MILDEX

熒茂光學股份有限公司

Mildex Optical Inc.

Projective Capacitive Touch Screen
Approval Form

Customer　:	鈺緯科技開發股份有限公司
Mildex Part No.:	**1216H095A4**
Date :	**2024/02/27**
Customer Part No.:	
Approval form No.:	**AS-2402013-01**

Customer Approval		
Customer Dept.	**Research & Development Dept.**	**Quality Assurance Dept.**
Signature:		
Date:		

MILDEX OPTICAL INC.		
PDM Manager	**QA Manager**	**Sale Manager**
產品開發部 2024-02-27 劉子德 / 產品開發部 2024-02-27 黃曜晨	品保部 2024-02-27 張瑞卿 / 品保部 2024-02-27 陳玉其	

No.7, Luke 3rd Rd., Luzhu Dist., Kaohsiung City 821, Taiwan
高雄市路竹區路科三路 7 號
TEL：886-7- 6955699　FAX：886-7- 6955799

items	Version	Content	Date	Page
1	01	Original	2024/2/27	N/A

1. Product：

This specification is applied to projected capacitive touch screen made by Mildex Optical Inc..

（Mildex Product Part No.：1216H095A4）

2. Specification：

2.1 Type：Projected capacitive Touch Panel

input Mode：Stylus for PCAP or Finger available.

2.2 Structure：

■ Cover Glass + Film + Film

□ Cover + Glass

Cover Glass / PC/ PMMA/ MR58.

2.3 Touch Screen Specification

Drawing：216H095-D03.4

Items	Descriptions	Unit or others
Cover Spec.	Chemically strengthened T=2.8 mm AG Etching Decoration Glass	Printing：Black 60 degree angle 80 unit(+10/-10)
OD	324.7(W) X 533.2(L) X3.3(T)	mm
VA	269.7(W) X478.2 (L)	mm
Transparency	88%±2%	Base: Optical Spectrum MODEL HZS-7136C wavelength 500nm~700nm)
Surface Hardness	Decoration Glass: ≧7H	follows JIS K 5600 standard，use Mitsubishi Pencil 750g)

All Specifications should follow the confirmed drawing.

2.4 Add the water-proof glue on the glass through hole.

3. Decoration Cover lens Artwork



Color Remark：
Outline: Pantone Black C

4. Characteristics

4.1 The Max rated Voltage

DC 5V max

4.2 Operation Temperature range

-20℃ to 70℃(Environment：Humidity 20% to 80%,No dew)

4.3 Storage Temperature range

-20℃ to 70℃ (Environment：Humidity 30% to 80%,No dew)

5. Electrical Characteristics

5.1 Linearity :

Utilizing the EETI testing software, the touching reaction is determined as qualified within ±3 mm of tolerance of copper stick dimension.

Tolerance: ±3 mm

Copper stick dimension Ψ=12mm

5.2 Response Time

25ms~30ms (Second)

6. Product Code rule

6.1 Following MILDEX regular product code rule except customer offer his comments. It is possible to tracking the product by product code.

6.2 Product code included：

Mildex Part No.(10 characters) and Making No.(5 characters)

and Making date(6 characters) and Serial No. (4 characters)

Example：1216H095A4

PXXXX-XXXXXX-0001

6.3 Samples only printed making date and serial number.

7. Mechanical characteristics

7.1 Input Mode: Stylus or Finger

7.2 Surface hardness

Decoration Glass: ≧7H (follows JIS K 5600 standard，use Mitsubishi Pencil 750g)

8. Optical Characteristics

8.1 Transparency: 88%±2%

(Base: Optical Spectrum MODEL HZS-7136C wavelength 500nm~700nm

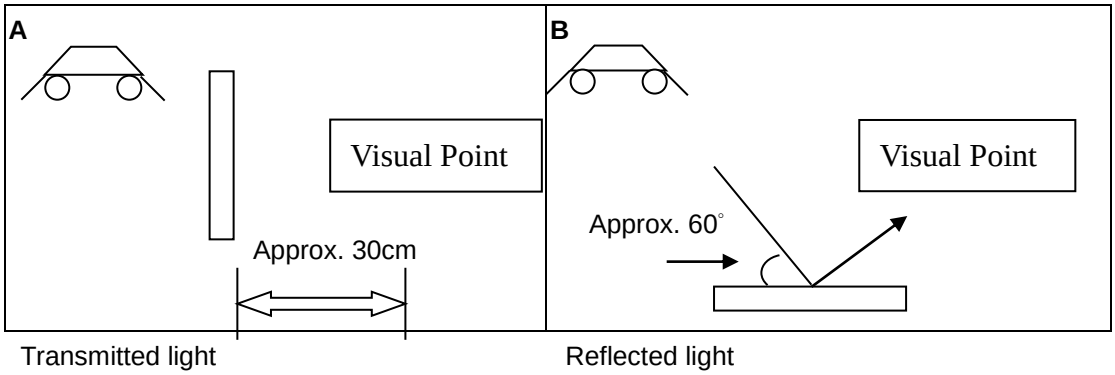
9.Reliability test

	Items	Specification	Remarks
1	High temperature storage	80℃ 240 hr	The result should after 1 hr in room temp. ◎Linearity should the same 5.1 Testing TP environment should be placed vertical way .
2	Low temperature storage	-30℃ 240hr	
3	High temperature & high humidity storage	60℃ 90%RH, 240 hr	
4	THERMAL SHOCK	-30℃~ 80℃(1hr each cycle, 30 cycles)	

10. Appearance

10.1 Rule for inspection

Items	Criterion
Eyesight	Optometry must be 0.8～1.5 (with or without glasses) and no acritochromacy or the other eye diseases.
Light Source	Tint inspections: under sunlight or other natural light. Other inspections: under fluorescent light
Illumination	Fluorescent Light: 800～1200 LUX
Distance	30cm±5cm
Time	5 seconds/per face



Transmitted light Reflected light

10.2 Criterion

Above parts should follows limited samples if happens disputed.

10.2.1 Membrane Margin Area

NO.	Items	Criterion		
1	Printing area particle/ Discoloration	Φ＜0.2mm 0.2＜Φ≦0.8mm 0.8＜Φ	Not calculate, Approval 5 spots are allowed / Distance: 5mm Not allowed	
2	Hard scratch	W≦0.08mm 0.08mm＜W≦0.15mm 0.15mm＜W≦0.2mm 0.2mm＜W	--- L=10mm L=10mm L>10mm	Accept(Any Length is acceptable) 6 is acceptable / Distance: 5mm 2 is acceptable/ Distance: 5mm Unacceptable
3	Soft scratch	W≦0.08mm 0.08mm＜W≦0.15mm 0.15mm＜W≦0.2mm 0.2mm＜W	--- L=15mm L=15mm L>15mm	Accept(Any Length is acceptable) 6 is acceptable / Distance: 5mm 2 is acceptable/ Distance: 5mm Unacceptable
4	Light leaking (white)	Φ≦0.2mm Φ＞0.2mm	Approval Disapprova	
5	Printed hollow	Inside OD A≦0.2mm:accept		

10.2.2 AA area Criterion

(1) Scratch

NO.	Items	Criterion		
1	Hard Scratch	W≦0.08mm	---	Accept(Any Length is acceptable)
		0.08mm＜W≦0.15mm	L≦20mm	6 is acceptable / Distance: 5mm
		0.15mm＜W≦0.2mm	L≦20mm	3 is acceptable/ Distance: 5mm
		0.2mm＜W	L>20mm	Unacceptable
2	Soft Scratch	W≦0.08mm	---	Accept(Any Length is acceptable)
		0.08mm＜W≦0.15mm	L≦20mm	6 is acceptable / Distance: 5mm
		0.15mm＜W≦0.2mm	L≦20mm	3 is acceptable/ Distance: 5mm
		0.2mm＜W	L>20mm	Unacceptable

(2) Granular foreign object

Diameter	Criterion
D≦0.2 mm	Acceptable
0.2mm＜D≦0.8mm	5 is acceptable / Distance: 5mm
0.8mm＜D	Reject

(3) Linear foreign object

Width	Length	Criterion
W≦0.08mm	L≦15	Acceptable
0.08mm＜W≦0.15mm	L≦15	6 is acceptable / Distance: 5mm
0.15mm＜W≦0.2mm	L≦15	3 is acceptable / Distance: 5mm
0.2＜W	15＜L	Reject

(4) Dent/bubble

Diameter	Criterion
D≦0.15mm	Acceptable
0.15mm＜D≦0.25mm	3 is acceptable / Distance: 5mm
0.25mm＜D≦0.4mm	2 is acceptable / Distance: 5mm
0.4mm＜D≦0.6mm	1 is acceptable / ---
0.6mm＜D	Reject

(5)AG defect

Width	Criterion
D≦0.3mm	Acceptable
0.3mm＜D≦0.8mm	5 is acceptable / Distance: 5mm
0.8mm＜D	Reject

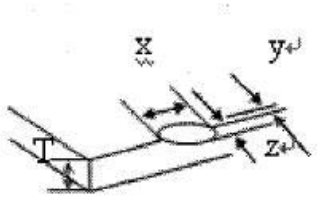
(6) Except the backside of AA，the defect is acceptable on the black printing area, not affecting functional performance.

(7) There will be a color difference phenomenon when active area expands by 1mm, based on the Limited sample of Mildex. For the first printing process, the upper limit and lower limit of thickness are 4±1μm.

10.2.3 Sensor / Breakage on edge

Regular Chips：Glass side/BM Side

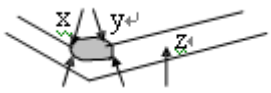
X：Chip Length	Y：Chip Width	Z：Chip depth	Acceptable Qty
X≦0.1mm	Y≦0.1mm	Z≦1/2 T	Acceptable
0.1mm＜X≦0.5mm	0.1mm＜Y≦0.5mm	Z≦1/2 T	N≦3
0.5mm＜X	0.5mm＜Y	1/2 T≦Z	Unacceptable



Note：Regular chip as above could not damage the metal trace.

Corner chip：

x：Breakage length	y：Breakage width	z：Breakage thickness
x≦0.5mm	y≦0.5mm	≦1/2T



Chip length may not affect Touch Pane product assembly

Note: May not damage bonding area or ITO circuits (including traces and alignment mark, not including resistance test

11. DURABILITY

11.1 FPC tail resistance

- Peeling force shall be 0.7kg to pull strength and sustain minutes in straight-line pulling (180 degrees) and 90 degrees pulling orientation.
- FPC tail bending 180° 20 times with internal R-2.0mm
- The measurement must satisfy the under-mentioned items.
- Linearity: According to Section 5.1.

12. Stocking Notes:

12.1 Do not stack the products nor put any heavy weight on top.

12.2 Do not shake nor drop.

12.3 Store at the room temperature away from chemicals as damage from acid and alkali could affect the screen/panel.

13. Handling and Cleaning:

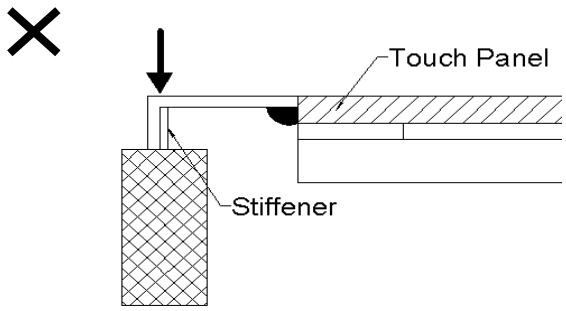
13.1 Hold by the glass edge of the product to avoid sticking dirt or scratches on the film.

13.2 Do not pull or drag forcibly at the Tail/FPC. Bending it may cause severe damage.

13.3 Use 80% Alcohol mixed with 20% water and a Non-Woven Cloth to clean the screen/panel surface. Do not use any acids or cleaning alkali liquids as this may cause cosmetic damage.

14. Mounting Notes

14.1 Do not bend Tail/FPC, such as the drawing below as it could cause severe damage.

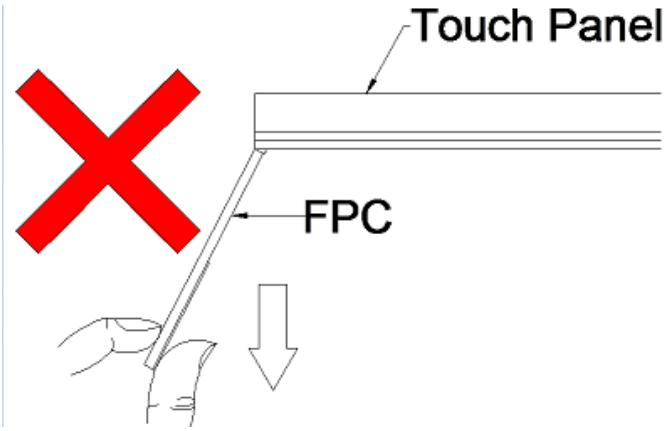


14.2 Do not bend the Tail/FPC on the edge of the glass as it could cause severe damages.



Both parties agree the specifications not listed in the approval sheet are defined by the actual products delivered.

14.3 Do not utilize over 1kg stress to pull FPC the neck, such as the drawing below, it will cause FPC peeling.

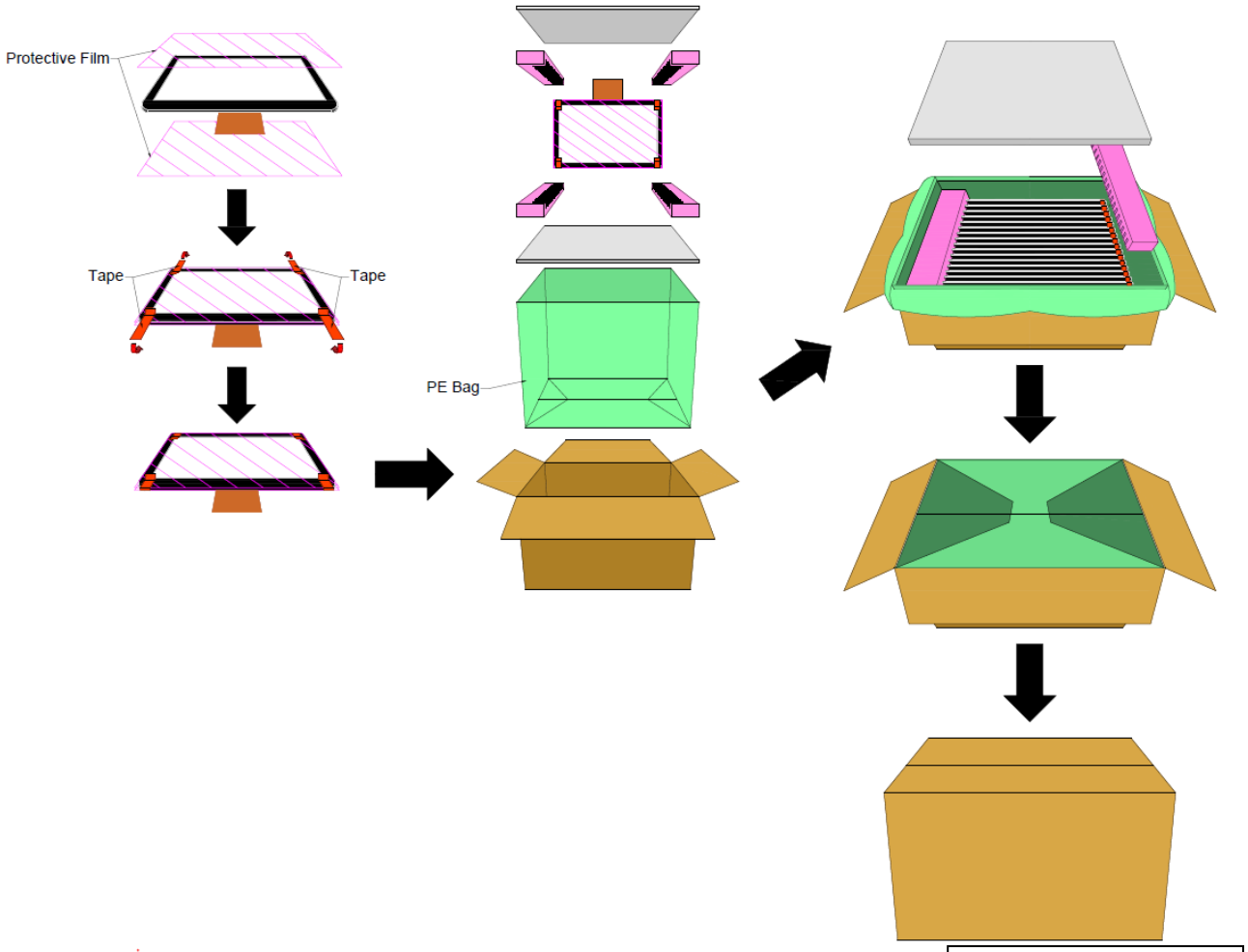


1

Both parties agree the specifications not listed in the approval sheet are defined by the actual products delivered.

15. Packaging illustration

The packaging procedure is as follows. The actual amount is based on the actual shipping packaging.

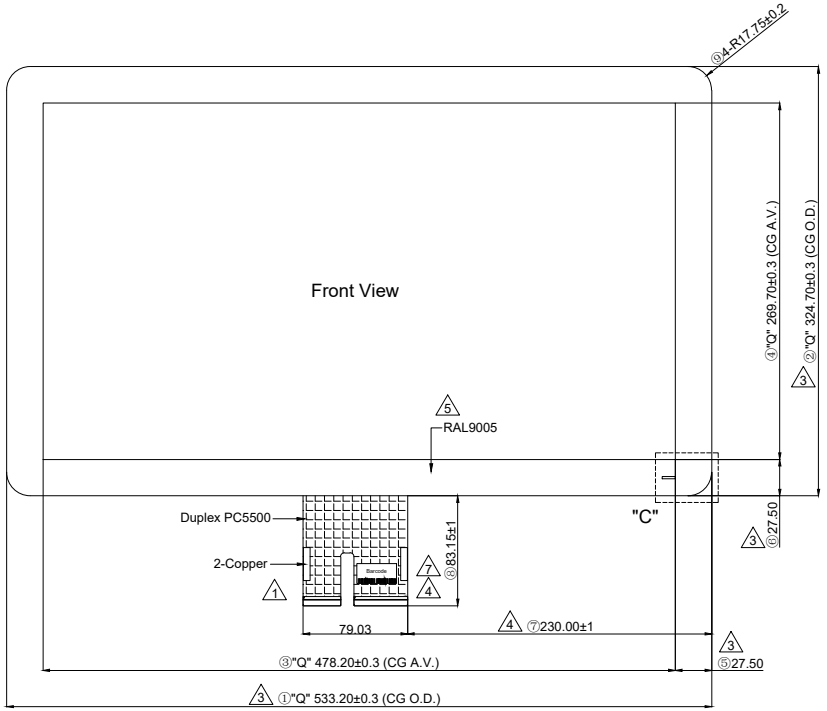


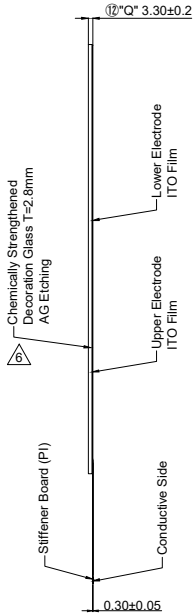
Shipping carton label

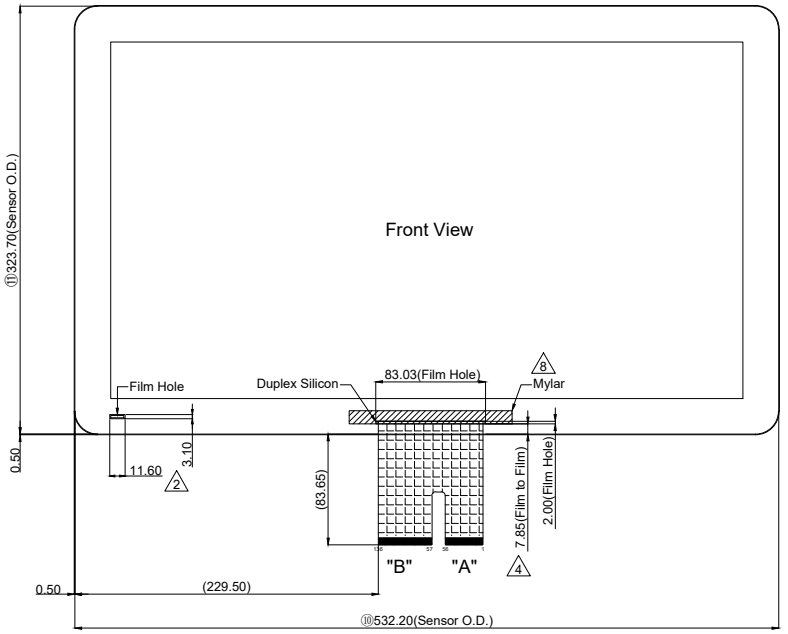
MILDEX	美西光學股份有限公司 MILDEX OPTICAL INC.. 高雄縣永安鄉永安工業區永工一路17-4號 TEL:886-6243769 FAX:886-6243767 NO.24,Kang Shan North Road,Kang Shan Town,Kaohsiung Hsien,TaiwanR.O.C.
客戶名稱 Customer Name.	
產品功能/型號尺寸 Function/Inch	
客戶訂單號碼 Customer Order	
數量 Q'TY.	_____箱 x _____PCS =_____PCS
重量 Weight	_____KG _____g
品號 Part No.	MILDEX：
	Customer：
出貨日期 Shipping Date	/ /

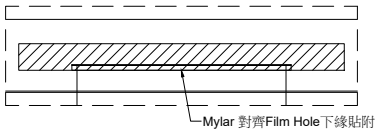
16. Warranty Period

1year limited warranty – touch screens/panels are warranted to the original purchaser for one full year from the shipping date.

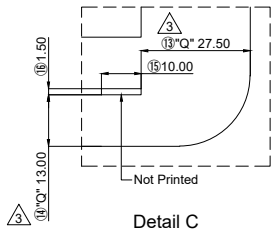




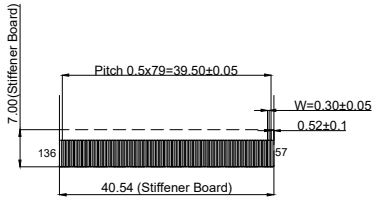




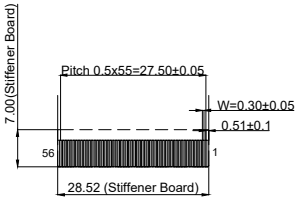
8 Detail D
Scale 2:1



Detail C
Scale 3:1



Detail B
Scale 4:1



Detail A
Scale 4:1

1.Pin Assignment

X axis	Pin 57 ~ 136
Y axis	Pin 1 ~ 56

2. Material Characteristics

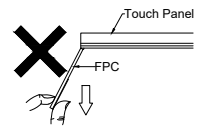
Property	Requirement
5 Transmittance	88±2 %
Surface hardness	7H
Operating temperature	-20 ~ 70 °C
Storage temperature	-20 ~ 70 °C
Operating Humidity	20 ~ 80% RH
Storage Humidity	30 ~ 80% RH

3.Tolerance no specified : ± 0.50mm

4.Marked the size of the "Q" key measurement size

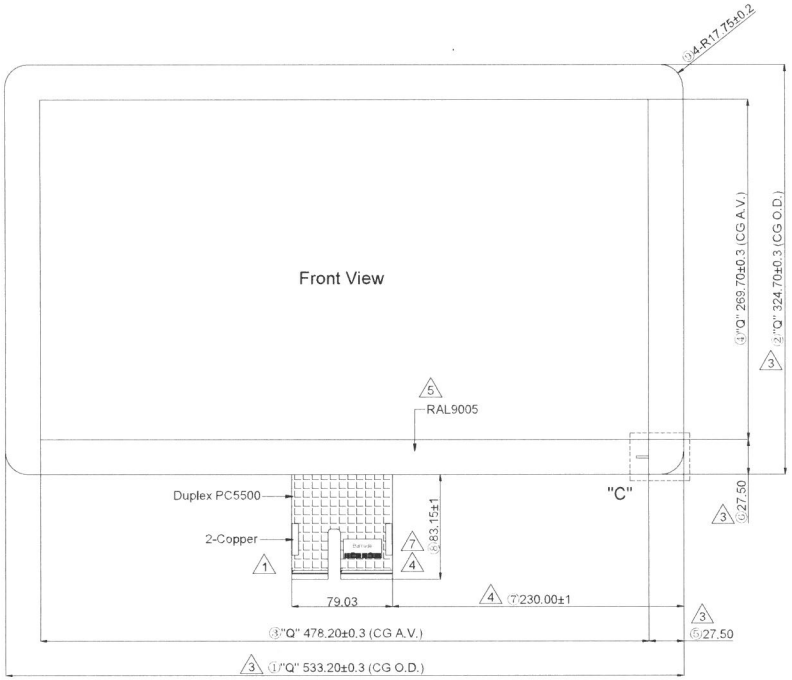
5.AG (Gloss 80±10)

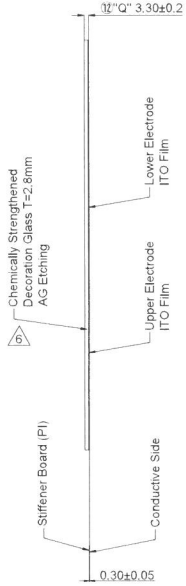
6.The head of FPC can not pulled

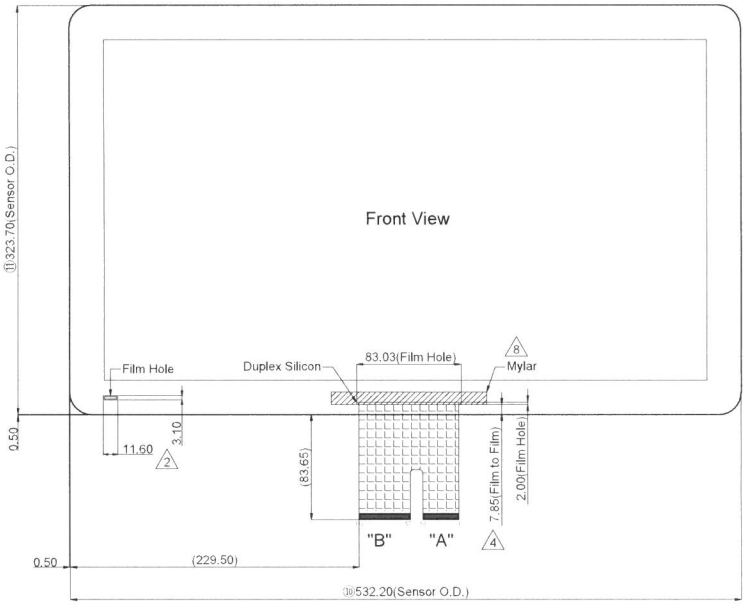


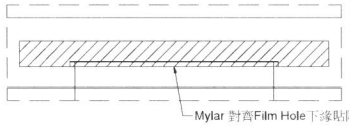
SYMBOL	DATE	REVISED DESCRIPTIONS	NOTE	CUSTOMER APPROVED
D03.4	2024.02.02	8 加貼Mylar		
D03.3	2022.08.02	7 變更標籤位置		
D03.2	2022.07.12	6 變更AG 規格		
D03.1	2022.05.16	4 變更FPC及位置 5變更標註		
D02.1	2017.08.28	1 變更FPC 2變更Film Hole 3變更Glass OD		
D01.1	2017.06.06	新發行		

樊茂光學股份有限公司 MILDEX OPTICAL INC.			DWG-NO.	216H095-D03.4
APPROVED	CHECK	DRAWN	SCALE	-----
劉子德	鄭金蓮	黃曜晨	UNIT	mm
			DATE	2024.02.02
			SHEET NO.	1 / 1

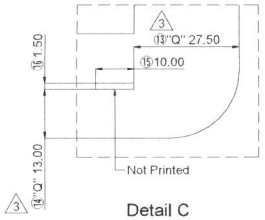




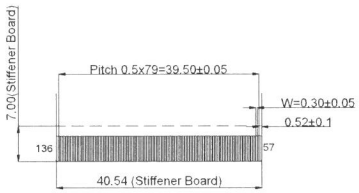




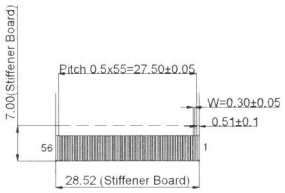
△8 Detail D
Scale 2:1



Detail C
Scale 3:1



Detail B
Scale 4:1



Detail A
Scale 4:1

Ferris 0202 1800

2. Material Characteristics

Property	Requirement
△5 Transmittance	88±2 %
Surface hardness	7H
Operating temperature	-20 ~ 70 °C
Storage temperature	-20 ~ 70 °C
Operating Humidity	20 ~ 80% RH
Storage Humidity	30 ~ 80% RH

1.Pin Assignment

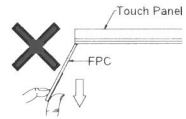
X axis	Pin 57 ~ 136
Y axis	Pin 1 ~ 56

3.Tolerance no specified : ± 0.50mm

4.Marked the size of the "Q" key measurement size

5.AG (Gloss 80±10)

6.The head of FPC can not pulled



SYMBOL	DATE	REVISED DESCRIPTIONS
D03.4	2024.02.02	△8 加貼Mylar
D03.3	2022.08.02	△7 變更標籤位置
D03.2	2022.07.12	△6 變更AG 規格
D03.1	2022.05.16	△4 變更FPC及位置 △5變更標註
D02.1	2017.08.28	△1 變更FPC △2變更Film Hole △3變更Glass OD
D01.1	2017.06.06	新發行

NOTE

CUSTOMER APPROVED

榮茂光學股份有限公司
MILDEX OPTICAL INC.

APPROVED	CHECK	DRAWN
劉子德	鄭金蓮	黃曜晨

DWG-NO.	216H095-D03.4
SCALE	-----
UNIT	mm
DATE	2024.02.02
SHEET NO.	1 / 1

CTI 華測檢測

檢測報告
Test Report

報告編號 A2230063995101001E
Report No. A2230063995101001E

報告抬頭公司名稱 熒茂光學股份有限公司
Company Name shown on Report MILDEX OPTICAL INC.
地 址 高雄市路竹區路科三路7號
Address NO.7, LUKE 3RD RD., LUZHU DIST., KAOHSIUNG CITY 821, TAIWAN

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

樣品名稱	TOUCH PANEL
Sample Name	TOUCH PANEL
樣品型號	一般品(F+G), T.W, 投射電容式
Part No.	一般品(F+G), T.W, 投射電容式
樣品接收日期	2023.02.21
Sample Received Date	Feb. 21, 2023
樣品檢測日期	2023.02.21-2023.03.02
Testing Period	Feb. 21, 2023 to Mar. 2, 2023

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(DBP, BBP, DEHP, DIBP), 氟(F), 氯(Cl), 溴(Br), 碘(I), 全氟辛烷磺酸(PFOS), 全氟辛酸(PFOA)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 (DBP, BBP, DEHP, DIBP), Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I), Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA) 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).

批 准
Approved by: 馮智聰
實驗室經理 Laboratory Manager

日 期
Date 2023.03.02

台灣華測檢測技術有限公司檢測中心
Testing Center, Centre Testing International (Taiwan) Co., Ltd.
No. R392331788
桃園市蘆竹區南崁路二段9號5樓之6
5F-6, No.9, Sec.2, Nankan Rd, Luzhu Dist., Taoyuan, Taiwan

檢測報告
Test Report

檢測依據 Test Method

測試項目 Test 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 62321-7-2:2017	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
氟 Fluorine (F)	參考EN 14582:2016 Refer to EN 14582:2016	IC
氯 Chlorine (Cl)	參考EN 14582:2016 Refer to EN 14582:2016	IC
溴 Bromine (Br)	參考EN 14582:2016 Refer to EN 14582:2016	IC
碘 Iodine (I)	參考EN 14582:2016 Refer to EN 14582:2016	IC
全氟辛烷磺酸 Perfluorooctane Sulfonates(PFOS)	參考US EPA 3550C:2007 & US EPA 8321B:2007 Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
全氟辛酸 Perfluorooctanoic Acid(PFOA)	參考US EPA 3550C:2007 & US EPA 8321B:2007 Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS

檢測報告
Test Report

檢測結果 Test Result(s)

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

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

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

檢測報告
Test Report

檢測結果 Test Result(s)

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

測試項目 Tested Item(s)	結果 Result	方法檢出限 MDL
	001	
氟 Fluorine (F)	N.D.	50 mg/kg
氯 Chlorine (Cl)	N.D.	50 mg/kg
溴 Bromine (Br)	N.D.	50 mg/kg
碘 Iodine (I)	N.D.	50 mg/kg

測試項目 Tested Item(s)	結果 Result	方法檢出限 MDL
	001	
全氟辛酸 Perfluorooctanoic Acid (PFOA)	N.D.	5 mg/kg

測試項目 Tested Item(s)	結果 Result	方法檢出限 MDL
	001	
全氟辛烷磺酸 Perfluorooctane Sulfonates (PFOS)	N.D.	5 mg/kg

CTI 華測檢測

檢測報告
Test Report

樣品/部位描述Sample/Part Description

序號 No.	CTI樣品ID CTI Sample ID	描述 Description
1	001	混測,金屬,非金屬 Mixed test, metal, non-metal

備註: **對於檢測鉛，鎘，汞之樣品已消解完全。**
-N.D. = 未檢出 (小於方法檢出限)
-mg/kg = ppm = 百萬分之一
-根據客戶要求，對樣品進行混合測試，測試結果不代表混合測試樣品中任何一種單一材質的含量。

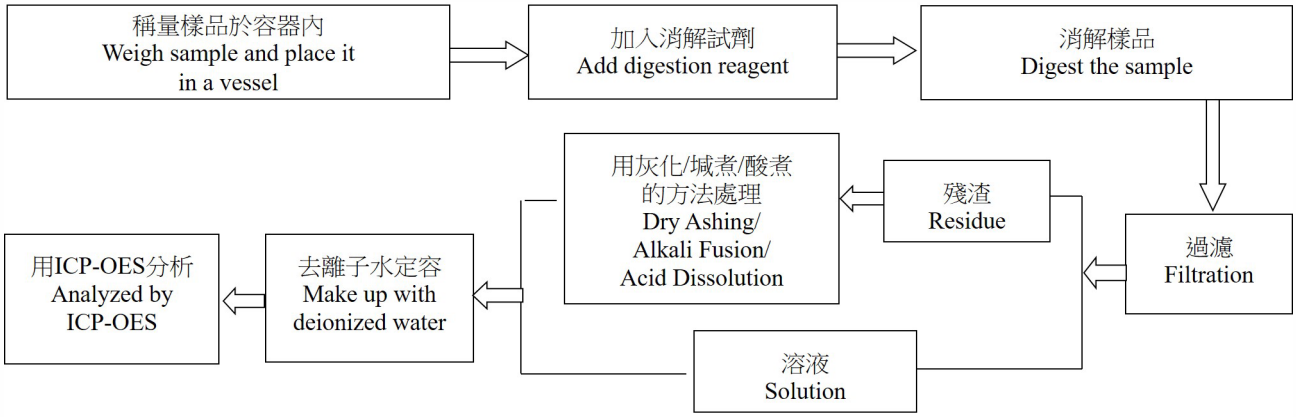
Remark: **The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.**
-MDL = Method Detection Limit
-N.D. = Not Detected (<MDL)
-mg/kg = ppm = parts per million
-As specified by client, the test was conducted by mixing several samples together. The result(s) shown on this report may be different from the content of any homogeneous material.

注釋: **本報告中的資料結果供科研、教學、企業內部品質控制、企業產品研發等目的用。**
Note: **The testing data and result(s) in this report is(are) just for scientific research, education, internal quality control and product development etc.**

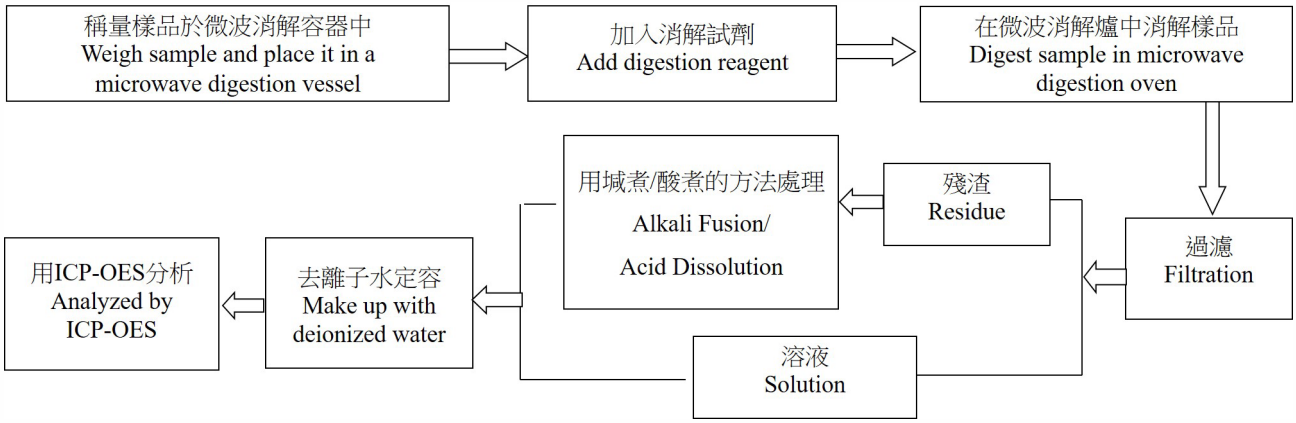
檢測報告
Test Report

檢測流程 Test Process

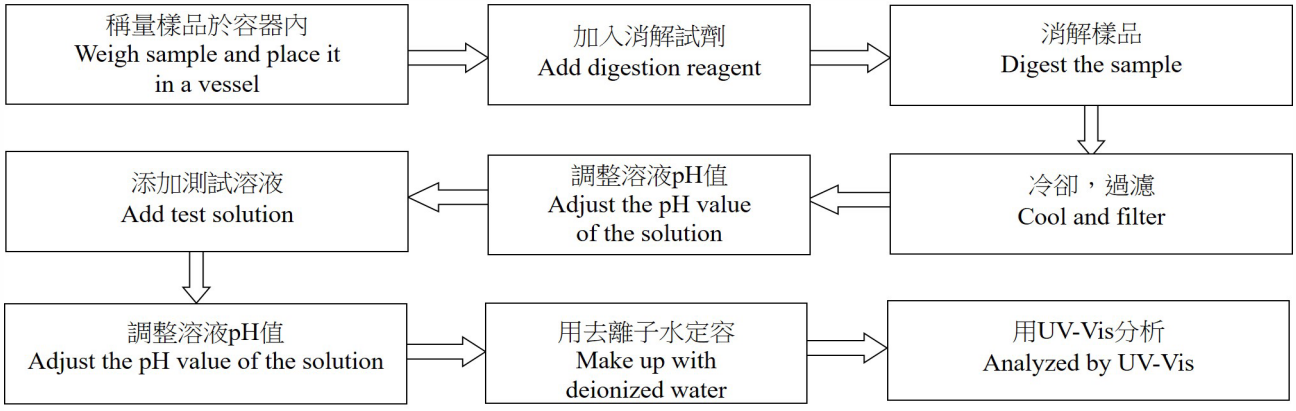
1. 鉛(Pb), 鎘(Cd)
Lead (Pb), Cadmium (Cd)



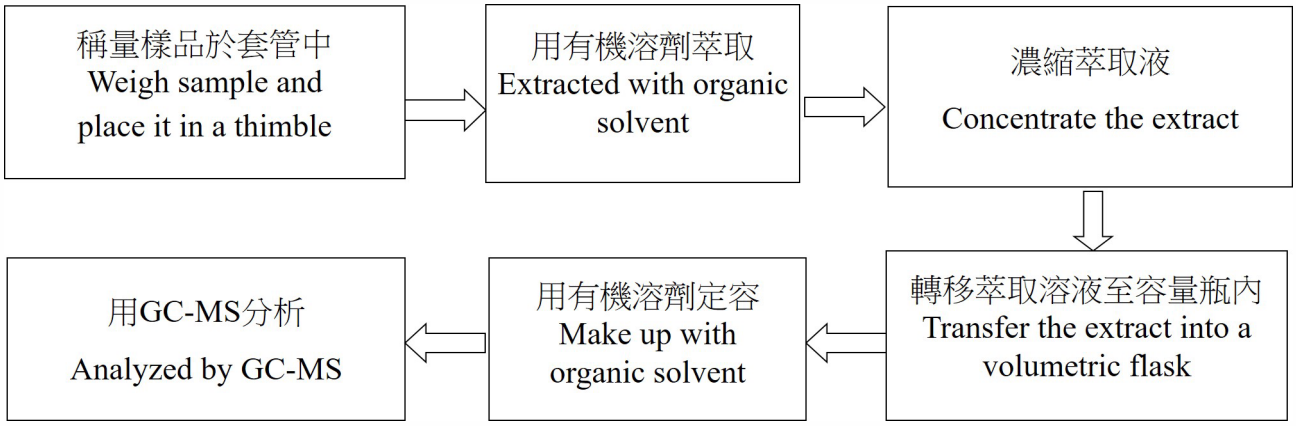
2. 汞(Hg)
Mercury (Hg)



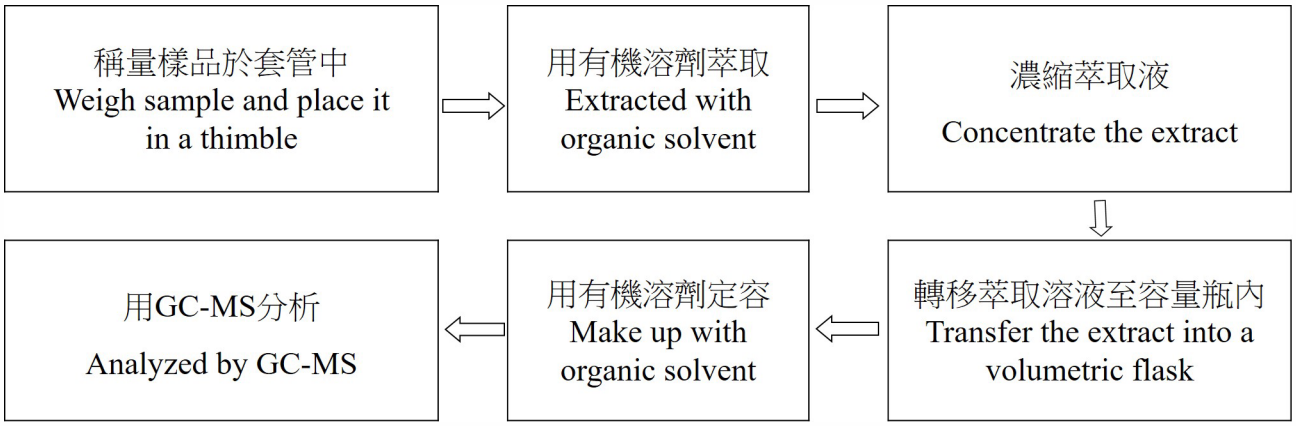
3. 六價鉻(Cr(VI))
Hexavalent Chromium (Cr(VI))



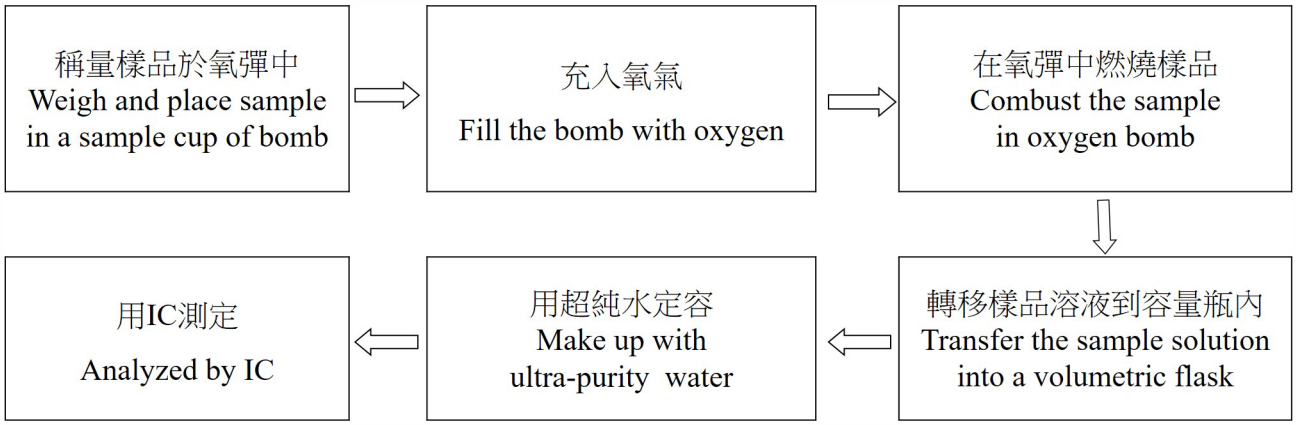
4. 多溴聯苯(PBBs)， 多溴二苯醚(PBDEs)
Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)



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

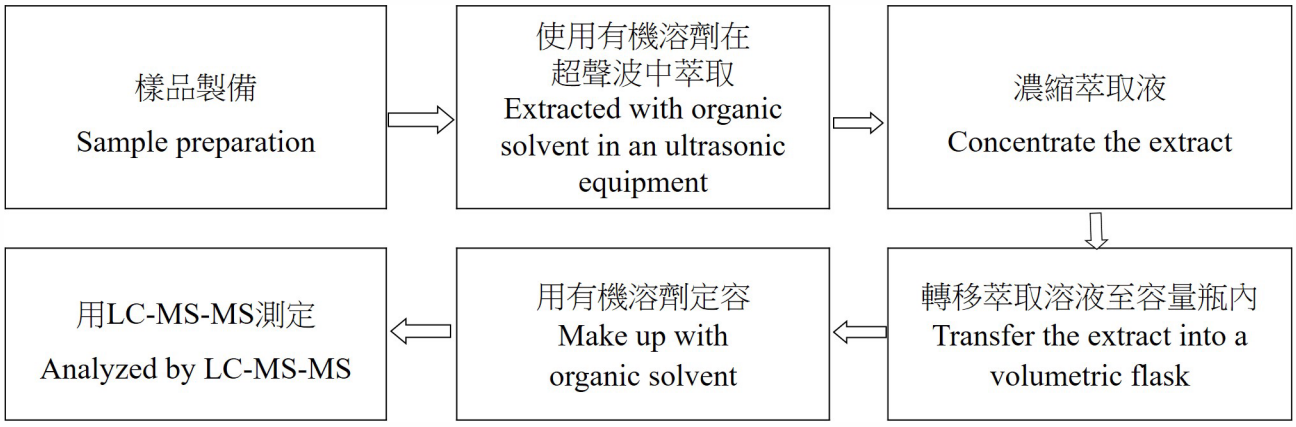


6. 氟(F)， 氯(Cl)， 溴(Br)， 碘(I)
Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I)



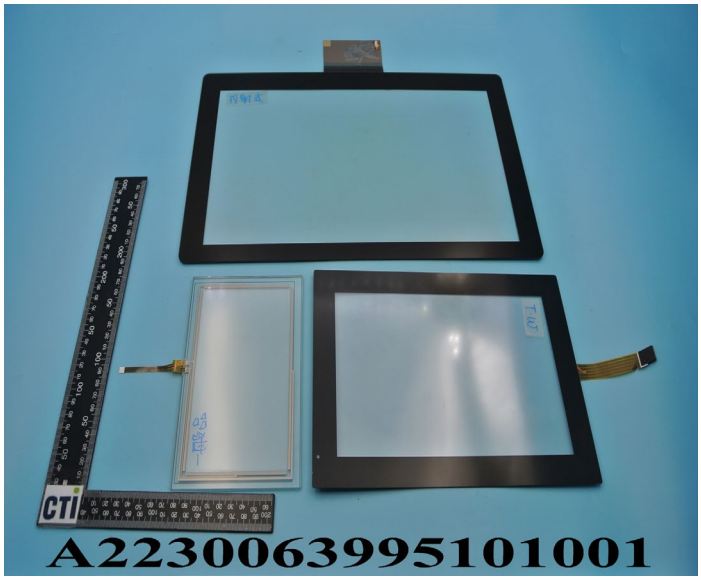
檢測報告
Test Report

7. 全氟辛烷磺酸(PFOS)， 全氟辛酸(PFOA)
Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA)



檢測報告
Test Report

樣品圖片
Photo(s) of the sample(s)



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. 報告抬頭公司名稱及位址、樣品及樣品資訊由申請者提供，申請者應對其真實性負責，CTI未核實其真實性；
   The Company Name shown on Report and Address, the sample(s) and sample information was/were provided by the applicant 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.

報告結束
*** End of report ***