

**Test Report** 

號碼(No.): ETR22604470M01

日期(Date): 04-Jul-2022

頁數(Page): 1 of 13

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 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) **SUBSTRATE** 

樣品型號(Style/Item No.) FC4

\_\_\_\_\_\_

收件日(Sample Receiving Date) 27-Jun-2022

測試期間(Testing Period) 27-Jun-2022 to 04-Jul-2022

測試需求(Test Requested) 依據客戶指定,參考RoHS 2011/65/EU Annex II及其修訂指令(EU) 2015/863測 (1)

> 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.)

Signed for and on behalf SĞS TAIWAN LTD. Chemical Laboratory - Taipei



PIN CODE: 73A47C04



## **Test Report**

號碼(No.): ETR22604470M01 日期(Date): 04-Jul-2022

頁數(Page): 2 of 13

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.)

#### 測試部位敘述 (Test Part Description)

No.1 : 綠色載板 (GREEN SUBSTRATE)

#### 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
鎘 (Cd) (Cadmium (Cd)) (CAS No.: 7440-	參考IEC 62321-5: 2013,以感應耦合電漿發射光	mg/kg	2	n.d.
43-9)	譜儀分析。(With reference to IEC 62321-5:			
	2013, analysis was performed by ICP-OES.)			
鉛 (Pb) (Lead (Pb)) (CAS No.: 7439-92-1)	參考IEC 62321-5: 2013 · 以感應耦合電漿發射光	mg/kg	2	4.31
	譜儀分析。(With reference to IEC 62321-5:			
	2013, analysis was performed by ICP-OES.)			
汞 (Hg) (Mercury (Hg)) (CAS No.: 7439-	參考IEC 62321-4: 2013+ AMD1: 2017,以感應耦	mg/kg	2	n.d.
97-6)	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.)			
六價鉻 Cr(VI) (Hexavalent Chromium	參考IEC 62321-7-2: 2017·以紫外光-可見光分光	mg/kg	8	n.d.
Cr(VI)) (CAS No.: 18540-29-9)	光度計分析。(With reference to IEC 62321-7-2:			
	2017, analysis was performed by UV-VIS.)			
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)	參考IEC 62321-6: 2015,以氣相層析儀/質譜儀分	mg/kg	5	n.d.
六溴聯苯 (Hexabromobiphenyl)	析。(With reference to IEC 62321-6: 2015,	mg/kg	5	n.d.
七溴聯苯 (Heptabromobiphenyl)	analysis was performed by GC/MS.)	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.



## **Test Report**

號碼(No.): ETR22604470M01 日期(Date): 04-Jul-2022 頁數(Page): 3 of 13

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.)

測試項目	測試方法	單位	MDL	結果
(Test Items)	(Method)	(Unit)		(Result)
				No.1
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)	參考IEC 62321-6: 2015.以氣相層析儀/質譜儀分析。(With reference to IEC 62321-6: 2015,	mg/kg	5	n.d.
六溴聯苯醚 (Hexabromodiphenyl ether)		mg/kg	5	n.d.
七溴聯苯醚 (Heptabromodiphenyl ether)	analysis was performed by GC/MS.)	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 benzyl		mg/kg	50	n.d.
phthalate (BBP)) (CAS No.: 85-68-7)				
鄰苯二甲酸二丁酯 (DBP) (Dibutyl		mg/kg	50	n.d.
phthalate (DBP)) (CAS No.: 84-74-2)				
鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-		mg/kg	50	n.d.
(2-ethylhexyl) phthalate (DEHP)) (CAS				
No.: 117-81-7)				
鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl	參考IEC 62321-8: 2017·以氣相層析儀/質譜儀分	mg/kg	50	n.d.
phthalate (DIBP)) (CAS No.: 84-69-5)	析。(With reference to IEC 62321-8: 2017,			
鄰苯二甲酸二異癸酯 (DIDP) (Diisodecyl	analysis was performed by GC/MS.)	mg/kg	50	n.d.
phthalate (DIDP)) (CAS No.: 26761-40-				
0, 68515-49-1)				
鄰苯二甲酸二異壬酯 (DINP) (Diisononyl		mg/kg	50	n.d.
phthalate (DINP)) (CAS No.: 28553-12-				
0, 68515-48-0)				
鄰苯二甲酸二正辛酯 (DNOP) (Di-n-octyl		mg/kg	50	n.d.
phthalate (DNOP)) (CAS No.: 117-84-0)				



## **Test Report**

號碼(No.): ETR22604470M01

日期(Date): 04-Jul-2022

頁數(Page): 4 of 13

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.)

測試項目	測試方法	單位	MDL	結果
(Test Items)	(Method)	(Unit)		(Result)
				No.1
六溴環十二烷及所有主要被辨別出的異構	參考IEC 62321: 2008·以氣相層析儀/質譜儀分	mg/kg	5	n.d.
物(HBCDD) (α- HBCDD, β- HBCDD, γ-	析。(With reference to IEC 62321: 2008, analysis			
HBCDD) (Hexabromocyclododecane	was performed by GC/MS.)			
(HBCDD) and all major				
diastereoisomers identified ( $\alpha$ - 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.: 14762-94-		mg/kg	50	1110
8)				
氯 (Cl) (Chlorine (Cl)) (CAS No.: 22537-	參考BS EN 14582: 2016 · 以離子層析儀分析。	mg/kg	50	n.d.
15-1)	(With reference to BS EN 14582: 2016, analysis			
溴 (Br) (Bromine (Br)) (CAS No.: 10097-	was performed by IC.)	mg/kg	50	n.d.
32-2)				
碘 (I) (Iodine (I)) (CAS No.: 14362-44-8)		mg/kg	50	n.d.
全氟辛烷磺酸及其鹽類 (PFOS and its	参考CEN/TS 15968: 2010 · 以液相層析串聯質譜	mg/kg	0.01	n.d.
salts) (CAS No.: 1763-23-1 and its salts)	儀分析。(With reference to CEN/TS 15968:			
全氟辛酸及其鹽類 (PFOA and its salts)	2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.
(CAS No.: 335-67-1 and its salts)	2010, analysis was performed by Ec/1413/1413.			
鈹 (Be) (Beryllium (Be)) (CAS No.: 7440-	參考US EPA 3052: 1996,以感應耦合電漿發射光	mg/kg	2	n.d.
41-7)	譜儀分析。(With reference to US EPA 3052:			
	1996, analysis was performed by ICP-OES.)			
銻 (Sb) (Antimony (Sb)) (CAS No.: 7440-	參考US EPA 3052: 1996,以感應耦合電漿發射光	mg/kg	2	n.d.
36-0)	譜儀分析。(With reference to US EPA 3052:			
	1996, analysis was performed by ICP-OES.)			



### **Test Report**

號碼(No.): ETR22604470M01 日期(Date): 04-Jul-2022 頁數(Page): 5 of 13

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.)

#### 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. 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.

- 6. 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.
- 7. 本報告為 ETR22604470 之異動報告。(This is the additional test report of ETR22604470.)



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號碼(No.): ETR22604470M01

日期(Date): 04-Jul-2022

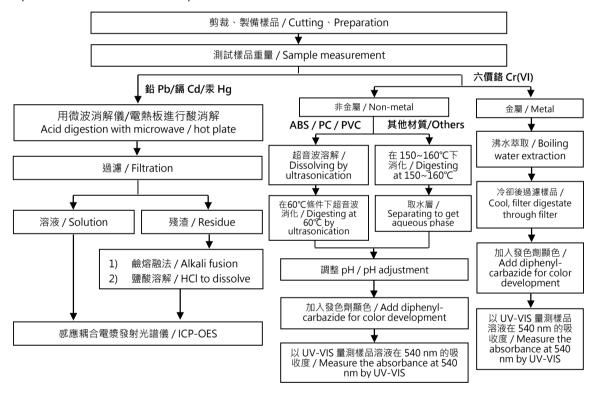
頁數(Page): 6 of 13

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.)

#### 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. ( $Cr^{6+}$  test method excluded)





# **Test Report**

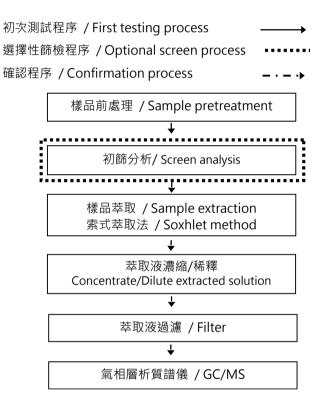
號碼(No.): ETR22604470M01

日期(Date): 04-Jul-2022

頁數(Page): 7 of 13

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.)

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





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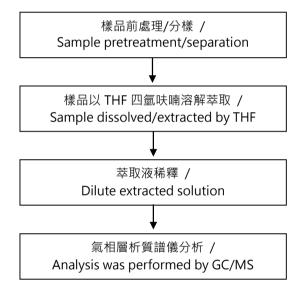
日期(Date): 04-Jul-2022

頁數(Page): 8 of 13

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.)

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

【測試方法/Test method: IEC 62321-8】



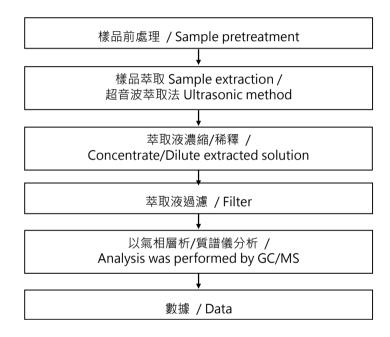


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#### 六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD



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頁數(Page): 9 of 13

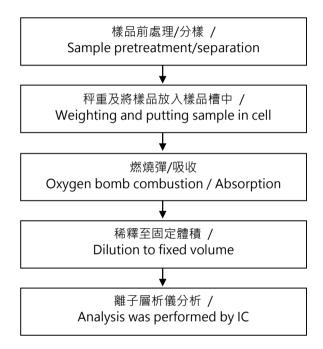


# **Test Report**

號碼(No.): ETR22604470M01 日期(Date): 04-Jul-2022 頁數(Page): 10 of 13

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.)

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



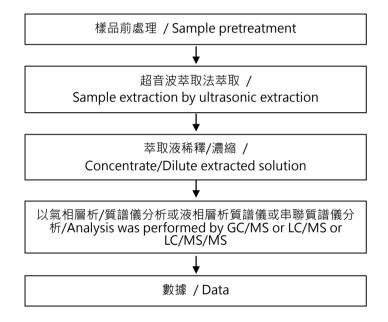


### **Test Report**

號碼(No.): ETR22604470M01 日期(Date): 04-Jul-2022 頁數(Page): 11 of 13

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.)

全氟化合物(包含全氟辛酸/全氟辛烷磺酸/其相關化合物等等)分析流程圖 / Analytical flow chart – PFAS (including PFOA/PFOS/its related compound, etc.)





## **Test Report**

號碼(No.): ETR22604470M01 日期

日期(Date): 04-Jul-2022 頁數(Page): 12 of 13

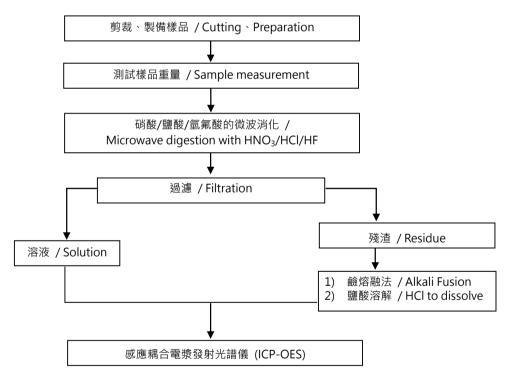
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#### 元素(含重金屬)分析流程圖 / Analytical flow chart of Elements (Heavy metal included)

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.

【參考方法/Reference method: US EPA 3051A、US EPA 3052】



\* US EPA 3051A 方法未添加氫氟酸 / US EPA 3051A method does not add HF.



# **Test Report**

號碼(No.): ETR22604470M01 日期(Date): 04-Jul-2022 頁數(Page): 13 of 13

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.)

由申請公司要求刪除樣品照片. (The photo of sample was removed base upon the applicant's requirement.)

\*\* 報告結尾 (End of Report) \*\*