



NATIONAL COMMUNICATIONS AUTHORITY

GHANA NATIONAL FREQUENCY ALLOCATION TABLE 2016

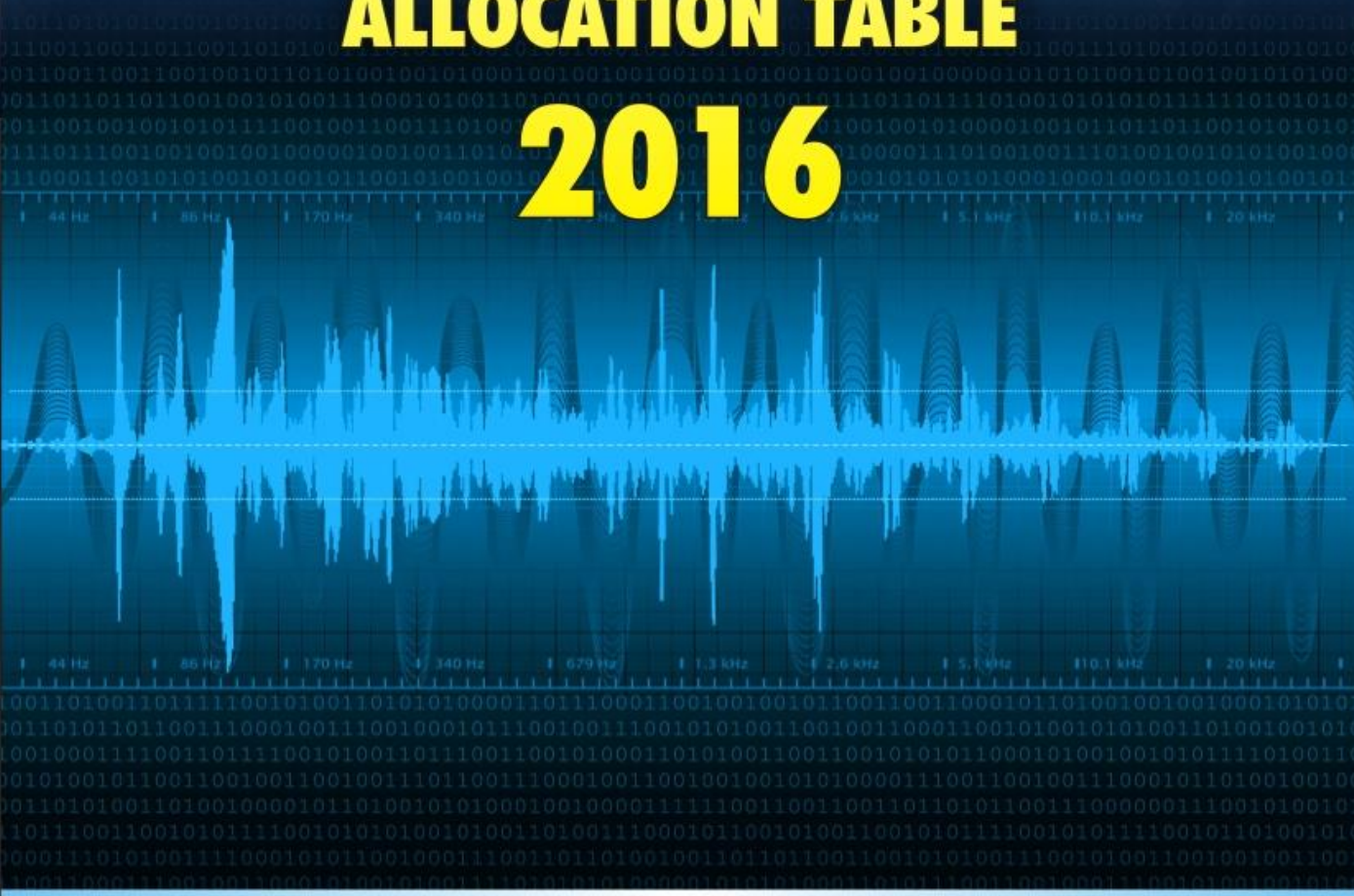


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INTRODUCTION

The National Frequency Allocation Table (NFAT) details how the various frequency bands are used in Ghana (referred to as ‘allocations’). It provides the framework within which frequency assignments are to be made for all radio services in Ghana.

The NFAT may be amended as a result of changes in the National Communications Authority’s Licensing decisions, or in accordance to changes to the Radio Regulations made by the World Radiocommunication Conferences (WRC) of the International Telecommunication Union (ITU) such that these affect the NFAT, or in accordance with the application of any other national frequency decisions.

Direct references have been made within the NFAT to the footnotes in the Radio Regulations that apply to radio services in Ghana. Where the provisions of the Radio Regulation differ from those NFAT, those of the latter will apply.

The NFAT does not infer any right for use of radio services or equipment, which must be authorized in accordance with the relevant licensing requirements.

TERMS AND DEFINITIONS

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 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.

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.

Public correspondence: Any telecommunication which the offices and stations must, by reason of their being at the disposal of the public, accept for transmission

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

Emission: Radiation produced, or the production of radiation, by a radio transmitting station. For example, the energy radiated by the local oscillator of a radio receiver would not be an emission but a radiation.

Harmful interference: Interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with Radio Regulations.

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. Each station shall be classified by the service in which it operates permanently or temporarily.

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.

Radiocommunication service: A service as defined in this Section involving the transmission, emission and/or reception of radio waves for specific telecommunication purposes. In this document, 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. These functions will normally be provided within the service in which the space station is operating.

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

Mobile-satellite service: A radiocommunication service:

- between mobile earth stations and one or more space stations, or between space stations used by this service; or
- between mobile earth stations by means of one or more space stations. This service may also include feeder links necessary for its operation.

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

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.

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.

Ship movement service: A safety service in the maritime mobile service other than a port operations service, between coast stations and ship stations, or between ship stations, in which messages are restricted to those relating to the movement of ships.

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.

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.

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**, which may include links between **space stations**, in which:

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

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

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

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

Standard frequency and time signal-satellite service: A **radiocommunication service** using **space stations** on earth **satellites** for the same purposes as those of the **standard frequency and time signal service**.

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

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

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

Amateur-satellite service: A **radiocommunication service** using **space stations** on earth **satellites** for the same purposes as those of the **amateur service**.

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

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

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

STRUCTURE OF THE NATIONAL TABLE OF FREQUENCY ALLOCATIONS

The National Table of Frequency Allocations consists of four (4) columns:

Column 1 – Frequency band. It contains allocation of frequency bands for different radiocommunication services for Region 1 countries. Contents of this column are identical to the column 1 of the Table of Frequency Allocations of Article 5 of the Radio Regulations.

Column 2 – Services- Foot note. It contains different radiocommunications services in Ghana. This allocation corresponds to provisions of Article 5 of the Radio Regulations.

Column 3 – Remarks. This column gives a brief description of the footnotes for easy reference.

The following conventions apply throughout the Ghana table:

- PRIMARY services are printed in capital letters.
- Secondary services are printed in lower case

Where a footnote is printed in the same line as a radio service, it applies to that radio service only, whereas where a footnote is printed at the bottom of frequency band, it applies to that band or parts thereof.

TABLE OF FREQUENCY ALLOCATION (8.3 kHz – 3000GHz)

| FREQUENCY BAND | GHANA'S ALLOCATION TO SERVICES | REMARKS |
|-----------------------|---|---|
| Below 8.3 kHz | Not allocated 5.53 5.54 | All the footnotes are incorporated in the ITU Radio Regulations. |
| 8.3 – 9 kHz | METEOROLOGICAL AIDS 5.54A | Passive use only. |
| 9 – 11.3 kHz | METEOROLOGICAL AIDS 5.54A RADIONAVIGATION | For sharing Rec. ITU-R RS 1881 should be applied. |
| 11.3 – 14 kHz | RADIONAVIGATION | |
| 14 – 19.95kHz | FIXED MARITIME MOBILE 5.57 5.56 | Stations that transmit standard frequency and time signals are protected. Maritime mobile service is limited to coast radiotelegraph stations (A1A & F1B). |
| 19.95 – 20.05kHz | STANDARD FREQUENCY AND TIME SIGNAL(20 KHz) | |
| 20.05 – 70 kHz | FIXED MARITIME MOBILE5.57 5.56 | Stations that transmit standard frequency and time signals are protected. Maritime mobile service is limited to coast radiotelegraph stations (A1A & F1B). |
| 70 – 72 kHz | RADIONAGIVATION 5.60 | |
| 72 – 84 kHz | FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60 5.56 | Stations that transmit standard frequency and time signals are protected. |

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| | | Maritime mobile service is limited to coast radiotelegraph stations (A1A & F1B). |
| 84 – 86 kHz | RADIONAVIGATION 5.60 | |
| 86 – 90 kHz | FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.56 | Stations that transmit standard frequency and time signals are protected. Maritime mobile service is limited to coast radiotelegraph stations (A1A & F1B). |
| 90 – 110 kHz | RADIONAVIGATION 5.62 Fixed 5.64 | |
| 110 – 112 kHz | FIXED MARITIME MOBILE RADIONAVIGATION 5.64 | |
| 112 – 115 kHz | RADIONAVIGATION 5.60 | |
| 115 – 117.6 kHz | RADIONAVIGATION 5.60 Fixed Maritime Mobile 5.64 | Pulse radionavigation systems may be used on condition that they do not cause harmful interference to other services. |
| 117.6 – 126kHz | FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64 | Pulse radionavigation systems may be used on condition that they do not cause harmful interference to other services. |
| 126 – 129 kHz | RADIONAVIGATION 5.60 | |

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| 129 – 130 kHz | FIXED MARITIME MOBILE RADIONAVIGATION 5.60 5.64 | Pulse radionavigation systems may be used on condition that they do not cause harmful interference to other services. |
| 130 – 135.7 kHz | FIXED MARITIME MOBILE | |
| 135.7-137.8kHz | FIXED MARITIME MOBILE Amateur 5.67A 5.64 | Amateur Operators should not exceed 1Watt (e.i.r.p.). |
| 137.8 -148.5 kHz | FIXED MARITIME MOBILE 5.64 | Stations are authorized for only classes A1A or F1B, A2C, A3C, F1C or F3C. Exceptionally, class J2B or J7B emissions are also authorized for maritime mobile service. |
| 148.5 – 255kHz | BROADCASTING | |
| 255 – 283.5 kHz | BROADCASTING AERONAUTICAL RADIONAVIGATION | |
| 283.5 – 315kHz | MARITIME RADIONAVIGATION (Radiobeacons) 5.73 AERONAUTICAL RADIONAVIGATION 5.74 | |
| 315 – 325kHz | AERONAUTICAL RADIONAVIGATION Maritime Radionavigation (Radiobeacons) 5.73 | |
| 325 – 405 kHz | AERONAUTICAL RADIONAVIGATION | |
| 405 – 415 kHz | RADIONAVIGATION 5.76 | |
| 415 – 435 kHz | MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION | Maritime Mobile services is limited to radiotelegraphy. |

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| 435 – 472 kHz | MARITIME MOBILE 5.79 Aeronautical radionavigation 5.82 | Maritime Mobile services is limited to radiotelegraphy. |
| 472 – 479 kHz | MARITIME MOBILE 5.79 Amateur 5.80A Aeronautical radionavigation 5.82 | Maritime Mobile services is limited to radiotelegraphy. Amateur Operators should not exceed 5Watt (e.i.r.p.), however they are to ensure that they don't cause harmful interference to the aeronautical radionavigation service. |
| 479 – 495 kHz | MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation 5.82 | Maritime Mobile services is limited to radiotelegraphy. Coast stations in the NAVTEX service should refer to resolution 339 (Rev.WRC-07). For use of 490kHz refer to Articles 31 and 52 of the ITU RR.. |
| 495 - 505 kHz | MARITIME MOBILE | |
| 505 – 526.5 kHz | MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION | Maritime Mobile services is limited to radiotelegraphy. Coast stations in the NAVTEX service should refer to resolution 339 (Rev.WRC-07). For use of 518kHz refer to Articles 31 and 52 of ITU RR. |
| 526 .5– 1606.5 kHz | BROADCASTING | |
| 1606.5 – 1625 kHz | MARITIME MOBILE FIXED LAND MOBILE | |

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| 1625 – 1635 kHz | RADIOLOCATION | |
| 1635 – 1800 kHz | MARITIME MOBILE FIXED LAND MOBILE | |
| 1800 – 1810kHz | RADIOLOCATION | |
| 1810 – 1850 kHz | AMATEUR 5.100, 5.99 | Amateur Operators should coordinate the use of the band with Operators in Togo. |
| 1850 – 2000 kHz | FIXED MOBILE except Aeronautical mobile 5.103 | |
| 2000 – 2025 kHz | FIXED MOBILE except aeronautical mobile (R) 5.103 | |
| 2025 – 2045 kHz | FIXED MOBILE except Aeronautical mobile (R) Meteorological Aids 5.104 5.103 | Meteorological aid services is limited to oceanographic buoy station. |
| 2045 – 2160 kHz | MARITIME MOBILE FIXED LAND MOBILE | |
| 2160 – 2170 kHz | RADIOLOCATION | |
| 2170 – 2173.5 kHz | MARITIME MOBILE | |
| 2173.5 – 2190.5 kHz | MOBILE (distress and calling) 5.108 5.109 5.110 ,5.111 | Refer to Articles 31 & 52 of ITU RR. |
| 2190.5 – 2194 kHz | MARITIME MOBILE | |

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| 2194 – 2300kHz | FIXED MOBILE except aeronautical mobile (R) 5.103 | |
| 2300 – 2498 kHz | FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.103 | For the use of 2498 kHz see Nos. 5.16 to 5.20, 5.21 and 23.3 to 23.10 of the ITU RR. |
| 2498 – 2501 kHz | STANDARD FREQUENCY AND TIME SIGNAL (2500 kHz) | |
| 2501 – 2502 kHz | STANDARD FREQUENCY AND TIME SIGNAL Space Research | |
| 2502 – 2625 kHz | FIXED MOBILE except aeronautical mobile (R) 5.103 | |
| 2625 – 2650 kHz | MARITIME MOBILE MARITIME RADIONAVIGATION | Maritime Radionavigation service should not exceed 50W. |
| 2650 – 2850 kHz | FIXED MOBILE except aeronautical mobile (R) 5.103 | |
| 2850 – 3025 kHz | AERONAUTICAL MOBILE (R) 5.111,5.115 | For the use of 3023 kHz refer to Article 31 of the ITU RR. |
| 3025 – 3155 kHz | AERONAUTICAL MOBILE (OR) | |
| 3155 – 3200 kHz | FIXED MOBILE expect aeronautical mobile (R) 5.116 | Low power wireless hearing aids shall be used. |
| 3200 – 3230 kHz | FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.116 | Low power wireless hearing aids shall be used. For broadcasting services see Nos. 5.16 to 5.20, 5.21 and 23.3 to 23.10 of ITU RR. |

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| 3230 – 3400 kHz | FIXED MOBILE except aeronautical mobile BROADCASTING 5.113 5.116 | Low power wireless hearing aids shall be used. For broadcasting services see Nos. 5.16 to 5.20, 5.21 and 23.3 to 23.10 of ITU RR. |
| 3400 – 3500 kHz | AERONAUTICAL MOBILE (R) | |
| 3500 – 3800 kHz | AMATEUR FIXED MOBILE except aeronautical mobile | |
| 3800 – 3900 kHz | FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE | |
| 3900 – 3950 kHz | AERONAUTICAL MOBILE (OR) | |
| 3950 – 4000 kHz | FIXED BROADCASTING | |
| 4000 – 4063 kHz | FIXED MARITIME MOBILE 5.127 | For Maritime mobile service see No. 52.220 and Appendix 17 of the ITU RR. |
| 4063 – 4438 kHz | MARITIME MOBILE 5.109 5.110 5.130, 5.131 5.132 5.79A 5.128 | Coast stations in the NAVTEX service should refer to resolution 339 (Rev.WRC-07). For the use of 4125 kHz, 4177.5 kHz, 4207.5 kHz refer to Article 31 and 52 of the ITU RR. 4209.5kHz is used exclusively by coast stations for meteorological and navigational warnings and urgent information to ships |

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| | | 4210kHz is used for the transmission of maritime safety information (MSI) see Appendix 17 of ITU RR. |
| 4438 – 4488 kHz | FIXED MOBILE except aeronautical mobile (R) Radiolocation 5.132A | Radiolocation services are limited to oceanographic radars, refer to Resolution 612 (Rev.WRC-12). |
| 4488 – 4650 kHz | FIXED MOBILE except aeronautical mobile (R) | |
| 4650 – 4700 kHz | AERONAUTICAL MOBILE (R) | |
| 4700 – 4750 kHz | AERONAUTICAL MOBILE (OR) | |
| 4750 – 4850 kHz | FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 5.113 | For broadcasting services see Nos. 5.16 to 5.20, 5.21 and 23.3 to 23.10 of ITU RR. |
| 4850 – 4995 kHz | FIXED LAND MOBILE BROADCASTING 5.113 | For broadcasting services see Nos. 5.16 to 5.20, 5.21 and 23.3 to 23.10 of ITU RR. |
| 4995 – 5003 kHz | STANDARD FREQUENCY AND TIME SIGNAL (5000 kHz) | |
| 5003 – 5005 kHz | STANDARD FREQUENCY AND TIME SIGNAL Space Research | |
| 5005 – 5060 kHz | FIXED BROADCASTING 5.113 | For broadcasting services see Nos. 5.16 to 5.20, 5.21 and 23.3 to 23.10 of ITU RR. |
| 5060 – 5250 kHz | FIXED Mobile except aeronautical mobile | |

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| 5250 – 5275 kHz | FIXED MOBILE except aeronautical mobile Radiolocation 5.132A | Radiolocation services are limited to oceanographic radars, refer to Resolution 612 (Rev.WRC-12). |
| 5275- 5351.5 kHz | FIXED MOBILE except aeronautical mobile | |
| 5351.5-5366.5 kHz | FIXED MOBILE except aeronautical mobile Amateur 5.133B | Stations in the Amateur service using the frequency 5351.5-5366.5 KHz shall not exceed a maximum power of 15 W (eirp) |
| 5366.5 – 5450 kHz | FIXED MOBILE except aeronautical mobile | |
| 5450 – 5480 kHz | FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE | |
| 5480 – 5680 kHz | AERONAUTICAL MOBILE (R) 5.111 5.115 | For the use of 5680 kHz refer to Article 31 of the ITU RR. |
| 5680 – 5730 kHz | AERONAUTICAL MOBILE (OR) 5.111 5.115 | For the use of 3023 kHz refer to Article 31 of the ITU RR. |
| 5730 – 5900 kHz | FIXED LAND MOBILE | |
| 5900 – 5950 kHz | BROADCASTING 5.134 5.136 | Refer to Article 12 and Resolution 517 (Rev. WRC-07). Fixed and Land mobile services may operate with a minimum power. |
| 5950 – 6200 kHz | BROADCASTING | |
| 6200 – 6525 kHz | MARITIME MOBILE 5.109 ,5.110, 5.130, 5.132 5.137 | For the use of 6215 kHz, 6268 kHz, 6312 kHz refer to Article 31 and 52 of the ITU RR. |

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| | | 6314 kHz is used for the transmission of maritime safety information (MSI) see Appendix 17 of ITU RR. Fixed services may operate with a mean power not exceeding 50W. |
| 6525 – 6685 kHz | AERONAUTICAL MOBILE (R) | |
| 6685 – 6765 kHz | AERONAUTICAL MOBILE (OR) | |
| 6765 – 7000 kHz | FIXED MOBILE except aeronautical mobile (R) 5.138 | Also designated for ISM applications, with reference to latest relevant ITU-R Recommendations. |
| 7000 – 7100 kHz | AMATEUR AMATEUR-SATELLITE 5.140 | Amateur Operators should coordinate the use of the band with Operators in Togo. |
| 7100 – 7200 kHz | AMATEUR | |
| 7200 – 7300 kHz | BROADCASTING | |
| 7300 – 7400 kHz | BROADCASTING 5.134 ,5.143, 5.143B | Refer to Article 12 and Resolution 517 (Rev. WRC-07). Fixed and Land mobile services may operate at a minimum power of 24 dBW. |
| 7400 – 7450 kHz | BROADCASTING 5.143B | Fixed and Land mobile services may operate at a minimum power of 24 dBW. |
| 7450 – 8100 kHz | FIXED MOBILE except aeronautical mobile (R) | |
| 8100 – 8195 kHz | FIXED MARITIME MOBILE | |

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| 8195 – 8815 kHz | MARITIME MOBILE 5.109,5.110, 5.132, 5.145 5.111 | For the use of 8414.5 kHz, 8376.5kHz, 8364 kHz, 8291 kHz refer to Article 31 and 52 of the ITU RR. 8416.5 kHz is used for the transmission of maritime safety information (MSI) see Appendix 17 of ITU RR. |
| 8815 – 8965 kHz | AERONAUTICAL MOBILE (R) | |
| 8965 – 9040 kHz | AERONAUTICAL MOBILE (OR) | |
| 9040 – 9305 kHz | FIXED | |
| 9305 – 9355 kHz | FIXED Radiolocation 5.145A | Radiolocation services are limited to oceanographic radars, refer to Resolution 612 (Rev.WRC-12). |
| 9355 – 9400 kHz | FIXED | |
| 9400 – 9500 kHz | BROADCASTING 5.134, 5.146 | Refer to Article 12 and Resolution 517 (Rev. WRC-07). |
| 9500 – 9900 kHz | BROADCASTING 5.147 | Fixed services may operate at a minimum power of 24 dBW. |
| 9900 – 9995 kHz | FIXED | |
| 9995 – 10003 kHz | STANDARD FREQUENCY AND TIME SIGNAL (10 MHz) 5.111 | For the use of 10003 kHz refer to Article 31 of the ITU RR. Emissions must be confined in a band of ± 3 kHz about the frequency. |
| 10003 – 10005 kHz | STANDARD FREQUENCY AND TIME SIGNAL Space Research 5.111 | For the use of 10003 kHz refer to Article 31 of the ITU RR. Emissions must be confined in a band of ± 3 kHz about the frequency. |

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| 10005 – 10100 kHz | AERONAUTICAL MOBILE (R) 5.111 | |
| 10100 – 10150 kHz | FIXED Amateur | |
| 10150 – 11175 kHz | FIXED Mobile except aeronautical mobile (R) | |
| 11175 – 11275 kHz | AERONAUTICAL MOBILE (OR) | |
| 11275 – 11400 kHz | AERONAUTICAL MOBILE (R) | |
| 11400 – 11600 kHz | FIXED | |
| 11600 – 11650 kHz | BROADCASTING 5.134 5.146 | Refer to Article 12 and Resolution 517 (Rev. WRC-07). |
| 11650 – 12050 kHz | BROADCASTING 5.147 | Fixed services may operate at a minimum power of 24 dBW. |
| 12050 – 12100 kHz | BROADCASTING 5.134 5.146 | Refer to Article 12 and Resolution 517 (Rev. WRC-07). |
| 12100 – 12230 kHz | FIXED | |
| 12230 – 13200 kHz | MARITIME MOBILE 5.109, 5.110 5.132 5.145 | For the use of 12577 kHz, 12520 kHz, 12290 kHz refer to Article 31 and 52 of the ITU RR. 12579 kHz is used for the transmission of maritime safety information (MSI) see Appendix 17 of ITU RR. |
| 13200 – 13260 kHz | AERONAUTICAL MOBILE (OR) | |

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| 13260 – 13360 kHz | AERONAUTICAL MOBILE (R) | |
| 13360 – 13410 kHz | FIXED RADIO ASTRONOMY 5.149 | Fixed service operators should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 13410 – 13450 kHz | FIXED Mobile except aeronautical mobile (R) | |
| 13450 – 13550 kHz | FIXED Mobile except aeronautical mobile (R) Radiolocation 5.132A | Radiolocation services are limited to oceanographic radars, refer to Resolution 612 (Rev.WRC-12). |
| 13550 – 13570 kHz | FIXED Mobile except aeronautical mobile (R) 5.150 | Also designated for ISM applications, subject to the provisions of No. 15.13 of the ITU-RR. |
| 13570 – 13600 kHz | BROADCASTING 5.134 5.151 | Refer to Article 12 and Resolution 517 (Rev. WRC-07). |
| 13600 – 13800 kHz | BROADCASTING | |
| 13800 – 13870 kHz | BROADCASTING 5.134 5.151 | Refer to Article 12 and Resolution 517 (Rev. WRC-07). |
| 13870 – 14000 kHz | FIXED Mobile except aeronautical mobile (R) | |
| 14000 – 14250 kHz | AMATEUR AMATEUR-SATELLITE | |
| 14250 – 14350 kHz | AMATEUR | |
| 14350 – 14990 kHz | FIXED Mobile except aeronautical mobile (R) | |

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| 14990 – 15005 kHz | STANDARD FREQUENCY AND TIME SIGNAL (15 MHz) 5.111 | For the use of 14993 kHz refer to Article 31 of the ITU RR. Emissions must be confined in a band of ± 3 kHz about the frequency. |
| 15005 – 15010 kHz | STANDARD FREQUENCY AND TIME SIGNAL Space Research | |
| 15010 – 15100 kHz | AERONAUTICAL MOBILE (OR) | |
| 15100 – 15600 kHz | BROADCASTING | |
| 15600 – 15800 kHz | BROADCASTING 5.134 5.146 | Refer to Article 12 and Resolution 517 (Rev. WRC-07). |
| 15800 – 16100 kHz | FIXED | |
| 16100 – 16200 kHz | FIXED Radiolocation 5.145A | Radiolocation services are limited to oceanographic radars, refer to Resolution 612 (Rev.WRC-12). |
| 16200 – 16360 kHz | FIXED | |
| 16360 – 17410 kHz | MARITIME MOBILE 5.109, 5.110, 5.132, 5.145 | For the use of 16804.5 kHz, 16695 kHz, 16420 kHz refer to Article 31 and 52 of the ITU RR. 16806.5 kHz is used for the transmission of maritime safety information (MSI) see Appendix 17 of ITU RR. |
| 17410 – 17480 kHz | FIXED | |
| 17480 – 17550 kHz | BROADCASTING 5.134 5.146 | Refer to Article 12 and Resolution 517 (Rev. WRC-07). |

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| 17550 – 17900 kHz | BROADCASTING | |
| 17900 – 17970 kHz | AERONAUTICAL MOBILE (R) | |
| 17970 – 18030 kHz | AERONAUTICAL MOBILE (OR) | |
| 18030 – 18052 kHz | FIXED | |
| 18052 – 18068 kHz | FIXED Space Research | |
| 18068 – 18168 kHz | AMATEUR AMATEUR – SATELLITE | |
| 18168 – 18780 kHz | FIXED Mobile except aeronautical mobile | |
| 18780 – 18900 kHz | MARITIME MOBILE | |
| 18900 – 19020 kHz | BROADCASTING 5.134 5.146 | Refer to Article 12 and Resolution 517 (Rev. WRC-07). |
| 19020 – 19680 kHz | FIXED | |
| 19680 – 19800 kHz | MARITIME MOBILE 5.132 | 19680.5 kHz is used for the transmission of maritime safety information (MSI) see Appendix 17 of ITU RR. |
| 19800 – 19990 kHz | FIXED | |
| 19990 – 19995 kHz | STANDARD FREQUENCY AND TIME SIGNAL Space Research 5.111 | For the use of 19993 kHz refer to Article 31 of the ITU RR. Emissions must be confined in a band of ± 3 kHz about the frequency. |
| 19995 – 20010 kHz | STANDARD FREQUENCY AND TIME SIGNAL (20MHz) | |

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| | 5.111 | |
| 20010 – 21000 kHz | FIXED Mobile | |
| 21000 – 21450 kHz | AMATEUR AMATEUR-SATELLITE | |
| 21450 – 21850 kHz | BROADCASTING | |
| 21850 – 21870 kHz | FIXED | |
| 21870 – 21924 kHz | FIXED 5.155B | Used by the fixed service for provision of services related to aircraft flight safety. |
| 21924 – 22000 kHz | AERONAUTICAL MOBILE (R) | |
| 22000 – 22855 kHz | MARITIME MOBILE 5.132 | 22376 kHz is used for the transmission of maritime safety information (MSI) see Appendix 17 of ITU RR. |
| 22855 – 23000 kHz | FIXED | |
| 23000 – 23200 kHz | FIXED Mobile except aeronautical (R) | |
| 23200 – 23350 kHz | AERONAUTICAL MOBILE (OR) FIXED 5.156A | Used by the fixed service for provision of services related to aircraft flight safety. |
| 23350 – 24000 kHz | FIXED MOBILE except aeronautical mobile 5.157 | Maritime mobile service is limited to inter-ship radiotelegraphy. |
| 24000 – 24450 kHz | FIXED LAND MOBILE | |
| 24450 – 24600 kHz | FIXED LAND MOBILE Radiolocation 5.132A | Radiolocation services are limited to oceanographic radars, refer to Resolution 612 (Rev.WRC-12). |

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| 24600 – 24890 kHz | FIXED LAND MOBILE | |
| 24890 – 24990 kHz | AMATEUR AMATEUR-SATELLITE | |
| 24990 – 25005 kHz | STANDARD FREQUENCY AND TIME SIGNAL (25MHz) | |
| 25005 – 25010 kHz | STANDARD FREQUENCY AND TIME SIGNAL Space Research | |
| 25010 – 25070 kHz | FIXED MOBILE except aeronautical mobile | |
| 25070 – 25210 kHz | MARITIME MOBILE | |
| 25210 – 25550 kHz | FIXED MOBILE except aeronautical mobile | |
| 25550 – 25670 kHz | RADIO ASTRONOMY | |
| 25670 – 26100 kHz | BROADCASTING | |
| 26100 – 26175 kHz | MARITIME MOBILE 5.132 | 26100.5 kHz is used for the transmission of maritime safety information (MSI) see Appendix 17 of ITU RR. |
| 26175 – 26200 kHz | FIXED MOBILE except aeronautical mobile | |
| 26200 – 26350kHz | FIXED MOBILE except aeronautical mobile Radiolocation 5.132A | Radiolocation services are limited to oceanographic radars, refer to Resolution 612 (Rev.WRC-12). |
| 26350 – 27500 kHz | FIXED MOBILE except aeronautical mobile 5.150 | Also designated for ISM applications, subject to the provisions of No.15.13 of the ITU-RR. |

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| 27.5 – 28 MHz | METEOROLOGICAL AIDS FIXED MOBILE | |
| 28 – 29.7 MHz | AMATEUR AMATEUR-SATELLITE | |
| 29.7 – 30.005 MHz | FIXED MOBILE | |
| 30.005 – 30.01 MHz | SPACE OPERATION (satellite identification) FIXED MOBILE SPACE RESEARCH | |
| 30.01 – 37.5 MHz | FIXED MOBILE | |
| 37.5 – 38.25 MHz | FIXED MOBILE Radio Astronomy 5.149 | Fixed and mobile service operators should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 38.25 – 39 MHz | FIXED MOBILE | |
| 39 – 39.5 MHz | FIXED MOBILE Radiolocation 5.132A | Radiolocation services are limited to oceanographic radars, refer to Resolution 612 (Rev.WRC-12). |
| 39.5 – 39.986 MHz | FIXED MOBILE | |
| 39.986 – 40.02 MHz | FIXED MOBILE Space Research | |

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| 40.02 – 40.98 MHz | FIXED MOBILE 5.150 | Also designated for ISM applications, subject to the provisions of No.15.13 of the ITU-RR. |
| 40.98 – 41.015 MHz | FIXED MOBILE Space Research | |
| 41.015 - 42 | FIXED MOBILE | |
| 42 – 42.5 MHz | FIXED MOBILE Radiolocation 5.132A | Radiolocation services are limited to oceanographic radars, refer to Resolution 612 (Rev.WRC-12). |
| 42.5 – 47 MHz | FIXED MOBILE | |
| 47 – 68 MHz | BROADCASTING | |
| 68 – 74.8 MHz | FIXED MOBILE except aeronautical mobile | |
| 74.8 – 75.2 MHz | AERONAUTICAL RADIONAVIGATION 5.180 | The frequency 75 MHz is assigned to marker beacons, other services should avoid causing harmful interference to it. |
| 75.2 – 87.5 MHz | FIXED MOBILE except aeronautical mobile | |
| 87.5 – 108 MHz | BROADCASTING | Used by Sound Broadcasting Operators. |
| 108 – 117.975 MHz | AERONAUTICAL RADIONAVIGATION 5.197A | Refer to Resolution 413 (Rev.WRC-07). |
| 117.975 - 137 MHz | AERONAUTICAL MOBILE (R) 5.111 5.200 | Refer to Article 31 of the ITU RR. |

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| | | 136-144 MHz is used by 2-way Radio Networks. |
| 137 - 137.025 MHz | SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE(space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.208 | Refer to Resolution 739 (Rev. WRC-07). Mobile-satellite service is limited to non-geostationary-satellite systems. The mobile-satellite service is subject to coordination under No. 9.11A of the ITU-RR. 136-144 MHz is used by 2-way Radio Networks. |
| 137.025 - 37.175MHz | SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-Satellite (space-to-earth) 5.209 5.208A 5.208B 5.208 | Refer to Resolution 739 (Rev. WRC-07). Mobile-satellite service is limited to non-geostationary-satellite systems. The mobile-satellite service is subject to coordination under No. 9.11A of the ITU-RR. 136-144 MHz is used by 2-way Radio Networks. |
| 137.175 – 137.825MHz | SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE(space-to-Earth) 5.209, 5.208A 5.208B SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.208 | Refer to Resolution 739 (Rev. WRC-07). Mobile-satellite service is limited to non-geostationary-satellite systems. The mobile-satellite service is subject to coordination under No. 9.11A of the ITU-RR. 136-144 MHz is used by 2-way Radio Networks. |

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| 137.825 – 138 MHz | SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 5.208 | Refer to Resolution 739 (Rev. WRC-07). Mobile-satellite service is limited to non-geostationary-satellite systems. The mobile-satellite service is subject to coordination under No. 9.11A of the ITU RR. 136-144 MHz is used by 2-way Radio Networks. |
| 138 – 144MHz | FIXED MOBILE 5.212 | For use by 2-way Radio Networks. |
| 144 – 146 MHz | AMATEUR AMATEUR-SATELLITE | |
| 146 - 174 MHz | FIXED MOBILE 5.218, 5.219, 5.221, 5.149, 5.226, 5.111 5.228AA 5.228F | For use by 2-way Radio Networks. The band 161.9375-161.9625 MHz and 161.9875-162.0125 May be used by the Mobile-satellite service, subject to Appendix 18 of the ITU RR. |
| 174 – 230 MHz | BROADCASTING | Used by Analogue Television Broadcasting Operators. |
| 230 - 235 MHz | FIXED MOBILE | |
| 235 - 267 MHz | FIXED MOBILE 5.111 5.254 ,5.256 | For the use of 243 MHz refer to Article 31 of the ITU RR. May be used by the mobile-satellite service, subject to agreement obtained under No. 9.21 of the ITU RR. |

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| 267 – 272 MHz | FIXED MOBILE Space Operation (space-to-Earth) 5.254 5.257 | Refer to No. 9.21 of the ITU RR. |
| 272 - 273 MHz | SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254 | May be used by the mobile-satellite service, subject to agreement obtained under No. 9.21 of the ITU RR. |
| 273 – 312 MHz | FIXED MOBILE 5.254 | May be used by the mobile-satellite service, subject to agreement obtained under No. 9.21 of the ITU RR. |
| 312 - 315 MHz | FIXED MOBILE Mobile-Satellite (Earth-to-space) 5.254, 5.255 | May be used by the mobile-satellite service, subject to agreement obtained under Nos. 9.21 and 9.11A of the ITU RR. |
| 315 - 322 MHz | FIXED MOBILE 5.254 | May be used by the mobile-satellite service, subject to agreement obtained under No. 9.21 of the ITU RR. |
| 322 – 328.6 MHz | FIXED MOBILE RADIO ASTRONOMY 5.149 | Fixed and Mobile service operators should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 328.6 - 335.4 MHz | AERONAUTICAL RADIONAVIGATION 5.258 | Aeronautical radionavigation service is limited to Instrument Landing Systems (glide path). |
| 335.4 - 387 MHz | FIXED MOBILE 55.254 | Used for Studio-Transmitter-Links (STL) and Outside Broadcasting (OB) operations. See Resolution 739 (Rev. WRC-15) |

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| 387-390MHz | FIXED MOBILE Mobile -satellite (space to Earth) 5.208A,5.208B,5.245,5.255 | Used for Studio-Transmitter-Links (STL) and Outside Broadcasting (OB) operations. |
| 390-399.9 MHz | FIXED MOBILE 5.254 | FIXED MOBILE |
| 399.9-400.05 MHz | MOBILE SATELLITE (Earth-to-space) 5.209 5.220 | Used for Studio-Transmitter-Links (STL) and Outside Broadcasting (OB) operations. |
| 400.05 – 400.15 MHz | STANDARD FREQUENCY AND TIME SIGNAL SATELLITE 5.261 5.262 | |
| 400.15-401 MHz | METEOROLOGICAL AIDS METEOROLOGICAL -SATELLITE (Space to Earth) MOBILE-SATELLITE (space to Earth) SPACE RESEARCH (space to Earth) Space operation (space to Earth) 5.262, 5.264 | The Band has been designated for Fixed and Mobile services. |
| 401-402 MHz | METEOROLOGICAL AIDS SPACE OPERATION (space to Earth) EARTH EXPLORATION-SATELLITE (Earth to space) METEOROLOGICAL -SATELLITE (Space to Earth) Fixed Mobile except aeronautical mobile | The Band has been designated for Fixed and Mobile services. |
| 402-403 MHz | METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth to space) METEOROLOGICAL -SATELLITE (Space to Earth) Fixed Mobile except aeronautical mobile | The Band has been designated for Fixed and Mobile services. |

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| 403-406 MHz | METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile 5.265 | The Band has been designated for Fixed and Mobile services. |
| 406-406.1MHz | MOBILE- SATELLITE (space-to-Earth) 5.266 5.257 | Refer to Article 31. |
| 406.1-410MHz | FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149, 5.265 | Fixed and Mobile service operators should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 410-420MHz | FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268 | |
| 420-430MHz | FIXED MOBILE except aeronautical mobile Radiolocation | |
| 430 -432MHz | AMATEUR RADIOLOCATION | |
| 432-438 MHz | AMATEUR RADIOLOCATION Earth exploration-satellite (active) 5.138 | |
| 438-440 MHz | AMATEUR RADIOLOCATION | |
| 440-450MHz | FIXED MOBILE except aeronautical mobile Radiolocation | |

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| 450-470 MHz | FIXED MOBILE 5.286AA | Refer to Resolution 224 and 749 (Rev. WRC-15). |
| 470-694 MHz | BROADCASTING 5.296 5.312A 5.311A | Land mobile services may also be used on a secondary basis. |
| 694-790 MHz | MOBILE except aeronautical mobile 5.312A 5.317A 5.311A | Refer to Resolutions 224 (Rev. WRC-15), 760 (WRC-15) and 749 (WRC-15) |
| 790-862 MHz | FIXED MOBILE except aeronautical mobile 5.316B 5.317A | 825-835 MHz used for IMT services. Refer to Resolutions 224 (Rev. WRC-12) & 749 (Rev. WRC-12). |
| 862-890 MHz | FIXED MOBILE except aeronautical mobile 5.317A | 870-880 MHz used for IMT services. Refer to Resolutions 224 (Rev. WRC-12) & 749 (Rev. WRC-12). |
| 890-960 MHz | FIXED MOBILE except aeronautical mobile 5.317A | Used for IMT services. Refer to Resolutions 224 (Rev. WRC-12) & 749 (Rev. WRC-12). |
| 960-1164 MHz | AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328 | For Aeronautical Mobile (R), refer to Resolution 417 (Rev. WRC-12). The 1087.7-1092.3 MHz is also allocated |

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| | | <p>aeronautical mobile-satellite ® services on a primary basis subject to Resolution 425 (WRC-15).</p> <p>960-1215 MHz is reserved for the operation & development of airborne electronic aids to air navigation and any directly associated ground-based facilities.</p> |
| 1164 – 1215MHz | <p>AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-earth)(space-to-space) 5.328B 5.328A</p> | <p>960-1215 MHz is reserved for the operation & development of airborne electronic aids to air navigation and any directly associated ground-based facilities, refer to the provisions of No. 21.18 in the ITU RR.</p> <p>For radionavigation satellite services, the provisions of Nos. 9.12, 9.12A & 9.13 of the ITU-RR and Resolution 610(WRC-03) shall apply.</p> <p>For radionavigation-satellite service refer to Resolution 609 (Rev.WRC-07).</p> |
| 1215-1240 MHz | <p>EARTH EXPLORATION RADIOLOCATION</p> | |

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| | RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) SPACE RESEARCH (ACTIVE) | |
| 1240-1300 MHz | EARTH EXPLORATION RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) SPACE RESEARCH (ACTIVE) Amateur 5.335A | |
| 1300-1350MHz | RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.337 RADIONAVIGATION-SATELLITE (Earth-to-Space) 5.337A, 5.149 | Restricted to ground-base radars for aeronautical radionavigation services. Service operators should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 1350-1400MHz | FIXED MOBILE RADIOLOCATION 5.149, 5.338A, 5.339 | Service operators should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. Refer to Resolution 750 (Rev.WRC-12). |
| 1400-1427MHz | EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340, 5.341 | |
| 1427-1429MHz | SPACE OPERATION(Earth-to-space) FIXED MOBILE except aeronautical mobile 5.338A 5.341 | Refer to Resolution 750 (Rev.WRC-12). |

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| 1429-1452MHz | FIXED MOBILE except aeronautical mobile 5.338A 5.341 | Refer to Resolution 750 (Rev.WRC-12). |
| 1452-1492MHz | FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.208B 5.341 5.345 | Refer to Resolution 739 (Rev. WRC-07). |
| 1492-1518MHZ | FIXED MOBILE except aeronautical mobile 5.341 | |
| 1518 – 1525MHz | FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348, 5.351A 5.341 | Mobile satellite services shall not claim protection from the fixed service. Refer to No. 9.11A of the ITU RR & Resolutions 212 (Rev. WRC-07) & 225(Rev. WRC-07). |
| 1525-1530MHz | SPACE OPERATION(space-to-Earth) FIXED MOBILE- SATELLITE(space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile except aeronautical mobile 5.341 5.351 5.354 | Refer to Resolution 739 (Rev. WRC-07). For mobile satellite services see Resolutions 212 (Rev.WRC-07) and 225 (Rev.WRC-07). 1525-1544 MHz shall not be used for feeder links of any service. Mobile satellite service is subject to coordination under No. 9.11A. |

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| <p>1530-1535MHz</p> | <p>SPACE OPERATION(space-to-Earth) MOBILE- SATELLITE(space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.341 5.351 5.354</p> | <p>Refer to Resolution 739 (Rev. WRC-07).</p> <p>For mobile satellite services see Resolutions 212, 225(Rev.WRC-07) and 222 (Rev.WRC-2000).</p> <p>1525-1544 MHz shall not be used for feeder links of any service.</p> <p>Mobile satellite service is subject to coordination under No. 9.11A.</p> |
| <p>1535-1559MHz</p> | <p>MOBILE- SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.354 5.353A5.356 5.357 5.357A</p> | <p>Refer to Resolution 739 (Rev. WRC-07).</p> <p>For mobile satellite services see Resolutions 212, 225(Rev.WRC-07) and 222 (Rev.WRC-2000).</p> <p>Mobile satellite service is subject to coordination under No. 9.11A.</p> <p>1525-1544 MHz & 1545-1559 shall not be used for feeder links of any service.</p> |

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| | | <p>For the use of 1544-1545 MHz refer to Article 31 and 44.</p> <p>Transmissions in 1545-1555 MHz by terrestrial aeronautical stations can be used to extend or supplement the satellite-to-aircraft links.</p> |
| 1559-1610MHz | <p>AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth)(space-to-space) 5.208B 5.328B 5.329A 5.341</p> | <p>Refer to Resolution 739 (Rev. WRC-07).</p> <p>For radionavigation satellite services, the provisions of Nos. 9.12, 9.12A & 9.13 of the ITU-RR and Resolution 610(WRC-03) shall apply.</p> |
| 1610-1610.6MHz | <p>MOBILE- SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.364 5.366 5.367 5.368 5.371 5.372</p> | <p>For mobile satellite services see Resolutions 212 & 225(Rev.WRC-07).</p> <p>Refer to Nos.9.11A, 5.366 & 5.359 of ITU RR.</p> <p>For the use of 1610 – 1626.5 MHz, refer to No. 9.21 of the ITU RR.</p> |
| 1610.6-1613.8MHz | <p>MOBILE- SATELLITE (Earth-to-space) 5.351A RADIO-ASTRONOMY AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.364 5.366 5.367 5.368 5.371 5.372</p> | <p>For mobile satellite services see Resolutions 212 & 225(Rev.WRC-07).</p> |

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| | | <p>Refer to Nos.9.11A, 5.366 & 5.359 of ITU RR.</p> <p>For the use of 1610 – 1626.5 MHz, refer to No. 9.21 of the ITU RR.</p> <p>Mobile satellite and aeronautical radionavigation services should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR.</p> |
| 1613.8-1626.5MHz | <p>MOBILE- SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile- satellite (space-to-Earth) 5.208B</p> <p>5.341 5.364 5.365 5.366 5.367 5.368 5.372</p> | <p>For mobile satellite services see Resolutions 212 & 225(Rev.WRC-07).</p> <p>Refer to Nos.9.11A, 5.366 & 5.359 of ITU RR.</p> <p>For the use of 1610 – 1626.5 MHz, refer to No. 9.21 of the ITU RR.</p> <p>Refer to Resolution 739 (Rev. WRC-07).</p> |
| 1626.5-1660MHz | <p>MOBILE- SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.357A 5.375 5.376</p> | <p>For mobile satellite services see Resolutions 212, 225(Rev.WRC-07) and 222 (Rev.WRC-2000).</p> |

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| | | <p>1626.5-1646.5 MHz shall not be used for feeder links of any service.</p> <p>1626.5 – 1660.5 MHz is subject to coordination under No. 9.11A.</p> <p>For the use of 1645.5-1646.5 MHz refer to Article 31.</p> <p>Transmissions in 1646.5-1656.5 MHz by terrestrial aeronautical stations can be used to extend or supplement the satellite-to-aircraft links.</p> |
| 1660-1660.5MHz | <p>MOBILE- SATELLITE (Earth-to-space) 5.351A RADIO-ASTRONOMY 5.149 5.341 5.351 5.354 5.376A</p> | <p>For mobile satellite services see Resolutions 212 (Rev.WRC-07) and 225 (Rev.WRC-07).</p> <p>Mobile satellite services should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR.</p> <p>1660.5 MHz shall not be used for feeder links of any service.</p> <p>Mobile satellite service is subject to coordination under No. 9.11A.</p> |

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| | | Mobile earth station shall not cause harmful interference to the radio astronomy service. |
| 1660.5-1668MHz | RADIO-ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 | |
| 1668-1668.4MHz | MOBILE-SATELLITE (Earth-to-space) 5.351A, 5.379B, 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 | For mobile satellite services see Resolutions 212 (Rev.WRC-07) and 225 (Rev.WRC-07). |
| 1668.4- 1670 | METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.351A, 5.379B, 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D | For mobile satellite services see Resolutions 212 (Rev.WRC-07) and 225 (Rev.WRC-07). The use of 1668-1675 MHz by the Mobile satellite service is subject to coordination under No. 9.11A. To protect the radio astronomy service the aggregate power flux density by the mobile |

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| | | <p>earth stations should not exceed -181 dB(W/m²) in 10 MHz & -194 dB(W/m²) in 20kHz.</p> <p>Meteorological Aids, Fixed, Mobile except aeronautical mobile and mobile satelliteservices should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR.</p> <p>The use of 1668-1675 MHz by the Mobile satellite service is subject to coordination under No. 9.11A.</p> <p>For sharing of 1668.4-1670 MHz between the mobile satellite service & the fixed and mobile services see Resolution 744 (Rev WRC-07).</p> |
| 1670-1675MHz | <p>METEOROLOGICAL AIDS FIXED METEOROLOGICAL- SATELLITE(space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A</p> | <p>For mobile satellite services see Resolutions 212 (Rev.WRC-07) and 225 (Rev.WRC-07).</p> <p>The use of 1668-1675 MHz by the Mobile satellite service is subject to coordination under No. 9.11A.</p> |

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| | | For sharing of 1668.4-1670 MHz between the mobile satellite service & the fixed and mobile services see Resolution 744 (Rev WRC-07). |
| 1675-1690MHz | METEOROLOGICAL AIDS FIXED METEOROLOGICAL- SATELLITE(space-to-Earth) Mobile except aeronautical mobile 5.341 | |
| 1690-1700MHz | METEOROLOGICAL AIDS METEOROLOGICAL- SATELLITE(space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 | Earth Exploration satellite can also be used for space-to-earth transmissions provided it does not cause harmful interference to other services in this band. |
| 1700 - 1710 MHz | FIXED METEOROLOGICAL-SATELLITE (space- to-earth) MOBILE except aeronautical mobile 5.289 5.341 | Earth Exploration satellite can also be used for space-to-earth transmissions provided it does not cause harmful interference to other services in this band. |
| 1710 - 1980 MHz | FIXED MOBILE 5.384A5.388B 5.388 | Assignment to operators for 2G services. HAPS operating as an IMT base station in neighboring countries shall not exceed a co-channel power flux-density of -127 dB(W/m ²) |

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| | | See Resolution 212 (Rev.WRC-07) & Resolution 223 (Rev.WRC-07). |
| 1980 - 2010 MHz | FIXED MOBILE MOBILE-SATELLITE (earth-to-space) 5.351A 5.388 5.389A | For mobile satellite services see Resolutions 212 (Rev.WRC-07) and 225 (Rev.WRC-07). See Resolution 223 (Rev. WRC-07). The Mobile satellite service is subject to coordination under No. 9.11A & Resolution 716 (Rev. WRC-2000). |
| 2010 - 2025 MHz | FIXED MOBILE 5.388B 5.388 | HAPS operating as an IMT base station in neighbouring countries shall not exceed a co-channel power flux-density of -127 dB (W/m ²). See Resolution 212 (Rev.WRC-07) & Resolution 223 (Rev.WRC-07). |
| 2025 - 2110 MHz | SPACE OPERATION (earth-space) (space-space) EARTH EXPLORATION-SATELLITE (earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (earth-space) (space-space) 5.392 | For mobile services, refer to Recommendation ITU-R SA. 1154. Space-space transmissions between |

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| | | two or more non-geostationary satellite service shall not impose any constraints on Earth-space, space – Earth and other space-space transmissions of the space operation, space research and the earth exploration satellite service. |
| 2110 - 2170 MHz | FIXED MOBILE 5.388B 5.388 | HAPS operating as an IMT base station in neighbouring countries shall not exceed a co-channel power flux-density of -127 dB (W/m ²). See Resolution 212 (Rev.WRC-07) & Resolution 223 (Rev.WRC-07). |
| 2170 - 2200 MHz | FIXED MOBILE MOBILE- SATELLITE (space-earth) 5.351A 5.388 5.389A | For mobile satellite services see Resolutions 212 (Rev.WRC-07) and 225 (Rev.WRC-07). See Resolution 223 (Rev.WRC-07). The Mobile satellite service is subject to coordination under No. 9.11A & Resolution 716 (Rev. WRC-2000). |

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| 2200 - 2290 MHz | SPACE OPERATION (space-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 | For mobile services, refer to Recommendation ITU-R SA. 1154. Space-space transmissions between two or more non-geostationary satellite services shall not impose any constraints on Earth-space, space – Earth and other space-space transmissions of the space operation, space research and the earth exploration satellite service. |
| 2290 - 2300 MHz | FIXED MOBILE except aeronautical mobile | Used by Internet and Data Service Providers. |
| 2300 – 2450 MHz | FIXED MOBILE 5.384A Amateur Radiolocation 5.150 | For IMT services in 2300-2400 MHz, see Resolution 223 (Rev. WRC-07). The frequency 2400-2483.5 MHz is designated for ISM applications, subject to the provisions of No.15.13 of the ITU-RR. |
| 2450 – 2483.5 MHz | FIXED MOBILE Radiolocation 5.150 | Designated for ISM applications, subject to the provisions of No.15.13 of the ITU-RR. |

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| 2483.5 - 2500 MHz | FIXED MOBILE MOBILE-SATELLITE (space to Earth) 5.351A RADIODETERMINATION-SATELLITE (space-to-Earth) Radiolocation 5.398A 5.150 5.402 | Designated for ISM applications, subject to the provisions of No.15.13 of the ITU-RR. |
| 2500 - 2690 MHz | FIXED MOBILE except aeronautical mobile 5.384A | Used by Broadband Wireless Access (BWA) Operators. |
| 2690 - 2700 MHz | EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) | |
| 2700 - 2900 MHz | AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 | Use by aeronautical radionavigation services is restricted to ground based radars & to associated air-borne transponders. Also authorized for Ground base radars used for meteorological purposes. |
| 2900 - 3100 MHz | RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427 | Radionavigation services using radar systems are protected. The aeronautical radionavigation service is limited to ground-base radars. 2930-2950 MHz is allocated for shipborne interrogator-transponder. |

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| | | The radiolocation service shall not cause harmful interference to the radionavigation service. |
| 3100 - 3300 MHz | RADIOLOCATION Earth Exploration-Satellite Space Research (Active) | 3100-3140 MHz has been assigned to for Fixed Services. |
| 3300 - 3400 MHz | FIXED 5.429A MOBILE except aeronautical mobile | Used by Internet and Data Service Providers. |
| 3400 - 3600 MHz | FIXED FIXED-SATELLITE (space-Earth) MOBILE except aeronautical mobile 5.430A Radiolocation 5.431 | Used by Internet and Data Service Providers. A base or mobile station in the mobile service shall ensure that the power flux density produced at 3m above ground does not exceed -154.5 dB(W/m ² – 4kHz) at the border. Fixed and mobile service operators should coordinate their use with the satellite service providers. See Nos. 9.17 and 9.18. |
| 3600 - 4200 MHz | FIXED FIXED-SATELLITE (space-earth) Mobile | 3600-3700MHz is used by Internet and Data Service Providers. |

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| | | Fixed and mobile service operators should coordinate their use with the satellite service providers. See Nos. 9.17 and 9.18. |
| 4200 - 4400 MHz | AERONAUTICAL MOBILE ® AERONAUTICAL RADIONAVIGATION 5.438 5.437 5.440 | Aeronautical mobile ® services is reserved exclusively for wireless avionics intra-communication system that operate in accordance with the international aeronautical standards. |
| 4400 - 4500 MHz | FIXED MOBILE | |
| 4500 - 4800 MHz | FIXED FIXED-SATELLITE (Space-Earth) 5.441 MOBILE | For fixed-satellite services refer to Appendix 30B. |
| 4800 - 4990 MHz | FIXED MOBILE Radio Astronomy 5.149 5.339 | Fixed and mobile services should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. 4950-4990 MHz is also allocated to space research (passive) and earth exploration-satellite (passive) services on a secondary basis. |
| 4990 - 5000 MHz | FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY | Fixed and mobile except aeronautical mobile services should refer to |

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| | Space research (passive) 5.149 | Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 5000 – 5010 MHz | AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space) | The aeronautical mobile-satellite service is subject to agreement obtained under No. 9.21 of the ITU-RR. |
| 5010 – 5030 MHz | AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-earth) (space-to-space) 5.328B 5.443B | The aeronautical mobile-satellite service is subject to agreement obtained under No. 9.21 of the ITU-RR. For radionavigation satellite services, the provisions of Nos. 9.12, 9.12A & 9.13 of the ITU-RR and Resolution 610(WRC-03) shall apply. Radionavigation satellite service system shall not exceed -124.5 dB(W/m ²) in a 150 kHz band to avoid harmful interference to the microwave landing system operating above 5030 MHz. |
| 5030 – 5091 MHz | AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIO NAVIGATION 5.444 | The aeronautical mobile (R) service is limited to internationally standardized aeronautical systems. Unwanted |

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| | | <p>emissions of this service should not exceed -75 dBW/MHz.</p> <p>The aeronautical mobile-satellite (R) service is limited to internationally standardized aeronautical systems & is subject to coordination under No. 9.11A.</p> <p>International standard system (Microwave landing system) would have priority. For the use of 5091-5150 MHz, see No. 5.444A & Resolution 114 (Rev.WRC-12).</p> |
| 5091- 5150 MHz | <p>FIXED-SATELLITE (Earth to space) AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444 5.444A</p> | <p>For use by aeronautical mobile service, see No.1.83 of Resolution 418(Rev.WRC-12)& Resolution 748 (Rev.WRC-12).</p> <p>The aeronautical mobile-satellite service is subject to agreement obtained under No. 9.21 of the ITU-RR.</p> <p>International standard system (Microwave landing system) would have priority. For the use of 5091-5150 MHz, see</p> |

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| | | No. 5.444A & Resolution 114 (Rev.WRC-12). Also allocated to the fixed satellite service (Earth-to-space) on a primary basis & is subject to coordination under No. 9.11A. |
| 5150- 5250 MHz | FIXED-SATELLITE (Earth to space) MOBILE except aeronautical mobile 5.446A 5.446B AERONAUTICAL RADIONAVIGATION 5.447B | Designated for ISM applications, subject to the provisions of No.15.13 of the ITU-RR. Maximum E.I.R.P. should be 200mW. |
| 5250- 5350 MHz | EARTH EXPLORATION- SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH (active) 5.447D 5.448B | Designated for ISM applications, subject to the provisions of No.15.13 of the ITU-RR. Maximum E.I.R.P. should be 200mW. |
| 5350- 5460 MHz | EARTH EXPLORATION- SATELLITE (active) 5.448B RADIOLOCATION 5.448D AERONAUTICAL RADIONAVIGATION RADIONAVIGATION 5.449 SPACE RESEARCH (active) 5.448C | Radar systems in the aeronautical radionavigation service are protected in accordance with No. 5.449 of the ITU-RR. Space research service in 5350-5460MHz shall not cause harmful interference to, nor claim protection from other services. |
| 5460- 5470 MHz | EARTH EXPLORATION- SATELLITE (active) | |

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| | RADIOLOCATION 5.448D RADIONAVIGATION 5.449 SPACE RESEARCH (active) 5.448B | |
| 5470 – 5725 MHz | FIXED MOBILE except aeronautical mobile 5.446A | Designated for ISM applications, subject to the provisions of No.15.13 of the ITU-RR. Maximum E.I.R.P. should be 1W. |
| 5725 – 5830 MHz | FIXED MOBILE except aeronautical mobile 5.446A | Designated for ISM applications, subject to the provisions of No.15.13 of the ITU-RR. Maximum E.I.R.P. should be 4W. |
| 5830 – 5850 MHz | FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-Satellite (space-to-Earth) | |
| 5850 – 5925 MHz | FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.150 | |
| 5925 – 6700 MHz | FIXED FIXED-SATELLITE (Earth-to-space) 5.457A | 5925 – 6425 MHz is designated for long haul fixed links. |
| 6700 – 7075 MHz | FIXED FIXED-SATELLITE (earth-space) (space-earth) 5.441 | 5925 – 6425 MHz & 6425 – 7110 MHz are designated for long haul fixed links. |
| 7075 – 7145 MHz | FIXED | 7110 - 7750 MHz is designated for long haul fixed links. |

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| 7145 – 7235 MHz | FIXED SPACE RESEARCH (earth-space) 5.460 | 7110 - 7750 MHz is designated for long haul fixed links. The band 7190-7235 MHz is also allocated for Earth Exploration satellite (Earth to space) on a primary basis. See footnote 5.460A and 5.560A. |
| 7235- 7250 MHz | FIXED FIXED-SATELLITE (space-earth) | 7110 - 7750 MHz is designated for long haul fixed links. |
| 7250 – 7300 MHz | FIXED FIXED-SATELLITE (space-earth) | 7110 - 7750 MHz is designated for long haul fixed links. |
| 7300 – 7450 MHz | FIXED FIXED-SATELLITE (space-earth) MOBILE except aeronautical mobile | 7110 - 7750 MHz is designated for long haul fixed links. The band 7375-7750 is allocated for Maritime mobile-satellite (space to earth) on a primary basis. See footnote 5.461AA |
| 7450 – 7550 MHz | FIXED FIXED-SATELLITE (space-earth) MOBILE except aeronautical mobile | 7110 - 7750 MHz is designated for long haul fixed links. The band 7375-7750 is also allocated for Maritime mobile-satellite (space to earth) on a |

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| | | primary basis. See footnote 5.461AA |
| 7550 – 7750 MHz | FIXED FIXED-SATELLITE (space-earth) MOBILE except aeronautical mobile | 7110 - 7750 MHz & 7725 – 8275 MHz is designated for long haul fixed links. See Recommendation ITU-R F.386. The band 7375-7750 is also allocated for Maritime mobile-satellite (space to earth) on a primary basis. See footnote 5.461AA and 5.461AB |
| 7750 -7900 MHz | FIXED MOBILE except aeronautical mobile | 7725 – 8275 MHz is designated for long haul fixed links. See Recommendation ITU-R F.386. The band is also allocated for Meteorological-satellite (space to earth) on a primary basis. See footnote 5.461B |
| 7900 – 8025 MHz | FIXED FIXED-SATELLITE (earth-space) | 7725 – 8275 MHz is designated for long haul fixed links. See Recommendation ITU-R F.386. |

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| 8025- 8175 MHz | FIXED FIXED-SATELLITE (earth-space) | 7725 – 8275 MHz is designated for long haul fixed links. See Recommendation ITU-R F.386. |
| 8175 -8215 MHz | FIXED FIXED-SATELLITE (earth-space) | 7725 – 8275 MHz is designated for long haul fixed links. See Recommendation ITU-R F.386. |
| 8215 – 8400 MHz | FIXED FIXED-SATELLITE | 7725 – 8275 MHz & 8275 – 8500 MHz is designated for long haul fixed links. See Recommendation ITU-R F.386. |
| 8400 – 8500 MHz | FIXED | 8275 – 8500 MHz is designated for long haul fixed links. See Recommendation ITU-R F.386. |
| 8500 – 8550 MHz | RADIOLOCATION | |
| 8550 – 8650 MHz | EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.469A | The earth exploration satellite and the space research services should not cause harmful interference to the radiolocation service. |
| 8650 – 8750 MHz | RADIOLOCATION | |
| 8750 – 8850 MHz | RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 | The aeronautical radionavigation service is limited to airborne Doppler navigation aids on a centre frequency of 8800 MHz. |

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| 8850 – 9000 MHz | RADIOLOCATION MARITIME RADIONAVIGATION 5.472 | The maritime radionavigation service is limited to shore-based radars. |
| 9000 – 9200 MHz | RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.337 5.473A | Use by aeronautical radionavigation services is restricted to ground based radars & to associated air-borne transponders. The radiolocation service shall not cause harmful interference to the radionavigation service. |
| 9200 – 9300 MHz | EARTH EXPLORATION SATELLITE (active) RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.474 | The maritime radionavigation service is limited to shore-based radars. Search & rescue transponders (SART) may be used, refer to Article 31. |
| 9300 – 9500 MHz | EARTH EXPLORATION SATELLITE (active) SPACE RESEARCH (active) RADIONAVIGATION RADIOLOCATION 5.427 5.474 5.475 5.475A 5.475B 5.476A | The radiolocation service shall not cause harmful interference to the radionavigation service. Search & rescue transponders (SART) may be used, refer to Article 31. Aeronautical radionavigation service is |

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| | | <p>limited to airborne weather radars & ground-based radars.</p> <p>The earth exploration-satellite service (active) & the space research service (active) is limited to systems requiring necessary bandwidth greater than 300 MHz that cannot be fully accommodated within the 9500-9800 MHz band.</p> <p>The earth exploration satellite & space research (active) shall not cause harmful interference to the radionavigation and radiolocation services.</p> |
| 9500- 9800 MHz | <p>EARTH EXPLORATION-SATELLITE RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A</p> | <p>The earth exploration satellite & space research (active) shall not cause harmful interference to the radionavigation and radiolocation services.</p> |
| 9800 – 9900 MHz | <p>RADIOLOCATION Earth exploration-satellite (active) Space research (active) Fixed 5.478A 5.478B</p> | <p>The earth exploration-satellite service (active) & the space research service (active) is limited to systems requiring necessary bandwidth greater than 500 MHz that cannot be fully accommodated within the 9300-9800 MHz band.</p> |

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| | | The earth exploration satellite service (active) & the space research service (active) shall not cause harmful interference to the fixed service. |
| 9900 – 10000MHz | EARTH EXPLORATION SATELLITE (active) 5.474A, 5.74B, 5.474C RADIOLOCATION Fixed 5.479 | 9975 – 10025MHz is also allocated to the meteorological-satellite service on a secondary basis for use by weather radars. |
| 10-10.4 GHz | EARTH EXPLORATION SATELLITE (active) 5.474A, 5.74B, 5.474C FIXED MOBILE RADIOLOCATION Amateur 5.474A, 5.479 | 9.975-10.025 GHz is also allocated to the meteorological-satellite service on a secondary basis for use by weather radars. 10.15 – 10.30 GHz is designated for point-multipoint services. |
| 10.4-10.45 GHz | EARTH EXPLORATION SATELLITE (active) 5.474A, 5.74B, 5.474C FIXED MOBILE RADIOLOCATION Amateur | 10.15 – 10.30 GHz is designated for point-multipoint services. |
| 10.45-10.5 GHz | RADIOLOCATION Amateur Amateur Satellite | |
| 10.5-10.55 GHz | FIXED MOBILE radiolocation | 10.50 – 10.68 GHz is designated for Point-multiPoint services. |

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| 10.55-10.6 GHz | FIXED MOBILE except aeronautical radiolocation | 10.50 – 10.68 GHz is designated for point-multipoint services. |
| 10.6-10.68 GHz | EARTH EXPLORATION SATELLITE (passive) FIXED MOBILE except aeronautical RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482A | 10.50 – 10.68 GHz is designated for point-multipoint services. |
| 10.68-10.7 GHz | EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 | |
| 10.7-11.7 GHz | FIXED FIXED-SATELLITE (Earth-Space) (Space-Earth) 5.441, 5.484, 5.484A MOBILE except aeronautical mobile | Used for point –point fixed links. The fixed-satellite service (Earth-to-space) is limited to feeder links for broadcasting-satellite service. |
| 11.7-12.5 GHz | FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 5.487 5.487A | Other services in this band shall not cause harmful interference to the broadcasting satellite service. Fixed satellite services (space-to-Earth) can also be operated on a primary basis. |

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| 12.5-12.75 GHz | FIXED SATELLITE (Earth-to- Space) (Space-to- Earth) 5.484A 5.494 | Also allocated for fixed and mobile, except aeronautical mobile. |
| 12.75-13.25 GHz | FIXED FIXED-SATELLITE 5.441 (Earth-to-Space) MOBILE Space Research (deep space) (Earth –to-Space) | Used for point –point fixed links. |
| 13.25-13.4 GHz | AERONAUTICAL RADIONAVIGATION 5.497 EARTH EXPLORATION SATELLITE (active) SPACE RESEARCH (active) 5.498A | Aeronautical radionavigation service is limited to Doppler navigation aids. The earth exploration satellite service (active) & the space research service (active) shall not cause harmful interference to the aeronautical radionavigation service. |
| 13.4-13.75 GHz | EARTH EXPLORATION SATELLITE (active) FIXED-SATELLITE (space-Earth) 5.499A RADIOLOCATION SPACE RESEARCH 5.499C, 5.99D, 5.501A Standard Frequency and Time Signal-Satellite (Earth –to- space) 5.499E, 5.510B | Space research services are limited to active spaceborne sensors. The earth exploration satellite service (active) & the space research service (active) shall not cause harmful |

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| | | interference to the radiolocation service. |
| 13.75- 14 GHz | <p>FIXED- SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Standard Frequency and Time Signal- satellite (Earth-to-space) Space Research Earth Exploration Satellite</p> <p>5.502 5.503</p> | For fixed satellite services using non-geostationary systems refer to No. 9.12. |
| 14-14.3 GHz | <p>FIXED- SATELLITE (Earth-to-Space) 5.457A 5.457B 5.484A 5.506 RADIONAVIGATION 5.504 Mobile satellite (earth –to-Space) 5.504B 5.506A Space Research</p> <p>5.504A</p> | <p>For fixed satellite services see Resolution 902 (WRC-03).</p> <p>For fixed satellite service using non-geostationary systems refer to No. 9.21.</p> <p>14-14.5 GHz may be used as feeder links for the broadcasting satellite service subject to coordination with other networks in the fixed satellite service.</p> <p>Radionavigation service shall provide sufficient protection to space stations of the fixed-satellite service.</p> <p>Aeronautical mobile satellite service operating in the band 14 – 14.5 GHz shall comply with the provisions of Annex 1, Part C of</p> |

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| | | <p>Recommendation ITU-R M. 1643.</p> <p>For ship earth stations refer to Resolution 902 (WRC-03).</p> <p>In 14-14.5 GHz, aircraft earth stations in the aeronautical mobile satellite service may communicate with space stations in the fixed satellite service, see Nos. 5.29, 5.30 & 5.31.</p> |
| 14.3-14.4 GHz | <p>FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile satellite (Earth-to-space) except aeronautical mobile-satellite 5.504B 5.506A Radionavigation-satellite 5.504A</p> | <p>For ship earth stations refer to Resolution 902 (WRC-03).</p> <p>For fixed satellite services using non-geostationary systems refer to No. 9.12.</p> <p>14-14.5 GHz may be used as feeder links for the broadcasting satellite service subject to coordination with other networks in the fixed satellite service.</p> <p>Aeronautical mobile satellite service operating in the band 14 – 14.5 GHz shall comply with</p> |

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| | | <p>the provisions of Annex 1, Part C of Recommendation ITU-R M. 1643.</p> <p>For ship earth stations refer to Resolution 902 (WRC-03).</p> <p>In 14-14.5 GHz, aircraft earth stations in the aeronautical mobile satellite service may communicate with space stations in the fixed satellite service, see Nos. 5.29, 5.30 & 5.31.</p> |
| 14.4-14.47 GHz | <p>FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A Space Research (space-to-Earth)</p> <p>5.504A</p> | <p>For ship earth stations refer to Resolution 902 (WRC-03).</p> <p>For fixed satellite services using non-geostationary systems refer to No. 9.12.</p> <p>14-14.5 GHz may be used as feeder links for the broadcasting satellite service subject to coordination with other networks in the fixed satellite service.</p> <p>Aeronautical mobile satellite service operating in the band 14 – 14.5</p> |

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| | | <p>GHz shall comply with the provisions of Annex 1, Part C of Recommendation ITU-R M. 1643.</p> <p>For ship earth stations refer to Resolution 902 (WRC-03).</p> <p>In 14-14.5 GHz, aircraft earth stations in the aeronautical mobile satellite service may communicate with space stations in the fixed satellite service, see Nos. 5.29, 5.30 & 5.31.</p> |
| 14.47-14.5 GHz | <p>FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile satellite (Earth-to-space) 5.504B 5.506A Radio Astronomy</p> <p>5.149 5.504A</p> | <p>For ship earth stations refer to Resolution 902 (WRC-03).</p> <p>For fixed satellite services using non-geostationary systems refer to No. 9.12.</p> <p>14-14.5 GHz may be used as feeder links for the broadcasting satellite service subject to coordination with other networks in the fixed satellite service.</p> <p>Aeronautical mobile satellite service operating</p> |

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| | | <p>in the band 14 – 14.5 GHz shall comply with the provisions of Annex 1, Part C of Recommendation ITU-R M. 1643.</p> <p>Other services either than the radioastronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR.</p> <p>In 14-14.5 GHz, aircraft earth stations in the aeronautical mobile satellite service may communicate with space stations in the fixed satellite service, see Nos. 5.29, 5.30 & 5.31.</p> |
| 14.5-15.35 GHz | FIXED MOBILE | <p>14.5 – 15.35 GHz is designated for point-point fixed links. See Recommendation ITU-R F.636.</p> <p>14.5-14.75 is allocated to the Fixed Satellite Services Earth to space (uplink)</p> |
| 15.35-15.4 GHz | EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) | |

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| 15.4 – 15.43 GHz | RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION | <p>Radiolocation services shall not cause harmful interference to aeronautical radionavigation services.</p> <p>Radiolocation stations operating in 15.4-15.7 GHz shall not exceed the power flux-density level of -156 dB(W/m²) in a 50MHz bandwidth in order to protect the radioastronomy service in 15.35-15.4 GHz.</p> |
| 15.43- 15.63 GHz | FIXED-SATELLITE (space to Earth) 5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511C | <p>The fixed-satellite service (space-to-Earth) (Earth-to-space) is limited to feeder links of non-geostationary systems in the mobile satellite service subject to coordination under 9.11A.</p> <p>Radiolocation services shall not cause harmful interference to aeronautical radionavigation services.</p> <p>Radiolocation stations operating in 15.4-15.7 GHz shall not exceed the power flux-density level of -156 dB(W/m²) in a 50MHz bandwidth in</p> |

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| | | <p>order to protect the radioastronomy service in 15.35-15.4 GHz.</p> <p>For aeronautical radionavigation, see ITU-R S.1340.</p> |
| 15.63-15.7 GHz | <p>RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIO NAVIGATION</p> | <p>Radiolocation services shall not cause harmful interference to aeronautical radionavigation services.</p> <p>Radiolocation stations operating in 15.4-15.7 GHz shall not exceed the power flux-density level of -156 dB(W/m²) in a 50MHz bandwidth in order to protect the radioastronomy service in 15.35-15.4 GHz.</p> <p>Emissions from non-geostationary satellite shall not exceed -146 dB (W/(m² – MHz)).</p> |
| 15.7-16.6 GHz | RADIOLOCATION | |
| 16.6-17.1 GHz | <p>RADIOLOCATION Space Research (deep space) (Earth to-space)</p> | |
| 17.1- 17.2 GHz | RADIOLOCATION | |
| 17.2- 17.3 GHz | <p>EARTH EXPLORATION SATELLITE (active) RADIOLOCATION</p> | Space borne active sensors shall not cause |

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| | SPACE RESEARCH (active) 5.513A | harmful interference to the radiolocation and other services allocated on a primary basis. |
| 17.3-17.7 GHz | FIXED-SATELLITE (Earth-to- space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation | For fixed satellite services refer to No. 9.12 of the ITU-R. Earth stations of the fixed satellite service shall not claim protection from feeder links of the Broadcasting satellite service. |
| 17.7-18.1 GHz | FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth- to- space) 5.516 MOBILE | Designated for point-point fixed links. See Recommendation ITU-R F.595. For fixed satellite services using non-geostationary systems refer to No. 9.12. |
| 18.1- 18.4 GHz | FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth- to- space) 5.520 MOBILE 5.519 | Designated for point-point fixed links. See Recommendation ITU-R F.595. For fixed satellite service using non-geostationary systems refer to No. 9.12. The fixed satellite service is limited to feeder links of geostationary-satellite systems in the |

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| | | <p>broadcasting satellite service.</p> <p>Also allocated on a primary basis to the meteorological satellite service using geostationary satellite.</p> |
| 18.4-18.6 GHz | <p>FIXED FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE</p> | <p>Designated for point-point fixed links. See Recommendation ITU-R F.595.</p> <p>For fixed satellite services using non-geostationary systems refer to No. 9.12.</p> |
| 18.6-18.8 GHz | <p>EARTH EXPLORATION SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A</p> | <p>Designated for point-to-point fixed links. See Recommendation ITU-R F.595.</p> <p>Fixed satellite service is limited to geostationary systems & systems with an orbit of apogee greater than 20,000 km.</p> <p>For emission values of the fixed service & fixed satellite service refer to Nos. 21.5A & 21.16.2 of the ITU-RR.</p> |

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| 18.8-19.3 GHz | FIXED FIXED-SATELLITE (space-to-Earth) 5.523A MOBILE | Designated for point-to-point fixed links. See Recommendation ITU-R F.595. For fixed satellite services refer to No. 9.11A of the ITU-RR. |
| 19.3-19.7 GHz | FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.523B 5.523C 5.523D 5.523E MOBILE | Designated for point-to-point fixed links. See Recommendation ITU-R F.595. Fixed satellite services is limited to feeder links for non-geostationary satellite systems in the mobile satellite service. see No. 9.11A. |
| 19.7-20.1 GHz | FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B Mobile-Satellite (space-to-Earth) | For fixed satellite services using non-geostationary systems refer to No. 9.12. |
| 20.1-20.2 GHz | FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B MOBILE-SATELLITE (space-to-Earth) 5.525 5.526 5.527 5.528 | For fixed satellite services using non-geostationary systems refer to No. 9.12. |
| 20.2-21.2 GHz | FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard Frequency and Time Signal (space-to-Earth) | |
| 21.2-21.4 GHz | FIXED MOBILE EARTH EXPLORATION SATELLITE (passive) SPACE RESEARCH (passive) | |

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| 21.4-22 GHz | FIXED MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B 5.530D | Refer to Resolution 555 & 755 (WRC-12). For broadcasting-satellite services refer to Resolution 739 (Rev.WRC). Fixed & Mobile services shall not produce a power flux density in excess of -120.4 dB (W/(m ² -MHz)) at 3m above the ground. |
| 22-22.21 GHz | FIXED MOBILE except aeronautical mobile 5. 149 | Designated for point-to-point fixed links. See Recommendation ITU-R F.637. Allocated services should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 22.21-22.5 GHz | EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE REASEARTH (passive) 5.149 5.532 | Designated for point-to-point fixed links. See Recommendation ITU-R F.637. Other services either than the radioastronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 22.5 - 22.55 GHz | FIXED MOBILE | Designated for point-to-point fixed links. See |

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| | | Recommendation ITU-R F.637. |
| 22.55 – 23.15 GHz | FIXED INTER-SATELLITE 5.338A MOBILE SPACE RESEARCH (Earth-to-space) 5.149 | Designated for point-to-point fixed links. See Recommendation ITU-R F.637. See Resolution 750. |
| 23.15-23.55 GHz | FIXED INTER-SATELLITE 5.338A MOBILE | Designated for point-to-point fixed links. See Recommendation ITU-R F.637. See Resolution 750. |
| 23.55 - 23.6 GHz | FIXED MOBILE | Designated for point-to-point fixed links. See Recommendation ITU-R F.637. |
| 23.6-24 GHz | EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 | |
| 24-24.05 GHz | AMATEUR AMATEUR-SATELLITE 5.150 | Designated for ISM applications, subject to the provisions of No.15.13 of the ITU-RR. |
| 24.05-24.25 GHz | RADIOLOCATION Amateur Earth Exploration-satellite (active) 5.150 | Designated for ISM applications, subject to the provisions of No.15.13 of the ITU-RR. |
| 24.25-24.45 GHz | FIXED | |

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| 24.45-24.65 GHz | FIXED INTER-SATELLITE | 24.5-26.5 GHz is designated for point-to-multipoint links. See Recommendation ITU-R F.748 Annex 1. |
| 24.65-24.75 GHz | FIXED FIXED SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE | 24.5-26.5 GHz is designated for point-to-multipoint links. See Recommendation ITU-R F.748 Annex 1. The fixed satellite service (Earth-to-space) is limited to earth stations using a minimum antenna diameter of 4.5m. |
| 24.75-25.25 GHz | FIXED FIXED SATELLITE (Earth-to-space) 5.532B | 24.5-26.5 GHz is designated for point-to-multipoint links. See Recommendation ITU-R F.748 Annex 1. The fixed satellite service (Earth-to-space) is limited to earth stations using a minimum antenna diameter of 4.5m. |
| 25.25-25.5 GHz | FIXED INTER-SATELLITE 5.536 MOBILE Standard Frequency and Time Signal-satellite (Earth-to-space) | 24.5-26.5 GHz is designated for point-to-multipoint links. See Recommendation ITU-R F.748 Annex 1. |
| 25.5-27 GHz | FIXED INTER-SATELLITE 5.536 MOBILE | 24.5-26.5 GHz is designated for point-to-multipoint links. See |

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| | <p>EARTH EXPLORATION-SATELLITE (space-to-Earth) SPACE RESEARCH Standard Frequency and Time Signal-satellite (Earth-to-space) 5.536A</p> | <p>Recommendation ITU-R F.748 Annex 1.</p> <p>The Earth exploration satellite service & the space research service shall not claim protection from stations in the fixed & mobile service. Also see Recommendation ITU-R SA.1862.</p> |
| 27-27.5 GHz | <p>FIXED INTER-SATELLITE 5.536 MOBILE</p> | |
| 27.5-28.5 GHz | <p>FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 MOBILE 5.538 5.540</p> | <p>Designated for point-to-multipoint links. See Recommendation ITU-R F.748 Annex 2. For fixed satellite services using non-geostationary systems refer to No. 9.12.</p> <p>Fixed satellite service (space-to-Earth) is also allocated in 27.500-27.501 GHz. Transmissions shall not exceed an e.i.r.p of +10 dBW.</p> <p>27.5-30 GHz may be used by the fixed satellite service (Earth-to-space) for feeder links for the Broadcast satellite service.</p> |

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| 28.5 – 29.1 GHz | <p>FIXED FIXED- SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539 MOBILE Earth Exploration-Satellite (Earth-to-space) 5.541 5.540</p> | <p>Designated for point-to-multipoint links. See Recommendation ITU-R F.748 Annex 2.</p> <p>For fixed satellite services using non-geostationary systems refer to No. 9.12.</p> <p>27.5-30 GHz may be used by the fixed satellite service (Earth-to-space) for feeder links for the Broadcast satellite service.</p> |
| 29.1– 29.5 GHz | <p>FIXED MOBILE FIXED- SATELLITE (Earth-to-space) 5.516B 5.523C 5.523E 5.535A 5.539 5.541A Earth Exploration-Satellite (earth to space) 5.541 5.540</p> | <p>For fixed satellite service refer to No. 9.11A of the ITU-RR.</p> <p>27.5-30 GHz may be used by the fixed satellite service (Earth-to-space) for feeder links for the Broadcast satellite service.</p> |
| 29.5– 29.9 GHz | <p>FIXED- SATELLITE(Earth-to-space) 5.484A 5.516B 5.539 Earth Exploration–Satellite(Earth-to-space) 5.541 Mobile-Satellite (Earth-to-space) 5.540</p> | <p>For fixed satellite services using non-geostationary systems refer to No. 9.12.</p> <p>27.5-30 GHz may be used by the fixed satellite service (Earth-to-space) for feeder links for the</p> |

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| | | Broadcast satellite service. |
| 29.9– 30 GHz | FIXED-SATELLITE (Earth-to-space) 5.539 5.516B 5.484A 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 | For fixed satellite services using non-geostationary systems refer to No. 9.12. 27.5-30 GHz may be used by the fixed satellite service (Earth-to-space) for feeder links for the Broadcast satellite service. Fixed satellite service (space-to-Earth) is also allocated in 29.999-30.000 GHz. Transmissions shall not exceed an e.i.r.p of +10 dBW. |
| 30 – 31 GHz | FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) | Refer to Resolution 750 (Rev.WRC-12). |
| 31 – 31.3 GHz | FIXED 5.338A MOBILE Standard Frequency and Time Signals-Satellite (space-to-Earth) Space Research 5.544 5.149 | Refer to Resolution 750 (Rev.WRC-12). |
| 31.3 – 31.5 GHz | EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 | |

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| 31.5 – 31.8 GHz | EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 | Other services either than the radioastronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 31.8 – 32.3 GHz | FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.548 | Designated for point-to-multipoint links. See Recommendation ITU-R F.1520 Annex 1. For radionavigation services see Recommendation 707. |
| 32.3 – 33 GHz | FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.548 | Designated for point-to-multipoint links. See Recommendation ITU-R F.1520 Annex 1. For radionavigation services see Recommendation 707. |
| 33 – 33.4 GHz | FIXED 5.547A RADIONAVIGATION 5.547 | Designated for point-to-multipoint links. See Recommendation ITU-R F.1520 Annex 1. |
| 33.4 – 34.2 GHz | RADIOLOCATION | |
| 34.2 – 34.7 GHz | RADIOLOCATION SPACE RESEARCH (deep space) (space-to-Earth) | |
| 34.7– 35.2 GHz | RADIOLOCATION Space Research | |
| 35.2 – 35.5 GHz | METEOROLOGICAL AIDS RADIOLOCATION | |

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| 35.5 - 36 GHz | METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) 5.549A | |
| 36 – 37GHz | EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.550A | Refer to Resolution 752 (WRC-07) of the ITU-RR. |
| 37 – 37.5 GHz | FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) 5.547 | Designated for point-to-multipoint links. See Recommendation ITU-R F.749 Annex 1. |
| 37.5 – 38 GHz | FIXED FIXED SATELLITE (space-to-Earth) MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) Earth Exploration –Satellite (space-to- Earth) 5.547 | Designated for point-to-multipoint links. See Recommendation ITU-R F.749 Annex 1. |
| 38 – 39.5 GHz | FIXED FIXED SATELLITE (space-to-Earth) MOBILE Earth Exploration –Satellite (space-to- Earth) 5.547 | Designated for point-to-multipoint links. See Recommendation ITU-R F.749 Annex 1. |
| 39.5 – 40 GHz | FIXED FIXED SATELLITE (space-to-Earth) 5.516B MOBILE MOBILE SATELLITE (space-to-Earth) Earth Exploration –Satellite (space-to- Earth) 5.547 | |
| 40 – 40.5 GHz | EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B | |

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| | MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth Exploration –Satellite (space-to- Earth) | |
| 40.5 – 42.5 GHz | FIXED FIXED-SATELLITE (space-to- Earth) BROADCASTING BROADCASTING-SATELLITE Mobile 5.547 5.551H 5.551I | |
| 42.5 – 43.5 GHz | FIXED FIXED SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.547 | Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 43.5 – 47 GHz | MOBILE 5.553 MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554 | |
| 47 – 47.2 GHz | AMATEUR AMATEUR SATELLITE | |
| 47.2 - 47.5 GHz | FIXED FIXED SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A | |
| 47.5 - 50.2GHz | FIXED FIXED SATELLITE (Earth-to-space) 5.552 5.338A (space-to-Earth) 5.516B 5.554A 5.555B MOBILE 5.149 5.555 | 47.5-47.9 GHz, 48.2-48.54 GHz & 49.44 – 50.2 GHz by the fixed satellite service (space-to-Earth) is limited to geostationary satellites. 48.94-49.04 GHz is also allocated to the radio |

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| | | <p>astronomy service on a primary basis.</p> <p>Also refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR.</p> <p>For fixed satellite service (Earth-to-space) see Resolution 750 (WRC-12).</p> |
| 50.2 - 50.4 GHz | <p>EARTH EXPLORATION-SATELLITE (passive)</p> <p>SPACE RESEARCH (passive)</p> <p>5.340</p> | |
| 50.4– 51.4 GHz | <p>FIXED</p> <p>FIXED SATELLITE (Earth-to-space) 5.338A</p> <p>MOBILE</p> <p>Mobile-Satellite (Earth-to-space)</p> | For fixed satellite service (Earth-to-space) in 50.4-50.9 GHz, see Resolution 750 (WRC-12). |
| 51.4 - 52.6GHz | <p>FIXED 5.338A</p> <p>MOBILE</p> <p>5.547 5.556</p> | <p>For fixed services, see Resolution 750 (WRC-12).</p> <p>In 51.4-54.25 GHz radio astronomy observations may be carried out under national arrangements.</p> |
| 52.6– 54.25 GHz | <p>EARTH EXPLORATION-SATELLITE (passive)</p> <p>SPACE RESEARCH (passive)</p> <p>5.340 5.556</p> | In 51.4-54.25 GHz, radio astronomy observations may be carried out under national arrangements. |
| 54.25 – 55.78 GHz | <p>EARTH EXPLORATION-SATELLITE (passive)</p> <p>INTER-SATELLITE 5.556A</p> | The use of 54.25-56.90 GHz by the inter-satellite |

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| | SPACE RESEARCH (passive) | service is limited to satellites in the geostationary satellite orbit. The power flux-density shall not exceed -147 dB(W/(m ² – 100MHz)). |
| 55.78 – 58.2 GHz | EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A 5.558A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 | To protect the earth exploration satellite service (passive) in the 55.78-56.26 GHz, the maximum power density of a fixed service station from transmitter to antenna is limited to 26 dB(W/MHz). The use of 56.9-57 GHz & 57-58.2 GHz by the inter-satellite service is limited to satellites in the geostationary satellite orbit. The power flux-density shall not exceed -147 dB (W/(m ² – 100MHz)). The use of 55.78-58.2 GHz by the aeronautical mobile service shall not cause harmful interference to the inter-satellite services. See No. 5.43 of the ITU-RR. |
| 58.2 - 59 GHz | EARTH EXPLORATION SATELLITE (passive) FIXED MOBILE | In 51.4-54.25 GHz, radio astronomy observations |

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| | SPACE RESEARCH (passive) 5.547 5.556 | may be carried out under national arrangements. |
| 59-59.3 GHz | EARTH EXPLORATION-SATELLITE (passive) FIXED INTERSATELLITE 5.556A MOBILE 5.558 RADIOLOCATION 5.559 SPACE RESEARCH (passive) | The inter-satellite service is limited to satellites in the geostationary satellite orbit. The power flux-density shall not exceed -147 dB (W/(m ² – 100MHz)). The use of 59-64 GHz by the aeronautical mobile service & airborne radars in the radiolocation services shall not cause harmful interference to the inter-satellite services. See No. 5.43 of the ITU-RR. |
| 59.3-64 GHz | FIXED INTER-SATELLITE MOBILE 5.558 RADIOLOCATION 5.559 5.138 | The use of 59-64 GHz by the aeronautical mobile service & airborne radars in the radiolocation services shall not cause harmful interference to the inter-satellite services. See No. 5.43 of the ITU-RR. 61-61.5 GHz is designated for ISM applications, with regard to the latest ITU-R Recommendations. |

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| 64-65 GHz | FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.547 5.556 | Radio astronomy observations may be carried out under national arrangements. |
| 65 - 66 GHz | EARTH EXPLORATION-SATELLITE FIXED INTER-SATELLITE SPACE RESEARCH MOBILE expect aeronautical mobile 5.547 | |
| 66 - 71 GHz | MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE INTER-SATELLITE 5.554 | The use of 66-71 GHz by the aeronautical mobile service shall not cause harmful interference to the inter-satellite service. See No. 5.43 of the ITU-RR. |
| 71 - 74 GHz | FIXED FIXED SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) | The band 71-76 GHz is designated for High capacity Fixed links. |
| 74 – 76 GHz | FIXED FIXED SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space Research (space-to-Earth) 5.561 | Stations in the fixed, mobile and broadcasting services should not cause harmful interference to stations in the fixed-satellite and broadcasting-satellite services. The band 71-76 GHz is designated for High capacity Fixed links. |
| 76-77.5 GHz | RADIO ASTRONOMY RADIOLOCATION | Other services either than the radio astronomy |

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| | Amateur Amateur-satellite Space-research (space-to-Earth) 5.149 | service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 77.5-78 GHz | AMATEUR AMATEUR-SATELLITE Radio astronomy Space research (space-to-Earth) 5.149 | Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 78-79GHz | RADIOLOCATION Amateur Amateur-Satellite Radio astronomy Space Research (Space-to-Earth) 5.149 5.560 | Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. Radars on space stations may be operated on a primary basis in the space research service. |
| 79-81 GHz | RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149 | Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 81 - 84 GHz | FIXED 5.338A FIXED SATELLITE (Earth-to-Space) MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) 5.149 5.561A | Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. For fixed services, see Resolution 750 (WRC-12). |

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| | | <p>The band 81-86 GHz is designated for High capacity Fixed links.</p> <p>Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR.</p> <p>81-81.5 GHz is also allocated to the amateur & amateur-satellite services on a secondary basis.</p> |
| 84-86 GHz | <p>FIXED 5.338A FIXED SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY</p> <p>5.149</p> | <p>For fixed services, see Resolution 750 (WRC-12).</p> <p>The band 81-86 GHz is designated for High capacity Fixed links.</p> <p>Other services either than the radioastronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR.</p> |
| 86-92GHz | <p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH(passive)</p> <p>5.340</p> | |

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| 92-94 GHz | FIXED 5.338A MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149 | For fixed services, see Resolution 750 (WRC-12). Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 94-94.1 GHz | EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy 5.562 5.562A | The Earth exploration-satellite (active) & space research (active) services is limited to spaceborne cloud radars. Earth exploration satellite providers should coordinate their operations with the radio astronomy stations. |
| 94.1-95 GHz | FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION 5.149 | Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 95-100 GHz | FIXED MOBILE RADIONAVIGATION RADIONAVIGATION-SATELLITE RADIO ASTRONOMY RADIO LOCATION 5.149 5.554 | Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 100-102 GHz | EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 | |

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| 102-105 GHz | FIXED MOBILE RADIO ASTRONOMY 5.149 5.341 | Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 105-109.5 GHz | FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341 | The use of this allocation is limited to space-based radio astronomy only. Other services either than the radioastronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 109.5 - 111.8 GHz | EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341 | |
| 111.8 – 114.25GHz | FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.341 | The use of this allocation is limited to space-based radio astronomy only. Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 114.25-116 GHz | EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH 5.340 5.341 | |
| 116 – 122.25 GHz | EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562C SPACE RESEARCH (passive) 5.138 5.341 | The inter-satellite service is limited to satellites in the geostationary satellite orbit. The power flux- |

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| | | <p>density shall not exceed - 148 dB (W/(m².MHz)).</p> <p>122-123 GHz is designated for ISM applications, with regard to the latest ITU-R Recommendations.</p> |
| 122.25 – 123 GHz | <p>FIXED INTER-SATELLITE MOBILE 5.558 Amateur 5.138</p> | <p>122-123 GHz is designated for ISM applications, with regard to the latest ITU-R Recommendations.</p> <p>The aeronautical mobile service shall not cause harmful interference to the inter-satellite service. See No. 5.43 of the ITU-RR.</p> |
| 123 - 130 GHz | <p>FIXED SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy</p> <p>5.149 5.554</p> | <p>Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR.</p> |
| 130 - 134GHz | <p>EARTH EXPLORATION SATELLITE (active) 5.562E FIXED INTER-SATELLITE MOBILE 5.558 RADIO ASTRONOMY</p> <p>5.149 5.562A</p> | <p>The Earth Exploration-satellite service (active) is limited to the band 133.5-134 GHz.</p> <p>The aeronautical mobile service shall not cause harmful interference to the inter-satellite service.</p> |

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| | | <p>See No. 5.43 of the ITU-RR.</p> <p>Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR.</p> <p>Earth exploration satellite providers should coordinate their operations with the radio astronomy stations.</p> |
| 134 – 136 GHz | <p>AMATEUR AMATEUR SATELLITE Radio astronomy</p> | |
| 136 – 141 GHz | <p>RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite</p> <p>5.149</p> | Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 141 – 148.5 GHz | <p>FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION</p> <p>5.149</p> | Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 148.5 - 151.5 GHz | <p>EARTH EXPLORATION SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340</p> | |
| 151.5 – 155.5 GHz | <p>FIXED MOBILE RADIO ASTRONOMY</p> | Other services either than the radio astronomy service should refer to |

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| | RADIOLOCATION 5.149 | Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 155.5 – 158.5 GHz | EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B 5.149 5.562F 5.562G | The use of this allocation is limited to space-based radio astronomy only. Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. The allocation to the Earth exploration satellite (passive) & space research (passive) services shall terminate on 1 January 2018. The allocation to the fixed & mobile services shall take effect from 1 st January, 2018. |
| 158.5 – 164 GHz | FIXED FIXED SATELLITE (space-to-Earth) MOBILE MOBILE SATELLITE (space-to-Earth) | |
| 164- 167 GHz | EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 | |
| 167 – 174.5 GHz | FIXED FIXED SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558 | In 167-174.8 GHz, the aeronautical mobile service shall not cause harmful interference to |

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| | 5.149 | <p>the inter-satellite service. See No. 5.43 of the ITU-RR.</p> <p>Other services either than the radioastronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR.</p> |
| 174.5 – 174.8 GHz | <p>FIXED INTER-SATELLITE MOBILE 5.558</p> | <p>In 167-174.8 GHz, the aeronautical mobile service shall not cause harmful interference to the inter-satellite service. See No. 5.43 of the ITU-RR.</p> |
| 174.8 – 182 GHz | <p>EARTH EXPLORATION SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)</p> | <p>The inter-satellite service is limited to satellites in the geostationary satellite orbit. The power flux-density shall not exceed -144 dB (W/(m².MHz)).</p> |
| 182 - 185 GHz | <p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340</p> | |
| 185 - 190 GHz | <p>EARTH EXPLORATION SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)</p> | <p>The inter-satellite service is limited to satellites in the geostationary satellite orbit. The power flux-density shall not exceed -144 dB (W/(m².MHz)).</p> |
| 190 – 191.8 GHz | <p>EARTH EXPLORATION SATELLITE (passive) SPACE RESEARCH (passive)</p> | |

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| | 5.340 | |
| 191.8 – 200 GHz | <p>FIXED INTER SATELLITE MOBILE 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE</p> <p>5.149 5.341 5.554</p> | <p>The aeronautical mobile service shall not cause harmful interference to the inter-satellite service. See No. 5.43 of the ITU-RR.</p> <p>Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR.</p> |
| 200 – 209 GHz | <p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> <p>5.340 5.341 5.563A</p> | <p>Ground-based passive atmospheric sensing is carried out to monitor atmospheric constituents.</p> |
| 209 - 217GHz | <p>FIXED FIXED -SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY</p> <p>5.149 5.341</p> | <p>Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR.</p> |
| 217 – 226 GHz | <p>FIXED FIXED SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) 5.562B</p> <p>5.149 5.341</p> | <p>The use of this allocation is limited to space-based radio astronomy only.</p> <p>Other services either than the radioastronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR.</p> |
| 226 – 231.5 GHz | <p>EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)</p> | |

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| | 5.340 | |
| 231.5 – 232 GHz | FIXED MOBILE Radiolocation | |
| 232 – 235 GHz | FIXED FIXED SATELLITE (space-to-Earth) MOBILE Radiolocation | |
| 235 - 238 GHz | EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B | Ground-based passive atmospheric sensing is carried out to monitor atmospheric constituents. 237.9-238GHz is also allocated to the Earth exploration-satellite service (active)& the space research service (active) for spaceborne cloud radars only. |
| 238 - 240 GHz | FIXED FIXED SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE | |
| 240 – 241 GHz | FIXED MOBILE RADIOLOCATION | |
| 241 - 248 GHz | RADIOLOCATION RADIO ASTRONOMY Amateur Amateur-Satellite 5.138 5.149 | 244-246 GHz is designated for ISM applications, with regard to the latest ITU-R Recommendations. Other services either than the radio astronomy |

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| | | service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 248 - 250 GHz | AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149 | Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 250 - 252 GHz | EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.563A | Ground-based passive atmospheric sensing is carried out to monitor atmospheric constituents. |
| 252 - 265 GHz | FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.149 5.554 | Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. |
| 265 - 275 GHz | FIXED FIXED SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY 5.149 5.563A | Other services either than the radio astronomy service should refer to Nos. 4.5, 4.6 and Article 29 of the ITU-RR. Ground-based passive atmospheric sensing is carried out to monitor atmospheric constituents. |
| 275 - 3000 GHz | (Not allocated) 5.565 | |