



測試報告

Test Report

號碼(No.): ETR23502274

日期(Date): 22-May-2023

頁數(Page): 1 of 9

笙泉科技股份有限公司 (MEGAWIN TECHNOLOGY CO., LTD.)

新竹縣竹北市台元一街8號7樓之1 (7F-1, NO. 8, TAIYUAN 1ST ST., JHUBEI CITY, HSINCHU COUNTY 30288, 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 the applicant as) :

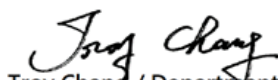
樣品名稱(Sample Name) : QFN_QFP_LQFP_PQFP_SERIES

收件日(Sample Receiving Date) : 15-May-2023

測試期間(Testing Period) : 15-May-2023 to 22-May-2023

測試需求(Test Requested) : 依據客戶指定・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, to test Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).)

測試結果(Test Results) : 請參閱下一頁 (Please refer to following pages.)


Troy Chang / Department Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei



PIN CODE: 69DAB1D0

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測試部位敘述 (Test Part Description)

No.1 : 混測所有黑色本體 (MIXED ALL BLACK BODY)

No.2 : 混測所有銀色金屬 (含鍍層) (MIXED ALL SILVER COLORED METAL (INCLUDING THE PLATING LAYER))

測試結果 (Test Results)

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result)	
				No.1	No.2
鎘 (Cd) (Cadmium (Cd))	參考IEC 62321-5: 2013 · 以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	n.d.
鉛 (Pb) (Lead (Pb))	參考IEC 62321-5: 2013 · 以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	7.30
汞 (Hg) (Mercury (Hg))	參考IEC 62321-4: 2013+ AMD1: 2017 · 以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-4: 2013+ AMD1: 2017, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	n.d.
六價鉻 Cr(VI) (Hexavalent Chromium Cr(VI))	參考IEC 62321-7-2: 2017 · 以紫外光-可見光分光光度計分析。(With reference to IEC 62321-7-2: 2017, analysis was performed by UV-VIS.)	mg/kg	8	n.d.	---
六價鉻 (Hexavalent Chromium) Cr(VI) (#2)	參考IEC 62321-7-1: 2015 · 以紫外光-可見光分光光度計分析。(With reference to IEC 62321-7-1: 2015, analysis was performed by UV-VIS.)	µg/cm ²	0.1	---	n.d.

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測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result)	
				No.1	No.2
一溴聯苯 (Monobromobiphenyl)	參考IEC 62321-6: 2015 · 以氣相層析儀/質譜儀分析。(With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.)	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.	---
多溴聯苯總和 (Sum of PBBs)		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.	---
多溴聯苯醚總和 (Sum of PBDEs)		mg/kg	-	n.d.	---
鄰苯二甲酸丁苯甲酯 (BBP) (Butyl benzyl phthalate (BBP))	參考IEC 62321-8: 2017 · 以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.)	mg/kg	50	n.d.	---
鄰苯二甲酸二丁酯 (DBP) (Dibutyl phthalate (DBP))		mg/kg	50	n.d.	---
鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-(2-ethylhexyl) phthalate (DEHP))		mg/kg	50	n.d.	---
鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl phthalate (DIBP))		mg/kg	50	n.d.	---

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備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 0.1% = 1000ppm
2. MDL = Method Detection Limit (方法偵測極限值)
3. n.d. = Not Detected (未檢出) ; 小於MDL / Less than MDL
4. "-" = Not Regulated (無規格值)
5. "---" = Not Conducted (未測試項目)
6. (#2) =
 - a. 當六價鉻結果大於 $0.13 \mu\text{g}/\text{cm}^2$ ，表示樣品表層含有六價鉻。(The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than $0.13 \mu\text{g}/\text{cm}^2$. The sample coating is considered to contain Cr(VI).)
 - b. 當六價鉻結果為n.d. (濃度小於 $0.10 \mu\text{g}/\text{cm}^2$)，表示表層不含六價鉻。(The sample is negative for Cr(VI) if Cr(VI) is n.d. (concentration less than $0.10 \mu\text{g}/\text{cm}^2$). The coating is considered a non-Cr(VI) based coating)
 - c. 當六價鉻結果介於 0.10 及 $0.13 \mu\text{g}/\text{cm}^2$ 時，無法確定塗層是否含有六價鉻。(The result between $0.10 \mu\text{g}/\text{cm}^2$ and $0.13 \mu\text{g}/\text{cm}^2$ is considered to be inconclusive - unavoidable coating variations may influence the determination.)
7. 樣品的測試是基於申請人要求混合測試，報告中的混合測試結果不代表其中個別單一材質的含量。
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.

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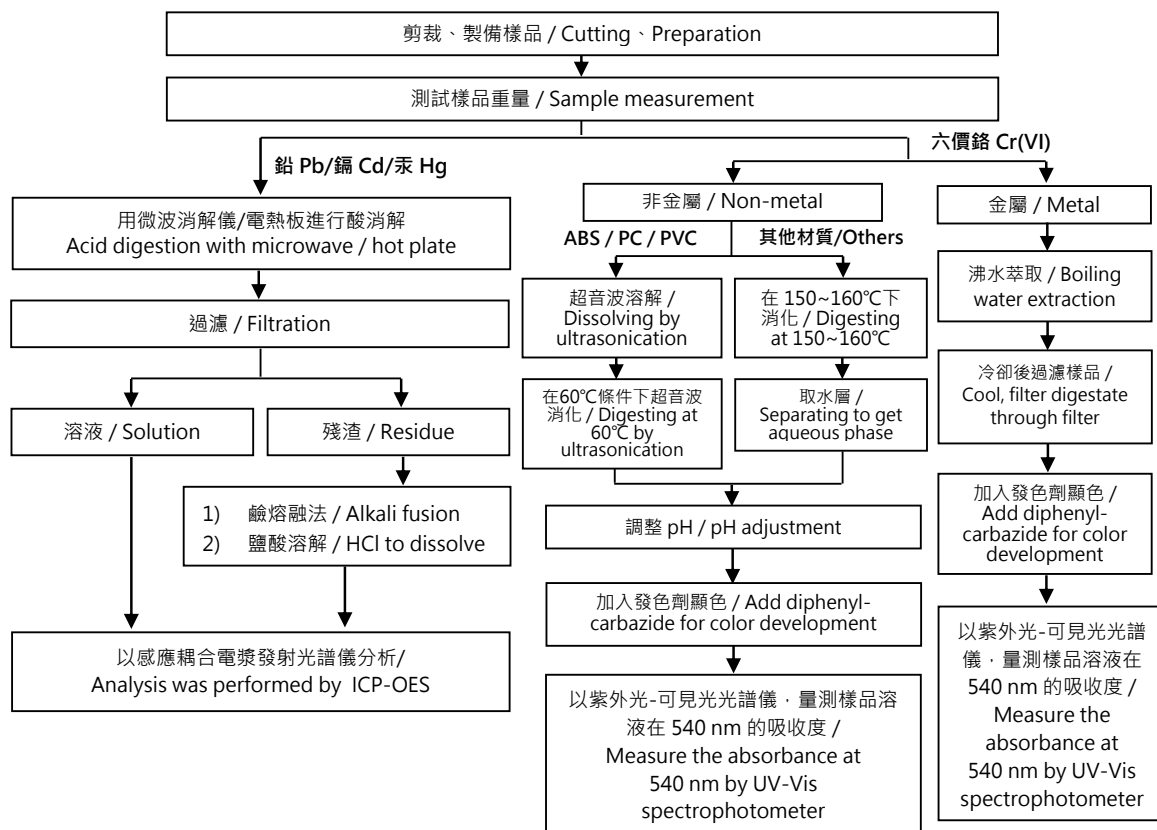
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重金屬流程圖 / Analytical flow chart of heavy metal

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.

(Cr⁶⁺ test method excluded)

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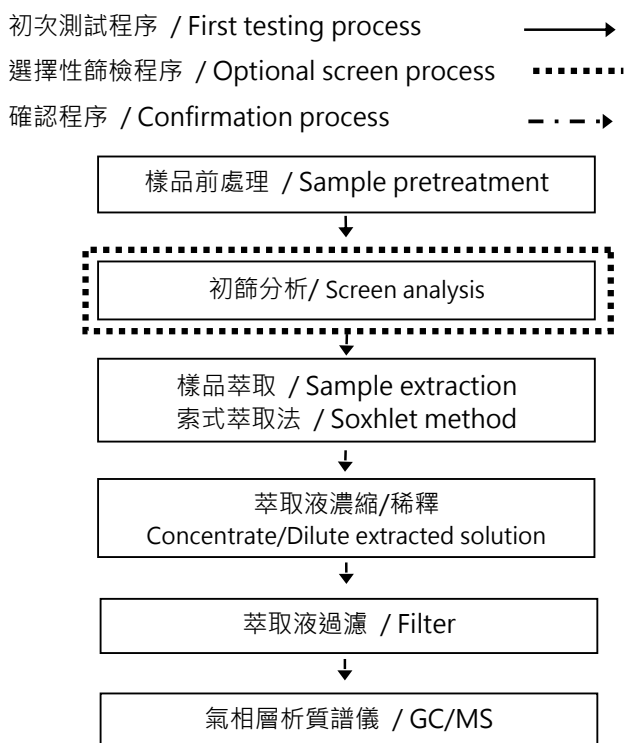
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多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBBs/PBDEs



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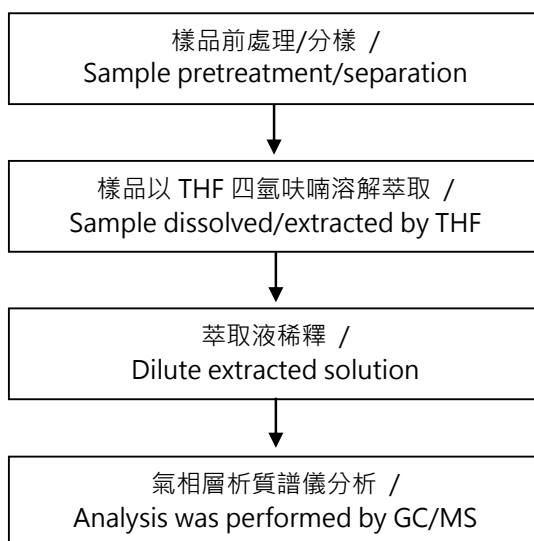
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可塑劑分析流程圖 / Analytical flow chart - Phthalate

【測試方法/Test method: IEC 62321-8】



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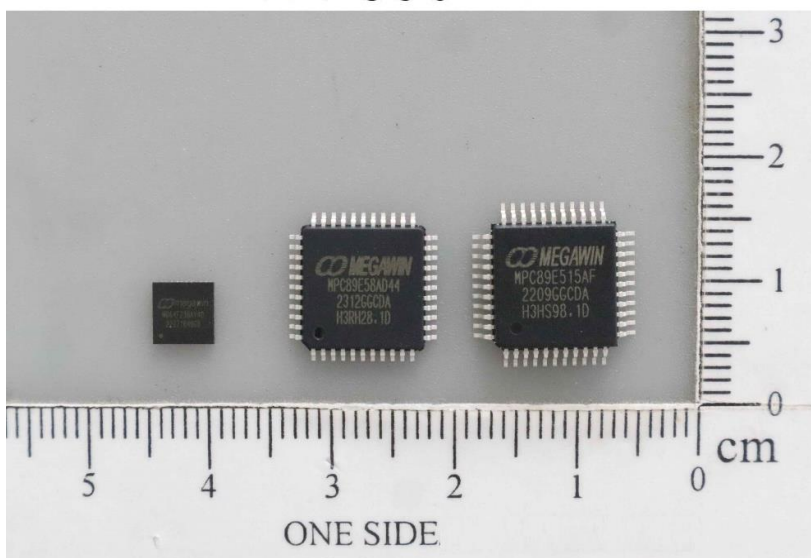
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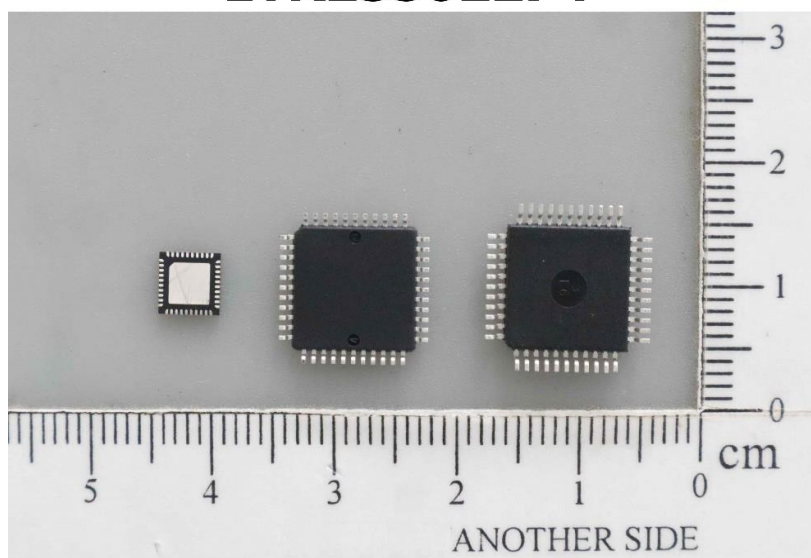
* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。*

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

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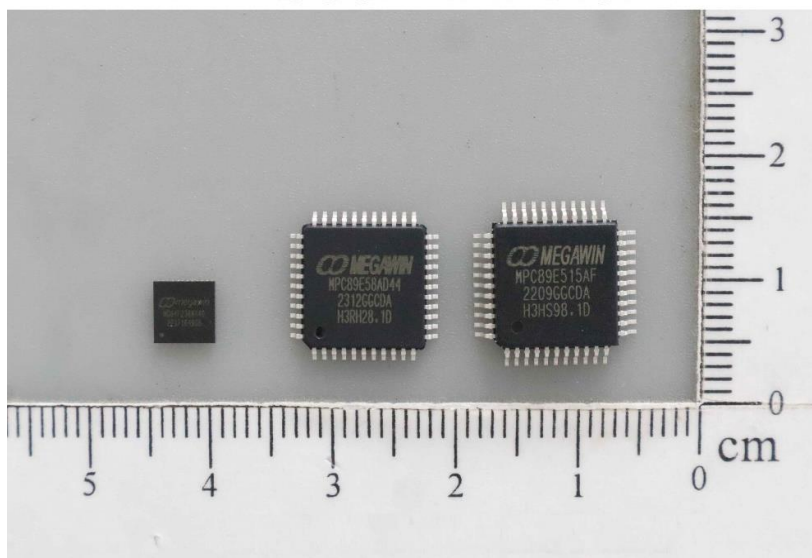
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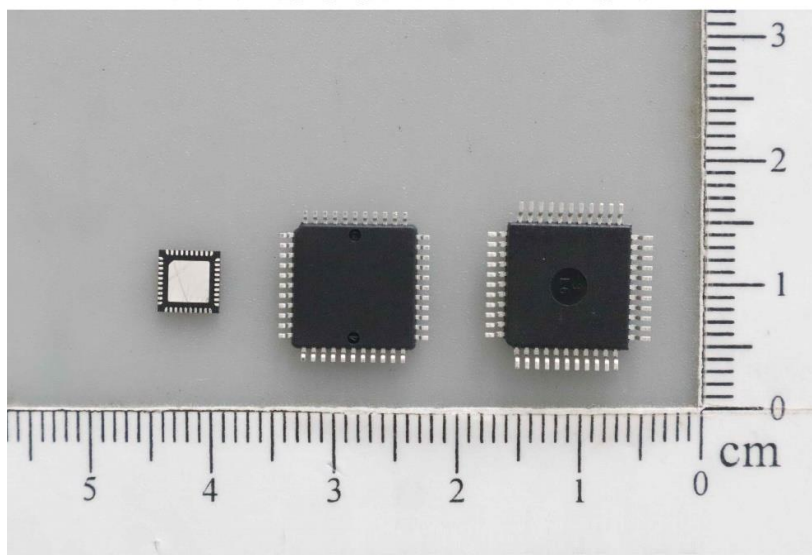
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ETR23502274 NO.1



ETR23502274 NO.2



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