RESOLUTION ITU-R 5-4

Work programme of Radiocommunication Study Groups

(1993-1995-1997-2000-2003)

The ITU Radiocommunication Assembly,

considering

a) those parts of Resolution ITU-R 1 concerning the Questions to be studied by the Radiocommunication Study Groups;

b) Resolution 82 of the Plenipotentiary Conference (Minneapolis, 1998) relating to the alternative procedure for the approval of ITU-R Questions and Recommendations, and Resolution ITU-R 45,

resolves

1 that the categories used to identify the priority and urgency of Questions to be studied should be:

C: Conference-oriented Questions associated with work related to specific preparations for, and decisions of, world and regional radiocommunication conferences:

C1: Very urgent and priority studies, required for the next World Radiocommunication Conference;

C2: urgent studies, expected to be required for other radiocommunication conferences;

S: Questions which are intended to respond to:

– matters referred to the Radiocommunication Assembly by the Plenipotentiary Conference, any other conference, the Council, the Radio Regulations Board;

– advances in radiocommunication technology or spectrum management;

– changes in radio usage or operation:

S1: urgent studies which are intended to be completed within two years;

S2: important studies, necessary for the development of radiocommunications;

S3: required studies, expected to facilitate the development of radiocommunications;

If necessary, following a world or regional radiocommunication conference, the Director of the Radiocommunication Bureau, in consultation with the Chairmen of the Study Groups concerned, may assign appropriate categories to Questions which are related to the decisions of the conference or to the agendas of future world or regional radiocommunication conferences.

2 that Questions identified as suitable for approval by the alternative procedure according to Resolution ITU-R 45 should be within the categories S1, 2 or 3; such Questions shall be identified as "/AP";

3 that, as early as possible in the study period beginning in 2000, the Study Groups shall identify which of their Questions, if any, are suitable for approval by the alternative procedure according to Resolution ITU-R 45. Identification of Questions using this procedure is subject to being approved, without opposition, by correspondence.

This approval procedure for the identification of Questions should not delay the starting of the process for the approval of Recommendations under the alternative procedure in accordance with Resolution ITU-R 45.

4 that the work programme for the next study period shall be the Questions listed in Annexes 1 to 7 with Categories C and S. These Questions shall be referred to the appropriate Study Group. The texts of the Questions listed in Annexes 1 to 7 are to be found in Document 1 of the series of documents for the next study period of the appropriate Study Group;

5 that the work programme also includes studies on matters relevant to agenda items of WRCs or relevant WRC Resolutions within the scope of the Study Group,

further resolves

6 that Conference-oriented Questions for study by the Study Groups shall:

– address topics seeking a Recommendation or a report to a conference;

– address a single specific issue;

– include a specified target date for the output;

7 that each Question shall:

– indicate in a concise form the reason for the study;

– specify the scope of the study as precisely as possible;

– indicate the form in which the response should be prepared (e.g. as a Recommendation or other text, etc.) and, when possible, an outline of the contents of the expected response;

– specify the date when a complete or partial response is needed or the time period for the study, together with the milestones for the progress of the study;

– be modified to take account of partial answers;

– identify relevant Study Groups working in closely related areas, to which the text of the Question should be sent for consideration;

8 that Study Groups shall consider all their Questions and make proposals to each Assembly:

– so as to bring them into conformity with *further resolves* 4 and 5;

– for the identification and categorization of Questions;

– for the deletion of Questions, where the study has been completed, where no contributions are expected within the next study period, or, in conformance with Resolution ITU-R 1, § 1.7, where no contributions have been made; such Questions shall be identified as category D;

9 that each Study Group shall report to each Radiocommunication Assembly the progress that has been made in respect of each Question allocated to it with categories C1, C2 or S1;

10 that, as a part of the work programme, a Study Group may also undertake studies, within the scope of its mandate, for the revision of an existing Recommendation or on a topic for which a new Question would normally be required. Where such study is expected to continue beyond the date of the next Radiocommunication Assembly, an appropriate Question should be drafted for approval by the Assembly.

Annex 1

QUESTIONS ASSIGNED BY THE RADIOCOMMUNICATION ASSEMBLY TO STUDY GROUP 1

Spectrum management

Question ITU-R	Title	Category
45-4/1	Techniques and technical criteria for frequency sharing	S2
66/1	Methods and algorithms for frequency planning	S3
202-2/1	Identification and measurement of various interference sources to analogue and digital radiocommunications systems (according to their originating mechanism and interference effect)	S2
205-1/1	Long-term strategies for spectrum utilization	S2
206/1	Strategies for economic approaches to national spectrum management and their financing	S2
207/1	Assessment, for spectrum planning and strategic development, of the benefits arising from the use of the radio spectrum	S2
208/1	Alternative methods of national spectrum management	S2
209/1	Parameters of radio equipment required for spectrum management and the efficient use of the radio spectrum	S1
210/1	Wireless power transmission	S3
211/1	Unwanted emissions	C2
212/1	Development of method(s) for the determination of the coordination area around earth stations	C1
213/1	Technical and operating parameters and spectrum requirements for short-range devices	S2
214/1	Monitoring of digital broadcasting signals	S2
215/1	Monitoring of the radio coverage of land mobile networks to verify compliance with a given license	S2
216/1	Spectrum redeployment as a method of national spectrum management	S2
217/1	Compatibility between short range devices operating within the band 59-64 GHz and industrial, scientific and medical (ISM) applications operating in the band 61-61.5 GHz	S2
218/1	Techniques for measurement of radiation from high data rate telecommunication systems using electricity power supply of telephone distribution wiring	S2
219/1	Remote access to radio monitoring equipment of other administrations	S2
220-1/1	Identification and characterization of various interference sources to analogue and digital radiocommunication systems (according to their originating mechanism and interference effect)	S2

Question ITU-R	Title	Category
221/1	Compatibility between radiocommunication systems and high data telecommunication systems using electricity power supply or telephone distributing wiring	S2
222/1	Definition of the spectral properties of transmitter emissions	S1
223/1	Guidance on the regulatory framework for national spectrum management	S2
224/1	Technical convergence with respect to terrestrial fixed, mobile, and broadcasting interactive multimedia applications and the associated regulatory environment	C1
225/1	Inspection of radio stations to verify compliance with licence parameters	S2
226/1	Spectrum management framework related to the introduction of ultra-wideband (UWB) devices	S1
227/1	Compatibility between ultra-wideband (UWB) devices and radiocommunication services	S1
228/1	Possibility and relevance of including in the Radio Regulations frequency bands above 3 000 GHz	C1

Annex 2

QUESTIONS ASSIGNED TO RADIOCOMMUNICATION STUDY GROUP 3

Radiowave propagation

Question ITU-R	Title	Category
201-2/3	Radiometeorological data required for the planning of terrestrial and space communication systems and space research application	S2
202-1/3	Methods for predicting propagation over the surface of the Earth	S2
203-3/3	Propagation prediction methods for terrestrial broadcasting, fixed (broadband access) and mobile services at frequencies above 30 MHz	S1
204-3/3	Propagation data and prediction methods required for terrestrial line-of-sight systems	S2
205-1/3	Propagation data and prediction methods required for trans-horizon systems	S2
206-3/3	Propagation data and prediction methods for fixed- and broadcasting-satellite services	S2
207-3/3	Propagation data and prediction methods for satellite mobile and radiodetermination services above about 0.1 GHz	S2
208-2/3	Propagation factors in frequency sharing issues affecting fixed-satellite services and terrestrial services	S2
209/3	Variability and risk parameters in system performance analysis	S2
211-2/3	Propagation data and propagation models for the design of short-range wireless communication and access systems and wireless local area networks (WLAN) in the frequency range 300 MHz to 100 GHz	S1
212-1/3	Ionospheric properties	S3
213-1/3	The short-term forecasting of operational parameters for ionospheric and trans-ionospheric radiocommunications	S3
214-1/3	Radio noise	S2
218-2/3	Ionospheric influences on space systems	S2
221/3	VHF and UHF propagation by way of sporadic E and other ionization	S3
222-1/3	Measurements and data banks of ionospheric parameters	S2
225-3/3	The prediction of propagation factors affecting systems at LF and MF including the use of digital modulation techniques	S1
226-2/3	Ionospheric and tropospheric characteristics along satellite-to-satellite paths	S2
227-1/3	HF channel simulation	S3

Question ITU-R	Title	Category
228/3	Propagation data required for the planning of space radiocommunication systems and space science service systems operating above 275 GHz	S1
229/3	Prediction of sky-wave propagation conditions, signal intensity, circuit performance and reliability at frequencies between about 1.6 and 30 MHz, in particular for systems using digital modulation techniques	S1

Annex 3

QUESTIONS ASSIGNED BY THE RADIOCOMMUNICATION ASSEMBLY TO STUDY GROUP 4

Fixed-satellite service

Question ITU-R	Title	Category
7-3/4	Baseband transmission variability, delay and echoes in systems in the fixed-satellite service	S2
42-1/4	Characteristics of antennas at earth stations in the fixed-satellite service	S1
44-1/4	Use of transportable transmitting earth stations in the fixed-satellite service including use for feeder links to broadcasting satellites	S2
46-2/4	Preferred multiple-access characteristics in the fixed-satellite service	S2
55-2/4	Feeder links in the fixed-satellite service used for the connections to and from geostationary satellites in various mobile-satellite services	S1
67-1/4	Frequency sharing between the fixed-satellite service and the Earth exploration-satellite (passive) and space research (passive) services near 19 GHz	C2
68-1/4	Frequency sharing of the fixed-satellite service and the inter-satellite service with other space radio services under provisions of Article 14 of the Radio Regulations	S2
70-1/4	Protection of the geostationary-satellite orbit against unacceptable interference from transmitting earth stations in the fixed-satellite service at frequencies above 15 GHz	S2
73-1/4	Availability and interruptions to traffic on digital paths or circuits in the fixed-satellite service	S2
75-3/4	Performance objectives of international digital transmission links in the fixed-satellite service	S1
76-1/4	Voice and data signal processing for international digital transmission links in the fixed-satellite service	S2
77-1/4	Video signal processing for international digital transmission links in the fixed-satellite service	S2
78-1/4	Use of satellite communication systems in the B-ISDN	S2
81-1/4	Frequency sharing among networks in the fixed-satellite service, the mobile-satellite service and those of satellites equipped to operate in more than one service in the 20-50 GHz band	S2
201-1/4	Digital satellite systems in the FSS in synchronous transport networks based on the SDH	S1

Question ITU-R	Title	Category
202-1/4	Interference criteria in the fixed-satellite service for the optimum inhomogeneous use of the available capacity of the geostationary orbit	S1
203-1/4	The impact of using small antennas on the efficient use of the geostationary-satellite orbit	S1
205-1/4	Frequency sharing between non-geostationary satellite feeder links in the fixed-satellite service used by the mobile-satellite service	S1
206-3/4	Sharing between non-geostationary satellite feeder links in the fixed-satellite service used by the mobile-satellite service and other space services, and networks of the fixed-satellite service using geostationary satellites	S1
208/4	Use of statistical and stochastic methods in evaluation of interference between satellite networks in the fixed-satellite service	S2
209/4	The use of frequency bands allocated to the fixed-satellite service for both the up and down links of geostationary-satellite systems	S2
214/4	Technical implications of steerable and reconfigurable satellite beams	S1
216/4	Interruptions to traffic due to site diversity arrangements and/or equipment protection arrangements on digital paths or circuits in the fixed-satellite service	S2
218-1/4	Compatibility between on-board processing satellites in the FSS and terrestrial networks	S2
223/4	Interference criteria for short-term interference events into the fixed-satellite service networks	S1
226-1/4	Use of portable and transportable transmitting earth stations for digital transmission of digital high-definition television for news gathering and outside broadcasts via satellite	S1
230/4	Studies on efficient use of FSS orbit/spectrum resources resulting from Resolution 18 (Kyoto-94)	C2
231/4	Sharing between networks of the fixed-satellite service using non-geostationary satellites and other networks of the fixed-satellite service	S1
232/4	Use of regenerative processing in FSS allocations	S2
233/4	Dedicated user digital satellite communications systems and their associated architectures	S2
234/4	Phase jitter and wander requirements for satellite earth station modems	S1
235/4	Use of operational facilities to meet power-flux-density limitation under Article 28 of the Radio Regulations	S1
236/4	Interference criteria and calculation methods for the fixed-satellite service	S1

Question ITU-R	Title	Category
237-2/4	Sharing criteria for systems in the fixed-satellite service involving a large number of non-geostationary satellites with systems in the fixed service for bands in the 10-30 GHz range	S1
239/4	Sharing criteria between systems utilizing inter-satellite links	C2
240/4	Technical implications of possible definition of the quasi-geostationary orbit on the fixed-satellite service sharing frequency bands with the fixed service	C2
241-1/4	Technical implications of possible definition of the quasi-geostationary orbit on the fixed-satellite service using geostationary and non-geostationary orbits	C2
244/4	Sharing between feeder links of the mobile-satellite (non-geostationary) service in the band 5 091-5 250 MHz and the aeronautical radionavigation service in the band 5 000-5 250 MHz	C2
245/4	Out-of-band and spurious emission limits	C2
246/4	Sharing between the inter-satellite service, Earth-exploration satellite (passive) service and other services in frequency bands above 50 GHz	C2
247/4	Design objectives for radiation patterns applicable to non-geostationary-satellite orbit/mobile-satellite service feeder link Earth stations operating in the 5/7 GHz band	S1
248/4	Frequency sharing between systems in the fixed-satellite service and wireless digital networks around 5 GHz	S1
249/4	Interoperability of equipment for digital transmission of television news gathering via satellite news gathering (SNG)	S1
250-1/4	Feasibility of the fixed-satellite service sharing with the fixed service operating on the same frequencies in the range 30-52 GHz	S1
251-1/4	Frequency sharing criteria between systems in the fixed-satellite service and systems in the fixed service using high-altitude platform stations	S1
252/4	Criteria for the protection of Appendix 30B Plan against interference from non-GSO systems	S1
253/4	Determination of coordination area for Earth stations operating with non-geostationary satellites in the fixed-satellite service in the frequency bands shared with the fixed service	S1
254-1/4	Sharing feasibility of earth stations on board vessels operating in the fixed-satellite service with stations in the fixed service in the band 5 925-6 425 MHz and other uplink frequency bands at 6 GHz and 14 GHz	S1
255/4	Sharing criteria for very small aperture terminal (VSAT) systems in the fixed-satellite service using the same frequency band with point-to-multipoint systems used for fixed wireless access (FWA) in the fixed service in the band 3 400-3 700 MHz	S2
256/4	Criteria and methodologies for sharing between the fixed-satellite service and other services with allocations in the band 40.5-42.5 GHz	S1

Question ITU-R	Title	Category
257/4	Spectrum requirements for telemetry, tracking and control of FSS networks operating with service links in the bands above 17 GHz	C2
259/4	Earth station off-axis e.i.r.p. density levels in the bands above 14.5 GHz allocated to the FSS	S1
260/4	Satellite news gathering (SNG) user's guide	S2
261/4	Allowable noise in fixed-satellite service systems due to interference	S1
262/4	Allowable error performance and availability degradations of fixed-satellite service systems due to long and short-term effects	S1
263/4	Performance objectives of digital links in the fixed-satellite service for transmission of IP packets	S1
264/4	Technical and operational characteristics of networks of the fixed-satellite service operating above 275 GHz	S1
265/4	An inter-satellite link between a geostationary satellite and a non-GSO constellation sharing frequencies with an inter-satellite link between geostationary satellite	C2
266/4	Technical characteristics of high-density FSS Earth stations operating with GSO FSS networks in the 20/30 GHz bands	C2
267/4	Technical and operational considerations relating to the advance publication, coordination and notification of fixed-satellite networks	C2
268/4	Development of methodologies for the assessment of satellite unwanted emission levels before launch	C2
269/4	Spectrum requirements and technical and operational characteristics of user terminals (VSAT) for global broadband satellite systems	S1

Annex 4

QUESTIONS ASSIGNED BY THE RADIOCOMMUNICATION ASSEMBLY TO STUDY GROUP 6*

Broadcasting service

Question ITU-R	Title	Category
1/6	Digital image formats for programme production and exchange for digital television broadcasting	S1
2/6	Audio metering characteristics suitable for use in digital sound production	S1/AP
3/6	Digital broadcasting of multiple services and-programmes in the broadcasting-satellite service	S2
4-1/6	Planning parameters for digital television broadcasting using terrestrial channels	S2
5-1/6	Serial data transport mechanism for packetized data within a television production studio based on, and compatible with, Recommendations ITU-R BT.656 and ITU-R BT.1120	S3/AP
6-1/6	Standards for digital high-definition television coding	S1
7/6	Interface to webcasting and its supporting data services	S2/AP
8/6	Methods for the assessment of automated audio metadata extraction systems	S2/AP
9/6	Universal transmitters and retransmitters for both analogue and digital terrestrial TV broadcasting	S1
10/6	Enhanced television	S1
11/6	Polarization of emissions in the terrestrial broadcasting service	S2
12-1/6	Generic bit-rate reduction coding of digital TV signals (SDTV, EDTV and HDTV) for production, for contribution, for primary and secondary distribution, for emission and for related applications	S1
13/6	Multimedia evolution and common content format	S1
14/6	Digital and analogue-digital TV receivers and receiving antenna characteristics required for the terrestrial TV broadcasting frequency planning	S1
15/6	Digital cinema (D-cinema) broadcasting	S1
16-1/6	Digital interactive broadcasting systems	S1
17/6	Data broadcasting in the digital broadcasting environment	S1
19/6	Low bit-rate audio coding standards	S1
20/6	Digital HDTV studio interfaces	S1/AP

* Study Group 6 is instructed to review all assigned Questions.

Question ITU-R	Title	Category
21/6	Characteristics of receiving systems in the broadcasting-satellite service (sound and television)	S2
22-1/6	Satellite orbits and space station technology for the broadcasting-satellite service (sound and television)	S2
23/6	Characteristics of systems in the broadcasting-satellite service (sound) for individual reception by means of portable and vehicular receivers	C2
24/6	Recording of television programmes on optical or magneto-optical disks for international exchange	S3/AP
25/6	Unified identification data for international exchange and archival of sound-programme and television recordings and of films for television	S1/AP
26/6	Interactive satellite broadcasting systems(television, sound and data)	S2
27/6	Receivers for sound broadcasting below 30 MHz	S1
28/6	Short-distance broadcasting in band 7 (HF) in the Tropical Zone	S1
29/6	Transmission of supplementary information with a single transmitter in frequency-modulation sound broadcasting	S1
30/6	Transmitting and receiving antennas at VHF and UHF	S1
31/6	Digital terrestrial television broadcasting	S1
32/6	Protection requirements of broadcasting systems against interference from radiation caused by wired telecommunication systems, from emissions of industrial, scientific and medical equipment, and from emissions of short-range devices	S1
33/6	Standards for digital audio coding and interfaces	S2
34/6	File formats for the exchange of audio, video, data and metadata (content) materials in the professional television and digital cinema environments	S1/AP
35/6	Tolerable round-trip time delay for sound-programme and television broadcast programme inserts	S1/AP
36/6	Standards for the high-definition television studio and for international programme exchange	S3
37/6	System parameters for multichannel sound systems	S3
38/6	Standards for the digital encoding of colour television signals	S3
39/6	Standards for digital audio techniques	S2
40/6	Extremely high-resolution imagery	S1
41/6	Auxiliary signals for digital television codecs to assist editing and cascading	S3/AP
42/6	Interfaces for digital video signals	S2

Question ITU-R	Title	Category
43/6	Digital coding for multi-programme television in contribution and distribution circuits	S2/AP
44-1/6	Objective picture quality parameters and associated measurement and monitoring methods for television images	S3
45/6	Broadcasting of multimedia and data applications for mobile reception	S1
46/6	Metadata for production and post-production in broadcasting	S1
47/6	Prevention of photosensitive epileptic seizures caused by television	S1
48/6	In-service monitoring of perceived audio quality for distribution and broadcasting networks	S1/AP
49/6	Conditional-access broadcasting systems	S2
50/6	Evaluating fields from terrestrial broadcasting transmitting systems operating in any frequency band for assessing exposure to non-ionizing radiation	S1
51/6	Sky-wave reception in LF, MF and HF broadcasting	S1
52/6	Coverage in LF, MF and HF broadcasting	S1
53/6	Standards for the transmission of several sound signals in one television channel in terrestrial or satellite broadcasting including high-definition and enhanced definition television systems	S1
54/6	Sound systems for the hearing impaired	S2/AP
55/6	Subjective assessment of sound quality in broadcasting using digital techniques	S2
56/6	Characteristics of terrestrial digital sound-broadcasting systems for reception by vehicular, portable and fixed receivers	S1
57/6	Frequency sharing issues related to the introduction of the broadcasting-satellite service (sound) in the frequency range 1-3 GHz	C2
58/6	Recording of sound programmes for international exchange	S2/AP
59/6	Archival of sound programmes in broadcasting	S2/AP
60/6	Digital broadcasting at frequencies below 30 MHz	S2
61/6	Spectrum management issues related to the introduction of the broadcasting-satellite service (sound) in the frequency range 1-3 GHz	C2
62/6	Subjective assessment of small, medium and large impairments in sound quality	S2/AP
63/6	Calibration of the listening level for headphones in subjective listening texts	S1/AP
64/6	Planning parameters for digital broadcasting at frequencies below 30 MHz	C1
65/6	Spectrum requirements for sound broadcasting	S1

Question ITU-R	Title	Category
66/6	Audio coding schemes for sound broadcast programme inserts	S1
67/6	Methodologies for subjective assessment of audio and video quality	S2/AP
68/6	Synchronization necessary for the satisfactory reception of sound and picture signals	S1/AP
69/6	Conditions for a satisfactory television service in the presence of reflected signals	S3/AP
70/6	Frequency sharing for the feeder links to a broadcasting satellite (sound and television)	C1
71/6	Sharing studies between high-definition television (HDTV) in the broadcasting-satellite service and other services	C1
72/6	Digital techniques in the broadcasting-satellite service (sound and television)	S1
73/6	Transmitting and receiving antennas for the broadcasting-satellite service (sound and television) and for the associated feeder links	C1
74/6	Radiation of unwanted emissions from space stations in the broadcasting-satellite service (sound and television)	C1
75-1/6	Telemetry, tracking and command signals and test signals for maintenance testing of the radio-frequency characteristics of broadcasting-satellites	S2
76/6	Satellite broadcasting of high-definition television (HDTV)	C2
77/6	Small format recording of television programmes on magnetic tape for international exchange	S2/AP
78/6	Digital recording of high definition television programmes for international exchange	S3/AP
79/6	The harmonization of standards between broadcast and non-broadcast applications of television	S1
80/6	Coding for the broadcasting of digitally-encoded TV signals in terrestrial narrow-band channels	S1
81/6	Subjective assessments of the quality of television pictures including alphanumeric and graphic pictures	S3/AP
82/6	Technical characteristics of feeder links to broadcasting satellites operating in the 12, 17 and 21 GHz bands	C1
83/6	Characteristics of systems in the broadcasting-satellite service (sound and television) for reception by transportable and fixed receivers	S1
84/6	Protection ratios for interference studies and system planning in the broadcasting-satellite service (sound and television)	C1
85/6	Simultaneous transmissions of TV programmes on BSS and FSS services from a multiservice space station	S1

Question ITU-R	Title	Category
86/6	Overall coordination of the technical characteristics and associated test methods for the separate parts of the television signal chain	S2/AP
87/6	Acquisition and recovery times in digital television encoding	S2/AP
88/6	Subjective assessment of stereoscopic television pictures	S3/AP
89/6	User requirements for electronic news gathering (ENG)	S1
90/6	Television recording format for long-term programme archives	S3/AP
91/6	Recording of television programmes for international exchange	S3/AP
92/6	Use of cinematographic film in television	S3/AP
93/6	Frequency requirements for electronic news gathering	S2
94/6	Access to orbit and spectrum resources for the broadcasting satellite service and the fixed satellite service «direct-to-home» applications	C1
95/6	Use of computer technology in television broadcasting applications	S2
96/6	User requirements in the area of file management and transfer protocols for television recording in programme production	S3/AP
97/6	Assessment and optimization of quality of colour reproduction in television	S3/AP
98/6	Adaptive image quality enhancement in future TV systems	S3/AP
99/6	Relationship between quality, quality evaluation methodology, and type of application, in a multimedia environment	S2/AP
100/6	Television and multimedia images quality levels	S1
101/6	Broadcasting of copy protection signalling for television	S1
102/6	Methodologies for subjective assessment of audio and video quality	S1/AP
103/6	Reference signals for the component digital studio	S1/AP
104/6	Sharing criteria for BSS networks in the 17.3-17.8 GHz band in Region 2, and in the 21.4-22 GHz band in Regions 1 and 3, and their associated feeder links	S1
105/6	Spectrum requirements for television broadcasting	S1
106/6	Recording formats to be used in international tape exchange for HDTV programme evaluation	S2/AP
107/6	Harmonization of the definition of reference antenna patterns and range of the applicability for the broadcasting-satellite service	S2
108/6	Digital sound broadcasting in band 7 (HF) in the Tropical Zone	S1

Question ITU-R	Title	Category
109/6	In-service monitoring of perceived audiovisual quality for broadcasting and distribution networks	S1
110/6	Processability margins required for contribution programme material in television production	S2
111/6	Technical methods for the protection of the privacy of end-users in interactive broadcasting systems (television, sound and data)	S1

Annex 5

QUESTIONS ASSIGNED BY THE RADIOCOMMUNICATION ASSEMBLY TO STUDY GROUP 7

Science services

Question ITU-R	Title	Category
101-2/7	Performance and reliability of frequency standards and their use in time-scales	S3
102-2/7	Terrestrial standard-frequency and time-signal dissemination	S2
104-2/7	Stability of standard-frequency and time-signal emissions as received	S3
110-2/7	Time codes	S2
111-1/7	Signal delays in antennas and other circuits and their calibration for high-accuracy time transfer	S2
118-2/7	Factors which affect frequency sharing between data relay satellite systems and systems of other services	S2
129-2/7	Unwanted emissions radiated from and received by stations of the science services	C2
139-3/7	Data transmission for Earth exploration-satellite systems	S2
141-3/7	Data transmission for meteorological satellite systems	S2
145-2/7	Technical factors involved in the protection of radioastronomical observations	S2
146-2/7	Criteria for evaluation of interference to radio astronomy	S2
149-1/7	Frequency utilization on the far side of the Moon	S2
152-2/7	Standard frequencies and time signals from satellites	S3
201-2/7	Two-way time and frequency transfer through communication satellites	S2
202-1/7	Protection criteria and frequency sharing between space VLBI and other space research systems	S2
203-1/7	Characteristics and telecommunication requirements for space VLBI	S2
205/7	Radio observations of pulsars	S2
206-1/7	Frequency comparisons of remotely located standards at the 10^{-15} level of uncertainty	S2
207-2/7	Time and frequency transfer using digital communication links	S2
211/7	Frequency sharing between the space research service and other services in the 37-38 GHz and 40-40.5 GHz bands	C2
213-1/7	Compatibility of spaceborne active sensors and systems in the services allocated above the band 5 250-5 460 MHz	C1

Question ITU-R	Title	Category
215-1/7	Frequency sharing between Earth exploration-satellite systems (passive), space research systems (passive) and systems in the fixed, mobile and fixed-satellite services in the band 18.6-18.8 GHz	C2
218-1/7	Frequency sharing between active sensor systems in the Earth exploration-satellite service and systems operating in other services at around 440 MHz and 5 300 MHz	S2
219/7	Space operation and space research services frequency bands for telecommand links in the range 100 MHz to 1 GHz	C1
221/7	Preferred frequency bands and protection criteria for space research service observations (passive)	S2
222-1/7	Radio links between earth stations and lunar and planetary missions by means of lunar and/or planetary data relay satellites	S2
223/7	The role of differential GPS networks in timing applications	S2
224/7	Algorithms for ensemble time scales and measurement systems	S3
226/7	Frequency sharing between the radio astronomy service and other services in bands above 70 GHz	S2
229/7	Frequency sharing between the Earth exploration-satellite service (passive) and airborne altimeters in the aeronautical radionavigation service in the band 4 200-4 400 MHz	C2
230/7	Protection and sharing criteria for radio astronomy measurements from space	S2
231/7	EESS (active) and SRS (active) operating above 100 GHz	S2
232-1/7	Frequency sharing between spaceborne passive sensors and other services in the bands 10.60-10.68 GHz, 31.5-31.8 GHz and 36-37 GHz	S2
233/7	Sharing conditions between active sensor systems in the Earth exploration-satellite service and systems operating in other services around 35.5-36.0 GHz	S1
234/7	Frequency sharing between active sensor systems in the Earth exploration-satellite service and systems operating in other services in the 1 215-1 300 MHz band	S2
235/7	Technical and operational characteristics of applications of space science services operating above 275 GHz	C2
236/7	The future of the UTC time scale	S2
237/7	Technical and operational factors relating to interference mitigation practices at radio astronomy stations	S2
238/7	Trusted time source for time stamp authority	S2
239/7	Instrumentation time codes	S2

Question ITU-R	Title	Category
240/7	Necessary criteria and calculation method for establishing coordination requirements relating to space research and Earth exploration-satellite applications in a space-to-space network composed of a space station on a geostationary satellite and a space station on a non-geostationary satellite in the bands 22.55-23.55 GHz and 25.25-27.5 GHz	S1
241/7	Frequency bands and protection criteria for radio astronomy observations from space	S2

Annex 6

QUESTIONS ASSIGNED BY THE RADIOCOMMUNICATION ASSEMBLY TO STUDY GROUP 8

Mobile, radiodetermination, amateur and related satellite services

Question ITU-R	Title	Category
1-3/8	Interference protection ratios and minimum field strengths required in the mobile services	S1
7-5/8	Characteristics of equipment for the land mobile service between 25 and 3 000 MHz	S2
12-4/8	Radio-paging systems	S2
35-1/8	Efficient use of the radio spectrum by radar stations in the radiodetermination service	S2
37-4/8	Systems with improved spectrum efficiency for the land mobile service	S1
48-4/8	Techniques and frequency usage in the amateur service and amateur-satellite service	S3
51-3/8	Automatic determination of location and guidance in the land mobile service	S1
62-2/8	Interference to the aeronautical mobile and aeronautical radionavigation services	S2
77-4/8	Adaptation of mobile radiocommunication technology to the needs of developing countries	S1
83-4/8	Efficient use of the radio spectrum and frequency sharing within the Mobile-Satellite Service (MSS)	C2
84-3/8	Use of non-geostationary-satellite orbits in mobile-satellite services	C2
85-1/8	Availability of circuits in mobile-satellite services	S2
87-3/8	Transmission characteristics for a mobile-satellite communication system	S2
88-1/8	Propagation and mobile earth station antenna characteristics for mobile-satellite services	S3
90/8	Technical and operating characteristics of systems providing radiocommunication using satellite techniques for distress and safety operations	S2
91-1/8	Technical and operating characteristics of the radiodetermination-satellite service	S2
93-2/8	Automation of MF, HF and VHF maritime mobile communications	S2
96-1/8	Improved efficiency in the use of the band 156-174 MHz by stations in the maritime mobile service	S2

Question ITU-R	Title	Category
98/8	Transmission of digital data for the updating of electronic chart display systems (ECDIS)	S2
99/8	Interference due to intermodulation products in the land mobile services between 25 and 3 000 MHz	S3
101-2/8	Digitally encoded speech in the land mobile service	S1
106/8	Criteria for sharing between the broadcasting-satellite service (sound) and complementary terrestrial broadcasting and the mobile, radiolocation and amateur services within the range 1-3 GHz	C2
107-1/8	Cellular land mobile telecommunication systems	S2
109/8	GMDSS requirements for mobile-satellite systems operating in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz	S2
110-1/8	Interference to the aeronautical mobile-satellite (R) service	S2
112/8	Performance objectives for digital mobile-satellite services	S3
113/8	Technical and operational characteristics of land mobile systems using multi-channel access techniques without a central controller	S2
114/8	Technical and operational characteristics of cordless telephones and cordless telecommunication systems	S2
201/8	Frequency sharing between mobile-satellite services and other services	C2
202-2/8	Unwanted emissions of primary radar systems	S2
205-2/8	Transport information and control systems (TICS)	S2
208/8	Evolution of land mobile systems towards IMT-2000	S1
209-1/8	Contributions of the mobile and amateur services and associated satellite services to the improvement of disaster communications	S1
210/8	Technical characteristics for mobile earth stations operating with global non-geostationary satellite systems in the mobile-satellite service (MSS) in the band 1-3 GHz	S1
211-1/8	Interference criteria and calculation method for the Mobile-Satellite Service (MSS)	S1
212-2/8	Nomadic wireless access systems including radio local area networks (RLANs) for mobile applications	S1
213/8	Transmission of data messages on shared private land mobile radio (PMR) channels	S1
214/8	The re-planning of bands in the land mobile service	S1
215-1/8	Frequency bands, technical characteristics, and operational requirements for fixed wireless access systems using mobile technology	S1
216-2/8	Compatibility of radionavigation, earth exploration-satellite (active), space research (active), mobile, and radiolocation services operating in the band 5 350-5 650 MHz and compatibility between the radionavigation and radiolocation services in the band 2 900-3 100 MHz	C1

Question ITU-R	Title	Category
217/8	Interference to the radionavigation-satellite service in the ICAO global navigation satellite system	S1
218/8	Essential technical requirements of mobile earth stations for global and regional geostationary mobile-satellite service systems in the band 1-3 GHz	S1
221/8	Use of the frequencies between 2.8-22 MHz by the aeronautical mobile (R) service for data transmissions using class of emission J2DEN	S1
222/8	Essential technical requirements of mobile earth stations for global non-geostationary mobile-satellite service systems with primary allocations in bands below 1 GHz	S1
223/8	Internet protocol applications over mobile systems	S1
224/8	Adaptive antennas	S1
225/8	Interference to the aeronautical and maritime mobile services in the HF bands by unauthorized stations	S1
226/8	Characteristics of and protection criteria for radars operating in the radiodetermination service	S1
227/8	Technical and operational characteristics of emergency communications in the mobile-satellite service	S1
228/8	Future submission of satellite radio transmission technologies for International Mobile Telecommunications-2000 (IMT-2000)	S1
229/8	Future development of IMT-2000 and systems beyond IMT-2000	S1
230/8	Software defined radios	S2
231/8	Operation of wideband aeronautical telemetry in bands above 3 GHz	S2
232/8	Universal shipborne automatic identification system	S2
233/8	Technical and operational characteristics for packet network transmission in MSS	S1
234/8	Compatibility of radionavigation and radiolocation services operating in the bands 9 000-9 200 MHz and 9 300-9 500 MHz	S2

Annex 7

QUESTIONS ASSIGNED BY THE RADIOCOMMUNICATION ASSEMBLY TO STUDY GROUP 9

Fixed service

Question ITU-R	Title	Category
102-4/9	Availability of digital fixed wireless systems	S1
107-2/9	Characteristics of fixed wireless systems operating in frequency bands above about 17 GHz	S2
108-2/9	Radio-frequency channel arrangements for fixed wireless systems operating in frequency bands above about 17 GHz	S2
110-1/9	Antenna radiation diagrams of fixed wireless stations for use in sharing studies	S2
111-3/9	Sharing criteria between the broadcasting-satellite service (sound and television) and the fixed service	S2
113-2/9	Frequency sharing and compatibility between systems in the fixed service and systems of the earth exploration-satellite service and the space research service	S2
118-4/9	Sharing criteria between the mobile-satellite service and the fixed service	S2
119-1/9	Limitation of unwanted emissions from radio-relay systems	S2
122-3/9	Effects of propagation on the design and operation of fixed wireless systems	S2
125-6/9	Point-to-multipoint fixed wireless systems used in access or back-haul networks	S2
127-4/9	Maximum allowable performance and availability degradations of fixed wireless systems due to various sources of interference	S2
133-1/9	Sharing criteria between the fixed and land mobile services in the frequency bands above about 0.5 GHz	S2
136-2/9	Radio-frequency channel arrangements for digital fixed wireless systems operating in frequency bands below about 17 GHz	S2
140-4/9	Fixed wireless access (FWA) systems using mobile-derived technologies	S2
142-2/9	Radio local area networks (RLANs)	S2
145-1/9	Characteristics required for high-speed data transmission over HF radio circuits	S2
147-2/9	Automatically controlled radio systems and networks in the HF fixed service	S2
158-1/9	Packet data transmission protocols for systems operating below about 30 MHz	S3
161-4/9	Performance limits for bringing into service and maintenance of digital fixed wireless systems	S2

Question ITU-R	Title	Category
202-1/9	Reference radiation patterns of omnidirectional and sectoral antennas in point-to-multipoint systems for use in sharing studies	S2
205-1/9	The use of frequency adaptive HF systems	S1
206-2/9	Sharing criteria for systems in the fixed service with systems in the fixed-satellite service involving a large number of non-geostationary satellites for bands in the 10-30 GHz range	S1
209-1/9	Technical criteria for frequency sharing between the fixed service and the fixed-satellite service using highly elliptical orbits as they affects the fixed service	S1
210-2/9	Error performance objectives for digital fixed wireless sections	S2
212-2/9	System characteristics and frequency bands for fixed service systems utilizing “high altitude platform stations” (HAPS)	S1
213-1/9	Simulation of HF transmission through an ionospheric channel	S3
216/9	System characteristics and sharing criteria for the fixed service operating in frequency bands below 1 GHz	S2
217-1/9	Feasibility of the fixed service sharing with the fixed-satellite service operating at the same frequencies in the range 30-52 GHz	S1
218-1/9	Frequency sharing criteria for systems in the fixed service using high-altitude platform stations and systems in the fixed-satellite service	S1
219/9	Determination of coordination area related to the fixed service for Earth stations operating with non-geostationary satellites in the fixed-satellite service	S1
220-2/9	Fixed wireless access systems conveying IP packets or ATM cells	S2
221/9	Spectrum vision for the fixed service	S1
225/9	Improvements to Recommendation ITU-R F.758	S1
226-1/9	Sharing feasibility of stations in the fixed service with earth stations on board vessels operating in the fixed-satellite service in the band 5 925-6 425 MHz and other uplink frequency bands at 6 GHz and 14 GHz	S1
227/9	Sharing criteria for point-to-multipoint systems used for fixed wireless access (FWA) in the fixed service using the same frequency band with very small aperture terminal (VSAT) systems in the fixed-satellite service in the band 3 400–3 700 MHz	S2
228-1/9	Performance and availability objectives for the access part of the network formed wholly or partly by fixed wireless systems	S2

Question ITU-R	Title	Category
229-1/9	Frequency arrangements based on frequency blocks for systems in the fixed service	S2
230/9	Sharing and compatibility between systems in the fixed service using high altitude platforms and the radio astronomy service	S2
231/9	Technical and operational aspects of coordination for area-licensed fixed wireless systems	S3
232/9	Assessment of sharing and mitigation options to facilitate the use of the band 3 400-3 700 MHz by certain FWA and radiolocation systems	S2
233/9	Criteria for sharing between stations in the fixed service and stations in the aeronautical mobile service in bands between about 37 GHz and 50 GHz	S1
234/9	Technical and operational characteristics of fixed wireless systems operating in frequency bands allocated to the fixed service above 57 GHz	S2
235/9	Analysis and optimization of error performance of digital fixed wireless systems for the purpose of bringing into service and maintenance	S2