



东 莞 市 商 旗 电 子 有 限 公 司
山 旗 电 子 (香 港) 实 业 有 限 公 司
承 认 书
SPECIFICATION FOR APPROVAL

客户名称 (CUSTOMER): _____

品名规格 (DESCRIPTION): MICRO USB 5F ccht 6.45(0.8*0.9) _____

客户料号: (PART NO.): _____

料 号 (PART NO.): ST-USB-001G _____

送样日期 (DATE): _____

客 户 公 司			东莞市商旗电子有限公司 山旗电子(香港)实业有限公司		
品管部 QC DEP	工程部 ENG DEP	采购部 PUR DEP	品管部 QC DEP	工程部 ENG DEP	营业部 TRA DEP
			方工	曾工	PETER

大陆总公司：中国广东东莞市樟木头樟罗管理区永宁路 183 号

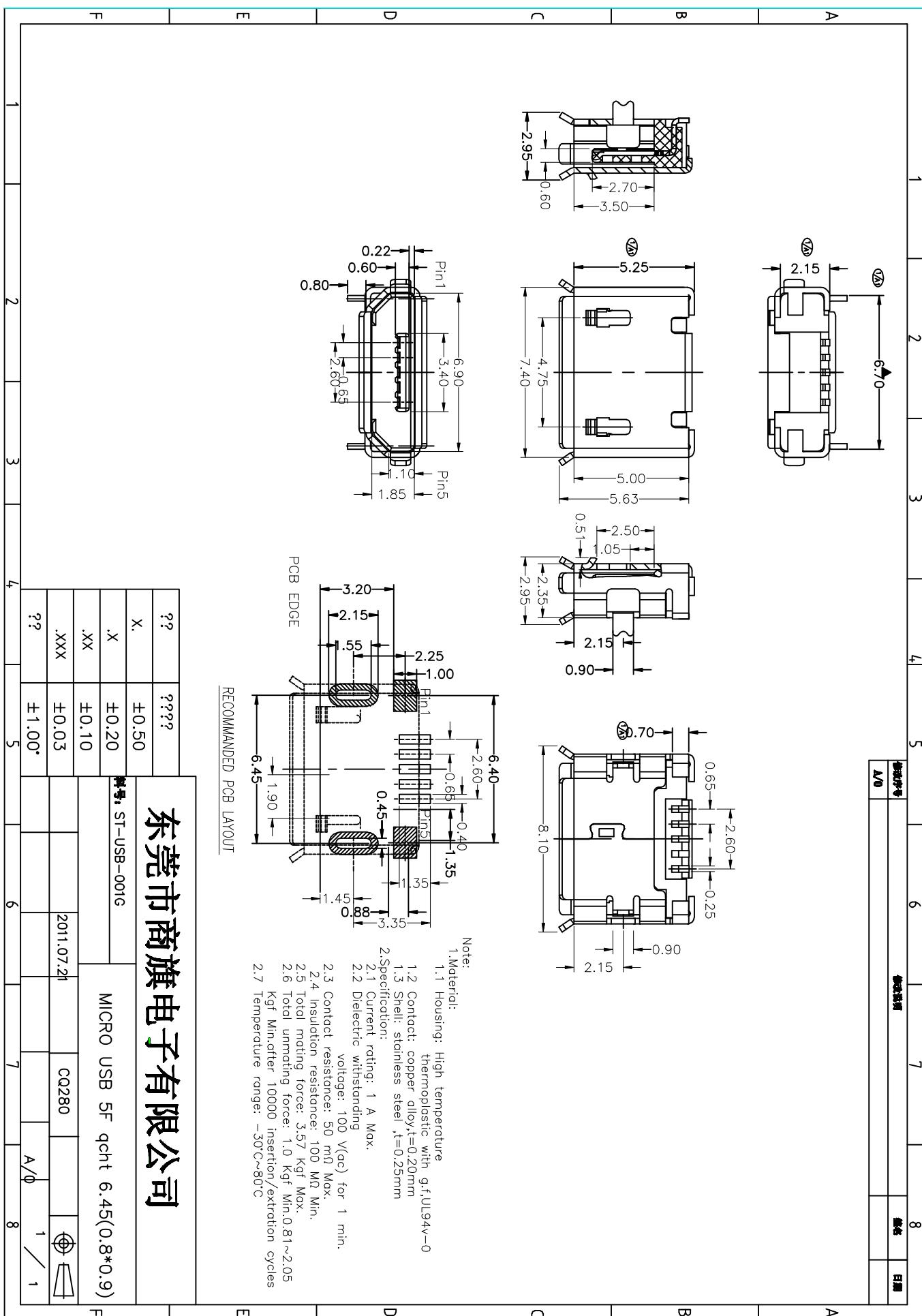
电话: +86-769-8719-1121

传真: +86-769-8902-6005

[Http://www.suntech.hk](http://www.suntech.hk)

E-mail: sales@suntech.hk

QQ:373383163



SUNGTECH

东莞市商旗电子有限公司
PRODUCT SPECIFICATION

1 SCOPE

This specification covers performance, tests and quality requirements for
MICRO USB 5 Pin Female SERIES CONNECTOR.

2 APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herewith. In the event of conflict between the requirements of the specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of the specification and the referenced documents, this specification shall take precedence.

MIL-STD-202 Test Methods for Electronic and Electrical Component Parts
MIL-STD-1344 Test Methods for Electrical Connectors

3 REQUIREMENTS

3.1 Design and Construction

Product shall be of design, construction and physical dimensions specified on applicable product drawing.

3.2 Materials and Finish

3.2.1 Contact: High performance copper alloy (Phosphor Bronze)

Finish: SEE ORDER INFORMATION

3.2.2 Housing: Thermoplastic, high temp. UL94V-0

3.2.3 Shell : Copper Alloy, Tin-plated over all

Finish: SEE ORDER INFORMATION

3.3 Ratings

3.3.1 Voltage: 30 Volts AC

3.3.2 Current: 1.0 Amperes

3.3.3 Shipping and Storage Temperature Range :-30 °C ~ +80 °C

Title	MICRO USB 5P	REV.	Description
Document NO.	Refer to drawing	Sheet NO.	Page 1 of 5

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PRODUCT SPECIFICATION

4 Performance

4.1. Test Requirements and Procedures Summary

Item	Requirement	Standard
Examination of Product	Product shall meet requirements of applicable product drawing and specification.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Low-signal Level Contact Resistance	30 milliohm Max.	Mate connectors, measure by dry circuit, 20 mV Max. 100mA Max. Excep wire conductor resistance. EIA - 364 -23
Insulation Resistance	100 Megohms Min	Mate/Un-mate connectors, apply 100V DC for 1 minute between adjacent terminal or ground . EIA - 364 - 21
Dielectric Withstanding Voltage	No Breakdown	Mate/Un-mate connectors, apply 250V AC(rms) for 1 minute between adjacent terminal or ground. EIA - 364 -20
Capacitance	2 pF Max.	Measured between adjacent circutes of un-mated connectors at 1kHz . EIA - 364 - 30
Temperature rise	30°C Max. Change allowed	Mate connector and measure the temperature rise of contact when the maximum AC rated current is passed EIA - 364 - 70
MECHANICAL		
Mating /un-mating force (initial)	Mating force :35N (3.57 kgf) Max. Un-mating force :7N (0.71 kgf) Min..	Mate / un-mated at a rate of 12.5 mm / min EIA - 364 - 13
Terminal /housing retention force	4 N (0.41 kgf) Min.	Apply axial pull out force on the terminal assembled in the housing at a rate of 25 +/- 3 mm / min.
Repeated mate / un-mate	Contact Resistance :50milliohm Max Mating force :35 N(3.57 kgf) Max. Un-mating Force : 3 N (0.3 kgf) Min Appearance:No breakdown	When mate / un-mated up to 5000 cycles repeatedly at Max. rate of 200 cycles / hr. EIA - 364 - 09

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PRODUCT SPECIFICATION

Item	Requirement	Standard
Vibration	Appearance:No Damage Contact Resistance :50milliohm Max. Discontinuity:1.0 microsecond Max	Mate connectors and subject to the following vibration conditions(refer to 6 clause), for a period of 15 minutes in each 3 mutually perpendicular axes, passing DC 100mA during the test. EIA - 364 - 28
Humidity	Appearance:No Damage Contact Resistance :50milliohm Max. Insulation Resistance:100 Megohms Min. Dielectric Strength :No Breakdown	Mate connectors and expose to humidity in 7 cycles 7 clause. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. EIA-364-31 method III
Cold Resistance	Appearance:No Damage Contact Resistance :50milliohm Max. Insulation Resistance:100 Megohms Min. Dielectric Strength :No Breakdown	Mate connectors and expose to -55 +/- 2 °C for 96 hours, Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed
Heat Resistance	Appearance:No Damage Contact Resistance :50milliohm Max. Insulation Resistance:100 Megohms Min. Dielectric Strength :No Breakdown	Mate connectors and expose to 105 +/- 2 °C for 250 hours, Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed EIA - 364 - 17
Shock	Appearance:No Damage Contact Resistance :50milliohm Max. Discontinuity:1.0 microsecond Max	Mate connectors and subject to the following shock conditions, 3 shocks shall be applied along 3 mutually perpendicular axes, passing DC 100 mA current during the test. (Total of 18 shocks) Test Pulse : Half Sine Peak Value : 294 m/s ² (30G) Duration : 11 ms EIA - 364 - 27

Title	MICRO USB 5P	REV.	Description
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Item	Requirement	Standard
Temperature cycling	Appearance:No Damage Contact Resistance :50milliohm Max. Insulation Resistance:100 Megohms Min. Dielectric Strength :No Breakdown	Mate connectors and subject to the flowing conditions for 10 cycles, Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. 1 cycle a). -55 +/- 3 °C 30 minutes. b). +85 +/- 2 °C 30 minutes. (Transit time shall be within 10 to 15 minutes)
ENVIRONMENTAL		
Solderability	95% of immersed area must show no voids , pin holes	Dip solder-tails in flux then immerse in solder bath at 245± 5 °C up to 0.5 mm from the bottom of the housing for 4 ~ 5 seconds (EIA - 364 -52 Category 2)
Resistance to Soldering Heat (Wave Soldering)	No Damage	Sample mounted on PCB and subject to wave soldering, Temperature: 250 ± 5 °C for 6 +2/ -0 Sec (High Temp. Thermoplastic)
Salt Spray	100 milliohm Max.	Subject mated/unmated connectors to 5% salt-solution concentration, 35 °C for 24 hours. (EIA-364-26,Test condition B)
SO2 Gas	Insulation Resistance:100 Megohms Min. Dielectric Strength :No Breakdown	Mate connectors and expose to 50 +/- 5 ppm SO2 gas, ambient temperature 40 +/- 2 °C for 24 hours.,
Resistance to Solder Heat (Reflow)	Without deformation of case or excessive looseness of the terminals(pin.). Electrical characteristics shall be satisfied.	For procedures other than specified below, refer to IEC PUB. 68-2-20. Test Tb Method 1A or 2 Solder bath method Solder temperature : 245+/- 5 °C Immersion time : 5 +/- 1 second Thickness of P.C.B : 0.8 mm Solder iron method Solder temperature : 350 +/- 10 °C Immersion time : 3 +/- 1 second However, excessive pressure shall not be applied to the terminal

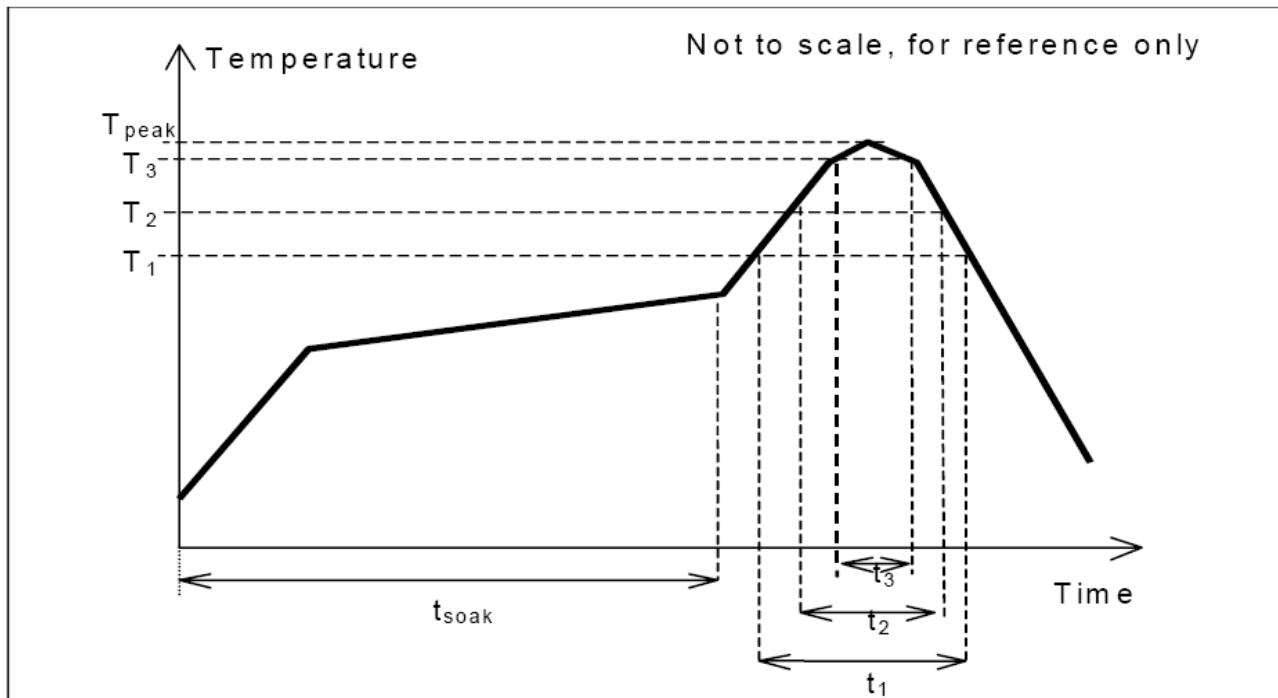
Note. Flowing Mixed Gas shell be conduct by customer request.

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REFLOW SOLDERING PROFILE

Pb-free reflow profile requirements:

Parameter	Reference	Specification
Average temperature gradient in preheating		2.5°C/s
Soak time	T soak	2-3 minutes
Time above 217°C	t1	60 s
Time above 230°C	t2	50 s
Time above 250°C	t3	5 s
Peak temperature in reflow	T peak	255°C (-0/+5°C)
Temperature gradient in cooling		Max -5°C/s



This profile is the minimum requirement for evaluating soldering heat resistance of components. Heat transfer method used for reflow soldering is hot air convection. The actual air temperatures used to achieve the specified profile is higher and largely dependent on the reflow equipment.

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QMFZ2 Component - Plastics

Fri day, October 24, 2003

E106764

POLYPLASTICS CO LTD
VECTRA DIV, KASUMI GASEKI BLDG, 6TH FL 2-5 KASUMI GASEKI 3-CHOME CHI YODA-KU TOKYO 100-6006 JAPAN

Material Designation: **E471i(d)**

Product Description: Liquid Crystal Polymer (LCP), designated "VECTRA" furnished as pellets.

Color	Min. Thick. (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str	IEC GWIT	IEC GWFI
NC, BK	0.8	V-0	-	-	130	130	130	-	-
ALL	1.5	V-0	-	-	130	130	130	-	-
	3.0	V-0	-	-	130	130	130	-	-

CTI: -

HVTR: -

D495: -

Dielectric Strength (kV/mm): -
ISO Tensile Strength (MPa): -
ISO Tensile Impact (kJ/m²): -

Volume Resistivity (10⁸ohm-cm): -
ISO Flexural Strength (MPa): -
ISO Izod Impact (kJ/m²): -

(d) Virgin and regrnd up to 50% by weight incl . have the same basic material characteristics for colors NC and BK.

Report Date: 1/31/2000

Underwriters Laboratories Inc®

UL 94 small I-scale test data does not pertain to building materials, furnishings and related contents. UL 94 small I-scale test data is intended solely for determining the flammability of plastic materials used in components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.



Test Report

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Date: 27 Jul 2012

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SAINT POWER HOLDINGS LIMITED

P.O.BOX217,APIA,SAMOA

SANFU PLASTIC MATERIAL CO.,LTD

C602,XINHENTAI BUILDING,ZHENAN ROAD,WU SHA,CHANGAN TOWN,DONGGUAN,CHINA

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

SGS Job No. : CP12-035423 - SZ

Model No. : E130I

Client Ref. Info. : E471I、E472I、E473I、E150I、E463I、E480I、S475、S135、S471、
A130、6130L、7130L、7140X、7145L、7244L、6635、6330、9140HT、
NX-101、RC-210、FC-110、MG-450、MG350、M-350、HM402、
HM302、LD235、LD240、LE235、LE240、LE130、E6006L、E6006MR、
E6807、E6808L、E4008、E5006L、E5002L、E5008、E6008、Z140GM、
6130GM、60G10、60G20、60G30、60G40

Date of Sample Received : 23 Jul 2012

Testing Period : 23 Jul 2012 - 27 Jul 2012

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 : A:Based on the performed tests on submitted samples, the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Kenny Wang
Approved Signatory

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SGS-CSTC Standards Testing Services Co., Ltd.
Guangzhou Scientific Chemical Laboratory

198 Kezhu Road, Scitech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.cn.sgs.com
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	CAN12-098347.001	Black plastic grains

Remarks :

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

A:RoHS Directive 2011/65/EU

Test Method : With reference to IEC 62321:2008

- (1) Determination of Cadmium by ICP-OES.
- (2) Determination of Lead by ICP-OES.
- (3) Determination of Mercury by ICP-OES.
- (4) Determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.
- (5) Determination of PBBs / PBDEs content by GC-MS.

Test Item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	ND
Mercury (Hg)	1,000	mg/kg	2	ND
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
Monobromodiphenyl ether	-	mg/kg	5	ND

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<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
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 directive 2011/65/EU, Annex II

B:Halogen

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

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Fluorine (F)	mg/kg	50	555
Chlorine (Cl)	mg/kg	50	ND
Bromine (Br)	mg/kg	50	ND
Iodine (I)	mg/kg	50	ND

C:Polynuclear Aromatic Hydrocarbons (PAHs)

Test Method : With reference to ZEK 01.4-08 of German ZLS and its amendments, analysis was performed by GC-MS.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Naphthalene(NAP)	mg/kg	0.2	ND
Acenaphthylene(ANY)	mg/kg	0.2	ND
Acenaphthene(ANA)	mg/kg	0.2	ND
Fluorene(FLU)	mg/kg	0.2	ND
Phenanthrene(PHE)	mg/kg	0.2	ND

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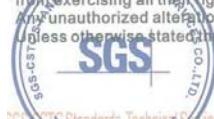
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<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Anthracene(ANT)	mg/kg	0.2	ND
Fluoranthene(FLT)	mg/kg	0.2	ND
Pyrene(PYR)	mg/kg	0.2	ND
Benzo(a)anthracene(BaA)	mg/kg	0.2	ND
Chrysene(CHR)	mg/kg	0.2	ND
Benzo(b)fluoranthene(BbF) +	mg/kg	0.4	ND
Benzo(j)fluoranthene(BjF)	mg/kg	0.2	ND
Benzo(k)fluoranthene(BkF)	mg/kg	0.2	ND
Benzo(e)pyrene(BeP)	mg/kg	0.2	ND
Benzo(a)pyrene(BaP)	mg/kg	0.2	ND
Indeno(1,2,3-c,d)pyrene(IPY)	mg/kg	0.2	ND
Dibenzo(a,h)anthracene(DBA)	mg/kg	0.2	ND
Benzo(g,h,i)perylene(BPE)	mg/kg	0.2	ND
Sum of 18 PAHs	mg/kg	-	ND

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Standards Technics Services Co., Ltd.
Guangzhou Scientific Testing Center Chemical Laboratory

198 Kezhu Road, Sci-tech Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 e www.cn.sgs.com

中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

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ZEK 01.4-08: Restraining maximum values for products

Parameter	Category 1	Category 2	Category 3
	Material indented to be put in the mouth or material for toys with normal skin contact for children aged < 36 months	Materials those are not included in Category 1, with predictable contact with the skin longer than 30 s. (long-term skin contact).	Materials those are not included in Category 1 or 2, with predictable skin contact up to 30 s (short-term skin contact).
Benzo(a)pyrene (mg/kg)	<0.2**	1	20
Sum of 18 PAH (mg/kg)*	<0.2**	10	200

Notes:

* = Only PAH substances >0.2 mg/kg are taken into account while calculating the sum of PAHs

** = In case that the maximum values exceed the limits of category 1, but are within the limits of category 2, one may confirm the suitability of the tested material which is indented to be put in the mouth by additional specific migration tests of PAH components based on DIN EN 1186ff and §64 LFGB 80.30-1. The conclusion of the migration test results must be made based on food law criteria.

D:PFOS (Perfluorooctane Sulfonates) and PFOA (Perfluorooctanoic Acid)

Test Method : With reference to US EPA Method 3550C: 2007, analysis was performed by HPLC-MS.

Test Item(s)	Unit	MDL	001
Perfluorooctane Sulfonates (PFOS) and related Acid,Metal Salt and Amide	mg/kg	10	ND
Perfluorooctanoic Acid (PFOA)	mg/kg	10	ND

Notes :

For reference: commission regulation (EU) No 757/2010 amending regulation (EC) No 850/2004:

(1) For the purposes of this entry, Article 4(1) (b) shall apply to concentrations of PFOS equal to or below 10 mg/kg (0,001 % by weight) when it occurs in substances or in preparations.

(2) For the purposes of this entry, Article 4(1) (b) shall apply to concentrations of PFOS in semi-finished products or articles, or parts thereof, if the concentration of PFOS is lower than 0,1 % by weight calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is lower than 1µg /m² of the coated material.

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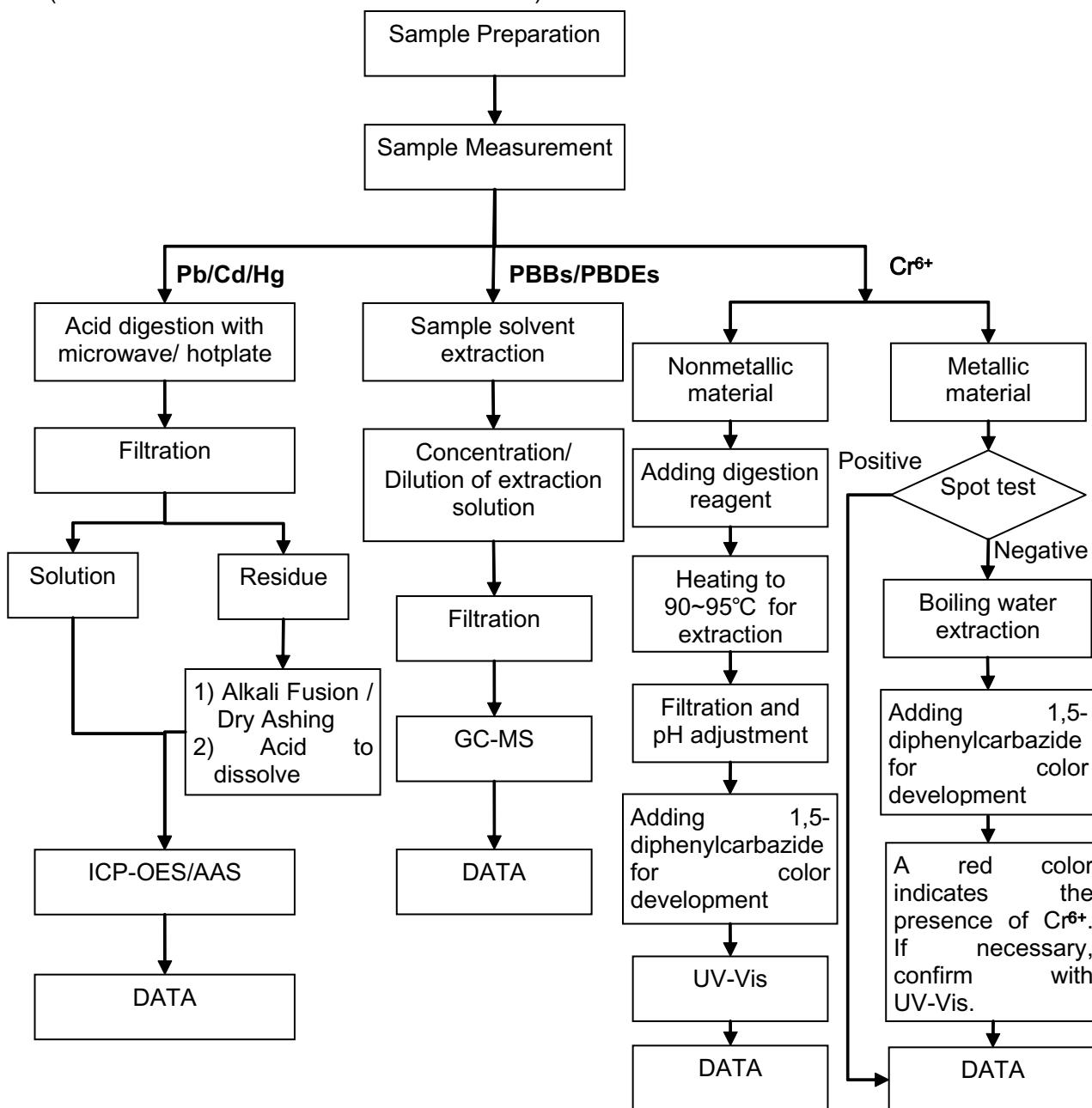
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ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Bella Wang / Cutey Yu
- 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 (Cr⁶⁺ and PBBs/PBDEs test method excluded).



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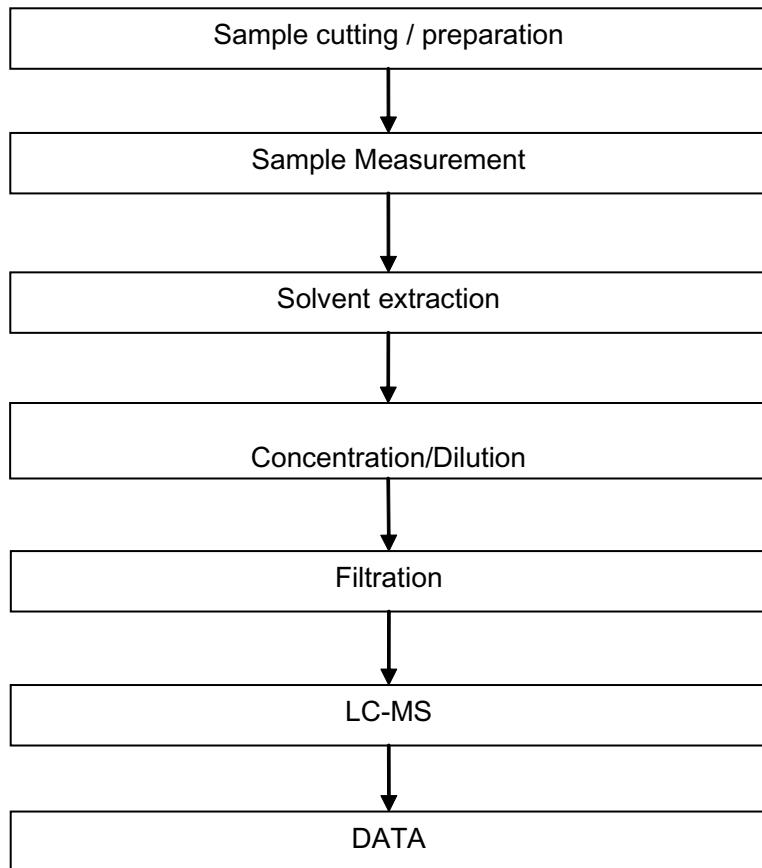
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ATTACHMENTS

PFOA / PFOS Testing Flow Chart

- 1) Name of the person who made testing: Cindy Huang
- 2) Name of the person in charge of testing: Ryan Yang



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Test Report

No. CANEC1209834701

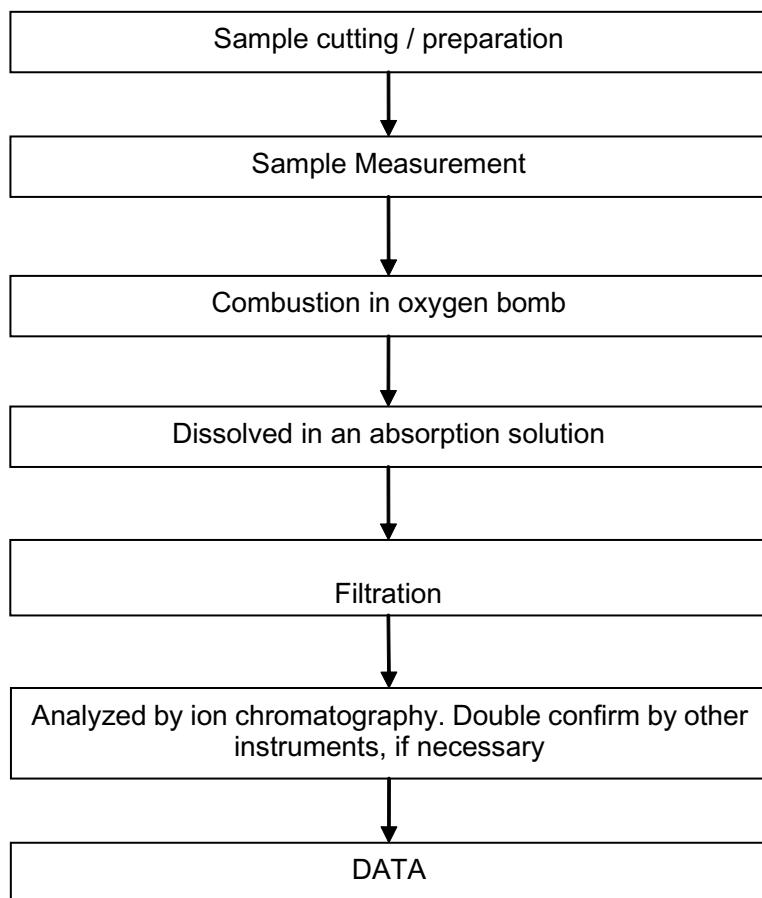
Date: 27 Jul 2012

Page 8 of 10

ATTACHMENTS

Halogen Testing Flow Chart

- 1) Name of the person who made testing: Bob Song
- 2) Name of the person in charge of testing: Rain Qiao



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Test Report

No. CANEC1209834701

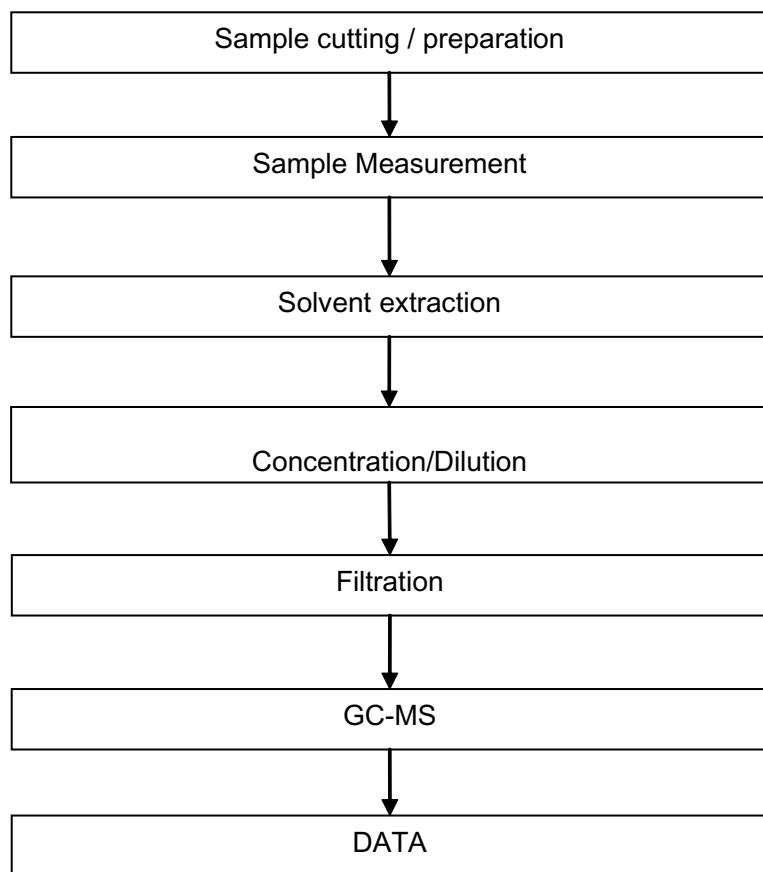
Date: 27 Jul 2012

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ATTACHMENTS

PAHs Testing Flow Chart

- 1) Name of the person who made testing: Cutey Yu
- 2) Name of the person in charge of testing: Ryan Yang



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No. CANEC1209834701

Date: 27 Jul 2012

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Sample photo:



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浙江中环铜业有限公司

产品质量证明

2012年7月21日

产品 牌号	H65	规格 状态	0.3X305 T	厚度公差 (mm)	±0.01
批号	0607-A-16	执行 标准	JIS H 3100:2006	宽度公差 (mm)	±0.3
化 型 底 分					
元素	Cu%	Fe%	Pb%	Zn%	
标准	63.5-68.0	<0.05	<0.05	余量	
实测值	63.71	0.016	0.007	余量	
性 能 检 测					
项目	抗拉强度 (N/mm ²)	延伸率 (%)	硬度值 (HV)	数 值	
实测值	476	22	147	kg	

质保书未填框的检验项目均合格。如客户对本产品的品质有异议,请持质保书在30天内与本公司联系,本公司将竭诚为您服务。(质保书盖章有效)

检验员: 02





Test Report

No. SHAEC1203282005

Date: 19 Mar 2012

Page 1 of 5

ZHE JIANG ZHONG HUAN COPPER CO., LTD
ANCHANG TOWN SHAOXING CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : C2680(H65) HIGH PRECISION BRASS STRIPS

SGS Job No. : SP12-006874 - SH

Date of Sample Received : 15 Mar 2012

Testing Period : 15 Mar 2012 - 19 Mar 2012

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 of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Fan Jingjie, JJ
Approved Signatory

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Testing Center

3rd Building, No.889 Yishan Road Xuhui District, Shanghai China 200233
中国·上海·徐汇区宜山路889号3号楼 邮编: 200233

t E&E (86-21) 61402553 f E&E (86-21) 64953679
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e sgs.china@sgs.com

Test Report

No. SHAEC1203282005

Date: 19 Mar 2012

Page 2 of 5

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	SHA12-032820.002	Golden metal

Remarks :

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

RoHS Directive 2011/65/EU

Test Method : With reference to IEC 62321:2008

- (1) Determination of Cadmium by ICP-OES.
- (2) Determination of Lead by ICP-OES.
- (3) Determination of Mercury by ICP-OES.
- (4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.
- (5) Determination of PBBs / PBDEs by GC-MS.

Test Item(s)	Limit	Unit	MDL	002
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	17
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	-	-	◇	Negative
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
Monobromodiphenyl ether	-	mg/kg	5	ND

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t E&E (86-21) 61402553 f E&E (86-21) 64953679
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Test Report

No. SHAEC1203282005

Date: 19 Mar 2012

Page 3 of 5

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>002</u>
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 directive 2011/65/EU, Annex II

- (2) ◊ = a. Positive means the presence of CrVI on the tested areas;
b. Negative means the absence of CrVI on the tested areas

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

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Test Report

No. SHAEC1203282005

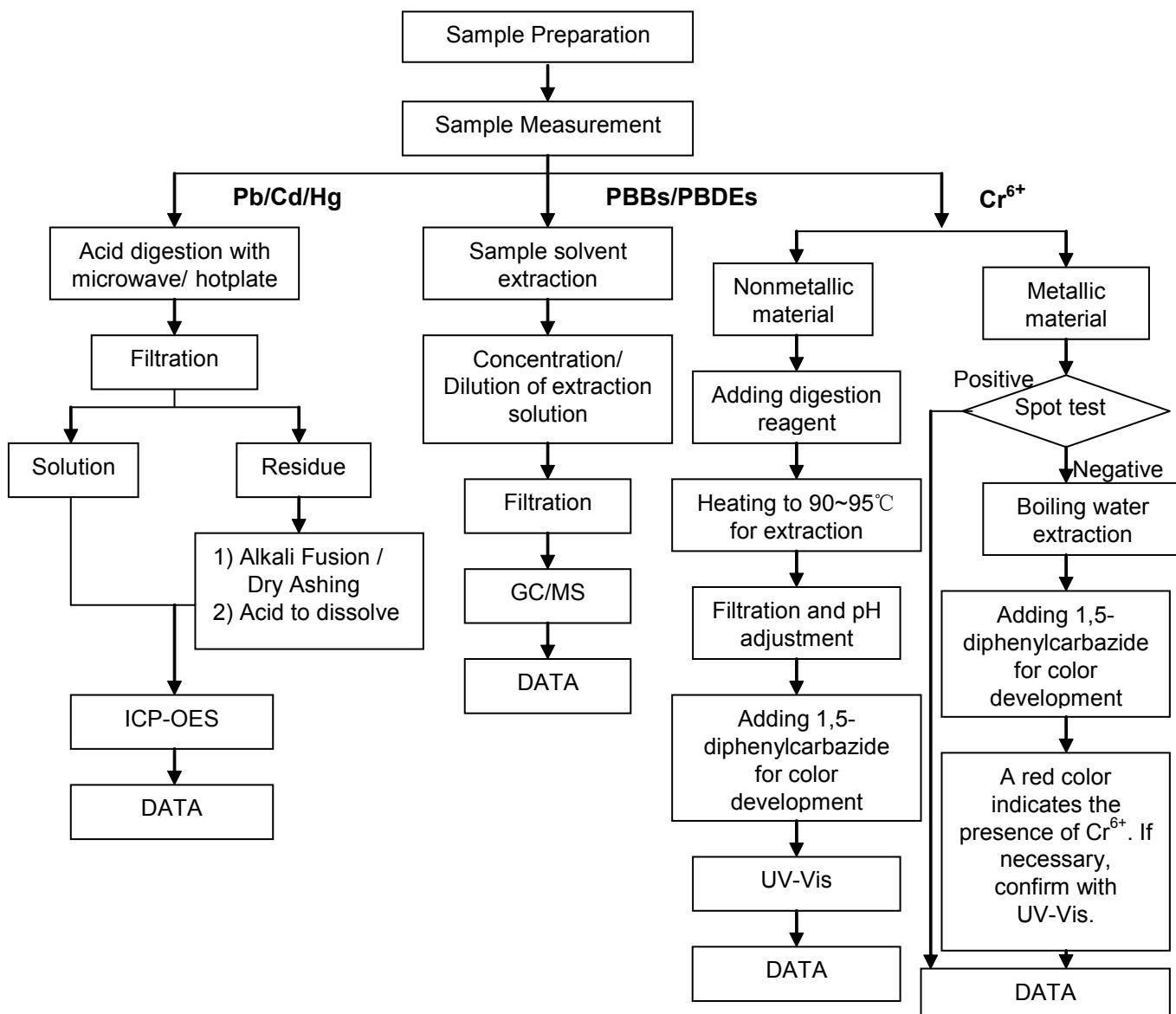
Date: 19 Mar 2012

Page 4 of 5

ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao/Gary Xu
- 2) Name of the person in charge of testing: Jeff Zhang/George Xu/ Elim Lin
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart.
(Cr⁶⁺ and PBBs/PBDEs test method excluded)



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Test Report

No. SHAEC1203282005

Date: 19 Mar 2012

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Sample photo:



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e sgs.china@sgs.com



REPORT OF MATERIAL TEST

DATE: OCT. 30, 2007

Customer: 明鑑投資有限公司

Applied Standard: CNS 9503 Phosphor Bronze Sheets, Plates and Strips

Commodity: C 5191 R PHOSPHOR BRONZE STRIP (H)

ISO 9002:1994
台正字第 3545 號

Chemical Analysis Test

Work No.	Size of Product			P(%)	Sn(%)	Cu+Sn+P(%)		P. O. NUMBER
	Thickness (mm)	Width (mm)	Length (mm)					
690085A	0.200	33.000	0.135	0.030 - 0.350	5.50 - 7.00	min. 39.50		PCC070824036
690085A	0.200	38.000	0.135		5.844	99.960		PCC070824036

Mechanical & Physical Test

Work No.	Dimension Test			Tensile Strength (Kgf/mm ²)	Elongation (%)	Hardness Test HV	Grain Size (mm)	Electric Conductivity (%)
	Thickness (mm)	Width (mm)	Length (mm)					
690085A	(-) 0.010 - (+) 0.010	(-) 0.10 - (+) 0.00	60 - 70	60.40	26.68	186.0 - 188.0	0.010	13.9
690085A	0.200	33.000	GOOD.	GOOD.	min. 8	180 - 230	-	-
690085A	0.200	38.000	GOOD.	GOOD.	26.68	186.0 - 188.0	0.010	13.9

MINCHALI METAL INDUSTRY CO., LTD.
 11, Pei Yuan Road, Chung Li City, Taiwan, R. O. C.
 Tel : (03)4526141-5 (03)4526017-9

QC Supervisor 鄭建益

AB20202



Test Report

No. SHAEC1203282001

Date: 19 Mar 2012

Page 1 of 5

ZHE JIANG ZHONG HUAN COPPER CO., LTD
ANCHANG TOWN SHAOXING CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : C5191 HIGH PRECHSHON COPPER

SGS Job No. : SP12-006874 - SH

Date of Sample Received : 15 Mar 2012

Testing Period : 15 Mar 2012 - 19 Mar 2012

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 of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Fan Jingjie, JJ
Approved Signatory

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t E&E (86-21) 61402553 f E&E (86-21) 64953679
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Test Report

No. SHAEC1203282001

Date: 19 Mar 2012

Page 2 of 5

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	SHA12-032820.001	Copper metal

Remarks :

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

RoHS Directive 2011/65/EU

Test Method : With reference to IEC 62321:2008

- (1) Determination of Cadmium by ICP-OES.
- (2) Determination of Lead by ICP-OES.
- (3) Determination of Mercury by ICP-OES.
- (4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.
- (5) Determination of PBBs / PBDEs by GC-MS.

Test Item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	14
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	-	-	◇	Negative
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
Monobromodiphenyl ether	-	mg/kg	5	ND

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Testing Center

3rd Building, No.889 Yishan Road Xuhui District, Shanghai China
中国·上海·徐汇区宜山路889号3号楼

200233
邮编: 200233
t E&E (86-21) 61402553 f E&E (86-21) 64953679
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Test Report

No. SHAEC1203282001

Date: 19 Mar 2012

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<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
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 directive 2011/65/EU, Annex II

- (2) ◊ = a. Positive means the presence of CrVI on the tested areas;
 b. Negative means the absence of CrVI on the tested areas

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

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Test Report

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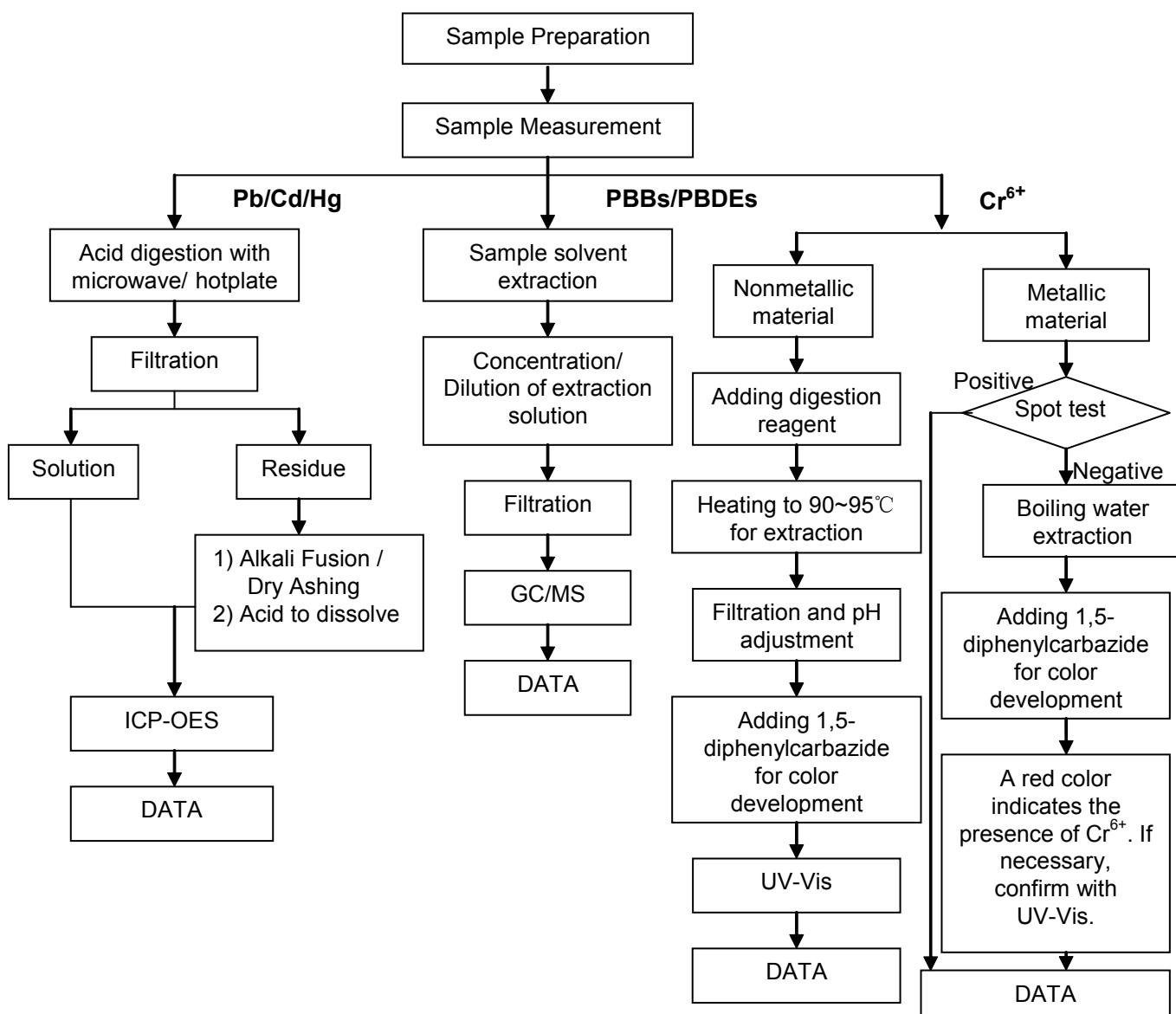
Date: 19 Mar 2012

Page 4 of 5

ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao/Gary Xu
- 2) Name of the person in charge of testing: Jeff Zhang/George Xu/ Elim Lin
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart.
(Cr⁶⁺ and PBBs/PBDEs test method excluded)



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中国·上海·徐汇区宜山路889号3号楼 邮编: 200233

t E&E (86-21) 61402553 f E&E (86-21) 64953679
HL: (86-21) 61402594 HL: (86-21) 54500353

www.cn.sgs.com
e sgs.china@sgs.com

Test Report

No. SHAEC1203282001

Date: 19 Mar 2012

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Sample photo:



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SGS-ESTC Standards Technical Services (Shanghai) Co.,Ltd
Testing Center3rd Building, No.889 Yishan Road Xuhui District, Shanghai China 200233
中国·上海·徐汇区宜山路889号3号楼 邮编: 200233t E&E (86-21) 61402553 f E&E (86-21) 64953679
HL: (86-21) 61402594 HL: (86-21) 54500353www.cn.sgs.com
e sgs.china@sgs.com

Test Report

Report No. RLSZE001424750002

Page 1 of 4

Applicant HANG KEI PLATING(SHEN ZHEN)CO.,LTD.
Address BLOCK3,JIAOTANG INDUSTRIAL ZONE,XIHUANLU,BAOAN DISTRICT,SHENZHEN,P.R.CHINA

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

Sample Name 端子纯雾锡镀层
 Material 黄铜
 Sample Received Date Sep. 11, 2012
 Testing Period Sep. 11, 2012 to Sep. 14, 2012

Test Requested As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)) in the submitted sample(s).

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	/

Test Result(s)

Please refer to the following page(s).

Tested by



Reviewed by

Vanger He

Date

Sep. 14, 2012

No. 14945060

Centre Testing International (Shenzhen) Co., Ltd. Hongwei Industrial Zone, Bao'an District, Shenzhen, Guangdong, China

Test Report

Report No. RLSZE001424750002

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Test Result(s)

Tested Item(s)	Result
Lead(Pb)	N.D.
Cadmium (Cd)	N.D.
Mercury(Hg)	N.D.
Hexavalent Chromium(Cr(VI))	Negative

Tested Sample/Part Description Metal with silvery plating

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 50cm² sample surface area used.

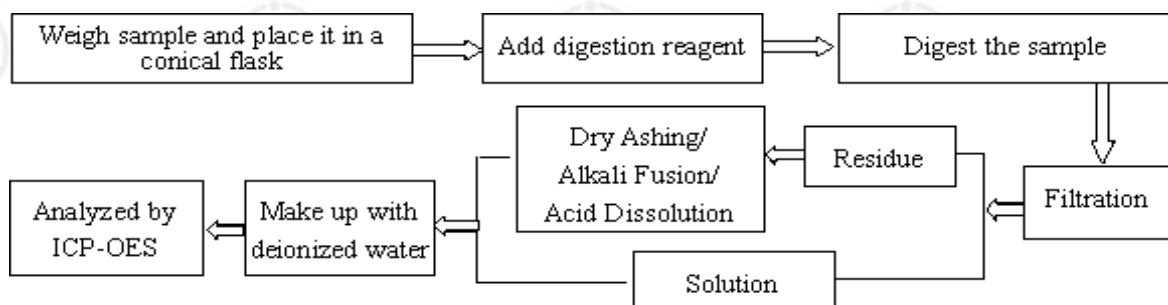
Test Report

Report No. RLSZE001424750002

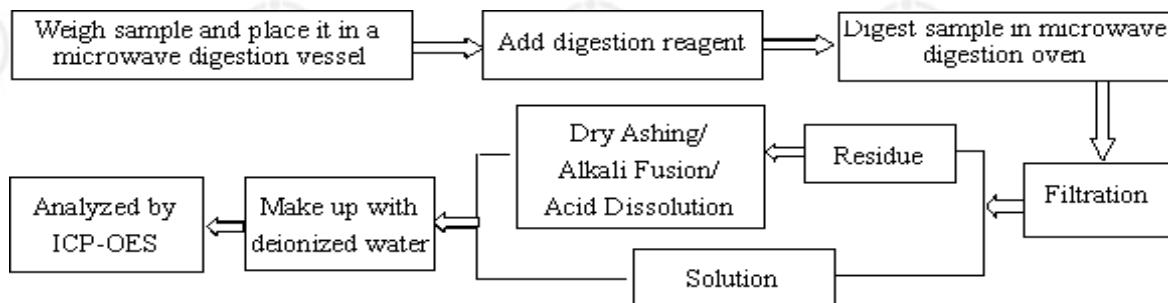
Page 3 of 4

Test Process

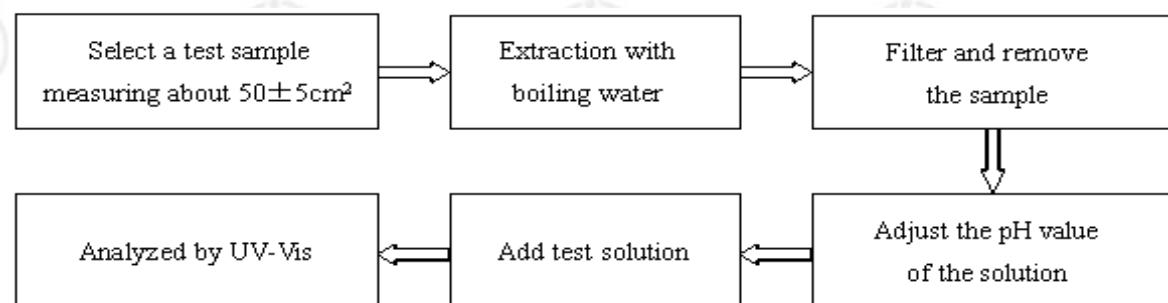
1. Lead(Pb), Cadmium(Cd)



2. Mercury(Hg)



3. Hexavalent Chromium(Cr(VI))

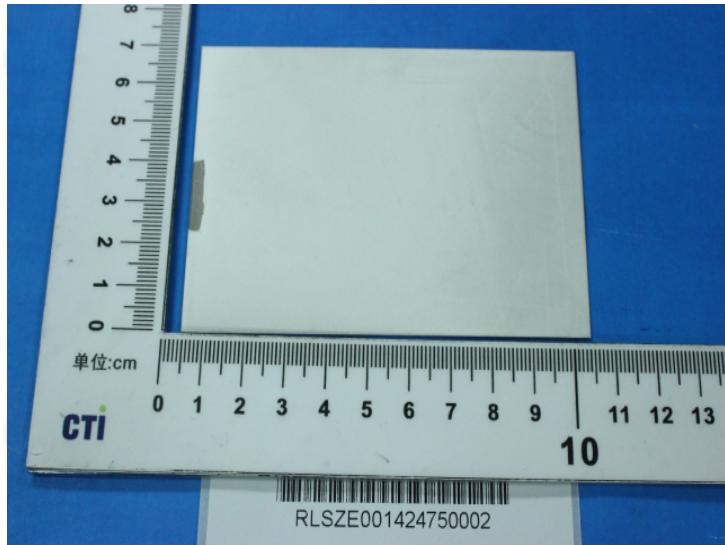


Test Report

Report No. RLSZE001424750002

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Photo(s) of the sample(s)



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Test Report

Report No. RLSZE001408170004

Page 1 of 4

Applicant HANG KEI PLATING(SHEN ZHEN)CO.,LTD.
Address BLOCK3,JIAOTANG INDUSTRIAL ZONE,XIHUANLU,BAOAN DISTRICT,SHENZHEN,P.R.CHINA

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

Sample Name	端子镍镀层
Material	不锈钢
Sample Received Date	Aug. 27, 2012
Testing Period	Aug. 27, 2012 to Aug. 30, 2012

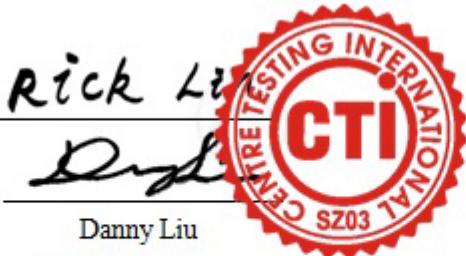
Test Requested As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)) in the submitted sample(s).

Test Method

Test Item(s)	Test Method	Measured Equipment(s)	MDL
Lead(Pb)	Plating layer test method (In-house method) and IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2 mg/kg
Cadmium(Cd)	Plating layer test method (In-house method) and IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2 mg/kg
Mercury(Hg)	Plating layer test method (In-house method) and 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	/

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

Tested by



Approved by

Danny Liu

Technical Manager

Reviewed by

Vanger He

Date

Aug. 30, 2012

No. 14945713

Centre Testing International (Shenzhen) Co., Ltd. Hongwei Industrial Zone, Bao'an District, Shenzhen, Guangdong, China

Test Report

Report No. RLSZE001408170004

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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 Sample/Part Description Silvery plating

Note: The washed plating 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 50cm² sample surface area used.

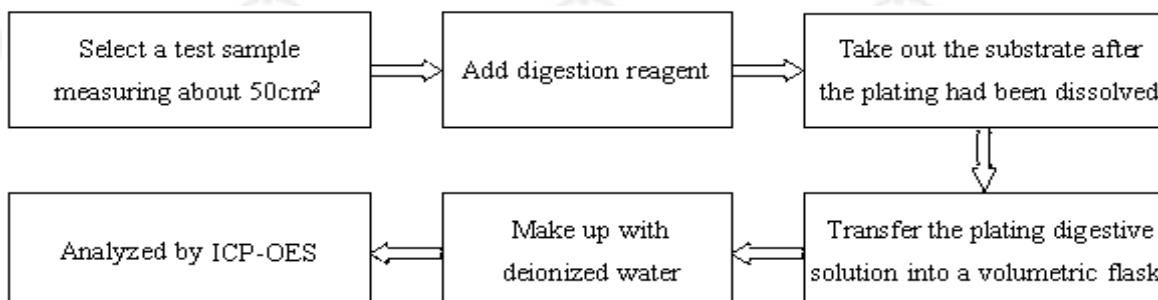
Test Report

Report No. RLSZE001408170004

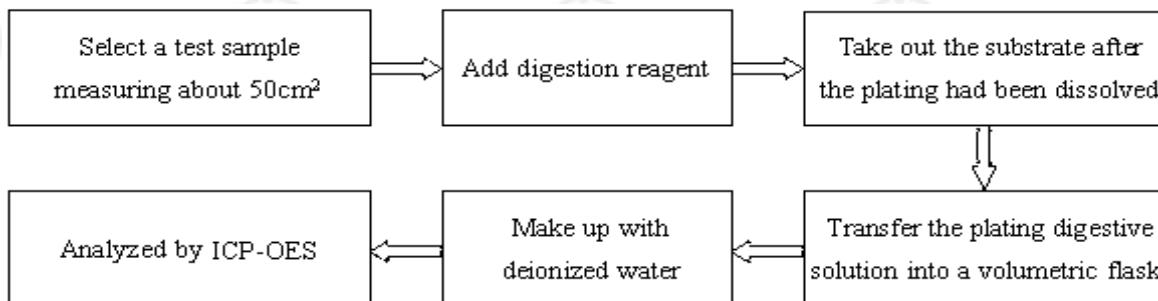
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Test Process

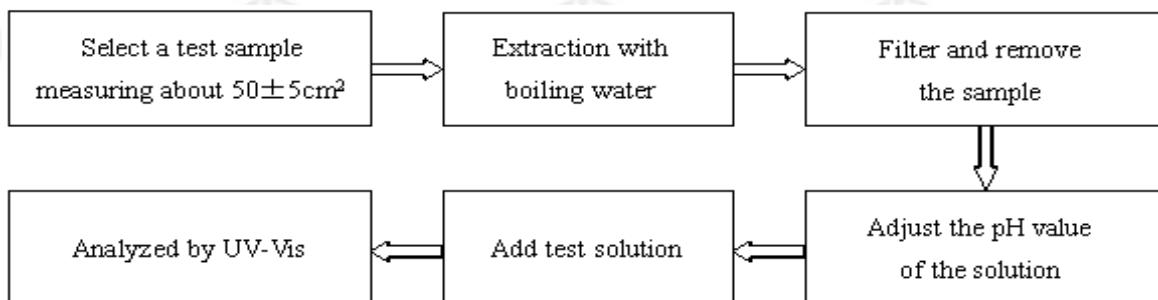
1. Lead(Pb), Cadmium(Cd)



2. Mercury(Hg)



3. Hexavalent Chromium(Cr(VI))



Test Report

Report No. RLSZE001408170004

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Photo(s) of the sample(s)



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Test Report

Report No. RLSZE001408170003

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Applicant HANG KEI PLATING(SHEN ZHEN)CO.,LTD.
Address BLOCK3,JIAOTANG INDUSTRIAL ZONE,XIHUANLU,BAOAN DISTRICT,SHENZHEN,P.R.CHINA

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

Sample Name	端子金镀层
Material	不锈钢
Sample Received Date	Aug. 27, 2012
Testing Period	Aug. 27, 2012 to Aug. 30, 2012

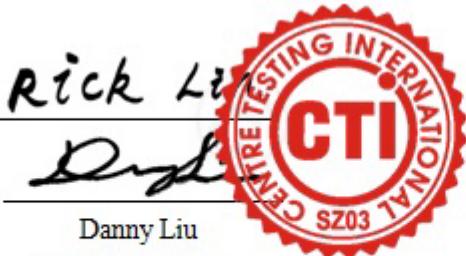
Test Requested As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)) in the submitted sample(s).

Test Method

Test Item(s)	Test Method	Measured Equipment(s)	MDL
Lead(Pb)	Plating layer test method (In-house method) and IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2 mg/kg
Cadmium(Cd)	Plating layer test method (In-house method) and IEC 62321:2008 Ed.1 Sec.9	ICP-OES	2 mg/kg
Mercury(Hg)	Plating layer test method (In-house method) and 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	/

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

Tested by



Approved by

Danny Liu

Technical Manager

Reviewed by

Vanger He

Date

Aug. 30, 2012

No. 14945713

Centre Testing International (Shenzhen) Co., Ltd. Hongwei Industrial Zone, Bao'an District, Shenzhen, Guangdong, China



Test Report

Report No. RLSZE001408170003

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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 Sample/Part Description Golden plating

Note: The washed plating 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 50cm² sample surface area used.

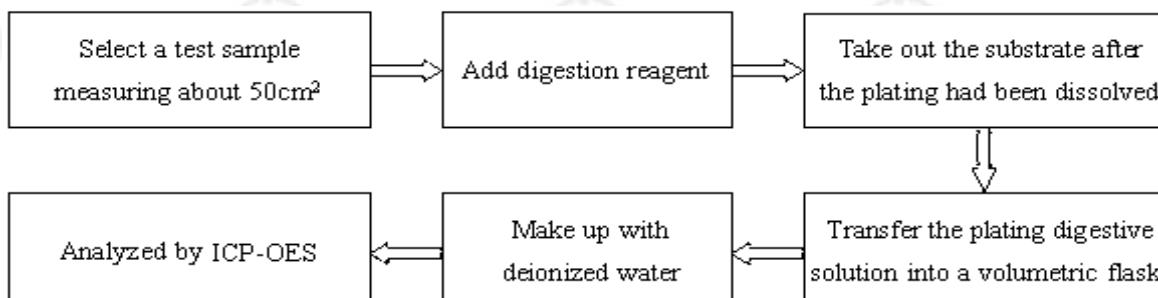
Test Report

Report No. RLSZE001408170003

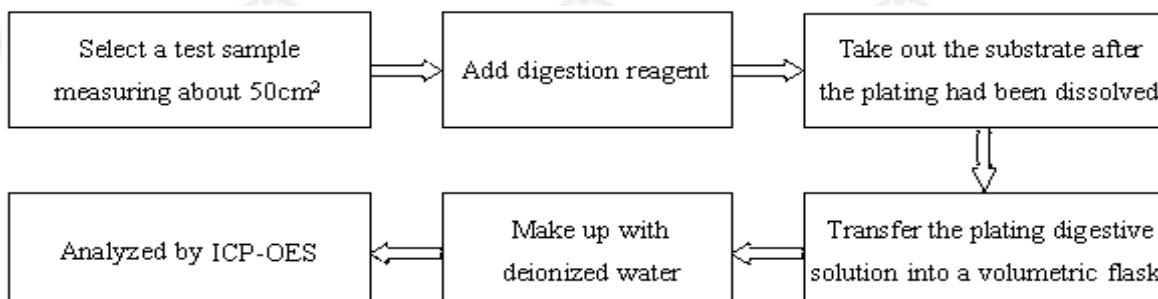
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Test Process

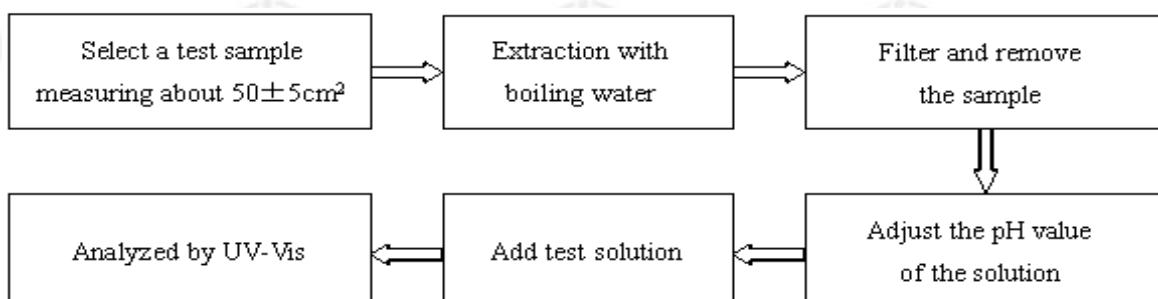
1. Lead(Pb), Cadmium(Cd)



2. Mercury(Hg)



3. Hexavalent Chromium(Cr(VI))

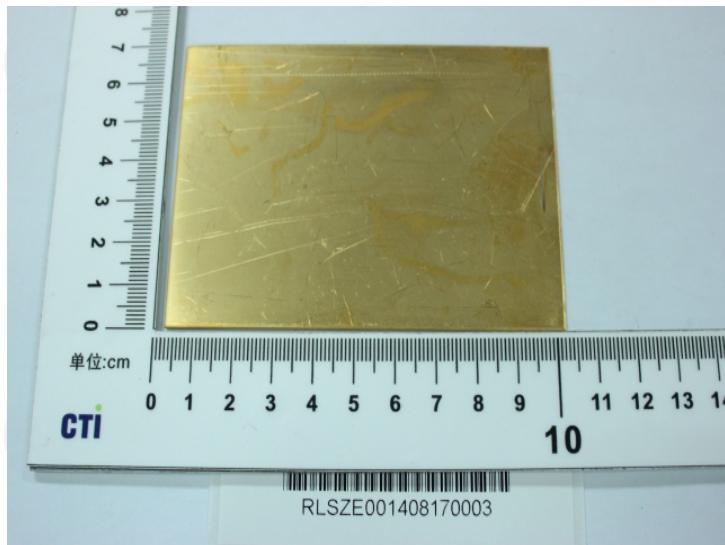


Test Report

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Photo(s) of the sample(s)



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