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Radiocommunication Bureau (BR)

Administrative Circular
CACE/1096

21 December 2023

To Administrations of Member States of the ITU, Radiocommunication Sector Members, ITU-R Associates and ITU Academia participating in the work of the Radiocommunication Study Group 5

Subject: **Radiocommunication Study Group 5 (Terrestrial Services)**

– **Approval of 1 new and 6 revised ITU-R Questions**

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

By Administrative Circular CACE/1081 dated 12 October 2023, 1 draft new and 6 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 12 December 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 264/5

Studies related to Intelligent Transport Systems, including Connected Automated Vehicles and future applications

(2023)

The ITU Radiocommunication Assembly,

considering

a) that, around 1.5 billion vehicles exist in the world including trucks and buses;

b) that there is a need to integrate various technologies including radiocommunications into land transportation systems;

c) that information and radiocommunication technologies are integrated in a vehicle to provide evolving Intelligent Transport Systems (ITS) communication use cases for the purpose of improving traffic management and assisting safer driving;

d) that international standards would facilitate the world-wide deployment of ITS and provide for economies of scale in bringing ITS equipment and services to the public;

e) that, after the initial standardization of intelligent transport systems (ITS), ongoing enhancements of the ITS specifications have been and will continue to be accommodated over time;

f) that the introduction of connected automated vehicles (CAVs) is driven by new types of radiocommunication and sensor technologies;

g) that CAVs have the potential to reduce crashes, thereby reducing traffic fatalities and crash-related injuries;

h) that CAVs are being planned to be or are already deployed in various regions;

i) that radiocommunications for ITS, including CAV, may be implemented in frequency bands allocated to the land mobile service;

j) that specific requirements may need to be considered for safe operation of certain critical road safety ITS use cases;

k) that ITS has evolved over the years and there is continuing evolution both in terms of the technology and use cases;

l) that millimetre wave technology could be beneficial for ITS, including CAVs and future applications;

m) that studies were already carried out under Question ITU-R 205-6/5 on Intelligent Transport Systems;

n) that studies were already carried out under Question ITU-R 261/5 on Connected Automated Vehicles;

o) that, under the in force and previous versions of Question ITU-R 205/5 and Question ITU-R 261/5, there were already ITU-R Reports and Recommendations and Handbooks published on various aspects of Intelligent Transport Systems and Connected Automated Vehicles as listed in *noting b)* and *c)*,

noting

a) that the Conference developed Recommendation **208 (WRC-19)** for harmonization of frequency bands for evolving ITS applications under mobile service allocation;

b) that under WRC-15 agenda item 1.18, Recommendation ITU-R M.2057 and Report ITU-R M.2322 were developed;

c) that under Question ITU-R 252/5, Report ITU-R F.2394 was developed;

d) that under the in force and previous versions of Questions ITU-R 205/5 and Question ITU-R 261/5, the following ITU-R Recommendations and Reports were already developed: Recommendations ITU-R M.1452, ITU-R M.1453, ITU-R M.1890, ITU-R M.2084, ITU-R M.2121, and Reports ITU-R M.2228, ITU-R M.2444, ITU-R M.2445, ITU-R M.2534-0;

e) that Volume 4 of the Handbook on Land Mobile contains information about Intelligent Transport Systems,

decides

that the following Questions should be studied, taking into account the information available in the already existing ITU publications on ITS including CAV as listed in the *notings* section

1 For ITS in general:

– What are the radiocommunication and spectrum requirements for ITS services and functional elements that might benefit from international standardization, and to what extent can the evolving mobile telecommunications systems be used to deliver ITS services?

2 In particular, for ITS applications to CAV:

– What are the radiocommunication and spectrum requirements, including broadband and/or low-latency radiocommunication connectivity, and operational characteristics of the radiocommunication systems that are capable of supporting CAV?

– What are the interworking requirements for ad-hoc direct radiocommunication with cellular-network connected radiocommunication to deliver ITS applications to CAV, both in an efficient and sustainable manner?

3 For the future and other ITS applications beyond *decides* 1 and 2 above:

– What are the objectives, use cases, radiocommunication and spectrum requirements, technical and operational issues, including safe operation, associated with future and emerging applications used for ITS, including CAV?

further decides

1 that the existing ITU-R Reports and/or Recommendations as listed in the *notings* should be revised and updated with the relevant results of the studies carried out under this question as appropriate;

2 that new results of studies carried out under this question should be included in one or more new ITU-R Recommendation(s) and/or Report(s) as appropriate;

3 that the above studies should be completed by 2027.

Category: S2

Annex 2

QUESTION ITU-R 257-2/5

Technical and operational characteristics of stations in the fixed service in the frequency range 275-1 000 GHz

(2015-2019-2023)

The ITU Radiocommunication Assembly,

considering

a) that there is a growing demand for high speed and large capacity radiocommunications having data rates of several tens of Gbit/s to sometime over 100 Gbit/s for fixed service systems;

b) that due to progress in the recent terahertz technologies, the integrated devices and circuits operating above 275 GHz can achieve various sophisticated applications;

c) that the above devices and circuits will be able to provide such high speed and large capacity radiocommunications for fixed service systems;

d) that the traffic demands for backhaul and fronthaul for mobile systems are increasing due to mobile broadband communications such as IMT-Advanced, IMT-2020 and future IMT;

e) that certain parts of the spectrum in the frequency range 275-1 000 GHz are identified in No. **5.565** for passive services in the Radio Regulations;

f) that certain parts of spectrum in the frequency range 275-450 GHz are identified in No. **5.564A** for use of fixed and land-mobile service applications, where no specific conditions are necessary to protect Earth exploration-satellite service (passive);

g) that the use of frequency bands of 275-450 GHz by fixed service applications does not preclude use by, and does not establish priority over, any other applications of radio services;

h) that the technical and operational characteristics of the fixed service need to be specified for sharing and compatibility studies with the passive service applications indicated in *considering f)*,

noting

a) that Report ITU-R SM.2352 provides the technology trends of active services in the frequency range 275-3 000 GHz;

b) that Report ITU-R F.2323 provides guidance on the future development of the fixed service operating in the millimetric-wave band;

c) that Report ITU-R RA.2189 initiated sharing studies between radio astronomy service and active services in the frequency range 275-3 000 GHz;

d) that Report ITU-R F.2416 provides technical and operational characteristics and applications of the point-to-point fixed service operating in the frequency band 275-450 GHz;

e) that Report ITU-R M.2417 provides technical and operational characteristics of land-mobile service applications in the frequency range 275-450 GHz;

f) that Report ITU-R RS.2431 provides the technical and operational characteristics of Earth Observation (passive) sensors in the frequency range 275-450 GHz;

g) that Report ITU-R SM.2450 provides sharing and compatibility studies between in the land-mobile, fixed and passive services in the frequency range 275-450 GHz,

decides that the following Question should be studied

What are the technical and operational characteristics of the fixed service in the frequency range 275-1 000 GHz?

further decides

1 that sharing studies between the fixed and passive services, as well as the fixed and other active services should be carried out taking into account the characteristics mentioned in *decides*;

2 that the results of studies in the frequency range 275-1 000 GHz should be brought to the attention of the other Study Groups;

3 that the results of the above studies should be included in one or more Recommendations, Reports, or Handbooks;

4 that the above studies should be completed by 2027.

Category: S2

Annex 3

QUESTION ITU-R 229-6/5[1]

Further development of the terrestrial component of IMT

(2000-2003-2008-2012-2015-2019-2023)

The ITU Radiocommunication Assembly,

considering

a) that mobile data traffic is drastically increasing driven largely by the introduction of new types of advanced devices;

b) that service functionalities in fixed and mobile networks are increasingly converging and IMT technologies are an enabler of such convergence;

c) that the cost of radio technology equipment is continually decreasing, thus making the radio approach an increasingly attractive access option for many applications including broadband communications;

d) that ever-increasing user demand for mobile radiocommunications requires the continual evolution of systems and development of new mobile broadband systems where required, in order to accommodate higher data rates and provide larger data capacity for applications such as multimedia, video and machine-to-machine services;

e) that for international operation, economies of scale, and interoperability it is desirable to agree on common system technical, operational, and spectrum-related parameters;

f) that, after the initial standardization of the terrestrial component of IMT, ongoing enhancements of the IMT specifications have been and will continue to be accommodated over time;

g) that the implementation of IMT systems is expanding and that these systems will continue to be widely deployed in the near future;

h) that ITU-R has been endeavouring to facilitate globally harmonized use of the spectrum identified for IMT by developing relevant ITU-R Recommendations;

i) Question ITU-R 77/5 on consideration of the needs of developing countries in the development and implementation of IMT;

j) that the needs of extension to various industry areas utilizing IMT are increasing rapidly,

recognizing

a) that IMT encompasses both a terrestrial component and a satellite component;

b) the time-scales necessary to develop and agree on the technical, operational and spectrum-related issues associated with the ongoing evolution and further development of future mobile systems;

c) the needs of the developing countries, taking account of *considering j)* above;

d) that the characteristics of current and future IMT systems, with significantly high data rates, large data traffic capacity and new types of applications, will necessitate the adoption of more spectrally efficient techniques;

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[1] This Question should be brought to the attention of the relevant Telecommunication Standardization Sector Study Groups and Radiocommunication Study Group 4.

e) that some frequency bands are identified for the use of IMT in the ITU Radio Regulations (RR);

f) that harmonized use of IMT spectrum is important to bridge the digital divide and bring the benefits of ICTs through IMT systems to all,

noting

a) that Resolution ITU-R 50 addresses the role of the Radiocommunication Sector in the ongoing development of IMT;

b) that Resolution ITU-R 56 specifies the naming for IMT;

c) that Resolution ITU-R 57 specifies the principles for the process of the development of IMT-Advanced;

d) that Resolution ITU-R 65 specifies the principles for the process of future development of IMT for 2020 and beyond,

decides that the following Questions should be studied

1 What are the overall objectives and user needs for the further development of IMT, beyond the work carried out so far by the Radiocommunication Sector on IMT?

2 What are the new applications and service requirements associated with further development of IMT?

3 What are the technical and operational issues, and spectrum-related issues for the further development of IMT and increasingly efficient use of spectrum?

4 What are the technical and operational characteristics needed for the further development of IMT?

5 What are the optimal radio-frequency arrangements required to facilitate harmonized use of the spectrum identified for IMT?

6 What factors need to be considered in developing a migration strategy to facilitate transition from current IMT technologies to more advanced ones?

7 What are the issues concerning the facilitation of global circulation of terminals and other related aspects regarding the continued development and deployment of IMT systems?

8 What are the terrestrial radio interface technologies of IMT and the detailed radio interface specifications which need to be provided by the 2027 timeframe?

9 What should be the objectives for the long-term development of IMT?

further decides

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

2 that the IMT studies described in *decides* 1 through 7 above should be completed by 2027;

3 that the studies described in *decides* 8 and 9 may extend beyond the 2027 time-frame.

Category: S2

Annex 4

QUESTION ITU-R 262-1/5

Usage of the terrestrial component of IMT systems for specific applications

(2019-2023)

The ITU Radiocommunication Assembly,

considering

a) that the first IMT systems started service around the year 2000, and since then IMT systems have been developed and enhanced;

b) that IMT systems have contributed to global economic and social development;

c) that the further development of IMT systems would provide additional capabilities and continue to be extended to varied usage scenarios;

d) that IMT systems are leading the growth and development of industries in the field of ICT;

e) that IMT systems are providing benefits of global ecosystem and economies of scale which is helping in faster adoption of ICT; and

f) that applicable areas of IMT are expected to be expanded further to various specific applications to facilitate the digital economy, e.g. e-manufacturing, e-agriculture, e-health, intelligent transport systems, smart city and traffic control, etc., which could bring requirements beyond current capabilities of IMT,

recognizing

a) that Resolution ITU-R 50 addresses the role of the Radiocommunication sector in the ongoing development of IMT;

b) that Question ITU-R 229/5 addresses in general terms the further development of the terrestrial component of IMT;

c) that Question ITU-R 209/5 addresses the use of the mobile, amateur and the amateur-satellite services in support of disaster radiocommunications;

d) that Recommendation ITU-R M.2083 defines “the framework and overall objectives of the future development of IMT for 2020 and beyond”;

e) that Recommendation ITU-R M.2150 defines the specifications of the terrestrial component of IMT-2020;

f) that Report ITU-R M.2441 addresses the emerging usage of the terrestrial component of IMT;

g) that Report ITU-R M.2291 contains studies related to the usage of IMT for broadband public protection and disaster relief applications,

noting

a) that several groups and organizations inside and outside ITU-R are studying technologies, usages and spectrum for specific applications based on IMT systems;

b) that IMT systems are now being deployed in industrial and enterprise networks, including public, private and local applications,

decides that the following Questions should be studied

1 What are the specific industrial and enterprise applications, their emerging usages, and their functionalities, that may be supported by the terrestrial component of IMT?

2 What are the technical characteristics, operational aspects, and capabilities associated with specific industrial and enterprise applications of using the terrestrial component of IMT?

further decides

1 that the results of the above studies should be included in one or more Recommendations, Reports and/or Handbooks;

2 that the above studies described in *decides* should be completed by 2027.

Category: S2

Annex 5

QUESTION ITU-R 77-9/5*

Consideration of the needs of developing countries in the development and implementation of the terrestrial component of IMT

(1986-1992-1993-1997-2000-2003-2007-2012-2019-2023)

The ITU Radiocommunication Assembly,

considering

a) the work carried out so far by the Radiocommunication Sector on mobile radiocommunication systems, in particular of International Mobile Telecommunications (IMT);

b) the various ITU-R Recommendations on IMT, including those addressing the needs of developing countries;

c) that different frequency bands are identified in the ITU Radio Regulations (RR) for use, on a worldwide, regional or country basis, by administrations wishing to implement IMT systems;

d) Resolution 43 (Rev. Buenos Aires, 2017), of the World Telecommunication Development Conference on "Assistance in implementing International Mobile Telecommunications (IMT) and future networks";

e) ITU-T Recommendations and ongoing work items that are relevant to this work;

f) the potential increase in the pace of deployment and provision of broadband communications services in the developing countries through the use of cost-effective wireless access technologies including IMT for both fixed and mobile users,

decides that the following Question should be studied:

What are the optimal technical and operational characteristics for the terrestrial component of IMT to meet the needs of developing countries for cost effective broadband access to the global telecommunication networks?

NOTE 1 – In carrying out the above study, particular attention should be given to the following items:

a) the need to provide an economical, reliable and high-quality telecommunication infrastructure;

b) the need for modular design (easily expandable) for both hardware and software, and simple and low-cost terminals allowing flexible growth of number of users and coverage areas;

c) the evolution and demand for the applications provided by the terrestrial component of IMT;

d) harmonized and efficient use of frequency bands for urban, rural and remote areas to the extent possible;

e) propagation phenomena and associated conditions in these areas;

f) the possibility of using the equipment in a variety of environments including extremes of heat and cold, high humidity, dust, corrosive atmospheres and other environment hazards;

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* This Question should be brought to the attention of Radiocommunication Study Group 3, Telecommunication Standardization Study Group 13 and Telecommunication Development Study Group 1.

g) approaches and experiences of administrations in implementing the terrestrial component of IMT in various frequency ranges and various environments;

h) the need for common access to emergency services supported through the terrestrial component of IMT,

further decides

1 that the results of the above studies should be included in one or more Recommendations, Reports, or Handbooks[1];

2 that work on the above studies be brought to the attention of the relevant ITU-D and ITU-T Study Groups;

3 that the results of the above studies should be completed by 2027.

Category: S2

[1] The material developed as a result of the above may also be appropriate as an update of the relevant Handbooks on IMT.

Annex 6

QUESTION ITU-R 209-7/5

Use of the mobile, amateur and the amateur-satellite services in support of disaster radiocommunications

(1995-1998-2006-2007-2012-2015-2019-2023)

The ITU Radiocommunication Assembly,

considering

a) Resolution 136 (Rev. Bucharest, 2022) of the Plenipotentiary Conference, on the use of telecommunications/information and communication technologies for humanitarian assistance and for monitoring and management in emergency and disaster situations, including health-related emergencies, for early warning, prevention, mitigation and relief;

b) Resolution 43 (Rev. Kigali, 2022) of the World Telecommunication Development Conference, which instructs the Director BDT, in close collaboration with the Directors of the Radiocommunication Bureau (BR) and the Telecommunication Standardization Bureau (TSB), as well as the relevant regional telecommunication organizations, to continue encouraging and assisting developing countries to implement IMT systems and future networks, to provide assistance to administrations on the use and interpretation of ITU Recommendations relating to IMT, and future networks adopted by both ITU-R and ITU-T, etc.;

c) Resolution **647 (Rev.WRC-19)** on Radiocommunication aspects, including spectrum-management guidelines, for early warning, disaster prediction, detection, mitigation and relief operations relating to emergencies and disasters;

d) that the Tampere Convention on the provision of telecommunication resources for disaster mitigation and relief operations by the Intergovernmental Conference on Emergency Telecommunications (ICET-98) came into force on 8 January 2005;

e) that in accordance with No. **25.3** of the Radio Regulations amateur stations may be used for transmitting international communications on behalf of third parties only in case of emergencies or disaster relief. An administration may determine the applicability of this provision to amateur stations under its jurisdiction (**WRC-03**);

f) that in No. **25.9A** of the Radio Regulations administrations are encouraged to take the necessary steps to allow amateur stations to prepare for and meet communication needs in support of disaster relief **(WRC-03)**,

recognizing

a) that when a disaster occurs, the disaster relief agencies are usually the first on the scene using their day-to-day communication systems, but that in most cases, other agencies and organizations may also be involved;

b) that in times of disasters, if most terrestrial-based networks are destroyed or impaired, other networks in the amateur and amateur-satellite services may be available to provide basic, on-site communications capability;

c) that important attributes of the amateur services include stations distributed throughout the world that have trained radio operators capable of reconfiguring networks to meet the specific needs of an emergency,

decides that the following Question should be studied

What are the technical, operational and related procedural aspects of mobile, amateur and amateur-satellite services to support disaster warning, mitigation and relief operations?

further decides

1 that the results of the above studies should be included in one or more Recommendations, Reports or Handbooks;

2 that the above studies should be completed by 2027;

3 that the above studies should be brought to the attention of the other two ITU Sectors.

Category: S2

Annex 7

QUESTION ITU-R 256-2/5

Technical and operational characteristics of the land mobile service in the frequency range 275-1 000 GHz

(2015-2019-2023)

The ITU Radiocommunication Assembly,

considering

a) that there is a growing demand for high speed and large capacity radiocommunications having data rates of several tens of Gbit/s to over 100 Gbit/s for land mobile service applications;

b) that due to progress in the recent terahertz technologies, the integrated devices and circuits operating above 275 GHz can achieve various sophisticated applications;

c) that the above devices and circuits could provide such high speed and large capacity radiocommunications for land mobile service systems;

d) that standard development organizations such as IEEE are developing standards for terahertz wireless systems which utilize the broadband contiguous bandwidth larger than 50 GHz using the frequency range above 275 GHz;

e) that broadband contiguous bandwidths larger than 50 GHz for the land mobile service are not available in the frequency range below 275 GHz;

f) that the use of the frequency range 275-1 000 GHz by the passive services does not preclude the use of this range by active services;

g) that the technical and operational characteristics of the land mobile service need to be specified for sharing and compatibility studies with the passive service applications indicated in *considering f)*,

recognizing

that Resolution **731 (Rev.WRC-19)** calls for studies to determine the specific conditions to be applied to the land mobile and fixed service applications to ensure the protection of Earth exploration-satellite service (passive) applications in the frequency bands 296-306 GHz, 313-318 GHz and 333-356 GHz,

decides that the following Question should be studied

What are the technical and operational characteristics of the land mobile service in the frequency range 275-1 000 GHz?

further decides

1 that sharing studies between the land mobile and passive services, as well as the land mobile and other active services should be carried out, taking into account the studies already conducted and characteristics mentioned in *decides*;

2 that the results of studies in the frequency range 275-1 000 GHz should be brought to the attention of the other Study Groups, in particular, Study Group 7;

3 that the results of the above studies should be included in one or more Recommendations, Reports or Handbooks;

4 that the above studies should be completed by 2027.

Category: S2

Annex 8

Proposed suppression of ITU-R Questions

Question ITU-R	Title
205-6/5	Intelligent transport systems
261/5	Radiocommunication requirements for connected automated vehicles (CAV)

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