INTERNATIONAL TELECOMMUNICATION UNION

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

Administrative Circular
CAR/198

2 December 2005

To Administrations of Member States of the ITU

Subject: **Radiocommunication Study Group 6**

- **Proposed approval of 3 draft new Questions and 3 draft revised Questions**
- **Proposed suppression of 1 Question**

At the meeting of Radiocommunication Study Group 6 held on 20 and 21 October 2005, 3 draft new Questions and 3 draft revised 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. Furthermore, the Study Group proposed the suppression of 1 Question.

It should be noted that, in response to *resolves* 2 of Resolution ITU-R 5-4, those draft new or revised Questions from which resulting draft Recommendations could be subject to the alternative approval procedure (Resolution ITU-R 45) are identified as "/AP".

Having regard to the provisions of § 3.4 of Resolution ITU-R 1-4, you are requested to inform the Secretariat (brsgd@itu.int) by 2 March 2006, whether your Administration approves or does not approve these Questions.

After the above-mentioned deadline, the results of this consultation will be notified in an 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: 7
– 3 draft new ITU-R Questions, 3 draft revised ITU-R Questions and proposed suppression of 1 ITU-R Question

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

Place des Nations
CH-1211 Geneva 20
Switzerland

Telephone +41 22 730 51 11
Telefax Gr3: +41 22 733 72 56
Gr4: +41 22 730 65 00

Telex 421 000 uit ch
Telegram ITU GENEVE

E-mail: itumail@itu.int
http://www.itu.int/

Annex 1

(Source: Document 6/212)

DRAFT REVISION OF QUESTION ITU-R 52/6

Coverage in LF, MF and HF broadcasting

(1990-1994)

The ITU Radiocommunication Assembly,

considering

a) the need to ensure efficient spectrum utilization when planning LF, MF and HF broadcasting services,

decides that the following Question should be studied

1 What is the dependence of ground-wave and sky-wave sound broadcasting coverage on:

~~– the characteristics of the system;~~

– the systems used and their characteristics;

– the type of modulation in digital and analogue broadcasting;

– the radio-frequency protection ratios;

– the channel spacing;

– the minimum usable field strength;

– the radiated power;

– the geographical distribution of the transmitters;

– the distribution of population density;

– the use of directional transmitting antennas;

– the use of groups of synchronized transmitters~~,~~ and single frequency networks;

for bands 5 (LF), 6 (MF) and 7 (HF)?

2 What methods are required (including the use of computers), for calculating the minimum number of channels for the coverage for broadcasting in bands 5 (LF) ~~and~~ 6 (MF) and 7 (HF), for each of the systems envisaged, taking into account the points listed under § 1?

NOTE 1 – See Recommendations ITU-R BS.598, ITU-R BS.1514, ITU-R BS.1615.

further decides

1 that the results of the above studies should be addressed to:

– update existing Recommendation(s);

– prepare (a) new Recommendation(s);

2 that the above studies should be completed by ~~2005~~ 2007.

Category: S1

Annex 2

(Source: Document 6/216)

Evaluation of the draft new Question in accordance with Resolution ITU-R 51

This draft new Question is intended to initiate studies to determine the technical conditions which would allow the introduction of digitally modulated emissions in the MF band in Region 2. Administrations in Region 2 are currently considering the introduction of digital sound broadcasting in the MF band. Moreover, work on 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. 6/216]

Digital sound broadcasting in Region 2

The ITU Radiocommunication Assembly,

considering

a) that Recommendation ITU-R BS.1514 recommends digital sound broadcasting systems for operation in the broadcasting bands below 30 MHz;

b) that digital sound broadcasting technology may enable significant improvements in audio quality in the MF band;

c) that the Regional Agreement for the MF Broadcast Service in Region 2, Rio de Janeiro, 1981 (RJ81), does not address the introduction of digital modulation in the MF band,

noting

a) that studies should be conducted to determine the compatibility of digital sound broadcasting systems with the technical characteristics of the RJ81 Agreement,

decides that the following Question should be studied

1 What are the necessary technical conditions which would allow the introduction of digitally modulated emissions in the RJ81 Agreement?

further decides

1 that the results of the above studies should be addressed to:

– prepare (a) new Recommendation(s);

– prepare (a) new Report(s);

2 that the above studies should be completed by 2007.

Proposed category: S1

Annex 3

(Source: Document 6/220)

Evaluation of a draft new Question in accordance with Resolution ITU-R 51

Work on the subject matter of this draft new 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. 6/220]

Spectrum usage and user requirements for wireless microphones

The ITU Radiocommunication Assembly,

considering

a) that separate applications exist for broadcast and non-broadcast application of wireless microphones;

b) that separate applications exist for news, sports, drama, light entertainment, studio and non-studio programme production within broadcasting use of wireless microphones;

c) that programme production may require the application of various technologies in the use of wireless microphone systems;

d) that there is a requirement within a wireless microphone system to assign a range of selectable frequencies to each system to permit frequency management and mitigate interference;

e) that wireless microphones are currently assigned frequencies in present television systems and several administrations are undertaking the transition from analogue to digital terrestrial television broadcasting;

f) that wireless microphone systems are used in many countries and are deployed for television production in other countries by national broadcasting organizations;

g) that liaison status exists with the International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC) working on their standardization of generic consumer and non-consumer electronics devices;

h) that it is desirable to minimize the potential for interference in these systems while maximizing frequency management, mitigating interference and increasing global harmonization of the selectable frequencies;

j) that changes to the selectable frequency ranges can only be introduced if compatibility with existing receivers, at least during a sufficiently long transition period, is retained,

decides that the following Question should be studied

1 What are the operating characteristics for broadcast wireless microphone systems deployed in the frequencies currently allocated in the television broadcasting bands?

2 What are the optimum arrangements for frequency selection in wireless microphone systems for broadcast and non-broadcast application?

3 What steps can be taken for frequency management when broadcast use of wireless microphone systems is applied in bands allocated to broadcasting?

4 What method should be adopted for frequency selectivity in broadcast wireless microphone systems?

5 What transmission artefacts should be avoided in the design of broadcast wireless microphone systems?

6 What are the optimum bandwidth requirements for broadcast and non-broadcast wireless microphone systems?

7 What unified standards should be adopted in the design of broadcast wireless microphone systems to achieve global interoperability?

further decides

1 that the results of the above studies should be addressed to prepare new Recommendations and Reports;

2 that the above studies should be completed by 2007.

Category: S1

Annex 4

(Source: Document 6/232)

DRAFT REVISION TO QUESTION ITU-R 73/6*

~~Transmitting and r~~Receiving earth station antennas for the broadcasting-satellite service ~~(sound and television) and for the associated feeder links~~

(1990-1993)

The ITU Radiocommunication Assembly,

considering

a) the need for ~~ample~~detailed information on ~~transmitting and~~co-polar and cross-polar patterns of receiving earth station antennas for the planning and coordination of systems in the broadcasting-satellite service (BSS) ~~and for the associated feeder links,~~;

b) that the determination of coordination requirements and/or interference assessments between geostationary-satellite systems belonging to the BSS and/or to the fixed-satellite service (FSS), as well as between BSS earth stations and other services sharing the same frequency band, significantly depends on the accuracy of reference antenna patterns used in analysis;

c) that the range of applicability of antenna patterns needs to be precisely defined (i.e. the applicable range of input parameters, the applicable frequency bands, etc.);

d) that the definition of both antenna patterns and their associated range of applicability needs to be based on measurements rather than on theoretical analysis;

e) that new antenna technologies (e.g. multiple-feed antennas, non-circular reflectors) are being widely deployed;

f) that the ITU Radiocommunication Bureau has developed an antenna pattern software library to be used in conjunction with all software used in the application of the relevant procedures of the Radio Regulations,

noting

a) that, extensive studies and measurements were conducted to appropriately describe the patterns of antennas in the 12 GHz frequency range, which led to the adoption of Recommendations ITU-R BO.1213 and ITU-R BO.1443 as well as Report ITU-R BO.2029;

b) that, BSS feeder links are implemented in frequency bands allocated to the FSS (Earth-to-space) and are using antennas that are compliant with the relevant Recommendations of the ITU-R S-series;

c) that, in order to achieve better performance, BSS space stations employ shaped beams specific to each BSS satellite for both transmitting and receiving,

---

* This Question should be brought to the attention of Radiocommunication Study Groups 4 (WP 4A), 7, 8 (WP 8D) and 9 (WP 9D).

decides that the following Question should be studied

1 What are the measured co-polar and cross-polar radiation characteristics of BSS receiving earth station antennas (for both individual and community reception)?

~~**1** What are the practicable means and economic implications of achieving improved sidelobe suppression with ground receiving antennas in the different bands allocated to the BSS and what levels of performance have been measured?~~

~~**2** What are the practical means and the economic implications of obtaining useful levels of beam shaping and sidelobe control with satellite transmitting and receiving antennas in the bands allocated to the BSS and its associated feeder-link bands, and what levels of performance can be demonstrated?~~

~~**3**~~**2** What are the reference patterns for the co-polar and cross-polar components applicable to~~of transmitting and~~ receiving earth station antennas for the BSS (for both individual and community reception)~~, and for the associated feeder links~~?

3 What is the range of applicability of each antenna pattern (frequency bands, antenna diameter values, etc.)?

~~**4** What are the technical characteristics necessary to achieve a pointing accuracy for satellite transmitting and receiving antennas such that:~~

~~– the deviation of the antenna's beam from its nominal direction shall not exceed 0.1°;~~

~~– where the transmitted antenna beam has an elliptical cross-section, the orientation of the major axis can be maintained within ± 2° of the specified value?~~

~~**5** What are the practical means and economic implications of achieving a pointing accuracy for satellite transmitting antennas which is improved beyond the limits of § 4 above?~~

4 What are the necessary parameters to implement reference antenna patterns in software tools?

~~NOTE 1 – See Recommendation ITU-R BO.652, ITU-R BO.1443 and ITU-R BO.1445 and Reports ITU-R BO.808 and ITU-R BO.810.~~

NOTE ~~2 –~~ Further study under this Question should be ~~directed at future revisions of Recommendation ITU-R BO.652 to reflect advances in antenna technology for the 12 GHz band and to cover~~aimed at covering the types of antennas needed for ~~digital audio broadcasting and HDTV in other~~the 17 GHz and 21 GHz BSS bands and above,

further decides

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

2 that the results of the above studies should be completed by ~~2003~~2007.

Proposed category: S1

Annex 5

(Source: Document 6/233)

PROPOSED SUPPRESSION OF QUESTION ITU-R 107/6

Harmonization of the definition of reference antenna patterns and range of the applicability for the broadcasting-satellite service

During its October 2005 meeting, Working Party 6S decided to revise Questions ITU-R 73/6 and ITU-R 107/6 in order to update them. During the course of this revision, the relevant items of Question ITU-R 107/6 were included in the revised version of Question ITU-R 73/6. Working Party 6S consequently agreed to delete Question ITU-R 107/6.

Note by the Secretariat: The text of Question ITU-R 107/6 can be found at the ITU website URL below:

http://www.itu.int/ITU-R/publications/download.asp?product=que06&lang=e

Annex 6

(Source: Document 6/243)

DRAFT REVISION OF QUESTION ITU-R 44-2/6

Objective picture quality parameters and associated measurement and monitoring methods for digital television images

(1990-1993-1996-1997-2002-2003-2005)

The ITU Radiocommunication Assembly,

considering

a) that considerable progress in digital television standards has been achieved;

b) that the Radiocommunication Study Group is responsible for setting the overall quality performance of broadcasting chains;

c) that for television systems, ranging from low-definition systems[1] through SDTV to HDTV and including specific applications such as multiprogramming, it is essential to identify objective picture quality parameters as well as associated performance measurement and monitoring methods, for the studio environment and in broadcasting;

d) that display technology, including fixed pixel displays, have digital pre-processing which may introduce unexpected artifacts, such as pixel rescaling, contrast ratio compensation, colorimetry correction, etc.;

e) that it would be an advantage if measurement methods used for such tasks were unified for HDTV, SDTV and low-definition systems;

f) that impairments to television pictures can be shown to correlate with measurable features of the signals;

g) that overall picture quality is related to the combination of all impairments;

h) that developments in the statistical characterization of television images and modelling of the human visual system may lead to the replacement of subjective assessment by objective measurement in certain applications;

j) that in the case of digital TV it is necessary in particular to assess the performance of bit rate reduction methods both in terms of subjective and objective parameters;

k) that the measurement of performance requires agreed standard test materials and methods based on moving and static images;

---

[1] These are those systems having a lower resolution than SDTV, such as those now used for mobile or handheld reception of broadcast programmes.

l) that the scrambling process used in conditional access broadcasting may require special steps to be taken where bit-rate reduction is to be employed; and

m) that continuous evaluation and monitoring of quality (including dynamic resolution) is needed,

decides that the following Question should be studied

1 What are the objective performance parameters for each application identified, and for each digital TV ~~standard~~ format?

2 What are the necessary test materials and test signals required for the objective picture quality measurement of these applications and for each digital TV ~~standard~~ format?

3 What methods should be used for measuring and monitoring the parameters defined in §§ 1 and 2 to cover all motion artifacts and impairments including those introduced by the display pre-processor?

4 What characteristics should be recommended for a cost-effective quality meter which gives a direct displayed indication of picture quality?

5 ~~Where conditional access is employed, w~~What steps are necessary to coordinate the scrambling and bit-rate reduction processes so as to maintain the desired subjective and objective quality?

6 What characteristics should be recommended for a high quality electronic evaluation method for testing the quality of digital television pictures?

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 2007.

Category: S3

Annex 7

(Source: Document 6/244)

Evaluation of the draft new Question in accordance with Resolution ITU-R 51

The topics of that Question are in the mandate of Study Group 6. Work on the subject matter of this draft new 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. 6/244]

Objective perceptual audio quality measurement methods

The ITU Radiocommunication Assembly,

considering

a) that conventional objective measurement methods (e.g. for measuring signal-to-noise ratio and distortion) may no longer be adequate in assessing systems which use low bit-rate coding schemes or which employ analogue or digital signal processing;

b) that low bit-rate coding schemes are rapidly being deployed both at intermediate audio quality levels, which is corresponding to be equivalent to or better than a good reception of FM or AM analogue broadcasting services, and in multichannel configurations;

c) that not all implementations conforming to a specification or standard guarantee the best quality achievable within that specification or standard;

d) that formal subjective assessment methods are not always suitable for the monitoring of audio quality under operational conditions;

e) that objective perceptual measurement methods may eventually complement or supersede conventional objective measurement methods in all areas of measurements;

f) that Recommendation ITU-R BS.1116 is focusing on the subjective measurement of audio signals for high-quality audio in mono, stereo and multichannel configurations;

g) that Recommendation ITU-R BS:1534 is recommended for the subjective assessment of audio quality at intermediate audio quality;

h) that Recommendation ITU-R BS.1387 was validated with subjective data derived with Recommendation ITU-R BS.1116 only, and is focusing on the objective measurement of mono and stereo signals at high-quality audio only;

j) that several broadcasters have already introduced or planned digital broadcasting services whose audio quality is at intermediate quality as defined in Recommendation ITU-R BS.1534;

k) that several broadcasters have already introduced or planned digital broadcasting services transmitting multichannel audio signals;

l) that objective perceptual measurement methods may usefully complement subjective assessment methods,

decides that the following Question should be studied

1 What are the characteristics of perceptual models which correlate well with perceived audio quality at intermediate audio quality levels?

2 What are the characteristics of perceptual models which correlate well with perceived audio quality for multichannel signals?

3 How may these models be used in the assessment of audio quality?

4 What are the parameters of quality which can be measured by objective perceptual methods?

5 What are the possibilities for defining a set of test signals to be used in the objective perceptual measurement of audio quality?

6 By what criteria should the measurement methods be assessed?

further decides

1 that the results of the above studies should be addressed to:

– include in a revision of Recommendation ITU-R BS.1387-1;

– prepare (a) new Recommendation(s);

– prepare (a) new Report(s);

2 that the above studies should be completed by 2007.

Category: S1/AP