

TFT LCD Module Inspection Specification

Model No. : NJ070NA-23A

Customer :
Approved By

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Revision History

Version	Date	Page	Section	Description
1.0A	2013/12/1			New
1.0B	2014/4/24	5	5(2)	Align Tablet IIS 1. Minimum Distance Between Bright dots 5mm 2. 2 dark dots adjacent N=0

Inspection Standards for LCD Modules

1.Description

These inspection standards shall be applied to LCD Module supplied by INNOLUX Optoelectronics Corporation. This model is only used in CE product, if it is used in other product applications; it still adopts this copy of specification. If there are any other product applications such as handwriting recognition, Industrial use, Medical use, Aerospace usage and so on, the specifications should be negotiated separately.

2.Acceptable Criteria

Unless there is other agreement, the sampling plan for incoming inspection shall follow MIL-STD-105E.

- (1) Lot size: Quantity per shipment as one lot (different model as different lot).
- (2) Sampling type: Normal inspection, single sampling.
- (3) Sampling level: Level II.
- (4) AQL: Acceptable Quality Level
Major defect: AQL=0.65
Minor defect: AQL=1.0

3.Classification of defects

Defects are classified two types, major defect and minor defect according to the defect. And, the definition of defects is classified as below.

- (1) Major defect
Any defect may result in functional failure, or reduce the usability of product for its purpose. For example, electrical failure, deformation and etc..
- (2) Minor defect
A defect that is not to reduce the usability of product for its intended purpose and un-uniformity, dot defect and etc..
The criteria on major or minor judgment will be according with the classification of defects.

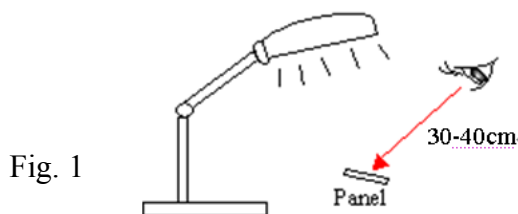
4.The environmental condition of inspection

The environmental condition and visual inspection shall be conducted as below.

- (1) Ambient temperature : 25 ± 5 °C
- (2) Humidity : 25~75 % RH
- (3) Panel visual inspection on the operation condition for cosmetic shall be conducted at the distance 30~40cm or more between the LCD module and eyes of inspector.
Ambient Illumination : 800~1200Lux for external appearance inspection

Ambient Illumination : 200~500 Lux for light on inspection

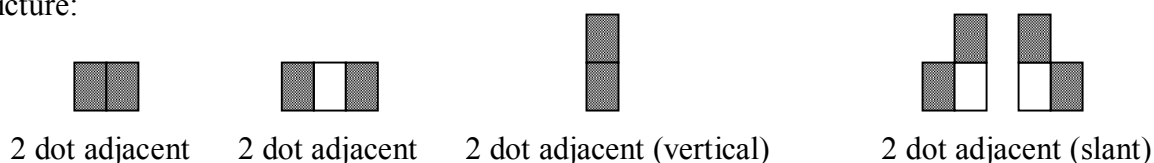
- (4) The viewing angle :
- a) ± 15 degree to the front surface of display panel in vertical direction.
 - b) ± 15 degree to the front surface of display panel in horizontal direction.
- (5) Display panel shall be conducted at the distance 30~40cm between the LCD module and eyes of inspector (Fig. 1)



5. Inspection Criteria

- (1) Definition of dot defect induced from the panel inside
- a) Bright dot : Dots appear bright and unchanged in size in which LCD panel is displaying under black pattern.
 - b) Dark dot : Dots appear dark and unchanged in size in which LCD panel is displaying under pure red, green, blue picture.
 - c) 2 dot adjacent = 1 pair = 2 dots

Picture:



(2) Display Inspection

Items		Acceptable count
Bright dot	Random	$N \leq 2$
	2 dots adjacent	$N \leq 0$
	3 dots adjacent	$N \leq 0$
Distance	Minimum Distance Between Bright dots	5mm
Dark dot	Random	$N \leq 3$
	2 dots adjacent	$N \leq 0$
	3 dots adjacent	$N \leq 0$
Total bright and dark dot		$N \leq 4$
Distance	Minimum Distance Between dark dots Minimum Distance Between dark and bright dot.	5mm
Tiny bright dot		visible through 6% ND filter $D \leq 0.25\text{mm}$, Ignore $0.25\text{mm} < D \leq 0.5\text{mm}$, $N \leq 3$ Distance $\geq 5\text{mm}$
Display failure (V-line/H-line/Cross line etc.)		Not allowable
Mura/ Waving/ Hot spot	Not visible through 6% ND filter in 50% gray or judge by limit sample if necessary	

***Note: Defect which is on the Black Matrix(outside of Active Area) are not considered as a defect.**

(3) Appearance & Display inspection

Item	Standards
Foreign Black/White/Bright Spot (Display & Appearance)	$D \leq 0.25\text{mm}$, Ignore $0.25\text{mm} < D \leq 0.5\text{mm}$, $N \leq 3$ Distance $\geq 5\text{mm}$ It is shown in Fig. 2.
Foreign Black/White/Bright Line (Display & Appearance)	$W \leq 0.05\text{ mm}$, Ignore $0.05 < W \leq 0.1\text{ mm}$ $L \leq 3.0\text{ mm}$, $N \leq 3$ It is shown in Fig. 3.
Polarizer Dent/Air Bubble	$D \leq 0.25\text{mm}$, Ignore $0.25\text{mm} < D \leq 0.5\text{mm}$, $N \leq 3$ Distance $\geq 5\text{mm}$
Polarizer Scratches	$W \leq 0.05\text{ mm}$, Ignore $0.05 < W \leq 0.1\text{ mm}$ $L \leq 3.0\text{ mm}$, $N \leq 3$

Notes: If any specific defect is not included in the above defect table, this defect should be judged by INX/ODM/Brand customer discussion.

1. W : Width
2. L : Length
3. D : Average Diameter
4. N : Count

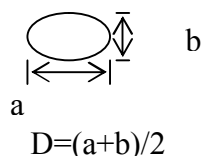


Fig. 2



W: width, L : length

Fig. 3

6.External Appearance Inspection Criteria

Item	Contents	
FPC cable	Cable not continuous 、 Break-off 、 Connector Burn-off /Break-off	
Metal frame (Bezel)	Scratch	*Noticeable scratch and exfoliation coating are not permitted. *The oxidized metal is not permitted.
	Incomplete assembly is not permitted.	
Backlight	Scratch	The scratch which may causes a problem in practical use is not permitted.
	Break-off	Breaking off is not permitted.
	Crack	The crack is not permitted.
Stain on Polarizer	The stain, which can't be wiped off, is not permitted.	
Tape/Label	Incorrect position, missed label is not permitted.	
Connector	Assembly NG or Function fail caused by deformation is not permitted	
Outline size	Spec. out is not permitted.	