

## 測試報告

## **Test Report**

號碼(No.): KA/2015/70159 日期(Date): 2015/07/09 頁數(Page): 1 of 6

捷拓科技股份有限公司

MINMAX TECHNOLOGY CO. LTD

702 臺南市安平工業區新信路18號

18, SHIN-SIN ROAD, AN-PING INDUSTRIAL DISTRICT, TAINAN 702, TAIWAN

以下測試樣品係由客户送樣,且由客户聲稱並經客户確認如下 (The following samples was/were submitted and identified by/on behalf of the client as):

樣品名稱(Sample Description) : DC-DC CONVERTER

樣品型號(Style/Item No.) : MJW10-XXXXX SERIES

收件日期(Sample Receiving Date) : 2015/07/03

: 2015/07/03 TO 2015/07/09 測試期間(Testing Period)

送樣廠商(Sample Submitted By) : 捷拓科技股份有限公司 (MINMAX TECHNOLOGY CO.,LTD)

依據客户指定,進行鎘,鉛,汞,六價鉻,多溴聯苯,多溴聯苯醚測試. (As 測試需求(Test Requested):

specified by client, to test Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs

contents in the submitted sample.)

請見下一頁 (Please refer to next pages). 測試方法(Test Method)

請見下一頁 (Please refer to next pages). 測試結果(Test Results)

Ray Chang Ph.D. / Mana

Signed for and on behalf of

**SGS Taiwan Limited** 

Chemical Laboratory-Kaohsiun

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### 測試結果(Test Results)

測試部位(PART NAME)No.1 (MIXED ALL PARTS:DC-DC CONVERTER)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限値 (MDL)	結果 (Result) No.1
鎬 / 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	27.6
汞 / Mercury (Hg)	mg/kg	参考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	参考IEC 62321: 2008方法,以UV-VIS檢測. / With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.
多溴聯苯總和 / Sum of PBBs	mg/kg	参考IEC 62321: 2008方法,以氣相層析/質 譜儀檢測. / With reference to IEC 62321: 2008 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)	方法偵測 極限値 (MDL)	結果 (Result) No.1
多溴聯苯醚總和 / Sum of PBDEs	mg/kg	参考IEC 62321: 2008方法,以氣相層析/質 譜儀檢測. / With reference to IEC 62321: 2008 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.

#### 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别單一材質的含量. (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.)

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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<sup>6+</sup> test method excluded )
- 2) 測試人員:劉俊宏 / Name of the person who made measurement: Jony Liu
- 測試負責人:張伯睿 / Name of the person in charge of measurement: Ray Chang 剪裁、製備樣品 / Cutting、Preparation 測試樣品重量 / Sample Measurement 汞 Hg 六價鉻 Cr6+ 鉛 Pb、鍋 Cd 依據不同樣品的材質而以適當的酸進行消化(如 硝酸/鹽酸/氫氟酸的微波消化/ 添加適量消化液 / Add 下表所示) / Acid digestion by suitable acid Microwave digestion with appropriate amount of HNO<sub>3</sub>/HCI/HF depended on different sample material (as digestion reagent below table) 加熱至適當溫度進行消化 萃取 / Heat to 過濾 / Filtration appropriate temperature to extract 殘渣 / Residue 溶液 / Solution 冷卻後過濾樣品 / Cool, filter digestate through filter 1) 鹼熔融法 / Alkali Fusion 鹽酸溶解 / 加入發色劑顯色 / Add 感應藕合電漿原子發射光譜儀 / ICP-AES HCI to dissolve diphenyl-carbazide for color development 樣品材質 / Sample Material 消化酸液種類 / Digestion Acid 鋼, 銅, 鋁, 焊錫 / 王水,硝酸,鹽酸,氫氟酸,雙氧水/ Steel, copper, aluminum, solder Aqua regia, HNO<sub>3</sub>, HCI, HF, H<sub>2</sub>O<sub>2</sub> 硝酸,氫氟酸 / HNO<sub>3</sub>/HF 以紫外光-可見光光譜 玻璃 / Glass 王水 / Aqua regia 儀,量測樣品溶液在 540 金, 鉑, 鈀, 陶瓷/ nm 的吸收度 / measure Gold, platinum, palladium, ceramic the absorbance at 540 硝酸 / HNO<sub>3</sub> 銀 / Silver nm by UV-VIS 塑膠 / Plastic 硫酸, 雙氧水, 硝酸, 鹽酸 / H<sub>2</sub>SO<sub>4</sub>, H<sub>2</sub>O<sub>2</sub>, HNO<sub>3</sub>, HCI 其他 / Others 加入任何酸至完全溶解 /

Note\*\*: (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 °C.

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Any acid to total digestion

(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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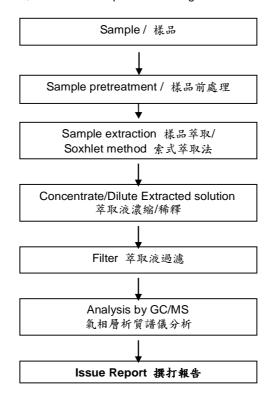


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### 多溴聯苯/多溴聯苯醚 分析流程圖 / PBB/PBDE analytical FLOW CHART

1)測試人員: 陳威錚 / Name of the person who made measurement: Dorothy Chen 2)測試負責人:張伯睿 / Name of the person in charge of measurement: Ray Chang



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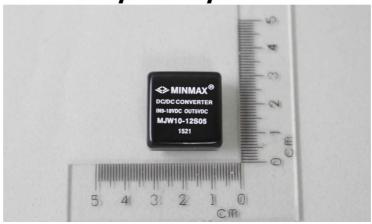


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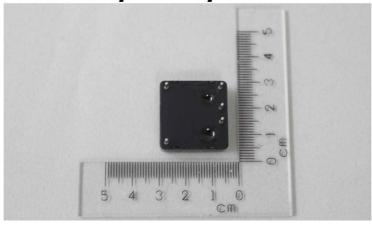
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> \* 照片中如有箭頭標示,則表示為實際檢測之樣品/部位. \* (The tested sample / part is marked by an arrow if it's shown on the photo.)

> > KA/2015/70159



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\*\* 報告結尾 (End of Report) \*\*

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