

LCD Panel Defective Symptoms Highlights

Under warranty if LCD panel with following defective symptoms within one year of purchasing

this page presents problems that could be made by LCD panel.
It is not necessary to repair circuit board. Simply follow the mechanical instruction on this manual to eliminate failure by replace LCD panel.]

Failure description

Phenomenon

Vertical block defect



Polarizer has bubbles



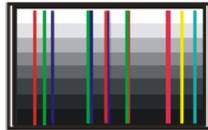
Vertical dim lines



Polarizer has bubbles



Vertical lines defect
(Always bright or dark)



Foreign material inside polarizer. It shows liner or dot shape.



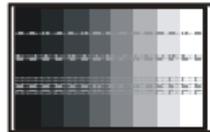
Horizontal block defect



Concentric circle formed



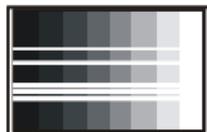
Horizontal dim lines



Bottom back light of LCD is brighter than normal



Horizontal lines defect
(Always bright or dark)



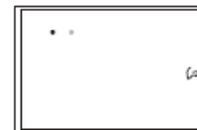
Back light un-uniformity



Has bright or dark pixel



Backlight has foreign material. Black or white color, liner or circular type



Under warranty if LCD panel pixel defects are out of the panel specification

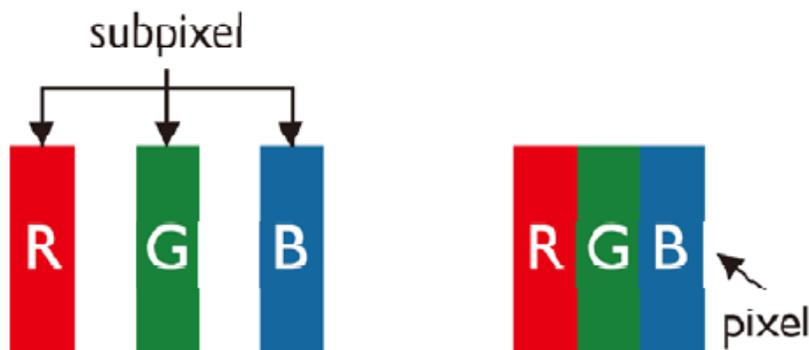
Proximity of Pixel Defects

Because pixel and sub-pixels defects of the same type that are nearby one another may be more noticeable. Refer to product user manual for pixel defect specification:

- Allowed amount of adjacent dark dots = (adjacent dark dots = 1 pair of dark dots)
- Minimum distance between dark dots
- Total number of defective dots.

Pixels and Sub-pixels

A pixel, or picture element, is composed of three sub-pixels in the primary colors of red, green and blue. Many pixels together form an image. When all sub-pixels of a pixel are lit, the three colored sub-pixels together appear as a single white pixel. When all are dark, the three colored sub-pixels together appear as a single black pixel. Other combinations of lit and dark sub-pixels appear as single pixels of other colors.

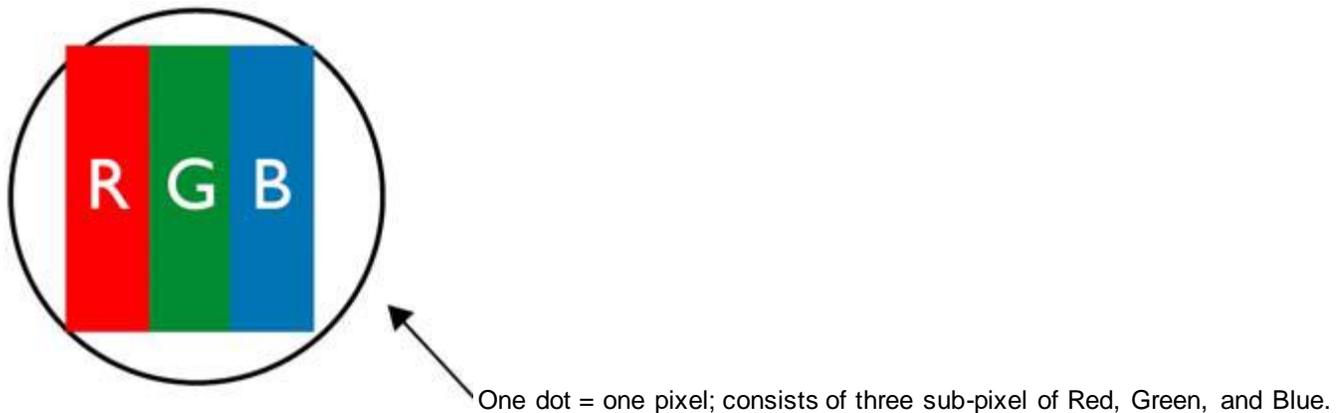


Types of Pixel Defects + Dot Definition

Pixel and sub-pixel defects appear on the screen in different ways. There are three categories of pixel defects and several types of sub-pixel defects within each category.

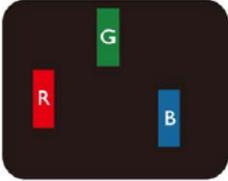
Bright Dot Defects = what is a defective "Dot"?

One or more defective, adjacent sub-pixel is defined as one "dot". The no. of defective sub-pixels is not relevant to define a defective dot. This means that a defective dot can consist of one, two or three defective sub-pixels which can be dark or lit.



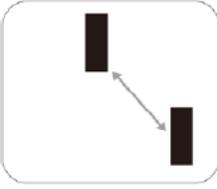
Bright Dot Defects

Bright dot defects appear as pixels or sub pixels that are always lit or 'on'. There are the examples of bright dot defects:

		
One lit red, green or blue sub pixel	Two adjacent lit sub-pixels: - Red + Blue = Purple - Red + Green = Yellow - Green + Blue = Cyan (Light Blue)	Three adjacent lit sub-pixels (one white dot)

Dark Dot Defects

Black dot defects appear as pixels or sub-pixels that are always dark or 'off'. There are the examples of black dot defects:

		
One dark dot	Two adjacent dark dots = 1 pair of dark dots	Two dark dots, specifications defines the minimum distance between dark dots

MURA

Dark spots or patches may occasionally appear on some liquid crystal display (LCD) panels. This is known within the industry as Mura, which is a Japanese term for "unevenness." It is used to describe an irregular pattern or area in which uneven screen uniformity appears under certain conditions. Mura is a result of the deterioration of the liquid crystal alignment layer and is most commonly caused by long-term operation under high ambient temperatures. It is an industry-wide phenomenon and Mura is not repairable. It is also not covered by our warranty terms.

Mura has been around since the introduction of LCD technology and with screens getting bigger and in operation 24/7; many displays are running in low light conditions. This all adds to the possibility of Mura affecting displays.

How to Spot MURA

There are many symptoms of Mura and also multiple causes. Several of these are listed below:

- Impurities or foreign particles in the crystal matrix
- Uneven distribution of LCD matrix during manufacturing
- Non-uniform luminance distribution of the backlight
- Panel assembly induced stress
- Flaws within the LCD cells
- Thermal induced stress - high temperature operation over long periods of time

How to Avoid MURA

Although we cannot guarantee the complete eradication of Mura every time, in general the appearance of Mura can be minimized by these methods:

- Lower the backlight brightness
- Use a screen saver
- Reduce the ambient temperature around the unit

Note: LCD panel may not be covered by factory 1 year warranty if the defect symptoms are not defined in this statement. If you have any question, please call AOC tech support hotline for assistance.

