CTI 华测检测 CENTRE TESTING INTERNATIONAL

CMA 180000343904

# Test Report

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**Applicant** HANGZHOU SILAN MICROELECTRONICS CO.,LTD.
**Address** NO.4 HUANGGUSHAN ROAD,HANGZHOU,P.R.CHINA

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

| | |
|---|---|
| Sample Name | Intelligent power module |
| Client Reference Information | DIP23 /SOP23 |
| Item No. | IRSM505-055DA，ASDBE-904P/SD02M50DA，SW9ALDA |
| Manufacturer Name | Chengdu Perfect Technology CO., LTD. |
| Sample Received Date | Mar. 6, 2019 |
| Testing Period | Mar. 6, 2019 to Mar. 12, 2019 |

**Test Requested** As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers (PBDEs), Phthalates (DBP, BBP, DEHP, DIBP) in the submitted sample(s).

**Test Method/Test Result(s)** Please refer to the following page(s).

Tested by Grit Qiu Reviewed by Danna Yan

Approved by Hill Zheng Date Mar. 12, 2019

Hill Zheng
Technical Manager

No. R262621286

China Testing International Group Co.,Ltd.
CTI Building, Xing Dong Community, Xin'an Sub-district, Bao'an District, Shenzhen City, Guangdong Province, P.R. China

# Test Report



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**Conclusion**

| Tested Sample | According to standard/directive | Result |
|---|---|---|
| Submitted Sample | RoHS Directive 2011/65/EU with amendment (EU) 2015/863 | Pass |

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Pass means that the results shown on the report comply with the limits set by RoHS Directive 2011/65/EU with amendment (EU) 2015/863.

# Test Report



**Test Method**

| Tested Item(s) | Test Method | Measured Equipment(s) |
|---|---|---|
| Lead(Pb) | IEC 62321-5:2013 | ICP-OES |
| Cadmium(Cd) | IEC 62321-5:2013 | ICP-OES |
| Mercury(Hg) | IEC 62321-4:2013+AMD1:2017 CSV | ICP-OES |
| Hexavalent Chromium(Cr(VI)) | IEC 62321-7-2:2017 and/or determination of Total Chromium by IEC 62321-5:2013 | UV-Vis/ICP-OES |
| | IEC 62321-7-1:2015 | UV-Vis |
| Polybrominated Biphenyls(PBBs) | IEC 62321-6:2015 | GC-MS |
| Polybrominated Diphenyl Ethers (PBDEs) | IEC 62321-6:2015 | GC-MS |
| Phthalates (DBP, BBP, DEHP, DIBP) | IEC 62321-8:2017 | GC-MS |

# Test Report



**Test Result(s)**

| Tested Item(s) | Result | | MDL | Limit |
|---|---|---|---|---|
| | 001 | 002 | | |
| Lead (Pb) | 4305 mg/kg* | N.D. | 2 mg/kg | 1000 mg/kg |
| Cadmium (Cd) | N.D. | N.D. | 2 mg/kg | 100 mg/kg |
| Mercury (Hg) | N.D. | N.D. | 2 mg/kg | 1000 mg/kg |
| Hexavalent Chromium (Cr(VI)) | N.D. | -- | 8 mg/kg | 1000 mg/kg |
| | -- | N.D.▼ | 0.10 μg/cm² (LOQ) | 1000 mg/kg |

| Tested Item(s) | Result | MDL | Limit |
|---|---|---|---|
| | 001 | | |
| **Polybrominated Biphenyls(PBBs)** | | | |
| Monobromobiphenyl | N.D. | 5 mg/kg | 1000 mg/kg |
| Dibromobiphenyl | N.D. | 5 mg/kg | |
| Tribromobiphenyl | N.D. | 5 mg/kg | |
| Tetrabromobiphenyl | N.D. | 5 mg/kg | |
| Pentabromobiphenyl | N.D. | 5 mg/kg | |
| Hexabromobiphenyl | N.D. | 5 mg/kg | |
| Heptabromobiphenyl | N.D. | 5 mg/kg | |
| Octabromobiphenyl | N.D. | 5 mg/kg | |
| Nonabromobiphenyl | N.D. | 5 mg/kg | |
| Decabromobiphenyl | N.D. | 5 mg/kg | |

| Tested Item(s) | Result | MDL | Limit |
|---|---|---|---|
| | 001 | | |
| **Polybrominated Diphenyl Ethers (PBDEs)** | | | |
| Monobromodiphenyl ether | N.D. | 5 mg/kg | 1000 mg/kg |
| Dibromodiphenyl ether | N.D. | 5 mg/kg | |
| Tribromodiphenyl ether | N.D. | 5 mg/kg | |
| Tetrabromodiphenyl ether | N.D. | 5 mg/kg | |
| Pentabromodiphenyl ether | N.D. | 5 mg/kg | |
| Hexabromodiphenyl ether | N.D. | 5 mg/kg | |
| Heptabromodiphenyl ether | N.D. | 5 mg/kg | |
| Octabromodiphenyl ether | N.D. | 5 mg/kg | |
| Nonabromodiphenyl ether | N.D. | 5 mg/kg | |
| Decabromodiphenyl ether | N.D. | 5 mg/kg | |

# Test Report



| Tested Item(s) | Result | MDL | Limit |
|---|---|---|---|
| | 001 | | |
| **Phthalates (DBP, BBP, DEHP, DIBP)** | | | |
| Dibutyl phthalate (DBP) CAS#:84-74-2 | N.D. | 50 mg/kg | 1000 mg/kg |
| Butyl benzyl phthalate (BBP) CAS#:85-68-7 | N.D. | 50 mg/kg | 1000 mg/kg |
| Di-(2-ethylhexyl) phthalate (DEHP) CAS#:117-81-7 | N.D. | 50 mg/kg | 1000 mg/kg |
| Diisobutyl phthalate (DIBP) CAS#:84-69-5 | N.D. | 50 mg/kg | 1000 mg/kg |

**Tested Sample/Part Description**

001 Black body with brown-yellow printing(Tested as a whole)#

002 Metal pin with silvery plating

**Remark:** **The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.**

**#The sample(s) was tested as a whole, because it's impossible to disassemble or separate it by current equipment and technology. The result(s) shown on this report may be different from the content of any homogeneous material.**

-MDL = Method Detection Limit

-N.D. = Not Detected (<MDL or LOQ)

-mg/kg = ppm = parts per million

-1000 mg/kg = 0.1%

-LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10 μg/cm$^2$

-▼The sample is negative for Cr(VI) − The Cr(VI) concentration is below 0.10 μg/cm$^2$. The coating is considered a non-Cr(VI) based coating.

-*According to the client's statement, the material of the sample(s) fall into exemption items 7(a) according to EU Directive 2011/65/EU: Lead in high melting temperature type solders(i.e. lead-based alloys containing 85% by weight of more lead).

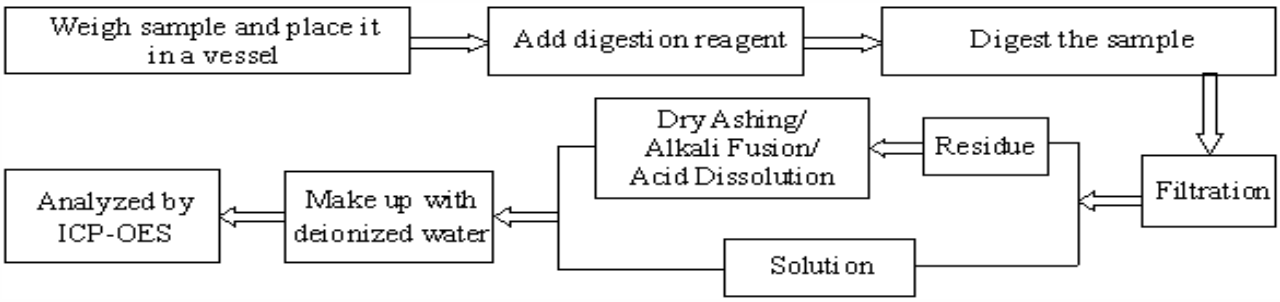
-The test result(s) is(are) presented in reference to the result(s) that reported in A2190043324101001.

# Test Report

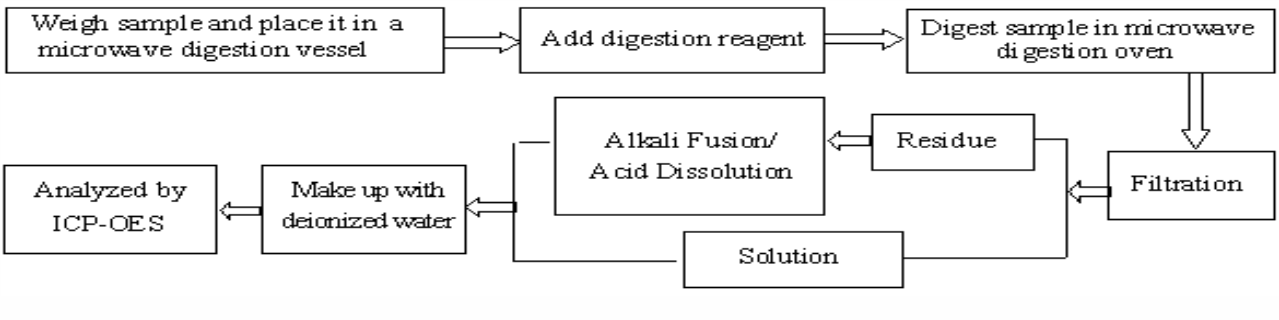


**Test Process**

**1. Lead(Pb), Cadmium(Cd), Chromium(Cr)**

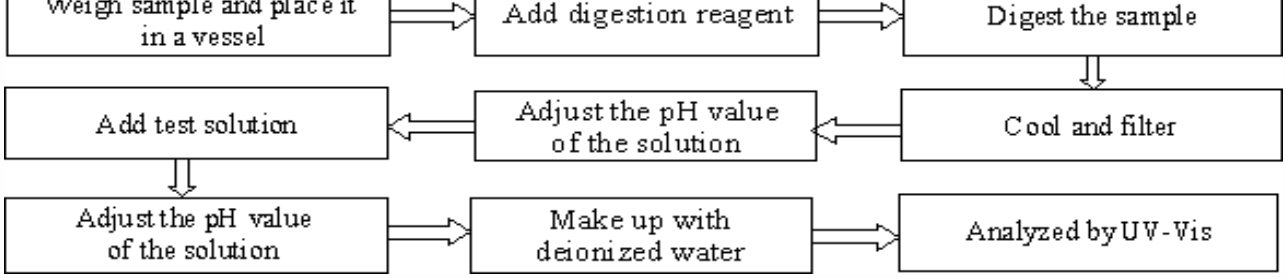



**2. Mercury(Hg)**

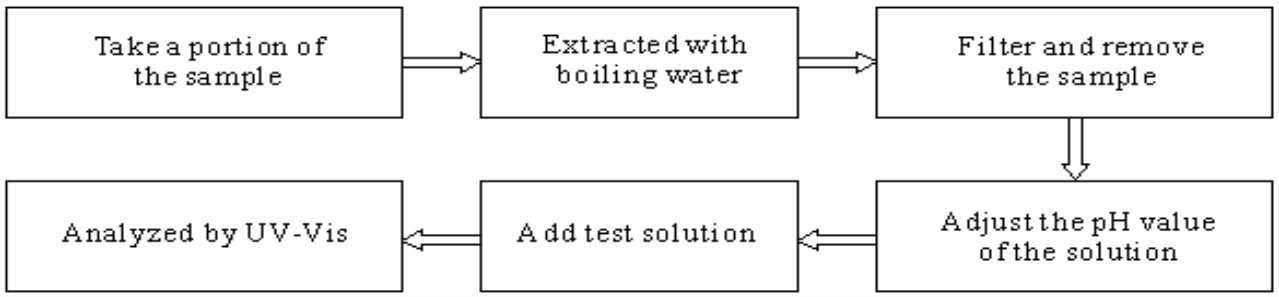



**3. Hexavalent Chromium(Cr(VI))**

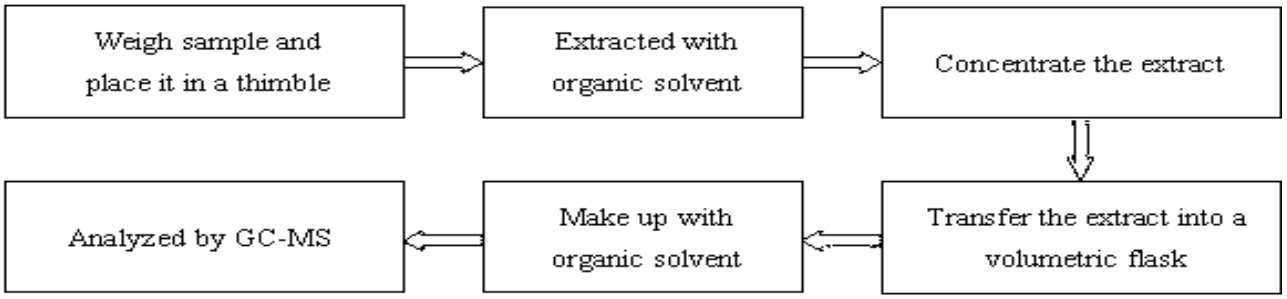
**(1) IEC 62321-7-2:2017**



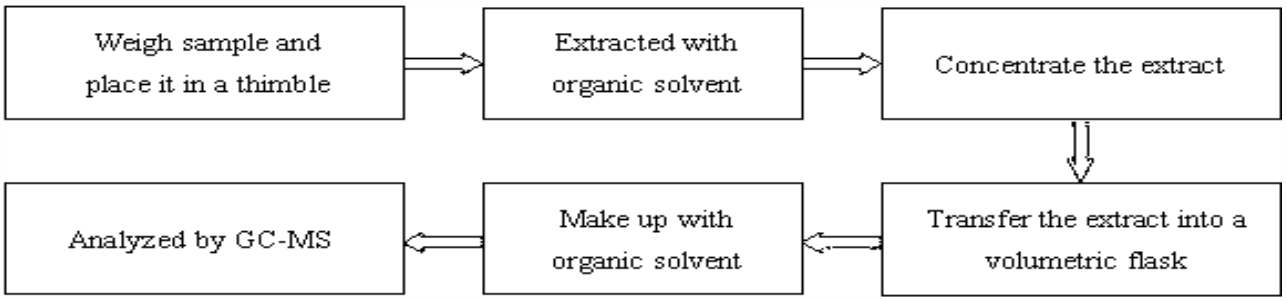

**(2) IEC 62321-7-1:2015**



**4. Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers (PBDEs)**




**5. Phthalates (DBP, BBP, DEHP, DIBP)**

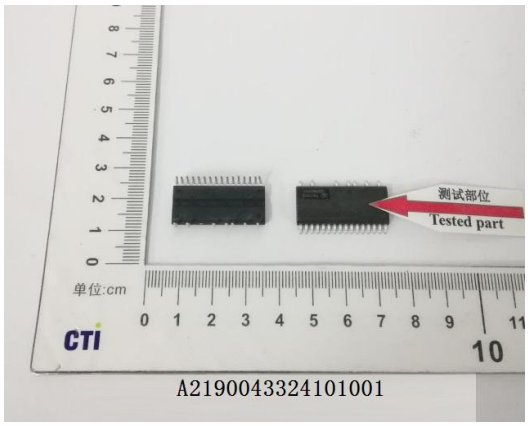


# Test Report

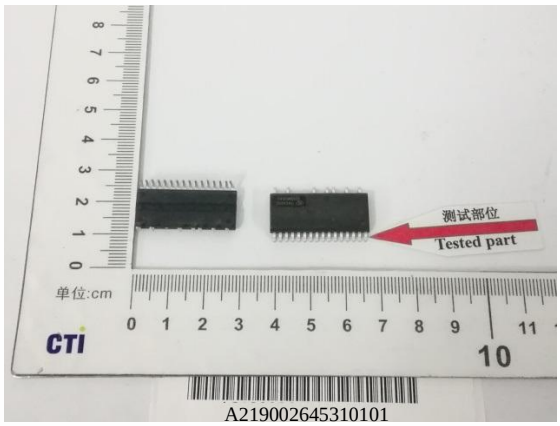


## Photo(s) of the sample(s)

001




002




*** End of Report ***

Statement:

1. This report is considered invalid without approved signature, special seal and the seal on the perforation;
2. The sample(s) and sample information was/were provided by the client who should be responsible for the authenticity which CTI hasn't verified;
3. The result(s) shown in this report refer(s) only to the sample(s) tested;
4. Without written approval of CTI, this report can't be reproduced except in full;
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