

## 測試報告

## Test Report

號碼(No.) : CE/2014/30865 日期(Date) : 2014/03/12 頁數(Page) : 1 of 10

旺宏電子股份有限公司

MACRONIX INTERNATIONAL CO., LTD.

新竹科學工業園區研新四路8號

NO. 8, CREATION ROAD IV, SCIENCE PARK, HSIN-CHU, TAIWAN, R.O.C.



以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by/on behalf of the applicant as) :

送樣廠商 (Sample Submitted By) : 旺宏電子股份有限公司 (MACRONIX INTERNATIONAL CO., LTD.)  
樣品名稱 (Sample Description) : 電子產品 (IC) (MX AND KH)  
樣品型號 (Style/Item No.) : 64 CSP  
收件日期 (Sample Receiving Date) : 2014/03/05  
測試期間 (Testing Period) : 2014/03/05 TO 2014/03/12

測試結果 (Test Results) : 請見下一頁 (Please refer to next pages).

  
Troy Chang, Manager-Tech  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory – Taipei

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### 測試結果(Test Results)

測試部位(PART NAME)No.1 : 黑色本體 (BLACK BODY)

測試部位(PART NAME)No.2 : 銀色金屬 (SILVER COLORED METAL)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	
				No.1	No.2
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321-5: 2013方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	n.d.	n.d.
鉛 / Lead (Pb)	mg/kg	參考IEC 62321-5: 2013方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	n.d.	97
汞 / Mercury (Hg)	mg/kg	參考IEC 62321-4: 2013方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-4: 2013 and performed by ICP-AES.	2	n.d.	n.d.
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考IEC 62321: 2008方法, 以UV-VIS檢測. / With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.	---
	**	參考IEC 62321: 2008方法, 以沸水萃取法檢測. / With reference to IEC 62321: 2008 and performed by Boiling water extraction Method.#	#	---	Negative
鄰苯二甲酸甲苯基丁酯 / BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7)	%	參考EN 14372, 以氣相層析/質譜儀檢測. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	---
鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Di-(2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	%	參考EN 14372, 以氣相層析/質譜儀檢測. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	---

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	
				No.1	No.2
鄰苯二甲酸二異癸酯 / DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0; 68515-49-1)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	---
鄰苯二甲酸二異壬酯 / DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0; 68515-48-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	---
鄰苯二甲酸二正辛酯 / DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	---
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	---
鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	---
鄰苯二甲酸二己酯 / DNHP (Di-n-hexyl phthalate) (CAS No.: 84-75-3)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	---
<b>鹵素 / Halogen</b>					
鹵素 (氟) / Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	參考BS EN 14582:2007, 以離子層析儀分析。 / With reference to BS EN 14582:2007. Analysis was performed by IC.	50	180	---
鹵素 (氯) / Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg		50	n.d.	---
鹵素 (溴) / Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg		50	n.d.	---
鹵素 (碘) / Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg		50	n.d.	---

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	
				No. 1	No. 2
多溴聯苯總和 / Sum of PBBs	mg/kg	參考IEC 62321: 2008方法, 以氣相層析 / 質譜儀檢測. / With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.	n.d.
一溴聯苯 / Monobromobiphenyl			5	n.d.	n.d.
二溴聯苯 / Dibromobiphenyl			5	n.d.	n.d.
三溴聯苯 / Tribromobiphenyl			5	n.d.	n.d.
四溴聯苯 / Tetrabromobiphenyl			5	n.d.	n.d.
五溴聯苯 / Pentabromobiphenyl			5	n.d.	n.d.
六溴聯苯 / Hexabromobiphenyl			5	n.d.	n.d.
七溴聯苯 / Heptabromobiphenyl			5	n.d.	n.d.
八溴聯苯 / Octabromobiphenyl			5	n.d.	n.d.
九溴聯苯 / Nonabromobiphenyl			5	n.d.	n.d.
十溴聯苯 / Decabromobiphenyl			5	n.d.	n.d.
多溴聯苯醚總和 / Sum of PBDEs			-	n.d.	n.d.
一溴聯苯醚 / Monobromodiphenyl ether			5	n.d.	n.d.
二溴聯苯醚 / Dibromodiphenyl ether			5	n.d.	n.d.
三溴聯苯醚 / Tribromodiphenyl ether			5	n.d.	n.d.
四溴聯苯醚 / Tetrabromodiphenyl ether			5	n.d.	n.d.
五溴聯苯醚 / Pentabromodiphenyl ether			5	n.d.	n.d.
六溴聯苯醚 / Hexabromodiphenyl ether			5	n.d.	n.d.
七溴聯苯醚 / Heptabromodiphenyl ether			5	n.d.	n.d.
八溴聯苯醚 / Octabromodiphenyl ether			5	n.d.	n.d.
九溴聯苯醚 / Nonabromodiphenyl ether	5	n.d.	n.d.		
十溴聯苯醚 / Decabromodiphenyl ether	5	n.d.	n.d.		

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### 備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n.d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. "-" = Not Regulated (無規格值)
5. "---" = Not Conducted (未測項目)
6. \*\* = Qualitative analysis (No Unit) 定性分析(無單位)
7. # =
  - a. Positive means the presence of CrVI on the tested areas  
(Positive表示測試區域偵測到六價鉻)
  - b. Negative means the absence of CrVI on the tested areas  
(Negative表示測試區域未偵測到六價鉻)

The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm<sup>2</sup> tested areas. / 該溶液濃度 $\geq$ 0.02 mg/kg with 50 cm<sup>2</sup> (tested areas)

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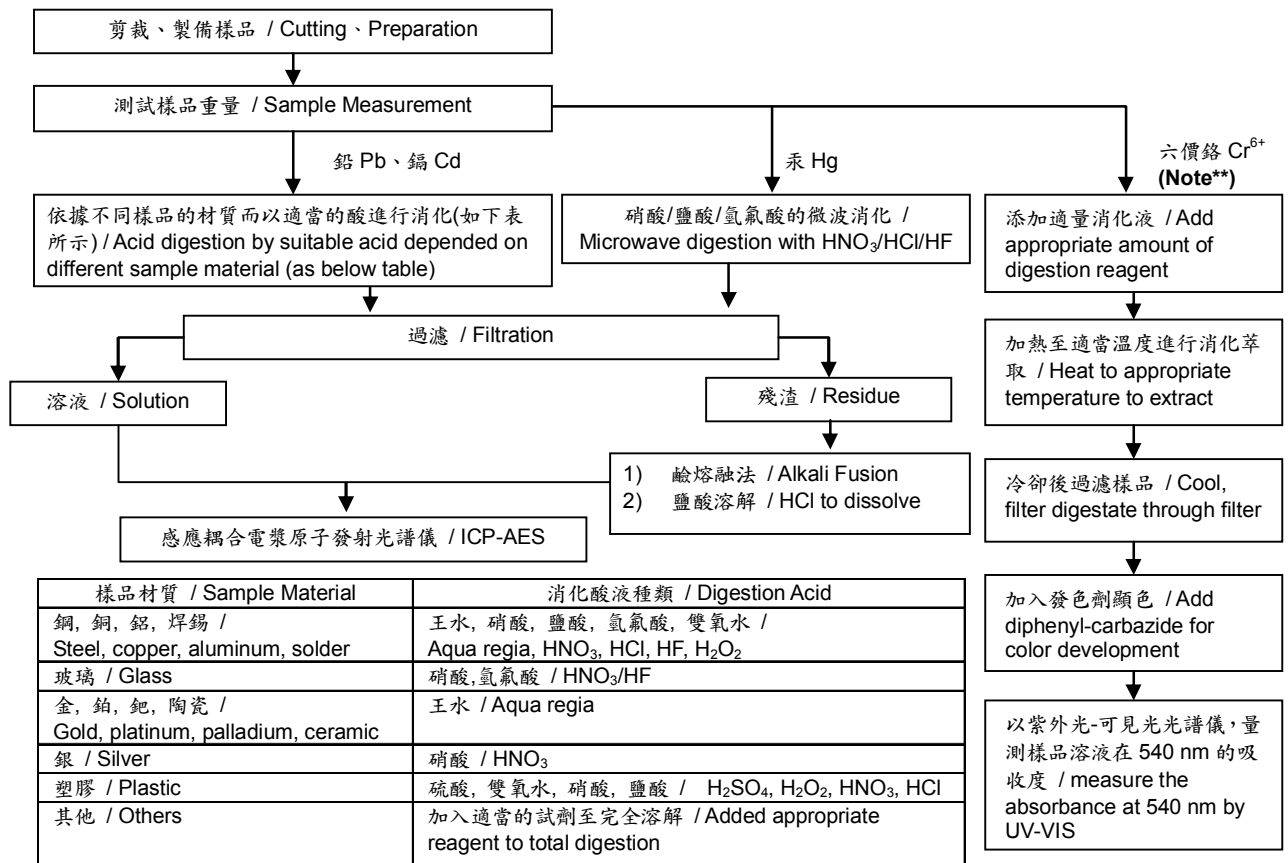
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- 1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> test method excluded)
- 2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



### Note\*\* (For IEC 62321)

- (1) 針對非金屬材料加入鹼性消化液，加熱至 90~95°C 萃取。 / For non-metallic material, add alkaline digestion reagent and heat to 90~95°C.
- (2) 針對金屬材料加入純水，加熱至沸騰萃取。 / For metallic material, add pure water and heat to boiling.

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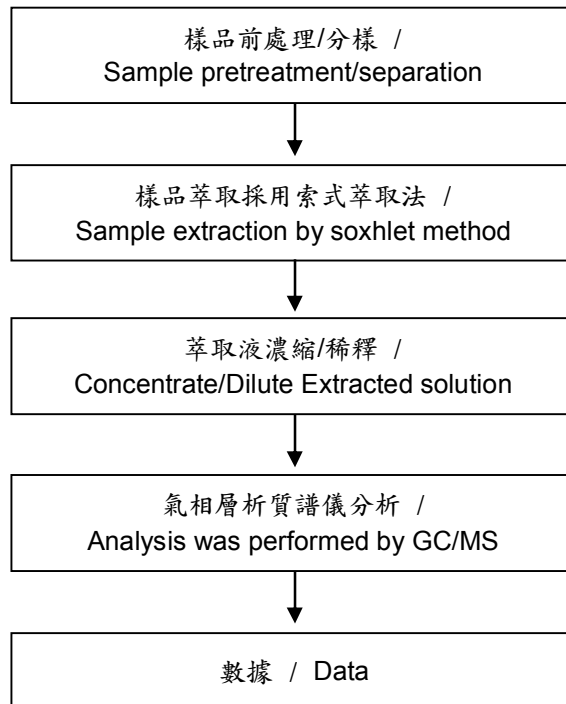
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### 可塑劑分析流程圖 / Analytical flow chart of phthalate content

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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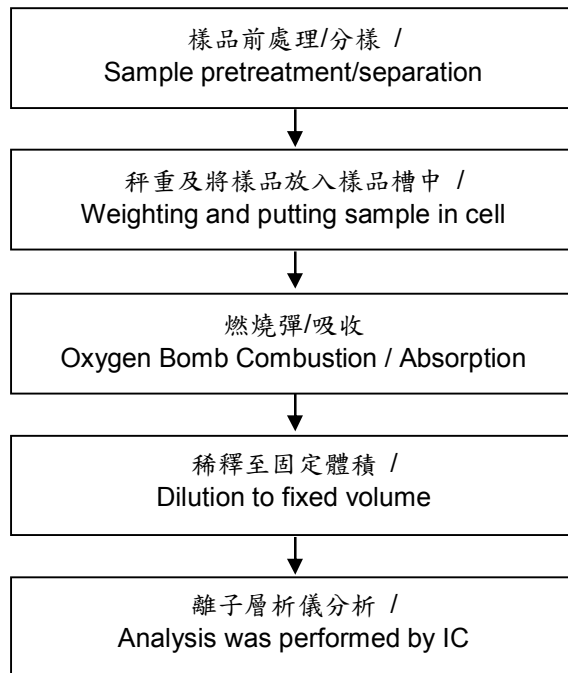
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### 鹵素分析流程圖 / Analytical flow chart of halogen content

- 測試人員：陳恩臻 / Name of the person who made measurement: Rita Chen
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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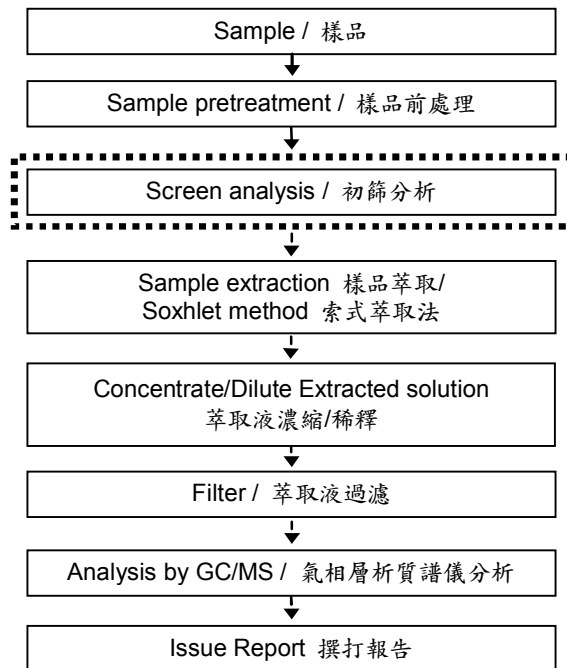
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### 多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
  - 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang
- 初次測試程序 / First testing process —————>
- 選擇性篩檢程序 / Optional screen process .....>
- 確認程序 / Confirmation process - - - >



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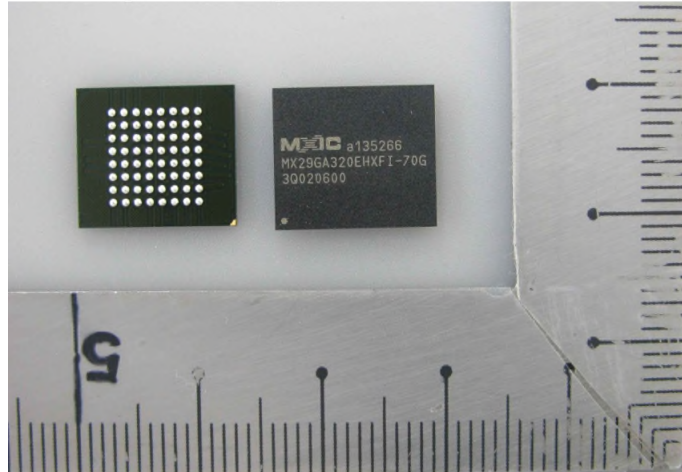
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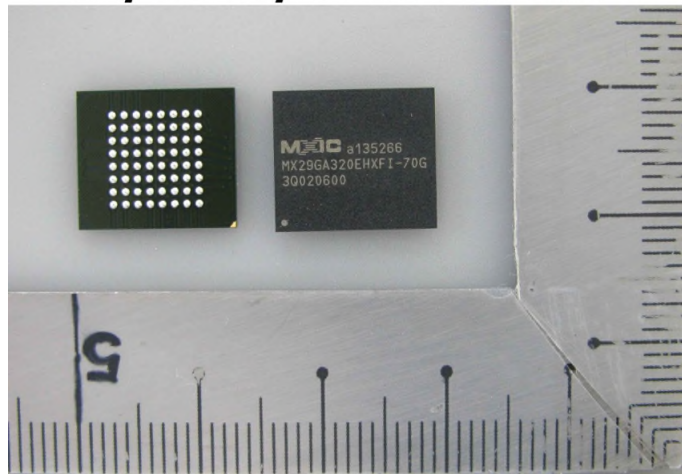
\* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。\*

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

### CE/2014/30865 NO.1



### CE/2014/30865 NO.2



\*\* 報告結尾 (End of Report) \*\*

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