

Certificate of non-use of The Controlled Substances

Company name Littelfuse, Inc.

Product Covered SIDACtor®, DO-214AA & COMPAK® Package
SIDAC, DO-214AA Package
SiBOD™, DO-214AA Package, SMTBJ series
Thyristor, COMPAK® Package
BATTRAX®, COMPAK® Package
PLED, DO-214AA Package


Issue Date August 15, 2013

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/packaging 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/packaging materials, and the additives and the like in the manufacturing processes, are all composed of the following components.

Issued by


JENNY DINGLASAN

< Global EHS Specialist >

Parts, sub-materials and unit parts

This document covers DO-214AA package & COMPAK package, RoHS-Compliant and Halogen-free series manufactured by Littelfuse Concord Wuxi Plant (Wuxi, China), supplied by Littelfuse, Inc. Please see page 2-4 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.

Remarks :

Pb (lead) contained in die bonding solder (item 8 on page 5) and passivation glass (item 7) to be categorized as exempt in RoHS Annex III 7(a) and 7(c)-I.

Please refer to page 56-59 of this report for the extract of the applicable exemptions of RoHS (EU Directive 2011/65/EU)

Littelfuse Part Number covered by this report (1/3)
SIDACtor® Standard Devices

P0080SALRP	P0722SBLRP	P1302SCLRP	P2500SALRP
P0080SAMCLRP	P0722SCLRP	P1402SALRP	P2500SBLRP
P0080SBLRP	P0900SALRP	P1402SBLRP	P2500SCLRP
P0080SBMCLRP	P0900SBLRP	P1500SALRP	P2500SCMCLRP
P0080SCLRP	P0900SCLRP	P1500SBLRP	P2600SALRP
P0080SCMCLRP	P0900SCMCLRP	P1500SCLRP	P2600SBLRP
P0080SDLRP	P0900SDLRP	P1500SCMCLRP	P2600SCLRP
P0220SALRP	P0901CA2LRP	P1500SDLRP	P2600SCMCLRP
P0220SAMCLRP	P0901SALRP	P1502SALRP	P2600SDLRP
P0220SBLRP	P0901SBLRP	P1502SBLRP	P2600STLRP
P0220SBMCLRP	P0901SCLRP	P1502SCLRP	P2602SALRP
P0220SCLRP	P0902SALRP	P1701CA2LRP	P2602SBLRP
P0220SCMCLRP	P0902SBLRP	P1701SALRP	P2602SCLRP
P0300SALRP	P0902SCLRP	P1701SBLRP	P3002SALRP
P0300SAMCLRP	P1100SALRP	P1701SCLRP	P3002SBLRP
P0300SBLRP	P1100SBLRP	P1800SALRP	P3002SCLRP
P0300SBMCLRP	P1100SCLRP	P1800SBLRP	P3100SALRP
P0300SCLRP	P1100SCMCLRP	P1800SCLRP	P3100SBLRP
P0300SCMCLRP	P1100SDLRP	P1800SCMCLRP	P3100SCLRP
P0640SALRP	P1101CA2LRP	P1800SDLRP	P3100SCMCLRP
P0640SBLRP	P1101SALRP	P1800STLRP	P3100SDLRP
P0640SCLRP	P1101SBLRP	P1802SALRP	P3100STLRP
P0640SCMCLRP	P1101SCLRP	P1802SBLRP	P3100SXHRP
P0640SDLRP	P1101SDLRP	P1802SCLRP	P3500SALRP
P0641CA2LRP	P1102SALRP	P2000SALRP	P3500SBLRP
P0641SALRP	P1102SBLRP	P2000SBLRP	P3500SCLRP
P0641SBLRP	P1102SCLRP	P2000SCLRP	P3500SCMCLRP
P0641SCLRP	P1200SALRP	P2000SCMCLRP	P3500SDLRP
P0642SALRP	P1200SBLRP	P2100SALRP	P3500STLRP
P0642SBLRP	P1200SCLRP	P2100SBLRP	P3502SALRP
P0642SCLRP	P1200SCMCLRP	P2100SCLRP	P3502SBLRP
P0720SALRP	P1300SALRP	P2100SCMCLRP	P3502SCLRP
P0720SBLRP	P1300SBLRP	P2300SALRP	P3502SCLRP
P0720SCLRP	P1300SCLRP	P2300SBLRP	P4202SALRP
P0720SCMCLRP	P1300SCMCLRP	P2300SCLRP	P4202SCLRP
P0720SDLRP	P1300SDLRP	P2300SCMCLRP	P4802SALRP
P0721CA2LRP	P1301CA2LRP	P2300SDLRP	P4802SCLRP
P0721SALRP	P1301SCLRP	P2300STLRP	P6002SALRP
P0721SBLRP	P1301SDLRP	P2302SALRP	P6002SCLRP
P0721SCLRP	P1302SALRP	P2302SBLRP	P7002SCLRP
P0722SALRP	P1302SBLRP	P2302SCLRP	

Littelfuse Part Number covered by this report (2/3)
SIDACTor® Special Devices

P376P1500SCR	P923CRP	Special device part numbers with base part number listed in table 1/3 (standard devices) are also automatically covered. Their typical part number format is PxxxPxxxxSxL^RRP. "L" at 3 rd digit from right denotes RoHS-compliant.	
P486P3100SBRP	P923WRP		
P618P3100SCR	P925CRP		
P640P3100SBRP	P925WRP		
P641P3100SCR	P926CRP		
P651P3100SARP	P926WRP		
P653P2600SBRP	P927CRP		
P654P3100SBRP	P927WRP		
P654P3100SBRPH	P931CRP		
P654P3100SBRPHF	P931WRP	P807P0080SAMCLRP	P806P1100SDLRP
P655P3500SBRP	P817P0080SALRP	P818P0220SALRP	P810P1300SDLRP
P658P0300SARP	PLED6US	P566P0300SALRP	P768P1500SDLRP
P659P0640SARP	P807P0080SAMCLRP	P792P0080SBLRP	P768AP1500SDLRP
P674P1500SCR	P818P0220SALRP	P753P1500SCLRP	P746AP2600SDRP
P675P1100SARP	P566P0300SALRP	P753AP1500SCLRP	P765P3100SDLRP
P676P0640SCR	P506P0721SALRP	P753BP1500SCLRP	P765AP3100SDLRP
P677P1800SCR	P811P1200SALRP	P753CP1500SCLRP	P773P3500SDLRP
P678P0080SBRP	P1301SALRP	P753DP1500SCLRP	P465P1500SCR
P686P2300SBRP	P779P1800SALRP	P465P1500SCR	P829P1101SDLRP
P688P1100SARP	P776P2000SALRP	P777P2000SCLRP	P829AP1101SDLRP
P689P1100SCR	P821P0080SCLRP	P762P2300SCLRP	A0609SCLRP
P691P0300SCMCRP	P792P0080SBLRP	P762AP2300SCLRP	A0710SCLRP
P692P3500SDRP	P591P2600SBLRP	P469P2600SCLRP	A0709SCLRP
P695P0300SARP	P831P2600SBLRP	P820P2600SCLRP	P7002SALRP
P697P1300SARP	P809P3100SBLRP	P759P2600SCLRP	P4202SBLRP
P698CRP	P3100SBLRPH	P759AP2600SCLRP	P4802SBLRP
P698WRP	P496P3500SBLRP	P766P2600SCLRP	P6002SBLRP
P707P3100SARP	P770P3500SBLRP	P766AP2600SCLRP	P7002SBLRP
P708P2300SBRP	P784P3500SBLRP	P774P2600SCLRP	P772P4202SCLRP
P712P0640SARP	P793P3500SBLRP	P440P3100SCR	P797P4202SCLRP
P716P3500SARP	P4500SBLRP	P754P3100SCLRP	P798P4202SCLRP
P746P2600SDRP	PLED6SW	P754AP3100SCLRP	A0609CB2LRP
P760ALRP	PLED9SW	P754BP3100SCLRP	P767P0720SDLRP
P760BLRP	PLED13SW	P754CP3100SCLRP	P767AP0720SDLRP
P760LRP	PLED18SW	P754DP3100SCLRP	
P4500SCLRP	P817P0080SALRP	P794P3500SCLRP	
P4500SCMCLRP	PLED6US	P681P3500SCR	
P827P3100SCLRP	P812P0640SDLRP	P813P0720SDLRP	

Littelfuse Part Number covered by this report (3/3)
SIDAC, SiBOD™, Thyristor, BATTRAX® and PLED Devices

SIDAC	SiBOD	Thyristor	
K0820SRP	SMTBJ050A	L2N3RP	S4S3RP
K0900SRP	SMTBJ050B	L2N5RP	S4SRP
K1050SRP	SMTBJ056A-006	L2X3RP	S6N1RP
K1100SRP	SMTBJ070B	L2X5RP	S6S1RP
K1200SRP	SMTBJ100B	L4N3RP	S6S2RP
K1300SRP	SMTBJ108A-006	L4N5RP	S6S3RP
K1400SRP	SMTBJ120A	L4N6RP	S6SRP
K1500SRP	SMTBJ162A-006	L4N8RP	S813S4N1RP
K1800SRP	SMTBJ170A	L4X3RP	S827S4S2RP
K1801SRP	SMTBJ180A-006	L4X5RP	S828S4S1RP
K2000SHRP	SMTBJ200A	L4X6RP	S853S4S3RP
K2000SRP	SMTBJ200B	L4X8RP	S856S4SRP
K2200SHRP	SMTBJ216A-006	L6N3RP	S872S4S2RP
K2200SRP	SMTBJ240A	L6N5RP	S893S4SRP
K2400SHRP		L6N6RP	
K2400SRP		L6N8RP	
K2500SHRP		L6X3RP	
K2500SRP		L6X5RP	BATTRAX®
K222K1500SRP		L6X6RP	
K226K1500SRP		L6X8RP	B1100CALRP
K240K2500SRP		Q2N3RP	B1100CCLRP
K260K2500SRP		Q2N4RP	B1160CALRP
K282K2500SRP		Q2X3RP	B1160CCLRP
K298K1400SRP		Q2X4RP	B1200CALRP
K300K1801SRP		Q4N3RP	B1200CCLRP
K301K1500SRP		Q4N4RP	B2050CCLRP
K303K1200SRP		Q4X3RP	
K305K1500SRP		Q4X4RP	PLED
K306K1300SRP		Q6N3RP	
		Q6N4RP	PLED6S
		Q6X3RP	PLED9S
		Q6X4RP	PLED13S
		S2N1RP	PLED18S
		S2S1RP	PLES6US
		S2S2RP	PLED9US
		S2S3RP	PLED13US
		S2SRP	PLED18US
		S4N1RP	

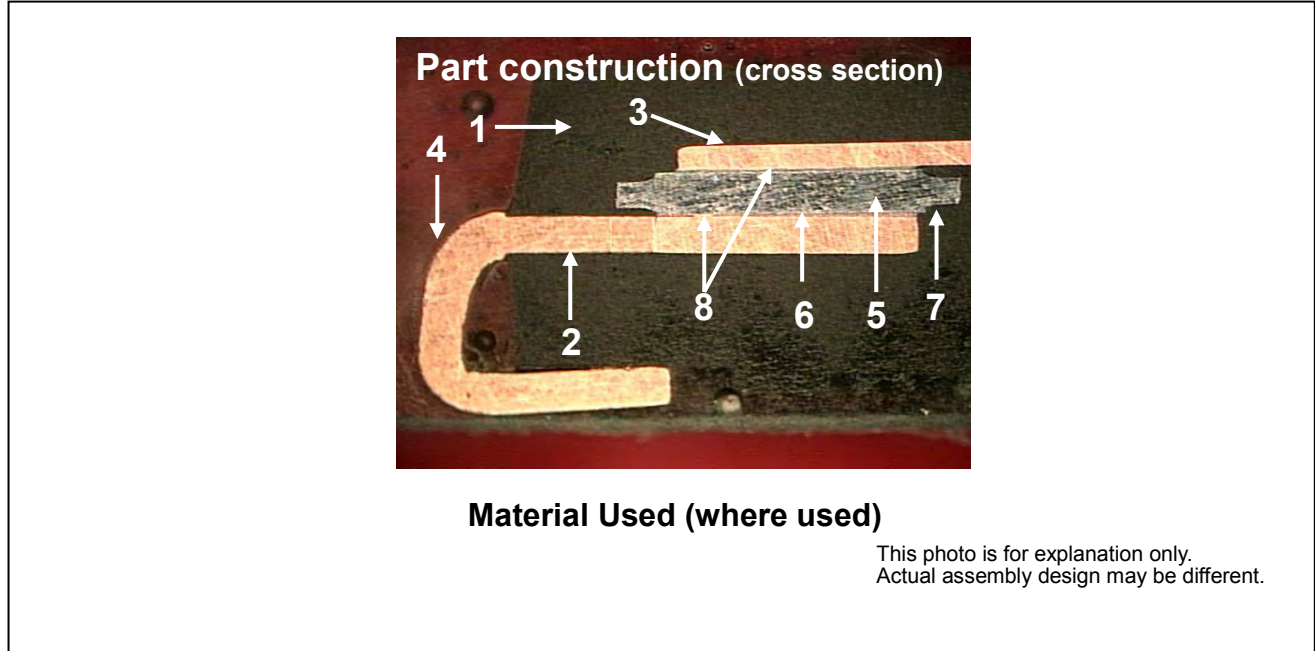


Table 1: Homogeneous Material Used

#	Description	Name of Material	Type	Pages
1	Molding compound	epoxy resin	plastic	6-16
2	Lead frame	copper alloy	metal	17-20 DO-214AA package uses same raw material and same supplier as TO-220. Report is from TO-220 material.
3	Clip	copper alloy	metal	21-24
4	Matte-Tin plating	Tin	metal	25-32
5	Silicon die	silicon	metal	33-37, tested as Nickel-plated wafer.
6	Nickel electrode	nickel	metal	
7	Passivation glass	glass	glass	38-44 Pb in this glass is exempted by RoHS Annex III 7(c)-l. Please refer to Annex 8 for the RoHS exemption.
8	Die bonding solder	solder	metal	45-55 Pb in this solder is exempted by RoHS Annex III 7(a). Please refer to Annex 8 for the RoHS exemption.



Number : WUXH00016523

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 :

Component Or Part No. : CK-2000A/CK-2000C.

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:

<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



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

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

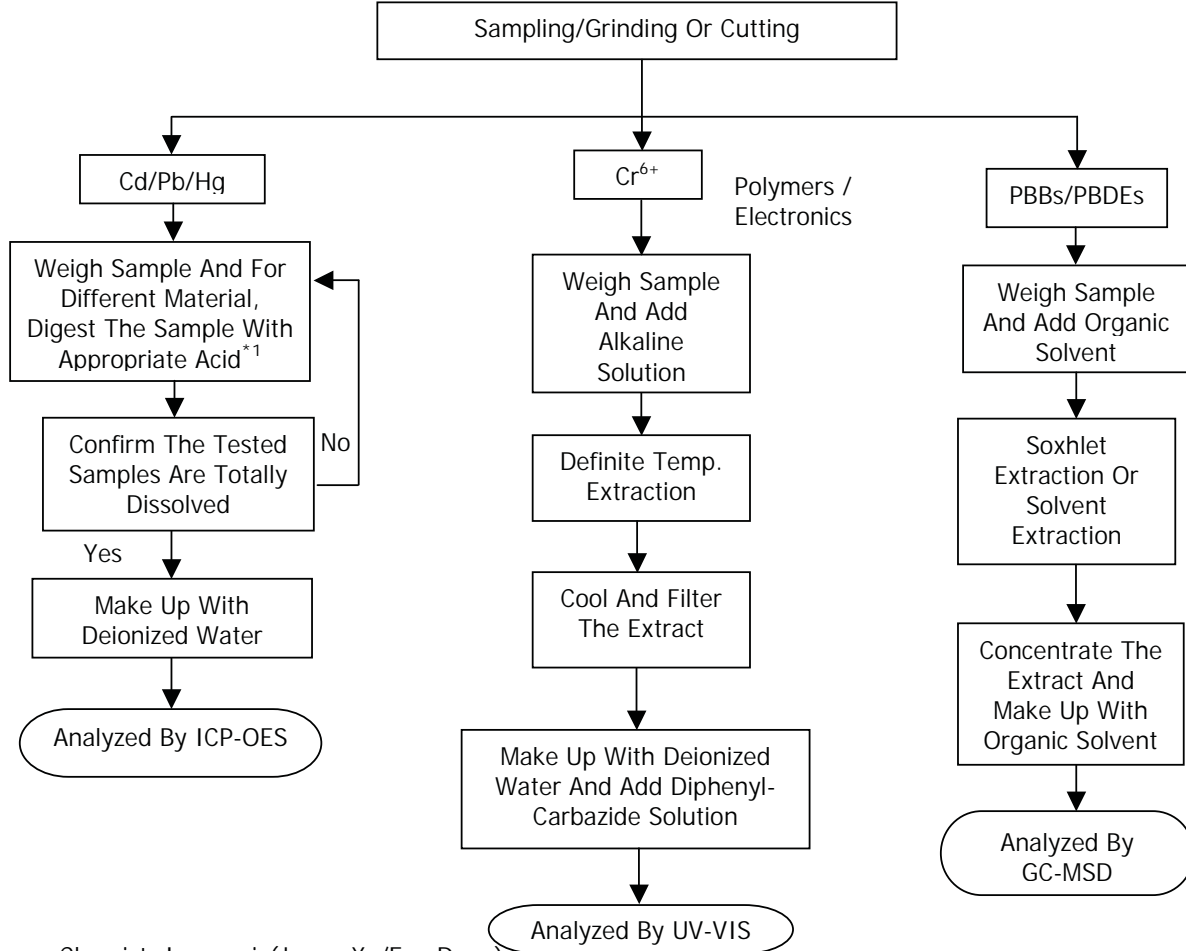
Date Sample Received: Jul 30, 2013

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 : WUXH00016523

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 :

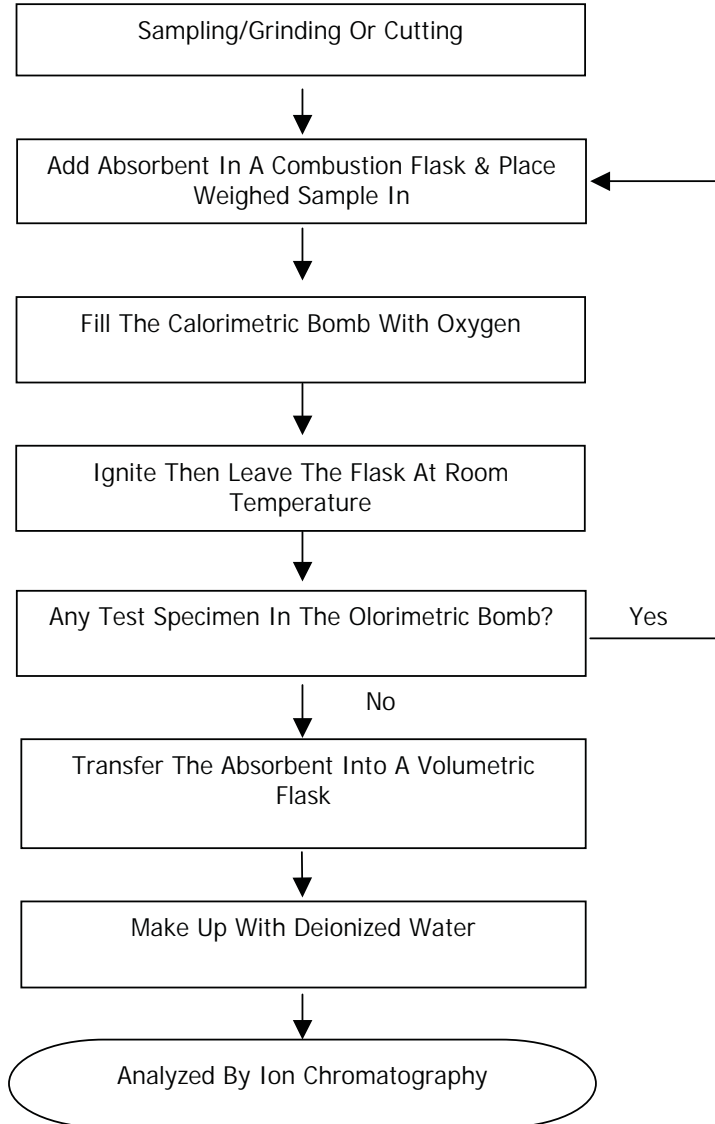
<u>Testing Item</u>	<u>Testing Method</u>	<u>Reporting Limit</u>
Halogen (F,Cl, Br,I) Content	With Reference To EN 14582:2007 By Combustion In A Calorimetric Bomb And Determined By Ion Chromatography	50 ppm

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 : WUXH00016523

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.

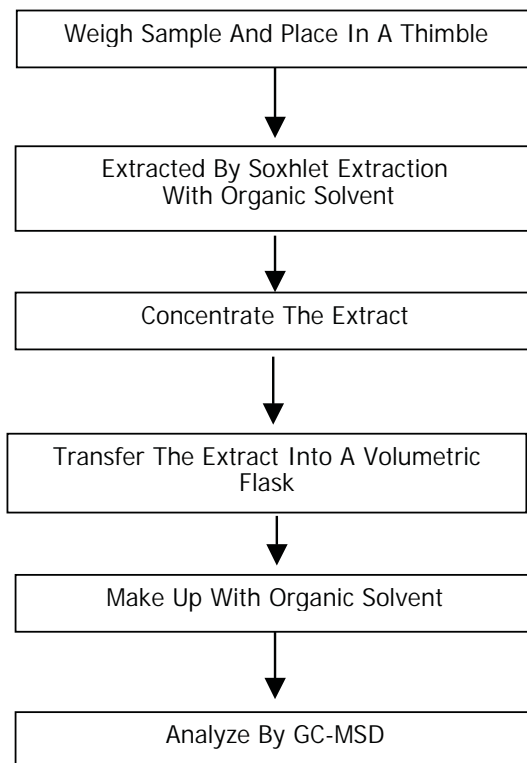
<u>Tested Compound</u>	<u>Result (%W/W)</u>
Dibutyl Phthalate (DBP)	ND
Diethyl Hexyl Phthalate(DEHP)	ND
Benzyl Butyl Phthalate (BBP)	ND
Di-isobutyl phthalate(DIBP)	ND
Di-Iso-Nonyl Phthalate (DINP)	ND
Di-N-Octyl Phthalate (DNOP)	ND
Di-Iso-Decyl Phthalate (DIDP)	ND

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)



Number : WUXH00016523

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

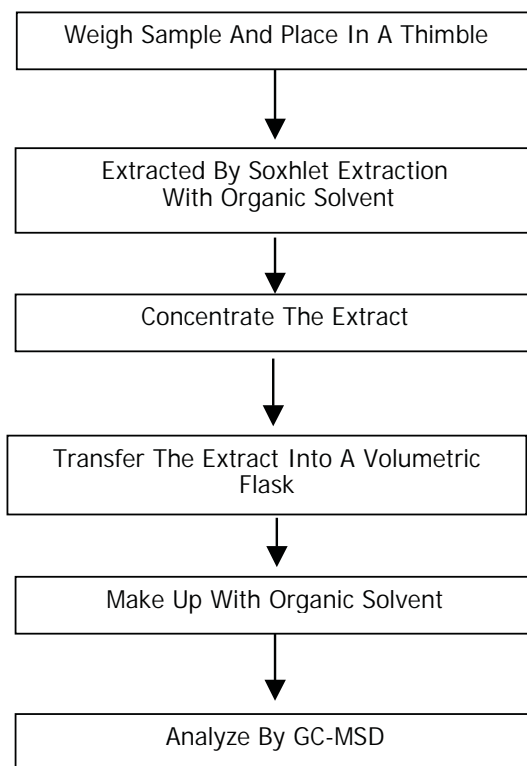
(B) Test Method :

<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 : 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 :
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



Tests Conducted (As Requested By The Applicant)

1 (A) Test Result Of RoHS Directive:

<u>Testing Item</u>	<u>Result</u>
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:

<u>Restricted Substances</u>	<u>Limits</u>
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:

<u>Testing Item</u>	<u>Testing Method</u>	<u>Reporting Limit</u>
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)

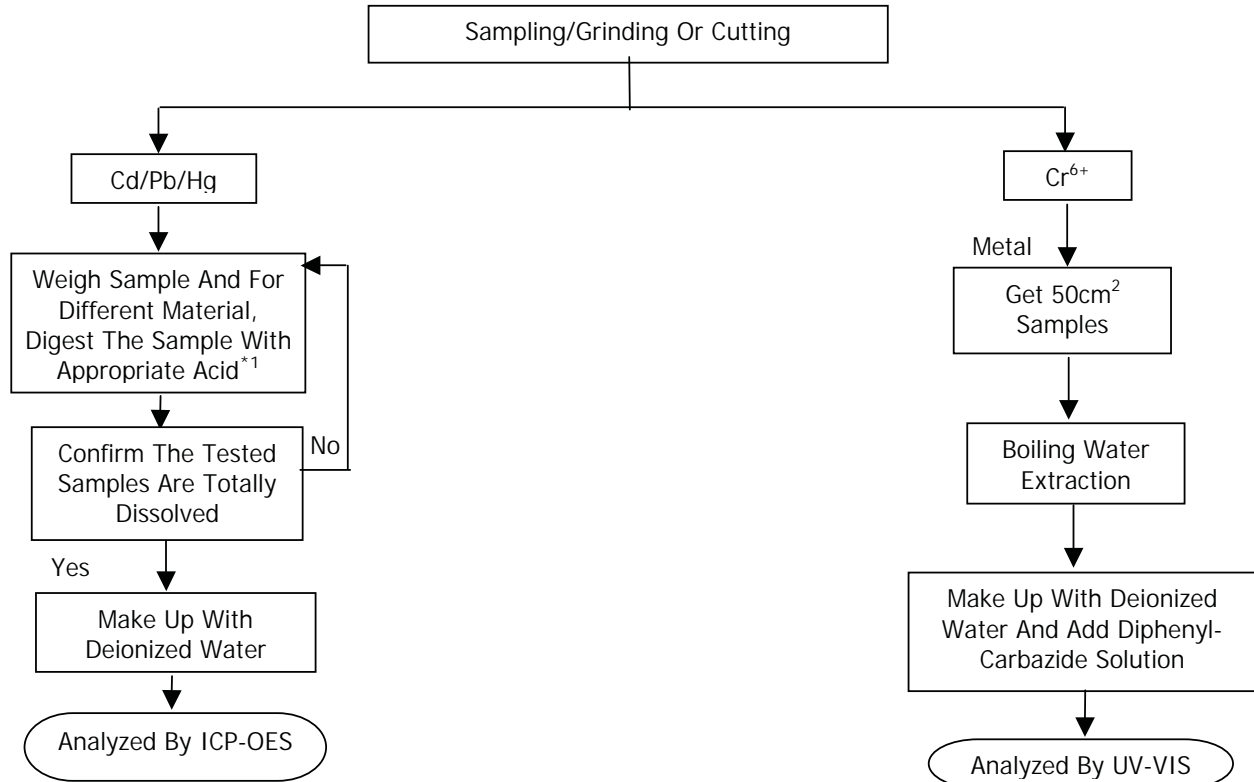
Date Sample Received: Jul 30, 2013

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



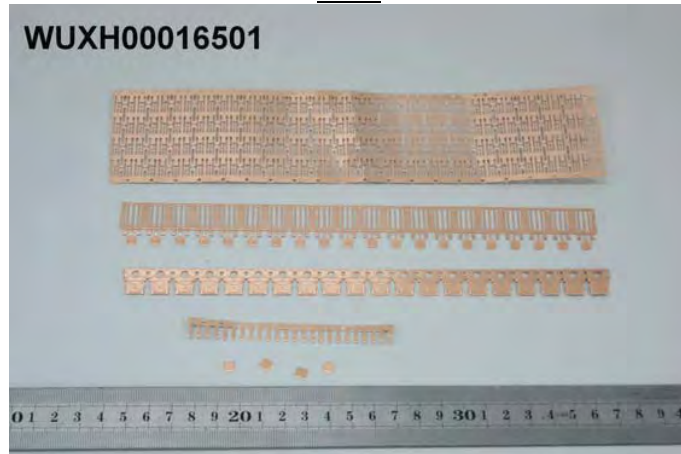
Remarks:

*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 : WUXH00016507

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 : Clip.
Vendor :
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



Tests Conducted (As Requested By The Applicant)

1 (A) Test Result Of RoHS Directive:

<u>Testing Item</u>	<u>Result</u>
Cadmium (Cd) Content (mg/kg)	ND
Lead (Pb) Content (mg/kg)	ND
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.

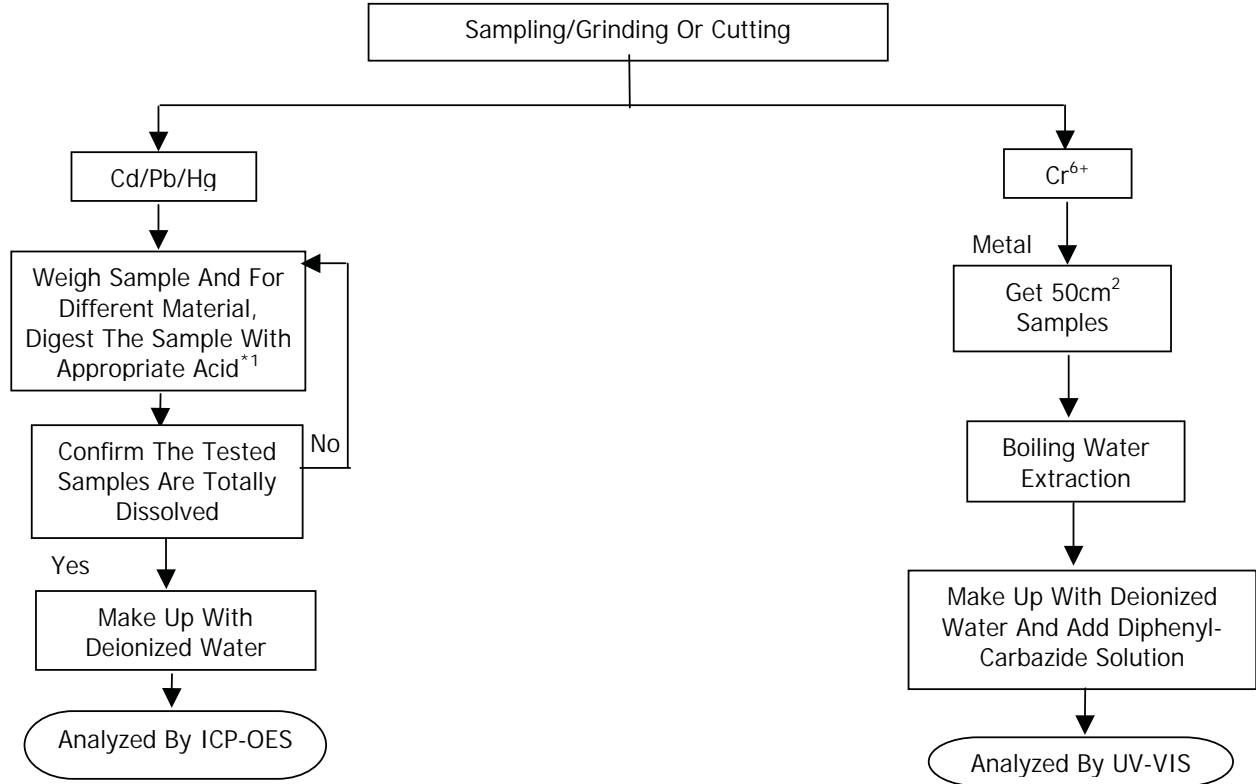
(C) Test Method:

<u>Testing Item</u>	<u>Testing Method</u>	<u>Reporting Limit</u>
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 26, 2013

Testing Period: Jul 26 2013 To Jul 30, 2013

Tests Conducted (As Requested By The Applicant)
 (D) Measurement Flowchart:
 Reference Standard: IEC 62321 Edition 1.0: 2008

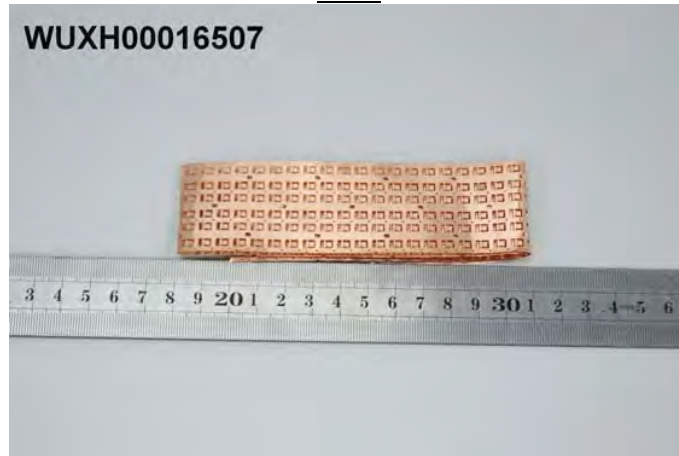


Remarks:
 *1: List Of Appropriate Acid:

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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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 :

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:

<u>Testing Item</u>	<u>Result</u> (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:

<u>Restricted Substances</u>	<u>Limits</u>
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:

<u>Testing Item</u>	<u>Testing Method</u>	<u>Reporting Limit</u>
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)

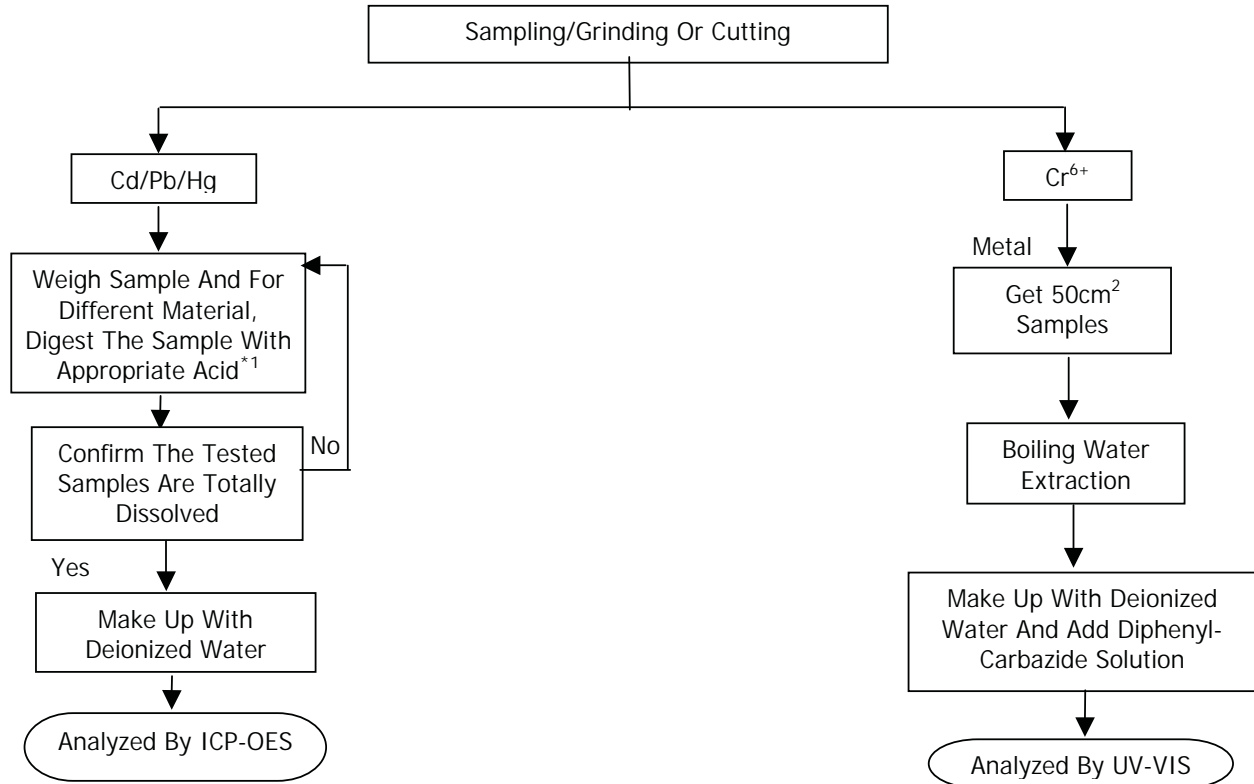
Date Sample Received: Jul 30, 2013

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



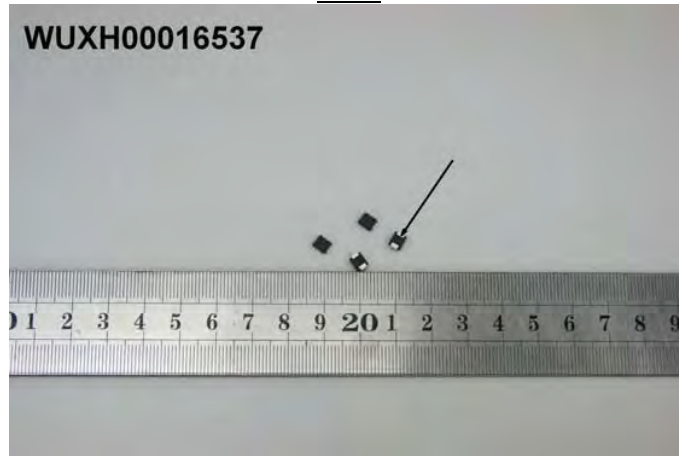
Remarks:

*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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Number : WUXH00016541

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 : Black Plastic With Silvery Metal Pin.
Item Name : Tin Plating(SMD).
Vendor :
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:

<u>Testing Item</u>	<u>Result</u> (1)
Cadmium (Cd) Content (mg/kg)/Plating	ND
Lead (Pb) Content (mg/kg)/Plating	40
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:

<u>Restricted Substances</u>	<u>Limits</u>
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:

<u>Testing Item</u>	<u>Testing Method</u>	<u>Reporting Limit</u>
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)

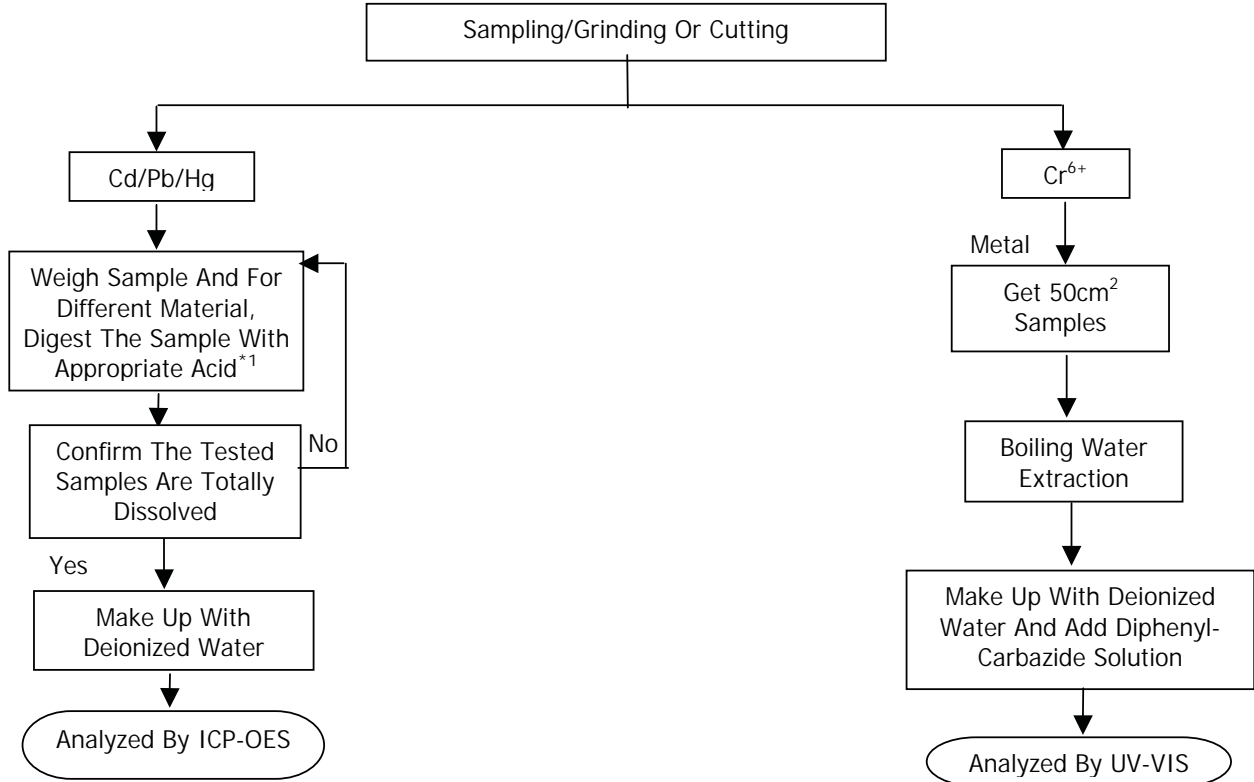
Date Sample Received: Jul 30, 2013

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



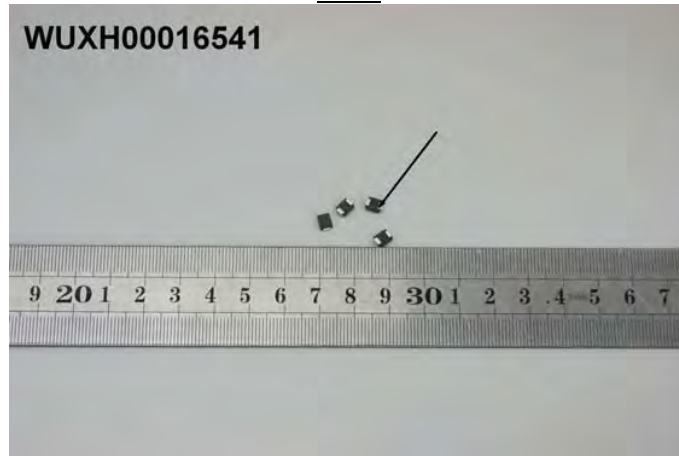
Remarks:

*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 : 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



Number : WUXH00016496

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

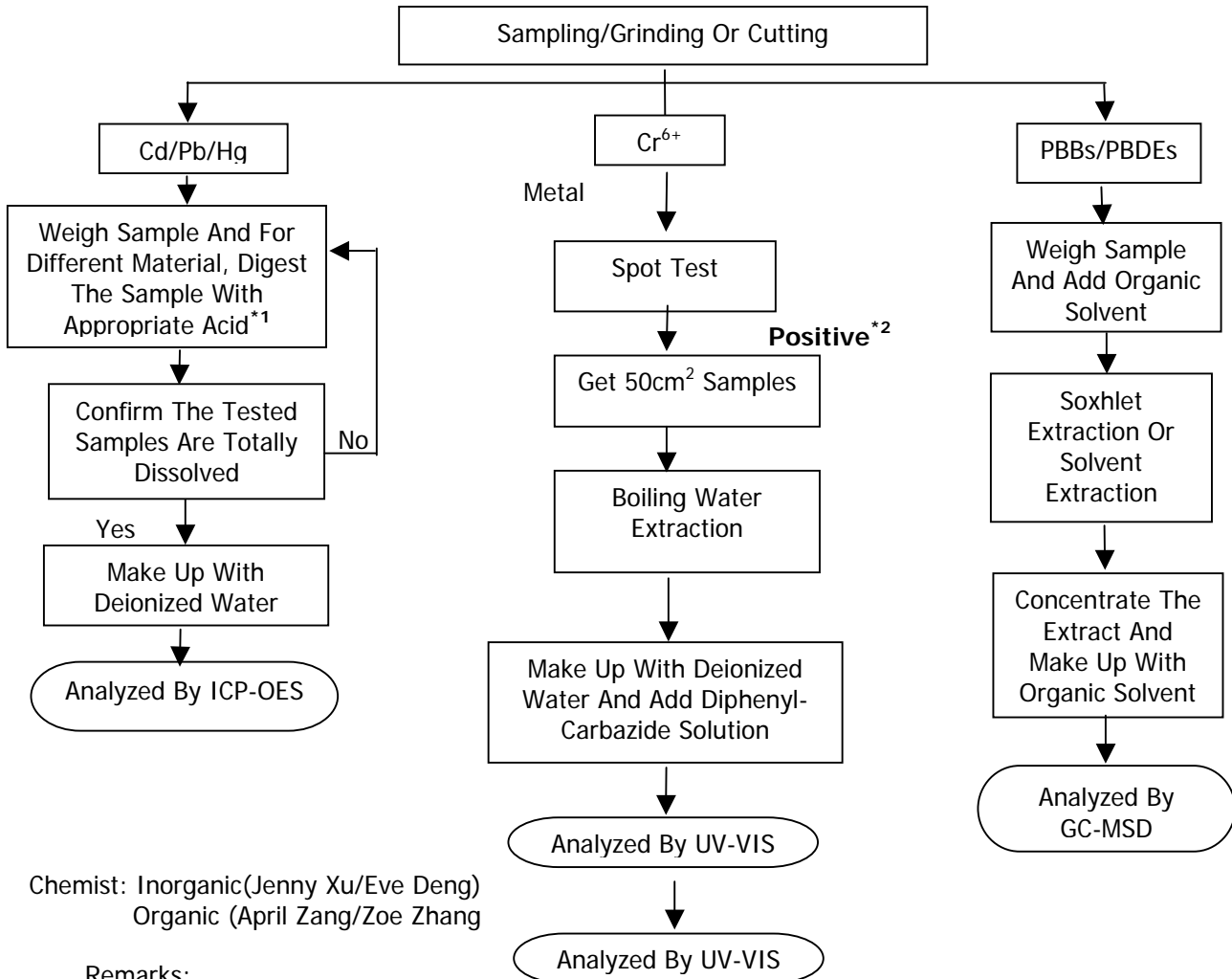
Date Sample Received: Jul 30, 2013

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)

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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



Number : WUXH00016497

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

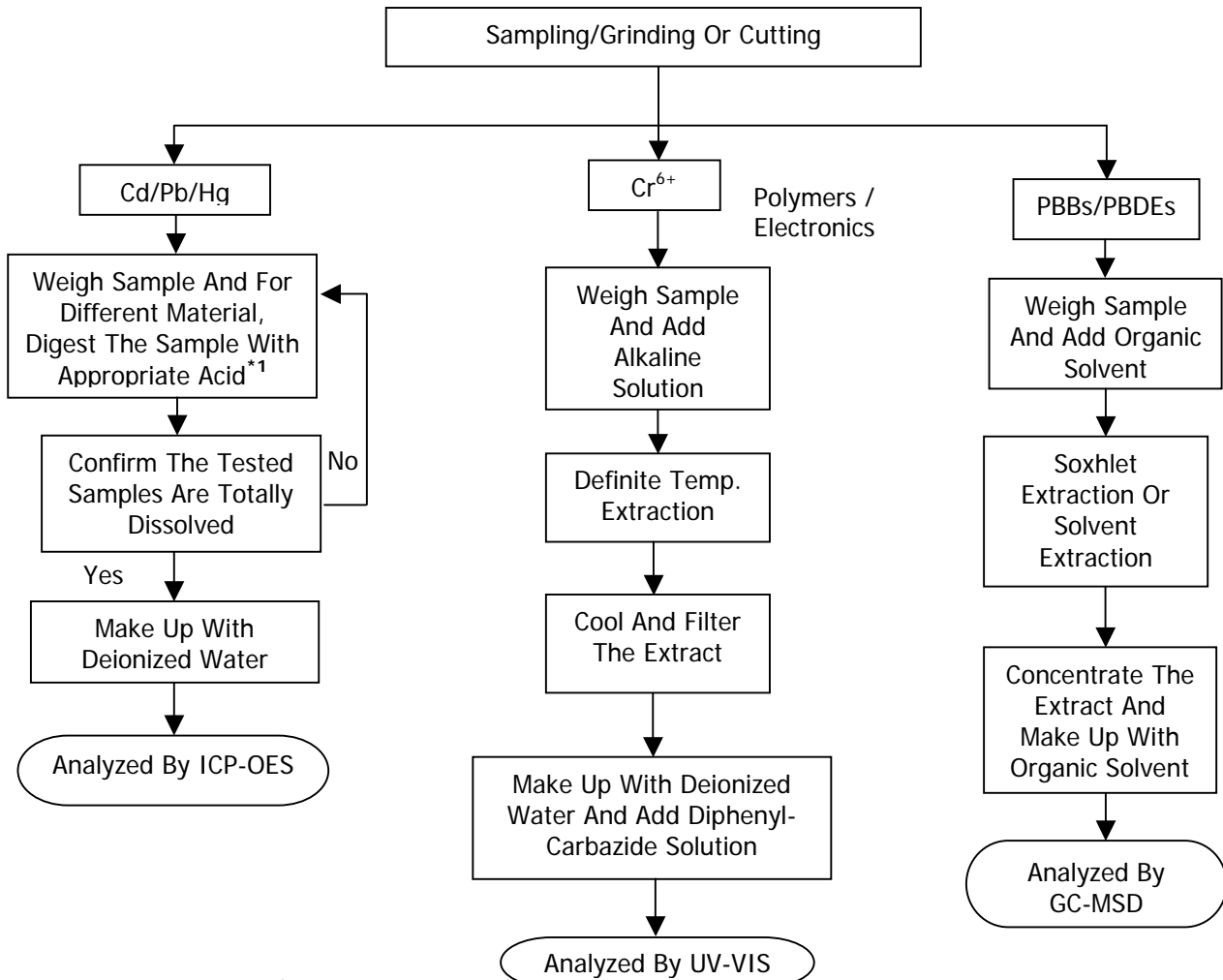
Date Sample Received: Jul 30, 2013

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 :

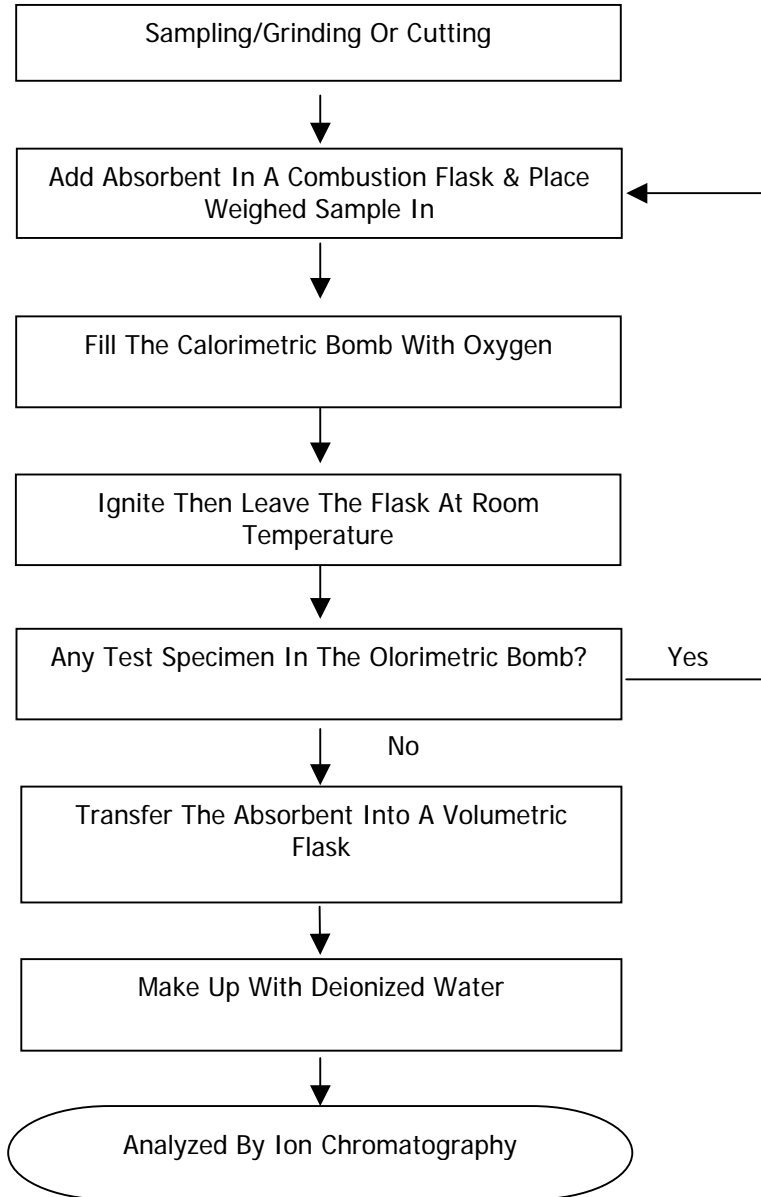
<u>Testing Item</u>	<u>Testing Method</u>	<u>Reporting Limit</u>
Halogen (F,Cl, Br,I) Content	With Reference To EN 14582:2007 By Combustion In A Calorimetric Bomb And Determined By Ion Chromatography	50 ppm

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 : WUXH00016515

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 :

Component Or Part No. : F367SN10-90P4.

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 : WUXH00016515

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)	906500
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

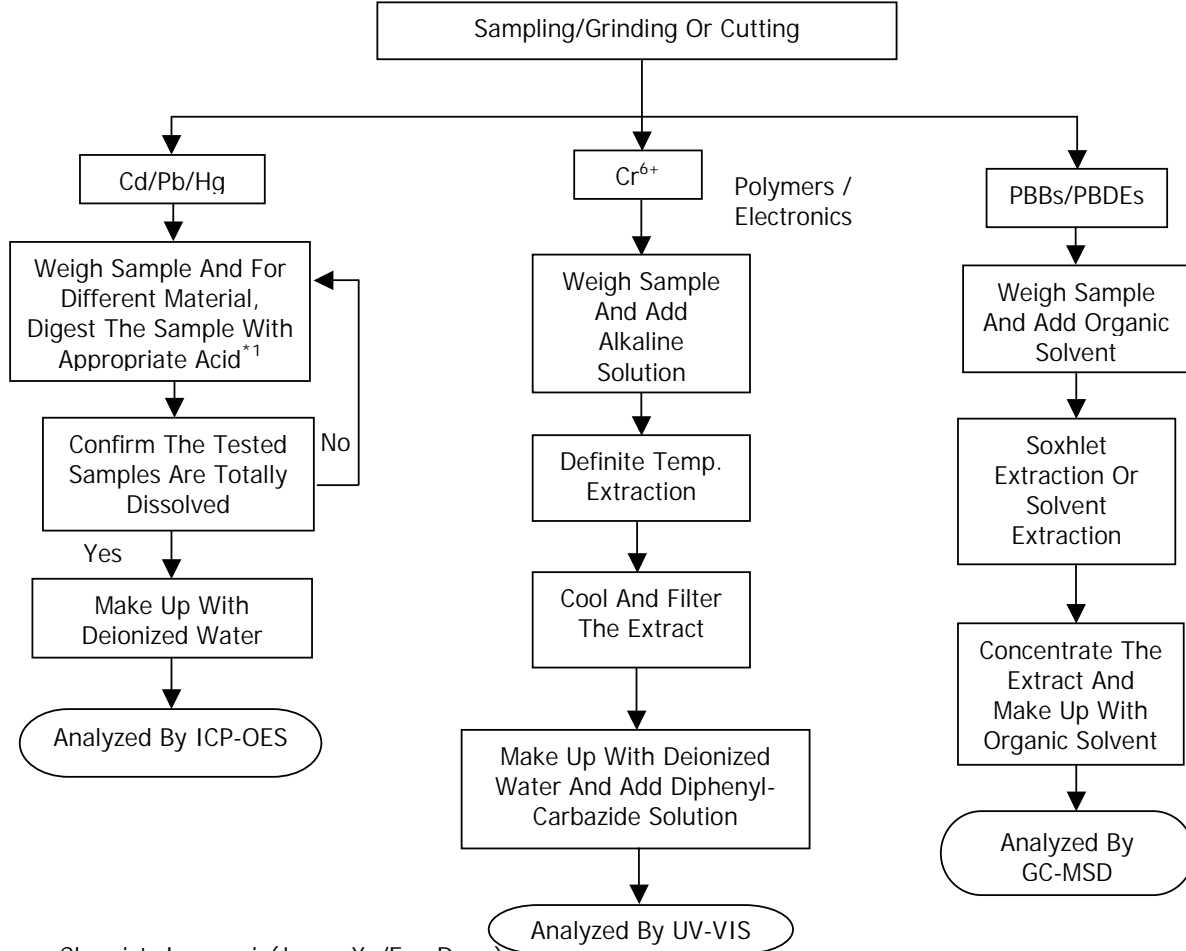
Date Sample Received: Jul 30, 2013

Testing Period: Jul 30 2013 To 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 : WUXH00016515

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 :

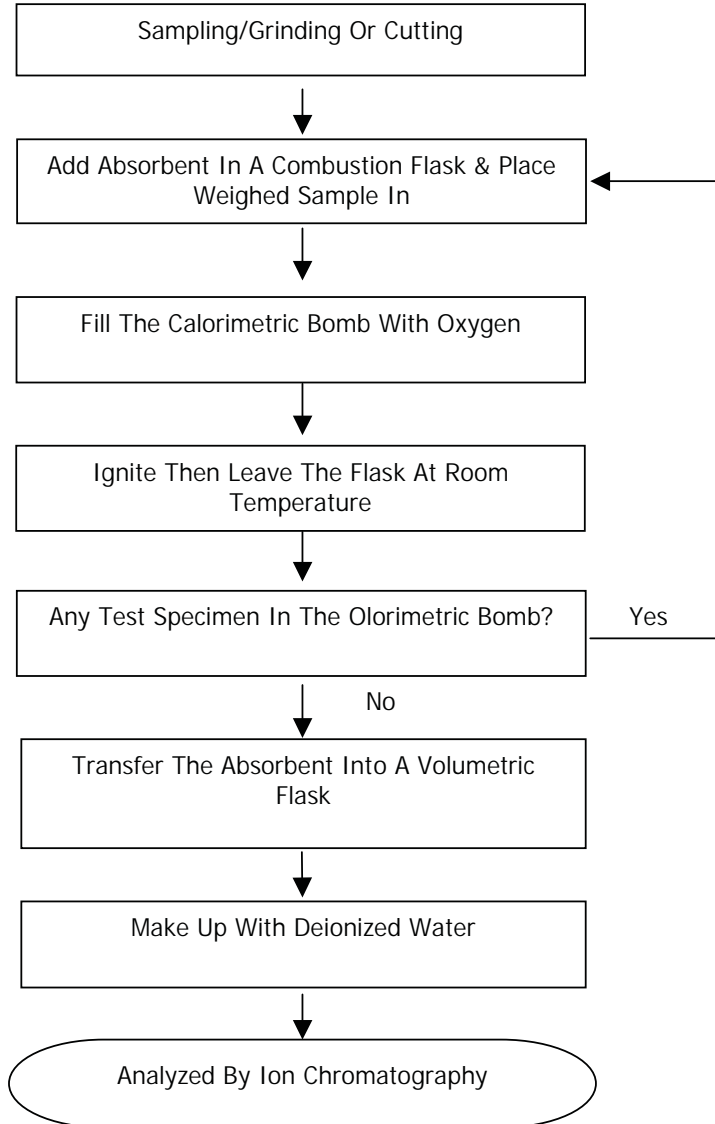
<u>Testing Item</u>	<u>Testing Method</u>	<u>Reporting Limit</u>
Halogen (F,Cl, Br,I) Content	With Reference To EN 14582:2007 By Combustion In A Calorimetric Bomb And Determined By Ion Chromatography	50 ppm

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 : WUXH00016515

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)

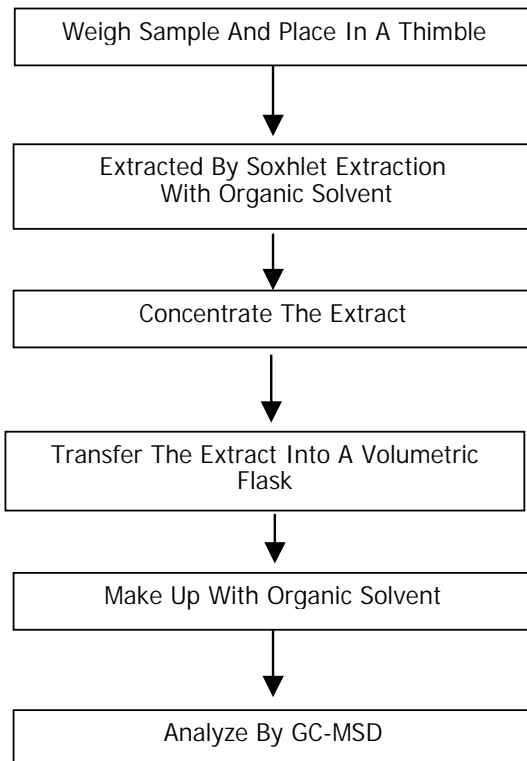
ND = Not Detected

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)



Number : WUXH00016515

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

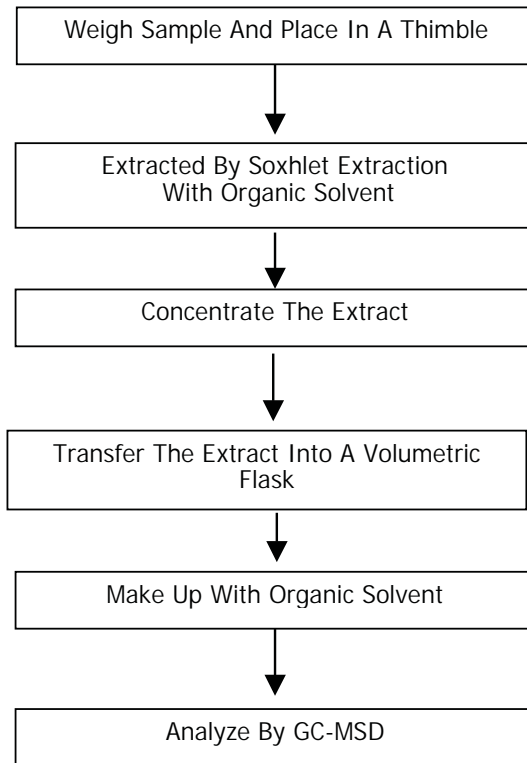
(B) Test Method :

<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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DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 8 June 2011
on the restriction of the use of certain hazardous substances in electrical and electronic equipment
(recast)
(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 114 thereof,

Having regard to the proposal from the European Commission,

Having regard to the opinion of the European Economic and Social Committee ⁽¹⁾,

Having regard to the opinion of the Committee of Regions ⁽²⁾,

Acting in accordance with the ordinary legislative procedure ⁽³⁾,

Whereas:

(1) A number of substantial changes are to be made to Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment ⁽⁴⁾. In the interest of clarity, that Directive should be recast.

(2) The disparities between the laws or administrative measures adopted by the Member States regarding the restriction of the use of hazardous substances in electrical and electronic equipment (EEE) could create barriers to trade and distort competition in the Union and may thereby have a direct impact on the establishment and functioning of the internal market. It therefore appears necessary to lay down rules in this field and to contribute to the protection of human health and the environmentally sound recovery and disposal of waste EEE.

(3) Directive 2002/95/EC provides that the Commission shall review the provisions of that Directive, in particular, in order to include in its scope equipment which falls within certain categories and to study the need to adapt the list of restricted substances on the basis of scientific progress, taking into account the precautionary principle, as endorsed by Council Resolution of 4 December 2000.

(4) Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste ⁽⁵⁾ gives first priority to prevention in waste legislation. Prevention is defined, inter alia, as measures that reduce the content of harmful substances in materials and products.

(5) Council Resolution of 25 January 1988 on a Community action programme to combat environmental pollution by cadmium ⁽⁶⁾ invited the Commission to pursue without delay the development of specific measures for such a programme. Human health also has to be protected and an overall strategy that in particular restricts the use of cadmium and stimulates research into substitutes should therefore be implemented. The Resolution stresses that the use of cadmium should be limited to cases where suitable alternatives do not exist.

(6) Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants ⁽⁷⁾ recalls that the objective of protecting the environment and human health from persistent organic pollutants cannot be sufficiently achieved by the Member States, owing to the trans-boundary effects of those pollutants, and can therefore be better achieved at Union level. Pursuant to that Regulation, releases of persistent organic pollutants, such as dioxins and furans, which are unintentional by-products of industrial processes, should be identified and reduced as soon as possible with the ultimate aim of elimination, where feasible.

(7) The available evidence indicates that measures on the collection, treatment, recycling and disposal of waste EEE as set out in Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE) ⁽⁸⁾ are necessary to reduce the waste management problems associated with the heavy metals and flame retardants concerned. In spite of those measures, however, significant parts of waste EEE will continue to be found in the current disposal routes inside or outside the Union. Even if waste EEE were collected separately and submitted to recycling processes, its content of mercury, cadmium, lead, chromium VI, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE) would be likely to pose risks to health or the environment, especially when treated in less than optimal conditions.

⁽¹⁾ OJ C 306, 16.12.2009, p. 36.

⁽²⁾ OJ C 141, 29.5.2010, p. 55.

⁽³⁾ Position of the European Parliament of 24 November 2010 (not yet published in the Official Journal) and decision of the Council of 27 May 2011.

⁽⁴⁾ OJ L 37, 13.2.2003, p. 19.

⁽⁵⁾ OJ L 312, 22.11.2008, p. 3.

⁽⁶⁾ OJ C 30, 4.2.1988, p. 1.

⁽⁷⁾ OJ L 158, 30.4.2004, p. 7.

⁽⁸⁾ OJ L 37, 13.2.2003, p. 24.

3. Paragraph 1 shall apply to medical devices and monitoring and control instruments which are placed on the market from 22 July 2014, to in vitro diagnostic medical devices which are placed on the market from 22 July 2016 and to industrial monitoring and control instruments which are placed on the market from 22 July 2017.

4. Paragraph 1 shall not apply to cables or spare parts for the repair, the reuse, the updating of functionalities or upgrading of capacity of the following:

- (a) EEE placed on the market before 1 July 2006;
- (b) medical devices placed on the market before 22 July 2014;
- (c) in vitro diagnostic medical devices placed on the market before 22 July 2016;
- (d) monitoring and control instruments placed on the market before 22 July 2014;
- (e) industrial monitoring and control instruments placed on the market before 22 July 2017;
- (f) EEE which benefited from an exemption and which was placed on the market before that exemption expired as far as that specific exemption is concerned.

5. Paragraph 1 shall not apply to reused spare parts, recovered from EEE placed on the market before 1 July 2006 and used in equipment placed on the market before 1 July 2016, provided that reuse takes place in auditable closed-loop business-to-business return systems, and that the reuse of parts is notified to the consumer.

6. Paragraph 1 shall not apply to the applications listed in Annexes III and IV.

Article 5

Adaptation of the Annexes to scientific and technical progress

1. For the purposes of adapting Annexes III and IV to scientific and technical progress, and in order to achieve the objectives set out in Article 1, the Commission shall adopt by means of individual delegated acts in accordance with Article 20 and subject to the conditions laid down in Articles 21 and 22, the following measures:

- (a) inclusion of materials and components of EEE for specific applications in the lists in Annexes III and IV, provided that such inclusion does not weaken the environmental and health protection afforded by Regulation (EC) No 1907/2006 and where any of the following conditions is fulfilled:
 - their elimination or substitution via design changes or materials and components which do not require any of the materials or substances listed in Annex II is scientifically or technically impracticable,
 - the reliability of substitutes is not ensured,
 - the total negative environmental, health and consumer safety impacts caused by substitution are likely to outweigh the total environmental, health and consumer safety benefits thereof.

Decisions on the inclusion of materials and components of EEE in the lists in Annexes III and IV and on the duration of any exemptions shall take into account the availability of substitutes and the socioeconomic impact of substitution. Decisions on the duration of any exemptions shall take into account any potential adverse impacts on innovation. Life-cycle thinking on the overall impacts of the exemption shall apply, where relevant;

- (b) deletion of materials and components of EEE from the lists in Annexes III and IV where the conditions set out in point (a) are no longer fulfilled.

2. Measures adopted in accordance with point (a) of paragraph 1 shall, for categories 1 to 7, 10 and 11 of Annex I, have a validity period of up to 5 years and, for categories 8 and 9 of Annex I, a validity period of up to 7 years. The validity periods are to be decided on a case-by-case basis and may be renewed.

For the exemptions listed in Annex III as at 21 July 2011, the maximum validity period, which may be renewed, shall, for categories 1 to 7 and 10 of Annex I, be 5 years from 21 July 2011 and, for categories 8 and 9 of Annex I, 7 years from the relevant dates laid down in Article 4(3), unless a shorter period is specified.

For the exemptions listed in Annex IV as at 21 July 2011, the maximum validity period, which may be renewed, shall be 7 years from the relevant dates laid down in Article 4(3), unless a shorter period is specified.

3. An application for granting, renewing or revoking an exemption shall be made to the Commission in accordance with Annex V.

4. The Commission shall:

- (a) acknowledge receipt of an application in writing within 15 days of its receipt. The acknowledgement shall state the date of receipt of the application;
- (b) inform the Member States of the application without delay and make the application and any supplementary information supplied by the applicant available to them;
- (c) make a summary of the application available to the public;
- (d) evaluate the application and its justification.

5. An application for renewal of an exemption shall be made no later than 18 months before the exemption expires.

The Commission shall decide on an application for renewal of an exemption no later than 6 months before the expiry date of the existing exemption unless specific circumstances justify other deadlines. The existing exemption shall remain valid until a decision on the renewal application is taken by the Commission.

*ANNEX II***Restricted substances referred to in Article 4(1) and maximum concentration values tolerated by weight in homogeneous materials**

Lead (0,1 %)

Mercury (0,1 %)

Cadmium (0,01 %)

Hexavalent chromium (0,1 %)

Polybrominated biphenyls (PBB) (0,1 %)

Polybrominated diphenyl ethers (PBDE) (0,1 %)

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. piezoelectronic 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 EEE 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