

Cosmetic Outgoing Inspection Specification

(15.0" XGA TFT LCD)

Customer _____

Samsung SKYoo

S. K. Yoo
Sr. Manager. LCD Q&R Group

LCD Q & R Group
Customer Service

1. Outgoing Inspection

1.1 Outgoing Inspection Plan

1.1.1 Sampling Plan

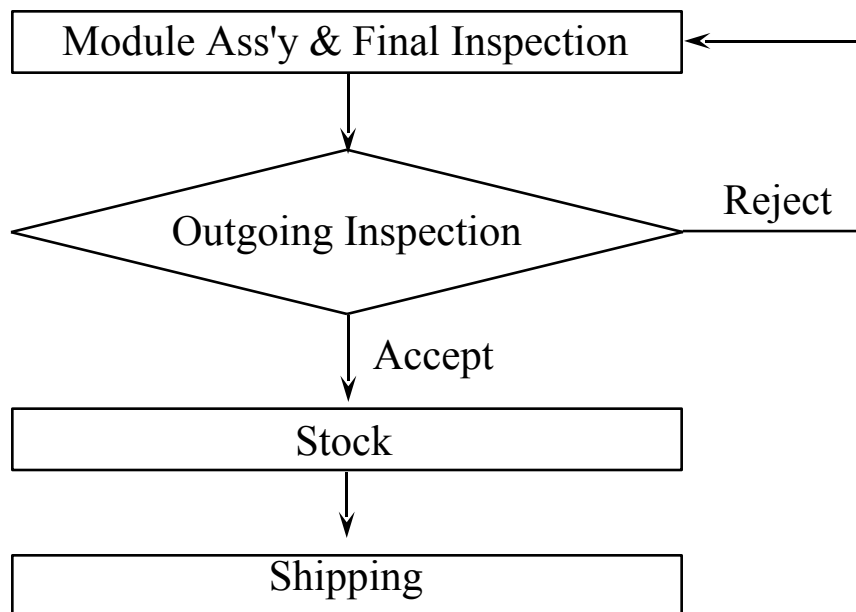
A.Q.L : MIL-STD, 105E Level II, 0.65 equivalent

Lot size : 200 ~ 1200 pcs

Sample size : 80 pcs

Accept/Reject : 1 / 2

1.1.2 Flow Chart



1.2 Outgoing Inspection Criteria

1.2.1 Inspection Introduction

1.2.1.1 Conditions

<i>viewing distance</i>	30 ~ 50 cm
<i>ambient illumination</i>	300 ~ 700 Lux (nominal 500 Lux)
<i>ambient temperature</i>	25 + - 3 'C
<i>viewing angle</i>	The surface of the module and the inspector's line of view shall be at 90 degrees.
<i>display pattern</i>	15.0" XGA - R, G, B, Black, White
<i>inspection area</i>	active area

1.2.1.2 Defect Modes

dark / bright spots

points on the display which appear dark / bright and remain unchanged in size

dark / bright lines

lines on the display which appear dark / bright and remain unchanged in size

polarizer scratch

when the unit is lit a light, line is seen across a darker background; line does not vary in size

polarizer dent

when the unit is lit a light, light(white) spots appear against a darker background, and do not vary in size

bright/dark dot

a sub-pixel (R, G, B dot) stuck off / on

1.2.2 Mechanical Inspection

Chassis Gap max. 0.7mm

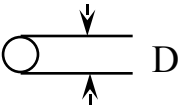
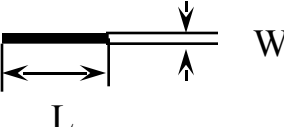
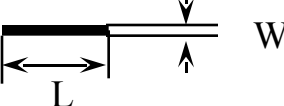
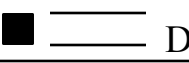
Silicone Gasket (Glue) silicone material shall not be exposed beyond the metal frame edge into the view area

Light Leakage there shall be no visible light around the edges of the screen.

** If there is none identified criteria in this specification, Samsung will refer production specification that Customer and Samsung agreed.*

** If there is mechanical dimension issue which has no designated tolerance, Samsung will apply natural tolerance.*

1.2.3. Visual Inspection

Defect Type	Count (mm)	Reject (mm)
<p><i>Dark / bright spot (foreign material, Stain, Dust)</i></p> 	$0.1 < D \leq 0.8$ $N \leq 4$	$D > 0.8$
<p><i>Bright line (light lint), or dark line (dark lint / hair)</i></p> 	$0.01 < W \leq 0.08$ $0.3 < L \leq 1.0$ $N \leq 3$	$W > 0.08$ $L > 1.0$
<p><i>Polarizer scratch</i></p> 	$0.01 < W \leq 0.05$ $0.3 < L \leq 10.0$ $N \leq 2$	$W > 0.05$ $L > 10.0$
<p><i>Polarizer dent/bubble</i></p> 	$D \leq 0.5$ $N \leq 2$	$D > 0.5$
<p><i>Maximum allowable number of defects</i></p>	$N \leq 10$	$N > 10$

[D : diameter, W : width, L : length, N : count]

1.2.4 Electrical Inspection

Defect Type	Accept	Reject
<i>Bright dot</i>		
<i>random</i>	N ≤ 6 (green ≤ 3)	N > 6 (green > 3)
<i>two adjacent</i>	N ≤ 1	N > 1
<i>Dark dot, (Fig. 1)</i>		
<i>random</i>	N ≤ 10	N > 10
<i>two adjacent</i>	N ≤ 3	N > 3
<i>three adjacent</i>	N ≤ 2	N > 2
<i>four or more adjacent</i>	Not allowed	
<i>Maximum allowable number of dot defect</i>	N ≤ 16	N > 16
<i>Minimum distance between defects, (Fig. 2)</i>		
<i>bright dot - to - bright dot</i>	L ⇒ 15mm	L < 15mm
<i>dark dot - to - dark dot</i>	L ⇒ 5mm	L < 5mm

[L : length, N : count]

Inspection pattern for electrical defect should be pure R, G, B, Black and White.

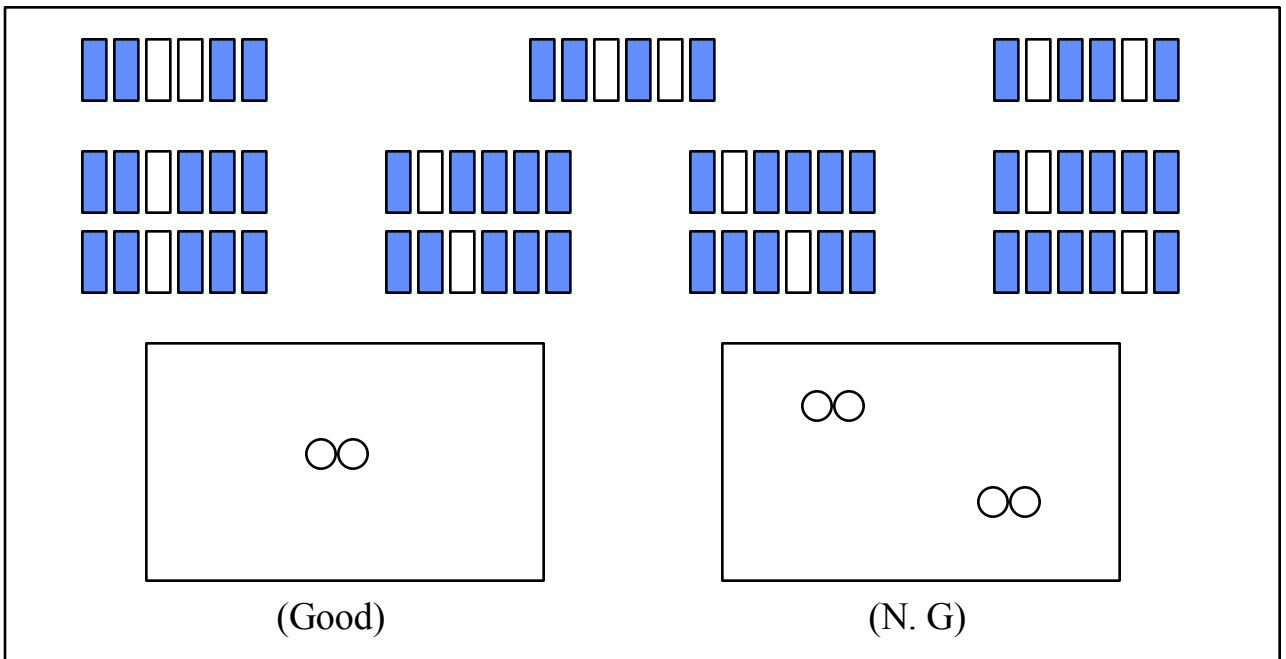
Light leakage not allowed

Image sticking image sticking pattern shall not be to persist longer than 10 seconds in the next pattern

Glue / stain / dirt glue, non-removable stain and dirt which are visible in the inspection area are not acceptable.

Fig. 1. Bright dot defect description

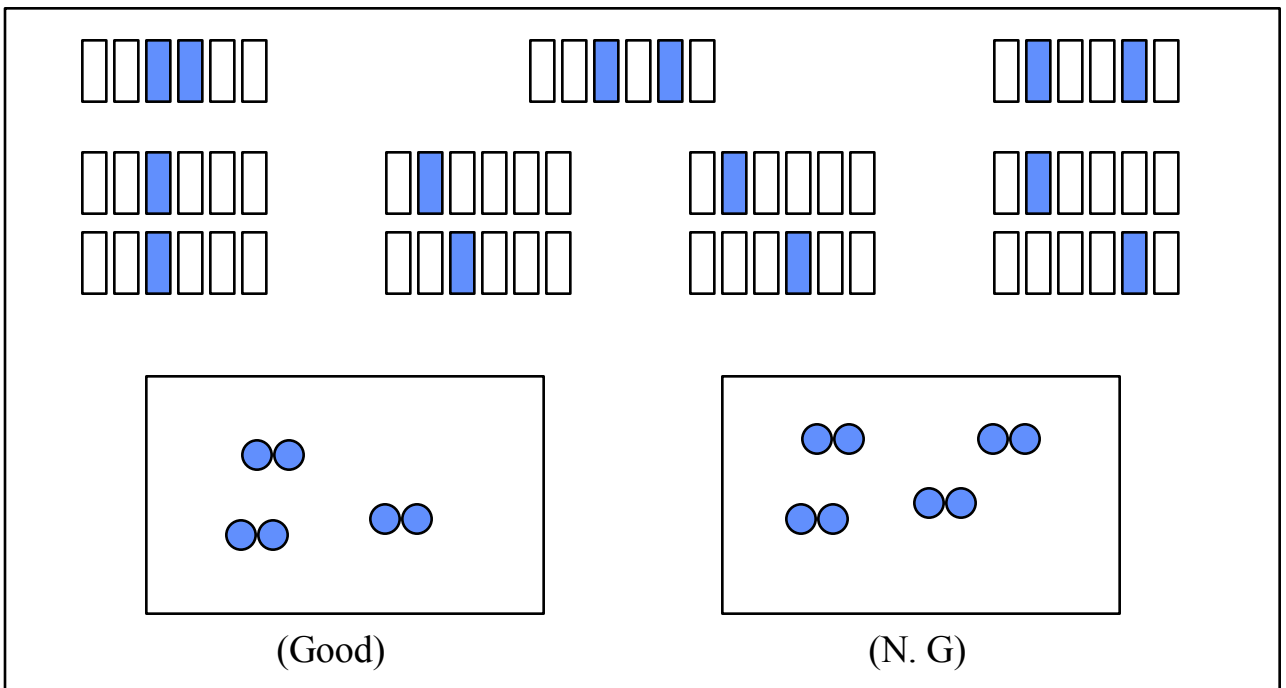
【 two adjacent 】



* adjacent two dots in horizontal direction will be considered as one dot

Fig. 2. Dark dot defect description

【 two adjacent 】



* adjacent two dots in horizontal direction will be considered as one dot

Fig. 2. Dark dot defect description - continued

【 three adjacent 】

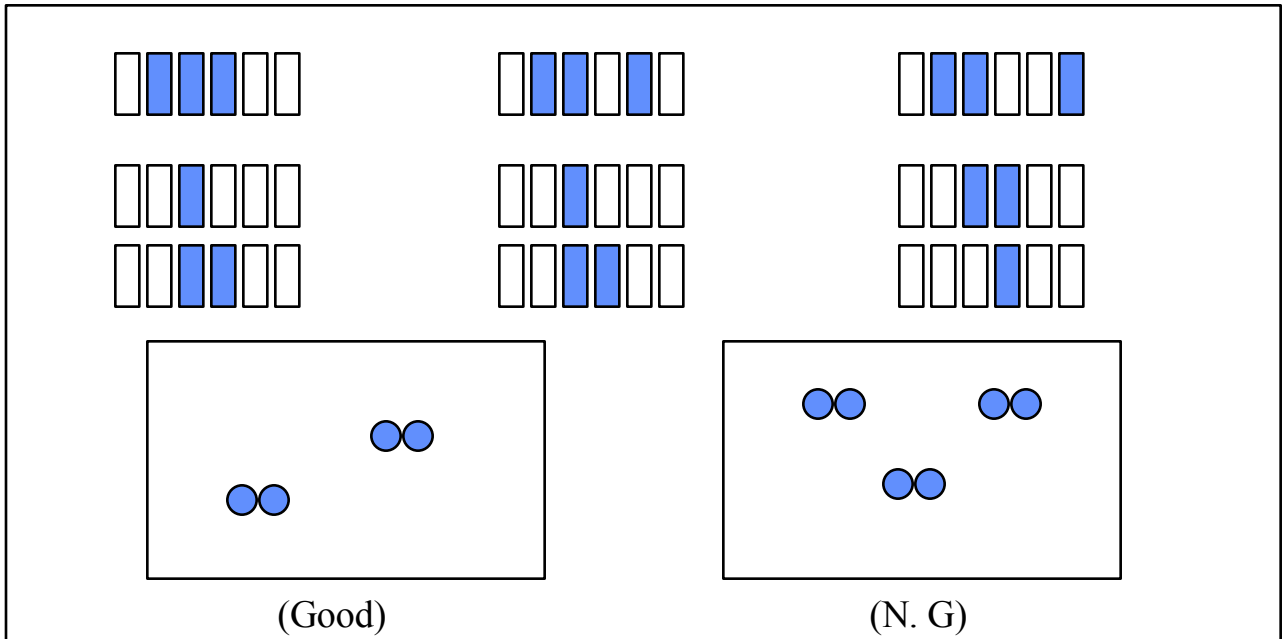
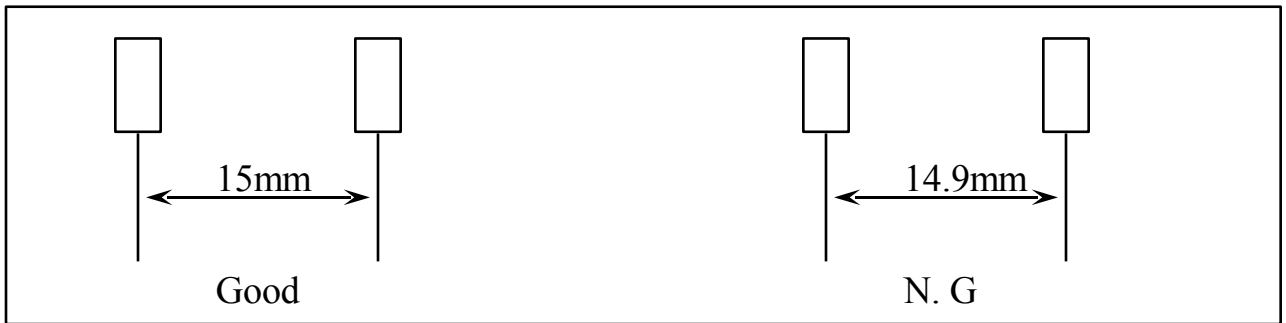


Fig. 3. Minimum distance between dot defects

【 bright dot - to - bright dot 】



【 dark dot - to - dark dot dot 】

