



Radiocommunication Bureau (BR)

Administrative Circular
CACE/689

18 September 2014

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

Subject: Radiocommunication Study Group 6 (Broadcasting service)
– Approval of 3 revised ITU-R Questions

By Administrative Circular CACE/678 of 10 July 2014, 3 draft revised ITU-R Questions were submitted for approval by correspondence in accordance with Resolution ITU-R 1-6 (§ 3.1.2).

The conditions governing this procedure were met on 10 September 2014.

The texts of the approved Questions are attached for your reference in Annexes 1 to 3 and will be published in Revision 5 to [Document 6/1](#) which contains the ITU-R Questions approved by the 2012 Radiocommunication Assembly and assigned to Radiocommunication Study Group 6.


François Rancy
Director

Annexes: 3

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 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

QUESTION ITU-R 102-2/6

Methodologies for subjective assessment of audio and video quality

(1999-2011-2014)

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 presentation² should be considered?
- 3 What are the subjective test methodologies³ 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 display (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.

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).

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

QUESTION ITU-R 135-1/6

System parameters for and management of digital sound systems with and without accompanying picture

(2010-2014)

The ITU Radiocommunication Assembly,

considering

- a) that the improvements in picture quality associated with high-definition, ultra-high definition and three-dimensional television systems 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 Recommendation ITU-R BS.646 – Source encoding for digital sound signals in broadcasting studios, specifies sampling frequency and bit resolution per sample for the digital coding of sound signals;
- c) that Recommendation ITU-R BS.775 specifies hierarchic multichannel sound systems up to 5.1 sound system for broadcasting;
- 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;
- 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;
 - 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 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 with higher order multichannel sound systems;
- 4 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?
- 6 What audio metering characteristics should be used to 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 2016.

Category: S2

Annex 3

QUESTION ITU-R 45-5/6¹

Broadcasting of multimedia and data applications

(2003-2005-2009-2010-2012-2014)

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;
- i) 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;
- j) the need for interoperability between the telecommunication services and interactive digital broadcasting services;
- k) the need to harmonize technical methods used to implement content protection and conditional access;

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) 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) 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
