

## RECOMMENDATION ITU-R BS.1734

**Basic performance requirements for the sound components of large-screen digital imagery applications for presentation in a theatrical environment**

(Question ITU-R 15/6)

(2005)

**Scope**

This Recommendation specifies the requirements relevant to the presentation of the sound components of the large-screen digital imagery (LSDI) applications intended for presentation in a theatrical environment. The specifications are mostly based on those contained in Recommendation ITU-R BS.775, revised where necessary to reflect the peculiarities of the presentation environment envisaged for that LSDI application.

The ITU Radiocommunication Assembly,

*considering*

- a) that in order to properly implement an LSDI service for presentation in a theatrical environment it is necessary to specify, among other matters, the basic performance requirements for the sound components of that LSDI service;
- b) that Recommendation ITU-R BT.1680 – Baseband imaging format for distribution of large screen digital imagery applications intended for presentation in a theatrical environment, recommends high definition television (HDTV) (Recommendation ITU-R BT.709) as one of the digital image systems to be used for distribution of LSDI applications for presentation in a theatrical environment;
- c) that Recommendation ITU-R BS.1688 – Baseband sound system and audio source-coding at delivery interfaces of large screen digital imagery applications, recommends that, for such LSDI applications, the reference digital baseband sound system at the interfaces should be based on the hierarchical reference sound system specified in Recommendation ITU-R BS.775 – Multichannel stereophonic sound system with and without accompanying picture, namely a hierarchy ranging from monophonic, through 2-channel stereophonic, and up to 5.1 channels of sound;
- d) that Annex 2 to Recommendation ITU-R BS.775 specifies basic requirements for such a multichannel sound system;
- e) that Annex 7 to Recommendation ITU-R BS.775, addressing the low frequency effects (LFEs) (subwoofer) channel, recognizes that applications such as the distribution of HDTV signals in a theatrical environment may use this option;
- f) that Recommendation ITU-R BS.1679 – Subjective assessment of the quality of audio in large screen digital imagery applications intended for presentation in a theatrical environment, recommends the methods and listening environment for the subjective assessment of audio quality in LSDI applications;
- g) that Recommendation ITU-R BT.1359 – Relative timing of sound and vision for broadcasting, recommends the timing tolerance between sound and vision signals in broadcasting systems;
- h) that a wider listening area is required in a theatrical environment than in a home environment,

*recommends*

1 that the specifications contained in Annex 1 should be used as the basic performance requirements for the sound components of LSDI applications for presentation in a theatrical environment.

## **Annex 1**

### **Basic requirements**

The following requirements, which are mostly based on Annex 2 to Recommendation ITU-R BS.775, are related to the multichannel sound system of LSDI applications for presentation in a theatrical environment.

1 The directional stability of the frontal sound image should be maintained within reasonable limits over a listening area larger than that provided by conventional two-channel stereophony.

2 The sensation of spatial reality (ambience) should be significantly enhanced over that provided by conventional two-channel stereophony and should be maintained within reasonable limits over a listening area. This may be achieved by the use of an adequate number of side and/or rear loudspeakers.

3 Side/rear loudspeakers should be used in the case where two-dimensional image locations outside the range of the front loudspeakers are preferable.

4 Downward compatibility with sound systems providing a lower number of channels (down to stereophonic and monophonic sound) should be maintained (see Annex 1 to Recommendation ITU-R BS.775).

5 In cases where the number of delivered signals is smaller than the number of reproduction channels upward conversion should be ensured to an acceptable degree (see Annex 5 to Recommendation ITU-R BS.775).

6 The basic audio quality of the sound reproduced should be subjectively indistinguishable from the reference for most types of audio programme material. Using triple stimuli with a hidden reference test implies grades consistently higher than four on the ITU-R impairment 5-grade scale. The most critical material should not be graded lower than four.

7 For the objective quality parameters Recommendations ITU-R BS.644 and ITU-R BS.645 should be the basis, superseded by new measuring methods for digital techniques.

8 For listening test conditions, see Recommendation ITU-R BS.1679.

9 For subjective assessments, see Recommendation ITU-R BS.1679.

10 For the relative timing of sound and vision, see Recommendation ITU-R BT.1359. Implementers should note that in large venues where sound and vision timing varies relative to seating location, other adjustments may need to be taken into account.

11 Optimum requirements should be pursued in all respects, including both cost comparisons and transmission bandwidth.

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