RECOMMENDATION ITU-R BR.1292*

Engineering guidelines for video recording in standard definition television production and post-production chains

(Question ITU-R 239/11)

(1997)

The ITU Radiocommunication Assembly,

considering

a) that television post-production operation is based on the use of television recording;

b) that a number of important image manipulations required in television post-production can only be performed on component video signals, in either analogue or digital form;

c) that there are now in use many formats of television recorders that operate on:

– analogue composite video signals,

– analogue component video signals,

– digital composite video signals,

– digital component video signals without bit-rate reduction (BRR),

– digital component video signals with a small BRR factor,

– digital component video signals with a large BRR factor;

d) that several such recording formats may be present in the same television post-production installation and they may happen to be used in tandem on the television signal chain, in a way that will be dictated by operational considerations more than by a concern for maximum final picture quality;

e) that every time a video signal is passed from its component to its composite form or *vice versa* (be it in the analogue or in the digital domain), it is subjected to a co-decoding process, and to the associated video filtering; this causes a small image impairment, that is hardly noticeable, but that becomes noticeable if the co-decoding process is repeatedly applied (see Note 1).

NOTE 1 – It should be noted that even quite "innocent", routine post-production operations may involve a composite-to-component co-decoding; for instance, if a video signal is taken from the PAL playback output of a video component VTR, and it is then recorded on another component VTR, this process introduces a component-to-composite co-decoding that contributes to picture impairment. The correct practice in this case is to take the signal from the component output of the playback VTR and to feed it to the component input of the recording VTR, since in this case the signal does not have to go to its composite form at all;

* Radiocommunication Study Group 6 made editorial amendments to this Recommendation in 2001 in accordance with Resolution ITU-R 44.

f) that every time a video signal is passed from its analogue to its digital form or *vice versa*, it is subjected to a co-decoding process, and to the associated video filtering; this causes a small image impairment, that is hardly noticeable, but that becomes noticeable if the co-decoding process is repeatedly applied (see Note 1 to § e));

g) that the application of a large degree of bit-rate reduction to the video signal, such as is customary in random-access television editing systems designed for off-line use, is likely to generate picture artefacts that may be acceptable for viewing purposes such as for off-line editing, but may well be unacceptable on the final edited master of a programme intended for transmission (see Note 1).

NOTE 1 – When evaluating the acceptability of picture artefacts generated by a high degree of BRR applied in programme production, account should carefully be taken of the likelihood that several additional BRR processes may be applied downstream from programme production (e.g. for primary and/or secondary distribution) before the digital video signal reaches its final user, in which case the attendant artefacts may well cumulate to an intolerable level,

recommends

1 that mixed component/composite television post-production installations where component and composite video recorders are placed in tandem should be avoided; video post-production installations where all the video recorders and interfaces are in component form must be preferred to installations where all the video recorders and interfaces are in composite form;

2 that mixed analogue/digital television post-production installations where analogue video recorders are placed in tandem with digital video recorders should be avoided; video post-production installations where all the video recorders and interfaces are digital must be preferred to installations where all the video recorders and interfaces are analogue;

3 that the use of random-access editing systems that apply a high degree of bit-rate reduction to the video signal, such as it is customary in random-access television editing systems designed for off-line use, may only be considered for off-line applications, but it should be avoided for on-line application.