



WHA YU INDUSTRIAL CO., LTD.(HEAD OFFICE)  
 DONGGUAN AEON TECH CO.,LTD.(CHINA)  
 SUZHOU AEON TECH CO.,LTD.(CHINA)  
 AEON TECH (SHANGHAI) CO.,LTD(CHINA)  
 DONGGUAN PARNER TECH CO.,LTD.(CHINA)



## SPECIFICATION FOR APPROVAL

**CUSTOMER:** 中磊電子股份有限公司

**PART NAME:** PIFA Antenna Assembly

**PART NO.:**

**REVISION:**

**W. Y. P/NO.:** C147-510422-A(SSR-74152)

**REV.:** X1

	MANUFACTURER SIGNATURE	CUSTOMER SIGNATURE
APPROVED BY :		
DATE :		

### WHA YU GROUP

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DONGGUAN AEON TECH CO., LTD.(CHINA)

東莞台霖電子通訊有限公司

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SUZHOU AEON TECH CO., LTD(CHINA)

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AEON TECH (SHANGHAI) CO., LTD(CHINA)

普翔電子貿易(上海)有限公司

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Tel: +86-21-64959151 Fax: +86-21-64959059

DONGGUAN PARNER TECH CO., LTD.(CHINA)

東莞倍能電子有限公司

Address: Hupan Industrial District, Shida Road, Tai Ling Shan Town,

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# *Contents*

<i>Item</i>	<i>Description</i>	<i>Page</i>
1. ....	天線規格表	..... 1
2. ....	成品圖	..... 2
3. ....	測試報告	..... 3~6
4. ....	<b>Cable</b> 規格	..... 7~9
5. ....	<b>Connector</b> 材質特性	..... 10
6. ....	<b>SGS</b> 測試	..... 11~40
7. ....	<b>RoHS</b> 排外條款	..... 41

# PIFA Antenna Assembly

## Specification

### 1. Electrical Properties :

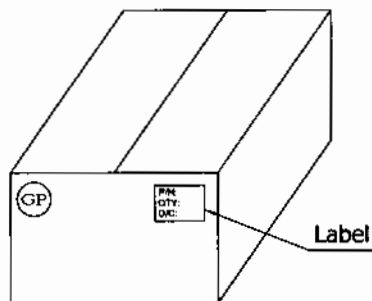
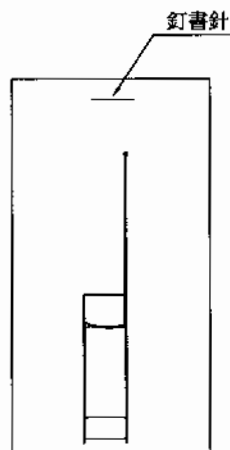
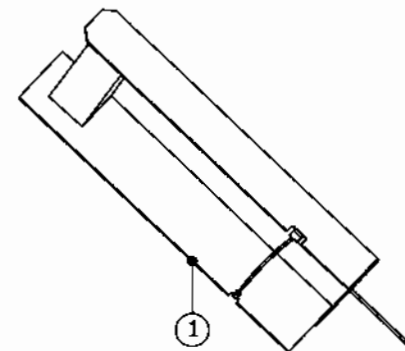
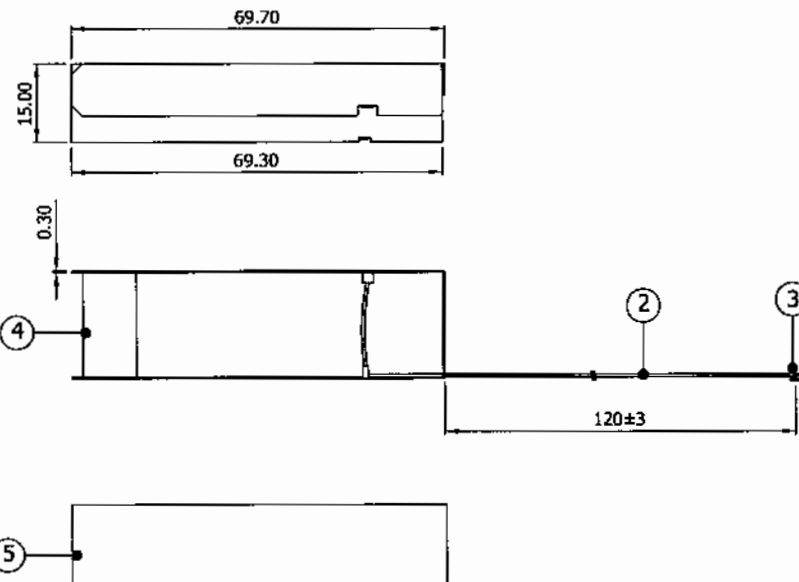
- 1.1 Frequency Range.....868MHz ~ 908MHz
- 1.2 Impedance ..... 50  $\Omega$  Nominal
- 1.3 VSWR .....1.92 Max.
- 1.4 Return Loss.....-10 dB Max.
- 1.5 Efficiency.....50%
- 1.6 Peak Gain.....3.5dBi
- 1.7 Polarization.....Linear
- 1.8 Admitted Power..... 1W

### 2. Physical Properties :

- 2.1 Cable..... $\phi$  1.13mm Coaxial Cable
- 2.2 Operating Temp. ....-20°C ~ +65°C
- 2.3 Storage Temp. ....-30°C ~ +75°C
- 2.4 Connector.....MHF(I-PEX)

CG-

REV	DATE	DESCRIPTION
X1	12/13-2007	New Issue



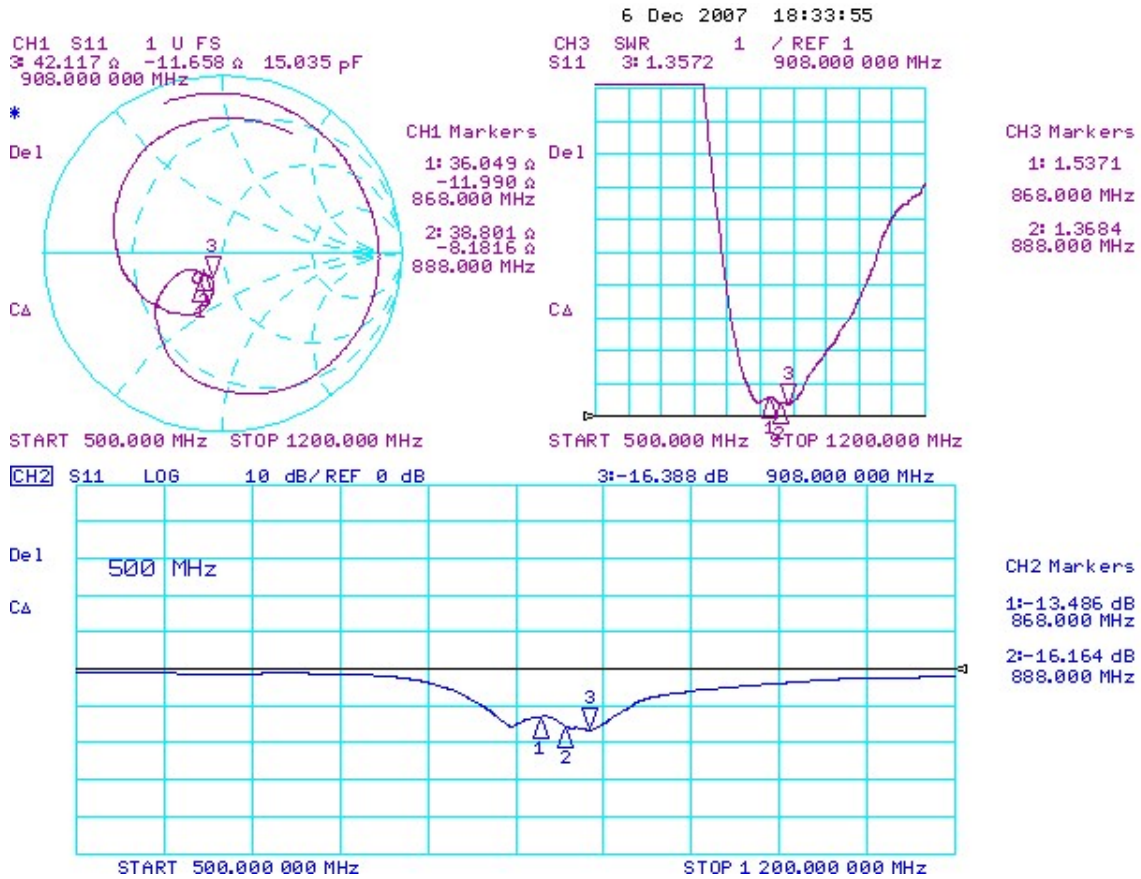
5	雙面膠	3M 467膠	1	
4	Sponge	EVA ; Black	1	
3	Connector	MHF Connector	1	
2	Cable	φ1.13 Coaxial Cable ; Gray	1	
1	PIFA	Copper	1	
NO	DESCRIPTION		QTY	REMARK

CUSTOMER'S SINGATURE	XX. ±5	APPROVED	CUSTOMER: 中磊
	X. ±3.0	<i>Andrew</i>	PART NO :
	.X ±1.0	CHECKED	PARTNAME: PIFA Antenna
	.XX ±0.5	<i>陳建榮</i>	W.Y P/NO : C147-510422-A
	.XXX ±0.1	DRAWING	REV UNIT FILE : SSR-74152
		<i>程</i>	X1 m/m SHEET : 1/1
		96.12.13	
		<i>淑娟</i>	

**M.gear** Wha Yu Group

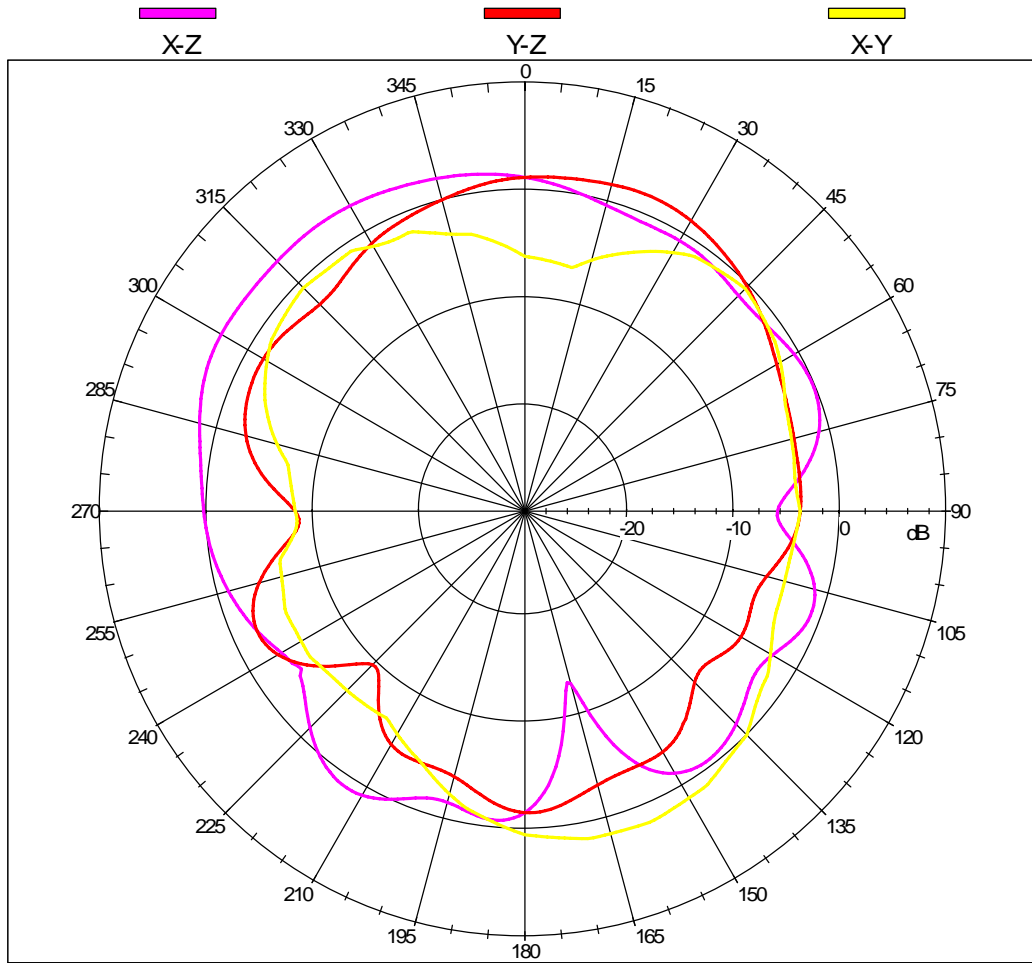
THIS DRAWING, AND IT'S INHERANT DESIGN CONCEPTS, ARE THE PROPERTY OF WHA YU AND AS SUCH MAY NOT BE COPIED, REPRODUCED, OR GIVEN TO THIRJ PARTIES WITHOUT THE WRITTEN CONSENT OF WHA YU.

PIFA Antenna Assembly(With housing)  
 中磊C147-510422-A(SSR-74152)SPEC:868MHz~908MHz

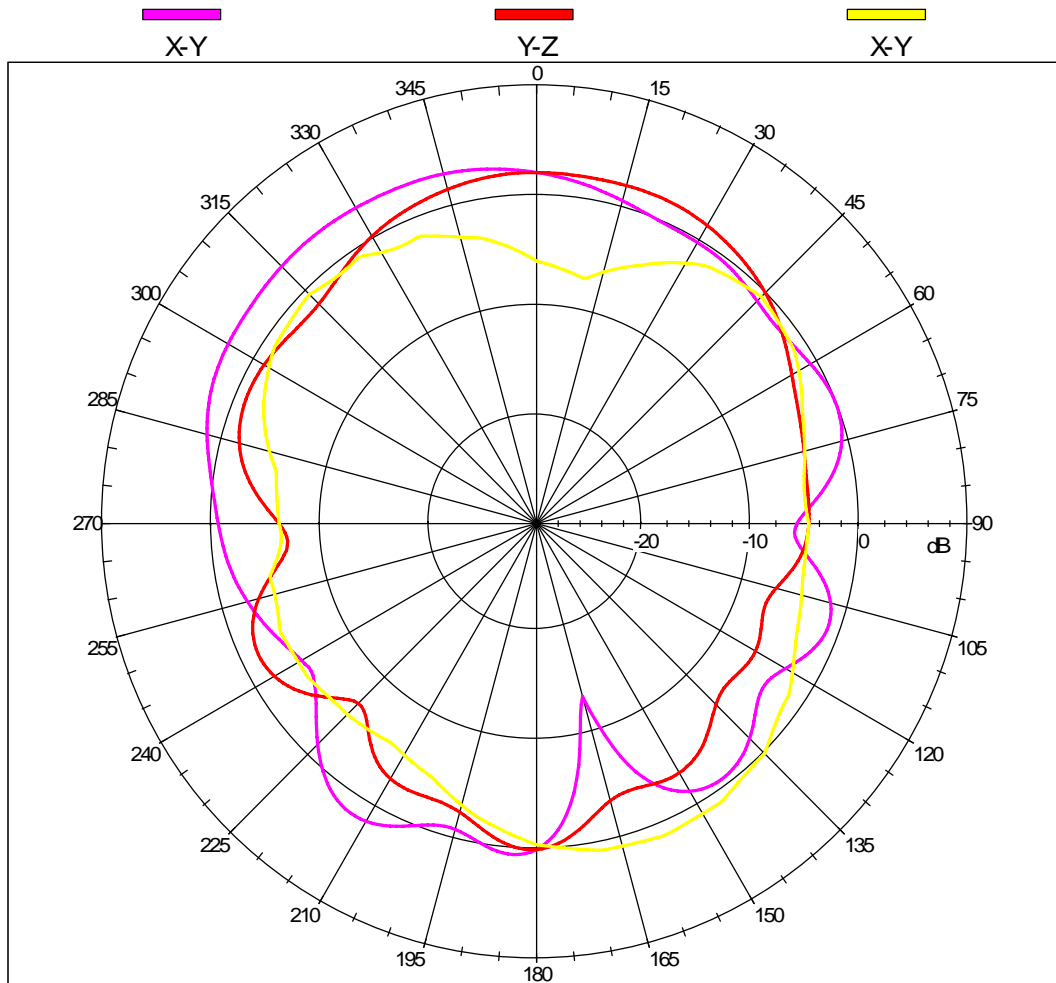


Far-field Power Distribution on X-Z Plane(E-Plane of L3 Pol Sense)

Gain=1.879 dBi; Efficiency: 82.268% @0.86800 GHz(SSR-74152) With housing



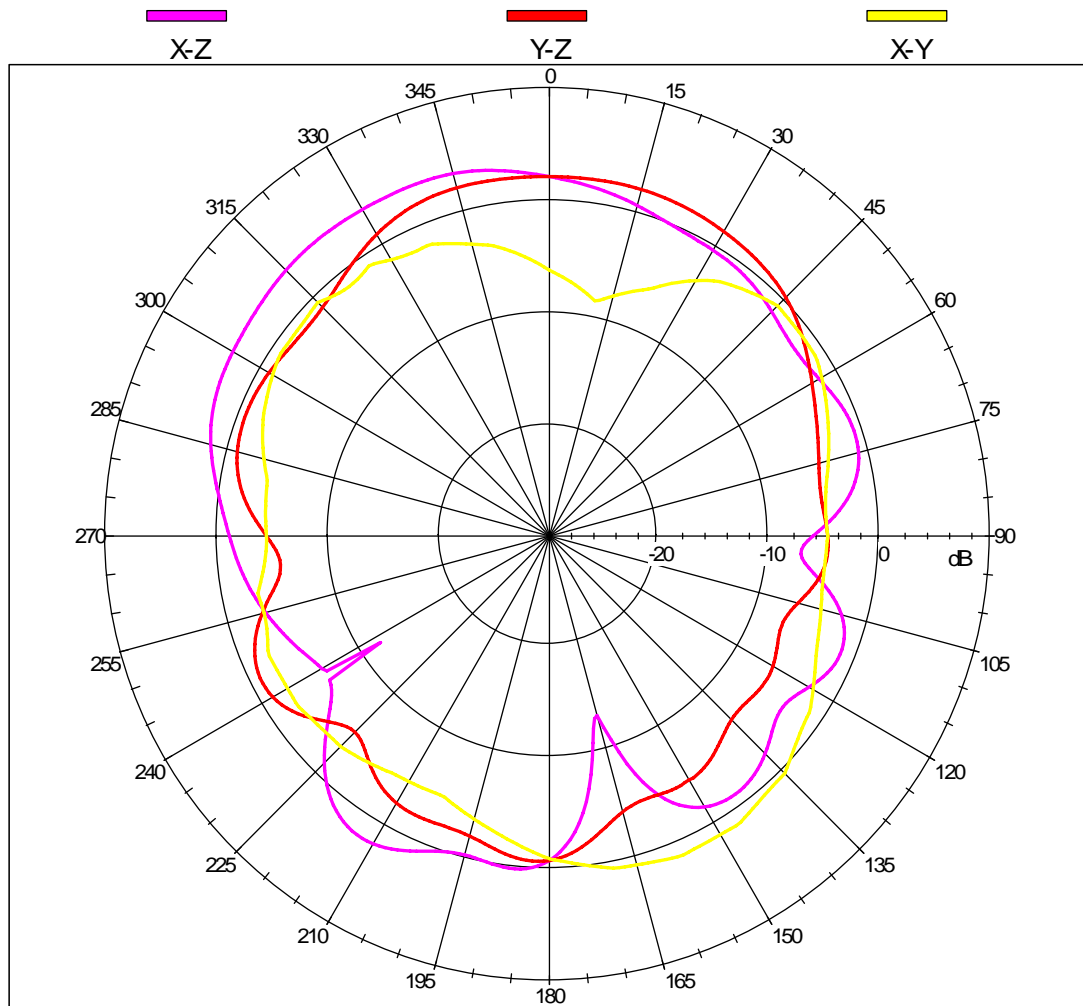
Far-field Power Distribution on X-Z Plane(E-Plane of L3 Pol Sense)  
Gain=2.680 dBi; Efficiency: 96.403% @0.88800 GHz(SSR-74152) With housing



2007/12/13

Far-field Power Distribution on X-Z Plane(E-Plane of L3 Pol Sense)

Gain=3.558 dBi; Efficiency: 90.050% @0.90800 GHz(SSR-74152) With housing



2007/12/13



Date : 2005/02/02

Our Spec. No. WS05-M016

MESSRS.

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SPECIFICATION  
FOR  
HIGH FREQUENCY COAXIAL CABLE  
" KHCX - 32AWG - SB - TA " GRAY

---

SHOWA ELECTRIC WIRE & CABLE CO., LTD.

TORANOMON

TOKYO JAPAN

*T. Mori*

---

T. Mori  
Manager, Engineering Section  
Engineering Dept.  
Electronic Wire Business Unit

## 1. 適用(SCOPE)

本仕様書は電子機器などの内部配線に使用される細径同軸“KHCX-32AWG-SB-TA”の構造と特性について定める。

This specification covers the construction and characteristics of coaxial cable “KHCX-32AWG-SB-TA” for internal wiring of electronic equipment.

## 2. ケーブル型名の説明 (EXPLANATION OF CABLE TYPE)

KHCX-32AWG-SB-TA

(1) (2) (3) (4)

(1) ケーブル略称 (Cable Abbreviation)

(2) 導体サイズ (Conductor Size)

(3) Inner Conductor Type (4) Outer Conductor Type.

## 3. 構造(CONSTRUCTION)

項目 Item		要求特性 Requirement
内部導体 Inner conductor	材質 Material	銀めっき軟銅線 Silver coated annealed copper wire
	構成 Stranding	7/0.08mm
	外径 Diameter	標準 0.24mm Nom. 0.24mm
絶縁体 Insulation	材質 Material	FEP
	色別 Color	自然色 Natural
	厚さ Thickness	標準 0.22mm Nom. 0.22mm
	外径 Diameter	0.68 +0.04/ -0.02mm
外部導体 Outer conductor	材質 Material	錫めっき銅合金線編組 Tinned copper alloy wire braid shield
	構成 Stranding	16/4/0.05 mm
	編組密度 Coverage	Approx. 90%
シース Sheath	材質 Material	FEP
	色別 Color	灰・白・黒 Gray・White・Black
	厚さ Thickness	標準 0.10mm Nom. 0.10mm
仕上外径 Overall diameter		1.13mm +0.08/ -0.05mm
概算質量 Approximate mass		3 kg/km

## 4. 特性 (CHARACTERISTICS)

項目 Item	単位 Unit	要求特性 Requirements
導体抵抗 Conductor Resistance	$\Omega$ /km	597 以下 (20°C) Max. 520 (at 20°C)
絶縁抵抗 Insulation Resistance	M $\Omega$ km	1,500 以上 (DC 500V 1 分間充電後, 20°C) Min. 1,500 (After charge DC 500V for 1 min. at 20°C)
耐電圧 Dielectric Strength	-	絶縁体 : AC.1.5kV/0.15 秒間 (スパークテスト) Dielectric core : No breakdown at AC.1.5kV for 0.15sec by spark test.
		シース : AC.1.5kV/0.15 秒間 (スパークテスト) Jacket : No breakdown at AC.1.5kV for 0.15sec by spark test.
		内部導体-外部導体間 : AC.500V/1 分間 No breakdown at AC.500V for 1 min between outer conductor and inner conductor.
静電容量 Capacitance	pF/m	標準 98 (at 1kHz) Nom. 98 (at 1kHz)
特性インピーダンス Characteristic Impedance	$\Omega$	50 $\pm$ 2 (at TDR)
減衰量 Attenuation	dB/m	2.0GHz : 2.9 以下 Max.2.9 2.4GHz : 3.2 以下 Max.3.2 3.0GHz : 3.7 以下 Max.3.7 4.0GHz : 4.3 以下 Max.4.3 5.0GHz : 4.8 以下 Max.4.8 6.0GHz : 5.3 以下 Max.5.3
VSWR	--	2.4~2.5GHz : 1.20 以下 Max.1.20 4.8~6.0GHz : 1.40 以下 Max.1.40
耐はんだ性 Heat resistance for solder	--	絶縁体およびシースの寸法変化は 0.2mm 以下のこと。 Shrink and expansion of dielectric core or jacket should not be more than 0.2mm. 試験条件(test condition) : 255°C $\pm$ 5°C * 3 sec.

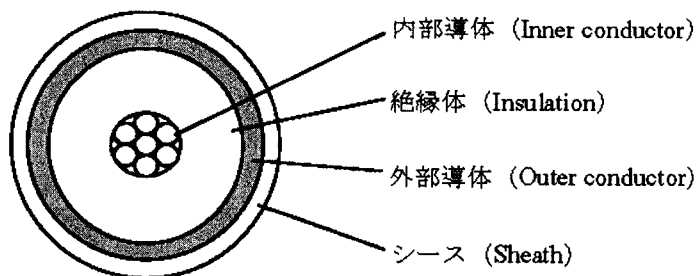


図 1 .ケーブル構造図

Fig.1. Cable Cross-Section



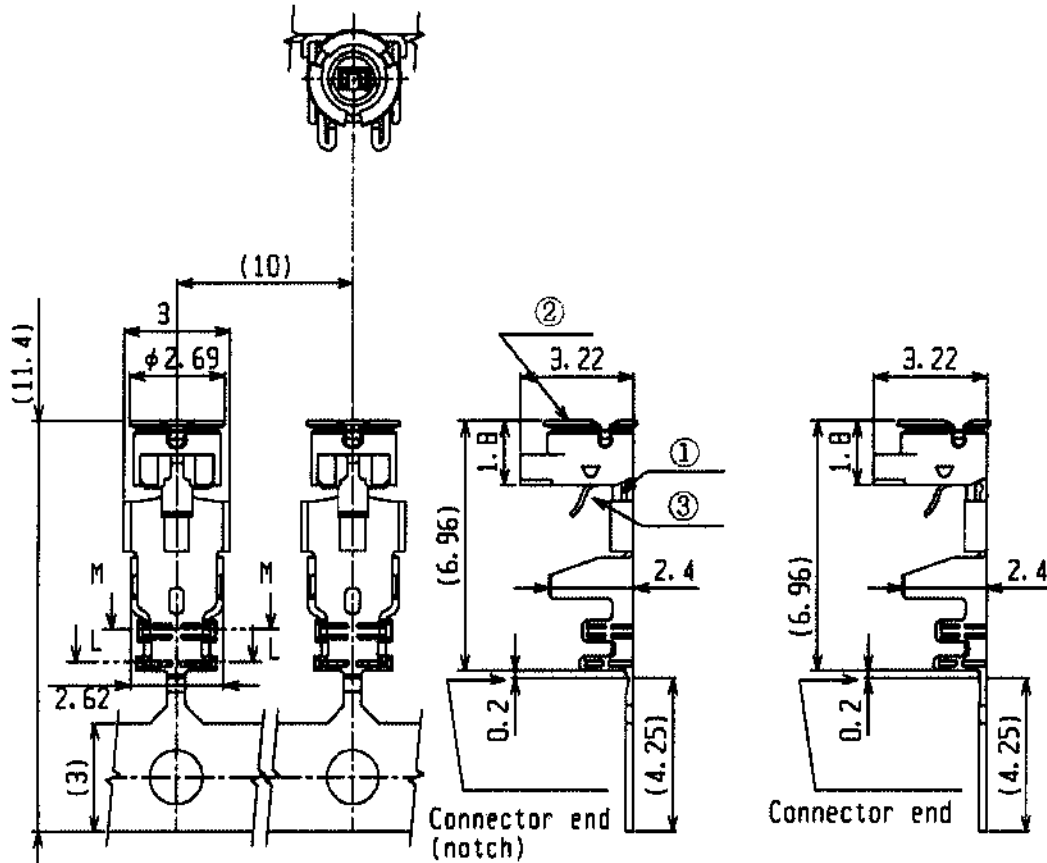
# 譚裕實業股份有限公司

WHA YU INDUSTRIAL CO., LTD

## Connector 材質證明書

譚裕料號 Whayu P/N	Z101-02110002-A1	產品名稱 Product Name	MHF Plug for $\phi$ 1.13 Coaxial Cable
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### 結構圖面



材質成份								表面處理
1	絕緣	PBT	Polybutylene Terephthalate(UL 94V-0)					Black
2	外殼	Phos. Bronze	Cu	Sn	P	Zn	Pb	鍍金 0.05 $\mu$ m
3	中心夾持	Phos. Bronze	Cu	Sn	P	Zn	Pb	鍍金 0.1 $\mu$ m

Remark : 插拔次數 30 次



# SGS Test Report

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**Product : PIFA Antenna Assembly**

## Contents

No	Description		Report No.	Page
1	Cable	$\phi$ 1.13mm Cable	CE/2007/C0427	P.12~16
2	PIFA	洋白銅	CE/2007/11769	P.17~19
3	Connector	MHF	CE/2007/46149 CE/2007/46124 CE/2007/46148	P.20~32
4	Sponge	EVA	GZ0703036357/CHEM	P.33~35
5	雙面膠	3M 467 膠	CE/2006/72382B	P.36~40

**Result for RoHS : PASS**

## Test Report

No. : CE/2007/C0427

Date : 2007/12/06

Page : 1 of 5

SWCC SHOWA DEVICE TECHNOLOGY CO., LTD.  
NO. 1-8, TORANOMON 1-CHOME, MINATO-KU, TOKYO 105-8444



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

Sample Description : ANTENNA COAXIAL CABLE UL-STYLE 11032  
Style/Item No. : FOR KHCX-30AWG-SB-TA / KHCX-32AWG-SB-TA /  
KHCX-36AWG-SB-TA / KHCX-32AWG-WSB-TA GRAY  
Sample Receiving Date : 2007/12/03  
Testing Period : 2007/12/03 TO 2007/12/06

=====  
**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 Hexavalent Chromium for metallic samples by Spot test / Colorimetric Method.  
(6) Determination of PBB and PBDE by GC/MS.  
**Test Result(s)** : Please refer to next page(s).

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

# Test Report

No. : CE/2007/C0427 Date : 2007/12/06

Page : 2 of 5

SWCC SHOWA DEVICE TECHNOLOGY CO., LTD.  
NO. 1-8, TORANOMON 1-CHOME, MINATO-KU, TOKYO 105-8444



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

Test Item (s):	Method (Refer to)	Result				MDL
		No.1	No.2	No.3	No.4	
Cadmium (Cd)	(1)	n.d.	n.d.	n.d.	n.d.	2
Lead (Pb)	(2)	n.d.	n.d.	n.d.	n.d.	2
Mercury (Hg)	(3)	n.d.	n.d.	n.d.	n.d.	2
Hexavalent Chromium Cr(VI) by alkaline extraction	(4)	n.d.	n.d.	---	---	2
Hexavalent Chromium Cr(VI) by Spot test / boiling water extraction	(5)	---	---	Negative	Negative	See Note 5
<b>Sum of PBBs</b>	(6)	n.d.	n.d.	---	---	-
Monobromobiphenyl		n.d.	n.d.	---	---	5
Dibromobiphenyl		n.d.	n.d.	---	---	5
Tribromobiphenyl		n.d.	n.d.	---	---	5
Tetrabromobiphenyl		n.d.	n.d.	---	---	5
Pentabromobiphenyl		n.d.	n.d.	---	---	5
Hexabromobiphenyl		n.d.	n.d.	---	---	5
Heptabromobiphenyl		n.d.	n.d.	---	---	5
Octabromobiphenyl		n.d.	n.d.	---	---	5
Nonabromobiphenyl		n.d.	n.d.	---	---	5
Decabromobiphenyl		n.d.	n.d.	---	---	5
<b>Sum of PBDEs (Mono to Nona) (Note 4)</b>		n.d.	n.d.	---	---	-
Monobromobiphenyl ether		n.d.	n.d.	---	---	5
Dibromobiphenyl ether		n.d.	n.d.	---	---	5
Tribromobiphenyl ether		n.d.	n.d.	---	---	5
Tetrabromobiphenyl ether		n.d.	n.d.	---	---	5
Pentabromobiphenyl ether		n.d.	n.d.	---	---	5
Hexabromobiphenyl ether		n.d.	n.d.	---	---	5
Heptabromobiphenyl ether		n.d.	n.d.	---	---	5
Octabromobiphenyl ether		n.d.	n.d.	---	---	5
Nonabromobiphenyl ether		n.d.	n.d.	---	---	5
Decabromobiphenyl ether		n.d.	n.d.	---	---	5
<b>Sum of PBDEs (Mono to Deca)</b>		n.d.	n.d.	---	---	-

## Test Report

No. : CE/2007/C0427 Date : 2007/12/06

Page : 3 of 5

SWCC SHOWA DEVICE TECHNOLOGY CO., LTD.  
NO. 1-8, TORANOMON 1-CHOME, MINATO-KU, TOKYO 105-8444



### TEST PART DESCRIPTION:

NO.1 : GRAY PLASTIC JACKET  
NO.2 : TRANSPARENT PLASTIC  
NO.3 : SILVER COLORED METAL WIRE  
NO.4 : SILVER COLORED METAL FOIL

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. Spot-test:

Negative = Absence of Cr(VI) coating / surface layer,

Positive = Presence of Cr(VI) coating / surface layer;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed.)

Boiling-water-extraction:

Negative = Absence of Cr(VI) coating / surface layer.

Positive = Presence of Cr(VI) coating / surface layer;

the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm<sup>2</sup> sample surface area.

6. "-" = Not Regulated

7. "--" = Not Conducted



## Test Report

No. : CE/2007/C0427

Date : 2007/12/06

Page : 4 of 5

SWCC SHOWA DEVICE TECHNOLOGY CO., LTD.  
NO. 1-8, TORANOMON 1-CHOME, MINATO-KU, TOKYO 105-8444



## Test Report

No. : CE/2007/C0427

Date : 2007/12/06

Page : 5 of 5

SWCC SHOWA DEVICE TECHNOLOGY CO., LTD.  
NO. 1-8, TORANOMON 1-CHOME, MINATO-KU, TOKYO 105-8444



\*\* End of Report \*\*

## 測試報告

號碼 : CE/2007/11769

日期 : 2007/01/15

頁數 : 1 of 3

青棋五金有限公司



PRO BRASS METAL CO., LTD.

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 : 洋白板  
Sample Description : NICKEL SILVER  
樣品型號(Style/Item No.) : C7701  
收件日期(Sample Receiving Date) : 2007/1/8  
測試期間(Testing Period) : 2007/1/8 TO 2007/01/15

=====  
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) 針對金屬材質之樣品，用 Spot test / Colorimetric 方法檢測六價鉻含量。 / Determination of Hexavalent Chromium for metallic samples by Spot test / Colorimetric Method.

測試結果 / Test Result(s) : 請見下一頁。

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

# 測試報告

號碼：CE/2007/11769

日期：2007/01/15

頁數：2 of 3

青棋五金有限公司



PRO BRASS METAL CO., LTD.

## 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)
		No.1	
鎘 / Cadmium (Cd)	(1)	n.d.	2
鉛 / Lead (Pb)	(2)	22.8	2
汞 / Mercury (Hg)	(3)	n.d.	2
六價鉻 / Hexavalent Chromium Cr(VI) by Spot test / boiling water	(4)	Negative	See Note 4

## 測試部位描述 / TEST PART DESCRIPTION:

NO.1 : 銀色金屬 / SILVER COLORED METAL

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. Spot-test:

Negative = Absence of CrVI coating / surface layer,

Positive = Presence of CrVI coating / surface layer;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed.)

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 = Absence of CrVI coating / surface layer,

Positive = Presence of CrVI coating / surface layer; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm<sup>2</sup> sample surface area.

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 cm<sup>2</sup> (sample surface area)

## 測試報告

號碼：CE/2007/11769

日期：2007/01/15

頁數：3 of 3

青棋五金有限公司



PRO BRASS METAL CO., LTD.



\*\* 報告結尾 \*\*

# 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

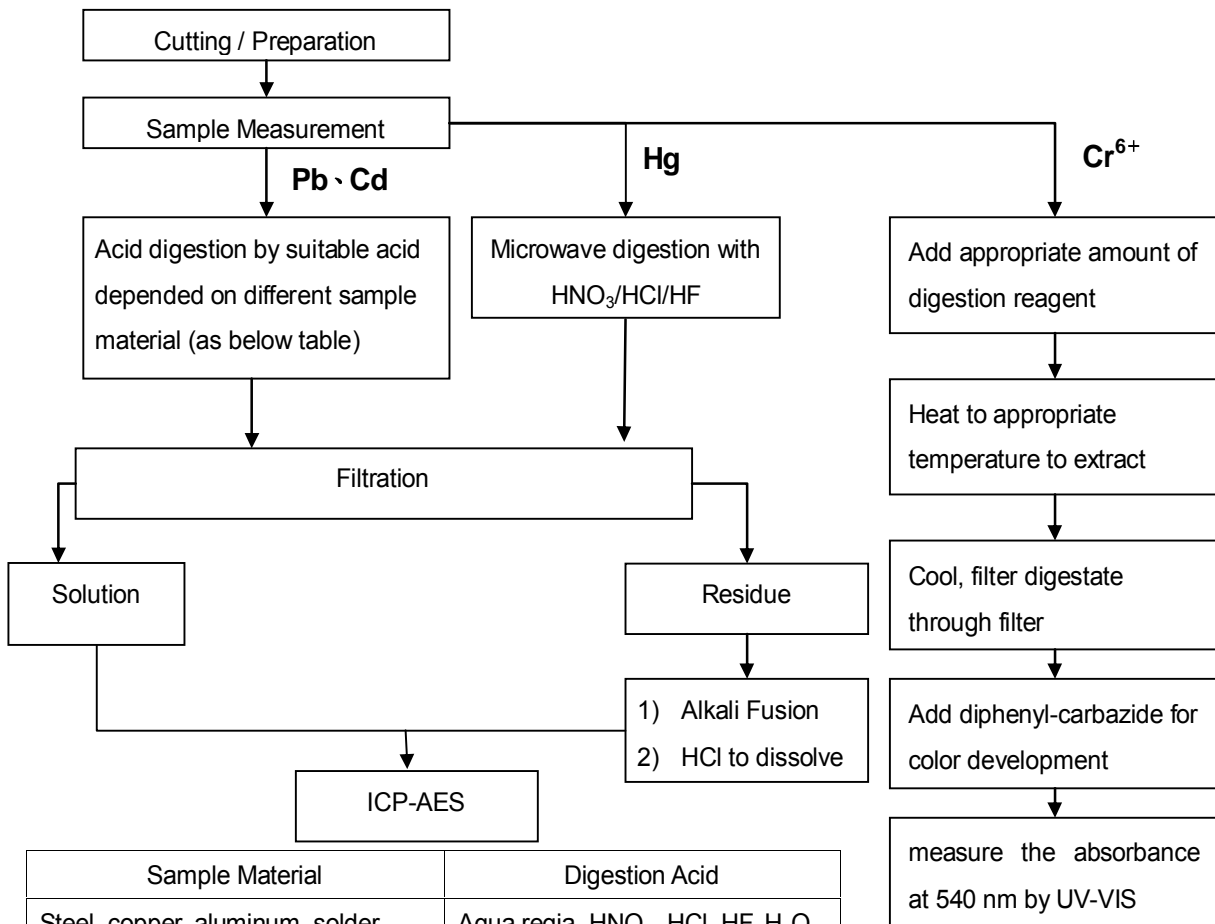
# Test Report

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/2007/46124    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

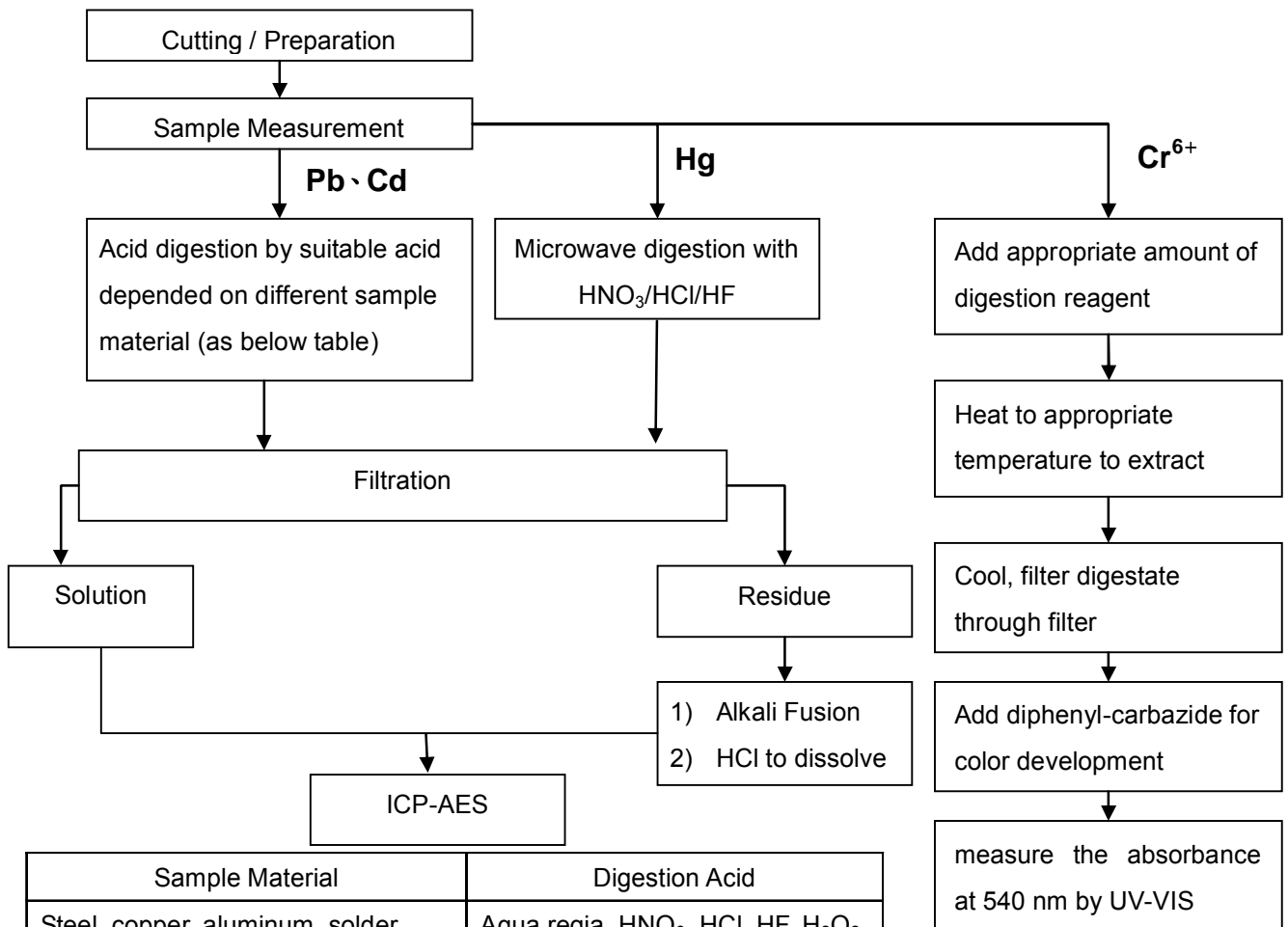
Page : 3 of 5

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

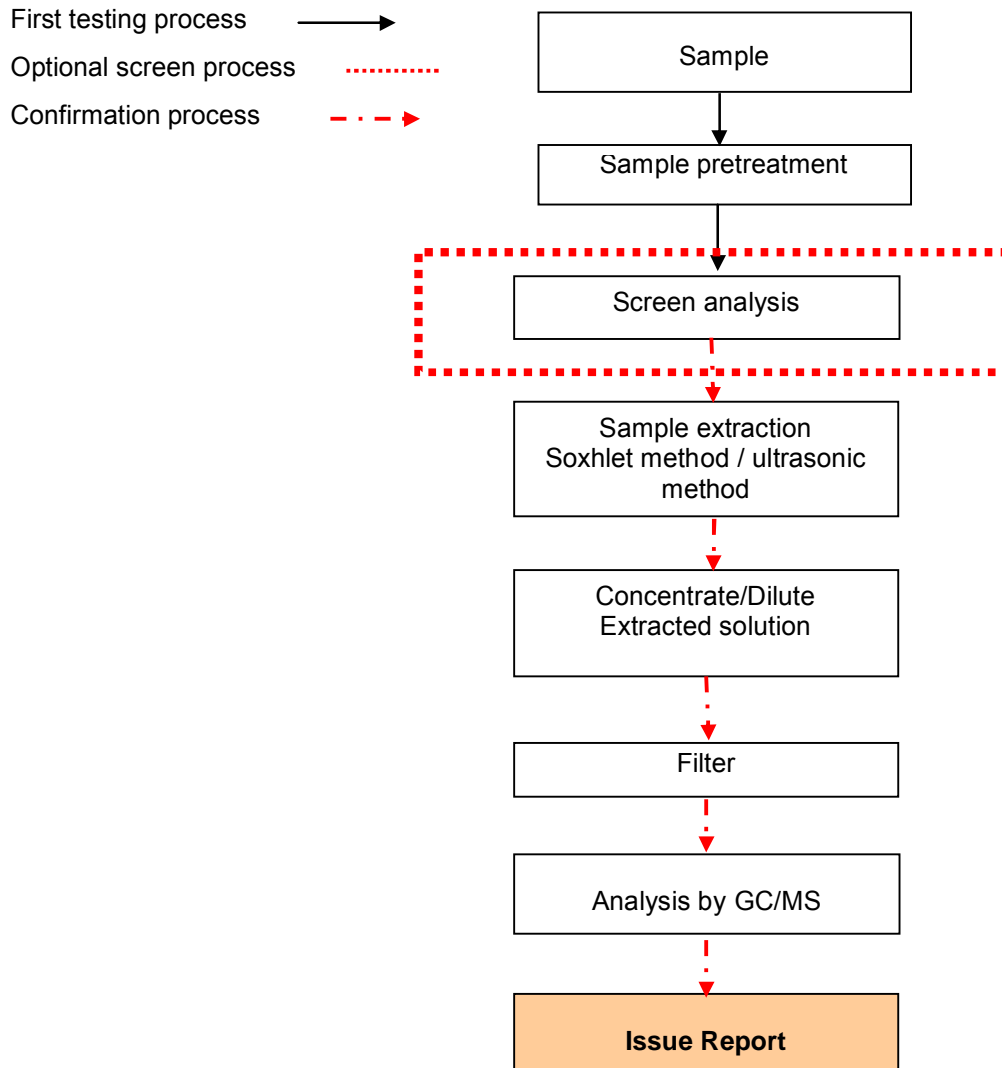


Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
Glass	HNO <sub>3</sub> /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO <sub>3</sub>
Plastic	H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , 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/2007/46124    Date : 2007/04/30

Page : 5 of 5

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



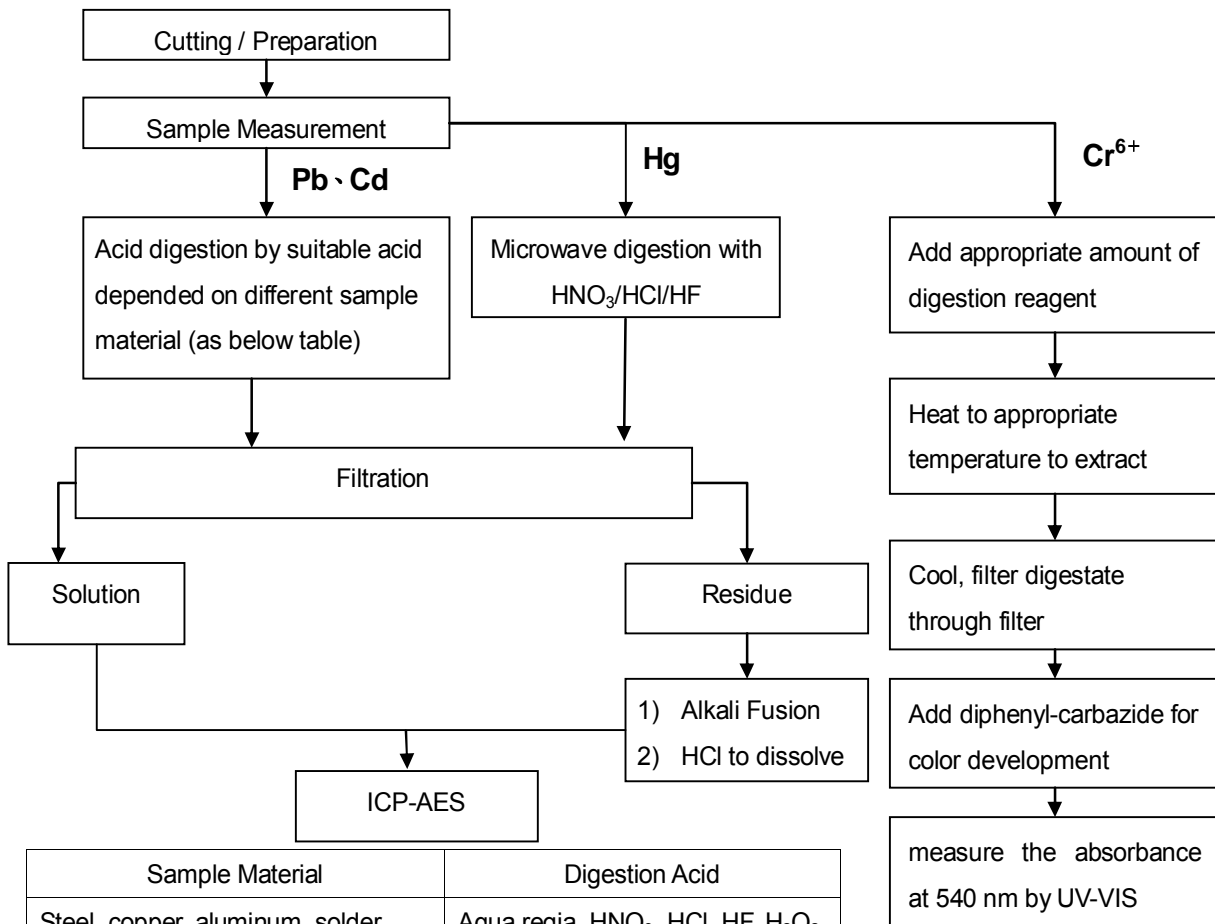
# Test Report

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  
Page : 4 of 4



\*\* End of Report \*\*

**Test Report**

No.: GZ0703036357/CHEM

Date: MAR 22, 2007

Page 1 of 3

DONG GUAN CITY DAO JIAO YUXIN SHOES MATERIAL FACTORY  
YUAN JIANG ROAD, BAI LU VILLAGE, CAI BAI MANAGEMENT AREA, DAOJIAO TOWN, DONG GUAN CITY OF  
GUANG DONG

The following sample(s) was/were submitted and identified on behalf of the applicant as 黑 EVA

SGS Ref No. : SZ10294148-2.1  
Sample Receiving Date : MAR 16, 2007  
Testing Period : MAR 16, 2007 TO MAR 22, 2007

Test Requested : To determine the Cadmium, Lead, Mercury, Hexavalent Chromium, PBBs (Polybrominated Biphenyls) & PBDEs (Polybrominated Diphenylethers) content in the submitted sample.

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.  
(2) Determination of Lead by ICP.  
(3) Determination of Mercury by ICP.  
(4) Determination of Hexavalent Chromium by Colorimetric Method.  
(5) Determination of PBBs and PBDEs by GC-MS.

Test Results : Please refer to next page.

Signed for and on behalf of  
SGS-CSTC Ltd.

  
Huang Fang, Sunny  
Sr. Engineer

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