

TO : 格誠

Green Part

SPECIFICATION FOR APPROVAL

DESCRIPTION : MINI_PCI_EXPRESS_9.9H**CUSTOMER P/N : 2.J.C52PIN00S270****LOTES P/N : AAA-PCI-093-K01****COMPLIANT PROCESS : PRODUCT ONLY FOR (IR
REFLOW)PROCESS****CUSTOMER APPROVAL SIGN :**

R&D CONFIRM	PREPARE BY
Liao_Jie	LiQin



Lotes SZ



Lotes GZ



Lotes TW

www.lotes.cc

CopyRight©2003 LOTES CO., LTD All right reserved



LOTES CO., LTD

INDEX

PAGE 1	INDEX
PAGE 2-5	PRODUCT SPECIFICATION
PAGE 6-12	PRODUCT DRAWING
PAGE 13-24	PRODUCT RELIABILITY TESTING REPORT
PAGE 25-71	PRODUCT MATERIAL REPORT & SGS
PAGE 72	DESCRIPTION OF PACKING

PRODUCT SPECIFICATION	REV	ECR No.
	2	N090632

DIMENSION

- 1.This specification covers 0.8mm pitch MINI PCI EXPRESS(**AAA-PCI-093-*****) connector series.
- 2.The physical dimensions and the 0.8mm pitch MINI PCI EXPRESS connector are shown in drawing.

MATERIAL AND FINISH

- 1.Housing: High temperature thermoplastic.
- 2.Contact: Copper Alloy, Nickel-plating over all, Gold Plating on contact area, Matte Tin plated on solder area.
- 3.Pads : Copper Alloy , Nickel-plating over all,Matte Tin plated on solder area.

OPERATING PERFORMANCE

- 1.Operation Temperature: -55℃ to +85℃
- 2.Voltage Rating: 50 V AC per contact
- 3.Current Rating: 0.5 A

ELECTRICAL PERFORMANCE

Test item	Test condition	Requirements
Examination of product	<ul style="list-style-type: none"> Visual inspection EIA-364-18 	<ul style="list-style-type: none"> No physical damage
Low Level Contact Resistance	<ul style="list-style-type: none"> Mate connectors: apply a current of 10mA(max) at open circuit voltage of 20mV (max) EIA-364-23 	<ul style="list-style-type: none"> 55mΩ MAX.per contact (Initial) △R=20mΩ Max.(Final)
Insulation resistance	<ul style="list-style-type: none"> Applying 500VDC between adjacent contacts of unmated and unmount connectors EIA-364-21 	<ul style="list-style-type: none"> 500MΩ MIN
Dielectric withstanding voltage	<ul style="list-style-type: none"> Measured by applying 300VAC for one minute between adjacent contacts of unmated connector assemblies. EIA-364-20 	<ul style="list-style-type: none"> No breakdown or flash Current leakage:1mA

LOTES CO., LTD	PRODUCT NAME: 0.8mm PITCH MINI PCI EXPRESS CONNECTOR		
	DOCUMENT No: GSP-AAA-PCI-073	REV: 2	PAGE: 1 OF 4
	APPROVED BY: SMARK	CHECKED BY: JOE	WRITTEN BY: Zhiguo_Peng

PRODUCT SPECIFICATION	REV	ECR No.
	2	N090632

MECHANICAL PERFORMANCE

Test item	Test condition	Requirements
Vibration test (Random)	<ul style="list-style-type: none"> Subject mated connectors and vibrate per EIA 364-28 test Condition. VII test condition letter D(15 minutes in each of 3 mutually perpendicular directions) 	<ul style="list-style-type: none"> No electrical discontinuity greater than 1 microsecond. △R=20mΩ Max.(Final)
Mechanical shock	<ul style="list-style-type: none"> Subject mated connector to 50Gs, half-sine shock pulses of 11 millisecond duration, 3 drops in each direction applied along the 3 mutually perpendicular planes total 18 shock. EIA-364-27 test condition A 	<ul style="list-style-type: none"> No electrical discontinuity greater than 1 microsecond △R=20mΩ Max.(Final) No physical damage
Durability (repeated mate/un-mate)	<ul style="list-style-type: none"> Repeat insertion the card to the connector and extraction card from the connector for 50 cycles. EIA-364-09 	<ul style="list-style-type: none"> △R=20mΩ Max.(Final)
Mating and Unmating force	<ul style="list-style-type: none"> Insert the card at the specified angle Rotate the card into position Reverse the installation sequence to unmating EIA-364-13 	<ul style="list-style-type: none"> 2.3 Kgf MAX

LOTES CO., LTD	TITLE:		
	0.8mm PITCH MINI PCI EXPRESS CONNECTOR		
	DOCUMENT No:	REV:	PAGE:
	GSP-AAA-PCI-073	2	2 OF 4
	APPROVED BY:	CHECKED BY:	WRITTEN BY:
	SMARK	JOE	Zhiguo_Peng

PRODUCT SPECIFICATION	REV	ECR No.
	2	N090632

ENVIRONMENTAL PERFORMANCE

Test item	Test condition	Requirements
Humidity (steady state)	<ul style="list-style-type: none"> Expose the mates connectors to 40±2℃,relative humidity 90~95% RH for 96 hours.EIA-364-31 	<ul style="list-style-type: none"> △R=20mΩ Max.(Final) Insulation resistance:500MΩMin. No physical damage.
Thermal shock	<ul style="list-style-type: none"> Expose the connectors to -55℃/30min. and 85℃/30min.(Repeat 10 cycles)---EIA-364-32 condition I 	<ul style="list-style-type: none"> △R=20mΩ Max.(Final) No physical damage.
Solder ability	Solder temperature:245+5℃ Immersion Duration:3+0.5sec.	<ul style="list-style-type: none"> Wet solder coverage: 95%Min
Salt spray	<ul style="list-style-type: none"> Subject the connector to 5% salt-solution concentration at 35℃ for 24 hours. EIA-364-26 	<ul style="list-style-type: none"> △R=20mΩMax .(Final)
Resistance to Solder Heat	<ul style="list-style-type: none"> EIA -364-56C IR Reflow : The peak temperature on the board shall be maintained for 10 secondsat 260+/-5℃ The Refer soldering conditions specified on paragraph 1 . 	<ul style="list-style-type: none"> No evidence of physical damage
Temperature life	Mate PCB module and subject to 85±3℃ for 96 hours EIA-364-17 condition A	<ul style="list-style-type: none"> Contact resistance:△R=20mΩ Max.(Final)

TEST CONDITIONS

The tests shall be carried out under the conditions as the referring.

(1).Temperature:15~35℃.

(2). Humidity: 45~75%.

PACKAGE

All parts shall be packaged and packed to protect against physical damage, corrosion and deterioration during shipment and storage.

LOTES CO., LTD	TITLE: 0.8mm PITCH MINI PCI EXPRESS CONNECTOR		
	DOCUMENT No: GSP-AAA-PCI-073	REV: 2	PAGE: 3 OF 4
	APPROVED BY: SMARK	CHECKED BY: JOE	WRITTEN BY: Zhiguo_Peng

PRODUCT SPECIFICATION

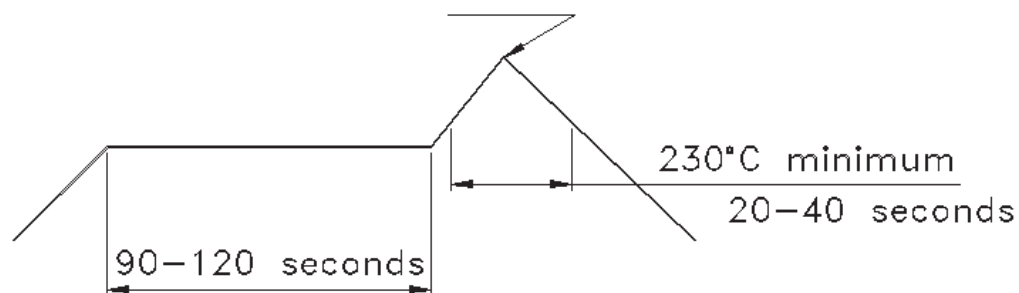
REV
2
ECR No.
N090632

TEST SEQUENCE:

Test or Examination	Test Group							
	A	B	C	D	E	F	G	H
Examination of Product	1,5	1,9	1,5	1,8	1,3	1,5	1,5	1,3
Contact Resistance	2,4	2,6	2,4			2,4	2,4	
Insulation Resistance				2,6				
Dielectric Withstanding Voltage				3,7				
Vibration	3							
Durability (Repeated)		5						
Mating force		3,7						
Unmating force		4,8						
Solder ability					2			
Humidity (Steady State)				5				
Thermal Shock				4				
Mechanical shock			3					
Temperature life						3		
Salt spray							3	
Resistance to Soldering Heat								2

RECOMMENDED INFORARED REFLOW CONDITION

260+/-5 °C maximum (Peak temperature) 10 seconds



(Preheat temperature: 150-200°C)

LOTES CO., LTD

PRODUCT NAME:

0.8mm PITCH MINI PCI EXPRESS CONNECTOR

DOCUMENT No:

GSP-AAA-PCI-073

REV:

2

PAGE:

4 OF 4

APPROVED BY: CHECKED BY:

SMARK

JOE

WRITTEN BY:

Zhiguo_Peng

F

E

D

C

B

A

1

2

3

4

5

6

7

8

REV.	ECN NO./DESCRIPTION	DATE
8	N120094	2012.3.13
9	N140259	2014.4.24
10	N140754	2015.1.07

F

E

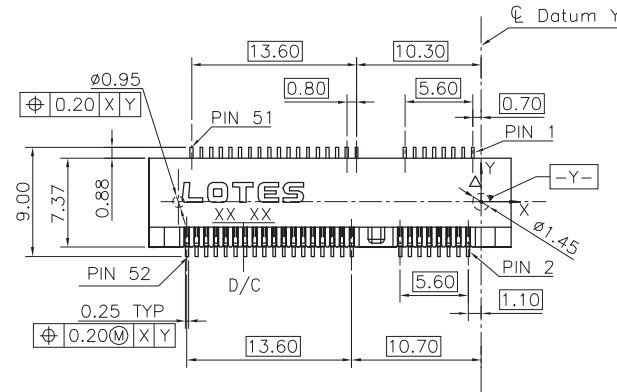
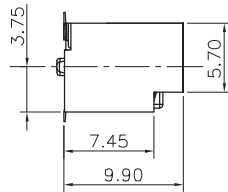
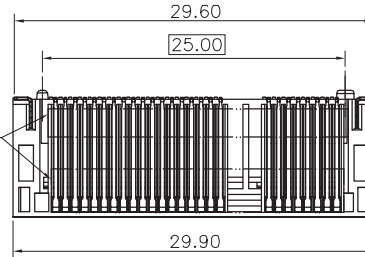
D

C

B

A

PLASTIC TO BE MELTED AREA



NOTES:

1.MATERIAL:

- 1-1.HOUSING: LCP+40%G.F UL94V-0 (COLOR SEE TABLE).
- 1-2.CONTACT: PHOSPHOR BRONZE C5191 OR BRASS C2680 (SEE TABLE).
- 1-3.PADS: BRASS C2680.

2.FINISH:

2-1 CONTACTS:

- 1).50u"MIN Ni UNDER PLATED OVER ALL.
- 2).Au PLATING ON CONTACT AREA (SEE TABLE).
- 3).MATTE-Tin 100u"MIN ON SOLDER AREA.

2-2 PADS:

- 1).60u"MIN Ni UNDER PLATED OVER ALL.
- 2).MATTE-Tin 100u"MIN ON SOLDER AREA.

3.MECHANICAL PERFORMANCE:

MATING & UNMATING FORCE: 2.3 Kgf MAX.

4.ELECTRICAL PERFORMANCE,

- 4-1.VOLTAGE RATING: 50 V AC PER CONTACT.
- CURRENT RATING: 0.5 A.

- 4-2.LLCR: INITIAL 55mΩ MAX PER CONTACT.

FINAL 20mΩ MAX

- 4-3.INSULATION RESISTANCE: 500MΩ MIN

- 4-4.DIELECTRIC WITHSTAND VOLTAGE:

AC 300V FOR 1 MINUTE BETWEEN ADJACENT CONTACTS.
NO BREAKDOWN OR FLASH.
CURRENT LEAKAGE:1mA.

5.IR REFLOW:

THE PEAK TEMPERATURE ON THE BOARD SHALL BE
MAINTAINED FOR 10 SECONDS AT 260±5°C.

6. AAA-PCI-093-K/N/T** : RoHS COMPLIANT.

AAA-PCI-093-P/Y** : HF COMPLIANT.

7. DOTUM X IS THE TOP SURFACE OF PRODUCT

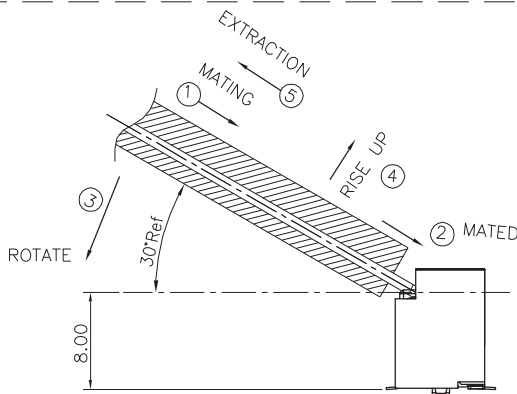
- 8. (1) THE HORIZONTAL AXIS FOR THE PATTERN IS ESTABLISHED BY
A LINE THROUGH THE CENTER OF THE Ø1.45 AND Ø0.95 POSTS.
- (2) THE VERTICAL AXIS IS 90° TO THE HORIZONTAL AXIS,
THROUGH THE CENTER OF DATUM Y.

9.THE PLASTIC TO BE MELTED AREA

THE SHAPE OF PLASTIC TO BE MELTED AREA IS ACCORDING TO PRODUCT

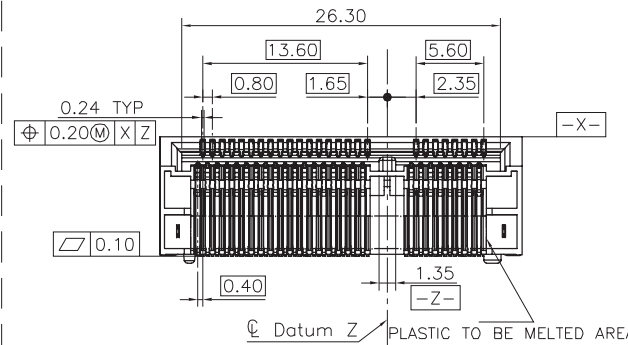
9.PRODUCT NO:AAA-PCI-***-*** *

PACKAGING SPEC: BLANK SHOWS REEL_POSITIVE
PACKAGING, "-" SHOWS REEL_REVERSE
PACKAGING OR TRAY_PACKAGING
TYPE SERIAL NUMBER
K/N/T: RoHS COMPLIANT
P/Y: HF COMPLIANT
PRODUCT SERIAL NUMBER
PRODUCT TYPE
FINISHED PRODUCT
CARD ENGE CONNECTOR
CONNECTOR



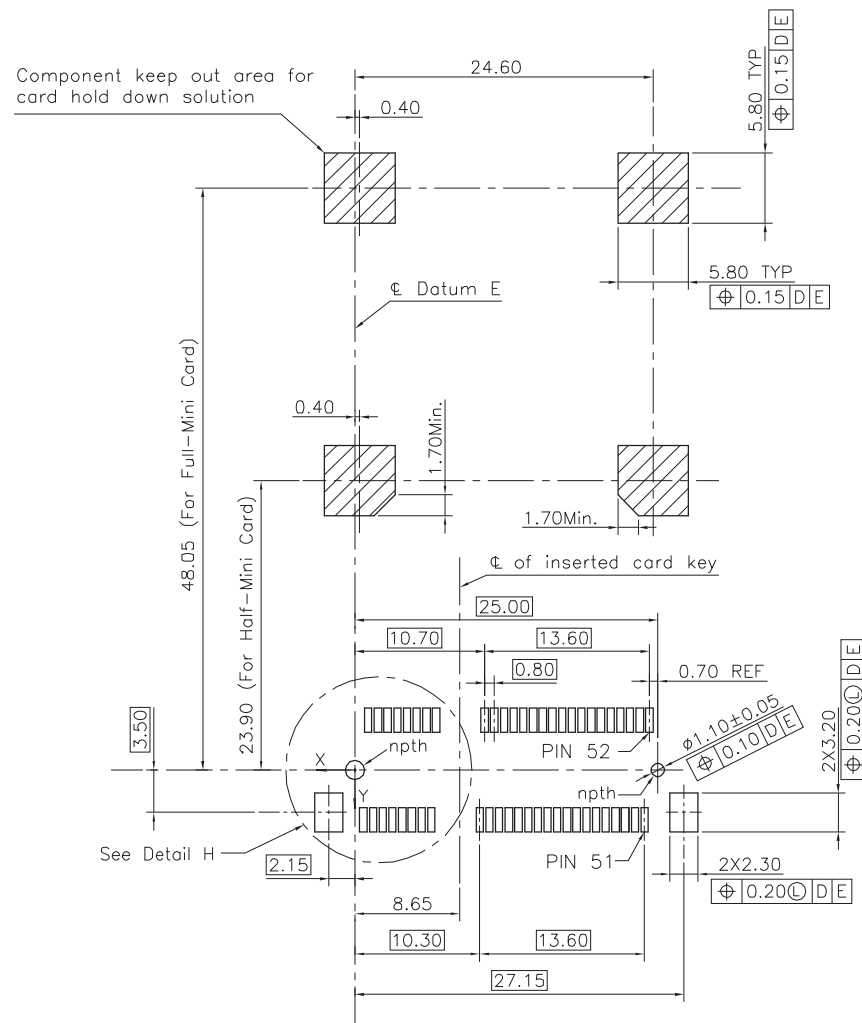
HOW TO MATE AND UNMATE

- MATE: ① → ③
UNMATE: ④ → ⑤

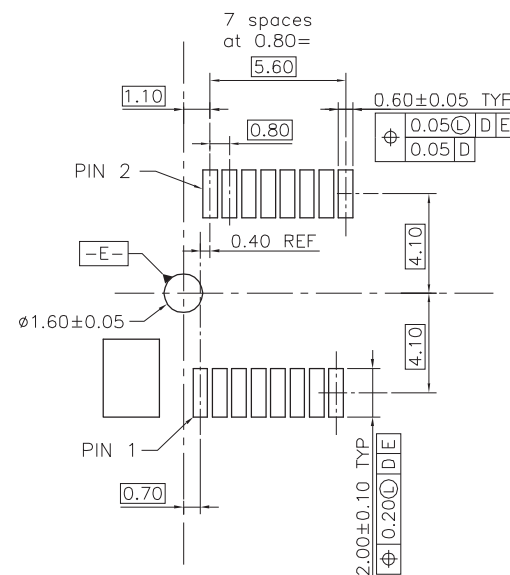


GENERAL TOLERANCES UNLESS SPECIFIED		PART NO.		LOTES			
X± 0.35	X°± 3°	SEE TABLE		MINI_PCI_EXPRESS_9.9H			
.XX± 0.25	.X°± 2°	APPROVED BY Jie_Liao		DWG NO. GAP-AAA-PCI-093			
.XXX± 0.15	.XX°± 1°	CHECKED BY Yusheng_Zhang		DRAWN BY Changwei_Ke			
SIZE A4	UNITS MM[INCH]						

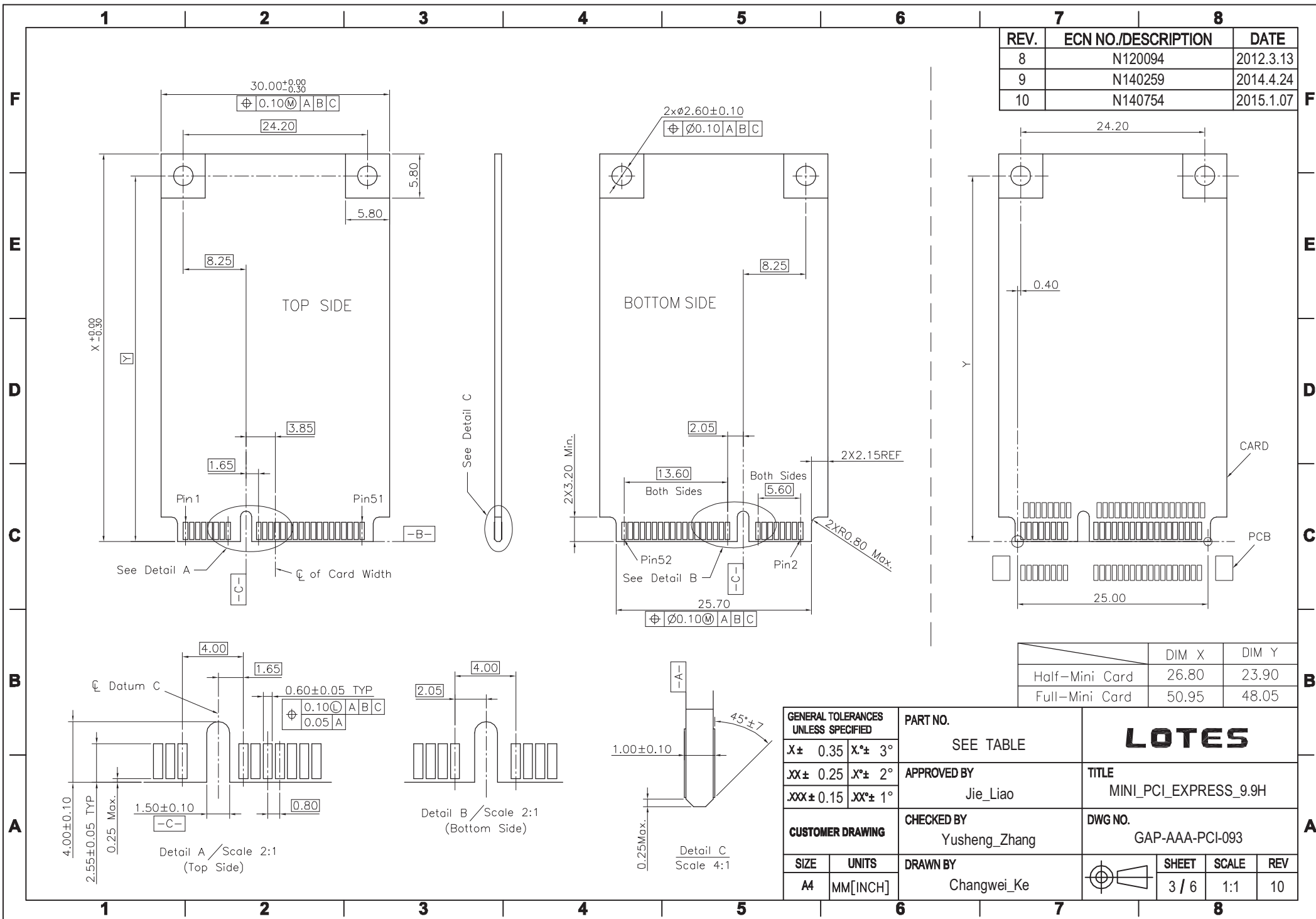
REV.	ECN NO./DESCRIPTION	DATE
8	N120094	2012.3.13
9	N140259	2014.4.24
10	N140754	2015.1.07



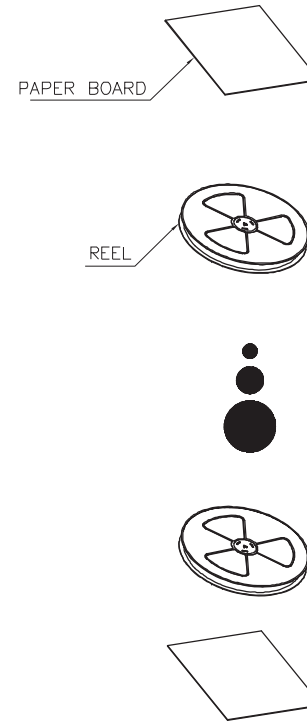
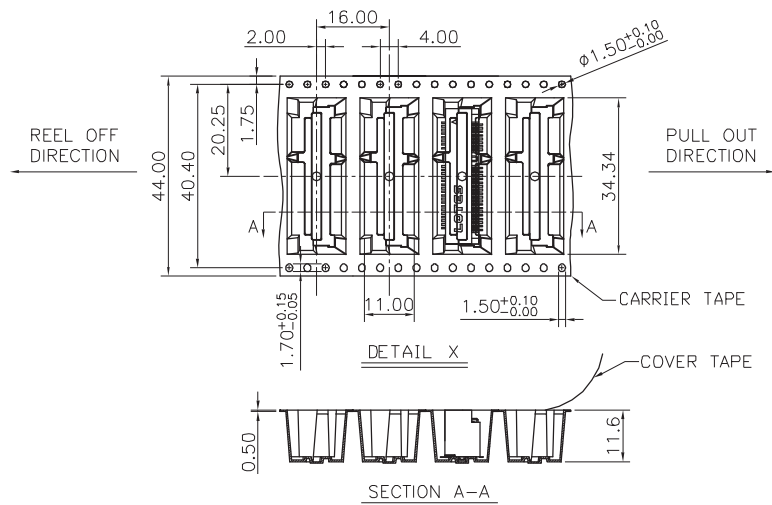
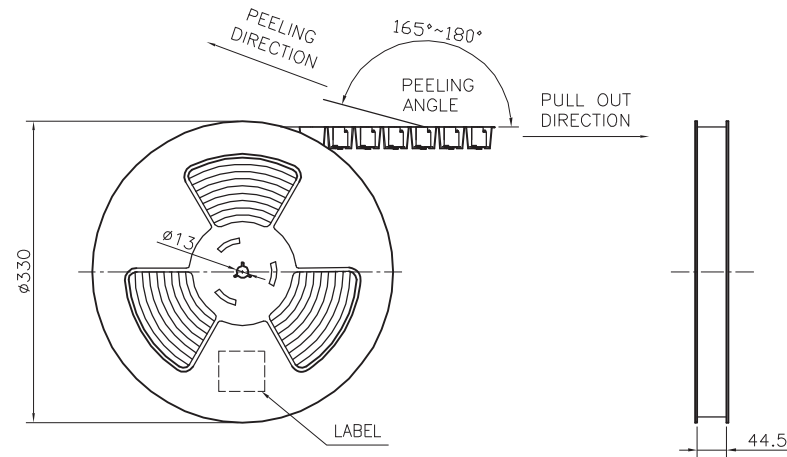
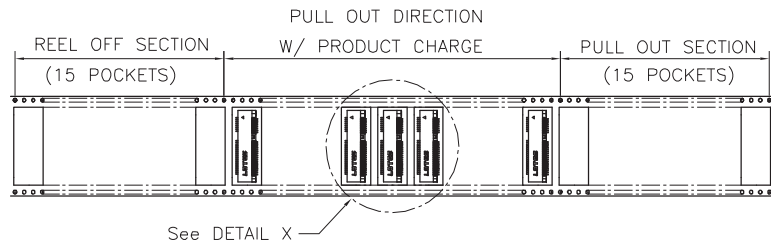
1. DATUM D IS THE TOP SURFACE OF PCB
2. THE HORIZONTAL AXIS FOR THE PATTERN IS ESTABLISHED BY A LINE THROUGH THE CENTER OF THE $\phi 1.60$ AND $\phi 1.10$ HOLES. THE VERTICAL AXIS IS 90° TO THE HORIZONTAL AXIS, THROUGH THE CENTER OF DATUM E.
3. LOCATION OF INSERTED CARD EDGE IS ALIGNED WITH ϕ OF HOLES.



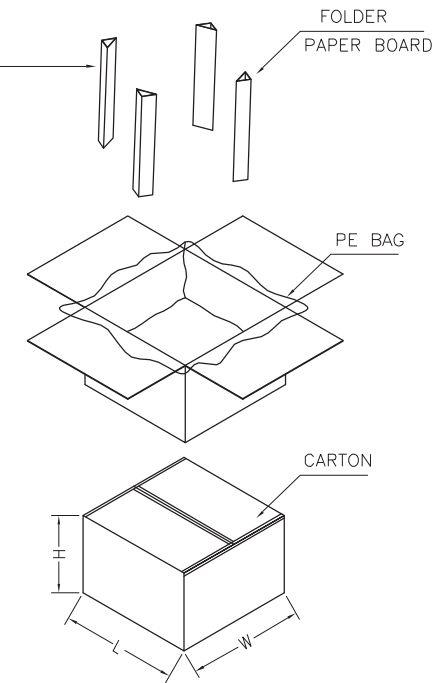
GENERAL TOLERANCES UNLESS SPECIFIED		PART NO.		LOTES			
X± 0.35	X°± 3°	SEE TABLE					
XX± 0.25	X°± 2°	APPROVED BY		TITLE MINI_PCI_EXPRESS_9.9H			
XXX± 0.15	XX°± 1°	Jie_Liao					
CUSTOMER DRAWING		CHECKED BY		DWG NO.			
		Yusheng_Zhang		GAP-AAA-PCI-093			
SIZE	UNITS	DRAWN BY			SHEET	SCALE	REV
A4	MM[INCH]	Changwei_Ke			2 / 6	1:1	10



REEL_POSITIVE PACK



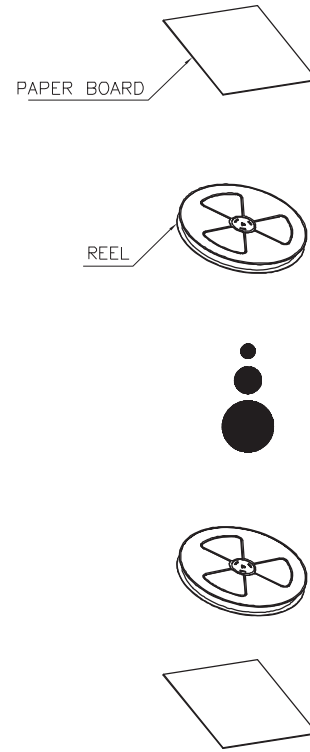
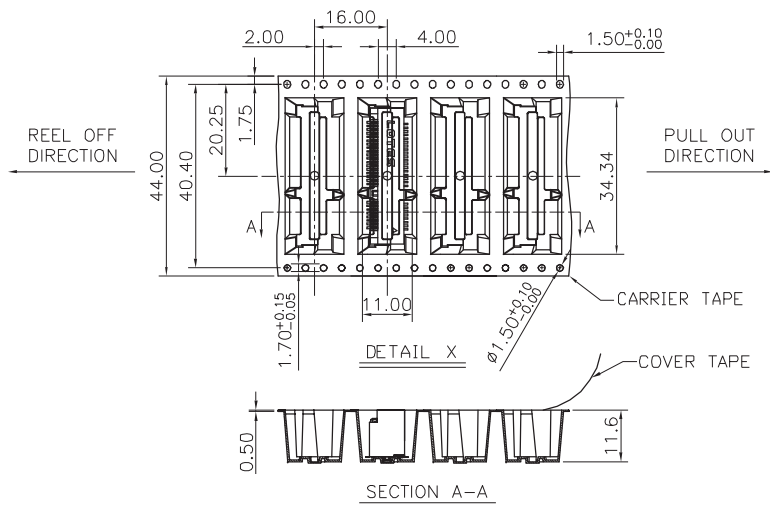
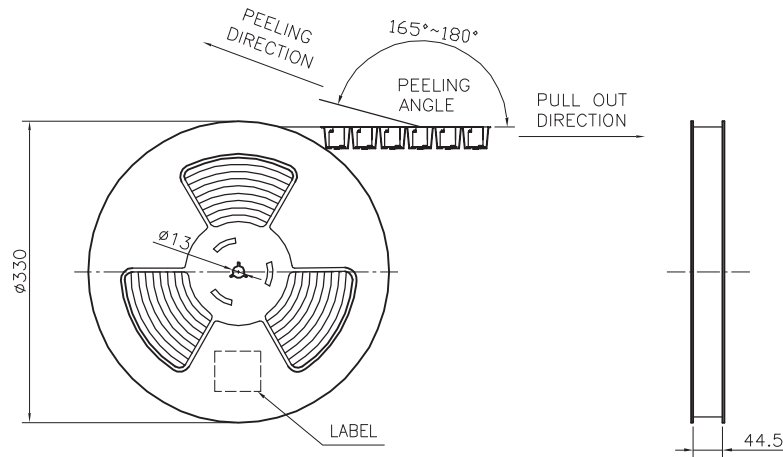
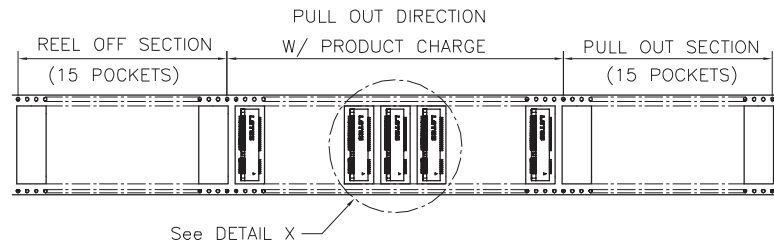
REV.	ECN NO./DESCRIPTION	DATE
8	N120094	2012.3.13
9	N140259	2014.4.24
10	N140754	2015.1.07



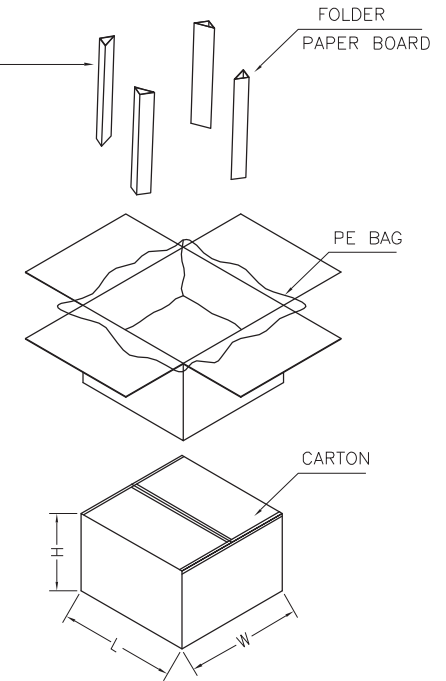
DESCRIPTION	P/N	SPECIFICATION	QT'Y
MINI PCI_E ASS'Y	SEE TABLE	9.9H TAPE&REEL PACKING	1800PCS
REEL	G09-4-30004-K01	13";W=44.5	6PCS
CARRIER TAPE	G09-5-00062-K01	44*16*11.6;PS_BLACK	36M
COVER TAPE	G09-5-00004-P02	0.06*37.5;PE WHITE	36M
PE BAG	G09-6-50002-P03	520*320*460;T=0.05mm	1PCS
CARTON	G09-1-35035-P02	L340*W340*H325; K=K	1PCS
PAPER BOARD	G09-3-30002-K01	320*320;	2PCS
FOLDER PAPER BOARD	G09-3-35014-K01	350*310*6mm;B=C;	4PCS

GENERAL TOLERANCES UNLESS SPECIFIED		PART NO.	LOTES			
X± 0.35	X°± 3°	SEE TABLE	TITLE MINI_PCI_EXPRESS_9.9H			
.XX± 0.25	.X°± 2°	APPROVED BY Jie_Liao				
.XXX± 0.15	.XX°± 1°	CHECKED BY Yusheng_Zhang				
CUSTOMER DRAWING		DWG NO.	GAP-AAA-PCI-093			
SIZE A4	UNITS MM[INCH]	DRAWN BY Changwei_Ke	SHEET 4 / 6	SCALE 1:1	REV 10	

REEL_REVERSE PACK



REV.	ECN NO./DESCRIPTION	DATE
8	N120094	2012.3.13
9	N140259	2014.4.24
10	N140754	2015.1.07

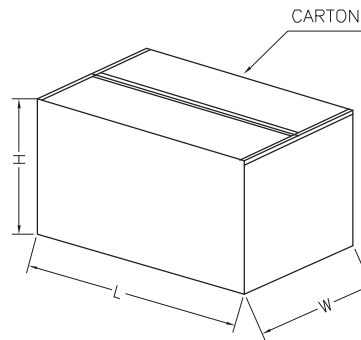
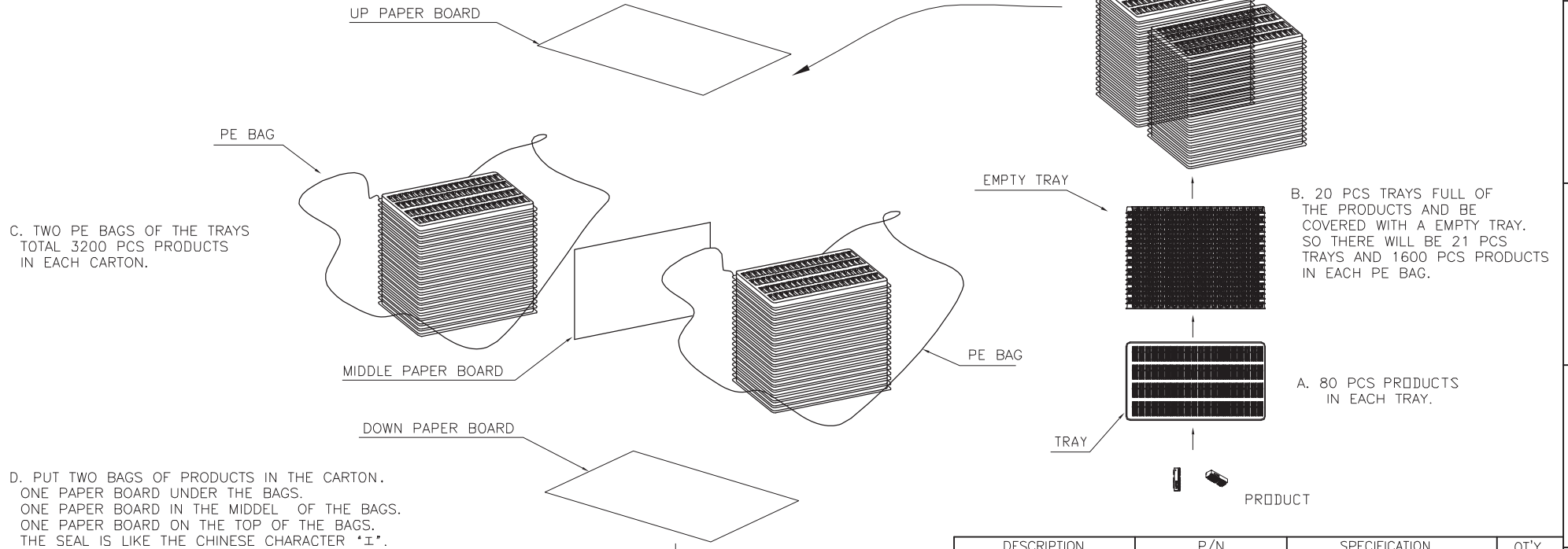


DESCRIPTION	P/N	SPECIFICATION	QT'Y
MINI PCI_E ASS'Y	SEE TABLE	9.9H TAPE&REEL PACKING	1800PCS
REEL	G09-4-30004-K01	13";W=44.5	6PCS
CARRIER TAPE	G09-5-00062-K01	44*16*11.6;PS_BLACK	36M
COVER TAPE	G09-5-00004-P02	0.06*37.5;PE WHITE	36M
PE BAG	G09-6-50002-P03	520*320*460;T=0.05mm	1PCS
CARTON	G09-1-35035-P02	L340*W340*H325; K=K	1PCS
PAPER BOARD	G09-3-30002-K01	320*320;	2PCS
FOLDER PAPER BOARD	G09-3-35014-K01	350*310*6mm;B=C;	4PCS

GENERAL TOLERANCES UNLESS SPECIFIED		PART NO.	LOTES			
X± 0.35	X°± 3°	SEE TABLE	TITLE MINI_PCI_EXPRESS_9.9H			
.XX± 0.25	.X°± 2°	APPROVED BY Jie_Liao				
.XXX± 0.15	.XX°± 1°	CHECKED BY Yusheng_Zhang				
CUSTOMER DRAWING		DRAWN BY Changwei_Ke	DWG NO. GAP-AAA-PCI-093			
SIZE	UNITS	DRAWN BY Changwei_Ke	SHEET 5 / 6	SCALE 1:1	REV 10	
A4	MM[INCH]					

TRAY_PACK

REV.	ECN NO./DESCRIPTION	DATE
8	N120094	2012.3.13
9	N140259	2014.4.24
10	N140754	2015.1.07



DESCRIPTION	P/N	SPECIFICATION	QT'Y
MINI PCI_E ASS'Y	SEE TABLE	9.9H TRAY PACKING	3200PCS
TRAY	G09-A-30085-K01	338.4*190*15	42PCS
PE BAG	G09-6-30004-K01	334.8*220*325;T=0.05mm	2PCS
CARTON	G09-1-30034-P02	L394*W342.4*H240; K=K	1PCS
MIDDLE PAPER BOARD	G09-3-30015-K01	342.4*235*10;B=C	1PCS
UP&DOWN PAPER BOARD	G09-3-30016-K01	342.4*394*4;C33;	2PCS

GENERAL TOLERANCES UNLESS SPECIFIED		PART NO. SEE TABLE	LOTES			
X± 0.35	X°± 3°		TITLE MINI_PCI_EXPRESS_9.9H			
XX± 0.25	XX°± 2°	APPROVED BY Jie_Liao	DWG NO. GAP-AAA-PCI-093			
XXX± 0.15	XXX°± 1°					
CUSTOMER DRAWING		CHECKED BY Yusheng_Zhang	DRAWN BY Changwei_Ke			
SIZE A4	UNITS MM[INCH]					
				SHEET 6 / 6	SCALE 1:1	REV 10

	1	2	3	4	5	6	7	8	
<div>TABLE</div>									
F	<div>REEL_POSITIVE PACK</div>								F
	PART NO		CONTACT MATERIAL & PLATING				COLOR		
	AAA-PCI-093-K01		PHOSPHOR BRONZE C5191 _Au 1u”				BLACK		
E	AAA-PCI-093-K02		PHOSPHOR BRONZE C5191 _Au 30u”				BLACK		
	AAA-PCI-093-K03		PHOSPHOR BRONZE C5191 _Au 1u”				WHITE		
	AAA-PCI-093-K05		PHOSPHOR BRONZE C5191 _Au 10u”				WHITE		
	AAA-PCI-093-K06		PHOSPHOR BRONZE C5191 _Au 10u”				BLACK		
	AAA-PCI-093-P01		PHOSPHOR BRONZE C5191 _Au 1u” T=0.2±0.05				BLACK		
D	AAA-PCI-093-P03		PHOSPHOR BRONZE C5191 _Au 1u”				WHITE		
	AAA-PCI-093-P04		PHOSPHOR BRONZE C5191 _Au 15u”				BLACK		
	AAA-PCI-093-P06		PHOSPHOR BRONZE C5191 _Au 10u”				BLACK		
	AAA-PCI-093-P07		BRASS C2680 _Au 1u”				BLACK		
C									C
B									B
A									A
	1	2	3	4	5	6	7	8	



PRODUCT RELIABILITY TEST REPORT

Report No. GL-RD081222-04

GL-P-027-005

Product: MINI PCI-E 9.9H
Part NO.: AAA-PCI-093-***
Test Object: Product Reliability Test
Sample Quantity: 40PCS
Test Environment: 20-24℃ , 50-62%RH
Date of Test: Dec.16,08~ Feb.27,09

Test Result Summary:

Qualification Group	Pass / Fail	Comments
Test Group A	Pass	
Test Group B	Pass	
Test Group C	Pass	
Test Group D	Pass	
Test Group E	Pass	
Test Group F	Pass	
Test Group G	Pass	
Test Group H	Pass	

Approved By: King Checked By: Su Prepared By: Hejie

PRODUCT RELIABILITY TEST REPORT

Report No. GL-RD081222-04

GL-P-027-005

1. Testing Sequence:

Test or examination		Test group step							
		A	B	C	D	E	F	G	H
1	Examination of product	1,5	1,9	1,5	1,8	1,3	1,5	1,5	1,3
2	Contact Resistance	2,4	2,6	2,4			2,4	2,4	
3	Insulation Resistance				2,6				
4	Dielectric withstanding voltage				3,7				
5	Vibration	3							
6	Durability		5						
7	Mating force		3,7						
8	Unmating Force		4,8						
9	Solder ability					2			
10	Humidity				5				
11	Thermal Shock				4				
12	Mechanical shock			3					
13	Temperature life						3		
14	Salt spray							3	
15	Resistance to Solder Heat								2
Specimen quantity (pcs)		5	5	5	5	5	5	5	5

PRODUCT RELIABILITY TEST REPORT

Report No. GL-RD081222-04

GL-P-027-005

2. Test Item & Condition & Requirements :

Test item		Test condition	Requirements
1	Examination of product	EIA-364-18. Meets requirements of product drawing	No physical damage
2	Contact Resistance	EIA 364-23 Subject mated contacts assembled in housing to closed circuit current of 10mA max. at open circuit voltage of 20mV max.	55 milliohms max.(initial). $\Delta R=20$ milliohms max.(Final)
3	Dielectric Withstanding Voltage	EIA 364-20 Subject mated connector with a voltage of 300VAC for 1.0minute between adjacent contacts.	No disruptive discharge or leakage greater than 1.0 mA(max)
4	Insulation Resistance	EIA 364-21 Impressed voltage 500V DC. Test between adjacent contacts of unmated connectors.	500 M Ω min
5	Durability	EIA 364-9 Repeated insertion and Removal of P.C.B from the connector for 50 cycles	Show no physical damage $\Delta R=20$ milliohms max.(Final)
6	Vibration	EIA 364-28 Subject mated connectors to 10-55-10Hz traversed in 1 minute at 1.52 mm amplitude 2hours each of 3 mutually perpendicular planes.100mA applied.	No electrical discontinuity greater Than 1.0microsecond shall occur. $\Delta R=20$ m Ω max.(Final)
7	Mechanical Shock	EIA 364-27 Subject mated specimens to 50G's half-sine shock pulses of 11 milliseconds duration three shocks in each direction applied along three mutually perpendicular planes (18 shocks)	No electrical discontinuity greater than 1.0 microsencond shall occur. $\Delta R=20$ m Ω max.(Final)

PRODUCT RELIABILITY TEST REPORT

Report No. **GL-RD081222-04****GL-P-027-005**

8	Mating and Unmating force	EIA 364-13 Insert the card at the specified angle Rotate the card into position Reverse the installtion sequence to unmating	2.3kgfmax.
9	Temperature Life	EIA 364-17 Expose mated connectors to a temperature of $85\pm 3^{\circ}\text{C}$ for 96hours.	Show no physical damage. $\Delta R=20\text{ m}\Omega$ max.(Final)
10	Thermal Shock	EIA 364-32 Mated connector $-40^{\circ}\text{C}/30\text{ min.}$, $+85^{\circ}\text{C}/30\text{min.}$ Making this a cycle, repeat 10 cycles	Show no physical damage. $\Delta R=20\text{ m}\Omega$ max.(Final)
11	Humidity temperature cycling	EIA 364-31 Subject specimens to 96 hours at $40\pm 2^{\circ}\text{C}$, with RH of 90~95%	Show no physical damage. $\Delta R=20\text{ m}\Omega$ max.(Final) Insulation resistance: $500\text{M}\Omega$ min
12	Solder ability	EIA 364-52 Solder Temperature(Tin): $245\pm 5^{\circ}\text{C}$ Immersion Durating:: $3\pm 0.5\text{ sec.}$	Wet solder coverage 95% min.
13	Salt Spray	EIA 364-26 Mated connector expose to 24 hours at $35\pm 2^{\circ}\text{C}$ and 5% salt-solution concentration. After the test, specimens shall be washed with running water and dried naturally before the measurement of contact resistance.	Show no physical damage
14	Resistance to solder heat	EIA-364-56 Max. peak temperature of $260\pm 5^{\circ}\text{C}$, 10 sec	Show no physical damage.

PRODUCT RELIABILITY TEST REPORT

Report No. GL-RD081222-04

GL-P-027-005

3. Testing Equipment:

Name	Model
Microscope	MITUTOYO-TM
Milliohmmeter	KEITHLEY-580
Withstanding voltage & insulation auto tester	ZENTECH-9052
Load cell auto tester	ALGOL-1220s
Thermal shock test chamber	CHANGHONG-SH-T-601
Temperature & humidity cycling chamber	WT-RF-5EE
Mechanical shock tester	King Design-DP-1200-ST-250
Vibration tester	King Design-9363EM-600F2K-40N120
High temperature oven	SMO-4
Salt Spray tester	SSF-060
PCB soldering machine	JIAZE-PS-2000

4. Testing Result:

Group A:

Examination step/ item	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Unit	Pass/fail
1 Examination of product	Normal	Normal	Normal	Normal	Normal	/	Pass
2 LLCR	47.46	46.07	49.09	48.74	46.91	mΩ	Pass
3 Vibration	Normal	Normal	Normal	Normal	Normal	/	Pass
4 LLCR	45.52	49.14	47.93	47.07	47.52	mΩ	Pass
5 Examination of product	Normal	Normal	Normal	Normal	Normal	/	Pass

Group B:

Examination step/ item	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Unit	Pass/fail
1 Examination of Product	Normal	Normal	Normal	Normal	Normal	/	Pass
2 LLCR	49.90	48.85	49.20	51.55	48.25	mΩ	Pass
3 Mating force	0.43	0.68	0.42	0.40	0.47	kgf	Pass
4 Unmating force	0.38	0.38	0.79	0.65	0.64	kgf	Pass
5 Durability	Normal	Normal	Normal	Normal	Normal	/	Pass
6 LLCR	42.55	53.24	48.02	50.53	46.24	mΩ	Pass
7 Mating force	0.22	0.17	0.23	0.17	0.40	kgf	Pass
8 Unmating force	0.16	0.21	0.17	0.26	0.43	kgf	Pass
9 Examination of Product	Normal	Normal	Normal	Normal	Normal	/	Pass



PRODUCT RELIABILITY TEST REPORT

Report No. GL-RD081222-04

GL-P-027-005

Group C:

	Examination step/ item	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Unit	Pass/fail
1	Examination of Product	Normal	Normal	Normal	Normal	Normal	/	Pass
2	LLCR	48.46	46.02	47.51	45.69	47.07	mΩ	Pass
3	Mechanical shock	Normal	Normal	Normal	Normal	Normal	/	Pass
4	LLCR	45.53	51.62	49.13	45.92	46.10	mΩ	Pass
5	Examination of Product	Normal	Normal	Normal	Normal	Normal	/	Pass

Group D:

	Examination step/ item	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Unit	Pass/fail
1	Examination of Product	Normal	Normal	Normal	Normal	Normal	/	Pass
2	IR	>500	>500	>500	>500	>500	MΩ	Pass
3	DWV	300	300	300	300	300	V	Pass
4	Thermal shock	Normal	Normal	Normal	Normal	Normal	/	Pass
5	Humidity	Normal	Normal	Normal	Normal	Normal	/	Pass
6	IR	>500	>500	>500	>500	>500	MΩ	Pass
7	DWV	300	300	300	300	300	V	Pass
8	Examination of Product	Normal	Normal	Normal	Normal	Normal	/	Pass

Group E:

	Examination Step/ Item	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Unit	Pass/fail
1	Examination of product	Normal	Normal	Normal	Normal	Normal	/	Pass
2	Solder ability	Normal	Normal	Normal	Normal	Normal	/	Pass
3	Examination of product	Normal	Normal	Normal	Normal	Normal	/	Pass



PRODUCT RELIABILITY TEST REPORT

Report No. GL-RD081222-04

GL-P-027-005

Group F:

	Examination step/ item	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Unit	Pass/fail
1	Examination of Product	Normal	Normal	Normal	Normal	Normal	/	Pass
2	LLCR	46.25	53.90	53.75	48.90	48.30	mΩ	Pass
3	Temperature life	Normal	Normal	Normal	Normal	Normal	/	Pass
4	LLCR	46.32	54.00	53.43	54.20	49.96	mΩ	Pass
5	Examination of Product	Normal	Normal	Normal	Normal	Normal	/	Pass

Group G:

	Examination step/ item	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Unit	Pass/fail
1	Examination of Product	Normal	Normal	Normal	Normal	Normal	/	Pass
2	LLCR	48.30	50.45	42.10	41.40	44.44	mΩ	Pass
3	Salt spray	Normal	Normal	Normal	Normal	Normal	/	Pass
4	LLCR	44.00	45.80	41.80	41.15	41.95	mΩ	Pass
5	Examination of Product	Normal	Normal	Normal	Normal	Normal	/	Pass

Group H:

	Examination step/ item	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Unit	Pass/fail
1	Examination of Product	Normal	Normal	Normal	Normal	Normal	/	Pass
2	Resistance to solder heat	Normal	Normal	Normal	Normal	Normal	/	Pass
3	Examination of Product	Normal	Normal	Normal	Normal	Normal	/	Pass



PRODUCT RELIABILITY TEST REPORT

Report No. GL-RD081222-04

GL-P-027-005

5. The LLCR as follow:

Group A

NO	A-Vibration									
	Initial					After Vibration				
	A1	A2	A3	A4	A5	A1	A2	A3	A4	A5
1-3	45.26	45.28	46.18	46.55	45.45	45.52	43.80	45.65	46.97	46.71
5-7	45.05	45.94	43.91	46.15	46.91	44.55	46.93	47.09	46.61	43.98
9-11	45.77	46.07	46.87	46.86	46.17	44.13	44.33	47.93	46.86	46.36
13-15	45.49	45.59	46.34	46.26	45.84	45.07	44.05	46.33	47.07	46.09
17-19	47.46	45.20	46.20	47.37	46.14	43.93	43.66	45.52	46.55	46.94
21-23	46.03	45.18	46.95	47.10	46.04	45.18	43.98	45.97	46.00	46.63
25-27	46.03	45.28	45.75	48.74	45.96	44.51	43.58	46.49	46.35	45.42
29-31	45.90	45.20	46.65	47.65	46.06	44.58	44.19	45.63	45.73	45.06
33-35	46.32	45.09	46.53	47.56	46.15	45.22	43.67	47.86	46.14	46.41
37-39	46.11	45.57	46.93	46.41	46.17	44.76	43.64	46.28	46.22	45.78
41-43	45.66	45.62	47.90	47.57	46.31	44.76	43.66	46.86	46.39	46.30
45-47	45.05	45.65	48.18	47.26	46.04	44.03	43.66	43.71	47.04	46.21
49-51	46.00	45.65	46.79	48.29	45.59	44.53	44.18	41.93	46.79	46.08
2-4	39.94	45.27	47.76	39.13	38.70	39.62	37.60	36.09	37.93	47.52
6-8	39.67	38.97	49.09	38.84	38.65	39.68	38.17	38.78	37.07	38.60
10-12	39.22	38.73	41.53	38.17	39.46	39.10	37.64	36.35	38.26	38.27
14-16	39.41	38.98	43.19	38.31	40.17	39.06	37.48	39.05	38.22	38.61
18-20	41.16	38.25	43.15	39.87	40.70	41.03	39.51	39.33	38.48	38.51
22-24	40.23	38.78	43.29	39.10	42.88	39.11	39.04	36.20	38.80	39.69
26-28	39.85	37.30	47.65	39.72	40.31	40.12	39.65	37.50	38.80	38.96
30-32	39.73	38.40	43.56	39.48	41.39	39.68	37.45	36.78	38.24	38.45
34-36	44.34	38.39	40.79	42.57	41.59	44.15	37.88	39.53	38.21	41.86
38-40	43.07	38.01	40.12	38.32	41.39	39.61	49.14	37.91	39.36	40.52
42-44	41.36	38.22	42.07	37.50	39.16	39.17	36.78	39.64	38.92	38.76
46-48	40.84	42.22	38.68	39.40	42.24	38.27	36.77	39.91	38.70	39.45
50-52	44.14	37.95	38.14	37.26	39.25	38.58	36.12	37.87	38.26	38.71
Max	47.46	46.07	49.09	48.74	46.91	45.52	49.14	47.93	47.07	47.52
Min	39.22	37.30	38.14	37.26	38.65	38.27	36.12	36.09	37.07	38.27
Avg	43.42	42.34	44.77	43.13	43.26	42.23	41.40	42.01	42.46	42.92
Stdev	2.80	3.55	3.07	4.30	3.03	2.72	3.63	4.28	4.17	3.63



PRODUCT RELIABILITY TEST REPORT

Report No. GL-RD081222-04

GL-P-027-005

Group B

NO	B-Durability									
	Initial					After Durabilitye				
	B1	B2	B3	B4	B5	B1	B2	B3	B4	B5
1-3	49.90	48.85	48.25	48.20	47.40	40.08	48.65	40.32	46.35	38.31
5-7	46.60	47.00	45.55	46.55	46.85	39.60	41.25	38.60	40.79	40.39
9-11	48.35	47.85	47.10	47.35	47.45	42.55	53.24	38.71	50.51	40.28
13-15	48.05	47.10	46.25	47.10	46.60	38.95	41.29	37.39	40.91	40.59
17-19	47.15	46.00	46.05	45.65	45.65	37.13	43.56	40.69	40.32	39.06
21-23	47.55	46.10	45.95	47.15	46.45	37.97	41.58	37.90	50.53	38.34
25-27	48.30	46.20	46.95	47.30	46.45	37.12	42.10	48.02	44.80	38.07
29-31	47.05	46.40	47.15	47.40	46.20	38.32	38.54	43.24	47.16	41.07
33-35	47.20	46.60	47.55	47.80	46.40	38.08	41.75	38.54	44.03	43.57
37-39	48.05	46.45	47.15	47.60	46.70	38.01	38.52	40.76	39.13	40.44
41-43	49.30	46.75	48.60	51.55	47.25	37.38	37.55	37.45	39.02	37.69
45-47	49.90	47.25	48.85	49.10	47.15	40.82	40.34	42.90	40.59	46.24
49-51	47.10	47.75	49.20	49.65	48.25	39.07	40.02	41.25	39.61	43.51
2-4	37.10	37.05	37.60	38.70	37.20	27.66	27.87	28.54	32.49	27.75
6-8	37.55	37.35	37.75	38.20	37.65	27.20	27.09	27.47	28.30	28.54
10-12	37.45	37.35	37.65	38.10	37.15	29.31	27.13	26.01	28.44	28.37
14-16	38.15	37.80	38.00	37.50	37.90	27.70	26.35	27.16	28.15	29.74
18-20	37.50	37.25	37.40	37.75	37.25	29.62	24.38	29.78	28.27	30.20
22-24	38.30	37.35	37.70	38.00	37.30	25.15	26.80	27.06	28.40	29.52
26-28	37.80	37.65	37.85	38.25	37.45	28.07	27.01	27.39	28.88	27.98
30-32	38.15	37.60	38.80	37.90	37.55	25.49	27.65	26.38	30.26	28.29
34-36	38.00	37.10	37.35	38.00	37.40	28.16	24.89	26.81	28.62	28.54
38-40	38.45	37.25	38.40	38.25	37.95	35.39	26.97	26.33	28.34	29.33
42-44	37.90	37.45	37.60	38.65	37.55	30.60	21.79	28.24	28.06	29.05
46-48	38.50	37.65	38.10	37.60	38.55	34.65	24.72	27.58	28.98	28.92
50-52	37.90	37.40	37.50	38.05	37.00	27.84	24.65	27.13	27.84	28.67
Max	49.90	48.85	49.20	51.55	48.25	42.55	53.24	48.02	50.53	46.24
Min	37.10	37.05	37.35	37.50	37.00	25.15	21.79	26.01	27.84	27.75
Avg	42.97	42.18	42.55	42.98	42.18	33.92	34.06	33.91	36.11	34.71
Stdev	5.23	4.90	4.90	5.11	4.77	5.57	8.89	7.01	7.99	6.26



PRODUCT RELIABILITY TEST REPORT

Report No. GL-RD081222-04

GL-P-027-005

Group C

NO	C-Mechanical shock									
	Initial					After Mechanical shock				
	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5
1-3	36.75	45.23	46.01	45.14	45.19	30.86	51.62	45.64	45.40	44.94
5-7	45.86	45.42	46.08	44.88	45.44	43.94	45.07	49.13	45.29	45.30
9-11	45.97	45.25	47.04	45.33	45.10	44.08	45.40	46.17	45.78	45.71
13-15	46.32	45.73	46.18	45.24	45.95	44.55	46.22	46.23	45.64	45.05
17-19	46.15	45.31	46.55	45.15	46.49	43.83	46.60	45.75	44.95	45.38
21-23	46.78	45.19	45.83	45.05	45.70	44.22	45.57	45.85	45.15	45.45
25-27	46.79	45.51	45.88	45.15	45.68	45.53	45.52	46.11	45.92	46.04
29-31	45.99	45.08	45.88	45.23	45.88	45.34	46.17	46.15	45.10	46.10
33-35	46.01	45.56	46.61	45.69	46.47	45.03	46.59	46.65	45.66	46.09
37-39	45.95	45.19	46.05	45.52	46.12	44.29	45.62	47.51	45.12	45.20
41-43	45.62	46.02	47.51	45.62	46.33	44.60	45.67	47.28	45.57	45.75
45-47	45.90	45.67	46.50	45.52	47.07	44.13	45.41	47.17	45.40	46.02
49-51	46.05	45.08	46.59	44.68	46.62	44.27	45.10	47.26	45.15	45.46
2-4	48.46	36.55	36.85	38.33	36.90	38.86	45.21	37.62	38.38	37.38
6-8	40.97	37.08	37.71	39.01	37.62	37.41	38.02	38.15	37.88	37.23
10-12	41.43	36.89	37.72	40.72	39.40	37.42	36.70	38.17	37.54	37.37
14-16	42.01	37.13	38.37	39.74	37.29	36.52	37.34	38.01	38.22	37.44
18-20	43.26	38.53	39.04	40.56	42.52	37.85	35.71	38.53	38.19	37.56
22-24	41.18	38.39	39.13	40.67	45.77	38.28	37.53	41.19	38.13	37.85
26-28	44.91	38.89	39.09	41.36	43.53	37.85	38.62	38.26	38.46	37.32
30-32	40.69	38.36	39.67	42.69	44.86	37.59	37.20	39.10	37.79	38.32
34-36	42.32	38.82	38.81	43.41	45.29	37.72	38.26	38.26	37.92	37.69
38-40	38.82	37.02	37.30	38.73	45.14	37.98	39.05	38.47	37.23	37.50
42-44	39.13	37.72	37.89	38.70	39.12	38.32	37.44	37.92	37.59	36.68
46-48	41.31	37.38	37.73	38.84	38.62	37.51	38.34	37.77	37.12	38.92
50-52	38.80	36.96	36.96	38.02	38.33	37.21	37.86	37.65	37.67	37.19
Max	48.46	46.02	47.51	45.69	47.07	45.53	51.62	49.13	45.92	46.10
Min	36.75	36.55	36.85	38.02	36.90	30.86	35.71	37.62	37.12	36.68
Avg	43.59	41.53	42.27	42.65	43.55	40.58	42.22	42.54	41.62	41.57
Stdev	3.17	3.99	4.24	2.90	3.48	3.95	4.50	4.33	3.86	4.11



PRODUCT RELIABILITY TEST REPORT

Report No. GL-RD081222-04

GL-P-027-005

Group F

NO	F- Temperature life									
	Initial					After Temperature life				
	F1	F2	F3	F4	F5	F1	F2	F3	F4	F5
1-3	46.05	52.95	45.75	45.70	46.25	46.30	52.08	44.78	46.69	46.07
5-7	46.25	48.00	46.65	46.60	46.50	46.25	47.75	44.87	48.43	46.40
9-11	46.05	51.35	46.90	46.85	47.00	46.32	52.42	46.22	52.99	47.22
13-15	45.95	48.25	46.60	48.90	48.30	45.50	48.68	45.02	54.20	49.26
17-19	45.45	47.00	47.05	45.25	46.45	45.98	48.26	46.08	46.10	46.22
21-23	45.65	46.95	47.60	45.05	46.45	46.12	49.50	45.55	45.52	47.46
25-27	45.65	47.15	47.85	45.10	46.20	46.11	50.09	46.45	46.54	45.99
29-31	45.60	47.80	47.25	45.15	46.80	45.88	49.92	45.09	46.08	47.67
33-35	45.70	48.45	46.90	45.40	46.45	45.44	51.06	46.02	46.30	47.06
37-39	45.95	53.85	46.60	44.95	46.40	45.43	53.36	44.77	45.73	46.89
41-43	45.50	53.10	48.90	44.80	46.60	46.03	52.56	48.85	45.14	48.59
45-47	45.60	53.90	49.85	45.00	47.00	45.93	53.93	47.39	46.14	49.96
49-51	45.90	49.40	53.75	44.90	46.90	45.42	54.00	53.43	45.16	48.22
2-4	37.75	36.90	37.70	37.30	37.95	37.31	38.52	38.18	36.47	38.49
6-8	37.45	37.25	37.30	37.50	38.55	36.97	38.25	37.21	37.12	38.77
10-12	38.65	38.10	37.75	37.75	38.80	38.89	39.01	38.35	48.23	39.36
14-16	37.30	37.55	37.40	37.25	38.60	35.52	38.53	40.49	38.07	38.68
18-20	38.85	38.60	38.25	37.55	39.50	39.21	39.69	37.59	36.03	40.69
22-24	38.00	38.15	41.25	38.05	38.90	37.84	38.96	38.19	37.02	38.49
26-28	38.45	39.15	39.80	37.45	39.30	37.98	40.03	38.10	36.85	39.42
30-32	37.40	38.35	40.10	38.15	38.75	37.70	39.52	37.70	39.07	39.16
34-36	38.25	39.75	40.10	37.95	39.40	38.22	40.75	35.67	37.25	38.07
38-40	38.10	38.85	38.50	37.45	39.05	37.46	40.78	36.17	36.61	38.28
42-44	38.55	39.85	39.55	37.80	39.20	40.07	41.00	38.97	36.91	39.28
46-48	39.05	38.95	38.85	37.55	39.10	38.27	42.42	37.26	36.47	36.62
50-52	38.35	39.60	38.05	37.60	39.35	38.29	42.26	39.82	36.86	39.33
Max	46.25	53.90	53.75	48.90	48.30	46.32	54.00	53.43	54.20	49.96
Min	37.30	36.90	37.30	37.25	37.95	35.52	38.25	35.67	36.03	36.62
Avg	41.98	44.20	43.32	41.65	42.84	41.94	45.51	42.24	42.61	43.14
Stdev	3.91	6.11	4.89	4.17	3.98	4.12	5.92	4.74	5.65	4.54



PRODUCT RELIABILITY TEST REPORT

Report No. GL-RD081222-04

GL-P-027-005

Group G

NO	G-Salt Spray									
	Initial					After Salt Spray				
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5
1-3	48.30	50.45	41.20	41.40	42.45	43.90	45.80	41.15	40.80	41.55
5-7	45.45	45.25	41.45	40.95	41.90	43.40	43.90	41.20	41.15	41.35
9-11	46.30	46.15	41.35	41.05	44.44	43.80	43.90	41.30	40.95	41.95
13-15	44.20	44.30	41.45	41.10	41.80	42.80	42.70	41.25	40.85	41.20
17-19	42.70	42.60	41.10	40.90	41.60	42.00	42.10	41.00	40.65	41.05
21-23	44.70	43.35	41.30	40.70	41.80	42.50	42.80	41.15	40.50	41.10
25-27	44.35	44.10	41.20	40.80	42.20	43.05	43.10	41.05	40.55	41.30
29-31	44.35	44.90	41.30	41.10	42.25	43.60	43.20	41.25	40.60	41.35
33-35	43.50	44.55	41.35	41.15	42.20	42.85	42.95	40.90	40.75	41.60
37-39	43.75	44.30	41.65	41.15	42.55	42.90	43.10	41.45	40.60	41.70
41-43	43.25	45.10	41.75	41.35	42.25	43.65	42.90	41.75	40.95	41.60
45-47	43.85	46.35	42.10	41.30	42.50	43.60	43.50	41.80	40.95	41.95
49-51	44.05	46.35	41.45	41.10	42.20	44.00	43.75	41.25	40.95	41.75
2-4	35.55	34.40	32.65	36.40	34.20	34.70	28.85	32.30	33.35	33.85
6-8	36.80	34.15	33.80	35.15	33.20	35.20	33.85	33.65	33.15	32.90
10-12	38.40	34.75	34.65	35.85	33.60	35.30	35.00	33.10	33.30	33.10
14-16	37.95	34.50	34.30	35.70	37.20	35.40	34.15	33.95	33.05	33.75
18-20	38.55	34.70	35.40	40.30	35.00	35.05	34.25	32.80	34.05	33.30
22-24	37.25	34.80	35.75	41.25	34.75	35.05	34.35	33.75	34.05	33.20
26-28	37.45	34.95	35.50	34.90	34.95	34.70	34.65	33.80	33.70	33.00
30-32	37.20	34.35	36.25	34.50	35.00	35.10	34.35	3.35	33.85	33.30
34-36	37.55	34.70	37.05	33.80	35.25	35.05	34.35	34.85	33.45	33.35
38-40	37.85	34.80	34.65	33.90	34.75	35.30	34.15	34.10	33.40	33.20
42-44	37.25	35.45	34.70	33.95	34.50	34.55	35.05	33.80	33.50	3.20
46-48	36.10	35.30	34.65	33.35	34.10	35.15	34.90	34.15	33.35	32.85
50-52	36.90	35.70	33.15	33.40	33.65	34.40	34.40	32.80	33.05	32.70
Max	48.30	50.45	42.10	41.40	44.44	44.00	45.80	41.80	41.15	41.95
Min	35.55	34.15	32.65	33.35	33.20	34.40	28.85	3.35	33.05	3.20
Avg	40.91	40.01	38.12	38.33	38.47	39.12	38.69	36.27	37.13	36.20
Stdev	3.87	5.48	3.49	3.30	4.01	4.23	4.93	7.75	3.74	7.91



上海普利特化工新材料有限公司

Shanghai PRET Chemical New Materials Co., Ltd.

KG300-Q02

项目		测试方法	单位	KG300-Q02
密度		ASTM D792	g/cm ³	1.7
拉伸强度	强度	ASTM D638	MPa	122
	伸长率	ASTM D638	%	2.5
弹性强度	强度	ASTM D790	MPa	175
	模量	ASTM D790	MPa	12500
冲击强度	Izod(有凹槽)	ASTM D256	J/m	81
热变形温度	1.82MPa	ASTM D648	°C	270
成型收缩率	MD	IN HOUSE	%	0.2
	TD	IN HOUSE	%	0.4
烤炉起泡	265°C, 1h	IN HOUSE	\	Good
介电常数	1MHz	ASTM D150	\	1.97
介电损耗因子	1MHz	ASTM D150	\	0.032
耐电弧性		ASTM D495	s	\
比较漏电痕迹指数 CTI		IEC60112	v	\

上海市金山第二工业区夏盛路 230 号, 201512; Website: www.pret.com.cn

Tel: 021-67222266; Fax: 021-51685255, 69210400;

除非另有特别说明, 产品手册中的所有数据均来源于室温条件 (23°C, 50%相对湿度) 下对标准试样进行的测试。这些数据为实验典型值, 真实可靠, 仅能作为参考性数据, 不能认定为材料性能的最小值。

These technical data in the product brochures are typical data under specific test conditions and not intended for use as limiting specifications.

for enhanced search functionality please visit UL's iQ™ family of databases

Component - Plastics

E301296

SHANGHAI PRET COMPOSITES CO LTD

558 XINYE RD, QINGPU INDUSTRIAL ZONE, SHANGHAI 201707 CN

KG300(a)

Liquid Crystal Polymer (LCP), furnished as pellets

Color	Min Thk (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str
NC, BK	0.75-0.83	V-0	-	-	130	130	130
Comparative Tracking Index (CTI): -			Inclined Plane Tracking (IPT): -				
Dielectric Strength (kV/mm): -			Volume Resistivity (10 ^x ohm-cm) : -				
High-Voltage Arc Tracking Rate (HVTR): -			High Volt, Low Current Arc Resis (D495): -				
Dimensional Stability (%): -							

(a) - The natural color (NC) for Grade KG300 is between white and beige.

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

Report Date: 2007-12-14

Last Revised: 2007-12-14

© 2015 UL LLC



IEC and ISO Test Methods

Test Name	Test Method	Units	Thickness	Value
			Tested (mm)	
Flammability	IEC 60695-11-10	Class (color)	0.75-0.83	V-0 (NC, BK)
Glow-Wire Flammability (GWI)	IEC 60695-2-12	C	-	-
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	C	-	-
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC Ball Pressure	IEC 60695-10-2	C	-	-
ISO Heat Deflection (1.80 MPa)	ISO 75-2	C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 8256	kJ/m ²	-	-
ISO Izod Impact	ISO 180	kJ/m ²	-	-
ISO Charpy Impact	ISO 179-2	kJ/m ²	-	-

© 2015 UL LLC

The materials covered in this database are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. THE FINAL ACCEPTANCE OF THE COMPONENT IS DEPENDENT UPON ITS INSTALLATION AND USE IN COMPLETE PRODUCTS SUBMITTED TO UNDERWRITERS LABORATORIES.

Notice of Disclaimer



**BUREAU
VERITAS**

TEST REPORT

LAB NO. : (6617)307-1248
DATE : November 6, 2017
PAGE : 1 OF 9

Applicant 申请人公司名称:

SHANGHAI PRET CHEMICAL NEW MATERIAL CO., LTD. / 上海普利特化工新材料有限公司
NO. 230 XIASHENG RD., JINSHAN DISTRICT, SHANGHAI / 上海市金山区夏盛路 230 号

Date of Submission 样品收取日期: 2017-10-17
Test Period 所需工作周期: 2017-10-17 to 2017-10-20
BV EE Ref. No. BV 参考编号: /

Sample Description 样品描述:		Sample(s) received is(are) stated to be 收到的送测样品为: 液晶高分子材料 TLCP 黑	
Manufacturer 制造商:	/	Buyer 买家:	/
Style No(s) 款号:	KG300-Q02	PO No. 采购订单号:	/
Country of Origin 原产地:	/	Country of Destination 目的地:	Oversea Country

Test Item(s) 测试项目: Details see page 2 详见第二页

SUMMARY OF TEST RESULTS 测试结果摘要

TEST REQUESTED 测试要求	CONCLUSION 结论	REMARK 备注
Halogen (chlorine, bromine) Content 卤素 (氯、溴) 含量	-	See Result 见结果页
Phthalate Test – Reference to (EU) 2015/863 amending Annex II to Directive 2011/65/EU & As Applicant's requirement / 邻苯二甲酸盐测试 – 参照指令 2011/65/EU 附录 II 的修订指令 (EU) 2015/863 按照客户要求	PASS 通过	-
European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendments / 有关欧盟委员会针对电子产品的指令 (电子电器禁用某些有害物质指令), 2011/65/EU 及其修订条款	PASS 通过	-

Note 注释: Chinese translation of report just for reference only, English report shall prevail if you have any objection.
报告中文翻译仅供参考, 如有异议以英文报告内容为准。
The below results are transferred from (6617)306-0967 dated November 2, 2017.

REMARK/备注

If there are questions or concerns on this report, please contact the following persons:

若有任何疑问或咨询, 可通过下述联络方式与我们联系

General enquiry and invoicing

其他问题

Technical enquiry

技术问题

俞文杰 先生/陈蕾 小姐 Mr. Speed Yu/ Ms. Joanna Chen
(021) 24166888*6832/6849

Speed.yu@cn.bureauveritas.com/ Joan.chen@cn.bureauveritas.com

余克刚 / 何丹青 先生 Mr. Gordon Yu/ Ken He

(021) 24166888*6852/6859

Gorden.Yu@cn.bureauveritas.com/ Kenny.he@cn.bureauveritas.com

BUREAU VERITAS
CONSUMER PRODUCTS SERVICES DIVISION (SHANGHAI)
必维国际检验集团 – 必维申美商品检测(上海)有限公司

PREPARED BY : Abby
制定:

余克刚 Gordon Yu
化学实验室经理 Analytical Lab Manager



LAB NO. : (6617)307-1248
DATE : November 6, 2017
PAGE : 2 OF 9



Sample Description Assigned by Laboratory:

实验室对样品的描述:

Test Item 测试项目	Description 描述
1	Black plastic

Note 注释:

g = gram(s) 克

mcg = microgram(s) 微克

mg/kg = milligram per kilogram 毫克每千克

mg/L = milligram per litre 毫克每升

MDL = Method Detection Limit 方法检测限

ND = Not Detected (< MDL) 未检出

EX = Exempted 豁免

% = percentage 百分比

1 mg/kg = 0.0001%

"<" = less than 小于

">" = Greater than 大于

Req. = Requirement 要求

"-" = Not Regulated 未规定

NA = Not applicable 不适用

Photo of the Submitted Sample

所提交样品的照片



TEST RESULT 测试结果

I. Halogen (chlorine, bromine) Content

I. 卤素（氯、溴）含量

Test Method: Sample was firstly combusted and absorbed with solvent, then analyzed by ion chromatography
测试方法: (Reference to EN14582:2016).
将样品燃烧后用溶剂吸收, 然后用离子色谱仪分析。(参照 EN14582:2016)

Parameter 参数	Unit 单位	MDL 方法检测限	Result 结果
			1
Chlorine 氯	mg/kg	50	ND
Bromine 溴	mg/kg	50	ND

II. Phthalate Test – Reference to (EU) 2015/863 amending Annex II to Directive 2011/65/EU & As Applicant's requirement

II. 邻苯二甲酸盐测试 – 参照指令 2011/65/EU 附录 II 的修订指令 (EU) 2015/863&按照客户要求

Test Method: Reference to IEC 62321-8 Ed 1.0.
测试方法: 参照 IEC 62321-8 Ed 1.0.

Maximum Allowable Limit : 0.1% (Each)
最大允许限值: 0.1%(各)

Parameter 参数	CAS No.	Unit 单位	MDL 方法检测限	Result 结果
				1
Dibutyl phthalate (DBP) 邻苯二甲酸二丁酯	84-74-2	%	0.005	ND
Butyl benzyl phthalate (BBP) 邻苯二甲酸丁基苄基酯	85-68-7	%	0.005	ND
Di-2-ethylhexyl phthalate (DEHP) 邻苯二甲酸二(2-乙基己基)酯	117-81-7	%	0.005	ND
Diisobutyl phthalate (DIBP) 邻苯二甲酸二异丁酯	84-69-5	%	0.005	ND
Conclusion 结论	-	-	-	PASS 通过

TEST RESULT 测试结果

III. European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) with its Amendments

III.有关欧盟委员会针对电子产品的指令(电子电器禁用某些有害物质指令), 2011/65/EU 及其修订条款

Test Method 测试方法 : See Appendix. 见附录。

-	Unit 单位	Maximum Allowable Limit (Req.) 最大允许限值 (要求)	Result 结果
Test Item 测试项目	-	-	1
Parameter 参数	-	-	-
Lead (Pb)铅	mg/kg	1000	ND
Cadmium (Cd)镉	mg/kg	100	ND
Mercury (Hg)汞	mg/kg	1000	ND
Chromium VI (Cr VI)六价铬	mg/kg	1000	ND
MonoBB 一溴联苯	mg/kg		ND
DiBB 二溴联苯	mg/kg		ND
TriBB 三溴联苯	mg/kg		ND
TetraBB 四溴联苯	mg/kg		ND
PentaBB 五溴联苯	mg/kg		ND
HexaBB 六溴联苯	mg/kg		ND
HeptaBB 七溴联苯	mg/kg		ND
OctaBB 八溴联苯	mg/kg		ND
NonaBB 九溴联苯	mg/kg		ND
DecaBB 十溴联苯	mg/kg		ND
Sum of PBBs 多溴联苯总和	mg/kg	1000	ND
MonoBDE 一溴二苯醚	mg/kg		ND
DiBDE 二溴二苯醚	mg/kg		ND
TriBDE 三溴二苯醚	mg/kg		ND
TetraBDE 四溴二苯醚	mg/kg		ND
PentaBDE 五溴二苯醚	mg/kg		ND
HexaBDE 六溴二苯醚	mg/kg		ND
HeptaBDE 七溴二苯醚	mg/kg		ND
OctaBDE 八溴二苯醚	mg/kg		ND
NonaBDE 九溴二苯醚	mg/kg		ND
DecaBDE 十溴二苯醚	mg/kg		ND
Sum of PBDEs 多溴二苯醚总和	mg/kg	1000	ND
Conclusion 结论	-	-	PASS 通过

Note / Key 注释:

Detection Limit 检出限(mg/kg) :

Each (Pb, Cd, Hg & Cr VI) 2 各 (铅, 镉, 汞和六价铬) 2;

Each PBB 5; Each PBDE 5 各多溴联苯 5; 各多溴二苯醚 5

Remark 备注:

- The list of analytes is summarized in table of Appendix. 分析物列表 – 见附录。
- The test flowchart of heavy metals and flame retardants content is listed in table of Appendix.
重金属和阻燃剂含量的测试流程图 – 见附录
- Result(s) of Cr VI for metallic material(s) was (were) expressed in term of positive and negative. Negative means the absence of Cr VI on the tested areas and the result(s) was (were) regarded as in compliance with European Parliament and Council Directive 2011/65/EU, Article 4(1). While, positive means the presence of Cr VI on tested areas and the result(s) was (were) regarded as in conflict with European Parliament and Council Directive 2011/65/EU, Article 4(1).
金属材料的六价铬结果以阴性和阳性表示。阴性表示六价铬未被检出在测试表面, 即结果被认为符合 2011/65/EU 指令中, 条款 4(1) 的要求。而阳性则表示六价铬存在在测试表面, 即不符合 2011/65/EU 指令中, 条款 4(1)的要求。
- According to European Parliament and Council Directive 2011/65/EU, Article 5 “Adaptation of the Annexes to scientific and technical progress”, exemption(s) should be granted to the materials and components of Test Item(s) in the lists in Annexes III and IV of this directive.
根据欧盟委员会 2011/65/EU 指令中, 条款 5“适应科学技术进步的附件”, 附件 III 和 IV 中列明的测试项目中的材料和部件可予以豁免。

END



**BUREAU
VERITAS**

LAB NO. : (6617)307-1248
DATE : November 6, 2017
PAGE : 6 OF 9

APPENDIX 附录

List of Analytes and their Corresponding Test Methods [European Parliament and Council Directive 2011/65/EU] : 分析物名单及其相应的测试方法 [欧盟委员会指令 2011/65/EU]:		
No.	Name of Analytes 分析物名称	Test Method(s) 测试方法
1	Lead (Pb) 铅	With reference to IEC 62321-5: 2013. 参照 IEC 62321-5: 2013.
2	Cadmium (Cd) 镉	
3	Mercury (Hg) 汞	With reference to IEC 62321-4: 2017. 参照 IEC 62321-4: 2017.
4	Chromium VI (Cr VI) 六价铬	<u>Metal 金属</u> : With reference to IEC 62321-7-1:2015. 参照 IEC 62321-7-1: 2015. <u>Polymers & Electronics 聚合物及电子件</u> : With reference to EN 62321: 2009, Annex C. 参照 EN 62321: 2009, Annex C.
5	Polybromobiphenyls (PBBs) 多溴联苯 - Bromobiphenyl (MonoBB) - Dibromobiphenyl (DiBB) - Tribromobiphenyl (TriBB) - Tetrabromobiphenyl (TetraBB) - Pentabromobiphenyl (PentaBB) - Hexabromobiphenyl (HexaBB) - Heptabromobiphenyl (HeptaBB) - Octabromobiphenyl (OctaBB) - Nonabromobiphenyl (NonaBB) - Decabromobiphenyl (DecaBB)	With reference to IEC 62321-6:2015. 参照 IEC 62321-6:2015.
6	Polybromodiphenyl ethers (PBDEs) 多溴二苯醚 - Bromodiphenyl ether (MonoBDE) - Dibromodiphenyl ether (DiBDE) - Tribromodiphenyl ether (TriBDE) - Tetrabromodiphenyl ether (TetraBDE) - Pentabromodiphenyl ether (PentaBDE) - Hexabromodiphenyl ether (HexaBDE) - Heptabromodiphenyl ether (HeptaBDE) - Octabromodiphenyl ether (OctaBDE) - Nonabromodiphenyl ether (NonaBDE) - Decabromodiphenyl ether (DecaBDE)	

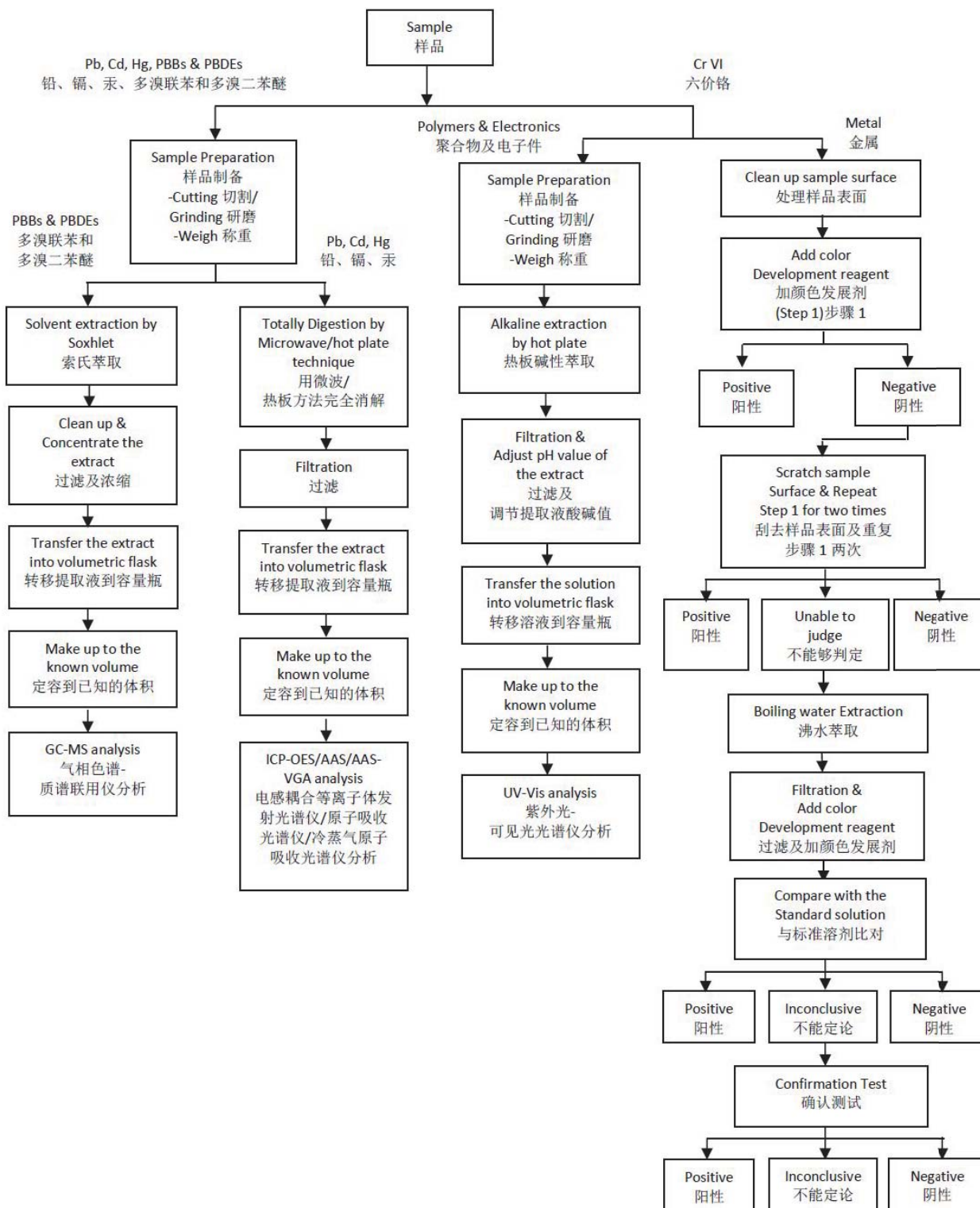


BUREAU
VERITAS

LAB NO. : (6617)307-1248
DATE : November 6, 2017
PAGE : 7 OF 9

APPENDIX 附录

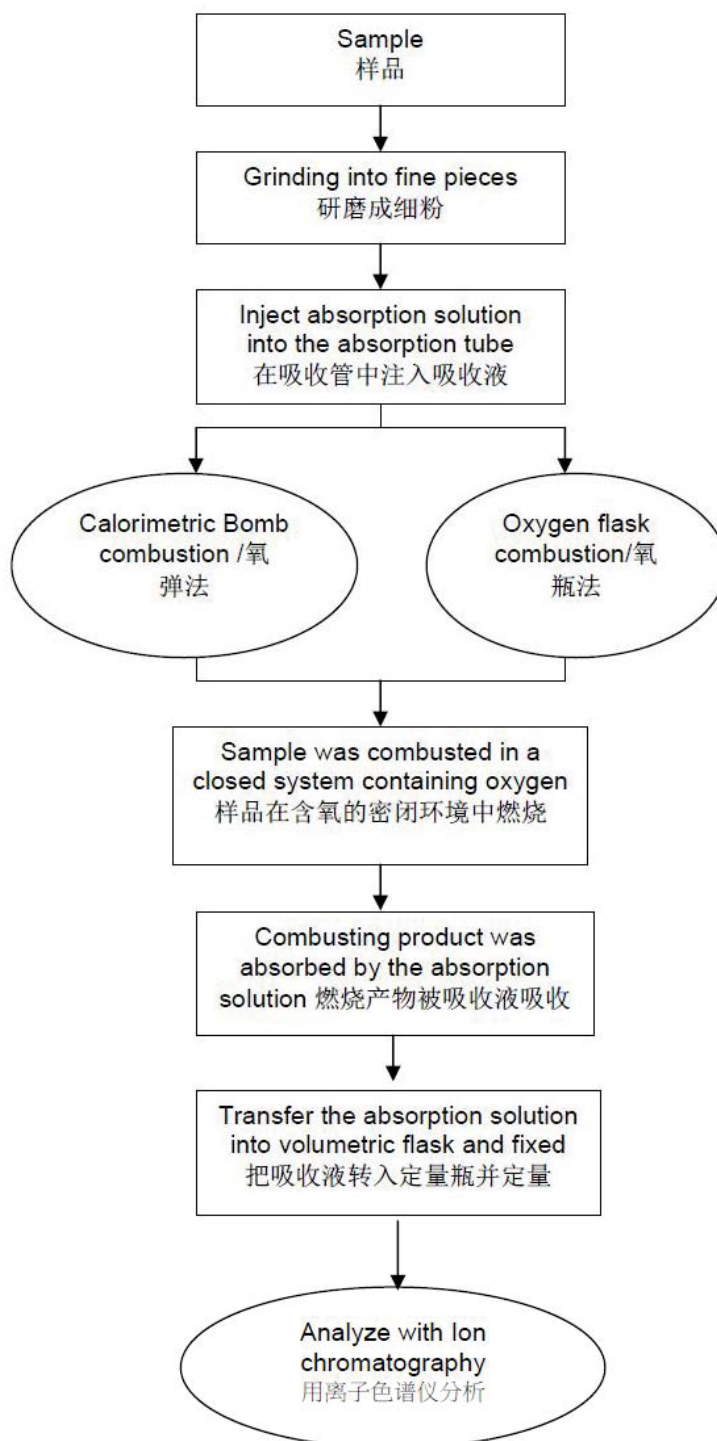
Test Flowchart of Heavy Metals and Flame Retardants Content [European Parliament and Council Directive 2011/65/EU] :
重金属和阻燃剂的测试流程图[欧盟委员会指令 2011/65/EU]:



APPENDIX

附录

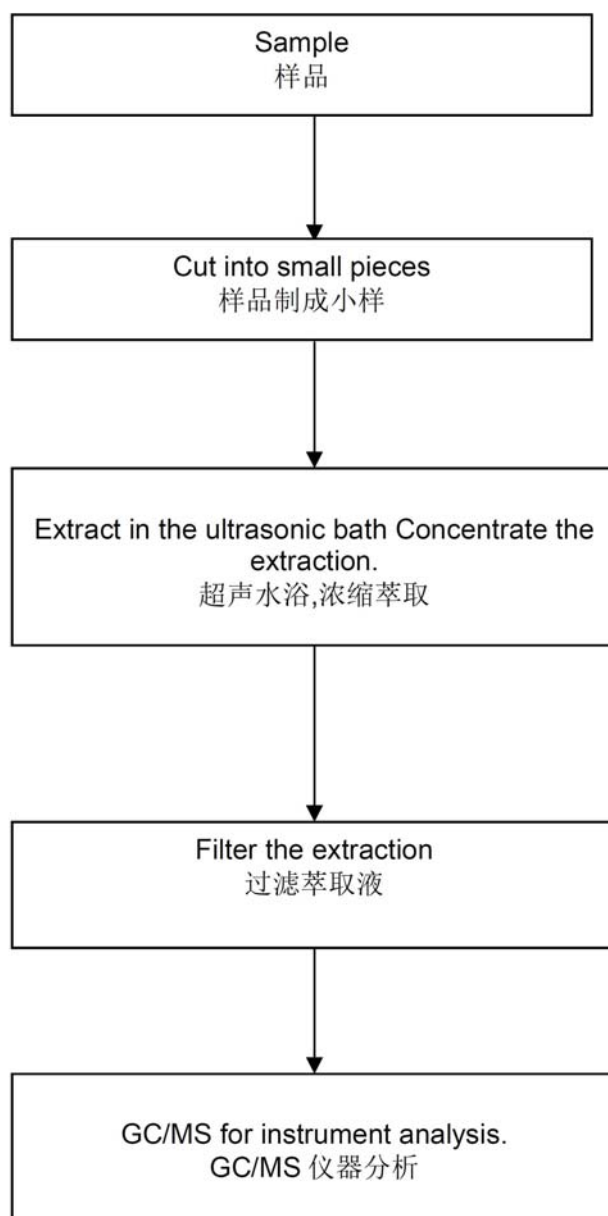
Test Procedures Flow Chart for the determination of Halogen



APPENDIX

附录

Test Procedures Flow Chart for the determination of Phthalates





REPORT OF MATERIAL TEST

怡程金属（深圳）有限公司

地址：深圳市龙岗区坪山镇深圳出口加工区

DATE: NOV.20.07

TEL: 0755--61291589 FAX: 0755--61291289

Customer: 得意	Commodity: C 5191 R PHOSPHOR BRONZE STRIP (H)	INVOICE/NO:LT961120
Applied Standard:CNS 9503 Phosphor Bronze Sheets, Plates and Strips		

Chemical Analysis Test										
I/No.	Size of Product			P(%) 0.030 - 0.350	Sn(%) 5.50 - 7.00	Cu+Sn+P(%) min.99.50				
	Thickness (mm)	Width (mm)	Length (mm)							
	Standard									
1	0.15	25		0.128	6.019	99.988				

Mechanical & Physical Test										
I/ No.	Size of Product			Dimension Test		Tension Test		Hardness Test HV	Grain Size (mm)	Electric Conductivity (%)
	Thickness (mm)	Width (mm)	Length (mm)	Thickness (mm)	Width (mm)	TensileStrength (kgf/mm2)	Elongation (%)			
	Standard				(-)0.10 - (+) 0.00	60-70	>8			
1	0.15	25		GOOD.	GOOD.	62.46	8.01	196	0.01	13.31

QC Supervisor: 徐慧

測試報告

Test Report

號碼(No.) : CE/2017/A5526

日期(Date) : 2017/11/02

頁數(Page): 1 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by/on behalf of the applicant as) :

送樣廠商(Sample Submitted By) : 怡程股份有限公司 (LIGHTWAY INTERNATIONAL CO., LTD.)
樣品名稱(Sample Description) : 磷青銅
樣品型號(Style/Item No.) : C5191
收件日期(Sample Receiving Date) : 2017/10/27
測試期間(Testing Period) : 2017/10/27 TO 2017/11/02

測試需求(Test Requested) :

- (1) 依據客戶指定, 參考RoHS 2011/65/EU Annex II及其修訂指令(EU) 2015/863測試鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚, DBP, BBP, DEHP, DIBP. (As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).)
- (3) 其他測試項目請見下一頁 . (Please refer to next pages for the other item(s).)

測試結果(Test Results) : 請參閱下一頁 (Please refer to following pages).


Troy Chang, Manager - Tech
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5526

日期(Date) : 2017/11/02

頁數(Page): 2 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



測試結果(Test Results)

測試部位(PART NAME)No. 1 : 銅色金屬 (COPPER COLORED METAL)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				No. 1
鎘 / Cadmium (Cd)	mg/kg	參考 IEC 62321-5 (2013), 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2	n. d.
鉛 / Lead (Pb)	mg/kg		2	14.6
汞 / Mercury (Hg)	mg/kg	參考 IEC 62321-4 (2013), 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-4 (2013) and performed by ICP-AES.	2	n. d.
六價鉻 / Hexavalent Chromium Cr(VI)(#2)	µg/cm ²	參考 IEC 62321-7-1 (2015), 以UV-VIS 檢測. / With reference to IEC 62321-7-1 (2015) and performed by UV-VIS.	0.10	n. d.
多溴聯苯總和 / Sum of PBBs	mg/kg	參考 IEC 62321-6 (2015), 以氣相層析/質譜儀檢測. / With reference to IEC 62321-6 (2015) and performed by GC/MS.	—	n. d.
一溴聯苯 / Monobromobiphenyl	mg/kg		5	n. d.
二溴聯苯 / Dibromobiphenyl	mg/kg		5	n. d.
三溴聯苯 / Tribromobiphenyl	mg/kg		5	n. d.
四溴聯苯 / Tetrabromobiphenyl	mg/kg		5	n. d.
五溴聯苯 / Pentabromobiphenyl	mg/kg		5	n. d.
六溴聯苯 / Hexabromobiphenyl	mg/kg		5	n. d.
七溴聯苯 / Heptabromobiphenyl	mg/kg		5	n. d.
八溴聯苯 / Octabromobiphenyl	mg/kg		5	n. d.
九溴聯苯 / Nonabromobiphenyl	mg/kg		5	n. d.
十溴聯苯 / Decabromobiphenyl	mg/kg		5	n. d.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5526

日期(Date) : 2017/11/02

頁數(Page): 3 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				No. 1
多溴聯苯醚總和 / Sum of PBDEs	mg/kg	參考IEC 62321-6 (2015), 以氣相層析/質譜儀檢測. / With reference to IEC 62321-6 (2015) and performed by GC/MS.	—	n. d.
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg		5	n. d.
二溴聯苯醚 / Dibromodiphenyl ether	mg/kg		5	n. d.
三溴聯苯醚 / Tribromodiphenyl ether	mg/kg		5	n. d.
四溴聯苯醚 / Tetrabromodiphenyl ether	mg/kg		5	n. d.
五溴聯苯醚 / Pentabromodiphenyl ether	mg/kg		5	n. d.
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg		5	n. d.
七溴聯苯醚 / Heptabromodiphenyl ether	mg/kg		5	n. d.
八溴聯苯醚 / Octabromodiphenyl ether	mg/kg		5	n. d.
九溴聯苯醚 / Nonabromodiphenyl ether	mg/kg		5	n. d.
十溴聯苯醚 / Decabromodiphenyl ether	mg/kg		5	n. d.
鄰苯二甲酸丁苄甲酯 / BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7)	mg/kg	參考IEC 62321-8 (2017), 以氣相層析儀/質譜儀檢測. / With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS.	50	n. d.
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	mg/kg		50	n. d.
鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Di-(2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	mg/kg		50	n. d.
鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	mg/kg		50	n. d.
鄰苯二甲酸二異癸酯 / DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0; 68515-49-1)	mg/kg		50	n. d.
鄰苯二甲酸二異壬酯 / DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0; 68515-48-0)	mg/kg		50	n. d.
鄰苯二甲酸二正辛酯 / DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	mg/kg		50	n. d.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5526

日期(Date) : 2017/11/02

頁數(Page): 4 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				No. 1
鹵素(氯) / Halogen-Chlorine (Cl) (CAS No. : 22537-15-1)	mg/kg	參考BS EN 14582 (2016), 以離子層析儀分析. / With reference to BS EN 14582 (2016). Analysis was performed by IC.	50	n. d.
鹵素(溴) / Halogen-Bromine (Br) (CAS No. : 10097-32-2)	mg/kg	參考BS EN 14582 (2016), 以離子層析儀分析. / With reference to BS EN 14582 (2016). Analysis was performed by IC.	50	n. d.
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	參考US EPA 3550C (2007), 以液相層析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by LC/MS.	10	n. d.
全氟辛酸 / PFOA (CAS No. : 335-67-1)	mg/kg	參考US EPA 3550C (2007), 以液相層析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by LC/MS.	10	n. d.
銻 / Antimony (Sb)	mg/kg	參考US EPA 3050B (1996), 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3050B (1996). Analysis was performed by ICP-AES.	2	n. d.
鈹 / Beryllium (Be)	mg/kg	參考US EPA 3050B (1996), 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3050B (1996). Analysis was performed by ICP-AES.	2	n. d.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5526

日期(Date) : 2017/11/02

頁數(Page): 5 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n. d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. "-" = Not Regulated (無規格值)
5. (#2) =
 - a. 當六價鉻結果大於 $0.13 \mu\text{g}/\text{cm}^2$ ，表示樣品表層含有六價鉻。 / The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than $0.13 \mu\text{g}/\text{cm}^2$. The sample coating is considered to contain Cr(VI).
 - b. 當六價鉻結果為n. d. (濃度小於 $0.10 \mu\text{g}/\text{cm}^2$)，表示表層不含六價鉻。 / The sample is negative for Cr(VI) if Cr(VI) is n. d. (concentration less than $0.10 \mu\text{g}/\text{cm}^2$). The coating is considered a non-Cr(VI) based coating
 - c. 當六價鉻結果介於 0.10 及 $0.13 \mu\text{g}/\text{cm}^2$ 時，無法確定塗層是否含有六價鉻。 / The result between $0.10 \mu\text{g}/\text{cm}^2$ and $0.13 \mu\text{g}/\text{cm}^2$ is considered to be inconclusive - unavoidable coating variations may influence the determination.

PFOS參考資訊(Reference Information) : 持久性有機污染物 POPs - (EU) 757/2010

PFOS濃度在物質或製備中不得超過0.001%(10ppm)，在半成品、成品或零部件中不得超過0.1%(1000ppm)，在紡織品或塗層材料中不得超過 $1\mu\text{g}/\text{m}^2$ 。

(Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above $1\mu\text{g}/\text{m}^2$.)

測試報告

Test Report

號碼(No.) : CE/2017/A5526

日期(Date) : 2017/11/02

頁數(Page): 6 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA

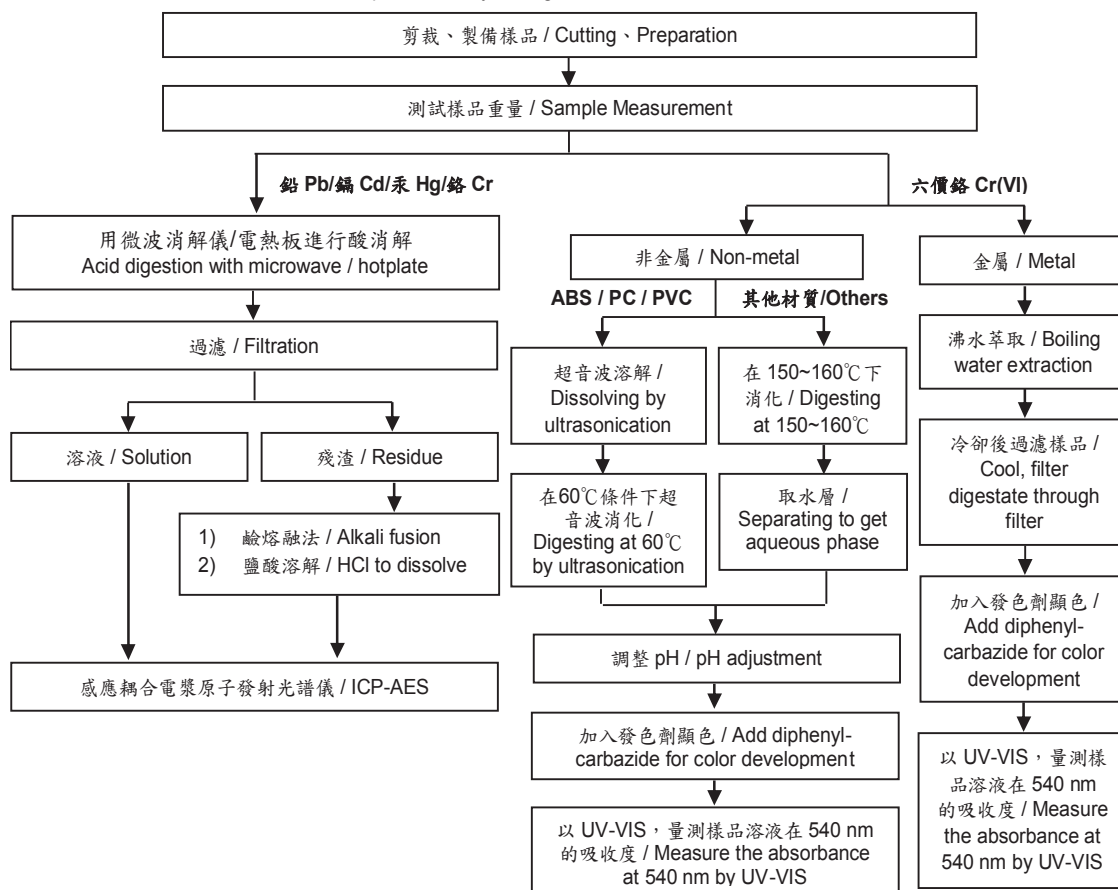


重金屬流程圖 / Analytical flow chart of Heavy Metal

根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外)

These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)

- 測試人員：王志瑋 / Technician : JR Wang
- 測試負責人：張啟興 / Supervisor: Troy Chang



測試報告

Test Report

號碼(No.) : CE/2017/A5526

日期(Date) : 2017/11/02

頁數(Page): 7 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LTD

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

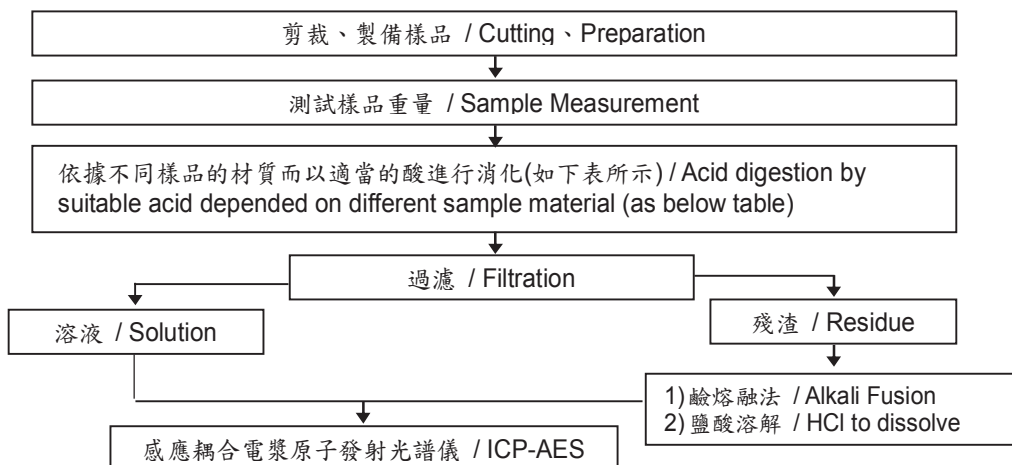
LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.

- 測試人員：王志瑋 / Technician: JR Wang
- 測試負責人：張啟興 / Supervisor: Troy Chang

元素以 ICP-AES 分析的消化流程圖 (Flow Chart of digestion for the elements analysis performed by ICP-AES)



銅,銅,鋁,焊錫 / Steel, copper, aluminum, solder	王水,硝酸,鹽酸,氫氟酸,雙氧水 / Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂
玻璃 / Glass	硝酸,氫氟酸 / HNO ₃ /HF
金,鉑,鈀,陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNO ₃
塑膠 / Plastic	硫酸,雙氧水,硝酸,鹽酸 / H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl
其他 / Others	加入適當的試劑至完全溶解 / Added appropriate reagent to total digestion

測試報告

Test Report

號碼(No.) : CE/2017/A5526

日期(Date) : 2017/11/02

頁數(Page): 8 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

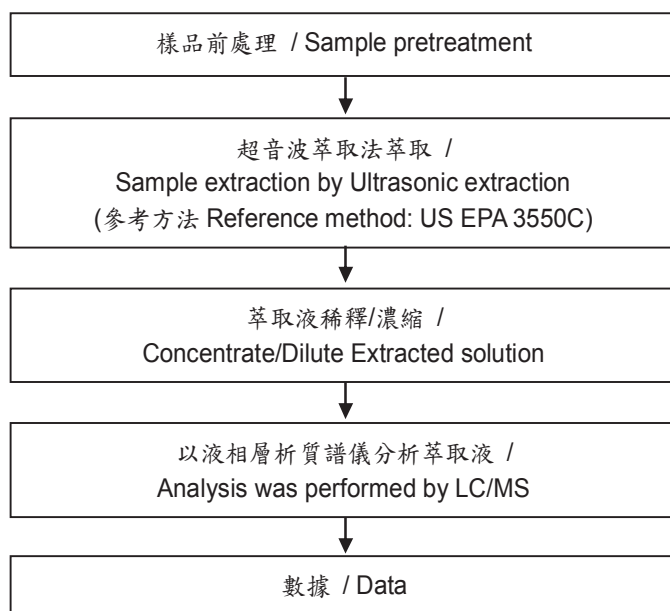
深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



全氟辛酸/全氟辛烷磺酸分析流程圖 / Analytical flow chart - PFOA/PFOS

- 測試人員：涂雅琴 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5526

日期(Date) : 2017/11/02

頁數(Page): 9 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

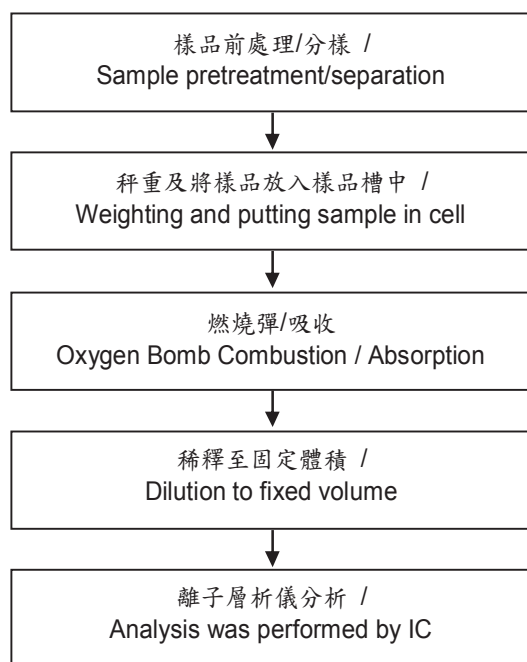
深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



鹵素分析流程圖 / Analytical flow chart - Halogen

- 測試人員：陳恩臻 / Technician: Rita Chen
- 測試負責人：張啟興 / Supervisor: Troy Chang



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5526

日期(Date) : 2017/11/02

頁數(Page): 10 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

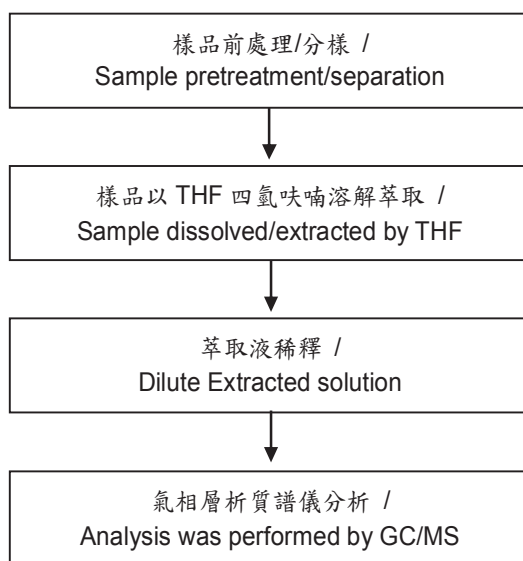
LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



可塑劑分析流程圖 / Analytical flow chart - Phthalate

- 測試人員：徐毓明 / Technician: Andy Hsu
- 測試負責人：張啟興 / Supervisor : Troy Chang

【測試方法/Test method: IEC 62321-8】



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5526

日期(Date) : 2017/11/02

頁數(Page): 11 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



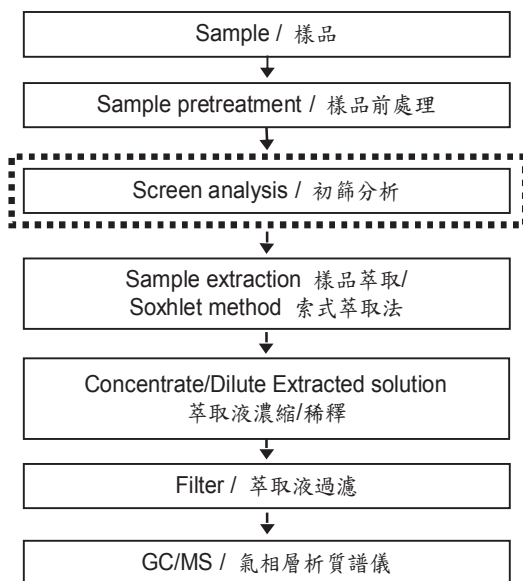
多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBB/PBDE

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang

初次測試程序 / First testing process —————→

選擇性篩檢程序 / Optional screen process→

確認程序 / Confirmation process - - - ->



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5526

日期(Date) : 2017/11/02

頁數(Page): 12 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

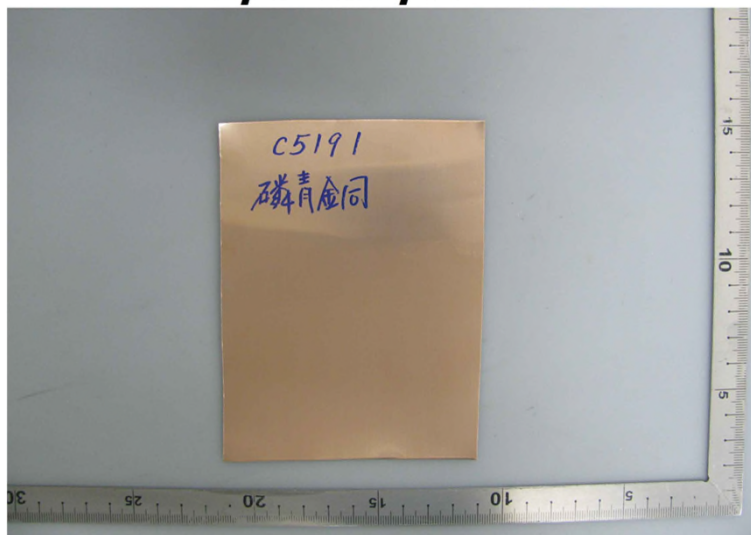
LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。 *

(The tested sample / part is marked by an arrow if it's shown on the photo.)

CE/2017/A5526



** 報告結尾 (End of Report) **

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.



REPORT OF MATERIAL TEST

怡程金属(深圳)有限公司

地址: 深圳市龙岗区坪山镇深圳出口加工区

DATE: FEB.18.08

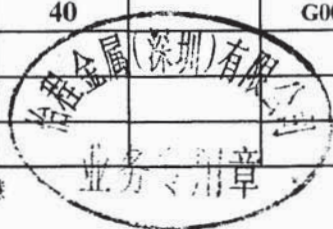
TEL: 0755-61291589 FAX: 0755-61291289

Customer: 得意	Commodity: C 2680 R BRASS STRIP (SH)	INVOICE/NO:LT970218
Applied Standard:CNS 4383 Brass Sheets, Plates and Strips		

Chemical Analysis Test										
I/No.	Size of Product			Cu(%)	Fe(%)	Pb(%)	Zn(%) REM= Remainder			
	Thickness (mm)	Width (mm)	Length (mm)							
	Standard									
				64.00 - 68.00	max. 0.050	max. 0.070	REM.			
1	0.2	40		65.58	0.034	0.0069	REM.			

Mechanical & Physical Test										
I/No.	Size of Product			Dimension Test		Tension Test		Hardness Test HV	Grain Size (mm)	Electric Conductirity (%)
	Thickness (mm)	Width (mm)	Length (mm)	Thickness (mm)	Width (mm)	TensileStrength (kgf/mm2)	Elongation (%)			
	Standard				(-)0.10 - (+) 0.00	>60	>2			
1	0.2	40		GOOD.	GOOD.	62.00	2.55	186		24.00

QC Supervisor: 徐慧



測試報告

Test Report

號碼(No.) : CE/2017/A5528

日期(Date) : 2017/11/02

頁數(Page): 1 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by/on behalf of the applicant as) :

送樣廠商(Sample Submitted By) : 怡程股份有限公司 (LIGHTWAY INTERNATIONAL CO., LTD.)
樣品名稱(Sample Description) : 黃銅
樣品型號(Style/Item No.) : C2680
收件日期(Sample Receiving Date) : 2017/10/27
測試期間(Testing Period) : 2017/10/27 TO 2017/11/02

測試需求(Test Requested) :

- (1) 依據客戶指定, 參考RoHS 2011/65/EU Annex II及其修訂指令(EU) 2015/863測試鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚, DBP, BBP, DEHP, DIBP. (As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).)
- (3) 其他測試項目請見下一頁 . (Please refer to next pages for the other item(s).)

測試結果(Test Results) : 請參閱下一頁 (Please refer to following pages).


Troy Chang, Manager - Tech
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5528

日期(Date) : 2017/11/02

頁數(Page): 2 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



測試結果(Test Results)

測試部位(PART NAME)No. 1 : 黃銅色金屬 (BRASS METAL)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				No. 1
鎘 / Cadmium (Cd)	mg/kg	參考 IEC 62321-5 (2013), 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2	n. d.
鉛 / Lead (Pb)	mg/kg		2	10.4
汞 / Mercury (Hg)	mg/kg	參考 IEC 62321-4 (2013), 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-4 (2013) and performed by ICP-AES.	2	n. d.
六價鉻 / Hexavalent Chromium Cr(VI)(#2)	µg/cm ²	參考 IEC 62321-7-1 (2015), 以UV-VIS 檢測. / With reference to IEC 62321-7-1 (2015) and performed by UV-VIS.	0.10	n. d.
多溴聯苯總和 / Sum of PBBs	mg/kg	參考 IEC 62321-6 (2015), 以氣相層析/質譜儀檢測. / With reference to IEC 62321-6 (2015) and performed by GC/MS.	—	n. d.
一溴聯苯 / Monobromobiphenyl	mg/kg		5	n. d.
二溴聯苯 / Dibromobiphenyl	mg/kg		5	n. d.
三溴聯苯 / Tribromobiphenyl	mg/kg		5	n. d.
四溴聯苯 / Tetrabromobiphenyl	mg/kg		5	n. d.
五溴聯苯 / Pentabromobiphenyl	mg/kg		5	n. d.
六溴聯苯 / Hexabromobiphenyl	mg/kg		5	n. d.
七溴聯苯 / Heptabromobiphenyl	mg/kg		5	n. d.
八溴聯苯 / Octabromobiphenyl	mg/kg		5	n. d.
九溴聯苯 / Nonabromobiphenyl	mg/kg		5	n. d.
十溴聯苯 / Decabromobiphenyl	mg/kg		5	n. d.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5528

日期(Date) : 2017/11/02

頁數(Page): 3 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				No. 1
多溴聯苯醚總和 / Sum of PBDEs	mg/kg	參考IEC 62321-6 (2015), 以氣相層析/質譜儀檢測. / With reference to IEC 62321-6 (2015) and performed by GC/MS.	-	n. d.
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg		5	n. d.
二溴聯苯醚 / Dibromodiphenyl ether	mg/kg		5	n. d.
三溴聯苯醚 / Tribromodiphenyl ether	mg/kg		5	n. d.
四溴聯苯醚 / Tetrabromodiphenyl ether	mg/kg		5	n. d.
五溴聯苯醚 / Pentabromodiphenyl ether	mg/kg		5	n. d.
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg		5	n. d.
七溴聯苯醚 / Heptabromodiphenyl ether	mg/kg		5	n. d.
八溴聯苯醚 / Octabromodiphenyl ether	mg/kg		5	n. d.
九溴聯苯醚 / Nonabromodiphenyl ether	mg/kg		5	n. d.
十溴聯苯醚 / Decabromodiphenyl ether	mg/kg		5	n. d.
鄰苯二甲酸丁苄甲酯 / BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7)	mg/kg	參考IEC 62321-8 (2017), 以氣相層析儀/質譜儀檢測. / With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS.	50	n. d.
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	mg/kg		50	n. d.
鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Di-(2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	mg/kg		50	n. d.
鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	mg/kg		50	n. d.
鄰苯二甲酸二異癸酯 / DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0; 68515-49-1)	mg/kg		50	n. d.
鄰苯二甲酸二異壬酯 / DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0; 68515-48-0)	mg/kg		50	n. d.
鄰苯二甲酸二正辛酯 / DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	mg/kg		50	n. d.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5528

日期(Date) : 2017/11/02

頁數(Page): 4 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				No. 1
鹵素(氯) / Halogen-Chlorine (Cl) (CAS No. : 22537-15-1)	mg/kg	參考BS EN 14582 (2016), 以離子層析儀分析. / With reference to BS EN 14582 (2016). Analysis was performed by IC.	50	n. d.
鹵素(溴) / Halogen-Bromine (Br) (CAS No. : 10097-32-2)	mg/kg	參考BS EN 14582 (2016), 以離子層析儀分析. / With reference to BS EN 14582 (2016). Analysis was performed by IC.	50	n. d.
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	參考US EPA 3550C (2007), 以液相層析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by LC/MS.	10	n. d.
全氟辛酸 / PFOA (CAS No. : 335-67-1)	mg/kg	參考US EPA 3550C (2007), 以液相層析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by LC/MS.	10	n. d.
銻 / Antimony (Sb)	mg/kg	參考US EPA 3050B (1996), 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3050B (1996). Analysis was performed by ICP-AES.	2	n. d.
鈹 / Beryllium (Be)	mg/kg	參考US EPA 3050B (1996), 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3050B (1996). Analysis was performed by ICP-AES.	2	n. d.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5528

日期(Date) : 2017/11/02

頁數(Page): 5 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n. d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. "-" = Not Regulated (無規格值)
5. (#2) =
 - a. 當六價鉻結果大於0.13 $\mu\text{g}/\text{cm}^2$, 表示樣品表層含有六價鉻. / The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 $\mu\text{g}/\text{cm}^2$. The sample coating is considered to contain Cr(VI).
 - b. 當六價鉻結果為n. d. (濃度小於0.10 $\mu\text{g}/\text{cm}^2$) , 表示表層不含六價鉻. / The sample is negative for Cr(VI) if Cr(VI) is n. d. (concentration less than 0.10 $\mu\text{g}/\text{cm}^2$). The coating is considered a non-Cr(VI) based coating
 - c. 當六價鉻結果介於 0.10 及 0.13 $\mu\text{g}/\text{cm}^2$ 時, 無法確定塗層是否含有六價鉻. / The result between 0.10 $\mu\text{g}/\text{cm}^2$ and 0.13 $\mu\text{g}/\text{cm}^2$ is considered to be inconclusive - unavoidable coating variations may influence the determination.

PFOS參考資訊(Reference Information) : 持久性有機污染物 POPs - (EU) 757/2010

PFOS濃度在物質或製備中不得超過0.001%(10ppm), 在半成品、成品或零部件中不得超過0.1%(1000ppm), 在紡織品或塗層材料中不得超過1 $\mu\text{g}/\text{m}^2$ 。

(Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1 $\mu\text{g}/\text{m}^2$.)

測試報告

Test Report

號碼(No.) : CE/2017/A5528

日期(Date) : 2017/11/02

頁數(Page): 6 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA

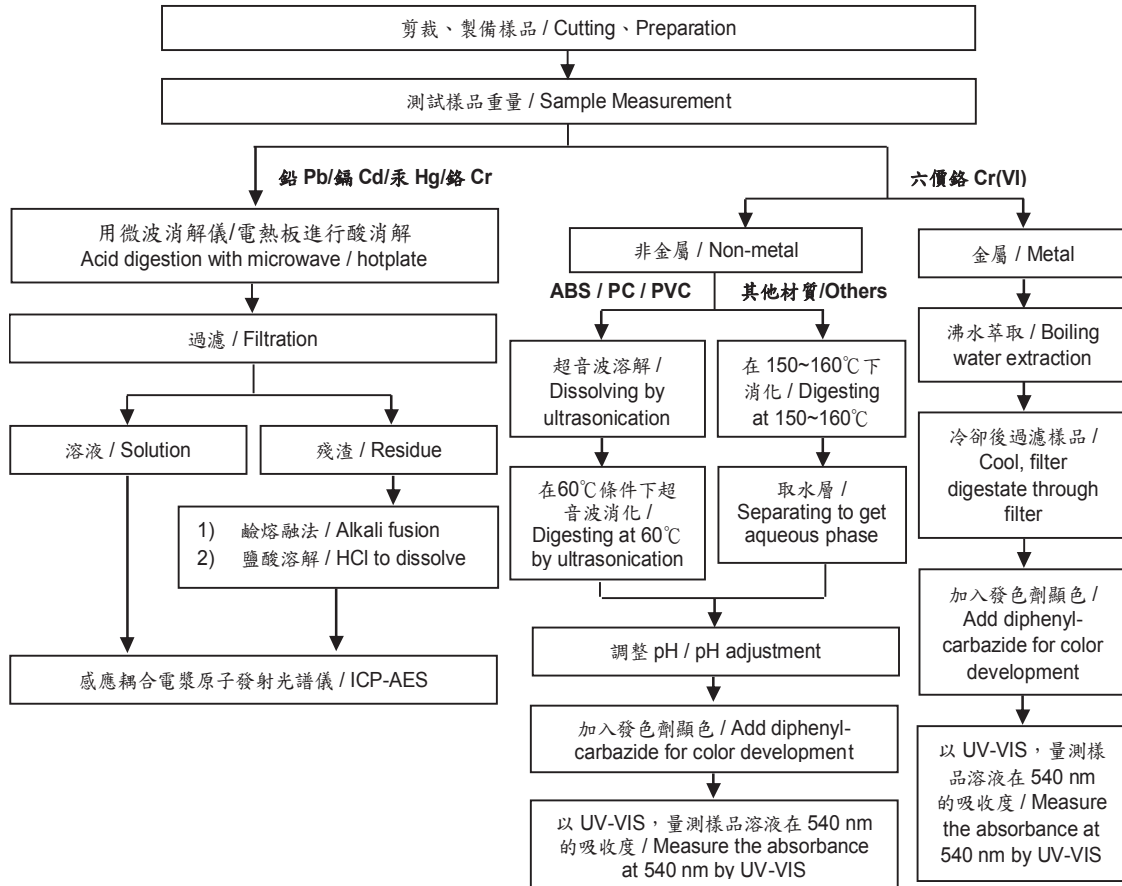


重金屬流程圖 / Analytical flow chart of Heavy Metal

根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外)

These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)

- 測試人員：王志瑋 / Technician : JR Wang
- 測試負責人：張啟興 / Supervisor: Troy Chang



測試報告

Test Report

號碼(No.) : CE/2017/A5528

日期(Date) : 2017/11/02

頁數(Page): 7 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LTD

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

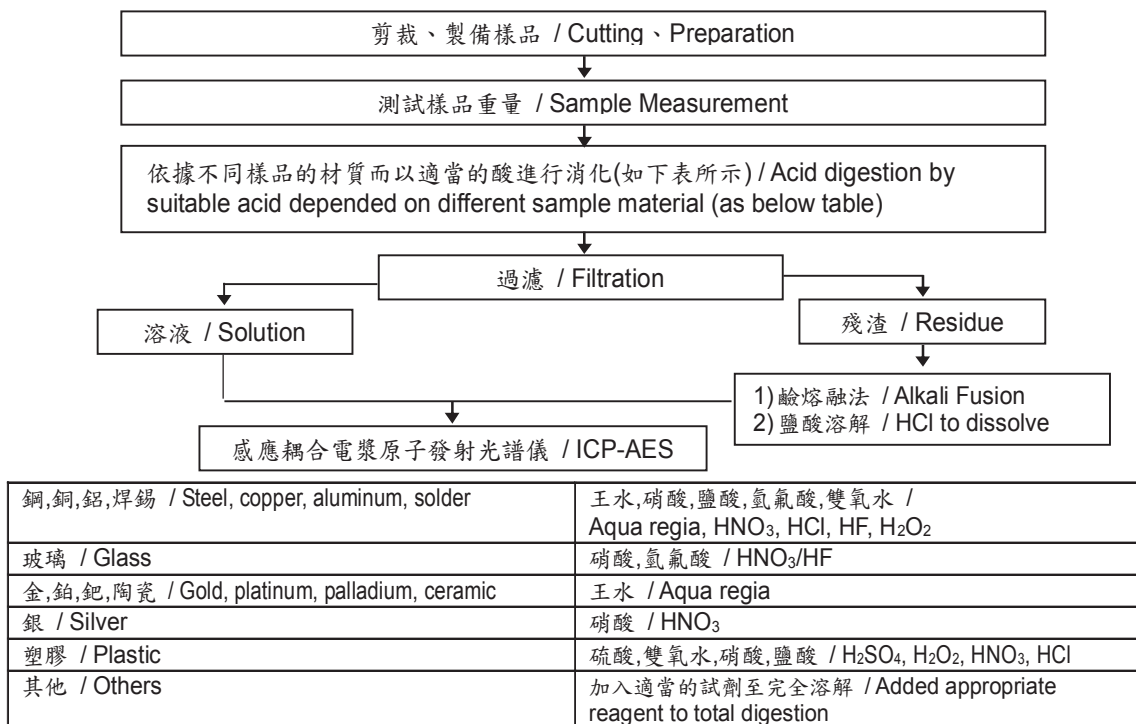
LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.

- 測試人員：王志瑋 / Technician: JR Wang
- 測試負責人：張啟興 / Supervisor: Troy Chang

元素以 ICP-AES 分析的消化流程圖 (Flow Chart of digestion for the elements analysis performed by ICP-AES)



測試報告

Test Report

號碼(No.) : CE/2017/A5528

日期(Date) : 2017/11/02

頁數(Page): 8 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

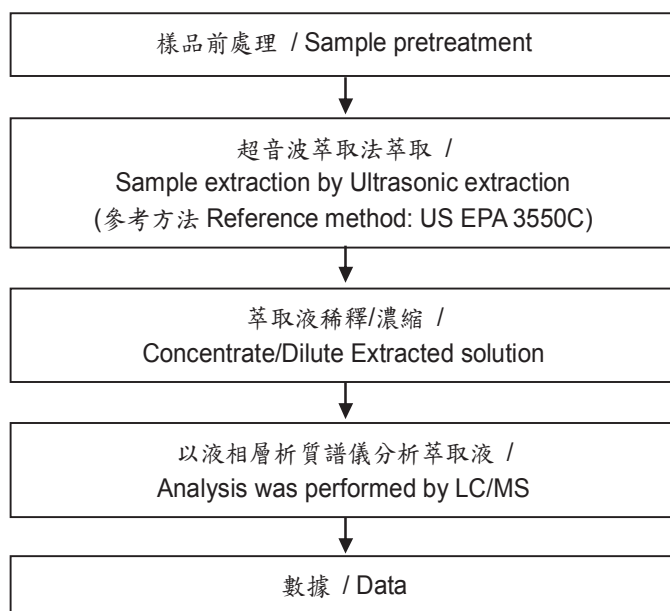
深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



全氟辛酸/全氟辛烷磺酸分析流程圖 / Analytical flow chart - PFOA/PFOS

- 測試人員：涂雅琴 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5528

日期(Date) : 2017/11/02

頁數(Page): 9 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

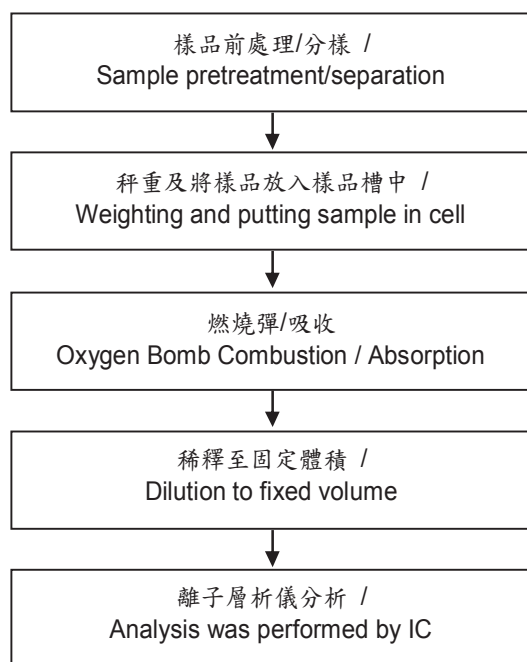
深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



鹵素分析流程圖 / Analytical flow chart - Halogen

- 測試人員：陳恩臻 / Technician: Rita Chen
- 測試負責人：張啟興 / Supervisor: Troy Chang



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5528

日期(Date) : 2017/11/02

頁數(Page): 10 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

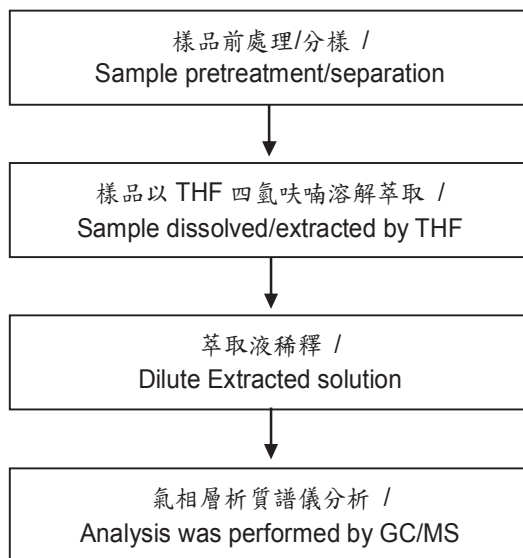
LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



可塑劑分析流程圖 / Analytical flow chart - Phthalate

- 測試人員：徐毓明 / Technician: Andy Hsu
- 測試負責人：張啟興 / Supervisor : Troy Chang

【測試方法/Test method: IEC 62321-8】



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

測試報告

Test Report

號碼(No.) : CE/2017/A5528

日期(Date) : 2017/11/02

頁數(Page): 11 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



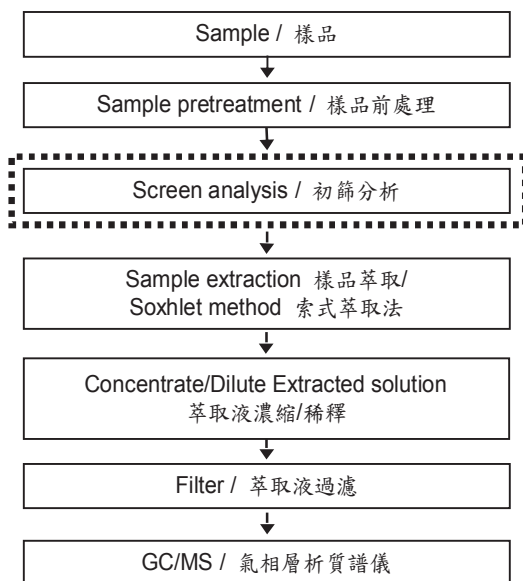
多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBB/PBDE

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang

初次測試程序 / First testing process —————→

選擇性篩檢程序 / Optional screen process→

確認程序 / Confirmation process - - - ->



測試報告

Test Report

號碼(No.) : CE/2017/A5528

日期(Date) : 2017/11/02

頁數(Page): 12 of 12

怡程金屬(深圳)有限公司

YI CHENG (SHENZHEN) CO., LED

深圳市龍崗區坪山鎮深圳出口加工區蘭金四路1號

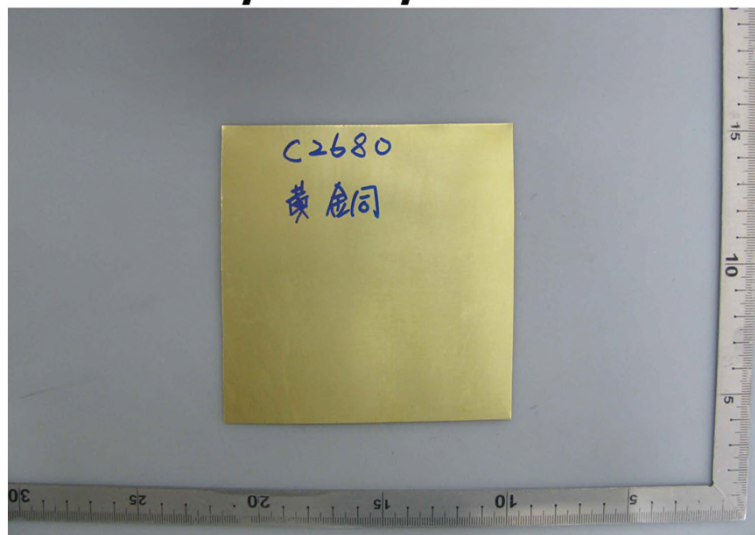
LIJING RD, SHENZHEN EXPORT PROCESSING ZONE, PINGSHAN REGION, SHENZHEN CHINA



* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。 *

(The tested sample / part is marked by an arrow if it's shown on the photo.)

CE/2017/A5528



** 報告結尾 (End of Report) **

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Termse-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Test Report

No. CANEC1709614806

Date: 29 May 2017

Page 1 of 5


LOTES GUANGZHOU CO.,LTD.

NO.526 NORTH OF JINLING ROAD,NANSHA ECONOMIC AND TECHNOLOGY DEVELOPMENT ZONE, GUANGZHOU

The following sample(s) was/were submitted and identified on behalf of the clients as : NICKEL/GOLD/TIN ELETROPLATING(C5191)

SGS Job No. : CP17-027940 - GZ
 Manufacturer : ZHONGSHAN CITY XING CHENG METAL PRODUCTS SURFACE TREATMENT CO.,LTD
 Buyer : LOTES GUANG ZHOU CO.LTD
 Date of Sample Received : 25 May 2017
 Testing Period : 25 May 2017 - 27 May 2017
 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).

Signed for and on behalf of
 SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch



Merry Lv
 Approved Signatory



SGS-CSTC Standards Technical Services Co., Ltd.
 Guangzhou Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN_Doccheck@sgs.com

198 Kazhu Road, Sciotech Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgsgroup.com.cn
 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

Test Report

No. CANEC1709614806

Date: 29 May 2017

Page 2 of 5

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN17-096148.006	Silver-white& golden-colored plating on metal

Remarks :

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

Elementary Analysis

Test Method : (1)Determination of Cadmium and Lead by ICP-OES after application of modified surface etching digestion based on IEC62321-5:2013
 (2)Determination of Mercury by ICP-OES after application of modified surface etching digestion based on IEC 62321-4:2013
 (3)With reference to IEC 62321-7-1:2015 , determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.

Test Item(s)	Unit	MDL	006
Cadmium (Cd)	mg/kg	2	ND
Lead (Pb)	mg/kg	2	50
Mercury (Hg)	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	µg/cm ²	0.10	ND

Notes :

- (1)IEC 62321 series is equivalent to EN 62321 series
http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25
- (2) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm². The sample coating is considered to contain CrVI
 b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm²). The coating is considered a non-CrVI based coating
 c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive - unavoidable coating variations may influence the determination
 Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.



SGS-CSTC Standard & Technical Services Co., Ltd.
 Guangzhou Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

198 Kazhu Road, Science Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.ssgroup.com.cn
 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

Test Report

No. CANEC1709614806

Date: 29 May 2017

Page 3 of 5

Remark: The result(s) shown are only for reference.



SGS-CSTC Standard & Technical Services Co., Ltd.
Guangzhou Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

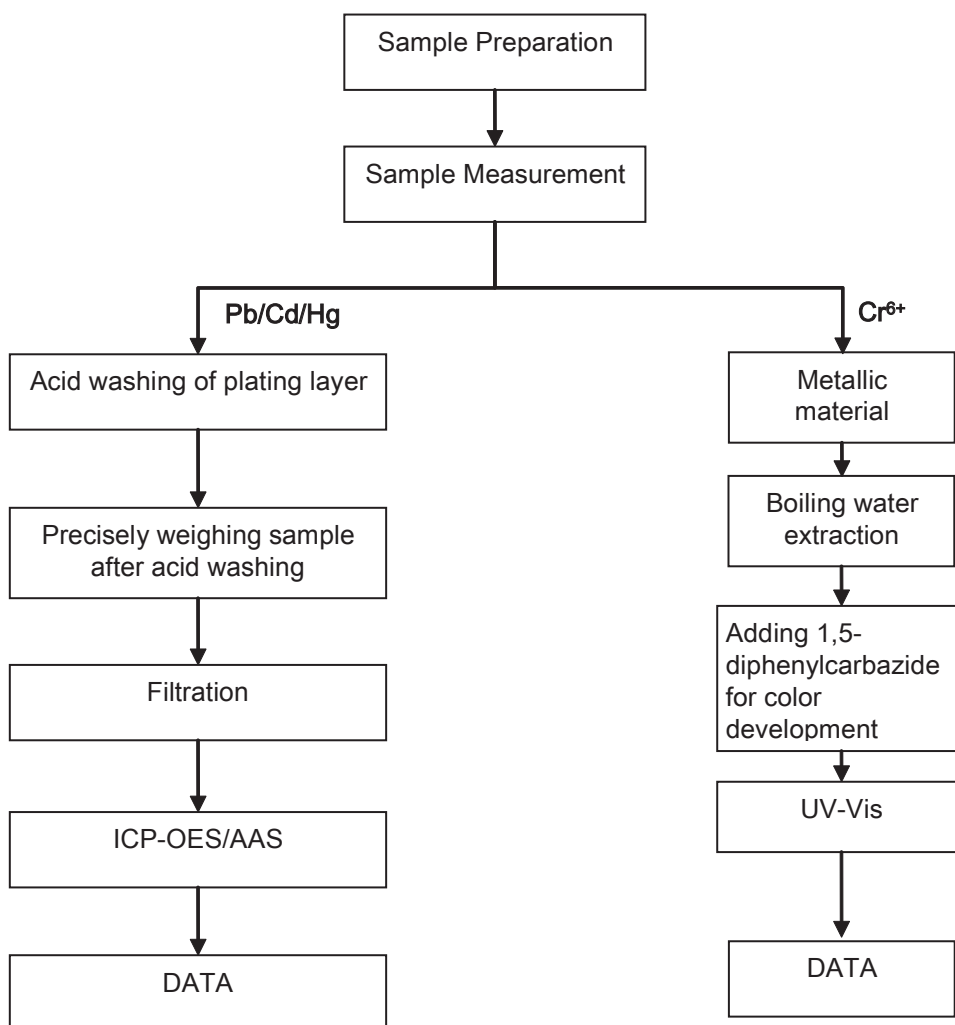
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN_Doccheck@sgs.com

198 Kazhu Road, Science Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgsgroup.com.cn
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

ATTACHMENTS

Plating Pb/Cd/Hg/Cr⁶⁺ Testing Flow Chart

- 1) Name of the person who made testing: Edith Zhang
- 2) Name of the person in charge of testing: Bella Wang



Test Report

No. CANEC1709614806

Date: 29 May 2017

Page 5 of 5

Sample photo:



SGS authenticate the photo on original report only

*** End of Report ***



SGS-CSTC Science & Technology Services Co., Ltd.
Guangzhou Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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

Test Report

No. CANEC1702975002

Date: 07 Mar 2017

Page 1 of 5

LOTES GUANGZHOU CO.,LTD.

NO.526 NORTH OF JINLING ROAD,NANSHA ECONOMIC AND TECHNOLOGY DEVELOPMENT ZONE, GUANGZHOU

The following sample(s) was/were submitted and identified on behalf of the clients as : NICKEL/TIN ELETROPLATING(C2680)

SGS Job No. : CP17-008734 - GZ
 Buyer : LOTES GUANG ZHOU CO.LTD
 Manufacturer : ZHONGSHAN CITY XING CHENG METAL PRODUCTS SURFACE TREATMENT CO.,LTD
 Date of Sample Received : 02 Mar 2017
 Testing Period : 02 Mar 2017 - 07 Mar 2017
 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).

Signed for and on behalf of
 SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

Echo

Echo Yeung
 Approved Signatory



SGS-CSTC Standards Technical Services Co., Ltd.
 Guangzhou Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN_Doccheck@sgs.com

198 Kazhu Road, Science Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgsgroup.com.cn
 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

Test Report

No. CANEC1702975002

Date: 07 Mar 2017

Page 2 of 5

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN17-029750.002	Silvery plating on metal

Remarks :

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

Elementary Analysis

Test Method : (1)Determination of Cadmium and Lead by ICP-OES after application of modified surface etching digestion based on IEC62321-5:2013
 (2)Determination of Mercury by ICP-OES after application of modified surface etching digestion based on IEC 62321-4:2013
 (3)With reference to IEC 62321-7-1:2015 , determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.

Test Item(s)	Unit	MDL	002
Cadmium (Cd)	mg/kg	2	ND
Lead (Pb)	mg/kg	2	47
Mercury (Hg)	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	µg/cm ²	0.10	ND

Notes :

- (1) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm². The sample coating is considered to contain CrVI
 b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm²). The coating is considered a non-CrVI based coating
 c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive - unavoidable coating variations may influence the determination

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

IEC 62321 series is equivalent to EN 62321 series

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25



SGS-CSTC Service Asia Technical Services Co., Ltd.
 Guangzhou Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

198 Kazhu Road, Science Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgsgroup.com.cn
 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

Test Report

No. CANEC1702975002

Date: 07 Mar 2017

Page 3 of 5

Remark: The results shown are only for reference.



SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

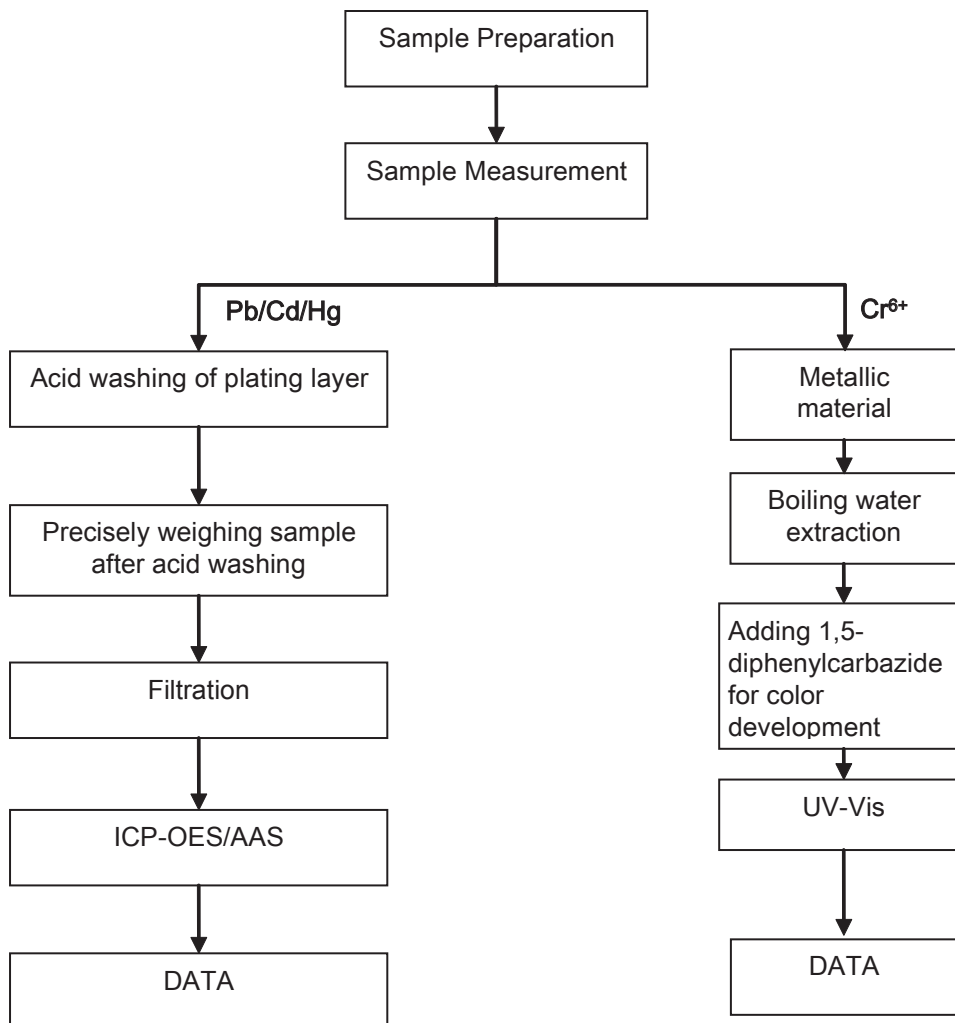
Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

198 Kazhu Road, Science Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgsgroup.com.cn
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

ATTACHMENTS

Plating Pb/Cd/Hg/Cr⁶⁺ Testing Flow Chart

- 1) Name of the person who made testing: Edith Zhang
- 2) Name of the person in charge of testing: Bella Wang



Test Report

No. CANEC1702975002

Date: 07 Mar 2017

Page 5 of 5

Sample photo:



SGS authenticate the photo on original report only

*** End of Report ***



SGS-CSTC (Shanghai) Technical Services Co., Ltd.
Guangzhou Branch Testing Center Chemical Laboratory

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

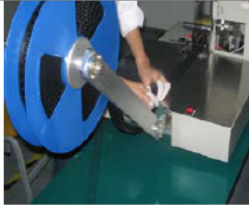
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN_Doccheck@sgs.com

198 Kazhu Road, Science Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgsgroup.com.cn
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

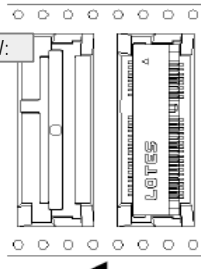
品 名 PART NAME	MINI PCI_E 9.9H	料 號 PART NUMBER	AAA-PCI-093-K01	文件編號 DOCUMENT NUMBER	GPK-PCI-016B
制定日期 INITIAL DATE	2008.08.17	修定日期 UPDATE DATE	2015.07.06	REV	5

1.包裝圖示說明.

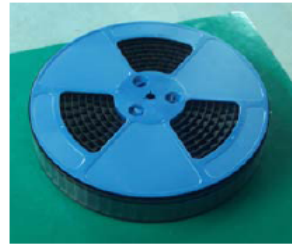
1.THE PACKAGE FIGURES ARE AS BELOW:



圖一FIGURE 1



包裝時載帶運行方向與產品放置位置



圖二FIGURE 2

PACKAGING FOR THE DIRECTION OF LOADING OPERATION AND THE LOCATION OF THE PRODUCT



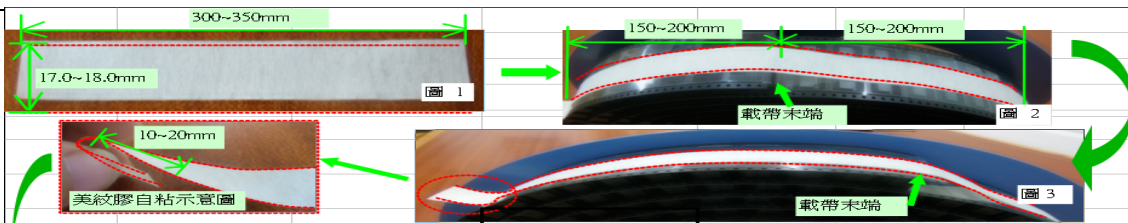
圖五FIGURE 5



圖四FIGURE 4



圖三FIGURE 3



貼美紋膠要求 THE REQUIREMENT ABOUT GLUE PAPER

- 1.將品檢OK成品裝入包裝載帶（載帶前後各預留空格15格）並裝入膠盤中,包裝數量:300PCS/盤 (如圖1);
1.PUT OK PRODUCTS INTO CARRIER TAPES (AS FIGURE 1, AND SHOULD KEEP EMPTY AT THE FIRST/END 15 CAVITIES), THEN SEAL THE CARRIER WITH COVER TAPE, AND PUT THEM INTO REEL AS FIGURE 2.CAPACITY: 300PCS/REEL.
- 2.將包好產品的6個膠盤依次疊放在防水袋中(如圖3),扎好防水袋口;
2. PUT 6 REELS INTO ONE WATERPROOF BAG AS FIGURE 3, AND THEN ,SEAL THE BAG;
- 3.在紙箱底部放1PCS隔板,將包裝好的6盤成品(共1800PCS)放入外箱中,然後將4個護角放入紙箱內四個角(如圖4);
3. PUT ONE CLAPBOARD AT THE BOTTOM SURFACE OF CARTON, THEN, PUT WATERPROOF BAGE WITH 6 TAPE REELS, (TOTAL 1800 PRODUCTS) INTO THE CARTON, AND THEN, PUT FOUR CUSHION BOARD INTO THE FOUR CORNER OF CARTON, AS FIGURE 4.
- 4.在頂層蓋上1層隔板,用膠帶封上外箱,貼上相關標籤(如圖5).
4.) PUT ONE CLAPBOARD AT THE TOP SURFACE OF CARTON, THEN, SEAL THE CARTON WITH TRANSPARENT GLUE, AND PASTE LABEL AS FIGURE 5
- 5.尾數箱包裝時,產品不足一箱需用廢紙將紙箱填滿.
5). AS FOR SOME CARTON WHICH IS NOT FULL ENOUGH WITH PARTS, MUST FILL THE CARTON WITH SOME CUSHION PAPER.

注意事項：1).每盤REEL成品放置的位置要求一致。(EVERY REEL OF FINISHED PRODUCT PLACEMENT POSITION REQUIREMENTS)
2)注意成品放置的方向性(PAY ATTENTION TO THE DIRECTION OF THE FINISHED PRODUCT PLACEMENT)

3.包裝BOM.THE DETAIL BOM IS AS BELOW:

DESCRIPTION	P/N	SPECIFICATION	Q'TY(PCS)	單量(g) WEIGHT(g)	包裝容量 WEIGHT PER BOX
成品 FINAL PRODUCT	AAA-PCI-093-K01	MINI PCI_E 9.9H	1800	2.0915g	
外箱 CARTON	G09-1-35035-P02	340*340*325;K=K	1	1481.04	1800PCS / 箱 6卷 / 箱 300PCS / 卷 1800PCS/CARTON 6REELS/CARTON 300PCS/REEL
REEL	G09-4-30004-K01	W=44.5;13"	6	283	
Mini PCI_E 9.9H ---Carry Tape	G09-5-00062-K01	44*16*11.6;PS黑色 (BLACK)	31M	0.73	
Cover tape	G09-5-00004-P02	0.06*37.5;PE白色 (WHITE)	31M	0.073	
PE袋 PE BAG	G09-6-50002-P03	520*320*460;T=0.05mm	1	26.56	
隔板 CLAPBOARD	G09-3-30002-K01	320*320;單坑紙(SINGLE DIMPLE)	2	39.25	
護角 CUSHION BOARD	G09-3-35014-K01	350*310*6mm;B=C;	4	70.25	
本次修正摘要 DESCRIPTION		核准 APPROVED BY	審核 CHECKED BY		制定 PREPARED BY
去除氣泡墊 ROMOVE AIR BUBBLES MAT		Jie_Liao	Yusheng_Zhang		Changwei_Ke