



霖昱微波科技股份有限公司  
**RainSun Corporation**

電話：(02)2911-7997 傳真：(02)2918-5200

產品承認書

**Product Specification**

客戶名稱：阿丹電子股份有限公司

承認編號：9700014

客戶品名：AN1603-433

產品名稱：Chip Antenna

承認印欄	97 年 12 月 24 日	備註欄
<p>承認</p> <p>霖昱微波科技(股)公司</p> <p>97. 12. 24</p> <p>承認書專用章</p>	<p>確認</p> <p>KUANWEI</p>	<p>擔當</p> <p>Judy</p>



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## AN1603 Multilayer Chip Antenna

### ◆ Features

- Light weight and low profile 16.0mm(L)X3.1mm(W)X1.65mm(H)
- Omni-directional in azimuth
- Lead (Pb) Free

### ◆ Applications

- 433MHz wireless communications
- 433MHz Modules
- Other ISM band 420MHz~660MHz Wireless Application

## Specifications

Center frequency	433MHz
Peak gain	0.5dBi
Operation temperature	-40 ~ +85 °C
Storage temperature	-40 ~ +85 °C
VSWR	2.0 (Max)
Input Impedance	50 Ohm
Power handling	3W (Max)
Bandwidth	8MHz
Azimuth beamwidth	Omni-directional
Polarization	Linear



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## Pin configuration



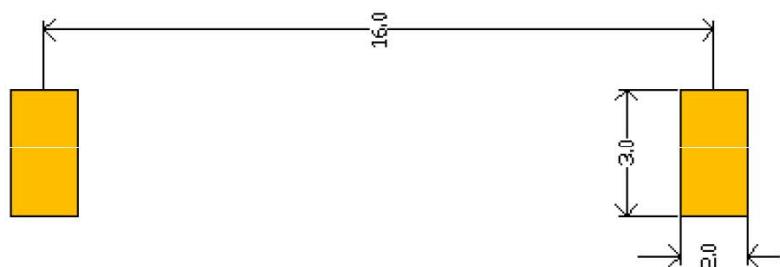
Pin No	Pin assignment
1	Feed termination
2	Feed point mark
3	Solder termination

## Dimensions



Symbol	Dimensions (mm)
A	16.00±0.10
B	3.10±0.10
C	0.60±0.05
H	1.65±0.20

## PCB foot printer





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## Recommended Test Board Pattern

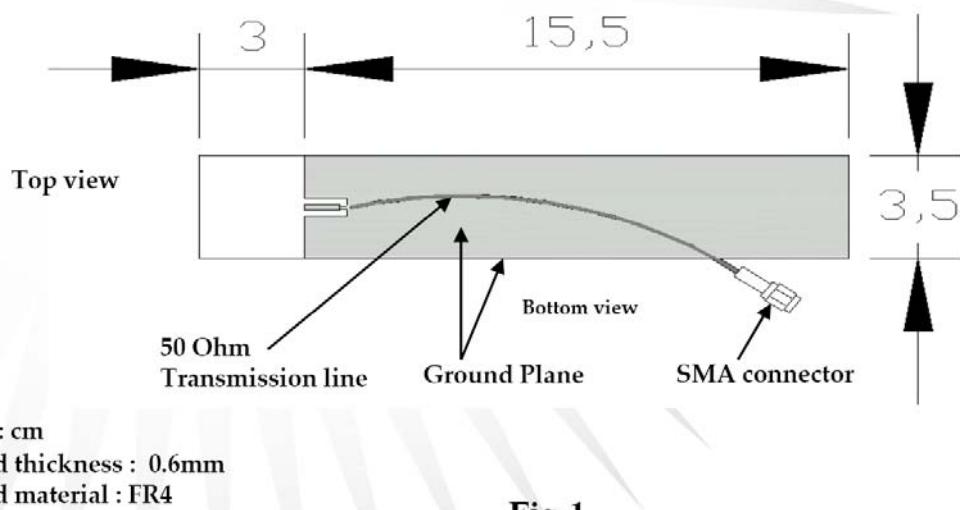
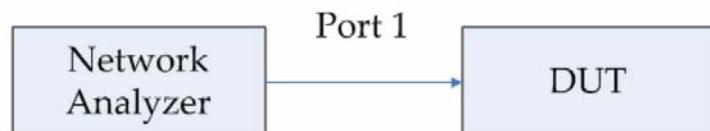


Fig-1

## Testing Setup



## Measurement



### Testing Instrument:

Anritsu 37369C VNA (Vector Network Analyzer)

VNA calibrate with 1 path reflection  
only calibration sequence on test board  
feed point.

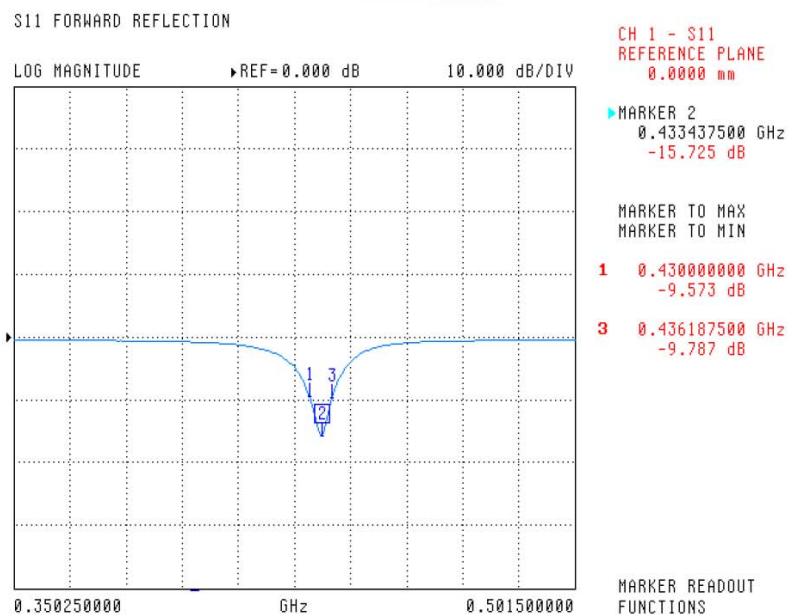
The test board dimension and its layout is the same as recommended Test Board.



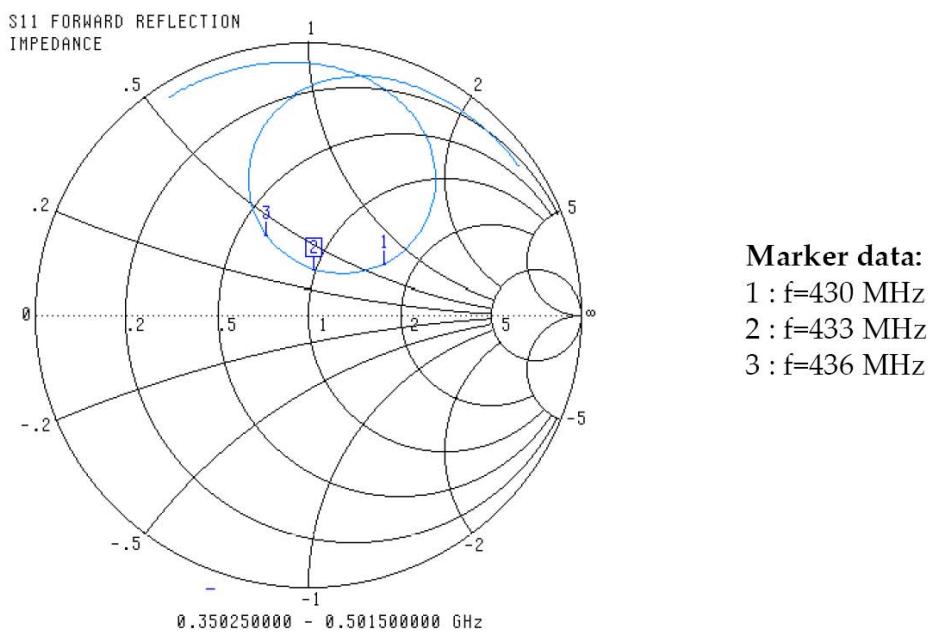
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## Typical Electrical Characteristics

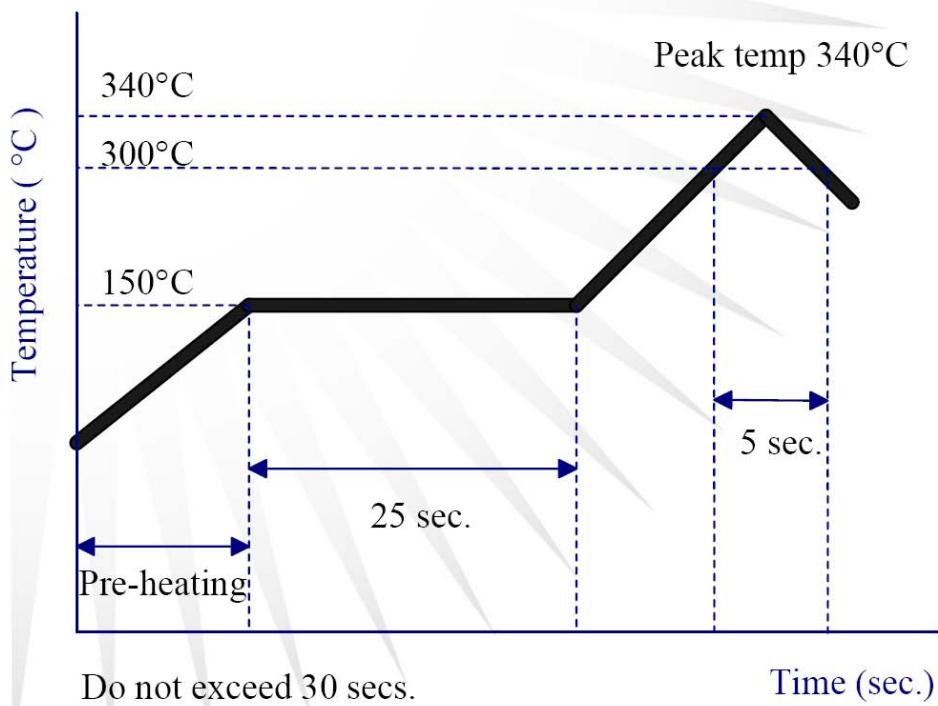
### Return loss



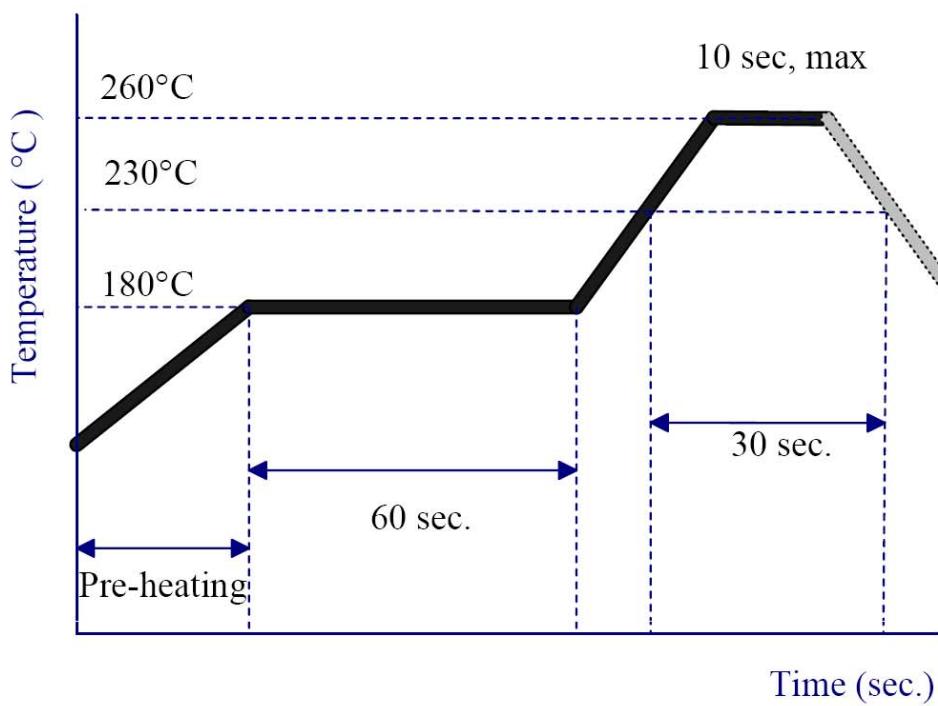
### 433 MHz Smith Chart



## Typical Soldering Profile for Lead-free Process



### Reflow Soldering

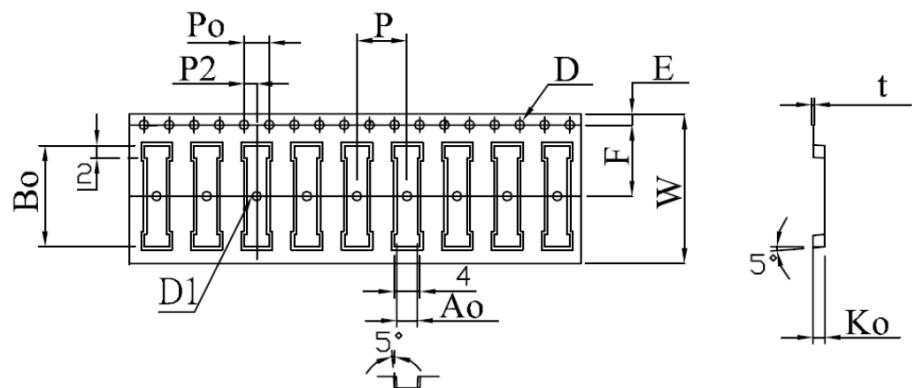




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## Packing

### Blister Tape Specifications

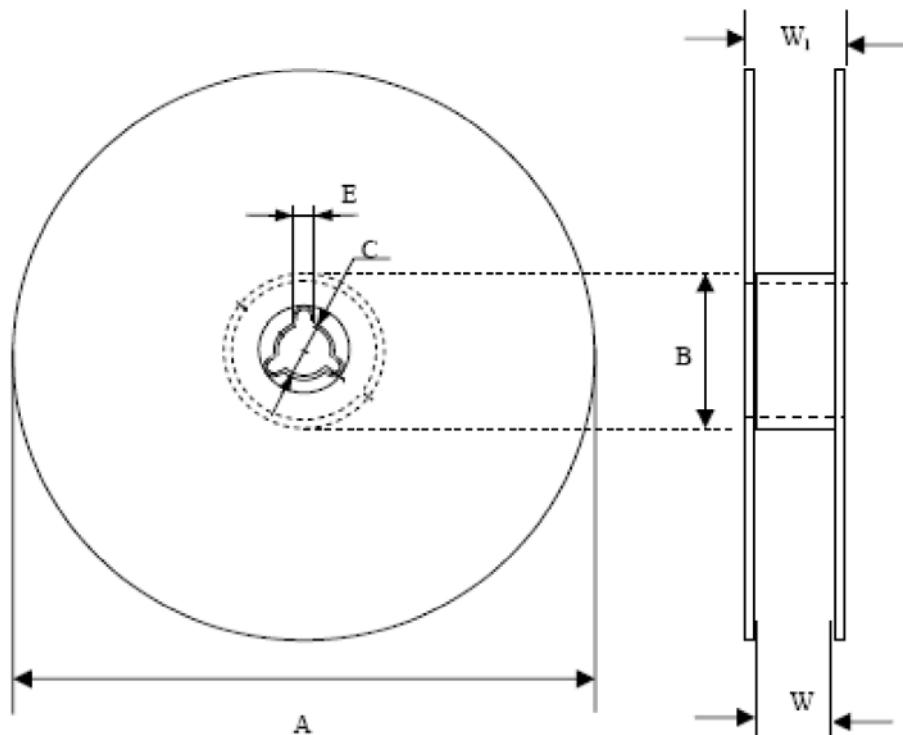


Symbol	Dimension	Tolerance	Unit
W	24.00	$\pm 0.30$	mm
P	8.00	$\pm 0.10$	mm
P2	2.00	$\pm 0.10$	mm
Ao	4.70	$+0.10$ $-3.20$	mm
Bo	16.20	$\pm 0.10$	mm
Ko	1.90	$\pm 0.10$	mm
F	11.50	$\pm 0.10$	mm
E	1.75	$\pm 0.10$	mm
D	1.50	$+0.10$ $-0.00$	mm
Po	4.00	$\pm 0.10$	mm
t	0.30	$\pm 0.05$	mm



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## Reel Specifications



Quantity Per Reel	Tape Width (mm)	A (mm)	C (mm)	B (mm)	E (mm)	W (mm)	W <sub>1</sub> (mm)
3,000	24	330±1	13.0±0.5	100.0±0.5	2.2±0.5	24.0±0.5	28.9±0.2



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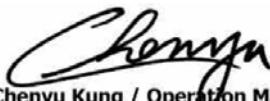


The following sample(s) was/were submitted and identified by/on behalf of the client as :

Sample Description : CHIP ANTENNA  
Sample Receiving Date : 2008/11/12  
Testing Period : 2008/11/12 TO 2008/11/19

=====

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

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### Test Result(s)

PART NAME NO.1 : CHIP ANTENNA

Test Item (s):	Unit	Method	MDL	Result
				No.1
Cadmium (Cd)	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Cadmium by ICP-AES.	2	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Lead by ICP-AES.	2	32
Mercury (Hg)	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Mercury by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI) by alkaline extraction	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of Hexavalent Chromium for non-metallic samples by UV/Vis Spectrometry.	2	n.d.
Halogen	---	With reference to BS EN 14582:2007. Analysis was performed by IC method for F, Cl, Br, I content.	---	---
Halogen-Fluorine (F) (CAS No.: 014762-94-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC method for Fluorine content.	50	n.d.
Halogen-Chlorine (Cl) (CAS No.: 022537-15-1)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC method for Chlorine content.	50	n.d.
Halogen-Bromine (Br) (CAS No.: 010097-32-2)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC method for Bromine content.	50	n.d.
Halogen-Iodine (I) (CAS No.: 014362-44-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC method for Iodine content.	50	n.d.

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Test Item (s):	Unit	Method	MDL	Result
				No.1
<b>Sum of PBBs</b>			-	n.d.
Monobromobiphenyl			5	n.d.
Dibromobiphenyl			5	n.d.
Tribromobiphenyl			5	n.d.
Tetrabromobiphenyl			5	n.d.
Pentabromobiphenyl			5	n.d.
Hexabromobiphenyl			5	n.d.
Heptabromobiphenyl			5	n.d.
Octabromobiphenyl			5	n.d.
Nonabromobiphenyl			5	n.d.
Decabromobiphenyl			5	n.d.
<b>Sum of PBDEs</b>		With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of PBB and PBDE by GC/MS.	-	n.d.
Monobromodiphenyl ether	mg/kg		5	n.d.
Dibromodiphenyl ether			5	n.d.
Tribromodiphenyl ether			5	n.d.
Tetrabromodiphenyl ether			5	n.d.
Pentabromodiphenyl ether			5	n.d.
Hexabromodiphenyl ether			5	n.d.
Heptabromodiphenyl ether			5	n.d.
Octabromodiphenyl ether			5	n.d.
Nonabromodiphenyl ether			5	n.d.
Decabromodiphenyl ether			5	n.d.

Note : 1. mg/kg = ppm; 0.1wt% = 1000ppm

2. n.d. = Not Detected

3. MDL = Method Detection Limit

4. " - " = Not Regulated

5. "---" = Not Conducted

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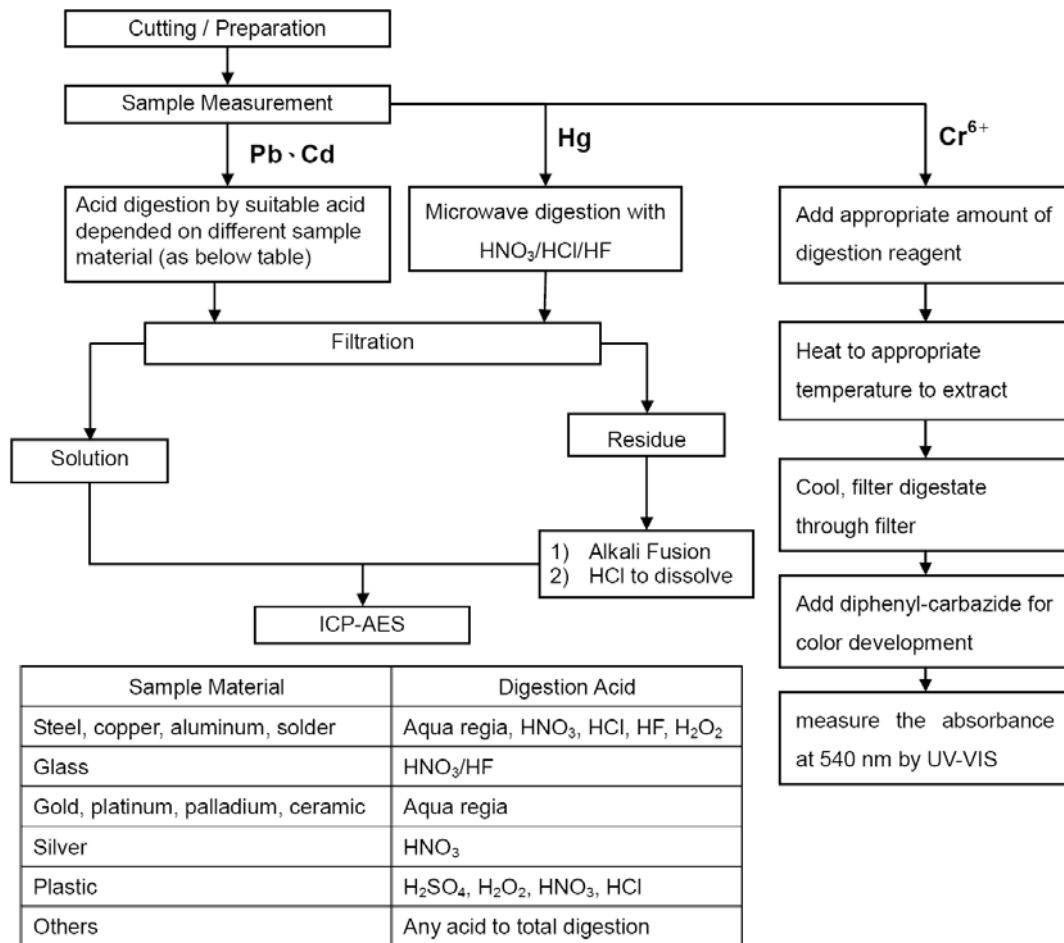
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- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
( Cr<sup>6+</sup> test method excluded )
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: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



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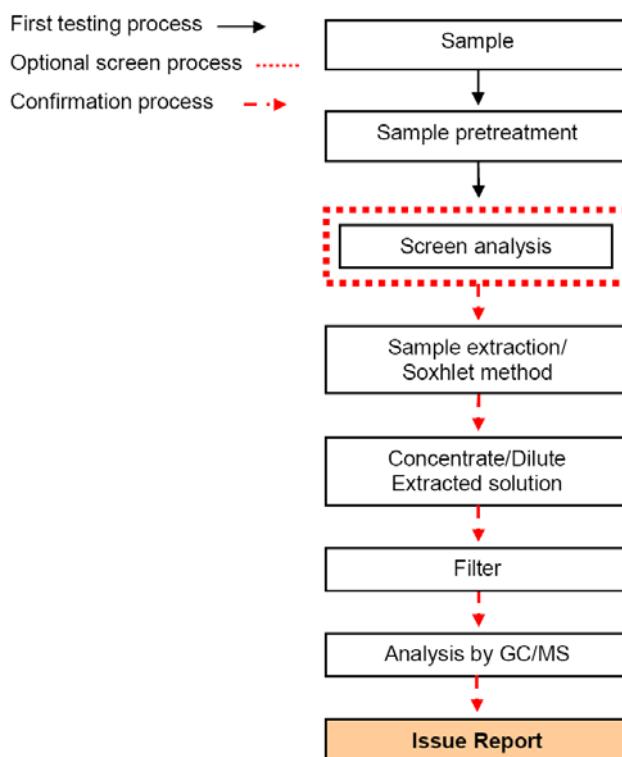
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### PBB/PBDE analytical FLOW CHART

- 1) Name of the person who made measurement: Roman Wong
- 2) Name of the person in charge of measurement: Shinjyh Chen



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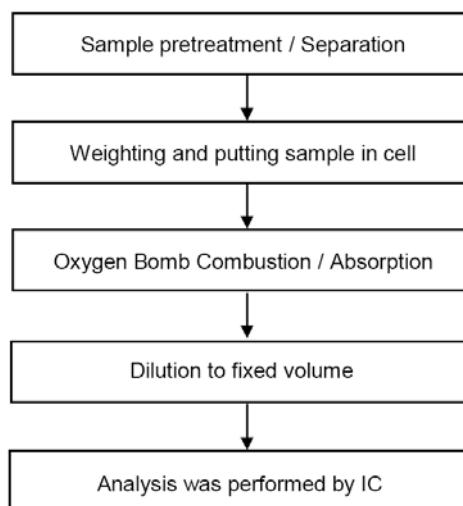
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### Analytical flow chart of halogen content

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



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