

檢測報告 Test Report



報告編號 Report No. A2230300540101002E

第 1 頁 共 21 頁 Page 1 of 21

報告抬頭公司名稱

萬達光電科技股份有限公司

Company Name shown on Report

HIGGSTEC INC.

地址

宜蘭縣蘇澳鎮頂平路 22 號

Address

NO. 22, DINGPING RD., SU'AO TOWNSHIP, YILAN COUNTY 270, TAIWAN(R.O.C.)

以下測試之樣品及樣品資訊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 applicant

產品名稱 Product Name

Touch Panel

產品型號 Part No.

TXXXX-XDNXXXX- XXXXXX-XXXXX

樣品接收日期 Sample Received Date

2023.06.20 Jun. 20, 2023

樣品檢測日期 Testing Period

2023.06.20 - 2023.07.10 Jun. 20, 2023 to Jul. 10, 2023

檢測要求 Test Requested

請參見下頁 Please refer to the following page(s).

批 Approved by

徐啟瑞

日期 Date

2023.08.11

徐啟瑞

實驗室經理 Laboratory Manager

No. R556666612

台灣華測檢測技術有限公司檢測中心

台灣桃園市蘆竹區南崁路二段 9 號 5 樓之 6

Testing Center, Centre Testing International (Taiwan) Co., Ltd.

5F-6, No.9, Sec.2, Nankan Rd, Luzhu Dist., Taoyuan, Taiwan

檢測報告

Test Report

報告編號 Report No. **A2230300540101002E**

第 2 頁 共 21 頁 Page 2 of 21

檢測要求

1. 根據客戶要求，對所提交樣品中鉛(Pb)、鎘(Cd)、汞(Hg)、鉻(Cr)、溴(Br)以及鄰苯二甲酸酯【鄰苯二甲酸二正丁酯(DBP)、鄰苯二甲酸丁基苄酯(BBP)、鄰苯二甲酸二(2-乙基己基)酯(DEHP)和鄰苯二甲酸二異丁酯(DIBP)】進行篩選測試。
2. 根據客戶要求，當篩選結果超出 IEC 62321-3-1:2013 所規定的篩選限值或本報告中所列鄰苯二甲酸酯篩選限值時，進一步採用更精確的化學方法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)和鄰苯二甲酸酯【鄰苯二甲酸二正丁酯(DBP)、鄰苯二甲酸丁基苄酯(BBP)、鄰苯二甲酸二(2-乙基己基)酯(DEHP)和鄰苯二甲酸二異丁酯(DIBP)】進行測試。
3. 根據客戶要求，對所提交樣品中的氯(Cl)、溴(Br)測試。

Test Requested

1. As specified by client, to screen Lead(Pb), Cadmium(Cd), Mercury(Hg), Chromium(Cr), Bromine(Br), Phthalates (Dibutyl phthalate(DBP), Benzylbutyl phthalate(BBP), Di-2-ethylhexyl phthalate(DEHP), Diisobutyl phthalate(DIBP)) in the submitted sample(s).
2. As specified by client, when screening results exceed the screening limit in IEC 62321-3-1:2013 or screening limit of Phthalates in this report, further use of chemical methods are required to test the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs) and Phthalates (Dibutyl phthalate(DBP), Benzylbutyl phthalate(BBP), Di-2-ethylhexyl phthalate(DEHP), Diisobutyl phthalate(DIBP)) in the submitted samples.
3. As specified by client, to test Chlorine (Cl), Bromine (Br) in the submitted sample(s).

結論 Conclusion

依據標準/指令

According to standard/directive

歐盟 RoHS 指令 2011/65/EU 及其
修訂指令(EU) 2015/863

RoHS Directive 2011/65/EU with amendment (EU) 2015/863

結果

Result

符合

PASS

符合表示檢測結果滿足歐盟 RoHS 指令 2011/65/EU 及其修訂指令(EU) 2015/863 要求的限值。

PASS means that the results shown on the report comply with the limits set by RoHS Directive 2011/65/EU with amendment(EU) 2015/863.

檢測報告 Test Report

報告編號 Report No. **A2230300540101002E**

第 3 頁 共 21 頁 Page 3 of 21

報告內容 Report Content

樣品資訊 Sample Information	1
檢測要求 Test Requested	1
檢測依據 Test Method	4 & 14
檢測結果 Test Result(s)	7 & 15
檢測流程 Test Process	9 & 17
樣品圖片 Photo(s) of the sample(s)	18

檢測報告

Test Report

報告編號 Report No. **A2230300540101002E**

第 4 頁 共 21 頁 Page 4 of 21

1.1. 檢測依據 Test Method**1.1.A. IEC 62321-3-1:2013 對管控元素的篩選限值（單位：mg/kg） Screening limits for regulated elements according to IEC 62321-3-1:2013(Unit: mg/kg)**

測試元素 Element	聚合物 Polymers	金屬 Metals	合成材料 Composite material
Pb	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$
Br	$BL \leq (300-3\sigma) < X$	N/A	$BL \leq (250-3\sigma) < X$

1.1.B. 參考 IEC 62321-8:2017 鄰苯二甲酸酯的篩選限值 Screening limits for Phthalates with reference to IEC 62321-8:2017

測試項目	篩選限值（單位：mg/kg）
鄰苯二甲酸二正丁酯 Dibutyl phthalate(DBP)	$BL \leq 500 < X$
鄰苯二甲酸丁基苄酯 Benzylbutyl phthalate(BBP)	$BL \leq 500 < X$
鄰苯二甲酸二（2-乙基己基）酯 Di-2-ethylhexyl phthalate(DEHP)	$BL \leq 500 < X$
鄰苯二甲酸二異丁酯 Diisobutyl phthalate(DIBP)	$BL \leq 500 < X$

檢測報告
Test Report

報告編號 Report No. A2230300540101002E

第 5 頁 共 21頁 Page 5 of 21

1.1.C. 化學測試 Chemical Test

測試項目 Tested Item(s)	測試方法 Test Method	測試儀器 Measured Equipment(s)	方法檢出限 MDL	限值 Limit
鉛 Lead (Pb)	IEC 62321-5:2013	ICP-OES	10 mg/kg	1000 mg/kg
鎘 Cadmium (Cd)	IEC 62321-5:2013	ICP-OES	10 mg/kg	100 mg/kg
汞 Mercury (Hg)	IEC 62321-4:2013+AMD1:2017 CSV	ICP-OES	10 mg/kg	1000 mg/kg
六價鉻 Hexavalent Chromium (Cr(VI))	IEC 62321-7-1:2015	UV-Vis	0.10 µg/cm² (LOQ)	1000 mg/kg
	IEC 62321-7-2:2017		20 mg/kg	
多溴聯苯 Polybrominated Biphenyls (PBBs)	IEC 62321-6:2015	GC-MS	100 mg/kg	1000 mg/kg
多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015	GC-MS	100 mg/kg	1000 mg/kg
鄰苯二甲酸二正丁酯 Dibutyl phthalate(DBP)	IEC 62321-8:2017	GC-MS	50 mg/kg	1000 mg/kg
鄰苯二甲酸丁基苄酯 Benzylbutyl phthalate(BBP)	IEC 62321-8:2017	GC-MS	50 mg/kg	1000 mg/kg
鄰苯二甲酸二(2-乙基己基)酯 Di-2-ethylhexyl phthalate(DEHP)	IEC 62321-8:2017	GC-MS	50 mg/kg	1000 mg/kg
鄰苯二甲酸二異丁酯 Diisobutyl phthalate(DIBP)	IEC 62321-8:2017	GC-MS	50 mg/kg	1000 mg/kg

檢測報告 Test Report

報告編號 Report No. **A2230300540101002E**

第 6 頁 共 21 頁 Page 6 of 21

備註 Remark:

- BL =低於篩選限值
BL = Under the screening limit
- OL =高於篩選限值
OL =Above the screening limit
- X =需要做進一步測試的範圍
X=The range of needing to do further testing
- 3σ =表明分析儀器的重現性
 3σ =The reproducibility of analytical instruments
- N/A =不適合
N/A = Not applicable
- LOD =方法檢出限
LOD = Detection limit
- LOQ = 定量限，六價鉻的定量限為 $0.10 \mu\text{g}/\text{cm}^2$
LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is $0.10 \mu\text{g}/\text{cm}^2$

檢測報告
Test Report

報告編號 Report No. A2230300540101002E

第 7 頁 共 21頁 Page 7 of 21

1.2 檢測結果 Test Result(s)

樣品 序號 Sample No.	照片 編號 Photo No.	樣品描述 Sample Description	Pb	Cd	Hg	Cr (VI)	PBBs / PBDEs	DBP	BBP	DEHP	DIBP
1	A-1	透明玻璃 Transparent glass	BL	BL	BL	BL	N/A	N/A	N/A	N/A	N/A
2	A-2	透明塑膠 Transparent plastic	BL	BL	BL	BL	BL	BL	BL	BL	BL
3	A-3	黃色 FPC Yellow FPC	BL	BL	BL	BL	BL	BL	BL	BL	BL
4	A-4	白色塑膠 White plastic	BL	BL	BL	BL	BL	BL	BL	BL	BL
5	A-5	白色塑膠 White plastic	BL	BL	BL	BL	BL	BL	BL	BL	BL

檢測報告

Test Report

報告編號 Report No. **A2230300540101002E**

第 8 頁 共 21 頁 Page 8 of 21

備註 Remark :

- N.D. = 化學測試未檢出 (小於方法檢出限或定量限) Not Detected by chemical test (<MDL or LOQ)
- MDL = Method Detection Limit
- 數值單位: mg/kg, 係化學測試之結果 Unit of numeric results: mg/kg, result by chemical test
- mg/kg = ppm = 百萬分之一 parts per million
- 1000 mg/kg = 0.1%
- N/A=不適合 Not applicable
- BL =低於篩選限值 Under the screening limit
- ▼六價鉻濃度小於 0.10 $\mu\text{g}/\text{cm}^2$, 樣品未檢出六價鉻。
▼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..
- 對於多溴聯苯 (PBBs) 和多溴二苯醚 (PBDEs), XRF 篩選時其結果顯示的是總溴含量; 對於六價鉻, XRF 篩選時其結果顯示的是總鉻含量。
When conducting the test for PBBs&PBDEs, XRF was introduced to screen Br Exclusively; When conducting the test for Hexavalent Chromium, XRF was introduced to screen Chromium exclusively.

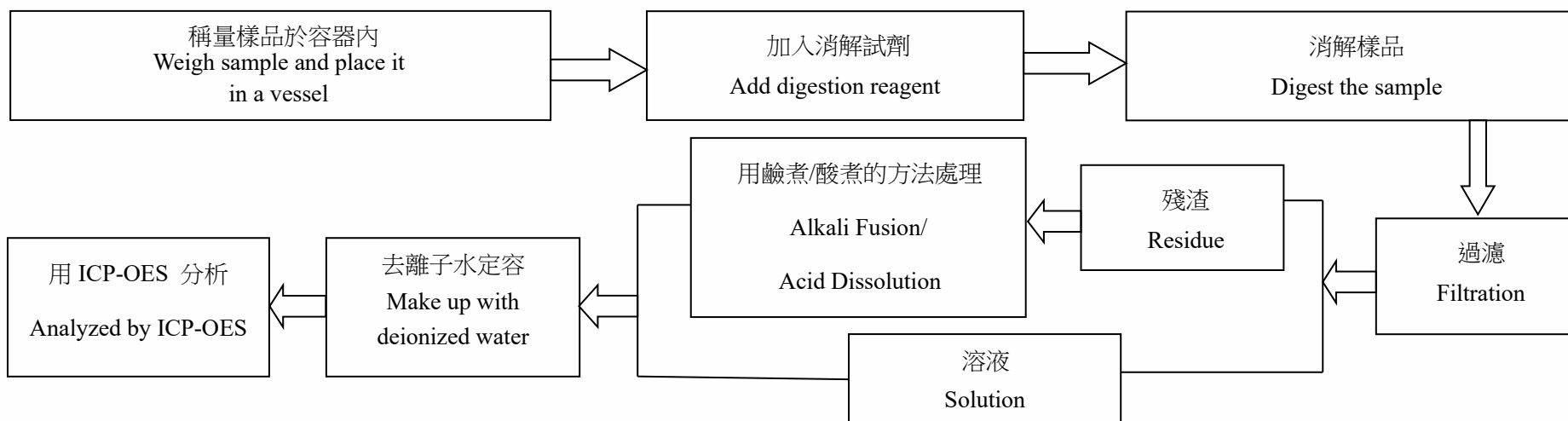
檢測報告 Test Report

報告編號 Report No. A2230300540101002E

第 9 頁 共 21 頁 Page 9 of 21

1.3. 檢測流程 Test Process

1.3.1. 鉛 Lead (Pb), 鎘 Cadmium (Cd)

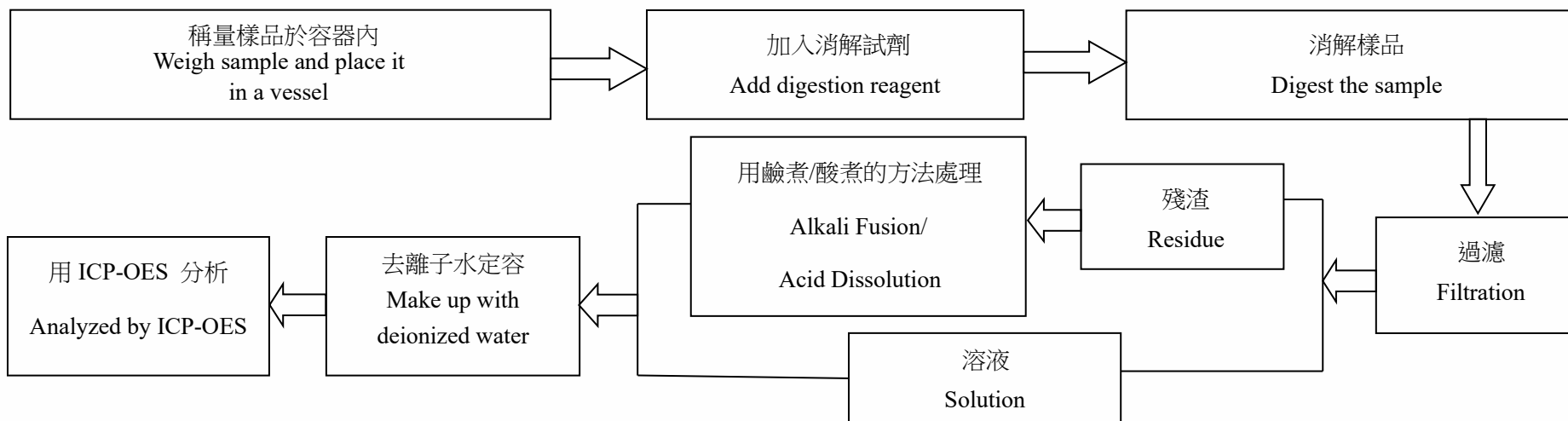


檢測報告 Test Report

報告編號 Report No. A2230300540101002E

第 10 頁 共 21 頁 Page 10 of 21

1.3.2. 汞 Mercury(Hg)



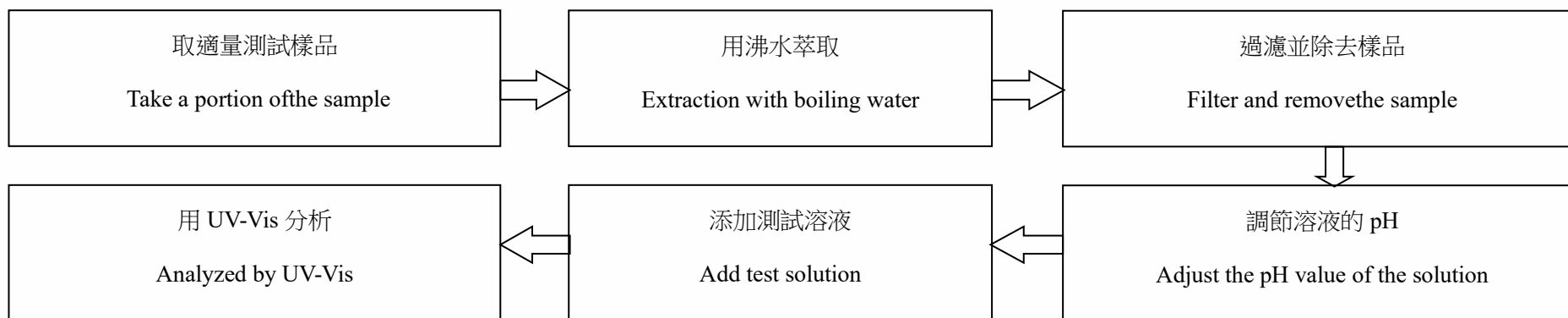
檢測報告 Test Report

報告編號 Report No. A2230300540101002E

第 11 頁 共 21 頁 Page 11 of 21

1.3.3.六價鉻 Hexavalent Chromium (Cr(VI))

1.3.3.1 IEC 62321-7-1:2015

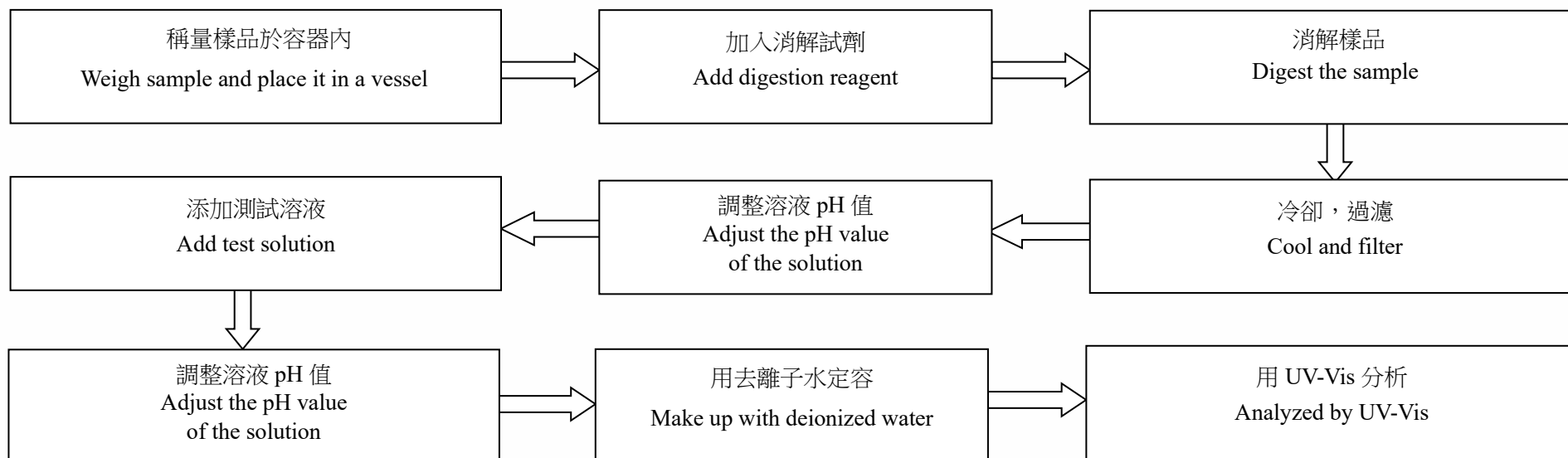


檢測報告 Test Report

報告編號 Report No. A2230300540101002E

第 12 頁 共 21 頁 Page 12 of 21

1.3.3.2. IEC62321-7-2:2017

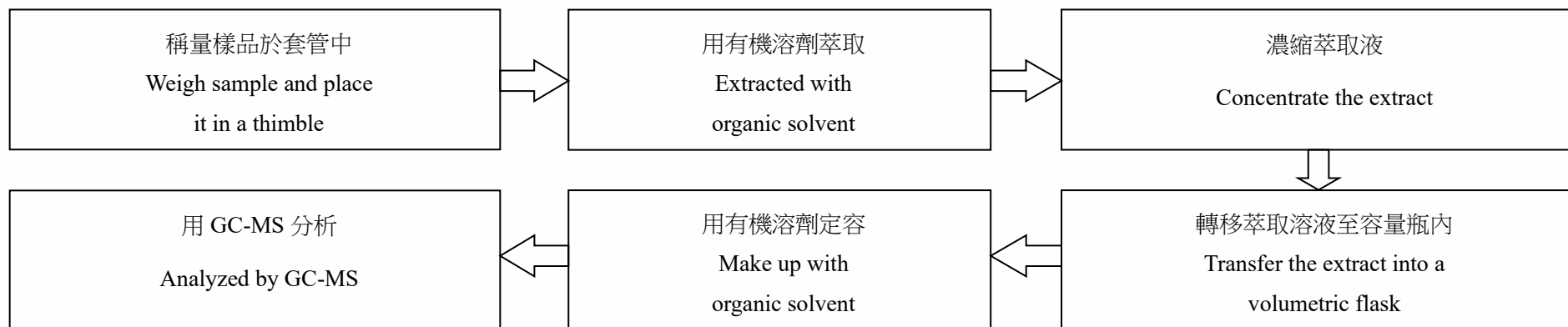


檢測報告 Test Report

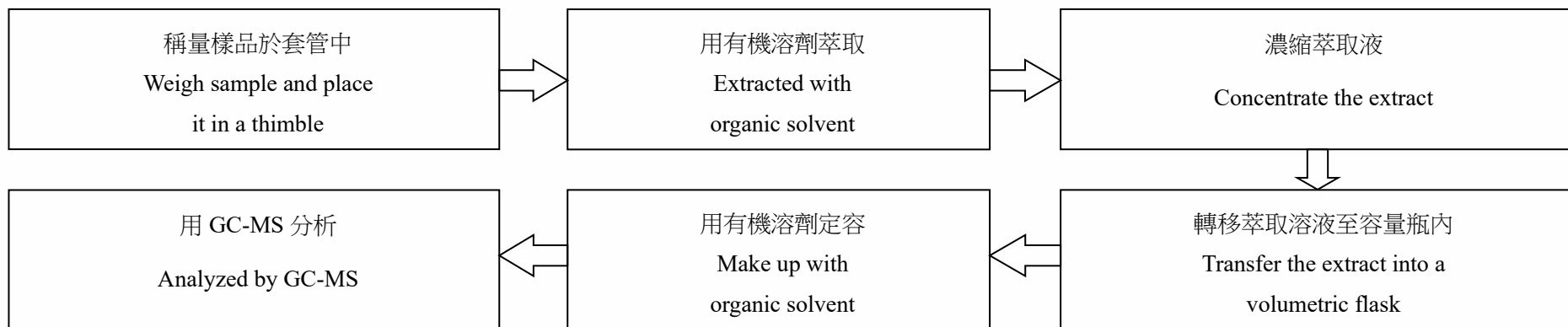
報告編號 Report No. A2230300540101002E

第 13 頁 共 21 頁 Page 13 of 21

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



1.3.5. 鄰苯二甲酸酯 Phthalates(DBP, BBP, DEHP, DIBP)



檢測報告

Test Report

報告編號 Report No. **A2230300540101002E**

第 14 頁 共 21 頁 Page 14 of 21

2.1. 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)	方法檢出限 MDL
氯 Chlorine (Cl)	參考 EN 14582:2016 Refer to EN 14582:2016	IC	50 mg/kg
溴 Bromine (Br)	參考 EN 14582:2016 Refer to EN 14582:2016	IC	50 mg/kg

檢測報告

Test Report

報告編號 Report No. **A2230300540101002E**

第 15 頁 共 21頁 Page 15 of 21

2.2. 檢測結果 Test Result(s)

樣品序號 Sample No.	照片編號 Photo No.	樣品描述 Sample Description	測試項目 Tested Item(s)	化學測試結果 Chemical Test (mg/kg)
1	A-1	透明玻璃 Transparent glass	Cl	N.D.
			Br	N.D.
2	A-2	透明塑膠 Transparent plastic	Cl	N.D.
			Br	N.D.
3	A-3	黃色 FPC Yellow FPC	Cl	N.D.
			Br	N.D.
4	A-4	白色塑膠 White plastic	Cl	N.D.
			Br	N.D.
5	A-5	白色塑膠 White plastic	Cl	N.D.
			Br	N.D.

檢測報告 Test Report

報告編號 Report No. **A2230300540101002E**

第 16 頁 共 21 頁 Page 16 of 21

備註 Remark :

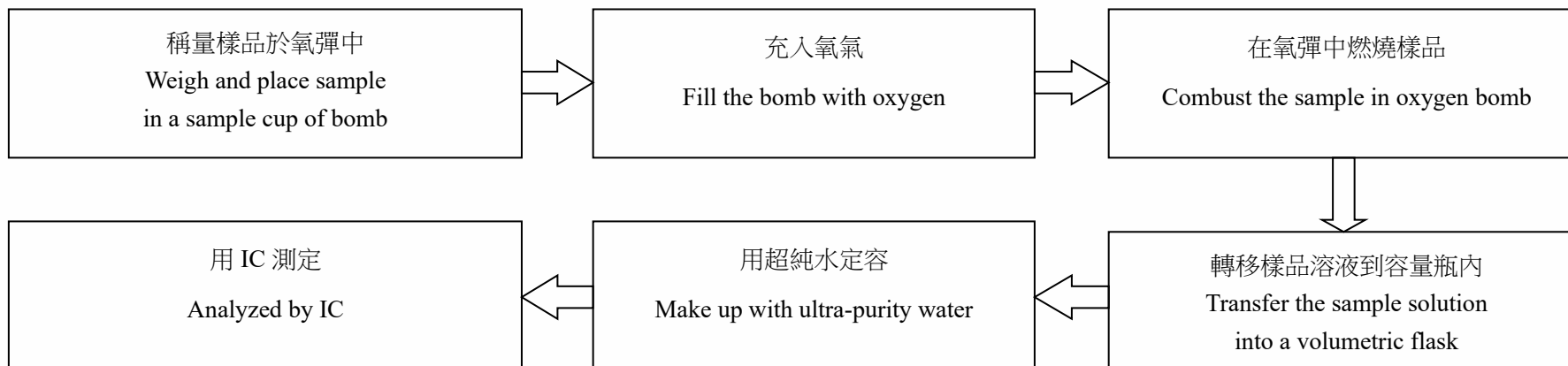
- N.D. = 化學測試未檢出 (小於方法檢出限或定量限) Not Detected by chemical test (<MDL or LOQ)
- MDL = Method Detection Limit
- 數值單位: mg/kg, 係化學測試之結果 Unit of numeric results: mg/kg, result by chemical test
- mg/kg = ppm = 百萬分之一 parts per million
- 1000 mg/kg = 0.1%

檢測報告 Test Report

報告編號 Report No. A2230300540101002E

第 17 頁 共 21 頁 Page 17 of 21

2.3. 檢測流程 Test Process



檢測報告 Test Report

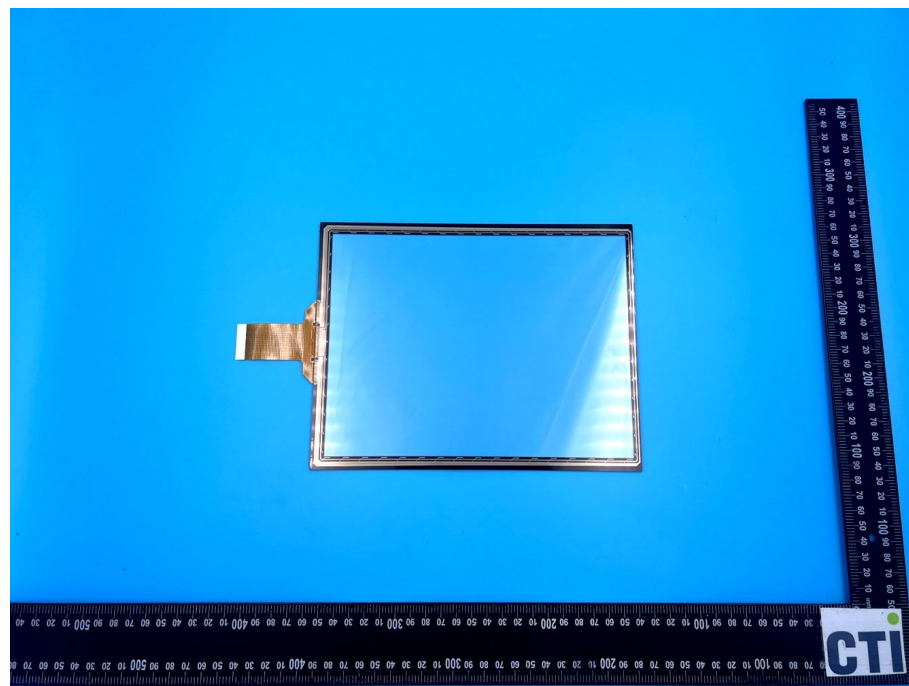
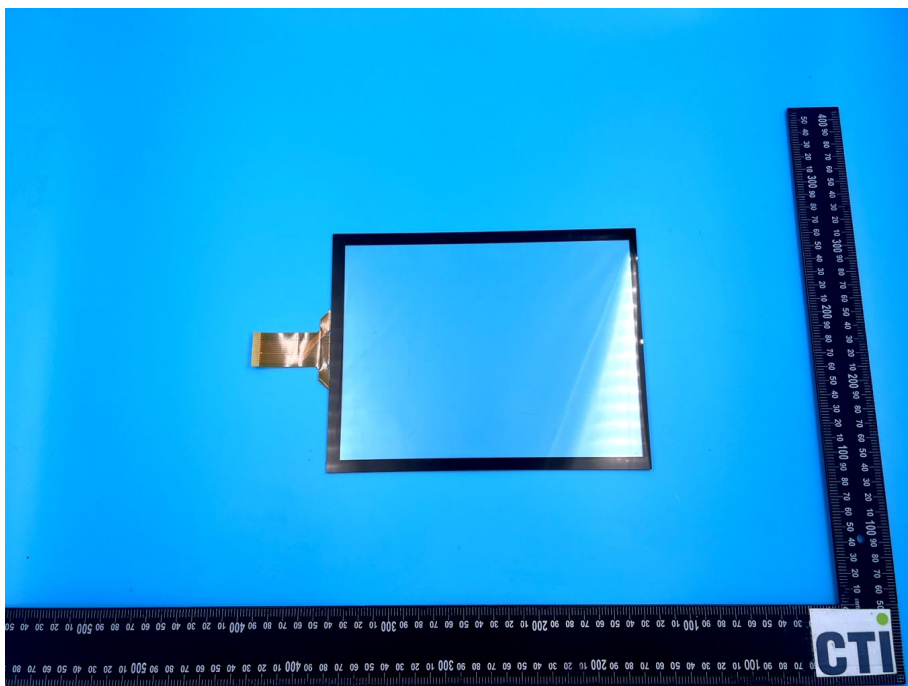
報告編號 Report No.

A2230300540101002E

第 18 頁 共 21頁 Page 18 of 21

樣品圖片

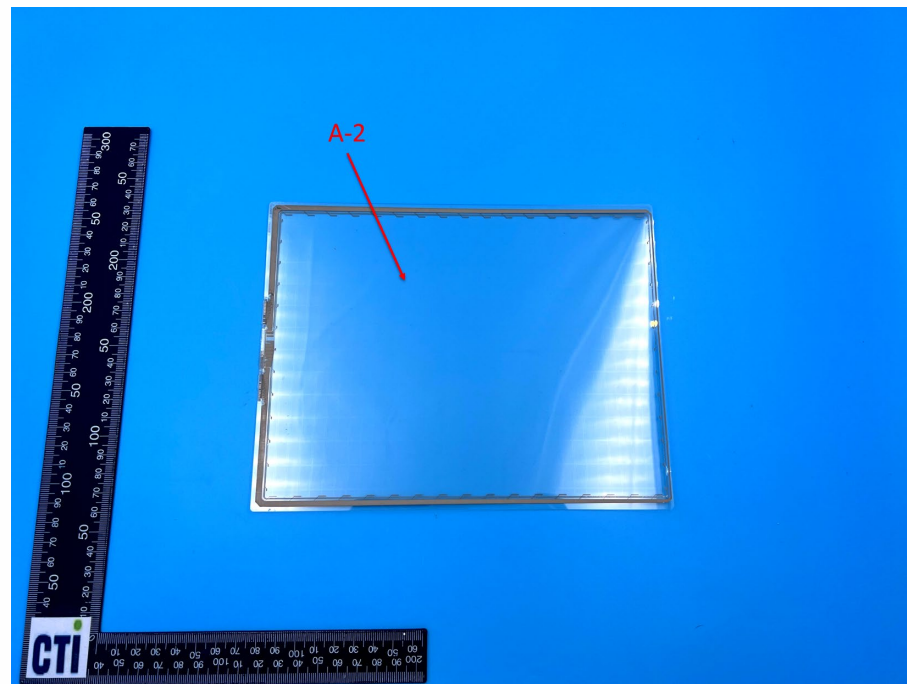
Photo(s) of the sample(s)



檢測報告 Test Report

報告編號 Report No. **A2230300540101002E**

第 19 頁 共 21 頁 Page 19 of 21

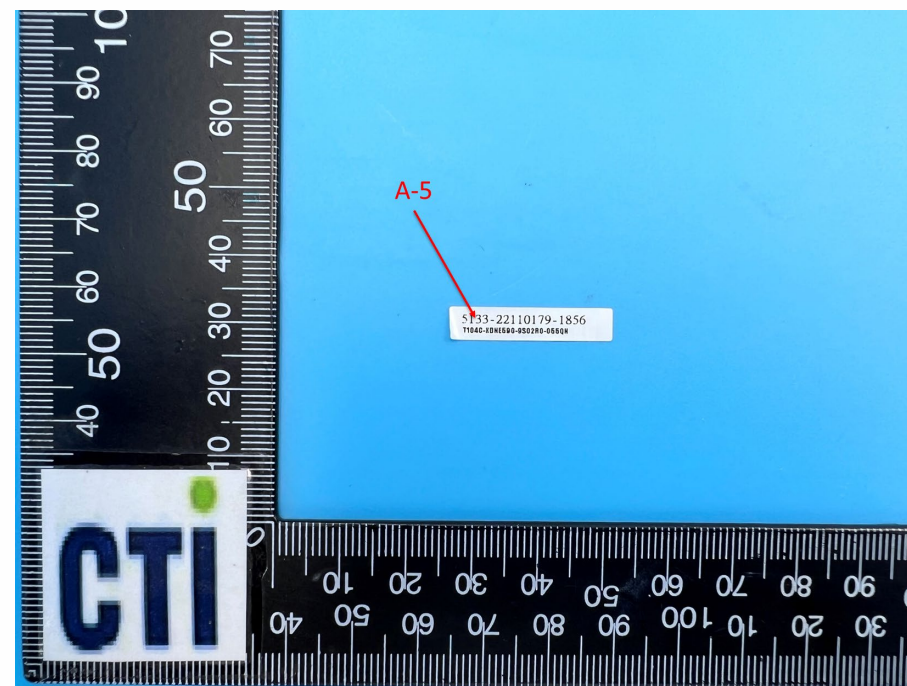
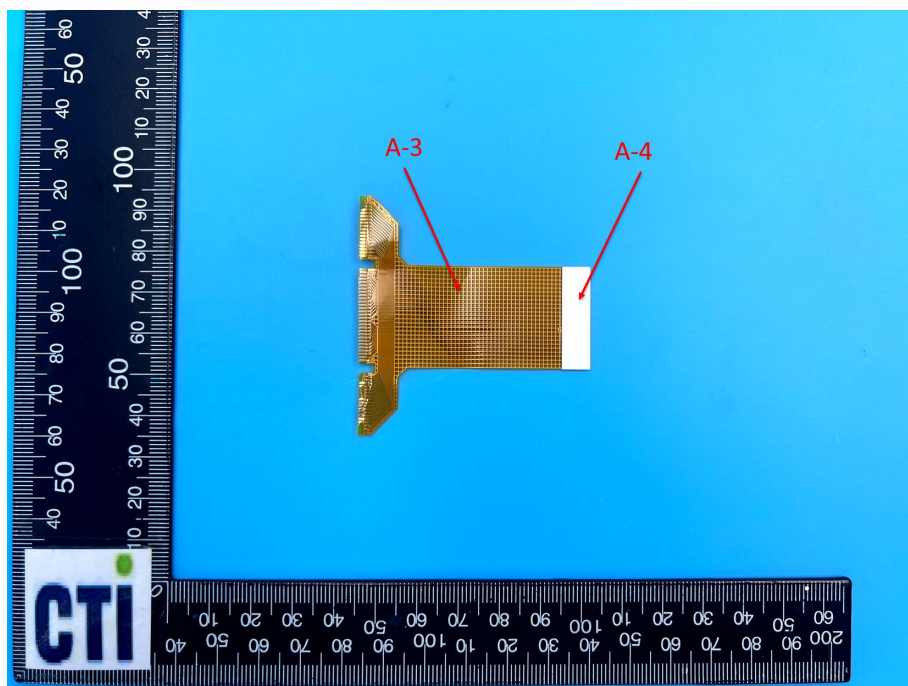


檢測報告 Test Report

報告編號 Report No.

A2230300540101002E

第 20 頁 共 21 頁 Page 20 of 21



檢測報告 Test Report

報告編號 Report No. **A2230300540101002E**

第 21 頁 共 21 頁 Page 21 of 21

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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. 報告抬頭公司名稱及地址、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；
Company Name and Address shown on Report, 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;
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*** End of Report ***

有限公司