

RECOMMENDATION ITU-R BT.1382

ASSESSMENT OF THE PICTURE QUALITY OF MULTI-PROGRAMME SERVICES

(Question ITU-R 211/11)

(1998)

The ITU Radiocommunication Assembly,

considering

- a) that a number of administrations are studying or planning the introduction of multi-programme television services;
- b) that a variety of media with different transmission characteristics may be used for the delivery of multi-programme services including terrestrial, satellite and cable;
- c) that several Working Parties in ITU-R are investigating multi-programme services;
- d) that the total transmission capacity of broadcast channels is limited and has to be shared among services;
- e) that service providers may want to have the flexibility to dynamically allocate channel capacity to each service in order to make efficient use of the total channel capacity;
- f) that multi-programme services may include 3D (Stereoscopic) television;
- g) that statistical redundancy techniques such as statistical multiplexing or joint coding may be applied to increase the number of programme services carried within the multiplex or to improve the quality of programmes within the multiplex;
- h) that the picture quality of individual programmes may vary according to the instantaneous bit rate allocated to the programme services, and to the scene content of all programmes;
- j) that it is possible that individual channels within a multi-programme multiplex may be thematically based;
- k) that single stimulus subjective procedures may be more appropriate to assess individual thematic programmes;
- l) that channels may occasionally suffer uncorrected errors which will make it important to assess the behaviour of multi-programme services as they pass from normal operation to failure;
- m) that the use of high levels of digital compression on multi-programme services may introduce a non-negligible amount of coding delay,

recommends

- 1** that, for subjective assessment of the quality of individual programmes compressed and coded with Constant Bit Rate (CBR) within a multi-programme service, subjective procedures detailed in Recommendations ITU-R BT.500 and 1129 and the procedure described in Annex 1 should be used;
- 2** that, for subjective assessment of the quality of individual programmes compressed and coded with Variable Bit Rate (VBR) by using methods such as statistical multiplexing or joint coding within a multi-programme service, subjective procedures detailed in Recommendations ITU-R BT.500 and 1129 and the procedure described in Annex 2 should be used;
- 3** that assessments of the quality of thematically based channels should be undertaken using test material of similar content and criticality to that which would usually be transmitted on those channels;
- 4** that, to assess the overall perceived quality of programming which varies in “instantaneous” quality over a period of time, the procedures described in Annex 1 and Annex 2 should be used;

- 5 that scaling of results for systems involving low quality references, according to the comments included in the description of the DSCQS method within Recommendation ITU-R BT.500, should be applied and further studied for testing which compares multi-programme services against low quality material;
- 6 that the guidance on subjective assessment of failure characteristics described in Annex 3 should be applied in addition to information given within Recommendation ITU-R BT.1129;
- 7 that procedures detailed in Annex 3 should be used for assessing the subjective performance of error mitigation strategies, such as freezing the last valid image, or “graceful degradation” coding;
- 8 that procedures detailed in Annex 4 for subjectively assessing viewer tolerance for delays in acquisition of newly selected programmes from a multi-channel multiplex should be applied.

ANNEX 1

Subjective picture quality assessment procedures for constant bit rate multi-programme services

Video Services may include SDTV and HDTV 2D or 3D (stereoscopic) video programmes.

1 2D Video Programmes

The subjective picture quality assessment for each SDTV programme can be carried out independently using the methods described in Recommendation ITU-R BT.1129. For the assessment of the system basic quality, the general test method DSCQS (described in Recommendation ITU-R BT.500) should be used. For the assessment of programmes with transmission impairments the general test method DSIS (described in Recommendation ITU-R BT.500) should be used.

The subjective picture quality assessment for each HDTV programme can be carried out independently using the methods described in Recommendation ITU-R BT.710 or, if possible, with the test procedures recommended for SDTV with appropriate modifications. For the system basic quality, the general test method DSCQS (described in Recommendation ITU-R BT.500) should be used. For the assessment of programmes with transmission impairments the general test method DSIS (described in Recommendation ITU-R BT.500) should be used.

Test procedures to assess the overall picture quality for programmes with instantaneously varying quality have to be developed.

2 3D (Stereoscopic) Video Programmes

For the subjective picture quality assessment for each 3D (stereoscopic) video programme, the methods on subjective assessment of stereoscopic television pictures are under development.

ANNEX 2

**Subjective picture quality assessment procedures for
variable bit rate multi-programme services**

For the subjective picture quality assessment of SDTV and HDTV 2D and 3D (stereoscopic) programmes new test procedures have to be developed including test procedures to assess overall picture quality for programmes with instantaneously varying quality. So far the test method DSCQS (described in Recommendation ITU-R BT.500) has been used for the SDTV 2D multi-programmes using variable bit rate coding. However, further data is required to verify the appropriateness of this method. Attention must also be drawn to the selection of test materials, since the picture quality may depend on the picture content of all the multiplexed programmes.

ANNEX 3

Subjective assessment of failure characteristics and error mitigation

This type of assessment is still under study and new procedures have to be developed.

ANNEX 4

Subjective assessment of channel hopping delays

This type of assessment is still under study and new procedures have to be developed.
