INTERNATIONAL TELECOMMUNICATION UNION

Radiocommunication Bureau
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Administrative Circular   10 March 2006
   CACE/373

**To Administrations of Member States of the ITU and
Radiocommunication Sector Members participating in the
work of the Radiocommunication Study Groups and the Special
Committee on Regulatory/Procedural Matters**

Subject: Radiocommunication Study Group 6

–   Approval of 3 new ITU-R Questions and 3 revised ITU-R Questions

–   Suppression of 1 ITU-R Question

By Administrative Circular CAR/198 of 2 December 2005, 3 draft new ITU-R Questions and
3 draft revised ITU-R Questions were submitted for approval by correspondence in accordance with
Resolution ITU-R 1-4 (§ 3.4). The Study Group proposed the suppression of 1 ITU-R Question.

The conditions governing these procedures were met on 2 March 2006 and therefore the Questions
are considered approved.

The texts of these Questions are attached for your reference and will be published in Addendum 5
to Document 6/1 which contains the ITU-R Questions approved by the 2003 Radiocommunication
Assembly and assigned to Radiocommunication Study Group 6.

Valery Timofeev
Director, Radiocommunication Bureau

Annexes: 7

<u>Distribution:</u>

– Administrations of Member States and Radiocommunication Sector Members
– 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
– ITU-R Associates in the work of Radiocommunication Study Group 6
– Secretary-General of the ITU, Director of the Telecommunication Standardization Bureau, Director of the Telecommunication Development
  Bureau

ANNEX 1

QUESTION ITU-R 52-1/6

Coverage in LF, MF and HF broadcasting

(1990-1994-2006)

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 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) 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 2007.

Category: S1

Annex 2

QUESTION ITU-R 120/6

Digital sound broadcasting in Region 2

(2006)

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.

Category: S1

Annex 3

QUESTION ITU-R 121/6

Spectrum usage and user requirements for wireless microphones

(2006)

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

QUESTION ITU-R 73-1/6*

Receiving earth station antennas
for the broadcasting-satellite service

(1990-1993-2006)

The ITU Radiocommunication Assembly,

considering

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

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,

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)?

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

2 What are the reference patterns for the co-polar and cross-polar components applicable to receiving earth station antennas for the BSS (for both individual and community reception)?

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

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

NOTE – Further study under this Question should be aimed at covering the types of antennas needed for 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 2007.

Category: S1

Annex 5

QUESTION ITU-R 107/6 IS SUPPRESSED

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

Annex 6

QUESTION ITU-R 44-3/6

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

(1990-1993-1996-1997-2002-2003-2005-2006)

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;

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[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 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 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   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

QUESTION ITU-R 122/6

Objective perceptual audio quality measurement methods

(2006)

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

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