



Radiocommunication Bureau (BR)

Administrative Circular
CACE/737

9 July 2015

To Administrations of Member States of the ITU, Radiocommunication Sector Members and ITU-R Associates participating in the work of Radiocommunication Study Group 4

Subject: **Radiocommunication Study Group 4 (Satellite services)**

- **Proposed adoption of 1 draft new ITU-R Recommendation, 6 draft revised ITU-R Recommendations and 2 draft new ITU-R Questions and their simultaneous approval by correspondence in accordance with § 10.3 of Resolution ITU-R 1-6 (Procedure for the simultaneous adoption and approval by correspondence)**

At the meeting of Radiocommunication Study Group 4, held on 26 June 2015, the Study Group decided to seek adoption of 1 draft new ITU-R Recommendation, 6 draft revised ITU-R Recommendations and 2 draft new ITU-R Questions by correspondence (§ 10.2.3 of Resolution ITU-R 1-6) and further decided to apply the procedure for simultaneous adoption and approval by correspondence (PSAA), (§ 10.3 of Resolution ITU-R 1-6). The titles and summaries of the draft Recommendations are given in Annex 1 and the texts of the draft Questions are given in Annexes 2 and 3.

The consideration period shall extend for 2 months ending on 9 September 2015. If within this period no objections are received from Member States, the draft Recommendations and Questions shall be considered to be adopted by Study Group 4. Furthermore, since the PSAA procedure has been followed, the draft Recommendations and Questions shall also be considered as approved.

Any Member State who objects to the adoption of a draft Recommendation or Question is requested to inform the Director and the Chairman of the Study Group of the reasons for the objection.

After the above-mentioned deadline, the results of the PSAA procedure will be announced in an Administrative Circular and the approved Recommendations and Questions will be published as soon as practicable (see <http://www.itu.int/pub/R-REC> and <http://www.itu.int/pub/R-QUE-SG04/en> respectively).

Any ITU member organization aware of a patent held by itself or others which may fully or partly cover elements of the draft Recommendation(s) mentioned in this letter is requested to disclose such information to the Secretariat as soon as possible. The Common Patent Policy for ITU-T/ITU-R/ISO/IEC is available at <http://www.itu.int/en/ITU-T/ipr/Pages/policy.aspx>.



François Rancy
Director

Annex 1: Titles and summaries of the draft Recommendations

Annex 2: Draft new Question ITU-R [UHDTV_SAT]/4

Annex 3: Draft new Question ITU-R [SMALL_ES_ANTENNAS]/4

Documents: Documents [4/94\(Rev.1\)](#), [4/102\(Rev.2\)](#), [4/103\(Rev.1\)](#), [4/104\(Rev.1\)](#), [4/105\(Rev.1\)](#), [4/113\(Rev.1\)](#), [4/114\(Rev.1\)](#)

These documents are available in electronic format at: <http://www.itu.int/md/R12-SG04-C/en>

Distribution:

- Administrations of Member States of the ITU and Radiocommunication Sector Members participating in the work of Radiocommunication Study Group 4
- ITU-R Associates participating in the work of Radiocommunication Study Group 4
- Chairmen and Vice-Chairmen of Radiocommunication Study Groups and the Special Committee on Regulatory/Procedural Matters
- Chairman and Vice-Chairmen of the Conference Preparatory Meeting
- Members of the Radio Regulations Board
- Secretary-General of the ITU, Director of the Telecommunication Standardization Bureau, Director of the Telecommunication Development Bureau

Annex 1

Titles and summaries of the draft Recommendations

Draft new Recommendation ITU-R M.[AMS(R)S.METHODOLOGY]-0

Doc. 4/105(Rev.1)

Methodology to calculate spectrum requirements within the frequency bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space) for aeronautical mobile-satellite (R) service communications related to the priority categories 1 to 6 of Article 44 of the Radio Regulations

This Recommendation provides a methodology to calculate aeronautical mobile-satellite (R) service spectrum requirements within the frequency bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space). It is intended to be used to quantify the spectrum requirements related to the AMS(R)S priority categories 1 to 6 of RR Article **44**, for which the provisions of Resolution **222 (Rev.WRC-12)** apply. The development of such a Recommendation was requested by Resolution **422 (WRC-12)**.

Draft revision of Recommendation ITU-R M.2014-0

Doc. 4/94(Rev.1)

Global circulation of IMT-2000 satellite terminals

WP 5D developed a revision of Recommendation ITU-R M.1579-1 which has been formally approved as Recommendation ITU-R [M.1579-2](#). It is now required to update Recommendation ITU-R [M.2014](#) which contains similar contents of Recommendation ITU-R M.1579, in order to reflect the up-to-date technology trends.

The main purpose of this revision is to include IMT-Advanced satellite terminals in addition to IMT-2000 satellite terminals.

Draft revision of Recommendation ITU-R M.1831-0

Doc. 4/102(Rev.2)

A coordination methodology for RNSS inter-system interference estimation

This revision includes: 1) minor editorial corrections and some additions to the main body of the Recommendation, including edits to comply with the ITU-R Recommendations Format Guidelines; 2) numerous clarifications and corrections to relevant text, figures, and equations in Annex 1; and 3) new material to address the case of interference between RNSS signals with short-length pseudo-random noise (PRN) codes (Annex 1, Section 6).

Draft revision of Recommendation ITU-R M.2031-0

Doc. 4/103(Rev.1)

Characteristics and protection criteria of receiving earth stations and characteristics of transmitting space stations in the radionavigation-satellite service (space-to-Earth) operating in the band 5 010-5- 030 MHz

This revision includes: 1) editorial corrections to the main body of the Recommendation and alignment of *considerings* and *recognizings* in conformance with the ITU-R Recommendation Format Guidelines; and 2) updates to the QZSS information in Annex 3 to make available the most recent details of the system.

Draft revision of Recommendation ITU-R M.1906-0

Doc. 4/104(Rev.1)

Characteristics and protection criteria of receiving space stations and characteristics of transmitting earth stations in the radionavigation-satellite service (Earth-to-space) operating in the band 5 000-5 010 MHz

This revision includes: 1) editorial corrections to the main body of the Recommendation and alignment of *considerings* and *recognizings* in conformance with the ITU-R Recommendation Format Guidelines; and 2) updates to the QZSS information in Annex 3 to make available the most recent details of the system.

Draft revision of Recommendation ITU-R S.1717-0

Doc. 4/113(Rev.1)

Electronic data file format for earth station antenna patterns

This revision provides the following changes:

- a) expand the scope of the Recommendation so as to encompass BSS earth station antennas. At present, the Recommendation only captures measurement data for FSS antennas;
- b) add an annex to the Recommendation addressing the case when antenna measurement data is only available in the azimuth and elevation planes.

Draft revision of Recommendation ITU-R S.1587-2

Doc. 4/114(Rev.1)

Technical characteristics of earth stations on board vessels communicating with FSS satellites in the frequency bands 5 925-6 425 MHz and 14-14.5 GHz which are allocated to the fixed-satellite service

The proposed changes are to transfer the example ESV characteristics into a databank to be maintained by the Bureau.

Annex 2

(Document [4/98](#))

DRAFT NEW QUESTION ITU-R [UHDTV_SAT]/4

UHDTV satellite broadcasting systems

The ITU Radiocommunication Assembly,

considering

- a) that preferences of television viewers have diversified, including high-resolution video images;
- b) that means for improving the flexibility and efficiency of the frequency spectrum are under constant investigation;
- c) that an increase in the transmission capacity is required in order to realize ultra-high definition television (UHDTV) satellite broadcasting in a single satellite transponder;
- d) that there have been significant developments in efficient modulation and channel coding techniques, including but not limited to formats such as amplitude phase shift keying (APSK) and low density parity check (LDPC) codes;
- e) that advances in video and audio compression techniques that can meet the UHDTV format have shown the practicality of transmitting more than one UHDTV service per satellite transponder;
- f) that UHDTV satellite broadcasting can accommodate both MPEG transport stream packets and IP packets;
- g) that flexible transmission and multiplexing configurations enables integration of UHDTV satellite broadcasting into the IP network;
- h) that the availability requirements of these different services, including UHDTV, can vary in accordance with their application,

noting

that Recommendation ITU-R BT.2020 - Parameter values for ultra-high definition television systems for production and international programme exchange, specifies UHDTV image system parameters,

decides that the following Questions should be studied;

- 1 What are suitable and/or optimal modulation and channel coding techniques for UHDTV satellite broadcasting systems, what are practical channel transmission rates (capacity), and what performance is achievable (e.g. BER as a function of C/N , C/I , SNR and E_b/N_0)?
- 2 What are appropriate availability performance requirements and bit error rate requirements for the transmission of these UHDTV satellite broadcasting systems?

3 What are appropriate error-control techniques and/or error-concealment processes that optimize quality, bandwidth and cost considerations?

4 What protection ratios are required between two digital signals and between a digital signal and other types of signals that are likely to be transmitted in the band allocated to the broadcasting-satellite service?

5 What are the practical schemes that need to be taken into account in satellite broadcasting systems when encountering rain attenuation, which differs by climatic zones?

6 What are the practical schemes when satellite transponder nonlinearity causing signal distortion is encountered?

further decides

1 that the results of the above studies should be included in the appropriate Recommendations and/or Reports;

2 that the above studies should be completed by 2017.

Category: S1

Annex 3

(Document [4/109](#))

DRAFT NEW QUESTION ITU-R [SMALL_ES_ANTENNAS]/4

Antenna radiation diagrams/patterns for small (D/λ^1 around 30) earth station antennas used in fixed-satellite and broadcasting-satellite systems

The ITU Radiocommunication Assembly,

considering

- a)* that earth station reference antenna patterns for the fixed satellite service (FSS) and the broadcasting satellite service (BSS) are used in determination of coordination requirements in accordance with the Radio Regulations;
- b)* that the identification of coordination requirements and/or interference assessments between FSS/BSS networks, as well as between FSS/BSS earth stations and systems of other services sharing the same frequency band, depends on the reference antenna patterns used in analysis;
- c)* that use of unnecessarily conservative reference antenna patterns can lead to an increase in the number of networks identified as potentially affected and thereby make it difficult for the involved administrations to complete coordination;
- d)* that the range of applicability of current and future reference antenna patterns needs to be precisely defined (i.e. the applicable range of input parameters, the applicable frequency bands, etc.);
- e)* that the definition of both antenna patterns and their associated range of applicability needs to be based on measurements;
- f)* that new antenna design and technology (e.g. non-circular reflectors, special feed horn design) could lead to lower side lobe levels than in the current reference antenna patterns;
- g)* that the new antenna technology such as phased arrays may also be taken into account in the development of new antenna patterns;
- h)* that the ITU Radiocommunication Bureau has developed an antenna pattern software library used in conjunction with all software used in the application of the relevant procedures of the Radio Regulations,

noting

- a)* that there are some FSS/BSS earth stations antenna patterns in existing ITU-R Recommendations as for example ITU-R S.465, ITU-R S.580, ITU-R BO.1213, ITU-R S.1855 that are used for antenna size D/λ around 30;

¹ D is the antenna dimension in the measurement plane (m), λ is the wavelength (m).

b) that identification for the need of coordination in BR IFIC special sections in many cases refer to satellite networks at very distant positions because of the comparatively high side lobe levels of the FSS/BSS earth stations reference antenna patterns especially at off-axis angles beyond 40 degrees,

decides that the following Questions should be studied

- 1 What are the measured radiation characteristics of small FSS/BSS earth station antennas especially in the vicinity of the off-axis angles of 40 degrees and beyond?
- 2 What are the reference patterns applicable to FSS/BSS earth station antennas with D/λ around 30?
- 3 What range of applicability could be associated with any new FSS/BSS reference antenna pattern (frequency bands, antenna diameter, etc.)?
- 4 Can the range of applicability of existing FSS/BSS reference antenna patterns be extended to small antennas?
- 5 How could the existing or new small (D/λ around 30) earth station antenna patterns be improved/developed taking into account the recent technological development including the phased array antennas and the measured antenna diagrams?
- 6 What are the necessary parameters to implement reference antenna patterns in software tools developed by the ITU Radiocommunication Bureau?

further decides

- 1 that the results of the above studies should be included in appropriate Recommendations and/or Reports;
- 2 that the above studies should be completed by 2019.

Category: S2
