

# CASTLENET TECHNOLOGY INC.

## APPROVAL SHEET

Parts No.: 2AN-C101BK-009R

Material Description: ANTENNA(6602113051-090)

UTAL 4.13MHA+CORE 90L BK ROHS


Manufacturer/Agency: 慶生

Mfg. Parts No.: \_\_\_\_\_

Original Vendor Name: \_\_\_\_\_

Sample Arrival Date: 2008-1-14

Comment: \_\_\_\_\_

Approval Dept. : <input checked="" type="checkbox"/> H/W <input type="checkbox"/> MD <input type="checkbox"/> PM <input type="checkbox"/> ME							
APPROVAL	H/W	MD	PE	ME	QA	PUR.	Others
林明輝		林明助	張進仲	X	林漢煊	趙永壽	X
D.C.C.    ISSUE				ISSUE    To			
				<input type="checkbox"/> CTI (IQC) <input type="checkbox"/> Vendor <input type="checkbox"/> CTK(IQC) <input type="checkbox"/> Other : _____			
				ISSUE                      From			
				<input checked="" type="checkbox"/> Headquarter : (CTI) No.64, Chung-Shan Rd. Tu-Cheng City, Taipei 236, Taiwan Tel:+886-2-2267-3858 Fax:+886-2-2269-7358 <input type="checkbox"/> China factory : (CTK) MaAnShan West Rd. BaCheng Town, KunShan City, JiangSu Province, China ZIP:215347			
File No.	AMI-810016						
http://www.castlnet.com.tw							

# 1CASTLENET TECHNOLOGY INC.

## CTI COMPONENT APPROVAL

Parts number 料號 : 2AN-C101BK-009R Date 日期 : 2008.1.9

Specifications 品名規格 : ANTENNA(6602113051-090) UFL v1.13MHF+CORE 90L BK RoHS

Supplier 廠商 : 慶陞

Regular parts 一般零件

Specify parts 指定零件

Recognition methods 承認方法 : Serial 系列  Single 單一  Other 其他

Packing Type :  TAPING  TRAY  TUBE  REEL  BULK  Others 依進貨包裝

Attention items during test 測試時應注意之事項 : \_\_\_\_\_

Sample testing result 測試結果 :

ELECTRICAL SPEC REVIEW  Ok  Reject NOTE:

MECHANICAL SPEC REVIEW  Ok  Reject NOTE:

FUNCTION TEST  Ok  Reject NOTE:

TEST PLATFORM (PRODUCT MODEL) :

TEST ITEM / METHOD/ RESULT :

CONCLUSION :  ACCEPT  REJECT

REMARK 備註: \_\_\_\_\_

APPROVE BY	TEST ENGINEER
<input checked="" type="checkbox"/> 林明輝	<input checked="" type="checkbox"/>

TO: 凱碩科技股份有限公司

## SPECIFICATION FOR APPROVAL

DESCRIPTION : ANTENNA-2.4G (BLACK)+1.13(90mm)+CORE+UFL  
CONNECTOR

PART NO :


慶陞 PART NO :

6602113051-090

DATE :

2007/12/24

PLEASE RETURN TO US ONE COPY OF " SPECIFICATION FOR APPROVAL  
" WITH YOUR APPROVED SIGNATURES

APPROVED SIGNATURES			
			

蘇州慶旺電子



慶陞工業股份有限公司  
KINSUN INDUSTRIES INC.

桃園縣中壢市普忠路 211 巷 20 號

TEL : 886-3-4353551

[Http://www.kinsun.com](http://www.kinsun.com)

FAX : 886-3-4353951

e-mail: [jason@kinsun.com](mailto:jason@kinsun.com)

# **TECHNICAL DATA**

## **Electrical Properties**

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**Frequency Range: 2.4~2.5GHz**

**Impedance: 50 Ohm nominal**

**V.S.W.R : 2.0**

**Gain: 2dBi±0.25**

**Radiation: Omni**

**Polarization: Vertical**

**Electrical Wave: Dipole Array**

**Connector: UFL Plug**

## **Mechanical Properties**

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**Antenna Cover: PU**

**Color : BLACK**

**Operation Temperature:-20 ~+60**

**Storage Temperature:-30 ~+75**

RoHS COMPLIANT

MECHANICAL

Antenna Cover : PU

Antenna Base : PC UL 94V-0

Color : Black

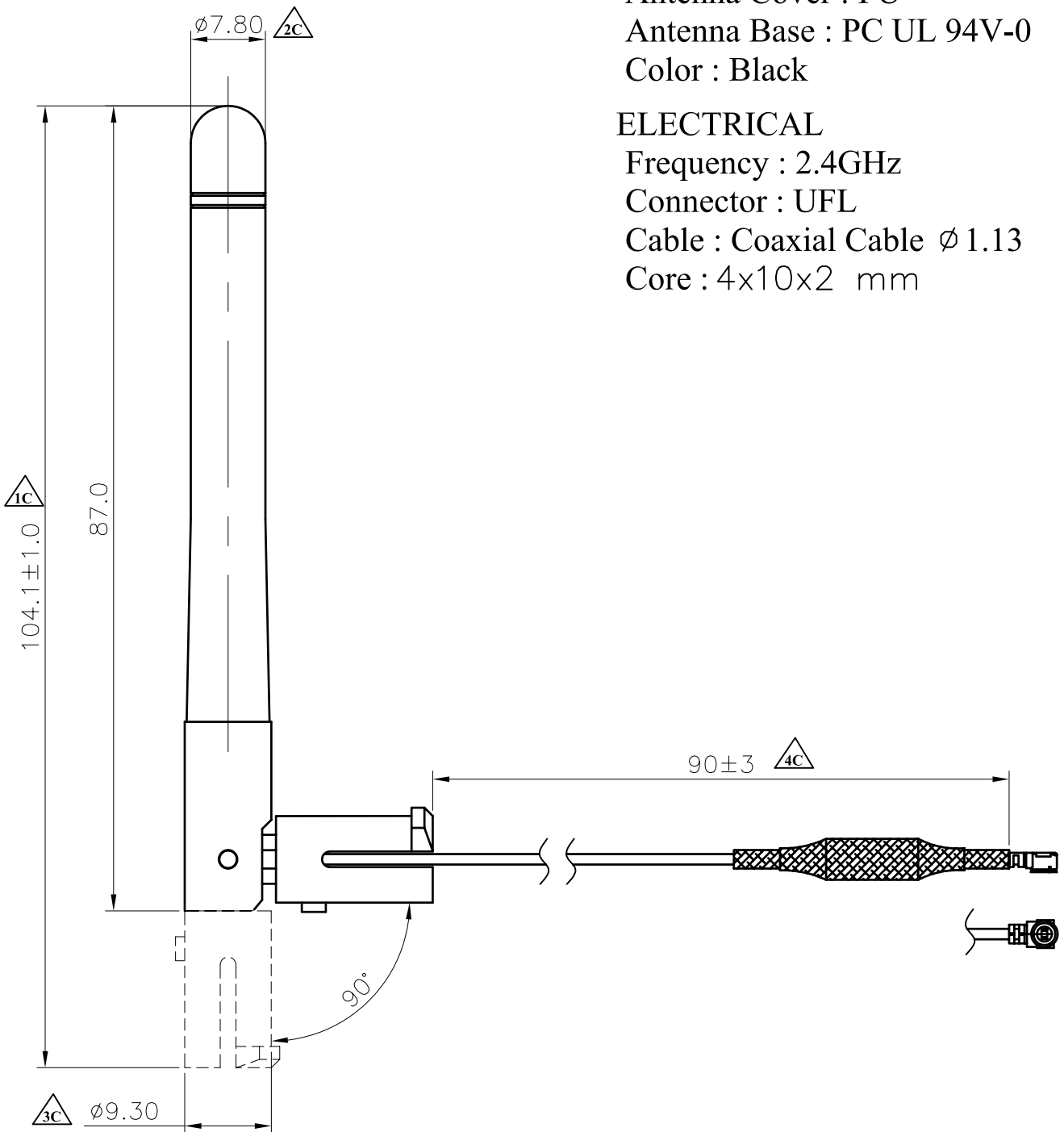
ELECTRICAL

Frequency : 2.4GHz

Connector : UFL

Cable : Coaxial Cable  $\phi$  1.13

Core : 4x10x2 mm



※凡標註△記號者，為品管檢驗之尺寸

設計DR. Marco 2007/12/20	核准APPD. Jerry 2007/12/20	容許公差 .XXX ±0.10 .XX ±0.25 .X ±0.38 X ±0.50 ANG ±3°	TOLERANCE	品名 ARTICLE 6602-2.4G-UFL
版本說明 REVISION NOTE				圖號 DWG NO. 6602113051-090
KINSUN 慶陞		單位 UNIT mm		比例 SCALE 1.5/1
		張數 SHEET 1/1		版本 REV. A

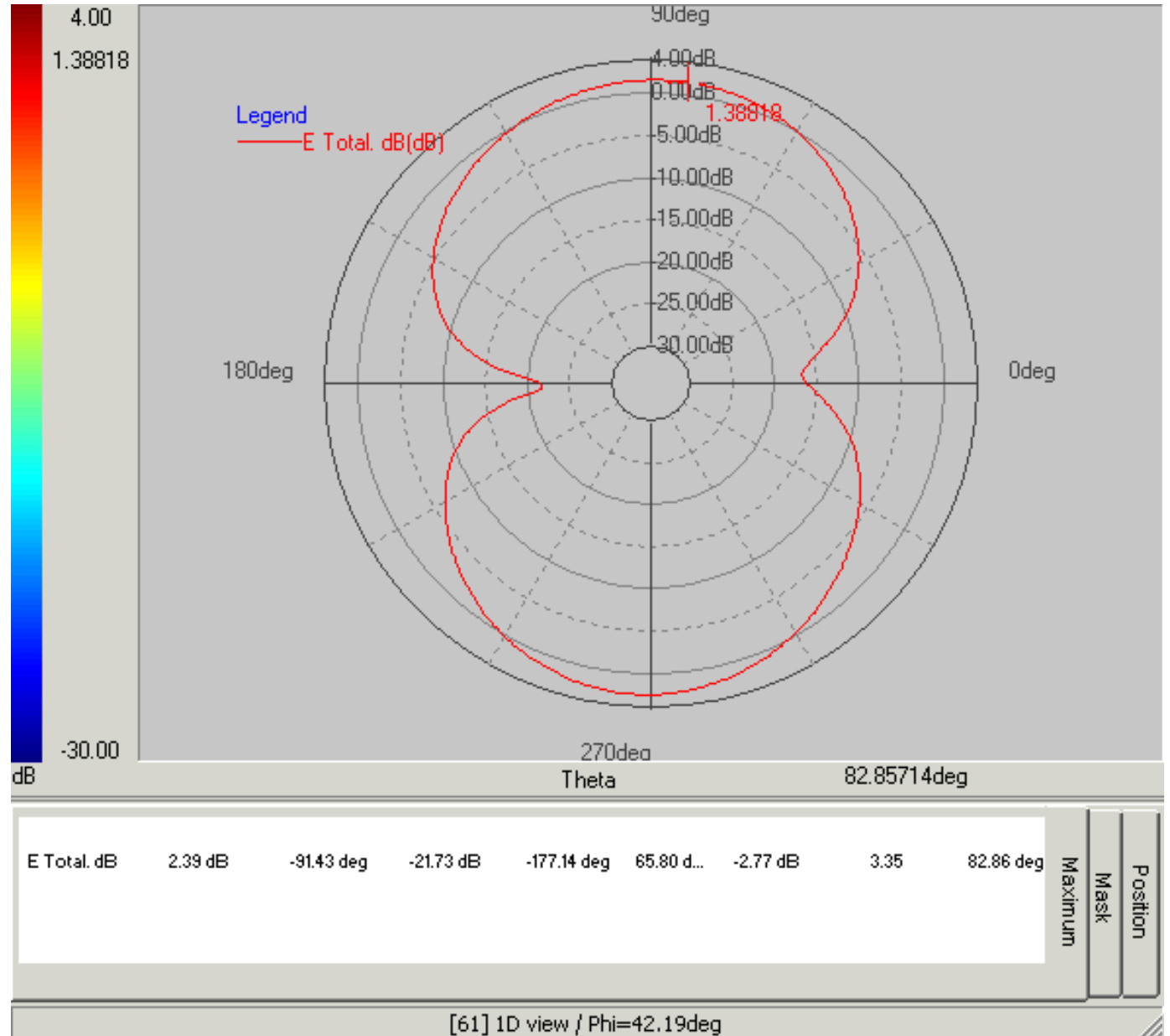
Brand / Model : 6602113051-090

Remark : 2450MHz

Tested by : Allen Yu

Date : 2007/12/25

Time : 下午 03 : 00



-- : Max. deg

\*Unit : dBi

Frequency(MHz) : **2450.00**

Pattern Field : **E plane**

Average Gain(dB) : **-2.77dB**

Maximum Gain(dB) : **2.39dB**

Maximum Gain(degree) : **-91.43**

Minimum Gain(dB) : **-21.73dB**

Minimum Gain(degree) : **-177.14**

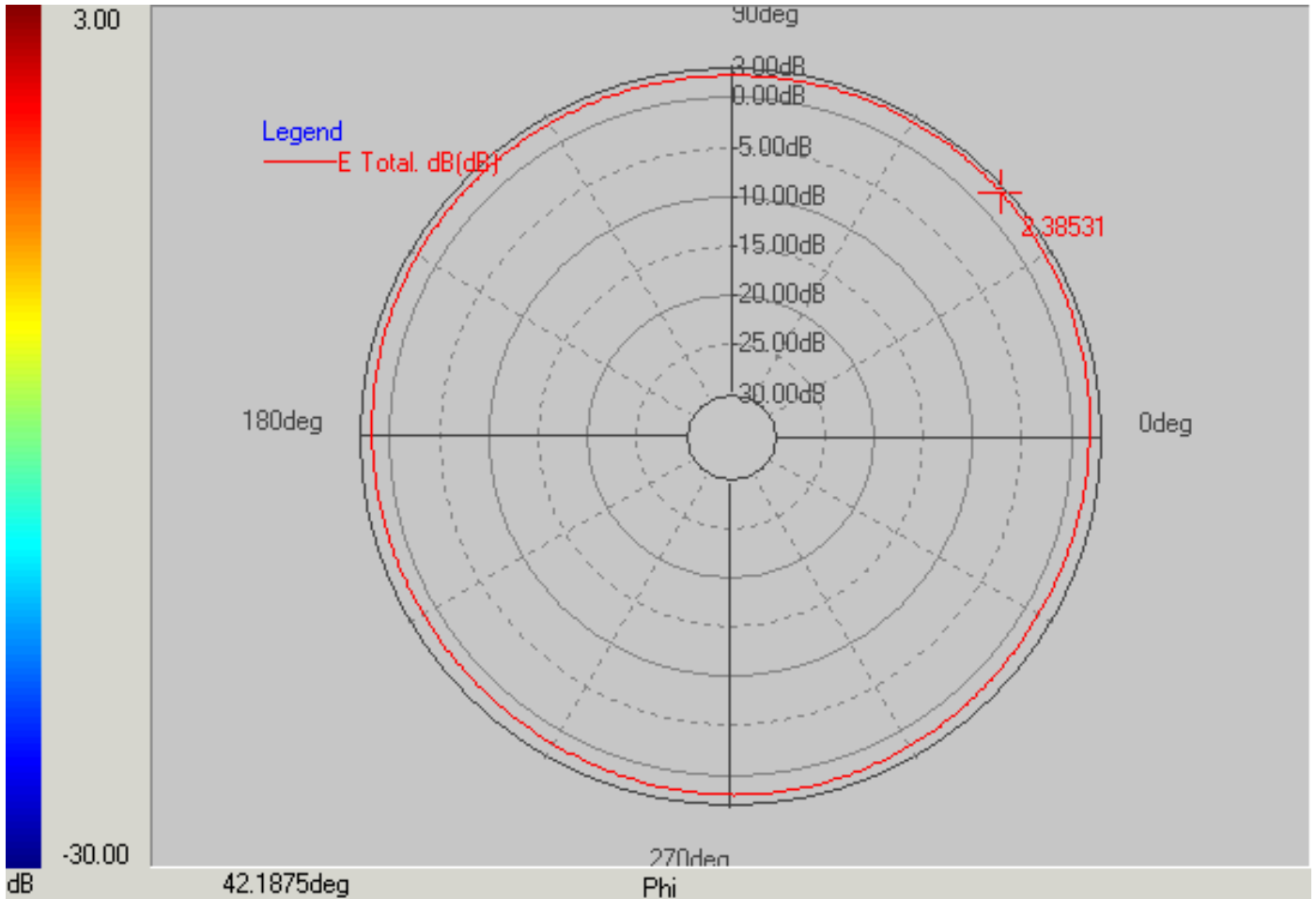
Brand / Model : 6602113051-090

Remark : 2450MHz

Tested by : Allen Yu

Date : 2007/12/25

Time : 下午 03 : 00



E Total. dB	2.39 dB	42.19 deg	1.38 dB	222.19 d...	---	1.89 dB	0.47	42.19 de	Maximum	Mask	Position
-------------	---------	-----------	---------	-------------	-----	---------	------	----------	---------	------	----------

[66] 1D view / Theta=-91.43deg

-- : Max. deg

\*Unit : dBi

Frequency(MHz) : **2450.00**

Pattern Field : **H plane**

Average Gain(dB) : **1.89dB**

Maximum Gain(dB) : **2.39dB**

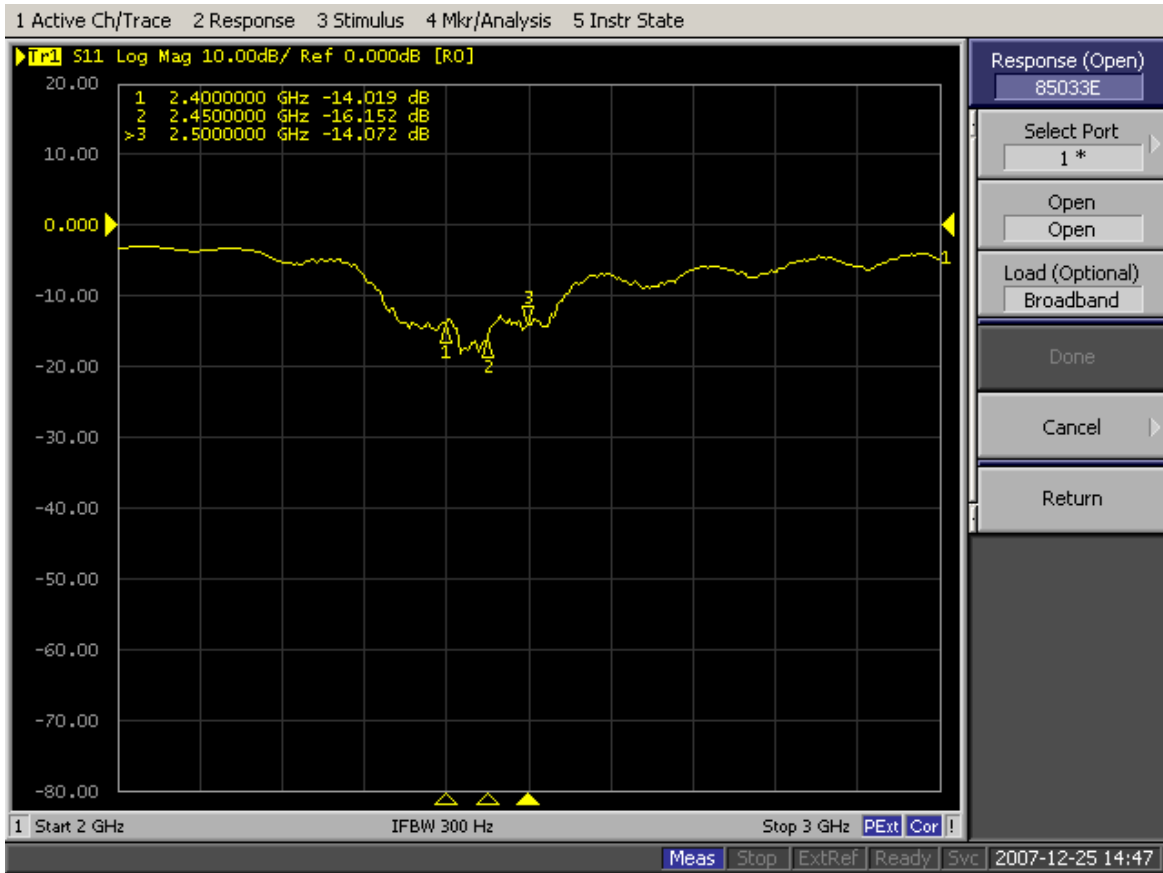
Maximum Gain(degree) : **42.19**

Minimum Gain(dB) : **1.38dB**

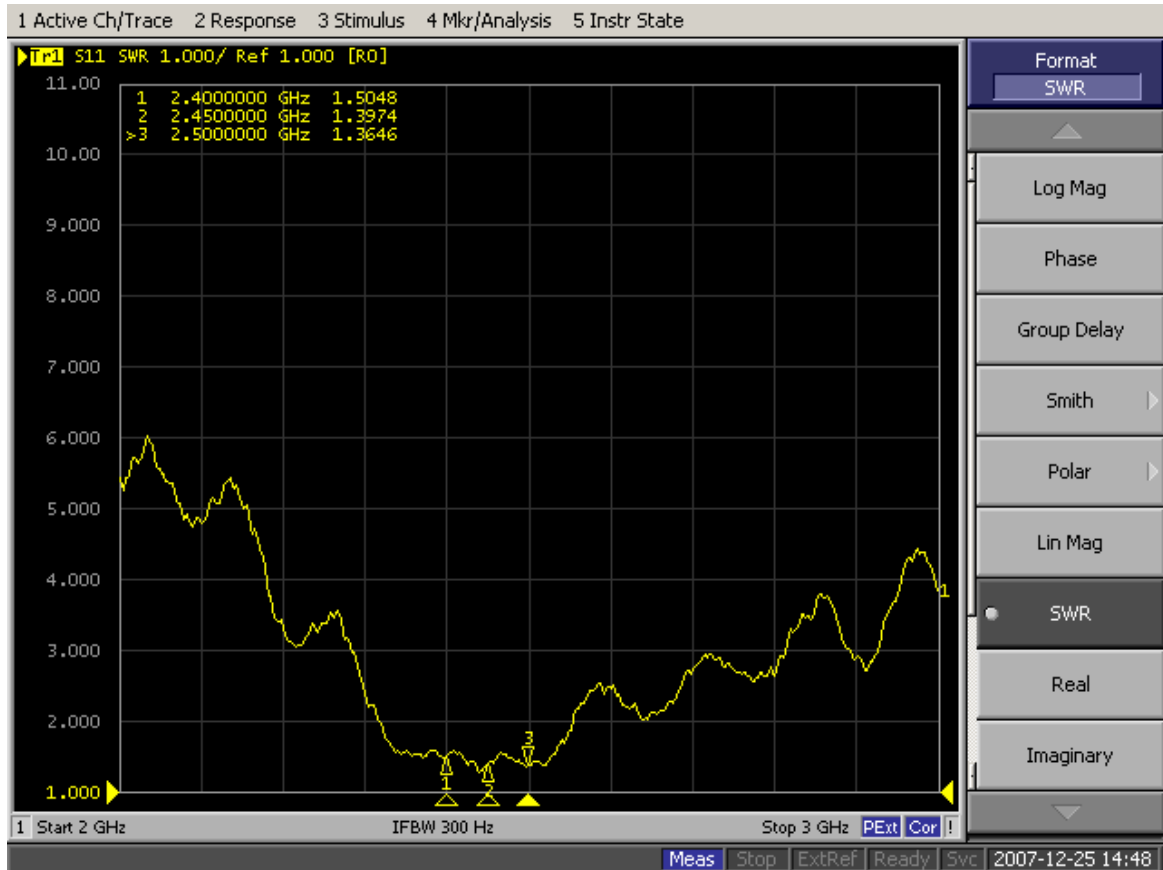
Minimum Gain(degree) : **222.19**

# 6602113051-090

## S11



## VSWR





# Elastollan<sup>®</sup> S Series

## Technical Bulletin

## Polyester Type

Elastollan<sup>®</sup> S series of products are polyester-based thermoplastic polyurethanes that exhibit good hydrolytic stability. They also exhibit good oil, fuel and solvent resistance. These products can be injection molded, blow molded and extruded. All grades should be dried before processing. Elastollan<sup>®</sup> products can be stored for up to 1 year in their original container. Containers should be stored in a cool, dry area.

**Extrusion grades: S90A**

**Injection molding grades: S80A to S60D**

Physical Properties	Units	ASTM Method	S80A <sup>3</sup>	S85A <sup>3</sup>	S90A <sup>3</sup>	S95A <sup>3</sup>	S98A <sup>3</sup>	S60D <sup>3</sup>
Specific gravity	gr./cm <sup>3</sup>	D-792	1.21	1.22	1.23	1.23	1.24	1.25
Hardness	Shore A D	D-2240	80 ± 2	85 ± 2 -	92 ± 2 41 ± 2	96 ± 2 48 ± 2	98 ± 2 54 ± 2	- 60 ± 2
Tensile strength	MPa psi	D-412	27.5 4000	34 4900	39 5600	42 6100	42 6100	43 6200
Tensile stress @100 % elongation	MPa psi	D-412	5.5 800	6.9 1000	11 1550	14 2000	19 2700	22 3200
@300 % elongation	MPa psi		9.6 1400	14 1980	20 2900	26 3800	32 4700	37 5300
Elongation @brk.	%	D-412	650	690	540	510	425	450
Tensile set @brk.	%	D-412	45	35	55	70	80	110
Tear strength	N/mm lb./in.	D-624 DIE C		104 590	128 730	154 875	185 1050	195 1150
Abrasion resistance	mg (Loss)	D-1044 <sup>2</sup> (Taber)	25	25	25	30	50	50

Test samples were cured 20 hours @ 100°C before testing.

**NOTE:** <sup>1</sup> These products can only be ordered in minimum quantities. Please contact your sales representative for details.

<sup>2</sup> H-18 wheel, 1000 gm weight and 1000 cycles.

<sup>3</sup> Products with an N designation do not contain hydrolytic stabilizers. Contact Elastollan Technical Service Rep for further information

**Caution:** Contact with product dusts from regrinding operations may cause temporary irritation of the eyes and the respiratory tract. Use with local exhaust. Under hot melt processing conditions (170-230 °C), wear personal protective equipment to prevent thermal burns.

**First aid:** *Eyes*-Flush eyes with flowing water at least 15 minutes. If irritation develops, consult a physician. *Skin*-Skin contact with hot melt may cause thermal burns. Call a physician immediately. *Inhalation*-If vapors generated from the hot melt process are inhaled, move to fresh air. Aid in breathing. If breathing difficulties develop, see a physician immediately.

**In case of fire:** Use water fog, foam, CO<sub>2</sub>, or dry chemical extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear.

**Disposal:** Waste material, unused contents and empty containers must be disposed of in accordance with applicable local, state or federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

**In case of chemical emergency:** Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents. 800-424-9300

**Attention:** This product is sold solely for use by industrial institutions. Refer to our Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

No warranties of any kind, either express or implied, including warranties of merchantability or fitness for a particular purpose, are made regarding products described or designs, data or information set forth or that the products designs, data or information may be used without infringing the intellectual property rights of others in no case shall the descriptions information, data or designs provided be considered a part of our terms and conditions of sale. Further, you expressly understand and agree that the descriptions, designs, data and information furnished by BASF hereunder are provided gratis and BASF assumes no obligation or liability for the description, designs data and information given or results obtained, all such being given and accepted at your risk.

BASF Corporation, 1609 Biddle Avenue, Wyandotte, Michigan 48192 (800) 892-3111 x21, [www.basf.com/elastollan](http://www.basf.com/elastollan)

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# BASF

# 日本帝人化成聚碳酸酯樹脂 POLYCARBONATE RESIN "TEIJIN PANLITE"

規 格	型 號	特 性	比 重	透 光 率	彎 曲 強 度	衝 擊 度	熱 變 形 度	成 收 縮 率		防 火 等 級
			g/cm <sup>3</sup>	3mm 厚度 %	kg/cm <sup>2</sup>	3mm 厚度 kg/cm/cm	12.5kg °C	徑 向 %	切 向 %	
高衝擊級	LE-1250	高衝擊、射出級	1.18	半透明	21,500	85	134	0.5 ~ 0.9		HB
防火級	LN-1250 LN-2250	射出防火 V-0 易難型	1.22	80	22,900	80	136	0.5 ~ 0.7		V-0
	LN-1250G	射出防火 V-0 易難型	1.22	半透明	23,000	80	133	0.5 ~ 0.7		V-0
光高反射級	LD-1000RM	全反射耐衝擊透光性效	1.28	光線反射率 2mm 56 以上	25,000	80	134	0.4 ~ 0.6		
玻璃纖維強化級 PANLITE-G GLASS FIBRE RESIN- FORCED GRADE	G-3110	射出玻璃纖維 10 %	1.27	半透明	36,000	9	146	0.3 ~ 0.5 0.4 ~ 0.5		V-2 V-0
	G-3115	射出玻璃纖維 15 %	1.30	半透明	45,000	12	147	0.3 ~ 0.5 0.4 ~ 0.5		V-2 V-0
	G-3120	射出玻璃纖維 20 %	1.34	半透明	55,000	14	148	0.1 ~ 0.5 0.4 ~ 0.6		V-2 V-1
	G-3130	射出玻璃纖維 30 %	1.43	半透明	74,000	16	149	0.02 ~ 0.2 0.3 ~ 0.5		V-2 V-1
易離型級 PANLITE-G MOLD RELEASE GRADE	G-3110R	射出、易離型含玻璃纖維 10 %	1.27	不透明	36,000	9	145	0.3 ~ 0.5 0.4 ~ 0.5		V-2 V-0
	G-3130R	射出、易離型含玻璃纖維 30 %	1.43	不透明	74,000	12	150	0.02 ~ 0.2 0.3 ~ 0.5		V-2 V-1
外觀良好級 PANLITE-G GOOD APPEARANCE G- GRADE	G-3110H	射出、低屈曲含玻璃纖維 10 %	1.27	半透明	34,000	5	140	0.3 ~ 0.5 0.4 ~ 0.5		V-2 V-0
	G-3115H	射出、低屈曲含玻璃纖維 15 %	1.30	半透明	40,000	6		0.2 ~ 0.4 0.4 ~ 0.6		
	G-3120H	射出、低屈曲含玻璃纖維 20 %	1.34	半透明	47,000	6		0.2 ~ 0.4 0.4 ~ 0.5		
	G-3124H	射出、低屈曲含玻璃纖維 24 %		半透明	52,000	7		0.1 ~ 0.3 0.4 ~ 0.5		
	G-3130H	射出、低屈曲含玻璃纖維 30 %	1.43	半透明	65,000	9	142	0.1 ~ 0.3 0.3 ~ 0.5		V-2 V-1
低屈曲級 PANLITE-G LOW ANISOTROPIC G- GRADE	G-3110M	射出超低屈曲、外觀良好 含玻璃纖維 10 %	1.27	半透明	26,000	8	133	0.5 ~ 0.7		V-2 V-0
	G-3115M	射出超低屈曲、外觀良好含玻璃纖維 15 %	1.30	半透明	28,500	5	140	0.4 ~ 0.6		V-2
	G-3120M	射出超低屈曲、外觀良好含玻璃纖維 20 %	1.34	半透明	31,000	4	141	0.4 ~ 0.6		V-2
	G-3130M	射出超低屈曲、外觀良好 含玻璃纖維 30 %	1.43	半透明	40,000	2	135	0.3 ~ 0.5		V-2 V-1
玻璃纖維強化難燃級 FLAME RETARD GRADE	GN-3110	射出防火含玻璃纖維 10 %	1.28	半透明	36,000	7	146	0.3 ~ 0.5 0.4 ~ 0.6		V-0
	GN-3120	射出防火含玻璃纖維 20 %		半透明						V-0
	GN-3130	射出防火含玻璃纖維 30 %	1.44	半透明	75,000	12	149	0.02 ~ 0.2 0.3 ~ 0.5		V-0
FRICITION & AERA- SION RESISTANT 耐擦、耐蝕	GS-3130	射出、耐擦、耐蝕含玻璃纖維 30 %	1.51	半透明	77,000	14	150	0.02 ~ 0.2 0.3 ~ 0.5		V-1 V-0
	LS-1250	射出耐擦、耐蝕	1.28	半透明	21,500	12	136	0.5 ~ 0.7		V-2 V-0

◎ 以上表所列數值 僅供參考用

QMFZ2 Component - Plastics

Sunday, March 15, 1998

E50075

**TEIJIN CHEMICALS LTD**

HIBIYA DAIBIRU BLDG 2-2 UCHISAIWAI-CHO 1-CHOME CHIYODA-KU TOKYO 100-0011 JAPAN

Material Designation: **LN-1250G#(f1)\***

Product Description: Polycarbonate (PC), designated "Panlite" furnished as pellets, powder.

Color	Min. Thick (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str	IEC GWIT	IEC GWFI
ALL	1.0	V-0	1	2	125	105	115	-	-
	1.5	V-0	3	0	125	115	125	-	-
	3.0	V-0	3	0	125	115	125	-	-
	6.0	V-0	2	0	125	115	125	-	-

**CTI: 3**

**HVTR: 3**

**D495: 6**

**IEC BP: -**

# Material designation may be suffixed with any one or two letters.

(f1) Suitable for outdoor use with respect to exposure to Ultraviolet Light, Water Exposure and Immersion in accordance with UL 746C.

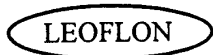
\* All colors except clear.

Report Date: 05/11/1989

Underwriters Laboratories Inc®

699748006

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.



# 藍菱電子科技有限公司

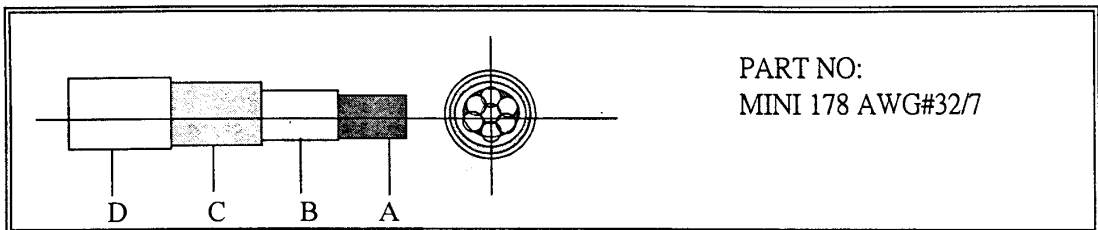
LEOFLON ELECTRONICS INDUSTRIAL CO., LTD.

TEL:886-2-2903-8223 FAX:886-2-2908-1221

台北縣新莊市中正路649-3號10樓

## 鐵氟龍高頻同軸電纜線

FEP TEFLON Coaxial Cable



PART NO:  
MINI 178 AWG#32/7

### SPECIFICATION

#### **A: CONDUCTOR**

Material	Silver Plated Copper
Stranding	7x0.079mm
Diameter	0.237mm

#### **B: INSULATION**

Material	FEP
Thickness	0.211mm
Diameter	0.66mm

#### **C: SHIELD**

Shield Type	Braid
Material	Silver Plated Copper
Coverage	95%
Diameter	0.9mm

#### **D: JACKET**

Material	FEP
Thickness	0.115mm
Overall Diameter	1.13mm

### MECHANICAL CHARACTERISTICS

Operating Temperature Range	-70°C ~ 200°C
Voltage	30V
Flame Test	UL-94

LEOFLON

# 藍菱電子科技有限公司

LEOFLON ELECTRONICS INDUSTRIAL CO., LTD.

TEL:886-2-2903-8223 FAX:886-2-2908-1221

台北縣新莊市中正路649-3號10樓

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Tensile Strength	Insulation 3789PSI
	Jacket: 4399PSI
Elongation	Insulation 320%
	Jacket: 330%

## ELECTRONICAL CHARACTERISTICS

Nom. Impedance	50Ohms
Nom. Capacitance	95pF/M
Nom. Velocity of Propagation	69%
Dielectric Strength	6KV 0.5mA/Minute
Spark Test	6KV
VSWR (0~6GHz)	Less 1.3
Attenuation (dB/M)	

500MHz	2.4GHz	5.2GHz	6GHz
1.23	2.7	4.89	5.12

# SPECIFICATION FOR APPROVAL

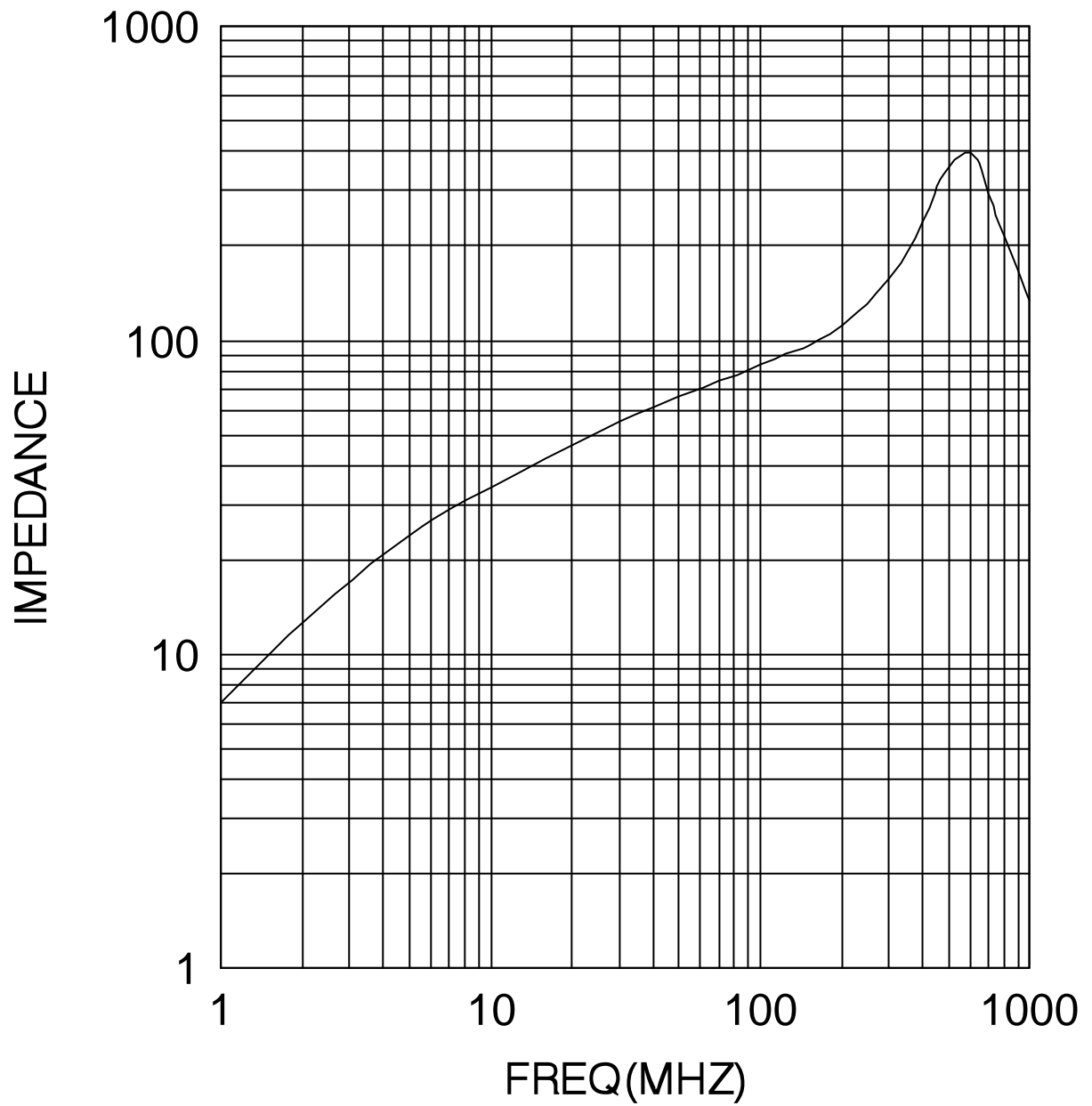
CUSTOMER:		CUST.P/N:		
ITEM:	K5B RH 4x10x2	K.C.P/N: PS0404IA		
(1) SHAPE :		A	4.0±0.2	m/m
		B	10.0±0.4	m/m
		C	2.0±0.15	m/m
		D		m/m
		E		m/m
		F		m/m
		G		m/m
(2) ELECTRICAL REQUIREMENTS:		(3) TEST CONDITIONS:		
$Z_1 = 37^{-0}$ OHM AT 25 MHz $Z_2 = 63^{-0}$ OHM AT 100 MHz		1 IMPEDANCE ANALYZER HP4191A TEST FIXTURE: HP16092A 2. WIRE: 0.65 T.C.W*63m/m1/2Ts 3. DRAWING: <div style="text-align: center;"> </div>		
(4) PACKING		(5) APPEARANCE		
<input checked="" type="checkbox"/> IN BULK <input type="checkbox"/> VACUUM <input type="checkbox"/> INSERTION 2000 PCS/BAGS* 4     BAG/INNER BOX* 4     BOXES/CARTON = 32000 PCS PCS/PLATE*     PLATES/CARTON=     PCS PCS/TRAY*     TRAYS/CARTON=     PCS		(1) AREA OF BREAK : < 2 m/m <sup>2</sup> (2) SUM OF BREAKING AREA : < 3 m/m <sup>2</sup> (3) DEPTH OF BREAK : < 1 m/m		
(6) REMARK:		Approved by 黃國章		
		Checked by 吳明珠		
		Drawn by 吳明珠		
		DWG.NO.		

# TEST DATA FOR PREPRODUCTION SAMPLES

CUSTOMER				CUST. P/N		
ITEM	<b><i>K5B RH 4x10x2</i></b>			K.C. P/N	<b><i>PS0404IA</i></b>	
TEMP.	<b>24 °C</b>	RH	<b>69</b> %	DWG.NO.		
WIRE	<i>0.65x63m/m</i> <b>T.C.W</b>	WINDING	<b>1/2</b> Ts	Q'TY		
Test Instruments						
Meas. Item.	<b>Z (OHM)</b>	<b>Z (OHM)</b>	<b>A m/m</b>	<b>B m/m</b>	<b>C m/m</b>	
Spec./ Yours.						
Spec./Suggest.	<b>37<sup>0</sup></b>	<b>63<sup>0</sup></b>	<b>4.0±0.2</b>	<b>10.0±0.4</b>	<b>2.0±0.15</b>	
Test Freq.	<b>25 MHZ</b>	<b>100 MHZ</b>				
<b>1</b>	<b>51</b>	<b>85</b>	<b>4.08</b>	<b>10.06</b>	<b>2.04</b>	
<b>2</b>	<b>50</b>	<b>84</b>	<b>4.06</b>	<b>10.12</b>	<b>2.02</b>	
<b>3</b>	<b>50</b>	<b>84</b>	<b>4.04</b>	<b>10.10</b>	<b>2.00</b>	
<b>4</b>	<b>50</b>	<b>84</b>	<b>4.04</b>	<b>10.10</b>	<b>2.00</b>	
<b>5</b>	<b>51</b>	<b>85</b>	<b>4.04</b>	<b>10.06</b>	<b>2.00</b>	
<b>6</b>						
<b>7</b>						
<b>8</b>						
<b>9</b>						
<b>10</b>						
$\bar{X}$	<b>50</b>	<b>84</b>	<b>4.05</b>	<b>10.09</b>	<b>2.01</b>	
<b>R</b>	<b>1</b>	<b>1</b>	<b>0.04</b>	<b>0.06</b>	<b>0.04</b>	
Your Sample.						
REMARK:				Approved by: 吴明珠		
				Checked by: 吴明珠		
				Drawn by: 吴明珠		

***KING CORE ELECTRONICS INC.***

# K5B RH 4x10x2





**PRODUCT SPECIFICATION**  
製品規格

**No. PRS-1176**

**MHF series micro coaxial connector**  
( Product No. Plug 20278, Rec. 20279)

**Qualification Test Report No. TR-1021**

6	S2084	K.O	DEC/19/'02	K.K			
5	S2082	K.O	DEC/05/'02	K.K			
4	S2076	K.O	Oct/17/'02	E.K	Prepared by	Reviewed by	Approved by
3	S2064	A.H	Sep/10/'02	K.K	K.Ohbayashi	E,Kawabe	K.Katabuchi
2	S2031	K.O	May/17/'02	K.K			
REV.	ECN	BY	DATE	APP.	JUN / 25 / 01	Jun / 25 / 01	Jun / 29 / 01
REVISION RECORD							

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<p>1. Scope / 序言 MHF series micro coaxial connector is a wire to board connector for AWG#36,32,30 coaxial cable . MHF series micro coaxial connector は、AWG # 36,32,30同軸ケーブルの基板対ワイヤーコネクタである。</p> <p>2. Objectives / 目的 This specification covers the requirements for product performance and test methods of MHF series microcoaxial connector 本規格は、MHF series micro coaxial connector の性能と試験条件について規定する。</p> <p>3. Part No. , construction , material and finish / 構成、材料及び仕上げ (1) Part No. Plug : 20278-***R-08,-13,-32,-18 , Receptacle : 20279-001E-01 (2) Construction, material and finish of the connector are covered as each drawings. 構成、材料及び仕上げは、各図面に指定されている通りとする。</p> <p>4. Applicable cable / 適合ケーブル 4-1 Part No. 20278-101R-08, 20278-111R-08 (1) Description Inner conductor : AWG#36(7/0.05) Silver plating annealed copper wire or silver plating tin-copper alloy Dielectric core : Fluoro-plastics ,diameter 0.4(+0.04,-0.02)mm , nominal thickness 0.125mm Outer conductor : 8/5/0.05 , nominal diameter 0.65mm , silver plating annealed copper wire Jacket : Fluoro-plastics , diameter 0.81(+0.04,-0.02)mm , nominal thickness 0.08mm (2) Requirements Characteristic impedance : 50(+2,-2)ohm by TDR method Nominal capacitance(Reference value): 96 pF/m Conductor resistance of inner conductor at 293K (20°C)(Reference value) : 1400 ohm/km Insulation resistance : 1000 mega-ohm.km MIN. Dielectric withstand voltage : no breakdown at AC1000V for 1 minutes.</p> <p>(1) 構成 中心導体 : AWG # 36 (7 / 0.05) , 銀メッキ軟銅線または銀メッキすず入り銅線 誘電体 : フッ素樹脂, 外径0.4(+0.04,-0.02) , 標準厚さ0.125mm 外部導体 : 8 / 5 / 0.05, 標準外径0.65mm, 銀メッキ軟銅線 ジャケット : フッ素樹脂, 外径0.81(+0.04,-0.02)mm, 標準厚さ0.08mm</p> <p>(2) 仕様 特性インピーダンス : 50±2 Ω (TDR) 標準静電容量(参考値) : 96pF/m 293K(20°C)時の中心導体導体抵抗(参考値) : 1400 Ω /km 絶縁抵抗 : 1000M Ω ·km以上 耐電圧 : AC1000V・1分間にて絶縁破壊の無い事</p> <p>4-2 Part No. 20278-101R-13, 20278-111R-13 (1) Description Inner conductor : AWG#32(7/0.08) Silver plating annealed copper wire or silver plating tin-copper alloy Dielectric core : Fluoro-plastics , diameter 0.68(+0.04,-0.02)mm , nominal thickness 0.22mm Outer conductor : 16/4/0.05 , nominal diameter 0.93mm , silver plating annealed copper wire Jacket : Fluoro-plastics , diameter 1.13(+0.08,-0.05)mm , nominal thickness 0.1mm</p>		

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## (2) Requirements

Characteristic impedance : 50(+2,-2)ohm by TDR method

Nominal capacitance(Reference value): 97 pF/m

Conductor resistance of inner conductor at 293K (20°C)(Reference value) : 520 ohm/km

Insulation resistance : 1500 mega-ohm.km MIN.

Dielectric withstand voltage : no breakdown at AC1000V for 1 minutes.

## (1) 構成

中心導体 : AWG # 32(7/0.08), 銀メッキ軟銅線または銀メッキすず入り銅線

誘電体 : フッ素樹脂, 外径0.68(+0.04,-0.02), 標準厚さ0.22mm

外部導体 : 16/4/0.05, 標準外径0.93mm, 銀メッキ軟銅線

ジャケット : フッ素樹脂, 外径1.13(+0.08,-0.05)mm, 標準厚さ0.1mm

## (2) 仕様

特性インピーダンス :  $50 \pm 2 \Omega$  (TDR)

標準静電容量(参考値) : 97pF/m

293K(20°C)時の中心導体導体抵抗(参考値) :  $520 \Omega / \text{km}$

絶縁抵抗 : 1500M  $\Omega \cdot \text{km}$ 以上

耐電圧 : AC1000V・1分間にて絶縁破壊の無い事

## 4-3 Part No. 20278-101R-32, 20278-111R-32

## (1) Description

Inner conductor : AWG#32(7/0.08)

Silver plating annealed copper wire or silver plating tin-copper alloy

Dielectric core : Fluoro-plastics , diameter 0.66(+0.05,-0.05)mm , nominal thickness 0.21mm

First outer conductor : 16/5/0.05, tin plating annealed copper wire

Second outer conductor : 16/6/0.05, nominal diameter 1.12mm , tin plating annealed copper wire

Jacket : Fluoro-plastics , diameter 1.32(+0.1,-0.1)mm , nominal thickness 0.1mm

## (2) Requirements

Characteristic impedance : 50(+2,-2)ohm by TDR method

Nominal capacitance(Reference value): 95 pF/m

Conductor resistance of inner conductor at 293K (20°C) (Reference value) : 520 ohm/km

Insulation resistance : 1500 mega-ohm.km MIN.

Dielectric withstand voltage : no breakdown at AC1000V for 1 minutes.

## (1) 構成

中心導体 : AWG # 32(7/0.08), 銀メッキ軟銅線または銀メッキすず入り銅線

誘電体 : フッ素樹脂, 外径0.66(+0.05,-0.05), 標準厚さ0.21mm

外部導体(内側) : 16/5/0.05, すずメッキ軟銅線

外部導体(外側) : 16/6/0.05, 標準外径1.12mm, すずメッキ軟銅線

ジャケット : フッ素樹脂, 外径1.32(+0.1,-0.1)mm, 標準厚さ0.1mm

## (2) 仕様

特性インピーダンス :  $50 \pm 2 \Omega$  (TDR)

標準静電容量(参考値) : 95pF/m

293K(20°C)時の中心導体導体抵抗(参考値) :  $520 \Omega / \text{km}$

絶縁抵抗 : 1500M  $\Omega \cdot \text{km}$ 以上

耐電圧 : AC1000V・1分間にて絶縁破壊の無い事

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<p>4-4 Part No. 20278-101R-18, 20278-111R-18 RG178 B/U</p> <p>(1) Description Inner conductor : AWG#30(7/0.102) , silver plating copper clad steel wire Dielectric core : Fluoro-plastics , diameter 0.84(+0.03,-0.03)mm , nominal thickness 0.268mm Outer conductor : 16/3/0.1 , nominal diameter 1.35mm , silver plating copper wire Jacket : Fluoro-plastics , diameter 1.8(+0.1,-0.1)mm , nominal thickness 0.23mm</p> <p>(2) Requirements Characteristic impedance : 50(+2,-2)ohm by TDR method Nominal capacitance(Reference value): 95 pF/m Conductor resistance of inner conductor at 293K (20°C) (Reference value) : 805 ohm/km Insulation resistance : 1500 mega-ohm.km MIN. Dielectric withstand voltage : no breakdown at AC2000V for 1 minutes.</p> <p>(1) 構成 中心導体 : AWG # 30(7/0.102),銀メッキ銅被鋼線 誘電体 : フッ素樹脂,外径0.84(±0.03),標準厚さ0.268mm 外部導体 : 16/3/0.1,標準外径1.35mm, 銀メッキ軟銅線 ジャケット : フッ素樹脂,外径1.8(±0.1)mm, 標準厚さ0.23mm</p> <p>(2) 仕様 特性インピーダンス : 50±2 Ω (TDR) 標準静電容量(参考値) : 95pF/m 293K(20°C)時の中心導体導体抵抗(参考値) : 805 Ω /km 絶縁抵抗 : 1500M Ω ・km以上 耐電圧 : AC2000V・1分間にて絶縁破壊の無い事</p> <p>5. Ratings / 定格 (1) Rated voltage / 電圧 : AC60Vrms (2) Nominal characteristic impedance / 公称特性インピーダンス : 50 Ω (3) Frequency / 周波数 : DC~6GHz (4) VSWR : Plug 1.3 MAX at 0.1~3GHz 1.5 MAX at 3~6GHz Receptacle 1.3 MAX at 0.1~3GHz. 1.4 MAX at 3~6GHz (5) Service Temperature / 使用温度範囲 : 233~363K(-40~+90°C)</p> <p>6. Test methods and performance / 試験及び性能</p> <p>6-1 Test condition / 試験条件 Unless otherwise specified, all tests and measurements shall be performed under the following conditions in accordance with MIL-STD-202 全ての測定と試験は、MIL-STD-202に基づき以下の条件で行う。 Temperature / 温度 : 288~308K (15~35°C) Humidity / 湿度 : 45~75%RH</p>		

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## 6-2 Sample quantity / 試料数

- (1) Insulation resistance / 絶縁抵抗 : 10pcs.
- (2) Dielectric withstanding voltage / 耐電圧 : 10pcs.
- (3) VSWR : 5pcs.
- (4) Unmating force / 抜去力 : 10pcs
- (5) Crimp strength / 引張強度 : 10pcs
- (6) Durability / 耐久性 : 10pcs.
- (7) Cable retention force / ケーブル保持力 : 10pcs.
- (8) Vibration / 振動 : 10pcs.
- (9) Shock / 衝撃 : 10pcs.
- (10) Thermal shock / 温度サイクル : 10pcs.
- (11) Humidity / 湿度 : 10pcs.
- (12) Salt water spray / 塩水噴霧 : 10pcs.
- (13) Solderability / 半田付け性 : 10pcs.
- (14) Reflow soldering heat resistance / 半田耐熱性 : 10pcs.

## 6-3-1 Electrical / 電氣的性能

## (1) Contact Resistance / 接触抵抗

A. Testing: Solder the receptacle connector to the test board and mate the plug connector together, then measure the contact resistance as shown in Fig.1 by the four terminal method. Apply the low level condition in accordance with MIL-STD-202, Method 307.

Open circuit voltage : 20mV MAX

Circuit current : 10mA MAX. (DC or AC1kHz)

Contact resistance of inner contact : <resistance of A-E> - <resistance of B-E>

Contact resistance of ground contact : <resistance of A-D> - <resistance of B-D>

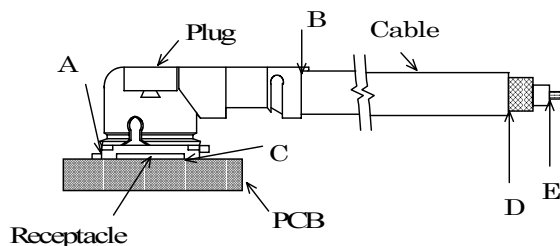


Fig.1

## B. Requirements :

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15milli-ohm MAX.

A. 試験法: テスト基板にリセプタクルコネクタを半田付けし、プラグコネクタと嵌合させ、Fig. 1のように4端子法にて下記の条件で測定する。 MIL-STD-202 試験法 307 に準拠。

開回路電圧: 20mV以下

試験電流 : 10mA (DCもしくはAC1kHz)

中心導体 : <A-E間の電気抵抗> - <B-E間の電気抵抗>

外部導体 : <A-D間の電気抵抗> - <B-D間の電気抵抗>

B. 必要条件: 中心導体 初期 20mΩ 以下, 試験後 25mΩ 以下

外部導体 初期 10mΩ 以下, 試験後 15mΩ 以下

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## (2) Insulation resistance / 絶縁抵抗

A. Testing : Mate the plug and receptacle connector together, then apply DC 100 V between the inner contact and the ground contact in accordance with MIL-STD-202, Method 302.

B. Requirements : Initial 500 Mohm MIN. after testing 100 Mohm MIN.

A. 試験法: リセプタクル及びプラグコネクタを互いに嵌合させ、中心導体と外部導体の間に DC 100Vを印加し、測定する。MIL-STD-202 試験法 302 に準拠。

B. 必要条件: 初期 500MΩ 以上 試験後 100MΩ 以上

## (3) Dielectric withstanding voltage / 耐電圧

A. Testing : Mate the receptacle and plug connector together, then apply AC 200 Vrms between the inner contact and the ground contact for a minute in accordance with MIL-STD-202, Method 301.

B. Requirements : No creeping discharge, flashover, nor insulator breakdown shall occur.

A. 試験法: リセプタクル及びプラグコネクタを互いに嵌合させ、中心導体と外部導体の間に AC 200V(実効値)を一分間印加する。MIL-STD-202 試験法 301 に準拠。

B. 必要条件: 沿面放電、空中放電、絶縁破壊等の異常のないこと。

## (4) VSWR

A. Testing : Measure the VSWR as shown in Fig.3 by the network analyzer.

Frequency : 100M~6GHz

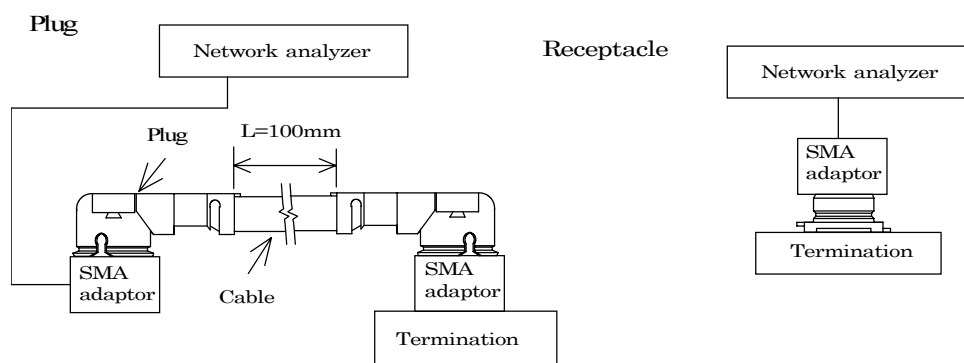


Fig.3

B. Requirements : Plug 1.3 MAX at 0.1~3GHz 1.5 MAX at 3~6GHz

Receptacle 1.3 MAX at 0.1~3GHz. 1.4 MAX at 3~6GHz

A. 試験法: ネットワークアナライザーにて Fig.3 のように VSWR を測定する。

周波数 : 100M~6GHz

B. 必要条件: Plug 1.3以下 0.1~3GHz 1.5以下 3~6GHz

Receptacle 1.3以下 0.1~3GHz 1.4以下 3~6GHz

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## 6-3-2 Mechanical / 機械的性能

## (1) Unmating force / 抜去力

A. Testing : Unmate the receptacle connector ( soldered to the test board) and plug at a speed  $25 \pm 3$ mm/minutes along the mating by the push-on/pull-off machine .

## B.Requirements :

Total unmating force : Initial 5N MIN. after 30 cycles 3N MIN.

Unmating force of inner contact : Initial 0.15N MIN. after 30 cycles 0.1N MIN

A.試験法:挿抜試験機を用いて、基板に半田付けしたリセプタクルとプラグを嵌合軸と平行に毎分 $25 \pm 3$ mmの速度で挿抜する。

## B.必要条件:

総合抜去力:初回抜去力 5N以上 ,30回後抜去力 3N以上

中心導体 :初回抜去力 0.15N以上 ,30回後抜去力 0.1N以上

## (2) Crimp strength / 引張強度

A. Testing : Pull the cable as shown in Fig.5 at a speed  $25 \pm 3$ mm/minutes by tensile strength machine.

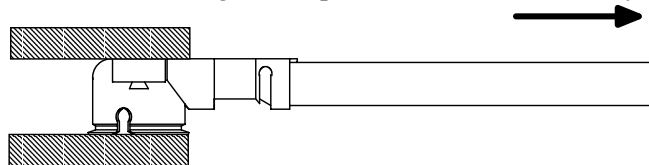


Fig.5

## B.Requirements : 10N MIN

A.試験法:引張試験機を用いて、毎分 $25 \pm 3$ mmの速度でケーブルを引張り、強度を測定する。

B.必要条件: 10N以上

## (3) Durability / 耐久性

A. Testing : Mate and umate the receptacle connector ( soldered to the test board) and plug 30 cycles at a speed  $25 \pm 3$ mm/minutes along the mating by the push-on/pull-off machine .

## B.Requirements :

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15milli-ohm MAX.

A.試験法:挿抜試験機を用いて、基板に半田付けしたリセプタクルとプラグを嵌合軸と平行に毎分 $25 \pm 3$ mmの速度で30回挿抜する。

B.必要条件 中心導体接触抵抗 : 初期 20m Ω 以下, 試験後 25m Ω 以下

外部導体接触抵抗 : 初期 10m Ω 以下, 試験後 15m Ω 以下

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## (4) Cable retention force / ケーブル保持力

A. Testing : Apply force on the cable as shown in Fig.2.

During the testing, run 100mA DC to check electrical discontinuity.

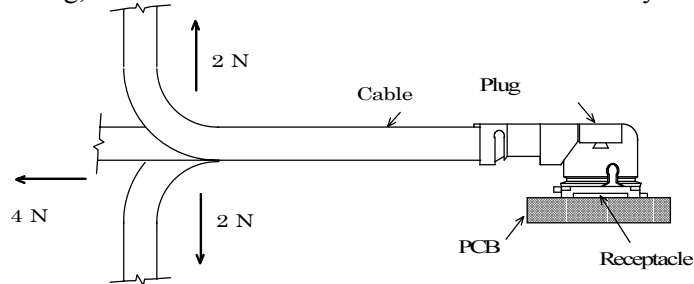


Fig.2

## B.Requirements

Appearance : Looseness between the parts, chipping, breakage or other abnormality shall not occur.

Electrical discontinuity : No electrical discontinuity grater than 1 micro-sec. shall occur.

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15milli-ohm MAX.

A. 試験法: Fig. 2のようにケーブルに力を加える。尚、試験中にDC100mAの電流を流して電氣的瞬断を確認する。

B. 必要条件 外観 : 部品のゆるみ、欠け、割れ、その他外観上の異常の無いこと。  
電流瞬断 : 試験中、1 マイクロ秒を超える電氣的瞬断の無いこと。  
中心導体接触抵抗 : 初期 20m Ω 以下、試験後 25m Ω 以下  
外部導体接触抵抗 : 初期 10m Ω 以下、試験後 15m Ω 以下

## (5) Vibration / 振動

A. Testing : Apply the following vibration to the mating connector .

During the testing, run 100mA DC to check electrical discontinuity.

Frequency : 10Hz → 100Hz → 10Hz / approx 15 minutes.

Half amplitude ,Peak value of acceleration: 1.5mm or 59m/s<sup>2</sup> (6G)

Directions , cycle : 3 mutually perpendicular direction ,  
5 cycles(approx 75min )about each direction

## B.Requirements

Appearance : Looseness between the parts, chipping, breakage or other abnormality shall not occur.

Electrical discontinuity : No electrical discontinuity grater than 1micro-sec. shall occur.

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15milli-ohm MAX.

A. 試験法: 嵌合状態のコネクタを、下記の振動を加える。尚、試験中にDC100mAの電流を流して電氣的瞬断を確認する。

周波数 : 10Hz→100Hz→10Hz / 約15分間

片振幅,加速度: 1. 5mm or 59m/s<sup>2</sup> (6G)

方向,サイクル: 3 つの互いに直角な方向について各5サイクル(約75分)実施

B. 必要条件 外観 : 部品のゆるみ、欠け、割れ、その他外観上の異常の無いこと。  
電流瞬断 : 試験中、1 マイクロ秒を超える電氣的瞬断の無いこと。  
中心導体接触抵抗 : 初期 20m Ω 以下、試験後 25m Ω 以下  
外部導体接触抵抗 : 初期 10m Ω 以下、試験後 15m Ω 以下



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## (6) Shock / 衝撃

A. Testing : Apply the following vibration to the mating connector in accordance with MIL-STD-202, Method 213, Condition B. During the testing, run 100mA DC to check electrical discontinuity.

Peak value of acceleration: 735m/s<sup>2</sup> (75G)

Duration : 11msec

Wave Form : half sinusoidal

Directions , cycle : 6 mutually perpendicular direction , 3 cycles about each direction

## B.Requirements

Appearance : Looseness between the parts, chipping, breakage or other abnormality shall not occur.

Electrical discontinuity : No electrical discontinuity greater than 1 micro-sec. shall occur.

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15milli-ohm MAX.

A.試験法: 嵌合状態のコネクタを、衝撃試験機に取り付け、下記の衝撃を加える。尚、試験中にDC100mAの電流を流して電氣的瞬断を確認する。MIN-STD-202 試験法 213 試験条件 B に準拠。

最大加速度: 735m/s<sup>2</sup>(75G)

標準持続時間: 11msec.

波形: 半波正弦波

方向: 直交する6方向、各3回

B.必要条件 外観 : 部品のゆるみ、欠け、割れ、その他外観上の異常の無いこと。

電流瞬断 : 試験中、1 マイクロ秒を超える電氣的瞬断の無いこと。

中心導体接触抵抗 : 初期 20m Ω 以下、試験後 25m Ω 以下

外部導体接触抵抗 : 初期 10m Ω 以下、試験後 15m Ω 以下

## 6-3-3 Environmental / 耐環境性

## (1) Thermal shock/ 温度サイクル

A. Testing : Apply the following environment to the mating connector .

Temperature ,duration

:233K/30minutes→278~308K/5minutes MAX.→363K/30minutes→278~308K/5minutes MAX.

(-40°C)

(5~35°C)

(90°C)

(5~35°C)

No. of cycles : 5 cycles

## B.Requirements

Appearance : Looseness between the parts, chipping, breakage or other abnormality shall not occur.

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15milli-ohm MAX.

Insulation resistance : initial 500 mega-ohm MIN. after testing 100 mega-ohm MIN.

A.試験法: 嵌合状態のコネクタを、下記の雰囲気放置する。

1サイクルの条件

:233K/30分→278~308K/5分以下→363K/30分→278~308K/5分以下

(-40°C)

(5~35°C)

(90°C)

(5~35°C)

実施サイクル : 5サイクル

B.必要条件 外観 : 部品のゆるみ、欠け、割れ、その他外観上の異常の無いこと。

中心導体接触抵抗 : 初期 20m Ω 以下、試験後 25m Ω 以下

外部導体接触抵抗 : 初期 10m Ω 以下、試験後 15m Ω 以下

絶縁抵抗 : 初期 500M Ω 以上 試験後 100M Ω 以上

DOCUMENT CLASSIFICATION	TITLE	No.
Product Specification 製品規格	MHF series micro coaxial connector	PRS-1176

## (2) Humidity / 湿度

A. Testing : Apply the following environment to the mating connector in accordance with MIL-STD-202, Method 103, Condition B .

Temperature :  $313 \pm 2$  K ( $40 \pm 2^\circ\text{C}$ )

Humidity : 90~95%RH

Duration : 96 hours

## B.Requirements

Appearance : Looseness between the parts, chipping, breakage or other abnormality shall not occur.

Contact resistance of inner contact initial 20 milli-ohm MAX. after testing 25milli-ohm MAX.

Contact resistance of ground contact initial 10 milli-ohm MAX. after testing 15milli-ohm MAX.

Insulation resistance : initial 500 mega-ohm MIN. after testing 100 mega-ohm MIN.

A.試験法: 嵌合状態のコネクタを、下記の雰囲気放置する。MIL-STD-202 試験法 103 条件 B に準拠。

温度:  $313 \pm 2$ K ( $40 \pm 2^\circ\text{C}$ )

湿度: 90~95%RH

時間: 96時間

B.必要条件 外観 : 部品のゆるみ、欠け、割れ、その他外観上の異常の無いこと。

中心導体接触抵抗 : 初期 20m Ω 以下, 試験後 25m Ω 以下

外部導体接触抵抗 : 初期 10m Ω 以下, 試験後 15m Ω 以下

絶縁抵抗 : 初期 500M Ω 以上 試験後 100M Ω 以上

## (3) Salt water spray / 塩水噴霧

A. Testing : Apply the following environment to the mating connector in accordance with MIL-STD-202, Method 101, Condition B.

Temperature :  $308 \pm 2$  K ( $35 \pm 2^\circ\text{C}$ )

Salt water density by weight :  $5 \pm 1\%$

Duration : 48 hours

B.Requirements : Appearance no abnormality adversely affecting the performance shall occur.

A.試験法: 嵌合状態のコネクタを、下記の雰囲気放置する。

温度 :  $308 \pm 2$ K ( $35 \pm 2^\circ\text{C}$ )

塩水濃度:  $5 \pm 1\%$  (重量比)

時間 : 48時間

B.必要条件 : 外観 著しい腐食の無い事。

DOCUMENT CLASSIFICATION Product Specification 製品規格	TITLE MHF series micro coaxial connector	No. PRS-1176
--	--	-----------------

## 6-3-4 Solder / 半田付け関連

## (1) Solderability / 半田付け性

A. Testing : Dip the solder tine of the contact in the solder bath at  $518 \pm 5 (245 \pm 5^\circ\text{C})$  for  $5 \pm 0.5$  sec.  
After immersing the tine in the flux of RMA or R type for 5 to 10 seconds in accordance with MIL-STD-202, Method 208.

B. Requirements : More than 95% of the dipped surface shall be evenly wet.

A. 試験法:コンタクトの半田付け部を $518 \pm 5\text{K} (245 \pm 5^\circ\text{C})$ の半田槽内に $5 \pm 0.5$ 秒浸す。フラックスは、RMA  
又はR型を使用し5~10秒間浸すものとする。MIL-STD-202、試験法208に準拠。

B. 必要条件:浸した面積の95%以上に半田がむらなく付着すること。

## (2) Reflow soldering heat resistance / 半田耐熱性

A. Testing : Put on the receptacle connector to PCB , apply the heat 2 cycles as shown in Fig. 4

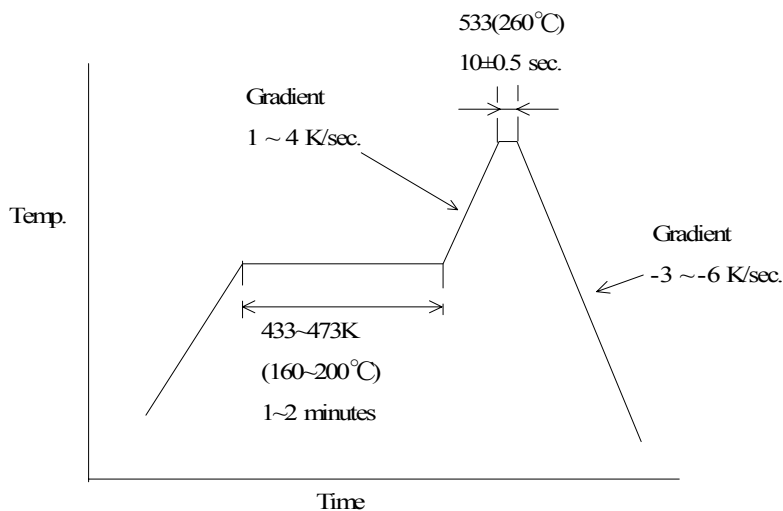


Fig4

B. Requirements : Appearance no abnormality adversely affecting the performance shall occur.

A. 試験法:基板にリセプタクルコネクタを置き、Fig. 4の条件で2回リフローを行う。

B. 必要条件:機能を損なう変形及び欠陥の無い事。

台灣雲林電子股份有限公司

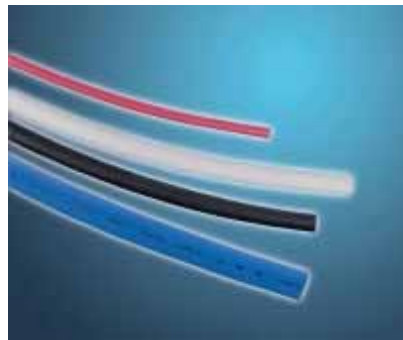
## 規格確認書

### G5(HF)

#### 低任意抽煙，鹵素聚烯烴管材

##### 應用

這是 **absolutely** 環境友好的 **heat-shrinkable** 管和由鹵素自由聚烯烴和材料不毒性煙亦不有害的物質做當燒。廣泛使用在電子、通信和汽車業減少毒力風險。



##### 特徵

- Low 煙放射
- Excellent 阻燃
- Low 溫度收縮

##### 操作溫度範圍

·Operating 溫度: -55°C ~ 125°C

·Minimum 抽縮溫度: 70°C

·Minimum 充分補救溫度: 110

## G5(HF) 低任意抽煙, 鹵素聚烯烴管材

### 產品 Dimensions

大小 (毫米)	作為供應(毫米)		作為補救(毫米)		包裹 (m/spool)	應用 範圍 (毫米)
	I.D	W.T	I.D (最大。)	W.T (分鐘。)		
φ 0.8	1.0.0.2	0.15.0.05	0.5	0.25.0.05	200	0.4~0.80
φ 1.0	1.5.0.3	0.20.0.05	0.6	0.33.0.05	200	0.5~0.90
φ 1.5	2.0.0.3	0.20.0.05	0.75	0.36.0.05	200	0.7~1.40
φ 2.0	2.5.0.3	0.20.0.05	1.0	0.44.0.05	200	1.0~1.80
φ 2.5	3.0.0.3	0.25.0.05	1.25	0.44.0.05	200	1.2~2.30
φ 3.0	3.5.0.3	0.25.0.05	1.5	0.44.0.05	200	1.5~2.70
φ 3.5	4.0.0.3	0.25.0.05	1.75	0.44.0.05	200	1.7~3.20
φ 4.0	4.5.0.3	0.25.0.05	2.0	0.44.0.05	200	2.0~3.60
φ 4.5	5.0.0.3	0.25.0.05	2.25	0.44.0.08	200	2.3~4.00
φ 5.0	5.5.0.3	0.25.0.05	2.5	0.56.0.08	100	2.5~4.50
φ 6.0	6.5.0.3	0.28.0.05	3.0	0.56.0.08	100	3.0~5.40
φ 7.0	7.6.0.3	0.30.0.06	3.5	0.56.0.08	100	3.5~6.30
φ 8.0	8.6.0.3	0.30.0.06	4.0	0.56.0.08	100	4.0~7.20
φ 9.0	9.6.0.3	0.30.0.06	4.5	0.56.0.08	100	4.5~8.00
φ 10.0	10.7.0.4	0.30.0.06	5.0	0.56.0.08	100	5.0~9.00
φ 11.0	11.7.0.4	0.30.0.06	5.5	0.56.0.08	100	5.0~10.0
φ 12.0	12.7.0.4	0.30.0.06	6.0	0.56.0.08	100	6.0~11.0
φ 13.0	13.7.0.4	0.35.0.07	6.5	0.69.0.08	100	6.5~12.0
φ 14.0	14.7.0.4	0.35.0.07	7.0	0.69.0.08	100	7.0~13.0
φ 15.0	15.7.0.5	0.35.0.07	7.5	0.69.0.08	100	7.5~14.0
φ 16.0	16.7.0.5	0.35.0.07	8.0	0.69.0.08	100	8.0~15.0
φ 17.0	17.5.0.6	0.35.0.12	8.5	0.70.0.08	100	8.8~16.0
φ 18.0	19.0.0.5	0.40.0.10	9.0	0.77.0.15	100	9.0~17.0
φ 20.0	21.0.0.5	0.40.0.10	10.0	0.77.0.15	50	10~19.0
φ 22.0	23.0.0.5	0.40.0.10	11.0	0.77.0.15	50	11~21.0
φ 25.0	26.0.1.0	0.45.0.10	12.5	0.87.0.15	50	12~24.0
φ 28.0	29.0.1.0	0.45.0.10	14.0	0.87.0.15	50	14~29.0
φ 30.0	31.5.0.7	0.45.0.15	15.0	0.95.0.15	50	15~29.0
φ 35.0	37.0.0.7	0.50.0.15	17.5	1.00.0.15	50	17~34.0
φ 40.0	40.5.0.7	0.50.0.15	20.0	1.00.0.15	50	20~39.0
φ 45.0	46.0.0.7	0.50.0.15	22.5	1.00.0.15	25	25~45.0
φ 50.0	50.5.0.7	0.50.0.15	25.0	1.00.0.15	25	35~70.0
φ 60.0	60.0.3.0	0.80.0.20	32.0	1.30.0.20	25	30~60.0
φ 70.0	70.0.3.0	0.80.0.20	35.0	1.50.0.20	25	35~70.0

φ 80.0	80.0.3.0	0.80.0.30	40.0	1.50.0.30	25	40~80.0
φ 90.0	90.0.4.0	0.80.0.30	43.0	1.50.0.30	25	50~100
φ 100	100.0.4.0	0.80.0.30	43.0	1.50.0.30	25	50~100
φ 120	120.0.4.0	0.80.0.30	56	1.50.0.30	15	60~120

顏色: black、white、red、blue、yellow、green, 其它顏色應要求。

特別大小, 被削減的片斷是可利用的應要求。

## G5(HF) 低任意抽煙, 鹵素聚烯烴管材

### 技術資料

	物產	規格要求	測試方法	典型的價值
物理	縱向收縮	5% 最大。	ASTM D 2671	≤5%
	同心	70%min 。	ASTM D 2671	≥70%
	抗拉強度	10.4MPa 分鐘。	ASTM D 638	≥12.0MPa
	伸長在斷裂	200% 分鐘。	ASTM D 638	≥300%
	熱震動	沒有崩裂	ASTM D 2671	通行證
	冷的彎(-55°C, 4 個小時。)	沒有崩裂	ASTM D 2671	通行證
	熱老化 158°C, 168 個小時。			
	抗拉強度在變老以後	70% 原物(分鐘。)	ASTM D 638	≥80%
	伸長在斷裂在變老以後	100% 分鐘。	ASTM D 638	≥200%
	電子	電介質電壓承受和故障	2500V, 60sec, 沒有故障	UL224
容量抵抗		10 <sup>14</sup> Ω · cm 分鐘。	ASTM D 876	≥10 <sup>14</sup> Ω · cm
化學製品	銅腐蝕	沒有腐蝕	ASTM D 2671	通行證
	銅穩定	伸長 ≥100%	ASTM D 2671	通行證
	燃燒性	VW-1	UL224	通行證

興

銅管材証

宜兴繁盛铜业有限公司

YiXing Fan Sheng COPPER Industry CO., Ltd.

No. 0002



发源编号

许可证 XK7-201-0024 产品质量证明书

质保书号 (98)

牌号名称	规格	状态	买	发	数	化学成分							杂质总和					
H66 铜管	25x1 m/m	Y2	件		2500 公斤	铜Cu	杂质	铁Fe	铅Pb	硫S	磷P	锡Sn	砷As	锑Sb	镍Ni	铋Bi	锌Zn	杂质总和
						64.2%	≤ 0.1%	0.1%	0.02%	%	%	%	0.07%	0.07%	%	%	≤ 0.1%	不大于 0.3% 0.1%
机械性能	抗拉强度 (不小于)	延伸率 (不小于)	直径公差	壁厚公差	执行标准													
	35 kg/mm <sup>2</sup>	30~35%	-0.15 m/m	±0.15 m/m	GB/T 1527-97													

注：(1)如对本产品有异议者，请于两周内提出，逾期本厂不予受理。(2)在提出时请注明质保书编号。

用户单位 广东车管厂铜管车间 2



# 測試報告

號碼：CE/2007/35653 日期：2007/03/22 頁數：1 of 6

協祐股份有限公司

WGJ COMPANY LTD.

桃園縣龜山鄉頂湖五街5號

5, TINGFU 5TH ST. TAKANG VILLAGE, KWEISHAN HSIANG, TAOYUAN HSIEN 333.

TAIWAN

以下測試樣品係由客戶送樣，且由客戶聲稱並經客戶確認如下(The following sample(s) was/were submitted and identified by/on behalf of the client as)：

樣品名稱(Sample Description) : BASF ELASTORAN S TYPE  
樣品型號(Style/Item No.) : S60A10WH, S70A10WH, S80A10, S85A10, S90A50, S95A50, S60D50, S64D50, S74D50, S80A50, S85A50, S85A51S, S98A53  
收件日期(Sample Receiving Date) : 2007/3/19  
測試期間(Testing Period) : 2007/3/19 TO 2007/03/22

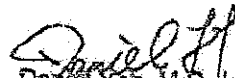
測試需求 / Test Requested : 參照 RoHS 2002/95/EC 及其修定指令要求。 / In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

測試方法 / Test Method : 參考 IEC 62321, Ed. 1 111/54/CDV 方法檢測。 / With reference to IEC 62321, Ed. 1 111/54/CDV. Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products.

- (1) 用感應耦合電漿原子發射光譜儀檢測鎘含量。 / Determination of Cadmium by ICP-AES.
- (2) 用感應耦合電漿原子發射光譜儀檢測鉛含量。 / Determination of Lead by ICP-AES.
- (3) 用感應耦合電漿原子發射光譜儀檢測汞含量。 / Determination of Mercury by ICP-AES.
- (4) 針對非金屬材質之樣品，用 UV-VIS 檢測六價鉻含量。 / Determination of Hexavalent Chromium for non-metallic samples by UV/Vis Spectrometry.
- (5) 以氣相層析儀/質譜儀檢測多溴聯苯和多溴聯苯醚含量。 / Determination of PBB and PBDE by GC/MS.

測試結果 / Test Result(s) : 請見下一頁。

結論 / Conclusion : 根據客戶所提供樣品的測試結果，符合 RoHS(2002/95/EC) 及其修定指令之要求。 / Based on the performed tests on submitted samples, the test results are compliant with the limits of RoHS Directive 2002/95/EC and its subsequent amendments.

  
Daniel Yen, M.P. / Operation Manager  
Signed for and on behalf of  
SGS TAIWAN LTD.

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# 測試報告

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協祐股份有限公司

WGJ COMPANY LTD.

桃園縣龜山鄉頂湖五街5號

5, TINGFU 5TH ST., TAKANG VILLAGE, KWEISHAN HSIANG, TAOYUAN HSIEN 333, TAIWAN



測試結果 (單位: mg/kg) / Test Result(s)

測試項目 / Test Item (s):	測試方法 Method (Refer to)	結果 / Result	方法偵測 極限值 (MDL)	RoHS 限值
		No.1		
鎘 / Cadmium (Cd)	(1)	n.d.	2	100
鉛 / Lead (Pb)	(2)	n.d.	2	1000
汞 / Mercury (Hg)	(3)	n.d.	2	1000
六價鉻 / Hexavalent Chromium Cr(VI) by alkaline extraction	(4)	n.d.	2	1000
多溴聯苯總和 / Sum of PBBs	(5)	n.d.	-	1000
一溴聯苯 / Monobromobiphenyl		n.d.	5	-
二溴聯苯 / Dibromobiphenyl		n.d.	5	-
三溴聯苯 / Tribromobiphenyl		n.d.	5	-
四溴聯苯 / Tetrabromobiphenyl		n.d.	5	-
五溴聯苯 / Pentabromobiphenyl		n.d.	5	-
六溴聯苯 / Hexabromobiphenyl		n.d.	5	-
七溴聯苯 / Heptabromobiphenyl		n.d.	5	-
八溴聯苯 / Octabromobiphenyl		n.d.	5	-
九溴聯苯 / Nonabromobiphenyl		n.d.	5	-
十溴聯苯 / Decabromobiphenyl		n.d.	5	-
多溴聯苯醚總和 (一至九溴) / Sum of PBDEs (Mono to Nona) (Note 4)		n.d.	-	1000
一溴聯苯醚 / Monobromobiphenyl ether		n.d.	5	-
二溴聯苯醚 / Dibromobiphenyl ether		n.d.	5	-
三溴聯苯醚 / Tribromobiphenyl ether		n.d.	5	-
四溴聯苯醚 / Tetrabromobiphenyl ether		n.d.	5	-
五溴聯苯醚 / Pentabromobiphenyl ether		n.d.	5	-
六溴聯苯醚 / Hexabromobiphenyl ether		n.d.	5	-
七溴聯苯醚 / Heptabromobiphenyl ether		n.d.	5	-
八溴聯苯醚 / Octabromobiphenyl ether		n.d.	5	-
九溴聯苯醚 / Nonabromobiphenyl ether		n.d.	5	-
十溴聯苯醚 / Decabromobiphenyl ether	n.d.	5	-	
多溴聯苯醚總和 (一至十溴) / Sum of PBDEs (Mono to Deca)	n.d.	-	-	

測試部位描述 / TEST PART DESCRIPTION:

NO.1 : 半透明塑膠粒 / SEMI-TRANSPARENT PLASTIC PELLETS

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## 測試報告

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協祐股份有限公司

WGJ COMPANY LTD.

桃園縣龜山鄉頂湖五街5號

5, TINGFU 5TH ST., IAKANG VILLAGE, KWEISHAN HSIANG, TAOYUAN HSIEN 333,  
TAIWAN



Note: 1. mg/kg = ppm

2. n.d. = Not Detected / 未檢出

3. MDL = Method Detection Limit / 方法偵測極限值

4. According to 2005/717/EC DecaBDE is exempt.

根據2005年10月13日歐盟會議公佈2005/717/EC，修訂2002/95/EC內容，通過解除  
高分子材質中十溴聯苯醚之使用限制。

5. "-" = Not Regulated / 無規格值

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SGS TAIWAN LIMITED

NO. 136-1, Wu Kung Road, WuKu Industrial Zone, Taipei county Taiwan.  
t(886-2) 22993939 f(886-2) 2299-3237 www.sgs.com.tw

## 測試報告

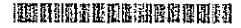
號碼：CE/2007/35653 日期：2007/03/22 頁數：4 of 6

協祐股份有限公司

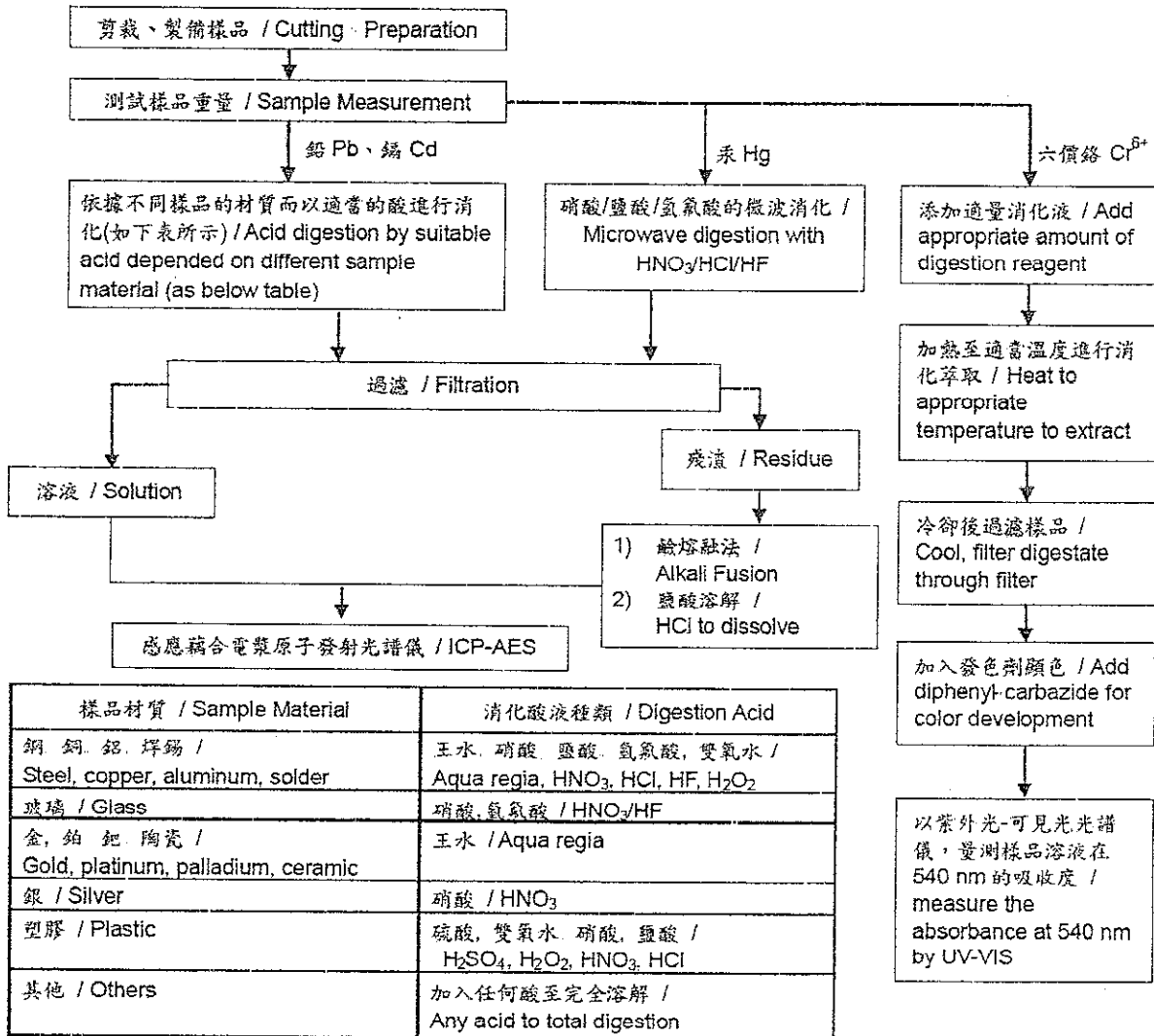
WGJ COMPANY LTD.

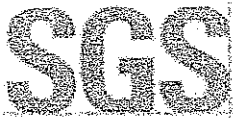
桃園縣龜山鄉頂湖五街5號

5, IINGFU 5TH ST., TAKANG VILLAGE, KWEISHAN HSIANG, TAoyUAN HSIEN 333, TAIWAN



- 1) 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. (Cr<sup>6+</sup> test method excluded)
- 2) 測試人員：張啓興 / Name of the person who made measurement: Troy Chang
- 3) 測試負責人：葉禮源 / Name of the person in charge of measurement: Daniel Yeh





# 測試報告

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日期 : 2007/03/22

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協祐股份有限公司

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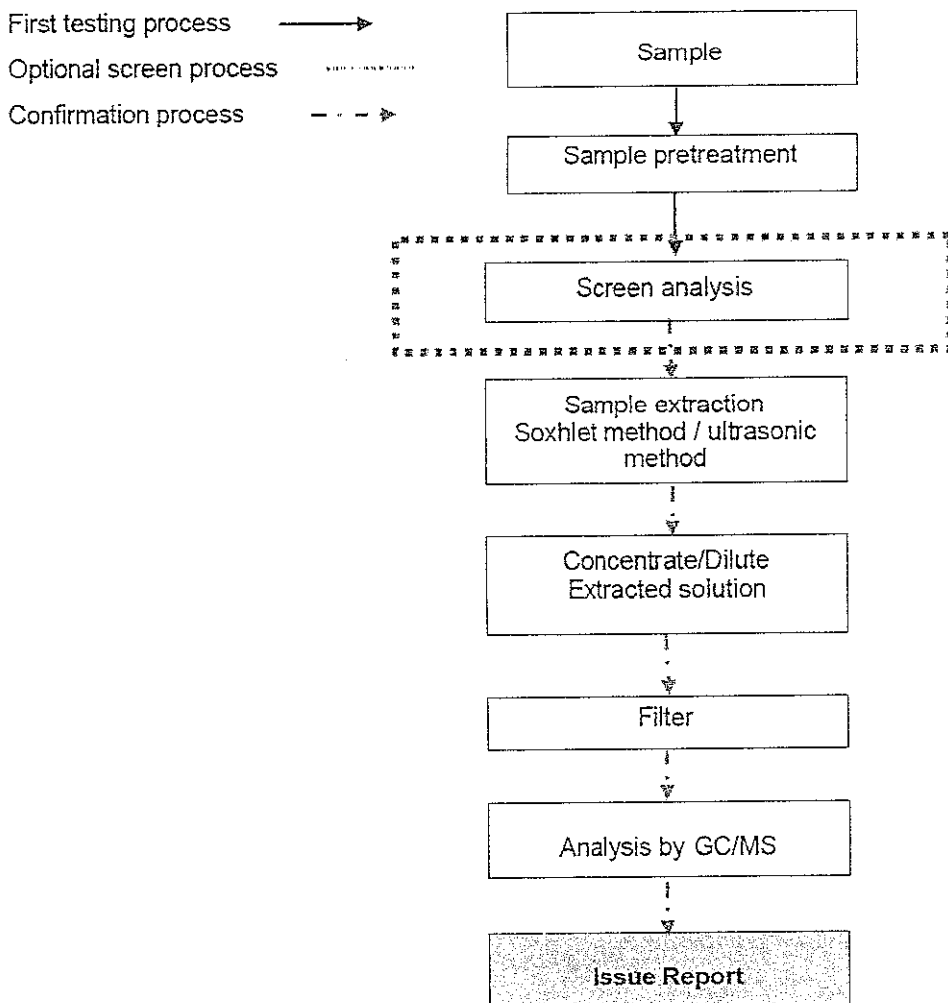
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5, TINGFU 5TH ST., IAKANG VILLAGE, KWEISHAN HSIANG, TAOYUAN HSIEN 333

TAIWAN



## PBB/PBDE analytical FLOW CHART



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SGS TAIWAN LIMITED

NO. 136-1, Wu Kung Road, WuKu Industrial Zone, Taipei county Taiwan  
t(886-2) 22993939 f(886-2) 2299-3237 www.sgs.com.tw

## 測試報告

號碼 : CE/2007/35653

日期 : 2007/03/22

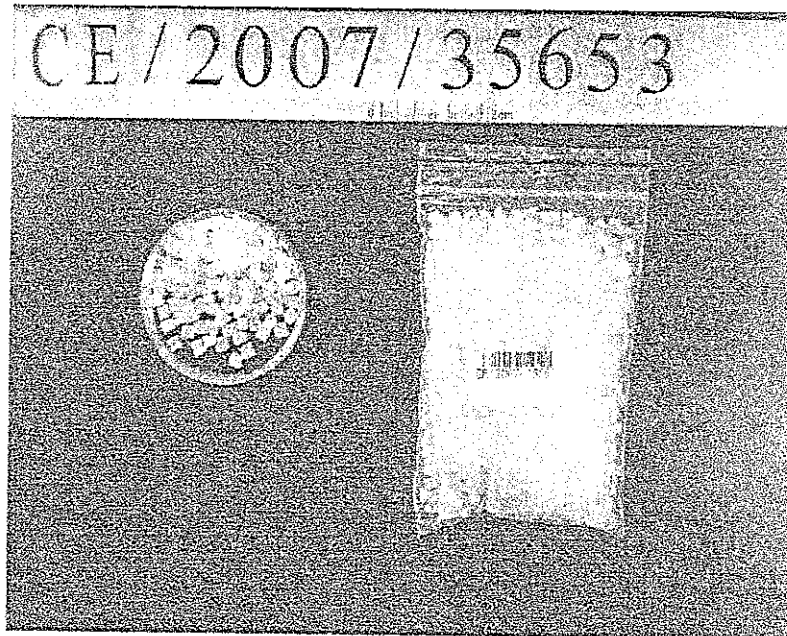
頁數 : 6 of 6

協祐股份有限公司

WGJ COMPANY LTD.

桃園縣龜山鄉頂湖五街5號

5, TINGFU 5TH ST., TAKANG VILLAGE, KWEISHAN HSIANG, TAOYUAN HSIEN 333,  
TAIWAN



\*\* 報告結尾 \*\*

# Test Report

No. : CE/2007/37979

Date : 2007/04/03

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TEIJIN KASEI TAIWAN CO., LTD.  
10F-2., NO. 87, SONG JIANG ROAD, (EMPIRE BLDG) TAIPEI,  
TAIWAN, R.O.C.



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


Sample Description : PLASTIC RESIN  
Style/Item No. : LN-1250G  
Sample Receiving Date : 2007/03/27  
Testing Period : 2007/03/27 TO 2007/04/03

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

**Test Method** : With reference to IEC 62321, Ed.1 111/54/CDV  
Procedures for the Determination of Levels of Regulated Substances in  
Electrotechnical Products.

- (1) Determination of Cadmium by ICP-AES.
- (2) Determination of Lead by ICP-AES.
- (3) Determination of Mercury by ICP-AES.
- (4) Determination of Hexavalent Chromium for non-metallic samples by UV/Vis Spectrometry.
- (5) Determination of PBB and PBDE by GC/MS.

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

  
Daniel Yeh, M.R. / Operation Manager  
Signed for and on behalf of  
SGS TAIWAN LTD.

# Test Report

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TEIJIN KASEI TAIWAN CO., LTD.  
10F-2., NO. 87, SONG JIANG ROAD, (EMPIRE BLDG) TAIPEI,  
TAIWAN, R.O.C.



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

Test Item (s):	Method (Refer to)	Result	MDL
		No.1	
Cadmium (Cd)	(1)	n.d.	2
Lead (Pb)	(2)	n.d.	2
Mercury (Hg)	(3)	n.d.	2
Hexavalent Chromium Cr(VI) by alkaline extraction	(4)	n.d.	2
<b>Sum of PBBs</b>	(5)	n.d.	-
Monobromobiphenyl		n.d.	5
Dibromobiphenyl		n.d.	5
Tribromobiphenyl		n.d.	5
Tetrabromobiphenyl		n.d.	5
Pentabromobiphenyl		n.d.	5
Hexabromobiphenyl		n.d.	5
Heptabromobiphenyl		n.d.	5
Octabromobiphenyl		n.d.	5
Nonabromobiphenyl		n.d.	5
Decabromobiphenyl		n.d.	5
<b>Sum of PBDEs (Mono to Nona) (Note 4)</b>		n.d.	-
Monobromobiphenyl ether		n.d.	5
Dibromobiphenyl ether		n.d.	5
Tribromobiphenyl ether		n.d.	5
Tetrabromobiphenyl ether		n.d.	5
Pentabromobiphenyl ether		n.d.	5
Hexabromobiphenyl ether		n.d.	5
Heptabromobiphenyl ether		n.d.	5
Octabromobiphenyl ether		n.d.	5
Nonabromobiphenyl ether		n.d.	5
Decabromobiphenyl ether		n.d.	5
<b>Sum of PBDEs (Mono to Deca)</b>		n.d.	-

## TEST PART DESCRIPTION:

NO.1 : BLACK PLASTIC PELLETS

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

# Test Report

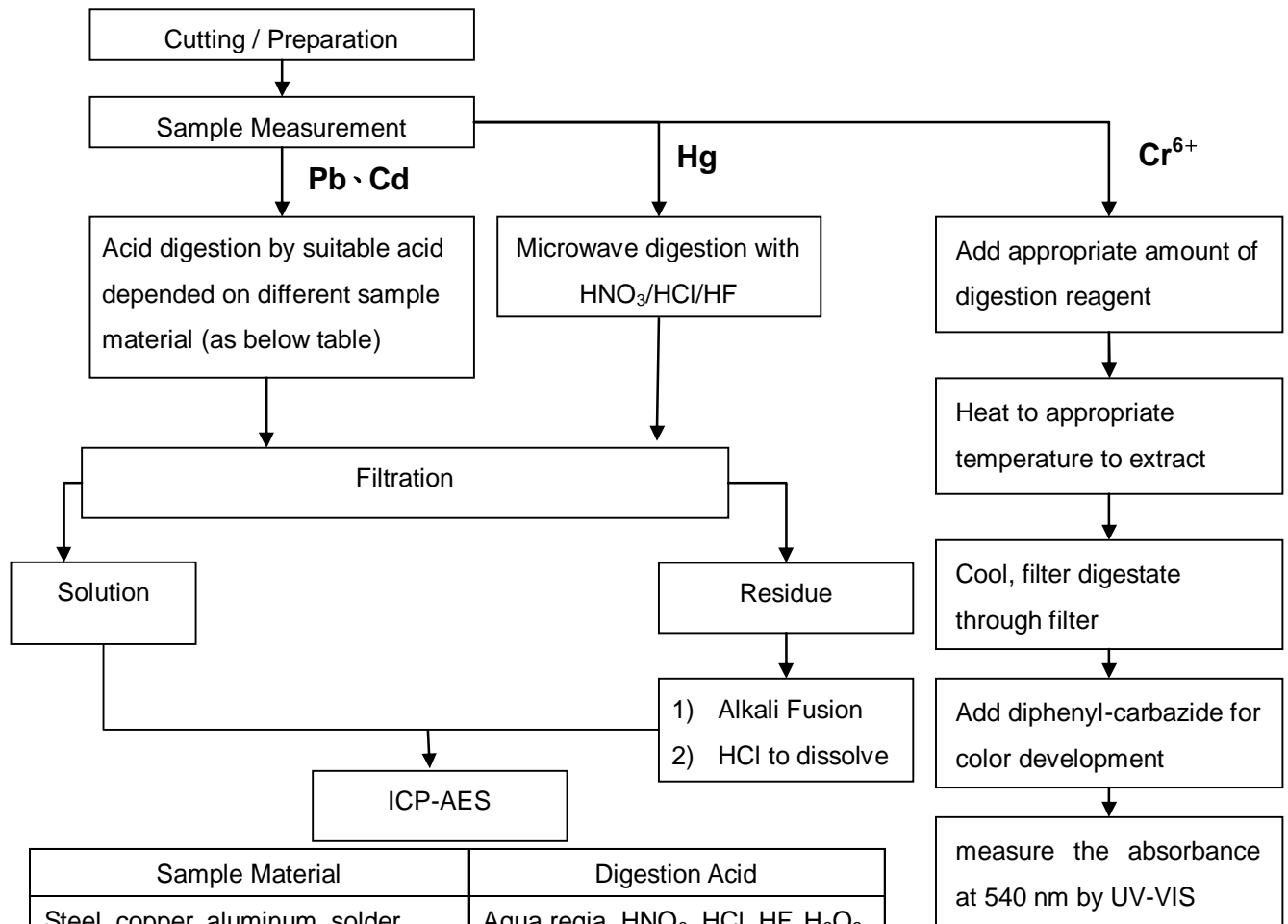
No. : CE/2007/37979 Date : 2007/04/03

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TEIJIN KASEI TAIWAN CO., LTD.  
10F-2., NO. 87, SONG JIANG ROAD, (EMPIRE BLDG) TAIPEI,  
TAIWAN, R.O.C.



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr6+ test method excluded)
- 2) Name of the person who made measurement: Troy Chang
- 3) Name of the person in charge of measurement: Daniel Yeh



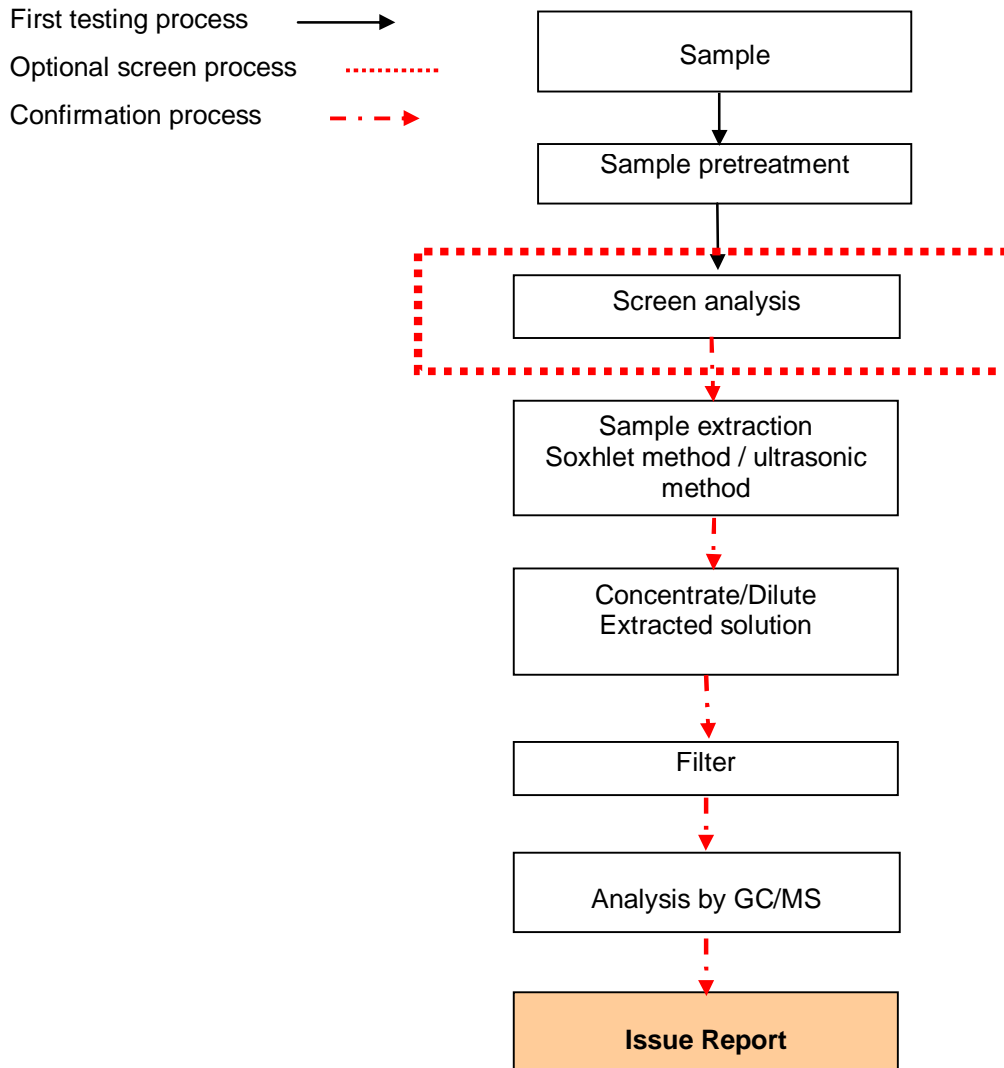
Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
Glass	HNO <sub>3</sub> /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO <sub>3</sub>
Plastic	H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl
Others	Any acid to total digestion



TEIJIN KASEI TAIWAN CO., LTD.  
 10F-2., NO. 87, SONG JIANG ROAD, (EMPIRE BLDG) TAIPEI,  
 TAIWAN, R.O.C.



## PBB/PBDE analytical FLOW CHART

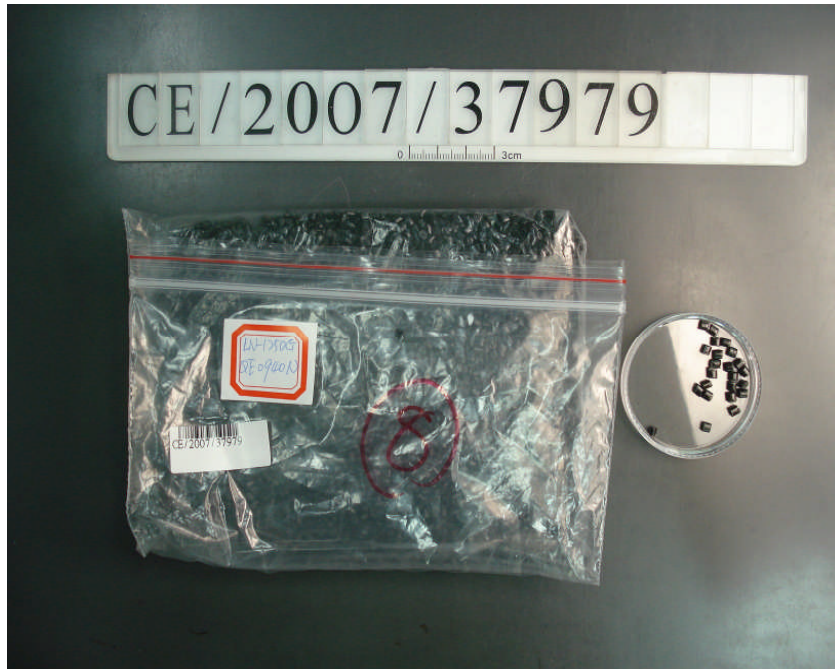


## Test Report

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TEIJIN KASEI TAIWAN CO., LTD.  
10F-2., NO. 87, SONG JIANG ROAD, (EMPIRE BLDG) TAIPEI,  
TAIWAN, R.O.C.



\*\* End of Report \*\*

# 測試報告 Test Report

號碼(No.): CE/2007/95287A

日期(Date): 2007/10/02

頁數(Page): 1 of 8

昶勤企業有限公司

SHEN GAU INDUSTRIAL CO., LTD.

台北縣新莊市五權二路26號7樓之3

7FL-3, NO. 26, WU CHUANG SECOND RD., WU KU INDUSTRIAL ZONE, HSIN CHUANG,

TAIPEI HSIEN, TAIWAN, R. O. C.



以下測試樣品係由客戶送樣，且由客戶聲稱並經客戶確認如下 (The following samples was/were submitted and identified by/on behalf of the client as):

樣品名稱(Sample Description) : 同軸線 (COAXIAL CABLE)  
 樣品型號(Style/Item No.) : REX50-SS32-113 (S) & (T), FEP-ALL COLORS  
 收件日期(Sample Receiving Date) : 2007/09/26  
 測試期間(Testing Period) : 2007/09/26 TO 2007/10/02

- =====  
**測試需求(Test Requested)** : 參照 RoHS 2002/95/EC 及其修定指令要求. (In accordance with the RoHS Directive 2002/95/EC, and its amendment directives).  
**測試方法(Test Method)** : (1) 參考IEC 62321, Ed. 1 111/54/CDV方法, 用感應耦合電漿原子發射光譜儀檢測鎘含量. / With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Cadmium by ICP-AES.  
 (2) 參考IEC 62321, Ed. 1 111/54/CDV方法, 用感應耦合電漿原子發射光譜儀檢測鉛含量. / With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Lead by ICP-AES.  
 (3) 參考IEC 62321, Ed. 1 111/54/CDV方法, 用感應耦合電漿原子發射光譜儀檢測汞含量. / With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Mercury by ICP-AES.  
 (4) 針對非金屬材質之樣品, 參考IEC 62321, Ed. 1 111/54/CDV方法檢測, 用UV-VIS檢測六價鉻含量. / With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Hexavalent Chromium for non-metallic samples by UV/Vis Spectrometry.  
 (5) 針對金屬材質之樣品, 參考BS EN ISO 3613:2001方法, 用UV-VIS檢測六價鉻含量. / With reference to BS EN ISO 3613:2001 for Hexavalent Chromium for metallic samples. Analysis was performed by UV-VIS Spectrometry.  
 (6) 參考IEC 62321, Ed. 1 111/54/CDV方法, 以氣相層析儀/質譜儀檢測多溴聯苯和多溴聯苯醚含量. / With reference to IEC 62321, Ed.1 111/54/CDV. Determination of PBB and PBDE by GC/MS.

**測試結果(Test Results)** : 請見下一頁 (Please refer to next pages).

\* 此份報告為合併CE/2007/95283及CE/2007/95287之報告 \*

(\* This report is combined with reports of CE/2007/95283 and CE/2007/95287 \*)



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

# 測試報告

## Test Report

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昶勤企業有限公司

SHEN GAU INDUSTRIAL CO., LTD.

台北縣新莊市五權二路26號7樓之3

7FL-3, NO. 26, WU CHUANG SECOND RD., WU KU INDUSTRIAL ZONE, HSIN CHUANG,  
TAIPEI HSIEN, TAIWAN, R. O. C.



測試結果(Test Results) 單位(Unit): mg/kg

測試項目 (Test Items)	測試方法 Method (Refer to)	結果 (Result)			方法偵測 極限值 (MDL)
		No.1	No.2	No.3	
鎘 / Cadmium (Cd)	(1)	n.d.	n.d.	n.d.	2
鉛 / Lead (Pb)	(2)	n.d.	n.d.	n.d.	2
汞 / Mercury (Hg)	(3)	n.d.	n.d.	n.d.	2
六價鉻 / Hexavalent Chromium Cr(VI) by alkaline extraction	(4)	n.d.	---	n.d.	2
六價鉻 / Hexavalent Chromium Cr(VI)	(5)	---	n.d.	---	See Note 7
<b>多溴聯苯總和 / Sum of PBBs</b>	(6)	n.d.	---	n.d.	-
一溴聯苯 / Monobromobiphenyl		n.d.	---	n.d.	5
二溴聯苯 / Dibromobiphenyl		n.d.	---	n.d.	5
三溴聯苯 / Tribromobiphenyl		n.d.	---	n.d.	5
四溴聯苯 / Tetrabromobiphenyl		n.d.	---	n.d.	5
五溴聯苯 / Pentabromobiphenyl		n.d.	---	n.d.	5
六溴聯苯 / Hexabromobiphenyl		n.d.	---	n.d.	5
七溴聯苯 / Heptabromobiphenyl		n.d.	---	n.d.	5
八溴聯苯 / Octabromobiphenyl		n.d.	---	n.d.	5
九溴聯苯 / Nonabromobiphenyl		n.d.	---	n.d.	5
十溴聯苯 / Decabromobiphenyl		n.d.	---	n.d.	5
<b>多溴聯苯醚總和 (一至九溴) / Sum of PBDEs (Mono to Nona) (Note 4)</b>		n.d.	---	n.d.	-
一溴聯苯醚 / Monobromobiphenyl ether		n.d.	---	n.d.	5
二溴聯苯醚 / Dibromobiphenyl ether		n.d.	---	n.d.	5
三溴聯苯醚 / Tribromobiphenyl ether		n.d.	---	n.d.	5
四溴聯苯醚 / Tetrabromobiphenyl ether		n.d.	---	n.d.	5
五溴聯苯醚 / Pentabromobiphenyl ether		n.d.	---	n.d.	5
六溴聯苯醚 / Hexabromobiphenyl ether		n.d.	---	n.d.	5
七溴聯苯醚 / Heptabromobiphenyl ether		n.d.	---	n.d.	5
八溴聯苯醚 / Octabromobiphenyl ether		n.d.	---	n.d.	5
九溴聯苯醚 / Nonabromobiphenyl ether	n.d.	---	n.d.	5	
十溴聯苯醚 / Decabromobiphenyl ether	n.d.	---	n.d.	5	
<b>多溴聯苯醚總和 (一至十溴) / Sum of PBDEs (Mono to Deca)</b>	n.d.	---	n.d.	-	

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昶勤企業有限公司

SHEN GAU INDUSTRIAL CO., LTD.

台北縣新莊市五權二路26號7樓之3

7FL-3, NO. 26, WU CHUANG SECOND RD., WU KU INDUSTRIAL ZONE, HSIN CHUANG,  
TAIPEI HSIEN, TAIWAN, R. O. C.



測試項目 (Test Items)	測試方法 Method (Refer to)	結果 (Result)		方法偵測 極限值 (MDL)
		No.4	No.5	
鎘 / Cadmium (Cd)	(1)	n.d.	n.d.	2
鉛 / Lead (Pb)	(2)	n.d.	n.d.	2
汞 / Mercury (Hg)	(3)	n.d.	n.d.	2
六價鉻 / Hexavalent Chromium Cr(VI)	(5)	n.d.	n.d.	See Note 7

## 測試部位描述 (TEST PART DESCRIPTION):

- NO.1 : 灰色塑膠外被 (特氟龍外被) (GRAY PLASTIC JACKET (特氟龍外被) (CE/2007/95283 NO.1))
- NO.2 : 銀色金屬內部導體 (鍍錫) (鍍錫銅線編織) (SILVER COLORED METAL STRAND CONDUCTOR (TIN PLATING) (鍍錫銅線編織) (CE/2007/95283 NO.2))
- NO.3 : 透明塑膠內被 (透明特氟龍絕緣) (TRANSPARENT PLASTIC INNER JACKET (透明特氟龍絕緣) (CE/2007/95283 NO.3))
- NO.4 : 銀色金屬線 (含鍍層) (鍍銀銅線導體) (SILVER COLORED METAL WIRE (INCLUDING THE PLATING LAYER) (鍍銀銅線導體) (CE/2007/95283 NO.4))
- NO.5 : 銀色金屬內部導體 (含銀) (鍍錫銅線編織) (SILVER COLORED METAL STRAND CONDUCTOR (SILVER PLATING) (鍍銀銅線編織) (CE/2007/95287))

## 備註(Note):

1. mg/kg = ppm
2. n.d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. 根據2005年10月13日歐盟會議公佈2005/717/EC, 修訂2002/95/EC內容, 通過解除高分子材質中十溴聯苯醚之使用限制. (According to 2005/717/EC DecaBDE is exempt.)
5. "-" = Not Regulated (無規格值)
6. "---" = Not Conducted (未測項目)
7. 方法偵測極限(Detection limit) =  $0.02 \mu\text{g}/\text{cm}^2$
8. 樣品的測試是基於申請人要求混合測試, 報告中的混合測試結果不代表其中個別單一材質的含量.  
(The samples was/were analyzed on behalf of the applicant as mixing sample in one testing.  
The above results was/were only given as the informality value).

# 測試報告 Test Report

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昶勤企業有限公司

SHEN GAU INDUSTRIAL CO., LTD.

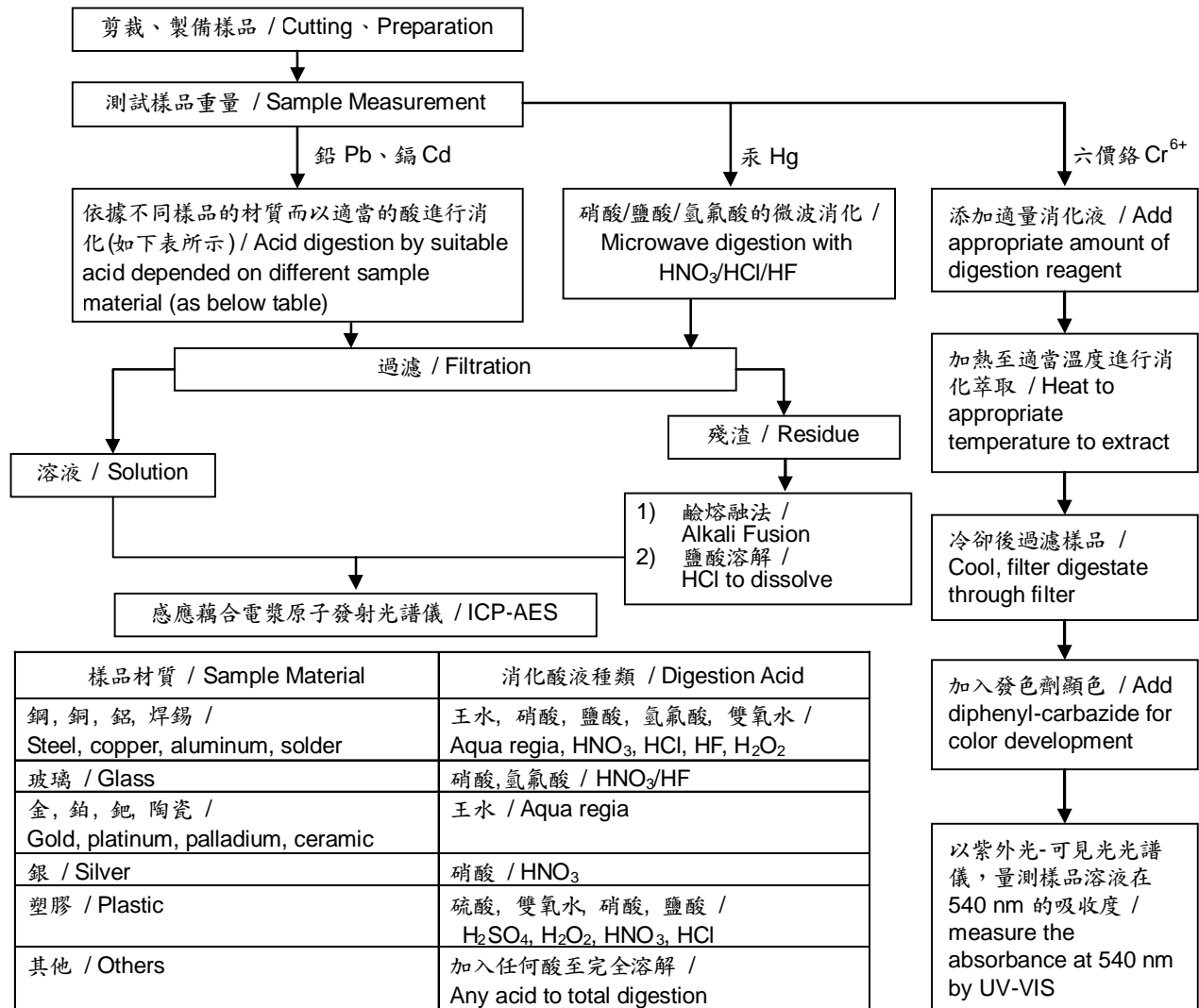
台北縣新莊市五權二路26號7樓之3

7FL-3, NO. 26, WU CHUANG SECOND RD., WU KU INDUSTRIAL ZONE, HSIN CHUANG,

TAIPEI HSIEN, TAIWAN, R. O. C.



- 1) 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. (Cr<sup>6+</sup> test method excluded)
- 2) 測試人員：張啓興 / Name of the person who made measurement: Troy Chang
- 3) 測試負責人：龔振裕 / Name of the person in charge of measurement: Chenyu Kung



# 測試報告 Test Report

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昶勤企業有限公司

SHEN GAU INDUSTRIAL CO., LTD.

台北縣新莊市五權二路26號7樓之3

7FL-3, NO. 26, WU CHUANG SECOND RD., WU KU INDUSTRIAL ZONE, HSIN CHUANG,

TAIPEI HSIEN, TAIWAN, R. O. C.

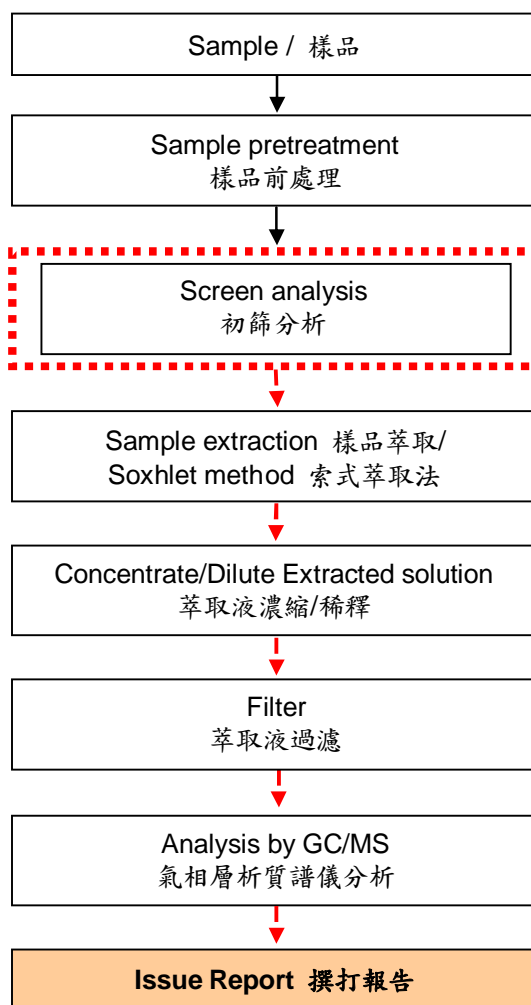


## 多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

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 - - - - -→



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SHEN GAU INDUSTRIAL CO., LTD.

台北縣新莊市五權二路26號7樓之3

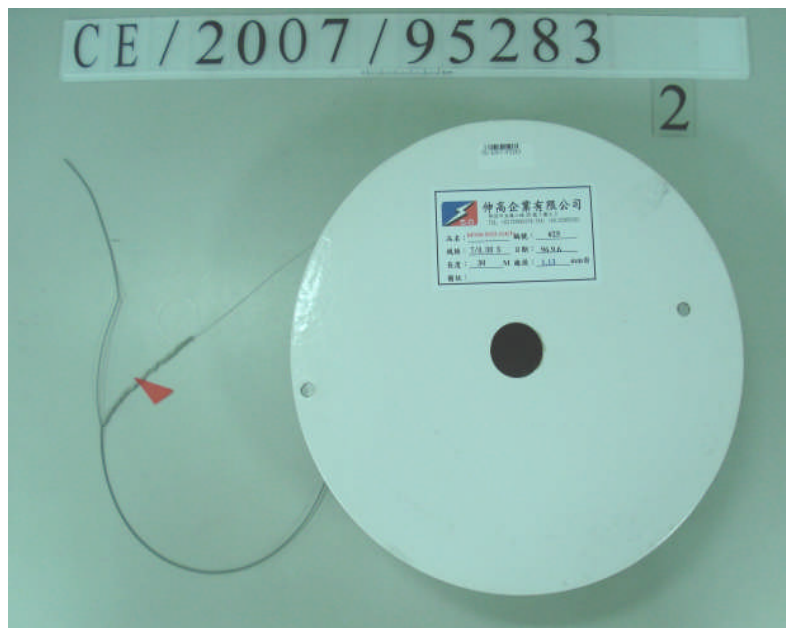
7FL-3, NO. 26, WU CHUANG SECOND RD., WU KU INDUSTRIAL ZONE, HSIN CHUANG,  
TAIPEI HSIEN, TAIWAN, R. O. C.



NO.1



NO.2





## 測試報告 Test Report

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日期(Date): 2007/10/02

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昶勤企業有限公司

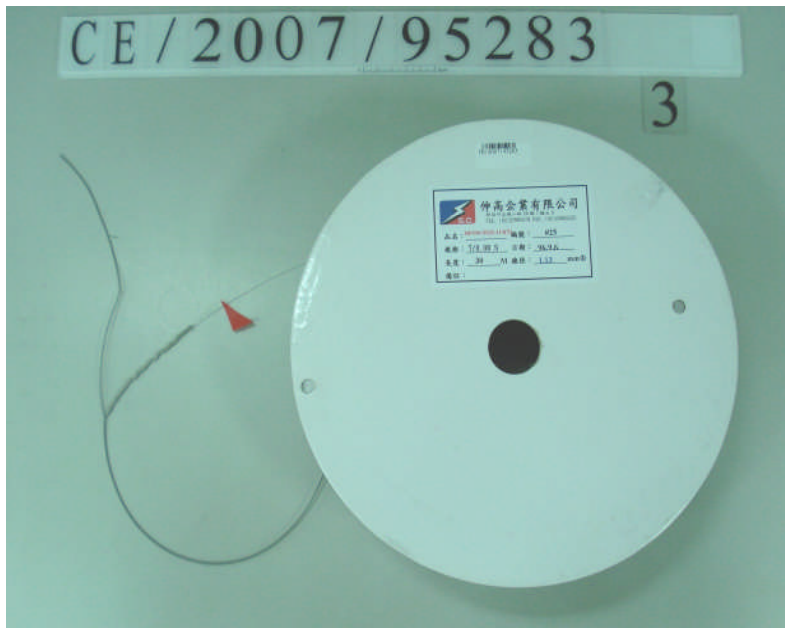
SHEN GAU INDUSTRIAL CO., LTD.

台北縣新莊市五權二路26號7樓之3

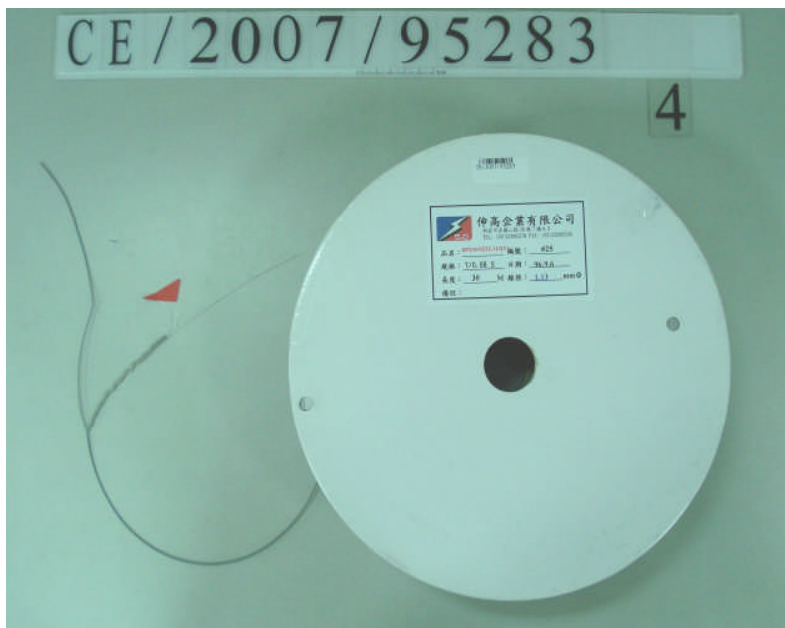
7FL-3, NO. 26, WU CHUANG SECOND RD., WU KU INDUSTRIAL ZONE, HSIN CHUANG,  
TAIPEI HSIEN, TAIWAN, R. O. C.



NO.3



NO.4



## 測試報告 Test Report

號碼(No.): CE/2007/95287A

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昶勤企業有限公司

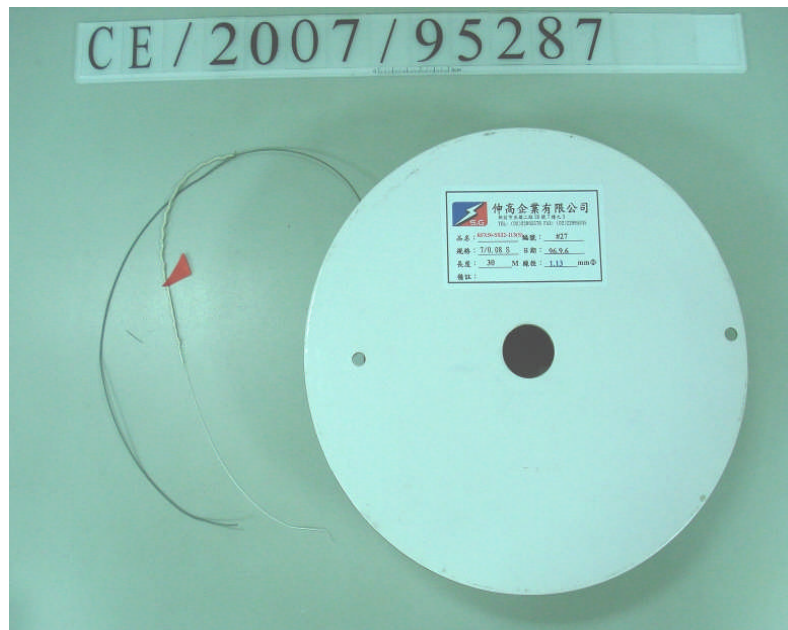
SHEN GAU INDUSTRIAL CO., LTD.

台北縣新莊市五權二路26號7樓之3

7FL-3, NO. 26, WU CHUANG SECOND RD., WU KU INDUSTRIAL ZONE, HSIN CHUANG,  
TAIPEI HSIEN, TAIWAN, R. O. C.



NO. 5



\*\* 報告結尾 \*\*



## 測試報告

號碼：CE/2007/71447

日期：2007/07/13

頁數：1 of 7

鈞寶電子工業股份有限公司

KING CORE ELECTRONICS INC.

桃園縣平鎮市平鎮工業區南豐路269號

NO. 269, NANFONG RD., PINGJHEN CITY, TAOYUAN COUNTY, TAIWAN

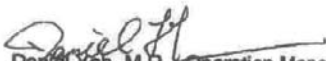


以下測試樣品係由客戶送樣，且由客戶聲稱並經客戶確認如下：

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

樣品名稱(Sample Description)	:	FERRITE CORE
樣品型號(Style/Item No.)	:	K5B SERIES
收件日期(Sample Receiving Date)	:	2007/07/06
測試期間(Testing Period)	:	2007/07/06 TO 2007/07/13

=====  
測試結果 : 請見下一頁。

  
Daniel Yeh, M.R., Operation Manager  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei

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NO. 136-1, Wu Kung Road, Wuku Industrial Zone, Taipei county, Taiwan.  
T(886-2) 22993939 F(886-2) 2299-3237 www.sgs.com.tw



## 測試報告

號碼：CE/2007/71447 日期：2007/07/13 頁數：2 of 7

鈞寶電子工業股份有限公司

KING CORE ELECTRONICS INC.

桃園縣平鎮市平鎮工業區南豐路269號

NO. 269, NANFONG RD., PINGJHEN CITY, TAOYUAN COUNTY, TAIWAN



### 測試結果

測試部位 NO.1 : 鐵灰色鐵芯 / IRON-GRAY CORE

測試項目 (Test Item)	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, Ed. 1 111/54/CDV 方法, 用感應耦合電漿原子發射光譜 儀 (ICP-AES) 檢測鎘含量. / With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Cadmium by ICP-AES.	2	n.d.
鉛 / Lead (Pb)	mg/kg	參考IEC 62321, Ed. 1 111/54/CDV 方法, 用感應耦合電漿原子發射光譜 儀 (ICP-AES) 檢測鉛含量. / With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Lead by ICP-AES.	2	n.d.
汞 / Mercury (Hg)	mg/kg	參考IEC 62321, Ed. 1 111/54/CDV 方法, 用感應耦合電漿原子發射光譜 儀 (ICP-AES) 檢測汞含量. / With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Mercury by ICP-AES.	2	n.d.
六價鉻 / Hexavalent Chromium Cr(VI) by Spot test / boiling water extraction	**	針對金屬材質之樣品, 參考IEC 62321, Ed. 1 111/54/CDV方法檢測. 用Spot test / Colorimetric方法檢 測六價鉻含量. / With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Hexavalent Chromium for metallic samples by Spot test / Colorimetric Method.	0.02mg/kg with 50 cm <sup>2</sup> surface area	Negative

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SGS TAIWAN LIMITED

NO. 136-1, Wu Kung Road, Wu Ku Industrial Zone, Taipei county, Taiwan.  
(886-2) 2299-9939 / (886-2) 2299-3237 www.sgs.com.tw



## 測試報告

號碼：CE/2007/71447 日期：2007/07/13 頁數：3 of 7

鈞寶電子工業股份有限公司  
KING CORE ELECTRONICS INC.  
桃園縣平鎮市平鎮工業區南豐路269號  
NO. 269, NANFONG RD., PINGJHEN CITY, TAOYUAN COUNTY, TAIWAN



測試項目 (Test Item)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				NO.1
鹵素 / HALOGEN	---	參考BS EN 14582附錄A, 以離子層析儀分析氯, 氟, 溴, 碘含量 / With reference to BS EN 14582 Annex A. Analysis was performed by IC method for F, Cl, Br, I content.	---	---
鹵素 (氯) / Halogen-Chlorine (Cl) (CAS No.: 007782-50-5)	mg/kg	參考BS EN 14582附錄A, 以離子層析儀分析氯含量 / With reference to BS EN 14582 Annex A. Analysis was performed by IC method for Chlorine content.	50	n.d.
鹵素 (氟) / Halogen-Fluorine (F) (CAS No.: 007782-41-4)	mg/kg	參考BS EN 14582附錄A, 以離子層析儀分析氟含量 / With reference to BS EN 14582 Annex A. Analysis was performed by IC method for Fluorine content.	50	n.d.
鹵素 (溴) / Halogen-Bromine (Br) (CAS No.: 007726-95-6)	mg/kg	參考BS EN 14582附錄A, 以離子層析儀分析溴含量 / With reference to BS EN 14582 Annex A. Analysis was performed by IC method for Bromine content.	50	n.d.
鹵素 (碘) / Halogen-Iodine (I) (CAS No.: 007553-56-2)	mg/kg	參考BS EN 14582附錄A, 以離子層析儀分析碘含量 / With reference to BS EN 14582 Annex A. Analysis was performed by IC method for Iodine content.	50	n.d.

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t(886-2) 22993939 f(886-2) 2299-3237 www.sgs.com.tw



## 測試報告

號碼：CE/2007/71447

日期：2007/07/13

頁數：4 of 7

鈞寶電子工業股份有限公司

KING CORE ELECTRONICS INC.

桃園縣平鎮市平鎮工業區南豐路269號

NO. 269, NANFONG RD., PINGJHEN CITY, TAOYUAN COUNTY, TAIWAN



測試項目 (Test Item)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				NO.1
多溴聯苯總和 / Sum of PBBs			-	n.d.
一溴聯苯 / Monobromobiphenyl			5	n.d.
二溴聯苯 / Dibromobiphenyl			5	n.d.
三溴聯苯 / Tribromobiphenyl			5	n.d.
四溴聯苯 / Tetrabromobiphenyl			5	n.d.
五溴聯苯 / Pentabromobiphenyl			5	n.d.
六溴聯苯 / Hexabromobiphenyl			5	n.d.
七溴聯苯 / Heptabromobiphenyl			5	n.d.
八溴聯苯 / Octabromobiphenyl			5	n.d.
九溴聯苯 / Nonabromobiphenyl			5	n.d.
十溴聯苯 / Decabromobiphenyl			5	n.d.
多溴聯苯醚總和 (一至九溴) / Sum of PBDEs (Mono to Nona) (Note 4)	mg/kg	參考 IEC 62321, Ed. 1 111/54/CDV 方法, 以氣相層析儀/質譜儀檢測多溴聯苯和多溴聯苯醚含量。 / With reference to IEC 62321, Ed.1 111/54/CDV. Determination of PBB and PBDE by GC/MS.	-	n.d.
一溴聯苯醚 / Monobromobiphenyl ether			5	n.d.
二溴聯苯醚 / Dibromobiphenyl ether			5	n.d.
三溴聯苯醚 / Tribromobiphenyl ether			5	n.d.
四溴聯苯醚 / Tetrabromobiphenyl ether			5	n.d.
五溴聯苯醚 / Pentabromobiphenyl ether			5	n.d.
六溴聯苯醚 / Hexabromobiphenyl ether			5	n.d.
七溴聯苯醚 / Heptabromobiphenyl ether			5	n.d.
八溴聯苯醚 / Octabromobiphenyl ether			5	n.d.
九溴聯苯醚 / Nonabromobiphenyl ether			5	n.d.
十溴聯苯醚 / Decabromobiphenyl ether			5	n.d.
多溴聯苯醚總和 (一至十溴) / Sum of PBDEs (Mono to Deca)			-	n.d.

Note: 1. mg/kg = ppm

2. n.d. = Not Detected / 未檢出

3. MDL = Method Detection Limit / 方法偵測極限值

4. According to 2005/717/EC DecaBDE is exempt.

根據2005年10月13日歐盟會議公佈2005/717/EC, 修訂2002/95/EC內容, 通過解除  
高分子材質中十溴聯苯醚之使用限制。

5. "-" = Not Regulated / 無規格值

6. "---" = Not Conducted / 未測項目

7. \*\* = Qualitative analysis (No Unit) / 定性分析(無單位)

8. Negative = Undetectable / Positive = Detectable

Negative / 陰性(未偵測到), Positive / 陽性(已偵測到)

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SGS

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(886-2) 2299-9399/(886-2) 2299-3237 www.sgs.com.tw

## 測試報告

號碼：CE/2007/71447

日期：2007/07/13

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鈞寶電子工業股份有限公司

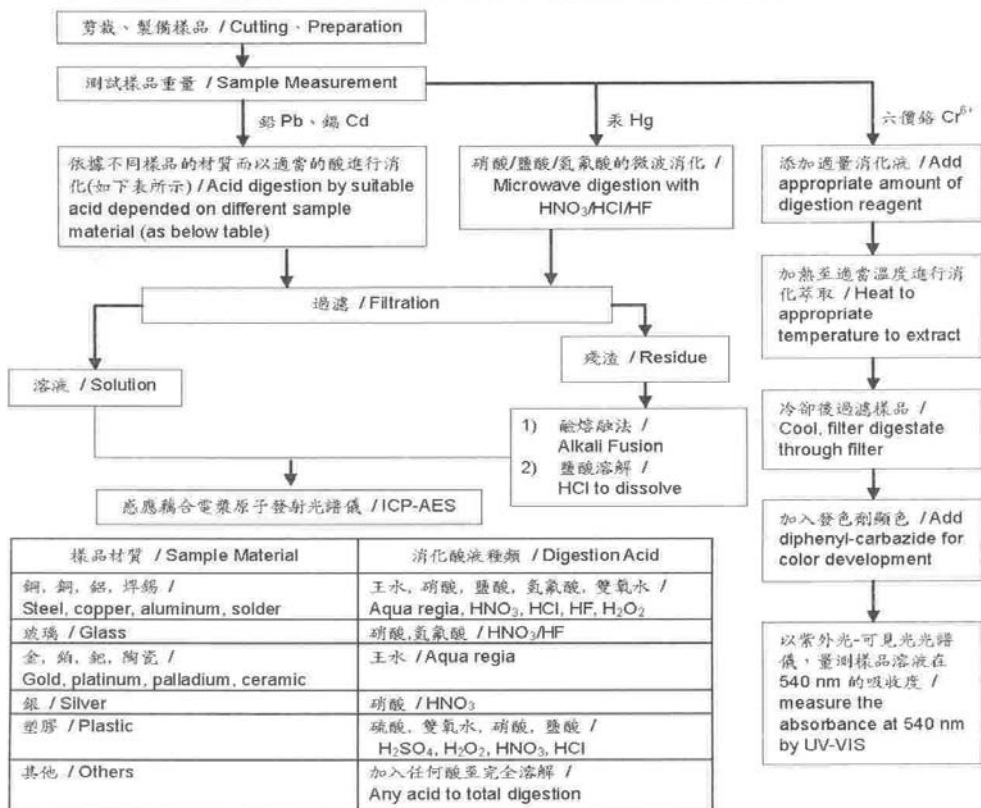
KING CORE ELECTRONICS INC.

桃園縣平鎮市平鎮工業區南豐路269號

NO. 269, NANFONG RD., PINGJHEN CITY, TAOYUAN COUNTY, TAIWAN



- 1) 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. (Cr<sup>6+</sup> test method excluded)
- 2) 測試人員：張啓興 / Name of the person who made measurement: Troy Chang
- 3) 測試負責人：葉禮源 / Name of the person in charge of measurement: Daniel Yeh



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t(886-2) 22993939 f(886-2) 2299-3237 www.sgs.com.tw

## 測試報告

號碼 : CE/2007/71447      日期 : 2007/07/13      頁數 : 6 of 7

鈞寶電子工業股份有限公司  
KING CORE ELECTRONICS INC.

桃園縣平鎮市平鎮工業區南豐路269號

NO. 269, NANFONG RD., PINGJHEN CITY, TAOYUAN COUNTY, TAIWAN

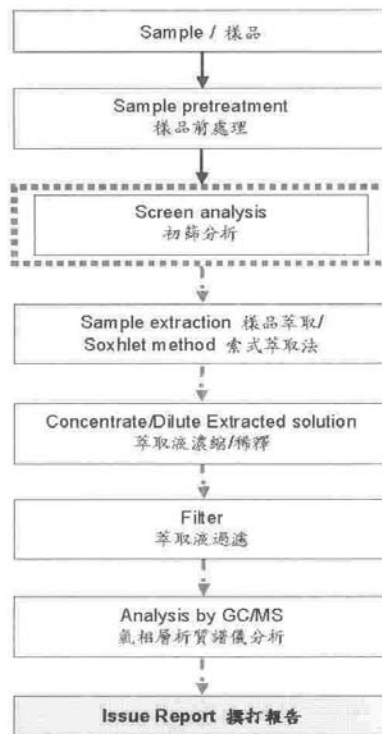


### 多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

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 - - -



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SGS TESTING SERVICES

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(886-2) 2299-3939 / (886-2) 2299-3237 www.sgs.com.tw



## 測試報告

號碼 : CE/2007/71447

日期 : 2007/07/13

頁數 : 7 of 7

鈞寶電子工業股份有限公司  
KING CORE ELECTRONICS INC.

桃園縣平鎮市平鎮工業區南豐路269號

NO. 269, NANFONG RD., PINGJHEN CITY, TAOYUAN COUNTY, TAIWAN



\*\* 報告結尾 \*\*

## SGS REPORT

### SUBJECT: Survey for Environmental-Related Substances

Issue Date: Jul-31. 2007

I-PEX Co.,Ltd.Japan

This ia applied for the following products:

I-PEX Product Name	I-PEX Part Number
MHF PLUG Connector	20278-111R-08
	20278-111R-13
	20278-111R-32
	20278-111R-18
	20351-111R-37

Attachment:

**Survey Form on Environmental Impact Substances Contained in Parts and Materials**  
SGS TEST REPORT for MHF PLUG connector

Please refer to the attached SGS REPORT.

Component name	SGS Report No.
HOUSING (White)	CE_2007_46123
HOUSING (Black)	CE_2007_46124
CONTACT	CE_2007_46148
GROUND CONTACT	CE_2007_46149

Remark:\* The SGS Test Report can be applied to a component.

# Test Report

I-PEX JP CO., LTD.  
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

No. : CE/2007/46149  
Date : 2007/05/02  
Page : 1 of 4



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

Sample Description : MHF PLUG GROUND CONTACT  
Style/Item No. : 1927-231  
Sample Receiving Date : 2007/04/25  
Testing Period : 2007/04/25 TO 2007/05/02

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

  
Daniel Yeh, M.R. / Operation Manager  
Signed for and on behalf of  
SGS TAIWAN LTD.

# Test Report

I-PEX JP CO., LTD.  
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

No. : CE/2007/46149  
Date : 2007/05/02  
Page : 2 of 4



## Test Result(s)

PART NAME NO.1 : GOLDEN COLORED METAL

Test Item (s):	Unit	Method	MDL	Result
				No.1
Cadmium (Cd)	mg/kg	With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Cadmium by ICP-AES.	2	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Lead by ICP-AES.	2	11
Mercury (Hg)	mg/kg	With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Mercury by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI) by alkaline extraction	mg/kg	With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Hexavalent Chromium by UV/Vis Spectrometry.	2	n.d.
Copper (Cu)	%	With reference to US EPA Method 3050B for Copper Content. Analysis was performed by ICP-AES.	0.0002	91.845
Gold (Au)	mg/kg	With reference to US EPA Method 3050B for Gold Content. Analysis was performed by ICP-AES.	2	2305
Nickel (Ni)	%	With reference to US EPA Method 3050B for Nickel Content. Analysis was performed by ICP-AES.	0.0002	3.005

Note : 1. mg/kg = ppm  
2. n.d. = Not Detected  
3. MDL = Method Detection Limit

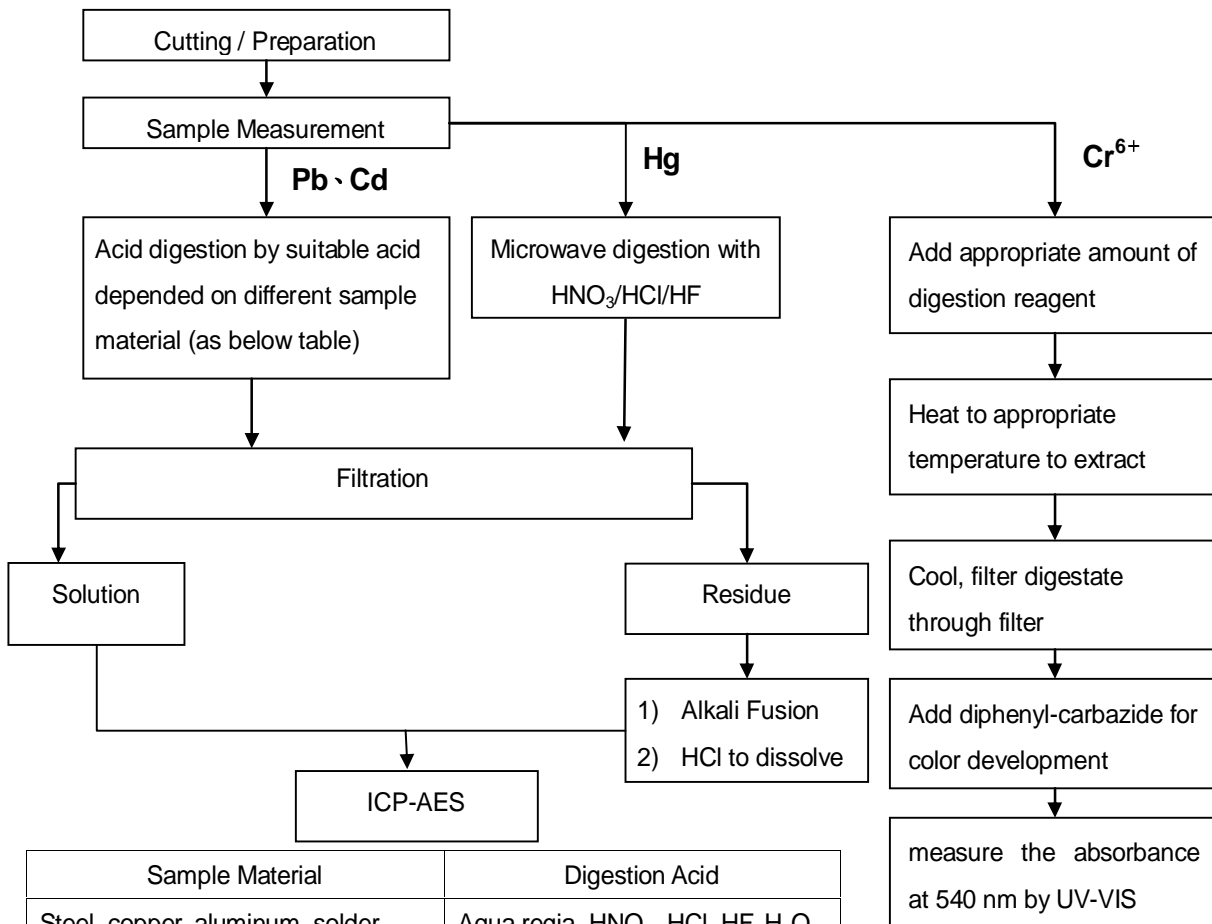
# Test Report

I-PEX JP CO., LTD.  
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

No. : CE/2007/46149  
Date : 2007/05/02  
Page : 3 of 4



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded)
- 2) Name of the person who made measurement: Troy Chang
- 3) Name of the person in charge of measurement: Daniel Yeh



Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
Glass	HNO <sub>3</sub> /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO <sub>3</sub>
Plastic	H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl
Others	Any acid to total digestion

## Test Report

I-PEX JP CO., LTD.  
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

No. : CE/2007/46149  
Date : 2007/05/02  
Page : 4 of 4



\*\* End of Report \*\*

# Test Report

No. : CE/2007/46123

Date : 2007/04/30

Page : 1 of 5

I-PEX JP CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



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

Sample Description : MHF PLUG HOUSING  
Style/Item No. : 1844-012  
Sample Receiving Date : 2007/04/25  
Testing Period : 2007/04/25 TO 2007/04/30

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

**Test Method** : With reference to IEC 62321, Ed.1 111/54/CDV  
Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products.  

- (1) Determination of Cadmium by ICP-AES.
- (2) Determination of Lead by ICP-AES.
- (3) Determination of Mercury by ICP-AES.
- (4) Determination of Hexavalent Chromium for non-metallic samples by UV/Vis Spectrometry.
- (5) Determination of PBB and PBDE by GC/MS.

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

  
Daniel Yen, M.R. / Operation Manager  
Signed for and on behalf of  
SGS TAIWAN LTD.

# Test Report

No. : CE/2007/46123

Date : 2007/04/30

Page : 2 of 5

I-PEX JP CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



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

Test Item (s):	Method (Refer to)	Result	MDL
		No.1	
Cadmium (Cd)	(1)	n.d.	2
Lead (Pb)	(2)	23	2
Mercury (Hg)	(3)	n.d.	2
Hexavalent Chromium Cr(VI) by alkaline extraction	(4)	n.d.	2
<b>Sum of PBBs</b>	(5)	n.d.	-
Monobromobiphenyl		n.d.	5
Dibromobiphenyl		n.d.	5
Tribromobiphenyl		n.d.	5
Tetrabromobiphenyl		n.d.	5
Pentabromobiphenyl		n.d.	5
Hexabromobiphenyl		n.d.	5
Heptabromobiphenyl		n.d.	5
Octabromobiphenyl		n.d.	5
Nonabromobiphenyl		n.d.	5
Decabromobiphenyl		n.d.	5
<b>Sum of PBDEs (Mono to Nona) (Note 4)</b>		n.d.	-
Monobromobiphenyl ether		n.d.	5
Dibromobiphenyl ether		n.d.	5
Tribromobiphenyl ether		n.d.	5
Tetrabromobiphenyl ether		n.d.	5
Pentabromobiphenyl ether		n.d.	5
Hexabromobiphenyl ether		n.d.	5
Heptabromobiphenyl ether		n.d.	5
Octabromobiphenyl ether		n.d.	5
Nonabromobiphenyl ether		n.d.	5
Decabromobiphenyl ether		n.d.	5
<b>Sum of PBDEs (Mono to Deca)</b>		n.d.	-

## TEST PART DESCRIPTION:

NO.1 : WHITE PLASTIC

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



# Test Report

No. : CE/2007/46123

Date : 2007/04/30

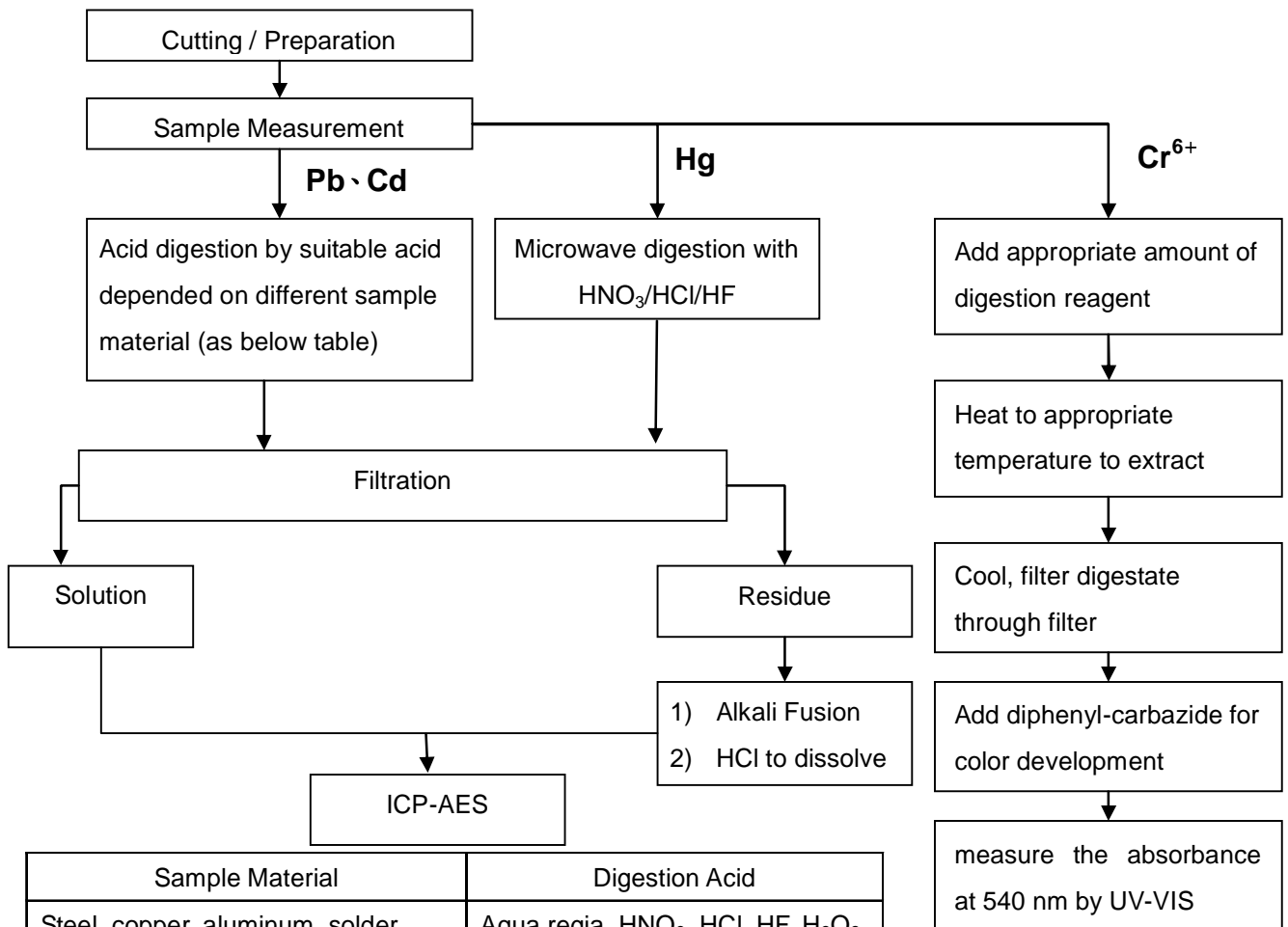
Page : 3 of 5

I-PEX JP CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded)
- 2) Name of the person who made measurement: Troy Chang
- 3) Name of the person in charge of measurement: Daniel Yeh

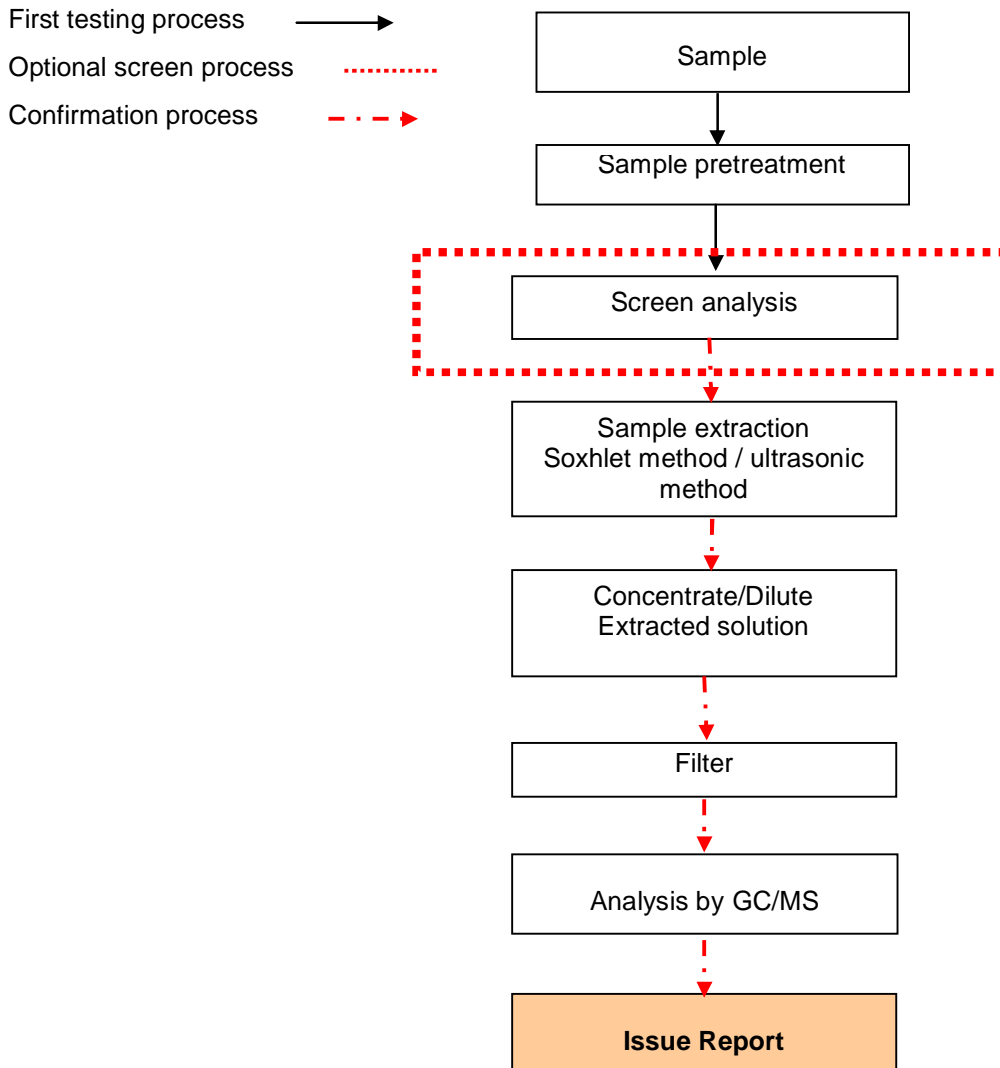


Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
Glass	HNO <sub>3</sub> /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO <sub>3</sub>
Plastic	H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl
Others	Any acid to total digestion

I-PEX JP CO., LTD.  
 6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



## PBB/PBDE analytical FLOW CHART



## Test Report

No. : CE/2007/46123    Date : 2007/04/30

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I-PEX JP CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



\*\* End of Report \*\*

# Test Report

No. : CE/2007/46124

Date : 2007/04/30

Page : 1 of 5

I-PEX JP CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN




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

Sample Description : MHF PLUG HOUSING  
Style/Item No. : 1844-011  
Sample Receiving Date : 2007/04/25  
Testing Period : 2007/04/25 TO 2007/04/30

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

**Test Method** : With reference to IEC 62321, Ed.1 111/54/CDV  
Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products.  
(1) Determination of Cadmium by ICP-AES.  
(2) Determination of Lead by ICP-AES.  
(3) Determination of Mercury by ICP-AES.  
(4) Determination of Hexavalent Chromium for non-metallic samples by UV/Vis Spectrometry.  
(5) Determination of PBB and PBDE by GC/MS.

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

  
Daniel Yen, M.R. / Operation Manager  
Signed for and on behalf of  
SGS TAIWAN LTD.

# Test Report

No. : CE/2007/46124

Date : 2007/04/30

Page : 2 of 5

I-PEX JP CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



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

Test Item (s):	Method (Refer to)	Result	MDL
		No.1	
Cadmium (Cd)	(1)	n.d.	2
Lead (Pb)	(2)	23	2
Mercury (Hg)	(3)	n.d.	2
Hexavalent Chromium Cr(VI) by alkaline extraction	(4)	n.d.	2
<b>Sum of PBBs</b>	(5)	n.d.	-
Monobromobiphenyl		n.d.	5
Dibromobiphenyl		n.d.	5
Tribromobiphenyl		n.d.	5
Tetrabromobiphenyl		n.d.	5
Pentabromobiphenyl		n.d.	5
Hexabromobiphenyl		n.d.	5
Heptabromobiphenyl		n.d.	5
Octabromobiphenyl		n.d.	5
Nonabromobiphenyl		n.d.	5
Decabromobiphenyl		n.d.	5
<b>Sum of PBDEs (Mono to Nona) (Note 4)</b>		n.d.	-
Monobromobiphenyl ether		n.d.	5
Dibromobiphenyl ether		n.d.	5
Tribromobiphenyl ether		n.d.	5
Tetrabromobiphenyl ether		n.d.	5
Pentabromobiphenyl ether		n.d.	5
Hexabromobiphenyl ether		n.d.	5
Heptabromobiphenyl ether		n.d.	5
Octabromobiphenyl ether		n.d.	5
Nonabromobiphenyl ether		n.d.	5
Decabromobiphenyl ether		n.d.	5
<b>Sum of PBDEs (Mono to Deca)</b>		n.d.	-

## TEST PART DESCRIPTION:

NO.1 : BLACK PLASTIC

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

# Test Report

No. : CE/2007/46124

Date : 2007/04/30

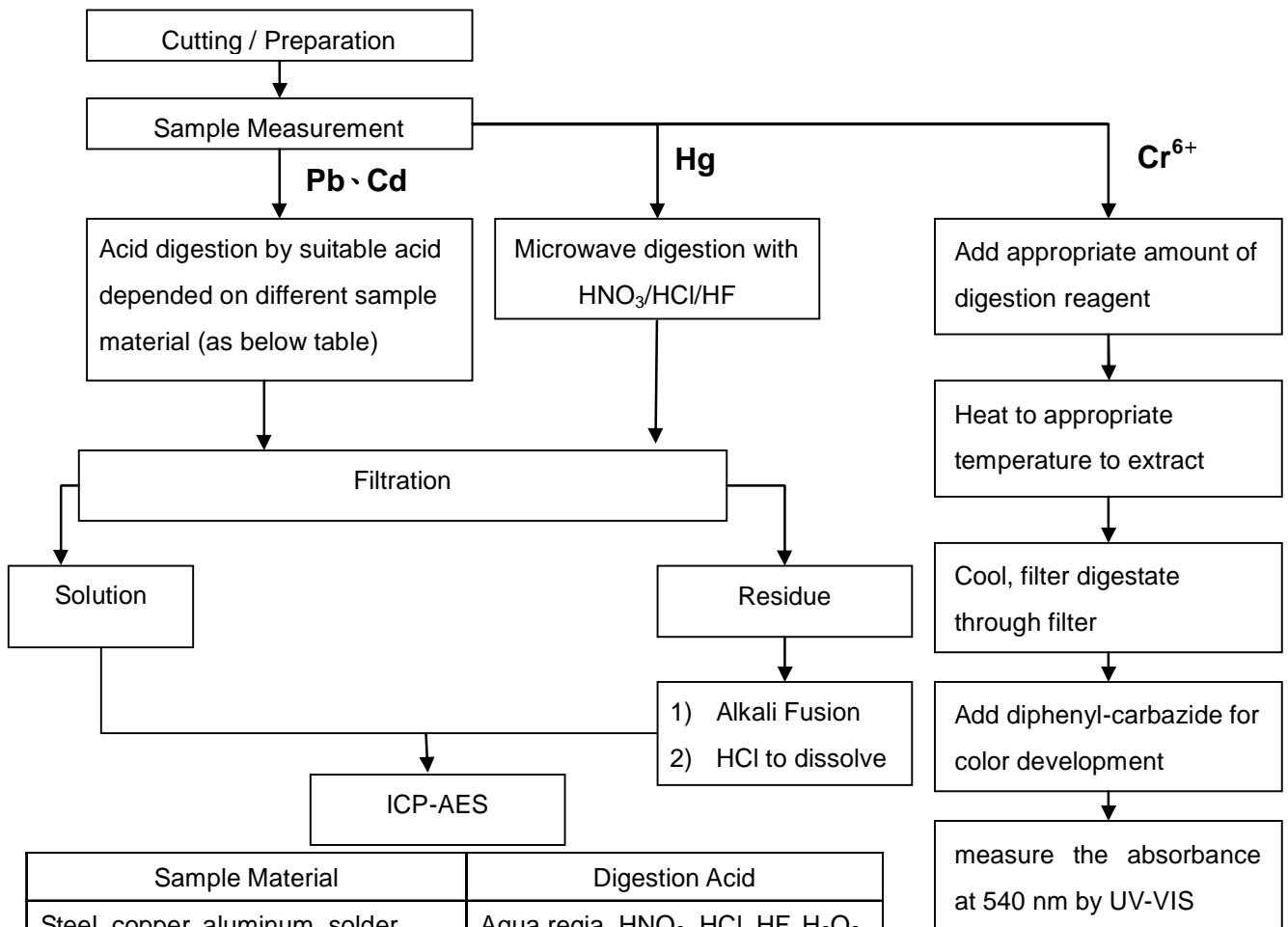
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I-PEX JP CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded)
- 2) Name of the person who made measurement: Troy Chang
- 3) Name of the person in charge of measurement: Daniel Yeh

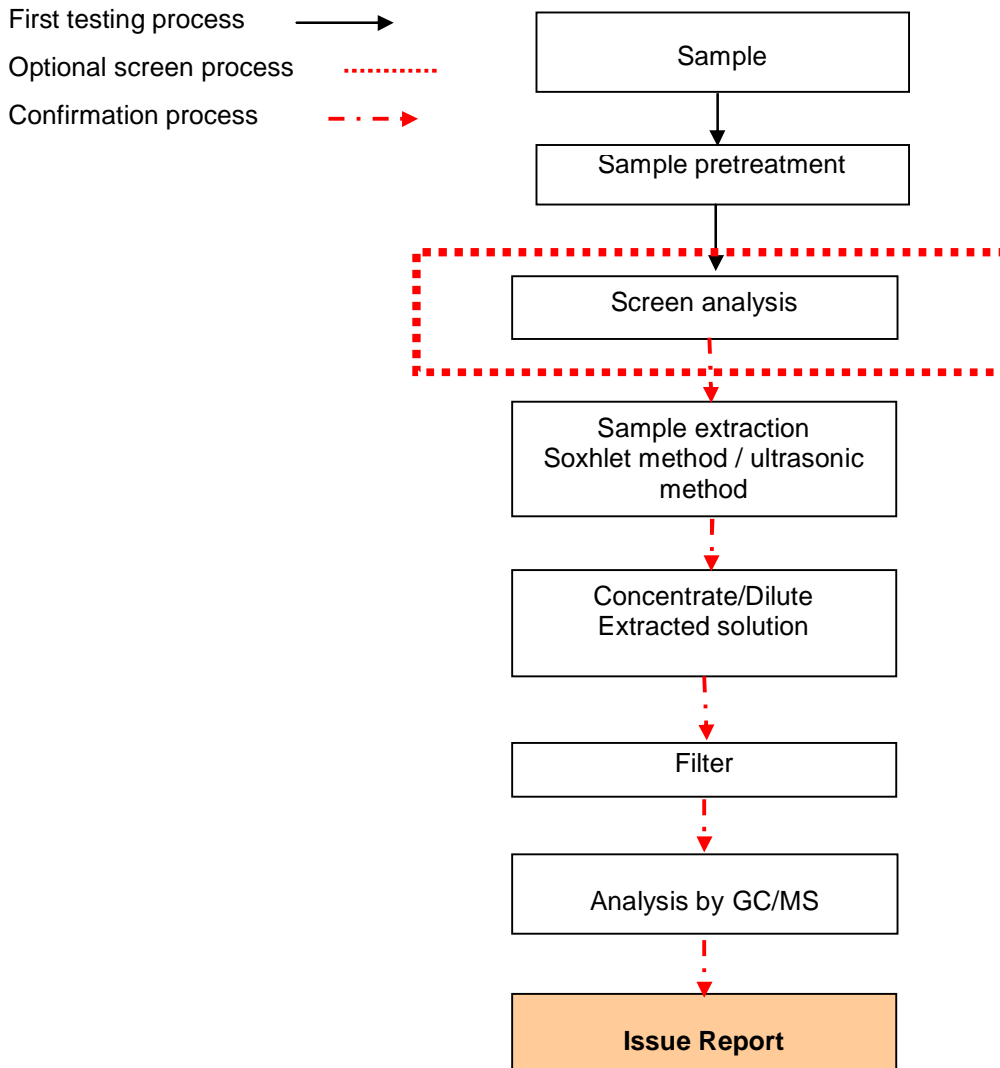


Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
Glass	HNO <sub>3</sub> /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO <sub>3</sub>
Plastic	H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl
Others	Any acid to total digestion

I-PEX JP CO., LTD.  
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



## PBB/PBDE analytical FLOW CHART



## Test Report

No. : CE/2007/46124    Date : 2007/04/30

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I-PEX JP CO., LTD.

6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN



\*\* End of Report \*\*



# Test Report

I-PEX JP CO., LTD.  
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

No. : CE/2007/46148  
Date : 2007/05/02  
Page : 1 of 4



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

Sample Description : MHF PLUG CONTACT  
Style/Item No. : 1845-011  
Sample Receiving Date : 2007/04/25  
Testing Period : 2007/04/25 TO 2007/05/02

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

  
Daniel Yeh, M.R. / Operation Manager  
Signed for and on behalf of  
SGS TAIWAN LTD.

# Test Report

I-PEX JP CO., LTD.  
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

No. : CE/2007/46148  
Date : 2007/05/02  
Page : 2 of 4



## Test Result(s)

PART NAME NO.1 : GOLDEN COLORED METAL

Test Item (s):	Unit	Method	MDL	Result
				No.1
Cadmium (Cd)	mg/kg	With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Cadmium by ICP-AES.	2	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Lead by ICP-AES.	2	16
Mercury (Hg)	mg/kg	With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Mercury by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI) by alkaline extraction	mg/kg	With reference to IEC 62321, Ed.1 111/54/CDV. Determination of Hexavalent Chromium by UV/Vis Spectrometry.	2	n.d.
Copper (Cu)	%	With reference to US EPA Method 3050B for Copper Content. Analysis was performed by ICP-AES.	0.0002	90.56
Gold (Au)	mg/kg	With reference to US EPA Method 3050B for Gold Content. Analysis was performed by ICP-AES.	2	3320
Nickel (Ni)	%	With reference to US EPA Method 3050B for Nickel Content. Analysis was performed by ICP-AES.	0.0002	3.525

Note : 1. mg/kg = ppm  
2. n.d. = Not Detected  
3. MDL = Method Detection Limit

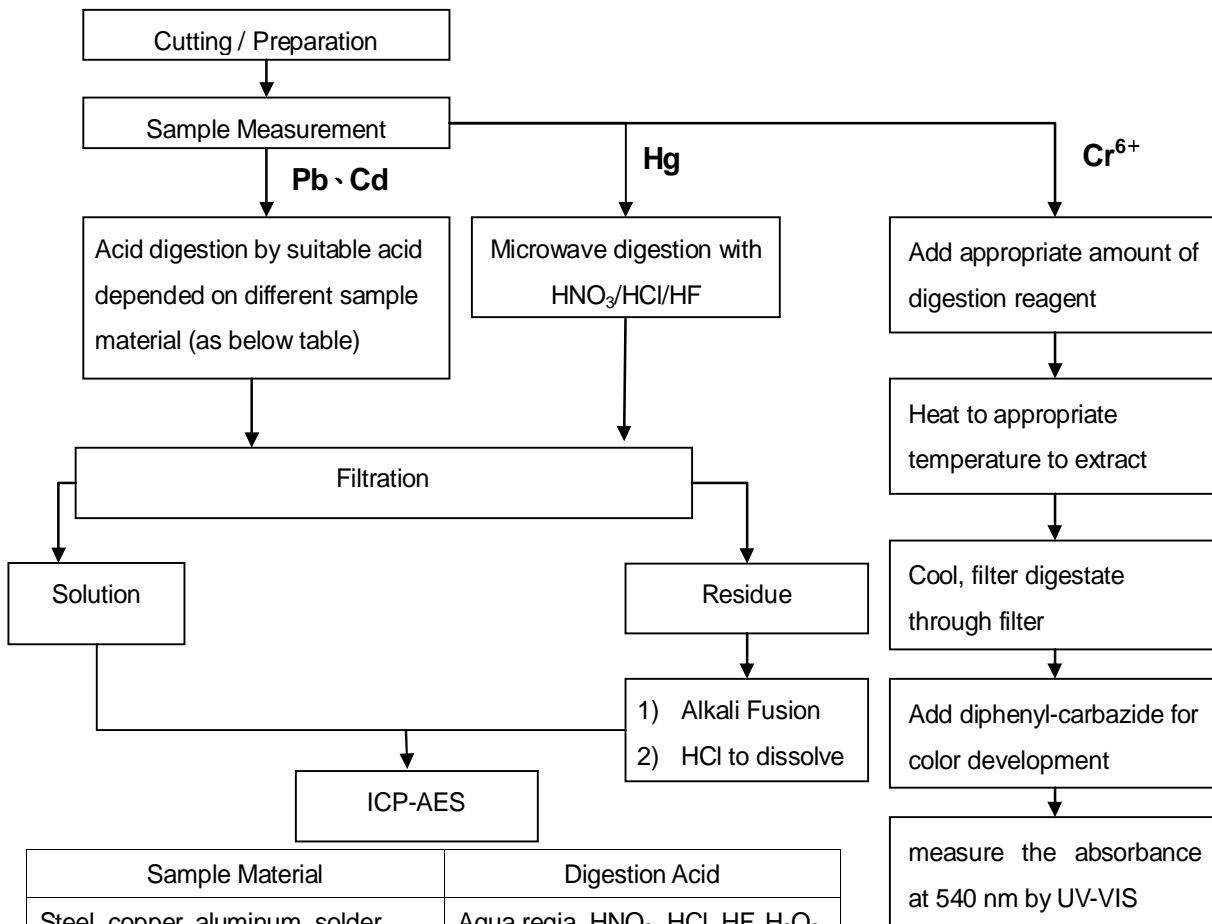
# Test Report

I-PEX JP CO., LTD.  
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

No. : CE/2007/46148  
Date : 2007/05/02  
Page : 3 of 4



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded)
- 2) Name of the person who made measurement: Troy Chang
- 3) Name of the person in charge of measurement: Daniel Yeh



Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
Glass	HNO <sub>3</sub> /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO <sub>3</sub>
Plastic	H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl
Others	Any acid to total digestion

## Test Report

I-PEX JP CO., LTD.  
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

No. : CE/2007/46148  
Date : 2007/05/02  
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\*\* End of Report \*\*

## 測試報告

號碼：CE/2007/72824

日期：2007/07/18

頁數：1 of 3

唐正企業有限公司

台北縣中和市中正路861巷11號




以下測試樣品係由客戶送樣，且由客戶聲稱並經客戶確認如下：

樣品名稱：空心管實心針之黃銅材質裸面處理  
收件日期：2007/07/11  
測試期間：2007/07/11 TO 2007/07/18

=====  
測試需求：參照 RoHS 2002/95/EC 及其修定指令要求。

測試方法：參考 IEC 62321, Ed. 1 111/54/CDV 方法檢測。  
(1) 用感應耦合電漿原子發射光譜儀(ICP-AES)檢測鎘含量。  
(2) 用感應耦合電漿原子發射光譜儀(ICP-AES)檢測鉛含量。  
(3) 用感應耦合電漿原子發射光譜儀(ICP-AES)檢測汞含量。  
(4) 針對金屬材質之樣品，用 Spot test / Colorimetric 方法檢測六價鉻含量。

測試結果：請見下一頁。

  
Daniel Yeh, M.R. / Operation Manager  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei

# 測試報告

號碼：CE/2007/72824

日期：2007/07/18

頁數：2 of 3

唐正企業有限公司

台北縣中和市中正路861巷11號



測試結果 (單位: mg/kg)

測試項目	測試方法 (請參考)	結果	方法偵測 極限值
		No.1	
鎘	(1)	3	2
鉛	(2)	64	2
汞	(3)	n.d.	2
六價鉻 (Spot test / boiling water extraction)	(4)	Negative	備註 4

## 測試部位描述:

NO.1 : 黃色金屬

備註: 1. mg/kg = ppm

2. n.d. = Not Detected / 未檢出

3. MDL = Method Detection Limit / 方法偵測極限值

4. Spot-test:

Negative=鍍層中偵測不到六價鉻, Positive=鍍層中偵測到六價鉻;

當該測項無法確認時, 測試樣品可藉由boiling-water-extraction測試方法進一步確認

Boiling-water-extraction:

Negative=鍍層中偵測不到六價鉻, Positive=鍍層中偵測到六價鉻;

該濃度溶液 $\geq 0.02$  mg/kg with  $50 \text{ cm}^2$  (sample surface area)

## 測試報告

號碼：CE/2007/72824

日期：2007/07/18

頁數：3 of 3

唐正企業有限公司

台北縣中和市中正路861巷11號



\*\* 報告結尾 \*\*

# 測試報告 Test Report

號碼(No.): CE/2007/A4757

日期(Date): 2007/10/29

頁數(Page): 1 of 4

台灣雲林電子股份有限公司

TAIWAN YUN LIN ELECTRONIC CO., LTD.

彰化縣員林鎮山腳路一段361-1號

NO. 361-1, SEC. 1, SHANJIN RD., YUANLIN JEN, CHANGHUA,


TAIWAN 510, R. O. C.



以下測試樣品係由客戶送樣，且由客戶聲稱並經客戶確認如下 (The following samples was/were submitted and identified by/on behalf of the client as):

樣品名稱(Sample Description) : HEAT SHRINKABLE TUBE  
 樣品型號(Style/Item No.) : G5(F) / G5(FCB)  
 收件日期(Sample Receiving Date) : 2007/10/22  
 測試期間(Testing Period) : 2007/10/22 TO 2007/10/29

=====  
**測試需求(Test Requested)** : 參照 RoHS 2002/95/EC 及其修定指令要求. (In accordance with the RoHS Directive 2002/95/EC, and its amendment directives).  
**測試方法(Test Method)** : 參考IEC 62321, Ed. 1 111/54/CDV方法檢測. (With reference to IEC 62321, Ed.1 111/54/CDV. Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products).  
 (1) 用感應耦合電漿原子發射光譜儀檢測鎘含量. / Determination of Cadmium by ICP-AES.  
 (2) 用感應耦合電漿原子發射光譜儀檢測鉛含量. / Determination of Lead by ICP-AES.  
 (3) 用感應耦合電漿原子發射光譜儀檢測汞含量. / Determination of Mercury by ICP-AES.  
 (4) 針對非金屬材質之樣品，用UV-VIS檢測六價鉻含量. / Determination of Hexavalent Chromium for non-metallic samples by UV/Vis Spectrometry.  
 (5) 以氣相層析儀/質譜儀檢測多溴聯苯和多溴聯苯醚含量. / Determination of PBB and PBDE by GC/MS.  
**測試結果(Test Results)** : 請見下一頁 (Please refer to next pages).

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



# 測試報告

## Test Report

號碼(No.): CE/2007/A4757

日期(Date): 2007/10/29

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台灣雲林電子股份有限公司

TAIWAN YUN LIN ELECTRONIC CO., LTD.

彰化縣員林鎮山腳路一段361-1號

NO. 361-1, SEC. 1, SHANJIN RD., YUANLIN JEN, CHANGHUA,

TAIWAN 510, R. O. C.



測試結果(Test Results) 單位(Unit): mg/kg

測試項目 (Test Items)	測試方法 Method (Refer to)	結果 (Result)	方法偵測 極限值 (MDL)
		No.1	
鎘 / Cadmium (Cd)	(1)	n.d.	2
鉛 / Lead (Pb)	(2)	11	2
汞 / Mercury (Hg)	(3)	n.d.	2
六價鉻 / Hexavalent Chromium Cr(VI) by alkaline extraction	(4)	n.d.	2
<b>多溴聯苯總和 / Sum of PBBs</b>		n.d.	-
一溴聯苯 / Monobromobiphenyl		n.d.	5
二溴聯苯 / Dibromobiphenyl		n.d.	5
三溴聯苯 / Tribromobiphenyl		n.d.	5
四溴聯苯 / Tetrabromobiphenyl		n.d.	5
五溴聯苯 / Pentabromobiphenyl		n.d.	5
六溴聯苯 / Hexabromobiphenyl		n.d.	5
七溴聯苯 / Heptabromobiphenyl		n.d.	5
八溴聯苯 / Octabromobiphenyl		n.d.	5
九溴聯苯 / Nonabromobiphenyl		n.d.	5
十溴聯苯 / Decabromobiphenyl		n.d.	5
<b>多溴聯苯醚總和 (一至九溴) / Sum of PBDEs (Mono to Nona) (Note 4)</b>	(5)	n.d.	-
一溴聯苯醚 / Monobromobiphenyl ether		n.d.	5
二溴聯苯醚 / Dibromobiphenyl ether		n.d.	5
三溴聯苯醚 / Tribromobiphenyl ether		n.d.	5
四溴聯苯醚 / Tetrabromobiphenyl ether		n.d.	5
五溴聯苯醚 / Pentabromobiphenyl ether		n.d.	5
六溴聯苯醚 / Hexabromobiphenyl ether		n.d.	5
七溴聯苯醚 / Heptabromobiphenyl ether		n.d.	5
八溴聯苯醚 / Octabromobiphenyl ether		n.d.	5
九溴聯苯醚 / Nonabromobiphenyl ether		n.d.	5
十溴聯苯醚 / Decabromobiphenyl ether		n.d.	5
<b>多溴聯苯醚總和 (一至十溴) / Sum of PBDEs (Mono to Deca)</b>		n.d.	-

### 測試部位描述 (TEST PART DESCRIPTION):

NO.1 : 黑色塑膠套管及其上白色印刷 (BLACK PLASTIC TUBE WITH WHITE PRINTED)

# 測試報告 Test Report

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台灣雲林電子股份有限公司

TAIWAN YUN LIN ELECTRONIC CO., LTD.

彰化縣員林鎮山腳路一段361-1號

NO. 361-1, SEC. 1, SHANJIN RD., YUANLIN JEN, CHANGHUA,

TAIWAN 510, R. O. C.



## 備註(Note):

1. mg/kg = ppm
2. n.d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. 根據2005年10月13日歐盟會議公佈2005/717/EC, 修訂2002/95/EC內容, 通過解除高分子材質中十溴聯苯醚之使用限制. (According to 2005/717/EC DecaBDE is exempt.)
5. "-" = Not Regulated (無規格值)
6. 樣品的測試是基於申請人要求混合測試, 報告中的混合測試結果不代表其中個別單一材質的含量.  
(The samples was/were analyzed on behalf of the applicant as mixing sample in one testing.  
The above results was/were only given as the informality value).

## 測試報告 Test Report

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台灣雲林電子股份有限公司

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\*\* 報告結尾 \*\*