INNOLUX CORPORATION

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LCD Panel Inspection Specification

Model No.: R315DCJ-KS4 Product

Customer： 鈺緯
Approval By

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Revision History

Version	Date	Page	Section	Description

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Inspection Standards for LCD Modules

1.Description

These inspection standards shall be applied to LCD Module supplied by INNOLUX Corporation.

This model is only used for Medical product. If there are any other product touch function, handwriting recognition, Industrial use, Aerospace use and so should be negotiated separately.

IIS shall prevail over Product Specifications, QDS (Quality description sheet) or other relative documents.

2.The environmental condition of inspection

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

(1) Ambient temperature : 20~30℃

(2) Humidity: 25~75 %RH

(3) External appearance inspection shall be conducted by using a single 20W fluorescent lamp or equivalent illumination.

(4) Basic Conditions:

a) Viewing Distance：350 to 500 mm.

b) Viewing Angle：±40 degree to the front surface of display panel in vertical and horizontal direction when power ON.

c) Ambient Illumination：50 to 100 lux for light on inspection.

d) Ambient Illumination：300 to 700 lux for external appearance inspection.

e) Luminance of module：dimming to 600 nits ± 50 nits.

(5) Using method for ND Filter

When using ND Filter for judging Mura, placing ND Filter near Mura defect and get close to the surface of LCD Panel (its distance shall be 3~5cm between the surface of panel and ND Filter.) for 2~3sec. Don’t touch the surface of polarizer to avoid scratching polarizer, and then move to the Defect position to judge mura by view angle 90 degree (The viewing angle shall be 90 degree to the right top of Mura defect with panel.)

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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 and/or minor judgement will be according with the classification of defects.

4.Inspection Criteria

(1) Definition of dot defect induced from the panel inside.

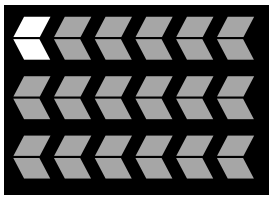
a) Bright dot：Dots appear bright and unchanged in size in which module is displaying under black pattern.

b) Dark dot：Dots appear dark and unchanged in size in which module is displaying under pure red, green, blue, white patterns.

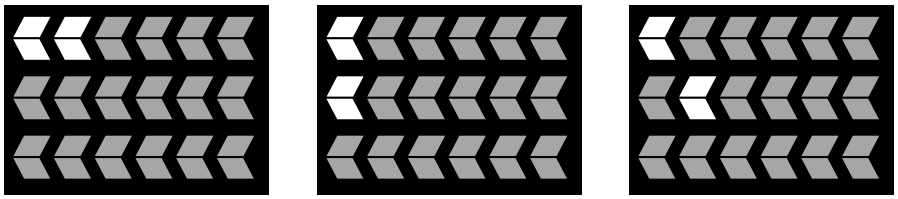
c) 2 Full dot adjacent = 1pair.

d) Picture：

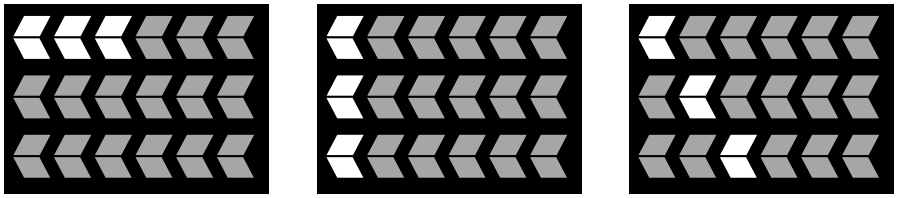
(a) Full Dot



(b) 2 Full Dot Adjacent



(c) 3 Full Dot Adjacent



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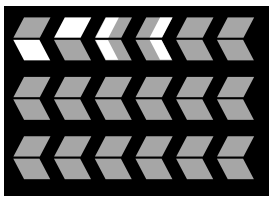
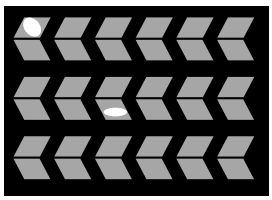
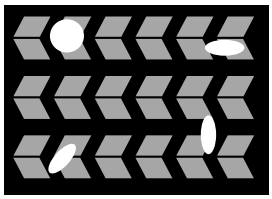
(d) Partial Dot Defect

(e) Foreign Spot Defect



(2) Display Inspection standards when power on.

Item		Acceptable count
Full Bright Dot	Random	N＝0
	2 dots adjacent	N＝0
	3 dots adjacent or more	N＝0
Full Dark Dot	Random	N≦15
	2 dots adjacent	N≦2
	3 dots adjacent or more	N＝0
Partial Bright Dots		N≦16
Total Bright Dot and Dark Dot		N≦25
Distance	Dots within a circle of 10mm diameter	N≦3
Foreign Black/White/Bright Spot		D≦0.20mm, Ignore 0.20＜D≦0.4 mm, N≦10
Foreign Black/White/Bright Line		W≦0.07mm, Ignore 0.07＜W≦0.1mm & L≦3.0mm, N≦10
Mura	Not visible through 6% ND filter in 50% gray or judge by limit sample if necessary	
Display failure (V-line/H-line/Cross line etc.)		Not allowable
Definitions： A Bright Dot is a lit Dot visible through 5% ND filter under all black background. If a lit cannot be seen through 5% ND filter, it is not counted as a bright dot. The Partial Bright Dot size is smaller than 1 Full Bright Dot.		

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(3) Line Defect

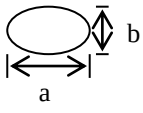
Line defect is defined as a horizontal or vertical line that differs from adjacent lines in brightness at any gray level. Line defects will not exist anywhere on the screen.

5.External Appearance Inspection Criteria

Item	Contents	
Screw	Parts mounting, incomplete assembly, deformation, oxidized, crooked or rusty is not permitted.	
Light Bar	FFC Break-off 、Connector Break-off / Burn-off is not permitted	
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.
Polarizer	Dent/Bubble	D≦0.20mm, Ignore 0.20＜D≦0.4 mm, N≦10
	Scratches	W≦0.07mm, , Ignore 0.07＜W≦0.1mm & L≦3.0mm, N≦10
	Stain	The stain which can’t be wiped off is not permitted.
Tape/Label	Incorrect position, missed label is not permitted.	
Connector	Oxidized/rusty connector is not permitted.	
Outline size	Spec. out is not permitted.	

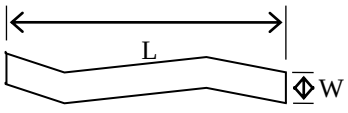
Note.1

D=(a+b)/2



Note.2

W: width, L：length



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6.Classification of defects

Inspection Item	Criteria and Description	Judgment
Vertical line	Signal input, vertical line off or irregular V-line appears	Major
Horizontal line	Signal input, horizontal line off or irregular H-line appears	Major
Cross line	Pattern signal input, a correct display is not obtained	Major
No display	Signal input, display is dead	Major
Irregular display	Pattern signal input, a correct display is not obtained	Major
Dots defect	Exceed specified standards	Minor
Scratch and Dent on polarizer	Exceed specified standards	Minor
Foreign material	Exceed specified standards	Minor
Mura	Non-uniformity is appeared in display	Minor
Polarizer bubble	Exceed specified standards	Minor

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