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Study Group 11

DRAFT REVISION OF RECOMMENDATION ITU-R BT.710-3

SUBJECTIVE ASSESSMENT METHODS FOR IMAGE QUALITY IN HIGH-DEFINITION TELEVISION

(Question 211-2/11)

(1990-1992-1994-1997)

The ITU Radiocommunication Assembly,

considering

a) that a number of administrations and organizations throughout the world are currently using and/or evaluating high-definition television systems, and that in many parts of the world HDTV broadcasting is likely to become the primary medium of the next century;

b) that subjective assessments are a vital element in HDTV system design and selection;

c) that Recommendation ITU-R BT.500 outlines general subjective assessment methods, many of the methodological details of which are also appropriate in the context of HDTV;

d) that Recommendation ITU-R BT.500 has been modified to provide only general information on methodology for the subjective assessment of the quality of television pictures,

recommends

1 that subjective assessment of image quality of high-definition television systems should be made following the general methodology given in Recommendation ITU-R BT.500;

2 that subjective assessments of the overall quality and of the failure characteristics of HDTV systems should use the specific viewing conditions and the subjective assessment methods described in Annex 1.

DELETE *recommends* 3 to 9 and Notes 1 and 2.

ANNEX 1

1 Viewing conditions

TABLE 1

Viewing conditions for the subjective assessment of HDTV image quality

Condition	Item	Values[1)]
a	Ratio of viewing distance to picture height	3
b	Peak luminance on the screen (cd/m^2)[2)]	150-250
c	Ratio of luminance of inactive tube screen (beams cut off) to peak luminance[3)]	≤ 0.02
d	Ratio of the luminance of the screen when displaying only black level in a completely dark room, to that corresponding to peak white[4)]	approximately 0.01
e	Ratio of luminance of background behind picture monitor to peak luminance of picture	approximately 0.15
f	Illumination from other sources[5)]	low
g	Chromaticity of background	D_{65}
h	Angle subtended by that part of the background which satisfies the specification above[6)]. This should be preserved for all observers	53° high x 83° wide
I	Arrangement of observers	Within ± 30° horizontally from the centre of the display. The vertical limit is under study
j	Display size[7)]	1.4 m (55 in)

1) As it currently may not be possible to achieve these conditions fully for tests, alternative values are given on an interim basis. It should be recognized, however, that the results of tests conducted under the interim conditions may not be, in general, comparable to those obtained in situations in which lower presentation objectives apply.

2) Peak luminance on the screen corresponding to the video signal with 100% amplitude. Values ≥ 70 cd/m^2 should be used until the specified level becomes technically feasible.

3) This item could be influenced by the room illumination, as well as the contrast range of the display.

4) Black level corresponds to the video signal with 0% amplitude.

5) Room illumination should be adjusted such that it is possible to satisfy the conditions c and e.

6) A minimum of 28° high x 48° wide is recommended.

7) Values ≥ 76.2 cm (30 in) should be used if displays of the specified size are not available.

2 Assessment methods

Subjective assessments of the overall quality of an HDTV image delivered by an emission system should be made using a double-stimulus continuous quality-scale method (Recommendation ITU-R BT.500) with the HDTV studio quality image as reference.

Assessment of the failure characteristics of an HDTV emission system should be made using a double-stimulus impairment scale method (Recommendation ITU-R BT.500) with either the HDTV studio image or the unimpaired emission image as reference.

When performance over the range of program content and transmission conditions likely to be encountered in practice is of issue, the description of composite failure characteristics as in Appendix 2 to Annex 1 of Recommendation ITU-R BT.500 should be considered.

Using these methods, care must be taken to distinguish the influence of the display format from that of the basic system format (e.g. any up-conversion). If it is felt to be applicable and appropriate, supplementary assessments may be performed using different displays in order to take into account different display formats.

Some of the HDTV emission systems may include an embedded conventional television format (backwards compatibility). Thus, there is a need to evaluate, in terms of picture quality, the adequacy of conventional television pictures embedded in HDTV emissions. For these systems, the viewing conditions and assessment methods given in Recommendations ITU-R BT.1128 and ITU-R BT.1129 should be applied.

Basic concepts and procedures described in Recommendation ITU-R BT.1129 should be applied to digital HDTV emission systems that employ bit-rate reduction schemes.

3 Test materials

Recommendation ITU-R BT.1210 lists a wide range of still pictures and moving sequences. These should preferably be used as the common test materials for HDTV quality assessments.

DELETE Annexes 2 and 3.