深圳市飞宇信电子有限公司

SHENZHEN FMC ELECTRONICX CO.,LTD.

规格承认书

Specification for Approval

客户名称：　　矽递

Customer:

规格描述:　　IPEX-PCB-1.13 黑-L45MM

Part name

飞宇信料号：　　3020-1766

Part No.

客户料号:

Customer Part No.

客户承认印　CUSTOMER APPROVED BY		
APPROVAL	CHIEF	SUPERVISOR

CHIEF	SALES	CHIEF	DESIGN
顾长飞	夏燕	蒋薪平	ALAN
Date:2014-07-17		Date:2014-07-17	
感谢给予敝公司送样承认之机会.如惠蒙承认通过,烦请将此表签回敝公司. OWE GRATITUDE TO GIVE US THE OPPORTUNITY OF SAMPLE APPROVAL.PLEASE RETURN　THIS FROM TO US AFTER YOURS ACCEPT.			

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INDEX.

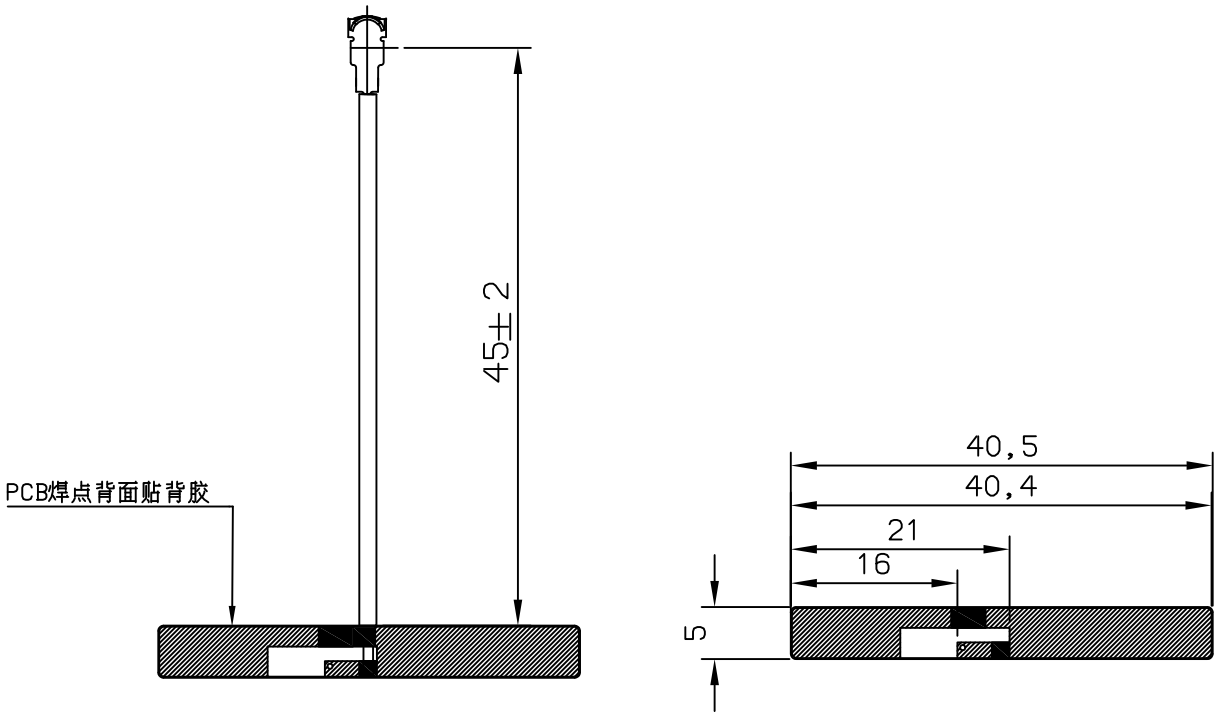
修改记录

版本	日期	工程师	修 改 内 容
A	2014-07-17	ALAN	

END PRODUCT DRAWING 成品图

RoHS Compliant

REV	DATE	DESCRIPTION	ECN NO.	NAME
A	2014.07.17	新订图面		ALAN



要求:

1. 线材无损伤
2. 成品须100%测试导通OK
3. 成品须100%全检OK.
4. 采用环保制程.
5. 频率: 2400-2500MHZ 增益: 2.5DBI

No.	PART No.	Description	Qty	Name
⑥				
⑤				
④	1202-0149	40.3*4.8*0.15mm sony green G9000胶纸环保	1	背胶
③	1113-0004	20278-112R-13-插头	1	IPEX
②	1601-0056	2.4G PCB Antenna(40.5*5.0*1.3mm)	1	PCB
①	1301-0009	1.13黑-48-锡-FEP	1	线材

角法 ANGLE PROJECTION

公差 GENERAL TOLERANCE

100~200:	± 3.00
50~100:	± 2.00
25~50 :	± 0.20
10~25 :	± 0.10
1~10:	±0.05

▽:Critical Dim
@:Major

产品名称(PRODUCT NAME)	IPEX-PCB-1.13黑-L45MM				
产品料号(PRODUCT NO)	3020-1766	单位(UNIT)	M M	比例(SIZE)	FREE
		页数(PAGE)	1 OF 1	幅面(FORMAT)	A4
设计(D S)	ALAN				
审核(CHK)					
核准(APPD)					

深圳飞宇信电子有限公司
SHENZHEN FLY ELECTRONIC CO.,LTD

表单编号: FYX/E-QR-14A 版本: 第一版

产品规格参数表

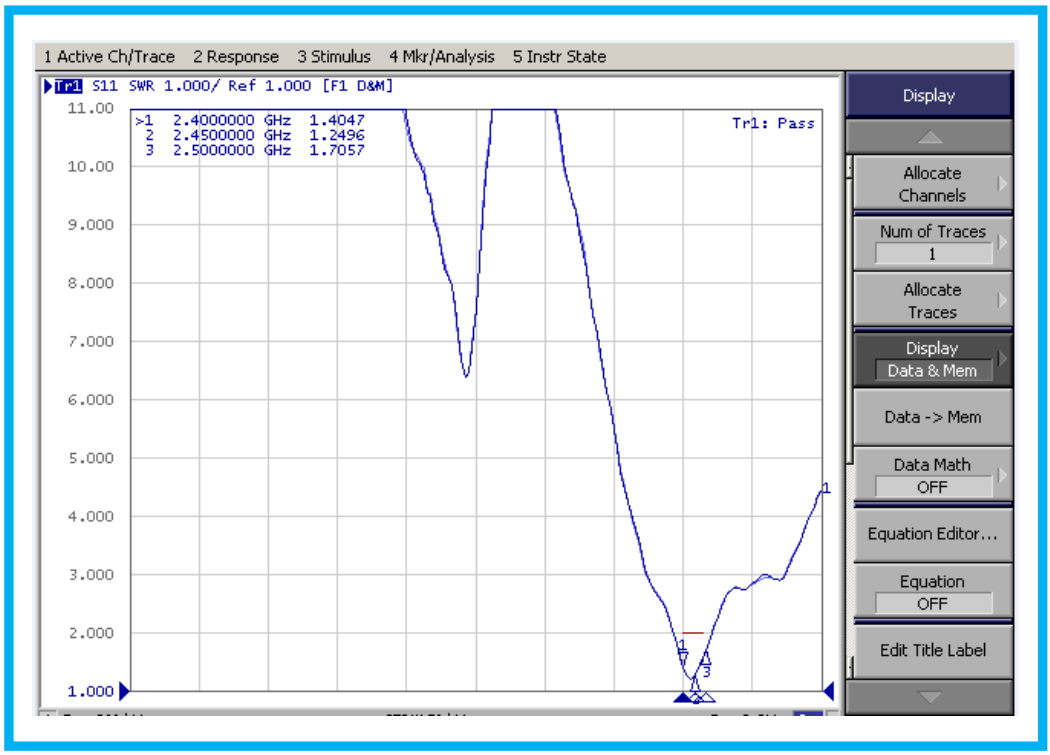
SPECIFICATION：**IPEX-PCB-113 黑-L=45MM**

DESCRIPTION	VALUE
Frequency range	2400-2500MHZ
Impedance	50Ω
V.S.W.R	2.0Max
Gain	2.5dBi
Radiation	Omni-directional
Radiating element	1/4 Wave Helical
Polarization	linear Vertical
Admitted power	1W
Connector	IPEX
Operating temp	-10℃~+60℃
Storage temp	-10℃~+70℃

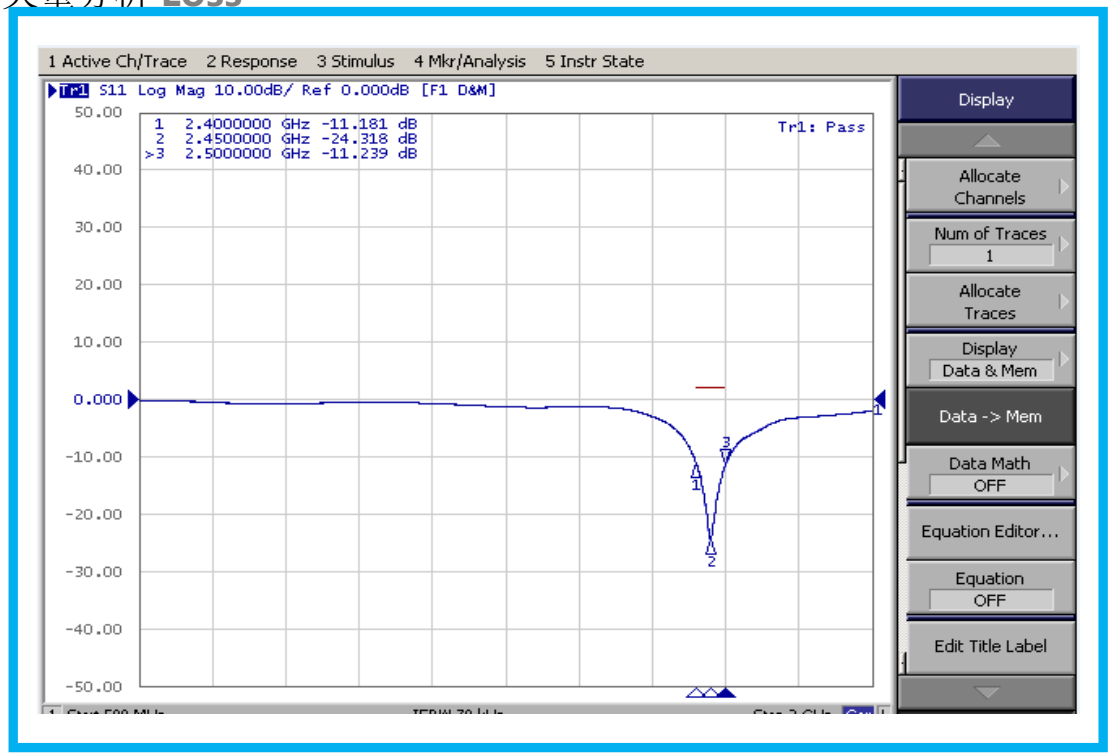
深 圳 市 飞 宇 信 电 子 有 限 公 司

SHENZHEN FMC ELECTRONICX CO.,LTD.

矢量分析 SWR



矢量分析 Loss



可靠性测试报告

Test group :

No	Test description
1	Salt Spray
2	Humidity
3	Temperature Cycling
4	Thermal Shock
5	Cable Solder Point Pull Force
6	Connector and Cable Pull Force

Test Group process :

Test Description Sequence	Test Group					
	1	**2**	**3**	**4**	**5**	**6**
Examination of product	1,	1	1	1	1	1
Electrical		3	3	3		
Salt Spray	2					
Humidity		2				
Temperature Cycling			2			
Thermal Shock				2		
Cable Solder Point Pull Force					2	
Connector and Cable Pull Force						2
Sample Size per Test Group	3	3	3	3	5	5

Note : 1. Test specimen(s) shall be prepared in accordance with approval sheets and shall be selected at random.

1.Test Group 1 [Salt Spray]:

1.1 Test item & Test method:

	Test Item	Test Method
1	Salt Spray	/

1.2 Test condition:

1.2.1 Salt Spray: a. Temperature: 35±1.1℃.

b. Humidity: 95%~98%(R.H.).

c. PH: 6.5~7.2.

d. Duration: 24 hours.

1.3 Test Request:

1.3.1 Salt Spray: No evidence of damage.

1.4 Picture:

1.5 Test Value:

	1	2	3
Visual Inspect.	OK	OK	OK
Salt Spray	OK	OK	OK

1.6 Test Result:

Comment	PASS

2.Test Group 2 [Humidity] :

2.1 Test item & Test method :

	Test Item	Test Method
1	Humidity	/

2.2 Test condition :

2.2.1 Humidity:a. Temperature :40°C

b. Humidity : 90 ~ 95% (R.H)

c. Duration : 96 hours

2.3 Test request :

2.3.1 Humidity:

a. No evidence of damage.

b. The electrical performance should meet the spec. specified.

2.4 Test value :

	1	2	3
Visual Inspect.	OK	OK	OK
Thermal shock	OK	OK	OK
Electrical	OK	OK	OK

2.5 Test result :

Comment	PASS

、*3.Test Group 3: [*Temperature Cycling*]*

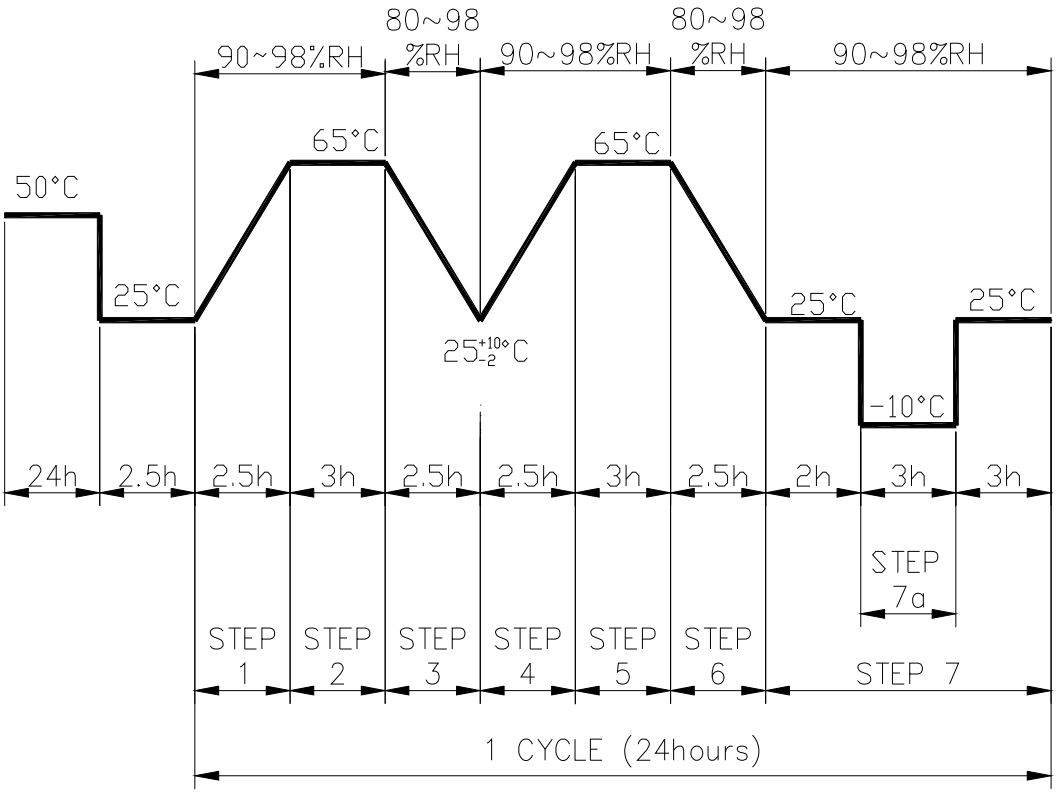
3.1 Test Item & Test method:

	Test Item	Test Method
1	Temperature Cycling	/

3.2 Test condition:

3.2.1 Temperature Cycling:

Temperature Cycling (excluding vibration);1 cycles (1 cycle = 24 hours) with connectors Engaged



Note: Shall meet visual requirements, show no physical damage, and shall meet requirements of additional tests

3.3 Test Request:

3.3.1 Temperature Cycling:

a. No physical damage.

b. Meet requirements of additional tests as specified in the sequence.

3.4 Test Value:

	1	2	3
Visual Inspect.	OK	OK	OK
Temperature Cycling	OK	OK	OK
Electrical	OK	OK	OK

3.5 Test Result:

Comment	PASS

4.Test Group 4: [Thermal shock]

4.1 Test Item & Test method:

	Test Item	Test Method
1	Thermal shock	/

4.2 Test condition:

4.2.1 Thermal shock: -55~85℃, 10cycles, extreme 30minutes.

4.3 Test Request:

4.3.1 Thermal Shock:

a. No physical damage.

b. Meet requirements of additional tests as specified in the sequence.

4.4 Test Value:

	1	2	3
Visual Inspect.	OK	OK	OK
Thermal shock	OK	OK	OK
Electrical	OK	OK	OK

4.5 Test Result:

Comment	PASS

5.Test Group 5: [Cable Solder Point Pull Force]

5.1 Test item & Test method:

	Test Item	Test Method
1	Cable Solder Point Pull Force	/

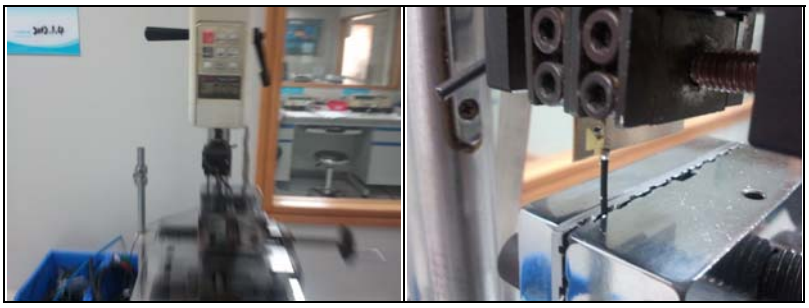
5.2 Test condition:

5.2.1 Cable Solder Point Pull Force: Rate: 25mm per minute

5.3 Test Request:

5.3.1 Cable Solder Point Pull Force: 3.0 kg Minimum

5.4 Picture:



5.5 Test Value:

	1	2	3	4	5
Visual Inspection	OK	OK	OK	OK	OK
Cable Solder Point Pull Force(Kg)	3.22	4.12	4.23	3.51	3.12

5.6 Test Result:

Comment	PASS

6.Test Group 6: [Connector and Cable Pull Force]

6.1 Test item & Test method:

	Test Item	Test Method
1	Connector and Cable Pull Force	/

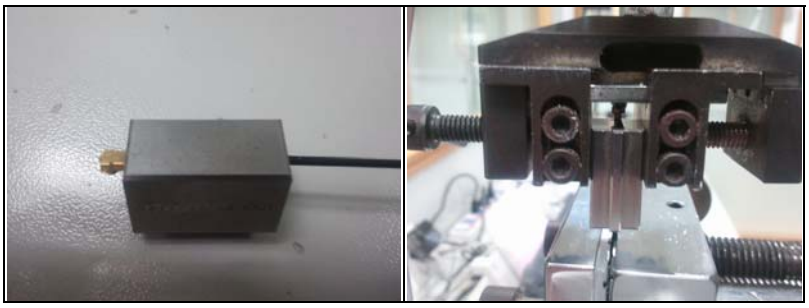
6.2 Test condition:

6.2.1 Cable Solder Point Pull Force: Rate: 25mm per minute

6.3 Test Request:

6.3.1 Cable Solder Point Pull Force: 1.0 kg Minimum

6.4 Picture:



6.5 Test Value:

	1	2	3	4	5
Visual Inspection	OK	OK	OK	OK	OK
Cable Solder Point Pull Force(Kg)	3.02	2.98	2.76	3.12	3.28

6.6 Test Result:

Comment	PASS

Testing equipment :

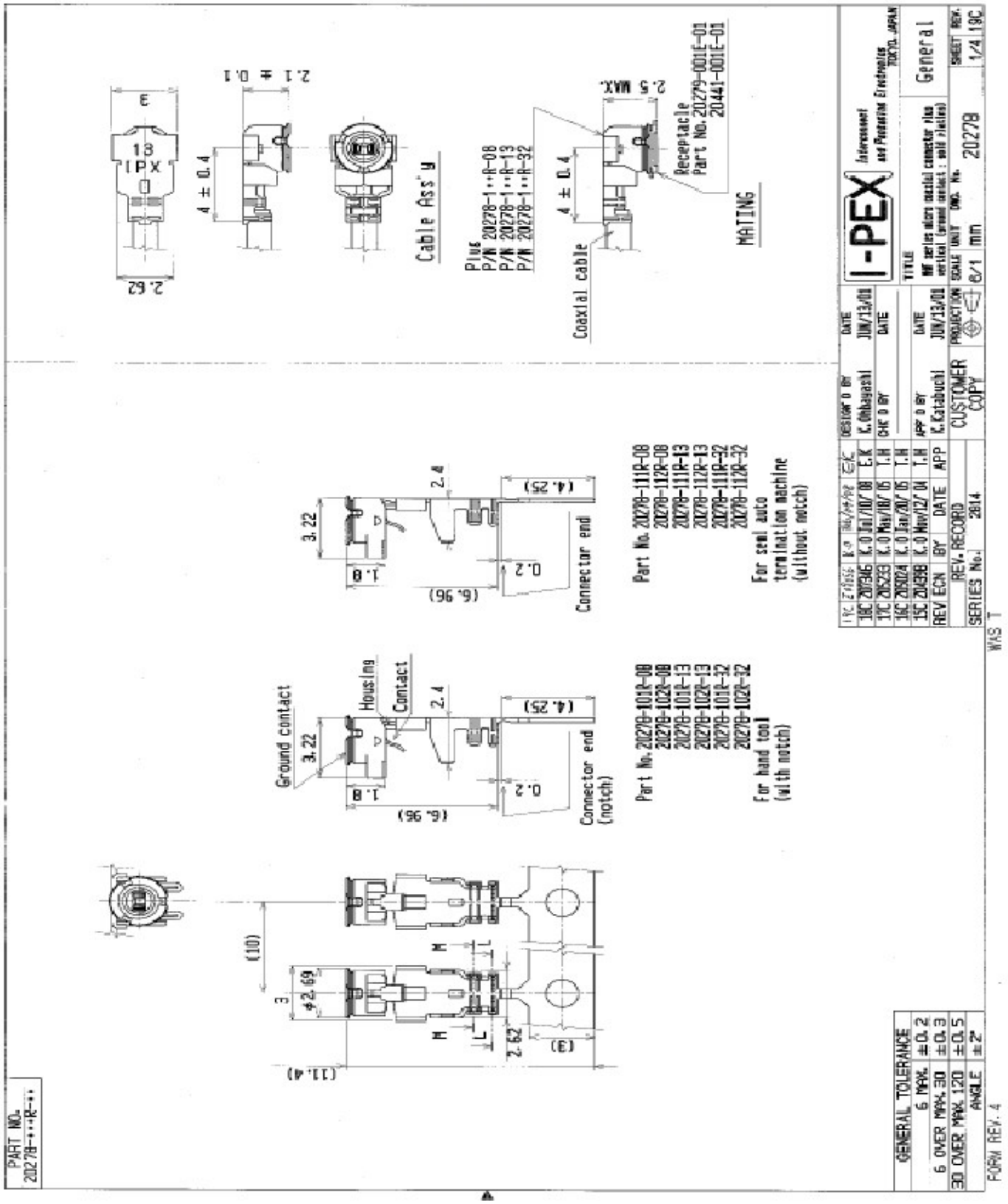
Instrument	Model
Performance Network Analyzer	Agilent / E5071C
Thermal Shock Tester	TERCHY／TS-72D
Pull Force Tester	SE TESTYSTEMS/1220
Humidity and Temperature Chamber	KSON／THS-A7L+-150

UNDER BLANK

IPEX端子规格

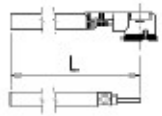
Material Data Sheet

MHF Connector

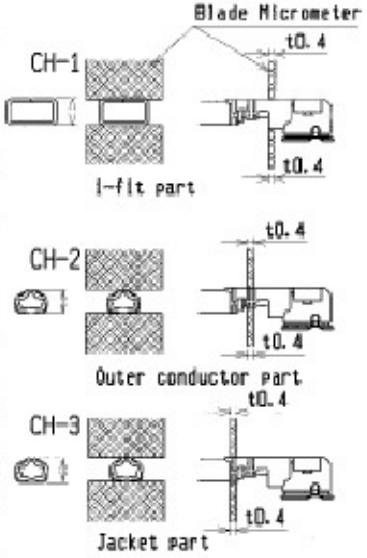


Part No. of non halogen free type		20278-101R-08 / 20278-111R-08	20278-101R-13 / 20278-111R-13	20278-101R-32 / 20278-111R-32	20278-101R-18 / 20278-111R-18
Part No. of halogen free type		20278-102R-08 / 20278-112R-08	20278-102R-13 / 20278-112R-13	20278-102R-32 / 20278-112R-32	20278-102R-18 / 20278-112R-18
Housing color		White	Black	Black	White
Applicable cable nominal dimension		2.09±0.1, 1.25±0.1, 1.16±0.1, φ0.81 Nominal, (φ0.65), φ0.4 Nominal, AWG#36(7/0.05), ※ NOTE-1	2.09±0.1, 1.25±0.1, 1.16±0.1, φ1.13 Nominal, (φ0.93), φ0.68 Nominal, AWG#32(7/0.08), ※ NOTE-1	2.09±0.1, 1.25±0.1, 1.16±0.1, φ1.32 Nominal, (φ1.12), φ0.66 Nominal, AWG#32(7/0.08), ※ NOTE-1	2.09±0.1, 1.25±0.1, 1.16±0.1, RG178 B/U, φ1.8 Nominal, (φ1.35), φ0.84 Nominal, AWG#30(7/0.102), ※ NOTE-1
Braided shield of Outer conductor 外部導体の編組		Single / 1重編組	Single / 1重編組	Double / 2重編組	Single / 1重編組
P/N of hand Tool / P/N of semi auto termination machine		90187-008C / 90213-008C	90187-013C / 90213-013C	90187-032C / 90213-032C	90233-018 / 90232-018
Sect. M-M		1.68, 1.12	2.24, 1.48	2.29, 1.56	2.71, 1.9
Sect. L-L		1.72, 1.19	2.28, 1.55	2.37, 1.71	3.1, 2.26
Crimp Height	CH-1	1.34~1.40	1.34~1.40	1.34~1.40	1.34~1.40
	CH-2	0.76~0.84	1.06~1.14	1.20~1.30	1.41~1.49
	CH-3	0.85~0.97	1.15~1.35	1.26~1.46	1.70~1.80

Cable cut length



Crimp Height



NOTE-1
中心導体,外部導体への半田コーティング は不可
Must not use solder coated
Inner conductor and outer conductor.

REV	ECN	BY	DATE	APP	DESIGN'D BY	DATE	I-PEX Interconnect and Production Electronics TOKYO, JAPAN				
					CHK'D BY	DATE	TITLE: MF series micro coaxial connector plug vertical (ground contact : solid plating)	General			
					APP'D BY	DATE					
REV. RECORD					CUSTOMER COPY		PROJECTION	SCALE: -/-	UNIT: mm	DWG. No.: 20278	SHEET: 3/4
SERIES No.: 2814											REV.: 19C

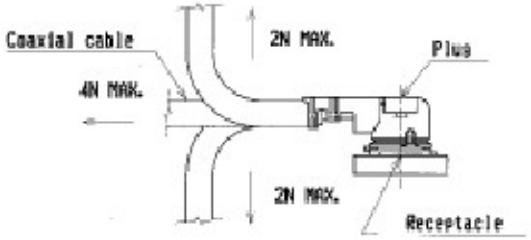
FORM REV. 4

WAS T

Notes

1. Material
(1) Housing : PBT , UL94V-0
(2) Contact
phosphor bronze
gold plating 0.1μm MIN.
over nickel 1.27μm MIN.
(3) Ground contact
phosphor bronze
gold plating 0.05μm MIN.
over nickel 1.27μm MIN.
2. Packing : reel
3. Mating partner part No.
: 20279-001E-01, 20441-001E-01
4. Permissible load of cable at mating

1. 材 料
(1) ハウジング : PBT, UL94V-0
(2) コンタクト
りん青銅
金メッキ0.1μm MIN.
下地 ニッケル1.27μm MIN.
(3) グランドコンタクト
りん青銅
金メッキ0.05μm MIN.
下地 ニッケル1.27μm MIN.
2. 梱包 : リール
3. かん合相手 part No.
: 20279-001E-01, 20441-001E-01
4. コネクタかん合後のケーブルに対する荷重



5. Suggestions for mating & unmating operation.

5-1 Matins.
Please mate the connector straightly to vertical direction as much as possible, adjusting the mating axis of plug and receptacle.
As excessive slant angle mating may break the connector , please don't do it.

5. コネクタかん合時およびび抜去時の注意

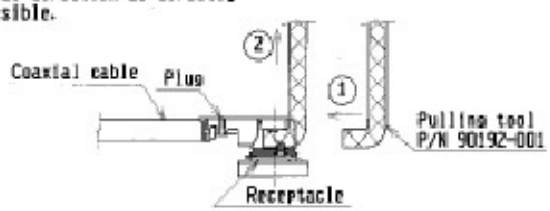
5-1 コネクタ挿入時
PlugとReceptacleのかん合軸を合わせ、できるだけ垂直に挿入して下さい。
無理な斜め挿入は行わないで下さい。
コネクタ破損の原因となりますので、過度なこじり挿抜は行わないで下さい。

5-2 Unmating.

(1) In case of unmating by pulling tool.
Please use the pulling tool as the following drawing, and please pull plug to vertical direction as directly as possible.

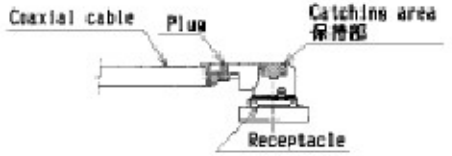
5-2 コネクタ抜去時

(1) 抜去ジグを用いる場合
下図のようにできるだけ垂直に引き抜いて下さい。



(2) In case of unmating directly by hand
Please catch the catching area of plug , and please pull plug to vertical direction as directly as possible.

(2) 手で直接引き抜く場合
下図の保持部をつかみ、できるだけ垂直に引き抜いて下さい。



5-3 Crimp over standards of outer conductor

Standards:Less than 10% from total numbers of outer conductor
(Numbers of outer conductor's crimp over from outer conductor's barrel)

5-3 外部導体はみ出し量

外部導体はみ出し量規定
：外部導体トータル本数の10%以下
（外部導体バレルの外にはみ出し数量）

5-4 Caution about Heat shrinkage tubes

Please be careful not to melt housing when using heat shrinkage tubes.
It will become cause of open circuit.

5-4 熱収縮チューブについての注意

熱収縮チューブで外部導体を覆う場合は、導通不良の原因となりますので、熱によりハウジングを溶融させないよう注意してください。

6. This is 'Pb-free' connector.

6. 本コネクタは" Pb-free' である

GENERAL TOLERANCE	
6 MAX.	±0.2
6 OVER MAX. 30	±0.3
30 OVER MAX. 120	±0.5
ANGLE	±2°

REV.	ECN	BY	DATE	APP
REV. RECORD				
SERIES No.	2814			

DESIGN'D BY DATE
CHK'D BY DATE
APP'D BY DATE

I-PEX Interconnect and Pantastic Electronics TOKYO, JAPAN

TITLE: MM series micro coaxial connector plug vertical (crowed contact ; gold plating)

General

CUSTOMER COPY | PROJECTION | SCALE: -/- | UNIT: mm | DWG. No. 20278 | SHEET 4/4 | REV. 19C

FORM REV-4

WAS T

TITLE	SPECIFICATION NO.	ISSUE	ISSUE DATE	SHEET
CONNECTOR	NMM24-A125		16/May./2012	1 of 14

1. SCOPE 適用

This product specification is applied to microwave coaxial connector cable assembly. Please contact us before using any of the production in the applications not described above.

当納入仕様書は、超小型表面実装同軸ｺﾈｸﾀJSCﾀｲﾌﾟのうち、ｹｰﾌﾞﾙ取付用ﾌﾟﾗｸﾞの仕様について規定します。
この用途以外にご使用の場合には事前に弊社へご連絡ください。

2. PART NUMBER 品番関連

	Part Number 弊社品番	Packaging 梱包形態	Quantity 数量
VEE1M99	MXJA01XX2050D1	-	-

3. RATING: 定格

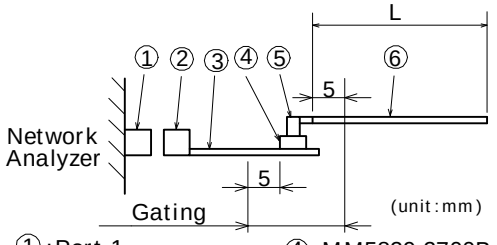
Item 項目		Specification 性能
3.1	Voltage Rating 定格電圧	30V r.m.s. maximum
3.2	Nominal Frequency Range 使用周波数	DC to 12GHz
3.3	Nominal Impedance 公称ｲﾝﾋﾟｰﾀﾞﾝｽ	50Ω
3.4	Temperature Rating 使用温度範囲	-40°C to +85°C
3.5	Used Cable 使用ｹｰﾌﾞﾙ	0.4D Single shield PFA cable

Item 項目		Unit 単位	Construction 構成
Inner Conductor 内部導体	Material 材料	-	Silver plated copper wire 銀めっき軟銅線
	No. and Dia. 外径及び本数	(No./mm)	7/0.05
	Total Dia. 外径	(mm)	0.15
Insulator 絶縁体	Material 材料	-	PFA
	Total Dia. 外径	(mm)	0.43
Outer Conductor 外部導体	Material 材料	-	Silver plated copper wire 銀めっき軟銅線
	Dia. of wire 線径	(mm)	0.05
Sheath ｼｰｽ	Material 材料	-	PFA(White) (白)
	Nominal thickness. 厚さ	(mm)	0.07
Overall Dia. 仕上外径		(mm)	0.81+0.04/-0.02
Minimum Bending Radius 最小曲げ半径		(mm)	3.3
Nominal Insertion loss 標準減衰量	dB/m at 1GHz		2.99
	dB/m at 2GHz		4.32
	dB/m at 3GHz		5.33
	dB/m at 4GHz		6.26
	dB/m at 6GHz		7.83
	dB/m at 9GHz		10.06
	dB/m at 12GHz		12.22

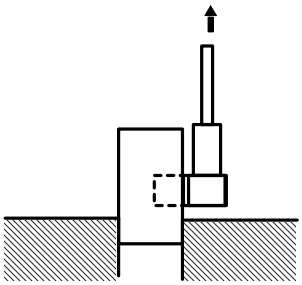
4. DESIGN AND CONSTRUCTION 構造寸法及び表面処理

See Figure 2 and 3. 第2図,第3図によります。

5. ELECTRICAL PERFORMANCE: 電気的性能

Item 項目		Specification 性能			Test 試験方法及び条件
5.1	Insulation Resistance 絶縁抵抗	500 MΩ minimum 500MΩ以上			MIL-STD-202, Method 302 Testing by applying the specified voltage between inner and outer conductor. MIL-STD-202試験方法302によります。 中心ｺﾝﾀｸﾄと外部ｺﾝﾀｸﾄ間に規定の電圧を印加し測定します。 Voltage 試験電圧 : DC 200V Time 試験時間 : 1min
5.2	Withstanding Voltage 耐電圧	No evidence of breakdown せん絡及び絶縁破壊を起しません。			MIL-STD-202, Method 301 Testing by applying the specified voltage between inner and outer conductor. MIL-STD-202試験方法301によります。 中心ｺﾝﾀｸﾄと外部ｺﾝﾀｸﾄ間に規定の電圧を印加し測定します。 Voltage 試験電圧: AC 200V r.m.s. Time 試験時間 : 1min
5.3	Contact Resistance 接触抵抗		Initial 初期	After test. 試験後	MIL-STD-1344 Method 3002.1 Testing by the voltage dropping method with the specified current. MIL-STD-1344試験方法3002.1によります。 規定の電流による電圧降下法にて測定します。 1. Frequency 測定周波数 : 1,000Hz. 2. Current 試験電流 : 150mA max. 3. Voltage drop: 200μV max. 測定点間の電圧降下 4. Measurement point 測定点: a. Center contact 中心ｺﾝﾀｸﾄ相互間 b. Outer contact 外部ｺﾝﾀｸﾄ相互間 The conductor resistance is eliminated from data. 但し､導体抵抗分は測定値より差し引きます。
		Center Contact 中心コンタクト	35mΩ max.	40mΩ max.	
		Outer Contact 外部コンタクト	20mΩ max.	25mΩ max.	
5.4	Voltage Standing Wave Ratio (V.S.W.R.) 電圧定在波比	1.3max. (DC ~3GHz) 1.4max. (3~6GHz) 1.5max. (6~9GHz) 1.6max. (9~12GHz)			Measurement system is as following figure. The judgment is done by the data only from work by using gating function. Frequency : 0.1GHz to 12GHz 0.1GHz~12GHzの範囲で､下図の測定系にて測定します｡但し､ｹﾞｰﾃｨﾝｸﾞ機能にて被測定物のみを取り出した測定値にて判定します。  ①:Port 1 ④:MM5829-2700B ②:SMA Jack ⑤:JSC type plug ③:Microstrip line ⑥:Coaxial Cable L=200m Min.

6. MECHANICAL PERFORMANCE: 機械的性能

Item 項目		Specification 性能	Test 試験方法及び条件
6.1	Engage and disengage force. 相手側ｺﾈｸﾀとの着脱力	a. Engagement 挿入力 30N maximum b. Disengagement 抜去力 3N minimum 20N maximum	a. Engagement force. 挿入力 Measuring the required force for complete engagement to mated connector. 適合する相手側ｺﾈｸﾀを、完全に結合させるまでに必要な力を測定します。 b. Disengagement force. 抜去力 Measuring the required force for complete disengagement from mated connector. 適合する相手側ｺﾈｸﾀを、完全に結合した状態から離脱するのに必要な力を測定します。
6.2	Connector Durability 寿命	No evidence of visual or mechanical damage and meet the contact resistance and engage / disengage force specifications. 試験後、機械的損傷がなく、接触抵抗、挿入、抜去力の規格値を満足します。	30 cycles of mating and withdrawal with jig at 12 cycles/min maximum. 挿抜治具にて適合する相手側ｺﾈｸﾀを12回/分以下の速さで垂直に30回着脱を行ないます。
6.3	Cable Retention Force ｹｰﾌﾞﾙ接続強度	No evidence of visual or mechanical damage and no electrical discontinuity. 試験後、ｹｰﾌﾞﾙがｹｰﾌﾞﾙ接続部からはずれたり、ｹｰﾌﾞﾙ接続部に異常な変形、電気的不連続がありません。	Applying the specified tension with specified time between cable and connector after setting up as the below drawing. ｺﾈｸﾀとｹｰﾌﾞﾙ相互間に規定の引張力を一定時間加えます。 1.Retention force 引張力: 5N 2.Time 試験時間 : 1min 3.Tension direction: As follows. 印加方向 下図 

7. Environmental Performance: 環境性能

Item 項目		Specification 性能	Test 試験方法及び条件
7.1	Moisture Resistance 耐湿性	No evidence of mechanical damage, and meet the insulation resistance, withstanding voltage and contact resistance specifications. 試験後、機械的損傷がなく、絶縁抵抗、耐電圧、接触抵抗の規格値を満足します。	MIL-STD-202, Method 103, Test Condition B. Temperature : 85 °C Humidity : 85% RH Time : 96 h Measurements should be done within 2h after removal from humidity. MIL-STD-202、試験方法103、試験条件Bにより試験します。 +85°C,85%RHの槽内に96時間放置し

<table>
<tr><td></td><td></td><td></td><td>た後、常温で2時間放置し測定します。</td></tr>
<tr><td colspan="2">Item　項目</td><td>Specification　性能</td><td>Test　試 験 方 法 及 び 条 件</td></tr>
<tr><td>7.2</td><td>Thermal Shock
熱衝撃性</td><td>No evidence of mechanical damage, and meet the insulation resistance, withstanding voltage and contact resistance specifications.

試験後、機械的損傷がなく、絶縁抵抗、耐電圧、接触抵抗の規格値を満足します。</td><td>MIL-STD-202, Method 107. Test condition is as follows.
MIL-STD-202試験方法107によります。
Number of cycles : 50 cycles
下記を1ｻｲｸﾙとして50ｻｲｸﾙ実施します。
<table>
<tr><th>Step</th><th>Temp(°C)
温度</th><th>Time(min)
時間（分）</th></tr>
<tr><td>1</td><td>-40</td><td>30</td></tr>
<tr><td>2</td><td>25</td><td>5 max.以内</td></tr>
<tr><td>3</td><td>85</td><td>30</td></tr>
<tr><td>4</td><td>25</td><td>5 max.以内</td></tr>
</table></td></tr>
<tr><td>7.3</td><td>Vibration　耐振性</td><td>No electrical interruption exceeding 10μs and no evidence of visual or mechanical damage and meet the requirement of the center contact resistance.
試験中、10μs以上の電気的瞬断がありません。
また、試験後、機械的損傷がなく、接触抵抗の規格値を満足します。</td><td>1.Test directions.　.振動の方向
3 mutually perpendicular directions
ｺﾈｸﾀの軸方向に互いに垂直な3方向について行ないます。
2.Sweep condition　掃引の条件
One cycle　: 10Hz~100Hz~10Hz (20min)
10Hz~100Hz~10Hz(20分)を1ｻｲｸﾙとします。

10Hz~30Hz : 3mm(0.12 inch) peak to peak　全振幅
30Hz~100Hz : 6G
3.Test cycles　試験回数
1direction 3cycles　Total 9cycles
1方向3ｻｲｸﾙ　計9ｻｲｸﾙ
4.Test current　試験電流:　100 mA</td></tr>
<tr><td>7.4</td><td>Drop　落下試験</td><td>No electrical interruption exceeding 10μs and no evidence of visual or mechanical damage and meet the requirement of the center contact resistance.
試験中、10μs以上の電気的瞬断がありません。
また、試験後、機械的損傷がなく、接触抵抗の規格値を満足します。</td><td>1.Test direction.　衝撃の方向
6 mutually perpendicular directions.
2.Test condition　試験条件
Load　負荷荷重: 100g
Height　落下高さ: 1.5m
Floor: Concrete　(ｺﾝｸﾘｰﾄ上)
3.Test cycles　試験回数
1direction 10times　Total 60times
1方向10回 計60回
4.Test current　.試験電流:　100 mA</td></tr>
</table>

8. UL standard UL規格
   Coaxial Cable 同軸ケーブル UL10608 VW-1 グレード
   Bushing ブッシング UL94 V-0グレード

9. Countyr of origin 原産国 Viet Nam ベトナム
   Factory 生産拠点
   Kanazu Murata Mfg.Co.,Ltd(Awara-shi Fukui-pref Japan) 金津村田製作所[福井県あわら市]

10. Standard packing style 梱包仕様
    See FIGURE 11 第11図によります

11. Change of product specification 納入仕様書の変更について
    We inform you before change this product specification.
    納入仕様書の変更については、事前協議の上、実施します。

12. ⚠CAUTION 注意

12.1 Limitation of Applications 用途の限定

Please do not use our products for the applications listed below which require specially high reliability for the prevention of defects which may directly or indirectly cause damage to the third party's life, body or property.
当製品について､その故障や誤動作が人命または財産に危害を及ぼす恐れがある等の理由により､高信頼性が要求される以下の用途ではご使用にならないでください。

(1) Aircraft equipment 航空機器
(2) Aerospace equipment 宇宙機器
(3) Undersea equipment 海底機器
(4) Power plant control equipment 発電所制御機器
(5) Medical equipment 医療機器
(6) Transportation equipment (vehicles, trains, ships, etc.) 輸送機器 (自動車､列車､船舶等)
(7) Traffic signal equipment 交通用信号機器
(8) Disaster prevention / crime prevention equipment 防災/防犯機器
(9) Data-processing equipment 情報処理機器
(10) Application of similar complexity and/or reliability requirements to the applications listed in the above.
その他上記機器と同等の機器

12.2 Fail-safe ﾌｪｰﾙｾｰﾌ機能の付加

Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure of our product.
当製品に万が一異常や不具合が生じた場合でも､二次災害防止のために完成品に適切なﾌｪｰﾙｾｰﾌ機能を必ず付加して下さい。

13. NOTICE 使用上の注意

13.1 Environment Conditions 使用環境

13.1.1 This product is designed for use of electrical equipment in the environment (temperature, humidity, atmospheric pressure, etc.) specified in this approval drawing: it may not be used in the following environments or under the following conditions :
当品は一般環境(常温、常湿、常圧の雰囲気内)で使用される電子機器でのご使用をもとに設計しております。
しかし以下のような環境でご使用されますと、当品が劣化する恐れがあります。

(1) Ambient air containing corrosive gas (Cl_2, H_2S, NH_3, SO_X, NO_X etc.).
特殊ｶﾞｽ雰囲気(Cl_2, H_2S, NH_3, SO_X, NO_Xなど)
(2) Ambient air containing volatile or combustible gas. 揮発性、引火性のあるｶﾞｽ雰囲気
(3) In liquid (water, oil, chemical solution, organic solvents, etc.). 水、油、化学薬品、有機溶剤等が直接かかる所
(4) In environments with a high concentration of airborne particles. 多湿のため結露しやすい所
(5) In direct sunlight. 直射日光の当たる所
(6) Dusty conditions. ほこりの多い場所
(7) In freezing. 凍結する所
(8) Other environments similar to the above conditions. 上記条件と類似する環境

13.1.2 Contact the manufacturer before using the product in any of the above environments or under any of the above conditions.
当品のご使用にあたって前項に示します事柄の可能性のある場合には､あらかじめ弊社までご相談いただきます様お願い致します。

13.2 Usage conditions 使用条件

13.2.1 Do not apply electrical voltage which is greater than specified in the drawing. It might cause degradation or destruction of the product. Even if it endures for short term usage, long term qualification is not guaranteed.
規定以上の電圧が印加されないようにお願い致します｡劣化あるいは破壊の恐れがあり､短時間では耐えてもその後の信頼性を保証するものではありません。

13.2.2 Confirm that there is no influence to the product's performance which might be caused by other components touching the product. Handling, Storage and Transportation of The Product
直接当品と接触する部品(ｹｰｽを含む)､材料が当品の動作において､当品の諸性能に対して悪影響を与えない事をご確認下さい。

13.3 Handling, Storage and Transportation of The Product 取扱い､輸送､保管方法について

13.3.1 Avoid excessive stress when handling and transporting printed circuit board after connector and/or assembly has been secured to PCB.
はんだ付けされたﾌﾟﾘﾝﾄ基板などのような Sub-Assy 品を輸送､取扱いする際は､当品に衝撃及び荷重のかからないようご注意ください。

13.3.2 Do not try to pull the cable that has connectors during handling and transporting.
ｹｰﾌﾞﾙ付のものを､輸送､取扱いする際は､ｹｰﾌﾞﾙ部に引張り等の荷重を加えないで下さい。

13.3.3 Use the product of previous delivery first. 先入れ､先出しでご使用下さい。

13.3.4 Store in manufacturer's package or tightly re-closed box in the following conditions.
下記の条件でかつ急激な温湿度変化の無い屋内にて､密閉または弊社梱包状態で保管下さい。

Temperature 温度 : -10 °C ~ +40 °C
Humidity 湿度 : 15%~ 85 % RH

Use this product within 6 month after receipt. 当品に端末加工が施してある場合は納入後､6ｶ月以内にご使用下さい。

13.4 Safety 安全性について

13.4.1 This product has two failure modes, - "OPEN" and "SHORT"-.
当品は主な故障ﾓｰﾄﾞとして､｢ｵｰﾌﾟﾝ｣ 及び｢ｼｮｰﾄ｣の2つのﾓｰﾄﾞがあります。

13.4.2 Please contact the manufacturer before using the product for the any other application that is not reported previously.
従来よりご連絡いただいております用途と異なったご使用をされる場合は､事前に弊社までご相談下さいますようお願いします。

13.4.3 Please contact the manufacturer in advance if the product is to be used in frequently bent position.
ｹｰﾌﾞﾙを繰り返して曲げ戻しする状態で使用される場合は、事前に弊社までご相談下さいますようお願いします。

14. Handling 取り付け取り外し上の注意事項

14.1 This product fits only with MM5829-2700B receptacle. Any other receptacle can not be used with this cable.
本ｹｰﾌﾞﾙに適合するﾚｾﾌﾟﾀｸﾙはMM5829-2700Bです｡これ以外のﾚｾﾌﾟﾀｸﾙはご使用できません。

14.2 The slant angle to engage the product to receptacle must be within 15 degree.(See Figure.4)
After engagement process starts, the slant angle must be 0 degree. The engagement is accomplished after lock feeling.
ｹｰﾌﾞﾙの取り付けは手でﾚｾﾌﾟﾀｸﾙに挿入することもできますが､専用挿抜治具M19202を使って挿入することもできます｡この際､ｹｰﾌﾞﾙをﾚｾﾌﾟﾀｸﾙに挿入するときの嵌合開始時の角度は 15°以内にして下さい｡(第4図によります)

14.3 Figure.5 shows the completed engagement. Needs to be checked if the mating height is less than 1.0mm.
嵌合完了状態図を第5図に示します｡嵌合高さが1.0mm以下であることをご確認下さい。

14.4 Do not rotate the cable while cable is mated with receptacle. (See Figure.6)
ｹｰﾌﾞﾙをﾚｾﾌﾟﾀｸﾙに嵌合した状態で、ｺﾈｸﾀ軸を中心とした回転を加えないで下さい。(第6図によります。)

14.5 Do not bend the cable at a position of 0.5mm or less from edge of connector.(See Figure.7)
There is a possibility that the cable's sheath come out of the connector.
ｶｼﾒ部端から0.5mm以内でのｹｰﾌﾞﾙの曲げは避けて下さい。外皮がｶｼﾒ部から抜ける可能性があります。
（第7図によります。）

14.6 Please wire the cable with the exception of hot terminal on receptacle and hot line on the board to avoid characteristic degradation or short failure. (See FIGURE.8)
ｹｰﾌﾞﾙの配線時は、特性劣化及びｼｮｰﾄ不良を生じさせないように、基板のﾎｯﾄﾗｲﾝやﾚｾﾌﾟﾀｸﾙのﾎｯﾄ端子上にｹｰﾌﾞﾙﾌﾟﾗｸﾞが配置されない方向へ引き回してください。（第8図によります。）

14.7 Use tool P/N M19202 for disengagement. (See FIGURE.9) ｹｰﾌﾞﾙの取り外しの際は必ず専用挿抜治具M19202をご使用下さい。（第9図によります。）

14.8 Do not try to pull out by the cable. There is possibility of wire breaks.
ｹｰﾌﾞﾙを持っての引き抜きは、断線の恐れがあるので、絶対に行わないで下さい。

14.9 In case the cable assembly is removed, please disengage slowly and perpendicularity (5degree or less) to receptacle. (See FIGURE.10)
ｹｰﾌﾞﾙの取り外しの際は、ﾚｾﾌﾟﾀｸﾙに対し垂直（5°以内）になる方向にゆっくり引き抜いて下さい。
（第10図によります。）

14.10 Do not give a twisted torque to the cable and connector.
中心導体結合部保護のため、ｹｰﾌﾞﾙにねじり方向の力を加えないで下さい。

14.11 The stress to the connector should be limited as shown the following figure.
ｺﾈｸﾀ結合部保護のため、下記事項をお守り下さい。

14.11.1 Stress to the housing. ｺﾈｸﾀ本体への荷重について
Stress A and B: 5N Max.
第1図に示すように、正常に結合している一対のｺﾈｸﾀの本体に、
A,B方向からそれぞれ5Nを超える荷重を加えないで下さい。

14.11.2 Stress to the outer sleeve. ｶｼﾒ部の荷重について
Stress C and D: 1N Max.
第1図に示すように、正常に結合している一対のｺﾈｸﾀのｶｼﾒ部にC方向から1Nを超える荷重を加えないで下さい。また、D方向からは、1Nを超える荷重を加えないでください。

14.11.3 Cable pull strength. ｹｰﾌﾞﾙへの荷重について
Stress E: 5N Max.
第1図に示すように、正常に結合している一対のｺﾈｸﾀに対して、
接続されているｹｰﾌﾞﾙのE方向に、5Nを越える荷重を加えないで下さい。

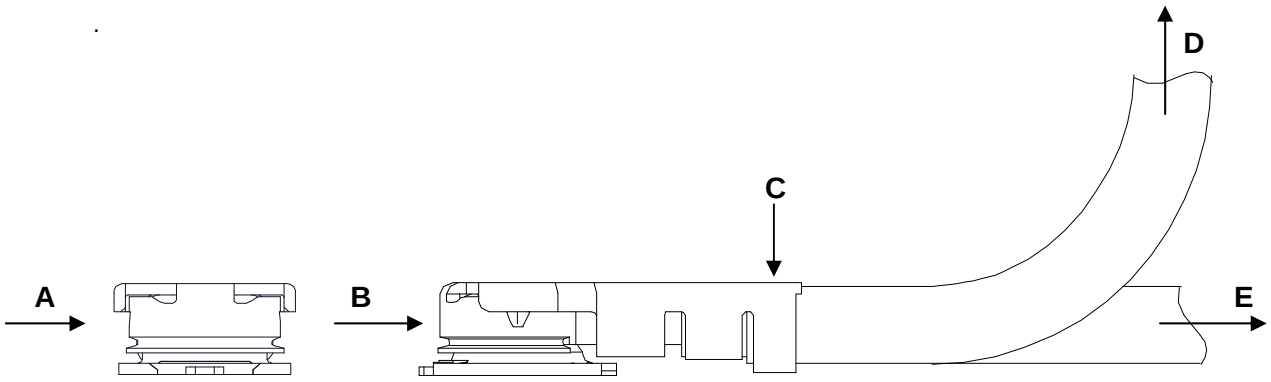


FIGURE1. Mechanical stress after engagement 嵌合後の耐荷重

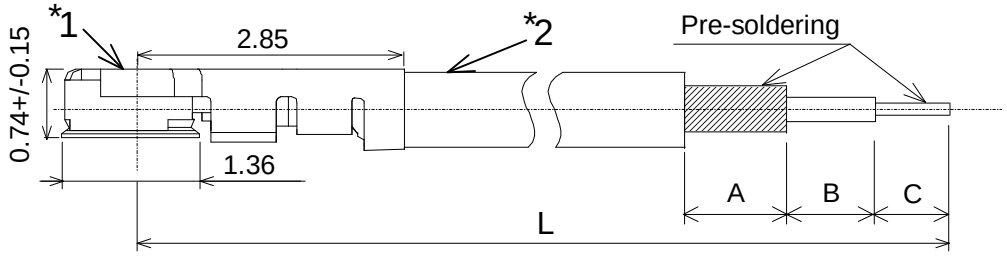
15. ⚠NOTE お願い

15.1 Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product. ご使用に際しては、貴社製品に実装された状態で必ず評価して下さい。

15.2 You are requested not to use our product deviating from the agreed specifications.
当製品を当納入仕様書の記載内容を逸脱して使用しないで下さい。

15.3 Please return one duplicate of this product specification to us with your signature to acknowledge your receipt. If the duplicate is not returned within three months, the product specification will be deemed to have been received by you.
お手数ですが、当納入仕様書に貴社受領印を押印の上、1部を弊社へご返却下さい。
貴社へ送付後3ヶ月以内にご返却いただけない場合は、当納入仕様書は、受領されたものとさせていただきます。

15.4 We consider it not appropriate to include any terms and conditions with regard to the business transaction in the product specifications, drawings or other technical documents. Therefore, if your technical documents as above include such terms and conditions such as warranty clause, product liability clause, or intellectual property infringement liability clause, they will be deemed to be invalid.
弊社は、仕様書、図面その他の技術資料には、取引に関する契約事項を記載することは適切ではないものと存じております。従って、もし、貴社が作成されたこれら技術資料に、品質保証、PL、工業所有権等にかかる弊社の責任の範囲に関する記載がある場合は、当該記載は無効とさせていただきます。 これらの事項につきましては、別途取引基本契約書等においてお申し越しいただきたくお願いします。

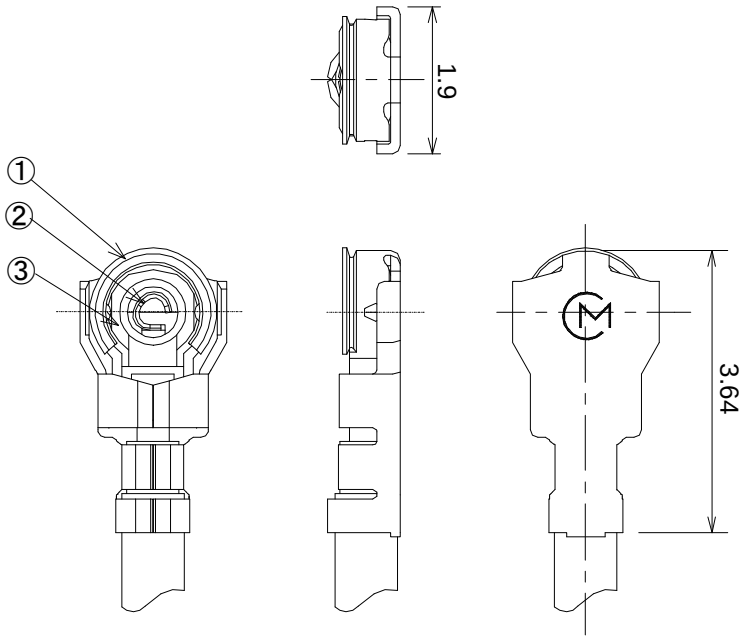


*1. Connector: JSC right angle plug connector
*2. Cable

Scale: Free
Unit: mm

Part Number	L	A	B	C
MXJA01XX2050D1	205 +/- 5	1 +/- 0.5	4 +/- 0.5	1 +/-0.5

FIGURE2. Cable Assembly Construction 外形寸法図



Scale: Free
Tolerances Unless
Otherwise Specified: +/-0.3
Unit: mm

No.	Part Name 部品名	Material 材質	Finish 表面処理	Q'ty 数量
3	Bushing ﾌﾞｯｼﾝｸﾞ	Engineering Plastic ｴﾝｼﾞﾆｱﾘﾝｸﾞﾌﾟﾗｽﾁｯｸ	None ﾅｼ	1
2	Center Socket ｾﾝﾀｰｿｹｯﾄ	Copper Alloy 銅合金	Ni:0.5~4.5 μm+Au:0.02~0.18 μm	1
1	Housing ﾊｳｼﾞﾝｸﾞ	Copper Alloy 銅合金	Ni:3.5~6.5 μm+Au:0.02~0.18 μm	1

FIGURE3. Connector Construction ｺﾈｸﾀ寸法図

(An instance of the cable assembly using JSC right angle plug connector)

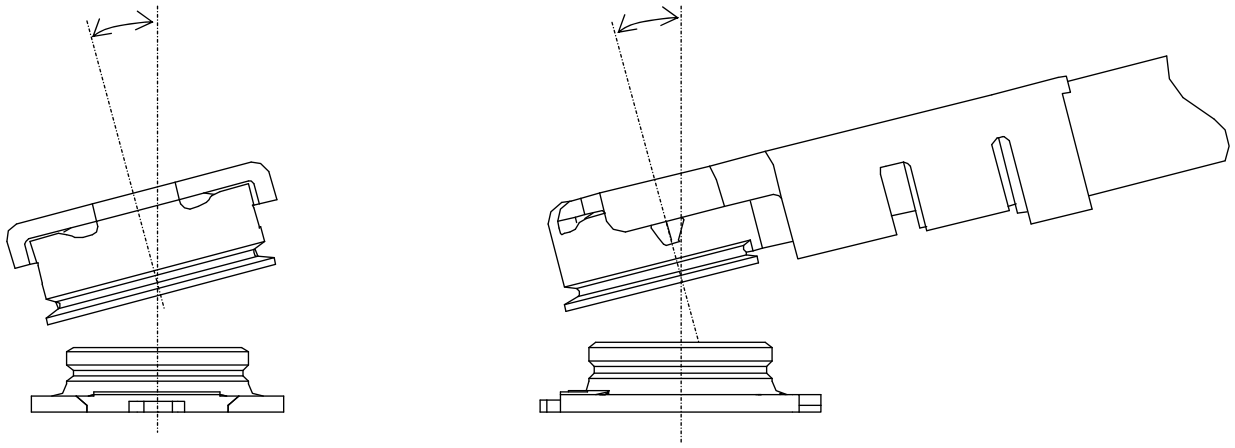
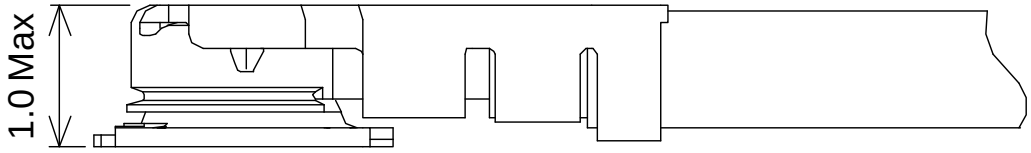


FIGURE4. Limit angle of engagement (Engagement only)
嵌合限界角度(開始時のみ)



Unit: mm

FIGURE5. Completion of engagement 嵌合完了図

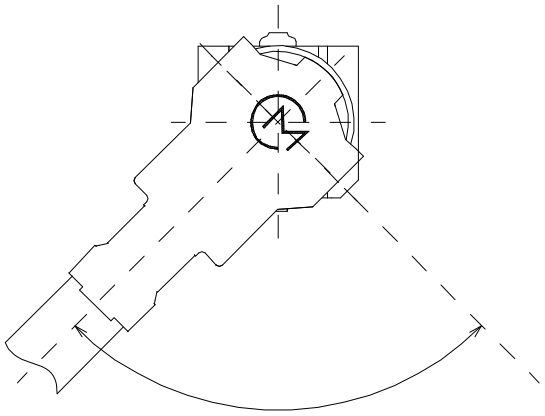


FIGURE6. Do not rotate the cable while cable is mated with receptacle
ｹｰﾌﾞﾙをﾚｾﾌﾟﾀｸﾙに嵌合させた状態での回転の禁止

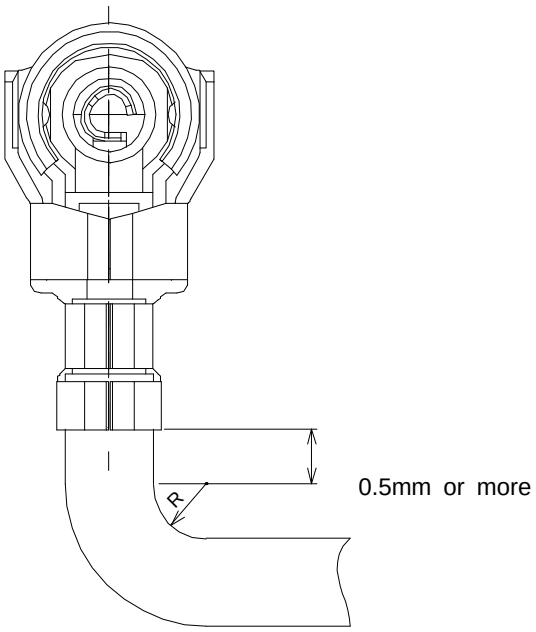


FIGURE7. The acceptable position of cable bend ｹｰﾌﾞﾙ曲げ許容位置

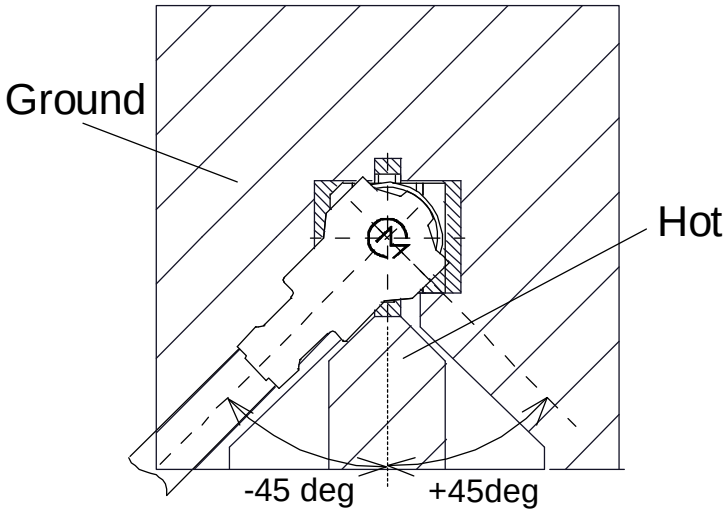
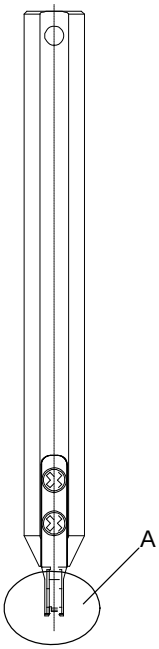
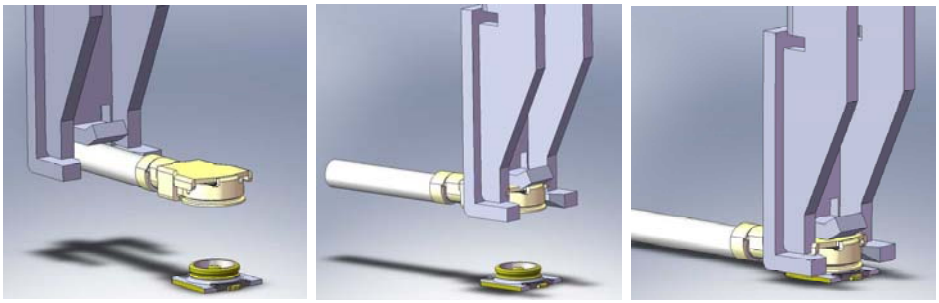


FIGURE8. Acceptable cable wiring position ｹｰﾌﾞﾙ引き回し禁止ｴﾘｱ

Do not wire the cable in the range of 0 +/-45 degree on the receptacle's hot terminal
注)・Hot端子の方向に対して+/-45degの範囲にはｹｰﾌﾞﾙを引き出さないで下さい。



M19202 Appearance
(reference)
外観



Detail A A部詳細図

FIGURE9. How to use tool (M19202)
挿抜治具（M19202）を使用したｹｰﾌﾞﾙの取り外し方法

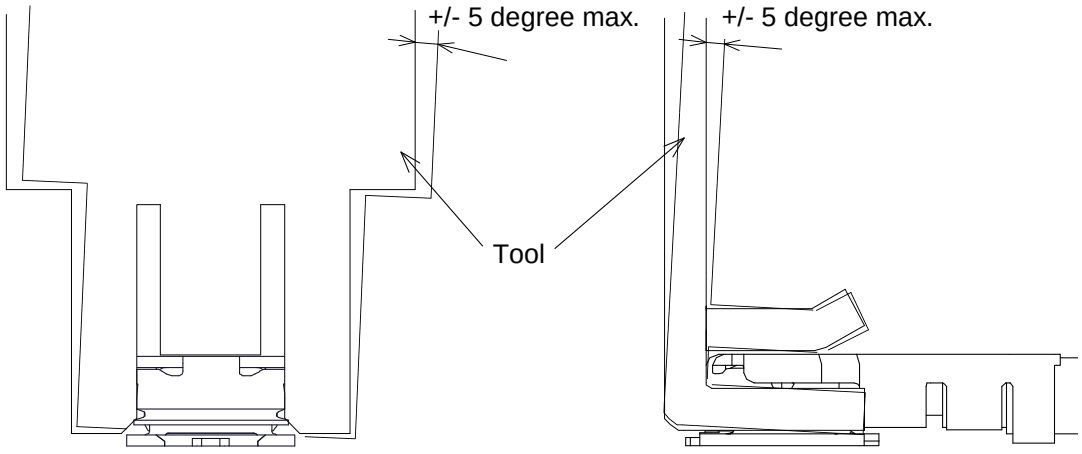
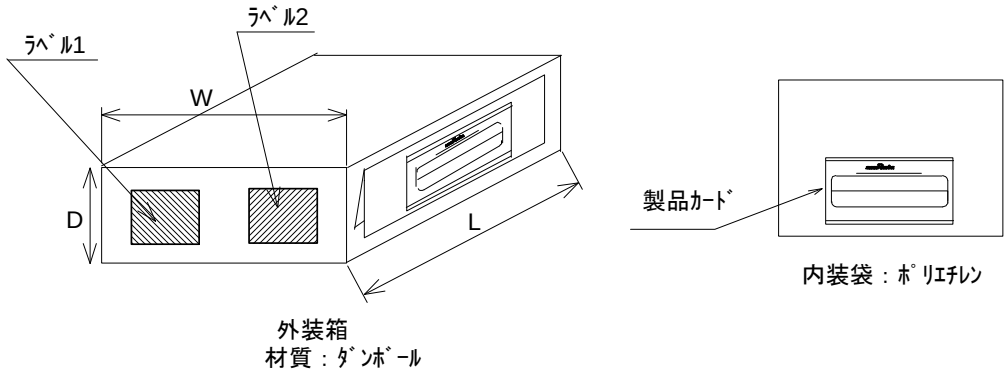


FIGURE10. The acceptable slant of tool
ケーブル取り外し時の挿抜治具傾き限界角度

1袋の収容数(pcs)	1外装箱の袋数(pcs)	1外装箱への収納数（pcs）	外装箱のサイズ		
			L(mm)	W(mm)	D(mm)
100max	4max	400max	331	265	118



ラベル1

発注者 (CUST.)	㈱村田製作所	
受渡場所名 (DELIVERY POINT)		
納入キー番号 (TRANS NO.)		
品名コード (PART NO.)		
品名(PART NAME)		
入数／納入数量(Q'TY / TOTAL Q'TY)	単位(UNIT)	
発注者備考(CUSTOMER'S REMARKS)	包装個数 (PACKAGE COUNT)	

(3N)3 ----------

(3N)4 ----------

(3N)5 ----------

muRata

・納入キー番号---連番でとっております。
・品名コード---貴社の品番です。

ラベル2

発注者品名ｺｰﾄﾞ Customer Part No. 数量Q'ty

(3N)1 発注者品名ｺｰﾄﾞ Customer Part No.

(3N)2 数量Q'ty 検印Inspection Lot No. 受注者ｺｰﾄﾞVender Code

muRata <EIAJ C-3ﾗﾍﾞﾙ>

・検印No.---連番でとっております。

FIGURE11. Standard packing style (reference) 標準梱包形態（参考）

Revised List

Number	Page
NMM24-A124	1/1

Date	Revision No.	Revision Item	Revised contents and reason	Rep. (Mgr.)	Prepared by
16/May./2012			First release.		

:

:

1. Scope

This specification covers FEP insulated High-Frequency coaxial cable for internal wiring of electronic equipment.

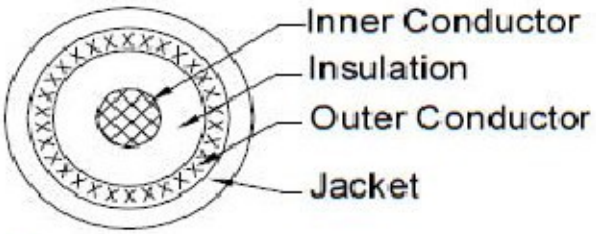
USE:Internal wiring of Class 2 Circuits of Electronic Equipment.

2. Construction :

Item		Unit	Spec. Value
Inner Conductor	Material	---	Silver plated copper
	construction	No./mm	7/0.08
	Dia.(approx)	mm	0.24
Insulation	Material	---	FEP
	Nom. Thickness	mm	0.22
	Dia.(approx)	mm	0.68±0.05
	Color	---	Natural
Outer Conductor	Type	---	Braid
	Material	---	Silver plated copper
	Coverage	%	>93
	Dia.(approx)	mm	0.93
Jacket	Material	---	PFA
	Nom. Thickness	mm	0.10
	Color	---	Gray
	Dia	mm	1.13 +0.10/-0.05

3. Characteristics :

Test Item	Unit	Specified Value	Note
Appearance	-	Faultless in visible	-
Rating voltage	V	250	-
Inner conductor resistance(at 20℃)	Ω/km	Max.597	At 20℃
Insulation resistance 1> (at 20℃)	MΩ-km	Min.1500	At 20℃
Dielectric strength		No breakdown at AC 1.5kV for 1min	Outer conductor to inner conductor
Capacitance	pF/m	Nom.98	At 1KHz
Characteristic impedance (at D-TDR)	Ω	50±2	TDR method
Attenuation(None Connect)	dB/m	2.1	1.0GHz
		2.9	2.0GHz
		3.6	3.0GHz
		4.2	4.0GHz
		4.7	5.0GHz
		5.2	6.0GHz



Cross-section of cable

4. Packing

Upon your request.

KB 深圳水田建滔制品厂
SHENZHEN SHUITIAN KINGBOARD MANUFACTURING FACTORY
A MEMBER OF KINGBOARD CHEMICAL HOLDINGS LIMITED
地址：深圳市宝安区石岩镇水田村 TEL:(0755)28160585
ADDR: SHUITIAN VILLAGE,SHIYAN TOWN,BAOAN,SHENZHEN,CHINA FAX:(0755)28160941

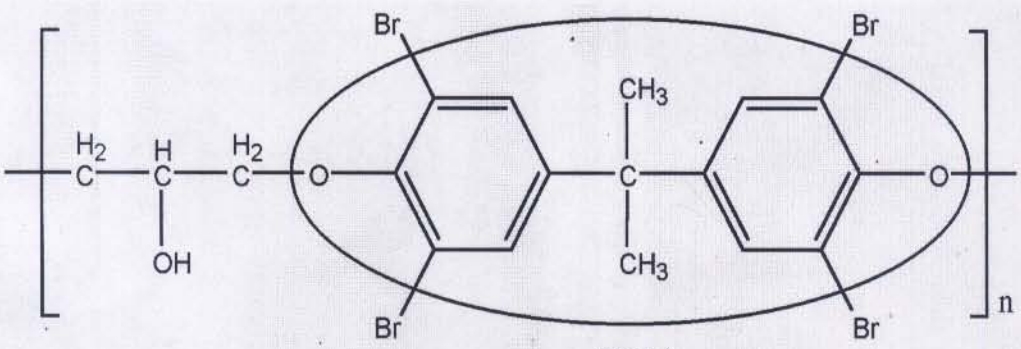
材质证明

厂商：建滔积层板（深圳）有限公司

材质名称：环氧玻璃布覆铜板

规格：NEMA FR-4

说明：兹说明 KB-6160/6150 中所使用的阻燃剂种类归属于 ISO1043-4 code number FR（16）之类别，树脂体系中的溴符合欧盟的 RoHS 指令要求。以下为我 FR-4 KB-6160/6150 溴化环氧树脂阻燃结构式：



TBBA

化学分子式为：$(C_{15}O_2H_{12}Br_4)_n$，其 CAS No 为 26265-08-7。在树脂体系中起阻燃作用的主要是其中的溴元素，我司 FR-4 板材中的溴含量约为 8%，从溴化环氧树脂的分子结构式可以看到，含溴的 TBBA（四溴双酚 A）参与树脂反应，并非以单体形式出现在板材中。

供应商：水田建滔制品厂

负责人或授权负责人：

地址：广东省深圳市宝安区石岩镇水田村

SGS REPORT

SUBJECT: Survey for Environmental-Related Substances

Attachment:

Survey Form on Environmental Impact Substances Contained in Parts and Materials

SGS TEST REPORT for MHF Plug connector

This is applied for the following products: Please refer to the attached SGS REPORT.

Component name	SGS Report No.	I-PEX Part Number
HOUSING (BLACK)	CE_2012_91068A	20278-112R-13 20278-112R-32
CONTACT	CE_2013_10248 *	
GROUND CONTACT	CE_2013_13104 *	

Component name	SGS Report No.	I-PEX Part Number
HOUSING (WHITE)	CE_2012_91069A	20278-112R-08 20278-112R-18 20351-112R-37
CONTACT	CE_2013_10248 *	
GROUND CONTACT	CE_2013_13104 *	

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

Test Report

No. : CE/2012/91068A Date : 2012/09/17 Page : 1 of 13

DAI-ICHI SEIKO 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.	:	1844-011-01
Sample Receiving Date	:	2012/09/06
Testing Period	:	2012/09/06 TO 2012/09/12 AND 2012/09/13 TO 2012/09/17

==========

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

* This report is added testing and combined with CE/2012/91068 *

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

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

Test Result(s)

PART NAME No.1 : BLACK PLASTIC

Test Item(s)	Unit	Method	MDL	Result No.1
Cadmium (Cd)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Mercury (Hg)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI)	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.
Antimony (Sb)	mg/kg	With reference to US EPA Method 3050B for Antimony Content. Analysis was performed by ICP-AES.	2	n.d.
Antimony trioxide (Sb_2O_3) (#) (CAS No.: 1309-64-4)	mg/kg	With reference to US EPA Method 3050B. Analysis was performed by ICP-AES.	-	n.d.
Phosphorus (P)	mg/kg	With reference to US EPA Method 3052 for Phosphorus Content. Analysis was performed by ICP-AES.	2	27400
Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.
PFOA (CAS No.: 335-67-1)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.
Tetrabromobisphenol A (TBBP-A) (CAS No.: 79-94-7)	mg/kg	With reference to DIN 53313. Analysis was performed by GC/MS.	10	n.d.
Hexabromocyclododecane (HBCDD) (CAS No.: 25637-99-4)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

Test Item(s)	Unit	Method	MDL	Result
				No.1
Sum of PBBs	mg/kg	With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.
Monobromobiphenyl	mg/kg		5	n.d.
Dibromobiphenyl	mg/kg		5	n.d.
Tribromobiphenyl	mg/kg		5	n.d.
Tetrabromobiphenyl	mg/kg		5	n.d.
Pentabromobiphenyl	mg/kg		5	n.d.
Hexabromobiphenyl	mg/kg		5	n.d.
Heptabromobiphenyl	mg/kg		5	n.d.
Octabromobiphenyl	mg/kg		5	n.d.
Nonabromobiphenyl	mg/kg		5	n.d.
Decabromobiphenyl	mg/kg		5	n.d.
Sum of PBDEs	mg/kg		-	n.d.
Monobromodiphenyl ether	mg/kg		5	n.d.
Dibromodiphenyl ether	mg/kg		5	n.d.
Tribromodiphenyl ether	mg/kg		5	n.d.
Tetrabromodiphenyl ether	mg/kg		5	n.d.
Pentabromodiphenyl ether	mg/kg		5	n.d.
Hexabromodiphenyl ether	mg/kg		5	n.d.
Heptabromodiphenyl ether	mg/kg		5	n.d.
Octabromodiphenyl ether	mg/kg		5	n.d.
Nonabromodiphenyl ether	mg/kg		5	n.d.
Decabromodiphenyl ether	mg/kg		5	n.d.
Halogen				
Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	798
Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.

DAI-ICHI SEIKO CO., LTD.
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Test Item(s)	Unit	Method	MDL	Result
				No.1
BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	%		0.003	n.d.
DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0)	%		0.01	n.d.
DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0)	%		0.01	n.d.
DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	%		0.003	n.d.
DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	%		0.003	n.d.

Note：

1. mg/kg = ppm；0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. " - " = Not Regulated
5. (#): The substance was calculated by the test result of Antimony. The MDL was evaluated for Antimony.

AX = A × F

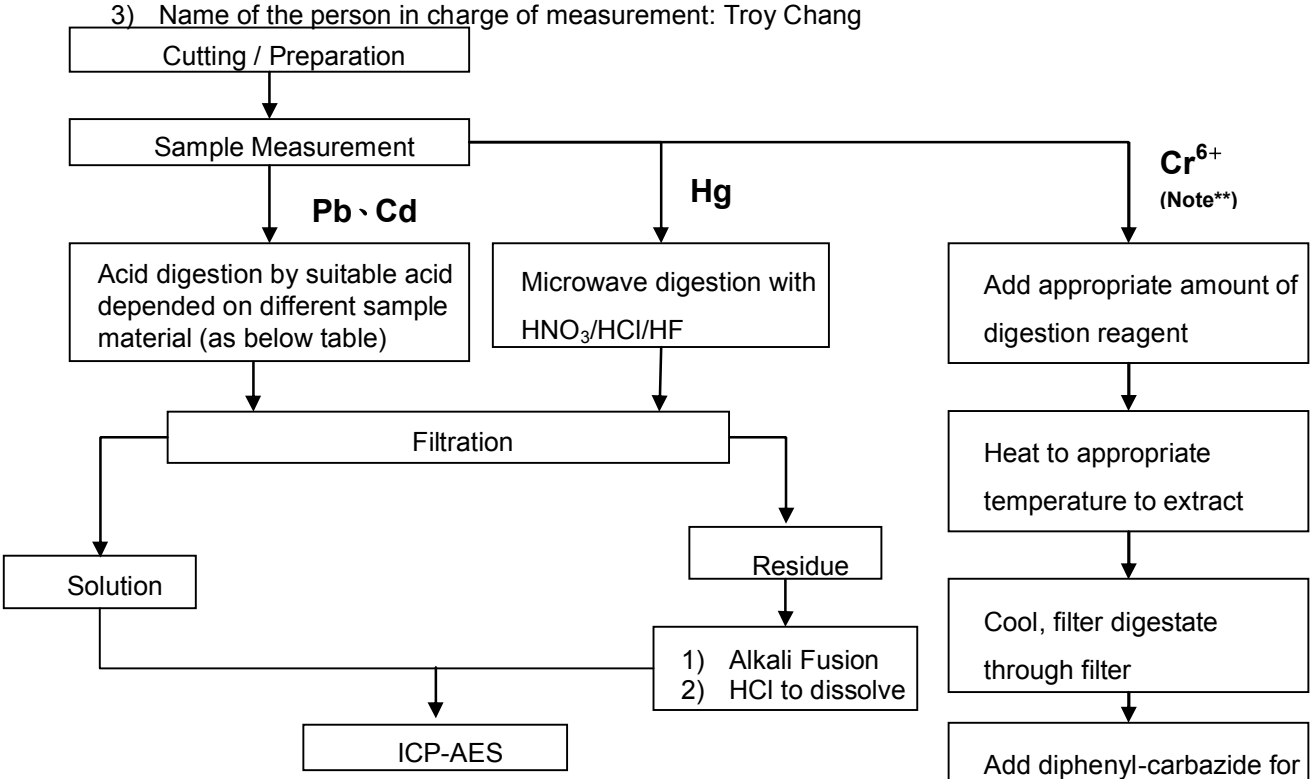
AX	A	F
Antimony trioxide (Sb_2O_3)	Antimony	1.1971

PFOS Reference Information : POPs - (EU) 757/2010

Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1μg/m².

DAI-ICHI SEIKO 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^{6+} test method excluded)
2) Name of the person who made measurement: Climbgreat Yang
3) Name of the person in charge of measurement: Troy Chang



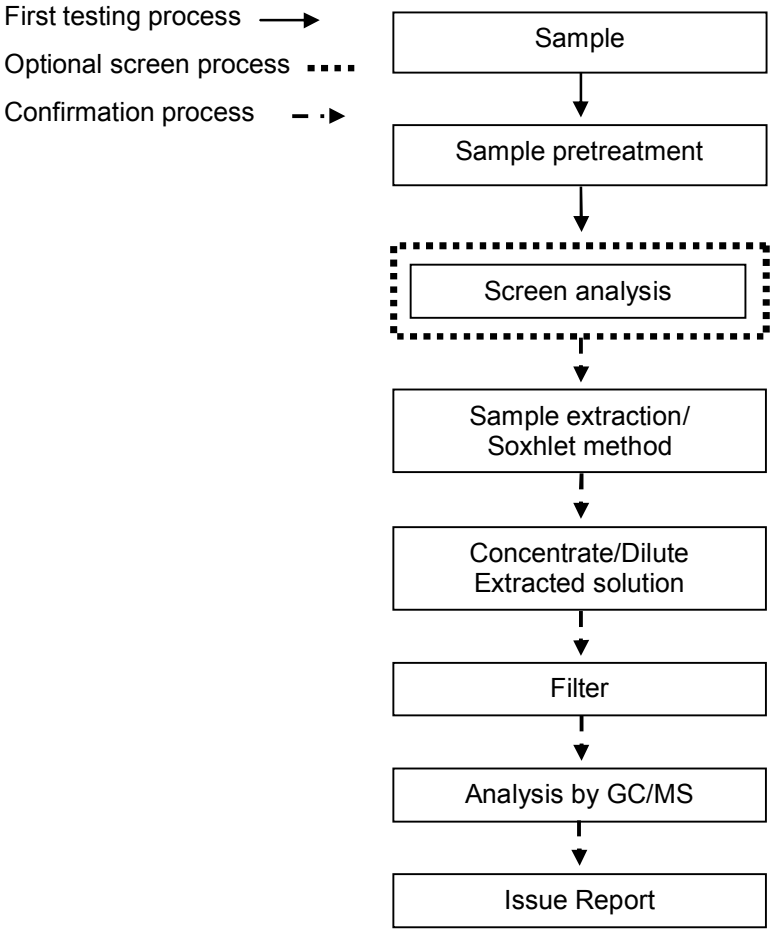
Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO_3, HCl, HF, H_2O_2
Glass	HNO_3/HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO_3
Plastic	H_2SO_4, H_2O_2, HNO_3, HCl
Others	Added appropriate reagent to total digestion

Note :** (1) For non-metallic material, add alkaline digestion reagent and heat to 90~95℃.
(2) For metallic material, add pure water and heat to boiling.

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

PBB/PBDE analytical FLOW CHART

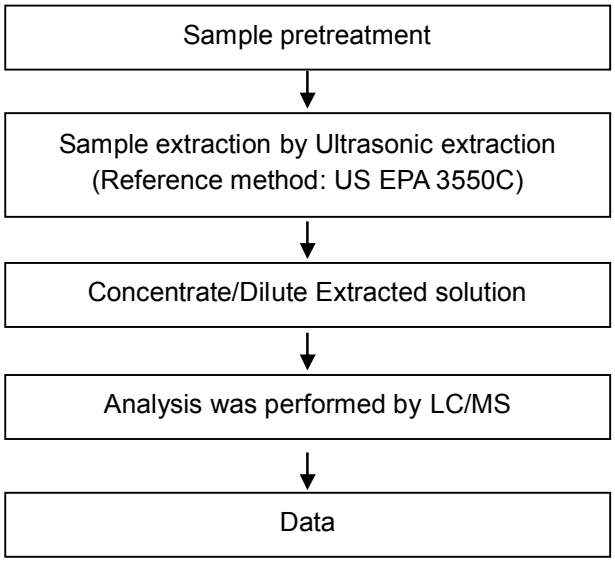
- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

PFOA/PFOS analytical flow chart of Ultrasonic extraction (LC/MS) procedure

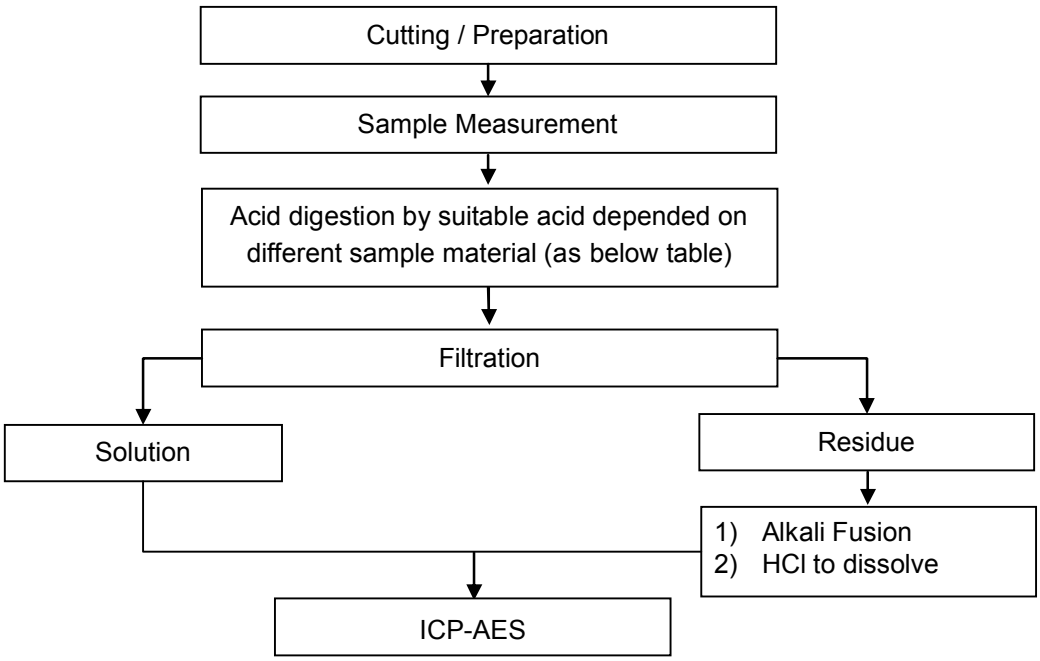
- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



DAI-ICHI SEIKO 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.
2) Name of the person who made measurement: Climbgreat Yang
3) Name of the person in charge of measurement: Troy Chang

Flow Chart of digestion for the elements analysis performed by ICP-AES

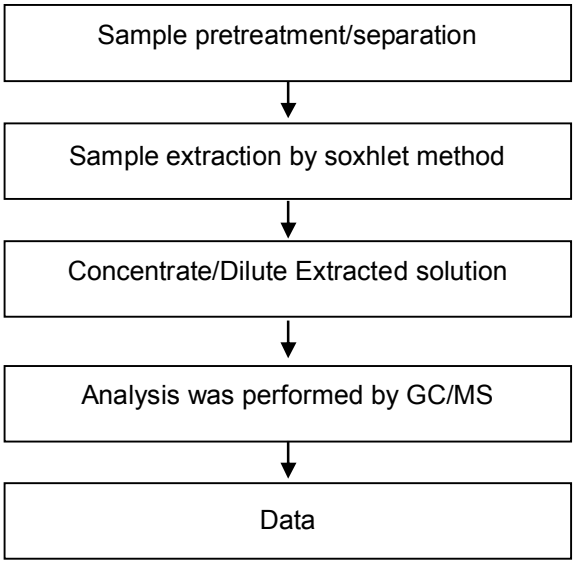


Steel, copper, aluminum, solder	Aqua regia, HNO_3, HCl, HF, H_2O_2
Glass	HNO_3/HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO_3
Plastic	H_2SO_4, H_2O_2, HNO_3, HCl
Others	Added appropriate reagent to total digestion

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

HBCDD analytical flow chart

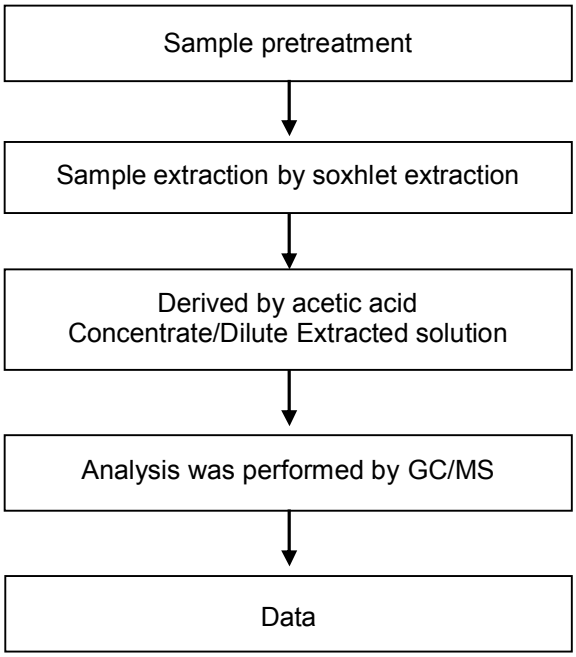
- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

TBBP-A analytical flow chart

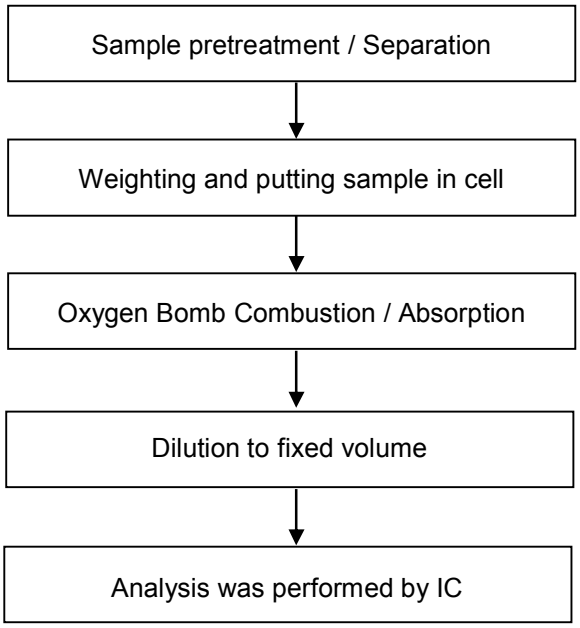
- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

Analytical flow chart of halogen content

1) Name of the person who made measurement: Rita Chen
2) Name of the person in charge of measurement: Troy Chang



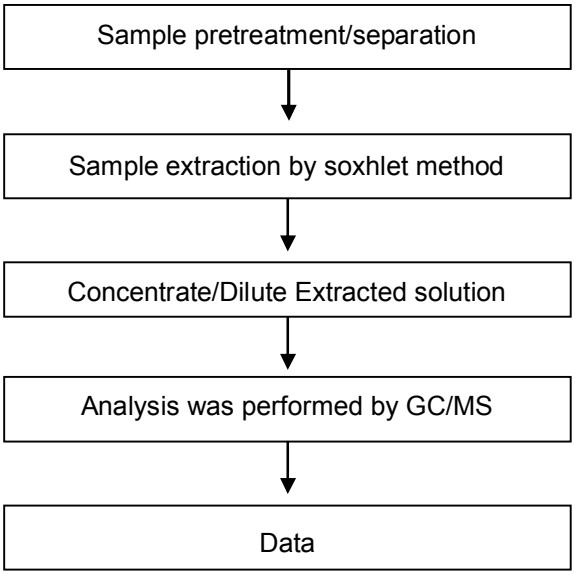
DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

Analytical flow chart of Soxhlet extraction (GC/MS) procedure

1) Name of the person who made measurement: Roman Wong

2) Name of the person in charge of measurement: Troy Chang

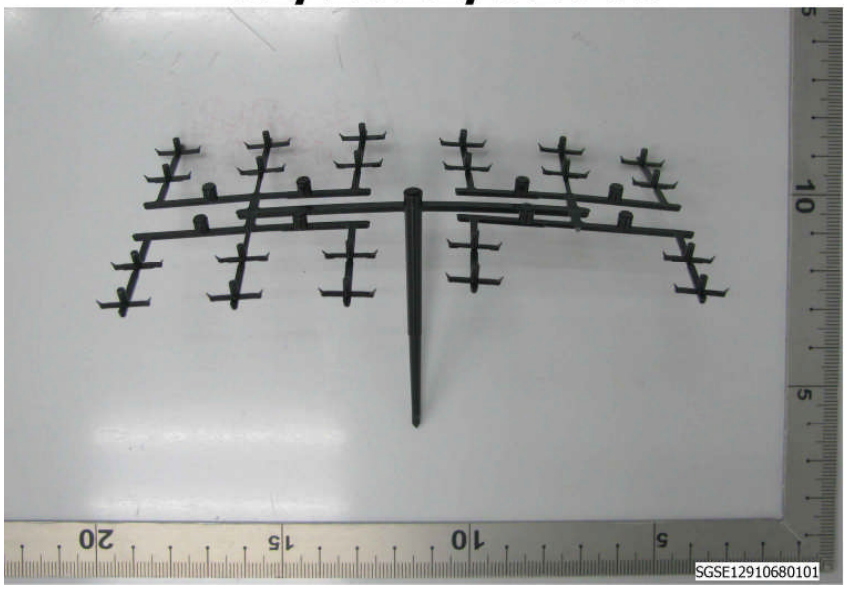
■ Test Items: Phthalate



DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

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

CE/2012/91068



** End of Report **

Test Report

No. : CE/2012/91069A Date : 2012/09/17 Page : 1 of 13

DAI-ICHI SEIKO 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.	:	1844-012-01
Sample Receiving Date	:	2012/09/06
Testing Period	:	2012/09/06 TO 2012/09/12 AND 2012/09/13 TO 2012/09/17

==========

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

* This report is added testing and combined with CE/2012/91069 *

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

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

Test Result(s)

PART NAME No.1 : WHITE PLASTIC

Test Item(s)	Unit	Method	MDL	Result No.1
Cadmium (Cd)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Mercury (Hg)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI)	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.
Antimony (Sb)	mg/kg	With reference to US EPA Method 3050B for Antimony Content. Analysis was performed by ICP-AES.	2	n.d.
Antimony trioxide (Sb_2O_3) (#) (CAS No.: 1309-64-4)	mg/kg	With reference to US EPA Method 3050B. Analysis was performed by ICP-AES.	-	n.d.
Phosphorus (P)	mg/kg	With reference to US EPA Method 3052 for Phosphorus Content. Analysis was performed by ICP-AES.	2	27200
Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.
PFOA (CAS No.: 335-67-1)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.
Tetrabromobisphenol A (TBBP-A) (CAS No.: 79-94-7)	mg/kg	With reference to DIN 53313. Analysis was performed by GC/MS.	10	n.d.
Hexabromocyclododecane (HBCDD) (CAS No.: 25637-99-4)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

Test Item(s)	Unit	Method	MDL	Result
				No.1
Sum of PBBs	mg/kg	With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.
Monobromobiphenyl	mg/kg		5	n.d.
Dibromobiphenyl	mg/kg		5	n.d.
Tribromobiphenyl	mg/kg		5	n.d.
Tetrabromobiphenyl	mg/kg		5	n.d.
Pentabromobiphenyl	mg/kg		5	n.d.
Hexabromobiphenyl	mg/kg		5	n.d.
Heptabromobiphenyl	mg/kg		5	n.d.
Octabromobiphenyl	mg/kg		5	n.d.
Nonabromobiphenyl	mg/kg		5	n.d.
Decabromobiphenyl	mg/kg		5	n.d.
Sum of PBDEs	mg/kg		-	n.d.
Monobromodiphenyl ether	mg/kg		5	n.d.
Dibromodiphenyl ether	mg/kg		5	n.d.
Tribromodiphenyl ether	mg/kg		5	n.d.
Tetrabromodiphenyl ether	mg/kg		5	n.d.
Pentabromodiphenyl ether	mg/kg		5	n.d.
Hexabromodiphenyl ether	mg/kg		5	n.d.
Heptabromodiphenyl ether	mg/kg		5	n.d.
Octabromodiphenyl ether	mg/kg		5	n.d.
Nonabromodiphenyl ether	mg/kg		5	n.d.
Decabromodiphenyl ether	mg/kg		5	n.d.
Halogen				
Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	1190
Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

Test Item(s)	Unit	Method	MDL	Result
				No.1
BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	%		0.003	n.d.
DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0)	%		0.01	n.d.
DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0)	%		0.01	n.d.
DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	%		0.003	n.d.
DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	%		0.003	n.d.

Note：

1. mg/kg = ppm；0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. " - " = Not Regulated
5. (#): The substance was calculated by the test result of Antimony. The MDL was evaluated for Antimony.

AX = A × F

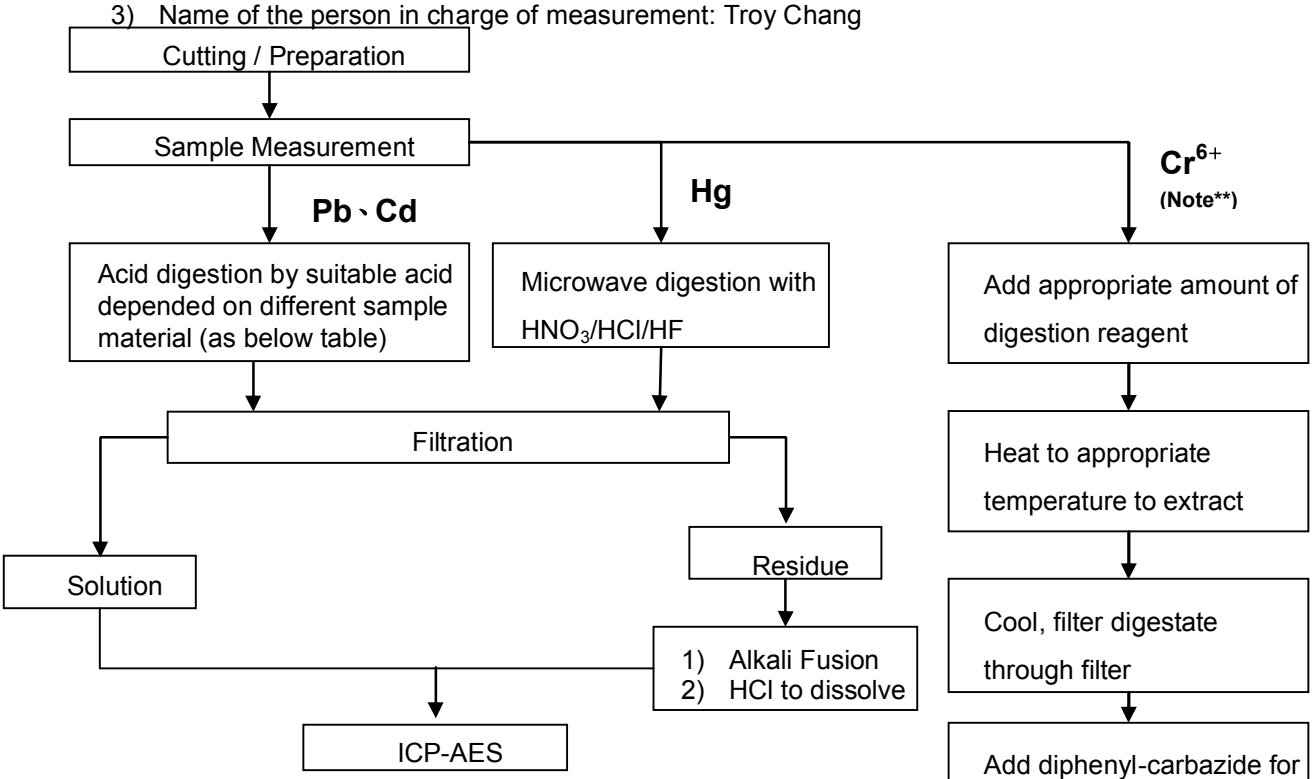
AX	A	F
Antimony trioxide (Sb_2O_3)	Antimony	1.1971

PFOS Reference Information : POPs - (EU) 757/2010

Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1μg/m².

DAI-ICHI SEIKO 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^{6+} test method excluded)
2) Name of the person who made measurement: Climbgreat Yang
3) Name of the person in charge of measurement: Troy Chang



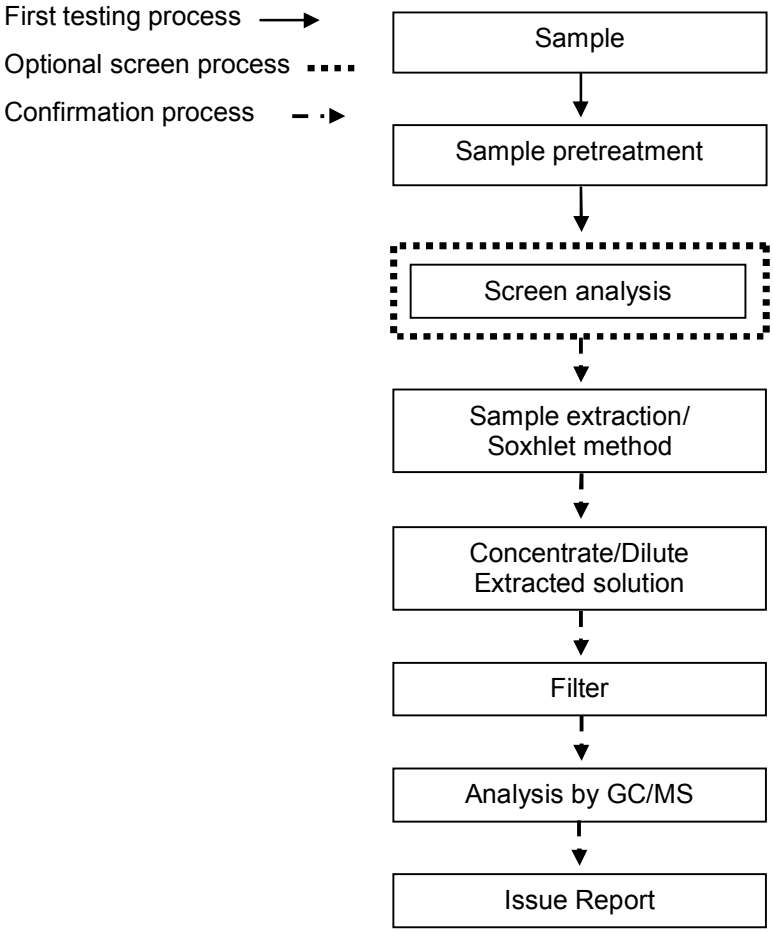
Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO_3, HCl, HF, H_2O_2
Glass	HNO_3/HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO_3
Plastic	H_2SO_4, H_2O_2, HNO_3, HCl
Others	Added appropriate reagent to total digestion

Note :** (1) For non-metallic material, add alkaline digestion reagent and heat to 90~95℃.
(2) For metallic material, add pure water and heat to boiling.

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

PBB/PBDE analytical FLOW CHART

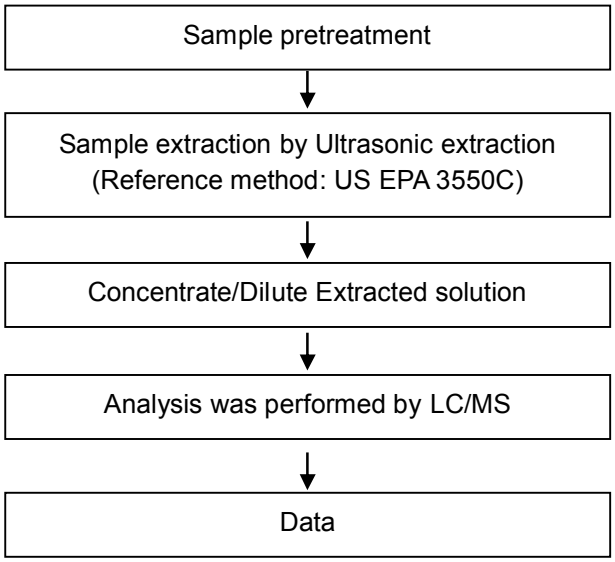
- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

PFOA/PFOS analytical flow chart of Ultrasonic extraction (LC/MS) procedure

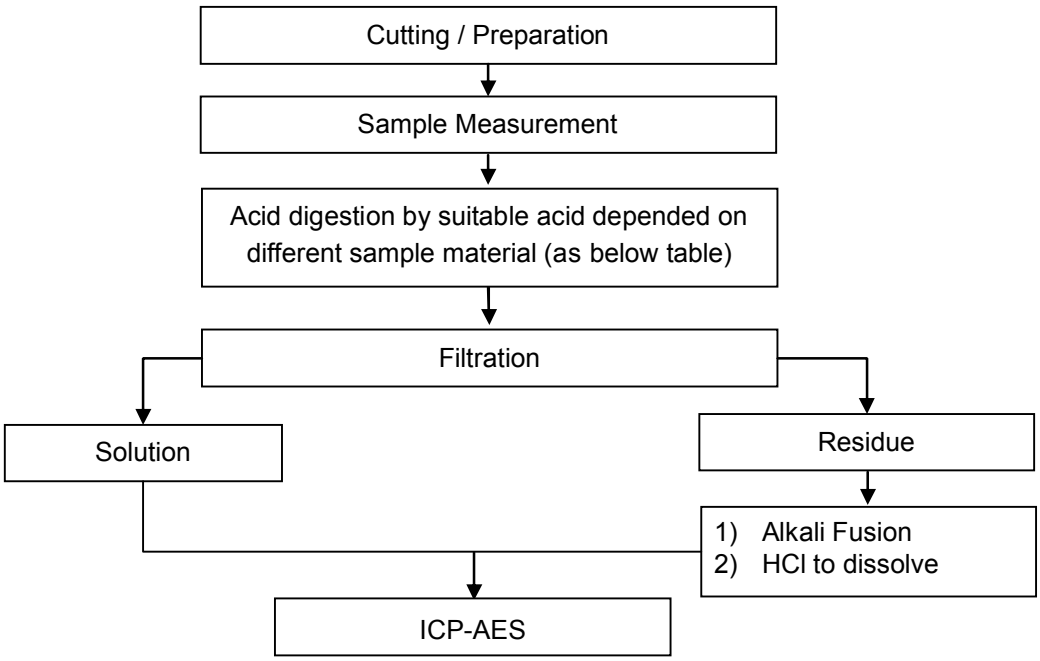
- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



DAI-ICHI SEIKO 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.
2) Name of the person who made measurement: Climbgreat Yang
3) Name of the person in charge of measurement: Troy Chang

Flow Chart of digestion for the elements analysis performed by ICP-AES

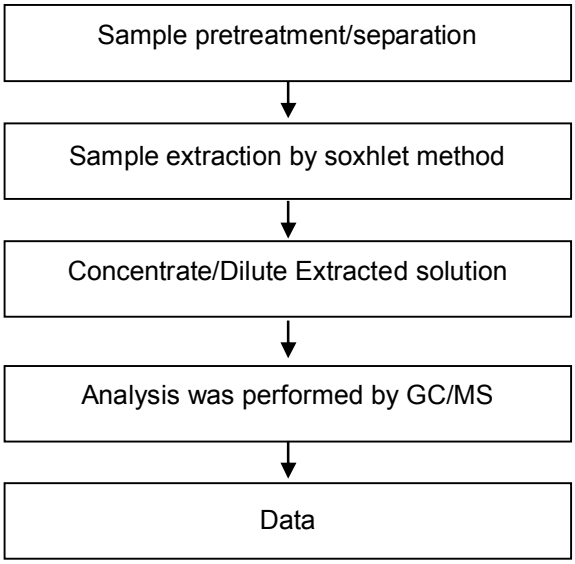


Steel, copper, aluminum, solder	Aqua regia, HNO_3, HCl, HF, H_2O_2
Glass	HNO_3/HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO_3
Plastic	H_2SO_4, H_2O_2, HNO_3, HCl
Others	Added appropriate reagent to total digestion

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

HBCDD analytical flow chart

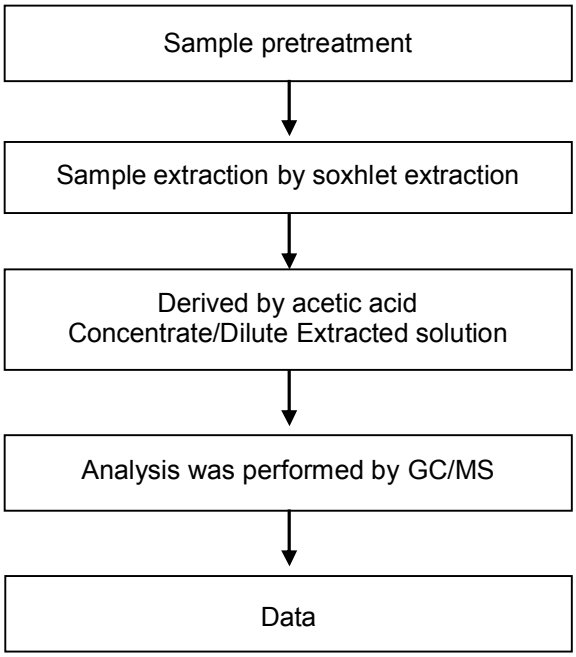
- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

TBBP-A analytical flow chart

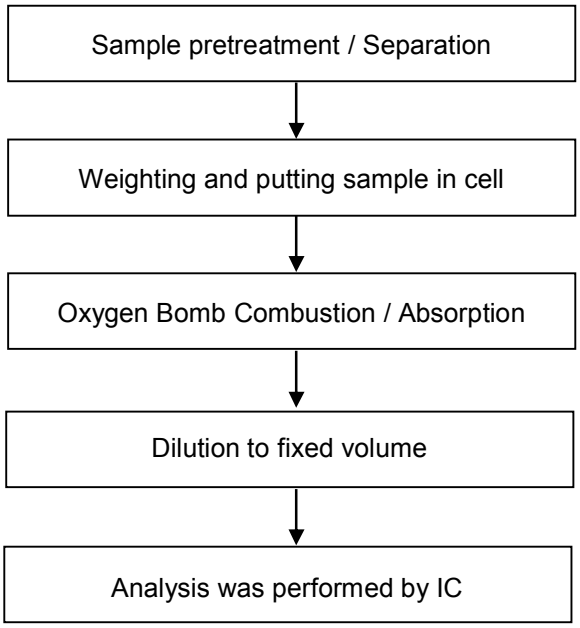
- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

Analytical flow chart of halogen content

1) Name of the person who made measurement: Rita Chen
2) Name of the person in charge of measurement: Troy Chang



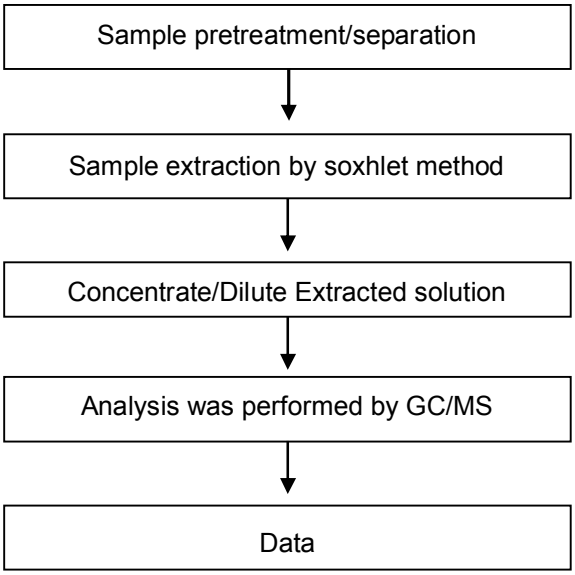
DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

Analytical flow chart of Soxhlet extraction (GC/MS) procedure

1) Name of the person who made measurement: Roman Wong

2) Name of the person in charge of measurement: Troy Chang

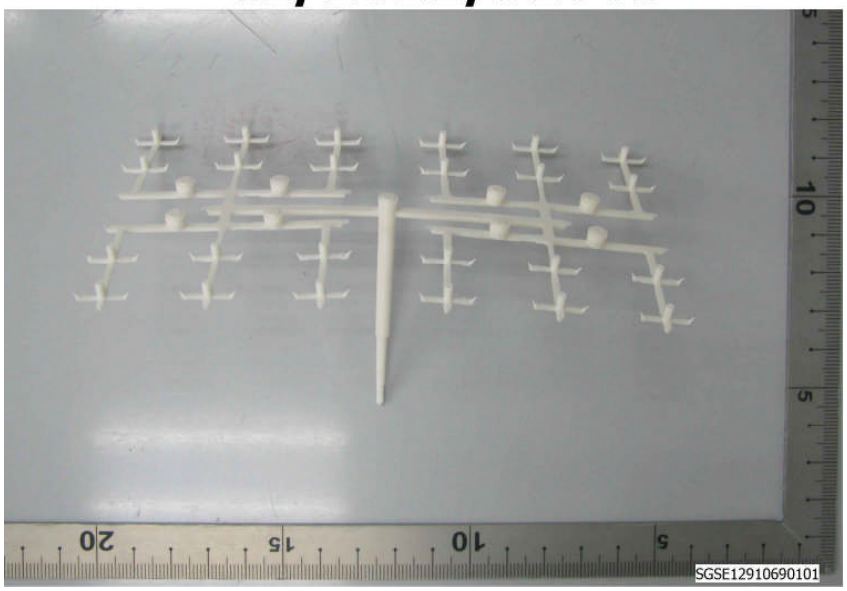
■ Test Items: Phthalate



DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

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

CE/2012/91069



** End of Report **

Test Report

No. : CE/2013/10248 Date : 2013/01/10 Page : 1 of 7

DAI-ICHI SEIKO 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 III RECE. GROUND CONTACT
Style/Item No.	:	2173-001
Sample Receiving Date	:	2013/01/02
Testing Period	:	2013/01/02 TO 2013/01/10

==========

Test Result(s)	:	Please refer to next page(s).
Test Requested	:	(1) As specified by client, with reference to RoHS Directive 2011/65/EU Annex II to determine Cadmium, Lead, Mercury, Cr(VI) contents in the submitted sample. (2) As specified by client, to test contents in the submitted sample.
Test Method	:	Please refer to next page(s).
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

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

Test Result(s)

PART NAME No.1 : PLATING LAYER OF GOLDEN COLORED METAL
PART NAME No.2 : BASE MATERIAL OF GOLDEN COLORED METAL

Test Item(s)	Unit	Method	MDL	Result	
				No.1	No.2
Cadmium (Cd)	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	n.d.	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	n.d.
Lead (Pb)	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	n.d.	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	17
Mercury (Hg)	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	n.d.	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	n.d.
Hexavalent Chromium Cr(VI)	**	With reference to IEC 62321: 2008 and performed by Boiling water extraction Method.#	#	Negative	Negative
Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	$\mu g/m^2$	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	1	n.d.	---

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

Note：

1. mg/kg = ppm；0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. "---" = Not Conducted
5. ** = Qualitative analysis (No Unit)
6. # = a. Positive means the presence of CrVI on the tested areas
   b. Negative means the absence of CrVI on the tested areas
   The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm^2 tested areas.

PFOS Reference Information : POPs - (EU) 757/2010

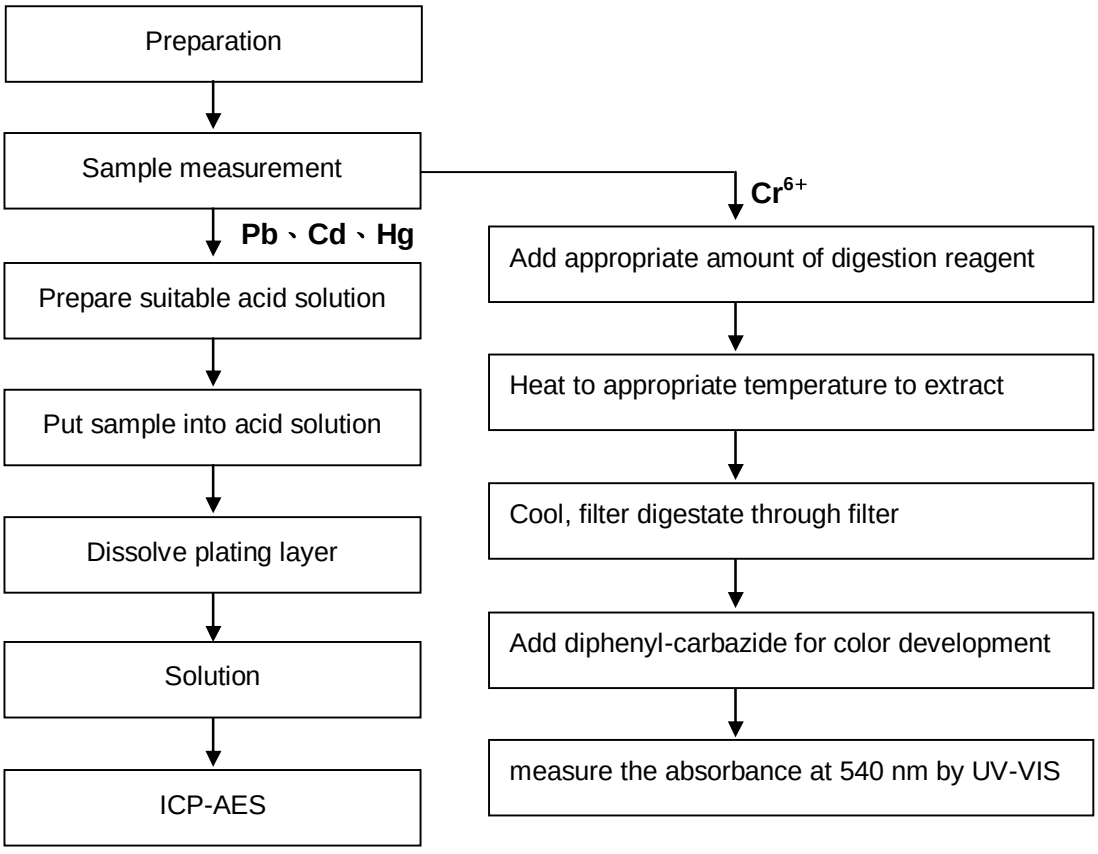
Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm),
in semi-finished products or articles or parts at a level above 0.1%(1000ppm),
in textiles or other coated materials above 1µg/m^2.

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

No.1

1) The plating layer of samples were dissolved totally by pre-conditioning method according to below flow chart.（Cr^{6+} test method excluded）
2) Name of the person who made measurement: Climbgreat Yang
3) Name of the person in charge of measurement: Troy Chang

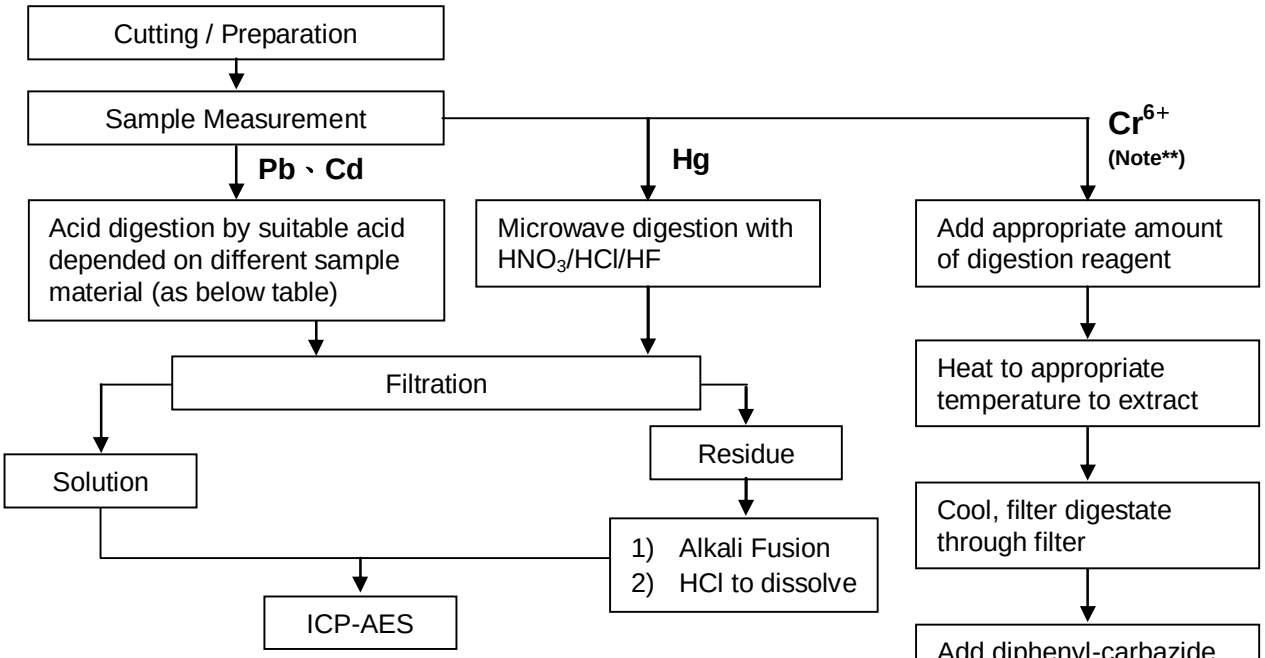
Flow Chart of Stripping method for metal analysis



DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

No.2

1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr^{6+} test method excluded)
2) Name of the person who made measurement: Climbgreat Yang
3) Name of the person in charge of measurement: Troy Chang



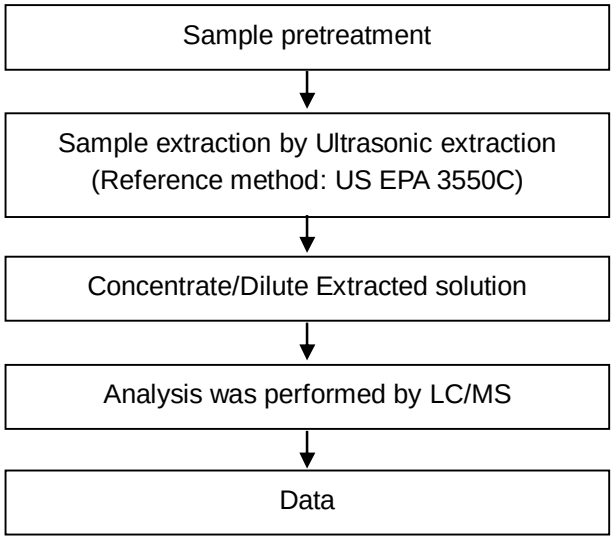
Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO_3, HCl, HF, H_2O_2
Glass	HNO_3/HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO_3
Plastic	H_2SO_4, H_2O_2, HNO_3, HCl
Others	Added appropriate reagent to total digestion

Note :** (1) For non-metallic material, add alkaline digestion reagent and heat to 90~95℃.
(2) For metallic material, add pure water and heat to boiling.

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

PFOS analytical flow chart of Ultrasonic extraction (LC/MS) procedure

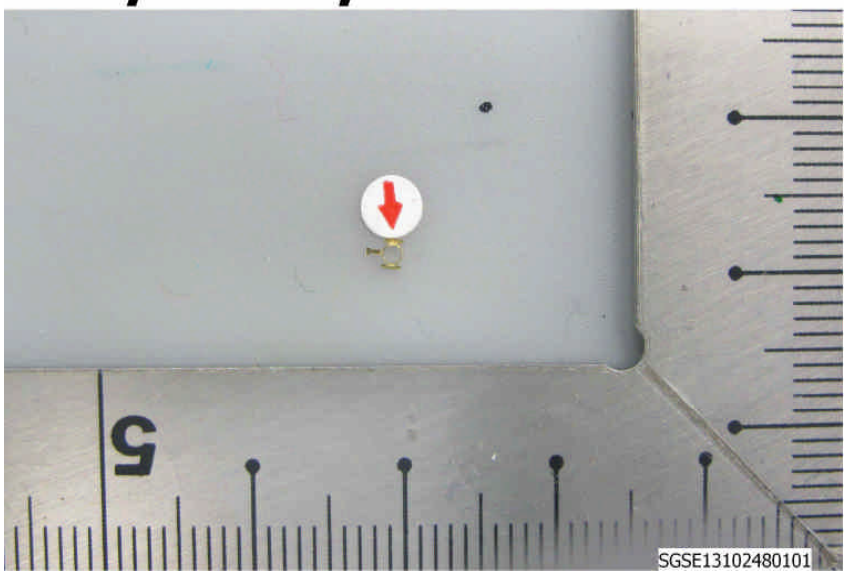
- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



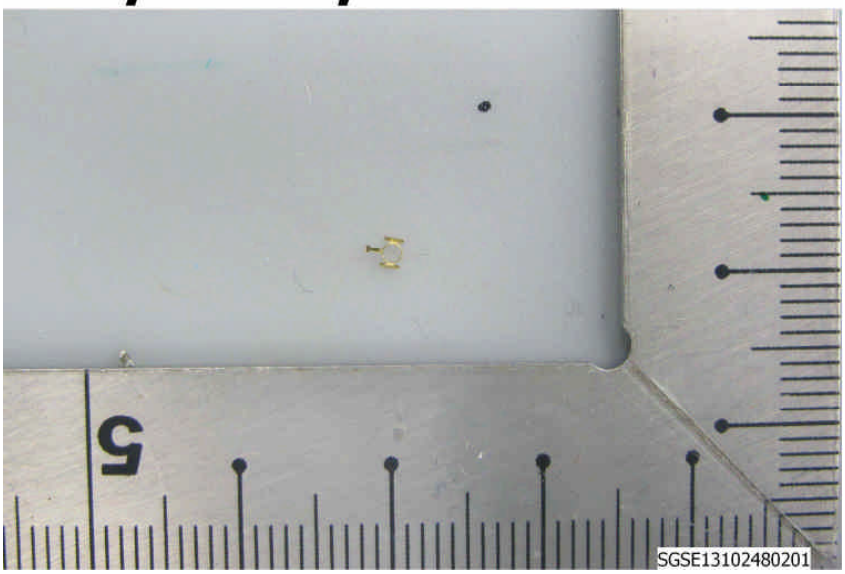
DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

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

CE/2013/10248 NO.1



CE/2013/10248 NO.2



** End of Report **

Test Report

No. : CE/2013/13104 Date : 2013/01/18 Page : 1 of 7

DAI-ICHI SEIKO 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 RECE. GROUND CONTACT
Style/Item No.	:	1848-001
Sample Receiving Date	:	2013/1/14
Testing Period	:	2013/1/14 TO 2013/01/18

==========

Test Requested	:	(1) As specified by client, with reference to RoHS Directive 2011/65/EU Annex II to determine Cadmium, Lead, Mercury, Cr(VI) contents in the submitted sample. (2) As specified by client, to test PFOS contents in the submitted sample.
Test Method	:	Please refer to next page(s).
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

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

Test Result(s)

PART NAME No.1 : PLATING LAYER OF GOLDEN/SILVER COLORED METAL
PART NAME No.2 : BASE MATERIAL OF GOLDEN/SILVER COLORED METAL

Test Item(s)	Unit	Method	MDL	Result	
				No.1	No.2
Cadmium (Cd)	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	n.d.	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	n.d.
Lead (Pb)	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	n.d.	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	21
Mercury (Hg)	mg/kg	IEC 62321: 2008 application of modified digestion by surface etching and performed by ICP-AES.	2	n.d.	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	n.d.
Hexavalent Chromium Cr(VI)	**	With reference to IEC 62321: 2008 and performed by Boiling water extraction Method.#	#	Negative	Negative
Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	$\mu g/m^2$	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	1	n.d.	---

DAI-ICHI SEIKO CO., LTD.
6-27-19 HARAMACHIDA MACHIDA-CITY TOKYO 194-0013 JAPAN

Note：

1. mg/kg = ppm；0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. "---" = Not Conducted
5. ** = Qualitative analysis (No Unit)
6. # = a. Positive means the presence of CrVI on the tested areas
   b. Negative means the absence of CrVI on the tested areas
   The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm^2 tested areas.

PFOS Reference Information : POPs - (EU) 757/2010

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

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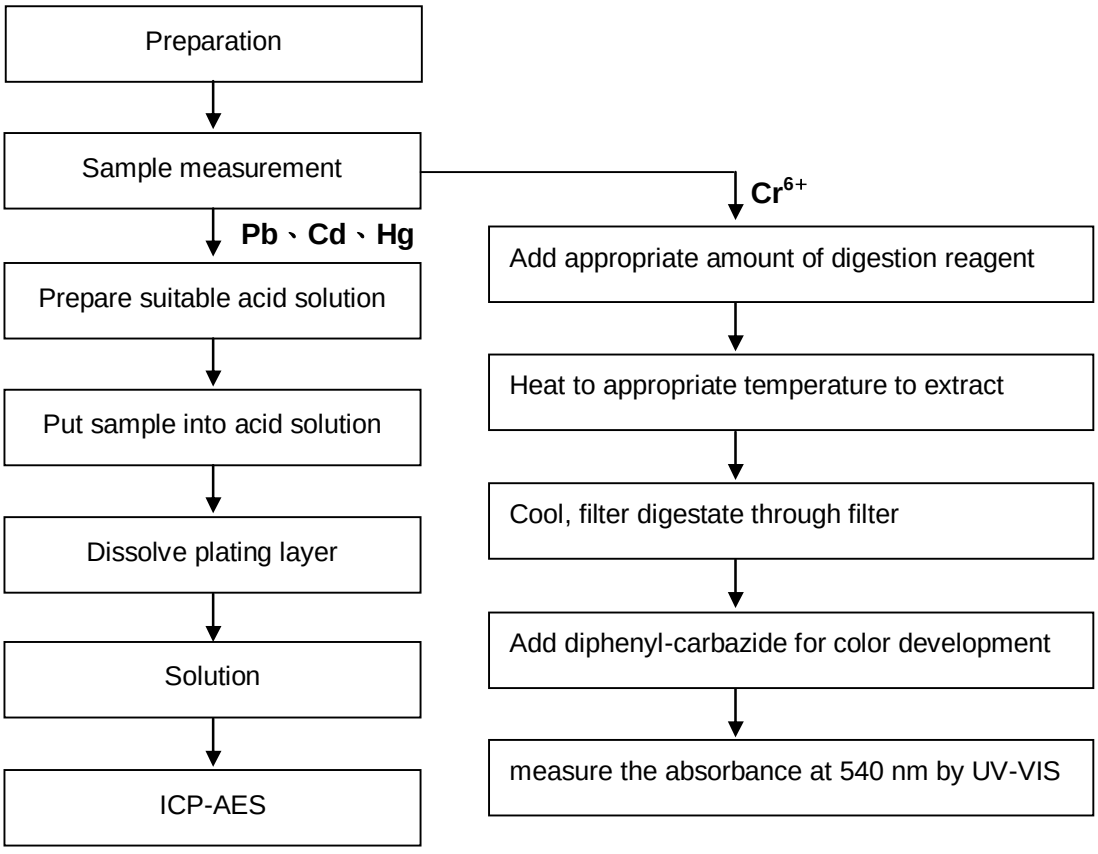
No.1

1) The plating layer of samples were dissolved totally by pre-conditioning method according to below flow chart.（Cr^{6+} test method excluded）
2) Name of the person who made measurement: Climbgreat Yang
3) Name of the person in charge of measurement: Troy Chang

Flow Chart of Stripping method for metal analysis



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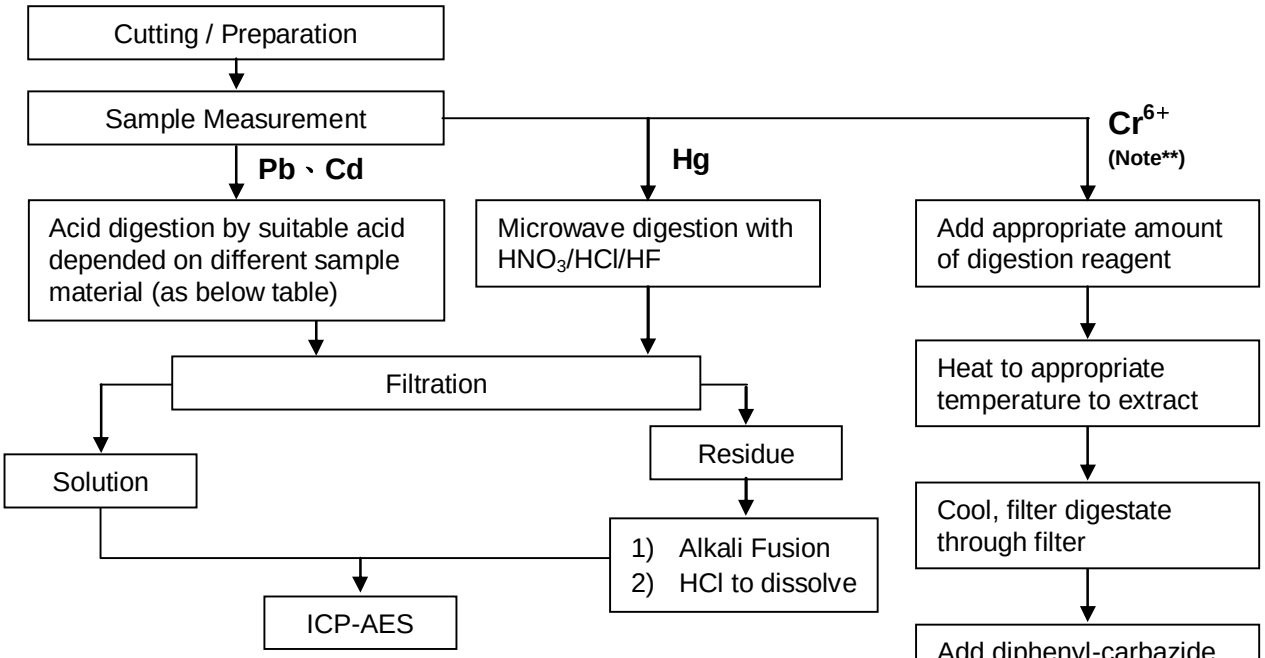
No.2

1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr^{6+} test method excluded)
2) Name of the person who made measurement: Climbgreat Yang
3) Name of the person in charge of measurement: Troy Chang



Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO_3, HCl, HF, H_2O_2
Glass	HNO_3/HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO_3
Plastic	H_2SO_4, H_2O_2, HNO_3, HCl
Others	Added appropriate reagent to total digestion

Note :** (1) For non-metallic material, add alkaline digestion reagent and heat to 90~95℃.
(2) For metallic material, add pure water and heat to boiling.

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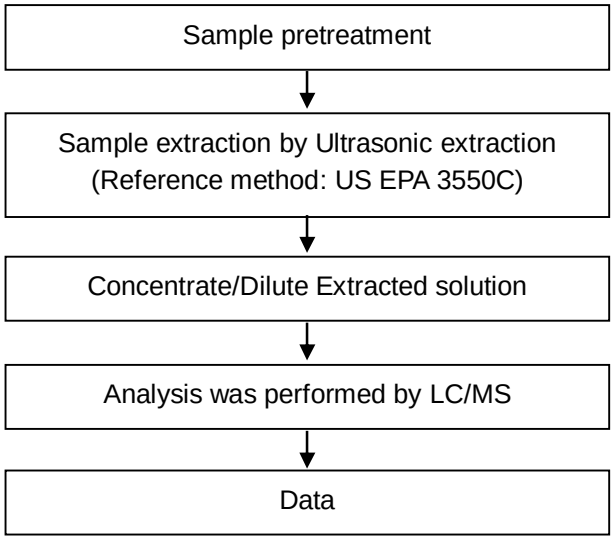
PFOS analytical flow chart of Ultrasonic extraction (LC/MS) procedure

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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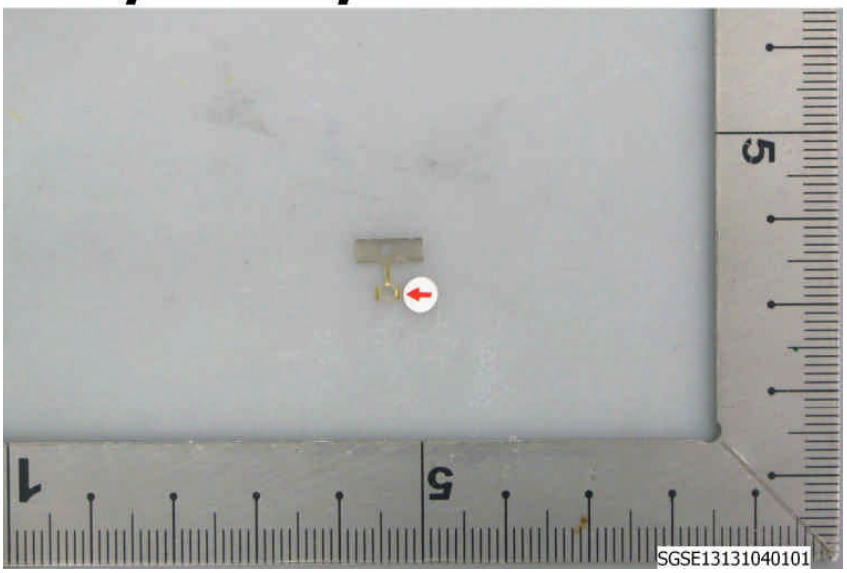
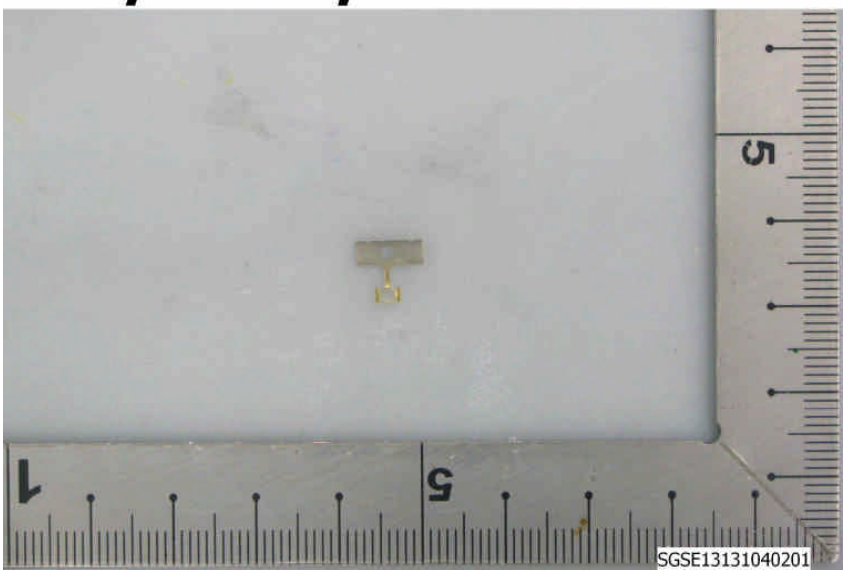
*** The tested sample / part is marked by an arrow if it's shown on the photo. ***

CE/2013/13104 NO.1



CE/2013/13104 NO.2



** End of Report **

CTI 华测检测 CENTRE TESTING INTERNATIONAL

检测报告

报告编号 RLSZF001599260001C 第 1 页 共 4 页

申请单位 深圳市海联通科技有限公司

地　　址 深圳市光明新区公明办事处将石社区石围大田洋工业区C区B栋3楼A

以下测试之样品及样品信息由申请者提供并确认

样品名称 同轴电缆

样品型号 RF1.13/RF0.81RF1.37

样品接收日期 2013.03.05

样品检测日期 2013.03.05－2013.03.09

检测要求 根据客户要求，对所提交样品混合测试铅(Pb)，镉(Cd)，汞(Hg)，六价铬(Cr(VI))，多溴联苯(PBBs)，多溴二苯醚(PBDEs)。

检测依据

测试项目	测试方法	测试仪器	方法检测限
铅(Pb)	IEC 62321:2008 Ed.1 Sec.8	ICP-OES	2 mg/kg
镉(Cd)	IEC 62321:2008 Ed.1 Sec.8	ICP-OES	2 mg/kg
汞(Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES	2 mg/kg
六价铬(Cr(VI))	IEC 62321:2008 Ed.1 Annex C	UV-Vis	2 mg/kg
多溴联苯(PBBs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5 mg/kg
多溴二苯醚(PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5 mg/kg

检测结果 请参见下页。

主　检 林瑞坤　　审　核 [illegible]

批　准 [illegible]　　日　期 2013.03.09

深圳市华测检测技术股份有限公司 SZ03 报告专用章

刘少蔚

技术经理

No.10784258

深圳市华测检测技术股份有限公司　　广东省深圳市宝安区70区鸿威工业园

检测报告

检测结果

测试项目	结果
铅(Pb)	N.D.
镉(Cd)	N.D.
汞(Hg)	N.D.
六价铬(Cr(VI))	N.D.

测试项目	结果
多溴联苯(PBBs)	
一溴联苯	N.D.
二溴联苯	N.D.
三溴联苯	N.D.
四溴联苯	N.D.
五溴联苯	N.D.
六溴联苯	N.D.
七溴联苯	N.D.
八溴联苯	N.D.
九溴联苯	N.D.
十溴联苯	N.D.

测试项目	结果
多溴二苯醚(PBDEs)	
一溴二苯醚	N.D.
二溴二苯醚	N.D.
三溴二苯醚	N.D.
四溴二苯醚	N.D.
五溴二苯醚	N.D.
六溴二苯醚	N.D.
七溴二苯醚	N.D.
八溴二苯醚	N.D.
九溴二苯醚	N.D.
十溴二苯醚	N.D.

测试样品/部位描述 黑色、灰色和透明塑料线皮混测

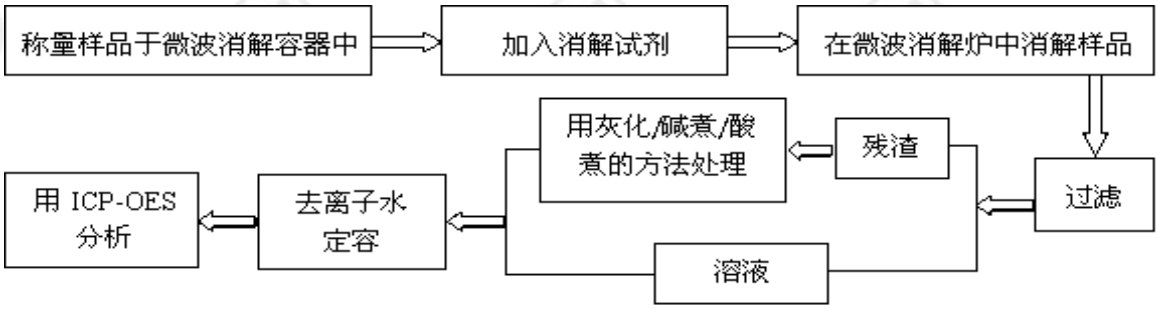
注释: **对于检测铅，镉，汞之样品已完全溶解。**
-N.D. = 未检出（小于方法检测限）
-mg/kg = ppm = 百万分之几

备注: **报告编号中“C”表示此报告为中文版本。**

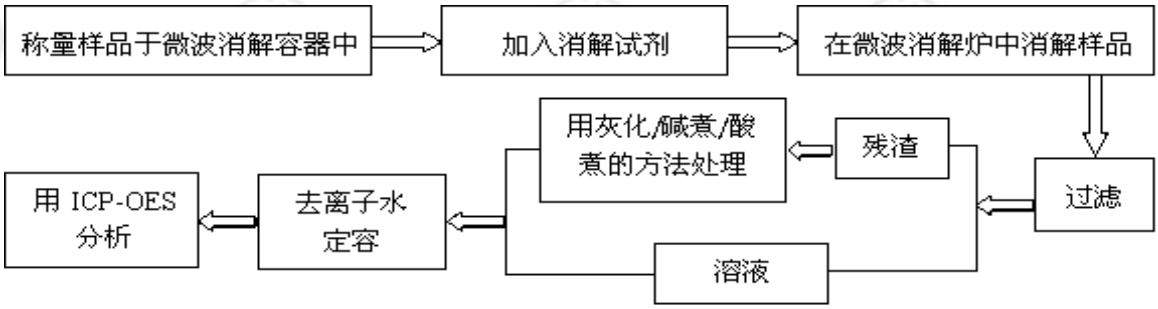
检测报告

检测流程

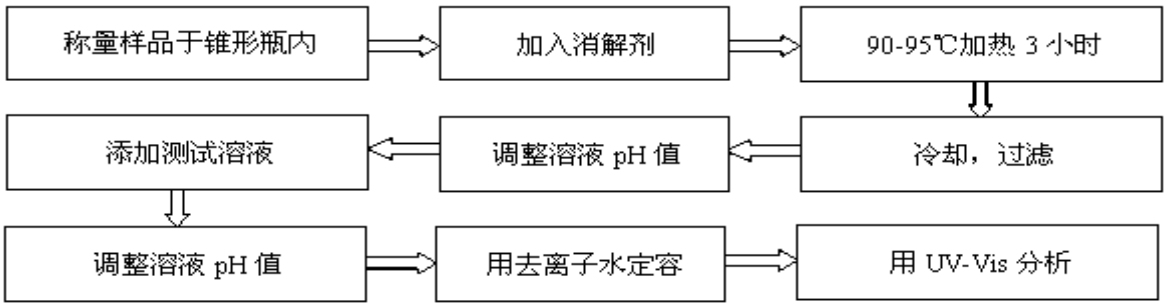
1. 铅(Pb)，镉(Cd)



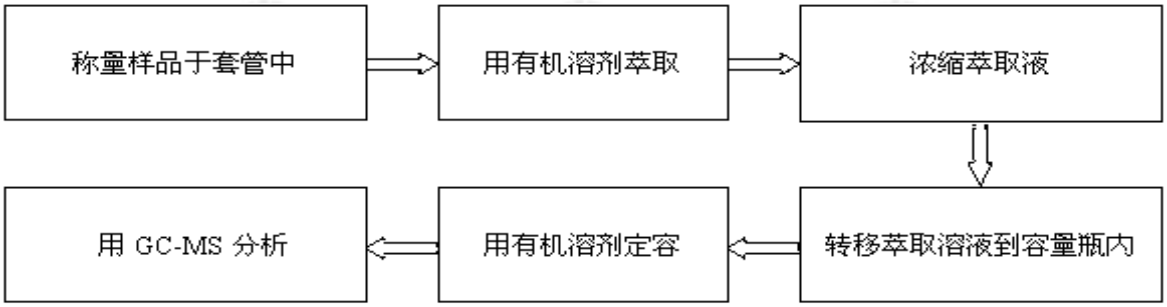
2. 汞(Hg)



3. 六价铬(Cr(VI))

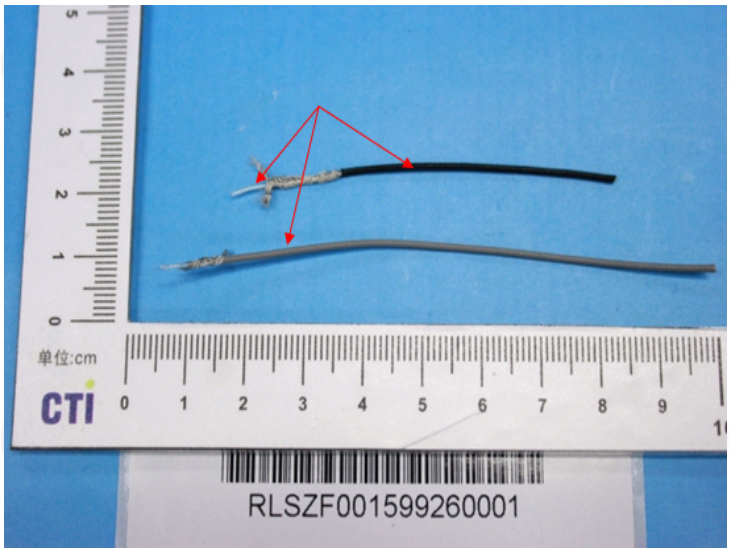


4. 多溴联苯(PBBs)，多溴二苯醚(PBDEs)



检测报告

样品图片



报告结束