



Radiocommunication Bureau (BR)

Administrative Circular
CACE/671

30 April 2014

To Administrations of Member States of the ITU, Radiocommunication Sector Members and ITU-R Associates participating in the work of Radiocommunication Study Group 6

Subject: Radiocommunication Study Group 6 (Broadcasting service)
– Proposed adoption by correspondence of 3 draft revised ITU-R Questions

At the meeting of Radiocommunication Study Group 6, held on 4 April 2014, the Study Group decided to seek adoption of 3 draft revised Questions in accordance with § 3.1.2 of Resolution ITU-R 1-6 (Adoption by a Study Group by correspondence). The texts of the draft ITU-R Questions are attached for your reference in Annexes 1 to 3.

The consideration period shall extend for two months ending on 30 June 2014. If within this period no objections are received from Member States, the approval by consultation procedure of § 3.1.2 of Resolution ITU-R 1-6 will be initiated.

Any Member State who objects to the adoption of the draft Question is requested to inform the Director and the Chairman of the Study Group of the reasons for the objection.

A handwritten signature in black ink, appearing to be 'FRANCIS RANCY', is positioned above the printed name of the Director.

François Rancy
Director

Annexes: 3

– 3 draft revised ITU-R Questions

Distribution:

- Administrations of Member States of the ITU and Radiocommunication Sector Members participating in the work of Radiocommunication Study Group 6
- ITU-R Associates participating in the work of Radiocommunication Study Group 6
- Chairmen and Vice-Chairmen of Radiocommunication Study Groups and the Special Committee on Regulatory/Procedural Matters
- Chairman and Vice-Chairmen of the Conference Preparatory Meeting
- Members of the Radio Regulations Board
- Secretary-General of the ITU, Director of the Telecommunication Standardization Bureau, Director of the Telecommunication Development Bureau

Annex 1

(Document 6/225)

DRAFT REVISION OF QUESTION ITU-R 102-1/6

Methodologies for subjective assessment of audio and video quality

(1999-2011)

The ITU Radiocommunication Assembly,

considering

- a) that Recommendations ITU-R BS.1116, ITU-R BS.1283, ITU-R BS.1284, ITU-R BS.1285 and ITU-R BT.500, and Report ITU-R BT.1082, have established primary methods for the subjective quality assessment of audio (including multichannel presentation) or visual (including stereoscopic presentation) systems respectively;
- b) that Recommendation ITU-R BS.1286 has established primary methods for the subjective quality assessment of audio in the presence of high quality television image;
- c) that the perceptual interaction between the audio and visual modalities can affect their mutual qualities and the overall perceived quality;
- d) that existing methods for the subjective assessment of audio quality are sometimes inadequate for audio systems with accompanying visual presentation;
- e) that there are no generally applicable methods for the subjective assessment of visual quality with accompanying audio presentation;
- f) that there are no known methods for the subjective assessment of both audio and visual presentation simultaneously;
- g) that a wide range of multimedia systems, including digital multimedia video information systems (VIS) for collective, indoor and outdoor viewing, comprise audio-visual presentations. Such systems have a wide range of applicability in terms of:
 - terminal types (standard and high definition television, computer terminals, (mobile-) multimedia terminals);
 - applications (entertainment, education, information services);
 - presentation quality (low, intermediate, high);
 - presentation environments (domestic, office, outdoor, professional);
 - delivery systems (internet, mobile networks, satellite, broadcast)
- h) that the multiscreen technology is used in the broadcasting and multimedia information applications providing simultaneous presentation of several different images on the same screen;

i) that optical head-mounted displays (e.g. video glasses)¹ have been implemented, for the reception of TV broadcasting programmes and personal multimedia information,

decides that the following Questions should be studied:

- 1 What are the quality attributes for audio-visual perception?
- 2 How the context dependent quality balance between audio and visual presentation^{*2} should be considered?
- 3 What are the subjective test methodologies^{**3} required for different applications and quality levels for:
 - audio-visual presentation?
 - visual presentation in the presence of audio (audio presentation at a constant quality level)?
 - audio presentation in the presence of visual (visual presentation at a constant quality level)?
- 4 How could such methodologies be used as criteria to identify quality attributes that are important for different application areas of audio-visual presentation, including VIS?
- 5 How could they be used to express quality requirements for audio and visual modalities for different application areas and to assess their optimization?
- 6 What approaches could be used for image quality assessment when applied to multiscreen and optical head-mounted displays) e.g. video glasses)?

further decides

- 1 that the results of the above studies should be included in (a) Recommendation(s);
- 2 that the above studies should be completed by 2015.

Category: S2

¹ The personal displays utilizing optical glasses can be used with the PCs, smartphones and other devices. They can be used for the reception of TV broadcasting programmes and personal multimedia information at any time, at any place and in motion.

~~^{*} Examples might include the importance of synchronization between audio and visual presentation for talking head applications, changing focus in sports transmissions (from fast moving objects, where video is most important, to the cheering crowd after certain event, where the audio catches the attraction).~~

² Examples might include the importance of synchronization between audio and visual presentation for talking head applications, changing focus in sports transmissions (from fast moving objects, where video is most important, to the cheering crowd after certain event, where the audio catches the attraction).

~~^{**} This should include, for example, the harmonization of grading scales employed in audio and visual testing at present (refer to present ITU-R BS and BT and ITU-T Recommendations), test environments, viewing and listening distances, training procedures, etc.~~

³ This should include, for example, the harmonization of grading scales employed in audio and visual testing at present (refer to present ITU-R BS and BT and ITU-T Recommendations), test environments, viewing and listening distances, training procedures, etc.

Annex 2

(Document 6/227)

DRAFT REVISION OF QUESTION ITU-R 135/6

**System parameters for and management of digital sound systems^{*}
with and without accompanying picture**

(2010)

The ITU Radiocommunication Assembly,

considering

- a) that the improvements in picture quality associated with high-definition, ultra-high definition and future three-dimensional television systems ~~that are in development~~ (e.g. 3DTV, EHRT) may warrant continued study of the sound systems that should be used in order to keep in step with the higher level of realism available in the picture;
- b) that ~~two-channel stereophonic representation conveys substantial acoustic information by phantom sources, and cannot adequately provide for coincidence of the visual and aural images independent of viewer's location;~~
- e) ~~that various transmission systems with bit rate reduced coding for multichannel sound transmission have been developed and are still under development;~~
- d) ~~that Recommendation ITU-R BS.646-1 – Source encoding for digital sound signals in broadcasting studios, specifies sampling frequency and bit resolution per sample for the digital coding of sound signals;~~
- e) ~~that sound studio equipment may need coding parameters different from those required for the emission of high-quality broadcast signals, for example, they may require a larger number of bits/sample to provide processing “headroom” and higher sampling rate to provide wider frequency response;~~
- f) that Recommendation ITU-R BS.775-2 specifies hierarchic multichannel sound systems up to 5.1 sound system for broadcasting;
- g) ~~that Recommendation ITU-R BS.775-2 needs to be extended, taking into account that other various multichannel sound systems, including three-dimensional sound systems, have already been developed and introduced into cinema and home audio environments;~~
- d) that Recommendation ITU-R BS.2051 specifies an advanced sound system with and without accompanying picture, beyond systems specified in Recommendation ITU-R BS.775, that can support channels (speaker feeds), objects and a scene-base, or a combination of these, with the use of metadata to fully describe the audio contents of the sound production;
- e) that it will be necessary to tailor sound programmes produced in advanced sound system in order to deliver them through 2-channel stereo and 5.1 channel sound delivery systems;

^{*} ~~For any matters dealing with conversion of film sound to broadcasting sound formats refer to Recommendation ITU-R BR.1287 and Recommendation ITU-R BR.1422.~~

- f) that the audience awareness of, and interest in advanced sound system could be boosted if the benefits of those systems in terms of an enhanced listening experience could be at least partly preserved when they are tailored for 2-channel stereo or 5.1 sound presentation;
- g) that Recommendation ITU-R BS.1909 specifies as typical viewing/listening environments public environments, home environments and mobile environments, and further states that the coincidence of position between sound images and video images should be maintained over a wide image and listening area;
- h) that the angular width of the screen at the listening/viewing positions in the production and reproduction environments will not always be equal, and so consequently there will be a benefit to adapting the reproduction of the audio content in a way that audio-visual coherence is maintained to a sufficient level across various screen environments;
- i) that listeners desire audio programmes to be uniform in subjective loudness for different sources and programme types;
- j) that Recommendation ITU-R BS.1770 specifies a loudness measurement algorithm for audio programmes with up to 5 channels,

decides that the following Questions should be studied

- 1 What are the optimum arrangements for monitoring multichannel sound during production, such as:
 - loudspeakers/room responses;
 - ~~— general arrangement and labelling of loudspeakers for covering extended multichannel sound systems beyond those already specified in Recommendation ITU-R BS.775-2;~~
 - ~~— suitable number of channels, arrangements, and characteristics for loudspeakers handling low frequency signals;~~
 - suitable methods for aligning the reproduction levels of the monitor loudspeakers;
 - suitable methods for visual monitoring of multichannel sound signal parameters such as level, phase, delay, etc.?
- 2 What are the requirements for allocation of channels on channel interfaces, when multichannel operation is envisaged?
- 3 What are the optimum methods to ensure appropriate system compatibility, such as:
 - ~~—~~ backward compatibility of higher order multichannel sound systems specified in Recommendation ITU-R BS.2051 with lower order sound systems already specified in Recommendation ITU-R BS.775-2 while retaining at least part of the enhanced listening experience inherent in the use of advanced sound systems, in terms of greater impression of presence and sound depth, without providing a sub-optimal experience if the sound reproduction system differs from that envisioned by the method employed;
 - forward compatibility of lower order sound systems already specified in Recommendation ITU-R BS.775-2 with higher order multichannel sound systems;
 - ~~— compatibility of multichannel sound systems with other sound reproduction systems (e.g. holographic reproduction)?~~

~~4 — What are the optimum coding parameters for representation of sound signals to ensure high sound quality for programme production?~~

~~5 — What are the requirements for digital audio interfaces for interconnection of digital audio equipment, taking into account the need for transmitting auxiliary data along with the programme?~~

~~6 — What are the requirements to apply to transcoding of audio signals from one format to another?~~

74 What are the requirements for file types and wrappers for use in multichannel audio production and programme exchange?

5 Which methods may be employed in order to scale audio programmes for different screen sizes using channel-based, object-based or scene-based paradigms in order to maintain audio-visual coherence for screens varying in size, including from personal/mobile consumption to large screen representations?

86 What Recommendations audio metering characteristics should be developed, and what technologies could be used to satisfy these requirements provide accurate indication of subjective loudness of programmes produced in the advanced sound systems?

further decides

1 that the results of the above studies should be included in (a) Recommendation(s) or (a) Report(s);

2 that the above studies should be completed by ~~2012~~2016.

Category: S2

Annex 3

(Document 6/245)

DRAFT REVISION OF QUESTION ITU-R 45-4/6^{*1}

Broadcasting of multimedia and data applications

(2003-2005-2009-2010-2012)

The ITU Radiocommunication Assembly,

considering

- a) that digital television and sound broadcasting systems have been implemented in many countries;
- b) that multimedia and data broadcasting services have been introduced in many countries;
- c) that mobile radiocommunication systems with advanced information technologies have been implemented in many countries;
- d) that reception of digital broadcasting services is possible both inside and outside the home with fixed receivers such as TV sets in the living room, as well as handheld/portable/vehicular receivers;
- e) that the characteristics of mobile reception and stationary reception are quite different;
- f) that the display sizes and receiver capabilities may be different between handheld/portable/vehicular receivers and fixed receivers;
- g) that optical head-mounted displays (e.g. "video glasses")² have been implemented, for the reception of TV broadcasting programmes and multimedia information;
- h) that the multiscreen/multi-image technology is used in the broadcasting and multimedia information applications providing simultaneous presentation of different applications and/or images;
- ig) that the format of the transmitted information should be such that the content can be displayed intelligibly on as many types of screens and terminals as possible;
- jh) the need for interoperability between the telecommunication services and interactive digital broadcasting services;

~~* This Question should be brought to the attention of ITU-R Study Group 5 and ITU-T Study Group 16.~~

~~¹ In the year 2012, Radiocommunication Study Group 6 extended the completion date of studies for this Question.~~

¹ This Question should be brought to the attention of ITU-R Study Group 5 and ITU-T Study Group 16.

² The personal displays utilizing optical glasses can be used with the PCs, smartphones and other devices. They can be used for the reception of TV broadcasting programmes and personal multimedia information at any time, at any place and in motion.

*l*j) the need to harmonize technical methods used to implement content protection and conditional access;

*l*k) that digital multimedia video information systems for presentation of various kinds of multimedia information applicable to programmes such as dramas, plays, sporting events, concerts, cultural events, etc. are widespread, and those systems are being installed for collective viewing,

decides that the following Questions should be studied

1 What are the user requirements for broadcasting of multimedia and data applications taking into account of various types of displays:

— for mobile/portable reception;

— for stationary reception;

2 What are the user requirements for digital multimedia video information systems on the basis of standard definition television (SDTV), high definition television (HDTV), ultra high definition television (UHDTV), three-dimensional television (3DTV), and large screen digital imagery (LSDI) ~~and extremely high resolution imagery (EHRI)~~ for collective indoor and outdoor viewing?

3 What characteristics are required for service assembly and access for broadcasting of multimedia and data applications for mobile reception and for stationary reception?

4 What characteristics are required for service assembly and access for the digital multimedia video information systems for collective indoor and outdoor viewing?

5 What data transport protocol(s) is (are) most suited to deliver broadcast multimedia and data contents to handheld, portable and vehicular receivers and to fixed receivers?

6 What solutions can be adopted to ensure the interoperability between the telecommunication services and interactive digital broadcasting services?

further decides

1 that the results of the above studies should be included in (a) Report(s) and/or Recommendation(s);

2 that the above studies should be completed by 2015.

Category: S2
