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測試報告
Test Report

號碼(No.) : CE/2015/64759　　日期(Date) : 2015/07/07　　頁數(Page): 1 of 10

SFI ELECTRONICS TECHNOLOGY INC.

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) : 立昌先進科技股份有限公司 (SFI ELECTRONICS TECHNOLOGY INC.)
樣品名稱(Sample Description) : TRANSIENT VOLTAGE SUPPRESSORS(T.V.S)SMD MULTILAYER
樣品型號(Style/Item No.) : FULL SIZE(ML-A/C SERIES, ESD SERIES, CH SERIES, HIGH CAP SERIES, LOW CAP SERIES, ESD+EMI SERIES, ARRAY SERIES , SHA SERIES, SHN SERIES, SHC SERIES ,SHV SERIES , SEM SERIES , SEA SERIES , SEH SERIES , STS SERIES, MH SERIES , SAD SERIES)
收件日期(Sample Receiving Date) : 2015/06/25
測試期間(Testing Period) : 2015/06/25 TO 2015/07/07

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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SFI ELECTRONICS TECHNOLOGY INC.

測試結果(Test Results)

測試部位(PART NAME)No.1 : 整體混測 (MIXED ALL PARTS)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (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	8.61
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.
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.
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.

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result)
				No.1
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.
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.

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SFI ELECTRONICS TECHNOLOGY INC.

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result)
				No.1
鹵素 / Halogen				
鹵素 (氟) / Halogen-Fluorine (F) (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) (CAS No.: 22537-15-1)	mg/kg		50	n.d.
鹵素 (溴) / Halogen-Bromine (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.

釋出鎳 / Nickel Release Test

測試方法(Method) :

參考EN 1811:2011+AC:2012方法處理, 以感應耦合電漿原子發射光譜儀分析. / With reference to EN 1811:2011+AC:2012. Analysis was performed by ICP-AES.

樣品 (Sample)	樣品表面積 (Sample Area) (cm^2)	測試溶液體積 (Volume of Test Solution) (ml)	釋出鎳 (Nickel Release) (μg/cm^2/week)
No.1	7.1	10	<0.1
			<0.1
			<0.1

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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）
5. 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 samples was/were analyzed on behalf of the applicant as mixing sample in one testing. The above results was/were only given as the informality value.）

6. μg/cm²/week = microgram per square centimeter per week
7.

樣品類別 (Type of sample)	釋出鎳 / Nickel Release (μg/cm²/week)		
	通過(PASS)	不確定 (No clear decision)*	失敗(FAIL)
釋出鎳成品含量限值為0.5μg/cm²/week（一般類樣品）/ Article with Nickel release limit of 0.5μg/cm²/week (Non-body piercing)	≤ 0.28	>0.28 and <0.88	≥ 0.88
釋出鎳成品含量限值為0.2μg/cm²/week（穿刺人體類樣品）/ Article with Nickel release limit of 0.2μg/cm²/week (Body piercing)	≤ 0.11	>0.11 and <0.35	≥ 0.35

* = No clear decision = Inconclusive（不確定）
Method Detection Limit（方法偵測極限值）= 0.1 μg/cm²/week

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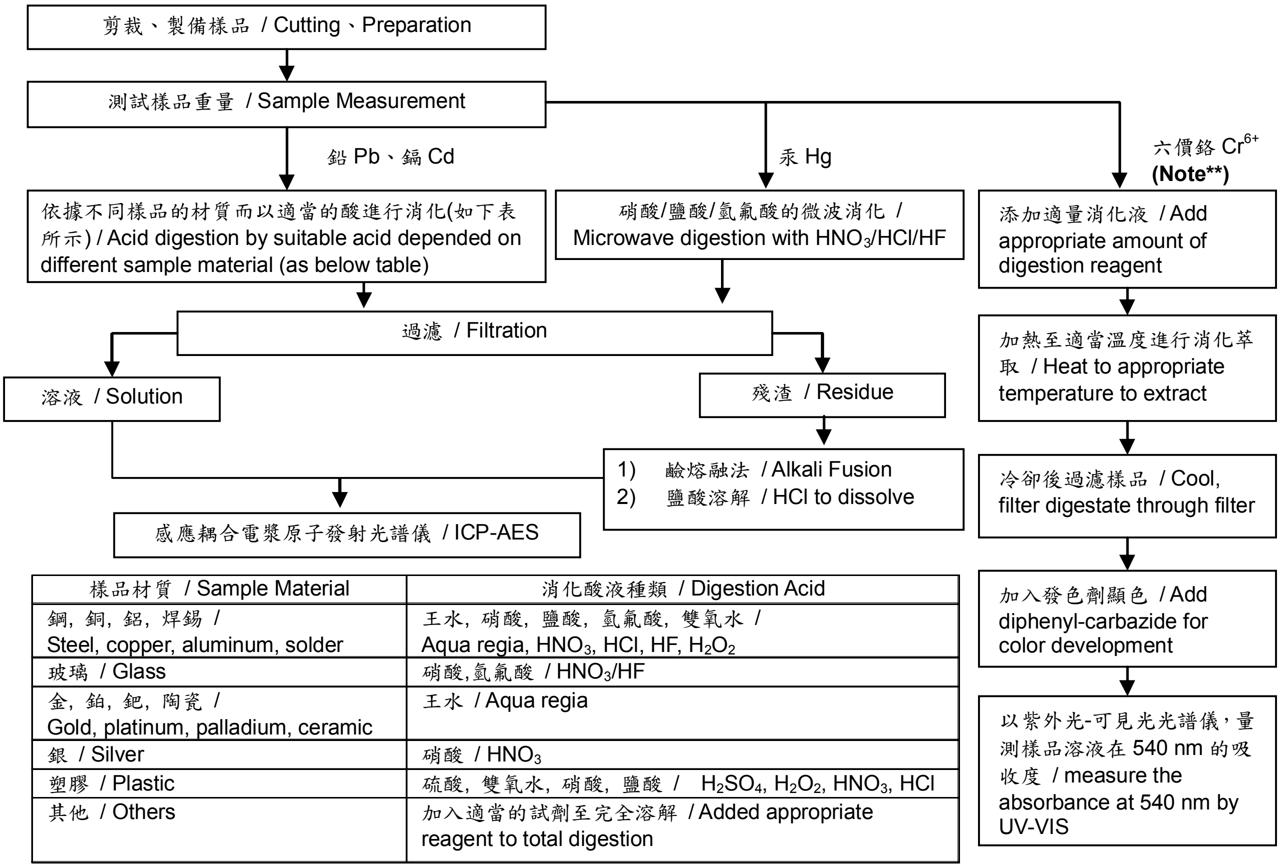
1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外） / These samples were dissolved totally by pre-conditioning method according to below flow chart.（Cr^{6+} test method excluded）
2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
3) 測試負責人：張啟興 / Name of the person in charge of measurement: Troy Chang



樣品材質 / Sample Material	消化酸液種類 / Digestion Acid
鋼，銅，鋁，焊錫 / Steel, copper, aluminum, solder	王水，硝酸，鹽酸，氫氟酸，雙氧水 / Aqua regia, HNO_3, HCl, HF, H_2O_2
玻璃 / Glass	硝酸,氫氟酸 / HNO_3/HF
金，鉑，鈀，陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNO_3
塑膠 / Plastic	硫酸，雙氧水，硝酸，鹽酸 / H_2SO_4, H_2O_2, HNO_3, HCl
其他 / Others	加入適當的試劑至完全溶解 / Added appropriate reagent to total digestion

Note (For IEC 62321)**

(1) 針對非金屬材料加入鹼性消化液，加熱至 90~95℃萃取. / For non-metallic material, add alkaline digestion reagent and heat to 90~95℃.
(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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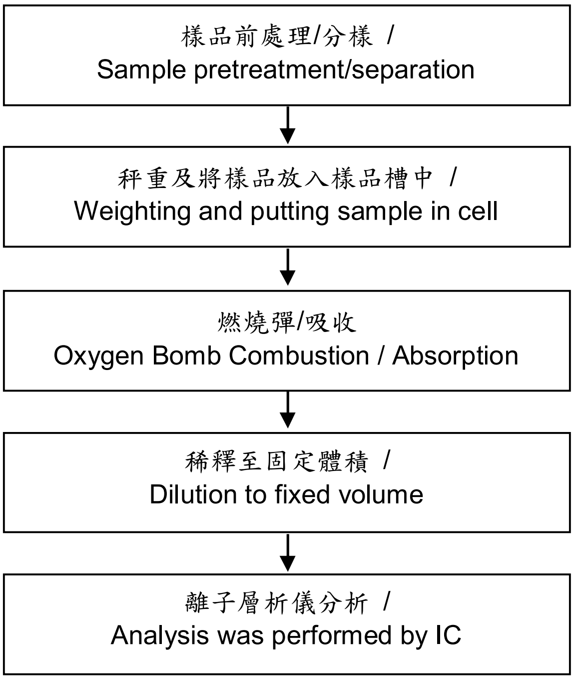
鹵素分析流程圖 / Analytical flow chart of halogen content

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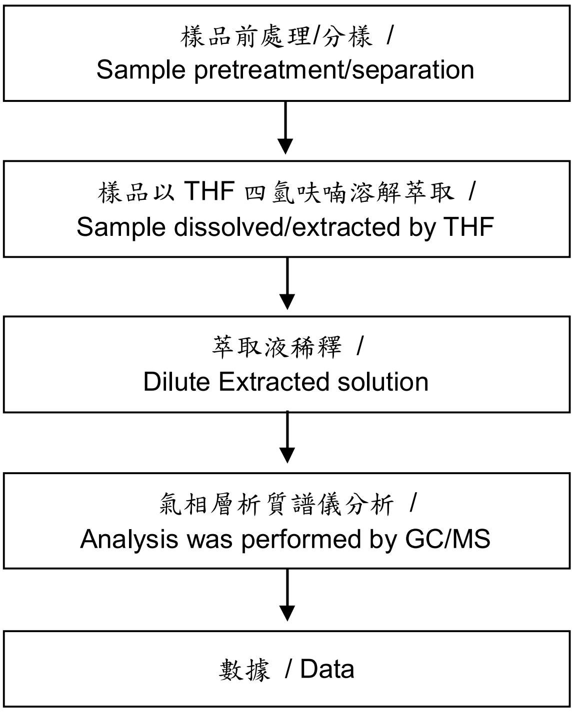
可塑劑分析流程圖 / Analytical flow chart of phthalate content

- 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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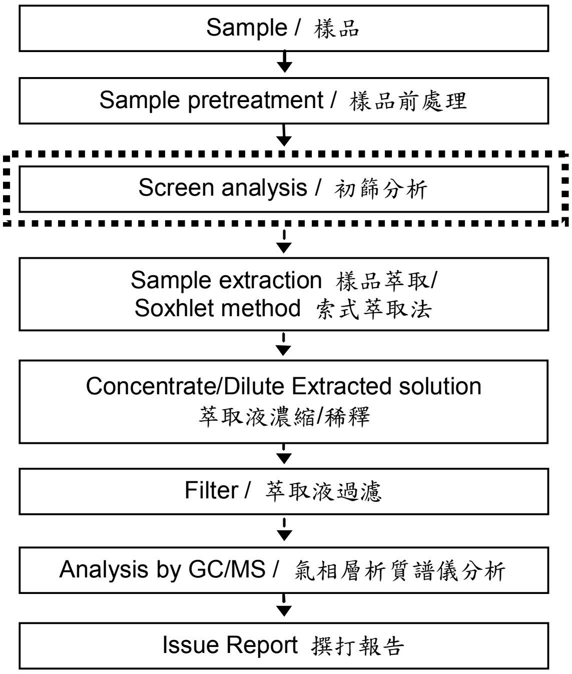
多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

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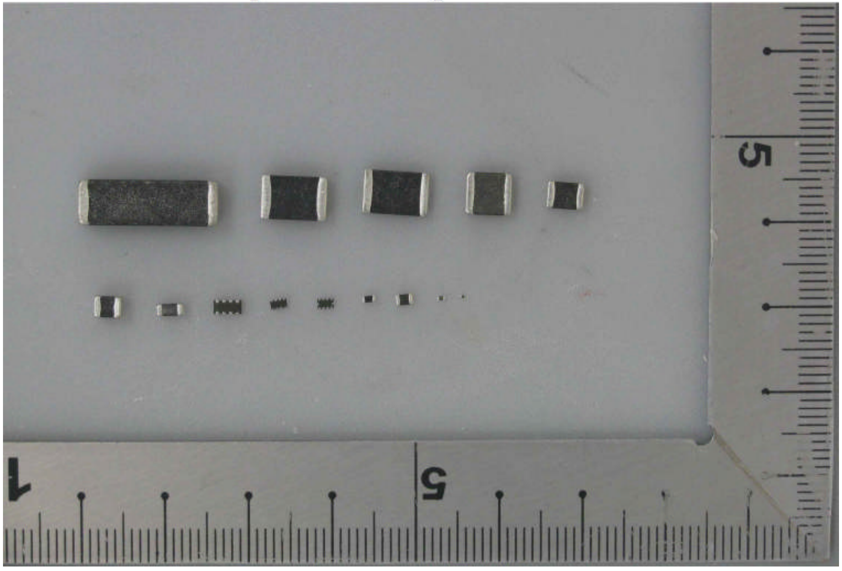
* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位. *
(The tested sample / part is marked by an arrow if it's shown on the photo.)

CE/2015/64759



** 報告結尾 (End of Report) **

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