

RECOMMENDATION ITU-R BT.1692

Optimization of the quality of colour reproduction in television

(Question ITU-R 97/6)

(2004)

The ITU Radiocommunication Assembly,

considering

- a) that in television the quality of colour reproduction is an important part of the overall quality of TV images and of the TV service itself;
- b) that it seems that in future broadcasters will continue to be interested in further optimization of colorimetric quality of TV images;
- c) that the modern level of colour science may be a basis for further development of the methods of optimization of colour reproduction quality in television;
- d) that throughout the world, digital TV system development is based on the transmission of the transport stream containing, particularly, additional data with service information which may be used for the optimization of video transmission in the light-to-light TV chain. It becomes possible to optimize the quality of colour reproduction by means of TV image processing at the near and far ends. Account can be taken of the signal processing in components of the TV chain, colorimetric characteristics of TV cameras and displays and viewing conditions at both ends (and therefore light and colour adaptation of the viewer) for any sequences, scenes or plots;
- e) that use of colour image statistics, human colour perception properties and an appropriate colour appearance model will give an opportunity for further improvement of image compression that may lead to further bit stream rate reduction, and a decision should be made on the basis of the trade-off between the quality of colour reproduction and the degree of reduction of the bit rate;
- f) that the use of new methods of colour image processing and compression may lead to new possibilities of colour reproduction in television;
- g) that some receivers in the future may contain algorithms that will define the procedure for reaching subjectively optimal colour reproduction;
- h) that colour optimization may be achieved with use of a suitable colour appearance model;
- j) that a unique set of colorimetric parameters and related characteristics required for all future television systems is specified for the conventional and extended colour gamut in Recommendation ITU-R BT.1361, and this is a basis for coordinated design of all the parts of "light-to-light" TV chains anywhere in the world;

k) that the new methods should be compatible with conventional colour transmission methods, so in future there will be two system levels:

- non-colour-adaptive TV systems (usual TV systems);
- colour-adaptive TV systems,

recommends

1 that technical solutions for colour-adaptive TV systems should be based on use of colour appearance models built with consideration of the adaptation of the human visual system to viewing conditions (possibly different) at both ends of the TV path;

2 that colour appearance models (built on a threshold or non-threshold basis) may be a part of future systems, and in this case the system becomes a colour-adaptive TV system;

3 that forward and backward compatibility is necessary for colour-adaptive TV systems, and that the colorimetric parameters and related characteristics as described in Recommendation ITU-R BT.1361, should be used for colour-adaptive TV systems for standard viewing conditions at both ends;

4 that in future additional viewing conditions should be recommended for viewing colour television.
