

Test Report

號碼(No.): ETR21B03232 日期(Date): 24-Nov-2021 頁數(Page): 1 of 12

欣興電子股份有限公司 (UNIMICRON TECHNOLOGY CORPORATION) 桃園市龜山區龜山工業區山鶯路179號 (NO. 179, SHAN YING ROAD, KWEI SHAN IND., PARK, TAOYUAN CITY 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)

欣興電子股份有限公司 (UNIMICRON TECHNOLOGY CORPORATION)

樣品名稱(Sample Name)

: Au PLATING LAYER

收件日(Sample Receiving Date)

: 17-Nov-2021

測試期間(Testing Period)

: 17-Nov-2021 to 24-Nov-2021

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.)





PIN CODE: 4444D496



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測試部位敘述 (Test Part Description)

No.1 : 金色片狀鍍層 (PLATING LAYER OF GOLDEN COLORED SHEET)

No.2 : 金色片狀(含鍍層) (GOLDEN COLORED SHEET (INCLUDING THE PLATING LAYER))

測試結果 (Test Results)

測試項目	測試方法	單位	MDL	結果	
(Test Items)	(Method)	(Unit)		(Result)	
				No.1	No.2
鎘 (Cd) (Cadmium (Cd)) (CAS No.: 7440-43-9)	酸洗脫鍍層·參考IEC 62321-5: 2013 ·以感應耦合電漿發射光譜儀分析。 (IEC 62321-5: 2013 application of modified digestion by surface etching, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	
鉛 (Pb) (Lead (Pb)) (CAS No.: 7439-92-1)	酸洗脫鍍層·參考IEC 62321-5: 2013 ·以感應耦合電漿發射光譜儀分析。 (IEC 62321-5: 2013 application of modified digestion by surface etching, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	
汞 (Hg) (Mercury (Hg)) (CAS No.: 7439-97-6)	酸洗脫鍍層,參考IEC 62321-4: 2013 + AMD1: 2017,以感應耦合電 漿發射光譜儀分析。(IEC 62321-4: 2013 + AMD1: 2017 application of modified digestion by surface etching, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	
六價鉻 (Hexavalent Chromium) Cr(VI) (CAS No.: 18540-29-9) (#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/cm²	0.1	n.d.	



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測試項目	測試方法	單位	MDL	結果	
(Test Items)	(Method)	(Unit)		(Result)	
				No.1	No.2
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)	參考IEC 62321-6: 2015,以氣相層析	mg/kg	5		n.d.
多溴聯苯總和 (Sum of PBBs)	儀/質譜儀分析。(With reference to	mg/kg	ı		n.d.
一溴聯苯醚 (Monobromodiphenyl ether)	IEC 62321-6: 2015, analysis was	mg/kg	5		n.d.
二溴聯苯醚 (Dibromodiphenyl ether)	performed by GC/MS.)	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	ı		n.d.
鄰苯二甲酸丁苯甲酯 (BBP) (Butyl		mg/kg	50		n.d.
benzyl phthalate (BBP)) (CAS No.: 85-					
68-7)					
鄰苯二甲酸二丁酯 (DBP) (Dibutyl	參考IEC 62321-8: 2017,以氣相層析	mg/kg	50		n.d.
phthalate (DBP)) (CAS No.: 84-74-2)	儀/質譜儀分析。(With reference to				
鄰苯二甲酸二(2-乙基己基)酯 (DEHP)	IEC 62321-8: 2017, analysis was	mg/kg	50		n.d.
(Di-(2-ethylhexyl) phthalate (DEHP))	performed by GC/MS.)				
(CAS No.: 117-81-7)					
鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl		mg/kg	50		n.d.
phthalate (DIBP)) (CAS No.: 84-69-5)					



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測試項目	測試方法	單位	MDL	結果	
(Test Items)	(Method)	(Unit)		(Result)	
				No.1	No.2
鄰苯二甲酸二異癸酯 (DIDP)		mg/kg	50		n.d.
(Diisodecyl phthalate (DIDP)) (CAS					
No.: 26761-40-0, 68515-49-1)	┃ ┪参考IEC 62321-8: 2017,以氣相層析				
鄰苯二甲酸二異壬酯 (DINP)	参与IEC 02321-0.2017,以照伯僧彻 儀/質譜儀分析。(With reference to	mg/kg	50		n.d.
(Diisononyl phthalate (DINP)) (CAS	IEC 62321-8: 2017, analysis was				
No.: 28553-12-0, 68515-48-0)	performed by GC/MS.)				
鄰苯二甲酸二正辛酯 (DNOP) (Di-n-	performed by GC/W3.)	mg/kg	50		n.d.
octyl phthalate (DNOP)) (CAS No.:					
117-84-0)					
六溴環十二烷及所有主要被辨別出的異	參考IEC 62321: 2008,以氣相層析儀/	mg/kg	5		n.d.
構物(HBCDD) (α- HBCDD, β- HBCDD,	質譜儀分析。(With reference to IEC				
γ- HBCDD)	62321: 2008, analysis was				
(Hexabromocyclododecane (HBCDD)	performed by GC/MS.)				
and all major diastereoisomers					
identified (α - HBCDD, β - HBCDD, γ -					
HBCDD)) (CAS No.: 25637-99-4,					
3194-55-6 (134237-51-7, 134237-					
50-6, 134237-52-8))					
氟 (F) (Fluorine (F)) (CAS No.: 14762-		mg/kg	50		414
94-8)					
氯 (CI) (Chlorine (CI)) (CAS No.:	參考BS EN 14582: 2016 · 以離子層析	mg/kg	50		n.d.
22537-15-1)	儀分析。(With reference to BS EN				
溴 (Br) (Bromine (Br)) (CAS No.:	14582: 2016, analysis was	mg/kg	50		n.d.
10097-32-2)	performed by IC.)				
碘 (I) (lodine (I)) (CAS No.: 14362-44-		mg/kg	50		n.d.
8)					
全氟辛烷磺酸及其鹽類 (PFOS and its	 参考CEN/TS 15968: 2010 · 以液相層	μg/m²	1	n.d.	
salts) (CAS No.: 1763-23-1 and its	析儀/質譜儀分析。(With reference to				
salts)	CEN/TS 15968: 2010, analysis was				
全氟辛酸及其鹽類 (PFOA and its salts)	performed by LC/MS.)	μg/m²	1	n.d.	
(CAS No.: 335-67-1 and its salts)	1				



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測試項目	測試方法	單位	MDL	結果	
(Test Items)	(Method)	(Unit)		(Result)	
				No.1	No.2
銻 (Sb) (Antimony (Sb)) (CAS No.: 7440-36-0)	酸洗脫鍍層·參考US EPA 3050B: 1996·以感應耦合電漿發射光譜儀分析。(US EPA 3050B: 1996 application of modified digestion by surface etching, analysis was performed by ICP-OES.)	mg/kg	2	n.d.	
鈹 (Be) (Beryllium (Be)) (CAS No.: 7440-41-7)	酸洗脫鍍層·參考US EPA 3050B: 1996·以感應耦合電漿發射光譜儀分析。(US EPA 3050B: 1996 application of modified digestion by surface etching, analysis was performed by ICP-OES.)	mg/kg	2	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); 小於MDL / Less than MDL
- 4. "-" = Not Regulated (無規格值)
- 5. "---" = Not Conducted (未測試項目)
- 6. 全氟辛烷磺酸及其鹽類包含 (PFOS and its salts including):

CAS No.: 29081-56-9, 2795-39-3, 29457-72-5, 70225-14-8, 56773-42-3, 251099-16-8, 307-35-7.

- 7. 全氟辛酸及其鹽類包含 (PFOA and its salts including):
 - CAS No.: 3825-26-1, 335-95-5, 2395-00-8, 335-93-3, 335-66-0.
- 8. (#2) =
 - a. 當六價鉻結果大於 $0.13~\mu g/cm^2$ ·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 $0.13~\mu g/cm^2$. 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 μg/cm²)·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 μg/cm²). The coating is considered a non-Cr(VI) based coating)
 - c. 當六價鉻結果介於 0.10 及 0.13 $\mu g/cm^2$ 時,無法確定塗層是否含有六價鉻。(The result between 0.10 $\mu g/cm^2$ and 0.13 $\mu g/cm^2$ is considered to be inconclusive unavoidable coating variations may influence the determination.)



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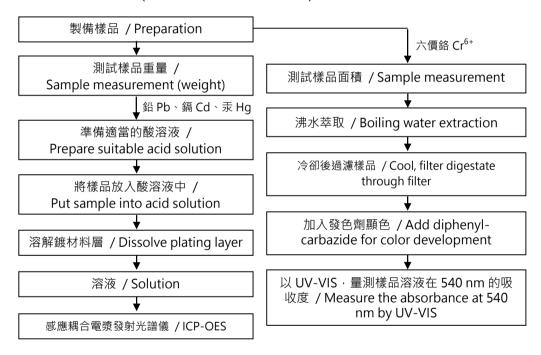
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鍍層重金屬測試流程圖 / Flow Chart of Stripping method for metal analysis

根據以下的流程圖之條件·樣品之外部鍍層已完全溶解。(六價鉻測試方法除外) / The plating layer of samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)



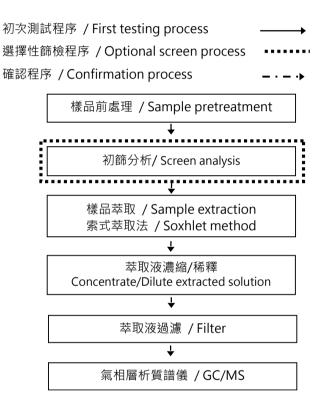


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多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBBs/PBDEs





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

【測試方法/Test method: IEC 62321-8】

樣品前處理/分樣 / Sample pretreatment/separation

樣品以 THF 四氫呋喃溶解萃取 / Sample dissolved/extracted by THF

萃取液稀釋 / Dilute extracted solution

氣相層析質譜儀分析 / Analysis was performed by GC/MS

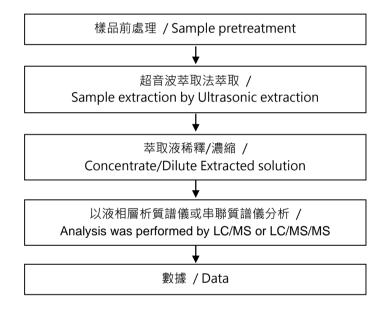


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全氟辛酸/全氟辛烷磺酸分析流程圖 / Analytical flow chart - PFOA/PFOS



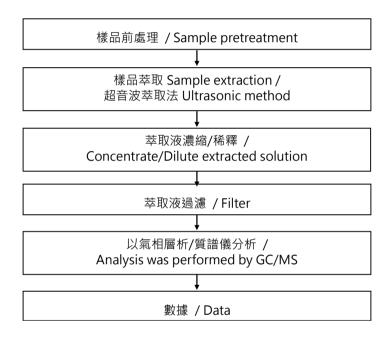


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六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD



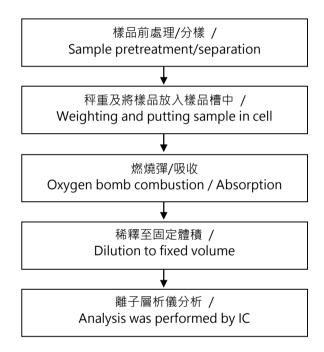


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鹵素分析流程圖 / Analytical flow chart - Halogen





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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.)

ETR21B03232 NO.1



ETR21B03232 NO.2



** 報告結尾 (End of Report) **