

## Certificate of non-use of The Controlled Substances

Company name            Littelfuse, Inc.

Product Covered        SIDACTor<sup>®</sup> Modified TO-220 Package (A-PAK),

Issue Date                September 10, 2011

It is hereby certified by Littelfuse, Inc., that there is neither RoHS (EU Directive 2011/65/EU)-restricted substance, nor such use, for materials to be used for unit parts, for packing/package materials, and for additives and the like in the manufacturing processes.

It is also certified by Littelfuse, Inc., that the products listed in this report do not contain Halogens and their compounds judged per widely accepted industrial guidelines.

In addition, it is hereby reported to you that the parts and sub-materials, the materials to be used for unit parts, the packing/package materials, and the additives and the like in the manufacturing processes, are all composed of the following components.

Issued by

\_\_\_\_\_  
< K.Yoshimoto, Senior Product Engineer, Littelfuse, Inc.>

(1) Parts, sub-materials and unit parts

This document covers modified TO-220 (A-PAK) RoHS-Compliant products series supplied by Littelfuse, Inc. Please see page 2 for the complete list of part number covered by this report.

< Homogeneous Materials used >

Please see figure and table 1 on page 5 of this document.

(2) The analytical data on all measurable substances

Please see annex 1 through 10, attached to this document

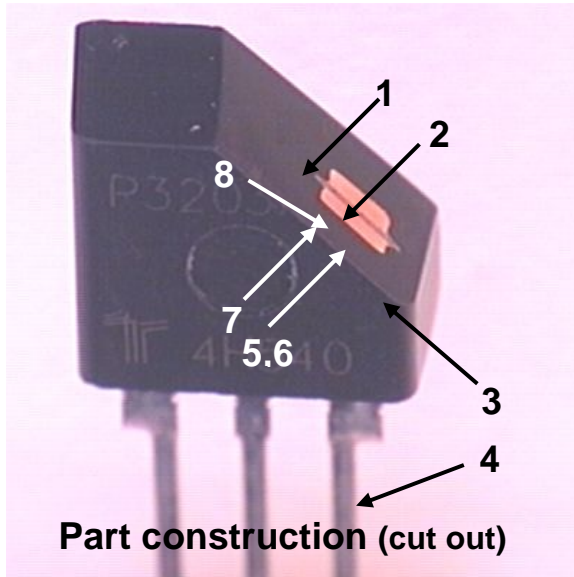
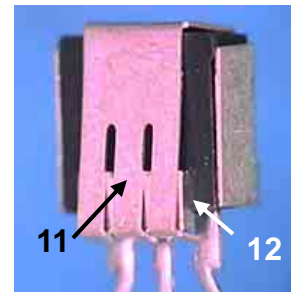
Remarks :

**Pb (lead) contained in die bonding solder (item 7 on page 3) and passivation glass (item 6) to be categorized as exempt in RoHS Annex III 7(a) and 7(c)-I.**

**Please refer to Annex 12 of this report for the extract of the applicable exemptions of RoHS (2011/65/EU)**

### Littelfuse Part Number covered by this report

Standard (Catalog) Part Number			SPECIAL DEVICE P/N
P2000AA61L	P1402ACL	P1553ACL	Any Special P/N which has base standard P/N listed in this table.
P2200AA61L	P1602ACL	P1803ACL	
P2400AA61L	P2202ACL	P2103ACL	
P2500AA61L	P2702ACL	P2353ACL	CR2703AA
P3000AA61L	P3002ACL	P2703ACL	<b>Optional Suffix</b>
P3300AA61L	P3602ACL	P3203ACL	
	P4202ACL	P3403ACL	
P0302AAL	P4802ACL	P5103ACL	Any P/N in this list, including special device P/N may be followed by "RP" or "TP" which denote packing options, or by "60", "61" or "69" which denote the lead-forming options.
P0302AAMCL	P6002ACL	P1553ACMCL	
P0602AAL			
P0602AAMCL	P0302ACMCL	P1803ACMCL	
P1402AAL	P0602ACMCL	P2103ACMCL	
P1602AAL	P1402ACMCL	P2353ACMCL	
P2202AAL	P1602ACMCL	P2703ACMCL	
P2702AAL	P2202ACMCL	P3203ACMCL	
P3002AAL	P2702ACMCL	P3403ACMCL	
P3602AAL	P3002ACMCL	P5103ACMCL	
P4202AAL	P3602ACMCL		<b>FS1 SERIES</b>
P4802AAL	P4202ACMCL	P1400ADL61	P2703AALFS1
P6002AAL	P4802ACMCL	P1800ADL61	P2703ACMCLFS1
	P6002ACMCL	P3100ADL61	
P0302ABL		P6002ADL	P3203ACFS1
P0302ABMCL	P1553AAL		P6002ACFS1
P0602ABL	P1803AAL		
P0602ABMCL	P2103AAL		
P1402ABL	P2353AAL		
P1602ABL	P2703AAL		
P2202ABL	P3203AAL		
P2702ABL	P3403AAL		
P3002ABL			
P3602ABL	P1553ABL		
P4202ABL	P1803ABL		
P4802ABL	P2103ABL		
P6002ABL	P2353ABL		
	P2703ABL		
P0302ACL	P3203ABL		
P0602ACL	P3403ABL		
	P5103ABL		


**Part construction (cut out)**
**Material Used (where used)**

**A-PAK Fail Safe (FS1 Series)**
**Table 1: Homogeneous Material Used**

#	Description	Name of Material	Type	Analysis data
1	Molding compound	epoxy resin	plastic	annex 1
2	Lead frame	copper alloy	metal	annex 2
3	Clip	copper alloy	metal	annex 2. Clip uses same copper material as lead frame
4	Lead finish	tin alloy	metal	annex 3
5	Silicon die	silicon	metal	annex 4, tested as Nickel-plated wafer.
6	Nickel electrode	nickel	metal	
7	Passivation glass	glass	glass	annex 5. Pb in this glass is exempted by RoHS Annex 7.
8	Die bonding solder	solder	metal	annex 6. Pb in this solder is exempted by RoHS Annex 5.
11	Fail Safe Clip	copper alloy	metal	annex 9. Applicable to fail safe FS1 series only
12	Fail Safe Solder Preform	solder	metal	annex 10. Applicable to fail safe FS1 series only

**Table 2: RoHS-regulated substance in raw materials**

Components	Analysis Result						
	Cd Cadmium	Cr Chromium	Hg Mercury	Pb Lead	PBB	PBDE	TOTAL HALOGEN
<b>As Component Total</b> (Typical Value)	< 2ppm	< 2ppm	< 2ppm	<10 ppm* <sup>1</sup> (1.4%* <sup>2</sup> )	< 5 ppm	< 5 ppm	< 100ppm
<b>Epoxy Resin compound</b> (mixture of phenolix resin, epoxy resin, filler and non-Brominated fire retardant) See Annex 1 for the detail	< 2ppm	< 2ppm	< 2ppm	< 2ppm	< 5ppm	< 5ppm	88ppm
<b>Lead frame and Clip</b> (Copper Alloy KFC) See Annex 2 for the detail	< 2ppm	< 2ppm	< 2ppm	11ppm * <sup>3</sup>	< 5ppm	< 5ppm	---
<b>Outside lead finish</b> (Matte-Tin plating) See Annex 3 for the detail	< 2ppm	< 2ppm	< 2ppm	22ppm * <sup>3</sup>	< 5ppm	< 5ppm	---
<b>Silicon Die</b> (Silicon + Ni electrode) See Annex 4 for the detail	< 2ppm	< 2ppm	< 2ppm	58ppm * <sup>3</sup>	< 5ppm	< 5ppm	---
<b>Passivation Glass</b> See Annex 5 for the detail	< 2ppm	< 2ppm	< 2ppm	40wt% * <sup>4</sup>	< 5ppm	< 5ppm	<50pm
<b>Die Bonding Solder</b> (Pb/Sn/Ag=88/10/2) See Annex 6 for the detail	< 2ppm	< 2ppm	< 2ppm	88wt% * <sup>5</sup>	< 5ppm	< 5ppm	84ppm
<b>Fail safe clip</b> (Copper Alloy + Sn plating) See Annex 9 for the detail	< 2ppm	< 2ppm	< 2ppm	32ppm * <sup>3</sup>	---	---	---
<b>Fail safe solder preform</b> (Sn/Bi=60/40) See Annex 10 for the detail	< 2ppm	< 2ppm	< 2ppm	110ppm * <sup>3</sup>	---	---	---

- \*1 Less than 10ppm Pb content overall, excluding Pb from the die bonding solder and the passivation glass on the silicon die.
- \*2 1.4wt% or 17mg of Pb (lead) content overall, including the RoHS-exempted use of Pb
- \*3 Pb (lead) contained in lead frame, outside finish, silicon die, fail safe clip and fail safe solder preform is not exempted from restriction by RoHS, but considered as process contamination or naturally-occurring impurity in raw materials. Littelfuse does not add Pb intentionally.
- \*4 Pb (lead) contained in passivation glass is exempted from restriction by RoHS Annex III 7(c)-I.
- \*5 Pb (lead) contained in die bonding solder is exempted from restriction by RoHS Annex III 7(a).

**Please refer to Annex 12 of this report for the applicable exemptions of RoHS (EU Directive 2011/65/EU)**

**Annex 1: Analysis Result of Molding Compound (Page 1 of 7)****Intertek**

TEST REPORT

Number : WUXH00005739

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, 2011

## Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **Brown Epoxy Molding Compound.**  
Item Name : Epoxy Molding Compound.  
Vendor : Cookson Electronics Semiconductor Products.  
Component Or Part No. : CK-2000A/CK-2000C.  
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

## Summary:

<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 Directives 2002/95/EC And Amendment 2005/618/EC	PASS

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



Jessica Lu  
General Manager

Page 1 Of 7

**Intertek Testing Services Wuxi Ltd.**No.8 Fubei Road, Xishan Economic Development Zone,  
Wuxi 214101, Jiangsu, China

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## Annex 1: Analysis Result of Molding Compound (Page 2 of 7)



TEST REPORT

Number : WUXH00005739

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>VI</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
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

Remark:

mg/kg = Milligram Per Kilogram = ppm

ND = Not Detected

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## Annex 1: Analysis Result of Molding Compound (Page 3 of 7)



TEST REPORT

Number : WUXH00005739

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 2002/95/EC And Amendment 2005/618/EC 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 And Determined By ICP-OES	2 mg/kg
Lead (Pb)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion And Determined By ICP-OES	2 mg/kg
Mercury (Hg)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion 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-MSD And Further HPLC Confirmation When Necessary.	5 mg/kg

Date Sample Received: Aug 01, 2011

Testing Period: Aug 01, 2011 To Aug 05, 2011

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## Annex 1: Analysis Result of Molding Compound (Page 4 of 7)



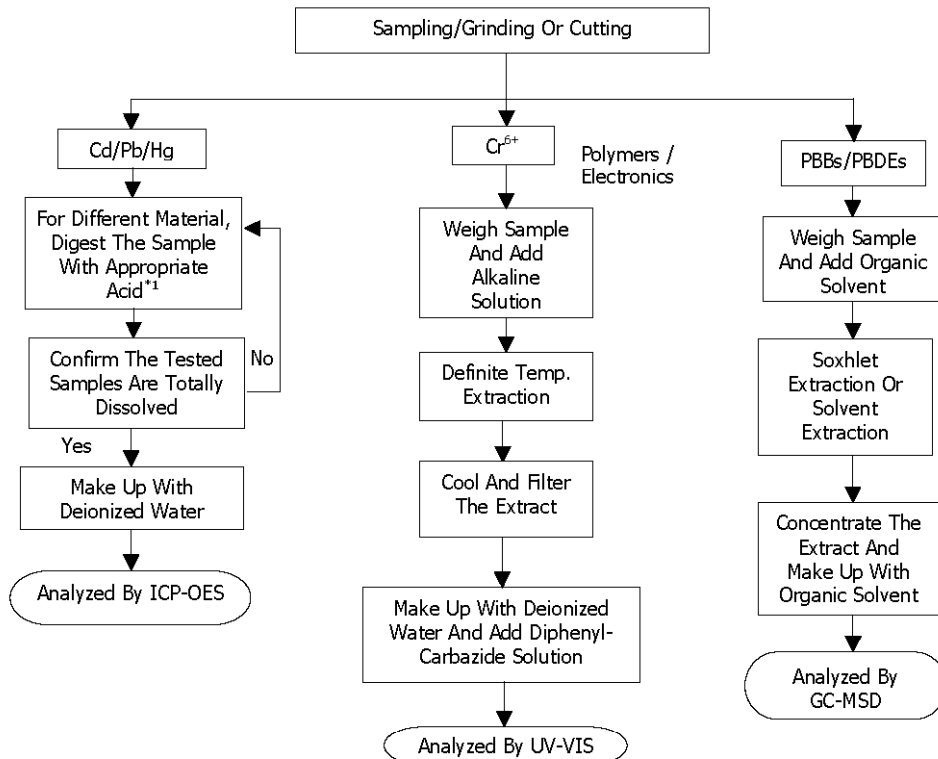
TEST REPORT

Number : WUXH00005739

Tests Conducted (As Requested By The Applicant)

(D) Measurement Flowchart:

Reference Standard: IEC 62321 Edition 1.0: 2008


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

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>

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## Annex 1: Analysis Result of Molding Compound (Page 5 of 7)



TEST REPORT

Number : WUXH00005739

Tests Conducted (As Requested By The Applicant)

2 Halogen Test

(I) Test Result Summary :

Halogen Content:

Testing Item	Result (ppm)
Fluorine (F) Content	ND
Chlorine (Cl)Content	88
Bromine (Br) Content	ND
Iodine (I) Content	ND

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

Date Sample Received: Aug 01, 2011

Testing Period: Aug 01, 2011 To Aug 05, 2011

(II) Test Method :

Testing Item	Testing Method	Reporting Limit
Halogen (F,Cl, Br,I) Content	With Reference 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

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**Annex 1: Analysis Result of Molding Compound (Page 6 of 7)****Intertek**

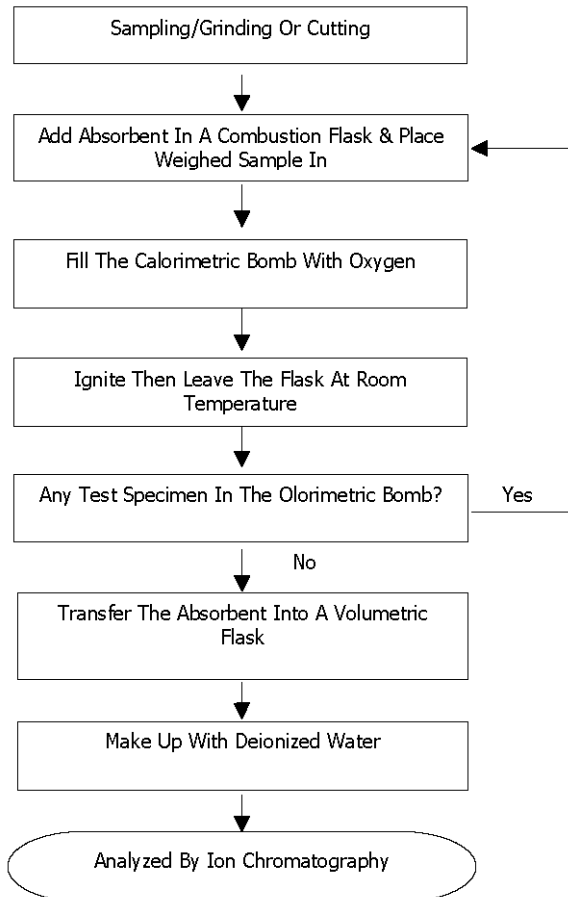
TEST REPORT

Number : WUXH00005739

Tests Conducted (As Requested By The Applicant)

(III) Measurement Flowchart:

Test For Halogen Content Reference Method: EN 14582:2007



Chemist: Fred Wang/ Ally Wan Ally Wan

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## Annex 1: Analysis Result of Molding Compound (Page 7 of 7)

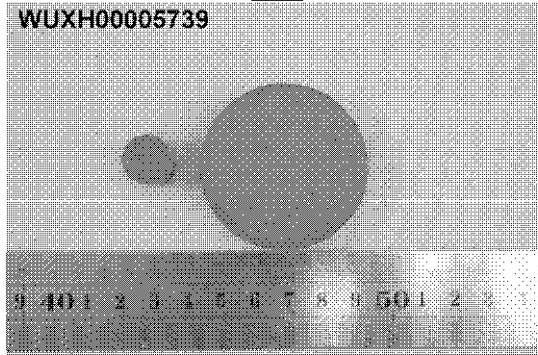
**Intertek**

TEST REPORT

Number : WUXH00005739

Tests Conducted (As Requested By The Applicant)

Photo



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## Annex 2: Analysis Result of Lead frame (Page 1 of 4)



# Test Report

Report No. RLSZD000935670003

Page 1 of 4

Applicant NINGBO ESC PHOTOELECTRON CO.,LTD

Address ECONOMIC &amp; TECHNICAL DEVELOPMENT ZONE,NO.88 YICHENG RD,XIAOGANG NINGBO,CHINA

**Report on the submitted sample(s) said to be**

Sample Name LEAD FRAME  
 Sample Description Cupreous/Silver color metal  
 Part No. TO LEAD FRAME CU SERIES  
 Material KFC  
 Sample Received Date Jun. 11, 2011  
 Testing Period Jun. 11, 2011 to Jun. 13, 2011

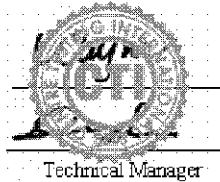
**Test Requested** 1.As specified by client, to determine the Lead(Pb), Cadmium(Cd), Mercury(Hg), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs) content in the submitted sample.  
 2.As specified by client, to identify if there is the Hexavalent Chromium in the submitted sample.

**Test Method**

Test Item(s)	Test Method	Measured Equipment(s)	MDL
Lead(Pb)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2 mg/kg
Cadmium(Cd)	IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2 mg/kg
Mercury(Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES	2 mg/kg
Hexavalent Chromium(Cr(VI))	IEC 62321:2008 Ed.1 Annex B	UV-Vis	/
Polybrominated Biphenyls(PBBs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5 mg/kg
Polybrominated Diphenyl Ethers(PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5 mg/kg

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

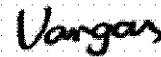
Tested by



Approved by

Technical Manager

Inspected by



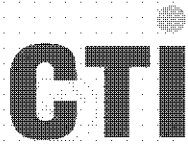
Date

Jun. 13, 2011

No. 15504265



## Annex 2: Analysis Result of Lead frame (Page 2 of 4)



# Test Report

Report No. RLSZD000935670003

Page 2 of 4

**Test Result(s)**

Tested Item(s)	Content
Lead(Pb)	N.D.
Cadmium (Cd)	N.D.
Mercury(Hg)	N.D.

Tested Item(s)	Conclusion
Hexavalent Chromium(Cr(VI))	Negative

Tested Item(s)	Content
<b>Polybrominated Biphenyls(PBBs)</b>	
Monobromobiphenyl	N.D.
Dibromobiphenyl	N.D.
Tribromobiphenyl	N.D.
Tetrabromobiphenyl	N.D.
Pentabromobiphenyl	N.D.
Hexabromobiphenyl	N.D.
Heptabromobiphenyl	N.D.
Octabromobiphenyl	N.D.
Nonabromobiphenyl	N.D.
Decabromobiphenyl	N.D.

Tested Item(s)	Content
<b>Polybrominated Diphenyl Ethers(PBDEs)</b>	
Monobromodiphenyl ether	N.D.
Dibromodiphenyl ether	N.D.
Tribromodiphenyl ether	N.D.
Tetrabromodiphenyl ether	N.D.
Pentabromodiphenyl ether	N.D.
Hexabromodiphenyl ether	N.D.
Heptabromodiphenyl ether	N.D.
Octabromodiphenyl ether	N.D.
Nonabromodiphenyl ether	N.D.
Decabromodiphenyl ether	N.D.

**Note:** The sample had been dissolved totally tested for Lead, Cadmium, Mercury.  
 -MDL = Method Detection Limit  
 -N.D. = Not Detected (<MDL )  
 -mg/kg = ppm = parts per million.  
 -Negative = Absence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is less than 0.02 mg/kg with 50cm<sup>2</sup> sample surface area used.

## Annex 2: Analysis Result of Lead frame (Page 3 of 4)

# CTI

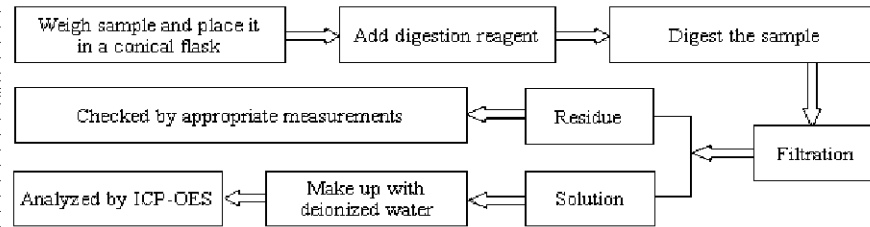
## Test Report

Report No. RLSZD000935670003

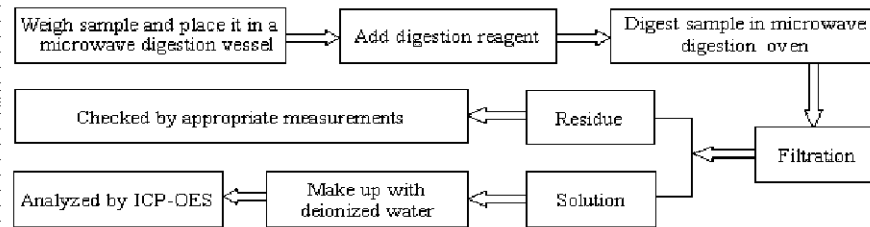
Page 3 of 4

### Test Process

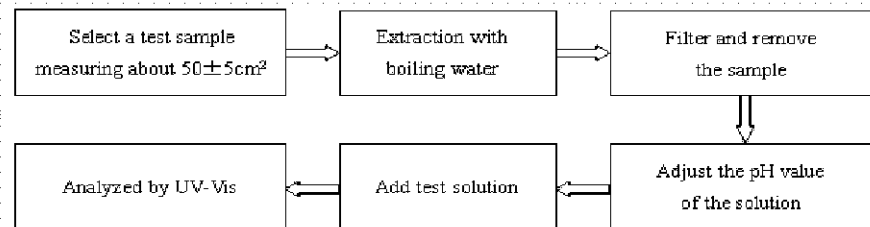
#### 1. Lead(Pb), Cadmium(Cd)



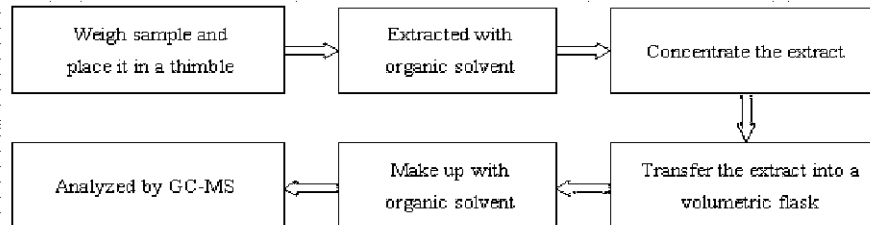
#### 2. Mercury(Hg)



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



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



## Annex 2: Analysis Result of Lead frame (Page 4 of 4)

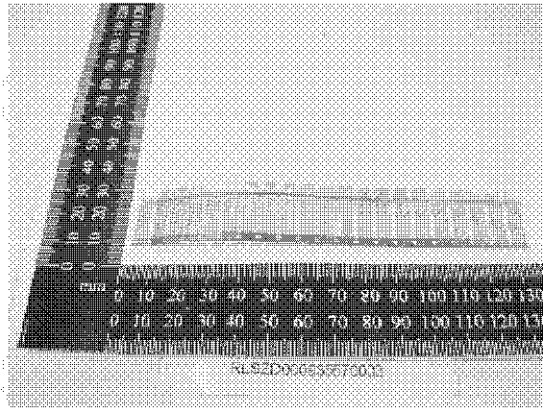
**CTI**

### Test Report

Report No. RLSZD000935670003

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



\*\*\* End of report \*\*\*

This report is considered invalidated without the Special Seal for Inspection of the CTI. This report shall not be altered, increased or deleted. The results shown in this test report refer only to the sample(s) tested. Without written approval of CTI, this test report shall not be copied except in full and published as advertisement.

Building C, Hongwei Industrial Zone, Baoan 70 District, Shenzhen



## Annex 3: Analysis Result of Lead finish (page 1 of 5)



### Test Report

No. CANEC1005451006

Date: 04 Jan 2011

Page 1 of 5

GAOXIN STANNUM INDUSTRY (HUIZHOU) CO.,LTD.  
 XIANAN INDUSTRIAL CENTRE,YUANZHOU TOWN,BOLUO COUNTY,HUIZHOU CITY  
 516123, CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as :

Solder Ball 99.9%

SGS Job No. : 12868209 - SZ  
 SGS Internal Reference No. : 15.5  
 Date of Sample Received : 29 Dec 2010  
 Testing Period : 29 Dec 2010 - 04 Jan 2011

Test Requested : Selected test(s) as requested by client.

Test Method : Please refer to next page(s).

Test Results : Please refer to next page(s).

Conclusion : Based on the performed tests on submitted sample(s), the results **comply with the RoHS Directive 2002/95/EC and its subsequent amendments.**

Signed for and on behalf of  
 SGS-CSTC Ltd.



Alpher Qiu  
 Approved Signatory

This document is issued by the Laboratory named here in the name of "Littelfuse" and the results obtained are not valid if the Laboratory is not duly accredited by the relevant authorities. The Laboratory is not responsible for the results obtained if the client does not follow the instructions given in the report. The Laboratory is not responsible for the results obtained if the client does not follow the instructions given in the report. The Laboratory is not responsible for the results obtained if the client does not follow the instructions given in the report. The Laboratory is not responsible for the results obtained if the client does not follow the instructions given in the report.



Member of the SGS Group (SGS SA)



## Annex 3: Analysis Result of Lead finish (page 2 of 5)



### Test Report

No. CANEC1005451006

Date: 04 Jan 2011

Page 2 of 5

#### Test Results:

ID for specimen 1 : CAN10-054510.002  
 Description for specimen 1 : Silvery metal ball

#### RoHS Directive 2002/95/EC

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Cadmium (Cd)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	100
Lead (Pb)	mg/kg	IEC 62321:2008, ICP-OES	22	2	1000
Mercury (Hg)	mg/kg	IEC 62321:2008, ICP-OES	N.D.	2	1000
Hexavalent Chromium (CrVI) by boiling water extraction	-	IEC 62321:2008, UV-Vis	Negative	◇	#
Sum of PBBs	mg/kg	-	N.D.	-	1000
Monobromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Dibromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tribromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tetrabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Pentabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Hexabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Heptabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Octabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Nonabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Decabromobiphenyl	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Sum of PBDEs	mg/kg	-	N.D.	-	1000
Monobromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Dibromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tribromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Tetrabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Pentabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Hexabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Heptabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Octabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Nonabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	
Decabromodiphenyl ether	mg/kg	IEC 62321:2008, GC-MS	N.D.	5	

#### Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. ◇ = Spot-Test:

Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result is negative or cannot be confirmed.)

Boiling-water-extraction:

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## Annex 3: Analysis Result of Lead finish (page 3 of 5)



### Test Report

No. CANEC1005451006

Date: 04 Jan 2011

Page 3 of 5

Negative = Absence of CrVI coating

Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm<sup>2</sup> sample surface area.

Storage conditions 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.

5. # = Positive indicates the presence of CrVI on the tested areas.

Negative indicates the absence of CrVI on the tested areas.

6. "-" = Not regulated

Remark: Results and photo(s) of this report refer to test report CANEC1005451003.

This document is issued by the Competent authorities (National Competence of the relevant member state) for the purpose of providing information on the results of the analysis and the compliance of the sample with the requirements of the relevant legislation. It is not intended to be used as a basis for legal proceedings. The results of the analysis are the property of the Competent authorities. The results of the analysis are not to be used for any other purpose. The results of the analysis are not to be used for any other purpose. The results of the analysis are not to be used for any other purpose.



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## Annex 3: Analysis Result of Lead finish (page 4 of 5)



### Test Report

No. CANEC1005451006

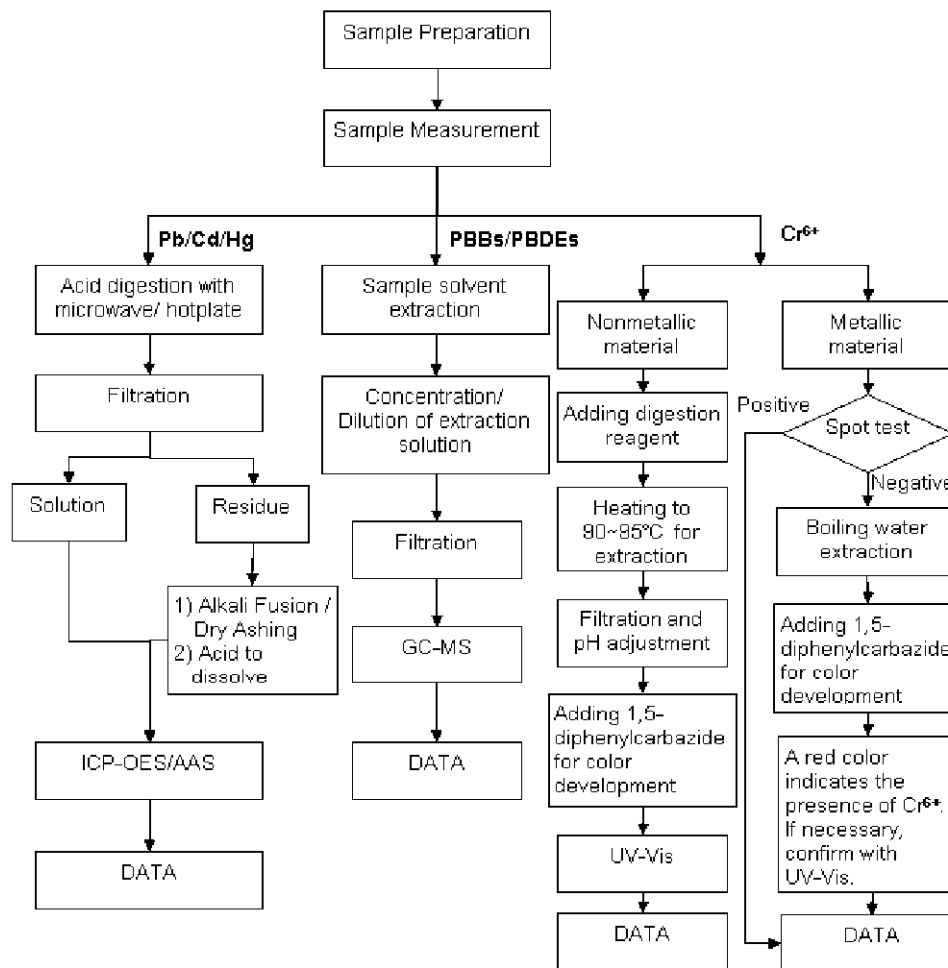
Date: 04 Jan 2011

Page 4 of 5

### ATTACHMENTS

#### RoHS Testing Flow Chart

- 1) Name of the person who made testing: Bella Wang / Cutey Yu / Ross Zhan
- 2) Name of the person in charge of testing: Adams Yu / Ryan Yang
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).



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### Annex 3: Analysis Result of Lead finish (page 5 of 5)


**Test Report**

No. CANEC1005451006

Date: 04 Jan 2011

Page 5 of 5

Sample photo:



SGS authenticate the photo on original report only

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

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**Annex 4: Analysis Result of Ni-plated Wafer (Page 1 of 5)****Intertek**

TEST REPORT

Number : WUXH00005703

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 04, 2011

## Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **Silvery Grey Metal.**

Item Name : Silicon Wafer With Nickel Plating.

Vendor : Concord.

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

Page 1 Of 5

**Intertek Testing Services Wuxi Ltd.**No 8 Fubei Road, Xishan Economic Development Zone,  
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## Annex 4: Analysis Result of Ni-plated Wafer (Page 2 of 5)



TEST REPORT

Number : WUXH00005703

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)	48
Mercury (Hg) Content (mg/kg)	ND
Chromium (VI) (Cr <sup>VI</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
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

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

Page 2 Of 5

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## Annex 5: Analysis Result of Ni-plated Wafer (Page 3 of 5)



TEST REPORT

Number : WUXH00005703

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 2002/95/EC And Amendment 2005/618/EC 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 And Determined By ICP-OES	2 mg/kg
Lead (Pb)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion And Determined By ICP-OES	2 mg/kg
Mercury (Hg)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion 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 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: Aug 01, 2011

Testing Period: Aug 01, 2011 To Aug 04, 2011

Page 3 Of 5

**Intertek Testing Services Wuxi Ltd.**

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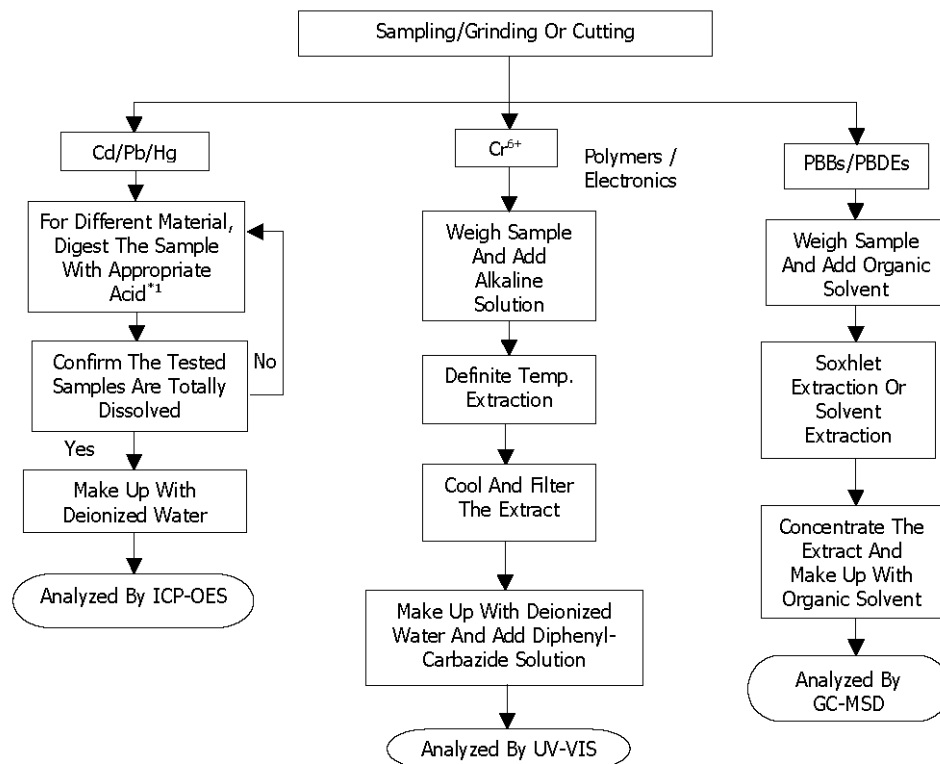
## Annex 5: Analysis Result of Ni-plated Wafer (Page 4 of 5)



TEST REPORT

Number : WUXH00005703

Tests Conducted (As Requested By The Applicant)

 (D) Measurement Flowchart:  
 Reference Standard: IEC 62321 Edition 1.0: 2008

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

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>

Page 4 Of 5

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## Annex 5: Analysis Result of Ni-plated Wafer (Page 5 of 5)

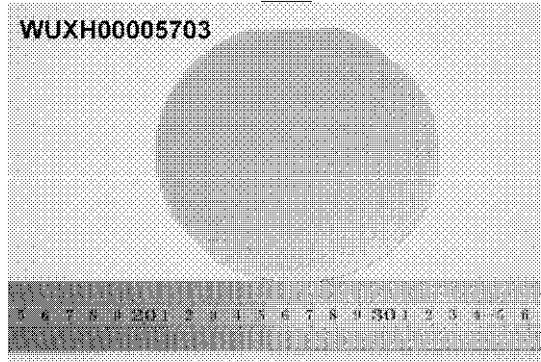
**Intertek**

TEST REPORT

Number : WUXH00005703

Tests Conducted (As Requested By The Applicant)

Photo



Page 5 Of 5

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**Annex 6: Analysis Result of Passivation Glass (Page 1 of 7)**

TEST REPORT

Number : WUXH00005704

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, 2011

## Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **White Power.**

Item Name : Wafer Passivation.  
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

Page 1 Of 7

**Intertek Testing Services Wuxi Ltd.**No.8 Fubei Road, Xishan Economic Development Zone,  
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## Annex 6: Analysis Result of Passivation Glass (Page 2 of 7)



TEST REPORT

Number : WUXH00005704

**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)	185100
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
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

**Remark:**

mg/kg = Milligram Per Kilogram = ppm

ND = Not Detected

# = The Result Is For Reference Only.

Page 2 Of 7

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## Annex 6: Analysis Result of Passivation Glass (Page 3 of 7)



TEST REPORT

Number : WUXH00005707

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 2002/95/EC And Amendment 2005/618/EC 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 And Determined By ICP-OES	2 mg/kg
Lead (Pb)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion And Determined By ICP-OES	2 mg/kg
Mercury (Hg)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion 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 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: Aug 01, 2011

Testing Period: Aug 01, 2011 To Aug 04, 2011

Page 3 Of 7

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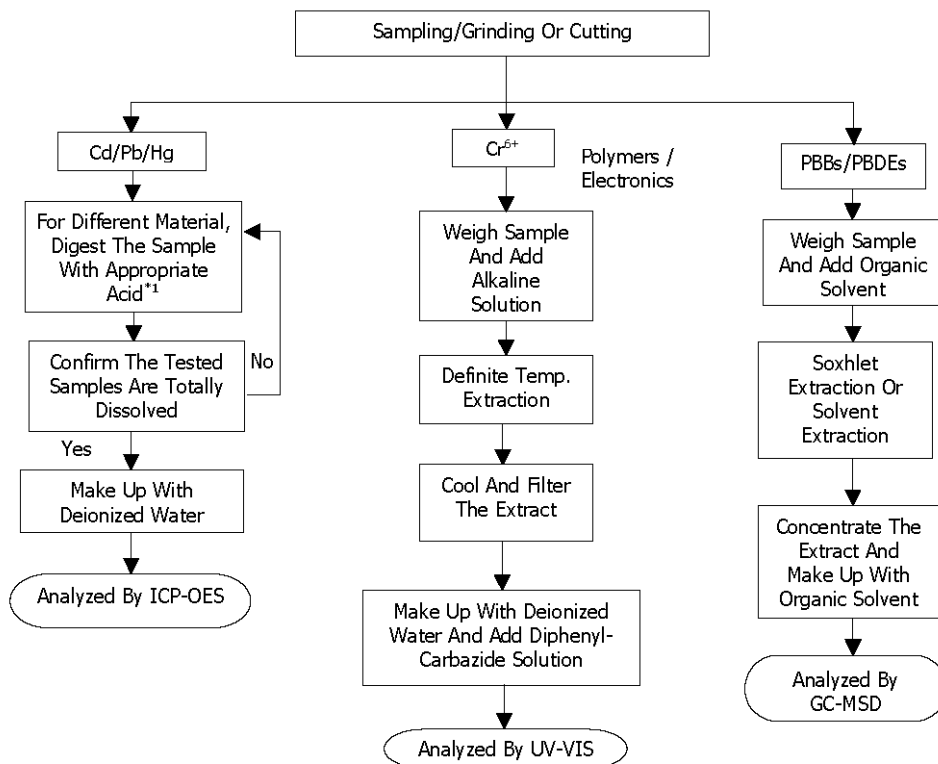
## Annex 6: Analysis Result of Passivation Glass (Page 4 of 7)



TEST REPORT

Number : WUXH00005704

Tests Conducted (As Requested By The Applicant)

 (D) Measurement Flowchart:  
 Reference Standard: IEC 62321 Edition 1.0: 2008

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

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. Halogen Test  
 (I) Test Result Summary :

Page 4 Of 7

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## Annex 6: Analysis Result of Passivation Glass (Page 5 of 7)



TEST REPORT

Number : WUXH00005704

**Tests Conducted (As Requested By The Applicant)**

Halogen Content:

Testing Item	Result (ppm)
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: Aug 01, 2011  
 Testing Period: Aug 01, 2011 To Aug 05, 2011

**(II) Test Method :**

Testing Item	Testing Method	Reporting Limit
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

Page 5 Of 7

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**Annex 6: Analysis Result of Passivation Glass (Page 6 of 7)****Intertek**

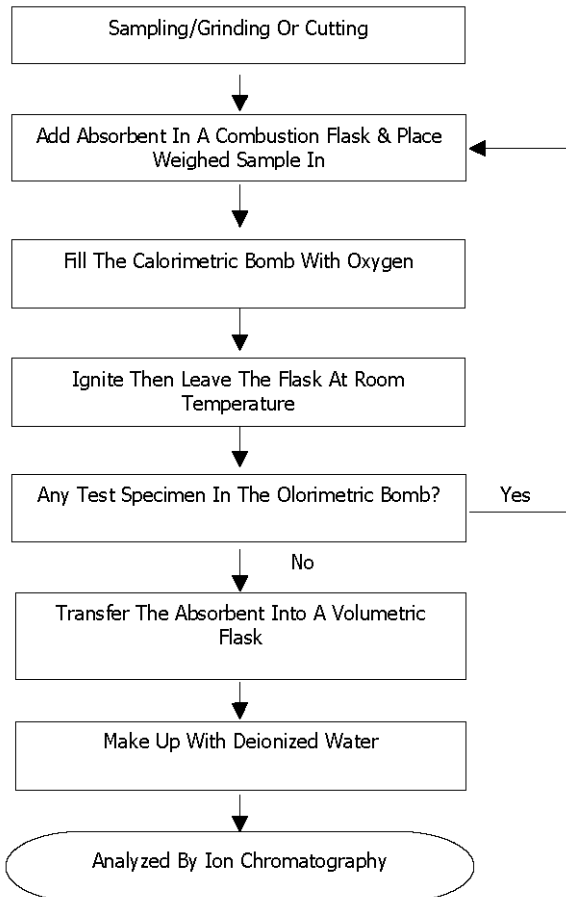
TEST REPORT

Number : WUXH00005704

Tests Conducted (As Requested By The Applicant)

(III) Measurement Flowchart:

Test For Halogen Content Reference Method: EN 14582:2007



Chemist: Fred Wang/ Ally Wan Ally Wan

Page 6 Of 7

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Wuxi 214101, Jiangsu, China

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## Annex 6: Analysis Result of Passivation Glass (Page 7 of 7)

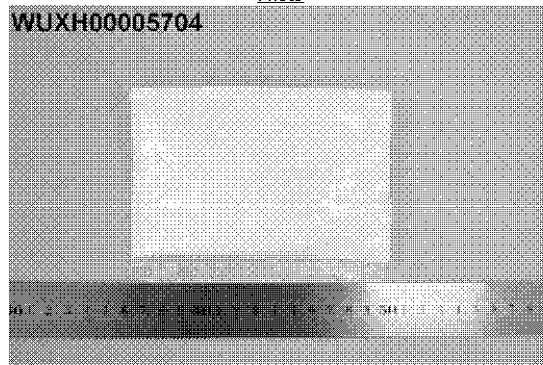
**Intertek**

TEST REPORT

Number : WUXH00005704

Tests Conducted (As Requested By The Applicant)

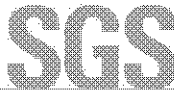
Photo



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**Annex 7: Analysis Result of Die Bonding Solder (Page 1 of 4)****Test Report**

No. SHAEC1107551802

Date: 31 May 2011

Page 1 of 4

SHENZHEN EARLYSUN TECHNOLOGY CO.,LTD

6F,BUILDING OF BAODAZHOU,INTERCHANGE OF LONGZHU AVENUE AND LONGZHU  
3ROAD,TAOYUAN STREET,NANSHAN,SHENZHEN,CHINAThe following sample(s) was/were submitted and identified on behalf of the clients as : High-temperature Solder  
Paste

SGS Job No. : SZ13136369 - SZ

Model No. : (ES-660,ES-500,ES-610,ES-620,ES-510,ES-520(Sn5Pb92.5Ag2.5,Sn5Pb95,Sn  
5Pb93.5Ag1.5,Sn10Pb90,Sn10Pb88Ag2,Sn20Pb78Ag2,Sn3Pb97,Sn5Pb93Ag2)  
)mixture

Date of Sample Received : 23 May 2011

Testing Period : 23 May 2011 - 31 May 2011

Test Requested : Selected test(s) as requested by client.

Test Method : Please refer to next page(s).

Test Results : Please refer to next page(s).

Conclusion : Based on the performed tests on submitted samples, the results comply with the  
RoHS Directive 2002/95/EC and its subsequent amendments.Signed for and on behalf of  
SGS-CSTC Ltd.Fan Jingjie, JJ  
Approved Signatory

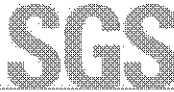
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Please do not disseminate the results shown in this test report for any other than the sample(s) tested.

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## Annex 7: Analysis Result of Die Bonding Solder (Page 2 of 4)



### Test Report

No. SHAEC1107551802

Date: 31 May 2011

Page 2 of 4

Test Results :

#### Test Part Description :

Specimen No.	SGS Sample ID	Description
1	SHA11-075518.001	Grey solid

Remarks :

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

#### RoHS Directive 2002/95/EC

Test Method : (1) With reference to IEC 62321:2008 for Cadmium content. Analysis was performed by ICP-OES.  
 (2) With reference to IEC 62321:2008 for Mercury content. Analysis was performed by ICP-OES.  
 (3) Titration method  
 (4) With reference to IEC 62321:2008 for Hexavalent Chromium by Colorimetric Method. Analysis was performed by UV/Vis Spectrophotometer.  
 (5) With reference to IEC 62321:2008 for PBBs / PBDEs content. Analysis was performed by GC/MS.

Test Item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
Mercury (Hg)	1,000	mg/kg	2	ND
Lead (Pb)	-	%	-	90.82▲
Hexavalent Chromium (CrVI)	1,000	mg/kg	2	ND
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND

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## Annex 7: Analysis Result of Die Bonding Solder (Page 3 of 4)



### Test Report

No. SHAEC1107551802

Date: 31 May 2011

Page 3 of 4

Test Item(s)	Limit	Unit	MDL	001
Monobromodiphenyl ether	-	mg/kg	5	ND
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND

#### Notes :

- (1) The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC
- (2) \*As declared by the applicant, the materials fall into exemption items according to EU directive 2002/95/EC(RoHS), and its subsequent amendments.

#### Halogen

Test Method : With reference to EN 14582: 2007, analysis was performed by Ion Chromatograph (IC).

Test Item(s)	Unit	MDL	001
Fluorine (F)	mg/kg	50	ND
Chlorine (Cl)	mg/kg	50	ND
Bromine (Br)	mg/kg	50	84
Iodine (I)	mg/kg	50	ND

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## Annex 7: Analysis Result of Die Bonding Solder (Page 4 of 4)



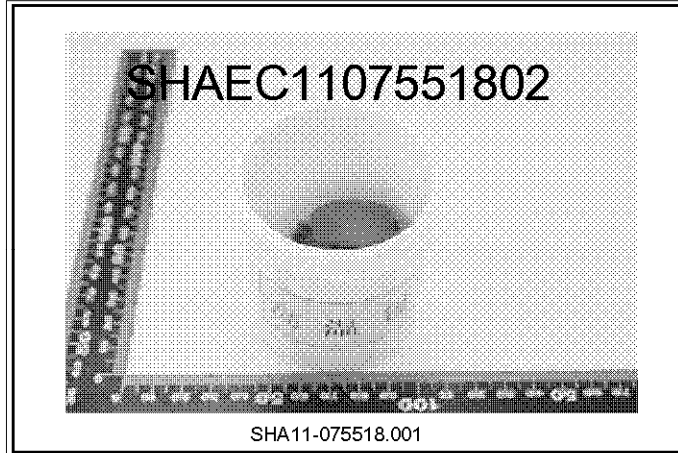
### Test Report

No. SHAEC1107551802

Date: 31 May 2011

Page 4 of 4

Sample photo:



SGS authenticate the photo on original report only

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**Annex 10: Analysis Result of Fail Safe Clip (Page 1 of 4)****Intertek**

TEST REPORT

Number : WUXH00005954

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 : Sep 07, 2011

## Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **Silvery Grey Metal.**

Item Name : Fail Safe Clip.

Vendor : G-Shank.

Component Or Part No. : Copper With Tin Plating.

Test Item : Cd, Pb, Hg, CrVI.

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

Page 1 Of 4

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## Annex 10: Analysis Result of Fail Safe Clip (Page 2 of 4)



TEST REPORT

Number : WUXH00005954

**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)	32
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 = Milligram Per Kilogram = ppm

 mg/kg With 50cm<sup>2</sup> = Milligram Per Kilogram With 50 Square Centimeter

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 <sup>6+</sup> )	0.1% (1000 mg/kg)

The Above Limits Were Quoted From 2002/95/EC And Amendment 2005/618/EC 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 And Determined By ICP-OES	2 mg/kg
Lead (Pb)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion And Determined By ICP-OES	2 mg/kg
Mercury (Hg)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion 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: Sep 01, 2011

Testing Period: Sep 01, 2011 To Sep 06, 2011

Page 2 Of 4

**Intertek Testing Services Wuxi Ltd.**

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## Annex 10: Analysis Result of Fail Safe Clip (Page 3 of 4)



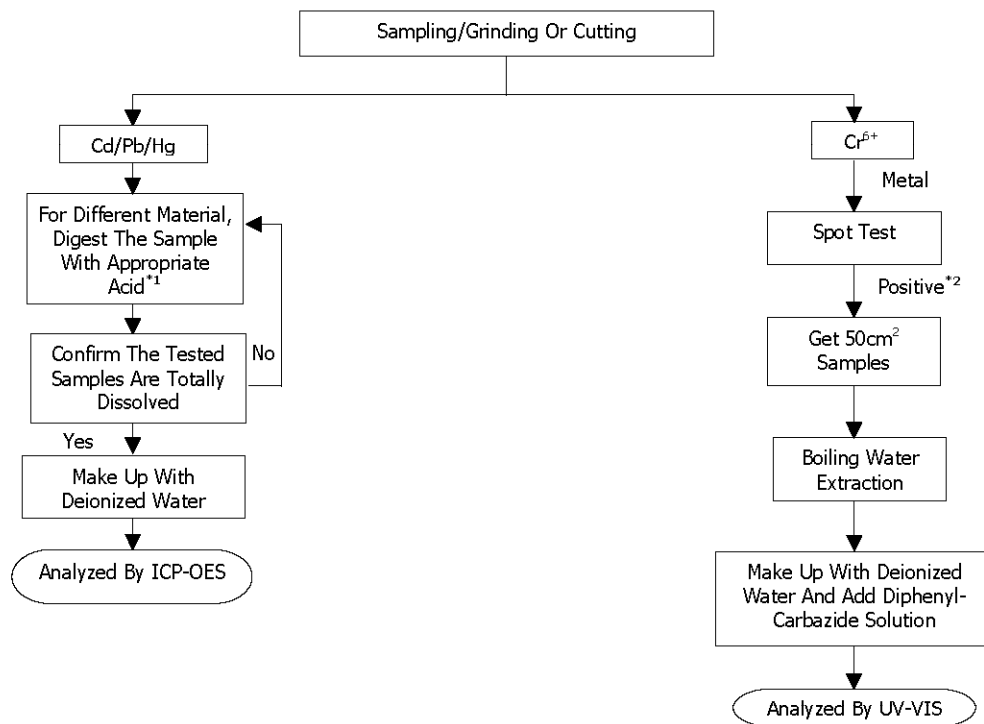
TEST REPORT

Number : WUXH00005954

Tests Conducted (As Requested By The Applicant)

(D) Measurement Flowchart:

Reference Standard: IEC 62321 Edition 1.0: 2008



Chemist: Inorganic (Ann Luo/Fred Wang/Ally Wan)

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.

Page 3 Of 4

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## Annex 10: Analysis Result of Fail Safe Clip (Page 4 of 4)

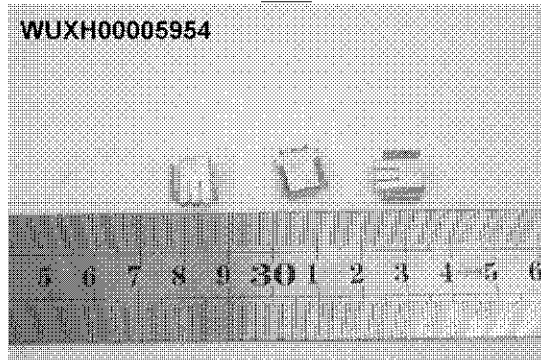
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TEST REPORT

Number : WUXH00005954

Tests Conducted (As Requested By The Applicant)

Photo



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**Annex 11: Analysis Result of Fail Solder Preform (Page 1 of 4)****Intertek**

TEST REPORT

Number : WUXH00005955

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 : Sep 07, 2011

## Sample Description As Declared:

One (1) Piece Of Submitted Sample Said To Be : **Silvery Grey Metal.**  
Item Name : Fail Safe Solder Pellet.  
Vendor : Indium Corporation Of America.  
Component Or Part No. : Sn60 Bi40.  
Test Item : Cd, Pb, Hg, CrVI.

## Tests Conducted:

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

## Summary:

<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 Directives 2002/95/EC And Amendment 2005/618/EC	PASS

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



Jessica Lu  
General Manager

Page 1 Of 4

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## Annex 11: Analysis Result of Fail Solder Preform (Page 2 of 4)



TEST REPORT

Number : WUXH00005955

**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)	110
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 = Milligram Per Kilogram = ppm

 mg/kg With 50cm<sup>2</sup> = Milligram Per Kilogram With 50 Square Centimeter

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 <sup>6+</sup> )	0.1% (1000 mg/kg)

The Above Limits Were Quoted From 2002/95/EC And Amendment 2005/618/EC 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 And Determined By ICP-OES	2 mg/kg
Lead (Pb)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion And Determined By ICP-OES	2 mg/kg
Mercury (Hg)Content	With Reference To IEC 62321 Edition 1.0: 2008, By Acid Digestion 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: Sep 01, 2011

Testing Period: Sep 01, 2011 To Sep 06, 2011

Page 2 Of 4

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## Annex 11: Analysis Result of Fail Solder Preform (Page 3 of 4)



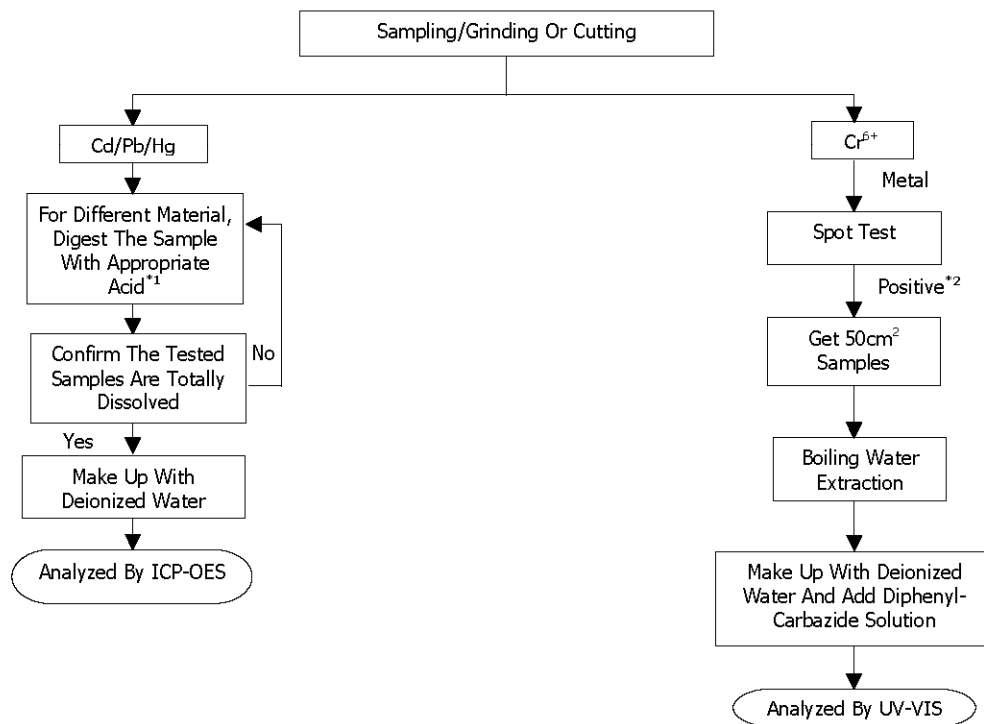
TEST REPORT

Number : WUXH00005955

Tests Conducted (As Requested By The Applicant)

(D) Measurement Flowchart:

Reference Standard: IEC 62321 Edition 1.0: 2008



Chemist: Inorganic (Ann Luo/Fred Wang/Ally Wan)

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.

Page 3 Of 4

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## Annex 11: Analysis Result of Fail Solder Preform (Page 4 of 4)

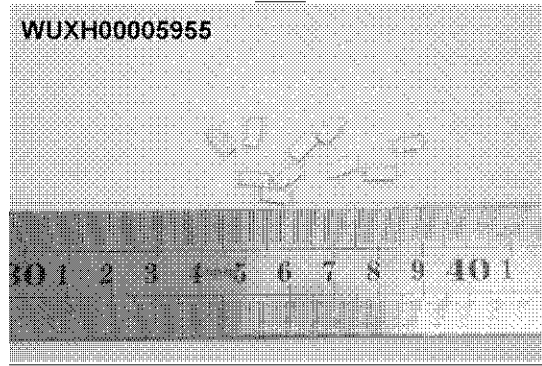
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TEST REPORT

Number : WUXH00005955

Tests Conducted (As Requested By The Applicant)

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## Annex 12: Applicable RoHS exemptions (2011/65/EU Annex III)

1.7.2011

EN

Official Journal of the European Union

L 174/103

	Exemption	Scope and dates of applicability
6(a)	Lead as an alloying element in steel for machining purposes and in galvanised steel containing up to 0,35 % lead by weight	
6(b)	Lead as an alloying element in aluminium containing up to 0,4 % lead by weight	
6(c)	Copper alloy containing up to 4 % lead by weight	
7(a)	Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead)	
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications	
7(c)-I	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezo-electronic devices, or in a glass or ceramic matrix compound	
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher	
7(c)-III	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs	Expires on 1 January 2012 and after that date may be used in spare parts for TEE placed on the market before 1 January 2012
8(b)	Cadmium and its compounds in electrical contacts	
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0,75 % by weight in the cooling solution	
9(b)	Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications	
11(a)	Lead used in C-press compliant pin connector systems	May be used in spare parts for EEE placed on the market before 24 September 2010
11(b)	Lead used in other than C-press compliant pin connector systems	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013
12	Lead as a coating material for the thermal conduction module C-ring	May be used in spare parts for EEE placed on the market before 24 September 2010
13(a)	Lead in white glasses used for optical applications	
13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards	
14	Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80 % and less than 85 % by weight	Expired on 1 January 2011 and after that date may be used in spare parts for EEE placed on the market before 1 January 2011