nas Technologies Corp.
啓迪科技股份有限公司

Specification
of
NTP-070CM-212703

Proposed By			Customer's Approval
Designed	Checked	Approved	
Elson	Roox	Abatie	

版本/Version	1.3

nas Technologies Corp.
啓迪科技股份有限公司

客戶名稱: Customer Name:	

啟迪型號: Nas Tech Model No.	NTP070CM212703

客戶型號: Customer Model No:	

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Model No:NTP070CM212703		Version
Issued date	2010/06/11	
Revised date	2010/08/09	V-1
Revised date	2010/08/11	V-2
Revised date	2010/11/01	V-3

Approved	Checked	Prepared
日期 Date	日期 Date	日期 Date
2010/11/2	2010/11/1	2010/11/1

本承認書內容貴公司確認無誤懇請於下方承認欄內簽章寄回。
Please confirm your acceptance of this approval sheet by return fax

客戶意見欄 Customer's Proposal	簽名 Signature	原因 Reason
□承認 Approval	日期 Date	
□不同意 Disagree	日期 Date	

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Revision History

Date	Rev.	Contents	Remark
20100811	1.0	New Create	Elson
20100817	1.1	Modify Inspection standard	Elson
20100930	1.2	Add the bilingual of item 7.	Eric
20101101	1.3	P.8 & 10, Modify pin assignment P.13, Add sleeping mode command	Elson

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1. Feature

The product is a 7.0” projective capacitive touch panel with 2 points gesture function. The touch panel is composed of customized coverlens, ITO sensor glass and FPCa with sensor IC. For which, the optical adhesive is applied for lamination between coverlens and senor glass to ensure good optical performance of touch panel.

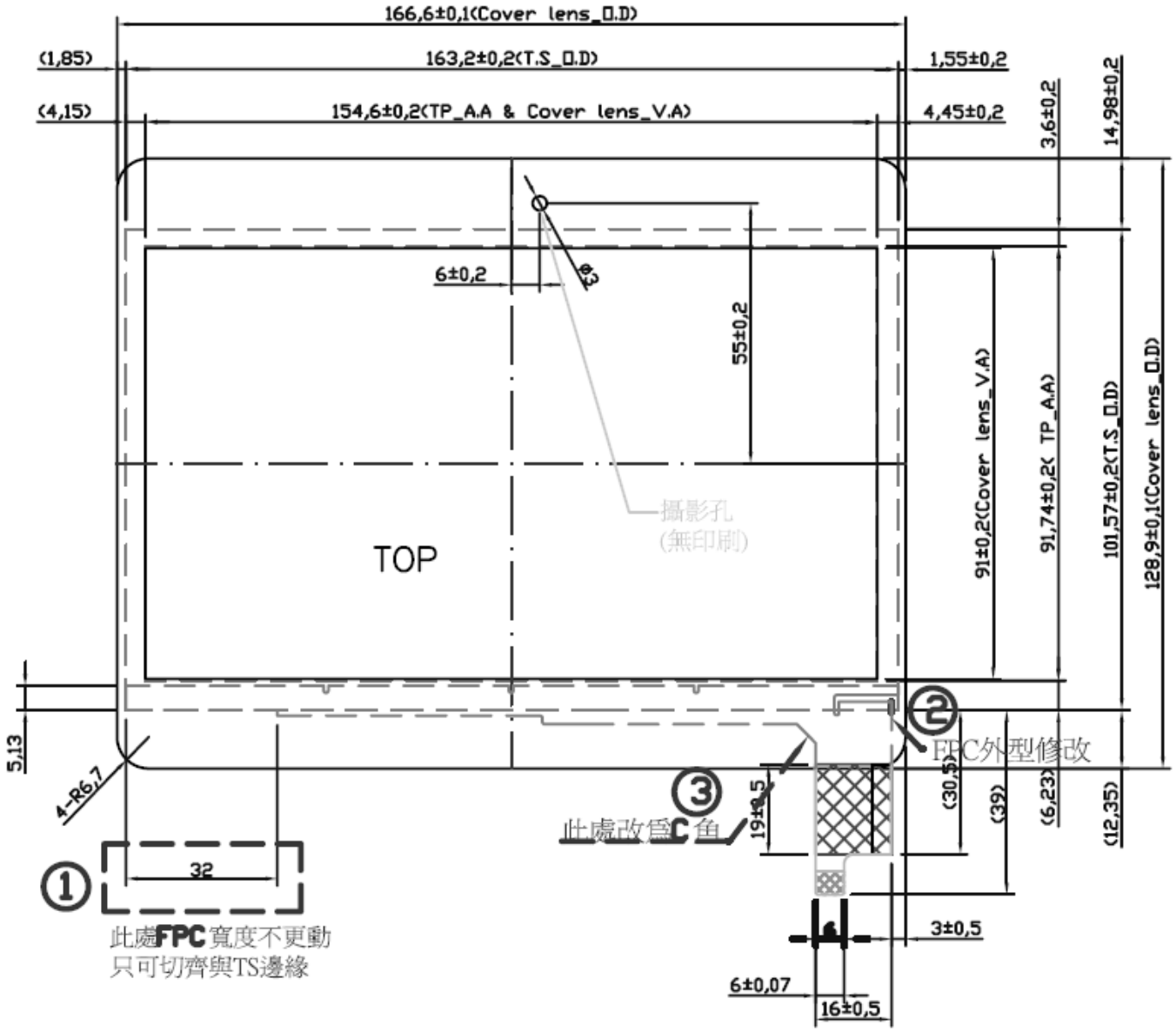
2. General Specification

2.1 Outline Specification

Item	Description	Unit
Size	7.0	inch
Coverlens View Area	154.60 ±0.2 * 91.00 ±0.2	mm
Coverlens Outline Area	166.60 ±0.1 * 128.90 ±0.1	mm
TP View Area	154.60 ±0.2 * 91.74 ±0.2	mm
TP Outline Area	163.20±0.2 * 101.57±0.2	mm
Transmittance	> 85%	-
TP Resolution	4096*4096	T.B.D.

3. Mechanical Drawing

3.1 Front View



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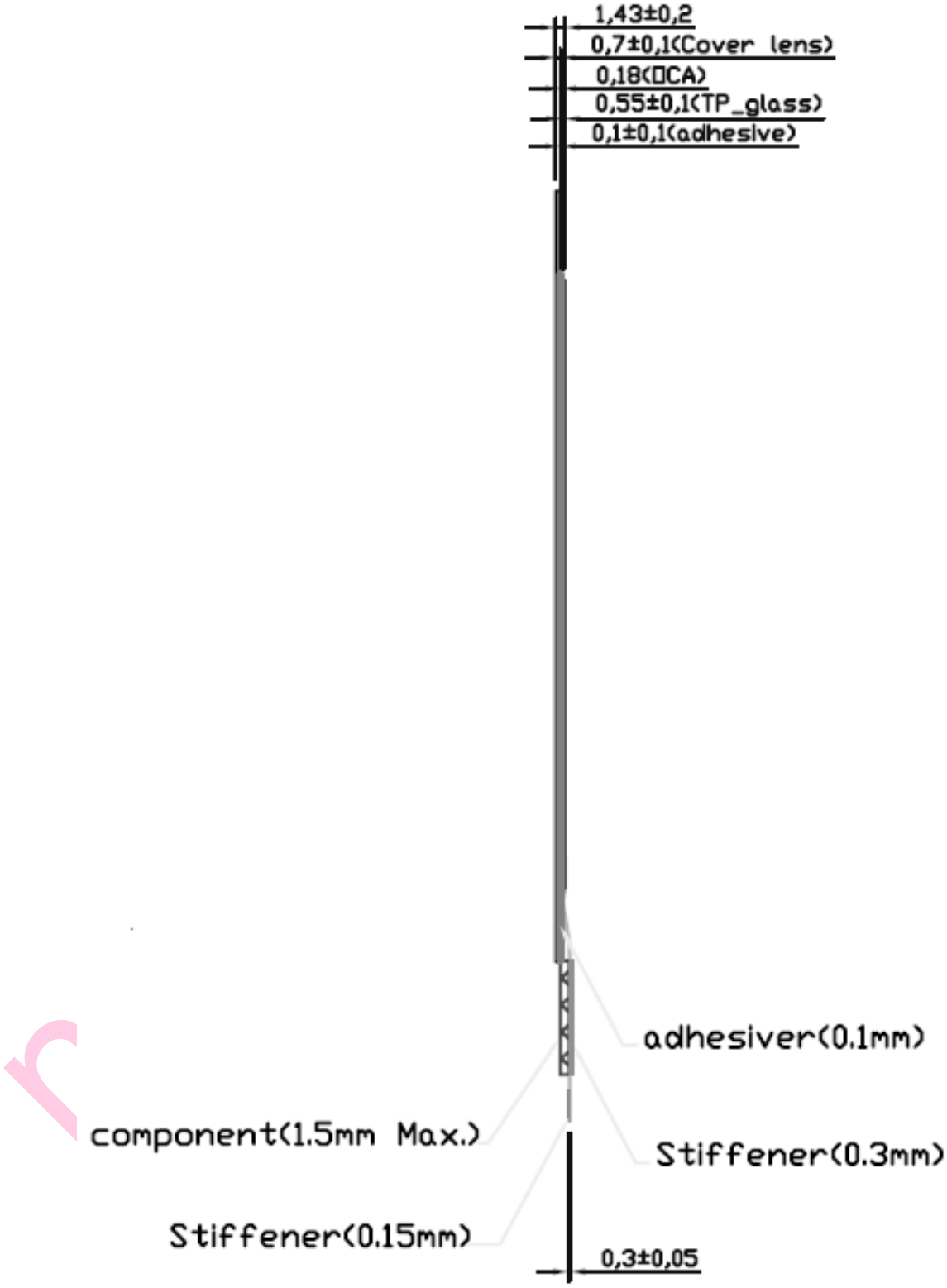
3.2 Side View



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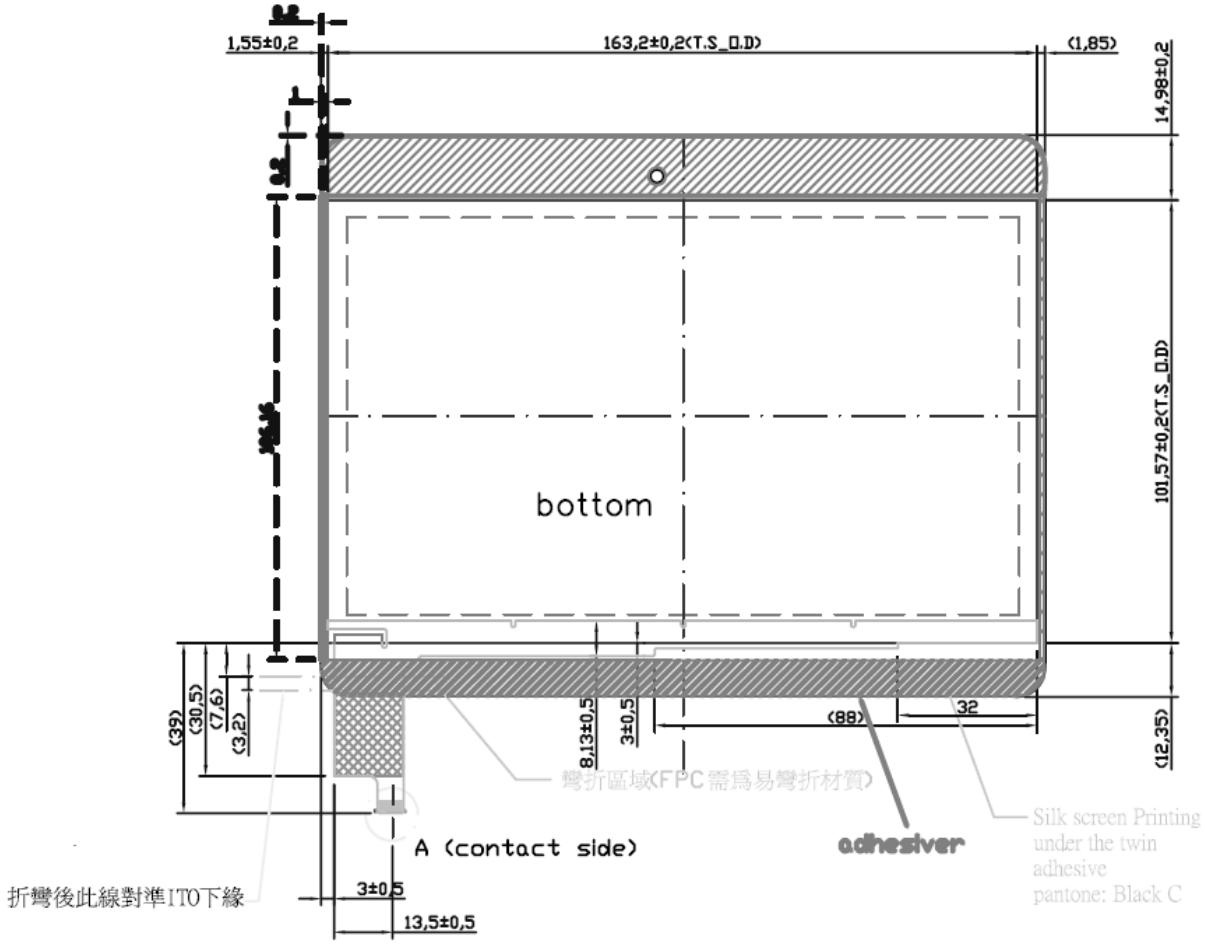
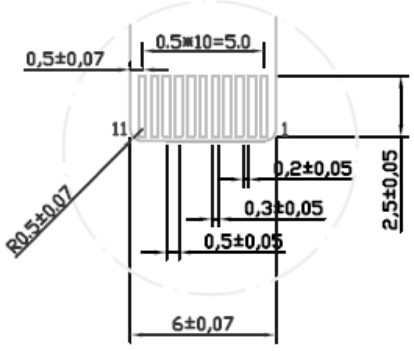
3.3 Back View





A Detail
Scale 5 :1

PIN OUT	
1	NC
2	SCL
3	SDA
4	NC
5	ATTN
6	GND
7	VCC
8	RST
9	NC
10	NC
11	WAKE

4. Electrical Specifications

4.1 Absolute Maximum Ratings

Parameter	Min.	Typ.	Max.	Units	Notes
Storage Temperature	-65	-	+150	℃	Note1
Ambient Temperature with Power Applied	-30	-	+70	℃	-
Supply Voltage Relative to Vss	-3	-	4	V	-

Note1:
Higher storage temperatures reduce data retention time. Recommended storage temperature is +25℃.Extended duration storage temperatures above 65℃ degrade reliability.

4.2 DC Electrical Characteristics

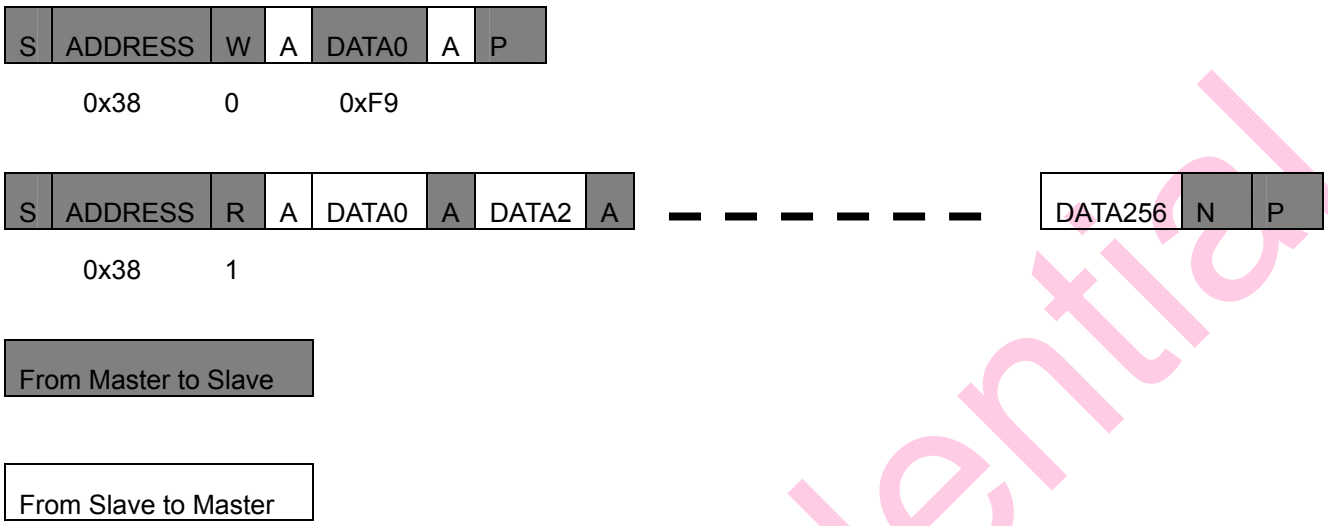
Parameter	Conditions	Min.	Typ.	Max.	Units
Power Supply	VCC	1.8	3.3	3.6	V
Current Consumption For Operation	VCC = 3.3V	T.B.D.	T.B.D.	T.B.D.	mA
Current Consumption For Sleep Mode	VCC = 3.3V	T.B.D.	T.B.D.	T.B.D.	mA

Note: It may cause permanent damage to the device due to over stress the maximum. Exposure to maximum rating conditions for extended periods may affect device reliability also.

5. Pin Assignment

Pin No.	Symbol	Description	Note
1	NC	No connection	
2	SCL	I2C clock	
3	SDA	I2C data	
4	NC	No connection	
5	ATTN	INT	
6	GND	Ground	
7	VCC	Power	
8	RST	Reset	
9	NC	No connection	
10	NC	No connection	
11	WAKE	Wake up from sleeping mode	

6. Firmware Protocol



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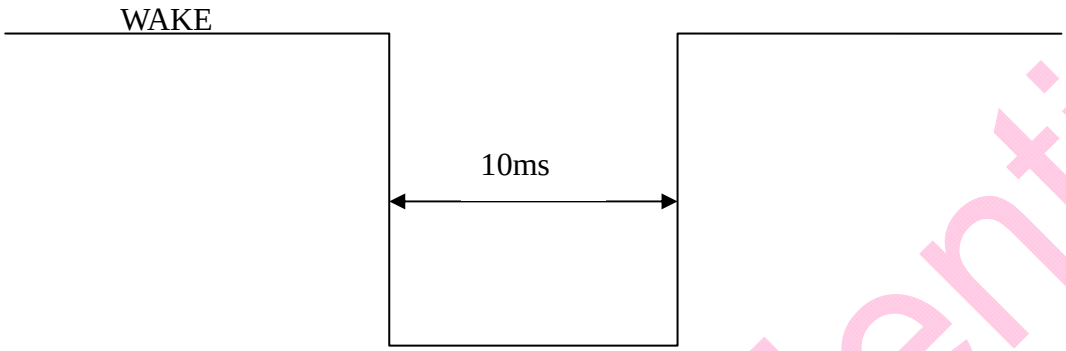
S = Start Condition
P = Stop Condition
A = Acknowledge
N = Not Acknowledge
W = Write
R = Read
ADDRESS = 7-Bits
DATA = 8-Bits

DATA	Description	DATA	Description
0	Reserve	13	Reserve
1	Reserve	14	Reserve
2	Reserve	15	Reserve
3	Finger number	16	Reserve
4	Reserve	17	Reserve
5	X1 Coordinate MSB	18	Reserve
6	X1 Coordinate LSB	19	Reserve
7	Y1 Coordinate MSB	20	Reserve
8	Y1 Coordinate LSB	21	Reserve
9	X2 Coordinate MSB	22	Reserve
10	X2 Coordinate LSB	23	Reserve
11	Y2 Coordinate MSB	24	Reserve
12	Y2 Coordinate LSB	25	Reserve

FINGER NUMBER = DATA3&0x0F
X1 POSITION = (DATA5<<8) | (DATA6)
Y1 POSITION = (DATA7<<8) | (DATA8)
X2 POSITION = (DATA9<<8) | (DATA10)
Y2 POSITION = (DATA11<<8) | (DATA12)

6.1 Sleeping Mode

Normal Mode → 0x70, 0xFC, 0x3A, 0x03, 0xC5 → Sleeping Mode → WAKE low pulse



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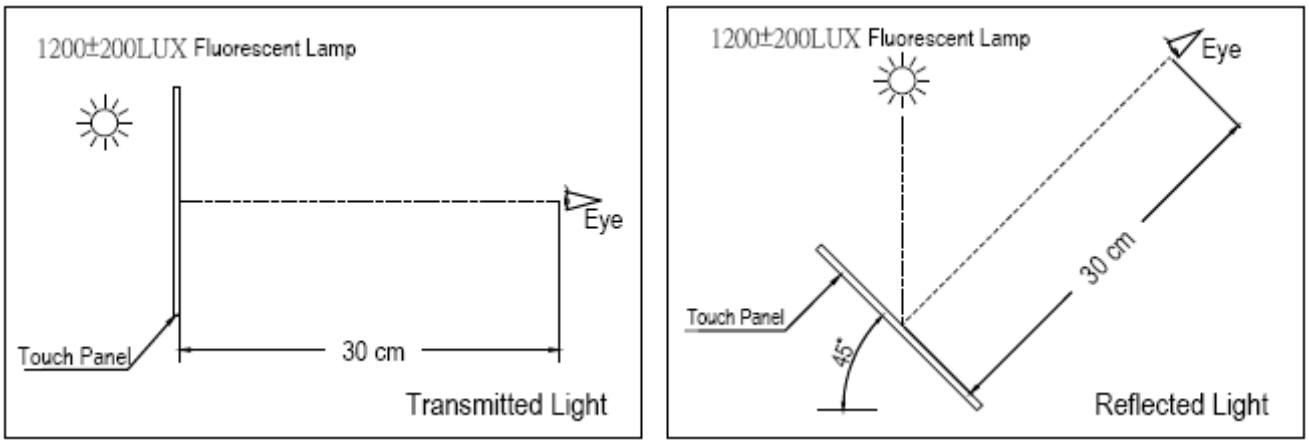
7. Inspection Conditions

7.1 Environmental Conditions

- Observation distance: 30 cm
- View angle should be smaller than 45°



7.2 Remark

- 注意事項 Notes

1. 缺陷數量各自獨立計算。

   Each defect quantity is counted separately.

2. 刮傷：顯微鏡下呈現黑色實線。

   Scratch:Black line which is observed by microscope.

3. 崩邊：需有連續性，才算 NG。

   Crack: Must be continuously.

4. 檢查製品面與眼睛 300mm 位置來做外觀檢查。

   The inspection check must be kept 300mm distance between product surface and eyes.

5. 擦拭方式：不可來回擦拭 / 無法去除髒污僅可使用棉花棒沾 IPA 擦拭。

   Clean method: Don't clean back and forth / can use cotton swab to apply the IPA to clean the dirty which is can not removed.

6. 取放方式：僅可取側邊，不可面取。

   Takes puts method: Only can takes by side, cannot takes by plane.

7. 外觀採取 MIL-STD-105E(AQL 1.0)，Level II 抽樣水準 (正常檢驗)

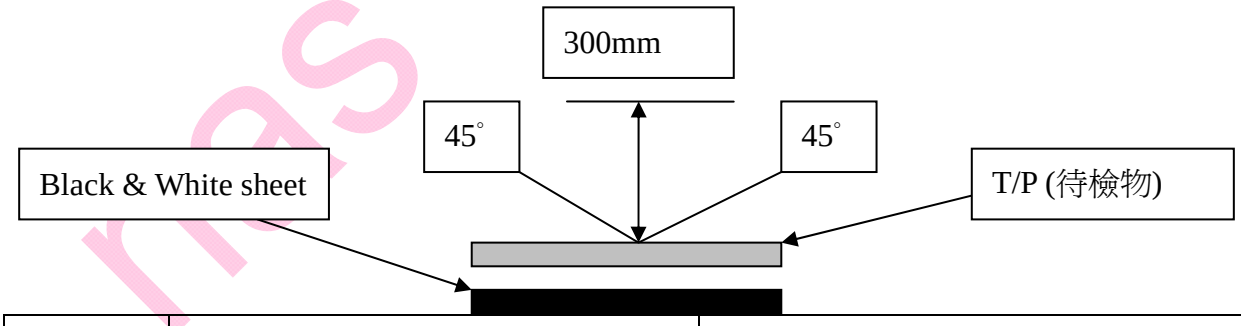
   Inspection criteria is MIL-STD-105E(AQL 1.0), Level II sampling level (normally inspection)

8. 動作區爲保證檢視區

   AA area is guarantee inspection area.

- 檢查方法：檢查環境需於無塵室等級 1000 以下，並上頭置放一 40W 三波長日光燈(白色)，下底爲黑色及白色 sheet 上檢查，檢查製品面與眼睛距離 300mm 檢測判定

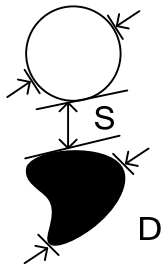
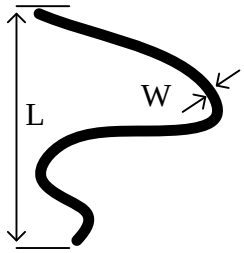
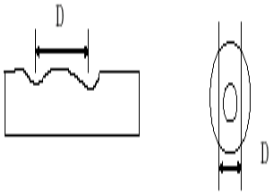
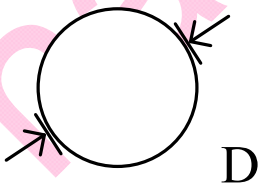
- Inspection method: the inspection environment must be dust-free room which is under 1000 class, and put a 40W tri-spectrum fluorescent lamps (White) over head, the DUT need to put on black and white sheet to inspection, the distance between DUT and eyes must be kept 300mm.

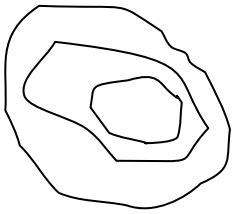
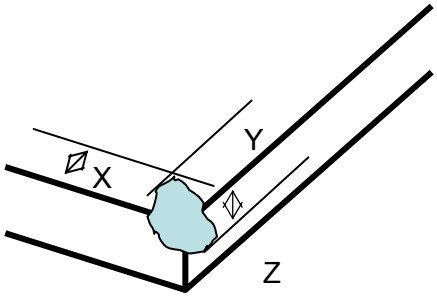
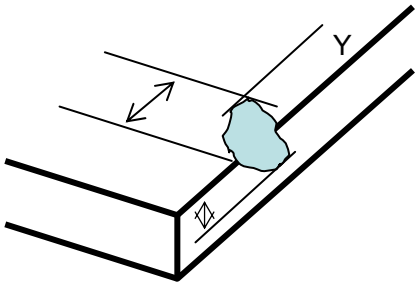
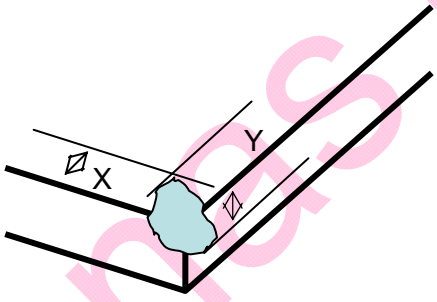


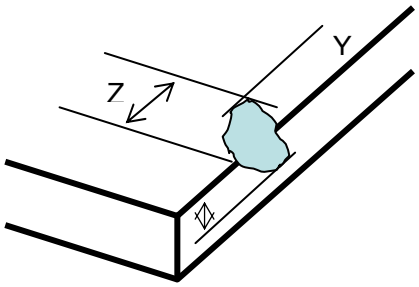
No.	設備名稱 Equipment	功能 Function
1	游標卡尺 Caliper	測量 Touch Panel 外框及內框尺寸 For Touch Panel Outline & Inner

		dimension measurement.
2	工具顯微鏡 Microscope	檢驗黑點、白點、異物、刮傷、裂縫等外觀缺陷 Inspect the defect such as black spot、white spot、particle、scratch、crack…etc.
3	15x 放大鏡 15x Lupe	檢查黑點、白點、異物、刮傷、裂縫等外觀缺陷 Check the defect such as black spot、white spot、particle、scratch、crack…etc.

8. Inspection Standards

Item	Inspection Criteria	Judgment
Black & White Spot 	The following black / white spot are within the viewing area Average Diameter: D (mm)	
	D≦ 0.1mm	Ignored
	0.1mm ＜ D ≦ 0.5mm	5
	D > 0.5mm	0
Scratch & Foreign Fiber 	The following black / white lines are within the viewing area. Width: W(mm), Length: L(mm)	
	W ≦ 0.03mm L≦5mm	Ignored
	0.03mm ＜ W ≦ 0.05mm L≦5mm	3
	W ＞ 0.05mm L>5mm	0
Fish eyes on film 	D < 0.1mm	Ignored
	0.1mm ≦ D ≦ 0.3mm	3
	0.3mm ＜ D ≦ 0.5mm	2
	D ＞ 0.5mm	0
Bubble / Dent / Bubble 	Bubbles within viewing area. Average diameter: D(mm)	
	D≦ 0.1mm	Ignored
	0.1mm ＜D≦ 0.3mm	3
	0.3mm ＜D≦ 0.5mm	2
	D＞ 0.5mm	0

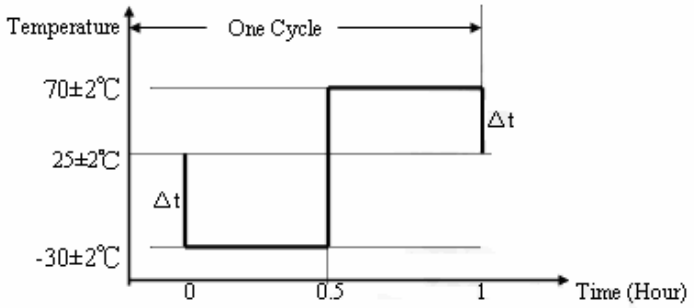
Newton Ring 	D＞ 8mm	0
Corner Chipping on Glass 	Corner: X ＜ 3mm, Y＜ 3mm, Z ＜ t (Trace can not be damaged)	
Edge Chipping on Glass 	Edge: X ＜ 3mm, Y＜ 3mm, Z ＜ t (Trace can not be damaged)	
Chipping on Glass 	Corner: X ＜ 1mm, Y＜ 1mm, Z ＜ 0.5t (Trace can not be damaged)	

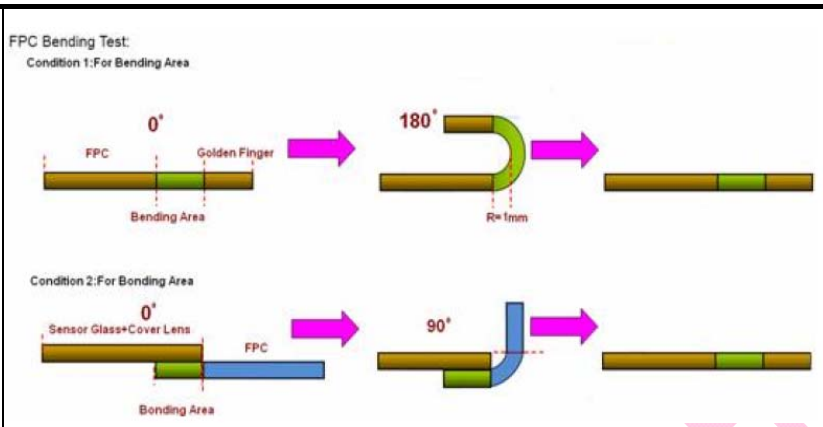
Edge Chipping on Glass 	Edge: X ＜ 1mm, Y＜ 1mm, Z ＜ 0.5t (Trace can not be damaged)

Note:

- Inspection area is TP active area
- The foreign material that can be blown out by air or washed out by wet cleaning are not regarded as a defect
- If we can not see any spot or line in appropriate operating condition of panel, it's acceptable

9. Reliability

No.	ITEM	DESCRIPTION	NOTE
1	High Temperate Storage	80°C, 240 hrs. No malfunction or abnormal should be found. Linearity Error should be no larger than △20 coordinates before/after the test.	-
2	Low Temperate Storage	-30°C, 240 hrs. No malfunction or abnormal should be found. Linearity Error should be no larger than △20 coordinates before/after the test.	-
3	Temperate/ Humidity	60°C, 90%RH, 240 hrs. No malfunction or abnormal should be found. Linearity Error should be no larger than △20 coordinates before/after the test	-
4	Thermal Shock	-30°C / 70°C, 30min for each dwell stage, 50 cycles. Temperature transition Duration: 3 min, No malfunction or abnormal should be found. Linearity Error should be no larger than △20 coordinates before/after the test. 	-
5	FPC Bending Test	Connector side: Bending angle will be decided per different project. Touch Panel side: Bending angle will be decided per different project Minimum 10 cycles for each side - Condition1 for flex circuit - Condition 2 for glass Criterion: Normal performance after bending test. There shall be no damage on FPC	-

			
6	FPC connection Insert / Remove test	Condition: Insert / Remove flex circuit for 10 cycles Criterion: Normal performances after flex circuit connection insert / remove test.	-
7	Activation Force	Stylus R0.8, Avg: 5~50g	
8	Impact	Φ22.0mm steel ball, 45g, Height=30cm 1 time and no damage (Impact at the center area)	
9	Static Load	15Kg atΦ20mm area for 30sec	
10	Hardness	3H pencil, pressure 500g, 45°，≧3H(JIS K5400)	
11	Finger Touch	1,000,000 times, R8, Silicon Rubber	
12	Pen Sliding	100,000 times, R0.8, Stylus	

10. Linearity Test

10.1 Test Condition

Temperature:	25 ℃	
Drawing Speed:	50 mm / sec	
Test Head: (Size) :	11 mm	
Deep: (Loading/Gap)	R Type: (g)	C Type: 11 (mm)
Drawing Lines:	Vertical: 12 (lines)	Horizontal: 20 (lines)
Resolution	Vertical: 768 (dot)	Horizontal: 1280 (dot)

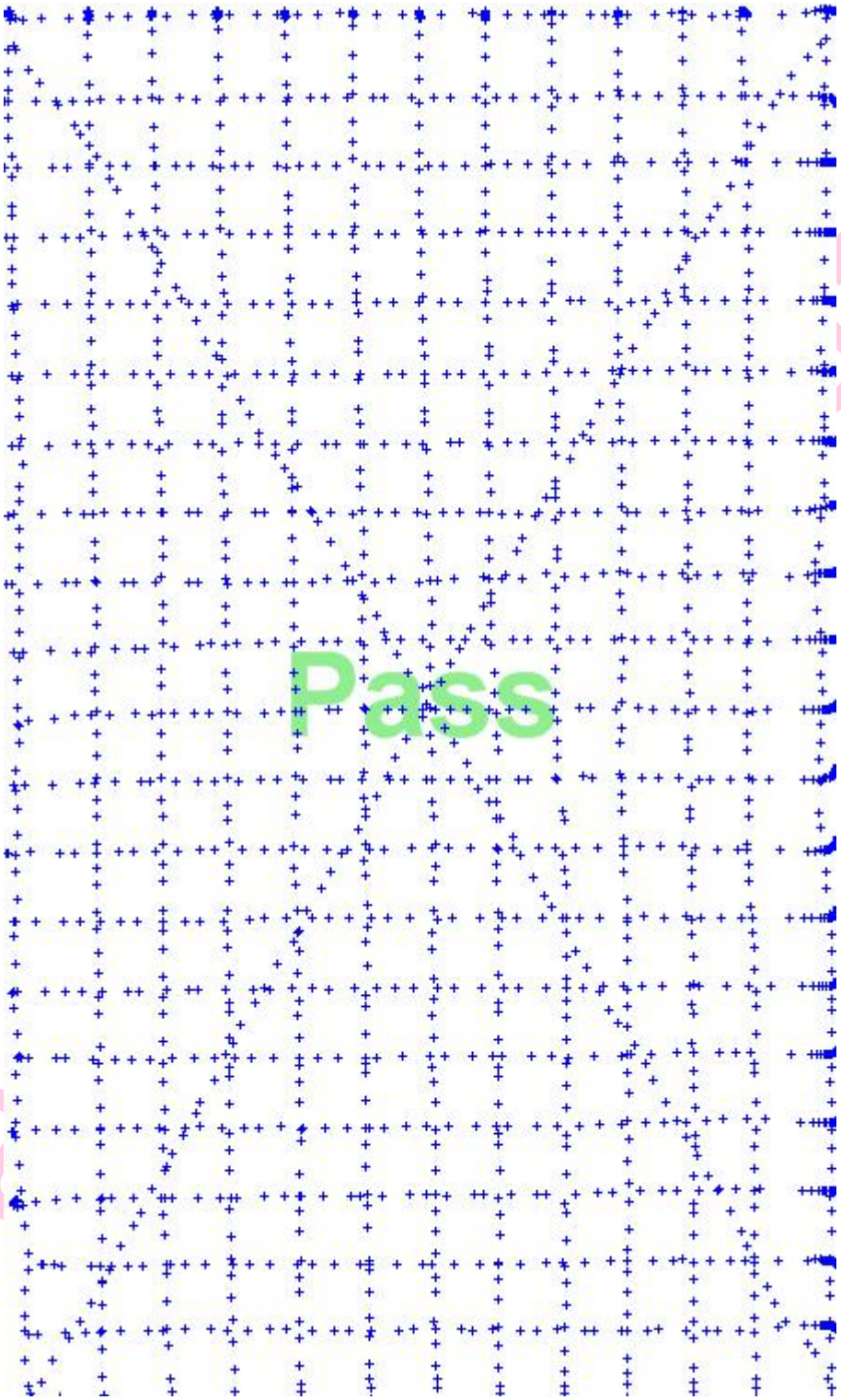
10.2 P/F Judgment

Linearity Boundary: ■ ± 38.4 (resolution)

10.3 Test Result

Item	Good	NG	Remark
Vertical direction P/F	■ PASS	□ FAIL	<= 3%
Horizontal direction P/F	■ PASS	□ FAIL	<= 3%
Dialog direction P/F	■ PASS	□ FAIL	<= 3%

10.4 Drawing Plot



11. Handling Cautions

11.1 ESD (Electrical Static Discharge) Strategy

ESD will cause serious damage of the panel, ESD strategy is very important in handling. Following items are the recommend ESD strategy

11.1.1 In handling touch panel, please wear non-charged material gloves. And the conduction ring connect wrist to the earth and the conducting shoes to the earth is necessary.

11.1.2 The machine and working table for the panel should have ESD prohibition strategy.

11.1.3 In handling the touch panel, ionize flowing decrease the charge in the environment is necessary.

11.1.4 In the process of assembly the touch panel module, shield case should connect to the ground.

11.2 Environment

11.2.1 Working environment of the touch panel should in the clean room.

11.2.2 The PET film/ITO film is easy damaged, handle it carefully and do not scratch it by sharp material.

11.2.3 Panel has protective film in the surface please remove the protection film of touch panel slowly with ionized air to prevent the electrostatic discharge.

11.3 Others

11.3.1 Turn off the power supply before connecting and disconnecting signal input cable.

11.3.2 The connection area of FPC and touch panel is very weak, do not handle touch panel only by FPC or bend FPC.

11.3.3 Water drop on the surface or condensation as touch panel power on will corrode panel electrode.

11.3.4 As the packing bag open, watch out the environment of the touch panel storage. High temperature and high humidity environment is prohibited.

12. Assembly notice

The assembly of touch panel and LCD must be keep the at least 0.5mm air gap, to get the best performance.