Radiocommunication Bureau (BR)

Administrative Circular
CACE/1092

4 December 2023

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 ITU Academia

Subject: **Radiocommunication Study Group 6 (Broadcasting Service)**

–   **Approval of 7 revised ITU-R Questions**

–   **Suppression of 2 ITU-R Questions**

By Administrative Circular CACE/1077 dated 26 September 2023, 7 draft revised ITU-R Questions were submitted for approval by correspondence in accordance with Resolution ITU-R 1-9 (§ A2.5.2.3). In addition, the Study Group proposed the suppression of 2 ITU-R Questions.

The conditions governing this procedure were met on 26 November 2023.

The texts of the approved Questions are attached for your reference in Annexes 1 to 7 and will be published by the ITU. The suppressed ITU-R Questions are indicated in Annex 8.

Mario Maniewicz
Director

Annexes: 8

Annex 1

QUESTION ITU-R 120-1/6

Digital sound broadcasting below 174 MHz

(2006-2023)

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 Recommendation ITU-R BS.1114 recommends digital sound broadcasting systems for operation in the frequency range 30 MHz-3 000 MHz;

c) that Recommendation ITU-R BS.1660 recommends planning parameters for terrestrial digital sound broadcasting systems in the VHF band;

d) that the Geneva 1984 Regional Agreement foresees the possible introduction of digital sound broadcasting;

e) that digital sound broadcasting technology may enable significant improvements in audio quality;

f) that Regional Agreements for the sound broadcasting service below 174 MHz do not fully address the introduction of digital modulation in the bands assigned to broadcasting service,

noting

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

b) that studies should be conducted to determine the compatibility of digital sound broadcasting systems with the technical characteristics of the GE84 Regional Agreement;

c) the results of above studies may be used by administrations in their multi-lateral negotiations,

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 bands assigned to sound broadcasting service below 174 MHz while maintaining the provisions of the relevant Regional Agreements?

further decides

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

2 that the above studies should be completed by 2031.

Category: S2

Annex 2

QUESTION ITU-R 136-3/6[1]

Worldwide broadcasting roaming[2, 3]

(2012-2013-2013-2023)

The ITU Radiocommunication Assembly,

considering

a)   that there is an increasing demand to use portable broadcast receivers worldwide (worldwide roaming);

b)   that the service requirements for digital sound broadcasting systems in different bands have been developed and adopted in ITU-R (Recommendation ITU-R BS.1348 for the bands below 30 MHz; Recommendation ITU-R BS.774 for VHF/UHF bands);

c)   that the requirements for enhanced multimedia services for digital terrestrial broadcasting in VHF bands I and II have been developed and adopted in ITU-R (Recommendation ITU-R BS.1892);

d)   that various digital sound broadcasting systems for fixed and mobile reception and their parameters are described in ITU-R Recommendations and Reports (Recommendations ITU-R BS.1514, ITU-R BS.1615, Reports ITU-R BS.2004, ITU-R BS.2144 for the bands below 30 MHz; Recommendations ITU-R BS.1114, ITU-R BS.1660, Reports ITU-R BS.1203, ITU-R BS.2208, ITU-R BS.2214 for VHF/UHF bands);

e)   that various digital multimedia broadcasting systems for fixed and mobile reception and their parameters are described in ITU-R Recommendations and Reports (Recommendations ITU-R BT.1833, ITU-R BT.2016, Report ITU-R BT.2049);

f)   that various digital terrestrial television broadcasting systems are described in ITU-R Recommendations and Reports (Recommendations ITU-R BT.709, ITU-R BT.1306, ITU-R BT.1877, Reports ITU-R BT.2140, ITU-R BT.2142, ITU-R BT.1543, etc.);

g)   that various digital satellite sound and television broadcasting systems are described in ITU-R Recommendations (Recommendations ITU-R BO.1130, ITU-R BO.1516, ITU-R BO.1724, ITU-R BO.1784);

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[1] This Question should be brought to the attention of ITU-R Study Groups 4, 5 and ITU-T Study Groups 9, 17 as well as to IEC.

[2] The definition of the term "roaming" for IMT-2000 is set in Recommendation ITU-R M.1224: the ability of a user to access wireless telecommunication services in areas other than the one(s) where the user is subscribed.

[3] In this context, the term "worldwide broadcasting roaming" is defined as the possibility for a consumer to receive radio, multimedia or television programmes of interest in any location of the world where those programmes are available, using a single receiver irrespective of the broadcasting platform on which those programmes are delivered at that location.

h)		that a set of ITU-R Recommendations invite the ITU membership and radio receiver manufacturers to study the possibility of the development of multiband, multi standard radio receivers (Recommendations ITU-R BS.774, ITU-R BS.1114, ITU-R BS.1348);

i)		that the implementation of various versions of interactivity in TV and radio broadcasting systems including use of Internet are described in ITU-R Recommendations (Recommendations ITU-R BT.1508, ITU-R BT.1564, ITU-R BT.1667, ITU-R BT.1832, ITU-R BT.2037, ITU-R BT.2053, etc.);

j)		that software-defined radio (SDR) is generally used;

k)		that modern digital broadcasting receivers are increasingly based on loaded software or firmware that may be subject to updating;

l)		that modern broadcast receivers are commonly equipped with an interface that allows the additional connection to the Internet (for, e.g., interactivity and downloads);

m)		that methods of broadcast content delivery via future interactive and existing systems, as found in, for example, Recommendation ITU-R BT.1833 are in progress in addition to terrestrial broadcasting;

n)		that worldwide broadcasting roaming may facilitate the regional, national and international harmonization of broadcasting;

o)		that worldwide broadcasting roaming offers the possibility of intersystem interoperability for information services in disaster and emergency situations, navigation, safety, etc.;

p)		that the United Nations has defined 17 Sustainable Development Goals, including "industries, innovation and infrastructure" and "responsible consumption and production";

q)		that Resolution ITU-R 60-2, Reduction of energy consumption for environmental protection and mitigating climate change by use of ICT/radiocommunication technologies and systems, encourages the consideration of environmental issues by Study Groups;

r)		that broadcasting services provide free to air reception and offer user privacy,

		decides that the following Questions should be studied

1		What are the service requirements and features for worldwide broadcasting roaming?

2		What are the system requirements (basic characteristics and performances) that need to be fulfilled in order to realize worldwide broadcasting roaming?

3		What are the technical characteristics of broadcast receivers including elements of SDR and its enhancements as well as aspects related to environmental sustainability that may be used for implementation of worldwide broadcasting roaming?

		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 2031.

Category: S2

Annex 3

QUESTION ITU-R 132-7/6

Digital terrestrial broadcasting planning

(2010-2011-2011-2015-2017-2019-2021-2023)

The ITU Radiocommunication Assembly,

considering

a) that many administrations have already introduced, and others are introducing, digital terrestrial broadcasting in bands assigned to the broadcasting service;

b) that experience gained through the implementation of digital terrestrial television, sound and multimedia broadcasting will be useful in refining the assumptions and techniques to be applied in the broadcasting networks planning and implementation;

c) that planning procedures are being developed to facilitate the introduction of new systems in the existing radio frequency environment;

d) that these planning procedures are based on the use of propagation prediction methods and empirically derived protection ratios;

e) that the characteristics of receiving installations, receivers and antennas are the important elements in frequency planning;

f) that reflected signals can impair the received quality of service;

g) that administrations and/or broadcasters need to verify and validate the results from the process of planning of digital terrestrial broadcasting networks,

decides that the following Questions should be studied

1   What are the frequency and network planning parameters for digital terrestrial broadcasting, 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 broadcasting reception;
–   effect of wet foliage on digital terrestrial broadcasting reception;

– effect of reflected signals on digital terrestrial broadcasting reception due to movement of reflecting objects, e.g. wind turbine farms and airplane flutter[1];

– building entry loss;

– indoor location variations?

2   What is the likely impact on matters related to the planning of digital terrestrial broadcasting networks in the migration from analogue networks?

3   What is the likely impact on matters related to the planning of digital terrestrial broadcasting networks in the migration from existing first generation digital systems[2] to more spectrally efficient second generation digital systems[3]?

4   What protection ratios are required when two or more digital transmitters of the same system, or of different systems, or analogue and digital transmitters are operating:

– in the same channel;

– in adjacent channels;

– with overlapping channels;

– in other potential interference relationships (e.g. image channel)?

5   What receiver and antenna system characteristics should be used for frequency planning with respect to more efficient use of the frequency spectrum (e.g. selectivity, noise figure, etc.)?

6   What are the protection ratios needed to protect the digital terrestrial broadcasting service from other services sharing the same bands or operating in adjacent bands?

7   What techniques can be used to mitigate interference?

8   What are acceptable durations of outages due to local short-term interference to digital terrestrial broadcasting?

9   What are the technical bases required for planning which lead to efficient utilization of the frequency bands for digital terrestrial broadcasting?

10   What are the characteristic multipath conditions that need to be taken into account in the digital terrestrial broadcasting networks planning?

11   What time availability percentages can be practically achieved in digital terrestrial broadcasting and what margins in planning parameters are required to achieve these time availability percentages?

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[1] Recommendation ITU-R BT.1893 "Assessment of impairment caused to digital television reception by a wind turbine".

[2] Recommendation ITU-R BT.1306 'Error correction, data framing, modulation and emission methods for digital terrestrial television broadcasting', Recommendation ITU-R BT.2016 'Error-correction, data framing, modulation and emission methods for terrestrial multimedia broadcasting for mobile reception using handheld receivers in VHF/UHF bands' and Recommendation ITU-R BS.1114 'Systems for terrestrial digital sound broadcasting to vehicular, portable and fixed receivers in the frequency range 30-3 000 MHz'.

[3] Recommendation ITU-R BT.1877 'Error-correction, data framing, modulation and emission methods and selection guidance for second generation digital terrestrial television broadcasting systems'.

12   What planning criteria can be optimized to facilitate the implementation of digital terrestrial broadcasting, taking into account existing services?

13   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?

14   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?

15   What radio-frequency verification methods are appropriate for the verification and validation of the digital terrestrial broadcasting planning processes?

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 2027.

Category: S3

Annex 4

QUESTION ITU-R 12-4/6[1, 2]

**Generic bit-rate reduction coding of digital video signals for production,
for contribution, for primary and secondary distribution,
for emission and for related applications**

(1993-1997-2001-2002-2009-2012-2023)

The ITU Radiocommunication Assembly,

considering

a)		that rapid progress has been made in bit-rate reduction coding techniques;

b)		that bit-rate reduction coding of digital video signals (e.g. LDTV, SDTV, HDTV and UHDTV[3]) finds wide applications for production, for emission by terrestrial means and by satellite, for contribution, for both primary and secondary distribution by telecommunication and by CATV networks;

c)		that the large channel capacity required for the digital transmission and recording of extremely high resolution or multi-view video signals may introduce problems that are both technical and economic, and it is desirable to reduce the bit-rate required by these signals to a minimum consistent with the necessary performance objectives;

d)		that the encoding methods adopted for digital video should have as many common characteristics as possible so as to simplify conversion between standards and also permit operating economies;

e)		that lossless[4] or perceptually lossless[5] bit-rate reduction coding may be desired particularly for studio applications;

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[1]	This Question should be brought to the attention of the ISO, the IEC and the relevant ITU-T Study Groups (9 and 16).

[2]	In the year 2023, Radiocommunication Study Group 6 extended the completion date of studies for this Question.

[3]	LDTV:	Low definition television
	SDTV:	Standard definition television
	HDTV:	High definition television
	UHDTV:Ultra-high definition television

[4]	The ITU terminology database defines "lossless bit-rate reduction" as "a bit-rate reduction *process* that fully preserves the information content of the original bit stream, which can be reconstructed with bit-to-bit accuracy (e.g. exploiting the bit-stream statistics)".

[5]	Perceptually lossless as used in the context of this Question means a lossy compression scheme with compression artefacts that are not subjectively visible during the production process.

f)   that there are advantages in having a generic bit-rate reduction coding in the various applications;

g)   that a number of compression families have been used for various television applications,

          decides that the following Question should be studied

What are the appropriate bit-rate reduction methods for digital video signals for use in production, in contribution, in emission, both terrestrial and by satellite, for distribution, both primary and secondary by telecommunication networks, for the recording media and for related applications such as Electronic news gathering (ENG)/ Satellite news gathering (SNG)?

          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 2027.

Category: S2

Annex 5

QUESTION ITU-R 34-4/6[1]

File formats and transport for the exchange of audio, video, data and metadata materials in the professional broadcast environments

(2002-2007-2009-2019-2023)

The ITU Radiocommunication Assembly,

considering

a)   that storage systems based on information technology, including cloud storage, data disks and data tapes have already started to penetrate all areas of the professional television environment; production, non-linear editing, play-out, post-production, distributed production, archiving, contribution and distribution;

b)   that future TV production environments will increasingly incorporate systems from the Information Technology (IT) world such as networks, and server systems;

c)   that applications for professional TV and sound broadcasting are being increasingly based on software which generally handle content in file form;

d)   that file exchange does not introduce additional picture and sound quality degradation if, for example, the compressed audio and video accommodated in the file body is transferred in its original, compressed form;

e)   that file exchange can be adapted easily to the available channel bandwidth so that user can trade-off transfer-bandwidth versus transfer-time;

f)   that audio, video, data and metadata can be stored and transferred in a common file;

g)   that audio, video, data and metadata can also be stored and transferred as independent files with provision for later synchronization;

h)   that the technology of file formats and file exchange offers significant advantages in a workflow in professional broadcast environments;

i)   that the interoperability within and between content management systems is an essential user requirement for the exchange of content and assets;

j)   that the application of metadata exchange in TV and sound production requires support of existing specifications on metadata;

k)   that compatibility with both binary and XML metadata transport protocols needs to be considered;

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[1] This Question should be brought to the attention of ITU-T Study Group 9 and the ISO/IEC JTC1 SC29 Working Group 11.

l)   that the adoption of a small number of interoperable file formats for the exchange of broadcast content would greatly simplify the design and operation of equipment and facilities;

m)   that interoperability and conformance testing can be simplified when a single coding method is specified;

n)   that many broadcasters have already deployed systems based on file formats;

o)   that many applications provided by multiple vendors rely on interoperable file formats;

p)   that it is desirable that file formats meet future user requirements,

recognizing

a)   that Recommendation ITU-R BT.1775 defines the editable file format and the generic container for the exchange of metadata, audio, video and data;

b)   that Recommendations ITU-R BS.1352 and ITU-R BS.2088 specify file formats for the exchange of audio programme materials with metadata,

decides that the following Questions should be studied

1   What are the user requirements and potential category of requirements for carrying programme and programme genres for the exchange of audio, video, data and metadata encapsulated in a file format in the professional television and sound broadcasting environments?

2   What structure of file formats will best serve the future needs of users, while desirably maintaining interoperability with existing deployments?

3   What degree of extensibility can be achieved while maintaining backward compatibility?

4   What will be the design of the encoders and decoders which would be utilized for interchange of audio, video, data and metadata?

5   What digital interfaces should be specified for transport of the file format(s) for interchange of audio, video, data and metadata?

6   What independent video/audio search capability will be required to assist asset management during and following interchange of the file?

7   What operational considerations will be required by broadcasting organizations for the interchange of audio, video, data and metadata?

further decides

1   that ITU-R Study Group 6 should continue to monitor the standardization work of other organizations with regard to file formats and transport mechanisms, and that appropriate existing and future file formats should be proposed for adoption by the ITU-R;

2   that the study should also include a consideration of integration and migration strategies for legacy, established and future file formats;

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

4   that the above studies should be completed by 2027.

Category: S2

Annex 6

QUESTION ITU-R 111-2/6

Technical methods for the protection and utilization of the personal data of end-users in broadcasting systems[*]

(2003-2004-2023)

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 digital broadcasting transmission channels (e.g. satellite master antenna, terrestrial relay or direct satellite and terrestrial reception) in combination with interaction/return channel techniques;

d) that interactivity could effectively extend the capability of broadcast receivers to provide bi-directional services such as Internet access, e-mailing, e-commerce, etc.;

e) the development of return channel techniques for receiving vision, sound and data from the user (programme-related and non-programme-related);

f) that interactive broadcasting services have been broadly deployed;

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;

i) that protection of end-users' personal data is an important matter when providing personalized content,

decides that the following Questions 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?

2   What are the technical means to preserve the security of personal data of the user ?

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

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[*]   This Question should be brought to the attention of the International Electrotechnical Commission (IEC), the International Standardization Organization (ISO), ITU Telecommunication Standardization Study Groups 2, 9, 16 and 17 and to Radiocommunication Study Groups 4 and 5 as well as to ITU-D Study Groups 1 and 2.

4   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?

5   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?

6   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, due to the use of local personal data, and to be able to control such transmissions on the interaction channel?

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 technical methods can be used to inform the user through the broadcast or interaction channel, in an easily understandable form, about any personal information available, e.g. user profiles and preferences to be transferred to a service provider or any other third party?

9   What technical methods can be adopted to protect end-users' personal data when providing personalized broadcast content?

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 45-6/6, 140-1/6 and ITU-R 289/4;

3   that the studies should be completed by 2027.

Category: S2

Annex 7

QUESTION ITU-R 130-4/6

**Digital interfaces for production, post-production and international exchange
of sound and television programmes for broadcasting**

(2009-2012-2013-2019-2023)

The ITU Radiocommunication Assembly,

considering

a)	that the practical implementation of television and sound production requires definition of the details of various studio interfaces and the data streams traversing them;

b)	that the ITU-R has established Recommendations on various types of television image and sound formats;

c)	that ITU-R has established Recommendations on digital interfaces for various types of television image formats, in parallel and serial forms, for coaxial and optical cables for production, post production and international exchange of programmes;

d)	that ITU-R has also established Recommendations on digital audio interfaces for production, post production and international exchange of programmes;

e)	that ITU-R has been studying image and sound formats for advanced immersive audio-visual systems, which may require higher data rate interfaces;

f)	that programme content and related data can be transferred either as a continuous stream or in the form of packets;

g)	that high-speed IP transmission over wide area telecommunication networks including wireless networks has become available;

h)	that IP interfaces can transport various signals, including real-time uncompressed audio/video signals, real-time compressed audio/video signals and associated metadata in addition to non-real-time data;

i)	that networked production and post-production systems should be constructed from interoperable pieces of equipment having standardized common interfaces and control protocols;

j)	that the transport mechanism should operate independently of the type of payload;

k)	that specifications should cover the possibility of conveying sound or any other ancillary signals through the interface, taking into account the original source timing;

l)	that for operational and economic reasons it is desirable to investigate whether the specification should also cover the possibility to use the same interface to transport the various image formats given in ITU-R Recommendations,

decides that the following questions should be studied

1	What parameters are necessary to define specified digital interfaces including IP-based and optical ones for the image and/or sound formats covered by ITU-R Recommendations?

2   What transport and control protocols are necessary to define interfaces for networked production and post-production systems?

3   What are the performance requirements (e.g. network latency and transmission errors) for the network used in programme production and exchange to ensure both real-time and non-real-time transfers of programme material?

4   What ancillary signals including payload identification[1] and metadata are required to be carried across the interfaces with the video and audio signals, and what are the parameters necessary to define specifications for these signals?

5   What technical requirements should be specified for the associated digital sound channels?

6   What are the parameters that should be specified to use the same interface to also transport the various payloads given in ITU-R Recommendations?

7   What provisions should be taken to ensure security in the transport of broadcast programme signals and devices connected with interfaces?

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 2027.

Category: S2

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[1] Identification of video, audio and ancillary data carried on a digital interface or individual links.

Annex 8

Proposed suppression of ITU-R Questions

Question ITU-R	Title
69-1/6	Conditions for a satisfactory television service in the presence of reflected signals
137-1/6	Internet Protocol (IP) interfaces for the transport of broadcast programmes

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