



Reference: ICP Analysis Note  
Date of Issue: 22 December 2008

## SM8eu/SOT89eu ICP Analysis Note

The appended ICP Analysis reports demonstrate compliance with EC directives 2002/95/EC (Restriction of the use of certain hazardous substances "RoHS") and the 24<sup>th</sup> amendment to 76/769/EEC (Restrictions on the marketing and use of certain dangerous substances and preparations).

This analysis was performed to independently verify that the content of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PDBE) present is within the permitted levels set.

**Note:** This report is a composite of the reports for the individual, homogenous parts of the product. The table below is a summary of the data in the following pages.

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K.Clithero  
Group Quality Manager

RoHS Substance	Result (ppm)
Lead	0
Mercury	Not detected
Cadmium	Not detected
Hexavalent Chromium	Not detected
Polybrominated Biphenyls (PBB)	Not detected
Polybrominated Diphenyl Ethers (PDBE)	Not detected

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## SM8eu/SOT89eu ICP Analysis Note

The appended ICP Analysis report demonstrates compliance with EC directives 2002/95/EC (Restriction of the use of certain hazardous substances "RoHS") and the 24<sup>th</sup> amendment to 76/769/EEC (Restrictions on the marketing and use of certain dangerous substances and preparations).

This analysis was performed to independently verify that the content of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PDBE) present is within the permitted levels set.

**Note:** This report is a composite of the reports for the individual, homogenous parts of the product. The table below is a summary of the data in the following pages.

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K. Clithero  
Group Quality Manager

RoHS Substance	Result (ppm)
Lead	25
Mercury	Not detected
Cadmium	Not detected
Hexavalent Chromium	Not detected
Polybrominated Biphenyls (PBB)	Not detected
Polybrominated Diphenyl Ethers (PDBE)	Not detected

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# Test Report

No. : CE/2008/49068    Date : 2008/05/08    Page : 1 of 4

ZETEX SEMICONDUCTORS PLC  
ZETEX TECHNOLOGY PARK, CHADDERTON, OLDHAM. OL9 9LL. UNITED  
KINGDOM



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

Sample Description : WAFER  
Buyer/Order No. : 65637  
Sample Receiving Date : 2008/04/30  
Testing Period : 2008/04/30 TO 2008/05/08

=====  
Test Result(s) : Please refer to next page(s).

Chenyu Kung / Operation Manager  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory – Taipei

# Test Report

No. : CE/2008/49068 Date : 2008/05/08 Page : 2 of 4

ZETEX SEMICONDUCTORS PLC  
 ZETEX TECHNOLOGY PARK, CHADDERTON, OLDHAM. OL9 9LL. UNITED  
 KINGDOM



## Test Result(s)

PART NAME NO.1 : WAFER

Test Item (s):	Unit	Method	MDL	Result
				No.1
Cadmium (Cd)	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Cadmium by ICP-AES.	2	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Lead by ICP-AES.	2	n.d.
Mercury (Hg)	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Mercury by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI) by alkaline extraction	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Hexavalent Chromium for non-metallic samples by UV/Vis Spectrometry.	2	n.d.
Antimony (Sb)	mg/kg	With reference to US EPA Method 3050B for Antimony Content. Analysis was performed by ICP-AES.	2	n.d.
Halogen-Chlorine (Cl) (CAS No.: 007782-50-5)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC method for Chlorine content.	50	n.d.
Halogen-Bromine (Br) (CAS No.: 007726-95-6)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC method for Bromine content.	50	n.d.

# Test Report

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ZETEX SEMICONDUCTORS PLC  
 ZETEX TECHNOLOGY PARK, CHADDERTON, OLDHAM. OL9 9LL. UNITED  
 KINGDOM



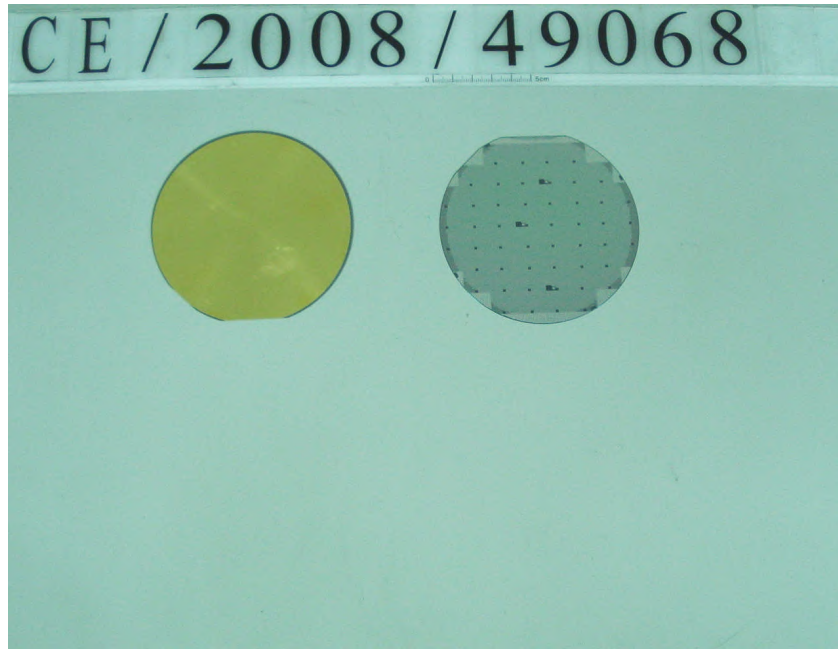
Test Item (s):	Unit	Method	MDL	Result
				No.1
<b>Sum of PBBs</b>	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of PBB and PBDE by GC/MS.	-	n.d.
Monobromobiphenyl			5	n.d.
Dibromobiphenyl			5	n.d.
Tribromobiphenyl			5	n.d.
Tetrabromobiphenyl			5	n.d.
Pentabromobiphenyl			5	n.d.
Hexabromobiphenyl			5	n.d.
Heptabromobiphenyl			5	n.d.
Octabromobiphenyl			5	n.d.
Nonabromobiphenyl			5	n.d.
Decabromobiphenyl			5	n.d.
<b>Sum of PBDEs (Mono to Nona) (Note 4)</b>			-	n.d.
Monobromodiphenyl ether			5	n.d.
Dibromodiphenyl ether			5	n.d.
Tribromodiphenyl ether			5	n.d.
Tetrabromodiphenyl ether			5	n.d.
Pentabromodiphenyl ether			5	n.d.
Hexabromodiphenyl ether			5	n.d.
Heptabromodiphenyl ether			5	n.d.
Octabromodiphenyl ether			5	n.d.
Nonabromodiphenyl ether			5	n.d.
Decabromodiphenyl ether			5	n.d.
<b>Sum of PBDEs (Mono to Deca)</b>			-	n.d.

- Note :
1. mg/kg = ppm
  2. n.d. = Not Detected
  3. MDL = Method Detection Limit
  4. According to 2005/717/EC DecaBDE is exempt.
  5. " - " = Not Regulated

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ZETEX SEMICONDUCTORS PLC  
ZETEX TECHNOLOGY PARK, CHADDERTON, OLDHAM. OL9 9LL. UNITED  
KINGDOM



\*\* End of Report \*\*

## Test Report

No. SH8015479/ CHEM

Date: Feb. 14, 2008

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MITSUI HIGH-TEC(SHANGHAI)CO., LTD  
NO.2001 XINJIN QIAO RD JINQIAO EXPORT PROCESSING ZONE PUDONG SHANGHAI CHINA

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

Sample Name : LEAD FRAME  
SGS Ref No. : 10845832-2  
Part No : EFTECT 64(SILVER)

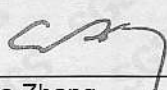
Sample Receiving Date : Feb.03, 2008  
Testing Period : Feb.03 — 14, 2008

Test Requested : To determine the Cadmium, Lead, Mercury, Hexavalent Chromium, PBBs(Polybrominated biphenyls) and PBBEs(PBDEs) (Polybrominated biphenyl ethers) Content of the submitted sample.

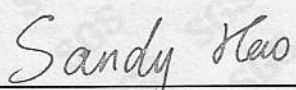
Test Method : (1) With reference to IEC 62321/2<sup>nd</sup> CDV (111/95/CDV) for Cadmium content  
Analysis was performed by ICP.  
(2) With reference to IEC 62321/2<sup>nd</sup> CDV (111/95/CDV) for Lead content  
Analysis was performed by ICP and AAS.  
(3) With reference to IEC 62321/2<sup>nd</sup> CDV (111/95/CDV) for Mercury content  
Analysis was performed by ICP.  
(4) With reference to IEC 62321/2<sup>nd</sup> CDV (111/95/CDV) for Hexavalent  
Chromium by spot test / Colorimetric Method.  
(5) With reference to IEC 62321/2<sup>nd</sup> CDV (111/95/CDV) for PBBs / PBDEs Content.  
Analysis was performed by GC/MS

Test Results : Please refer to next pages

Signed for and on behalf of  
SGS-CSTC Chemical Laboratory

  
Ella Zhang  
Section Manager

Signed for and on behalf of  
SGS-CSTC Chemical Laboratory

  
Sandy Hao  
Lab Manager

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Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only. This document cannot be reproduced except in full, without prior approval of the Company.

Test results by chemical method (Unit: mg/kg)

Test Item(s):	Method (refer to)	1*	MDL
Cadmium(Cd)	(1)	ND	2
Lead (Pb)	(2)	ND	2
Mercury (Hg)	(3)	ND	2
Hexavalent Chromium (CrVI) by Spot test / boiling water extraction	(4)	Negative	See Note (4)
Sum of PBBs	(5)	ND	--
Monobromobiphenyl		ND	5
Dibromobiphenyl		ND	5
Tribromobiphenyl		ND	5
Tetrabromobiphenyl		ND	5
Pentabromobiphenyl		ND	5
Hexabromobiphenyl		ND	5
Heptabromobiphenyl		ND	5
Octabromobiphenyl		ND	5
Nonabromobiphenyl		ND	5
Decabromobiphenyl		ND	5
Sum of PBDEs		ND	--
Monobromodiphenyl ether		ND	5
Dibromodiphenyl ether		ND	5
Tribromodiphenyl ether		ND	5
Tetrabromodiphenyl ether		ND	5
Pentabromodiphenyl ether		ND	5
Hexabromodiphenyl ether		ND	5
Heptabromodiphenyl ether		ND	5
Octabromodiphenyl ether		ND	5
Nonabromodiphenyl ether	ND	5	
Decabromodiphenyl ether	ND	5	

**Test Part Description:**

1. Copper metal with white (mix all)

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## Test Report

No. SH8015479/ CHEM

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Note:

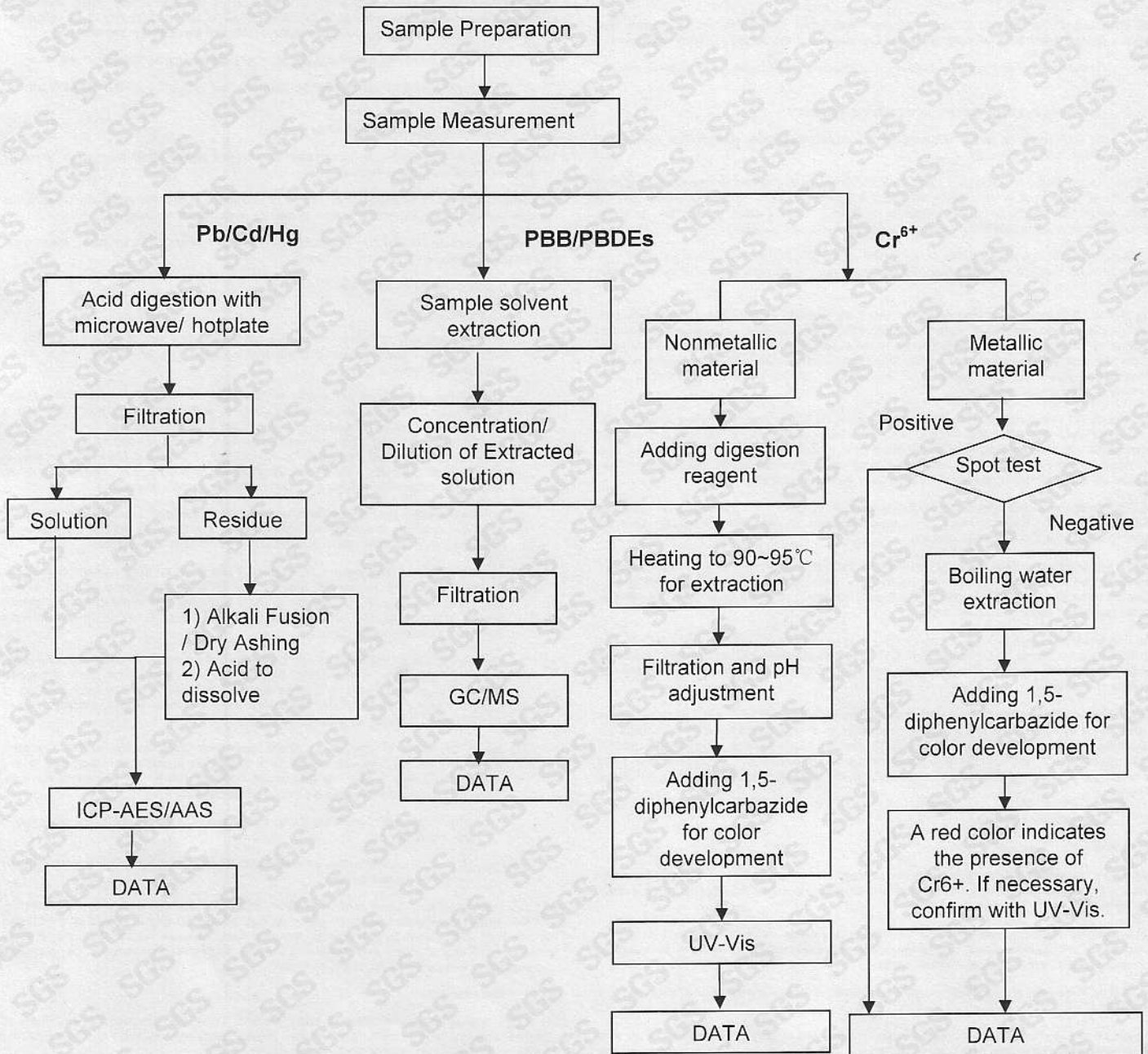
- (1) mg/kg = ppm
- (2) ND = Not Detected
- (3) MDL = Method Detection Limit
- (4) Spot-test:  
Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;  
(The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.)  
Boiling-water-extraction:  
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.
- (5) \*The sample(s) was/were analyzed on behalf of the applicant as mixing sample in one testing. The above result(s) was/were only given as the informality value.

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SHCHEM 1724247

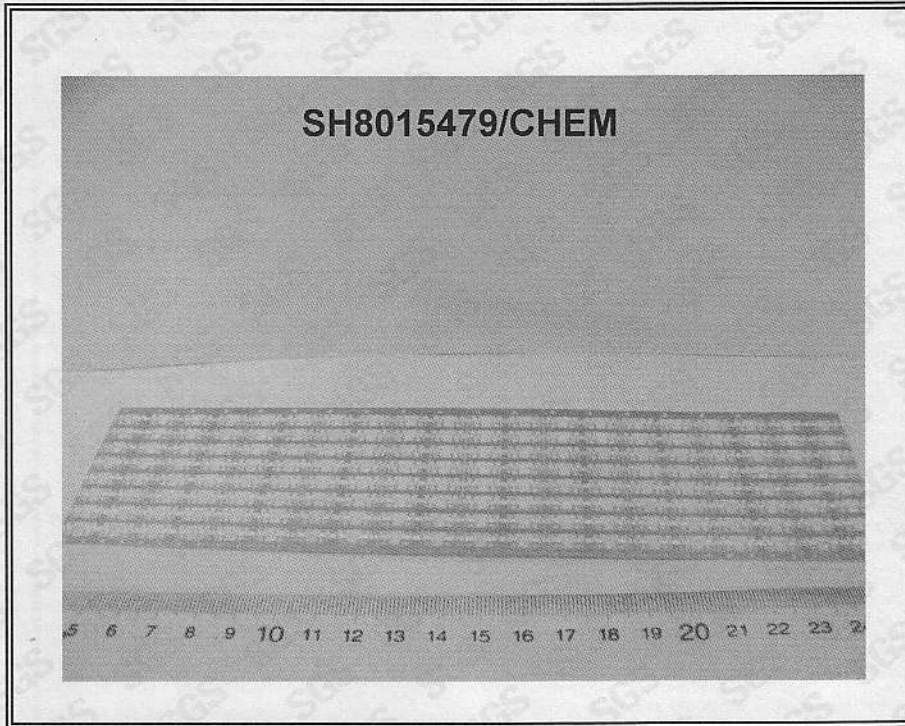
**ATTACHMENTS**

- 1) Name of the person who made measurement: Cathy Cai/George Xu/Diane Wang
- 2) Name of the person in charge of measurement: Terry Wang/Tracy Yue



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Sample photo:



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## Test Report

No. SH8050865/CHEM

Date: Apr. 16, 2008

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HERAEUS ZHAOYUAN PRECIOUS METAL MATERIALS CO., LTD/ HERAEUS ZHAOYUAN (CHANGSHU) ELECTRONIC MATERIAL CO., LTD  
NO.238 LINGLONG ROAD, ZHAOYUAN SHANGDONG/ NO.248 HUANGHE ROAD CHANGSHU, JIANGSU

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

Sample Name : GOLD BONDING WIRE HD  
SGS Ref No. : 10960194  
Main Substance : GOLD

Sample Receiving Date : Apr.15, 2008  
Testing Period : Apr.15 – 16, 2008

Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

Test Method : With reference to IEC 62321/2<sup>nd</sup> CDV (111/95/CDV)  
Procedures for the Determination of Levels of Regulated Substances in  
Electrotechnical Products  
(1) Determination of Cadmium by ICP.  
(2) Determination of Lead by ICP  
(3) Determination of Mercury by ICP.  
(4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method.  
(5) Determination of PBBs and PBDEs by GC/MS.

Test Results : Please refer to next pages

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 Chemical Laboratory



Ella Zhang  
Section Manager

Signed for and on behalf of  
SGS-CSTC Chemical Laboratory



Sandy Hao  
Lab Manager

# Test Report

No. SH8050865/CHEM

Date: Apr. 16, 2008

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Test results by chemical method (Unit: mg/kg)

Test Item(s):	Method (refer to)	1	MDL	RoHS Limit
Cadmium(Cd)	(1)	ND	2	100
Lead (Pb)	(2)	ND	2	1000
Mercury (Hg)	(3)	ND	2	1000
Hexavalent Chromium (CrVI) by spot test / boiling-water extraction	(4)	Negative	See Note (5)	#
Sum of PBBs	(5)	ND	-	1000
Monobromobiphenyl		ND	5	-
Dibromobiphenyl		ND	5	-
Tribromobiphenyl		ND	5	-
Tetrabromobiphenyl		ND	5	-
Pentabromobiphenyl		ND	5	-
Hexabromobiphenyl		ND	5	-
Heptabromobiphenyl		ND	5	-
Octabromobiphenyl		ND	5	-
Nonabromobiphenyl		ND	5	-
Decabromobiphenyl		ND	5	-
Sum of PBDEs (Note 4)		ND	-	1000
Monobromodiphenyl ether		ND	5	-
Dibromodiphenyl ether		ND	5	-
Tribromodiphenyl ether		ND	5	-
Tetrabromodiphenyl ether		ND	5	-
Pentabromodiphenyl ether		ND	5	-
Hexabromodiphenyl ether		ND	5	-
Heptabromodiphenyl ether		ND	5	-
Octabromodiphenyl ether		ND	5	-
Nonabromodiphenyl ether	ND	5	-	
Decabromodiphenyl ether	ND	5	-	
Sum of PBDEs (Mono to Deca)	ND	-	-	

Test Part Description:

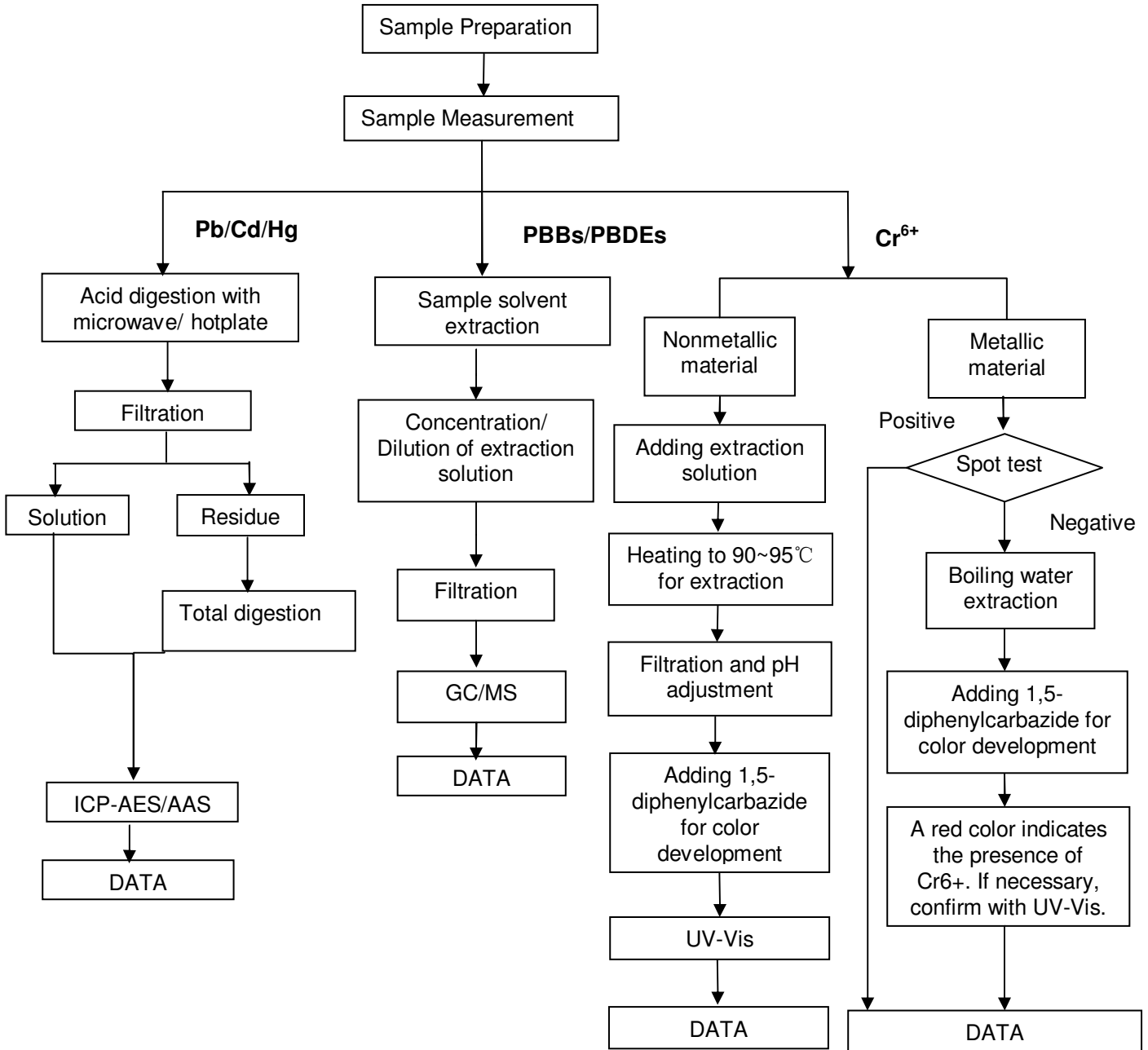
1. Golden metal thread

## Note:

- (1) mg/kg = ppm
- (2) ND = Not Detected
- (3) MDL = Method Detection Limit
- (4) Sum of Mono to NonaBDE & according to 2005/717/EC DecaBDE is exempt.
- (5) 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:
    - 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.
- (6) # = Positive indicates the presence of Hexavalent Chromium on the tested areas.  
Negative indicates the absence of CrVI on the tested areas.
- (7) "-" = Not Regulated
- (8) The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC

**ATTACHMENTS**

- 1) Name of the person who made measurement: Cathy Cai/George Xu/Diane Wang
- 2) Name of the person in charge of measurement: Terry Wang/Tracy Yue
- 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)



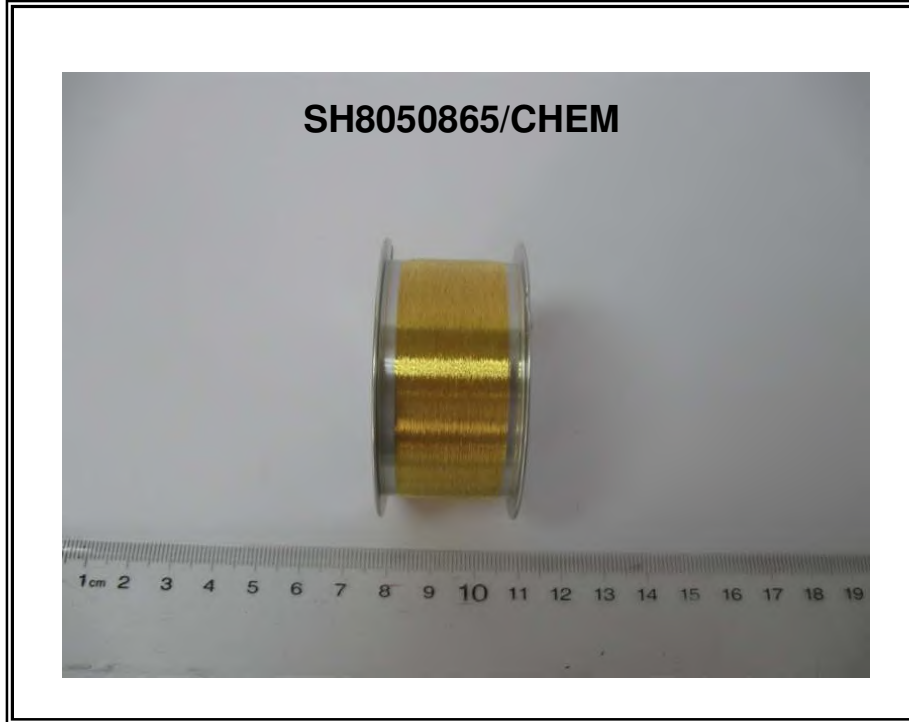
## Test Report

No. SH8050865/CHEM

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Sample photo:



SGS authenticate the photo on original report only

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





## TEST REPORT

Applicant : KCC Corporation  
Address : Jeonju Industrial Complex No. 3, 846, Yongam-ri,  
Bongdong-eup, Wanju-gun, Jeonbuk, Korea

Page: 1 of 4

Report No. RT08R-2779-006

Date: Apr. 11, 2008

Sample Description : The following submitted sample(s) said to be:-

Name/Type of Product : KTMC-1050(+)  
Sample ID No. : RT08R-2779-006  
Manufacturer/Vender : KCC Corporation

Sample received : Apr. 08, 2008  
Testing Date : Apr. 08, 2008 ~ Apr. 11, 2008  
Testing Laboratory : Intertek Testing Center  
Testing Environment : Temperature : ( 22 ~ 26 ) °C      Relative Humidity: ( 55 ~ 65 ) %

Test Method(s) : Please see the following page(s).  
Test Result(s) : Please see the following page(s).

\* Note 1 : The test results presented in this report relate only to the object tested.

\* Note 2 : This report shall not be reproduced except in full without the written approval of the testing laboratory.

Approved by,

E.Y.Lee / Lab. Technical Manager

Authorized by,

H.W.Yoo / Lab. General Manager

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Intertek Testing Center



# TEST REPORT

Page: 2 of 4  
Date: Apr. 11, 2008

Report No. RT08R-2779-006

Sample ID No. : RT08R-2779-006

Sample Description : KTMC-1050(+)

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	0.5	N.D.
Lead (Pb)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	5	N.D.
Mercury (Hg)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	2	N.D.
Hexavalent Chromium (Cr <sup>6+</sup> )	mg/kg	US EPA 3060A and determined by UV-visible	1	N.D.
<b>Polybrominated Biphenyl (PBBs)</b>				
Monobromobiphenyl	mg/kg	With reference to US EPA 3540C, by solvent extraction and determined by GC/MS Analysis	5	N.D.
Dibromobiphenyl	mg/kg		5	N.D.
Tribromobiphenyl	mg/kg		5	N.D.
Tetrabromobiphenyl	mg/kg		5	N.D.
Pentabromobiphenyl	mg/kg		5	N.D.
Hexabromobiphenyl	mg/kg		5	N.D.
Heptabromobiphenyl	mg/kg		5	N.D.
Octabromobiphenyl	mg/kg		5	N.D.
Nonabromobiphenyl	mg/kg		5	N.D.
Decabromobiphenyl	mg/kg		5	N.D.
<b>Polybrominated Diphenyl Ether (PBDEs)</b>				
Monobromodiphenyl ether	mg/kg	With reference to US EPA 3540C, by solvent extraction and determined by GC/MS Analysis	5	N.D.
Dibromodiphenyl ether	mg/kg		5	N.D.
Tribromodiphenyl ether	mg/kg		5	N.D.
Tetrabromodiphenyl ether	mg/kg		5	N.D.
Pentabromodiphenyl ether	mg/kg		5	N.D.
Hexabromodiphenyl ether	mg/kg		5	N.D.
Heptabromodiphenyl ether	mg/kg		5	N.D.
Octabromodiphenyl ether	mg/kg		5	N.D.
Nonabromodiphenyl ether	mg/kg		5	N.D.
Decabromodiphenyl ether	mg/kg		5	N.D.

Tested by : Y.K Cho / H.J Kim / W.H Park

Notes : mg/kg = ppm = parts per million  
 < = Less than  
 N.D. = Not detected ( <MDL )  
 MDL = Method detection limit

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Intertek Testing Center

## TEST REPORT

Page: 3 of 4  
Date: Apr. 11, 2008

Report No. RT08R-2779-006

Sample ID No. : RT08R-2779-006

Sample Description : KTMC-1050(+)

\* View of sample as received;-



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**Intertek Testing Center**

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Seoul Lab. : #709, 7Fl, Ace Techno Tower V, 197-22, Guro-3Dong, Guro-Gu, Seoul 152-766 Korea Tel : 02-2109-1260 Fax : 02-2109-1258  
Ulsan Lab. : #340-2, Yongam-Ri, Chongryang-Myun, Ulju-Gun, Ulsan 689-865 Korea Tel : 052-257-6754 Fax : 052-276-6792

# TEST REPORT

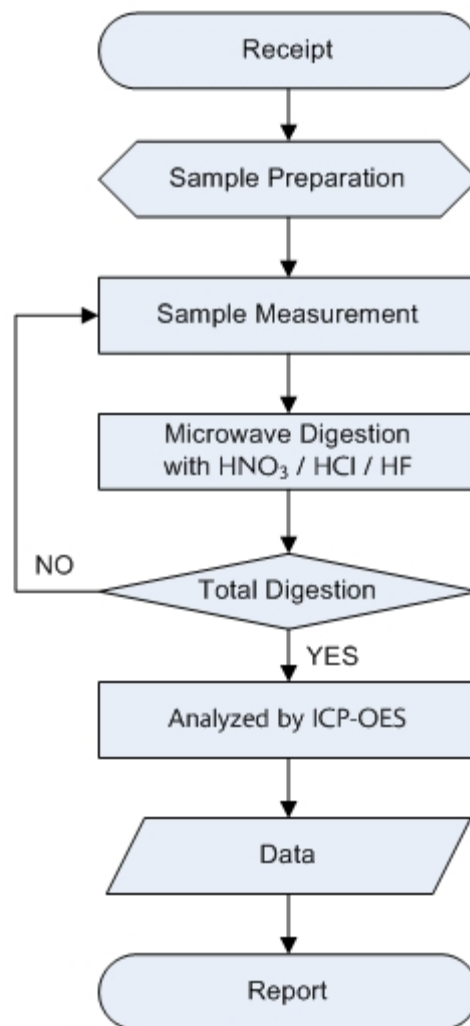
Report No. RT08R-2779-006

Page: 4 of 4  
Date: Apr. 11, 2008

Sample ID No. : RT08R-2779-006

Sample Description : KTMC-1050(+)

## Flow Chart Of Digestion ( EPA 3052 For Cd, Pb )



\*\* Remarks : The samples were dissolved totally by pre-conditioning method according to above flow chart.

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

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Intertek Testing Center

## Test Report

No. SH8075804/CHEM

Date: May. 31, 2008

Page 1 of 4

SHANGHAI YUANHAO SURFACE FINISHING CO., LTD.  
NO.8, LANE18, SANZHUANG ROAD, SONGJIANG EXPORT PROCESSING ZONE, SHANGHAI

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

Sample Name : MATTE TIN  
SGS Ref No. : 11051414  
Main Substance : PURE TIN

Sample Receiving Date : May.28, 2008  
Testing Period : May.28 – 31, 2008

Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

Test Method : With reference to IEC 62321/2<sup>nd</sup> CDV (111/95/CDV)  
Procedures for the Determination of Levels of Regulated Substances in  
Electrotechnical Products  
(1) Determination of Cadmium by ICP.  
(2) Determination of Lead by ICP and AAS.  
(3) Determination of Mercury by ICP.  
(4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method.

Test Results : Please refer to next pages

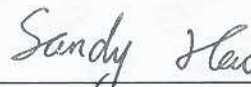
Conclusion : Based on the performed tests on submitted samples, the results comply with the  
RoHS Directive 2002/95/EC and its subsequent amendments.

Signed for and on behalf of  
SGS-CSTC Chemical Laboratory



Ella Zhang  
Section Manager

Signed for and on behalf of  
SGS-CSTC Chemical Laboratory



Sandy Hao  
Lab Manager

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Test results by chemical method (Unit: mg/kg)

Test Item(s):	Method (refer to)	1	MDL	RoHS Limit
Cadmium(Cd)	(1)	ND	2	100
Lead (Pb)	(2)	ND	2	1000
Mercury (Hg)	(3)	ND	2	1000
Hexavalent Chromium (CrVI) by spot test / boiling-water extraction	(4)	Negative	See Note (4)	#

Test Part Description:

1. Silvery-white metal part

Note:

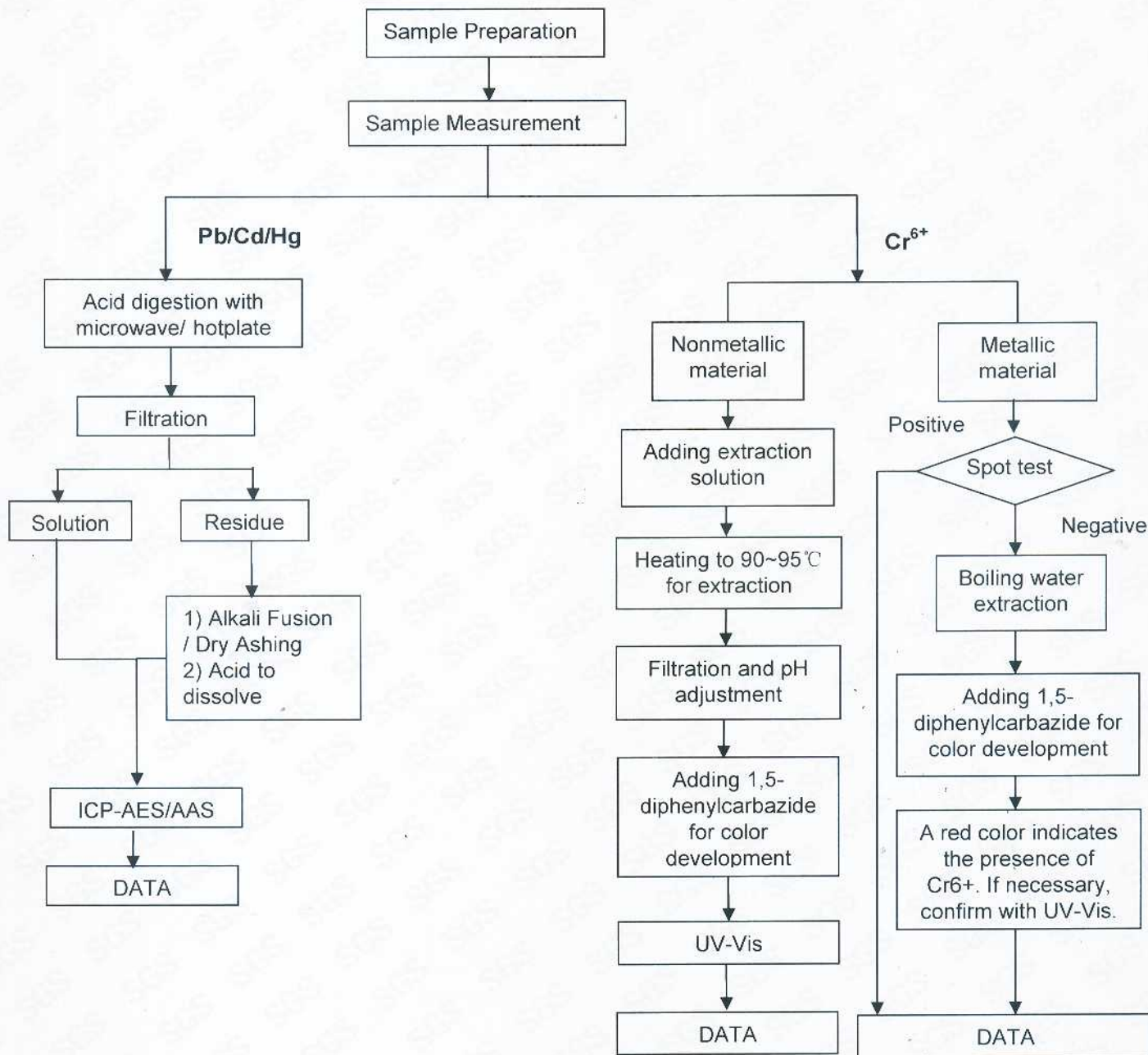
- (1) mg/kg = ppm
- (2) ND = Not Detected
- (3) MDL = Method Detection Limit
- (4) Spot-test:  
Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;  
(The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.)  
Boiling-water-extraction:  
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.
- (5) # = Positive indicates the presence of Hexavalent Chromium on the tested areas.  
Negative indicates the absence of CrVI on the tested areas.
- (6) The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC

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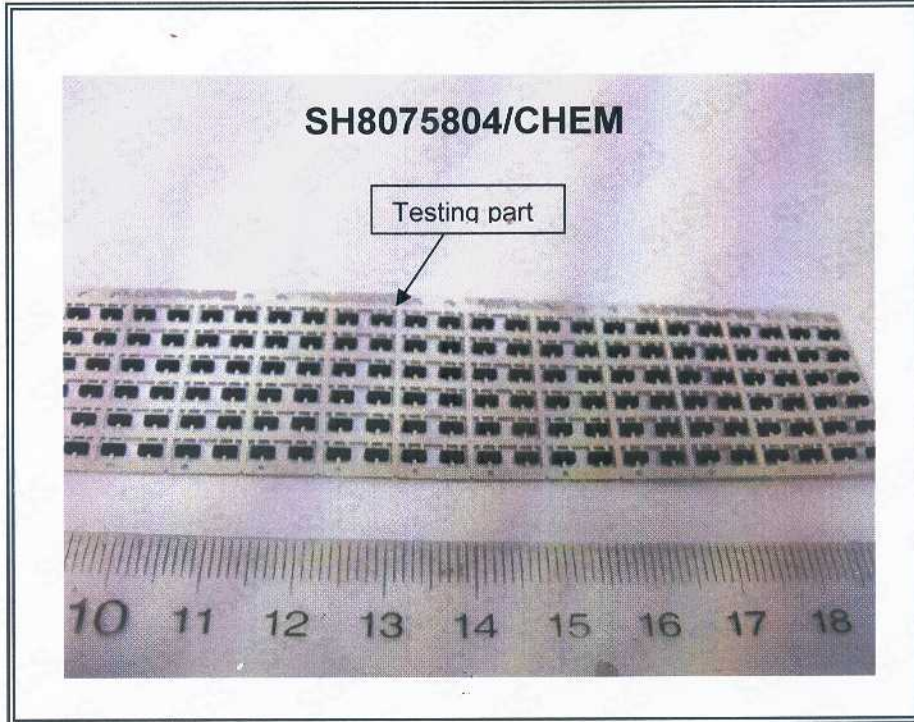
**ATTACHMENTS**

- 1) Name of the person who made measurement: Cathy Cai/George Xu
- 2) Name of the person in charge of measurement: Terry Wang



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Sample photo:



SGS authenticate the photo on original report only

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

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