

RECOMMENDATION ITU-R BT.1665

**Considerations for colour encoding and spatial resolution
for large screen digital imagery¹ display**

(Question ITU-R 15/6)

(2003)

The ITU Radiocommunication Assembly,

considering

- a) that ITU, as well as other international standardisation bodies, are studying a new application that will provide for the delivery of very high-quality digital images to theatres;
- b) that digital methods involve encoding of video information into a finite number of discrete values (quantisation), rather than the infinitely divisible range of values existing in the natural world;
- c) that the choice of encoding method may materially limit the performance of an image presentation in several ways, including colour saturation, brightness, contrast, the resolution of detail and the visibility of contouring artefacts;
- d) that digital display methods involve spatial sampling of the visual field into a number of discrete picture elements, rather than the infinitely divisible spatial field existing in the natural world;
- e) that the parameters and methods of spatial sampling may materially limit the performance of an image presentation in several ways, including detail, sharpness and the visibility of aliasing artefacts;
- f) that presently available display equipment also limits the performance of an image presentation, but that current and future developments in display technology will lessen these limitations over time;
- g) that scientific principles are known by which the limitations described in *considering* c) and e) may be eliminated for observers with normal human vision;
- h) that encoding and sampling methods which minimise the limitations described in *considering* c) and e) are desirable for the highest quality viewing experience, as it introduces no artificial constraints on the image creator's range of expression;

¹ Large screen digital imagery (LSDI) is a family of digital imagery systems applicable to programmes such as dramas, plays, sporting events, concerts, cultural events, etc. from capture to large screen presentation in high-resolution quality in appropriately equipped cinema theatres, halls and other venues.

- j) that practical engineering compromises that are based on a full understanding of scientific principles can often provide performance approaching that of a theoretically ideal display but with lower cost and complexity;
- k) that the LSDI encoding and sampling methods employed should facilitate conversions to other established colour encoding and sampling methods with minimum artefacts,

recommends

- 1 that the properties of the human visual system should be used as the basis of the design and evaluation of colour encoding and spatial sampling methods for digital display of high-quality images in theatres;
- 2 that the final specification for the colour encoding and spatial sampling methods should be close to the design values arrived at in *recommends* 1 above, and within the limits of practical engineering, implementation, complexity and the relevant cost.
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