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Spectrum Management and Telecommunications Policy

Canadian Table of Frequency Allocations 9 kHz to 275 GHz (2005 Edition)

Revised in 2005
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(Incorporating Decisions of the 2003 World Radiocommunication Conference)

Canada

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Radiocommunication Act

Notice No. DGTP-002-05 — Revisions to the Canadian Table of Frequency Allocations

This Notice announces the release of the revised *Canadian Table of Frequency Allocations*. Proposals to amend the Canadian Table were made in Gazette Notice DGTP-012-04, dated December 4, 2004, based on most of the decisions adopted by the International Telecommunications Union (ITU) at the World Radio Conference 2003 (WRC-2003).

The Canadian Table allocates frequency bands to radio services within the scope of the International Table and as required to meet Canadian needs. Canadian footnotes provide the particular provisions and conditions for use of those radio services in Canada.

The Department has, or will, initiate separate public consultations on domestic allocations in several frequency bands. Allocation decisions will be announced in due course. These bands include:

- 216 - 222 MHz;
- 1710 - 2200 MHz; and
- 3650 - 3700 MHz.

With the exception of the above allocation proceedings under way, the revisions incorporated into the *Canadian Table of Frequency Allocations* reflect the results of the consultation on the WRC-2003 decisions.

Obtaining Copies

Copies of this notice and the revised *Canadian Table of Frequency Allocations* are available electronically on the [Spectrum Management and Telecommunications Web site](http://strategis.gc.ca/spectrum) at:
<http://strategis.gc.ca/spectrum>.

Official printed copies of Canada Gazette notices can be obtained from the [Canada Gazette Web site](http://canadagazette.gc.ca/publication-e.html#i5) at:
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May 14, 2005

Larry Shaw
Director General
Telecommunications Policy Branch

Industry Canada, 2005

The revised *Canadian Table of Frequency Allocations* is available electronically on the [Spectrum Management and Telecommunications Web site](http://strategis.gc.ca/spectrum) at the following address: <http://strategis.gc.ca/spectrum>.

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Foreword

The *Canadian Table of Frequency Allocations* assigns the electromagnetic spectrum between 9 kHz and 275 GHz (275-400 GHz is unallocated at this time) and establishes the frequency allocations available for radio services in Canada. The *Canadian Table of Frequency Allocations* is based on the provisions of the Final Acts resulting from the various World Radio Conferences (WRC), including the WRC 2003, convened by the International Telecommunication Union (ITU).

This update does not cover a number of frequency bands which are under active review for spectrum allocations. These bands include:

- 216 - 222 MHz;
- 1710 - 2200 MHz; and,
- 3650 - 3700 MHz.

The Canadian Table and the associated general information will, from time to time, need to be revised. Such revisions occur when changes to the ITU Table are made as a result of World Radiocommunications Conferences or particular Canadian radio service requirements. The *Canadian Table of Frequency Allocations* reflects international changes while taking into account Canadian requirements to ensure that government, commercial and private users have full flexibility to develop new radio applications.

The Canadian Table is intended to respond to Canadian domestic spectrum requirements, and consequently reflects Industry Canada's spectrum allocation and utilization policies developed through public consultation. It should be noted, therefore, that the Canadian Table differs, where necessary, from the ITU Table.

Canadian radio systems and spectrum utilization policies set the necessary elements for the use of frequency bands and/or radio services. Spectrum policies have traditionally designated the use of a radio service to certain applications in a particular frequency band, or bands. The spectrum designations are intended to accommodate a diversity of applications and users. Examples include designating the use of a mobile radio application for public safety applications or designating a fixed allocation to point-to-multipoint systems.

In some cases the use of a band, or the use of a service in a band, is withheld pending the development of a spectrum utilization policy. In cases where no spectrum utilization policy provisions exist in a given band, and there is no footnote withholding use, spectrum access may be available on a case-by-case basis.

Spectrum utilization policies developed in recent years have given more attention to defining the relationship between co-primary services in the same band. In some cases however, spectrum utilization policy provisions exist for one service but not another co-primary service allocated in a given band. This is particularly true where the implementation of the co-primary service is infrequent. In this case, coordination and authorization of systems within the service are generally handled on a case-by-case basis, taking into account the utilization designations for the other service.

Information on the *Canadian Table of Frequency Allocations* and its interpretation with respect to various spectrum utilization policies issued by Industry Canada can best be obtained by contacting:

[Director, Spectrum and Radio Policy](#)

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Definitions

The following is a list of those terms and definitions which are relevant to the *Canadian Table of Frequency Allocations*. These terms and definitions are extracted from the International Radio Regulations of the International Telecommunication Union. The regulations should be consulted for a more comprehensive listing.

1 - General Terms

Administration: Any governmental department or service responsible for discharging the obligations undertaken in the Convention of the International Telecommunication Union and the Regulations.

Allocation (of a frequency band): Entry in the Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more terrestrial or space radiocommunication services or the radio astronomy service under specified conditions. This term shall also be applied to the frequency band concerned.

Allotment (of a radio frequency or radio frequency channel): Entry of a designated frequency channel in an agreed plan, adopted by a competent conference, for use by one or more administrations for a terrestrial or space radiocommunication service in one or more identified countries or geographical areas and under specified conditions.

Assignment (of a radio frequency or radio frequency channel): Authorization given by an administration for a radio station to use a radio frequency or radio frequency channel under specified conditions.

Radio: A general term applied to the use of radio waves.

Radio Waves or Hertzian Waves: Electromagnetic waves of frequencies arbitrarily lower than 3 000 GHz, propagated in space without artificial guide.

Radiocommunication: Telecommunication by means of radio waves.

Terrestrial Radiocommunication: Any radiocommunication other than space radiocommunication or radio astronomy.

Space Radiocommunication: Any radiocommunication involving the use of one or more space stations or the use of one or more reflecting satellites or other objects in space.

Radiodetermination: The determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to those parameters, by means of the propagation properties of radio waves.

Radionavigation: Radiodetermination used for the purpose of navigation, including obstruction warnings.

Radiolocation: Radiodetermination used for purposes other than those of radionavigation.

Radio Direction-Finding: Radiodetermination using the reception of radio waves for the purpose of determining the direction of a station or object.

Radio Astronomy: Astronomy based on the reception of radio waves of cosmic origin.

Coordinated Universal Time (UTC): Time scale, based on the second (SI), as defined and recommended by the International Radio Consultative Committee (CCIR), and maintained by the International Time Bureau (BIH).

For most practical purposes associated with the Radio Regulations, UTC is equivalent to mean solar time at the prime meridian (0° longitude), formerly expressed in GMT.

Industrial, Scientific and Medical (ISM) Applications (of radio frequency energy): Operation of equipment or appliances designed to generate and use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunications.

2 - Radio Services

Radiocommunication Service: A service involving the transmission, emission and/or reception of radio waves for specific telecommunication purposes. Unless otherwise stated, any radiocommunication service relates to terrestrial radiocommunication.

Fixed Service: A radiocommunication service between specified fixed points.

Fixed-Satellite Service: A radiocommunication service between earth stations at given positions, when one or more satellites are used; the given position may be a specified point or any fixed point within specified areas; in some cases this service includes satellite-to-satellite links, which may also be operated in the inter-satellite service: the fixed-satellite service may also include feeder links for other space radiocommunication services.

Aeronautical Fixed Service: A radiocommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air transport.

Inter-Satellite Service: A radiocommunication service providing links between artificial satellites.

Space Operation Service: A radiocommunication service concerned exclusively with the operation of spacecraft, in particular space tracking, space telemetry and space telecommand.

These functions will normally be provided within the service in which the space station is operating.

Mobile Service: A radiocommunication service between mobile and land stations, or between mobile stations.

Mobile-Satellite Service: A radiocommunication service:

- between mobile earth stations and one or more space stations, or between space stations used by this service; or
- between mobile earth stations by means of one or more space stations.

This service may also include feeder links necessary for its operation.

Land Mobile Service: A mobile service between base stations and land mobile stations or between land mobile stations.

Land Mobile-Satellite Service: A mobile-satellite service in which mobile earth stations are located on land.

Maritime Mobile Service: A mobile service between coast stations and ship stations, or between ship stations, or between associated on-board communication stations; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service.

Maritime Mobile-Satellite Service: A mobile-satellite service in which mobile earth stations are located on board ships; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service.

Aeronautical Mobile Service: A mobile service between aeronautical stations, and aircraft stations, or between aircraft stations, in which survival craft stations may participate; emergency position-indicating radiobeacon stations may also participate in this service on designated distress and emergency frequencies.

Aeronautical Mobile (R)¹ Service: An aeronautical mobile service reserved for communications relating to safety and regularity of flight, primarily along national or international civil air routes.

Aeronautical Mobile (OR)² Service: An aeronautical mobile service intended for communications, including those relating to flight coordination, primarily outside national or international civil air routes.

Aeronautical Mobile-Satellite Service: A mobile-satellite service in which mobile earth stations are located on board aircraft; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service.

Aeronautical Mobile-Satellite (R)¹ Service: An aeronautical mobile-satellite service reserved for communications relating to safety and regularity of flights, primarily along national or international civil air routes.

¹ (R): route

² (OR): off-route

Aeronautical Mobile-Satellite (OR)² Service: An aeronautical mobile-satellite service intended for communications, including those relating to flight coordination, primarily outside national and international civil air routes.

Broadcasting Service: A radiocommunication service in which the transmissions are intended for direct reception by the general public. This service may include sound transmissions, television transmissions or other types of transmission.

Broadcasting-Satellite Service: A radiocommunication service in which signals transmitted or retransmitted by space stations are intended for direct reception by the general public.

In the broadcasting-satellite service, the term *direct reception* shall encompass both individual reception and community reception.

Radiodetermination Service: A radiocommunication service for the purpose of radiodetermination.

Radiodetermination-Satellite Service: A radiocommunication service for the purpose of radiodetermination involving the use of one or more space stations.

This service may also include feeder links necessary for its own operation.

Radionavigation Service: A radiodetermination service for the purpose of radionavigation.

Radionavigation-Satellite Service: A radiodetermination-satellite service for the purpose of radionavigation.

This service may also include *feeder links* necessary for its operation.

Maritime Radionavigation Service: A radionavigation service intended for the benefit and for the safe operation of ships.

Maritime Radionavigation-Satellite Service: A radionavigation-satellite service in which earth stations are located on board ships.

Aeronautical Radionavigation Service: A radionavigation service intended for the benefit and for the safe operation of aircraft.

Aeronautical Radionavigation-Satellite Service: A radionavigation-satellite service in which earth stations are located on board aircraft.

Radiolocation Service: A radiodetermination service for the purpose of radiolocation.

Radiolocation-Satellite Service: A radiodetermination-satellite service used for the purpose of radiolocation.

This service may also include *feeder links* necessary for its operation.

Meteorological Aids Service: A radiocommunication service used for meteorological, including hydrological, observations and exploration.

Earth Exploration-Satellite Service: A radiocommunication service between earth stations and one or more space stations, which may include links between space stations, in which:

- information relating to the characteristics of the Earth and its natural phenomena, including data relating to the state of the environment, is obtained from active sensors or passive sensors on earth satellites;
- similar information is collected from air-borne or Earth-based platforms;
- such information may be distributed to earth stations within the system concerned;
- platform interrogation may be included.

This service may also include feeder links necessary for its operation.

Meteorological-Satellite Service: An earth exploration-satellite service for meteorological purposes.

Standard Frequency and Time Signal Service: A radiocommunication service for scientific, technical and other purposes, providing the transmission of specified frequencies, time signals, or both, of stated high precision, intended for general reception.

Standard Frequency and Time Signal-Satellite Service: A radiocommunication service using space stations on earth satellites for the same purpose as those of standard frequency and time signal service.

This service may also include feeder links necessary for its operation.

Space Research Service: A radiocommunication service in which spacecraft or other objects in space are used for scientific or technological research purposes.

Amateur Service: A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.

Amateur-Satellite Service: A radiocommunication service using space stations on earth satellites for the same purpose as those of amateur service.

Radio Astronomy Service: A service involving the use of radio astronomy.

Safety Service: Any radiocommunication service used permanently or temporarily for the safeguarding of human life and property.

3 - Categories of Services

Primary and Secondary Services:

Where, in this Table, a band is indicated as allocated to more than one service, either on a worldwide or regional basis, such services are listed in the following order:

- (a) services the names of which are printed in "capitals" (example: FIXED); these are called "primary" services;
- (b) services the names of which are printed in "normal characters" (example: Mobile); these are called "secondary" services.

Additional remarks are printed in normal characters (example: MOBILE except aeronautical mobile).

Permitted and primary services have equal rights, except that, in the preparation of frequency plans, the primary service shall have prior choice of frequencies.

Stations of a secondary service:

- (a) shall not cause harmful interference to stations of primary service to which frequencies are already assigned or to which frequencies may be assigned at a later date;
- (b) cannot claim protection from harmful interference from stations of a primary service to which frequencies are already assigned or may be assigned at a later date;
- (c) can claim protection, however, from harmful interference from stations of the same or other secondary service(s) to which frequencies may be assigned at a later date.

The heading of the international portion of this Table includes three columns, each of which corresponds to one of the ITU Regions. Where an allocation occupies the whole of the width of the ITU Table or only one or two of the three columns, this is a worldwide allocation or a Regional allocation, respectively.

The frequency band referred to in each allocation is indicated in the left-hand top corner of the part of the box of the Table concerned.

The footnote references which appear in the Table below the allocated service or services apply to the whole of the allocation concerned.

The footnote references which appear to the right of the name of a service are applicable only to that particular service.

Canadian Table of Frequency Allocations

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
kHz

0 - 9	(not allocated) C1 C2
9 - 14	RADIONAVIGATION
14 - 19.95	FIXED MARITIME MOBILE 5.57 5.56
19.95 - 20.05	STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)
20.05 - 70	FIXED MARITIME MOBILE 5.57 5.56
70 - 90	FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60 Radiolocation 5.61
90 - 110	RADIONAVIGATION Fixed 5.64
110 - 130	FIXED MARITIME MOBILE MARITIME RADIONAVIGATION 5.60 Radiolocation 5.61 5.64

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
kHz

130 - 160	FIXED MARITIME MOBILE 5.64
160 - 190	FIXED
190 - 200	AERONAUTICAL RADIONAVIGATION
200 - 285	AERONAUTICAL RADIONAVIGATION Aeronautical Mobile
285 - 315	AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73
315 - 325	MARITIME RADIONAVIGATION (radiobeacons) 5.73 Aeronautical Radionavigation
325 - 335	AERONAUTICAL RADIONAVIGATION Aeronautical Mobile Maritime Radionavigation (radiobeacons)
335 - 405	AERONAUTICAL RADIONAVIGATION Aeronautical Mobile
405 - 415	RADIONAVIGATION 5.76 Aeronautical Mobile
415 - 495	MARITIME MOBILE 5.79 5.79A 5.78 5.80 5.82
495 - 505	MOBILE (distress and calling) 5.83
505 - 510	MARITIME MOBILE 5.79

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
kHz

510 - 525	AERONAUTICAL RADIONAVIGATION MOBILE 5.79A 5.84
525 - 535	AERONAUTICAL RADIONAVIGATION BROADCASTING 5.86
535 - 1 605	BROADCASTING
1 605 - 1 705	BROADCASTING 5.89 5.90
1 705 - 1 800	AERONAUTICAL RADIONAVIGATION FIXED MOBILE RADIOLOCATION
1 800 - 1 850	AMATEUR
1 850 - 2 000	AMATEUR RADIOLOCATION RADIONAVIGATION
2 000 - 2 065	FIXED MOBILE
2 065 - 2 107	MARITIME MOBILE 5.105 C3
2 107 - 2 170	FIXED MOBILE
2 170 - 2 173.5	MARITIME MOBILE
2 173.5 - 2 190.5	MOBILE (distress and calling) 5.108 5.109 5.110 5.111

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
kHz

2 190.5 - 2 194	MARITIME MOBILE
2 194 - 2 300	FIXED MOBILE
2 300 - 2 495	FIXED MOBILE
2 495 - 2 501	STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)
2 501 - 2 502	STANDARD FREQUENCY AND TIME SIGNAL Space Research
2 502 - 2 505	STANDARD FREQUENCY AND TIME SIGNAL
2 505 - 2 850	FIXED MOBILE
2 850 - 3 025	AERONAUTICAL MOBILE (R) 5.111 5.115
3 025 - 3 155	AERONAUTICAL MOBILE (OR) C5
3 155 - 3 230	FIXED MOBILE except aeronautical mobile (R) 5.116
3 230 - 3 400	FIXED MOBILE except aeronautical mobile Radiolocation 5.118 5.116
3 400 - 3 500	AERONAUTICAL MOBILE (R)

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
kHz

3 500 - 4 000	AMATEUR
4 063 - 4 438	MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 5.129
4 438 - 4 650	FIXED MOBILE except aeronautical mobile (R)
4 650 - 4 700	AERONAUTICAL MOBILE (R)
4 700 - 4 750	AERONAUTICAL MOBILE (OR) C5
4 750 - 4 850	FIXED MOBILE except aeronautical mobile (R)
4 850 - 4 995	FIXED LAND MOBILE
4 995 - 5 003	STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)
5 003 - 5 005	STANDARD FREQUENCY AND TIME SIGNAL Space Research
5 005 - 5 060	FIXED
5 060 - 5 250	FIXED Mobile except aeronautical mobile
5 250 - 5 450	FIXED MOBILE except aeronautical mobile
5 450 - 5 480	AERONAUTICAL MOBILE (R)

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
kHz

5 480 - 5 680	AERONAUTICAL MOBILE (R) 5.111 5.115
5 680 - 5 730	AERONAUTICAL MOBILE (OR) 5.111 5.115 C5
5 730 - 5 900	FIXED MOBILE except aeronautical mobile (R)
5 900 - 5 950	BROADCASTING 5.134 5.135 FIXED MOBILE except aeronautical mobile (R) 5.136 C9
5 950 - 6 200	BROADCASTING
6 200 - 6 525	MARITIME MOBILE 5.109 5.110 5.130 5.132 C4
6 525 - 6 685	AERONAUTICAL MOBILE (R)
6 685 - 6 765	AERONAUTICAL MOBILE (R)
6 765 - 7 000	FIXED MOBILE except aeronautical mobile (R) 5.138 5.138A
7 000 - 7 100	AMATEUR AMATEUR-SATELLITE
7 100 - 7 300	AMATEUR 5.142

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
kHz

7 300 - 7 400	BROADCASTING 5.134 FIXED MOBILE except aeronautical mobile (R) 5.143 5.143D C9
7 400 - 8 100	FIXED MOBILE except aeronautical mobile (R) 5.143E C8
8 100 - 8 195	FIXED MARITIME MOBILE
8 195 - 8 815	MARITIME MOBILE 5.109 5.110 5.132 5.145 5.111
8 815 - 8 965	AERONAUTICAL MOBILE (R)
8 965 - 9 040	AERONAUTICAL MOBILE (OR) C5
9 040 - 9 400	FIXED
9 400 - 9 500	BROADCASTING 5.134 FIXED 5.146 C9
9 500 - 9 900	BROADCASTING 5.147
9 900 - 9 995	FIXED

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
kHz

9 995 - 10 003	STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111
10 003 - 10 005	STANDARD FREQUENCY AND TIME SIGNAL Space Research 5.111
10 005 - 10 100	AERONAUTICAL MOBILE (R) 5.111
10 100 - 10 150	AMATEUR C6
10 150 - 11 175	FIXED Mobile except aeronautical mobile (R)
11 175 - 11 275	AERONAUTICAL MOBILE (OR) C5
11 275 - 11 400	AERONAUTICAL MOBILE (R)
11 400 - 11 600	FIXED
11 600 - 11 650	BROADCASTING 5.134 FIXED 5.146 C9
11 650 - 12 050	BROADCASTING 5.147

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
kHz

12 050 - 12 100	BROADCASTING 5.134 FIXED 5.146 C9
12 100 - 12 230	FIXED
12 230 - 13 200	MARITIME MOBILE 5.109 5.110 5.132 5.145
13 200 - 13 260	AERONAUTICAL MOBILE (OR) C5
13 260 - 13 360	AERONAUTICAL MOBILE (R)
13 360 - 13 410	FIXED RADIO ASTRONOMY 5.149
13 410 - 13 570	FIXED MOBILE except aeronautical mobile (R) 5.150
13 570 - 13 600	BROADCASTING 5.134 FIXED MOBILE except aeronautical mobile (R) 5.151 C9
13 600 - 13 800	BROADCASTING
13 800 - 13 870	BROADCASTING 5.134 5.135 FIXED Mobile except aeronautical mobile (R) 5.151 C9

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
kHz

13 870 - 14 000	FIXED Mobile except aeronautical mobile (R)
14 000 - 14 250	AMATEUR AMATEUR-SATELLITE
14 250 - 14 350	AMATEUR
14 350 - 14 990	FIXED Mobile except aeronautical mobile (R)
14 990 - 15 005	STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111
15 005 - 15 010	STANDARD FREQUENCY AND TIME SIGNAL Space Research
15 010 - 15 100	AERONAUTICAL MOBILE (OR) C5
15 100 - 15 600	BROADCASTING
15 600 - 15 800	BROADCASTING 5.134 5.135 FIXED 5.146 C9
15 800 - 16 360	FIXED 5.153
16 360 - 17 410	MARITIME MOBILE 5.109 5.110 5.132 5.145
17 410 - 17 480	FIXED

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
kHz

17 480 - 17 550	BROADCASTING 5.134 FIXED 5.146 C9
17 550 - 17 900	BROADCASTING
17 900 - 17 970	AERONAUTICAL MOBILE (R)
17 970 - 18 030	AERONAUTICAL MOBILE (OR) C5
18 030 - 18 052	FIXED
18 052 - 18 068	FIXED Space Research
18 068 - 18 168	AMATEUR AMATEUR-SATELLITE
18 168 - 18 780	FIXED
18 780 - 18 900	MARITIME MOBILE
18 900 - 19 020	BROADCASTING 5.134 FIXED 5.146 C9
19 020 - 19 680	FIXED
19 680 - 19 800	MARITIME MOBILE 5.132
19 800 - 19 990	FIXED

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
kHz

19 990 - 19 995	STANDARD FREQUENCY AND TIME SIGNAL Space Research 5.111
19 995 - 20 010	STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111
20 010 - 21 000	FIXED Mobile
21 000 - 21 450	AMATEUR AMATEUR-SATELLITE
21 450 - 21 850	BROADCASTING
21 850 - 21 870	FIXED
21 870 - 21 924	FIXED 5.155B
21 924 - 22 000	AERONAUTICAL MOBILE (R)
22 000 - 22 855	MARITIME MOBILE 5.132
22 855 - 23 000	FIXED
23 000 - 23 200	FIXED Mobile except aeronautical mobile (R)
23 200 - 23 350	AERONAUTICAL MOBILE (OR) C5
23 350 - 24 000	FIXED MOBILE except aeronautical mobile 5.157
24 000 - 24 890	FIXED LAND MOBILE

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
kHz

24 890 - 24 990	AMATEUR AMATEUR-SATELLITE
24 990 - 25 005	STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)
25 005 - 25 010	STANDARD FREQUENCY AND TIME SIGNAL Space Research
25 010 - 25 070	FIXED MOBILE except aeronautical mobile
25 070 - 25 210	MARITIME MOBILE
25 210 - 25 550	FIXED MOBILE except aeronautical mobile
25 550 - 25 670	RADIO ASTRONOMY 5.149
25 670 - 26 100	BROADCASTING
26 100 - 26 175	MARITIME MOBILE 5.132
26 175 - 27 500	FIXED MOBILE except aeronautical mobile 5.150

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

27.5 - 28	MOBILE Fixed
28 - 29.7	AMATEUR AMATEUR-SATELLITE
29.7 - 30.005	MOBILE Fixed
30.005 - 30.01	MOBILE SPACE RESEARCH Fixed
30.01 - 37.5	MOBILE Fixed
37.5 - 38.25	MOBILE Fixed Radio Astronomy 5.149
38.25 - 39.986	MOBILE Fixed
39.986 - 40.02	MOBILE Fixed Space Research
40.02 - 40.98	MOBILE Fixed 5.150
40.98 - 41.015	MOBILE Fixed Space Research
41.015 - 47	MOBILE Fixed

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

47 - 50	MOBILE Fixed
50 - 54	AMATEUR
54 - 72	BROADCASTING
72 - 73	FIXED MOBILE
73 - 74.6	RADIO ASTRONOMY
74.6 - 74.8	FIXED MOBILE 5.180
74.8 - 75.2	AERONAUTICAL RADIONAVIGATION 5.180
75.2 - 76	FIXED MOBILE 5.180
76 - 108	BROADCASTING
108 - 117.975	AERONAUTICAL RADIONAVIGATION 5.197A
117.975 - 137	AERONAUTICAL MOBILE (R) 5.111 5.198 5.199 5.200 5.203

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

137 - 137.025	<p>METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE OPERATION (space-to-Earth) SPACE RESEARCH (space-to-Earth)</p> <p>5.208</p>
137.025 - 137.175	<p>METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE OPERATION (space-to-Earth) SPACE RESEARCH (space-to-Earth)</p> <p>5.208</p>
137.175 - 137.825	<p>METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE OPERATION (space-to-Earth) SPACE RESEARCH (space-to-Earth)</p> <p>5.208</p>
137.825 - 138	<p>METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE OPERATION (space-to-Earth) SPACE RESEARCH (space-to-Earth)</p> <p>5.208</p>
138 - 144	<p>FIXED LAND MOBILE Space Research (space-to-Earth)</p>
144 - 146	<p>AMATEUR AMATEUR-SATELLITE</p>
146 - 148	<p>AMATEUR</p>
148 - 149.9	<p>FIXED LAND MOBILE MOBILE-SATELLITE (Earth-to-space) 5.209</p> <p>5.218 5.219 C26</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

149.9 - 150.05	MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.224B 5.220 5.222 5.223
150.05 - 156.7625	MOBILE Fixed 5.226 5.227
156.7625 - 156.8375	MARITIME MOBILE (distress and calling) 5.111 5.226
156.8375 - 174	MOBILE Fixed 5.226
174 - 216	BROADCASTING
216 - 222	FIXED LAND MOBILE 5.242 MARITIME MOBILE
222 - 225	AMATEUR
225 - 235	FIXED MOBILE C5
235 - 273	FIXED MOBILE 5.111 5.199 5.254 5.256 5.256A C5
273 - 312	FIXED MOBILE 5.254 C5

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

312 - 315	FIXED MOBILE Mobile-Satellite (Earth-to-space) 5.254 5.255 C5
315 - 328.6	FIXED MOBILE 5.149 5.254 C5
328.6 - 335.4	AERONAUTICAL RADIONAVIGATION 5.258
335.4 - 387	FIXED MOBILE 5.254 C5
387 - 390	FIXED MOBILE Mobile-Satellite (space-to-Earth) 5.254 5.255 C5
390 - 399.9	FIXED MOBILE 5.254 C5
399.9 - 400.05	MOBILE-SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.222 5.224B 5.260 5.220 C19
400.05 - 400.15	STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

400.15 - 401	<p>METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.209 SPACE RESEARCH (space-to-Earth) 5.263 Space Operation (space-to-Earth)</p> <p>5.264</p>
401 - 402	<p>EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (Earth-to-space) SPACE OPERATION (space-to-Earth) Fixed Mobile except aeronautical mobile</p>
402 - 403	<p>EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile</p>
403 - 406	<p>METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile</p>
406 - 406.1	<p>MOBILE-SATELLITE (Earth-to-space)</p> <p>5.149 5.266 5.267</p>
406.1 - 410	<p>MOBILE except aeronautical mobile RADIO ASTRONOMY Fixed</p> <p>5.149</p>
410 - 414	<p>MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268 Fixed</p>
414 - 415	<p>FIXED SPACE RESEARCH (space-to-space) 5.268 Mobile except aeronautical mobile</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

415 - 419	MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268 Fixed
419 - 420	FIXED SPACE RESEARCH (space-to-space) 5.268 Mobile except aeronautical mobile
420 - 430	MOBILE except aeronautical mobile Fixed C10
430 - 432	RADIOLOCATION Amateur
432 - 438	RADIOLOCATION Amateur Earth exploration-satellite (active) 5.279A 5.282
438 - 450	RADIOLOCATION 5.285 Amateur 5.284 5.286
450 - 455	MOBILE Fixed 5.209 5.286 5.286A 5.286B 5.286C 5.286D 5.286E C26B
455 - 456	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.286A 5.286B 5.286C 5.209 C26A C26B
456 - 459	MOBILE 5.287 Fixed 5.287 5.288

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

459 - 460	<p>FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.286A 5.286B 5.286C</p> <p>5.209 C26A C26B</p>
460 - 470	<p>MOBILE 5.287 Fixed</p> <p>5.289</p>
470 - 608	<p>BROADCASTING</p> <p>5.293 C24</p>
608 - 614	<p>RADIO ASTRONOMY Mobile-Satellite except aeronautical mobile-satellite (Earth-to-space)</p>
614 - 746	<p>BROADCASTING</p> <p>5.293 5.311 C24</p>
746 - 806	<p>BROADCASTING MOBILE</p> <p>5.293 5.311 C22 C24</p>
806 - 890	<p>MOBILE 5.317A C7 Fixed</p> <p>5.317 5.318</p>
890 - 902	<p>FIXED MOBILE except aeronautical mobile 5.317A C7 Radiolocation C5A</p> <p>5.318</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

902 - 928	<p>FIXED RADIOLOCATION C5A Amateur Mobile except aeronautical mobile</p> <p>5.150</p>
928 - 929	<p>FIXED MOBILE except aeronautical mobile 5.317A C7 Radiolocation C5A</p>
929 - 932	<p>MOBILE except aeronautical mobile 5.317A C7 Fixed Radiolocation C5A</p>
932 - 932.5	<p>FIXED MOBILE except aeronautical mobile 5.317A C7 Radiolocation C5A</p>
932.5 - 935	<p>FIXED Mobile except aeronautical mobile 5.317A C7 Radiolocation C5A</p>
935 - 941	<p>MOBILE except aeronautical mobile 5.317A C7 Fixed Radiolocation C5A</p>
941 - 941.5	<p>FIXED MOBILE except aeronautical mobile 5.317A C7 Radiolocation C5A</p>
941.5 - 942	<p>FIXED Mobile except aeronautical mobile 5.317A C7 Radiolocation C5A</p>
942 - 944	<p>FIXED Mobile 5.317A C7</p>
944 - 952	<p>MOBILE 5.317A C7 Fixed</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

952 - 956	FIXED MOBILE 5.317A C7
956 - 960	FIXED Mobile 5.317A C7
960 - 1 164	AERONAUTICAL RADIONAVIGATION 5.328
1 164 - 1 215	AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth)(space-to-space) 5.328B 5.328A
1 215 - 1 240	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.331 5.332
1 240 - 1 300	AERONAUTICAL RADIONAVIGATION EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth)(space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.331 5.332 5.335 5.335A
1 300 - 1 350	AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.149 5.337A

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

1 350 - 1 370	<p>AERONAUTICAL RADIONAVIGATION 5.334 FIXED C5 MOBILE C5 RADIOLOCATION</p> <p>5.149</p>
1 370 - 1 400	<p>FIXED C5 MOBILE C5 RADIOLOCATION</p> <p>5.149 5.339 5.339A C27 C27A</p>
1 400 - 1 427	<p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340 5.341</p>
1 427 - 1 429	<p>FIXED SPACE OPERATION (Earth-to-space)</p> <p>5.341</p>
1 429 - 1 452	<p>FIXED MOBILE</p> <p>5.339A 5.341 C27A</p>
1 452 - 1 492	<p>BROADCASTING 5.345 BROADCASTING-SATELLITE 5.345 5.347A FIXED Mobile 5.343</p> <p>5.341 C28 C29 C30 C40</p>
1 492 - 1 518	<p>FIXED MOBILE</p> <p>5.341</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

1 518 - 1 525	<p>FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.348C C31</p> <p>5.341</p>
1 525 - 1 530	<p>MOBILE-SATELLITE (space-to-Earth) 5.347A 5.351A Earth Exploration-Satellite Space Operation (space-to-Earth)</p> <p>5.341 5.351 5.354</p>
1 530 - 1 535	<p>MOBILE-SATELLITE (space-to-Earth) 5.347A 5.351A 5.353A Earth Exploration-Satellite</p> <p>5.341 5.351 5.354</p>
1 535 - 1 559	<p>MOBILE-SATELLITE (space-to-Earth) 5.347A 5.351A</p> <p>5.341 5.351 5.353A 5.354 5.356 5.357 5.357A 5.362A</p>
1 559 - 1 610	<p>AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329A</p> <p>5.341</p>
1 610 - 1 610.6	<p>AERONAUTICAL RADIONAVIGATION MOBILE-SATELLITE (Earth-to-space) 5.351A</p> <p>5.341 5.364 5.366 5.367 5.368 5.372</p>
1 610.6 - 1 613.8	<p>AERONAUTICAL RADIONAVIGATION MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY</p> <p>5.149 5.341 5.364 5.366 5.367 5.368 5.372</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

1 613.8 - 1 626.5	<p>AERONAUTICAL RADIONAVIGATION MOBILE-SATELLITE (Earth-to-space) 5.351A Mobile-Satellite (space-to-Earth) 5.347A</p> <p>5.341 5.364 5.365 5.366 5.367 5.368 5.372</p>
1 626.5 - 1 660	<p>MOBILE-SATELLITE (Earth-to-space) 5.351A</p> <p>5.341 5.351 5.353A 5.354 5.357A 5.362A 5.374 5.375 5.376</p>
1 660 - 1 660.5	<p>MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY</p> <p>5.149 5.341 5.351 5.354 5.362A 5.376A</p>
1 660.5 - 1 668	<p>RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed</p> <p>5.149 5.341 5.379A</p>
1 668 - 1 668.4	<p>RADIO ASTRONOMY SPACE RESEARCH (passive) MOBILE-SATELLITE (Earth-to-space) 5.348C 5.379B 5.379C C31 Fixed</p> <p>5.149 5.341 5.379A 5.379D</p>
1 668.4 - 1 670	<p>FIXED METEOROLOGICAL AIDS MOBILE-SATELLITE (Earth-to-space) 5.348C 5.379B 5.379C C31 RADIO ASTRONOMY</p> <p>5.149 5.341 5.379D 5.379E</p>
1 670 - 1 675	<p>FIXED METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE (except aeronautical mobile) MOBILE-SATELLITE (Earth-to-space) 5.348C 5.379B C31</p> <p>5.341 5.379D 5.379E 5.380A C31A C33</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

1 675 - 1 700	<p>METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth)</p> <p>5.289 5.341</p>
1 700 - 1 710	<p>FIXED METEOROLOGICAL-SATELLITE (space-to-Earth)</p> <p>5.289 5.341</p>
1 710 - 1 850	<p>FIXED Mobile C5</p> <p>5.341 5.385 5.386 C33</p>
1 850 - 1 970	<p>FIXED MOBILE</p> <p>5.388 C35</p>
1 970 - 1 990	<p>FIXED MOBILE</p> <p>5.388 5.389A 5.389B C35</p>
1 990 - 2 010	<p>FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A</p> <p>5.388 5.389A 5.389B C36</p>
2 010 - 2 025	<p>FIXED MOBILE MOBILE-SATELLITE (Earth-to-space)</p> <p>5.388 5.389C 5.389E 5.390 C36</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

2 025 - 2 110	<p>EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED SPACE OPERATION (Earth-to-space) (space-to-space) SPACE RESEARCH (Earth-to-space) (space-to-space) Mobile C5</p> <p>5.391 5.392</p>
2 110 - 2 120	<p>FIXED MOBILE SPACE RESEARCH (deep space)(Earth-to-space)</p> <p>5.388 C35A</p>
2 120 - 2 165	<p>FIXED MOBILE</p> <p>5.388 C35A C36</p>
2 165 - 2 200	<p>FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A</p> <p>5.388 5.389A 5.389C 5.389E 5.390 C36</p>
2 200 - 2 290	<p>EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED SPACE OPERATION (space-to-Earth) (space-to-space) SPACE RESEARCH (space-to-Earth) (space-to-space) Mobile C5</p> <p>5.391 5.392</p>
2 290 - 2 300	<p>FIXED SPACE RESEARCH (deep space) (space-to-Earth) Mobile C5</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

2 300 - 2 450	<p>FIXED MOBILE 5.394 C12 C17 RADIOLOCATION Amateur</p> <p>5.150 5.282 5.396 C13</p>
2 450 - 2 483.5	<p>FIXED MOBILE 5.394 RADIOLOCATION</p> <p>5.150</p>
2 483.5 - 2 500	<p>FIXED C38 MOBILE-SATELLITE (space-to-Earth) 5.351A RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398 RADIOLOCATION</p> <p>5.150 5.402</p>
2 500 - 2 596	<p>FIXED MOBILE except aeronautical mobile 5.384A C38A</p> <p>5.416 5.418</p>
2 596 - 2 655	<p>BROADCASTING FIXED MOBILE except aeronautical mobile 5.384A C38A</p> <p>5.339 5.416 5.417A 5.418</p>
2 655 - 2 686	<p>BROADCASTING FIXED MOBILE except aeronautical mobile 5.384A C38A Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive)</p> <p>5.149 5.416 5.347A</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

2 686 - 2 690	<p>FIXED MOBILE except aeronautical mobile 5.384A C38A Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive)</p> <p>5.149 5.347A</p>
2 690 - 2 700	<p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340</p>
2 700 - 2 850	<p>AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation</p> <p>5.423</p>
2 850 - 2 900	<p>AERONAUTICAL RADIONAVIGATION 5.337 MARITIME RADIONAVIGATION 5.424 C14 Radiolocation</p>
2 900 - 3 100	<p>RADIOLOCATION 5.424A RADIONAVIGATION 5.426</p> <p>5.425 5.427</p>
3 100 - 3 300	<p>RADIOLOCATION 5.428 Earth Exploration-Satellite (active) Space Research (active)</p> <p>5.149</p>
3 300 - 3 450	<p>RADIOLOCATION 5.433 C5 Amateur</p> <p>5.149</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

3 450 - 3 500	FIXED C18 RADIOLOCATION 5.433 Amateur 5.282 C15
3 500 - 4 200	FIXED C18 FIXED-SATELLITE (space-to-Earth) C20
4 200 - 4 400	AERONAUTICAL RADIONAVIGATION 5.438 5.440
4 400 - 4 500	FIXED MOBILE C25
4 500 - 4 800	FIXED MOBILE FIXED-SATELLITE (space-to-Earth) 5.441 C25 C16A
4 800 - 4 825	FIXED MOBILE Radio Astronomy C25
4 825 - 4 835	FIXED MOBILE 5.442 RADIO ASTRONOMY 5.443 5.149 C25

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

4 835 - 4 950	<p>FIXED MOBILE Radio Astronomy</p> <p>C25</p>
4 950 - 4 990	<p>FIXED MOBILE 5.442 RADIO ASTRONOMY 5.443</p> <p>5.149 5.339</p>
4 990 - 5 000	<p>FIXED RADIO ASTRONOMY Space Research (passive)</p> <p>5.149</p>
5 000 - 5 010	<p>AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)</p> <p>5.367</p>
5 010 - 5 030	<p>AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)(space-to-space) 5.328B 5.443B</p> <p>5.367</p>
5 030 - 5 150	<p>AERONAUTICAL RADIONAVIGATION</p> <p>5.367 5.444 5.444A</p>
5 150 - 5 250	<p>AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B</p> <p>5.446 5.447B 5.447C C39B</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

5 250 - 5 255	<p>EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH 5.447D</p> <p>5.448A C39B</p>
5 255 - 5 350	<p>EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH (active)</p> <p>5.448A C39B</p>
5 350 - 5 460	<p>AERONAUTICAL RADIONAVIGATION 5.449 EARTH EXPLORATION-SATELLITE (active) 5.448B RADIOLOCATION 5.448D SPACE RESEARCH (active) 5.448C</p>
5 460 - 5 470	<p>RADIONAVIGATION 5.449 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION 5.448D SPACE RESEARCH (active)</p> <p>5.448B</p>
5 470 - 5 570	<p>EARTH EXPLORATION-SATELLITE (active) MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B SPACE RESEARCH (active)</p> <p>5.448B 5.452 C39B</p>
5 570 - 5 650	<p>MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B</p> <p>5.452 C39B</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

5 650 - 5 725	<p>MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION Amateur Space Research (deep space)</p> <p>5.282 C39B</p>
5 725 - 5 850	<p>RADIOLOCATION Amateur</p> <p>5.150 C39A</p>
5 850 - 5 925	<p>FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Amateur Radiolocation</p> <p>5.150 C39C</p>
5 925 - 6 700	<p>FIXED FIXED-SATELLITE (Earth-to-space) 5.457A</p> <p>5.149 5.440 5.458 C39D</p>
6 700 - 7 075	<p>FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 C40</p> <p>5.458 5.458A 5.458B 5.458C</p>
7 075 - 7 145	<p>FIXED</p> <p>5.458 5.459</p>
7 145 - 7 235	<p>FIXED SPACE RESEARCH (Earth-to-space) 5.460</p> <p>5.458 5.459</p>
7 235 - 7 250	<p>FIXED</p> <p>5.458</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

7 250 - 7 300	FIXED-SATELLITE (space-to-Earth) C49 MOBILE-SATELLITE 5.461 C50
7 300 - 7 450	FIXED FIXED-SATELLITE (space-to-Earth) C49 5.461
7 450 - 7 550	FIXED FIXED-SATELLITE (space-to-Earth) C49 METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461A
7 550 - 7 750	FIXED FIXED-SATELLITE (space-to-Earth) C49
7 750 - 7 850	FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B
7 850 - 7 900	FIXED
7 900 - 7 975	FIXED FIXED-SATELLITE (Earth-to-space) C49 5.461
7 975 - 8 025	FIXED-SATELLITE (Earth-to-space) C49 MOBILE-SATELLITE 5.461 C50
8 025 - 8 175	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) C49 5.463

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

8 175 - 8 215	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) C49 METEOROLOGICAL-SATELLITE (Earth-to-space) 5.463
8 215 - 8 400	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) C49 5.463
8 400 - 8 500	FIXED SPACE RESEARCH (space-to-Earth) 5.465
8 500 - 8 550	RADIOLOCATION
8 550 - 8 650	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.469A
8 650 - 8 750	RADIOLOCATION
8 750 - 8 850	AERONAUTICAL RADIONAVIGATION 5.470 RADIOLOCATION
8 850 - 9 000	MARITIME RADIONAVIGATION 5.472 RADIOLOCATION
9 000 - 9 200	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation
9 200 - 9 300	MARITIME RADIONAVIGATION 5.472 RADIOLOCATION 5.474

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
MHz

9 300 - 9 500	RADIONAVIGATION 5.476 Radiolocation 5.427 5.474 5.475
9 500 - 9 800	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A
9 800 - 10 000	RADIOLOCATION Fixed 5.479

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
GHz

10 - 10.45	RADIOLOCATION Amateur 5.479
10.45 - 10.5	RADIOLOCATION Amateur Amateur-Satellite
10.5 - 10.55	FIXED RADIOLOCATION
10.55 - 10.6	FIXED
10.6 - 10.68	EARTH EXPLORATION-SATELLITE (passive) FIXED RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.482
10.68 - 10.7	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340
10.7 - 11.7	FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A C16 C16B C16C
11.7 - 12.2	FIXED-SATELLITE (space-to-Earth) 5.484A 5.485 5.486 5.488 C16B

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
GHz

12.2 - 12.7	<p>BROADCASTING BROADCASTING-SATELLITE C43 FIXED FIXED-SATELLITE (space-to-Earth)</p> <p>5.487A 5.488 5.490 5.492 C16B</p>
12.7 - 12.75	<p>FIXED FIXED-SATELLITE (Earth-to-space)</p>
12.75 - 13.25	<p>FIXED FIXED-SATELLITE (Earth-to-space) 5.441</p> <p>C16C</p>
13.25 - 13.4	<p>AERONAUTICAL RADIONAVIGATION 5.497 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active)</p> <p>5.498A</p>
13.4 - 13.75	<p>EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.501A Standard Frequency and Time Signal-Satellite (Earth-to-space)</p> <p>5.501B</p>
13.75 - 14	<p>FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Earth exploration-satellite Standard Frequency and Time Signal-Satellite (Earth-to-space)</p> <p>5.502 5.503 C16B</p>
14 - 14.47	<p>FIXED-SATELLITE (Earth-to-space) 5.457A 5.484A 5.506 Mobile-Satellite (Earth-to-space) 5.506A C41A</p> <p>5.504A C16B C39D</p>

CANADIAN TABLE OF FREQUENCY ALLOCATIONS
GHz

14.47 - 14.5	<p>FIXED-SATELLITE (Earth-to-space) 5.457A 5.484A 5.506 Radio Astronomy Mobile-Satellite (Earth-to-space) 5.506A C41A</p> <p>5.149 5.504A C16B C39D</p>
14.5 - 15.35	<p>FIXED Mobile C5</p> <p>5.339</p>
15.35 - 15.4	<p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340</p>
15.4 - 15.43	<p>AERONAUTICAL RADIONAVIGATION</p> <p>5.511D</p>
15.43 - 15.63	<p>AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.511A</p> <p>5.511C</p>
15.63 - 15.7	<p>AERONAUTICAL RADIONAVIGATION</p> <p>5.511D</p>
15.7 - 16.6	<p>RADIOLOCATION</p> <p>C42</p>
16.6 - 17.1	<p>RADIOLOCATION Space Research (Earth-to-space) (deep space)</p>
17.1 - 17.2	<p>RADIOLOCATION</p>

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17.2 - 17.3	<p>EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)</p> <p>5.513A</p>
17.3 - 17.7	<p>BROADCASTING-SATELLITE FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation</p> <p>5.515 5.517 C43 C44</p>
17.7 - 17.8	<p>BROADCASTING-SATELLITE C46 FIXED C45 FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.516</p> <p>5.515 5.517 C43 C44</p>
17.8 - 18.1	<p>FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.484A 5.516</p> <p>C16D C43</p>
18.1 - 18.4	<p>FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520</p> <p>5.519 C16D C16E C43</p>
18.4 - 18.6	<p>FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B</p> <p>C16E</p>
18.6 - 18.8	<p>EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.522B SPACE RESEARCH (passive)</p> <p>5.522A C16E</p>

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18.8 - 19.3	<p>FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.523A</p> <p>C16E</p>
19.3 - 19.7	<p>FIXED FIXED-SATELLITE (space-to-Earth) 5.523B 5.523C 5.523D 5.523E</p> <p>C16D C46A</p>
19.7 - 20.2	<p>FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B MOBILE-SATELLITE (space-to-Earth)</p> <p>5.525 5.526 5.527 5.528 5.529 C16B</p>
20.2 - 21.2	<p>FIXED-SATELLITE (space-to-Earth) C49 MOBILE-SATELLITE (space-to-Earth) C50 Standard Frequency and Time Signal-Satellite (space-to-Earth)</p>
21.2 - 21.4	<p>EARTH EXPLORATION-SATELLITE (passive) FIXED SPACE RESEARCH (passive) Mobile</p>
21.4 - 22	<p>FIXED Mobile</p> <p>5.347A</p>
22 - 22.21	<p>FIXED Mobile except aeronautical mobile</p> <p>5.149</p>
22.21 - 22.5	<p>EARTH EXPLORATION-SATELLITE (passive) FIXED RADIO ASTRONOMY SPACE RESEARCH (passive) Mobile except aeronautical mobile</p> <p>5.532</p>

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22.5 - 22.55	FIXED Mobile
22.55 - 23.55	FIXED INTER-SATELLITE Mobile 5.149
23.55 - 23.6	FIXED Mobile
23.6 - 24	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340
24 - 24.05	AMATEUR AMATEUR-SATELLITE 5.150
24.05 - 24.25	RADIOLOCATION Amateur Earth Exploration-Satellite (active) 5.150
24.25 - 24.45	RADIONAVIGATION FIXED
24.45 - 24.65	INTER-SATELLITE 5.540 RADIONAVIGATION
24.65 - 24.75	INTER-SATELLITE RADIOLOCATION-SATELLITE (Earth-to-space)
24.75 - 25.05	FIXED-SATELLITE (Earth-to-space) 5.535 C44

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25.05 - 25.25	<p>FIXED FIXED-SATELLITE (Earth-to-space) 5.535</p> <p>C44</p>
25.25 - 25.5	<p>FIXED INTER-SATELLITE 5.536 MOBILE Earth Exploration-Satellite (space-to-Earth) Standard Frequency and Time Signal-Satellite (Earth-to-space)</p> <p>C47B</p>
25.5 - 27	<p>EARTH EXPLORATION-SATELLITE (space-to-Earth) 5.536A FIXED INTER-SATELLITE 5.536 MOBILE SPACE RESEARCH (space-to-Earth) 5.536A Standard Frequency and Time Signal-Satellite (Earth-to-space)</p> <p>C47B</p>
27 - 27.5	<p>FIXED FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE 5.536 MOBILE</p> <p>C47A C47B</p>
27.5 - 28.5	<p>FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE</p> <p>5.538 5.540 C16F C47A</p>
28.5- 29.1	<p>FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539 MOBILE</p> <p>5.540 C16F</p>

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29.1-29.5	<p>FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.523C 5.523E 5.535A 5.539 5.541A MOBILE 5.540 C16F C16G C48</p>
29.5-29.9	<p>FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE-SATELLITE(Earth-to-space) 5.525 5.526 5.527 5.529 5.540 5.542 C16B</p>
29.9 - 30	<p>FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE-SATELLITE (Earth-to-space) 5.525 5.526 5.527 5.538 5.540 5.542 C16B</p>
30 - 31	<p>FIXED-SATELLITE (Earth-to-space) C49 MOBILE-SATELLITE (Earth-to-space) C50 Standard Frequency and Time Signal-Satellite (space-to-Earth)</p>
31 - 31.3	<p>FIXED MOBILE Space Research 5.544 Standard Frequency and Time Signal-Satellite (space-to-Earth) 5.149</p>
31.3 - 31.8	<p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340</p>
31.8 - 32	<p>FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547B 5.548</p>

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32 - 32.3	<p>FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth)</p> <p>5.547 5.547C 5.548</p>
32.3 - 33	<p>FIXED 5.547A INTER-SATELLITE RADIONAVIGATION</p> <p>5.547 5.547D 5.548</p>
33 - 33.4	<p>FIXED 5.547A RADIONAVIGATION</p> <p>5.547 5.547E</p>
33.4 - 34.2	<p>RADIOLOCATION</p>
34.2 - 34.7	<p>RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space)</p>
34.7 - 35.2	<p>RADIOLOCATION Space Research</p>
35.2 - 35.5	<p>METEOROLOGICAL AIDS RADIOLOCATION</p>
35.5 - 36	<p>EARTH EXPLORATION-SATELLITE (active) METEOROLOGICAL AIDS RADIOLOCATION SPACE RESEARCH (active)</p> <p>5.549A</p>
36 - 37	<p>EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)</p> <p>5.149</p>

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37 - 37.5	<p>FIXED MOBILE SPACE RESEARCH (space-to-Earth) 5.547</p>
37.5 - 38	<p>FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) Earth Exploration-Satellite (space-to-Earth) 5.547</p>
38 - 39.5	<p>FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth Exploration-Satellite (space-to-Earth) 5.547 C51</p>
39.5 - 40	<p>FIXED FIXED-SATELLITE (space-to-Earth) 5.516B C49 MOBILE MOBILE-SATELLITE (space-to-Earth) C50 Earth Exploration-Satellite (space-to-Earth) 5.547 C51</p>
40 - 40.5	<p>EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B C49 MOBILE MOBILE-SATELLITE (space-to-Earth) C50 SPACE RESEARCH (Earth-to-space) Earth Exploration-Satellite (space-to-Earth)</p>

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40.5 - 41	<p>BROADCASTING BROADCASTING-SATELLITE FIXED FIXED-SATELLITE (space-to-Earth) 5.516B Mobile Mobile-Satellite (space-to-Earth)</p> <p>5.547</p>
41 - 42.5	<p>BROADCASTING BROADCASTING-SATELLITE FIXED FIXED-SATELLITE (space-to-Earth) 5.516B Mobile</p> <p>5.547 5.551H 5.551I</p>
42.5 - 43.5	<p>FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY</p> <p>5.149 5.547 5.551H 5.551I</p>
43.5 - 47	<p>MOBILE 5.553 MOBILE-SATELLITE C50 RADIONAVIGATION RADIONAVIGATION-SATELLITE</p> <p>5.554</p>
47 - 47.2	<p>AMATEUR AMATEUR-SATELLITE</p>
47.2 - 47.5	<p>FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE</p> <p>5.552A C52</p>

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47.5-47.9	<p>FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE</p> <p>C52</p>
47.9-48.2	<p>FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE</p> <p>5.552A C52</p>
48.2-50.2	<p>FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.552 MOBILE</p> <p>5.149 5.340 5.555</p>
50.2 - 50.4	<p>EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)</p> <p>5.340</p>
50.4 - 51.4	<p>FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Mobile-Satellite (Earth-to-space)</p>
51.4 - 52.6	<p>FIXED MOBILE</p> <p>5.547 5.556</p>
52.6 - 54.25	<p>EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)</p> <p>5.340 5.556</p>
54.25 - 55.78	<p>EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive)</p>

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55.78 - 56.9	<p>EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive)</p> <p>5.547</p>
56.9 - 57	<p>EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive)</p> <p>5.547</p>
57 - 58.2	<p>EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive)</p> <p>5.547</p>
58.2 - 59	<p>EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)</p> <p>5.547 5.556</p>
59 - 59.3	<p>EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)</p>

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59.3 - 64	<p>FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559</p> <p>5.138</p>
64 - 65	<p>FIXED INTER-SATELLITE MOBILE except aeronautical mobile</p> <p>5.547 5.556</p>
65 - 66	<p>EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH</p> <p>5.547</p>
66 - 71	<p>INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE</p> <p>5.554</p>
71 - 74	<p>FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)</p>
74 - 76	<p>BROADCASTING BROADCASTING-SATELLITE FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Space Research (space-to-Earth)</p> <p>5.559A 5.561</p>

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76 - 77.5	<p>RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-Satellite Space Research (space-to-Earth)</p> <p>5.149</p>
77.5 - 78	<p>AMATEUR AMATEUR-SATELLITE Radio Astronomy Space Research (space-to-Earth)</p> <p>5.149</p>
78 - 79	<p>RADIOLOCATION Amateur Amateur-Satellite Radio Astronomy Space Research (space-to-Earth)</p> <p>5.149 5.560</p>
79 - 81	<p>RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-Satellite Space Research (space-to-Earth)</p> <p>5.149</p>
81 - 84	<p>FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space Research (space-to-Earth)</p> <p>5.149 5.561A</p>

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84 - 86	<p>FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY</p> <p>5.149</p>
86 - 92	<p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340</p>
92 - 94	<p>FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION</p> <p>5.149</p>
94 - 94.1	<p>EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio Astronomy</p> <p>5.562 5.562A</p>
94.1 - 95	<p>FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION</p> <p>5.149</p>
95 - 100	<p>FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE</p> <p>5.149 5.554</p>

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100 - 102	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341
102 - 105	FIXED MOBILE RADIO ASTRONOMY 5.149 5.341
105 - 109.5	FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341
109.5 - 111.8	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341
111.8 - 114.25	FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.340 5.341
114.25 - 116	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341

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116 - 122.25	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341
122.25 - 123	FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138
123 - 130	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio Astronomy 5.149 5.554
130 - 134	EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A
134 - 136	AMATEUR AMATEUR-SATELLITE Radio Astronomy
136 - 141	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-Satellite 5.149

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141 - 148.5	<p>FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION</p> <p>5.149</p>
148.5 - 151.5	<p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340</p>
151.5 - 155.5	<p>FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION</p> <p>5.149</p>
155.5 - 158.5	<p>EARTH EXPLORATION-SATELLITE (passive) 5.562F FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B</p> <p>5.149 5.562G</p>
158.5 - 164	<p>FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)</p>
164 - 167	<p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340</p>

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167 - 174.5	<p>FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558</p> <p>5.149</p>
174.5 - 174.8	<p>FIXED INTER-SATELLITE MOBILE 5.558</p>
174.8 - 182	<p>EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)</p>
182 - 185	<p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340</p>
185 - 190	<p>EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)</p>
190 - 191.8	<p>EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)</p> <p>5.340</p>
191.8 - 200	<p>FIXED INTER-SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE</p> <p>5.149 5.341 5.554</p>

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200 - 202	<p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340 5.341 5.563A</p>
202 - 209	<p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340 5.341 5.563A</p>
209 - 217	<p>FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY</p> <p>5.149 5.341</p>
217 - 226	<p>FIXED FIXED-SATELLITE(Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B</p> <p>5.149 5.341</p>
226 - 231.5	<p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340</p>
231.5 - 232	<p>FIXED MOBILE Radiolocation</p>
232 - 235	<p>FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation</p>

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235 - 238	<p>EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive)</p> <p>5.563A 5.563B</p>
238 - 240	<p>FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE</p>
240 - 241	<p>FIXED MOBILE RADIOLOCATION</p>
241 - 248	<p>RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-Satellite</p> <p>5.138 5.149</p>
248 - 250	<p>AMATEUR AMATEUR-SATELLITE Radio Astronomy</p> <p>5.149</p>
250 - 252	<p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340 5.563A</p>

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252 - 265	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554
265 - 275	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A
Beyond 275	(not allocated) 5.565

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International Footnotes

The following is a current listing of all footnotes contained in the *International Tables of Frequency Allocations*. It should be noted that some of the international footnotes applicable to Canada have been suppressed in the Canadian Table in favour of a specific Canadian footnote which incorporates the ITU provisions and responds to specific Canadian spectrum requirements. In addition, other Canadian footnotes have been developed to respond to such domestic requirements.

- 5.53** Administrations authorizing the use of frequencies below 9 kHz shall ensure that no harmful interference is caused thereby to the services to which the bands above 9 kHz are allocated.
- 5.54** Administrations conducting scientific research using frequencies below 9 kHz are urged to advise other administrations that may be concerned in order that such research may be afforded all practicable protection from harmful interference.
- 5.56** The stations of services to which the bands 14-19.95 kHz and 20.05-70 kHz and in Region 1 also the bands 72-84 kHz and 86-90 kHz are allocated may transmit standard frequency and time signals. Such stations shall be afforded protection from harmful interference. In Armenia, Azerbaijan, Belarus, Bulgaria, the Russian Federation, Georgia, Kazakhstan, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Tajikistan and Turkmenistan, the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions. **(WRC-03)**
- 5.57** The use of the bands 14-19.95 kHz, 20.05-70 kHz and 70-90 kHz (72-84 kHz and 86-90 kHz in Region 1) by the maritime mobile service is limited to coast radiotelegraph stations (A1A and F1B only). Exceptionally, the use of class J2B or J7B emissions is authorized subject to the necessary bandwidth not exceeding that normally used for class A1A or F1B emissions in the band concerned.
- 5.60** In the bands 70-90 kHz (70-86 kHz in Region 1) and 110-130 kHz (112-130 kHz in Region 1), pulsed radionavigation systems may be used on condition that they do not cause harmful interference to other services to which these bands are allocated.
- 5.61** In Region 2, the establishment and operation of stations in the maritime radionavigation service in the bands 70-90 kHz and 110-130 kHz shall be subject to agreement obtained under No. **9.21** with administrations whose services, operating in accordance with the Table, may be affected. However, stations of the fixed, maritime mobile and radiolocation services shall not cause harmful interference to stations in the maritime radionavigation service established under such agreements.
- 5.62** Administrations which operate stations in the radionavigation service in the band 90-110 kHz are urged to coordinate technical and operating characteristics in such a way as to avoid harmful interference to the services provided by these stations.
- 5.64** Only classes A1A or F1B, A2C, A3C, F1C or F3C emissions are authorized for stations of the fixed service in the bands allocated to this service between 90 kHz and 160 kHz (148.5 kHz in Region 1) and for stations of the maritime mobile service in the bands allocated to this service between 110 kHz and 160 kHz (148.5 kHz in Region 1). Exceptionally, class J2B or J7B emissions are also authorized in the bands between 110 kHz and 160 kHz (148.5 kHz in Region 1) for stations of the maritime mobile service.
- 5.73** The band 285-325 kHz (283.5-325 kHz in Region 1) in the maritime radionavigation service may be used to transmit supplementary navigational information using narrow-band techniques, on condition that no harmful interference is caused to radiobeacon stations operating in the radionavigation service. **(WRC-97)**
- 5.76** The frequency 410 kHz is designated for radio direction-finding in the maritime radionavigation service. The other radionavigation services to which the band 405-415 kHz is allocated shall not cause harmful interference to radio direction-finding in the band 406.5-413.5 kHz.
- 5.78** Different category of service: in Cuba, the United States of America and Mexico, the allocation of the band 415-435 kHz to the aeronautical radionavigation service is on a primary basis.

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- 5.79** The use of the bands 415-495 kHz and 505-526.5 kHz (505-510 kHz in Region 2) by the maritime mobile service is limited to radiotelegraphy.
- 5.79A** When establishing coast stations in the NAVTEX service on the frequencies 490 kHz, 518 kHz and 4 209.5 kHz, administrations are strongly recommended to coordinate the operating characteristics in accordance with the procedures of the International Maritime Organization (IMO) (see Resolution **339 (Rev. WRC-97)**). (**WRC-97**)
- 5.80** In Region 2, the use of the band 435-495 kHz by the aeronautical radionavigation service is limited to non-directional beacons not employing voice transmission.
- 5.81** (**SUP - WRC-00**)
- 5.82** In the maritime mobile service, the frequency 490 kHz is, from the date of full implementation of the GMDSS (see Resolution **331 (Rev. WRC-97)**), to be used exclusively for the transmission by coast stations of navigational and meteorological warnings and urgent information to ships, by means of narrow-band direct-printing telegraphy. The conditions for use of the frequency 490 kHz are prescribed in Articles **31** and **52**. In using the band 415-495 kHz for the aeronautical radionavigation service, administrations are requested to ensure that no harmful interference is caused to the frequency 490 kHz. (**WRC-97**)
- 5.83** The frequency 500 kHz is an international distress and calling frequency for Morse radiotelegraphy. The conditions for its use are prescribed in Articles **31** and **52**, and in Appendix **13**.
- 5.84** The conditions for the use of the frequency 518 kHz by the maritime mobile service are prescribed in Articles **31** and **52** and in Appendix **13**. (**WRC-97**)
- 5.86** In Region 2, in the band 525-535 kHz the carrier power of broadcasting stations shall not exceed 1 kW during the day and 250 W at night.
- 5.89** In Region 2, the use of the band 1 605-1 705 kHz by stations of the broadcasting service is subject to the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).
- The examination of frequency assignments to stations of the fixed and mobile services in the band 1 625-1 705 kHz shall take account of the allotments appearing in the Plan established by the Regional Administrative Radio Conference (Rio de Janeiro, 1988).
- 5.90** In the band 1 605-1 705 kHz, in cases where a broadcasting station of Region 2 is concerned, the service area of the maritime mobile stations in Region 1 shall be limited to that provided by ground-wave propagation.
- 5.105** In Region 2, except in Greenland, coast stations and ship stations using radiotelephony in the band 2 065-2 107 kHz shall be limited to class J3E emissions and to a peak envelope power not exceeding 1 kW. Preferably, the following carrier frequencies should be used: 2 065.0 kHz, 2 079.0 kHz, 2 082.5 kHz, 2 086.0 kHz, 2 093.0 kHz, 2 096.5 kHz, 2 100.0 kHz and 2 103.5 kHz. In Argentina and Uruguay, the carrier frequencies 2 068.5 kHz and 2 075.5 kHz are also used for this purpose, while the frequencies within the band 2 072-2 075.5 kHz are used as provided in No. **52.165**.
- 5.106** In Regions 2 and 3, provided no harmful interference is caused to the maritime mobile service, the frequencies between 2 065 kHz and 2 107 kHz may be used by stations of the fixed service communicating only within national borders and whose mean power does not exceed 50 W. In notifying the frequencies, the attention of the Bureau should be drawn to these provisions.
- 5.108** The carrier frequency 2 182 kHz is an international distress and calling frequency for radiotelephony. The conditions for the use of the band 2 173.5-2 190.5 kHz are prescribed in Articles **31** and **52** and in Appendix **13**.
- 5.109** The frequencies 2 187.5 kHz, 4 207.5 kHz, 6 312 kHz, 8 414.5 kHz, 12 577 kHz and 16 804.5 kHz are international distress frequencies for digital selective calling. The conditions for the use of these frequencies are prescribed in Article **31**.

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- 5.110** The frequencies 2 174.5 kHz, 4 177.5 kHz, 6 268 kHz, 8 376.5 kHz, 12 520 kHz and 16 695 kHz are international distress frequencies for narrow-band direct-printing telegraphy. The conditions for the use of these frequencies are prescribed in Article **31**.
- 5.111** The carrier frequencies 2 182 kHz, 3 023 kHz, 5 680 kHz, 8 364 kHz and the frequencies 121.5 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles. The conditions for the use of the frequencies are prescribed in Article **31** and in Appendix **13**.
- The same applies to the frequencies 10 003 kHz, 14 993 kHz and 19 993 kHz, but in each of these cases emissions must be confined in a band of ± 3 kHz about the frequency.
- 5.113** For the conditions for the use of the bands 2 300-2 495 kHz (2 498 kHz in Region 1), 3 200-3 400 kHz, 4 750-4 995 kHz and 5 005-5 060 kHz by the broadcasting service, see Nos. **5.16** to **5.20**, **5.21** and **23.3** to **23.10**.
- 5.115** The carrier (reference) frequencies 3 023 kHz and 5 680 kHz may also be used, in accordance with Article **31** and Appendix **13** by stations of the maritime mobile service engaged in coordinated search and rescue operations.
- 5.116** Administrations are urged to authorize the use of the band 3 155-3 195 kHz to provide a common worldwide channel for low power wireless hearing aids. Additional channels for these devices may be assigned by administrations in the bands between 3 155 kHz and 3 400 kHz to suit local needs.
- It should be noted that frequencies in the range 3 000 kHz to 4 000 kHz are suitable for hearing aid devices which are designed to operate over short distances within the induction field.
- 5.118** *Additional allocation:* in the United States, Mexico, Peru and Uruguay, the band 3 230-3 400 kHz is also allocated to the radiolocation service on a secondary basis. (**WRC-03**)
- 5.120** (**SUP - WRC-00**)
- 5.124** (**SUP - WRC-00**)
- 5.127** The use of the band 4 000-4 063 kHz by the maritime mobile service is limited to ship stations using radiotelephony (see No. **52.220** and Appendix **17**).
- 5.129** On condition that harmful interference is not caused to the maritime mobile service, the frequencies in the bands 4 063-4 123 kHz and 4 130-4 438 kHz may be used exceptionally by stations in the fixed service communicating only within the boundary of the country in which they are located with a mean power not exceeding 50 W.
- 5.130** The conditions for the use of the carrier frequencies 4 125 kHz and 6 215 kHz are prescribed in Articles **31** and **52** and in Appendix **13**.
- 5.131** The frequency 4 209.5 kHz is used exclusively for the transmission by coast stations of meteorological and navigational warnings and urgent information to ships by means of narrow-band direct-printing techniques. (**WRC-97**)
- 5.132** The frequencies 4 210 kHz, 6 314 kHz, 8 416.5 kHz, 12 579 kHz, 16 806.5 kHz, 19 680.5 kHz, 22 376 kHz and 26 100.5 kHz are the international frequencies for the transmission of maritime safety information (MSI) (see Appendix **17**).
- 5.134** The use of the bands 5 900-5 950 kHz, 7 300-7 350 kHz, 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 13 570-13 600 kHz, 13 800-13 870 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz by the broadcasting service as from 1 April 2007 is subject to the application of the procedure of Article **12**. Administrations are urged to use these bands to facilitate the introduction of digitally modulated emissions in accordance with the provisions of Resolution **517 (Rev. WRC-03)**. (**WRC-03**)

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5.135 (SUP - WRC-97)

5.136 The band 5 900-5 950 kHz is allocated, until 1 April 2007, to the fixed service on a primary basis, as well as to the following services: in Region 1 to the land mobile service on a primary basis, in Region 2 to the mobile except aeronautical mobile (R) service on a primary basis, and in Region 3 to the mobile except aeronautical mobile (R) service on a secondary basis, subject to application of the procedure referred to in Resolution **21 (Rev. WRC-95)**. After 1 April 2007, frequencies in this band may be used by stations in the above-mentioned services, communicating only within the boundary of the country in which they are located, on the condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations.

5.137 On condition that harmful interference is not caused to the maritime mobile service, the bands 6 200-6 213.5 kHz and 6 220.5-6 525 kHz may be used exceptionally by stations in the fixed service, communicating only within the boundary of the country in which they are located, with a mean power not exceeding 50 W. At the time of notification of these frequencies, the attention of the Bureau will be drawn to the above conditions.

5.138 The following bands:

6 765-6 795 kHz	(centre frequency 6 780 kHz),
433.05-434.79 MHz	(centre frequency 433.92 MHz) in Region 1 except in the countries mentioned in No. 5.280 ,
61-61.5 GHz	(centre frequency 61.25 GHz),
122-123 GHz	(centre frequency 122.5 GHz), and
244-246 GHz	(centre frequency 245 GHz)

are designated for industrial, scientific and medical (ISM) applications. The use of these frequency bands for ISM applications shall be subject to special authorization by the administration concerned, in agreement with other administrations whose radiocommunication services might be affected. In applying this provision, administrations shall have due regard to the latest relevant ITU-R Recommendations.

5.138A Until 29 March 2009, the band 6 765-7 000 kHz is allocated to the fixed service on a primary basis and to the land mobile service on a secondary basis. After this date, this band is allocated to the fixed and the mobile except aeronautical mobile (R) services on a primary basis. (**WRC-03**)

5.142 Until 29, March 2009, the use of the band 7 100-7 300 kHz in Region 2 by the amateur service shall not impose constraints on the broadcasting service intended for use within Region 1 and Region 3. After 29 March 2009 the use of the band 7 200-7 300 kHz in Region 2 by the amateur service shall not impose constraints on the broadcasting service intended for use within Region 1 and Region 3. (**WRC-03**)

5.143 The band 7 300-7 350 kHz is allocated, until 1 April 2007, to the fixed service on a primary basis and to the land mobile service on a secondary basis, subject to application of the procedure referred to in Resolution **21 (Rev. WRC-95)**. After 1 April 2007, frequencies in this band may be used by stations in the above-mentioned services, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations.

5.143D In Region 2, the band 7 350-7 400 kHz is allocated, until 29 March 2009, to the fixed service on a primary basis and to the land mobile service on a secondary basis. After 29 March 2009, frequencies in this band may be used by stations in the abovementioned services, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for

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these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. **(WRC-03)**

- 5.143E** Until 29 March 2009, the band 7 450-8 100 kHz is allocated to the fixed service on a primary basis and to the land mobile service on a secondary basis. **(WRC-03)**
- 5.145** The conditions for the use of the carrier frequencies 8 291 kHz, 12 290 kHz and 16 420 kHz are prescribed in Articles **31** and **52** and in Appendix **13**.
- 5.146** The bands 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz are allocated to the fixed service on a primary basis until 1 April 2007, subject to application of the procedure referred to in Resolution **21 (Rev. WRC-95)**. After 1 April 2007, frequencies in these bands may be used by stations in the fixed service, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies in the fixed service, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations.
- 5.147** On condition that harmful interference is not caused to the broadcasting service, frequencies in the bands 9 775-9 900 kHz, 11 650-11 700 kHz and 11 975-12 050 kHz may be used by stations in the fixed service communicating only within the boundary of the country in which they are located, each station using a total radiated power not exceeding 24 dBW.
- 5.148 (SUP - WRC-97)**
- 5.149** In making assignments to stations of other services to which the bands:

13 360-13 410 kHz,	4 990-5 000 MHz,	94.1-100 GHz,
25 550-25 670 kHz,	6 650-6 675.2 MHz,	102-109.5 GHz,
37.5-38.25 MHz,	10.6-10.68 GHz,	111.8-114.25 GHz,
73-74.6 MHz in Regions 1 and 3,	14.47-14.5 GHz,	128.33-128.59 GHz,
150.05-153 MHz in Region 1,	22.01-22.21 GHz,	129.23-129.49 GHz,
322-328.6 MHz,	22.21-22.5 GHz,	130-134 GHz,
406.1-410 MHz,	22.81-22.86 GHz,	136-148.5 GHz,
608-614 MHz in Regions 1 and 3,	23.07-23.12 GHz,	151.5-158.5 GHz,
1 330-1 400 MHz,	31.2-31.3 GHz,	168.59-168.93 GHz,
1 610.6-1 613.8 MHz,	31.5-31.8 GHz in Regions 1 and 3,	171.11-171.45 GHz,
1 660-1 670 MHz,	36.43-36.5 GHz,	172.31-172.65 GHz,
1 718.8-1 722.2 MHz,	42.5-43.5 GHz,	173.52-173.85 GHz,
2 655-2 690 MHz,	42.77-42.87 GHz,	195.75-196.15 GHz,
3 260-3 267 MHz,	43.07-43.17 GHz,	209-226 GHz,
3 332-3 339 MHz,	43.37-43.47 GHz,	241-250 GHz,
3 345.8-3 352.5 MHz,	48.94-49.04 GHz,	252-275 GHz
4 825-4 835 MHz,	76-86 GHz	
4 950-4 990 MHz,	92-94 GHz	

are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **4.5** and **4.6** and Article **29**). **(WRC-2000)**

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5.150 The following bands:

13 553-13 567 kHz	(centre frequency 13 560 kHz),
26 957-27 283 kHz	(centre frequency 27 120 kHz),
40.66-40.70 MHz	(centre frequency 40.68 MHz),
902-928 MHz	in Region 2 (centre frequency 915 MHz),
2 400-2 500 MHz	(centre frequency 2 450 MHz),
5 725-5 875 MHz	(centre frequency 5 800 MHz), and
24-24.25 GHz	(centre frequency 24.125 GHz)

are also designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within these bands must accept harmful interference which may be caused by these applications. ISM equipment operating in these bands is subject to the provisions of No. **15.13**.

5.151 The bands 13 570-13 600 kHz and 13 800-13 870 kHz are allocated, until 1 April 2007, to the fixed service on a primary basis and to the mobile except aeronautical mobile (R) service on a secondary basis, subject to application of the procedure referred to in Resolution **21 (Rev. WRC-95)**. After 1 April 2007, frequencies in these bands may be used by stations in the above-mentioned services, communicating only within the boundary of the country in which they are located, on the condition that harmful interference is not caused to the broadcasting service. When using frequencies in these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations.

5.153 In Region 3, the stations of those services to which the band 15 995-16 005 kHz is allocated may transmit standard frequency and time signals.

5.155B The band 21 870-21 924 kHz is used by the fixed service for provision of services related to aircraft flight safety.

5.156A The use of the band 23 200-23 350 kHz by the fixed service is limited to provision of services related to aircraft flight safety.

5.157 The use of the band 23 350-24 000 kHz by the maritime mobile service is limited to inter-ship radiotelegraphy.

5.172 Different category of service: in the French Overseas Departments in Region 2, Guyana, Jamaica and Mexico, the allocation of the band 54-68 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**).

5.173 Different category of service: in the French Overseas Departments in Region 2, Guyana, Jamaica and Mexico, the allocation of the band 68-72 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**).

5.180 The frequency 75 MHz is assigned to marker beacons. Administrations shall refrain from assigning frequencies close to the limits of the guardband to stations of other services which, because of their power or geographical position, might cause harmful interference or otherwise place a constraint on marker beacons.

Every effort should be made to improve further the characteristics of airborne receivers and to limit the power of transmitting stations close to the limits 74.8 MHz and 75.2 MHz.

5.185 Different category of service: in the United States, the French Overseas Departments in Region 2, Guyana, Jamaica, Mexico and Paraguay, the allocation of the band 76-88 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**).

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- 5.197A** The band 108-117.975 MHz may also be used by the aeronautical mobile (R) service on a primary basis, limited to systems that transmit navigational information in support of air navigation and surveillance functions in accordance with recognized international aviation standards. Such use shall be in accordance with Resolution **413 (WRC-03)** and shall not cause harmful interference to nor claim protection from stations operating in the aeronautical radionavigation service which operate in accordance with international aeronautical standards. **(WRC-03)**
- 5.198** Additional allocation: the band 117.975-136 MHz is also allocated to the aeronautical mobile-satellite (R) service on a secondary basis, subject to agreement obtained under No. **9.21. (WRC-97)**
- 5.199** The bands 121.45-121.55 MHz and 242.95-243.05 MHz are also allocated to the mobile-satellite service for the reception on board satellites of emissions from emergency position-indicating radiobeacons transmitting at 121.5 MHz and 243 MHz (see Appendix **13**).
- 5.200** In the band 117.975-136 MHz, the frequency 121.5 MHz is the aeronautical emergency frequency and, where required, the frequency 123.1 MHz is the aeronautical frequency auxiliary to 121.5 MHz. Mobile stations of the maritime mobile service may communicate on these frequencies under the conditions laid down in Article **31** and Appendix **13** for distress and safety purposes with stations of the aeronautical mobile service.
- 5.203** In the band 136-137 MHz, existing operational meteorological satellites may continue to operate, under the conditions defined in No. **4.4** with respect to the aeronautical mobile service, until 1 January 2002. Administrations shall not authorize new frequency assignments in this band to stations in the meteorological-satellite service. **(WRC-97)**
- 5.208** The use of the band 137-138 MHz by the mobile-satellite service is subject to coordination under No. **9.11A. (WRC-97)**
- 5.208A** In making assignments to space stations in the mobile-satellite service in the bands 137-138 MHz, 387-390 MHz and 400.15-401 MHz, administrations shall take all practicable steps to protect the radio astronomy service in the bands 150.05-153 MHz, 322-328.6 MHz, 406.1-410 MHz and 608-614 MHz from harmful interference from unwanted emissions. The threshold levels of interference detrimental to the radio astronomy service are shown in Table 1 of Recommendation ITU-R RA.769-1. **(WRC-97)**
- 5.209** The use of the bands 137-138 MHz, 148-150.05 MHz, 399.9-400.05 MHz, 400.15-401 MHz, 454-456 MHz and 459-460 MHz by the mobile-satellite service is limited to non-geostationary-satellite systems. **(WRC-97)**
- 5.218** Additional allocation: the band 148-149.9 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under No. **9.21**. The bandwidth of any individual transmission shall not exceed ± 25 kHz.
- 5.219** The use of the band 148-149.9 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. The mobile-satellite service shall not constrain the development and use of the fixed, mobile and space operation services in the band 148-149.9 MHz.
- 5.220** The use of the bands 149.9-150.05 MHz and 399.9-400.05 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. The mobile-satellite service shall not constrain the development and use of the radionavigation-satellite service in the bands 149.9-150.05 MHz and 399.9-400.05 MHz. **(WRC-97)**
- 5.221** Stations of the mobile-satellite service in the band 148-149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Croatia, Cuba, Denmark, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, the Russian Federation, Finland, France, Gabon, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Lebanon, Libyan Arab Jamahiriya, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mali, Malta, Mauritania,

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Moldova, Mongolia, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, Syrian Arab Republic, Kyrgyzstan, Slovakia, Romania, the United Kingdom, Senegal, Serbia and Montenegro, Sierra Leone, Singapore, Slovenia, Sri Lanka, South Africa, Sweden, Switzerland, Swaziland, Tanzania, Chad, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Zambia, and Zimbabwe. **(WRC-03)**

- 5.222** Emissions of the radionavigation-satellite service in the bands 149.9-150.05 MHz and 399.9-400.05 MHz may also be used by receiving earth stations of the space research service.
- 5.223** Recognizing that the use of the band 149.9-150.05 MHz by the fixed and mobile services may cause harmful interference to the radionavigation-satellite service, administrations are urged not to authorize such use in application of No. **4.4**.
- 5.224 (SUP - WRC-97)**
- 5.224A** The use of the bands 149.9-150.05 MHz and 399.9-400.05 MHz by the mobile-satellite service (Earth-to-space) is limited to the land mobile-satellite service (Earth-to-space) until 1 January 2015. **(WRC-97)**
- 5.224B** The allocation of the bands 149.9-150.05 MHz and 399.9-400.05 MHz to the radionavigation-satellite service shall be effective until 1 January 2015. **(WRC-97)**
- 5.226** The frequency 156.8 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service. The conditions for the use of this frequency are contained in Article **31** and Appendix **13**.
- In the bands 156-156.7625 MHz, 156.8375-157.45 MHz, 160.6-160.975 MHz and 161.475-162.05 MHz, each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by the administration (see Articles **31** and **52**, and Appendix **13**).
- Any use of frequencies in these bands by stations of other services to which they are allocated should be avoided in areas where such use might cause harmful interference to the maritime mobile VHF radio-communication service.
- However, the frequency 156.8 MHz and the frequency bands in which priority is given to the maritime mobile service may be used for radiocommunications on inland waterways subject to agreement between interested and affected administrations and taking into account current frequency usage and existing agreements.
- 5.227** In the maritime mobile VHF service the frequency 156.525 MHz is to be used exclusively for digital selective calling for distress, safety and calling. The conditions for the use of this frequency are prescribed in Articles **31** and **52**, and Appendices **13** and **18**.
- 5.241** In Region 2, no new stations in the radiolocation service may be authorized in the band 216-225 MHz. Stations authorized prior to 1 January 1990 may continue to operate on a secondary basis.
- 5.242** Additional allocation: in Canada, the band 216-220 MHz is also allocated to the land mobile service on a primary basis.
- 5.254** The bands 235-322 MHz and 335.4-399.9 MHz may be used by the mobile-satellite service, subject to agreement obtained under No. **9.21**, on condition that stations in this service do not cause harmful interference to those of other services operating or planned to be operated in accordance with the Table of Frequency Allocations except for the additional allocation made in footnote No. **5.256A**. **(WRC-03)**
- 5.255** The bands 312-315 MHz (Earth-to-space) and 387-390 MHz (space-to-Earth) in the mobile-satellite service may also be used by non-geostationary-satellite systems. Such use is subject to coordination under No. **9.11A**.
- 5.256** The frequency 243 MHz is the frequency in this band for use by survival craft stations and equipment used for survival purposes (see Appendix **13**).

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- 5.256A** *Additional allocation:* in China, the Russian Federation, Kazakhstan and Ukraine, the band 258-261 MHz is also allocated to the space research service (Earth-to-space) and space operation service (Earth-to-space) on a primary basis. Stations in the space research service (Earth-to-space) and space operation service (Earth-to-space) shall not cause harmful interference to, nor claim protection from, nor constrain the use and development of the mobile service systems and mobile-satellite service systems operating in the band. Stations in space research service (Earth-to-space) and space operation service (Earth-to-space) shall not constrain the future development of fixed service systems of other countries. **(WRC-03)**
- 5.257** The band 267-272 MHz may be used by administrations for space telemetry in their countries on a primary basis, subject to agreement obtained under No. **9.21**.
- 5.258** The use of the band 328.6-335.4 MHz by the aeronautical radionavigation service is limited to Instrument Landing Systems (glide path).
- 5.260** Recognizing that the use of the band 399.9-400.05 MHz by the fixed and mobile services may cause harmful interference to the radionavigation satellite service, administrations are urged not to authorize such use in application of No. **4.4**.
- 5.261** Emissions shall be confined in a band of ± 25 kHz about the standard frequency 400.1 MHz.
- 5.263** The band 400.15-401 MHz is also allocated to the space research service in the space-to-space direction for communications with manned space vehicles. In this application, the space research service will not be regarded as a safety service.
- 5.264** The use of the band 400.15-401 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. The power flux-density limit indicated in Annex 1 of Appendix **5** shall apply until such time as a competent world radiocommunication conference revises it.
- 5.266** The use of the band 406-406.1 MHz by the mobile-satellite service is limited to low power satellite emergency position-indicating radiobeacons (see also Article **31** and Appendix **13**).
- 5.267** Any emission capable of causing harmful interference to the authorized uses of the band 406-406.1 MHz is prohibited.
- 5.268** Use of the band 410-420 MHz by the space research service is limited to communications within 5 km of an orbiting, manned space vehicle. The power flux-density at the surface of the Earth produced by emissions from extra-vehicular activities shall not exceed -153 dB(W/m²) for $0^\circ \leq \delta \leq 5^\circ$, $-153 + 0.077(\delta - 5)$ dB(W/m²) for $5^\circ \leq \delta \leq 70^\circ$ and -148 dB(W/m²) for $70^\circ \leq \delta \leq 90^\circ$, where δ is the angle of arrival of the radio-frequency wave and the reference bandwidth is 4 kHz. No. **4.10** does not apply to extra-vehicular activities. In this frequency band the space research (space-to-space) service shall not claim protection from, nor constrain the use and development of, stations of the fixed and mobile services. **(WRC-97)**
- 5.269** Different category of service: in Australia, the United States, India, Japan and the United Kingdom, the allocation of the bands 420-430 MHz and 440-450 MHz to the radiolocation service is on a primary basis (see No. **5.33**).
- 5.279A** The use of this band by sensors in the Earth exploration-satellite service (active) shall be in accordance with Recommendation ITU-R SA.1260 I. Additionally, the Earth exploration-satellite service (active) in the band 432-438 MHz shall not cause harmful interference to the aeronautical radionavigation service in China. The provisions of this footnote in no way diminish the obligation of the Earth exploration-satellite service (active) to operate as a secondary service in accordance with Nos. **5.29** and **5.30**. **(WRC-03)**
- 5.281** *Additional allocation:* in the French Overseas Departments in Region 2 and India, the band 433.75-434.25 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis. In France and in Brazil, the band is allocated to the same service on a secondary basis.

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- 5.282** In the bands 435-438 MHz, 1 260-1 270 MHz, 2 400-2 450 MHz, 3 400-3 410 MHz (in Regions 2 and 3 only) and 5 650-5 670 MHz, the amateur-satellite service may operate subject to not causing harmful interference to other services operating in accordance with the Table (see No. **5.43**). Administrations authorizing such use shall ensure that any harmful interference caused by emissions from a station in the amateur-satellite service is immediately eliminated in accordance with the provisions of No. **25.11**. The use of the bands 1 260-1 270 MHz and 5 650-5 670 MHz by the amateur-satellite service is limited to the Earth-to-space direction.
- 5.284** Additional allocation: in Canada, the band 440-450 MHz is also allocated to the amateur service on a secondary basis.
- 5.285** Different category of service: in Canada, the allocation of the band 440-450 MHz to the radiolocation service is on a primary basis (see No. **5.33**).
- 5.286** The band 449.75-450.25 MHz may be used for the space operation service (Earth-to-space) and the space research service (Earth-to-space), subject to agreement obtained under No. **9.21**.
- 5.286A** The use of the bands 454-456 MHz and 459-460 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. (**WRC-97**)
- 5.286B** The use of the band 454-455 MHz in the countries listed in No. **5.286D**, 455-456 MHz and 459-460 MHz in Region 2, and 454-456 MHz and 459-460 MHz in the countries listed in No. **5.286E**, by stations in the mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations. (**WRC-97**)
- 5.286C** The use of the band 454-455 MHz in the countries listed in No. **5.286D**, 455-456 MHz and 459-460 MHz in Region 2, and 454-456 MHz and 459-460 MHz in the countries listed in No. **5.286E**, by stations in the mobile-satellite service, shall not constrain the development and use of the fixed and mobile services operating in accordance with the Table of Frequency Allocations. (**WRC-97**)
- 5.286D** Additional allocation: in Canada, the United States, Mexico and Panama, the band 454-455 MHz is also allocated to the mobile-satellite service (Earth-to-space) on a primary basis. (**WRC-97**)
- 5.286E** Additional allocation: in Cape Verde, Indonesia, Nepal, Nigeria and Papua New Guinea, the bands 454-456 MHz and 459-460 MHz are also allocated to the mobile-satellite (Earth-to-space) service on a primary basis. (**WRC-97**)
- 5.287** In the maritime mobile service, the frequencies 457.525 MHz, 457.550 MHz, 457.575 MHz, 467.525 MHz, 467.550 MHz and 467.575 MHz may be used by on-board communication stations. Where needed, equipment designed for 12.5 kHz channel spacing using also the additional frequencies 457.5375 MHz, 457.5625 MHz, 467.5375 MHz and 467.5625 MHz may be introduced for on-board communications. The use of these frequencies in territorial waters may be subject to the national regulations of the administration concerned. The characteristics of the equipment used shall conform to those specified in Recommendation ITU-R M.1174 (see Resolution **341** (**WRC-97**)). (**WRC-97**)
- 5.288** In the territorial waters of the United States and the Philippines, the preferred frequencies for use by on-board communication stations shall be 457.525 MHz, 457.550 MHz, 457.575 MHz and 457.600 MHz paired, respectively, with 467.750 MHz, 467.775 MHz, 467.800 MHz and 467.825 MHz. The characteristics of the equipment used shall conform to those specified in Recommendation ITU-R M.1174-1. (**WRC-03**)
- 5.289** Earth exploration-satellite service applications, other than the meteorological-satellite service, may also be used in the bands 460-470 MHz and 1 690-1 710 MHz for space-to-Earth transmissions subject to not causing harmful interference to stations operating in accordance with the Table.
- 5.293** Different category of service: in Canada, Chile, Colombia, Cuba, the United States, Guyana, Honduras, Jamaica, Mexico, Panama and Peru, the allocation of the bands 470-512 MHz and 614-806 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. In Argentina and

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- Ecuador, the allocation of the band 470-512 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (**WRC-2000**)
- 5.311** Within the frequency band 620-790 MHz, assignments may be made to television stations using frequency modulation in the broadcasting-satellite service subject to agreement between the administrations concerned and those having services, operating in accordance with the Table, which may be affected (see Resolutions **33 (Rev.WRC-03)** and **507 (Rev.WRC-03)**). Such stations shall not produce a power flux-density in excess of the value -129 dB(W/m²) for angles of arrival less than 20° (see Recommendation **705**) within the territories of other countries without the consent of the administrations of those countries. Resolution **545 (WRC-03)** applies. (**WRC-03**)
- 5.317** Additional allocation: in Region 2 (except Brazil and the United States), the band 806-890 MHz is also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. **9.21**. The use of this service is intended for operation within national boundaries.
- 5.317A** Administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) may use those parts of the band 806-960 MHz which are allocated to the mobile service on a primary basis and are used or planned to be used for mobile systems (see Resolution **224 (WRC-2000)**). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (**WRC-2000**)
- 5.318** Additional allocation: in Canada, the United States and Mexico, the bands 849-851 MHz and 894-896 MHz are also allocated to the aeronautical mobile service on a primary basis, for public correspondence with aircraft. The use of the band 849-851 MHz is limited to transmissions from aeronautical stations and the use of the band 894-896 MHz is limited to transmissions from aircraft stations.
- 5.321** Alternative allocation: in Italy, the band 838-854 MHz is allocated to the broadcasting service on a primary basis as from 1 January 1995.
- 5.328** The use of the band 960-1 215 MHz by the aeronautical radionavigation service is reserved on a worldwide basis for the operation and development of airborne electronic aids to air navigation and any directly associated ground-based facilities. (**WRC-2000**)
- 5.328A** Stations in the radionavigation-satellite service in the band 1 164-1 215 MHz shall operate in accordance with the provisions of Resolution **609 (WRC-03)** and shall not claim protection from stations in the aeronautical radionavigation service in the band 960-1 215 MHz. No. **5.43A** does not apply. The provisions of No. **21.18** shall apply. (**WRC-03**)
- 5.328B** The use of the bands 1 164-1 300 MHz, 1 559-1 610 MHz and 5 010-5 030 MHz by systems and networks in the radionavigation-satellite service for which complete coordination or notification information, as appropriate, is received by the Radiocommunication Bureau after 1 January 2005 is subject to the application of the provisions of Nos. **9.12**, **9.12A** and **9.13**. Resolution **610 (WRC-03)** shall also apply. (**WRC-03**)
- 5.329** Use of the radionavigation-satellite service in the band 1 215-1 300 MHz shall be subject to the condition that no harmful interference is caused to, and no protection is claimed from, the radionavigation service authorized under No. **5.331**. Furthermore, use of the radionavigation-satellite service in the band 1 215-1 300 MHz shall be subject to the condition that no harmful interference is caused to the radiolocation service. No. **5.43** shall not apply in respect of the radiolocation service. Resolution **608 (WRC-03)** shall apply. (**WRC-03**)
- 5.329A** Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1 215-1 300 MHz and 1 559-1 610 MHz is not intended to provide safety service applications, and shall not impose any additional constraints on other systems or services operating in accordance with the Table. (**WRC-2000**).
- 5.331** Additional allocation: in Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Belarus, Belgium, Benin, Bosnia and Herzegovina, Brazil, Burkina Faso, Burundi, Cameroon, China, Korea (Rep. of), Croatia, Denmark,

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- Egypt, the United Arab Emirates, Estonia, the Russian Federation, Finland, France, Ghana, Greece, Guinea, Equatorial Guinea, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Jordan, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Mauritania, Nigeria, Norway, Oman, the Netherlands, Poland, Portugal, Qatar, Syrian Arab Republic, Slovakia, the United Kingdom, Serbia and Montenegro, Slovenia, Somalia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Thailand, Togo, Turkey, Venezuela and Viet Nam, the band 1 215-1 300 MHz is also allocated to the radionavigation service on a primary basis. In Canada and the United States, the band 1 240-1 300 MHz is also allocated to the radionavigation service, and use of the radionavigation service shall be limited to the aeronautical radionavigation service. **(WRC-03)**
- 5.332** In the band 1 215-1 260 MHz, active spaceborne sensors in the Earth exploration-satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service, the radionavigation-satellite service and other services allocated on a primary basis. **(WRC-2000)**
- 5.333** **(SUP - WRC-97)**
- 5.334** *Additional allocation:* in Canada and the United States, the band 1 350-1 370 MHz is also allocated to the aeronautical radionavigation service on a primary basis. **(WRC-03)**
- 5.335** In Canada and the United States in the band 1 240-1 300 MHz, active spaceborne sensors in the earth exploration-satellite and space research services shall not cause interference to, claim protection from, or otherwise impose constraints on operation or development of the aeronautical radionavigation service. **(WRC-97)**
- 5.335A** In the band 1 260-1 300 MHz, active spaceborne sensors in the Earth exploration-satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service and other services allocated by footnotes on a primary basis. **(WRC-2000)**
- 5.337** The use of the bands 1 300-1 350 MHz, 2 700-2 900 MHz and 9 000-9 200 MHz by the aeronautical radionavigation service is restricted to ground-based radars and to associated airborne transponders which transmit only on frequencies in these bands and only when actuated by radars operating in the same band.
- 5.337A** The use of the band 1 300-1 350 MHz by earth stations in the radionavigation-satellite service and by stations in the radiolocation service shall not cause harmful interference to, nor constrain the operation and development of, the aeronautical-radionavigation service. **(WRC-2000)**
- 5.339** The bands 1 370-1 400 MHz, 2 640-2 655 MHz, 4 950-4 990 MHz and 15.20-15.35 GHz are also allocated to the space research (passive) and earth exploration-satellite (passive) services on a secondary basis.
- 5.339A** *Additional allocation:* the band 1 390-1 392 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a secondary basis and the band 1 430-1 432 MHz is also allocated to the fixed-satellite service (space-to-Earth) on a secondary basis. These allocations are limited to use for feeder links for non-geostationary-satellite networks in the mobile-satellite service with service links below 1 GHz, and Resolution **745 (WRC-03)** applies. **(WRC-03)**

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5.340 All emissions are prohibited in the following bands:

1 400-1 427 MHz,
2 690-2 700 MHz, except those provided for by No. **5.422**,
10.68-10.7 GHz, except those provided for by No. **5.483**,
15.35-15.4 GHz, except those provided for by No. **5.511**,
23.6-24 GHz,
31.3-31.5 GHz,
31.5-31.8 GHz, in Region 2,
48.94-49.04 GHz, from airborne stations,
50.2-50.4 GHz¹,
52.6-54.25 GHz,
86-92 GHz,
100-102 GHz,
109.5-111.8 GHz,
114.25-116 GHz,
148.5-151.5 GHz,
164-167 GHz,
182-185 GHz,
190-191.8 GHz,
200-209 GHz,
226-231.5 GHz,
250-252 GHz. (**WRC-03**)

5.341 In the bands 1 400-1 727 MHz, 101-120 GHz and 197-220 GHz, passive research is being conducted by some countries in a programme for the search for intentional emissions of extraterrestrial origin.

5.342 Additional allocation: in Belarus, Russian Federation and Ukraine, the band 1 429-1 535 MHz is also allocated to the aeronautical mobile service on a primary basis exclusively for the purposes of aeronautical telemetry within the national territory. As of 1 April 2007, the use of the band 1 452-1 492 MHz is subject to agreement between the administrations concerned. (**WRC-2000**)

5.343 In Region 2, the use of the band 1 435-1 535 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service.

5.345 Use of the band 1 452-1 492 MHz by the broadcasting-satellite service, and by the broadcasting service, is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (WARC-92)**.

5.347A In the bands:

1 452-1 492 MHz,
1 525-1 559 MHz,
1 613.8-1 626.5 MHz,
2 655-2 670 MHz,
2 670-2 690 MHz,
21.4-22 GHz.

Resolution **739 (WRC-03)** applies. (**WRC-03**)

¹ The allocation to the Earth exploration-satellite service (passive) and the space research service (passive) in the band 50.2-50.4 GHz should not impose undue constraints on the use of the adjacent bands by the primary allocated services in those bands. (**WRC-97**)

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- 5.348** The use of the band 1 518-1 525 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. In the band 1 518-1 525 MHz stations in the mobile-satellite service shall not claim protection from the stations in the fixed service. No. **5.43A** does not apply. (**WRC-03**)
- 5.348A** In the band 1 518-1 525 MHz, the coordination threshold in terms of the power flux-density levels at the surface of the Earth in application of No. **9.11A** for space stations in the mobile-satellite (space-to-Earth) service, with respect to the land mobile service use for specialized mobile radios or used in conjunction with public switched telecommunication networks (PSTN) operating within the territory of Japan, shall be -150 dB(W/m²) in any 4 kHz band for all angles of arrival, instead of those given in Table 5-2 of Appendix 5. In the band 1 518-1 525 MHz stations in the mobile-satellite service shall not claim protection from stations in the mobile service in the territory of Japan. No. **5.43A** does not apply. (**WRC-03**)
- 5.348B** In the band 1 518-1 525 MHz, stations in the mobile-satellite service shall not claim protection from aeronautical mobile telemetry stations in the mobile service in the territory of the United States (see Nos. **5.343** and **5.344**) and in the countries listed in No. **5.342**. No. **5.43A** does not apply. (**WRC-03**)
- 5.348C** For the use of the bands 1 518-1 525 MHz and 1 668-1 675 MHz by the mobile-satellite service, see Resolution **225 (Rev. WRC-03)**. (**WRC-03**)
- 5.351** The bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 626.5-1 645.5 MHz and 1 646.5-1 660.5 MHz shall not be used for feeder links of any service. In exceptional circumstances, however, an earth station at a specified fixed point in any of the mobile-satellite services may be authorized by an administration to communicate via space stations using these bands.
- 5.351A** For the use of the bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 980-2 010 MHz, 2 170-2 200 MHz, 2 483.5-2 500 MHz, 2 500-2 520 MHz and 2 670-2 690 MHz by the mobile-satellite service, see Resolutions **212 (Rev. WRC-97)** and **225 (WRC-2000)**. (**WRC-2000**)
- 5.352** (**SUP - WRC-97**)
- 5.353** (**SUP - WRC-97**)
- 5.353A** In applying the procedures of Section II of Article **9** to the mobile-satellite service in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz, priority shall be given to accommodate the spectrum requirements for distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS). Maritime mobile-satellite distress, urgency and safety communications shall have priority access and immediate availability over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, distress, urgency and safety communications of the GMDSS. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution **222 (WRC-2000)** shall apply.) (**WRC-2000**)
- 5.354** The use of the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz by the mobile-satellite services is subject to coordination under No. **9.11A**.
- 5.356** The use of the band 1 544-1 545 MHz by the mobile-satellite service (space-to-Earth) is limited to distress and safety communications (see Article **31**).
- 5.357** Transmissions in the band 1 545-1 555 MHz from terrestrial aeronautical stations directly to aircraft stations, or between aircraft stations, in the aeronautical mobile (R) service are also authorized when such transmissions are used to extend or supplement the satellite-to-aircraft links.
- 5.357A** In applying the procedures of Section II of Article **9** to the mobile-satellite service in the bands 1 545- 1 555 MHz and 1 646.5-1 656.5 MHz, priority shall be given to accommodate the spectrum requirements of the aeronautical mobile-satellite (R) service providing transmission of messages with priority 1 to 6 in Article **44**. Aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article **44** shall have priority access and immediate availability, by preemption if necessary, over all other mobile-satellite communications operating within a

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network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution 222 (WRC-2000) shall apply.) (WRC-2000)

5.358 (SUP - WRC-97)

5.360 (SUP - WRC-97)

5.361 (SUP - WRC-97)

5.362A In the United States, in the bands 1 555-1 559 MHz and 1 656.5-1 660.5 MHz, the aeronautical mobile-satellite (R) service shall have priority access and immediate availability, by preemption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (WRC-97)

5.364 The use of the band 1 610-1 626.5 MHz by the mobile-satellite service (Earth-to-space) and by the radiodetermination-satellite service (Earth-to-space) is subject to coordination under No. 9.11A. A mobile earth station operating in either of the services in this band shall not produce a peak e.i.r.p. density in excess of -15 dB (W/4 kHz) in the part of the band used by systems operating in accordance with the provisions of No. 5.366 (to which No. 4.10 applies), unless otherwise agreed by the affected administrations. In the part of the band where such systems are not operating, the mean e.i.r.p. density of a mobile earth station shall not exceed -3 dB (W/4 kHz). Stations of the mobile-satellite service shall not claim protection from stations in the aeronautical radionavigation service, stations operating in accordance with the provisions of No. 5.366 and stations in the fixed service operating in accordance with the provisions of No. 5.359. Administrations responsible for the coordination of mobile-satellite networks shall make all practicable efforts to ensure protection of stations operating in accordance with the provisions of No. 5.366.

5.365 The use of the band 1 613.8-1 626.5 MHz by the mobile-satellite service (space-to-Earth) is subject to coordination under No. 9.11A.

5.366 The band 1 610-1 626.5 MHz is reserved on a worldwide basis for the use and development of airborne electronic aids to air navigation and any directly associated ground-based or satellite-borne facilities. Such satellite use is subject to agreement obtained under No. 9.21.

5.367 Additional allocation: The bands 1 610-1 626.5 MHz and 5 000-5 150 MHz are also allocated to the aeronautical mobile-satellite (R) service on a primary basis, subject to agreement obtained under No. 9.21.

5.368 With respect to the radiodetermination-satellite and mobile-satellite services the provisions of No. 4.10 do not apply in the band 1 610-1 626.5 MHz, with the exception of the aeronautical radionavigation-satellite service.

5.372 Harmful interference shall not be caused to stations of the radio astronomy service using the band 1 610.6-1 613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services (No. 29.13 applies).

5.374 Mobile earth stations in the mobile-satellite service operating in the bands 1 631.5-1 634.5 MHz and 1 656.5-1 660 MHz shall not cause harmful interference to stations in the fixed service operating in the countries listed in No. 5.359. (WRC-97)

5.375 The use of the band 1 645.5-1 646.5 MHz by the mobile-satellite service (Earth-to-space) and for inter-satellite links is limited to distress and safety communications (see Article 31).

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- 5.376** Transmissions in the band 1 646.5-1 656.5 MHz from aircraft stations in the aeronautical mobile (R) service directly to terrestrial aeronautical stations, or between aircraft stations, are also authorized when such transmissions are used to extend or supplement the aircraft-to-satellite links.
- 5.376A** Mobile earth stations operating in the band 1 660-1 660.5 MHz shall not cause harmful interference to stations in the radio astronomy service. **(WRC-97)**
- 5.377 (SUP - WRC-03)**
- 5.379A** Administrations are urged to give all practicable protection in the band 1 660.5-1 668.4 MHz for future research in radio astronomy, particularly by eliminating air-to-ground transmissions in the meteorological aids service in the band 1 664.4-1 668.4 MHz as soon as practicable.
- 5.379B** The use of the band 1 668-1 675 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. **(WRC-03)**
- 5.379C** In order to protect the radio astronomy service in the band 1 668-1 670 MHz, the aggregate power flux-density values produced by mobile earth stations in a network of the mobile-satellite service operating in this band shall not exceed -181 dB(W/m²) in 10 MHz and -194 dB(W/m²) in any 20 kHz at any radio astronomy station recorded in the Master International Frequency Register, for more than 2% of integration periods of 2 000 s. **(WRC-03)**
- 5.379D** For sharing of the band 1 668-1 675 MHz between the mobile-satellite service and the fixed, mobile and space research (passive) services, Resolution **744 (WRC-03)** shall apply. **(WRC-03)**
- 5.379E** In the band 1 668.4-1 675 MHz, stations in the mobile-satellite service shall not cause harmful interference to stations in the meteorological aids service in China, Iran (Islamic Republic of), Japan and Uzbekistan. In the band 1 668.4-1 675 MHz, administrations are urged not to implement new systems in the meteorological aids service and are encouraged to migrate existing meteorological aids service operations to other bands as soon as practicable. **(WRC-03)**
- 5.380** The bands 1 670-1 675 MHz and 1 800-1 805 MHz are intended for use, on a worldwide basis, by administrations wishing to implement aeronautical public correspondence. The use of the band 1 670-1 675 MHz by stations in the systems for public correspondence with aircraft is limited to transmissions from aeronautical stations and the use of the band 1 800-1 805 MHz is limited to transmissions from aircraft stations.
- 5.380A** In the band 1 670-1 675 MHz, stations in the mobile-satellite service shall not cause harmful interference to, nor constrain the development of, existing earth stations in the meteorological-satellite service notified in accordance with Resolution **670 (WRC-03)**. **(WRC-03)**
- 5.384A** The bands, or portions of the bands, 1 710-1 885 MHz and 2 500- 2 690 MHz, are identified for use by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) in accordance with Resolution **223 (WRC-2000)**. This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. **(WRC-00)**
- 5.385** *Additional allocation:* the band 1 718.8-1 722.2 MHz is also allocated to the radio astronomy service on a secondary basis for spectral line observations. **(WRC-2000)**
- 5.386** *Additional allocation:* the band 1 750-1 850 MHz is also allocated to the space operation (Earth-to-space) and space research (Earth-to-space) services in Region 2, in Australia, Guam, India, Indonesia and Japan on a primary basis, subject to agreement obtained under No. **9.21**, having particular regard to troposcatter systems. **(WRC-03)**
- 5.388** The bands 1 885-2 025 MHz and 2 110-2 200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000). Such use does not preclude the use of these bands by other services to which they are allocated. The bands should be made available for IMT-2000 in accordance with Resolution **212 (Rev.WRC-97)**. (See also Resolution **223 (WRC-2000)**). **(WRC-2000)**

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- 5.389A** The use of the bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobile-satellite service is subject to coordination under No. **9.11A** and to the provisions of Resolution **716 (WRC-95)**. The use of these bands shall not commence before 1 January 2000; however the use of the band 1 980-1 990 MHz in Region 2 shall not commence before 1 January 2005.
- 5.389B** The use of the band 1 980-1 990 MHz by the mobile-satellite service shall not cause harmful interference to or constrain the development of the fixed and mobile services in Argentina, Brazil, Canada, Chile, Ecuador, the United States, Honduras, Jamaica, Mexico, Peru, Suriname, Trinidad and Tobago, Uruguay and Venezuela.
- 5.389C** The use of the bands 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 by the mobile-satellite service shall not commence before 1 January 2002 and is subject to coordination under No. **9.11A** and to the provisions of Resolution **716 (WRC-95)**. (**WRC-97**)
- 5.389D (SUP - WRC-03)**
- 5.389E** The use of the bands 2 010-2 025 MHz and 2 160-2 170 MHz by the mobile-satellite service in Region 2 shall not cause harmful interference to or constrain the development of the fixed and mobile services in Regions 1 and 3.
- 5.390** In Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, Suriname and Uruguay, the use of the bands 2 010-2 025 MHz and 2 160-2 170 MHz by the mobile-satellite services shall not cause harmful interference to stations in the fixed and mobile services before 1 January 2005. After this date, the use of these bands is subject to coordination under No. **9.11A** and to the provisions of Resolution **716 (WRC-95)**. (**WRC-2000**)
- 5.391** In making assignments to the mobile service in the bands 2 025-2 110 MHz and 2 200-2 290 MHz, administrations shall not introduce high-density mobile systems, as described in Recommendation ITU-R SA.1154, and shall take that Recommendation into account for the introduction of any other type of mobile system. (**WRC-97**)
- 5.392** Administrations are urged to take all practicable measures to ensure that space-to-space transmissions between two or more non-geostationary satellites, in the space research, space operations and Earth exploration-satellite services in the bands 2 025-2 110 MHz and 2 200-2 290 MHz, shall not impose any constraints on Earth-to-space, space-to-Earth and other space-to-space transmissions of those services and in those bands between geostationary and non-geostationary satellites.
- 5.394** In the United States, the use of the band 2 300-2 390 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. In Canada, the use of the band 2 300-2 483.5 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services.
- 5.396** Space stations of the broadcasting-satellite service in the band 2 310-2 360 MHz operating in accordance with No. **5.393** that may affect the services to which this band is allocated in other countries shall be coordinated and notified in accordance with Resolution **33 (Rev. WRC-97)**. Complementary terrestrial broadcasting stations shall be subject to bilateral coordination with neighbouring countries prior to their bringing into use.
- 5.398** In respect of the radiodetermination-satellite service in the band 2 483.5-2 500 MHz, the provisions of No. **4.10** do not apply.
- 5.402** The use of the band 2 483.5-2 500 MHz by the mobile-satellite and the radiodetermination-satellite services is subject to the coordination under No. **9.11A**. Administrations are urged to take all practicable steps to prevent harmful interference to the radio astronomy service from emissions in the 2 483.5-2 500 MHz band, especially those caused by second-harmonic radiation that would fall into the 4 990-5 000 MHz band allocated to the radio astronomy service worldwide.
- 5.403** Subject to agreement obtained under No. **9.21**, the band 2 520-2 535 MHz (until 1 January 2005 the band 2 500-2 535 MHz) may also be used for the mobile-satellite (space-to-Earth), except aeronautical mobile-satellite, service for operation limited to within national boundaries. The provisions of No. **9.11A** apply.

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- 5.407** In the band 2 500-2 520 MHz, the power flux-density at the surface of the Earth from space stations operating in the mobile-satellite (space-to-Earth) service shall not exceed $-152 \text{ dB (W/m}^2 \cdot 4 \text{ kHz)}$ in Argentina, unless otherwise agreed by the administrations concerned.
- 5.409** Administrations shall make all practicable efforts to avoid developing new tropospheric scatter systems in the band 2 500-2 690 MHz.
- 5.410** The band 2 500-2 690 MHz may be used for tropospheric scatter systems in Region 1, subject to agreement obtained under No. **9.21**.
- 5.411** When planning new tropospheric scatter radio-relay links in the band 2 500-2 690 MHz, all possible measures shall be taken to avoid directing the antennae of these links towards the geostationary-satellite orbit.
- 5.413** In the design of systems in the broadcasting-satellite service in the bands between 2 500 MHz and 2 690 MHz, administrations are urged to take all necessary steps to protect the radio astronomy service in the band 2 690-2 700 MHz.
- 5.414** The allocation of the frequency band 2 500-2 520 MHz to the mobile-satellite service (space-to-Earth) shall be effective on 1 January 2005 and is subject to coordination under No. **9.11A**.
- 5.415** The use of the bands 2 500-2 690 MHz in Region 2 and 2 500-2 535 MHz and 2 655-2 690 MHz in Region 3 by the fixed-satellite service is limited to national and regional systems, subject to agreement obtained under No. **9.21**, giving particular attention to the broadcasting-satellite service in Region 1. In the direction space-to-Earth, the power flux-density at the Earth's surface shall not exceed the values given in Article **21**, Table **21-4**.
- 5.416** The use of the band 2 520-2 670 MHz by the broadcasting-satellite service is limited to national and regional systems for community reception, subject to agreement obtained under No. **9.21**. (**WRC-03**)
- 5.417A** In applying provision No. **5.418**, in Korea (Rep. of) and Japan, *resolves* 3 of Resolution **528 (Rev.WRC-03)** is relaxed to allow the broadcasting-satellite service (sound) and the complementary terrestrial broadcasting service to additionally operate on a primary basis in the band 2 605-2 630 MHz. This use is limited to systems intended for national coverage. An administration listed in this provision shall not have simultaneously two overlapping frequency assignments, one under this provision and the other under No. **5.416**. The provisions of No. **5.416** and Table **21-4** of Article **21** do not apply. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) in the band 2 605-2 630 MHz is subject to the provisions of Resolution **539 (Rev.WRC-03)**. The power flux-density at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the band 2 605-2 630 MHz for which complete Appendix **4** coordination information, or notification information, has been received after 4 July 2003, for all conditions and for all methods of modulation, shall not exceed the following limits:

$-130 \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for $0^\circ \leq \theta \leq 5^\circ$
$-130 + 0.4 (\theta - 5) \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for $5^\circ < \theta \leq 25^\circ$
$-122 \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for $25^\circ < \theta \leq 90^\circ$

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. In the case of the broadcasting-satellite service (sound) networks of Korea (Rep. of), as an exception to the limits above, the pfd value of $-122 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ shall be used as a threshold for coordination under No. **9.11** in an area of 1 000 km around the territory of the administration notifying the BSS (sound) system, for angles of arrival greater than 35° . (**WRC-03**)

- 5.417B** In Korea (Rep. of) and Japan, use of the band 2 605-2 630 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.417A**, for which complete Appendix **4** coordination information, or notification information, has been received after 4 July 2003, is subject to the application of the provisions of No. **9.12A**, in respect of geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received after 4 July 2003, and No. **22.2** does not

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apply. No. **22.2** shall continue to apply with respect to geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received before 5 July 2003. **(WRC-03)**

5.417C Use of the band 2 605-2 630 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.417A**, for which complete Appendix **4** coordination information, or notification information, has been received after 4 July 2003, is subject to the application of the provisions of No. **9.12**. **(WRC-03)**

5.417D Use of the band 2 605-2 630 MHz by geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, has been received after 4 July 2003 is subject to the application of the provisions of No. **9.13** with respect to non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.417A**, and No. **22.2** does not apply. **(WRC-03)**

5.418 *Additional allocation:* in Korea (Rep. of), India, Japan, Pakistan and Thailand, the band 2 535-2 655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (Rev.WRC-03)**. The provisions of No. **5.416** and Table **21-4** of Article **21**, do not apply to this additional allocation. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to Resolution **539 (Rev.WRC-03)**. Geostationary broadcasting-satellite service (sound) systems for which complete Appendix **4** coordination information has been received after 1 June 2005 are limited to systems intended for national coverage. The power flux-density at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the band 2 630-2 655 MHz, and for which complete Appendix **4** coordination information has been received after 1 June 2005, shall not exceed the following limits, for all conditions and for all methods of modulation:

-130 dB(W/(m ² · MHz))	for 0° ≤ θ ≤ 5°
-130 + 0.4 (θ - 5) dB(W/(m ² · MHz))	for 5° < θ ≤ 25°
-122 dB(W/(m ² · MHz))	for 25° < θ ≤ 90°

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. As an exception to the limits above, the pfd value of -122 dB(W/(m² · MHz)) shall be used as a threshold for coordination under No. **9.11** in an area of 1 500 km around the territory of the administration notifying the broadcasting-satellite service (sound) system. In addition, the pfd value shall not exceed -100 dB(W/(m² · MHz)) anywhere on the territory of the Russian Federation.

In addition, an administration listed in this provision shall not have simultaneously two overlapping frequency assignments, one under this provision and the other under No. **5.416** for systems for which complete Appendix **4** coordination information has been received after 1 June 2005. **(WRC-03)**

5.418A In certain Region 3 countries listed in No. **5.418**, use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound) for which complete Appendix **4** coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **9.12A**, in respect of geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received after 2 June 2000, and No. **22.2** does not apply. No. **22.2** shall continue to apply with respect to geostationary-satellite networks for which complete Appendix **4** coordination information, or notification information, is considered to have been received before 3 June 2000. **(WRC-03)**

5.418B Use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. **5.418**, for which complete Appendix **4** coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **9.12**. **(WRC-03)**

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- 5.418C** Use of the band 2 630-2 655 MHz by geostationary-satellite networks for which complete Appendix 4 coordination information, or notification information, has been received after 2 June 2000 is subject to the application of the provisions of No. 9.13 with respect to non-geostationary-satellite systems in the broadcasting-satellite service (sound), pursuant to No. 5.418 and No. 22.2 does not apply. (WRC-03)
- 5.419** The allocation of the frequency band 2 670-2 690 MHz to the mobile-satellite service shall be effective from 1 January 2005. When introducing systems of the mobile-satellite service in this band, administrations shall take all necessary steps to protect the satellite systems operating in this band prior to 3 March 1992. The coordination of mobile-satellite systems in the band shall be in accordance with No. 9.11A.
- 5.420** The band 2 655-2 670 MHz (until 1 January 2005 the band 2 655-2 690 MHz) may also be used for the mobile-satellite (Earth-to-space), except aeronautical mobile-satellite, service for operation limited to within national boundaries, subject to agreement obtained under No. 9.21. The coordination under No. 9.11A applies.
- 5.423** In the band 2 700-2 900 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the aeronautical radionavigation service.
- 5.424** Additional allocation: in Canada, the band 2 850-2 900 MHz is also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars.
- 5.424A** In the band 2 900-3 100 MHz, stations in the radiolocation service shall not cause harmful interference to, nor claim protection from, radar systems in the radionavigation service. (WRC-03)
- 5.425** In the band 2 900-3 100 MHz, the use of the shipborne interrogator-transponder system (SIT) shall be confined to the sub-band 2 930 -2 950 MHz.
- 5.426** The use of the band 2 900-3 100 MHz by the aeronautical radionavigation service is limited to ground-based radars.
- 5.427** In the bands 2 900-3 100 MHz and 9 300-9 500 MHz, the response from radar transponders shall not be capable of being confused with the response from radar beacons (racons) and shall not cause interference to ship or aeronautical radars in the radionavigation service, having regard, however, to No. 4.9.
- 5.428** Additional allocation: in Azerbaijan, Cuba, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3 100-3 300 MHz is also allocated to the radionavigation service on a primary basis. (WRC-03)
- 5.433** In Regions 2 and 3, in the band 3 400-3 600 MHz the radiolocation service is allocated on a primary basis. However, all administrations operating radiolocation systems in this band are urged to cease operations by 1985. Thereafter, administrations shall take all practicable steps to protect the fixed-satellite service and coordination requirements shall not be imposed on the fixed-satellite service.
- 5.438** Use of the band 4 200-4 400 MHz by the aeronautical radionavigation service is reserved exclusively for radio altimeters installed on board aircraft and for the associated transponders on the ground. However, passive sensing in the earth exploration-satellite and space research services may be authorized in this band on a secondary basis (no protection is provided by the radio altimeters).
- 5.440** The standard frequency and time signal-satellite service may be authorized to use the frequency 4 202 MHz for space-to-Earth transmissions and the frequency 6 427 MHz for Earth-to-space transmissions. Such transmissions shall be confined within the limits of ± 2 MHz of these frequencies, subject to agreement obtained under No. 9.21.
- 5.441** The use of the bands 4 500-4 800 MHz (space-to-Earth), 6 725-7 025 MHz (Earth-to-space) by the fixed-satellite service shall be in accordance with the provisions of Appendix 30B. The use of the bands 10.7- 10.95 GHz (space-to-Earth), 11.2-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by geostationary-satellite systems in the fixed-satellite service shall be in accordance with the provisions of Appendix 30B. The use of the bands 10.7-10.95 GHz (space-to Earth), 11.2-11.45 GHz (space-to-Earth) and 12.75- 13.25 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. 9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-

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satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. **(WRC-2000)**

- 5.442** In the bands 4 825-4 835 MHz and 4 950-4 990 MHz, the allocation to the mobile service is restricted to the mobile, except aeronautical mobile, service.
- 5.443** Different category of service: in Argentina, Australia and Canada, the allocation of the bands 4 825-4 835 MHz and 4 950-4 990 MHz to the radio astronomy service is on a primary basis (see No. **5.33**).
- 5.443A (SUP - WRC-03)**
- 5.443B** In order not to cause harmful interference to the microwave landing system operating above 5 030 MHz, the aggregate power flux-density produced at the Earth's surface in the band 5 030-5 150 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the band 5 010-5 030 MHz shall not exceed $-124.5 \text{ dB(W/m}^2\text{)}$ in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the band 4 990-5 000 MHz, radionavigation-satellite service systems operating in the band 5 010-5 030 MHz shall comply with the limits in the band 4 990-5 000 MHz defined in Resolution **741(WRC-03)**. **(WRC-03)**
- 5.444** The band 5 030-5 150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. The requirements of this system shall take precedence over other uses of this band. For the use of this band, No. **5.444A** and Resolution **114 (Rev.WRC-03)** apply. **(WRC-03)**
- 5.444A** *Additional allocation:* the band 5 091-5 150 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a primary basis. This allocation is limited to feeder links of non-geostationary mobile-satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**.

In the band 5 091-5 150 MHz, the following conditions also apply:

- prior to 1 January 2018, the use of the band 5 091-5 150 MHz by feeder links of non-geostationary-satellite systems in the mobile-satellite service shall be made in accordance with Resolution **114 (Rev.WRC-03)**;
 - prior to 1 January 2018, the requirements of existing and planned international standard systems for the aeronautical radionavigation service which cannot be met in the 5 000-5 091 MHz band, shall take precedence over other uses of this band;
 - after 1 January 2012, no new assignments shall be made to earth stations providing feeder links of non-geostationary mobile-satellite systems;
 - after 1 January 2018, the fixed-satellite service will become secondary to the aeronautical radionavigation service. **(WRC-03)**
- 5.446** *Additional allocation:* in the countries listed in Nos. **5.369** and **5.400**, the band 5 150-5 216 MHz is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis, subject to agreement obtained under No. **9.21**. In Region 2, the band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a primary basis. In Regions 1 and 3, except those countries listed in Nos. **5.369** and **5.400**, the band is also allocated to the radiodetermination-satellite service (space-to-Earth) on a secondary basis. The use by the radiodetermination-satellite service is limited to feeder links in conjunction with the radiodetermination-satellite service operating in the bands 1 610-1 626.5 MHz and/or 2 483.5-2 500 MHz. The total power flux-density at the Earth's surface shall in no case exceed -159 dBW/m^2 in any 4 kHz band for all angles of arrival.

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- 5.446A** The use of the bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile service shall be in accordance with Resolution **229 (WRC-03)**. **(WRC-03)**
- 5.446B** In the band 5 150-5 250 MHz, stations in the mobile service shall not claim protection from earth stations in the fixed-satellite service. Number **5.43A** does not apply to the mobile service with respect to FSS earth stations. **(WRC-03)**
- 5.447A** The allocation to the fixed-satellite service (Earth-to-space) is limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**.
- 5.447B** Additional allocation: the band 5 150-5 216 MHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. This allocation is limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service and is subject to provisions of No. **9.11A**. The power flux-density at the Earth's surface produced by space stations of the fixed-satellite service operating in the space-to-Earth direction in the band 5 150-5 216 MHz shall in no case exceed -164 dB(W/m²) in any 4 kHz band for all angles of arrival.
- 5.447C** Administrations responsible for fixed-satellite service networks in the band 5 150-5 250 MHz operated under Nos. **5.447A** and **5.447B** shall coordinate on an equal basis in accordance with No. **9.11A** with administrations responsible for non-geostationary-satellite networks operated under No. **5.446** and brought into use prior to 17 November 1995. Satellite networks operated under No. **5.446** brought into use after 17 November 1995 shall not claim protection from, and shall not cause harmful interference to, stations of the fixed-satellite service operated under Nos. **5.447A** and **5.447B**.
- 5.447D** The allocation of the band 5 250-5 255 MHz to the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the band by the space research service are on a secondary basis. **(WRC-97)**
- 5.447F** In the band 5 250-5 350 MHz, stations in the mobile service shall not claim protection from the radiolocation service, the Earth exploration-satellite service (active) and the space research service (active). These services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendations ITU-R M.1638 and ITU-R SA.1632. **(WRC-03)**
- 5.448A** The Earth exploration-satellite (active) and space research (active) services in the frequency band 5 250-5 350 MHz shall not claim protection from the radiolocation service. No. **5.43A** does not apply. **(WRC-03)**
- 5.448B** The Earth exploration-satellite service (active) operating in the band 5 350-5 570 MHz and space research service (active) operating in the band 5 460-5 570 MHz shall not cause harmful interference to the aeronautical radionavigation service in the band 5 350-5 460 MHz, the radionavigation service in the band 5 460-5 470 MHz and the maritime radionavigation service in the band 5 470-5 570 MHz. **(WRC-03)**
- 5.448C** The space research service (active) operating in the band 5 350-5 460 MHz shall not cause harmful interference to nor claim protection from other services to which this band is allocated. **(WRC-03)**
- 5.448D** In the frequency band 5 350-5 470 MHz, stations in the radiolocation service shall not cause harmful interference to, nor claim protection from, radar systems in the aeronautical radionavigation service operating in accordance with No. **5.449**. **(WRC-03)**
- 5.449** The use of the band 5 350-5 470 MHz by the aeronautical radionavigation service is limited to airborne radars and associated airborne beacons.
- 5.450A** In the band 5 470-5 725 MHz, stations in the mobile service shall not claim protection from radiodetermination services. Radiodetermination services shall not impose on the mobile service more stringent protection criteria, based on system characteristics and interference criteria, than those stated in Recommendation ITU-R M.1638. **(WRC-03)**

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- 5.450B** In the frequency band 5 470-5 650 MHz, stations in the radiolocation service, except ground-based radars used for meteorological purposes in the band 5 600-5 650 MHz, shall not cause harmful interference to, nor claim protection from, radar systems in the maritime radionavigation service. **(WRC-03)**
- 5.452** Between 5 600 MHz and 5 650 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the maritime radionavigation service.
- 5.457A** In the bands 5 925-6 425 MHz and 14-14.5 GHz, earth stations located on board vessels may communicate with space stations of the fixed-satellite service. Such use shall be in accordance with Resolution **902 (WRC-03)**. **(WRC-03)**
- 5.458** In the band 6 425-7 075 MHz, passive microwave sensor measurements are carried out over the oceans. In the band 7 075-7 250 MHz, passive microwave sensor measurements are carried out. Administrations should bear in mind the needs of the Earth exploration-satellite (passive) and space research (passive) services in their future planning of the bands 6 425-7 025 MHz and 7 075-7 250 MHz.
- 5.458A** In making assignments in the band 6 700-7 075 MHz to space stations of the fixed-satellite service, administrations are urged to take all practicable steps to protect spectral line observations of the radio astronomy service in the band 6 650-6 675.2 MHz from harmful interference from unwanted emissions.
- 5.458B** The space-to-Earth allocation to the fixed-satellite service in the band 6 700-7 075 MHz is limited to feeder links for non-geostationary satellite systems of the mobile-satellite service and is subject to coordination under No. **9.11A**. The use of the band 6 700-7 075 MHz (space-to-Earth) by feeder links for non-geostationary satellite systems in the mobile-satellite service is not subject to No. **22.2**.
- 5.458C** Administrations making submissions in the band 7 025-7 075 MHz (Earth-to-space) for geostationary-satellite systems in the fixed-satellite service after 17 November 1995 shall consult on the basis of relevant ITU-R Recommendations with the administrations that have notified and brought into use non-geostationary-satellite systems in this frequency band before 18 November 1995 upon request of the latter administrations. This consultation shall be with a view to facilitating shared operation of both geostationary-satellite systems in the fixed-satellite service and non-geostationary-satellite systems in this band.
- 5.459** Additional allocation: in Russian Federation, the frequency bands 7 100-7 155 MHz and 7 190-7 235 MHz are also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under No. **9.21**. **(WRC-97)**
- 5.460** The use of the band 7 145-7 190 MHz by the space research service (Earth-to-space) is restricted to deep space; no emissions to deep space shall be effected in the band 7 190-7 235 MHz. Geostationary satellites in the space research service operating in the band 7 190-7 235 MHz shall not claim protection from existing and future stations of the fixed and mobile services and No. **5.43A** does not apply. **(WRC-03)**
- 5.461** Additional allocation: the bands 7 250-7 375 MHz (space-to-Earth) and 7 900-8 025 MHz (Earth-to-space) are also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. **9.21**.
- 5.461A** The use of the band 7 450-7 550 MHz by the meteorological-satellite service (space-to-Earth) is limited to geostationary-satellite systems. Non-geostationary meteorological-satellite systems in this band notified before 30 November 1997 may continue to operate on a primary basis until the end of their lifetime. **(WRC-97)**
- 5.461B** The use of the band 7 750-7 850 MHz by the meteorological-satellite service (space-to-Earth) is limited to non-geostationary satellite systems. **(WRC-97)**
- 5.463** Aircraft stations are not permitted to transmit in the band 8 025-8 400 MHz. **(WRC-97)**
- 5.465** In the space research service, the use of the band 8 400-8 450 MHz is limited to deep space.

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- 5.469A** In the band 8 550-8 650 MHz, stations in the earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, or constrain the use and development of, stations of the radiolocation service. **(WRC-97)**
- 5.470** The use of the band 8 750-8 850 MHz by the aeronautical radionavigation service is limited to airborne Doppler navigation aids on a centre frequency of 8 800 MHz.
- 5.472** In the bands 8 850-9 000 MHz and 9 200-9 225 MHz, the maritime radionavigation service is limited to shore-based radars.
- 5.474** In the band 9 200-9 500 MHz, search and rescue transponders (SART) may be used, having due regard to the appropriate ITU-R Recommendation (see also Article **31**).
- 5.475** The use of the band 9 300-9 500 MHz by the aeronautical radionavigation service is limited to airborne weather radars and ground-based radars. In addition, ground-based radar beacons in the aeronautical radionavigation service are permitted in the band 9 300-9 320 MHz on condition that harmful interference is not caused to the maritime radionavigation service. In the band 9 300-9 500 MHz, ground-based radars used for meteorological purposes have priority over other radiolocation devices.
- 5.476** In the band 9 300-9 320 MHz in the radionavigation service, the use of shipborne radars, other than those existing on 1 January 1976, is not permitted until 1 January 2001.
- 5.476A** In the band 9 500-9 800 MHz, stations in the earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, or constrain the use and development of, stations of the radionavigation and radiolocation services. **(WRC-97)**
- 5.479** The band 9 975-10 025 MHz is also allocated to the meteorological-satellite service on a secondary basis for use by weather radars.
- 5.482** In the band 10.6-10.68 GHz, stations of the fixed and mobile, except aeronautical mobile, services shall be limited to a maximum equivalent isotropically radiated power of 40 dBW and the power delivered to the antenna shall not exceed -3 dBW. These limits may be exceeded subject to agreement obtained under No. **9.21**. However, in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, China, the United Arab Emirates, Georgia, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Kuwait, Latvia, Lebanon, Moldova, Nigeria, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Tajikistan and Turkmenistan, the restrictions on the fixed and mobile, except aeronautical mobile, services are not applicable. **(WRC-03)**
- 5.484A** The use of the bands 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7- 12.2 GHz (space-to-Earth) in Region 2, 12.2-12.75 GHz (space-to-Earth) in Region 3, 12.5-12.75 GHz (space-to-Earth) in Region 1, 13.75-14.5 GHz (Earth-to-space), 17.8-18.6 GHz (space-to-Earth), 19.7-20.2 GHz (space-to-Earth), 27.5-28.6 GHz (Earth-to-space), 29.5-30 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. **(WRC-2000)**
- 5.485** In Region 2, in the band 11.7-12.2 GHz, transponders on space stations in the fixed-satellite service may be used additionally for transmissions in the broadcasting-satellite service, provided that such transmissions do not have a maximum e.i.r.p. greater than 53 dBW per television channel and do not cause greater interference or require more protection from interference than the coordinated fixed-satellite service frequency assignments. With respect to the space services, this band shall be used principally for the fixed-satellite service.

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- 5.486** Different category of service: in Mexico and the United States, the allocation of the band 11.7-12.1 GHz to the fixed service is on a secondary basis (see No. **5.32**).
- 5.487A** *Additional allocation:* in Region 1, the band 11.7-12.5 GHz, in Region 2, the band 12.2-12.7 GHz and, in Region 3, the band 11.7-12.2 GHz, are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis, limited to non-geostationary systems and subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the broadcasting-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. **(WRC-03)**
- 5.488** The use of the band 11.7-12.2 GHz by geostationary-satellite networks in the fixed-satellite service in Region 2 is subject to application of the provisions of No. **9.14** for coordination with stations of terrestrial services in Regions 1, 2 and 3. For the use of the band 12.2-12.7 GHz by the broadcasting-satellite service in Region 2, see Appendix **30**. **(WRC-03)**
- 5.490** In Region 2, in the band 12.2-12.7 GHz, existing and future terrestrial radiocommunication services shall not cause harmful interference to the space services operating in conformity with the broadcasting-satellite Plan for Region 2 contained in Appendix **30**.
- 5.492** Assignments to stations of the broadcasting-satellite service which are in conformity with the appropriate regional Plan or included in the Regions 1 and 3 List in Appendix **30** may also be used for transmissions in the fixed-satellite service (space-to-Earth), provided that such transmissions do not cause more interference, or require more protection from interference, than the broadcasting-satellite service transmissions operating in conformity with the Plan or the List, as appropriate. **(WRC-2000)**
- 5.497** The use of the band 13.25-13.4 GHz by the aeronautical radionavigation service is limited to Doppler navigation aids.
- 5.498** **(SUP - WRC-97)**
- 5.498A** The Earth exploration-satellite (active) and space research (active) services operating in the band 13.25-13.4 GHz shall not cause harmful interference to, or constrain the use and development of, the aeronautical radionavigation service. **(WRC-97)**
- 5.501A** The allocation of the band 13.4-13.75 GHz to the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the band by the space research service are on a secondary basis. **(WRC-97)**
- 5.501B** In the band 13.4-13.75 GHz, the Earth exploration-satellite (active) and space research (active) services shall not cause harmful interference to, or constrain the use and development of, the radiolocation service. **(WRC-97)**
- 5.502** In the band 13.75-14 GHz, an earth station of a geostationary fixed-satellite service network shall have a minimum antenna diameter of 1.2 m and an earth station of a non-geostationary fixed-satellite service system shall have a minimum antenna diameter of 4.5 m. In addition, the e.i.r.p., averaged over one second, radiated by a station in the radiolocation or radionavigation services shall not exceed 59 dBW for elevation angles above 2° and 65 dBW at lower angles. Before an administration brings into use an earth station in a geostationary-satellite network in the fixed-satellite service in this band with an antenna size smaller than 4.5 m, it shall ensure that the power flux-density produced by this earth station does not exceed:
- 115 dB(W/(m² · 10 MHz)) for more than 1% of the time produced at 36 m above sea level at the low water mark, as officially recognized by the coastal state;

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- 115 dB(W/(m² · 10 MHz)) for more than 1% of the time produced 3 m above ground at the border of the territory of an administration deploying or planning to deploy land mobile radars in this band, unless prior agreement has been obtained.

For earth stations within the fixed-satellite service having an antenna diameter greater than or equal to 4.5 m, the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. **(WRC-03)**

5.503 In the band 13.75-14 GHz, geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 shall operate on an equal basis with stations in the fixed-satellite service; after that date, new geostationary space stations in the space research service will operate on a secondary basis. Until those geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band:

- in the band 13.770-13.780 GHz, the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in geostationary-satellite orbit shall not exceed:
 - (i) $4.7D + 28$ dB(W/40 kHz), where D is the fixed-satellite service earth station antenna diameter (m) for antenna diameters equal to or greater than 1.2 m and less than 4.5 m;
 - (ii) $49.2 + 20 \log(D/4.5)$ dB(W/40 kHz), where D is the fixed-satellite service earth station antenna diameter (m) for antenna diameters equal to or greater than 4.5 m and less than 31.9 m;
 - (iii) 66.2 dB(W/40 kHz) for any fixed-satellite service earth station for antenna diameters (m) equal to or greater than 31.9 m;
 - (iv) 56.2 dB(W/4 kHz) for narrow-band (less than 40 kHz of necessary bandwidth) fixed-satellite service earth station emissions from any fixed-satellite service earth station having an antenna diameter of 4.5 m or greater;
- the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in the 6 MHz band from 13.772 to 13.778 GHz.

Automatic power control may be used to increase the e.i.r.p. density in these frequency ranges to compensate for rain attenuation, to the extent that the power flux-density at the fixed-satellite service space station does not exceed the value resulting from use by an earth station of an e.i.r.p. meeting the above limits in clear-sky conditions. **(WRC-03)**

5.503A (SUP - WRC-03)

5.504 The use of the band 14-14.3 GHz by the radionavigation service shall be such as to provide sufficient protection to space stations of the fixed-satellite service.

5.504A In the band 14-14.5 GHz, aircraft earth stations in the secondary aeronautical mobile-satellite service may also communicate with space stations in the fixed-satellite service. The provisions of Nos. **5.29**, **5.30** and **5.31** apply. **(WRC-03)**

5.506 The band 14-14.5 GHz may be used, within the fixed-satellite service (Earth-to-space), for feeder links for the broadcasting-satellite service, subject to coordination with other networks in the fixed-satellite service. Such use of feeder links is reserved for countries outside Europe.

5.506A In the band 14-14.5 GHz, ship earth stations with an e.i.r.p. greater than 21 dBW shall operate under the same conditions as earth stations located on board vessels, as provided in Resolution **902 (WRC-03)**. This footnote shall not apply to ship earth stations for which the complete Appendix **4** information has been received by the Bureau prior to 5 July 2003. **(WRC-03)**

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- 5.510** The use of the band 14.5-14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe.
- 5.511A** The band 15.43-15.63 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. Use of the band 15.43-15.63 GHz by the fixed-satellite service (space-to-Earth and Earth-to-space) is limited to feeder links of non-geostationary systems in the mobile-satellite service, subject to coordination under No. **9.11A**. The use of the frequency band 15.43-15.63 GHz by the fixed-satellite service (space-to-Earth) is limited to feeder links of non-geostationary systems in the mobile-satellite service for which advance publication information has been received by the Bureau prior to 2 June 2000. In the space-to-Earth direction, the minimum earth station elevation angle above and gain towards the local horizontal plane and the minimum coordination distances to protect an earth station from harmful interference shall be in accordance with Recommendation ITU-R S.1341. In order to protect the radio astronomy service in the band 15.35-15.4 GHz, the aggregate power flux-density radiated in the 15.35-15.4 GHz band by all the space stations within any feeder-link of a non-geostationary system in the mobile-satellite service (space-to-Earth) operating in the 15.43-15.63 GHz band shall not exceed the level of $-156 \text{ dB(W/m}^2\text{)}$ in a 50 MHz bandwidth, into any radio astronomy observatory site for more than 2% of the time. **(WRC-2000)**
- 5.511B (SUP - WRC-97)**
- 5.511C** Stations operating in the aeronautical radionavigation service shall limit the effective e.i.r.p. in accordance with Recommendation ITU-R S.1340. The minimum coordination distance required to protect the aeronautical radionavigation stations (No. **4.10** applies) from harmful interference from feeder-link earth stations and the maximum e.i.r.p. transmitted towards the local horizontal plane by a feeder-link earth station shall be in accordance with Recommendation ITU-R S.1340. **(WRC-97)**
- 5.511D** Fixed-satellite service systems for which complete information for advance publication has been received by the Bureau by 21 November 1997 may operate in the bands 15.4-15.43 GHz and 15.63-15.7 GHz in the space-to-Earth direction and 15.63-15.65 GHz in the Earth-to-space direction. In the bands 15.4-15.43 GHz and 15.65-15.7 GHz, emissions from a non-geostationary space station shall not exceed the power flux-density limits at the Earth's surface of $-146 \text{ dB (W/m}^2 \cdot \text{MHz)}$ for any angle of arrival. In the band 15.63-15.65 GHz, where an administration plans emissions from a non-geostationary space station that exceed $-146 \text{ dB (W/m}^2 \cdot \text{MHz)}$ for any angle of arrival, it shall coordinate under No. **9.11A** with the affected administrations. Stations in the fixed-satellite service operating in the band 15.63-15.65 GHz in the Earth-to-space direction shall not cause harmful interference to stations in the aeronautical radionavigation service (No. **4.10** applies). **(WRC-97)**
- 5.513** Additional allocation: in Israel, the band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. These services shall not claim protection from or cause harmful interference to services operating in accordance with the Table in countries other than those included in No. **5.512**.
- 5.513A** Spaceborne active sensors operating in the band 17.2-17.3 GHz shall not cause harmful interference to, or constrain the development of, the radiolocation and other services allocated on a primary basis. **(WRC-97)**
- 5.515** In the band 17.3-17.8 GHz, sharing between the fixed-satellite service (Earth-to-space) and the broadcasting-satellite service shall also be in accordance with the provisions of § 1 of Annex 4 of Appendix **30A/30A**.
- 5.516** The use of the band 17.3-18.1 GHz by geostationary-satellite systems in the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. The use of the band 17.3-17.8 GHz in Region 2 by systems in the fixed-satellite service (Earth-to-space) is limited to geostationary satellites. For the use of the band 17.3-17.8 GHz in Region 2 by feeder links for the broadcasting-satellite service in the band 12.2-12.7 GHz, see Article **11**. The use of the bands 17.3-18.1 GHz (Earth-to-space) in Regions 1 and 3 and 17.8-18.1 GHz (Earth-to-space) in Region 2 by non-geostationary-satellite systems in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification

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information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply.

Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. **(WRC-2000)**

5.516B The following bands are identified for use by high-density applications in the fixed-satellite service (HDFSS):

17.3-17.7 GHz (space-to-Earth)	in Region 1
18.3-19.3 GHz (space-to-Earth)	in Region 2
19.7-20.2 GHz (space-to-Earth)	in all Regions
39.5-40 GHz (space-to-Earth)	in Region 1
40-40.5 GHz (space-to-Earth)	in all Regions
40.5-42 GHz (space-to-Earth)	in Region 2
47.5-47.9 GHz (space-to-Earth)	in Region 1
48.2-48.54 GHz (space-to-Earth)	in Region 1
49.44-50.2 GHz (space-to-Earth)	in Region 1 and
27.5-27.82 GHz (Earth-to-space)	in Region 1
28.35-28.45 GHz (Earth-to-space)	in Region 2
28.45-28.94 GHz (Earth-to-space)	in all Regions
28.94-29.1 GHz (Earth-to-space)	in Region 2 and 3
29.25-29.46 GHz (Earth-to-space)	in Region 2
29.46-30 GHz (Earth-to-space)	in all Regions
48.2-50.2 GHz (Earth-to-space)	in Region 2

This identification does not preclude the use of these bands by other fixed-satellite service applications or by other services to which these bands are allocated on a co-primary basis and does not establish priority in these Regulations among users of the bands. Administrations should take this into account when considering regulatory provisions in relation to these bands. See Resolution **143 (WRC-03)**. **(WRC-03)**

5.517 In Region 2, the allocation to the broadcasting-satellite service in the band 17.3-17.8 GHz shall come into effect on 1 April 2007. After that date, use of the fixed-satellite (space-to-Earth) service in the band 17.7-17.8 GHz shall not claim protection from and shall not cause harmful interference to operating systems in the broadcasting-satellite service.

5.518 Different category of service: in Region 2, the allocation of the band 17.7-17.8 GHz to the mobile service is on a primary basis until 31 March 2007.

5.519 Additional allocation: the band 18.1-18.3 GHz is also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Its use is limited to geostationary satellites and shall be in accordance with the provisions of Article **21**, Table **21-4**.

5.520 The use of the band 18.1-18.4 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links of geostationary-satellite systems in the broadcasting-satellite service. **(WRC-2000)**

5.522 (SUP - WRC-00)

5.522A The emissions of the fixed service and the fixed-satellite service in the band 18.6-18.8 GHz are limited to the values given in Nos. **21.5A** and **21.16.2**, respectively. **(WRC-2000)**

5.522B The use of the band 18.6-18.8 GHz by the fixed-satellite service is limited to geostationary systems and systems with an orbit of apogee greater than 20 000 km. **(WRC-2000)**

5.523 (SUP - WRC-00)

5.523A The use of the bands 18.8-19.3 GHz (space-to-Earth) and 28.6-29.1 GHz (Earth-to-space) by geostationary and non-geostationary fixed-satellite service networks is subject to the application of the provisions of No. **9.11A** and No. **22.2** does not apply. Administrations having geostationary-satellite networks under coordination prior to

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18 November 1995 shall cooperate to the maximum extent possible to coordinate pursuant to No. **9.11A** with non-geostationary-satellite networks for which notification information has been received by the Bureau prior to that date, with a view to reaching results acceptable to all the parties concerned. Non-geostationary-satellite networks shall not cause unacceptable interference to geostationary fixed-satellite service networks for which complete Appendix 4 notification information is considered as having been received by the Bureau prior to 18 November 1995. **(WRC-97)**

- 5.523B** The use of the band 19.3-19.6 GHz (Earth-to-space) by the fixed-satellite service is limited to feeder links for non-geostationary-satellite systems in the mobile-satellite service. Such use is subject to the application of the provisions of No. **9.11A**, and No. **22.2** does not apply.
- 5.523C** No. **22.2** of the Radio Regulations shall continue to apply in the bands 19.3-19.6 GHz and 29.1-29.4 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix 4 coordination information, or notification information, is considered as having been received by the Bureau prior to 18 November 1995. **(WRC-97)**
- 5.523D** The use of the band 19.3-19.7 GHz (space-to-Earth) by geostationary fixed-satellite service systems and by feeder links for non-geostationary-satellite systems in the mobile-satellite service is subject to the application of the provisions of No. **9.11A**, but not subject to the provisions of No. **22.2**. The use of this band for other non-geostationary fixed-satellite service systems, or for the cases indicated in Nos. **5.523C** and **5.523E**, is not subject to the provisions of No. **9.11A** and shall continue to be subject to Articles **9** (except No. **9.11A**) and **11** procedures, and to the provisions of No. **22.2**. **(WRC-97)**
- 5.523E** No. **22.2** of the Radio Regulations shall continue to apply in the bands 19.6-19.7 GHz and 29.4-29.5 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix 4 coordination information, or notification information, is considered as having been received by the Bureau by 21 November 1997. **(WRC-97)**
- 5.525** In order to facilitate interregional coordination between networks in the mobile-satellite and fixed-satellite services, carriers in the mobile-satellite service that are most susceptible to interference shall, to the extent practicable, be located in the higher parts of the bands 19.7-20.2 GHz and 29.5-30 GHz.
- 5.526** In the bands 19.7-20.2 GHz and 29.5-30 GHz in Region 2, and in the bands 20.1-20.2 GHz and 29.9-30 GHz in Regions 1 and 3, networks which are both in the fixed-satellite service and in the mobile-satellite service may include links between earth stations at specified or unspecified points or while in motion, through one or more satellites for point-to-point and point-to-multipoint communications.
- 5.527** In the bands 19.7-20.2 GHz and 29.5-30 GHz, the provisions of No. **4.10** do not apply with respect to the mobile-satellite service.
- 5.528** The allocation to the mobile-satellite service is intended for use by networks which use narrow spot-beam antennas and other advanced technology at the space stations. Administrations operating systems in the mobile-satellite service in the band 19.7-20.1 GHz in Region 2 and in the band 20.1-20.2 GHz shall take all practicable steps to ensure the continued availability of these bands for administrations operating fixed and mobile systems in accordance with the provisions of No. **5.524**.
- 5.529** The use of the bands 19.7-20.1 GHz and 29.5-29.9 GHz by the mobile-satellite service in Region 2 is limited to satellite networks which are both in the fixed-satellite service and in the mobile-satellite service as described in No. **5.526**.
- 5.532** The use of the band 22.21-22.5 GHz by the Earth exploration-satellite (passive) and space research (passive) services shall not impose constraints upon the fixed and mobile, except aeronautical mobile, services.
- 5.533** The inter-satellite service shall not claim protection from harmful interference from airport surface detection equipment stations of the radionavigation service.

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5.534 (SUP - WRC-03)

- 5.535** In the band 24.75-25.25 GHz, feeder links to stations of the broadcasting-satellite service shall have priority over other uses in the fixed-satellite service (Earth-to-space). Such other uses shall protect and shall not claim protection from existing and future operating feeder-link networks to such broadcasting satellite stations.
- 5.535A** The use of the band 29.1-29.5 GHz (Earth-to-space) by the fixed-satellite service is limited to geostationary-satellite systems and feeder links to non-geostationary-satellite systems in the mobile-satellite service. Such use is subject to the application of the provisions of No. **9.11A**, but not subject to the provisions of No. **22.2**, except as indicated in Nos. **5.523C** and **5.523E** where such use is not subject to the provisions of No. **9.11A** and shall continue to be subject to Articles **9** (except No. **9.11A**) and **11** procedures, and to the provisions of No. **22.2**. (**WRC-97**)
- 5.536** Use of the 25.25-27.5 GHz band by the inter-satellite service is limited to space research and Earth exploration-satellite applications, and also transmissions of data originating from industrial and medical activities in space.
- 5.536A** Administrations operating earth stations in the Earth exploration-satellite service or the space research service shall not claim protection from stations in the fixed and mobile services operated by other administrations. In addition, earth stations in the Earth exploration-satellite service or in the space research service should be operated taking into account Recommendations ITU-R SA.1278 and ITU-R SA.1625, respectively. (**WRC-03**)
- 5.537** Space services using non-geostationary satellites operating in the inter-satellite service in the band 27-27.5 GHz are exempt from the provisions of No. **22.2**.
- 5.538** Additional allocation: the bands 27.500-27.501 GHz and 29.999-30.000 GHz are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis for the beacon transmissions intended for up-link power control. Such space-to-Earth transmissions shall not exceed an equivalent isotropically radiated power (e.i.r.p.) of +10 dBW in the direction of adjacent satellites on the geostationary-satellite orbit. In the band 27.500-27.501 GHz, such space-to-Earth transmissions shall not produce a power flux-density in excess of the values specified in Article **21**, Table **21-4** on the Earth's surface.
- 5.539** The band 27.5-30 GHz may be used by the fixed-satellite service (Earth-to-space) for the provision of feeder links for the broadcasting-satellite service.
- 5.540** Additional allocation: the band 27.501-29.999 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a secondary basis for beacon transmissions intended for up-link power control.
- 5.541** In the band 28.5-30 GHz, the earth exploration-satellite service is limited to the transfer of data between stations and not to the primary collection of information by means of active or passive sensors.
- 5.541A** Feeder links of non-geostationary networks in the mobile-satellite service and geostationary networks in the fixed-satellite service operating in the band 29.1-29.5 GHz (Earth-to-space) shall employ uplink adaptive power control or other methods of fade compensation, such that the earth station transmissions shall be conducted at the power level required to meet the desired link performance while reducing the level of mutual interference between both networks. These methods shall apply to networks for which Appendix **4** coordination information is considered as having been received by the Bureau after 17 May 1996 and until they are changed by a future competent world radiocommunication conference. Administrations submitting Appendix **4** information for coordination before this date are encouraged to utilize these techniques to the extent practicable. (**WRC-2000**)
- 5.542** *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Pakistan, Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Somalia, Sudan, Sri Lanka and Chad, the band 29.5-31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. **21.3** and **21.5** shall apply. (**WRC-2000**)

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- 5.543** The band 29.95-30 GHz may be used for space-to-space links in the Earth exploration-satellite service for telemetry, tracking, and control purposes, on a secondary basis.
- 5.544** In the band 31-31.3 GHz the power flux-density limits specified in Article **21**, Table **21-4** shall apply to the space research service.
- 5.547** The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service (see Resolutions **75 (WRC-2000)** and **79 (WRC-2000)**). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the bands 39.5-40 GHz and 40.5-42 GHz (see No. **5.516B**), administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate. **(WRC-03)**
- 5.547A** Administrations should take practical measures to minimize the potential interference between stations in the fixed service and airborne stations in the radionavigation service in the 31.8-33.4 GHz band, taking into account the operational needs of the airborne radar systems. **(WRC-2000)**
- 5.547B** Alternative allocation: in the United States, the band 31.8-32 GHz is allocated to the radionavigation and space research (deep space) (space-to-Earth) services on a primary basis. **(WRC-97)**
- 5.547C** *Alternative allocation:* in the United States, the band 32-32.3 GHz is allocated to the radionavigation and space research (deep space) (space-to-Earth) services on a primary basis. **(WRC-03)**
- 5.547D** Alternative allocation: in the United States, the band 32.3-33 GHz is allocated to the inter-satellite and radionavigation services on a primary basis. **(WRC-97)**
- 5.547E** Alternative allocation: in the United States, the band 33-33.4 GHz is allocated to the radionavigation service on a primary basis. **(WRC-97)**
- 5.548** In designing systems for the inter-satellite service in the band 32.3-33 GHz, for the radionavigation service in the band 32-33 GHz, and for the space research service (deep space) in the band 31.8-32.3 GHz, administrations shall take all necessary measures to prevent harmful interference between these services, bearing in mind the safety aspects of the radionavigation service (see Recommendation **707**). **(WRC-03)**
- 5.549A** In the band 35.5-36.0 GHz, the mean power flux-density at the Earth's surface, generated by any spaceborne sensor in the Earth exploration-satellite service (active) or space research service (active), for any angle greater than 0.8° from the beam centre shall not exceed -73.3 dB(W/m²) in this band. **(WRC-03)**
- 5.551 (SUP - WRC-97)**
- 5.551A (SUP - WRC-03)**
- 5.551AA (SUP - WRC-03)**
- 5.551B (SUP - WRC-00)**
- 5.551C (SUP - WRC-00)**
- 5.551E (SUP - WRC-00)**
- 5.551G (SUP - WRC-03)**
- 5.551H** The equivalent power flux-density (epfd) produced in the band 42.5-43.5 GHz by all space stations in any non-geostationary-satellite system in the fixed-satellite service (space-to-Earth), or in the broadcasting-satellite

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service (space-to-Earth) operating in the 42-42.5 GHz band, shall not exceed the following values at the site of any radio astronomy station for more than 2% of the time:

- 230 dB(W/m²) in 1 GHz and –246 dB(W/m²) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a single-dish telescope; and
- 209 dB(W/m²) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station.

These efd values shall be evaluated using the methodology given in Recommendation ITU-R S.1586 and the reference antenna pattern and the maximum gain of an antenna in the radio astronomy service given in Recommendation ITU-R RA.1631 and shall apply over the whole sky and for elevation angles higher than the minimum operating angle θ_{\min} of the radiotelescope (for which a default value of 5° should be adopted in the absence of notified information).

These values shall apply at any radio astronomy station that either:

- was in operation prior to 5 July 2003 and has been notified to the Radiocommunication Bureau before 4 January 2004; or
- was notified before the date of receipt of the complete Appendix 4 information for coordination or notification, as appropriate, for the space station to which the limits apply.

Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution **743 (WRC-03)** shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. **(WRC-03)**

5.551I The power flux-density in the band 42.5-43.5 GHz produced by any geostationary space station in the fixed-satellite service (space-to-Earth), or the broadcasting-satellite service (space-to-Earth) operating in the 42-42.5 GHz band, shall not exceed the following values at the site of any radio astronomy station:

- 137 dB(W/m²) in 1 GHz and -153 dB(W/m²) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a single-dish telescope; and
- 116 dB(W/m²) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station.

These values shall apply at the site of any radio astronomy station that either:

- was in operation prior to 5 July 2003 and has been notified to the Bureau before 4 January 2004; or
- was notified before the date of receipt of the complete Appendix 4 information for coordination or notification, as appropriate, for the space station to which the limits apply.

Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution **743 (WRC-03)** shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. **(WRC-03)**

5.552 The allocation of the spectrum for the fixed-satellite service in the bands 42.5-43.5 GHz and 47.2-50.2 GHz for Earth-to-space transmission is greater than that in the band 37.5-39.5 GHz for space-to-Earth transmission in order to accommodate feeder links to broadcasting satellites. Administrations are urged to take all practicable steps to reserve the band 47.2-49.2 GHz for feeder links for the broadcasting-satellite service operating in the band 40.5-42.5 GHz.

5.552A The allocation to the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz is designated for use by high altitude platform stations. The use of the bands 47.2-47.5 GHz and 47.9-48.2 GHz is subject to the provisions of Resolution **122 (WRC-97)**. **(WRC-97)**

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- 5.553** In the bands 43.5-47 GHz and 66-71 GHz, stations in the land mobile service may be operated subject to not causing harmful interference to the space radiocommunication services to which these bands are allocated (see No. **5.43**). **(WRC-2000)**
- 5.554** In the bands 43.5-47 GHz, 66-71 GHz, 95-100 GHz, 123-130 GHz, 191.8-200 GHz and 252-265 GHz, satellite links connecting land stations at specified fixed points are also authorized when used in conjunction with the mobile-satellite service or the radionavigation-satellite service. **(WRC-2000)**
- 5.555** *Additional allocation:* the band 48.94-49.04 GHz is also allocated to the radio astronomy service on a primary basis. **(WRC-2000)**
- 5.555A (SUP - WRC-03)**
- 5.556** In the bands 51.4-54.25 GHz, 58.2-59 GHz and 64-65 GHz, radio astronomy observations may be carried out under national arrangements. **(WRC-2000)**
- 5.556A** Use of the bands 54.25-56.9 GHz, 57-58.2 GHz and 59-59.3 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed -147 dB (W/m² · 100 MHz) for all angles of arrival. **(WRC-97)**
- 5.557A** In the band 55.78-56.26 GHz, in order to protect stations in the Earth exploration-satellite service (passive), the maximum power density delivered by a transmitter to the antenna of a fixed service station is limited to -26 dB(W/MHz). **(WRC-2000)**
- 5.558** In the bands 55.78-58.2 GHz, 59-64 GHz, 66-71 GHz, 122.25-123 GHz, 130-134 GHz, 167-174.8 GHz and 191.8-200 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **5.43**). **(WRC-2000)**
- 5.558A** Use of the band 56.9-57 GHz by inter-satellite systems is limited to links between satellites in geostationary-satellite orbit and to transmissions from non-geostationary satellites in high-Earth orbit to those in low-Earth orbit. For links between satellites in the geostationary-satellite orbit, the single entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface, for all conditions and for all methods of modulation, shall not exceed -147 dB (W/m² · 100 MHz) for all angles of arrival. **(WRC-97)**
- 5.559** In the band 59-64 GHz, airborne radars in the radiolocation service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **5.43**). **(WRC-2000)**
- 5.559A** The band 75.5-76 GHz is also allocated to the amateur and amateur-satellite services on a primary basis until the year 2006. **(WRC-2000)**
- 5.560** In the band 78-79 GHz radars located on space stations may be operated on a primary basis in the Earth exploration-satellite service and in the space research service.
- 5.561** In the band 74-76 GHz, stations in the fixed, mobile and broadcasting services shall not cause harmful interference to stations of the fixed-satellite service or stations of the broadcasting-satellite service operating in accordance with the decisions of the appropriate frequency assignment planning conference for the broadcasting-satellite service. **(WRC-2000)**
- 5.561A** The 81-81.5 GHz band is also allocated to the amateur and amateur-satellite services on a secondary basis. **(WRC-2000)**
- 5.562** The use of the band 94-94.1 GHz by the Earth exploration-satellite (active) and space research (active) services is limited to spaceborne cloud radars. **(WRC-97)**

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- 5.562A** In the bands 94-94.1 GHz and 130-134 GHz, transmissions from space stations of the Earth exploration-satellite service (active) that are directed into the main beam of a radio astronomy antenna have the potential to damage some radio astronomy receivers. Space agencies operating the transmitters and the radio astronomy stations concerned should mutually plan their operations so as to avoid such occurrences to the maximum extent possible. **(WRC-2000)**
- 5.562B** In the bands 105-109.5 GHz, 111.8-114.25 GHz, 155.5-158.5 GHz and 217-226 GHz, the use of this allocation is limited to space-based radio astronomy only. **(WRC-2000)**
- 5.562C** Use of the band 116-122.25 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed $-148 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for all angles of arrival. **(WRC-2000)**
- 5.562E** The allocation to the Earth exploration-satellite service (active) is limited to the band 133.5-134 GHz. **(WRC-2000)**
- 5.562F** In the band 155.5-158.5 GHz, the allocation to the Earth exploration-satellite (passive) and space research (passive) services shall terminate on 1 January 2018. **(WRC-2000)**
- 5.562G** The date of entry into force of the allocation to the fixed and mobile services in the band 155.5-158.5 GHz shall be 1 January 2018. **(WRC-2000)**
- 5.562H** Use of the bands 174.8-182 GHz and 185-190 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, at all altitudes from 0 to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, shall not exceed $-144 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for all angles of arrival. **(WRC-2000)**
- 5.563A** In the bands 200-209 GHz, 235-238 GHz, 250-252 GHz and 265-275 GHz, ground-based passive atmospheric sensing is carried out to monitor atmospheric constituents. **(WRC-2000)**
- 5.563B** The band 237.9-238 GHz is also allocated to the Earth exploration-satellite service (active) and the space research service (active) for spaceborne cloud radars only. **(WRC-2000)**
- 5.565** The frequency band 275-1 000 GHz may be used by administrations for experimentation with, and development of, various active and passive services. In this band a need has been identified for the following spectral line measurements for passive services:
- radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;
 - Earth exploration-satellite service (passive) and space research service (passive): 275-277 GHz, 294-306 GHz, 316-334 GHz, 342-349 GHz, 363-365 GHz, 371-389 GHz, 416-434 GHz, 442-444 GHz, 496-506 GHz, 546-568 GHz, 624-629 GHz, 634-654 GHz, 659-661 GHz, 684-692 GHz, 730-732 GHz, 851-853 GHz and 951-956 GHz.
- Future research in this largely unexplored spectral region may yield additional spectral lines and continuum bands of interest to the passive services. Administrations are urged to take all practicable steps to protect these passive services from harmful interference until the date when the allocation Table is established in the above-mentioned frequency band. **(WRC-2000)**

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Canadian Footnotes

The complete set of Canadian footnotes to the *Canadian Table of Frequency Allocations* are listed hereafter. This includes new Canadian footnotes and any modifications or suppression of footnotes. Changes to the Canadian footnotes are identified by the indicator **(CAN-04)** and **(CAN-05)**.

- C1** Users of frequencies below 9 kHz shall ensure that no harmful interference is caused to the services to which the bands above 9 kHz are allocated.
- C2** Scientific researchers using frequencies below 9 kHz are urged to advise the Department in order that such research may be afforded all practicable protection from harmful interference.
- C3** **Additional Allocation:** In the band 2065-2107 kHz, the fixed service is also allocated on a primary basis provided that no harmful interference is caused to the maritime mobile service, stations of the fixed service communicate only within Canada's national borders, and they employ a mean power not exceeding 50 watts.
- C4** **Additional Allocation:** In the bands 6 200-6 213.5 kHz and 6 220.5-6 525 kHz, the fixed service is allocated on a primary basis and can be used on an exceptional basis provided that no harmful interference is caused to the maritime mobile service, stations of the fixed service communicate only within Canada's national borders, and they employ a mean power not exceeding 50 watts.
- C5** For the exclusive use of the Government of Canada.
- C5A** The use of the radiolocation service is limited to Government of Canada shipborne radar operations. These operations are not permitted on inland waters of Canada.
- C6** The use of the band 10 100-10 150 kHz by the Amateur service in Canada is not in accordance with the international frequency allocations. Canadian Amateur operations shall not cause interference to fixed service operations of other administrations and if such interference should occur, the Amateur service may be required to cease operations. The Amateur service in Canada may not claim protection from interference by the fixed service operations of other administrations.
- C7** **(CAN-04)** International Footnote **5.317A** provides Administrations with the flexibility to implement International Mobile Technology (IMT) 2000 in parts of the band 806-960 MHz which are allocated to the mobile service on a primary basis. For the time being, the application of **5.317A** is limited to the bands designated for cellular mobile telephony and trunked mobile systems. The bands 824-849 MHz and 869-894 MHz are designated for cellular telephony services and the bands 806-821 MHz, 851-866 MHz, 896-901 MHz and 935-940 MHz are designated for trunked mobile services and, as such, can evolve to accommodate IMT-2000 service capabilities.
- C8** **(CAN-04)** The band 7 400-7 450 kHz is allocated to the fixed service on a primary basis and to the land mobile service on a secondary basis until 29 March 2009.
- C9** In the bands 5 900-5 950 kHz, 7 300-7 350 kHz, 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 13 570-13 600 kHz, 13 800-13 870 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz, existing services may continue to operate after 1 April 2007 communicating only within national borders, provided that harmful interference is not caused to existing or planned broadcasting services.
- C10** **Additional Allocation:** In the band 420-430 MHz, the radiolocation service is also allocated on a secondary basis. The Department may authorize this use of the radiolocation service in coastal and off-shore regions of Canada where such radiolocation operations can not be fully accommodated in the band 430-450 MHz.
- C12** **(CAN-03)** The band 2 360-2 400 MHz is designated for Mobile Aeronautical Telemetry Service (MATS) applications. The Government of Canada has priority on the use of this band. Access to spectrum by other entities for MATS may be permitted subject to coordination with the Government of Canada systems.

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- C13** (CAN-03) The bands 2 305-2 320 MHz and 2 345-2 360 MHz are designated for Wireless Communication Service (WCS) applications under the fixed and mobile service allocations. Use of these bands is subject to domestic spectrum utilization policy.
- C14** In the band 2 850-2 900 MHz, operations of the maritime radionavigation service are limited to shore based radars.
- C15** (CAN-03) In the band 3 450-3 500 MHz, in certain locations in Canada the radiolocation service has priority over the fixed service. The Department will identify through spectrum policy the general area of radiolocation system operation.
- C16** In the band 10.7-10.95 GHz, users of the fixed-satellite service are urged, in their planning of operations, to give all practicable protection to the passive operations in the adjacent band 10.6 -10.7 GHz.
- C16A** (CAN-04) In the band 4500-4800 MHz the use of the fixed and mobile services by the Government of Canada in the vicinity of major military bases has priority over the use of the fixed-satellite service. The use of the fixed-satellite service in this band shall be limited to applications that pose minimal constraints on the deployment of fixed and mobile service systems by the GoC in the vicinity of major military bases.
- C16B** (CAN-00) Geostationary orbit networks principally providing domestic fixed-satellite services utilize the conventional bands 11.45-12.2 GHz and 19.7-20.2 GHz in the space-to-Earth direction and paired, respectively, with the bands 13.75-14.50 GHz and 29.5-30.0 GHz in the Earth-to-space direction. Broadcasting satellite networks providing domestic services utilize the band 12.2-12.7 GHz in the space-to-Earth direction. Domestic implementation of non-geostationary fixed-satellite services in these bands will conform to future ITU Radio Regulations and operating criteria for sharing between services and systems. In addition, non-geostationary fixed-satellite service (FSS) use of the band 11.45-11.7 GHz which is shared with the fixed service on a coordinated basis will be governed by spectrum utilization policies which will be formulated in future.
- C16C** (CAN-00) The use of the bands 10.7-10.95 GHz in the space-to-Earth direction and 13.0-13.15 GHz and 13.2-13.25 GHz in the Earth-to-space direction by the fixed-satellite service, includes feeder links for mobile-satellite space stations.
- C16D** (CAN-05) In the bands 17.8-18.3 GHz and 19.3-19.7 GHz the use of spectrum for the fixed service has priority over the use of the fixed-satellite service. Use of the spectrum for fixed-satellite service shall be limited to applications that pose minimal constraints on the deployment of fixed services. Earth stations that comply with these requirements will be coordinated and may be granted radio authorization on a case-by-case basis.
- C16E** (CAN-04) In the band 18.3-19.3 GHz use of the fixed-satellite service has priority over use of the fixed service. Use of the fixed service in this band shall be limited to applications that pose minimal constraints on the deployment of fixed-satellite services. Domestic implementation of fixed-satellite services in the band 18.8-19.3 GHz will be governed by spectrum utilization policies to be developed. These policies will take regional developments into consideration in the designation and authorization of spectrum for particular systems and technologies.
- C16F** (CAN-04) In the bands 28.35-29.1 GHz and 29.25-29.5 GHz use of the fixed-satellite service has priority over use of the fixed service. Use of the fixed service in this band shall be limited to applications that pose minimal constraints on the deployment of fixed-satellite services. Domestic implementation of fixed-satellite services in the band 28.6-29.1 GHz will be governed by spectrum utilization policies to be developed. These policies will take regional developments into consideration in the designation and authorization of spectrum for particular systems and technologies.
- C16G** (CAN-04) In the band 29.1-29.25 GHz use of the fixed service has priority over use of the fixed-satellite service. Use of the fixed-satellite service in this band shall be limited to applications that pose minimal constraints on the deployment of fixed services. An example of such an application would be the use of a small number of large aperture earth stations, taking into account existing and potential service areas for ubiquitous deployment of fixed service systems.

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- C17** (CAN-03) In the band 2 300-2 360 MHz, mobile aeronautical telemetry services may be authorized on a secondary basis on certain military bases and vicinities where it does not constrain the implementation of wireless communication services and other services.
- C18** (CAN-03) The band 3 450-3 650 MHz is designated for fixed wireless access applications under the fixed service allocation.
- C19** **Additional Allocation:** In the band 399.9-400.5 MHz, the fixed and mobile services are allocated on a secondary basis and their use is limited to low-power operations.
- C20** (CAN-03) In the band 3 500-3 650 MHz, the fixed-satellite earth-stations will be located in areas so as not to constrain the implementation of fixed wireless access systems.
- C22** (CAN-04) In the band 746-806 MHz, the gradual use of spectrum for the mobile service will be subject to the development of a series of spectrum utilization policies as the transition of digital television progresses.
- C24** (CAN-04) In the bands 470-512 MHz and 614-806 MHz, international footnote **5.293** has raised the fixed and mobile services to a co-primary status with the broadcasting service for Canada. To support broadcasting requirements during the transition to digital television, the Department is only allocating the mobile service in the band 746-806 MHz at this time. The Department, will carry out public consultation in the future in order to adopt the other service allocation provisions of international footnote **5.293** in the frequency bands 470-512 MHz and 614-746 MHz.
- C25** The band 4 400-4 940 MHz is allocated to the fixed and mobile services on a primary basis, for the exclusive use of the Government of Canada.
- C26** In the band 148-149.9 MHz, applicants for a licence to provide mobile-satellite service in Canada must demonstrate that they have adopted measures to avoid causing harmful interference to the fixed and mobile services.
- C26A** (CAN-00) In the bands 454-456 MHz and 459-460 MHz, applicants for a licence to provide mobile-satellite service in Canada must demonstrate that they have adopted measures to avoid causing harmful interference to the fixed and mobile services.
- C26B** (CAN-00) In the bands 454-456 MHz and 459-460 MHz, stations of the mobile service have assignment priority over stations of the fixed service regarding access to spectrum.
- C27** In the band 1 370-1 400 MHz, high-power stations of the radiolocation service have priority over the fixed and mobile services.
- C27A** (CAN-04) In the bands 1 390-1 392 MHz and 1 430-1 432 MHz the fixed-satellite service, in accordance with **5.339A**, (WRC-03) is withheld in Canada.
- C28** In the band 1 452-1 492 MHz, until at least 1 January 2000, the broadcasting-satellite service shall not cause harmful interference to the fixed service. After this date, the fixed service may continue to operate provided that it neither causes harmful interference to, nor is affected by the broadcasting-satellite service beam assignments when the broadcasting-satellite service is implemented in Canada. This footnote will be reviewed prior to 1 January 2000.
- C29** In the band 1 452-1 492 MHz, existing fixed stations may continue to operate provided these installations do not cause interference nor claim protection from, stations of the broadcasting service operating in accordance with the domestic allotment plan implemented under **C30**.
- C30** In the band 1 452-1 492 MHz, stations in the broadcasting service shall be implemented in accordance with a domestic allotment plan, which takes into account stations in the fixed service, to the extent possible.
- C31** (CAN-04) In the bands 1 518-1 525 MHz and 1 668-1 675 MHz, the mobile-satellite service is withheld.

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- C31A** (CAN-04) In the band 1 670-1 675 MHz the use of fixed and mobile services is subject to future policy review.
- C32** (CAN-04) SUP
- C33** In the bands 1 670-1 675 MHz and 1 800-1 805 MHz, the use of aeronautical public correspondence in accordance with No. 5.380 may be the subject of a future policy review.
- C34** (CAN-04) SUP
- C35** (CAN-04) In the band 1 850-1 990 MHz, stations of the mobile service have priority over those of the fixed service with displacement of fixed assignments governed by the appropriate spectrum utilization policy.
- C35A** In the band 2 110-2 160 MHz, the implementation of the mobile service will be the subject of future policy review.
- C36** (CAN-00) In the bands 1 990-2 025 MHz and 2 160-2 200 MHz, a moratorium has been placed on the licensing of new systems in the fixed service. Existing fixed service systems operating in these bands will have priority over the mobile-satellite service until January 1, 2003. After this date, specific fixed service stations will be displaced, according to the transition policy, to enable the implementation of mobile-satellite service systems in certain sub-bands. The earliest mandatory date for fixed service frequency assignments that may be subject to displacement will be January 1, 2003.
- C38** (CAN-04) In the band 2 483.5-2 500 MHz, the fixed service has been reduced to secondary status with the implementation of the Low Earth Orbital (LEO) mobile-satellite service in Canada.
- C38A** (CAN-04) The use of the band 2 500-2 690 MHz by the mobile service is subject to future spectrum policy and licensing considerations.
- C39** (CAN-04) SUP
- C39A** (CAN-05) The band 5 725-5 825 MHz is designated for use by licence-exempt wireless local area networks and devices with established maximum power levels and based upon not interfering with, or claiming protection from, licensed services.
- C39B** (CAN-05) The use of the bands 5 150-5 250 MHz, 5 250-5 350 MHz and 5 470-5 725 MHz by the mobile service is in accordance with spectrum policy and technical and operational limits established for the implementation of wireless local area networks and devices.
- C39C** (CAN-05) In the band 5 850-5 925 MHz the use of the fixed and mobile services has priority over the use of the fixed-satellite service. The use of the fixed-satellite service in this band shall be limited to applications that pose minimal constraints on the deployment of fixed and mobile service systems. An example of such an application would be the use of a small number of large aperture earth stations, taking into account existing and potential service areas for ubiquitous deployment of fixed and mobile service systems.
- C39D** (CAN-04) In the bands 5 925-6 425 MHz and 14-14.5 GHz, a technical and operational procedure will be developed in accordance with Resolution 902 (WRC-03) in order to facilitate the operation of earth stations located on board vessels in Canada.
- C40** Feeder links to broadcasting-satellite (sound) space stations operating in the band 1 452 -1 492 MHz shall be implemented in the band 7 025-7 075 MHz to the extent possible before a different fixed-satellite (Earth-to-space) band is so used. Use of the fixed-satellite (Earth-to-space) allocation in the 7 025-7 075 MHz band is limited to this application, except for general fixed-satellite use by inter-Regional fixed-satellite networks.
- C41** (CAN-04) SUP

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- C41A (CAN-04)** In the band 14-14.5 GHz, the use of mobile-satellite allocation, on a secondary basis, shall be limited to those mobile earth stations which operate with space stations in the fixed-satellite service. Such use will be governed by spectrum utilization policies which will be formulated in the future.
- C42 Additional Allocation:** The band 15.7-16.2 GHz is also allocated on a primary basis to the radionavigation service, the use of which is limited to Airport Surface Detection Equipment (ASDE).
- C43** In the bands 17.3-17.8 GHz and 17.9-18.4 GHz, the fixed-satellite service (Earth-to-space) is limited to feeder links to broadcasting-satellite space stations operating in the 12.2-12.7 GHz band.
- C44 (CAN-00)** Feeder links to broadcasting-satellite space stations operating in the band 17.3 -17.8 GHz shall be implemented in the band 24.75-25.25 GHz. In areas where fixed systems have been licensed using a competitive process, future earth stations (Earth-to-space) in the band 25.05-25.25 GHz will be permitted provided that such installations will not cause interference to any fixed service to be deployed in the authorized service area.
- C45** In the band 17.7-17.8 GHz, Canadian stations in the fixed service shall not claim protection from and shall not cause harmful interference to Canadian stations operating in the broadcasting-satellite service after 1 April 2007. In addition, to protect broadcasting-satellite receiving stations in Canada and in the United States, the aggregate power flux density from fixed systems of one country shall not be greater than $-109 \text{ dB (W/m}^2 \text{)}$ over any 1 MHz band in any area within the other country where the broadcasting-satellite service is used.
- C46** In the band 17.7-17.8 GHz, Canadian broadcasting-satellite space stations shall not radiate into territory of the United States administration a power flux density greater than that specified by ITU Regulation No. 2578. Similarly, to protect Canadian fixed systems, transmissions from broadcasting-satellite space stations of United States operators can be expected to be limited in the same way in Canadian territory.
- C46A (CAN-04)** The use of the band 19.3-19.7 GHz for fixed-satellite services (space-to-Earth) is limited to feeder links for the mobile-satellite service.
- C47 (CAN-04)** SUP
- C47A (CAN-00)** The band 27.35-28.35 GHz is being licensed for Local Multipoint Communication Systems (LMCS) in the fixed service, which will be given priority over fixed-satellite service systems sharing this spectrum on a co-primary basis. Fixed-satellite service implementation in this band will be limited to applications which will pose minimal constraints upon the deployment of fixed service systems, such as a small number of large antennas for feeder links.
- C47B (CAN-00)** The band 25.35-27.5 GHz has been designated for Local Multipoint Communications Systems (LMCS) in the fixed service. Recommendations are under development within the ITU-R on sharing with the inter-satellite service.
- C48 (CAN-04)** The use of the band 29.1-29.25 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the mobile-satellite service.
- C49** In the bands 7 250-7 750 MHz and 7 900-8 400 MHz and, in all or a portion of, the bands 20.2-21.2 GHz, 30-31 GHz and 39.5-40.5 GHz as required, the use of the fixed-satellite service is limited to the Government of Canada.
- C50** In the bands 7 250-7 375 MHz, 7 975-8 025 MHz, and 43.5-45.5 GHz and, in all or a portion of, the bands 20.2 -21.2 GHz, 30-31 GHz and 39.5-40.5 GHz as required, the use of the mobile-satellite service is limited to the Government of Canada.
- C51 (CAN-00)** The band 38.6-40 GHz is being licensed for high density applications in the fixed service operating on an area basis (point-to-multipoint), which will be given priority over fixed-satellite service systems sharing this spectrum on a co-primary basis. Fixed-satellite service implementation in this spectrum will be limited to

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applications which will pose minimal constraints upon the deployment of fixed service systems, such as a small number of large antennas for feeder links.

C52 (CAN-00) Use of the band 47.2-48.2 GHz by High Altitude Platform Systems (HAPS) will be governed by spectrum utilization policies which will be formulated in the future.

Figure 1 - Chart of ITU Regions

For the allocation of frequencies the world has been divided into three regions as shown on the following map. The shaded part represents the Tropical Zones as defined in Nos. 5.16 to 5.20 and 5.21.

