



檢測報告 Test Report

報告編號 A220001844913902ER1
Report No. A220001844913902ER1

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申請單位 加高電子股份有限公司(深圳)
Applicant HARMONY ELECTRONICS(SHEN ZHEN)
地址 深圳市寶安區福永街道塘尾社區橋塘路聚源工業區
Address JU YUAN INDUSTRIAL PARK,QIAO TANG ROAD,TANG WEI
COMMUNITY,FUYONG,BAOAN DISTRICT,SHEN AHEN CITY,PEOPLE'S REPUBLIC OF
CHINA.

以下測試之樣品及樣品信息由申請者提供並確認

The following sample(s) and sample information was/were submitted and identified by/on the behalf of the client

樣品名稱 Sample Name(s) CRYSTAL
樣品型號 Part No. AT-49
樣品顏色 Color Silver
材料名稱 Material Copper+Iron+Cobalt+Nickel
供應商 Supplier HARMONY ELECTRONICS(SHEN ZHEN)
樣品接收日期 2020.02.24
Sample Received Date Feb. 24, 2020
樣品檢測日期 2020.02.24-2020.02.29
Testing Period Feb. 24, 2020 to Feb. 29, 2020
檢測要求 根據客戶要求, 對所提交樣品中的鉛(Pb), 鎘(Cd), 汞(Hg), 六價鉻(Cr(VI)), 多溴聯苯(PBBs), 多溴二苯醚(PBDEs), 鄰苯二甲酸酯進行測試。
Test Requested As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers (PBDEs), Phthalates in the submitted sample(s).
檢測依據/檢測結果 請參見下頁。
Test Method/Test Result(s) Please refer to the following page(s).

主 檢 張孝瑜 審 核 耿雨竹
Tested by Reviewed by
批 准 陳凱敏 日 期 2020.03.19
Approved by Date
實驗室經理 Lab Manager

上海華測品標檢測技術有限公司
Centre Testing International Pinbiao(Shanghai) Co., Ltd.

No. T172798168
上海市閔行區萬芳路 1351 號
No.1351, Wanfang Road, Minhang District, Shanghai, China



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檢測依據 Test Method

測試項目 Tested Item(s)	測試方法 Test Method	測試儀器 Measured Equipment(s)
鉛 Lead(Pb)	IEC 62321-5:2013	ICP-OES
鎘 Cadmium(Cd)	IEC 62321-5:2013	ICP-OES
汞 Mercury(Hg)	IEC 62321-4:2013+AMD1:2017 CSV	ICP-OES
六價鉻 Hexavalent Chromium(Cr(VI))	IEC 62321-7-1:2015	UV-Vis
	IEC 62321-7-2:2017	UV-Vis
多溴聯苯 Polybrominated Biphenyls(PBBs)	IEC 62321-6:2015	GC-MS
多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015	GC-MS
鄰苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)	IEC 62321-8:2017	GC-MS
鄰苯二甲酸酯 Phthalates	IEC 62321-8:2017	GC-MS

檢測結果 Test Result(s)

測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	001	002	003	
鉛 Lead (Pb)	N.D.	N.D.	N.D.	2 mg/kg
鎘 Cadmium (Cd)	N.D.	N.D.	N.D.	2 mg/kg
汞 Mercury (Hg)	N.D.	N.D.	N.D.	2 mg/kg
六價鉻 Hexavalent Chromium (Cr(VI))	--	--	--	8 mg/kg
	N.D.▼	N.D.▼	N.D.▼	0.10 µg/cm ² (LOQ)

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測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	004	005	006	
鉛 Lead (Pb)	N.D.	N.D.	N.D.	2 mg/kg
鎘 Cadmium (Cd)	N.D.	N.D.	N.D.	2 mg/kg
汞 Mercury (Hg)	N.D.	N.D.	N.D.	2 mg/kg
六價鉻 Hexavalent Chromium (Cr(VI))	--	N.D.	N.D.	8 mg/kg
	N.D. ▼	--	--	0.10 µg/cm ² (LOQ)

測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	001	002	003	
多溴聯苯 Polybrominated Biphenyls(PBBs)				
一溴聯苯 Monobromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
二溴聯苯 Dibromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
三溴聯苯 Tribromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
四溴聯苯 Tetrabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
五溴聯苯 Pentabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
六溴聯苯 Hexabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
七溴聯苯 Heptabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
八溴聯苯 Octabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
九溴聯苯 Nonabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
十溴聯苯 Decabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg

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測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	004	005	006	
多溴聯苯 Polybrominated Biphenyls(PBBs)				
一溴聯苯 Monobromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
二溴聯苯 Dibromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
三溴聯苯 Tribromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
四溴聯苯 Tetrabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
五溴聯苯 Pentabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
六溴聯苯 Hexabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
七溴聯苯 Heptabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
八溴聯苯 Octabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
九溴聯苯 Nonabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg
十溴聯苯 Decabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg

測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	001	002	003	
多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)				
一溴二苯醚 Monobromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
二溴二苯醚 Dibromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
三溴二苯醚 Tribromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
四溴二苯醚 Tetrabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
五溴二苯醚 Pentabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
六溴二苯醚 Hexabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
七溴二苯醚 Heptabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
八溴二苯醚 Octabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
九溴二苯醚 Nonabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
十溴二苯醚 Decabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg

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測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	004	005	006	
多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)				
一溴二苯醚 Monobromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
二溴二苯醚 Dibromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
三溴二苯醚 Tribromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
四溴二苯醚 Tetrabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
五溴二苯醚 Pentabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
六溴二苯醚 Hexabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
七溴二苯醚 Heptabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
八溴二苯醚 Octabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
九溴二苯醚 Nonabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg
十溴二苯醚 Decabromodiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg

測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	001	002	003	
鄰苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)				
鄰苯二甲酸二丁酯 Dibutyl phthalate (DBP) CAS#:84-74-2	N.D.	N.D.	N.D.	50 mg/kg
鄰苯二甲酸丁基苄基酯 Butyl benzyl phthalate (BBP) CAS#:85-68-7	N.D.	N.D.	N.D.	50 mg/kg
鄰苯二甲酸二(2-乙基)己酯 Di-(2-ethylhexyl) phthalate (DEHP) CAS#:117-81-7	N.D.	N.D.	N.D.	50 mg/kg
鄰苯二甲酸二異丁酯 Diisobutyl phthalate (DIBP) CAS#:84-69-5	N.D.	N.D.	N.D.	50 mg/kg

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測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	004	005	006	
鄰苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)				
鄰苯二甲酸二丁酯 Dibutyl phthalate (DBP) CAS#:84-74-2	N.D.	N.D.	N.D.	50 mg/kg
鄰苯二甲酸丁基苄基酯 Butyl benzyl phthalate (BBP) CAS#:85-68-7	N.D.	N.D.	N.D.	50 mg/kg
鄰苯二甲酸二(2-乙基)己酯 Di-(2-ethylhexyl) phthalate (DEHP) CAS#:117-81-7	N.D.	N.D.	N.D.	50 mg/kg
鄰苯二甲酸二異丁酯 Diisobutyl phthalate (DIBP) CAS#:84-69-5	N.D.	N.D.	N.D.	50 mg/kg

測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	001	002	003	
鄰苯二甲酸酯 Phthalates				
鄰苯二甲酸二異壬酯 Di-isononyl phthalate (DINP) CAS#:28553-12-0,68515-48-0	N.D.	N.D.	N.D.	50 mg/kg

測試項目 Tested Item(s)	結果 Result			方法檢出限 MDL
	004	005	006	
鄰苯二甲酸酯 Phthalates				
鄰苯二甲酸二異壬酯 Di-isononyl phthalate (DINP) CAS#:28553-12-0,68515-48-0	N.D.	N.D.	N.D.	50 mg/kg

樣品/部位描述 Sample/Part Description

- 001 銀色金屬引腳 Silvery metal pin
- 002 銀色金屬 Silvery metal
- 003 銀色金屬 Silvery metal
- 004 銀色金屬 Silvery metal
- 005 綠色玻璃 Green glass
- 006 晶片 Wafer

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備註: 對於檢測鉛, 鎘, 汞之樣品已完全溶解。
-N.D. = 未檢出 (小於方法檢出限或定量限)
-mg/kg = ppm = 百萬分之一
-LOQ = 定量限, 六價鉻的定量限為 0.10 $\mu\text{g}/\text{cm}^2$
-▼六價鉻濃度小於 0.10 $\mu\text{g}/\text{cm}^2$, 樣品未檢出六價鉻。
根據客戶聲明, 本報告中的樣品和報告 A2200018449139E 中的樣品為同材質, 本報告中樣品的結果引自報告 A2200018449139E 中樣品的結果。

Remark: The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.
-MDL = Method Detection Limit
-N.D. = Not Detected (<MDL or LOQ)
-mg/kg = ppm = parts per million
-LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10 $\mu\text{g}/\text{cm}^2$
-▼The sample is negative for Cr(VI) – The Cr(VI) concentration is below 0.10 $\mu\text{g}/\text{cm}^2$. The coating is considered a non-Cr(VI) based coating.
According to the client's statement, the material of sample in this report is the same as the sample in report No. A2200018449139E, so the test result(s) is presented in reference to that one.

注釋: 本報告于原報告(報告編號 A220001844913902E)基礎上修改了“樣品型號”。本報告替換原報告 A220001844913902E, 自本報告簽發之日起, 原報告 A220001844913902E 作廢。

Note: This testing report revised “Part No.” based on the original report of No. A220001844913902E. This testing report displaces the original one which was invalid since the date of this testing report released.

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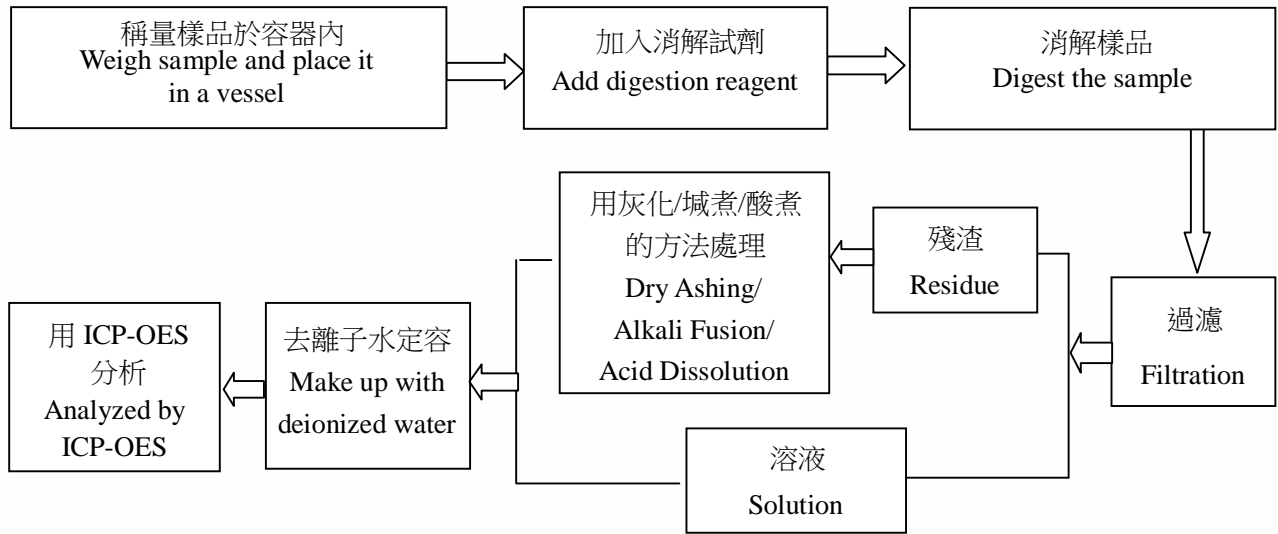
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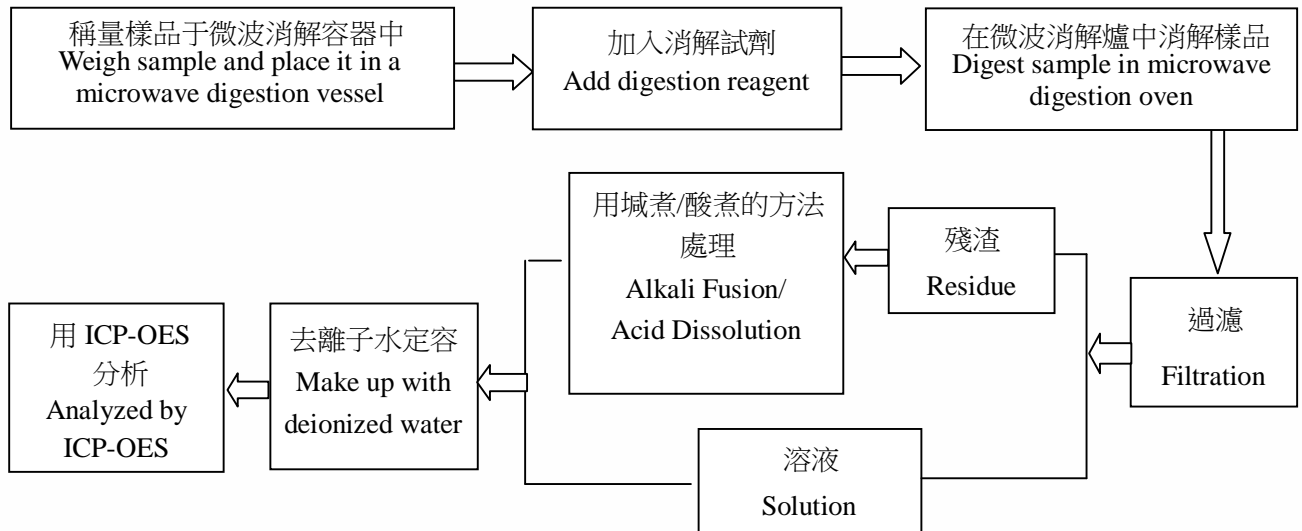
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檢測流程 Test Process

1. 鉛 Lead(Pb), 鎘 Cadmium(Cd)



2. 汞 Mercury(Hg)



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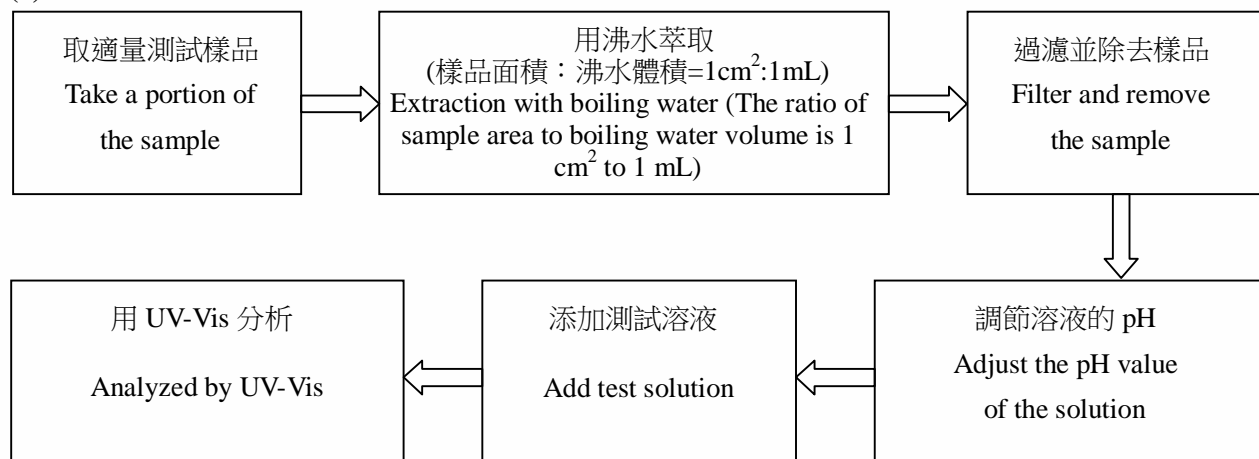
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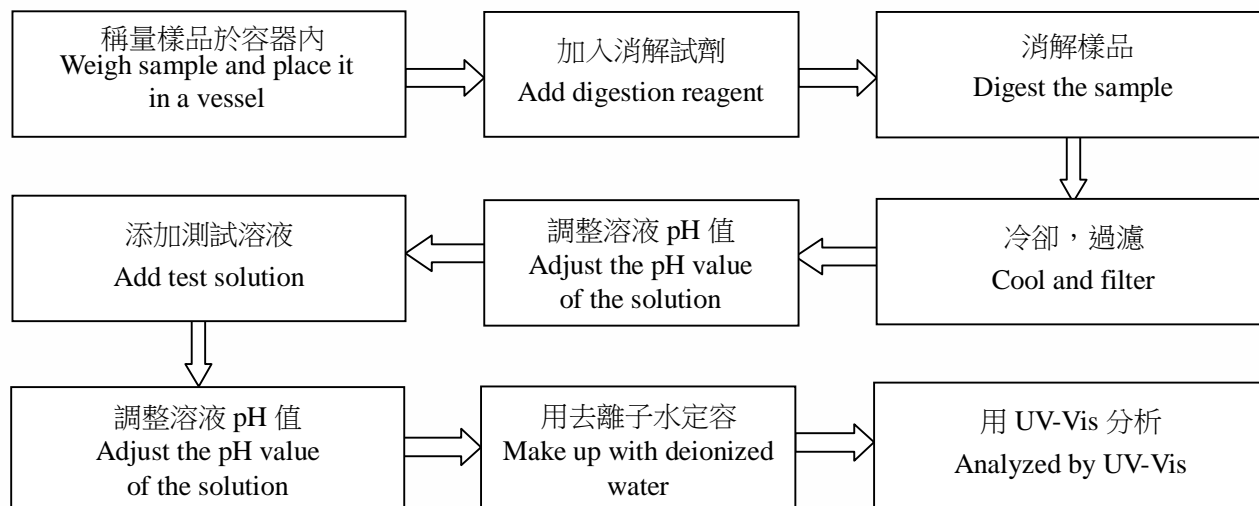
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3. 六價鉻 Hexavalent Chromium(Cr(VI))

(1) IEC 62321-7-1:2015



(2) IEC 62321-7-2:2017



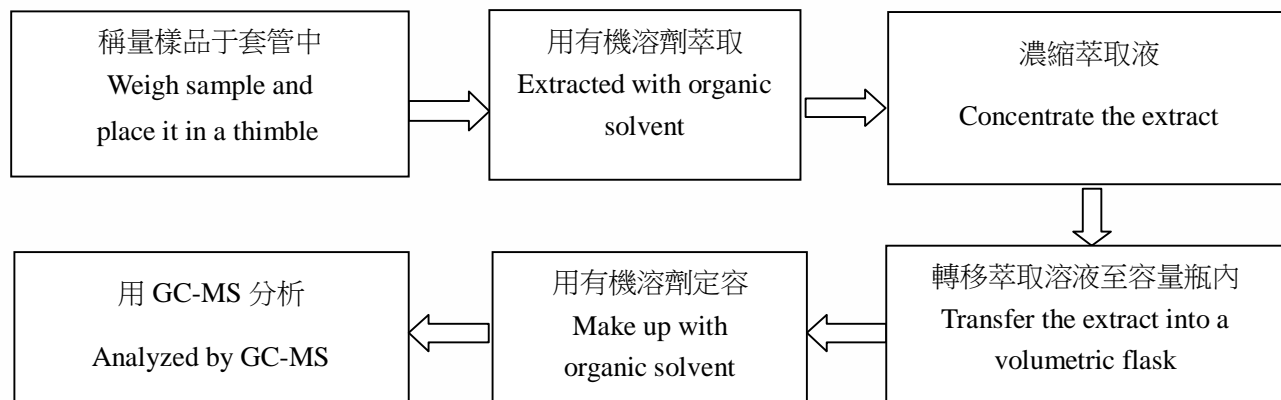
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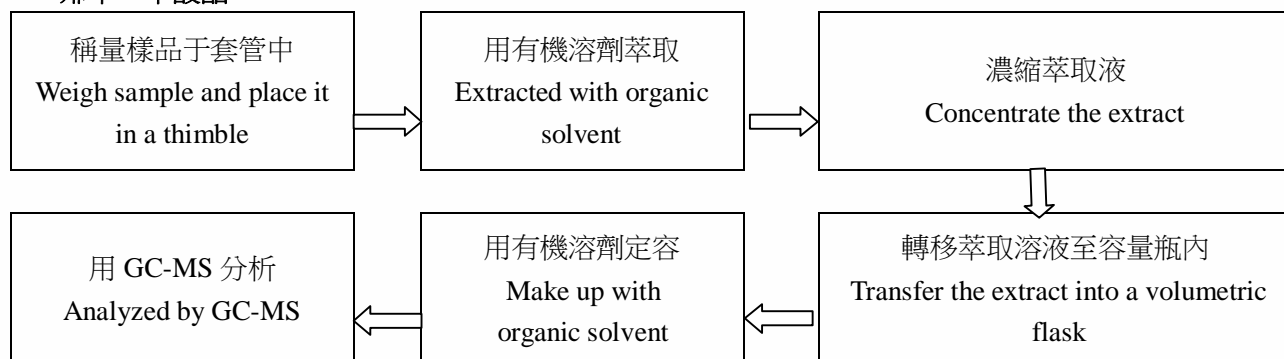
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4. 多溴聯苯 Polybrominated Biphenyls(PBBs), 多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)



5. 鄰苯二甲酸酯 Phthalates



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樣品圖片

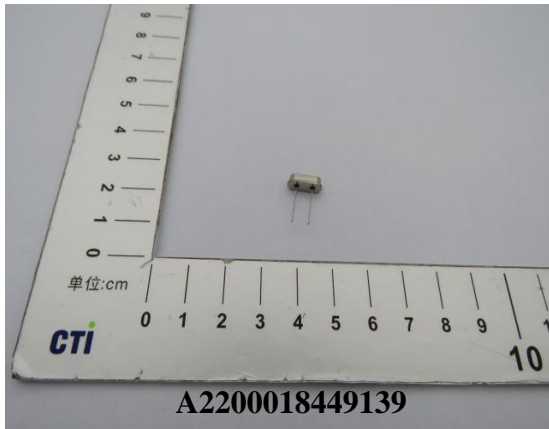
Photo(s) of the sample(s)

成品(客戶參考圖片(非測試樣品))

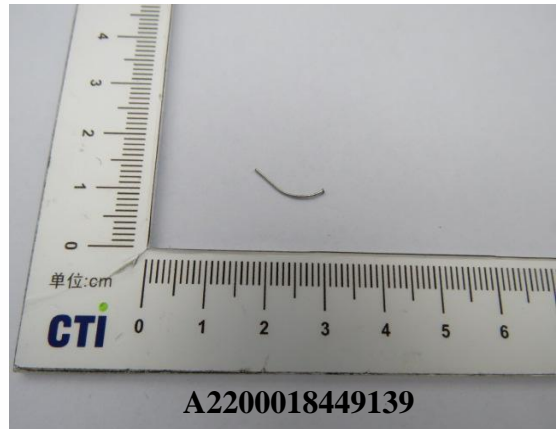
Final Product

001

(Client Reference Photo (Non-tested sample))



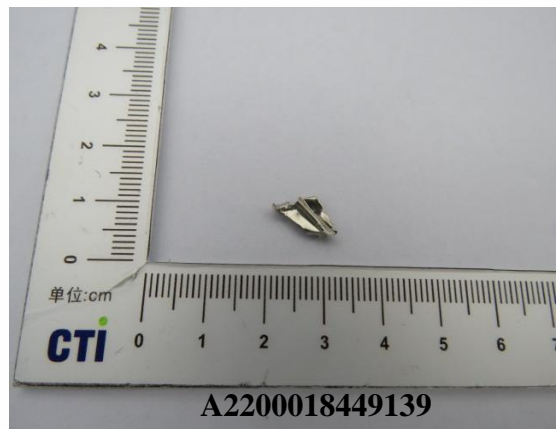
002



003



A2200018449139



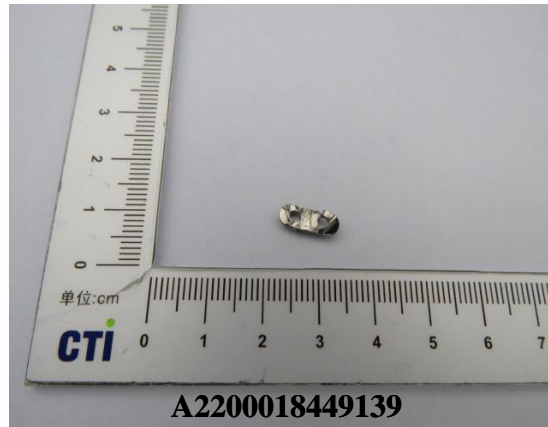
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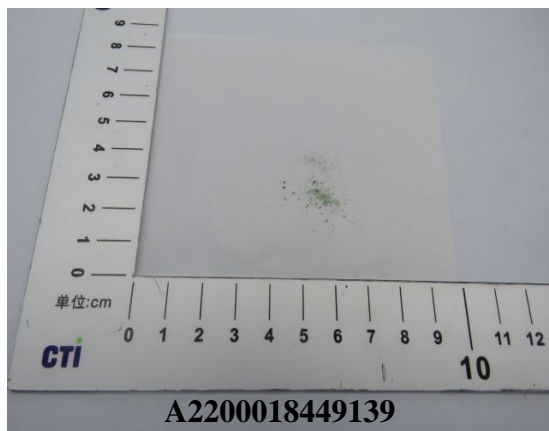
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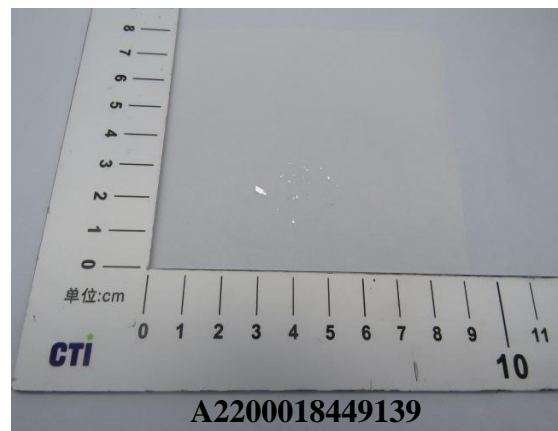
004



005



006



*** 報告結束 ***

*** End of Report ***

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聲明 Statement :

1. 檢測報告無批准人簽字、“專用章”及報告騎縫章無效；

This report is considered invalid without approved signature, special seal and the seal on the perforation;

2. 樣品及樣品信息由申請者提供，申請者應對其真實性負責，CTI 未核實其真實性；

The sample(s) and sample information was/were provided by the client who should be responsible for the authenticity which CTI hasn't verified;

3. 本報告檢測結果僅對受測樣品負責；

The result(s) shown in this report refer(s) only to the sample(s) tested;

4. 未經 CTI 書面同意，不得部分複製本報告；

Without written approval of CTI, this report can't be reproduced except in full;

5. 如檢測報告中的英文內容與中文內容有差異，以中文為準。

In case of any discrepancy between the English version and Chinese version of the testing reports (if generated), the Chinese version shall prevail.