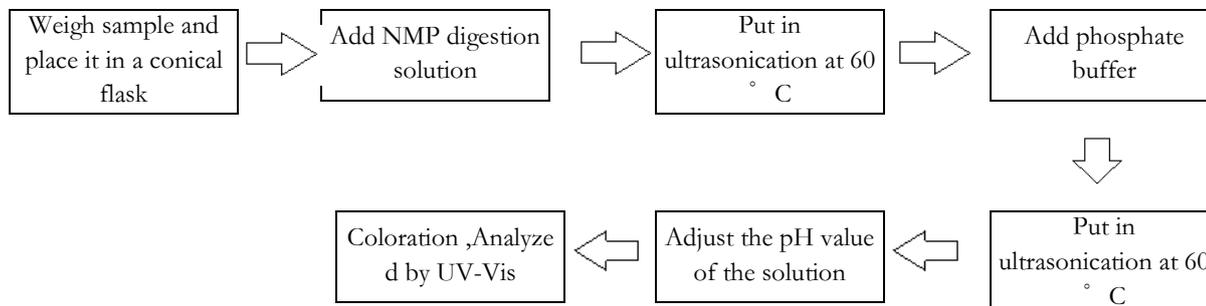
Note: - "MDL" denotes Method Detection Limit

- "N.D." : denotes Not Detected (&lt;MDL)

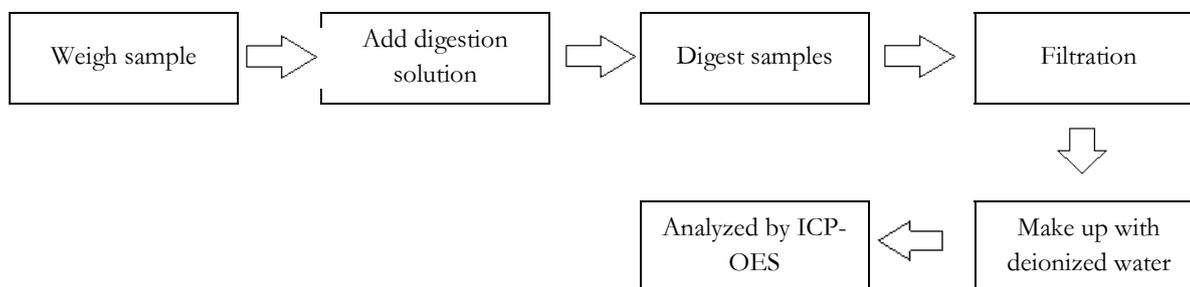
- "mg/kg" : denotes milligram per kilogram

Test Flow Chart

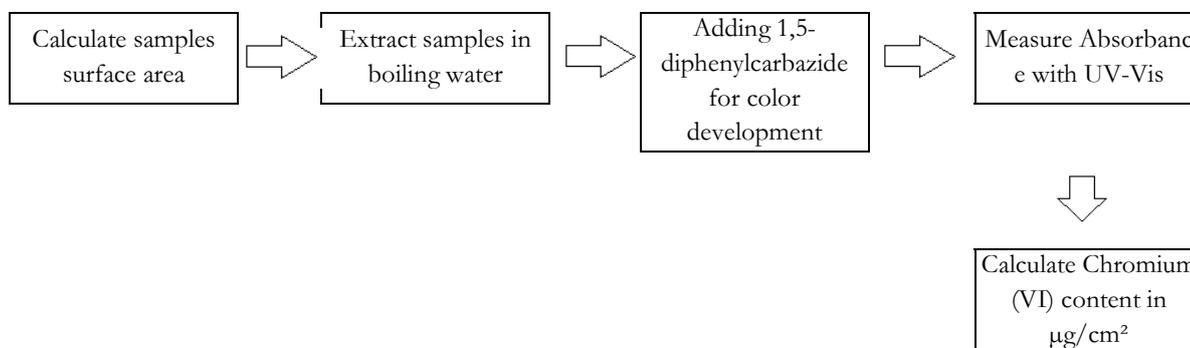
Chromium(VI) Content



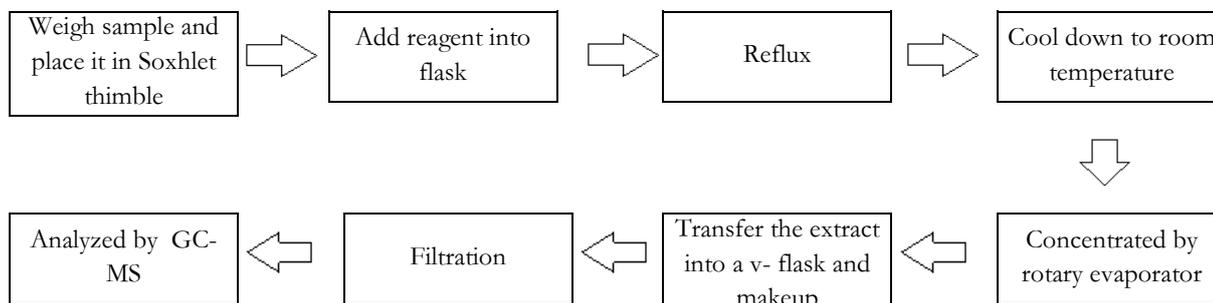
Pb/Cd/Hg Content



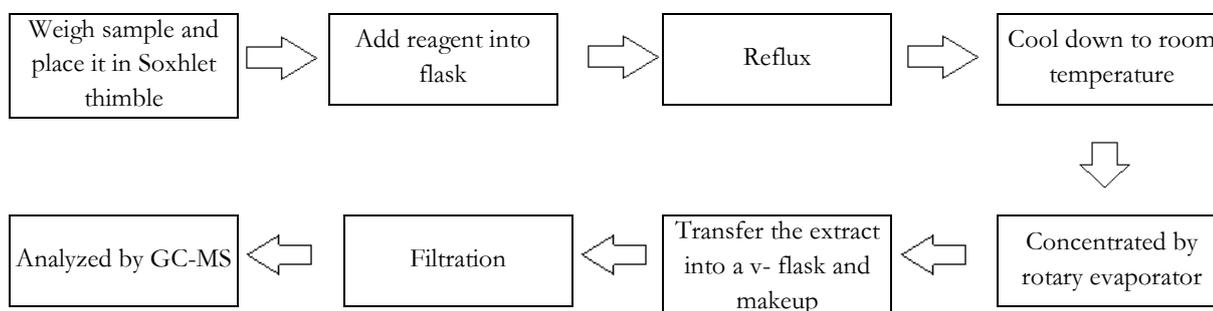
Chromium(VI) Content



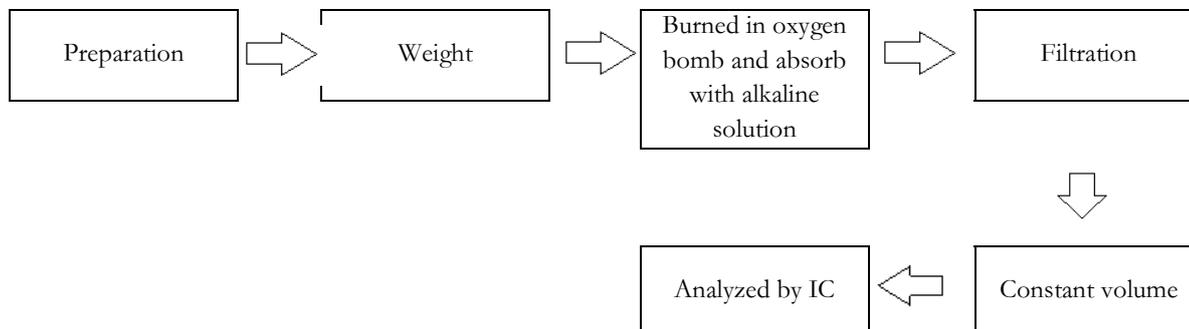
### PBBs/PBDEs Content



### Phthalates Content



### Halogen (F, Cl, Br, I) Content



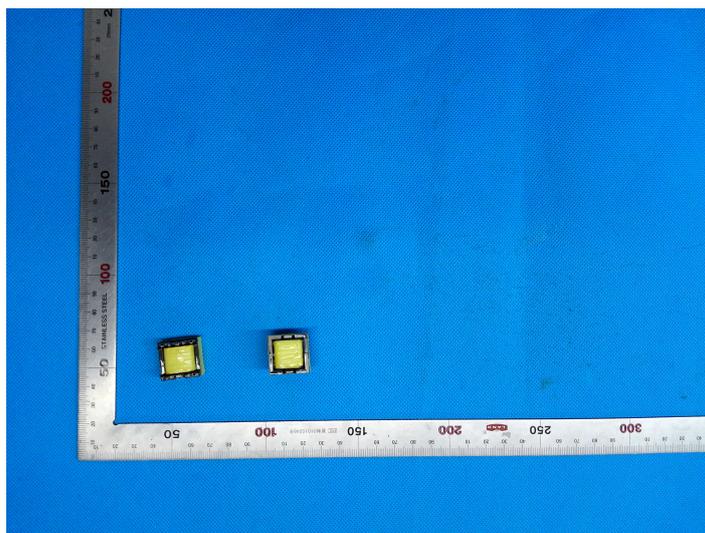
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Tested Sample/Part Description

Sample No.	Tested Material Description
001	Transformer series (non-metal)
002	Transformer series (metal)

Photo(s) of the sample(s)



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

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of IMPAQ, this report can't be reproduced except in full.