

INTERNATIONAL TELECOMMUNICATION UNION



Radiocommunication Bureau

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**Administrative Circular
CACE/533**

18 March 2011

**To Administrations of Member States of the ITU, Radiocommunication Sector Members,
ITU-R Associates participating in the work of the Radiocommunication Study Group 6
and the Special Committee on Regulatory/Procedural Matters**

Subject: Radiocommunication Study Group 6

- **Approval of 5 revised ITU-R Questions**
- **Suppression of 1 ITU-R Question**

By Administrative Circular CAR/308 of 10 December 2010, 5 draft revised ITU-R Questions were submitted for approval by correspondence in accordance with Resolution ITU-R 1-5 (§ 3.4). In addition, the Study Group proposed the suppression of 1 ITU-R Question.

The conditions governing this procedure were met on 10 March 2011.

The texts of the approved Questions are attached for your reference (Annexes 1 to 5) and will be published in Revision 2 to [Document 6/1](#) which contains the ITU-R Questions approved by the 2007 Radiocommunication Assembly and assigned to Radiocommunication Study Group 6. The suppressed ITU-R Question is indicated in Annex 6.

François Rancy
Director, Radiocommunication Bureau

Annexes: 6

Distribution:

- Administrations of Member States and Radiocommunication Sector Members
- ITU-R Associates 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 126-1/6

Recommended operating practices to tailor¹ television programme material to broadcasting applications at various image quality levels, display sizes and aspect ratios

(2007-2011)

The ITU Radiocommunication Assembly,

considering

- a) that an increasing number of broadcasters now need to tailor their television programme material to a variety of broadcasting applications at a variety of image quality levels, display sizes and aspect ratios;
- b) that the treatment to be applied to the original programme signal in order to adapt it to a variety of broadcasting applications at a variety of image quality levels, display sizes and aspect ratios depends on the image resolution that those applications are able to provide to the end user, and on their viewing environment,

decides that the following Questions should be studied

- 1 What are the constraints related to tailor television broadcasting applications at various image quality levels, display sizes and aspect ratios, including digital multimedia video information systems for collective, indoor and outdoor viewing, e.g. in terms of the displayable image quality and of the presentation environment?
- 2 Which measures can be recommended to broadcasters, to tailor their television productions to broadcasting applications at various image quality levels, display sizes and aspect ratios within the identified constraints, in order to maximize the image quality of the delivered programmes?

further decides

- 1 that the results of the above studies should be included in Recommendation(s) and/or Report(s), to cover those various broadcasting applications;
- 2 that the above studies should be completed by 2012.

Category: S2

¹ The verb “to tailor” is used in this text to indicate the post-processing operations required to adapt programme material for its presentation in broadcasting applications different from the one for which it had been originally produced, e.g. in terms of image size resolution, viewing conditions, etc.

Annex 2

QUESTION ITU-R 128-1/6

Digital three-dimensional (3D) TV broadcasting¹

(2008-2011)

The ITU Radiocommunication Assembly,

considering

- a) that existing TV broadcasting systems do not provide complete perception of reproduced pictures as natural three-dimensional scenes;
- b) that viewers' experience of presence in reproduced pictures may be enhanced by 3D TV, which is anticipated to be an important future application of digital TV broadcasting for both conventional indoor and outdoor viewing conditions;
- c) that the cinema industry is moving quickly towards production and display in 3D motion pictures;
- d) that research into various applications of new technologies (for example, holographic imaging) that could be used in 3D TV broadcasting is taking place in some countries;
- e) that progress in new methods of digital TV signal compression and processing is moving toward the practical realization of multifunctional 3D TV broadcasting systems;
- f) that the development of uniform world standards for 3D TV systems, covering various aspects of digital TV broadcasting, would encourage adoption across the digital divide and prevent a multiplicity of incompatible standards;
- g) the harmonization of broadcast and non-broadcast applications of 3D TV is desirable,

decides that the following Questions should be studied

- 1** What are the user requirements for digital 3D TV broadcasting systems for both conventional indoor and outdoor viewing conditions?
- 2** What are the requirements for image viewing and sound listening conditions for 3D TV?
- 3** What 3D TV broadcasting systems currently exist or are being developed for the purposes of TV programme production, post-production, recording, archiving, distribution and transmission for realization of 3D TV broadcasting?

¹ This Question should be brought to the attention of ITU-T SG 9 and ITU-R Study Group 4.

- 4** What new methods of image capture and recording would be suitable for the effective representation of three-dimensional scenes?
- 5** What are the possible solutions (and their limitations) for the broadcasting of 3D TV digital signals via the existing terrestrial 6, 7 and 8 MHz bandwidth channels or broadcast satellite service channels, for fixed and mobile reception?
- 6** What methods for providing 3D TV broadcasts would be compatible with existing television systems?
- 7** What are the digital signal compression and modulation methods that may be recommended for 3D TV broadcasting?
- 8** What are the requirements for the 3D TV studio digital interfaces?
- 9** What are appropriate picture and sound quality levels for various broadcast applications of 3D TV?
- 10** What methodologies of subjective and objective assessment of picture and sound quality may be used in 3D TV broadcasting?

also decides

- 1** that results of the above-mentioned studies should be analysed for the purpose of the preparation of new Reports and Recommendation(s);
- 2** that the above-mentioned studies should be completed by 2015.

Category: S3

Annex 3

QUESTION ITU-R 40-2/6*

Extremely high-resolution imagery

(1993-2002-2010-2011)

The ITU Radiocommunication Assembly,

considering

- a) that TV technology at a number of levels of quality may find applications in both broadcast and non-broadcast services;
- b) that the Radiocommunication Sector is studying a range of TV systems for broadcast uses;
- c) that ITU-R has been studying extremely high-resolution imagery and expanded hierarchy of large screen digital imagery, and has established Recommendations ITU-R BT.1201-1 that provides the guideline of image characteristics for extremely high-resolution imagery and ITU-R BT.1769 that provides the parameter values for expanded hierarchy of image formats for LSDI applications;
- d) that HDTV technology along with large screen displays has become the norm in homes, where audiences enjoy high-quality programme content;
- e) that progress in display technologies will permit the use of large-screen and extremely high resolution television displays for home viewing;
- f) that additional visual experiences beyond HDTV can be offered by presenting higher resolution images, which can give a stronger sensation of reality to viewers;
- g) that broadcast applications with such a feature, called ultra high definition television (UHDTV) can be considered as one of the forms of extremely high-resolution imagery;
- h) that some administrations consider introducing broadcasting of UHDTV to the home associated with improved efficient coding and transmission technologies;
- j) that in some broadcast-related applications (for example: computer graphics, printing, motion pictures, digital multimedia video information systems) an extremely high resolution is expected;
- k) that studies on higher resolution digital image architecture are being conducted in some organizations,

* This Question should be brought to the attention of the International Electrotechnical Commission (IEC), the International Organization for Standardization (ISO) and the Telecommunication Standardization Sector.

decides that the following Questions should be studied

- 1** What kind of approach should be taken to realize such an extremely high-resolution imagery system for broadcasting and non-broadcasting applications?
- 2** What features such a system should have to allow for broadcasting applications and to assure harmonization between different applications, including digital multimedia video information system for collective, indoor and outdoor viewing?
- 3** What kind of parameters should be determined for these systems in programme origination and exchange?
- 4** What characteristics should be recommended in every part of the TV broadcasting chain using extremely high-resolution imagery, namely acquisition, recording, contribution, distribution, emission and display?

NOTE 1 – See Reports ITU-R BT.2042-3 and ITU-R BT.2053-2; see also Question ITU-R 15-2/6.

further decides

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

Category: S2

Annex 4

QUESTION ITU-R 32-1/6*

Protection requirements of broadcasting systems against interference from radiation caused by wired telecommunication systems, from emissions of industrial, scientific and medical equipment, and from emissions of short-range devices

(2002-2011)

The ITU Radiocommunication Assembly,

considering

- a) that telecommunication systems are being developed which utilize electricity power supply or telephone line distribution wiring;
- b) that such new telecommunication systems are now being developed to operate with data rates exceeding 1 Mbit/s up to 1 Gbit/s, with carrier frequencies in the HF, VHF and UHF bands and possibly beyond;
- c) that electricity power supply and telephone line distribution wiring are generally not designed or installed in such a way that RF radiation will be minimised and radiation from the wires will inevitably occur;
- d) that any radiation from such systems may affect the use of radiocommunication systems, particularly at LF, MF, HF, VHF and UHF and possibly beyond;
- e) that industrial, scientific and medical (ISM) equipment and short-range devices are being developed with increasing demand;
- f) that any unwanted radiation and emission from such systems may cause interference to the reception of broadcasting services;
- g) that broadcasting systems are designed taking into account intrinsic receiver noise and external radio noise including atmospheric, man-made and galactic noise;
- h) that radiation from the wired telecommunication systems and emission from ISM equipment and short-range devices increase the level of man-made radio noise, causing increase of the external radio noise;
- j) that increase of external radio noise results in increase of the minimum usable field strength and degradation of the reception quality of the broadcasting services;
- k) that Recommendation ITU-R P.372 describes levels of some types of radio noise;
- l) that reception environment of broadcasting services should be protected from the interference,

* This Question should be brought to the attention of Telecommunication Standardization Study Group 5, Radiocommunication Study Groups 1, 5 and the International Special Committee on Radio Interference (CISPR).

decides that the following Questions should be studied

1 What are the interference protection requirements of the various broadcasting systems in terms of the maximum acceptable level of field strength incident from wired telecommunication systems, from ISM equipment, and from short-range devices, taking into account the following items:

1.1 planning parameters of broadcasting systems;

1.2 distance from the wiring, ISM equipment and short-range devices to broadcasting receiving antenna;

1.3 potential increase of man-made noise in the next decades;

1.4 cumulative effect of unwanted radiation from a number of sources at the input of the receiver?

further decides

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

2 that the studies should be completed by 2012.

NOTE 1 – See also Questions ITU-R 218/1 and ITU-R 221-1/1.

Category: S1

Annex 5

QUESTION ITU-R 132-1/6*

Digital terrestrial television broadcasting planning

(2010-2011)

The ITU Radiocommunication Assembly,

considering

- a) that many administrations have already introduced, and others are introducing, Digital Terrestrial Television Broadcasting (DTTB) services in VHF (Band III) and/or UHF (Bands IV/V) bands;
- b) that experience gained through the implementation of DTTB services will be useful in refining the assumptions and techniques to be applied in the planning and implementation of DTTB services,

decides that the following Questions should be studied

- 1** What are the frequency planning parameters for such services, including but not limited to:
 - minimum field strengths;
 - implications of modulation and emission methods;
 - receiving and transmitting antenna characteristics;
 - implications of using diversity transmission and reception methods;
 - location correction values;
 - time variability values;
 - single frequency networks;
 - speed ranges;
 - environmental noise and its impact on digital terrestrial TV reception;
 - effect of wet foliage on digital terrestrial TV reception;
 - effect of wind turbine farms and airplane flutter on digital terrestrial TV reception;
 - building penetration loss;
 - indoor location variations?
- 2** What is the likely impact on matters related to the planning of broadcasting networks for terrestrial television broadcasting in the migration from existing¹ digital television modulation parameters to new and more spectrally efficient² modulation parameters?

* This Question deals with studies related to the implementation of digital terrestrial broadcasting services, which do not impact the GE06 Agreement and Plan.

¹ For example DVB-T (ITU-R DTTB System B).

² For example DVB-T2.

- 3** What protection ratios are required when two or more digital transmitters of the same system, digital television and multimedia transmitters of different systems, or analogue and digital television transmitters are operating:
- in the same channel;
 - in adjacent channels;
 - with overlapping channels;
 - in other potential interference relationships (e.g. image channel)?
- 4** What receiver characteristics should be used for frequency planning with respect to more efficient use of the frequency spectrum (e.g. selectivity, noise figure, etc.)?
- 5** What are the protection ratios needed to protect television broadcasting services from other services sharing the bands or operating in adjacent bands?
- 6** What techniques can be used to mitigate interference?
- 7** What are the technical bases required for planning which lead to efficient utilization of the VHF and UHF bands for terrestrial television services?
- 8** What are the characteristic multipath conditions that need to be taken into account in the planning of such services?
- 9** What technical or planning criteria can be optimized to facilitate the implementation of terrestrial digital broadcasting, taking into account existing services?
- 10** What are the characteristics of the mobile multipath channel that need to be taken into account in the use of mobile reception, at different speeds?
- 11** What are the characteristics of the multipath channel that need to be taken into account in the use of hand-held reception, at different speeds?
- 12** What are the appropriate methods to multiplex the required signals (including vision, sound, data, etc.) into the channel?
- 13** What are the appropriate methods for error protection?
- 14** What are the appropriate modulation and emission methods and their relevant parameters, for the broadcasting of digitally encoded TV signals in terrestrial channels?
- 15** What are the appropriate strategies to introduce and implement digital terrestrial TV broadcast services, taking account of existing terrestrial broadcast services?
- 16** What are radiocommunication technologies or applications that could be provided by digital terrestrial TV systems and what sets of system parameters could be used for different applications?
- 17** What strategies should be employed by administrations, particularly those sharing common borders, for migration from an established digital terrestrial television broadcasting service to a more advanced digital terrestrial television broadcasting service?

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: S3

Annex 6

Suppressed ITU-R Question

Question ITU-R	Title
31-1/6	Digital terrestrial television broadcasting
