FHD553-X cosmetic acceptance criteria

This document provides information on the FHD553-X cosmetic acceptance criteria.

Affected products

The following products are affected.

- FHD553-X

Required specifications

Learn about the required specifications for the acceptance criteria inspection.

Specification	Description	Notes
Ambient temperature	20 to 30°C (68 to 86°F)	—
Ambient humidity	50±10% RH	—
Illumination	300 to 700 lux	—
Viewing distance	100 to 120 cm (39.4 to 47.2 inches) apart from the surface of LCD module	If the defect is visible within 1.0 m (3.3 feet) but invisible from more 1.0 m (3.3 feet), it is not consider a defect.
Viewing angle	Surface of the module and the inspector's line of view must be at 90°	—

Viewing angle (left 45°/right 45°)

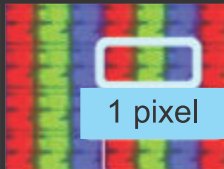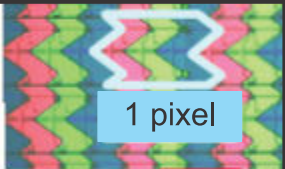A   Panel

B   Inspection area

C   Inspector

D   Panel width

Defect categories

Defects are categorized as follows.

Defect	Description
Major	Likely results in failure or reduces the usability of the product for its intended purpose.
Minor	Has little bearing on the effective use or operation of the product.

Dot defect

The following topics provide the criteria for assessing dot defects.

	Type 1	Type 2	Mark
1 pixel	1 pixel	1 pixel	1 pixel = 3 dots
1 dot	1 dot	1 dot	
1 dot off	or	or	1 red dot off

Bright dot defect

A bright dot (black pattern and 50% gray test pattern) defect is a brightly visible dot compared against the background.

1. Start dot defect test at the 0% (0/255) gray test pattern.

2. If the dot is brightly visible, move to the 50% (127/255) gray test pattern.
    If brightly visible, a bright dot defect exists.

Item	Criteria
R.G.B one dot	2
Adjacent two dots	0
Adjacent three dots	0
Bright dot – Bright dot	5 mm (0.2 inches)

Low dot defect

A low dot (N≦7) defect is a brightly visible dot compared against the 25% (63/255) gray pattern background.

1. Start dot defect test at the 0% (0/255) gray test pattern.
2. If the dot is visible, move to the 50% (127/255) gray test pattern.
   If the dot is brightly visible, a bright dot defect exists.
3. If the dot is invisible, move to the 25% (63/255) gray pattern.

   - If the dot is brightly visible, a low dot defect exists.
   - If the dot is invisible, no defect exists.
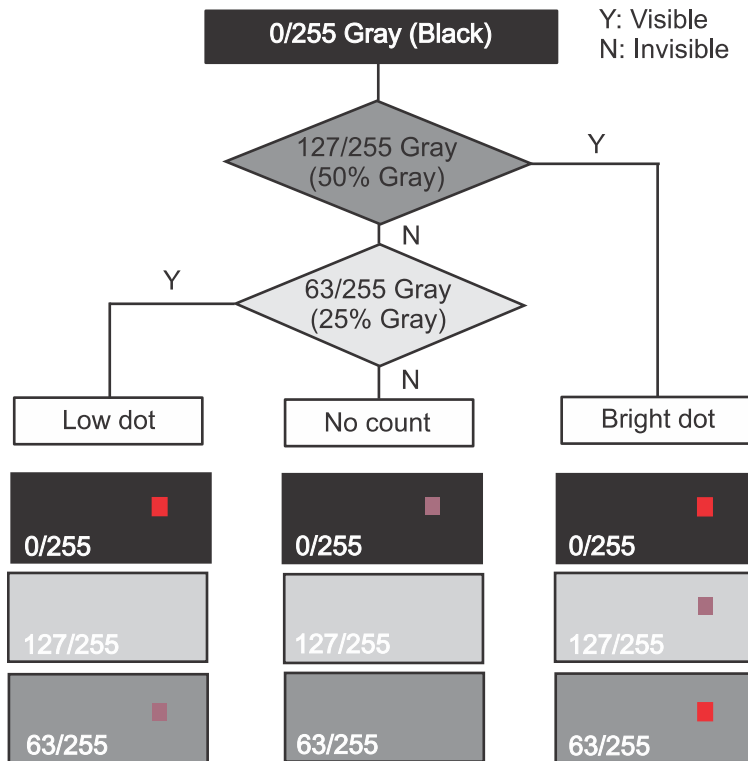
Dark dot defect

Dots (sub-pixels) appear darkly on the screen when the white (100%R/G/B) test pattern is displayed.

Item	Criteria
One dot	10
Adjacent two dots	2
Adjacent three dots	0

Total amount of dot defects

This summarizes the total amount of dot defects.

Item	Criteria
Quantity	15

Adjacent two dots

Minimum distance criteria is not adjusted to those defect patterns. Only case #1 is counted as one dot and the other cases are counted as two dots.

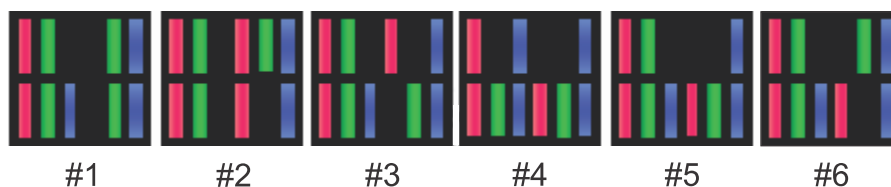#1   #2   #3   #4   #5   #6
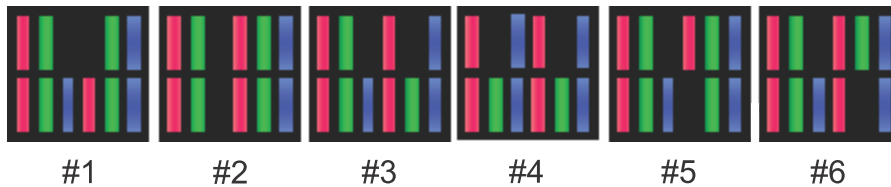
Adjacent three dots

Minimum distance criteria is not adjusted to those defect patterns. Only case #1 is counted as one dot and the other cases are counted as two dots.
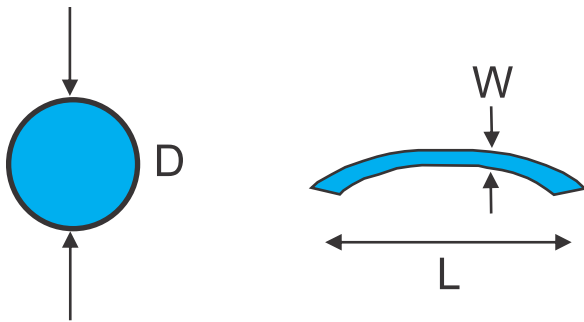

#1   #2   #3   #4   #5   #6

Spot and linear defect

Learn about spot and linear defects.

Item	Criteria		Quantity
	Size		
Line shape scratch	0.01<W≦0.4 2.0 <L≦15.0		5

Item	Criteria	
	Size	**Quantity**
Dot shape scratch	0.1≦D≦3.0	5

Criteria for each parameter and standard

Spot defect	D: dimension
Linear defect	W: width L: length—Length is from the line starting point to the ending point

Distinguishing method of spot and linear defect

In the center of the circle, if the angle is over 180°, this is a spot shape.

If the line is curved more than 180°, a spot shape exists
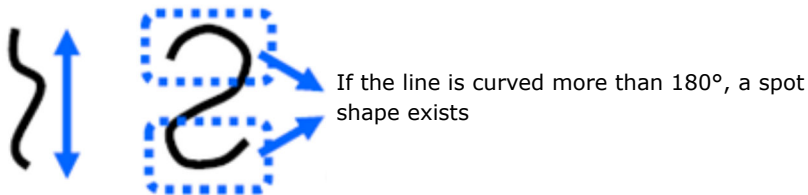
The following is an example of a spot or linear defect:

Shape										
Spot / Linear (O / I)	I	o	o	o	o	I	o	o	o	o

Line defect

All kinds of line defects such as vertical, horizontal, or cross are not allowed.

Mura

When a mura issue happens, the limit sample is determined by mutual agreement.

Light leakage

Visible light must not be visible around the edges of the screen. Pressure light leakage is not considered.

No light leakage from 1.0 m, for any pattern .The surface of the module and the inspector's line of view must be at 0°, no view angle.
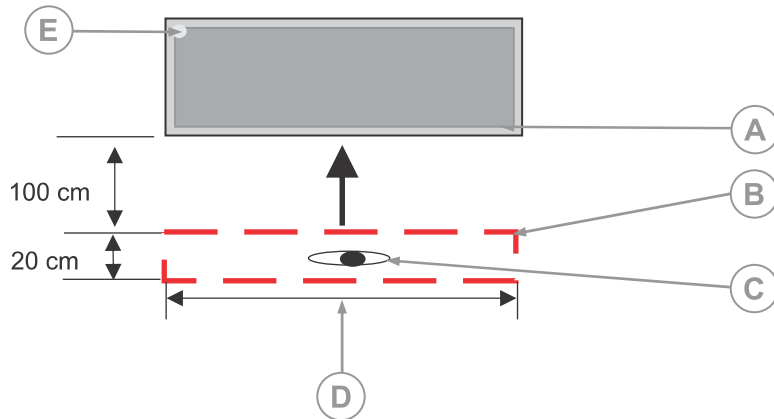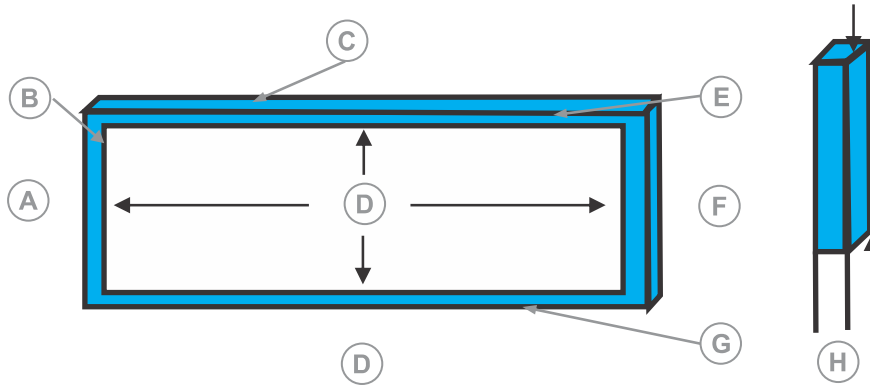

A	Panel	C	Inspector	E	Light leakage
B	Inspection area	D	Panel width		

Black top chassis inspection (front and side)

Inspect the front and side of the black top chassis for defects.

Defect location	Defect type	Accept (mm)	Reject (mm)
Front	Dent	0.5 < D ≤ 1.0 N ≤ 2	D > 1.0 N > 2
	Scratch	0.01 < W ≤ 0.1 0.3 < L ≤ 12.0 N ≤ 2	W > 0.1 L > 12.0 N > 2
Side	Deformation (upper/right/left)	Chassis gap ≤1.5	Chassis gap >1.5

Defect location	Defect type	Accept (mm)	Reject (mm)
	Deformation (bottom)	Chassis gap ≤3.0	Chassis gap >3.0
	Dent/scratch	Ignore	

A	Left	D	Front	G	Bottom
B	Burr	E	Bending	H	Side
C	Upper	F	Right		

Black top chassis inspection (bending corner)

Inspect the front and side of the black top chassis for defects.

Defect location	Defect type	Accept (mm)	Reject (mm)
Bending corner side edge	First step visible check	If silver inner metal is invisible from a 1.0 mm (0.04 inches) look.	If silver inner metal is invisible from a 1.0 mm (0.04 inches) check size.
	Second size step	D ≤ 2.0 Total N = ignore	D > 2.0 Total N = ignore
Burr	—	0.3 < L ≤ 30.0 One side N ≤ 1 Total N ≤ 3	L > 30.0 One side N > 1 Total N > 3
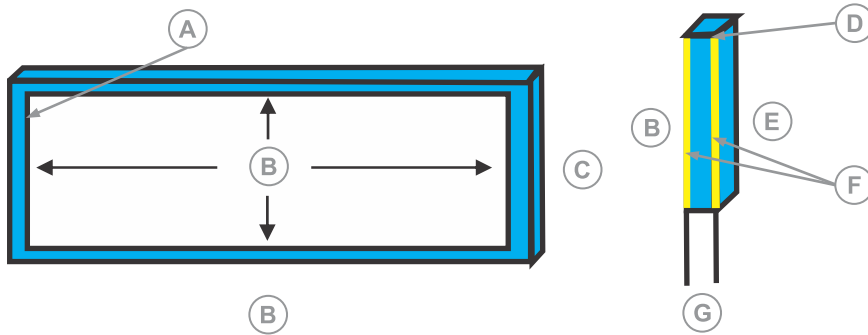
The translucent edge is ignored when measuring the diameter of the spot.

A	Burr	D	Corner	G	Side
B	Front	E	Back		
C	Right	F	Side edge		

Classification of defects

The following outlines the classification of defects.

Defect mode	Criterion for defect	Class
No display	Not allowed	Major
Line defect	No vertical, horizontal, or cross lines allowed	
Polarizer defects	In accordance with the inspection criteria:	Minor
Extraneous substance	Dot defects Spot and linear defects	
Dot defect	Line defects Mura Light leakage Black top chassis defects	

Technical support

Technical support for Christie Enterprise products is available at:

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