

RECOMMENDATION ITU-R BR.1287-1

Broadcasting of programmes on film with multichannel sound

(1997-2001)

The ITU Radiocommunication Assembly,

considering

- a) that nowadays most feature films are released with multichannel surround sound for the cinema;
- b) that one analogue system, using matrix encoding to carry multichannel surround sound on the standard optical soundtracks, is in widespread use and is the only universal system for multichannel sound present on most release prints;
- c) that several digital multichannel sound systems have now been introduced for cinema presentation using special replay equipment: these are mutually non-compatible and are located on different areas of the film;
- d) that the surround sound coding using two optical soundtracks can be satisfactorily carried through transparent stereo sound systems used in television;
- e) that broadcasters may wish to transmit these soundtracks and they may need to generate:
 - a mono signal for conventional single channel television;
 - a two-channel signal for the stereo transmission systems;
- f) that ITU-R is studying multichannel sound systems that accompany broadcast pictures,

recommends

- 1** that where original material on film contains surround sound coding in two analogue optical tracks, and broadcast sound delivers only two sound channels, broadcasters should deliver, to the greatest extent possible, that encoded surround sound to the home receivers;
- 2** that whenever possible that surround sound should be derived from the sound master that was used to create the analogue optical soundtrack;
- 3** that the following procedures should be adopted for broadcasting film which has a stereo optical track with surround sound in the case that the sound master is not available:
 - the telecine should reproduce each optical track separately;
 - the appropriate noise reduction processing should be applied to each signal individually;
 - the resultant two signals should be used as a stereo signal;
 - if a monophonic signal is required, it should be created by summing the two tracks after the noise reduction processing has been performed;

- 4 that the following should be also taken into account:
- the signal levels delivered to the inputs of the noise reduction processors should be set carefully. The dynamic range of the signals may be greater than is suitable for the domestic environment. It has been found that in some cases better results are achieved by raising low level signals rather than by compressing the peaks or limiting high levels. This subject, however, requires further study. Any compression should be applied to both signals in an identical manner, and should only be performed after the noise reduction processing has been performed;
 - if it is required to suppress the encoded surround information, matrix decoding and specialized stereo signal processing have to be performed;
 - if a stereo optical sound sensor is not available, a compromise procedure is to use a normal mono-optical head with a single noise reduction processor. This will give accurate centre information, but will cause anomalies with wide stereo material, in particular, the suppression of low level stereo components;
 - if the appropriate noise reduction equipment is not available, the noise levels and dynamics of the signal will be incorrect and there will be a consequential loss in audio quality;
 - these recommendations have been found suitable for Dolby stereo films and in principle should work for other proprietary systems.
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