


APPROVAL SHEET

Qi Hardware Inc

Item : AT39 Crystal

Spec. no : AT3908-028636-F18-YYC-YQA

Freq : 28.63636 MHz

Customer Approved	Checked By	Issued By
		

友桂電子股份有限公司

YOKETAN CORPORATION

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RoHS Compliant



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SPECIFICATION OF CRYSTAL UNITS

YOKETAN CORP.

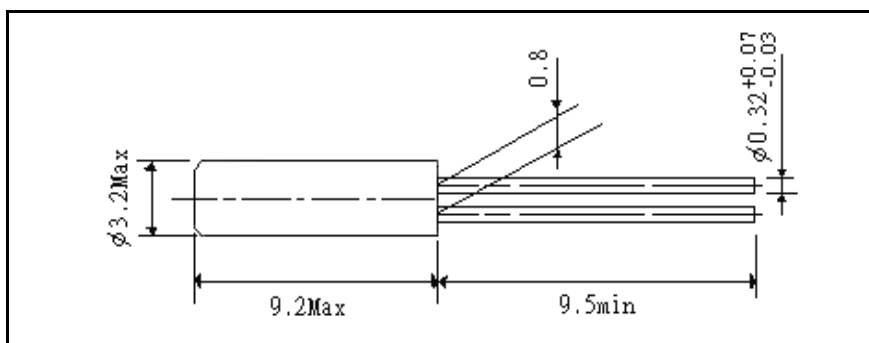
Customer Qi Hardware

SPEC NO : AT3908-028636-F18-YYC-YQA

DATE : 8-Mar-10

SPECIFICATION OF CRYSTAL UNITS

1	Nominal frequency	28.63636 MHz
2	Frequency tolerance	± 30 ppm at 25 ± 2
3	Temperature characteristics	± 30 ppm
4	Operating temperature	$-20 \sim +70$
5	Equivalent series resistance	40 ohms Max.
6	Load capacitance	18pF
7	Shunt capacitance	5.0pF Max.
8	Drive level	10uW Max.
9	Insulation resistance	500M ohms/100 \pm 15VDC
10	Aging	± 5 ppm/Year
11	Marking	S28.63636
12	Holder (Unit: mm)	As below



Note:

1. Heating up the package must be less than 150 degrees/5sec.
2. The crystal characteristics may be affected and destroyed at worst by bending the crystal.
3. The crystal characteristics may be affected and destroyed at worst by additional production process as ultrasonic welding or molding encapsulation. Please be sure to check if this process affects any damage to crystal products prior to use.

SPECIFICATION OF CRYSTAL UNITS

YOKETAN CORP.

Reliability Test (applicable to 49(50) type .U type and Tuning Fork X'tal)

Test Items	Test Condition	Specification	
		Dip	SMD
1. Gross Leak Test	FC-40 125 /30sec	No continuous bubble	
2. Fine Leak Test	Bombing of He 4kg/cm ² for 2 hours	Less than 5*10 ⁻⁸ atm.c.c./sec, Helium	
3. Drop Test	a. ~19.999MHz(Fund.) 100 cm height b. 20~29.999MHz(Fund.) 50 cm height c. 30~ MHz(Fund.) 20 cm height on hard wooden surface / 3 times (thickness more than 30 mm)	F ± 10PPM , C.I within spec.	F ±10PPM , C.I within spec.
4. Vibration Test	Freq. range: 10~55Hz Peak to peak amplitude:1.5mm 3 direction(X,Y,Z) , each 60min.	F ± 10PPM , C.I within spec.	F ±10PPM , C.I within spec.
5. Resistance to Soldering Test	a. IR Reflow furnace with the condition 2 times. Peak temp.260±3 , 10±1 sec.	NA	F ±10PPM , C.I within spec. For SMD type only.
	b. Dip terminals in a 245±5 solder station(pool) Dipping depth 0.5mm(Min) Dipping time 5±0.5 sec.	At least 90% by 30X magnification of each dipped area shall be covered by fresh solder. For DIP type only.	NA
6. Bending Test	Bending cycle : 1 cycle 0° - > 45° -> 0° -> 45° -> 0°	F ±5PPM , C.I within spec. For DIP type only.	NA
7. Shearing Test	Weight : 5N, Test duration : 10±1 sec	NA	F ±10PPM , C.I within spec. For SMD type only.
8. Low Temp. Exposure Test	-40±3 , 240±12 hrs	F ± 10PPM , C.I within spec.	F ±10PPM , C.I within spec.
9. Aging Test	85±3 , 240±12hrs	F ± 10PPM , C.I within spec.	F ±10PPM , C.I within spec.
10. High Temp. & Humidity Test	+85 ±5 & 85%±5% R.H. , 240±12 hrs	F ± 10PPM , C.I within spec.	F ±10PPM , C.I within spec.
11. Temperature Cycling Test	-25±3 /15±3min ~ +85±3 /15±3min 15cycles	F ± 10PPM , C.I within spec.	F ±10PPM , C.I within spec.

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28-2, NAN 2ND ROAD, T. E. P. Z, TAICHUNG (427), TAIWAN, R. O. C.

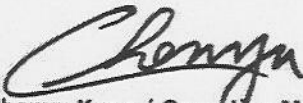


The following sample(s) was/were submitted and identified by/on behalf of the client as :

Sample Description	:	CYLINDER CRYSTAL UNITS
Style/Item No.	:	ATXX SERIES/XMRXX SERIES
Sample Receiving Date	:	2009/11/06
Testing Period	:	2009/11/06 TO 2009/11/13

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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 : MIXED ALL PARTS (TWO TYPES)

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) by alkaline extraction	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.
Perfluorooctane sulfonates (PFOS) PFOS – Acid PFOS – Metal Salt PFOS – Amide	mg/kg	With reference to US EPA 3540C: 1996 method for PFOS Content. Analysis was performed by LC/MS.	10	n.d.
PFOA (CAS No.: 000335-67-1)	mg/kg	With reference to US EPA 3540C: 1996 method for PFOA Content. Analysis was performed by LC/MS.	10	n.d.
Halogen				
Halogen-Fluorine (F) (CAS No.: 014762-94-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	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.	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.	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.	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: 2008 and performed 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. The sample(s) was/were analyzed on behalf of the applicant as mixing sample in one testing.

The above result(s) was/were only given as the informality value.

PFOS Reference Information : Directive 2006/122/EC

(1) May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0.005 % by mass.

(2) May not be placed on the market in semi-finished products or articles, or parts thereof, if the concentration of PFOS is equal to or higher than 0.1 % by mass calculated with reference to the mass of structurally or microstructurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is equal to or higher than 1µg/m2 of the coated material.

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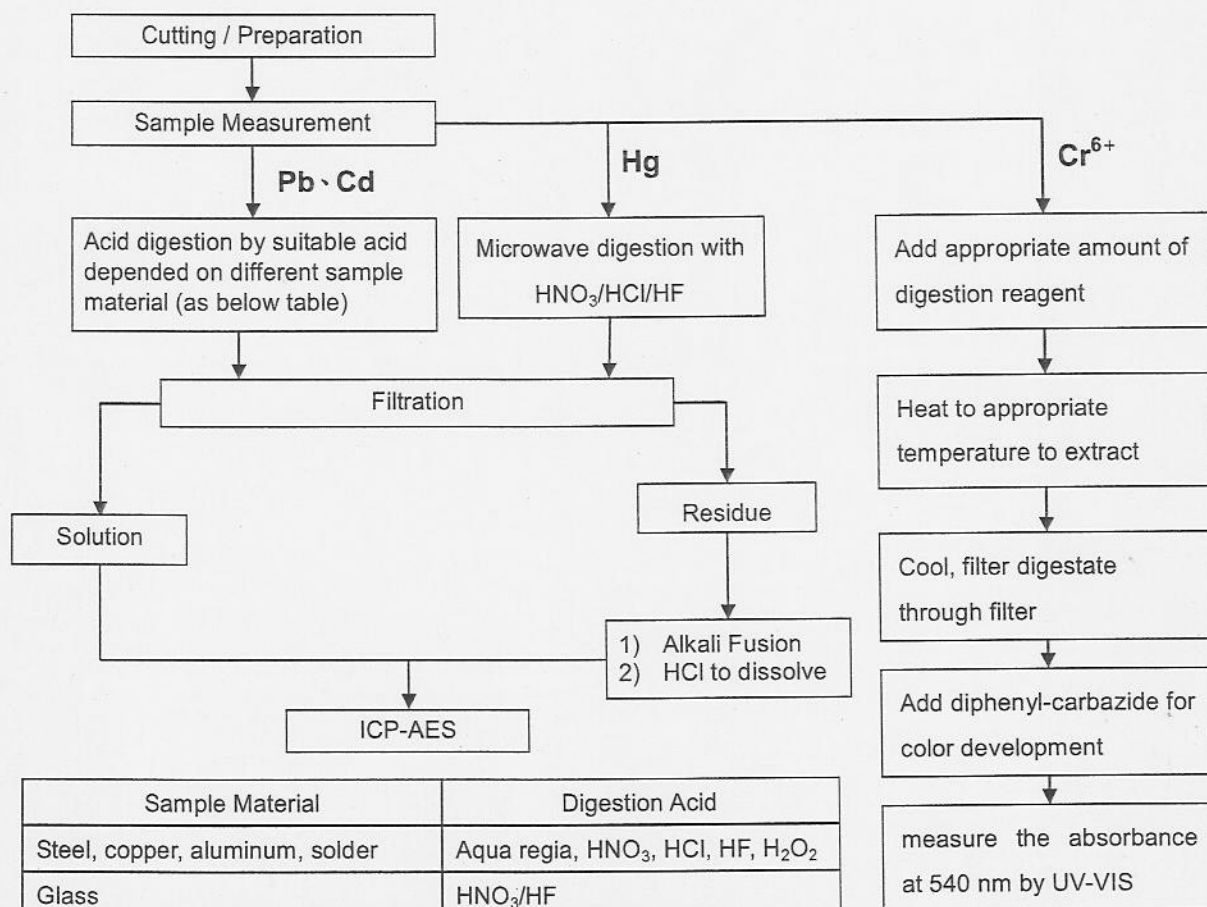
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28-2, NAN 2ND ROAD, T. E. P. Z, TAICHUNG (427), TAIWAN, R. O. C.

- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.
(Cr⁶⁺ test method excluded)
- 2) Name of the person who made measurement: 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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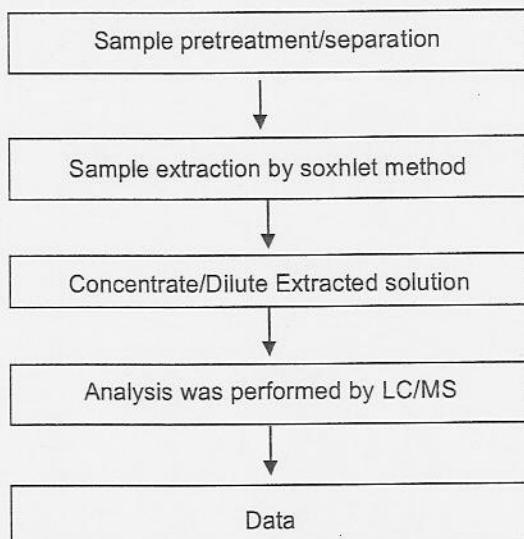
28-2, NAN 2ND ROAD, T. E. P. Z, TAICHUNG (427), TAIWAN, R. O. C.



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

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

■ Test Items: PFOS/PFOA 、Benzotriazole



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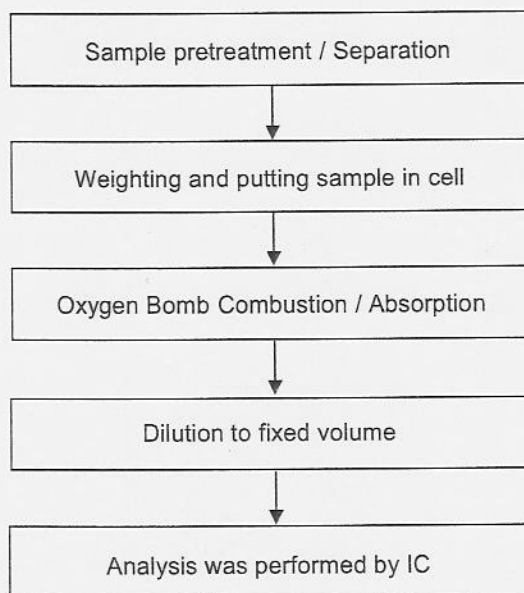
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Analytical flow chart of halogen content

- 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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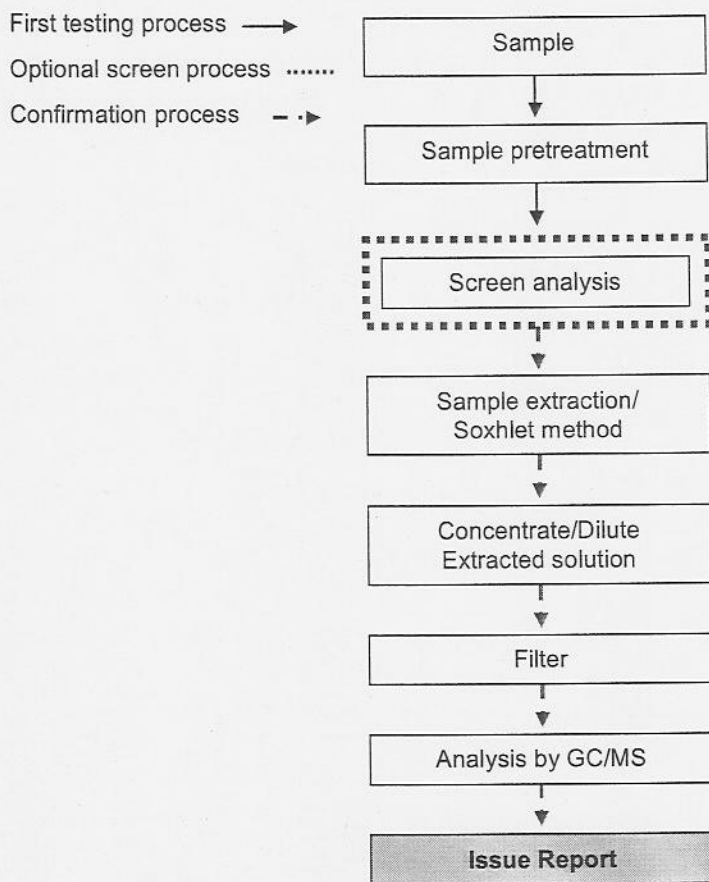
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PBB/PBDE analytical FLOW CHART

- 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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** End of Report **

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