



Pakistan Table of Frequency Allocations
(9 KHz – 1000 GHz)

Pakistan Telecommunication Authority
Frequency Allocation Board
Government of Pakistan

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PREFACE

Radio frequency spectrum is the range of electromagnetic waves over which radio waves can be radiated and is depicted by a tabulation of uses of radio waves arranged in ascending frequency order. Radio frequency spectrum, which is naturally available, is a scarce national resource susceptible to harmful interference and international in character since radio waves can not be confined to national boundaries. Like any other natural resource, radio frequency cannot be owned but shared amongst various services, users, technologies etc.

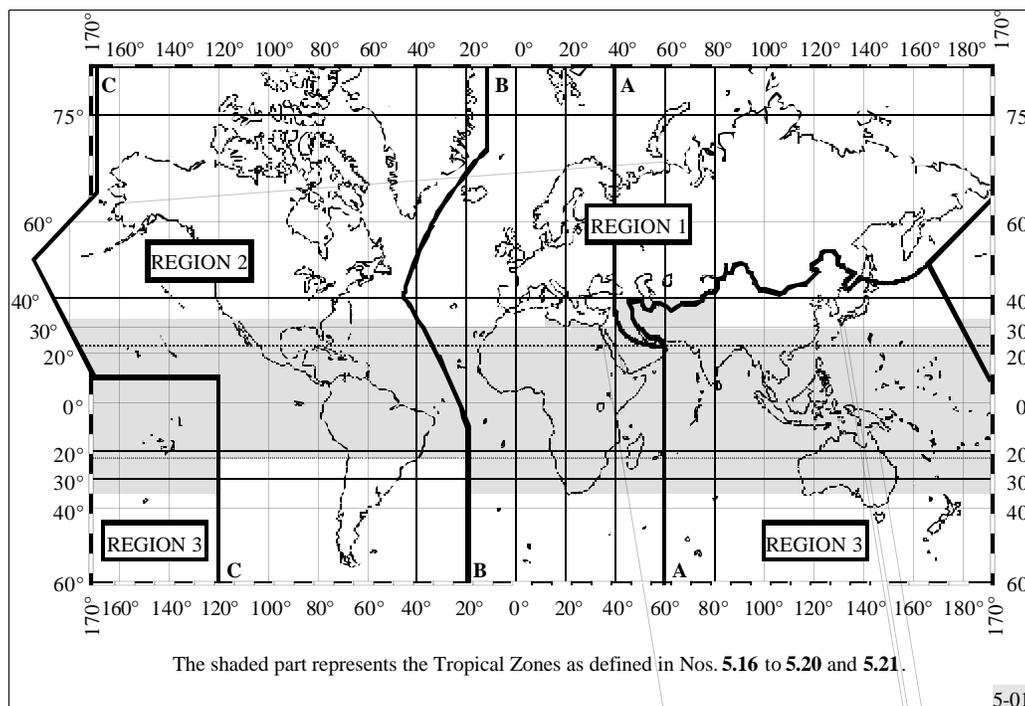
Radio frequency spectrum has great potential of generating socio-economic activities in a country. It is a key input into many vital public services affecting the quality and safety of life of citizens. Radio frequency spectrum contributes to a diverse array of cultural, social and scientific activities. Radio spectrum enables communication across many different media, for many different purposes, individual and collective, commercial and non-commercial. The growth in the use of the mobile telephones, internet, TV broadcasting is a manifestation of the attraction of communication in all its electronic forms to very broad sections of society. People like to talk and listen, to watch and learn, to be informed and entertained: radio spectrum enables this. Society places a value on the defense of the country and its interests via the military capabilities, which in turn rely on a range of spectrum uses.

Spectrum Management is a national responsibility as well as international cooperation and is a regulatory procedure to ensure the efficient and interference free operation of radiocommunication services. Therefore, spectrum management shall be aimed at effective, efficient and prudent use of the radio frequency spectrum in the best national interests. Spectrum management, which invites efficient use and re-use of radio frequencies, can be an important enabler of the diffusion of new technology which in turn contributes to economic growth.

Assignment of radio frequencies is governed by an international treaty formulated under the aegis of the International Telecommunication Union, to which Pakistan is a signatory. Pakistan Table of Frequency Allocations has been prepared in accordance with the ITU Radio Regulations-Article 5. The objective of this table is to meet the competing and conflicting demands of all of the radio services/users in Pakistan, intending to make use of the spectrum. This table will help in regulating the radio frequencies in the country in an effective, efficient and judicious manner.

DEFINITIONS

1. For the allocation of frequencies, International Telecommunication Union (ITU), a technical arm of the United Nations, has divided the world into three Regions as shown on the following map:



Pakistan is the signatory to International Telecommunication Union (ITU) convention and situated in Region 3. This Region includes the area limited on the east by line C and on the west by line A, except any of the territory of Armenia, Azerbaijan, Georgia, Kazakstan, Mongolia, Uzbekistan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan, Turkey and Ukraine and the area to the north of Russian Federation. It also includes that part of the territory of the Islamic Republic of Iran lying outside of those limits. Whereas the lines A, B and C are defined as follows:

Line A: Line A extends from the North Pole along meridian 40° East of Greenwich to parallel 40° North; thence by great circle arc to the intersection of meridian 60° East and the Tropic of Cancer; thence along the meridian 60° East to the South Pole.

Line B: Line B extends from the North Pole along meridian 10° West of Greenwich to its intersection with parallel 72° North; thence by great circle arc to the intersection of meridian 50° West and parallel 40° North; thence by great circle arc to the intersection of meridian 20° West and parallel 10° South; thence along meridian 20° West to the South Pole.

Line C: Line C extends from the North Pole by great circle arc to the intersection of parallel 65° 30' North with the international boundary in Bering Strait; thence by great circle arc to the intersection of meridian 165° East of Greenwich and parallel 50° North; thence by great circle arc to the intersection of meridian 170° West and parallel 10° North; thence along parallel 10° North to its intersection with meridian 120° West; thence along meridian 120° West to the South Pole.

2. The “Tropical Zone” for Region 3 as shown in the map at Clause 1 above is defined as contained between the parallels 30° North and 35° South with the addition of:

- i) The area contained between the meridians 40° East and 80° East of Greenwich and the parallels 30° North and 40° North;
- ii) Part of Libya north of parallel 30° North.

General Terms

3. Following is a list of terms and definitions, which are relevant to consideration of the Pakistan Table of Frequency Allocations (The Table). These terms and definitions are extracted from the Radio Regulations of the International Telecommunication Union. The said Regulations should be consulted for a more comprehensive listing.

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

Telecommunication: Any transmission, emission or reception of signs, signals, writings, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems.

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 these parameters, by means of the propagation properties of radio waves.

Radionavigation: Radiodetermination used for the purposes of navigation, including obstruction warning.

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

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

Industrial, Scientific and Medical (ISM) applications: 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.

SPECIFIC TERMS RELATED TO FREQUENCY MANAGEMENT

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 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 fixed 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.

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.

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.

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.

Port operations service: A maritime mobile service in or near a port, between coast stations and ship stations, or between ship stations, in which messages are restricted to those relating to the operational handling, the movement and the safety of ships and, in emergency, to the safety of persons. Messages which are of a public correspondence nature shall be excluded from 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) 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) 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) service: An aeronautical mobile-satellite service reserved for communications relating to safety and regularity of flights, primarily along national or international civil air routes.

(R=Route, OR=Off Route)

Aeronautical mobile-satellite (OR) 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 used 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 the 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.

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.

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 purposes as those of the amateur service.

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

Special service: A radiocommunication service, not otherwise defined in this Section, carried on exclusively for specified needs of general utility, and not open to public correspondence.

RADIO STATIONS AND SYSTEMS

Station: One or more transmitters or receivers or a combination of transmitters and receivers, including the accessory equipment, necessary at one location for carrying on a radiocommunication service, or the radio astronomy service.

Terrestrial station: A station effecting terrestrial radiocommunication.

Earth station: A station located either on the Earth's surface or within the major portion of the Earth's atmosphere and intended for communication with space station or other space object.

Space station: A station located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere.

Fixed station: A station in the fixed service.

High altitude platform station: A station located on an object at an altitude of 20 to 50 km and at a specified, nominal, fixed point relative to the Earth.

Mobile station: A station in the mobile service intended to be used while in motion or during halts at unspecified points.

Mobile earth station: An earth station in the mobile-satellite service intended to be used while in motion or during halts at unspecified points.

Base station: A land station in the land mobile service.

Base earth station: An earth station in the fixed satellite service or, in some cases, in the land mobile satellite service, located at a specified fixed point or within a specified area on land to provide a feeder link for the land mobile-satellite service.

Land mobile station: A mobile station in the land mobile service capable of surface movement within the geographical limits of a country or continent.

Land mobile earth station: A mobile earth station in the land mobile-satellite service capable of surface movement within the geographical limits of a country or continent.

Coast station: A land station in the maritime mobile service.

Port station: A coast station in the port operations service.

Ship station: A mobile station in the maritime mobile service located on board a vessel which is not permanently moored, other than a survival craft station.

Aeronautical station: A land station in the aeronautical mobile service.

Aeronautical earth station: An earth station in the fixed-satellite service, or, in some cases, in the aeronautical mobile-satellite service, located at a specified fixed point on land to provide a feeder link for the aeronautical mobile-satellite service.

Aircraft earth station: A mobile earth station in the aeronautical mobile-satellite service located on board an aircraft.

Broadcasting station: A station in the broadcasting service.

Radiodetermination station: A station in the radiodetermination service.

Amateur station: A station in the amateur service.

Radio astronomy station: A station in the radio astronomy service.

Radar: A radiodetermination system based on the comparison of reference signals with radio signals reflected, or retransmitted, from the position to be determined.

Satellite system: A space system using one or more artificial earth satellites.

Satellite network: A satellite system or a part of a satellite system, consisting of only one satellite and the cooperating earth stations.

Satellite link: A radio link between a transmitting earth station and a receiving earth station through one satellite. A satellite link comprises one up-link and one down-link.

Feeder link: A radio link from an earth station at a given location to a space station, or vice versa, conveying information for a space radiocommunication service other than for the fixed-satellite service. The given location may be at a specified fixed point, or at any fixed point within specified areas.

Categories of Services and Allocations

4. Where, in a box of Pakistan Table of Frequency Allocations 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.
- c) Additional remarks shall be printed in normal characters (example: MOBILE except aeronautical mobile).

5. Stations of a secondary service:

- a) Shall not cause harmful interference to stations of primary services 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.

6. Where a band is indicated in an International footnote of the Table as allocated to a service "on a secondary basis" in an area smaller than a Region, or in a particular country, this is a secondary service.
7. Where a band is indicated in an International footnote of the Table as allocated to a service "on a primary basis", in an area smaller than a Region, or in a particular country, this is a primary service only in that area or country.
8. Where a band is indicated in an International footnote of the Table as "also allocated" to a service in an area smaller than a Region, or in a particular country, this is an "additional" allocation, i.e. an allocation which is added in this area or in this country to the service or services which are indicated in the Table.
9. If the international footnote does not include any restriction on the service or services concerned apart from the restriction to operate only in a particular area or country, stations of this service or these services shall have equality of right to operate with stations of the other primary service or services indicated in the Table.
10. If restrictions are imposed on an additional allocation in addition to the restriction to operate only in a particular area or country, this is indicated in an International footnote of the Table.
11. Where a band is indicated in an International footnote of the Table as "allocated" to one or more services in an area smaller than a Region, or in a particular country, this is an "alternative" allocation, i.e. an allocation which replaces, in this area or in this country, the allocation indicated in the Table.
12. If the footnote does not include any restriction on stations of the service or services concerned, apart from the restriction to operate only in a particular area or country, these stations of such a service or services shall have an equality of right to operate with stations of the primary service or services, indicated in the Table, to which the band is allocated in other areas or countries.
13. If restrictions are imposed on stations of a service to which an alternative allocation is made, in addition to the restriction to operate only in a particular country or area, this is indicated in the International and National footnote.
14. Where it is indicated that a service or stations in a service may operate in a specific frequency band subject to not causing harmful interference to another service or to another station in the same service, this means also that the service which is subject to not causing harmful interference cannot claim protection from harmful interference caused by the other service or other station in the same service.
15. Where it is indicated that a service or stations in a service may operate in a specific frequency band subject to not claiming protection from another service or from another station in the same service, this means also that the service which is subject to not claiming protection shall not cause harmful interference to the other service or other station in the same service.

Description of the Table

16. The heading of the Table includes three columns:
 - a. the first column identifies the Frequency Band.
 - b. the second column identifies the services defined, internationally, for Region-3.
 - c. the third column identifies the services defined for Pakistan.
17. Within each of the categories specified, listing of services does not indicate relative priority within each category.
18. In the case where there is a parenthetical addition to an allocation in the Table, that service allocation is restricted to the type of operation so indicated.
19. In the case where there is any type of ambiguity whatsoever the reason may be, in referring the Pakistan Table of Frequency Allocations, the decision of the Frequency Allocation Board will be final and binding.

TABLE OF FREQUENCY ALLOCATIONS

0 – 117.6 KHz

Allocation to Services		
Frequency	ITU–R (Region 3)	Pakistan
0 – 9	(Not allocated) 5.53 5.54	(Not Allocated)
9 – 14	R ADIONAVIGATION	R ADIONAVIGATION
14 – 19.95	FIXED MARITIME MOBILE 5.55 5.56 5.57	FIXED, MARITIME MOBILE
19.95 – 20.05	STANDARD FREQUENCY AND TIME SIGNAL (20 KHz)	STANDARD FREQUENCY TIME SIGNALS
20.05 – 70	FIXED MARITIME MOBILE 5.56 5.57 5.58	FIXED MARITIME MOBILE
70 – 72	R ADIONAVIGATION Fixed Maritime mobile 5.60 5.57 5.59	R ADIONAVIGATION FIXED MARITIME MOBILE
72 – 84	FIXED MARITIME MOBILE R ADIONAVIGATION 5.57 5.60	FIXED MARITIME MOBILE R ADIONAVIGATION
84 – 86	R ADIONAVIGATION S 5.60 Fixed Maritime mobile 5.57 5.59	R ADIONAVIGATION FIXED MARITIME MOBILE
86 – 90	FIXED MARITIME MOBILE R ADIONAVIGATION 5.57 5.60	FIXED, MARITIME MOBILE R ADIONAVIGATION
90 – 110	R ADIONAVIGATION Fixed 5.62 5.64	R ADIONAVIGATION Fixed
110 – 112	FIXED MARITIME MOBILE R ADIONAVIGATION 5.60	FIXED MARITIME MOBILE R ADIONAVIGATION
112 – 117.6	R ADIONAVIGATION S 5.60 Fixed Maritime mobile 5.64 5.65	R ADIONAVIGATION Fixed Maritime mobile

117.6 - 1606.5 KHz

Allocation to Services		
Frequency	ITU-R Region-3	Pakistan
117.6 – 126	FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	FIXED, MARITIME MOBILE RADIONAVIGATION
126 – 129	RADIONAVIGATION S 5.60 Fixed Maritime mobile 5.64 5.65	RADIONAVIGATION Fixed, Maritime mobile
129 – 130	FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64	FIXED, MARITIME MOBILE RADIONAVIGATION
130 – 160	FIXED MARITIME MOBILE RADIONAVIGATION 5.64	FIXED, MARITIME MOBILE RADIONAVIGATION
160 – 190	FIXED Aeronautical Radionavigation	FIXED Aeronautical radionavigation
190 – 200	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION
200 – 285	AERONAUTICAL RADIONAVIGATION Aeronautical mobile	AERONAUTICAL RADIONAVIGATION Aeronautical mobile
285 – 315	AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73	AERONAUTICAL RADIONAVIGATION, MARITIME RADIONAVIGATION (radiobeacons)
315 – 325	MARITIME RADIONAVIGATION (radiobeacons) Aeronautical radionavigation 5.73	MARITIME RADIONAVIGATION (radiobeacons) Aeronautical radionavigation
325 – 405	AERONAUTICAL RADIONAVIGATION Aeronautical mobile	AERONAUTICAL RADIONAVIGATION Aeronautical mobile
405 – 415	RADIONAVIGATION Aeronautical mobile 5.76	RADIONAVIGATION, Aeronautical mobile
415 – 495	MARITIME MOBILE Aeronautical radionavigation 5.79 5.79A 5.80 5.77 5.78 5.82	MARITIME MOBILE, AERONAUTICAL RADIONAVIGATION PAK01
495 – 505	MOBILE (distress and calling) 5.83	MOBILE (distress and calling)
505 – 526.5	MARITIME MOBILE AERONAUTICAL RADIONAVIGATION Aeronautical mobile Land mobile 5.79 5.79A 5.84	MARITIME MOBILE, AERONAUTICAL RADIONAVIGATION Aeronautical mobile, Land Mobile
526.5 – 535	BROADCASTING Mobile	BROADCASTING Mobile
535 – 1606.5	BROADCASTING	BROADCASTING PAK02

FREQUENCY ALLOCATION BOARD

1606.5- 3155 KHz

Allocation to Services		
Frequency	ITU-R Region-3	Pakistan
1606.5 – 1800	FIXED MOBILE RADIOLOCATION RADIONAVIGATION 5.91	FIXED, MOBILE, RADIOLOCATION, R ADIONAVIGATION
1800 – 2000	AMATEUR FIXED MOBILE except aeronautical mobile RADIOLOCATION Radiolocation 5.97	AMATEUR FIXED MOBILE except aeronautical mobile R ADIONAVIGATION Radiolocation PAK 03
2000 – 2065	FIXED MOBILE	FIXED, MOBILE
2065 – 2107	MARITIME MOBILE 5.105 5.106	MARITIME MOBILE
2107 – 2170	FIXED MOBILE	FIXED, MOBILE
2170 – 2173.5	MARITIME MOBILE	MARITIME MOBILE
2173.5 – 2190.5	MOBILE (distress and calling) 5.108 5.109 5.110 5.111	MOBILE (distress and calling)
2190.5 – 2194	MARITIME MOBILE	MARITIME MOBILE
2194 – 2300	FIXED MOBILE 5.112	FIXED MOBILE 5.112
2300 – 2495	FIXED MOBILE BROADCASTING 5.113	FIXED, MOBILE, BROADCASTING
2495 – 2501	STANDARD FREQUENCY AND TIME SIGNAL (2 500 kHz)	STANDARD FREQUENCY AND TIME SIGNAL
2502 – 2505	STANDARD FREQUENCY AND TIME SIGNAL	STANDARD FREQUENCY AND TIME SIGNAL
2505 – 2850	FIXED MOBILE	FIXED, MOBILE
2850 – 3025	AERONAUTICAL MOBILE (R) 5.111 5.115	AERONAUTICAL MOBILE (R)
3025 – 3155	FIXED MOBILE except aeronautical mobile (R) 5.116 5.117	FIXED MOBILE except aeronautical mobile (R)

FREQUENCY ALLOCATION BOARD

3155 –5250 KHz

Allocation to Services		
Frequency	ITU-R Region-3	Pakistan
3155 – 3200	FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.116	FIXED MOBILE except aeronautical mobile (R) BROADCASTING
3200 – 3230	FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.116	FIXED MOBILE except aeronautical mobile (R) BROADCASTING
3230 – 3400	FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116 5.118	
3400 – 3500	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)
3500 – 3900	AMATEUR, FIXED MOBILE	AMATEUR, FIXED, MOBILE
3900 – 3950	AERONAUTICAL MOBILE BROADCASTING	AERONAUTICAL MOBILE BROADCASTING
3950 – 4000	FIXED BROADCASTING 5.126	FIXED, BROADCASTING PAK 04
4000 – 4063	FIXED MARITIME MOBILE 5.127 5.126	FIXED, MARITIME MOBILE PAK 04
4063 – 4438	MARITIME MOBILE 5.79A 5.109 5.110 5.130 5.131 5.132 5.128 5.129	MARITIME MOBILE
4438 – 4650	FIXED MOBILE except aeronautical mobile	FIXED MOBILE except aeronautical mobile
4650 – 4700	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)
4700 – 4750	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)
4750 – 4850	FIXED BROADCASTING 5.113 Land mobile	FIXED BROADCASTING Land mobile
4850 – 4995	FIXED LAND MOBILE BROADCASTING 5.113	FIXED, LAND MOBILE, BROADCASTING
4995 – 5003	STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	STAND FREQUENCY AND TIME SIGNAL (5 000 kHz)
5003 – 5005	STANDARD FREQUENCY AND TIME SIGNAL Space research	STANDARD FREQUENCY AND TIME SIGNAL Space research
5005 – 5060	FIXED BROADCASTING 5.113	FIXED, BROADCASTING
5060 – 5250	FIXED Mobile except aeronautical mobile 5.133	FIXED Mobile except aeronautical mobile

FREQUENCY ALLOCATION BOARD

5250 –9900 KHz

Allocation to Services		
Frequency	ITU-R Region-3	Pakistan
5250 – 5450	FIXED MOBILE except aeronautical mobile	FIXED MOBILE except aeronautical mobile
5450 – 5480	FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE
5480 – 5680	AERONAUTICAL MOBILE (R) 5.111 5.115	AERONAUTICAL MOBILE (R)
5680 – 5730	AERONAUTICAL MOBILE (OR) 5.111 5.115	AERONAUTICAL MOBILE (OR)
5730 – 5900	FIXED Mobile except aeronautical mobile (R)	FIXED Mobile except aeronautical mobile (R)
5900 – 5950	BROADCASTING 5.134 5.136	BROADCASTING PAK 05
5950 – 6200	BROADCASTING	BROADCASTING
6200 – 6525	MARITIME MOBILE 5.109 5.110 5.130 5.132 5.137	MARITIME MOBILE
6525 – 6685	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)
6685 – 6765	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR))
6765 – 7000	FIXED Land mobile 5.139 5.138	FIXED Land mobile
7000 – 7100	AMATEUR AMATEUR-SATELLITE 5.140 5.141	AMATEUR AMATEUR-SATELLITE
7100 – 7300	BROADCASTING	BROADCASTING
7300 – 7350	BROADCASTING 5.134 5.143	BROADCASTING
7350 – 8100	FIXED Land mobile 5.144	FIXED, Land mobile PAK 06
8100 – 8195	FIXED	FIXED, MARITIME MOBILE
8195 – 8815	MARITIME MOBILE MARITIME MOBILE 5.109 5.110 5.132 5.145 5.111	MARITIME MOBILE
8815 – 8965	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)
8965 – 9040	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)
9040 – 9400	FIXED	FIXED
9400 – 9500	BROADCASTING 5.134 5.146	BROADCASTING
9500 – 9900	BROADCASTING 5.147	BROADCASTING

FREQUENCY ALLOCATION BOARD

9900 –14000 KHz

Allocation to Services		
Frequency	ITU-R Region-3	Pakistan
9900 – 9995	FIXED	FIXED
9995 – 10003	STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz) 5.111	STANDARD FREQUENCY AND TIME SIGNAL (10 000 kHz)
10003 – 10005	STANDARD FREQUENCY AND TIME SIGNAL Space research	STANDARD FREQUENCY AND TIME SIGNAL Space research
10005 – 10100	AERONAUTICAL MOBILE (R) 5.111	AERONAUTICAL MOBILE (R)
10100 – 10150	FIXED Amateur	FIXED Amateur
10150 – 11175	FIXED Mobile except aeronautical mobile (R)	FIXED, Mobile except aeronautical mobile (R)
11175 – 11275	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)
11275 – 11400	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)
11400 – 11600	FIXED	FIXED
11600 – 11650	BROADCASTING 5.134 5.146	BROADCASTING
11650 – 12050	BROADCASTING 5.147	BROADCASTING
12050 – 12100	BROADCASTING 5.134 5.146	BROADCASTING
12100 – 12230	FIXED	FIXED
12230 – 13200	MARITIME MOBILE 5109 5.110 5.132 S5.145	FIXED, MARITIME MOBILE
13200 – 13260	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)
13260 – 13360	AERONAUTICAL MOBILE (R)	
13360 – 13410	FIXED RADIO ASTRONOMY 5.149	FIXED, RADIO ASTRONOMY
13410 – 13570	FIXED Mobile except aeronautical mobile (R) 5.150	FIXED Mobile except aeronautical mobile (R)
13570 – 13600	BROADCASTING 5.134 5.151	BROADCASTING
13600 – 13800	BROADCASTING	BROADCASTING
13800 – 13870	BROADCASTING 5.134 5.151	BROADCASTING
13870 – 14000	FIXED Mobile except aeronautical mobile (R)	FIXED Mobile except aeronautical mobile (R)

14000 – 19800 KHz

Allocation to Services		
Frequency	ITU-R Region-3	Pakistan
14000 – 14250	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE
14250 – 14350	AMATEUR 5.152	AMATEUR S5.152
14350 – 14990	FIXED Mobile except aeronautical mobile (R)	FIXED Mobile except aeronautical mobile (R)
14990 – 15005	STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz) 5.111	STANDARD FREQUENCY AND TIME SIGNAL (15 000 kHz)
15005 – 15010	STANDARD FREQUENCY AND TIME SIGNAL Space research	STANDARD FREQUENCY AND TIME SIGNAL Space research
15010 – 15100	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)
15100 – 15600	BROADCASTING	BROADCASTING
15600 – 15800	BROADCASTING 5.134 5.146	BROADCASTING
15800 – 16360	FIXED 5.153	FIXED PAK 07
16360 – 17410	MARITIME MOBILE 5.109 5.110 5.132 5.145	MARITIME MOBILE
17410 – 17480	FIXED	FIXED
17480 – 17550	BROADCASTING 5.134 5.146	BROADCASTING
17550 – 17900	BROADCASTING	BROADCASTING
17900 – 17970	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)
17970 – 18030	AERONAUTICAL MOBILE (OR)	AERONAUTICAL MOBILE (OR)
18030 – 18052	FIXED	FIXED
18052 – 18068	FIXED Space research	FIXED Space research
18068 – 18168	AMATEUR AMATEUR-SATELLITE 5.154	AMATEUR AMATEUR-SATELLITE
18168 – 18780	FIXED Mobile except aeronautical mobile	FIXED Mobile except aeronautical mobile
18780 – 18900	MARITIME MOBILE	MARITIME MOBILE
18900 – 19020	BROADCASTING 5.134 5.146	BROADCASTING
19020 – 19680	FIXED	FIXED
19680 – 19800	MARITIME MOBILE 5.132	MARITIME MOBILE

FREQUENCY ALLOCATION BOARD

19800 – 25210 KHz

Allocation to Services		
Frequency	ITU-R Region-3	Pakistan
19800 – 19990	FIXED	FIXED
19990 – 19995	STANDARD FREQUENCY AND TIME SIGNAL Space research 5.111	STANDARD FREQUENCY AND TIME SIGNAL Space research
19995 – 20010	STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz) 5.111	STANDARD FREQUENCY AND TIME SIGNAL (20 000 kHz)
20010 – 21000	FIXED Mobile	FIXED Mobile
21000 – 21450	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR SATELLITE
21450 – 21850	BROADCASTING	BROADCASTING
21850 - 21870	FIXED 5.155A 5.155	FIXED
21870 – 21924	FIXED 5.155B	FIXED
21924 – 22000	AERONAUTICAL MOBILE (R)	AERONAUTICAL MOBILE (R)
22000 – 22855	MARITIME MOBILE 5.132 5.156	MARITIME MOBILE
22855 – 23000	FIXED 5.156	FIXED
23000 – 23200	FIXED Mobile except aeronautical mobile (R) 5.156	FIXED Mobile except aeronautical mobile (R)
23200 – 23350	FIXED 5.156A AERONAUTICAL MOBILE (OR)	FIXED AERONAUTICAL MOBILE (OR)
23350 – 24000	FIXED MOBILE except aeronautical mobile S5.157	FIXED MOBILE except aeronautical mobile
24000 – 24890	FIXED LAND MOBILE	FIXED LAND MOBILE
24890 – 24990	AMATEUR AMATEUR – SATELLITE	AMATEUR AMATEUR – SATELLITE
24990 – 25005	STANDARD FREQUENCY AND TIME SIGNAL (25000 kHz)	STANDARD FREQUENCY AND TIME SIGNAL (25000 kHz)
25005 – 25010	STANDARD FREQUENCY AND TIME SIGNAL Space research	STANDARD FREQUENCY AND TIME SIGNAL Space research
25010 – 25070	FIXED MOBILE except aeronautical mobile	FIXED MOBILE except aeronautical mobile
25070 – 25210	MARITIME MOBILE	MARITIME MOBILE

25210 – 26100 KHz

Allocation to Services		
Frequency	ITU -R Region-3	Pakistan
25210 – 25550	FIXED MOBILE except aeronautical mobile	FIXED MOBILE except aeronautical mobile
25550 – 25670	RADIO ASTRONOMY 5.149	RADIO ASTRONOMY
25670 – 26100	BROADCASTING	BROADCASTING

26.1 – 54 MHz

Allocation to Services		
Frequency	ITU-R Region-3	Pakistan
26.1 – 26.175	MARITIME MOBILE 5.132	MARITIME MOBILE
26.175 – 27.5	FIXED MOBILE except aeronautical mobile 5.150	FIXED MOBILE except aeronautical mobile
27.5 – 28	METEOROLOGICAL AIDS FIXED MOBILE	METEOROLOGICAL AIDS FIXED MOBILE
28 – 29.7	AMATEUR AMATEUR – SATELLITE	AMATEUR AMATEUR – SATELLITE
29.7 – 30.005	FIXED MOBILE	FIXED MOBILE
30.005 – 30.01	SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH	SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH
30.01 – 37.5	FIXED MOBILE	FIXED MOBILE
37.5 – 38.25	FIXED MOBILE Radio astronomy 5.149	FIXED MOBILE Radio astronomy
38.25 – 39.986	FIXED MOBILE	FIXED MOBILE
39.986 – 40.02	FIXED MOBILE Space research	FIXED MOBILE Space research
40.02 – 40.98	FIXED MOBILE 5.150	FIXED MOBILE
40.98 – 41.015	FIXED MOBILE Space research 5.160 5.161	FIXED MOBILE Space research
41.015 – 44	FIXED MOBILE 5.160 5.161	FIXED MOBILE
44 – 47	FIXED MOBILE 5.162 5.162A	FIXED MOBILE
47 – 50	FIXED MOBILE BROADCASTING 5.162 ^a	FIXED MOBILE BROADCASTING 5.162A
50 – 54	AMATEUR 5.162A 5.166 5.167 5.168 5.170	AMATEUR FIXED MOBILE BROADCASTING

54 – 137.025 MHz

Allocation to Services		
Frequency	ITU-R Region-3	Pakistan
54 – 68	FIXED MOBILE BROADCASTING 5.162A	FIXED MOBILE BROADCASTING PAK 08
68 – 74.8	FIXED MOBILE 5.149 5.176 5.179	FIXED MOBILE
74.8 – 75.2	AERONAUTICAL RADIONAVIGATION 5.180 5.181	AERONAUTICAL- R ADIONAVIGATION
75.2 – 75.4	FIXED MOBILE 5.179	FIXED MOBILE
75.4 – 87	FIXED MOBILE 5.179	FIXED MOBILE
87 – 100	FIXED MOBILE BROADCASTING	FIXED MOBILE BROADCASTING PAK 09
100 – 108	BROADCASTING 5.192 5.194	BROADCASTING PAK 09
108 – 117.975	AERONAUTICAL RADIONAVIGATION 5.197	AERONAUTICAL- R ADIONAVIGATION
		108 – 111.975 Mobile PAK 10
117.975 – 137	AERONAUTICAL MOBILE (R) 5.111 5.198 5.199 5.200 5.201 5.202 5.203 5.203A 5.203B	AERONAUTICAL MOBILE (R)
137 -137.025	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE -SATELLITE (space-to-Earth) 5.208A 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space- to-Earth) MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) FIXED MOBILE-except aeronautical mobile (R)

137.025 – 143.6 MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
137.025 – 137.175	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) 5.208A 5.209 Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-satellite (space-to-Earth) FIXED MOBILE -except aeronautical mobile (R)
137.175 – 137.825	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) FIXED MOBILE except aeronautical mobile (R)
137.825 – 138	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) 5.208A 5.209 Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-satellite (space-to-Earth) FIXED MOBILE except aeronautical mobile (R)
138 – 143.6	FIXED MOBILE Space research (space-to-Earth) 5.207 5.213	FIXED MOBILE Space research (space-to-Earth)

143.6 – 223 MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
143.6 – 143.65	FIXED MOBILE SPACE RESEARCH (space-to-Earth) 5.207 5.213	FIXED MOBILE SPACE RESEARCH (space-to-Earth)
143.65 – 144	FIXED MOBILE Space research (space-to-Earth) 5.207 5.213	FIXED MOBILE Space research (space-to-Earth)
144 – 146	AMATEUR AMATEUR-SATELLITE 5.216	AMATEUR AMATEUR-SATELLITE
146 – 148	AMATEUR FIXED MOBILE 5.217	AMATEUR FIXED MOBILE
148 – 149.9	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) PAK 11
149.9 – 150.05	MOBILE -SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.224B 5.220 5.222 5.223	MOBILE -SATELLITE (Earth-to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE
150.05 – 156.7625	FIXED MOBILE 5.225 5.226 5.227	FIXED MOBILE
156.7625 – 156.8375	MARITIME MOBILE (distress and calling) 5.111 5.226	MARITIME MOBILE (distress and calling)
156.8375 – 174	FIXED MOBILE 5.226 5.230 5.231 5.232	FIXED MOBILE
		167 – 174 MHz BROADCASTING
174 – 223	FIXED MOBILE BROADCASTING 5.233 5.238 5.240 5.245	FIXED MOBILE BROADCASTING PAK 12 PAK13
		200 – 216 MHz AERONAUTICAL RADIONAVIGATION

223 – 390 MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
223 – 230	FIXED MOBILE BROADCASTING AERONAUTICAL RADIONAVIGATION Radiolocation 5.250	FIXED MOBILE BROADCASTING AERONAUTICAL RADIONAVIGATION Radiolocation PAK12 PAK13
230 - 235	FIXED MOBILE AERONAUTICAL RADIONAVIGATION 5.250	FIXED MOBILE AERONAUTICAL RADIONAVIGATION
235 – 267	FIXED MOBILE 5.111 5.199 5.252 5.254 5.256	FIXED MOBILE
267 – 272	FIXED MOBILE Space operation (space-to-Earth) 5.254 5.257	FIXED MOBILE Space operation (space-to-Earth)
272 – 273	SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254	SPACE OPERATION (space-to-Earth) FIXED MOBILE
273 – 312	FIXED MOBILE 5.254	FIXED MOBILE
312 – 315	FIXED MOBILE Mobile-satellite (Earth-to-space) 5.254 5.255	FIXED MOBILE Mobile-satellite (Earth-to-space)
315 – 322	FIXED MOBILE 5.254	FIXED MOBILE
322 – 328.6	FIXED MOBILE RADIO ASTRONOMY 5.149	FIXED MOBILE RADIO ASTRONOMY
328.6 – 335.4	AERONAUTICAL RADIONAVIGATION 5.258 5.259	AERONAUTICAL RADIONAVIGATION
335.4 – 387	FIXED MOBILE 5.254	FIXED MOBILE
387 – 390	FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.254 5.255	FIXED MOBILE Mobile-satellite (space-to-Earth)

390 – 406 MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
390 – 399.9	FIXED MOBILE 5.254	FIXED MOBILE
399.9 – 400.05	MOBILE -SATELLITE (Earth -to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE 5.222 5.224B 5.260 5.220	MOBILE -SATELLITE (Earth -to-space) 5.209 5.224A RADIONAVIGATION-SATELLITE
400.05 – 400.15	STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262	STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) FIXED MOBILE
400.15 – 401	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space -to-Earth) MOBILE -SATELLITE (space-to-Earth) 5.208A 5.209 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.262 5.264	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Space operation (space-to-Earth) FIXED MOBILE
401 – 402	METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth -to-space) METEOROLOGICAL-SATELLITE (Earth -to-space) Fixed Mobile except aeronautical mobile	METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth -to-space) METEOROLOGICAL-SATELLITE (Earth -to-space) Fixed Mobile except aeronautical mobile
402 – 403	METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth -to-space) METEOROLOGICAL-SATELLITE (Earth -to-space) Fixed Mobile except aeronautical mobile	METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth -to-space) METEOROLOGICAL-SATELLITE (Earth -to-space) Fixed Mobile except aeronautical mobile
403 – 406	METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile	METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile

406 – 460 MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
406 – 406.1	MOBILE -SATELLITE (Earth -to-space) 5.266 5.267	MOBILE -SATELLITE (Earth -to-space)
406.1 – 410	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY
410 – 420	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space -to-space) 5.268	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space -to-space)
420 – 430	FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271	FIXED MOBILE except aeronautical mobile Radiolocation
430 – 440	RADIOLOCATION Amateur 5.271 5.276 5.277 5.278 5.279 5.281 5.282	RADIOLOCATION FIXED Amateur 430 – 435 & 438 – 440 MHz MOBILE – except aeronautical mobile
440 – 450	FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271 5.284 5.285 5.286	FIXED MOBILE except aeronautical mobile Radiolocation
450 – 455	FIXED MOBILE 5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E	FIXED MOBILE
455 – 456	FIXED MOBILE 5.209 5.271 5.286A 5.286B 5.286C 5.286E	FIXED MOBILE
456 – 459	FIXED MOBILE 5.271 5.287 5.288	FIXED MOBILE
459 – 460	FIXED MOBILE 5.209 5.271 5.286A 5.286B 5.286C 5.286E	FIXED MOBILE

460 –1240 MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
460 – 470	FIXED MOBILE Meteorological-Satellite (space - to-Earth) 5.287 5.288 5.289 5.290	FIXED MOBILE Meteorological-Satellite (space -to-Earth)
470 – 585	FIXED MOBILE BROADCASTING 5.291 5.298	FIXED MOBILE BROADCASTING PAK14 PAK16
585 – 610	FIXED MOBILE BROADCASTING RADIONAVIGATION 5.149 5.305 5.306 5.307	FIXED MOBILE BROADCASTING RADIONAVIGATION PAK14 PAK17
610 – 890	FIXED MOBILE 5.317A BROADCASTING 5.149 5.305 5.306 5.307 5.311 5.320	FIXED MOBILE BROADCASTING PAK17 PAK18 PAK14 PAK16
890 – 942	FIXED MOBILE 5.317A BROADCASTING Radiolocation 5.327	FIXED MOBILE BROADCASTING Radiolocation PAK14
942 – 960	FIXED MOBILE 5.317A BROADCASTING 5.320	FIXED MOBILE BROADCASTING PAK18
960 – 1215	AERONAUTICAL RADIONAVIGATION 5.328 5.328A	AERONAUTICAL RADIONAVIGATION
1215 – 1240	EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION RADIONAVIGATION- SATELLITE (space -to-Earth) (space-to-space) 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) SPACE RESEARCH (active) FIXED MOBILE

1240 – 1452 MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
1240 – 1260	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A SPACE RESEARCH (active) Amateur 5.330 5.331 5.332 5.334 5.335	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) SPACE RESEARCH (active) Amateur FIXED MOBILE
1260 – 1300	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.330 5.331 5.334 5.335 5.335A	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) SPACE RESEARCH (active) Amateur FIXED MOBILE
1300 – 1350	AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION RADIONAVIGATION SATELLITE (Earth-to-space) 5.149 5.337A	AERONAUTICAL RADIONAVIGATION RADIOLOCATION RADIONAVIGATION SATELLITE (Earth-to-space)
1350 – 1400	RADIOLOCATION 5.149 5.334 5.339	RADIOLOCATION
1400 – 1427	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)
1427 – 1429	SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341	SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile
1429 – 1452	FIXED MOBILE 5.343 5.341	FIXED MOBILE

1452 – 1610MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
1452 – 1492	FIXED MOBILE 5.343 BROADCASTING 5.345 5.347 BROADCASTING - SATELLITE 5.345 5.347 5.341 5.344	FIXED MOBILE BROADCASTING BROADCASTING-SATELLITE
1492 – 1525	FIXED MOBILE 5.341 5.348A	FIXED MOBILE
1525 – 1530	SPACE OPERATION (space-to-Earth) FIXED MOBILE -SATELLITE (space-to-Earth) 5.351A Earth exploration-satellite Mobile 5.349 5.341 5.351 5.352A 5.354	SPACE OPERATION (space-to-Earth) FIXED MOBILE -SATELLITE (space-to-Earth) Earth exploration-satellite Mobile PAK19 PAK20
1530 – 1535	SPACE OPERATION (space-to- Earth) MOBILE -SATELLITE (space-to- Earth) 5.351A 5.353A Earth exploration-satellite Fixed Mobile 5.343 5.341 5.351 5.354	SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite Fixed Mobile PAK19
1535 – 1559	MOBILE -SATELLITE (space-to- Earth) 5.351A 5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A	MOBILE-SATELLITE (space-to-Earth) PAK19
		1550 – 1559, 1610 – 1645.5 & 1646.5 – 1660 MHz FIXED PAK21
1559 – 1610	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION- SATELLITE (space-to-Earth) (space-to-space) 5.329A..5.341 5.362B 5.362C 5.363	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space)
		FIXED PAK22

1610 – 1626.5 MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
1610 – 1610.6	MOBILE -SATELLITE (Earth -to-space) 5.351 ^a AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372	MOBILE -SATELLITE (Earth-to-space) AERONAUTICAL RADIONAVIGATION Radiodetermination -satellite (Earth-to-space)
		1550 – 1559, 1610 – 1645.5 & 1646.5 – 1660 MHz FIXED
		1610 – 1626.5 MHz RADIODETERMINATION-SATELLITE (Earth to Space) PAK23
1610.6 – 1613.8	MOBILE -SATELLITE (Earth -to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372	MOBILE -SATELLITE (Earth-to-space) RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination -satellite (Earth-to-space)
		1550 – 1559, 1610 – 1645.5 & 1646.5 – 1660 MHz FIXED
		1610 – 1626.5 MHz RADIODETERMINATION-SATELLITE (Earth to Space) PAK23
1613.8 – 1626.5	MOBILE -SATELLITE (Earth -to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) Radiodetermination-satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372	MOBILE -SATELLITE (Earth-to-space) AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) Radiodetermination -satellite (Earth-to-space)
		1550 – 1559, 1610 – 1645.5 & 1646.5 – 1660 MHz FIXED
		1610 – 1626.5 MHz RADIODETERMINATION-SATELLITE (Earth to Space) PAK23

1626.5 – 1700 MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan's Allocations
1626.5 – 1660	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376	MOBILE – SATELLITE (Earth-to-space) PAK19
		1550 – 1559, 1610 – 1645.5 & 1646.5 – 1660 MHz FIXED
1660 – 1660.5	MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.362A 5.376A	MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY PAK19
1660.5 – 1668.4	RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile Meteorological Aids
1668.4 – 1670	METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.341	METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY
1670 – 1675	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE 5.380 5.341	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE
1675 – 1690	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile
1690 – 1700	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) 5.289 5.341 5.381	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) FIXED MOBILE – except aeronautical mobile

1700 – 2200MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
1700 – 1710	FIXED METEOROLOGICAL- SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341 5.384	FIXED METEOROLOGICAL-SATELLITE (space- to-Earth) MOBILE except aeronautical mobile
1710 – 1930	FIXED MOBILE 5.380 5.384A 5.388A 5.149 5.341 5.385 5.386 5.387 5.388	FIXED MOBILE
1930 – 1970	FIXED MOBILE 5.388A 5.388	FIXED MOBILE
1970-1980	FIXED MOBILE 5.388A 5.388	FIXED MOBILE
1980-2010	FIXED MOBILE MOBILE-SATELLITE (Earth-to- space) 5.351A 5.388 5.389A 5.389B 5.389F	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space)
2010 – 2025	FIXED MOBILE 5.388A 5.388	FIXED, MOBILE
2025 – 2110	SPACE OPERATION (Earth-to- space) (space-to-space) EARTH EXPLORATION- SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to- space) (space-to-space) 5.392	SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE SPACE RESEARCH (Earth-to-space) (space-to-space)
2110 – 2120	FIXED MOBILE 5.388A SPACE RESEARCH (deep space) (Earth-to-space) 5.388	FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space)
2120 – 2160	FIXED MOBILE 5.388A 5.388	FIXED MOBILE
2160 – 2170	FIXED MOBILE 5.388A 5.388	FIXED MOBILE
2170 – 2200	FIXED MOBILE MOBILE-SATELLITE (space-to- Earth) 5.351A 5.388 5.389A 5.389F 5.392A	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth)

2200 – 2520 MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
2200 – 2290	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE SPACE RESEARCH (space-to-Earth) (space-to-space)
2290 – 2300	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)
2300 – 2450	FIXED MOBILE RADIOLOCATION Amateur 5.150 5.282 5.393 5.394 5.396	FIXED MOBILE RADIOLOCATION Amateur
2450 – 2483.5	FIXED MOBILE RADIOLOCATION 5.150 5.394	FIXED MOBILE RADIOLOCATION PAK24
2483.5 – 2500	FIXED MOBILE MOBILE -SATELLITE (space-to-Earth) 5.351A RADIOLOCATION Radiodetermination-satellite (space-to-Earth) 5.398 5.150 5.400 5.402	FIXED MOBILE MOBILE -SATELLITE (space-to-Earth) RADIOLOCATION Radiodetermination-satellite (space-to-Earth) RADIODETERMINATION – SATELLITE (Space to Earth) PAK25
2500 – 2520	FIXED 5.409 5.411 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384 ^a MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403 5.404 5.407 5.414 5.415A	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) PAK26

2520 – 2690MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
2520 – 2535	FIXED 5.409 5.411 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING - SATELLITE 5.413 5.416 5.403 5.415A	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile BROADCASTING -SATELLITE PAK26
2535 – 2655	FIXED 5.409 5.411 MOBILE except aeronautical mobile 5.384A BROADCASTING - SATELLITE 5.413 5.416 5.339 5.418 5.418A 5.418B 5.418C	FIXED MOBILE except aeronautical mobile BROADCASTING -SATELLITE PAK27
2655 – 2670	FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.420	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile BROADCASTING -SATELLITE Earth exploration-satellite (passive) Radio astronomy Space research (passive) PAK26
2670 – 2690	FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE -SATELLITE (Earth-to-space) 5.351A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.419 5.420 5.420A	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile MOBILE -SATELLITE (Earth-to-space) Earth exploration-satellite (passive) Radio astronomy Space research (passive) PAK26

2690 – 4200 MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
2690 – 2700	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.421 5.422	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) FIXED MOBILE -Except aeronautical mobile PAK28
2700 – 2900	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.424	AERONAUTICAL RADIONAVIGATION Radiolocation
2900 – 3100	RADIONAVIGATION 5.426 Radiolocation 5.425 5.427	RADIONAVIGATION Radiolocation
3100 – 3300	RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149 5.428	RADIOLOCATION Earth exploration-satellite (active) Space research (active)
3300 – 3400	RADIOLOCATION Amateur 5.149 5.429	RADIOLOCATION Amateur FIXED MOBILE PAK30
3400 – 3500	FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile Radiolocation 5.433 5.282 5.432	FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile Radiolocation MOBILE -except aeronautical mobile PAK29
3500 – 3700	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 5.433 5.435	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation PAK29
3700 – 4200	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile

4200 – 5470MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
4200 – 4400	AERONAUTICAL RADIONAVIGATION 5.438 5.439 5.440	AERONAUTICAL RADIONAVIGATION
4400 – 4500	FIXED MOBILE	FIXED MOBILE
4500 – 4800	FIXED FIXED-SATELLITE (space-to- Earth) 5.441 MOBILE	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE
4800 – 4990	FIXED MOBILE 5.442 Radio astronomy 5.149 5.339 5.443	FIXED MOBILE Radio astronomy
4990 – 5000	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149	FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive)
5000 – 5150	AERONAUTICAL RADIONAVIGATION AERONAUTICAL MOBILE- SATELLITE (R) 5.367 5.443A 5.443B 5.444 5.444A	AERONAUTICAL RADIONAVIGATION AERONAUTICAL MOBILE-SATELLITE (R)
5150 – 5250	AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to- space) 5.447A 5.446 5.447 5.447B 5.447C	AERONAUTICAL RAD IONAVIGATION FIXED-SATELLITE (Earth-to-space) MOBILE PAK31
5250 – 5255	EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.447D 5.448 5.448A	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH
5255 – 5350	EARTH EXPLORATION- SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.448 5.448A	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)
5350 – 5460	EARTH EXPLORATION- SATELLITE (active) 5.448B AERONAUTICAL RADIONAVIGATION 5.449 Radiolocation	EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION Radiolocation
5460 – 5470	RADIONAVIGATION 5.449 Radiolocation	RADIONAVIGATION Radiolocation

5470 – 7300 MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
5470 – 5650	MARITIME RADIONAVIGATION Radiolocation 5.450 5.451 5.452	MARITIME RADIONAVIGATION Radiolocation
5650 – 5725	RADIOLOCATION Amateur Space research (deep space) 5.282 5.451 5.453 5.454 5.455	RADIOLOCATION FIXED MOBILE Amateur Space research (deep space)
5725 – 5830	RADIOLOCATION Amateur 5.150 5.453 5.455	RADIOLOCATION FIXED MOBILE Amateur PAK32
5830 – 5850	RADIOLOCATION Amateur Amateur-satellite (space-to-Earth) 5.150 5.453 5.455	RADIOLOCATION FIXED MOBILE Amateur Amateur-satellite (space-to-Earth) PAK32
5850 – 5925	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Radiolocation 5.150	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Radiolocation PAK32
5925 – 6700	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.149 5.440 5.458	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE
6700 – 7075	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.441 MOBILE 5.458 5.458A 5.458B 5.458C	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) MOBILE
7075 – 7250	FIXED MOBILE 5.458 5.459 5.460	FIXED MOBILE
7250 – 7300	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE

7300 – 8215MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
7300 – 7450	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile
7450 – 7550	FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461A	FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile
7550 – 7750	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile
7750 – 7850	FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) 5.461B MOBILE except aeronautical mobile	FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile
7850 – 7900	FIXED MOBILE except aeronautical mobile	FIXED MOBILE except aeronautical mobile
7900 – 8025	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.461	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE
8025 – 8175	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE
8175 – 8215	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE

8215 – 9500MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
8215 – 8400	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.463 5.462A	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE
8400 – 8500	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.465 5.466 5.467	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth)
8500 – 8550	RADIOLOCATION 5.468 5.469	RADIOLOCATION FIXED MOBILE
8550 – 8650	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.468 5.469 5.469A	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) FIXED MOBILE
8650 – 8750	RADIOLOCATION 5.468 5.469	RADIOLOCATION FIXED MOBILE
8750 – 8850	RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471	RADIOLOCATION AERONAUTICAL RADIONAVIGATION
8850 – 9000	RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473	RADIOLOCATION MARITIME RADIONAVIGATION
9000 – 9200	AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.471	AERONAUTICAL RADIONAVIGATION Radiolocation
9200 – 9300	RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474	RADIOLOCATION MARITIME RADIONAVIGATION
9300 – 9500	RADIONAVIGATION 5.476 Radiolocation 5.427 5.474 5.475	RADIONAVIGATION Radiolocation

8215 – 10000 MHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan's Allocations
9500 – 9800	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active)
9800 – 10000	RADIOLOCATION Fixed 5.477 5.478 5.479	RADIOLOCATION FIXED

10 – 12.5 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
10 – 10.45	FIXED MOBILE RADIOLOCATION Amateur 5.479	FIXED MOBILE RADIOLOCATION Amateur PAK33
10.45 – 10.5	RADIOLOCATION Amateur Amateur-satellite 5.481	RADIOLOCATION Amateur Amateur-satellite PAK33
10.5 – 10.55	FIXED MOBILE RADIOLOCATION	FIXED MOBILE RADIOLOCATION PAK33
10.55 – 10.6	FIXED MOBILE except aeronautical mobile Radiolocation	FIXED MOBILE except aeronautical mobile Radiolocation PAK33
10.6 – 10.68	EARTH EXPLORATION- SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation PAK33
10.68 – 10.7	EARTH EXPLORATION- SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.483	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)
10.7 – 11.7	FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A MOBILE except aeronautical mobile	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile PAK38
11.7 – 12.2	FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.487 5.487A 5.492	FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE PAK35 PAK34
12.2 – 12.5	FIXED MOBILE except aeronautical mobile BROADCASTING 5.484A 5.487 5.491	FIXED MOBILE except aeronautical mobile BROADCASTING PAK38 PAK36 PAK35 PAK34

12.5 – 14.3 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
12.5 – 12.75	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE except aeronautical mobile BROADCASTING-SATELLITE 5.493	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile BROADCASTING-SATELLITE PAK38 PAK 37
12.75 – 13.25	FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE Space research (deep space) (space-to-Earth)	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Space research (deep space) (space-to-Earth)
13.25 – 13.4	EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A 5.499	EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION SPACE RESEARCH (active) FIXED
13.4 – 13.75	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501 5.501B 5.500	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH FIXED MOBILE Standard frequency and time signal-satellite (Earth-to-space)
13.75 – 14	FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Standard frequency and time signal-satellite (Earth-to-space) Space research 5.499 5.500 5.501 5.502 5.503 5.503A	FIXED-SATELLITE (Earth-to-space) RADIOLOCATION FIXED MOBILE Standard frequency and time signal-satellite (Earth-to-space) Space research PAK38
14 – 14.25	FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Space research 5.505	FIXED-SATELLITE (Earth-to-space) RADIONAVIGATION FIXED Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Space research PAK38
14.25 – 14.3	FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Space research 5.505 5.508 5.509	FIXED-SATELLITE (Earth-to-space) RADIONAVIGATION FIXED Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Space research PAK38

14.3 –15.43 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
14.3 – 14.4	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Radionavigation-satellite	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Radionavigation-satellite PAK38
14.4 – 14.47	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Space research (space-to-Earth)	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Space research (space-to-Earth) PAK38
14.47 – 14.5	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Radio astronomy 5.149	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) except aeronautical mobile-satellite Radio astronomy PAK38
14.5 – 14.8	FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space research	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Space research
14.8 – 15.35	FIXED MOBILE Space research 5.339	FIXED MOBILE Space research
15.35 – 15.4	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile
15.4 – 15.43	AERONAUTICAL RADIONAVIGATION 5.511D	AERONAUTICAL RADIONAVIGATION

15.434 – 18.6 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
15.43 – 15.63	FIXED-SATELLITE (Earth-to-space) 5.511A AERONAUTICAL RADIONAVIGATION 5.511C	FIXED-SATELLITE (Earth-to-space) AERONAUTICAL RADIONAVIGATION
15.63 – 15.7	AERONAUTICAL RADIONAVIGATION 5.511D	AERONAUTICAL RADIONAVIGATION
15.7 – 16.6	RADIOLOCATION 5.512 5.513	RADIOLOCATION FIXED MOBILE
16.6 – 17.1	RADIOLOCATION Space research (deep space) (Earth-to-space) 5.512 5.513	RADIOLOCATION FIXED MOBILE Space research (deep space) (Earth-to-space)
17.1 – 17.2	RADIOLOCATION 5.512 5.513	RADIOLOCATION FIXED MOBILE
17.2 – 17.3	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.512 5.513 5.513A	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) FIXED MOBILE
17.3 – 17.7	FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation 5.514	FIXED-SATELLITE (Earth-to-space) Radiolocation Fixed Mobile
17.7 – 18.1	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) MOBILE PAK38
18.1 – 18.4	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.520 MOBILE 5.519 5.521	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) MOBILE PAK38
18.4 – 18.6	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE PAK38

18.6 – 22 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
18.6 – 18.8	FIXED EARTH EXPLORATION SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A	FIXED EARTH EXPLORATION SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Space research (passive)
18.8 – 19.3	FIXED FIXED-SATELLITE (space-to- Earth) 5.523A MOBILE	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE
19.3 – 19.7	FIXED FIXED-SATELLITE (space-to- Earth) (Earth-to-space) 5.523B 5.523C 5.523D 5.523E MOBILE	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) MOBILE
19.7 – 20.1	FIXED-SATELLITE (space-to- Earth) 5.484A Mobile-satellite (space-to-Earth) 5.524	FIXED-SATELLITE (space-to-Earth) FIXED MOBILE Mobile-satellite (space-to-Earth) PAK39 PAK 38
20.1 – 20.2	FIXED-SATELLITE (space-to- Earth) 5.484A MOBILE -SATELLITE (space-to- Earth) 5.524 5.525 5.526 5.527 5.528	FIXED-SATELLITE (space-to-Earth) MOBILE -SATELLITE (space-to-Earth) FIXED MOBILE PAK38 PAK39
20.2 – 21.2	FIXED-SATELLITE (space-to- Earth) MOBILE -SATELLITE (space-to- Earth) Standard frequency and time signal-satellite (space-to-Earth) 5.524	FIXED-SATELLITE (space-to-Earth) MOBILE -SATELLITE (space-to-Earth) FIXED MOBILE Standard frequency and time signal- satellite (space-to-Earth) PAK39
21.2 – 21.4	EARTH EXPLORATION- SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)
21.4 – 22	FIXED MOBILE BROADCASTING-SATELLITE 5.530 5.531	FIXED MOBILE BROADCASTING-SATELLITE

22 – 25.25 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan's Allocations
22 – 22.21	FIXED MOBILE except aeronautical mobile 5.149	FIXED MOBILE except aeronautical mobile
22.21 – 22.5	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive)
22.5 – 22.55	FIXED MOBILE	FIXED MOBILE
22.55 – 23.55	FIXED INTER-SATELLITE MOBILE 5.149	FIXED INTER-SATELLITE MOBILE
23.55 – 23.6	FIXED MOBILE	FIXED MOBILE
23.6 – 24	EARTH EXPLORATION-SATELLITE (pas sive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)
24 – 24.05	AMATEUR AMATEUR-SATELLITE 5.150	AMATEUR AMATEUR-SATELLITE
24.05 – 24.25	RADIOLOCATION Amateur Earth exploration-satellite (active) 5.150	RADIOLOCATION Amateur Earth exploration-satellite (active)
24.25 – 24.45	RADIONAVIGATION FIXED MOBILE	RADIONAVIGATION FIXED MOBILE
24.45 – 24.65	FIXED INTER-SATELLITE MOBILE RADIONAVIGATION 5.533	FIXED INTER-SATELLITE MOBILE RADIONAVIGATION PAK40
24.65 – 24.75	FIXED INTER-SATELLITE MOBILE 5.533 5.534	FIXED INTER-SATELLITE MOBILE PAK40
24.75 – 25.25	FIXED FIXED-SATELLITE (Earth -to-space) 5.535 MOBILE 5.534	FIXED FIXED-SATELLITE (Earth -to-space) MOBILE PAK40

25.25 – 29.9 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
25.25 – 25.5	FIXED INTER-SATELLITE 5.536 MOBILE Standard frequency and time signal-satellite (Earth-to-space)	FIXED INTER-SATELLITE MOBILE Standard frequency and time signal-satellite (Earth-to-space) PAK40
25.5 – 27	EARTH EXPLORATION-SATELLITE (space-to Earth) 5.536A 5.536B FIXED INTER-SATELLITE 5.536 MOBILE Standard frequency and time signal-satellite (Earth-to-space)	EARTH EXPLORATION-SATELLITE (space-to Earth) FIXED INTER-SATELLITE MOBILE Standard frequency and time signal-satellite (Earth-to-space) PAK40
27 – 27.5	FIXED FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE 5.536 5.537 MOBILE	FIXED FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE MOBILE
27.5 – 28.5	FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 MOBILE 5.538 5.540	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE PAK41 PAK 38
28.5 – 29.1	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.523A 5.539 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Earth exploration-satellite (Earth-to-space) PAK38
29.1 – 29.5	FIXED FIXED-SATELLITE (Earth-to-space) 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Earth exploration-satellite (Earth-to-space)
29.5 – 29.9	FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542	FIXED-SATELLITE (Earth-to-space) Earth exploration satellite (Earth-to-space) Mobile-satellite (Earth-to-space) Fixed Mobile PAK42 PAK 38

29.9 – 33 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
29.9 – 30	FIXED-SATELLITE (Earth-to-space) 5.484A 5.539 MOBILE -SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542	FIXED-SATELLITE (Earth-to-space) MOBILE -SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) Fixed Mobile PAK42 PAK38
30 – 31	FIXED-SATELLITE (Earth-to-space) MOBILE -SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.542	FIXED-SATELLITE (Earth-to-space) MOBILE -SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) Fixed Mobile PAK42
31 – 31.3	FIXED 5.543 ^a MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545 5.149	FIXED MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research PAK43
31.3 – 31.5	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)
31.5 – 31.8	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile
31.8 – 32	FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547B 5.548	FIXED RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth)
32 – 32.3	FIXED 5.547A INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547C 5.548	FIXED INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth)
32.3 – 33	FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.547D 5.548	FIXED INTER-SATELLITE RADIONAVIGATION

33 – 38 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan's Allocations
33 – 33.4	FIXED 5.547A RADIONAVIGATION 5.547 5.547E	FIXED RADIONAVIGATION
33.4 – 34.2	RADIOLOCATION 5.549	RADIOLOCATION FIXED MOBILE
34.2 – 34.7	RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space) 5.549	RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space) FIXED MOBILE
34.7 – 35.2	RADIOLOCATION Space research 5.550 5.549	RADIOLOCATION FIXED MOBILE Space research
35.2 – 35.5	METEOROLOGICAL AIDS RADIOLOCATION 5.549	METEOROLOGICAL AIDS RADIOLOCATION FIXED MOBILE
35.5 – 36	METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549 5.551A	METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) FIXED MOBILE
36 – 37	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)
37 – 37.5	FIXED MOBILE SPACE RESEARCH (space-to-Earth)	FIXED MOBILE SPACE RESEARCH (space-to-Earth)
37.5 – 38	FIXED FIXED-SATELLITE (space-to-Earth) 5.551AA MOBILE SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth)

38 – 43.5 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
38 – 39.5	FIXED FIXED-SATELLITE (space-to-Earth) 5.551AA MOBILE Earth exploration-satellite (space-to-Earth) 5.547	FIXED FIXED-SATELLITE (space-to-Earth) 5.551AA MOBILE Earth exploration-satellite (space-to-Earth)
39.5 – 40	FIXED FIXED-SATELLITE (space-to-Earth) 5.551AA MOBILE MOBILE -SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE -SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth)
40 – 40.5	EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE -SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)	EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE -SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)
40.5 – 41	FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile 5.547	FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile PAK44
41 – 42.5	FIXED FIXED-SATELLITE (space-to-Earth) 5.551AA BROADCASTING BROADCASTING-SATELLITE Mobile 5.547 5.551F 5.551G	FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile PAK44
42.5 – 43.5	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.547	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile RADIO ASTRONOMY

43.5 – 56.9 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan's Allocations
43.5 – 47	MOBILE 5.553 MOBILE -SATELLITE RADIONAVIGATION RADIONAVIGATION- SATELLITE 5.554	MOBILE MOBILE -SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE
47 – 47.2	AMATEUR AMATEUR-SATELLITE	AMATEUR AMATEUR-SATELLITE
47.2 – 50.2	FIXED FIXED-SATELLITE (Earth-to- space) 5.552 MOBILE 5.149 5.340 5.552A 5.555	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE
50.2 – 50.4	EARTH EXPLORATION- SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.555A	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)
50.4 – 51.4	FIXED FIXED-SATELLITE (Earth-to- space) MOBILE Mobile-satellite (Earth -to-space)	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Mobile-satellite (Earth -to-space)
51.4 – 52.6	FIXED MOBILE 5.547 5.556	FIXED MOBILE
52.6 – 54.25	EARTH EXPLORATION- SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)
54.25 – 55.78	EARTH EXPLORATION- SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive) 5.556B	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE SPACE RESEARCH (passive)
55.78 – 56.9	EARTH EXPLORATION- SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE SPACE RESEARCH (passive)
55.78 – 56.9	EARTH EXPLORATION- SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE SPACE RESEARCH (passive)

56.9 – 66 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
56.9 – 57	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE SPACE RESEARCH (passive)
57 – 58.2	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE SPACE RESEARCH (passive)
58.2 – 59	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.547 5.556	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)
59 – 59.3	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive)	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE MOBILE RADIOLOCATION SPACE RESEARCH (passive)
59.3 – 64	FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138	FIXED INTER-SATELLITE MOBILE RADIOLOCATION
64 – 65	FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556	FIXED INTER-SATELLITE MOBILE except aeronautical mobile
65 – 66	EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH 5.547	EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE MOBILE except aeronautical mobile SPACE RESEARCH

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66 – 81 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
66 – 71	INTER-SATELLITE MOBILE 5.553 5.558 MOBILE -SATELLITE RADIONAVIGATION RADIONAVIGATION- SATELLITE 5.554	INTER-SATELLITE MOBILE 5.553 5.558 MOBILE -SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE
71 – 74	FIXED FIXED-SATELLITE (space-to- Earth) MOBILE MOBILE -SATELLITE (space-to- Earth)	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE -SATELLITE (space-to-Earth)
74 – 75.5	FIXED FIXED-SATELLITE (space-to- Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-E arth) 5.559A 5.561	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth)
76 – 77.5	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur -satellite Space research (space-to-Earth) 5.149	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur -satellite Space research (space-to-Earth)
77.5 – 78	AMATEUR AMATEUR-SATELLITE Radio astronomy Space research (space-to-Earth) 5.149	AMATEUR AMATEUR-SATELLITE Radio astronomy Space research (space-to-Earth)
78 – 79	RADIOLOCATION Amateur Amateur -satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560	RADIOLOCATION Amateur Amateur -satellite Radio astronomy Space research (space-to-Earth)
79 – 81	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur -satellite Space research (space-to-Earth) 5.149	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur -satellite Space research (space-to-Earth)

81 – 102 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan's Allocations
81 – 84	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE -SATELLITE (Earth to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE MOBILE -SATELLITE (Earth to-space) RADIO ASTRONOMY Space research (space-to-Earth)
84 – 86	FIXED FIXED-SATELLITE (Earth-to-space) 5.561B MOBILE RADIO ASTRONOMY 5.149	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY
86 – 92	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)
92 – 94	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION
94 – 94.1	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.562A	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy
94.1 – 95	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION
95 – 100	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE
100- 102	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)

102 – 130 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan’s Allocations
102 – 105	FIXED MOBILE RADIO ASTRONOMY 5.149 5.341	FIXED MOBILE RADIO ASTRONOMY
105 – 109.5	FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive)
109.5 – 111.8	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)
111.8 – 114.25	FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive)
114.25 – 116	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)
116 – 119.98	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.341	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE SPACE RESEARCH (passive)
119.98 – 122.25	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE SPACE RESEARCH (passive)
122.25-123	FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138	FIXED INTER-SATELLITE MOBILE Amateur
123 – 130	FIXED-SATELLITE (space-to-Earth) MOBILE -SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy 5.562D 5.149 5.554	FIXED-SATELLITE (space-to-Earth) MOBILE -SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy

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130 – 167 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan's Allocations
130 – 134	EARTH EXPLORATION-SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY 5.149 5.562A	EARTH EXPLORATION-SATELLITE (active) FIXED INTER-SATELLITE MOBILE RADIO ASTRONOMY
134 – 136	AMATEUR AMATEUR-SATELLITE Radio astronomy	AMATEUR AMATEUR-SATELLITE Radio astronomy
136 – 141	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur -satellite 5.149	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur -satellite
141 -148.5	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION
148.5-151.5	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)
151.5-155.5	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION
155.5-158.5	EARTH EXPLORATION-SATELLITE (passive) 5.562F FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.562G	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive)
158.5-164	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE -SATELLITE (space-to-Earth)	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE -SATELLITE (space-to-Earth)
164 – 167	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)

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167 – 217 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan's Allocations
167-174.5	FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 5.149 5.562D	FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE
174.5 – 174.8	FIXED INTER-SATELLITE MOBILE 5.558	FIXED INTER-SATELLITE MOBILE
174.8 – 182	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE SPACE RESEARCH (passive)
182 – 185	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)
185 – 190	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE SPACE RESEARCH (passive)
190 – 191.8	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)
191.8 – 200	FIXED INTER-SATELLITE MOBILE 5.558 MOBILE -SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.341 5.554	FIXED INTER-SATELLITE MOBILE MOBILE -SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE
200 – 202	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)
202 – 209	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 5.563A	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)
209 – 217	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.341	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY

217 – 252 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan's Allocations
217 – 226	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341
226 -231.5	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340
231.5-232	FIXED MOBILE Radiolocation	FIXED MOBILE Radiolocation
232 – 235	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation
235 – 238	EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B	EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive)
238 – 240	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE
240 – 241	FIXED MOBILE RADIOLOCATION	FIXED MOBILE RADIOLOCATION
241 – 248	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite
248 – 250	AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149	AMATEUR AMATEUR-SATELLITE Radio astronomy
250 – 252	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)

FREQUENCY ALLOCATION BOARD

252 – 1000 GHz

Allocation to Services		
Frequency	ITU – Region 3	Pakistan's Allocations
252 – 265	FIXED MOBILE MOBILE -SATELLITE (Earth -to- space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION- SATELLITE 5.149 5.554	FIXED MOBILE MOBILE -SATELLITE (Earth -to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE
265 – 275	FIXED FIXED-SATELLITE (Earth-to- space) MOBILE RADIO ASTRONOMY 5.149 5.563A	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY
275 – 1000	(Not allocated) 5.565	(Not allocated)

INTERNATIONAL FOOTNOTES

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 9kHz are urged to advise other administrations that may be concerned in order that such research may be afforded all practicable protection from harmful interference.

5.55 *Additional allocation:* in Armenia, Azerbaijan, Bulgaria, Georgia, Kyrgyzstan, the Russian Federation, Tajikistan and Turkmenistan, the band 14-17 kHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)

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, Georgia, Kazakstan, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Rep., Russian Federation, Tajikistan, Turkmenistan and Ukraine, the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions. (WRC-97)

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.

5.58 *Additional allocation:* in Armenia, Azerbaijan, Georgia, Kazakstan, Kyrgyzstan, the Russian Federation, Tajikistan and Turkmenistan, the band 67-70 kHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)

5.59 *Different category of service:* in Bangladesh and Pakistan, the allocation of the bands 70-72 kHz and 84-86 kHz to the fixed and maritime mobile services is on a primary basis (see No. **5.33**). (WRC-2000)

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.

5.63 (SUP - WRC-97)

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.

5.65 *Different category of service:* in Bangladesh, the allocation of the bands 112-117.6 kHz and 126-129 kHz to the fixed and maritime mobile services is on a primary basis (see No. **5.33**). (WRC-2000)

5.66 *Different category of service:* in Germany, the allocation of the band 115-117.6 kHz to the fixed and maritime mobile services is on a primary basis (see No. **5.33**) and to the radionavigation service on a secondary basis (see No. **5.32**).

5.67 *Additional allocation:* in Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 130-148.5 kHz is also allocated to the radionavigation service on a secondary basis. Within and between these countries this service shall have an equal right to operate. (WRC-2000)

- 5.68** *Alternative allocation:* in Angola, Botswana, Burundi, the Congo, Malawi, Dem. Rep. of the Congo, Rwanda and South Africa, the band 160-200 kHz is allocated to the fixed service on a primary basis.
- 5.69** *Additional allocation:* in Somalia, the band 200-255 kHz is also allocated to the aeronautical radionavigation service on a primary basis.
- 5.70** *Alternative allocation:* in Angola, Botswana, Burundi, Cameroon, the Central African Rep., the Congo, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Nigeria, Oman, Dem. Rep. of the Congo, Rwanda, South Africa, Swaziland, Tanzania, Chad, Zambia and Zimbabwe, the band 200-283.5 kHz is allocated to the aeronautical radionavigation service on a primary basis.
- 5.71** *Alternative allocation:* in Tunisia, the band 255-283.5 kHz is allocated to the broadcasting service on a primary basis.
- 5.72** Norwegian stations of the fixed service situated in northern areas (north of 60° N) subject to auroral disturbances are allowed to continue operation on four frequencies in the bands 283.5-490 kHz and 510-526.5 kHz.
- 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)
- 5.74** *Additional Allocation:* in Region 1, the frequency band 285.3-285.7 kHz is also allocated to the maritime radionavigation service (other than radiobeacons) on a primary basis.
- 5.75** *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, Moldova, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and the Black Sea areas of Bulgaria and Romania, the allocation of the band 315-325 kHz to the maritime radionavigation service is on a primary basis under the condition that in the Baltic Sea area, the assignment of frequencies in this band to new stations in the maritime or aeronautical radionavigation services shall be subject to prior consultation between the administrations concerned. (WRC-2000)
- 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.
- 5.77** *Different category of service:* in Australia, China, the French Overseas Territories of Region 3, India, Indonesia (until 1 January 2005), Iran (Islamic Republic of), Japan, Pakistan, Papua New Guinea and Sri Lanka, the allocation of the band 415-495 kHz to the aeronautical radionavigation service is on a primary basis. Administrations in these countries shall take all practical steps necessary to ensure that aeronautical radionavigation stations in the band 435-495 kHz do not cause interference to reception by coast stations of ship stations transmitting on frequencies designated for ship stations on a worldwide basis (see No. **52.39**). (WRC-2000)
- 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.
- 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 4209.5 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-2000)
- 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)

5.85 Not used.

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.

5.87 *Additional allocation:* in Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe, the band 526.5-535 kHz is also allocated to the mobile service on a secondary basis.

5.87A *Additional allocation:* in Uzbekistan, the band 526.5-1 606.5 kHz is also allocated to the radionavigation service on a primary basis. Such use is subject to agreement obtained under No. **9.21** with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime. (WRC-97)

5.88 *Additional allocation:* in China, the band 526.5-535 kHz is also allocated to the aeronautical radionavigation service on a secondary basis.

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 1625-1 705 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.

5.91 *Additional allocation:* in the Philippines and Sri Lanka, the band 1 606.5-1 705 kHz is also allocated to the broadcasting service on a secondary basis. (WRC-97)

5.92 Some countries of Region 1 use radiodetermination systems in the bands 1 606.5-1 625 kHz, 1 635-1 800 kHz, 1 850-2 160 kHz, 2 194-2 300 kHz, 2 502-2 850 kHz and 3 500-3 800 kHz, subject to agreement obtained under No. **9.21**. The radiated mean power of these stations shall not exceed 50 W.

5.93 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Georgia, Hungary, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Nigeria, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., the Russian Federation, Tajikistan, Chad, Turkmenistan and Ukraine, the bands 1 625-1 635 kHz, 1 800-1 810 kHz and 2 160-2 170 kHz and, in Bulgaria, the bands 1 625-1 635 kHz and 1 800-1 810 kHz, are also allocated to the fixed and land mobile services on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-2000)

5.94 and **5.95** Not used.

5.96 In Germany, Armenia, Austria, Azerbaijan, Belarus, Denmark, Estonia, Finland, Georgia, Hungary, Ireland, Israel, Jordan, Kazakstan, Latvia, Liechtenstein, Lithuania, Malta, Moldova, Norway, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., the United Kingdom, the Russian Federation, Sweden, Switzerland, Tajikistan, Turkmenistan and Ukraine, administrations may allocate up to 200 kHz to their amateur service in the bands 1 715-1 800 kHz and 1 850-2 000 kHz. However, when allocating the bands within this range to their amateur service, administrations shall, after prior consultation with administrations of neighbouring countries, take such steps as may be necessary to prevent harmful interference from their amateur service to the fixed and mobile services of other countries. The mean power of any amateur station shall not exceed 10 W. (WRC-2000)

5.97 In Region 3, the Loran system operates either on 1 850 kHz or 1 950 kHz, the bands occupied being 1 825-1 875 kHz and 1 925-1 975 kHz respectively. Other services to which the band 1 800-2 000 kHz is allocated may use any frequency therein on condition that no harmful interference is caused to the Loran system operating on 1 850 kHz or 1 950 kHz.

5.98 *Alternative allocation:* in Angola, Armenia, Azerbaijan, Belarus, Belgium, Bulgaria, Cameroon, the Congo, Denmark, Egypt, Eritrea, Spain, Ethiopia, Georgia, Greece, Italy, Kazakstan, Lebanon, Lithuania, Moldova, the Netherlands, Syria, Kyrgyzstan, the Russian Federation, Somalia, Tajikistan, Tunisia, Turkmenistan, Turkey and Ukraine, the band 1 810-1 830 kHz is allocated to the fixed

and mobile, except aeronautical mobile, services on a primary basis. (WRC-2000)

5.99 *Additional allocation:* in Saudi Arabia, Austria, Bosnia and Herzegovina, Iraq, Libya, Uzbekistan, Slovakia, the Czech Rep., Romania, Slovenia, Chad, Togo and Yugoslavia, the band 1810-1830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-2000)

5.100 In Region 1, the authorization to use the band 1810-1830 kHz by the amateur service in countries situated totally or partially north of 40° N shall be given only after consultation with the countries mentioned in Nos. **5.98** and **5.99** to define the necessary steps to be taken to prevent harmful interference between amateur stations and stations of other services operating in accordance with Nos. **5.98** and **5.99**.

5.101 *Alternative allocation:* in Burundi and Lesotho, the band 1810-1850 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

5.102 *Alternative allocation:* in Argentina, Bolivia, Chile, Mexico, Paraguay, Peru, Uruguay and Venezuela, the band 1850-2000 kHz is allocated to the fixed, mobile except aeronautical mobile, radiolocation and radionavigation services on a primary basis.

5.103 In Region 1, in making assignments to stations in the fixed and mobile services in the bands 1850-2045 kHz, 2194-2498 kHz, 2502-2625 kHz and 2650-2850 kHz, administrations should bear in mind the special requirements of the maritime mobile service.

5.104 In Region 1, the use of the band 2025-2045 kHz by the meteorological aids service is limited to oceanographic buoy stations.

5.105 In Region 2, except in Greenland, coast stations and ship stations using radiotelephony in the band 2065-2107 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: 2065.0 kHz, 2079.0 kHz, 2082.5 kHz, 2086.0 kHz, 2093.0 kHz, 2096.5 kHz, 2100.0 kHz and 2103.5 kHz. In Argentina and Uruguay, the carrier frequencies 2068.5 kHz and 2075.5 kHz are also used for this purpose, while the frequencies within the band 2072-2075.5 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 2065 kHz and 2107 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.

5.107 *Additional allocation:* in Saudi Arabia, Botswana, Eritrea, Ethiopia, Iraq, Lesotho, Libya, Somalia and Swaziland, the band 2160-2170 kHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. The mean power of stations in these services shall not exceed 50 W. (WRC-2000)

5.108 The carrier frequency 2182 kHz is an international distress and calling frequency for radiotelephony. The conditions for the use of the band 2173.5-2190.5 kHz are prescribed in Articles **31** and **52** and in Appendix **13**.

5.109 The frequencies 2187.5 kHz, 4207.5 kHz, 6312 kHz, 8414.5 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**.

5.110 The frequencies 2174.5 kHz, 4177.5 kHz, 6268 kHz, 8 376.5 kHz, 12520 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 2182 kHz, 3023 kHz, 5680 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, 14993 kHz and 19993 kHz, but in each of these cases emissions must be confined in a band of 3 kHz about the frequency.

5.112 *Alternative allocation:* in Bosnia and Herzegovina, Cyprus, Denmark, Greece, Iceland, Malta, Sri Lanka and Yugoslavia, the band 2194-2300 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-2000)

5.113 For the conditions for the use of the bands 2300-2 495 kHz (2498 kHz in Region 1), 3200-3400 kHz, 4750-4 995 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**.

5.114 *Alternative allocation:* in Bosnia and Herzegovina, Cyprus, Denmark, Greece, Iraq, Malta, and Yugoslavia, the band 2502-2 625 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-2000)

5.115 The carrier (reference) frequencies 3023 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 3155-3195 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 3155 kHz and 3 400 kHz to suit local needs.

It should be noted that frequencies in the range 3000 kHz to 4000 kHz are suitable for hearing aid devices which are designed to operate over short distances within the induction field.

5.117 *Alternative allocation:* in Bosnia and Herzegovina, Cyprus, Côte d'Ivoire, Denmark, Egypt, Greece, Iceland, Liberia, Malta, Sri Lanka, Togo and Yugoslavia, the band 3155-3200 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-2000)

5.118 *Additional allocation:* in the United States, Japan, Mexico, Peru and Uruguay, the band 3230-3 400 kHz is also allocated to the radiolocation service on a secondary basis.

5.119 *Additional allocation:* in Honduras, Mexico, Peru and Venezuela, the band 3500-3 750 kHz is also allocated to the fixed and mobile services on a primary basis.

5.120 (SUP - WRC-2000)

5.121 Not used.

5.122 *Alternative allocation:* in Argentina, Bolivia, Chile, Ecuador, Paraguay, Peru and Uruguay, the band 3750-4 000 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

5.123 *Additional allocation:* in Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe, the band 3900-3 950 kHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **9.2 1**.

5.124 (SUP - WRC-2000)

5.125 *Additional allocation:* in Greenland, the band 3950-4 000 kHz is also allocated to the broadcasting service on a primary basis. The power of the broadcasting stations operating in this band shall not exceed that necessary for a national service and shall in no case exceed 5 kW.

5.126 In Region 3, the stations of those services to which the band 3 995-4 005 kHz is allocated may transmit standard frequency and time signals.

5.127 The use of the band 4000-4063 kHz by the maritime mobile service is limited to ship stations using radiotelephony (see No. **5.220** and Appendix **17**).

5.128 In Afghanistan, Argentina, Armenia, Azerbaijan, Belarus, Botswana, Burkina Faso, the Central African Rep., China, Georgia, India, Kazakstan, Mali, Niger, Kyrgyzstan, Russian Federation, Tajikistan, Chad, Turkmenistan and Ukraine, in the bands 4063-4123 kHz, 4130-4133 kHz and 4408-4438 kHz, stations of limited power in the fixed service which are situated at least 600 km from the coast may operate on condition that harmful interference is not caused to the maritime mobile service. (WRC-97)

5.129 On condition that harmful interference is not caused to the maritime mobile service, the frequencies in the bands 4063-4123 kHz and 4130-4438 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 4125 kHz and 6215 kHz are prescribed in Articles **31** and **52** and in Appendix **13**.

5.131 The frequency 4209.5 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 4210 kHz, 6314 kHz, 8416.5 kHz, 12579 kHz, 16806.5 kHz, 19680.5 kHz, 22376 kHz and 26100.5 kHz are the international frequencies for the transmission of maritime safety information (MSI) (see Appendix **17**).

5.133 *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, Kazakstan, Latvia, Lithuania, Moldova, Uzbekistan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 5130-5250 kHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **5.33**).

5.134 The use of the bands 5900-5950 kHz, 7300-7350 kHz, 9400-9500 kHz, 11600-11650 kHz, 12050-12100 kHz, 13570-13600 kHz, 13800-13870 kHz, 15600-15800 kHz, 17480-17550 kHz and 18900-19020 kHz by the broadcasting service is limited to single-sideband emissions with the characteristics specified in Appendix **11** or to any other spectrum-efficient modulation techniques recommended by ITU-R. Access to these bands shall be subject to the decisions of a competent conference. (WRC-97)

5.135 (SUP - WRC-97)

5.136 The band 5900-5950 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 6200-6213.5 kHz and 6220.5-6525 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:

6765-6795 kHz	(centre frequency 6780 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.

5.139 *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 6765-7 000 kHz to the land mobile service is on a primary basis (see No. **5.33**).

5.140 *Additional allocation:* in Angola, Iraq, Rwanda, Somalia and Togo, the band 7000-7 050 kHz is also allocated to the fixed service on a primary basis.

5.141 *Alternative allocation:* in Egypt, Eritrea, Ethiopia, Guinea, Libya and Madagascar, the band 7000-7 050 kHz is allocated to the fixed service on a primary basis. (WRC-97)

5.142 The use of the band 7 100-7300 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.

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.

5.144 In Region 3, the stations of those services to which the band 7 995-8 005 kHz is allocated may transmit standard frequency and time signals.

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,
25 550-25 670 kHz,
37.5-38.25 MHz,
73-74.6 MHz in Regions 1 and 3,
150.05-153 MHz in Region 1,
322-328.6 MHz,
406.1-410 MHz,
608-614 MHz in Regions 1 and 3,
1 330-1 400 MHz,
1 610.6-1 613.8 MHz,
1 660-1 670 MHz,
1 718.8-1 722.2 MHz,
2 655-2 690 MHz,
3 260-3 267 MHz,
3 332-3 339 MHz,
3 345.8-3 352.5 MHz,
4 825-4 835 MHz,
4 950-4 990 MHz,
4 990-5 000 MHz,
6 650-6 675.2 MHz,
10.6-10.68 GHz,
14.47-14.5 GHz,
22.01-22.21 GHz,
22.21-22.5 GHz,
22.81-22.86 GHz,
23.07-23.12 GHz,
31.2-31.3 GHz,
31.5-31.8 GHz in Regions 1 and 3,
36.43-36.5 GHz,
42.5-43.5 GHz,
42.77-42.87 GHz,
43.07-43.17 GHz,
43.37-43.47 GHz,
48.94-49.04 GHz,
76-86 GHz,
92-94 GHz,
94.1-100 GHz,
102-109.5 GHz,
111.8-114.25 GHz,
128.33-128.59 GHz,

129.23-129.49 GHz,
 130-134 GHz,
 136-148.5 GHz,
 151.5 -158.5 GHz,
 168.59-168.93 GHz,
 171.11-171.45 GHz,
 172.31-172.65 GHz,
 173.52-173.85 GHz,
 195.75-196.15 GHz,
 209-226 GHz,
 241-250 GHz,
 252-275 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)

5.150 The following bands:

13553-13 567 kHz	(centre frequency 13 560 kHz),
26957-27 283 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),
2 400-2500 MHz	(centre frequency 2 450 MHz),
5 725-5875 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.

5.152 *Additional allocation:* in Armenia, Azerbaijan, China, Côte d'Ivoire, Georgia, Iran (Islamic Republic of), Kazakstan, Moldova, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 14 250-14 350 kHz is also allocated to the fixed service on a primary basis. Stations of the fixed service shall not use a radiated power exceeding 24 dBW. (WRC-2000)

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.

5.154 *Additional allocation:* in Armenia, Azerbaijan, Georgia, Kazakstan, Moldova, Kyrgyzstan,

the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 18068-18 168 kHz is also allocated to the fixed service on a primary basis for use within their boundaries, with a peak envelope power not exceeding 1 kW. (WRC-2000)

5.155 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Kazakstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Rep., Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 21 850-21 870 kHz is also allocated to the aeronautical mobile (R) services on a primary basis.

5.155A In Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Rep., the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the use of the band 21 850-21 870 kHz by the fixed service is limited to provision of services related to aircraft flight safety. (WRC-2000)

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

5.156 *Additional allocation:* in Nigeria, the band 22 720-23 200 kHz is also allocated to the meteorological aids service (radiosondes) on a primary basis.

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.

5.158 and 5.159 Not used.

5.160 *Additional allocation:* in Botswana, Burundi, Lesotho, Malawi, Dem. Rep. of the Congo, Rwanda and Swaziland, the band 41-44 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-2000)

5.161 *Additional allocation:* in Iran (Islamic Republic of) and Japan, the band 41-44 MHz is also allocated to the radiolocation service on a secondary basis.

5.162 *Additional allocation:* in Australia and New Zealand, the band 44-47 MHz is also allocated to the broadcasting service on a primary basis.

5.162A *Additional allocation:* in Germany, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Denmark, Spain, Estonia, Finland, France, Ireland, Iceland, Italy, Latvia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Lithuania, Luxembourg, Moldova, Monaco, Norway, the Netherlands, Poland, Portugal, Slovakia, the Czech Rep., the United Kingdom, the Russian Federation, Sweden and Switzerland the band 46-68 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution **217 (WRC-97)**. (WRC-2000)

5.163 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Estonia, Georgia, Hungary, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Rep., Russian Federation, Tajikistan, Turkmenistan and Ukraine, the bands 47-48.5 MHz and 56.5-58 MHz are also allocated to the fixed and land mobile services on a secondary basis.

5.164 *Additional allocation:* in Albania, Germany, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Côte d'Ivoire, Denmark, Spain, Finland, France, Gabon, Greece, Ireland, Israel, Italy, Jordan, Lebanon, Libya, Liechtenstein, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Nigeria, Norway, the Netherlands, Poland, Syria, the United Kingdom, Senegal, Slovenia, Sweden, Switzerland, Swaziland, Togo, Tunisia, Turkey and Yugoslavia the band 47-68 MHz, in Romania the band 47-58 MHz and in the Czech Rep. the band 66-68 MHz, are also allocated to the land mobile service on a primary basis. However, stations of the land mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations of countries other than those mentioned in connection with the band. (WRC-97)

5.165 *Additional allocation:* in Angola, Cameroon, the Congo, Madagascar, Mozambique, Somalia, Sudan, Tanzania and Chad, the band 47-68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

5.166 *Alternative allocation:* in New Zealand, the band 50-51 MHz is allocated to the fixed, mobile and broadcasting services on a primary basis; the band 53-54 MHz is allocated to the fixed and mobile services on a primary basis.

5.167 *Alternative allocation:* in Bangladesh, Brunei Darussalam, India, Indonesia, Iran (Islamic Republic of), Malaysia, Pakistan, Singapore and Thailand, the band 50-54 MHz is allocated to the fixed, mobile and broadcasting services on a primary basis.

5.168 *Additional allocation:* in Australia, China and the Dem. People's Rep. of Korea, the band 50-54 MHz is also allocated to the broadcasting service on a primary basis.

5.169 *Alternative allocation:* in Botswana, Burundi, Lesotho, Malawi, Namibia, Dem. Rep. of the Congo, Rwanda, South Africa, Swaziland, Zambia and Zimbabwe, the band 50-54 MHz is allocated to the amateur service on a primary basis.

5.170 *Additional allocation:* in New Zealand, the band 51-53 MHz is also allocated to the fixed and mobile services on a primary basis.

5.171 *Additional allocation:* in Botswana, Burundi, Lesotho, Malawi, Mali, Namibia, Dem. Rep. of the Congo, Rwanda, South Africa, Swaziland and Zimbabwe, the band 54-68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

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**).

5.174 *Alternative allocation:* in Bulgaria, Hungary, Poland and Romania, the band 68-73 MHz is allocated to the broadcasting service on a primary basis and used in accordance with the decisions in the Final Acts of the Special Regional Conference (Geneva, 1960). (WRC-97)

5.175 *Alternative allocation:* in Armenia, Azerbaijan, Belarus, Georgia, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting service on a primary basis. The services to which these bands are allocated in other countries and the broadcasting service in the countries listed above are subject to agreements with the neighbouring countries concerned. (WRC-2000)

5.176 *Additional allocation:* in Australia, China, Korea (Rep. of), Estonia (subject to agreement obtained under No. **9.21**), the Philippines, the Dem. People's Rep. of Korea and Samoa, the band 68-74 MHz is also allocated to the broadcasting service on a primary basis. (WRC-2000)

5.177 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Latvia, Moldova, Uzbekistan, Poland, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 73-74 MHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-2000)

5.178 *Additional allocation:* in Colombia, Costa Rica, Cuba, El Salvador, Guatemala, Guyana, Honduras and Nicaragua, the band 73-74.6 MHz is also allocated to the fixed and mobile services on a secondary basis.

5.179 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, China, Georgia, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Russian Federation, Tajikistan, Turkmenistan and Ukraine, the bands 74.6-74.8 MHz and 75.2-75.4 MHz are also allocated to the aeronautical radionavigation service, on a primary basis, for ground-based transmitters only.

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.

5.181 *Additional allocation:* in Egypt, Israel, Japan, and Syria, the band 74.8-75.2 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedure invoked under No. **9.21**. (WRC-2000)

5.182 *Additional allocation:* in Western Samoa, the band 75.4-87 MHz is also allocated to the broadcasting service on a primary basis.

5.183 *Additional allocation:* in China, Korea (Rep. of), Japan, the Philippines and the Dem. People's Rep. of Korea, the band 76-87 MHz is also allocated to the broadcasting service on a primary basis.

5.184 *Additional allocation:* in Bulgaria and Romania, the band 76-87.5 MHz is also allocated to the broadcasting service on a primary basis and used in accordance with the decisions contained in the Final Acts of the Special Regional Conference (Geneva, 1960). (WRC-97)

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**).

5.186 (SUP -WRC-97)

5.187 *Alternative allocation:* in Albania, the band 81-87.5 MHz is allocated to the broadcasting service on a primary basis and used in accordance with the decisions contained in the Final Acts of the Special Regional Conference (Geneva, 1960).

5.188 *Additional allocation:* in Australia, the band 85-87 MHz is also allocated to the broadcasting service on a primary basis. The introduction of the broadcasting service in Australia is subject to special agreements between the administrations concerned.

5.189 Not used.

5.190 *Additional allocation:* in Monaco, the band 87.5-88 MHz is also allocated to the land mobile service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-97)

5.191 Not used.

5.192 *Additional allocation:* in China and Korea (Rep. of), the band 100-108 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-97)

5.193 Not used.

5.194 *Additional allocation:* in Azerbaijan, Lebanon, Syria, Kyrgyzstan, Somalia and Turkmenistan, the band 104-108 MHz is also allocated to the mobile, except aeronautical mobile (R), service on a secondary basis. (WRC-97)

5.195 and **5.196** Not used.

5.197 *Additional allocation:* in Japan, Pakistan and Syria, the band 108-111.975 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedures invoked under No. **9.21**. (WRC-2000)

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.

5.201 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Latvia, Moldova, Mongolia, Mozambique, Uzbekistan, Papua New Guinea, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 132-136 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC-97)

5.202 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Bulgaria, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Jordan, Latvia, Moldova, Oman, Uzbekistan, Poland, Syria, Kyrgyzstan, Slovakia, the Czech Rep., Romania, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 136-137 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC-2000)

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)

5.203A *Additional allocation:* in Israel, Mauritania, Qatar and Zimbabwe, the band 136-137 MHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a secondary basis until 1 January 2005. (WRC-97)

5.203B *Additional allocation:* in Saudi Arabia, United Arab Emirates, Jordan, Oman and Syria, the band 136-137 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis until 1 January 2005. (WRC-97)

5.204 *Different category of service:* in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Bosnia and Herzegovina, Brunei Darussalam, China, Cuba, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Malaysia, Oman, Pakistan, Philippines, Qatar, Singapore, Sri Lanka, Thailand, Yemen and Yugoslavia, the band 137-138 MHz is allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis (see No. 5.33).

5.205 *Different category of service:* in Israel and Jordan, the allocation of the band 137-138 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 5.33).

5.206 *Different category of service:* in Armenia, Azerbaijan, Belarus, Bulgaria, Egypt, Finland, France, Georgia, Greece, Kazakhstan, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Syria, Slovakia, the Czech Rep., Romania, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 137-138 MHz to the aeronautical mobile (OR) service is on a primary basis (see No. 5.33). (WRC-2000)

5.207 *Additional allocation:* in Australia, the band 137-144 MHz is also allocated to the broadcasting service on a primary basis until that service can be accommodated within regional broadcasting allocations.

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)

5.210 *Additional allocation:* in France, Italy, Liechtenstein, Slovakia, the Czech Rep., the United Kingdom and Switzerland, the bands 138-143.6 MHz and 143.65-144 MHz are also allocated to the space research service (space-to-Earth) on a secondary basis. (WRC-2000)

5.211 *Additional allocation:* in Germany, Saudi Arabia, Austria, Bahrain, Belgium, Bosnia and Herzegovina, Denmark, the United Arab Emirates, Spain, Finland, Greece, Ireland, Israel, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Liechtenstein, Luxembourg, Mali, Malta, Norway, the Netherlands, Qatar, the United Kingdom, Somalia, Sweden, Switzerland, Tanzania, Tunisia, Turkey and Yugoslavia, the band 138-144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis. (WRC-2000)

5.212 *Alternative allocation:* in Angola, Botswana, Burundi, Cameroon, the Central African Rep., the Congo, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Lesotho, Liberia, Libya, Malawi, Mozambique, Namibia, Nigeria, Oman, Dem. Rep. of the Congo, Rwanda, Sierra Leone, South Africa, Swaziland, Chad, Togo, Zambia and Zimbabwe, the band 138-144 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-2000)

5.213 *Additional allocation:* in China, the band 138-144 MHz is also allocated to the radiolocation service on a primary basis.

5.214 *Additional allocation:* in Bosnia and Herzegovina, Croatia, Eritrea, Ethiopia, Kenya, The Former Yugoslav Republic of Macedonia, Malta, Somalia, Sudan, Tanzania and Yugoslavia, the band 138-144 MHz is also allocated to the fixed service on a primary basis. (WRC-2000)

5.215 Not used.

5.216 *Additional allocation:* in China, the band 144-146 MHz is also allocated to the aeronautical mobile (OR) service on a secondary basis.

5.217 *Alternative allocation:* in Afghanistan, Bangladesh, Cuba, Guyana and India, the band 146-148 MHz is allocated to the fixed and mobile services on a primary basis.

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, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo, Korea (Rep. of), Croatia, Cuba, Denmark, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, Finland, France, Gabon, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Latvia, The Former Yugoslav Republic of Macedonia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, Syria, Kyrgyzstan, Slovakia, Romania, the United Kingdom, the Russian Federation, Senegal, 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, Yugoslavia, Zambia, and Zimbabwe. (WRC-2000)

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)

5.225 *Additional allocation:* in Australia and India, the band 150.05-153 MHz is also allocated to the radio astronomy service on a primary basis.

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 radiocommunication 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**.

5.228 Not used.

5.229 *Alternative allocation:* in Morocco, the band 162-174 MHz is allocated to the broadcasting service on a primary basis. The use of this band shall be subject to agreement with administrations having services, operating or planned, in accordance with the Table which are likely to be affected. Stations in existence on 1 January 1981, with their technical characteristics as of that date, are not affected by such agreement.

5.230 *Additional allocation:* in China, the band 163-167 MHz is also allocated to the space operation service (space-to-Earth) on a primary basis, subject to agreement obtained under No. **9.21**.

5.231 *Additional allocation:* in Afghanistan, China and Pakistan, the band 167-174 MHz is also allocated to the broadcasting service on a primary basis. The introduction of the broadcasting service into this band shall be subject to agreement with the neighbouring countries in Region 3 whose services are likely to be affected.

5.232 *Additional allocation:* in Japan, the band 170-174 MHz is also allocated to the broadcasting service on a primary basis.

5.233 *Additional allocation:* in China, the band 174-184 MHz is also allocated to the space research (space-to-Earth) and the space operation (space-to-Earth) services on a primary basis, subject to agreement obtained under No. **9.21**. These services shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations.

5.234 *Different category of service:* in Mexico, the allocation of the band 174-216 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**).

5.235 *Additional allocation:* in Germany, Austria, Belgium, Denmark, Spain, Finland, France, Israel, Italy, Liechtenstein, Malta, Monaco, Norway, the Netherlands, the United Kingdom, Sweden and Switzerland, the band 174-223 MHz is also allocated to the land mobile service on a primary basis. However, the stations of the land mobile service shall not cause harmful interference to, or claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.

5.236 Not used.

5.237 *Additional allocation:* in the Congo, Eritrea, Ethiopia, Gambia, Guinea, Libya, Malawi, Mali, Senegal, Sierra Leone, Somalia, Tanzania and Zimbabwe, the band 174-223 MHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-97)

5.238 *Additional allocation:* in Bangladesh, India, Pakistan and the Philippines, the band 200-216 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

5.239 Not used.

5.240 *Additional allocation:* in China and India, the band 216-223 MHz is also allocated to the aeronautical radionavigation service on a primary basis and to the radiolocation service on a secondary basis.

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.

5.243 *Additional allocation:* in Somalia, the band 216-225 MHz is also allocated to the aeronautical radionavigation service on a primary basis, subject to not causing harmful interference to existing or planned broadcasting services in other countries.

5.244 (SUP - WRC-97)

5.245 *Additional allocation:* in Japan, the band 222-223 MHz is also allocated to the aeronautical radionavigation service on a primary basis and to the radiolocation service on a secondary basis.

5.246 *Alternative allocation:* in Spain, France, Israel and Monaco, the band 223-230 MHz is allocated to the broadcasting and land mobile services on a primary basis (see No. **5.33**) on the basis that, in the preparation of frequency plans, the broadcasting service shall have prior choice of frequencies; and allocated to the fixed and mobile, except land mobile, services on a secondary basis. However, the stations of the land mobile service shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations in Morocco and Algeria.

5.247 *Additional allocation:* in Saudi Arabia, Bahrain, the United Arab Emirates, Jordan, Oman, Qatar and Syria, the band 223-235 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

5.248 and **5.249** Not used.

5.250 *Additional allocation:* in China, the band 225-235 MHz is also allocated to the radio astronomy service on a secondary basis.

5.251 *Additional allocation:* in Nigeria, the band 230-235 MHz is also allocated to the aeronautical radionavigation service on a primary basis, subject to agreement obtained under No. **9.21**.

5.252 *Alternative allocation:* in Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe, the bands 230-238 MHz and 246-254 MHz are allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **9.21**.

5.253 Not used.

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.

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**).

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).

5.259 *Additional allocation:* in Egypt, Israel, Japan, and Syria, the band 328.6-335.4 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedure invoked under No. **9.21**. (WRC-2000)

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.

5.262 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Bulgaria, Colombia, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Liberia, Malaysia, Moldova, Nigeria, Uzbekistan, Pakistan, the Philippines, Qatar, Syria, Kyrgyzstan, Slovakia, Romania, the Russian Federation, Singapore, Somalia, Tajikistan, Turkmenistan, Ukraine and Yugoslavia, the band 400.05-401 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC2000)

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.

5.265 Not used.

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 5km 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 $0^\circ \leq \theta < 5^\circ$, $-153 + 0.077(\theta - 5)$ dB(W/m²) for $5^\circ \leq \theta < 70^\circ$ and -148 dB(W/m²) for $70^\circ \leq \theta < 90^\circ$, where θ 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. (WRC97)

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**).

5.270 *Additional allocation:* in Australia, the United States, Jamaica and the Philippines, the bands 420-430 MHz and 440-450 MHz are also allocated to the amateur service on a secondary basis.

5.271 *Additional allocation:* in Azerbaijan, Belarus, China, Estonia, India, Latvia, Lithuania, Kyrgyzstan and Turkmenistan, the band 420-460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis. (WRC-2000)

5.272 *Different category of service:* in France, the allocation of the band 430-434 MHz to the amateur service is on a secondary basis (see No. **5.32**).

5.273 *Different category of service:* in Denmark, Libya and Norway, the allocation of the bands 430-432 MHz and 438-440 MHz to the radiolocation service is on a secondary basis (see No. **5.32**).

5.274 *Alternative allocation:* in Denmark, Norway and Sweden, the bands 430-432 MHz and 438-440 MHz are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

5.275 *Additional allocation:* in Bosnia and Herzegovina, Croatia, Estonia, Finland, Latvia, The Former Yugoslav Republic of Macedonia, Libya, Slovenia and Yugoslavia, the bands 430-432 MHz and 438-440 MHz are also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-97)

5.276 *Additional allocation:* in Afghanistan, Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burkina Faso, Burundi, Egypt, the United Arab Emirates, Ecuador, Eritrea, Ethiopia, Greece, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Jordan, Kenya, Kuwait, Lebanon, Libya, Liechtenstein, Malaysia, Malta, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, the Dem. People's Rep. of Korea, Singapore, Somalia, Switzerland, Tanzania, Thailand, Togo, Turkey and Yemen, the band 430-440 MHz is also allocated to the fixed service on a primary basis and the bands 430-435 MHz and 438-440 MHz are also allocated to the mobile, except aeronautical mobile, service on a primary basis. (WRC-97)

5.277 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, Congo, Djibouti, Georgia, Hungary, Israel, Kazakhstan, Latvia, Mali, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, the Russian Federation, Rwanda, Tajikistan, Chad, Turkmenistan and Ukraine, the band 430-440 MHz is also allocated to the fixed service on a primary basis. (WRC-2000)

5.278 *Different category of service:* in Argentina, Colombia, Costa Rica, Cuba, Guyana, Honduras, Panama and Venezuela, the allocation of the band 430-440 MHz to the amateur service is on a primary basis (see No. **5.33**).

5.279 *Additional allocation:* in Mexico, the bands 430-435 MHz and 438-440 MHz are also allocated on a primary basis to the land mobile service, subject to agreement obtained under No. **9.21**.

5.280 In Germany, Austria, Bosnia and Herzegovina, Croatia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Portugal, Slovenia, Switzerland and Yugoslavia, the band 433.05-434.79 MHz (centre frequency 433.92 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services of these countries operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. **15.13**.

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.

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.

5.283 *Additional allocation:* in Austria, the band 438-440 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

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.

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.

5.290 *Different category of service:* in Afghanistan, Azerbaijan, Belarus, China, Japan, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 4 60-470 MHz to the meteorological-satellite service (space-to-Earth) is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (WRC-2000)

5.291 *Additional allocation:* in China, the band 470-485 MHz is also allocated to the space research (space-to-Earth) and the space operation (space-to-Earth) services on a primary basis subject to agreement obtained under No. **9.21** and subject to not causing harmful interference to existing and planned broadcasting stations.

5.291A *Additional allocation:* in Germany, Austria, Denmark, Estonia, Finland, Liechtenstein, Norway, Netherlands, the Czech Rep. and Switzerland, the band 470-494 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution **217 (WRC-97)**. (WRC-97)

5.292 *Different category of service:* in Mexico and Venezuela, the allocation of the band 470-512 MHz to the fixed and mobile services, and in Argentina and Uruguay to the mobile service, is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**.

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 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)

5.294 *Additional allocation:* in Burundi, Cameroon, the Congo, Ethiopia, Israel, Kenya, Lebanon, Libya, Malawi, Senegal, Sudan, Syria, and Yemen, the band 470-582 MHz is also allocated to the fixed service on a secondary basis.

5.295 Not used.

5.296 *Additional allocation:* in Germany, Austria, Belgium, Cyprus, Denmark, Spain, Finland, France, Ireland, Israel, Italy, Libya, Lithuania, Malta, Morocco, Monaco, Norway, the Netherlands, Portugal, Syria, the United Kingdom, Sweden, Switzerland, Swaziland and Tunisia, the band 470-790 MHz is also allocated on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting. Stations of the land mobile service in the countries listed in this footnote shall not cause harmful interference to existing or planned stations operating in accordance with the Table in countries other than those listed in this footnote. (WRC-2000)

5.297 *Additional allocation:* in Costa Rica, Cuba, El Salvador, the United States, Guatemala, Guyana, Honduras, Jamaica and Mexico, the band 512-608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-2000)

5.298 *Additional allocation:* in India, the band 549.75-550.25 MHz is also allocated to the space operation service (space-to-Earth) on a secondary basis.

5.299 Not used.

5.300 *Additional allocation:* in Israel, Libya, Syria and Sudan, the band 582-790 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis.

5.301 Not used.

5.302 *Additional allocation:* in the United Kingdom, the band 590-598 MHz is also allocated to the aeronautical radionavigation service on a primary basis. All new assignments to stations in the aeronautical radionavigation service, including those transferred from the adjacent bands, shall be subject to coordination with the Administrations of the following countries: Germany, Belgium, Denmark, Spain, France, Ireland, Luxembourg, Morocco, Norway and the Netherlands.

5.303 Not used.

5.304 *Additional allocation:* in the African Broadcasting Area (see Nos. **5.10** to **5.13**), the band 606-614 MHz is also allocated to the radio astronomy service on a primary basis.

5.305 *Additional allocation:* in China, the band 606-614 MHz is also allocated to the radio astronomy service on a primary basis.

5.306 *Additional allocation:* in Region 1, except in the African Broadcasting Area (see Nos. **5.10** to **5.13**), and in Region 3, the band 608-614 MHz is also allocated to the radio astronomy service on a secondary basis.

- 5.307** *Additional allocation:* in India, the band 608-614 MHz is also allocated to the radio astronomy service on a primary basis.
- 5.308** Not used.
- 5.309** *Different category of service:* in Costa Rica, El Salvador and Honduras, the allocation of the band 614-806 MHz to the fixed service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**.
- 5.310** (SUP -WRC-97)
- 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-97)** and **507**). Such stations shall not produce a power flux-density in excess of the value $-129 \text{ dB(W/m}^2\text{)}$ 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.
- 5.312** *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Kazakhstan, Latvia, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 645-862 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-97)
- 5.313** (SUP -WRC-97)
- 5.314** *Additional allocation:* in Austria, Italy, Moldova, Uzbekistan, the United Kingdom and Swaziland, the band 790-862 MHz is also allocated to the land mobile service on a secondary basis. (WRC-2000)
- 5.315** *Alternative allocation:* in Greece, Italy and Tunisia, the band 790-838 MHz is allocated to the broadcasting service on a primary basis. (WRC-2000)
- 5.316** *Additional allocation:* in Germany, Saudi Arabia, Bosnia and Herzegovina, Burkina Faso, Cameroon, Côte d'Ivoire, Croatia, Denmark, Egypt, Finland, Israel, Kenya, The Former Yugoslav Republic of Macedonia, Libya, Liechtenstein, Monaco, Norway, the Netherlands, Portugal, Syria, Sweden, Switzerland and Yugoslavia, the band 790-830 MHz, and in these same countries and in Spain, France, Gabon and Malta, the band 830-862 MHz, are also allocated to the mobile, except aeronautical mobile, service on a primary basis. However, stations of the mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, stations of services operating in accordance with the Table in countries other than those mentioned in connection with the band. (WRC-2000)
- 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.
- 5.319** *Additional allocation:* in Belarus, Russian Federation and Ukraine, the bands 806-840 MHz (Earth-to-space) and 856-890 MHz (space-to-Earth) are also allocated to the mobile-satellite, except aeronautical mobile-satellite (R), service. The use of these bands by this service shall not cause harmful interference to, or claim protection from, services in other countries operating in accordance with the Table of Frequency Allocations and is subject to special agreements between

the administrations concerned.

5.320 *Additional allocation:* in Region 3, the bands 806-890 MHz and 942-960 MHz are also allocated to the mobile-satellite, except aeronautical mobile-satellite (R), service on a primary basis, subject to agreement obtained under No. **9.21**. The use of this service is limited to operation within national boundaries. In seeking such agreement, appropriate protection shall be afforded to services operating in accordance with the Table, to ensure that no harmful interference is caused to such services.

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.

5.322 In Region 1, in the band 862-960 MHz, stations of the broadcasting service shall be operated only in the African Broadcasting Area (see Nos. **5.10** to **5.13**) excluding Algeria, Egypt, Spain, Libya, Morocco, Namibia, Nigeria, South Africa, Tanzania, Zimbabwe and Zambia, subject to agreement obtained under No. **9.21**. (WRC-2000)

5.323 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Hungary, Kazakhstan, Latvia, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 862-960 MHz is also allocated to the aeronautical radionavigation service on a primary basis. Such use is subject to agreement obtained under No. **9.21** with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime. (WRC-97)

5.324 Not used.

5.325 *Different category of service:* in the United States, the allocation of the band 890-942 MHz to the radiolocation service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**.

5.325A *Different category of service:* in Cuba, the allocation of the band 902-915 MHz to the land mobile service is on a primary basis. (WRC-2000)

5.326 *Different category of service:* in Chile, the band 903-905 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis, subject to agreement obtained under No. **9.21**.

5.327 *Different category of service:* in Australia, the allocation of the band 915-928 MHz to the radiolocation service is on a primary basis (see No. **5.33**).

5.328 The use of the band 960-1215 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 *Additional allocation:* the band 1 164-1 215 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. The aggregate power flux-density produced by all the space stations of all radionavigation-satellite systems at the Earth's surface shall not exceed the provisional value of $-115 \text{ dB(W/m}^2\text{)}$ in any 1 MHz band for all angles of arrival. Stations in the radionavigation-satellite service shall not cause harmful interference to, nor claim protection from, stations of the aeronautical-radionavigation service. The provisions of Resolution **605 (WRC-2000)** apply. (WRC-2000)

5.329 Use of the radionavigation-satellite service in the band 1 215-1300 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**. See also Resolution **606 (WRC-2000)**. (WRC-2000)

5.329A Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1 215-1 300 MHz and 1 559-1610 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)

5.330 *Additional allocation:* in Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, China, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq,

Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Morocco, Mozambique, Nepal, Nigeria, Pakistan, the Philippines, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Togo and Yemen, the band 1215-1300 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-97)

5.331 *Additional allocation:* in Algeria, Germany, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Burundi, Cameroon, China, Croatia, Denmark, the United Arab Emirates, France, Greece, India, Iran (Islamic Republic of), Iraq, Kenya, The Former Yugoslav Republic of Macedonia, Liechtenstein, Luxembourg, Mali, Mauritania, Norway, Oman, the Netherlands, Portugal, Qatar, Senegal, Slovenia, Somalia, Sudan, Sri Lanka, Sweden, Switzerland, Turkey and Yugoslavia, the band 1215-1300 MHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)

5.332 In the band 1215-1260 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 bands 1240-1300 MHz and 1350-1370 MHz are also allocated to the aeronautical radionavigation service on a primary basis.

5.335 In Canada and the United States in the band 1240-1300 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 1260-1300 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)

5.336 Not used.

5.337 The use of the bands 1300-1350 MHz, 2700-2900 MHz and 9000-9200 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 1300-1350 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)

5.338 In Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Romania and Turkmenistan, existing installations of the radionavigation service may continue to operate in the band 1350-1400 MHz. (WRC-2000)

5.339 The bands 1370-1400 MHz, 2640-2655 MHz, 4950-4990 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.

5.340 All emissions are prohibited in the following bands:

- 1400-1427 MHz,
- 2690-2700 MHz, except those provided for by Nos. **5.421** and **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 GHz², except those provided for by No. **5.555A**,
 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, except those provided for by No. **5.563** ,
 190-191.8 GHz,
 200-209 GHz,
 226-231.5 GHz,
 250-252 GHz.

(WRC-2000)

5.341 In the bands 1400-1727 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 Armenia, Azerbaijan, Belarus, Bulgaria, Uzbekistan, Kyrgyzstan, the Russian Federation and Ukraine, the band 1429-1535 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 1452-1492 MHz is subject to agreement between the administrations concerned. (WRC-2000)

5.343 In Region 2, the use of the band 1435-1535 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service.

5.344 *Alternative allocation:* in the United States, the band 1452-1525 MHz is allocated to the fixed and mobile services on a primary basis (see also No. **5.343**).

5.345 Use of the band 1452-1492 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)**.

5.346 Not used.

5.347 *Different category of service:* in Bangladesh, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Cuba, Denmark, Egypt, Greece, Ireland, Italy, Kenya, Mozambique, Portugal, Sri Lanka, Swaziland, Yemen, Yugoslavia and Zimbabwe, the allocation of the band 1452-1492 MHz to the broadcasting-satellite service and the broadcasting service is on a secondary basis until 1 April 2007. (WRC-2000)

5.348 The use of the band 1492-1525 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. However, no coordination threshold in Article **21** for space stations of the mobile-satellite service with respect to terrestrial services shall apply to the situation referred to in No. **5.343**. With respect to the situation referred to in No. **5.343**, the requirement for coordination in the band 1492-1525 MHz will be determined by band overlap.

5.348A In the band 1492-1525 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**. The above threshold level of the power flux-density shall apply until it is changed by a competent world radiocommunication conference.

² **5.340.1** 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)

5.349 *Different category of service:* in Saudi Arabia, Azerbaijan, Bahrain, Bosnia and Herzegovina, Cameroon, Egypt, France, Iran (Islamic Republic of), Iraq, Israel, Kazakstan, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Morocco, Qatar, Syria, Kyrgyzstan, Romania, Turkmenistan, Yemen and Yugoslavia, the allocation of the band 1 525-1530 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **5.33**). (WRC-2000)

5.350 *Additional allocation:* in Azerbaijan, Kyrgyzstan and Turkmenistan, the band 1525-1530 MHz is also allocated to the aeronautical mobile service on a primary basis. (WRC-2000)

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 1525-1544 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)

5.352A In the band 1525-1530 MHz, stations in the mobile-satellite service, except stations in the maritime mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed service in France and French overseas territories in Region 3, Algeria, Saudi Arabia, Egypt, Guinea, India, Israel, Italy, Jordan, Kuwait, Mali, Malta, Morocco, Mauritania, Nigeria, Oman, Pakistan, Philippines, Qatar, Syria, Tanzania, Viet Nam and Yemen notified prior to 1 April 1998. (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 1530-1544 MHz and 1626.5-1645.5 MHz, priority shall be given to accommodating 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 1525-1559 MHz and 1626.5-1660.5 MHz by the mobile-satellite services is subject to coordination under No. **9.11A**.

5.355 *Additional allocation:* in Bahrain, Bangladesh, Congo, Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Qatar, Syria, Somalia, Sudan, Chad, Togo and Yemen, the bands 1540-1559 MHz, 1610-1645.5 MHz and 1646.5-1660 MHz are also allocated to the fixed service on a secondary basis. (WRC-2000)

5.356 The use of the band 1544-1545 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 1545-1555 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 1545-1555 MHz and 1646.5-1656.5 MHz, priority shall be given to accommodating 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 pre-emption 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. (The provisions of Resolution **222 (WRC-2000)** shall apply.) (WRC-2000)

5.358 (SUP - WRC-97)

5.359 *Additional allocation:* in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakhstan, Kuwait, Latvia, Lebanon, Libya, Lithuania, Mali, Morocco, Mauritania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Syria, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Tunisia, Turkmenistan and Ukraine, the bands 1550-1559 MHz, 1610-1645.5 MHz and 1646.5-1660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these bands. (WRC-2000)

5.360 to 5.362 (SUP - WRC-97)

5.362A In the United States, in the bands 1555-1559 MHz and 1656.5-1660.5 MHz, the aeronautical mobile-satellite (R) service shall have priority access and immediate availability, by pre-emption 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)

5.362B *Additional allocation:* The band 1 559-1 610 MHz is also allocated to the fixed service on a primary basis until 1 January 2005 in Germany, Armenia, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine, and until 1 January 2010 in Saudi Arabia, Cameroon, Jordan, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Syria and Tunisia. After these dates, the fixed service may continue to operate on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and the aeronautical radionavigation service and not authorize new frequency assignments to fixed-service systems in this band. (WRC-2000)

5.362C *Additional allocation:* in Bahrain, Bangladesh, Congo, Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Qatar, Syria, Somalia, Sudan, Chad, Togo and Yemen, the band 1 559-1 610 MHz is also allocated to the fixed service on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and not authorize new frequency assignments to fixed-service systems in this band. (WRC-2000)

5.363 *Alternative allocation:* in Sweden, the band 1 590-1 626.5 MHz is allocated to the aeronautical radionavigation service on a primary basis.

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.

5.369 *Different category of service:* in Angola, Australia, Burundi, China, Côte d'Ivoire, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Israel, Jordan, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Dem. Rep. of the Congo, Syria, Senegal, Sudan, Swaziland, Togo and Zambia, the allocation of the band 1 610-1 626.5 MHz to the radiodetermination-satellite service (Earth-to-space) is on a primary basis (see No. 5.33), subject to agreement obtained under No. 9.21 from countries not listed in this provision. (WRC-97)

5.370 *Different category of service:* in Venezuela, the allocation to the radiodetermination-

satellite service in the band 1 610-1 626.5 MHz (Earth-to-space) is on a secondary basis.

5.371 *Additional allocation:* in Region 1, the bands 1610-1 626.5 MHz (Earth-to-space) and 2483.5-2 500 MHz (space-to-Earth) are also allocated to the radiodetermination-satellite service on a secondary basis, subject to agreement obtained under No. **9.21** .

5.372 Harmful interference shall not be caused to stations of the radio astronomy service using the band 1610.6-1 613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services (No. **29.13** applies).

5.373 Not used.

5.373A (SUP -WRC-97)

5.374 Mobile earth stations in the mobile-satellite service operating in the bands 1631.5-1 634.5 MHz and 1656.5-1 660 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 1645.5 -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**).

5.376 Transmissions in the band 1646.5-1 656.5 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 1660-1 660.5 MHz shall not cause harmful interference to stations in the radio astronomy service. (WRC-97)

5.377 In the band 1675-1710 MHz, stations in the mobile-satellite service shall not cause harmful interference to, nor constrain the development of, the meteorological-satellite and meteorological aids services (see Resolution **213 (Rev.WRC-95)**) and the use of this band shall be subject to coordination under No. **9.11A**.

5.378 Not used.

5.379 *Additional allocation:* in Bangladesh, India, Indonesia, Nigeria and Pakistan, the band 1 660.5-1 668.4 MHz is also allocated to the meteorological aids service on a secondary basis.

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.

5.380 The bands 1670-1 675 MHz and 1800-1805 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 1800-1 805 MHz is limited to transmissions from aircraft stations.

5.381 *Additional allocation:* in Afghanistan, Costa Rica, Cuba, India, Iran (Islamic Republic of), Malaysia, Pakistan and Sri Lanka, the band 1 690-1 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-97)

5.382 *Different category of service:* in Saudi Arabia, Armenia, Austria, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Bulgaria, the Congo, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, Hungary, Iraq, Israel, Jordan, Kazakstan, Kuwait, the Former Yugoslav Republic of Macedonia, Lebanon, Mauritania, Moldova, Mongolia, Oman, Uzbekistan, Poland, Qatar, Syria, Kyrgyzstan, Romania, Russian Federation, Somalia, Tajikistan, Tanzania, Turkmenistan, Ukraine, Yemen and Yugoslavia, the allocation of the band 1690-1 700 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**), and in the Dem. People's Rep. of Korea, the allocation of the band 1690-1 700 MHz to the fixed service is on a primary basis (see No. **5.33**) and to the mobile, except aeronautical mobile, service on a secondary basis. (WRC-97)

5.383 Not used.

Note by the Secretariat: This Resolution was abrogated by WRC-2000.

5.384 *Additional allocation:* in India, Indonesia and Japan, the band 1 700-1 710 MHz is also allocated to the space research service (space-to-Earth) on a primary basis. (WRC-97)

5.384A The bands, or portions of the bands, 1710-1885 MHz and 2500-2690 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-2000).

5.385 *Additional allocation:* the band 1718.8-1722.2 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, India, Indonesia and Japan on a primary basis, subject to agreement obtained under No. **9.21**, having particular regard to troposcatter systems.

5.387 *Additional allocation:* in Azerbaijan, Belarus, Georgia, Kazakstan, Mali, Mongolia, Kyrgyzstan, Slovakia, Romania, Tajikistan and Turkmenistan, the band 1770-1790 MHz is also allocated to the meteorological-satellite service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-2000)

5.388 The bands 1885-2025 MHz and 2110-2200 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)

5.388A In Regions 1 and 3, the bands 1885-1980 MHz, 2010-2025 MHz and 2110-2170 MHz and, in Region 2, the bands 1885-1980 MHz and 2110-2160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications -2000 (IMT-2000), in accordance with Resolution **221 (WRC-2000)**. The use by IMT-2000 applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-2000)

5.389 Not used.

5.389A The use of the bands 1980-2010 MHz and 2170-2200 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 1980-1990 MHz in Region 2 shall not commence before 1 January 2005.

5.389B The use of the band 1980-1990 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 2010-2025 MHz and 2160-2170 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 In Canada and the United States the use of the bands 2010-2025 MHz and 2160-2170 MHz by the mobile-satellite service shall not commence before 1 January 2000.

5.389E The use of the bands 2010-2025 MHz and 2160-2170 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.

5.389F In Algeria, Benin, Cape Verde, Egypt, Iran (Islamic Republic of), Mali, Syria and Tunisia, the use of the bands 1980-2010 MHz and 2170-2200 MHz by the mobile-satellite service shall neither cause harmful interference to the fixed and mobile services, nor hamper the development of those services prior to 1 January 2005, nor shall the former service request protection from the latter

* *Note by the Secretariat:* This Resolution was revised by WRC-2000.

services. (WRC-2000)

5.390 In Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, Suriname and Uruguay, the use of the bands 2010-2025 MHz and 2160-2170 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 2025-2110 MHz and 2200-2290 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 2025-2110 MHz and 2200-2290 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.

5.392A Additional allocation: in Russian Federation, the band 2160-2200 MHz is also allocated to the space research service (space-to-Earth) on a primary basis until 1 January 2005. Stations in the space research service shall not cause harmful interference to, or claim protection from, stations in the fixed and mobile services operating in this frequency band.

5.393 Additional allocation: in the United States, India and Mexico, the band 2310-2360 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial sound broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (WARC-92)**, with the exception of *resolves* 3 in regard to the limitation on broadcasting-satellite systems in the upper 25 MHz. (WRC-2000)

5.394 In the United States, the use of the band 2300-2390 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. In Canada, the use of the band 2300-2483.5 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services.

5.395 In France, the use of the band 2310-2360 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service.

5.396 Space stations of the broadcasting-satellite service in the band 2310-2360 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.

5.397 Different category of service: in France, the band 2450-2500 MHz is allocated on a primary basis to the radiolocation service (see No. **5.33**). Such use is subject to agreement with administrations having services operating or planned to operate in accordance with the Table of Frequency Allocations which may be affected.

5.398 In respect of the radiodetermination-satellite service in the band 2483.5-2500 MHz, the provisions of No. **4.10** do not apply.

5.399 In Region 1, in countries other than those listed in No. **5.400**, harmful interference shall not be caused to, or protection shall not be claimed from, stations of the radiolocation service by stations of the radiodetermination satellite service.

5.400 Different category of service: in Angola, Australia, Bangladesh, Burundi, China, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Jordan, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Dem. Rep. of the Congo, Syria, Sudan, Swaziland, Togo and Zambia, the allocation of the band 2483.5-2500 MHz to the radiodetermination-satellite service (space-to-Earth) is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21** from

* *Note by the Secretariat:* This Resolution was revised by WRC-2000.

countries not listed in this provision. (WRC-97)

5.401 Not used.

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.

5.404 *Additional allocation:* in India and Iran (Islamic Republic of), the band 2 500-2 516.5 MHz may also be used for the radiodetermination-satellite service (space-to-Earth) for operation limited to within national boundaries, subject to agreement obtained under No. **9.21**.

5.405 *Additional allocation:* in France, the band 2 500-2 550 MHz is also allocated to the radiolocation service on a primary basis. Such use is subject to agreement with the administrations having services operating or planned to operate in accordance with the Table which may be affected.

5.406 Not used.

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 dB(W/(m² ? 4 kHz)) in Argentina, unless otherwise agreed by the administrations concerned.

5.408 (SUP - WRC-2000)

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.

5.412 *Alternative allocation:* in Azerbaijan, Bulgaria, Kyrgyzstan and Turkmenistan, the band 2 500-2 690 MHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-2000)

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**.

5.415A *Additional allocation:* in India and Japan, subject to agreement obtained under No. **9.21**, the band 2 515-2 535 MHz may also be used for the aeronautical mobile-satellite service (space-to-Earth) for operation limited to within their national boundaries. (WRC-2000)

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**. The power flux-density at the Earth's surface shall not exceed the values given in Article **21**, Table **21-4**.

5.417 (SUP -WRC-2000)

5.418 *Additional allocation:* in Bangladesh, Belarus, Korea (Rep. of), India, Japan, Pakistan, Singapore, Sri Lanka 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 (WARC-92)**. 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 (WRC-2000)**. (WRC-2000)

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. Use of the band by non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to the provisions of Resolution **539 (WRC-2000)**, and such systems shall be in accordance with Resolution **528 (WARC-92)**. (WRC-2000)

5.418B Use of the band 2 630-2 655 MHz by non-geostationary-satellite systems 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**. Resolution **539 (WRC-2000)** applies. (WRC-2000)

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), and No. **22.2** does not apply. Resolution **539 (WRC-2000)** applies. (WRC-2000)

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.

5.420A *Additional allocation:* in India and Japan, subject to agreement obtained under No. **9.21**, the band 2 670-2 690 MHz may also be used for the aeronautical mobile-satellite service (Earth-to-space) for operation limited to within their national boundaries. (WRC-2000)

5.421 *Additional allocation:* in Germany and Austria, the band 2 690-2 695 MHz is also allocated to the fixed service on a primary basis. Such use is limited to equipment in operation by 1 January 1985.

5.422 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Brunei Darussalam, Congo, Côte d'Ivoire, Cuba, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Georgia, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Iraq, Israel, Jordan, Lebanon, Malaysia, Mali, Mauritania, Moldova, Mongolia, Nigeria, Oman, Uzbekistan, Pakistan, the Philippines, Qatar, Syria, Kyrgyzstan, the Dem. Rep. of the Congo, Romania, the Russian Federation, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine, Yemen and Yugoslavia, the band 2 690-2 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-2000)

- 5.423** In the band 2700-2900 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 2850-2900 MHz is also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars.
- 5.425** In the band 2900-3100 MHz, the use of the shipborne interrogator-transponder system (SIT) shall be confined to the sub-band 2930-2950 MHz.
- 5.426** The use of the band 2900-3100 MHz by the aeronautical radionavigation service is limited to ground-based radars.
- 5.427** In the bands 2900-3100 MHz and 9300-9500 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, Bulgaria, Cuba, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3100-3300 MHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)
- 5.429** *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, China, the Congo, Korea (Rep. of), the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Malaysia, Oman, Pakistan, Qatar, Syria, Dem. People's Rep. of Korea and Yemen, the band 3300-3400 MHz is also allocated to the fixed and mobile services on a primary basis. The countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service. (WRC-97)
- 5.430** *Additional allocation:* in Azerbaijan, Bulgaria, Cuba, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3300-3400 MHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)
- 5.431** *Additional allocation:* in Germany, Israel, Nigeria and the United Kingdom, the band 3400-3475 MHz is also allocated to the amateur service on a secondary basis.
- 5.432** *Different category of service:* in Korea (Rep. of), Japan and Pakistan, the allocation of the band 3400-3500 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. 5.33). (WRC-2000)
- 5.433** In Regions 2 and 3, in the band 3400-3600 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.
- 5.434** (SUP - WRC-97)
- 5.435** In Japan, in the band 3620-3700 MHz, the radiolocation service is excluded.
- 5.436** Not used.
- 5.437** (SUP - WRC-2000)
- 5.438** Use of the band 4200-4400 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).
- 5.439** *Additional allocation:* in Iran (Islamic Republic of) and Libya, the band 4200-4400 MHz is also allocated to the fixed service on a secondary basis. (WRC-2000)

5.440 The standard frequency and time signal-satellite service may be authorized to use the frequency 4202 MHz for space-to-Earth transmissions and the frequency 6427 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 4 500-4800 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-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 *Additional allocation:* The band 5 000-5 010 MHz is also allocated to the radionavigation-satellite service (Earth-to-space) on a primary basis. See Resolution **603 (WRC-2000)**. (WRC-2000)

5.443B *Additional allocation:* The band 5 010-5 030 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. 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 dB(W/m²) 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, the aggregate power flux-density produced in the 4 990-5 000 MHz band by all the space stations within any radionavigation-satellite service (space-to-Earth) system operating in the 5 010-5 030 MHz band shall not exceed the provisional value of -171 dB(W/m²) in a 10 MHz band at any radio astronomy observatory site for more than 2% of the time. For the use of this band, Resolution **604 (WRC-2000)** applies. (WRC-2000)

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 (WRC-95)** apply. (WRC-2000)

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 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 2010, 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 (WRC-95)**;
- prior to 1 January 2010, the requirements of existing and planned international

standard systems for the aeronautical radionavigation service which cannot be met in the 5000-5 091 MHz band, shall take precedence over other uses of this band;

- after 1 January 2008, no new assignments shall be made to stations providing feeder links of non-geostationary mobile-satellite systems;
- after 1 January 2010, the fixed-satellite service will become secondary to the aeronautical radionavigation service.

5.445 Not used.

5.446 *Additional allocation:* in the countries listed in Nos. **5.369** and **5.400**, the band 5150-5216 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 1610-1 626.5 MHz and/or 2483.5-2 500 MHz. The total power flux-density at the Earth's surface shall in no case exceed -159 dB(W/m²) in any 4 kHz band for all angles of arrival.

5.447 *Additional allocation:* in Germany, Austria, Belgium, Denmark, Spain, Estonia, Finland, France, Greece, Israel, Italy, Japan, Jordan, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Norway, Pakistan, the Netherlands, Portugal, Syria, the United Kingdom, Sweden, Switzerland and Tunisia, the band 5 150-5 250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-2000)

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 5150-5216 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 5 150-5216 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 5 150-5250 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)

5.448 *Additional allocation:* in Austria, Azerbaijan, Bulgaria, Libya, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Romania and Turkmenistan, the band 5250-5 350 MHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)

5.448A The use of the frequency band 5 250-5 350 MHz by the earth exploration-satellite (active) and space research (active) services shall not constrain the future development and deployment of the radiolocation service. (WRC-97)

5.448B The earth exploration-satellite (active) service operating in the band 5350-5 460 MHz shall not cause harmful interference to, or constrain the use and development of, the aeronautical radionavigation service. (WRC-97)

5.449 The use of the band 5350-5 470 MHz by the aeronautical radionavigation service is limited to airborne radars and associated airborne beacons.

5.450 *Additional allocation:* in Austria, Azerbaijan, Bulgaria, Iran (Islamic Republic of), Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Turkmenistan and Ukraine, the band 5470-5650 MHz is also allocated to the aeronautical radionavigation service on a primary basis. (WRC-97)

5.451 *Additional allocation:* in the United Kingdom, the band 5470-5850 MHz is also allocated to the land mobile service on a secondary basis. The power limits specified in Nos. **21.2**, **21.3**, **21.4** and **21.5** shall apply in the band 5725-5850 MHz.

5.452 Between 5600 MHz and 5650 MHz, ground-based radars used for meteorological purposes are authorized to operate on a basis of equality with stations of the maritime radionavigation service.

5.453 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo, Korea (Rep. of), Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Madagascar, Malaysia, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, the Dem. People's Rep. of Korea, Singapore, Swaziland, Tanzania, Chad and Yemen, the band 5650-5850 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-2000)

5.454 *Different category of service:* in Azerbaijan, Belarus, Georgia, Mongolia, Uzbekistan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 5670-5725 MHz to the space research service is on a primary basis (see No. **5.33**). (WRC-2000)

5.455 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Cuba, Georgia, Hungary, Kazakhstan, Latvia, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 5670-5850 MHz is also allocated to the fixed service on a primary basis.

5.456 *Additional allocation:* in Germany and in Cameroon, the band 5755-5850 MHz is also allocated to the fixed service on a primary basis.

5.457 Not used.

5.458 In the band 6425-7075 MHz, passive microwave sensor measurements are carried out over the oceans. In the band 7075-7250 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 6425-7025 MHz and 7075-7250 MHz.

5.458A In making assignments in the band 6700-7075 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 6650-6675.2 MHz from harmful interference from unwanted emissions.

5.458B The space-to-Earth allocation to the fixed-satellite service in the band 6700-7075 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 6700-7075 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 7025-7075 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 7100-7155 MHz and 7190-7235 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 *Additional allocation:* the band 7145-7235 MHz is also allocated to the space research (Earth-to-space) service on a primary basis, subject to agreement obtained under No. **9.21**. The use of the band 7145-7190 MHz is restricted to deep space; no emissions to deep space shall be

effected in the band 7 190-7 235 MHz.

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)

5.462 (SUP -WRC-97)

5.462A In Regions 1 and 3 (except for Japan), in the band 8 025-8 400 MHz, the earth exploration-satellite service using geostationary satellites shall not produce a power flux-density in excess of the following provisional values for angles of arrival (?), without the consent of the affected administration:

-174 dB(W/m²) in a 4 kHz band for 0° ? ? ? 5°

-174 + 0.5 (? - 5) dB(W/m²) in a 4 kHz band for 5° ? ? ? 25°

-164 dB(W/m²) in a 4 kHz band for 25° ? ? ? 90°

These values are subject to study under Resolution **124 (WRC-97)***. (WRC-97)

5.463 Aircraft stations are not permitted to transmit in the band 8 025-8 400 MHz. (WRC-97)

5.464 (SUP -WRC-97)

5.465 In the space research service, the use of the band 8 400-8 450 MHz is limited to deep space.

5.466 *Different category of service:* in Israel, Malaysia, Singapore and Sri Lanka, the allocation of the band 8 400-8 500 MHz to the space research service is on a secondary basis (see No. **5.32**). (WRC-97)

5.467 *Alternative allocation:* in the United Kingdom, the band 8 400-8 500 MHz is allocated to the radiolocation and space research services on a primary basis.

5.468 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, the Congo, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guyana, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Jordan, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, Qatar, Syria, Dem. People's Rep. of Korea, Senegal, Singapore, Somalia, Swaziland, Tanzania, Chad, Togo, Tunisia and Yemen, the band 8 500-8 750 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-97)

5.469 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Lithuania, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 8 500-8 750 MHz is also allocated to the land mobile and radionavigation services on a primary basis. (WRC-2000)

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.

5.471 *Additional allocation:* in Algeria, Germany, Bahrain, Belgium, China, the United Arab Emirates, France, Greece, Indonesia, Iran (Islamic Republic of), Libya, the Netherlands, Qatar and

* *Note by the Secretariat:* This Resolution was revised by WRC-2000.

Sudan, the bands 8 825-8 850 MHz and 9 000-9 200 MHz are also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars only.

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.

5.473 *Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Bulgaria, Cuba, Georgia, Hungary, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Romania, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the bands 8 850-9 000 MHz and 9 200-9 300 MHz are also allocated to the radionavigation service on a primary basis. (WRC-2000)

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)

5.477 *Different category of service:* in Algeria, Saudi Arabia, Austria, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Pakistan, Qatar, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Sweden, Trinidad and Tobago, and Yemen, the allocation of the band 9 800-10 000 MHz to the fixed service is on a primary basis (see No. 5.33). (WRC-2000)

5.478 *Additional allocation:* in Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Slovakia, the Czech Rep., Romania, Turkmenistan and Ukraine, the band 9 800-10 000 MHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)

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.

5.480 *Additional allocation:* in Argentina, Brazil, Chile, Costa Rica, Cuba, El Salvador, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Peru, Uruguay and Venezuela, the band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-2000)

5.481 *Additional allocation:* in Germany, Angola, Brazil, China, Costa Rica, El Salvador, Ecuador, Spain, Guatemala, Japan, Morocco, Nigeria, Oman, Uzbekistan, Paraguay, Peru, the Dem. People's Rep. of Korea, Sweden, Tanzania, Thailand and Uruguay, the band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-2000)

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, Uzbekistan, Pakistan, the Philippines, Qatar, Syria, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the restrictions on the fixed and mobile, except aeronautical mobile, services are not applicable.

5.483 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, China, Colombia, Korea (Rep. of), Costa Rica, Egypt, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kazakhstan, Kuwait, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Qatar, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, Tajikistan, Turkmenistan, Ukraine, Yemen and Yugoslavia, the band 10.68-

10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-2000)

5.484 In Region 1, the use of the band 10.7-11.7 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service.

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.

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**).

5.487 In the band 11.7-12.5 GHz in Regions 1 and 3, the fixed, fixed-satellite, mobile, except aeronautical mobile, and broadcasting services, in accordance with their respective allocations, shall not cause harmful interference to, or claim protection from, broadcasting-satellite stations operating in accordance with the provisions of the Regions 1 and 3 Plan in Appendix **30**. (WRC-2000)

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-2000)

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 the provisions of Resolution **77 (WRC-2000)**. For the use of the band 12.2-12.7 GHz by the broadcasting-satellite service in Region 2, see Appendix **30**. (WRC-2000)

5.489 *Additional allocation:* in Peru, the band 12.1-12.2 GHz is also allocated to the fixed service on a primary basis.

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**.

5.491 *Additional allocation:* in Region 3, the band 12.2-12.5 GHz is also allocated to the fixed-

satellite service (space-to-Earth) on a primary basis. The power flux-density limits in Table 21-4 of Article 21 shall apply to this frequency band. The introduction of the service in relation to the broadcasting-satellite service in Region 1 shall follow the procedures specified in Article 7 of Appendix 30, with the applicable frequency band extended to cover 12.2-12.5 GHz. (WRC-2000)

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)

5.493 The broadcasting-satellite service in the band 12.5-12.75 GHz in Region 3 is limited to a power flux-density not exceeding $-111 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$ for all conditions and for all methods of modulation at the edge of the service area. (WRC-97)

5.494 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Cameroon, the Central African Rep., the Congo, Côte d'Ivoire, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Madagascar, Mali, Morocco, Mongolia, Nigeria, Qatar, Dem. Rep. of the Congo, Syria, Senegal, Somalia, Sudan, Chad, Togo and Yemen, the band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-97)

5.495 *Additional allocation:* in Bosnia and Herzegovina, Croatia, Denmark, France, Greece, Liechtenstein, Monaco, Uganda, Portugal, Romania, Slovenia, Switzerland, Tanzania, Tunisia and Yugoslavia, the band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-2000)

5.496 *Additional allocation:* in Austria, Azerbaijan, Kyrgyzstan and Turkmenistan, the band 12.5-12.75 GHz is also allocated to the fixed service and the mobile, except aeronautical mobile, service on a primary basis. However, stations in these services shall not cause harmful interference to fixed-satellite service earth stations of countries in Region 1 other than those listed in this footnote. Coordination of these earth stations is not required with stations of the fixed and mobile services of the countries listed in this footnote. The power flux-density limit at the Earth's surface given in Table 21-4 of Article 21, for the fixed-satellite service shall apply on the territory of the countries listed in this footnote. (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)

5.499 *Additional allocation:* in Bangladesh, India and Pakistan, the band 13.25-14 GHz is also allocated to the fixed service on a primary basis.

5.500 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Madagascar, Malaysia, Mali, Malta, Morocco, Mauritania, Nigeria, Pakistan, Qatar, Syria, Senegal, Singapore, Sudan, Chad and Tunisia, the band 13.4-14 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-2000)

5.501 *Additional allocation:* in Austria, Azerbaijan, Hungary, Japan, Mongolia, Kyrgyzstan, Romania, the United Kingdom and Turkmenistan, the band 13.4-14 GHz is also allocated to the radionavigation service on a primary basis. (WRC-2000)

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 in the fixed-satellite service shall have a minimum antenna diameter of 4.5 m and the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. 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. The protection of assignments to receiving space stations in the fixed-satellite service operating with earth stations that, individually, have an e.i.r.p. of less than 68 dBW shall not impose constraints on the operation of the radiolocation and radionavigation stations operating in accordance with the Radio Regulations. No. **5.43A** does not apply. See Resolution **733 (WRC-2000)**. (WRC-2000)

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:

- 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 71 dBW in the 6 MHz band from 13.772 to 13.778 GHz;
- 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 the 6 MHz band in this frequency range 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. of 71 dBW or 51 dBW, as appropriate, in the 6 MHz band in clear-sky conditions. (WRC-2000)

5.503A Until 1 January 2000, stations in the fixed-satellite service shall not cause harmful interference to non-geostationary space stations in the space research and Earth exploration-satellite services. After that date, these non-geostationary space stations will operate on a secondary basis in relation to the fixed-satellite service. Additionally, when planning earth stations in the fixed-satellite service to be brought into service between 1 January 2000 and 1 January 2001, in order to accommodate the needs of spaceborne precipitation radars operating in the band 13.793-13.805 GHz, advantage should be taken of the consultation process and the information given in Recommendation ITU-R SA.1071.

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.

5.505 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Bangladesh, Botswana, Brunei Darussalam, Cameroon, China, Congo, Korea (Rep. of), Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lesotho, Lebanon, Malaysia, Mali, Morocco, Mauritania, Oman, Pakistan, the Philippines, Qatar, Syria, the Dem. People's Rep. of Korea, Senegal, Singapore, Somalia, Sudan, Swaziland, Tanzania, Chad and Yemen, the band 14-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-2000)

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.

5.507 Not used.

5.508 *Additional allocation:* in Germany, Bosnia and Herzegovina, France, Greece, Ireland, Iceland, Italy, The Former Yugoslav Republic of Macedonia, Libya, Liechtenstein, Portugal, the United Kingdom, Slovenia, Switzerland and Yugoslavia, the band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-2000)

5.509 *Additional allocation:* in Japan the band 14.25-14.3 GHz is also allocated to the mobile, except aeronautical mobile, service on a primary basis. (WRC-2000)

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.

5.511 *Additional allocation:* in Saudi Arabia, Bahrain, Bosnia and Herzegovina, Cameroon, Egypt, the United Arab Emirates, Guinea, Iran (Islamic Republic of), Iraq, Israel, Kuwait, Lebanon, Libya, Pakistan, Qatar, Syria, Slovenia, Somalia and Yugoslavia, the band 15.35-15.4 GHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-97)

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 $-146 \text{ dB(W/(m}^2 \text{ ? MHz))}$ 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 $-146 \text{ dB(W/(m}^2 \text{ ? MHz))}$ 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)

5.512 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Brunei Darussalam, Cameroon, the Congo, Costa Rica, Egypt, El Salvador, the United Arab Emirates, Finland, Guatemala, India, Indonesia, Iran (Islamic Republic of), Jordan, Kuwait, Libya, Malaysia, Morocco, Mozambique, Nepal, Nicaragua, Oman, Pakistan, Qatar, Singapore, Slovenia, Somalia, Sudan, Swaziland, Tanzania, Chad, Yemen and Yugoslavia, the band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. (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)

5.514 *Additional allocation:* in Algeria, Germany, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Cameroon, Costa Rica, El Salvador, the United Arab Emirates, Finland, Guatemala, Honduras, India, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Libya, Nepal, Nicaragua, Oman, Pakistan, Qatar, Slovenia, Sudan and Yugoslavia, the band 17.3-17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. **21.3** and **21.5** shall apply. (WRC-2000)

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**.

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 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)

5.517 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)

5.521 *Alternative allocation:* in Germany, Denmark, the United Arab Emirates, Greece and Slovakia, the band 18.1-18.4 GHz is allocated to the fixed, fixed-satellite (space-to-Earth) and mobile services on a primary basis (see No. **5.33**). The provisions of No. **5.519** also apply. (WRC-2000)

5.522 (SUP - WRC-2000)

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)

5.522C In the band 18.6-18.8 GHz, in Algeria, Saudi Arabia, Bahrain, Egypt, the United Arab Emirates, Jordan, Lebanon, Libya, Morocco, Oman, Qatar, Syria, Tunisia and Yemen, fixed-service systems in operation at the date of entry into force of the Final Acts of WRC-2000 are not subject to the limits of No. **21.5A**. (WRC-2000)

5.523 (SUP - WRC-2000)

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 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** 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** 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)

5.524 *Additional allocation:* in Afghanistan, Algeria, Angola, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, the Congo, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Dem. Rep. of the Congo, Syria, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Tanzania, Chad, Togo and Tunisia, the band 19.7-21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service in the band 19.7 -21.2 GHz and of space stations in the mobile-satellite service in the band 19.7-20.2 GHz where the allocation to the mobile-satellite service is on a primary basis in the latter band. (WRC-2000)

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**.

5.530 In Regions 1 and 3, the allocation to the broadcasting-satellite service in the band 21.4-22 GHz shall come into effect on 1 April 2007. The use of this band by the broadcasting-satellite service after that date and on an interim basis prior to that date is subject to the provisions of Resolution **525 (WARC-92)**.

5.531 *Additional allocation:* in Japan, the band 21.4-22 GHz is also allocated to the broadcasting service on a primary basis.

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.

5.534 *Additional allocation:* in Japan, the band 24.65-25.25 GHz is also allocated to the radionavigation service on a primary basis until 2008.

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 installing Earth exploration-satellite service earth stations cannot claim protection from stations in the fixed and mobile services operated by neighbouring administrations. In addition, earth stations operating in the Earth exploration-satellite service should take into account Recommendation ITU-R SA.1278. (WRC-2000)

5.536B In Germany, Saudi Arabia, Austria, Belgium, Brazil, Bulgaria, China, Korea (Rep. of), Denmark, Egypt, United Arab Emirates, Spain, Estonia, Finland, France, Hungary, India, Iran (Islamic Republic of), Ireland, Israel, Italy, Jordan, Kenya, Kuwait, Lebanon, Libya, Liechtenstein, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, Syria, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Sweden, Switzerland, Tanzania, Turkey, Viet Nam and Zimbabwe, earth stations operating in the Earth exploration-satellite service in the band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. (WRC-97)

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**.

5.537A In Bhutan, Indonesia, Iran (Islamic Republic of), Japan, Maldives, Mongolia, Myanmar, Pakistan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.5-28.35 GHz may also be used by high altitude platform stations (HAPS). The use of the band 27.5-28.35 GHz by HAPS is limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services. (WRC-2000)

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 70 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, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Pakistan, the Philippines, Qatar, Syria, 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)

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.

5.543A In Bhutan, Indonesia, Iran (Islamic Republic of), Japan, Maldives, Mongolia, Myanmar, Pakistan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 31-31.3 GHz may also be used by high altitude platform stations (HAPS) in the ground-to-HAPS direction. The use of the band 31-31.3 GHz by systems using HAPS shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services, taking into account No. 5.545. The use of HAPS in the band 31-31.3 GHz shall not cause harmful interference to the passive services having a primary allocation in the band 31.3-31.8 GHz, taking into account the interference criteria given in Recommendations ITU-R SA.1029 and ITU-R RA.769. The administrations of the countries listed above are urged to limit the deployment of HAPS in the band 31-31.3 GHz to the lower half of this band (31-31.15 GHz) until WRC-03. (WRC-2000)

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.

5.545 *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, Mongolia, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 31-31.3 GHz to the space research service is on a primary basis (see No. 5.33). (WRC-2000)

5.546 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Egypt, the United Arab Emirates, Spain, Estonia, Finland, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Syria, Kyrgyzstan, Romania, the United Kingdom, the Russian Federation, Tajikistan, Turkmenistan, Turkey and Ukraine, the allocation of the band 31.5-31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 5.33). (WRC-2000)

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, administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate (see Resolution **84 (WRC-2000)**). (WRC-2000)

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 inter-satellite, radionavigation and space research (deep space) (space-to-Earth) services on a primary basis. (WRC-97)

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 and radionavigation services 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**).

5.549 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malaysia, Mali, Malta, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, Dem. Rep. of the Congo, Syria, Senegal, Singapore, Somalia, Sudan, Sri Lanka, Togo, Tunisia and Yemen, the band 33.4-36 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-97)

5.550 *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, Mongolia, Uzbekistan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 34.7-35.2 GHz to the space research service is on a primary basis (see No. **5.33**). (WRC-2000)

5.551 (SUP - WRC-97)

5.551A In the band 35.5-36.0 GHz, 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 meteorological aids service and other services allocated on a primary basis. (WRC-97)

5.551AA In the bands 37.5-40 GHz and 42-42.5 GHz, non-geostationary-satellite systems in the fixed-satellite service should employ power control or other methods of downlink fade compensation of the order of 10 dB, such that the satellite transmissions are at power levels required to meet the desired link performance while reducing the level of interference to the fixed service. The use of downlink fade compensation methods are under study by the ITU-R (see Resolution **84 (WRC-2000)**). (WRC-2000)

5.551B (SUP - WRC-2000)

5.551C (SUP - WRC-2000)

5.551D (SUP - WRC-2000)

5.551E (SUP - WRC-2000)

5.551F *Different category of service:* in Japan, the allocation of the band 41.5-42.5 GHz to the mobile service is on a primary basis (see No. **5.33**). (WRC-97)

5.551G In order to protect the radio astronomy service in the band 42.5-43.5 GHz, the aggregate power flux-density in the 42.5-43.5 GHz band produced by all the space stations in any non-geostationary-satellite system in the fixed-satellite service (space-to-Earth) or in the broadcasting-satellite service (space-to-Earth) system operating in the 41.5-42.5 GHz band shall not exceed -167 dB(W/m²) in any 1 MHz band at the site of a radio astronomy station for more than 2% of the time. The power flux-density in the band 42.5-43.5 GHz produced by any geostationary station in the fixed-satellite service (space-to-Earth) or in the broadcasting-satellite service (space-to-Earth) operating in the band 42-42.5 GHz shall not exceed -167 dB(W/m²) in any 1 MHz band at the site of a radio astronomy station. These limits are provisional and will be reviewed in accordance with Resolution **128 (Rev.WRC-2000)**. (WRC-2000)

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)

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 The band 50.2-50.4 GHz is also allocated, on a primary basis, to the fixed and mobile services until 1 July 2000. (WRC-97)

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 1000 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)

5.556B *Additional allocation:* in Japan, the band 54.25-55.78 GHz is also allocated to the mobile service on a primary basis for low-density use. (WRC-97)

5.557 *Additional allocation:* in Japan, the band 55.78-58.2 GHz is also allocated to the radiolocation service on a primary basis. (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,

Note by the Secretariat: This Resolution was revised by WRC-2000.

the single entry power flux-density at all altitudes from 0 km to 1000 km above the Earth's surface, for all conditions and for all methods of modulation, shall not exceed $-147 \text{ dB(W/(m}^2 \cdot 100 \text{ MHz))}$ 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)

5.561B In Japan, use of the band 84-86 GHz, by the fixed-satellite service (Earth-to-space) is limited to feeder links in the broadcasting-satellite service using the geostationary-satellite orbit. (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)

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)

5.562D *Additional allocation:* In Korea (Rep. of), the bands 128-130 GHz, 171-171.6 GHz, 172.2-172.8 GHz and 173.3-174 GHz are also allocated to the radio astronomy service on a primary basis until 2015. (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)

5.563 *Additional allocation:* in the United Kingdom, the band 182-185 GHz is also allocated to the fixed and mobile services on a primary basis.

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)

5.564 (SUP - WRC-2000)

5.565 The frequency band 275-1000 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)

NATIONAL FOOTNOTES

- PAK01** It will be ensured that aeronautical radionavigation stations in the Band 435 – 495 KHz do not cause harmful interference to reception by coast stations of stations transmitting on frequencies designated for ship stations on world wide basis.
- PAK02** The Frequency Range 535-1606.5 KHz has been identified for AM Sound Broadcasting Service.
- PAK03** The Loran system operates either on 1850 kHz or 1950 kHz, the bands occupied being 1825-1875 kHz and 1925-1975 kHz respectively. Other services to which the band 1800-2000 KHz is allocated may use any frequency therein on condition that no harmful interference is caused to the Loran system operating on 1850 kHz or 1950 kHz.
- PAK04** The stations of those services to which the band 3995-4005 kHz is allocated may transmit standard frequency and time signals.
- PAK05** The band 5900-5950 kHz is allocated, until 1 April 2007, to the fixed service on a primary basis, as well as 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, on the condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, the minimum power required will be used and care shall be taken for the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations.
- PAK06** The stations of those services to which the band 7995-8005 kHz is allocated may transmit standard frequency and time signals.
- PAK07** The stations of those services to which the band 15995-16005 kHz is allocated may transmit standard frequency and time signals.
- PAK08** The Frequency Range 61 – 68 MHz can be considered for Terrestrial TV Broadcasting Service.
- PAK09** The Frequency Range 87 – 108 MHz has been identified for FM Sound Broadcasting Service. Both Public and Private FM Sound Broadcasters will be accommodated in this range.
- PAK10** In the band 108-111.975 MHz the allocation to the mobile service on a secondary basis is subject to the condition that harmful interference is not caused to stations of the aeronautical radionavigation service.
- PAK11** 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 the country in accordance with the Table of Frequency Allocations.
- PAK12** The Frequency Range 174 – 230 MHz is identified for Analog Terrestrial TV Broadcasting Services.

- PAK13** For Terrestrial Digital Audio Broadcasting Service, TV Channels 5 – 12 in VHF Range (174– 230 MHz) will be considered.
- PAK14** For Terrestrial Digital Video Broadcasting, TV Channels 25 – 36 in UHF Range (470 – 960 MHz) will be considered on case to case basis.
- PAK15** TV Channels 26, 28, 30, 32 are allocated for Mobile TV Transmitters (OB – Outside Broadcast Operation).
- PAK16** The Frequency Ranges 485 – 490 / 495 – 500 MHz & 806 – 811 / 851 – 856 MHz are identified for Radio Trunking Service. Both 12.5 KHz and 25 KHz Channel Spacing will be considered on case to case basis.
- PAK17** The band 608-614 MHz is also allocated to the radio astronomy service on a secondary basis.
- PAK18** The bands 806-890 MHz and 942-960 MHz are also allocated to the mobile-satellite, except aeronautical mobile-satellite (R), service on a primary basis, subject to agreement obtained under No. **9.21**. The use of this service is limited to operation within national boundaries. In seeking such agreement, appropriate protection shall be afforded to services operating in accordance with the Table, to ensure that no harmful interference is caused to such services.
- PAK19** The Frequency Range 1525 – 1559 / 1626.5 – 1660.5 MHz is identified for Global Mobile Personal Communication by Satellite (GMPCS).
- PAK20** In the band 1525-1530 MHz, stations in the mobile-satellite service, except stations in the maritime mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed service in Pakistan notified prior to 1 April 1998.
- PAK21** All practicable efforts shall be made to avoid the implementation of new fixed-service stations in these bands.
- PAK22** The band 1559-1610 MHz is also allocated to the fixed service on a primary basis until 1st January 2005. After this date, the fixed service may continue to operate on a secondary basis until 1st January 2015, at which time this allocation shall no longer be valid. All practicable steps shall be taken to protect the radionavigation-satellite service and the aeronautical radionavigation service and not authorize new frequency assignments to fixed-service systems in this band.
- PAK23** The allocation of the band 1610 - 1626.5 MHz to the radiodetermination-satellite service (Earth-to-space) on a primary basis is subject to agreement obtained under No. **9.21** from all countries other than Angola, Australia, Burundi, China, Côte d'Ivoire, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Israel, Jordan, Lebanon, Liberia, Libya, Madagascar, Mali, Papua New Guinea, Dem. Rep. of the Congo, Syria, Senegal, Sudan, Swaziland, Togo and Zambia.
- PAK24** The Frequency Range 24735 – 24835 MHz is identified as the ISM (Industrial, Scientific & Medical) Band.
- PAK25** The allocation of the band 2483.5-2500 MHz to the radiodetermination-satellite service (space-to-Earth) on a primary basis is subject to agreement obtained under No. **9.21** from all countries other than Angola, Australia, Bangladesh, Burundi, China, Eritrea, Ethiopia, India, Iran (Islamic Republic of), Jordan,

Lebanon, Liberia, Libya, Madagascar, Mali, Papua New Guinea, Dem. Rep. of the Congo, Syria, Sudan, Swaziland, Togo and Zambia.

- PAK26** The use of the bands 2 500-2 535 MHz and 2 655-2 690 MHz by the fixed-satellite service is limited to national and regional systems, subject to agreement obtained under No. **9.21**. In the direction space-to-Earth, the power flux-density at the Earth's surface shall not exceed the values given in Article **21**.
- PAK27** The 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. Use of the band by non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to the provisions of Resolution **539 (WRC-2000)**, and such systems shall be in accordance with Resolution **528 (WARC-92)**.
- PAK28** The use of band 2 690-2 700 MHz for the fixed and mobile, except aeronautical mobile, services on a primary basis is limited to equipment in operation by 1 January 1985.
- PAK29** The Frequency Band 3.4 – 3.6 GHz is identified for FWA operation.
- PAK30** The countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service.
- PAK31** The use of band 5150-5250 MHz for the mobile service, on a primary basis, is subject to agreement obtained under No. **9.21**.
- PAK32** The Frequency Range 5725 – 5875 MHz is identified as the ISM (Industrial, Scientific & Medical) Band.
- PAK33** The Frequency Range 10.15 – 10.65 GHz is identified for FWA (Fixed Wireless Access) Operation and Fixed Links.
- PAK34** The Frequency Range 11.7 – 12.5 GHz is identified for MVDDS (Multichannel Video Distribution & Data Services) on sharing basis with the Broadcast Satellite Service (BSS) & Fixed Satellite Service (FSS).
- PAK35** The band 11.7-12.2 GHz is 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.

- PAK36** The band 12.2-12.5 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. The power flux-density limits in Table 21-4 of Article 21 shall apply to this frequency band.
- PAK37** The broadcasting-satellite service in the band 12.5-12.75 GHz is limited to a power flux-density not exceeding $-111 \text{ dB(W)/(m}^2 \text{ ?27 MHz)}$ for all conditions and for all methods of modulation at the edge of the service area.
- PAK38** The use of the bands 12.2-12.75 GHz (space-to-Earth), 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.
- PAK39** The use of the band 19.7 – 21.2 GHz for fixed and mobile services, on primary basis, shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service in the band 19.7-21.2 GHz and of space stations in the mobile-satellite service in the band 19.7-20.2 GHz where the allocation to the mobile-satellite service is on a primary basis in the latter band.
- PAK40** The Frequency Range 24.45 – 27 GHz is identified for Local Multipoint Distribution System (LMDS).
- PAK41** The allocation to the fixed service in the band 27.5-28.35 GHz may also be used by high altitude platform stations (HAPS). The use of the band 27.5-28.35 GHz by HAPS is limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services.
- PAK42** The power limits specified in Nos. 21.3 and 21.5 shall apply to fixed and mobile services, on secondary basis, in the band 29.5– 31 GHz.
- PAK43** The allocation to the fixed service in the band 31-31.3 GHz may also be used by high altitude platform stations (HAPS) in the ground-to-HAPS direction. The use of the band 31-31.3 GHz by systems using HAPS shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services, taking into account No. 5.545. The use of HAPS in the band 31-31.3 GHz shall not cause harmful interference to the passive services having a primary allocation in the band 31.3-31.8 GHz, taking into account the interference criteria given in Recommendations ITU-R SA.1029 and ITU-R RA.769. The administrations of the countries listed above are urged to limit the

deployment of HAPS in the band 31 -31.3 GHz to the lower half of this band (31 - 31.15 GHz) until WRC-03.

PAK44 The Frequency Range 40.5 – 42.5 GHz has been identified for Broadcasting Services.

