Test Report

No. : CE/2011/A5193A Date : 2011/11/03 Page : 1 of 10

MICRO CRYSTAL AG
MUEHLESTRASSE 14, CH-2540, GRENCHEN, SWITZERLAND

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

Sample Description	:	QUARTZ CRYSTAL RESONATOR
Style/Item No.	:	CC-TYPES (CC1/CC4/CC5/CC6/CC7/CM7/CM8) WITH MARKING
Manufacturer/Vendor	:	MICRO CRYSTAL AG
Country Of Origin	:	SWITZERLAND
Sample Receiving Date	:	2007/07/20 AND 2008/02/14 AND 2010/08/31 AND 2011/10/27
Testing Period	:	2007/07/20 TO 2007/07/30 AND 2007/07/30 TO 2007/08/03 AND 2008/02/14 TO 2008/02/21 AND 2010/08/31 TO 2010/09/07 AND 2011/10/27 TO 2011/11/03

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

* This report is combined with reports of CE/2010/86004A and CE/2011/A5193 *

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

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MICRO CRYSTAL AG
MUEHLESTRASSE 14, CH-2540, GRENCHEN, SWITZERLAND

Test Result(s)

PART NAME No.1 : QUARTZ CRYSTAL (CE/2007/74957)
PART NAME No.2 : QUARTZ CRYSTAL (CE/2008/21880)
PART NAME No.3 : QUARTZ CRYSTAL (CE/2010/86004)
PART NAME No.4 : QUARTZ CRYSTAL (CE/2011/A5193)

Test Item(s)	Unit	Method	MDL	Result			
				No.1	No.2	No.3	No.4
Cadmium (Cd)	mg/kg	With reference to IEC 62321, Ed. 1 111/54/CDV. Determination of Cadmium by ICP-AES.	2	n.d.	---	---	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	---	n.d.	n.d.
Lead (Pb)	mg/kg	With reference to IEC 62321, Ed. 1 111/54/CDV. Determination of Lead by ICP-AES.	2	n.d.	---	---	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	---	n.d.	n.d.
Mercury (Hg)	mg/kg	With reference to IEC 62321, Ed. 1 111/54/CDV. Determination of Mercury by ICP-AES.	2	n.d.	---	---	---
	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	---	---	n.d.	n.d.
Hexavalent Chromium Cr(VI) by alkaline extraction	mg/kg	With reference to IEC 62321, Ed. 1 111/54/CDV. Determination of Hexavalent Chromium for non-metallic samples by UV/Vis Spectrometry.	2	n.d.	---	---	---
Hexavalent Chromium Cr(VI)	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	---	---	n.d.	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.	---	---
Phosphorus (P)	mg/kg	With reference to US EPA 3050B for Phosphorus Content. Analysis was performed by ICP-AES.	2	---	n.d.	---	---

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MUEHLESTRASSE 14, CH-2540, GRENCHEN, SWITZERLAND

Test Item(s)	Unit	Method	MDL	Result			
				No.1	No.2	No.3	No.4
Halogen							
Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	---	n.d.	---	---
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.	---	---
Sum of PBBs	mg/kg	With reference to IEC 62321: 2008 and performed by GC/MS.	-	---	---	n.d.	n.d.
Monobromobiphenyl			5	---	---	n.d.	n.d.
Dibromobiphenyl			5	---	---	n.d.	n.d.
Tribromobiphenyl			5	---	---	n.d.	n.d.
Tetrabromobiphenyl			5	---	---	n.d.	n.d.
Pentabromobiphenyl			5	---	---	n.d.	n.d.
Hexabromobiphenyl			5	---	---	n.d.	n.d.
Heptabromobiphenyl			5	---	---	n.d.	n.d.
Octabromobiphenyl			5	---	---	n.d.	n.d.
Nonabromobiphenyl			5	---	---	n.d.	n.d.
Decabromobiphenyl			5	---	---	n.d.	n.d.
Sum of PBDEs			-	---	---	n.d.	n.d.
Monobromodiphenyl ether			5	---	---	n.d.	n.d.
Dibromodiphenyl ether			5	---	---	n.d.	n.d.
Tribromodiphenyl ether			5	---	---	n.d.	n.d.
Tetrabromodiphenyl ether			5	---	---	n.d.	n.d.
Pentabromodiphenyl ether			5	---	---	n.d.	n.d.
Hexabromodiphenyl ether			5	---	---	n.d.	n.d.
Heptabromodiphenyl ether			5	---	---	n.d.	n.d.
Octabromodiphenyl ether			5	---	---	n.d.	n.d.
Nonabromodiphenyl ether			5	---	---	n.d.	n.d.
Decabromodiphenyl ether			5	---	---	n.d.	n.d.

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MUEHLESTRASSE 14, CH-2540, GRENCHEN, SWITZERLAND

Test Item(s)	Unit	Method	MDL	Result			
				No.1	No.2	No.3	No.4
Sum of PBBs	mg/kg	With reference to IEC 62321, Ed. 1 111/54/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.	---	---	---

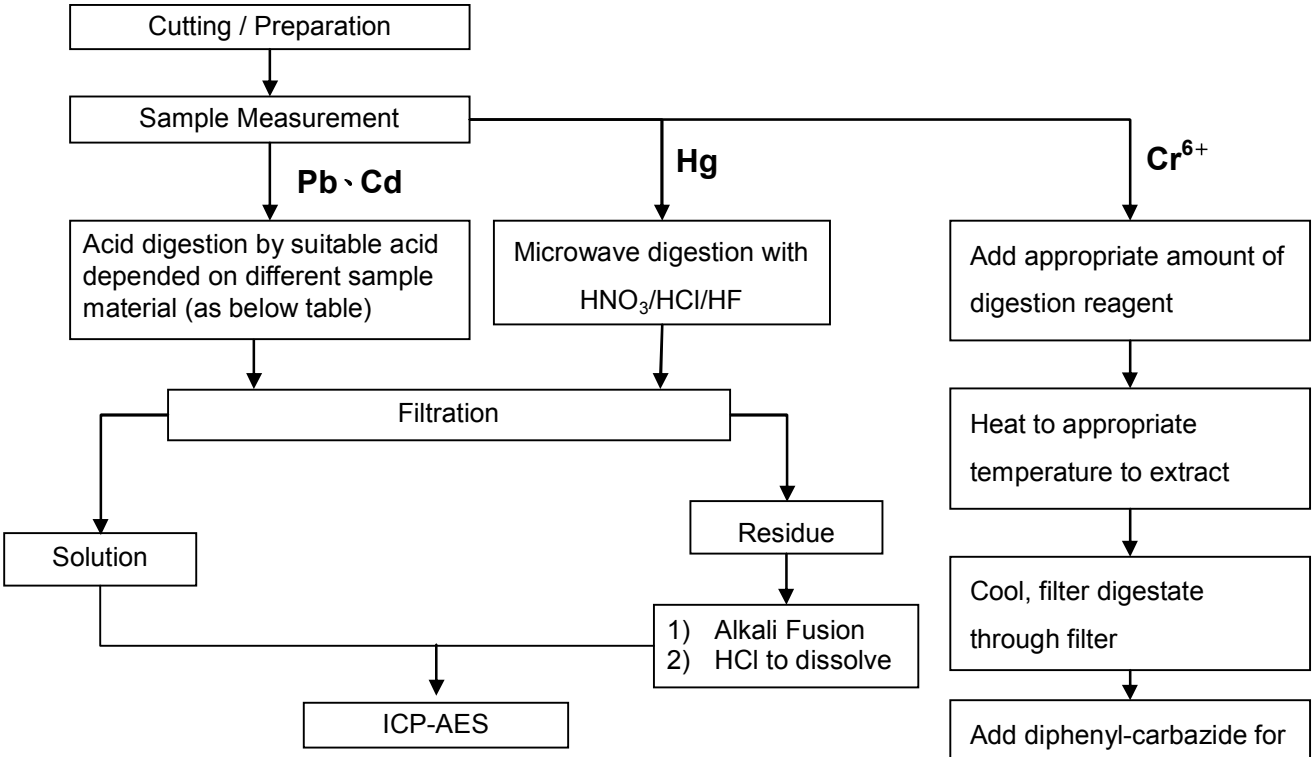
Note：

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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MICRO CRYSTAL AG
MUEHLESTRASSE 14, CH-2540, GRENCHEN, SWITZERLAND

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



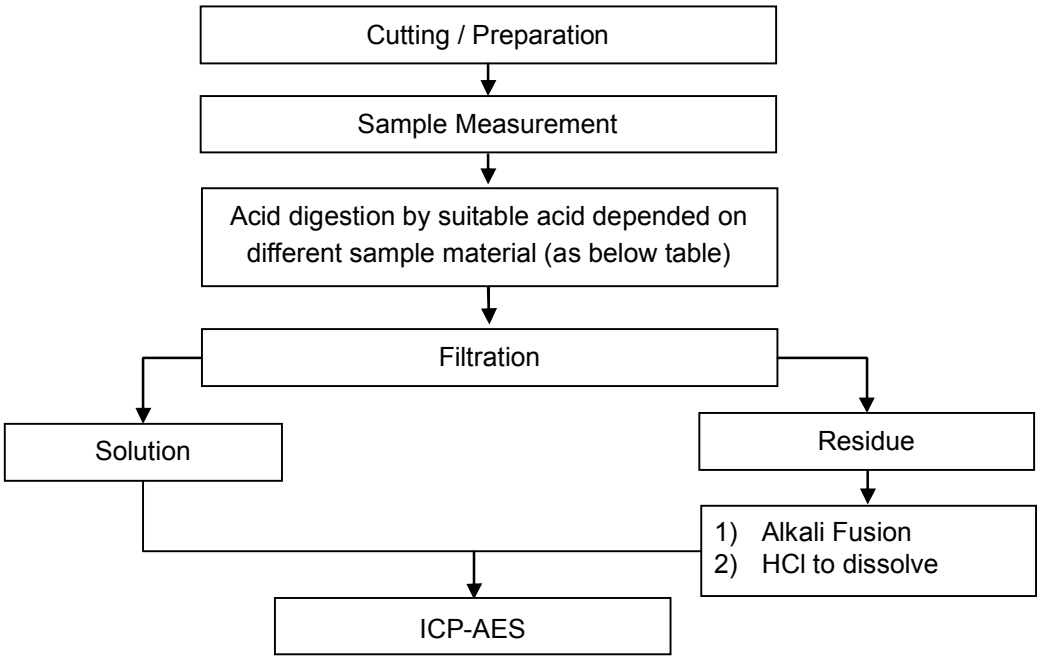
Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO_3, HCl, HF, H_2O_2
Glass	HNO_3/HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO_3
Plastic	H_2SO_4, H_2O_2, HNO_3, HCl
Others	Any acid to total digestion

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MUEHLESTRASSE 14, CH-2540, GRENCHEN, SWITZERLAND

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



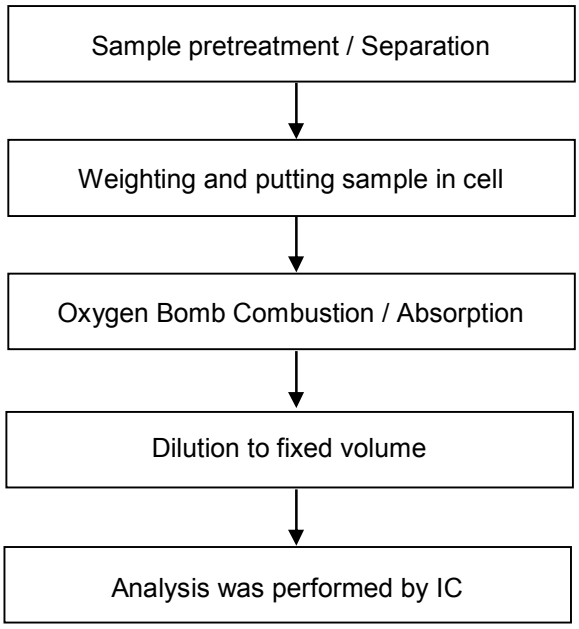
Steel, copper, aluminum, solder	Aqua regia, HNO_3, HCl, HF, H_2O_2
Glass	HNO_3/HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO_3
Plastic	H_2SO_4, H_2O_2, HNO_3, HCl
Others	Any acid to total digestion

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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



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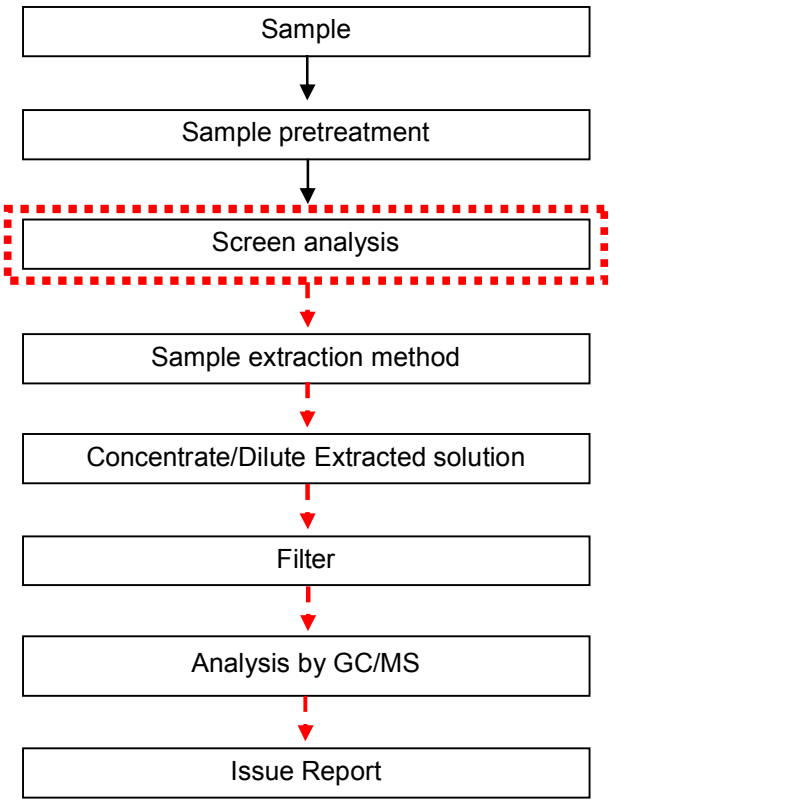
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MUEHLESTRASSE 14, CH-2540, GRENCHEN, SWITZERLAND

Analytical flow chart

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

【Test Items: PBB/PBDE, TBBP-A-bis 】

First testing process → Optional screen process ····· Confirmation process



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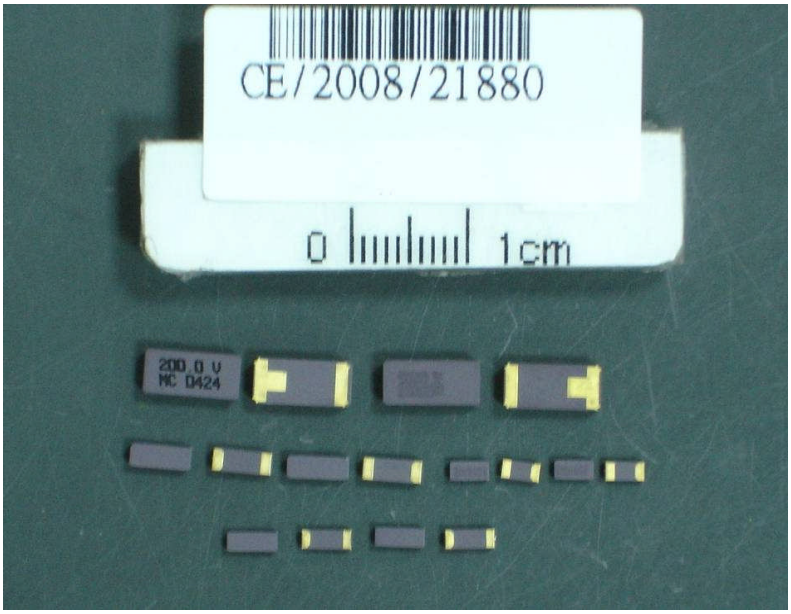
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*** The tested sample / part is marked by an arrow if it's shown on the photo. ***

PART NAME No.1



PART NAME No.2



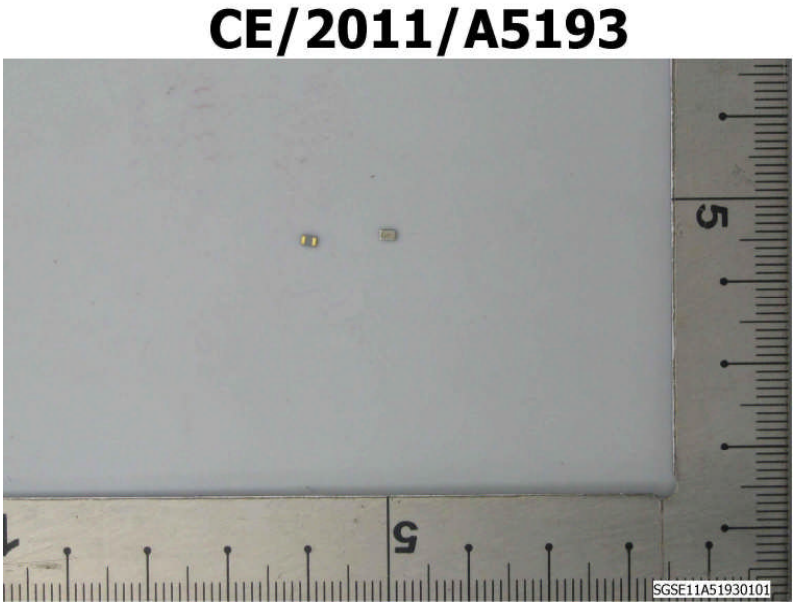
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PART NAME No.3



PART NAME No.4



** End of Report **

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