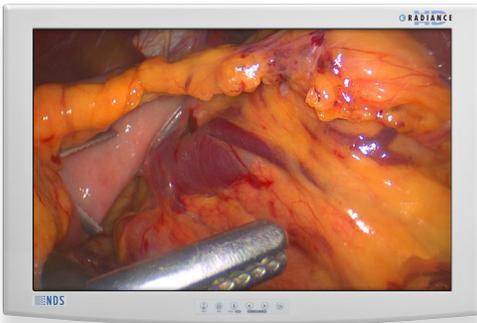
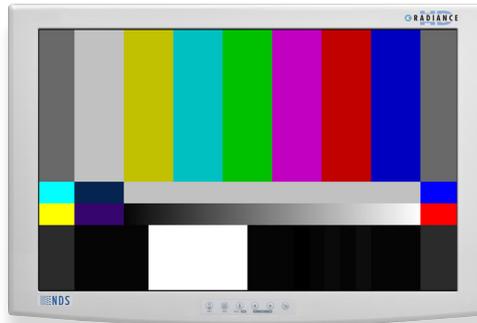


WHAT IS LCD IMAGE RETENTION?

LCD image retention is often referred to as “Image burn-in” or “image sticking”. LCD image retention occurs when a static image (an image that does not change) is displayed for an extended period of time. The phenomena occurs due to changes in the physical properties of the liquid crystal material that makes up the pixels of the screen. These changes prevent the liquid crystal material from returning to its normally relaxed state, and therefore partially “retaining” the static image that had been left on the screen for a long period of time. Below is an illustration showing what image retention can look like.



Normal Surgical Image
(No Image Retention)



Camera Color Bar Test Pattern



Simulation of Image Retention
(After Color Bars Have Been Displayed
for an Extended Period of Time)

HOW TO PREVENT LCD IMAGE RETENTION

The only way to prevent image retention from occurring is to avoid displaying a static image for a long period of time. One way to accomplish this is to turn off the display when not in use, or to turn off the video source equipment and allow the display to enter “power-save” or “DPMS” mode (where the display automatically turns off on its own until a video signal is detected again).

CAN LCD IMAGE RETENTION BE REVERSED?

In most cases, image retention will dissipate over time. However, in some extreme cases the problem is irreversible. A number of factors affect how persistent (or in some cases permanent) image retention will be, such as the length of time the static image was displayed, the actual content of the static image, and environmental conditions. For this reason, all LCD display manufacturers exclude image retention from their warranty coverage.

In cases where the image retention is not permanent, there are several ways the problem can be reversed. For example, simply powering off the display for 24 to 48 hours, or displaying an alternating pattern of completely white and completely black screens for multiple hours. The longer the static image was displayed, the longer it may take for the problem to go away.