



*Radiocommunication Bureau*  
(Direct Fax N°. +41 22 730 57 85)

Administrative Circular  
CAR/170

30 July 2004

## To Administrations of Member States of the ITU

**Subject: Proposed approval of 2 draft new Questions and 6 draft revised Questions adopted by Radiocommunication Study Group 6 at its meeting held on 6 and 7 May 2004**

At the meeting of Radiocommunication Study Group 6 held on 6 and 7 May 2004, 2 draft new ITU-R Questions and 6 draft revised ITU-R Questions were adopted, and it was agreed to apply the procedure of Resolution ITU-R 1-4 (see § 3) for approval of Questions in the interval between Radiocommunication Assemblies.

Moreover, in response to *resolves* 2 of Resolution ITU-R 5-4, those draft new or revised Questions for which draft Recommendations resulting from studies of these Questions could be subject to the alternative approval procedure according to Resolution ITU-R 45 are identified as “/AP”.

With regards to the provisions of § 3 of Resolution ITU-R 1-4, I should be grateful if you would inform me by 30 October 2004, whether your Administration approves or does not approve these Questions and the proposed modification of the date.

After the above-mentioned deadline, the Director of the Radiocommunication Bureau will notify the results of this consultation by Administrative Circular. If the Questions are approved, they will have the same status as Questions approved at a Radiocommunication Assembly and will become official texts attributed to Radiocommunication Study Group 6 (see <http://www.itu.int/ITU-R/publications/download.asp?product=que06&lang=e>).

Valery Timofeev  
Director, Radiocommunication Bureau

**Annexes: 8**

8 draft new and revised ITU-R Questions

Distribution:

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

## ANNEX 1

(Source : Document 6/64)

### **Evaluation of draft new Question in accordance with Resolution ITU-R 51:**

This draft new Question is intended to initiate studies related to the development of the forward and return channels required for the interaction of participants with programmes delivered by broadcasting systems at LSDI venues. Therefore, it addresses, *inter alia*, the frequency bandwidth requirements of these channels. Moreover, the frequency bandwidth aspects of the Question are not being conducted elsewhere, therefore the draft new Question complies with *resolves* 1a) and 1 b) of Resolution ITU-R 51.

### DRAFT NEW QUESTION ITU-R [Doc. 6/64]

#### **Delivery of interactive information to and from large screen digital imagery venues through broadcasting systems**

The ITU Radiocommunication Assembly,

*considering*

- a) the progress in information processing and communications technologies;
- b) the rapid progress towards digital high-definition television (HDTV) delivery systems;
- c) the establishment of a worldwide HDTV production standard (see Recommendation ITU-R BT.709) and international programme exchange standards;
- d) the rapid adoption of electronic means, in particular HDTV technology, for the broadcast distribution of alternative digital content;
- e) the economic advantages of distributing programmes by digital broadcasting systems to a large number of geographically dispersed large screen digital imagery (LSDI) venues;
- f) the desire of users to actively interact with video and sound systems, as evidenced by the popularity of video games, audience participation at live events, and other emerging forms of alternate digital content;
- g) the progress in the establishment of Recommendations for return channels for interaction with broadcasting systems;
- h) the rapid development and deployment of many new communication systems that will facilitate the implementation of return paths for interactive broadcasting systems,

*decides* that the following Question should be studied

- 1 What new techniques and technologies would be required for meaningful interaction of many participants with a single programme delivered by a broadcasting system to one LSDI venue?
- 2 What new techniques and technologies would be required for meaningful interaction between many participants at multiple LSDI venues connected by a broadcasting network?
- 3 What new techniques and technologies would be required for meaningful interaction of many participants at multiple LSDI venues with content delivered by a broadcasting system?
- 4 What implications, if any, would interactive LSDI delivered by broadcasting systems have on frequency bandwidth requirements for both the forward and return channels?

*further decides*

- 1 that the results of the above studies should be included in (a) Recommendation(s);
- 2 that this work should be coordinated with Study Groups in the Radiocommunication and Telecommunication Standardization Sectors;
- 3 that the above studies should be completed by 2007.

Category: S2

## ANNEX 2

(Source: Document 6/65)

### DRAFT REVISION OF QUESTION ITU-R 111/6

#### **Technical methods for the protection of the privacy of end-users in interactive broadcasting systems (television, sound and data)\***

(2003)

The ITU Radiocommunication Assembly,

*considering*

- a) that the determination of what is private information varies by administration, and therefore the technical means to protect such information may vary as well;
- b) the progress in information processing, storage and transmission technology;
- c) the development of ~~advanced~~ digital broadcasting transmission channels (e.g. ~~able~~, satellite master antenna, terrestrial relay or direct satellite and terrestrial reception) in combination with interaction/return channel techniques (e.g. return channel satellite (RCS), return channel terrestrial (RCT), wireless communication networks);
- d) that interactivity could effectively extend the capability of broadcast receivers to provide bidirectional services such as access to Internet access web content, to allow, e-mailing, e-commerce, etc.;
- e) the development of ~~transmission methods suitable~~ return channel techniques for use in receiving from viewers' return information related to programme material (vision, sound and data); from the user (programme-related and non-programme-related);
- f) ~~the large number of domestic receivers likely to be impacted by the adoption of interactive broadcasting services, and the resulting need for a common worldwide system architecture, that~~ interactive broadcasting services are expected to be broadly deployed;

*further considering*

- g) that broadcasting signals are generally not targeted to specific individuals or specific groups but are for reception by everybody (sometimes subject to special payments);
- h) that use of the return channel can result in users' information, some of which may be considered private, being transmitted to those involved in the provision of the service,

---

\* This Question should be brought to the attention of the International Electrotechnical Commission (IEC), the International Standardization Organization (ISO), ~~and the ITU~~ Telecommunication Standardization Sector of ITU Study Groups 2 and 17 and to Radiocommunication Study Groups 4, 8 and 9.

*decides* that the following Question should be studied

1 How can anonymous reception of broadcast be assured in the framework of interactive broadcasts without any necessity for explicit user intervention?

~~1~~ How can anonymous reception of broadcast, without explicit signalling for privacy opt-out, be maintained in the framework of interactive broadcasts?

2 What are the technical means to preserve the privacy of user information?

~~2~~ What methods could be adopted to allow the end-user to be, at any time, aware of what personal data (e.g. user profiles or usage history) have been created and/or are stored in the broadcast receiver (e.g. set top box), and to control the storage of such data if desired?

3 What technical methods can be used to allow anonymous participation in interactive broadcasting services?

34 What technical methods can be adopted to allow the end-user to control the amount of personal data which can be (upon agreement by the end-user) transferred to or retrieved by the service provider or any other entity via the interaction channel?

45 What technical methods can be used to allow the end-user to be aware, at any time, of any such transfer of personal data to the service and/or the content provider or any third party?

56 What technical methods can be used to allow the end-user to be aware, at any time, of the mechanisms and changes in behaviour or offer of content/services, if there are any, of the end-user terminal due to the use of local personal data, and to prevent this if desired be able to control such transmissions on the interaction channel?

~~6~~ What methods can be used to allow the end-user to be aware, at any time, of the mechanisms and changes in behaviour or offer of content, if there are any, or of the use of personal data at any location other than the end-user terminal, and to prevent this if desired?

7 What technical methods can be used to ensure that transmission of any profile or usage history data about the end-users (e.g. “mediametria”) remain anonymous?

~~8~~ What methods can be used to inform the user that the system uses a return channel and to prevent this if desired?

98 What technical methods can be used to inform the user through the broadcast or interaction channel, at all times and in an easily understandable form, about any personal information available, e.g. user profiles and preferences to be and whether this information is transferred to a service provider or any other third party for the purpose of, for example, mediametria?

*further decides*

- 1 that this Question should result in ITU-R Recommendation(s);
- 2 that this Question should be considered when studying ITU-R Questions on interactive broadcasting, in particular with Questions ITU-R 16/6 and ITU-R 26/6;
- ~~3 that this Question should be considered in updates of Recommendation ITU-R BT.1369 “Basic principles for a worldwide common family of systems for the provision of interactive television services”;~~
- 43 that the studies should be completed by ~~2004~~2007.

Category: S2

## ANNEX 3

(Source: Document 6/68)

### DRAFT REVISION OF QUESTION ITU-R 97-1/6

#### **Optimization of quality of colour reproduction in television**

(1997-2004)

The ITU Radiocommunication Assembly,

*considering*

- a) that in television the quality of colour reproduction is an important part of the overall quality of TV images and of the TV service itself;
- b) that it seems that in future broadcasters will continue to be interested in further enhancement of colorimetric quality of TV images;
- c) that the modern level of colourimetric knowledge-science may be a basis for further development of the methods of optimisation of colour reproduction quality in television;
- d) that throughout the world, digital TV systems development is based on the transmission of the transport stream containing video, audio and data, where additional data contain service information which may be used for the enhancement of video, audio and data transmission in the light-to-light TV chain. It becomes possible to optimise the quality of colour reproduction by means of processing of the TV image at the near and far ends. Account can be taken of the signal processing in components of the TV chain, colorimetric characteristics of TV cameras and displays and viewing conditions at both ends (and therefore light and colour adaptation of the viewer) for any sequences, scenes, or plots;
- e) that throughout the world, object-oriented methods of image presentation are beginning to be used for television and other related imaging applications;
- e)f) that the use of colour image statistics, human colour perception properties and an appropriate colour appearance model will give an opportunity for further improvement of image compression that may lead to further bit stream rate reduction, and a decision should be made on the basis of the trade off between the quality of colour reproduction and the degree of reduction of the bit rate;
- f)g) that the use of new methods of colour image processing and compression may lead to new possibilities of colour reproduction in television;
- g)h) that some receivers ~~of in~~ the future may contain intelligence algorithms that will define the procedure for reaching the subjective optimal colour reproduction from the point of view of the observer, that will correspond to better contribution to subjective colour image quality;

~~h)j)~~ that ~~the optimum solution for~~ colour optimisation may be achieved with the use of a suitable colour appearance model;

~~j)k)~~ that the problem of overall image quality evaluation includes the objective and subjective evaluation of colorimetric quality of TV images as important components;

~~k)l)~~ that the optimum solution of the problem of objective evaluation of colorimetric quality of TV images depends upon the choice of a suitable colour appearance model and the colour reproduction accuracy evaluation criterion and algorithm used,

*decides* that the following Question should be studied

- 1 What processing algorithms should be used for optimisation of colorimetric quality of colour images and what will be the complexity of such algorithms and expedience of their use for different TV broadcasting applications?
- 2 What information is needed for colour reproduction optimisation in light-to-light TV chain to be transmitted on transport bit stream?
- 3 What data rate must be used for additional data for the optimisation of colorimetric quality of TV images at the receiving end?
- 4 What provision can be made in the programme and transport stream for this additional data?
- 5 What will be the influence of the optimisation of light-to-light colorimetric characteristics of TV chain upon the mechanisms of image compression?
- 6 What will be the influence of the use of optimisation of light-to-light colorimetric characteristics of TV chain upon the optimum degree of image compression?
- 7 What should be the choice of a colour appearance model used in algorithms for the evaluation and optimisation of colour image quality?
- 8 What should be the choice of criterion of colour image quality and a way of considering colour statistics of TV images and human colour perception properties?
- 9 In what a manner may the idea of optimisation of light-to-light colorimetric characteristics of the TV chain optimisation be used for other audio-visual services?
- 10 How should optimisation of quality of image composed from objects captured under different conditions be realized and how should these conditions be documented if needed?

*further decides*

- 1 that the results of the above studies, as appropriate, should be included in a Report and (a) Recommendation(s);
- 2 that the above studies should be completed by 2006.

Category: S3/AP



## ANNEX 4

(Source: Document 6/72)

### DRAFT REVISION OF QUESTION ITU-R 98-1/6

#### **Adaptive image quality control in future TV systems**

(1997-2004)

The ITU Radiocommunication Assembly,

*considering*

- a) that digital TV systems have been ~~are~~ developed as a compromise between image quality and compression ratio with consideration of image statistics, human ~~viewing system~~ properties visual perception, methods of image processing, characteristics of transmission and receiving equipment, and capturing and display systems;
- b) that use of digital representation brings an opportunity to transmit additional information ~~inside with~~ the digital TV signal, the use of which provides the possibility of control of the video signal processing ~~characteristics~~ at the transmitting and receiving ends;
- c) that new methods of image processing and transmission, such as fractal analysis, wavelet transformation, object-oriented coding, transmission of content and corresponding tools, are now developed and may be used in future ~~used in~~ TV applications, and that parameters and characteristics of these methods may be controlled during video processing transmission and presentation;
- d) that at all the stages of processing the information on scene image as a whole, as well as on objects, the image can be decomposed and may be documented and transmitted inside data stream;
- e) that ~~the an~~ objective of television broadcasting is to obtain optimum subjective quality of the reproduced image for any ~~sequences, scenes, plots~~ programme content, ~~any the methods and parameters of image compression,~~ any source and reproducing devices' characteristics, ~~the conditions of image viewing at both ends of the light to light TV path, with provision for their possible change and any viewing conditions;~~
- e)f) that the receiver of the future may contain intelligent element adaptive processing that can calculate the necessary processing parameters for optimum image quality;

f)g) ~~that some suggestions~~ nominal parameters for the image processing of the image at the transmitting and receiving ends may be generated at the transmitting end and transmitted for use by an image processing device at the receiving equipment characteristics automatic use end;

g)h) that an important part of adaptive image quality optimisation is colour reproduction quality optimisation and that this specific matter is a subject for study for answer Question ITU-R 97/6,

*decides* that the following Question should be studied

**1** What responses of the end-to-end TV chain may be adaptively controlled using information from the transmitting end?

**2** What will be the methods of image quality control in TV systems using new methods of image processing, transmission and presentation?

**3** What parameters and other information are needed for adaptive control of light-to-light characteristics of the TV chain?

**4** What should be the information on the objects constituting the scene to be transmitted in the case of object oriented method of image representation?

**45** What must be the data rate of additional data used for the adaptive control?

**56** What location in the programme stream may be used for additional data used for the adaptive control parameters and recommendations transmission?

**67** What are the influences of the adaptive control of light-to-light characteristics of the TV chain upon the mechanisms of image compression?

**78** What will be the influence of the use of adaptive control of the light-to-light TV chain upon the optimum degree of image compression?

**89** What are the possibilities of adaptive control of light-to-light characteristics of the TV chain in interactive TV services?

**910** In what a manner can the idea of adaptive control of light-to-light characteristics of the TV chain be used for other audio-visual services?

*further decides*

**1** that the results of the above studies, as appropriate, should be included in a Report and (a) Recommendation(s);

**2** that above studies should be completed by 2006.

Category: ~~S3~~S1/AP

## ANNEX 5

(Source: Document 6/91)

### DRAFT REVISION OF QUESTION ITU-R 106/6

#### **Recording formats for different media to be used in for the international tape exchange of recordings for high-definition television programme evaluation**

(1999)

The ITU Radiocommunication Assembly,

*considering*

- a) the existence of Recommendation ITU-R BR.602 ~~“Exchange of television recordings for programme evaluation”~~;
- b) the increasing penetration of high-definition television (HDTV) broadcast services;
- c) the consequent increasing need for international HDTV programme exchange;
- d) that such exchanges are generally intended for programme broadcasting, but they are often also intended for programme evaluation;
- e) that a correct evaluation of a HDTV programme requires an assessment of the programme essence ~~creative content~~, but it also requires a reasonably reliable assessment of its technical quality;
- f) that it would consequently appear that the use of an SDTV consumer recording format, as recommended in Recommendation ITU-R BR.602 for SDTV programme evaluation, will not meet the more demanding requirements of HDTV programme evaluation,

*decides* that the following Question should be studied

- 1 Which user requirements should be met by television recordings intended for HDTV programme evaluation purposes (e.g. ~~cost~~ economic comparisons, reliability, picture and sound quality, ease of operation, size and weight of exchanged recording support, etc.)?
- 2 Which ~~television recording format(s)~~ recording formats for television can best meet the identified user requirements and can be recommended for international exchange for HDTV programme evaluation?
- 3 Which operating practices (e.g. audio track allocation, leaders and trailer, labelling, etc.) can be recommended for this international exchange of recordings?

*further decides*

- 1 that the results of the above studies should be included in a Recommendation;
- 2 that the above studies should be completed by 2006.

Category: S2/AP

## ANNEX 6

(Source : Document 6/89)

### DRAFT REVISION OF QUESTION ITU-R 64/6\*

#### **Planning parameters for digital broadcasting at frequencies below 30 MHz**

(1999)

The ITU Radiocommunication Assembly

*considering*

- a) that since a few years efforts have been made in several parts of the world to develop digital broadcasting systems for introduction in the LF, MF and HF broadcasting bands (150 kHz to 26 MHz);
- b) that Question ITU-R 60/6 asks for the formulation of an appropriate Recommendation by 1999;
- c) that Recommendation ITU-R BS.1348 recommends technical and operational characteristics and capabilities for digital sound broadcasting services from terrestrial transmitters, intended for vehicular, portable and fixed reception in LF, MF and HF bands;
- d) that Recommendation ITU-R BS.1349 recommends that any system developed for digital sound broadcasting to vehicular, portable and fixed receivers in the LF, MF and HF bands should have emission characteristics which are compatible with the channel widths currently in use, e.g. 10 kHz, 9 kHz and 5 kHz;
- e) that such a new digital broadcasting system has to be introduced in a compatible manner in an existing environment of AM broadcast transmissions in the LF, MF and HF bands;
- f) that some parts of the LF and MF bands are shared with other services, e.g. in Region 1 the band 255-283.5 kHz and in Region 2 the band 525-535 kHz is shared with the aeronautical radionavigation service and in Region 2 the band 1 625-1 705 kHz is shared with the fixed and mobile services;
- g) that Resolution 543 (WRC-03) has recommended provisional RF protection ratio values for digitally modulated emissions in the HF broadcasting service and asked ITU-R to continue studies on this subject and report the results of these studies to the World Radiocommunication Conference 2007;

---

\* This Question should be brought to the attention of Radiocommunication Study Groups 8 and 9.

*decides* that the following Question should be studied

**1** What are the values of the following planning criteria for the implementation of digital sound broadcasting systems in the bands 5 (LF), 6 (MF) and 7 (HF) in an AM environment at the beginning which gradually will change into a full digital scenario?

- minimum usable field strength;
- RF protection ratios\*\* for the following cases:

<b>Wanted emission</b>	<b>Unwanted emission</b>
Digital	Digital
Digital	AM
AM	Digital

**2** What methods of sharing with the aeronautical radionavigation, fixed and mobile services could be applied and what are the criteria to protect these services interfered with by the digital broadcast emissions and what are the criteria to protect the broadcasting services from interference caused by the shared services?

**3** What protection ratios are required for the protection of digital sound broadcasting systems in the bands 5 (LF), 6 (MF) and 7 (HF) against interference from out-of-band emissions of industrial, scientific and medical (ISM) equipment, and from radiation caused by telecommunication systems utilizing power supply or telephone line distribution?

*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 ~~2003~~2006.

Category: C1

---

\*\* The determination of protection ratios should be based on the methods described in Recommendation ITU-R BS.559.

## ANNEX 7

(Source: Document 6/93)

### **Evaluation of draft new Question in accordance with Resolution ITU-R 51:**

This draft new Question is intended to initiate studies related to the performance of analogue and digital television receivers and the specifications and performance of the current domestic antenna design, construction and installation. Such specifications are being considered within a number of administrations to improve the performance of frequency planning for television services. Moreover, work on the radio-frequency spectrum aspects of this Question is not being conducted elsewhere. Therefore, this draft new Question complies with *resolves* 1a) and 1b) of Resolution ITU-R 51.

### DRAFT NEW QUESTION ITU-R [Doc. 6/93]

#### **Characteristics of television receivers and receiving antennas essential for frequency planning**

The ITU Radiocommunication Assembly,

*considering*

- a) the importance of certain characteristics of television receiving installations, receivers and antennas in the work of the Radiocommunication Assembly, the Radiocommunication Bureau and other organizations concerned with establishing frequency plans;
- b) that under the organization of the ITU-R, Study Group 6 should deal with matters concerning television receiving installations, receivers and antennas;
- c) that account should be taken of the methods of measuring characteristics specified by the International Electrotechnical Commission (IEC),

*decides* that the following Question should be studied

What are the principal characteristics of television receivers, receiving installations, feeders, multi-couplers, baseband distribution and antennas which values might be useful in frequency planning undertaken by the Radiocommunication Bureau and other organizations concerned?

*further decides*

- 1 that the results of the above studies should be addressed to:
  - update existing Recommendation(s);
  - prepare new Recommendation(s);
- 2 that the above studies should be completed by 2007.

Category: S2

## ANNEX 8

(Source: Document 6/98)

### DRAFT REVISION OF QUESTION ITU-R 69/6

#### **Conditions for a satisfactory television service in the presence of reflected signals**

(1990-1993)

The ITU Radiocommunication Assembly,

*considering*

- a) that reflected signals ~~which cause ghost images~~ can be generated by re-radiating structures such as tall buildings or tall antenna structures;
- b) that receiving antenna directivity is sometimes ineffective in eliminating reflected ghost images signals;
- c) that reflected ghost images signals can be also generated on cable distribution systems and collective antenna systems;
- d) that reflected signals can impair the received television picture and can also adversely affect reception of additional broadcasting services ~~such as teletext~~;
- e) that it is possible to cancel reflected signals by means of automatic circuits in the receiver;
- f) ~~that, where appropriate, it would be advantageous if a common ghost cancelling reference signal could be designed,~~ that reflected signals may have a different effect on analogue and digital television signals.
- g) that reflected signals may have different effects depending on different digital modulation systems.

*decides* that the following Question should be studied

- 1 What ratio of direct-delayed reflected signal is required for satisfactory television reception including additional broadcasting services taking into account:
  - polarity of reflected ghost images signals;
  - displacement of reflected ghost images signals from wanted images;
  - variability of reflected ghost images signals due to movement of reflecting objects, e.g., aircraft, wind turbines;
  - variability of reflected ghost images signals due to movement of receiving and transmitting antenna?



- 2 What methods of calculation should be used to determine the ratio and displacement of the direct and reflected signals which result from antenna structures in the vicinity of television radiators, taking into account factors such as radiation, polarization, movement, etc.?
- 3 What methods to cancel reflected signals by means of automatic circuits in the television receiver should be envisaged?
- ~~4 What are the appropriate technical characteristics of a ghost cancelling reference signal for a television broadcasting system?~~
- ~~5 What are the appropriate objective criteria for evaluating the relative performances of different ghost cancelling systems using a common GCR (Ghost Cancelling Reference) signal?~~
- 4 What is the difference between the effects of reflected signals on analogue and digital television reception?
- 5 How is the effect of reflected signals determined by the type of different digital modulation system used?
- 6 What is the multipath margin required to compensate for wind turbines when developing recommended ratios and minimum field strength for planning DTTB services?
- 7 What is the preferred composition of the structure, aperture and turbine tip velocity of reflective structures to minimize multipath/doppler effects?
- 8 What are the minimum distances between reflective structures and TV reception locations for television systems operating in the VHF and UHF bands?

NOTE 1 – See Recommendations ITU-R BT.804 and ITU-R BT.805.

*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 2006.

Category: S1