

## 測試報告

## Test Report

號碼(No.) : CE/2015/93137

日期(Date) : 2015/09/17

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鈞寶電子工業股份有限公司

KING CORE ELECTRONICS INC.

桃園市平鎮區南豐路269號(平鎮工業區)

NO. 269, NANFONG RD., PINGJHEN DISTRICT, TAOYUAN CITY 324, TAIWAN



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) : 鈞寶電子工業股份有限公司 (KING CORE ELECTRONICS INC.)  
樣品名稱(Sample Description) : MULTILAYER CHIP BEAD  
樣品型號(Style/Item No.) : 10材  
收件日期(Sample Receiving Date) : 2015/09/14  
測試期間(Testing Period) : 2015/09/14 TO 2015/09/17

### 測試需求(Test Requested) :

- (1) 依據客戶指定, 參考RoHS2011/65/EU Annex II及其修訂指令(EU) 2015/863測試鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚, DBP, BBP, DEHP, DIBP. (As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample.)
- (2) 其他測試項目請見下一頁 . (Please refer to next pages for the other item(s).)

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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KING CORE ELECTRONICS INC.

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### 測試結果(Test Results)

測試部位(PART NAME)No.1 : MULTILAYER CHIP BEAD

| 測試項目<br>(Test Items)  | 單位<br>(Unit) | 測試方法<br>(Method)  | 方法偵測<br>極限值<br>(MDL) | 結果<br>(Result) |
|---|--------------|---|----------------------|----------------|
|   |              |   |                      | No. 1          |
| 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.          |
| 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                    | 45.7           |
| 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.          |
| 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.          |
| 砷 / Arsenic (As)  | mg/kg        | 參考US EPA 3052方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA Method 3052. Analysis was performed by ICP-AES.             | 2                    | n. d.          |
| 鄰苯二甲酸丁苯甲酯 / BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7) | mg/kg        | 參考IEC 62321-8 (111/321/CD), 以氣相層析儀/質譜儀檢測之. / With reference to IEC 62321-8 (111/321/CD). Analysis was performed by GC/MS. | 50                   | n. d.          |

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| 測試項目<br>(Test Items)  | 單位<br>(Unit) | 測試方法<br>(Method)  | 方法偵測<br>極限值<br>(MDL) | 結果<br>(Result) |
|---|--------------|---|----------------------|----------------|
|   |              |   |                      | No. 1          |
| 鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No. : 84-74-2)  | mg/kg        | 參考IEC 62321-8 (111/321/CD), 以氣相層析儀/質譜儀檢測之。 / With reference to IEC 62321-8 (111/321/CD). Analysis was performed by GC/MS. | 50                   | n. d.          |
| 鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No. : 84-69-5)  | mg/kg        | 參考IEC 62321-8 (111/321/CD), 以氣相層析儀/質譜儀檢測之。 / With reference to IEC 62321-8 (111/321/CD). Analysis was performed by GC/MS. | 50                   | n. d.          |
| 鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Di-(2-ethylhexyl) phthalate) (CAS No. : 117-81-7)   | mg/kg        | 參考IEC 62321-8 (111/321/CD), 以氣相層析儀/質譜儀檢測之。 / With reference to IEC 62321-8 (111/321/CD). Analysis was performed by GC/MS. | 50                   | n. d.          |
| 全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)  | mg/kg        | 參考US EPA 3550C: 2007方法, 以液相層析/質譜儀檢測。 / With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.             | 10                   | n. d.          |
| 全氟辛酸 / PFOA (CAS No. : 335-67-1)  | mg/kg        | 參考US EPA 3550C: 2007方法, 以液相層析/質譜儀檢測。 / With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.             | 10                   | n. d.          |
| 六溴環十二烷及所有主要被辨別出的異構物 / Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified ( $\alpha$ -HBCDD, $\beta$ -HBCDD, $\gamma$ -HBCDD) (CAS No. : 25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8)) | 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 method. Analysis was performed by GC/MS.            | 5                    | n. d.          |

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| 測試項目<br>(Test Items)                                     | 單位<br>(Unit) | 測試方法<br>(Method)  | 方法偵測<br>極限值<br>(MDL) | 結果<br>(Result) |
|--|--------------|---|----------------------|----------------|
|  |              |   |                      | No. 1          |
| 多溴聯苯總和 / Sum of PBBs                                     | mg/kg        | 參考IEC 62321-6: 2015方法, 以氣相層析/質譜儀檢測. / With reference to IEC 62321-6: 2015 and performed by GC/MS. | -                    | n. d.          |
| 一溴聯苯 / Monobromobiphenyl                                 | mg/kg        |   | 5                    | n. d.          |
| 二溴聯苯 / Dibromobiphenyl                                   | mg/kg        |   | 5                    | n. d.          |
| 三溴聯苯 / Tribromobiphenyl                                  | mg/kg        |   | 5                    | n. d.          |
| 四溴聯苯 / Tetrabromobiphenyl                                | mg/kg        |   | 5                    | n. d.          |
| 五溴聯苯 / Pentabromobiphenyl                                | mg/kg        |   | 5                    | n. d.          |
| 六溴聯苯 / Hexabromobiphenyl                                 | mg/kg        |   | 5                    | n. d.          |
| 七溴聯苯 / Heptabromobiphenyl                                | mg/kg        |   | 5                    | n. d.          |
| 八溴聯苯 / Octabromobiphenyl                                 | mg/kg        |   | 5                    | n. d.          |
| 九溴聯苯 / Nonabromobiphenyl                                 | mg/kg        |   | 5                    | n. d.          |
| 十溴聯苯 / Decabromobiphenyl                                 | mg/kg        |   | 5                    | n. d.          |
| 多溴聯苯醚總和 / Sum of PBDEs                                   | mg/kg        |   | -                    | n. d.          |
| 一溴聯苯醚 / Monobromodiphenyl ether                          | mg/kg        |   | 5                    | n. d.          |
| 二溴聯苯醚 / Dibromodiphenyl ether                            | mg/kg        |   | 5                    | n. d.          |
| 三溴聯苯醚 / Tribromodiphenyl ether                           | mg/kg        |   | 5                    | n. d.          |
| 四溴聯苯醚 / Tetrabromodiphenyl ether                         | mg/kg        |   | 5                    | n. d.          |
| 五溴聯苯醚 / Pentabromodiphenyl ether                         | mg/kg        |   | 5                    | n. d.          |
| 六溴聯苯醚 / Hexabromodiphenyl ether                          | mg/kg        |   | 5                    | n. d.          |
| 七溴聯苯醚 / Heptabromodiphenyl ether                         | mg/kg        |   | 5                    | n. d.          |
| 八溴聯苯醚 / Octabromodiphenyl ether                          | mg/kg        |   | 5                    | n. d.          |
| 九溴聯苯醚 / Nonabromodiphenyl ether                          | mg/kg        | 5   | n. d.                |                |
| 十溴聯苯醚 / Decabromodiphenyl ether                          | mg/kg        | 5   | n. d.                |                |
| 鹵素 / Halogen   |              |   |                      |                |
| 鹵素 (氟) / Halogen-Fluorine (F)<br>(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                   | n. d.          |
| 鹵素 (氯) / Halogen-Chlorine (Cl)<br>(CAS No. : 22537-15-1) | mg/kg        |   | 50                   | n. d.          |
| 鹵素 (溴) / Halogen-Bromine (Br)<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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### 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)

### PFOS參考資訊(Reference Information) : 持久性有機污染物 POPs - (EU) 757/2010

PFOS濃度在物質或製備中不得超過0.001%(10ppm)，在半成品、成品或零部件中不得超過0.1%(1000ppm)，在紡織品或塗層材料中不得超過 $1\mu\text{g}/\text{m}^2$ 。

(Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above  $1\mu\text{g}/\text{m}^2$ .)

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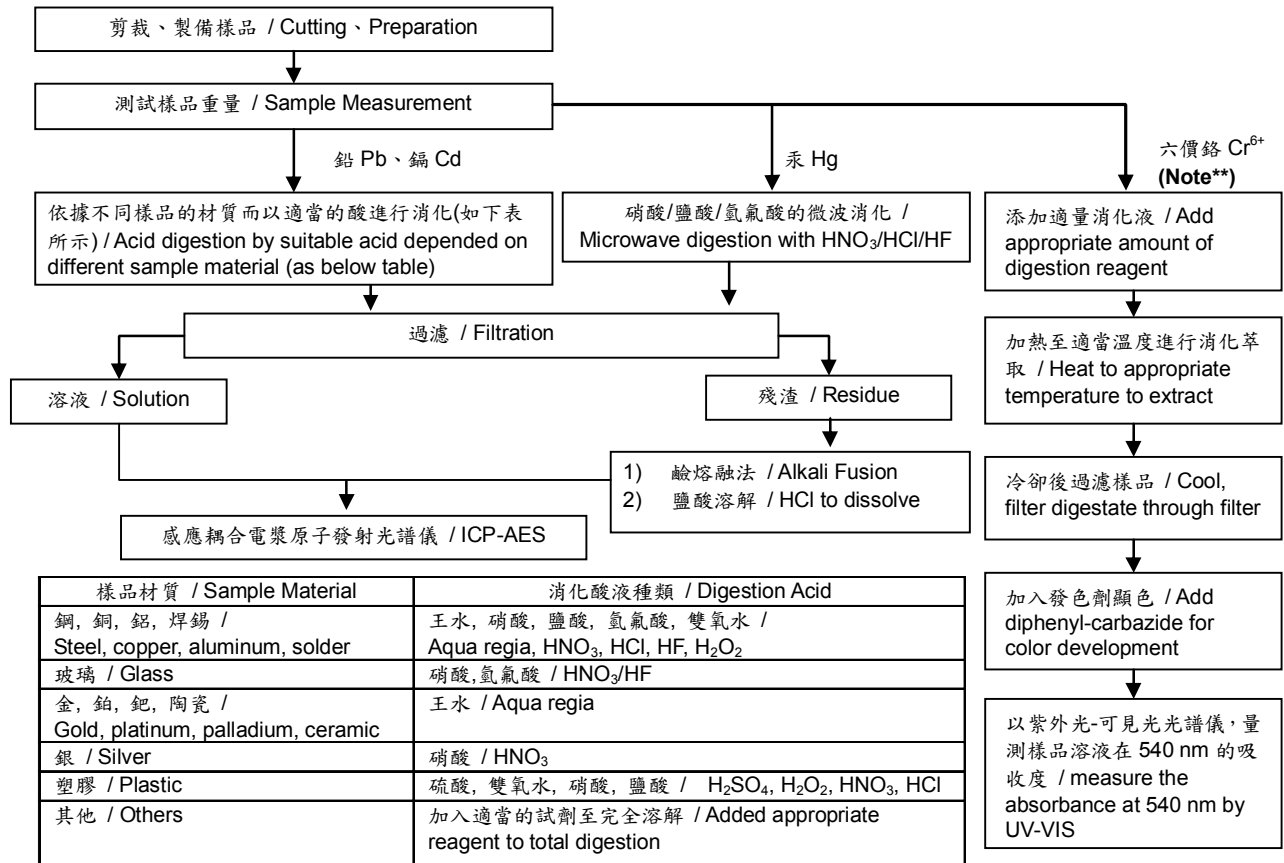
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- 1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> test method excluded)
- 2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
-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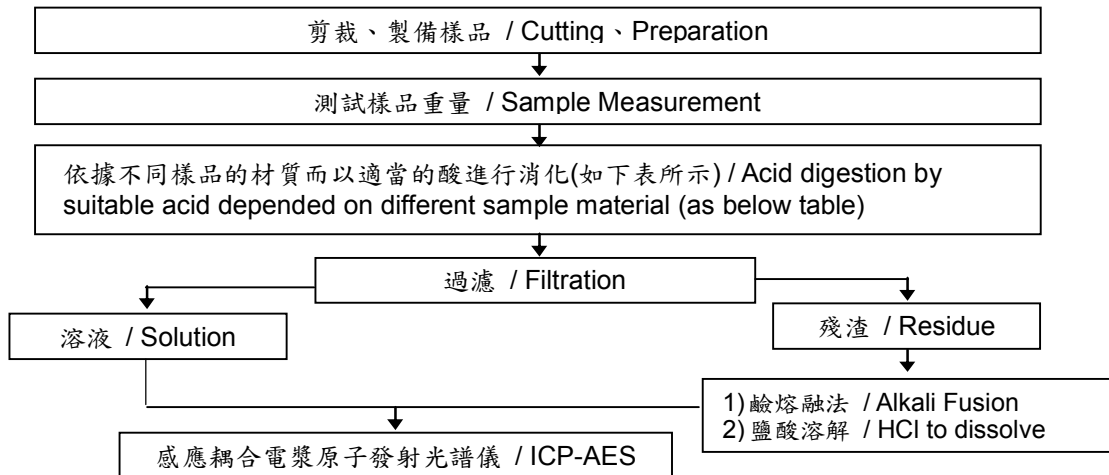
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- 根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.
- 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 測試負責人：張啟興 / Name of the person in charge of measurement: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

### 元素以 ICP-AES 分析的消化流程圖 (Flow Chart of digestion for the elements analysis performed by ICP-AES)



|   |  |
|---|--|
| 鋼,銅,鋁,焊錫 / Steel, copper, aluminum, solder    | 王水,硝酸,鹽酸,氫氟酸,雙氧水 / Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>               |
| 玻璃 / Glass                                    | 硝酸,氫氟酸 / HNO <sub>3</sub> /HF  |
| 金,鉑,鈀,陶瓷 / Gold, platinum, palladium, ceramic | 王水 / Aqua regia  |
| 銀 / Silver                                    | 硝酸 / HNO <sub>3</sub>  |
| 塑膠 / Plastic                                  | 硫酸,雙氧水,硝酸,鹽酸 / H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl |
| 其他 / Others                                   | 加入適當的試劑至完全溶解 / Added appropriate reagent to total digestion  |



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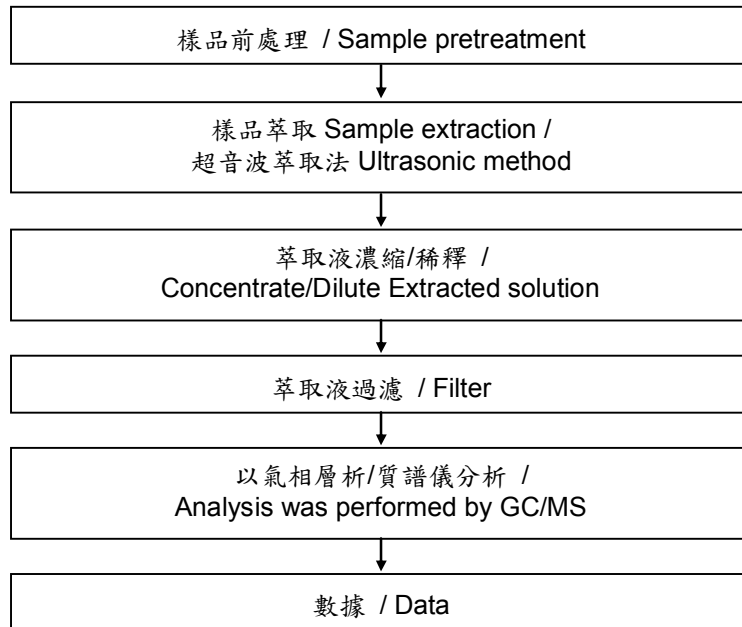
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### 六溴環十二烷分析流程圖 / HBCDD analytical flow chart

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





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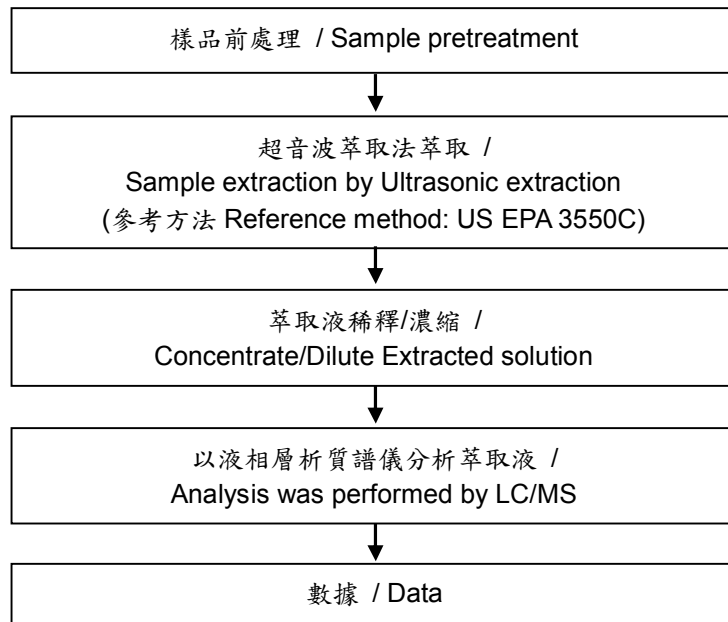
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### 全氟辛酸/全氟辛烷磺酸分析流程圖 / PFOA/PFOS analytical flow chart

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



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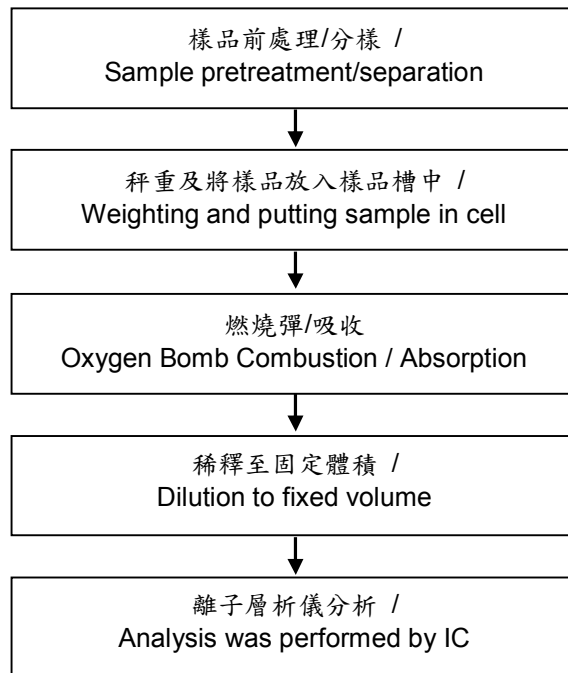
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### 鹵素分析流程圖 / Analytical flow chart of halogen content

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



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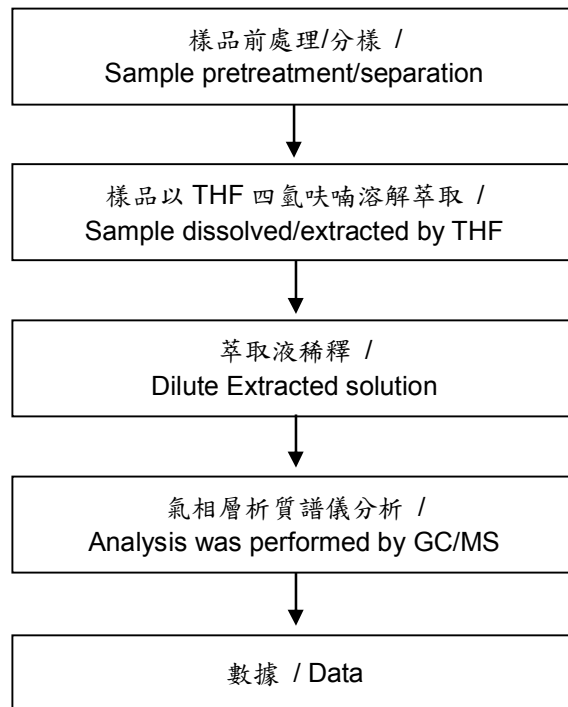
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### 可塑劑分析流程圖 / Analytical flow chart of phthalate content

- 測試人員：徐毓明 / Name of the person who made measurement: Andy Shu
- 測試負責人：張啟興 / Name of the person in charge of measurement: Troy Chang

#### 【測試方法/Test method: IEC 62321-8】



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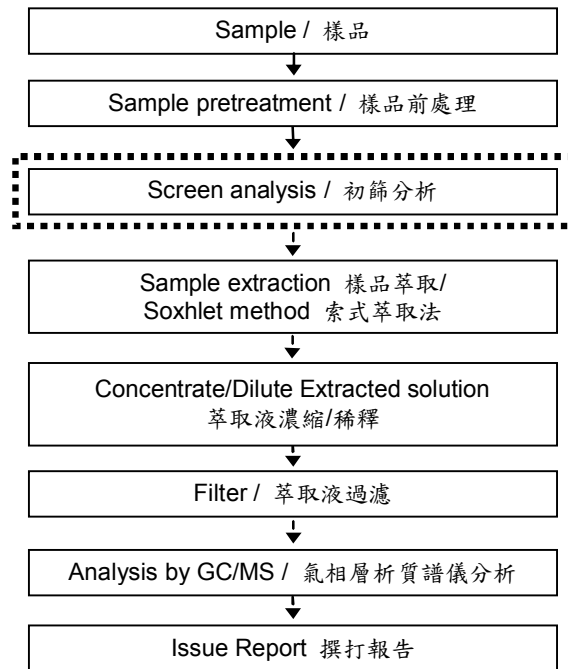
桃園市平鎮區南豐路269號(平鎮工業區)

NO. 269, NANFONG RD., PINGJHEN DISTRICT, TAOYUAN CITY 324, TAIWAN



### 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：張啟興 / 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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## 測試報告

## Test Report

號碼(No.) : CE/2015/93137

日期(Date) : 2015/09/17

頁數(Page): 13 of 13

鈞寶電子工業股份有限公司  
KING CORE ELECTRONICS INC.

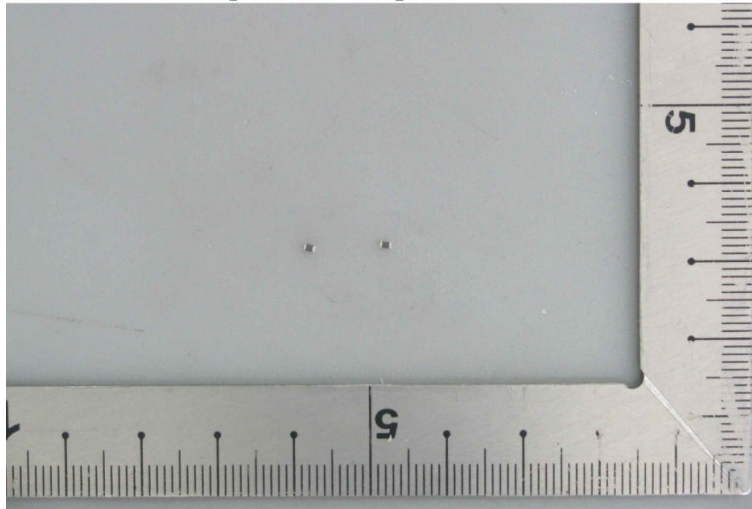
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\* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。 \*  
(The tested sample / part is marked by an arrow if it's shown on the photo.)

### CE/2015/93137



\*\* 報告結尾 (End of Report) \*\*