



## ICP Test Report Certification Packet

Company name: Littelfuse, Inc.  
Product Series: DO-214AC – SIDAC, SIDACtor, SMAJ, P4SMA series  
Product #: TVS Diode, SIDAC, SIDACtor  
Issue Date: March 4, 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 SIDAC, SIDACtor, SMAJ, P4SMA 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**

<b>Total Parts</b>	<b>Raw Material Part Number</b>	<b>Raw Material Description</b>	<b>Page(s)</b>
1	NA	Silicon wafer with Nickel Plating	3-7
2	NA	Wafer Passivation (glass)	8-17
3	NA	Lead Frame	18-21
4	NA	Solder Paste	22-32
5	NA	Epoxy Molding Compound	33-43
6	NA	Tin Plating	44-47



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 <sup>6+</sup> ) Result (By Boiling Water Extraction On Metal) (mg/kg With 50cm <sup>2</sup> )	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 50cm<sup>2</sup> = 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 <sup>6+</sup> )	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 <sup>6+</sup> ) 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 <sup>2</sup> (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

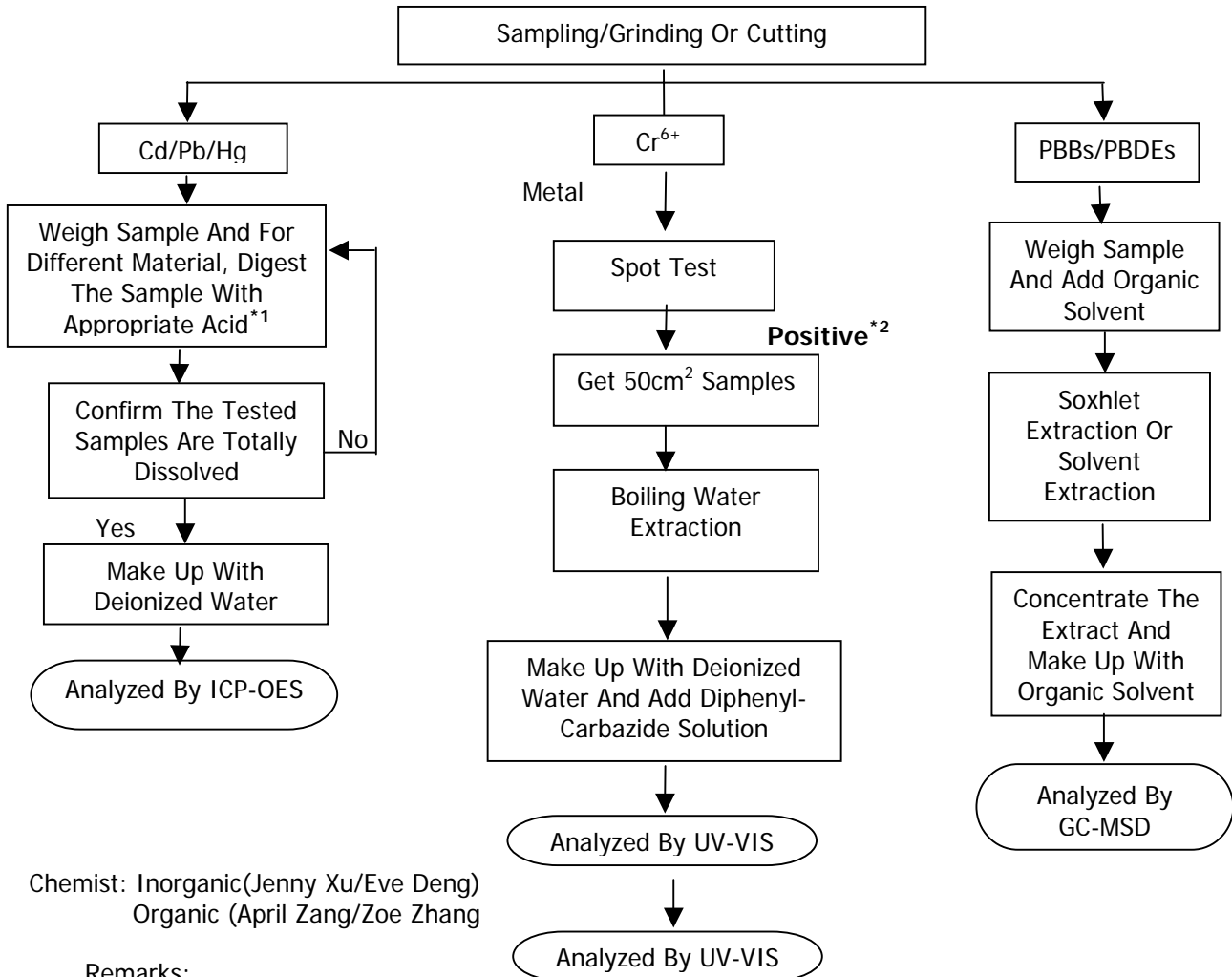
Date Sample Received: Jul 30, 2013

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 <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub> , H <sub>3</sub> BO <sub>3</sub>
Metals	HNO <sub>3</sub> , HCl, HF
Electronics	HNO <sub>3</sub> , HCl, H <sub>2</sub> O <sub>2</sub> , HBF <sub>4</sub>

\*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





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 <sup>6+</sup> ) 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 <sup>6+</sup> )	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 <sup>6+</sup> ) 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

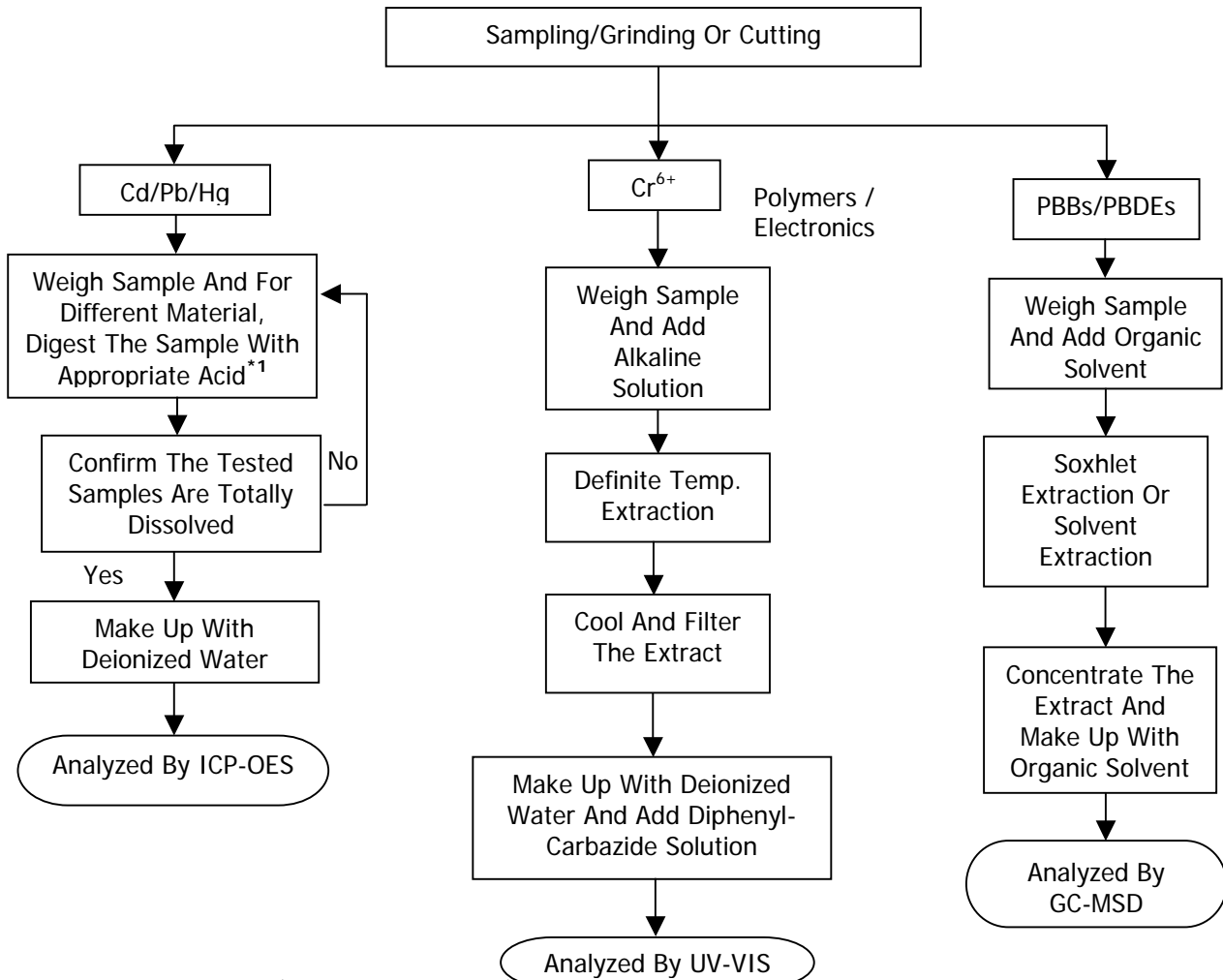
Date Sample Received: Jul 30, 2013

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 <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub> , H <sub>3</sub> BO <sub>3</sub>
Metals	HNO <sub>3</sub> , HCl, HF
Electronics	HNO <sub>3</sub> , HCl, H <sub>2</sub> O <sub>2</sub> , HBF <sub>4</sub>



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 :

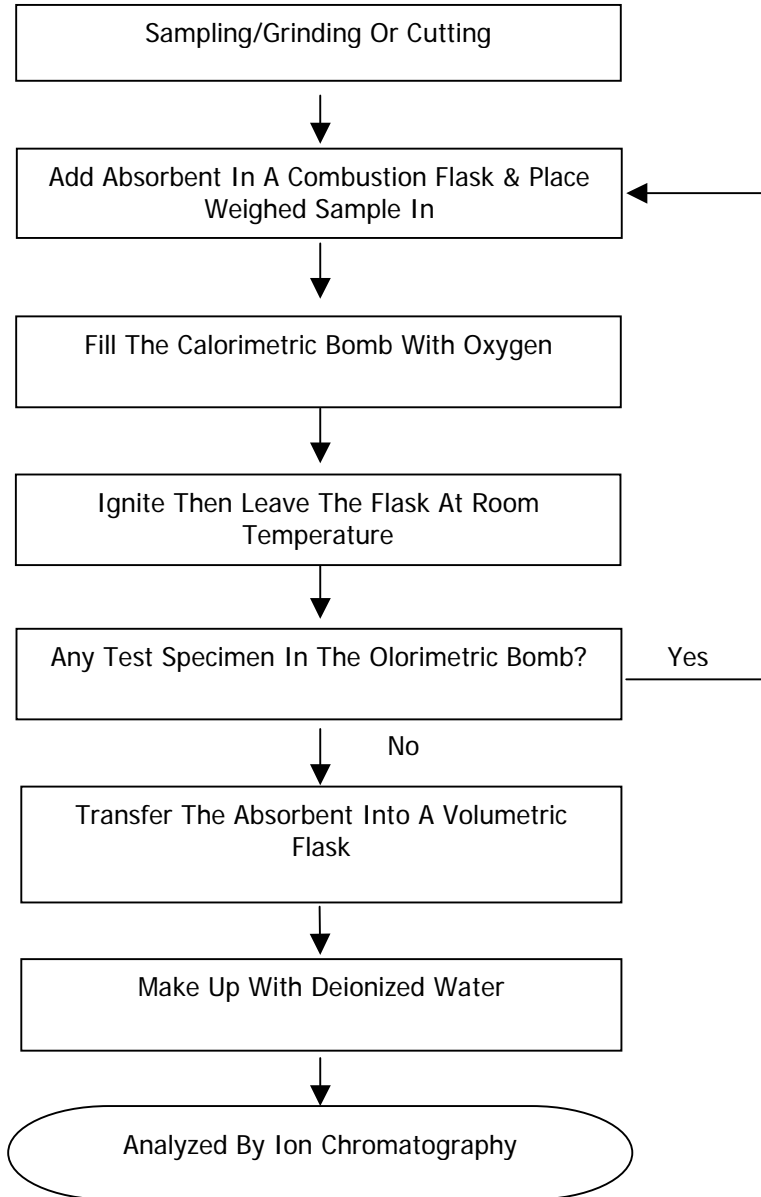
<u>Testing Item</u>	<u>Testing Method</u>	<u>Reporting Limit</u>
Halogen (F,Cl, Br,I) Content	With Reference To EN 14582:2007 By Combustion In A Calorimetric Bomb And Determined By Ion Chromatography	50 ppm

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 : WUXH00020054

Applicant : LITTELFUSE SEMICONDUCTOR (WUXI) CO., LTD  
3#, ZHENFA 6 ROAD, SHUO FANG NEW DISTRICT  
WUXI, JIANGSU 214142, P.R.CHINA  
Attn : ZHANG XIAOPENG

Date : Feb 25, 2014

Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **White Powder.**  
Item Name : Wafer Passivation (Glass Powder).  
Test Item : Sb.

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

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

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Jessica Lu  
General Manager



## Tests Conducted (As Requested By The Applicant)

## 1 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

&lt;10

ppm = Parts Per Million = mg/kg

&lt; = Less Than

Date Sample Received : Feb 20, 2014

Testing Period : Feb 20, 2014 To Feb 24, 2014

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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:

<u>Tested Sample</u>	<u>Standard</u>	<u>Result</u>
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 : WUXH00016501

Tests Conducted (As Requested By The Applicant)

1 (A) Test Result Of RoHS Directive:

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

Remark: mg/kg With 50cm<sup>2</sup> = Milligram Per Kilogram With 50 Square Centimeter  
 mg/kg = Milligram Per Kilogram = ppm  
 ND = Not Detected  
 N = Negative

(B) RoHS Requirement:

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

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

(C) Test Method:

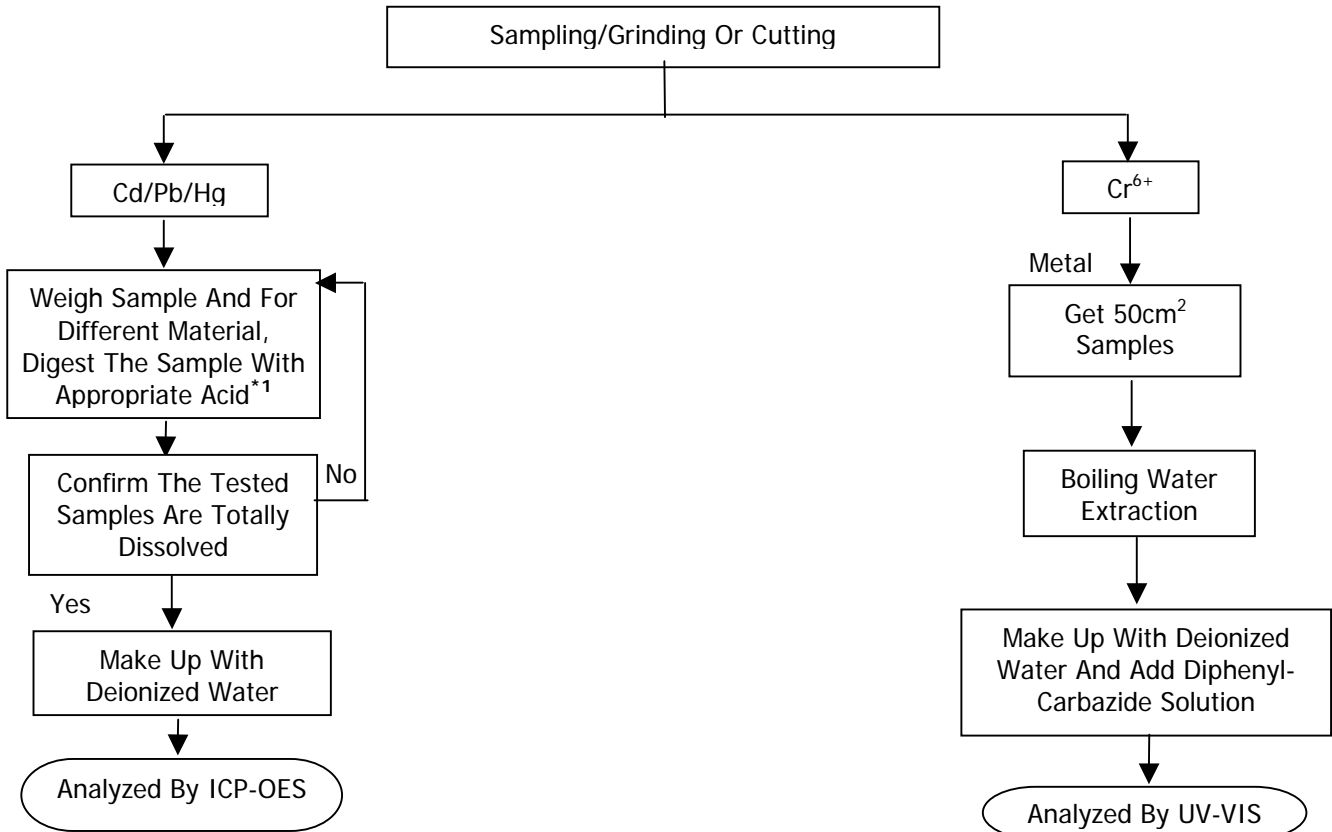
<b>Testing Item</b>	<b>Testing Method</b>	<b>Reporting Limit</b>
Cadmium (Cd) Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion Until The Tested Sample Was Totally Dissolved, And Determined By ICP-OES.	2 mg/kg
Lead (Pb) Content	With Reference To IEC 62321 Edition 1.0: 2008, By 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 <sup>6+</sup> ) 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 <sup>2</sup> (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



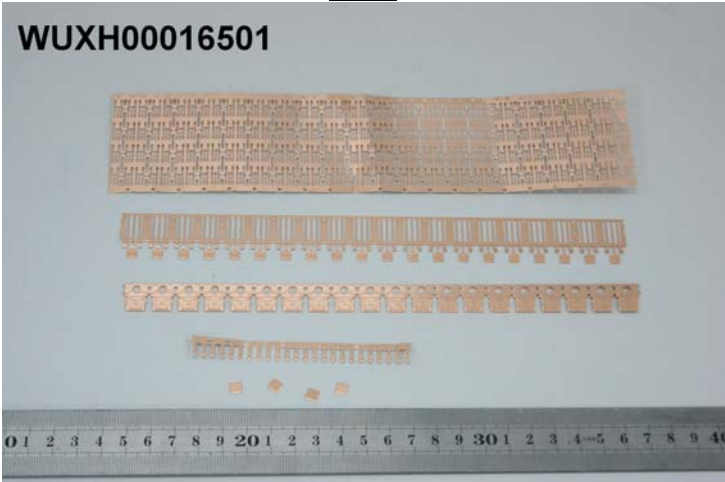
Remarks:

\*1: List Of Appropriate Acid:

Material	Acid Added For Digestion
Polymers	HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub> , H <sub>3</sub> BO <sub>3</sub>
Metals	HNO <sub>3</sub> , HCl, HF
Electronics	HNO <sub>3</sub> , HCl, H <sub>2</sub> O <sub>2</sub> , HBF <sub>4</sub>

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 <sup>6+</sup> ) 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 <sup>6+</sup> )	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 <sup>6+</sup> ) 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

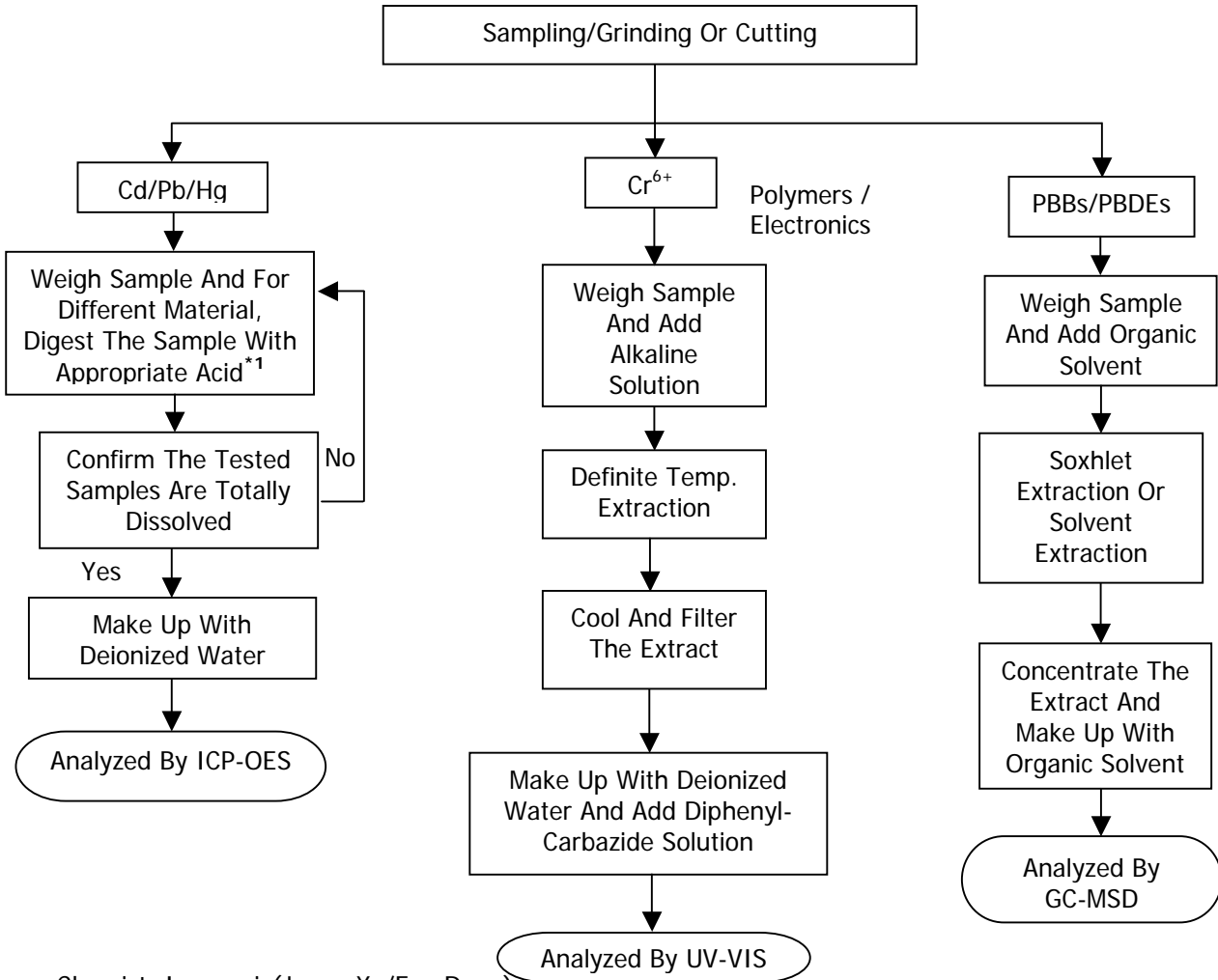
Testing Period: Jul 30 2013 To Aug 02, 2013



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 <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub> , H <sub>3</sub> BO <sub>3</sub>
Metals	HNO <sub>3</sub> , HCl, HF
Electronics	HNO <sub>3</sub> , HCl, H <sub>2</sub> O <sub>2</sub> , HBF <sub>4</sub>



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 :

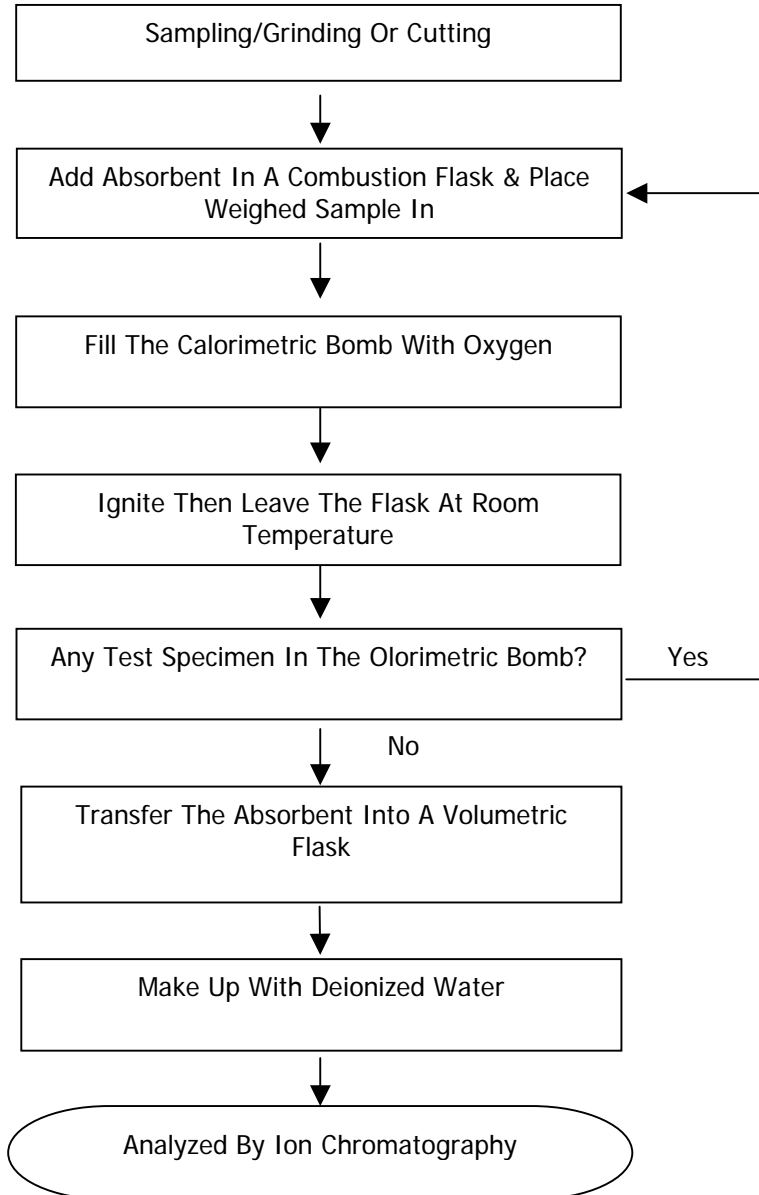
<u>Testing Item</u>	<u>Testing Method</u>	<u>Reporting Limit</u>
Halogen (F,Cl, Br,I) Content	With Reference To EN 14582:2007 By Combustion In A Calorimetric Bomb And Determined By Ion Chromatography	50 ppm

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

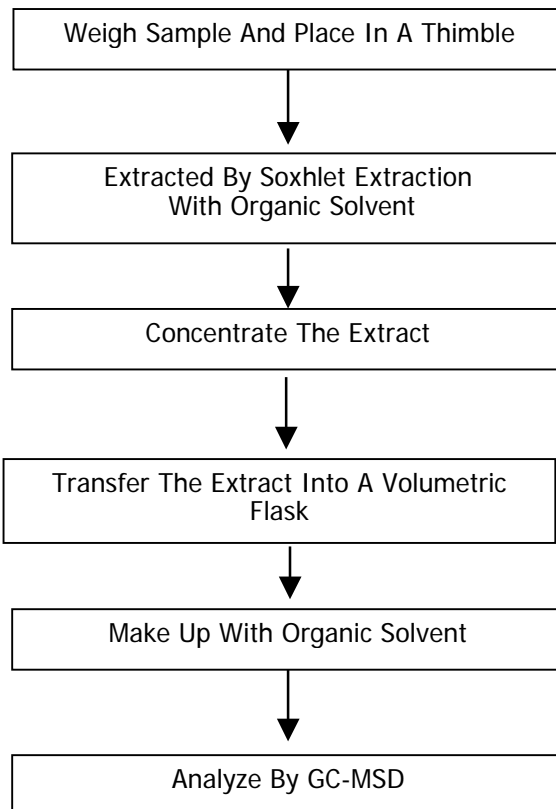
Date Sample Received : Jul 30, 2013

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

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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)

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Number : WUXH00016513

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

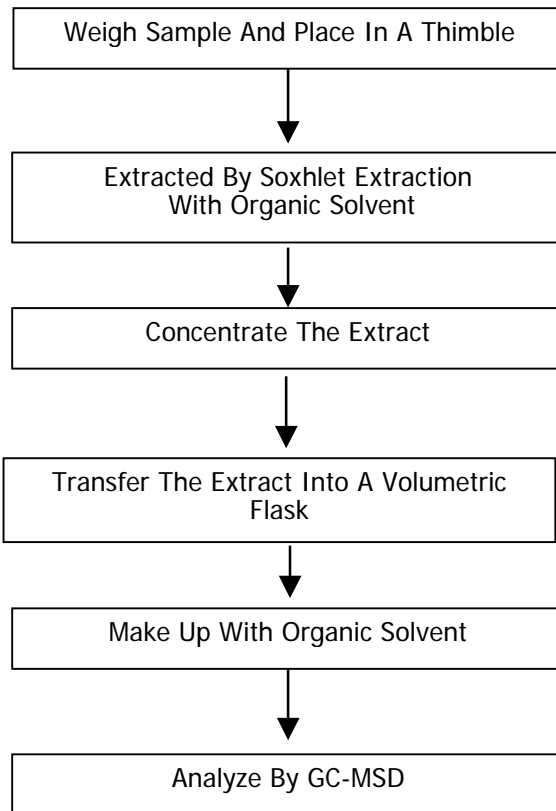
(B) Test Method :

<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)

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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 <sup>6+</sup> ) 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 <sup>6+</sup> )	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 <sup>6+</sup> ) 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

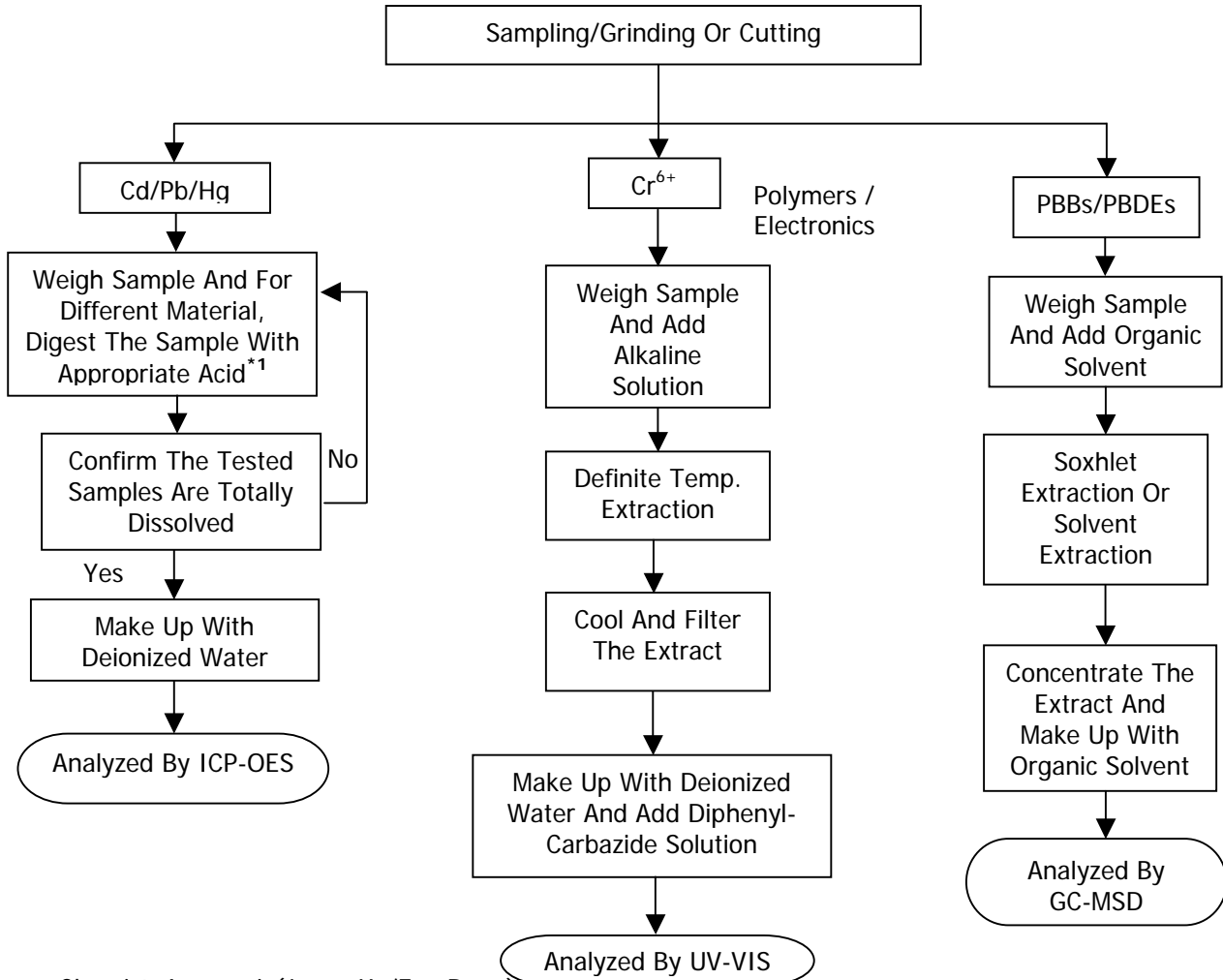
Date Sample Received: Jul 30, 2013

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 <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub> , H <sub>3</sub> BO <sub>3</sub>
Metals	HNO <sub>3</sub> , HCl, HF
Electronics	HNO <sub>3</sub> , HCl, H <sub>2</sub> O <sub>2</sub> , HBF <sub>4</sub>



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 :

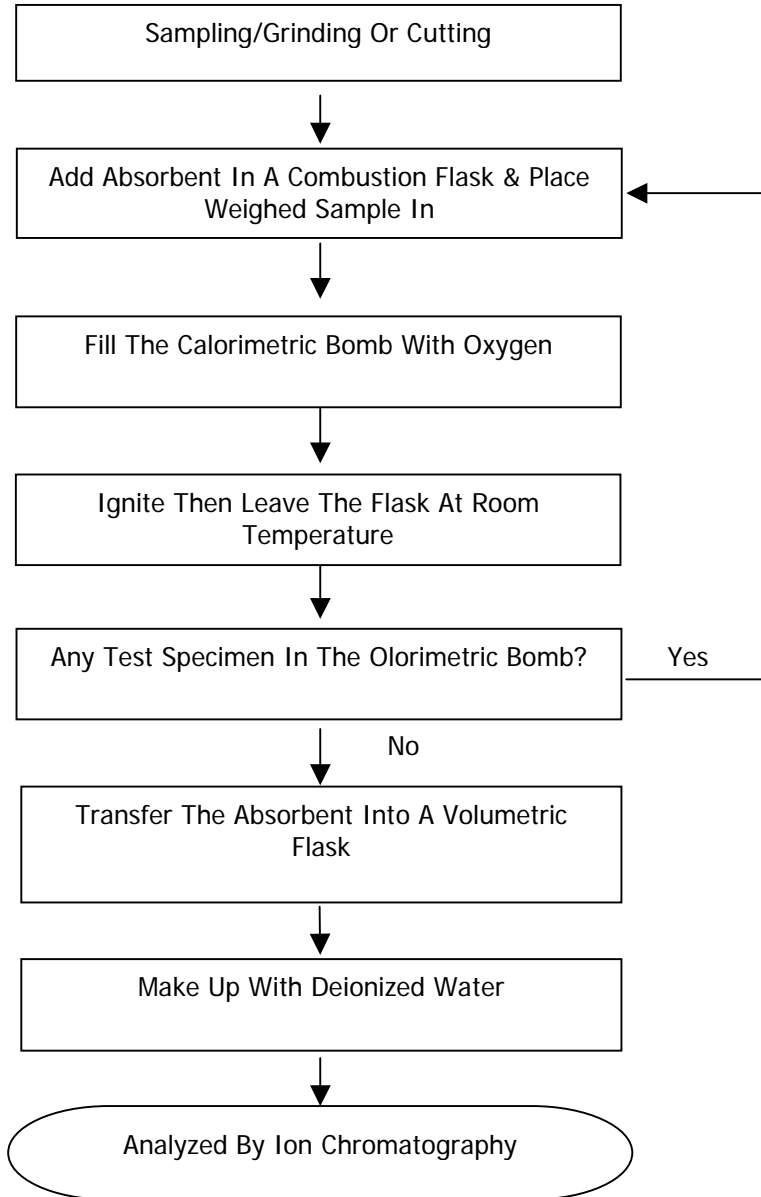
<u>Testing Item</u>	<u>Testing Method</u>	<u>Reporting Limit</u>
Halogen (F,Cl, Br,I) Content	With Reference To EN 14582:2007 By Combustion In A Calorimetric Bomb And Determined By Ion Chromatography	50 ppm

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

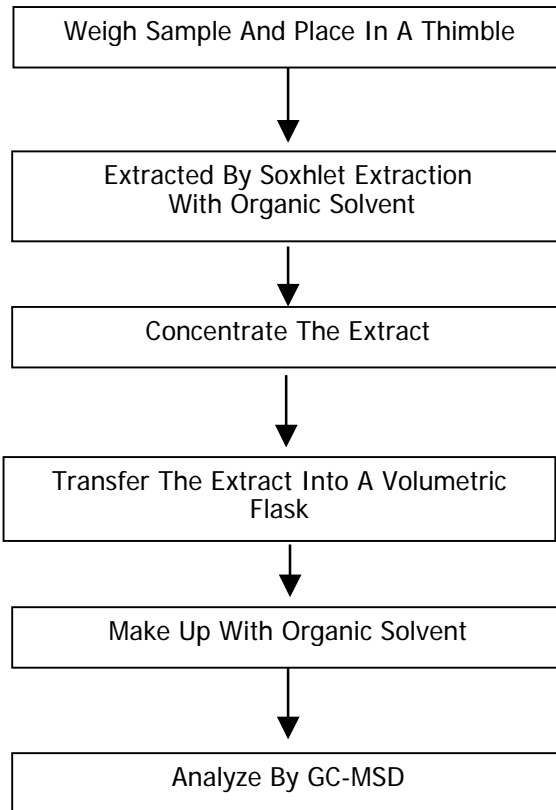
Detection Limit = 0.01%(W/W)  
ND = Not Detected

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

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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)

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Number : WUXH00016524

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

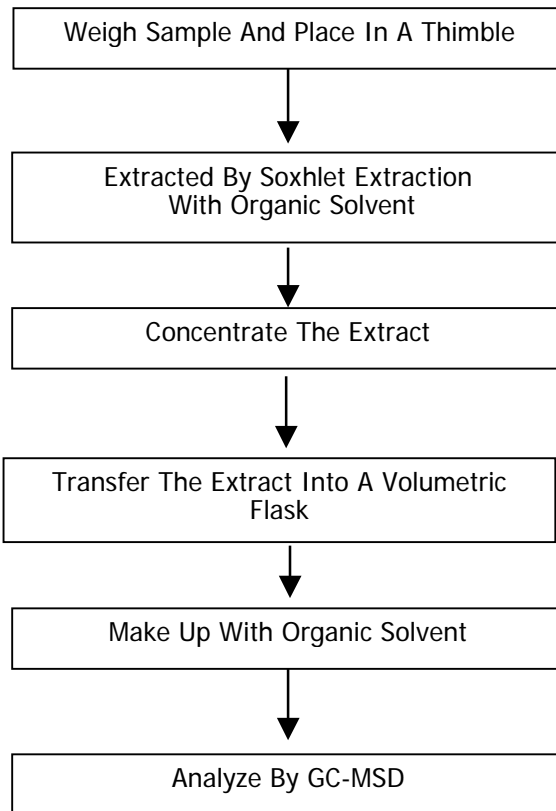
(B) Test Method :

<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)

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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:

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

Remark: mg/kg With 50cm<sup>2</sup> = 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:

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

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

(C) Test Method:

<b>Testing Item</b>	<b>Testing Method</b>	<b>Reporting Limit</b>
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 <sup>6+</sup> ) 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 <sup>2</sup> (In Testing Solution)

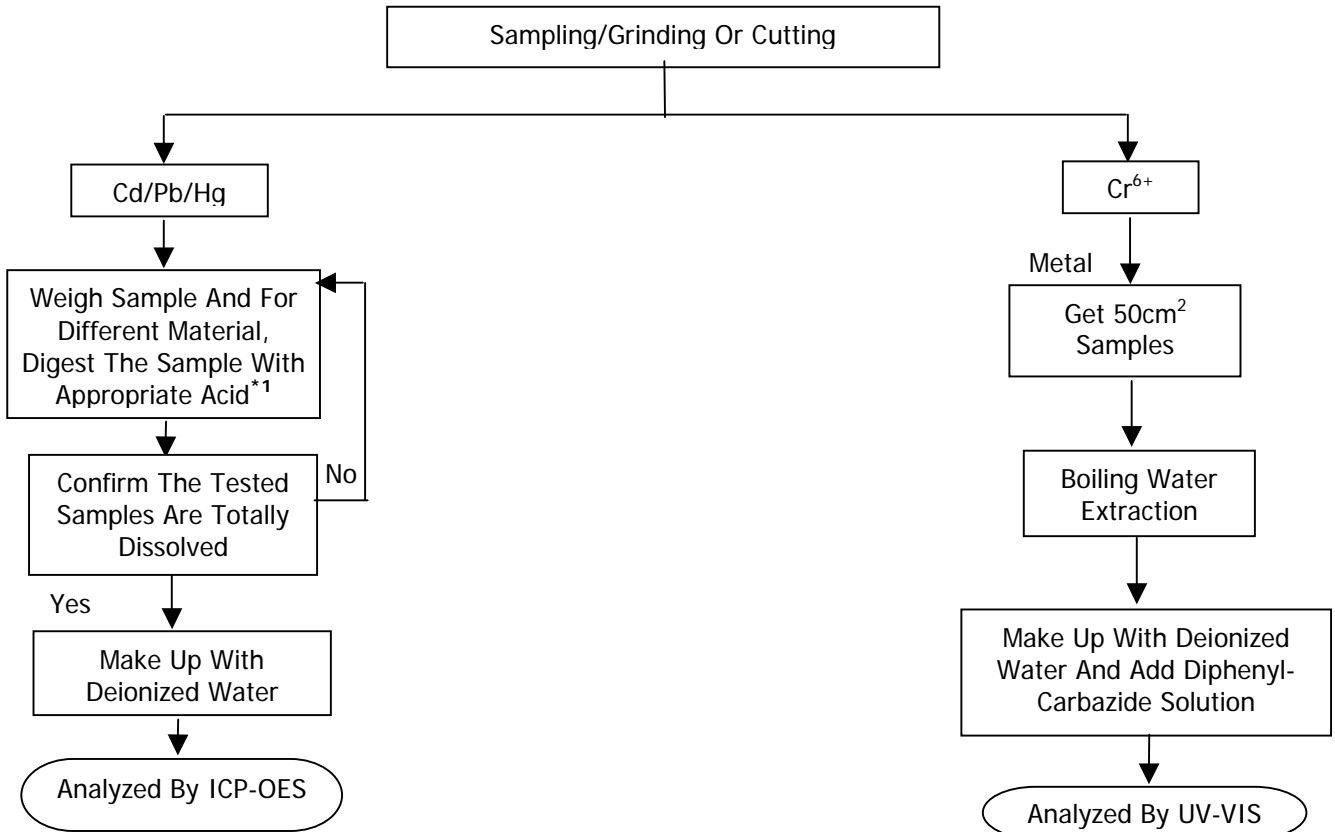
Date Sample Received: Jul 30, 2013

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



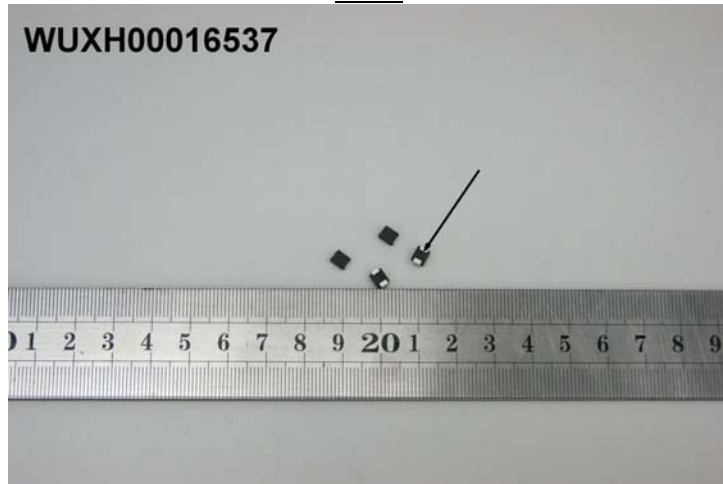
Remarks:

\*1: List Of Appropriate Acid:

Material	Acid Added For Digestion
Polymers	HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub> , H <sub>3</sub> BO <sub>3</sub>
Metals	HNO <sub>3</sub> , HCl, HF
Electronics	HNO <sub>3</sub> , HCl, H <sub>2</sub> O <sub>2</sub> , HBF <sub>4</sub>

Tests Conducted (As Requested By The Applicant)

Photo



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