



ICP Test Report Certification Packet

Company name: Littelfuse, Inc.
Product Series: DO-214AC – SMAJ14-
Product #: TVS Diode
Issue Date: January 13, 2014

It is hereby certified by Littelfuse, Inc. that there is neither RoHS (EU Directive 2002/95/EC)-restricted substance nor such use, for materials to be used for unit parts, for packing/packaging materials, and for additives and the like in the manufacturing processes. In addition, it is hereby reported to you that the parts and sub-materials, the materials to be used for unit parts, the packing/packaging materials, and the additives and the like in the manufacturing processes, are all composed of the following components.

Issued by:  JORDANUFF H. CABILAN

[Global EHS Engineer]

(1) Parts, sub-materials and unit parts

This document covers the SMAJ14- RoHS-Compliant series products manufactured by Littelfuse, Inc.

< Raw Materials Used

Please see Table 1

(2) The ICP data on all measurable substances

Please see appropriate pages as identified in Table 1

Remarks : under RoHS Exemptions 5 (7C-1 in the New RoHS exemption) and 7a apply to these products.



Table 1: List of Raw Materials covered by this report

| Total Parts | Raw Material Part Number | Raw Material Description | Page(s) |
|--------------------|---------------------------------|-----------------------------------|----------------|
| 1 | NA | Silicon wafer with Nickel Plating | 3-7 |
| 2 | NA | Wafer Passivation (glass) | 8-14 |
| 3 | NA | Lead Frame | 15-18 |
| 4 | NA | Solder Paste | 19-29 |
| 5 | NA | Epoxy Molding Compound | 30-40 |
| 6 | NA | Tin Plating | 41-44 |



Number : WUXH00016496

Applicant : CONCORD SEMICONDUCTOR(WUXI) CO., LTD.
EAST 1#, ZHENFA 6 ROAD, SHUO FANG
INDUSTRIAL PARK WUXI NATIONAL HIGH-TECH
DEVELOPMENT ZONE, WUXI, JIANGSU, CHINA
Attn : ZHANG XIAOPENG

Date : Aug 01, 2013

Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **Silvery Grey Metal.**
Item Name : Silicon Wafer With Nickel Plating.
Vendor : Littelfuse.
Component Or Part No. : Silicon+Nickel.
Test Item : Cd,Pb,Hg,CrVI,PBBs,PBDEs.
Remark : As Requested By The Applicant, Tested As A Whole And Sampled Randomly.

Tests Conducted:
As Requested By The Applicant, For Details Refer To Attached Pages

Prepared And Checked By:
For Intertek Testing Services Wuxi Ltd.

Jessica Lu
General Manager





Number : WUXH00016496

Tests Conducted (As Requested By The Applicant)

1 RoHS Directives Test

(A) Test Result Summary:

| Testing Item | Result |
|--|--------|
| Cadmium (Cd) Content (mg/kg) | ND |
| Lead (Pb) Content (mg/kg) | 25 |
| Mercury (Hg) Content (mg/kg) | ND |
| Chromium (VI)(Cr ⁶⁺) Result (By Boiling Water Extraction On Metal) (mg/kg With 50cm ²) | N |
| Polybrominated Biphenyls (PBBs)(mg/kg) | |
| Monobrominated Biphenyls (MonoBB) | ND |
| Dibrominated Biphenyls (DiBB) | ND |
| Tribrominated Biphenyls (TriBB) | ND |
| Tetrabrominated Biphenyls (TetraBB) | ND |
| Pentabrominated Biphenyls (PentaBB) | ND |
| Hexabrominated Biphenyls (HexaBB) | ND |
| Heptabrominated Biphenyls (HeptaBB) | ND |
| Octabrominated Biphenyls (OctaBB) | ND |
| Nonabrominated Biphenyls (NonaBB) | ND |
| Decabrominated Biphenyl (DecaBB) | ND |
| Sum Of PBBs | ND |
| Polybrominated Diphenyl Ethers (PBDEs)(mg/kg) | |
| Monobrominated Diphenyl Ethers (MonoBDE) | ND |
| Dibrominated Diphenyl Ethers (DiBDE) | ND |
| Tribrominated Diphenyl Ethers (TriBDE) | ND |
| Tetrabrominated Diphenyl Ethers (TetraBDE) | ND |
| Pentabrominated Diphenyl Ethers (PentaBDE) | ND |
| Hexabrominated Diphenyl Ethers (HexaBDE) | ND |
| Heptabrominated Diphenyl Ethers (HeptaBDE) | ND |
| Octabrominated Diphenyl Ethers (OctaBDE) | ND |
| Nonabrominated Diphenyl Ethers (NonaBDE) | ND |
| Decabrominated Diphenyl Ether (DecaBDE) | ND |
| Sum Of PBDEs | ND |

Remark:

mg/kg = Milligram Per Kilogram = ppm

mg/kg With 50cm² = Milligram Per Kilogram With 50 Square Centimeter

ND = Not Detected

N=Negative

Tests Conducted (As Requested By The Applicant)

(B)RoHS Requirement:

| Restricted Substances | Limits |
|--|-------------------|
| Cadmium (Cd) | 0.01% (100 mg/kg) |
| Lead (Pb) | 0.1% (1000 mg/kg) |
| Mercury (Hg) | 0.1% (1000 mg/kg) |
| Chromium (VI) (Cr ⁶⁺) | 0.1% (1000 mg/kg) |
| Polybrominated Biphenyls (PBBs) | 0.1% (1000 mg/kg) |
| Polybrominated Diphenyl Ethers (PBDEs) | 0.1% (1000 mg/kg) |

The Above Limits Were Quoted From RoHS Directive 2011/65/EU For Homogeneous Material.

(C) Test Method:

| Testing Item | Testing Method | Reporting Limit |
|--|--|--|
| Cadmium (Cd) Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Lead (Pb) Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Mercury (Hg) Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Chromium (VI) (Cr ⁶⁺) Content (For Metal) | With Reference To IEC 62321 Edition 1.0: 2008, By Boiling Water Extraction And Determined By UV-VIS Spectrophotometer | 0.02mg/kg With 50cm ² (In Testing Solution) |
| Polybrominated Biphenyls (PBBs) & Polybrominated Diphenyl Ethers (PBDEs) | With Reference To IEC 62321 Edition 1.0: 2008, By Solvent Extraction And Determined By GC/MS And Further HPLC Confirmation When Necessary. | 5 mg/kg |

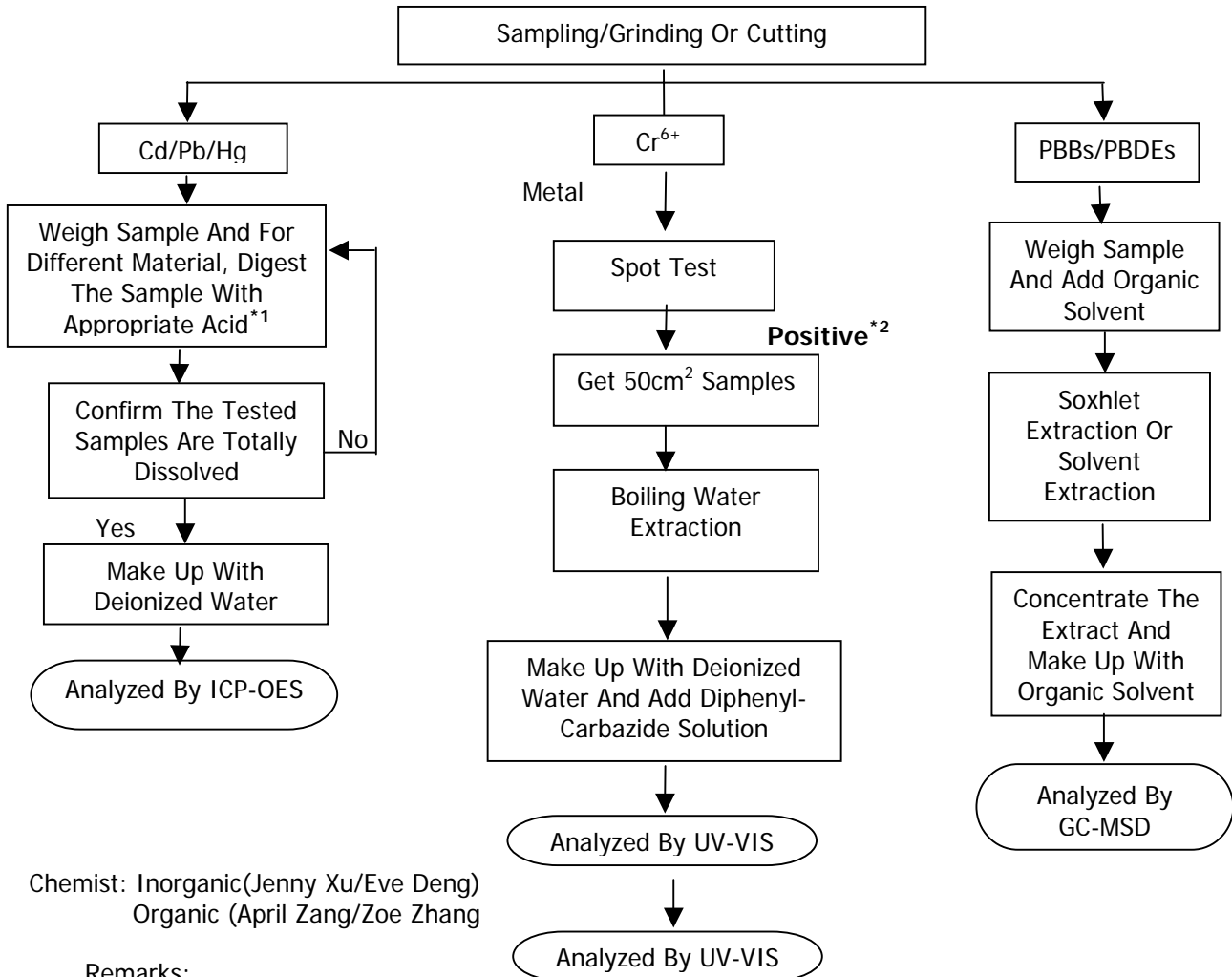
Date Sample Received: Jul 30, 2013

Testing Period: Jul 30, 2013 To Aug 01, 2013

Tests Conducted (As Requested By The Applicant)

(D) Measurement Flowchart:

Reference Standard: IEC 62321 Edition 1.0: 2008



Chemist: Inorganic(Jenny Xu/Eve Deng)
Organic (April Zang/Zoe Zhang)

Remarks:

*1: List Of Appropriate Acid:

| Material | Acid Added For Digestion |
|-------------|--|
| Polymers | HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃ |
| Metals | HNO ₃ , HCl, HF |
| Electronics | HNO ₃ , HCl, H ₂ O ₂ , HBF ₄ |

*2: If The Result Of Spot Test Is Positive, Chromium VI Would Be Determined As Detected.

Tests Conducted (As Requested By The Applicant)

Photo



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Number : WUXH00016497

Applicant : CONCORD SEMICONDUCTOR(WUXI) CO., LTD.
EAST 1#, ZHENFA 6 ROAD, SHUO FANG
INDUSTRIAL PARK WUXI NATIONAL HIGH-TECH
DEVELOPMENT ZONE, WUXI,JIANGSU,CHINA
Attn : ZHANG XIAOPENG

Date : Aug 01, 2013

Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **White Powder.**
Item Name : Wafer Passivation (Glass).
Vendor : Propriety.
Component Or Part No. : Propriety.
Test Item : Cd,Pb,Hg,CrVI,PBBs,PBDEs,F,Cl,Br,I.

Tests Conducted:
As Requested By The Applicant, For Details Refer To Attached Pages

Prepared And Checked By:
For Intertek Testing Services Wuxi Ltd.

Jessica Lu
General Manager





Number : WUXH00016497

Tests Conducted (As Requested By The Applicant)

1 RoHS Directives Test

(A) Test Result Summary:

| Testing Item | Result |
|--|--------|
| Cadmium (Cd) Content (mg/kg) | ND |
| Lead (Pb) Content (mg/kg) | 312500 |
| Mercury (Hg) Content (mg/kg) | ND |
| Chromium (VI) (Cr ⁶⁺) Content (mg/kg)(For Non-Metal) | ND |
| Polybrominated Biphenyls (PBBs)(mg/kg) | |
| Monobrominated Biphenyls (MonoBB) | ND |
| Dibrominated Biphenyls (DiBB) | ND |
| Tribrominated Biphenyls (TriBB) | ND |
| Tetrabrominated Biphenyls (TetraBB) | ND |
| Pentabrominated Biphenyls (PentaBB) | ND |
| Hexabrominated Biphenyls (HexaBB) | ND |
| Heptabrominated Biphenyls (HeptaBB) | ND |
| Octabrominated Biphenyls (OctaBB) | ND |
| Nonabrominated Biphenyls (NonaBB) | ND |
| Decabrominated Biphenyl (DecaBB) | ND |
| Sum Of PBBs | ND |
| Polybrominated Diphenyl Ethers (PBDEs)(mg/kg) | |
| Monobrominated Diphenyl Ethers (MonoBDE) | ND |
| Dibrominated Diphenyl Ethers (DiBDE) | ND |
| Tribrominated Diphenyl Ethers (TriBDE) | ND |
| Tetrabrominated Diphenyl Ethers (TetraBDE) | ND |
| Pentabrominated Diphenyl Ethers (PentaBDE) | ND |
| Hexabrominated Diphenyl Ethers (HexaBDE) | ND |
| Heptabrominated Diphenyl Ethers (HeptaBDE) | ND |
| Octabrominated Diphenyl Ethers (OctaBDE) | ND |
| Nonabrominated Diphenyl Ethers (NonaBDE) | ND |
| Decabrominated Diphenyl Ether (DecaBDE) | ND |
| Sum Of PBDEs | ND |

Remark:

mg/kg = Milligram Per Kilogram = ppm

ND = Not Detected

Tests Conducted (As Requested By The Applicant)

(B)RoHS Requirement:

| Restricted Substances | Limits |
|--|-------------------|
| Cadmium (Cd) | 0.01% (100 mg/kg) |
| Lead (Pb) | 0.1% (1000 mg/kg) |
| Mercury (Hg) | 0.1% (1000 mg/kg) |
| Chromium (VI) (Cr ⁶⁺) | 0.1% (1000 mg/kg) |
| Polybrominated Biphenyls (PBBs) | 0.1% (1000 mg/kg) |
| Polybrominated Diphenyl Ethers (PBDEs) | 0.1% (1000 mg/kg) |

The Above Limits Were Quoted From RoHS Directive 2011/65/EU For Homogeneous Material.

(C) Test Method:

| Testing Item | Testing Method | Reporting Limit |
|---|--|-----------------|
| Cadmium (Cd)Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Lead (Pb)Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Mercury (Hg)Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Chromium (VI) (Cr ⁶⁺) Content (For Non-Metal) | With Reference To IEC 62321 Edition 1.0: 2008, By Alkaline Digestion And Determined By UV-VIS Spectrophotometer. | 1 mg/kg |
| Polybrominated Biphenyls (PBBs)& Polybrominated Diphenyl Ethers (PBDEs) | With Reference To IEC 62321 Edition 1.0: 2008, By Solvent Extraction And Determined By GC/MS And Further HPLC Confirmation When Necessary. | 5 mg/kg |

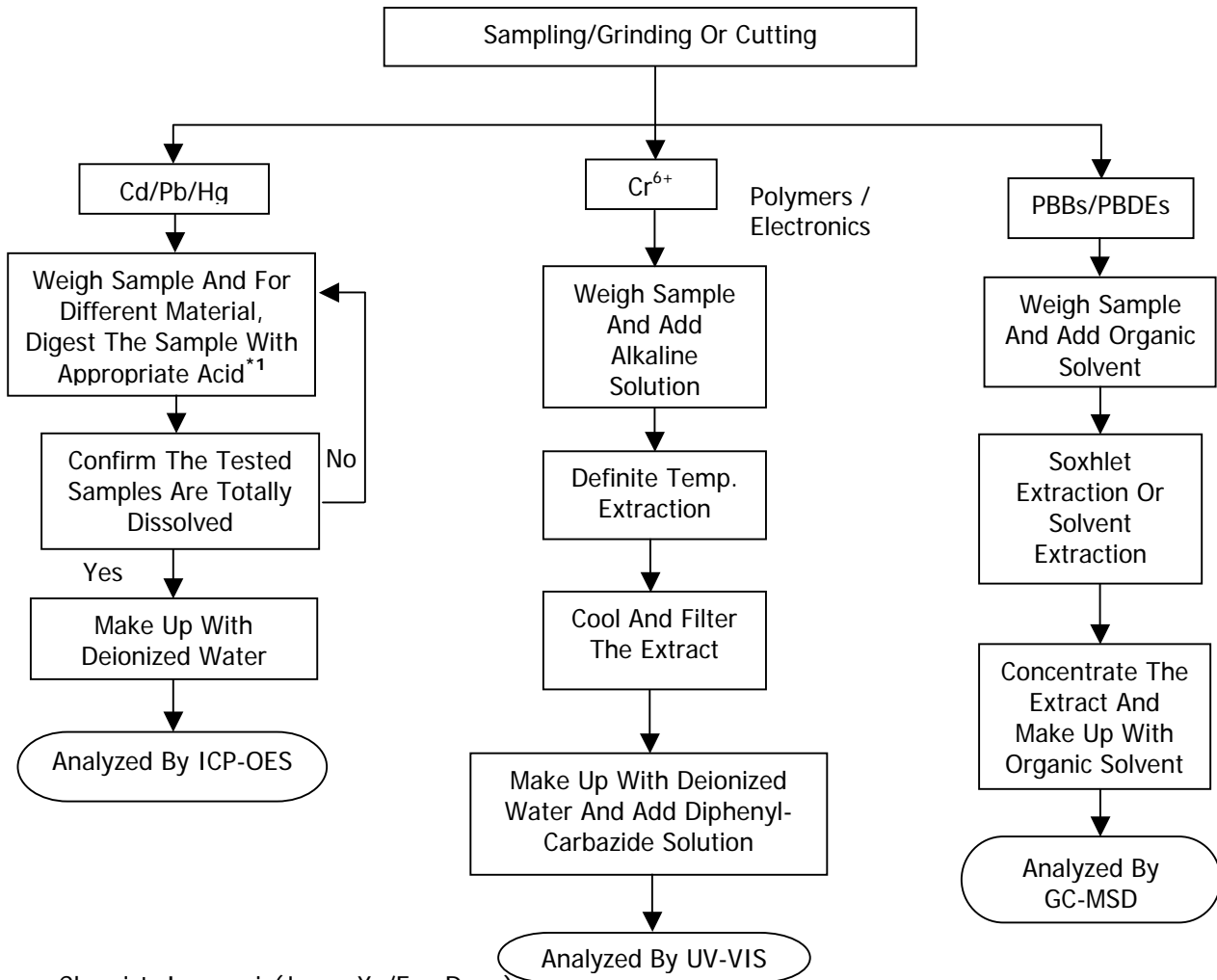
Date Sample Received: Jul 30, 2013

Testing Period: Jul 30 2013 To Jul 31, 2013

Tests Conducted (As Requested By The Applicant)

(D) Measurement Flowchart:

Reference Standard: IEC 62321 Edition 1.0: 2008



Chemist: Inorganic(Jenny Xu/Eve Deng)
Organic (April Zang/Zoe Zhang)

Remarks:

*1: List Of Appropriate Acid:

| Material | Acid Added For Digestion |
|-------------|--|
| Polymers | HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃ |
| Metals | HNO ₃ , HCl, HF |
| Electronics | HNO ₃ , HCl, H ₂ O ₂ , HBF ₄ |



Number : WUXH00016497

Tests Conducted (As Requested By The Applicant)

2 Halogen Test

(I) Test Result Summary :

Halogen Content:

| <u>Testing Item</u> | <u>Result (ppm)</u> |
|----------------------|---------------------|
| Fluorine (F) Content | ND |
| Chlorine (Cl)Content | ND |
| Bromine (Br) Content | ND |
| Iodine (I) Content | ND |

Remarks : ppm = Parts Per Million = mg/kg
ND = Not Detected

Date Sample Received: Jul 30, 2013

Testing Period: Jul 30 2013 To Jul 31, 2013

(II) Test Method :

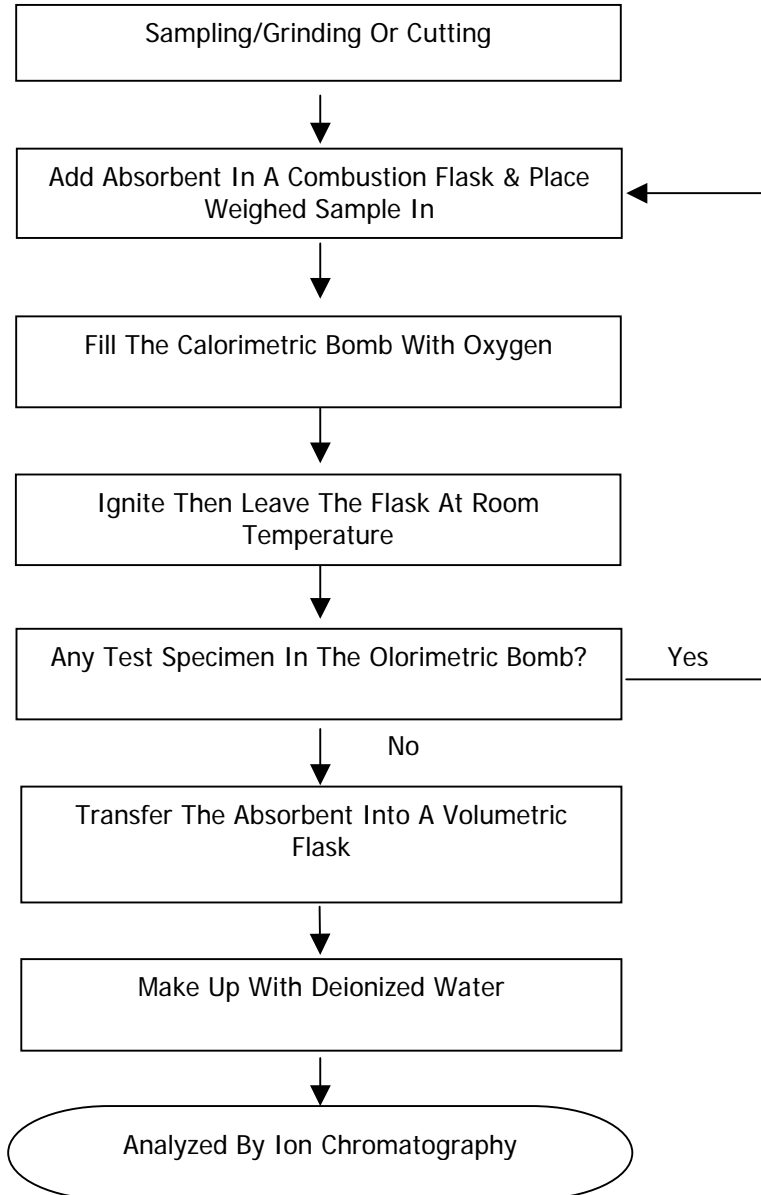
| <u>Testing Item</u> | <u>Testing Method</u> | <u>Reporting Limit</u> |
|------------------------------|---|------------------------|
| Halogen (F,Cl, Br,I) Content | With Reference To EN 14582:2007 By Combustion In A Calorimetric Bomb And Determined By Ion Chromatography | 50 ppm |

Remarks : Reporting Limit = Quantitation Limit Of Analyte In Sample

Tests Conducted (As Requested By The Applicant)

(III) Measurement Flowchart:

Test For Halogen Content Reference Method: EN 14582:2007



Chemist: Eve Deng

Tests Conducted (As Requested By The Applicant)

Photo



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Number : WUXH00016501

Applicant : CONCORD SEMICONDUCTOR(WUXI) CO., LTD.
EAST 1#, ZHENFA 6 ROAD, SHUO FANG
INDUSTRIAL PARK WUXI NATIONAL HIGH-TECH
DEVELOPMENT ZONE, WUXI, JIANGSU, CHINA
Attn : ZHANG XIAOPENG

Date : Aug 02, 2013

Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **Copper Metal.**
Item Name : Lead Frame/Lead Frame Matrix/TO-220 Lead Frame/Heatsink.
Vendor : Jinag Jihlong Technology Co., Ltd.
Component Or Part No. : Copper.
Test Item : Cd,Pb,Hg,CrVI.

Tests Conducted:
As Requested By The Applicant, For Details Refer To Attached Pages

Conclusion:

| Tested Sample | Standard | Result |
|------------------|--|--------|
| Submitted Sample | With Reference To Test Method Of IEC 62321 Edition 1.0: 2008 And Maximum Concentration Limits Quoted From RoHS Directive 2011/65/EU. | Pass |

Prepared And Checked By:
For Intertek Testing Services Wuxi Ltd.

Jessica Lu
General Manager



Tests Conducted (As Requested By The Applicant)

1 (A) Test Result Of RoHS Directive:

| Testing Item | Result |
|--|---------------|
| Cadmium (Cd) Content (mg/kg) | ND |
| Lead (Pb) Content (mg/kg) | 44 |
| Mercury (Hg) Content (mg/kg) | ND |
| Chromium (VI)(Cr ⁶⁺) Result (By Boiling Water Extraction On Metal) (mg/kg With 50cm ²) | N |

Remark: mg/kg With 50cm² = Milligram Per Kilogram With 50 Square Centimeter
 mg/kg = Milligram Per Kilogram = ppm
 ND = Not Detected
 N = Negative

(B) RoHS Requirement:

| Restricted Substances | Limits |
|-----------------------------------|-------------------|
| Cadmium (Cd) | 0.01% (100 mg/kg) |
| Lead (Pb) | 0.1% (1000 mg/kg) |
| Mercury (Hg) | 0.1% (1000 mg/kg) |
| Chromium (VI) (Cr ⁶⁺) | 0.1% (1000 mg/kg) |

The Above Limits Were Quoted From Rohs Directive 2011/65/EU For Homogeneous Material.

(C) Test Method:

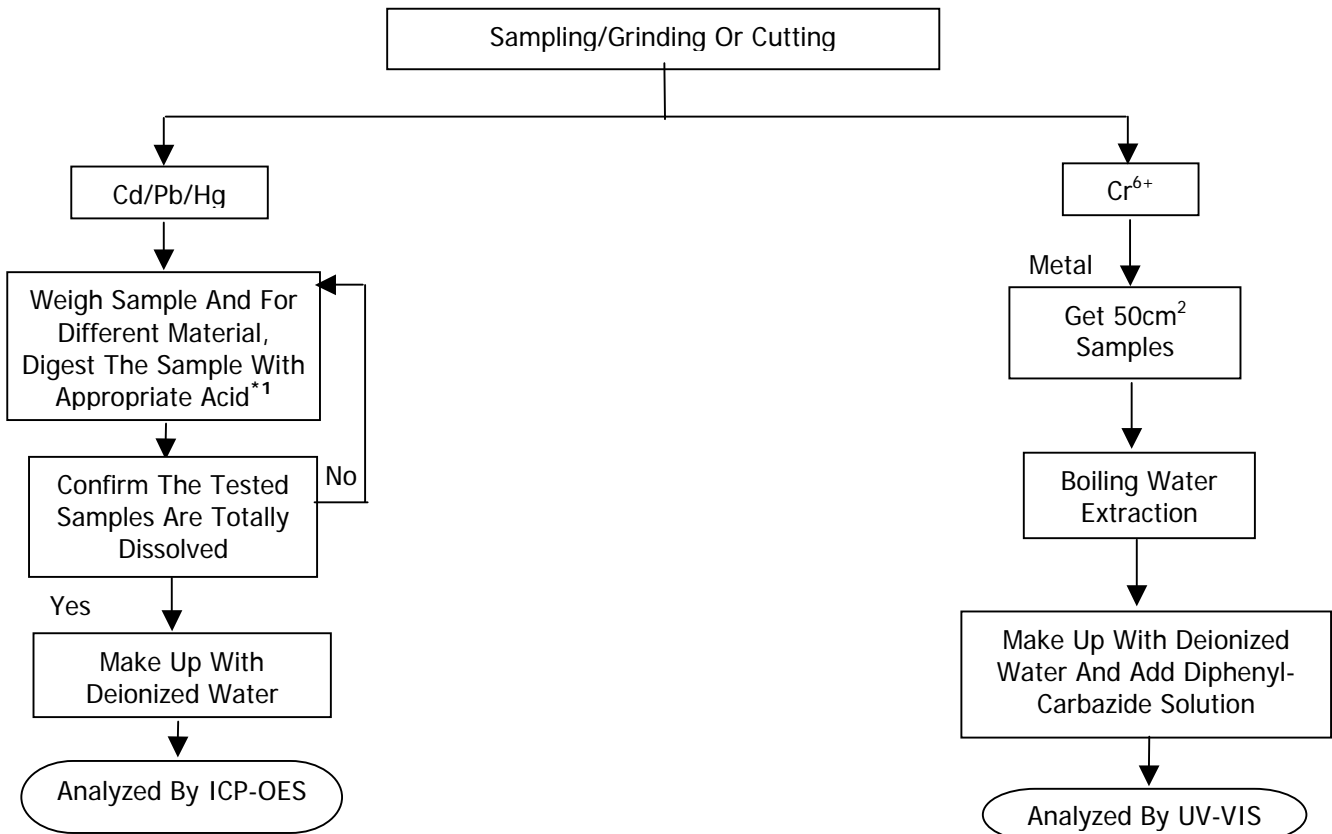
| Testing Item | Testing Method | Reporting Limit |
|---|--|--|
| Cadmium (Cd) Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Lead (Pb) Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Mercury (Hg) Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Chromium (VI) (Cr ⁶⁺) Content (For Metal) | With Reference To IEC 62321 Edition 1.0: 2008, By Boiling Water Extraction And Determined By UV-VIS Spectrophotometer. | 0.02mg/kg With 50cm ² (In Testing Solution) |

Date Sample Received: Jul 30, 2013
 Testing Period: Jul 30, 2013 To Aug 02, 2013

Tests Conducted (As Requested By The Applicant)

(D) Measurement Flowchart:

Reference Standard: IEC 62321 Edition 1.0: 2008



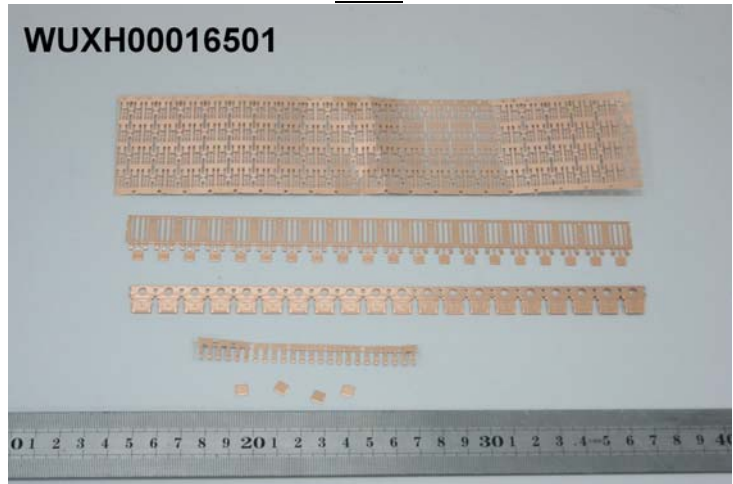
Remarks:

*1: List Of Appropriate Acid:

| Material | Acid Added For Digestion |
|-------------|--|
| Polymers | HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃ |
| Metals | HNO ₃ , HCl, HF |
| Electronics | HNO ₃ , HCl, H ₂ O ₂ , HBF ₄ |

Tests Conducted (As Requested By The Applicant)

Photo



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Number : WUXH00016513

Applicant : CONCORD SEMICONDUCTOR(WUXI) CO., LTD.
EAST 1#, ZHENFA 6 ROAD, SHUO FANG
INDUSTRIAL PARK WUXI NATIONAL HIGH-TECH
DEVELOPMENT ZONE, WUXI, JIANGSU, CHINA
Attn : ZHANG XIAOPENG

Date : Aug 05, 2013

Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **Gray Paste.**
Item Name : Solder Paste.
Vendor : Heraeus Materials Technology Shanghai Ltd.
Component Or Part No. : AG3-D3-NC237-6(Pb:Sn:Ag=92.5:5:2.5).
Test Item : Cd,Pb,Hg,CrVI,PBBs,PBDEs,F,Cl,Br,I,Phthalate,HBCDD.

Tests Conducted:
As Requested By The Applicant, For Details Refer To Attached Pages

Prepared And Checked By:
For Intertek Testing Services Wuxi Ltd.

Jessica Lu
General Manager





Number : WUXH00016513

Tests Conducted (As Requested By The Applicant)

- 1 RoHS Directives Test
 - (A) Test Result Summary:

| Testing Item | Result |
|--|--------|
| Cadmium (Cd) Content (mg/kg) | ND |
| Lead (Pb) Content (mg/kg) | 925100 |
| Mercury (Hg) Content (mg/kg) | ND |
| Chromium (VI) (Cr ⁶⁺) Content (mg/kg)(For Non-Metal) | ND |
| Polybrominated Biphenyls (PBBs)(mg/kg) | |
| Monobrominated Biphenyls (MonoBB) | ND |
| Dibrominated Biphenyls (DiBB) | ND |
| Tribrominated Biphenyls (TriBB) | ND |
| Tetrabrominated Biphenyls (TetraBB) | ND |
| Pentabrominated Biphenyls (PentaBB) | ND |
| Hexabrominated Biphenyls (HexaBB) | ND |
| Heptabrominated Biphenyls (HeptaBB) | ND |
| Octabrominated Biphenyls (OctaBB) | ND |
| Nonabrominated Biphenyls (NonaBB) | ND |
| Decabrominated Biphenyl (DecaBB) | ND |
| Sum Of PBBs | ND |
| Polybrominated Diphenyl Ethers (PBDEs)(mg/kg) | |
| Monobrominated Diphenyl Ethers (MonoBDE) | ND |
| Dibrominated Diphenyl Ethers (DiBDE) | ND |
| Tribrominated Diphenyl Ethers (TriBDE) | ND |
| Tetrabrominated Diphenyl Ethers (TetraBDE) | ND |
| Pentabrominated Diphenyl Ethers (PentaBDE) | ND |
| Hexabrominated Diphenyl Ethers (HexaBDE) | ND |
| Heptabrominated Diphenyl Ethers (HeptaBDE) | ND |
| Octabrominated Diphenyl Ethers (OctaBDE) | ND |
| Nonabrominated Diphenyl Ethers (NonaBDE) | ND |
| Decabrominated Diphenyl Ether (DecaBDE) | ND |
| Sum Of PBDEs | ND |

Remark:
 mg/kg = Milligram Per Kilogram = ppm
 ND = Not Detected



Number : WUXH00016513

Tests Conducted (As Requested By The Applicant)

(B)RoHS Requirement:

| Restricted Substances | Limits |
|--|-------------------|
| Cadmium (Cd) | 0.01% (100 mg/kg) |
| Lead (Pb) | 0.1% (1000 mg/kg) |
| Mercury (Hg) | 0.1% (1000 mg/kg) |
| Chromium (VI) (Cr ⁶⁺) | 0.1% (1000 mg/kg) |
| Polybrominated Biphenyls (PBBs) | 0.1% (1000 mg/kg) |
| Polybrominated Diphenyl Ethers (PBDEs) | 0.1% (1000 mg/kg) |

The Above Limits Were Quoted From RoHS Directive 2011/65/EU For Homogeneous Material.

(C) Test Method:

| Testing Item | Testing Method | Reporting Limit |
|---|--|------------------------|
| Cadmium (Cd)Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Lead (Pb)Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Mercury (Hg)Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Chromium (VI) (Cr ⁶⁺) Content (For Non-Metal) | With Reference To IEC 62321 Edition 1.0: 2008, By Alkaline Digestion And Determined By UV-VIS Spectrophotometer. | 1 mg/kg |
| Polybrominated Biphenyls (PBBs)& Polybrominated Diphenyl Ethers (PBDEs) | With Reference To IEC 62321 Edition 1.0: 2008, By Solvent Extraction And Determined By GC/MS And Further HPLC Confirmation When Necessary. | 5 mg/kg |

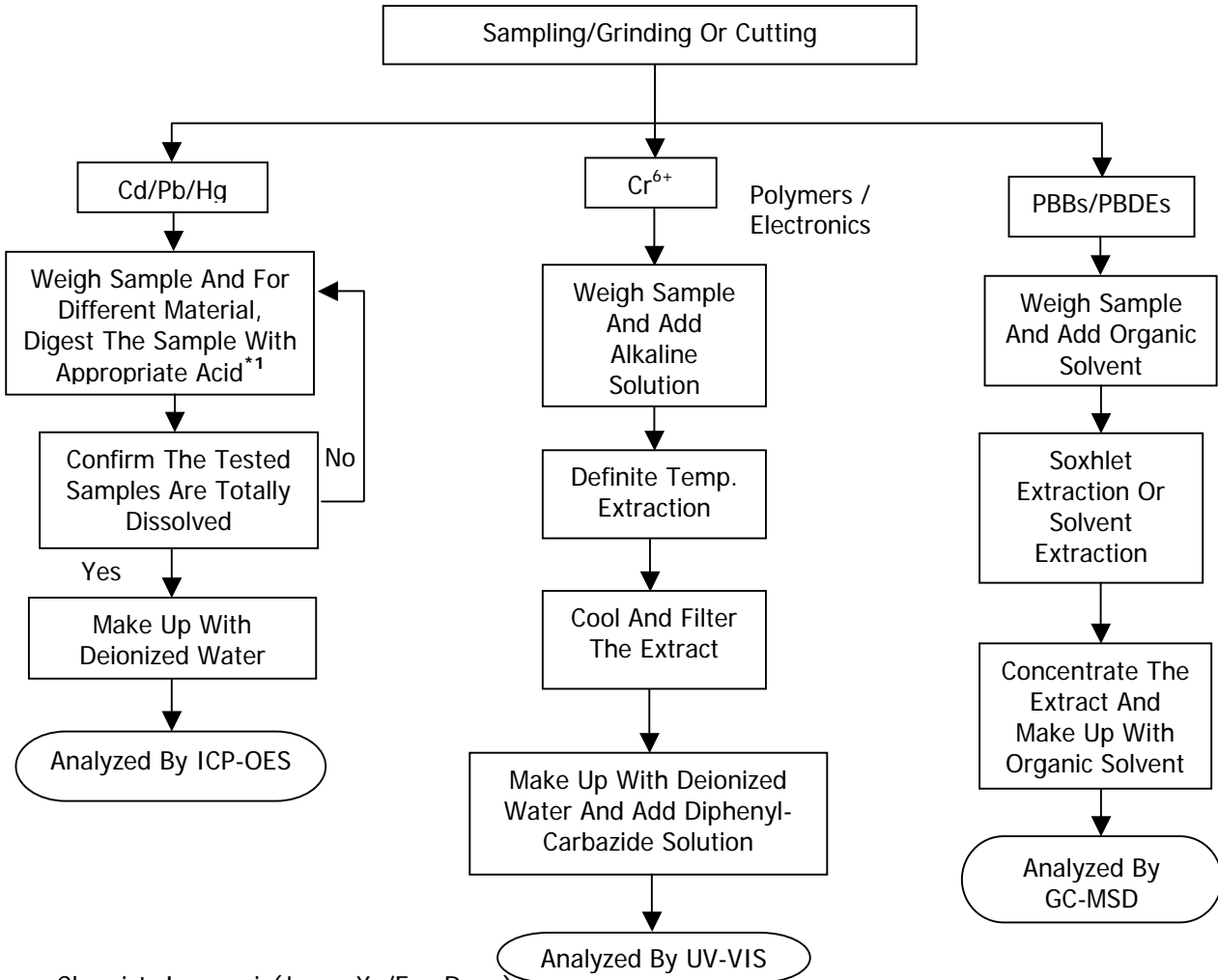
Date Sample Received: Jul 30, 2013

Testing Period: Jul 30 2013 To Aug 02, 2013

Tests Conducted (As Requested By The Applicant)

(D) Measurement Flowchart:

Reference Standard: IEC 62321 Edition 1.0: 2008



Chemist: Inorganic(Jenny Xu/Eve Deng)
Organic (April Zang/Zoe Zhang)

Remarks:

*1: List Of Appropriate Acid:

| Material | Acid Added For Digestion |
|-------------|--|
| Polymers | HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃ |
| Metals | HNO ₃ , HCl, HF |
| Electronics | HNO ₃ , HCl, H ₂ O ₂ , HBF ₄ |



Number : WUXH00016513

Tests Conducted (As Requested By The Applicant)

2 Halogen Test

(I) Test Result Summary :

Halogen Content:

| <u>Testing Item</u> | <u>Result (ppm)</u> |
|----------------------|---------------------|
| Fluorine (F) Content | ND |
| Chlorine (Cl)Content | ND |
| Bromine (Br) Content | ND |
| Iodine (I) Content | ND |

Remarks : ppm = Parts Per Million = mg/kg
ND = Not Detected

Date Sample Received: Jul 30, 2013

Testing Period: Jul 30 2013 To Aug 02, 2013

(II) Test Method :

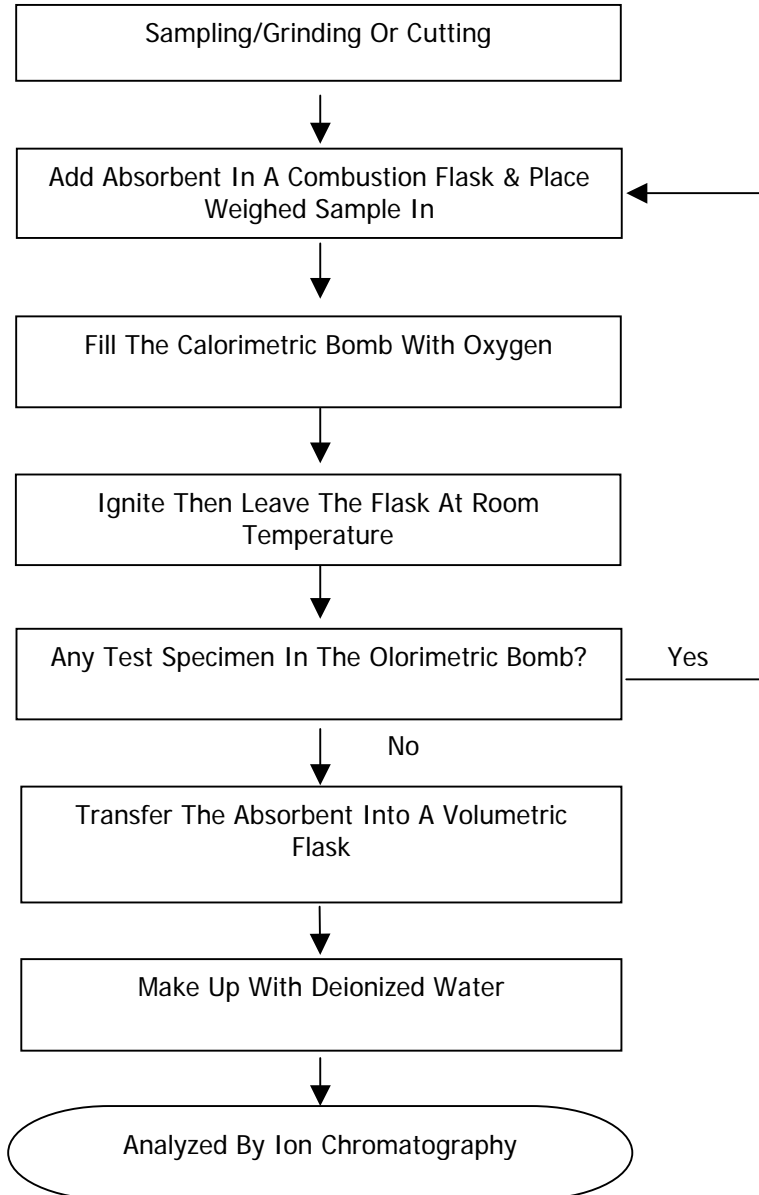
| <u>Testing Item</u> | <u>Testing Method</u> | <u>Reporting Limit</u> |
|------------------------------|---|------------------------|
| Halogen (F,Cl, Br,I) Content | With Reference To EN 14582:2007 By Combustion In A Calorimetric Bomb And Determined By Ion Chromatography | 50 ppm |

Remarks : Reporting Limit = Quantitation Limit Of Analyte In Sample

Tests Conducted (As Requested By The Applicant)

(III) Measurement Flowchart:

Test For Halogen Content Reference Method: EN 14582:2007



Chemist: Eve Deng



Number : WUXH00016513

Tests Conducted (As Requested By The Applicant)

3 Phthalate Content Test

With Reference To EN14372, By Gas Chromatographic-Mass Spectrometric (GC-MSD) Analysis.

| <u>Tested Compound</u> | <u>Result (%W/W)</u> |
|-------------------------------|----------------------|
| Dibutyl Phthalate (DBP) | ND |
| Diethyl Hexyl Phthalate(DEHP) | ND |
| Benzyl Butyl Phthalate (BBP) | ND |
| Di-isobutyl phthalate(DIBP) | ND |
| Di-Iso-Nonyl Phthalate (DINP) | ND |
| Di-N-Octyl Phthalate (DNOP) | ND |
| Di-Iso-Decyl Phthalate (DIDP) | ND |

Detection Limit = 0.01%(W/W)

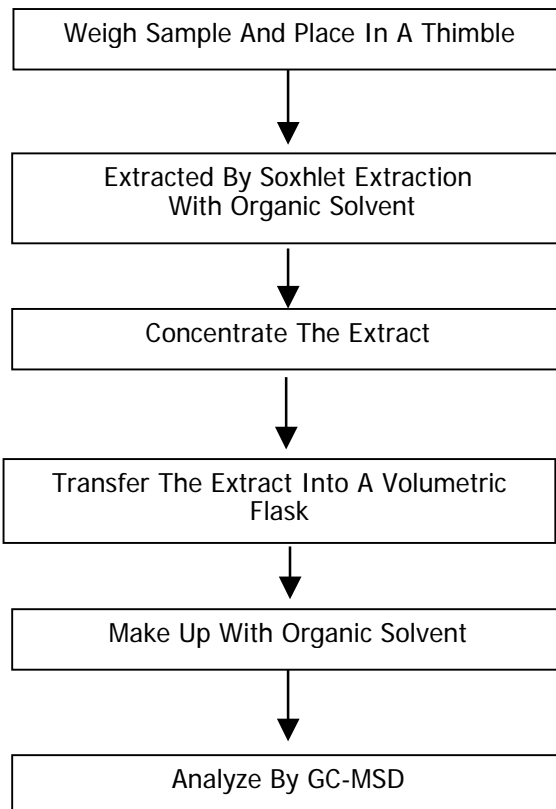
ND = Not Detected

Date Sample Received : Jul 30, 2013

Testing Period : Jul 30, 2013 To Aug 02, 2013

Tests Conducted (As Requested By The Applicant)
Measurement Flowchart:

Test For Phthalates Contents



Chemist: Inorganic (Ann Luo/Fred Wang/Ally Wan)
Organic (Jenny Xu/Cherry Sun)

Tests Conducted (As Requested By The Applicant)

4 HBCDD (Hexabromocyclododecane)

(A) Test Result Summary:

| <u>Testing Item</u> | <u>Result(ppm)</u> |
|--------------------------------|--------------------|
| HBCDD (Hexabromocyclododecane) | ND |

Remarks:

ppm = Parts Per Million = mg/kg

ND = Not Detected

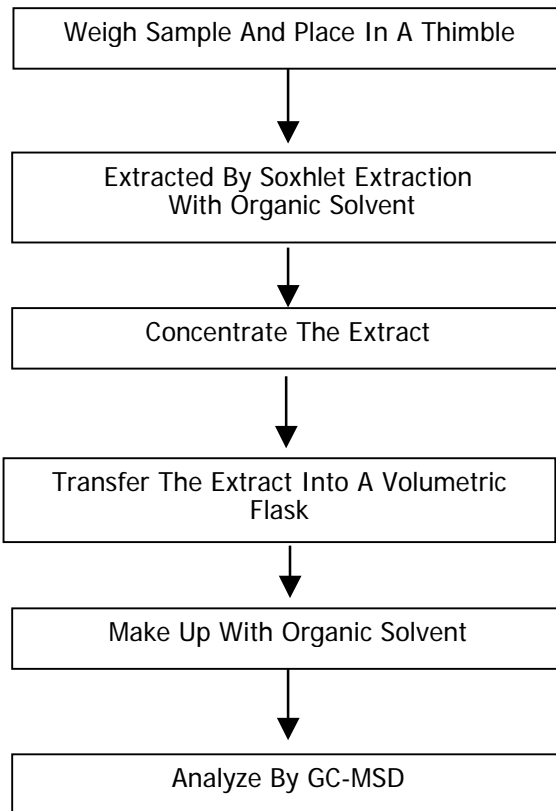
(B) Test Method :

| <u>Testing Item</u> | <u>Testing Method</u> | <u>Reporting Limit</u> |
|--------------------------------|--|------------------------|
| HBCDD (Hexabromocyclododecane) | With Reference To US EPA 3540C, By Solvent Extraction And Determined By GC-MSD | 10 ppm |

Date Sample Received : Jul 30, 2013

Testing Period : Jul 30, 2013 To Aug 02, 2013

Tests Conducted (As Requested By The Applicant)
Measurement Flowchart:
Test For HBCDD (Hexabromocyclododecane) Content



Chemist: Inorganic (Ann Luo/Fred Wang/Ally Wan)
Organic (Jenny Xu/Cherry Sun)

Tests Conducted (As Requested By The Applicant)

Photo



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Number : WUXH00016524

Applicant : CONCORD SEMICONDUCTOR(WUXI) CO., LTD.
EAST 1#, ZHENFA 6 ROAD, SHUO FANG
INDUSTRIAL PARK WUXI NATIONAL HIGH-TECH
DEVELOPMENT ZONE, WUXI, JIANGSU, CHINA
Attn : ZHANG XIAOPENG

Date : Aug 05, 2013

Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **Grey Epoxy Molding Compound.**
Item Name : Epoxy Molding Compound.
Vendor : Chang Chun Plastics Co., Ltd.
Component Or Part No. : EME-E110G.
Test Item : Cd,Pb,Hg,CrVI,PBBs,PBDEs,F,Cl,Br,I,Phthalate,HBCDD,Sb.

Tests Conducted:
As Requested By The Applicant, For Details Refer To Attached Pages

Conclusion:

| Tested Sample | Standard | Result |
|------------------|--|--------|
| Submitted Sample | With Reference To Test Method Of IEC 62321 Edition 1.0: 2008 And Maximum Concentration Limits Quoted From RoHS Directive 2011/65/EU. | Pass |

Prepared And Checked By:
For Intertek Testing Services Wuxi Ltd.

Jessica Lu
General Manager





Number : WUXH00016524

Tests Conducted (As Requested By The Applicant)

1 RoHS Directives Test

(A) Test Result Summary:

| Testing Item | Result |
|--|--------|
| Cadmium (Cd) Content (mg/kg) | ND |
| Lead (Pb) Content (mg/kg) | ND |
| Mercury (Hg) Content (mg/kg) | ND |
| Chromium (VI) (Cr ⁶⁺) Content (mg/kg)(For Non-Metal) | ND |
| Polybrominated Biphenyls (PBBs)(mg/kg) | |
| Monobrominated Biphenyls (MonoBB) | ND |
| Dibrominated Biphenyls (DiBB) | ND |
| Tribrominated Biphenyls (TriBB) | ND |
| Tetrabrominated Biphenyls (TetraBB) | ND |
| Pentabrominated Biphenyls (PentaBB) | ND |
| Hexabrominated Biphenyls (HexaBB) | ND |
| Heptabrominated Biphenyls (HeptaBB) | ND |
| Octabrominated Biphenyls (OctaBB) | ND |
| Nonabrominated Biphenyls (NonaBB) | ND |
| Decabrominated Biphenyl (DecaBB) | ND |
| Sum Of PBBs | ND |
| Polybrominated Diphenyl Ethers (PBDEs)(mg/kg) | |
| Monobrominated Diphenyl Ethers (MonoBDE) | ND |
| Dibrominated Diphenyl Ethers (DiBDE) | ND |
| Tribrominated Diphenyl Ethers (TriBDE) | ND |
| Tetrabrominated Diphenyl Ethers (TetraBDE) | ND |
| Pentabrominated Diphenyl Ethers (PentaBDE) | ND |
| Hexabrominated Diphenyl Ethers (HexaBDE) | ND |
| Heptabrominated Diphenyl Ethers (HeptaBDE) | ND |
| Octabrominated Diphenyl Ethers (OctaBDE) | ND |
| Nonabrominated Diphenyl Ethers (NonaBDE) | ND |
| Decabrominated Diphenyl Ether (DecaBDE) | ND |
| Sum Of PBDEs | ND |

Remark:

mg/kg = Milligram Per Kilogram = ppm

ND = Not Detected



Number : WUXH00016524

Tests Conducted (As Requested By The Applicant)

(B)RoHS Requirement:

| Restricted Substances | Limits |
|--|-------------------|
| Cadmium (Cd) | 0.01% (100 mg/kg) |
| Lead (Pb) | 0.1% (1000 mg/kg) |
| Mercury (Hg) | 0.1% (1000 mg/kg) |
| Chromium (VI) (Cr ⁶⁺) | 0.1% (1000 mg/kg) |
| Polybrominated Biphenyls (PBBs) | 0.1% (1000 mg/kg) |
| Polybrominated Diphenyl Ethers (PBDEs) | 0.1% (1000 mg/kg) |

The Above Limits Were Quoted From RoHS Directive 2011/65/EU For Homogeneous Material.

(C) Test Method:

| Testing Item | Testing Method | Reporting Limit |
|---|--|-----------------|
| Cadmium (Cd)Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Lead (Pb)Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Mercury (Hg)Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Chromium (VI) (Cr ⁶⁺) Content (For Non-Metal) | With Reference To IEC 62321 Edition 1.0: 2008, By Alkaline Digestion And Determined By UV-VIS Spectrophotometer. | 1 mg/kg |
| Polybrominated Biphenyls (PBBs)& Polybrominated Diphenyl Ethers (PBDEs) | With Reference To IEC 62321 Edition 1.0: 2008, By Solvent Extraction And Determined By GC/MS And Further HPLC Confirmation When Necessary. | 5 mg/kg |

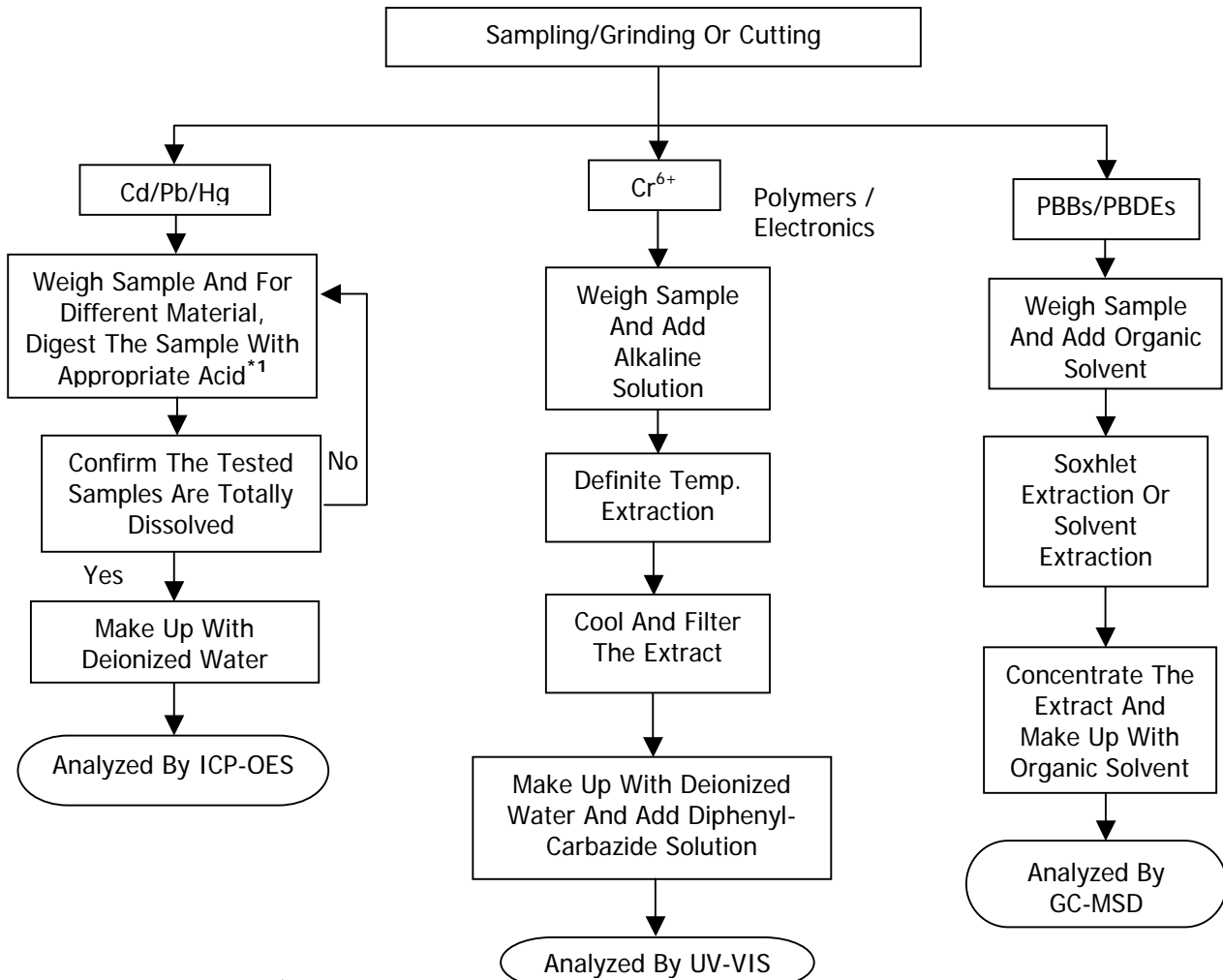
Date Sample Received: Jul 30, 2013

Testing Period: Jul 30 2013 To Aug 02, 2013

Tests Conducted (As Requested By The Applicant)

(D) Measurement Flowchart:

Reference Standard: IEC 62321 Edition 1.0: 2008



Chemist: Inorganic(Jenny Xu/Eve Deng)
Organic (April Zang/Zoe Zhang)

Remarks:

*1: List Of Appropriate Acid:

| Material | Acid Added For Digestion |
|-------------|--|
| Polymers | HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃ |
| Metals | HNO ₃ , HCl, HF |
| Electronics | HNO ₃ , HCl, H ₂ O ₂ , HBF ₄ |



Number : WUXH00016524

Tests Conducted (As Requested By The Applicant)

2 Halogen Test

(I) Test Result Summary :

Halogen Content:

| <u>Testing Item</u> | <u>Result (ppm)</u> |
|----------------------|---------------------|
| Fluorine (F) Content | ND |
| Chlorine (Cl)Content | ND |
| Bromine (Br) Content | ND |
| Iodine (I) Content | ND |

Remarks : ppm = Parts Per Million = mg/kg
ND = Not Detected

Date Sample Received: Jul 30, 2013

Testing Period: Jul 30 2013 To Aug 02, 2013

(II) Test Method :

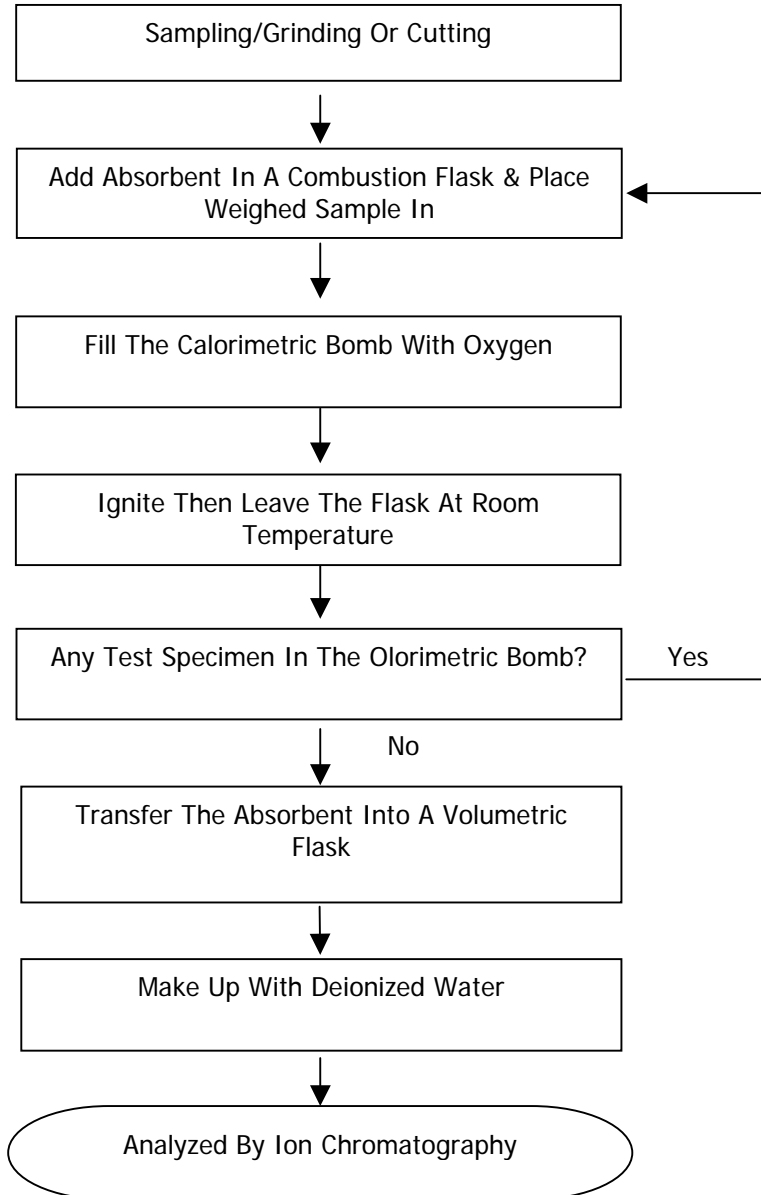
| <u>Testing Item</u> | <u>Testing Method</u> | <u>Reporting Limit</u> |
|------------------------------|---|------------------------|
| Halogen (F,Cl, Br,I) Content | With Reference To EN 14582:2007 By Combustion In A Calorimetric Bomb And Determined By Ion Chromatography | 50 ppm |

Remarks : Reporting Limit = Quantitation Limit Of Analyte In Sample

Tests Conducted (As Requested By The Applicant)

(III) Measurement Flowchart:

Test For Halogen Content Reference Method: EN 14582:2007



Chemist: Eve Deng



Number : WUXH00016524

Tests Conducted (As Requested By The Applicant)

3 Total Antimony (Sb) Content

As Per Client's Request, Acid Digestion Method Was Used And Total Antimony (Sb) Content Was Determined By Inductively Coupled Argon Plasma Spectrometry.

Result In ppm
<10

ppm = Parts Per Million =mg/kg
< = Less Than

Date Sample Received : Jul 30, 2013
Testing Period : Jul 30, 2013 To Aug 02, 2013

4 Phthalate Content Test

With Reference To EN14372, By Gas Chromatographic-Mass Spectrometric (GC-MSD) Analysis.

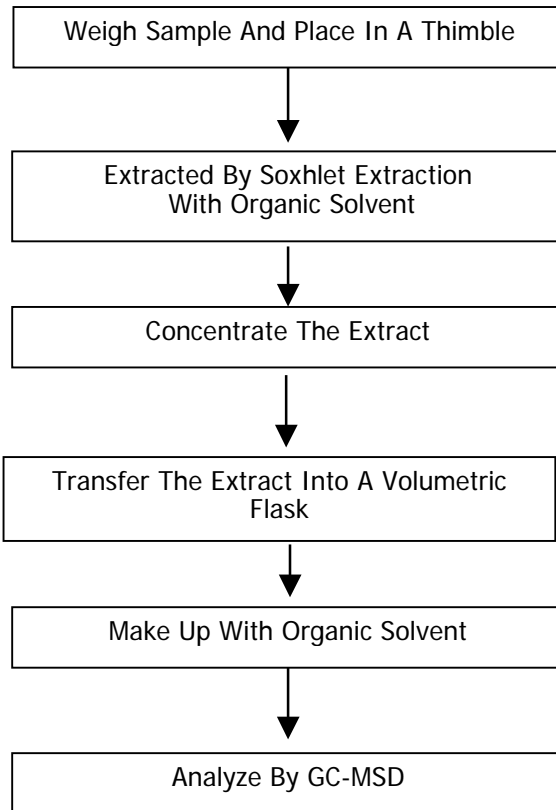
| <u>Tested Compound</u> | <u>Result (%.W/W)</u> |
|-------------------------------|-----------------------|
| Dibutyl Phthalate (DBP) | ND |
| Diethyl Hexyl Phthalate(DEHP) | ND |
| Benzyl Butyl Phthalate (BBP) | ND |
| Di-isobutyl phthalate(DIBP) | ND |
| Di-Iso-Nonyl Phthalate (DINP) | ND |
| Di-N-Octyl Phthalate (DNOP) | ND |
| Di-Iso-Decyl Phthalate (DIDP) | ND |

Detection Limit = 0.01%(W/W)
ND = Not Detected

Date Sample Received : Jul 30, 2013
Testing Period : Jul 30, 2013 To Aug 02, 2013

Tests Conducted (As Requested By The Applicant)
Measurement Flowchart:

Test For Phthalates Contents



Chemist: Inorganic (Ann Luo/Fred Wang/Ally Wan)
Organic (Jenny Xu/Cherry Sun)

Tests Conducted (As Requested By The Applicant)

5 HBCDD (Hexabromocyclododecane)

(A) Test Result Summary:

| <u>Testing Item</u> | <u>Result(ppm)</u> |
|--------------------------------|--------------------|
| HBCDD (Hexabromocyclododecane) | ND |

Remarks:

ppm = Parts Per Million = mg/kg

ND = Not Detected

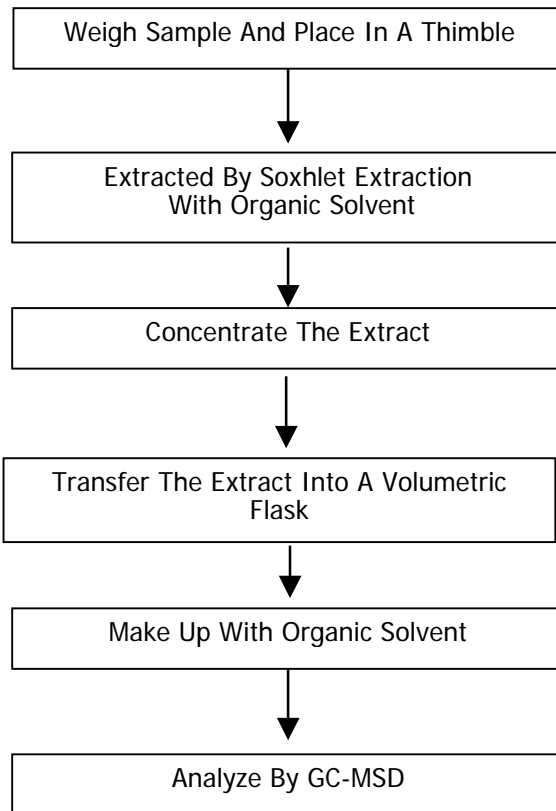
(B) Test Method :

| <u>Testing Item</u> | <u>Testing Method</u> | <u>Reporting Limit</u> |
|--------------------------------|--|------------------------|
| HBCDD (Hexabromocyclododecane) | With Reference To US EPA 3540C, By Solvent Extraction And Determined By GC-MSD | 10 ppm |

Date Sample Received : Jul 30, 2013

Testing Period : Jul 30, 2013 To Aug 02, 2013

Tests Conducted (As Requested By The Applicant)
Measurement Flowchart:
Test For HBCDD (Hexabromocyclododecane) Content



Chemist: Inorganic (Ann Luo/Fred Wang/Ally Wan)
Organic (Jenny Xu/Cherry Sun)

Tests Conducted (As Requested By The Applicant)

Photo



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Number : WUXH00016537

Applicant : CONCORD SEMICONDUCTOR(WUXI) CO., LTD.
EAST 1#, ZHENFA 6 ROAD, SHUO FANG
INDUSTRIAL PARK WUXI NATIONAL HIGH-TECH
DEVELOPMENT ZONE, WUXI, JIANGSU, CHINA
Attn : ZHANG XIAOPENG

Date : Aug 02, 2013

Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **Black Plastic With Silvery Metal Pin.**
Item Name : Tin Plating(SMD).
Vendor : Bandl (Kunshan) International Co.,.
Component Or Part No. : Pure Matte Tin.
Test Item : Cd,Pb,Hg,CrVI.

Tests Conducted:
As Requested By The Applicant, For Details Refer To Attached Pages

Prepared And Checked By:
For Intertek Testing Services Wuxi Ltd.

Jessica Lu
General Manager



Tests Conducted (As Requested By The Applicant)

1 (A) Test Result Of RoHS Directive:

| Testing Item | Result (1) |
|--|-------------------|
| Cadmium (Cd) Content (mg/kg)/Plating | ND |
| Lead (Pb) Content (mg/kg)/Plating | 66 |
| Mercury (Hg) Content (mg/kg)/Plating | ND |
| Chromium (VI)(Cr ⁶⁺) Result (By Boiling Water Extraction On Metal) (mg/kg With 50cm ²) | N |

Remark: mg/kg With 50cm² = Milligram Per Kilogram With 50 Square Centimeter
 mg/kg = Milligram Per Kilogram = ppm
 ND = Not Detected
 N = Negative
 The Result Is For Reference Only.

Tested Component:(1) Metal Pin Plating.

(B) RoHS Requirement:

| Restricted Substances | Limits |
|-----------------------------------|-------------------|
| Cadmium (Cd) | 0.01% (100 mg/kg) |
| Lead (Pb) | 0.1% (1000 mg/kg) |
| Mercury (Hg) | 0.1% (1000 mg/kg) |
| Chromium (VI) (Cr ⁶⁺) | 0.1% (1000 mg/kg) |

The Above Limits Were Quoted From Rohs Directive 2011/65/EU For Homogeneous Material.

(C) Test Method:

| Testing Item | Testing Method | Reporting Limit |
|---|--|--|
| Cadmium (Cd) Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Lead (Pb) Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Mercury (Hg) Content | With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES. | 2 mg/kg |
| Chromium (VI) (Cr ⁶⁺) Content (For Metal) | With Reference To IEC 62321 Edition 1.0: 2008, By Boiling Water Extraction And Determined By UV-VIS Spectrophotometer. | 0.02mg/kg With 50cm ² (In Testing Solution) |

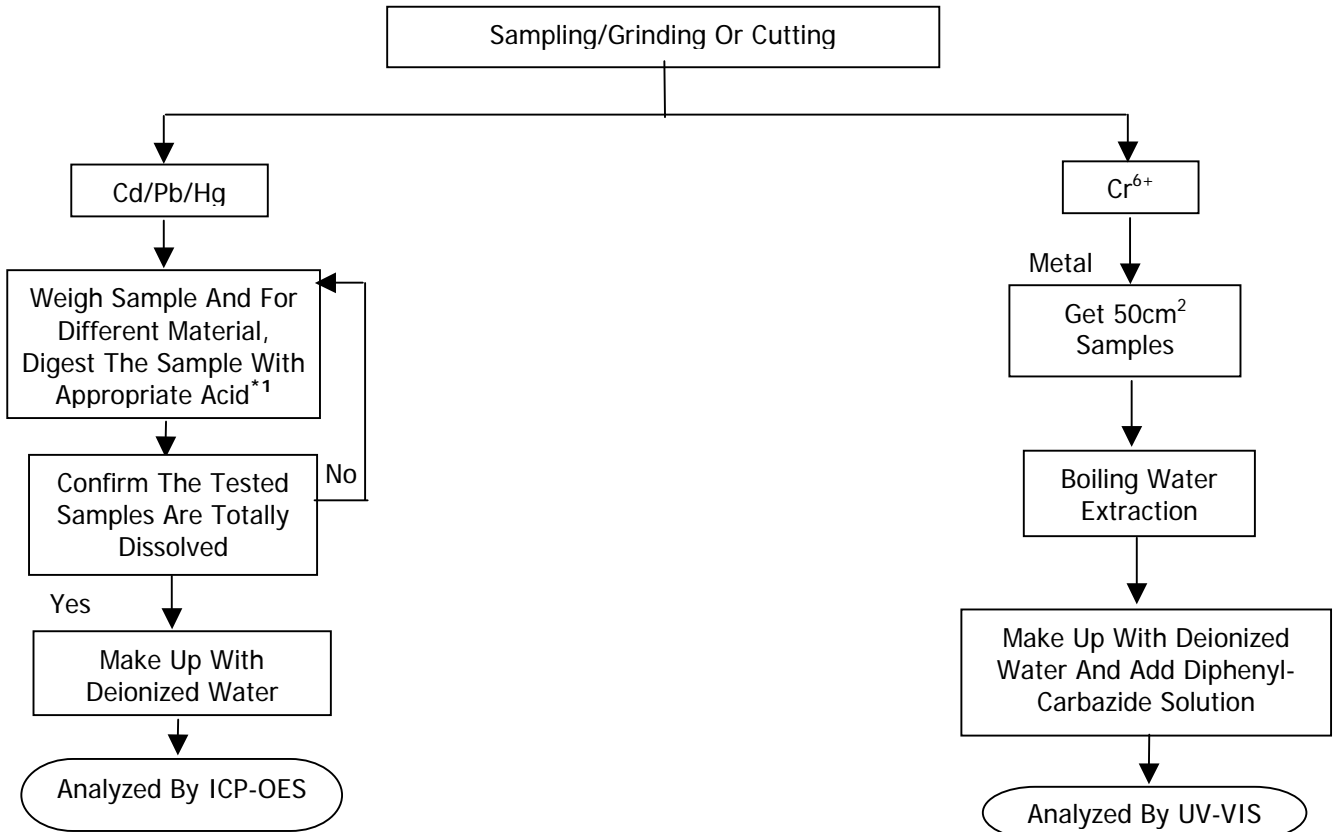
Date Sample Received: Jul 30, 2013

Testing Period: Jul 30, 2013 To Aug 01, 2013

Tests Conducted (As Requested By The Applicant)

(D) Measurement Flowchart:

Reference Standard: IEC 62321 Edition 1.0: 2008



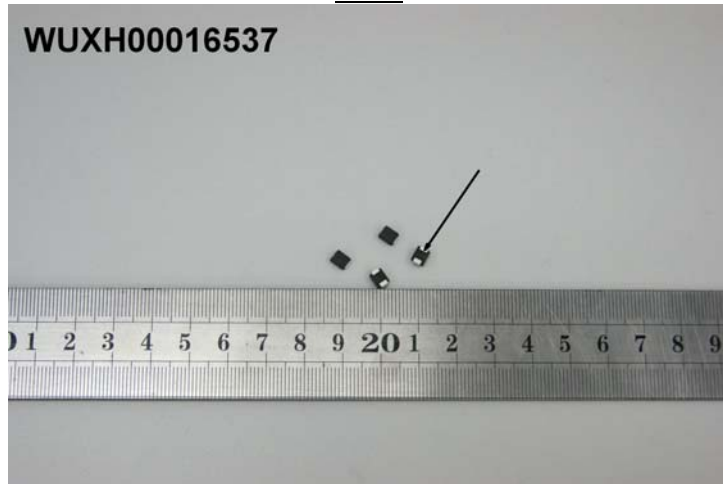
Remarks:

*1: List Of Appropriate Acid:

| Material | Acid Added For Digestion |
|-------------|--|
| Polymers | HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃ |
| Metals | HNO ₃ , HCl, HF |
| Electronics | HNO ₃ , HCl, H ₂ O ₂ , HBF ₄ |

Tests Conducted (As Requested By The Applicant)

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