



90th Anniversary
CCIR/ITU-R Study Groups
(1927-2017)

Radiocommunication Bureau (BR)

Administrative Circular
CACE/823

14 July 2017

**To Administrations of Member States of the ITU, Radiocommunication Sector Members,
ITU-R Associates participating in the work of the Radiocommunication Study Group 7 and
ITU Academia**

Subject: Radiocommunication Study Group 7 (Science Services)

- **Approval of 1 new ITU-R Question and 3 revised ITU-R Questions**
- **Suppression of 1 ITU-R Question**

By Administrative Circular CACE/807 of 5 May 2017, 1 draft new ITU-R Question and 3 draft revised ITU-R Questions were submitted for approval by correspondence in accordance with Resolution ITU-R 1-7 (§ A2.5.2.3). In addition, the Study Group proposed the suppression of 1 ITU-R Question.

The conditions governing this procedure were met on 5 July 2017.

The texts of the approved Questions are attached for your reference in the Annexes 1 – 4 to this letter and will be published by the ITU. The suppressed ITU-R Question is indicated in Annex 5.

François Rancy
Director

Annexes: 5

Distribution:

- Administrations of Member States of the ITU and Radiocommunication Sector Members participating in the work of Radiocommunication Study Group 7
- ITU-R Associates participating in the work of Radiocommunication Study Group 7
- ITU Academia
- Chairmen and Vice-Chairmen of Radiocommunication Study Groups
- 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

QUESTION ITU-R 257/7

Technical and operational characteristics of radio astronomy applications operating above 275 GHz

(2017)

The ITU Radiocommunication Assembly,

considering

- a)* that many cosmic phenomena are observable only at frequencies above 275 GHz owing to the physical laws which govern them;
- b)* that the ability of the radio astronomy service to operate at frequencies above 275 GHz has improved to the point that observations are regularly conducted at various terrestrial locations, on airborne platforms, and by space missions;
- c)* that applications of active services above 275 GHz are under development;
- d)* that compatibility of the use of the spectrum above 275 GHz should be ensured;
- e)* that compatibility is facilitated when the operational and technical characteristics of systems are clearly understood,

recognizing

- a)* that spectrum allocations do not currently exist above 275 GHz;
- b)* that RR No. 5.565 identifies bands in the range 275-1 000 GHz for use by administrations for passive service applications, including radio astronomy applications,

decides that the following Questions should be studied

- 1 What are the technical and operational characteristics of systems operating at frequencies above 275 GHz in the radio astronomy service?
- 2 Which of these technical and operational characteristics are of particular importance in ensuring the compatible use of spectrum above 275 GHz?

further decides

- 1 that the results of studies should be brought to the attention of the other Study Groups;
- 2 that the results of studies should be included in ITU-R Recommendations and/or Reports, as appropriate;
- 3 that the above studies should be completed before 2023.

Category: S2

Annex 2

QUESTION ITU-R 226-2/7

Frequency sharing between the radio astronomy service and other services in bands between 67 and 275 GHz

(1997-2012-2017)

The ITU Radiocommunication Assembly,

considering

- a)* that many atomic and molecular spectral lines are observed at frequencies in the mm-wave spectrum between 67 GHz and 275 GHz, 67 GHz being the lowest frequency at which telluric opacity permits ground-based radio astronomy observations above 60 GHz, and 275 GHz being the highest frequency at which spectrum allocations presently exist;
- b)* that these spectral lines, together with continuum observations, provide information about star formation, including the formation of planets in other solar systems, the existence of pre-biological molecules and extra-terrestrial life, the physics and chemistry of the interstellar medium, the history of the universe, and about other astrophysical processes of great interest;
- c)* that spectral lines of great importance to radio astronomy may not fall within bands allocated to the radio astronomy service;
- d)* that sharing between radio astronomy observatories and ground-based transmitters is facilitated in the mm-wave band by topography and by the attenuation provided by atmospheric gases;
- e)* that large mm-wave telescopes represent significant collaborative scientific investments;
- f)* that mm-wave observatories are, wherever practicable, located in high and isolated remote sites, to take maximum advantage of extremely dry atmospheric conditions and a low interference environment;
- g)* that geographical sharing between the radio astronomy service and other services may be feasible with the creation of protection zones by national administrations; and
- h)* that Question ITU-R 145/7 addresses conditions for frequency sharing between radio astronomy and other radio services,

further considering

that systems of active services in the frequency range of 67 GHz to 275 GHz are under development,

decides that the following Questions should be studied

- 1** What are the technical and operational characteristics of systems operating at frequencies between 67 and 275 GHz in the radio astronomy service?
- 2** What are the radiocommunication services with which the radio astronomy service can share frequency bands between 67 and 275 GHz?

further decides

- 1 that the results of the above studies should be included in (a) Recommendation(s) and/or Report(s), as appropriate;
- 2 that the results of studies should be brought to the attention of the other Study Groups;
- 3 that the above studies should be completed before 2023.

Category: S2

Annex 3

QUESTION ITU-R 145-3/7

Technical factors relating to the protection of radioastronomical observations

(1990-1993-2000-2017)

The ITU Radiocommunication Assembly,

considering

- a)* that radio astronomy is based on the reception of natural emissions at much lower power levels than are generally used in other radio services, and may therefore suffer harmful interference at levels which could be tolerated by many other services;
- b)* that, for an understanding of astronomical phenomena, radioastronomers must observe both at specific and immutable line frequencies and also in a series of bands throughout the continuum spectrum;
- c)* that existing measures to protect the radio astronomy service are based on the assumption that the radio astronomy stations are located on Earth;
- d)* that Question ITU-R 230/7 deals with radio astronomy observations from space,
decides that the following Questions should be studied
 - 1 What are the preferred frequency bands for the radio astronomy service?
 - 2 What are the characteristics of observational techniques in radio astronomy?
 - 3 What are the factors which affect the practicability of frequency sharing between radio astronomy and other radio services?
 - 4 In what ways can radio astronomy observations be affected by spurious and out-of-band emissions from radio transmitters located in other frequency bands and by other electrical equipment?

further decides

- 1 that the results of the above studies should be included in (a) Recommendation(s) and/or Report(s), as appropriate;
- 2 that the results of studies should be brought to the attention of the other Study Groups;
- 3 that the above studies should be completed before 2023.

Category: S2

Annex 4

QUESTION ITU-R 236-2/7.*

The future of the UTC time scale

(2001-2014-2017)

The ITU Radiocommunication Assembly,

considering

- a) that Resolution **655 (WRC-15)** invites the ITU Radiocommunication Sector and BIPM, along with other organizations, to cooperate in studies, dialogue, and reports to address issues identified in that Resolution concerning the definition of time scales and the dissemination of time signals via telecommunication systems;
- b) that UTC is the legal basis for time-keeping for most countries in the world, and *de-facto* is the time scale used in most others;
- c) that Recommendation ITU-R TF.460-6 states that all standard-frequency and time signal emissions should conform as closely as possible to UTC;
- d) that Recommendation ITU-R TF.460-6 describes the procedure for the occasional insertion of leap seconds into UTC to ensure that it does not differ by more than 0.9 seconds from the time determined from the rotation of the Earth (UT1);
- e) that the occasional insertion of leap seconds into UTC creates serious operational difficulties for many navigation, industrial, financial, and telecommunication systems today,

decides that the following Questions should be studied

- 1 What are the various aspects of current and potential future reference time scales, including their impacts and applications in telecommunications, industry, and other areas of human activity?
- 2 What are the requirements for the content and structure of time signals to be disseminated by radiocommunication systems?
- 3 Does the current leap second procedure satisfy user needs or should an alternative procedure be adopted?

further decides

- 1 that the results of the above studies should be included in ITU-R Reports;
- 2 that the above studies should be completed before 2023.

Category: C2

* This Question should be brought to the attention of the Bureau international des Poids et Mesures (BIPM), the International Earth Rotation Service (IERS), Study Group 13 of the Telecommunication Standardization Sector and Radiocommunication Study Group 5.

Annex 5

Suppressed ITU-R Question

Question ITU-R	Title
254/7	Characteristics and spectrum requirements of satellite systems using nanosatellites and picosatellites
