

# Advice to Broadcasters on avoiding 'image retention' on displays

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## Advice to Broadcasters on avoiding 'image retention' on displays

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### Introduction

Plasma screen technology in particular tends to exhibit a greater vulnerability than CRT screens to localised, persistent 'image retention' which can result from the exposure of the screen to certain types of static element within the displayed picture. Other display technologies, including LCD, may also be affected. The problem is characterised by a 'retained' vestigial image appearing on screen permanently after the signal causing it has been removed. It is often the edges of static images which are most noticeable in any retained image.

Because of its greater resolution, edges are sharper in HDTV than in SDTV, so this phenomenon is likely to become an increasingly serious issue as HDTV broadcasts are becoming more common.

### Manufacturers and retailers are aware of the issue

The screen impairment mechanisms are complex, and differ with the screen technologies involved. Receiver manufacturers nevertheless believe that risks can be reduced if all parties were to adopt a co-ordinated approach to the challenge. To this end, manufacturers and retailers of screens have in recent years generally aimed at ensuring that:

- Good operational practice, clearly and emphatically stated, is provided to the end-user and this is maintained in the light of any new development.
- Technological measures are continuously developed to achieve greater tolerance to this type of potential damage, such as the implementation of display protection modes of operation.
- Commitment is maintained to the training of retail and installation staff in this area - including how to advise customers on appropriate setting of parameter levels aimed at minimising potential image retention problems.

In addition to this ongoing commitment to addressing the problem it is suggested that broadcasters and other content providers should voluntarily limit the types of "problem image" that are presented to the screen.

### Advice to broadcasters and other content providers

For the broadcaster, 'static' images are increasingly encountered in a number of roles, including on-screen channel identification, interactive application flags, banner displays, screens displayed

when radio services are being received, programme guides, and longer-term text inserts such as sports scores. This type of content has become more prevalent in recent years, and it is likely to remain an editorial feature of many broadcasts.

To minimise the risk of static image retention or premature ageing of displays, broadcasters and other content providers should take note of the following.

### **Concerning static Images**

For the purpose of this document an image is deemed to be static if any part of the screen is occupied by any part of the image for more than a total of six hours in any twelve on more than one occasion in a seven-day period. If an image is not static the risk of a retained image being formed from it is low. To assist in ensuring that images are not static, certain specific practices might be considered, including:

- Moving the position of images on the screen from time to time in order that the definition of 'static' is not met.
- Instigating a time-out of static images where appropriate.

### **Concerning the luminance of static images**

The luminance value of any static image should be restricted to a value equal to the average picture level of the screen in order to minimise the risk of forming a retained image.

Two alternative methods of achieving this are:

- To use a technique known as 'Linear-key mixing' that overlays the static image as a partly transparent image over the picture content. The 'added image volume' level that sets the apparent transparency should not be set any higher than a level necessary to make the added image acceptably visible.
- To limit the luminance/intensity of the static image to 40% of peak white.

Further, it is recommended that the use of saturated blue or yellow images be avoided wherever possible and particularly where one is laid over the other.

Note      Whilst image retention mechanisms differ considerably depending on the screen technology (and may be more evident as a short-term "image sticking"), these guidelines, which were originally drawn up with plasma displays in mind, should also avoid this problem becoming evident on other display types.

*The EBU acknowledges the work of Intellect (the UK's trade association for the IT, telecoms and electronics industries), and the UK's Digital TV Group (DTG), in the preparation of this Recommendation.*