

## 測試報告

## Test Report

號碼(No.) : CE/2019/63573

日期(Date) : 2019/06/28

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美麗微半導體股份有限公司 / (FORMOSA MICROSEMI CO., LTD.)

(杭州美麗微電子有限公司 / HANGZHOU FORMOSA MICRO-ELECTRONIC CO., LTD.)

新北市土城區中央路3段208號5樓 / 5F., NO. 208, SEC. 3, ZHONGYANG RD., TUCHENG DIST., NEW TAIPEI CITY 23680, TAIWAN

(杭州市濱江區明德路6號1幢3層 / FLOOR 3, BLOCK 1. NO. 6, MINGDE RD., BINJIANG DIST., HANGZHOU, CHINA)

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):

樣品名稱(Sample Description) : SOLDER PROCESSED PLASTIC MOLDED PRODUCTS (INCLUDED SURFACE MOUNT AND AXIAL PACKAGE PRODUCTS (各項焊錫製程塑封裝產品(包含貼片與軸式封裝產品))

樣品型號(Style/Item No.) : 請參考第5頁 (PLEASE REFER TO PAGE 5)


收件日期(Sample Receiving Date) : 2019/06/21

測試期間(Testing Period) : 2019/06/21 to 2019/06/28

### 測試需求(Test Requested):

- (1) 依據客戶指定，參考RoHS 2011/65/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(s).)
- (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) : 請參閱下一頁 (Please refer to following pages).

  
Troy Chang / Manager - Tech  
Signed for and 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 : 各項焊錫製程塑封裝產品(包含貼片與軸式封裝產品) (SOLDER PROCESSED PLASTIC MOLDED PRODUCTS (INCLUDED SURFACE MOUNT AND AXIAL PACKAGE PRODUCTS))

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	MDL	結果 (Result)
				No. 1
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321-5 (2013), 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), 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	10700 (▲)
汞 / Mercury (Hg)	mg/kg	參考IEC 62321-4:2013+ AMD1:2017, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-4:2013+ AMD1:2017 and performed by ICP-AES.	2	n. d.
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考IEC 62321-7-2 (2017), 以UV-VIS檢測. / With reference to IEC 62321-7-2 (2017) and performed by UV-VIS.	8	n. d.
多溴聯苯總和 / Sum of PBBs	mg/kg	參考IEC 62321-6 (2015), 以氣相層析儀/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.	

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	MDL	結果 (Result)
				No. 1
多溴聯苯醚總和 / Sum of PBDEs	mg/kg	參考IEC 62321-6 (2015), 以氣相層析儀 / 質譜儀檢測. / With reference to IEC 62321-6 (2015) and performed by GC/MS.	-	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.	
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 (2017), 以氣相層析儀 / 質譜儀檢測. / With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS.	50	n. d.
鄰苯二甲酸丁苯甲酯 / BBP (Butyl Benzyl phthalate) (CAS No. : 85-68-7)	mg/kg		50	n. d.
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No. : 84-74-2)	mg/kg		50	n. d.
鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No. : 84-69-5)	mg/kg	50	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), 以氣相層析儀 / 質譜儀檢測. / With reference to IEC 62321 (2008). Analysis was performed by GC/MS.	5	n. d.

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	MDL	結果 (Result)
				No. 1
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	參考US EPA 3550C (2007), 以液相層析儀/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), 以液相層析儀/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by LC/MS.	10	n. d.

### 備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. MDL = Method Detection Limit (方法偵測極限值)
3. n. d. = Not Detected (未檢出)
4. "-" = Not Regulated (無規格值)
5. (▲) 依據申請公司聲明, 測試部位No. 1 "鉛" 之測試結果適用歐盟2011/65/EU Annex III - 7(a) "高熔點錫錫中的鉛" 之豁免條款 及 7(c)-I "含鉛之玻璃或陶瓷的電器和電子元件, 介電陶瓷電容器除外" 之豁免條款. / The applicant claimed that the test result of lead in No. 1 was applied to 2011/65/EU Annex III - 7(a) Lead in high melting temperature type solders and 7(c)-I Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors.

### 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1µg/m<sup>2</sup>。

(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 1µg/m<sup>2</sup>.)

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樣品型號(Style/Item No.) :

1. ASM-10A / ASM-10A-L / ASM-10C/ DO-218(19/5/2)/ MINI-SMA(SOD-123) / SOD-123H / SOD-123H1 / SOD-123HT / SOD-123HT1 / SOD-123T/ SOD-123S / SOD-123S1/ SOD-123S-1/ SOD-123S-2/ SOD-123S-3/ SOD-123S-4/SOD-123S-5/ SOD-123S7 / SOD-123S8 / SOD-123SA1/ SOD-123SA3/ SOD-123ST / SOD-123ST-1/ SOD-123ST-2/ SOD-323ST1/ SOD-123ST2/ SOD-323 / SOD-323HE / SOD-323S / SOD-323ST2/ SOD-523 / MINI-MELF (DO-213AA/GL34) / SMA / MELF(DO-213AB)/ SMA-F / SMA-HS / SMA-HSFL / SMA-HSFL1/ SMA-HSFL2/ SMA-HST / SMA-L / SMA-W / SMA-S / SMB(DO-214AA) / SMB-F(DO-214AA) / SMB-FL/ SMB-HS / SMB-HSFL / SMB-S / SMC (DO-214AB) / SMC-F (DO-214AB) / SMC-T1 / SMC-T2 / SMC-T3 / SMC-T4 /

2. A-405/ DO-14/ DO-15/ DO-27/ DO-201AD/ DO-201AE/ DO-218/ DO-34/ DO-405/ DO-41/ P6/ R6/ P600/ HV/ HV03/ HV05/ HV07/ FH/ FHV/ FV5M/ FV5M-1/ FV5M-2/ FH10M/ GT/ GH/ BCT/ BJ/ BL/ BU/ W/ MD/ P0600M/

3. TO-126 / TO-220/ TO-220AB / TO-220AC / ITO-220AB / ITO-220AB-W / ITO-220AC / TO-3P (TO-247) / TO-251/ TO-251AA/ TO-251AB/ TO-251S/ DPAK(TO-252) / DPAK-1 (TO-252-1)/ DPAK-2 (TO-252-2)/ TO-252AA/ TO-252-4L/ TO-262 (I2PAK) / D2PAK(TO-263) / D2PAK-1 (TO-263-1)/ TO-92 (TO-226AA)/ TO-92S/ R-1/ R-3/ R-6/ TO-256/ TO-247AC/ TO-3PN/ TO-277/ TO-277A/ TO-277B /

4. 4GBJ / DB / DBF/ DBS / DF / DFS / GBL / GBJ / GBP / GBPC-W / GBPC-T / GBU / KBL / KBJ/ KBP / KBPC-3 / KBPC-6 / KBPC-8 / KBPC-MT / KBPC-MW / KBPC-PS / KBPC-PT / KBPC-PW / KBP / LDBS / LMBS / LMDS (TBS) / LMDS-1/ MBF / MBLS / MBLS-1/ MBLS-7 / MDB / MDLS / MDS (TO-269AA) / MDS-1 / MDS-6 / MP / MT-35/ QFNB/ RB-15 /RS/ WOB / UDLS/

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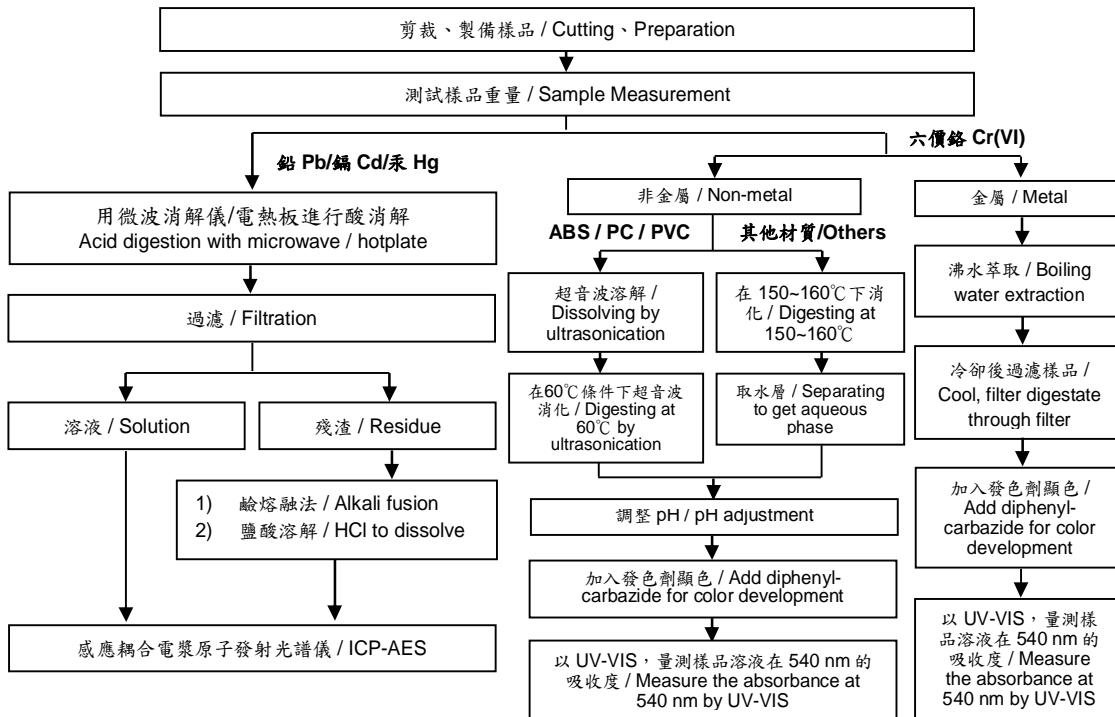
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### 重金屬流程圖 / Analytical flow chart of Heavy Metal

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)

- 測試人員：陳思臻 / Technician : Rita Chen
- 測試負責人：張啟興 / Supervisor: Troy Chang



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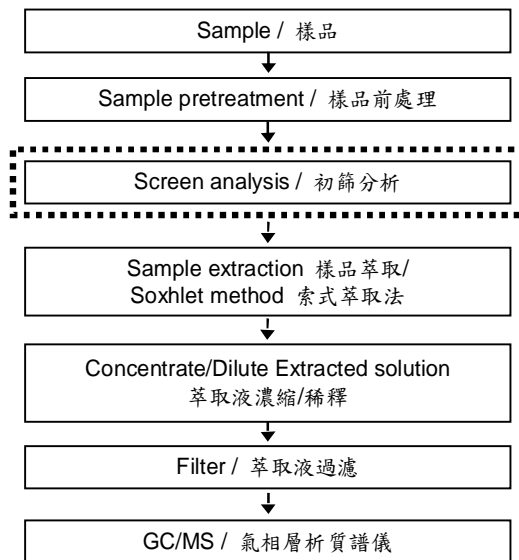
### 多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBB/PBDE

- 測試人員：涂雅琴 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: 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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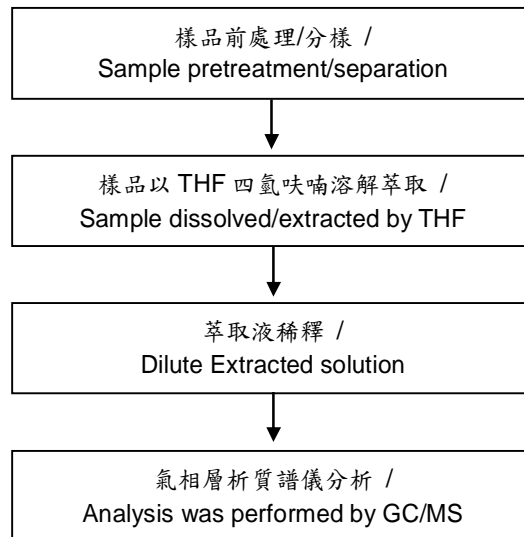
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### 可塑劑分析流程圖 / Analytical flow chart - Phthalate

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor : Troy Chang

#### 【測試方法/Test method: IEC 62321-8】





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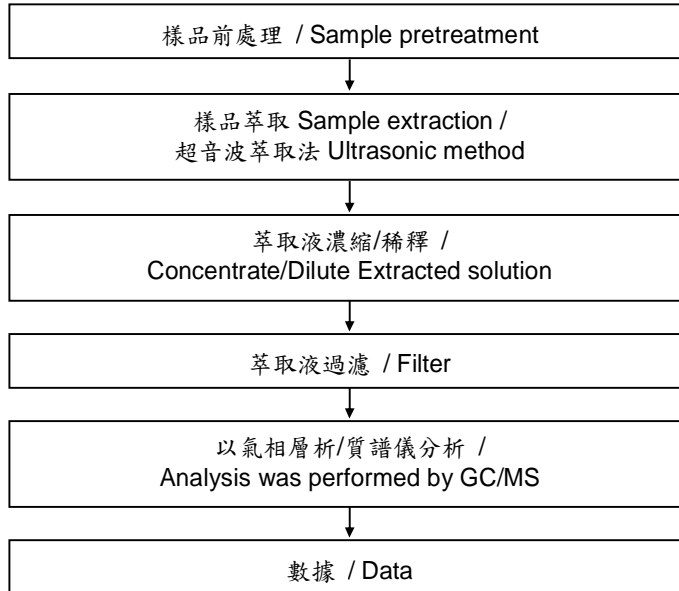
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### 六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



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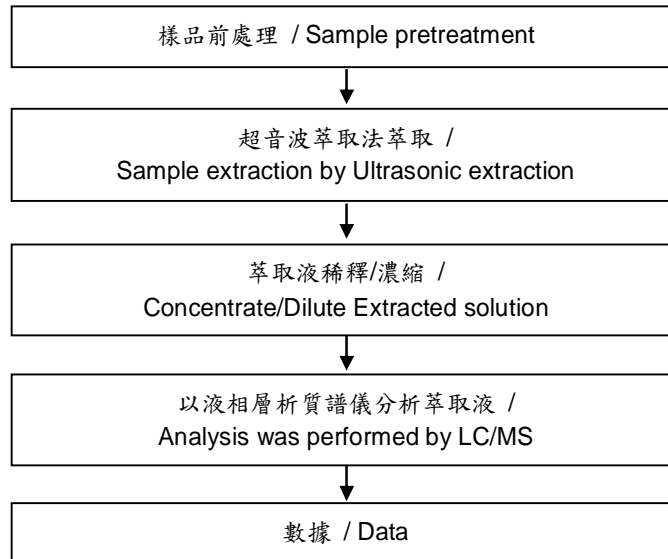
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### 全氟辛酸/全氟辛烷磺酸分析流程圖 / Analytical flow chart - PFOA/PFOS

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



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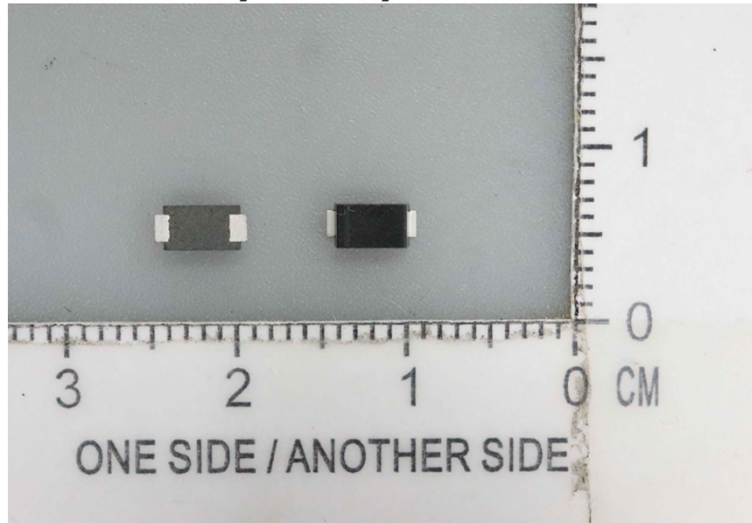
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\* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。 \*

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

### CE/2019/63573



\*\* 報告結尾 (End of Report) \*\*