



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
承認 霖昱微波科技(股)公司 97.12.24 承認書專用章	確認 Kuanwei	擔當 Judy



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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

Pin configuration



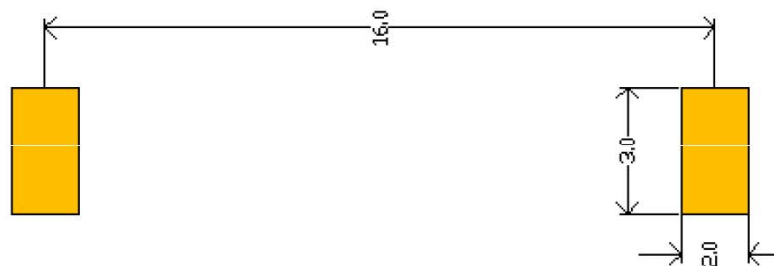
Pin No	Pin assignment
1	Feed termination
2	Feed point mark
3	Solder termination

Dimensions

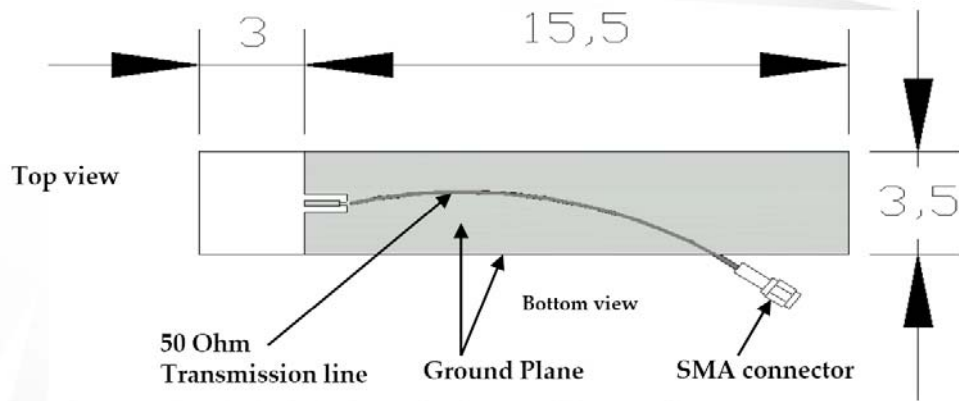


Symbol	Dimensions (mm)
A	16.00±0.10
B	3.10±0.10
C	0.60±0.05
H	1.65±0.20

PCB foot printer



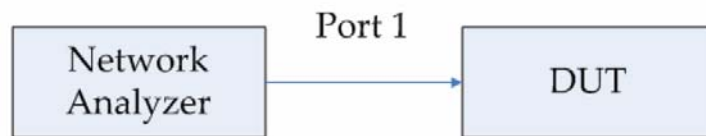
Recommended Test Board Pattern



Unit : cm
Board thickness : 0.6mm
Board material : FR4

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.

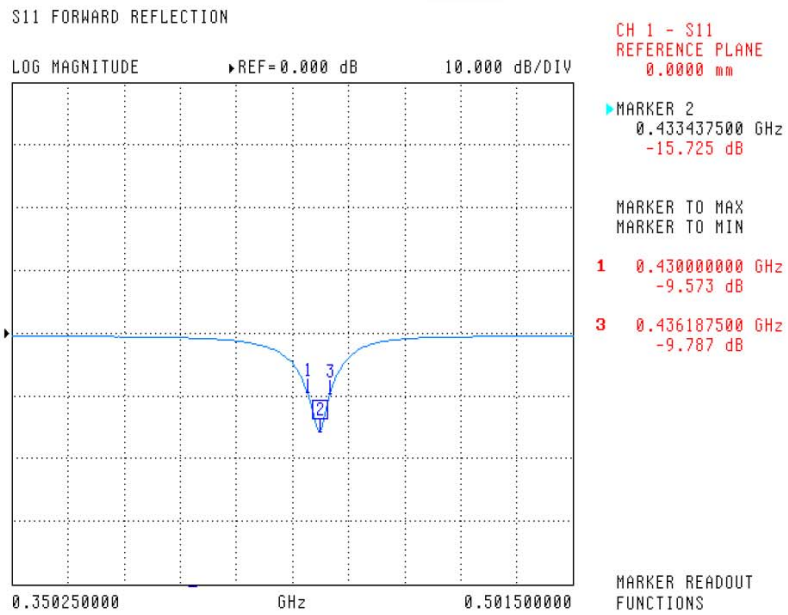


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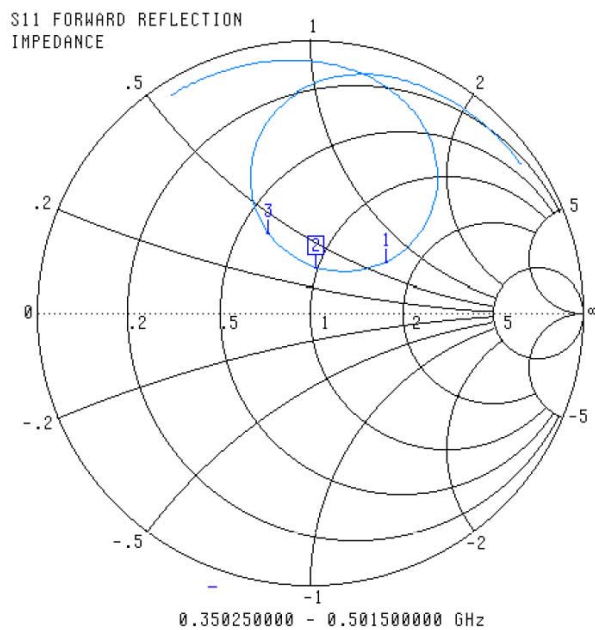
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Typical Electrical Characteristics

Return loss



433 MHz Smith Chart



Marker data:

1 : f=430 MHz

2 : f=433 MHz

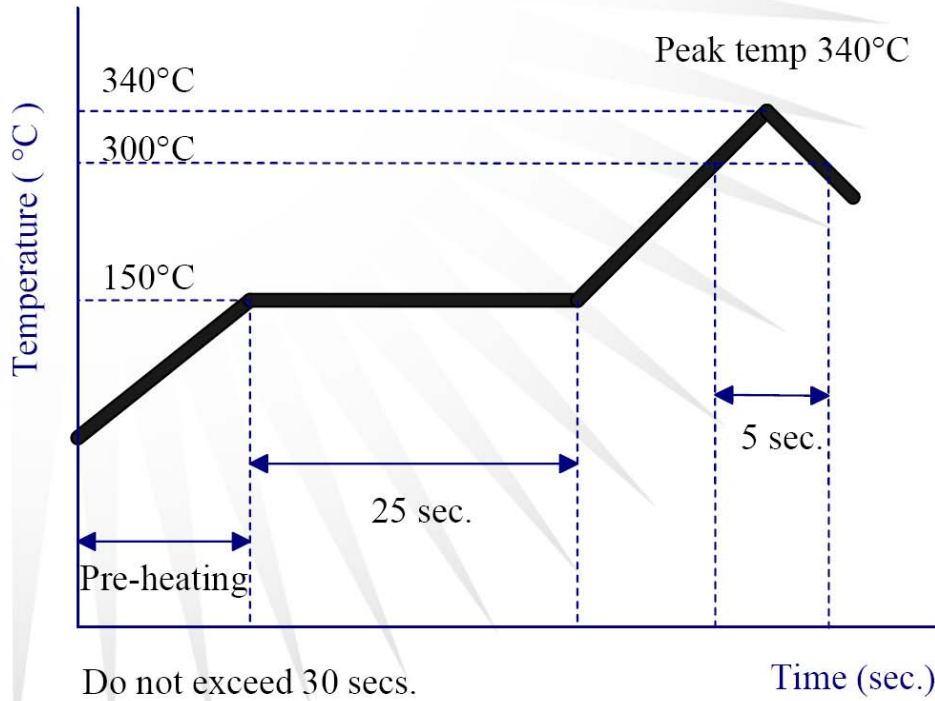
3 : f=436 MHz



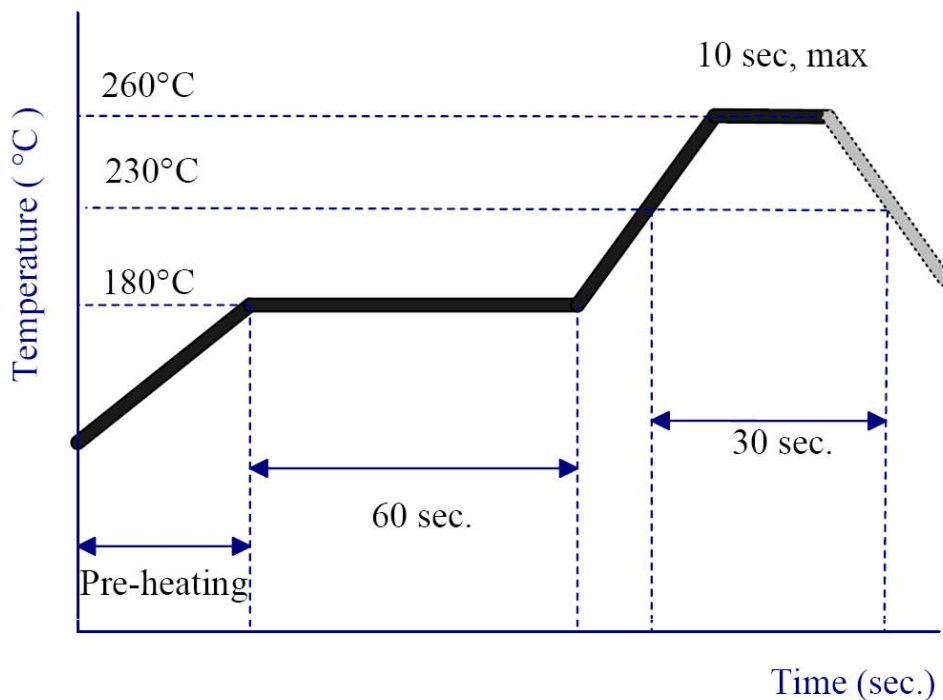
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Typical Soldering Profile for Lead-free Process

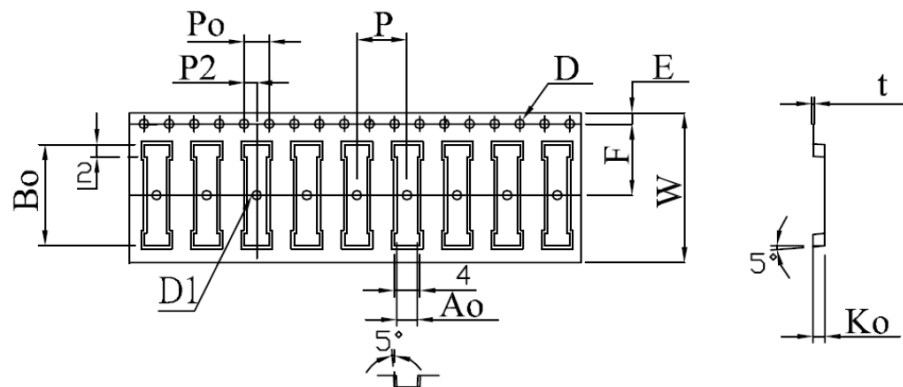


Reflow Soldering



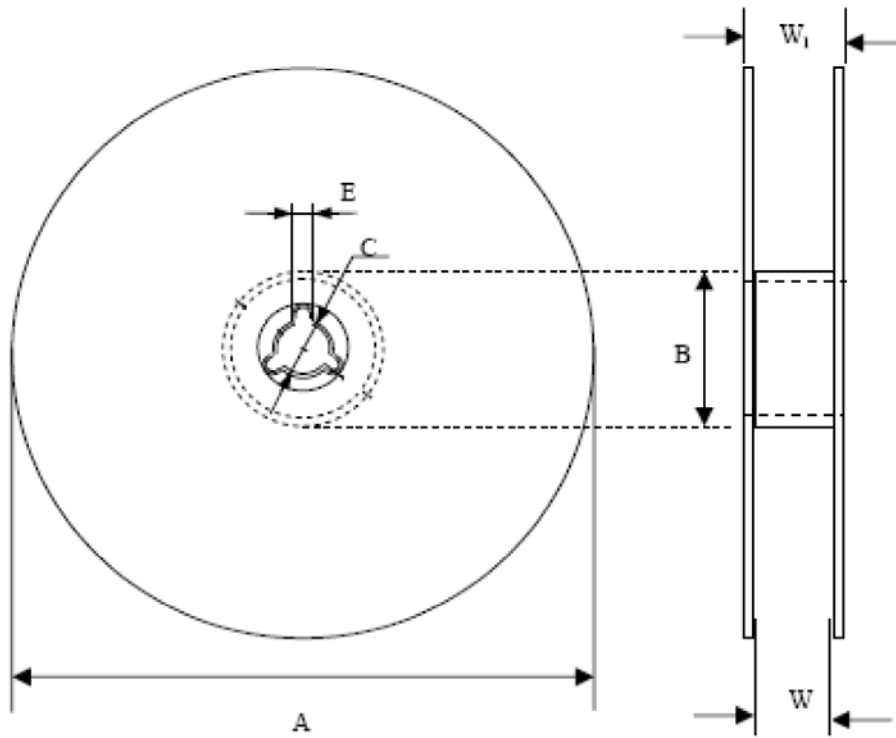
Packing

Blister Tape Specifications



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

Reel Specifications



Quantity Per Reel	Tape Width (mm)	A (mm)	C (mm)	B (mm)	E (mm)	W (mm)	W_1 (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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簽名有效
For Question
Please Contact with SGS
www.tw.sgs.com

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3F, NO. 14, LANE 235, BAOCIAO RD., SINDIAN CITY, TAIPEI 231



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
Sum of PBBs	mg/kg	With reference to IEC 62321/2nd CDV (111/95/CDV). Determination of PBB and PBDE by GC/MS.	-	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.
Sum of PBDEs			-	n.d.
Monobromodiphenyl ether			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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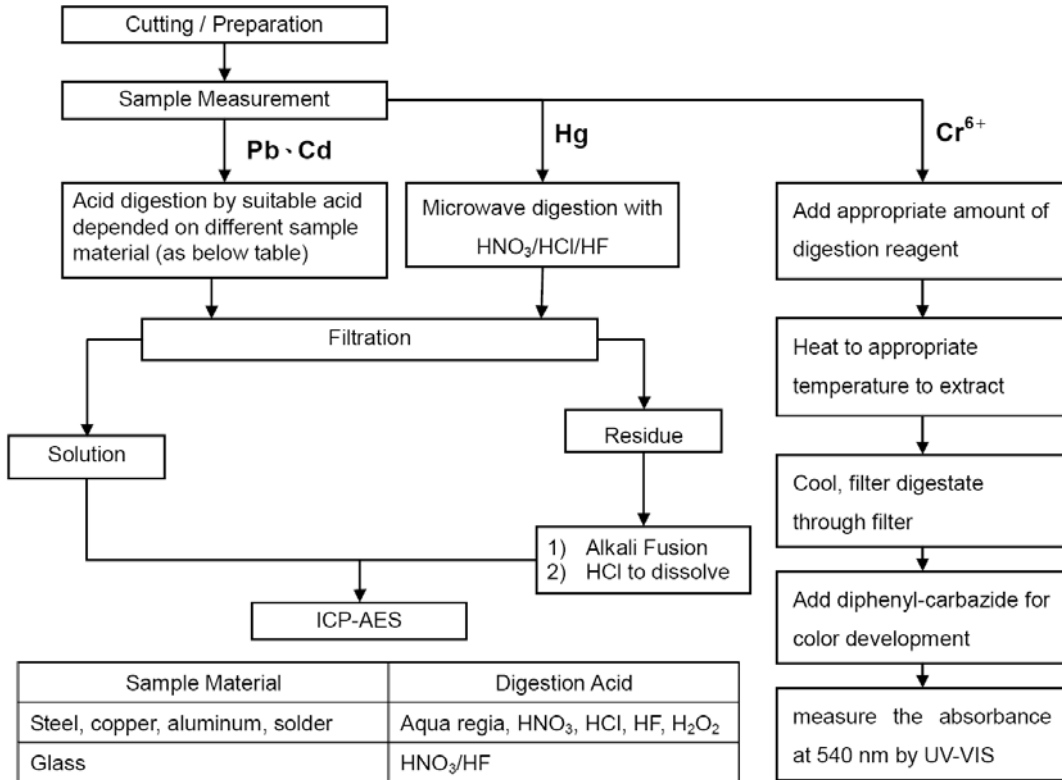
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- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.
(Cr⁶⁺ test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



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

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Test Report

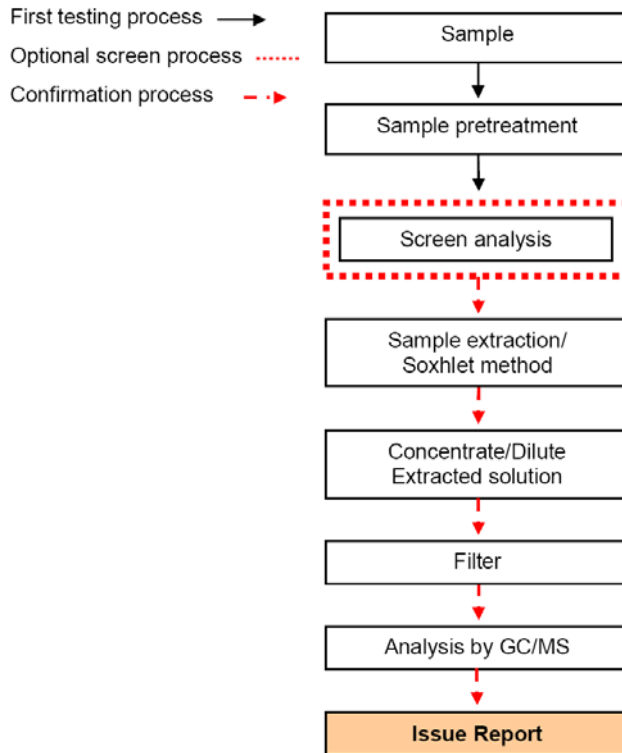
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PBB/PBDE analytical FLOW CHART

- 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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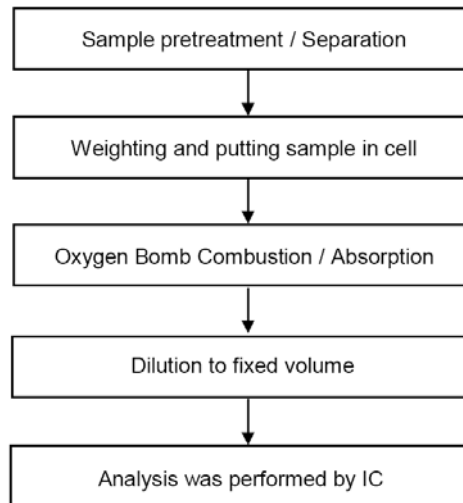
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Analytical flow chart of halogen content

- 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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** End of Report **

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